

GW - 52

MONITORING REPORTS

DATE:

1998

RECEIVED

JUL 02 1999

ENVIRONMENTAL BUREAU
OIL CONSERVATION DIVISION

**PHASE IV ASSESSMENT REPORT,
GROUND WATER MONITORING REPORT,
& PHASE V ASSESSMENT WORK PLAN**

**TRANSWESTERN PIPELINE COMPANY
ROSWELL COMPRESSOR STATION NO. 9**

Attachment #4

**Laboratory Reports for the May 1998
Ground Water Sampling Event**



HOUSTON LABORATORY

8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

June 15, 1998

Mr. George Robinson
CYPRESS ENGINEERING, INC.
10235 W. Little York Rd #256
Houston, TX 77040

The following report contains analytical results for the sample(s) received at Southern Petroleum Laboratories (SPL) on May 29, 1998. The sample(s) was assigned to Certificate of Analysis No.(s) 9805C90 and analyzed for all parameters as listed on the chain of custody.

Any data flag or quality control exception associated with this report will be footnoted in the analytical results page(s) or the quality control summary page(s).

If you have any questions or comments pertaining to this data report, please do not hesitate to contact me. Please reference the above Certificate of Analysis No. during any inquiries.

Again, SPL is pleased to be of service to you. We anticipate working with you in fulfilling all your current and future analytical needs.

Southern Petroleum Laboratories

A handwritten signature in black ink, appearing to read "Electa Brown", is written over a horizontal line.

Electa Brown

Client Services Representative



HOUSTON LABORATORY

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 660-0901

Southern Petroleum Laboratories, Inc.

Certificate of Analysis Number: 98-05-C90

Approved for Release by:

A handwritten signature in cursive script, reading "Electa Brown", is written over a horizontal line.

Electa Brown, Client Services Representative

A handwritten date "6-15-98" is written in cursive script over a horizontal line.

Date:

Greg Grandits
Laboratory Director

Cynthia Schreiner
Quality Assurance Officer

The attached analytical data package may not be reproduced except in full without the express written approval of this laboratory.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9805C90-01

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 06/12/98

PROJECT: Transwestern Pipeline
SITE: Roswell Sta. 9
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-7

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 05/28/98 12:15:00
DATE RECEIVED: 05/29/98

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
Alkalinity, as CaCO3 Method 310.1 * Analyzed by: JS Date: 06/08/98 10:00:00	114	1	mg/L	
Chloride Method 325.3 * Analyzed by: DAM Date: 06/09/98 11:00:00	290	10	mg/L	
Sulfate Method 375.4 * Analyzed by: TW Date: 06/10/98 11:30:00	2400	100	mg/L	
Total Dissolved Solids Method 160.1 * Analyzed by: KS Date: 06/01/98 16:18:00	3000	100	mg/L	
Nitrate-Nitrite, as N Method 353.3 * Analyzed by: DAM Date: 06/04/98 10:00:00	ND	0.1	mg/L	
Liquid-liquid extraction SEMIVOLATILES Method 3520C *** Analyzed by: DL Date: 05/31/98 10:00:00	05/31/98			

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.

**HOUSTON LABORATORY**

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 660-0901

Certificate of Analysis No. H9-9805C90-01

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 06/12/98

PROJECT: Transwestern Pipeline
SITE: Roswell Sta. 9
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-7

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 05/28/98 12:15:00
DATE RECEIVED: 05/29/98

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
Silver, Total Method 6010B *** Analyzed by: JM Date: 06/11/98 10:03:00	ND	0.01	mg/L	
Arsenic, Total Method 7060A *** Analyzed by: PB Date: 06/10/98 14:30:00	ND	0.005	mg/L	
Barium, Total Method 6010B *** Analyzed by: JM Date: 06/11/98 10:03:00	0.011	0.005	mg/L	
Cadmium, Total Method 6010B *** Analyzed by: JM Date: 06/11/98 10:03:00	ND	0.005	mg/L	
Chromium, Total Method 6010B *** Analyzed by: JM Date: 06/11/98 10:03:00	ND	0.01	mg/L	
Copper, Total Method 6010B *** Analyzed by: JM Date: 06/11/98 10:03:00	ND	0.01	mg/L	

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9805C90-01

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 06/12/98

PROJECT: Transwestern Pipeline
SITE: Roswell Sta. 9
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-7

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 05/28/98 12:15:00
DATE RECEIVED: 05/29/98

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
Iron, Total Method 6010B *** Analyzed by: JM Date: 06/11/98 10:03:00	0.44	0.02	mg/L	
Mercury, Total Method 7470 A*** Analyzed by: AG Date: 06/12/98 14:07:00	ND	0.0002	mg/L	
Manganese, Total Method 6010B *** Analyzed by: JM Date: 06/11/98 10:03:00	0.490	0.005	mg/L	
Acid Digestion-Aqueous, ICP Method 3010A *** Analyzed by: GJ Date: 06/04/98 17:00:00	06/04/98			
Lead, Total Method 6010B *** Analyzed by: JM Date: 06/11/98 10:03:00	ND	0.05	mg/L	
Selenium, Total Method 7740 *** Analyzed by: PB Date: 06/10/98 17:08:00	ND	0.005	mg/L	

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.

**HOUSTON LABORATORY**8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9805C90-01

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 06/12/98

PROJECT: Transwestern Pipeline
SITE: Roswell Sta. 9
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-7PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 05/28/98 12:15:00
DATE RECEIVED: 05/29/98**ANALYTICAL DATA**

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Zinc, Total	ND	0.02	mg/L
Method 6010B ***			
Analyzed by: JM			
Date: 06/12/98 09:10:00			

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.**QUALITY ASSURANCE:** These analyses are performed in accordance
with EPA guidelines for quality assurance.

**HOUSTON LABORATORY**

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 660-0901

Certificate of Analysis No. H9-9805C90-01

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

06/12/98

PROJECT: Transwestern Pipeline
SITE: Roswell Sta. 9
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-7

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 05/28/98 12:15:00
DATE RECEIVED: 05/29/98

ANALYTICAL DATA

PARAMETER	RESULTS	PQL*	UNITS
Benzene	ND	5	ug/L
Bromobenzene	ND	5	ug/L
Bromochloromethane	ND	5	ug/L
Bromodichloromethane	ND	5	ug/L
Bromoform	ND	5	ug/L
Bromomethane	ND	10	ug/L
n-Butylbenzene	ND	5	ug/L
sec-Butylbenzene	ND	5	ug/L
tert-Butylbenzene	ND	5	ug/L
Carbon tetrachloride	ND	5	ug/L
Chlorobenzene	ND	5	ug/L
Chlorodibromomethane	ND	5	ug/L
Chloroethane	ND	10	ug/L
Chloroform	ND	5	ug/L
Chloromethane	ND	10	ug/L
2-Chlorotoluene	ND	5	ug/L
4-Chlorotoluene	ND	5	ug/L
1,2-Dibromo-3-chloropropane	ND	5	ug/L
1,2-Dibromoethane	ND	5	ug/L
Dibromomethane	ND	5	ug/L
1,2-Dichlorobenzene	ND	5	ug/L
1,3-Dichlorobenzene	ND	5	ug/L
1,4-Dichlorobenzene	ND	5	ug/L
Dichlorodifluoromethane	ND	10	ug/L
1,1-Dichloroethane	ND	5	ug/L
1,2-Dichloroethane	ND	5	ug/L
1,1-Dichloroethene	ND	5	ug/L
cis-1,2-Dichloroethene	ND	5	ug/L
trans-1,2-Dichloroethene	ND	5	ug/L
1,2-Dichloropropane	ND	5	ug/L
1,3-Dichloropropane	ND	5	ug/L
2,2-Dichloropropane	ND	5	ug/L
1,1-Dichloropropene	ND	5	ug/L
Ethylbenzene	ND	5	ug/L
Hexachlorobutadiene	ND	5	ug/L
Isopropylbenzene	ND	5	ug/L
p-Isopropyltoluene	ND	5	ug/L
Methylene chloride	ND	5	ug/L

METHOD: 8260 Water, Volatile Organics
(continued on next page)

**HOUSTON LABORATORY**

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 660-0901

Certificate of Analysis No. H9-9805C90-01

Cypress Engineering, Inc.

SAMPLE ID: MW-7

ANALYTICAL DATA (continued)				
PARAMETER	RESULTS	PQL*	UNITS	
Naphthalene	ND	5	ug/L	
n-Propylbenzene	ND	5	ug/L	
Styrene	ND	5	ug/L	
1,1,1,2-Tetrachloroethane	ND	5	ug/L	
1,1,2,2-Tetrachloroethane	ND	5	ug/L	
Tetrachloroethene	ND	5	ug/L	
Toluene	ND	5	ug/L	
1,2,3-Trichlorobenzene	ND	5	ug/L	
1,2,4-Trichlorobenzene	ND	5	ug/L	
1,1,1-Trichloroethane	ND	5	ug/L	
1,1,2-Trichloroethane	ND	5	ug/L	
Trichloroethene	ND	5	ug/L	
Trichlorofluoromethane	ND	5	ug/L	
1,2,3-Trichloropropane	ND	5	ug/L	
1,2,4-Trimethylbenzene	ND	5	ug/L	
1,3,5-Trimethylbenzene	ND	5	ug/L	
Vinyl chloride	ND	10	ug/L	
Xylenes (total)	ND	5	ug/L	
Acetone	ND	100	ug/L	
Carbon Disulfide	ND	5	ug/L	
Vinyl Acetate	ND	10	ug/L	
2-Butanone	ND	20	ug/L	
1,2-Dichloroethene (total)	ND	5	ug/L	
2-Chloroethylvinylether	ND	10	ug/L	
4-Methyl-2-Pentanone	ND	10	ug/L	
cis-1,3-Dichloropropene	ND	5	ug/L	
trans-1,3-Dichloropropene	ND	5	ug/L	
2-Hexanone	ND	10	ug/L	

SURROGATES	AMOUNT SPIKED	% RECOVERY	LOWER LIMIT	UPPER LIMIT
1,2-Dichloroethane-d4	50 ug/L	92	76	114
Toluene-d8	50 ug/L	92	88	110
4-Bromofluorobenzene	50 ug/L	94	86	115

ANALYZED BY: JC

DATE/TIME: 05/31/98 05:06:00

METHOD: 8260 Water, Volatile Organics

NOTES: * - Practical Quantitation Limit

ND - Not Detected

NA - Not Analyzed

COMMENTS:

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.

**HOUSTON LABORATORY**8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9805C90-01

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

06/12/98

PROJECT: Transwestern Pipeline
SITE: Roswell Sta. 9
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-7PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 05/28/98 12:15:00
DATE RECEIVED: 05/29/98**ANALYTICAL DATA**

PARAMETER	RESULTS	PQL*	UNITS
Acenaphthene	ND	5	ug/L
Acenaphthylene	ND	5	ug/L
Anthracene	ND	5	ug/L
Benzo(a)Anthracene	ND	5	ug/L
Benzo(b)Fluoranthene	ND	5	ug/L
Benzo(k)Fluoranthene	ND	5	ug/L
Benzo(a)Pyrene	ND	5	ug/L
Benzo(g,h,i)Perylene	ND	5	ug/L
Chrysene	ND	5	ug/L
Dibenz(a,h)Anthracene	ND	5	ug/L
Fluoranthene	ND	5	ug/L
Fluorene	ND	5	ug/L
Indeno(1,2,3-cd)Pyrene	ND	5	ug/L
2-Methylnaphthalene	ND	5	ug/L
Naphthalene	ND	5	ug/L
Phenanthrene	ND	5	ug/L
Pyrene	ND	5	ug/L
1-Methylnaphthalene	ND	5	ug/L

SURROGATES	AMOUNT SPIKED	% RECOVERY	LOWER LIMIT	UPPER LIMIT
Nitrobenzene-d5	50 ug/L	70	35	114
2-Fluorobiphenyl	50 ug/L	78	43	116
Terphenyl-d14	50 ug/L	80	33	141
Phenol-d5	75 ug/L	29	10	110
2-Fluorophenol	75 ug/L	43	21	110
2,4,6-Tribromophenol	75 ug/L	91	10	123

ANALYZED BY: RY
EXTRACTED BY: DL
METHOD: 8270C, Semivolatile Organics - Water
NOTES: * - Practical Quantitation Limit ND - Not Detected
NA - Not AnalyzedDATE/TIME: 06/09/98 16:27:00
DATE/TIME: 05/31/98 10:00:00**COMMENTS:**QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.

**HOUSTON LABORATORY**

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 660-0901

Certificate of Analysis No. H9-9805C90-02

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 06/12/98

PROJECT: Transwestern Pipeline
SITE: Roswell Sta. 9
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-22

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 05/28/98 13:40:00
DATE RECEIVED: 05/29/98

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
Alkalinity, as CaCO3 Method 310.1 * Analyzed by: JS Date: 06/08/98 10:00:00	107	1	mg/L	
Chloride Method 325.3 * Analyzed by: DAM Date: 06/09/98 11:00:00	410	10	mg/L	
Sulfate Method 375.4 * Analyzed by: TW Date: 06/10/98 11:30:00	2200	100	mg/L	
Total Dissolved Solids Method 160.1 * Analyzed by: KS Date: 06/01/98 16:18:00	2700	100	mg/L	
Nitrate-Nitrite, as N Method 353.3 * Analyzed by: DAM Date: 06/04/98 10:00:00	0.9	0.1	mg/L	
Liquid-liquid extraction SEMIVOLATILES Method 3520C *** Analyzed by: DL Date: 05/31/98 10:00:00	05/31/98			

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9805C90-02

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 06/12/98

PROJECT: Transwestern Pipeline
SITE: Roswell Sta. 9
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-22

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 05/28/98 13:40:00
DATE RECEIVED: 05/29/98

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
Silver, Total Method 6010B *** Analyzed by: JM Date: 06/11/98 10:03:00	ND	0.01	mg/L	
Arsenic, Total Method 7060A *** Analyzed by: PB Date: 06/10/98 14:30:00	ND	0.005	mg/L	
Barium, Total Method 6010B *** Analyzed by: JM Date: 06/11/98 10:03:00	0.009	0.005	mg/L	
Cadmium, Total Method 6010B *** Analyzed by: JM Date: 06/11/98 10:03:00	ND	0.005	mg/L	
Chromium, Total Method 6010B *** Analyzed by: JM Date: 06/11/98 10:03:00	ND	0.01	mg/L	
Copper, Total Method 6010B *** Analyzed by: JM Date: 06/11/98 10:03:00	ND	0.01	mg/L	

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9805C90-02

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 06/12/98

PROJECT: Transwestern Pipeline
SITE: Roswell Sta. 9
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-22

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 05/28/98 13:40:00
DATE RECEIVED: 05/29/98

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
Iron, Total Method 6010B *** Analyzed by: JM Date: 06/11/98 10:03:00	0.96	0.02	mg/L	
Mercury, Total Method 7470 A*** Analyzed by: AG Date: 06/12/98 14:07:00	ND	0.0002	mg/L	
Manganese, Total Method 6010B *** Analyzed by: JM Date: 06/11/98 10:03:00	0.015	0.005	mg/L	
Acid Digestion-Aqueous, ICP Method 3010A *** Analyzed by: GJ Date: 06/04/98 17:00:00	06/04/98			
Lead, Total Method 6010B *** Analyzed by: JM Date: 06/11/98 10:03:00	ND	0.05	mg/L	
Selenium, Total Method 7740 *** Analyzed by: PB Date: 06/10/98 17:08:00	ND	0.005	mg/L	

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.

**HOUSTON LABORATORY**

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 660-0901

Certificate of Analysis No. H9-9805C90-02

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 06/12/98

PROJECT: Transwestern Pipeline
SITE: Roswell Sta. 9
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-22

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 05/28/98 13:40:00
DATE RECEIVED: 05/29/98

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Zinc, Total	ND	0.02	mg/L
Method 6010B ***			
Analyzed by: JM			
Date: 06/12/98 09:10:00			

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.

**HOUSTON LABORATORY**8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9805C90-02

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

06/12/98

PROJECT: Transwestern Pipeline
SITE: Roswell Sta. 9
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-22**PROJECT NO:**
MATRIX: WATER
DATE SAMPLED: 05/28/98 13:40:00
DATE RECEIVED: 05/29/98**ANALYTICAL DATA**

PARAMETER	RESULTS	PQL*	UNITS
Benzene	ND	5	ug/L
Bromobenzene	ND	5	ug/L
Bromochloromethane	ND	5	ug/L
Bromodichloromethane	ND	5	ug/L
Bromoform	ND	5	ug/L
Bromomethane	ND	10	ug/L
n-Butylbenzene	ND	5	ug/L
sec-Butylbenzene	ND	5	ug/L
tert-Butylbenzene	ND	5	ug/L
Carbon tetrachloride	ND	5	ug/L
Chlorobenzene	ND	5	ug/L
Chlorodibromomethane	ND	5	ug/L
Chloroethane	ND	10	ug/L
Chloroform	ND	5	ug/L
Chloromethane	ND	10	ug/L
2-Chlorotoluene	ND	5	ug/L
4-Chlorotoluene	ND	5	ug/L
1,2-Dibromo-3-chloropropane	ND	5	ug/L
1,2-Dibromoethane	ND	5	ug/L
Dibromomethane	ND	5	ug/L
1,2-Dichlorobenzene	ND	5	ug/L
1,3-Dichlorobenzene	ND	5	ug/L
1,4-Dichlorobenzene	ND	5	ug/L
Dichlorodifluoromethane	ND	10	ug/L
1,1-Dichloroethane	ND	5	ug/L
1,2-Dichloroethane	ND	5	ug/L
1,1-Dichloroethene	ND	5	ug/L
cis-1,2-Dichloroethene	ND	5	ug/L
trans-1,2-Dichloroethene	ND	5	ug/L
1,2-Dichloropropane	ND	5	ug/L
1,3-Dichloropropane	ND	5	ug/L
2,2-Dichloropropane	ND	5	ug/L
1,1-Dichloropropene	ND	5	ug/L
Ethylbenzene	ND	5	ug/L
Hexachlorobutadiene	ND	5	ug/L
Isopropylbenzene	ND	5	ug/L
p-Isopropyltoluene	ND	5	ug/L
Methylene chloride	ND	5	ug/L

METHOD: 8260 Water, Volatile Organics
(continued on next page)

**HOUSTON LABORATORY**

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 660-0901

Certificate of Analysis No. H9-9805C90-02

Cypress Engineering, Inc.

SAMPLE ID: MW-22

ANALYTICAL DATA (continued)				
PARAMETER	RESULTS	PQL*	UNITS	
Naphthalene	ND	5	ug/L	
n-Propylbenzene	ND	5	ug/L	
Styrene	ND	5	ug/L	
1,1,1,2-Tetrachloroethane	ND	5	ug/L	
1,1,2,2-Tetrachloroethane	ND	5	ug/L	
Tetrachloroethene	ND	5	ug/L	
Toluene	ND	5	ug/L	
1,2,3-Trichlorobenzene	ND	5	ug/L	
1,2,4-Trichlorobenzene	ND	5	ug/L	
1,1,1-Trichloroethane	ND	5	ug/L	
1,1,2-Trichloroethane	ND	5	ug/L	
Trichloroethene	ND	5	ug/L	
Trichlorofluoromethane	ND	5	ug/L	
1,2,3-Trichloropropane	ND	5	ug/L	
1,2,4-Trimethylbenzene	ND	5	ug/L	
1,3,5-Trimethylbenzene	ND	5	ug/L	
Vinyl chloride	ND	10	ug/L	
Xylenes (total)	ND	5	ug/L	
Acetone	ND	100	ug/L	
Carbon Disulfide	ND	5	ug/L	
Vinyl Acetate	ND	10	ug/L	
2-Butanone	ND	20	ug/L	
1,2-Dichloroethene (total)	ND	5	ug/L	
2-Chloroethylvinylether	ND	10	ug/L	
4-Methyl-2-Pentanone	ND	10	ug/L	
cis-1,3-Dichloropropene	ND	5	ug/L	
trans-1,3-Dichloropropene	ND	5	ug/L	
2-Hexanone	ND	10	ug/L	
SURROGATES	AMOUNT SPIKED	% RECOVERY	LOWER LIMIT	UPPER LIMIT
1,2-Dichloroethane-d4	50 ug/L	90	76	114
Toluene-d8	50 ug/L	90	88	110
4-Bromofluorobenzene	50 ug/L	96	86	115

ANALYZED BY: JC

DATE/TIME: 05/31/98 05:31:00

METHOD: 8260 Water, Volatile Organics

NOTES: * - Practical Quantitation Limit

ND - Not Detected

NA - Not Analyzed

COMMENTS:

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.

**HOUSTON LABORATORY**

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 660-0901

Certificate of Analysis No. H9-9805C90-02

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

06/12/98

PROJECT: Transwestern Pipeline
SITE: Roswell Sta. 9
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-22

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 05/28/98 13:40:00
DATE RECEIVED: 05/29/98

ANALYTICAL DATA

PARAMETER	RESULTS	PQL*	UNITS
Acenaphthene	ND	5	ug/L
Acenaphthylene	ND	5	ug/L
Anthracene	ND	5	ug/L
Benzo(a)Anthracene	ND	5	ug/L
Benzo(b)Fluoranthene	ND	5	ug/L
Benzo(k)Fluoranthene	ND	5	ug/L
Benzo(a)Pyrene	ND	5	ug/L
Benzo(g,h,i)Perylene	ND	5	ug/L
Chrysene	ND	5	ug/L
Dibenz(a,h)Anthracene	ND	5	ug/L
Fluoranthene	ND	5	ug/L
Fluorene	ND	5	ug/L
Indeno(1,2,3-cd)Pyrene	ND	5	ug/L
2-Methylnaphthalene	ND	5	ug/L
Naphthalene	ND	5	ug/L
Phenanthrene	ND	5	ug/L
Pyrene	ND	5	ug/L
1-Methylnaphthalene	ND	5	ug/L

SURROGATES	AMOUNT SPIKED	% RECOVERY	LOWER LIMIT	UPPER LIMIT
Nitrobenzene-d5	50 ug/L	68	35	114
2-Fluorobiphenyl	50 ug/L	84	43	116
Terphenyl-d14	50 ug/L	70	33	141
Phenol-d5	75 ug/L	19	10	110
2-Fluorophenol	75 ug/L	33	21	110
2,4,6-Tribromophenol	75 ug/L	87	10	123

ANALYZED BY: RY DATE/TIME: 06/09/98 16:55:00
EXTRACTED BY: DL DATE/TIME: 05/31/98 10:00:00
METHOD: 8270C, Semivolatile Organics - Water
NOTES: * - Practical Quantitation Limit ND - Not Detected
 NA - Not Analyzed

COMMENTS:

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.

**HOUSTON LABORATORY**

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 660-0901

Certificate of Analysis No. H9-9805C90-03

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 06/12/98

PROJECT: Transwestern Pipeline
SITE: Roswell Sta. 9
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-9

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 05/28/98 14:40:00
DATE RECEIVED: 05/29/98

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Alkalinity, as CaCO3 Method 310.1 * Analyzed by: JS Date: 06/08/98 10:00:00	112	1	mg/L
Chloride Method 325.3 * Analyzed by: DAM Date: 06/09/98 11:00:00	470	10	mg/L
Sulfate Method 375.4 * Analyzed by: TW Date: 06/10/98 11:30:00	2500	100	mg/L
Total Dissolved Solids Method 160.1 * Analyzed by: KS Date: 06/01/98 16:18:00	3200	100	mg/L
Nitrate-Nitrite, as N Method 353.3 * Analyzed by: DAM Date: 06/04/98 10:00:00	0.9	0.1	mg/L
Liquid-liquid extraction SEMIVOLATILES Method 3520C *** Analyzed by: DL Date: 05/31/98 10:00:00	05/31/98		

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.

**HOUSTON LABORATORY**8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9805C90-03

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 06/12/98

PROJECT: Transwestern Pipeline
SITE: Roswell Sta. 9
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-9**PROJECT NO:**
MATRIX: WATER
DATE SAMPLED: 05/28/98 14:40:00
DATE RECEIVED: 05/29/98

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
Silver, Total Method 6010B *** Analyzed by: JM Date: 06/11/98 10:03:00	ND	0.01	mg/L	
Arsenic, Total Method 7060A *** Analyzed by: PB Date: 06/10/98 14:30:00	ND	0.005	mg/L	
Barium, Total Method 6010B *** Analyzed by: JM Date: 06/11/98 10:03:00	0.013	0.005	mg/L	
Cadmium, Total Method 6010B *** Analyzed by: JM Date: 06/11/98 10:03:00	ND	0.005	mg/L	
Chromium, Total Method 6010B *** Analyzed by: JM Date: 06/11/98 10:03:00	ND	0.01	mg/L	
Copper, Total Method 6010B *** Analyzed by: JM Date: 06/11/98 10:03:00	ND	0.01	mg/L	

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.

**HOUSTON LABORATORY**

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 660-0901

Certificate of Analysis No. H9-9805C90-03

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 06/12/98

PROJECT: Transwestern Pipeline
SITE: Roswell Sta. 9
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-9

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 05/28/98 14:40:00
DATE RECEIVED: 05/29/98

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
Iron, Total Method 6010B *** Analyzed by: JM Date: 06/11/98 10:03:00	0.86	0.02	mg/L	
Mercury, Total Method 7470 A*** Analyzed by: AG Date: 06/12/98 14:07:00	ND	0.0002	mg/L	
Manganese, Total Method 6010B *** Analyzed by: JM Date: 06/11/98 10:03:00	0.070	0.005	mg/L	
Acid Digestion-Aqueous, ICP Method 3010A *** Analyzed by: GJ Date: 06/04/98 17:00:00	06/04/98			
Lead, Total Method 6010B *** Analyzed by: JM Date: 06/11/98 10:03:00	ND	0.05	mg/L	
Selenium, Total Method 7740 *** Analyzed by: PB Date: 06/10/98 17:08:00	ND	0.005	mg/L	

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9805C90-03

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 06/12/98

PROJECT: Transwestern Pipeline
SITE: Roswell Sta. 9
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-9

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 05/28/98 14:40:00
DATE RECEIVED: 05/29/98

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
Zinc, Total	ND	0.02	mg/L	
Method 6010B ***				
Analyzed by: JM				
Date: 06/12/98 09:10:00				

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.

**HOUSTON LABORATORY**

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 660-0901

Certificate of Analysis No. H9-9805C90-03

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

06/12/98

PROJECT: Transwestern Pipeline
SITE: Roswell Sta. 9
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-9

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 05/28/98 14:40:00
DATE RECEIVED: 05/29/98

ANALYTICAL DATA

PARAMETER	RESULTS	PQL*	UNITS
Benzene	ND	5	ug/L
Bromobenzene	ND	5	ug/L
Bromochloromethane	ND	5	ug/L
Bromodichloromethane	ND	5	ug/L
Bromoform	ND	5	ug/L
Bromomethane	ND	10	ug/L
n-Butylbenzene	ND	5	ug/L
sec-Butylbenzene	ND	5	ug/L
tert-Butylbenzene	ND	5	ug/L
Carbon tetrachloride	ND	5	ug/L
Chlorobenzene	ND	5	ug/L
Chlorodibromomethane	ND	5	ug/L
Chloroethane	ND	10	ug/L
Chloroform	ND	5	ug/L
Chloromethane	ND	10	ug/L
2-Chlorotoluene	ND	5	ug/L
4-Chlorotoluene	ND	5	ug/L
1,2-Dibromo-3-chloropropane	ND	5	ug/L
1,2-Dibromoethane	ND	5	ug/L
Dibromomethane	ND	5	ug/L
1,2-Dichlorobenzene	ND	5	ug/L
1,3-Dichlorobenzene	ND	5	ug/L
1,4-Dichlorobenzene	ND	5	ug/L
Dichlorodifluoromethane	ND	10	ug/L
1,1-Dichloroethane	ND	5	ug/L
1,2-Dichloroethane	ND	5	ug/L
1,1-Dichloroethene	ND	5	ug/L
cis-1,2-Dichloroethene	ND	5	ug/L
trans-1,2-Dichloroethene	ND	5	ug/L
1,2-Dichloropropane	ND	5	ug/L
1,3-Dichloropropane	ND	5	ug/L
2,2-Dichloropropane	ND	5	ug/L
1,1-Dichloropropene	ND	5	ug/L
Ethylbenzene	ND	5	ug/L
Hexachlorobutadiene	ND	5	ug/L
Isopropylbenzene	ND	5	ug/L
p-Isopropyltoluene	ND	5	ug/L
Methylene chloride	ND	5	ug/L

METHOD: 8260 Water, Volatile Organics
(continued on next page)

**HOUSTON LABORATORY**8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9805C90-03

Cypress Engineering, Inc.

SAMPLE ID: MW-9

PARAMETER	ANALYTICAL DATA (continued)		UNITS
	RESULTS	PQL*	
Naphthalene	ND	5	ug/L
n-Propylbenzene	ND	5	ug/L
Styrene	ND	5	ug/L
1,1,1,2-Tetrachloroethane	ND	5	ug/L
1,1,2,2-Tetrachloroethane	ND	5	ug/L
Tetrachloroethene	ND	5	ug/L
Toluene	ND	5	ug/L
1,2,3-Trichlorobenzene	ND	5	ug/L
1,2,4-Trichlorobenzene	ND	5	ug/L
1,1,1-Trichloroethane	ND	5	ug/L
1,1,2-Trichloroethane	ND	5	ug/L
Trichloroethene	ND	5	ug/L
Trichlorofluoromethane	ND	5	ug/L
1,2,3-Trichloropropane	ND	5	ug/L
1,2,4-Trimethylbenzene	ND	5	ug/L
1,3,5-Trimethylbenzene	ND	5	ug/L
Vinyl chloride	ND	10	ug/L
Xylenes (total)	ND	5	ug/L
Acetone	ND	100	ug/L
Carbon Disulfide	ND	5	ug/L
Vinyl Acetate	ND	10	ug/L
2-Butanone	ND	20	ug/L
1,2-Dichloroethene (total)	ND	5	ug/L
2-Chloroethylvinylether	ND	10	ug/L
4-Methyl-2-Pentanone	ND	10	ug/L
cis-1,3-Dichloropropene	ND	5	ug/L
trans-1,3-Dichloropropene	ND	5	ug/L
2-Hexanone	ND	10	ug/L

SURROGATES	AMOUNT SPIKED	% RECOVERY	LOWER LIMIT	UPPER LIMIT
1,2-Dichloroethane-d4	50 ug/L	94	76	114
Toluene-d8	50 ug/L	94	88	110
4-Bromofluorobenzene	50 ug/L	94	86	115

ANALYZED BY: JC

DATE/TIME: 05/31/98 05:56:00

METHOD: 8260 Water, Volatile Organics

NOTES: * - Practical Quantitation Limit

ND - Not Detected

NA - Not Analyzed

COMMENTS:

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9805C90-03

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

06/12/98

PROJECT: Transwestern Pipeline
SITE: Roswell Sta. 9
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-9

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 05/28/98 14:40:00
DATE RECEIVED: 05/29/98

ANALYTICAL DATA

PARAMETER	RESULTS	PQL*	UNITS
Acenaphthene	ND	5	ug/L
Acenaphthylene	ND	5	ug/L
Anthracene	ND	5	ug/L
Benzo(a)Anthracene	ND	5	ug/L
Benzo(b)Fluoranthene	ND	5	ug/L
Benzo(k)Fluoranthene	ND	5	ug/L
Benzo(a)Pyrene	ND	5	ug/L
Benzo(g,h,i)Perylene	ND	5	ug/L
Chrysene	ND	5	ug/L
Dibenz(a,h)Anthracene	ND	5	ug/L
Fluoranthene	ND	5	ug/L
Fluorene	ND	5	ug/L
Indeno(1,2,3-cd)Pyrene	ND	5	ug/L
2-Methylnaphthalene	ND	5	ug/L
Naphthalene	ND	5	ug/L
Phenanthrene	ND	5	ug/L
Pyrene	ND	5	ug/L
1-Methylnaphthalene	ND	5	ug/L

SURROGATES	AMOUNT SPIKED	% RECOVERY	LOWER LIMIT	UPPER LIMIT
Nitrobenzene-d5	50 ug/L	66	35	114
2-Fluorobiphenyl	50 ug/L	78	43	116
Terphenyl-d14	50 ug/L	72	33	141
Phenol-d5	75 ug/L	19	10	110
2-Fluorophenol	75 ug/L	33	21	110
2,4,6-Tribromophenol	75 ug/L	80	10	123

ANALYZED BY: RY DATE/TIME: 06/09/98 17:23:00
EXTRACTED BY: DL DATE/TIME: 05/31/98 10:00:00
METHOD: 8270C, Semivolatile Organics - Water
NOTES: * - Practical Quantitation Limit ND - Not Detected
 NA - Not Analyzed

COMMENTS:

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.

**HOUSTON LABORATORY**

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 660-0901

Certificate of Analysis No. H9-9805C90-04

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

06/12/98

PROJECT: Transwestern Pipeline
SITE: Roswell Sta. 9
SAMPLED BY: Provided by SPL
SAMPLE ID: Trip Blank 05/21/98

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 05/28/98
DATE RECEIVED: 05/29/98

ANALYTICAL DATA

PARAMETER	RESULTS	PQL*	UNITS
Benzene	ND	5	ug/L
Bromobenzene	ND	5	ug/L
Bromochloromethane	ND	5	ug/L
Bromodichloromethane	ND	5	ug/L
Bromoform	ND	5	ug/L
Bromomethane	ND	10	ug/L
n-Butylbenzene	ND	5	ug/L
sec-Butylbenzene	ND	5	ug/L
tert-Butylbenzene	ND	5	ug/L
Carbon tetrachloride	ND	5	ug/L
Chlorobenzene	ND	5	ug/L
Chlorodibromomethane	ND	5	ug/L
Chloroethane	ND	10	ug/L
Chloroform	ND	5	ug/L
Chloromethane	ND	10	ug/L
2-Chlorotoluene	ND	5	ug/L
4-Chlorotoluene	ND	5	ug/L
1,2-Dibromo-3-chloropropane	ND	5	ug/L
1,2-Dibromoethane	ND	5	ug/L
Dibromomethane	ND	5	ug/L
1,2-Dichlorobenzene	ND	5	ug/L
1,3-Dichlorobenzene	ND	5	ug/L
1,4-Dichlorobenzene	ND	5	ug/L
Dichlorodifluoromethane	ND	10	ug/L
1,1-Dichloroethane	ND	5	ug/L
1,2-Dichloroethane	ND	5	ug/L
1,1-Dichloroethene	ND	5	ug/L
cis-1,2-Dichloroethene	ND	5	ug/L
trans-1,2-Dichloroethene	ND	5	ug/L
1,2-Dichloropropane	ND	5	ug/L
1,3-Dichloropropane	ND	5	ug/L
2,2-Dichloropropane	ND	5	ug/L
1,1-Dichloropropene	ND	5	ug/L
Ethylbenzene	ND	5	ug/L
Hexachlorobutadiene	ND	5	ug/L
Isopropylbenzene	ND	5	ug/L
p-Isopropyltoluene	ND	5	ug/L
Methylene chloride	ND	5	ug/L

METHOD: 8260 Water, Volatile Organics
(continued on next page)

**HOUSTON LABORATORY**

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 660-0901

Certificate of Analysis No. H9-9805C90-04

Cypress Engineering, Inc.

SAMPLE ID: Trip Blank

05/21/98

ANALYTICAL DATA (continued)

PARAMETER	RESULTS	PQL*	UNITS
Naphthalene	ND	5	ug/L
n-Propylbenzene	ND	5	ug/L
Styrene	ND	5	ug/L
1,1,1,2-Tetrachloroethane	ND	5	ug/L
1,1,2,2-Tetrachloroethane	ND	5	ug/L
Tetrachloroethene	ND	5	ug/L
Toluene	ND	5	ug/L
1,2,3-Trichlorobenzene	ND	5	ug/L
1,2,4-Trichlorobenzene	ND	5	ug/L
1,1,1-Trichloroethane	ND	5	ug/L
1,1,2-Trichloroethane	ND	5	ug/L
Trichloroethene	ND	5	ug/L
Trichlorofluoromethane	ND	5	ug/L
1,2,3-Trichloropropane	ND	5	ug/L
1,2,4-Trimethylbenzene	ND	5	ug/L
1,3,5-Trimethylbenzene	ND	5	ug/L
Vinyl chloride	ND	10	ug/L
Xylenes (total)	ND	5	ug/L
Acetone	ND	100	ug/L
Carbon Disulfide	ND	5	ug/L
Vinyl Acetate	ND	10	ug/L
2-Butanone	ND	20	ug/L
1,2-Dichloroethene (total)	ND	5	ug/L
2-Chloroethylvinylether	ND	10	ug/L
4-Methyl-2-Pentanone	ND	10	ug/L
cis-1,3-Dichloropropene	ND	5	ug/L
trans-1,3-Dichloropropene	ND	5	ug/L
2-Hexanone	ND	10	ug/L

SURROGATES	AMOUNT SPIKED	% RECOVERY	LOWER LIMIT	UPPER LIMIT
1,2-Dichloroethane-d4	50 ug/L	90	76	114
Toluene-d8	50 ug/L	96	88	110
4-Bromofluorobenzene	50 ug/L	92	86	115

ANALYZED BY: JC

DATE/TIME: 05/31/98 06:22:00

METHOD: 8260 Water, Volatile Organics

NOTES: * - Practical Quantitation Limit

ND - Not Detected

NA - Not Analyzed

COMMENTS:

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.

QUALITY CONTROL

DOCUMENTATION

3A
WATER VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: SPL

Contract:

Lab Code:

Case No.: 9805C92 SAS No.:

SDG No.:

Matrix Spike - EPA Sample No.: MW-8

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC #	QC. LIMITS REC.
1,1-Dichloroethene	50	0	52	104	61-145
Trichloroethene	50	0	44	88	71-120
Benzene	50	0	45	90	76-127
Toluene	50	0	40	80	76-125
Chlorobenzene	50	0	45	90	75-130

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC #	% RPD #	QC LIMITS RPD	REC.
1,1-Dichloroethene	50	47	94	10	14	61-145
Trichloroethene	50	42	84	5	14	71-120
Benzene	50	44	88	2	11	76-127
Toluene	50	38	76	5	13	76-125
Chlorobenzene	50	43	86	5	13	75-130

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 5 outside limits

Spike Recovery: 0 out of 10 outside limits

Data File: /var/chem/n.i/n980530a.b/n150t12.d
Report Date: 31-May-1998 11:13

Page 4

SPL Houston Labs

RECOVERY REPORT

Client Name: Client SDG: n980530
Sample Matrix: LIQUID Fraction: VOA
Lab Smp Id: LCS
Level: LOW Operator: JC
Data Type: MS DATA SampleType: LCS
SpikeList File: 8260 water.spk Quant Type: ISTD
Sublist File: 8260.sub
Method File: /var/chem/n.i/n980530a.b/n8260w.m
Misc Info: N150W2//N150CW2

SPIKE COMPOUND	CONC ADDED ug/L	CONC RECOVERED ug/L	% RECOVERED	LIMITS
8 1,1-Dichloroethene	50	49	98.00	61-145
29 Trichloroethene	50	52	104.00	71-120
25 Benzene	50	52	104.00	76-127
37 Toluene	50	46	92.00	76-125
45 Chlorobenzene	50	50	100.00	75-130

SURROGATE COMPOUND	CONC ADDED ug/L	CONC RECOVERED ug/L	% RECOVERED	LIMITS
\$ 21 1,2-Dichloroethane	50	47	94.00	76-114
\$ 36 Toluene-d8	50	47	94.00	88-110
\$ 56 Bromofluorobenzene	50	49	98.00	86-115



SPL Blank QC Report

HOUSTON LABORATORY

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 669-0903

page 1

Matrix: Aqueous
Sample ID: VLBLK
Batch: N980530122724

Reported on: 06/03/98 16:06
Analyzed on: 05/30/98 23:35
Analyst: JC

METHOD 8260/8240 N150B03

Compound	Result	Detection Limit	Units
Dichlorodifluoromethane	ND	10	ug/L
Chloromethane	ND	10	ug/L
Vinyl Chloride	ND	10	ug/L
Bromomethane	ND	10	ug/L
Chloroethane	ND	10	ug/L
Trichlorofluoromethane	ND	5	ug/L
Acetone	ND	100	ug/L
1,1-Dichloroethene	ND	5	ug/L
Methylene Chloride	ND	5	ug/L
Carbon Disulfide	ND	5	ug/L
trans-1,2-Dichloroethene	ND	5	ug/L
1,1-Dichloroethane	ND	5	ug/L
Vinyl Acetate	ND	10	ug/L
2-Butanone	ND	20	ug/L
cis-1,2-Dichloroethene	ND	5	ug/L
1,2-Dichloroethene (total)	ND	5	ug/L
2,2-Dichloropropane	ND	5	ug/L
Bromochloromethane	ND	5	ug/L
Chloroform	ND	5	ug/L
1,1,1-Trichloroethane	ND	5	ug/L
1,2-Dichloroethane	ND	5	ug/L
1,1-Dichloropropene	ND	5	ug/L
Benzene	ND	5	ug/L
Carbon Tetrachloride	ND	5	ug/L
1,2-Dichloropropane	ND	5	ug/L
Trichloroethene	ND	5	ug/L
Dibromomethane	ND	5	ug/L
Bromodichloromethane	ND	5	ug/L
2-Chloroethylvinylether	ND	10	ug/L
4-Methyl-2-Pentanone	ND	10	ug/L
cis-1,3-Dichloropropene	ND	5	ug/L
trans-1,3-Dichloropropene	ND	5	ug/L
Toluene	ND	5	ug/L
1,1,2-Trichloroethane	ND	5	ug/L

Notes

ND - Not detected.



SPL Blank QC Report

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-2900

page 2

Matrix: Aqueous
Sample ID: VLBLK
Batch: N980530122724

Reported on: 06/03/98 16:06
Analyzed on: 05/30/98 23:35
Analyst: JC

METHOD 8260/8240 N150B03

Compound	Result	Detection Limit	Units
1,3-Dichloropropane	ND	5	ug/L
2-Hexanone	ND	10	ug/L
Dibromochloromethane	ND	5	ug/L
1,2-Dibromoethane	ND	5	ug/L
Tetrachloroethene	ND	5	ug/L
Chlorobenzene	ND	5	ug/L
1,1,1,2-Tetrachloroethane	ND	5	ug/L
Ethylbenzene	ND	5	ug/L
Bromoform	ND	5	ug/L
Styrene	ND	5	ug/L
Xylene (Total)	ND	5	ug/L
1,1,2,2-Tetrachloroethane	ND	5	ug/L
1,2,3-Trichloropropane	ND	5	ug/L
Isopropylbenzene	ND	5	ug/L
Bromobenzene	ND	5	ug/L
N-Propylbenzene	ND	5	ug/L
2-Chlorotoluene	ND	5	ug/L
4-Chlorotoluene	ND	5	ug/L
1,3,5-Trimethylbenzene	ND	5	ug/L
tert-Butylbenzene	ND	5	ug/L
1,2,4-Trimethylbenzene	ND	5	ug/L
1,3-Dichlorobenzene	ND	5	ug/L
sec-Butylbenzene	ND	5	ug/L
1,4-Dichlorobenzene	ND	5	ug/L
p-Isopropyltoluene	ND	5	ug/L
1,2-Dichlorobenzene	ND	5	ug/L
n-Butylbenzene	ND	5	ug/L
1,2-Dibromo-3-Chloropropan	ND	5	ug/L
1,2,4-Trichlorobenzene	ND	5	ug/L
Naphthalene	ND	5	ug/L
Hexachlorobutadiene	ND	5	ug/L
1,2,3-Trichlorobenzene	ND	5	ug/L

Notes

ND - Not detected.



SPL Blank QC Report

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 658-0900

3

Matrix: Aqueous
Sample ID: VLBLK
Batch: N980530122724

Reported on: 06/03/98 16:06
Analyzed on: 05/30/98 23:35
Analyst: JC

METHOD 8260/8240 N150B03

Surrogate	Result	QC Criteria	Units
1,2-Dichloroethane-d4	90	76-114	% Recovery
Toluene-d8	92	88-110	% Recovery
Bromofluorobenzene	94	86-115	% Recovery

Samples in Batch 9805C90-01 9805C90-02 9805C90-03 9805C90-04

Notes

ND - Not detected.

3C
WATER SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: SPL

Contract:

Lab Code:

Case No.: 980531

SAS No.:

SDG No.:

Matrix Spike - EPA Sample No.: Blank Spike/Spike-Dup

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC #	QC. LIMITS REC.
=====	=====	=====	=====	=====	=====
Phenol	75	0	47	63	12-110
2-Chlorophenol	75	0	57	76	27-123
1,4-Dichlorobenzene	50	0	39	78	36- 97
N-Nitroso-di-n-prop. (1)	50	0	42	84	41-116
1,2,4-Trichlorobenzene	50	0	40	80	39- 98
4-Chloro-3-methylphenol	75	0	60	80	23- 97
Acenaphthene	50	0	40	80	46-118
4-Nitrophenol	75	0	45	60	30-150
2,4-Dinitrotoluene	50	0	40	80	50-150
Pentachlorophenol	75	0	52	69	9-125
Pyrene	50	0	44	88	26-127

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC #	% RPD #	QC LIMITS	
=====	=====	=====	=====	=====	RPD	REC.
Phenol	75	31	41	42	42	12-110
2-Chlorophenol	75	50	67	13	40	27-123
1,4-Dichlorobenzene	50	34	68	14	28	36- 97
N-Nitroso-di-n-prop. (1)	50	43	86	2	38	41-116
1,2,4-Trichlorobenzene	50	38	86	7	28	39- 98
4-Chloro-3-methylphenol	75	69	92	14	42	23- 97
Acenaphthene	50	40	80	0	31	46-118
4-Nitrophenol	75	36	48	22	50	30-150
2,4-Dinitrotoluene	50	48	96	18	50	50-150
Pentachlorophenol	75	72	96	33	50	9-125
Pyrene	50	42	84	5	31	26-127

(1) N-Nitroso-di-n-propylamine

RPD: 0 out of 11 outside limits

Spike Recovery: 0 out of 22 outside limits



SPL Blank QC Report

HOUSTON LABORATORY

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 660-1100

1

Matrix: Aqueous
Sample ID: BLANK
Batch: E980531042258

Reported on: 06/12/98 10:39

Analyzed on: 06/06/98 13:53

Analyst: YL

METHOD 8270 H151B03

C o m p o u n d	Result	Detection Limit	Units
Naphthalene	ND	5	ug/L
2-Methylnaphthalene	ND	5	ug/L
1-Methylnaphthalene	ND	5	ug/L
Acenaphthylene	ND	5	ug/L
Acenaphthene	ND	5	ug/L
Fluorene	ND	5	ug/L
Phenanthrene	ND	5	ug/L
Anthracene	ND	5	ug/L
Fluoranthene	ND	5	ug/L
Pyrene	ND	5	ug/L
Benzo[a]anthracene	ND	5	ug/L
Chrysene	ND	5	ug/L
Benzo[b]fluoranthene	ND	5	ug/L
Benzo[k]fluoranthene	ND	5	ug/L
Benzo[a]pyrene	ND	5	ug/L
Indeno[1,2,3-cd]pyrene	ND	5	ug/L
Dibenz[a,h]anthracene	ND	5	ug/L
Benzo[g,h,i]perylene	ND	5	ug/L

S u r r o g a t e	Result	QC Criteria	Units
2-Fluorophenol	47	21-110	% Recovery
Phenol-d5	35	10-110	% Recovery
2,4,6-Tribromophenol	72	10-123	% Recovery
Nitrobenzene-d5	66	35-114	% Recovery
2-Fluorobiphenyl	80	43-116	% Recovery
Terphenyl-d14	88	33-141	% Recovery

Samples in Batch 9805C90-01 9805C90-02 9805C90-03

Notes

ND - Not detected.

Analyst: JMEG
HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
Checked: (713) 660-0901

Houston, Texas 7705
 Cheeked (713) 660-0901

852117 46

Work Orders in Batch	
Work Order	Fractions

98-05-C92	01E-03E
98-05-D10	01A
98-05-D21	01C-06C
98-05-C90 ✓	01E-03E
98-05-D75	01E-03E
98-05-D86	01E-03E
98-06-156	01D

Work Order Spiked: 9805C92-01E

[illegible]

ICP Spectroscopy Method 6010 Quality Control Report



Matrix: Water

Units: mg/L

Analyst: MFC

HOUSTON LABORATORY

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

Date: 061298 Time: 0910 File Name: 061298M2

Checked: (713) 660-0901

gm 6/15/98

Laboratory Control Sample

Element	Mth. Blank	True Value	Result	% Recovery	Lower Limit	Upper Limit
Silver						
Aluminum						
Arsenic						
Barium	ND	2.00	1.98	99	1.60	2.40
Beryllium						
Calcium	ND	20.00	19.38	97	16.00	24.00
Cadmium						
Cobalt						
Chromium	ND	2.00	1.93	97	1.60	2.40
Copper						
Iron	ND	2.00	1.94	97	1.60	2.40
Potassium	ND	20.00	19.33	97	16.00	24.00
Magnesium	ND	20.00	19.48	97	16.00	24.00
Manganese						
Sodium						
Nickel						
Lead						
Antimony						
Selenium						
Thallium						
Vanadium						
Zinc	ND	2.00	1.92	96	1.60	2.40

Work Orders in Batch

Work Order Fractions

98-06-543 03A

98-06-545 03A

98-06-554 02B

98-05-C92 01E-03E

98-05-C90 01E-03E

98-05-D86 01E-03E

Matrix Spike - Spike Duplicate Results

Work Order Spiked: 9806543-03A

Element	Sample Result	Spike Added	Matrix Spike Result	Matrix Spike Recovery	Matrix Spike Duplicate Result	Matrix Spike Duplicate Recovery	QC Limits % Recovery	Spike RPD %	QC Limits %
Silver									
Aluminum									
Arsenic									
Barium	7.944	1.0	9.806	186.2 *	9.973	202.9 *	80 120	8.6	20.0
Beryllium									
Calcium	78.14	10.0	91.73	135.9 *	94.32	161.8 *	80 120	17.4	20.0
Cadmium									
Cobalt									
Chromium	1.241	1.0	2.179	93.8	2.228	98.7	80 120	5.1	20.0
Copper									
Iron	17.75	1.0	27.41	966.0 *	28.24	1049.0 *	80 120	8.2	20.0
Potassium	13.21	10.0	30.67	174.6 *	32.04	188.3 *	80 120	7.6	20.0
Magnesium	6.772	10.0	18.3	115.3	18.8	120.3 *	80 120	4.2	20.0
Manganese									
Sodium									
Nickel									
Lead									
Antimony									
Selenium									
Thallium									
Vanadium									
Zinc	0.1986	1.0	1.084	88.5	1.11	91.1	80 120	2.9	20.0

* Spike Results Outside Method Limits

**HOUSTON LABORATORY**

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 660-0901

**** SPL QUALITY CONTROL REPORT ****

Matrix: Aqueous

Reported on: 06/10/98

Analyzed on: 06/10/98

Analyst: PB

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Arsenic, Total
Method 7060A ***

SPL Sample ID Number	Blank Value ug/L	LCS Concentration ug/L	Measured Concentration ug/L	% Recovery	QC Limits Recovery
LCS	ND	40.0	43.5	109	80 - 120

-9806461

Samples in batch:

9805C90-01E	9805C90-02E	9805C90-03E	9805C92-01E
9805C92-02E	9805C92-03E	9805D86-01E	9805D86-02E
9805D86-03E	9805D87-01E	9805D87-02E	9806079-01E
9806079-02E	9806086-01D	9806116-02F	9806156-01D

COMMENTS:

LCS = SPL ID # 97-839-258-1

** VALUES OUTSIDE QC RANGE.



** SPL QUALITY CONTROL REPORT **

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Matrix: Aqueous

Reported on: 06/10/98

Analyzed on: 06/10/98

Analyst: PB

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Arsenic, Total
Method 7060A ***

SPL Sample ID Number	Method Blank ug/L	Sample Result ug/L	Spike Added ug/L	Matrix Spike		Matrix Spike Duplicate		RPD (%)	QC LIMITS (Advisory)	
				Result ug/L	Recovery %	Result ug/L	Recovery %		RPD Max	% REC
9806079-01E	ND	ND	40.0	36.3	90.8	44.8	112	21 20	75	-125

-9806461

Samples in batch:

9805C90-01E	9805C90-02E	9805C90-03E	9805C92-01E
9805C92-02E	9805C92-03E	9805D86-01E	9805D86-02E
9805D86-03E	9805D87-01E	9805D87-02E	9806079-01E
9806079-02E	9806086-01D	9806116-02F	9806156-01D

COMMENTS:

LCS = SPL ID # 97-839-258-1

** VALUES OUTSIDE QC RANGE.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 06/12/98

Analyzed on: 06/12/98

Analyst: AG

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Mercury, Total
Method 7470 A***

SPL Sample ID Number	Blank Value ug/L	LCS Concentration ug/L	Measured Concentration ug/L	% Recovery	QC Limits Recovery
LCS	ND	2.00	2.05	102	80 - 120

-9806519

Samples in batch:

9805C90-01E	9805C90-02E	9805C90-03E	9805C92-01E
9805C92-02E	9805C92-03E	9805D63-01A	9805D75-01E
9805D75-02E	9805D75-03E	9805D86-01E	9805D86-02E
9805D86-03E	9805D87-01E	9805D87-02E	9806116-02F
9806156-01D	9806460-11B	9806460-12B	9806497-03B

COMMENTS:

LCS = SPL ID# 94-452-45-21



** SPL QUALITY CONTROL REPORT **

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Matrix: Aqueous

Reported on: 06/12/98

Analyzed on: 06/12/98

Analyst: AG

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Mercury, Total
Method 7470 A***

SPL Sample	Method	Sample	Spike	Matrix Spike		Matrix Spike Duplicate		RPD	QC LIMITS (Advisory)	
ID Number	Blank ug/L	Result ug/L	Added ug/L	Result ug/L	Recovery %	Result ug/L	Recovery %	(%)	RPD Max	% REC
9805C90-01E	ND	ND	2.00	2.06	103	1.94	97.0	6.0	20	75 -125

-9806519

Samples in batch:

9805C90-01E	9805C90-02E	9805C90-03E	9805C92-01E
9805C92-02E	9805C92-03E	9805D63-01A	9805D75-01E
9805D75-02E	9805D75-03E	9805D86-01E	9805D86-02E
9805D86-03E	9805D87-01E	9805D87-02E	9806116-02F
9806156-01D	9806460-11B	9806460-12B	9806497-03B

COMMENTS:

LCS = SPL ID# 94-452-45-21



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 06/10/98

Analyzed on: 06/10/98

Analyst: PB

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Selenium, Total
Method 7740 ***

SPL Sample ID Number	Blank Value ug/L	LCS Concentration ug/L	Measured Concentration ug/L	% Recovery	QC Limits Recovery
LCS	ND	40.0	43.5	109	80 - 120

-9806454

Samples in batch:

9805C90-01E	9805C90-02E	9805C90-03E	9805C92-01E
9805C92-02E	9805C92-03E	9805D86-01E	9805D86-02E
9805D86-03E	9805D87-01E	9805D87-02E	9806079-01E
9806079-02E	9806086-01D	9806156-01D	

COMMENTS:

LCS = SPL ID # 97-839-258-1



** SPL QUALITY CONTROL REPORT **

HOUSTON LABORATORY

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 660-0901

Matrix: Aqueous

Reported on: 06/10/98

Analyzed on: 06/10/98

Analyst: PB

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Selenium, Total
Method 7740 ***

SPL Sample	Method	Sample	Spike	Matrix Spike		Matrix Spike Duplicate		RPD	QC LIMITS (Advisory)		
				Result	Recovery	Result	Recovery		RPD	% REC	
ID Number	Blank	Result	Added	Result	%	Result	%	(%)	Max		
ug/L	ug/L	ug/L	ug/L	ug/L		ug/L					
9806079-01E	ND	ND	40.0	33.4	83.5	37.6	94.0	12	20	75	-125

-9806454

Samples in batch:

9805C90-01E	9805C90-02E	9805C90-03E	9805C92-01E
9805C92-02E	9805C92-03E	9805D86-01E	9805D86-02E
9805D86-03E	9805D87-01E	9805D87-02E	9806079-01E
9806079-02E	9806036-01D	9806156-01D	

COMMENTS:

LCS = SPL ID # 97-839-258-1

**HOUSTON LABORATORY**

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 660-0901

**** SPL QUALITY CONTROL REPORT ****

Matrix: Aqueous

Reported on: 06/09/98

Analyzed on: 06/08/98

Analyst: JS

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Alkalinity, as CaCO₃

Method 310.1 *

SPL Sample ID Number	Blank Value mg/L	LCS Concentration mg/L	Measured Concentration mg/L	% Recovery	QC Limits Recovery
LCS	ND	65	63	96.9	95 - 113

-9806389

Samples in batch:

9805B64-01B	9805B64-02B	9805B64-03B	9805B64-04B
9805B64-05B	9805C90-01B	9805C90-02B	9805C90-03B
9805C92-01B	9805C92-02B	9805C92-03B	9805D86-01B
9805D86-02B	9805D86-03B	9805D87-01B	9805D87-02B

COMMENTS:

SPL LCS ID# 95535192-24



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 06/09/98

Analyzed on: 06/08/98

Analyst: JS

This sample was randomly selected for use in the SPL quality control program. The results are as follows:

Alkalinity, as CaCO₃
Method 310.1 *

-- DUPLICATE ANALYSIS --

SPL Sample ID	Original Sample Concentration mg/L	Duplicate Sample mg/L	RPD	RPD Max.
9805B64-01B	101.0	102.4	1.4	18

-9806388

Samples in batch:

9805B64-01B	9805B64-02B	9805B64-03B	9805B64-04B
9805B64-05B	9805C90-01B	9805C90-02B	9805C90-03B
9805C92-01B	9805C92-02B		

COMMENTS:



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 06/09/98

Analyzed on: 06/09/98

Analyst: DAM

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Chloride
Method 325.3 *

SPL Sample ID Number	Blank Value mg/L	LCS Concentration mg/L	Measured Concentration mg/L	% Recovery	QC Limits Recovery
LCS	ND	116	117	101	94 - 106

-9806445

Samples in batch:

9805B64-01B 9805B64-02B 9805B64-03B 9805B64-04B
9805B64-05B 9805C22-01E 9805C60-01B 9805C60-02B
9805C60-03B 9805C60-04B 9805C90-01B 9805C90-02B
9805C90-03B 9805C92-01B 9805C92-02B 9805C92-03B
9806135-02A

COMMENTS:

LCS = SPL ID#:94453192-24



** SPL QUALITY CONTROL REPORT **

HOUSTON LABORATORY

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 660-0901

Matrix: Aqueous

Reported on: 06/09/98

Analyzed on: 06/09/98

Analyst: DAM

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Chloride
Method 325.3 *

SPL Sample	Method	Sample	Spike	Matrix Spike		Matrix Spike Duplicate		RPD	QC LIMITS (Advisory)	
ID Number	Blank	Result	Added	Result	Recovery	Result	Recovery	(%)	RPD	% REC
	mg/L	mg/L	mg/L	mg/L	%	mg/L	%		Max	
9805B64-04B	ND	36.95	50.0	84.97	96.0	86.81	99.7	3.8	5	92 -109

-9806442

Samples in batch:

9805B64-01B 9805B64-02B 9805B64-03B 9805B64-04B
9805B64-05B 9805C22-01E 9805C90-01B 9805C90-02B
9805C90-03B 9806135-02A

COMMENTS:



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 06/10/98

Analyzed on: 06/10/98

Analyst: TW

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Sulfate
Method 375.4 *

SPL Sample ID Number	Blank Value mg/L	LCS Concentration mg/L	Measured Concentration mg/L	% Recovery	QC Limits Recovery
LCS	ND	4.52	4.51	99.8	82 - 111

-9806441

Samples in batch:

9805B64-01B	9805B64-02B	9805B64-03B	9805B64-04B
9805B64-05B	9805B97-01A	9805B97-02A	9805C22-01E
9805C90-01B	9805C90-02B	9805C90-03B	9805C92-01B
9805C92-02B	9805C92-03B	9805D86-01B	9805D86-02B
9805D86-03B	9805D87-01B	9805D87-02B	9806135-02A

COMMENTS:

LCS#94453183-1



** SPL QUALITY CONTROL REPORT **

HOUSTON LABORATORY

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 660-0901

Matrix: Aqueous

Reported on: 06/10/98

Analyzed on: 06/10/98

Analyst: TW

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Sulfate
Method 375.4 *

SPL Sample	Method	Sample	Spike	Matrix Spike		Matrix Spike Duplicate		RPD	QC LIMITS (Advisory)	
ID Number	Blank	Result	Added	Result	Recovery	Result	Recovery	(%)	RPD	% REC
	mg/L	mg/L	mg/L	mg/L	%	mg/L	%		Max	
9805C92-01B	ND	8.54	10.0	20.20	117	19.46	109	7.1	9.5	84 -120

-9806440

Samples in batch:

9805C90-01B 9805C90-03B 9805C92-01B 9805C92-02B
9805C92-03B 9805D86-01B 9805D86-02B 9805D86-03B
9805D87-01B 9805D87-02B

COMMENTS:



© ** SPL QUALITY CONTROL REPORT **

HOUSTON LABORATORY

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 660-0901

Matrix: Aqueous

Reported on: 06/10/98

Analyzed on: 06/10/98

Analyst: TW

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Sulfate
Method 375.4 *

SPL Sample	Method	Sample	Spike	Matrix Spike		Matrix Spike Duplicate		RPD	QC LIMITS (Advisory)	
ID Number	Blank mg/L	Result mg/L	Added mg/L	Result mg/L	Recovery %	Result mg/L	Recovery %	(%)	RPD Max	% REC
9805B97-01A	ND	1.09	10.0	10.97	98.8	11.73	106	7.0	9.5	84 -120

-9806439

Samples in batch:

9805B64-01B 9805B64-02B 9805B64-03B 9805B64-04B
9805B64-05B 9805B97-01A 9805B97-02A 9805C22-01E
9805C90-02B 9806135-02A

COMMENTS:

**HOUSTON LABORATORY**

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 660-0901

**** SPL QUALITY CONTROL REPORT ****

Matrix: Aqueous

Reported on: 06/02/98

Analyzed on: 06/01/98

Analyst: KS

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Total Dissolved Solids
Method 160.1 *

SPL Sample ID Number	Blank Value mg/L	LCS Concentration mg/L	Measured Concentration mg/L	% Recovery	QC Limits Recovery
LCS	ND	430.5	408	94.8	93 - 107

-9806076

Samples in batch:

9805B68-01G	9805B68-02G	9805C22-01C	9805C90-01B
9805C90-02B	9805C90-03B	9805C92-01B	9805C92-02B
9805C92-03B			

COMMENTS:

SPL LCS ID# 95535200-19



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 06/02/98

Analyzed on: 06/01/98

Analyst: KS

This sample was randomly selected for use in the SPL quality control program. The results are as follows:

Total Dissolved Solids
Method 160.1 *

-- DUPLICATE ANALYSIS --

SPL Sample ID	Original Sample Concentration mg/L	Duplicate Sample mg/L	RPD	RPD Max.
9805C22-01C	1500	1550	3.3	5

-9806075

Samples in batch:

9805B68-01G	9805B68-02G	9805C22-01C	9805C90-01B
9805C90-02B	9805C90-03B	9805C92-01B	9805C92-02B
9805C92-03B			

COMMENTS:

**HOUSTON LABORATORY**

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 660-0901

**** SPL QUALITY CONTROL REPORT ****

Matrix: Aqueous

Reported on: 06/11/98

Analyzed on: 06/04/98

Analyst: DAM

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Nitrate-Nitrite, as N
Method 353.3 *

SPL Sample ID Number	Blank Value mg/L	LCS Concentration mg/L	Measured Concentration mg/L	% Recovery	QC Limits Recovery
LCS	ND	2.77	2.96	107	92 - 111

-9806491

Samples in batch:

9805C60-01C	9805C60-02C	9805C60-03C	9805C60-04C
9805C90-01C	9805C90-02C	9805C90-03C	9805C92-01C
9805C92-02C	9805C92-03C	9805D86-01C	9805D86-02C
9805D86-03C	9805D87-01C	9805D87-02C	

COMMENTS:

LCS = SPL ID #:95535172-26



** SPL QUALITY CONTROL REPORT **

HOUSTON LABORATORY

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 660-0901

Matrix: Aqueous

Reported on: 06/11/98

Analyzed on: 06/04/98

Analyst: DAM

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Nitrate-Nitrite, as N
Method 353.3 *

SPL Sample	Method	Sample	Spike	Matrix Spike		Matrix Spike Duplicate		RPD	QC LIMITS (Advisory)		
ID Number	Blank	Result	Added	Result	Recovery	Result	Recovery	(%)	RPD	% REC	
	mg/L	mg/L	mg/L	mg/L	%	mg/L	%		Max		
9805C60-01C	ND	0.98	5.00	6.14	103	6.13	103	0	12	87	-120

-9806489

Samples in batch:

9805C60-01C 9805C60-02C 9805C60-03C 9805C60-04C
9805C90-01C 9805C90-02C 9805C90-03C 9805C92-01C
9805C92-02C 9805C92-03C

COMMENTS:

CHAIN OF CUSTODY
AND
SAMPLE RECEIPT CHECKLIST



SPL, Inc.

SPL Workorder No:

52169

Analysis Request & Chain of Custody Record

9805C90

page 1 of 1

Client Name: CYPRESS ENGINEERING (713) 856-7980

Address/Phone: 10285 WEST LITTLE LARK SUITE 250 HOUSTON, TX 77040

Client Contact: SANDY SHARP

Project Name: TRANSWESTERN PIPELINE

Project Number:

Project Location: ROSWELL STA 9

Invoice To: GEORGE ROBINSON

SAMPLE ID	DATE	TIME	comp	grab	W=water SL=sludge	S=soil O=other:	matrix P=plastic G=glass	bottle A=amber glass V=vial	size 1=1 liter 4=4oz 16=16oz 8=8oz	pres. 1=HCl 2=HNO3 3=H2SO4 O=other:	Number of Containers	Requested Analysis									
MU1-7	5/29/98	12:35		X	W		G		40/1	1/0	3/1	X	VOC'S 8260 FID/MS 1,2-DICHLOROETHENE (cis & trans) DICHLOBROMIDE (O-M & P) TDS, SULFATE, CHLORIDE, & TOTAL ALKALINITY								
MU-7		↓					P		1	3/0	1/2			X	X		X			X	X
MW-22		13:40					G		40/1	1/0	3/1	X				X					
MW-22		↓					P		1	3/0	1/2		X	X		X			X	X	
MW-9		14:40					G		40/1	1/0	3/1	X				X					
MW-9		↓					P		1	3/0	1/2		X	X		X			X	X	

Client/Consultant Remarks:

* DO NOT FILTER METALS. ADD PRESERVATIVES & RUN ANALYSES

Laboratory remarks:

TIMES FOR SANDY SHARP!

Intact? ☒ Y ☐ N

Temp: 30

Requested TAT

24hr ☐ 72hr ☐
 48hr ☐ Standard ☒
 Other ☐

Special Reporting Requirements

Standard QC ☒

Fax Results

Level 3 QC ☐Raw Data ☐Level 4 QC ☐

Special Detection Limits (specify):

PM review (initial):

1. Relinquished by Sampler:

Sandy Sharp

date

5/29/98

time

1600

3. Relinquished by:

date

time

2. Received by:

4. Received by:

5. Relinquished by:

date

time

6. Received by Laboratory:

Luben St. 5/29/98 1000

☐ 8880 Interchange Drive, Houston, TX 77054 (713) 660-0901☐ 459-Hughes Drive, Traverse City, MI 49684 (616) 947-5777☐ 500 Ambassador Caffery Parkway, Scott, LA 70583 (318) 237-4775☐ 1501 E. Orangethorpe Avenue, Fullerton, CA 92631 (714) 447-6868

SPL Houston Environmental Laboratory

Sample Login Checklist

Date: 5/29/98	Time: 1000
---------------	------------

SPL Sample ID: 9805C90

		Yes	No
1	Chain-of-Custody (COC) form is present.	✓	
2	COC is properly completed.	✓	
3	If no, Non-Conformance Worksheet has been completed.		
4	Custody seals are present on the shipping container.	✓	
5	If yes, custody seals are intact.	✓	
6	All samples are tagged or labeled.	✓	
7	If no, Non-Conformance Worksheet has been completed.		
8	Sample containers arrived intact	✓	
9	Temperature of samples upon arrival:	3 C	
10	Method of sample delivery to SPL:	SPL Delivery	
		Client Delivery	
		FedEx Delivery (airbill #)	P04721508
		Other:	
11	Method of sample disposal:	SPL Disposal	✓
		HOLD	
		Return to Client	

Name: <i>Arden Smith</i>	Date: 5/29/98
--------------------------	---------------



HOUSTON LABORATORY

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 660-0901

June 15, 1998

Mr. George Robinson
CYPRESS ENGINEERING, INC.
10235 W. Little York Rd #256
Houston, TX 77040

The following report contains analytical results for the sample(s) received at Southern Petroleum Laboratories (SPL) on May 30, 1998. The sample(s) was assigned to Certificate of Analysis No.(s) 9805D86 and analyzed for all parameters as listed on the chain of custody.

Any data flag or quality control exception associated with this report will be footnoted in the analytical results page(s) or the quality control summary page(s).

If you have any questions or comments pertaining to this data report, please do not hesitate to contact me. Please reference the above Certificate of Analysis No. during any inquiries.

Again, SPL is pleased to be of service to you. We anticipate working with you in fulfilling all your current and future analytical needs.

Southern Petroleum Laboratories

A handwritten signature in cursive script, reading "Electa Brown", is written over a horizontal line.

Electa Brown

Client Services Representative



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Southern Petroleum Laboratories, Inc.

Certificate of Analysis Number: 98-05-D86

Approved for Release by:

A handwritten signature in cursive script, reading "Electa Brown", is written over a horizontal line.

Electa Brown, Client Services Representative

A handwritten date "6-15-98" is written in cursive script over a horizontal line.

Date:

Greg Grandits
Laboratory Director

Cynthia Schreiner
Quality Assurance Officer

The attached analytical data package may not be reproduced except in full without the express written approval of this laboratory.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9805D86-01

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 06/12/98

PROJECT: Transwestern Pipeline
SITE: Roswell Sta. 9
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-13

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 05/28/98 16:55:00
DATE RECEIVED: 05/30/98

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
Alkalinity, as CaCO3 Method 310.1 * Analyzed by: JS Date: 06/08/98 10:00:00	149	1	mg/L	
Chloride Method 325.3 * Analyzed by: DAM Date: 06/09/98 11:00:00	530	10	mg/L	
Sulfate Method 375.4 * Analyzed by: TW Date: 06/10/98 11:30:00	2100	100	mg/L	
Total Dissolved Solids Method 160.1 * Analyzed by: CL Date: 06/03/98 16:20:00	2900	100	mg/L	
Nitrate-Nitrite, as N Method 353.3 * Analyzed by: DAM Date: 06/04/98 10:00:00	ND	0.1	mg/L	
Liquid-liquid extraction SEMIVOLATILES Method 3520C *** Analyzed by: KL Date: 05/31/98 08:00:00	05/31/98			

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.

**HOUSTON LABORATORY**8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9805D86-01

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 06/12/98

PROJECT: Transwestern Pipeline
SITE: Roswell Sta. 9
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-13PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 05/28/98 16:55:00
DATE RECEIVED: 05/30/98

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
Silver, Total Method 6010B *** Analyzed by: JM Date: 06/11/98 10:03:00	ND	0.01	mg/L	
Arsenic, Total Method 7060A *** Analyzed by: PB Date: 06/10/98 14:30:00	ND	0.005	mg/L	
Barium, Total Method 6010B *** Analyzed by: JM Date: 06/11/98 10:03:00	0.008	0.005	mg/L	
Cadmium, Total Method 6010B *** Analyzed by: JM Date: 06/11/98 10:03:00	ND	0.005	mg/L	
Chromium, Total Method 6010B *** Analyzed by: JM Date: 06/11/98 10:03:00	ND	0.01	mg/L	
Copper, Total Method 6010B *** Analyzed by: JM Date: 06/11/98 10:03:00	ND	0.01	mg/L	

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.

**HOUSTON LABORATORY**8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9805D86-01

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 06/12/98

PROJECT: Transwestern Pipeline
SITE: Roswell Sta. 9
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-13PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 05/28/98 16:55:00
DATE RECEIVED: 05/30/98

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
Iron, Total Method 6010B *** Analyzed by: JM Date: 06/11/98 10:03:00	1.41	0.02	mg/L	
Mercury, Total Method 7470 A*** Analyzed by: AG Date: 06/12/98 14:07:00	0.0033	0.0002	mg/L	
Manganese, Total Method 6010B *** Analyzed by: JM Date: 06/11/98 10:03:00	1.37	0.005	mg/L	
Acid Digestion-Aqueous, ICP Method 3010A *** Analyzed by: GJ Date: 06/04/98 17:00:00	06/04/98			
Lead, Total Method 6010B *** Analyzed by: JM Date: 06/11/98 10:03:00	ND	0.05	mg/L	
Selenium, Total Method 7740 *** Analyzed by: PB Date: 06/10/98 17:08:00	ND	0.005	mg/L	

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9805D86-01

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 06/12/98

PROJECT: Transwestern Pipeline
SITE: Roswell Sta. 9
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-13

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 05/28/98 16:55:00
DATE RECEIVED: 05/30/98

ANALYTICAL DATA			
PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Zinc, Total	ND	0.02	mg/L
Method 6010B ***			
Analyzed by: JM			
Date: 06/12/98 09:10:00			

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.

**HOUSTON LABORATORY**

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 660-0901

Certificate of Analysis No. H9-9805D86-01

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

06/12/98

PROJECT: Transwestern Pipeline
SITE: Roswell Sta. 9
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-13

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 05/28/98 16:55:00
DATE RECEIVED: 05/30/98

ANALYTICAL DATA				
PARAMETER	RESULTS	PQL*	UNITS	
Benzene	140	5	ug/L	
Bromobenzene	ND	5	ug/L	
Bromochloromethane	ND	5	ug/L	
Bromodichloromethane	ND	5	ug/L	
Bromoform	ND	5	ug/L	
Bromomethane	ND	10	ug/L	
n-Butylbenzene	ND	5	ug/L	
sec-Butylbenzene	ND	5	ug/L	
tert-Butylbenzene	ND	5	ug/L	
Carbon tetrachloride	ND	5	ug/L	
Chlorobenzene	ND	5	ug/L	
Chlorodibromomethane	ND	5	ug/L	
Chloroethane	ND	10	ug/L	
Chloroform	ND	5	ug/L	
Chloromethane	ND	10	ug/L	
2-Chlorotoluene	ND	5	ug/L	
4-Chlorotoluene	ND	5	ug/L	
1,2-Dibromo-3-chloropropane	ND	5	ug/L	
1,2-Dibromoethane	ND	5	ug/L	
Dibromomethane	ND	5	ug/L	
1,2-Dichlorobenzene	ND	5	ug/L	
1,3-Dichlorobenzene	ND	5	ug/L	
1,4-Dichlorobenzene	ND	5	ug/L	
Dichlorodifluoromethane	ND	10	ug/L	
1,1-Dichloroethane	ND	5	ug/L	
1,2-Dichloroethane	ND	5	ug/L	
1,1-Dichloroethene	ND	5	ug/L	
cis-1,2-Dichloroethene	ND	5	ug/L	
trans-1,2-Dichloroethene	ND	5	ug/L	
1,2-Dichloropropane	ND	5	ug/L	
1,3-Dichloropropane	ND	5	ug/L	
2,2-Dichloropropane	ND	5	ug/L	
1,1-Dichloropropene	ND	5	ug/L	
Ethylbenzene	ND	5	ug/L	
Hexachlorobutadiene	ND	5	ug/L	
Isopropylbenzene	ND	5	ug/L	
p-Isopropyltoluene	ND	5	ug/L	
Methylene chloride	ND	5	ug/L	

METHOD: 8260 Water, Volatile Organics
(continued on next page)

**HOUSTON LABORATORY**

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 660-0901

Certificate of Analysis No. H9-9805D86-01

Cypress Engineering, Inc.

SAMPLE ID: MW-13

PARAMETER	ANALYTICAL DATA (continued)		UNITS
	RESULTS	PQL*	
Naphthalene	ND	5	ug/L
n-Propylbenzene	ND	5	ug/L
Styrene	ND	5	ug/L
1,1,1,2-Tetrachloroethane	ND	5	ug/L
1,1,2,2-Tetrachloroethane	ND	5	ug/L
Tetrachloroethene	ND	5	ug/L
Toluene	ND	5	ug/L
1,2,3-Trichlorobenzene	ND	5	ug/L
1,2,4-Trichlorobenzene	ND	5	ug/L
1,1,1-Trichloroethane	ND	5	ug/L
1,1,2-Trichloroethane	ND	5	ug/L
Trichloroethene	ND	5	ug/L
Trichlorofluoromethane	ND	5	ug/L
1,2,3-Trichloropropane	ND	5	ug/L
1,2,4-Trimethylbenzene	ND	5	ug/L
1,3,5-Trimethylbenzene	ND	5	ug/L
Vinyl chloride	ND	10	ug/L
Xylenes (total)	ND	5	ug/L
Acetone	ND	100	ug/L
Carbon Disulfide	ND	5	ug/L
Vinyl Acetate	ND	10	ug/L
2-Butanone	ND	20	ug/L
1,2-Dichloroethene (total)	ND	5	ug/L
2-Chloroethylvinylether	ND	10	ug/L
4-Methyl-2-Pentanone	ND	10	ug/L
cis-1,3-Dichloropropene	ND	5	ug/L
trans-1,3-Dichloropropene	ND	5	ug/L
2-Hexanone	ND	10	ug/L

SURROGATES	AMOUNT SPIKED	% RECOVERY	LOWER LIMIT	UPPER LIMIT
1,2-Dichloroethane-d4	50 ug/L	90	76	114
Toluene-d8	50 ug/L	92	88	110
4-Bromofluorobenzene	50 ug/L	98	86	115

ANALYZED BY: JC

DATE/TIME: 05/31/98 12:45:00

METHOD: 8260 Water, Volatile Organics

NOTES: * - Practical Quantitation Limit

ND - Not Detected

NA - Not Analyzed

COMMENTS:

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9805D86-01

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

06/12/98

PROJECT: Transwestern Pipeline
SITE: Roswell Sta. 9
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-13

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 05/28/98 16:55:00
DATE RECEIVED: 05/30/98

ANALYTICAL DATA

PARAMETER	RESULTS	PQL*	UNITS
Acenaphthene	ND	5	ug/L
Acenaphthylene	ND	5	ug/L
Anthracene	ND	5	ug/L
Benzo(a)Anthracene	ND	5	ug/L
Benzo(b)Fluoranthene	ND	5	ug/L
Benzo(k)Fluoranthene	ND	5	ug/L
Benzo(a)Pyrene	ND	5	ug/L
Benzo(g,h,i)Perylene	ND	5	ug/L
Chrysene	ND	5	ug/L
Dibenz(a,h)Anthracene	ND	5	ug/L
Fluoranthene	ND	5	ug/L
Fluorene	ND	5	ug/L
Indeno(1,2,3-cd)Pyrene	ND	5	ug/L
2-Methylnaphthalene	ND	5	ug/L
Naphthalene	ND	5	ug/L
Phenanthrene	ND	5	ug/L
Pyrene	ND	5	ug/L
1-Methylnaphthalene	ND	5	ug/L

SURROGATES	AMOUNT SPIKED	% RECOVERY	LOWER LIMIT	UPPER LIMIT
Nitrobenzene-d5	50 ug/L	80	35	114
2-Fluorobiphenyl	50 ug/L	92	43	116
Terphenyl-d14	50 ug/L	78	33	141
Phenol-d5	75 ug/L	17	10	110
2-Fluorophenol	75 ug/L	27	21	110
2,4,6-Tribromophenol	75 ug/L	85	10	123

ANALYZED BY: YL DATE/TIME: 06/09/98 16:39:00
EXTRACTED BY: KL DATE/TIME: 05/31/98 08:00:00
METHOD: 8270C, Semivolatile Organics - Water
NOTES: * - Practical Quantitation Limit ND - Not Detected
NA - Not Analyzed

COMMENTS:

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.

**HOUSTON LABORATORY**8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9805D86-02

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 06/12/98

PROJECT: Transwestern Pipeline
SITE: Roswell Sta. 9
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-21PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 05/28/98 18:00:00
DATE RECEIVED: 05/30/98

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
Alkalinity, as CaCO ₃ Method 310.1 * Analyzed by: JS Date: 06/08/98 10:00:00	124	1	mg/L	
Chloride Method 325.3 * Analyzed by: DAM Date: 06/09/98 11:00:00	450	10	mg/L	
Sulfate Method 375.4 * Analyzed by: TW Date: 06/10/98 11:30:00	2100	100	mg/L	
Total Dissolved Solids Method 160.1 * Analyzed by: CL Date: 06/03/98 16:20:00	3000	100	mg/L	
Nitrate-Nitrite, as N Method 353.3 * Analyzed by: DAM Date: 06/04/98 10:00:00	ND	0.1	mg/L	
Liquid-liquid extraction SEMIVOLATILES Method 3520C *** Analyzed by: KL Date: 05/31/98 08:00:00	05/31/98			

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.**QUALITY ASSURANCE:** These analyses are performed in accordance
with EPA guidelines for quality assurance.

**HOUSTON LABORATORY**8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9805D86-02

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 06/12/98

PROJECT: Transwestern Pipeline
SITE: Roswell Sta. 9
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-21PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 05/28/98 18:00:00
DATE RECEIVED: 05/30/98

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
Silver, Total Method 6010B *** Analyzed by: JM Date: 06/11/98 10:03:00	ND	0.01	mg/L	
Arsenic, Total Method 7060A *** Analyzed by: PB Date: 06/10/98 14:30:00	ND	0.005	mg/L	
Barium, Total Method 6010B *** Analyzed by: JM Date: 06/11/98 10:03:00	0.026	0.005	mg/L	
Cadmium, Total Method 6010B *** Analyzed by: JM Date: 06/11/98 10:03:00	ND	0.005	mg/L	
Chromium, Total Method 6010B *** Analyzed by: JM Date: 06/11/98 10:03:00	ND	0.01	mg/L	
Copper, Total Method 6010B *** Analyzed by: JM Date: 06/11/98 10:03:00	ND	0.01	mg/L	

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.

**HOUSTON LABORATORY**

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 660-0901

Certificate of Analysis No. H9-9805D86-02

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 06/12/98

PROJECT: Transwestern Pipeline
SITE: Roswell Sta. 9
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-21

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 05/28/98 18:00:00
DATE RECEIVED: 05/30/98

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
Iron, Total Method 6010B *** Analyzed by: JM Date: 06/11/98 10:03:00	0.63	0.02	mg/L	
Mercury, Total Method 7470 A*** Analyzed by: AG Date: 06/12/98 14:07:00	ND	0.0002	mg/L	
Manganese, Total Method 6010B *** Analyzed by: JM Date: 06/11/98 10:03:00	1.51	0.005	mg/L	
Acid Digestion-Aqueous, ICP Method 3010A *** Analyzed by: GJ Date: 06/04/98 17:00:00	06/04/98			
Lead, Total Method 6010B *** Analyzed by: JM Date: 06/11/98 10:03:00	ND	0.05	mg/L	
Selenium, Total Method 7740 *** Analyzed by: PB Date: 06/10/98 17:08:00	ND	0.005	mg/L	

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9805D86-02

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 06/12/98

PROJECT: Transwestern Pipeline
SITE: Roswell Sta. 9
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-21

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 05/28/98 18:00:00
DATE RECEIVED: 05/30/98

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
Zinc, Total	ND	0.02	mg/L	
Method 6010B ***				
Analyzed by: JM				
Date: 06/12/98 09:10:00				

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9805D86-02

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

06/12/98

PROJECT: Transwestern Pipeline
SITE: Roswell Sta. 9
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-21

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 05/28/98 18:00:00
DATE RECEIVED: 05/30/98

ANALYTICAL DATA

PARAMETER	RESULTS	PQL*	UNITS
Benzene	790	50	ug/L
Bromobenzene	ND	5	ug/L
Bromochloromethane	ND	5	ug/L
Bromodichloromethane	ND	5	ug/L
Bromoform	ND	5	ug/L
Bromomethane	ND	10	ug/L
n-Butylbenzene	ND	5	ug/L
sec-Butylbenzene	ND	5	ug/L
tert-Butylbenzene	ND	5	ug/L
Carbon tetrachloride	ND	5	ug/L
Chlorobenzene	ND	5	ug/L
Chlorodibromomethane	ND	5	ug/L
Chloroethane	ND	10	ug/L
Chloroform	ND	5	ug/L
Chloromethane	ND	10	ug/L
2-Chlorotoluene	ND	5	ug/L
4-Chlorotoluene	ND	5	ug/L
1,2-Dibromo-3-chloropropane	ND	5	ug/L
1,2-Dibromoethane	ND	5	ug/L
Dibromomethane	ND	5	ug/L
1,2-Dichlorobenzene	ND	5	ug/L
1,3-Dichlorobenzene	ND	5	ug/L
1,4-Dichlorobenzene	ND	5	ug/L
Dichlorodifluoromethane	ND	10	ug/L
1,1-Dichloroethane	ND	5	ug/L
1,2-Dichloroethane	ND	5	ug/L
1,1-Dichloroethene	ND	5	ug/L
cis-1,2-Dichloroethene	ND	5	ug/L
trans-1,2-Dichloroethene	ND	5	ug/L
1,2-Dichloropropane	ND	5	ug/L
1,3-Dichloropropane	ND	5	ug/L
2,2-Dichloropropane	ND	5	ug/L
1,1-Dichloropropene	ND	5	ug/L
Ethylbenzene	ND	5	ug/L
Hexachlorobutadiene	ND	5	ug/L
Isopropylbenzene	ND	5	ug/L
p-Isopropyltoluene	ND	5	ug/L
Methylene chloride	ND	5	ug/L

METHOD: 8260 Water, Volatile Organics
(continued on next page)

**HOUSTON LABORATORY**8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9805D86-02

Cypress Engineering, Inc.

SAMPLE ID: MW-21

PARAMETER	ANALYTICAL DATA (continued)		UNITS
	RESULTS	PQL*	
Naphthalene	ND	5	ug/L
n-Propylbenzene	ND	5	ug/L
Styrene	ND	5	ug/L
1,1,1,2-Tetrachloroethane	ND	5	ug/L
1,1,2,2-Tetrachloroethane	ND	5	ug/L
Tetrachloroethene	ND	5	ug/L
Toluene	ND	5	ug/L
1,2,3-Trichlorobenzene	ND	5	ug/L
1,2,4-Trichlorobenzene	ND	5	ug/L
1,1,1-Trichloroethane	ND	5	ug/L
1,1,2-Trichloroethane	ND	5	ug/L
Trichloroethene	ND	5	ug/L
Trichlorofluoromethane	ND	5	ug/L
1,2,3-Trichloropropane	ND	5	ug/L
1,2,4-Trimethylbenzene	ND	5	ug/L
1,3,5-Trimethylbenzene	ND	5	ug/L
Vinyl chloride	ND	10	ug/L
Xylenes (total)	34	5	ug/L
Acetone	ND	100	ug/L
Carbon Disulfide	ND	5	ug/L
Vinyl Acetate	ND	10	ug/L
2-Butanone	ND	20	ug/L
1,2-Dichloroethene (total)	ND	5	ug/L
2-Chloroethylvinylether	ND	10	ug/L
4-Methyl-2-Pentanone	ND	10	ug/L
cis-1,3-Dichloropropene	ND	5	ug/L
trans-1,3-Dichloropropene	ND	5	ug/L
2-Hexanone	ND	10	ug/L

SURROGATES	AMOUNT SPIKED	% RECOVERY	LOWER LIMIT	UPPER LIMIT
1,2-Dichloroethane-d4	50 ug/L	88	76	114
Toluene-d8	50 ug/L	88	88	110
4-Bromofluorobenzene	50 ug/L	98	86	115

ANALYZED BY: JC

DATE/TIME: 05/31/98 13:11:00

METHOD: 8260 Water, Volatile Organics

NOTES: * - Practical Quantitation Limit

ND - Not Detected

NA - Not Analyzed

COMMENTS:

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9805D86-02

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

06/12/98

PROJECT: Transwestern Pipeline
SITE: Roswell Sta. 9
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-21

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 05/28/98 18:00:00
DATE RECEIVED: 05/30/98

ANALYTICAL DATA

PARAMETER	RESULTS	PQL*	UNITS
Acenaphthene	ND	5	ug/L
Acenaphthylene	ND	5	ug/L
Anthracene	ND	5	ug/L
Benzo(a)Anthracene	ND	5	ug/L
Benzo(b)Fluoranthene	ND	5	ug/L
Benzo(k)Fluoranthene	ND	5	ug/L
Benzo(a)Pyrene	ND	5	ug/L
Benzo(g,h,i)Perylene	ND	5	ug/L
Chrysene	ND	5	ug/L
Dibenz(a,h)Anthracene	ND	5	ug/L
Fluoranthene	ND	5	ug/L
Fluorene	ND	5	ug/L
Indeno(1,2,3-cd)Pyrene	ND	5	ug/L
2-Methylnaphthalene	ND	5	ug/L
Naphthalene	ND	5	ug/L
Phenanthrene	ND	5	ug/L
Pyrene	ND	5	ug/L
1-Methylnaphthalene	ND	5	ug/L

SURROGATES	AMOUNT SPIKED	% RECOVERY	LOWER LIMIT	UPPER LIMIT
Nitrobenzene-d5	50 ug/L	68	35	114
2-Fluorobiphenyl	50 ug/L	84	43	116
Terphenyl-d14	50 ug/L	86	33	141
Phenol-d5	75 ug/L	17	10	110
2-Fluorophenol	75 ug/L	37	21	110
2,4,6-Tribromophenol	75 ug/L	87	10	123

ANALYZED BY: YL DATE/TIME: 06/06/98 18:15:00
EXTRACTED BY: KL DATE/TIME: 05/31/98 08:00:00
METHOD: 8270C, Semivolatile Organics - Water
NOTES: * - Practical Quantitation Limit ND - Not Detected
 NA - Not Analyzed

COMMENTS:

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9805D86-03

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 06/12/98

PROJECT: Transwestern Pipeline
SITE: Roswell Sta. 9
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-12

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 05/28/98 19:00:00
DATE RECEIVED: 05/30/98

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
Alkalinity, as CaCO ₃ Method 310.1 * Analyzed by: JS Date: 06/08/98 10:00:00	99	1	mg/L	
Chloride Method 325.3 * Analyzed by: DAM Date: 06/09/98 11:00:00	440	10	mg/L	
Sulfate Method 375.4 * Analyzed by: TW Date: 06/10/98 11:30:00	2100	100	mg/L	
Total Dissolved Solids Method 160.1 * Analyzed by: CL Date: 06/03/98 16:20:00	3100	100	mg/L	
Nitrate-Nitrite, as N Method 353.3 * Analyzed by: DAM Date: 06/04/98 10:00:00	0.3	0.1	mg/L	
Liquid-liquid extraction SEMIVOLATILES Method 3520C *** Analyzed by: KL Date: 05/31/98 08:00:00	05/31/98			

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9805D86-03

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 06/12/98

PROJECT: Transwestern Pipeline
SITE: Roswell Sta. 9
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-12

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 05/28/98 19:00:00
DATE RECEIVED: 05/30/98

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
Silver, Total Method 6010B *** Analyzed by: JM Date: 06/11/98 10:03:00	ND	0.01	mg/L	
Arsenic, Total Method 7060A *** Analyzed by: PB Date: 06/10/98 14:30:00	ND	0.005	mg/L	
Barium, Total Method 6010B *** Analyzed by: JM Date: 06/11/98 10:03:00	ND	0.005	mg/L	
Cadmium, Total Method 6010B *** Analyzed by: JM Date: 06/11/98 10:03:00	ND	0.005	mg/L	
Chromium, Total Method 6010B *** Analyzed by: JM Date: 06/11/98 10:03:00	ND	0.01	mg/L	
Copper, Total Method 6010B *** Analyzed by: JM Date: 06/11/98 10:03:00	ND	0.01	mg/L	

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.

**HOUSTON LABORATORY**

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 660-0901

Certificate of Analysis No. H9-9805D86-03

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 06/12/98

PROJECT: Transwestern Pipeline
SITE: Roswell Sta. 9
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-12

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 05/28/98 19:00:00
DATE RECEIVED: 05/30/98

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Iron, Total Method 6010B *** Analyzed by: JM Date: 06/11/98 10:03:00	0.12	0.02	mg/L
Mercury, Total Method 7470 A*** Analyzed by: AG Date: 06/12/98 14:07:00	ND	0.0002	mg/L
Manganese, Total Method 6010B *** Analyzed by: JM Date: 06/11/98 10:03:00	0.688	0.005	mg/L
Acid Digestion-Aqueous, ICP Method 3010A *** Analyzed by: GJ Date: 06/04/98 17:00:00	06/04/98		
Lead, Total Method 6010B *** Analyzed by: JM Date: 06/11/98 10:03:00	ND	0.05	mg/L
Selenium, Total Method 7740 *** Analyzed by: PB Date: 06/10/98 17:08:00	ND	0.005	mg/L

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-3901

Certificate of Analysis No. H9-9805D86-03

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 06/12/98

PROJECT: Transwestern Pipeline
SITE: Roswell Sta. 9
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-12

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 05/28/98 19:00:00
DATE RECEIVED: 05/30/98

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
Zinc, Total	ND	0.02	mg/L	
Method 6010B ***				
Analyzed by: JM				
Date: 06/12/98 09:10:00				

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.

**HOUSTON LABORATORY**8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9805D86-03

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

06/12/98

PROJECT: Transwestern Pipeline
SITE: Roswell Sta. 9
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-12PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 05/28/98 19:00:00
DATE RECEIVED: 05/30/98**ANALYTICAL DATA**

PARAMETER	RESULTS	PQL*	UNITS
Benzene	310	25	ug/L
Bromobenzene	ND	5	ug/L
Bromochloromethane	ND	5	ug/L
Bromodichloromethane	ND	5	ug/L
Bromoform	ND	5	ug/L
Bromomethane	ND	10	ug/L
n-Butylbenzene	ND	5	ug/L
sec-Butylbenzene	ND	5	ug/L
tert-Butylbenzene	ND	5	ug/L
Carbon tetrachloride	ND	5	ug/L
Chlorobenzene	ND	5	ug/L
Chlorodibromomethane	ND	5	ug/L
Chloroethane	ND	10	ug/L
Chloroform	ND	5	ug/L
Chloromethane	ND	10	ug/L
2-Chlorotoluene	ND	5	ug/L
4-Chlorotoluene	ND	5	ug/L
1,2-Dibromo-3-chloropropane	ND	5	ug/L
1,2-Dibromoethane	ND	5	ug/L
Dibromomethane	ND	5	ug/L
1,2-Dichlorobenzene	ND	5	ug/L
1,3-Dichlorobenzene	ND	5	ug/L
1,4-Dichlorobenzene	ND	5	ug/L
Dichlorodifluoromethane	ND	10	ug/L
1,1-Dichloroethane	ND	5	ug/L
1,2-Dichloroethane	ND	5	ug/L
1,1-Dichloroethene	ND	5	ug/L
cis-1,2-Dichloroethene	ND	5	ug/L
trans-1,2-Dichloroethene	ND	5	ug/L
1,2-Dichloropropane	ND	5	ug/L
1,3-Dichloropropane	ND	5	ug/L
2,2-Dichloropropane	ND	5	ug/L
1,1-Dichloropropene	ND	5	ug/L
Ethylbenzene	ND	5	ug/L
Hexachlorobutadiene	ND	5	ug/L
Isopropylbenzene	ND	5	ug/L
p-Isopropyltoluene	ND	5	ug/L
Methylene chloride	ND	5	ug/L

METHOD: 8260 Water, Volatile Organics
(continued on next page)

**HOUSTON LABORATORY**8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9805D86-03

Cypress Engineering, Inc.

SAMPLE ID: MW-12

ANALYTICAL DATA (continued)			
PARAMETER	RESULTS	PQL*	UNITS
Naphthalene	ND	5	ug/L
n-Propylbenzene	ND	5	ug/L
Styrene	ND	5	ug/L
1,1,1,2-Tetrachloroethane	ND	5	ug/L
1,1,2,2-Tetrachloroethane	ND	5	ug/L
Tetrachloroethene	ND	5	ug/L
Toluene	ND	5	ug/L
1,2,3-Trichlorobenzene	ND	5	ug/L
1,2,4-Trichlorobenzene	ND	5	ug/L
1,1,1-Trichloroethane	ND	5	ug/L
1,1,2-Trichloroethane	ND	5	ug/L
Trichloroethene	ND	5	ug/L
Trichlorofluoromethane	ND	5	ug/L
1,2,3-Trichloropropane	ND	5	ug/L
1,2,4-Trimethylbenzene	9	5	ug/L
1,3,5-Trimethylbenzene	ND	5	ug/L
Vinyl chloride	ND	10	ug/L
Xylenes (total)	ND	5	ug/L
Acetone	ND	100	ug/L
Carbon Disulfide	ND	5	ug/L
Vinyl Acetate	ND	10	ug/L
2-Butanone	ND	20	ug/L
1,2-Dichloroethene (total)	ND	5	ug/L
2-Chloroethylvinylether	ND	10	ug/L
4-Methyl-2-Pentanone	ND	10	ug/L
cis-1,3-Dichloropropene	ND	5	ug/L
trans-1,3-Dichloropropene	ND	5	ug/L
2-Hexanone	ND	10	ug/L

SURROGATES	AMOUNT SPIKED	% RECOVERY	LOWER LIMIT	UPPER LIMIT
1,2-Dichloroethane-d4	50 ug/L	88	76	114
Toluene-d8	50 ug/L	94	88	110
4-Bromofluorobenzene	50 ug/L	98	86	115

ANALYZED BY: JC

DATE/TIME: 05/31/98 13:36:00

METHOD: 8260 Water, Volatile Organics

NOTES: * - Practical Quantitation Limit

ND - Not Detected

NA - Not Analyzed

COMMENTS:

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.

**HOUSTON LABORATORY**8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9805D86-03

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

06/12/98

PROJECT: Transwestern Pipeline
SITE: Roswell Sta. 9
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-12PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 05/28/98 19:00:00
DATE RECEIVED: 05/30/98**ANALYTICAL DATA**

PARAMETER	RESULTS	PQL*	UNITS
Acenaphthene	ND	5	ug/L
Acenaphthylene	ND	5	ug/L
Anthracene	ND	5	ug/L
Benzo(a)Anthracene	ND	5	ug/L
Benzo(b)Fluoranthene	ND	5	ug/L
Benzo(k)Fluoranthene	ND	5	ug/L
Benzo(a)Pyrene	ND	5	ug/L
Benzo(g,h,i)Perylene	ND	5	ug/L
Chrysene	ND	5	ug/L
Dibenz(a,h)Anthracene	ND	5	ug/L
Fluoranthene	ND	5	ug/L
Fluorene	ND	5	ug/L
Indeno(1,2,3-cd)Pyrene	ND	5	ug/L
2-Methylnaphthalene	ND	5	ug/L
Naphthalene	ND	5	ug/L
Phenanthrene	ND	5	ug/L
Pyrene	ND	5	ug/L
1-Methylnaphthalene	ND	5	ug/L

SURROGATES	AMOUNT SPIKED	% RECOVERY	LOWER LIMIT	UPPER LIMIT
Nitrobenzene-d5	50 ug/L	52	35	114
2-Fluorobiphenyl	50 ug/L	82	43	116
Terphenyl-d14	50 ug/L	84	33	141
Phenol-d5	75 ug/L	11	10	110
2-Fluorophenol	75 ug/L	31	21	110
2,4,6-Tribromophenol	75 ug/L	75	10	123

ANALYZED BY: YL
EXTRACTED BY: KL
METHOD: 8270C, Semivolatile Organics - Water
NOTES: * - Practical Quantitation Limit ND - Not Detected
NA - Not AnalyzedDATE/TIME: 06/06/98 18:47:00
DATE/TIME: 05/31/98 08:00:00**COMMENTS:**QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.

QUALITY CONTROL
DOCUMENTATION

3A
WATER VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: SPL

Contract:

Lab Code:

Case No.: 9805D75 SAS No.:

SDG No.:

Matrix Spike - EPA Sample No.: MW-1

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC #	QC. LIMITS REC.
1,1-Dichloroethene	50	0	51	102	61-145
Trichloroethene	50	0	49	98	71-120
Benzene	50	0	53	106	76-127
Toluene	50	0	45	90	76-125
Chlorobenzene	50	0	44	88	75-130

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC #	% RPD #	QC LIMITS	
					RPD	REC.
1,1-Dichloroethene	50	46	92	10	14	61-145
Trichloroethene	50	47	94	4	14	71-120
Benzene	50	52	104	2	11	76-127
Toluene	50	43	86	5	13	76-125
Chlorobenzene	50	44	88	0	13	75-130

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 5 outside limits

Spike Recovery: 0 out of 10 outside limits

SPL Houston Labs

RECOVERY REPORT

Client Name: Client SDG: n980601
Sample Matrix: LIQUID Fraction: VOA
Lab Smp Id: LCS
Level: LOW Operator: JC
Data Type: MS DATA SampleType: LCS
SpikeList File: 8260_water.spk Quant Type: ISTD
Sublist File: 8260.sub
Method File: /var/chem/n.i/n980601.b/n8260w.m
Misc Info: N152W1//N152CW1

SPIKE COMPOUND	CONC ADDED ug/L	CONC RECOVERED ug/L	% RECOVERED	LIMITS
8 1,1-Dichloroethene	50	50	100.00	61-145
29 Trichloroethene	50	52	104.00	71-120
25 Benzene	50	58	116.00	76-127
37 Toluene	50	48	96.00	76-125
45 Chlorobenzene	50	49	98.00	75-130

SURROGATE COMPOUND	CONC ADDED ug/L	CONC RECOVERED ug/L	% RECOVERED	LIMITS
\$ 21 1,2-Dichloroethane	50	49	98.00	76-114
\$ 36 Toluene-d8	50	47	94.00	88-110
\$ 56 Bromofluorobenzene	50	51	102.00	86-115

3A
WATER VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: SPL

Contract:

Lab Code:

Case No.: 9805D87 SAS No.:

SDG No.:

Matrix Spike - EPA Sample No.: MW-20

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC #	QC. LIMITS REC.
1,1-Dichloroethene	50	150	150	0*	61-145
Trichloroethene	50	0	52	104	71-120
Benzene	50	0	56	112	76-127
Toluene	50	0	48	96	76-125
Chlorobenzene	50	0	47	94	75-130

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC #	% RPD #	QC LIMITS	
					RPD	REC.
1,1-Dichloroethene	50	160	20*	200*	14	61-145
Trichloroethene	50	50	100	4	14	71-120
Benzene	50	55	110	2	11	76-127
Toluene	50	45	90	6	13	76-125
Chlorobenzene	50	47	94	0	13	75-130

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits due to matrix interference

RPD: 1 out of 5 outside limits

Spike Recovery: 2 out of 10 outside limits

SPL Houston Labs

RECOVERY REPORT

Client Name: Client SDG: n980531
Sample Matrix: LIQUID Fraction: VOA
Lab Smp Id: LCS
Level: LOW Operator: JC
Data Type: MS DATA SampleType: LCS
SpikeList File: 8260_water.spk Quant Type: ISTD
Sublist File: 8260.sub
Method File: /var/chem/n.i/n980531.b/n8260w.m
Misc Info: N151W1//N151CW1

SPIKE COMPOUND	CONC ADDED ug/L	CONC RECOVERED ug/L	% RECOVERED	LIMITS
8 1,1-Dichloroethene	50	63	126.00	61-145
29 Trichloroethene	50	52	104.00	71-120
25 Benzene	50	51	102.00	76-127
37 Toluene	50	44	88.00	76-125
45 Chlorobenzene	50	50	100.00	75-130

SURROGATE COMPOUND	CONC ADDED ug/L	CONC RECOVERED ug/L	% RECOVERED	LIMITS
\$ 21 1,2-Dichloroethane	50	45	90.00	76-114
\$ 36 Toluene-d8	50	45	90.00	88-110
\$ 56 Bromofluorobenzene	50	48	96.00	86-115



SPL Blank QC Report

HOUSTON LABORATORY

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 660-0901

page 1

Matrix: Aqueous
Sample ID: VLBLK
Batch: N980531122720

Reported on: 06/03/98 17:42
Analyzed on: 05/31/98 10:37
Analyst: JC

METHOD 8260/8240 N151B01

Compound	Result	Detection Limit	Units
Dichlorodifluoromethane	ND	10	ug/L
Chloromethane	ND	10	ug/L
Vinyl Chloride	ND	10	ug/L
Bromomethane	ND	10	ug/L
Chloroethane	ND	10	ug/L
Trichlorofluoromethane	ND	5	ug/L
Acetone	ND	100	ug/L
1,1-Dichloroethene	ND	5	ug/L
Methylene Chloride	ND	5	ug/L
Carbon Disulfide	ND	5	ug/L
trans-1,2-Dichloroethene	ND	5	ug/L
1,1-Dichloroethane	ND	5	ug/L
Vinyl Acetate	ND	10	ug/L
2-Butanone	ND	20	ug/L
cis-1,2-Dichloroethene	ND	5	ug/L
1,2-Dichloroethene (total)	ND	5	ug/L
2,2-Dichloropropane	ND	5	ug/L
Bromochloromethane	ND	5	ug/L
Chloroform	ND	5	ug/L
1,1,1-Trichloroethane	ND	5	ug/L
1,2-Dichloroethane	ND	5	ug/L
1,1-Dichloropropene	ND	5	ug/L
Benzene	ND	5	ug/L
Carbon Tetrachloride	ND	5	ug/L
1,2-Dichloropropane	ND	5	ug/L
Trichloroethene	ND	5	ug/L
Dibromomethane	ND	5	ug/L
Bromodichloromethane	ND	5	ug/L
2-Chloroethylvinylether	ND	10	ug/L
4-Methyl-2-Pentanone	ND	10	ug/L
cis-1,3-Dichloropropene	ND	5	ug/L
trans-1,3-Dichloropropene	ND	5	ug/L
Toluene	ND	5	ug/L
1,1,2-Trichloroethane	ND	5	ug/L

Notes

ND - Not detected.



SPL Blank QC Report

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 668-0901

page 2

Matrix: Aqueous
Sample ID: VLBLK
Batch: N980531122720

Reported on: 06/03/98 17:42
Analyzed on: 05/31/98 10:37
Analyst: JC

METHOD 8260/8240 N151B01

Compound	Result	Detection Limit	Units
1,3-Dichloropropane	ND	5	ug/L
2-Hexanone	ND	10	ug/L
Dibromochloromethane	ND	5	ug/L
1,2-Dibromoethane	ND	5	ug/L
Tetrachloroethene	ND	5	ug/L
Chlorobenzene	ND	5	ug/L
1,1,1,2-Tetrachloroethane	ND	5	ug/L
Ethylbenzene	ND	5	ug/L
Bromoform	ND	5	ug/L
Styrene	ND	5	ug/L
Xylene (Total)	ND	5	ug/L
1,1,2,2-Tetrachloroethane	ND	5	ug/L
1,2,3-Trichloropropane	ND	5	ug/L
Isopropylbenzene	ND	5	ug/L
Bromobenzene	ND	5	ug/L
N-Propylbenzene	ND	5	ug/L
2-Chlorotoluene	ND	5	ug/L
4-Chlorotoluene	ND	5	ug/L
1,3,5-Trimethylbenzene	ND	5	ug/L
tert-Butylbenzene	ND	5	ug/L
1,2,4-Trimethylbenzene	ND	5	ug/L
1,3-Dichlorobenzene	ND	5	ug/L
sec-Butylbenzene	ND	5	ug/L
1,4-Dichlorobenzene	ND	5	ug/L
p-Isopropyltoluene	ND	5	ug/L
1,2-Dichlorobenzene	ND	5	ug/L
n-Butylbenzene	ND	5	ug/L
1,2-Dibromo-3-Chloropropan	ND	5	ug/L
1,2,4-Trichlorobenzene	ND	5	ug/L
Naphthalene	ND	5	ug/L
Hexachlorobutadiene	ND	5	ug/L
1,2,3-Trichlorobenzene	ND	5	ug/L

Notes

ND - Not detected.



SPL Blank QC Report

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 669-0900

3

Matrix: Aqueous
Sample ID: VLBLK
Batch: N980531122720

Reported on: 06/03/98 17:42
Analyzed on: 05/31/98 10:37
Analyst: JC

METHOD 8260/8240 N151B01

Surrogate	Result	QC Criteria	Units
1,2-Dichloroethane-d4	92	76-114	% Recovery
Toluene-d8	92	88-110	% Recovery
Bromofluorobenzene	94	86-115	% Recovery

Samples in Batch 9805D86-01 9805D86-02 9805D86-03

Notes

ND - Not detected.



SPL Blank QC Report

HOUSTON LABORATORY

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 666-0901

page

4

Matrix: Aqueous
Sample ID: VLBLK
Batch: N980601122720

Reported on: 06/03/98 17:42
Analyzed on: 06/01/98 12:21
Analyst: JC

METHOD 8260/8240 N152B01

Compound	Result	Detection Limit	Units
Dichlorodifluoromethane	ND	10	ug/L
Chloromethane	ND	10	ug/L
Vinyl Chloride	ND	10	ug/L
Bromomethane	ND	10	ug/L
Chloroethane	ND	10	ug/L
Trichlorofluoromethane	ND	5	ug/L
Acetone	ND	100	ug/L
1,1-Dichloroethene	ND	5	ug/L
Methylene Chloride	ND	5	ug/L
Carbon Disulfide	ND	5	ug/L
trans-1,2-Dichloroethene	ND	5	ug/L
1,1-Dichloroethane	ND	5	ug/L
Vinyl Acetate	ND	10	ug/L
2-Butanone	ND	20	ug/L
cis-1,2-Dichloroethene	ND	5	ug/L
1,2-Dichloroethene (total)	ND	5	ug/L
2,2-Dichloropropane	ND	5	ug/L
Bromochloromethane	ND	5	ug/L
Chloroform	ND	5	ug/L
1,1,1-Trichloroethane	ND	5	ug/L
1,2-Dichloroethane	ND	5	ug/L
1,1-Dichloropropene	ND	5	ug/L
Benzene	ND	5	ug/L
Carbon Tetrachloride	ND	5	ug/L
1,2-Dichloropropane	ND	5	ug/L
Trichloroethene	ND	5	ug/L
Dibromomethane	ND	5	ug/L
Bromodichloromethane	ND	5	ug/L
2-Chloroethylvinylether	ND	10	ug/L
4-Methyl-2-Pentanone	ND	10	ug/L
cis-1,3-Dichloropropene	ND	5	ug/L
trans-1,3-Dichloropropene	ND	5	ug/L
Toluene	ND	5	ug/L
1,1,2-Trichloroethane	ND	5	ug/L

Notes

ND - Not detected.



SPL Blank QC Report

HOUSTON LABORATORY

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 660-0900

page 5

Matrix: Aqueous
Sample ID: VLBLK
Batch: N980601122720

Reported on: 06/03/98 17:42
Analyzed on: 06/01/98 12:21
Analyst: JC

METHOD 8260/8240 N152B01

Compound	Result	Detection Limit	Units
1,3-Dichloropropane	ND	5	ug/L
2-Hexanone	ND	10	ug/L
Dibromochloromethane	ND	5	ug/L
1,2-Dibromoethane	ND	5	ug/L
Tetrachloroethene	ND	5	ug/L
Chlorobenzene	ND	5	ug/L
1,1,1,2-Tetrachloroethane	ND	5	ug/L
Ethylbenzene	ND	5	ug/L
Bromoform	ND	5	ug/L
Styrene	ND	5	ug/L
Xylene (Total)	ND	5	ug/L
1,1,2,2-Tetrachloroethane	ND	5	ug/L
1,2,3-Trichloropropane	ND	5	ug/L
Isopropylbenzene	ND	5	ug/L
Bromobenzene	ND	5	ug/L
N-Propylbenzene	ND	5	ug/L
2-Chlorotoluene	ND	5	ug/L
4-Chlorotoluene	ND	5	ug/L
1,3,5-Trimethylbenzene	ND	5	ug/L
tert-Butylbenzene	ND	5	ug/L
1,2,4-Trimethylbenzene	ND	5	ug/L
1,3-Dichlorobenzene	ND	5	ug/L
sec-Butylbenzene	ND	5	ug/L
1,4-Dichlorobenzene	ND	5	ug/L
p-Isopropyltoluene	ND	5	ug/L
1,2-Dichlorobenzene	ND	5	ug/L
n-Butylbenzene	ND	5	ug/L
1,2-Dibromo-3-Chloropropan	ND	5	ug/L
1,2,4-Trichlorobenzene	ND	5	ug/L
Naphthalene	ND	5	ug/L
Hexachlorobutadiene	ND	5	ug/L
1,2,3-Trichlorobenzene	ND	5	ug/L

Notes

ND - Not detected.



SPL Blank QC Report

HOUSTON LABORATORY

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 660-0901

page 0

Matrix: Aqueous
Sample ID: VLBLK
Batch: N980601122720

Reported on: 06/03/98 17:42
Analyzed on: 06/01/98 12:21
Analyst: JC

METHOD 8260/8240 N152B01

Surrogate	Result	QC Criteria	Units
1,2-Dichloroethane-d4	100	76-114	% Recovery
Toluene-d8	94	88-110	% Recovery
Bromofluorobenzene	102	86-115	% Recovery

Samples in Batch 9805D86-02 9805D86-03

Notes

ND - Not detected.

WATER SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: SPL

Contract:

Lab Code:

Case No:

9805D75

SAS No:

SDG No:

Matrix Spike - EPA

Sample No:

MW-2

Level (low/med):

	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC #	QC LIMITS REC
Phenol	75	0	22	29	12-110
2-Chlorophenol	75	0	46	61	27-123
1,4-Dichlorobenzene	50	0	35	70	36- 97
N-Nitroso-di-n-propylamine	50	0	33	66	41-116
1,2,4-Trichlorobenzene	50	0	38	76	39- 98
4-Chloro-3-methylphenol	75	0	65	87	23- 97
Acenaphthene	50	0	39	78	46-118
4-Nitrophenol	75	0	29	39	30-150
2,4-Dinitrotoluene	50	0	35	70	50-150
Pentachlorophenol	75	0	73	97	9-125
Pyrene	50	0	42	84	26-127

	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC #	% RPD #	QC LIMITS	
					RPD	REC
Phenol	75	12	16	58 *	42	12-110
2-Chlorophenol	75	28	37	49 *	40	27-132
1,4-Dichlorobenzene	50	24	48	37 *	28	36- 97
N-Nitroso-di-n-propylamine	50	23	46	36	38	41-116
1,2,4-Trichlorobenzene	50	26	52	38 *	28	39- 98
4-Chloro-3-methylphenol	75	47	63	32	42	23- 97
Acenaphthene	50	30	60	26	31	46-118
4-Nitrophenol	75	22	29 *	29	50	30-150
2,4-Dinitrotoluene	50	30	60	15	50	50-150
Pentachlorophenol	75	58	77	23	50	9-125
Pyrene	50	41	82	2	31	26-127

Column to be used to flag recovery and RPD values with an asterisk

* Amount outside QC limits due to matrix interference

RPD: 4 out of 11 outside limits
Spike Recovery: 1 out of 22 outside limits

SPL Houston Labs

RECOVERY REPORT

Client Name:
 Sample Matrix: LIQUID
 Lab Smp Id: METHSPIKE-8270W
 Level: LOW
 Data Type: MS DATA
 SpikeList File: 8270w.spk
 Sublist File: lcs.sub
 Method File: /var/chem/p.i/p980609.b/p8270cw.m
 Misc Info: E151F3/H151B03/P160CC2

Client SDG: p980609
 Fraction: SV
 Operator: RY
 SampleType: MSD
 Quant Type: ISTD

SPIKE COMPOUND	CONC ADDED ug/L	CONC RECOVERED ug/L	% RECOVERED	LIMITS
5 Phenol	75	33	44.00	12-110
9 2-Chlorophenol	75	51	68.00	27-123
12 1,4-Dichlorobenzen	50	33	66.00	36-97
21 N-Nitroso-di-n-pro	50	40	80.00	41-116
31 1,2,4-Trichloroben	50	35	70.00	39-98
36 4-Chloro-3-methylp	75	62	82.67	23-97
49 Acenaphthene	50	39	78.00	46-118
51 4-Nitrophenol	75	38	50.67	30-150
53 2,4-Dinitrotoluene	50	36	72.00	50-150
64 Pentachlorophenol	75	41	54.67	9-125
71 Pyrene	50	39	78.00	26-127

SURROGATE COMPOUND	CONC ADDED ug/L	CONC RECOVERED ug/L	% RECOVERED	LIMITS
\$ 23 Nitrobenzene-d5	50	37	74.00	35-114
\$ 41 2-Fluorobiphenyl	50	40	80.00	43-116
\$ 72 Terphenyl-d14	50	26	52.00	33-141
\$ 3 2-Fluorophenol	75	45	60.00	21-110
\$ 4 Phenol-d5	75	32	42.67	10-110
\$ 61 2,4,6-Tribromophen	75	69	92.00	10-123



SPL Blank QC Report

HOUSTON LABORATORY

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 660-9000

1

Matrix: Aqueous
Sample ID: BLANK
Batch: E980531042258

Reported on: 06/10/98 17:47

Analyzed on: 06/06/98 13:53

Analyst: YL

METHOD 8270 H151B03

C o m p o u n d	Result	Detection Limit	Units
Naphthalene	ND	5	ug/L
2-Methylnaphthalene	ND	5	ug/L
1-Methylnaphthalene	ND	5	ug/L
Acenaphthylene	ND	5	ug/L
Acenaphthene	ND	5	ug/L
Fluorene	ND	5	ug/L
Phenanthrene	ND	5	ug/L
Anthracene	ND	5	ug/L
Fluoranthene	ND	5	ug/L
Pyrene	ND	5	ug/L
Benzo[a]anthracene	ND	5	ug/L
Chrysene	ND	5	ug/L
Benzo[b]fluoranthene	ND	5	ug/L
Benzo[k]fluoranthene	ND	5	ug/L
Benzo[a]pyrene	ND	5	ug/L
Indeno[1,2,3-cd]pyrene	ND	5	ug/L
Dibenz[a,h]anthracene	ND	5	ug/L
Benzo[g,h,i]perylene	ND	5	ug/L

S u r r o g a t e	Result	QC Criteria	Units
2-Fluorophenol	47	21-110	% Recovery
Phenol-d5	35	10-110	% Recovery
2,4,6-Tribromophenol	72	10-123	% Recovery
Nitrobenzene-d5	66	35-114	% Recovery
2-Fluorobiphenyl	80	43-116	% Recovery
Terphenyl-d14	88	33-141	% Recovery

Samples in Batch 9805D86-01 9805D86-02 9805D86-03

Notes

ND - Not detected.

Analyst: JMEG
HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
Checked: (713) 660-0901

~~Cheeked~~ (713) 660-0901

91 011258

Work Orders in Batch

Work Order Fractions

98-05-C92 01E-03E

98-05-D10 01A

98-05-D21 01C-06C

98-05-C90 01E-03E

98-05-D75 01E-03E

98-05-D86 01E-03E

98-06-156 01D

Work Order Spiked: 9805C92-01E

[illegible]

ICP Spectroscopy Method 6010 Quality Control Report



Matrix: Water

Units: mg/L

Analyst: **WESLEY**

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

Date: 061298 Time: 0910 File Name: 061298M2

Checked: **gm 6/15/98**

Laboratory Control Sample

Element	Mth. Blank	True Value	Result	% Recovery	Lower Limit	Upper Limit
Silver						
Aluminum						
Arsenic						
Barium	ND	2.00	1.98	99	1.60	2.40
Beryllium						
Calcium	ND	20.00	19.38	97	16.00	24.00
Cadmium						
Cobalt						
Chromium	ND	2.00	1.93	97	1.60	2.40
Copper						
Iron	ND	2.00	1.94	97	1.60	2.40
Potassium	ND	20.00	19.33	97	16.00	24.00
Magnesium	ND	20.00	19.48	97	16.00	24.00
Manganese						
Sodium						
Nickel						
Lead						
Antimony						
Selenium						
Thallium						
Vanadium						
Zinc	ND	2.00	1.92	96	1.60	2.40

Work Orders in Batch

Work Order	Fractions
98-06-543	03A
98-06-545	03A
98-06-554	02B
98-05-C92	01E-03E
98-05-C90	01E-03E
98-05-D86	01E-03E

Matrix Spike - Spike Duplicate Results

Work Order Spiked: 9806543-03A

Element	Sample Result	Spike Added	Matrix Spike Result	Matrix Spike Recovery	Matrix Spike Duplicate Result	Matrix Spike Duplicate Recovery	QC Limits % Recovery	Spike RPD %	QC Limits %
Silver									
Aluminum									
Arsenic									
Barium	7.944	1.0	9.806	186.2	*	9.973	202.9	*	80 120 8.6 20.0
Beryllium									
Calcium	78.14	10.0	91.73	135.9	*	94.32	161.8	*	80 120 17.4 20.0
Cadmium									
Cobalt									
Chromium	1.241	1.0	2.179	93.8		2.228	98.7		80 120 5.1 20.0
Copper									
Iron	17.75	1.0	27.41	966.0	*	28.24	1049.0	*	80 120 8.2 20.0
Potassium	13.21	10.0	30.67	174.6	*	32.04	188.3	*	80 120 7.6 20.0
Magnesium	6.772	10.0	18.3	115.3		18.8	120.3	*	80 120 4.2 20.0
Manganese									
Sodium									
Nickel									
Lead									
Antimony									
Selenium									
Thallium									
Vanadium									
Zinc	0.1986	1.0	1.084	88.5		1.11	91.1		80 120 2.9 20.0

* Spike Results Outside Method Limits



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 06/10/98

Analyzed on: 06/10/98

Analyst: PB

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Arsenic, Total
Method 7060A ***

SPL Sample ID Number	Blank Value ug/L	LCS Concentration ug/L	Measured Concentration ug/L	% Recovery	QC Limits Recovery
LCS	ND	40.0	43.5	109	80 - 120

-9806461

Samples in batch:

9805C90-01E	9805C90-02E	9805C90-03E	9805C92-01E
9805C92-02E	9805C92-03E	9805D86-01E	9805D86-02E
9805D86-03E	9805D87-01E	9805D87-02E	9806079-01E
9806079-02E	9806086-01D	9806116-02F	9806156-01D

COMMENTS:

LCS = SPL ID # 97-839-258-1

** VALUES OUTSIDE QC RANGE.



** SPL QUALITY CONTROL REPORT **

HOUSTON LABORATORY

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 660-0901

Matrix: Aqueous

Reported on: 06/10/98

Analyzed on: 06/10/98

Analyst: PB

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Arsenic, Total
Method 7060A ***

SPL Sample	Method	Sample	Spike	Matrix Spike		Matrix Spike Duplicate		RPD	QC LIMITS (Advisory)	
ID Number	Blank ug/L	Result ug/L	Added ug/L	Result ug/L	Recovery %	Result ug/L	Recovery %	(%)	RPD Max	% REC
9806079-01E	ND	ND	40.0	36.3	90.8	44.8	112	21 11 20	75	-125

-9806461

Samples in batch:

9805C90-01E 9805C90-02E 9805C90-03E 9805C92-01E
9805C92-02E 9805C92-03E 9805D86-01E 9805D86-02E
9805D86-03E 9805D87-01E 9805D87-02E 9806079-01E
9806079-02E 9806086-01D 9806116-02F 9806156-01D

COMMENTS:

LCS = SPL ID # 97-839-258-1

** VALUES OUTSIDE QC RANGE.

**HOUSTON LABORATORY**

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 660-0901

**** SPL QUALITY CONTROL REPORT ****

Matrix: Aqueous

Reported on: 06/12/98

Analyzed on: 06/12/98

Analyst: AG

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Mercury, Total
Method 7470 A***

SPL Sample ID Number	Blank Value ug/L	LCS Concentration ug/L	Measured Concentration ug/L	% Recovery	QC Limits Recovery
LCS	ND	2.00	2.05	102	80 - 120

-9806519

Samples in batch:

9805C90-01E	9805C90-02E	9805C90-03E	9805C92-01E
9805C92-02E	9805C92-03E	9805D63-01A	9805D75-01E
9805D75-02E	9805D75-03E	9805D86-01E	9805D86-02E
9805D86-03E	9805D87-01E	9805D87-02E	9806116-02F
9806156-01D	9806460-11B	9806460-12B	9806497-03B

COMMENTS:

LCS = SPL ID# 94-452-45-21



** SPL QUALITY CONTROL REPORT **

HOUSTON LABORATORY

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 660-0901

Matrix: Aqueous

Reported on: 06/12/98

Analyzed on: 06/12/98

Analyst: AG

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Mercury, Total
Method 7470 A***

SPL Sample	Method	Sample	Spike	Matrix Spike		Matrix Spike Duplicate		RPD	QC LIMITS (Advisory)		
ID Number	Blank ug/L	Result ug/L	Added ug/L	Result ug/L	Recovery %	Result ug/L	Recovery %	(%)	RPD Max	% REC	
9805C90-01E	ND	ND	2.00	2.06	103	1.94	97.0	6.0	20	75	-125

-9806519

Samples in batch:

9805C90-01E	9805C90-02E	9805C90-03E	9805C92-01E
9805C92-02E	9805C92-03E	9805D63-01A	9805D75-01E
9805D75-02E	9805D75-03E	9805D86-01E	9805D86-02E
9805D86-03E	9805D87-01E	9805D87-02E	9806116-02F
9806156-01D	9806460-11B	9806460-12B	9806497-03B

COMMENTS:

LCS = SPL ID# 94-452-45-21



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 06/10/98

Analyzed on: 06/10/98

Analyst: PB

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Selenium, Total
Method 7740 ***

SPL Sample ID Number	Blank Value ug/L	LCS Concentration ug/L	Measured Concentration ug/L	% Recovery	QC Limits Recovery
LCS	ND	40.0	43.5	109	80 - 120

-9806454

Samples in batch:

9805C90-01E	9805C90-02E	9805C90-03E	9805C92-01E
9805C92-02E	9805C92-03E	9805D86-01E	9805D86-02E
9805D86-03E	9805D87-01E	9805D87-02E	9806079-01E
9806079-02E	9806086-01D	9806156-01D	

COMMENTS:

LCS = SPL ID # 97-839-258-1



** SPL QUALITY CONTROL REPORT **

HOUSTON LABORATORY

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 660-0901

Matrix: Aqueous

Reported on: 06/10/98

Analyzed on: 06/10/98

Analyst: PB

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Selenium, Total
Method 7740 ***

SPL Sample	Method	Sample	Spike	Matrix Spike		Matrix Spike Duplicate		RPD	QC LIMITS (Advisory)		
ID Number	Blank ug/L	Result ug/L	Added ug/L	Result ug/L	Recovery %	Result ug/L	Recovery %	(%)	RPD Max	% REC	
9806079-01E	ND	ND	40.0	33.4	83.5	37.6	94.0	12	20	75	-125

-9806454

Samples in batch:

9805C90-01E	9805C90-02E	9805C90-03E	9805C92-01E
9805C92-02E	9805C92-03E	9805D86-01E	9805D86-02E
9805D86-03E	9805D87-01E	9805D87-02E	9806079-01E
9806079-02E	9806086-01D	9806156-01D	

COMMENTS:

LCS = SPL ID # 97-839-258-1

**HOUSTON LABORATORY**

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 660-0901

**** SPL QUALITY CONTROL REPORT ****

Matrix: Aqueous

Reported on: 06/09/98

Analyzed on: 06/08/98

Analyst: JS

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Alkalinity, as CaCO₃
Method 310.1 *

SPL Sample ID Number	Blank Value mg/L	LCS Concentration mg/L	Measured Concentration mg/L	% Recovery	QC Limits Recovery
LCS	ND	65	63	96.9	95 - 113

-9806389

Samples in batch:

9805B64-01B	9805B64-02B	9805B64-03B	9805B64-04B
9805B64-05B	9805C90-01B	9805C90-02B	9805C90-03B
9805C92-01B	9805C92-02B	9805C92-03B	9805D86-01B
9805D86-02B	9805D86-03B	9805D87-01B	9805D87-02B

COMMENTS:

SPL LCS ID# 95535192-24



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 06/09/98

Analyzed on: 06/08/98

Analyst: JS

This sample was randomly selected for use in the SPL quality control program. The results are as follows:

Alkalinity, as CaCO₃
Method 310.1 *

-- DUPLICATE ANALYSIS --

SPL Sample ID	Original Sample Concentration mg/L	Duplicate Sample mg/L	RPD	RPD Max.
9805C92-03B	130.6	131.8	0.9	18

-9806392

Samples in batch:

9805C92-03B 9805D86-01B 9805D86-02B 9805D86-03B
9805D87-01B 9805D87-02B

COMMENTS:

SPL LCS ID# 95535192-24

**HOUSTON LABORATORY**

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 660-0901

**** SPL QUALITY CONTROL REPORT ****

Matrix: Aqueous

Reported on: 06/09/98

Analyzed on: 06/09/98

Analyst: DAM

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Chloride
Method 325.3 *

SPL Sample ID Number	Blank Value mg/L	LCS Concentration mg/L	Measured Concentration mg/L	% Recovery	QC Limits Recovery
LCS	ND	116	115.4	99.5	94 - 106

-9806446

Samples in batch:

9805B61-01B	9805B61-02B	9805B61-03B	9805B61-04B
9805B63-01H	9805B63-02H	9805B63-03H	9805B97-01A
9805B97-02A	9805D86-01B	9805D86-02B	9805D86-03B
9805D87-01B	9805D87-02B		

COMMENTS:

LCS = SPL ID#94453192-24



** SPL QUALITY CONTROL REPORT **

HOUSTON LABORATORY

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 660-0901

Matrix: Aqueous

Reported on: 06/09/98

Analyzed on: 06/09/98

Analyst: DAM

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Chloride
Method 325.3 *

SPL Sample	Method	Sample	Spike	Matrix Spike		Matrix Spike Duplicate		RPD	QC LIMITS (Advisory)	
ID Number	Blank	Result	Added	Result	Recovery	Result	Recovery	(%)	RPD	% REC
	mg/L	mg/L	mg/L	mg/L	%	mg/L	%		Max	
9805D87-01B	ND	31.70	50.0	80.53	97.7	82.60	102	4.3	5	92 -109

-9806444

Samples in batch:

9805D86-01B 9805D86-02B 9805D86-03B 9805D87-01B
9805D87-02B 9806444-01A

COMMENTS:

**HOUSTON LABORATORY**

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 660-0901

**** SPL QUALITY CONTROL REPORT ****

Matrix: Aqueous

Reported on: 06/10/98

Analyzed on: 06/10/98

Analyst: TW

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Sulfate
Method 375.4 *

SPL Sample ID Number	Blank Value mg/L	LCS Concentration mg/L	Measured Concentration mg/L	% Recovery	QC Limits Recovery
LCS	ND	4.52	4.51	99.8	82 - 111

-9806441

Samples in batch:

9805B64-01B	9805B64-02B	9805B64-03B	9805B64-04B
9805B64-05B	9805B97-01A	9805B97-02A	9805C22-01E
9805C90-01B	9805C90-02B	9805C90-03B	9805C92-01B
9805C92-02B	9805C92-03B	9805D86-01B	9805D86-02B
9805D86-03B	9805D87-01B	9805D87-02B	9806135-02A

COMMENTS:

LCS#94453183-1



** SPL QUALITY CONTROL REPORT **

HOUSTON LABORATORY

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 660-0901

Matrix: Aqueous

Reported on: 06/10/98

Analyzed on: 06/10/98

Analyst: TW

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Sulfate
Method 375.4 *

SPL Sample ID Number	Method Sample		Spike Added mg/L	Matrix Spike		Matrix Spike Duplicate		RPD (%)	QC LIMITS (Advisory)	
	Blank mg/L	Result mg/L		Result mg/L	Recovery %	Result mg/L	Recovery %		RPD Max	% REC
9805C92-01B	ND	8.54	10.0	20.20	117	19.46	109	7.1	9.5	84 -120

-9806440

Samples in batch:

9805C90-01B	9805C90-03B	9805C92-01B	9805C92-02B
9805C92-03B	9805D86-01B	9805D86-02B	9805D86-03B
9805D87-01B	9805D87-02B		

COMMENTS:

**HOUSTON LABORATORY**

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 660-0901

**** SPL QUALITY CONTROL REPORT ****

Matrix: Aqueous

Reported on: 06/04/98

Analyzed on: 06/03/98

Analyst: CL

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Total Dissolved Solids
Method 160.1 *

SPL Sample ID Number	Blank Value mg/L	LCS Concentration mg/L	Measured Concentration mg/L	% Recovery	QC Limits Recovery
LCS	ND	296.8	296	99.7	93 - 107

-9806190

Samples in batch:

9805D75-03F	9805D84-01B	9805D84-02B	9805D84-03B
9805D85-15B	9805D85-16B	9805D85-17B	9805D85-18B
9805D85-19B	9805D85-27A	9805D86-01B	9805D86-02B
9805D86-03B			

COMMENTS:

SPL LCS #ID 95535202-05



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 06/04/98

Analyzed on: 06/03/98

Analyst: KS

This sample was randomly selected for use in the SPL quality control program. The results are as follows:

Total Dissolved Solids
Method 160.1 *

-- DUPLICATE ANALYSIS --

SPL Sample ID	Original Sample Concentration mg/l	Duplicate Sample mg/l	RPD	RPD Max.
9805D86-03B	2800	3090	9.8	5

-9806189

Samples in batch:

9805D86-01B 9805D86-02B 9805D86-03B

COMMENTS:

**HOUSTON LABORATORY**

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 660-0901

**** SPL QUALITY CONTROL REPORT ****

Matrix: Aqueous

Reported on: 06/11/98

Analyzed on: 06/04/98

Analyst: DAM

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Nitrate-Nitrite, as N
Method 353.3 *

SPL Sample ID Number	Blank Value mg/L	LCS Concentration mg/L	Measured Concentration mg/L	% Recovery	QC Limits Recovery
LCS	ND	2.77	2.96	107	92 - 111

-9806491

Samples in batch:

9805C60-01C	9805C60-02C	9805C60-03C	9805C60-04C
9805C90-01C	9805C90-02C	9805C90-03C	9805C92-01C
9805C92-02C	9805C92-03C	9805D86-01C	9805D86-02C
9805D86-03C	9805D87-01C	9805D87-02C	

COMMENTS:

LCS = SPL ID #:95535172-26



** SPL QUALITY CONTROL REPORT **

HOUSTON LABORATORY

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 660-0901

Matrix: Aqueous

Reported on: 06/11/98

Analyzed on: 06/04/98

Analyst: DAM

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Nitrate-Nitrite, as N
Method 353.3 *

SPL Sample	Method	Sample	Spike	Matrix Spike		Matrix Spike Duplicate		RPD	QC LIMITS (Advisory)		
ID Number	Blank	Result	Added	Result	Recovery	Result	Recovery	(%)	RPD	% REC	
	mg/L	mg/L	mg/L	mg/L	%	mg/L	%		Max		
9805D86-01C	ND	ND	5.00	5.34	107	5.43	109	1.8	12	87	-120

-9806490

Samples in batch:

9805D86-01C 9805D86-02C 9805D86-03C 9805D87-01C
9805D87-02C

COMMENTS:

CHAIN OF CUSTODY
AND
SAMPLE RECEIPT CHECKLIST

Analysis Request & Chain of Custody Record

9805D86

page 1 of 1

Client Name: Cypress Engineering (913)856-7880						matrix		bottle	size	pres.	Requested Analysis														
Address/Phone: 10235 WEST LITTLE YORK SUITE 250, HOUSTON TX 77040																									
Client Contact: SANDY SHARP																									
Project Name: TRANSEASTERN PIPELINE																									
Project Number:																									
Project Location: ROSWELL STA. 9																									
Invoice To: GEORGE ROBINSON																									
SAMPLE ID	DATE	TIME	comp	grab	W=water SL=sludge	S=soil O=other:	P=plastic G=glass	A=amber glass V=vial	1=1 liter 8=8oz 4=4oz 16=16oz	1=HCl 3=H2SO4	2=HNO3 O=other:	Number of Containers	VOL'S 8260 INCLUDING 1,2 DICHLOROETHENE (CIS+TRANS) TACHOMETER BLENDED (CY-M-SL)	TOS, SULFATE, CHLORIDE	TOTAL ALKALINITY	NITRATE & NITRATE AS NITROGEN 353.2	PAH'S 8270 INCLUDES PHENOL METHYL ANTHRAcene (Source: 1-4-2-)	TOTAL METALS Pb/Cd/Cr/Vi/ Ba/Pb/Cd/Pb/Hg/Cu/ Fe, Mn, Zn	TOTAL AS BY GRANITE FURNACE ANALYSIS	Se (TOTAL) BY GRANITE FURNACE 774D					
MW -13	5/28/98	1655		X	W	G	40	1	1/0	3/1	X						X								
MW -13		1655				P	1	3/0	1/2				X	X			X			X	X				
MW 21		1800				G	40	1	3/0	3/2	X						X								
MW -21		1800				P	1	3/0	1/2				X	X			X			X	X				
MW -12		1900				G	40	1	3/0	3/2	X						X								
MW -12		1900				P	1	3/0	1/2				X	X			X			X	X				
Client/Consultant Remarks: DO NOT FILTER METALS. ADD PRESERVATIVES @ RUN ANALYSIS						Laboratory remarks:											Intact? ☐ Y ☐ N Temp: 4°C								
Requested TAT		Special Reporting Requirements		Fax Results	Raw Data	Special Detection Limits (specify):			PM review (initial):																
Standard QC ☒		Level 3 QC ☐		Level 4 QC ☐																					
24hr ☐	72hr ☐	1. Relinquished by Sampler: Sandy Sharp			date 5/29/98	time 1200	2. Received by:																		
48hr ☐	Standard ☒	3. Relinquished by:			date	time	4. Received by:																		
Other ☐		5. Relinquished by:			date 5.30.98	time 1700	6. Received by Laboratory:																		

- 8880 Interchange Drive, Houston, TX 77054 (713) 660-0901
459-Hughes Drive, Traverse City, MI 49684 (616) 947-5777

- 500 Ambassador Caffery Parkway, Scott, LA 70583 (318) 237-4775
- 1501 E. Orangethorpe Avenue, Fullerton, CA 92631 (714) 447-6868

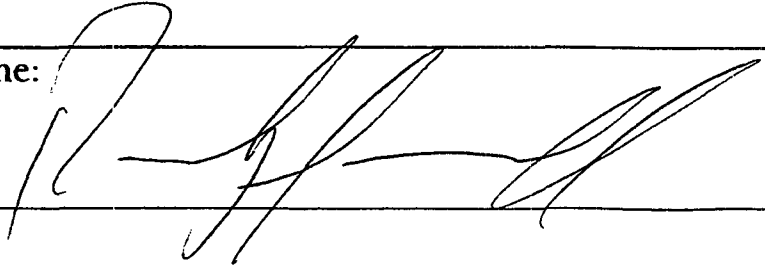
SPL Houston Environmental Laboratory

Sample Login Checklist

Date: 5-30-98	Time: 10 ⁰⁰
------------------	---------------------------

SPL Sample ID: 98051086

		Yes	No
1	Chain-of-Custody (COC) form is present.	✓	
2	COC is properly completed.	✓	
3	If no, Non-Conformance Worksheet has been completed.		
4	Custody seals are present on the shipping container.	✓	
5	If yes, custody seals are intact.	✓	
6	All samples are tagged or labeled.	✓	
7	If no, Non-Conformance Worksheet has been completed.		
8	Sample containers arrived intact	✓	
9	Temperature of samples upon arrival:	4 C	
10	Method of sample delivery to SPL:	SPL Delivery	
		Client Delivery	
		FedEx Delivery (airbill #)	804721509668
		Other:	
11	Method of sample disposal:	SPL Disposal	✓
		HOLD	
		Return to Client	

Name: 	Date: 5-30-98
--	------------------



HOUSTON LABORATORY

8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

June 15, 1998

Mr. George Robinson
CYPRESS ENGINEERING, INC.
10235 W. Little York Rd #256
Houston, TX 77040

The following report contains analytical results for the sample(s) received at Southern Petroleum Laboratories (SPL) on May 29, 1998. The sample(s) was assigned to Certificate of Analysis No.(s) 9805C92 and analyzed for all parameters as listed on the chain of custody.

Any data flag or quality control exception associated with this report will be footnoted in the analytical results page(s) or the quality control summary page(s).

If you have any questions or comments pertaining to this data report, please do not hesitate to contact me. Please reference the above Certificate of Analysis No. during any inquiries.

Again, SPL is pleased to be of service to you. We anticipate working with you in fulfilling all your current and future analytical needs.

Southern Petroleum Laboratories

A handwritten signature in cursive script, reading "Electa Brown", is written over a horizontal line.

Electa Brown
Client Services Representative



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Southern Petroleum Laboratories, Inc.

Certificate of Analysis Number: 98-05-C92

Approved for Release by:



Electa Brown, Client Services Representative

6-15-98
Date:

Greg Grandits
Laboratory Director

Cynthia Schreiner
Quality Assurance Officer

The attached analytical data package may not be reproduced except in full without the express written approval of this laboratory.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9805C92-01

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 06/12/98

PROJECT: Transwestern Pipeline
SITE: Roswell Sta. 9
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-14

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 05/27/98 15:25:00
DATE RECEIVED: 05/29/98

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
Alkalinity, as CaCC3 Method 310.1 * Analyzed by: JS Date: 06/08/98 10:00:00	112	1	mg/L	
Chloride Method 325.3 * Analyzed by: DAM Date: 06/09/98 11:00:00	380	10	mg/L	
Sulfate Method 375.4 * Analyzed by: TW Date: 06/10/98 11:30:00	2200	250	mg/L	
Total Dissolved Solids Method 160.1 * Analyzed by: KS Date: 06/01/98 16:18:00	2700	100	mg/L	
Nitrate-Nitrite, as N Method 353.3 * Analyzed by: DAM Date: 06/04/98 10:00:00	0.3	0.1	mg/L	
Liquid-liquid extraction SEMIVOLATILES Method 3520C *** Analyzed by: KL Date: 05/31/98 08:00:00	05/31/98			

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9805C92-01

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 06/12/98

PROJECT: Transwestern Pipeline
SITE: Roswell Sta. 9
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-14

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 05/27/98 15:25:00
DATE RECEIVED: 05/29/98

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
Silver, Total Method 6010B *** Analyzed by: JM Date: 06/11/98 10:03:00	ND	0.01	mg/L	
Arsenic, Total Method 7060A *** Analyzed by: PB Date: 06/10/98 14:30:00	ND	0.005	mg/L	
Barium, Total Method 6010B *** Analyzed by: JM Date: 06/11/98 10:03:00	0.009	0.005	mg/L	
Cadmium, Total Method 6010B *** Analyzed by: JM Date: 06/11/98 10:03:00	ND	0.005	mg/L	
Chromium, Total Method 6010B *** Analyzed by: JM Date: 06/11/98 10:03:00	ND	0.01	mg/L	
Copper, Total Method 6010B *** Analyzed by: JM Date: 06/11/98 10:03:00	ND	0.01	mg/L	

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9805C92-01

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 06/12/98

PROJECT: Transwestern Pipeline
SITE: Roswell Sta. 9
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-14

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 05/27/98 15:25:00
DATE RECEIVED: 05/29/98

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
Iron, Total Method 6010B *** Analyzed by: JM Date: 06/11/98 10:03:00	0.05	0.02	mg/L	
Mercury, Total Method 7470 A*** Analyzed by: AG Date: 06/12/98 14:07:00	ND	0.0002	mg/L	
Manganese, Total Method 6010B *** Analyzed by: JM Date: 06/11/98 10:03:00	0.007	0.005	mg/L	
Acid Digestion-Aqueous, ICP Method 3010A *** Analyzed by: GJ Date: 06/04/98 17:00:00	06/04/98			
Lead, Total Method 6010B *** Analyzed by: JM Date: 06/11/98 10:03:00	ND	0.05	mg/L	
Selenium, Total Method 7740 *** Analyzed by: PB Date: 06/10/98 17:08:00	ND	0.005	mg/L	

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.

**HOUSTON LABORATORY**

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 660-0901

Certificate of Analysis No. H9-9805C92-01

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 06/12/98

PROJECT: Transwestern Pipeline
SITE: Roswell Sta. 9
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-14

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 05/27/98 15:25:00
DATE RECEIVED: 05/29/98

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
Zinc, Total	ND	0.02	mg/L	
Method 6010B ***				
Analyzed by: JM				
Date: 06/12/98 09:10:00				

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.

