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98

REPORTS

DATE:

FEB. 1998



February 1, 1998

Conoco, Inc., Mid-Continent Region
Attn.: Ms. Shirley Ebert, Field SHEAR Specialist
3314 Bloomfield Hwy.
Farmington, NM 87401

RE: 1997 Annual Ground Water Report
Conoco Location: Shephard & Kelsey #1E
Unit D, Sec. 29, T29N, R11W, NMPM, San Juan Co., NM

FEB 27 1998

RECEIVED
FEB 27 1998
ON SITE TECHNOLOGIES, LTD.

Dear Ms. Ebert:

The following report summarizes the ground water remediation and monitoring activities conducted by On Site Technologies Limited Partnership and/or others on behalf of Conoco, Inc. at the referenced oil and gas location. This report covered the prior calendar year of 1997, and follows the format outlined in the *Comprehensive Ground Water Remediation and Long-Term Monitoring Plan for Conoco Locations in the San Juan Basin, New Mexico*, submitted to the New Mexico Oil Conservation Division on October 15, 1997.

SUMMARY OF 1997 ACTIVITIES:

During February, 1997, hydrocarbon contaminated soils were excavated from two areas at the Shephard and Kelsey #1E location, near a former produced water storage tank that had leaked and in the area of a former covered unlined production pit. Refer to the attached site map.

The produced water tank excavation involved an area of approximately 2,325 square feet, and ranged in depth from two (2) to six (6) feet below the ground surface. Approximately 180 cubic yards of soil were removed for offsite disposal and treatment. No ground water was encountered in the excavation. A monitoring well was located in the excavation and advanced to eleven feet. A ground water sample collected in March 1997, from this monitoring well indicated no impact from hydrocarbons and the site was recommended for closure.

The production pit excavation involved an area of approximately 220 square feet and to a depth of 4.5 feet below the ground surface. Approximately 30 cubic yards of contaminated soil were removed for offsite disposal and treatment. Shallow ground water was encountered in the excavation. A monitoring well was placed in the excavation prior to backfilling. A ground water sample collected in March 1997, from this monitoring well indicated residual BTEX contamination. Two additional monitoring wells were installed in August 1997, and a ground water monitoring program initiated for this site. At this time, it is anticipated that ground water quality will improve by natural attenuation, since the main source of contamination has been removed. For the calendar year 1997, three monitoring events have been completed, in March, August and December 1997. Results of the soil excavation efforts and initial ground water sampling were previously documented in the following correspondence:

On Site Technologies, Ltd., April 16, 1997. letter to Mr. W. L. Brignon, Senior Council Conoco, Inc. Midland Division, regarding: *Former Production Pit Assessment and Remediation, Conoco Location, Shephard & Kelsey #1E, Unit D, Sec. 29, T29N, R11W, NMPM, San Juan Co., NM.*

On Site Technologies, Ltd., April 28, 1997. letter to Mr. W. L. Brignon, Senior Council Conoco, Inc. Midland Division, regarding: *Former Production Tank Leak, Assessment and Remediation, Conoco Location, Shephard & Kelsey #1E, Unit D, Sec. 29, T29N, R11W, NMPM, San Juan Co., NM.*

PO Box 2606
Farmington, NM
505-325-5667 FAX: 505-327-1496

SAMPLING:

Following the approved Conoco plan, during each sampling event, water levels were measured on all monitoring wells prior to purging and sampling. Samples were collected in laboratory supplied containers, preserved as needed, and proper chain-of-custody protocol followed. Laboratory analyses ordered followed the Conoco Ground Water Plan.

Table 1 summarizes the monitoring well data and water levels measured during each sampling event. Table 2 summarizes the laboratory results for BTEX compounds from all water sampling completed at the referenced site, including assessment data. Table 3 summarizes the laboratory results for RCRA metals and API water quality testing, as required by NMOCD.

Copies of all laboratory reports for the calendar year 1997, along with all laboratory QA/QC documentation and chain-of-custody, are attached with this report.

SUMMARY AND CONCLUSIONS:

The following conclusions are based on the 1997 ground water monitoring results and trends associated with a former production pit at the Shephard and Kelsey #1E well location:

1. Except for contamination from BTEX constituents, there appears to have been no significant hydrocarbon impact to ground water above the New Mexico Water Quality Control Commission (NMWQCC) standards. The BTEX contamination appears to be limited to the immediate area of the former pit.
2. API water analysis indicates high TDS (i.e., 6,929 mg/L) with high sulfate and chloride concentrations. This water quality is typical for shallow ground water at similar sites along the San Juan River and is not suspected to have been a result of the ongoing oil and gas production at the site.
3. BTEX contamination of ground water has declined for all constituents and has been below NMWQCC standards for the last two sample events (i.e., August and December 1997). If BTEX contamination remains below standards for two (2) more quarters, the site should be considered closed and no further remedial actions will need to be taken.
4. The ground water during 1997 fluctuated seasonally with changes in irrigation and flow in the San Juan River. The ground water surface is relatively flat with a gradient of 0.029 to 0.019 feet/foot to the South-southeast. Refer to the Ground Water Potentiometric Maps attached.

Recommendations

LIMITATIONS AND CLOSURE:

This annual groundwater report documents the results of ground water monitoring for the referenced Conoco well location during the calendar year 1997. This report following the Conoco Ground Water Plan, dated October 15, 1997.

The scope of On Site Technologies' services consisted of project management, periodic water sampling and measurement of water levels, laboratory testing for ground water quality, and preparation of the annual report. All work has been performed in accordance with generally accepted professional practices in geotechnical, petroleum and environmental engineering, and hydrogeology.

This document has been prepared by On Site Technologies for the exclusive use of Conoco Inc. as it pertains to