**HOUSTON LABORATORY**

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 660-0901

Certificate of Analysis No. H9-9805C92-01

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

06/12/98

PROJECT: Transwestern Pipeline
SITE: Roswell Sta. 9
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-14

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 05/27/98 15:25:00
DATE RECEIVED: 05/29/98

ANALYTICAL DATA

PARAMETER	RESULTS	PQL*	UNITS
Benzene	ND	5	ug/L
Bromobenzene	ND	5	ug/L
Bromochloromethane	ND	5	ug/L
Bromodichloromethane	ND	5	ug/L
Bromoform	ND	5	ug/L
Bromomethane	ND	10	ug/L
n-Butylbenzene	ND	5	ug/L
sec-Butylbenzene	ND	5	ug/L
tert-Butylbenzene	ND	5	ug/L
Carbon tetrachloride	ND	5	ug/L
Chlorobenzene	ND	5	ug/L
Chlorodibromomethane	ND	5	ug/L
Chloroethane	ND	10	ug/L
Chloroform	ND	5	ug/L
Chloromethane	ND	10	ug/L
2-Chlorotoluene	ND	5	ug/L
4-Chlorotoluene	ND	5	ug/L
1,2-Dibromo-3-chloropropane	ND	5	ug/L
1,2-Dibromoethane	ND	5	ug/L
Dibromomethane	ND	5	ug/L
1,2-Dichlorobenzene	ND	5	ug/L
1,3-Dichlorobenzene	ND	5	ug/L
1,4-Dichlorobenzene	ND	5	ug/L
Dichlorodifluoromethane	ND	10	ug/L
1,1-Dichloroethane	ND	5	ug/L
1,2-Dichloroethane	ND	5	ug/L
1,1-Dichloroethene	ND	5	ug/L
cis-1,2-Dichloroethene	ND	5	ug/L
trans-1,2-Dichloroethene	ND	5	ug/L
1,2-Dichloropropane	ND	5	ug/L
1,3-Dichloropropane	ND	5	ug/L
2,2-Dichloropropane	ND	5	ug/L
1,1-Dichloropropene	ND	5	ug/L
Ethylbenzene	ND	5	ug/L
Hexachlorobutadiene	ND	5	ug/L
Isopropylbenzene	ND	5	ug/L
p-Isopropyltoluene	ND	5	ug/L
Methylene chloride	ND	5	ug/L

METHOD: 8260 Water, Volatile Organics
(continued on next page)

**HOUSTON LABORATORY**

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 660-0901

Certificate of Analysis No. H9-9805C92-01

Cypress Engineering, Inc.

SAMPLE ID: MW-14

ANALYTICAL DATA (continued)			
PARAMETER	RESULTS	PQL*	UNITS
Naphthalene	ND	5	ug/L
n-Propylbenzene	ND	5	ug/L
Styrene	ND	5	ug/L
1,1,1,2-Tetrachloroethane	ND	5	ug/L
1,1,2,2-Tetrachloroethane	ND	5	ug/L
Tetrachloroethene	ND	5	ug/L
Toluene	ND	5	ug/L
1,2,3-Trichlorobenzene	ND	5	ug/L
1,2,4-Trichlorobenzene	ND	5	ug/L
1,1,1-Trichloroethane	ND	5	ug/L
1,1,2-Trichloroethane	ND	5	ug/L
Trichloroethene	ND	5	ug/L
Trichlorofluoromethane	ND	5	ug/L
1,2,3-Trichloropropane	ND	5	ug/L
1,2,4-Trimethylbenzene	ND	5	ug/L
1,3,5-Trimethylbenzene	ND	5	ug/L
Vinyl chloride	ND	10	ug/L
Xylenes (total)	ND	5	ug/L
Acetone	ND	100	ug/L
Carbon Disulfide	ND	5	ug/L
Vinyl Acetate	ND	10	ug/L
2-Butanone	ND	20	ug/L
1,2-Dichloroethene (total)	ND	5	ug/L
2-Chloroethylvinylether	ND	10	ug/L
4-Methyl-2-Pentanone	ND	10	ug/L
cis-1,3-Dichloropropene	ND	5	ug/L
trans-1,3-Dichloropropene	ND	5	ug/L
2-Hexanone	ND	10	ug/L

SURROGATES	AMOUNT SPIKED	% RECOVERY	LOWER LIMIT	UPPER LIMIT
1,2-Dichloroethane-d4	50 ug/L	88	76	114
Toluene-d8	50 ug/L	94	88	110
4-Bromofluorobenzene	50 ug/L	94	86	115

ANALYZED BY: JC

DATE/TIME: 05/31/98 06:47:00

METHOD: 8260 Water, Volatile Organics

NOTES: * - Practical Quantitation Limit

ND - Not Detected

NA - Not Analyzed

COMMENTS:

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.

**HOUSTON LABORATORY**8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9805C92-01

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

06/12/98

PROJECT: Transwestern Pipeline
SITE: Roswell Sta. 9
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-14PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 05/27/98 15:25:00
DATE RECEIVED: 05/29/98**ANALYTICAL DATA**

PARAMETER	RESULTS	PQL*	UNITS
Acenaphthene	ND	5	ug/L
Acenaphthylene	ND	5	ug/L
Anthracene	ND	5	ug/L
Benzo(a)Anthracene	ND	5	ug/L
Benzo(b)Fluoranthene	ND	5	ug/L
Benzo(k)Fluoranthene	ND	5	ug/L
Benzo(a)Pyrene	ND	5	ug/L
Benzo(g,h,i)Perylene	ND	5	ug/L
Chrysene	ND	5	ug/L
Dibenz(a,h)Anthracene	ND	5	ug/L
Fluoranthene	ND	5	ug/L
Fluorene	ND	5	ug/L
Indeno(1,2,3-cd)Pyrene	ND	5	ug/L
2-Methylnaphthalene	ND	5	ug/L
Naphthalene	ND	5	ug/L
Phenanthrene	ND	5	ug/L
Pyrene	ND	5	ug/L
1-Methylnaphthalene	ND	5	ug/L

SURROGATES	AMOUNT SPIKED	% RECOVERY	LOWER LIMIT	UPPER LIMIT
Nitrobenzene-d5	50 ug/L	50	35	114
2-Fluorobiphenyl	50 ug/L	74	43	116
Terphenyl-d14	50 ug/L	88	33	141
Phenol-d5	75 ug/L	24	10	110
2-Fluorophenol	75 ug/L	48	21	110
2,4,6-Tribromophenol	75 ug/L	80	10	123

ANALYZED BY: YL
EXTRACTED BY: KL
METHOD: 8270C, Semivolatile Organics - Water
NOTES: * - Practical Quantitation Limit ND - Not Detected
NA - Not Analyzed**COMMENTS:**QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9805C92-02

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 06/12/98

PROJECT: Transwestern Pipeline
SITE: Roswell Sta. 9
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-15

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 05/27/98 17:30:00
DATE RECEIVED: 05/29/98

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
Alkalinity, as CaCO ₃ Method 310.1 * Analyzed by: JS Date: 06/08/98 10:00:00	110	1	mg/L	
Chloride Method 325.3 * Analyzed by: DAM Date: 06/09/98 11:00:00	500	10	mg/L	
Sulfate Method 375.4 * Analyzed by: TW Date: 06/10/98 11:30:00	2300	100	mg/L	
Total Dissolved Solids Method 160.1 * Analyzed by: KS Date: 06/01/98 16:18:00	2900	100	mg/L	
Nitrate-Nitrite, as N Method 353.3 * Analyzed by: DAM Date: 06/04/98 10:00:00	0.5	0.1	mg/L	
Liquid-liquid extraction SEMIVOLATILES Method 3520C *** Analyzed by: KL Date: 05/31/98 08:00:00	05/31/98			

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9805C92-02

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 06/12/98

PROJECT: Transwestern Pipeline
SITE: Roswell Sta. 9
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-15

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 05/27/98 17:30:00
DATE RECEIVED: 05/29/98

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
Silver, Total Method 6010B *** Analyzed by: JM Date: 06/11/98 10:03:00	ND	0.01	mg/L	
Arsenic, Total Method 7060A *** Analyzed by: PB Date: 06/10/98 14:30:00	ND	0.005	mg/L	
Barium, Total Method 6010B *** Analyzed by: JM Date: 06/11/98 10:03:00	0.009	0.005	mg/L	
Cadmium, Total Method 6010B *** Analyzed by: JM Date: 06/11/98 10:03:00	ND	0.005	mg/L	
Chromium, Total Method 6010B *** Analyzed by: JM Date: 06/11/98 10:03:00	ND	0.01	mg/L	
Copper, Total Method 6010B *** Analyzed by: JM Date: 06/11/98 10:03:00	ND	0.01	mg/L	

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9805C92-02

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 06/12/98

PROJECT: Transwestern Pipeline
SITE: Roswell Sta. 9
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-15

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 05/27/98 17:30:00
DATE RECEIVED: 05/29/98

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
Iron, Total Method 6010B *** Analyzed by: JM Date: 06/11/98 10:03:00	0.04	0.02	mg/L	
Mercury, Total Method 7470 A*** Analyzed by: AG Date: 06/12/98 14:07:00	ND	0.0002	mg/L	
Manganese, Total Method 6010B *** Analyzed by: JM Date: 06/11/98 10:03:00	0.006	0.005	mg/L	
Acid Digestion-Aqueous, ICP Method 3010A *** Analyzed by: GJ Date: 06/04/98 17:00:00	06/04/98			
Lead, Total Method 6010B *** Analyzed by: JM Date: 06/11/98 10:03:00	ND	0.05	mg/L	
Selenium, Total Method 7740 *** Analyzed by: PB Date: 06/10/98 17:08:00	ND	0.005	mg/L	

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.

**HOUSTON LABORATORY**

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 660-0901

Certificate of Analysis No. H9-9805C92-02

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 06/12/98

PROJECT: Transwestern Pipeline
SITE: Roswell Sta. 9
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-15

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 05/27/98 17:30:00
DATE RECEIVED: 05/29/98

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Zinc, Total	ND	0.02	mg/L
Method 6010B ***			
Analyzed by: JM			
Date: 06/12/98 09:10:00			

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9805C92-02

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

06/12/98

PROJECT: Transwestern Pipeline
SITE: Roswell Sta. 9
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-15

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 05/27/98 17:30:00
DATE RECEIVED: 05/29/98

ANALYTICAL DATA

PARAMETER	RESULTS	PQL*	UNITS
Benzene	ND	5	ug/L
Bromobenzene	ND	5	ug/L
Bromochloromethane	ND	5	ug/L
Bromodichloromethane	ND	5	ug/L
Bromoform	ND	5	ug/L
Bromomethane	ND	10	ug/L
n-Butylbenzene	ND	5	ug/L
sec-Butylbenzene	ND	5	ug/L
tert-Butylbenzene	ND	5	ug/L
Carbon tetrachloride	ND	5	ug/L
Chlorobenzene	ND	5	ug/L
Chlorodibromomethane	ND	5	ug/L
Chloroethane	ND	10	ug/L
Chloroform	ND	5	ug/L
Chloromethane	ND	10	ug/L
2-Chlorotoluene	ND	5	ug/L
4-Chlorotoluene	ND	5	ug/L
1,2-Dibromo-3-chloropropane	ND	5	ug/L
1,2-Dibromoethane	ND	5	ug/L
Dibromomethane	ND	5	ug/L
1,2-Dichlorobenzene	ND	5	ug/L
1,3-Dichlorobenzene	ND	5	ug/L
1,4-Dichlorobenzene	ND	5	ug/L
Dichlorodifluoromethane	ND	10	ug/L
1,1-Dichloroethane	ND	5	ug/L
1,2-Dichloroethane	ND	5	ug/L
1,1-Dichloroethene	ND	5	ug/L
cis-1,2-Dichloroethene	ND	5	ug/L
trans-1,2-Dichloroethene	ND	5	ug/L
1,2-Dichloropropane	ND	5	ug/L
1,3-Dichloropropane	ND	5	ug/L
2,2-Dichloropropane	ND	5	ug/L
1,1-Dichloropropene	ND	5	ug/L
Ethylbenzene	ND	5	ug/L
Hexachlorobutadiene	ND	5	ug/L
Isopropylbenzene	ND	5	ug/L
p-Isopropyltoluene	ND	5	ug/L
Methylene chloride	ND	5	ug/L

METHOD: 8260 Water, Volatile Organics
(continued on next page)

**HOUSTON LABORATORY**

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 660-0901

Certificate of Analysis No. H9-9805C92-02

Cypress Engineering, Inc.

SAMPLE ID: MW-15

PARAMETER	ANALYTICAL DATA (continued)		PQL*	UNITS
	RESULTS			
Naphthalene	ND	5		ug/L
n-Propylbenzene	ND	5		ug/L
Styrene	ND	5		ug/L
1,1,1,2-Tetrachloroethane	ND	5		ug/L
1,1,2,2-Tetrachloroethane	ND	5		ug/L
Tetrachloroethene	ND	5		ug/L
Toluene	ND	5		ug/L
1,2,3-Trichlorobenzene	ND	5		ug/L
1,2,4-Trichlorobenzene	ND	5		ug/L
1,1,1-Trichloroethane	ND	5		ug/L
1,1,2-Trichloroethane	ND	5		ug/L
Trichloroethene	ND	5		ug/L
Trichlorofluoromethane	ND	5		ug/L
1,2,3-Trichloropropane	ND	5		ug/L
1,2,4-Trimethylbenzene	ND	5		ug/L
1,3,5-Trimethylbenzene	ND	5		ug/L
Vinyl chloride	ND	10		ug/L
Xylenes (total)	ND	5		ug/L
Acetone	ND	100		ug/L
Carbon Disulfide	ND	5		ug/L
Vinyl Acetate	ND	10		ug/L
2-Butanone	ND	20		ug/L
1,2-Dichloroethene (total)	ND	5		ug/L
2-Chloroethylvinylether	ND	10		ug/L
4-Methyl-2-Pentanone	ND	10		ug/L
cis-1,3-Dichloropropene	ND	5		ug/L
trans-1,3-Dichloropropene	ND	5		ug/L
2-Hexanone	ND	10		ug/L
SURROGATES	AMOUNT SPIKED	% RECOVERY	LOWER LIMIT	UPPER LIMIT
1,2-Dichloroethane-d4	50 ug/L	90	76	114
Toluene-d8	50 ug/L	92	88	110
4-Bromofluorobenzene	50 ug/L	94	86	115

ANALYZED BY: JC

DATE/TIME: 05/31/98 07:13:00

METHOD: 8260 Water, Volatile Organics

NOTES: * - Practical Quantitation Limit

ND - Not Detected

NA - Not Analyzed

COMMENTS:

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.

**HOUSTON LABORATORY**

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 660-0901

Certificate of Analysis No. H9-9805C92-02

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

06/12/98

PROJECT: Transwestern Pipeline
SITE: Roswell Sta. 9
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-15

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 05/27/98 17:30:00
DATE RECEIVED: 05/29/98

ANALYTICAL DATA

PARAMETER	RESULTS	PQL*	UNITS
Acenaphthene	ND	5	ug/L
Acenaphthylene	ND	5	ug/L
Anthracene	ND	5	ug/L
Benzo(a)Anthracene	ND	5	ug/L
Benzo(b)Fluoranthene	ND	5	ug/L
Benzo(k)Fluoranthene	ND	5	ug/L
Benzo(a)Pyrene	ND	5	ug/L
Benzo(g,h,i)Perylene	ND	5	ug/L
Chrysene	ND	5	ug/L
Dibenz(a,h)Anthracene	ND	5	ug/L
Fluoranthene	ND	5	ug/L
Fluorene	ND	5	ug/L
Indeno(1,2,3-cd)Pyrene	ND	5	ug/L
2-Methylnaphthalene	ND	5	ug/L
Naphthalene	ND	5	ug/L
Phenanthrene	ND	5	ug/L
Pyrene	ND	5	ug/L
1-Methylnaphthalene	ND	5	ug/L

SURROGATES	AMOUNT SPIKED	% RECOVERY	LOWER LIMIT	UPPER LIMIT
Nitrobenzene-d5	50 ug/L	44	35	114
2-Fluorobiphenyl	50 ug/L	64	43	116
Terphenyl-d14	50 ug/L	82	33	141
Phenol-d5	75 ug/L	21	10	110
2-Fluorophenol	75 ug/L	40	21	110
2,4,6-Tribromophenol	75 ug/L	75	10	123

ANALYZED BY: YL DATE/TIME: 06/06/98 20:58:00
EXTRACTED BY: KL DATE/TIME: 05/31/98 08:00:00
METHOD: 8270C, Semivolatile Organics - Water
NOTES: * - Practical Quantitation Limit ND - Not Detected
 NA - Not Analyzed

COMMENTS:

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9805C92-03

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 06/12/98

PROJECT: Transwestern Pipeline
SITE: Roswell Sta. 9
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-8

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 05/27/98 10:40:00
DATE RECEIVED: 05/29/98

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
Alkalinity, as CaCO ₃ Method 310.1 * Analyzed by: JS Date: 06/08/98 10:00:00	131	1	mg/L	
Chloride Method 325.3 * Analyzed by: DAM Date: 06/09/98 11:00:00	370	10	mg/L	
Sulfate Method 375.4 * Analyzed by: TW Date: 06/10/98 11:30:00	2500	100	mg/L	
Total Dissolved Solids Method 160.1 * Analyzed by: KS Date: 06/01/98 16:18:00	2800	100	mg/L	
Nitrate-Nitrite, as N Method 353.3 * Analyzed by: DAM Date: 06/04/98 10:00:00	0.2	0.1	mg/L	
Liquid-liquid extraction SEMIVOLATILES Method 3520C *** Analyzed by: KL Date: 05/31/98 08:00:00	05/31/98			

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9805C92-03

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 06/12/98

PROJECT: Transwestern Pipeline
SITE: Roswell Sta. 9
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-8

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 05/27/98 10:40:00
DATE RECEIVED: 05/29/98

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
Silver, Total Method 6010B *** Analyzed by: JM Date: 06/11/98 10:03:00	ND	0.01	mg/L	
Arsenic, Total Method 7060A *** Analyzed by: PB Date: 06/10/98 14:30:00	ND	0.005	mg/L	
Barium, Total Method 6010B *** Analyzed by: JM Date: 06/11/98 10:03:00	ND	0.005	mg/L	
Cadmium, Total Method 6010B *** Analyzed by: JM Date: 06/11/98 10:03:00	ND	0.005	mg/L	
Chromium, Total Method 6010B *** Analyzed by: JM Date: 06/11/98 10:03:00	ND	0.01	mg/L	
Copper, Total Method 6010B *** Analyzed by: JM Date: 06/11/98 10:03:00	ND	0.01	mg/L	

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.

**HOUSTON LABORATORY**8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9805C92-03

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 06/12/98

PROJECT: Transwestern Pipeline
SITE: Roswell Sta. 9
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-8**PROJECT NO:**
MATRIX: WATER
DATE SAMPLED: 05/27/98 10:40:00
DATE RECEIVED: 05/29/98

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
Iron, Total Method 6010B *** Analyzed by: JM Date: 06/11/98 10:03:00	0.03	0.02	mg/L	
Mercury, Total Method 7470 A*** Analyzed by: AG Date: 06/12/98 14:07:00	ND	0.0002	mg/L	
Manganese, Total Method 6010B *** Analyzed by: JM Date: 06/11/98 10:03:00	ND	0.005	mg/L	
Acid Digestion-Aqueous, ICP Method 3010A *** Analyzed by: GJ Date: 06/04/98 17:00:00	06/04/98			
Lead, Total Method 6010B *** Analyzed by: JM Date: 06/11/98 10:03:00	ND	0.05	mg/L	
Selenium, Total Method 7740 *** Analyzed by: PB Date: 06/10/98 17:08:00	ND	0.005	mg/L	

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9805C92-03

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 06/12/98

PROJECT: Transwestern Pipeline
SITE: Roswell Sta. 9
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-8

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 05/27/98 10:40:00
DATE RECEIVED: 05/29/98

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
Zinc, Total	ND	0.02	mg/L	
Method 6010B ***				
Analyzed by: JM				
Date: 06/12/98 09:10:00				

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9805C92-03

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

06/12/98

PROJECT: Transwestern Pipeline
SITE: Roswell Sta. 9
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-8

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 05/27/98 10:40:00
DATE RECEIVED: 05/29/98

ANALYTICAL DATA			
PARAMETER	RESULTS	PQL*	UNITS
Benzene	ND	5	ug/L
Bromobenzene	ND	5	ug/L
Bromochloromethane	ND	5	ug/L
Bromodichloromethane	ND	5	ug/L
Bromoform	ND	5	ug/L
Bromomethane	ND	10	ug/L
n-Butylbenzene	ND	5	ug/L
sec-Butylbenzene	ND	5	ug/L
tert-Butylbenzene	ND	5	ug/L
Carbon tetrachloride	ND	5	ug/L
Chlorobenzene	ND	5	ug/L
Chlorodibromomethane	ND	5	ug/L
Chloroethane	ND	10	ug/L
Chloroform	ND	5	ug/L
Chloromethane	ND	10	ug/L
2-Chlorotoluene	ND	5	ug/L
4-Chlorotoluene	ND	5	ug/L
1,2-Dibromo-3-chloropropane	ND	5	ug/L
1,2-Dibromoethane	ND	5	ug/L
Dibromomethane	ND	5	ug/L
1,2-Dichlorobenzene	ND	5	ug/L
1,3-Dichlorobenzene	ND	5	ug/L
1,4-Dichlorobenzene	ND	5	ug/L
Dichlorodifluoromethane	ND	10	ug/L
1,1-Dichloroethane	ND	5	ug/L
1,2-Dichloroethane	ND	5	ug/L
1,1-Dichloroethene	ND	5	ug/L
cis-1,2-Dichloroethene	ND	5	ug/L
trans-1,2-Dichloroethene	ND	5	ug/L
1,2-Dichloropropane	ND	5	ug/L
1,3-Dichloropropane	ND	5	ug/L
2,2-Dichloropropane	ND	5	ug/L
1,1-Dichloropropene	ND	5	ug/L
Ethylbenzene	ND	5	ug/L
Hexachlorobutadiene	ND	5	ug/L
Isopropylbenzene	ND	5	ug/L
p-Isopropyltoluene	ND	5	ug/L
Methylene chloride	ND	5	ug/L

METHOD: 8260 Water, Volatile Organics
(continued on next page)



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9805C92-03

Cypress Engineering, Inc.

SAMPLE ID: MW-8

ANALYTICAL DATA (continued)				
PARAMETER	RESULTS	PQL*	UNITS	
Naphthalene	ND	5	ug/L	
n-Propylbenzene	ND	5	ug/L	
Styrene	ND	5	ug/L	
1,1,1,2-Tetrachloroethane	ND	5	ug/L	
1,1,2,2-Tetrachloroethane	ND	5	ug/L	
Tetrachloroethene	ND	5	ug/L	
Toluene	ND	5	ug/L	
1,2,3-Trichlorobenzene	ND	5	ug/L	
1,2,4-Trichlorobenzene	ND	5	ug/L	
1,1,1-Trichloroethane	ND	5	ug/L	
1,1,2-Trichloroethane	ND	5	ug/L	
Trichloroethene	ND	5	ug/L	
Trichlorofluoromethane	ND	5	ug/L	
1,2,3-Trichloropropane	ND	5	ug/L	
1,2,4-Trimethylbenzene	ND	5	ug/L	
1,3,5-Trimethylbenzene	ND	5	ug/L	
Vinyl chloride	ND	10	ug/L	
Xylenes (total)	ND	5	ug/L	
Acetone	ND	100	ug/L	
Carbon Disulfide	ND	5	ug/L	
Vinyl Acetate	ND	10	ug/L	
2-Butanone	ND	20	ug/L	
1,2-Dichloroethene (total)	ND	5	ug/L	
2-Chloroethylvinylether	ND	10	ug/L	
4-Methyl-2-Pentanone	ND	10	ug/L	
cis-1,3-Dichloropropene	ND	5	ug/L	
trans-1,3-Dichloropropene	ND	5	ug/L	
2-Hexanone	ND	10	ug/L	
SURROGATES	AMOUNT SPIKED	% RECOVERY	LOWER LIMIT	UPPER LIMIT
1,2-Dichloroethane-d4	50 ug/L	90	76	114
Toluene-d8	50 ug/L	92	88	110
4-Bromofluorobenzene	50 ug/L	92	86	115

ANALYZED BY: JC

DATE/TIME: 05/31/98 07:38:00

METHOD: 8260 Water, Volatile Organics

NOTES: * - Practical Quantitation Limit

ND - Not Detected

NA - Not Analyzed

COMMENTS:

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9805C92-03

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

06/12/98

PROJECT: Transwestern Pipeline
SITE: Roswell Sta. 9
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-8

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 05/27/98 10:40:00
DATE RECEIVED: 05/29/98

ANALYTICAL DATA				
PARAMETER	RESULTS	PQL*	UNITS	
Acenaphthene	ND	5	ug/L	
Acenaphthylene	ND	5	ug/L	
Anthracene	ND	5	ug/L	
Benzo(a)Anthracene	ND	5	ug/L	
Benzo(b)Fluoranthene	ND	5	ug/L	
Benzo(k)Fluoranthene	ND	5	ug/L	
Benzo(a)Pyrene	ND	5	ug/L	
Benzo(g,h,i)Perylene	ND	5	ug/L	
Chrysene	ND	5	ug/L	
Dibenz(a,h)Anthracene	ND	5	ug/L	
Fluoranthene	ND	5	ug/L	
Fluorene	ND	5	ug/L	
Indeno(1,2,3-cd)Pyrene	ND	5	ug/L	
2-Methylnaphthalene	ND	5	ug/L	
Naphthalene	ND	5	ug/L	
Phenanthrene	ND	5	ug/L	
Pyrene	ND	5	ug/L	
1-Methylnaphthalene	ND	5	ug/L	
SURROGATES	AMOUNT SPIKED	% RECOVERY	LOWER LIMIT	UPPER LIMIT
Nitrobenzene-d5	50 ug/L	36	35	114
2-Fluorobiphenyl	50 ug/L	50	43	116
Terphenyl-d14	50 ug/L	58	33	141
Phenol-d5	75 ug/L	17	10	110
2-Fluorophenol	75 ug/L	25	21	110
2,4,6-Tribromophenol	75 ug/L	48	10	123

ANALYZED BY: YL
EXTRACTED BY: KL
METHOD: 8270C, Semivolatile Organics - Water
NOTES: * - Practical Quantitation Limit ND - Not Detected
NA - Not Analyzed

COMMENTS:

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.

QUALITY CONTROL
DOCUMENTATION

3A
WATER VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: SPL

Contract:

Lab Code:

Case No.: 9805C92 SAS No.:

SDG No.:

Matrix Spike - EPA Sample No.: MW-8

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC #	QC. LIMITS REC.
1,1-Dichloroethene	50	0	52	104	61-145
Trichloroethene	50	0	44	88	71-120
Benzene	50	0	45	90	76-127
Toluene	50	0	40	80	76-125
Chlorobenzene	50	0	45	90	75-130

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC #	% RPD #	QC LIMITS	
					RPD	REC.
1,1-Dichloroethene	50	47	94	10	14	61-145
Trichloroethene	50	42	84	5	14	71-120
Benzene	50	44	88	2	11	76-127
Toluene	50	38	76	5	13	76-125
Chlorobenzene	50	43	86	5	13	75-130

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 5 outside limits

Spike Recovery: 0 out of 10 outside limits

SPL Houston Labs

RECOVERY REPORT

Client Name: Client SDG: n980530
Sample Matrix: LIQUID Fraction: VOA
Lab Smp Id: LCS
Level: LOW Operator: JC
Data Type: MS DATA SampleType: LCS
SpikeList File: 8260 water.spk Quant Type: ISTD
Sublist File: 8260.sub
Method File: /var/chem/n.i/n980530a.b/n8260w.m
Misc Info: N150W2//N150CW2

SPIKE COMPOUND	CONC ADDED ug/L	CONC RECOVERED ug/L	% RECOVERED	LIMITS
8 1,1-Dichloroethene	50	49	98.00	61-145
29 Trichloroethene	50	52	104.00	71-120
25 Benzene	50	52	104.00	76-127
37 Toluene	50	46	92.00	76-125
45 Chlorobenzene	50	50	100.00	75-130

SURROGATE COMPOUND	CONC ADDED ug/L	CONC RECOVERED ug/L	% RECOVERED	LIMITS
\$ 21 1,2-Dichloroethane	50	47	94.00	76-114
\$ 36 Toluene-d8	50	47	94.00	88-110
\$ 56 Bromofluorobenzene	50	49	98.00	86-115



SPL Blank QC Report

HOUSTON LABORATORY

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 660-0901

page 1

Matrix: Aqueous
Sample ID: VLBLK
Batch: N980530122724

Reported on: 06/03/98 16:09
Analyzed on: 05/30/98 23:35
Analyst: JC

METHOD 8260/8240 N150B03

Compound	Result	Detection Limit	Units
Dichlorodifluoromethane	ND	10	ug/L
Chloromethane	ND	10	ug/L
Vinyl Chloride	ND	10	ug/L
Bromomethane	ND	10	ug/L
Chloroethane	ND	10	ug/L
Trichlorofluoromethane	ND	5	ug/L
Acetone	ND	100	ug/L
1,1-Dichloroethene	ND	5	ug/L
Methylene Chloride	ND	5	ug/L
Carbon Disulfide	ND	5	ug/L
trans-1,2-Dichloroethene	ND	5	ug/L
1,1-Dichloroethane	ND	5	ug/L
Vinyl Acetate	ND	10	ug/L
2-Butanone	ND	20	ug/L
cis-1,2-Dichloroethene	ND	5	ug/L
1,2-Dichloroethene (total)	ND	5	ug/L
2,2-Dichloropropane	ND	5	ug/L
Bromochloromethane	ND	5	ug/L
Chloroform	ND	5	ug/L
1,1,1-Trichloroethane	ND	5	ug/L
1,2-Dichloroethane	ND	5	ug/L
1,1-Dichloropropene	ND	5	ug/L
Benzene	ND	5	ug/L
Carbon Tetrachloride	ND	5	ug/L
1,2-Dichloropropane	ND	5	ug/L
Trichloroethene	ND	5	ug/L
Dibromomethane	ND	5	ug/L
Bromodichloromethane	ND	5	ug/L
2-Chloroethylvinylether	ND	10	ug/L
4-Methyl-2-Pentanone	ND	10	ug/L
cis-1,3-Dichloropropene	ND	5	ug/L
trans-1,3-Dichloropropene	ND	5	ug/L
Toluene	ND	5	ug/L
1,1,2-Trichloroethane	ND	5	ug/L

Notes

ND - Not detected.



SPL Blank QC Report

HOUSTON LABORATORY

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 660-0801

page

2

Matrix: Aqueous
Sample ID: VLBLK
Batch: N980530122724

Reported on: 06/03/98 16:09
Analyzed on: 05/30/98 23:35
Analyst: JC

METHOD 8260/8240 N150B03

Compound	Result	Detection Limit	Units
1,3-Dichloropropane	ND	5	ug/L
2-Hexanone	ND	10	ug/L
Dibromochloromethane	ND	5	ug/L
1,2-Dibromoethane	ND	5	ug/L
Tetrachloroethene	ND	5	ug/L
Chlorobenzene	ND	5	ug/L
1,1,1,2-Tetrachloroethane	ND	5	ug/L
Ethylbenzene	ND	5	ug/L
Bromoform	ND	5	ug/L
Styrene	ND	5	ug/L
Xylene (Total)	ND	5	ug/L
1,1,2,2-Tetrachloroethane	ND	5	ug/L
1,2,3-Trichloropropane	ND	5	ug/L
Isopropylbenzene	ND	5	ug/L
Bromobenzene	ND	5	ug/L
N-Propylbenzene	ND	5	ug/L
2-Chlorotoluene	ND	5	ug/L
4-Chlorotoluene	ND	5	ug/L
1,3,5-Trimethylbenzene	ND	5	ug/L
tert-Butylbenzene	ND	5	ug/L
1,2,4-Trimethylbenzene	ND	5	ug/L
1,3-Dichlorobenzene	ND	5	ug/L
sec-Butylbenzene	ND	5	ug/L
1,4-Dichlorobenzene	ND	5	ug/L
p-Isopropyltoluene	ND	5	ug/L
1,2-Dichlorobenzene	ND	5	ug/L
n-Butylbenzene	ND	5	ug/L
1,2-Dibromo-3-Chloropropan	ND	5	ug/L
1,2,4-Trichlorobenzene	ND	5	ug/L
Naphthalene	ND	5	ug/L
Hexachlorobutadiene	ND	5	ug/L
1,2,3-Trichlorobenzene	ND	5	ug/L

Notes

ND - Not detected.



SPL Blank QC Report

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 669-0903

Page 3

Matrix: Aqueous
Sample ID: VLBLK
Batch: N980530122724

Reported on: 06/03/98 16:09
Analyzed on: 05/30/98 23:35
Analyst: JC

METHOD 8260/8240 N150B03

Surrogate	Result	QC Criteria	Units
1,2-Dichloroethane-d4	90	76-114	% Recovery
Toluene-d8	92	88-110	% Recovery
Bromofluorobenzene	94	86-115	% Recovery

Samples in Batch 9805C92-01 9805C92-02 9805C92-03

Notes

ND - Not detected.

3C

WATER SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: SPL

Contract:

Lab Code:

Case No:

9805D75

SAS No:

SDG No:

Matrix Spike - EPA

Sample No:

MW-2

Level (low/med):

	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC #	QC LIMITS REC
Phenol	75	0	22	29	12-110
2-Chlorophenol	75	0	46	61	27-123
1,4-Dichlorobenzene	50	0	35	70	36- 97
N-Nitroso-di-n-propylamine	50	0	33	66	41-116
1,2,4-Trichlorobenzene	50	0	38	76	39- 98
4-Chloro-3-methylphenol	75	0	65	87	23- 97
Acenaphthene	50	0	39	78	46-118
4-Nitrophenol	75	0	29	39	30-150
2,4-Dinitrotoluene	50	0	35	70	50-150
Pentachlorophenol	75	0	73	97	9-125
Pyrene	50	0	42	84	26-127

	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC #	% RPD #	QC LIMITS	
					RPD	REC
Phenol	75	12	16	58 *	42	12-110
2-Chlorophenol	75	28	37	49 *	40	27-132
1,4-Dichlorobenzene	50	24	48	37 *	28	36- 97
N-Nitroso-di-n-propylamine	50	23	46	36	38	41-116
1,2,4-Trichlorobenzene	50	26	52	38 *	28	39- 98
4-Chloro-3-methylphenol	75	47	63	32	42	23- 97
Acenaphthene	50	30	60	26	31	46-118
4-Nitrophenol	75	22	29 *	29	50	30-150
2,4-Dinitrotoluene	50	30	60	15	50	50-150
Pentachlorophenol	75	58	77	23	50	9-125
Pyrene	50	41	82	2	31	26-127

Column to be used to flag recovery and RPD values with an asterisk

* Amount outside QC limits due to matrix interference

RPD: 4 out of 11 outside limits
Spike Recovery: 1 out of 22 outside limits

SPL Houston Labs

RECOVERY REPORT

Client Name:
Sample Matrix: LIQUID
Lab Smp Id: METHSPIKE-8270W
Level: LOW

Client SDG: p980609
Fraction: SV

Data Type: MS DATA
SpikeList File: 8270w.spk
Sublist File: lcs.sub
Method File: /var/chem/p.i/p980609.b/p8270cw.m
Misc Info: E151F3/H151B03/P160CC2

Operator: RY
SampleType: MSD
Quant Type: ISTD

SPIKE COMPOUND	CONC ADDED ug/L	CONC RECOVERED ug/L	% RECOVERED	LIMITS
5 Phenol	75	33	44.00	12-110
9 2-Chlorophenol	75	51	68.00	27-123
12 1,4-Dichlorobenzen	50	33	66.00	36-97
21 N-Nitroso-di-n-pro	50	40	80.00	41-116
31 1,2,4-Trichloroben	50	35	70.00	39-98
36 4-Chloro-3-methyl-p	75	62	82.67	23-97
49 Acenaphthene	50	39	78.00	46-118
51 4-Nitrophenol	75	38	50.67	30-150
53 2,4-Dinitrotoluene	50	36	72.00	50-150
64 Pentachloropheno	75	41	54.67	9-125
71 Pyrene	50	39	78.00	26-127

SURROGATE COMPOUND	CONC ADDED ug/L	CONC RECOVERED ug/L	% RECOVERED	LIMITS
\$ 23 Nitrobenzene-d5	50	37	74.00	35-114
\$ 41 2-Fluorobiphenyl	50	40	80.00	43-116
\$ 72 Terphenyl-d14	50	26	52.00	33-141
\$ 3 2-Fluorophenol	75	45	60.00	21-110
\$ 4 Phenol-d5	75	32	42.67	10-110
\$ 61 2,4,6-Tribromophen	75	69	92.00	10-123



SPL Blank QC Report

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 966-0900

Matrix: Aqueous
Sample ID: BLANK
Batch: E980531042258

Reported on: 06/10/98 16:05
Analyzed on: 06/06/98 13:53
Analyst: YL

METHOD 8270 H151B03

C o m p o u n d	Result	Detection Limit	Units
Naphthalene	ND	5	ug/L
2-Methylnaphthalene	ND	5	ug/L
1-Methylnaphthalene	ND	5	ug/L
Acenaphthylene	ND	5	ug/L
Acenaphthene	ND	5	ug/L
Fluorene	ND	5	ug/L
Phenanthrene	ND	5	ug/L
Anthracene	ND	5	ug/L
Fluoranthene	ND	5	ug/L
Pyrene	ND	5	ug/L
Benzo[a]anthracene	ND	5	ug/L
Chrysene	ND	5	ug/L
Benzo[b]fluoranthene	ND	5	ug/L
Benzo[k]fluoranthene	ND	5	ug/L
Benzo[a]pyrene	ND	5	ug/L
Indeno[1,2,3-cd]pyrene	ND	5	ug/L
Dibenz[a,h]anthracene	ND	5	ug/L
Benzo[g,h,i]perylene	ND	5	ug/L

S u r r o g a t e	Result	QC Criteria	Units
2-Fluorophenol	47	21-110	% Recovery
Phenol-d5	35	10-110	% Recovery
2,4,6-Tribromophenol	72	10-123	% Recovery
Nitrobenzene-d5	66	35-114	% Recovery
2-Fluorobiphenyl	80	43-116	% Recovery
Terphenyl-d14	88	33-141	% Recovery

Samples in Batch 9805C92-01 9805C92-02 9805C92-03

Notes

ND - Not detected.

Analyst: JMEG
HUNTEN LABORATORY

HOUSTON, TEXAS 77054

Checked (713) 660-0901

Cheeked (713) 660-0901

852110

Work Orders in Batch	
Work Order	Fractions

98-06-156 01D

Work Order Spiked: 9805C92-01E

[illegible]

ICP Spectroscopy Method 6010 Quality Control Report



Matrix: Water

Units: mg/L

Analyst: JMS

HOUSTON LABORATORY

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

Phone: (713) 660-0901

Date: 061298 Time: 0910 File Name: 061298M2

Checked: gm 6/15/98

Laboratory Control Sample

Element	Mth. Blank	True Value	Result	% Recovery	Lower Limit	Upper Limit
Silver						
Aluminum						
Arsenic						
Barium	ND	2.00	1.98	99	1.60	2.40
Beryllium						
Calcium	ND	20.00	19.38	97	16.00	24.00
Cadmium						
Cobalt						
Chromium	ND	2.00	1.93	97	1.60	2.40
Copper						
Iron	ND	2.00	1.94	97	1.60	2.40
Potassium	ND	20.00	19.33	97	16.00	24.00
Magnesium	ND	20.00	19.48	97	16.00	24.00
Manganese						
Sodium						
Nickel						
Lead						
Antimony						
Selenium						
Thallium						
Vanadium						
Zinc	ND	2.00	1.92	96	1.60	2.40

Work Orders in Batch

Work Order	Fractions
98-06-543	03A
98-06-545	03A
98-06-554	02B
98-05-C92	01E-03E
98-05-C90	01E-03E
98-05-D86	01E-03E

Matrix Spike - Spike Duplicate Results

Work Order Spiked: 9806543-03A

Element	Sample Result	Spike Added	Matrix Spike Result	Matrix Spike Recovery	Matrix Spike Duplicate Result	Matrix Spike Duplicate Recovery	QC Limits % Recovery	Spike RPD %	QC Limits %
Silver									
Aluminum									
Arsenic									
Barium	7.944	1.0	9.806	186.2 *	9.973	202.9 *	80 120	8.6	20.0
Beryllium									
Calcium	78.14	10.0	91.73	135.9 *	94.32	161.8 *	80 120	17.4	20.0
Cadmium									
Cobalt									
Chromium	1.241	1.0	2.179	93.8	2.228	98.7	80 120	5.1	20.0
Copper									
Iron	17.75	1.0	27.41	966.0 *	28.24	1049.0 *	80 120	8.2	20.0
Potassium	13.21	10.0	30.67	174.6 *	32.04	188.3 *	80 120	7.6	20.0
Magnesium	6.772	10.0	18.3	115.3	18.8	120.3 *	80 120	4.2	20.0
Manganese									
Sodium									
Nickel									
Lead									
Antimony									
Selenium									
Thallium									
Vanadium									
Zinc	0.1986	1.0	1.084	88.5	1.11	91.1	80 120	2.9	20.0

* Spike Results Outside Method Limits

**HOUSTON LABORATORY**

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 660-0901

**** SPL QUALITY CONTROL REPORT ****

Matrix: Aqueous

Reported on: 06/10/98

Analyzed on: 06/10/98

Analyst: PB

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Arsenic, Total
Method 7060A ***

SPL Sample ID Number	Blank Value ug/L	LCS Concentration ug/L	Measured Concentration ug/L	% Recovery	QC Limits Recovery
LCS	ND	40.0	43.5	109	80 - 120

-9806461

Samples in batch:

9805C90-01E	9805C90-02E	9805C90-03E	9805C92-01E
9805C92-02E	9805C92-03E	9805D86-01E	9805D86-02E
9805D86-03E	9805D87-01E	9805D87-02E	9806079-01E
9806079-02E	9806086-01D	9806116-02F	9806156-01D

COMMENTS:

LCS = SPL ID # 97-839-258-1

** VALUES OUTSIDE QC RANGE.



** SPL QUALITY CONTROL REPORT **

HOUSTON LABORATORY

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 660-0901

Matrix: Aqueous

Reported on: 06/10/98

Analyzed on: 06/10/98

Analyst: PB

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Arsenic, Total
Method 7060A ***

SPL Sample	Method	Sample	Spike	Matrix Spike		Matrix Spike Duplicate		RPD	QC LIMITS (Advisory)	
ID Number	Blank ug/L	Result ug/L	Added ug/L	Result ug/L	Recovery %	Result ug/L	Recovery %	(%)	RPD Max	% REC
9806079-01E	ND	ND	40.0	36.3	90.8	44.8	112	21 **	20	75 -125

-9806461

Samples in batch:

9805C90-01E	9805C90-02E	9805C90-03E	9805C92-01E
9805C92-02E	9805C92-03E	9805D86-01E	9805D86-02E
9805D86-03E	9805D87-01E	9805D87-02E	9806079-01E
9806079-02E	9806086-01D	9806116-02F	9806156-01D

COMMENTS:

LCS = SPL ID # 97-839-258-1

** VALUES OUTSIDE QC RANGE.

**HOUSTON LABORATORY**

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 660-0901

**** SPL QUALITY CONTROL REPORT ****

Matrix: Aqueous

Reported on: 06/12/98

Analyzed on: 06/12/98

Analyst: AG

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Mercury, Total
Method 7470 A***

SPL Sample ID Number	Blank Value ug/L	LCS Concentration ug/L	Measured Concentration ug/L	% Recovery	QC Limits Recovery
LCS	ND	2.00	2.05	102	80 - 120

-9806519

Samples in batch:

9805C90-01E	9805C90-02E	9805C90-03E	9805C92-01E
9805C92-02E	9805C92-03E	9805D63-01A	9805D75-01E
9805D75-02E	9805D75-03E	9805D86-01E	9805D86-02E
9805D86-03E	9805D87-01E	9805D87-02E	9806116-02F
9806156-01D	9806460-11B	9806460-12B	9806497-03B

COMMENTS:

LCS = SPL ID# 94-452-45-21



©

** SPL QUALITY CONTROL REPORT **

HOUSTON LABORATORY

8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Matrix: Aqueous

Reported on: 06/12/98

Analyzed on: 06/12/98

Analyst: AG

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Mercury, Total
Method 7470 A***

SPL Sample	Method	Sample	Spike	Matrix Spike		Matrix Spike Duplicate		RPD	QC LIMITS (Advisory)		
ID Number	Blank	Result	Added	Result	Recovery	Result	Recovery	(%)	RPD	% REC	
	ug/L	ug/L	ug/L	ug/L	%	ug/L	%		Max		
9805C90-01E	ND	ND	2.00	2.06	103	1.94	97.0	6.0	20	75	-125

-9806519

Samples in batch:

9805C90-01E	9805C90-02E	9805C90-03E	9805C92-01E
9805C92-02E	9805C92-03E	9805D63-01A	9805D75-01E
9805D75-02E	9805D75-03E	9805D86-01E	9805D86-02E
9805D86-03E	9805D87-01E	9805D87-02E	9806116-02F
9806156-01D	9806460-11B	9806460-12B	9806497-03B

COMMENTS:

LCS = SPL ID# 94-452-45-21

**HOUSTON LABORATORY**

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 660-0901

**** SPL QUALITY CONTROL REPORT ****

Matrix: Aqueous

Reported on: 06/10/98

Analyzed on: 06/10/98

Analyst: PB

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Selenium, Total
Method 7740 ***

SPL Sample ID Number	Blank Value ug/L	LCS Concentration ug/L	Measured Concentration ug/L	% Recovery	QC Limits Recovery
LCS	ND	40.0	43.5	109	80 - 120

-9806454

Samples in batch:

9805C90-01E	9805C90-02E	9805C90-03E	9805C92-01E
9805C92-02E	9805C92-03E	9805D86-01E	9805D86-02E
9805D86-03E	9805D87-01E	9805D87-02E	9806079-01E
9806079-02E	9806086-01D	9806156-01D	

COMMENTS:

LCS = SPL ID # 97-839-258-1



** SPL QUALITY CONTROL REPORT **

HOUSTON LABORATORY

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 660-0901

Matrix: Aqueous

Reported on: 06/10/98

Analyzed on: 06/10/98

Analyst: PB

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Selenium, Total
Method 7740 ***

SPL Sample	Method	Sample	Spike	Matrix Spike		Matrix Spike Duplicate		RPD	QC LIMITS (Advisory)	
ID Number	Blank ug/L	Result ug/L	Added ug/L	Result ug/L	Recovery %	Result ug/L	Recovery %	(%)	RPD Max	% REC
9806079-01E	ND	ND	40.0	33.4	83.5	37.6	94.0	12	20	75 -125

-9806454

Samples in batch:

9805C90-01E 9805C90-02E 9805C90-03E 9805C92-01E
9805C92-02E 9805C92-03E 9805D86-01E 9805D86-02E
9805D86-03E 9805D87-01E 9805D87-02E 9806079-01E
9806079-02E 9806086-01D 9806156-01D

COMMENTS:

LCS = SPL ID # 97-839-2S8-1

**HOUSTON LABORATORY**

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 660-0901

**** SPL QUALITY CONTROL REPORT ****

Matrix: Aqueous

Reported on: 06/09/98

Analyzed on: 06/08/98

Analyst: JS

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Alkalinity, as CaCO₃
Method 310.1 *

SPL Sample ID Number	Blank Value mg/L	LCS Concentration mg/L	Measured Concentration mg/L	% Recovery	QC Limits Recovery
LCS	ND	65	63	96.9	95 - 113

-9806389

Samples in batch:

9805B64-01B	9805B64-02B	9805B64-03B	9805B64-04B
9805B64-05B	9805C90-01B	9805C90-02B	9805C90-03B
9805C92-01B	9805C92-02B	9805C92-03B	9805D86-01B
9805D86-02B	9805D86-03B	9805D87-01B	9805D87-02B

COMMENTS:

SPL LCS ID# 95535192-24

**HOUSTON LABORATORY**

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 660-0901

**** SPL QUALITY CONTROL REPORT ****

Matrix: Aqueous

Reported on: 06/09/98

Analyzed on: 06/08/98

Analyst: JS

This sample was randomly selected for use in the SPL quality control program. The results are as follows:

Alkalinity, as CaCO₃
Method 310.1 *

-- DUPLICATE ANALYSIS --

SPL Sample ID	Original Sample Concentration mg/L	Duplicate Sample mg/L	RPD	RPD Max.
9805B64-01B	101.0	102.4	1.4	18

-9806388

Samples in batch:

9805B64-01B	9805B64-02B	9805B64-03B	9805B64-04B
9805B64-05B	9805C90-01B	9805C90-02B	9805C90-03B
9805C92-01B	9805C92-02B		

COMMENTS:

**HOUSTON LABORATORY**

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 06/09/98

Analyzed on: 06/08/98

Analyst: JS

This sample was randomly selected for use in the SPL quality control program. The results are as follows:

Alkalinity, as CaCO₃

Method 310.1 *

-- DUPLICATE ANALYSIS --

SPL Sample ID	Original Sample Concentration mg/L	Duplicate Sample mg/L	RPD	RPD Max.
9805C92-03B	130.6	131.8	0.9	18

-9806392

Samples in batch:

9805C92-03B

9805D86-01B

9805D86-02B

9805D86-03B

9805D87-01B

9805D87-02B

COMMENTS:

SPL LCS ID# 95535192-24

**HOUSTON LABORATORY**

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 660-0901

**** SPL QUALITY CONTROL REPORT ****

Matrix: Aqueous

Reported on: 06/09/98

Analyzed on: 06/09/98

Analyst: DAM

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Chloride
Method 325.3 *

SPL Sample ID Number	Blank Value mg/L	LCS Concentration mg/L	Measured Concentration mg/L	% Recovery	QC Limits Recovery
LCS	ND	116	117	101	94 - 106

-9806445

Samples in batch:

9805B64-01B	9805B64-02B	9805B64-03B	9805B64-04B
9805B64-05B	9805C22-01E	9805C60-01B	9805C60-02B
9805C60-03B	9805C60-04B	9805C90-01B	9805C90-02B
9805C90-03B	9805C92-01B	9805C92-02B	9805C92-03B
9806135-02A			

COMMENTS:

LCS = SPL ID#:94453192-24



** SPL QUALITY CONTROL REPORT **

HOUSTON LABORATORY

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 660-0901

Matrix: Aqueous

Reported on: 06/09/98

Analyzed on: 06/09/98

Analyst: DAM

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Chloride
Method 325.3 *

SPL Sample	Method	Sample	Spike	Matrix Spike		Matrix Spike Duplicate		RPD	QC LIMITS (Advisory)	
ID Number	Blank mg/L	Result mg/L	Added mg/L	Result mg/L	Recovery %	Result mg/L	Recovery %	(%)	RPD Max	% REC
9805C60-01B	ND	48.50	50.0	99.32	102	100.21	103	1.0	5	92 -109

-9806443

Samples in batch:

9805C60-01B 9805C60-02B 9805C60-03B 9805C60-04B
9805C92-01B 9805C92-02B 9805C92-03B

COMMENTS:



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 06/10/98

Analyzed on: 06/10/98

Analyst: TW

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Sulfate
Method 375.4 *

SPL Sample ID Number	Blank Value mg/L	LCS Concentration mg/L	Measured Concentration mg/L	% Recovery	QC Limits Recovery
LCS	ND	4.52	4.51	99.8	82 - 111

-9806441

Samples in batch:

9805B64-01B	9805B64-02B	9805B64-03B	9805B64-04B
9805B64-05B	9805B97-01A	9805B97-02A	9805C22-01E
9805C90-01B	9805C90-02B	9805C90-03B	9805C92-01B
9805C92-02B	9805C92-03B	9805D86-01B	9805D86-02B
9805D86-03B	9805D87-01B	9805D87-02B	9806135-02A

COMMENTS:

LCS#94453183-1



** SPL QUALITY CONTROL REPORT **

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Matrix: Aqueous

Reported on: 06/10/98

Analyzed on: 06/10/98

Analyst: TW

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Sulfate
Method 375.4 *

SPL Sample	Method	Sample	Spike	Matrix Spike		Matrix Spike Duplicate		RPD	QC LIMITS (Advisory)		
ID Number	Blank	Result	Added	Result	Recovery	Result	Recovery	(%)	RPD	% REC	
	mg/L	mg/L	mg/L	mg/L	%	mg/L	%		Max		
9805C92-01B	ND	8.54	10.0	20.20	117	19.46	109	7.1	9.5	84	-120

-9806440

Samples in batch:

9805C90-01B	9805C90-03B	9805C92-01B	9805C92-02B
9805C92-03B	9805D86-01B	9805D86-02B	9805D86-03B
9805D87-01B	9805D87-02B		

COMMENTS:



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 06/02/98

Analyzed on: 06/01/98

Analyst: KS

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Total Dissolved Solids
Method 160.1 *

SPL Sample ID Number	Blank Value mg/L	LCS Concentration mg/L	Measured Concentration mg/L	% Recovery	QC Limits Recovery
LCS	ND	430.5	408	94.8	93 - 107

-9806076

Samples in batch:

9805B68-01G	9805B68-02G	9805C22-01C	9805C90-01B
9805C90-02B	9805C90-03B	9805C92-01B	9805C92-02B
9805C92-03B			

COMMENTS:

SPL LCS ID# 95535200-19

**HOUSTON LABORATORY**

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 660-0901

**** SPL QUALITY CONTROL REPORT ****

Matrix: Aqueous

Reported on: 06/02/98

Analyzed on: 06/01/98

Analyst: KS

This sample was randomly selected for use in the SPL quality control program. The results are as follows:

Total Dissolved Solids
Method 160.1 *

-- DUPLICATE ANALYSIS --

SPL Sample ID	Original Sample Concentration mg/L	Duplicate Sample mg/L	RPD	RPD Max.
9805C22-01C	1500	1550	3.3	5

-9806075

Samples in batch:

9805B68-01G	9805B68-02G	9805C22-01C	9805C90-01B
9805C90-02B	9805C90-03B	9805C92-01B	9805C92-02B
9805C92-03B			

COMMENTS:

**HOUSTON LABORATORY**

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 660-0901

**** SPL QUALITY CONTROL REPORT ****

Matrix: Aqueous

Reported on: 06/11/98

Analyzed on: 06/04/98

Analyst: DAM

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Nitrate-Nitrite, as N
Method 353.3 *

SPL Sample ID Number	Blank Value mg/L	LCS Concentration mg/L	Measured Concentration mg/L	% Recovery	QC Limits Recovery
LCS	ND	2.77	2.96	107	92 - 111

-9806491

Samples in batch:

9805C60-01C	9805C60-02C	9805C60-03C	9805C60-04C
9805C90-01C	9805C90-02C	9805C90-03C	9805C92-01C
9805C92-02C	9805C92-03C	9805D86-01C	9805D86-02C
9805D86-03C	9805D87-01C	9805D87-02C	

COMMENTS:

LCS = SPL ID #:95535172-26



** SPL QUALITY CONTROL REPORT **

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Matrix: Aqueous

Reported on: 06/11/98
Analyzed on: 06/04/98
Analyst: DAM

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Nitrate-Nitrite, as N
Method 353.3 *

SPL Sample ID Number	Method Blank mg/L	Sample Result mg/L	Spike Added mg/L	Matrix Spike		Matrix Spike Duplicate		RPD (%)	QC LIMITS (Advisory)		
				Result mg/L	Recovery %	Result mg/L	Recovery %		RPD Max	% REC	
9805C60-01C	ND	0.98	5.00	6.14	103	6.13	103	0	12	87	-120

-9806489

Samples in batch:

9805C60-01C 9805C60-02C 9805C60-03C 9805C60-04C
9805C90-01C 9805C90-02C 9805C90-03C 9805C92-01C
9805C92-02C 9805C92-03C

COMMENTS:

CHAIN OF CUSTODY
AND
SAMPLE RECEIPT CHECKLIST

SPL Houston Environmental Laboratory

Sample Login Checklist

Date: 5/29/98	Time: 1000
---------------	------------

SPL Sample ID: 9805

		Yes	No
1	Chain-of-Custody (COC) form is present.	✓	
2	COC is properly completed.	✓	
3	If no, Non-Conformance Worksheet has been completed.		
4	Custody seals are present on the shipping container.	✓	
5	If yes, custody seals are intact.	✓	
6	All samples are tagged or labeled.	✓	
7	If no, Non-Conformance Worksheet has been completed.		
8	Sample containers arrived intact	✓	
9	Temperature of samples upon arrival:	3 C	
10	Method of sample delivery to SPL:	SPL Delivery	
		Client Delivery	
		FedEx Delivery (airbill #)	80472150969
		Other:	
11	Method of sample disposal:	SPL Disposal	✓
		HOLD	
		Return to Client	

Name: Ruben Esteban	Date: 5/29/98
---------------------	---------------



HOUSTON LABORATORY

8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

June 15, 1998

Mr. George Robinson
CYPRESS ENGINEERING, INC.
10235 W. Little York Rd #256
Houston, TX 77040

The following report contains analytical results for the sample(s) received at Southern Petroleum Laboratories (SPL) on May 30, 1998. The sample(s) was assigned to Certificate of Analysis No.(s) 9805D87 and analyzed for all parameters as listed on the chain of custody.

Any data flag or quality control exception associated with this report will be footnoted in the analytical results page(s) or the quality control summary page(s).

If you have any questions or comments pertaining to this data report, please do not hesitate to contact me. Please reference the above Certificate of Analysis No. during any inquiries.

Again, SPL is pleased to be of service to you. We anticipate working with you in fulfilling all your current and future analytical needs.

Southern Petroleum Laboratories

A handwritten signature in cursive script, reading "Electa Brown", is written over a horizontal line.

Electa Brown
Client Services Representative



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Southern Petroleum Laboratories, Inc.

Certificate of Analysis Number: 98-05-D87

Approved for Release by:

A handwritten signature in cursive script, reading "Electa Brown", is written over a horizontal line.

Electa Brown, Client Services Representative

6-15-98

Date:

Greg Grandits
Laboratory Director

Cynthia Schreiner
Quality Assurance Officer

The attached analytical data package may not be reproduced except in full without the express written approval of this laboratory.

**HOUSTON LABORATORY**

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 660-0901

Certificate of Analysis No. H9-9805D87-01

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 06/12/98

PROJECT: Transwestern Pipeline
SITE: Roswell Sta. 9
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-24

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 05/28/98 19:50:00
DATE RECEIVED: 05/30/98

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
Alkalinity, as CaCO3 Method 310.1 * Analyzed by: JS Date: 06/08/98 10:00:00	198	1	mg/L	
Chloride Method 325.3 * Analyzed by: DAM Date: 06/09/98 11:00:00	320	10	mg/L	
Sulfate Method 375.4 * Analyzed by: TW Date: 06/10/98 11:30:00	2400	100	mg/L	
Total Dissolved Solids Method 160.1 * Analyzed by: CL Date: 06/02/98 14:20:00	3200	100	mg/L	
Nitrate-Nitrite, as N Method 353.3 * Analyzed by: DAM Date: 06/04/98 10:00:00	3.0	0.1	mg/L	
Liquid-liquid extraction SEMIVOLATILES Method 3520C *** Analyzed by: KL Date: 05/31/98 08:00:00	05/31/98			

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9805D87-01

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 06/12/98

PROJECT: Transwestern Pipeline
SITE: Roswell Sta. 9
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-24

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 05/28/98 19:50:00
DATE RECEIVED: 05/30/98

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
Silver, Total Method 6010B *** Analyzed by: JM Date: 06/09/98 07:54:00	ND	0.01	mg/L	
Arsenic, Total Method 7060A *** Analyzed by: PB Date: 06/10/98 14:30:00	ND	0.005	mg/L	
Barium, Total Method 6010B *** Analyzed by: JM Date: 06/09/98 07:54:00	ND	0.005	mg/L	
Cadmium, Total Method 6010B *** Analyzed by: JM Date: 06/09/98 07:54:00	ND	0.005	mg/L	
Chromium, Total Method 6010B *** Analyzed by: JM Date: 06/09/98 07:54:00	ND	0.01	mg/L	
Copper, Total Method 6010B *** Analyzed by: JM Date: 06/09/98 07:54:00	ND	0.01	mg/L	

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9805D87-01

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 06/12/98

PROJECT: Transwestern Pipeline
SITE: Roswell Sta. 9
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-24

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 05/28/98 19:50:00
DATE RECEIVED: 05/30/98

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
Iron, Total Method 6010B *** Analyzed by: JM Date: 06/09/98 07:54:00	0.09	0.02	mg/L	
Mercury, Total Method 7470 A*** Analyzed by: AG Date: 06/12/98 14:07:00	0.0005	0.0002	mg/L	
Manganese, Total Method 6010B *** Analyzed by: JM Date: 06/09/98 07:54:00	ND	0.005	mg/L	
Acid Digestion-Aqueous, ICP Method 3010A *** Analyzed by: GJ Date: 06/04/98 17:00:00	06/04/98			
Lead, Total Method 6010B *** Analyzed by: JM Date: 06/09/98 07:54:00	ND	0.05	mg/L	
Selenium, Total Method 7740 *** Analyzed by: PB Date: 06/10/98 17:08:00	ND	0.005	mg/L	

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.

**HOUSTON LABORATORY**

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 660-0901

Certificate of Analysis No. H9-9805D87-01

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 06/12/98

PROJECT: Transwestern Pipeline
SITE: Roswell Sta. 9
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-24

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 05/28/98 19:50:00
DATE RECEIVED: 05/30/98

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
Zinc, Total	ND	0.02	mg/L	
Method 6010B ***				
Analyzed by: JM				
Date: 06/09/98 07:54:00				

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.

**HOUSTON LABORATORY**8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9805D87-01

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

06/12/98

PROJECT: Transwestern Pipeline
SITE: Roswell Sta. 9
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-24PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 05/28/98 19:50:00
DATE RECEIVED: 05/30/98**ANALYTICAL DATA**

PARAMETER	RESULTS	PQL*	UNITS
Benzene	ND	5	ug/L
Bromobenzene	ND	5	ug/L
Bromochloromethane	ND	5	ug/L
Bromodichloromethane	ND	5	ug/L
Bromoform	ND	5	ug/L
Bromomethane	ND	10	ug/L
n-Butylbenzene	ND	5	ug/L
sec-Butylbenzene	ND	5	ug/L
tert-Butylbenzene	ND	5	ug/L
Carbon tetrachloride	ND	5	ug/L
Chlorobenzene	ND	5	ug/L
Chlorodibromomethane	ND	5	ug/L
Chloroethane	ND	10	ug/L
Chloroform	ND	5	ug/L
Chloromethane	ND	10	ug/L
2-Chlorotoluene	ND	5	ug/L
4-Chlorotoluene	ND	5	ug/L
1,2-Dibromo-3-chloropropane	ND	5	ug/L
1,2-Dibromoethane	ND	5	ug/L
Dibromomethane	ND	5	ug/L
1,2-Dichlorobenzene	ND	5	ug/L
1,3-Dichlorobenzene	ND	5	ug/L
1,4-Dichlorobenzene	ND	5	ug/L
Dichlorodifluoromethane	ND	10	ug/L
1,1-Dichloroethane	14	5	ug/L
1,2-Dichloroethane	ND	5	ug/L
1,1-Dichloroethene	140	5	ug/L
cis-1,2-Dichloroethene	ND	5	ug/L
trans-1,2-Dichloroethene	ND	5	ug/L
1,2-Dichloropropane	ND	5	ug/L
1,3-Dichloropropane	ND	5	ug/L
2,2-Dichloropropane	ND	5	ug/L
1,1-Dichloropropene	ND	5	ug/L
Ethylbenzene	ND	5	ug/L
Hexachlorobutadiene	ND	5	ug/L
Isopropylbenzene	ND	5	ug/L
p-Isopropyltoluene	ND	5	ug/L
Methylene chloride	ND	5	ug/L

METHOD: 8260 Water, Volatile Organics
(continued on next page)



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9805D87-01

Cypress Engineering, Inc.

SAMPLE ID: MW-24

ANALYTICAL DATA (continued)				
PARAMETER	RESULTS	PQL*	UNITS	
Naphthalene	ND	5	ug/L	
n-Propylbenzene	ND	5	ug/L	
Styrene	ND	5	ug/L	
1,1,1,2-Tetrachloroethane	ND	5	ug/L	
1,1,2,2-Tetrachloroethane	ND	5	ug/L	
Tetrachloroethene	ND	5	ug/L	
Toluene	ND	5	ug/L	
1,2,3-Trichlorobenzene	ND	5	ug/L	
1,2,4-Trichlorobenzene	ND	5	ug/L	
1,1,1-Trichloroethane	29	5	ug/L	
1,1,2-Trichloroethane	ND	5	ug/L	
Trichloroethene	ND	5	ug/L	
Trichlorofluoromethane	ND	5	ug/L	
1,2,3-Trichloropropane	ND	5	ug/L	
1,2,4-Trimethylbenzene	ND	5	ug/L	
1,3,5-Trimethylbenzene	ND	5	ug/L	
Vinyl chloride	ND	10	ug/L	
Xylenes (total)	ND	5	ug/L	
Acetone	ND	100	ug/L	
Carbon Disulfide	ND	5	ug/L	
Vinyl Acetate	ND	10	ug/L	
2-Butanone	ND	20	ug/L	
1,2-Dichloroethene (total)	ND	5	ug/L	
2-Chloroethylvinylether	ND	10	ug/L	
4-Methyl-2-Pentanone	ND	10	ug/L	
cis-1,3-Dichloropropene	ND	5	ug/L	
trans-1,3-Dichloropropene	ND	5	ug/L	
2-Hexanone	ND	10	ug/L	
SURROGATES	AMOUNT SPIKED	% RECOVERY	LOWER LIMIT	UPPER LIMIT
1,2-Dichloroethane-d4	50 ug/L	90	76	114
Toluene-d8	50 ug/L	90	88	110
4-Bromofluorobenzene	50 ug/L	94	86	115

ANALYZED BY: JC

DATE/TIME: 05/31/98 14:01:00

METHOD: 8260 Water, Volatile Organics

NOTES: * - Practical Quantitation Limit

ND - Not Detected

NA - Not Analyzed

COMMENTS:

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.

**HOUSTON LABORATORY**

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 660-0901

Certificate of Analysis No. H9-9805D87-01

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

06/12/98

PROJECT: Transwestern Pipeline
SITE: Roswell Sta. 9
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-24

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 05/28/98 19:50:00
DATE RECEIVED: 05/30/98

ANALYTICAL DATA

PARAMETER	RESULTS	PQL*	UNITS
Acenaphthene	ND	5	ug/L
Acenaphthylene	ND	5	ug/L
Anthracene	ND	5	ug/L
Benzo(a)Anthracene	ND	5	ug/L
Benzo(b)Fluoranthene	ND	5	ug/L
Benzo(k)Fluoranthene	ND	5	ug/L
Benzo(a)Pyrene	ND	5	ug/L
Benzo(g,h,i)Perylene	ND	5	ug/L
Chrysene	ND	5	ug/L
Dibenz(a,h)Anthracene	ND	5	ug/L
Fluoranthene	ND	5	ug/L
Fluorene	ND	5	ug/L
Indeno(1,2,3-cd)Pyrene	ND	5	ug/L
2-Methylnaphthalene	ND	5	ug/L
Naphthalene	ND	5	ug/L
Phenanthrene	ND	5	ug/L
Pyrene	ND	5	ug/L
1-Methylnaphthalene	ND	5	ug/L

SURROGATES	AMOUNT SPIKED	% RECOVERY	LOWER LIMIT	UPPER LIMIT
Nitrobenzene-d5	50 ug/L	62	35	114
2-Fluorobiphenyl	50 ug/L	80	43	116
Terphenyl-d14	50 ug/L	84	33	141
Phenol-d5	75 ug/L	27	10	110
2-Fluorophenol	75 ug/L	37	21	110
2,4,6-Tribromophenol	75 ug/L	87	10	123

ANALYZED BY: YL DATE/TIME: 06/06/98 19:20:00
EXTRACTED BY: KL DATE/TIME: 05/31/98 08:00:00
METHOD: 8270C, Semivolatile Organics - Water
NOTES: * - Practical Quantitation Limit ND - Not Detected
 NA - Not Analyzed

COMMENTS:

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9805D87-02

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 06/12/98

PROJECT: Transwestern Pipeline
SITE: Roswell Sta. 9
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-20

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 05/28/98 10:00:00
DATE RECEIVED: 05/30/98

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
Alkalinity, as CaCO ₃ Method 310.1 * Analyzed by: JS Date: 06/08/98 10:00:00	208	1	mg/L	
Chloride Method 325.3 * Analyzed by: DAM Date: 06/09/98 11:00:00	310	10	mg/L	
Sulfate Method 375.4 * Analyzed by: TW Date: 06/10/98 11:30:00	2400	100	mg/L	
Total Dissolved Solids Method 160.1 * Analyzed by: CL Date: 06/02/98 14:20:00	3000	100	mg/L	
Nitrate-Nitrite, as N Method 353.3 * Analyzed by: DAM Date: 06/04/98 10:00:00	3.0	0.1	mg/L	
Liquid-liquid extraction SEMIVOLATILES Method 3520C *** Analyzed by: KL Date: 05/31/98 08:00:00	05/31/98			

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9805D87-02

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 06/12/98

PROJECT: Transwestern Pipeline
SITE: Roswell Sta. 9
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-20

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 05/28/98 10:00:00
DATE RECEIVED: 05/30/98

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
Silver, Total Method 6010B *** Analyzed by: JM Date: 06/09/98 07:54:00	ND	0.01	mg/L	
Arsenic, Total Method 7060A *** Analyzed by: PB Date: 06/10/98 14:30:00	ND	0.005	mg/L	
Barium, Total Method 6010B *** Analyzed by: JM Date: 06/09/98 07:54:00	ND	0.005	mg/L	
Cadmium, Total Method 6010B *** Analyzed by: JM Date: 06/09/98 07:54:00	ND	0.005	mg/L	
Chromium, Total Method 6010B *** Analyzed by: JM Date: 06/09/98 07:54:00	ND	0.01	mg/L	
Copper, Total Method 6010B *** Analyzed by: JM Date: 06/09/98 07:54:00	ND	0.01	mg/L	

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.

**HOUSTON LABORATORY**8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9805D87-02

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 06/12/98

PROJECT: Transwestern Pipeline
SITE: Roswell Sta. 9
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-20PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 05/28/98 10:00:00
DATE RECEIVED: 05/30/98

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
Iron, Total Method 6010B *** Analyzed by: JM Date: 06/09/98 07:54:00	0.03	0.02	mg/L	
Mercury, Total Method 7470 A*** Analyzed by: AG Date: 06/12/98 14:07:00	ND	0.0002	mg/L	
Manganese, Total Method 6010B *** Analyzed by: JM Date: 06/09/98 07:54:00	ND	0.005	mg/L	
Acid Digestion-Aqueous, ICP Method 3010A *** Analyzed by: GJ Date: 06/04/98 17:00:00	06/04/98			
Lead, Total Method 6010B *** Analyzed by: JM Date: 06/09/98 07:54:00	ND	0.05	mg/L	
Selenium, Total Method 7740 *** Analyzed by: PB Date: 06/10/98 17:08:00	ND	0.005	mg/L	

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9805D87-02

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 06/12/98

PROJECT: Transwestern Pipeline
SITE: Roswell Sta. 9
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-20

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 05/28/98 10:00:00
DATE RECEIVED: 05/30/98

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
Zinc, Total	ND	0.02	mg/L	
Method 6010B ***				
Analyzed by: JM				
Date: 06/09/98 07:54:00				

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.

**HOUSTON LABORATORY**

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 660-0901

Certificate of Analysis No. H9-9805D87-02

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

06/12/98

PROJECT: Transwestern Pipeline
SITE: Roswell Sta. 9
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-20

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 05/28/98 10:00:00
DATE RECEIVED: 05/30/98

ANALYTICAL DATA

PARAMETER	RESULTS	PQL*	UNITS
Benzene	ND	5	ug/L
Bromobenzene	ND	5	ug/L
Bromochloromethane	ND	5	ug/L
Bromodichloromethane	ND	5	ug/L
Bromoform	ND	5	ug/L
Bromomethane	ND	10	ug/L
n-Butylbenzene	ND	5	ug/L
sec-Butylbenzene	ND	5	ug/L
tert-Butylbenzene	ND	5	ug/L
Carbon tetrachloride	ND	5	ug/L
Chlorobenzene	ND	5	ug/L
Chlorodibromomethane	ND	5	ug/L
Chloroethane	ND	10	ug/L
Chloroform	ND	5	ug/L
Chloromethane	ND	10	ug/L
2-Chlorotoluene	ND	5	ug/L
4-Chlorotoluene	ND	5	ug/L
1,2-Dibromo-3-chloropropane	ND	5	ug/L
1,2-Dibromoethane	ND	5	ug/L
Dibromomethane	ND	5	ug/L
1,2-Dichlorobenzene	ND	5	ug/L
1,3-Dichlorobenzene	ND	5	ug/L
1,4-Dichlorobenzene	ND	5	ug/L
Dichlorodifluoromethane	ND	10	ug/L
1,1-Dichloroethane	15	5	ug/L
1,2-Dichloroethane	ND	5	ug/L
1,1-Dichloroethene	150	5	ug/L
cis-1,2-Dichloroethene	ND	5	ug/L
trans-1,2-Dichloroethene	ND	5	ug/L
1,2-Dichloropropane	ND	5	ug/L
1,3-Dichloropropane	ND	5	ug/L
2,2-Dichloropropane	ND	5	ug/L
1,1-Dichloropropene	ND	5	ug/L
Ethylbenzene	ND	5	ug/L
Hexachlorobutadiene	ND	5	ug/L
Isopropylbenzene	ND	5	ug/L
p-Isopropyltoluene	ND	5	ug/L
Methylene chloride	ND	5	ug/L

METHOD: 8260 Water, Volatile Organics
(continued on next page)



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9805D87-02

Cypress Engineering, Inc.

SAMPLE ID: MW-20

ANALYTICAL DATA (continued)			
PARAMETER	RESULTS	PQL*	UNITS
Naphthalene	ND	5	ug/L
n-Propylbenzene	ND	5	ug/L
Styrene	ND	5	ug/L
1,1,1,2-Tetrachloroethane	ND	5	ug/L
1,1,2,2-Tetrachloroethane	ND	5	ug/L
Tetrachloroethene	ND	5	ug/L
Toluene	ND	5	ug/L
1,2,3-Trichlorobenzene	ND	5	ug/L
1,2,4-Trichlorobenzene	ND	5	ug/L
1,1,1-Trichloroethane	ND	5	ug/L
1,1,2-Trichloroethane	ND	5	ug/L
Trichloroethene	ND	5	ug/L
Trichlorofluoromethane	ND	5	ug/L
1,2,3-Trichloropropane	ND	5	ug/L
1,2,4-Trimethylbenzene	ND	5	ug/L
1,3,5-Trimethylbenzene	ND	5	ug/L
Vinyl chloride	ND	10	ug/L
Xylenes (total)	ND	5	ug/L
Acetone	ND	100	ug/L
Carbon Disulfide	ND	5	ug/L
Vinyl Acetate	ND	10	ug/L
2-Butanone	ND	20	ug/L
1,2-Dichloroethene (total)	ND	5	ug/L
2-Chloroethylvinylether	ND	10	ug/L
4-Methyl-2-Pentanone	ND	10	ug/L
cis-1,3-Dichloropropene	ND	5	ug/L
trans-1,3-Dichloropropene	ND	5	ug/L
2-Hexanone	ND	10	ug/L

SURROGATES	AMOUNT SPIKED	% RECOVERY	LOWER LIMIT	UPPER LIMIT
1,2-Dichloroethane-d4	50 ug/L	94	76	114
Toluene-d8	50 ug/L	90	88	110
4-Bromofluorobenzene	50 ug/L	96	86	115

ANALYZED BY: JC

DATE/TIME: 05/31/98 14:27:00

METHOD: 8260 Water, Volatile Organics

NOTES: * - Practical Quantitation Limit

ND - Not Detected

NA - Not Analyzed

COMMENTS:

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.

**HOUSTON LABORATORY**8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9805D87-02

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

06/12/98

PROJECT: Transwestern Pipeline
SITE: Roswell Sta. 9
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-20PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 05/28/98 10:00:00
DATE RECEIVED: 05/30/98**ANALYTICAL DATA**

PARAMETER	RESULTS	PQL*	UNITS
Acenaphthene	ND	5	ug/L
Acenaphthylene	ND	5	ug/L
Anthracene	ND	5	ug/L
Benzo(a)Anthracene	ND	5	ug/L
Benzo(b)Fluoranthene	ND	5	ug/L
Benzo(k)Fluoranthene	ND	5	ug/L
Benzo(a)Pyrene	ND	5	ug/L
Benzo(g,h,i)Perylene	ND	5	ug/L
Chrysene	ND	5	ug/L
Dibenz(a,h)Anthracene	ND	5	ug/L
Fluoranthene	ND	5	ug/L
Fluorene	ND	5	ug/L
Indeno(1,2,3-cd)Pyrene	ND	5	ug/L
2-Methylnaphthalene	ND	5	ug/L
Naphthalene	ND	5	ug/L
Phenanthrene	ND	5	ug/L
Pyrene	ND	5	ug/L
1-Methylnaphthalene	ND	5	ug/L

SURROGATES	AMOUNT SPIKED	% RECOVERY	LOWER LIMIT	UPPER LIMIT
Nitrobenzene-d5	50 ug/L	56	35	114
2-Fluorobiphenyl	50 ug/L	80	43	116
Terphenyl-d14	50 ug/L	82	33	141
Phenol-d5	75 ug/L	15	10	110
2-Fluorophenol	75 ug/L	36	21	110
2,4,6-Tribromophenol	75 ug/L	88	10	123

ANALYZED BY: YL
EXTRACTED BY: KL
METHOD: 8270C, Semivolatile Organics - Water
NOTES: * - Practical Quantitation Limit ND - Not Detected
NA - Not Analyzed**COMMENTS:**QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.

QUALITY CONTROL
DOCUMENTATION

3A
WATER VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: SPL

Contract:

Lab Code:

Case No.: 9805D87 SAS No.:

SDG No.:

Matrix Spike - EPA Sample No.: MW-20

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC #	QC. LIMITS REC.
=====	=====	=====	=====	=====	=====
1,1-Dichloroethene	50	150	150	0*	61-145
Trichloroethene	50	0	52	104	71-120
Benzene	50	0	56	112	76-127
Toluene	50	0	48	96	76-125
Chlorobenzene	50	0	47	94	75-130

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC #	% RPD #	QC LIMITS RPD	REC.
=====	=====	=====	=====	=====	=====	=====
1,1-Dichloroethene	50	160	20*	200*	14	61-145
Trichloroethene	50	50	100	4	14	71-120
Benzene	50	55	110	2	11	76-127
Toluene	50	45	90	6	13	76-125
Chlorobenzene	50	47	94	0	13	75-130

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits due to matrix interference

RPD: 1 out of 5 outside limits

Spike Recovery: 2 out of 10 outside limits

SPL Houston Labs

RECOVERY REPORT

Client Name: Client SDG: n980531
Sample Matrix: LIQUID Fraction: VOA
Lab Smp Id: LCS
Level: LOW Operator: JC
Data Type: MS DATA SampleType: LCS
SpikeList File: 8260_water.spk Quant Type: ISTD
Sublist File: 8260.sub
Method File: /var/chem/n.i/n980531.b/n8260w.m
Misc Info: N151W1//N151CW1

SPIKE COMPOUND	CONC ADDED ug/L	CONC RECOVERED ug/L	% RECOVERED	LIMITS
8 1,1-Dichloroethene	50	63	126.00	61-145
29 Trichloroethene	50	52	104.00	71-120
25 Benzene	50	51	102.00	76-127
37 Toluene	50	44	88.00	76-125
45 Chlorobenzene	50	50	100.00	75-130

SURROGATE COMPOUND	CONC ADDED ug/L	CONC RECOVERED ug/L	% RECOVERED	LIMITS
\$ 21 1,2-Dichloroethane	50	45	90.00	76-114
\$ 36 Toluene-d8	50	45	90.00	88-110
\$ 56 Bromofluorobenzene	50	48	96.00	86-115



SPL Blank QC Report

HOUSTON LABORATORY

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 668-0900

Page 1

Matrix: Aqueous
Sample ID: VLBLK
Batch: N980531122720

Reported on: 06/03/98 17:39
Analyzed on: 05/31/98 10:37
Analyst: JC

METHOD 8260/8240 N151B01

Compound	Result	Detection Limit	Units
Dichlorodifluoromethane	ND	10	ug/L
Chloromethane	ND	10	ug/L
Vinyl Chloride	ND	10	ug/L
Bromomethane	ND	10	ug/L
Chloroethane	ND	10	ug/L
Trichlorofluoromethane	ND	5	ug/L
Acetone	ND	100	ug/L
1,1-Dichloroethene	ND	5	ug/L
Methylene Chloride	ND	5	ug/L
Carbon Disulfide	ND	5	ug/L
trans-1,2-Dichloroethene	ND	5	ug/L
1,1-Dichloroethane	ND	5	ug/L
Vinyl Acetate	ND	10	ug/L
2-Butanone	ND	20	ug/L
cis-1,2-Dichloroethene	ND	5	ug/L
1,2-Dichloroethene (total)	ND	5	ug/L
2,2-Dichloropropane	ND	5	ug/L
Bromochloromethane	ND	5	ug/L
Chloroform	ND	5	ug/L
1,1,1-Trichloroethane	ND	5	ug/L
1,2-Dichloroethane	ND	5	ug/L
1,1-Dichloropropene	ND	5	ug/L
Benzene	ND	5	ug/L
Carbon Tetrachloride	ND	5	ug/L
1,2-Dichloropropane	ND	5	ug/L
Trichloroethene	ND	5	ug/L
Dibromomethane	ND	5	ug/L
Bromodichloromethane	ND	5	ug/L
2-Chloroethylvinylether	ND	10	ug/L
4-Methyl-2-Pentanone	ND	10	ug/L
cis-1,3-Dichloropropene	ND	5	ug/L
trans-1,3-Dichloropropene	ND	5	ug/L
Toluene	ND	5	ug/L
1,1,2-Trichloroethane	ND	5	ug/L

Notes

ND - Not detected.



SPL Blank QC Report

HOUSTON LABORATORY

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 668-0900

page 2

Matrix: Aqueous
Sample ID: VLBLK
Batch: N980531122720

Reported on: 06/03/98 17:39
Analyzed on: 05/31/98 10:37
Analyst: JC

METHOD 8260/8240 N151B01

Compound	Result	Detection Limit	Units
1,3-Dichloropropane	ND	5	ug/L
2-Hexanone	ND	10	ug/L
Dibromochloromethane	ND	5	ug/L
1,2-Dibromoethane	ND	5	ug/L
Tetrachloroethene	ND	5	ug/L
Chlorobenzene	ND	5	ug/L
1,1,1,2-Tetrachloroethane	ND	5	ug/L
Ethylbenzene	ND	5	ug/L
Bromoform	ND	5	ug/L
Styrene	ND	5	ug/L
Xylene (Total)	ND	5	ug/L
1,1,2,2-Tetrachloroethane	ND	5	ug/L
1,2,3-Trichloropropane	ND	5	ug/L
Isopropylbenzene	ND	5	ug/L
Bromobenzene	ND	5	ug/L
N-Propylbenzene	ND	5	ug/L
2-Chlorotoluene	ND	5	ug/L
4-Chlorotoluene	ND	5	ug/L
1,3,5-Trimethylbenzene	ND	5	ug/L
tert-Butylbenzene	ND	5	ug/L
1,2,4-Trimethylbenzene	ND	5	ug/L
1,3-Dichlorobenzene	ND	5	ug/L
sec-Butylbenzene	ND	5	ug/L
1,4-Dichlorobenzene	ND	5	ug/L
p-Isopropyltoluene	ND	5	ug/L
1,2-Dichlorobenzene	ND	5	ug/L
n-Butylbenzene	ND	5	ug/L
1,2-Dibromo-3-Chloropropan	ND	5	ug/L
1,2,4-Trichlorobenzene	ND	5	ug/L
Naphthalene	ND	5	ug/L
Hexachlorobutadiene	ND	5	ug/L
1,2,3-Trichlorobenzene	ND	5	ug/L

Notes

ND - Not detected.



SPL Blank QC Report

HOUSTON LABORATORY

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 660-0901

page

3

Matrix: Aqueous
Sample ID: VLBLK
Batch: N980531122720

Reported on: 06/03/98 17:39
Analyzed on: 05/31/98 10:37
Analyst: JC

METHOD 8260/8240 N151B01

Surrogate	Result	QC Criteria	Units
1,2-Dichloroethane-d4	92	76-114	% Recovery
Toluene-d8	92	88-110	% Recovery
Bromofluorobenzene	94	86-115	% Recovery

Samples in Batch 9805D87-01 9805D87-02

Notes

ND - Not detected.

3C

WATER SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: SPL

Contract:

Lab Code:

Case No:

9805D75

SAS No:

SDG No:

Matrix Spike - EPA

Sample No:

MW-2

Level (low/med):

	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC #	QC LIMITS REC
Phenol	75	0	22	29	12-110
2-Chlorophenol	75	0	46	61	27-123
1,4-Dichlorobenzene	50	0	35	70	36- 97
N-Nitroso-di-n-propylamine	50	0	33	66	41-116
1,2,4-Trichlorobenzene	50	0	38	76	39- 98
4-Chloro-3-methylphenol	75	0	65	87	23- 97
Acenaphthene	50	0	39	78	46-118
4-Nitrophenol	75	0	29	39	30-150
2,4-Dinitrotoluene	50	0	35	70	50-150
Pentachlorophenol	75	0	73	97	9-125
Pyrene	50	0	42	84	26-127

	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC #	% RPD #	QC LIMITS RPD REC
Phenol	75	12	16	58 *	42 12-110
2-Chlorophenol	75	28	37	49 *	40 27-132
1,4-Dichlorobenzene	50	24	48	37 *	28 36- 97
N-Nitroso-di-n-propylamine	50	23	46	36	38 41-116
1,2,4-Trichlorobenzene	50	26	52	38 *	28 39- 98
4-Chloro-3-methylphenol	75	47	63	32	42 23- 97
Acenaphthene	50	30	60	26	31 46-118
4-Nitrophenol	75	22	29 *	29	50 30-150
2,4-Dinitrotoluene	50	30	60	15	50 50-150
Pentachlorophenol	75	58	77	23	50 9-125
Pyrene	50	41	82	2	31 26-127

Column to be used to flag recovery and RPD values with an asterisk

* Amount outside QC limits due to matrix interference

RPD: 4 out of 11 outside limits
Spike Recovery: 1 out of 22 outside limits

SPL Houston Labs

RECOVERY REPORT

Client Name:
Sample Matrix: LIQUID
Lab Smp Id: METHSPIKE-8270W
Level: LOW
Data Type: MS DATA
SpikeList File: 8270w.spk
Sublist File: lcs.sub
Method File: /var/chem/p.i/p980609.b/p8270cw.m
Misc Info: E151F3/H151B03/P160CC2

Client SDG: p980609
Fraction: SV
Operator: RY
SampleType: MSD
Quant Type: ISTD

SPIKE COMPOUND	CONC ADDED ug/L	CONC RECOVERED ug/L	% RECOVERED	LIMITS
5 Phenol	75	33	44.00	12-110
9 2-Chlorophenol	75	51	68.00	27-123
12 1,4-Dichlorobenzen	50	33	66.00	36-97
21 N-Nitroso-di-n-pro	50	40	80.00	41-116
31 1,2,4-Trichloroben	50	35	70.00	39-98
36 4-Chloro-3-methylp	75	62	82.67	23-97
49 Acenaphthene	50	39	78.00	46-118
51 4-Nitrophenol	75	38	50.67	30-150
53 2,4-Dinitrotoluene	50	36	72.00	50-150
64 Pentachlorophenol	75	41	54.67	9-125
71 Pyrene	50	39	78.00	26-127

SURROGATE COMPOUND	CONC ADDED ug/L	CONC RECOVERED ug/L	% RECOVERED	LIMITS
\$ 23 Nitrobenzene-d5	50	37	74.00	35-114
\$ 41 2-Fluorobiphenyl	50	40	80.00	43-116
\$ 72 Terphenyl-d14	50	26	52.00	33-141
\$ 3 2-Fluorophenol	75	45	60.00	21-110
\$ 4 Phenol-d5	75	32	42.67	10-110
\$ 61 2,4,6-Tribromophen	75	69	92.00	10-123



SPL Blank QC Report

HOUSTON LABORATORY

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 629-0000

1

Matrix: Aqueous
Sample ID: BLANK
Batch: E980531042258

Reported on: 06/10/98 17:47

Analyzed on: 06/06/98 13:53

Analyst: YL

METHOD 8270 H151B03

C o m p o u n d	Result	Detection Limit	Units
Naphthalene	ND	5	ug/L
2-Methylnaphthalene	ND	5	ug/L
1-Methylnaphthalene	ND	5	ug/L
Acenaphthylene	ND	5	ug/L
Acenaphthene	ND	5	ug/L
Fluorene	ND	5	ug/L
Phenanthrene	ND	5	ug/L
Anthracene	ND	5	ug/L
Fluoranthene	ND	5	ug/L
Pyrene	ND	5	ug/L
Benzo[a]anthracene	ND	5	ug/L
Chrysene	ND	5	ug/L
Benzo[b]fluoranthene	ND	5	ug/L
Benzo[k]fluoranthene	ND	5	ug/L
Benzo[a]pyrene	ND	5	ug/L
Indeno[1,2,3-cd]pyrene	ND	5	ug/L
Dibenz[a,h]anthracene	ND	5	ug/L
Benzo[g,h,i]perylene	ND	5	ug/L

S u r r o g a t e	Result	QC Criteria	Units
2-Fluorophenol	47	21-110	% Recovery
Phenol-d5	35	10-110	% Recovery
2,4,6-Tribromophenol	72	10-123	% Recovery
Nitrobenzene-d5	66	35-114	% Recovery
2-Fluorobiphenyl	80	43-116	% Recovery
Terphenyl-d14	88	33-141	% Recovery

Samples in Batch 9805D87-01 9805D87-02

Notes

ND - Not detected.

ICP Spectroscopy Method 6010 Quality Control Report



Matrix: Water

Units: mg/L

 Analyst: JMEG
 HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 Checked: (713) 660-0901

Date: 060998 Time: 0754 File Name: 60998M10

Laboratory Control Sample

Element	Mth. Blank	True Value	Result	% Recovery	Lower Limit	Upper Limit
Silver	ND	2.00	1.94	97	1.60	2.40
Aluminum						
Arsenic						
Barium	ND	2.00	1.90	95	1.60	2.40
Beryllium						
Calcium						
Cadmium	ND	2.00	1.92	96	1.60	2.40
Cobalt						
Chromium	ND	2.00	1.97	98	1.60	2.40
Copper	ND	2.00	1.90	95	1.60	2.40
Iron	ND	2.00	1.96	98	1.60	2.40
Potassium						
Magnesium						
Manganese	ND	2.00	1.96	98	1.60	2.40
Sodium						
Nickel	ND	2.00	2.03	101	1.60	2.40
Lead	ND	2.00	1.95	98	1.60	2.40
Antimony						
Selenium						
Thallium						
Vanadium						
Zinc	ND	2.00	1.97	98	1.60	2.40

Work Orders in Batch

Work Order Fractions

98-05-D87, 01E, 02E

98-06-086 01D

98-06-116 02F

98-06-079 01E, 02E

Jm 6/10/98

Matrix Spike - Spike Duplicate Results

Work Order Spiked: 9805D87-01E

Element	Sample Result	Spike Added	Matrix Spike Result	Matrix Spike Recovery	Matrix Spike Duplicate Result	Matrix Spike Duplicate Recovery	QC Limits % Recovery	Spike RPD %	QC Limits %
Silver	ND	1.0	0.9966	99.7	0.9866	98.7	80 120	1.0	20.0
Aluminum									
Arsenic									
Barium	0.0036	1.0	0.9832	98.0	0.9634	96.0	80 120	2.0	20.0
Beryllium									
Calcium									
Cadmium	ND	1.0	0.9817	98.2	0.9648	96.5	80 120	1.7	20.0
Cobalt									
Chromium	ND	1.0	0.9623	96.2	0.9473	94.7	80 120	1.6	20.0
Copper	ND	1.0	0.9875	98.8	0.981	98.1	80 120	0.7	20.0
Iron	0.0876	1.0	1.033	94.5	1.025	93.7	80 120	0.8	20.0
Potassium									
Magnesium									
Manganese	ND	1.0	0.9695	97.0	0.9538	95.4	80 120	1.6	20.0
Sodium									
Nickel	ND	1.0	0.9856	98.6	0.96	96.0	80 120	2.6	20.0
Lead	ND	1.0	0.9397	94.0	0.9442	94.4	80 120	0.5	20.0
Antimony									
Selenium									
Thallium									
Vanadium									
Zinc	ND	1.0	0.9917	99.2	0.9771	97.7	80 120	1.5	20.0

**HOUSTON LABORATORY**

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 660-0901

**** SPL QUALITY CONTROL REPORT ****

Matrix: Aqueous

Reported on: 06/10/98

Analyzed on: 06/10/98

Analyst: PB

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Arsenic, Total
Method 7060A ***

SPL Sample ID Number	Blank Value ug/L	LCS Concentration ug/L	Measured Concentration ug/L	% Recovery	QC Limits Recovery
LCS	ND	40.0	43.5	109	80 - 120

-9806461

Samples in batch:

9805C90-01E	9805C90-02E	9805C90-03E	9805C92-01E
9805C92-02E	9805C92-03E	9805D86-01E	9805D86-02E
9805D86-03E	9805D87-01E	9805D87-02E	9806079-01E
9806079-02E	9806086-01D	9806116-02F	9806156-01D

COMMENTS:

LCS = SPL ID # 97-839-258-1

**** VALUES OUTSIDE QC RANGE.**



** SPL QUALITY CONTROL REPORT **

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Matrix: Aqueous

Reported on: 06/10/98

Analyzed on: 06/10/98

Analyst: PB

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Arsenic, Total
Method 7060A ***

SPL Sample	Method	Sample	Spike	Matrix Spike		Matrix Spike Duplicate		RPD	QC LIMITS (Advisory)		
ID Number	Blank ug/L	Result ug/L	Added ug/L	Result ug/L	Recovery %	Result ug/L	Recovery %	(%)	RPD Max	% REC	
9806079-01E	ND	ND	40.0	36.3	90.8	44.8	112	21*	20	75	-125

-9806461

Samples in batch:

9805C90-01E	9805C90-02E	9805C90-03E	9805C92-01E
9805C92-02E	9805C92-03E	9805D86-01E	9805D86-02E
9805D86-03E	9805D87-01E	9805D87-02E	9806079-01E
9806079-02E	9806086-01D	9806116-02F	9806156-01D

COMMENTS:

LCS = SPL ID # 97-839-258-1

** VALUES OUTSIDE QC RANGE.

**HOUSTON LABORATORY**

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 660-0901

**** SPL QUALITY CONTROL REPORT ****

Matrix: Aqueous

Reported on: 06/12/98

Analyzed on: 06/12/98

Analyst: AG

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Mercury, Total
Method 7470 A***

SPL Sample ID Number	Blank Value ug/L	LCS Concentration ug/L	Measured Concentration ug/L	% Recovery	QC Limits Recovery
LCS	ND	2.00	2.05	102	80 - 120

-9806519

Samples in batch:

9805C90-01E	9805C90-02E	9805C90-03E	9805C92-01E
9805C92-02E	9805C92-03E	9805D63-01A	9805D75-01E
9805D75-02E	9805D75-03E	9805D86-01E	9805D86-02E
9805D86-03E	9805D87-01E	9805D87-02E	9806116-02F
9806156-01D	9806460-11B	9806460-12B	9806497-03B

COMMENTS:

LCS = SPL ID# 94-452-45-21



** SPL QUALITY CONTROL REPORT **

HOUSTON LABORATORY

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 660-0901

Matrix: Aqueous

Reported on: 06/12/98

Analyzed on: 06/12/98

Analyst: AG

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Mercury, Total
Method 7470 A***

SPL Sample	Method	Sample	Spike	Matrix Spike		Matrix Spike Duplicate		RPD	QC LIMITS (Advisory)		
ID Number	Blank	Result	Added	Result	Recovery	Result	Recovery	(%)	RPD	% REC	
	ug/L	ug/L	ug/L	ug/L	%	ug/L	%		Max		
9805C90-01E	ND	ND	2.00	2.06	103	1.94	97.0	6.0	20	75	-125

-9806519

Samples in batch:

9805C90-01E 9805C90-02E 9805C90-03E 9805C92-01E
9805C92-02E 9805C92-03E 9805D63-01A 9805D75-01E
9805D75-02E 9805D75-03E 9805D86-01E 9805D86-02E
9805D86-03E 9805D87-01E 9805D87-02E 9806116-02F
9806156-01D 9806460-11B 9806460-12B 9806497-03B

COMMENTS:

LCS = SPL ID# 94-452-45-21



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 06/10/98

Analyzed on: 06/10/98

Analyst: PB

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Selenium, Total
Method 7740 ***

SPL Sample ID Number	Blank Value ug/L	LCS Concentration ug/L	Measured Concentration ug/L	% Recovery	QC Limits Recovery
LCS	ND	40.0	43.5	109	80 - 120

-9806454

Samples in batch:

9805C90-01E	9805C90-02E	9805C90-03E	9805C92-01E
9805C92-02E	9805C92-03E	9805D86-01E	9805D86-02E
9805D86-03E	9805D87-01E	9805D87-02E	9806079-01E
9806079-02E	9806086-01D	9806156-01D	

COMMENTS:

LCS = SPL ID # 97-839-258-1



** SPL QUALITY CONTROL REPORT **

HOUSTON LABORATORY

8860 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 660-0901

Matrix: Aqueous

Reported on: 06/10/98

Analyzed on: 06/10/98

Analyst: PE

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Selenium, Total
Method 7740 ***

SPL Sample	Method	Sample	Spike	Matrix Spike		Matrix Spike Duplicate		RPD	QC LIMITS (Advisory)		
ID Number	Blank	Result	Added	Result	Recovery	Result	Recovery	(%)	RPD	% REC	
	ug/L	ug/L	ug/L	ug/L	%	ug/L	%		Max		
9806079-01E	ND	ND	40.0	33.4	83.5	37.6	94.0	12	20	75	-125

-9806454

Samples in batch:

9805C90-01E 9805C90-02E 9805C90-03E 9805C92-01E
9805C92-02E 9805C92-03E 9805D86-01E 9805D86-02E
9805D86-03E 9805D87-01E 9805D87-02E 9806079-01E
9806079-02E 9806086-01D 9806156-01D

COMMENTS:

LCS = SPL ID # 97-839-258-1

**HOUSTON LABORATORY**

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 660-0901

**** SPL QUALITY CONTROL REPORT ****

Matrix: Aqueous

Reported on: 06/09/98

Analyzed on: 06/08/98

Analyst: JS

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Alkalinity, as CaCO₃
Method 310.1 *

SPL Sample ID Number	Blank Value mg/L	LCS Concentration mg/L	Measured Concentration mg/L	% Recovery	QC Limits Recovery
LCS	ND	65	63	96.9	95 - 113

-9806389

Samples in batch:

9805B64-01B	9805B64-02B	9805B64-03B	9805B64-04B
9805B64-05B	9805C90-01B	9805C90-02B	9805C90-03B
9805C92-01B	9805C92-02B	9805C92-03B	9805D86-01B
9805D86-02B	9805D86-03B	9805D87-01B	9805D87-02B

COMMENTS:

SPL LCS ID# 95535192-24

**HOUSTON LABORATORY**

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 660-0901

**** SPL QUALITY CONTROL REPORT ****

Matrix: Aqueous

Reported on: 06/09/98

Analyzed on: 06/08/98

Analyst: JS

This sample was randomly selected for use in the SPL quality control program. The results are as follows:

Alkalinity, as CaCO₃
Method 310.1 *

-- DUPLICATE ANALYSIS --

SPL Sample ID	Original Sample Concentration mg/L	Duplicate Sample mg/L	RPD	RPD Max.
9805C92-03B	130.6	131.8	0.9	18

-9806392

Samples in batch:

9805C92-03B 9805D86-01B 9805D86-02B 9805D86-03B
9805D87-01B 9805D87-02B

COMMENTS:

SPL LCS ID# 95535192-24



** SPL QUALITY CONTROL REPORT **

HOUSTON LABORATORY

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 660-0901

Matrix: Aqueous

Reported on: 06/09/98

Analyzed on: 06/09/98

Analyst: DAM

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Chloride
Method 325.3 *

SPL Sample ID Number	Blank Value mg/L	LCS Concentration mg/L	Measured Concentration mg/L	% Recovery	QC Limits Recovery
LCS	ND	116	115.4	99.5	94 - 106

-9806446

Samples in batch:

9805B61-01B	9805B61-02B	9805B61-03B	9805B61-04B
9805B63-01H	9805B63-02H	9805B63-03H	9805B97-01A
9805B97-02A	9805D86-01B	9805D86-02B	9805D86-03B
9805D87-01B	9805D87-02B		

COMMENTS:

LCS = SPL ID#94453192-24



** SPL QUALITY CONTROL REPORT **

HOUSTON LABORATORY

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 660-0901

Matrix: Aqueous

Reported on: 06/09/98

Analyzed on: 06/09/98

Analyst: DAM

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Chloride
Method 325.3 *

SPL Sample	Method	Sample	Spike	Matrix Spike		Matrix Spike Duplicate		RPD	QC LIMITS (Advisory)	
ID Number	Blank	Result	Added	Result	Recovery	Result	Recovery	(%)	RPD	% REC
	mg/L	mg/L	mg/L	mg/L	%	mg/L	%		Max	
9805D87-01B	ND	31.70	50.0	80.53	97.7	82.60	102	4.3	5	92 -109

-9806444

Samples in batch:

9805D86-01B 9805D86-02B 9805D86-03B 9805D87-01B
9805D87-02B 9806444-01A

COMMENTS:

**HOUSTON LABORATORY**

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 06/10/98

Analyzed on: 06/10/98

Analyst: TW

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Sulfate
Method 375.4 *

SPL Sample ID Number	Blank Value mg/L	LCS Concentration mg/L	Measured Concentration mg/L	% Recovery	QC Limits Recovery
LCS	ND	4.52	4.51	99.8	82 - 111

-9806441

Samples in batch:

9805B64-01B	9805B64-02B	9805B64-03B	9805B64-04B
9805B64-05B	9805B97-01A	9805B97-02A	9805C22-01E
9805C90-01B	9805C90-02B	9805C90-03B	9805C92-01B
9805C92-02B	9805C92-03B	9805D86-01B	9805D86-02B
9805D86-03B	9805D87-01B	9805D87-02B	9806135-02A

COMMENTS:

LCS#94453183-1



** SPL QUALITY CONTROL REPORT **

HOUSTON LABORATORY

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 660-0901

Matrix: Aqueous

Reported on: 06/10/98

Analyzed on: 06/10/98

Analyst: TW

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Sulfate
Method 375.4 *

SPL Sample	Method	Sample	Spike	Matrix Spike		Matrix Spike Duplicate		RPD	QC LIMITS (Advisory)		
ID Number	Blank	Result	Added	Result	Recovery	Result	Recovery	(%)	RPD	% REC	
	mg/L	mg/L	mg/L	mg/L	%	mg/L	%		Max		
9805C92-01B	ND	8.54	10.0	20.20	117	19.46	109	7.1	9.5	84	-120

-9806440

Samples in batch:

9805C90-01B 9805C90-03B 9805C92-01B 9805C92-02B
9805C92-03B 9805D86-01B 9805D86-02B 9805D86-03B
9805D87-01B 9805D87-02B

COMMENTS:

**HOUSTON LABORATORY**

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 660-0901

**** SPL QUALITY CONTROL REPORT ****

Matrix: Aqueous

Reported on: 06/03/98

Analyzed on: 06/02/98

Analyst: CL

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Total Dissolved Solids
Method 160.1 *

SPL Sample ID Number	Blank Value mg/L	LCS Concentration mg/L	Measured Concentration mg/L	% Recovery	QC Limits Recovery
LCS	ND	200	191	95.5	93 - 107

-9806134

Samples in batch:

9805B63-03F	9805D85-20B	9805D85-21B	9805D85-23B
9805D85-24B	9805D85-26B	9805D87-01B	9805D87-02B

COMMENTS:

SPL LCS ID# 95535202-10

**HOUSTON LABORATORY**

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 660-0901

**** SPL QUALITY CONTROL REPORT ****

Matrix: Aqueous

Reported on: 06/03/98

Analyzed on: 06/02/98

Analyst: CL

This sample was randomly selected for use in the SPL quality control program. The results are as follows:

Total Dissolved Solids
Method 160.1 *

-- DUPLICATE ANALYSIS --

SPL Sample ID	Original Sample Concentration mg/L	Duplicate Sample mg/L	RPD	RPD Max.
9805D85-26B	684	704	2.9	5

-9806133

Samples in batch:

9805B63-03F	9805D85-20B	9805D85-21B	9805D85-23B
9805D85-24B	9805D85-26B	9805D87-01B	9805D87-02B

COMMENTS:

**HOUSTON LABORATORY**

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 660-0901

**** SPL QUALITY CONTROL REPORT ****

Matrix: Aqueous

Reported on: 06/11/98

Analyzed on: 06/04/98

Analyst: DAM

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Nitrate-Nitrite, as N
Method 353.3 *

SPL Sample ID Number	Blank Value mg/L	LCS Concentration mg/L	Measured Concentration mg/L	% Recovery	QC Limits Recovery
LCS	ND	2.77	2.96	107	92 - 111

-9806491

Samples in batch:

9805C60-01C	9805C60-02C	9805C60-03C	9805C60-04C
9805C90-01C	9805C90-02C	9805C90-03C	9805C92-01C
9805C92-02C	9805C92-03C	9805D86-01C	9805D86-02C
9805D86-03C	9805D87-01C	9805D87-02C	

COMMENTS:

LCS = SPL ID #:95535172-26



** SPL QUALITY CONTROL REPORT **

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Matrix: Aqueous

Reported on: 06/11/98

Analyzed on: 06/04/98

Analyst: DAM

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Nitrate-Nitrite, as N
Method 353.3 *

SPL Sample	Method	Sample	Spike	Matrix Spike		Matrix Spike Duplicate		RPD	QC LIMITS (Advisory)		
ID Number	Blank mg/L	Result mg/L	Added mg/L	Result mg/L	Recovery %	Result mg/L	Recovery %	(%)	RPD Max	% REC	
9805D86-01C	ND	ND	5.00	5.34	107	5.43	109	1.8	12	87	-120

-9806490

Samples in batch:

9805D86-01C 9805D86-02C 9805D86-03C 9805D87-01C
9805D87-02C

COMMENTS:

CHAIN OF CUSTODY
AND
SAMPLE RECEIPT CHECKLIST

- ☐ 500 Ambassador Caffery Parkway, Scott, LA 70583 (318) 237-4775
☐ 1501 E. Orangethorpe Avenue, Fullerton, CA 92631 (714) 447-6868

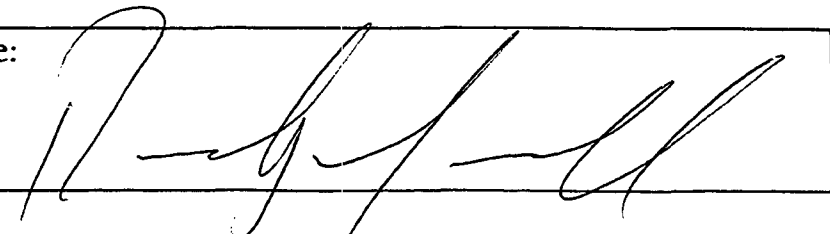
SPL Houston Environmental Laboratory

Sample Login Checklist

Date: 5-30-98	Time: 10 ⁰⁰
------------------	---------------------------

SPL Sample ID: 9805087

		Yes	No
1	Chain-of-Custody (COC) form is present.	✓	
2	COC is properly completed.	✓	
3	If no, Non-Conformance Worksheet has been completed.		
4	Custody seals are present on the shipping container.	✓	
5	If yes, custody seals are intact.	✓	
6	All samples are tagged or labeled.	✓	
7	If no, Non-Conformance Worksheet has been completed.		
8	Sample containers arrived intact	✓	
9	Temperature of samples upon arrival:	4	C
10	Method of sample delivery to SPL:	SPL Delivery	
		Client Delivery	
		FedEx Delivery (airbill #)	80472121509680
		Other:	
11	Method of sample disposal:	SPL Disposal	✓
		HOLD	
		Return to Client	

Name: 	Date: 5-30-98
---	------------------



HOUSTON LABORATORY

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 660-0901

June 11, 1998

Mr. George Robinson
CYPRESS ENGINEERING, INC.
10235 W. Little York Rd, #256
Houston, TX 77040

The following report contains analytical results for the sample(s) received at Southern Petroleum Laboratories (SPL) on May 27, 1998. The sample(s) was assigned to Certificate of Analysis No.(s) 9805B64 and analyzed for all parameters as listed on the chain of custody.

Any data flag or quality control exception associated with this report will be footnoted in the analytical results page(s) or the quality control summary page(s).

If you have any questions or comments pertaining to this data report, please do not hesitate to contact me. Please reference the above Certificate of Analysis No. during any inquiries.

Again, SPL is pleased to be of service to you. We anticipate working with you in fulfilling all your current and future analytical needs.

Southern Petroleum Laboratories

A handwritten signature in cursive script, reading "Electa Brown", is written over a horizontal line.

Electa Brown
Client Services Representative

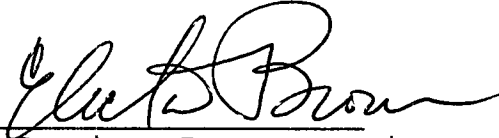


HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Southern Petroleum Laboratories, Inc.

Certificate of Analysis Number: 98-05-B64

Approved for Release by:


Electa Brown, Client Services Representative

6-12-98
Date:

Greg Grandits
Laboratory Director

Cynthia Schreiner
Quality Assurance Officer

The attached analytical data package may not be reproduced except in full without the express written approval of this laboratory.

**HOUSTON LABORATORY**8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9805B64-01

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 06/11/98

PROJECT: Transwestern Pipeline
SITE: Roswell Sta. 9
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-6PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 05/26/98 11:25:00
DATE RECEIVED: 05/27/98

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
Alkalinity, as CaCO3 Method 310.1 * Analyzed by: JS Date: 06/08/98 10:00:00	102	1	mg/L	
Chloride Method 325.3 * Analyzed by: DAM Date: 06/09/98 11:00:00	340	10	mg/L	
Sulfate Method 375.4 * Analyzed by: TW Date: 06/10/98 11:30:00	1900	100	mg/L	
Total Dissolved Solids Method 160.1 * Analyzed by: CL Date: 05/28/98 15:26:00	2600	100	mg/L	
Nitrate-Nitrite, as N Method 353.3 * Analyzed by: DAM Date: 05/27/98 16:00:00	1.1	0.1	mg/L	
Liquid-liquid extraction SEMIVOLATILES Method 3520C *** Analyzed by: KL Date: 05/31/98 08:00:00	05/31/98			

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9805B64-01

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 06/10/98

PROJECT: Transwestern Pipeline
SITE: Roswell Sta. 9
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-6

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 05/26/98 11:25:00
DATE RECEIVED: 05/27/98

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
Silver, Total Method 6010B *** Analyzed by: DQ Date: 06/05/98 09:46:00	ND	0.01	mg/L	
Arsenic, Total Method 7060A *** Analyzed by: PB Date: 06/08/98 10:11:00	ND	0.005	mg/L	
Barium, Total Method 6010B *** Analyzed by: DQ Date: 06/05/98 09:46:00	ND	0.005	mg/L	
Cadmium, Total Method 6010B *** Analyzed by: DQ Date: 06/05/98 09:46:00	ND	0.005	mg/L	
Chromium, Total Method 6010B *** Analyzed by: DQ Date: 06/05/98 09:46:00	ND	0.01	mg/L	
Copper, Total Method 6010B *** Analyzed by: DQ Date: 06/05/98 09:46:00	ND	0.01	mg/L	

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9805B64-01

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 06/10/98

PROJECT: Transwestern Pipeline
SITE: Roswell Sta. 9
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-6

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 05/26/98 11:25:00
DATE RECEIVED: 05/27/98

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
Iron, Total Method 6010B *** Analyzed by: DQ Date: 06/05/98 09:46:00	0.04	0.02	mg/L	
Mercury, Total Method 7470 A*** Analyzed by: AG Date: 06/09/98 14:16:00	ND	0.0002	mg/L	
Manganese, Total Method 6010B *** Analyzed by: DQ Date: 06/05/98 09:46:00	ND	0.005	mg/L	
Acid Digestion-Aqueous, ICP Method 3010A *** Analyzed by: SRC Date: 05/28/98 08:30:00	05/28/98			
Lead, Total Method 6010B *** Analyzed by: DQ Date: 06/05/98 09:46:00	ND	0.05	mg/L	
Selenium, Total Method 7740 *** Analyzed by: PB Date: 06/09/98 09:30:00	ND	0.005	mg/L	

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.

**HOUSTON LABORATORY**

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 660-0901

Certificate of Analysis No. H9-9805B64-01

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 06/10/98

PROJECT: Transwestern Pipeline
SITE: Roswell Sta. 9
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-6

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 05/26/98 11:25:00
DATE RECEIVED: 05/27/98

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
Zinc, Total	ND	0.02	mg/L	
Method 6010B ***				
Analyzed by: DQ				
Date: 06/05/98 09:46:00				

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.

**HOUSTON LABORATORY**8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9805B64-01

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

06/10/98

PROJECT: Transwestern Pipeline
SITE: Roswell Sta. 9
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-6PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 05/26/98 11:25:00
DATE RECEIVED: 05/27/98**ANALYTICAL DATA**

PARAMETER	RESULTS	PQL*	UNITS
Benzene	ND	5	ug/L
Bromobenzene	ND	5	ug/L
Bromochloromethane	ND	5	ug/L
Bromodichloromethane	ND	5	ug/L
Bromoform	ND	5	ug/L
Bromomethane	ND	10	ug/L
n-Butylbenzene	ND	5	ug/L
sec-Butylbenzene	ND	5	ug/L
tert-Butylbenzene	ND	5	ug/L
Carbon tetrachloride	ND	5	ug/L
Chlorobenzene	ND	5	ug/L
Chlorodibromomethane	ND	5	ug/L
Chloroethane	ND	10	ug/L
Chloroform	ND	5	ug/L
Chloromethane	ND	10	ug/L
2-Chlorotoluene	ND	5	ug/L
4-Chlorotoluene	ND	5	ug/L
1,2-Dibromo-3-chloropropane	ND	5	ug/L
1,2-Dibromoethane	ND	5	ug/L
Dibromomethane	ND	5	ug/L
1,2-Dichlorobenzene	ND	5	ug/L
1,3-Dichlorobenzene	ND	5	ug/L
1,4-Dichlorobenzene	ND	5	ug/L
Dichlorodifluoromethane	ND	10	ug/L
1,1-Dichloroethane	ND	5	ug/L
1,2-Dichloroethane	ND	5	ug/L
1,1-Dichloroethene	ND	5	ug/L
cis-1,2-Dichloroethene	ND	5	ug/L
trans-1,2-Dichloroethene	ND	5	ug/L
1,2-Dichloropropane	ND	5	ug/L
1,3-Dichloropropane	ND	5	ug/L
2,2-Dichloropropane	ND	5	ug/L
1,1-Dichloropropene	ND	5	ug/L
Ethylbenzene	ND	5	ug/L
Hexachlorobutadiene	ND	5	ug/L
Isopropylbenzene	ND	5	ug/L
p-Isopropyltoluene	ND	5	ug/L
Methylene chloride	ND	5	ug/L

METHOD: 8260 Water, Volatile Organics
(continued on next page)



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9805B64-01

Cypress Engineering, Inc.

SAMPLE ID: MW-6

ANALYTICAL DATA (continued)				
PARAMETER	RESULTS	PQL*	UNITS	
Naphthalene	ND	5	ug/L	
n-Propylbenzene	ND	5	ug/L	
Styrene	ND	5	ug/L	
1,1,1,2-Tetrachloroethane	ND	5	ug/L	
1,1,2,2-Tetrachloroethane	ND	5	ug/L	
Tetrachloroethene	ND	5	ug/L	
Toluene	ND	5	ug/L	
1,2,3-Trichlorobenzene	ND	5	ug/L	
1,2,4-Trichlorobenzene	ND	5	ug/L	
1,1,1-Trichloroethane	ND	5	ug/L	
1,1,2-Trichloroethane	ND	5	ug/L	
Trichloroethene	ND	5	ug/L	
Trichlorofluoromethane	ND	5	ug/L	
1,2,3-Trichloropropane	ND	5	ug/L	
1,2,4-Trimethylbenzene	ND	5	ug/L	
1,3,5-Trimethylbenzene	ND	5	ug/L	
Vinyl chloride	ND	10	ug/L	
Xylenes (total)	ND	5	ug/L	
Acetone	ND	100	ug/L	
Carbon Disulfide	ND	5	ug/L	
Vinyl Acetate	ND	10	ug/L	
2-Butanone	ND	20	ug/L	
1,2-Dichloroethene (total)	ND	5	ug/L	
2-Chloroethylvinylether	ND	10	ug/L	
4-Methyl-2-Pentanone	ND	10	ug/L	
cis-1,3-Dichloropropene	ND	5	ug/L	
trans-1,3-Dichloropropene	ND	5	ug/L	
2-Hexanone	ND	10	ug/L	
SURROGATES	AMOUNT SPIKED	% RECOVERY	LOWER LIMIT	UPPER LIMIT
1,2-Dichloroethane-d4	50 ug/L	98	76	114
Toluene-d8	50 ug/L	92	88	110
4-Bromofluorobenzene	50 ug/L	96	86	115

ANALYZED BY: JC

DATE/TIME: 05/28/98 09:06:00

METHOD: 8260 Water, Volatile Organics

NOTES: * - Practical Quantitation Limit

ND - Not Detected

NA - Not Analyzed

COMMENTS:

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9805B64-01

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

06/10/98

PROJECT: Transwestern Pipeline
SITE: Roswell Sta. 9
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-6

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 05/26/98 11:25:00
DATE RECEIVED: 05/27/98

ANALYTICAL DATA				
PARAMETER	RESULTS	PQL*	UNITS	
Acenaphthene	ND	5	ug/L	
Acenaphthylene	ND	5	ug/L	
Anthracene	ND	5	ug/L	
Benzo(a)Anthracene	ND	5	ug/L	
Benzo(b)Fluoranthene	ND	5	ug/L	
Benzo(k)Fluoranthene	ND	5	ug/L	
Benzo(a)Pyrene	ND	5	ug/L	
Benzo(g,h,i)Perylene	ND	5	ug/L	
Chrysene	ND	5	ug/L	
Dibenz(a,h)Anthracene	ND	5	ug/L	
Fluoranthene	ND	5	ug/L	
Fluorene	ND	5	ug/L	
Indeno(1,2,3-cd)Pyrene	ND	5	ug/L	
2-Methylnaphthalene	ND	5	ug/L	
Naphthalene	ND	5	ug/L	
Phenanthrene	ND	5	ug/L	
Pyrene	ND	5	ug/L	
1-Methylnaphthalene	ND	5	ug/L	
SURROGATES	AMOUNT SPIKED	% RECOVERY	LOWER LIMIT	UPPER LIMIT
Nitrobenzene-d5	50 ug/L	44	35	114
2-Fluorobiphenyl	50 ug/L	56	43	116
Terphenyl-d14	50 ug/L	78	33	141
Phenol-d5	75 ug/L	13	10	110
2-Fluorophenol	75 ug/L	21	21	110
2,4,6-Tribromophenol	75 ug/L	67	10	123

ANALYZED BY: YL DATE/TIME: 06/09/98 17:42:00
EXTRACTED BY: KL DATE/TIME: 05/31/98 08:00:00
METHOD: 8270C, Semivolatile Organics - Water
NOTES: * - Practical Quantitation Limit ND - Not Detected
NA - Not Analyzed

COMMENTS:

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.

**HOUSTON LABORATORY**8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9805B64-02

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 06/11/98

PROJECT: Transwestern Pipeline
SITE: Roswell Sta. 9
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-5PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 05/26/98 12:35:00
DATE RECEIVED: 05/27/98

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
Alkalinity, as CaCO ₃ Method 310.1 * Analyzed by: JS Date: 06/08/98 10:00:00	110	1	mg/L	
Chloride Method 325.3 * Analyzed by: DAM Date: 06/09/98 11:00:00	570	10	mg/L	
Sulfate Method 375.4 * Analyzed by: TW Date: 06/10/98 11:30:00	1900	100	mg/L	
Total Dissolved Solids Method 160.1 * Analyzed by: CL Date: 05/28/98 15:26:00	2200	100	mg/L	
Nitrate-Nitrite, as N Method 353.3 * Analyzed by: DAM Date: 05/27/98 16:00:00	3.5	0.1	mg/L	
Liquid-liquid extraction SEMIVOLATILES Method 3520C *** Analyzed by: KL Date: 05/31/98 08:00:00	05/31/98			

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9805B64-02

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 06/10/98

PROJECT: Transwestern Pipeline
SITE: Roswell Sta. 9
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-5

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 05/26/98 12:35:00
DATE RECEIVED: 05/27/98

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
Silver, Total Method 6010B *** Analyzed by: DQ Date: 06/05/98 09:46:00	ND	0.01	mg/L	
Arsenic, Total Method 7060A *** Analyzed by: PB Date: 06/08/98 10:11:00	ND	0.005	mg/L	
Barium, Total Method 6010B *** Analyzed by: DQ Date: 06/05/98 09:46:00	0.012	0.005	mg/L	
Cadmium, Total Method 6010B *** Analyzed by: DQ Date: 06/05/98 09:46:00	ND	0.005	mg/L	
Chromium, Total Method 6010B *** Analyzed by: DQ Date: 06/05/98 09:46:00	ND	0.01	mg/L	
Copper, Total Method 6010B *** Analyzed by: DQ Date: 06/05/98 09:46:00	ND	0.01	mg/L	

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.

**HOUSTON LABORATORY**

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 660-0901

Certificate of Analysis No. H9-9805B64-02

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 06/10/98

PROJECT: Transwestern Pipeline
SITE: Roswell Sta. 9
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-5

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 05/26/98 12:35:00
DATE RECEIVED: 05/27/98

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
Iron, Total Method 6010B *** Analyzed by: DQ Date: 06/05/98 09:46:00	0.04	0.02	mg/L	
Mercury, Total Method 7470 A*** Analyzed by: AG Date: 06/09/98 14:16:00	ND	0.0002	mg/L	
Manganese, Total Method 6010B *** Analyzed by: DQ Date: 06/05/98 09:46:00	ND	0.005	mg/L	
Acid Digestion-Aqueous, ICP Method 3010A *** Analyzed by: SRC Date: 05/28/98 08:30:00	05/28/98			
Lead, Total Method 6010B *** Analyzed by: DQ Date: 06/05/98 09:46:00	ND	0.05	mg/L	
Selenium, Total Method 7740 *** Analyzed by: PB Date: 06/09/98 09:30:00	ND	0.005	mg/L	

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.

**HOUSTON LABORATORY**

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 660-0901

Certificate of Analysis No. H9-9805B64-02

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 06/10/98

PROJECT: Transwestern Pipeline
SITE: Roswell Sta. 9
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-5

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 05/26/98 12:35:00
DATE RECEIVED: 05/27/98

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
Zinc, Total	ND	0.02	mg/L	
Method 6010B ***				
Analyzed by: DQ				
Date: 06/05/98 09:46:00				

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9805B64-02

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

06/10/98

PROJECT: Transwestern Pipeline
SITE: Roswell Sta. 9
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-5

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 05/26/98 12:35:00
DATE RECEIVED: 05/27/98

ANALYTICAL DATA				
PARAMETER	RESULTS	PQL*	UNITS	
Benzene	ND	5	ug/L	
Bromobenzene	ND	5	ug/L	
Bromochloromethane	ND	5	ug/L	
Bromodichloromethane	ND	5	ug/L	
Bromoform	ND	5	ug/L	
Bromomethane	ND	10	ug/L	
n-Butylbenzene	ND	5	ug/L	
sec-Butylbenzene	ND	5	ug/L	
tert-Butylbenzene	ND	5	ug/L	
Carbon tetrachloride	ND	5	ug/L	
Chlorobenzene	ND	5	ug/L	
Chlorodibromomethane	ND	5	ug/L	
Chloroethane	ND	10	ug/L	
Chloroform	ND	5	ug/L	
Chloromethane	ND	10	ug/L	
2-Chlorotoluene	ND	5	ug/L	
4-Chlorotoluene	ND	5	ug/L	
1,2-Dibromo-3-chloropropane	ND	5	ug/L	
1,2-Dibromoethane	ND	5	ug/L	
Dibromomethane	ND	5	ug/L	
1,2-Dichlorobenzene	ND	5	ug/L	
1,3-Dichlorobenzene	ND	5	ug/L	
1,4-Dichlorobenzene	ND	5	ug/L	
Dichlorodifluoromethane	ND	10	ug/L	
1,1-Dichloroethane	ND	5	ug/L	
1,2-Dichloroethane	ND	5	ug/L	
1,1-Dichloroethene	ND	5	ug/L	
cis-1,2-Dichloroethene	ND	5	ug/L	
trans-1,2-Dichloroethene	ND	5	ug/L	
1,2-Dichloropropane	ND	5	ug/L	
1,3-Dichloropropane	ND	5	ug/L	
2,2-Dichloropropane	ND	5	ug/L	
1,1-Dichloropropene	ND	5	ug/L	
Ethylbenzene	ND	5	ug/L	
Hexachlorobutadiene	ND	5	ug/L	
Isopropylbenzene	ND	5	ug/L	
p-Isopropyltoluene	ND	5	ug/L	
Methylene chloride	ND	5	ug/L	

METHOD: 8260 Water, Volatile Organics
(continued on next page)

**HOUSTON LABORATORY**

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 660-0901

Certificate of Analysis No. H9-9805B64-02

Cypress Engineering, Inc.

SAMPLE ID: MW-5

ANALYTICAL DATA (continued)				
PARAMETER	RESULTS	PQL*	UNITS	
Naphthalene	ND	5	ug/L	
n-Propylbenzene	ND	5	ug/L	
Styrene	ND	5	ug/L	
1,1,1,2-Tetrachloroethane	ND	5	ug/L	
1,1,2,2-Tetrachloroethane	ND	5	ug/L	
Tetrachloroethene	ND	5	ug/L	
Toluene	ND	5	ug/L	
1,2,3-Trichlorobenzene	ND	5	ug/L	
1,2,4-Trichlorobenzene	ND	5	ug/L	
1,1,1-Trichloroethane	ND	5	ug/L	
1,1,2-Trichloroethane	ND	5	ug/L	
Trichloroethene	ND	5	ug/L	
Trichlorofluoromethane	ND	5	ug/L	
1,2,3-Trichloropropane	ND	5	ug/L	
1,2,4-Trimethylbenzene	ND	5	ug/L	
1,3,5-Trimethylbenzene	ND	5	ug/L	
Vinyl chloride	ND	10	ug/L	
Xylenes (total)	ND	5	ug/L	
Acetone	ND	100	ug/L	
Carbon Disulfide	ND	5	ug/L	
Vinyl Acetate	ND	10	ug/L	
2-Butanone	ND	20	ug/L	
1,2-Dichloroethene (total)	ND	5	ug/L	
2-Chloroethylvinylether	ND	10	ug/L	
4-Methyl-2-Pentanone	ND	10	ug/L	
cis-1,3-Dichloropropene	ND	5	ug/L	
trans-1,3-Dichloropropene	ND	5	ug/L	
2-Hexanone	ND	10	ug/L	
SURROGATES	AMOUNT SPIKED	% RECOVERY	LOWER LIMIT	UPPER LIMIT
1,2-Dichloroethane-d4	50 ug/L	96	76	114
Toluene-d8	50 ug/L	90	88	110
4-Bromofluorobenzene	50 ug/L	96	86	115

ANALYZED BY: JC

DATE/TIME: 05/28/98 10:22:00

METHOD: 8260 Water, Volatile Organics

NOTES: * - Practical Quantitation Limit

ND - Not Detected

NA - Not Analyzed

COMMENTS:

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.

**HOUSTON LABORATORY**

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 660-0901

Certificate of Analysis No. H9-9805B64-02

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

06/10/98

PROJECT: Transwestern Pipeline
SITE: Roswell Sta. 9
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-5

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 05/26/98 12:35:00
DATE RECEIVED: 05/27/98

ANALYTICAL DATA

PARAMETER	RESULTS	PQL*	UNITS
Acenaphthene	ND	5	ug/L
Acenaphthylene	ND	5	ug/L
Anthracene	ND	5	ug/L
Benzo(a)Anthracene	ND	5	ug/L
Benzo(b)Fluoranthene	ND	5	ug/L
Benzo(k)Fluoranthene	ND	5	ug/L
Benzo(a)Pyrene	ND	5	ug/L
Benzo(g,h,i)Perylene	ND	5	ug/L
Chrysene	ND	5	ug/L
Dibenz(a,h)Anthracene	ND	5	ug/L
Fluoranthene	ND	5	ug/L
Fluorene	ND	5	ug/L
Indeno(1,2,3-cd)Pyrene	ND	5	ug/L
2-Methylnaphthalene	ND	5	ug/L
Naphthalene	ND	5	ug/L
Phenanthrene	ND	5	ug/L
Pyrene	ND	5	ug/L
1-Methylnaphthalene	ND	5	ug/L

SURROGATES	AMOUNT SPIKED	% RECOVERY	LOWER LIMIT	UPPER LIMIT
Nitrobenzene-d5	50 ug/L	46	35	114
2-Fluorobiphenyl	50 ug/L	56	43	116
Terphenyl-d14	50 ug/L	140	33	141
Phenol-d5	75 ug/L	45	10	110
2-Fluorophenol	75 ug/L	45	21	110
2,4,6-Tribromophenol	75 ug/L	103	10	123

ANALYZED BY: YL DATE/TIME: 06/09/98 22:28:00
EXTRACTED BY: KL DATE/TIME: 05/31/98 08:00:00
METHOD: 8270C, Semivolatile Organics - Water
NOTES: * - Practical Quantitation Limit ND - Not Detected
 NA - Not Analyzed

COMMENTS:

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9805B64-03

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 06/11/98

PROJECT: Transwestern Pipeline
SITE: Roswell Sta. 9
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-11

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 05/26/98 14:05:00
DATE RECEIVED: 05/27/98

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
Alkalinity, as CaCO ₃ Method 310.1 * Analyzed by: JS Date: 06/08/98 10:00:00	103	1	mg/L	
Chloride Method 325.3 * Analyzed by: DAM Date: 06/09/98 11:00:00	400	10	mg/L	
Sulfate Method 375.4 * Analyzed by: TW Date: 06/10/98 11:30:00	2100	100	mg/L	
Total Dissolved Solids Method 160.1 * Analyzed by: CL Date: 05/28/98 15:26:00	3000	100	mg/L	
Nitrate-Nitrite, as N Method 353.3 * Analyzed by: DAM Date: 05/27/98 16:00:00	0.7	0.1	mg/L	
Liquid-liquid extraction SEMIVOLATILES Method 3520C *** Analyzed by: KL Date: 05/31/98 08:00:00	05/31/98			

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.

**HOUSTON LABORATORY**8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9805B64-03

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 06/10/98

PROJECT: Transwestern Pipeline
SITE: Roswell Sta. 9
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-11PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 05/26/98 14:05:00
DATE RECEIVED: 05/27/98

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
Silver, Total Method 6010B *** Analyzed by: DQ Date: 06/05/98 09:46:00	ND	0.01	mg/L	
Arsenic, Total Method 7060A *** Analyzed by: PB Date: 06/08/98 10:11:00	ND	0.005	mg/L	
Barium, Total Method 6010B *** Analyzed by: DQ Date: 06/05/98 09:46:00	ND	0.005	mg/L	
Cadmium, Total Method 6010B *** Analyzed by: DQ Date: 06/05/98 09:46:00	ND	0.005	mg/L	
Chromium, Total Method 6010B *** Analyzed by: DQ Date: 06/05/98 09:46:00	ND	0.01	mg/L	
Copper, Total Method 6010B *** Analyzed by: DQ Date: 06/05/98 09:46:00	ND	0.01	mg/L	

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.

**HOUSTON LABORATORY**

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 660-0901

Certificate of Analysis No. H9-9805B64-03

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 06/10/98

PROJECT: Transwestern Pipeline
SITE: Roswell Sta. 9
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-11

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 05/26/98 14:05:00
DATE RECEIVED: 05/27/98

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
Iron, Total Method 6010B *** Analyzed by: DQ Date: 06/05/98 09:46:00	0.17	0.02	mg/L	
Mercury, Total Method 7470 A*** Analyzed by: AG Date: 06/09/98 14:16:00	ND	0.0002	mg/L	
Manganese, Total Method 6010B *** Analyzed by: DQ Date: 06/05/98 09:46:00	ND	0.005	mg/L	
Acid Digestion-Aqueous, ICP Method 3010A *** Analyzed by: SRC Date: 05/28/98 08:30:00	05/28/98			
Lead, Total Method 6010B *** Analyzed by: DQ Date: 06/05/98 09:46:00	ND	0.05	mg/L	
Selenium, Total Method 7740 *** Analyzed by: PB Date: 06/09/98 09:30:00	ND	0.005	mg/L	

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.

**HOUSTON LABORATORY**

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 660-0901

Certificate of Analysis No. H9-9805B64-03

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 06/10/98

PROJECT: Transwestern Pipeline
SITE: Roswell Sta. 9
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-11

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 05/26/98 14:05:00
DATE RECEIVED: 05/27/98

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
Zinc, Total	0.21	0.02	mg/L	
Method 6010B ***				
Analyzed by: DQ				
Date: 06/05/98 09:46:00				

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.

**HOUSTON LABORATORY**8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9805B64-03

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

06/10/98

PROJECT: Transwestern Pipeline
SITE: Roswell Sta. 9
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-11PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 05/26/98 14:05:00
DATE RECEIVED: 05/27/98**ANALYTICAL DATA**

PARAMETER	RESULTS	PQL*	UNITS
Benzene	ND	5	ug/L
Bromobenzene	ND	5	ug/L
Bromochloromethane	ND	5	ug/L
Bromodichloromethane	ND	5	ug/L
Bromoform	ND	5	ug/L
Bromomethane	ND	10	ug/L
n-Butylbenzene	ND	5	ug/L
sec-Butylbenzene	ND	5	ug/L
tert-Butylbenzene	ND	5	ug/L
Carbon tetrachloride	ND	5	ug/L
Chlorobenzene	ND	5	ug/L
Chlorodibromomethane	ND	5	ug/L
Chloroethane	ND	10	ug/L
Chloroform	ND	5	ug/L
Chloromethane	ND	10	ug/L
2-Chlorotoluene	ND	5	ug/L
4-Chlorotoluene	ND	5	ug/L
1,2-Dibromo-3-chloropropane	ND	5	ug/L
1,2-Dibromoethane	ND	5	ug/L
Dibromomethane	ND	5	ug/L
1,2-Dichlorobenzene	ND	5	ug/L
1,3-Dichlorobenzene	ND	5	ug/L
1,4-Dichlorobenzene	ND	5	ug/L
Dichlorodifluoromethane	ND	10	ug/L
1,1-Dichloroethane	ND	5	ug/L
1,2-Dichloroethane	ND	5	ug/L
1,1-Dichloroethene	ND	5	ug/L
cis-1,2-Dichloroethene	ND	5	ug/L
trans-1,2-Dichloroethene	ND	5	ug/L
1,2-Dichloropropane	ND	5	ug/L
1,3-Dichloropropane	ND	5	ug/L
2,2-Dichloropropane	ND	5	ug/L
1,1-Dichloropropene	ND	5	ug/L
Ethylbenzene	ND	5	ug/L
Hexachlorobutadiene	ND	5	ug/L
Isopropylbenzene	ND	5	ug/L
p-Isopropyltoluene	ND	5	ug/L
Methylene chloride	ND	5	ug/L

METHOD: 8260 Water, Volatile Organics
(continued on next page)



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9805B64-03

Cypress Engineering, Inc.

SAMPLE ID: MW-11

ANALYTICAL DATA (continued)				
PARAMETER	RESULTS	PQL*	UNITS	
Naphthalene	ND	5	ug/L	
n-Propylbenzene	ND	5	ug/L	
Styrene	ND	5	ug/L	
1,1,1,2-Tetrachloroethane	ND	5	ug/L	
1,1,2,2-Tetrachloroethane	ND	5	ug/L	
Tetrachloroethene	ND	5	ug/L	
Toluene	ND	5	ug/L	
1,2,3-Trichlorobenzene	ND	5	ug/L	
1,2,4-Trichlorobenzene	ND	5	ug/L	
1,1,1-Trichloroethane	ND	5	ug/L	
1,1,2-Trichloroethane	ND	5	ug/L	
Trichloroethene	ND	5	ug/L	
Trichlorofluoromethane	ND	5	ug/L	
1,2,3-Trichloropropane	ND	5	ug/L	
1,2,4-Trimethylbenzene	ND	5	ug/L	
1,3,5-Trimethylbenzene	ND	5	ug/L	
Vinyl chloride	ND	10	ug/L	
Xylenes (total)	ND	5	ug/L	
Acetone	ND	100	ug/L	
Carbon Disulfide	ND	5	ug/L	
Vinyl Acetate	ND	10	ug/L	
2-Butanone	ND	20	ug/L	
1,2-Dichloroethene (total)	ND	5	ug/L	
2-Chloroethylvinylether	ND	10	ug/L	
4-Methyl-2-Pentanone	ND	10	ug/L	
cis-1,3-Dichloropropene	ND	5	ug/L	
trans-1,3-Dichloropropene	ND	5	ug/L	
2-Hexanone	ND	10	ug/L	

SURROGATES	AMOUNT SPIKED	% RECOVERY	LOWER LIMIT	UPPER LIMIT
1,2-Dichloroethane-d4	50 ug/L	94	76	114
Toluene-d8	50 ug/L	90	88	110
4-Bromofluorobenzene	50 ug/L	100	86	115

ANALYZED BY: JC

DATE/TIME: 05/28/98 10:47:00

METHOD: 8260 Water, Volatile Organics

NOTES: * - Practical Quantitation Limit

ND - Not Detected

NA - Not Analyzed

COMMENTS:

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9805B64-03

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

06/10/98

PROJECT: Transwestern Pipeline
SITE: Roswell Sta. 9
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-11

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 05/26/98 14:05:00
DATE RECEIVED: 05/27/98

ANALYTICAL DATA

PARAMETER	RESULTS	PQL*	UNITS
Acenaphthene	ND	5	ug/L
Acenaphthylene	ND	5	ug/L
Anthracene	ND	5	ug/L
Benzo(a)Anthracene	ND	5	ug/L
Benzo(b)Fluoranthene	ND	5	ug/L
Benzo(k)Fluoranthene	ND	5	ug/L
Benzo(a)Pyrene	ND	5	ug/L
Benzo(g,h,i)Perylene	ND	5	ug/L
Chrysene	ND	5	ug/L
Dibenz(a,h)Anthracene	ND	5	ug/L
Fluoranthene	ND	5	ug/L
Fluorene	ND	5	ug/L
Indeno(1,2,3-cd)Pyrene	ND	5	ug/L
2-Methylnaphthalene	ND	5	ug/L
Naphthalene	ND	5	ug/L
Phenanthrene	ND	5	ug/L
Pyrene	ND	5	ug/L
1-Methylnaphthalene	ND	5	ug/L

SURROGATES	AMOUNT SPIKED	% RECOVERY	LOWER LIMIT	UPPER LIMIT
Nitrobenzene-d5	50 ug/L	48	35	114
2-Fluorobiphenyl	50 ug/L	58	43	116
Terphenyl-d14	50 ug/L	140	33	141
Phenol-d5	75 ug/L	43	10	110
2-Fluorophenol	75 ug/L	43	21	110
2,4,6-Tribromophenol	75 ug/L	105	10	123

ANALYZED BY: YL DATE/TIME: 06/09/98 18:46:00
EXTRACTED BY: KL DATE/TIME: 05/31/98 08:00:00
METHOD: 8270C, Semivolatile Organics - Water
NOTES: * - Practical Quantitation Limit ND - Not Detected
 NA - Not Analyzed

COMMENTS:

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.

**HOUSTON LABORATORY**8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9805B64-04

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 06/11/98

PROJECT: Transwestern Pipeline
SITE: Roswell Sta. 9
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-10PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 05/26/98 15:10:00
DATE RECEIVED: 05/27/98

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
Alkalinity, as CaCO ₃ Method 310.1 * Analyzed by: JS Date: 06/08/98 10:00:00	122	1	mg/L	
Chloride Method 325.3 * Analyzed by: DAM Date: 06/09/98 11:00:00	370	10	mg/L	
Sulfate Method 375.4 * Analyzed by: TW Date: 06/10/98 11:30:00	2200	100	mg/L	
Total Dissolved Solids Method 160.1 * Analyzed by: CL Date: 05/28/98 15:26:00	3000	100	mg/L	
Nitrate-Nitrite, as N Method 353.3 * Analyzed by: DAM Date: 05/27/98 16:00:00	0.8	0.1	mg/L	
Liquid-liquid extraction SEMIVOLATILES Method 3520C *** Analyzed by: KL Date: 05/31/98 08:00:00	05/31/98			

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9805B64-04

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 06/10/98

PROJECT: Transwestern Pipeline
SITE: Roswell Sta. 9
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-10

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 05/26/98 15:10:00
DATE RECEIVED: 05/27/98

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
Silver, Total Method 6010B *** Analyzed by: DQ Date: 06/05/98 09:46:00	ND	0.01	mg/L	
Arsenic, Total Method 7060A *** Analyzed by: PB Date: 06/08/98 10:11:00	ND	0.005	mg/L	
Barium, Total Method 6010B *** Analyzed by: DQ Date: 06/05/98 09:46:00	0.006	0.005	mg/L	
Cadmium, Total Method 6010B *** Analyzed by: DQ Date: 06/05/98 09:46:00	ND	0.005	mg/L	
Chromium, Total Method 6010B *** Analyzed by: DQ Date: 06/05/98 09:46:00	ND	0.01	mg/L	
Copper, Total Method 6010B *** Analyzed by: DQ Date: 06/05/98 09:46:00	ND	0.01	mg/L	

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.

**HOUSTON LABORATORY**

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 660-0901

Certificate of Analysis No. H9-9805B64-04

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 06/10/98

PROJECT: Transwestern Pipeline
SITE: Roswell Sta. 9
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-10

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 05/26/98 15:10:00
DATE RECEIVED: 05/27/98

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
Iron, Total Method 6010B *** Analyzed by: DQ Date: 06/05/98 09:46:00	0.03	0.02	mg/L	
Mercury, Total Method 7470 A*** Analyzed by: AG Date: 06/09/98 14:16:00	ND	0.0002	mg/L	
Manganese, Total Method 6010B *** Analyzed by: DQ Date: 06/05/98 09:46:00	ND	0.005	mg/L	
Acid Digestion-Aqueous, ICP Method 3010A *** Analyzed by: SRC Date: 05/28/98 08:30:00	05/28/98			
Lead, Total Method 6010B *** Analyzed by: DQ Date: 06/05/98 09:46:00	ND	0.05	mg/L	
Selenium, Total Method 7740 *** Analyzed by: PB Date: 06/09/98 09:30:00	ND	0.005	mg/L	

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.

**HOUSTON LABORATORY**

8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9805B64-04

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 06/10/98

PROJECT: Transwestern Pipeline
SITE: Roswell Sta. 9
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-10

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 05/26/98 15:10:00
DATE RECEIVED: 05/27/98

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
Zinc, Total	0.20	0.02	mg/L	
Method 6010B ***				
Analyzed by: DQ				
Date: 06/05/98 09:46:00				

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9805B64-04

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

06/10/98

PROJECT: Transwestern Pipeline
SITE: Roswell Sta. 9
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-10

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 05/26/98 15:10:00
DATE RECEIVED: 05/27/98

ANALYTICAL DATA

PARAMETER	RESULTS	PQL*	UNITS
Benzene	ND	5	ug/L
Bromobenzene	ND	5	ug/L
Bromochloromethane	ND	5	ug/L
Bromodichloromethane	ND	5	ug/L
Bromoform	ND	5	ug/L
Bromomethane	ND	10	ug/L
n-Butylbenzene	ND	5	ug/L
sec-Butylbenzene	ND	5	ug/L
tert-Butylbenzene	ND	5	ug/L
Carbon tetrachloride	ND	5	ug/L
Chlorobenzene	ND	5	ug/L
Chlorodibromomethane	ND	5	ug/L
Chloroethane	ND	10	ug/L
Chloroform	ND	5	ug/L
Chloromethane	ND	10	ug/L
2-Chlorotoluene	ND	5	ug/L
4-Chlorotoluene	ND	5	ug/L
1,2-Dibromo-3-chloropropane	ND	5	ug/L
1,2-Dibromoethane	ND	5	ug/L
Dibromomethane	ND	5	ug/L
1,2-Dichlorobenzene	ND	5	ug/L
1,3-Dichlorobenzene	ND	5	ug/L
1,4-Dichlorobenzene	ND	5	ug/L
Dichlorodifluoromethane	ND	10	ug/L
1,1-Dichloroethane	ND	5	ug/L
1,2-Dichloroethane	ND	5	ug/L
1,1-Dichloroethene	ND	5	ug/L
cis-1,2-Dichloroethene	ND	5	ug/L
trans-1,2-Dichloroethene	ND	5	ug/L
1,2-Dichloropropane	ND	5	ug/L
1,3-Dichloropropane	ND	5	ug/L
2,2-Dichloropropane	ND	5	ug/L
1,1-Dichloropropene	ND	5	ug/L
Ethylbenzene	ND	5	ug/L
Hexachlorobutadiene	ND	5	ug/L
Isopropylbenzene	ND	5	ug/L
p-Isopropyltoluene	ND	5	ug/L
Methylene chloride	ND	5	ug/L

METHOD: 8260 Water, Volatile Organics
(continued on next page)

**HOUSTON LABORATORY**

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 660-0901

Certificate of Analysis No. H9-9805B64-04

Cypress Engineering, Inc.

SAMPLE ID: MW-10

ANALYTICAL DATA (continued)			
PARAMETER	RESULTS	PQL*	UNITS
Naphthalene	ND	5	ug/L
n-Propylbenzene	ND	5	ug/L
Styrene	ND	5	ug/L
1,1,1,2-Tetrachloroethane	ND	5	ug/L
1,1,2,2-Tetrachloroethane	ND	5	ug/L
Tetrachloroethene	ND	5	ug/L
Toluene	ND	5	ug/L
1,2,3-Trichlorobenzene	ND	5	ug/L
1,2,4-Trichlorobenzene	ND	5	ug/L
1,1,1-Trichloroethane	ND	5	ug/L
1,1,2-Trichloroethane	ND	5	ug/L
Trichloroethene	ND	5	ug/L
Trichlorofluoromethane	ND	5	ug/L
1,2,3-Trichloropropane	ND	5	ug/L
1,2,4-Trimethylbenzene	ND	5	ug/L
1,3,5-Trimethylbenzene	ND	5	ug/L
Vinyl chloride	ND	10	ug/L
Xylenes (total)	ND	5	ug/L
Acetone	ND	100	ug/L
Carbon Disulfide	ND	5	ug/L
Vinyl Acetate	ND	10	ug/L
2-Butanone	ND	20	ug/L
1,2-Dichloroethene (total)	ND	5	ug/L
2-Chloroethylvinylether	ND	10	ug/L
4-Methyl-2-Pentanone	ND	10	ug/L
cis-1,3-Dichloropropene	ND	5	ug/L
trans-1,3-Dichloropropene	ND	5	ug/L
2-Hexanone	ND	10	ug/L

SURROGATES	AMOUNT SPIKED	% RECOVERY	LOWER LIMIT	UPPER LIMIT
1,2-Dichloroethane-d4	50 ug/L	96	76	114
Toluene-d8	50 ug/L	92	88	110
4-Bromofluorobenzene	50 ug/L	96	86	115

ANALYZED BY: JC

DATE/TIME: 05/28/98 11:12:00

METHOD: 8260 Water, Volatile Organics

NOTES: * - Practical Quantitation Limit

ND - Not Detected

NA - Not Analyzed

COMMENTS:

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.

**HOUSTON LABORATORY**

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 660-0901

Certificate of Analysis No. H9-9805B64-04

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

06/10/98

PROJECT: Transwestern Pipeline
SITE: Roswell Sta. 9
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-10

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 05/26/98 15:10:00
DATE RECEIVED: 05/27/98

ANALYTICAL DATA

PARAMETER	RESULTS	PQL*	UNITS
Acenaphthene	ND	5	ug/L
Acenaphthylene	ND	5	ug/L
Anthracene	ND	5	ug/L
Benzo(a)Anthracene	ND	5	ug/L
Benzo(b)Fluoranthene	ND	5	ug/L
Benzo(k)Fluoranthene	ND	5	ug/L
Benzo(a)Pyrene	ND	5	ug/L
Benzo(g,h,i)Perylene	ND	5	ug/L
Chrysene	ND	5	ug/L
Dibenz(a,h)Anthracene	ND	5	ug/L
Fluoranthene	ND	5	ug/L
Fluorene	ND	5	ug/L
Indeno(1,2,3-cd)Pyrene	ND	5	ug/L
2-Methylnaphthalene	ND	5	ug/L
Naphthalene	ND	5	ug/L
Phenanthrene	ND	5	ug/L
Pyrene	ND	5	ug/L
1-Methylnaphthalene	ND	5	ug/L

SURROGATES	AMOUNT SPIKED	% RECOVERY	LOWER LIMIT	UPPER LIMIT
Nitrobenzene-d5	50 ug/L	74	35	114
2-Fluorobiphenyl	50 ug/L	86	43	116
Terphenyl-d14	50 ug/L	80	33	141
Phenol-d5	75 ug/L	19	10	110
2-Fluorophenol	75 ug/L	32	21	110
2,4,6-Tribromophenol	75 ug/L	75	10	123

ANALYZED BY: YL DATE/TIME: 06/09/98 19:18:00
EXTRACTED BY: KL DATE/TIME: 05/31/98 08:00:00
METHOD: 8270C, Semivolatile Organics - Water
NOTES: * - Practical Quantitation Limit ND - Not Detected
 NA - Not Analyzed

COMMENTS:

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9805B64-05

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 06/11/98

PROJECT: Transwestern Pipeline
SITE: Roswell Sta. 9
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-3

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 05/26/98 16:10:00
DATE RECEIVED: 05/27/98

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
Alkalinity, as CaCO ₃ Method 310.1 * Analyzed by: JS Date: 06/08/98 10:00:00	108	1	mg/L	
Chloride Method 325.3 * Analyzed by: DAM Date: 06/09/98 11:00:00	430	10	mg/L	
Sulfate Method 375.4 * Analyzed by: TW Date: 06/10/98 11:30:00	2100	100	mg/L	
Total Dissolved Solids Method 160.1 * Analyzed by: CL Date: 05/28/98 15:26:00	2700	100	mg/L	
Nitrate-Nitrite, as N Method 353.3 * Analyzed by: DAM Date: 05/27/98 16:00:00	1.2	0.1	mg/L	
Liquid-liquid extraction SEMIVOLATILES Method 3520C *** Analyzed by: KL Date: 05/31/98 08:00:00	05/31/98			

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9805B64-05

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 06/10/98

PROJECT: Transwestern Pipeline
SITE: Roswell Sta. 9
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-3

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 05/26/98 16:10:00
DATE RECEIVED: 05/27/98

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
Silver, Total Method 6010B *** Analyzed by: DQ Date: 06/05/98 09:46:00	ND	0.01	mg/L	
Arsenic, Total Method 7060A *** Analyzed by: PB Date: 06/08/98 10:11:00	ND	0.005	mg/L	
Barium, Total Method 6010B *** Analyzed by: DQ Date: 06/05/98 09:46:00	0.008	0.005	mg/L	
Cadmium, Total Method 6010B *** Analyzed by: DQ Date: 06/05/98 09:46:00	ND	0.005	mg/L	
Chromium, Total Method 6010B *** Analyzed by: DQ Date: 06/05/98 09:46:00	ND	0.01	mg/L	
Copper, Total Method 6010B *** Analyzed by: DQ Date: 06/05/98 09:46:00	ND	0.01	mg/L	

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.

**HOUSTON LABORATORY**

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 660-0901

Certificate of Analysis No. H9-9805B64-05

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 06/10/98

PROJECT: Transwestern Pipeline
SITE: Roswell Sta. 9
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-3

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 05/26/98 16:10:00
DATE RECEIVED: 05/27/98

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Iron, Total Method 6010B *** Analyzed by: DQ Date: 06/05/98 09:46:00	ND	0.02	mg/L
Mercury, Total Method 7470 A*** Analyzed by: AG Date: 06/09/98 14:16:00	ND	0.0002	mg/L
Manganese, Total Method 6010B *** Analyzed by: DQ Date: 06/05/98 09:46:00	ND	0.005	mg/L
Acid Digestion-Aqueous, ICP Method 3010A *** Analyzed by: SRC Date: 05/28/98 08:30:00	05/28/98		
Lead, Total Method 6010B *** Analyzed by: DQ Date: 06/05/98 09:46:00	ND	0.05	mg/L
Selenium, Total Method 7740 *** Analyzed by: PB Date: 06/09/98 09:30:00	ND	0.005	mg/L

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9805B64-05

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 06/10/98

PROJECT: Transwestern Pipeline
SITE: Roswell Sta. 9
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-3

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 05/26/98 16:10:00
DATE RECEIVED: 05/27/98

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
Zinc, Total	ND	0.02	mg/L	
Method 6010B ***				
Analyzed by: DQ				
Date: 06/05/98 09:46:00				

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.

**HOUSTON LABORATORY**

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 660-0901

Certificate of Analysis No. H9-9805B64-05

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

06/10/98

PROJECT: Transwestern Pipeline
SITE: Roswell Sta. 9
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-3

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 05/26/98 16:10:00
DATE RECEIVED: 05/27/98

ANALYTICAL DATA

PARAMETER	RESULTS	PQL*	UNITS
Benzene	ND	5	ug/L
Bromobenzene	ND	5	ug/L
Bromochloromethane	ND	5	ug/L
Bromodichloromethane	ND	5	ug/L
Bromoform	ND	5	ug/L
Bromomethane	ND	10	ug/L
n-Butylbenzene	ND	5	ug/L
sec-Butylbenzene	ND	5	ug/L
tert-Butylbenzene	ND	5	ug/L
Carbon tetrachloride	ND	5	ug/L
Chlorobenzene	ND	5	ug/L
Chlorodibromomethane	ND	5	ug/L
Chloroethane	ND	10	ug/L
Chloroform	ND	5	ug/L
Chloromethane	ND	10	ug/L
2-Chlorotoluene	ND	5	ug/L
4-Chlorotoluene	ND	5	ug/L
1,2-Dibromo-3-chloropropane	ND	5	ug/L
1,2-Dibromoethane	ND	5	ug/L
Dibromomethane	ND	5	ug/L
1,2-Dichlorobenzene	ND	5	ug/L
1,3-Dichlorobenzene	ND	5	ug/L
1,4-Dichlorobenzene	ND	5	ug/L
Dichlorodifluoromethane	ND	10	ug/L
1,1-Dichloroethane	ND	5	ug/L
1,2-Dichloroethane	ND	5	ug/L
1,1-Dichloroethene	ND	5	ug/L
cis-1,2-Dichloroethene	ND	5	ug/L
trans-1,2-Dichloroethene	ND	5	ug/L
1,2-Dichloropropane	ND	5	ug/L
1,3-Dichloropropane	ND	5	ug/L
2,2-Dichloropropane	ND	5	ug/L
1,1-Dichloropropene	ND	5	ug/L
Ethylbenzene	ND	5	ug/L
Hexachlorobutadiene	ND	5	ug/L
Isopropylbenzene	ND	5	ug/L
p-Isopropyltoluene	ND	5	ug/L
Methylene chloride	ND	5	ug/L

METHOD: 8260 Water, Volatile Organics
(continued on next page)



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9805B64-05

Cypress Engineering, Inc.

SAMPLE ID: MW-3

ANALYTICAL DATA (continued)			
PARAMETER	RESULTS	PQL*	UNITS
Naphthalene	ND	5	ug/L
n-Propylbenzene	ND	5	ug/L
Styrene	ND	5	ug/L
1,1,1,2-Tetrachloroethane	ND	5	ug/L
1,1,2,2-Tetrachloroethane	ND	5	ug/L
Tetrachloroethene	ND	5	ug/L
Toluene	ND	5	ug/L
1,2,3-Trichlorobenzene	ND	5	ug/L
1,2,4-Trichlorobenzene	ND	5	ug/L
1,1,1-Trichloroethane	ND	5	ug/L
1,1,2-Trichloroethane	ND	5	ug/L
Trichloroethene	ND	5	ug/L
Trichlorofluoromethane	ND	5	ug/L
1,2,3-Trichloropropane	ND	5	ug/L
1,2,4-Trimethylbenzene	ND	5	ug/L
1,3,5-Trimethylbenzene	ND	5	ug/L
Vinyl chloride	ND	10	ug/L
Xylenes (total)	ND	5	ug/L
Acetone	ND	100	ug/L
Carbon Disulfide	ND	5	ug/L
Vinyl Acetate	ND	10	ug/L
2-Butanone	ND	20	ug/L
1,2-Dichloroethene (total)	ND	5	ug/L
2-Chloroethylvinylether	ND	10	ug/L
4-Methyl-2-Pentanone	ND	10	ug/L
cis-1,3-Dichloropropene	ND	5	ug/L
trans-1,3-Dichloropropene	ND	5	ug/L
2-Hexanone	ND	10	ug/L

SURROGATES	AMOUNT SPIKED	% RECOVERY	LOWER LIMIT	UPPER LIMIT
1,2-Dichloroethane-d4	50 ug/L	94	76	114
Toluene-d8	50 ug/L	92	88	110
4-Bromofluorobenzene	50 ug/L	96	86	115

ANALYZED BY: JC

DATE/TIME: 05/28/98 11:38:00

METHOD: 8260 Water, Volatile Organics

NOTES: * - Practical Quantitation Limit

ND - Not Detected

NA - Not Analyzed

COMMENTS:

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.

**HOUSTON LABORATORY**8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9805B64-05

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

06/10/98

PROJECT: Transwestern Pipeline
SITE: Roswell Sta. 9
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-3PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 05/26/98 16:10:00
DATE RECEIVED: 05/27/98**ANALYTICAL DATA**

PARAMETER	RESULTS	PQL*	UNITS
Acenaphthene	ND	5	ug/L
Acenaphthylene	ND	5	ug/L
Anthracene	ND	5	ug/L
Benzo(a)Anthracene	ND	5	ug/L
Benzo(b)Fluoranthene	ND	5	ug/L
Benzo(k)Fluoranthene	ND	5	ug/L
Benzo(a)Pyrene	ND	5	ug/L
Benzo(g,h,i)Perylene	ND	5	ug/L
Chrysene	ND	5	ug/L
Dibenz(a,h)Anthracene	ND	5	ug/L
Fluoranthene	ND	5	ug/L
Fluorene	ND	5	ug/L
Indeno(1,2,3-cd)Pyrene	ND	5	ug/L
2-Methylnaphthalene	ND	5	ug/L
Naphthalene	ND	5	ug/L
Phenanthrene	ND	5	ug/L
Pyrene	ND	5	ug/L
1-Methylnaphthalene	ND	5	ug/L

SURROGATES	AMOUNT SPIKED	% RECOVERY	LOWER LIMIT	UPPER LIMIT
Nitrobenzene-d5	50 ug/L	74	35	114
2-Fluorobiphenyl	50 ug/L	84	43	116
Terphenyl-d14	50 ug/L	84	33	141
Phenol-d5	75 ug/L	21	10	110
2-Fluorophenol	75 ug/L	33	21	110
2,4,6-Tribromophenol	75 ug/L	73	10	123

ANALYZED BY: YL
EXTRACTED BY: KL
METHOD: 8270C, Semivolatile Organics - Water
DATE/TIME: 06/09/98 22:59:00
DATE/TIME: 05/31/98 08:00:00
NOTES: * - Practical Quantitation Limit ND - Not Detected
NA - Not Analyzed**COMMENTS:****QUALITY ASSURANCE:** These analyses are performed in accordance
with EPA guidelines for quality assurance.

**HOUSTON LABORATORY**

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 660-0901

Certificate of Analysis No. H9-9805B64-06

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

06/10/98

PROJECT: Transwestern Pipeline
SITE: Roswell Sta. 9
SAMPLED BY: Provided by SPL
SAMPLE ID: Trip Blank 05/21/98

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 05/26/98
DATE RECEIVED: 05/27/98

ANALYTICAL DATA

PARAMETER	RESULTS	PQL*	UNITS
Benzene	ND	5	ug/L
Bromobenzene	ND	5	ug/L
Bromochloromethane	ND	5	ug/L
Bromodichloromethane	ND	5	ug/L
Bromoform	ND	5	ug/L
Bromomethane	ND	10	ug/L
n-Butylbenzene	ND	5	ug/L
sec-Butylbenzene	ND	5	ug/L
tert-Butylbenzene	ND	5	ug/L
Carbon tetrachloride	ND	5	ug/L
Chlorobenzene	ND	5	ug/L
Chlorodibromomethane	ND	5	ug/L
Chloroethane	ND	10	ug/L
Chloroform	ND	5	ug/L
Chloromethane	ND	10	ug/L
2-Chlorotoluene	ND	5	ug/L
4-Chlorotoluene	ND	5	ug/L
1,2-Dibromo-3-chloropropane	ND	5	ug/L
1,2-Dibromoethane	ND	5	ug/L
Dibromomethane	ND	5	ug/L
1,2-Dichlorobenzene	ND	5	ug/L
1,3-Dichlorobenzene	ND	5	ug/L
1,4-Dichlorobenzene	ND	5	ug/L
Dichlorodifluoromethane	ND	10	ug/L
1,1-Dichloroethane	ND	5	ug/L
1,2-Dichloroethane	ND	5	ug/L
1,1-Dichloroethene	ND	5	ug/L
cis-1,2-Dichloroethene	ND	5	ug/L
trans-1,2-Dichloroethene	ND	5	ug/L
1,2-Dichloropropane	ND	5	ug/L
1,3-Dichloropropane	ND	5	ug/L
2,2-Dichloropropane	ND	5	ug/L
1,1-Dichloropropene	ND	5	ug/L
Ethylbenzene	ND	5	ug/L
Hexachlorobutadiene	ND	5	ug/L
Isopropylbenzene	ND	5	ug/L
p-Isopropyltoluene	ND	5	ug/L
Methylene chloride	ND	5	ug/L

METHOD: 8260 Water, Volatile Organics
(continued on next page)

**HOUSTON LABORATORY**

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 660-0901

Certificate of Analysis No. H9-9805B64-06

Cypress Engineering, Inc.

SAMPLE ID: Trip Blank 05/21/98

PARAMETER	ANALYTICAL DATA (continued)		UNITS
	RESULTS	PQL*	
Naphthalene	ND	5	ug/L
n-Propylbenzene	ND	5	ug/L
Styrene	ND	5	ug/L
1,1,1,2-Tetrachloroethane	ND	5	ug/L
1,1,2,2-Tetrachloroethane	ND	5	ug/L
Tetrachloroethene	ND	5	ug/L
Toluene	ND	5	ug/L
1,2,3-Trichlorobenzene	ND	5	ug/L
1,2,4-Trichlorobenzene	ND	5	ug/L
1,1,1-Trichloroethane	ND	5	ug/L
1,1,2-Trichloroethane	ND	5	ug/L
Trichloroethene	ND	5	ug/L
Trichlorofluoromethane	ND	5	ug/L
1,2,3-Trichloropropane	ND	5	ug/L
1,2,4-Trimethylbenzene	ND	5	ug/L
1,3,5-Trimethylbenzene	ND	5	ug/L
Vinyl chloride	ND	10	ug/L
Xylenes (total)	ND	5	ug/L
Acetone	ND	100	ug/L
Carbon Disulfide	ND	5	ug/L
Vinyl Acetate	ND	10	ug/L
2-Butanone	ND	20	ug/L
1,2-Dichloroethene (total)	ND	5	ug/L
2-Chloroethylvinylether	ND	10	ug/L
4-Methyl-2-Pentanone	ND	10	ug/L
cis-1,3-Dichloropropene	ND	5	ug/L
trans-1,3-Dichloropropene	ND	5	ug/L
2-Hexanone	ND	10	ug/L

SURROGATES	AMOUNT SPIKED	% RECOVERY	LOWER LIMIT	UPPER LIMIT
1,2-Dichloroethane-d4	50 ug/L	98	76	114
Toluene-d8	50 ug/L	92	88	110
4-Bromofluorobenzene	50 ug/L	98	86	115

ANALYZED BY: JC

DATE/TIME: 05/28/98 12:03:00

METHOD: 8260 Water, Volatile Organics

NOTES: * - Practical Quantitation Limit

ND - Not Detected

NA - Not Analyzed

COMMENTS:

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.

QUALITY CONTROL
DOCUMENTATION

3A
WATER VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: SPL

Contract:

Lab Code:

Case No.: 9805B64 SAS No.:

SDG No.:

Matrix Spike - EPA Sample No.: MW-6

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC #	QC. LIMITS REC.
=====	=====	=====	=====	=====	=====
1,1-Dichloroethene	50	0	65	130	61-145
Trichloroethene	50	0	52	104	71-120
Benzene	50	0	53	106	76-127
Toluene	50	0	46	92	76-125
Chlorobenzene	50	0	51	102	75-130

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC #	% RPD #	QC LIMITS	
=====	=====	=====	=====	=====	RPD	REC.
1,1-Dichloroethene	50	64	128	2	14	61-145
Trichloroethene	50	51	102	2	14	71-120
Benzene	50	50	100	6	11	76-127
Toluene	50	44	88	4	13	76-125
Chlorobenzene	50	49	98	4	13	75-130

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 5 outside limits

Spike Recovery: 0 out of 10 outside limits

Data File: /var/chem/n.i/n980528.b/n148tl1.d
Report Date: 28-May-1998 08:41

Page 3

SPL Houston Labs

RECOVERY REPORT

Client Name: Client SDG: n980528
Sample Matrix: LIQUID Fraction: VOA
Lab Smp Id: LCS
Level: LOW Operator: JC
Data Type: MS DATA SampleType: LCS
SpikeList File: 8260_water.spk Quant Type: ISTD
Sublist File: 8260.sub
Method File: /var/chem/n.i/n980528.b/n8260w.m
Misc Info: N148W1//N148CW1

SPIKE COMPOUND	CONC ADDED ug/L	CONC RECOVERED ug/L	% RECOVERED	LIMITS
8 1,1-Dichloroethene	50	58	116.00	61-145
29 Trichloroethene	50	50	100.00	71-120
25 Benzene	50	52	104.00	76-127
37 Toluene	50	46	92.00	76-125
45 Chlorobenzene	50	50	100.00	75-130

SURROGATE COMPOUND	CONC ADDED ug/L	CONC RECOVERED ug/L	% RECOVERED	LIMITS
\$ 21 1,2-Dichloroethane	50	47	94.00	76-114
\$ 36 Toluene-d8	50	47	94.00	88-110
\$ 56 Bromofluorobenzene	50	50	100.00	86-115



SPL Blank QC Report

HOUSTON LABORATORY

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 660-0901

page 1

Matrix: Aqueous
Sample ID: VLBLK
Batch: N980528122720

Reported on: 05/29/98 16:09
Analyzed on: 05/28/98 08:41
Analyst: JC

METHOD 8260/8240 N148B01

Compound	Result	Detection Limit	Units
Dichlorodifluoromethane	ND	10	ug/L
Chloromethane	ND	10	ug/L
Vinyl Chloride	ND	10	ug/L
Bromomethane	ND	10	ug/L
Chloroethane	ND	10	ug/L
Trichlorofluoromethane	ND	5	ug/L
Acetone	ND	100	ug/L
1,1-Dichloroethene	ND	5	ug/L
Methylene Chloride	ND	5	ug/L
Carbon Disulfide	ND	5	ug/L
trans-1,2-Dichloroethene	ND	5	ug/L
1,1-Dichloroethane	ND	5	ug/L
Vinyl Acetate	ND	10	ug/L
2-Butanone	ND	20	ug/L
cis-1,2-Dichloroethene	ND	5	ug/L
1,2-Dichloroethene (total)	ND	5	ug/L
2,2-Dichloropropane	ND	5	ug/L
Bromochloromethane	ND	5	ug/L
Chloroform	ND	5	ug/L
1,1,1-Trichloroethane	ND	5	ug/L
1,2-Dichloroethane	ND	5	ug/L
1,1-Dichloropropene	ND	5	ug/L
Benzene	ND	5	ug/L
Carbon Tetrachloride	ND	5	ug/L
1,2-Dichloropropane	ND	5	ug/L
Trichloroethene	ND	5	ug/L
Dibromomethane	ND	5	ug/L
Bromodichloromethane	ND	5	ug/L
2-Chloroethylvinylether	ND	10	ug/L
4-Methyl-2-Pentanone	ND	10	ug/L
cis-1,3-Dichloropropene	ND	5	ug/L
trans-1,3-Dichloropropene	ND	5	ug/L
Toluene	ND	5	ug/L
1,1,2-Trichloroethane	ND	5	ug/L

Notes

ND - Not detected.



SPL Blank QC Report

HOUSTON LABORATORY

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 660-0901

page

2

Matrix: Aqueous
Sample ID: VLBLK
Batch: N980528122720

Reported on: 05/29/98 16:09
Analyzed on: 05/28/98 08:41
Analyst: JC

METHOD 8260/8240 N148B01

Compound	Result	Detection Limit	Units
1,3-Dichloropropane	ND	5	ug/L
2-Hexanone	ND	10	ug/L
Dibromochloromethane	ND	5	ug/L
1,2-Dibromoethane	ND	5	ug/L
Tetrachloroethene	ND	5	ug/L
Chlorobenzene	ND	5	ug/L
1,1,1,2-Tetrachloroethane	ND	5	ug/L
Ethylbenzene	ND	5	ug/L
Bromoform	ND	5	ug/L
Styrene	ND	5	ug/L
Xylene (Total)	ND	5	ug/L
1,1,2,2-Tetrachloroethane	ND	5	ug/L
1,2,3-Trichloropropane	ND	5	ug/L
Isopropylbenzene	ND	5	ug/L
Bromobenzene	ND	5	ug/L
N-Propylbenzene	ND	5	ug/L
2-Chlorotoluene	ND	5	ug/L
4-Chlorotoluene	ND	5	ug/L
1,3,5-Trimethylbenzene	ND	5	ug/L
tert-Butylbenzene	ND	5	ug/L
1,2,4-Trimethylbenzene	ND	5	ug/L
1,3-Dichlorobenzene	ND	5	ug/L
sec-Butylbenzene	ND	5	ug/L
1,4-Dichlorobenzene	ND	5	ug/L
p-Isopropyltoluene	ND	5	ug/L
1,2-Dichlorobenzene	ND	5	ug/L
n-Butylbenzene	ND	5	ug/L
1,2-Dibromo-3-Chloropropan	ND	5	ug/L
1,2,4-Trichlorobenzene	ND	5	ug/L
Naphthalene	ND	5	ug/L
Hexachlorobutadiene	ND	5	ug/L
1,2,3-Trichlorobenzene	ND	5	ug/L

Notes

ND - Not detected.



SPL Blank QC Report

HOUSTON LABORATORY

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 660-0901

page

3

Matrix: Aqueous
Sample ID: VLBLK
Batch: N980528122720

Reported on: 05/29/98 16:09
Analyzed on: 05/28/98 08:41
Analyst: JC

METHOD 8260/8240 N148B01

Surrogate	Result	QC Criteria	Units
1,2-Dichloroethane-d4	102	76-114	% Recovery
Toluene-d8	94	88-110	% Recovery
Bromofluorobenzene	100	86-115	% Recovery

Samples in Batch 9805B64-01 9805B64-02 9805B64-03 9805B64-04
9805B64-05 9805B64-06

Notes

ND - Not detected.

WATER SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: SPL

Contract:

Lab Code:

Case No:

9805D75

SAS No:

SDG No:

Matrix Spike - EPA

Sample No:

MW-2

Level (low/med):

	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC #	QC LIMITS REC
Phenol	75	0	22	29	12-110
2-Chlorophenol	75	0	46	61	27-123
1,4-Dichlorobenzene	50	0	35	70	36- 97
N-Nitroso-di-n-propylamine	50	0	33	66	41-116
1,2,4-Trichlorobenzene	50	0	38	76	39- 98
4-Chloro-3-methylphenol	75	0	65	87	23- 97
Acenaphthene	50	0	39	78	46-118
4-Nitrophenol	75	0	29	39	30-150
2,4-Dinitrotoluene	50	0	35	70	50-150
Pentachlorophenol	75	0	73	97	9-125
Pyrene	50	0	42	84	26-127

	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC #	% RPD #	QC LIMITS RPD REC
Phenol	75	12	16	58 *	42 12-110
2-Chlorophenol	75	28	37	49 *	40 27-132
1,4-Dichlorobenzene	50	24	48	37 *	28 36- 97
N-Nitroso-di-n-propylamine	50	23	46	36	38 41-116
1,2,4-Trichlorobenzene	50	26	52	38 *	28 39- 98
4-Chloro-3-methylphenol	75	47	63	32	42 23- 97
Acenaphthene	50	30	60	26	31 46-118
4-Nitrophenol	75	22	29 *	29	50 30-150
2,4-Dinitrotoluene	50	30	60	15	50 50-150
Pentachlorophenol	75	58	77	23	50 9-125
Pyrene	50	41	82	2	31 26-127

Column to be used to flag recovery and RPD values with an asterisk

* Amount outside QC limits due to matrix interference

RPD: 4 out of 11 outside limits
Spike Recovery: 1 out of 22 outside limits

SPL Houston Labs

RECOVERY REPORT

Client Name:
Sample Matrix: LIQUID
Lab Smp Id: METHSPIKE-8270W
Level: LOW
Data Type: MS DATA
SpikeList File: 8270w.spk
Sublist File: lcs.sub
Method File: /var/chem/p.i/p980609.b/p8270cw.m
Misc Info: E151F3/H151B03/P160CC2

Client SDG: p980609
Fraction: SV
Operator: RY
SampleType: MSD
Quant Type: ISTD

SPIKE COMPOUND	CONC ADDED ug/L	CONC RECOVERED ug/L	% RECOVERED	LIMITS
5 Phenol	75	33	44.00	12-110
9 2-Chlorophenol	75	51	68.00	27-123
12 1,4-Dichlorobenzen	50	33	66.00	36-97
21 N-Nitroso-di-n-pro	50	40	80.00	41-116
31 1,2,4-Trichloroben	50	35	70.00	39-98
36 4-Chloro-3-methylp	75	62	82.67	23-97
49 Acenaphthene	50	39	78.00	46-118
51 4-Nitrophenol	75	38	50.67	30-150
53 2,4-Dinitrotoluene	50	36	72.00	50-150
64 Pentachlorophenol	75	41	54.67	9-125
71 Pyrene	50	39	78.00	26-127

SURROGATE COMPOUND	CONC ADDED ug/L	CONC RECOVERED ug/L	% RECOVERED	LIMITS
\$ 23 Nitrobenzene-d5	50	37	74.00	35-114
\$ 41 2-Fluorobiphenyl	50	40	80.00	43-116
\$ 72 Terphenyl-d14	50	26	52.00	33-141
\$ 3 2-Fluorophenol	75	45	60.00	21-110
\$ 4 Phenol-d5	75	32	42.67	10-110
\$ 61 2,4,6-Tribromophen	75	69	92.00	10-123



SPL Blank QC Report

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0900

1

Matrix: Aqueous
Sample ID: BLANK
Batch: E980531042258

Reported on: 06/10/98 12:37
Analyzed on: 06/06/98 13:53
Analyst: YL

METHOD 8270 H151B03

C o m p o u n d	Result	Detection Limit	Units
Naphthalene	ND	5	ug/L
2-Methylnaphthalene	ND	5	ug/L
1-Methylnaphthalene	ND	5	ug/L
Acenaphthylene	ND	5	ug/L
Acenaphthene	ND	5	ug/L
Fluorene	ND	5	ug/L
Phenanthrene	ND	5	ug/L
Anthracene	ND	5	ug/L
Fluoranthene	ND	5	ug/L
Pyrene	ND	5	ug/L
Benzo[a]anthracene	ND	5	ug/L
Chrysene	ND	5	ug/L
Benzo[b]fluoranthene	ND	5	ug/L
Benzo[k]fluoranthene	ND	5	ug/L
Benzo[a]pyrene	ND	5	ug/L
Indeno[1,2,3-cd]pyrene	ND	5	ug/L
Dibenz[a,h]anthracene	ND	5	ug/L
Benzo[g,h,i]perylene	ND	5	ug/L

S u r r o g a t e	Result	QC Criteria	Units
2-Fluorophenol	47	21-110	% Recovery
Phenol-d5	35	10-110	% Recovery
2,4,6-Tribromophenol	72	10-123	% Recovery
Nitrobenzene-d5	66	35-114	% Recovery
2-Fluorobiphenyl	80	43-116	% Recovery
Terphenyl-d14	88	33-141	% Recovery

Samples in Batch 9805B64-01 9805B64-02 9805B64-03 9805B64-04
9805B64-05

Notes

ND - Not detected.

ICP Spectroscopy Method 6010 Quality Control Report



Matrix: Water

Units: mg/L

Analyst: DO

HOUSTON LABORATORY

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

Checked (713) 660-0901

Date: 060598 Time: 946

File Name: 060598M3

Laboratory Control Sample

Element	Mth. Blank	True Value	Result	% Recovery	Lower Limit	Upper Limit
Silver	ND	2.00	1.98	99	1.60	2.40
Aluminum						
Arsenic	ND	4.00	4.12	103	3.20	4.80
Barium	ND	2.00	1.93	97	1.60	2.40
Beryllium						
Calcium	ND	20.00	20.33	102	16.00	24.00
Cadmium	ND	2.00	2.00	100	1.60	2.40
Cobalt						
Chromium	ND	2.00	2.07	103	1.60	2.40
Copper	ND	2.00	1.99	99	1.60	2.40
Iron	ND	2.00	2.05	102	1.60	2.40
Potassium						
Magnesium	ND	20.00	20.20	101	16.00	24.00
Manganese	ND	2.00	2.06	103	1.60	2.40
Sodium						
Nickel						
Lead	ND	2.00	2.09	105	1.60	2.40
Antimony						
Selenium	ND	4.00	4.12	103	3.20	4.80
Thallium						
Vanadium						
Zinc	ND	2.00	2.12	106	1.60	2.40

Work Orders in Batch

Work Order Fractions

98-05-B61 01C-04C

98-05-B64 01E-05E

98-05-B96 01A,02A

Matrix Spike - Spike Duplicate Results

Work Order Spiked: 9805B61-01C

Element	Sample Result	Spike Added	Matrix Spike Result	Matrix Spike Recovery	Matrix Spike Duplicate Result	Matrix Spike Duplicate Recovery	QC Limits % Recovery	Spike RPD %	QC Limits %
Silver	ND	1.0	1.06	106.0	1.052	105.2	80 120	0.8	20.0
Aluminum									
Arsenic	ND	2.0	2.295	114.8	2.27	113.5	80 120	1.1	20.0
Barium	0.0446	1.0	0.9308	88.6	0.9288	88.4	80 120	0.2	20.0
Beryllium									
Calcium	748.9	100.0	855.6	106.7	872.7	123.8	* 80 120	14.8	20.0
Cadmium	ND	1.0	1.126	112.6	1.114	111.4	80 120	1.1	20.0
Cobalt									
Chromium	ND	1.0	0.9774	97.7	0.9619	96.2	80 120	1.6	20.0
Copper	ND	1.0	1.064	106.4	1.057	105.7	80 120	0.7	20.0
Iron	1.676	1.0	2.53	85.4	2.892	121.6	* 80 120	35.0	** 20.0
Potassium									
Magnesium	194.8	10.0	206.1	113.0	202.7	79.0	* 80 120	35.4	** 20.0
Manganese	0.0529	1.0	1.038	98.5	1.027	97.4	80 120	1.1	20.0
Sodium									
Nickel									
Lead	ND	1.0	1.031	103.1	1.039	103.9	80 120	0.8	20.0
Antimony									
Selenium	ND	2.0	2.447	122.4	* 2.388	119.4	80 120	2.4	20.0
Thallium									
Vanadium									
Zinc	ND	1.0	1.172	117.2	1.164	116.4	80 120	0.7	20.0

* Spike Results Outside Method Limits

** Spike RPD Outside Method Limits

Elements Bench Spiked: Ca (X10 DIL)



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 06/08/98

Analyzed on: 06/08/98

Analyst: PB

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Arsenic, Total
Method 7060A ***

SPL Sample ID Number	Blank Value ug/L	LCS Concentration ug/L	Measured Concentration ug/L	% Recovery	QC Limits Recovery
LCS	ND	40.0	42.9	107	80 - 120

-9806316

Samples in batch:

9805B64-01E 9805B64-02E 9805B64-03E 9805B64-04E
9805B64-05E 9805C31-02F

COMMENTS:

LCS= SPL ID# 97-839-254-3
POST SPIKED.



** SPL QUALITY CONTROL REPORT **

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Matrix: Aqueous

Reported on: 06/08/98

Analyzed on: 06/08/98

Analyst: PB

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Arsenic, Total
Method 7060A ***

SPL Sample	Method	Sample	Spike	Matrix Spike		Matrix Spike Duplicate		RPD	QC LIMITS (Advisory)		
ID Number	Blank ug/L	Result ug/L	Added ug/L	Result ug/L	Recovery %	Result ug/L	Recovery %	(%)	RPD Max	% REC	
9805B64-01E	ND	ND	40.0	45.3	113	43.9	110	2.7	20	75	-125

-9806316

Samples in batch:

9805B64-01E 9805B64-02E 9805B64-03E 9805B64-04E
9805B64-05E 9805C31-02F

COMMENTS:

LCS= SPL ID# 97-839-254-3
POST SPIKED.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 06/09/98

Analyzed on: 06/09/98

Analyst: AG

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Mercury, Total
Method 7470 A***

SPL Sample ID Number	Blank Value ug/L	LCS Concentration ug/L	Measured Concentration ug/L	% Recovery	QC Limits Recovery
LCS	ND	2.00	1.93	96.5	80 - 120

-9806369

Samples in batch:

9805B64-01E 9805B64-02E 9805B64-03E 9805B64-04E
9805B64-05E 9806079-01E 9806079-02E 9806086-01D

COMMENTS:

LCS = SPL ID# 94-452-45-21



** SPL QUALITY CONTROL REPORT **

HOUSTON LABORATORY

8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Matrix: Aqueous

Reported on: 06/09/98

Analyzed on: 06/09/98

Analyst: AG

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Mercury, Total
Method 7470 A***

SPL Sample	Method	Sample	Spike	Matrix.Spike..		Matrix.Spike Duplicate		RPD	QC LIMITS (Advisory)		
ID Number	Blank	Result	Added	Result	Recovery	Result	Recovery	(%)	RPD	% REC	
	ug/L	ug/L	ug/L	ug/L	%	ug/L	%		Max		
9805B64-01E	ND	ND	2.00	2.01	100	1.92	96.0	4.1	20	75	-125

-9806369

Samples in batch:

9805B64-01E 9805B64-02E 9805B64-03E 9805B64-04E
9805B64-05E 9806079-01E 9806079-02E 9806086-01D

COMMENTS:

LCS = SPL ID# 94-452-45-21



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 06/09/98

Analyzed on: 06/09/98

Analyst: PB

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Selenium, Total
Method 7740 ***

SPL Sample ID Number	Blank Value ug/L	LCS Concentration ug/L	Measured Concentration ug/L	% Recovery	QC Limits Recovery
LCS	ND	40.0	44.5	111	80 - 120

-9806397

Samples in batch:

9805B64-01E 9805B64-02E 9805B64-03E 9805B64-04E
9805B64-05E

COMMENTS:

LCS = SPL ID # 97-839-254-3

* VALUES OUTSIDE QC RANGE DUE TO MATRIX INTERFERENCE.

** VALUES OUTSIDE QC RANGE.



** SPL QUALITY CONTROL REPORT **

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Matrix: Aqueous

Reported on: 06/09/98
Analyzed on: 06/09/98
Analyst: PB

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Selenium, Total
Method 7740 ***

SPL Sample	Method	Sample	Spike	Matrix Spike		Matrix Spike Duplicate		RPD	QC LIMITS (Advisory)		
ID Number	Blank	Result	Added	Result	Recovery	Result	Recovery	(%)	RPD	% REC	
	ug/L	ug/L	ug/L	ug/L	%	ug/L	%		Max		
9805B64-01E	ND	ND	40.0	23.9	59.8*	18.6	46.5*	25**	20	75	-125

-9806397

Samples in batch:

9805B64-01E 9805B64-02E 9805B64-03E 9805B64-04E
9805B64-05E

COMMENTS:

LCS = SPL ID # 97-839-254-3

* VALUES OUTSIDE QC RANGE DUE TO MATRIX INTERFERENCE.

** VALUES OUTSIDE QC RANGE.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-3901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 06/09/98

Analyzed on: 06/08/98

Analyst: JS

This sample was randomly selected for use in the SPL quality control program. The results are as follows:

Alkalinity, as CaCO₃
Method 310.1 *

-- DUPLICATE ANALYSIS --

SPL Sample ID	Original Sample Concentration mg/L	Duplicate Sample mg/L	RPD	RPD Max.
9805B64-01B	101.0	102.4	1.4	18

-9806388

Samples in batch:

9805B64-01B	9805B64-02B	9805B64-03B	9805B64-04B
9805B64-05B	9805C90-01B	9805C90-02B	9805C90-03B
9805C92-01B	9805C92-02B		

COMMENTS:

**HOUSTON LABORATORY**

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 660-0901

**** SPL QUALITY CONTROL REPORT ****

Matrix: Aqueous

Reported on: 06/09/98

Analyzed on: 06/08/98

Analyst: JS

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Alkalinity, as CaCO₃
Method 310.1 *

SPL Sample ID Number	Blank Value mg/L	LCS Concentration mg/L	Measured Concentration mg/L	% Recovery	QC Limits Recovery
LCS	ND	65	63	96.9	95 - 113

-9806389

Samples in batch:

9805B64-01B	9805B64-02B	9805B64-03B	9805B64-04B
9805B64-05B	9805C90-01B	9805C90-02B	9805C90-03B
9805C92-01B	9805C92-02B	9805C92-03B	9805D86-01B
9805D86-02B	9805D86-03B	9805D87-01B	9805D87-02B

COMMENTS:

SPL LCS ID# 95535192-24

**HOUSTON LABORATORY**

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 660-0901

**** SPL QUALITY CONTROL REPORT ****

Matrix: Aqueous

Reported on: 06/09/98

Analyzed on: 06/09/98

Analyst: DAM

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Chloride
Method 325.3 *

SPL Sample ID Number	Blank Value mg/L	LCS Concentration mg/L	Measured Concentration mg/L	% Recovery	QC Limits Recovery
LCS	ND	116	117	101	94 - 106

-9806445

Samples in batch:

9805B64-01B	9805B64-02B	9805B64-03B	9805B64-04B
9805B64-05B	9805C22-01E	9805C60-01B	9805C60-02B
9805C60-03B	9805C60-04B	9805C90-01B	9805C90-02B
9805C90-03B	9805C92-01B	9805C92-02B	9805C92-03B
9806135-02A			

COMMENTS:

LCS = SPL ID#:94453192-24



** SPL QUALITY CONTROL REPORT **

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Matrix: Aqueous

Reported on: 06/09/98

Analyzed on: 06/09/98

Analyst: DAM

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Chloride
Method 325.3 *

SPL Sample	Method	Sample	Spike	Matrix Spike		Matrix Spike Duplicate		RPD	QC LIMITS (Advisory)	
ID Number	Blank	Result	Added	Result	Recovery	Result	Recovery	(%)	RPD	% REC
	mg/L	mg/L	mg/L	mg/L	%	mg/L	%		Max	
9805B64-04B	ND	36.95	50.0	84.97	96.0	86.81	99.7	3.8	5	92 -109

-9806442

Samples in batch:

9805B64-01B 9805B64-02B 9805B64-03B 9805B64-04B
9805B64-05B 9805C22-01E 9805C90-01B 9805C90-02B
9805C90-03B 9806135-02A

COMMENTS:



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 06/10/98

Analyzed on: 06/10/98

Analyst: TW

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Sulfate
Method 375.4 *

SPL Sample ID Number	Blank Value mg/L	LCS Concentration mg/L	Measured Concentration mg/L	% Recovery	QC Limits Recovery
LCS	ND	4.52	4.51	99.8	82 - 111

-9806441

Samples in batch:

9805B64-01B	9805B64-02B	9805B64-03B	9805B64-04B
9805B64-05B	9805B97-01A	9805B97-02A	9805C22-01E
9805C90-01B	9805C90-02B	9805C90-03B	9805C92-01B
9805C92-02B	9805C92-03B	9805D86-01B	9805D86-02B
9805D86-03B	9805D87-01B	9805D87-02B	9806135-02A

COMMENTS:

LCS#94453183-1



** SPL QUALITY CONTROL REPORT **

HOUSTON LABORATORY

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 660-0901

Matrix: Aqueous

Reported on: 06/10/98

Analyzed on: 06/10/98

Analyst: TW

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Sulfate
Method 375.4 *

SPL Sample	Method	Sample	Spike	Matrix Spike		Matrix Spike Duplicate		RPD	QC LIMITS (Advisory)	
ID Number	Blank	Result	Added	Result	Recovery	Result	Recovery	(%)	RPD	% REC
	mg/L	mg/L	mg/L	mg/L	%	mg/L	%		Max	
9805B97-01A	ND	1.09	10.0	10.97	98.8	11.73	106	7.0	9.5	84 -120

-9806439

Samples in batch:

9805B64-01B 9805B64-02B 9805B64-03B 9805B64-04B
9805B64-05B 9805B97-01A 9805B97-02A 9805C22-01E
9805C90-02B 9806135-02A

COMMENTS:



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 05/29/98

Analyzed on: 05/28/98

Analyst: CL

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Total Dissolved Solids
Method 160.1 *

SPL Sample ID Number	Blank Value mg/L	LCS Concentration mg/L	Measured Concentration mg/L	% Recovery	QC Limits Recovery
LCS	ND	430.5	409	95.0	93 - 107

-9805A19

Samples in batch:

9805A65-26C 9805B64-01B 9805B64-02B 9805B64-03B
9805B64-04B 9805B64-05B

COMMENTS:

SPL LCS ID # 95535200-19

**HOUSTON LABORATORY**

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 660-0901

**** SPL QUALITY CONTROL REPORT ****

Matrix: Aqueous

Reported on: 05/29/98

Analyzed on: 05/28/98

Analyst: CL

This sample was randomly selected for use in the SPL quality control program. The results are as follows:

Total Dissolved Solids

Method 160.1 *

-- DUPLICATE ANALYSIS --

SPL Sample ID	Original Sample Concentration mg/L	Duplicate Sample mg/L	RPD	RPD Max.
9805B64-01B	2500	2600	3.9	5

-9805A20

Samples in batch:

9805A65-26C

9805B64-01B

9805B64-02B

9805B64-03B

9805B64-04B

9805B64-05B

COMMENTS:

SPL LCS ID # 95535200-19

**HOUSTON LABORATORY**

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 660-0901

**** SPL QUALITY CONTROL REPORT ****

Matrix: Aqueous

Reported on: 06/10/98

Analyzed on: 05/27/98

Analyst: DAM

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Nitrate-Nitrite, as N
Method 353.3 *

SPL Sample ID Number	Blank Value mg/L	LCS Concentration mg/L	Measured Concentration mg/L	% Recovery	QC Limits Recovery
LCS	ND	2.77	2.64	95.3	92 - 111

-9806451

Samples in batch:

9805B64-01C 9805B64-02C 9805B64-03C 9805B64-04C
9805B64-05C

COMMENTS:

LCS = SPL ID#:95535190-18



** SPL QUALITY CONTROL REPORT **

HOUSTON LABORATORY

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 660-0901

Matrix: Aqueous

Reported on: 06/10/98

Analyzed on: 05/27/98

Analyst: DAM

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Nitrate-Nitrite, as N
Method 353.3 *

SPL Sample	Method	Sample	Spike	Matrix Spike		Matrix Spike Duplicate		RPD	QC LIMITS (Advisory)		
ID Number	Blank	Result	Added	Result	Recovery	Result	Recovery	(%)	RPD	% REC	
	mg/L	mg/L	mg/L	mg/L	%	mg/L	%		Max		
9805B64-02C	ND	3.47	5.00	8.43	99.2	8.71	105	5.7	12	87	-120

-9806450

Samples in batch:

9805B64-01C 9805B64-02C 9805B64-03C 9805B64-04C
9805B64-05C

COMMENTS:

CHAIN OF CUSTODY
AND
SAMPLE RECEIPT CHECKLIST



SPL, Inc.

SPL Workorder No:

52163

Analysis Request & Chain of Custody Record

9805B64

page 1 of 1

Client Name: CYPRESS ENGINEERING (713) 856-7980				matrix		bottle		size		pres.		Requested Analysis	
Address/Phone: 10255 WEST LITTLE YORK, SUITE 250 HOUSTON TX 77040				S=soil		A=amber glass		4=4oz 40=vial		1=HCl 2=HNO3			
Client Contact:				O=other:		V=vial		8=8oz 16=16oz		3=H2SO4 O=other:			
Project Name: TRANSWESTERN PIPELINE				W=water		P=plastic		1=1 liter		Number of Containers			
Project Number:				SL=sludge		G=glass		8=8oz		VOCs 8260 INCLUDE 12 DICHLORETHENE (CS-TRANS) # DICHLOETHENE (CS-TRANS) TDS, SULFATE, CHLORIDE, TOTAL ALKALINITY NITRATE & NITRATE AS NITROGEN (353.2) X 8270 PAHs INCLUDING MONOMETHYLNAPHTHALENE ISOMERS (1-#2-)			
Project Location: ROSWELL STA. 9													
Invoice To: GEORGE ROBINSON C. CYPRESS													
SAMPLE ID		DATE	TIME	comp	grab								
MW-10		5/26/98	1125	X		W	G	40	1	1/0	3/1	X	
MW-6		5/26/98	1125	X		W	P	1	0	0	3	X	X
MW-5		5/26/98	1235	X		W	G	40	1	1/0	3/1	X	X
MW-5		5/26/98	1235	X		W	P	1	0	0	3	X	X
MW-11		5/26/98	1405	X		W	G	40	1	1/0	3/1	X	X
MW-11		5/26/98	1405	X		W	P	1	0	0	3	X	X
MW-10		5/26/98	1510	X		W	G	40	1	1/0	3/1	X	X
MW-10		5/26/98	1510	X		W	P	1	0	0	3	X	X
MW-3		5/26/98	1610	X		W	G	40	1	1/0	3/1	X	X
MW-3		5/26/98	1610	X		W	P	1	0	0	3	X	X
Client/Consultant Remarks: * PLEASE ADD PRESERVATIVES (H2SO4) TO NO2/NO3 ASAP ** DO NOT FILTER MUSTALS ADD PRESERVATIVES & RUN TOTALS!													
Laboratory remarks: RUSH													
Intact? ☒ Y ☐ N													
Temp: 40C													
Requested TAT		Special Reporting Requirements		Fax Results		Raw Data		Special Detection Limits (specify):		PM review (initial):			
24hr ☐ 72hr ☐		Standard QC ☒		Level 3 QC ☐		Level 4 QC ☐							
48hr ☐ Standard ☒		1. Relinquished by: <i>Stacy</i>		date: 5/26/98		time: 1715		2. Received by:					
Other ☐		3. Relinquished by:		date:		time:		4. Received by:					
		5. Relinquished by:		date:		time:		6. Received by Laboratory: <i>Phyllis</i>		5/27/98 1000			

☐ 8880 Interchange Drive, Houston, TX 77054 (713) 660-0901☐ 459-Hughes Drive, Traverse City, MI 49684 (616) 947-5777☐ 500 Ambassador Caffery Parkway, Scott, LA 70583 (318) 237-4775☐ 1501 E. Orangethorpe Avenue, Fullerton, CA 92631 (714) 447-6868

SPL Houston Environmental Laboratory

Sample Login Checklist

Date: 5-27-98	Time: 1000
------------------	---------------

SPL Sample ID: 9805 B64

		Yes	No
1	Chain-of-Custody (COC) form is present.	✓	
2	COC is properly completed.	✓	
3	If no, Non-Conformance Worksheet has been completed.		
4	Custody seals are present on the shipping container.	✓	
5	If yes, custody seals are intact.	✓	
6	All samples are tagged or labeled.	✓	
7	If no, Non-Conformance Worksheet has been completed.		
8	Sample containers arrived intact	✓	
9	Temperature of samples upon arrival:	4° C	
10	Method of sample delivery to SPL:	SPL Delivery	
		Client Delivery	
		FedEx Delivery (airbill #)	804721511841
		Other:	
11	Method of sample disposal:	SPL Disposal	✓
		HOLD	
		Return to Client	

Name: Am [Signature]	Date: 5-22-98
-------------------------	------------------



HOUSTON LABORATORY

8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

June 12, 1998

Mr. George Robinson
CYPRESS ENGINEERING, INC.
10235 W. Little York Rd #256
Houston, TX 77040

The following report contains analytical results for the sample(s) received at Southern Petroleum Laboratories (SPL) on May 28, 1998. The sample(s) was assigned to Certificate of Analysis No.(s) 9805C60 and analyzed for all parameters as listed on the chain of custody.

Any data flag or quality control exception associated with this report will be footnoted in the analytical results page(s) or the quality control summary page(s).

If you have any questions or comments pertaining to this data report, please do not hesitate to contact me. Please reference the above Certificate of Analysis No. during any inquiries.

Again, SPL is pleased to be of service to you. We anticipate working with you in fulfilling all your current and future analytical needs.

Southern Petroleum Laboratories

A handwritten signature in cursive script, reading "Electa Brown", is written over a horizontal line.

Electa Brown
Client Services Representative



HOUSTON LABORATORY

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 660-C901

Southern Petroleum Laboratories, Inc.

Certificate of Analysis Number: 98-05-C60

Approved for Release by:

A handwritten signature in cursive script, reading "Electa Brown", is written over a horizontal line.

Electa Brown, Client Services Representative

6-15-98

Date:

Greg Grandits
Laboratory Director

Cynthia Schreiner
Quality Assurance Officer

The attached analytical data package may not be reproduced except in full without the express written approval of this laboratory.

**HOUSTON LABORATORY**

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 660-0901

Certificate of Analysis No. H9-9805C60-01

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 06/11/98

PROJECT: Transwestern Pipeline
SITE: Roswell Sta. 9
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-19

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 05/27/98 09:45:00
DATE RECEIVED: 05/28/98

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
Silver, Total Method 6010B *** Analyzed by: JM Date: 06/09/98 07:54:00	ND	0.01	mg/L	
Arsenic, Total Method 7060A *** Analyzed by: PB Date: 06/11/98 10:39:00	ND	0.005	mg/L	
Barium, Total Method 6010B *** Analyzed by: JM Date: 06/09/98 07:54:00	ND	0.005	mg/L	
Cadmium, Total Method 6010B *** Analyzed by: JM Date: 06/09/98 07:54:00	ND	0.005	mg/L	
Chromium, Total Method 6010B *** Analyzed by: JM Date: 06/09/98 07:54:00	ND	0.01	mg/L	
Copper, Total Method 6010B *** Analyzed by: JM Date: 06/09/98 07:54:00	ND	0.01	mg/L	

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9805C60-01

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 06/11/98

PROJECT: Transwestern Pipeline
SITE: Roswell Sta. 9
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-19

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 05/27/98 09:45:00
DATE RECEIVED: 05/28/98

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
Iron, Total Method 6010B *** Analyzed by: JM Date: 06/09/98 07:54:00	0.14	0.02	mg/L	
Mercury, Total Method 7470 A*** Analyzed by: AG Date: 06/01/98 13:25:00	ND	0.0002	mg/L	
Manganese, Total Method 6010B *** Analyzed by: JM Date: 06/09/98 07:54:00	ND	0.005	mg/L	
Acid Digestion-Aqueous, ICP Method 3010A *** Analyzed by: EE Date: 05/29/98 08:00:00	05/29/98			
Lead, Total Method 6010B *** Analyzed by: JM Date: 06/09/98 07:54:00	ND	0.05	mg/L	
Selenium, Total Method 7740 *** Analyzed by: PB Date: 06/10/98 17:08:00	ND	0.005	mg/L	

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.

**HOUSTON LABORATORY**8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9805C60-01

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 06/11/98

PROJECT: Transwestern Pipeline
SITE: Roswell Sta. 9
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-19PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 05/27/98 09:45:00
DATE RECEIVED: 05/28/98

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
Zinc, Total	ND	0.02	mg/L	
Method 6010B ***				
Analyzed by: JM				
Date: 06/10/98 09:51:00				

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9805C60-01

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

06/11/98

PROJECT: Transwestern Pipeline
SITE: Roswell Sta. 9
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-19

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 05/27/98 09:45:00
DATE RECEIVED: 05/28/98

ANALYTICAL DATA				
PARAMETER	RESULTS	PQL*	UNITS	
Benzene	ND	5	ug/L	
Bromobenzene	ND	5	ug/L	
Bromochloromethane	ND	5	ug/L	
Bromodichloromethane	ND	5	ug/L	
Bromoform	ND	5	ug/L	
Bromomethane	ND	10	ug/L	
n-Butylbenzene	ND	5	ug/L	
sec-Butylbenzene	ND	5	ug/L	
tert-Butylbenzene	ND	5	ug/L	
Carbon tetrachloride	ND	5	ug/L	
Chlorobenzene	ND	5	ug/L	
Chlorodibromomethane	ND	5	ug/L	
Chloroethane	ND	10	ug/L	
Chloroform	ND	5	ug/L	
Chloromethane	ND	10	ug/L	
2-Chlorotoluene	ND	5	ug/L	
4-Chlorotoluene	ND	5	ug/L	
1,2-Dibromo-3-chloropropane	ND	5	ug/L	
1,2-Dibromoethane	ND	5	ug/L	
Dibromomethane	ND	5	ug/L	
1,2-Dichlorobenzene	ND	5	ug/L	
1,3-Dichlorobenzene	ND	5	ug/L	
1,4-Dichlorobenzene	ND	5	ug/L	
Dichlorodifluoromethane	ND	10	ug/L	
1,1-Dichloroethane	ND	5	ug/L	
1,2-Dichloroethane	ND	5	ug/L	
1,1-Dichloroethene	ND	5	ug/L	
cis-1,2-Dichloroethene	ND	5	ug/L	
trans-1,2-Dichloroethene	ND	5	ug/L	
1,2-Dichloropropane	ND	5	ug/L	
1,3-Dichloropropane	ND	5	ug/L	
2,2-Dichloropropane	ND	5	ug/L	
1,1-Dichloropropene	ND	5	ug/L	
Ethylbenzene	ND	5	ug/L	
Hexachlorobutadiene	ND	5	ug/L	
Isopropylbenzene	ND	5	ug/L	
p-Isopropyltoluene	ND	5	ug/L	
Methylene chloride	ND	5	ug/L	

METHOD: 8260 Water, Volatile Organics
(continued on next page)

**HOUSTON LABORATORY**

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 660-0901

Certificate of Analysis No. H9-9805C60-01

Cypress Engineering, Inc.

SAMPLE ID: MW-19

ANALYTICAL DATA (continued)			
PARAMETER	RESULTS	PQL*	UNITS
Naphthalene	ND	5	ug/L
n-Propylbenzene	ND	5	ug/L
Styrene	ND	5	ug/L
1,1,1,2-Tetrachloroethane	ND	5	ug/L
1,1,2,2-Tetrachloroethane	ND	5	ug/L
Tetrachloroethene	ND	5	ug/L
Toluene	ND	5	ug/L
1,2,3-Trichlorobenzene	ND	5	ug/L
1,2,4-Trichlorobenzene	ND	5	ug/L
1,1,1-Trichloroethane	ND	5	ug/L
1,1,2-Trichloroethane	ND	5	ug/L
Trichloroethene	ND	5	ug/L
Trichlorofluoromethane	ND	5	ug/L
1,2,3-Trichloropropane	ND	5	ug/L
1,2,4-Trimethylbenzene	ND	5	ug/L
1,3,5-Trimethylbenzene	ND	5	ug/L
Vinyl chloride	ND	10	ug/L
Xylenes (total)	ND	5	ug/L
Acetone	ND	100	ug/L
Carbon Disulfide	ND	5	ug/L
Vinyl Acetate	ND	10	ug/L
2-Butanone	ND	20	ug/L
1,2-Dichloroethene (total)	ND	5	ug/L
2-Chloroethylvinylether	ND	10	ug/L
4-Methyl-2-Pentanone	ND	10	ug/L
cis-1,3-Dichloropropene	ND	5	ug/L
trans-1,3-Dichloropropene	ND	5	ug/L
2-Hexanone	ND	10	ug/L

SURROGATES	AMOUNT SPIKED	% RECOVERY	LOWER LIMIT	UPPER LIMIT
1,2-Dichloroethane-d4	50 ug/L	92	76	114
Toluene-d8	50 ug/L	88	88	110
4-Bromofluorobenzene	50 ug/L	96	86	115

ANALYZED BY: JC

DATE/TIME: 05/29/98 11:14:00

METHOD: 8260 Water, Volatile Organics

NOTES: * - Practical Quantitation Limit

ND - Not Detected

NA - Not Analyzed

COMMENTS:

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.

**HOUSTON LABORATORY**

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 660-0901

Certificate of Analysis No. H9-9805C60-01

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

06/11/98

PROJECT: Transwestern Pipeline
SITE: Roswell Sta. 9
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-19

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 05/27/98 09:45:00
DATE RECEIVED: 05/28/98

ANALYTICAL DATA

PARAMETER	RESULTS	PQL*	UNITS
Acenaphthene	ND	5	ug/L
Acenaphthylene	ND	5	ug/L
Anthracene	ND	5	ug/L
Benzo(a)Anthracene	ND	5	ug/L
Benzo(b)Fluoranthene	ND	5	ug/L
Benzo(k)Fluoranthene	ND	5	ug/L
Benzo(a)Pyrene	ND	5	ug/L
Benzo(g,h,i)Perylene	ND	5	ug/L
Chrysene	ND	5	ug/L
Dibenz(a,h)Anthracene	ND	5	ug/L
Fluoranthene	ND	5	ug/L
Fluorene	ND	5	ug/L
Indeno(1,2,3-cd)Pyrene	ND	5	ug/L
2-Methylnaphthalene	ND	5	ug/L
Naphthalene	ND	5	ug/L
Phenanthrene	ND	5	ug/L
Pyrene	ND	5	ug/L
1-Methylnaphthalene	ND	5	ug/L

SURROGATES	AMOUNT SPIKED	% RECOVERY	LOWER LIMIT	UPPER LIMIT
Nitrobenzene-d5	50 ug/L	60	35	114
2-Fluorobiphenyl	50 ug/L	70	43	116
Terphenyl-d14	50 ug/L	84	33	141
Phenol-d5	75 ug/L	13	10	110
2-Fluorophenol	75 ug/L	23	21	110
2,4,6-Tribromophenol	75 ug/L	63	10	123

ANALYZED BY: YL DATE/TIME: 06/09/98 20:21:00
EXTRACTED BY: KL DATE/TIME: 05/31/98 08:00:00
METHOD: 8270C, Semivolatile Organics - Water
NOTES: * - Practical Quantitation Limit ND - Not Detected
 NA - Not Analyzed

COMMENTS:

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9805C60-02

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 06/11/98

PROJECT: Transwestern Pipeline
SITE: Roswell Sta. 9
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-18

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 05/27/98 10:45:00
DATE RECEIVED: 05/28/98

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
Alkalinity, as CaCO ₃ Method 310.1 * Analyzed by: JS Date: 05/29/98 11:45:00	69	1	mg/L	
Chloride Method 325.3 * Analyzed by: DAM Date: 06/09/98 11:00:00	430	10	mg/L	
Sulfate Method 375.4 * Analyzed by: TW Date: 05/29/98 11:00:00	1800	100	mg/L	
Total Dissolved Solids Method 160.1 * Analyzed by: CL Date: 05/29/98 16:15:00	2800	100	mg/L	
Nitrate-Nitrite, as N Method 353.3 * Analyzed by: DAM Date: 06/04/98 10:00:00	0.8	0.1	mg/L	
Liquid-liquid extraction SEMIVOLATILES Method 3520C *** Analyzed by: KL Date: 05/31/98 08:00:00	05/31/98			

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.

**HOUSTON LABORATORY**

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 660-0901

Certificate of Analysis No. H9-9805C60-02

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 06/11/98

PROJECT: Transwestern Pipeline
SITE: Roswell Sta. 9
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-18

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 05/27/98 10:45:00
DATE RECEIVED: 05/28/98

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
Silver, Total Method 6010B *** Analyzed by: JM Date: 06/09/98 07:54:00	ND	0.01	mg/L	
Arsenic, Total Method 7060A *** Analyzed by: PB Date: 06/11/98 10:39:00	ND	0.005	mg/L	
Barium, Total Method 6010B *** Analyzed by: JM Date: 06/09/98 07:54:00	0.015	0.005	mg/L	
Cadmium, Total Method 6010B *** Analyzed by: JM Date: 06/09/98 07:54:00	ND	0.005	mg/L	
Chromium, Total Method 6010B *** Analyzed by: JM Date: 06/09/98 07:54:00	ND	0.01	mg/L	
Copper, Total Method 6010B *** Analyzed by: JM Date: 06/09/98 07:54:00	ND	0.01	mg/L	

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9805C60-02

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 06/11/98

PROJECT: Transwestern Pipeline
SITE: Roswell Sta. 9
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-18

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 05/27/98 10:45:00
DATE RECEIVED: 05/28/98

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
Iron, Total Method 6010B *** Analyzed by: JM Date: 06/09/98 07:54:00	ND	0.02	mg/L	
Mercury, Total Method 7470 A*** Analyzed by: AG Date: 06/01/98 13:25:00	ND	0.0002	mg/L	
Manganese, Total Method 6010B *** Analyzed by: JM Date: 06/09/98 07:54:00	ND	0.005	mg/L	
Acid Digestion-Aqueous, ICP Method 3010A *** Analyzed by: EE Date: 05/29/98 08:00:00	05/29/98			
Lead, Total Method 6010B *** Analyzed by: JM Date: 06/09/98 07:54:00	ND	0.05	mg/L	
Selenium, Total Method 7740 *** Analyzed by: PB Date: 06/10/98 17:08:00	ND	0.005	mg/L	

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9805C60-02

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 06/11/98

PROJECT: Transwestern Pipeline
SITE: Roswell Sta. 9
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-18

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 05/27/98 10:45:00
DATE RECEIVED: 05/28/98

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
Zinc, Total	ND	0.02	mg/L	
Method 6010B ***				
Analyzed by: JM				
Date: 06/10/98 09:51:00				

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9805C60-02

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

06/11/98

PROJECT: Transwestern Pipeline
SITE: Roswell Sta. 9
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-18

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 05/27/98 10:45:00
DATE RECEIVED: 05/28/98

ANALYTICAL DATA				
PARAMETER	RESULTS	PQL*	UNITS	
Benzene	ND	5	ug/L	
Bromobenzene	ND	5	ug/L	
Bromochloromethane	ND	5	ug/L	
Bromodichloromethane	ND	5	ug/L	
Bromoform	ND	5	ug/L	
Bromomethane	ND	10	ug/L	
n-Butylbenzene	ND	5	ug/L	
sec-Butylbenzene	ND	5	ug/L	
tert-Butylbenzene	ND	5	ug/L	
Carbon tetrachloride	ND	5	ug/L	
Chlorobenzene	ND	5	ug/L	
Chlorodibromomethane	ND	5	ug/L	
Chloroethane	ND	10	ug/L	
Chloroform	ND	5	ug/L	
Chloromethane	ND	10	ug/L	
2-Chlorotoluene	ND	5	ug/L	
4-Chlorotoluene	ND	5	ug/L	
1,2-Dibromo-3-chloropropane	ND	5	ug/L	
1,2-Dibromoethane	ND	5	ug/L	
Dibromomethane	ND	5	ug/L	
1,2-Dichlorobenzene	ND	5	ug/L	
1,3-Dichlorobenzene	ND	5	ug/L	
1,4-Dichlorobenzene	ND	5	ug/L	
Dichlorodifluoromethane	ND	10	ug/L	
1,1-Dichloroethane	ND	5	ug/L	
1,2-Dichloroethane	ND	5	ug/L	
1,1-Dichloroethene	ND	5	ug/L	
cis-1,2-Dichloroethene	ND	5	ug/L	
trans-1,2-Dichloroethene	ND	5	ug/L	
1,2-Dichloropropane	ND	5	ug/L	
1,3-Dichloropropane	ND	5	ug/L	
2,2-Dichloropropane	ND	5	ug/L	
1,1-Dichloropropene	ND	5	ug/L	
Ethylbenzene	ND	5	ug/L	
Hexachlorobutadiene	ND	5	ug/L	
Isopropylbenzene	ND	5	ug/L	
p-Isopropyltoluene	ND	5	ug/L	
Methylene chloride	ND	5	ug/L	

METHOD: 8260 Water, Volatile Organics
(continued on next page)



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9805C60-02

Cypress Engineering, Inc.

SAMPLE ID: MW-18

ANALYTICAL DATA (continued)			
PARAMETER	RESULTS	PQL*	UNITS
Naphthalene	ND	5	ug/L
n-Propylbenzene	ND	5	ug/L
Styrene	ND	5	ug/L
1,1,1,2-Tetrachloroethane	ND	5	ug/L
1,1,2,2-Tetrachloroethane	ND	5	ug/L
Tetrachloroethene	ND	5	ug/L
Toluene	ND	5	ug/L
1,2,3-Trichlorobenzene	ND	5	ug/L
1,2,4-Trichlorobenzene	ND	5	ug/L
1,1,1-Trichloroethane	ND	5	ug/L
1,1,2-Trichloroethane	ND	5	ug/L
Trichloroethene	ND	5	ug/L
Trichlorofluoromethane	ND	5	ug/L
1,2,3-Trichloropropane	ND	5	ug/L
1,2,4-Trimethylbenzene	ND	5	ug/L
1,3,5-Trimethylbenzene	ND	5	ug/L
Vinyl chloride	ND	10	ug/L
Xylenes (total)	ND	5	ug/L
Acetone	ND	100	ug/L
Carbon Disulfide	ND	5	ug/L
Vinyl Acetate	ND	10	ug/L
2-Butanone	ND	20	ug/L
1,2-Dichloroethene (total)	ND	5	ug/L
2-Chloroethylvinylether	ND	10	ug/L
4-Methyl-2-Pentanone	ND	10	ug/L
cis-1,3-Dichloropropene	ND	5	ug/L
trans-1,3-Dichloropropene	ND	5	ug/L
2-Hexanone	ND	10	ug/L

SURROGATES	AMOUNT SPIKED	% RECOVERY	LOWER LIMIT	UPPER LIMIT
1,2-Dichloroethane-d4	50 ug/L	100	76	114
Toluene-d8	50 ug/L	90	88	110
4-Bromofluorobenzene	50 ug/L	98	86	115

ANALYZED BY: JC

DATE/TIME: 05/29/98 11:40:00

METHOD: 8260 Water, Volatile Organics

NOTES: * - Practical Quantitation Limit

ND - Not Detected

NA - Not Analyzed

COMMENTS:

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.

**HOUSTON LABORATORY**

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 660-0901

Certificate of Analysis No. H9-9805C60-02

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

06/11/98

PROJECT: Transwestern Pipeline
SITE: Roswell Sta. 9
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-18

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 05/27/98 10:45:00
DATE RECEIVED: 05/28/98

ANALYTICAL DATA

PARAMETER	RESULTS	PQL*	UNITS
Acenaphthene	ND	5	ug/L
Acenaphthylene	ND	5	ug/L
Anthracene	ND	5	ug/L
Benzo(a)Anthracene	ND	5	ug/L
Benzo(b)Fluoranthene	ND	5	ug/L
Benzo(k)Fluoranthene	ND	5	ug/L
Benzo(a)Pyrene	ND	5	ug/L
Benzo(g,h,i)Perylene	ND	5	ug/L
Chrysene	ND	5	ug/L
Dibenz(a,h)Anthracene	ND	5	ug/L
Fluoranthene	ND	5	ug/L
Fluorene	ND	5	ug/L
Indeno(1,2,3-cd)Pyrene	ND	5	ug/L
2-Methylnaphthalene	ND	5	ug/L
Naphthalene	ND	5	ug/L
Phenanthrene	ND	5	ug/L
Pyrene	ND	5	ug/L
1-Methylnaphthalene	ND	5	ug/L

SURROGATES	AMOUNT SPIKED	% RECOVERY	LOWER LIMIT	UPPER LIMIT
Nitrobenzene-d5	50 ug/L	72	35	114
2-Fluorobiphenyl	50 ug/L	82	43	116
Terphenyl-d14	50 ug/L	90	33	141
Phenol-d5	75 ug/L	19	10	110
2-Fluorophenol	75 ug/L	33	21	110
2,4,6-Tribromophenol	75 ug/L	63	10	123

ANALYZED BY: YL DATE/TIME: 06/09/98 20:52:00
EXTRACTED BY: KL DATE/TIME: 05/31/98 08:00:00
METHOD: 8270C, Semivolatile Organics - Water
NOTES: * - Practical Quantitation Limit ND - Not Detected
 NA - Not Analyzed

COMMENTS:

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.

**HOUSTON LABORATORY**

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 660-0901

Certificate of Analysis No. H9-9805C60-03

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 06/11/98

PROJECT: Transwestern Pipeline
SITE: Roswell Sta. 9
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-17

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 05/27/98 12:30:00
DATE RECEIVED: 05/28/98

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
Alkalinity, as CaCO3 Method 310.1 * Analyzed by: JS Date: 05/29/98 11:45:00	89	1	mg/L	
Chloride Method 325.3 * Analyzed by: DAM Date: 06/09/98 11:00:00	470	10	mg/L	
Sulfate Method 375.4 * Analyzed by: TW Date: 05/29/98 11:00:00	1500	100	mg/L	
Total Dissolved Solids Method 160.1 * Analyzed by: CL Date: 05/29/98 16:15:00	3000	100	mg/L	
Nitrate-Nitrite, as N Method 353.3 * Analyzed by: DAM Date: 06/04/98 10:00:00	0.6	0.1	mg/L	
Liquid-liquid extraction SEMIVOLATILES Method 3520C *** Analyzed by: KL Date: 05/31/98 08:00:00	05/31/98			

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.

**HOUSTON LABORATORY**

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 660-0901

Certificate of Analysis No. H9-9805C60-03

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 06/11/98

PROJECT: Transwestern Pipeline
SITE: Roswell Sta. 9
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-17

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 05/27/98 12:30:00
DATE RECEIVED: 05/28/98

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Silver, Total Method 6010B *** Analyzed by: JM Date: 06/09/98 07:54:00	ND	0.01	mg/L
Arsenic, Total Method 7060A *** Analyzed by: PB Date: 06/11/98 10:39:00	ND	0.005	mg/L
Barium, Total Method 6010B *** Analyzed by: JM Date: 06/09/98 07:54:00	ND	0.005	mg/L
Cadmium, Total Method 6010B *** Analyzed by: JM Date: 06/09/98 07:54:00	ND	0.005	mg/L
Chromium, Total Method 6010B *** Analyzed by: JM Date: 06/09/98 07:54:00	ND	0.01	mg/L
Copper, Total Method 6010B *** Analyzed by: JM Date: 06/09/98 07:54:00	ND	0.01	mg/L

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.

**HOUSTON LABORATORY**

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 660-0901

Certificate of Analysis No. H9-9805C60-03

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 06/11/98

PROJECT: Transwestern Pipeline
SITE: Roswell Sta. 9
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-17

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 05/27/98 12:30:00
DATE RECEIVED: 05/28/98

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Iron, Total Method 6010B *** Analyzed by: JM Date: 06/09/98 07:54:00	ND	0.02	mg/L
Mercury, Total Method 7470 A*** Analyzed by: AG Date: 06/01/98 13:25:00	ND	0.0002	mg/L
Manganese, Total Method 6010B *** Analyzed by: JM Date: 06/09/98 07:54:00	0.011	0.005	mg/L
Acid Digestion-Aqueous, ICP Method 3010A *** Analyzed by: EE Date: 05/29/98 08:00:00	05/29/98		
Lead, Total Method 6010B *** Analyzed by: JM Date: 06/09/98 07:54:00	ND	0.05	mg/L
Selenium, Total Method 7740 *** Analyzed by: PB Date: 06/10/98 17:08:00	ND	0.005	mg/L

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9805C60-03

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 06/11/98

PROJECT: Transwestern Pipeline
SITE: Roswell Sta. 9
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-17

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 05/27/98 12:30:00
DATE RECEIVED: 05/28/98

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
Zinc, Total	ND	0.02	mg/L	
Method 6010B ***				
Analyzed by: JM				
Date: 06/10/98 09:51:00				

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.

**HOUSTON LABORATORY**

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 660-0901

Certificate of Analysis No. H9-9805C60-03

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

06/11/98

PROJECT: Transwestern Pipeline
SITE: Roswell Sta. 9
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-17

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 05/27/98 12:30:00
DATE RECEIVED: 05/28/98

ANALYTICAL DATA

PARAMETER	RESULTS	PQL*	UNITS
Benzene	ND	5	ug/L
Bromobenzene	ND	5	ug/L
Bromochloromethane	ND	5	ug/L
Bromodichloromethane	ND	5	ug/L
Bromoform	ND	5	ug/L
Bromomethane	ND	10	ug/L
n-Butylbenzene	ND	5	ug/L
sec-Butylbenzene	ND	5	ug/L
tert-Butylbenzene	ND	5	ug/L
Carbon tetrachloride	ND	5	ug/L
Chlorobenzene	ND	5	ug/L
Chlorodibromomethane	ND	5	ug/L
Chloroethane	ND	10	ug/L
Chloroform	ND	5	ug/L
Chloromethane	ND	10	ug/L
2-Chlorotoluene	ND	5	ug/L
4-Chlorotoluene	ND	5	ug/L
1,2-Dibromo-3-chloropropane	ND	5	ug/L
1,2-Dibromoethane	ND	5	ug/L
Dibromomethane	ND	5	ug/L
1,2-Dichlorobenzene	ND	5	ug/L
1,3-Dichlorobenzene	ND	5	ug/L
1,4-Dichlorobenzene	ND	5	ug/L
Dichlorodifluoromethane	ND	10	ug/L
1,1-Dichloroethane	ND	5	ug/L
1,2-Dichloroethane	ND	5	ug/L
1,1-Dichloroethene	ND	5	ug/L
cis-1,2-Dichloroethene	ND	5	ug/L
trans-1,2-Dichloroethene	ND	5	ug/L
1,2-Dichloropropane	ND	5	ug/L
1,3-Dichloropropane	ND	5	ug/L
2,2-Dichloropropane	ND	5	ug/L
1,1-Dichloropropene	ND	5	ug/L
Ethylbenzene	ND	5	ug/L
Hexachlorobutadiene	ND	5	ug/L
Isopropylbenzene	ND	5	ug/L
p-Isopropyltoluene	ND	5	ug/L
Methylene chloride	ND	5	ug/L

METHOD: 8260 Water, Volatile Organics
(continued on next page)



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9805C60-03

Cypress Engineering, Inc.

SAMPLE ID: MW-17

PARAMETER	ANALYTICAL DATA (continued)		UNITS
	RESULTS	PQL*	
Naphthalene	ND	5	ug/L
n-Propylbenzene	ND	5	ug/L
Styrene	ND	5	ug/L
1,1,1,2-Tetrachloroethane	ND	5	ug/L
1,1,2,2-Tetrachloroethane	ND	5	ug/L
Tetrachloroethene	ND	5	ug/L
Toluene	ND	5	ug/L
1,2,3-Trichlorobenzene	ND	5	ug/L
1,2,4-Trichlorobenzene	ND	5	ug/L
1,1,1-Trichloroethane	ND	5	ug/L
1,1,2-Trichloroethane	ND	5	ug/L
Trichloroethene	ND	5	ug/L
Trichlorofluoromethane	ND	5	ug/L
1,2,3-Trichloropropane	ND	5	ug/L
1,2,4-Trimethylbenzene	ND	5	ug/L
1,3,5-Trimethylbenzene	ND	5	ug/L
Vinyl chloride	ND	10	ug/L
Xylenes (total)	ND	5	ug/L
Acetone	ND	100	ug/L
Carbon Disulfide	ND	5	ug/L
Vinyl Acetate	ND	10	ug/L
2-Butanone	ND	20	ug/L
1,2-Dichloroethene (total)	ND	5	ug/L
2-Chloroethylvinylether	ND	10	ug/L
4-Methyl-2-Pentanone	ND	10	ug/L
cis-1,3-Dichloropropene	ND	5	ug/L
trans-1,3-Dichloropropene	ND	5	ug/L
2-Hexanone	ND	10	ug/L
m,p-Xylene(s)	ND	5	ug/L
o-Xylene	ND	5	ug/L

SURROGATES	AMOUNT SPIKED	% RECOVERY	LOWER LIMIT	UPPER LIMIT
1,2-Dichloroethane-d4	50 ug/L	100	76	114
Toluene-d8	50 ug/L	92	88	110
4-Bromofluorobenzene	50 ug/L	98	86	115

ANALYZED BY: JC

DATE/TIME: 05/29/98 12:05:00

METHOD: 8260 Water, Volatile Organics

NOTES: * - Practical Quantitation Limit

ND - Not Detected

NA - Not Analyzed

COMMENTS:

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9805C60-03

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

06/11/98

PROJECT: Transwestern Pipeline
SITE: Roswell Sta. 9
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-17

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 05/27/98 12:30:00
DATE RECEIVED: 05/28/98

ANALYTICAL DATA				
PARAMETER	RESULTS	PQL*	UNITS	
Acenaphthene	ND	5	ug/L	
Acenaphthylene	ND	5	ug/L	
Anthracene	ND	5	ug/L	
Benzo(a)Anthracene	ND	5	ug/L	
Benzo(b)Fluoranthene	ND	5	ug/L	
Benzo(k)Fluoranthene	ND	5	ug/L	
Benzo(a)Pyrene	ND	5	ug/L	
Benzo(g,h,i)Perylene	ND	5	ug/L	
Chrysene	ND	5	ug/L	
Dibenz(a,h)Anthracene	ND	5	ug/L	
Fluoranthene	ND	5	ug/L	
Fluorene	ND	5	ug/L	
Indeno(1,2,3-cd)Pyrene	ND	5	ug/L	
2-Methylnaphthalene	ND	5	ug/L	
Naphthalene	ND	5	ug/L	
Phenanthrene	ND	5	ug/L	
Pyrene	ND	5	ug/L	
1-Methylnaphthalene	ND	5	ug/L	

SURROGATES	AMOUNT SPIKED	% RECOVERY	LOWER LIMIT	UPPER LIMIT
Nitrobenzene-d5	50 ug/L	80	35	114
2-Fluorobiphenyl	50 ug/L	86	43	116
Terphenyl-d14	50 ug/L	88	33	141
Phenol-d5	75 ug/L	17	10	110
2-Fluorophenol	75 ug/L	33	21	110
2,4,6-Tribromophenol	75 ug/L	72	10	123

ANALYZED BY: YL
EXTRACTED BY: KL
METHOD: 8270C, Semivolatile Organics - Water
DATE/TIME: 06/09/98 21:24:00
DATE/TIME: 05/31/98 08:00:00
NOTES: * - Practical Quantitation Limit ND - Not Detected
NA - Not Analyzed

COMMENTS:

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9805C60-04

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 06/11/98

PROJECT: Transwestern Pipeline
SITE: Roswell Sta. 9
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-23D

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 05/27/98 15:00:00
DATE RECEIVED: 05/28/98

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
Alkalinity, as CaCO ₃ Method 310.1 * Analyzed by: JS Date: 05/29/98 11:45:00	90	1	mg/L	
Chloride Method 325.3 * Analyzed by: DAM Date: 06/09/98 11:00:00	350	10	mg/L	
Sulfate Method 375.4 * Analyzed by: TW Date: 05/29/98 11:00:00	1800	100	mg/L	
Total Dissolved Solids Method 160.1 * Analyzed by: CL Date: 05/29/98 16:15:00	3000	100	mg/L	
Nitrate-Nitrite, as N Method 353.3 * Analyzed by: DAM Date: 06/04/98 10:00:00	ND	0.1	mg/L	
Liquid-liquid extraction SEMIVOLATILES Method 3520C *** Analyzed by: KL Date: 05/31/98 08:00:00	05/31/98			

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9805C60-04

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 06/11/98

PROJECT: Transwestern Pipeline
SITE: Roswell Sta. 9
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-23D

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 05/27/98 15:00:00
DATE RECEIVED: 05/28/98

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
Silver, Dissolved Method 6010B *** Analyzed by: JM Date: 06/09/98 07:54:00	ND	0.01	mg/L	
Arsenic, Dissolved Method 7060A *** Analyzed by: PB Date: 06/10/98 14:30:00	0.005	0.005	mg/L	
Barium, Dissolved Method 6010B *** Analyzed by: JM Date: 06/09/98 07:54:00	0.013	0.005	mg/L	
Cadmium, Dissolved Method 6010B *** Analyzed by: JM Date: 06/09/98 07:54:00	ND	0.005	mg/L	
Chromium, Dissolved Method 6010B *** Analyzed by: JM Date: 06/09/98 07:54:00	ND	0.01	mg/L	
Copper, Dissolved Method 6010B *** Analyzed by: JM Date: 06/09/98 07:54:00	ND	0.01	mg/L	

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9805C60-04

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 06/11/98

PROJECT: Transwestern Pipeline
SITE: Roswell Sta. 9
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-23D

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 05/27/98 15:00:00
DATE RECEIVED: 05/28/98

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
Iron, Dissolved Method 6010B *** Analyzed by: JM Date: 06/09/98 07:54:00	ND	0.02	mg/L	
Mercury, Dissolved Method 7470 A*** Analyzed by: AG Date: 06/01/98 13:25:00	ND	0.0002	mg/L	
Manganese, Dissolved Method 6010B *** Analyzed by: JM Date: 06/09/98 07:54:00	0.094	0.005	mg/L	
Dissolved Metals Prep. Method 3005A *** Analyzed by: EE Date: 05/29/98 09:15:00	05/29/98			
Lead, Dissolved Method 6010B *** Analyzed by: JM Date: 06/09/98 07:54:00	ND	0.05	mg/L	
Selenium, Dissolved Method 6010B *** Analyzed by: JM Date: 06/09/98 07:54:00	ND	0.1	mg/L	

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.

**LABORATORIES**

Certificate of Analysis No. H9-9805C60-04

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 10/05/98

PROJECT: Transwestern Pipeline
SITE: Roswell Sta. 9
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-23D

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 05/27/98 15:00:00
DATE RECEIVED: 05/28/98

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Zinc, Dissolved	ND	0.02	mg/L
Method 6010B ***			
Analyzed by: JM			
Date: 06/09/98 07:54:00			

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.

6660 INTERCHANGE DR.
HOUSTON, TX 77054
(713) 660-0801

300 AMBASSADOR CYPRESS PKWY.
SCOTT, LA 70583-8544
(518) 237-4SPL

105 HUGHES DRIVE
TRAVERSE CITY, MI 49680
(616) 947-5777

1311 E. ORANGETHORPE AVE.
FULLERTON, CA 92631
(714) 447-6868



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9805C60-04

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

06/11/98

PROJECT: Transwestern Pipeline
SITE: Roswell Sta. 9
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-23D

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 05/27/98 15:00:00
DATE RECEIVED: 05/28/98

ANALYTICAL DATA

PARAMETER	RESULTS	PQL*	UNITS
Benzene	ND	5	ug/L
Bromobenzene	ND	5	ug/L
Bromochloromethane	ND	5	ug/L
Bromodichloromethane	ND	5	ug/L
Bromoform	ND	5	ug/L
Bromomethane	ND	10	ug/L
n-Butylbenzene	ND	5	ug/L
sec-Butylbenzene	ND	5	ug/L
tert-Butylbenzene	ND	5	ug/L
Carbon tetrachloride	ND	5	ug/L
Chlorobenzene	ND	5	ug/L
Chlorodibromomethane	ND	5	ug/L
Chloroethane	ND	10	ug/L
Chloroform	ND	5	ug/L
Chloromethane	ND	10	ug/L
2-Chlorotoluene	ND	5	ug/L
4-Chlorotoluene	ND	5	ug/L
1,2-Dibromo-3-chloropropane	ND	5	ug/L
1,2-Dibromoethane	ND	5	ug/L
Dibromomethane	ND	5	ug/L
1,2-Dichlorobenzene	ND	5	ug/L
1,3-Dichlorobenzene	ND	5	ug/L
1,4-Dichlorobenzene	ND	5	ug/L
Dichlorodifluoromethane	ND	10	ug/L
1,1-Dichloroethane	ND	5	ug/L
1,2-Dichloroethane	ND	5	ug/L
1,1-Dichloroethene	ND	5	ug/L
cis-1,2-Dichloroethene	ND	5	ug/L
trans-1,2-Dichloroethene	ND	5	ug/L
1,2-Dichloropropane	ND	5	ug/L
1,3-Dichloropropane	ND	5	ug/L
2,2-Dichloropropane	ND	5	ug/L
1,1-Dichloropropene	ND	5	ug/L
Ethylbenzene	ND	5	ug/L
Hexachlorobutadiene	ND	5	ug/L
Isopropylbenzene	ND	5	ug/L
p-Isopropyltoluene	ND	5	ug/L
Methylene chloride	ND	5	ug/L

METHOD: 8260 Water, Volatile Organics
(continued on next page)



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9805C60-04

Cypress Engineering, Inc.

SAMPLE ID: MW-23D

ANALYTICAL DATA (continued)				
PARAMETER	RESULTS	PQL*	UNITS	
Naphthalene	ND	5	ug/L	
n-Propylbenzene	ND	5	ug/L	
Styrene	ND	5	ug/L	
1,1,1,2-Tetrachloroethane	ND	5	ug/L	
1,1,2,2-Tetrachloroethane	ND	5	ug/L	
Tetrachloroethene	ND	5	ug/L	
Toluene	ND	5	ug/L	
1,2,3-Trichlorobenzene	ND	5	ug/L	
1,2,4-Trichlorobenzene	ND	5	ug/L	
1,1,1-Trichloroethane	ND	5	ug/L	
1,1,2-Trichloroethane	ND	5	ug/L	
Trichloroethene	ND	5	ug/L	
Trichlorofluoromethane	ND	5	ug/L	
1,2,3-Trichloropropane	ND	5	ug/L	
1,2,4-Trimethylbenzene	ND	5	ug/L	
1,3,5-Trimethylbenzene	ND	5	ug/L	
Vinyl chloride	ND	10	ug/L	
Xylenes (total)	ND	5	ug/L	
Acetone	ND	100	ug/L	
Carbon Disulfide	ND	5	ug/L	
Vinyl Acetate	ND	10	ug/L	
2-Butanone	ND	20	ug/L	
1,2-Dichloroethene (total)	ND	5	ug/L	
2-Chloroethylvinylether	ND	10	ug/L	
4-Methyl-2-Pentanone	ND	10	ug/L	
cis-1,3-Dichloropropene	ND	5	ug/L	
trans-1,3-Dichloropropene	ND	5	ug/L	
2-Hexanone	ND	10	ug/L	
m,p-Xylene(s)	ND	5	ug/L	
o-Xylene	ND	5	ug/L	

SURROGATES	AMOUNT SPIKED	% RECOVERY	LOWER LIMIT	UPPER LIMIT
1,2-Dichloroethane-d4	50 ug/L	100	76	114
Toluene-d8	50 ug/L	92	88	110
4-Bromofluorobenzene	50 ug/L	98	86	115

ANALYZED BY: JC

DATE/TIME: 05/29/98 12:30:00

METHOD: 8260 Water, Volatile Organics

NOTES: * - Practical Quantitation Limit

ND - Not Detected

NA - Not Analyzed

COMMENTS:

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.

**HOUSTON LABORATORY**

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 660-0901

Certificate of Analysis No. H9-9805C60-04

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

06/11/98

PROJECT: Transwestern Pipeline
SITE: Roswell Sta. 9
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-23D

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 05/27/98 15:00:00
DATE RECEIVED: 05/28/98

ANALYTICAL DATA

PARAMETER	RESULTS	PQL*	UNITS
Acenaphthene	ND	5	ug/L
Acenaphthylene	ND	5	ug/L
Anthracene	ND	5	ug/L
Benzo(a)Anthracene	ND	5	ug/L
Benzo(b)Fluoranthene	ND	5	ug/L
Benzo(k)Fluoranthene	ND	5	ug/L
Benzo(a)Pyrene	ND	5	ug/L
Benzo(g,h,i)Perylene	ND	5	ug/L
Chrysene	ND	5	ug/L
Dibenz(a,h)Anthracene	ND	5	ug/L
Fluoranthene	ND	5	ug/L
Fluorene	ND	5	ug/L
Indeno(1,2,3-cd)Pyrene	ND	5	ug/L
2-Methylnaphthalene	ND	5	ug/L
Naphthalene	ND	5	ug/L
Phenanthrene	ND	5	ug/L
Pyrene	ND	5	ug/L
1-Methylnaphthalene	ND	5	ug/L

SURROGATES	AMOUNT SPIKED	% RECOVERY	LOWER LIMIT	UPPER LIMIT
Nitrobenzene-d5	50 ug/L	66	35	114
2-Fluorobiphenyl	50 ug/L	74	43	116
Terphenyl-d14	50 ug/L	74	33	141
Phenol-d5	75 ug/L	15	10	110
2-Fluorophenol	75 ug/L	24	21	110
2,4,6-Tribromophenol	75 ug/L	56	10	123

ANALYZED BY: YL DATE/TIME: 06/09/98 21:56:00
EXTRACTED BY: KL DATE/TIME: 05/31/98 08:00:00
METHOD: 8270C, Semivolatile Organics - Water
NOTES: * - Practical Quantitation Limit ND - Not Detected
 NA - Not Analyzed

COMMENTS:

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.

**HOUSTON LABORATORY**

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 660-0901

Certificate of Analysis No. H9-9805C60-05

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

06/11/98

PROJECT: Transwestern Pipeline
SITE: Roswell Sta. 9
SAMPLED BY: Provided By SPL
SAMPLE ID: Trip Blank 5/21/98

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 05/27/98
DATE RECEIVED: 05/28/98

ANALYTICAL DATA

PARAMETER	RESULTS	PQL*	UNITS
Benzene	ND	5	ug/L
Bromobenzene	ND	5	ug/L
Bromochloromethane	ND	5	ug/L
Bromodichloromethane	ND	5	ug/L
Bromoform	ND	5	ug/L
Bromomethane	ND	10	ug/L
n-Butylbenzene	ND	5	ug/L
sec-Butylbenzene	ND	5	ug/L
tert-Butylbenzene	ND	5	ug/L
Carbon tetrachloride	ND	5	ug/L
Chlorobenzene	ND	5	ug/L
Chlorodibromomethane	ND	5	ug/L
Chloroethane	ND	10	ug/L
Chloroform	ND	5	ug/L
Chloromethane	ND	10	ug/L
2-Chlorotoluene	ND	5	ug/L
4-Chlorotoluene	ND	5	ug/L
1,2-Dibromo-3-chloropropane	ND	5	ug/L
1,2-Dibromoethane	ND	5	ug/L
Dibromomethane	ND	5	ug/L
1,2-Dichlorobenzene	ND	5	ug/L
1,3-Dichlorobenzene	ND	5	ug/L
1,4-Dichlorobenzene	ND	5	ug/L
Dichlorodifluoromethane	ND	10	ug/L
1,1-Dichloroethane	ND	5	ug/L
1,2-Dichloroethane	ND	5	ug/L
1,1-Dichloroethene	ND	5	ug/L
cis-1,2-Dichloroethene	ND	5	ug/L
trans-1,2-Dichloroethene	ND	5	ug/L
1,2-Dichloropropane	ND	5	ug/L
1,3-Dichloropropane	ND	5	ug/L
2,2-Dichloropropane	ND	5	ug/L
1,1-Dichloropropene	ND	5	ug/L
Ethylbenzene	ND	5	ug/L
Hexachlorobutadiene	ND	5	ug/L
Isopropylbenzene	ND	5	ug/L
p-Isopropyltoluene	ND	5	ug/L
Methylene chloride	ND	5	ug/L

METHOD: 8260 Water, Volatile Organics
(continued on next page)

**HOUSTON LABORATORY**

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 660-0901

Certificate of Analysis No. H9-9805C60-05

Cypress Engineering, Inc.

SAMPLE ID: Trip Blank

5/21/98

ANALYTICAL DATA (continued)				
PARAMETER	RESULTS	PQL*	UNITS	
Naphthalene	ND	5	ug/L	
n-Propylbenzene	ND	5	ug/L	
Styrene	ND	5	ug/L	
1,1,1,2-Tetrachloroethane	ND	5	ug/L	
1,1,2,2-Tetrachloroethane	ND	5	ug/L	
Tetrachloroethene	ND	5	ug/L	
Toluene	ND	5	ug/L	
1,2,3-Trichlorobenzene	ND	5	ug/L	
1,2,4-Trichlorobenzene	ND	5	ug/L	
1,1,1-Trichloroethane	ND	5	ug/L	
1,1,2-Trichloroethane	ND	5	ug/L	
Trichloroethene	ND	5	ug/L	
Trichlorofluoromethane	ND	5	ug/L	
1,2,3-Trichloropropane	ND	5	ug/L	
1,2,4-Trimethylbenzene	ND	5	ug/L	
1,3,5-Trimethylbenzene	ND	5	ug/L	
Vinyl chloride	ND	10	ug/L	
Xylenes (total)	ND	5	ug/L	
Acetone	ND	100	ug/L	
Carbon Disulfide	ND	5	ug/L	
Vinyl Acetate	ND	10	ug/L	
2-Butanone	ND	20	ug/L	
1,2-Dichloroethene (total)	ND	5	ug/L	
2-Chloroethylvinylether	ND	10	ug/L	
4-Methyl-2-Pentanone	ND	10	ug/L	
cis-1,3-Dichloropropene	ND	5	ug/L	
trans-1,3-Dichloropropene	ND	5	ug/L	
2-Hexanone	ND	10	ug/L	
m,p-Xylene(s)	ND	5	ug/L	
o-Xylene	ND	5	ug/L	

SURROGATES	AMOUNT SPIKED	% RECOVERY	LOWER LIMIT	UPPER LIMIT
1,2-Dichloroethane-d4	50 ug/L	92	76	114
Toluene-d8	50 ug/L	88	88	110
4-Bromofluorobenzene	50 ug/L	96	86	115

ANALYZED BY: JC

DATE/TIME: 05/29/98 12:56:00

METHOD: 8260 Water, Volatile Organics

NOTES: * - Practical Quantitation Limit

ND - Not Detected

NA - Not Analyzed

COMMENTS:

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.

QUALITY CONTROL

DOCUMENTATION

3A
WATER VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: SPL

Contract:

Lab Code:

Case No.: 9805A20 SAS No.:

SDG No.:

Matrix Spike - EPA Sample No.: EFF-POS

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC #	QC. LIMITS REC.
=====	=====	=====	=====	=====	=====
1,1-Dichloroethene	50	0	57	114	61-145
Trichloroethene	50	0	50	100	71-120
Benzene	50	3	53	100	76-127
Toluene	50	0	45	90	76-125
Chlorobenzene	50	0	50	100	75-130

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC #	% RPD #	QC LIMITS RPD	REC.
=====	=====	=====	=====	=====	=====	=====
1,1-Dichloroethene	50	55	110	4	14	61-145
Trichloroethene	50	52	104	4	14	71-120
Benzene	50	57	108	8	11	76-127
Toluene	50	46	92	2	13	76-125
Chlorobenzene	50	49	98	2	13	75-130

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 5 outside limits

Spike Recovery: 0 out of 10 outside limits

SPL Houston Labs

RECOVERY REPORT

Client Name: Client SDG: n980529
Sample Matrix: LIQUID Fraction: VOA
Lab Smp Id: LCS
Level: LOW Operator: JC
Data Type: MS DATA SampleType: LCS
SpikeList File: 8260_water.spk Quant Type: ISTD
Sublist File: 8260.sub
Method File: /var/chem/n.i/n980529.b/n8260w.m
Misc Info: N149W1//N149CW1

SPIKE COMPOUND	CONC ADDED ug/L	CONC RECOVERED ug/L	% RECOVERED	LIMITS
8 1,1-Dichloroethene	50	57	114.00	61-145
29 Trichloroethene	50	53	106.00	71-120
25 Benzene	50	53	106.00	76-127
37 Toluene	50	47	94.00	76-125
45 Chlorobenzene	50	50	100.00	75-130

SURROGATE COMPOUND	CONC ADDED ug/L	CONC RECOVERED ug/L	% RECOVERED	LIMITS
\$ 21 1,2-Dichloroethane	50	48	96.00	76-114
\$ 36 Toluene-d8	50	46	92.00	88-110
\$ 56 Bromofluorobenzene	50	49	98.00	86-115



SPL Blank QC Report

HOUSTON LABORATORY

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 689-1111

1

Matrix: Aqueous
Sample ID: VLBLK
Batch: N980529122720

Reported on: 06/08/98 12:58
Analyzed on: 05/29/98 08:16
Analyst: JC

METHOD 8260/8240 N149B01

Compound	Result	Detection Limit	Units
Dichlorodifluoromethane	ND	10	ug/L
Chloromethane	ND	10	ug/L
Vinyl Chloride	ND	10	ug/L
Bromomethane	ND	10	ug/L
Chloroethane	ND	10	ug/L
Trichlorofluoromethane	ND	5	ug/L
Acetone	ND	100	ug/L
1,1-Dichloroethene	ND	5	ug/L
Methylene Chloride	ND	5	ug/L
Carbon Disulfide	ND	5	ug/L
trans-1,2-Dichloroethene	ND	5	ug/L
1,1-Dichloroethane	ND	5	ug/L
Vinyl Acetate	ND	10	ug/L
2-Butanone	ND	20	ug/L
cis-1,2-Dichloroethene	ND	5	ug/L
1,2-Dichloroethene (total)	ND	5	ug/L
2,2-Dichloropropane	ND	5	ug/L
Bromochloromethane	ND	5	ug/L
Chloroform	ND	5	ug/L
1,1,1-Trichloroethane	ND	5	ug/L
1,2-Dichloroethane	ND	5	ug/L
1,1-Dichloropropene	ND	5	ug/L
Benzene	ND	5	ug/L
Carbon Tetrachloride	ND	5	ug/L
1,2-Dichloropropane	ND	5	ug/L
Trichloroethene	ND	5	ug/L
Dibromomethane	ND	5	ug/L
Bromodichloromethane	ND	5	ug/L
2-Chloroethylvinylether	ND	10	ug/L
4-Methyl-2-Pentanone	ND	10	ug/L
cis-1,3-Dichloropropene	ND	5	ug/L
trans-1,3-Dichloropropene	ND	5	ug/L
Toluene	ND	5	ug/L
1,1,2-Trichloroethane	ND	5	ug/L

Notes

ND - Not detected.



SPL Blank QC Report

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 662-9988

2

Matrix: Aqueous
Sample ID: VLBLK
Batch: N980529122720

Reported on: 06/08/98 12:58
Analyzed on: 05/29/98 08:16
Analyst: JC

METHOD 8260/8240 N149B01

C o m p o u n d	Result	Detection Limit	Units
1,3-Dichloropropane	ND	5	ug/L
2-Hexanone	ND	10	ug/L
Dibromochloromethane	ND	5	ug/L
1,2-Dibromoethane	ND	5	ug/L
Tetrachloroethene	ND	5	ug/L
Chlorobenzene	ND	5	ug/L
1,1,1,2-Tetrachloroethane	ND	5	ug/L
Ethylbenzene	ND	5	ug/L
Bromoform	ND	5	ug/L
Styrene	ND	5	ug/L
Xylene (Total)	ND	5	ug/L
1,1,2,2-Tetrachloroethane	ND	5	ug/L
1,2,3-Trichloropropane	ND	5	ug/L
Isopropylbenzene	ND	5	ug/L
Bromobenzene	ND	5	ug/L
N-Propylbenzene	ND	5	ug/L
2-Chlorotoluene	ND	5	ug/L
4-Chlorotoluene	ND	5	ug/L
1,3,5-Trimethylbenzene	ND	5	ug/L
tert-Butylbenzene	ND	5	ug/L
1,2,4-Trimethylbenzene	ND	5	ug/L
1,3-Dichlorobenzene	ND	5	ug/L
sec-Butylbenzene	ND	5	ug/L
1,4-Dichlorobenzene	ND	5	ug/L
p-Isopropyltoluene	ND	5	ug/L
1,2-Dichlorobenzene	ND	5	ug/L
n-Butylbenzene	ND	5	ug/L
1,2-Dibromo-3-Chloropropan	ND	5	ug/L
1,2,4-Trichlorobenzene	ND	5	ug/L
Naphthalene	ND	5	ug/L
Hexachlorobutadiene	ND	5	ug/L
1,2,3-Trichlorobenzene	ND	5	ug/L

Notes

ND - Not detected.



SPL Blank QC Report

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 999-1111

3

Matrix: Aqueous
Sample ID: VLBLK
Batch: N980529122720

Reported on: 06/08/98 12:58
Analyzed on: 05/29/98 08:16
Analyst: JC

METHOD 8260/8240 N149B01

S u r r o g a t e	Result	QC Criteria	Units
1,2-Dichloroethane-d4	88	76-114	% Recovery
Toluene-d8	88	88-110	% Recovery
Bromofluorobenzene	98	86-115	% Recovery

Samples in Batch 9805C60-01 9805C60-02 9805C60-03 9805C60-04
9805C60-05

Notes

ND - Not detected.

WATER SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: SPL

Contract:

Lab Code:

Case No:

9805D75

SAS No:

SDG No:

Matrix Spike - EPA

Sample No:

MW-2

Level (low/med):

	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC #	QC LIMITS REC
Phenol	75	0	22	29	12-110
2-Chlorophenol	75	0	46	61	27-123
1,4-Dichlorobenzene	50	0	35	70	36- 97
N-Nitroso-di-n-propylamine	50	0	33	66	41-116
1,2,4-Trichlorobenzene	50	0	38	76	39- 98
4-Chloro-3-methylphenol	75	0	65	87	23- 97
Acenaphthene	50	0	39	78	46-118
4-Nitrophenol	75	0	29	39	30-150
2,4-Dinitrotoluene	50	0	35	70	50-150
Pentachlorophenol	75	0	73	97	9-125
Pyrene	50	0	42	84	26-127

	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC #	% RPD #	QC LIMITS	
					RPD	REC
Phenol	75	12	16	58 *	42	12-110
2-Chlorophenol	75	28	37	49 *	40	27-132
1,4-Dichlorobenzene	50	24	48	37 *	28	36- 97
N-Nitroso-di-n-propylamine	50	23	46	36	38	41-116
1,2,4-Trichlorobenzene	50	26	52	38 *	28	39- 98
4-Chloro-3-methylphenol	75	47	63	32	42	23- 97
Acenaphthene	50	30	60	26	31	46-118
4-Nitrophenol	75	22	29 *	29	50	30-150
2,4-Dinitrotoluene	50	30	60	15	50	50-150
Pentachlorophenol	75	58	77	23	50	9-125
Pyrene	50	41	82	2	31	26-127

Column to be used to flag recovery and RPD values with an asterisk

* Amount outside QC limits due to matrix interference

RPD: 4 out of 11 outside limits
Spike Recovery: 1 out of 22 outside limits

SPL Houston Labs

RECOVERY REPORT

Client Name: Client SDG: p980609
 Sample Matrix: LIQUID Fraction: SV
 Lab Smp Id: METHSPIKE-8270W
 Level: LOW Operator: RY
 Data Type: MS DATA SampleType: MSD
 SpikeList File: 8270w.spk Quant Type: ISTD
 Sublist File: lcs.sub
 Method File: /var/chem/p.i/p980609.b/p8270cw.m
 Misc Info: E151F3/H151B03/P160CC2

SPIKE COMPOUND	CONC ADDED ug/L	CONC RECOVERED ug/L	% RECOVERED	LIMITS
5 Phenol	75	33	44.00	12-110
9 2-Chlorophenol	75	51	68.00	27-123
12 1,4-Dichlorobenzen	50	33	66.00	36-97
21 N-Nitroso-di-n-pro	50	40	80.00	41-116
31 1,2,4-Trichloroben	50	35	70.00	39-98
36 4-Chloro-3-methylp	75	62	82.67	23-97
49 Acenaphthene	50	39	78.00	46-118
51 4-Nitrophenol	75	38	50.67	30-150
53 2,4-Dinitrotoluene	50	36	72.00	50-150
64 Pentachlorophenol	75	41	54.67	9-125
71 Pyrene	50	39	78.00	26-127

SURROGATE COMPOUND	CONC ADDED ug/L	CONC RECOVERED ug/L	% RECOVERED	LIMITS
\$ 23 Nitrobenzene-d5	50	37	74.00	35-114
\$ 41 2-Fluorobiphenyl	50	40	80.00	43-116
\$ 72 Terphenyl-d14	50	26	52.00	33-141
\$ 3 2-Fluorophenol	75	45	60.00	21-110
\$ 4 Phenol-d5	75	32	42.67	10-110
\$ 61 2,4,6-Tribromophen	75	69	92.00	10-123



SPL Blank QC Report

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 696-0391

1

Matrix: Aqueous
Sample ID: BLANK
Batch: E980531042258

Reported on: 06/10/98 14:57
Analyzed on: 06/06/98 13:53
Analyst: YL

METHOD 8270 H151B03

C o m p o u n d	Result	Detection Limit	Units
Naphthalene	ND	5	ug/L
2-Methylnaphthalene	ND	5	ug/L
1-Methylnaphthalene	ND	5	ug/L
Acenaphthylene	ND	5	ug/L
Acenaphthene	ND	5	ug/L
Fluorene	ND	5	ug/L
Phenanthrene	ND	5	ug/L
Anthracene	ND	5	ug/L
Fluoranthene	ND	5	ug/L
Pyrene	ND	5	ug/L
Benzo[a]anthracene	ND	5	ug/L
Chrysene	ND	5	ug/L
Benzo[b]fluoranthene	ND	5	ug/L
Benzo[k]fluoranthene	ND	5	ug/L
Benzo[a]pyrene	ND	5	ug/L
Indeno[1,2,3-cd]pyrene	ND	5	ug/L
Dibenz[a,h]anthracene	ND	5	ug/L
Benzo[g,h,i]perylene	ND	5	ug/L

S u r r o g a t e	Result	QC Criteria	Units
2-Fluorophenol	47	21-110	% Recovery
Phenol-d5	35	10-110	% Recovery
2,4,6-Tribromophenol	72	10-123	% Recovery
Nitrobenzene-d5	66	35-114	% Recovery
2-Fluorobiphenyl	80	43-116	% Recovery
Terphenyl-d14	88	33-141	% Recovery

Samples in Batch 9805C60-01 9805C60-02 9805C60-03 9805C60-04

Notes

ND - Not detected.

Analyst: JMEG
HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
Checked: (713) 660-0901

Checked (713) 660-0901

Jan 6/10/98

Work Orders in Batch	
Work Order	Fractions

98-05-C60 01E-03E

Work Order Spiked: 9805C60-01E

[illegible]

ICP Spectroscopy Method 6010 Quality Control Report



Matrix: Water

Units: mg/L

Analyst: JMEG

HOUSTON LABORATORY

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

Checked: JMEG

Date: 061098 Time: 0951 File Name: 061098M7

Laboratory Control Sample

Element	Mth. Blank	True Value	Result	% Recovery	Lower Limit	Upper Limit
Silver						
Aluminum						
Arsenic						
Barium						
Beryllium						
Calcium						
Cadmium						
Cobalt						
Chromium						
Copper	ND	2.00	1.93	96	1.60	2.40
Iron						
Potassium						
Magnesium						
Manganese						
Sodium						
Nickel						
Lead						
Antimony						
Selenium						
Thallium						
Vanadium						
Zinc	ND	2.00	1.95	98	1.60	2.40

Work Orders in Batch

Work Order Fractions

98-05-C60, 01E-03E

98-06-447 01B

Matrix Spike - Spike Duplicate Results

Work Order Spiked: 9805C60-01E

Element	Sample Result	Spike Added	Matrix Spike Result	Matrix Spike Recovery	Matrix Spike Duplicate Result	Matrix Spike Duplicate Recovery	QC Limits % Recovery		Spike RPD %	QC Limits %	
Silver											
Aluminum											
Arsenic											
Barium											
Beryllium											
Calcium											
Cadmium											
Cobalt											
Chromium											
Copper	ND	1.0	1.00	100.0	1.003	100.3	80	120	0.3	20.0	
Iron											
Potassium											
Magnesium											
Manganese											
Sodium											
Nickel											
Lead											
Antimony											
Selenium											
Thallium											
Vanadium											
Zinc	ND	1.0	0.994	99.4	0.9996	100.0	80	120	0.6	20.0	



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 06/01/98

Analyzed on: 06/01/98

Analyst: AG

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Mercury, Total
Method 7470 A***

SPL Sample ID Number	Blank Value ug/L	LCS Concentration ug/L	Measured Concentration ug/L	% Recovery	QC Limits Recovery
LCS	ND	2.00	2.16	108	80 - 120

-9806034

Samples in batch:

9805A79-01H 9805A79-02H 9805A79-03H 9805A79-04H
9805A79-05H 9805C60-01E 9805C60-02E 9805C60-03E

COMMENTS:

LCS = SPL ID# 94-452-45-21



** SPL QUALITY CONTROL REPORT **

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Matrix: Aqueous

Reported on: 06/01/98

Analyzed on: 06/01/98

Analyst: AG

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Mercury, Total
Method 7470 A***

SPL Sample	Method	Sample	Spike	Matrix Spike		Matrix Spike Duplicate		RPD	QC LIMITS (Advisory)		
ID Number	Blank ug/L	Result ug/L	Added ug/L	Result ug/L	Recovery %	Result ug/L	Recovery %	(%)	RPD Max	% REC	
9805A79-01H	ND	ND	2.00	1.90	95.0	2.03	102	7.1	20	75	-125

-9806034

Samples in batch:

9805A79-01H 9805A79-02H 9805A79-03H 9805A79-04H
9805A79-05H 9805C60-01E 9805C60-02E 9805C60-03E

COMMENTS:

LCS = SPL ID# 94-452-45-21



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 06/10/98

Analyzed on: 06/10/98

Analyst: PB

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Selenium, Total
Method 7740 ***

SPL Sample ID Number	Blank Value ug/L	LCS Concentration ug/L	Measured Concentration ug/L	% Recovery	QC Limits Recovery
LCS	ND	40.0	38.3	95.8	80 - 120

-9806457

Samples in batch:

9805C60-01E 9805C60-02E 9805C60-03E

COMMENTS:

LCS = SPL ID # 97-839-264-9

* VALUES OUTSIDE QC RANGE DUE TO MATRIX INTERFERENCE.



** SPL QUALITY CONTROL REPORT **

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Matrix: Aqueous

Reported on: 06/10/98

Analyzed on: 06/10/98

Analyst: PB

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Selenium, Total
Method 7740 ***

SPL Sample ID Number	Method Blank ug/L	Sample Result ug/L	Spike Added ug/L	Matrix Spike		Matrix Spike Duplicate		RPD (%)	QC LIMITS (Advisory)		
				Result ug/L	Recovery %	Result ug/L	Recovery %		RPD Max	% REC	
9805C60-01E	ND	ND	40.0	18.9	47.2 *	18.2	45.5 *	3.7	20	75	-125

-9806457

Samples in batch:

9805C60-01E 9805C60-02E 9805C60-03E

COMMENTS:

LCS = SPL ID # 97-839-264-9

* VALUES OUTSIDE QC RANGE DUE TO MATRIX INTERFERENCE.

ICP Spectroscopy Method 6010 Quality Control Report



Matrix: DISSOLVED Units: mg/L

Analyst: JMF
HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 Checked: (713) 660-0901

Date: 060998 Time: 0754 File Name: 060998M9

Sm 6/10/98

Laboratory Control Sample

Element	Mth. Blank	True Value	Result	% Recovery	Lower Limit	Upper Limit
Silver	ND	2.00	2.04	102	1.60	2.40
Aluminum						
Arsenic						
Barium	ND	2.00	1.97	99	1.60	2.40
Beryllium						
Calcium						
Cadmium	ND	2.00	1.99	99	1.60	2.40
Cobalt						
Chromium	ND	2.00	2.01	101	1.60	2.40
Copper	ND	2.00	1.98	99	1.60	2.40
Iron	ND	2.00	2.01	100	1.60	2.40
Potassium						
Magnesium						
Manganese	ND	2.00	2.02	101	1.60	2.40
Sodium						
Nickel						
Lead	ND	2.00	2.01	100	1.60	2.40
Antimony						
Selenium	ND	4.00	4.08	102	3.20	4.80
Thallium						
Vanadium						
Zinc	ND	2.00	2.02	101	1.60	2.40

Work Orders in Batch

Work Order Fractions

98-05-C60 04E

Matrix Spike - Spike Duplicate Results

Work Order Spiked: 9805C60-04E

Element	Sample Result	Spike Added	Matrix Spike Result	Matrix Spike Recovery	Matrix Spike Duplicate Result	Matrix Spike Duplicate Recovery	QC Limits % Recovery	Spike RPD %	QC Limits %
Silver	ND	1.0	0.9825	98.3	0.9714	97.1	80 120	1.1	20.0
Aluminum									
Arsenic									
Barium	0.0128	1.0	1.011	99.8	0.9716	95.9	80 120	4.0	20.0
Beryllium									
Calcium									
Cadmium	ND	1.0	0.9815	98.2	1.066	106.6	80 120	8.3	20.0
Cobalt									
Chromium	ND	1.0	0.9374	93.7	0.9701	97.0	80 120	3.4	20.0
Copper	ND	1.0	1.005	100.5	0.9696	97.0	80 120	3.6	20.0
Iron	ND	1.0	0.9419	94.2	0.9624	96.2	80 120	2.2	20.0
Potassium									
Magnesium									
Manganese	0.0937	1.0	1.043	94.9	1.067	97.3	80 120	2.5	20.0
Sodium									
Nickel									
Lead	ND	1.0	0.9353	93.5	0.9789	97.9	80 120	4.6	20.0
Antimony									
Selenium	ND	2.0	2.168	108.4	2.133	106.7	80 120	1.6	20.0
Thallium									
Vanadium									
Zinc	ND	1.0	0.9939	99.4	1.02	102.0	80 120	2.6	20.0

Elements Bench Spiked: ALL

**HOUSTON LABORATORY**

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 660-0901

**** SPL QUALITY CONTROL REPORT ****

Matrix: Aqueous

Reported on: 06/10/98

Analyzed on: 06/10/98

Analyst: PB

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Arsenic, Dissolved
Method 7060A ***

SPL Sample ID Number	Blank Value ug/L	LCS Concentration ug/L	Measured Concentration ug/L	% Recovery	QC Limits Recovery
LCS	ND	40.0	43.2	108	80 - 120

-9806460

Samples in batch:

9805C60-04E

COMMENTS:

LCS = SPL ID # 97-839-254-3
BENCH SPIKED.



** SPL QUALITY CONTROL REPORT **

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Matrix: Aqueous

Reported on: 06/10/98
Analyzed on: 06/10/98
Analyst: PB

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Arsenic, Dissolved
Method 7060A ***

SPL Sample	Method	Sample	Spike	Matrix Spike		Matrix Spike Duplicate		RPD	QC LIMITS (Advisory)		
ID Number	Blank	Result	Added	Result	Recovery	Result	Recovery	(%)	RPD	% REC	
	ug/L	ug/L	ug/L	ug/L	%	ug/L	%		Max		
9805C60-04E	ND	5.3	40.0	47.3	105	47.7	106	0.9	20	75	-125

-9806460

Samples in batch:

9805C60-04E

COMMENTS:

LCS = SPL ID # 97-839-254-3
BENCH SPIKED.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 06/11/98

Analyzed on: 06/11/98

Analyst: PB

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Arsenic, Total
Method 7060A ***

SPL Sample ID Number	Blank Value ug/L	LCS Concentration ug/L	Measured Concentration ug/L	% Recovery	QC Limits Recovery
LCS	ND	40.0	40.2	100	80 - 120

-9806470

Samples in batch:

9805C60-01E 9805C60-02E 9805C60-03E

COMMENTS:

LCS = SPL ID # 97-839-264-9



** SPL QUALITY CONTROL REPORT **

HOUSTON LABORATORY

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 660-0901

Matrix: Aqueous

Reported on: 06/11/98

Analyzed on: 06/11/98

Analyst: PB

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Arsenic, Total
Method 7060A ***

SPL Sample ID Number	Method Blank ug/L	Sample Result ug/L	Spike Added ug/L	Matrix Spike		Matrix Spike Duplicate		RPD (%)	QC LIMITS (Advisory)		
				Result ug/L	Recovery %	Result ug/L	Recovery %		RPD Max	% REC	
9805C60-01E	ND	ND	40.0	40.4	101	39.0	97.5	3.5	20	75	-125

-9806470

Samples in batch:

9805C60-01E 9805C60-02E 9805C60-03E

COMMENTS:

LCS = SPL ID # 97-839-264-9

**HOUSTON LABORATORY**

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 660-0901

**** SPL QUALITY CONTROL REPORT ****

Matrix: Aqueous

Reported on: 06/01/98

Analyzed on: 06/01/98

Analyst: AG

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Mercury, Dissolved
Method 7470 A***

SPL Sample ID Number	Blank Value ug/L	LCS Concentration ug/L	Measured Concentration ug/L	% Recovery	QC Limits Recovery
LCS	ND	2.00	2.16	108	80 - 120

-9806035

Samples in batch:

9805C60-04E

COMMENTS:

LCS = SPL ID# 94-452-45-21



** SPL QUALITY CONTROL REPORT **

HOUSTON LABORATORY

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 660-0901

Matrix: Aqueous

Reported on: 06/01/98

Analyzed on: 06/01/98

Analyst: AG

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Mercury, Dissolved
Method 7470 A***

SPL Sample	Method	Sample	Spike	Matrix Spike		Matrix Spike Duplicate		RPD	QC LIMITS (Advisory)		
ID Number	Blank	Result	Added	Result	Recovery	Result	Recovery	(%)	RPD	% REC	
	ug/L	ug/L	ug/L	ug/L	%	ug/L	%		Max		
9805C60-04E	ND	ND	2.00	2.07	104	2.10	105	1.0	20	75	-125

-9806035

Samples in batch:

9805C60-04E

COMMENTS:

LCS = SPL ID# 94-452-45-21



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 05/31/98

Analyzed on: 05/29/98

Analyst: JS

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Alkalinity, as CaCO_3
Method 310.1 *

SPL Sample ID Number	Blank Value mg/L	LCS Concentration mg/L	Measured Concentration mg/L	% Recovery	QC Limits Recovery
LCS	ND	65.0	64.0	98.5	95 - 113

-9805A55

Samples in batch:

9805952-01E	9805952-02E	9805952-03E	9805952-05E
9805C60-01B	9805C60-02B	9805C60-03B	9805C60-04B

COMMENTS:

LCS ID#: 94453192-24

**HOUSTON LABORATORY**

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 660-0901

**** SPL QUALITY CONTROL REPORT ****

Matrix: Aqueous

Reported on: 05/31/98

Analyzed on: 05/29/98

Analyst: JS

This sample was randomly selected for use in the SPL quality control program. The results are as follows:

Alkalinity, as CaCO₃
Method 310.1 *

-- DUPLICATE ANALYSIS --

SPL Sample ID	Original Sample Concentration mg/L	Duplicate Sample mg/L	RPD	RPD Max.
9805952-02E	511	510	0.2	18

-9805A54

Samples in batch:

9805952-01E	9805952-02E	9805952-03E	9805952-05E
9805C60-01B	9805C60-02B	9805C60-03B	9805C60-04B

COMMENTS:

**HOUSTON LABORATORY**

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 660-0901

**** SPL QUALITY CONTROL REPORT ****

Matrix: Aqueous

Reported on: 06/09/98

Analyzed on: 06/09/98

Analyst: DAM

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Chloride
Method 325.3 *

SPL Sample ID Number	Blank Value mg/L	LCS Concentration mg/L	Measured Concentration mg/L	% Recovery	QC Limits Recovery
LCS	ND	116	117	101	94 - 106

-9806445

Samples in batch:

9805B64-01B	9805B64-02B	9805B64-03B	9805B64-04B
9805B64-05B	9805C22-01E	9805C60-01B	9805C60-02B
9805C60-03B	9805C60-04B	9805C90-01B	9805C90-02B
9805C90-03B	9805C92-01B	9805C92-02B	9805C92-03B
9806135-02A			

COMMENTS:

LCS = SPL ID#:94453192-24



®

** SPL QUALITY CONTROL REPORT **

HOUSTON LABORATORY

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 660-0901

Matrix: Aqueous

Reported on: 06/09/98

Analyzed on: 06/09/98

Analyst: DAM

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Chloride
Method 325.3 *

SPL Sample	Method	Sample	Spike	Matrix Spike		Matrix Spike Duplicate		RPD	QC LIMITS (Advisory)		
ID Number	Blank	Result	Added	Result	Recovery	Result	Recovery	(%)	RPD	% REC	
	mg/L	mg/L	mg/L	mg/L	%	mg/L	%		Max		
9805C60-01B	ND	48.50	50.0	99.32	102	100.21	103	1.0	5	92	-109

-9806443

Samples in batch:

9805C60-01B 9805C60-02B 9805C60-03B 9805C60-04B
9805C92-01B 9805C92-02B 9805C92-03B

COMMENTS:



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 05/29/98

Analyzed on: 05/29/98

Analyst: TW

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Sulfate
Method 375.4 *

SPL Sample ID Number	Blank Value mg/L	LCS Concentration mg/L	Measured Concentration mg/L	% Recovery	QC Limits Recovery
LCS	ND	4.52	3.93	86.9	82 - 111

-9805A40

Samples in batch:

9805871-01A 9805A80-02H 9805C60-01B 9805C60-02B
9805C60-03B 9805C60-04B

COMMENTS:

LCS#94453192-24



** SPL QUALITY CONTROL REPORT **

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Matrix: Aqueous

Reported on: 05/29/98

Analyzed on: 05/29/98

Analyst: TW

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Sulfate
Method 375.4 *

SPL Sample	Method	Sample	Spike	Matrix Spike		Matrix Spike Duplicate		RPD	QC LIMITS (Advisory)		
ID Number	Blank	Result	Added	Result	Recovery	Result	Recovery	(%)	RPD	% REC	
	mg/L	mg/L	mg/L	mg/L	%	mg/L	%		Max		
9805C60-01B	ND	6.51	10	15.15	86.4	15.53	90.2	4.3	9.5	84	-120

-9805A39

Samples in batch:

9805871-01A 9805A80-02H 9805C60-01B 9805C60-02B
9805C60-03B 9805C60-04B

COMMENTS:

**HOUSTON LABORATORY**

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 660-0901

**** SPL QUALITY CONTROL REPORT ****

Matrix: Aqueous

Reported on: 06/03/98

Analyzed on: 05/29/98

Analyst: KS

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Total Dissolved Solids
Method 160.1 *

SPL Sample ID Number	Blank Value mg/L	LCS Concentration mg/L	Measured Concentration mg/L	% Recovery	QC Limits Recovery
LCS	ND	296.8	287	96.7	93 - 107

-9806033

Samples in batch:

9805B63-01F 9805B63-02F 9805C60-01B 9805C60-02B
9805C60-03B 9805C60-04B

COMMENTS:

SPL LCS ID # 95535202-05

**HOUSTON LABORATORY**

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 660-0901

**** SPL QUALITY CONTROL REPORT ****

Matrix: Aqueous

Reported on: 06/03/98

Analyzed on: 05/29/98

Analyst: KS

This sample was randomly selected for use in the SPL quality control program. The results are as follows:

Total Dissolved Solids
Method 160.1 *

-- DUPLICATE ANALYSIS --

SPL Sample ID	Original Sample Concentration mg/L	Duplicate Sample mg/L	RPD	RPD Max.
9805C60-01B	3200	3670	13.7	5

-9806031

Samples in batch:

9805B63-01F 9805B63-02F 9805C60-01B 9805C60-02B
9805C60-03B 9805C60-04B

COMMENTS:

RPD IS OUT OF LIMITS

**HOUSTON LABORATORY**

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 660-0901

**** SPL QUALITY CONTROL REPORT ****

Matrix: Aqueous

Reported on: 06/11/98

Analyzed on: 06/04/98

Analyst: DAM

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Nitrate-Nitrite, as N
Method 353.3 *

SPL Sample ID Number	Blank Value mg/L	LCS Concentration mg/L	Measured Concentration mg/L	% Recovery	QC Limits Recovery
LCS	ND	2.77	2.96	107	92 - 111

-9806491

Samples in batch:

9805C60-01C	9805C60-02C	9805C60-03C	9805C60-04C
9805C90-01C	9805C90-02C	9805C90-03C	9805C92-01C
9805C92-02C	9805C92-03C	9805D86-01C	9805D86-02C
9805D86-03C	9805D87-01C	9805D87-02C	

COMMENTS:

LCS = SPL ID #:95535172-26



** SPL QUALITY CONTROL REPORT **

HOUSTON LABORATORY

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 660-0901

Matrix: Aqueous

Reported on: 06/11/98

Analyzed on: 06/04/98

Analyst: DAM

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Nitrate-Nitrite, as N
Method 353.3 *

SPL Sample	Method	Sample	Spike	Matrix Spike		Matrix Spike Duplicate		RPD	QC LIMITS (Advisory)		
ID Number	Blank	Result	Added	Result	Recovery	Result	Recovery	(%)	RPD	% REC	
	mg/L	mg/L	mg/L	mg/L	%	mg/L	%		Max		
9805C60-01C	ND	0.98	5.00	6.14	103	6.13	103	0	12	87	-120

-9806489

Samples in batch:

9805C60-01C 9805C60-02C 9805C60-03C 9805C60-04C
9805C90-01C 9805C90-02C 9805C90-03C 9805C92-01C
9805C92-02C 9805C92-03C

COMMENTS:

CHAIN OF CUSTODY
AND
SAMPLE RECEIPT CHECKLIST



SPL, Inc.

SPL Workorder No:

52168

Analysis Request & Chain of Custody Record

page 1 of 1

Client Name: <u>CYPRESS ENGINEERING (713) 886-7980</u>				matrix	bottle	size	pres.	Requested Analysis															
Address/Phone: <u>10735 WEST LITTLE LANE SUITE 256 HOUSTON TX 77040</u>				W=water SL=sludge S=soil O=other:	P=plastic G=glass A=amber glass V=vial	1=1 liter 8=8oz 4=4oz 16=16oz	1=HCl 3=H2SO4 2=HNO3 O=other:	Number of Containers	VOC'S 8260 INCLUDE 1,2-DICHLOROETHANE (COS-ETHANE) DICHLOROBENZENE (O-M-E-D) TOS, SULFATE, CHLORIDE, & TOTAL ALKALINITY NITRATE & NITRATE AS NITROGEN (353.2) PAH'S 8270 INCLUDING MONOMETHYLAHTHYLENE ISOMERS (1-8-2) TOTAL METALS (MUTUAL) Ba, Cd, Cr, Pb, Hg, Mn, Cu, Fe, Ni, Zn TOTAL AS BY GRAPHIC FURNACE 7060 TOTAL Se BY GRAPHIC FURNACE 7740														
Client Contact: <u>SANDY STAMP</u>																							
Project Name: <u>TRANSWESTERN PIPELINE</u>																							
Project Number:																							
Project Location: <u>ROSWELL STA. 9</u>																							
Invoice To: <u>GEORGE ROBINSON</u>																							
SAMPLE ID	DATE	TIME	comp	grab																			
MW-19	0945	5/27/98		X	W	G	40	1	1/0	3/1	X												
*MW-19	0945					P	1	0	3			X	X			X		X					
MW-18	1045					G	40	1	1/0	3/1	X					X							
*MW-18	1045					P	1	0	3			X	X			X		X					
MW-17	1230					G	40	1	1/0	3/1	X					X							
MW-17	1230					P	1	3/0	1/2			X	X			X		X					
MW-23 D	1500					G	40	1	1/0	3/1	X					X							
MW-23 D	1500					P	1	3/0	1/2			X	X			X		X					
TRIP BLANK						G	40	1	2		X												
RUN DISSOLVED METALS ON MW-23 D (FILTER & PRESERVE) ONLY																							
Client/Consultant Remarks:										Laboratory remarks:													
*DO NOT FILTER METALS ADD PRESERVATIVES & RUN ANALYSIS ON ALL EXCEPT MW-23 D SEE										Intact? ☒ Y ☐ N													
**ADD PRESERVATIVES TO NITRATE/NITRATE AS NITROGEN BLS FOR MW-19 & MW-18 ASAP										Temp: <u>4C</u>													
Requested TAT				Special Reporting Requirements				Fax Results ☒				Raw Data ☐				Special Detection Limits (specify):				PM review (initial):			
24hr ☐ 72hr ☐				Standard QC ☒ Level 3 QC ☐ Level 4 QC ☐																			
48hr ☐ Standard ☒				1. Relinquished by Sample: <u>Sandy Stamp</u>				date <u>5/27/98</u> time <u>1610</u>				2. Received by:											
Other ☐				3. Relinquished by:				date				time				4. Received by:							
				5. Relinquished by:				date				time				6. Received by Laboratory: <u>Julien G. L...</u> <u>5/28/98</u>							

☐ 8880 Interchange Drive, Houston, TX 77054 (713) 660-0901

☐ 459-Hughes Drive, Traverse City, MI 49684 (616) 947-5777

☐ 500 Ambassador Caffery Parkway, Scott, LA 70583 (318) 237-4775

☐ 1501 E. Orangethorpe Avenue, Fullerton, CA 92631 (714) 447-6868

SPL Houston Environmental Laboratory

Sample Login Checklist

Date: 5/28/98	Time: 1000
---------------	------------

SPL Sample ID: 9805C60

		Yes	No
1	Chain-of-Custody (COC) form is present.	✓	
2	COC is properly completed.	✓	
3	If no, Non-Conformance Worksheet has been completed.		
4	Custody seals are present on the shipping container.	✓	
5	If yes, custody seals are intact.	✓	
6	All samples are tagged or labeled.	✓	
7	If no, Non-Conformance Worksheet has been completed.		
8	Sample containers arrived intact	✓	
9	Temperature of samples upon arrival:	4 C	
10	Method of sample delivery to SPL:	SPL Delivery	
		Client Delivery	
		FedEx Delivery (airbill #)	8047215096
		Other:	
11	Method of sample disposal:	SPL Disposal	✓
		HOLD	
		Return to Client	

Name: Ruben E. Teh	Date: 5/28/98
--------------------	---------------

**PHASE IV ASSESSMENT REPORT,
GROUND WATER MONITORING REPORT,
& PHASE V ASSESSMENT WORK PLAN**

**TRANSWESTERN PIPELINE COMPANY
ROSWELL COMPRESSOR STATION NO. 9**

Attachment #5

**Laboratory Reports for the May 1998
Off Site Water Well
Ground Water Sampling Event**



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

May 26, 1998

Mr. George Robinson
CYPRESS ENGINEERING, INC.
10235 W. Little York Rd. #256
Houston, TX 77040

The following report contains analytical results for the sample(s) received at Southern Petroleum Laboratories (SPL) on May 9, 1998. The sample(s) was assigned to Certificate of Analysis No.(s) 9805418 and analyzed for all parameters as listed on the chain of custody.

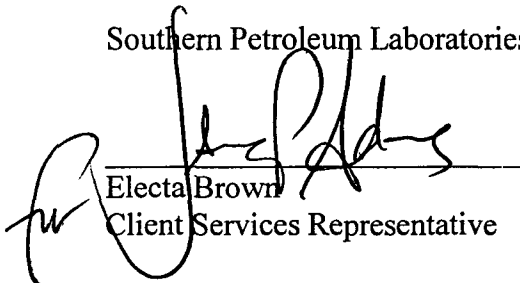
Sample "Water Well #5" (SPL ID: 9805418-01) was randomly chosen as a Quality Control sample for metals analysis by SW-846 method 6010. The Matrix Spike (MS) and Matrix Spike Duplicate (MSD) recoveries were outside of advisable limits for Calcium (Ca) and Sodium (Na). A Laboratory Control Sample (LCS) was analyzed as a Quality Control check for the analytical batch and all recoveries were within acceptable limits.

Any data flag or quality control exception associated with this report will be footnoted in the analytical results page(s) or the quality control summary page(s).

If you have any questions or comments pertaining to this data report, please do not hesitate to contact me. Please reference the above Certificate of Analysis No. during any inquiries.

Again, SPL is pleased to be of service to you. We anticipate working with you in fulfilling all your current and future analytical needs.

Southern Petroleum Laboratories

A handwritten signature in dark ink, appearing to read "Electa Brown", is written over a horizontal line. To the left of the signature is a small, stylized mark that looks like "fw".
Electa Brown
Client Services Representative



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Southern Petroleum Laboratories, Inc.

Certificate of Analysis Number: 98-05-418

Approved for Release by:

A handwritten signature in dark ink, appearing to read 'Electa Brown', is written over a horizontal line.

Electa Brown, Client Services Representative

5/21/98

Date:

Greg Grandits
Laboratory Director

Cynthia Schreiner
Quality Assurance Officer

The attached analytical data package may not be reproduced except in full without the express written approval of this laboratory.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9805418-01

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 05/22/98

PROJECT: Transwestern Pipeline
SITE: Roswell Station #9
SAMPLED BY: Cypress Engineering
SAMPLE ID: Water Well #5

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 05/07/98 16:50:00
DATE RECEIVED: 05/09/98

ANALYTICAL DATA			
PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Alkalinity, as CaCO ₃ Method 310.1 * Analyzed by: JS Date: 05/20/98 13:45:00	141	1	mg/L
Chloride Method 325.3 * Analyzed by: ET Date: 05/19/98 18:00:00	680	10	mg/L
Sulfate Method 375.4 * Analyzed by: DAM Date: 05/18/98 15:00:00	800	50	mg/L
Total Dissolved Solids Method 160.1 * Analyzed by: KS Date: 05/13/98 16:30:00	1900	100	mg/L
Nitrate-Nitrite, as N Method 353.3 * Analyzed by: EM Date: 05/11/98 11:00:00	1.48	0.05	mg/L
Liquid-liquid extraction SEMIVOLATILES Method 3520C *** Analyzed by: AS Date: 05/12/98 12:00:00	05/12/98		

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9805418-01

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 05/22/98

PROJECT: Transwestern Pipeline
SITE: Roswell Station #9
SAMPLED BY: Cypress Engineering
SAMPLE ID: Water Well #5

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 05/07/98 16:50:00
DATE RECEIVED: 05/09/98

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
Silver, Dissolved Method 6010B *** Analyzed by: JM Date: 05/22/98 08:08:00	ND	0.01	mg/L	
Arsenic, Dissolved Method 6010B *** Analyzed by: JM Date: 05/22/98 08:08:00	ND	0.1	mg/L	
Barium, Dissolved Method 6010B *** Analyzed by: JM Date: 05/22/98 08:08:00	0.022	0.005	mg	
Calcium, Dissolved Method 6010B *** Analyzed by: JM Date: 05/22/98 08:08:00	241	0.1	mg/L	
Cadmium, Dissolved Method 6010B *** Analyzed by: JM Date: 05/22/98 08:08:00	ND	0.005	mg/L	
Chromium, Dissolved Method 6010B *** Analyzed by: JM Date: 05/22/98 08:08:00	ND	0.01	mg/L	

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9805418-01

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 05/22/98

PROJECT: Transwestern Pipeline
SITE: Roswell Station #9
SAMPLED BY: Cypress Engineering
SAMPLE ID: Water Well #5

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 05/07/98 16:50:00
DATE RECEIVED: 05/09/98

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
Copper, Dissolved Method 6010B *** Analyzed by: JM Date: 05/22/98 08:08:00	ND	0.01	mg/L	
Iron, Dissolved Method 6010B *** Analyzed by: JM Date: 05/22/98 08:08:00	ND	0.02	mg/L	
Mercury, Dissolved Method 7470 A*** Analyzed by: AG Date: 05/15/98 15:23:00	ND	0.0002	mg/L	
Potassium, Dissolved Method 6010B *** Analyzed by: JM Date: 05/22/98 08:08:00	2	2	mg/L	
Magnesium, Dissolved Method 6010B *** Analyzed by: JM Date: 05/22/98 08:08:00	69.4	0.1	mg/L	
Manganese, Dissolved Method 6010B *** Analyzed by: JM Date: 05/22/98 08:08:00	0.012	0.005	mg/L	

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9805418-01

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 05/22/98

PROJECT: Transwestern Pipeline
SITE: Roswell Station #9
SAMPLED BY: Cypress Engineering
SAMPLE ID: Water Well #5

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 05/07/98 16:50:00
DATE RECEIVED: 05/09/98

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
Sodium, Dissolved Method 6010B *** Analyzed by: JM Date: 05/22/98 08:08:00	387	0.5	mg/L	
Dissolved Metals Prep. Method 3005A *** Analyzed by: SRC Date: 05/11/98 08:30:00	05/11/98			
Lead, Dissolved Method 6010B *** Analyzed by: JM Date: 05/22/98 08:08:00	ND	0.05	mg	
Selenium, Dissolved Method 6010B *** Analyzed by: JM Date: 05/22/98 08:08:00	ND	0.1	mg/L	
Zinc, Dissolved Method 6010B *** Analyzed by: JM Date: 05/22/98 08:08:00	ND	0.02	mg/L	

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9805418-01

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

05/22/98

PROJECT: Transwestern Pipeline
SITE: Roswell Station #9
SAMPLED BY: Cypress Engineering
SAMPLE ID: Water Well #5

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 05/07/98 16:50:00
DATE RECEIVED: 05/09/98

ANALYTICAL DATA			
PARAMETER	RESULTS	PQL*	UNITS
Benzene	ND	5	ug/L
Bromobenzene	ND	5	ug/L
Bromochloromethane	ND	5	ug/L
Bromodichloromethane	ND	5	ug/L
Bromoform	ND	5	ug/L
Bromomethane	ND	10	ug/L
n-Butylbenzene	ND	5	ug/L
sec-Butylbenzene	ND	5	ug/L
tert-Butylbenzene	ND	5	ug/L
Carbon tetrachloride	ND	5	ug/L
Chlorobenzene	ND	5	ug/L
Chlorodibromomethane	ND	5	ug/L
Chloroethane	ND	10	ug/L
Chloroform	ND	5	ug/L
Chloromethane	ND	10	ug/L
2-Chlorotoluene	ND	5	ug/L
4-Chlorotoluene	ND	5	ug/L
1,2-Dibromo-3-chloropropane	ND	5	ug/L
1,2-Dibromoethane	ND	5	ug/L
Dibromomethane	ND	5	ug/L
1,2-Dichlorobenzene	ND	5	ug/L
1,3-Dichlorobenzene	ND	5	ug/L
1,4-Dichlorobenzene	ND	5	ug/L
Dichlorodifluoromethane	ND	10	ug/L
1,1-Dichloroethane	ND	5	ug/L
1,2-Dichloroethane	ND	5	ug/L
1,1-Dichloroethene	ND	5	ug/L
cis-1,2-Dichloroethene	ND	5	ug/L
trans-1,2-Dichloroethene	ND	5	ug/L
1,2-Dichloropropane	ND	5	ug/L
1,3-Dichloropropane	ND	5	ug/L
2,2-Dichloropropane	ND	5	ug/L
1,1-Dichloropropene	ND	5	ug/L
Ethylbenzene	ND	5	ug/L
Hexachlorobutadiene	ND	5	ug/L
Isopropylbenzene	ND	5	ug/L
p-Isopropyltoluene	ND	5	ug/L
Methylene chloride	ND	5	ug/L

METHOD: 8260 Water, Volatile Organics
(continued on next page)



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9805418-01

Cypress Engineering, Inc.

SAMPLE ID: Water Well #5

ANALYTICAL DATA (continued)			
PARAMETER	RESULTS	PQL*	UNITS
Naphthalene	ND	5	ug/L
n-Propylbenzene	ND	5	ug/L
Styrene	ND	5	ug/L
1,1,1,2-Tetrachloroethane	ND	5	ug/L
1,1,2,2-Tetrachloroethane	ND	5	ug/L
Tetrachloroethene	ND	5	ug/L
Toluene	ND	5	ug/L
1,2,3-Trichlorobenzene	ND	5	ug/L
1,2,4-Trichlorobenzene	ND	5	ug/L
1,1,1-Trichloroethane	ND	5	ug/L
1,1,2-Trichloroethane	ND	5	ug/L
Trichloroethene	ND	5	ug/L
Trichlorofluoromethane	ND	5	ug/L
1,2,3-Trichloropropane	ND	5	ug/L
1,2,4-Trimethylbenzene	ND	5	ug/L
1,3,5-Trimethylbenzene	ND	5	ug/L
Vinyl chloride	ND	10	ug/L
Xylenes (total)	ND	5	ug/L
Acetone	ND	100	ug/L
Carbon Disulfide	ND	5	ug/L
Vinyl Acetate	ND	10	ug/L
2-Butanone	ND	20	ug/L
1,2-Dichloroethene (total)	ND	5	ug/L
2-Chloroethylvinylether	ND	10	ug/L
4-Methyl-2-Pentanone	ND	10	ug/L
cis-1,3-Dichloropropene	ND	5	ug/L
trans-1,3-Dichloropropene	ND	5	ug/L
2-Hexanone	ND	10	ug/L

SURROGATES	AMOUNT SPIKED	% RECOVERY	LOWER LIMIT	UPPER LIMIT
1,2-Dichloroethane-d4	50 ug/L	98	76	114
Toluene-d8	50 ug/L	100	88	110
4-Bromofluorobenzene	50 ug/L	104	86	115

ANALYZED BY: JC

DATE/TIME: 05/14/98 15:49:00

METHOD: 8260 Water, Volatile Organics

NOTES: * - Practical Quantitation Limit

ND - Not Detected

NA - Not Analyzed

COMMENTS:

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9805418-01

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

05/22/98

PROJECT: Transwestern Pipeline
SITE: Roswell Station #9
SAMPLED BY: Cypress Engineering
SAMPLE ID: Water Well #5

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 05/07/98 16:50:00
DATE RECEIVED: 05/09/98

ANALYTICAL DATA

PARAMETER	RESULTS	PQL*	UNITS
Acenaphthene	ND	5	ug/L
Acenaphthylene	ND	5	ug/L
Anthracene	ND	5	ug/L
Benzo(a)Anthracene	ND	5	ug/L
Benzo(b)Fluoranthene	ND	5	ug/L
Benzo(k)Fluoranthene	ND	5	ug/L
Benzo(a)Pyrene	ND	5	ug/L
Benzo(g,h,i)Perylene	ND	5	ug/L
Chrysene	ND	5	ug/L
Dibenz(a,h)Anthracene	ND	5	ug/L
Fluoranthene	ND	5	ug/L
Fluorene	ND	5	ug/L
Indeno(1,2,3-cd)Pyrene	ND	5	ug/L
2-Methylnaphthalene	ND	5	ug/L
Naphthalene	ND	5	ug/L
Phenanthrene	ND	5	ug/L
Pyrene	ND	5	ug/L
1-Methylnaphthalene	ND	5	ug/L

SURROGATES

	AMOUNT SPIKED	% RECOVERY	LOWER LIMIT	UPPER LIMIT
Nitrobenzene-d5	50 ug/L	80	35	114
2-Fluorobiphenyl	50 ug/L	100	43	116
Terphenyl-d14	50 ug/L	72	33	141
Phenol-d5	75 ug/L	27	10	110
2-Fluorophenol	75 ug/L	39	21	110
2,4,6-Tribromophenol	75 ug/L	99	10	123

ANALYZED BY: RY
EXTRACTED BY: AS
METHOD: 8270C, Semivolatile Organics - Water
NOTES: * - Practical Quantitation Limit ND - Not Detected
NA - Not Analyzed

COMMENTS:

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.

QUALITY CONTROL
DOCUMENTATION

3A
WATER VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: SPL

Contract: _____

Lab Code: _____

Case No.: 9805418 SAS No.: _____

SDG No.: _____

Matrix Spike - EPA Sample No.: WATER WELL #5

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC #	QC. LIMITS REC.
1,1-Dichloroethene	50	0	62	124	61-145
Trichloroethene	50	0	43	86	71-120
Benzene	50	0	48	96	76-127
Toluene	50	0	42	84	76-125
Chlorobenzene	50	0	47	94	75-130

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC #	% RPD #	QC LIMITS	
					RPD	REC.
1,1-Dichloroethene	50	58	116	7	14	61-145
Trichloroethene	50	44	88	2	14	71-120
Benzene	50	48	96	0	11	76-127
Toluene	50	41	82	2	13	76-125
Chlorobenzene	50	48	96	2	13	75-130

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits due to matrix interference

RPD: 0 out of 5 outside limits

Spike Recovery: 0 out of 10 outside limits

SPL Houston Labs

RECOVERY REPORT

Client Name:
Sample Matrix: LIQUID
Lab Smp Id: LCS
Level: LOW
Data Type: MS DATA
SpikeList File: 8260_water.spk
Sublist File: 8260.sub
Method File: /var/chem/n.i/n980514.b/n8260w.m
Misc Info: N134W1//N134CW1

Client SDG: n980514
Fraction: VOA
Operator: JC
SampleType: LCS
Quant Type: ISTD

SPIKE COMPOUND	CONC ADDED ug/L	CONC RECOVERED ug/L	% RECOVERED	LIMITS
8 1,1-Dichloroethene	50	67	134.00	61-145
29 Trichloroethene	50	51	102.00	71-120
25 Benzene	50	52	104.00	76-127
37 Toluene	50	47	94.00	76-125
45 Chlorobenzene	50	52	104.00	75-130

SURROGATE COMPOUND	CONC ADDED ug/L	CONC RECOVERED ug/L	% RECOVERED	LIMITS
\$ 21 1,2-Dichloroethane	50	45	90.00	76-114
\$ 36 Toluene-d8	50	47	94.00	88-110
\$ 56 Bromofluorobenzene	50	52	104.00	86-115



SPL Blank QC Report

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 860-9000

2

Matrix: Aqueous
Sample ID: VLBLK
Batch: N980514122720

Reported on: 05/15/98 14:59
Analyzed on: 05/14/98 08:36
Analyst: JC

METHOD 8260/8240 N134B01

Compound	Result	Detection Limit	Units
Dichlorodifluoromethane	ND	10	ug/L
Chloromethane	ND	10	ug/L
Vinyl Chloride	ND	10	ug/L
Bromomethane	ND	10	ug/L
Chloroethane	ND	10	ug/L
Trichlorofluoromethane	ND	5	ug/L
Acetone	ND	100	ug/L
1,1-Dichloroethene	ND	5	ug/L
Methylene Chloride	ND	5	ug/L
Carbon Disulfide	ND	5	ug/L
trans-1,2-Dichloroethene	ND	5	ug/L
1,1-Dichloroethane	ND	5	ug/L
Vinyl Acetate	ND	10	ug/L
2-Butanone	ND	20	ug/L
cis-1,2-Dichloroethene	ND	5	ug/L
1,2-Dichloroethene (total)	ND	5	ug/L
2,2-Dichloropropane	ND	5	ug/L
Bromochloromethane	ND	5	ug/L
Chloroform	ND	5	ug/L
1,1,1-Trichloroethane	ND	5	ug/L
1,2-Dichloroethane	ND	5	ug/L
1,1-Dichloropropene	ND	5	ug/L
Benzene	ND	5	ug/L
Carbon Tetrachloride	ND	5	ug/L
1,2-Dichloropropane	ND	5	ug/L
Trichloroethene	ND	5	ug/L
Dibromomethane	ND	5	ug/L
Bromodichloromethane	ND	5	ug/L
2-Chloroethylvinylether	ND	10	ug/L
4-Methyl-2-Pentanone	ND	10	ug/L
cis-1,3-Dichloropropene	ND	5	ug/L
trans-1,3-Dichloropropene	ND	5	ug/L
Toluene	ND	5	ug/L
1,1,2-Trichloroethane	ND	5	ug/L

Notes

ND - Not detected.



SPL Blank QC Report

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 998-9998

Matrix: Aqueous
Sample ID: VLBLK
Batch: N980514122720

Reported on: 05/15/98 14:59
Analyzed on: 05/14/98 08:36
Analyst: JC

METHOD 8260/8240 N134B01

Compound	Result	Detection Limit	Units
1,3-Dichloropropane	ND	5	ug/L
2-Hexanone	ND	10	ug/L
Dibromochloromethane	ND	5	ug/L
1,2-Dibromoethane	ND	5	ug/L
Tetrachloroethene	ND	5	ug/L
Chlorobenzene	ND	5	ug/L
1,1,1,2-Tetrachloroethane	ND	5	ug/L
Ethylbenzene	ND	5	ug/L
Bromoform	ND	5	ug/L
Styrene	ND	5	ug/L
Xylene (Total)	ND	5	ug/L
1,1,2,2-Tetrachloroethane	ND	5	ug/L
1,2,3-Trichloropropane	ND	5	ug/L
Isopropylbenzene	ND	5	ug/L
Bromobenzene	ND	5	ug/L
N-Propylbenzene	ND	5	ug/L
2-Chlorotoluene	ND	5	ug/L
4-Chlorotoluene	ND	5	ug/L
1,3,5-Trimethylbenzene	ND	5	ug/L
tert-Butylbenzene	ND	5	ug/L
1,2,4-Trimethylbenzene	ND	5	ug/L
1,3-Dichlorobenzene	ND	5	ug/L
sec-Butylbenzene	ND	5	ug/L
1,4-Dichlorobenzene	ND	5	ug/L
p-Isopropyltoluene	ND	5	ug/L
1,2-Dichlorobenzene	ND	5	ug/L
n-Butylbenzene	ND	5	ug/L
1,2-Dibromo-3-Chloropropan	ND	5	ug/L
1,2,4-Trichlorobenzene	ND	5	ug/L
Naphthalene	ND	5	ug/L
Hexachlorobutadiene	ND	5	ug/L
1,2,3-Trichlorobenzene	ND	5	ug/L

Notes

ND - Not detected.



SPL Blank QC Report

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 680-9000

4

Matrix: Aqueous
Sample ID: VLBLK
Batch: N980514122720

Reported on: 05/15/98 14:59
Analyzed on: 05/14/98 08:36
Analyst: JC

METHOD 8260/8240 N134B01

Surrogate	Result	QC Criteria	Units
1,2-Dichloroethane-d4	104	76-114	% Recovery
Toluene-d8	102	88-110	% Recovery
Bromofluorobenzene	104	86-115	% Recovery

Samples in Batch 9805418-01

Notes

ND - Not detected.

3C
WATER SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: SPL

Contract: _____

Lab Code: _____

Case No.: 980512

SAS No.: _____

SDG No.: _____

Matrix Spike - EPA Sample No.: Blank Spike/Spike-Dup

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC #	QC. LIMITS REC.
=====	=====	=====	=====	=====	=====
Phenol	75	0	27	36	12-110
2-Chlorophenol	75	0	57	76	27-123
1,4-Dichlorobenzene	50	0	37	74	36- 97
N-Nitroso-di-n-prop. (1)	50	0	43	86	41-116
1,2,4-Trichlorobenzene	50	0	39	78	39- 98
4-Chloro-3-methylphenol	75	0	58	77	23- 97
Acenaphthene	50	0	41	82	46-118
4-Nitrophenol	75	0	26	35	30-150
2,4-Dinitrotoluene	50	0	43	86	50-150
Pentachlorophenol	75	0	56	75	9-125
Pyrene	50	0	42	84	26-127

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC #	% RPD #	QC LIMITS RPD REC.
=====	=====	=====	=====	=====	=====
Phenol	75	26	35	3	42 12-110
2-Chlorophenol	75	55	73	4	40 27-123
1,4-Dichlorobenzene	50	34	68	8	28 36- 97
N-Nitroso-di-n-prop. (1)	50	38	76	12	38 41-116
1,2,4-Trichlorobenzene	50	38	76	3	28 39- 98
4-Chloro-3-methylphenol	75	55	73	5	42 23- 97
Acenaphthene	50	38	76	8	31 46-118
4-Nitrophenol	75	23	31	12	50 30-150
2,4-Dinitrotoluene	50	40	80	7	50 50-150
Pentachlorophenol	75	53	71	5	50 9-125
Pyrene	50	36	72	15	31 26-127

(1) N-Nitroso-di-n-propylamine,

* Values outside of QC limits due to diluted out

RPD: 0 out of 11 outside limits

Spike Recovery: 0 out of 22 outside limits



SPL Blank QC Report

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 690-0900

1

Matrix: Aqueous
Sample ID: BLANK
Batch: E980512042258

Reported on: 05/15/98 11:15
Analyzed on: 05/13/98 15:20
Analyst: RY

METHOD 8270 J132B03

C o m p o u n d	Result	Detection Limit	Units
Naphthalene	ND	5	ug/L
2-Methylnaphthalene	ND	5	ug/L
1-Methylnaphthalene	ND	5	ug/L
Acenaphthylene	ND	5	ug/L
Acenaphthene	ND	5	ug/L
Fluorene	ND	5	ug/L
Phenanthrene	ND	5	ug/L
Anthracene	ND	5	ug/L
Fluoranthene	ND	5	ug/L
Pyrene	ND	5	ug/L
Benzo [a] anthracene	ND	5	ug/L
Chrysene	ND	5	ug/L
Benzo [b] fluoranthene	ND	5	ug/L
Benzo [k] fluoranthene	ND	5	ug/L
Benzo [a] pyrene	ND	5	ug/L
Indeno [1,2,3-cd] pyrene	ND	5	ug/L
Dibenz [a,h] anthracene	ND	5	ug/L
Benzo [g,h,i] perylene	ND	5	ug/L

S u r r o g a t e	Result	QC Criteria	Units
Nitrobenzene-d5	74	35-114	% Recovery
2-Fluorobiphenyl	88	43-116	% Recovery
Terphenyl-d14	76	33-141	% Recovery
Phenol-d5	37	10-110	% Recovery
2-Fluorophenol	47	21-110	% Recovery
2,4,6-Tribromophenol	84	10-123	% Recovery

Samples in Batch 9805418-01

Notes

ND - Not detected.

ICP Spectroscopy Method 6010 Quality Control Report



Matrix: DISSOLVED Units: mg/L

Analyst: JM
HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON TEXAS 77054
PHONE (713) 660-0900

Date: 052298 Time: 0808 File Name: 052298C2

Checked:

gm 5/26/98

Laboratory Control Sample

Element	Mth. Blank	True Value	Result	% Recovery	Lower Limit	Upper Limit
Silver	ND	2.00	2.03	101	1.60	2.40
Aluminum						
Arsenic	ND	4.00	4.03	101	3.20	4.80
Barium	ND	2.00	1.99	99	1.60	2.40
Beryllium						
Calcium	ND	20.00	20.03	100	16.00	24.00
Cadmium	ND	2.00	1.96	98	1.60	2.40
Cobalt						
Chromium	ND	2.00	2.00	100	1.60	2.40
Copper	ND	2.00	2.03	101	1.60	2.40
Iron	ND	2.00	1.99	100	1.60	2.40
Potassium	ND	20.00	19.92	100	16.00	24.00
Magnesium	ND	20.00	20.30	102	16.00	24.00
Manganese	ND	2.00	2.02	101	1.60	2.40
Sodium	ND	20.00	19.36	97	16.00	24.00
Nickel						
Lead	ND	2.00	2.03	102	1.60	2.40
Antimony						
Selenium	ND	4.00	4.02	101	3.20	4.80
Thallium						
Vanadium						
Zinc	ND	2.00	2.03	101	1.60	2.40

Work Orders in Batch

Work Order Fractions

98-05-418 01E

Matrix Spike - Spike Duplicate Results

Work Order Spiked: 9805418-01E

Element	Sample Result	Spike Added	Matrix Spike Result	Matrix Spike Recovery	Matrix Spike Duplicate Result	Matrix Spike Duplicate Recovery	QC Limits % Recovery	Spike RPD %	QC Limits %
Silver	0.0035	1.0	0.9227	91.9	0.8608	85.7	80 120	7.0	20.0
Aluminum									
Arsenic	ND	2.0	2.039	102.0	2.044	102.2	80 120	0.2	20.0
Barium	0.0219	1.0	0.9695	94.8	0.9602	93.8	80 120	1.0	20.0
Beryllium									
Calcium	240.6	10.0	243.9	33.0 *	246.7	61.0 *	80 120	59.6 **	20.0
Cadmium	ND	1.0	0.9791	97.9	0.9903	99.0	80 120	1.1	20.0
Cobalt									
Chromium	ND	1.0	0.9626	96.3	0.9725	97.3	80 120	1.0	20.0
Copper	ND	1.0	0.9919	99.2	0.9855	98.6	80 120	0.6	20.0
Iron	ND	1.0	0.9761	97.6	0.9816	98.2	80 120	0.6	20.0
Potassium	2.066	10.0	13.1	110.3	13.2	111.3	80 120	0.9	20.0
Magnesium	69.4	10.0	77.48	80.8	77.49	80.9	80 120	0.1	20.0
Manganese	0.012	1.0	0.9822	97.0	0.9889	97.7	80 120	0.7	20.0
Sodium	387	10.0	392.6	56.0 *	389.2	22.0 *	80 120	87.2 **	20.0
Nickel									
Lead	ND	1.0	1.002	100.2	1.019	101.9	80 120	1.7	20.0
Antimony									
Selenium	ND	2.0	2.036	101.8	2.027	101.4	80 120	0.4	20.0
Thallium									
Vanadium									
Zinc	ND	1.0	1.019	101.9	1.027	102.7	80 120	0.8	20.0

* Values Outside QC Range Due To Matrix Interference.

** Values Outside QC Range.

Elements Bench Spiked: ALL



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 05/15/98

Analyzed on: 05/15/98

Analyst: AG

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Mercury, Dissolved
Method 7470 A***

SPL Sample ID Number	Blank Value ug/L	LCS Concentration ug/L	Measured Concentration ug/L	% Recovery	QC Limits Recovery
LCS	ND	2.00	1.93	96.5	80 - 120

-9805535

Samples in batch:

9805418-01E

9805567-01B

9805567-02B

9805567-03B

COMMENTS:

LCS = SPL ID# 94-452-45-21



** SPL QUALITY CONTROL REPORT **

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Matrix: Aqueous

Reported on: 05/15/98

Analyzed on: 05/15/98

Analyst: AG

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Mercury, Dissolved
Method 7470 A***

SPL Sample	Method	Sample	Spike	Matrix Spike		Matrix Spike Duplicate		RPD	QC LIMITS (Advisory)		
ID Number	Blank ug/L	Result ug/L	Added ug/L	Result ug/L	Recovery %	Result ug/L	Recovery %	(%)	RPD Max	% REC	
9805418-01E	ND	ND	2.00	1.91	95.5	1.83	91.5	4.3	20	75	-125

-9805535

Samples in batch:

9805418-01E 9805567-01B 9805567-02B 9805567-03B

COMMENTS:

LCS = SPL ID# 94-452-45-21



** SPL QUALITY CONTROL REPORT **

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Matrix: Aqueous

Reported on: 05/20/98

Analyzed on: 05/20/98

Analyst: JS

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Alkalinity, as CaCO_3
Method 310.1 *

SPL Sample ID Number	Blank Value mg/L	LCS Concentration mg/L	Measured Concentration mg/L	% Recovery	QC Limits Recovery
LCS	ND	65	65	100	95 - 113

-9805688

Samples in batch:

9805418-01B	9805543-01D	9805543-02D	9805543-03D
9805543-04D	9805543-05D	9805544-02G	9805544-04G
9805544-05G	9805621-02C		

COMMENTS:

LCS#94453192-24



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 05/20/98

Analyzed on: 05/20/98

Analyst: JS

This sample was randomly selected for use in the SPL quality control program. The results are as follows:

Alkalinity, as CaCO₃
Method 310.1 *

-- DUPLICATE ANALYSIS --

SPL Sample ID	Original Sample Concentration mg/L	Duplicate Sample mg/L	RPD	RPD Max.
9805418-01B	141	142	0.7	18

-9805687

Samples in batch:

9805418-01B	9805543-01D	9805543-02D	9805543-03D
9805543-04D	9805543-05D	9805544-02G	9805544-04G
9805544-05G	9805621-02C		

COMMENTS:



** SPL QUALITY CONTROL REPORT **

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Matrix: Aqueous

Reported on: 05/19/98

Analyzed on: 05/19/98

Analyst: ET

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Chloride
Method 325.3 *

SPL Sample ID Number	Blank Value mg/L	LCS Concentration mg/L	Measured Concentration mg/L	% Recovery	QC Limits Recovery
LCS	ND	170	169.27	99.6	94 - 106

-9805652

Samples in batch:

9805418-01B	9805543-01D	9805543-02D	9805543-03D
9805543-04D	9805543-05D	9805550-03A	9805551-03A
9805785-01A	9805829-01A		

COMMENTS:

LCS = SPL ID#94453192-24



** SPL QUALITY CONTROL REPORT **

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Matrix: Aqueous

Reported on: 05/19/98

Analyzed on: 05/19/98

Analyst: ET

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Chloride
Method 325.3 *

SPL Sample	Method	Sample	Spike	Matrix Spike		Matrix Spike Duplicate		RPD	QC LIMITS (Advisory)	
ID Number	Blank mg/L	Result mg/L	Added mg/L	Result mg/L	Recovery %	Result mg/L	Recovery %	(%)	RPD Max	% REC
9805829-01A	ND	36.16	50.00	86.85	101	86.50	101	0	5	92 -109

-9805640

Samples in batch:

9805418-01B 9805543-01D 9805543-02D 9805543-03D
9805543-04D 9805543-05D 9805550-03A 9805551-03A
9805785-01A 9805829-01A

COMMENTS:



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 05/18/98

Analyzed on: 05/18/98

Analyst: DAM

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Sulfate
Method 375.4 *

SPL Sample ID Number	Blank Value mg/L	LCS Concentration mg/L	Measured Concentration mg/L	% Recovery	QC Limits Recovery
LCS	ND	9.14	9.32	102	82 - 111

-9805603

Samples in batch:

9805274-01H	9805274-02H	9805274-03H	9805274-04H
9805274-05H	9805274-06H	9805408-01F	9805408-02F
9805418-01B	9805478-02A		

COMMENTS:

LCS = SPL ID#:94453192-24



** SPL QUALITY CONTROL REPORT **

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Matrix: Aqueous

Reported on: 05/18/98

Analyzed on: 05/18/98

Analyst: DAM

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Sulfate
Method 375.4 *

SPL Sample	Method	Sample	Spike	Matrix Spike		Matrix Spike Duplicate		RPD	QC LIMITS (Advisory)		
ID Number	Blank mg/L	Result mg/L	Added mg/L	Result mg/L	Recovery %	Result mg/L	Recovery %	(%)	RPD Max	% REC	
9805274-01H	ND	ND	10.0	9.61	96.1	9.79	97.9	1.9	9.5	84	-120

-9805602

Samples in batch:

9305274-01H 9805274-02H 9805274-03H 9805274-04H
9305274-05H 9805274-06H 9805408-01F 9805408-02F
9305418-01B 9805478-02A

COMMENTS:



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 05/14/98

Analyzed on: 05/13/98

Analyst: KS

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Total Dissolved Solids
Method 160.1 *

SPL Sample ID Number	Blank Value mg/L	LCS Concentration mg/L	Measured Concentration mg/L	% Recovery	QC Limits Recovery
LCS	ND	293.2	289	98.6	93 - 107

-9805514

Samples in batch:

9805418-01B 9805545-01F

COMMENTS:

SPL LCS ID# 95535192-17



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

®
** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 05/14/98

Analyzed on: 05/13/98

Analyst: KS

This sample was randomly selected for use in the SPL quality control program. The results are as follows:

Total Dissolved Solids
Method 160.1 *

-- DUPLICATE ANALYSIS --

SPL Sample ID	Original Sample Concentration mg/L	Duplicate Sample mg/L	RPD	RPD Max.
9805418-01B	1860	1940	4.2	5

-9805513

Samples in batch:

9805418-01B 9805545-01F

COMMENTS:



** SPL QUALITY CONTROL REPORT **

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Matrix: Aqueous

Reported on: 05/11/98

Analyzed on: 05/11/98

Analyst: EM

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Nitrate-Nitrite, as N
Method 353.3 *

SPL Sample ID Number	Blank Value mg/L	LCS Concentration mg/L	Measured Concentration mg/L	% Recovery	QC Limits Recovery
LCS	ND	1.00	0.94	94.0	92 - 111

-9805360

Samples in batch:

9805234-01B 9805234-02B 9805418-01C

COMMENTS:

SPL LCS#: 94453190-18



** SPL QUALITY CONTROL REPORT **

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Matrix: Aqueous

Reported on: 05/11/98

Analyzed on: 05/11/98

Analyst: EM

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Nitrate-Nitrite, as N
Method 353.3 *

SPL Sample	Method	Sample	Spike	Matrix Spike		Matrix Spike Duplicate		RPD	QC LIMITS (Advisory)		
ID Number	Blank mg/L	Result mg/L	Added mg/L	Result mg/L	Recovery %	Result mg/L	Recovery %	(%)	RPD Max	% REC	
9805234-01B	ND	1.06	5.00	5.99	98.6	5.94	97.6	1.0	12	87	-120

-9805359

Samples in batch:

9805234-01B 9805234-02B 9805418-01C

COMMENTS:

1501 E. Oceanfront Avenue, Millerton, CA 97621 (714) 447-1469

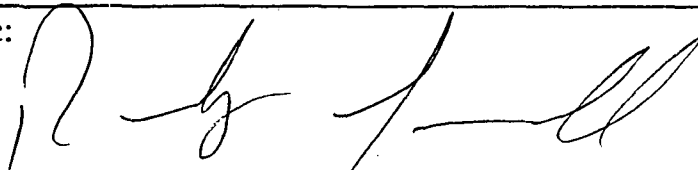
SPL Houston Environmental Laboratory

Sample Login Checklist

Date: 5-9-98	Time: 10 ⁰⁰
-----------------	---------------------------

SPL Sample ID: 9805418

		Yes	No
1	Chain-of-Custody (COC) form is present.	✓	
2	COC is properly completed.		✓
3	If no, Non-Conformance Worksheet has been completed.	✓	
4	Custody seals are present on the shipping container.	✓	
5	If yes, custody seals are intact.	✓	
6	All samples are tagged or labeled.	✓	
7	If no, Non-Conformance Worksheet has been completed.		
8	Sample containers arrived intact	✓	
9	Temperature of samples upon arrival:	3 C	
10	Method of sample delivery to SPL:	SPL Delivery	
		Client Delivery	
		FedEx Delivery (airbill #)	804721719929
		Other:	
11	Method of sample disposal:	SPL Disposal	✓
		HOLD	
		Return to Client	

Name: 	Date: 5-9-98
--	-----------------

**PHASE IV ASSESSMENT REPORT,
GROUND WATER MONITORING REPORT,
& PHASE V ASSESSMENT WORK PLAN**

**TRANSWESTERN PIPELINE COMPANY
ROSWELL COMPRESSOR STATION NO. 9**

Attachment #6

**Laboratory Reports for the August 1998
Ground Water Sampling Event**



September 2, 1998

Mr. George Robinson
CYPRESS ENGINEERING, INC.
10235 W. Little York Rd, #256
Houston, TX 77040

The following report contains analytical results for the sample(s) received at Southern Petroleum Laboratories (SPL) on August 18, 1998. The sample(s) was assigned to Certificate of Analysis No.(s) 9808731 and analyzed for all parameters as listed on the chain of custody.

Sample "MW-2" (SPL#9808731-01E) was randomly chosen as a Quality Control sample for Total Metals analysis by SW-846 method 6010. The Matrix Spike(MS)and Matrix Spike Duplicate (MSD) recoveries were outside of advisable limits for Sodium, Magnesium, the (MSD) was out for Potassium. The MS/MSD Relative Percent Difference (RPD) recoveries were outside of advisable quality control limits for Magnesium. A Laboratory Control Sample (LCS) was analyzed as a Quality Control check for the analytical batch and all recoveries were within acceptable limits.

Any data flag or quality control exception associated with this report will be footnoted in the analytical results page(s) or the quality control summary page(s).

If you have any questions or comments pertaining to this data report, please do not hesitate to contact me. Please reference the above Certificate of Analysis No. during any inquiries.

Again, SPL is pleased to be of service to you. We anticipate working with you in fulfilling all your current and future analytical needs.

Southern Petroleum Laboratories

A handwritten signature in cursive script, reading "Electa Brown".

Electa Brown
Project Manager



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Southern Petroleum Laboratories, Inc.

Certificate of Analysis Number: 98-08-731

Approved for Release by:

A handwritten signature in cursive script, reading "Electa Brown", is written over a horizontal line.

Electa Brown, Project Manager

A handwritten date "9-2-98" is written in cursive script over a horizontal line.

Date

Greg Grandits
Laboratory Director

Cynthia Schreiner
Quality Assurance Officer

The attached analytical data package may not be reproduced except in full without the express written approval of this laboratory.
The results relate only to the samples tested.
Results reported on a Wet Weight Basis unless otherwise noted.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9808731-01

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 10/27/98

PROJECT: TWP Roswell STA 9
SITE:
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-21

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 08/15/98 10:50:00
DATE RECEIVED: 08/18/98

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
Alkalinity, as CaCO ₃ Method 310.1 * Analyzed by: TK Date: 08/24/98 15:20:00	146	1	mg/L	
Chloride Method 325.3 * Analyzed by: AB Date: 08/28/98 10:00:00	408	5	mg/L	
Sulfate Method 375.4 * Analyzed by: TW Date: 08/27/98 13:00:00	1900	100	mg/L	
Total Dissolved Solids Method 160.1 * Analyzed by: DS Date: 08/21/98 16:00:00	3400	100	mg/L	
Nitrate-Nitrite, as N Method 353.3 * Analyzed by: AB Date: 08/30/98 10:00:00	ND	0.1	mg/L	
Liquid-liquid extraction SEMIVOLATILES Method 3520C *** Analyzed by: KL Date: 08/19/98 10:00:00	08/19/98			

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9808731-01

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 10/27/98

PROJECT: TWP Roswell STA 9
SITE:
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-21

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 08/15/98 10:50:00
DATE RECEIVED: 08/18/98

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
Silver, Total Method 6010B *** Analyzed by: JM Date: 08/25/98 09:56:00	ND	0.01	mg/L	
Arsenic, Total Method 6010B *** Analyzed by: EG Date: 08/25/98 09:56:00	0.006	0.005	mg/L	
Barium, Total Method 6010B *** Analyzed by: JM Date: 08/25/98 09:56:00	0.020	0.005	mg/L	
Calcium, Total Method 6010B *** Analyzed by: JM Date: 08/31/98 10:03:00	647	0.2	mg/L	
Cadmium, Total Method 6010B *** Analyzed by: JM Date: 08/25/98 09:56:00	ND	0.005	mg/L	
Chromium, Total Method 6010B *** Analyzed by: JM Date: 08/25/98 09:56:00	ND	0.01	mg/L	

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9808731-01

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 10/27/98

PROJECT: TWP Roswell STA 9
SITE:
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-21

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 08/15/98 10:50:00
DATE RECEIVED: 08/18/98

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
Copper, Total Method 6010B *** Analyzed by: JM Date: 08/25/98 09:56:00	ND	0.01	mg/L	
Iron, Total Method 6010B *** Analyzed by: JM Date: 08/25/98 09:56:00	0.66	0.02	mg/L	
Mercury, Total Method 7470 A*** Analyzed by: AG Date: 08/28/98 13:43:00	ND	0.0002	mg/L	
Potassium, Total Method 6010B *** Analyzed by: JM Date: 08/25/98 09:56:00	3	2	mg/L	
Magnesium, Total Method 6010B *** Analyzed by: JM Date: 08/25/98 09:56:00	144	0.1	mg/L	
Manganese, Total Method 6010B *** Analyzed by: JM Date: 08/25/98 09:56:00	1.34	0.005	mg/L	

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9808731-01

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 10/27/98

PROJECT: TWP Roswell STA 9
SITE:
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-21

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 08/15/98 10:50:00
DATE RECEIVED: 08/18/98

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
Sodium, Total Method 6010B *** Analyzed by: JM Date: 08/25/98 09:56:00	196	0.5	mg/L	
Acid Digestion-Aqueous, ICP Method 3010A *** Analyzed by: EE Date: 08/19/98 11:30:00	08/19/98			
Lead, Total Method 6010B *** Analyzed by: EG Date: 08/25/98 09:56:00	ND	0.005	mg/L	
Selenium, Total Method 6010B *** Analyzed by: EG Date: 08/25/98 09:56:00	ND	0.005	mg/L	
Zinc, Total Method 6010B *** Analyzed by: JM Date: 08/25/98 09:56:00	ND	0.02	mg/L	

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9808731-01

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

10/27/98

PROJECT: TWP Roswell STA 9
SITE:
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-21

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 08/15/98 10:50:00
DATE RECEIVED: 08/18/98

ANALYTICAL DATA				
PARAMETER	RESULTS	PQL*	UNITS	
Benzene	1000	50	ug/L	
Bromobenzene	ND	5	ug/L	
Bromochloromethane	ND	5	ug/L	
Bromodichloromethane	ND	5	ug/L	
Bromoform	ND	5	ug/L	
Bromomethane	ND	10	ug/L	
n-Butylbenzene	ND	5	ug/L	
sec-Butylbenzene	ND	5	ug/L	
tert-Butylbenzene	ND	5	ug/L	
Carbon tetrachloride	ND	5	ug/L	
Chlorobenzene	ND	5	ug/L	
Chlorodibromomethane	ND	5	ug/L	
Chloroethane	ND	10	ug/L	
Chloroform	ND	5	ug/L	
Chloromethane	ND	10	ug/L	
2-Chlorotoluene	ND	5	ug/L	
4-Chlorotoluene	ND	5	ug/L	
1,2-Dibromo-3-chloropropane	ND	5	ug/L	
1,2-Dibromoethane	ND	5	ug/L	
Dibromomethane	ND	5	ug/L	
1,2-Dichlorobenzene	ND	5	ug/L	
1,3-Dichlorobenzene	ND	5	ug/L	
1,4-Dichlorobenzene	ND	5	ug/L	
Dichlorodifluoromethane	ND	10	ug/L	
1,1-Dichloroethane	ND	5	ug/L	
1,2-Dichloroethane	ND	5	ug/L	
1,1-Dichloroethene	ND	5	ug/L	
cis-1,2-Dichloroethene	ND	5	ug/L	
trans-1,2-Dichloroethene	ND	5	ug/L	
1,2-Dichloropropane	ND	5	ug/L	
1,3-Dichloropropane	ND	5	ug/L	
2,2-Dichloropropane	ND	5	ug/L	
1,1-Dichloropropene	ND	5	ug/L	
Ethylbenzene	ND	5	ug/L	
Hexachlorobutadiene	ND	5	ug/L	
Isopropylbenzene	ND	5	ug/L	
p-Isopropyltoluene	ND	5	ug/L	
Methylene chloride	ND	5	ug/L	

METHOD: 8260 Water, Volatile Organics
(continued on next page)



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9808731-01

Cypress Engineering, Inc.

SAMPLE ID: MW-21

ANALYTICAL DATA (continued)

PARAMETER	RESULTS	PQL*	UNITS
Naphthalene	ND	5	ug/L
n-Propylbenzene	ND	5	ug/L
Styrene	ND	5	ug/L
1,1,1,2-Tetrachloroethane	ND	5	ug/L
1,1,2,2-Tetrachloroethane	ND	5	ug/L
Tetrachloroethene	ND	5	ug/L
Toluene	ND	5	ug/L
1,2,3-Trichlorobenzene	ND	5	ug/L
1,2,4-Trichlorobenzene	ND	5	ug/L
1,1,1-Trichloroethane	ND	5	ug/L
1,1,2-Trichloroethane	ND	5	ug/L
Trichloroethene	ND	5	ug/L
Trichlorofluoromethane	ND	5	ug/L
1,2,3-Trichloropropane	ND	5	ug/L
1,2,4-Trimethylbenzene	7	5	ug/L
1,3,5-Trimethylbenzene	ND	5	ug/L
Vinyl chloride	ND	10	ug/L
Xylenes (total)	68	5	ug/L
Acetone	ND	100	ug/L
Carbon Disulfide	ND	5	ug/L
Vinyl Acetate	ND	10	ug/L
2-Butanone	ND	20	ug/L
1,2-Dichloroethene (total)	ND	5	ug/L
2-Chloroethylvinylether	ND	10	ug/L
4-Methyl-2-Pentanone	ND	10	ug/L
cis-1,3-Dichloropropene	ND	5	ug/L
trans-1,3-Dichloropropene	ND	5	ug/L
2-Hexanone	ND	10	ug/L
Methyl t-Butyl Ether	ND	10	ug/L

SURROGATES	AMOUNT SPIKED	% RECOVERY	LOWER LIMIT	UPPER LIMIT
1,2-Dichloroethane-d4	50 ug/L	88	76	114
Toluene-d8	50 ug/L	100	88	110
4-Bromofluorobenzene	50 ug/L	104	86	115

ANALYZED BY: JC

DATE/TIME: 08/20/98 01:47:00

METHOD: 8260 Water, Volatile Organics

NOTES: * - Practical Quantitation Limit

ND - Not Detected

NA - Not Analyzed

COMMENTS:

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9808731-01

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

10/27/98

PROJECT: TWP Roswell STA 9
SITE:
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-21

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 08/15/98 10:50:00
DATE RECEIVED: 08/18/98

ANALYTICAL DATA

PARAMETER	RESULTS	PQL*	UNITS	
Acenaphthene	ND	5	ug/L	
Acenaphthylene	ND	5	ug/L	
Anthracene	ND	5	ug/L	
Benzo(a)Anthracene	ND	5	ug/L	
Benzo(b)Fluoranthene	ND	5	ug/L	
Benzo(k)Fluoranthene	ND	5	ug/L	
Benzo(a)Pyrene	ND	5	ug/L	
Benzo(g,h,i)Perylene	ND	5	ug/L	
Chrysene	ND	5	ug/L	
Dibenz(a,h)Anthracene	ND	5	ug/L	
Fluoranthene	ND	5	ug/L	
Fluorene	ND	5	ug/L	
Indeno(1,2,3-cd)Pyrene	ND	5	ug/L	
2-Methylnaphthalene	ND	5	ug/L	
Naphthalene	ND	5	ug/L	
Phenanthrene	ND	5	ug/L	
Pyrene	ND	5	ug/L	
1-Methylnaphthalene	ND	5	ug/L	

SURROGATES	AMOUNT SPIKED	% RECOVERY	LOWER LIMIT	UPPER LIMIT
Nitrobenzene-d5	50 ug/L	66	35	114
2-Fluorobiphenyl	50 ug/L	84	43	116
Terphenyl-d14	50 ug/L	90	33	141
Phenol-d5	75 ug/L	21	10	110
2-Fluorophenol	75 ug/L	33	21	110
2,4,6-Tribromophenol	75 ug/L	121	10	123

ANALYZED BY: YL DATE/TIME: 08/24/98 19:09:00
EXTRACTED BY: KL DATE/TIME: 08/19/98 10:00:00
METHOD: 8270C, Semivolatile Organics - Water
NOTES: * - Practical Quantitation Limit ND - Not Detected
 NA - Not Analyzed

COMMENTS:

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9808731-02

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 10/27/98

PROJECT: TWP Roswell STA 9
SITE:
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-12

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 08/15/98 12:15:00
DATE RECEIVED: 08/18/98

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
Alkalinity, as CaCO ₃ Method 310.1 * Analyzed by: TK Date: 08/24/98 15:20:00	111	1	mg/L	
Chloride Method 325.3 * Analyzed by: AB Date: 08/28/98 10:00:00	408	5	mg/L	
Sulfate Method 375.4 * Analyzed by: TW Date: 08/27/98 13:00:00	2000	100	mg/L	
Total Dissolved Solids Method 160.1 * Analyzed by: DS Date: 08/21/98 16:00:00	3200	100	mg/L	
Nitrate-Nitrite, as N Method 353.3 * Analyzed by: AB Date: 08/30/98 10:00:00	0.4	0.1	mg/L	
Liquid-liquid extraction SEMIVOLATILES Method 3520C *** Analyzed by: KL Date: 08/19/98 10:00:00	08/19/98			

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9808731-02

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 10/27/98

PROJECT: TWP Roswell STA 9
SITE:
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-12

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 08/15/98 12:15:00
DATE RECEIVED: 08/18/98

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
Silver, Total Method 6010B *** Analyzed by: JM Date: 08/25/98 09:56:00	ND	0.01	mg/L	
Arsenic, Total Method 6010B *** Analyzed by: EG Date: 08/25/98 09:56:00	0.005	0.005	mg/L	
Barium, Total Method 6010B *** Analyzed by: JM Date: 08/25/98 09:56:00	0.005	0.005	mg/L	
Calcium, Total Method 6010B *** Analyzed by: JM Date: 08/31/98 10:03:00	616	0.2	mg/L	
Cadmium, Total Method 6010B *** Analyzed by: JM Date: 08/25/98 09:56:00	ND	0.005	mg/L	
Chromium, Total Method 6010B *** Analyzed by: JM Date: 08/25/98 09:56:00	ND	0.01	mg/L	

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9808731-02

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 10/27/98

PROJECT: TWP Roswell STA 9
SITE:
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-12

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 08/15/98 12:15:00
DATE RECEIVED: 08/18/98

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
Copper, Total Method 6010B *** Analyzed by: JM Date: 08/25/98 09:56:00	ND	0.01	mg/L	
Iron, Total Method 6010B *** Analyzed by: JM Date: 08/25/98 09:56:00	0.13	0.02	mg/L	
Mercury, Total Method 7470 A*** Analyzed by: AG Date: 08/28/98 13:43:00	ND	0.0002	mg	
Potassium, Total Method 6010B *** Analyzed by: JM Date: 08/25/98 09:56:00	3	2	mg/L	
Magnesium, Total Method 6010B *** Analyzed by: JM Date: 08/25/98 09:56:00	118	0.1	mg/L	
Manganese, Total Method 6010B *** Analyzed by: JM Date: 08/25/98 09:56:00	0.678	0.005	mg/L	

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9808731-02

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 10/27/98

PROJECT: TWP Roswell STA 9

PROJECT NO:

SITE:

MATRIX: WATER

SAMPLED BY: Cypress Engineering

DATE SAMPLED: 08/15/98 12:15:00

SAMPLE ID: MW-12

DATE RECEIVED: 08/18/98

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Sodium, Total Method 6010B *** Analyzed by: JM Date: 08/25/98 09:56:00	194	0.5	mg/L
Acid Digestion-Aqueous, ICP Method 3010A *** Analyzed by: EE Date: 08/19/98 11:30:00	08/19/98		
Lead, Total Method 6010B *** Analyzed by: EG Date: 08/25/98 09:56:00	ND	0.005	mg/L
Selenium, Total Method 6010B *** Analyzed by: EG Date: 08/25/98 09:56:00	ND	0.005	mg/L
Zinc, Total Method 6010B *** Analyzed by: JM Date: 08/25/98 09:56:00	ND	0.02	mg/L

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9808731-02

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

10/27/98

PROJECT: TWP Roswell STA 9

PROJECT NO:

SITE:

MATRIX: WATER

SAMPLED BY: Cypress Engineering

DATE SAMPLED: 08/15/98 12:15:00

SAMPLE ID: MW-12

DATE RECEIVED: 08/18/98

ANALYTICAL DATA

PARAMETER	RESULTS	PQL*	UNITS
Benzene	190	5	ug/L
Bromobenzene	ND	5	ug/L
Bromochloromethane	ND	5	ug/L
Bromodichloromethane	ND	5	ug/L
Bromoform	ND	5	ug/L
Bromomethane	ND	10	ug/L
n-Butylbenzene	ND	5	ug/L
sec-Butylbenzene	ND	5	ug/L
tert-Butylbenzene	ND	5	ug/L
Carbon tetrachloride	ND	5	ug/L
Chlorobenzene	ND	5	ug/L
Chlorodibromomethane	ND	5	ug/L
Chloroethane	ND	10	ug/L
Chloroform	ND	5	ug/L
Chloromethane	ND	10	ug/L
2-Chlorotoluene	ND	5	ug/L
4-Chlorotoluene	ND	5	ug/L
1,2-Dibromo-3-chloropropane	ND	5	ug/L
1,2-Dibromoethane	ND	5	ug/L
Dibromomethane	ND	5	ug/L
1,2-Dichlorobenzene	ND	5	ug/L
1,3-Dichlorobenzene	ND	5	ug/L
1,4-Dichlorobenzene	ND	5	ug/L
Dichlorodifluoromethane	ND	10	ug/L
1,1-Dichloroethane	ND	5	ug/L
1,2-Dichloroethane	ND	5	ug/L
1,1-Dichloroethene	ND	5	ug/L
cis-1,2-Dichloroethene	ND	5	ug/L
trans-1,2-Dichloroethene	ND	5	ug/L
1,2-Dichloropropane	ND	5	ug/L
1,3-Dichloropropane	ND	5	ug/L
2,2-Dichloropropane	ND	5	ug/L
1,1-Dichloropropene	ND	5	ug/L
Ethylbenzene	ND	5	ug/L
Hexachlorobutadiene	ND	5	ug/L
Isopropylbenzene	ND	5	ug/L
p-Isopropyltoluene	ND	5	ug/L
Methylene chloride	ND	5	ug/L

METHOD: 8260 Water, Volatile Organics
(continued on next page)



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9808731-02

Cypress Engineering, Inc.

SAMPLE ID: MW-12

ANALYTICAL DATA (continued)				
PARAMETER	RESULTS	PQL*	UNITS	
Naphthalene	ND	5	ug/L	
n-Propylbenzene	ND	5	ug/L	
Styrene	ND	5	ug/L	
1,1,1,2-Tetrachloroethane	ND	5	ug/L	
1,1,2,2-Tetrachloroethane	ND	5	ug/L	
Tetrachloroethene	ND	5	ug/L	
Toluene	ND	5	ug/L	
1,2,3-Trichlorobenzene	ND	5	ug/L	
1,2,4-Trichlorobenzene	ND	5	ug/L	
1,1,1-Trichloroethane	ND	5	ug/L	
1,1,2-Trichloroethane	ND	5	ug/L	
Trichloroethene	ND	5	ug/L	
Trichlorofluoromethane	ND	5	ug/L	
1,2,3-Trichloropropane	ND	5	ug/L	
1,2,4-Trimethylbenzene	8	5	ug/L	
1,3,5-Trimethylbenzene	ND	5	ug/L	
Vinyl chloride	ND	10	ug/L	
Xylenes (total)	ND	5	ug/L	
Acetone	ND	100	ug/L	
Carbon Disulfide	ND	5	ug/L	
Vinyl Acetate	ND	10	ug/L	
2-Butanone	ND	20	ug/L	
1,2-Dichloroethene (total)	ND	5	ug/L	
2-Chloroethylvinylether	ND	10	ug/L	
4-Methyl-2-Pentanone	ND	10	ug/L	
cis-1,3-Dichloropropene	ND	5	ug/L	
trans-1,3-Dichloropropene	ND	5	ug/L	
2-Hexanone	ND	10	ug/L	
Methyl t-Butyl Ether	ND	10	ug/L	
SURROGATES	AMOUNT SPIKED	% RECOVERY	LOWER LIMIT	UPPER LIMIT
1,2-Dichloroethane-d4	50 ug/L	92	76	114
Toluene-d8	50 ug/L	100	88	110
4-Bromofluorobenzene	50 ug/L	100	86	115

ANALYZED BY: JC

DATE/TIME: 08/20/98 01:20:00

METHOD: 8260 Water, Volatile Organics

NOTES: * - Practical Quantitation Limit

ND - Not Detected

NA - Not Analyzed

COMMENTS:

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9808731-02

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

10/27/98

PROJECT: TWP Roswell STA 9
SITE:
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-12

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 08/15/98 12:15:00
DATE RECEIVED: 08/18/98

ANALYTICAL DATA

PARAMETER	RESULTS	PQL*	UNITS
Acenaphthene	ND	5	ug/L
Acenaphthylene	ND	5	ug/L
Anthracene	ND	5	ug/L
Benzo(a)Anthracene	ND	5	ug/L
Benzo(b)Fluoranthene	ND	5	ug/L
Benzo(k)Fluoranthene	ND	5	ug/L
Benzo(a)Pyrene	ND	5	ug/L
Benzo(g,h,i)Perylene	ND	5	ug/L
Chrysene	ND	5	ug/L
Dibenz(a,h)Anthracene	ND	5	ug/L
Fluoranthene	ND	5	ug/L
Fluorene	ND	5	ug/L
Indeno(1,2,3-cd)Pyrene	ND	5	ug/L
2-Methylnaphthalene	ND	5	ug/L
Naphthalene	ND	5	ug/L
Phenanthrene	ND	5	ug/L
Pyrene	ND	5	ug/L
1-Methylnaphthalene	ND	5	ug/L

SURROGATES	AMOUNT SPIKED	% RECOVERY	LOWER LIMIT	UPPER LIMIT
Nitrobenzene-d5	50 ug/L	60	35	114
2-Fluorobiphenyl	50 ug/L	88	43	116
Terphenyl-d14	50 ug/L	84	33	141
Phenol-d5	75 ug/L	55	10	110
2-Fluorophenol	75 ug/L	48	21	110
2,4,6-Tribromophenol	75 ug/L	112	10	123

ANALYZED BY: YL DATE/TIME: 08/28/98 02:05:00
EXTRACTED BY: KL DATE/TIME: 08/19/98 10:00:00
METHOD: 8270C, Semivolatile Organics - Water
NOTES: * - Practical Quantitation Limit ND - Not Detected
 NA - Not Analyzed

COMMENTS:

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9808731-03

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 10/27/98

PROJECT: TWP Roswell STA 9
SITE:
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-20

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 08/15/98 13:30:00
DATE RECEIVED: 08/18/98

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
Alkalinity, as CaCO3 Method 310.1 * Analyzed by: TK Date: 08/24/98 15:20:00	242	1	mg/L	
Chloride Method 325.3 * Analyzed by: AB Date: 08/28/98 10:00:00	301	5	mg/L	
Sulfate Method 375.4 * Analyzed by: TW Date: 08/27/98 13:00:00	2200	100	mg/L	
Total Dissolved Solids Method 160.1 * Analyzed by: DS Date: 08/21/98 16:00:00	3700	100	mg/L	
Nitrate-Nitrite, as N Method 353.3 * Analyzed by: AB Date: 08/30/98 10:00:00	2.2	0.1	mg/L	
Liquid-liquid extraction SEMIVOLATILES Method 3520C *** Analyzed by: KL Date: 08/19/98 10:00:00	08/19/98			

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9808731-03

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 10/27/98

PROJECT: TWP Roswell STA 9
SITE:
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-20

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 08/15/98 13:30:00
DATE RECEIVED: 08/18/98

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
Silver, Total Method 6010B *** Analyzed by: JM Date: 08/25/98 09:56:00	ND	0.01	mg/L	
Arsenic, Total Method 6010B *** Analyzed by: EG Date: 08/25/98 09:56:00	0.007	0.005	mg/L	
Barium, Total Method 6010B *** Analyzed by: JM Date: 08/25/98 09:56:00	0.006	0.005	mg/L	
Calcium, Total Method 6010B *** Analyzed by: JM Date: 08/31/98 10:03:00	673	0.2	mg/L	
Cadmium, Total Method 6010B *** Analyzed by: JM Date: 08/25/98 09:56:00	ND	0.005	mg/L	
Chromium, Total Method 6010B *** Analyzed by: JM Date: 08/25/98 09:56:00	ND	0.01	mg/L	

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9808731-03

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 10/27/98

PROJECT: TWP Roswell STA 9
SITE:
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-20

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 08/15/98 13:30:00
DATE RECEIVED: 08/18/98

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
Copper, Total Method 6010B *** Analyzed by: JM Date: 08/25/98 09:56:00	ND	0.01	mg/L	
Iron, Total Method 6010B *** Analyzed by: JM Date: 08/25/98 09:56:00	0.26	0.02	mg/L	
Mercury, Total Method 7470 A*** Analyzed by: AG Date: 08/28/98 13:43:00	ND	0.0002	mg/L	
Potassium, Total Method 6010B *** Analyzed by: JM Date: 08/25/98 09:56:00	4	2	mg/L	
Magnesium, Total Method 6010B *** Analyzed by: JM Date: 08/25/98 09:56:00	130	0.1	mg/L	
Manganese, Total Method 6010B *** Analyzed by: JM Date: 08/25/98 09:56:00	ND	0.005	mg/L	

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9808731-03

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 10/27/98

PROJECT: TWP Roswell STA 9
SITE:
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-20

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 08/15/98 13:30:00
DATE RECEIVED: 08/18/98

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
Sodium, Total Method 6010B *** Analyzed by: JM Date: 08/25/98 09:56:00	214	0.5	mg/L	
Acid Digestion-Aqueous, ICP Method 3010A *** Analyzed by: EE Date: 08/19/98 11:30:00	08/19/98			
Lead, Total Method 6010B *** Analyzed by: EG Date: 08/25/98 09:56:00	ND	0.005	mg/L	
Selenium, Total Method 6010B *** Analyzed by: EG Date: 08/25/98 09:56:00	ND	0.005	mg/L	
Zinc, Total Method 6010B *** Analyzed by: JM Date: 08/25/98 09:56:00	ND	0.02	mg/L	

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9808731-03

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

10/27/98

PROJECT: TWP Roswell STA 9
SITE:
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-20

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 08/15/98 13:30:00
DATE RECEIVED: 08/18/98

ANALYTICAL DATA				
PARAMETER	RESULTS	PQL*	UNITS	
Benzene	ND	5	ug/L	
Bromobenzene	ND	5	ug/L	
Bromochloromethane	ND	5	ug/L	
Bromodichloromethane	ND	5	ug/L	
Bromoform	ND	5	ug/L	
Bromomethane	ND	10	ug/L	
n-Butylbenzene	ND	5	ug/L	
sec-Butylbenzene	ND	5	ug/L	
tert-Butylbenzene	ND	5	ug/L	
Carbon tetrachloride	ND	5	ug/L	
Chlorobenzene	ND	5	ug/L	
Chlorodibromomethane	ND	5	ug/L	
Chloroethane	ND	10	ug/L	
Chloroform	ND	5	ug/L	
Chloromethane	ND	10	ug/L	
2-Chlorotoluene	ND	5	ug/L	
4-Chlorotoluene	ND	5	ug/L	
1,2-Dibromo-3-chloropropane	ND	5	ug/L	
1,2-Dibromoethane	ND	5	ug/L	
Dibromomethane	ND	5	ug/L	
1,2-Dichlorobenzene	ND	5	ug/L	
1,3-Dichlorobenzene	ND	5	ug/L	
1,4-Dichlorobenzene	ND	5	ug/L	
Dichlorodifluoromethane	ND	10	ug/L	
1,1-Dichloroethane	14	5	ug/L	
1,2-Dichloroethane	ND	5	ug/L	
1,1-Dichloroethene	100	5	ug/L	
cis-1,2-Dichloroethene	ND	5	ug/L	
trans-1,2-Dichloroethene	ND	5	ug/L	
1,2-Dichloropropane	ND	5	ug/L	
1,3-Dichloropropane	ND	5	ug/L	
2,2-Dichloropropane	ND	5	ug/L	
1,1-Dichloropropene	ND	5	ug/L	
Ethylbenzene	ND	5	ug/L	
Hexachlorobutadiene	ND	5	ug/L	
Isopropylbenzene	ND	5	ug/L	
p-Isopropyltoluene	ND	5	ug/L	
Methylene chloride	ND	5	ug/L	

METHOD: 8260 Water, Volatile Organics
(continued on next page)



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9808731-03

Cypress Engineering, Inc.

SAMPLE ID: MW-20

ANALYTICAL DATA (continued)			
PARAMETER	RESULTS	PQL*	UNITS
Naphthalene	ND	5	ug/L
n-Propylbenzene	ND	5	ug/L
Styrene	ND	5	ug/L
1,1,1,2-Tetrachloroethane	ND	5	ug/L
1,1,2,2-Tetrachloroethane	ND	5	ug/L
Tetrachloroethene	ND	5	ug/L
Toluene	ND	5	ug/L
1,2,3-Trichlorobenzene	ND	5	ug/L
1,2,4-Trichlorobenzene	ND	5	ug/L
1,1,1-Trichloroethane	28	5	ug/L
1,1,2-Trichloroethane	ND	5	ug/L
Trichloroethene	ND	5	ug/L
Trichlorofluoromethane	ND	5	ug/L
1,2,3-Trichloropropane	ND	5	ug/L
1,2,4-Trimethylbenzene	ND	5	ug/L
1,3,5-Trimethylbenzene	ND	5	ug/L
Vinyl chloride	ND	10	ug/L
Xylenes (total)	ND	5	ug/L
Acetone	ND	100	ug/L
Carbon Disulfide	ND	5	ug/L
Vinyl Acetate	ND	10	ug/L
2-Butanone	ND	20	ug/L
1,2-Dichloroethene (total)	ND	5	ug/L
2-Chloroethylvinylether	ND	10	ug/L
4-Methyl-2-Pentanone	ND	10	ug/L
cis-1,3-Dichloropropene	ND	5	ug/L
trans-1,3-Dichloropropene	ND	5	ug/L
2-Hexanone	ND	10	ug/L
Methyl t-Butyl Ether	ND	10	ug/L

SURROGATES	AMOUNT SPIKED	% RECOVERY	LOWER LIMIT	UPPER LIMIT
1,2-Dichloroethane-d4	50 ug/L	92	76	114
Toluene-d8	50 ug/L	100	88	110
4-Bromofluorobenzene	50 ug/L	100	86	115

ANALYZED BY: JC

DATE/TIME: 08/20/98 00:54:00

METHOD: 8260 Water, Volatile Organics

NOTES: * - Practical Quantitation Limit

ND - Not Detected

NA - Not Analyzed

COMMENTS:

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9808731-03

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

10/27/98

PROJECT: TWP Roswell STA 9
SITE:
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-20

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 08/15/98 13:30:00
DATE RECEIVED: 08/18/98

ANALYTICAL DATA				
PARAMETER	RESULTS	PQL*	UNITS	
Acenaphthene	ND	5	ug/L	
Acenaphthylene	ND	5	ug/L	
Anthracene	ND	5	ug/L	
Benzo(a)Anthracene	ND	5	ug/L	
Benzo(b)Fluoranthene	ND	5	ug/L	
Benzo(k)Fluoranthene	ND	5	ug/L	
Benzo(a)Pyrene	ND	5	ug/L	
Benzo(g,h,i)Perylene	ND	5	ug/L	
Chrysene	ND	5	ug/L	
Dibenz(a,h)Anthracene	ND	5	ug/L	
Fluoranthene	ND	5	ug/L	
Fluorene	ND	5	ug/L	
Indeno(1,2,3-cd)Pyrene	ND	5	ug/L	
2-Methylnaphthalene	ND	5	ug/L	
Naphthalene	ND	5	ug/L	
Phenanthrene	ND	5	ug/L	
Pyrene	ND	5	ug/L	
1-Methylnaphthalene	ND	5	ug/L	
SURROGATES	AMOUNT SPIKED	% RECOVERY	LOWER LIMIT	UPPER LIMIT
Nitrobenzene-d5	50 ug/L	62	35	114
2-Fluorobiphenyl	50 ug/L	86	43	116
Terphenyl-d14	50 ug/L	80	33	141
Phenol-d5	75 ug/L	59	10	110
2-Fluorophenol	75 ug/L	52	21	110
2,4,6-Tribromophenol	75 ug/L	107	10	123

ANALYZED BY: YL DATE/TIME: 08/28/98 01:34:00
EXTRACTED BY: KL DATE/TIME: 08/19/98 10:00:00
METHOD: 8270C, Semivolatile Organics - Water
NOTES: * - Practical Quantitation Limit ND - Not Detected
 NA - Not Analyzed

COMMENTS:

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.

QUALITY CONTROL
DOCUMENTATION

3A
WATER VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: SPL

Contract:

Lab Code:

Case No.: 9808731 SAS No.:

SDG No.:

Matrix Spike - EPA Sample No.: MW-21

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC #	QC. LIMITS REC.
=====	=====	=====	=====	=====	=====
1,1-Dichloroethene	50	0	58	118	61-145
Trichloroethene	50	0	49	98	71-120
Benzene	50	840	740	0*	76-127
Toluene	50	0	49	98	76-125
Chlorobenzene	50	0	47	94	75-130

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC #	% RPD #	QC LIMITS RPD	REC.
=====	=====	=====	=====	=====	=====	=====
1,1-Dichloroethene	50	60	120	2	14	61-145
Trichloroethene	50	49	98	0	14	71-120
Benzene	50	830	0*	0	11	76-127
Toluene	50	49	98	0	13	76-125
Chlorobenzene	50	46	92	2	13	75-130

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits due to matrix interferences

RPD: 0 out of 5 outside limits

Spike Recovery: 2 out of 10 outside limits

SPL Houston Labs

RECOVERY REPORT

Client Name: Client SDG: n980819
Sample Matrix: LIQUID Fraction: VOA
Lab Smp Id: LCS
Level: LOW Operator: JC
Data Type: MS DATA SampleType: LCS
SpikeList File: 8260 water.spk Quant Type: ISTD
Sublist File: 8260.süb
Method File: /var/chem/n.i/n980819a.b/n8260w.m
Misc Info: N231W2//N231CW2

SPIKE COMPOUND	CONC ADDED ug/L	CONC RECOVERED ug/L	% RECOVERED	LIMITS
8 1,1-Dichloroethene	50	57	114.00	61-145
29 Trichloroethene	50	49	98.00	71-120
25 Benzene	50	54	108.00	76-127
37 Toluene	50	50	100.00	76-125
45 Chlorobenzene	50	48	96.00	75-130

SURROGATE COMPOUND	CONC ADDED ug/L	CONC RECOVERED ug/L	% RECOVERED	LIMITS
\$ 21 1,2-Dichloroethane	50	47	94.00	76-114
\$ 36 Toluene-d8	50	49	98.00	88-110
\$ 56 Bromofluorobenzene	50	52	104.00	86-115



SPL Blank QC Report

HOUSTON LABORATORY

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 866-0901

Page 1

Matrix: Aqueous
Sample ID: VLBLK
Batch: N980819122724

Reported on: 08/27/98 16:46
Analyzed on: 08/19/98 22:17
Analyst: JC

METHOD 8260/8240 N231B02

C o m p o u n d	Result	Detection Limit	Units
Dichlorodifluoromethane	ND	10	ug/L
Chloromethane	ND	10	ug/L
Vinyl Chloride	ND	10	ug/L
Bromomethane	ND	10	ug/L
Chloroethane	ND	10	ug/L
Trichlorofluoromethane	ND	5	ug/L
Acetone	ND	100	ug/L
1,1-Dichloroethene	ND	5	ug/L
Methylene Chloride	ND	5	ug/L
Carbon Disulfide	ND	5	ug/L
trans-1,2-Dichloroethene	ND	5	ug/L
1,1-Dichloroethane	ND	5	ug/L
Vinyl Acetate	ND	10	ug/L
2-Butanone	ND	20	ug/L
cis-1,2-Dichloroethene	ND	5	ug/L
1,2-Dichloroethene (total)	ND	5	ug/L
2,2-Dichloropropane	ND	5	ug/L
Bromochloromethane	ND	5	ug/L
Chloroform	ND	5	ug/L
1,1,1-Trichloroethane	ND	5	ug/L
1,2-Dichloroethane	ND	5	ug/L
1,1-Dichloropropene	ND	5	ug/L
Benzene	ND	5	ug/L
Carbon Tetrachloride	ND	5	ug/L
1,2-Dichloropropane	ND	5	ug/L
Trichloroethene	ND	5	ug/L
Dibromomethane	ND	5	ug/L
Bromodichloromethane	ND	5	ug/L
2-Chloroethylvinylether	ND	10	ug/L
4-Methyl-2-Pentanone	ND	10	ug/L
cis-1,3-Dichloropropene	ND	5	ug/L
trans-1,3-Dichloropropene	ND	5	ug/L
Toluene	ND	5	ug/L
1,1,2-Trichloroethane	ND	5	ug/L

Notes

ND - Not detected.



SPL Blank QC Report

HOUSTON LABORATORY

8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 584-0901Matrix: Aqueous
Sample ID: VLBLK
Batch: N980819122724Reported on: 08/27/98 16:46
Analyzed on: 08/19/98 22:17
Analyst: JC

METHOD 8260/8240 N231B02

Compound	Result	Detection Limit	Units
1,3-Dichloropropane	ND	5	ug/L
2-Hexanone	ND	10	ug/L
Dibromochloromethane	ND	5	ug/L
1,2-Dibromoethane	ND	5	ug/L
Tetrachloroethene	ND	5	ug/L
Chlorobenzene	ND	5	ug/L
1,1,1,2-Tetrachloroethane	ND	5	ug/L
Ethylbenzene	ND	5	ug/L
Bromoform	ND	5	ug/L
Styrene	ND	5	ug/L
Xylene (Total)	ND	5	ug/L
1,1,2,2-Tetrachloroethane	ND	5	ug/L
1,2,3-Trichloropropane	ND	5	ug/L
Isopropylbenzene	ND	5	ug/L
Bromobenzene	ND	5	ug/L
N-Propylbenzene	ND	5	ug/L
2-Chlorotoluene	ND	5	ug/L
4-Chlorotoluene	ND	5	ug/L
1,3,5-Trimethylbenzene	ND	5	ug/L
tert-Butylbenzene	ND	5	ug/L
1,2,4-Trimethylbenzene	ND	5	ug/L
1,3-Dichlorobenzene	ND	5	ug/L
sec-Butylbenzene	ND	5	ug/L
1,4-Dichlorobenzene	ND	5	ug/L
p-Isopropyltoluene	ND	5	ug/L
1,2-Dichlorobenzene	ND	5	ug/L
n-Butylbenzene	ND	5	ug/L
1,2-Dibromo-3-Chloropropan	ND	5	ug/L
1,2,4-Trichlorobenzene	ND	5	ug/L
Naphthalene	ND	5	ug/L
Hexachlorobutadiene	ND	5	ug/L
1,2,3-Trichlorobenzene	ND	5	ug/L
Methyl t-Butyl Ether	ND	10	ug/L

Notes

ND - Not detected.



SPL Blank QC Report

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 584-9901

3

Matrix: Aqueous
Sample ID: VLBLK
Batch: N980819122724

Reported on: 08/27/98 16:46
Analyzed on: 08/19/98 22:17
Analyst: JC

METHOD 8260/8240 N231B02

S u r r o g a t e	Result	QC Criteria	Units
1,2-Dichloroethane-d4	88	76-114	% Recovery
Toluene-d8	98	88-110	% Recovery
Bromofluorobenzene	104	86-115	% Recovery

Samples in Batch 9808731-01 9808731-02 9808731-03

Notes

ND - Not detected.

3C

WATER SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: SPL

Contract:

Lab Code: Case No: 980819

SAS No: SDG No:

Matrix Spike - EPA

Sample No: SBLK

Level (low/med):

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATIO (ug/L)	MS CONCENTRATION (ug/L)	MS % REC #	QC LIMITS REC
Phenol	75	0	15	20	12-110
2-Chlorophenol	75	0	48	64	27-123
1,4-Dichlorobenzene	50	0	27	54	36- 97
N-Nitroso-di-n-propylamine	50	0	32	64	41-116
1,2,4-Trichlorobenzene	50	0	29	58	39- 110
4-Chloro-3-methylphenol	75	0	56	75	23-110
Acenaphthene	50	0	41	82	46-125
4-Nitrophenol	75	0	19	25	25-150
2,4-Dinitrotoluene	50	0	45	90	50-150
Pentachlorophenol	75	0	61	81	9-125
Pyrene	50	0	52	104	26-127

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATIO (ug/L)	MSD % REC #	% RPD #	QC LIMITS	
					RPD	REC
Phenol	75	16	21	5	42	12-110
2-Chlorophenol	75	43	57	12	40	27-132
1,4-Dichlorobenzene	50	27	54	0	28	36- 97
N-Nitroso-di-n-propylamine	50	30	60	6	38	41-116
1,2,4-Trichlorobenzene	50	28	56	4	28	39-110
4-Chloro-3-methylphenol	75	51	68	10	42	23-110
Acenaphthene	50	42	84	2	31	46-125
4-Nitrophenol	75	20	27	8	50	25-150
2,4-Dinitrotoluene	50	46	92	2	50	50-150
Pentachlorophenol	75	64	85	5	50	9-125
Pyrene	50	54	108	4	31	26-127

Column to be used to flag recovery and RPD values with an asterisk

RPD: 0 out of 11 outside limits
Spike Recovery: 0 out of 22 outside limits



SPL Blank QC Report

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 688-0901

page 1

Matrix: Aqueous
Sample ID: BLANK
Batch: E980819042258

Reported on: 08/31/98 14:51
Analyzed on: 08/24/98 17:32
Analyst: YL

METHOD 8270 H231B03

Compound	Result	Detection Limit	Units
Pyridine	ND	5	ug/L
Phenol	ND	5	ug/L
Aniline	ND	5	ug/L
bis(2-Chloroethyl) ether	ND	5	ug/L
2-Chlorophenol	ND	5	ug/L
1,3-Dichlorobenzene	ND	5	ug/L
1,4-Dichlorobenzene	ND	5	ug/L
Benzyl alcohol	ND	5	ug/L
1,2-Dichlorobenzene	ND	5	ug/L
2-Methylphenol	ND	5	ug/L
bis(2-chloroisopropyl) ethe	ND	5	ug/L
4-Methylphenol	ND	5	ug/L
N-Nitroso-di-n-propylamine	ND	5	ug/L
Hexachloroethane	ND	5	ug/L
Nitrobenzene	ND	5	ug/L
Isophorone	ND	5	ug/L
2-Nitrophenol	ND	5	ug/L
2,4-Dimethylphenol	ND	5	ug/L
Benzoic acid	ND	25	ug/L
bis(2-Chloroethoxy) methane	ND	5	ug/L
2,4-Dichlorophenol	ND	5	ug/L
1,2,4-Trichlorobenzene	ND	5	ug/L
Naphthalene	ND	5	ug/L
4-Chloroaniline	ND	5	ug/L
Hexachlorobutadiene	ND	5	ug/L
4-Chloro-3-methylphenol	ND	5	ug/L
2-Methylnaphthalene	ND	5	ug/L
1-Methylnaphthalene	ND	5	ug/L
Hexachlorocyclopentadiene	ND	5	ug/L
2,4,6-Trichlorophenol	ND	5	ug/L
2,4,5-Trichlorophenol	ND	10	ug/L
2-Chloronaphthalene	ND	5	ug/L
2-Nitroaniline	ND	25	ug/L
Dimethylphthalate	ND	5	ug/L

Notes

ND - Not detected.



SPL Blank QC Report

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 684-0901

Matrix: Aqueous
Sample ID: BLANK
Batch: E980819042258

Reported on: 08/31/98 14:51
Analyzed on: 08/24/98 17:32
Analyst: YL

METHOD 8270 H231B03

Compound	Result	Detection Limit	Units
2,6-Dinitrotoluene	ND	5	ug/L
Acenaphthylene	ND	5	ug/L
3-Nitroaniline	ND	25	ug/L
Acenaphthene	ND	5	ug/L
2,4-Dinitrophenol	ND	25	ug/L
4-Nitrophenol	ND	25	ug/L
Dibenzofuran	ND	5	ug/L
2,4-Dinitrotoluene	ND	5	ug/L
Diethylphthalate	ND	5	ug/L
4-Chlorophenyl-phenylether	ND	5	ug/L
Fluorene	ND	5	ug/L
4-Nitroaniline	ND	25	ug/L
4,6-Dinitro-2-methylphenol	ND	25	ug/L
n-Nitrosodiphenylamine	ND	5	ug/L
1,2-Diphenylhydrazine	ND	5	ug/L
4-Bromophenyl-phenylether	ND	5	ug/L
Hexachlorobenzene	ND	5	ug/L
Pentachlorophenol	ND	25	ug/L
Phenanthrene	ND	5	ug/L
Anthracene	ND	5	ug/L
Carbazole	ND	5	ug/L
Di-n-butylphthalate	ND	5	ug/L
Fluoranthene	ND	5	ug/L
Pyrene	ND	5	ug/L
Butylbenzylphthalate	ND	5	ug/L
3,3'-Dichlorobenzidine	ND	10	ug/L
Benzo[a]anthracene	ND	5	ug/L
Chrysene	ND	5	ug/L
bis(2-Ethylhexyl)phthalate	ND	5	ug/L
Di-n-octylphthalate	ND	5	ug/L
Benzo[b]fluoranthene	ND	5	ug/L
Benzo[k]fluoranthene	ND	5	ug/L
Benzo[a]pyrene	ND	5	ug/L
Indeno[1,2,3-cd]pyrene	ND	5	ug/L

Notes

ND - Not detected.



SPL Blank QC Report

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 681-0901

3

Matrix: Aqueous
Sample ID: BLANK
Batch: E980819042258

Reported on: 08/31/98 14:51
Analyzed on: 08/24/98 17:32
Analyst: YL

METHOD 8270 H231B03

Compound	Result	Detection Limit	Units
Dibenz[a,h]anthracene	ND	5	ug/L
Benzo[g,h,i]perylene	ND	5	ug/L

Surrogate	Result	QC Criteria	Units
Nitrobenzene-d5	42	35-114	% Recovery
2-Fluorobiphenyl	66	43-116	% Recovery
Terphenyl-d14	88	33-141	% Recovery
Phenol-d5	19	10-110	% Recovery
2-Fluorophenol	28	21-110	% Recovery
2,4,6-Tribromophenol	123	10-123	% Recovery

Samples in Batch 9808731-01 9808731-02 9808731-03

Notes

ND - Not detected.

ICP Spectroscopy Method 6010 Quality Control Report

Analyst: JM



Matrix: Water

Units: mg/L

Date:082598 Time:0956 File Name: 082598M2

HOUSTON LABORATORY

 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Laboratory Control Sample

Element	Mth. Blank	True Value	Result	% Recovery	Lower Limit	Upper Limit
Silver	ND	2.00	2.08	104	1.60	2.40
Aluminum						
Arsenic						
Barium	ND	2.00	1.88	94	1.60	2.40
Beryllium						
Calcium						
Cadmium	ND	2.00	1.99	100	1.60	2.40
Cobalt						
Chromium	ND	2.00	2.00	100	1.60	2.40
Copper	ND	2.00	1.96	98	1.60	2.40
Iron	ND	2.00	1.99	99	1.60	2.40
Potassium	ND	20.00	21.49	107	16.00	24.00
Magnesium	ND	20.00	19.98	100	16.00	24.00
Manganese	ND	2.00	1.96	98	1.60	2.40
Sodium	ND	20.00	20.90	105	16.00	24.00
Nickel						
Lead						
Antimony						
Selenium						
Thallium						
Vanadium						
Zinc	ND	2.00	2.00	100	1.60	2.40

Work Orders in Batch

Work Order Fractions

98-08-731 01E-03E

98-08-745 02E, 03E

98-08-641 08C

Matrix Spike - Spike Duplicate Results

Work Order Spiked: 9808731-01E

Element	Sample Result	Spike Added	Matrix Spike Result	Matrix Spike Recovery	Matrix Spike Duplicate Result	Matrix Spike Duplicate Recovery	QC Limits % Recovery	Spike RPD %	QC Limits %
Silver	ND	1.0	1.042	104.2	0.9436	94.4	80 120	9.9	20.0
Aluminum									
Arsenic									
Barium	0.1448	1.0	0.9803	83.6	0.9882	84.3	80 120	0.9	20.0
Beryllium									
Calcium									
Cadmium	ND	1.0	1.018	101.8	0.9072	90.7	80 120	11.5	20.0
Cobalt									
Chromium	ND	1.0	0.9566	95.7	0.8647	86.5	80 120	10.1	20.0
Copper	ND	1.0	0.9708	97.1	0.8794	87.9	80 120	9.9	20.0
Iron	0.6587	1.0	1.641	98.2	1.485	82.6	80 120	17.3	20.0
Potassium	2.643	10.0	14.18	115.4	14.66	120.2	* 80 120	4.1	20.0
Magnesium	143.9	10.0	149.8	59.0	* 151.2	73.0	* 80 120	21.2	** 20.0
Manganese	1.34	1.0	2.314	97.4	2.345	100.5	80 120	3.1	20.0
Sodium	196.1	10.0	195.1	0.0	* 175.8	0.0	* 80 120	0.0	20.0
Nickel									
Lead									
Antimony									
Selenium									
Thallium									
Vanadium									
Zinc	ND	1.0	1.016	101.6	0.9162	91.6	80 120	10.3	20.0

Elements Post Spiked: Ba, K, Mg, Mn, Na, Zn

* Spike Results Outside Method Limits

** Spike RPD Outside Method Limits

Checked: 8/26 ACA

ICP Spectroscopy Method 6010 Quality Control Report

Analyst: JM



Matrix: Water

Units: mg/L

Date:083198 Time:1003 File Name: 083198M8

HOUSTON LABORATORY

 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Laboratory Control Sample

Element	Mth. Blank	True Value	Result	% Recovery	Lower Limit	Upper Limit
Silver						
Aluminum						
Arsenic						
Barium						
Beryllium						
Calcium	ND	20.00	20.53	103	16.00	24.00
Cadmium						
Cobalt						
Chromium						
Copper						
Iron						
Potassium						
Magnesium						
Manganese						
Sodium						
Nickel						
Lead						
Antimony						
Selenium						
Thallium						
Vanadium						
Zinc						

Work Orders in Batch

Work Order Fractions

98-08-731 01E-03E

98-08-745 02E, 03E

Matrix Spike - Spike Duplicate Results

Work Order Spiked: 9808731-02E

Element	Sample Result	Spike Added	Matrix Spike Result	Matrix Spike Recovery	Matrix Spike Duplicate Result	Matrix Spike Duplicate Recovery	QC Limits % Recovery	Spike RPD %	QC Limits %
Silver									
Aluminum									
Arsenic									
Barium									
Beryllium									
Calcium	616.1	40.0	657.1	102.5	657.8	104.2	80 120	1.7	20.0
Cadmium									
Cobalt									
Chromium									
Copper									
Iron									
Potassium									
Magnesium									
Manganese									
Sodium									
Nickel									
Lead									
Antimony									
Selenium									
Thallium									
Vanadium									
Zinc									

Elements Post Spiked: Ca. (2X Dilution)

Checked: *Jm 9/1/98*

ICP Spectroscopy Method 6010 Quality Control Report

Analyst: EG



Matrix: Water

Units: mg/L

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Date:082698 Time:09:56 File Name: T082598B

Laboratory Control Sample

Element	Mth. Blank	True Value	Result	% Recovery	Lower Limit	Upper Limit
Silver						
Aluminum						
Arsenic	ND	4.00	3.96	99	3.20	4.80
Barium						
Beryllium						
Calcium						
Cadmium						
Cobalt						
Chromium						
Copper						
Iron						
Potassium						
Magnesium						
Manganese						
Sodium						
Nickel						
Lead	ND	2.00	1.96	98	1.60	2.40
Antimony						
Selenium	ND	4.00	3.88	97	3.20	4.80
Thallium						
Vanadium						
Zinc						

Work Orders in Batch

Work Order Fractions

98-08-731, 01E-03E

98-08-745 02E
03E

98-08-641 08C

Matrix Spike - Spike Duplicate Results

Work Order Spiked: 9808731-01E

Element	Sample Result	Spike Added	Matrix Spike Result	Matrix Spike Recovery	Matrix Spike Duplicate Result	Matrix Spike Duplicate Recovery	QC Limits % Recovery	Spike RPD %	QC Limits %
Silver									
Aluminum									
Arsenic	0.0057	2.0	2.087	104.1	1.927	96.1	80 120	8.0	20.0
Barium									
Beryllium									
Calcium									
Cadmium									
Cobalt									
Chromium									
Copper									
Iron									
Potassium									
Magnesium									
Manganese									
Sodium									
Nickel									
Lead	ND	1.0	0.9573	95.7	0.8854	88.5	80 120	7.8	20.0
Antimony									
Selenium	ND	2.0	2.028	101.4	1.865	93.3	80 120	8.4	20.0
Thallium									
Vanadium									
Zinc									

Checked: 8/26/98

ICP Spectroscopy Method 6010 Quality Control Report

Analyst: EG



Matrix: Water

Units: mg/L

HOUSTON LABORATORY

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 660-0901

Date:082598 Time:09:56 File Name: T082598B

Laboratory Control Sample

Element	Mth. Blank	True Value	Result	% Recovery	Lower Limit	Upper Limit
Silver						
Aluminum						
Arsenic	ND	4.00	3.96	99	3.20	4.80
Barium						
Beryllium						
Calcium						
Cadmium						
Cobalt						
Chromium						
Copper						
Iron						
Potassium						
Magnesium						
Manganese						
Sodium						
Nickel						
Lead	ND	2.00	1.96	98	1.60	2.40
Antimony						
Selenium	ND	4.00	3.88	97	3.20	4.80
Thallium						
Vanadium						
Zinc						

Work Orders in Batch

Work Order Fractions

98-08-731 01E-03E

98-08-745 02E
03E

98-08-641 08C

Matrix Spike - Spike Duplicate Results

Work Order Spiked: 9808731-01E

Element	Sample Result	Spike Added	Matrix Spike Result	Matrix Spike Recovery	Matrix Spike Duplicate Result	Matrix Spike Duplicate Recovery	QC Limits % Recovery	Spike RPD %	QC Limits %
Silver									
Aluminum									
Arsenic	0.0057	2.0	2.037	104.1	1.927	96.1	80 120	8.0	20.0
Barium									
Beryllium									
Calcium									
Cadmium									
Cobalt									
Chromium									
Copper									
Iron									
Potassium									
Magnesium									
Manganese									
Sodium									
Nickel									
Lead	ND	1.0	0.9573	95.7	0.8854	88.5	80 120	7.8	20.0
Antimony									
Selenium	ND	2.0	2.028	101.4	1.865	93.3	80 120	8.4	20.0
Thallium									
Vanadium									
Zinc									

Checked: 2 9/2/98



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 08/28/98

Analyzed on: 08/28/98

Analyst: AG

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Mercury, Total
Method 7470 A***

SPL Sample ID Number	Blank Value ug/L	LCS Concentration ug/L	Measured Concentration ug/L	% Recovery	QC Limits Recovery
LCS	ND	2.00	2.00	100	80 - 120

-9808C58

Samples in batch:

9808731-01E	9808731-02E	9808731-03E	9808745-02E
9808745-03E	9808890-01F	9808890-02F	9808890-03F
9808890-04F	9808890-05F	9808890-06F	9808890-07F
9808893-08F	9808925-02E	9808925-03E	9808953-01C
9808953-02C			

COMMENTS:

LCS = SPL ID# 94-452-45-21



** SPL QUALITY CONTROL REPORT **

HOUSTON LABORATORY

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 660-0901

Matrix: Aqueous

Reported on: 08/28/98

Analyzed on: 08/28/98

Analyst: AG

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Mercury, Total
Method 7470 A***

SPL Sample	Method	Sample	Spike	Matrix Spike		Matrix Spike Duplicate		RPD	QC LIMITS (Advisory)	
ID Number	Blank ug/L	Result ug/L	Added ug/L	Result ug/L	Recovery %	Result ug/L	Recovery %	(%)	RPD Max	% REC
9808890-01F	ND	ND	2.00	1.99	99.5	1.90	95.0	4.6	20	75 -125

-9808C58

Samples in batch:

9808731-01E 9808731-02E 9808731-03E 9808745-02E
9808745-03E 9808890-01F 9808890-02F 9808890-03F
9808890-04F 9808890-05F 9808890-06F 9808890-07F
9808893-08F 9808925-02E 9808925-03E 9808953-01C
9808953-02C

COMMENTS:

LCS = SPL ID# 94-452-45-21



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 08/24/98

Analyzed on: 08/24/98

Analyst: TK

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Alkalinity, as CaCO_3
Method 310.1 *

SPL Sample ID Number	Blank Value mg/L	LCS Concentration mg/L	Measured Concentration mg/L	% Recovery	QC Limits Recovery
LCS	ND	235	242	103	95 - 113

-9808A60

Samples in batch:

9808731-01B 9808731-02B 9808731-03B

COMMENTS:

LCS#94453209-13



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 08/24/98

Analyzed on: 08/24/98

Analyst: TK

This sample was randomly selected for use in the SPL quality control program. The results are as follows:

Alkalinity, as CaCO₃
Method 310.1 *

-- DUPLICATE ANALYSIS --

SPL Sample ID	Original Sample Concentration mg/L	Duplicate Sample mg/L	RPD	RPD Max.
9808731-01B	146.2	146.4	0.1	18

-9808A59

Samples in batch:

9808731-01B 9808731-02B 9808731-03B

COMMENTS:



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 08/31/98

Analyzed on: 08/28/98

Analyst: AB

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Chloride
Method 325.3 *

SPL Sample ID Number	Blank Value mg/L	LCS Concentration mg/L	Measured Concentration mg/L	% Recovery	QC Limits Recovery
LCS	ND	186	177	95.2	94 - 106

-9808C97

Samples in batch:

9808516-01F	9808722-01E	9808725-01E	9808731-01B
9808731-02B	9808731-03B	9808745-02B	9808745-03B
9808790-01E	9808812-01F	9808890-03H	9808890-06H
9808893-08H			

COMMENTS:

SPL=LCS#94453209-12



** SPL QUALITY CONTROL REPORT **

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Matrix: Aqueous

Reported on: 08/31/98

Analyzed on: 08/28/98

Analyst: AB

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Chloride
Method 325.3 *

SPL Sample	Method	Sample	Spike	Matrix Spike		Matrix Spike Duplicate		RPD	QC LIMITS (Advisory)	
ID Number	Blank mg/L	Result mg/L	Added mg/L	Result mg/L	Recovery %	Result mg/L	Recovery %	(%)	RPD Max	% REC
9808745-02B	ND	92	100	199	107	197	105	1.9	5	92 -109

-9808C95

Samples in batch:

9808516-01F 9808722-01E 9808725-01E 9808731-01B
9808731-02B 9808731-03B 9808745-02B 9808745-03B

COMMENTS:



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 08/27/98

Analyzed on: 08/27/98

Analyst: TW

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Sulfate
Method 375.4 *

SPL Sample ID Number	Blank Value mg/L	LCS Concentration mg/L	Measured Concentration mg/L	% Recovery	QC Limits Recovery
LCS	ND	10.04	10.26	102	82 - 111

-9808C21

Samples in batch:

9808516-01F	9808635-01B	9808635-02B	9808635-03B
9808644-01B	9808644-02B	9808644-03B	9808652-01B
9808652-03B	9808722-01E	9808725-01E	9808731-01B
9808779-04H	9808779-05H	9808780-14H	9808812-01F

COMMENTS:

LCS= SPL ID# 95535209-12.



** SPL QUALITY CONTROL REPORT **

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Matrix: Aqueous

Reported on: 08/27/98
Analyzed on: 08/27/98
Analyst: TW

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Sulfate
Method 375.4 *

SPL Sample	Method	Sample	Spike	Matrix Spike		Matrix Spike Duplicate		RPD	QC LIMITS (Advisory)		
ID Number	Blank	Result	Added	Result	Recovery	Result	Recovery	(%)	RPD	% REC	
	mg/L	mg/L	mg/L	mg/L	%	mg/L	%		Max		
9808779-04H	ND	9.87	10.00	21.23	114	20.82	110	3.6	9.5	84	-120

-9808C18

Samples in batch:

9808516-01F 9808652-03B 9808722-01E 9808725-01E
9808731-01B 9808779-04H 9808779-05H 9808780-14H

COMMENTS:



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 08/27/98

Analyzed on: 08/27/98

Analyst: TW

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Sulfate
Method 375.4 *

SPL Sample ID Number	Blank Value mg/L	LCS Concentration mg/L	Measured Concentration mg/L	% Recovery	QC Limits Recovery
LCS	ND	10.04	9.57	95.3	82 - 111

-9808C22

Samples in batch:

9808731-02B	9808731-03B	9808745-02B	9808745-03B
9808790-01E	9808890-03H	9808890-06H	9808893-08H

COMMENTS:

LCS#95535209-12



** SPL QUALITY CONTROL REPORT **

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Matrix: Aqueous

Reported on: 08/27/98

Analyzed on: 08/27/98

Analyst: TW

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Sulfate
Method 375.4 *

SPL Sample	Method	Sample	Spike	Matrix Spike		Matrix Spike Duplicate		RPD	QC LIMITS (Advisory)	
ID Number	Blank	Result	Added	Result	Recovery	Result	Recovery	(%)	RPD	% REC
	mg/L	mg/L	mg/L	mg/L	%	mg/L	%		Max	
9808890-06H	ND	12.08	10.00	22.74	107	23.73	116	8.1	9.5	84 -120

-9808C19

Samples in batch:

9808731-02B 9808731-03B 9808745-02B 9808745-03B
9808790-01E 9808890-03H 9808890-06H 9808893-08H

COMMENTS:



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 08/24/98

Analyzed on: 08/21/98

Analyst: DS

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Total Dissolved Solids
Method 160.1 *

SPL Sample ID Number	Blank Value mg/L	LCS Concentration mg/L	Measured Concentration mg/L	% Recovery	QC Limits Recovery
LCS	ND	455.9	453	99.4	93 - 107

-9808A26

Samples in batch:

9808712-01G	9808712-02G	9808722-01E	9808725-01E
9808731-01B	9808731-02B	9808731-03B	9808790-01E
9808812-01F	9808847-01D	9808847-02D	9808847-03D

COMMENTS:

LCS=SPL ID#95535216-23



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 08/24/98

Analyzed on: 08/21/98

Analyst: DS

This sample was randomly selected for use in the SPL quality control program. The results are as follows:

Total Dissolved Solids
Method 160.1 *

-- DUPLICATE ANALYSIS --

SPL Sample ID	Original Sample Concentration mg/L	Duplicate Sample mg/L	RPD	RPD Max.
9808712-01G	868	870	0.2	5

-9808A25

Samples in batch:

9808712-01G	9808712-02G	9808722-01E	9808725-01E
9808731-01B	9808731-02B	9808731-03B	9808790-01E
9808812-01F			

COMMENTS:



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 09/01/98

Analyzed on: 08/30/98

Analyst: AB

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Nitrate-Nitrite, as N
Method 353.3 *

SPL Sample ID Number	Blank Value mg/L	LCS Concentration mg/L	Measured Concentration mg/L	% Recovery	QC Limits Recovery
LCS	ND	2.77	2.80	101	92 - 111

-9809028

Samples in batch:

9808731-01C 9808731-02C 9808731-03C 9808745-02C
9808745-03C

COMMENTS:

SPL=LCS#955196-25



**** SPL QUALITY CONTROL REPORT ****

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Matrix: Aqueous

Reported on: 09/01/98
Analyzed on: 08/30/98
Analyst: AB

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Nitrate-Nitrite, as N
Method 353.3 *

SPL Sample ID Number	Method Blank mg/L	Sample Result mg/L	Spike Added mg/L	Matrix Spike		Matrix Spike Duplicate		RPD (%)	QC LIMITS (Advisory)	
				Result mg/L	Recovery %	Result mg/L	Recovery %		RPD Max	% REC
9808731-01C	ND	ND	5.0	4.3	86.0	4.2	84.0	2.4	12	87 -120

-9809024

Samples in batch:

9808731-01C 9808731-02C 9808731-03C 9808745-02C
9808745-03C

COMMENTS:

MS/MSD RECOVERY IS LOW DUE TO MATRIX INTERFERENCE.

CHAIN OF CUSTODY
AND
SAMPLE RECEIPT CHECKLIST

1501 E. Orangethorpe Avenue, Fullerton, CA 92631 (714) 447-6868

SPL Houston Environmental Laboratory

Sample Login Checklist

Date: 8/18/98	Time: 1000
---------------	------------

SPL Sample ID: 9808731

		Yes	No
1	Chain-of-Custody (COC) form is present.	✓	
2	COC is properly completed.	✓	
3	If no, Non-Conformance Worksheet has been completed.		
4	Custody seals are present on the shipping container.	✓	
5	If yes, custody seals are intact.	✓	
6	All samples are tagged or labeled.	✓	
7	If no, Non-Conformance Worksheet has been completed.		
8	Sample containers arrived intact	✓	
9	Temperature of samples upon arrival:	4 C	
10	Method of sample delivery to SPL:	SPL Delivery	
		Client Delivery	
		FedEx Delivery (airbill #)	806 908026440
		Other:	
11	Method of sample disposal:	SPL Disposal	✓
		HOLD	
		Return to Client	

Name: Aubrey STL	Date: 8/18/98
------------------	---------------



September 2, 1998

Mr. George Robinson
CYPRESS ENGINEERING, INC.
10235 W. Little York Rd, #256
Houston, TX 77040

The following report contains analytical results for the sample(s) received at Southern Petroleum Laboratories (SPL) on August 18, 1998. The sample(s) was assigned to Certificate of Analysis No.(s) 9808745 and analyzed for all parameters as listed on the chain of custody.

Sample "MW-9" (SPL#9808745-01E) was randomly chosen as a Quality Control sample for Total Metals analysis by SW-846 method 6010. The Matrix Spike(MS)and Matrix Spike Duplicate (MSD) recoveries were outside of advisable limits for Sodium, Magnesium and Calcium. The MS/MSD Relative Percent Difference (RPD) recoveries were outside of advisable quality control limits for Calcium and Magnesium. A Laboratory Control Sample (LCS) was analyzed as a Quality Control check for the analytical batch and all recoveries were within acceptable limits.

Any data flag or quality control exception associated with this report will be footnoted in the analytical results page(s) or the quality control summary page(s).

If you have any questions or comments pertaining to this data report, please do not hesitate to contact me. Please reference the above Certificate of Analysis No. during any inquiries.

Again, SPL is pleased to be of service to you. We anticipate working with you in fulfilling all your current and future analytical needs.

Southern Petroleum Laboratories


Electa Brown
Project Manager



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Southern Petroleum Laboratories, Inc.

Certificate of Analysis Number: 98-08-745

Approved for Release by:

A handwritten signature in cursive script, reading "Electa Brown", is written over a horizontal line.

Electa Brown, Project Manager

A handwritten date "9-2-98" is written in cursive script over a horizontal line.

Date

Greg Grandits
Laboratory Director

Cynthia Schreiner
Quality Assurance Officer

The attached analytical data package may not be reproduced except in full without the express written approval of this laboratory.
The results relate only to the samples tested.
Results reported on a Wet Weight Basis unless otherwise noted.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9808745-01

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 10/27/98

PROJECT: TWP Roswell STA 9
SITE:
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-9

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 08/14/98 17:15:00
DATE RECEIVED: 08/18/98

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
Silver, Dissolved Method 6010B *** Analyzed by: JM Date: 08/25/98 09:56:00	ND	0.01	mg/L	
Arsenic, Dissolved Method 7060A *** Analyzed by: PB Date: 08/19/98 09:04:00	ND	0.005	mg/L	
Barium, Dissolved Method 6010B *** Analyzed by: JM Date: 08/25/98 09:56:00	0.007	0.005	mg/L	
Calcium, Dissolved Method 6010B *** Analyzed by: JM Date: 08/31/98 10:03:00	619	0.2	mg/L	
Cadmium, Dissolved Method 6010B *** Analyzed by: JM Date: 08/25/98 09:56:00	ND	0.005	mg/L	
Chromium, Dissolved Method 6010B *** Analyzed by: JM Date: 08/25/98 09:56:00	ND	0.01	mg/L	

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9808745-01

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 10/27/98

PROJECT: TWP Roswell STA 9
SITE:
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-9

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 08/14/98 17:15:00
DATE RECEIVED: 08/18/98

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
Copper, Dissolved Method 6010B *** Analyzed by: JM Date: 08/25/98 09:56:00	ND	0.01	mg/L	
Iron, Dissolved Method 6010B *** Analyzed by: JM Date: 08/25/98 09:56:00	ND	0.02	mg/L	
Mercury, Dissolved Method 7470 A*** Analyzed by: AG Date: 08/28/98 13:43:00	ND	0.0002	mg/L	
Potassium, Dissolved Method 6010B *** Analyzed by: JM Date: 08/25/98 09:56:00	5	2	mg/L	
Magnesium, Dissolved Method 6010B *** Analyzed by: JM Date: 08/25/98 09:56:00	206	0.1	mg/L	
Manganese, Dissolved Method 6010B *** Analyzed by: JM Date: 08/25/98 09:56:00	0.031	0.005	mg/L	

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9808745-01

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 10/27/98

PROJECT: TWP Roswell STA 9
SITE:
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-9

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 08/14/98 17:15:00
DATE RECEIVED: 08/18/98

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Sodium, Dissolved Method 6010B *** Analyzed by: JM Date: 08/25/98 09:56:00	261	0.5	mg/L
Dissolved Metals Prep. Method 3005A *** Analyzed by: GJ Date: 08/18/98 16:00:00	08/18/98		
Lead, Dissolved Method 6010B *** Analyzed by: JM Date: 08/25/98 09:56:00	ND	0.05	mg/L
Selenium, Dissolved Method 7740 *** Analyzed by: PB Date: 08/19/98 08:40:00	ND	0.005	mg/L
Zinc, Dissolved Method 6010B *** Analyzed by: JM Date: 08/25/98 09:56:00	ND	0.02	mg/L

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9808745-02

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 10/27/98

PROJECT: TWP Roswell STA 9
SITE:
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-28

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 08/14/98 18:30:00
DATE RECEIVED: 08/18/98

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
Alkalinity, as CaCO ₃ Method 310.1 * Analyzed by: TK Date: 08/21/98 15:00:00	108	1	mg/L	
Chloride Method 325.3 * Analyzed by: AB Date: 08/28/98 10:00:00	417	5	mg/L	
Sulfate Method 375.4 * Analyzed by: TW Date: 08/27/98 13:00:00	1700	100	mg/L	
Total Dissolved Solids Method 160.1 * Analyzed by: DS Date: 08/19/98 17:00:00	3300	100	mg/L	
Nitrate-Nitrite, as N Method 353.3 * Analyzed by: AB Date: 08/30/98 10:00:00	0.4	0.1	mg/L	
Liquid-liquid extraction SEMIVOLATILES Method 3520C *** Analyzed by: KL Date: 08/19/98 10:00:00	08/19/98			

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9808745-02

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 10/27/98

PROJECT: TWP Roswell STA 9
SITE:
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-28

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 08/14/98 18:30:00
DATE RECEIVED: 08/18/98

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
Silver, Total Method 6010B *** Analyzed by: JM Date: 08/25/98 09:56:00	ND	0.01	mg/L	
Arsenic, Total Method 6010B *** Analyzed by: EG Date: 08/25/98 09:56:00	ND	0.005	mg/L	
Barium, Total Method 6010B *** Analyzed by: JM Date: 08/25/98 09:56:00	ND	0.005	mg/L	
Calcium, Total Method 6010B *** Analyzed by: JM Date: 08/31/98 10:03:00	616	0.2	mg/L	
Cadmium, Total Method 6010B *** Analyzed by: JM Date: 08/25/98 09:56:00	ND	0.005	mg/L	
Chromium, Total Method 6010B *** Analyzed by: JM Date: 08/25/98 09:56:00	ND	0.01	mg/L	

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9808745-02

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 10/27/98

PROJECT: TWP Roswell STA 9
SITE:
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-28

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 08/14/98 18:30:00
DATE RECEIVED: 08/18/98

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
Copper, Total Method 6010B *** Analyzed by: JM Date: 08/25/98 09:56:00	ND	0.01	mg/L	
Iron, Total Method 6010B *** Analyzed by: JM Date: 08/25/98 09:56:00	0.09	0.02	mg/L	
Mercury, Total Method 7470 A*** Analyzed by: AG Date: 08/28/98 13:43:00	ND	0.0002	mg	
Potassium, Total Method 6010B *** Analyzed by: JM Date: 08/25/98 09:56:00	ND	2	mg/L	
Magnesium, Total Method 6010B *** Analyzed by: JM Date: 08/25/98 09:56:00	115	0.1	mg/L	
Manganese, Total Method 6010B *** Analyzed by: JM Date: 08/25/98 09:56:00	0.470	0.005	mg/L	

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9808745-02

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 10/27/98

PROJECT: TWP Roswell STA 9
SITE:
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-28

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 08/14/98 18:30:00
DATE RECEIVED: 08/18/98

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Sodium, Total Method 6010B *** Analyzed by: JM Date: 08/25/98 09:56:00	193	0.5	mg/L
Acid Digestion-Aqueous, ICP Method 3010A *** Analyzed by: EE Date: 08/19/98 11:30:00	08/19/98		
Lead, Total Method 6010B *** Analyzed by: EG Date: 08/25/98 09:56:00	ND	0.005	mg/L
Selenium, Total Method 6010B *** Analyzed by: EG Date: 08/25/98 09:56:00	0.005	0.005	mg/L
Zinc, Total Method 6010B *** Analyzed by: JM Date: 08/25/98 09:56:00	0.02	0.02	mg/L

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9808745-02

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

10/27/98

PROJECT: TWP Roswell STA 9
SITE:
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-28

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 08/14/98 18:30:00
DATE RECEIVED: 08/18/98

ANALYTICAL DATA

PARAMETER	RESULTS	PQL*	UNITS
Benzene	200	5	ug/L
Bromobenzene	ND	5	ug/L
Bromochloromethane	ND	5	ug/L
Bromodichloromethane	ND	5	ug/L
Bromoform	ND	5	ug/L
Bromomethane	ND	10	ug/L
n-Butylbenzene	ND	5	ug/L
sec-Butylbenzene	ND	5	ug/L
tert-Butylbenzene	ND	5	ug/L
Carbon tetrachloride	ND	5	ug/L
Chlorobenzene	ND	5	ug/L
Chlorodibromomethane	ND	5	ug/L
Chloroethane	ND	10	ug/L
Chloroform	ND	5	ug/L
Chloromethane	ND	10	ug/L
2-Chlorotoluene	ND	5	ug/L
4-Chlorotoluene	ND	5	ug/L
1,2-Dibromo-3-chloropropane	ND	5	ug/L
1,2-Dibromoethane	ND	5	ug/L
Dibromomethane	ND	5	ug/L
1,2-Dichlorobenzene	ND	5	ug/L
1,3-Dichlorobenzene	ND	5	ug/L
1,4-Dichlorobenzene	ND	5	ug/L
Dichlorodifluoromethane	ND	10	ug/L
1,1-Dichloroethane	ND	5	ug/L
1,2-Dichloroethane	ND	5	ug/L
1,1-Dichloroethene	ND	5	ug/L
cis-1,2-Dichloroethene	ND	5	ug/L
trans-1,2-Dichloroethene	ND	5	ug/L
1,2-Dichloropropane	ND	5	ug/L
1,3-Dichloropropane	ND	5	ug/L
2,2-Dichloropropane	ND	5	ug/L
1,1-Dichloropropene	ND	5	ug/L
Ethylbenzene	ND	5	ug/L
Hexachlorobutadiene	ND	5	ug/L
Isopropylbenzene	ND	5	ug/L
p-Isopropyltoluene	ND	5	ug/L
Methylene chloride	ND	5	ug/L

METHOD: 8260 Water, Volatile Organics
(continued on next page)



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9808745-02

Cypress Engineering, Inc.

SAMPLE ID: MW-28

ANALYTICAL DATA (continued)				
PARAMETER	RESULTS	PQL*	UNITS	
Naphthalene	ND	5	ug/L	
n-Propylbenzene	ND	5	ug/L	
Styrene	ND	5	ug/L	
1,1,1,2-Tetrachloroethane	ND	5	ug/L	
1,1,2,2-Tetrachloroethane	ND	5	ug/L	
Tetrachloroethene	ND	5	ug/L	
Toluene	ND	5	ug/L	
1,2,3-Trichlorobenzene	ND	5	ug/L	
1,2,4-Trichlorobenzene	ND	5	ug/L	
1,1,1-Trichloroethane	ND	5	ug/L	
1,1,2-Trichloroethane	ND	5	ug/L	
Trichloroethene	ND	5	ug/L	
Trichlorofluoromethane	ND	5	ug/L	
1,2,3-Trichloropropane	ND	5	ug/L	
1,2,4-Trimethylbenzene	9	5	ug/L	
1,3,5-Trimethylbenzene	ND	5	ug/L	
Vinyl chloride	ND	10	ug/L	
Xylenes (total)	ND	5	ug/L	
Acetone	ND	100	ug/L	
Carbon Disulfide	ND	5	ug/L	
Vinyl Acetate	ND	10	ug/L	
2-Butanone	ND	20	ug/L	
1,2-Dichloroethene (total)	ND	5	ug/L	
2-Chloroethylvinylether	ND	10	ug/L	
4-Methyl-2-Pentanone	ND	10	ug/L	
cis-1,3-Dichloropropene	ND	5	ug/L	
trans-1,3-Dichloropropene	ND	5	ug/L	
2-Hexanone	ND	10	ug/L	
Methyl t-Butyl Ether	ND	10	ug/L	
SURROGATES	AMOUNT SPIKED	% RECOVERY	LOWER LIMIT	UPPER LIMIT
1,2-Dichloroethane-d4	50 ug/L	96	76	114
Toluene-d8	50 ug/L	100	88	110
4-Bromofluorobenzene	50 ug/L	102	86	115

ANALYZED BY: JC

DATE/TIME: 08/19/98 13:31:00

METHOD: 8260 Water, Volatile Organics

NOTES: * - Practical Quantitation Limit

ND - Not Detected

NA - Not Analyzed

COMMENTS:

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9808745-02

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

10/27/98

PROJECT: TWP Roswell STA 9
SITE:
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-28

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 08/14/98 18:30:00
DATE RECEIVED: 08/18/98

ANALYTICAL DATA

PARAMETER	RESULTS	PQL*	UNITS
Acenaphthene	ND	5	ug/L
Acenaphthylene	ND	5	ug/L
Anthracene	ND	5	ug/L
Benzo(a)Anthracene	ND	5	ug/L
Benzo(b)Fluoranthene	ND	5	ug/L
Benzo(k)Fluoranthene	ND	5	ug/L
Benzo(a)Pyrene	ND	5	ug/L
Benzo(g,h,i)Perylene	ND	5	ug/L
Chrysene	ND	5	ug/L
Dibenz(a,h)Anthracene	ND	5	ug/L
Fluoranthene	ND	5	ug/L
Fluorene	ND	5	ug/L
Indeno(1,2,3-cd)Pyrene	ND	5	ug/L
2-Methylnaphthalene	ND	5	ug/L
Naphthalene	ND	5	ug/L
Phenanthrene	ND	5	ug/L
Pyrene	ND	5	ug/L
1-Methylnaphthalene	ND	5	ug/L

SURROGATES	AMOUNT SPIKED	% RECOVERY	LOWER LIMIT	UPPER LIMIT
Nitrobenzene-d5	50 ug/L	0 «	35	114
2-Fluorobiphenyl	50 ug/L	16 «	43	116
Terphenyl-d14	50 ug/L	148 «	33	141
Phenol-d5	75 ug/L	0 «	10	110
2-Fluorophenol	75 ug/L	0 «	21	110
2,4,6-Tribromophenol	75 ug/L	147 «	10	123

ANALYZED BY: YL DATE/TIME: 08/24/98 20:46:00
EXTRACTED BY: KL DATE/TIME: 08/19/98 10:00:00
METHOD: 8270C, Semivolatile Organics - Water
NOTES: * - Practical Quantitation Limit ND - Not Detected
 NA - Not Analyzed
 « - Recovery outside of control limits.

COMMENTS:

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9808745-03

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 10/27/98

PROJECT: TWP Roswell STA 9
SITE:
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-13

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 08/15/98 09:45:00
DATE RECEIVED: 08/18/98

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
Alkalinity, as CaCO ₃ Method 310.1 * Analyzed by: TK Date: 08/21/98 15:00:00	163	1	mg/L	
Chloride Method 325.3 * Analyzed by: AB Date: 08/28/98 10:00:00	461	5	mg/L	
Sulfate Method 375.4 * Analyzed by: TW Date: 08/27/98 13:00:00	1700	100	mg/L	
Total Dissolved Solids Method 160.1 * Analyzed by: DS Date: 08/19/98 17:00:00	3700	100	mg/L	
Nitrate-Nitrite, as N Method 353.3 * Analyzed by: AB Date: 08/30/98 10:00:00	ND	0.1	mg/L	
Liquid-liquid extraction SEMIVOLATILES Method 3520C *** Analyzed by: KL Date: 08/19/98 10:00:00	08/19/98			

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9808745-03

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 10/27/98

PROJECT: TWP Roswell STA 9
SITE:
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-13

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 08/15/98 09:45:00
DATE RECEIVED: 08/18/98

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
Silver, Total Method 6010B *** Analyzed by: JM Date: 08/25/98 09:56:00	ND	0.01	mg/L	
Arsenic, Total Method 6010B *** Analyzed by: EG Date: 08/25/98 09:56:00	0.007	0.005	mg/L	
Barium, Total Method 6010B *** Analyzed by: JM Date: 08/25/98 09:56:00	0.009	0.005	mg/L	
Calcium, Total Method 6010B *** Analyzed by: JM Date: 08/31/98 10:03:00	664	0.2	mg/L	
Cadmium, Total Method 6010B *** Analyzed by: JM Date: 08/25/98 09:56:00	ND	0.005	mg/L	
Chromium, Total Method 6010B *** Analyzed by: JM Date: 08/25/98 09:56:00	ND	0.01	mg/L	

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9808745-03

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 10/27/98

PROJECT: TWP Roswell STA 9
SITE:
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-13

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 08/15/98 09:45:00
DATE RECEIVED: 08/18/98

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
Copper, Total Method 6010B *** Analyzed by: JM Date: 08/25/98 09:56:00	ND	0.01	mg/L	
Iron, Total Method 6010B *** Analyzed by: JM Date: 08/25/98 09:56:00	1.36	0.02	mg/L	
Mercury, Total Method 7470 A*** Analyzed by: AG Date: 08/28/98 13:43:00	ND	0.0002	mg/L	
Potassium, Total Method 6010B *** Analyzed by: JM Date: 08/25/98 09:56:00	5	2	mg/L	
Magnesium, Total Method 6010B *** Analyzed by: JM Date: 08/25/98 09:56:00	134	0.1	mg/L	
Manganese, Total Method 6010B *** Analyzed by: JM Date: 08/25/98 09:56:00	1.07	0.005	mg/L	

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9808745-03

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 10/27/98

PROJECT: TWP Roswell STA 9
SITE:
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-13

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 08/15/98 09:45:00
DATE RECEIVED: 08/18/98

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
Sodium, Total Method 6010B *** Analyzed by: JM Date: 08/25/98 09:56:00	155	0.5	mg/L	
Acid Digestion-Aqueous, ICP Methcd 3010A *** Analyzed by: EE Date: 08/19/98 11:30:00	08/19/98			
Lead, Total Method 6010B *** Analyzed by: EG Date: 08/25/98 09:56:00	ND	0.005	mg/L	
Selenium, Total Method 6010B *** Analyzed by: EG Date: 08/25/98 09:56:00	ND	0.005	mg/L	
Zinc, Total Method 6010B *** Analyzed by: JM Date: 08/25/98 09:56:00	0.06	0.02	mg/L	

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9808745-03

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

10/27/98

PROJECT: TWP Roswell STA 9
SITE:
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-13

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 08/15/98 09:45:00
DATE RECEIVED: 08/18/98

ANALYTICAL DATA				
PARAMETER	RESULTS	PQL*	UNITS	
Benzene	30	5	ug/L	
Bromobenzene	ND	5	ug/L	
Bromochloromethane	ND	5	ug/L	
Bromodichloromethane	ND	5	ug/L	
Bromoform	ND	5	ug/L	
Bromomethane	ND	10	ug/L	
n-Butylbenzene	ND	5	ug/L	
sec-Butylbenzene	ND	5	ug/L	
tert-Butylbenzene	ND	5	ug/L	
Carbon tetrachloride	ND	5	ug/L	
Chlorobenzene	ND	5	ug/L	
Chlorodibromomethane	ND	5	ug/L	
Chloroethane	ND	10	ug/L	
Chloroform	ND	5	ug/L	
Chloromethane	ND	10	ug/L	
2-Chlorotoluene	ND	5	ug/L	
4-Chlorotoluene	ND	5	ug/L	
1,2-Dibromo-3-chloropropane	ND	5	ug/L	
1,2-Dibromoethane	ND	5	ug/L	
Dibromomethane	ND	5	ug/L	
1,2-Dichlorobenzene	ND	5	ug/L	
1,3-Dichlorobenzene	ND	5	ug/L	
1,4-Dichlorobenzene	ND	5	ug/L	
Dichlorodifluoromethane	ND	10	ug/L	
1,1-Dichloroethane	ND	5	ug/L	
1,2-Dichloroethane	ND	5	ug/L	
1,1-Dichloroethene	ND	5	ug/L	
cis-1,2-Dichloroethene	ND	5	ug/L	
trans-1,2-Dichloroethene	ND	5	ug/L	
1,2-Dichloropropane	ND	5	ug/L	
1,3-Dichloropropane	ND	5	ug/L	
2,2-Dichloropropane	ND	5	ug/L	
1,1-Dichloropropene	ND	5	ug/L	
Ethylbenzene	ND	5	ug/L	
Hexachlorobutadiene	ND	5	ug/L	
Isopropylbenzene	ND	5	ug/L	
p-Isopropyltoluene	ND	5	ug/L	
Methylene chloride	ND	5	ug/L	

METHOD: 8260 Water, Volatile Organics
(continued on next page)



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9808745-03

Cypress Engineering, Inc.

SAMPLE ID: MW-13

ANALYTICAL DATA (continued)			
PARAMETER	RESULTS	PQL*	UNITS
Naphthalene	ND	5	ug/L
n-Propylbenzene	ND	5	ug/L
Styrene	ND	5	ug/L
1,1,1,2-Tetrachloroethane	ND	5	ug/L
1,1,2,2-Tetrachloroethane	ND	5	ug/L
Tetrachloroethene	ND	5	ug/L
Toluene	ND	5	ug/L
1,2,3-Trichlorobenzene	ND	5	ug/L
1,2,4-Trichlorobenzene	ND	5	ug/L
1,1,1-Trichloroethane	ND	5	ug/L
1,1,2-Trichloroethane	ND	5	ug/L
Trichloroethene	ND	5	ug/L
Trichlorofluoromethane	ND	5	ug/L
1,2,3-Trichloropropane	ND	5	ug/L
1,2,4-Trimethylbenzene	ND	5	ug/L
1,3,5-Trimethylbenzene	ND	5	ug/L
Vinyl chloride	ND	10	ug/L
Xylenes (total)	ND	5	ug/L
Acetone	ND	100	ug/L
Carbon Disulfide	ND	5	ug/L
Vinyl Acetate	ND	10	ug/L
2-Butanone	ND	20	ug/L
1,2-Dichloroethene (total)	ND	5	ug/L
2-Chloroethylvinylether	ND	10	ug/L
4-Methyl-2-Pentanone	ND	10	ug/L
cis-1,3-Dichloropropene	ND	5	ug/L
trans-1,3-Dichloropropene	ND	5	ug/L
2-Hexanone	ND	10	ug/L
Methyl t-Butyl Ether	ND	10	ug/L

SURROGATES	AMOUNT SPIKED	% RECOVERY	LOWER LIMIT	UPPER LIMIT
1,2-Dichloroethane-d4	50 ug/L	92	76	114
Toluene-d8	50 ug/L	100	88	110
4-Bromofluorobenzene	50 ug/L	104	86	115

ANALYZED BY: JC

DATE/TIME: 08/19/98 13:58:00

METHOD: 8260 Water, Volatile Organics

NOTES: * - Practical Quantitation Limit

ND - Not Detected

NA - Not Analyzed

COMMENTS:

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9808745-03

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

10/27/98

PROJECT: TWP Roswell STA 9
SITE:
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-13

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 08/15/98 09:45:00
DATE RECEIVED: 08/18/98

ANALYTICAL DATA

PARAMETER	RESULTS	PQL*	UNITS	
Acenaphthene	ND	5	ug/L	
Acenaphthylene	ND	5	ug/L	
Anthracene	ND	5	ug/L	
Benzo(a)Anthracene	ND	5	ug/L	
Benzo(b)Fluoranthene	ND	5	ug/L	
Benzo(k)Fluoranthene	ND	5	ug/L	
Benzo(a)Pyrene	ND	5	ug/L	
Benzo(g,h,i)Perylene	ND	5	ug/L	
Chrysene	ND	5	ug/L	
Dibenz(a,h)Anthracene	ND	5	ug/L	
Fluoranthene	ND	5	ug/L	
Fluorene	ND	5	ug/L	
Indeno(1,2,3-cd)Pyrene	ND	5	ug/L	
2-Methylnaphthalene	ND	5	ug/L	
Naphthalene	ND	5	ug/L	
Phenanthrene	ND	5	ug/L	
Pyrene	ND	5	ug/L	
1-Methylnaphthalene	ND	5	ug/L	

SURROGATES	AMOUNT SPIKED	% RECOVERY	LOWER LIMIT	UPPER LIMIT
Nitrobenzene-d5	50 ug/L	36	35	114
2-Fluorobiphenyl	50 ug/L	48	43	116
Terphenyl-d14	50 ug/L	86	33	141
Phenol-d5	75 ug/L	11	10	110
2-Fluorophenol	75 ug/L	23	21	110
2,4,6-Tribromophenol	75 ug/L	92	10	123

ANALYZED BY: YL DATE/TIME: 08/24/98 21:18:00
EXTRACTED BY: KL DATE/TIME: 08/19/98 10:00:00
METHOD: 8270C, Semivolatile Organics - Water
NOTES: * - Practical Quantitation Limit ND - Not Detected
 NA - Not Analyzed

COMMENTS:

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.

QUALITY CONTROL
DOCUMENTATION

3A
WATER VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: SPL

Contract:

Lab Code:

Case No.: 9808745 SAS No.:

SDG No.:

Matrix Spike - EPA Sample No.: MW-13

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC #	QC. LIMITS REC.
=====	=====	=====	=====	=====	=====
1,1-Dichloroethene	50	0	59	118	61-145
Trichloroethene	50	0	50	100	71-120
Benzene	50	30	82	104	76-127
Toluene	50	0	50	100	76-125
Chlorobenzene	50	0	48	96	75-130

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC #	% RPD #	QC LIMITS RPD	REC.
=====	=====	=====	=====	=====	=====	=====
1,1-Dichloroethene	50	59	118	0	14	61-145
Trichloroethene	50	50	100	0	14	71-120
Benzene	50	83	106	2	11	76-127
Toluene	50	51	102	2	13	76-125
Chlorobenzene	50	47	94	2	13	75-130

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 5 outside limits

Spike Recovery: 0 out of 10 outside limits

SPL Houston Labs

RECOVERY REPORT

Client Name: Client SDG: n980819
Sample Matrix: LIQUID Fraction: VOA
Lab Smp Id: LCS
Level: LOW Operator: JC
Data Type: MS DATA SampleType: LCS
SpikeList File: 8260_water.spk Quant Type: ISTD
Sublist File: 8260.sub
Method File: /var/chem/n.i/n980819.b/n8260w.m
Misc Info: N231W1//N231CW1

SPIKE COMPOUND	CONC ADDED ug/L	CONC RECOVERED ug/L	% RECOVERED	LIMITS
8 1,1-Dichloroethene	50	67	134.00	61-145
29 Trichloroethene	50	51	102.00	71-120
25 Benzene	50	55	110.00	76-127
37 Toluene	50	51	102.00	76-125
45 Chlorobenzene	50	49	98.00	75-130

SURROGATE COMPOUND	CONC ADDED ug/L	CONC RECOVERED ug/L	% RECOVERED	LIMITS
\$ 21 1,2-Dichloroethane	50	46	92.00	76-114
\$ 36 Toluene-d8	50	50	100.00	88-110
\$ 56 Bromofluorobenzene	50	52	104.00	86-115



Matrix: Aqueous
Sample ID: VLBLK
Batch: N980819122720

Reported on: 08/20/98 13:04
Analyzed on: 08/19/98 08:42
Analyst: JC

METHOD 8260/8240 N231B01

Compound	Result	Detection Limit	Units
Dichlorodifluoromethane	ND	10	ug/L
Chloromethane	ND	10	ug/L
Vinyl Chloride	ND	10	ug/L
Bromomethane	ND	10	ug/L
Chloroethane	ND	10	ug/L
Trichlorofluoromethane	ND	5	ug/L
Acetone	ND	100	ug/L
1,1-Dichloroethene	ND	5	ug/L
Methylene Chloride	ND	5	ug/L
Carbon Disulfide	ND	5	ug/L
trans-1,2-Dichloroethene	ND	5	ug/L
1,1-Dichloroethane	ND	5	ug/L
Vinyl Acetate	ND	10	ug/L
2-Butanone	ND	20	ug/L
cis-1,2-Dichloroethene	ND	5	ug/L
1,2-Dichloroethene (total)	ND	5	ug/L
2,2-Dichloropropane	ND	5	ug/L
Bromochloromethane	ND	5	ug/L
Chloroform	ND	5	ug/L
1,1,1-Trichloroethane	ND	5	ug/L
1,2-Dichloroethane	ND	5	ug/L
1,1-Dichloropropene	ND	5	ug/L
Benzene	ND	5	ug/L
Carbon Tetrachloride	ND	5	ug/L
1,2-Dichloropropane	ND	5	ug/L
Trichloroethene	ND	5	ug/L
Dibromomethane	ND	5	ug/L
Bromodichloromethane	ND	5	ug/L
2-Chloroethylvinylether	ND	10	ug/L
4-Methyl-2-Pentanone	ND	10	ug/L
cis-1,3-Dichloropropene	ND	5	ug/L
trans-1,3-Dichloropropene	ND	5	ug/L
Toluene	ND	5	ug/L
1,1,2-Trichloroethane	ND	5	ug/L

Notes

ND - Not detected.



Matrix: Aqueous
Sample ID: VLBLK
Batch: N980819122720

Reported on: 08/20/98 13:04
Analyzed on: 08/19/98 08:42
Analyst: JC

METHOD 8260/8240 N231B01

Compound	Result	Detection Limit	Units
1,3-Dichloropropane	ND	5	ug/L
2-Hexanone	ND	10	ug/L
Dibromochloromethane	ND	5	ug/L
1,2-Dibromoethane	ND	5	ug/L
Tetrachloroethene	ND	5	ug/L
Chlorobenzene	ND	5	ug/L
1,1,1,2-Tetrachloroethane	ND	5	ug/L
Ethylbenzene	ND	5	ug/L
Bromoform	ND	5	ug/L
Styrene	ND	5	ug/L
Xylene (Total)	ND	5	ug/L
1,1,2,2-Tetrachloroethane	ND	5	ug/L
1,2,3-Trichloropropane	ND	5	ug/L
Isopropylbenzene	ND	5	ug/L
Bromobenzene	ND	5	ug/L
N-Propylbenzene	ND	5	ug/L
2-Chlorotoluene	ND	5	ug/L
4-Chlorotoluene	ND	5	ug/L
1,3,5-Trimethylbenzene	ND	5	ug/L
tert-Butylbenzene	ND	5	ug/L
1,2,4-Trimethylbenzene	ND	5	ug/L
1,3-Dichlorobenzene	ND	5	ug/L
sec-Butylbenzene	ND	5	ug/L
1,4-Dichlorobenzene	ND	5	ug/L
p-Isopropyltoluene	ND	5	ug/L
1,2-Dichlorobenzene	ND	5	ug/L
n-Butylbenzene	ND	5	ug/L
1,2-Dibromo-3-Chloropropan	ND	5	ug/L
1,2,4-Trichlorobenzene	ND	5	ug/L
Naphthalene	ND	5	ug/L
Hexachlorobutadiene	ND	5	ug/L
1,2,3-Trichlorobenzene	ND	5	ug/L
Methyl t-Butyl Ether	ND	10	ug/L

Notes

ND - Not detected.



Matrix: Aqueous
Sample ID: VLBLK
Batch: N980819122720

Reported on: 08/20/98 13:04
Analyzed on: 08/19/98 08:42
Analyst: JC

METHOD 8260/8240 N231B01

Surrogate	Result	QC Criteria	Units
1,2-Dichloroethane-d4	88	76-114	% Recovery
Toluene-d8	100	88-110	% Recovery
Bromofluorobenzene	104	86-115	% Recovery

Samples in Batch 9808745-02 9808745-03

Notes

ND - Not detected.

WATER SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: SPL

Contract:

Lab Code: Case No: 980819

SAS No: SDG No:

Matrix Spike - EPA

Sample No: SBLK

Level (low/med):

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATIO (ug/L)	MS CONCENTRATION (ug/L)	MS % REC #	QC LIMITS REC
Phenol	75	0	15	20	12-110
2-Chlorophenol	75	0	48	64	27-123
1,4-Dichlorobenzene	50	0	27	54	36- 97
N-Nitroso-di-n-propylamine	50	0	32	64	41-116
1,2,4-Trichlorobenzene	50	0	29	58	39- 110
4-Chloro-3-methylphenol	75	0	56	75	23-110
Acenaphthene	50	0	41	82	46-125
4-Nitrophenol	75	0	19	25	25-150
2,4-Dinitrotoluene	50	0	45	90	50-150
Pentachlorophenol	75	0	61	81	9-125
Pyrene	50	0	52	104	26-127

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATIO (ug/L)	MSD % REC #	% RPD #	QC LIMITS	
					RPD	REC
Phenol	75	16	21	5	42	12-110
2-Chlorophenol	75	43	57	12	40	27-132
1,4-Dichlorobenzene	50	27	54	0	28	36- 97
N-Nitroso-di-n-propylamine	50	30	60	6	38	41-116
1,2,4-Trichlorobenzene	50	28	56	4	28	39-110
4-Chloro-3-methylphenol	75	51	68	10	42	23-110
Acenaphthene	50	42	84	2	31	46-125
4-Nitrophenol	75	20	27	8	50	25-150
2,4-Dinitrotoluene	50	46	92	2	50	50-150
Pentachlorophenol	75	64	85	5	50	9-125
Pyrene	50	54	108	4	31	26-127

Column to be used to flag recovery and RPD values with an asterisk

RPD: 0 out of 11 outside limits
Spike Recovery: 0 out of 22 outside limits



SPL Blank QC Report

HOUSTON LABORATORY

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 866-0900

1

Matrix: Aqueous
Sample ID: BLANK
Batch: E980819042258

Reported on: 08/31/98 17:13

Analyzed on: 08/24/98 17:32

Analyst: YL

METHOD 8270 H231B03

Compound	Result	Detection Limit	Units
Pyridine	ND	5	ug/L
Phenol	ND	5	ug/L
Aniline	ND	5	ug/L
bis(2-Chloroethyl) ether	ND	5	ug/L
2-Chlorophenol	ND	5	ug/L
1,3-Dichlorobenzene	ND	5	ug/L
1,4-Dichlorobenzene	ND	5	ug/L
Benzyl alcohol	ND	5	ug/L
1,2-Dichlorobenzene	ND	5	ug/L
2-Methylphenol	ND	5	ug/L
bis(2-chloroisopropyl) ether	ND	5	ug/L
4-Methylphenol	ND	5	ug/L
N-Nitroso-di-n-propylamine	ND	5	ug/L
Hexachloroethane	ND	5	ug/L
Nitrobenzene	ND	5	ug/L
Isophorone	ND	5	ug/L
2-Nitrophenol	ND	5	ug/L
2,4-Dimethylphenol	ND	5	ug/L
Benzoic acid	ND	25	ug/L
bis(2-Chloroethoxy) methane	ND	5	ug/L
2,4-Dichlorophenol	ND	5	ug/L
1,2,4-Trichlorobenzene	ND	5	ug/L
Naphthalene	ND	5	ug/L
4-Chloroaniline	ND	5	ug/L
Hexachlorobutadiene	ND	5	ug/L
4-Chloro-3-methylphenol	ND	5	ug/L
2-Methylnaphthalene	ND	5	ug/L
1-Methylnaphthalene	ND	5	ug/L
Hexachlorocyclopentadiene	ND	5	ug/L
2,4,6-Trichlorophenol	ND	5	ug/L
2,4,5-Trichlorophenol	ND	10	ug/L
2-Chloronaphthalene	ND	5	ug/L
2-Nitroaniline	ND	25	ug/L
Dimethylphthalate	ND	5	ug/L

Notes

ND - Not detected.



SPL Blank QC Report

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 658-0981

Matrix: Aqueous
Sample ID: BLANK
Batch: E980819042258

Reported on: 08/31/98 17:13
Analyzed on: 08/24/98 17:32
Analyst: YL

METHOD 8270 H231B03

Compound	Result	Detection Limit	Units
2,6-Dinitrotoluene	ND	5	ug/L
Acenaphthylene	ND	5	ug/L
3-Nitroaniline	ND	25	ug/L
Acenaphthene	ND	5	ug/L
2,4-Dinitrophenol	ND	25	ug/L
4-Nitrophenol	ND	25	ug/L
Dibenzofuran	ND	5	ug/L
2,4-Dinitrotoluene	ND	5	ug/L
Diethylphthalate	ND	5	ug/L
4-Chlorophenyl-phenylether	ND	5	ug/L
Fluorene	ND	5	ug/L
4-Nitroaniline	ND	25	ug/L
4,6-Dinitro-2-methylphenol	ND	25	ug/L
n-Nitrosodiphenylamine	ND	5	ug/L
1,2-Diphenylhydrazine	ND	5	ug/L
4-Bromophenyl-phenylether	ND	5	ug/L
Hexachlorobenzene	ND	5	ug/L
Pentachlorophenol	ND	25	ug/L
Phenanthrene	ND	5	ug/L
Anthracene	ND	5	ug/L
Carbazole	ND	5	ug/L
Di-n-butylphthalate	ND	5	ug/L
Fluoranthene	ND	5	ug/L
Pyrene	ND	5	ug/L
Butylbenzylphthalate	ND	5	ug/L
3,3'-Dichlorobenzidine	ND	10	ug/L
Benzo[a]anthracene	ND	5	ug/L
Chrysene	ND	5	ug/L
bis(2-Ethylhexyl)phthalate	ND	5	ug/L
Di-n-octylphthalate	ND	5	ug/L
Benzo[b]fluoranthene	ND	5	ug/L
Benzo[k]fluoranthene	ND	5	ug/L
Benzo[a]pyrene	ND	5	ug/L
Indeno[1,2,3-cd]pyrene	ND	5	ug/L

Notes

ND - Not detected.



SPL Blank QC Report

HOUSTON LABORATORY

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 668-0981

3

Matrix: Aqueous
Sample ID: BLANK
Batch: E980819042258

Reported on: 08/31/98 17:13
Analyzed on: 08/24/98 17:32
Analyst: YL

METHOD 8270 H231B03

C o m p o u n d	Result	Detection Limit	Units
Dibenz[a,h]anthracene	ND	5	ug/L
Benzo[g,h,i]perylene	ND	5	ug/L

S u r r o g a t e	Result	QC Criteria	Units
Nitrobenzene-d5	42	35-114	% Recovery
2-Fluorobiphenyl	66	43-116	% Recovery
Terphenyl-d14	88	33-141	% Recovery
Phenol-d5	19	10-110	% Recovery
2-Fluorophenol	28	21-110	% Recovery
2,4,6-Tribromophenol	123	10-123	% Recovery

Samples in Batch 9808745-02 9808745-03

Notes

ND - Not detected.

ICP Spectroscopy Method 6010 Quality Control Report

Analyst: JM



Matrix: DISSOLVED Units: mg/L

Date:082598 Time:0956 File Name: 082598M3

HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Laboratory Control Sample

Element	Mth. Blank	True Value	Result	% Recovery	Lower Limit	Upper Limit
Silver	ND	2.00	1.92	96	1.60	2.40
Aluminum						
Arsenic						
Barium	ND	2.00	1.84	92	1.60	2.40
Beryllium						
Calcium						
Cadmium	ND	2.00	2.01	101	1.60	2.40
Cobalt						
Chromium	ND	2.00	2.01	100	1.60	2.40
Copper	ND	2.00	1.95	98	1.60	2.40
Iron	ND	2.00	2.00	100	1.60	2.40
Potassium	ND	20.00	19.18	96	16.00	24.00
Magnesium	ND	20.00	19.71	99	16.00	24.00
Manganese	ND	2.00	1.98	99	1.60	2.40
Sodium	ND	20.00	18.68	93	16.00	24.00
Nickel						
Lead	ND	2.00	1.98	99	1.60	2.40
Antimony						
Selenium						
Thallium						
Vanadium						
Zinc	ND	2.00	2.01	101	1.60	2.40

Work Orders in Batch

Work Order Fractions

98-08-745 01E

98-08-424 01C, 02C

98-08-427 01C-03C

98-08-429 01C-03C

98-08-576 01D

98-08-367 01C

Matrix Spike - Spike Duplicate Results

Work Order Spiked: 9808745-01E

Element	Sample Result	Spike Added	Matrix Spike Result	Matrix Spike Recovery	Matrix Spike Duplicate Result	Matrix Spike Duplicate Recovery	QC Limits % Recovery	Spike RPD %	QC Limits %
Silver	ND	1.0	0.8977	89.8	0.9068	90.7	80 120	1.0	20.0
Aluminum									
Arsenic									
Barium	0.0066	1.0	0.9477	94.1	0.9577	95.1	80 120	1.1	20.0
Beryllium									
Calcium									
Cadmium	ND	1.0	1.108	110.8	1.129	112.9	80 120	1.9	20.0
Cobalt									
Chromium	ND	1.0	1.036	103.6	1.062	106.2	80 120	2.5	20.0
Copper	ND	1.0	1.003	100.3	1.02	102.0	80 120	1.7	20.0
Iron	ND	1.0	1.036	103.6	1.052	105.2	80 120	1.5	20.0
Potassium	5.085	10.0	14.09	90.1	14.31	92.3	80 120	2.4	20.0
Magnesium	205.8	10.0	211.1	53.0 *	213.4	76.0 *	80 120	35.7 **	20.0
Manganese	0.031	1.0	1.073	104.2	1.088	105.7	80 120	1.4	20.0
Sodium	261	10.0	244	0.0 *	246.9	0.0 *	80 120	0.0	20.0
Nickel									
Lead	ND	1.0	1.093	109.3	1.105	110.5	80 120	1.1	20.0
Antimony									
Selenium									
Thallium									
Vanadium									
Zinc	ND	1.0	1.112	111.2	1.128	112.8	80 120	1.4	20.0

* Spike Results Outside Method Limits

** Spike RPD Outside Method Limits

BENCH SPIKED.

Checked *[Signature]*

ICP Spectroscopy Method 6010 Quality Control Report

Analyst: JM



Matrix: DISSOLVED Units: mg/L

Date: 083198 Time: 1003 File Name: 083198M9

HOUSTON LABORATORY

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 660-0901

Laboratory Control Sample

Element	Mth. Blank	True Value	Result	% Recovery	Lower Limit	Upper Limit
Silver						
Aluminum						
Arsenic						
Barium						
Beryllium						
Calcium	ND	20.00	20.28	101	16.00	24.00
Cadmium						
Cobalt						
Chromium						
Copper						
Iron						
Potassium						
Magnesium						
Manganese						
Sodium						
Nickel						
Lead						
Antimony						
Selenium						
Thallium						
Vanadium						
Zinc						

Work Orders in Batch

Work Order Fractions

98-08-745 01E

Matrix Spike - Spike Duplicate Results

Work Order Spiked: 9808745-01E

Element	Sample Result	Spike Added	Matrix Spike Result	Matrix Spike Recovery	Matrix Spike Duplicate Result	Matrix Spike Duplicate Recovery	QC Limits % Recovery	Spike RPD %	QC Limits %
Silver									
Aluminum									
Arsenic									
Barium									
Beryllium									
Calcium	619.3	40.0	672.4	132.8 *	696.9	194.0 *	80 120	37.5	** 20.0
Cadmium									
Cobalt									
Chromium									
Copper									
Iron									
Potassium									
Magnesium									
Manganese									
Sodium									
Nickel									
Lead									
Antimony									
Selenium									
Thallium									
Vanadium									
Zinc									

Bench Spiked: Ca. (2x Dilution).

* Spike Results Outside Method Limits

** Spike RPD Outside Method Limits

Checked: *Jm 9/1/98*

ICP Spectroscopy Method 6010 Quality Control Report

Analyst: JM



Matrix: Water

Units: mg/L

Date:082598 Time:0956 File Name: 082598M2

HOUSTON LABORATORY

 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Laboratory Control Sample

Element	Mth. Blank	True Value	Result	% Recovery	Lower Limit	Upper Limit
Silver	ND	2.00	2.08	104	1.60	2.40
Aluminum						
Arsenic						
Barium	ND	2.00	1.88	94	1.60	2.40
Beryllium						
Calcium						
Cadmium	ND	2.00	1.99	100	1.60	2.40
Cobalt						
Chromium	ND	2.00	2.00	100	1.60	2.40
Copper	ND	2.00	1.96	98	1.60	2.40
Iron	ND	2.00	1.99	99	1.60	2.40
Potassium	ND	20.00	21.49	107	16.00	24.00
Magnesium	ND	20.00	19.98	100	16.00	24.00
Manganese	ND	2.00	1.96	98	1.60	2.40
Sodium	ND	20.00	20.90	105	16.00	24.00
Nickel						
Lead						
Antimony						
Selenium						
Thallium						
Vanadium						
Zinc	ND	2.00	2.00	100	1.60	2.40

Work Orders in Batch

Work Order	Fractions
98-08-731	01E-03E
98-08-745	02E, 03E
98-08-641	08C

Matrix Spike - Spike Duplicate Results

Work Order Spiked: 9808731-01E

Element	Sample Result	Spike Added	Matrix Spike Result	Matrix Spike Recovery	Matrix Spike Duplicate Result	Matrix Spike Duplicate Recovery	QC Limits % Recovery	Spike RPD %	QC Limits %
Silver	ND	1.0	1.042	104.2	0.9436	94.4	80 120	9.9	20.0
Aluminum									
Arsenic									
Barium	0.1448	1.0	0.9803	83.6	0.9882	84.3	80 120	0.9	20.0
Beryllium									
Calcium									
Cadmium	ND	1.0	1.018	101.8	0.9072	90.7	80 120	11.5	20.0
Cobalt									
Chromium	ND	1.0	0.9566	95.7	0.8647	86.5	80 120	10.1	20.0
Copper	ND	1.0	0.9708	97.1	0.8794	87.9	80 120	9.9	20.0
Iron	0.6587	1.0	1.641	98.2	1.485	82.6	80 120	17.3	20.0
Potassium	2.643	10.0	14.18	115.4	14.66	120.2	* 80 120	4.1	20.0
Magnesium	143.9	10.0	149.8	59.0	* 151.2	73.0	* 80 120	21.2	** 20.0
Manganese	1.34	1.0	2.314	97.4	2.345	100.5	80 120	3.1	20.0
Sodium	196.1	10.0	195.1	0.0	* 175.8	0.0	* 80 120	0.0	20.0
Nickel									
Lead									
Antimony									
Selenium									
Thallium									
Vanadium									
Zinc	ND	1.0	1.016	101.6	0.9162	91.6	80 120	10.3	20.0

Elements Post Spiked: Ba, K, Mg, Mn, Na, Zn

* Spike Results Outside Method Limits

** Spike RPD Outside Method Limits

Checked: 8/26 ACA

ICP Spectroscopy Method 6010 Quality Control Report

Analyst: EG



Matrix: Water

Units: mg/L

HOUSTON LABORATORY

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 660-0901

Date:082698 Time:09:56 File Name: T082598B

Laboratory Control Sample

Element	Mth. Blank	True Value	Result	% Recovery	Lower Limit	Upper Limit
Silver						
Aluminum						
Arsenic	ND	4.00	3.96	99	3.20	4.80
Barium						
Beryllium						
Calcium						
Cadmium						
Cobalt						
Chromium						
Copper						
Iron						
Potassium						
Magnesium						
Manganese						
Sodium						
Nickel						
Lead	ND	2.00	1.96	98	1.60	2.40
Antimony						
Selenium	ND	4.00	3.88	97	3.20	4.80
Thallium						
Vanadium						
Zinc						

Work Orders in Batch

Work Order	Fractions
98-08-731	01E-03E
98-08-745	02E 03E
98-08-641	08C

Matrix Spike - Spike Duplicate Results

Work Order Spiked: 9808731-01E

Element	Sample Result	Spike Added	Matrix Spike Result	Matrix Spike Recovery	Matrix Spike Duplicate Result	Matrix Spike Duplicate Recovery	QC Limits % Recovery	Spike RPD %	QC Limits %
Silver									
Aluminum									
Arsenic	0.0057	2.0	2.087	104.1	1.927	96.1	80 120	8.0	20.0
Barium									
Beryllium									
Calcium									
Cadmium									
Cobalt									
Chromium									
Copper									
Iron									
Potassium									
Magnesium									
Manganese									
Sodium									
Nickel									
Lead	ND	1.0	0.9573	95.7	0.8854	88.5	80 120	7.8	20.0
Antimony									
Selenium	ND	2.0	2.028	101.4	1.865	93.3	80 120	8.4	20.0
Thallium									
Vanadium									
Zinc									

Checked: 2 8/26/99

ICP Spectroscopy Method 6010 Quality Control Report

Analyst: JM



Matrix: Water

Units: mg/L

Date: 083198 Time: 1003 File Name: 083198M8

HOUSTON LABORATORY

 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Laboratory Control Sample

Element	Mth. Blank	True Value	Result	% Recovery	Lower Limit	Upper Limit
Silver						
Aluminum						
Arsenic						
Barium						
Beryllium						
Calcium	ND	20.00	20.53	103	16.00	24.00
Cadmium						
Cobalt						
Chromium						
Copper						
Iron						
Potassium						
Magnesium						
Manganese						
Sodium						
Nickel						
Lead						
Antimony						
Selenium						
Thallium						
Vanadium						
Zinc						

Work Orders in Batch

Work Order Fractions

98-08-731 01E-03E

98-08-745 02E, 03E

Matrix Spike - Spike Duplicate Results

Work Order Spiked: 9808731-02E

Element	Sample Result	Spike Added	Matrix Spike Result	Matrix Spike Recovery	Matrix Spike Duplicate Result	Matrix Spike Duplicate Recovery	QC Limits % Recovery	Spike RPD %	QC Limits %
Silver									
Aluminum									
Arsenic									
Barium									
Beryllium									
Calcium	616.1	40.0	657.1	102.5	657.8	104.2	80 120	1.7	20.0
Cadmium									
Cobalt									
Chromium									
Copper									
Iron									
Potassium									
Magnesium									
Manganese									
Sodium									
Nickel									
Lead									
Antimony									
Selenium									
Thallium									
Vanadium									
Zinc									

Elements Post Spiked: Ca. (2X Dilution)

Checked: *JM 9/1/98*

ICP Spectroscopy Method 6010 Quality Control Report

Analyst: EG



Matrix: Water

Units: mg/L

HOUSTON LABORATORY

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 660-0901

Date:082598 Time:09:56 File Name: T082598B

Laboratory Control Sample

Element	Mth. Blank	True Value	Result	% Recovery	Lower Limit	Upper Limit
Silver						
Aluminum						
Arsenic	ND	4.00	3.96	99	3.20	4.80
Barium						
Beryllium						
Calcium						
Cadmium						
Cobalt						
Chromium						
Copper						
Iron						
Potassium						
Magnesium						
Manganese						
Sodium						
Nickel						
Lead	ND	2.00	1.96	98	1.60	2.40
Antimony						
Selenium	ND	4.00	3.88	97	3.20	4.80
Thallium						
Vanadium						
Zinc						

Work Orders in Batch

Work Order	Fractions
98-08-731	01E-03E
98-08-745	02E 03E
98-08-641	08C

Matrix Spike - Spike Duplicate Results

Work Order Spiked: 9808731-01E

Element	Sample Result	Spike Added	Matrix Spike Result	Matrix Spike Recovery	Matrix Spike Duplicate Result	Matrix Spike Duplicate Recovery	QC Limits % Recovery		Spike RPD %	QC Limits %	
Silver											
Aluminum											
Arsenic	0.0057	2.0	2.087	104.1	1.927	96.1	80	120	8.0	20.0	
Barium											
Beryllium											
Calcium											
Cadmium											
Cobalt											
Chromium											
Copper											
Iron											
Potassium											
Magnesium											
Manganese											
Sodium											
Nickel											
Lead	ND	1.0	0.9573	95.7	0.8854	88.5	80	120	7.8	20.0	
Antimony											
Selenium	ND	2.0	2.028	101.4	1.865	93.3	80	120	8.4	20.0	
Thallium											
Vanadium											
Zinc											

Checked: 2 9/2/98



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 08/19/98

Analyzed on: 08/19/98

Analyst: PB

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Arsenic, Dissolved
Method 7060A ***

SPL Sample ID Number	Blank Value ug/L	LCS Concentration ug/L	Measured Concentration ug/L	% Recovery	QC Limits Recovery
LCS	ND	40.0	41.1	103	80 - 120

-9808868

Samples in batch:

9808478-04E 9808576-01D 9808712-01D 9808712-02D
9808745-01E

COMMENTS:

LCS = SPL ID # 98-1034-36-8.
BENCH SPIKED.



** SPL QUALITY CONTROL REPORT **

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Matrix: Aqueous

Reported on: 08/19/98

Analyzed on: 08/19/98

Analyst: PB

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Arsenic, Dissolved
Method 7060A ***

SPL Sample	Method	Sample	Spike	Matrix Spike		Matrix Spike Duplicate		RPD	QC LIMITS (Advisory)		
ID Number	Blank ug/L	Result ug/L	Added ug/L	Result ug/L	Recovery %	Result ug/L	Recovery %	(%)	RPD Max	% REC	
9808745-01E	ND	ND	40.0	42.3	106	43.9	110	3.7	20	75	-125

-9808868

Samples in batch:

9808478-04E 9808576-01D 9808712-01D 9808712-02D
9808745-01E

COMMENTS:

LCS = SPL ID # 98-1034-36-8.
BENCH SPIKED.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 08/28/98

Analyzed on: 08/28/98

Analyst: AG

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Mercury, Dissolved
Method 7470 A***

SPL Sample ID Number	Blank Value ug/L	LCS Concentration ug/L	Measured Concentration ug/L	% Recovery	QC Limits Recovery
LCS	ND	2.00	2.07	104	80 - 120

-9808C50

Samples in batch:

9808745-01E

COMMENTS:

LCS = SPL ID# 94-452-45-21



** SPL QUALITY CONTROL REPORT **

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Matrix: Aqueous

Reported on: 08/28/98

Analyzed on: 08/28/98

Analyst: AG

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Mercury, Dissolved
Method 7470 A***

SPL Sample	Method	Sample	Spike	Matrix Spike		Matrix Spike Duplicate		RPD	QC LIMITS (Advisory)		
ID Number	Blank ug/L	Result ug/L	Added ug/L	Result ug/L	Recovery %	Result ug/L	Recovery %	(%)	RPD Max	% REC	
9808745-01E	ND	ND	2.00	2.01	100	1.98	99.0	1.0	20	75	-125

-9808C50

Samples in batch:

9808745-01E

COMMENTS:

LCS = SPL ID# 94-452-45-21



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 08/28/98

Analyzed on: 08/28/98

Analyst: AG

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Mercury, Total
Method 7470 A***

SPL Sample ID Number	Blank Value ug/L	LCS Concentration ug/L	Measured Concentration ug/L	% Recovery	QC Limits Recovery
LCS	ND	2.00	2.00	100	80 - 120

-9808C58

Samples in batch:

9808731-01E 9808731-02E 9808731-03E 9808745-02E
9808745-03E 9808890-01F 9808890-02F 9808890-03F
9808890-04F 9808890-05F 9808890-06F 9808890-07F
9808893-08F 9808925-02E 9808925-03E 9808953-01C
9808953-02C

COMMENTS:

LCS = SPL ID# 94-452-45-21



** SPL QUALITY CONTROL REPORT **

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Matrix: Aqueous

Reported on: 08/28/98

Analyzed on: 08/28/98

Analyst: AG

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Mercury, Total
Method 7470 A***

SPL Sample	Method	Sample	Spike	Matrix Spike		Matrix Spike Duplicate		RPD	QC LIMITS (Advisory)		
ID Number	Blank	Result	Added	Result	Recovery	Result	Recovery	(%)	RPD	% REC	
	ug/L	ug/L	ug/L	ug/L	%	ug/L	%		Max		
9808890-01F	ND	ND	2.00	1.99	99.5	1.90	95.0	4.6	20	75	-125

-9808C58

Samples in batch:

9808731-01E 9808731-02E 9808731-03E 9808745-02E
9808745-03E 9808890-01F 9808890-02F 9808890-03F
9808890-04F 9808890-05F 9808890-06F 9808890-07F
9808893-08F 9808925-02E 9808925-03E 9808953-01C
9808953-02C

COMMENTS:

LCS = SPL ID# 94-452-45-21



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 08/19/98

Analyzed on: 08/19/98

Analyst: PB

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Selenium, Dissolved
Method 7740 ***

SPL Sample ID Number	Blank Value ug/L	LCS Concentration ug/L	Measured Concentration ug/L	% Recovery	QC Limits Recovery
LCS	ND	40.0	40.8	102	80 - 120

-9808858

Samples in batch:

9808478-04E 9808576-01D 9808712-01D 9808712-02D
9808745-01E

COMMENTS:

LCS = SPL ID # 98-1034-36-8.

BENCH SPIKED.

*VALUES OUTSIDE QC RANGE DUE TO MATRIX INTERFERENCE.



** SPL QUALITY CONTROL REPORT **

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Matrix: Aqueous

Reported on: 08/19/98
Analyzed on: 08/19/98
Analyst: PB

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Selenium, Dissolved
Method 7740 ***

SPL Sample	Method	Sample	Spike	Matrix Spike		Matrix Spike Duplicate		RPD	QC LIMITS (Advisory)		
ID Number	Blank ug/L	Result ug/L	Added ug/L	Result ug/L	Recovery %	Result ug/L	Recovery %	(%)	RPD Max	% REC	
9808745-01E	ND	ND	40.0	9.7	24.2 *	9.4	23.5 *	2.9	20	75	-125

-9808858

Samples in batch:

9808478-04E 9808576-01D 9808712-01D 9808712-02D
9808745-01E

COMMENTS:

LCS = SPL ID # 98-1034-36-8.

BENCH SPIKED.

*VALUES OUTSIDE QC RANGE DUE TO MATRIX INTERFERENCE.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 08/21/98

Analyzed on: 08/21/98

Analyst: TK

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Alkalinity, as CaCO_3
Method 310.1 *

SPL Sample ID Number	Blank Value mg/L	LCS Concentration mg/L	Measured Concentration mg/L	% Recovery	QC Limits Recovery
LCS	ND	235	225.2	95.8	95 - 113

-9808973

Samples in batch:

9808745-02B 9808745-03B 9808779-04H 9808779-05H
9808780-14H

COMMENTS:

LCS#94453209-13



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 08/21/98

Analyzed on: 08/21/98

Analyst: TK

This sample was randomly selected for use in the SPL quality control program. The results are as follows:

Alkalinity, as CaCO₃
Method 310.1 *

-- DUPLICATE ANALYSIS --

SPL Sample ID	Original Sample Concentration mg/L	Duplicate Sample mg/L	RPD	RPD Max.
9808779-04H	364	364	0	18

-9808972

Samples in batch:

9808745-02B 9808745-03B 9808779-04H 9808779-05H
9808780-14H

COMMENTS:



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 08/31/98

Analyzed on: 08/28/98

Analyst: AB

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Chloride
Method 325.3 *

SPL Sample ID Number	Blank Value mg/L	LCS Concentration mg/L	Measured Concentration mg/L	% Recovery	QC Limits Recovery
LCS	ND	186	177	95.2	94 - 106

-9808C97

Samples in batch:

9808516-01F	9808722-01E	9808725-01E	9808731-01B
9808731-02B	9808731-03B	9808745-02B	9808745-03B
9808790-01E	9808812-01F	9808890-03H	9808890-06H
9808893-08H			

COMMENTS:

SPL=LCS#94453209-12



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 08/31/98

Analyzed on: 08/28/98

Analyst: AB

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Chloride
Method 325.3 *

SPL Sample	Method	Sample	Spike	Matrix Spike		Matrix Spike Duplicate		RPD	QC LIMITS (Advisory)	
ID Number	Blank mg/L	Result mg/L	Added mg/L	Result mg/L	Recovery %	Result mg/L	Recovery %	(%)	RPD Max	% REC
9808745-02B	ND	92	100	199	107	197	105	1.9	5	92 -109

-9808C95

Samples in batch:

9808516-01F 9808722-01E 9808725-01E 9808731-01B
9808731-02B 9808731-03B 9808745-02B 9808745-03B

COMMENTS:



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 08/27/98

Analyzed on: 08/27/98

Analyst: TW

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Sulfate
Method 375.4 *

SPL Sample ID Number	Blank Value mg/L	LCS Concentration mg/L	Measured Concentration mg/L	% Recovery	QC Limits Recovery
LCS	ND	10.04	9.57	95.3	82 - 111

-9808C22

Samples in batch:

9808731-02E 9808731-03B 9808745-02B 9808745-03B
9808790-01E 9808890-03H 9808890-06H 9808893-08H

COMMENTS:

LCS#95535209-12



** SPL QUALITY CONTROL REPORT **

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Matrix: Aqueous

Reported on: 08/27/98

Analyzed on: 08/27/98

Analyst: TW

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Sulfate
Method 375.4 *

SPL Sample	Method	Sample	Spike	Matrix Spike		Matrix Spike Duplicate		RPD	QC LIMITS (Advisory)		
ID Number	Blank	Result	Added	Result	Recovery	Result	Recovery	(%)	RPD	% REC	
	mg/L	mg/L	mg/L	mg/L	%	mg/L	%		Max		
9808890-06H	ND	12.08	10.00	22.74	107	23.73	116	8.1	9.5	84	-120

-9808C19

Samples in batch:

9808731-02B 9808731-03B 9808745-02B 9808745-03B
9808790-01E 9808890-03H 9808890-06H 9808893-08H

COMMENTS:



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 08/20/98

Analyzed on: 08/19/98

Analyst: DS

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Total Dissolved Solids
Method 160.1 *

SPL Sample ID Number	Blank Value mg/L	LCS Concentration mg/L	Measured Concentration mg/L	% Recovery	QC Limits Recovery
LCS	ND	455.9	456	100	93 - 107

-9808910

Samples in batch:

9808555-01D	9808555-02D	9808555-03D	9808574-01B
9808574-02B	9808574-03B	9808623-01E	9808623-02E
9808623-03E	9808644-01B	9808644-02B	9808644-03B
9808652-01E	9808652-02B	9808652-03B	9808656-01D
9808745-02E	9808745-03B		

COMMENTS:

LCS=SPL ID#95535216-23



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 08/20/98

Analyzed on: 08/19/98

Analyst: DS

This sample was randomly selected for use in the SPL quality control program. The results are as follows:

Total Dissolved Solids
Method 160.1 *

-- DUPLICATE ANALYSIS --

SPL Sample ID	Original Sample Concentration mg/L	Duplicate Sample mg/L	RPD	RPD Max.
9808652-01B	4160	4070	2.2	5

-9808909

Samples in batch:

9808644-01B	9808644-02B	9808644-03B	9808652-01B
9808652-02B	9808652-03B	9808656-01D	9808745-02B
9808745-03B			

COMMENTS:



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 09/01/98

Analyzed on: 08/30/98

Analyst: AB

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Nitrate-Nitrite, as N
Method 353.3 *

SPL Sample ID Number	Blank Value mg/L	LCS Concentration mg/L	Measured Concentration mg/L	% Recovery	QC Limits Recovery
LCS	ND	2.77	2.80	101	92 - 111

-9809028

Samples in batch:

9808731-01C 9808731-02C 9808731-03C 9808745-02C
9808745-03C

COMMENTS:

SPL=LCS#955196-25



** SPL QUALITY CONTROL REPORT **

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Matrix: Aqueous

Reported on: 09/01/98
Analyzed on: 08/30/98
Analyst: AB

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Nitrate-Nitrite, as N
Method 353.3 *

SPL Sample	Method	Sample	Spike	Matrix Spike		Matrix Spike Duplicate		RPD	QC LIMITS (Advisory)		
ID Number	Blank	Result	Added	Result	Recovery	Result	Recovery	(%)	RPD	% REC	
	mg/L	mg/L	mg/L	mg/L	%	mg/L	%		Max		
9808731-01C	ND	ND	5.0	4.3	86.0	4.2	84.0	2.4	12	87	-120

-9809024

Samples in batch:

9808731-01C 9808731-02C 9808731-03C 9808745-02C
9808745-03C

COMMENTS:

MS/MSD RECOVERY IS LOW DUE TO MATRIX INTERFERENCE.

CHAIN OF CUSTODY
AND
SAMPLE RECEIPT CHECKLIST



SPL, Inc.

Analysis Request & Chain of Custody Record

SPL Workorder No:

9808745

47525

page 1 of 1

Client Name: CYPRESS ENGINEERING
Address/Phone: 10235 WEST LITTLE YORK SUITE 252
HOUSTON TX 77045 (713) 856-7880
Client Contact: SANDY SLAMP (413) 646-7252
Project Name: TWP RESWELL SDA 9
Project Number:
Project Location:
Invoice To: GEORGE ROBINSON

matrix	bottle	size	pres.	Number of Containers	Requested Analysis																	
					W=water SL=sludge O=other:	S=soil	P=plastic G=glass	A=amber glass V=vial	1=1 liter 8=8oz	4=4oz 16=16oz	2=HNO3 3=H2SO4 O=other:	VOC'S 8200 INCLUDE 1,2-DICHLOROETHANE (CIS- & TRANS-) & DICHLOROBENZENE (O-M, P-) TOS, CHLORIDE, SULFIDE, TOTAL ALKYLITY NITRATE & NITRATE AS NITROGEN 353.12 8200 PAH'S INCLUDE MONOMETHYLBIPHENYL ISOMERS 1-4 2- TOTAL METALS (7470 & 6010) Ba, Cd, Cr, Pb, Hg, Ag, Cu, Fe, Mn, Zn, Co, K, Ni, Mo, As by GRANVILLE FARMER 7010 SK 1L 7740	Filtered & RUN	DISSOLVED METALS	(FOR SOME METALS AS ARISE)							
W	P	1	0	1																		
W	G	40/1	1/6	3/1	X																	X
W	G	1	3	1																		
W	P	1	2/6	2																		
W	G	40/1	1/6	3/1	X																	
W	G	1	3	1																		
W	P	1	2/6	2																		

Client/Consultant Remarks:

*FILTER & RUN DISSOLVED METALS ON MW-9

Laboratory remarks:

Intact? ☒ Y ☐ N

Temp: 4C

Requested TAT

24hr ☐ 72hr ☐
48hr ☐ Standard ☒
Other ☐

Special Reporting Requirements

Standard QC ☒

Fax Results

Level 3 QC ☒Raw Data ☐Level 4 QC ☐

Special Detection Limits (specify):

PM review (initial):

EB 8/19

1. Relinquished by Sampler:

3. Relinquished by:

5. Relinquished by:

date

date

date

time

time

time

2. Received by:

4. Received by:

6. Received by Laboratory:

☐ 8880 Interchange Drive, Houston, TX 77054 (713) 660-0901☐ 459-Hughes Drive, Traverse City, MI 49684 (616) 947-5777☐ 500 Ambassador Caffery Parkway, Scott, LA 70583 (318) 237-4775☐ 1501 E. Orangethorpe Avenue, Fullerton, CA 92631 (714) 447-6868

SPL Houston Environmental Laboratory

Sample Login Checklist

Date: 8/18/98	Time: 1000
---------------	------------

SPL Sample ID: 9808745

		Yes	No
1	Chain-of-Custody (COC) form is present.	✓	
2	COC is properly completed.	✓	
3	If no, Non-Conformance Worksheet has been completed.		
4	Custody seals are present on the shipping container.	✓	
5	If yes, custody seals are intact.	✓	
6	All samples are tagged or labeled.	✓	
7	If no, Non-Conformance Worksheet has been completed.		
8	Sample containers arrived intact	✓	
9	Temperature of samples upon arrival:	4 C	
10	Method of sample delivery to SPL:	SPL Delivery	
		Client Delivery	
		FedEx Delivery (airbill #)	806908026930
		Other:	
11	Method of sample disposal:	SPL Disposal	
		HOLD	
		Return to Client	

Name: Ruben Esteban	Date: 8/18/98
---------------------	---------------



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

August 31, 1998

Mr. George Robinson
CYPRESS ENGINEERING, INC.
10235 W. Little York
Houston, TX 77040

The following report contains analytical results for the sample(s) received at Southern Petroleum Laboratories (SPL) on August 15, 1998. The sample(s) was assigned to Certificate of Analysis No.(s) 9808644 and analyzed for all parameters as listed on the chain of custody.

Any data flag or quality control exception associated with this report will be footnoted in the analytical results page(s) or the quality control summary page(s).

If you have any questions or comments pertaining to this data report, please do not hesitate to contact me. Please reference the above Certificate of Analysis No. during any inquiries.

Again, SPL is pleased to be of service to you. We anticipate working with you in fulfilling all your current and future analytical needs.

Southern Petroleum Laboratories

A handwritten signature in cursive script, reading "Electa Brown", is written over a horizontal line.

Electa Brown
Project Manager



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Southern Petroleum Laboratories, Inc.

Certificate of Analysis Number: 98-08-644

Approved for Release by:

A handwritten signature in cursive script, reading "Electa Brown", is written over a horizontal line.

Electa Brown, Project Manager

9-1-98

Date

Greg Grandits
Laboratory Director

Cynthia Schreiner
Quality Assurance Officer

The attached analytical data package may not be reproduced except in full without the express written approval of this laboratory.
The results relate only to the samples tested.
Results reported on a Wet Weight Basis unless otherwise noted.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9808644-01

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 10/27/98

PROJECT: TWP Roswell STA 9
SITE:
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-17

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 08/13/98 17:55:00
DATE RECEIVED: 08/15/98

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
Alkalinity, as CaCO3 Method 310.1 * Analyzed by: TK Date: 08/20/98 14:00:00	124	1	mg/L	
Chloride Method 325.3 * Analyzed by: AB Date: 08/27/98 10:00:00	443	10	mg/L	
Sulfate Method 375.4 * Analyzed by: TW Date: 08/27/98 13:00:00	2100	100	mg/L	
Total Dissolved Solids Method 160.1 * Analyzed by: DS Date: 08/19/98 17:00:00	3900	100	mg/L	
Nitrate-Nitrite, as N Method 353.3 * Analyzed by: AAB Date: 08/18/98 10:00:00	0.6	0.1	mg/L	
Liquid-liquid extraction SEMIVOLATILES Method 3520C *** Analyzed by: KL Date: 08/18/98 10:00:00	08/18/98			

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9808644-01

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 10/27/98

PROJECT: TWP Roswell STA 9
SITE:
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-17

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 08/13/98 17:55:00
DATE RECEIVED: 08/15/98

ANALYTICAL DATA			
PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Silver, Total Method 6010B *** Analyzed by: JM Date: 08/27/98 08:59:00	ND	0.01	mg/L
Arsenic, Total Method 6010B *** Analyzed by: EG Date: 08/27/98 10:13:00	ND	0.005	mg/L
Barium, Total Method 6010B *** Analyzed by: JM Date: 08/28/98 17:36:00	ND	0.005	mg/L
Calcium, Total Method 6010B *** Analyzed by: JM Date: 08/28/98 17:36:00	578	0.2	mg/L
Cadmium, Total Method 6010B *** Analyzed by: JM Date: 08/27/98 08:59:00	ND	0.005	mg/L
Chromium, Total Method 6010B *** Analyzed by: JM Date: 08/27/98 08:59:00	ND	0.01	mg/L

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9808644-01

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 10/27/98

PROJECT: TWP Roswell STA 9
SITE:
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-17

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 08/13/98 17:55:00
DATE RECEIVED: 08/15/98

ANALYTICAL DATA			
PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Copper, Total Method 6010B *** Analyzed by: JM Date: 08/27/98 08:59:00	ND	0.01	mg/L
Iron, Total Method 6010B *** Analyzed by: JM Date: 08/27/98 08:59:00	ND	0.02	mg/L
Mercury, Total Method 7470 A*** Analyzed by: AG Date: 08/26/98 15:13:00	ND	0.0002	mg/L
Potassium, Total Method 6010B *** Analyzed by: JM Date: 08/27/98 08:59:00	2	2	mg/L
Magnesium, Total Method 6010B *** Analyzed by: JM Date: 08/27/98 08:59:00	161	0.1	mg/L
Manganese, Total Method 6010B *** Analyzed by: JM Date: 08/27/98 08:59:00	0.044	0.005	mg/L

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9808644-01

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 10/27/98

PROJECT: TWP Roswell STA 9
SITE:
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-17

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 08/13/98 17:55:00
DATE RECEIVED: 08/15/98

ANALYTICAL DATA			
PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Sodium, Total Method 6010B *** Analyzed by: JM Date: 08/27/98 08:59:00	257	0.5	mg/L
Acid Digestion-Aqueous, ICP Method 3010A *** Analyzed by: MR Date: 08/18/98 08:45:00	08/18/98		
Lead, Total Method 6010B *** Analyzed by: EG Date: 08/27/98 10:13:00	ND	0.005	mg/L
Selenium, Total Method 6010B *** Analyzed by: EG Date: 08/27/98 10:13:00	ND	0.005	mg/L
Zinc, Total Method 6010B *** Analyzed by: JM Date: 08/28/98 17:36:00	0.09	0.02	mg/L

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9808644-01

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

10/27/98

PROJECT: TWP Roswell STA 9
SITE:
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-17

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 08/13/98 17:55:00
DATE RECEIVED: 08/15/98

ANALYTICAL DATA			
PARAMETER	RESULTS	PQL*	UNITS
Benzene	ND	5	ug/L
Bromobenzene	ND	5	ug/L
Bromochloromethane	ND	5	ug/L
Bromodichloromethane	ND	5	ug/L
Bromoform	ND	5	ug/L
Bromomethane	ND	10	ug/L
n-Butylbenzene	ND	5	ug/L
sec-Butylbenzene	ND	5	ug/L
tert-Butylbenzene	ND	5	ug/L
Carbon tetrachloride	ND	5	ug/L
Chlorobenzene	ND	5	ug/L
Chlorodibromomethane	ND	5	ug/L
Chloroethane	ND	10	ug/L
Chloroform	ND	5	ug/L
Chloromethane	ND	10	ug/L
2-Chlorotoluene	ND	5	ug/L
4-Chlorotoluene	ND	5	ug/L
1,2-Dibromo-3-chloropropane	ND	5	ug/L
1,2-Dibromoethane	ND	5	ug/L
Dibromomethane	ND	5	ug/L
1,2-Dichlorobenzene	ND	5	ug/L
1,3-Dichlorobenzene	ND	5	ug/L
1,4-Dichlorobenzene	ND	5	ug/L
Dichlorodifluoromethane	ND	10	ug/L
1,1-Dichloroethane	ND	5	ug/L
1,2-Dichloroethane	ND	5	ug/L
1,1-Dichloroethene	ND	5	ug/L
cis-1,2-Dichloroethene	ND	5	ug/L
trans-1,2-Dichloroethene	ND	5	ug/L
1,2-Dichloropropane	ND	5	ug/L
1,3-Dichloropropane	ND	5	ug/L
2,2-Dichloropropane	ND	5	ug/L
1,1-Dichloropropene	ND	5	ug/L
Ethylbenzene	ND	5	ug/L
Hexachlorobutadiene	ND	5	ug/L
Isopropylbenzene	ND	5	ug/L
p-Isopropyltoluene	ND	5	ug/L
Methylene chloride	ND	5	ug/L

METHOD: 8260 Water, Volatile Organics
(continued on next page)



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9808644-01

Cypress Engineering, Inc.

SAMPLE ID: MW-17

ANALYTICAL DATA (continued)				
PARAMETER	RESULTS	PQL*	UNITS	
Naphthalene	ND	5	ug/L	
n-Propylbenzene	ND	5	ug/L	
Styrene	ND	5	ug/L	
1,1,1,2-Tetrachloroethane	ND	5	ug/L	
1,1,2,2-Tetrachloroethane	ND	5	ug/L	
Tetrachloroethene	ND	5	ug/L	
Toluene	ND	5	ug/L	
1,2,3-Trichlorobenzene	ND	5	ug/L	
1,2,4-Trichlorobenzene	ND	5	ug/L	
1,1,1-Trichloroethane	ND	5	ug/L	
1,1,2-Trichloroethane	ND	5	ug/L	
Trichloroethene	ND	5	ug/L	
Trichlorofluoromethane	ND	5	ug/L	
1,2,3-Trichloropropane	ND	5	ug/L	
1,2,4-Trimethylbenzene	ND	5	ug/L	
1,3,5-Trimethylbenzene	ND	5	ug/L	
Vinyl chloride	ND	10	ug/L	
Xylenes (total)	ND	5	ug/L	
Acetone	ND	100	ug/L	
Carbon Disulfide	ND	5	ug/L	
Vinyl Acetate	ND	10	ug/L	
2-Butanone	ND	20	ug/L	
1,2-Dichloroethene (total)	ND	5	ug/L	
2-Chloroethylvinylether	ND	10	ug/L	
4-Methyl-2-Pentanone	ND	10	ug/L	
cis-1,3-Dichloropropene	ND	5	ug/L	
trans-1,3-Dichloropropene	ND	5	ug/L	
2-Hexanone	ND	10	ug/L	
Methyl t-Butyl Ether	ND	10	ug/L	

SURROGATES	AMOUNT SPIKED	% RECOVERY	LOWER LIMIT	UPPER LIMIT
1,2-Dichloroethane-d4	50 ug/L	94	76	114
Toluene-d8	50 ug/L	100	88	110
4-Bromofluorobenzene	50 ug/L	102	86	115

ANALYZED BY: JC

DATE/TIME: 08/17/98 21:38:00

METHOD: 8260 Water, Volatile Organics

NOTES: * - Practical Quantitation Limit
NA - Not Analyzed

ND - Not Detected

COMMENTS:

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9808644-01

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

10/27/98

PROJECT: TWP Roswell STA 9
SITE:
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-17

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 08/13/98 17:55:00
DATE RECEIVED: 08/15/98

ANALYTICAL DATA

PARAMETER	RESULTS	PQL*	UNITS
Acenaphthene	ND	5	ug/L
Acenaphthylene	ND	5	ug/L
Anthracene	ND	5	ug/L
Benzo(a)Anthracene	ND	5	ug/L
Benzo(b)Fluoranthene	ND	5	ug/L
Benzo(k)Fluoranthene	ND	5	ug/L
Benzo(a)Pyrene	ND	5	ug/L
Benzo(g,h,i)Perylene	ND	5	ug/L
Chrysene	ND	5	ug/L
Dibenz(a,h)Anthracene	ND	5	ug/L
Fluoranthene	ND	5	ug/L
Fluorene	ND	5	ug/L
Indeno(1,2,3-cd)Pyrene	ND	5	ug/L
2-Methylnaphthalene	ND	5	ug/L
Naphthalene	ND	5	ug/L
Phenanthrene	ND	5	ug/L
Pyrene	ND	5	ug/L
1-Methylnaphthalene	ND	5	ug/L

SURROGATES

	AMOUNT SPIKED	% RECOVERY	LOWER LIMIT	UPPER LIMIT
Nitrobenzene-d5	50 ug/L	88	35	114
2-Fluorobiphenyl	50 ug/L	86	43	116
Terphenyl-d14	50 ug/L	88	33	141
Phenol-d5	75 ug/L	25	10	110
2-Fluorophenol	75 ug/L	37	21	110
2,4,6-Tribromophenol	75 ug/L	104	10	123

ANALYZED BY: RY DATE/TIME: 08/20/98 17:35:00
EXTRACTED BY: KL DATE/TIME: 08/18/98 10:00:00
METHOD: 8270C, Semivolatile Organics - Water
NOTES: * - Practical Quantitation Limit ND - Not Detected
NA - Not Analyzed

COMMENTS:

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9808644-02

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 10/27/98

PROJECT: TWP Roswell STA 9
SITE:
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-15

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 08/13/98 18:45:00
DATE RECEIVED: 08/15/98

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
Alkalinity, as CaCO ₃ Method 310.1 * Analyzed by: TK Date: 08/20/98 14:00:00	106	1	mg/L	
Chloride Method 325.3 * Analyzed by: AB Date: 08/27/98 10:00:00	479	10	mg/L	
Sulfate Method 375.4 * Analyzed by: TW Date: 08/27/98 13:00:00	2200	100	mg/L	
Total Dissolved Solids Method 160.1 * Analyzed by: DS Date: 08/19/98 17:00:00	3900	100	mg/L	
Nitrate-Nitrite, as N Method 353.3 * Analyzed by: AAB Date: 08/18/98 10:00:00	0.6	0.1	mg/L	
Liquid-liquid extraction SEMIVOLATILES Method 3520C *** Analyzed by: KL Date: 08/18/98 10:00:00	08/18/98			

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9808644-02

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 10/27/98

PROJECT: TWP Roswell STA 9
SITE:
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-15

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 08/13/98 18:45:00
DATE RECEIVED: 08/15/98

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
Silver, Total Method 6010B *** Analyzed by: JM Date: 08/27/98 08:59:00	ND	0.01	mg/L	
Arsenic, Total Method 6010B *** Analyzed by: EG Date: 08/27/98 10:13:00	0.006	0.005	mg/L	
Barium, Total Method 6010B *** Analyzed by: JM Date: 08/28/98 17:36:00	0.012	0.005	mg/L	
Calcium, Total Method 6010B *** Analyzed by: JM Date: 08/28/98 17:36:00	586	0.2	mg/L	
Cadmium, Total Method 6010B *** Analyzed by: JM Date: 08/27/98 08:59:00	ND	0.005	mg/L	
Chromium, Total Method 6010B *** Analyzed by: JM Date: 08/27/98 08:59:00	ND	0.01	mg/L	

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9808644-02

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 10/27/98

PROJECT: TWP Roswell STA 9
SITE:
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-15

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 08/13/98 18:45:00
DATE RECEIVED: 08/15/98

ANALYTICAL DATA			
PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Copper, Total Method 6010B *** Analyzed by: JM Date: 08/27/98 08:59:00	ND	0.01	mg/L
Iron, Total Method 6010B *** Analyzed by: JM Date: 08/27/98 08:59:00	0.03	0.02	mg/L
Mercury, Total Method 7470 A*** Analyzed by: AG Date: 08/26/98 15:13:00	ND	0.0002	mg/L
Potassium, Total Method 6010B *** Analyzed by: JM Date: 08/27/98 08:59:00	4	2	mg/L
Magnesium, Total Method 6010B *** Analyzed by: JM Date: 08/27/98 08:59:00	162	0.1	mg/L
Manganese, Total Method 6010B *** Analyzed by: JM Date: 08/27/98 08:59:00	0.012	0.005	mg/L

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9808644-02

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 10/27/98

PROJECT: TWP Roswell STA 9
SITE:
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-15

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 08/13/98 18:45:00
DATE RECEIVED: 08/15/98

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
Sodium, Total Method 6010B *** Analyzed by: JM Date: 08/27/98 08:59:00	262	0.5	mg/L	
Acid Digestion-Aqueous, ICP Method 3010A *** Analyzed by: MR Date: 08/18/98 08:45:00	08/18/98			
Lead, Total Method 6010B *** Analyzed by: EG Date: 08/27/98 10:13:00	ND	0.005	mg/L	
Selenium, Total Method 6010B *** Analyzed by: EG Date: 08/27/98 10:13:00	ND	0.005	mg/L	
Zinc, Total Method 6010B *** Analyzed by: JM Date: 08/28/98 17:36:00	0.20	0.02	mg/L	

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9808644-02

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

10/27/98

PROJECT: TWP Roswell STA 9
SITE:
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-15

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 08/13/98 18:45:00
DATE RECEIVED: 08/15/98

ANALYTICAL DATA			
PARAMETER	RESULTS	PQL*	UNITS
Benzene	ND	5	ug/L
Bromobenzene	ND	5	ug/L
Bromochloromethane	ND	5	ug/L
Bromodichloromethane	ND	5	ug/L
Bromoform	ND	5	ug/L
Bromomethane	ND	10	ug/L
n-Butylbenzene	ND	5	ug/L
sec-Butylbenzene	ND	5	ug/L
tert-Butylbenzene	ND	5	ug/L
Carbon tetrachloride	ND	5	ug/L
Chlorobenzene	ND	5	ug/L
Chlorodibromomethane	ND	5	ug/L
Chloroethane	ND	10	ug/L
Chloroform	ND	5	ug/L
Chloromethane	ND	10	ug/L
2-Chlorotoluene	ND	5	ug/L
4-Chlorotoluene	ND	5	ug/L
1,2-Dibromo-3-chloropropane	ND	5	ug/L
1,2-Dibromoethane	ND	5	ug/L
Dibromomethane	ND	5	ug/L
1,2-Dichlorobenzene	ND	5	ug/L
1,3-Dichlorobenzene	ND	5	ug/L
1,4-Dichlorobenzene	ND	5	ug/L
Dichlorodifluoromethane	ND	10	ug/L
1,1-Dichloroethane	ND	5	ug/L
1,2-Dichloroethane	ND	5	ug/L
1,1-Dichloroethene	ND	5	ug/L
cis-1,2-Dichloroethene	ND	5	ug/L
trans-1,2-Dichloroethene	ND	5	ug/L
1,2-Dichloropropane	ND	5	ug/L
1,3-Dichloropropane	ND	5	ug/L
2,2-Dichloropropane	ND	5	ug/L
1,1-Dichloropropene	ND	5	ug/L
Ethylbenzene	ND	5	ug/L
Hexachlorobutadiene	ND	5	ug/L
Isopropylbenzene	ND	5	ug/L
p-Isopropyltoluene	ND	5	ug/L
Methylene chloride	ND	5	ug/L

METHOD: 8260 Water, Volatile Organics
(continued on next page)



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9808644-02

Cypress Engineering, Inc.

SAMPLE ID: MW-15

PARAMETER	ANALYTICAL DATA (continued)		UNITS
	RESULTS	PQL*	
Naphthalene	ND	5	ug/L
n-Propylbenzene	ND	5	ug/L
Styrene	ND	5	ug/L
1,1,1,2-Tetrachloroethane	ND	5	ug/L
1,1,2,2-Tetrachloroethane	ND	5	ug/L
Tetrachloroethene	ND	5	ug/L
Toluene	ND	5	ug/L
1,2,3-Trichlorobenzene	ND	5	ug/L
1,2,4-Trichlorobenzene	ND	5	ug/L
1,1,1-Trichloroethane	ND	5	ug/L
1,1,2-Trichloroethane	ND	5	ug/L
Trichloroethene	ND	5	ug/L
Trichlorofluoromethane	ND	5	ug/L
1,2,3-Trichloropropane	ND	5	ug/L
1,2,4-Trimethylbenzene	ND	5	ug/L
1,3,5-Trimethylbenzene	ND	5	ug/L
Vinyl chloride	ND	10	ug/L
Xylenes (total)	ND	5	ug/L
Acetone	ND	100	ug/L
Carbon Disulfide	ND	5	ug/L
Vinyl Acetate	ND	10	ug/L
2-Butanone	ND	20	ug/L
1,2-Dichloroethene (total)	ND	5	ug/L
2-Chloroethylvinylether	ND	10	ug/L
4-Methyl-2-Pentanone	ND	10	ug/L
cis-1,3-Dichloropropene	ND	5	ug/L
trans-1,3-Dichloropropene	ND	5	ug/L
2-Hexanone	ND	10	ug/L
Methyl t-Butyl Ether	ND	10	ug/L

SURROGATES	AMOUNT SPIKED	% RECOVERY	LOWER LIMIT	UPPER LIMIT
1,2-Dichloroethane-d4	50 ug/L	92	76	114
Toluene-d8	50 ug/L	100	88	110
4-Bromofluorobenzene	50 ug/L	100	86	115

ANALYZED BY: JC

DATE/TIME: 08/17/98 22:54:00

METHOD: 8260 Water, Volatile Organics

NOTES: * - Practical Quantitation Limit

ND - Not Detected

NA - Not Analyzed

COMMENTS:

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9808644-02

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

10/27/98

PROJECT: TWP Roswell STA 9
SITE:
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-15

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 08/13/98 18:45:00
DATE RECEIVED: 08/15/98

ANALYTICAL DATA

PARAMETER	RESULTS	PQL*	UNITS
Acenaphthene	ND	5	ug/L
Acenaphthylene	ND	5	ug/L
Anthracene	ND	5	ug/L
Benzo(a)Anthracene	ND	5	ug/L
Benzo(b)Fluoranthene	ND	5	ug/L
Benzo(k)Fluoranthene	ND	5	ug/L
Benzo(a)Pyrene	ND	5	ug/L
Benzo(g,h,i)Perylene	ND	5	ug/L
Chrysene	ND	5	ug/L
Dibenz(a,h)Anthracene	ND	5	ug/L
Fluoranthene	ND	5	ug/L
Fluorene	ND	5	ug/L
Indeno(1,2,3-cd)Pyrene	ND	5	ug/L
2-Methylnaphthalene	ND	5	ug/L
Naphthalene	ND	5	ug/L
Phenanthrene	ND	5	ug/L
Pyrene	ND	5	ug/L
1-Methylnaphthalene	ND	5	ug/L

SURROGATES	AMOUNT SPIKED	% RECOVERY	LOWER LIMIT	UPPER LIMIT
Nitrobenzene-d5	50 ug/L	76	35	114
2-Fluorobiphenyl	50 ug/L	78	43	116
Terphenyl-d14	50 ug/L	68	33	141
Phenol-d5	75 ug/L	23	10	110
2-Fluorophenol	75 ug/L	31	21	110
2,4,6-Tribromophenol	75 ug/L	91	10	123

ANALYZED BY: RY DATE/TIME: 08/20/98 18:09:00
EXTRACTED BY: KL DATE/TIME: 08/18/98 10:00:00
METHOD: 8270C, Semivolatile Organics - Water
NOTES: * - Practical Quantitation Limit ND - Not Detected
 NA - Not Analyzed

COMMENTS:

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9808644-03

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 10/27/98

PROJECT: TWP Roswell STA 9
SITE:
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-8

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 08/14/98 09:30:00
DATE RECEIVED: 08/15/98

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
Alkalinity, as CaCO3 Method 310.1 * Analyzed by: TK Date: 08/20/98 14:00:00	204	1	mg/L	
Chloride Method 325.3 * Analyzed by: AB Date: 08/27/98 10:00:00	355	10	mg/L	
Sulfate Method 375.4 * Analyzed by: TW Date: 08/27/98 13:00:00	2100	100	mg/L	
Total Dissolved Solids Method 160.1 * Analyzed by: DS Date: 08/19/98 17:00:00	3800	100	mg/L	
Nitrate-Nitrite, as N Method 353.3 * Analyzed by: AAB Date: 08/18/98 10:00:00	ND	0.1	mg/L	
Liquid-liquid extraction SEMIVOLATILES Method 3520C *** Analyzed by: KL Date: 08/18/98 10:00:00	08/18/98			

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9808644-03

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 10/27/98

PROJECT: TWP Roswell STA 9
SITE:
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-8

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 08/14/98 09:30:00
DATE RECEIVED: 08/15/98

ANALYTICAL DATA			
PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Silver, Total Method 6010B *** Analyzed by: JM Date: 08/27/98 08:59:00	ND	0.01	mg/L
Arsenic, Total Method 6010B *** Analyzed by: EG Date: 08/27/98 10:13:00	ND	0.005	mg/L
Barium, Total Method 6010B *** Analyzed by: JM Date: 08/28/98 17:36:00	0.006	0.005	mg/L
Calcium, Total Method 6010B *** Analyzed by: JM Date: 08/28/98 17:36:00	604	0.2	mg/L
Cadmium, Total Method 6010B *** Analyzed by: JM Date: 08/27/98 08:59:00	ND	0.005	mg/L
Chromium, Total Method 6010B *** Analyzed by: JM Date: 08/27/98 08:59:00	ND	0.01	mg/L

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9808644-03

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 10/27/98

PROJECT: TWP Roswell STA 9
SITE:
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-8

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 08/14/98 09:30:00
DATE RECEIVED: 08/15/98

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
Copper, Total Method 6010B *** Analyzed by: JM Date: 08/27/98 08:59:00	ND	0.01	mg/L	
Iron, Total Method 6010B *** Analyzed by: JM Date: 08/27/98 08:59:00	0.11	0.02	mg/L	
Mercury, Total Method 7470 A*** Analyzed by: AG Date: 08/26/98 15:13:00	ND	0.0002	mg/L	
Potassium, Total Method 6010B *** Analyzed by: JM Date: 08/27/98 08:59:00	4	2	mg/L	
Magnesium, Total Method 6010B *** Analyzed by: JM Date: 08/27/98 08:59:00	188	0.1	mg/L	
Manganese, Total Method 6010B *** Analyzed by: JM Date: 08/27/98 08:59:00	0.009	0.005	mg/L	

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9808644-03

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 10/27/98

PROJECT: TWP Roswell STA 9
SITE:
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-8

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 08/14/98 09:30:00
DATE RECEIVED: 08/15/98

ANALYTICAL DATA			
PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Sodium, Total Method 6010B *** Analyzed by: JM Date: 08/27/98 08:59:00	135	0.5	mg/L
Acid Digestion-Aqueous, ICP Method 3010A *** Analyzed by: MR Date: 08/18/98 08:45:00	08/18/98		
Lead, Total Method 6010B *** Analyzed by: EG Date: 08/27/98 10:13:00	ND	0.005	mg/L
Selenium, Total Method 6010B *** Analyzed by: EG Date: 08/27/98 10:13:00	ND	0.005	mg/L
Zinc, Total Method 6010B *** Analyzed by: JM Date: 08/28/98 17:36:00	0.39	0.02	mg/L

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9808644-03

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

10/27/98

PROJECT: TWP Roswell STA 9
SITE:
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-8

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 08/14/98 09:30:00
DATE RECEIVED: 08/15/98

ANALYTICAL DATA			
PARAMETER	RESULTS	PQL*	UNITS
Benzene	ND	5	ug/L
Bromobenzene	ND	5	ug/L
Bromochloromethane	ND	5	ug/L
Bromodichloromethane	ND	5	ug/L
Bromoform	ND	5	ug/L
Bromomethane	ND	10	ug/L
n-Butylbenzene	ND	5	ug/L
sec-Butylbenzene	ND	5	ug/L
tert-Butylbenzene	ND	5	ug/L
Carbon tetrachloride	ND	5	ug/L
Chlorobenzene	ND	5	ug/L
Chlorodibromomethane	ND	5	ug/L
Chloroethane	ND	10	ug/L
Chloroform	ND	5	ug/L
Chloromethane	ND	10	ug/L
2-Chlorotoluene	ND	5	ug/L
4-Chlorotoluene	ND	5	ug/L
1,2-Dibromo-3-chloropropane	ND	5	ug/L
1,2-Dibromoethane	ND	5	ug/L
Dibromomethane	ND	5	ug/L
1,2-Dichlorobenzene	ND	5	ug/L
1,3-Dichlorobenzene	ND	5	ug/L
1,4-Dichlorobenzene	ND	5	ug/L
Dichlorodifluoromethane	ND	10	ug/L
1,1-Dichloroethane	ND	5	ug/L
1,2-Dichloroethane	ND	5	ug/L
1,1-Dichloroethene	ND	5	ug/L
cis-1,2-Dichloroethene	ND	5	ug/L
trans-1,2-Dichloroethene	ND	5	ug/L
1,2-Dichloropropane	ND	5	ug/L
1,3-Dichloropropane	ND	5	ug/L
2,2-Dichloropropane	ND	5	ug/L
1,1-Dichloropropene	ND	5	ug/L
Ethylbenzene	ND	5	ug/L
Hexachlorobutadiene	ND	5	ug/L
Isopropylbenzene	ND	5	ug/L
p-Isopropyltoluene	ND	5	ug/L
Methylene chloride	ND	5	ug/L

METHOD: 8260 Water, Volatile Organics
(continued on next page)



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9808644-03

Cypress Engineering, Inc.

SAMPLE ID: MW-8

PARAMETER	ANALYTICAL DATA (continued)		UNITS
	RESULTS	PQL*	
Naphthalene	ND	5	ug/L
n-Propylbenzene	ND	5	ug/L
Styrene	ND	5	ug/L
1,1,1,2-Tetrachloroethane	ND	5	ug/L
1,1,2,2-Tetrachloroethane	ND	5	ug/L
Tetrachloroethene	ND	5	ug/L
Toluene	ND	5	ug/L
1,2,3-Trichlorobenzene	ND	5	ug/L
1,2,4-Trichlorobenzene	ND	5	ug/L
1,1,1-Trichloroethane	ND	5	ug/L
1,1,2-Trichloroethane	ND	5	ug/L
Trichloroethene	ND	5	ug/L
Trichlorofluoromethane	ND	5	ug/L
1,2,3-Trichloropropane	ND	5	ug/L
1,2,4-Trimethylbenzene	ND	5	ug/L
1,3,5-Trimethylbenzene	ND	5	ug/L
Vinyl chloride	ND	10	ug/L
Xylenes (total)	ND	5	ug/L
Acetone	ND	100	ug/L
Carbon Disulfide	ND	5	ug/L
Vinyl Acetate	ND	10	ug/L
2-Butanone	ND	20	ug/L
1,2-Dichloroethene (total)	ND	5	ug/L
2-Chloroethylvinylether	ND	10	ug/L
4-Methyl-2-Pentanone	ND	10	ug/L
cis-1,3-Dichloropropene	ND	5	ug/L
trans-1,3-Dichloropropene	ND	5	ug/L
2-Hexanone	ND	10	ug/L
Methyl t-Butyl Ether	ND	10	ug/L

SURROGATES	AMOUNT SPIKED	% RECOVERY	LOWER LIMIT	UPPER LIMIT
1,2-Dichloroethane-d4	50 ug/L	92	76	114
Toluene-d8	50 ug/L	100	88	110
4-Bromofluorobenzene	50 ug/L	102	86	115

ANALYZED BY: JC

DATE/TIME: 08/17/98 23:19:00

METHOD: 8260 Water, Volatile Organics

NOTES: * - Practical Quantitation Limit

ND - Not Detected

NA - Not Analyzed

COMMENTS:

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9808644-03

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

10/27/98

PROJECT: TWP Roswell STA 9
SITE:
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-8

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 08/14/98 09:30:00
DATE RECEIVED: 08/15/98

ANALYTICAL DATA			
PARAMETER	RESULTS	PQL*	UNITS
Acenaphthene	ND	5	ug/L
Acenaphthylene	ND	5	ug/L
Anthracene	ND	5	ug/L
Benzo(a)Anthracene	ND	5	ug/L
Benzo(b)Fluoranthene	ND	5	ug/L
Benzo(k)Fluoranthene	ND	5	ug/L
Benzo(a)Pyrene	ND	5	ug/L
Benzo(g,h,i)Perylene	ND	5	ug/L
Chrysene	ND	5	ug/L
Dibenz(a,h)Anthracene	ND	5	ug/L
2,4-Dichlorophenol	ND	5	ug/L
Fluoranthene	ND	5	ug/L
Fluorene	ND	5	ug/L
Indeno(1,2,3-cd)Pyrene	ND	5	ug/L
2-Methylnaphthalene	ND	5	ug/L
Naphthalene	ND	5	ug/L
Phenanthrene	ND	5	ug/L
Pyrene	ND	5	ug/L
1-Methylnaphthalene	ND	5	ug/L

SURROGATES	AMOUNT SPIKED	% RECOVERY	LOWER LIMIT	UPPER LIMIT
Nitrobenzene-d5	50 ug/L	84	35	114
2-Fluorobiphenyl	50 ug/L	88	43	116
Terphenyl-d14	50 ug/L	72	33	141
Phenol-d5	75 ug/L	24	10	110
2-Fluorophenol	75 ug/L	36	21	110
2,4,6-Tribromophenol	75 ug/L	104	10	123

ANALYZED BY: RY DATE/TIME: 08/20/98 18:42:00
EXTRACTED BY: KL DATE/TIME: 08/18/98 10:00:00
METHOD: 8270C, Semivolatile Organics - Water
NOTES: * - Practical Quantitation Limit ND - Not Detected
 NA - Not Analyzed

COMMENTS:

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.

QUALITY CONTROL

DOCUMENTATION

3A
WATER VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: SPL

Contract:

Lab Code:

Case No.: 9808644 SAS No.:

SDG No.:

Matrix Spike - EPA Sample No.: MW-17

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC #	QC. LIMITS REC.
1,1-Dichloroethene	50	0	59	118	61-145
Trichloroethene	50	0	48	96	71-120
Benzene	50	0	53	103	76-127
Toluene	50	0	49	98	76-125
Chlorobenzene	50	0	47	94	75-130

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC #	% RPD #	QC LIMITS RPD	REC.
1,1-Dichloroethene	50	60	120	2	14	61-145
Trichloroethene	50	51	102	6	14	71-120
Benzene	50	55	110	7	11	76-127
Toluene	50	52	104	6	13	76-125
Chlorobenzene	50	48	96	2	13	75-130

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 5 outside limits

Spike Recovery: 0 out of 10 outside limits

SPL Houston Labs

RECOVERY REPORT

Client Name: Client SDG: n980817
Sample Matrix: LIQUID Fraction: VOA
Lab Smp Id: LCS
Level: LOW Operator: JC
Data Type: MS DATA SampleType: LCS
SpikeList File: 8260_water.spk Quant Type: ISTD
Sublist File: 8260.sub
Method File: /var/chem/n.i/n980817a.b/n8260w.m
Misc Info: N229W2//N229CW2

SPIKE COMPOUND	CONC ADDED ug/L	CONC RECOVERED ug/L	% RECOVERED	LIMITS
8 1,1-Dichloroethene	50	59	118.00	61-145
29 Trichloroethene	50	50	100.00	71-120
25 Benzene	50	54	108.00	76-127
37 Toluene	50	50	100.00	76-125
45 Chlorobenzene	50	47	94.00	75-130

SURROGATE COMPOUND	CONC ADDED ug/L	CONC RECOVERED ug/L	% RECOVERED	LIMITS
\$ 21 1,2-Dichloroethane	50	45	90.00	76-114
\$ 36 Toluene-d8	50	50	100.00	88-110
\$ 56 Bromofluorobenzene	50	52	104.00	86-115



SPL Blank QC Report

HOUSTON LABORATORY

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 684-0901

1

Matrix: Aqueous
Sample ID: VLBLK
Batch: N980817122724

Reported on: 08/27/98 13:00
Analyzed on: 08/17/98 21:13
Analyst: JC

METHOD 8260/8240 N229B02

C o m p o u n d	Result	Detection Limit	Units
Dichlorodifluoromethane	ND	10	ug/L
Chloromethane	ND	10	ug/L
Vinyl Chloride	ND	10	ug/L
Bromomethane	ND	10	ug/L
Chloroethane	ND	10	ug/L
Trichlorofluoromethane	ND	5	ug/L
Acetone	ND	100	ug/L
1,1-Dichloroethene	ND	5	ug/L
Methylene Chloride	ND	5	ug/L
Carbon Disulfide	ND	5	ug/L
trans-1,2-Dichloroethene	ND	5	ug/L
1,1-Dichloroethane	ND	5	ug/L
Vinyl Acetate	ND	10	ug/L
2-Butanone	ND	20	ug/L
cis-1,2-Dichloroethene	ND	5	ug/L
1,2-Dichloroethene (total)	ND	5	ug/L
2,2-Dichloropropane	ND	5	ug/L
Bromochloromethane	ND	5	ug/L
Chloroform	ND	5	ug/L
1,1,1-Trichloroethane	ND	5	ug/L
1,2-Dichloroethane	ND	5	ug/L
1,1-Dichloropropene	ND	5	ug/L
Benzene	ND	5	ug/L
Carbon Tetrachloride	ND	5	ug/L
1,2-Dichloropropane	ND	5	ug/L
Trichloroethene	ND	5	ug/L
Dibromomethane	ND	5	ug/L
Bromodichloromethane	ND	5	ug/L
2-Chloroethylvinylether	ND	10	ug/L
4-Methyl-2-Pentanone	ND	10	ug/L
cis-1,3-Dichloropropene	ND	5	ug/L
trans-1,3-Dichloropropene	ND	5	ug/L
Toluene	ND	5	ug/L
1,1,2-Trichloroethane	ND	5	ug/L

Notes

ND - Not detected.



SPL Blank QC Report

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 659-0901

Matrix: Aqueous
Sample ID: VLBLK
Batch: N980817122724

Reported on: 08/27/98 13:00
Analyzed on: 08/17/98 21:13
Analyst: JC

METHOD 8260/8240 N229B02

Compound	Result	Detection Limit	Units
1,3-Dichloropropane	ND	5	ug/L
2-Hexanone	ND	10	ug/L
Dibromochloromethane	ND	5	ug/L
1,2-Dibromoethane	ND	5	ug/L
Tetrachloroethene	ND	5	ug/L
Chlorobenzene	ND	5	ug/L
1,1,1,2-Tetrachloroethane	ND	5	ug/L
Ethylbenzene	ND	5	ug/L
Bromoform	ND	5	ug/L
Styrene	ND	5	ug/L
Xylene (Total)	ND	5	ug/L
1,1,2,2-Tetrachloroethane	ND	5	ug/L
1,2,3-Trichloropropane	ND	5	ug/L
Isopropylbenzene	ND	5	ug/L
Bromobenzene	ND	5	ug/L
N-Propylbenzene	ND	5	ug/L
2-Chlorotoluene	ND	5	ug/L
4-Chlorotoluene	ND	5	ug/L
1,3,5-Trimethylbenzene	ND	5	ug/L
tert-Butylbenzene	ND	5	ug/L
1,2,4-Trimethylbenzene	ND	5	ug/L
1,3-Dichlorobenzene	ND	5	ug/L
sec-Butylbenzene	ND	5	ug/L
1,4-Dichlorobenzene	ND	5	ug/L
p-Isopropyltoluene	ND	5	ug/L
1,2-Dichlorobenzene	ND	5	ug/L
n-Butylbenzene	ND	5	ug/L
1,2-Dibromo-3-Chloropropan	ND	5	ug/L
1,2,4-Trichlorobenzene	ND	5	ug/L
Naphthalene	ND	5	ug/L
Hexachlorobutadiene	ND	5	ug/L
1,2,3-Trichlorobenzene	ND	5	ug/L
Methyl t-Butyl Ether	ND	10	ug/L

Notes

ND - Not detected.



SPL Blank QC Report

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 866-0801

3

Matrix: Aqueous
Sample ID: VLBLK
Batch: N980817122724

Reported on: 08/27/98 13:00
Analyzed on: 08/17/98 21:13
Analyst: JC

METHOD 8260/8240 N229B02

S u r r o g a t e	Result	QC Criteria	Units
1,2-Dichloroethane-d4	90	76-114	% Recovery
Toluene-d8	100	88-110	% Recovery
Bromofluorobenzene	104	86-115	% Recovery

Samples in Batch 9808644-01 9808644-02 9808644-03

Notes

ND - Not detected.

WATER SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: SPL

Contract:

Lab Code: Case No: 980818

SAS No: SDG No:

Matrix Spike - EPA

Sample No: BLKSPIKE

Level (low/med):

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATIO (ug/L)	MS CONCENTRATION (ug/L)	MS % REC #	QC LIMITS REC
Phenol	75	0	22	29	12-110
2-Chlorophenol	75	0	48	64	27-123
1,4-Dichlorobenzene	50	0	29	58	36- 97
N-Nitroso-di-n-propylamine	50	0	37	74	41-116
1,2,4-Trichlorobenzene	50	0	36	72	39-110
4-Chloro-3-methylphenol	75	0	64	85	23-110
Acenaphthene	50	0	42	84	46-125
4-Nitrophenol	75	0	31	41	25-150
2,4-Dinitrotoluene	50	0	45	90	50-150
Pentachlorophenol	75	0	82	109	9-125
Pyrene	50	0	41	82	26-127

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATIO (ug/L)	MSD % REC #	% RPD #	QC LIMITS	
					RPD	REC
Phenol	75	23	31	7	42	12-110
2-Chlorophenol	75	55	73	13	40	27-132
1,4-Dichlorobenzene	50	36	72	22	28	36- 97
N-Nitroso-di-n-propylamine	50	42	84	13	38	41-116
1,2,4-Trichlorobenzene	50	43	86	18	28	39-110
4-Chloro-3-methylphenol	75	68	91	7	42	23-110
Acenaphthene	50	43	86	2	31	46-125
4-Nitrophenol	75	28	37	10	50	25-150
2,4-Dinitrotoluene	50	44	88	2	50	50-150
Pentachlorophenol	75	75	100	9	50	9-125
Pyrene	50	36	72	13	31	26-127

Column to be used to flag recovery and RPD values with an asterisk

RPD: 0 out of 11 outside limits
Spike Recovery: 0 out of 22 outside limits



SPL Blank QC Report

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 566-0900

1

Matrix: Aqueous
Sample ID: BLANK
Batch: E980818042258

Reported on: 08/28/98 12:03
Analyzed on: 08/20/98 15:54
Analyst: RY

METHOD 8270 J230B03

Compound	Result	Detection Limit	Units
Pyridine	ND	5	ug/L
Phenol	ND	5	ug/L
Aniline	ND	5	ug/L
bis(2-Chloroethyl) ether	ND	5	ug/L
2-Chlorophenol	ND	5	ug/L
1,3-Dichlorobenzene	ND	5	ug/L
1,4-Dichlorobenzene	ND	5	ug/L
Benzyl alcohol	ND	5	ug/L
1,2-Dichlorobenzene	ND	5	ug/L
bis(2-chloroisopropyl) ethe	ND	5	ug/L
4-Methylphenol	ND	5	ug/L
N-Nitroso-di-n-propylamine	ND	5	ug/L
Hexachloroethane	ND	5	ug/L
Nitrobenzene	ND	5	ug/L
Isophorone	ND	5	ug/L
2-Nitrophenol	ND	5	ug/L
2,4-Dimethylphenol	ND	5	ug/L
Benzoic acid	ND	25	ug/L
bis(2-Chloroethoxy) methane	ND	5	ug/L
2,4-Dichlorophenol	ND	5	ug/L
1,2,4-Trichlorobenzene	ND	5	ug/L
Naphthalene	ND	5	ug/L
4-Chloroaniline	ND	5	ug/L
Hexachlorobutadiene	ND	5	ug/L
4-Chloro-3-methylphenol	ND	5	ug/L
2-Methylnaphthalene	ND	5	ug/L
Hexachlorocyclopentadiene	ND	5	ug/L
2,4,6-Trichlorophenol	ND	5	ug/L
2,4,5-Trichlorophenol	ND	10	ug/L
2-Chloronaphthalene	ND	5	ug/L
2-Nitroaniline	ND	25	ug/L
Dimethylphthalate	ND	5	ug/L
2,6-Dinitrotoluene	ND	5	ug/L
Acenaphthylene	ND	5	ug/L

Notes

ND - Not detected.



SPL Blank QC Report

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 662-0900

Matrix: Aqueous
Sample ID: BLANK
Batch: E980818042258

Reported on: 08/28/98 12:03
Analyzed on: 08/20/98 15:54
Analyst: RY

METHOD 8270 J230B03

Compound	Result	Detection Limit	Units
3-Nitroaniline	ND	25	ug/L
Acenaphthene	ND	5	ug/L
2,4-Dinitrophenol	ND	25	ug/L
4-Nitrophenol	ND	25	ug/L
Dibenzofuran	ND	5	ug/L
2,4-Dinitrotoluene	ND	5	ug/L
Diethylphthalate	ND	5	ug/L
4-Chlorophenyl-phenylether	ND	5	ug/L
Fluorene	ND	5	ug/L
4-Nitroaniline	ND	25	ug/L
4,6-Dinitro-2-methylphenol	ND	25	ug/L
n-Nitrosodiphenylamine	ND	5	ug/L
1,2-Diphenylhydrazine	ND	5	ug/L
4-Bromophenyl-phenylether	ND	5	ug/L
Hexachlorobenzene	ND	5	ug/L
Pentachlorophenol	ND	25	ug/L
Phenanthrene	ND	5	ug/L
Anthracene	ND	5	ug/L
Carbazole	ND	5	ug/L
Di-n-butylphthalate	ND	5	ug/L
Fluoranthene	ND	5	ug/L
Pyrene	ND	5	ug/L
Butylbenzylphthalate	ND	5	ug/L
3,3'-Dichlorobenzidine	ND	10	ug/L
Benzo[a]anthracene	ND	5	ug/L
Chrysene	ND	5	ug/L
bis(2-Ethylhexyl)phthalate	ND	5	ug/L
Di-n-octylphthalate	ND	5	ug/L
Benzo[b]fluoranthene	ND	5	ug/L
Benzo[k]fluoranthene	ND	5	ug/L
Benzo[a]pyrene	ND	5	ug/L
Indeno[1,2,3-cd]pyrene	ND	5	ug/L
Dibenz[a,h]anthracene	ND	5	ug/L
Benzo[g,h,i]perylene	ND	5	ug/L

Notes

ND - Not detected.



SPL Blank QC Report

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 952-0800

3

Matrix: Aqueous
Sample ID: BLANK
Batch: E980818042253

Reported on: 08/28/98 12:03
Analyzed on: 08/20/98 15:54
Analyst: RY

METHOD 8270 J230B03

C o m p o u n d	Result	Detection Limit	Units
1-Methylnaphthalene	ND	5	ug/L
2-Methylphenol	ND	5	ug/L

S u r r o g a t e	Result	QC Criteria	Units
Nitrobenzene-d5	96	35-114	% Recovery
2-Fluorobiphenyl	92	43-116	% Recovery
Terphenyl-d14	88	33-141	% Recovery
Phenol-d5	32	10-110	% Recovery
2-Fluorophenol	45	21-110	% Recovery
2,4,6-Tribromophenol	105	10-123	% Recovery

Samples in Batch 9808644-01 9808644-02 9808644-03

Notes

ND - Not detected.

ICP Spectroscopy Method 6010 Quality Control Report

Analyst: EG



Matrix: Water

Units: mg/L

HOUSTON LABORATORY
888C INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 560-0901

Date:082798 Time:1013 File Name: T082798B

Laboratory Control Sample

Element	Mth. Blank	True Value	Result	% Recovery	Lower Limit	Upper Limit
Silver	ND	2.00	2.01	100	1.60	2.40
Aluminum						
Arsenic	ND	4.00	4.12	103	3.20	4.80
Barium	ND	2.00	1.98	99	1.60	2.40
Beryllium						
Calcium						
Cadmium	ND	2.00	2.05	103	1.60	2.40
Cobalt						
Chromium	ND	2.00	2.09	105	1.60	2.40
Copper						
Iron	ND	2.00	1.96	98	1.60	2.40
Potassium						
Magnesium						
Manganese						
Sodium						
Nickel						
Lead	ND	2.00	2.05	102	1.60	2.40
Antimony						
Selenium	ND	4.00	4.02	100	3.20	4.80
Thallium						
Vanadium						
Zinc						

Work Orders in Batch

Work Order	Fractions
98-08-574	01E-03E
98-08-557	01B
98-08-584	17A
98-08-605	01C
98-08-618	05A
98-08-620	02C
98-08-623	01D-03D
98-08-635	01E-03E
98-08-644	01E-03E
98-08-652	01E, 02E 03F

Matrix Spike - Spike Duplicate Results

Work Order Spiked: 9808574-02E

Element	Sample Result	Spike Added	Matrix Spike Result	Matrix Spike Recovery	Matrix Spike Duplicate Result	Matrix Spike Duplicate Recovery	QC Limits % Recovery	Spike RPD %	QC Limits %
Silver	ND	1.0	0.9657	96.6	0.9781	97.8	80 120	1.3	20.0
Aluminum									
Arsenic	0.0068	2.0	2.015	100.4	2.027	101.0	80 120	0.6	20.0
Barium	0.0111	1.0	0.8862	87.5	0.8958	88.5	80 120	1.1	20.0
Beryllium									
Calcium									
Cadmium	ND	1.0	0.9314	93.1	0.9374	93.7	80 120	0.6	20.0
Cobalt									
Chromium	ND	1.0	0.9452	94.5	0.9541	95.4	80 120	0.9	20.0
Copper									
Iron	ND	1.0	0.8896	89.0	0.8766	87.7	80 120	1.5	20.0
Potassium									
Magnesium									
Manganese									
Sodium									
Nickel									
Lead	ND	1.0	0.9371	93.7	0.9383	93.8	80 120	0.1	20.0
Antimony									
Selenium	ND	2.0	1.958	97.9	1.946	97.3	80 120	0.6	20.0
Thallium									
Vanadium									
Zinc									

Checked: ML 3/23/

ICP Spectroscopy Method 6010 Quality Control Report

Analyst: JM



Matrix: Water

Units: mg/L

Date: 082798 Time: 0859 File Name: 082798M9

HOUSTON LABORATORY

8680 INTERCHANGE DR. E.

HOUSTON, TEXAS 77054

PHONE 713-660-0901

Laboratory Control Sample

Element	Mth. Blank	True Value	Result	% Recovery	Lower Limit	Upper Limit
Silver	ND	2.00	2.03	101	1.60	2.40
Aluminum						
Arsenic						
Barium						
Beryllium	ND	2.00	1.97	99	1.60	2.40
Calcium						
Cadmium	ND	2.00	2.02	101	1.60	2.40
Cobalt						
Chromium	ND	2.00	2.04	102	1.60	2.40
Copper	ND	2.00	2.00	100	1.60	2.40
Iron	ND	2.00	2.00	100	1.60	2.40
Potassium	ND	20.00	19.83	99	16.00	24.00
Magnesium	ND	20.00	20.17	101	16.00	24.00
Manganese	ND	2.00	1.98	99	1.60	2.40
Sodium	ND	20.00	20.03	100	16.00	24.00
Nickel	ND	2.00	2.04	102	1.60	2.40
Lead						
Antimony						
Selenium						
Thallium						
Vanadium						
Zinc						

Work Orders in Batch

Work Order	Fractions
98-08-574	01E-03E
98-08-584	17A
98-08-635	01E-03E
98-08-644	01E-03E
89-08-652	01E-03E

Matrix Spike - Spike Duplicate Results

Work Order Spiked: 98089574-02E

Element	Sample Result	Spike Added	Matrix Spike Result	Matrix Spike Recovery	Matrix Spike Duplicate Result	Matrix Spike Duplicate Recovery	QC Limits % Recovery	Spike RPD %	QC Limits %
Silver	ND	1.0	0.9392	93.9	0.9302	93.0	80 120	1.0	20.0
Aluminum									
Arsenic									
Barium									
Beryllium	ND	1.0	0.8702	87.0	0.8654	86.5	80 120	0.6	20.0
Calcium									
Cadmium	ND	1.0	0.9077	90.8	0.9078	90.8	80 120	0.0	20.0
Cobalt									
Chromium	ND	1.0	0.8737	87.9	0.871	87.1	80 120	0.9	20.0
Copper	0.0105	1.0	0.9303	92.0	0.9261	91.6	80 120	0.5	20.0
Iron	0.0545	1.0	0.9227	86.8	0.9218	86.7	80 120	0.1	20.0
Potassium	3.609	10.0	13.37	97.6	13.93	103.2	80 120	5.6	20.0
Magnesium	161.1	10.0	169.3	82.0	171	99.0	80 120	18.8	20.0
Manganese	ND	1.0	0.8637	86.4	0.8629	86.3	80 120	0.1	20.0
Sodium	252.1	10.0	265	129.0	266.4	143.0	80 120	10.3	20.0
Nickel	ND	1.0	0.8739	87.4	0.8647	86.5	80 120	1.1	20.0
Lead									
Antimony									
Selenium									
Thallium									
Vanadium									
Zinc									

* Spike Results Outside Method Limits

Checked: 08/23/98

ICP Spectroscopy Method 6010 Quality Control Report

Analyst: JM



Matrix: Water

Units: mg/L

Date:082898 Time:1736 File Name: 082898M8

HOUSTON LABORATORY

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 660-0901

Laboratory Control Sample

Element	Mth. Blank	True Value	Result	% Recovery	Lower Limit	Upper Limit
Silver						
Aluminum						
Arsenic						
Barium	ND	2.00	1.81	91	1.60	2.40
Beryllium						
Calcium	ND	20.00	19.37	97	16.00	24.00
Cadmium						
Cobalt						
Chromium						
Copper						
Iron						
Potassium						
Magnesium						
Manganese						
Sodium						
Nickel						
Lead						
Antimony						
Selenium						
Thallium						
Vanadium						
Zinc	ND	2.00	1.92	96	1.60	2.40

Work Orders in Batch

Work Order Fractions

98-08-635 01E-03E

98-08-574 1E-03E

98-08-644 01E-03E

98-08-652 01E-03E

98-08-635 01E-03E

98-08-574 01E-03E

98-08-644 01E-03E

98-08-652 01E-03E

Matrix Spike - Spike Duplicate Results

Work Order Spiked: 9808635-01E

Element	Sample Result	Spike Added	Matrix Spike Result	Matrix Spike Recovery	Matrix Spike Duplicate Result	Matrix Spike Duplicate Recovery	QC Limits % Recovery	Spike RPD %	QC Limits %
Silver									
Aluminum									
Arsenic									
Barium	0.0109	1.0	0.9177	90.7	0.9024	89.2	80 120	1.7	20.0
Beryllium									
Calcium	583.6	10.0	569.9	0.0 *	564.7	0.0 *	80 120	0.0	20.0
Cadmium									
Cobalt									
Chromium									
Copper									
Iron									
Potassium									
Magnesium									
Manganese									
Sodium									
Nickel									
Lead									
Antimony									
Selenium									
Thallium									
Vanadium									
Zinc	ND	1.0	0.9654	96.5	0.9658	96.6	80 120	0.0	20.0

Elements Post Spiked: Ca

* Spike Results Outside Method Limits

Checked: 8/31/98 ACA



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 08/26/98

Analyzed on: 08/26/98

Analyst: AG

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Mercury, Total
Method 7470 A***

SPL Sample ID Number	Blank Value ug/L	LCS Concentration ug/L	Measured Concentration ug/L	% Recovery	QC Limits Recovery
LCS	ND	2.00	1.88	94.0	80 - 120

-9808B65

Samples in batch:

9808644-01E 9808644-02E 9808644-03E 9808652-01E
9808652-02E 9808652-03E 9808826-02F

COMMENTS:

LCS = SPL ID# 94-452-45-21



** SPL QUALITY CONTROL REPORT **

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Matrix: Aqueous

Reported on: 08/26/98
Analyzed on: 08/26/98
Analyst: AG

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Mercury, Total
Method 7470 A***

SPL Sample	Method	Sample	Spike	Matrix Spike		Matrix Spike Duplicate		RPD	QC LIMITS (Advisory)		
ID Number	Blank	Result	Added	Result	Recovery	Result	Recovery	(%)	RPD	% REC	
	ug/L	ug/L	ug/L	ug/L	%	ug/L	%		Max		
9808652-01E	ND	ND	2.00	2.05	102	2.17	108	5.7	20	75	-125

-9808B65

Samples in batch:

9808644-01E 9808644-02E 9808644-03E 9808652-01E
9808652-02E 9808652-03E 9808826-02F

COMMENTS:

LCS = SPL ID# 94-452-45-21



** SPL QUALITY CONTROL REPORT **

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Matrix: Aqueous

Reported on: 08/20/98

Analyzed on: 08/20/98

Analyst: TK

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Alkalinity, as CaCO_3
Method 310.1 *

SPL Sample ID Number	Blank Value mg/L	LCS Concentration mg/L	Measured Concentration mg/L	% Recovery	QC Limits Recovery
LCS	ND	235	228.4	97.2	95 - 113

-9808918

Samples in batch:

9808644-01B 9808644-02B 9808644-03B

COMMENTS:

LCS# 94453209-13

®
**

SPL QUALITY CONTROL REPORT **

HOUSTON LABORATORY

8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Matrix: Aqueous

Reported on: 08/20/98

Analyzed on: 08/20/98

Analyst: TK

This sample was randomly selected for use in the SPL quality control program. The results are as follows:

Alkalinity, as CaCO₃
Method 310.1 *

-- DUPLICATE ANALYSIS --

SPL Sample ID	Original Sample Concentration mg/L	Duplicate Sample mg/L	RPD	RPD Max.
9808644-01B	124.0	124.2	0.2	18

-9808917

Samples in batch:

9808644-01B 9808644-02B 9808644-03B

COMMENTS:



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 08/27/98

Analyzed on: 08/27/98

Analyst: TW

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Sulfate
Method 375.4 *

SPL Sample ID Number	Blank Value mg/L	LCS Concentration mg/L	Measured Concentration mg/L	% Recovery	QC Limits Recovery
LCS	ND	10.04	10.26	102	82 - 111

-9808C21

amples in batch:

9808516-01F	9808635-01B	9808635-02B	9808635-03B
9808644-01B	9808644-02B	9808644-03B	9808652-01B
9808652-03B	9808722-01E	9808725-01E	9808731-01B
9808779-04H	9808779-05H	9808780-14H	9808812-01F

COMMENTS:

LCS= SPL ID# 95535209-12.



** SPL QUALITY CONTROL REPORT **

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Matrix: Aqueous

Reported on: 08/27/98

Analyzed on: 08/27/98

Analyst: TW

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Sulfate
Method 375.4 *

SPL Sample	Method	Sample	Spike	Matrix Spike		Matrix Spike Duplicate		RPD	QC LIMITS (Advisory)		
ID Number	Blank	Result	Added	Result	Recovery	Result	Recovery	(%)	RPD	% REC	
	mg/L	mg/L	mg/L	mg/L	%	mg/L	%		Max		
9808652-01B	ND	7.98	10.00	19.21	112	18.71	107	4.6	9.5	84	-120

-9808C17

Samples in batch:

9808635-01B 9808635-02B 9808635-03B 9808644-01B
9808644-02B 9808644-03B 9808652-01B 9808652-02B
9808812-01F

COMMENTS:



**** SPL QUALITY CONTROL REPORT ****

HOUSTON LABORATORY

8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Matrix: Aqueous

Reported on: 08/28/98

Analyzed on: 08/27/98

Analyst: AB

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Chloride
Method 325.3 *

SPL Sample	Method	Sample	Spike	Matrix Spike		Matrix Spike Duplicate		RPD	QC LIMITS (Advisory)		
ID Number	Blank mg/L	Result mg/L	Added mg/L	Result mg/L	Recovery %	Result mg/L	Recovery %	(%)	RPD Max	% REC	
9808652-02B	ND	30	50	78	96.0	79	98.0	2.1	5	92	-109

-9808C92

Samples in batch:

9808635-03B	9808644-01B	9808644-02B	9808644-03B
9808652-01B	9808652-02B	9808652-03B	9808656-01D

COMMENTS:



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 08/28/98

Analyzed on: 08/27/98

Analyst: AB

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Chloride
Method 325.3 *

SPL Sample ID Number	Blank Value mg/L	LCS Concentration mg/L	Measured Concentration mg/L	% Recovery	QC Limits Recovery
LCS	ND	186	184	98.9	94 - 106

-9808C93

Samples in batch:

9808548-01D	9808548-02D	9808548-03D	9808550-01D
9808550-02D	9808550-03D	9808550-04D	9808553-01D
9808553-02D	9808553-03D	9808553-04D	9808574-01B
9808574-02B	9808574-03B	9808635-01B	9808635-02B
9808635-03B	9808644-01B	9808644-02B	9808644-03B

COMMENTS:

SPL=LCS#94453209-12



**[®] SPL QUALITY CONTROL REPORT **

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Matrix: Aqueous

Reported on: 08/20/98

Analyzed on: 08/19/98

Analyst: DS

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Total Dissolved Solids
Method 160.1 *

SPL Sample ID Number	Blank Value mg/L	LCS Concentration mg/L	Measured Concentration mg/L	% Recovery	QC Limits Recovery
LCS	ND	455.9	456	100	93 - 107

-9808910

Samples in batch:

9808555-01D	9808555-02D	9808555-03D	9808574-01B
9808574-02B	9808574-03B	9808623-01E	9808623-02E
9808623-03E	9808644-01B	9808644-02B	9808644-03B
9808652-01B	9808652-02B	9808652-03B	9808656-01D
9808745-02B	9808745-03B		

COMMENTS:

LCS=SPL ID#95535216-23

®
**

SPL QUALITY CONTROL REPORT **

HOUSTON LABORATORY

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 660-0901

Matrix: Aqueous

Reported on: 08/20/98

Analyzed on: 08/19/98

Analyst: DS

This sample was randomly selected for use in the SPL quality control program. The results are as follows:

Total Dissolved Solids

Method 160.1 *

-- DUPLICATE ANALYSIS --

SPL Sample ID	Original Sample Concentration mg/L	Duplicate Sample mg/L	RPD	RPD Max.
9808652-01B	4160	4070	2.2	5

-9808909

Samples in batch:

9808644-01B	9808644-02B	9808644-03B	9808652-01B
9808652-02B	9808652-03B	9808656-01D	9808745-02B
9808745-03B			

COMMENTS:



**[®] SPL QUALITY CONTROL REPORT **

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Matrix: Aqueous

Reported on: 08/18/98

Analyzed on: 08/18/98

Analyst: AAB

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Nitrate-Nitrite, as N
Method 353.3 *

SPL Sample ID Number	Blank Value mg/L	LCS Concentration mg/L	Measured Concentration mg/L	% Recovery	QC Limits Recovery
LCS	ND	2.77	2.74	98.9	92 - 111

-9808799

Samples in batch:

9808056-03G	9808220-01E	9808508-01C	9808508-02C
9808508-03C	9808518-04D	9808574-01C	9808574-02C
9808574-03C	9808635-01C	9808635-02C	9808635-03C
9808644-01C	9808644-02C	9808644-03C	9808652-01C
9808652-02C	9808652-03C		

COMMENTS:

LCS = SPL ID#:95535196-25



** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 08/18/98
Analyzed on: 08/18/98
Analyst: AAB

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Nitrate-Nitrite, as N
Method 353.3 *

SPL Sample	Method	Sample	Spike	Matrix Spike		Matrix Spike Duplicate		RPD	QC LIMITS (Advisory)		
ID Number	Blank	Result	Added	Result	Recovery	Result	Recovery	(%)	RPD	% REC	
	mg/L	mg/L	mg/L	mg/L	%	mg/L	%		Max		
9808574-02C	ND	0.80	5.00	5.56	95.2	5.53	94.6	0.6	12	87	-120

-9808798

Samples in batch:

9808574-01C 9808574-02C 9808574-03C 9808644-01C
9808644-02C 9808644-03C 9808652-01C 9808652-02C
9808652-03C

COMMENTS:

CHAIN OF CUSTODY
AND
SAMPLE RECEIPT CHECKLIST

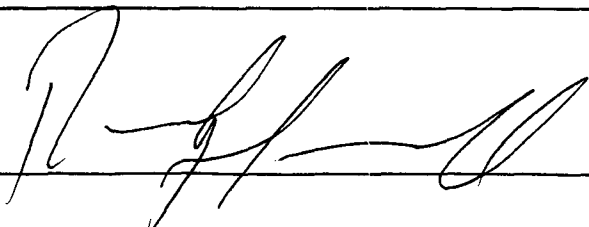
SPL Houston Environmental Laboratory

Sample Login Checklist

Date: 8-15-98	Time: 1000
------------------	---------------

SPL Sample ID: 9808644

		Yes	No
1	Chain-of-Custody (COC) form is present.	—	
2	COC is properly completed.	—	
3	If no, Non-Conformance Worksheet has been completed.		
4	Custody seals are present on the shipping container.	—	
5	If yes, custody seals are intact.	—	
6	All samples are tagged or labeled.	—	
7	If no, Non-Conformance Worksheet has been completed.		
8	Sample containers arrived intact	—	
9	Temperature of samples upon arrival:	4	C
10	Method of sample delivery to SPL:	SPL Delivery	
		Client Delivery	
		FedEx Delivery (airbill #)	80690802652
		Other:	
11	Method of sample disposal:	SPL Disposal	—
		HOLD	
		Return to Client	

Name: 	Date: 8-15-98
--	------------------



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

August 31, 1998

Mr. George Robinson
CYPRESS ENGINEERING, INC.
10235 W. Little York
Houston, TX 77040

The following report contains analytical results for the sample(s) received at Southern Petroleum Laboratories (SPL) on August 14, 1998. The sample(s) was assigned to Certificate of Analysis No.(s) 9808635 and analyzed for all parameters as listed on the chain of custody.

Any data flag or quality control exception associated with this report will be footnoted in the analytical results page(s) or the quality control summary page(s).

If you have any questions or comments pertaining to this data report, please do not hesitate to contact me. Please reference the above Certificate of Analysis No. during any inquiries.

Again, SPL is pleased to be of service to you. We anticipate working with you in fulfilling all your current and future analytical needs.

Southern Petroleum Laboratories


Electa Brown
Project Manager



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Southern Petroleum Laboratories, Inc.

Certificate of Analysis Number: 98-08-635

Approved for Release by:

A handwritten signature in cursive script, reading "Electa Brown", is written over a horizontal line.

Electa Brown, Project Manager

A handwritten date "9-1-98" is written in cursive script over a horizontal line.

Date

Greg Grandits
Laboratory Director

Cynthia Schreiner
Quality Assurance Officer

The attached analytical data package may not be reproduced except in full without the express written approval of this laboratory.
The results relate only to the samples tested.
Results reported on a Wet Weight Basis unless otherwise noted.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9808635-01

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 10/27/98

PROJECT: TWP Roswell STA 9
SITE:
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-23D

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 08/11/98 18:10:00
DATE RECEIVED: 08/14/98

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
Alkalinity, as CaCO3 Method 310.1 * Analyzed by: TK Date: 08/19/98 14:15:00	128	1	mg/L	
Chloride Method 325.3 * Analyzed by: AB Date: 08/27/98 10:00:00	337	10	mg/L	
Sulfate Method 375.4 * Analyzed by: TW Date: 08/27/98 13:00:00	2200	100	mg/L	
Total Dissolved Solids Method 160.1 * Analyzed by: DS Date: 08/17/98 15:00:00	3800	100	mg/L	
Nitrate-Nitrite, as N Method 353.3 * Analyzed by: AAB Date: 08/18/98 10:00:00	ND	0.1	mg/L	
Liquid-liquid extraction SEMIVOLATILES Method 3520C *** Analyzed by: DR Date: 08/17/98 10:00:00	08/17/98			

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9808635-01

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 10/27/98

PROJECT: TWP Roswell STA 9
SITE:
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-23D

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 08/11/98 18:10:00
DATE RECEIVED: 08/14/98

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
Silver, Total Method 6010B *** Analyzed by: JM Date: 08/27/98 08:59:00	ND	0.01	mg/L	
Arsenic, Total Method 6010B *** Analyzed by: EG Date: 08/27/98 10:13:00	0.009	0.005	mg/L	
Barium, Total Method 6010B *** Analyzed by: JM Date: 08/28/98 17:36:00	0.011	0.005	mg/L	
Calcium, Total Method 6010B *** Analyzed by: JM Date: 08/28/98 17:36:00	584	0.2	mg/L	
Cadmium, Total Method 6010B *** Analyzed by: JM Date: 08/27/98 08:59:00	ND	0.005	mg/L	
Chromium, Total Method 6010B *** Analyzed by: JM Date: 08/27/98 08:59:00	ND	0.01	mg/L	

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9808635-01

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 10/27/98

PROJECT: TWP Roswell STA 9
SITE:
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-23D

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 08/11/98 18:10:00
DATE RECEIVED: 08/14/98

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
Copper, Total Method 6010B *** Analyzed by: JM Date: 08/27/98 08:59:00	0.02	0.01	mg/L	
Iron, Total Method 6010B *** Analyzed by: JM Date: 08/27/98 08:59:00	0.23	0.02	mg/L	
Mercury, Total Method 7470 A*** Analyzed by: AG Date: 08/26/98 15:13:00	ND	0.0002	mg/L	
Potassium, Total Method 6010B *** Analyzed by: JM Date: 08/27/98 08:59:00	6	2	mg/L	
Magnesium, Total Method 6010B *** Analyzed by: JM Date: 08/27/98 08:59:00	165	0.1	mg/L	
Manganese, Total Method 6010B *** Analyzed by: JM Date: 08/27/98 08:59:00	0.068	0.005	mg/L	

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9808635-01

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 10/27/98

PROJECT: TWP Roswell STA 9
SITE:
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-23D

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 08/11/98 18:10:00
DATE RECEIVED: 08/14/98

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
Sodium, Total Method 6010B *** Analyzed by: JM Date: 08/27/98 08:59:00	240	0.5	mg/L	
Acid Digestion-Aqueous, ICP Method 3010A *** Analyzed by: MR Date: 08/18/98 08:45:00	08/18/98			
Lead, Total Method 6010B *** Analyzed by: EG Date: 08/27/98 10:13:00	ND	0.005	mg/L	
Selenium, Total Method 6010B *** Analyzed by: EG Date: 08/27/98 10:13:00	ND	0.005	mg/L	
Zinc, Total Method 6010B *** Analyzed by: JM Date: 08/28/98 17:36:00	ND	0.02	mg/L	

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9808635-01

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

10/27/98

PROJECT: TWP Roswell STA 9
SITE:
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-23D

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 08/11/98 18:10:00
DATE RECEIVED: 08/14/98

ANALYTICAL DATA

PARAMETER	RESULTS	PQL*	UNITS
Benzene	ND	5	ug/L
Bromobenzene	ND	5	ug/L
Bromochloromethane	ND	5	ug/L
Bromodichloromethane	ND	5	ug/L
Bromoform	ND	5	ug/L
Bromomethane	ND	10	ug/L
n-Butylbenzene	ND	5	ug/L
sec-Butylbenzene	ND	5	ug/L
tert-Butylbenzene	ND	5	ug/L
Carbon tetrachloride	ND	5	ug/L
Chlorobenzene	ND	5	ug/L
Chlorodibromomethane	ND	5	ug/L
Chloroethane	ND	10	ug/L
Chloroform	ND	5	ug/L
Chloromethane	ND	10	ug/L
2-Chlorotoluene	ND	5	ug/L
4-Chlorotoluene	ND	5	ug/L
1,2-Dibromo-3-chloropropane	ND	5	ug/L
1,2-Dibromoethane	ND	5	ug/L
Dibromomethane	ND	5	ug/L
1,2-Dichlorobenzene	ND	5	ug/L
1,3-Dichlorobenzene	ND	5	ug/L
1,4-Dichlorobenzene	ND	5	ug/L
Dichlorodifluoromethane	ND	10	ug/L
1,1-Dichloroethane	ND	5	ug/L
1,2-Dichloroethane	ND	5	ug/L
1,1-Dichloroethene	ND	5	ug/L
cis-1,2-Dichloroethene	ND	5	ug/L
trans-1,2-Dichloroethene	ND	5	ug/L
1,2-Dichloropropane	ND	5	ug/L
1,3-Dichloropropane	ND	5	ug/L
2,2-Dichloropropane	ND	5	ug/L
1,1-Dichloropropene	ND	5	ug/L
Ethylbenzene	ND	5	ug/L
Hexachlorobutadiene	ND	5	ug/L
Isopropylbenzene	ND	5	ug/L
p-Isopropyltoluene	ND	5	ug/L
Methylene chloride	ND	5	ug/L

METHOD: 8260 Water, Volatile Organics
(continued on next page)



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9808635-01

Cypress Engineering, Inc.

SAMPLE ID: MW-23D

ANALYTICAL DATA (continued)			
PARAMETER	RESULTS	PQL*	UNITS
Naphthalene	ND	5	ug/L
n-Propylbenzene	ND	5	ug/L
Styrene	ND	5	ug/L
1,1,1,2-Tetrachloroethane	ND	5	ug/L
1,1,2,2-Tetrachloroethane	ND	5	ug/L
Tetrachloroethene	ND	5	ug/L
Toluene	ND	5	ug/L
1,2,3-Trichlorobenzene	ND	5	ug/L
1,2,4-Trichlorobenzene	ND	5	ug/L
1,1,1-Trichloroethane	ND	5	ug/L
1,1,2-Trichloroethane	ND	5	ug/L
Trichloroethene	ND	5	ug/L
Trichlorofluoromethane	ND	5	ug/L
1,2,3-Trichloropropane	ND	5	ug/L
1,2,4-Trimethylbenzene	ND	5	ug/L
Vinyl chloride	ND	10	ug/L
Xylenes (total)	ND	5	ug/L
Methyl t-butyl ether	ND	10	ug/L
1,3,5-Trimethylbenzene	ND	5	ug/L
1,2-Dichloroethene (total)	ND	5	ug/L
cis-1,3-Dichloropropene	ND	5	ug/L
trans-1,3-Dichloropropene	ND	5	ug/L
Acetone	ND	100	ug/L
Vinyl Acetate	ND	10	ug/L
Carbon Disulfide	ND	5	ug/L
2-Butanone	ND	20	ug/L
4-Methyl-2-Pentanone	ND	10	ug/L
2-Hexanone	ND	10	ug/L
2-Chloroethylvinylether	ND	10	ug/L

SURROGATES	AMOUNT SPIKED	% RECOVERY	LOWER LIMIT	UPPER LIMIT
1,2-Dichloroethane-d4	50 ug/L	96	76	114
Toluene-d8	50 ug/L	98	88	110
4-Bromofluorobenzene	50 ug/L	98	86	115

ANALYZED BY: GT

DATE/TIME: 08/17/98 14:44:00

METHOD: 8260 Water, Volatile Organics

NOTES: * - Practical Quantitation Limit

ND - Not Detected

NA - Not Analyzed

COMMENTS:

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9808635-01

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

10/27/98

PROJECT: TWP Roswell STA 9
SITE:
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-23D

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 08/11/98 18:10:00
DATE RECEIVED: 08/14/98

ANALYTICAL DATA

PARAMETER	RESULTS	PQL*	UNITS
Acenaphthene	ND	5	ug/L
Acenaphthylene	ND	5	ug/L
Anthracene	ND	5	ug/L
Benzo(a)Anthracene	ND	5	ug/L
Benzo(b)Fluoranthene	ND	5	ug/L
Benzo(k)Fluoranthene	ND	5	ug/L
Benzo(a)Pyrene	ND	5	ug/L
Benzo(g,h,i)Perylene	ND	5	ug/L
Chrysene	ND	5	ug/L
Dibenz(a,h)Anthracene	ND	5	ug/L
Fluoranthene	ND	5	ug/L
Fluorene	ND	5	ug/L
Indeno(1,2,3-cd)Pyrene	ND	5	ug/L
2-Methylnaphthalene	ND	5	ug/L
Naphthalene	ND	5	ug/L
Phenanthrene	ND	5	ug/L
Pyrene	ND	5	ug/L
1-Methylnaphthalene	ND	5	ug/L

SURROGATES

	AMOUNT SPIKED	% RECOVERY	LOWER LIMIT	UPPER LIMIT
Nitrobenzene-d5	50 ug/L	92	35	114
2-Fluorobiphenyl	50 ug/L	92	43	116
Terphenyl-d14	50 ug/L	86	33	141
Phenol-d5	75 ug/L	25	10	110
2-Fluorophenol	75 ug/L	36	21	110
2,4,6-Tribromophenol	75 ug/L	96	10	123

ANALYZED BY: RY DATE/TIME: 08/20/98 13:40:00
EXTRACTED BY: DR DATE/TIME: 08/17/98 10:00:00
METHOD: 8270C, Semivolatile Organics - Water
NOTES: * - Practical Quantitation Limit ND - Not Detected
 NA - Not Analyzed

COMMENTS:

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9808635-02

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 10/27/98

PROJECT: TWP Roswell STA 9
SITE:
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-10

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 08/13/98 10:20:00
DATE RECEIVED: 08/14/98

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
Alkalinity, as CaCO ₃ Method 310.1 * Analyzed by: TK Date: 08/19/98 14:15:00	121	1	mg/L	
Chloride Method 325.3 * Analyzed by: AB Date: 08/27/98 10:00:00	372	10	mg/L	
Sulfate Method 375.4 * Analyzed by: TW Date: 08/27/98 13:00:00	1900	100	mg/L	
Total Dissolved Solids Method 160.1 * Analyzed by: DS Date: 08/17/98 15:00:00	3300	100	mg/L	
Nitrate-Nitrite, as N Method 353.3 * Analyzed by: AAB Date: 08/18/98 10:00:00	0.7	0.1	mg/L	
Liquid-liquid extraction SEMIVOLATILES Methcd 3520C *** Analyzed by: DR Date: 08/17/98 10:00:00	08/17/98			

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9808635-02

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 10/27/98

PROJECT: TWP Roswell STA 9
SITE:
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-10

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 08/13/98 10:20:00
DATE RECEIVED: 08/14/98

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
Silver, Total Method 6010B *** Analyzed by: JM Date: 08/27/98 08:59:00	ND	0.01	mg/L	
Arsenic, Total Method 6010B *** Analyzed by: EG Date: 08/27/98 10:13:00	0.007	0.005	mg/L	
Barium, Total Method 6010B *** Analyzed by: JM Date: 08/28/98 17:36:00	0.007	0.005	mg/L	
Calcium, Total Method 6010B *** Analyzed by: JM Date: 08/28/98 17:36:00	563	0.2	mg/L	
Cadmium, Total Method 6010B *** Analyzed by: JM Date: 08/27/98 08:59:00	ND	0.005	mg/L	
Chromium, Total Method 6010B *** Analyzed by: JM Date: 08/27/98 08:59:00	ND	0.01	mg/L	

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9808635-02

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 10/27/98

PROJECT: TWP Roswell STA 9
SITE:
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-10

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 08/13/98 10:20:00
DATE RECEIVED: 08/14/98

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
Copper, Total Method 6010B *** Analyzed by: JM Date: 08/27/98 08:59:00	ND	0.01	mg/L	
Iron, Total Method 6010B *** Analyzed by: JM Date: 08/27/98 08:59:00	ND	0.02	mg/L	
Mercury, Total Method 7470 A*** Analyzed by: AG Date: 08/26/98 15:13:00	ND	0.0002	mg/L	
Potassium, Total Method 6010B *** Analyzed by: JM Date: 08/27/98 08:59:00	5	2	mg/L	
Magnesium, Total Method 6010B *** Analyzed by: JM Date: 08/27/98 08:59:00	130	0.1	mg/L	
Manganese, Total Method 6010B *** Analyzed by: JM Date: 08/27/98 08:59:00	ND	0.005	mg/L	

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9808635-02

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 10/27/98

PROJECT: TWP Roswell STA 9
SITE:
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-10

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 08/13/98 10:20:00
DATE RECEIVED: 08/14/98

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
Sodium, Total Method 6010B *** Analyzed by: JM Date: 08/27/98 08:59:00	201	0.5	mg/L	
Acid Digestion-Aqueous, ICP Method 3010A *** Analyzed by: MR Date: 08/18/98 08:45:00	08/18/98			
Lead, Total Method 6010B *** Analyzed by: EG Date: 08/27/98 10:13:00	ND	0.005	mg/L	
Selenium, Total Method 6010B *** Analyzed by: EG Date: 08/27/98 10:13:00	ND	0.005	mg/L	
Zinc, Total Method 6010B *** Analyzed by: JM Date: 08/28/98 17:36:00	0.04	0.02	mg/L	

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9808635-02

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

10/27/98

PROJECT: TWP Roswell STA 9
SITE:
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-10

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 08/13/98 10:20:00
DATE RECEIVED: 08/14/98

ANALYTICAL DATA

PARAMETER	RESULTS	PQL*	UNITS
Benzene	ND	5	ug/L
Bromobenzene	ND	5	ug/L
Bromochloromethane	ND	5	ug/L
Bromodichloromethane	ND	5	ug/L
Bromoform	ND	5	ug/L
Bromomethane	ND	10	ug/L
n-Butylbenzene	ND	5	ug/L
sec-Butylbenzene	ND	5	ug/L
tert-Butylbenzene	ND	5	ug/L
Carbon tetrachloride	ND	5	ug/L
Chlorobenzene	ND	5	ug/L
Chlorodibromomethane	ND	5	ug/L
Chloroethane	ND	10	ug/L
Chloroform	ND	5	ug/L
Chloromethane	ND	10	ug/L
2-Chlorotoluene	ND	5	ug/L
4-Chlorotoluene	ND	5	ug/L
1,2-Dibromo-3-chloropropane	ND	5	ug/L
1,2-Dibromoethane	ND	5	ug/L
Dibromomethane	ND	5	ug/L
1,2-Dichlorobenzene	ND	5	ug/L
1,3-Dichlorobenzene	ND	5	ug/L
1,4-Dichlorobenzene	ND	5	ug/L
Dichlorodifluoromethane	ND	10	ug/L
1,1-Dichloroethane	ND	5	ug/L
1,2-Dichloroethane	ND	5	ug/L
1,1-Dichloroethene	ND	5	ug/L
cis-1,2-Dichloroethene	ND	5	ug/L
trans-1,2-Dichloroethene	ND	5	ug/L
1,2-Dichloropropane	ND	5	ug/L
1,3-Dichloropropane	ND	5	ug/L
2,2-Dichloropropane	ND	5	ug/L
1,1-Dichloropropene	ND	5	ug/L
Ethylbenzene	ND	5	ug/L
Hexachlorobutadiene	ND	5	ug/L
Isopropylbenzene	ND	5	ug/L
p-Isopropyltoluene	ND	5	ug/L
Methylene chloride	ND	5	ug/L

METHOD: 8260 Water, Volatile Organics
(continued on next page)



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9808635-02

Cypress Engineering, Inc.

SAMPLE ID: MW-10

ANALYTICAL DATA (continued)			
PARAMETER	RESULTS	PQL*	UNITS
Naphthalene	ND	5	ug/L
n-Propylbenzene	ND	5	ug/L
Styrene	ND	5	ug/L
1,1,1,2-Tetrachloroethane	ND	5	ug/L
1,1,2,2-Tetrachloroethane	ND	5	ug/L
Tetrachloroethene	ND	5	ug/L
Toluene	ND	5	ug/L
1,2,3-Trichlorobenzene	ND	5	ug/L
1,2,4-Trichlorobenzene	ND	5	ug/L
1,1,1-Trichloroethane	ND	5	ug/L
1,1,2-Trichloroethane	ND	5	ug/L
Trichloroethene	ND	5	ug/L
Trichlorofluoromethane	ND	5	ug/L
1,2,3-Trichloropropane	ND	5	ug/L
1,2,4-Trimethylbenzene	ND	5	ug/L
Vinyl chloride	ND	10	ug/L
Xylenes (total)	ND	5	ug/L
Methyl t-butyl ether	ND	10	ug/L
1,3,5-Trimethylbenzene	ND	5	ug/L
1,2-Dichloroethene (total)	ND	5	ug/L
cis-1,3-Dichloropropene	ND	5	ug/L
trans-1,3-Dichloropropene	ND	5	ug/L
Acetone	ND	100	ug/L
Vinyl Acetate	ND	10	ug/L
Carbon Disulfide	ND	5	ug/L
2-Butanone	ND	20	ug/L
4-Methyl-2-Pentanone	ND	10	ug/L
2-Hexanone	ND	10	ug/L
2-Chloroethylvinylether	ND	10	ug/L

SURROGATES	AMOUNT SPIKED	% RECOVERY	LOWER LIMIT	UPPER LIMIT
1,2-Dichloroethane-d4	50 ug/L	94	76	114
Toluene-d8	50 ug/L	102	88	110
4-Bromofluorobenzene	50 ug/L	94	86	115

ANALYZED BY: GT

DATE/TIME: 08/17/98 15:08:00

METHOD: 8260 Water, Volatile Organics

NOTES: * - Practical Quantitation Limit

ND - Not Detected

NA - Not Analyzed

COMMENTS:

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9808635-02

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

10/27/98

PROJECT: TWP Roswell STA 9
SITE:
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-10

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 08/13/98 10:20:00
DATE RECEIVED: 08/14/98

ANALYTICAL DATA

PARAMETER	RESULTS	PQL*	UNITS
Acenaphthene	ND	5	ug/L
Acenaphthylene	ND	5	ug/L
Anthracene	ND	5	ug/L
Benzo(a)Anthracene	ND	5	ug/L
Benzo(b)Fluoranthene	ND	5	ug/L
Benzo(k)Fluoranthene	ND	5	ug/L
Benzo(a)Pyrene	ND	5	ug/L
Benzo(g,h,i)Perylene	ND	5	ug/L
Chrysene	ND	5	ug/L
Dibenz(a,h)Anthracene	ND	5	ug/L
Fluoranthene	ND	5	ug/L
Fluorene	ND	5	ug/L
Indeno(1,2,3-cd)Pyrene	ND	5	ug/L
2-Methylnaphthalene	ND	5	ug/L
Naphthalene	ND	5	ug/L
Phenanthrene	ND	5	ug/L
Pyrene	ND	5	ug/L
1-Methylnaphthalene	ND	5	ug/L

SURROGATES	AMOUNT SPIKED	% RECOVERY	LOWER LIMIT	UPPER LIMIT
Nitrobenzene-d5	50 ug/L	76	35	114
2-Fluorobiphenyl	50 ug/L	80	43	116
Terphenyl-d14	50 ug/L	70	33	141
Phenol-d5	75 ug/L	20	10	110
2-Fluorophenol	75 ug/L	32	21	110
2,4,6-Tribromophenol	75 ug/L	91	10	123

ANALYZED BY: RY DATE/TIME: 08/20/98 14:14:00
EXTRACTED BY: DR DATE/TIME: 08/17/98 10:00:00
METHOD: 8270C, Semivolatile Organics - Water
NOTES: * - Practical Quantitation Limit ND - Not Detected
 NA - Not Analyzed

COMMENTS:

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9808635-03

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 10/27/98

PROJECT: TWP Roswell STA 9
SITE:
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-11

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 08/13/98 11:35:00
DATE RECEIVED: 08/14/98

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
Alkalinity, as CaCO3 Method 310.1 * Analyzed by: TK Date: 08/19/98 14:15:00	102	1	mg/L	
Chloride Method 325.3 * Analyzed by: AB Date: 08/27/98 10:00:00	390	10	mg/L	
Sulfate Method 375.4 * Analyzed by: TW Date: 08/27/98 13:00:00	1900	100	mg/L	
Total Dissolved Solids Method 160.1 * Analyzed by: DS Date: 08/17/98 15:00:00	3300	100	mg/L	
Nitrate-Nitrite, as N Method 353.3 * Analyzed by: AAB Date: 08/18/98 10:00:00	0.6	0.1	mg/L	
Liquid-liquid extraction SEMIVOLATILES Method 3520C *** Analyzed by: DR Date: 08/17/98 10:00:00	08/17/98			

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9808635-03

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 10/27/98

PROJECT: TWP Roswell STA 9
SITE:
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-11

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 08/13/98 11:35:00
DATE RECEIVED: 08/14/98

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
Silver, Total Method 6010B *** Analyzed by: JM Date: 08/27/98 08:59:00	ND	0.01	mg/L	
Arsenic, Total Method 6010B *** Analyzed by: EG Date: 08/27/98 10:13:00	0.006	0.005	mg/L	
Barium, Total Method 6010B *** Analyzed by: JM Date: 08/28/98 17:36:00	0.007	0.005	mg/L	
Calcium, Total Method 6010B *** Analyzed by: JM Date: 08/28/98 17:36:00	585	0.2	mg/L	
Cadmium, Total Method 6010B *** Analyzed by: JM Date: 08/27/98 08:59:00	ND	0.005	mg/L	
Chromium, Total Method 6010B *** Analyzed by: JM Date: 08/27/98 08:59:00	ND	0.01	mg/L	

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9808635-03

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 10/27/98

PROJECT: TWP Roswell STA 9
SITE:
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-11

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 08/13/98 11:35:00
DATE RECEIVED: 08/14/98

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
Copper, Total Method 6010B *** Analyzed by: JM Date: 08/27/98 08:59:00	ND	0.01	mg/L	
Iron, Total Method 6010B *** Analyzed by: JM Date: 08/27/98 08:59:00	0.14	0.02	mg/L	
Mercury, Total Method 7470 A*** Analyzed by: AG Date: 08/26/98 15:13:00	ND	0.0002	mg/L	
Potassium, Total Method 6010B *** Analyzed by: JM Date: 08/27/98 08:59:00	4	2	mg/L	
Magnesium, Total Method 6010B *** Analyzed by: JM Date: 08/27/98 08:59:00	121	0.1	mg/L	
Manganese, Total Method 6010B *** Analyzed by: JM Date: 08/27/98 08:59:00	0.012	0.005	mg/L	

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9808635-03

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 10/27/98

PROJECT: TWP Roswell STA 9
SITE:
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-11

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 08/13/98 11:35:00
DATE RECEIVED: 08/14/98

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
Sodium, Total Method 6010B *** Analyzed by: JM Date: 08/27/98 08:59:00	229	0.5	mg/L	
Acid Digestion-Aqueous, ICP Method 3010A *** Analyzed by: MR Date: 08/18/98 08:45:00	08/18/98			
Lead, Total Method 6010B *** Analyzed by: EG Date: 08/27/98 10:13:00	ND	0.005	mg/L	
Selenium, Total Method 6010B *** Analyzed by: EG Date: 08/27/98 10:13:00	ND	0.005	mg/L	
Zinc, Total Method 6010B *** Analyzed by: JM Date: 08/28/98 17:36:00	0.06	0.02	mg/L	

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9808635-03

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

10/27/98

PROJECT: TWP Roswell STA 9
SITE:
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-11

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 08/13/98 11:35:00
DATE RECEIVED: 08/14/98

ANALYTICAL DATA				
PARAMETER	RESULTS	PQL*	UNITS	
Benzene	ND	5	ug/L	
Bromobenzene	ND	5	ug/L	
Bromochloromethane	ND	5	ug/L	
Bromodichloromethane	ND	5	ug/L	
Bromoform	ND	5	ug/L	
Bromomethane	ND	10	ug/L	
n-Butylbenzene	ND	5	ug/L	
sec-Butylbenzene	ND	5	ug/L	
tert-Butylbenzene	ND	5	ug/L	
Carbon tetrachloride	ND	5	ug/L	
Chlorobenzene	ND	5	ug/L	
Chlorodibromomethane	ND	5	ug/L	
Chloroethane	ND	10	ug/L	
Chloroform	ND	5	ug/L	
Chloromethane	ND	10	ug/L	
2-Chlorotoluene	ND	5	ug/L	
4-Chlorotoluene	ND	5	ug/L	
1,2-Dibromo-3-chloropropane	ND	5	ug/L	
1,2-Dibromoethane	ND	5	ug/L	
Dibromomethane	ND	5	ug/L	
1,2-Dichlorobenzene	ND	5	ug/L	
1,3-Dichlorobenzene	ND	5	ug/L	
1,4-Dichlorobenzene	ND	5	ug/L	
Dichlorodifluoromethane	ND	10	ug/L	
1,1-Dichloroethane	ND	5	ug/L	
1,2-Dichloroethane	ND	5	ug/L	
1,1-Dichloroethene	ND	5	ug/L	
cis-1,2-Dichloroethene	ND	5	ug/L	
trans-1,2-Dichloroethene	ND	5	ug/L	
1,2-Dichloropropane	ND	5	ug/L	
1,3-Dichloropropane	ND	5	ug/L	
2,2-Dichloropropane	ND	5	ug/L	
1,1-Dichloropropene	ND	5	ug/L	
Ethylbenzene	ND	5	ug/L	
Hexachlorobutadiene	ND	5	ug/L	
Isopropylbenzene	ND	5	ug/L	
p-Isopropyltoluene	ND	5	ug/L	
Methylene chloride	ND	5	ug/L	

METHOD: 8260 Water, Volatile Organics
(continued on next page)

**HOUSTON LABORATORY**8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9808635-03

Cypress Engineering, Inc.

SAMPLE ID: MW-11

ANALYTICAL DATA (continued)			
PARAMETER	RESULTS	PQL*	UNITS
Naphthalene	ND	5	ug/L
n-Propylbenzene	ND	5	ug/L
Styrene	ND	5	ug/L
1,1,1,2-Tetrachloroethane	ND	5	ug/L
1,1,2,2-Tetrachloroethane	ND	5	ug/L
Tetrachloroethene	ND	5	ug/L
Toluene	ND	5	ug/L
1,2,3-Trichlorobenzene	ND	5	ug/L
1,2,4-Trichlorobenzene	ND	5	ug/L
1,1,1-Trichloroethane	ND	5	ug/L
1,1,2-Trichloroethane	ND	5	ug/L
Trichloroethene	ND	5	ug/L
Trichlorofluoromethane	ND	5	ug/L
1,2,3-Trichloropropane	ND	5	ug/L
1,2,4-Trimethylbenzene	ND	5	ug/L
Vinyl chloride	ND	10	ug/L
Xylenes (total)	ND	5	ug/L
Methyl t-butyl ether	ND	10	ug/L
1,3,5-Trimethylbenzene	ND	5	ug/L
1,2-Dichloroethene (total)	ND	5	ug/L
cis-1,3-Dichloropropene	ND	5	ug/L
trans-1,3-Dichloropropene	ND	5	ug/L
Acetone	ND	100	ug/L
Vinyl Acetate	ND	10	ug/L
Carbon Disulfide	ND	5	ug/L
2-Butanone	ND	20	ug/L
4-Methyl-2-Pentanone	ND	10	ug/L
2-Hexanone	ND	10	ug/L
2-Chloroethylvinylether	ND	10	ug/L

SURROGATES	AMOUNT SPIKED	% RECOVERY	LOWER LIMIT	UPPER LIMIT
1,2-Dichloroethane-d4	50 ug/L	98	76	114
Toluene-d8	50 ug/L	100	88	110
4-Bromofluorobenzene	50 ug/L	98	86	115

ANALYZED BY: GT

DATE/TIME: 08/17/98 15:31:00

METHOD: 8260 Water, Volatile Organics

NOTES: * - Practical Quantitation Limit

ND - Not Detected

NA - Not Analyzed

COMMENTS:

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9808635-03

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

10/27/98

PROJECT: TWP Roswell STA 9
SITE:
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-11

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 08/13/98 11:35:00
DATE RECEIVED: 08/14/98

ANALYTICAL DATA

PARAMETER	RESULTS	PQL*	UNITS
Acenaphthene	ND	5	ug/L
Acenaphthylene	ND	5	ug/L
Anthracene	ND	5	ug/L
Benzo(a)Anthracene	ND	5	ug/L
Benzo(b)Fluoranthene	ND	5	ug/L
Benzo(k)Fluoranthene	ND	5	ug/L
Benzo(a)Pyrene	ND	5	ug/L
Benzo(g,h,i)Perylene	ND	5	ug/L
Chrysene	ND	5	ug/L
Dibenz(a,h)Anthracene	ND	5	ug/L
Fluoranthene	ND	5	ug/L
Fluorene	ND	5	ug/L
Indeno(1,2,3-cd)Pyrene	ND	5	ug/L
2-Methylnaphthalene	ND	5	ug/L
Naphthalene	ND	5	ug/L
Phenanthrene	ND	5	ug/L
Pyrene	ND	5	ug/L
1-Methylnaphthalene	ND	5	ug/L

SURROGATES

	AMOUNT SPIKED	% RECOVERY	LOWER LIMIT	UPPER LIMIT
Nitrobenzene-d5	50 ug/L	80	35	114
2-Fluorobiphenyl	50 ug/L	80	43	116
Terphenyl-d14	50 ug/L	68	33	141
Phenol-d5	75 ug/L	23	10	110
2-Fluorophenol	75 ug/L	33	21	110
2,4,6-Tribromophenol	75 ug/L	85	10	123

ANALYZED BY: RY DATE/TIME: 08/20/98 14:48:00
EXTRACTED BY: DR DATE/TIME: 08/17/98 10:00:00
METHOD: 8270C, Semivolatile Organics - Water
NOTES: * - Practical Quantitation Limit ND - Not Detected
 NA - Not Analyzed

COMMENTS:

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.

QUALITY CONTROL

DOCUMENTATION

3B
WATER VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: SPL

Contract:

Lab Code:

Case No:

9808635

SAS No:

SDG No:

Matrix Spike - EPA

Sample No:

MW-11

Level(low/med) Low

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC. #	QC LIMITS REC.
1,1-Dichloroethene	50	0	57	114	61-145
Trichloroethene	50	0	52	104	71-120
Benzene	50	0	58	116	76-127
Toluene	50	0	54	108	76-125
Chlorobenzene	50	0	49	98	75-130

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC.	#	QC LIMITS	
					% RPD #	REC.
1,1-Dichloroethene	50	38	76		40 *	22 61-145
Trichloroethene	50	45	90		14	24 71-120
Benzene	50	54	108		7	21 76-127
Toluene	50	51	102		6	21 76-125
Chlorobenzene	50	48	96		2	21 75-130

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits due to matrix interference

RPD: 1 out of 5 outside limits
Spike Recovery: 0 out of 10 outside limits

SPL Houston Labs

RECOVERY REPORT

Client Name:
Sample Matrix: LIQUID
Lab Smp Id: METHSPIKE-8260W/1X
Level: LOW
Data Type: MS DATA
SpikeList File: 8240water.spk
Sublist File: 8260A.sub
Method File: /var/chem/m.i/m980817.b/m8260aw.m
Misc Info: M229W1//M229CW1

Client SDG: m980817
Fraction: VOA
Operator: GT
SampleType: METHSPIKE
Quant Type: ISTD

SPIKE COMPOUND	CONC ADDED ug/L	CONC RECOVERED ug/L	% RECOVERED	LIMITS
7 1,1-Dichloroethene	50	49	98.00	61-145
26 Trichloroethene	50	47	94.00	71-120
22 Benzene	50	51	102.00	76-127
33 Toluene	50	50	100.00	76-125
39 Chlorobenzene	50	46	92.00	75-130

SURROGATE COMPOUND	CONC ADDED ug/L	CONC RECOVERED ug/L	% RECOVERED	LIMITS
\$ 19 1,2-Dichloroethane	50	51	102.00	76-114
\$ 32 Toluene-d8	50	48	96.00	88-110
\$ 47 Bromofluorobenzene	50	55	110.00	86-115



SPL Blank QC Report

HOUSTON LABORATORY

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 984-0901

1

Matrix: Aqueous
Sample ID: VBLK
Batch: M980817113701

Reported on: 08/21/98 12:20
Analyzed on: 08/17/98 14:21
Analyst: GT

METHOD 8260 M229B01

Compound	Result	Detection Limit	Units
Chloromethane	ND	10	ug/L
Vinyl Chloride	ND	10	ug/L
Bromomethane	ND	10	ug/L
Chloroethane	ND	10	ug/L
Trichlorofluoromethane	ND	5	ug/L
Acetone	ND	100	ug/L
1,1-Dichloroethene	ND	5	ug/L
Methylene Chloride	ND	5	ug/L
Carbon Disulfide	ND	5	ug/L
trans-1,2-Dichloroethene	ND	5	ug/L
1,1-Dichloroethane	ND	5	ug/L
1,2-Dichloroethene (total)	ND	5	ug/L
Vinyl Acetate	ND	10	ug/L
2-Butanone	ND	20	ug/L
cis-1,2-Dichloroethene	ND	5	ug/L
Bromochloromethane	ND	5	ug/L
Chloroform	ND	5	ug/L
1,1,1-Trichloroethane	ND	5	ug/L
1,2-Dichloroethane	ND	5	ug/L
Benzene	ND	5	ug/L
Carbon Tetrachloride	ND	5	ug/L
1,2-Dichloropropane	ND	5	ug/L
Trichloroethene	ND	5	ug/L
Bromodichloromethane	ND	5	ug/L
2-Chloroethylvinylether	ND	10	ug/L
4-Methyl-2-Pentanone	ND	10	ug/L
cis-1,3-Dichloropropene	ND	5	ug/L
trans-1,3-Dichloropropene	ND	5	ug/L
Toluene	ND	5	ug/L
1,1,2-Trichloroethane	ND	5	ug/L
2-Hexanone	ND	10	ug/L
Dibromochloromethane	ND	5	ug/L
Tetrachloroethene	ND	5	ug/L
Chlorobenzene	ND	5	ug/L

Notes

ND - Not detected.



SPL Blank QC Report

HOUSTON LABORATORY
8830 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 669-0901

Matrix: Aqueous
Sample ID: VBLK
Batch: M980817113701

Reported on: 08/21/98 12:20
Analyzed on: 08/17/98 14:21
Analyst: GT

METHOD 8260 M229B01

Compound	Result	Detection Limit	Units
Xylene (Total)	ND	5	ug/L
Ethylbenzene	ND	5	ug/L
Bromoform	ND	5	ug/L
Styrene	ND	5	ug/L
1,1,2,2-Tetrachloroethane	ND	5	ug/L
Dichlorodifluoromethane	ND	10	ug/L
1,1,1,2-Tetrachloroethane	ND	5	ug/L
1,2,3-Trichloropropane	ND	5	ug/L
1,2-Dibromo-3-Chloropropan	ND	5	ug/L
Dibromomethane	ND	5	ug/L
Methyl t-butyl ether	ND	10	ug/L
1,2,4-Trimethylbenzene	ND	5	ug/L
Bromobenzene	ND	5	ug/L
N-Butylbenzene	ND	5	ug/L
sec-Butylbenzene	ND	5	ug/L
tert-Butylbenzene	ND	5	ug/L
2-Chlorotoluene	ND	5	ug/L
4-Chlorotoluene	ND	5	ug/L
1,2-Dibromoethane	ND	5	ug/L
1,2-Dichlorobenzene	ND	5	ug/L
1,3-Dichlorobenzene	ND	5	ug/L
1,4-Dichlorobenzene	ND	5	ug/L
1,3-Dichloropropane	ND	5	ug/L
2,2-Dichloropropane	ND	5	ug/L
Hexachlorobutadiene	ND	5	ug/L
Isopropylbenzene	ND	5	ug/L
p-Isopropyltoluene	ND	5	ug/L
Naphthalene	ND	5	ug/L
N-Propylbenzene	ND	5	ug/L
1,2,3-Trichlorobenzene	ND	5	ug/L
1,2,4-Trichlorobenzene	ND	5	ug/L
1,3,5-Trimethylbenzene	ND	5	ug/L
1,1-Dichloropropene	ND	5	ug/L

Notes

ND - Not detected.



SPL Blank QC Report

HOUSTON LABORATORY

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 866-1111

3

Matrix: Aqueous
Sample ID: VBLK
Batch: M980817113701

Reported on: 08/21/98 12:20
Analyzed on: 08/17/98 14:21
Analyst: GT

METHOD 8260 M229B01

S u r r o g a t e	Result	QC Criteria	Units
1,2-Dichloroethane-d4	100	76-114	% Recovery
Toluene-d8	96	88-110	% Recovery
Bromofluorobenzene	94	86-115	% Recovery

Samples in Batch 9808635-01 9808635-02 9808635-03

Notes

ND - Not detected.

3C

WATER SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: SPL

Contract:

Lab Code: Case No: 980817

SAS No: SDG No:

Matrix Spike - EPA

Sample No: BLKSPIKE

Level (low/med):

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATIO (ug/L)	MS CONCENTRATION (ug/L)	MS % REC #	QC LIMITS REC
Phenol	75	0	23	31	12-110
2-Chlorophenol	75	0	57	76	27-123
1,4-Dichlorobenzene	50	0	42	84	36- 97
N-Nitroso-di-n-propylamine	50	0	45	90	41-116
1,2,4-Trichlorobenzene	50	0	48	96	39-110
4-Chloro-3-methylphenol	75	0	65	87	23-110
Acenaphthene	50	0	42	84	46-125
4-Nitrophenol	75	0	20	27	25-150
2,4-Dinitrotoluene	50	0	41	82	50-150
Pentachlorophenol	75	0	71	95	9-125
Pyrene	50	0	33	66	26-127

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATIO (ug/L)	MSD % REC #	% RPD #	QC LIMITS	
					RPD	REC
Phenol	75	22	29	7	42	12-110
2-Chlorophenol	75	58	77	1	40	27-132
1,4-Dichlorobenzene	50	41	82	2	28	36- 97
N-Nitroso-di-n-propylamine	50	48	96	6	38	41-116
1,2,4-Trichlorobenzene	50	47	94	2	28	39-110
4-Chloro-3-methylphenol	75	65	87	0	42	23-110
Acenaphthene	50	45	90	7	31	46-125
4-Nitrophenol	75	23	31	14	50	25-150
2,4-Dinitrotoluene	50	46	92	11	50	50-150
Pentachlorophenol	75	76	101	6	50	9-125
Pyrene	50	40	80	19	31	26-127

Column to be used to flag recovery and RPD values with an asterisk

RPD: 0 out of 11 outside limits
Spike Recovery: 0 out of 22 outside limits



SPL Blank QC Report

HOUSTON LABORATORY

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 688-0901

1

Matrix: Aqueous
Sample ID: BLANK
Batch: E980817042258

Reported on: 08/27/98 11:38
Analyzed on: 08/20/98 11:59
Analyst: RY

METHOD 8270 J229B03A

C o m p o u n d	Result	Detection Limit	Units
Pyridine	ND	5	ug/L
Phenol	ND	5	ug/L
Aniline	ND	5	ug/L
bis(2-Chloroethyl) ether	ND	5	ug/L
2-Chlorophenol	ND	5	ug/L
1,3-Dichlorobenzene	ND	5	ug/L
1,4-Dichlorobenzene	ND	5	ug/L
Benzyl alcohol	ND	5	ug/L
1,2-Dichlorobenzene	ND	5	ug/L
2-Methylphenol	ND	5	ug/L
bis(2-chloroisopropyl) ethe	ND	5	ug/L
4-Methylphenol	ND	5	ug/L
N-Nitroso-di-n-propylamine	ND	5	ug/L
Hexachloroethane	ND	5	ug/L
Nitrobenzene	ND	5	ug/L
Isophorone	ND	5	ug/L
2-Nitrophenol	ND	5	ug/L
2,4-Dimethylphenol	ND	5	ug/L
Benzoic acid	ND	25	ug/L
bis(2-Chloroethoxy) methane	ND	5	ug/L
2,4-Dichlorophenol	ND	5	ug/L
1,2,4-Trichlorobenzene	ND	5	ug/L
Naphthalene	ND	5	ug/L
4-Chloroaniline	ND	5	ug/L
Hexachlorobutadiene	ND	5	ug/L
4-Chloro-3-methylphenol	ND	5	ug/L
2-Methylnaphthalene	ND	5	ug/L
Hexachlorocyclopentadiene	ND	5	ug/L
2,4,6-Trichlorophenol	ND	5	ug/L
2,4,5-Trichlorophenol	ND	10	ug/L
2-Chloronaphthalene	ND	5	ug/L
2-Nitroaniline	ND	25	ug/L
Dimethylphthalate	ND	5	ug/L
2,6-Dinitrotoluene	ND	5	ug/L

Notes

ND - Not detected.



SPL Blank QC Report

HOUSTON LABORATORY

8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 681-0901Matrix: Aqueous
Sample ID: BLANK
Batch: E980817042258Reported on: 08/27/98 11:38
Analyzed on: 08/20/98 11:59
Analyst: RY

METHOD 8270 J229B03A

Compound	Result	Detection Limit	Units
Acenaphthylene	ND	5	ug/L
3-Nitroaniline	ND	25	ug/L
Acenaphthene	ND	5	ug/L
2,4-Dinitrophenol	ND	25	ug/L
4-Nitrophenol	ND	25	ug/L
Dibenzofuran	ND	5	ug/L
2,4-Dinitrotoluene	ND	5	ug/L
Diethylphthalate	ND	5	ug/L
4-Chlorophenyl-phenylether	ND	5	ug/L
Fluorene	ND	5	ug/L
4-Nitroaniline	ND	25	ug/L
4,6-Dinitro-2-methylphenol	ND	25	ug/L
n-Nitrosodiphenylamine	ND	5	ug/L
1,2-Diphenylhydrazine	ND	5	ug/L
4-Bromophenyl-phenylether	ND	5	ug/L
Hexachlorobenzene	ND	5	ug/L
Pentachlorophenol	ND	25	ug/L
Phenanthrene	ND	5	ug/L
Anthracene	ND	5	ug/L
Carbazole	ND	5	ug/L
Di-n-butylphthalate	ND	5	ug/L
Fluoranthene	ND	5	ug/L
Pyrene	ND	5	ug/L
Butylbenzylphthalate	ND	5	ug/L
3,3'-Dichlorobenzidine	ND	10	ug/L
Benzo[a]anthracene	ND	5	ug/L
Chrysene	ND	5	ug/L
bis(2-Ethylhexyl)phthalate	ND	5	ug/L
Di-n-octylphthalate	ND	5	ug/L
Benzo[b]fluoranthene	ND	5	ug/L
Benzo[k]fluoranthene	ND	5	ug/L
Benzo[a]pyrene	ND	5	ug/L
Indeno[1,2,3-cd]pyrene	ND	5	ug/L
Dibenz[a,h]anthracene	ND	5	ug/L

Notes

ND - Not detected.



SPL Blank QC Report

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 988-0901

3

Matrix: Aqueous
Sample ID: BLANK
Batch: E980817042258

Reported on: 08/27/98 11:38
Analyzed on: 08/20/98 11:59
Analyst: RY

METHOD 8270 J229B03A

C o m p o u n d	Result	Detection Limit	Units
Benzo[g,h,i]perylene	ND	5	ug/L

S u r r o g a t e	Result	QC Criteria	Units
Nitrobenzene-d5	96	35-114	% Recovery
2-Fluorobiphenyl	100	43-116	% Recovery
Terphenyl-d14	74	33-141	% Recovery
Phenol-d5	29	10-110	% Recovery
2-Fluorophenol	43	21-110	% Recovery
2,4,6-Tribromophenol	93	10-123	% Recovery

Samples in Batch 9808635-01 9808635-02 9808635-03

Notes

ND - Not detected.

ICP Spectroscopy Method 6010 Quality Control Report

Analyst: EG



Matrix: Water

Units: mg/L

HOUSTON LABORATORY

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 660-0901

Date:082798 Time:1013 File Name: T082798B

Laboratory Control Sample

Element	Mth. Blank	True Value	Result	% Recovery	Lower Limit	Upper Limit
Silver	ND	2.00	2.01	100	1.60	2.40
Aluminum						
Arsenic	ND	4.00	4.12	103	3.20	4.80
Barium	ND	2.00	1.98	99	1.60	2.40
Beryllium						
Calcium						
Cadmium	ND	2.00	2.05	103	1.60	2.40
Cobalt						
Chromium	ND	2.00	2.09	105	1.60	2.40
Copper						
Iron	ND	2.00	1.96	98	1.60	2.40
Potassium						
Magnesium						
Manganese						
Sodium						
Nickel						
Lead	ND	2.00	2.05	102	1.60	2.40
Antimony						
Selenium	ND	4.00	4.02	100	3.20	4.80
Thallium						
Vanadium						
Zinc						

Work Orders in Batch

Work Order Fractions

98-08-574 01E-03E

98-08-557 01B

98-08-584 17A

98-08-605 01C

98-08-618 05A

98-08-620 02C

98-08-623 01D-03D

98-08-635 01E-03E

98-08-644 01E-03E

98-08-652 01E, 02E
03F

Matrix Spike - Spike Duplicate Results

Work Order Spiked: 9808574-02E

Element	Sample Result	Spike Added	Matrix Spike Result	Matrix Spike Recovery	Matrix Spike Duplicate Result	Matrix Spike Duplicate Recovery	QC Limits % Recovery	Spike RPD %	QC Limits %
Silver	ND	1.0	0.9657	96.6	0.9781	97.8	80 120	1.3	20.0
Aluminum									
Arsenic	0.0068	2.0	2.015	100.4	2.027	101.0	80 120	0.6	20.0
Barium	0.0111	1.0	0.8862	87.5	0.8958	88.5	80 120	1.1	20.0
Beryllium									
Calcium									
Cadmium	ND	1.0	0.9314	93.1	0.9374	93.7	80 120	0.6	20.0
Cobalt									
Chromium	ND	1.0	0.9452	94.5	0.9541	95.4	80 120	0.9	20.0
Copper									
Iron	ND	1.0	0.8896	89.0	0.8766	87.7	80 120	1.5	20.0
Potassium									
Magnesium									
Manganese									
Sodium									
Nickel									
Lead	ND	1.0	0.9371	93.7	0.9383	93.8	80 120	0.1	20.0
Antimony									
Selenium	ND	2.0	1.958	97.9	1.946	97.3	80 120	0.6	20.0
Thallium									
Vanadium									
Zinc									

Checked: ML 8/23/98

ICP Spectroscopy Method 6010 Quality Control Report

Analyst: JM



Matrix: Water

Units: mg/L

Date:082798 Time:0859 File Name: 082798M9

HOUSTON LABORATORY

8880 INTERCHANGE DR. E

HOUSTON, TEXAS 77064

PHONE 713 660-1921

Laboratory Control Sample

Element	Mth. Blank	True Value	Result	% Recovery	Lower Limit	Upper Limit
Silver	ND	2.00	2.03	101	1.60	2.40
Aluminum						
Arsenic						
Barium						
Beryllium	ND	2.00	1.97	99	1.60	2.40
Calcium						
Cadmium	ND	2.00	2.02	101	1.60	2.40
Cobalt						
Chromium	ND	2.00	2.04	102	1.60	2.40
Copper	ND	2.00	2.00	100	1.60	2.40
Iron	ND	2.00	2.00	100	1.60	2.40
Potassium	ND	20.00	19.83	99	16.00	24.00
Magnesium	ND	20.00	20.17	101	16.00	24.00
Manganese	ND	2.00	1.98	99	1.60	2.40
Sodium	ND	20.00	20.03	100	16.00	24.00
Nickel	ND	2.00	2.04	102	1.60	2.40
Lead						
Antimony						
Selenium						
Thallium						
Vanadium						
Zinc						

Work Orders in Batch

Work Order	Fractions
98-08-574	01E-03E
98-08-584	17A
98-08-635	01E-03E
98-08-644	01E-03E
89-08-652	01E-03E

Matrix Spike - Spike Duplicate Results

Work Order Spiked: 98089574-02E

Element	Sample Result	Spike Added	Matrix Spike Result	Matrix Spike Recovery	Matrix Spike Duplicate Result	Matrix Spike Duplicate Recovery	QC Limits % Recovery	Spike RPD %	QC Limits %
Silver	ND	1.0	0.9392	93.9	0.9302	93.0	80 120	1.0	20.0
Aluminum									
Arsenic									
Barium									
Beryllium	ND	1.0	0.8702	87.0	0.8654	86.5	80 120	0.6	20.0
Calcium									
Cadmium	ND	1.0	0.9077	90.8	0.9078	90.8	80 120	0.0	20.0
Cobalt									
Chromium	ND	1.0	0.8787	87.9	0.871	87.1	80 120	0.9	20.0
Copper	0.0105	1.0	0.9303	92.0	0.9261	91.6	80 120	0.5	20.0
Iron	0.0545	1.0	0.9227	86.8	0.9218	86.7	80 120	0.1	20.0
Potassium	3.609	10.0	13.37	97.6	13.93	103.2	80 120	5.6	20.0
Magnesium	161.1	10.0	169.3	82.0	171	99.0	80 120	18.8	20.0
Manganese	ND	1.0	0.8637	86.4	0.8629	86.3	80 120	0.1	20.0
Sodium	252.1	10.0	265	129.0	266.4	143.0	80 120	10.3	20.0
Nickel	ND	1.0	0.8739	87.4	0.8647	86.5	80 120	1.1	20.0
Lead									
Antimony									
Selenium									
Thallium									
Vanadium									
Zinc									

* Spike Results Outside Method Limits

Checked: 08/28/98

ICP Spectroscopy Method 6010 Quality Control Report

Analyst: JM



Matrix: Water

Units: mg/L

Date: 082898 Time: 1736 File Name: 082898M8

HOUSTON LABORATORY

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 660-0901

Laboratory Control Sample

Element	Mth. Blank	True Value	Result	% Recovery	Lower Limit	Upper Limit
Silver						
Aluminum						
Arsenic						
Barium	ND	2.00	1.81	91	1.60	2.40
Beryllium						
Calcium	ND	20.00	19.37	97	16.00	24.00
Cadmium						
Cobalt						
Chromium						
Copper						
Iron						
Potassium						
Magnesium						
Manganese						
Sodium						
Nickel						
Lead						
Antimony						
Selenium						
Thallium						
Vanadium						
Zinc	ND	2.00	1.92	96	1.60	2.40

Work Orders in Batch

Work Order Fractions

98-08-635 01E-03E

98-08-574 1E-03E

98-08-644 01E-03E

98-08-652 01E-03E

98-08-635 01E-03E

98-08-574 01E-03E

98-08-644 01E-03E

98-08-652 01E-03E

Matrix Spike - Spike Duplicate Results

Work Order Spiked: 9808635-01E

Element	Sample Result	Spike Added	Matrix Spike Result	Matrix Spike Recovery	Matrix Spike Duplicate Result	Matrix Spike Duplicate Recovery	QC Limits % Recovery	Spike RPD %	QC Limits %
Silver									
Aluminum									
Arsenic									
Barium	0.0109	1.0	0.9177	90.7	0.9024	89.2	80 120	1.7	20.0
Beryllium									
Calcium	583.6	10.0	569.9	0.0	* 564.7	0.0	* 80 120	0.0	20.0
Cadmium									
Cobalt									
Chromium									
Copper									
Iron									
Potassium									
Magnesium									
Manganese									
Sodium									
Nickel									
Lead									
Antimony									
Selenium									
Thallium									
Vanadium									
Zinc	ND	1.0	0.9654	96.5	0.9658	96.6	80 120	0.0	20.0

Elements Post Spiked: Ca

* Spike Results Outside Method Limits

Checked: SB1 ACA

**HOUSTON LABORATORY**8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 08/26/98

Analyzed on: 08/26/98

Analyst: AG

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Mercury, Total
Method 7470 A***

SPL Sample ID Number	Blank Value ug/L	LCS Concentration ug/L	Measured Concentration ug/L	% Recovery	QC Limits Recovery
LCS	ND	2.00	1.90	95.0	80 - 120

-9808B64

Samples in batch:

9808623-01D	9808623-02D	9808623-03D	9808635-01E
9808635-02E	9808635-03E	9808779-01F	9808779-02F
9808779-03F	9808779-04F	9808779-05F	9808779-06F
9808779-07F	9808780-08F	9808780-09F	9808780-10F
9808780-11F	9808780-12F	9808780-13F	9808780-14F

COMMENTS:

LCS = SPL ID# 94-452-45-21



©

** SPL QUALITY CONTROL REPORT **

HOUSTON LABORATORY

8830 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 660-0901

Matrix: Aqueous

Reported on: 08/26/98

Analyzed on: 08/26/98

Analyst: AG

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Mercury, Total
Method 7470 A***

SPL Sample	Method	Sample	Spike	Matrix Spike		Matrix Spike Duplicate		RPD	QC LIMITS (Advisory)		
ID Number	Blank	Result	Added	Result	Recovery	Result	Recovery	(%)	RPD	% REC	
	ug/L	ug/L	ug/L	ug/L	%	ug/L	%		Max		
9808779-01F	ND	ND	2.00	1.83	91.5	1.89	94.5	3.2	20	75	-125

-9808B64

Samples in batch:

9808623-01D	9808623-02D	9808623-03D	9808635-01E
9808635-02E	9808635-03E	9808779-01F	9808779-02F
9808779-03F	9808779-04F	9808779-05F	9808779-06F
9808779-07F	9808780-08F	9808780-09F	9808780-10F
9808780-11F	9808780-12F	9808780-13F	9808780-14F

COMMENTS:

LCS = SPL ID# 94-452-45-21



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 08/19/98

Analyzed on: 08/19/98

Analyst: TK

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Alkalinity, as CaCO₃
Method 310.1 *

SPL Sample ID Number	Blank Value mg/L	LCS Concentration mg/L	Measured Concentration mg/L	% Recovery	QC Limits Recovery
LCS	ND	235	224	95.3	95 - 113

-9808839

Samples in batch:

9808553-04D 9808635-01B 9808635-02B 9808635-03B
9808652-01B 9808652-02B 9808652-03B

COMMENTS:

LCS# 94453209-13



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 08/19/98

Analyzed on: 08/19/98

Analyst: TK

This sample was randomly selected for use in the SPL quality control program. The results are as follows:

Alkalinity, as CaCO₃
Method 310.1 *

-- DUPLICATE ANALYSIS --

SPL Sample ID	Original Sample Concentration mg/L	Duplicate Sample mg/L	RPD	RPD Max.
9808553-04D	426.4	426.6	0	18

-9808838

Samples in batch:

9808553-04D 9808635-01B 9808635-02B 9808635-03B
9808652-01B 9808652-02B 9808652-03B

COMMENTS:

LCS# 94453209-13

**HOUSTON LABORATORY**8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901**** SPL QUALITY CONTROL REPORT ****

Matrix: Aqueous

Reported on: 08/28/98

Analyzed on: 08/27/98

Analyst: AB

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Chloride
Method 325.3 *

SPL Sample ID Number	Blank Value mg/L	LCS Concentration mg/L	Measured Concentration mg/L	% Recovery	QC Limits Recovery
LCS	ND	186	184	98.9	94 - 106

-9808C93

Samples in batch:

9808548-01D	9808548-02D	9808548-03D	9808550-01D
9808550-02D	9808550-03D	9808550-04D	9808553-01D
9808553-02D	9808553-03D	9808553-04D	9808574-01B
9808574-02B	9808574-03B	9808635-01B	9808635-02B
9808635-03B	9808644-01B	9808644-02B	9808644-03B

COMMENTS:

SPL=LCS#94453209-12



**** SPL QUALITY CONTROL REPORT ****

HOUSTON LABORATORY

8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Matrix: Aqueous

Reported on: 08/28/98

Analyzed on: 08/27/98

Analyst: AB

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Chloride
Method 325.3 *

SPL Sample	Method	Sample	Spike	Matrix Spike		Matrix Spike Duplicate		RPD	QC LIMITS (Advisory)	
ID Number	Blank mg/L	Result mg/L	Added mg/L	Result mg/L	Recovery %	Result mg/L	Recovery %	(%)	RPD Max	% REC
9808652-02B	ND	30	50	78	96.0	79	98.0	2.1	5	92 -109

-9808C92

Samples in batch:

9808635-03B 9808644-01B 9808644-02B 9808644-03B
9808652-01B 9808652-02B 9808652-03B 9808656-01D

COMMENTS:



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 08/27/98

Analyzed on: 08/27/98

Analyst: TW

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Sulfate
Method 375.4 *

SPL Sample ID Number	Blank Value mg/L	LCS Concentration mg/L	Measured Concentration mg/L	% Recovery	QC Limits Recovery
LCS	ND	10.04	10.26	102	82 - 111

-9808C21

Samples in batch:

9808516-01F	9808635-01B	9808635-02B	9808635-03B
9808644-01B	9808644-02B	9808644-03B	9808652-01B
9808652-03B	9808722-01E	9808725-01E	9808731-01B
9808779-04H	9808779-05H	9808780-14H	9808812-01F

COMMENTS:

LCS= SPL ID# 95535209-12.



®

** SPL QUALITY CONTROL REPORT **

HOUSTON LABORATORY

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 660-0901

Matrix: Aqueous

Reported on: 08/27/98

Analyzed on: 08/27/98

Analyst: TW

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Sulfate
Method 375.4 *

SPL Sample	Method	Sample	Spike	Matrix Spike		Matrix Spike Duplicate		RPD	QC LIMITS (Advisory)		
ID Number	Blank	Result	Added	Result	Recovery	Result	Recovery	(%)	RPD	% REC	
	mg/L	mg/L	mg/L	mg/L	%	mg/L	%		Max		
9808652-01B	ND	7.98	10.00	19.21	112	18.71	107	4.6	9.5	84	-120

-9808C17

Samples in batch:

9808635-01B 9808635-02B 9808635-03B 9808644-01B
9808644-02B 9808644-03B 9808652-01B 9808652-02B
9808812-01F

COMMENTS:



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 08/18/98

Analyzed on: 08/17/98

Analyst: DS

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Total Dissolved Solids
Method 160.1 *

SPL Sample ID Number	Blank Value mg/L	LCS Concentration mg/L	Measured Concentration mg/L	% Recovery	QC Limits Recovery
LCS	ND	455.9	452	99.1	93 - 107

-9808789

amples in batch:

9808490-01D	9808490-02D	9808490-03D	9808493-01D
9808493-02D	9808493-03D	9808493-04D	9808494-03D
9808494-04D	9808518-01D	9808518-02D	9808518-03D
9808518-04C	9808576-01G	9808635-01B	9808635-02B
9808635-03B			

COMMENTS:

LCS=SPL ID#95535216-23



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 08/18/98

Analyzed on: 08/17/98

Analyst: DS

This sample was randomly selected for use in the SPL quality control program. The results are as follows:

Total Dissolved Solids
Method 160.1 *

-- DUPLICATE ANALYSIS --

SPL Sample ID	Original Sample Concentration mg/L	Duplicate Sample mg/L	RPD	RPD Max.
9808494-04D	376	378	0.5	5

-9808790

Samples in batch:

9808494-04D	9808518-01D	9808518-02D	9808518-03D
9808518-04C	9808635-01B	9808635-02B	9808635-03B

COMMENTS:



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 08/18/98

Analyzed on: 08/18/98

Analyst: AAB

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Nitrate-Nitrite, as N
Method 353.3 *

SPL Sample ID Number	Blank Value mg/L	LCS Concentration mg/L	Measured Concentration mg/L	% Recovery	QC Limits Recovery
LCS	ND	2.77	2.74	98.9	92 - 111

-9808799

Samples in batch:

9808056-03G	9808220-01E	9808508-01C	9808508-02C
9808508-03C	9808518-04D	9808574-01C	9808574-02C
9808574-03C	9808635-01C	9808635-02C	9808635-03C
9808644-01C	9808644-02C	9808644-03C	9808652-01C
9808652-02C	9808652-03C		

COMMENTS:

LCS = SPL ID#:95535196-25



®

** SPL QUALITY CONTROL REPORT **

HOUSTON LABORATORY

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 660-0901

Matrix: Aqueous

Reported on: 08/18/98

Analyzed on: 08/18/98

Analyst: AAB

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Nitrate-Nitrite, as N
Method 353.3 *

SPL Sample	Method	Sample	Spike	Matrix Spike		Matrix Spike Duplicate		RPD	QC LIMITS (Advisory)		
ID Number	Blank	Result	Added	Result	Recovery	Result	Recovery	(%)	RPD	% REC	
	mg/L	mg/L	mg/L	mg/L	%	mg/L	%		Max		
9808220-01E	ND	0.13	5.00	4.72	91.8	4.64	90.2	1.8	12	87	-120

-9808797

Samples in batch:

9808056-03G 9808220-01E 9808508-01C 9808508-02C
9808508-03C 9808518-04D 9808635-01C 9808635-02C
9808635-03C

COMMENTS:

CHAIN OF CUSTODY
AND
SAMPLE RECEIPT CHECKLIST



SPL, Inc.

Analysis Request & Chain of Custody Record

SPL Workorder No:

9808635

47526

page 1 of 1

Client Name: CYPRESS ENGINEERING (713) 856-7980
Address/Phone: 10235 WEST LITTLE YORK SUITE 250
HOUSTON, TX 77040
Client Contact: SANDY SHARP (713) 646-7252
Project Name: TWP ROSWELL STA. 4
Project Number:
Project Location:
Invoice To: GEORGE ROBINSON

matrix bottle size pres.
W=water S=soil
SL=sludge O=other:
P=plastic A=amber glass
G=glass V=vial
1=1 liter 4=4oz 40=vial
8=8oz 16=16oz
1=HCl 2=HNO3
3=H2SO4 O=other:

Number of Containers
VOC'S 8240 INCLUDES
1,2 DICHLOROETHYLENE (CIS & TRANS)
DICHLOROBENZENE (O-M, P-)
TOS, CHLORIDE SULFATE,
TOTAL ALKALINITY
353.2 NITRATE & NITRATE
AS NITROGEN
8270 PHOSPHORUS
MUNICIPALITY
E. SOMELES (1-2)
TOTAL METALS
(7470/6010)
Ba, Cd, Cr, Pb, Hg, Ag,
Cu, Fe, Mn, Zn, Ca, K, Na, Mg,
As by GRAPHITE FURNACE
11 7740
5e

SAMPLE ID	DATE	TIME	comp	grab	W=	SL=	P=F	G=	1=	3=	1=	3=	Num	VOC	1,2	4,7	10,5	78	35	A	82	metals	TOC	Ba	Cu	As	Se												
MW-23D	8/11/98	1810		X	W	G	40/1	1/0	3/1	X										X																			
MW-23D	8/11/98	1810		X	W	G	1	3	1										X																				
MW-23D	8/11/98	1810		X	W	P	1	2/0	2								X						X																
MW-10	8/13/98	1020		X	W	G	40/1	1/0	3/1	X										X																			
MW-10	8/13/98	1020		X	W	G	1	3	1										X																				
MW-10	8/13/98	1020		X	W	P	1	2/0	2								X						X																
MW-11	8/13/98	1020 1135		X	W	G	40/1	1/0	3/1	X										X																			
MW-11	8/13/98	1135		X	W	G	1	3	1										X																				
MW-11	8/13/98	1135		X	W	P	1	2/0	2								X						X																

Client/Consultant Remarks:

Laboratory remarks:

Intact? ☐ Y ☐ N

Temp:

Requested TAT	Special Reporting Requirements	Fax Results ☒	Raw Data ☐	Special Detection Limits (specify):	PM review (initial):
	Standard QC ☐	Level 3 QC ☒	Level 4 QC ☐		EB 8/18
24hr ☐	72hr ☐	1. Relinquished by Sampler: <u>Sandy Sharp</u>	date: <u>8/13/98</u>	time: <u>1700</u>	2. Received by:
48hr ☐	Standard ☒	3. Relinquished by:	date:	time:	4. Received by:
Other ☐		5. Relinquished by:	date: <u>8-14-98</u>	time: <u>10:00</u>	6. Received by Laboratory: <u>[Signature]</u>

☐ 8880 Interchange Drive, Houston, TX 77054 (713) 660-0901☐ 459-Hughes Drive, Traverse City, MI 49684 (616) 947-5777☐ 500 Ambassador Caffery Parkway, Scott, LA 70583 (318) 237-4775☐ 1501 E. Orangethorpe Avenue, Fullerton, CA 92631 (714) 447-6868

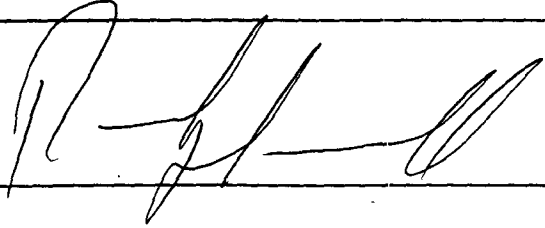
SPL Houston Environmental Laboratory

Sample Login Checklist

Date: 8-14-98	Time: 1000
------------------	---------------

SPL Sample ID: 9808635

		<u>Yes</u>	<u>No</u>		
1	Chain-of-Custody (COC) form is present.	☒	☐		
2	COC is properly completed.	☒	☐		
3	If no, Non-Conformance Worksheet has been completed.	☐	☐		
4	Custody seals are present on the shipping container.	☒	☐		
5	If yes, custody seals are intact.	☒	☐		
6	All samples are tagged or labeled.	☒	☐		
7	If no, Non-Conformance Worksheet has been completed.	☐	☐		
8	Sample containers arrived intact	☒	☐		
9	Temperature of samples upon arrival:	C			
10	Method of sample delivery to SPL:			SPL Delivery	
				Client Delivery	
				FedEx Delivery (airbill #)	806949036154
		Other:			
11	Method of sample disposal:	SPL Disposal	☒		
		HOLD	☐		
		Return to Client	☐		

Name: 	Date: 8-14-98
--	------------------



August 31, 1998

Mr. George Robinson
CYPRESS ENGINEERING, INC.
10235 W. Little York Rd #256
Houston, TX 77040

The following report contains analytical results for the sample(s) received at Southern Petroleum Laboratories (SPL) on August 14, 1998. The sample(s) was assigned to Certificate of Analysis No.(s) 9808574 and analyzed for all parameters as listed on the chain of custody.

Sample "MW-19" (SPL#9808574-02E) was randomly chosen as a Quality Control sample for Total Metals analysis by SW-846 method 6010. The Matrix Spike(MS)and Matrix Spike Duplicate (MSD) recoveries were outside of advisable limits for Sodium. A Laboratory Control Sample (LCS) was analyzed as a Quality Control check for the analytical batch and all recoveries were within acceptable limits.

Any data flag or quality control exception associated with this report will be footnoted in the analytical results page(s) or the quality control summary page(s).

If you have any questions or comments pertaining to this data report, please do not hesitate to contact me. Please reference the above Certificate of Analysis No. during any inquiries.

Again, SPL is pleased to be of service to you. We anticipate working with you in fulfilling all your current and future analytical needs.

Southern Petroleum Laboratories


Electa Brown
Project Manager



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Southern Petroleum Laboratories, Inc.

Certificate of Analysis Number: 98-08-574

Approved for Release by:



Electa Brown, Project Manager

9-2-98
Date

Greg Grandits
Laboratory Director

Cynthia Schreiner
Quality Assurance Officer

The attached analytical data package may not be reproduced except in full without the express written approval of this laboratory.
The results relate only to the samples tested.
Results reported on a Wet Weight Basis unless otherwise noted.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9808574-01

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 10/27/98

PROJECT: TWP Roswell STA 9
SITE:
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-3

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 08/13/98 12:35:00
DATE RECEIVED: 08/14/98

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
Alkalinity, as CaCO ₃ Method 310.1 * Analyzed by: TK Date: 08/18/98 15:00:00	111	1	mg/L	
Chloride Method 325.3 * Analyzed by: AB Date: 08/27/98 10:00:00	443	10	mg/L	
Sulfate Method 375.4 * Analyzed by: TW Date: 08/27/98 13:00:00	95	5	mg/L	
Total Dissolved Solids Method 160.1 * Analyzed by: DS Date: 08/19/98 17:00:00	3600	100	mg/L	
Nitrate-Nitrite, as N Method 353.3 * Analyzed by: AAB Date: 08/18/98 10:00:00	1.1	0.1	mg/L	
Liquid-liquid extraction SEMIVOLATILES Method 3520C *** Analyzed by: DR Date: 08/17/98 10:00:00	08/17/98			

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9808574-01

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 10/27/98

PROJECT: TWP Roswell STA 9
SITE:
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-3

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 08/13/98 12:35:00
DATE RECEIVED: 08/14/98

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
Silver, Total Method 6010B *** Analyzed by: JM Date: 08/27/98 08:59:00	ND	0.01	mg/L	
Arsenic, Total Method 6010B *** Analyzed by: EG Date: 08/27/98 10:13:00	0.007	0.005	mg/L	
Barium, Total Method 6010B *** Analyzed by: JM Date: 08/28/98 17:36:00	0.010	0.005	mg/L	
Calcium, Total Method 6010B *** Analyzed by: JM Date: 08/28/98 17:36:00	594	0.2	mg/L	
Cadmium, Total Method 6010B *** Analyzed by: JM Date: 08/27/98 08:59:00	ND	0.005	mg/L	
Chromium, Total Method 6010B *** Analyzed by: JM Date: 08/27/98 08:59:00	ND	0.01	mg/L	

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9808574-01

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 10/27/98

PROJECT: TWP Roswell STA 9
SITE:
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-3

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 08/13/98 12:35:00
DATE RECEIVED: 08/14/98

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
Copper, Total Method 6010B *** Analyzed by: JM Date: 08/27/98 08:59:00	ND	0.01	mg/L	
Iron, Total Method 6010B *** Analyzed by: JM Date: 08/27/98 08:59:00	0.07	0.02	mg/L	
Mercury, Total Method 7470 A*** Analyzed by: AG Date: 08/24/98 14:09:00	ND	0.0002	mg/L	
Potassium, Total Method 6010B *** Analyzed by: JM Date: 08/27/98 08:59:00	3	2	mg/L	
Magnesium, Total Method 6010B *** Analyzed by: JM Date: 08/27/98 08:59:00	121	0.1	mg/L	
Manganese, Total Method 6010B *** Analyzed by: JM Date: 08/27/98 08:59:00	ND	0.005	mg/L	

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9808574-01

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 10/27/98

PROJECT: TWP Roswell STA 9
SITE:
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-3

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 08/13/98 12:35:00
DATE RECEIVED: 08/14/98

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Sodium, Total Method 6010B *** Analyzed by: JM Date: 08/27/98 08:59:00	205	0.5	mg/L
Acid Digestion-Aqueous, ICP Method 3010A *** Analyzed by: MR Date: 08/18/98 08:45:00	08/18/98		
Lead, Total Method 6010B *** Analyzed by: EG Date: 08/27/98 10:13:00	ND	0.005	mg/L
Selenium, Total Method 6010B *** Analyzed by: EG Date: 08/27/98 10:13:00	ND	0.005	mg/L
Zinc, Total Method 6010B *** Analyzed by: JM Date: 08/28/98 17:36:00	0.04	0.02	mg/L

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9808574-01

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

10/27/98

PROJECT: TWP Roswell STA 9
SITE:
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-3

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 08/13/98 12:35:00
DATE RECEIVED: 08/14/98

ANALYTICAL DATA

PARAMETER	RESULTS	PQL*	UNITS
Benzene	ND	5	ug/L
Bromobenzene	ND	5	ug/L
Bromochloromethane	ND	5	ug/L
Bromodichloromethane	ND	5	ug/L
Bromoform	ND	5	ug/L
Bromomethane	ND	10	ug/L
n-Butylbenzene	ND	5	ug/L
sec-Butylbenzene	ND	5	ug/L
tert-Butylbenzene	ND	5	ug/L
Carbon tetrachloride	ND	5	ug/L
Chlorobenzene	ND	5	ug/L
Chlorodibromomethane	ND	5	ug/L
Chloroethane	ND	10	ug/L
Chloroform	ND	5	ug/L
Chloromethane	ND	10	ug/L
2-Chlorotoluene	ND	5	ug/L
4-Chlorotoluene	ND	5	ug/L
1,2-Dibromo-3-chloropropane	ND	5	ug/L
1,2-Dibromoethane	ND	5	ug/L
Dibromomethane	ND	5	ug/L
1,2-Dichlorobenzene	ND	5	ug/L
1,3-Dichlorobenzene	ND	5	ug/L
1,4-Dichlorobenzene	ND	5	ug/L
Dichlorodifluoromethane	ND	10	ug/L
1,1-Dichloroethane	ND	5	ug/L
1,2-Dichloroethane	ND	5	ug/L
1,1-Dichloroethene	ND	5	ug/L
cis-1,2-Dichloroethene	ND	5	ug/L
trans-1,2-Dichloroethene	ND	5	ug/L
1,2-Dichloropropane	ND	5	ug/L
1,3-Dichloropropane	ND	5	ug/L
2,2-Dichloropropane	ND	5	ug/L
1,1-Dichloropropene	ND	5	ug/L
Ethylbenzene	ND	5	ug/L
Hexachlorobutadiene	ND	5	ug/L
Isopropylbenzene	ND	5	ug/L
p-Isopropyltoluene	ND	5	ug/L
Methylene chloride	ND	5	ug/L

METHOD: 8260 Water, Volatile Organics
(continued on next page)



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9808574-01

Cypress Engineering, Inc.

SAMPLE ID: MW-3

ANALYTICAL DATA (continued)				
PARAMETER	RESULTS	PQL*	UNITS	
Naphthalene	ND	5	ug/L	
n-Propylbenzene	ND	5	ug/L	
Styrene	ND	5	ug/L	
1,1,1,2-Tetrachloroethane	ND	5	ug/L	
1,1,2,2-Tetrachloroethane	ND	5	ug/L	
Tetrachloroethene	ND	5	ug/L	
Toluene	ND	5	ug/L	
1,2,3-Trichlorobenzene	ND	5	ug/L	
1,2,4-Trichlorobenzene	ND	5	ug/L	
1,1,1-Trichloroethane	ND	5	ug/L	
1,1,2-Trichloroethane	ND	5	ug/L	
Trichloroethene	ND	5	ug/L	
Trichlorofluoromethane	ND	5	ug/L	
1,2,3-Trichloropropane	ND	5	ug/L	
1,2,4-Trimethylbenzene	ND	5	ug/L	
1,3,5-Trimethylbenzene	ND	5	ug/L	
Vinyl chloride	ND	10	ug/L	
Xylenes (total)	ND	5	ug/L	
Acetone	ND	100	ug/L	
Carbon Disulfide	ND	5	ug/L	
Vinyl Acetate	ND	10	ug/L	
2-Butanone	ND	20	ug/L	
1,2-Dichloroethene (total)	ND	5	ug/L	
2-Chloroethylvinylether	ND	10	ug/L	
4-Methyl-2-Pentanone	ND	10	ug/L	
cis-1,3-Dichloropropene	ND	5	ug/L	
trans-1,3-Dichloropropene	ND	5	ug/L	
2-Hexanone	ND	10	ug/L	
Methyl t-Butyl Ether	ND	10	ug/L	
SURROGATES	AMOUNT SPIKED	% RECOVERY	LOWER LIMIT	UPPER LIMIT
1,2-Dichloroethane-d4	50 ug/L	88	76	114
Toluene-d8	50 ug/L	100	88	110
4-Bromofluorobenzene	50 ug/L	102	86	115

ANALYZED BY: JC

DATE/TIME: 08/18/98 01:00:00

METHOD: 8260 Water, Volatile Organics

NOTES: * - Practical Quantitation Limit

ND - Not Detected

NA - Not Analyzed

COMMENTS:

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9808574-01

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

10/27/98

PROJECT: TWP Roswell STA 9
SITE:
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-3

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 08/13/98 12:35:00
DATE RECEIVED: 08/14/98

ANALYTICAL DATA

PARAMETER	RESULTS	PQL*	UNITS
Acenaphthene	ND	5	ug/L
Acenaphthylene	ND	5	ug/L
Anthracene	ND	5	ug/L
Benzo(a)Anthracene	ND	5	ug/L
Benzo(b)Fluoranthene	ND	5	ug/L
Benzo(k)Fluoranthene	ND	5	ug/L
Benzo(a)Pyrene	ND	5	ug/L
Benzo(g,h,i)Perylene	ND	5	ug/L
Chrysene	ND	5	ug/L
Dibenz(a,h)Anthracene	ND	5	ug/L
Fluoranthene	ND	5	ug/L
Fluorene	ND	5	ug/L
Indeno(1,2,3-cd)Pyrene	ND	5	ug/L
2-Methylnaphthalene	ND	5	ug/L
Naphthalene	ND	5	ug/L
Phenanthrene	ND	5	ug/L
Pyrene	ND	5	ug/L
1-Methylnaphthalene	ND	5	ug/L

SURROGATES	AMOUNT SPIKED	% RECOVERY	LOWER LIMIT	UPPER LIMIT
Nitrobenzene-d5	50 ug/L	80	35	114
2-Fluorobiphenyl	50 ug/L	84	43	116
Terphenyl-d14	50 ug/L	70	33	141
Phenol-d5	75 ug/L	23	10	110
2-Fluorophenol	75 ug/L	35	21	110
2,4,6-Tribromophenol	75 ug/L	92	10	123

ANALYZED BY: RY DATE/TIME: 08/19/98 22:10:00
EXTRACTED BY: DR DATE/TIME: 08/17/98 10:00:00
METHOD: 8270C, Semivolatile Organics - Water
NOTES: * - Practical Quantitation Limit ND - Not Detected
 NA - Not Analyzed

COMMENTS:

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9808574-02

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 10/27/98

PROJECT: TWP Roswell STA 9
SITE:
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-19

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 08/13/98 14:10:00
DATE RECEIVED: 08/14/98

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
Alkalinity, as CaCO ₃ Method 310.1 * Analyzed by: TK Date: 08/18/98 15:00:00	113	1	mg/L	
Chloride Method 325.3 * Analyzed by: AB Date: 08/27/98 10:00:00	443	10	mg/L	
Sulfate Method 375.4 * Analyzed by: TW Date: 08/27/98 13:00:00	2000	100	mg/L	
Total Dissolved Solids Method 160.1 * Analyzed by: DS Date: 08/19/98 17:00:00	4000	100	mg/L	
Nitrate-Nitrite, as N Method 353.3 * Analyzed by: AAB Date: 08/18/98 10:00:00	0.8	0.1	mg/L	
Liquid-liquid extraction SEMIVOLATILES Method 3520C *** Analyzed by: DR Date: 08/17/98 10:00:00	08/17/98			

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9808574-02

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 10/27/98

PROJECT: TWP Roswell STA 9
SITE:
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-19

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 08/13/98 14:10:00
DATE RECEIVED: 08/14/98

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
Silver, Total Method 6010B *** Analyzed by: JM Date: 08/27/98 08:59:00	ND	0.01	mg/L	
Arsenic, Total Method 6010B *** Analyzed by: EG Date: 08/27/98 10:13:00	0.007	0.005	mg/L	
Barium, Total Method 6010B *** Analyzed by: JM Date: 08/28/98 17:36:00	0.009	0.005	mg/L	
Calcium, Total Method 6010B *** Analyzed by: JM Date: 08/28/98 17:36:00	589	0.2	mg/L	
Cadmium, Total Method 6010B *** Analyzed by: JM Date: 08/27/98 08:59:00	ND	0.005	mg/L	
Chromium, Total Method 6010B *** Analyzed by: JM Date: 08/27/98 08:59:00	ND	0.01	mg/L	

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9808574-02

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 10/27/98

PROJECT: TWP Roswell STA 9
SITE:
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-19

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 08/13/98 14:10:00
DATE RECEIVED: 08/14/98

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
Copper, Total Method 6010B *** Analyzed by: JM Date: 08/27/98 08:59:00	0.01	0.01	mg/L	
Iron, Total Method 6010B *** Analyzed by: JM Date: 08/27/98 08:59:00	0.05	0.02	mg/L	
Mercury, Total Method 7470 A*** Analyzed by: AG Date: 08/24/98 14:09:00	ND	0.0002	mg/L	
Potassium, Total Method 6010B *** Analyzed by: JM Date: 08/27/98 08:59:00	4	2	mg/L	
Magnesium, Total Method 6010B *** Analyzed by: JM Date: 08/27/98 08:59:00	161	0.1	mg/L	
Manganese, Total Method 6010B *** Analyzed by: JM Date: 08/27/98 08:59:00	ND	0.005	mg/L	

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9808574-02

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 10/27/98

PROJECT: TWP Roswell STA 9
SITE:
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-19

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 08/13/98 14:10:00
DATE RECEIVED: 08/14/98

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
Sodium, Total Method 6010B *** Analyzed by: JM Date: 08/27/98 08:59:00	252	0.5	mg/L	
Acid Digestion-Aqueous, ICP Method 3010A *** Analyzed by: MR Date: 08/18/98 08:45:00	08/18/98			
Lead, Total Method 6010B *** Analyzed by: EG Date: 08/27/98 10:13:00	ND	0.005	mg/L	
Selenium, Total Method 6010B *** Analyzed by: EG Date: 08/27/98 10:13:00	ND	0.005	mg/L	
Zinc, Total Method 6010B *** Analyzed by: JM Date: 08/28/98 17:36:00	0.08	0.02	mg/L	

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9808574-02

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

10/27/98

PROJECT: TWP Roswell STA 9
SITE:
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-19

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 08/13/98 14:10:00
DATE RECEIVED: 08/14/98

ANALYTICAL DATA				
PARAMETER	RESULTS	PQL*	UNITS	
Benzene	ND	5	ug/L	
Bromobenzene	ND	5	ug/L	
Bromochloromethane	ND	5	ug/L	
Bromodichloromethane	ND	5	ug/L	
Bromoform	ND	5	ug/L	
Bromomethane	ND	10	ug/L	
n-Butylbenzene	ND	5	ug/L	
sec-Butylbenzene	ND	5	ug/L	
tert-Butylbenzene	ND	5	ug/L	
Carbon tetrachloride	ND	5	ug/L	
Chlorobenzene	ND	5	ug/L	
Chlorodibromomethane	ND	5	ug/L	
Chloroethane	ND	10	ug/L	
Chloroform	ND	5	ug/L	
Chloromethane	ND	10	ug/L	
2-Chlorotoluene	ND	5	ug/L	
4-Chlorotoluene	ND	5	ug/L	
1,2-Dibromo-3-chloropropane	ND	5	ug/L	
1,2-Dibromoethane	ND	5	ug/L	
Dibromomethane	ND	5	ug/L	
1,2-Dichlorobenzene	ND	5	ug/L	
1,3-Dichlorobenzene	ND	5	ug/L	
1,4-Dichlorobenzene	ND	5	ug/L	
Dichlorodifluoromethane	ND	10	ug/L	
1,1-Dichloroethane	ND	5	ug/L	
1,2-Dichloroethane	ND	5	ug/L	
1,1-Dichloroethene	ND	5	ug/L	
cis-1,2-Dichloroethene	ND	5	ug/L	
trans-1,2-Dichloroethene	ND	5	ug/L	
1,2-Dichloropropane	ND	5	ug/L	
1,3-Dichloropropane	ND	5	ug/L	
2,2-Dichloropropane	ND	5	ug/L	
1,1-Dichloropropene	ND	5	ug/L	
Ethylbenzene	ND	5	ug/L	
Hexachlorobutadiene	ND	5	ug/L	
Isopropylbenzene	ND	5	ug/L	
p-Isopropyltoluene	ND	5	ug/L	
Methylene chloride	ND	5	ug/L	

METHOD: 8260 Water, Volatile Organics
(continued on next page)

**HOUSTON LABORATORY**8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9808574-02

Cypress Engineering, Inc.

SAMPLE ID: MW-19

PARAMETER	ANALYTICAL DATA (continued)		UNITS
	RESULTS	PQL*	
Naphthalene	ND	5	ug/L
n-Propylbenzene	ND	5	ug/L
Styrene	ND	5	ug/L
1,1,1,2-Tetrachloroethane	ND	5	ug/L
1,1,2,2-Tetrachloroethane	ND	5	ug/L
Tetrachloroethene	ND	5	ug/L
Toluene	ND	5	ug/L
1,2,3-Trichlorobenzene	ND	5	ug/L
1,2,4-Trichlorobenzene	ND	5	ug/L
1,1,1-Trichloroethane	ND	5	ug/L
1,1,2-Trichloroethane	ND	5	ug/L
Trichloroethene	ND	5	ug/L
Trichlorofluoromethane	ND	5	ug/L
1,2,3-Trichloropropane	ND	5	ug/L
1,2,4-Trimethylbenzene	ND	5	ug/L
1,3,5-Trimethylbenzene	ND	5	ug/L
Vinyl chloride	ND	10	ug/L
Xylenes (total)	ND	5	ug/L
Acetone	ND	100	ug/L
Carbon Disulfide	ND	5	ug/L
Vinyl Acetate	ND	10	ug/L
2-Butanone	ND	20	ug/L
1,2-Dichloroethene (total)	ND	5	ug/L
2-Chloroethylvinylether	ND	10	ug/L
4-Methyl-2-Pentanone	ND	10	ug/L
cis-1,3-Dichloropropene	ND	5	ug/L
trans-1,3-Dichloropropene	ND	5	ug/L
2-Hexanone	ND	10	ug/L
Methyl t-Butyl Ether	ND	10	ug/L

SURROGATES	AMOUNT SPIKED	% RECOVERY	LOWER LIMIT	UPPER LIMIT
1,2-Dichloroethane-d4	50 ug/L	86	76	114
Toluene-d8	50 ug/L	100	88	110
4-Bromofluorobenzene	50 ug/L	102	86	115

ANALYZED BY: JC

DATE/TIME: 08/18/98 01:26:00

METHOD: 8260 Water, Volatile Organics

NOTES: * - Practical Quantitation Limit

ND - Not Detected

NA - Not Analyzed

COMMENTS:

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9808574-02

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

10/27/98

PROJECT: TWP Roswell STA 9
SITE:
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-19

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 08/13/98 14:10:00
DATE RECEIVED: 08/14/98

ANALYTICAL DATA

PARAMETER	RESULTS	PQL*	UNITS
Acenaphthene	ND	5	ug/L
Acenaphthylene	ND	5	ug/L
Anthracene	ND	5	ug/L
Benzo(a)Anthracene	ND	5	ug/L
Benzo(b)Fluoranthene	ND	5	ug/L
Benzo(k)Fluoranthene	ND	5	ug/L
Benzo(a)Pyrene	ND	5	ug/L
Benzo(g,h,i)Perylene	ND	5	ug/L
Chrysene	ND	5	ug/L
Dibenz(a,h)Anthracene	ND	5	ug/L
Fluoranthene	ND	5	ug/L
Fluorene	ND	5	ug/L
Indeno(1,2,3-cd)Pyrene	ND	5	ug/L
2-Methylnaphthalene	ND	5	ug/L
Naphthalene	ND	5	ug/L
Phenanthrene	ND	5	ug/L
Pyrene	ND	5	ug/L
1-Methylnaphthalene	ND	5	ug/L

SURROGATES	AMOUNT SPIKED	% RECOVERY	LOWER LIMIT	UPPER LIMIT
Nitrobenzene-d5	50 ug/L	84	35	114
2-Fluorobiphenyl	50 ug/L	90	43	116
Terphenyl-d14	50 ug/L	76	33	141
Phenol-d5	75 ug/L	24	10	110
2-Fluorophenol	75 ug/L	35	21	110
2,4,6-Tribromophenol	75 ug/L	96	10	123

ANALYZED BY: RY DATE/TIME: 08/19/98 22:44:00
EXTRACTED BY: DR DATE/TIME: 08/17/98 10:00:00
METHOD: 8270C, Semivolatile Organics - Water
NOTES: * - Practical Quantitation Limit ND - Not Detected
 NA - Not Analyzed

COMMENTS:

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9808574-03

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 10/27/98

PROJECT: TWP Roswell STA 9
SITE:
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-18

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 08/13/98 15:25:00
DATE RECEIVED: 08/14/98

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
Alkalinity, as CaCO3 Method 310.1 * Analyzed by: TK Date: 08/18/98 15:00:00	82	1	mg/L	
Chloride Method 325.3 * Analyzed by: AB Date: 08/27/98 10:00:00	479	10	mg/L	
Sulfate Method 375.4 * Analyzed by: TW Date: 08/27/98 13:00:00	2000	100	mg/L	
Total Dissolved Solids Method 160.1 * Analyzed by: DS Date: 08/19/98 17:00:00	3900	100	mg/L	
Nitrate-Nitrite, as N Method 353.3 * Analyzed by: AAB Date: 08/18/98 10:00:00	0.7	0.1	mg/L	
Liquid-liquid extraction SEMIVOLATILES Method 3520C *** Analyzed by: DR Date: 08/17/98 10:00:00	08/17/98			

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9808574-03

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 10/27/98

PROJECT: TWP Roswell STA 9
SITE:
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-18

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 08/13/98 15:25:00
DATE RECEIVED: 08/14/98

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
Silver, Total Method 6010B *** Analyzed by: JM Date: 08/27/98 08:59:00	ND	0.01	mg/L	
Arsenic, Total Method 6010B *** Analyzed by: EG Date: 08/27/98 10:13:00	0.008	0.005	mg/L	
Barium, Total Method 6010B *** Analyzed by: JM Date: 08/28/98 17:36:00	0.015	0.005	mg/L	
Calcium, Total Method 6010B *** Analyzed by: JM Date: 08/28/98 17:36:00	586	0.2	mg/L	
Cadmium, Total Method 6010B *** Analyzed by: JM Date: 08/27/98 08:59:00	ND	0.005	mg/L	
Chromium, Total Method 6010B *** Analyzed by: JM Date: 08/27/98 08:59:00	ND	0.01	mg/L	

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.

**HOUSTON LABORATORY**8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9808574-03

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 10/27/98

PROJECT: TWP Roswell STA 9
SITE:
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-18PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 08/13/98 15:25:00
DATE RECEIVED: 08/14/98

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
Copper, Total Method 6010B *** Analyzed by: JM Date: 08/27/98 08:59:00	ND	0.01	mg/L	
Iron, Total Method 6010B *** Analyzed by: JM Date: 08/27/98 08:59:00	ND	0.02	mg/L	
Mercury, Total Method 7470 A*** Analyzed by: AG Date: 08/24/98 14:09:00	ND	0.0002	mg/L	
Potassium, Total Method 6010B *** Analyzed by: JM Date: 08/27/98 08:59:00	7	2	mg/L	
Magnesium, Total Method 6010B *** Analyzed by: JM Date: 08/27/98 08:59:00	209	0.1	mg/L	
Manganese, Total Method 6010B *** Analyzed by: JM Date: 08/27/98 08:59:00	0.007	0.005	mg/L	

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.**QUALITY ASSURANCE:** These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9808574-03

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 10/27/98

PROJECT: TWP Roswell STA 9
SITE:
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-18

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 08/13/98 15:25:00
DATE RECEIVED: 08/14/98

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
Sodium, Total Method 6010B *** Analyzed by: JM Date: 08/27/98 08:59:00	169	0.5	mg/L	
Acid Digestion-Aqueous, ICP Method 3010A *** Analyzed by: MR Date: 08/18/98 08:45:00	08/18/98			
Lead, Total Method 6010B *** Analyzed by: EG Date: 08/27/98 10:13:00	ND	0.005	mg/L	
Selenium, Total Method 6010B *** Analyzed by: EG Date: 08/27/98 10:13:00	ND	0.005	mg/L	
Zinc, Total Method 6010B *** Analyzed by: JM Date: 08/28/98 17:36:00	0.08	0.02	mg/L	

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9808574-03

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

10/27/98

PROJECT: TWP Roswell STA 9

PROJECT NO:

SITE:

MATRIX: WATER

SAMPLED BY: Cypress Engineering

DATE SAMPLED: 08/13/98 15:25:00

SAMPLE ID: MW-18

DATE RECEIVED: 08/14/98

ANALYTICAL DATA

PARAMETER	RESULTS	PQL*	UNITS
Benzene	ND	5	ug/L
Bromobenzene	ND	5	ug/L
Bromochloromethane	ND	5	ug/L
Bromodichloromethane	ND	5	ug/L
Bromoform	ND	5	ug/L
Bromomethane	ND	10	ug/L
n-Butylbenzene	ND	5	ug/L
sec-Butylbenzene	ND	5	ug/L
tert-Butylbenzene	ND	5	ug/L
Carbon tetrachloride	ND	5	ug/L
Chlorobenzene	ND	5	ug/L
Chlorodibromomethane	ND	5	ug/L
Chloroethane	ND	10	ug/L
Chloroform	ND	5	ug/L
Chloromethane	ND	10	ug/L
2-Chlorotoluene	ND	5	ug/L
4-Chlorotoluene	ND	5	ug/L
1,2-Dibromo-3-chloropropane	ND	5	ug/L
1,2-Dibromoethane	ND	5	ug/L
Dibromomethane	ND	5	ug/L
1,2-Dichlorobenzene	ND	5	ug/L
1,3-Dichlorobenzene	ND	5	ug/L
1,4-Dichlorobenzene	ND	5	ug/L
Dichlorodifluoromethane	ND	10	ug/L
1,1-Dichloroethane	ND	5	ug/L
1,2-Dichloroethane	ND	5	ug/L
1,1-Dichloroethene	ND	5	ug/L
cis-1,2-Dichloroethene	ND	5	ug/L
trans-1,2-Dichloroethene	ND	5	ug/L
1,2-Dichloropropane	ND	5	ug/L
1,3-Dichloropropane	ND	5	ug/L
2,2-Dichloropropane	ND	5	ug/L
1,1-Dichloropropene	ND	5	ug/L
Ethylbenzene	ND	5	ug/L
Hexachlorobutadiene	ND	5	ug/L
Isopropylbenzene	ND	5	ug/L
p-Isopropyltoluene	ND	5	ug/L
Methylene chloride	ND	5	ug/L

METHOD: 8260 Water, Volatile Organics
(continued on next page)



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9808574-03

Cypress Engineering, Inc.

SAMPLE ID: MW-18

ANALYTICAL DATA (continued)			
PARAMETER	RESULTS	PQL*	UNITS
Naphthalene	ND	5	ug/L
n-Propylbenzene	ND	5	ug/L
Styrene	ND	5	ug/L
1,1,1,2-Tetrachloroethane	ND	5	ug/L
1,1,2,2-Tetrachloroethane	ND	5	ug/L
Tetrachloroethene	ND	5	ug/L
Toluene	ND	5	ug/L
1,2,3-Trichlorobenzene	ND	5	ug/L
1,2,4-Trichlorobenzene	ND	5	ug/L
1,1,1-Trichloroethane	ND	5	ug/L
1,1,2-Trichloroethane	ND	5	ug/L
Trichloroethene	ND	5	ug/L
Trichlorofluoromethane	ND	5	ug/L
1,2,3-Trichloropropane	ND	5	ug/L
1,2,4-Trimethylbenzene	ND	5	ug/L
1,3,5-Trimethylbenzene	ND	5	ug/L
Vinyl chloride	ND	10	ug/L
Xylenes (total)	ND	5	ug/L
Acetone	ND	100	ug/L
Carbon Disulfide	ND	5	ug/L
Vinyl Acetate	ND	10	ug/L
2-Butanone	ND	20	ug/L
1,2-Dichloroethene (total)	ND	5	ug/L
2-Chloroethylvinylether	ND	10	ug/L
4-Methyl-2-Pentanone	ND	10	ug/L
cis-1,3-Dichloropropene	ND	5	ug/L
trans-1,3-Dichloropropene	ND	5	ug/L
2-Hexanone	ND	10	ug/L
Methyl t-Butyl Ether	ND	10	ug/L

SURROGATES	AMOUNT SPIKED	% RECOVERY	LOWER LIMIT	UPPER LIMIT
1,2-Dichloroethane-d4	50 ug/L	88	76	114
Toluene-d8	50 ug/L	98	88	110
4-Bromofluorobenzene	50 ug/L	104	86	115

ANALYZED BY: JC

DATE/TIME: 08/18/98 01:51:00

METHOD: 8260 Water, Volatile Organics

NOTES: * - Practical Quantitation Limit

ND - Not Detected

NA - Not Analyzed

COMMENTS:

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9808574-03

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

10/27/98

PROJECT: TWP Roswell STA 9
SITE:
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-18

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 08/13/98 15:25:00
DATE RECEIVED: 08/14/98

ANALYTICAL DATA

PARAMETER	RESULTS	PQL*	UNITS
Acenaphthene	ND	5	ug/L
Acenaphthylene	ND	5	ug/L
Anthracene	ND	5	ug/L
Benzo(a)Anthracene	ND	5	ug/L
Benzo(b)Fluoranthene	ND	5	ug/L
Benzo(k)Fluoranthene	ND	5	ug/L
Benzo(a)Pyrene	ND	5	ug/L
Benzo(g,h,i)Perylene	ND	5	ug/L
Chrysene	ND	5	ug/L
Dibenz(a,h)Anthracene	ND	5	ug/L
Fluoranthene	ND	5	ug/L
Fluorene	ND	5	ug/L
Indeno(1,2,3-cd)Pyrene	ND	5	ug/L
2-Methylnaphthalene	ND	5	ug/L
Naphthalene	ND	5	ug/L
Phenanthrene	ND	5	ug/L
Pyrene	ND	5	ug/L
1-Methylnaphthalene	ND	5	ug/L

SURROGATES	AMOUNT SPIKED	% RECOVERY	LOWER LIMIT	UPPER LIMIT
Nitrobenzene-d5	50 ug/L	86	35	114
2-Fluorobiphenyl	50 ug/L	88	43	116
Terphenyl-d14	50 ug/L	72	33	141
Phenol-d5	75 ug/L	27	10	110
2-Fluorophenol	75 ug/L	37	21	110
2,4,6-Tribromophenol	75 ug/L	95	10	123

ANALYZED BY: RY DATE/TIME: 08/19/98 23:17:00
EXTRACTED BY: DR DATE/TIME: 08/17/98 10:00:00
METHOD: 8270C, Semivolatile Organics - Water
NOTES: * - Practical Quantitation Limit ND - Not Detected
 NA - Not Analyzed

COMMENTS:

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.

QUALITY CONTROL
DOCUMENTATION

3A
WATER VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: SPL

Contract:

Lab Code:

Case No.: 9808644 SAS No.:

SDG No.:

Matrix Spike - EPA Sample No.: MW-17

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC #	QC. LIMITS REC.
=====	=====	=====	=====	=====	=====
1,1-Dichloroethene	50	0	59	118	61-145
Trichloroethene	50	0	48	96	71-120
Benzene	50	0	53	103	76-127
Toluene	50	0	49	98	76-125
Chlorobenzene	50	0	47	94	75-130

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC #	% RPD #	QC LIMITS	
=====	=====	=====	=====	=====	=====	=====
1,1-Dichloroethene	50	60	120	2	14	61-145
Trichloroethene	50	51	102	6	14	71-120
Benzene	50	55	110	7	11	76-127
Toluene	50	52	104	6	13	76-125
Chlorobenzene	50	48	96	2	13	75-130

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 5 outside limits

Spike Recovery: 0 out of 10 outside limits

SPL Houston Labs

RECOVERY REPORT

Client Name: Client SDG: n980817
Sample Matrix: LIQUID Fraction: VOA
Lab Smp Id: LCS
Level: LOW Operator: JC
Data Type: MS DATA SampleType: LCS
SpikeList File: 8260_water.spk Quant Type: ISTD
Sublist File: 8260.sub
Method File: /var/chem/n.i/n980817a.b/n8260w.m
Misc Info: N229W2//N229CW2

SPIKE COMPOUND	CONC ADDED ug/L	CONC RECOVERED ug/L	% RECOVERED	LIMITS
8 1,1-Dichloroethene	50	59	118.00	61-145
29 Trichloroethene	50	50	100.00	71-120
25 Benzene	50	54	108.00	76-127
37 Toluene	50	50	100.00	76-125
45 Chlorobenzene	50	47	94.00	75-130

SURROGATE COMPOUND	CONC ADDED ug/L	CONC RECOVERED ug/L	% RECOVERED	LIMITS
\$ 21 1,2-Dichloroethane	50	45	90.00	76-114
\$ 36 Toluene-d8	50	50	100.00	88-110
\$ 56 Bromofluorobenzene	50	52	104.00	86-115



Matrix: Aqueous
Sample ID: VLBLK
Batch: N980817122724

Reported on: 08/19/98 13:56
Analyzed on: 08/17/98 21:13
Analyst: JC

METHOD 8260/8240 N229B02

Compound	Result	Detection Limit	Units
Dichlorodifluoromethane	ND	10	ug/L
Chloromethane	ND	10	ug/L
Vinyl Chloride	ND	10	ug/L
Bromomethane	ND	10	ug/L
Chloroethane	ND	10	ug/L
Trichlorofluoromethane	ND	5	ug/L
Acetone	ND	100	ug/L
1,1-Dichloroethene	ND	5	ug/L
Methylene Chloride	ND	5	ug/L
Carbon Disulfide	ND	5	ug/L
trans-1,2-Dichloroethene	ND	5	ug/L
1,1-Dichloroethane	ND	5	ug/L
Vinyl Acetate	ND	10	ug/L
2-Butanone	ND	20	ug/L
cis-1,2-Dichloroethene	ND	5	ug/L
1,2-Dichloroethene (total)	ND	5	ug/L
2,2-Dichloropropane	ND	5	ug/L
Bromochloromethane	ND	5	ug/L
Chloroform	ND	5	ug/L
1,1,1-Trichloroethane	ND	5	ug/L
1,2-Dichloroethane	ND	5	ug/L
1,1-Dichloropropene	ND	5	ug/L
Benzene	ND	5	ug/L
Carbon Tetrachloride	ND	5	ug/L
1,2-Dichloropropane	ND	5	ug/L
Trichloroethene	ND	5	ug/L
Dibromomethane	ND	5	ug/L
Bromodichloromethane	ND	5	ug/L
2-Chloroethylvinylether	ND	10	ug/L
4-Methyl-2-Pentanone	ND	10	ug/L
cis-1,3-Dichloropropene	ND	5	ug/L
trans-1,3-Dichloropropene	ND	5	ug/L
Toluene	ND	5	ug/L
1,1,2-Trichloroethane	ND	5	ug/L

Notes

ND - Not detected.



Matrix: Aqueous
Sample ID: VLBLK
Batch: N980817122724

Reported on: 08/19/98 13:56
Analyzed on: 08/17/98 21:13
Analyst: JC

METHOD 8260/8240 N229B02

Compound	Result	Detection Limit	Units
1,3-Dichloropropane	ND	5	ug/L
2-Hexanone	ND	10	ug/L
Dibromochloromethane	ND	5	ug/L
1,2-Dibromoethane	ND	5	ug/L
Tetrachloroethene	ND	5	ug/L
Chlorobenzene	ND	5	ug/L
1,1,1,2-Tetrachloroethane	ND	5	ug/L
Ethylbenzene	ND	5	ug/L
Bromoform	ND	5	ug/L
Styrene	ND	5	ug/L
Xylene (Total)	ND	5	ug/L
1,1,2,2-Tetrachloroethane	ND	5	ug/L
1,2,3-Trichloropropane	ND	5	ug/L
Isopropylbenzene	ND	5	ug/L
Bromobenzene	ND	5	ug/L
N-Propylbenzene	ND	5	ug/L
2-Chlorotoluene	ND	5	ug/L
4-Chlorotoluene	ND	5	ug/L
1,3,5-Trimethylbenzene	ND	5	ug/L
tert-Butylbenzene	ND	5	ug/L
1,2,4-Trimethylbenzene	ND	5	ug/L
1,3-Dichlorobenzene	ND	5	ug/L
sec-Butylbenzene	ND	5	ug/L
1,4-Dichlorobenzene	ND	5	ug/L
p-Isopropyltoluene	ND	5	ug/L
1,2-Dichlorobenzene	ND	5	ug/L
n-Butylbenzene	ND	5	ug/L
1,2-Dibromo-3-Chloropropan	ND	5	ug/L
1,2,4-Trichlorobenzene	ND	5	ug/L
Naphthalene	ND	5	ug/L
Hexachlorobutadiene	ND	5	ug/L
1,2,3-Trichlorobenzene	ND	5	ug/L
Methyl t-Butyl Ether	ND	10	ug/L

Notes

ND - Not detected.



LABORATORIES

SPL Blank QC Report

page 3

Matrix: Aqueous
Sample ID: VLBLK
Batch: N980817122724

Reported on: 08/19/98 13:56
Analyzed on: 08/17/98 21:13
Analyst: JC

METHOD 8260/8240 N229B02

S u r r o g a t e	Result	QC Criteria	Units
1,2-Dichloroethane-d4	90	76-114	% Recovery
Toluene-d8	100	88-110	% Recovery
Bromofluorobenzene	104	86-115	% Recovery

Samples in Batch 9808574-01 9808574-02 9808574-03

Notes

ND - Not detected.

Data File: /var/chem/n.i/n980817a.b/n229b02.d
Report Date: 19-Aug-1998 08:35

Page 1

SPL Houston Labs

Volatiles by 8260

Data file : /var/chem/n.i/n980817a.b/n229b02.d
Lab Smp Id: VLBLK-8260W
Inj Date : 17-AUG-1998 21:13
Operator : JC
Smp Info : VLBLK-8260W/1X
Misc Info : N229W2//N229CW2
Comment :
Method : /var/chem/n.i/n980817a.b/n8260w.m
Meth Date : 19-Aug-1998 08:29 jimmy
Cal Date : 07-JUL-1998 15:16
Als bottle: 28
Dil Factor: 1.00000
Integrator: HP RTE
Target Version: 3.40
Processing Host: chemsys1

Inst ID: n.i
Quant Type: ISTD
Cal File: n188iw2.d
QC Sample: BLANK
Compound Sublist: all.sub

Concentration Formula: Amt * DF * Uf * 5/Vo

Name	Value	Description
DF	1.000	Dilution Factor
Uf	0.200	ng unit correction factor
Vo	5.000	Sample Volume purged (mL)

Compounds	QUANT	SIG					CONCENTRATIONS	
			RT	EXP RT	REL RT	RESPONSE	ON-COLUMN	FINAL
	MASS						(ng)	(ug/L)
* 20 Pentafluorobenzene	168		2.115	2.113	(1.000)	447496	250.000	
\$ 21 1,2-Dichloroethane-d4	102		2.172	2.158	(0.864)	37868	224.738	45
* 27 1,4-Difluorobenzene	114		2.514	2.512	(1.000)	558047	250.000	
\$ 36 Toluene-d8	98		4.021	4.008	(1.599)	656343	249.671	50
* 44 Chlorobenzene-d5	117		6.053	6.051	(1.000)	521298	250.000	
\$ 56 Bromofluorobenzene	95		7.879	7.877	(1.302)	291236	259.565	52
* 66 1,4-Dichlorobenzene-d4	152		9.592	9.589	(1.000)	279092	250.000	

SPL Houston Labs

INTERNAL STANDARD COMPOUNDS
AREA AND RT SUMMARY

Instrument ID: n.i
Lab File ID: n229b02.d
Lab Smp Id: VLBLK-8260W
Analysis Type: VOA
Quant Type: ISTD
Operator: JC

Calibration Date: 08/17/98
Calibration Time: 2022

Level: LOW
Sample Type: WATER

Method File: /var/chem/n.i/n980817a.b/n8260w.m
Misc Info: N229W2//N229CW2

COMPOUND	STANDARD	AREA LIMIT		SAMPLE	%DIFF
		LOWER	UPPER		
20 Pentafluorobenzen	431800	215900	863600	447496	3.64
27 1,4-Difluorobenze	534304	267152	1068608	558047	4.44
44 Chlorobenzene-d5	519703	259852	1039406	521298	0.31
66 1,4-Dichlorobenze	291073	145536	582146	279092	-4.12

COMPOUND	STANDARD	RT LIMIT		SAMPLE	%DIFF
		LOWER	UPPER		
20 Pentafluorobenzen	2.11	1.61	2.61	2.11	0.11
27 1,4-Difluorobenze	2.51	2.01	3.01	2.51	0.09
44 Chlorobenzene-d5	6.05	5.55	6.55	6.05	0.04
66 1,4-Dichlorobenze	9.59	9.09	10.09	9.59	0.02

AREA UPPER LIMIT = +100% of internal standard area.
AREA LOWER LIMIT = - 50% of internal standard area.
RT UPPER LIMIT = + 0.50 minutes of internal standard RT.
RT LOWER LIMIT = - 0.50 minutes of internal standard RT.

Data File: /var/chem/n.i/n980817a,b/n229b02.d
Date : 17-AUG-1998 21:13

Client ID:

Sample Info: WLBLK-82604/1X

Purge Volume: 5.0

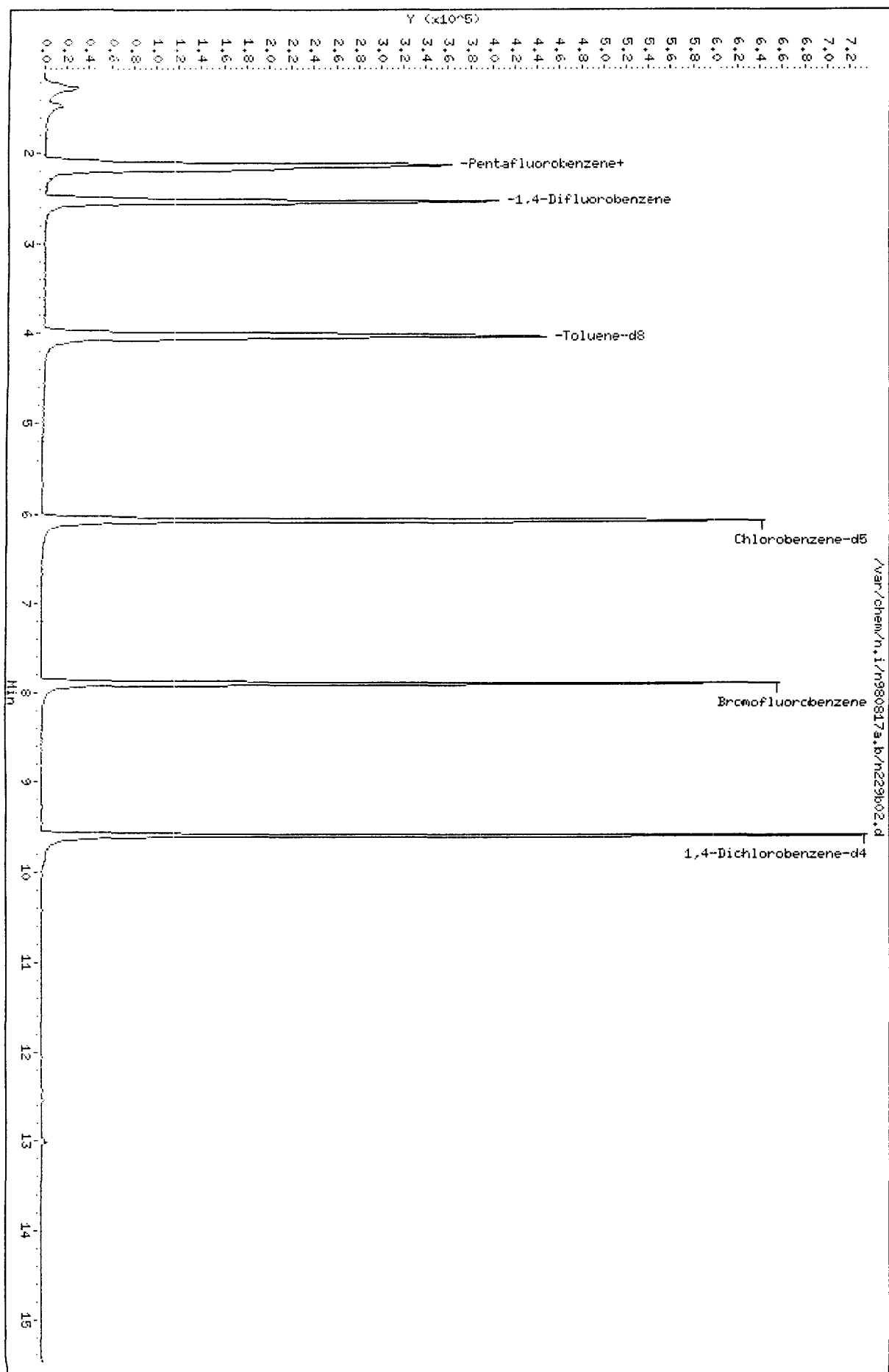
Column phase: 30m,hp5ms,0.25u df

Instrument: n.i

Operator: JC

Column diameter: 0.25

Page 4



Data File: /var/chem/n.i/n980707.b/n188bf1.d

Page 1

Date : 07-JUL-1998 14:25

Client ID:

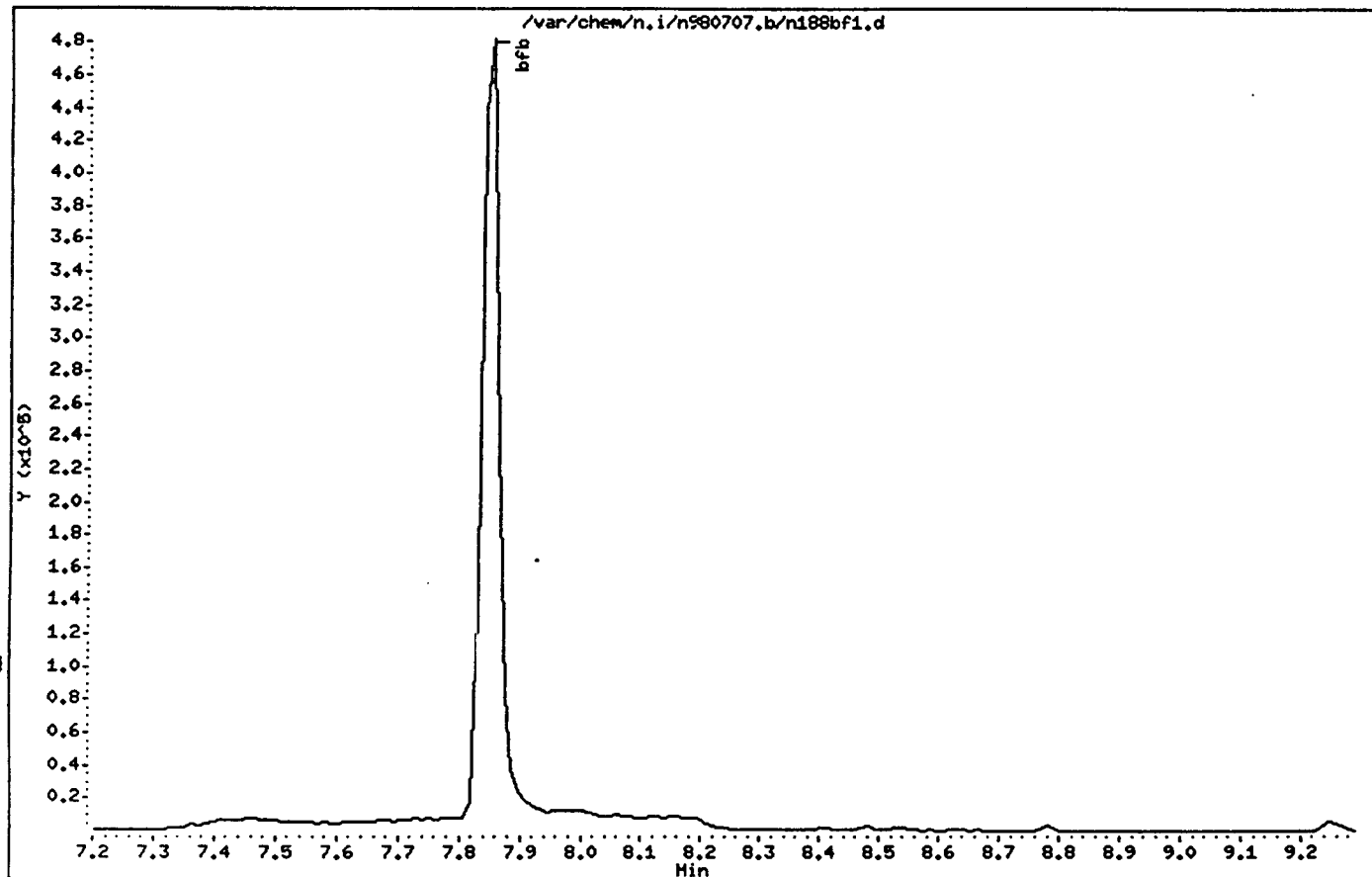
Instrument: n.i

Sample Info: 50 NG BFB

Operator: LT

Column phase:

Column diameter: 0.25



Date : 07-JUL-1998 14:25

Client ID:

Instrument: n.i

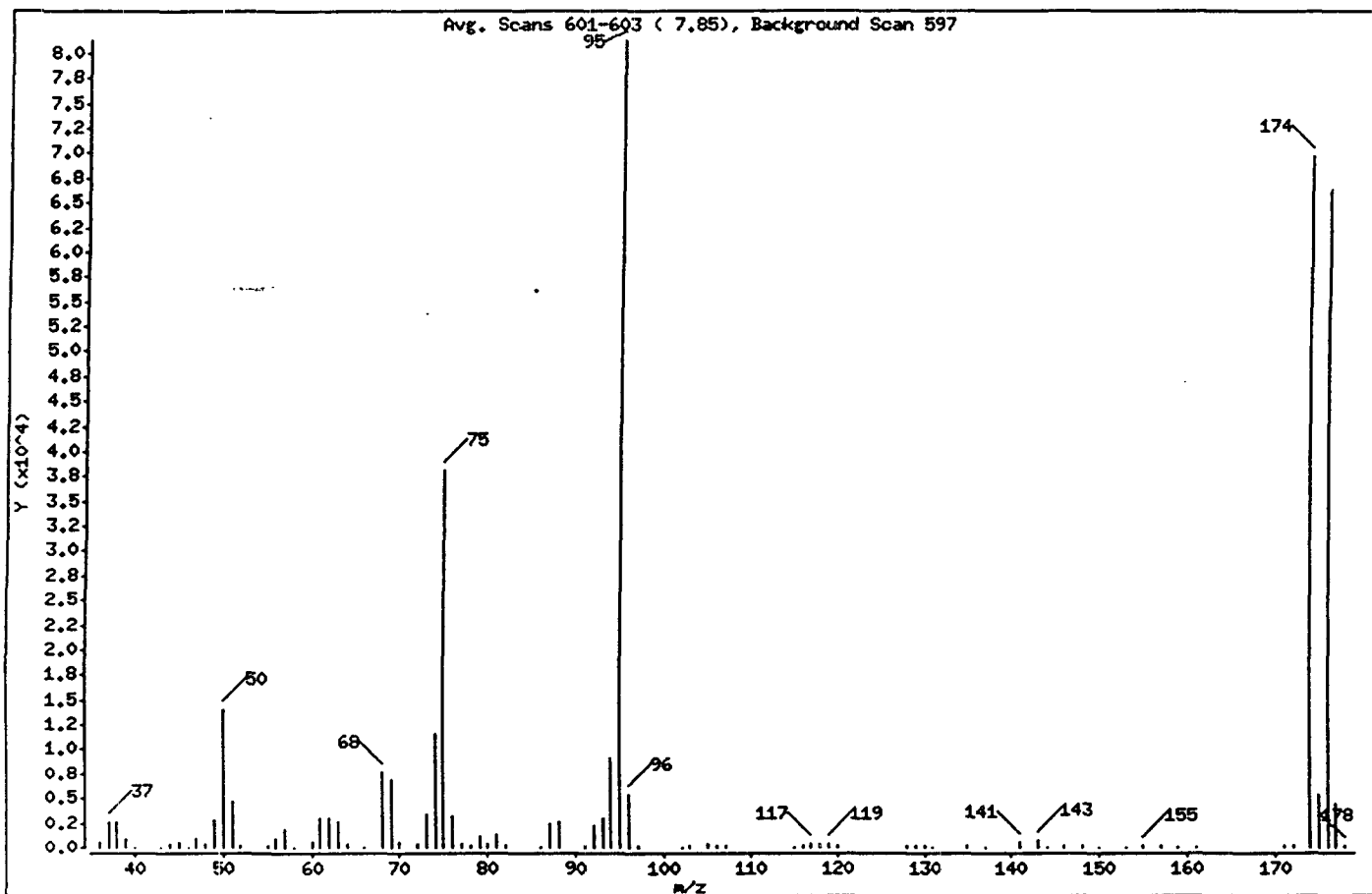
Sample Info: 50 NG BFB

Operator: LT

Column phase:

Column diameter: 0.25

1 bfb



m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
95	Base Peak, 100% relative abundance	100.00
50	15.00 - 40.00% of mass 95	17.20
75	30.00 - 60.00% of mass 95	46.85
96	5.00 - 9.00% of mass 95	6.57
173	Less than 2.00% of mass 174	0.00 (0.00)
174	50.00 - 99.90% of mass 95	85.81
175	5.00 - 9.00% of mass 174	6.75 (7.87)
176	95.00 - 101.00% of mass 174	81.71 (95.23)
177	5.00 - 9.00% of mass 176	5.51 (6.74)

Date : 07-JUL-1998 14:25

Client ID:

Instrument: n.i

Sample Info: 50 NG BFB

Operator: LT

Column phase:

Column diameter: 0.25

Data File: n188bf1.d

Spectrum: Avg. Scans 601-603 (7.85), Background Scan 597

Location of Maximum: 95.00

Number of points: 84

m/z	Y	m/z	Y	m/z	Y	m/z	Y
36.00	582	63.00	2570	93.00	3065	141.00	623
37.00	2653	64.00	310	94.00	9067	143.00	656
38.00	2590	66.00	56	95.00	81304	144.00	38
39.00	1003	68.00	7572	96.00	5339	146.00	155
40.00	87	69.00	6946	97.00	161	148.00	159
43.00	44	70.00	497	102.00	44	150.00	44
44.00	320	72.00	377	103.00	236	153.00	41
45.00	575	73.00	3271	105.00	419	155.00	223
46.00	35	74.00	11602	106.00	243	157.00	132
47.00	868	75.00	38096	107.00	115	159.00	89
48.00	436	76.00	3192	115.00	34	161.00	76
49.00	2806	77.00	375	116.00	240	171.00	96
50.00	13982	78.00	146	117.00	422	172.00	140
51.00	4631	79.00	1170	118.00	294	174.00	69768
52.00	173	80.00	394	119.00	301	175.00	5488
55.00	181	81.00	1252	120.00	114	176.00	66432
56.00	908	82.00	130	128.00	205	177.00	4479
57.00	1805	86.00	43	129.00	120	178.00	116
58.00	34	87.00	2523	130.00	256		
60.00	621	88.00	2590	131.00	73		
61.00	3065	91.00	119	135.00	124		
62.00	3012	92.00	2206	137.00	40		

Data File: /var/chem/n.i/n980817a,b/n229bf4.d

Page 1

Date : 17-AUG-1998 19:57

Client ID:

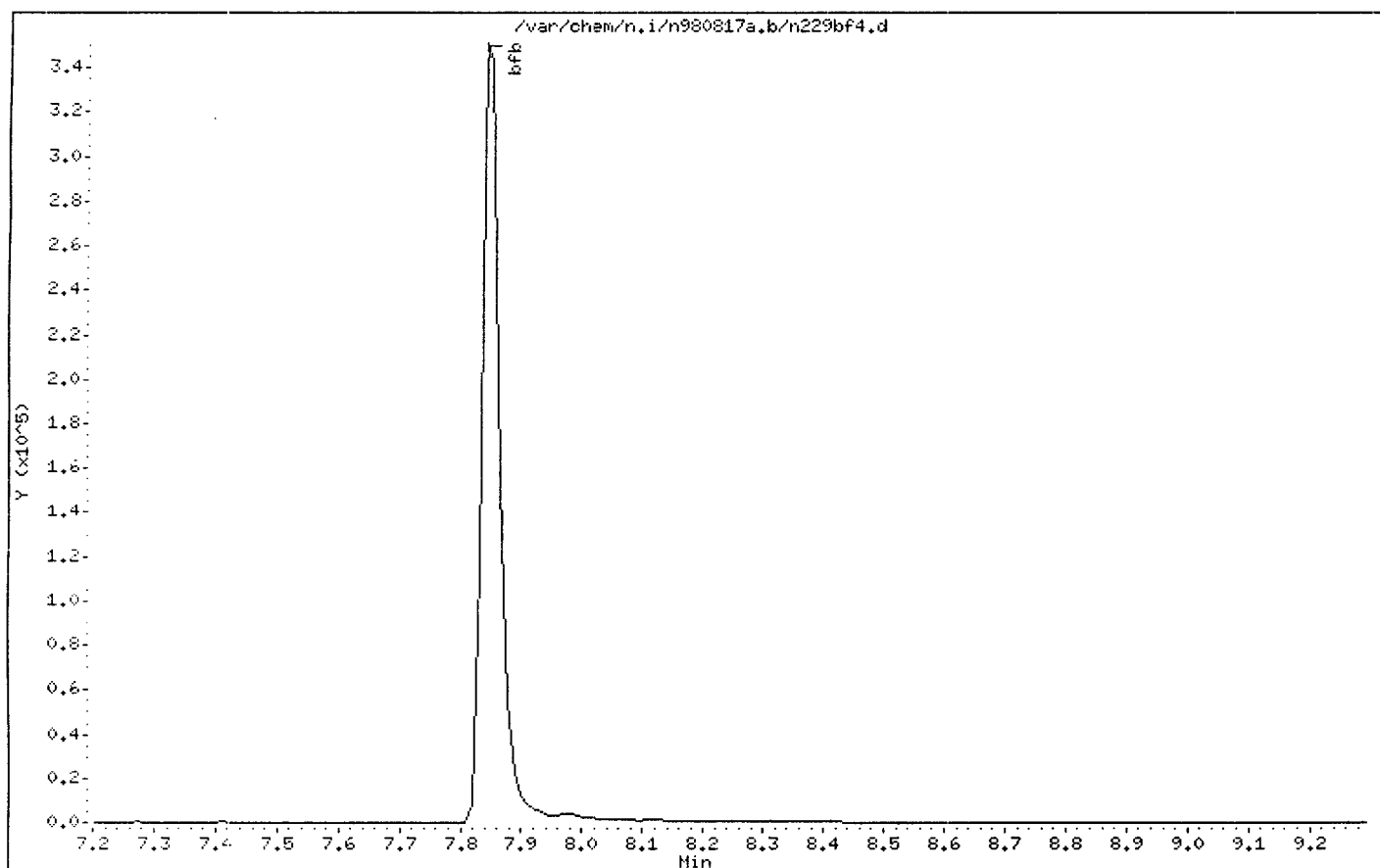
Instrument: n.i

Sample Info: 50 NG BFB

Operator: JC

Column phase:

Column diameter: 0.25



Date : 17-AUG-1998 19:57

Client ID:

Instrument: n.i

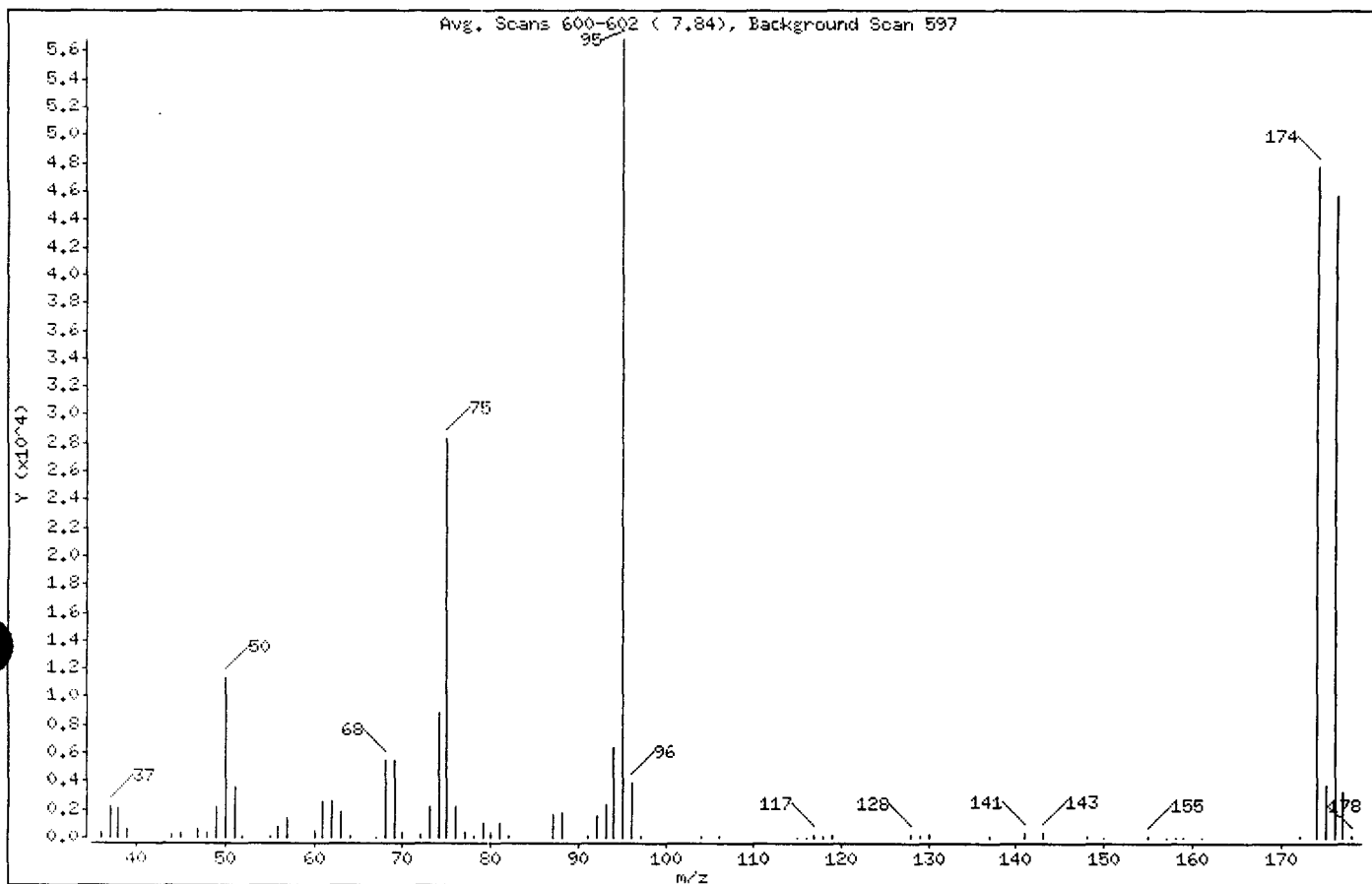
Sample Info: 50 NG BFB

Operator: JC

Column phase:

Column diameter: 0.25

1 bfb



m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
95	Base Peak, 100% relative abundance	100.00
50	15.00 - 40.00% of mass 95	20.07
75	30.00 - 60.00% of mass 95	49.87
96	5.00 - 9.00% of mass 95	6.95
173	Less than 2.00% of mass 174	0.00 (0.00)
174	50.00 - 99.90% of mass 95	84.09
175	5.00 - 9.00% of mass 174	6.56 (7.80)
176	95.00 - 101.00% of mass 174	80.40 (95.61)
177	5.00 - 9.00% of mass 176	5.78 (7.19)

Data File: /var/chem/n.i/n980817a.b/n229bf4.d

Page 3

Date : 17-AUG-1998 19:57

Client ID:

Instrument: n.i

Sample Info: 50 NG BFB

Operator: JC

Column phase:

Column diameter: 0.25

Data File: n229bf4.d

Spectrum: Avg. Scans 600-602 (7.84), Background Scan 597

Location of Maximum: 95.00

Number of points: 70

m/z	Y	m/z	Y	m/z	Y	m/z	Y
36.00	431	63.00	1889	88.00	1814	137.00	80
37.00	2224	64.00	162	91.00	91	141.00	450
38.00	2120	67.00	59	92.00	1562	143.00	449
39.00	717	68.00	5481	93.00	2293	148.00	92
44.00	283	69.00	5434	94.00	6357	150.00	35
45.00	429	70.00	411	95.00	56848	155.00	125
47.00	704	72.00	255	96.00	3949	157.00	52
48.00	343	73.00	2182	97.00	128	158.00	41
49.00	2260	74.00	8930	104.00	182	159.00	33
50.00	11411	75.00	28344	106.00	136	161.00	38
51.00	3603	76.00	2248	115.00	36	172.00	66
52.00	110	77.00	328	116.00	58	174.00	47808
55.00	167	78.00	149	117.00	294	175.00	3730
56.00	828	79.00	994	118.00	147	176.00	45704
57.00	1473	80.00	331	119.00	219	177.00	3288
60.00	488	81.00	1026	128.00	220	178.00	97
61.00	2585	82.00	115	129.00	101		
62.00	2600	87.00	1680	130.00	199		

SPL Houston Labs

INITIAL CALIBRATION DATA

Start Cal Date : 07-JUL-1998 15:16
 End Cal Date : 07-JUL-1998 17:25
 Quant Method : ISTD
 Origin : Disabled
 Target Version : 3.40
 Integrator : HP RTE
 Method file : /var/chem/n.i/n980707.b/n8260wL.m
 Cal Date : 08-Jul-1998 12:46 lien
 Curve Type : Average

Calibration File Names:

Level 1: /var/chem/n.i/n980707.b/n188iw1a.d
 Level 2: /var/chem/n.i/n980707.b/n188iw2.d
 Level 3: /var/chem/n.i/n980707.b/n188iw3.d
 Level 4: /var/chem/n.i/n980707.b/n188iw4.d
 Level 5: /var/chem/n.i/n980707.b/n188iw5.d

Compound	25.000 Level 1	100.000 Level 2	250.000 Level 3	500.000 Level 4	1000.000 Level 5	RRF	% RSD
1 Dichlorodifluoromethane	0.25337	0.21087	0.19031	0.16456	0.14102	0.19203	22.516
2 Chloromethane	0.74600	0.53568	0.48920	0.41418	0.37308	0.51163	28.443
3 Vinyl Chloride	0.36113	0.30967	0.27690	0.22473	0.18785	0.27206	25.134
4 Bromomethane	0.27339	0.22462	0.20196	0.16316	0.13425	0.19947	27.084
5 Chloroethane	0.32102	0.28084	0.24645	0.19424	0.15616	0.23974	27.508
6 Trichlorofluoromethane	0.35410	0.36463	0.33869	0.30944	0.26157	0.32569	12.724
7 Acetone	0.03563	0.02673	0.02317	0.01873	0.01566	0.02478	37.558
8 1,1-Dichloroethene	0.29918	0.26887	0.28646	0.26035	0.21869	0.26671	11.550
9 Methylene Chloride	0.54097	0.40811	0.39202	0.32135	0.25540	0.38357	27.881
10 Carbon Disulfide	1.38344	1.26960	1.32875	1.21628	1.03249	1.24611	10.824
11 trans-1,2-Dichloroethene	0.42657	0.39776	0.40930	0.38631	0.32342	0.38867	10.136
12 1,1-Dichloroethane	0.69277	0.83082	0.70744	0.71322	0.61487	0.71183	10.869
13 Vinyl Acetate	0.99685	0.79817	0.81069	0.75364	0.73174	0.81822	12.821
14 2-Butanone	0.99685	0.79817	0.81069	0.75364	0.73174	0.81822	12.821
15 cis-1,2-Dichloroethene	0.45494	0.42498	0.44666	0.44649	0.42511	0.43964	3.128
M 16 1,2-Dichloroethene (total)	0.44076	0.41137	0.42798	0.41640	0.37426	0.41415	6.040
17 2,2-Dichloropropane	0.61396	0.57749	0.61905	0.60426	0.58092	0.59914	3.170
18 Bromochloromethane	0.18994	0.19161	0.21786	0.20599	0.19049	0.19918	6.218
19 Chloroform	0.81074	0.71387	0.74780	0.73008	0.69178	0.73885	6.115
22 1,1,1-Trichloroethane	0.48328	0.47961	0.49939	0.50895	0.46455	0.48716	3.567
23 1,2-Dichloroethane	0.61076	0.59638	0.68326	0.67360	0.68696	0.65019	6.635
24 1,1-Dichloropropene	0.59928	0.55238	0.60104	0.60957	0.62542	0.59754	4.566
25 Benzene	1.20011	1.16590	1.26085	1.24987	1.23356	1.22206	3.182
26 Carbon Tetrachloride	0.33852	0.34501	0.37572	0.39303	0.38512	0.36748	6.631
28 1,2-Dichloropropane	0.30335	0.29597	0.31197	0.30949	0.31023	0.30620	2.149
29 Trichloroethene	0.30130	0.31076	0.33122	0.32694	0.32656	0.31935	3.991

SPL Houston Labs

INITIAL CALIBRATION DATA

Start Cal Date : 07-JUL-1998 15:16
 End Cal Date : 07-JUL-1998 17:25
 Quant Method : ISTD
 Origin : Disabled
 Target Version : 3.40
 Integrator : HP RTE
 Method file : /var/chem/n.i/n980707.b/n8260wL.m
 Cal Date : 08-Jul-1998 12:46 lien
 Curve Type : Average

Compound	25.000 Level 1	100.000 Level 2	250.000 Level 3	500.000 Level 4	1000.000 Level 5	RRF	% RSD
30 Dibromomethane	0.16929	0.19108	0.19308	0.20620	0.20450	0.19283	7.658
31 Bromodichloromethane	0.42843	0.41725	0.44417	0.44750	0.46042	0.43956	3.843
32 2-Chloroethylvinylether	0.18410	0.18029	0.20689	0.20694	0.21796	0.19924	8.157
33 4-Methyl-2-Pentanone	0.27119	0.21057	0.22917	0.22857	0.24307	0.23651	9.538
34 cis-1,3-Dichloropropene	0.47928	0.46469	0.52990	0.53504	0.55950	0.51368	7.789
35 trans-1,3-Dichloropropene	0.39771	0.42001	0.48129	0.49684	0.51015	0.46120	10.731
37 Toluene	0.74297	0.73892	0.81195	0.80803	0.83779	0.78793	5.637
38 1,1,2-Trichloroethane	0.20579	0.21051	0.22779	0.22588	0.23976	0.22194	6.207
39 1,3-Dichloropropane	0.43712	0.41107	0.44407	0.44351	0.44134	0.43542	3.189
40 2-Hexanone	0.17412	0.12703	0.13495	0.13768	0.13689	0.14214	12.927
41 Dibromochloromethane	0.23676	0.22792	0.26748	0.27387	0.28255	0.25772	9.304
42 1,2-Dibromoethane	0.27046	0.26173	0.28110	0.28431	0.28182	0.27588	3.455
43 Tetrachloroethene	0.30079	0.27499	0.28383	0.28850	0.28817	0.28726	3.245
45 Chlorobenzene	1.00904	0.94625	1.00210	0.99984	0.97445	0.98633	2.632
46 1,1,1,2-Tetrachloroethane	0.27910	0.28526	0.32393	0.34730	0.36067	0.31925	11.393
47 Ethylbenzene	0.53546	0.49166	0.52355	0.52456	0.51152	0.51735	3.224
48 m,p-Xylene(s)	0.65330	0.60134	0.62099	0.61501	0.58856	0.61584	3.965
49 Bromoform	0.17094	0.16783	0.21916	0.25112	0.27466	0.21674	21.924
50 Styrene	1.29031	1.12133	1.16684	1.11870	1.08850	1.15713	6.873
51 o-Xylene	0.67469	0.61289	0.64155	0.62999	0.61401	0.63463	3.996
M 52 Xylene (Total)	0.66043	0.60519	0.62784	0.62000	0.59704	0.62210	3.954
53 1,1,2,2-Tetrachloroethane	0.42128	0.34687	0.38238	0.37656	0.36744	0.37891	7.193
54 1,2,3-Trichloropropane	0.11440	0.10306	0.10626	0.10434	0.10803	0.10722	4.139
55 Isopropylbenzene	3.32112	2.95753	3.01992	3.01129	2.90250	3.04247	5.349
57 Bromobenzene	1.05722	0.86914	0.91080	0.90329	0.88322	0.92473	8.204
58 N-Propylbenzene	0.86046	0.72501	0.74498	0.74727	0.74096	0.76374	7.171
59 2-Chlorotoluene	0.79825	0.68634	0.71361	0.71015	0.69012	0.71969	6.324
60 4-Chlorotoluene	0.85671	0.70454	0.73394	0.72524	0.70714	0.74551	8.500
61 1,3,5-Trimethylbenzene	2.88392	2.37326	2.49064	2.45956	2.33153	2.50778	8.765
62 tert-Butylbenzene	1.97198	1.57420	1.63996	1.57750	1.49711	1.65215	11.248
63 1,2,4-Trimethylbenzene	3.13057	2.46547	2.59416	2.50694	2.33065	2.60556	11.840
64 1,3-Dichlorobenzene	1.68601	1.32151	1.42572	1.39872	1.37626	1.44164	9.841
65 sec-Butylbenzene	3.31780	2.37536	2.50551	2.43185	2.29676	2.58545	16.108

SPL Houston Labs

INITIAL CALIBRATION DATA

Start Cal Date : 07-JUL-1998 15:16
 End Cal Date : 07-JUL-1998 17:25
 Quant Method : ISTD
 Origin : Disabled
 Target Version : 3.40
 Integrator : HP RTE
 Method file : /var/chem/n.i/n980707.b/n8260wL.m
 Cal Date : 08-Jul-1998 12:46 lien
 Curve Type : Average

Compound	25.000	100.000	250.000	500.000	1000.000	RRF	% RSD
-----	Level 1	Level 2	Level 3	Level 4	Level 5	-----	-----
67 1,4-Dichlorobenzene	1.68083	1.33137	1.45741	1.43651	1.38332	1.45789	9.185
68 p-Isopropyltoluene	2.97583	2.12447	2.21045	2.14955	1.98159	2.28838	17.189
69 1,2-Dichlorobenzene	1.79290	1.28454	1.38178	1.35861	1.32809	1.42919	14.453
70 n-Butylbenzene	2.93010	1.73172	1.87533	1.84493	1.83820	2.04406	24.377
71 1,2-Dibromo-3-Chloropropane	0.20178	0.11620	0.13607	0.14281	0.14588	0.14855	21.488
72 1,2,4-Trichlorobenzene	2.07845	0.68594	0.77301	0.79818	0.76302	1.01972	58.186
73 Naphthalene	6.40821	1.45668	1.65457	1.66996	1.55871	2.54962	84.668
74 Hexachlorobutadiene	1.27302	0.39869	0.41479	0.42092	0.39561	0.58061	66.692
75 1,2,3-Trichlorobenzene	2.80510	0.56671	0.63145	0.64010	0.55581	1.03983	94.970
76 Acetonitrile	0.05436	0.04477	0.04071	0.04280	0.03351	0.04323	17.438
77 Acrylonitrile	0.06545	0.05348	0.05727	0.04972	0.03970	0.05312	17.883
78 Allyl Chloride	0.05436	0.08873	0.10494	0.13066	0.18362	0.11246	43.082
80 1,4-Dioxane	0.00171	0.00301	0.00349	0.00343	0.00385	0.00310	26.879
81 Ethyl Cyanide	0.00593	0.01046	0.01377	0.01720	0.02432	0.01433	48.561
82 Ethyl Methacrylate	0.04923	0.09284	0.13350	0.19009	0.29937	0.15301	63.339
83 Ethyl Ether	0.02300	0.02999	0.03854	0.04448	0.05574	0.03835	33.125
84 Iodomethane	0.60849	0.58691	0.55732	0.45477	0.36123	0.51375	20.174
85 Iso-Butyl Alcohol	0.00331	0.00946	0.01487	0.01883	0.02824	0.01494	63.269
86 Methacrylonitrile	0.05810	0.09279	0.15830	0.19657	0.28000	0.15715	55.656
87 Methyl Methacrylate	0.02326	0.03970	0.05653	0.07490	0.11578	0.06203	57.481
88 trans-1,4-Dichloro-2-Butene	0.02592	0.05320	0.08304	0.11006	0.15981	0.08641	59.912
89 Methyl t-Butyl Ether	1.19998	1.17576	1.22302	1.11605	0.96280	1.13552	9.199
90 Butadiene	1.02824	0.60612	0.55333	0.49573	0.46592	0.62987	36.377
91 Cumene	3.32112	2.95741	3.01992	3.01129	2.90250	3.04245	5.349
92 Cyclohexane	0.51296	0.53149	0.58412	0.60815	0.64075	0.57549	9.213
93 Dicyclopentadiene	3.30552	2.54224	2.55359	2.47865	2.31657	2.63931	14.558
94 Hexane	0.16815	0.23584	0.24232	0.21764	0.17659	0.20811	16.331
95 t-Butyl Alcohol	0.13935	0.13420	0.13987	0.13151	0.13216	0.13542	2.922
97 Acrolein	0.05943	0.05016	0.04576	0.03822	0.03122	0.04496	24.140
98 2,2,4-Trimethylpentane	1.88055	0.56589	0.59837	0.61124	0.64381	0.85997	66.421
195 2-Nitropropane	0.00682	0.01884	0.02729	0.03890	0.06515	0.03140	70.760

SPL Houston Labs

INITIAL CALIBRATION DATA

Start Cal Date : 07-JUL-1998 15:16
 End Cal Date : 07-JUL-1998 17:25
 Quant Method : ISTD
 Origin : Disabled
 Target Version : 3.40
 Integrator : HP RTE
 Method file : /var/chem/n.i/n980707.b/n8260wL.m
 Cal Date : 08-Jul-1998 12:46 lien
 Curve Type : Average

Compound	25.000 Level 1	100.000 Level 2	250.000 Level 3	500.000 Level 4	1000.000 Level 5	RRF	% RSD
198 Ethyl Acetate	0.31374	0.36396	0.32786	0.41132	0.41983	0.36734	13.007
199 Cyclohexanone	0.00627	0.00463	0.00526	0.00530	0.00535	0.00536	10.960
200 1,1,2-Trichlorotrifluoroethan	0.03541	0.07242	0.08326	0.08914	0.12354	0.08075	39.318
203 n-Butanol	0.00513	0.01063	0.01460	0.02027	0.03204	0.01653	62.193
204 Di-Isopropyl Ether	1.23283	1.19484	1.27782	1.18508	1.12906	1.20393	4.613
206 tert-Amyl Methyl Ether	1.35705	1.23670	1.30953	1.33961	1.41207	1.33099	4.852
208 Ethyl t-Butyl Ether	1.39351	1.33791	1.27093	1.36750	1.29727	1.33342	3.751
209 Methylcyclohexane	0.48844	0.37891	0.46358	0.47823	0.52097	0.46603	11.388
\$ 21 1,2-Dichloroethane-d4	0.06411	0.07590	0.07979	0.07848	0.07915	0.07549	8.647
\$ 36 Toluene-d8	1.04200	1.12617	1.23124	1.21712	1.27193	1.17769	7.871
\$ 56 Bromofluorobenzene	0.52974	0.53575	0.55284	0.53779	0.53433	0.53809	1.628

SPL Houston Labs

INITIAL CALIBRATION DATA

Start Cal Date : 07-JUL-1998 15:16
 End Cal Date : 07-JUL-1998 17:25
 Quant Method : ISTD
 Origin : Included
 Target Version : 3.40
 Integrator : HP RTE
 Method file : /var/chem/n.i/n980707.b/n8260w.m
 Cal Date : 08-Jul-1998 12:45 lien

Calibration File Names:

Level 1: /var/chem/n.i/n980707.b/n188iw1a.d
 Level 2: /var/chem/n.i/n980707.b/n188iw2.d
 Level 3: /var/chem/n.i/n980707.b/n188iw3.d
 Level 4: /var/chem/n.i/n980707.b/n188iw4.d
 Level 5: /var/chem/n.i/n980707.b/n188iw5.d

Compound	25	100	250	500	1000	Curve	Coefficients			%RSD or R ²
	Level 1	Level 2	Level 3	Level 4	Level 5		b	m1	m2	
1 Dichlorodifluoromethane	9734	34490	70844	121625	180078	QUAD	-0.02563	4.65199	4.41565	0.99993
2 Chloromethane	28660	87614	182102	306118	476417	QUAD	-0.07275	2.09418	0.42898	0.99948
3 Vinyl Chloride	13874	50649	103075	166096	239888	QUAD	-0.02212	2.98335	3.16829	0.99959
4 Bromomethane	10503	36738	75180	120588	171433	QUAD	-0.01403	3.86898	6.73932	0.99968
5 Chloroethane	12333	45934	91739	143559	199417	QUAD	0.00004	2.81348	5.76728	0.99971
6 Trichlorofluoromethane	0.35410	0.36463	0.33869	0.30944	0.26157	AVRG		0.32569		12.72372
7 Acetone	7612	21863	43130	69201	100011	QUAD	-0.31952	37.90679	86.43044	0.99962
8 1,1-Dichloroethene	0.29918	0.26887	0.28646	0.26035	0.21869	AVRG		0.26671		11.54951
9 Methylene Chloride	20783	66750	145929	237507	326146	QUAD	0.02713	1.68180	2.15883	0.99974
10 Carbon Disulfide	53149	207653	494625	898942	1318483	QUAD	0.04050	0.60347	0.08576	0.99981

SPL Houston Labs

INITIAL CALIBRATION DATA

Start Cal Date : 07-JUL-1998 15:16
 End Cal Date : 07-JUL-1998 17:25
 Quant Method : ISTD
 Origin : Included
 Target Version : 3.40
 Integrator : HP RTE
 Method file : /var/chem/n.i/n980707.b/n8260w.m
 Cal Date : 08-Jul-1998 12:45 lien

Compound	25	100	250	500	1000	Curve	Coefficients			%RSD or R ²
	Level 1	Level 2	Level 3	Level 4	Level 5		b	m1	m2	
11 trans-1,2-Dichloroethene	0.42657	0.39776	0.40930	0.38631	0.32342	AVRG		0.38867		10.13577
12 1,1-Dichloroethane	0.69277	0.83082	0.70744	0.71322	0.61487	AVRG		0.71183		10.86922
13 Vinyl Acetate	0.99685	0.79817	0.81069	0.75364	0.73174	AVRG		0.81822		12.82073
14 2-Butanone	0.99685	0.79817	0.81069	0.75364	0.73174	AVRG		0.81822		12.82073
15 cis-1,2-Dichloroethene	0.45494	0.42498	0.44666	0.44649	0.42511	AVRG		0.43964		3.12767
M 16 1,2-Dichloroethene (total)	0.44076	0.41137	0.42798	0.41640	0.37426	AVRG		0.41415		6.03975
17 2,2-Dichloropropane	0.61396	0.57749	0.61905	0.60426	0.58092	AVRG		0.59914		3.16990
18 Bromochloromethane	0.18994	0.19161	0.21786	0.20599	0.19049	AVRG		0.19918		6.21758
19 Chloroform	0.81074	0.71387	0.74780	0.73008	0.69178	AVRG		0.73885		6.11494
22 1,1,1-Trichloroethane	0.48328	0.47961	0.49939	0.50895	0.46455	AVRG		0.48716		3.56728
23 1,2-Dichloroethane	0.61076	0.59638	0.68326	0.67360	0.68696	AVRG		0.65019		6.63476
24 1,1-Dichloropropene	0.59928	0.55238	0.60104	0.60957	0.62542	AVRG		0.59754		4.56570
25 Benzene	1.20011	1.16590	1.26085	1.24987	1.23356	AVRG		1.22206		3.18155
26 Carbon Tetrachloride	0.33852	0.34501	0.37572	0.39303	0.38512	AVRG		0.36748		6.63150
28 1,2-Dichloropropane	0.30335	0.29597	0.31197	0.30949	0.31023	AVRG		0.30620		2.14873
29 Trichloroethene	0.30130	0.31076	0.33122	0.32694	0.32656	AVRG		0.31935		3.99131
30 Dibromomethane	0.16929	0.19108	0.19308	0.20620	0.20450	AVRG		0.19283		7.65821

SPL Houston Labs

INITIAL CALIBRATION DATA

Start Cal Date : 07-JUL-1998 15:16
 End Cal Date : 07-JUL-1998 17:25
 Quant Method : ISTD
 Origin : Included
 Target Version : 3.40
 Integrator : HP RTE
 Method file : /var/chem/n.i/n980707.b/n8260w.m
 Cal Date : 08-Jul-1998 12:45 lien

Compound	25	100	250	500	1000	Curve	Coefficients			%RSD or R^2
	Level 1	Level 2	Level 3	Level 4	Level 5		b	m1	m2	
31 Bromodichloromethane	0.42843	0.41725	0.44417	0.44750	0.46042	AVRG		0.43956		3.84284
32 2-Chloroethylvinylether	0.18410	0.18029	0.20689	0.20694	0.21796	AVRG		0.19924		8.15724
33 4-Methyl-2-Pentanone	0.27119	0.21057	0.22917	0.22857	0.24307	AVRG		0.23651		9.53809
34 cis-1,3-Dichloropropene	0.47928	0.46469	0.52990	0.53504	0.55950	AVRG		0.51368		7.78879
35 trans-1,3-Dichloropropene	0.39771	0.42001	0.48129	0.49684	0.51015	AVRG		0.46120		10.73061
37 Toluene	0.74297	0.73892	0.81195	0.80803	0.83779	AVRG		0.78793		5.63705
38 1,1,2-Trichloroethane	0.20579	0.21051	0.22779	0.22588	0.23976	AVRG		0.22194		6.20686
39 1,3-Dichloropropane	0.43712	0.41107	0.44407	0.44351	0.44134	AVRG		0.43542		3.18860
40 2-Hexanone	0.17412	0.12703	0.13495	0.13768	0.13689	AVRG		0.14214		12.92651
41 Dibromochloromethane	0.23676	0.22792	0.26748	0.27387	0.28255	AVRG		0.25772		9.30380
42 1,2-Dibromoethane	0.27046	0.26173	0.28110	0.28431	0.28182	AVRG		0.27588		3.45487
43 Tetrachloroethene	0.30079	0.27499	0.28383	0.28850	0.28817	AVRG		0.28726		3.24496
45 Chlorobenzene	1.00904	0.94625	1.00210	0.99984	0.97445	AVRG		0.98633		2.63154
46 1,1,1,2-Tetrachloroethane	0.27910	0.28526	0.32393	0.34730	0.36067	AVRG		0.31925		11.39308
47 Ethylbenzene	0.53546	0.49166	0.52355	0.52456	0.51152	AVRG		0.51735		3.22351
48 m,p-Xylene(s)	0.65330	0.60134	0.62099	0.61501	0.58856	AVRG		0.61584		3.96482
49 Bromoform	9254	39233	121107	284251	596000	QUAD	0.08219	4.14207	-0.52810	0.99932

SPL Houston Labs

INITIAL CALIBRATION DATA

Start Cal Date : 07-JUL-1998 15:16
 End Cal Date : 07-JUL-1998 17:25
 Quant Method : ISTD
 Origin : Included
 Target Version : 3.40
 Integrator : HP RTE
 Method file : /var/chem/n.i/n980707.b/n8260w.m
 Cal Date : 08-Jul-1998 12:45 lien

Compound	25	100	250	500	1000	Curve	Coefficients			%RSD or R^2
	Level 1	Level 2	Level 3	Level 4	Level 5		b	m1	m2	
50 Styrene	1.29031	1.12133	1.16684	1.11870	1.08850	AVRG		1.15713		6.87300
51 o-Xylene	0.67469	0.61289	0.64155	0.62999	0.61401	AVRG		0.63463		3.99555
M 52 Xylene (Total)	0.66043	0.60519	0.62784	0.62000	0.59704	AVRG		0.62210		3.95398
53 1,1,2,2-Tetrachloroethane	0.42128	0.34687	0.38238	0.37656	0.36744	AVRG		0.37891		7.19306
54 1,2,3-Trichloropropane	0.11440	0.10306	0.10626	0.10434	0.10803	AVRG		0.10722		4.13859
55 Isopropylbenzene	3.32112	2.95753	3.01992	3.01129	2.90250	AVRG		3.04247		5.34878
57 Bromobenzene	1.05722	0.86914	0.91080	0.90329	0.88322	AVRG		0.92473		8.20381
58 N-Propylbenzene	0.86046	0.72501	0.74498	0.74727	0.74096	AVRG		0.76374		7.17067
59 2-Chlorotoluene	0.79825	0.68634	0.71361	0.71015	0.69012	AVRG		0.71969		6.32368
60 4-Chlorotoluene	0.85671	0.70454	0.73394	0.72524	0.70714	AVRG		0.74551		8.49997
61 1,3,5-Trimethylbenzene	2.88392	2.37326	2.49064	2.45956	2.33153	AVRG		2.50778		8.76491
62 tert-Butylbenzene	1.97198	1.57420	1.63996	1.57750	1.49711	AVRG		1.65215		11.24758
63 1,2,4-Trimethylbenzene	3.13057	2.46547	2.59416	2.50694	2.33065	AVRG		2.60556		11.84018
64 1,3-Dichlorobenzene	1.68601	1.32151	1.42572	1.39872	1.37626	AVRG		1.44164		9.84143
65 sec-Butylbenzene	85912	266900	675738	1343623	2396793	QUAD	-0.00282	0.38779	0.00520	0.99986
67 1,4-Dichlorobenzene	1.68083	1.33137	1.45741	1.43651	1.38332	AVRG		1.45789		9.18538
68 p-Isopropyltoluene	77057	238710	596161	1187647	2067904	QUAD	0.00001	0.42663	0.00979	0.99983

SPL Houston Labs

INITIAL CALIBRATION DATA

Start Cal Date : 07-JUL-1998 15:16
 End Cal Date : 07-JUL-1998 17:25
 Quant Method : ISTD
 Origin : Included
 Target Version : 3.40
 Integrator : HP RTE
 Method file : /var/chem/n.i/n980707.b/n8260w.m
 Cal Date : 08-Jul-1998 12:45 lien

Compound	25	100	250	500	1000	Curve	Coefficients			%RSD or R ²
	Level 1	Level 2	Level 3	Level 4	Level 5		b	m1	m2	
69 1,2-Dichlorobenzene	1.79290	1.28454	1.38178	1.35861	1.32809	AVRG		1.42919		14.45267
70 n-Butylbenzene	75873	194579	505778	1019341	1918264	QUAD	-0.01529	0.54591	0.00002	0.99969
71 1,2-Dibromo-3-Chloropropane	5225	13057	36697	78905	152234	QUAD	0.00939	7.24781	-0.71226	0.99930
72 1,2,4-Trichlorobenzene	53820	77074	208481	441002	796251	QUAD	-0.02832	1.25485	0.02080	0.99760
73 Naphthalene	165936	163675	446238	922672	1626596	QUAD	-0.05299	0.57799	0.01159	0.99415
74 Hexachlorobutadiene	32964	44798	111868	232564	412838	QUAD	-0.04809	2.34551	0.13333	0.99714
75 1,2,3-Trichlorobenzene	72636	63677	170303	353662	580014	QUAD	-0.03947	1.33584	0.21599	0.99206
76 Acetonitrile	20883	73231	151535	316327	427863	QUAD	0.85381	14.76168	10.57127	0.99588
77 Acrylonitrile	25144	87469	213189	367462	506973	QUAD	0.64824	11.37539	8.40677	0.99944
78 Allyl Chloride	20883	72566	156252	289712	468957	QUAD	0.48777	9.36960	-2.90066	0.99956
80 1,4-Dioxane	2624	19711	51953	101320	196881	QUAD	1.35602	301	-71.31960	0.99959
81 Ethyl Cyanide	22787	85527	205040	381274	621104	QUAD	3.39120	75.51691	-18.66301	0.99545
82 Ethyl Methacrylate	18914	75922	198777	421490	764596	QUAD	0.84295	6.19868	-1.34486	0.99682
83 Ethyl Ether	11785	32521	77081	135574	207880	QUAD	0.42975	26.65140	-21.70002	0.99988
84 Iodomethane	23377	95993	207462	336116	461294	QUAD	0.04188	1.13842	1.10799	0.99984
85 Iso-Butyl Alcohol	12708	77350	221395	417617	721339	QUAD	8.54609	60.00899	-12.57386	0.99978

SPL Houston Labs

INITIAL CALIBRATION DATA

Start Cal Date : 07-JUL-1998 15:16
 End Cal Date : 07-JUL-1998 17:25
 Quant Method : ISTD
 Origin : Included
 Target Version : 3.40
 Integrator : HP RTE
 Method file : /var/chem/n.i/n980707.b/n8260w.m
 Cal Date : 08-Jul-1998 12:45 lien

Compound	25	100	250	500	1000	Curve	Coefficients			%RSD or R ²
	Level 1	Level 2	Level 3	Level 4	Level 5		b	m1	m2	
86 Methacrylonitrile	22322	75879	235706	435846	715106	QUAD	0.80099	5.79430	-1.15357	0.99861
87 Methyl Methacrylate	11920	43050	113066	228296	431776	QUAD	0.73765	15.81842	-8.63203	0.99875
88 trans-1,4-Dichloro-2-Butene	67125	298893	895882	1824348	3335491	QUAD	8.40538	10.48669	-0.38332	0.99882
89 Methyl t-Butyl Ether	1.19998	1.17576	1.22302	1.11605	0.96280	AVRG		1.13552		9.19876
90 Butadiene	39503	99135	205975	366392	594983	QUAD	-0.10497	1.98966	0.11510	0.99984
91 Cumene	3.32112	2.95741	3.01992	3.01129	2.90250	AVRG		3.04245		5.34932
92 Cyclohexane	0.51296	0.53149	0.58412	0.60815	0.64075	AVRG		0.57549		9.21336
93 Dicyclopentadiene	3.30552	2.54224	2.55359	2.47865	2.31657	AVRG		2.63931		14.55850
94 Hexane	6460	38573	90202	160854	225502	QUAD	0.07674	2.78431	3.90517	0.99974
95 t-Butyl Alcohol	0.13935	0.13420	0.13987	0.13151	0.13216	AVRG		0.13542		2.92202
97 Acrolein	22832	82048	170325	282492	398742	QUAD	0.03429	16.48849	12.42836	0.99993
98 2,2,4-Trimethylpentane	96355	122712	299220	621047	1200483	QUAD	-0.13675	1.91765	-0.12147	0.99718
195 2-Nitropropane	26187	154043	406373	862518	1664029	QUAD	9.10580	29.63243	-3.08289	0.99744
198 Ethyl Acetate	0.31374	0.36396	0.32786	0.41132	0.41983	AVRG		0.36734		13.00744

SPL Houston Labs

INITIAL CALIBRATION DATA

Start Cal Date : 07-JUL-1998 15:16
 End Cal Date : 07-JUL-1998 17:25
 Quant Method : ISTD
 Origin : Included
 Target Version : 3.40
 Integrator : HP RTE
 Method file : /var/chem/n.i/n980707.b/n8260w.m
 Cal Date : 08-Jul-1998 12:45 lien

Compound	25	100	250	500	1000	Curve	Coefficients			%RSD or R ²
	Level 1	Level 2	Level 3	Level 4	Level 5		b	m1	m2	
199 Cyclohexanone	0.00627	0.00463	0.00526	0.00530	0.00535	AVRG		0.00536		10.96006
200 1,1,2-Trichlorotrifluoroethan	13604	59225	123976	197656	315513	QUAD	0.39618	12.98500	-5.31844	0.99693
203 n-Butanol	19707	86929	217437	449474	818236	QUAD	8.01613	58.20814	-11.78418	0.99789
204 Di-Isopropyl Ether	1.23283	1.19484	1.27782	1.18508	1.12906	AVRG		1.20393		4.61316
206 tert-Amyl Methyl Ether	1.35705	1.23670	1.30953	1.33961	1.41207	AVRG		1.33099		4.85161
208 Ethyl t-Butyl Ether	1.39351	1.33791	1.27093	1.36750	1.29727	AVRG		1.33342		3.75056
209 Methylcyclohexane	0.48844	0.37891	0.46358	0.47823	0.52097	AVRG		0.46603		11.38806
=====										
\$ 21 1,2-Dichloroethane-d4	0.06411	0.07590	0.07979	0.07848	0.07915	AVRG		0.07549		8.64746
\$ 36 Toluene-d8	1.04200	1.12617	1.23124	1.21712	1.27193	AVRG		1.17769		7.87074
\$ 56 Bromofluorobenzene	0.52974	0.53575	0.55284	0.53779	0.53433	AVRG		0.53809		1.62802

SPL Houston Labs

INITIAL CALIBRATION DATA

Start Cal Date : 07-JUL-1998 15:16
End Cal Date : 07-JUL-1998 17:25
Quant Method : ISTD
Origin : Included
Target Version : 3.40
Integrator : HP RTE
Method file : /var/chem/n.i/n980707.b/n8260w.m
Cal Date : 08-Jul-1998 12:45 lien

Curve	Formula	Units
=====	=====	=====
Averaged	Amt = Rsp/ml	Response
Quad	Amt = b + m1*Rsp + m2*Rsp^2	Response

SPL Houston Labs

Volatiles by 8260

Data file : /var/chem/n.i/n980707.b/n188iwla.d
Lab Smp Id: VSTD005-8260W
Inj Date : 07-JUL-1998 17:25
Operator : JC
Smp Info : VSTD005-8260W/1X
Misc Info : N188W1//N188CW1
Comment :
Method : /var/chem/n.i/n980707.b/n8260wL.m
Meth Date : 08-Jul-1998 13:20 lien
Cal Date : 07-JUL-1998 15:16
Als bottle: 8
Dil Factor: 1.00000
Integrator: HP RTE
Target Version: 3.40
Processing Host: chemsys1

Inst ID: n.i
Quant Type: ISTD
Cal File: n188iw2.d
Compound Sublist: all.sub

Concentration Formula: Amt * DF * Uf * 5/Vo

Name	Value	Description
DF	1.000	Dilution Factor
Uf	0.200	ng unit correction factor
Vo	5.000	Sample Volume purged (mL)

Compounds	QUANT SIG	CONCENTRATIONS					
		MASS	RT	EXP RT	REL RT	RESPONSE	ON-COLUMN (ng)
-----	----	--	-----	-----	-----	-----	-----
1 Dichlorodifluoromethane	85	1.339	1.347	(0.636)	9734	32.9863	6
2 Chloromethane	50	1.316	1.324	(0.626)	28660	36.4525	7
3 Vinyl Chloride	62	1.339	1.359	(0.636)	13874	33.1853	7
4 Bromomethane	94	1.373	1.393	(0.653)	10503	34.2634	7
5 Chloroethane	64	1.373	1.381	(0.653)	12333	33.4757	7
6 Trichlorofluoromethane	101	1.499	1.507	(0.712)	13604	27.1814	5
7 Acetone	58	1.442	1.450	(0.685)	7612	199.857	40
8 1,1-Dichloroethene	96	1.522	1.518	(0.723)	11494	28.0436	6
9 Methylene Chloride	84	1.556	1.564	(0.740)	20783	35.2588	7
10 Carbon Disulfide	76	1.579	1.575	(0.750)	53149	27.7551	6
11 trans-1,2-Dichloroethene	96	1.659	1.655	(0.788)	16388	27.4377	5
12 1,1-Dichloroethane	63	1.716	1.712	(0.816)	26615	24.3309	5
13 Vinyl Acetate	43	1.727	1.712	(0.821)	38297	30.4580	6
14 2-Butanone	43	1.727	1.712	(0.821)	38297	30.4580	6
15 cis-1,2-Dichloroethene	96	1.887	1.884	(0.897)	17478	25.8705	5
M 16 1,2-Dichloroethene (total)	96				33866	53.2118	11

Compounds	QUANT SIG		RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS	
	MASS						ON-COLUMN (ng)	FINAL (ug/L)
-----	----	--	-----	-----	-----	-----	-----	-----
17 2,2-Dichloropropane	77		1.933	1.941	(0.919)	23587	25.6184	5
18 Bromochloromethane	128		1.944	1.941	(0.924)	7297	23.8403	5
19 Chloroform	83		1.944	1.941	(0.924)	31147	27.4323	5
* 20 Pentafluorobenzene	168		2.104	2.101	(1.000)	384180	250.000	
\$ 21 1,2-Dichloroethane-d4	102		2.149	2.146	(0.859)	3285	21.2334	4
22 1,1,1-Trichloroethane	97		2.172	2.169	(0.868)	24762	24.8009	5
23 1,2-Dichloroethane	62		2.195	2.180	(1.043)	23464	23.4838	5
24 1,1-Dichloropropene	75		2.252	2.249	(1.071)	23023	25.0728	5
25 Benzene	78		2.309	2.306	(0.922)	61491	24.5510	5
26 Carbon Tetrachloride	117		2.344	2.329	(0.936)	17345	23.0298	5
* 27 1,4-Difluorobenzene	114		2.503	2.500	(1.000)	512378	250.000	
28 1,2-Dichloropropane	63		2.754	2.740	(1.100)	15543	24.7674	5
29 Trichloroethene	130		2.754	2.751	(1.100)	15438	23.5867	5
30 Dibromomethane	93		2.789	2.785	(1.114)	8674	21.9481	4
31 Bromodichloromethane	83		2.869	2.865	(1.146)	21952	24.3675	5
32 2-Chloroethylvinylether	63		3.325	3.311	(1.328)	9433	23.1009	5
33 4-Methyl-2-Pentanone	43		3.553	3.539	(1.419)	13895	28.6651	6
34 cis-1,3-Dichloropropene	75		3.485	3.482	(1.392)	24557	23.3254	5
35 trans-1,3-Dichloropropene	75		4.124	4.110	(1.647)	20378	21.5586	4
\$ 36 Toluene-d8	98		3.999	4.007	(1.597)	53390	22.1196	4
37 Toluene	92		4.101	4.098	(1.638)	38068	23.5733	5
38 1,1,2-Trichloroethane	83		4.250	4.247	(1.698)	10544	23.1798	5
39 1,3-Dichloropropane	76		4.592	4.589	(0.759)	23663	25.0973	5
40 2-Hexanone	43		4.832	4.794	(0.798)	9426	30.6262	6
41 Dibromochloromethane	129		4.820	4.829	(0.796)	12817	22.9673	4
42 1,2-Dibromoethane	107		5.094	5.091	(0.842)	14641	24.5083	5
43 Tetrachloroethene	164		5.174	5.171	(0.855)	16283	26.1775	5
* 44 Chlorobenzene-d5	117		6.053	6.050	(1.000)	541344	250.000	
45 Chlorobenzene	112		6.099	6.096	(1.008)	54624	25.5756	5
46 1,1,1,2-Tetrachloroethane	131		6.213	6.210	(1.026)	15109	21.8557	4
47 Ethylbenzene	106		6.487	6.484	(1.072)	28987	25.8751	5
48 m,p-Xylene(s)	106		6.670	6.678	(1.102)	70732	53.0414	11
49 Bromoform	173		7.001	7.009	(1.157)	9254	19.7175	4
50 Styrene	104		7.160	7.169	(1.183)	69850	27.8772	6
51 o-Xylene	106		7.206	7.203	(1.190)	36524	26.5783	5
M 52 Xylene (Total)	106					107256	79.6208	16
53 1,1,2,2-Tetrachloroethane	83		7.686	7.694	(1.270)	22806	27.7961	6
54 1,2,3-Trichloropropane	77		7.823	7.831	(1.292)	6193	26.6748	5
55 Isopropylbenzene	105		7.902	7.911	(0.824)	85998	27.2896	5
\$ 56 Bromofluorobenzene	95		7.880	7.888	(1.302)	28677	24.6120	5
57 Bromobenzene	156		8.005	8.002	(0.835)	27376	28.5817	6
58 N-Propylbenzene	120		8.507	8.504	(0.887)	22281	28.1662	6
59 2-Chlorotoluene	126		8.439	8.447	(0.880)	20670	27.7286	6
60 4-Chlorotoluene	126		8.564	8.561	(0.893)	22184	28.7290	6
61 1,3,5-Trimethylbenzene	105		8.804	8.812	(0.918)	74677	28.7497	6
62 tert-Butylbenzene	91		9.272	9.269	(0.967)	51063	29.8396	6
63 1,2,4-Trimethylbenzene	105		9.284	9.292	(0.968)	81064	30.0374	6

Compounds	QUANT SIG					CONCENTRATIONS	
	MASS	RT	EXP RT	REL RT	RESPONSE	ON-COLUMN (ng)	FINAL (ug/L)
-----	----	--	-----	-----	-----	-----	-----
64 1,3-Dichlorobenzene	146	9.501	9.497	(0.990)	43658	29.2376	6
65 sec-Butylbenzene	105	9.603	9.611	(1.001)	85912	32.0814	6
• 66 1,4-Dichlorobenzene-d4	152	9.592	9.589	(1.000)	258943	250.000	
67 1,4-Dichlorobenzene	146	9.626	9.623	(1.004)	43524	28.8231	6
68 p-Isopropyltoluene	119	9.866	9.874	(1.029)	77057	32.5102	6
69 1,2-Dichlorobenzene	146	10.037	10.034	(1.046)	46426	31.3623	6
70 n-Butylbenzene	91	10.425	10.433	(1.087)	75873	35.8369	7
71 1,2-Dibromo-3-Chloropropane	75	10.904	10.901	(1.137)	5225	33.9588	7
72 1,2,4-Trichlorobenzene	180	12.423	12.431	(1.295)	53820	50.9564	10
73 Naphthalene	128	12.537	12.534	(1.307)	165936	62.8348	12
74 Hexachlorobutadiene	225	13.016	13.024	(1.357)	32964	54.8143	11
75 1,2,3-Trichlorobenzene	180	12.982	12.979	(1.353)	72636	67.4410	13
76 Acetonitrile	41	1.556	1.553	(0.740)	20883	314.358	63
77 Acrylonitrile	53	1.533	1.518	(0.729)	25144	308.002	62
78 Allyl Chloride	41	1.556	1.553	(0.740)	20883	120.835	24
80 1,4-Dioxane	88	2.971	2.934	(1.412)	2624	551.133	110
81 Ethyl Cyanide	54	1.739	1.724	(0.826)	22787	1034.42	210
82 Ethyl Methacrylate	69	4.741	4.726	(2.253)	18914	80.4409	16
83 Ethyl Ether	45	1.465	1.461	(0.585)	11785	149.938	30
84 Iodomethane	142	1.544	1.541	(0.734)	23377	29.6105	6
85 Iso-Butyl Alcohol	41	1.967	1.986	(0.935)	12708	553.419	110
86 Methacrylonitrile	41	1.807	1.815	(0.859)	22322	92.4321	18
87 Methyl Methacrylate	41	2.994	2.979	(1.196)	11920	93.7550	19
88 trans-1,4-Dichloro-2-Butene	75	8.028	8.036	(0.837)	67125	749.997	150
89 Methyl t-Butyl Ether	73	1.693	1.690	(0.805)	46101	26.4192	5
90 Butadiene	39	1.328	1.347	(0.631)	39503	40.8117	8
91 Cumene	105	7.902	7.911	(0.824)	85998	27.2898	5
92 Cyclohexane	56	2.321	2.317	(1.103)	19707	22.2836	4
93 Dicyclopentadiene	66	9.877	9.874	(1.030)	85594	31.3104	6
94 Hexane	57	1.693	1.690	(0.805)	6460	20.2001	4
95 t-Butyl Alcohol	59	1.990	1.986	(0.946)	53536	257.261	51
96 Propylene Oxide	57	1.990	1.978	(0.946)	14929	23.9579	5
97 Acrolein	56	1.430	1.427	(0.680)	22832	330.466	66
98 2,2,4-Trimethylpentane	57	2.583	2.580	(1.032)	96355	54.6690	11
195 2-Nitropropane	43	2.800	2.785	(1.331)	26187	542.706	110
198 Ethyl Acetate	43	1.910	1.907	(0.908)	60266	106.759	21
199 Cyclohexanone	55	7.297	7.260	(1.206)	33953	2924.27	580
200 1,1,2-Trichlorotrifluoroethan	101	1.499	1.507	(0.712)	13604	109.623	22
201 Ethylene Oxide	42	1.385	1.360	(0.658)	8208	2402.57	480
203 n-Butanol	56	2.321	2.317	(1.103)	19707	775.604	160
204 Di-Isopropyl Ether	45	1.853	1.849	(0.881)	47363	25.6002	5
206 tert-Amyl Methyl Ether	73	2.503	2.511	(1.190)	52135	25.4894	5
208 Ethyl t-Butyl Ether	59	1.990	1.986	(0.946)	53536	26.1266	5
209 Methylcyclohexane	83	3.143	3.139	(1.494)	18765	26.2025	5

Data File: /var/chem/n.i/n980707.b/n188iw1a.d
Report Date: 08-Jul-1998 13:22

Page 4

QC Flag Legend

M - Compound response manually integrated.

SPL Houston Labs

INTERNAL STANDARD COMPOUNDS
AREA AND RT SUMMARY

Instrument ID: n.i
Lab File ID: n188iw1a.d
Lab Smp Id: VSTD005-8260W
Analysis Type: VOA
Quant Type: ISTD
Operator: JC
Method File: /var/chem/n.i/n980707.b/n8260wL.m
Misc Info: N188W1//N188CW1

Calibration Date: 07/07/98
Calibration Time: 1540

Level: LOW
Sample Type: WATER

COMPOUND	STANDARD	AREA LIMIT		SAMPLE	%DIFF
		LOWER	UPPER		
20 Pentafluorobenzen	372247	186124	744494	384180	3.21
27 1,4-Difluorobenze	500060	250030	1000120	512378	2.46
44 Chlorobenzene-d5	552603	276302	1105206	541344	-2.04
66 1,4-Dichlorobenze	269701	134850	539402	258943	-3.99

COMPOUND	STANDARD	RT LIMIT		SAMPLE	%DIFF
		LOWER	UPPER		
20 Pentafluorobenzen	2.10	1.60	2.60	2.10	0.15
27 1,4-Difluorobenze	2.50	2.00	3.00	2.50	0.13
44 Chlorobenzene-d5	6.05	5.55	6.55	6.05	0.05
66 1,4-Dichlorobenze	9.59	9.09	10.09	9.59	0.03

AREA UPPER LIMIT = +100% of internal standard area.
AREA LOWER LIMIT = - 50% of internal standard area.
RT UPPER LIMIT = + 0.50 minutes of internal standard RT.
RT LOWER LIMIT = - 0.50 minutes of internal standard RT.

Data File: /var/chem/n.1/n980707.b/n1881w1a.d
Date : 07-JUL-1998 17:25

Client ID:

Sample Info: VSTD008-82604/1X

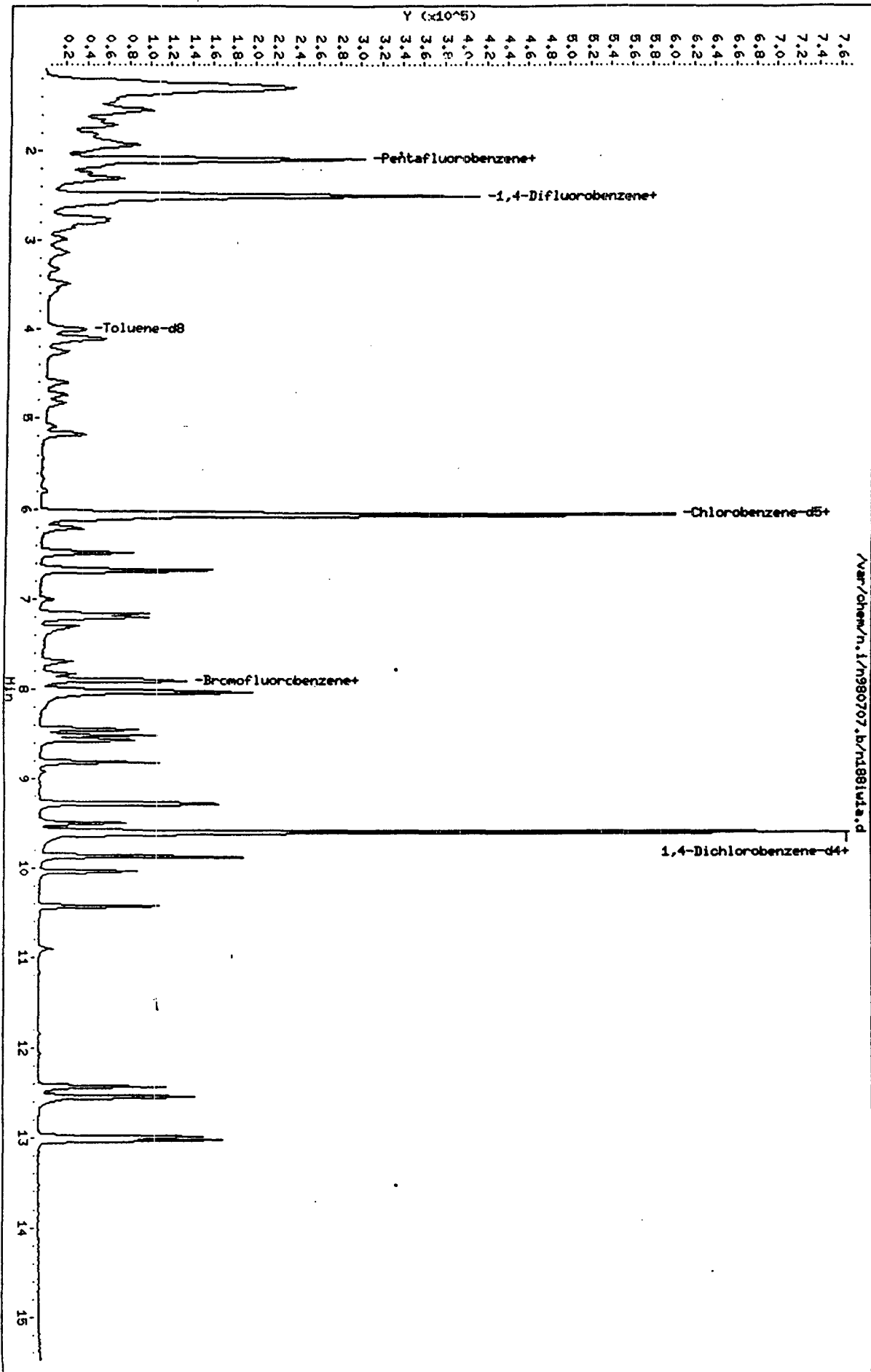
Purge Volume: 5.0

Column phase: 30m, hp5ms, 0.25u df

Instrument: n.1

Operator: JC

Column diameter: 0.25



SPL Houston Labs

Volatiles by 8260

Data file : /var/chem/n.i/n980707.b/n188iw2.d

Lab Smp Id: VSTD020-8260W

Inj Date : 07-JUL-1998 15:16

Operator : JC

Inst ID: n.i

Smp Info : VSTD020-8260W/1X

Misc Info : N188W1//N188CW1

Comment :

Method : /var/chem/n.i/n980707.b/n8260wL.m

Meth Date : 11-Jul-1998 10:46 lien

Quant Type: ISTD

Cal Date : 07-JUL-1998 15:16

Cal File: n188iw2.d

Als bottle: 4

Dil Factor: 1.00000

Integrator: HP RTE

Compound Sublist: all.sub

Target Version: 3.40

Processing Host: chemsys1

Concentration Formula: Amt * DF * Uf * 5/Vo

Name	Value	Description
DF	1.000	Dilution Factor
Uf	0.200	ng unit correction factor
Vo	5.000	Sample Volume purged (mL)

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS	
						ON-COLUMN (ng)	FINAL (ug/L)
1 Dichlorodifluoromethane	85	1.348	1.328	(0.642)	34490	109.815	22
2 Chloromethane	50	1.325	1.339	(0.631)	87614	104.701	21
3 Vinyl Chloride	62	1.348	1.362	(0.642)	50649	113.826	23
4 Bromomethane	94	1.394	1.396	(0.663)	36738	112.605	22
5 Chloroethane	64	1.371	1.373	(0.652)	45934	117.144	23
6 Trichlorofluoromethane	101	1.508	1.499	(0.718)	59638	111.958	22 (M) 07/11/98
7 Acetone	58	1.440	1.430	(0.685)	21863	539.331	110
8 1,1-Dichloroethene	96	1.519	1.533	(0.723)	43976	100.810	20 (M)
9 Methylene Chloride	84	1.565	1.556	(0.745)	66750	106.398	21
10 Carbon Disulfide	76	1.588	1.624	(0.756)	207653	101.885	20
11 trans-1,2-Dichloroethene	96	1.656	1.647	(0.788)	65057	102.339	20
12 1,1-Dichloroethane	63	1.713	1.704	(0.815)	135887	116.717	23 (M)
13 Vinyl Acetate	43	1.713	1.716	(0.815)	130546	97.5495	20
14 2-Butanone	43	1.713	1.716	(0.815)	130546	97.5495	20
15 cis-1,2-Dichloroethene	96	1.885	1.875	(0.897)	69509	96.6672	19
M 16 1,2-Dichloroethene (total)	96				134566	198.657	40

Compounds	QUANT SIG	MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS	
							ON-COLUMN	FINAL
							(ng)	(ug/L)
-----	----	----	----	-----	-----	-----	-----	-----
17 2,2-Dichloropropane		77	1.942	1.944	(0.924)	94453	96.3875	19
18 Bromochloromethane		128	1.942	1.933	(0.924)	31340	96.2037	19
19 Chloroform		83	1.942	1.944	(0.924)	116758	96.6180	19
* 20 Pentafluorobenzene		168	2.102	2.092	(1.000)	408893	250.000	
S 21 1,2-Dichloroethane-d4		102	2.159	2.149	(0.863)	16458	100.543	20
22 1,1,1-Trichloroethane		97	2.181	2.172	(0.872)	104003	98.4510	20
23 1,2-Dichloroethane		62	2.181	2.184	(1.038)	97542	91.7239	18
24 1,1-Dichloropropene		75	2.250	2.241	(1.071)	90345	92.4421	18
25 Benzene		78	2.307	2.298	(0.922)	252824	95.4044	19
26 Carbon Tetrachloride		117	2.330	2.321	(0.932)	74815	93.8852	19
* 27 1,4-Difluorobenzene		114	2.501	2.503	(1.000)	542124	250.000	
28 1,2-Dichloropropane		63	2.741	2.743	(1.096)	64180	96.6577	19
29 Trichloroethane		130	2.752	2.754	(1.100)	67388	97.3086	19
30 Dibromomethane		93	2.786	2.789	(1.114)	41435	99.0916	20
31 Bromodichloromethane		83	2.866	2.869	(1.146)	90480	94.9250	19
32 2-Chloroethylvinylether		63	3.323	3.314	(1.329)	39096	90.4906	18
33 4-Methyl-2-Pentanone		43	3.551	3.531	(1.420)	45661	89.0290	18
34 cis-1,3-Dichloropropene		75	3.483	3.485	(1.392)	100768	90.4625	18
35 trans-1,3-Dichloropropene		75	4.122	4.124	(1.648)	91079	91.0687	18
S 36 Toluene-d8		98	4.008	4.010	(1.602)	244210	95.6252	19
37 Toluene		92	4.099	4.113	(1.639)	160234	93.7794	19
38 1,1,2-Trichloroethane		83	4.248	4.250	(1.698)	45648	94.8457	19
39 1,3-Dichloropropane		76	4.601	4.592	(0.760)	96094	94.4078	19
40 2-Hexanone		43	4.807	4.786	(0.794)	29695	89.3724	18
41 Dibromochloromethane		129	4.818	4.832	(0.796)	53280	88.4388	18
42 1,2-Dibromoethane		107	5.081	5.083	(0.840)	61182	94.8682	19
43 Tetrachloroethene		164	5.172	5.174	(0.855)	64284	95.7309	19
* 44 Chlorobenzene-d5		117	6.051	6.053	(1.000)	584411	250.000	
45 Chlorobenzene		112	6.097	6.099	(1.008)	221199	95.9358	19
46 1,1,1,2-Tetrachloroethane		131	6.211	6.213	(1.026)	66684	89.3524	18
47 Ethylbenzene		106	6.485	6.487	(1.072)	114933	95.0340	19
48 m,p-Xylene(s)		106	6.679	6.692	(1.104)	281144	195.291	39
49 Bromoform		173	7.010	7.012	(1.158)	39233	77.4334	15
50 Styrene		104	7.158	7.172	(1.183)	262127	96.9057	19
51 o-Xylene		106	7.204	7.218	(1.191)	143273	96.5757	19
M 52 Xylene (Total)		106				424417	291.845	58
53 1,1,2,2-Tetrachloroethane		83	7.695	7.697	(1.272)	81086	91.5453	18
54 1,2,3-Trichloropropane		77	7.832	7.845	(1.294)	24091	96.1191	19
55 Isopropylbenzene		105	7.900	7.925	(0.824)	332314	97.2081	19
S 56 Bromofluorobenzene		95	7.877	7.891	(1.302)	125239	99.5654	20
57 Bromobenzene		156	8.003	8.017	(0.835)	97658	93.9878	19
58 n-Propylbenzene		120	8.505	8.519	(0.887)	81464	94.9300	19
59 2-Chlorotoluene		126	8.437	8.462	(0.880)	77119	95.3660	19
60 4-Chlorotoluene		126	8.562	8.576	(0.893)	79163	94.5034	19
61 1,3,5-Trimethylbenzene		105	8.813	8.827	(0.919)	266664	94.6357	19
62 tert-Butylbenzene		91	9.270	9.284	(0.967)	176880	95.2819	19
63 1,2,4-Trimethylbenzene		105	9.281	9.306	(0.968)	277025	94.6234	19

Compounds	QUANT SIG				CONCENTRATIONS		
	MASS	RT	EXP RT	REL RT	RESPONSE	ON-COLUMN (ng)	FINAL (ug/L)
-----	----	--	-----	-----	-----	-----	-----
64 1,3-Dichlorobenzene	146	9.498	9.512	(0.990)	148487	91.6666	18
65 sec-Butylbenzene	105	9.612	9.626	(1.002)	266900	91.8739	18
66 1,4-Dichlorobenzene-d4	152	9.590	9.603	(1.000)	280905	250.000	
67 1,4-Dichlorobenzene	146	9.624	9.637	(1.004)	149595	91.3217	18
68 p-Isopropyltoluene	119	9.875	9.877	(1.030)	238710	92.8374	18
69 1,2-Dichlorobenzene	146	10.035	10.048	(1.046)	144334	89.8795	18
70 n-Butylbenzene	91	10.434	10.436	(1.088)	194579	84.7196	17
71 1,2-Dibromo-3-Chloropropane	75	10.902	10.904	(1.137)	13057	78.2267	16
72 1,2,4-Trichlorobenzene	180	12.432	12.434	(1.296)	77074	67.2679	13
73 Naphthalene	128	12.535	12.537	(1.307)	163675	57.1330	11
74 Hexachlorobutadiene	225	13.025	13.028	(1.358)	44798	68.6685	14
75 1,2,3-Trichlorobenzene	180	12.980	12.982	(1.354)	63677	54.5004	11
76 Acetonitrile	41	1.554	1.544	(0.739)	73231	1035.74	210 (M) 07/11/98 17
77 Acrylonitrile	53	1.519	1.510	(0.723)	87469	1006.70	200
78 Allyl Chloride	41	1.554	1.544	(0.739)	72566	394.510	79
80 1,4-Dioxane	88	2.958	2.926	(1.407)	19711	3889.79	780
81 Ethyl Cyanide	54	1.725	1.716	(0.821)	85527	3647.86	730
82 Ethyl Methacrylate	69	4.727	4.718	(2.249)	75922	303.380	61 (M)
83 Ethyl Ether	45	1.451	1.453	(0.580)	32521	391.056	78
84 Iodomethane	142	1.542	1.556	(0.734)	95993	114.241	23
85 Iso-Butyl Alcohol	41	1.942	1.978	(0.924)	77350	3164.91	630 (M)
86 Methacrylonitrile	41	1.816	1.807	(0.864)	75879	295.213	59
87 Methyl Methacrylate	41	2.981	2.983	(1.192)	43050	320.024	64
88 trans-1,4-Dichloro-2-Butene	75	8.026	8.074	(0.837)	298893	3078.48	620
89 Methyl t-Butyl Ether	73	1.691	1.681	(0.804)	192304	103.544	21
90 Butadiene	39	1.337	1.339	(0.636)	99135	96.2292	19
91 Cumene	105	7.900	7.925	(0.824)	332301	97.2051	19
92 Cyclohexane	56	2.330	2.309	(1.109)	86929	92.3537	18
93 Dicyclopentadiene	66	9.875	9.889	(1.030)	285651	96.3220	19
94 Hexane	57	1.691	1.681	(0.804)	38573	113.326	23
95 t-Butyl Alcohol	59	1.987	1.978	(0.946)	219495	991.010	200 (M)
97 Acrolein	56	1.440	1.419	(0.685)	82048	1115.77	220
98 2,2,4-Trimethylpentane	57	2.581	2.595	(1.032)	122712	65.8030	13
195 2-Nitropropane	43	2.786	2.800	(1.326)	154043	2999.48	600
198 Ethyl Acetate	43	1.908	1.898	(0.908)	297645	495.402	99 (M)
199 Cyclohexanone	55	7.284	7.263	(1.204)	108190	8631.41	1700
200 1,1,2-Trichlorotrifluoroethan	101	1.508	1.499	(0.718)	59225	448.401	90
201 Ethylene Oxide	42	1.360	1.360	(0.647)	18889	5194.85	1000
203 n-Butanol	56	2.330	2.309	(1.109)	86929	3214.47	640
204 Di-Isopropyl Ether	45	1.850	1.853	(0.880)	195425	99.2452	20
206 tert-Amyl Methyl Ether	73	2.513	2.503	(1.196)	202271	92.9156	18
207 Chlorotrifluoromethane	69	4.727	4.718	(2.249)	75756	83.9775	17 (M)
208 Ethyl t-Butyl Ether	59	1.987	1.978	(0.946)	218824	100.336	20
209 Methylcyclohexane	83	3.140	3.131	(1.494)	61973	81.3059	16

Data File: /var/chem/n.i/n980707.b/n188iw2.d
Report Date: 11-Jul-1998 10:48

Page 4

QC Flag Legend

M - Compound response manually integrated.

SPL Houston Labs

INTERNAL STANDARD COMPOUNDS
 AREA AND RT SUMMARY

Instrument ID: n.i
 Lab File ID: n188iw2.d
 Lab Smp Id: VSTD020-8260W
 Analysis Type: VOA
 Quant Type: ISTD
 Operator: JC
 Method File: /var/chem/n.i/n980707.b/n8260wL.m
 Misc Info: N188W1//N188CW1

Calibration Date: 07/07/98
 Calibration Time: 1540

Level: LOW
 Sample Type: WATER

COMPOUND	STANDARD	AREA LIMIT		SAMPLE	%DIFF
		LOWER	UPPER		
20 Pentafluorobenzen	372247	186124	744494	408893	9.84
27 1,4-Difluorobenze	500060	250030	1000120	542124	8.41
44 Chlorobenzene-d5	552603	276302	1105206	584411	5.76
66 1,4-Dichlorobenze	269701	134850	539402	280905	4.15

COMPOUND	STANDARD	RT LIMIT		SAMPLE	%DIFF
		LOWER	UPPER		
20 Pentafluorobenzen	2.10	1.60	2.60	2.10	0.05
27 1,4-Difluorobenze	2.50	2.00	3.00	2.50	0.04
44 Chlorobenzene-d5	6.05	5.55	6.55	6.05	0.02
66 1,4-Dichlorobenze	9.59	9.09	10.09	9.59	0.01

AREA UPPER LIMIT = +100% of internal standard area.
 AREA LOWER LIMIT = - 50% of internal standard area.
 RT UPPER LIMIT = + 0.50 minutes of internal standard RT.
 RT LOWER LIMIT = - 0.50 minutes of internal standard RT.

Data File: /var/chem/n.1/n980707.b/n1881u2.d
Date : 07-JUL-1998 15:16

Client ID:

Sample Info: VSTD020-8260M/LX

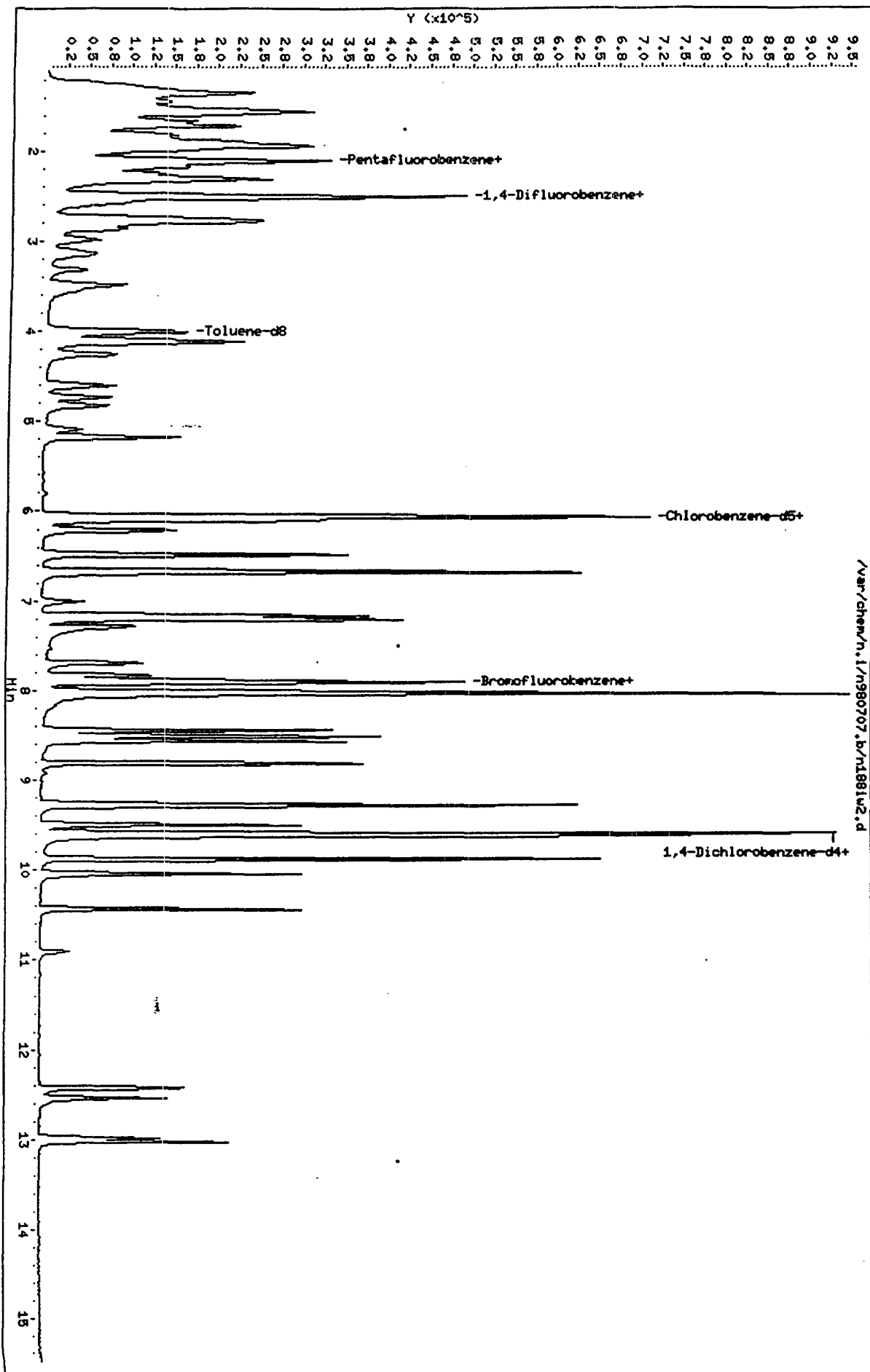
Purge Volume: 5.0

Column phase: 30m/hp5ms,0.25u df

Instrument: n.1

Operator: JC

Column diameter: 0.25



SPL Houston Labs

Volatiles by 8260

Data file : /var/chem/n.i/n980707.b/n188iw3.d

Lab Smp Id: VSTD050-8260W

Inj Date : 07-JUL-1998 15:40

Operator : JC

Inst ID: n.i

Smp Info : VSTD050-8260W/1X

Misc Info : N188W1//N188CW1

Comment :

Method : /var/chem/n.i/n980707.b/n8260wL.m

Meth Date : 11-Jul-1998 10:46 lien

Quant Type: ISTD

Cal Date : 07-JUL-1998 15:16

Cal File: n188iw2.d

Als bottle: 5

Dil Factor: 1.00000

Integrator: HP RTE

Compound Sublist: all.sub

Target Version: 3.40

Processing Host: chemsys1

Concentration Formula: Amt * DF * Uf * 5/Vo

Name	Value	Description
DF	1.000	Dilution Factor
Uf	0.200	ng unit correction factor
Vo	5.000	Sample Volume purged (mL)

Compounds	QUANT SIG						CONCENTRATIONS	
	MASS	RT	EXP RT	REL RT	RESPONSE	ON-COLUMN (ng)	FINAL (ug/L)	
1 Dichlorodifluoromethane	85	1.347	1.328	(0.641)	70844	247.770	50	
2 Chloromethane	50	1.324	1.339	(0.630)	182102	239.039	48	
3 Vinyl Chloride	62	1.359	1.362	(0.647)	103075	254.449	51	
4 Bromomethane	94	1.393	1.396	(0.663)	75180	253.118	51	
5 Chloroethane	64	1.381	1.373	(0.658)	91739	256.991	51	
6 Trichlorofluoromethane	101	1.507	1.499	(0.717)	126078	259.985	52 (M)	on/ul/927
7 Acetone	58	1.450	1.430	(0.690)	43130	1168.70	230	
8 1,1-Dichloroethene	96	1.518	1.533	(0.723)	106635	268.513	54 (M)	
9 Methylene Chloride	84	1.564	1.556	(0.745)	145929	255.508	51	
10 Carbon Disulfide	76	1.575	1.624	(0.750)	494625	266.580	53 (M)	
11 trans-1,2-Dichloroethene	96	1.655	1.647	(0.788)	152360	263.267	53	
12 1,1-Dichloroethane	63	1.712	1.704	(0.815)	263342	248.459	50 (M)	
13 Vinyl Acetate	43	1.712	1.716	(0.815)	301778	247.701	50	
14 2-Butanone	43	1.712	1.716	(0.815)	301778	247.701	50	
15 cis-1,2-Dichloroethene	96	1.884	1.875	(0.897)	166266	253.992	51	
M 16 1,2-Dichloroethene (total)	96				318626	516.688	100	

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS	
						ON-COLUMN (ng)	FINAL (ug/L)
-----	----	--	-----	-----	-----	-----	-----
17 2,2-Dichloropropane	77	1.941	1.944	(0.924)	230440	258.310	52
18 Bromochloromethane	128	1.941	1.933	(0.924)	81097	273.449	55
19 Chloroform	83	1.941	1.944	(0.924)	278368	253.028	51
* 20 Pentafluorobenzene	168	2.101	2.092	(1.000)	372247	250.000	
S 21 1,2-Dichloroethane-d4	102	2.146	2.149	(0.858)	39901	264.263	53
22 1,1,1-Trichloroethane	97	2.169	2.172	(0.868)	249727	256.281	51
23 1,2-Dichloroethane	62	2.180	2.184	(1.038)	254340	262.715	52
24 1,1-Dichloropropene	75	2.249	2.241	(1.071)	223736	251.466	50
25 Benzene	78	2.306	2.298	(0.922)	630503	257.937	52
26 Carbon Tetrachloride	117	2.329	2.321	(0.931)	187883	255.607	51
* 27 1,4-Difluorobenzene	114	2.500	2.503	(1.000)	500060	250.000	
28 1,2-Dichloropropane	63	2.740	2.743	(1.096)	156002	254.709	51
29 Trichloroethene	130	2.751	2.754	(1.100)	165628	259.286	52
30 Dibromomethane	93	2.785	2.789	(1.114)	96550	250.321	50
31 Bromodichloromethane	83	2.865	2.869	(1.146)	222110	252.623	50
32 2-Chloroethylvinylether	63	3.311	3.314	(1.324)	103457	259.602	52
33 4-Methyl-2-Pentanone	43	3.539	3.531	(1.415)	114598	242.237	48
34 cis-1,3-Dichloropropene	75	3.482	3.485	(1.393)	264984	257.894	52
35 trans-1,3-Dichloropropene	75	4.110	4.124	(1.644)	240675	260.891	52
S 36 Toluene-d8	98	4.007	4.010	(1.603)	615695	261.367	52
37 Toluene	92	4.098	4.113	(1.639)	406025	257.622	52
38 1,1,2-Trichloroethane	83	4.247	4.250	(1.699)	113907	256.580	51
39 1,3-Dichloropropane	76	4.589	4.592	(0.758)	245397	254.968	51
40 2-Hexanone	43	4.794	4.786	(0.792)	74575	237.366	47 (M) 07/11/98T
41 Dibromochloromethane	129	4.829	4.832	(0.798)	147811	259.472	52
42 1,2-Dibromoethane	107	5.091	5.083	(0.842)	155337	254.728	51
43 Tetrachloroethene	164	5.171	5.174	(0.855)	156848	247.021	49
* 44 Chlorobenzene-d5	117	6.050	6.053	(1.000)	552603	250.000	
45 Chlorobenzene	112	6.096	6.099	(1.008)	553761	253.995	51
46 1,1,1,2-Tetrachloroethane	131	6.210	6.213	(1.026)	179006	253.663	51
47 Ethylbenzene	106	6.484	6.487	(1.072)	289317	252.996	50
48 m,p-Xylene(s)	106	6.678	6.692	(1.104)	686317	504.178	100
49 Bromoform	173	7.009	7.012	(1.158)	121107	252.785	50
50 Styrene	104	7.169	7.172	(1.185)	644802	252.098	50
51 o-Xylene	106	7.203	7.218	(1.191)	354521	252.726	50
M 52 Xylene (Total)	106				1040838	756.917	150
53 1,1,2,2-Tetrachloroethane	83	7.694	7.697	(1.272)	211303	252.291	50
54 1,2,3-Trichloropropane	77	7.831	7.845	(1.294)	58721	247.773	50
55 Isopropylbenzene	105	7.911	7.925	(0.825)	814475	248.147	50
S 56 Bromofluorobenzene	95	7.888	7.891	(1.304)	305499	256.852	51
57 Bromobenzene	156	8.002	8.017	(0.835)	245645	246.234	49
58 N-Propylbenzene	120	8.504	8.519	(0.887)	200922	243.861	49
59 2-Chlorotoluene	126	8.447	8.462	(0.881)	192462	247.887	50
60 4-Chlorotoluene	126	8.561	8.576	(0.893)	197944	246.118	49
61 1,3,5-Trimethylbenzene	105	8.812	8.827	(0.919)	671729	248.291	50
62 tert-Butylbenzene	91	9.269	9.284	(0.967)	442298	248.155	50
63 1,2,4-Trimethylbenzene	105	9.292	9.306	(0.969)	699648	248.906	50

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS	
						ON-COLUMN (ng)	FINAL (ug/L)
-----	----	--	-----	-----	-----	-----	-----
64 1,3-Dichlorobenzene	146	9.497	9.512	(0.990)	384519	247.239	49
65 sec-Butylbenzene	105	9.611	9.626	(1.002)	675738	242.270	48
* 66 1,4-Dichlorobenzene-d4	152	9.589	9.603	(1.000)	269701	250.000	
67 1,4-Dichlorobenzene	146	9.623	9.637	(1.004)	393064	249.918	50
68 p-Isopropyltoluene	119	9.874	9.877	(1.030)	596161	241.487	48
69 1,2-Dichlorobenzene	146	10.034	10.048	(1.046)	372668	241.708	48
70 n-Butylbenzene	91	10.433	10.436	(1.088)	505778	229.364	46
71 1,2-Dibromo-3-Chloropropane	75	10.901	10.904	(1.137)	36697	228.991	46
72 1,2,4-Trichlorobenzene	180	12.431	12.434	(1.296)	208481	189.515	38
73 Naphthalene	128	12.534	12.537	(1.307)	446238	162.236	32
74 Hexachlorobutadiene	225	13.024	13.028	(1.358)	111868	178.600	36
75 1,2,3-Trichlorobenzene	180	12.979	12.982	(1.354)	170303	151.815	30
76 Acetonitrile	41	1.553	1.544	(0.739)	151535	2354.22	470 (M)
77 Acrylonitrile	53	1.518	1.510	(0.723)	213189	2695.18	540
78 Allyl Chloride	41	1.553	1.544	(0.739)	156252	933.102	190
80 1,4-Dioxane	88	2.934	2.926	(1.397)	51953	11261.8	2200 (M)
81 Ethyl Cyanide	54	1.724	1.716	(0.821)	205040	9606.19	1900
82 Ethyl Methacrylate	69	4.726	4.718	(2.250)	198777	872.496	170 (M)
83 Ethyl Ether	45	1.461	1.453	(0.585)	77081	1004.84	200 (M)
84 Iodomethane	142	1.541	1.556	(0.734)	207462	271.206	54
85 Iso-Butyl Alcohol	41	1.986	1.978	(0.946)	221395	9950.57	2000
86 Methacrylonitrile	41	1.815	1.807	(0.864)	235706	1007.31	200
87 Methyl Methacrylate	41	2.979	2.983	(1.192)	113066	911.210	180
88 trans-1,4-Dichloro-2-Butene	75	8.036	8.074	(0.838)	895882	9610.54	1900
89 Methyl t-Butyl Ether	73	1.690	1.681	(0.804)	455264	269.263	54
90 Butadiene	39	1.347	1.339	(0.641)	205975	219.620	44
91 Cumene	105	7.911	7.925	(0.825)	814475	248.149	50
92 Cyclohexane	56	2.317	2.309	(1.103)	217437	253.747	51
93 Dicyclopentadiene	66	9.874	9.889	(1.030)	688705	241.880	48
94 Hexane	57	1.690	1.681	(0.804)	90202	291.098	58
95 t-Butyl Alcohol	59	1.986	1.978	(0.946)	520652	2582.14	520 (M)
97 Acrolein	56	1.427	1.419	(0.679)	170325	2544.28	510
98 2,2,4-Trimethylpentane	57	2.580	2.595	(1.032)	299220	173.950	35
195 2-Nitropropane	43	2.785	2.800	(1.326)	406373	8691.75	1700 (M)
198 Ethyl Acetate	43	1.907	1.898	(0.908)	610227	1115.65	220 (M)
199 Cyclohexanone	55	7.260	7.263	(1.200)	290649	24522.7	4900
200 1,1,2-Trichlorotrifluoroethan	101	1.507	1.499	(0.717)	123976	1031.04	210
203 n-Butanol	56	2.317	2.309	(1.103)	217437	8831.95	1800
204 Di-Isopropyl Ether	45	1.849	1.853	(0.880)	475666	265.345	53
206 tert-Amyl Methyl Ether	73	2.511	2.503	(1.196)	487467	245.968	49
207 Chlorotrifluoromethane	69	4.726	4.718	(2.250)	202687	246.803	49
208 Ethyl t-Butyl Ether	59	1.986	1.978	(0.946)	473100	238.283	48 (M)
209 Methylcyclohexane	83	3.139	3.131	(1.494)	172565	248.686	50

07/11/987

Data File: /var/chem/n.i/n980707.b/n188iw3.d
Report Date: 11-Jul-1998 10:48

Page 4

QC Flag Legend

M - Compound response manually integrated.

SPL Houston Labs

INTERNAL STANDARD COMPOUNDS
AREA AND RT SUMMARY

Instrument ID: n.i
Lab File ID: n188iw3.d
Lab Smp Id: VSTD050-8260W
Analysis Type: VOA
Quant Type: ISTD
Operator: JC
Method File: /var/chem/n.i/n980707.b/n8260wL.m
Misc Info: N188W1//N188CW1

Calibration Date: 07/07/98
Calibration Time: 1540

Level: LOW
Sample Type: WATER

COMPOUND	STANDARD	AREA LIMIT		SAMPLE	%DIFF
		LOWER	UPPER		
20 Pentafluorobenzen	372247	186124	744494	372247	0.00
27 1,4-Difluorobenze	500060	250030	1000120	500060	0.00
44 Chlorobenzene-d5	552603	276302	1105206	552603	0.00
66 1,4-Dichlorobenze	269701	134850	539402	269701	0.00

COMPOUND	STANDARD	RT LIMIT		SAMPLE	%DIFF
		LOWER	UPPER		
20 Pentafluorobenzen	2.10	1.60	2.60	2.10	0.00
27 1,4-Difluorobenze	2.50	2.00	3.00	2.50	0.00
44 Chlorobenzene-d5	6.05	5.55	6.55	6.05	0.00
66 1,4-Dichlorobenze	9.59	9.09	10.09	9.59	0.00

AREA UPPER LIMIT = +100% of internal standard area.
AREA LOWER LIMIT = - 50% of internal standard area.
RT UPPER LIMIT = + 0.50 minutes of internal standard RT.
RT LOWER LIMIT = - 0.50 minutes of internal standard RT.

Data File: /var/chem/n.i/n980707.b/n188iw3.d

Page 6

Date : 07-JUL-1998 15:40

Client ID:

Instrument: n.i

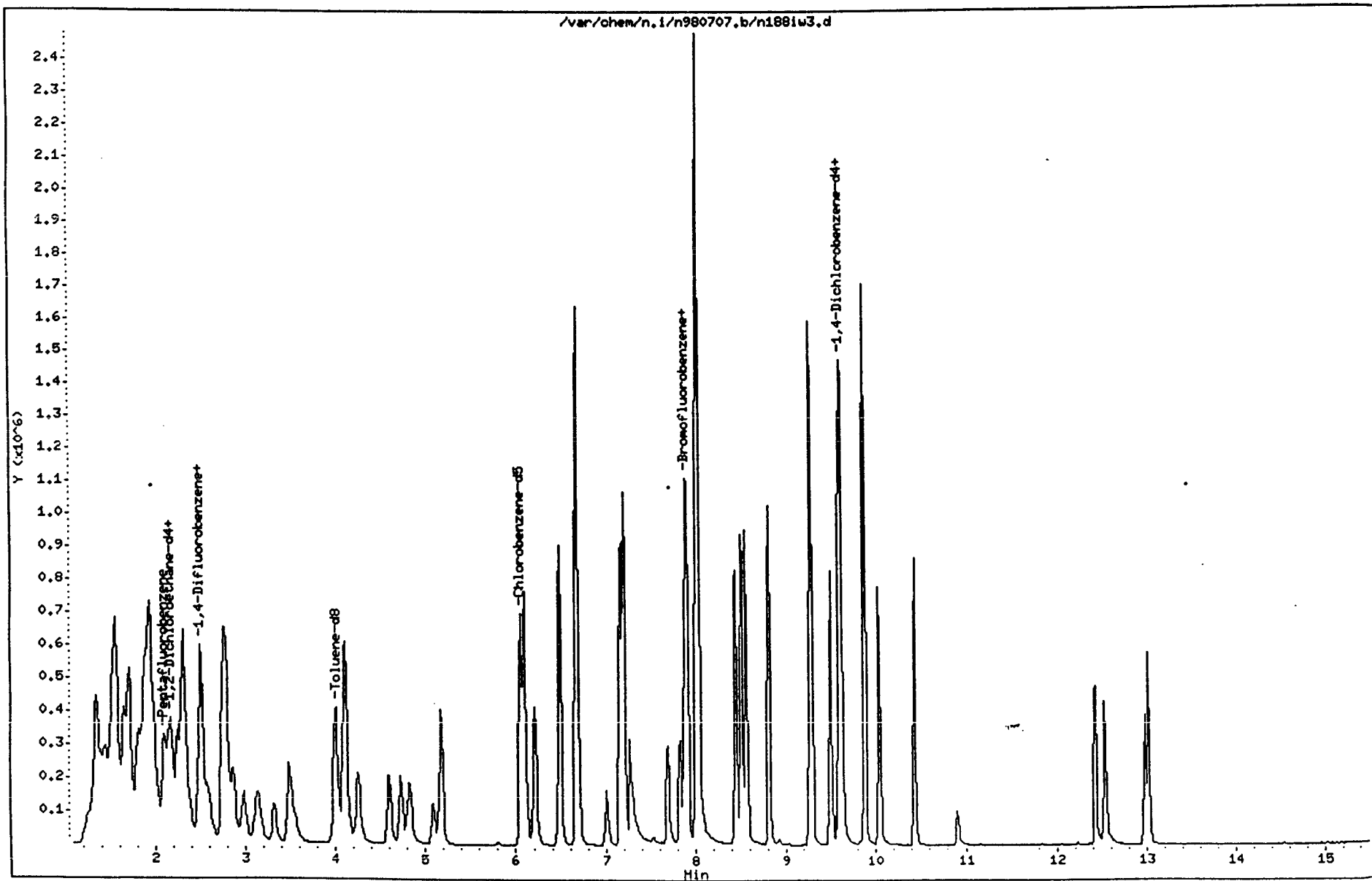
Sample Info: VSTD050-8260W/1X

Purge Volume: 5.0

Operator: JC

Column phase: 30m,hp5ms,0.25u df

Column diameter: 0.25



SPL Houston Labs

Volatiles by 8260

Data file : /var/chem/n.i/n980707.b/n188iw4.d
Lab Smp Id: VSTD100-8260W
Inj Date : 07-JUL-1998 16:05
Operator : JC
Smp Info : VSTD100-8260W/1X
Misc Info : N188W1//N188CW1
Comment :
Method : /var/chem/n.i/n980707.b/n8260wL.m
Meth Date : 08-Jul-1998 13:20 lien
Cal Date : 07-JUL-1998 15:16
Als bottle: 6
Dil Factor: 1.00000
Integrator: HP RTE
Target Version: 3.40
Processing Host: chemsys1

Inst ID: n.i

Quant Type: ISTD
Cal File: n188iw2.d

Compound Sublist: all.sub

Concentration Formula: Amt * DF * Uf * 5/Vo

Name	Value	Description
DF	1.000	Dilution Factor
Uf	0.200	ng unit correction factor
Vo	5.000	Sample Volume purged (mL)

Compounds	QUANT SIG						CONCENTRATIONS	
	MASS	RT	EXP RT	REL RT	RESPONSE		ON-COLUMN (ng)	FINAL (ug/L)
1 Dichlorodifluoromethane	85	1.348	1.347	(0.642)	121625		428.482	86
2 Chloromethane	50	1.337	1.324	(0.636)	306118		404.769	81
3 Vinyl Chloride	62	1.360	1.359	(0.647)	166096		413.020	83
4 Bromomethane	94	1.394	1.393	(0.663)	120588		408.968	82
5 Chloroethane	64	1.382	1.381	(0.658)	143559		405.097	81
6 Trichlorofluoromethane	101	1.497	1.507	(0.712)	228702		475.054	95 (M)
7 Acetone	58	1.440	1.450	(0.685)	69201		1888.86	380
8 1,1-Dichloroethene	96	1.508	1.518	(0.718)	192424		488.077	98 (M)
9 Methylene Chloride	84	1.554	1.564	(0.739)	237507		418.893	84
10 Carbon Disulfide	76	1.576	1.575	(0.750)	898942		488.030	98 (M)
11 trans-1,2-Dichloroethene	96	1.656	1.655	(0.788)	285516		496.958	99
12 1,1-Dichloroethane	63	1.713	1.712	(0.815)	527135		500.980	100 (M)
13 Vinyl Acetate	43	1.713	1.712	(0.815)	557009		460.539	92
14 2-Butanone	43	1.713	1.712	(0.815)	557009		460.539	92
15 cis-1,2-Dichloroethene	96	1.873	1.884	(0.891)	329994		507.793	100
M 16 1,2-Dichloroethene (total)	96				615510		1005.42	200

07/08/9827

07/08/9827

Compounds	QUANT SIG					CONCENTRATIONS	
	MASS	RT	EXP RT	REL RT	RESPONSE	ON-COLUMN (ng)	FINAL (ug/L)
-----	----	--	-----	-----	-----	-----	-----
17 2,2-Dichloropropane	77	1.942	1.941	(0.924)	446601	504.275	100
18 Bromochloromethane	128	1.942	1.941	(0.924)	152242	517.094	100
19 Chloroform	83	1.942	1.941	(0.924)	539597	494.064	99
* 20 Pentafluorobenzene	168	2.102	2.101	(1.000)	369545	250.000	
\$ 21 1,2-Dichloroethane-d4	102	2.147	2.146	(0.859)	79736	519.811	100
22 1,1,1-Trichloroethane	97	2.170	2.169	(0.868)	517118	522.370	100
23 1,2-Dichloroethane	62	2.181	2.180	(1.038)	497849	518.002	100
24 1,1-Dichloropropene	75	2.250	2.249	(1.071)	450526	510.068	100
25 Benzene	78	2.307	2.306	(0.922)	1269926	511.379	100
26 Carbon Tetrachloride	117	2.330	2.329	(0.932)	399339	534.767	110
* 27 1,4-Difluorobenzene	114	2.501	2.500	(1.000)	508024	250.000	
28 1,2-Dichloropropane	63	2.741	2.740	(1.096)	314452	505.366	100
29 Trichloroethene	130	2.752	2.751	(1.100)	332185	511.874	100
30 Dibromomethane	93	2.786	2.785	(1.114)	209510	534.673	110
31 Bromodichloromethane	83	2.866	2.865	(1.146)	454684	509.040	100
32 2-Chloroethylvinylether	63	3.312	3.311	(1.324)	210262	519.334	100
33 4-Methyl-2-Pentanone	43	3.528	3.539	(1.411)	232239	483.210	97
34 cis-1,3-Dichloropropene	75	3.483	3.482	(1.392)	543629	520.790	100
35 trans-1,3-Dichloropropene	75	4.111	4.110	(1.643)	504818	538.642	110
\$ 36 Toluene-d8	98	4.008	4.007	(1.602)	1236656	516.740	100
37 Toluene	92	4.099	4.098	(1.639)	820995	512.752	100
38 1,1,2-Trichloroethane	83	4.247	4.247	(1.698)	229510	508.876	100
39 1,3-Dichloropropane	76	4.590	4.589	(0.759)	502026	509.284	100
40 2-Hexanone	43	4.795	4.794	(0.792)	155846	484.327	97(M)
41 Dibromochloromethane	129	4.830	4.829	(0.798)	310009	531.344	110
42 1,2-Dibromoethane	107	5.081	5.091	(0.840)	321821	515.269	100
43 Tetrachloroethene	164	5.172	5.171	(0.855)	326566	502.161	100
* 44 Chlorobenzene-d5	117	6.051	6.050	(1.000)	565973	250.000	
45 Chlorobenzene	112	6.097	6.096	(1.008)	1131764	506.846	100
46 1,1,1,2-Tetrachloroethane	131	6.211	6.210	(1.026)	393127	543.926	110
47 Ethylbenzene	106	6.485	6.484	(1.072)	593779	506.970	100
48 m,p-Xylene(s)	106	6.679	6.678	(1.104)	1392318	998.654	200
49 Bromoform	173	7.010	7.009	(1.158)	284251	579.298	120
50 Styrene	104	7.170	7.169	(1.185)	1266304	483.391	97
51 o-Xylene	106	7.215	7.203	(1.192)	713111	496.345	99
M 52 Xylene (Total)	106				2105429	1494.94	300
53 1,1,2,2-Tetrachloroethane	83	7.695	7.694	(1.272)	426244	496.903	99
54 1,2,3-Trichloropropane	77	7.832	7.831	(1.294)	118107	486.579	97
55 Isopropylbenzene	105	7.912	7.911	(0.825)	1663770	494.876	99
\$ 56 Bromofluorobenzene	95	7.889	7.888	(1.304)	608747	499.722	100
57 Bromobenzene	156	8.003	8.002	(0.835)	499075	488.403	98
58 N-Propylbenzene	120	8.517	8.504	(0.888)	412872	489.218	98
59 2-Chlorotoluene	126	8.448	8.447	(0.881)	392365	493.369	99
60 4-Chlorotoluene	126	8.562	8.561	(0.893)	400703	486.404	97
61 1,3,5-Trimethylbenzene	105	8.813	8.812	(0.919)	1358930	490.385	98
62 tert-Butylbenzene	91	9.281	9.269	(0.968)	871583	477.408	95
63 1,2,4-Trimethylbenzene	105	9.293	9.292	(0.969)	1385109	481.075	96

07/08/98

Compounds	QUANT SIG				RESPONSE	CONCENTRATIONS	
	MASS	RT	EXP RT	REL RT		ON-COLUMN (ng)	FINAL (ug/L)
64 1,3-Dichlorobenzene	146	9.498	9.497	(0.990)	772808	485.114	97
65 sec-Butylbenzene	105	9.612	9.611	(1.002)	1343623	470.295	94
* 66 1,4-Dichlorobenzene-d4	152	9.590	9.589	(1.000)	276255	250.000	
67 1,4-Dichlorobenzene	146	9.635	9.623	(1.005)	793687	492.669	98
68 p-Isopropyltoluene	119	9.875	9.874	(1.030)	1187647	469.666	94
69 1,2-Dichlorobenzene	146	10.035	10.034	(1.046)	750643	475.307	95
70 n-Butylbenzene	91	10.434	10.433	(1.088)	1019341	451.291	90
71 1,2-Dibromo-3-Chloropropane	75	10.902	10.901	(1.137)	78905	480.690	96
72 1,2,4-Trichlorobenzene	180	12.432	12.431	(1.296)	441002	391.372	78
73 Naphthalene	128	12.535	12.534	(1.307)	922672	327.492	65
74 Hexachlorobutadiene	225	13.025	13.024	(1.358)	232564	362.486	72
75 1,2,3-Trichlorobenzene	180	12.980	12.979	(1.354)	353662	307.790	62
76 Acetonitrile	41	1.542	1.553	(0.734)	316327	4950.34	990 (M)
77 Acrylonitrile	53	1.519	1.518	(0.723)	367462	4679.50	940
78 Allyl Chloride	41	1.542	1.553	(0.734)	289712	1742.75	350 (M)
80 1,4-Dioxane	88	2.923	2.934	(1.391)	101320	22123.6	4400 (M)
81 Ethyl Cyanide	54	1.725	1.724	(0.821)	381274	17993.4	3600
82 Ethyl Methacrylate	69	4.715	4.726	(2.244)	421490	1863.58	370
83 Ethyl Ether	45	1.451	1.461	(0.580)	135574	1739.67	350 (M)
84 Iodomethane	142	1.554	1.541	(0.739)	336116	442.603	88
85 Iso-Butyl Alcohol	41	1.976	1.986	(0.940)	417617	18907.0	3800
86 Methacrylonitrile	41	1.816	1.815	(0.864)	435846	1876.25	380
87 Methyl Methacrylate	41	2.980	2.979	(1.192)	228296	1811.02	360
88 trans-1,4-Dichloro-2-Butene	75	8.049	8.036	(0.839)	1824348	19106.3	3800
89 Methyl t-Butyl Ether	73	1.691	1.690	(0.804)	824865	491.428	98
90 Butadiene	39	1.348	1.347	(0.642)	366392	393.521	79
91 Cumene	105	7.912	7.911	(0.825)	1663770	494.880	99
92 Cyclohexane	56	2.318	2.317	(1.103)	449474	528.368	100
93 Dicyclopentadiene	66	9.886	9.874	(1.031)	1369481	469.564	94
94 Hexane	57	1.679	1.690	(0.799)	160854	522.901	100
95 t-Butyl Alcohol	59	1.976	1.986	(0.940)	971967	4855.65	970 (M)
97 Acrolein	56	1.428	1.427	(0.680)	282492	4250.67	850
98 2,2,4-Trimethylpentane	57	2.592	2.580	(1.036)	621047	355.383	71 (M)
195 2-Nitropropane	43	2.786	2.785	(1.326)	862518	18582.9	3700
198 Ethyl Acetate	43	1.907	1.907	(0.908)	1520015	2799.30	560 (M)
199 Cyclohexanone	55	7.261	7.260	(1.200)	599489	49385.4	9900
200 1,1,2-Trichlorotrifluoroethan	101	1.497	1.507	(0.712)	197656	1655.82	330
203 n-Butanol	56	2.318	2.317	(1.103)	449474	18390.4	3700
204 Di-Isopropyl Ether	45	1.850	1.849	(0.880)	875881	492.172	98
206 tert-Amyl Methyl Ether	73	2.501	2.511	(1.190)	990094	503.238	100
207 Chlorotrifluoromethane	69	4.715	4.726	(2.244)	421490	516.982	100
208 Ethyl t-Butyl Ether	59	1.976	1.986	(0.940)	1010706	512.778	100 (M)
209 Methylcyclohexane	83	3.129	3.139	(1.489)	353458	513.097	100

07/08/98

07/08/98

07/08/98

Data File: /var/chem/n.i/n980707.b/n188iw4.d
Report Date: 08-Jul-1998 13:22

Page 4

QC Flag Legend

M - Compound response manually integrated.

SPL Houston Labs

INTERNAL STANDARD COMPOUNDS
 AREA AND RT SUMMARY

Instrument ID: n.i
 Lab File ID: n188iw4.d
 Lab Smp Id: VSTD100-8260W
 Analysis Type: VOA
 Quant Type: ISTD
 Operator: JC
 Method File: /var/chem/n.i/n980707.b/n8260wL.m
 Misc Info: N188W1//N188CW1

Calibration Date: 07/07/98
 Calibration Time: 1540

Level: LOW
 Sample Type: WATER

COMPOUND	STANDARD	AREA LIMIT		SAMPLE	%DIFF
		LOWER	UPPER		
20 Pentafluorobenzen	372247	186124	744494	369545	-0.73
27 1,4-Difluorobenze	500060	250030	1000120	508024	1.59
44 Chlorobenzene-d5	552603	276302	1105206	565973	2.42
66 1,4-Dichlorobenze	269701	134850	539402	276255	2.43

COMPOUND	STANDARD	RT LIMIT		SAMPLE	%DIFF
		LOWER	UPPER		
20 Pentafluorobenzen	2.10	1.60	2.60	2.10	0.05
27 1,4-Difluorobenze	2.50	2.00	3.00	2.50	0.04
44 Chlorobenzene-d5	6.05	5.55	6.55	6.05	0.02
66 1,4-Dichlorobenze	9.59	9.09	10.09	9.59	0.01

AREA UPPER LIMIT = +100% of internal standard area.
 AREA LOWER LIMIT = - 50% of internal standard area.
 RT UPPER LIMIT = + 0.50 minutes of internal standard RT.
 RT LOWER LIMIT = - 0.50 minutes of internal standard RT.

Data File: /var/chem/n.i/n980707.b/n188iw4.d

Date : 07-JUL-1998 16:05

Client ID:

Sample Info: VSTD100-8260W/1X

Purge Volume: 5.0

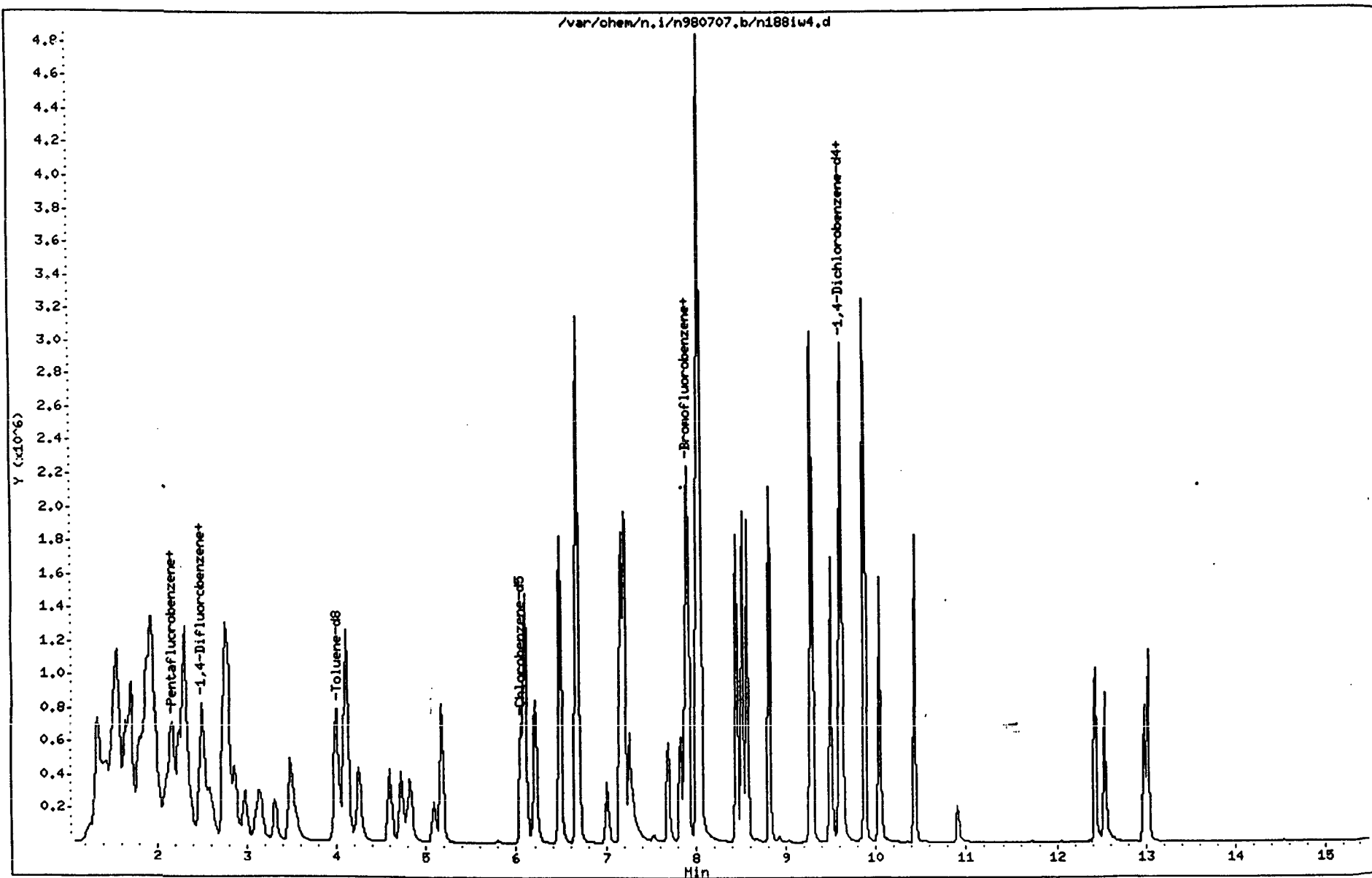
Column phase: 30m,hp5ms,0.25u df

Instrument: n.i

Operator: JC

Column diameter: 0.25

Page 6



SPL Houston Labs

Volatiles by 8260

Data file : /var/chem/n.i/n980707.b/n188iw5.d
Lab Smp Id: VSTD200-8260W
Inj Date : 07-JUL-1998 16:29
Operator : JC
Smp Info : VSTD200-8260W/1X
Misc Info : N188W1//N188CW1
Comment :
Method : /var/chem/n.i/n980707.b/n8260wL.m
Meth Date : 08-Jul-1998 13:20 lien
Cal Date : 07-JUL-1998 15:16
Als bottle: 7
Dil Factor: 1.00000
Integrator: HP RTE
Target Version: 3.40
Processing Host: chemsys1

Inst ID: n.i
Quant Type: ISTD
Cal File: n188iw2.d
Compound Sublist: all.sub

Concentration Formula: Amt * DF * Uf * 5/Vo

Name	Value	Description
DF	1.000	Dilution Factor
Uf	0.200	ng unit correction factor
Vo	5.000	Sample Volume purged (mL)

Compounds	QUANT SIG	CONCENTRATIONS					
		MASS	RT	EXP RT	REL RT	RESPONSE	ON-COLUMN (ng)
-----	----	--	-----	-----	-----	-----	-----
1 Dichlorodifluoromethane	85	1.328	1.347	(0.634)	180078	734.358	150
2 Chloromethane	50	1.339	1.324	(0.640)	476417	729.195	140
3 Vinyl Chloride	62	1.362	1.359	(0.651)	239888	690.491	140
4 Bromomethane	94	1.396	1.393	(0.667)	171433	673.003	130
5 Chloroethane	64	1.373	1.381	(0.656)	199417	651.371	130
6 Trichlorofluoromethane	101	1.499	1.507	(0.716)	334019	803.122	160 (M)
7 Acetone	58	1.430	1.450	(0.684)	100011	3159.90	630
8 1,1-Dichloroethene	96	1.533	1.518	(0.733)	279268	819.952	160 (M)
9 Methylene Chloride	84	1.556	1.564	(0.744)	326146	665.950	130
10 Carbon Disulfide	76	1.624	1.575	(0.776)	1318483	828.566	160 (M)
11 trans-1,2-Dichloroethene	96	1.647	1.655	(0.787)	413006	832.116	170
12 1,1-Dichloroethane	63	1.704	1.712	(0.815)	785189	863.795	170 (M)
13 Vinyl Acetate	43	1.716	1.712	(0.820)	934425	894.306	180
14 2-Butanone	43	1.716	1.712	(0.820)	934425	894.306	180
15 cis-1,2-Dichloroethene	96	1.875	1.884	(0.896)	542861	966.956	190
M 16 1,2-Dichloroethene (total)	96	.			955867	1807.37	360

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS	
						ON-COLUMN (ng)	FINAL (ug/L)
17 2,2-Dichloropropane	77	1.944	1.941	(0.929)	741833	969.597	190
18 Bromochloromethane	128	1.933	1.941	(0.924)	243249	956.366	190
19 Chloroform	83	1.944	1.941	(0.929)	883398	936.285	190
* 20 Pentafluorobenzene	168	2.092	2.101	(1.000)	319249	250.000	
\$ 21 1,2-Dichloroethane-d4	102	2.149	2.146	(0.859)	147589	1048.56	210
22 1,1,1-Trichloroethane	97	2.172	2.169	(0.868)	866216	953.589	190
23 1,2-Dichloroethane	62	2.184	2.180	(1.044)	877239	1056.55	210
24 1,1-Dichloropropene	75	2.241	2.249	(1.071)	798661	1046.67	210
25 Benzene	78	2.298	2.306	(0.918)	2300153	1009.41	200
26 Carbon Tetrachloride	117	2.321	2.329	(0.927)	718106	1047.99	210
* 27 1,4-Difluorobenzene	114	2.503	2.500	(1.000)	466163	250.000	
28 1,2-Dichloropropane	63	2.743	2.740	(1.096)	578471	1013.16	200
29 Trichloroethene	130	2.754	2.751	(1.100)	608913	1022.55	200
30 Dibromomethane	93	2.789	2.785	(1.114)	381322	1060.53	210
31 Bromodichloromethane	83	2.869	2.865	(1.146)	858532	1047.48	210
32 2-Chloroethylvinylether	63	3.314	3.311	(1.324)	406423	1093.98	220
33 4-Methyl-2-Pentanone	43	3.531	3.539	(1.410)	453249	1027.74	200
34 cis-1,3-Dichloropropene	75	3.485	3.482	(1.392)	1043281	1089.20	220
35 trans-1,3-Dichloropropene	75	4.124	4.110	(1.647)	951243	1106.12	220
\$ 36 Toluene-d8	98	4.010	4.007	(1.602)	2371701	1080.01	220
37 Toluene	92	4.113	4.098	(1.643)	1562192	1063.28	210
38 1,1,2-Trichloroethane	83	4.250	4.247	(1.698)	447073	1080.28	220
39 1,3-Dichloropropane	76	4.592	4.589	(0.759)	957677	1013.59	200
40 2-Hexanone	43	4.786	4.794	(0.791)	297046	963.111	190 (M) 07/08/98
41 Dibromochloromethane	129	4.832	4.829	(0.798)	613106	1096.34	220
42 1,2-Dibromoethane	107	5.083	5.091	(0.840)	611539	1021.54	200
43 Tetrachloroethene	164	5.174	5.171	(0.855)	625316	1003.19	200
* 44 Chlorobenzene-d5	117	6.053	6.050	(1.000)	542483	250.000	
45 Chlorobenzene	112	6.099	6.096	(1.008)	2114482	987.947	200
46 1,1,1,2-Tetrachloroethane	131	6.213	6.210	(1.026)	782640	1129.74	220
47 Ethylbenzene	106	6.487	6.484	(1.072)	1109970	988.731	200
48 m.p.Xylene(s)	106	6.692	6.678	(1.106)	2554278	1911.41	380
49 Bromoform	173	7.012	7.009	(1.158)	596000	1267.23	250
50 Styrene	104	7.172	7.169	(1.185)	2361961	940.682	190
51 o-Xylene	106	7.218	7.203	(1.192)	1332362	967.516	190
M 52 Xylene (Total)	106				3886640	2879.17	580
53 1,1,2,2-Tetrachloroethane	83	7.697	7.694	(1.272)	797314	969.733	190
54 1,2,3-Trichloropropane	77	7.845	7.831	(1.296)	234416	1007.57	200
55 Isopropylbenzene	105	7.925	7.911	(0.825)	3028922	953.994	190
\$ 56 Bromofluorobenzene	95	7.891	7.888	(1.304)	1159452	993.011	200
57 Bromobenzene	156	8.017	8.002	(0.835)	921692	955.109	190
58 N-Propylbenzene	120	8.519	8.504	(0.887)	773230	970.175	190
59 2-Chlorotoluene	126	8.462	8.447	(0.881)	720181	958.909	190
60 4-Chlorotoluene	126	8.576	8.561	(0.893)	737939	948.526	190
61 1,3,5-Trimethylbenzene	105	8.827	8.812	(0.919)	2433086	929.720	180
62 tert-Butylbenzene	91	9.284	9.269	(0.967)	1562317	906.159	180
63 1,2,4-Trimethylbenzene	105	9.306	9.292	(0.969)	2432164	894.492	180

Compounds	QUANT SIG					CONCENTRATIONS	
	MASS	RT	EXP RT	REL RT	RESPONSE	ON-COLUMN (ng)	FINAL (ug/L)
64 1,3-Dichlorobenzene	146	9.512	9.497	(0.990)	1436205	954.647	190
65 sec-Butylbenzene	105	9.626	9.611	(1.002)	2396793	888.337	180
* 66 1,4-Dichlorobenzene-d4	152	9.603	9.589	(1.000)	260889	250.000	
67 1,4-Dichlorobenzene	146	9.637	9.623	(1.004)	1443569	948.851	190
68 p-Isopropyltoluene	119	9.877	9.874	(1.029)	2067904	865.938	170
69 1,2-Dichlorobenzene	146	10.048	10.034	(1.046)	1385939	929.265	180
70 n-Butylbenzene	91	10.436	10.433	(1.087)	1918264	899.291	180
71 1,2-Dibromo-3-Chloropropane	75	10.904	10.901	(1.135)	152234	982.034	200
72 1,2,4-Trichlorobenzene	180	12.434	12.431	(1.295)	796251	748.262	150
73 Naphthalene	128	12.537	12.534	(1.305)	1626596	611.347	120
74 Hexachlorobutadiene	225	13.028	13.024	(1.357)	412838	681.369	140
75 1,2,3-Trichlorobenzene	180	12.982	12.979	(1.352)	580014	534.514	110
76 Acetonitrile	41	1.544	1.553	(0.738)	427863	7750.70	1600 (M)
77 Acrylonitrile	53	1.510	1.518	(0.722)	506973	7473.25	1500
78 Allyl Chloride	41	1.544	1.553	(0.738)	468957	3265.41	650 (M)
80 1,4-Dioxane	88	2.926	2.934	(1.398)	196881	49762.5	10000 (M)
81 Ethyl Cyanide	54	1.716	1.724	(0.820)	621104	33929.6	6800
82 Ethyl Methacrylate	69	4.718	4.726	(2.255)	764596	3913.19	780 (M)
83 Ethyl Ether	45	1.453	1.461	(0.580)	207880	2907.02	580 (M)
84 Iodomethane	142	1.556	1.541	(0.744)	461294	703.138	140
85 Iso-Butyl Alcohol	41	1.978	1.986	(0.945)	721339	37802.6	7600
86 Methacrylonitrile	41	1.807	1.815	(0.864)	715106	3563.40	710
87 Methyl Methacrylate	41	2.983	2.979	(1.192)	431776	3732.75	750
88 trans-1,4-Dichloro-2-Butene	75	8.074	8.036	(0.841)	3335491	36989.9	7400
89 Methyl t-Butyl Ether	73	1.681	1.690	(0.804)	1229488	847.889	170
90 Butadiene	39	1.339	1.347	(0.640)	594983	739.715	150
91 Cumene	105	7.925	7.911	(0.825)	3028922	954.001	190
92 Cyclohexane	56	2.309	2.317	(1.104)	818236	1113.39	220
93 Dicyclopentadiene	66	9.889	9.874	(1.030)	2417467	877.716	180
94 Hexane	57	1.681	1.690	(0.804)	225502	848.546	170
95 t-Butyl Alcohol	59	1.978	1.986	(0.945)	1687713	9759.60	2000 (M)
96 Propylene Oxide	57	1.978	1.978	(0.945)	539402	1041.68	210
97 Acrolein	56	1.419	1.427	(0.678)	398742	6945.13	1400
98 2,2,4-Trimethylpentane	57	2.595	2.580	(1.036)	1200483	748.644	150
195 2-Nitropropane	43	2.800	2.785	(1.338)	1664029	41499.7	8300
198 Ethyl Acetate	43	1.898	1.907	(0.907)	2680596	5714.40	1100 (M)
199 Cyclohexanone	55	7.263	7.260	(1.200)	1161815	99853.6	20000
200 1,1,2-Trichlorotrifluoroethan	101	1.499	1.507	(0.716)	315513	3059.56	610
203 n-Butanol	56	2.309	2.317	(1.104)	818236	38752.8	7800
204 Di-Isopropyl Ether	45	1.853	1.849	(0.885)	1441811	937.817	190
206 tert-Amyl Methyl Ether	73	2.503	2.511	(1.196)	1803213	1060.92	210
207 Chlorotrifluoromethane	69	4.718	4.726	(2.255)	802261	1139.05	230
208 Ethyl t-Butyl Ether	59	1.978	1.986	(0.945)	1656613	972.889	190
209 Methylcyclohexane	83	3.131	3.139	(1.496)	665279	1117.90	220

07/08/98

07/08/98

07/08/98

07/08/98

Data File: /var/chem/n.i/n980707.b/n188iw5.d
Report Date: 08-Jul-1998 13:22

Page 4

QC Flag Legend

M - Compound response manually integrated.

SPL Houston Labs

INTERNAL STANDARD COMPOUNDS
AREA AND RT SUMMARY

Instrument ID: n.i
Lab File ID: n188iw5.d
Lab Smp Id: VSTD200-8260W
Analysis Type: VOA
Quant Type: ISTD
Operator: JC

Calibration Date: 07/07/98
Calibration Time: 1540

Level: LOW
Sample Type: WATER

Method File: /var/chem/n.i/n980707.b/n8260wL.m
Misc Info: N188W1//N188CW1

COMPOUND	STANDARD	AREA LIMIT		SAMPLE	%DIFF
		LOWER	UPPER		
20 Pentafluorobenzen	372247	186124	744494	319249	-14.24
27 1,4-Difluorobenze	500060	250030	1000120	466163	-6.78
44 Chlorobenzene-d5	552603	276302	1105206	542483	-1.83
66 1,4-Dichlorobenze	269701	134850	539402	260889	-3.27

COMPOUND	STANDARD	RT LIMIT		SAMPLE	%DIFF
		LOWER	UPPER		
20 Pentafluorobenzen	2.10	1.60	2.60	2.09	-0.39
27 1,4-Difluorobenze	2.50	2.00	3.00	2.50	0.13
44 Chlorobenzene-d5	6.05	5.55	6.55	6.05	0.05
66 1,4-Dichlorobenze	9.59	9.09	10.09	9.60	0.15

AREA UPPER LIMIT = +100% of internal standard area.
AREA LOWER LIMIT = - 50% of internal standard area.
RT UPPER LIMIT = + 0.50 minutes of internal standard RT.
RT LOWER LIMIT = - 0.50 minutes of internal standard RT.

Data File: /var/chem/n.i/n980707.b/n1881w5.d

Page 6

Date : 07-JUL-1998 16:29

Client ID:

Instrument: n.i

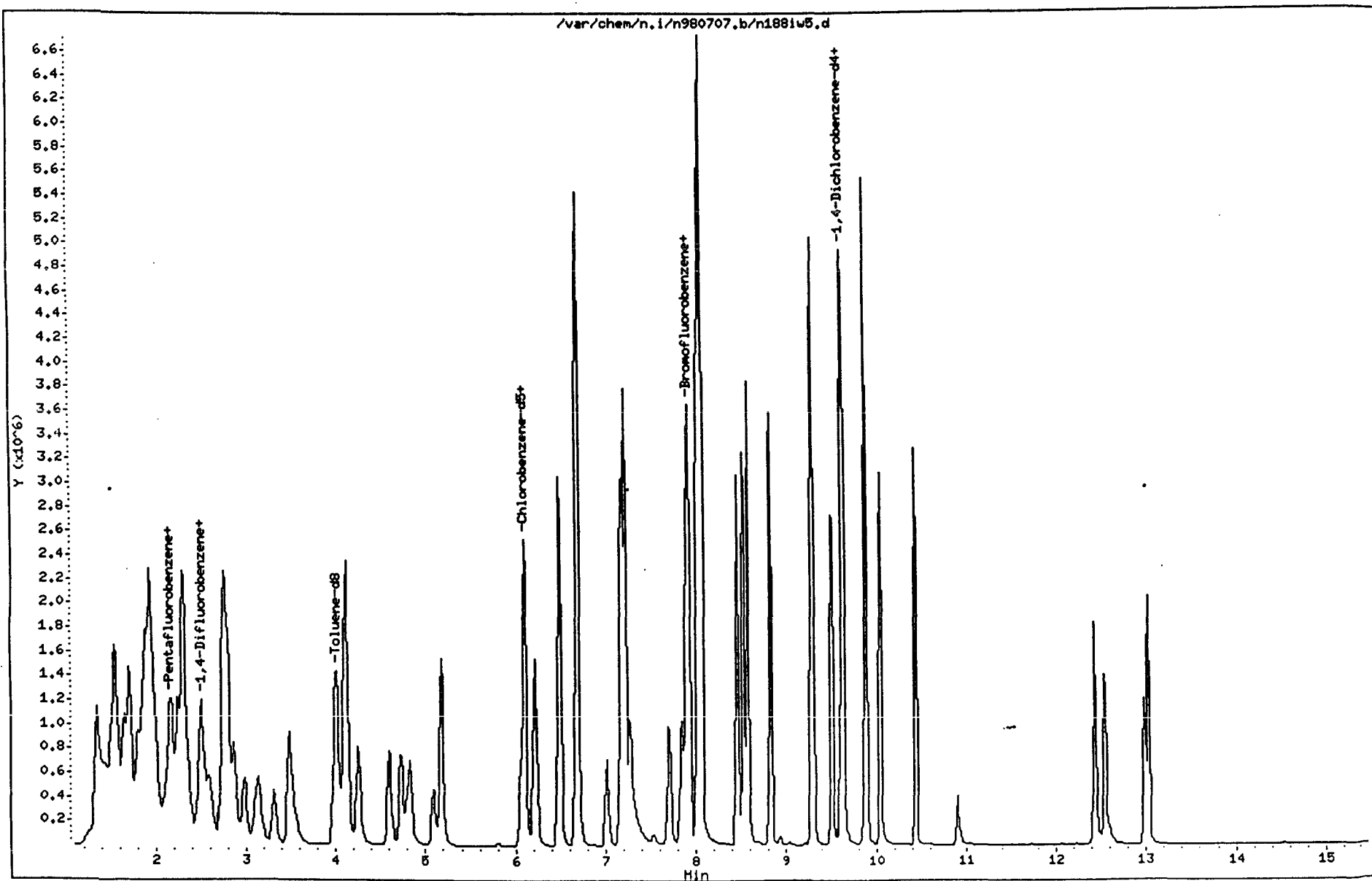
Sample Info: VSTD200-8260W/1X

Purge Volume: 5.0

Operator: JC

Column phase: 30m,hp5ms,0.25u df

Column diameter: 0.25



SPL Houston Labs

CONTINUING CALIBRATION COMPOUNDS

Instrument ID: n.i Injection Date: 17-AUG-1998 20:22
Lab File ID: n229cw2.d Init. Calibration Date(s): 07/07/98 07/07/98
Analysis Type: WATER Init. Calibration Times: 15:16 17:25
Lab Sample ID: VSTD050-8260W Method File: /var/chem/n.i/n980817a.b/n8260wL.m
Quant Type: ISTD

COMPOUND	RRF	RF250	MIN RRF	%D	MAX %D
1 Dichlorodifluoromethane	0.192	0.108	0.010	43.6	100.0
2 Chloromethane	0.512	0.386	0.100	24.7	40.0
3 Vinyl Chloride	0.272	0.226	0.100	16.8	20.0
4 Bromomethane	0.199	0.152	0.100	23.9	40.0
5 Chloroethane	0.240	0.205	0.010	14.5	40.0
6 Trichlorofluoromethane	0.326	0.288	0.010	11.5	40.0
7 Acetone	0.025	0.021	0.010	15.9	40.0
8 1,1-Dichloroethene	0.267	0.269	0.100	-1.0	20.0
9 Methylene Chloride	0.384	0.337	0.010	12.0	40.0
10 Carbon Disulfide	1.246	1.052	0.010	15.6	40.0
11 trans-1,2-Dichloroethene	0.389	0.389	0.010	-0.1	40.0
12 1,1-Dichloroethane	0.712	0.723	0.100	-1.6	40.0
13 Vinyl Acetate	0.818	0.684	0.010	16.5	40.0
14 2-Butanone	0.818	0.684	0.010	16.5	40.0
15 cis-1,2-Dichloroethene	0.440	0.425	0.010	3.2	40.0
M 16 1,2-Dichloroethene (total)	0.414	0.407	0.010	1.7	40.0
17 2,2-Dichloropropane	0.599	0.533	0.010	11.0	40.0
18 Bromochloromethane	0.199	0.182	0.010	8.5	40.0
19 Chloroform	0.739	0.732	0.200	0.9	20.0
S 21 1,2-Dichloroethane-d4	0.075	0.077	0.010	-2.4	40.0
22 1,1,1-Trichloroethane	0.487	0.524	0.100	-7.5	40.0
23 1,2-Dichloroethane	0.650	0.650	0.100	0.0	40.0
24 1,1-Dichloropropene	0.598	0.591	0.010	1.1	40.0
25 Benzene	1.222	1.327	0.100	-8.5	40.0
26 Carbon Tetrachloride	0.367	0.401	0.100	-9.1	40.0
28 1,2-Dichloropropane	0.306	0.323	0.010	-5.5	20.0
29 Trichloroethene	0.319	0.334	0.100	-4.6	40.0
30 Dibromomethane	0.193	0.205	0.010	-6.6	40.0
31 Bromodichloromethane	0.440	0.439	0.200	0.1	40.0
32 2-Chloroethylvinylether	0.199	0.199	0.010	-0.1	40.0
33 4-Methyl-2-Pentanone	0.237	0.234	0.010	1.2	40.0
34 cis-1,3-Dichloropropene	0.514	0.478	0.100	7.0	40.0
35 trans-1,3-Dichloropropene	0.461	0.414	0.100	10.2	40.0
S 36 Toluene-d8	1.178	1.220	0.010	-3.6	40.0
37 Toluene	0.788	0.813	0.400	-3.2	20.0
38 1,1,2-Trichloroethane	0.222	0.224	0.100	-0.7	40.0

SPL Houston Labs

CONTINUING CALIBRATION COMPOUNDS

Instrument ID: n.i Injection Date: 17-AUG-1998 20:22
Lab File ID: n229cw2.d Init. Calibration Date(s): 07/07/98 07/07/98
Analysis Type: WATER Init. Calibration Times: 15:16 17:25
Lab Sample ID: VSTD050-8260W Method File: /var/chem/n.i/n980817a.b/n8260wL.m
Quant Type: ISTD

COMPOUND	RRF	RF250	MIN	MAX
-----	-----	-----	-----	-----
39 1,3-Dichloropropane	0.435	0.484	0.010	-11.2
40 2-Hexanone	0.142	0.152	0.010	-6.7
41 Dibromochloromethane	0.258	0.255	0.100	1.2
42 1,2-Dibromoethane	0.276	0.284	0.010	-3.0
43 Tetrachloroethene	0.287	0.338	0.200	-17.5
45 Chlorobenzene	0.986	0.963	0.300	2.4
46 1,1,1,2-Tetrachloroethane	0.319	0.337	0.010	-5.4
47 Ethylbenzene	0.517	0.541	0.100	-4.6
48 m,p-Xylene(s)	0.616	0.644	0.300	-4.6
49 Bromoform	0.217	0.202	0.100	6.7
50 Styrene	1.157	1.109	0.300	4.1
51 o-Xylene	0.635	0.655	0.300	-3.2
M 52 Xylene (Total)	0.622	0.648	0.300	-4.2
53 1,1,2,2-Tetrachloroethane	0.379	0.336	0.300	11.4
54 1,2,3-Trichloropropane	0.107	0.097	0.010	9.5
55 Isopropylbenzene	3.042	2.946	0.010	3.2
S 56 Bromofluorobenzene	0.538	0.577	0.010	-7.1
57 Bromobenzene	0.925	0.790	0.010	14.6
58 N-Propylbenzene	0.764	0.730	0.010	4.4
59 2-Chlorotoluene	0.720	0.636	0.010	11.7
60 4-Chlorotoluene	0.746	0.649	0.010	13.0
61 1,3,5-Trimethylbenzene	2.508	2.402	0.010	4.2
62 tert-Butylbenzene	1.652	1.646	0.010	0.4
63 1,2,4-Trimethylbenzene	2.606	2.446	0.010	6.1
64 1,3-Dichlorobenzene	1.442	1.298	0.010	10.0
65 sec-Butylbenzene	2.585	2.518	0.010	2.6
67 1,4-Dichlorobenzene	1.458	1.357	0.010	6.9
68 p-Isopropyltoluene	2.288	2.206	0.010	3.6
69 1,2-Dichlorobenzene	1.429	1.246	0.010	12.8
70 n-Butylbenzene	2.044	1.907	0.010	6.7
71 1,2-Dibromo-3-Chloropropane	0.149	0.098	0.010	34.3
72 1,2,4-Trichlorobenzene	1.020	0.759	0.010	25.6
73 Naphthalene	2.550	1.367	0.010	46.4
74 Hexachlorobutadiene	0.581	0.415	0.010	28.5
75 1,2,3-Trichlorobenzene	1.040	0.601	0.010	42.2

Data File: /var/chem/n.i/n980817a.b/n229cw2.d
Report Date: 19-Aug-1998 08:27

Page 3

SPL Houston Labs

CONTINUING CALIBRATION COMPOUNDS

Instrument ID: n.i Injection Date: 17-AUG-1998 20:22
Lab File ID: n229cw2.d Init. Calibration Date(s): 07/07/98 07/07/98
Analysis Type: WATER Init. Calibration Times: 15:16 17:25
Lab Sample ID: VSTD050-8260W Method File: /var/chem/n.i/n980817a.b/n8260wL.m
Quant Type: ISTD

COMPOUND	RRF	RF250	MIN	MAX
8% Methyl t-Butyl Ether	1.136	1.010	0.010	11.0

SPL Houston Labs

Volatiles by 8260

Data file : /var/chem/n.i/n980817a.b/n229cw2.d
 Lab Smp Id: VSTD050-8260W
 Inj Date : 17-AUG-1998 20:22
 Operator : JC
 Smp Info : VSTD050-8260W/1X
 Misc Info : N229W2//N229CW2
 Comment :
 Method : /var/chem/n.i/n980817a.b/n8260w.m
 Meth Date : 19-Aug-1998 08:29 jimmy
 Cal Date : 07-JUL-1998 15:16
 Als bottle: 26
 Dil Factor: 1.00000
 Integrator: HP RTE
 Target Version: 3.40
 Processing Host: chemsys1

Inst ID: n.i
 Quant Type: ISTD
 Cal File: n188iw2.d
 Compound Sublist: 8260.sub

Concentration Formula: Amt * DF * Uf * 5/Vo

Name	Value	Description
DF	1.000	Dilution Factor
Uf	0.200	ng unit correction factor
Vo	5.000	Sample Volume purged (mL)

Compounds	QUANT SIG	CONCENTRATIONS						
		MASS	RT	EXP RT	REL RT	RESPONSE	ON-COLUMN	FINAL
							(ng)	(ug/L)
=====	=====	==	=====	=====	=====	=====	=====	
1 Dichlorodifluoromethane	85	1.348	1.348	(0.638)	46769	132.510	26	
2 Chloromethane	50	1.325	1.325	(0.627)	166463	199.583	40	
3 Vinyl Chloride	62	1.382	1.382	(0.654)	97778	203.974	41	
4 Bromomethane	94	1.382	1.382	(0.654)	65538	182.113	36	
5 Chloroethane	64	1.371	1.371	(0.649)	88508	204.759	41	
6 Trichlorofluoromethane	101	1.519	1.519	(0.719)	124486	221.298	44	
7 Acetone	58	1.451	1.451	(0.687)	44996	1142.28	230	
8 1,1-Dichloroethene	96	1.553	1.553	(0.735)	116352	252.574	50	
9 Methylene Chloride	84	1.565	1.565	(0.741)	145700	210.102	42	
10 Carbon Disulfide	76	1.645	1.645	(0.778)	454383	192.625	38	
11 trans-1,2-Dichloroethene	96	1.656	1.656	(0.784)	167949	250.179	50	
12 1,1-Dichloroethane	63	1.725	1.725	(0.816)	312148	253.889	51	
13 Vinyl Acetate	43	1.725	1.725	(0.816)	295180	208.870	42	
14 2-Butanone	43	1.725	1.725	(0.816)	295180	208.870	42	
15 cis-1,2-Dichloroethene	96	1.884	1.884	(0.892)	183675	241.888	48	
M 16 1,2-Dichloroethene (total)	96				351624	491.558	98	

Compounds	QUANT SIG			EXP RT	REL RT	RESPONSE	CONCENTRATIONS	
	MASS	RT					ON-COLUMN (ng)	FINAL (ug/L)
=====	=====	=====		=====	=====	=====	=====	=====
17 1,2-Dichloropropane	77	1.930		1.930	(0.914)	230259	222.510	44
18 Bromochloromethane	128	1.941		1.941	(0.919)	78662	228.657	46
19 Chloroform	83	1.953		1.953	(0.924)	316206	247.781	50
* 20 Pentafluorobenzene	168	2.113		2.113	(1.000)	431800	250.000	
\$ 21 1,2-Dichloroethane-d4	102	2.158		2.158	(0.859)	41291	255.942	51
22 1,1,1-Trichloroethane	97	2.181		2.181	(0.868)	279746	268.688	54
23 1,2 Dichloroethane	62	2.193		2.193	(1.038)	280807	250.050	50
24 1,1-Dichloropropene	75	2.261		2.261	(1.070)	255151	247.224	49
25 Benzene	78	2.318		2.318	(0.923)	708770	271.372	54
26 Carbon Tetrachloride	117	2.330		2.330	(0.927)	214280	272.835	54
* 27 1,4-Difluorobenzene	114	2.512		2.512	(1.000)	534304	250.000	
28 1,2-Dichloropropane	63	2.752		2.752	(1.095)	172660	263.839	53
29 Trichloroethene	133	2.763		2.763	(1.100)	178562	261.618	52
30 Dibromomethane	93	2.798		2.798	(1.114)	109778	266.376	53
31 Bromodichloromethane	83	2.866		2.866	(1.141)	234522	249.644	50
32 2-Chloroethylvinylether	63	3.323		3.323	(1.323)	106556	250.242	50
33 4-Methyl-2-Pentanone	43	3.551		3.551	(1.413)	124860	247.013	49
34 cis-1,3-Dichloropropene	75	3.494		3.494	(1.391)	255304	232.549	46
35 trans-1,3-Dichloropropene	75	4.122		4.122	(1.641)	221310	224.524	45
\$ 36 Toluene-d8	98	4.008		4.008	(1.595)	651655	258.903	52
37 Toluene	92	4.110		4.110	(1.636)	434596	258.077	52
38 1,1,1-Trichloroethane	83	4.247		4.247	(1.691)	119437	251.794	50
39 1,2-Dichloropropane	76	4.601		4.601	(0.760)	251735	278.111	56
40 2-Hexanone	43	4.807		4.807	(0.794)	78818	266.753	53
41 Dibromochloromethane	129	4.829		4.829	(0.798)	132301	246.948	49
42 1,2-Dibromoethane	107	5.092		5.092	(0.842)	147724	257.579	52
43 Tetrachloroethene	164	5.172		5.172	(0.855)	175454	293.816	59
* 44 Chlorobenzene-d5	117	6.051		6.051	(1.000)	519703	250.000	
45 Chlorobenzene	112	6.096		6.096	(1.008)	500530	244.113	49
46 1,1,1,2-Tetrachloroethane	131	6.211		6.211	(1.026)	174960	263.625	53
47 Ethylbenzene	106	6.484		6.484	(1.072)	281356	261.610	52
48 m,p-Xylene(s)	106	6.679		6.679	(1.104)	669871	523.249	100
49 Bromoform	173	6.998		6.998	(1.157)	105146	224.647	45
50 Styrene	104	7.158		7.158	(1.183)	576423	239.631	48
51 o-Xylene	106	7.204		7.204	(1.191)	340397	258.019	52
M 52 Xylene Total	106					1010268	781.196	160
53 1,1,1,2-Tetrachloroethane	83	7.683		7.683	(1.270)	174543	221.593	44
54 1,2,2-Trichloropropane	77	7.820		7.820	(1.292)	50408	226.161	45
55 Isopropylbenzene	105	7.900		7.900	(0.824)	857642	242.113	48
\$ 56 Bromofluorobenzene	95	7.877		7.877	(1.302)	299610	267.848	54
57 Bromobenzene	156	8.003		8.003	(0.835)	229981	213.606	43
58 n-Propylbenzene	120	8.505		8.505	(0.887)	212486	238.960	48
59 2-Chlorotoluene	126	8.436		8.436	(0.880)	185001	220.782	44
60 4-Chlorotoluene	126	8.562		8.562	(0.893)	188807	217.521	44
61 1,3,5-Trimethylbenzene	105	8.802		8.802	(0.918)	699142	239.449	48
62 tert-Butylbenzene	91	9.270		9.270	(0.967)	479088	249.060	50
63 1,2,4-Trimethylbenzene	105	9.281		9.281	(0.968)	712092	234.733	47

Compounds	QUANT SIG					CONCENTRATIONS	
	MASS	RT	EXP RT	REL RT	RESPONSE	ON-COLUMN (ng)	FINAL (ug/L)
=====	=====	==	=====	=====	=====	=====	=====
64 1,3-Dichlorobenzene	146	9.487	9.487	(0.989)	377855	225.115	45
65 sec-Butylbenzene	105	9.612	9.612	(1.002)	732943	251.656	50
* 66 1,4-Dichlorobenzene-d4	152	9.589	9.589	(1.000)	291073	250.000	
67 1,4-Dichlorobenzene	146	9.624	9.624	(1.004)	395097	232.765	46
68 p-Isopropyltoluene	119	9.863	9.863	(1.029)	641968	247.143	49
69 1,2-Dichlorobenzene	146	10.034	10.034	(1.046)	362579	217.897	44
70 n-Butylbenzene	91	10.423	10.423	(1.087)	554961	256.406	51
71 1,2-Dibromo-3-Chloropropane	75	10.902	10.902	(1.137)	28414	177.529	36
72 1,2,4-Trichlorobenzene	180	12.420	12.420	(1.295)	220827	233.917	47
73 Naphthalene	128	12.523	12.523	(1.306)	397975	189.738	38
74 Hexachlorobutadiene	225	13.014	13.014	(1.357)	120783	237.039	47
75 1,2,3-Trichlorobenzene	180	12.968	12.968	(1.352)	175070	210.530	42
89 Methyl t-Butyl Ether	73	1.690	1.690	(0.800)	436158	222.385	44

SPL Houston Labs

INTERNAL STANDARD COMPOUNDS
AREA AND RT SUMMARY

Instrument ID: n.i
Lab File ID: n229cw2.d
Lab Smp Id: VSTD050-8260W
Analysis Type: VOA
Quant Type: ISTD
Operator: JC

Calibration Date: 08/17/98
Calibration Time: 2022

Level: LOW
Sample Type: WATER

Method File: /var/chem/n.i/n980817a.b/n8260w.m
Misc Info: N229W2//N229CW2

COMPOUND	STANDARD	AREA LIMIT		SAMPLE	%DIFF
		LOWER	UPPER		
20 Pentafluorobenzen	431800	215900	863600	431800	0.00
27 1,4-Difluorobenze	534304	267152	1068608	534304	0.00
44 Chlorobenzene-d5	519703	259852	1039406	519703	0.00
66 1,4-Dichlorobenze	291073	145536	582146	291073	0.00

COMPOUND	STANDARD	RT LIMIT		SAMPLE	%DIFF
		LOWER	UPPER		
20 Pentafluorobenzen	2.11	1.61	2.61	2.11	0.00
27 1,4-Difluorobenze	2.51	2.01	3.01	2.51	0.00
44 Chlorobenzene-d5	6.05	5.55	6.55	6.05	0.00
66 1,4-Dichlorobenze	9.59	9.09	10.09	9.59	0.00

AREA UPPER LIMIT = +100% of internal standard area.

AREA LOWER LIMIT = - 50% of internal standard area.

RT UPPER LIMIT = + 0.50 minutes of internal standard RT.

RT LOWER LIMIT = - 0.50 minutes of internal standard RT.

Data File: /var/chem/n.i/n980817a,b/n229cw2.d

Page 6

Date : 17-AUG-1998 20:22

Client ID:

Instrument: n.i

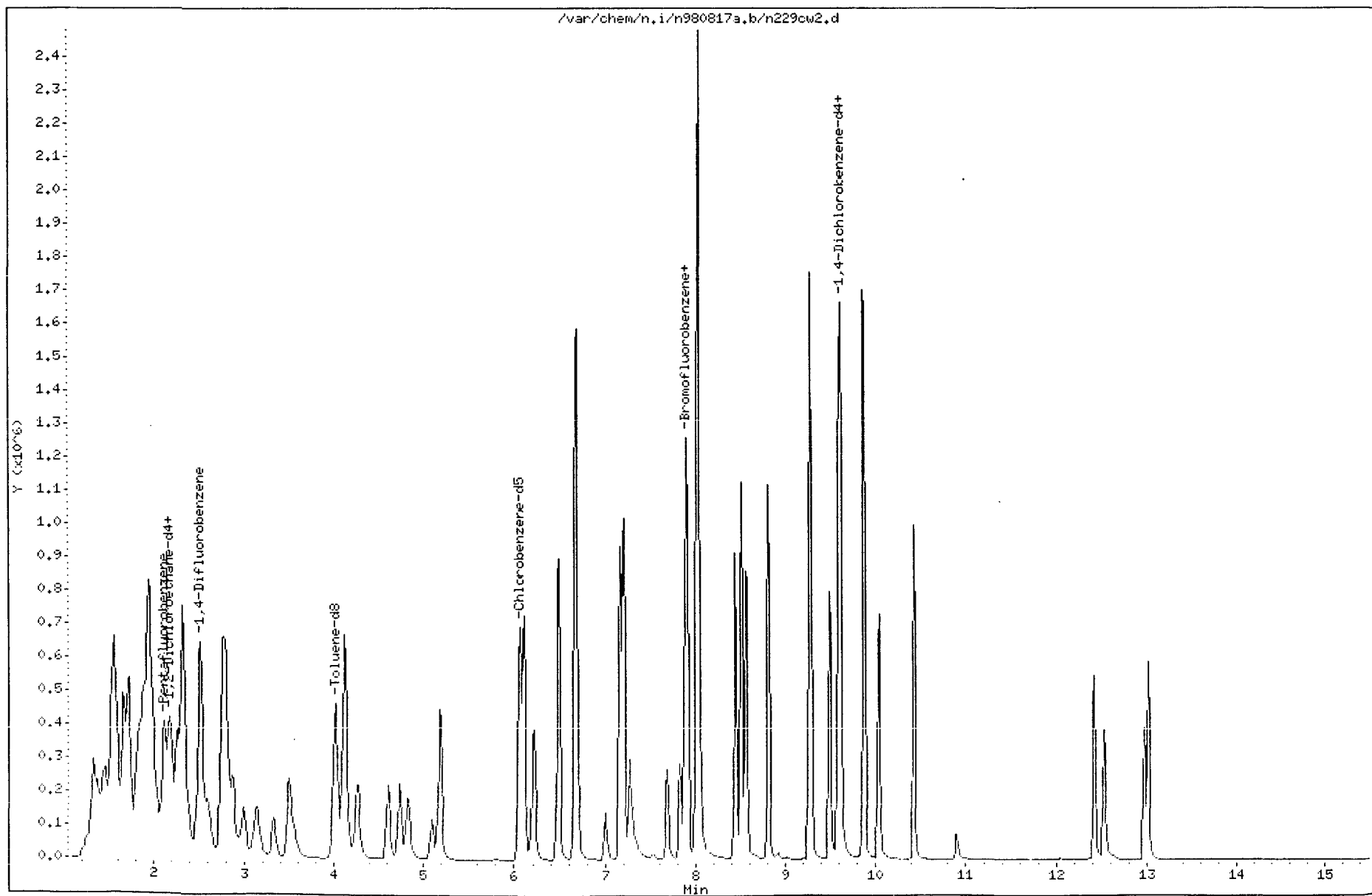
Sample Info: VSTD050-8260W/1X

Purge Volume: 5.0

Operator: JC

Column phase: 30m,hp5ms,0.25u df

Column diameter: 0.25



Data File: /var/chem/n.i/n980817a.b/n229s28.d
Report Date: 19-Aug-1998 10:37

Page 1

SPL Houston Labs

Volatiles by 8260

Data file : /var/chem/n.i/n980817a.b/n229s28.d
Lab Smp Id: 9808574-01A-8260W
Inj Date : 18-AUG-1998 01:00
Operator : JC
Smp Info : 9808574-01A-8260W/1X
Misc Info : N229W2/N229B02/N229CW2
Comment :
Method : /var/chem/n.i/n980817a.b/n8260w.m
Meth Date : 19-Aug-1998 08:29 jimmy
Cal Date : 07-JUL-1998 15:16
Als bottle: 35
Dil Factor: 1.00000
Integrator: HP RTE
Target Version: 3.40
Processing Host: chemsys1

Inst ID: n.i
Quant Type: ISTD
Cal File: n188iw2.d
Compound Sublist: 8260.sub

Concentration Formula: Amt * DF * Uf * 5/Vo

Name	Value	Description
DF	1.000	Dilution Factor
Uf	0.200	ng unit correction factor
Vo	5.000	Sample Volume purged (mL)

Compounds	QUANT SIG	MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS	
							ON-COLUMN (ng)	FINAL (ug/L)
* 20 Pentafluorobenzene	168	2.112	2.113	(1.000)	434654	250.000		
\$ 21 1,2-Dichloroethane-d4	102	2.169	2.158	(0.860)	36032	222.888	44	
* 27 1,4-Difluorobenzene	114	2.523	2.512	(1.000)	535399	250.000		
\$ 36 Toluene-d8	98	4.019	4.008	(1.593)	629916	249.754	50	
* 44 Chlorobenzene-d5	117	6.050	6.051	(1.000)	497244	250.000		
\$ 56 Bromofluorobenzene	95	7.888	7.877	(1.304)	271309	253.502	51	
* 66 1,4-Dichlorobenzene-d4	152	9.589	9.589	(1.000)	262979	250.000		

SPL Houston Labs

INTERNAL STANDARD COMPOUNDS
 AREA AND RT SUMMARY

Instrument ID: n.i
 Lab File ID: n229s28.d
 Lab Smp Id: 9808574-01A-8260W
 Analysis Type: VOA
 Quant Type: ISTD
 Operator: JC
 Method File: /var/chem/n.i/n980817a.b/n8260w.m
 Misc Info: N229W2/N229B02/N229CW2

Calibration Date: 08/17/98
 Calibration Time: 2022
 Level: LOW
 Sample Type: WATER

COMPOUND	STANDARD	AREA LIMIT		SAMPLE	%DIFF
		LOWER	UPPER		
20 Pentafluorobenzen	431800	215900	863600	434654	0.66
27 1,4-Difluorobenze	534304	267152	1068608	535399	0.20
44 Chlorobenzene-d5	519703	259852	1039406	497244	-4.32
66 1,4-Dichlorobenze	291073	145536	582146	262979	-9.65

COMPOUND	STANDARD	RT LIMIT		SAMPLE	%DIFF
		LOWER	UPPER		
20 Pentafluorobenzen	2.11	1.61	2.61	2.11	-0.02
27 1,4-Difluorobenze	2.51	2.01	3.01	2.52	0.44
44 Chlorobenzene-d5	6.05	5.55	6.55	6.05	-0.01
66 1,4-Dichlorobenze	9.59	9.09	10.09	9.59	0.00

AREA UPPER LIMIT = +100% of internal standard area.
 AREA LOWER LIMIT = - 50% of internal standard area.
 RT UPPER LIMIT = + 0.50 minutes of internal standard RT.
 RT LOWER LIMIT = - 0.50 minutes of internal standard RT.

Data File: /var/chem/n.i/n980817a.b/n229s28.d
Date: 18-AUG-1998 01:00

Client ID:

Sample Info: 9808574-01A-8260M/1X

Purge Volume: 5.0

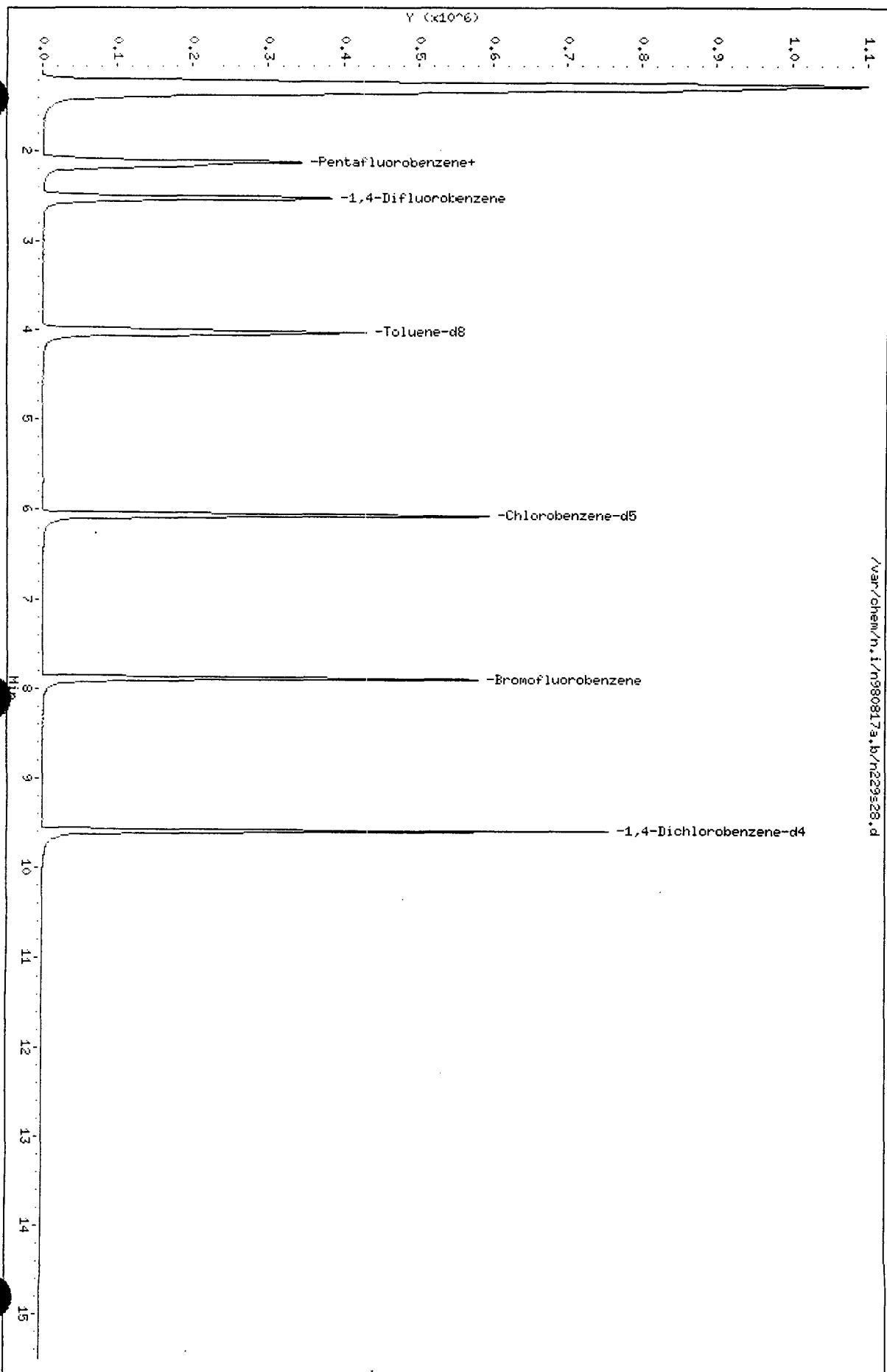
Column phase: 30m, hp5ms, 0.25u df

Instrument: n.i

Operator: JC

Column diameter: 0.25

Page 4



SPL Houston Labs

Volatiles by 8260

Data file : /var/chem/n.i/n980817a.b/n229s29.d
Lab Smp Id: 9808574-02A-8260W
Inj Date : 18-AUG-1998 01:26
Operator : JC
Smp Info : 9808574-02A-8260W/1X
Misc Info : N229W2/N229B02/N229CW2
Comment :
Method : /var/chem/n.i/n980817a.b/n8260w.m
Meth Date : 19-Aug-1998 08:29 jimmy
Cal Date : 07-JUL-1998 15:16
Als bottle: 36
Dil Factor: 1.00000
Integrator: HP RTE
Target Version: 3.40
Processing Host: chemsys1

Inst ID: n.i
Quant Type: ISTD
Cal File: n188iw2.d
Compound Sublist: 8260.sub

Concentration Formula: Amt * DF * Uf * 5/Vo

Name	Value	Description
DF	1.000	Dilution Factor
Uf	0.200	ng unit correction factor
Vo	5.000	Sample Volume purged (mL)

Compounds	QUANT SIG	MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS	
							ON-COLUMN	FINAL
							(ng)	(ug/L)
* 26 Pentafluorobenzene	=====	168	2.115	2.113	(1.000)	433138	250.000	
\$ 21 1,2-Dichloroethane-d4	=====	102	2.172	2.158	(0.864)	34831	215.028	43
* 27 1,4-Difluorobenzene	=====	114	2.515	2.512	(1.000)	536470	250.000	
\$ 36 Toluene-d8	=====	98	4.022	4.008	(1.599)	632153	250.141	50
* 44 Chlorobenzene-c5	=====	117	6.053	6.051	(1.000)	487083	250.000	
\$ 56 Bromofluorobenzene	=====	95	7.880	7.877	(1.302)	269510	257.075	51
* 66 1,4-Dichlorobenzene-d4	=====	152	9.592	9.589	(1.000)	261008	250.000	

SPL Houston Labs

INTERNAL STANDARD COMPOUNDS
AREA AND RT SUMMARY

Instrument ID: n.i
Lab File ID: n229s29.d
Lab Smp Id: 9808574-02A-8260W
Analysis Type: VOA
Quant Type: ISTD
Operator: JC

Calibration Date: 08/17/98
Calibration Time: 2022

Level: LOW
Sample Type: WATER

Method File: /var/chem/n.i/n980817a.b/n8260w.m
Misc Info: N229W2/N229B02/N229CW2

COMPOUND	STANDARD	AREA LIMIT		SAMPLE	%DIFF
		LOWER	UPPER		
20 Pentafluorobenzen	431800	215900	863600	433138	0.31
27 1,4-Difluorobenze	534304	267152	1068608	536470	0.41
44 Chlorobenzene-d5	519703	259852	1039406	487083	-6.28
66 1,4-Dichlorobenze	291073	145536	582146	261008	-10.33

COMPOUND	STANDARD	RT LIMIT		SAMPLE	%DIFF
		LOWER	UPPER		
20 Pentafluorobenzen	2.11	1.61	2.61	2.12	0.13
27 1,4-Difluorobenze	2.51	2.01	3.01	2.51	0.11
44 Chlorobenzene-d5	6.05	5.55	6.55	6.05	0.04
66 1,4-Dichlorobenze	9.59	9.09	10.09	9.59	0.03

AREA UPPER LIMIT = +100% of internal standard area.
AREA LOWER LIMIT = - 50% of internal standard area.
RT UPPER LIMIT = + 0.50 minutes of internal standard RT.
RT LOWER LIMIT = - 0.50 minutes of internal standard RT.

Data File: /var/chem/n.i/n980817a,b/n229s29.d
Date: 18-AUG-1998 01:26

Client ID:

Sample Info: 9808574-02a-8260M/1X

Purge Volume: 5.0

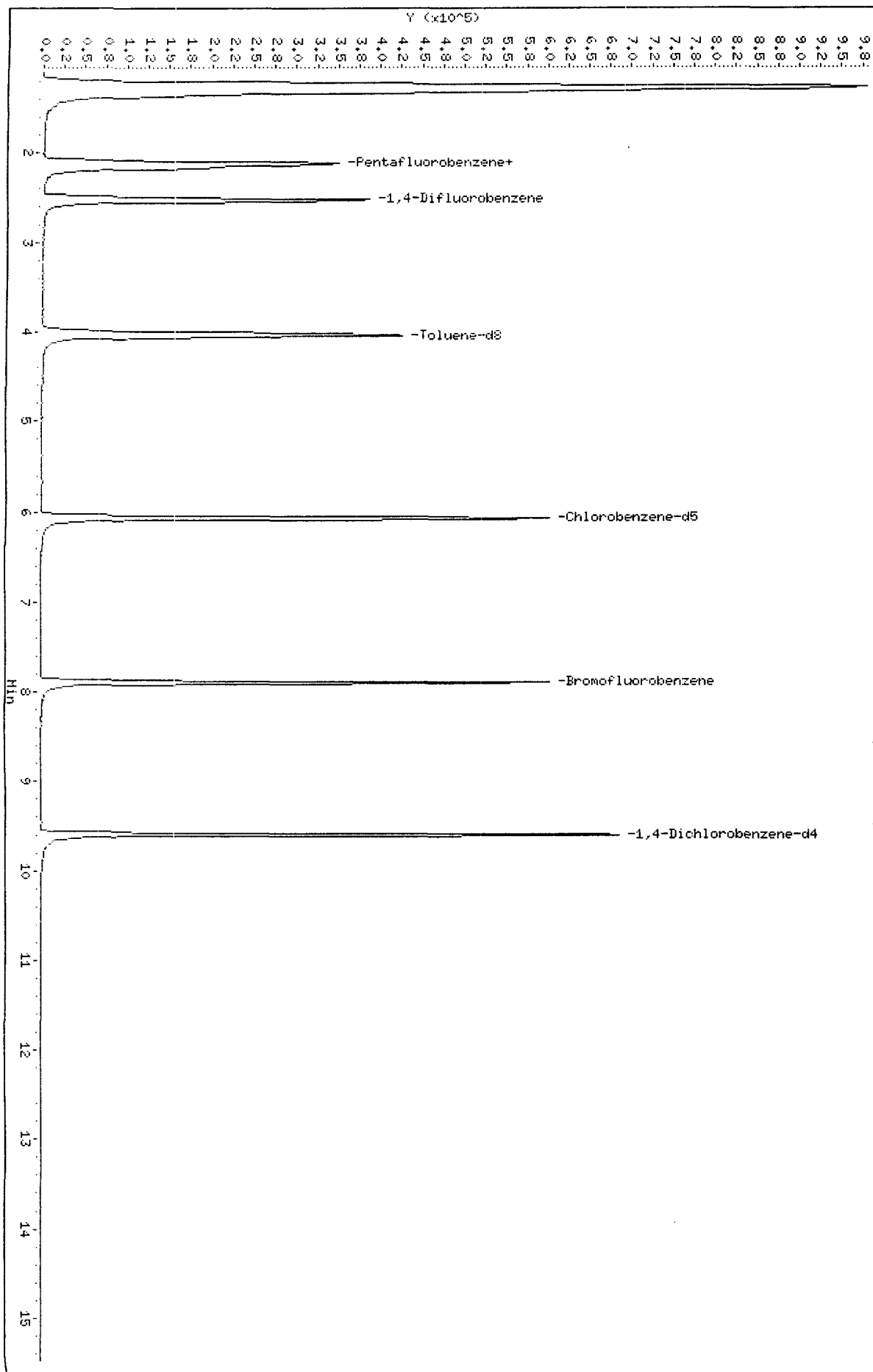
Column phase: 30m,hp5ms,0.25u df

Instrument: n.i

Operator: JC

Column diameter: 0.25

/var/chem/n.i/n980817a,b/n229s29.d



Data File: /var/chem/n.i/n980817a.b/n229s30.d
Report Date: 19-Aug-1998 10:38

Page 1

SPL Houston Labs

Volatiles by 8260

Data file : /var/chem/n.i/n980817a.b/n229s30.d
Lab Smp Id: 9808574-03A-8260W
Inj Date : 18-AUG-1998 01:51
Operator : JC
Smp Info : 9808574-03A-8260W/1X
Misc Info : N229W2/N229B02/N229CW2
Comment :
Method : /var/chem/n.i/n980817a.b/n8260w.m
Meth Date : 19-Aug-1998 08:29 jimmy
Cal Date : 07-JUL-1998 15:16
Als bottle: 37
Dil Factor: 1.00000
Integrator: HP RTE
Target Version: 3.40
Processing Host: chemsys1

Inst ID: n.i
Quant Type: ISTD
Cal File: n188iw2.d
Compound Sublist: 8260.sub

Concentration Formula: Amt * DF * Uf * 5/Vo

Name	Value	Description
DF	1.000	Dilution Factor
Uf	0.200	ng unit correction factor
Vo	5.000	Sample Volume purged (mL)

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS	
						ON-COLUMN (ng)	FINAL (ug/L)
* 20 Pentafluorobenzene	168	2.123	2.113	(1.000)	434445	250.000	
\$ 21 1,2-Dichloroethane-d4	102	2.169	2.158	(0.860)	36485	221.891	44
* 27 1,4-Difluorobenzene	114	2.523	2.512	(1.000)	544564	250.000	
\$ 30 Toluene-d8	98	4.018	4.008	(1.593)	631744	246.263	49
* 44 Chlorobenzene-d5	117	6.062	6.051	(1.000)	485183	250.000	
\$ 56 Bromofluorobenzene	95	7.888	7.877	(1.301)	271655	260.135	52
* 66 1,4-Dichlorobenzene-d4	152	9.589	9.589	(1.000)	260264	250.000	

SPL Houston Labs

INTERNAL STANDARD COMPOUNDS
AREA AND RT SUMMARY

Instrument ID: n.i
Lab File ID: n229s30.d
Lab Smp Id: 9808574-03A-8260W
Analysis Type: VOA
Quant Type: ISTD
Operator: JC

Calibration Date: 08/17/98
Calibration Time: 2022

Level: LOW
Sample Type: WATER

Method File: /var/chem/n.i/n980817a.b/n8260w.m
Misc Info: N229W2/N229B02/N229CW2

COMPOUND	STANDARD	AREA LIMIT		SAMPLE	%DIFF
		LOWER	UPPER		
20 Pentafluorobenzen	431800	215900	863600	434445	0.61
27 1,4-Difluorobenze	534304	267152	1068608	544564	1.92
44 Chlorobenzene-d5	519703	259852	1039406	485183	-6.64
66 1,4-Dichlorobenze	291073	145536	582146	260264	-10.58

COMPOUND	STANDARD	RT LIMIT		SAMPLE	%DIFF
		LOWER	UPPER		
20 Pentafluorobenzen	2.11	1.61	2.61	2.12	0.51
27 1,4-Difluorobenze	2.51	2.01	3.01	2.52	0.43
44 Chlorobenzene-d5	6.05	5.55	6.55	6.06	0.18
66 1,4-Dichlorobenze	9.59	9.09	10.09	9.59	-0.01

AREA UPPER LIMIT = +100% of internal standard area.
AREA LOWER LIMIT = - 50% of internal standard area.
RT UPPER LIMIT = + 0.50 minutes of internal standard RT.
RT LOWER LIMIT = - 0.50 minutes of internal standard RT.

Data File: /var/chem/n.i/n980817a,b/n229s30.d

Page 4

Date : 18-AUG-1998 01:51

Client ID:

Instrument: n.i

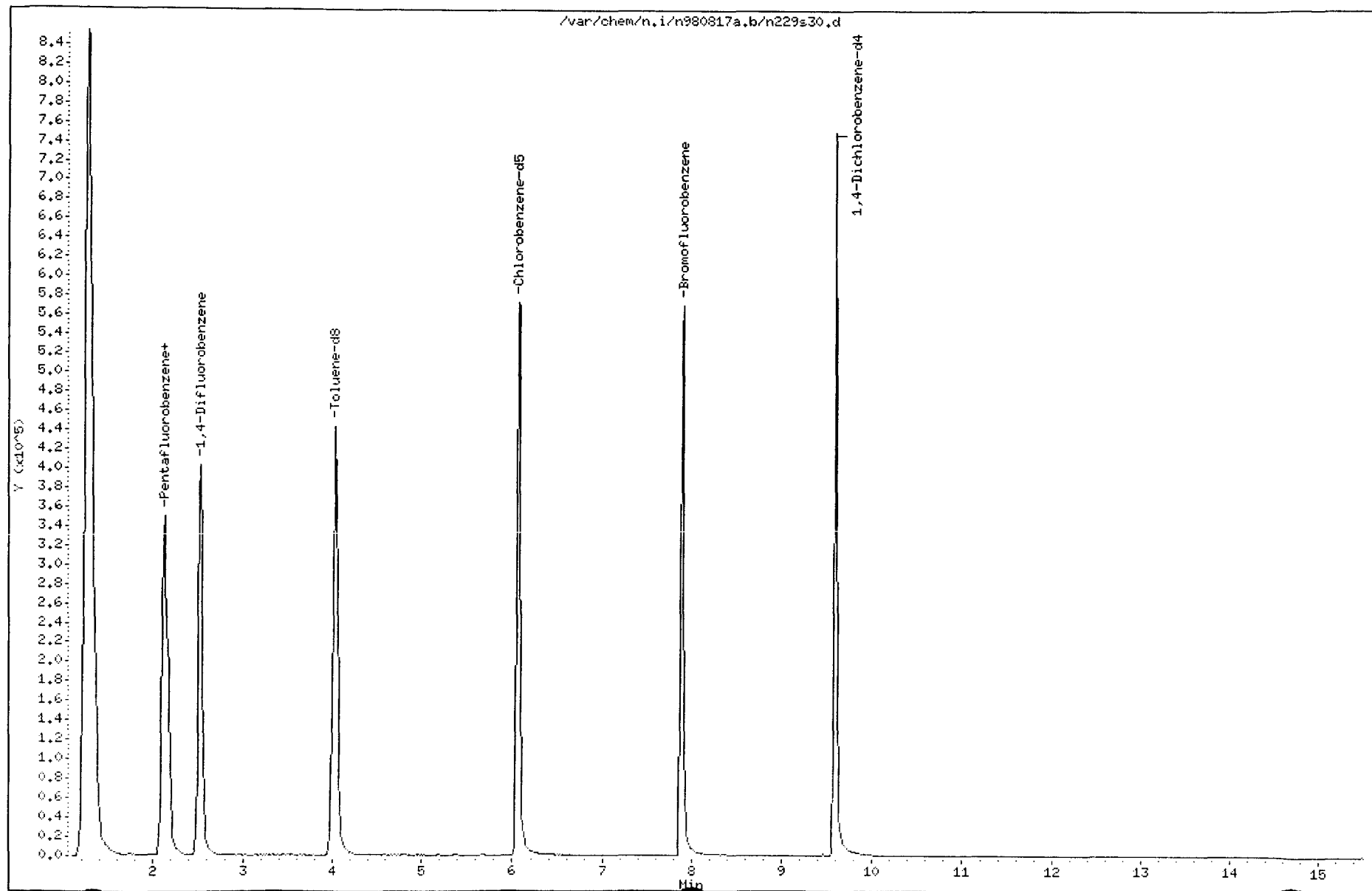
Sample Info: 9808574-03A-8260M/1X

Purge Volume: 5.0

Operator: JC

Column phase: 30m,hp5ms,0.25u df

Column diameter: 0.25



SPL Houston Labs

Volatiles by 8260

Data file : /var/chem/n.i/n980817a.b/n229tl2.d
Lab Smp Id: LCS
Inj Date : 17-AUG-1998 20:47
Operator : JC
Smp Info : METHSPIKE-8260W/1X
Misc Info : N229W2//N229CW2
Comment :
Method : /var/chem/n.i/n980817a.b/n8260w.m
Meth Date : 19-Aug-1998 08:29 jimmy
Cal Date : 07-JUL-1998 15:16
Als bottle: 27
Dil Factor: 1.00000
Integrator: HP RTE
Target Version: 3.40
Processing Host: chemsys1
Inst ID: n.i
Quant Type: ISTD
Cal File: n188iw2.d
QC Sample: LCS
Compound Sublist: 8260.sub

Concentration Formula: Amt * DF * Uf * 5/Vo

Name	Value	Description
DF	1.000	Dilution Factor
Uf	0.200	ng unit correction factor
Vo	5.000	Sample Volume purged (mL)

Compounds	QUANT SIG	MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS	
							ON-COLUMN (ng)	FINAL (ug/L)
8 1,1-Dichloroethene	96	1.532	1.553	(0.725)	135157	297.384	59	
* 20 Pentafluorobenzene	168	2.114	2.113	(1.000)	426008	250.000		
S 21 1,2-Dichloroethane-d4	102	2.159	2.158	(0.859)	37131	225.844	45	
25 Benzene	78	2.319	2.318	(0.923)	715559	268.838	54	
* 27 1,4-Difluorobenzene	114	2.513	2.512	(1.000)	544506	250.000		
29 Trichloroethene	130	2.764	2.763	(1.100)	173565	249.532	50	
S 36 Toluene-d8	98	4.009	4.008	(1.595)	647053	252.258	50	
37 Toluene	92	4.111	4.110	(1.636)	427217	248.942	50	
* 44 Chlorobenzene-35	117	6.052	6.051	(1.000)	523162	250.000		
45 Chlorobenzene	112	6.097	6.096	(1.008)	488053	236.454	47	
S 56 Bromofluorobenzene	95	7.878	7.877	(1.302)	293557	260.701	52	
* 66 1,4 Dichlorobenzene-d4	152	9.590	9.589	(1.000)	287653	250.000		

SPL Houston Labs

INTERNAL STANDARD COMPOUNDS
AREA AND RT SUMMARY

Instrument ID: n.i
Lab File ID: n229t12.d
Lab Smp Id: LCS
Analysis Type: VOA
Quant Type: ISTD
Operator: JC

Calibration Date: 08/17/98
Calibration Time: 2022

Level: LOW
Sample Type: WATER

Method File: /var/chem/n.i/n980817a.b/n8260w.m
Misc Info: N229W2//N229CW2

COMPOUND	STANDARD	AREA LIMIT		SAMPLE	%DIFF
		LOWER	UPPER		
20 Pentafluorobenzen	431800	215900	863600	426008	-1.34
27 1,4-Difluorobenze	534304	267152	1068608	544506	1.91
44 Chlorobenzene-d5	519703	259852	1039406	523162	0.67
66 1,4-Dichlorobenze	291073	145536	582146	287653	-1.17

COMPOUND	STANDARD	RT LIMIT		SAMPLE	%DIFF
		LOWER	UPPER		
20 Pentafluorobenzen	2.11	1.61	2.61	2.11	0.05
27 1,4-Difluorobenze	2.51	2.01	3.01	2.51	0.04
44 Chlorobenzene-d5	6.05	5.55	6.55	6.05	0.02
66 1,4-Dichlorobenze	9.59	9.09	10.09	9.59	0.01

AREA UPPER LIMIT = +100% of internal standard area.
AREA LOWER LIMIT = - 50% of internal standard area.
RT UPPER LIMIT = + 0.50 minutes of internal standard RT.
RT LOWER LIMIT = - 0.50 minutes of internal standard RT.

Data File: /var/chem/n.i/n980817a,b/n229t12.d

Page 4

Date : 17-AUG-1998 20:47

Client ID:

Instrument: n.i

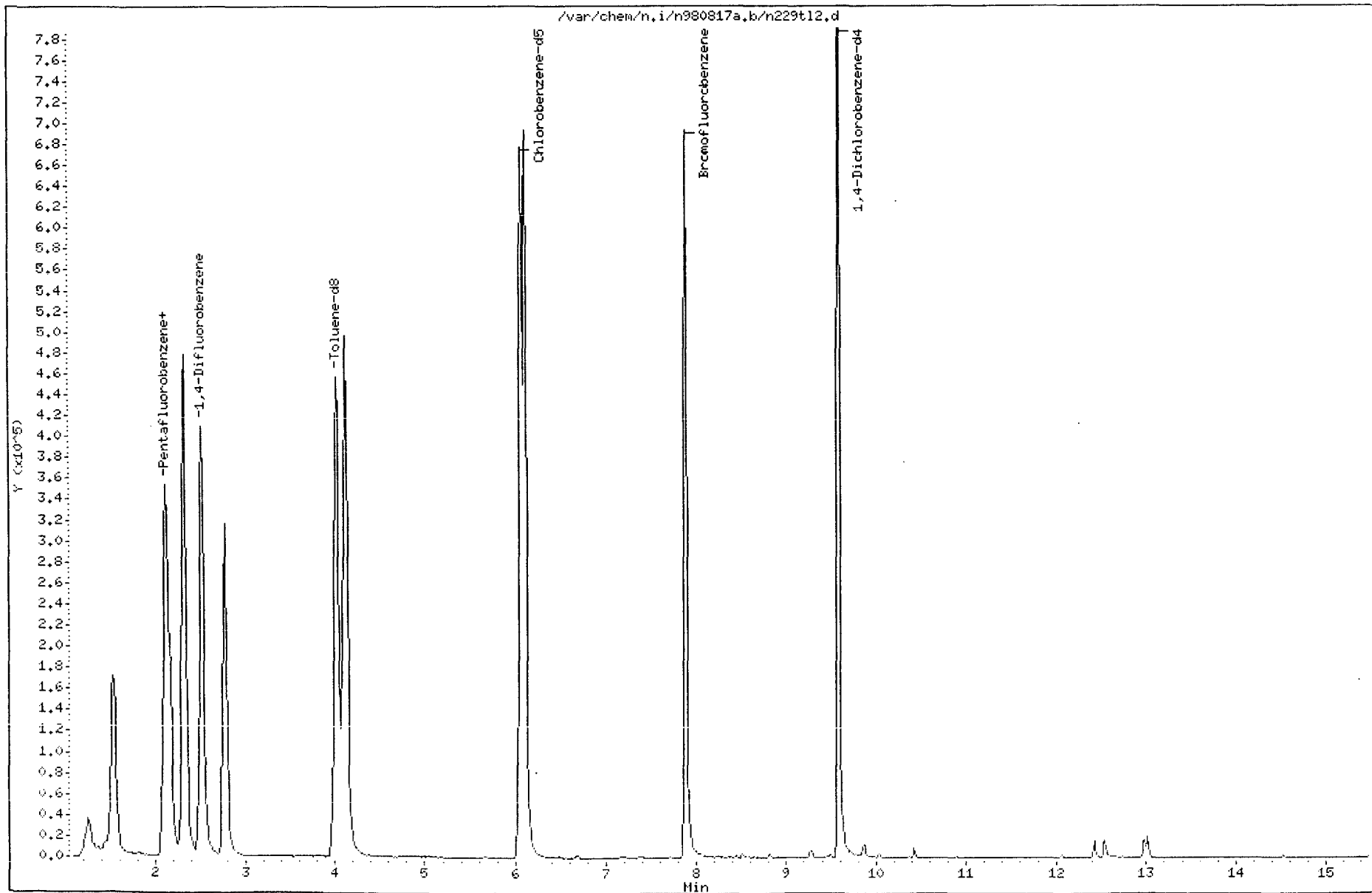
Sample Info: METHSPIKE-8260W/1X

Purge Volume: 5.0

Operator: JC

Column phase: 30m,hp5ms,0.25u df

Column diameter: 0.25



SPL Houston Labs

INTERNAL STANDARD COMPOUNDS
AREA AND RT SUMMARY

Instrument ID: n.i
b File ID: n229s22.d
Lab Smp Id: 9808644-01A-8260W
Analysis Type: VOA
Quant Type: ISTD
Operator: JC
Method File: /var/chem/n.i/n980817a.b/n8260w.m
Misc Info: N229W2/N229B02/N229CW2

Calibration Date: 08/17/98
Calibration Time: 2022

Level: LOW
Sample Type: WATER

COMPOUND	STANDARD	AREA LIMIT		SAMPLE	%DIFF
		LOWER	UPPER		
20 Pentafluorobenzen	431800	215900	863600	442091	2.38
27 1,4-Difluorobenze	534304	267152	1068608	547499	2.47
44 Chlorobenzene-d5	519703	259852	1039406	515978	-0.72
66 1,4-Dichlorobenze	291073	145536	582146	279313	-4.04

COMPOUND	STANDARD	RT LIMIT		SAMPLE	%DIFF
		LOWER	UPPER		
20 Pentafluorobenzen	2.11	1.61	2.61	2.11	0.01
27 1,4-Difluorobenze	2.51	2.01	3.01	2.51	0.01
44 Chlorobenzene-d5	6.05	5.55	6.55	6.05	0.00
66 1,4-Dichlorobenze	9.59	9.09	10.09	9.59	0.00

AREA UPPER LIMIT = +100% of internal standard area.
AREA LOWER LIMIT = - 50% of internal standard area.
RT UPPER LIMIT = + 0.50 minutes of internal standard RT.
RT LOWER LIMIT = - 0.50 minutes of internal standard RT.

Data File: /var/chem/n.i/n980817a.b/n229s22.d
Report Date: 19-Aug-1998 10:38

Page 1

SPL Houston Labs

Volatiles by 8260

Data file : /var/chem/n.i/n980817a.b/n229s22.d

Lab Smp Id: 9808644-01A-8260W

Inj Date : 17-AUG-1998 21:38

Operator : JC

Inst ID: n.i

Smp Info : 9808644-01A-8260W/1X

Misc Info : N229W2/N229B02/N229CW2

Comment :

Method : /var/chem/n.i/n980817a.b/n8260w.m

Meth Date : 19-Aug-1998 08:29 jimmy

Quant Type: ISTD

Cal Date : 07-JUL-1998 15:16

Cal File: n188iw2.d

Als bottle: 29

Dil Factor: 1.00000

Integrator: HP RTE

Compound Sublist: 8260.sub

Target Version: 3.40

Processing Host: chemsys1

Sample/MS/MSD

Concentration Formula: Amt * DF * Uf * 5/Vo

Name	Value	Description
DF	1.000	Dilution Factor
Uf	0.200	ng unit correction factor
Vo	5.000	Sample Volume purged (mL)

Compounds	QUANT SIG	MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS	
							ON-COLUMN	FINAL
							(ng)	(ug/L)
* 20 Pentatluorobenzene	168	2.113	2.113	(1.000)	442091	250.000		
\$ 21 1,2-Dichloroethane-d4	102	2.170	2.158	(0.864)	38698	234.089		47
* 27 1,1-Difluorobenzene	114	2.512	2.512	(1.000)	547499	250.000		
\$ 36 Toluene-d8	98	4.019	4.008	(1.600)	648954	251.616		50
* 44 Chlorobenzene-d5	117	6.051	6.051	(1.000)	515978	250.000		
\$ 56 Bromofluorobenzene	95	7.877	7.877	(1.302)	284372	256.061		51
* 66 1,4-Dichlorobenzene-d4	152	9.589	9.589	(1.000)	279313	250.000		

Data File: /var/chem/n.i/n980817a,b/n229s22.d

Page 4

Date : 17-AUG-1998 21:38

Client ID:

Instrument: n.i

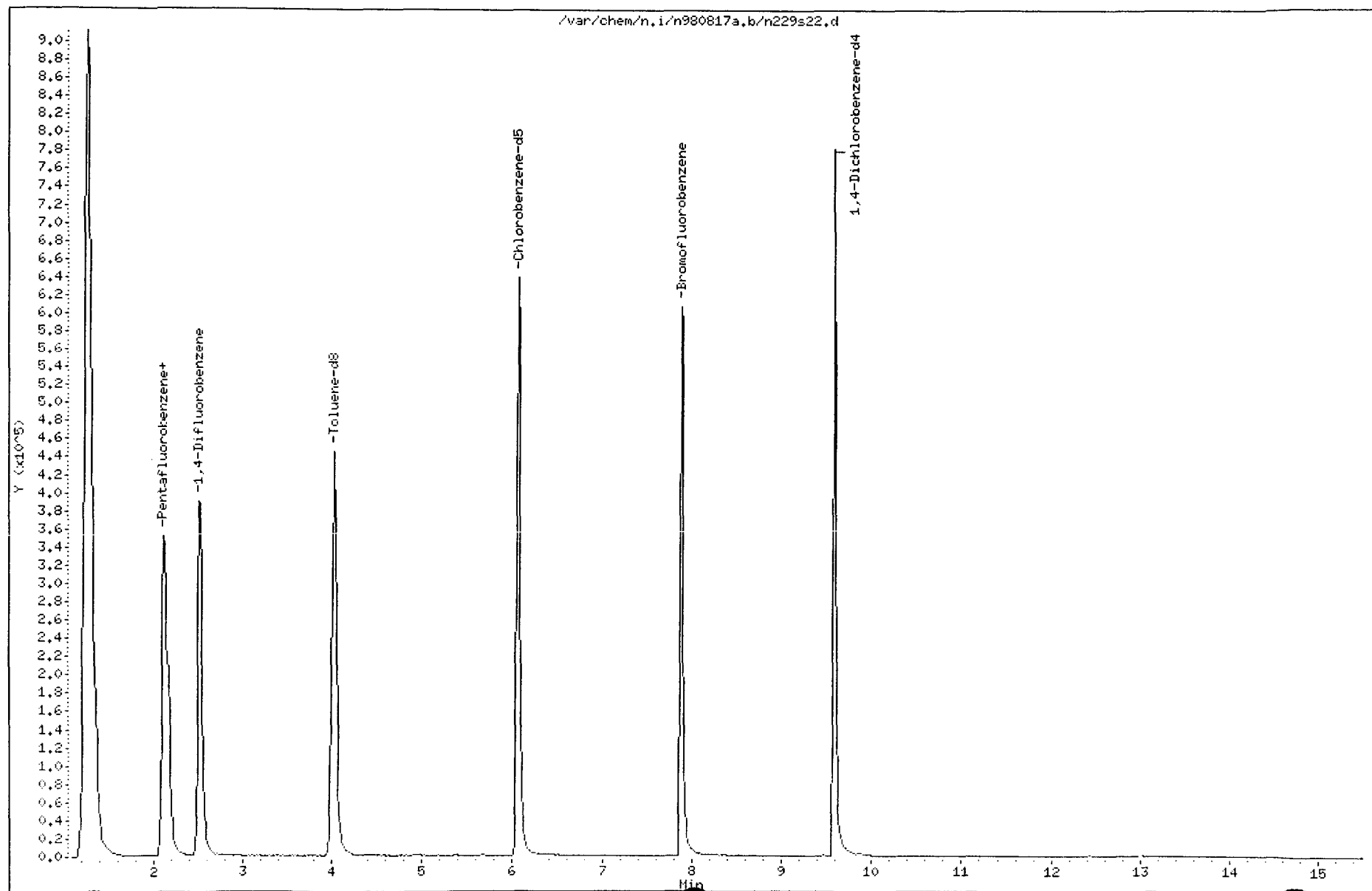
Sample Info: 9808644-01A-8260H/1X

Purge Volume: 5.0

Operator: JC

Column phase: 30m,hp5ms,0.25u df

Column diameter: 0.25



Data File: /var/chem/n.i/n980817a.b/n229k02.d
Report Date: 19-Aug-1998 10:38

Page 1

SPL Houston Labs

Volatiles by 8260

Data file : /var/chem/n.i/n980817a.b/n229k02.d
Lab Smp Id: 9808644-01A MS-8260
Inj Date : 17-AUG-1998 22:03
Operator : JC
Smp Info : 9808644-01A MS-8260W/1X
Misc Info : N229W2/N229S22/N229CW2
Comment :
Method : /var/chem/n.i/n980817a.b/n8260w.m
Meth Date : 19-Aug-1998 08:29 jimmy
Cal Date : 07-JUL-1998 15:16
Als bottle: 30
Dil Factor: 1.00000
Integrator: HP RTE
Target Version: 3.40
Processing Host: chemsys1

Inst ID: n.i
Quant Type: ISTD
Cal File: n188iw2.d
QC Sample: MS
Compound Sublist: 8260.sub

Concentration Formula: Amt * DF * Uf * 5/Vo

Name	Value	Description
DF	1.000	Dilution Factor
Uf	0.200	ng unit correction factor
Vo	5.000	Sample Volume purged (mL)

Compounds	QUANT SIG	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS	
						ON-COLUMN (ng)	FINAL (ug/L)
*****	****	==	=====	=====	=====	=====	
* 1,1-Dichloroethene	96	1.541	1.553	(0.730)	135661	293.809	59
* 20 Pentafluorobenzene	168	2.112	2.113	(1.000)	432800	250.000	
S 21 1,2-Dichloroethane-d4	102	2.157	2.158	(0.859)	37622	225.865	45
25 Benzene	78	2.317	2.318	(0.923)	709694	263.179	53
* 27 1,4-Difluorobenzene	114	2.511	2.512	(1.000)	551656	250.000	
29 Trichloroethene	130	2.762	2.763	(1.100)	171211	242.958	48
S 36 Toluene-d8	98	4.007	4.008	(1.595)	638828	245.823	49
37 Toluene	92	4.109	4.110	(1.636)	427666	245.973	49
* 44 Chlorobenzene-d5	117	6.050	6.051	(1.000)	524095	250.000	
45 Chlorobenzene	112	6.095	6.096	(1.008)	484240	234.189	47
S 56 Bromofluorobenzene	95	7.876	7.877	(1.302)	290996	257.967	52
* 66 1,4-Dichlorobenzene-d4	152	9.588	9.589	(1.000)	280209	250.000	

SPL Houston Labs

INTERNAL STANDARD COMPOUNDS
AREA AND RT SUMMARY

Instrument ID: n.i
Lab File ID: n229k02.d
Lab Smp Id: 9808644-01A MS-8260
Analysis Type: VOA
Quant Type: ISTD
Operator: JC
Method File: /var/chem/n.i/n980817a.b/n8260w.m
Misc Info: N229W2/N229S22/N229CW2

Calibration Date: 08/17/98
Calibration Time: 2022

Level: LOW
Sample Type: WATER

COMPOUND	STANDARD	AREA LIMIT		SAMPLE	%DIFF
		LOWER	UPPER		
20 Pentafluorobenzen	431800	215900	863600	432800	0.23
27 1,4-Difluorobenze	534304	267152	1068608	551656	3.25
44 Chlorobenzene-d5	519703	259852	1039406	524095	0.85
66 1,4-Dichlorobenze	291073	145536	582146	280209	-3.73

COMPOUND	STANDARD	RT LIMIT		SAMPLE	%DIFF
		LOWER	UPPER		
20 Pentafluorobenzen	2.11	1.61	2.61	2.11	-0.04
27 1,4-Difluorobenze	2.51	2.01	3.01	2.51	-0.04
44 Chlorobenzene-d5	6.05	5.55	6.55	6.05	-0.02
66 1,4-Dichlorobenze	9.59	9.09	10.09	9.59	-0.01

AREA UPPER LIMIT = +100% of internal standard area.
AREA LOWER LIMIT = - 50% of internal standard area.
RT UPPER LIMIT = + 0.50 minutes of internal standard RT.
RT LOWER LIMIT = - 0.50 minutes of internal standard RT.

Data File: /var/chem/n.i/n980817a,b/n229k02.d

Page 4

Date : 17-AUG-1998 22:03

Client ID:

Instrument: n.i

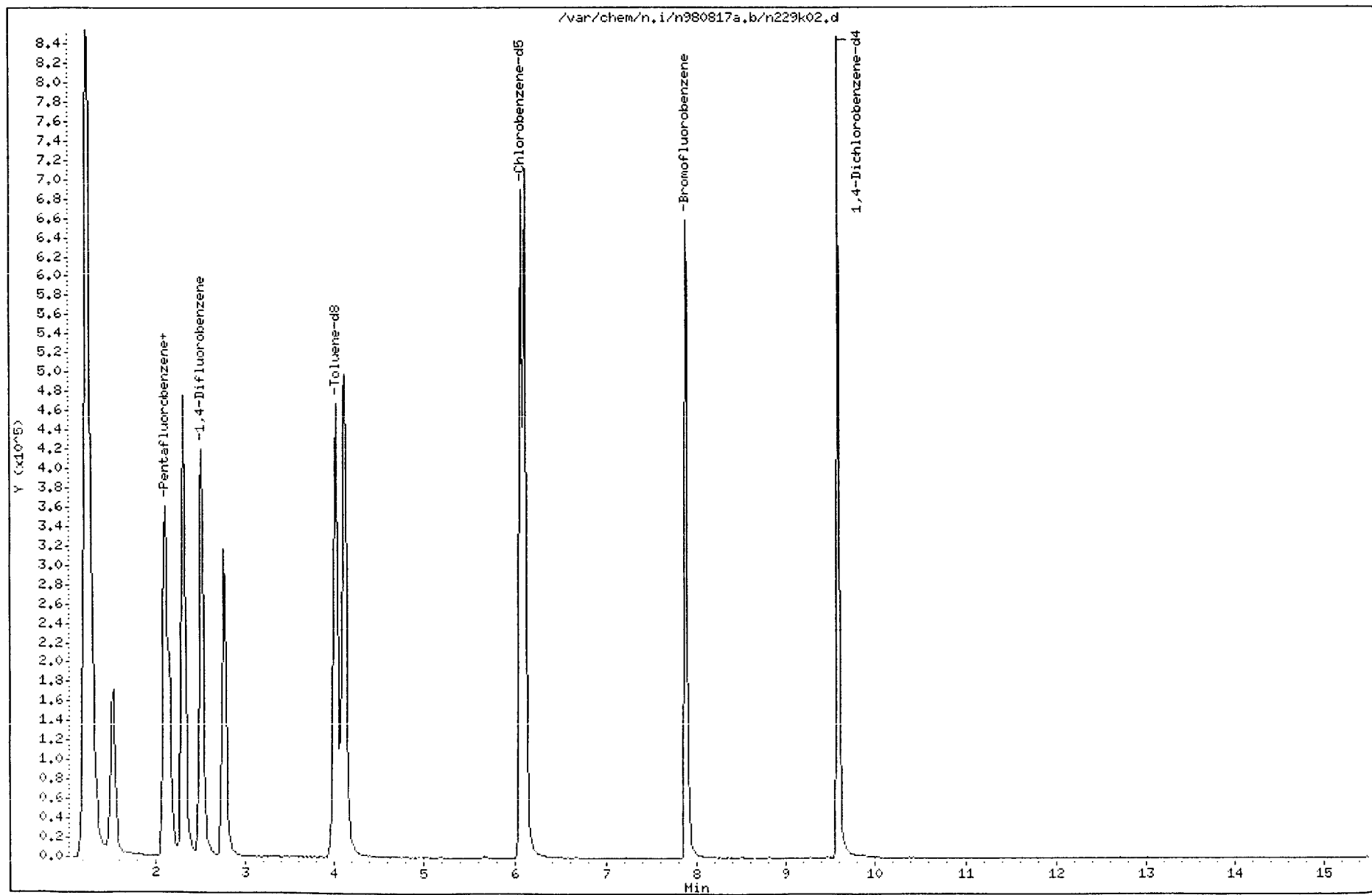
Sample Info: 9808644-01A MS-8260W/1X

Purge Volume: 5.0

Operator: JC

Column phase: 30m,hp5ms,0.25u df

Column diameter: 0.25



SPL Houston Labs

Volatiles by 8260

Data file : /var/chem/n.i/n980817a.b/n229kd2.d
Lab Smp Id: 9808644-01A MSD-826
Inj Date : 17-AUG-1998 22:29
Operator : JC
Smp Info : 9808644-01A MSD-8260W/1X
Misc Info : N229W2/N229K02/N229CW2
Comment :
Method : /var/chem/n.i/n980817a.b/n8260w.m
Meth Date : 19-Aug-1998 08:29 jimmy
Cal Date : 07-JUL-1998 15:16
Als bottle: 31
Dil Factor: 1.00000
Integrator: HP RTE
Target Version: 3.40
Processing Host: chemsys1

Inst ID: n.i
Quant Type: ISTD
Cal File: n188iw2.d
QC Sample: MSD
Compound Sublist: 8260.sub

Concentration Formula: Amt * DF * Uf * 5/Vo

Name	Value	Description
DF	1.000	Dilution Factor
Uf	0.200	ng unit correction factor
Vo	5.000	Sample Volume purged (mL)

Compounds	QUANT SIG	MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS	
							ON-COLUMN (ng)	FINAL (ug/L)
*****	=====	====	==	=====	=====	=====	=====	
* 1,1-Dichloroethene		96	1.531	1.553	(0.725)	137820	301.164 60	
* 20 Pentafluorobenzene		168	2.113	2.113	(1.000)	428949	250.000	
\$ 21 1,2-Dichloroethane-d4		102	2.159	2.158	(0.859)	38460	234.388 47	
25 Benzene		78	2.319	2.318	(0.923)	733588	276.155 55	
* 27 1,4-Difluorobenzene		114	2.513	2.512	(1.000)	543436	250.000	
29 Trichloroethene		130	2.764	2.763	(1.100)	176295	253.956 51	
\$ 36 Toluene-d8		98	4.008	4.008	(1.595)	642914	251.138 50	
37 Toluene		92	4.111	4.110	(1.636)	443221	258.776 52	
* 44 Chlorobenzene-d5		117	6.051	6.051	(1.000)	523429	250.000	
45 Chlorobenzene		112	6.097	6.096	(1.008)	496642	240.492 48	
\$ 56 Bromofluorobenzene		95	7.878	7.877	(1.302)	287984	255.622 51	
* 66 1,4-Dichlorobenzene-d4		152	9.590	9.589	(1.000)	283075	250.000	

SPL Houston Labs

INTERNAL STANDARD COMPOUNDS
AREA AND RT SUMMARY

Instrument ID: n.i
Lab File ID: n229kd2.d
Lab Smp Id: 9808644-01A MSD-826
Analysis Type: VOA
Quant Type: ISTD
Operator: JC
Method File: /var/chem/n.i/n980817a.b/n8260w.m
Misc Info: N229W2/N229K02/N229CW2

Calibration Date: 08/17/98
Calibration Time: 2022
Level: LOW
Sample Type: WATER

COMPOUND	STANDARD	AREA LIMIT		SAMPLE	%DIFF
		LOWER	UPPER		
20 Pentafluorobenzen	431800	215900	863600	428949	-0.66
27 1,4-Difluorobenze	534304	267152	1068608	543436	1.71
44 Chlorobenzene-d5	519703	259852	1039406	523429	0.72
66 1,4-Dichlorobenze	291073	145536	582146	283075	-2.75

COMPOUND	STANDARD	RT LIMIT		SAMPLE	%DIFF
		LOWER	UPPER		
20 Pentafluorobenzen	2.11	1.61	2.61	2.11	0.03
27 1,4-Difluorobenze	2.51	2.01	3.01	2.51	0.03
44 Chlorobenzene-d5	6.05	5.55	6.55	6.05	0.01
66 1,4-Dichlorobenze	9.59	9.09	10.09	9.59	0.01

AREA UPPER LIMIT = +100% of internal standard area.
AREA LOWER LIMIT = - 50% of internal standard area.
RT UPPER LIMIT = + 0.50 minutes of internal standard RT.
RT LOWER LIMIT = - 0.50 minutes of internal standard RT.

Data File: /var/chem/n.i/n980817a,b/n229kd2.d

Page 4

Date : 17-AUG-1998 22:29

Client ID:

Instrument: n.i

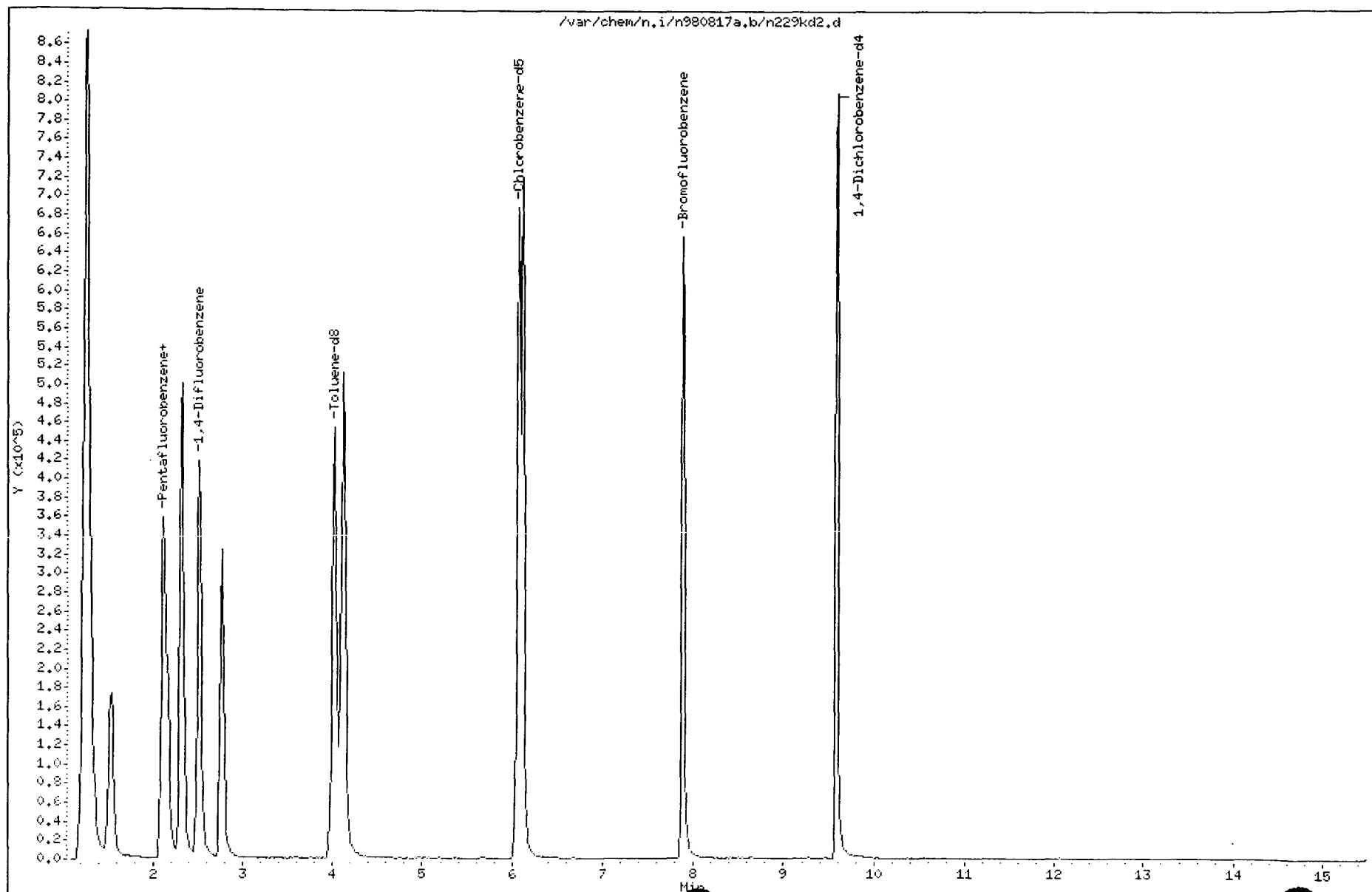
Sample Info: 9808644-01A MSD-8260W/1X

Purge Volume: 5.0

Operator: JC

Column phase: 30m,hp5ms,0.25u df

Column diameter: 0.25



WATER SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: SPL

Contract:

Lab Code: Case No: 9808623

SAS No: SDG No:

Matrix Spike - EPA

Sample No: MW-1

Level (low/med):

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATIO (ug/L)	MS CONCENTRATION (ug/L)	MS % REC #	QC LIMITS REC
Phenol	75	0	18	24	12-110
2-Chlorophenol	75	0	51	68	27-123
1,4-Dichlorobenzene	50	0	36	72	36- 97
N-Nitroso-di-n-propylamine	50	0	41	82	41-116
1,2,4-Trichlorobenzene	50	0	39	78	39-110
4-Chloro-3-methylphenol	75	0	56	75	23-110
Acenaphthene	50	0	40	80	46-125
4-Nitrophenol	75	0	22	29	25-150
2,4-Dinitrotoluene	50	0	40	80	50-150
Pentachlorophenol	75	0	71	95	9-125
Pyrene	50	0	34	68	26-127

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATIO (ug/L)	MSD % REC #	% RPD #	QC LIMITS	
					RPD	REC
Phenol	75	16	21	13	42	12-110
2-Chlorophenol	75	43	57	18	40	27-132
1,4-Dichlorobenzene	50	29	58	22	28	36- 97
N-Nitroso-di-n-propylamine	50	36	72	13	38	41-116
1,2,4-Trichlorobenzene	50	34	68	14	28	39-110
4-Chloro-3-methylphenol	75	54	72	4	42	23-110
Acenaphthene	50	35	70	13	31	46-125
4-Nitrophenol	75	20	27	7	50	25-150
2,4-Dinitrotoluene	50	37	74	8	50	50-150
Pentachlorophenol	75	67	89	7	50	9-125
Pyrene	50	34	68	0	31	26-127

Column to be used to flag recovery and RPD values with an asterisk

RPD: 0 out of 11 outside limits
Spike Recovery: 0 out of 22 outside limits

SPL Houston Labs

RECOVERY REPORT

Client Name: Client SDG: j980819
 Sample Matrix: LIQUID Fraction: SV
 Lab Smp Id: METHSPIKE-827CW
 Level: LOW Operator: RY
 Data Type: MS DATA SampleType: MS
 SpikeList File: 8270w.spk Quant Type: ISTD
 Sublist File: 8270.sub
 Method File: /var/chem/j.i/j980819.b/j8270w.m
 Misc Info: E229F3/J229B03/J231CC2

SPIKE COMPOUND	CONC ADDED ug/L	CONC RECOVERED ug/L	% RECOVERED	LIMITS
5 Phenol	75	21	28.00	12-110
9 2-Chlorophenol	75	54	72.00	27-123
12 1,4-Dichlorobenzer.	50	38	76.00	36-97
21 N-Nitroso-di-n-pro	50	41	82.00	41-116
31 1,2,4-Trichlorober.	50	39	78.00	39-110
36 4-Chloro-3-methylp	75	56	74.67	23-110
49 Acenaphthene	50	37	74.00	46-125
51 4-Nitrophenol	75	19	25.33	25-150
53 2,4-Dinitrotoluene	50	36	72.00	50-150
64 Pentachlorophenol	75	58	77.33	9-125
71 Pyrene	50	28	56.00	26-127

SURROGATE COMPOUND	CONC ADDED ug/L	CONC RECOVERED ug/L	% RECOVERED	LIMITS
\$ 23 Nitrobenzene-d5	50	40	80.00	35-114
\$ 41 2-Fluorobiphenyl	50	40	80.00	43-116
\$ 72 Terphenyl-d14	50	31	62.00	33-141
\$ 4 Phenol-d5	75	21	28.00	10-110
\$ 3 2-Fluorophenol	75	31	41.33	21-110
\$ 61 2,4,6-Tribromophen	75	69	92.00	10-123



SPL Blank QC Report

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 830-9901

Matrix: Aqueous
Sample ID: BLANK
Batch: E980817042258

Reported on: 08/26/98 16:24
Analyzed on: 08/19/98 13:09
Analyst: RY

METHOD 8270 J229B03

C o m p o u n d	Result	Detection Limit	Units
Pyridine	ND	5	ug/L
Phenol	ND	5	ug/L
Aniline	ND	5	ug/L
bis(2-Chloroethyl) ether	ND	5	ug/L
2-Chlorophenol	ND	5	ug/L
1,3-Dichlorobenzene	ND	5	ug/L
1,4-Dichlorobenzene	ND	5	ug/L
Benzyl alcohol	ND	5	ug/L
1,2-Dichlorobenzene	ND	5	ug/L
2-Methylphenol	ND	5	ug/L
bis(2-chloroisopropyl) ethe	ND	5	ug/L
4-Methylphenol	ND	5	ug/L
N-Nitroso-di-n-propylamine	ND	5	ug/L
Hexachloroethane	ND	5	ug/L
Nitrobenzene	ND	5	ug/L
Isophorone	ND	5	ug/L
2-Nitrophenol	ND	5	ug/L
2,4-Dimethylphenol	ND	5	ug/L
Benzoic acid	ND	25	ug/L
bis(2-Chloroethoxy) methane	ND	5	ug/L
2,4-Dichlorophenol	ND	5	ug/L
1,2,4-Trichlorobenzene	ND	5	ug/L
Naphthalene	ND	5	ug/L
4-Chloroaniline	ND	5	ug/L
Hexachlorobutadiene	ND	5	ug/L
4-Chloro-3-methylphenol	ND	5	ug/L
2-Methylnaphthalene	ND	5	ug/L
Hexachlorocyclopentadiene	ND	5	ug/L
2,4,6-Trichlorophenol	ND	5	ug/L
2,4,5-Trichlorophenol	ND	10	ug/L
2-Chloronaphthalene	ND	5	ug/L
2-Nitroaniline	ND	25	ug/L
Dimethylphthalate	ND	5	ug/L
2,6-Dinitrotoluene	ND	5	ug/L

Notes

ND - Not detected.



SPL Blank QC Report

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 582-9901

2

Matrix: Aqueous
Sample ID: BLANK
Batch: E980817042258

Reported on: 08/26/98 16:24
Analyzed on: 08/19/98 13:09
Analyst: RY

METHOD 8270 J229B03

Compound	Result	Detection Limit	Units
Acenaphthylene	ND	5	ug/L
3-Nitroaniline	ND	25	ug/L
Acenaphthene	ND	5	ug/L
2,4-Dinitrophenol	ND	25	ug/L
4-Nitrophenol	ND	25	ug/L
Dibenzofuran	ND	5	ug/L
2,4-Dinitrotoluene	ND	5	ug/L
Diethylphthalate	ND	5	ug/L
4-Chlorophenyl-phenylether	ND	5	ug/L
Fluorene	ND	5	ug/L
4-Nitroaniline	ND	25	ug/L
4,6-Dinitro-2-methylphenol	ND	25	ug/L
n-Nitrosodiphenylamine	ND	5	ug/L
1,2-Diphenylhydrazine	ND	5	ug/L
4-Bromophenyl-phenylether	ND	5	ug/L
Hexachlorobenzene	ND	5	ug/L
Pentachlorophenol	ND	25	ug/L
Phenanthrene	ND	5	ug/L
Anthracene	ND	5	ug/L
Carbazole	ND	5	ug/L
Di-n-butylphthalate	ND	5	ug/L
Fluoranthene	ND	5	ug/L
Pyrene	ND	5	ug/L
Butylbenzylphthalate	ND	5	ug/L
3,3'-Dichlorobenzidine	ND	10	ug/L
Benzo[a]anthracene	ND	5	ug/L
Chrysene	ND	5	ug/L
bis(2-Ethylhexyl)phthalate	ND	5	ug/L
Di-n-octylphthalate	ND	5	ug/L
Benzo[b]fluoranthene	ND	5	ug/L
Benzo[k]fluoranthene	ND	5	ug/L
Benzo[a]pyrene	ND	5	ug/L
Indeno[1,2,3-cd]pyrene	ND	5	ug/L
Dibenz[a,h]anthracene	ND	5	ug/L

Notes

ND - Not detected.



SPL Blank QC Report

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 500-6991

Matrix: Aqueous
Sample ID: BLANK
Batch: E980817042258

Reported on: 08/26/98 16:24
Analyzed on: 08/19/98 13:09
Analyst: RY

METHOD 8270 J229B03

C o m p o u n d	Result	Detection Limit	Units
Benzo[g,h,i]perylene	ND	5	ug/L

S u r r o g a t e	Result	QC Criteria	Units
Nitrobenzene-d5	72	35-114	% Recovery
2-Fluorobiphenyl	72	43-116	% Recovery
Terphenyl-d14	60	33-141	% Recovery
Phenol-d5	12	10-110	% Recovery
2-Fluorophenol	31	21-110	% Recovery
2,4,6-Tribromophenol	71	10-123	% Recovery

Samples in Batch 9808574-01 9808574-02 9808574-03

Notes

ND - Not detected.

ICP Spectroscopy Method 6010 Quality Control Report

Analyst: EG



Matrix: Water

Units: mg/L

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE 713-560-0901

Date:082798 Time:1013 File Name: T082798B

Laboratory Control Sample

Element	Mth. Blank	True Value	Result	% Recovery	Lower Limit	Upper Limit
Silver	ND	2.00	2.01	100	1.60	2.40
Aluminum						
Arsenic	ND	4.00	4.12	103	3.20	4.80
Barium	ND	2.00	1.98	99	1.60	2.40
Beryllium						
Calcium						
Cadmium	ND	2.00	2.05	103	1.60	2.40
Cobalt						
Chromium	ND	2.00	2.09	105	1.60	2.40
Copper						
Iron	ND	2.00	1.96	98	1.60	2.40
Potassium						
Magnesium						
Manganese						
Sodium						
Nickel						
Lead	ND	2.00	2.05	102	1.60	2.40
Antimony						
Selenium	ND	4.00	4.02	100	3.20	4.80
Thallium						
Vanadium						
Zinc						

Work Orders in Batch

Work Order Fractions

98-08-574 01E-03E

98-08-557 01B

98-08-584 17A

98-08-605 01C

98-08-618 05A

98-08-620 02C

98-08-623 01D-03D

98-08-635 01E-03E

98-08-644 01E-03E

98-08-652 01E, 02E
03F

Matrix Spike - Spike Duplicate Results

Work Order Spiked: 9808574-02E

Element	Sample Result	Spike Added	Matrix Spike		Matrix Spike Duplicate		QC Limits		Spike RPD %	QC Limits %
			Result	Recovery	Result	Recovery	% Recovery			
Silver	ND	1.0	0.9657	96.6	0.9781	97.8	80	120	1.3	20.0
Aluminum										
Arsenic	0.0068	2.0	2.015	100.4	2.027	101.0	80	120	0.6	20.0
Barium	0.0111	1.0	0.8862	87.5	0.8958	88.5	80	120	1.1	20.0
Beryllium										
Calcium										
Cadmium	ND	1.0	0.9314	93.1	0.9374	93.7	80	120	0.6	20.0
Cobalt										
Chromium	ND	1.0	0.9452	94.5	0.9541	95.4	80	120	0.9	20.0
Copper										
Iron	ND	1.0	0.8896	89.0	0.8766	87.7	80	120	1.5	20.0
Potassium										
Magnesium										
Manganese										
Sodium										
Nickel										
Lead	ND	1.0	0.9371	93.7	0.9383	93.8	80	120	0.1	20.0
Antimony										
Selenium	ND	2.0	1.958	97.9	1.946	97.3	80	120	0.6	20.0
Thallium										
Vanadium										
Zinc										

Checked: AL 8/23/98

ICP Spectroscopy Method 6010 Quality Control Report

Analyst: JM



Matrix: Water

Units: mg/L

Date:082798 Time:0859 File Name: 082798M9

HOUSTON LABORATORY
 5880 INTERCHANGE DR E
 HOUSTON, TEXAS 77054
 PHONE 713-660-1901

Laboratory Control Sample

Element	Mth. Blank	True Value	Result	% Recovery	Lower Limit	Upper Limit
Silver	ND	2.00	2.03	101	1.60	2.40
Aluminum						
Arsenic						
Barium						
Beryllium	ND	2.00	1.97	99	1.60	2.40
Calcium						
Cadmium	ND	2.00	2.02	101	1.60	2.40
Cobalt						
Chromium	ND	2.00	2.04	102	1.60	2.40
Copper	ND	2.00	2.00	100	1.60	2.40
Iron	ND	2.00	2.00	100	1.60	2.40
Potassium	ND	20.00	19.83	99	16.00	24.00
Magnesium	ND	20.00	20.17	101	16.00	24.00
Manganese	ND	2.00	1.98	99	1.60	2.40
Sodium	ND	20.00	20.03	100	16.00	24.00
Nickel	ND	2.00	2.04	102	1.60	2.40
Lead						
Antimony						
Selenium						
Thallium						
Vanadium						
Zinc						

Work Orders in Batch

Work Order Fractions

98-08-574 01E-03E

98-08-584 17A

98-08-635 01E-03E

98-08-644 01E-03E

89-08-652 01E-03E

Matrix Spike - Spike Duplicate Results

Work Order Spiked: 98089574-02E

Element	Sample Result	Spike Added	Matrix Spike Result	Matrix Spike Recovery	Matrix Spike Duplicate Result	Matrix Spike Duplicate Recovery	QC Limits % Recovery	Spike RPD %	QC Limits %
Silver	ND	1.0	0.9392	93.9	0.9302	93.0	80 120	1.0	20.0
Aluminum									
Arsenic									
Barium									
Beryllium	ND	1.0	0.8702	87.0	0.8654	86.5	80 120	0.6	20.0
Calcium									
Cadmium	ND	1.0	0.9077	90.8	0.9078	90.8	80 120	0.0	20.0
Cobalt									
Chromium	ND	1.0	0.8787	87.9	0.871	87.1	80 120	0.9	20.0
Copper	0.0105	1.0	0.9303	92.0	0.9261	91.6	80 120	0.5	20.0
Iron	0.0545	1.0	0.9227	86.8	0.9218	86.7	80 120	0.1	20.0
Potassium	3.609	10.0	13.37	97.6	13.93	103.2	80 120	5.6	20.0
Magnesium	161.1	10.0	169.3	82.0	171	99.0	80 120	18.8	20.0
Manganese	ND	1.0	0.8637	86.4	0.8629	86.3	80 120	0.1	20.0
Sodium	252.1	10.0	265	129.0	266.4	143.0	80 120	10.3	20.0
Nickel	ND	1.0	0.8739	87.4	0.8647	86.5	80 120	1.1	20.0
Lead									
Antimony									
Selenium									
Thallium									
Vanadium									
Zinc									

* Spike Results Outside Method Limits

Checked: 08/23/98

ICP Spectroscopy Method 6010 Quality Control Report

Analyst: JM



Matrix: Water

Units: mg/L

Date:082898 Time:1736 File Name: 082898M8

HOUSTON LABORATORY

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 660-0901

Laboratory Control Sample

Element	Mth. Blank	True Value	Result	% Recovery	Lower Limit	Upper Limit
Silver						
Aluminum						
Arsenic						
Barium	ND	2.00	1.81	91	1.60	2.40
Beryllium						
Calcium	ND	20.00	19.37	97	16.00	24.00
Cadmium						
Cobalt						
Chromium						
Copper						
Iron						
Potassium						
Magnesium						
Manganese						
Sodium						
Nickel						
Lead						
Antimony						
Selenium						
Thallium						
Vanadium						
Zinc	ND	2.00	1.92	96	1.60	2.40

Work Orders in Batch

Work Order Fractions

98-08-635 01E-03E

98-08-574 1E-03E

98-08-644 01E-03E

98-08-652 01E-03E

98-08-635 01E-03E

98-08-574 01E-03E

98-08-644 01E-03E

98-08-652 01E-03E

Matrix Spike - Spike Duplicate Results

Work Order Spiked: 9808635-01E

Element	Sample Result	Spike Added	Matrix Spike Result	Matrix Spike Recovery	Matrix Spike Duplicate Result	Matrix Spike Duplicate Recovery	QC Limits % Recovery	Spike RPD %	QC Limits %
Silver									
Aluminum									
Arsenic									
Barium	0.0109	1.0	0.9177	90.7	0.9024	89.2	80 120	1.7	20.0
Beryllium									
Calcium	583.6	10.0	569.9	0.0 *	564.7	0.0 *	80 120	0.0	20.0
Cadmium									
Cobalt									
Chromium									
Copper									
Iron									
Potassium									
Magnesium									
Manganese									
Sodium									
Nickel									
Lead									
Antimony									
Selenium									
Thallium									
Vanadium									
Zinc	ND	1.0	0.9654	96.5	0.9658	96.6	80 120	0.0	20.0

Elements Post Spiked:Ca

* Spike Results Outside Method Limits

Checked: 8/31/98 ACP



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 08/24/98

Analyzed on: 08/24/98

Analyst: AG

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Mercury, Total
Method 7470 A***

SPL Sample ID Number	Blank Value ug/L	LCS Concentration ug/L	Measured Concentration ug/L	% Recovery	QC Limits Recovery
LCS	ND	2.00	1.95	97.5	80 - 120

-9808A50

Samples in batch:

9808508-01E 9808508-02E 9808508-03E 9808574-01E
9808574-02E 9808574-03E 9808584-17A

COMMENTS:

LCS = SPL ID# 94-452-45-21



**** SPL QUALITY CONTROL REPORT ****

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Matrix: Aqueous

Reported on: 08/24/98
Analyzed on: 08/24/98
Analyst: AG

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Mercury, Total
Method 7470 A***

SPL Sample ID Number	Method Blank ug/L	Sample Result ug/L	Spike Added ug/L	Matrix Spike		Matrix Spike Duplicate		RPD (%)	QC LIMITS (Advisory)		
				Result ug/L	Recovery %	Result ug/L	Recovery %		RPD Max	% REC	
9808508-01E	ND	ND	2.00	2.10	105	2.07	104	1.0	20	75	-125

-9808A50

Samples in batch:

9808508-01E 9808508-02E 9808508-03E 9808574-01E
9808574-02E 9808574-03E 9808584-17A

COMMENTS:

LCS = SPL ID# 94-452-45-21



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 08/18/98

Analyzed on: 08/18/98

Analyst: TK

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Alkalinity, as CaCO₃
Method 310.1 *

SPL Sample ID Number	Blank Value mg/L	LCS Concentration mg/L	Measured Concentration mg/L	% Recovery	QC Limits Recovery
LCS	ND	235	239.6	102	95 - 113

-9808783

Samples in batch:

9808533-02F	9808533-04F	9808533-08F	9808574-01B
9808574-02B	9808574-03B	9808638-01H	9808656-01D

COMMENTS:

LCS#94453209-13

©
**

SPL QUALITY CONTROL REPORT **

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Matrix: Aqueous

Reported on: 08/18/98

Analyzed on: 08/18/98

Analyst: TK

This sample was randomly selected for use in the SPL quality control program. The results are as follows:

Alkalinity, as CaCO₃
Method 310.1 *

-- DUPLICATE ANALYSIS --

SPL Sample ID	Original Sample Concentration mg/L	Duplicate Sample mg/L	RPD	RPD Max.
9808533-02F	66.2	66.4	0.3	18

-9808782

Samples in batch:

9808533-02F	9808533-04F	9808533-08F	9808574-01B
9808574-02B	9808574-03B	9808638-01H	9808656-01D

COMMENTS:



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 08/28/98

Analyzed on: 08/27/98

Analyst: AB

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Chloride
Method 325.3 *

SPL Sample ID Number	Blank Value mg/L	LCS Concentration mg/L	Measured Concentration mg/L	% Recovery	QC Limits Recovery
LCS	ND	186	184	98.9	94 - 106

-9808C93

Samples in batch:

9808548-01D	9808548-02D	9808548-03D	9808550-01D
9808550-02D	9808550-03D	9808550-04D	9808553-01D
9808553-02D	9808553-03D	9808553-04D	9808574-01B
9808574-02B	9808574-03B	9808635-01B	9808635-02B
9808635-03B	9808644-01B	9808644-02B	9808644-03B

COMMENTS:

SPL=LCS#94453209-12



**** SPL QUALITY CONTROL REPORT ****

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Matrix: Aqueous

Reported on: 08/28/98

Analyzed on: 08/27/98

Analyst: AB

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Chloride
Method 325.3 *

SPL Sample	Method	Sample	Spike	Matrix Spike		Matrix Spike Duplicate		RPD	QC LIMITS (Advisory)	
ID Number	Blank mg/L	Result mg/L	Added mg/L	Result mg/L	Recovery %	Result mg/L	Recovery %	(%)	RPD Max	% REC
9808574-03B	ND	48	50	94	92.0	96	96.0	4.3	5	92 - 109

-9808C91

Samples in batch:

9808553-02D	9808553-03D	9808553-04D	9808574-01B
9808574-02B	9808574-03B	9808635-01B	9808635-02B

COMMENTS:



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 08/27/98

Analyzed on: 08/27/98

Analyst: TW

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Sulfate
Method 375.4 *

SPL Sample ID Number	Blank Value mg/L	LCS Concentration mg/L	Measured Concentration mg/L	% Recovery	QC Limits Recovery
LCS	ND	10.04	9.80	97.6	82 - 111

-9808C20

Samples in batch:

9807D00-03A	9808550-01D	9808550-02D	9808550-03D
9808550-04D	9808553-01D	9808553-02D	9808553-03D
9808553-04D	9808555-01D	9808555-02D	9808555-03D
9808557-01D	9808574-01B	9808574-02B	9808574-03B
9808652-02B			

COMMENTS:

LCS#94453209-12



**** SPL QUALITY CONTROL REPORT ****

HOUSTON LABORATORY

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 660-0901

Matrix: Aqueous

Reported on: 08/27/98

Analyzed on: 08/27/98

Analyst: TW

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Sulfate
Method 375.4 *

SPL Sample	Method	Sample	Spike	Matrix Spike		Matrix Spike Duplicate		RPD	QC LIMITS (Advisory)		
ID Number	Blank mg/L	Result mg/L	Added mg/L	Result mg/L	Recovery %	Result mg/L	Recovery %	(%)	RPD Max	% REC	
9808555-01D	ND	10.01	10.00	20.31	103	20.42	104	1.0	9.5	84	-120

-9808C16

Samples in batch:

9808553-04D 9808555-01D 9808555-02D 9808555-03D
9808557-01D 9808574-01B 9808574-02B 9808574-03B

COMMENTS:



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 08/20/98

Analyzed on: 08/19/98

Analyst: DS

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Total Dissolved Solids
Method 160.1 *

SPL Sample ID Number	Blank Value mg/L	LCS Concentration mg/L	Measured Concentration mg/L	% Recovery	QC Limits Recovery
LCS	ND	455.9	456	100	93 - 107

-9808910

Samples in batch:

9808555-01D	9808555-02D	9808555-03D	9808574-01B
9808574-02B	9808574-03B	9808623-01E	9808623-02E
9808623-03E	9808644-01B	9808644-02B	9808644-03B
9808652-01B	9808652-02B	9808652-03B	9808656-01D
9808745-02B	9808745-03B		

COMMENTS:

LCS=SPL ID#95535216-23



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 08/20/98

Analyzed on: 08/19/98

Analyst: DS

This sample was randomly selected for use in the SPL quality control program. The results are as follows:

Total Dissolved Solids
Method 160.1 *

-- DUPLICATE ANALYSIS --

SPL Sample ID	Original Sample Concentration mg/L	Duplicate Sample mg/L	RPD	RPD Max.
9808623-01E	1263	1270	0.6	5

-9808914

Samples in batch:

9808555-01D	9808555-02D	9808555-03D	9808574-01B
9808574-02B	9808574-03B	9808623-01E	9808623-02E
9808623-03E			

COMMENTS:



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 08/18/98

Analyzed on: 08/18/98

Analyst: AAB

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Nitrate-Nitrite, as N
Method 353.3 *

SPL Sample ID Number	Blank Value mg/L	LCS Concentration mg/L	Measured Concentration mg/L	% Recovery	QC Limits Recovery
LCS	ND	2.77	2.74	98.9	92 - 111

-9808799

Samples in batch:

9808056-03G	9808220-01E	9808508-01C	9808508-02C
9808508-03C	9808518-04D	9808574-01C	9808574-02C
9808574-03C	9808635-01C	9808635-02C	9808635-03C
9808644-01C	9808644-02C	9808644-03C	9808652-01C
9808652-02C	9808652-03C		

COMMENTS:

LCS = SPL ID#:95535196-25

**HOUSTON LABORATORY**8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901**** SPL QUALITY CONTROL REPORT ****

Matrix: Aqueous

Reported on: 08/18/98

Analyzed on: 08/18/98

Analyst: AAB

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Nitrate-Nitrite, as N
Method 353.3 *

SPL Sample	Method	Sample	Spike	Matrix Spike		Matrix Spike Duplicate		RPD	QC LIMITS (Advisory)		
ID Number	Blank mg/L	Result mg/L	Added mg/L	Result mg/L	Recovery %	Result mg/L	Recovery %	(%)	RPD Max	% REC	
9808574-02C	ND	0.80	5.00	5.56	95.2	5.53	94.6	0.6	12	87	-120

-9808798

Samples in batch:

9808574-01C	9808574-02C	9808574-03C	9808644-01C
9808644-02C	9808644-03C	9808652-01C	9808652-02C
9808652-03C			

COMMENTS:

CHAIN OF CUSTODY
AND
SAMPLE RECEIPT CHECKLIST

500 Ambassador Caffery Parkway, Scott, LA 70583 (318) 237-4775
1501 E. Orangethorpe Avenue, Fullerton, CA 92631 (714) 447-6868

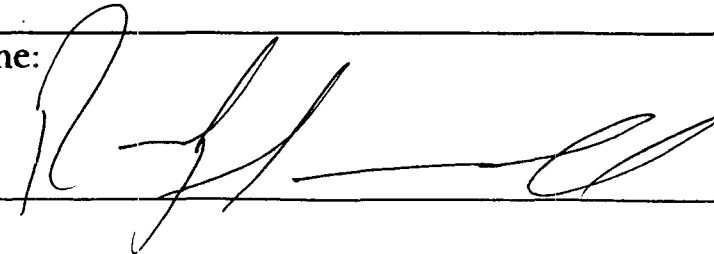
SPL Houston Environmental Laboratory

Sample Login Checklist

Date: 8-14-98	Time: 1000
---------------	------------

SPL Sample ID: 9808574

		Yes	No
1	Chain-of-Custody (COC) form is present.	✓	
2	COC is properly completed.	—	
3	If no, Non-Conformance Worksheet has been completed.		
4	Custody seals are present on the shipping container.	—	
5	If yes, custody seals are intact.	—	
6	All samples are tagged or labeled.	—	
7	If no, Non-Conformance Worksheet has been completed.		
8	Sample containers arrived intact	—	
9	Temperature of samples upon arrival:	4 C	
10	Method of sample delivery to SPL:	SPL Delivery	
		Client Delivery	
		FedEx Delivery (airbill #)	806949036154
		Other:	
11	Method of sample disposal:	SPL Disposal	—
		HOLD	
		Return to Client	

Name: 	Date: 8-14-98
---	---------------



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

August 31, 1998

Mr. George Robinson
CYPRESS ENGINEERING, INC.
10235 W. Little York
Houston, TX 77040

The following report contains analytical results for the sample(s) received at Southern Petroleum Laboratories (SPL) on August 15, 1998. The sample(s) was assigned to Certificate of Analysis No.(s) 9808652 and analyzed for all parameters as listed on the chain of custody.

Any data flag or quality control exception associated with this report will be footnoted in the analytical results page(s) or the quality control summary page(s).

If you have any questions or comments pertaining to this data report, please do not hesitate to contact me. Please reference the above Certificate of Analysis No. during any inquiries.

Again, SPL is pleased to be of service to you. We anticipate working with you in fulfilling all your current and future analytical needs.

Southern Petroleum Laboratories


Electa Brown
Project Manager



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Southern Petroleum Laboratories, Inc.

Certificate of Analysis Number: 98-08-652

Approved for Release by:

Electa Brown

Electa Brown, Project Manager

9-1-98

Date

Greg Grandits
Laboratory Director

Cynthia Schreiner
Quality Assurance Officer

The attached analytical data package may not be reproduced except in full without the express written approval of this laboratory.
The results relate only to the samples tested.
Results reported on a Wet Weight Basis unless otherwise noted.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9808652-01

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 10/27/98

PROJECT: TWP Roswell STA 9
SITE:
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-9

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 08/14/98 13:40:00
DATE RECEIVED: 08/15/98

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
Alkalinity, as CaCO ₃ Method 310.1 * Analyzed by: TK Date: 08/19/98 14:15:00	105	1	mg/L	
Chloride Method 325.3 * Analyzed by: AB Date: 08/27/98 10:00:00	479	10	mg/L	
Sulfate Method 375.4 * Analyzed by: TW Date: 08/27/98 13:00:00	2000	250	mg/L	
Total Dissolved Solids Method 160.1 * Analyzed by: DS Date: 08/19/98 17:00:00	4200	100	mg/L	
Nitrate-Nitrite, as N Method 353.3 * Analyzed by: AAB Date: 08/18/98 10:00:00	1.1	0.1	mg/L	
Liquid-liquid extraction SEMIVOLATILES Method 3520C *** Analyzed by: KL Date: 08/18/98 10:00:00	08/18/98			

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9808652-01

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 10/27/98

PROJECT: TWP Roswell STA 9
SITE:
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-9

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 08/14/98 13:40:00
DATE RECEIVED: 08/15/98

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
Silver, Total Method 6010B *** Analyzed by: JM Date: 08/27/98 08:59:00	ND	0.01	mg/L	
Arsenic, Total Method 6010B *** Analyzed by: EG Date: 08/27/98 10:13:00	0.007	0.005	mg/L	
Barium, Total Method 6010B *** Analyzed by: JM Date: 08/28/98 17:36:00	0.015	0.005	mg/L	
Calcium, Total Method 6010B *** Analyzed by: JM Date: 08/28/98 17:36:00	554	0.2	mg/L	
Cadmium, Total Method 6010B *** Analyzed by: JM Date: 08/27/98 08:59:00	ND	0.005	mg/L	
Chromium, Total Method 6010B *** Analyzed by: JM Date: 08/27/98 08:59:00	ND	0.01	mg/L	

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9808652-01

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 10/27/98

PROJECT: TWP Roswell STA 9
SITE:
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-9

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 08/14/98 13:40:00
DATE RECEIVED: 08/15/98

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
Copper, Total Method 6010B *** Analyzed by: JM Date: 08/27/98 08:59:00	ND	0.01	mg/L	
Iron, Total Method 6010B *** Analyzed by: JM Date: 08/27/98 08:59:00	0.91	0.02	mg/L	
Mercury, Total Method 7470 A*** Analyzed by: AG Date: 08/26/98 15:13:00	ND	0.0002	mg/L	
Potassium, Total Method 6010B *** Analyzed by: JM Date: 08/27/98 08:59:00	6	2	mg/L	
Magnesium, Total Method 6010B *** Analyzed by: JM Date: 08/27/98 08:59:00	174	0.1	mg/L	
Manganese, Total Method 6010B *** Analyzed by: JM Date: 08/27/98 08:59:00	0.046	0.005	mg/L	

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9808652-01

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 10/27/98

PROJECT: TWP Roswell STA 9
SITE:
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-9

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 08/14/98 13:40:00
DATE RECEIVED: 08/15/98

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
Sodium, Total Method 6010B *** Analyzed by: JM Date: 08/27/98 08:59:00	240	0.5	mg/L	
Acid Digestion-Aqueous, ICP Method 3010A *** Analyzed by: MR Date: 08/18/98 08:45:00	08/18/98			
Lead, Total Method 6010B *** Analyzed by: EG Date: 08/27/98 10:13:00	ND	0.005	mg/L	
Selenium, Total Method 6010B *** Analyzed by: EG Date: 08/27/98 10:13:00	ND	0.005	mg/L	
Zinc, Total Method 6010B *** Analyzed by: JM Date: 08/28/98 17:36:00	0.03	0.02	mg/L	

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9808652-01

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

10/27/98

PROJECT: TWP Roswell STA 9
SITE:
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-9

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 08/14/98 13:40:00
DATE RECEIVED: 08/15/98

ANALYTICAL DATA

PARAMETER	RESULTS	PQL*	UNITS
Benzene	ND	5	ug/L
Bromobenzene	ND	5	ug/L
Bromochloromethane	ND	5	ug/L
Bromodichloromethane	ND	5	ug/L
Bromoform	ND	5	ug/L
Bromomethane	ND	10	ug/L
n-Butylbenzene	ND	5	ug/L
sec-Butylbenzene	ND	5	ug/L
tert-Butylbenzene	ND	5	ug/L
Carbon tetrachloride	ND	5	ug/L
Chlorobenzene	ND	5	ug/L
Chlorodibromomethane	ND	5	ug/L
Chloroethane	ND	10	ug/L
Chloroform	ND	5	ug/L
Chloromethane	ND	10	ug/L
2-Chlorotoluene	ND	5	ug/L
4-Chlorotoluene	ND	5	ug/L
1,2-Dibromo-3-chloropropane	ND	5	ug/L
1,2-Dibromoethane	ND	5	ug/L
Dibromomethane	ND	5	ug/L
1,2-Dichlorobenzene	ND	5	ug/L
1,3-Dichlorobenzene	ND	5	ug/L
1,4-Dichlorobenzene	ND	5	ug/L
Dichlorodifluoromethane	ND	10	ug/L
1,1-Dichloroethane	ND	5	ug/L
1,2-Dichloroethane	ND	5	ug/L
1,1-Dichloroethene	ND	5	ug/L
cis-1,2-Dichloroethene	ND	5	ug/L
trans-1,2-Dichloroethene	ND	5	ug/L
1,2-Dichloropropane	ND	5	ug/L
1,3-Dichloropropane	ND	5	ug/L
2,2-Dichloropropane	ND	5	ug/L
1,1-Dichloropropene	ND	5	ug/L
Ethylbenzene	ND	5	ug/L
Hexachlorobutadiene	ND	5	ug/L
Isopropylbenzene	ND	5	ug/L
p-Isopropyltoluene	ND	5	ug/L
Methylene chloride	ND	5	ug/L

METHOD: 8260 Water, Volatile Organics
(continued on next page)



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9808652-01

Cypress Engineering, Inc.

SAMPLE ID: MW-9

ANALYTICAL DATA (continued)			
PARAMETER	RESULTS	PQL*	UNITS
Naphthalene	ND	5	ug/L
n-Propylbenzene	ND	5	ug/L
Styrene	ND	5	ug/L
1,1,1,2-Tetrachloroethane	ND	5	ug/L
1,1,2,2-Tetrachloroethane	ND	5	ug/L
Tetrachloroethene	ND	5	ug/L
Toluene	ND	5	ug/L
1,2,3-Trichlorobenzene	ND	5	ug/L
1,2,4-Trichlorobenzene	ND	5	ug/L
1,1,1-Trichloroethane	ND	5	ug/L
1,1,2-Trichloroethane	ND	5	ug/L
Trichloroethene	ND	5	ug/L
Trichlorofluoromethane	ND	5	ug/L
1,2,3-Trichloropropane	ND	5	ug/L
1,2,4-Trimethylbenzene	ND	5	ug/L
1,3,5-Trimethylbenzene	ND	5	ug/L
Vinyl chloride	ND	10	ug/L
Xylenes (total)	ND	5	ug/L
Acetone	ND	100	ug/L
Carbon Disulfide	ND	5	ug/L
Vinyl Acetate	ND	10	ug/L
2-Butanone	ND	20	ug/L
1,2-Dichloroethene (total)	ND	5	ug/L
2-Chloroethylvinylether	ND	10	ug/L
4-Methyl-2-Pentanone	ND	10	ug/L
cis-1,3-Dichloropropene	ND	5	ug/L
trans-1,3-Dichloropropene	ND	5	ug/L
2-Hexanone	ND	10	ug/L
Methyl t-Butyl Ether	ND	10	ug/L

SURROGATES	AMOUNT SPIKED	% RECOVERY	LOWER LIMIT	UPPER LIMIT
1,2-Dichloroethane-d4	50 ug/L	90	76	114
Toluene-d8	50 ug/L	100	88	110
4-Bromofluorobenzene	50 ug/L	104	86	115

ANALYZED BY: JC

DATE/TIME: 08/17/98 23:44:00

METHOD: 8260 Water, Volatile Organics

NOTES: * - Practical Quantitation Limit

ND - Not Detected

NA - Not Analyzed

COMMENTS:

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9808652-01

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

10/27/98

PROJECT: TWP Roswell STA 9
SITE:
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-9

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 08/14/98 13:40:00
DATE RECEIVED: 08/15/98

ANALYTICAL DATA				
PARAMETER	RESULTS	PQL*	UNITS	
Acenaphthene	ND	5	ug/L	
Acenaphthylene	ND	5	ug/L	
Anthracene	ND	5	ug/L	
Benzo(a)Anthracene	ND	5	ug/L	
Benzo(b)Fluoranthene	ND	5	ug/L	
Benzo(k)Fluoranthene	ND	5	ug/L	
Benzo(a)Pyrene	ND	5	ug/L	
Benzo(g,h,i)Perylene	ND	5	ug/L	
Chrysene	ND	5	ug/L	
Dibenz(a,h)Anthracene	ND	5	ug/L	
Fluoranthene	ND	5	ug/L	
Fluorene	ND	5	ug/L	
Indeno(1,2,3-cd)Pyrene	ND	5	ug/L	
2-Methylnaphthalene	ND	5	ug/L	
Naphthalene	ND	5	ug/L	
Phenanthrene	ND	5	ug/L	
Pyrene	ND	5	ug/L	
1-Methylnaphthalene	ND	5	ug/L	
SURROGATES	AMOUNT SPIKED	% RECOVERY	LOWER LIMIT	UPPER LIMIT
Nitrobenzene-d5	50 ug/L	100	35	114
2-Fluorobiphenyl	50 ug/L	96	43	116
Terphenyl-d14	50 ug/L	72	33	141
Phenol-d5	75 ug/L	32	10	110
2-Fluorophenol	75 ug/L	43	21	110
2,4,6-Tribromophenol	75 ug/L	97	10	123

ANALYZED BY: RY DATE/TIME: 08/20/98 19:15:00
EXTRACTED BY: KL DATE/TIME: 08/18/98 10:00:00
METHOD: 8270C, Semivolatile Organics - Water
NOTES: * - Practical Quantitation Limit ND - Not Detected
 NA - Not Analyzed

COMMENTS:

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9808652-02

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 10/27/98

PROJECT: TWP Roswell STA 9
SITE:
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-7

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 08/14/98 12:25:00
DATE RECEIVED: 08/15/98

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
Alkalinity, as CaCO ₃ Method 310.1 * Analyzed by: TK Date: 08/19/98 14:15:00	108	1	mg/L	
Chloride Method 325.3 * Analyzed by: AB Date: 08/27/98 10:00:00	301	10	mg/L	
Sulfate Method 375.4 * Analyzed by: TW Date: 08/27/98 13:00:00	2300	100	mg	
Total Dissolved Solids Method 160.1 * Analyzed by: DS Date: 08/19/98 17:00:00	3800	100	mg/L	
Nitrate-Nitrite, as N Method 353.3 * Analyzed by: AAB Date: 08/18/98 10:00:00	ND	0.1	mg/L	
Liquid-liquid extraction SEMIVOLATILES Method 3520C *** Analyzed by: KL Date: 08/18/98 10:00:00	08/18/98			

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9808652-02

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 10/27/98

PROJECT: TWP Roswell STA 9
SITE:
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-7

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 08/14/98 12:25:00
DATE RECEIVED: 08/15/98

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
Silver, Total Method 6010B *** Analyzed by: JM Date: 08/27/98 08:59:00	ND	0.01	mg/L	
Arsenic, Total Method 6010B *** Analyzed by: EG Date: 08/27/98 10:13:00	ND	0.005	mg/L	
Barium, Total Method 6010B *** Analyzed by: JM Date: 08/28/98 17:36:00	0.012	0.005	mg/L	
Calcium, Total Method 6010B *** Analyzed by: JM Date: 08/28/98 17:36:00	572	0.2	mg/L	
Cadmium, Total Method 6010B *** Analyzed by: JM Date: 08/27/98 08:59:00	ND	0.005	mg/L	
Chromium, Total Method 6010B *** Analyzed by: JM Date: 08/27/98 08:59:00	ND	0.01	mg/L	

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9808652-02

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 10/27/98

PROJECT: TWP Roswell STA 9
SITE:
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-7

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 08/14/98 12:25:00
DATE RECEIVED: 08/15/98

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
Copper, Total Method 6010B *** Analyzed by: JM Date: 08/27/98 08:59:00	ND	0.01	mg/L	
Iron, Total Method 6010B *** Analyzed by: JM Date: 08/27/98 08:59:00	0.30	0.02	mg/L	
Mercury, Total Method 7470 A*** Analyzed by: AG Date: 08/26/98 15:13:00	ND	0.0002	mg/L	
Potassium, Total Method 6010B *** Analyzed by: JM Date: 08/27/98 08:59:00	8	2	mg/L	
Magnesium, Total Method 6010B *** Analyzed by: JM Date: 08/27/98 08:59:00	180	0.1	mg/L	
Manganese, Total Method 6010B *** Analyzed by: JM Date: 08/27/98 08:59:00	0.428	0.005	mg/L	

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9808652-02

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 10/27/98

PROJECT: TWP Roswell STA 9
SITE:
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-7

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 08/14/98 12:25:00
DATE RECEIVED: 08/15/98

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
Sodium, Total Method 6010B *** Analyzed by: JM Date: 08/27/98 08:59:00	130	0.5	mg/L	
Acid Digestion-Aqueous, ICP Method 3010A *** Analyzed by: MR Date: 08/18/98 08:45:00	08/18/98			
Lead, Total Method 6010B *** Analyzed by: EG Date: 08/27/98 10:13:00	ND	0.005	mg/L	
Selenium, Total Method 6010B *** Analyzed by: EG Date: 08/27/98 10:13:00	ND	0.005	mg/L	
Zinc, Total Method 6010B *** Analyzed by: JM Date: 08/28/98 17:36:00	0.09	0.02	mg/L	

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9808652-02

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

10/27/98

PROJECT: TWP Roswell STA 9
SITE:
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-7

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 08/14/98 12:25:00
DATE RECEIVED: 08/15/98

ANALYTICAL DATA

PARAMETER	RESULTS	PQL*	UNITS
Benzene	ND	5	ug/L
Bromobenzene	ND	5	ug/L
Bromochloromethane	ND	5	ug/L
Bromodichloromethane	ND	5	ug/L
Bromoform	ND	5	ug/L
Bromomethane	ND	10	ug/L
n-Butylbenzene	ND	5	ug/L
sec-Butylbenzene	ND	5	ug/L
tert-Butylbenzene	ND	5	ug/L
Carbon tetrachloride	ND	5	ug/L
Chlorobenzene	ND	5	ug/L
Chlorodibromomethane	ND	5	ug/L
Chloroethane	ND	10	ug/L
Chloroform	ND	5	ug/L
Chloromethane	ND	10	ug/L
2-Chlorotoluene	ND	5	ug/L
4-Chlorotoluene	ND	5	ug/L
1,2-Dibromo-3-chloropropane	ND	5	ug/L
1,2-Dibromoethane	ND	5	ug/L
Dibromomethane	ND	5	ug/L
1,2-Dichlorobenzene	ND	5	ug/L
1,3-Dichlorobenzene	ND	5	ug/L
1,4-Dichlorobenzene	ND	5	ug/L
Dichlorodifluoromethane	ND	10	ug/L
1,1-Dichloroethane	ND	5	ug/L
1,2-Dichloroethane	ND	5	ug/L
1,1-Dichloroethene	ND	5	ug/L
cis-1,2-Dichloroethene	ND	5	ug/L
trans-1,2-Dichloroethene	ND	5	ug/L
1,2-Dichloropropane	ND	5	ug/L
1,3-Dichloropropane	ND	5	ug/L
2,2-Dichloropropane	ND	5	ug/L
1,1-Dichloropropene	ND	5	ug/L
Ethylbenzene	ND	5	ug/L
Hexachlorobutadiene	ND	5	ug/L
Isopropylbenzene	ND	5	ug/L
p-Isopropyltoluene	ND	5	ug/L
Methylene chloride	ND	5	ug/L

METHOD: 8260 Water, Volatile Organics
(continued on next page)



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9808652-02

Cypress Engineering, Inc.

SAMPLE ID: MW-7

PARAMETER	ANALYTICAL DATA (continued)		UNITS
	RESULTS	PQL*	
Naphthalene	ND	5	ug/L
n-Propylbenzene	ND	5	ug/L
Styrene	ND	5	ug/L
1,1,1,2-Tetrachloroethane	ND	5	ug/L
1,1,2,2-Tetrachloroethane	ND	5	ug/L
Tetrachloroethene	ND	5	ug/L
Toluene	ND	5	ug/L
1,2,3-Trichlorobenzene	ND	5	ug/L
1,2,4-Trichlorobenzene	ND	5	ug/L
1,1,1-Trichloroethane	ND	5	ug/L
1,1,2-Trichloroethane	ND	5	ug/L
Trichloroethene	ND	5	ug/L
Trichlorofluoromethane	ND	5	ug/L
1,2,3-Trichloropropane	ND	5	ug/L
1,2,4-Trimethylbenzene	ND	5	ug/L
1,3,5-Trimethylbenzene	ND	5	ug/L
Vinyl chloride	ND	10	ug/L
Xylenes (total)	ND	5	ug/L
Acetone	ND	100	ug/L
Carbon Disulfide	ND	5	ug/L
Vinyl Acetate	ND	10	ug/L
2-Butanone	ND	20	ug/L
1,2-Dichloroethene (total)	ND	5	ug/L
2-Chloroethylvinylether	ND	10	ug/L
4-Methyl-2-Pentanone	ND	10	ug/L
cis-1,3-Dichloropropene	ND	5	ug/L
trans-1,3-Dichloropropene	ND	5	ug/L
2-Hexanone	ND	10	ug/L
Methyl t-Butyl Ether	ND	10	ug/L

SURROGATES	AMOUNT SPIKED	% RECOVERY	LOWER LIMIT	UPPER LIMIT
1,2-Dichloroethane-d4	50 ug/L	92	76	114
Toluene-d8	50 ug/L	100	88	110
4-Bromofluorobenzene	50 ug/L	104	86	115

ANALYZED BY: JC

DATE/TIME: 08/18/98 00:09:00

METHOD: 8260 Water, Volatile Organics

NOTES: * - Practical Quantitation Limit

ND - Not Detected

NA - Not Analyzed

COMMENTS:

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9808652-02

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

10/27/98

PROJECT: TWP Roswell STA 9
SITE:
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-7

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 08/14/98 12:25:00
DATE RECEIVED: 08/15/98

ANALYTICAL DATA

PARAMETER	RESULTS	PQL*	UNITS
Acenaphthene	ND	5	ug/L
Acenaphthylene	ND	5	ug/L
Anthracene	ND	5	ug/L
Benzo(a)Anthracene	ND	5	ug/L
Benzo(b)Fluoranthene	ND	5	ug/L
Benzo(k)Fluoranthene	ND	5	ug/L
Benzo(a)Pyrene	ND	5	ug/L
Benzo(g,h,i)Perylene	ND	5	ug/L
Chrysene	ND	5	ug/L
Dibenz(a,h)Anthracene	ND	5	ug/L
Fluoranthene	ND	5	ug/L
Fluorene	ND	5	ug/L
Indeno(1,2,3-cd)Pyrene	ND	5	ug/L
2-Methylnaphthalene	ND	5	ug/L
Naphthalene	ND	5	ug/L
Phenanthrene	ND	5	ug/L
Pyrene	ND	5	ug/L
1-Methylnaphthalene	ND	5	ug/L

SURROGATES	AMOUNT SPIKED	% RECOVERY	LOWER LIMIT	UPPER LIMIT
Nitrobenzene-d5	50 ug/L	96	35	114
2-Fluorobiphenyl	50 ug/L	84	43	116
Terphenyl-d14	50 ug/L	80	33	141
Phenol-d5	75 ug/L	25	10	110
2-Fluorophenol	75 ug/L	37	21	110
2,4,6-Tribromophenol	75 ug/L	100	10	123

ANALYZED BY: RY DATE/TIME: 08/20/98 19:49:00
EXTRACTED BY: KL DATE/TIME: 08/18/98 10:00:00
METHOD: 8270C, Semivolatile Organics - Water
NOTES: * - Practical Quantitation Limit ND - Not Detected
 NA - Not Analyzed

COMMENTS:

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9808652-03

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 10/27/98

PROJECT: TWP Roswell STA 9
SITE:
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-22

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 08/14/98 15:55:00
DATE RECEIVED: 08/15/98

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
Alkalinity, as CaCO3 Method 310.1 * Analyzed by: TK Date: 08/19/98 14:15:00	125	1	mg/L	
Chloride Method 325.3 * Analyzed by: AB Date: 08/27/98 10:00:00	355	10	mg/L	
Sulfate Method 375.4 * Analyzed by: TW Date: 08/27/98 13:00:00	1800	100	mg/L	
Total Dissolved Solids Method 160.1 * Analyzed by: DS Date: 08/19/98 17:00:00	3600	100	mg/L	
Nitrate-Nitrite, as N Method 353.3 * Analyzed by: AAB Date: 08/18/98 10:00:00	0.6	0.1	mg/L	
Liquid-liquid extraction SEMIVOLATILES Method 3520C *** Analyzed by: KL Date: 08/18/98 10:00:00	08/18/98			

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9808652-03

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 10/27/98

PROJECT: TWP Roswell STA 9
SITE:
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-22

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 08/14/98 15:55:00
DATE RECEIVED: 08/15/98

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
Silver, Dissolved Method 6010B *** Analyzed by: JM Date: 08/27/98 08:59:00	ND	0.01	mg/L	
Arsenic, Dissolved Method 6010B *** Analyzed by: JM Date: 08/27/98 08:59:00	ND	0.1	mg/L	
Barium, Dissolved Method 6010B *** Analyzed by: JM Date: 08/28/98 08:58:00	ND	0.005	mg/L	
Calcium, Dissolved Method 6010B *** Analyzed by: JM Date: 08/27/98 08:59:00	642	0.2	mg/L	
Cadmium, Dissolved Method 6010B *** Analyzed by: JM Date: 08/27/98 08:59:00	ND	0.005	mg/L	
Chromium, Dissolved Method 6010B *** Analyzed by: JM Date: 08/27/98 08:59:00	ND	0.01	mg/L	

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9808652-03

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 10/27/98

PROJECT: TWP Roswell STA 9
SITE:
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-22

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 08/14/98 15:55:00
DATE RECEIVED: 08/15/98

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
Copper, Dissolved Method 6010B *** Analyzed by: JM Date: 08/27/98 08:59:00	ND	0.01	mg/L	
Iron, Dissolved Method 6010B *** Analyzed by: JM Date: 08/27/98 08:59:00	0.08	0.02	mg/L	
Mercury, Dissolved Method 7470 A*** Analyzed by: AG Date: 08/26/98 15:13:00	ND	0.0002	mg/L	
Potassium, Dissolved Method 6010B *** Analyzed by: JM Date: 08/27/98 08:59:00	2	2	mg/L	
Magnesium, Dissolved Method 6010B *** Analyzed by: JM Date: 08/27/98 08:59:00	129	0.1	mg/L	
Manganese, Dissolved Method 6010B *** Analyzed by: JM Date: 08/27/98 08:59:00	ND	0.005	mg/L	

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9808652-03

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 10/27/98

PROJECT: TWP Roswell STA 9
SITE:
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-22

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 08/14/98 15:55:00
DATE RECEIVED: 08/15/98

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
Sodium, Dissolved Method 6010B *** Analyzed by: JM Date: 08/27/98 08:59:00	236	0.5	mg/L	
Dissolved Metals Prep. Method 3005A *** Analyzed by: MR Date: 08/17/98 09:15:00	08/17/98			
Lead, Dissolved Method 6010B *** Analyzed by: JM Date: 08/27/98 08:59:00	ND	0.05	mg/L	
Selenium, Dissolved Method 6010B *** Analyzed by: JM Date: 08/27/98 08:59:00	ND	0.1	mg/L	
Zinc, Dissolved Method 6010B *** Analyzed by: JM Date: 08/27/98 08:59:00	ND	0.02	mg/L	
Silver, Total Method 6010B *** Analyzed by: JM Date: 08/27/98 08:59:00	ND	0.01	mg/L	

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9808652-03

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 10/27/98

PROJECT: TWP Roswell STA 9
SITE:
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-22

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 08/14/98 15:55:00
DATE RECEIVED: 08/15/98

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
Arsenic, Total Method 6010B *** Analyzed by: EG Date: 08/27/98 10:13:00	0.006	0.005	mg/L	
Barium, Total Method 6010B *** Analyzed by: JM Date: 08/28/98 17:36:00	0.036	0.005	mg/L	
Calcium, Total Method 6010B *** Analyzed by: JM Date: 08/28/98 17:36:00	573	0.2	mg/L	
Cadmium, Total Method 6010B *** Analyzed by: JM Date: 08/27/98 08:59:00	ND	0.005	mg/L	
Chromium, Total Method 6010B *** Analyzed by: JM Date: 08/27/98 08:59:00	ND	0.01	mg/L	
Copper, Total Method 6010B *** Analyzed by: JM Date: 08/27/98 08:59:00	ND	0.01	mg/L	

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9808652-03

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 10/27/98

PROJECT: TWP Roswell STA 9
SITE:
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-22

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 08/14/98 15:55:00
DATE RECEIVED: 08/15/98

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
Iron, Total Method 6010B *** Analyzed by: JM Date: 08/27/98 08:59:00	0.41	0.02	mg/L	
Mercury, Total Method 7470 A*** Analyzed by: AG Date: 08/26/98 15:13:00	0.0008	0.0002	mg/L	
Potassium, Total Method 6010B *** Analyzed by: JM Date: 08/27/98 08:59:00	3	2	mg/L	
Magnesium, Total Method 6010B *** Analyzed by: JM Date: 08/27/98 08:59:00	109	0.1	mg/L	
Manganese, Total Method 6010B *** Analyzed by: JM Date: 08/27/98 08:59:00	0.025	0.005	mg/L	
Sodium, Total Method 6010B *** Analyzed by: JM Date: 08/27/98 08:59:00	206	0.5	mg/L	

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9808652-03

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 10/27/98

PROJECT: TWP Roswell STA 9
SITE:
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-22

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 08/14/98 15:55:00
DATE RECEIVED: 08/15/98

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
Acid Digestion-Aqueous, ICP Method 3010A *** Analyzed by: MR Date: 08/18/98 08:45:00	08/18/98			
Lead, Total Method 6010B *** Analyzed by: EG Date: 08/27/98 10:13:00	ND	0.005	mg/L	
Selenium, Total Method 6010B *** Analyzed by: EG Date: 08/27/98 10:13:00	ND	0.005	mg/L	
Zinc, Total Method 6010B *** Analyzed by: JM Date: 08/28/98 17:36:00	0.09	0.02	mg/L	

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9808652-03

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

10/27/98

PROJECT: TWP Roswell STA 9
SITE:
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-22

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 08/14/98 15:55:00
DATE RECEIVED: 08/15/98

ANALYTICAL DATA				
PARAMETER	RESULTS	PQL*	UNITS	
Benzene	ND	5	ug/L	
Bromobenzene	ND	5	ug/L	
Bromochloromethane	ND	5	ug/L	
Bromodichloromethane	ND	5	ug/L	
Bromoform	ND	5	ug/L	
Bromomethane	ND	10	ug/L	
n-Butylbenzene	ND	5	ug/L	
sec-Butylbenzene	ND	5	ug/L	
tert-Butylbenzene	ND	5	ug/L	
Carbon tetrachloride	ND	5	ug/L	
Chlorobenzene	ND	5	ug/L	
Chlorodibromomethane	ND	5	ug/L	
Chloroethane	ND	10	ug/L	
Chloroform	ND	5	ug/L	
Chloromethane	ND	10	ug/L	
2-Chlorotoluene	ND	5	ug/L	
4-Chlorotoluene	ND	5	ug/L	
1,2-Dibromo-3-chloropropane	ND	5	ug/L	
1,2-Dibromoethane	ND	5	ug/L	
Dibromomethane	ND	5	ug/L	
1,2-Dichlorobenzene	ND	5	ug/L	
1,3-Dichlorobenzene	ND	5	ug/L	
1,4-Dichlorobenzene	ND	5	ug/L	
Dichlorodifluoromethane	ND	10	ug/L	
1,1-Dichloroethane	ND	5	ug/L	
1,2-Dichloroethane	ND	5	ug/L	
1,1-Dichloroethene	ND	5	ug/L	
cis-1,2-Dichloroethene	ND	5	ug/L	
trans-1,2-Dichloroethene	ND	5	ug/L	
1,2-Dichloropropane	ND	5	ug/L	
1,3-Dichloropropane	ND	5	ug/L	
2,2-Dichloropropane	ND	5	ug/L	
1,1-Dichloropropene	ND	5	ug/L	
Ethylbenzene	ND	5	ug/L	
Hexachlorobutadiene	ND	5	ug/L	
Isopropylbenzene	ND	5	ug/L	
p-Isopropyltoluene	ND	5	ug/L	
Methylene chloride	ND	5	ug/L	

METHOD: 8260 Water, Volatile Organics
(continued on next page)



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9808652-03

Cypress Engineering, Inc.

SAMPLE ID: MW-22

PARAMETER	ANALYTICAL DATA (continued)		UNITS
	RESULTS	PQL*	
Naphthalene	ND	5	ug/L
n-Propylbenzene	ND	5	ug/L
Styrene	ND	5	ug/L
1,1,1,2-Tetrachloroethane	ND	5	ug/L
1,1,2,2-Tetrachloroethane	ND	5	ug/L
Tetrachloroethene	ND	5	ug/L
Toluene	ND	5	ug/L
1,2,3-Trichlorobenzene	ND	5	ug/L
1,2,4-Trichlorobenzene	ND	5	ug/L
1,1,1-Trichloroethane	ND	5	ug/L
1,1,2-Trichloroethane	ND	5	ug/L
Trichloroethene	ND	5	ug/L
Trichlorofluoromethane	ND	5	ug/L
1,2,3-Trichloropropane	ND	5	ug/L
1,2,4-Trimethylbenzene	ND	5	ug/L
1,3,5-Trimethylbenzene	ND	5	ug/L
Vinyl chloride	ND	10	ug/L
Xylenes (total)	ND	5	ug/L
Acetone	ND	100	ug/L
Carbon Disulfide	ND	5	ug/L
Vinyl Acetate	ND	10	ug/L
2-Butanone	ND	20	ug/L
1,2-Dichloroethene (total)	ND	5	ug/L
2-Chloroethylvinylether	ND	10	ug/L
4-Methyl-2-Pentanone	ND	10	ug/L
cis-1,3-Dichloropropene	ND	5	ug/L
trans-1,3-Dichloropropene	ND	5	ug/L
2-Hexanone	ND	10	ug/L
Methyl t-Butyl Ether	ND	10	ug/L

SURROGATES	AMOUNT SPIKED	% RECOVERY	LOWER LIMIT	UPPER LIMIT
1,2-Dichloroethane-d4	50 ug/L	90	76	114
Toluene-d8	50 ug/L	100	88	110
4-Bromofluorobenzene	50 ug/L	100	86	115

ANALYZED BY: JC

DATE/TIME: 08/18/98 00:35:00

METHOD: 8260 Water, Volatile Organics

NOTES: * - Practical Quantitation Limit

ND - Not Detected

NA - Not Analyzed

COMMENTS:

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9808652-03

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

10/27/98

PROJECT: TWP Roswell STA 9
SITE:
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-22

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 08/14/98 15:55:00
DATE RECEIVED: 08/15/98

ANALYTICAL DATA

PARAMETER	RESULTS	PQL*	UNITS
Acenaphthene	ND	5	ug/L
Acenaphthylene	ND	5	ug/L
Anthracene	ND	5	ug/L
Benzo(a)Anthracene	ND	5	ug/L
Benzo(b)Fluoranthene	ND	5	ug/L
Benzo(k)Fluoranthene	ND	5	ug/L
Benzo(a)Pyrene	ND	5	ug/L
Benzo(g,h,i)Perylene	ND	5	ug/L
Chrysene	ND	5	ug/L
Dibenz(a,h)Anthracene	ND	5	ug/L
Fluoranthene	ND	5	ug/L
Fluorene	ND	5	ug/L
Indeno(1,2,3-cd)Pyrene	ND	5	ug/L
2-Methylnaphthalene	ND	5	ug/L
Naphthalene	ND	5	ug/L
Phenanthrene	ND	5	ug/L
Pyrene	ND	5	ug/L
1-Methylnaphthalene	ND	5	ug/L

SURROGATES	AMOUNT SPIKED	% RECOVERY	LOWER LIMIT	UPPER LIMIT
Nitrobenzene-d5	50 ug/L	98	35	114
2-Fluorobiphenyl	50 ug/L	92	43	116
Terphenyl-d14	50 ug/L	70	33	141
Phenol-d5	75 ug/L	31	10	110
2-Fluorophenol	75 ug/L	43	21	110
2,4,6-Tribromophenol	75 ug/L	100	10	123

ANALYZED BY: RY DATE/TIME: 08/20/98 20:22:00
EXTRACTED BY: KL DATE/TIME: 08/18/98 10:00:00
METHOD: 8270C, Semivolatile Organics - Water
NOTES: * - Practical Quantitation Limit ND - Not Detected
 NA - Not Analyzed

COMMENTS:

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.

QUALITY CONTROL

DOCUMENTATION

3A
WATER VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: SPL

Contract:

Lab Code:

Case No.: 9808644 SAS No.:

SDG No.:

Matrix Spike - EPA Sample No.: MW-17

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC #	QC. LIMITS REC.
=====	=====	=====	=====	=====	=====
1,1-Dichloroethene	50	0	59	118	61-145
Trichloroethene	50	0	48	96	71-120
Benzene	50	0	53	103	76-127
Toluene	50	0	49	98	76-125
Chlorobenzene	50	0	47	94	75-130

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC #	% RPD #	QC LIMITS	
=====	=====	=====	=====	=====	=====	=====
1,1-Dichloroethene	50	60	120	2	14	61-145
Trichloroethene	50	51	102	6	14	71-120
Benzene	50	55	110	7	11	76-127
Toluene	50	52	104	6	13	76-125
Chlorobenzene	50	48	96	2	13	75-130

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 5 outside limits

Spike Recovery: 0 out of 10 outside limits

SPL Houston Labs

RECOVERY REPORT

Client Name: Client SDG: n980817
Sample Matrix: LIQUID Fraction: VOA
Lab Smp Id: LCS
Level: LOW Operator: JC
Data Type: MS DATA SampleType: LCS
SpikeList File: 8260_water.spk Quant Type: ISTD
Sublist File: 8260.sub
Method File: /var/chem/n.i/n980817a.b/n8260w.m
Misc Info: N229W2//N229CW2

SPIKE COMPOUND	CONC ADDED ug/L	CONC RECOVERED ug/L	% RECOVERED	LIMITS
8 1,1-Dichloroethene	50	59	118.00	61-145
29 Trichloroethene	50	50	100.00	71-120
25 Benzene	50	54	108.00	76-127
37 Toluene	50	50	100.00	76-125
45 Chlorobenzene	50	47	94.00	75-130

SURROGATE COMPOUND	CONC ADDED ug/L	CONC RECOVERED ug/L	% RECOVERED	LIMITS
\$ 21 1,2-Dichloroethane	50	45	90.00	76-114
\$ 36 Toluene-d8	50	50	100.00	88-110
\$ 56 Bromofluorobenzene	50	52	104.00	86-115



Matrix: Aqueous
Sample ID: VLBLK
Batch: N980817122724

Reported on: 08/19/98 17:32
Analyzed on: 08/17/98 21:13
Analyst: JC

METHOD 8260/8240 N229B02

Compound	Result	Detection Limit	Units
Dichlorodifluoromethane	ND	10	ug/L
Chloromethane	ND	10	ug/L
Vinyl Chloride	ND	10	ug/L
Bromomethane	ND	10	ug/L
Chloroethane	ND	10	ug/L
Trichlorofluoromethane	ND	5	ug/L
Acetone	ND	100	ug/L
1,1-Dichloroethene	ND	5	ug/L
Methylene Chloride	ND	5	ug/L
Carbon Disulfide	ND	5	ug/L
trans-1,2-Dichloroethene	ND	5	ug/L
1,1-Dichloroethane	ND	5	ug/L
Vinyl Acetate	ND	10	ug/L
2-Butanone	ND	20	ug/L
cis-1,2-Dichloroethene	ND	5	ug/L
1,2-Dichloroethene (total)	ND	5	ug/L
2,2-Dichloropropane	ND	5	ug/L
Bromochloromethane	ND	5	ug/L
Chloroform	ND	5	ug/L
1,1,1-Trichloroethane	ND	5	ug/L
1,2-Dichloroethane	ND	5	ug/L
1,1-Dichloropropene	ND	5	ug/L
Benzene	ND	5	ug/L
Carbon Tetrachloride	ND	5	ug/L
1,2-Dichloropropane	ND	5	ug/L
Trichloroethene	ND	5	ug/L
Dibromomethane	ND	5	ug/L
Bromodichloromethane	ND	5	ug/L
2-Chloroethylvinylether	ND	10	ug/L
4-Methyl-2-Pentanone	ND	10	ug/L
cis-1,3-Dichloropropene	ND	5	ug/L
trans-1,3-Dichloropropene	ND	5	ug/L
Toluene	ND	5	ug/L
1,1,2-Trichloroethane	ND	5	ug/L

Notes

ND - Not detected.



Matrix: Aqueous
Sample ID: VLBLK
Batch: N980817122724

Reported on: 08/19/98 17:32
Analyzed on: 08/17/98 21:13
Analyst: JC

METHOD 8260/8240 N229B02

C o m p o u n d	Result	Detection Limit	Units
1,3-Dichloropropane	ND	5	ug/L
2-Hexanone	ND	10	ug/L
Dibromochloromethane	ND	5	ug/L
1,2-Dibromoethane	ND	5	ug/L
Tetrachloroethene	ND	5	ug/L
Chlorobenzene	ND	5	ug/L
1,1,1,2-Tetrachloroethane	ND	5	ug/L
Ethylbenzene	ND	5	ug/L
Bromoform	ND	5	ug/L
Styrene	ND	5	ug/L
Xylene (Total)	ND	5	ug/L
1,1,2,2-Tetrachloroethane	ND	5	ug/L
1,2,3-Trichloropropane	ND	5	ug/L
Isopropylbenzene	ND	5	ug/L
Bromobenzene	ND	5	ug/L
N-Propylbenzene	ND	5	ug/L
2-Chlorotoluene	ND	5	ug/L
4-Chlorotoluene	ND	5	ug/L
1,3,5-Trimethylbenzene	ND	5	ug/L
tert-Butylbenzene	ND	5	ug/L
1,2,4-Trimethylbenzene	ND	5	ug/L
1,3-Dichlorobenzene	ND	5	ug/L
sec-Butylbenzene	ND	5	ug/L
1,4-Dichlorobenzene	ND	5	ug/L
p-Isopropyltoluene	ND	5	ug/L
1,2-Dichlorobenzene	ND	5	ug/L
n-Butylbenzene	ND	5	ug/L
1,2-Dibromo-3-Chloropropan	ND	5	ug/L
1,2,4-Trichlorobenzene	ND	5	ug/L
Naphthalene	ND	5	ug/L
Hexachlorobutadiene	ND	5	ug/L
1,2,3-Trichlorobenzene	ND	5	ug/L
Methyl t-Butyl Ether	ND	10	ug/L

Notes

ND - Not detected.



SPL Blank QC Report

page

Matrix: Aqueous
Sample ID: VLBLK
Batch: N980817122724

Reported on: 08/19/98 17:32
Analyzed on: 08/17/98 21:13
Analyst: JC

METHOD 8260/8240 N229B02

Surrogate	Result	QC Criteria	Units
1,2-Dichloroethane-d4	90	76-114	% Recovery
Toluene-d8	100	88-110	% Recovery
Bromofluorobenzene	104	86-115	% Recovery

Samples in Batch 9808652-01 9808652-02 9808652-03

Notes

ND - Not detected.

WATER SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: SPL

Contract:

Lab Code: Case No: 980818

SAS No: SDG No:

Matrix Spike - EPA

Sample No: BLKSPIKE

Level (low/med):

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATIO (ug/L)	MS CONCENTRATION (ug/L)	MS % REC #	QC LIMITS REC
Phenol	75	0	22	29	12-110
2-Chlorophenol	75	0	48	64	27-123
1,4-Dichlorobenzene	50	0	29	58	36- 97
N-Nitroso-di-n-propylamine	50	0	37	74	41-116
1,2,4-Trichlorobenzene	50	0	36	72	39-110
4-Chloro-3-methylphenol	75	0	64	85	23-110
Acenaphthene	50	0	42	84	46-125
4-Nitrophenol	75	0	31	41	25-150
2,4-Dinitrotoluene	50	0	45	90	50-150
Pentachlorophenol	75	0	82	109	9-125
Pyrene	50	0	41	82	26-127

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATIO (ug/L)	MSD % REC #	% RPD #	QC LIMITS RPD REC
Phenol	75	23	31	7	42 12-110
2-Chlorophenol	75	55	73	13	40 27-132
1,4-Dichlorobenzene	50	36	72	22	28 36- 97
N-Nitroso-di-n-propylamine	50	42	84	13	38 41-116
1,2,4-Trichlorobenzene	50	43	86	18	28 39-110
4-Chloro-3-methylphenol	75	68	91	7	42 23-110
Acenaphthene	50	43	86	2	31 46-125
4-Nitrophenol	75	28	37	10	50 25-150
2,4-Dinitrotoluene	50	44	88	2	50 50-150
Pentachlorophenol	75	75	100	9	50 9-125
Pyrene	50	36	72	13	31 26-127

Column to be used to flag recovery and RPD values with an asterisk

RPD: 0 out of 11 outside limits
Spike Recovery: 0 out of 22 outside limits



SPL Blank QC Report

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-9898

Matrix: Aqueous
Sample ID: BLANK
Batch: E980818042258

Reported on: 08/28/98 12:03
Analyzed on: 08/20/98 15:54
Analyst: RY

METHOD 8270 J230B03

Compound	Result	Detection Limit	Units
Pyridine	ND	5	ug/L
Phenol	ND	5	ug/L
Aniline	ND	5	ug/L
bis(2-Chloroethyl) ether	ND	5	ug/L
2-Chlorophenol	ND	5	ug/L
1,3-Dichlorobenzene	ND	5	ug/L
1,4-Dichlorobenzene	ND	5	ug/L
Benzyl alcohol	ND	5	ug/L
1,2-Dichlorobenzene	ND	5	ug/L
bis(2-chloroisopropyl) ether	ND	5	ug/L
4-Methylphenol	ND	5	ug/L
N-Nitroso-di-n-propylamine	ND	5	ug/L
Hexachloroethane	ND	5	ug/L
Nitrobenzene	ND	5	ug/L
Isophorone	ND	5	ug/L
2-Nitrophenol	ND	5	ug/L
2,4-Dimethylphenol	ND	5	ug/L
Benzoic acid	ND	25	ug/L
bis(2-Chloroethoxy) methane	ND	5	ug/L
2,4-Dichlorophenol	ND	5	ug/L
1,2,4-Trichlorobenzene	ND	5	ug/L
Naphthalene	ND	5	ug/L
4-Chloroaniline	ND	5	ug/L
Hexachlorobutadiene	ND	5	ug/L
4-Chloro-3-methylphenol	ND	5	ug/L
2-Methylnaphthalene	ND	5	ug/L
Hexachlorocyclopentadiene	ND	5	ug/L
2,4,6-Trichlorophenol	ND	5	ug/L
2,4,5-Trichlorophenol	ND	10	ug/L
2-Chloronaphthalene	ND	5	ug/L
2-Nitroaniline	ND	25	ug/L
Dimethylphthalate	ND	5	ug/L
2,6-Dinitrotoluene	ND	5	ug/L
Acenaphthylene	ND	5	ug/L

Notes

ND - Not detected.



SPL Blank QC Report

HOUSTON LABORATORY

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 860-0901

2

Matrix: Aqueous
Sample ID: BLANK
Batch: E980818042258

Reported on: 08/28/98 12:03
Analyzed on: 08/20/98 15:54
Analyst: RY

METHOD 8270 J230B03

Compound	Result	Detection Limit	Units
3-Nitroaniline	ND	25	ug/L
Acenaphthene	ND	5	ug/L
2,4-Dinitrophenol	ND	25	ug/L
4-Nitrophenol	ND	25	ug/L
Dibenzofuran	ND	5	ug/L
2,4-Dinitrotoluene	ND	5	ug/L
Diethylphthalate	ND	5	ug/L
4-Chlorophenyl-phenylether	ND	5	ug/L
Fluorene	ND	5	ug/L
4-Nitroaniline	ND	25	ug/L
4,6-Dinitro-2-methylphenol	ND	25	ug/L
n-Nitrosodiphenylamine	ND	5	ug/L
1,2-Diphenylhydrazine	ND	5	ug/L
4-Bromophenyl-phenylether	ND	5	ug/L
Hexachlorobenzene	ND	5	ug/L
Pentachlorophenol	ND	25	ug/L
Phenanthrene	ND	5	ug/L
Anthracene	ND	5	ug/L
Carbazole	ND	5	ug/L
Di-n-butylphthalate	ND	5	ug/L
Fluoranthene	ND	5	ug/L
Pyrene	ND	5	ug/L
Butylbenzylphthalate	ND	5	ug/L
3,3'-Dichlorobenzidine	ND	10	ug/L
Benzo[a]anthracene	ND	5	ug/L
Chrysene	ND	5	ug/L
bis(2-Ethylhexyl)phthalate	ND	5	ug/L
Di-n-octylphthalate	ND	5	ug/L
Benzo[b]fluoranthene	ND	5	ug/L
Benzo[k]fluoranthene	ND	5	ug/L
Benzo[a]pyrene	ND	5	ug/L
Indeno[1,2,3-cd]pyrene	ND	5	ug/L
Dibenz[a,h]anthracene	ND	5	ug/L
Benzo[g,h,i]perylene	ND	5	ug/L

Notes

ND - Not detected.



SPL Blank QC Report

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-9898

Matrix: Aqueous
Sample ID: BLANK
Batch: E980818042258

Reported on: 08/28/98 12:03
Analyzed on: 08/20/98 15:54
Analyst: RY

METHOD 8270 J230B03

Compound	Result	Detection Limit	Units
1-Methylnaphthalene	ND	5	ug/L
2-Methylphenol	ND	5	ug/L

Surrogate	Result	QC Criteria	Units
Nitrobenzene-d5	96	35-114	% Recovery
2-Fluorobiphenyl	92	43-116	% Recovery
Terphenyl-d14	88	33-141	% Recovery
Phenol-d5	32	10-110	% Recovery
2-Fluorophenol	45	21-110	% Recovery
2,4,6-Tribromophenol	105	10-123	% Recovery

Samples in Batch 9808652-01 9808652-02 9808652-03

Notes

ND - Not detected.

ICP Spectroscopy Method 6010 Quality Control Report

Analyst: EG



Matrix: Water

Units: mg/L

HOUSTON LABORATORY

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 660-0901

Date:082798 Time:1013 File Name: T082798B

Laboratory Control Sample

Element	Mth. Blank	True Value	Result	% Recovery	Lower Limit	Upper Limit
Silver	ND	2.00	2.01	100	1.60	2.40
Aluminum						
Arsenic	ND	4.00	4.12	103	3.20	4.80
Barium	ND	2.00	1.98	99	1.60	2.40
Beryllium						
Calcium						
Cadmium	ND	2.00	2.05	103	1.60	2.40
Cobalt						
Chromium	ND	2.00	2.09	105	1.60	2.40
Copper						
Iron	ND	2.00	1.96	98	1.60	2.40
Potassium						
Magnesium						
Manganese						
Sodium						
Nickel						
Lead	ND	2.00	2.05	102	1.60	2.40
Antimony						
Selenium	ND	4.00	4.02	100	3.20	4.80
Thallium						
Vanadium						
Zinc						

Work Orders in Batch

Work Order	Fractions
98-08-574	01E-03E
98-08-557	01B
98-08-584	17A
98-08-605	01C
98-08-618	05A
98-08-620	02C
98-08-623	01D-03D
98-08-635	01E-03E
98-08-644	01E-03E
98-08-652	01E, 02E 03F

Matrix Spike - Spike Duplicate Results

Work Order Spiked: 9808574-02E

Element	Sample Result	Spike Added	Matrix Spike Result	Matrix Spike Recovery	Matrix Spike Duplicate Result	Matrix Spike Duplicate Recovery	QC Limits % Recovery	Spike RPD %	QC Limits %
Silver	ND	1.0	0.9657	96.6	0.9781	97.8	80 120	1.3	20.0
Aluminum									
Arsenic	0.0068	2.0	2.015	100.4	2.027	101.0	80 120	0.6	20.0
Barium	0.0111	1.0	0.8862	87.5	0.8958	88.5	80 120	1.1	20.0
Beryllium									
Calcium									
Cadmium	ND	1.0	0.9314	93.1	0.9374	93.7	80 120	0.6	20.0
Cobalt									
Chromium	ND	1.0	0.9452	94.5	0.9541	95.4	80 120	0.9	20.0
Copper									
Iron	ND	1.0	0.8896	89.0	0.8766	87.7	80 120	1.5	20.0
Potassium									
Magnesium									
Manganese									
Sodium									
Nickel									
Lead	ND	1.0	0.9371	93.7	0.9383	93.8	80 120	0.1	20.0
Antimony									
Selenium	ND	2.0	1.958	97.9	1.946	97.3	80 120	0.6	20.0
Thallium									
Vanadium									
Zinc									

Checked: ML 8/28/98

ICP Spectroscopy Method 6010 Quality Control Report

Analyst: JM



Matrix: Water

Units: mg/L

Date:082798 Time:0859 File Name: 082798M9

HOUSTON LABORATORY
3650 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE 713 665-0901

Laboratory Control Sample

Element	Mth. Blank	True Value	Result	% Recovery	Lower Limit	Upper Limit
Silver	ND	2.00	2.03	101	1.60	2.40
Aluminum						
Arsenic						
Barium						
Beryllium	ND	2.00	1.97	99	1.60	2.40
Calcium						
Cadmium	ND	2.00	2.02	101	1.60	2.40
Cobalt						
Chromium	ND	2.00	2.04	102	1.60	2.40
Copper	ND	2.00	2.00	100	1.60	2.40
Iron	ND	2.00	2.00	100	1.60	2.40
Potassium	ND	20.00	19.83	99	16.00	24.00
Magnesium	ND	20.00	20.17	101	16.00	24.00
Manganese	ND	2.00	1.98	99	1.60	2.40
Sodium	ND	20.00	20.03	100	16.00	24.00
Nickel	ND	2.00	2.04	102	1.60	2.40
Lead						
Antimony						
Selenium						
Thallium						
Vanadium						
Zinc						

Work Orders in Batch

Work Order Fractions

98-08-574 01E-03E

98-08-584 17A

98-08-635 01E-03E

98-08-644 01E-03E

89-08-652 01E-03E

Matrix Spike - Spike Duplicate Results

Work Order Spiked: 98089574-02E

Element	Sample Result	Spike Added	Matrix Spike Result	Matrix Spike Recovery	Matrix Spike Duplicate Result	Matrix Spike Duplicate Recovery	QC Limits % Recovery	Spike RPD %	QC Limits %
Silver	ND	1.0	0.9392	93.9	0.9302	93.0	80 120	1.0	20.0
Aluminum									
Arsenic									
Barium									
Beryllium	ND	1.0	0.8702	87.0	0.8654	86.5	80 120	0.6	20.0
Calcium									
Cadmium	ND	1.0	0.9077	90.8	0.9078	90.8	80 120	0.0	20.0
Cobalt									
Chromium	ND	1.0	0.8787	87.9	0.871	87.1	80 120	0.9	20.0
Copper	0.0105	1.0	0.9303	92.0	0.9261	91.6	80 120	0.5	20.0
Iron	0.0545	1.0	0.9227	86.8	0.9218	86.7	80 120	0.1	20.0
Potassium	3.609	10.0	13.37	97.6	13.93	103.2	80 120	5.6	20.0
Magnesium	161.1	10.0	169.3	82.0	171	99.0	80 120	18.8	20.0
Manganese	ND	1.0	0.8637	86.4	0.8629	86.3	80 120	0.1	20.0
Sodium	252.1	10.0	265	129.0	266.4	143.0	80 120	10.3	20.0
Nickel	ND	1.0	0.8739	87.4	0.8647	86.5	80 120	1.1	20.0
Lead									
Antimony									
Selenium									
Thallium									
Vanadium									
Zinc									

* Spike Results Outside Method Limits

Checked: 08/23/98

ICP Spectroscopy Method 6010 Quality Control Report

Analyst: JM



Matrix: DISSOLVED

Units: mg/L

Date: 082798 Time: 0859 File Name: 82798M10

HOUSTON LABORATORY

2880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE 713 660-1901

Laboratory Control Sample

Element	Mth. Blank	True Value	Result	% Recovery	Lower Limit	Upper Limit
Silver	ND	2.00	1.88	94	1.60	2.40
Aluminum						
Arsenic	ND	4.00	3.91	98	3.20	4.80
Barium						
Beryllium						
Calcium	ND	20.00	18.19	91	16.00	24.00
Cadmium	ND	2.00	1.93	97	1.60	2.40
Cobalt						
Chromium	ND	2.00	1.95	97	1.60	2.40
Copper	ND	2.00	2.03	104	1.60	2.40
Iron	ND	2.00	1.96	98	1.60	2.40
Potassium	ND	20.00	21.50	108	16.00	24.00
Magnesium	ND	20.00	19.84	99	16.00	24.00
Manganese	ND	2.00	1.93	96	1.60	2.40
Sodium	ND	20.00	21.91	110	16.00	24.00
Nickel						
Lead	ND	2.00	1.89	94	1.60	2.40
Antimony						
Selenium						
Thallium						
Vanadium						
Zinc	ND	2.00	1.96	98	1.60	2.40

Work Orders in Batch

Work Order	Fractions
98-08-A18	01D, 02D 16D
98-08-944	01D, 08D
98-08-548	01C-03C
98-08-550	01C, 04C
98-08-553	01C-04C
98-08-555	01C-03C
98-08-652	03E
98-08-656	01C

Matrix Spike - Spike Duplicate Results

Work Order Spiked: 9808A18-01D

Element	Sample Result	Spike Added	Matrix Spike Result	Matrix Spike Recovery	Matrix Spike Duplicate Result	Matrix Spike Duplicate Recovery	QC Limits % Recovery	Spike RPD %	QC Limits %
Silver	ND	1.0	0.774	77.4	0.761	76.1	80 120	1.7	20.0
Aluminum									
Arsenic	0.0158	2.0	2.07	102.7	2.069	102.7	80 120	0.0	20.0
Barium									
Beryllium									
Calcium	40.41	10.0	48.67	82.6	48.41	80.0	80 120	3.2	20.0
Cadmium	0.007	1.0	0.9878	98.1	0.9855	97.9	80 120	0.2	20.0
Cobalt									
Chromium	ND	1.0	0.9947	99.5	0.994	99.4	80 120	0.1	20.0
Copper	ND	1.0	1.054	105.4	1.064	106.4	80 120	0.9	20.0
Iron	0.0911	1.0	1.001	91.0	0.998	90.7	80 120	0.3	20.0
Potassium	2.783	10.0	14.41	116.3	14.4	116.2	80 120	0.1	20.0
Magnesium	25.43	10.0	34.68	92.5	34.71	92.8	80 120	0.3	20.0
Manganese	0.0182	1.0	0.9962	97.8	0.995	97.7	80 120	0.1	20.0
Sodium	273.2	10.0	268.8	0.0	272.6	0.0	80 120	0.0	20.0
Nickel									
Lead	ND	1.0	0.967	96.2	0.9343	93.4	80 120	2.9	20.0
Antimony									
Selenium									
Thallium									
Vanadium									
Zinc	ND	1.0	1.005	100.5	1.002	100.2	80 120	0.3	20.0

Elements Post Spiked: ALL

Checked: *JK 3/29/98*

* Spike Results Outside Method Limits

ICP Spectroscopy Method 6010 Quality Control Report

Analyst: JM



Matrix: Dissolved

Units: mg/L

HOUSTON LABORATORY

3680 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE 713-660-0901

Date:082898 Time:0858 File Name: 082898m2

Laboratory Control Sample

Element	Mth. Blank	True Value	Result	% Recovery	Lower Limit	Upper Limit
Silver						
Aluminum						
Arsenic						
Barium	ND	2.00	1.92	96	1.60	2.40
Beryllium						
Calcium						
Cadmium						
Cobalt						
Chromium						
Copper						
Iron						
Potassium						
Magnesium						
Manganese						
Sodium						
Nickel						
Lead						
Antimony						
Selenium						
Thallium						
Vanadium						
Zinc						

Work Orders in Batch

Work Order Fractions

98-08-652 / 03E

98-08-478 04E

98-08-712 01D, 02D

Matrix Spike - Spike Duplicate Results

Work Order Spiked: 9808652-03E

Element	Sample Result	Spike Added	Matrix Spike Result	Matrix Spike Recovery	Matrix Spike Duplicate Result	Matrix Spike Duplicate Recovery	QC Limits % Recovery	Spike RPD %	QC Limits %
Silver									
Aluminum									
Arsenic									
Barium	0.1478	1.0	0.9599	81.2	0.9457	79.8	* 80 120	1.8	20.0
Beryllium									
Calcium									
Cadmium									
Cobalt									
Chromium									
Copper									
Iron									
Potassium									
Magnesium									
Manganese									
Sodium									
Nickel									
Lead									
Antimony									
Selenium									
Thallium									
Vanadium									
Zinc									

* Spike Results Outside Method Limits
Bench Spiked.

Checked: 8/31/98

ICP Spectroscopy Method 6010 Quality Control Report

Analyst: JM



Matrix: Water

Units: mg/L

Date: 082898 Time: 1736 File Name: 082898M8

HOUSTON LABORATORY

 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Laboratory Control Sample

Element	Mth. Blank	True Value	Result	% Recovery	Lower Limit	Upper Limit
Silver						
Aluminum						
Arsenic						
Barium	ND	2.00	1.81	91	1.60	2.40
Beryllium						
Calcium	ND	20.00	19.37	97	16.00	24.00
Cadmium						
Cobalt						
Chromium						
Copper						
Iron						
Potassium						
Magnesium						
Manganese						
Sodium						
Nickel						
Lead						
Antimony						
Selenium						
Thallium						
Vanadium						
Zinc	ND	2.00	1.92	96	1.60	2.40

Work Orders in Batch

Work Order	Fractions
98-08-635	01E-03E
98-08-574	1E-03E
98-08-644	01E-03E
98-08-652	01E-03E
98-08-635	01E-03E
98-08-574	01E-03E
98-08-644	01E-03E
98-08-652	01E-03E

Matrix Spike - Spike Duplicate Results

Work Order Spiked: 9808635-01E

Element	Sample Result	Spike Added	Matrix Spike Result	Matrix Spike Recovery	Matrix Spike Duplicate Result	Matrix Spike Duplicate Recovery	QC Limits % Recovery	Spike RPD %	QC Limits %
Silver									
Aluminum									
Arsenic									
Barium	0.0109	1.0	0.9177	90.7	0.9024	89.2	80 120	1.7	20.0
Beryllium									
Calcium	583.6	10.0	569.9	0.0	564.7	0.0	80 120	0.0	20.0
Cadmium									
Cobalt									
Chromium									
Copper									
Iron									
Potassium									
Magnesium									
Manganese									
Sodium									
Nickel									
Lead									
Antimony									
Selenium									
Thallium									
Vanadium									
Zinc	ND	1.0	0.9654	96.5	0.9658	96.6	80 120	0.0	20.0

Elements Post Spiked: Ca

* Spike Results Outside Method Limits

Checked: 8/31/98 ACA



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 08/26/98

Analyzed on: 08/26/98

Analyst: AG

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Mercury, Total
Method 7470 A***

SPL Sample ID Number	Blank Value ug/L	LCS Concentration ug/L	Measured Concentration ug/L	% Recovery	QC Limits Recovery
LCS	ND	2.00	1.88	94.0	80 - 120

-9808B65

Samples in batch:

9808644-01E 9808644-02E 9808644-03E 9808652-01E
9808652-02E 9808652-03E 9808826-02F

COMMENTS:

LCS = SPL ID# 94-452-45-21



** SPL QUALITY CONTROL REPORT **

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Matrix: Aqueous

Reported on: 08/26/98

Analyzed on: 08/26/98

Analyst: AG

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Mercury, Total
Method 7470 A***

SPL Sample	Method	Sample	Spike	Matrix Spike		Matrix Spike Duplicate		RPD	QC LIMITS (Advisory)		
ID Number	Blank ug/L	Result ug/L	Added ug/L	Result ug/L	Recovery %	Result ug/L	Recovery %	(%)	RPD Max	% REC	
9808652-01E	ND	ND	2.00	2.05	102	2.17	108	5.7	20	75	-125

-9808B65

Samples in batch:

9808644-01E 9808644-02E 9808644-03E 9808652-01E
9808652-02E 9808652-03E 9808826-02F

COMMENTS:

LCS = SPL ID# 94-452-45-21



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 08/26/98

Analyzed on: 08/26/98

Analyst: AG

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Mercury, Dissolved
Method 7470 A***

SPL Sample ID Number	Blank Value ug/L	LCS Concentration ug/L	Measured Concentration ug/L	% Recovery	QC Limits Recovery
LCS	ND	2.00	1.88	94.0	80 - 120

-9808B66

Samples in batch:

9808652-03E

COMMENTS:

LCS = SPL ID# 94-452-45-21



** SPL QUALITY CONTROL REPORT **

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Matrix: Aqueous

Reported on: 08/26/98

Analyzed on: 08/26/98

Analyst: AG

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Mercury, Dissolved
Method 7470 A***

SPL Sample	Method	Sample	Spike	Matrix Spike		Matrix Spike Duplicate		RPD	QC LIMITS (Advisory)		
ID Number	Blank ug/L	Result ug/L	Added ug/L	Result ug/L	Recovery %	Result ug/L	Recovery %	(%)	RPD Max	% REC	
9808652-03E	ND	ND	2.00	1.87	93.5	2.05	102	8.7	20	75	-125

-9808B66

Samples in batch:

9808652-03E

COMMENTS:

LCS = SPL ID# 94-452-45-21



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 08/19/98

Analyzed on: 08/19/98

Analyst: TK

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Alkalinity, as CaCO₃
Method 310.1 *

SPL Sample ID Number	Blank Value mg/L	LCS Concentration mg/L	Measured Concentration mg/L	% Recovery	QC Limits Recovery
LCS	ND	235	224	95.3	95 - 113

-9808839

Samples in batch:

9808553-04D 9808635-01B 9808635-02B 9808635-03B
9808652-01E 9808652-02B 9808652-03B

COMMENTS:

LCS# 94453209-13



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 08/19/98

Analyzed on: 08/19/98

Analyst: TK

This sample was randomly selected for use in the SPL quality control program. The results are as follows:

Alkalinity, as CaCO_3
Method 310.1 *

-- DUPLICATE ANALYSIS --

SPL Sample ID	Original Sample Concentration mg/L	Duplicate Sample mg/L	RPD	RPD Max.
9808553-04D	426.4	426.6	0	18

-9808838

Samples in batch:

9808553-04D 9808635-01B 9808635-02B 9808635-03B
9808652-01B 9808652-02B 9808652-03B

COMMENTS:

LCS# 94453209-13



**** SPL QUALITY CONTROL REPORT ****

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Matrix: Aqueous

Reported on: 08/28/98
Analyzed on: 08/27/98
Analyst: AB

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Chloride
Method 325.3 *

SPL Sample	Method	Sample	Spike	Matrix Spike		Matrix Spike Duplicate		RPD	QC LIMITS (Advisory)	
ID Number	Blank mg/L	Result mg/L	Added mg/L	Result mg/L	Recovery %	Result mg/L	Recovery %	(%)	RPD Max	% REC
9808652-02B	ND	30	50	78	96.0	79	98.0	2.1	5	92 -109

-9808C92

Samples in batch:

9808635-03B 9808644-01B 9808644-02B 9808644-03B
9808652-01B 9808652-02B 9808652-03B 9808656-01D

COMMENTS:



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 08/28/98

Analyzed on: 08/27/98

Analyst: AB

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Chloride
Method 325.3 *

SPL Sample ID Number	Blank Value mg/L	LCS Concentration mg/L	Measured Concentration mg/L	% Recovery	QC Limits Recovery
LCS	ND	186	184	98.9	94 - 106

-9808C94

Samples in batch:

9808652-01B 9808652-02B 9808652-03B 9808656-01D

COMMENTS:

SPL=LCS#94453209-12



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 08/27/98

Analyzed on: 08/27/98

Analyst: TW

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Sulfate
Method 375.4 *

SPL Sample ID Number	Blank Value mg/L	LCS Concentration mg/L	Measured Concentration mg/L	% Recovery	QC Limits Recovery
LCS	ND	10.04	10.26	102	82 - 111

-9808C21

Samples in batch:

9808516-01F	9808635-01B	9808635-02B	9808635-03B
9808644-01B	9808644-02B	9808644-03B	9808652-01B
9808652-03B	9808722-01E	9808725-01E	9808731-01B
9808779-04H	9808779-05H	9808780-14H	9808812-01F

COMMENTS:

LCS= SPL ID# 95535209-12.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 08/27/98

Analyzed on: 08/27/98

Analyst: TW

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Sulfate
Method 375.4 *

SPL Sample ID Number	Blank Value mg/L	LCS Concentration mg/L	Measured Concentration mg/L	% Recovery	QC Limits Recovery
LCS	ND	10.04	9.80	97.6	82 - 111

-9808C20

Samples in batch:

9807D00-03A	9808550-01D	9808550-02D	9808550-03D
9808550-04D	9808553-01D	9808553-02D	9808553-03D
9808553-04D	9808555-01D	9808555-02D	9808555-03D
9808557-01D	9808574-01B	9808574-02B	9808574-03B
9808652-02B			

COMMENTS:

LCS#94453209-12



** SPL QUALITY CONTROL REPORT **

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Matrix: Aqueous

Reported on: 08/27/98

Analyzed on: 08/27/98

Analyst: TW

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Sulfate
Method 375.4 *

SPL Sample	Method	Sample	Spike	Matrix Spike		Matrix Spike Duplicate		RPD	QC LIMITS (Advisory)	
ID Number	Blank mg/L	Result mg/L	Added mg/L	Result mg/L	Recovery %	Result mg/L	Recovery %	(%)	RPD Max	% REC
9808652-01B	ND	7.98	10.00	19.21	112	18.71	107	4.6	9.5	84 -120

-9808C17

Samples in batch:

9808635-01B 9808635-02B 9808635-03B 9808644-01B
9808644-02B 9808644-03B 9808652-01B 9808652-02B
9808812-01F

COMMENTS:



** SPL QUALITY CONTROL REPORT **

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Matrix: Aqueous

Reported on: 08/27/98

Analyzed on: 08/27/98

Analyst: TW

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Sulfate
Method 375.4 *

SPL Sample	Method	Sample	Spike	Matrix Spike		Matrix Spike Duplicate		RPD	QC LIMITS (Advisory)		
ID Number	Blank	Result	Added	Result	Recovery	Result	Recovery	(%)	RPD	% REC	
	mg/L	mg/L	mg/L	mg/L	%	mg/L	%		Max		
9808779-04H	ND	9.87	10.00	21.23	114	20.82	110	3.6	9.5	84	-120

-9808C18

Samples in batch:

9808516-01F 9808652-03B 9808722-01E 9808725-01E
9808731-01B 9808779-04H 9808779-05H 9808780-14H

COMMENTS:



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 08/20/98

Analyzed on: 08/19/98

Analyst: DS

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Total Dissolved Solids
Method 160.1 *

SPL Sample ID Number	Blank Value mg/L	LCS Concentration mg/L	Measured Concentration mg/L	% Recovery	QC Limits Recovery
LCS	ND	455.9	456	100	93 - 107

-9808910

Samples in batch:

9808555-01D	9808555-02D	9808555-03D	9808574-01B
9808574-02B	9808574-03B	9808623-01E	9808623-02E
9808623-03E	9808644-01B	9808644-02B	9808644-03B
9808652-01B	9808652-02B	9808652-03B	9808656-01D
9808745-02B	9808745-03B		

COMMENTS:

LCS=SPL ID#95535216-23



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 08/20/98

Analyzed on: 08/19/98

Analyst: DS

This sample was randomly selected for use in the SPL quality control program. The results are as follows:

Total Dissolved Solids
Method 160.1 *

-- DUPLICATE ANALYSIS --

SPL Sample ID	Original Sample Concentration mg/L	Duplicate Sample mg/L	RPD	RPD Max.
9808652-01B	4160	4070	2.2	5

-9808909

Samples in batch:

9808644-01B	9808644-02B	9808644-03B	9808652-01B
9808652-02B	9808652-03B	9808656-01D	9808745-02B
9808745-03B			

COMMENTS:



HOUSTON LABORATORY
8680 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 08/18/98

Analyzed on: 08/18/98

Analyst: AAB

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Nitrate-Nitrite, as N
Method 353.3 *

SPL Sample ID Number	Blank Value mg/L	LCS Concentration mg/L	Measured Concentration mg/L	% Recovery	QC Limits Recovery
LCS	ND	2.77	2.74	98.9	92 - 111

-9808799

Samples in batch:

9808056-03G	9808220-01E	9808508-01C	9808508-02C
9808508-03C	9808518-04D	9808574-01C	9808574-02C
9808574-03C	9808635-01C	9808635-02C	9808635-03C
9808644-01C	9808644-02C	9808644-03C	9808652-01C
9808652-02C	9808652-03C		

COMMENTS:

LCS = SPL ID#:95535196-25



** SPL QUALITY CONTROL REPORT **

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Matrix: Aqueous

Reported on: 08/18/98
Analyzed on: 08/18/98
Analyst: AAB

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Nitrate-Nitrite, as N
Method 353.3 *

SPL Sample	Method	Sample	Spike	Matrix Spike		Matrix Spike Duplicate		RPD	QC LIMITS (Advisory)		
ID Number	Blank	Result	Added	Result	Recovery	Result	Recovery	(%)	RPD	% REC	
	mg/L	mg/L	mg/L	mg/L	%	mg/L	%		Max		
9808574-02C	ND	0.80	5.00	5.56	95.2	5.53	94.6	0.6	12	87	-120

-9808798

Samples in batch:

9808574-01C 9808574-02C 9808574-03C 9808644-01C
9808644-02C 9808644-03C 9808652-01C 9808652-02C
9808652-03C

COMMENTS:

CHAIN OF CUSTODY
AND
SAMPLE RECEIPT CHECKLIST



SPL, Inc.

Analysis Request & Chain of Custody Record

SPL Workorder No:

9808052

47522

page 1 of 1

Client Name: <u>CYPRESS ENGINEERING</u> <u>10235 WEST LITTLE YORK BLVD SUITE 250</u> Address/Phone: <u>HOUSTON TX 77040 (713) 856-7980</u>					matrix		bottle	size	pres.	Requested Analysis																			
Client Contact: <u>SANDY SHARP (713) 646-7252</u>					S=soil SL=sludge O=other:		A=amber glass V=vial	1=1 liter 4=4oz 40=vial 8=8oz 16=16oz	1=HCl 2=HNO3 3=H2SO4 O=other:	Number of Containers	YOU'S 8260 INCLUDE: 42 DICHLOROMETHANE (CIS-TRANS) & DICHLOROBENZENE (O-M-P-) TOS, CHLORIDE SULFATE TOTAL ALKALINITY NITRATE & NITRATE AS NITROGEN (353.2) 8270 PPM'S INCLUDE: MONOMETHYLAMPTALENE ISOMERS 1-4 2-) TOTAL METALS (7470 & 6010) Ba, Cd, Cr, Pb, Hg, Ag, Cu Fe, Mn, Zn, Co, K, Na, Mg AS BY CERTIFICATE NUMBER 7000 5c 1 1 7940 FILTER AND RUN DISSOLVED METALS RUN SAME METALS AS ABOVE																		
Project Name: <u>TWP ROSWELL STA. 9</u>					W=water		P=plastic	1=1 liter 4=4oz 40=vial 8=8oz 16=16oz	1=HCl 2=HNO3 3=H2SO4 O=other:	Number of Containers																			
Project Number:					SL=sludge O=other:		G=glass	1=1 liter 4=4oz 40=vial 8=8oz 16=16oz	1=HCl 2=HNO3 3=H2SO4 O=other:	Number of Containers																			
Project Location:					W=water		P=plastic	1=1 liter 4=4oz 40=vial 8=8oz 16=16oz	1=HCl 2=HNO3 3=H2SO4 O=other:	Number of Containers																			
Invoice To: <u>GEORGE ROBINSON</u>					SL=sludge O=other:		G=glass	1=1 liter 4=4oz 40=vial 8=8oz 16=16oz	1=HCl 2=HNO3 3=H2SO4 O=other:	Number of Containers																			
SAMPLE ID	DATE	TIME	comp	grab	W=water	SL=sludge O=other:	P=plastic	1=1 liter 4=4oz 40=vial 8=8oz 16=16oz	1=HCl 2=HNO3 3=H2SO4 O=other:	Number of Containers																			
MW-9	8/14/98	1340		X	W		G	40/1	1/0	3/1	X																		
MW-9	8/14/98	1340		X	W		G	1	3	1			X																
MW-9	8/14/98	1340		X	W		P	1	2/0	2		X			X														
MW-7	8/14/98	1225		X	W		G	40/1	1/0	3/1	X				X														
MW-7	8/14/98	1225		X	W		G	1	3	1			X																
MW-7	8/14/98	1225		X	W		P	1	2/0	2		X			X														
MW-22	8/14/98	1555		X	W		G	40/1	1/0	3/1	X				X														
MW-22	8/14/98	1555		X	W		G	1	3	1			X																
MW-22	8/14/98	1555		X	W		P	1	2/0	2		X			X														
MW-22	8/14/98	1555		X	W		P	1	0	1												X							
Client/Consultant Remarks: X ON MW-22 RUN TOTAL METALS & DISSOLVED METALS					Laboratory remarks:										Intact? ☐ Y ☐ N Temp: <u>4°C</u>														
Requested TAT					Special Reporting Requirements					Fax Results ☒ Raw Data ☐					Special Detection Limits (specify):					PM review (initial): <u>EB 8/18</u>									
24hr ☐ 72hr ☐					Standard QC ☐ Level 3 QC ☒					Level 4 QC ☐																			
48hr ☐ Standard ☒					1. Relinquished by Sampler: <u>Sandy Sharp</u>					date <u>8/14/98</u> time <u>1700</u>					2. Received by:														
Other ☐					3. Relinquished by:					date					time					4. Received by:									
					5. Relinquished by:					date <u>8-15-98</u> time <u>1000</u>					6. Received by Laboratory:														

☐ 8880 Interchange Drive, Houston, TX 77054 (713) 660-0901☐ 459-Hughes Drive, Traverse City, MI 49684 (616) 947-5777☐ 500 Ambassador Caffery Parkway, Scott, LA 70583 (318) 237-4775☐ 1501 E. Orangethorpe Avenue, Fullerton, CA 92631 (714) 447-6868

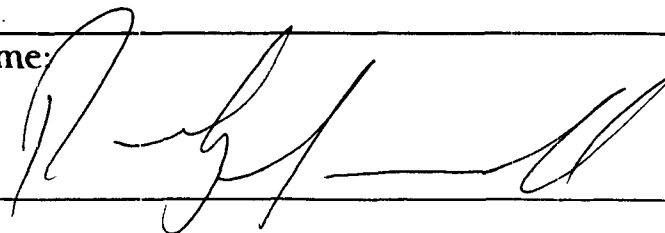
SPL Houston Environmental Laboratory

Sample Login Checklist

Date: 8-15-98	Time: 1000
---------------	------------

SPL Sample ID: 9808652

		Yes	No
1	Chain-of-Custody (COC) form is present.	—	
2	COC is properly completed.	—	
3	If no, Non-Conformance Worksheet has been completed.		
4	Custody seals are present on the shipping container.	—	
5	If yes, custody seals are intact.	—	
6	All samples are tagged or labeled.	—	
7	If no, Non-Conformance Worksheet has been completed.		
8	Sample containers arrived intact	—	
9	Temperature of samples upon arrival:	4	C
10	Method of sample delivery to SPL:	SPL Delivery	
		Client Delivery	
		FedEx Delivery (airbill #)	806908026532
		Other:	
11	Method of sample disposal:	SPL Disposal	—
		HOLD	
		Return to Client	

Name: 	Date: 8-15-98
---	---------------



August 28, 1998

Mr. George Robinson
CYPRESS ENGINEERING, INC.
10235 W. Little York Rd #256
Houston, TX 77040

The following report contains analytical results for the sample(s) received at Southern Petroleum Laboratories (SPL) on August 13, 1998. The sample(s) was assigned to Certificate of Analysis No.(s) 9808508 and analyzed for all parameters as listed on the chain of custody.

Sample "MW-6" (SPL#9808508-01E) was randomly chosen as a Quality Control sample for Total Metals analysis by SW-846 method 6010. The Matrix Spike(MS)and Matrix Spike Duplicate (MSD) recoveries were outside of advisable limits for Calcium. The MSD and MS/MSD Relative Percent Difference (RPD) recoveries were also out for Magnesium and Sodium. A Laboratory Control Sample (LCS) was analyzed as a Quality Control check for the analytical batch and all recoveries were within acceptable limits.

Any data flag or quality control exception associated with this report will be footnoted in the analytical results page(s) or the quality control summary page(s).

If you have any questions or comments pertaining to this data report, please do not hesitate to contact me. Please reference the above Certificate of Analysis No. during any inquiries.

Again, SPL is pleased to be of service to you. We anticipate working with you in fulfilling all your current and future analytical needs.

Southern Petroleum Laboratories

A handwritten signature in cursive script, reading "Electa Brown".

Electa Brown
Project Manager



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

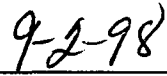
Southern Petroleum Laboratories, Inc.

Certificate of Analysis Number: 98-08-508

Approved for Release by:



Electa Brown, Project Manager



Date

Greg Grandits
Laboratory Director

Cynthia Schreiner
Quality Assurance Officer

The attached analytical data package may not be reproduced except in full without the express written approval of this laboratory.
The results relate only to the samples tested.
Results reported on a Wet Weight Basis unless otherwise noted.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9808508-01

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 10/27/98

PROJECT: TWP Roswell STA 9
SITE:
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-6

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 08/11/98 11:30:00
DATE RECEIVED: 08/13/98

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
Alkalinity, as CaCO ₃ Method 310.1 * Analyzed by: TK Date: 08/17/98 15:00:00	98	1	mg/L	
Chloride Method 325.3 * Analyzed by: AB Date: 08/20/98 10:00:00	305	2	mg/L	
Sulfate Method 375.4 * Analyzed by: TW Date: 08/25/98 12:30:00	1500	100	mg/L	
Total Dissolved Solids Method 160.1 * Analyzed by: DS Date: 08/14/98 15:00:00	2900	100	mg/L	
Nitrate-Nitrite, as N Method 353.3 * Analyzed by: AAB Date: 08/18/98 10:00:00	1.0	0.1	mg/L	
Liquid-liquid extraction SEMIVOLATILES Method 3520C *** Analyzed by: DR Date: 08/14/98 10:00:00	08/14/98			

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9808508-01

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 10/27/98

PROJECT: TWP Roswell STA 9
SITE:
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-6

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 08/11/98 11:30:00
DATE RECEIVED: 08/13/98

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
Silver, Total Method 6010B *** Analyzed by: EG Date: 08/24/98 10:34:00	ND	0.01	mg/L	
Arsenic, Total Method 6010B *** Analyzed by: EG Date: 08/24/98 10:34:00	ND	0.1	mg/L	
Barium, Total Method 6010B *** Analyzed by: EG Date: 08/24/98 10:34:00	0.006	0.005	mg/L	
Calcium, Total Method 6010B *** Analyzed by: EG Date: 08/24/98 10:34:00	425	0.1	mg/L	
Cadmium, Total Method 6010B *** Analyzed by: EG Date: 08/24/98 10:34:00	ND	0.005	mg/L	
Chromium, Total Method 6010B *** Analyzed by: EG Date: 08/24/98 10:34:00	ND	0.01	mg/L	

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9808508-01

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 10/27/98

PROJECT: TWP Roswell STA 9
SITE:
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-6

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 08/11/98 11:30:00
DATE RECEIVED: 08/13/98

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
Copper, Total Method 6010B *** Analyzed by: EG Date: 08/24/98 10:34:00	ND	0.01	mg/L	
Iron, Total Method 6010B *** Analyzed by: EG Date: 08/24/98 10:34:00	0.18	0.02	mg/L	
Mercury, Total Method 7470 A*** Analyzed by: AG Date: 08/24/98 14:09:00	ND	0.0002	mg/L	
Potassium, Total Method 6010B *** Analyzed by: EG Date: 08/24/98 10:34:00	3	2	mg/L	
Magnesium, Total Method 6010B *** Analyzed by: EG Date: 08/24/98 10:34:00	124	0.1	mg/L	
Manganese, Total Method 6010B *** Analyzed by: EG Date: 08/24/98 10:34:00	ND	0.005	mg/L	

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9808508-01

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 10/27/98

PROJECT: TWP Roswell STA 9
SITE:
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-6

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 08/11/98 11:30:00
DATE RECEIVED: 08/13/98

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
Sodium, Total Method 6010B *** Analyzed by: EG Date: 08/24/98 10:34:00	126	0.5	mg/L	
Acid Digestion-Aqueous, ICP Method 3010A *** Analyzed by: GJ Date: 08/13/98 18:00:00	08/13/98			
Lead, Total Method 6010B *** Analyzed by: EG Date: 08/26/98 10:30:00	ND	0.005	mg/L	
Selenium, Total Method 6010B *** Analyzed by: EG Date: 08/24/98 10:34:00	ND	0.1	mg/L	
Zinc, Total Method 6010B *** Analyzed by: EG Date: 08/24/98 10:34:00	0.02	0.02	mg/L	

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.

Certificate of Analysis No. H9-9808508-01

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 11/13/98

PROJECT: TWP Roswell STA 9
SITE:
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-6

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 08/11/98 11:30:00
DATE RECEIVED: 08/13/98

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
Silver, Total Method 6010B *** Analyzed by: EG Date: 08/24/98 10:34:00	ND	0.01	mg/L	
Arsenic, Total Method 6010B *** Analyzed by: EG Date: 08/26/98 10:30:00	ND	0.005	mg/L	
Barium, Total Method 6010B *** Analyzed by: EG Date: 08/24/98 10:34:00	0.006	0.005	mg/L	
Calcium, Total Method 6010B *** Analyzed by: EG Date: 08/24/98 10:34:00	425	0.1	mg/L	
Cadmium, Total Method 6010B *** Analyzed by: EG Date: 08/24/98 10:34:00	ND	0.005	mg/L	
Chromium, Total Method 6010B *** Analyzed by: EG Date: 08/24/98 10:34:00	ND	0.01	mg/L	

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.

Certificate of Analysis No. H9-9808508-01

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 11/13/98

PROJECT: TWP Roswell STA 9
SITE:
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-6

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 08/11/98 11:30:00
DATE RECEIVED: 08/13/98

ANALYTICAL DATA			
PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Sodium, Total Method 6010B *** Analyzed by: EG Date: 08/24/98 10:34:00	126	0.5	mg/L
Acid Digestion-Aqueous, ICP Method 3010A *** Analyzed by: GJ Date: 08/13/98 18:00:00	08/13/98		
Lead, Total Method 6010B *** Analyzed by: EG Date: 08/26/98 10:30:00	ND	0.005	mg/L
Selenium, Total Method 6010B *** Analyzed by: EG Date: 08/26/98 10:30:00	ND	0.005	mg/L
Zinc, Total Method 6010B *** Analyzed by: EG Date: 08/24/98 10:34:00	0.02	0.02	mg/L

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9808508-01

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

10/27/98

PROJECT: TWP Roswell STA 9
SITE:
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-6

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 08/11/98 11:30:00
DATE RECEIVED: 08/13/98

ANALYTICAL DATA				
PARAMETER	RESULTS	PQL*	UNITS	
Benzene	ND	5	ug/L	
Bromobenzene	ND	5	ug/L	
Bromochloromethane	ND	5	ug/L	
Bromodichloromethane	ND	5	ug/L	
Bromoform	ND	5	ug/L	
Bromomethane	ND	10	ug/L	
n-Butylbenzene	ND	5	ug/L	
sec-Butylbenzene	ND	5	ug/L	
tert-Butylbenzene	ND	5	ug/L	
Carbon tetrachloride	ND	5	ug/L	
Chlorobenzene	ND	5	ug/L	
Chlorodibromomethane	ND	5	ug/L	
Chloroethane	ND	10	ug/L	
Chloroform	ND	5	ug/L	
Chloromethane	ND	10	ug/L	
2-Chlorotoluene	ND	5	ug/L	
4-Chlorotoluene	ND	5	ug/L	
1,2-Dibromo-3-chloropropane	ND	5	ug/L	
1,2-Dibromoethane	ND	5	ug/L	
Dibromomethane	ND	5	ug/L	
1,2-Dichlorobenzene	ND	5	ug/L	
1,3-Dichlorobenzene	ND	5	ug/L	
1,4-Dichlorobenzene	ND	5	ug/L	
Dichlorodifluoromethane	ND	10	ug/L	
1,1-Dichloroethane	ND	5	ug/L	
1,2-Dichloroethane	ND	5	ug/L	
1,1-Dichloroethene	ND	5	ug/L	
cis-1,2-Dichloroethene	ND	5	ug/L	
trans-1,2-Dichloroethene	ND	5	ug/L	
1,2-Dichloropropane	ND	5	ug/L	
1,3-Dichloropropane	ND	5	ug/L	
2,2-Dichloropropane	ND	5	ug/L	
1,1-Dichloropropene	ND	5	ug/L	
Ethylbenzene	ND	5	ug/L	
Hexachlorobutadiene	ND	5	ug/L	
Isopropylbenzene	ND	5	ug/L	
p-Isopropyltoluene	ND	5	ug/L	
Methylene chloride	ND	5	ug/L	

METHOD: 8260 Water, Volatile Organics
(continued on next page)



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9808508-01

Cypress Engineering, Inc.

SAMPLE ID: MW-6

ANALYTICAL DATA (continued)				
PARAMETER	RESULTS	PQL*	UNITS	
Naphthalene	ND	5	ug/L	
n-Propylbenzene	ND	5	ug/L	
Styrene	ND	5	ug/L	
1,1,1,2-Tetrachloroethane	ND	5	ug/L	
1,1,2,2-Tetrachloroethane	ND	5	ug/L	
Tetrachloroethene	ND	5	ug/L	
Toluene	ND	5	ug/L	
1,2,3-Trichlorobenzene	ND	5	ug/L	
1,2,4-Trichlorobenzene	ND	5	ug/L	
1,1,1-Trichloroethane	ND	5	ug/L	
1,1,2-Trichloroethane	ND	5	ug/L	
Trichloroethene	ND	5	ug/L	
Trichlorofluoromethane	ND	5	ug/L	
1,2,3-Trichloropropane	ND	5	ug/L	
1,2,4-Trimethylbenzene	ND	5	ug/L	
1,3,5-Trimethylbenzene	ND	5	ug/L	
Vinyl chloride	ND	10	ug/L	
Xylenes (total)	ND	5	ug/L	
Acetone	ND	100	ug/L	
Carbon Disulfide	ND	5	ug/L	
Vinyl Acetate	ND	10	ug/L	
2-Butanone	ND	20	ug/L	
1,2-Dichloroethene (total)	ND	5	ug/L	
2-Chloroethylvinylether	ND	10	ug/L	
4-Methyl-2-Pentanone	ND	10	ug/L	
cis-1,3-Dichloropropene	ND	5	ug/L	
trans-1,3-Dichloropropene	ND	5	ug/L	
2-Hexanone	ND	10	ug/L	
Methyl t-Butyl Ether	ND	10	ug/L	
SURROGATES	AMOUNT SPIKED	% RECOVERY	LOWER LIMIT	UPPER LIMIT
1,2-Dichloroethane-d4	50 ug/L	94	76	114
Toluene-d8	50 ug/L	100	88	110
4-Bromofluorobenzene	50 ug/L	102	86	115

ANALYZED BY: JC

DATE/TIME: 08/14/98 09:35:00

METHOD: 8260 Water, Volatile Organics

NOTES: * - Practical Quantitation Limit

ND - Not Detected

NA - Not Analyzed

COMMENTS:

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9808508-01

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

10/27/98

PROJECT: TWP Roswell STA 9
SITE:
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-6

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 08/11/98 11:30:00
DATE RECEIVED: 08/13/98

ANALYTICAL DATA

PARAMETER	RESULTS	PQL*	UNITS
Acenaphthene	ND	5	ug/L
Acenaphthylene	ND	5	ug/L
Anthracene	ND	5	ug/L
Benzo(a)Anthracene	ND	5	ug/L
Benzo(b)Fluoranthene	ND	5	ug/L
Benzo(k)Fluoranthene	ND	5	ug/L
Benzo(a)Pyrene	ND	5	ug/L
Benzo(g,h,i)Perylene	ND	5	ug/L
Chrysene	ND	5	ug/L
Dibenz(a,h)Anthracene	ND	5	ug/L
Fluoranthene	ND	5	ug/L
Fluorene	ND	5	ug/L
Indeno(1,2,3-cd)Pyrene	ND	5	ug/L
2-Methylnaphthalene	ND	5	ug/L
Naphthalene	ND	5	ug/L
Phenanthrene	ND	5	ug/L
Pyrene	ND	5	ug/L
1-Methylnaphthalene	ND	5	ug/L

SURROGATES

	AMOUNT SPIKED	% RECOVERY	LOWER LIMIT	UPPER LIMIT
Nitrobenzene-d5	50 ug/L	68	35	114
2-Fluorobiphenyl	50 ug/L	96	43	116
Terphenyl-d14	50 ug/L	96	33	141
Phenol-d5	75 ug/L	23	10	110
2-Fluorophenol	75 ug/L	35	21	110
2,4,6-Tribromophenol	75 ug/L	109	10	123

ANALYZED BY: YL DATE/TIME: 08/18/98 19:32:00
EXTRACTED BY: DR DATE/TIME: 08/14/98 10:00:00
METHOD: 8270C, Semivolatile Organics - Water
NOTES: * - Practical Quantitation Limit ND - Not Detected
 NA - Not Analyzed

COMMENTS:

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9808508-02

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 10/27/98

PROJECT: TWP Roswell STA 9
SITE:
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-14

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 08/11/98 14:55:00
DATE RECEIVED: 08/13/98

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
Alkalinity, as CaCO ₃ Method 310.1 * Analyzed by: TK Date: 08/17/98 15:00:00	122	1	mg/L	
Chloride Method 325.3 * Analyzed by: AB Date: 08/20/98 10:00:00	360	5	mg/L	
Sulfate Method 375.4 * Analyzed by: TW Date: 08/25/98 12:30:00	1800	100	mg/L	
Total Dissolved Solids Method 160.1 * Analyzed by: DS Date: 08/14/98 15:00:00	3300	100	mg/L	
Nitrate-Nitrite, as N Method 353.3 * Analyzed by: AAB Date: 08/18/98 10:00:00	0.2	0.1	mg/L	
Liquid-liquid extraction SEMIVOLATILES Method 3520C *** Analyzed by: DR Date: 08/14/98 10:00:00	08/14/98			

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9808508-02

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 10/27/98

PROJECT: TWP Roswell STA 9
SITE:
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-14

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 08/11/98 14:55:00
DATE RECEIVED: 08/13/98

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
Silver, Total Method 6010B *** Analyzed by: EG Date: 08/24/98 10:34:00	ND	0.01	mg/L	
Arsenic, Total Method 6010B *** Analyzed by: EG Date: 08/24/98 10:34:00	ND	0.1	mg/L	
Barium, Total Method 6010B *** Analyzed by: EG Date: 08/24/98 10:34:00	0.009	0.005	mg/L	
Calcium, Total Method 6010B *** Analyzed by: EG Date: 08/24/98 10:34:00	608	1	mg/L	
Cadmium, Total Method 6010B *** Analyzed by: EG Date: 08/24/98 10:34:00	ND	0.005	mg/L	
Chromium, Total Method 6010B *** Analyzed by: EG Date: 08/24/98 10:34:00	ND	0.01	mg/L	

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9808508-02

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 10/27/98

PROJECT: TWP Roswell STA 9
SITE:
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-14

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 08/11/98 14:55:00
DATE RECEIVED: 08/13/98

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
Copper, Total Method 6010B *** Analyzed by: EG Date: 08/24/98 10:34:00	ND	0.01	mg/L	
Iron, Total Method 6010B *** Analyzed by: EG Date: 08/24/98 10:34:00	ND	0.02	mg/L	
Mercury, Total Method 7470 A*** Analyzed by: AG Date: 08/24/98 14:09:00	ND	0.0002	mg	
Potassium, Total Method 6010B *** Analyzed by: EG Date: 08/24/98 10:34:00	5	2	mg/L	
Magnesium, Total Method 6010B *** Analyzed by: EG Date: 08/24/98 10:34:00	144	0.1	mg/L	
Manganese, Total Method 6010B *** Analyzed by: EG Date: 08/24/98 10:34:00	ND	0.005	mg/L	

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9808508-02

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 10/27/98

PROJECT: TWP Roswell STA 9
SITE:
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-14

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 08/11/98 14:55:00
DATE RECEIVED: 08/13/98

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
Sodium, Total Method 6010B *** Analyzed by: EG Date: 08/24/98 10:34:00	161	0.5	mg/L	
Acid Digestion-Aqueous, ICP Method 3010A *** Analyzed by: GJ Date: 08/13/98 18:00:00	08/13/98			
Lead, Total Method 6010B *** Analyzed by: EG Date: 08/26/98 10:30:00	ND	0.005	mg/L	
Selenium, Total Method 6010B *** Analyzed by: EG Date: 08/24/98 10:34:00	ND	0.1	mg/L	
Zinc, Total Method 6010B *** Analyzed by: EG Date: 08/24/98 10:34:00	0.03	0.02	mg/L	

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.

Certificate of Analysis No. H9-9808508-02

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 11/13/98

PROJECT: TWP Roswell STA 9
SITE:
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-14

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 08/11/98 14:55:00
DATE RECEIVED: 08/13/98

ANALYTICAL DATA			
PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Silver, Total Method 6010B *** Analyzed by: EG Date: 08/24/98 10:34:00	ND	0.01	mg/L
Arsenic, Total Method 6010B *** Analyzed by: EG Date: 08/26/98 10:30:00	ND	0.005	mg/L
Barium, Total Method 6010B *** Analyzed by: EG Date: 08/24/98 10:34:00	0.009	0.005	mg/L
Calcium, Total Method 6010B *** Analyzed by: EG Date: 08/24/98 10:34:00	608	1	mg/L
Cadmium, Total Method 6010B *** Analyzed by: EG Date: 08/24/98 10:34:00	ND	0.005	mg/L
Chromium, Total Method 6010B *** Analyzed by: EG Date: 08/24/98 10:34:00	ND	0.01	mg/L

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.

Certificate of Analysis No. H9-9808508-02

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 11/13/98

PROJECT: TWP Roswell STA 9
SITE:
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-14

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 08/11/98 14:55:00
DATE RECEIVED: 08/13/98

ANALYTICAL DATA			
PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Sodium, Total Method 6010B *** Analyzed by: EG Date: 08/24/98 10:34:00	161	0.5	mg/L
Acid Digestion-Aqueous, ICP Method 3010A *** Analyzed by: GJ Date: 08/13/98 18:00:00	08/13/98		
Lead, Total Method 6010B *** Analyzed by: EG Date: 08/26/98 10:30:00	ND	0.005	mg/L
Selenium, Total Method 6010B *** Analyzed by: EG Date: 08/26/98 10:30:00	ND	0.005	mg/L
Zinc, Total Method 6010B *** Analyzed by: EG Date: 08/24/98 10:34:00	0.03	0.02	mg/L

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9808508-02

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

10/27/98

PROJECT: TWP Roswell STA 9
SITE:
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-14

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 08/11/98 14:55:00
DATE RECEIVED: 08/13/98

ANALYTICAL DATA				
PARAMETER	RESULTS	PQL*	UNITS	
Benzene	ND	5	ug/L	
Bromobenzene	ND	5	ug/L	
Bromochloromethane	ND	5	ug/L	
Bromodichloromethane	ND	5	ug/L	
Bromoform	ND	5	ug/L	
Bromomethane	ND	10	ug/L	
n-Butylbenzene	ND	5	ug/L	
sec-Butylbenzene	ND	5	ug/L	
tert-Butylbenzene	ND	5	ug/L	
Carbon tetrachloride	ND	5	ug/L	
Chlorobenzene	ND	5	ug/L	
Chlorodibromomethane	ND	5	ug/L	
Chloroethane	ND	10	ug/L	
Chloroform	ND	5	ug/L	
Chloromethane	ND	10	ug/L	
2-Chlorotoluene	ND	5	ug/L	
4-Chlorotoluene	ND	5	ug/L	
1,2-Dibromo-3-chloropropane	ND	5	ug/L	
1,2-Dibromoethane	ND	5	ug/L	
Dibromomethane	ND	5	ug/L	
1,2-Dichlorobenzene	ND	5	ug/L	
1,3-Dichlorobenzene	ND	5	ug/L	
1,4-Dichlorobenzene	ND	5	ug/L	
Dichlorodifluoromethane	ND	10	ug/L	
1,1-Dichloroethane	ND	5	ug/L	
1,2-Dichloroethane	ND	5	ug/L	
1,1-Dichloroethene	ND	5	ug/L	
cis-1,2-Dichloroethene	ND	5	ug/L	
trans-1,2-Dichloroethene	ND	5	ug/L	
1,2-Dichloropropane	ND	5	ug/L	
1,3-Dichloropropane	ND	5	ug/L	
2,2-Dichloropropane	ND	5	ug/L	
1,1-Dichloropropene	ND	5	ug/L	
Ethylbenzene	ND	5	ug/L	
Hexachlorobutadiene	ND	5	ug/L	
Isopropylbenzene	ND	5	ug/L	
p-Isopropyltoluene	ND	5	ug/L	
Methylene chloride	ND	5	ug/L	

METHOD: 8260 Water, Volatile Organics
(continued on next page)



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9808508-02

Cypress Engineering, Inc.

SAMPLE ID: MW-14

ANALYTICAL DATA (continued)				
PARAMETER	RESULTS	PQL*	UNITS	
Naphthalene	ND	5	ug/L	
n-Propylbenzene	ND	5	ug/L	
Styrene	ND	5	ug/L	
1,1,1,2-Tetrachloroethane	ND	5	ug/L	
1,1,2,2-Tetrachloroethane	ND	5	ug/L	
Tetrachloroethene	ND	5	ug/L	
Toluene	ND	5	ug/L	
1,2,3-Trichlorobenzene	ND	5	ug/L	
1,2,4-Trichlorobenzene	ND	5	ug/L	
1,1,1-Trichloroethane	ND	5	ug/L	
1,1,2-Trichloroethane	ND	5	ug/L	
Trichloroethene	ND	5	ug/L	
Trichlorofluoromethane	ND	5	ug/L	
1,2,3-Trichloropropane	ND	5	ug/L	
1,2,4-Trimethylbenzene	ND	5	ug/L	
1,3,5-Trimethylbenzene	ND	5	ug/L	
Vinyl chloride	ND	10	ug/L	
Xylenes (total)	ND	5	ug/L	
Acetone	ND	100	ug/L	
Carbon Disulfide	ND	5	ug/L	
Vinyl Acetate	ND	10	ug/L	
2-Butanone	ND	20	ug/L	
1,2-Dichloroethene (total)	ND	5	ug/L	
2-Chloroethylvinylether	ND	10	ug/L	
4-Methyl-2-Pentanone	ND	10	ug/L	
cis-1,3-Dichloropropene	ND	5	ug/L	
trans-1,3-Dichloropropene	ND	5	ug/L	
2-Hexanone	ND	10	ug/L	
Methyl t-Butyl Ether	ND	10	ug/L	

SURROGATES	AMOUNT SPIKED	% RECOVERY	LOWER LIMIT	UPPER LIMIT
1,2-Dichloroethane-d4	50 ug/L	92	76	114
Toluene-d8	50 ug/L	100	88	110
4-Bromofluorobenzene	50 ug/L	100	86	115

ANALYZED BY: JC

DATE/TIME: 08/14/98 10:51:00

METHOD: 8260 Water, Volatile Organics

NOTES: * - Practical Quantitation Limit

ND - Not Detected

NA - Not Analyzed

COMMENTS:

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9808508-02

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

10/27/98

PROJECT: TWP Roswell STA 9
SITE:
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-14

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 08/11/98 14:55:00
DATE RECEIVED: 08/13/98

ANALYTICAL DATA

PARAMETER	RESULTS	PQL*	UNITS
Acenaphthene	ND	5	ug/L
Acenaphthylene	ND	5	ug/L
Anthracene	ND	5	ug/L
Benzo(a)Anthracene	ND	5	ug/L
Benzo(b)Fluoranthene	ND	5	ug/L
Benzo(k)Fluoranthene	ND	5	ug/L
Benzo(a)Pyrene	ND	5	ug/L
Benzo(g,h,i)Perylene	ND	5	ug/L
Chrysene	ND	5	ug/L
Dibenz(a,h)Anthracene	ND	5	ug/L
Fluoranthene	ND	5	ug/L
Fluorene	ND	5	ug/L
Indeno(1,2,3-cd)Pyrene	ND	5	ug/L
2-Methylnaphthalene	ND	5	ug/L
Naphthalene	ND	5	ug/L
Phenanthrene	ND	5	ug/L
Pyrene	ND	5	ug/L
1-Methylnaphthalene	ND	5	ug/L

SURROGATES	AMOUNT SPIKED	% RECOVERY	LOWER LIMIT	UPPER LIMIT
Nitrobenzene-d5	50 ug/L	60	35	114
2-Fluorobiphenyl	50 ug/L	84	43	116
Terphenyl-d14	50 ug/L	90	33	141
Phenol-d5	75 ug/L	19	10	110
2-Fluorophenol	75 ug/L	32	21	110
2,4,6-Tribromophenol	75 ug/L	105	10	123

ANALYZED BY: YL
EXTRACTED BY: DR
METHOD: 8270C, Semivolatile Organics - Water
NOTES: * - Practical Quantitation Limit ND - Not Detected
NA - Not Analyzed

COMMENTS:

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9808508-03

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 10/27/98

PROJECT: TWP Roswell STA 9
SITE:
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-5

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 08/11/98 16:55:00
DATE RECEIVED: 08/13/98

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
Alkalinity, as CaCO ₃ Method 310.1 * Analyzed by: TK Date: 08/17/98 15:00:00	121	1	mg/L	
Chloride Method 325.3 * Analyzed by: AB Date: 08/20/98 10:00:00	520	5	mg/L	
Sulfate Method 375.4 * Analyzed by: TW Date: 08/25/98 12:30:00	1500	100	mg/L	
Total Dissolved Solids Method 160.1 * Analyzed by: DS Date: 08/14/98 15:00:00	3400	100	mg/L	
Nitrate-Nitrite, as N Method 353.3 * Analyzed by: AAB Date: 08/18/98 10:00:00	3.7	0.1	mg/L	
Liquid-liquid extraction SEMIVOLATILES Method 3520C *** Analyzed by: DR Date: 08/14/98 10:00:00	08/14/98			

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9808508-03

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 10/27/98

PROJECT: TWP Roswell STA 9
SITE:
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-5

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 08/11/98 16:55:00
DATE RECEIVED: 08/13/98

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
Silver, Total Method 6010B *** Analyzed by: EG Date: 08/24/98 10:34:00	ND	0.01	mg/L	
Arsenic, Total Method 6010B *** Analyzed by: EG Date: 08/24/98 10:34:00	ND	0.1	mg/L	
Barium, Total Method 6010B *** Analyzed by: EG Date: 08/24/98 10:34:00	0.010	0.005	mg	
Calcium, Total Method 6010B *** Analyzed by: EG Date: 08/24/98 10:34:00	588	1	mg/L	
Cadmium, Total Method 6010B *** Analyzed by: EG Date: 08/24/98 10:34:00	ND	0.005	mg/L	
Chromium, Total Method 6010B *** Analyzed by: EG Date: 08/24/98 10:34:00	ND	0.01	mg/L	

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9808508-03

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 10/27/98

PROJECT: TWP Roswell STA 9
SITE:
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-5

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 08/11/98 16:55:00
DATE RECEIVED: 08/13/98

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
Copper, Total Method 6010B *** Analyzed by: EG Date: 08/24/98 10:34:00	ND	0.01	mg/L	
Iron, Total Method 6010B *** Analyzed by: EG Date: 08/24/98 10:34:00	0.06	0.02	mg/L	
Mercury, Total Method 7470 A*** Analyzed by: AG Date: 08/24/98 14:09:00	ND	0.0002	mg/L	
Potassium, Total Method 6010B *** Analyzed by: EG Date: 08/24/98 10:34:00	3	2	mg/L	
Magnesium, Total Method 6010B *** Analyzed by: EG Date: 08/24/98 10:34:00	144	0.1	mg/L	
Manganese, Total Method 6010B *** Analyzed by: EG Date: 08/24/98 10:34:00	ND	0.005	mg/L	

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9808508-03

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 10/27/98

PROJECT: TWP Roswell STA 9
SITE:
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-5

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 08/11/98 16:55:00
DATE RECEIVED: 08/13/98

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
Sodium, Total Method 6010B *** Analyzed by: EG Date: 08/24/98 10:34:00	193	0.5	mg/L	
Acid Digestion-Aqueous, ICP Method 3010A *** Analyzed by: GJ Date: 08/13/98 18:00:00	08/13/98			
Lead, Total Method 6010B *** Analyzed by: EG Date: 08/26/98 10:30:00	ND	0.005	mg/L	
Selenium, Total Method 6010B *** Analyzed by: EG Date: 08/24/98 10:34:00	ND	0.1	mg/L	
Zinc, Total Method 6010B *** Analyzed by: EG Date: 08/24/98 10:34:00	ND	0.02	mg/L	

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.

Certificate of Analysis No. H9-9808508-03

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 11/13/98

PROJECT: TWP Roswell STA 9
SITE:
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-5

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 08/11/98 16:55:00
DATE RECEIVED: 08/13/98

ANALYTICAL DATA			
PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Silver, Total Method 6010B *** Analyzed by: EG Date: 08/24/98 10:34:00	ND	0.01	mg/L
Arsenic, Total Method 6010B *** Analyzed by: EG Date: 08/26/98 10:30:00	ND	0.005	mg/L
Barium, Total Method 6010B *** Analyzed by: EG Date: 08/24/98 10:34:00	0.010	0.005	mg/L
Calcium, Total Method 6010B *** Analyzed by: EG Date: 08/24/98 10:34:00	588	1	mg/L
Cadmium, Total Method 6010B *** Analyzed by: EG Date: 08/24/98 10:34:00	ND	0.005	mg/L
Chromium, Total Method 6010B *** Analyzed by: EG Date: 08/24/98 10:34:00	ND	0.01	mg/L

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.

Certificate of Analysis No. H9-9808508-03

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

DATE: 11/13/98

PROJECT: TWP Roswell STA 9
SITE:
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-5

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 08/11/98 16:55:00
DATE RECEIVED: 08/13/98

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
Sodium, Total Method 6010B *** Analyzed by: EG Date: 08/24/98 10:34:00	193	0.5	mg/L	
Acid Digestion-Aqueous, ICP Method 3010A *** Analyzed by: GJ Date: 08/13/98 18:00:00	08/13/98			
Lead, Total Method 6010B *** Analyzed by: EG Date: 08/26/98 10:30:00	ND	0.005	mg/L	
Selenium, Total Method 6010B *** Analyzed by: EG Date: 08/26/98 10:30:00	0.016	0.005	mg/L	
Zinc, Total Method 6010B *** Analyzed by: EG Date: 08/24/98 10:34:00	ND	0.02	mg/L	

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9808508-03

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

10/27/98

PROJECT: TWP Roswell STA 9
SITE:
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-5

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 08/11/98 16:55:00
DATE RECEIVED: 08/13/98

ANALYTICAL DATA				
PARAMETER	RESULTS	PQL*	UNITS	
Benzene	ND	5	ug/L	
Bromobenzene	ND	5	ug/L	
Bromochloromethane	ND	5	ug/L	
Bromodichloromethane	ND	5	ug/L	
Bromoform	ND	5	ug/L	
Bromomethane	ND	10	ug/L	
n-Butylbenzene	ND	5	ug/L	
sec-Butylbenzene	ND	5	ug/L	
tert-Butylbenzene	ND	5	ug/L	
Carbon tetrachloride	ND	5	ug/L	
Chlorobenzene	ND	5	ug/L	
Chlorodibromomethane	ND	5	ug/L	
Chloroethane	ND	10	ug/L	
Chloroform	ND	5	ug/L	
Chloromethane	ND	10	ug/L	
2-Chlorotoluene	ND	5	ug/L	
4-Chlorotoluene	ND	5	ug/L	
1,2-Dibromo-3-chloropropane	ND	5	ug/L	
1,2-Dibromoethane	ND	5	ug/L	
Dibromomethane	ND	5	ug/L	
1,2-Dichlorobenzene	ND	5	ug/L	
1,3-Dichlorobenzene	ND	5	ug/L	
1,4-Dichlorobenzene	ND	5	ug/L	
Dichlorodifluoromethane	ND	10	ug/L	
1,1-Dichloroethane	ND	5	ug/L	
1,2-Dichloroethane	ND	5	ug/L	
1,1-Dichloroethene	ND	5	ug/L	
cis-1,2-Dichloroethene	ND	5	ug/L	
trans-1,2-Dichloroethene	ND	5	ug/L	
1,2-Dichloropropane	ND	5	ug/L	
1,3-Dichloropropane	ND	5	ug/L	
2,2-Dichloropropane	ND	5	ug/L	
1,1-Dichloropropene	ND	5	ug/L	
Ethylbenzene	ND	5	ug/L	
Hexachlorobutadiene	ND	5	ug/L	
Isopropylbenzene	ND	5	ug/L	
p-Isopropyltoluene	ND	5	ug/L	
Methylene chloride	ND	5	ug/L	

METHOD: 8260 Water, Volatile Organics
(continued on next page)



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9808508-03

Cypress Engineering, Inc.

SAMPLE ID: MW-5

ANALYTICAL DATA (continued)				
PARAMETER	RESULTS	PQL*	UNITS	
Naphthalene	ND	5	ug/L	
n-Propylbenzene	ND	5	ug/L	
Styrene	ND	5	ug/L	
1,1,1,2-Tetrachloroethane	ND	5	ug/L	
1,1,2,2-Tetrachloroethane	ND	5	ug/L	
Tetrachloroethene	ND	5	ug/L	
Toluene	ND	5	ug/L	
1,2,3-Trichlorobenzene	ND	5	ug/L	
1,2,4-Trichlorobenzene	ND	5	ug/L	
1,1,1-Trichloroethane	ND	5	ug/L	
1,1,2-Trichloroethane	ND	5	ug/L	
Trichloroethene	ND	5	ug/L	
Trichlorofluoromethane	ND	5	ug/L	
1,2,3-Trichloropropane	ND	5	ug/L	
1,2,4-Trimethylbenzene	ND	5	ug/L	
1,3,5-Trimethylbenzene	ND	5	ug/L	
Vinyl chloride	ND	10	ug/L	
Xylenes (total)	ND	5	ug/L	
Acetone	ND	100	ug/L	
Carbon Disulfide	ND	5	ug/L	
Vinyl Acetate	ND	10	ug/L	
2-Butanone	ND	20	ug/L	
1,2-Dichloroethene (total)	ND	5	ug/L	
2-Chloroethylvinylether	ND	10	ug/L	
4-Methyl-2-Pentanone	ND	10	ug/L	
cis-1,3-Dichloropropene	ND	5	ug/L	
trans-1,3-Dichloropropene	ND	5	ug/L	
2-Hexanone	ND	10	ug/L	
Methyl t-Butyl Ether	ND	10	ug/L	

SURROGATES	AMOUNT SPIKED	% RECOVERY	LOWER LIMIT	UPPER LIMIT
1,2-Dichloroethane-d4	50 ug/L	90	76	114
Toluene-d8	50 ug/L	100	88	110
4-Bromofluorobenzene	50 ug/L	102	86	115

ANALYZED BY: JC

DATE/TIME: 08/14/98 11:16:00

METHOD: 8260 Water, Volatile Organics

NOTES: * - Practical Quantitation Limit

ND - Not Detected

NA - Not Analyzed

COMMENTS:

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9808508-03

Cypress Engineering, Inc.
10235 W. Little York Rd #256
Houston, TX 77040
ATTN: George Robinson

10/27/98

PROJECT: TWP Roswell STA 9
SITE:
SAMPLED BY: Cypress Engineering
SAMPLE ID: MW-5

PROJECT NO:
MATRIX: WATER
DATE SAMPLED: 08/11/98 16:55:00
DATE RECEIVED: 08/13/98

ANALYTICAL DATA

PARAMETER	RESULTS	PQL*	UNITS	
Acenaphthene	ND	5	ug/L	
Acenaphthylene	ND	5	ug/L	
Anthracene	ND	5	ug/L	
Benzo(a)Anthracene	ND	5	ug/L	
Benzo(b)Fluoranthene	ND	5	ug/L	
Benzo(k)Fluoranthene	ND	5	ug/L	
Benzo(a)Pyrene	ND	5	ug/L	
Benzo(g,h,i)Perylene	ND	5	ug/L	
Chrysene	ND	5	ug/L	
Dibenz(a,h)Anthracene	ND	5	ug/L	
Fluoranthene	ND	5	ug/L	
Fluorene	ND	5	ug/L	
Indeno(1,2,3-cd)Pyrene	ND	5	ug/L	
2-Methylnaphthalene	ND	5	ug/L	
Naphthalene	ND	5	ug/L	
Phenanthrene	ND	5	ug/L	
Pyrene	ND	5	ug/L	
1-Methylnaphthalene	ND	5	ug/L	

SURROGATES	AMOUNT SPIKED	% RECOVERY	LOWER LIMIT	UPPER LIMIT
Nitrobenzene-d5	50 ug/L	68	35	114
2-Fluorobiphenyl	50 ug/L	96	43	116
Terphenyl-d14	50 ug/L	100	33	141
Phenol-d5	75 ug/L	20	10	110
2-Fluorophenol	75 ug/L	33	21	110
2,4,6-Tribromophenol	75 ug/L	108	10	123

ANALYZED BY: YL DATE/TIME: 08/18/98 20:36:00
EXTRACTED BY: DR DATE/TIME: 08/14/98 10:00:00
METHOD: 8270C, Semivolatile Organics - Water
NOTES: * - Practical Quantitation Limit ND - Not Detected
 NA - Not Analyzed

COMMENTS:

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.

QUALITY CONTROL
DOCUMENTATION

3A
WATER VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: SPL

Contract:

Lab Code:

Case No.: 9808508 SAS No.:

SDG No.:

Matrix Spike - EPA Sample No.: MW-6

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC #	QC. LIMITS REC.
=====	=====	=====	=====	=====	=====
1,1-Dichloroethene	50	0	60	120	61-145
Trichloroethene	50	0	51	102	71-120
Benzene	50	0	56	112	76-127
Toluene	50	0	52	104	76-125
Chlorobenzene	50	0	48	96	75-130

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC #	% RPD #	QC LIMITS	
=====	=====	=====	=====	=====	RPD	REC.
1,1-Dichloroethene	50	57	114	5	14	61-145
Trichloroethene	50	49	98	4	14	71-120
Benzene	50	53	106	6	11	76-127
Toluene	50	50	100	4	13	76-125
Chlorobenzene	50	48	96	0	13	75-130

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 5 outside limits

Spike Recovery: 0 out of 10 outside limits

SPL Houston Labs

RECOVERY REPORT

Client Name: Client SDG: n980814
Sample Matrix: LIQUID Fraction: VOA
Lab Smp Id: LCS
Level: LOW Operator: JC
Data Type: MS DATA SampleType: LCS
SpikeList File: 8260_water.spk Quant Type: ISTD
Sublist File: 8260.sub
Method File: /var/chem/n.i/n980814.b/n8260w.m
Misc Info: N226W1//N226CW1

SPIKE COMPOUND	CONC ADDED ug/L	CONC RECOVERED ug/L	% RECOVERED	LIMITS
8 1,1-Dichloroethene	50	61	122.00	61-145
29 Trichloroethene	50	51	102.00	71-120
25 Benzene	50	55	110.00	76-127
37 Toluene	50	51	102.00	76-125
45 Chlorobenzene	50	48	96.00	75-130

SURROGATE COMPOUND	CONC ADDED ug/L	CONC RECOVERED ug/L	% RECOVERED	LIMITS
\$ 21 1,2-Dichloroethane	50	46	92.00	76-114
\$ 36 Toluene-d8	50	51	102.00	88-110
\$ 56 Bromofluorobenzene	50	50	100.00	86-115



SPL Blank QC Report

HOUSTON LABORATORY

8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 588-9961

1

Matrix: Aqueous
Sample ID: VLBLK
Batch: N980814122720Reported on: 08/27/98 10:33
Analyzed on: 08/14/98 08:44
Analyst: JC

METHOD 8260/8240 N226B01

Compound	Result	Detection Limit	Units
Dichlorodifluoromethane	ND	10	ug/L
Chloromethane	ND	10	ug/L
Vinyl Chloride	ND	10	ug/L
Bromomethane	ND	10	ug/L
Chloroethane	ND	10	ug/L
Trichlorofluoromethane	ND	5	ug/L
Acetone	ND	100	ug/L
1,1-Dichloroethene	ND	5	ug/L
Methylene Chloride	ND	5	ug/L
Carbon Disulfide	ND	5	ug/L
trans-1,2-Dichloroethene	ND	5	ug/L
1,1-Dichloroethane	ND	5	ug/L
Vinyl Acetate	ND	10	ug/L
2-Butanone	ND	20	ug/L
cis-1,2-Dichloroethene	ND	5	ug/L
1,2-Dichloroethene (total)	ND	5	ug/L
2,2-Dichloropropane	ND	5	ug/L
Bromochloromethane	ND	5	ug/L
Chloroform	ND	5	ug/L
1,1,1-Trichloroethane	ND	5	ug/L
1,2-Dichloroethane	ND	5	ug/L
1,1-Dichloropropene	ND	5	ug/L
Benzene	ND	5	ug/L
Carbon Tetrachloride	ND	5	ug/L
1,2-Dichloropropane	ND	5	ug/L
Trichloroethene	ND	5	ug/L
Dibromomethane	ND	5	ug/L
Bromodichloromethane	ND	5	ug/L
2-Chloroethylvinylether	ND	10	ug/L
4-Methyl-2-Pentanone	ND	10	ug/L
cis-1,3-Dichloropropene	ND	5	ug/L
trans-1,3-Dichloropropene	ND	5	ug/L
Toluene	ND	5	ug/L
1,1,2-Trichloroethane	ND	5	ug/L

Notes

ND - Not detected.



SPL Blank QC Report

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 866-8861

Matrix: Aqueous
Sample ID: VLBLK
Batch: N980814122720

Reported on: 08/27/98 10:33
Analyzed on: 08/14/98 08:44
Analyst: JC

METHOD 8260/8240 N226B01

Compound	Result	Detection Limit	Units
1,3-Dichloropropane	ND	5	ug/L
2-Hexanone	ND	10	ug/L
Dibromochloromethane	ND	5	ug/L
1,2-Dibromoethane	ND	5	ug/L
Tetrachloroethene	ND	5	ug/L
Chlorobenzene	ND	5	ug/L
1,1,1,2-Tetrachloroethane	ND	5	ug/L
Ethylbenzene	ND	5	ug/L
Bromoform	ND	5	ug/L
Styrene	ND	5	ug/L
Xylene (Total)	ND	5	ug/L
1,1,2,2-Tetrachloroethane	ND	5	ug/L
1,2,3-Trichloropropane	ND	5	ug/L
Isopropylbenzene	ND	5	ug/L
Bromobenzene	ND	5	ug/L
N-Propylbenzene	ND	5	ug/L
2-Chlorotoluene	ND	5	ug/L
4-Chlorotoluene	ND	5	ug/L
1,3,5-Trimethylbenzene	ND	5	ug/L
tert-Butylbenzene	ND	5	ug/L
1,2,4-Trimethylbenzene	ND	5	ug/L
1,3-Dichlorobenzene	ND	5	ug/L
sec-Butylbenzene	ND	5	ug/L
1,4-Dichlorobenzene	ND	5	ug/L
p-Isopropyltoluene	ND	5	ug/L
1,2-Dichlorobenzene	ND	5	ug/L
n-Butylbenzene	ND	5	ug/L
1,2-Dibromo-3-Chloropropan	ND	5	ug/L
1,2,4-Trichlorobenzene	ND	5	ug/L
Naphthalene	ND	5	ug/L
Hexachlorobutadiene	ND	5	ug/L
1,2,3-Trichlorobenzene	ND	5	ug/L
Methyl t-Butyl Ether	ND	10	ug/L

Notes

ND - Not detected.



SPL Blank QC Report

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 566-5561

3

Matrix: Aqueous
Sample ID: VLBLK
Batch: N980814122720

Reported on: 08/27/98 10:33
Analyzed on: 08/14/98 08:44
Analyst: JC

METHOD 8260/8240 N226B01

S u r r o g a t e	Result	QC Criteria	Units
1,2-Dichloroethane-d4	92	76-114	% Recovery
Toluene-d8	100	88-110	% Recovery
Bromofluorobenzene	100	86-115	% Recovery

Samples in Batch 9808508-01 9808508-02 9808508-03

Notes

ND - Not detected.

3C

WATER SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: SPL

Contract:

Lab Code: Case No: 980814

SAS No: SDG No:

Matrix Spike - EPA Sample No: SBLK Level (low/med):

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATIO (ug/L)	MS CONCENTRATION (ug/L)	MS % REC #	QC LIMITS REC
Phenol	75	0	15	20	12-110
2-Chlorophenol	75	0	44	59	27-123
1,4-Dichlorobenzene	50	0	34	68	36- 97
N-Nitroso-di-n-propylamine	50	0	27	54	41-116
1,2,4-Trichlorobenzene	50	0	35	70	39- 110
4-Chloro-3-methylphenol	75	0	46	61	23-110
Acenaphthene	50	0	41	82	46-125
4-Nitrophenol	75	0	19	25	25-150
2,4-Dinitrotoluene	50	0	36	72	50-150
Pentachlorophenol	75	0	47	63	9-125
Pyrene	50	0	46	92	26-127

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATIO (ug/L)	MSD % REC #	% RPD #	QC LIMITS	
					RPD	REC
Phenol	75	17	23	14	42	12-110
2-Chlorophenol	75	46	61	3	40	27-132
1,4-Dichlorobenzene	50	35	70	3	28	36- 97
N-Nitroso-di-n-propylamine	50	28	56	4	38	41-116
1,2,4-Trichlorobenzene	50	36	72	3	28	39-110
4-Chloro-3-methylphenol	75	47	63	3	42	23-110
Acenaphthene	50	44	88	7	31	46-125
4-Nitrophenol	75	19	25	0	50	25-150
2,4-Dinitrotoluene	50	37	74	3	50	50-150
Pentachlorophenol	75	50	67	6	50	9-125
Pyrene	50	48	96	4	31	26-127

Column to be used to flag recovery and RPD values with an asterisk

RPD: 0 out of 11 outside limits
Spike Recovery: 0 out of 22 outside limits



SPL Blank QC Report

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 584-9898

1

Matrix: Aqueous
Sample ID: BLANK
Batch: E980815042258

Reported on: 08/27/98 17:34
Analyzed on: 08/18/98 17:22
Analyst: YL

METHOD 8270 H227B03A

Compound	Result	Detection Limit	Units
Naphthalene	ND	5	ug/L
2-Methylnaphthalene	ND	5	ug/L
1-Methylnaphthalene	ND	5	ug/L
Acenaphthylene	ND	5	ug/L
Acenaphthene	ND	5	ug/L
Fluorene	ND	5	ug/L
Phenanthrene	ND	5	ug/L
Anthracene	ND	5	ug/L
Fluoranthene	ND	5	ug/L
Pyrene	ND	5	ug/L
Benzo[a]anthracene	ND	5	ug/L
Chrysene	ND	5	ug/L
Benzo[b]fluoranthene	ND	5	ug/L
Benzo[k]fluoranthene	ND	5	ug/L
Benzo[a]pyrene	ND	5	ug/L
Indeno[1,2,3-cd]pyrene	ND	5	ug/L
Dibenz[a,h]anthracene	ND	5	ug/L
Benzo[g,h,i]perylene	ND	5	ug/L

Surrogate	Result	QC Criteria	Units
Nitrobenzene-d5	62	35-114	% Recovery
2-Fluorobiphenyl	90	43-116	% Recovery
Terphenyl-d14	86	33-141	% Recovery
2-Fluorophenol	43	21-110	% Recovery
Phenol-d5	27	10-110	% Recovery
2,4,6-Tribromophenol	101	10-123	% Recovery

Samples in Batch 9808508-01 9808508-02 9808508-03

Notes

ND - Not detected.

ICP Spectroscopy Method 6010 Quality Control Report

Analyst: EG/JM



Matrix: Water

Units: mg/L

Date: 082498 Time: 1034 File Name: 082498M2

HOUSTON LABORATORY

 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Laboratory Control Sample

Element	Mth. Blank	True Value	Result	% Recovery	Lower Limit	Upper Limit
Silver	ND	2.00	1.97	98	1.60	2.40
Aluminum						
Arsenic	ND	4.00	4.11	103	3.20	4.80
Barium	ND	2.00	1.92	96	1.60	2.40
Beryllium						
Calcium	ND	20.00	19.83	99	16.00	24.00
Cadmium	ND	2.00	2.01	100	1.60	2.40
Cobalt						
Chromium	ND	2.00	2.03	102	1.60	2.40
Copper	ND	2.00	1.99	99	1.60	2.40
Iron	ND	2.00	1.98	99	1.60	2.40
Potassium	ND	20.00	22.41	112	16.00	24.00
Magnesium	ND	20.00	20.34	102	16.00	24.00
Manganese	ND	2.00	1.95	97	1.60	2.40
Sodium	ND	20.00	21.65	108	16.00	24.00
Nickel						
Lead						
Antimony						
Selenium	ND	4.00	4.12	103	3.20	4.80
Thallium						
Vanadium						
Zinc	ND	2.00	2.03	102	1.60	2.40

Work Orders in Batch

Work Order Fractions

98-08-508 01E-03E

98-08-488 01B-03B

98-08-490 01B-03B

98-08-493 01B-04B

98-08-494 01B-04B

98-08-492 03B

Matrix Spike - Spike Duplicate Results

Work Order Spiked: 9808508-01E

Element	Sample Result	Spike Added	Matrix Spike Result	Matrix Spike Recovery	Matrix Spike Duplicate Result	Matrix Spike Duplicate Recovery	QC Limits % Recovery	Spike RPD %	QC Limits %
Silver	ND	1.0	0.8363	83.6	0.8557	85.6	80 120	2.3	20.0
Aluminum									
Arsenic	ND	2.0	1.788	89.4	1.841	92.1	80 120	2.9	20.0
Barium	0.0056	1.0	0.9256	92.0	0.9216	91.6	80 120	0.4	20.0
Beryllium									
Calcium	425.3	10.0	447.1	218.0 *	448.9	236.0 *	80 120	7.9	20.0
Cadmium	ND	1.0	0.8722	87.2	0.878	87.8	80 120	0.7	20.0
Cobalt									
Chromium	ND	1.0	0.8358	83.6	0.8475	84.8	80 120	1.4	20.0
Copper	ND	1.0	0.8136	81.4	0.852	85.2	80 120	4.6	20.0
Iron	0.1802	1.0	1.153	97.3	1.123	94.3	80 120	3.1	20.0
Potassium	2.818	10.0	12.45	96.3	13.55	107.3	80 120	10.8	20.0
Magnesium	124.4	10.0	135.4	110.0	138.8	144.0 *	80 120	26.8 **	20.0
Manganese	0.0043	1.0	0.8127	80.8	0.8259	82.1	80 120	1.6	20.0
Sodium	125.7	10.0	134	83.0	140.3	146.0 *	80 120	55.0 **	20.0
Nickel									
Lead									
Antimony									
Selenium	ND	2.0	1.847	92.4	1.896	94.8	80 120	2.6	20.0
Thallium									
Vanadium									
Zinc	0.0234	1.0	0.9071	88.4	0.9363	91.3	80 120	3.3	20.0

* Spike Results Outside Method Limits

** Spike RPD Outside Method Limits

Elements Post Spiked: Ba, Fe, K.

Checked: 8/25/98

**HOUSTON LABORATORY**8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901**** SPL QUALITY CONTROL REPORT ****

Matrix: Aqueous

Reported on: 08/24/98

Analyzed on: 08/24/98

Analyst: AG

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Mercury, Total
Method 7470 A***

SPL Sample ID Number	Blank Value ug/L	LCS Concentration ug/L	Measured Concentration ug/L	% Recovery	QC Limits Recovery
LCS	ND	2.00	1.95	97.5	80 - 120

-9808A50

Samples in batch:

9808508-01E 9808508-02E 9808508-03E 9808574-01E
9808574-02E 9808574-03E 9808584-17A

COMMENTS:

LCS = SPL ID# 94-452-45-21



** SPL QUALITY CONTROL REPORT **

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Matrix: Aqueous.

Reported on: 08/24/98

Analyzed on: 08/24/98

Analyst: AG

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Mercury, Total
Method 7470 A***

SPL Sample	Method	Sample	Spike	Matrix Spike		Matrix Spike Duplicate		RPD	QC LIMITS (Advisory)		
ID Number	Blank	Result	Added	Result	Recovery	Result	Recovery	(%)	RPD	% REC	
	ug/L	ug/L	ug/L	ug/L	%	ug/L	%		Max		
9808508-01E	ND	ND	2.00	2.10	105	2.07	104	1.0	20	75	-125

-9808A50

Samples in batch:

9808508-01E 9808508-02E 9808508-03E 9808574-01E
9808574-02E 9808574-03E 9808584-17A

COMMENTS:

LCS = SPL ID# 94-452-45-21

ICP Spectroscopy Method 6010 Quality Control Report

Analyst: EG



Matrix: Water

Units: mg/L

HOUSTON LABORATORY

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 660-0901

Date:082698 Time:1030 File Name: T082698D

Laboratory Control Sample

Element	Mth. Blank	True Value	Result	% Recovery	Lower Limit	Upper Limit
Silver						
Aluminum						
Arsenic						
Barium						
Beryllium						
Calcium						
Cadmium						
Cobalt						
Chromium						
Copper						
Iron						
Potassium						
Magnesium						
Manganese						
Sodium						
Nickel						
Lead	ND	2.00	1.93	96	1.60	2.40
Antimony						
Selenium						
Thallium						
Vanadium						
Zinc						

Work Orders in Batch

Work Order Fractions

98-08-508 01E-03E

98-08-502 02C

Matrix Spike - Spike Duplicate Results

Work Order Spiked: 9808508-01E

Element	Sample Result	Spike Added	Matrix Spike Result	Matrix Spike Recovery	Matrix Spike Duplicate Result	Matrix Spike Duplicate Recovery	QC Limits % Recovery	Spike RPD %	QC Limits %
Silver									
Aluminum									
Arsenic									
Barium									
Beryllium									
Calcium									
Cadmium									
Cobalt									
Chromium									
Copper									
Iron									
Potassium									
Magnesium									
Manganese									
Sodium									
Nickel									
Lead	ND	1.0	0.8048	80.5	0.8161	81.6	80 120	1.4	20.0
Antimony									
Selenium									
Thallium									
Vanadium									
Zinc									

Checked: 8/26/98



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 08/18/98

Analyzed on: 08/18/98

Analyst: TK

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Alkalinity, as CaCO₃
Method 310.1 *

SPL Sample ID Number	Blank Value mg/L	LCS Concentration mg/L	Measured Concentration mg/L	% Recovery	QC Limits Recovery
LCS	ND	235	239.4	102	95 - 113

-9808786

Samples in batch:

9808508-01B	9808508-02B	9808508-03B	9808547-01D
9808547-02D	9808547-03D	9808547-04D	9808555-01D
9808555-02D	9808555-03D		

COMMENTS:

LCS#94453209-13



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 08/17/98

Analyzed on: 08/17/98

Analyst: TK

This sample was randomly selected for use in the SPL quality control program. The results are as follows:

Alkalinity, as CaCO₃
Method 310.1 *

-- DUPLICATE ANALYSIS --

SPL Sample ID	Original Sample Concentration mg/L	Duplicate Sample mg/L	RPD	RPD Max.
9808508-01B	98	98.2	0.2	18

-9808732

Samples in batch:

9808508-01B	9808508-02B	9808508-03B	9808547-01D
9808547-02D	9808547-03D	9808547-04D	9808555-01D
9808555-02D	9808555-03D		

COMMENTS:



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous-

Reported on: 08/21/98

Analyzed on: 08/20/98

Analyst: AB

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Chloride
Method 325.3 *

SPL Sample ID Number	Blank Value mg/L	LCS Concentration mg/L	Measured Concentration mg/L	% Recovery	QC Limits Recovery
LCS	ND	186	181	97.3	94 - 106

-9808952

Samples in batch:

9808466-01A 9808494-01D 9808508-01B 9808508-02B
9808508-03B 9808730-02B 9808847-01D 9808847-02D
9808847-03D

COMMENTS:

LCS= SPL ID# 94453209-13.



** SPL QUALITY CONTROL REPORT **

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Matrix: Aqueous

Reported on: 08/21/98

Analyzed on: 08/20/98

Analyst: AB

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Chloride
Method 325.3 *

SPL Sample	Method	Sample	Spike	Matrix Spike		Matrix Spike Duplicate		RPD	QC LIMITS (Advisory)		
ID Number	Blank mg/L	Result mg/L	Added mg/L	Result mg/L	Recovery %	Result mg/L	Recovery %	(%)	RPD Max	% REC	
9808494-01D	ND	5	100	103	98.0	105	100	2.0	5	92	-109

-9808947

Samples in batch:

9808466-01A 9808494-01D 9808508-01B 9808508-02B
9808508-03B 9808730-02B 9808847-01D 9808847-02D
9808847-03D

COMMENTS:



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 08/17/98

Analyzed on: 08/14/98

Analyst: DS

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Total Dissolved Solids
Method 160.1 *

SPL Sample ID Number	Blank Value mg/L	LCS Concentration mg/L	Measured Concentration mg/L	% Recovery	QC Limits Recovery
LCS	ND	455.9	452	99.1	93 - 107

-9808716

Samples in batch:

9808423-01E	9808424-01D	9808424-02D	9808427-01D
9808427-02D	9808427-03D	9808429-01D	9808429-02D
9808429-03D	9808488-01D	9808488-02D	9808488-03D
9808494-01D	9808494-02D	9808508-01B	9808508-02B

9808508-03B

COMMENTS:

LCS=SPL ID#95535216-17

**HOUSTON LABORATORY**8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901**** SPL QUALITY CONTROL REPORT ****

Matrix: Aqueous

Reported on: 08/17/98

Analyzed on: 08/14/98

Analyst: DS

This sample was randomly selected for use in the SPL quality control program. The results are as follows:

Total Dissolved Solids
Method 160.1 *

-- DUPLICATE ANALYSIS --

SPL Sample ID	Original Sample Concentration mg/L	Duplicate Sample mg/L	RPD	RPD Max.
9808488-01D	435	436	0.2	5

-9808715

Samples in batch:

9808424-01D	9808424-02D	9808429-01D	9808488-01D
9808488-02D	9808488-03D	9808508-01B	9808508-02B
9808508-03B			

COMMENTS:



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 08/25/98

Analyzed on: 08/25/98

Analyst: TW

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Sulfate
Method 375.4 *

SPL Sample ID Number	Blank Value mg/L	LCS Concentration mg/L	Measured Concentration mg/L	% Recovery	QC Limits Recovery
LCS	ND	10.00	9.3	93.0	82 - 111

-9808B13

Samples in batch:

9808490-01D	9808490-02D	9808490-03D	9808493-01D
9808493-02D	9808493-03D	9808493-04D	9808494-01D
9808494-02D	9808494-03D	9808494-04D	9808508-01B
9808508-02B	9808508-03B	9808518-01D	9808518-02D
9808547-01D	9808547-02D		

COMMENTS:

LCS#95535209-12



** SPL QUALITY CONTROL REPORT **

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Matrix: Aqueous

Reported on: 08/25/98

Analyzed on: 08/25/98

Analyst: TW

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Sulfate
Method 375.4 *

SPL Sample	Method	Sample	Spike	Matrix Spike		Matrix Spike Duplicate		RPD	QC LIMITS (Advisory)		
ID Number	Blank	Result	Added	Result	Recovery	Result	Recovery	(%)	RPD	% REC	
	mg/L	mg/L	mg/L	mg/L	%	mg/L	%		Max		
9808494-02D	ND	10.45	10.00	20.69	102	21.36	109	6.6	9.5	84	-120

-9808B11

Samples in batch:

9808494-02D 9808494-03D 9808494-04D 9808508-01B
9808508-02B 9808508-03B 9808518-01D 9808518-02D

COMMENTS:



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 08/18/98

Analyzed on: 08/18/98

Analyst: AAB

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Nitrate-Nitrite, as N
Method 353.3 *

SPL Sample ID Number	Blank Value mg/L	LCS Concentration mg/L	Measured Concentration mg/L	% Recovery	QC Limits Recovery
LCS	ND	2.77	2.74	98.9	92 - 111

-9808799

Samples in batch:

9808056-03G	9808220-01E	9808508-01C	9808508-02C
9808508-03C	9808518-04D	9808574-01C	9808574-02C
9808574-03C	9808635-01C	9808635-02C	9808635-03C
9808644-01C	9808644-02C	9808644-03C	9808652-01C
9808652-02C	9808652-03C		

COMMENTS:

LCS = SPL ID#:95535196-25



** SPL QUALITY CONTROL REPORT **

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Matrix: Aqueous

Reported on: 08/18/98
Analyzed on: 08/18/98
Analyst: AAB

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Nitrate-Nitrite, as N
Method 353.3 *

SPL Sample	Method	Sample	Spike	Matrix Spike		Matrix Spike Duplicate		RPD	QC LIMITS (Advisory)		
ID Number	Blank	Result	Added	Result	Recovery	Result	Recovery	(%)	RPD	% REC	
	mg/L	mg/L	mg/L	mg/L	%	mg/L	%		Max		
9808220-01E	ND	0.13	5.00	4.72	91.8	4.64	90.2	1.8	12	87	-120

-9808797

Samples in batch:

9808056-03G 9808220-01E 9808508-01C 9808508-02C
9808508-03C 9808518-04D 9808635-01C 9808635-02C
9808635-03C

COMMENTS:

CHAIN OF CUSTODY
AND
SAMPLE RECEIPT CHECKLIST



SPL, Inc.

Analysis Request & Chain of Custody Record

SPL Workorder No:

9808508

47527

page 1 of 1

Client Name: CYPRESS ENGINEERING (713) 856-7980

Address/Phone: 10235 WEST LITTLE YORK SUITE 256

Houston TX 77040

Client Contact: SANDY SHARP (713) 646-7252

Project Name: TWP ROSWELL STA. 9

Project Number:

Project Location:

Invoice To: GEORGE ROBINSON @ CES

SAMPLE ID	DATE	TIME	comp	grab	matrix		P=Plastic G=glass	1=HCl 3=H2SO4	Number of Containers	Vials		TOS	Total	Nitr Nitr	Nitr	8227 mon ISS	TO	ME	Ba	Cu	As	Se
					W=water SL=sludge	S=soil O=other				1/2 B 1/2 D	1/2 D											
MW-10	8/11/98	1130		X	W	G	40/1	1/0	3/1	X						X						
MW-10	/	1130		X	W	G	1	3	1					X								
MW-10		1130		X	W	P	1	2/0	2		X						X					
MW-14		1455		X	W	G	40/1	1/0	3/1	X						X						
MW-14		1455		X	W	G	1	3	1					X								
MW-14		1455		X	W	P	1	2/0	2		X							X				
MW-5		1655		X	W	G	40/1	1/0	3/1	X							X					
MW-5		1655		X	W	G	1	3	1						X							
MW-5		1655		X	W	P	1	2/0	2		X							X				

Client/Consultant Remarks:

Laboratory remarks:

ph

Intact? ☒ Y ☐ N

Temp: 42

Requested TAT

24hr ☐ 72hr ☐
48hr ☐ Standard ☒
Other ☐

Special Reporting Requirements

Standard QC ☒Fax Results ☒Level 3 QC ☐Raw Data ☐Level 4 QC ☐

Special Detection Limits (specify):

PM review (initial):

QB 8/13

1. Relinquished by Sampler:

3. Relinquished by:

5. Relinquished by:

date

date

date

time

time

time

2. Received by:

4. Received by:

6. Received by Laboratory:

☐ 8880 Interchange Drive, Houston, TX 77054 (713) 660-0901☐ 459-Hughes Drive, Traverse City, MI 49684 (616) 947-5777☐ 500 Ambassador Caffery Parkway, Scott, LA 70583 (318) 237-4775☐ 1501 E. Orangethorpe Avenue, Fullerton, CA 92631 (714) 447-6868

SPL Houston Environmental Laboratory

Sample Login Checklist

Date: 8/13/98	Time: 1000
---------------	------------

SPL Sample ID: 9808508

		Yes	No
1	Chain-of-Custody (COC) form is present.	✓	
2	COC is properly completed.	✓	
3	If no, Non-Conformance Worksheet has been completed.		
4	Custody seals are present on the shipping container.	✓	
5	If yes, custody seals are intact.	✓	
6	All samples are tagged or labeled.	✓	
7	If no, Non-Conformance Worksheet has been completed.		
8	Sample containers arrived intact	✓	
9	Temperature of samples upon arrival:	4 C	
10	Method of sample delivery to SPL:	SPL Delivery	
		Client Delivery	
		FedEx Delivery (airbill #)	
		Other:	
11	Method of sample disposal:	SPL Disposal	
		HOLD	
		Return to Client	

Name: <i>Melvin G. Hub</i>	Date: 8/13/98
----------------------------	---------------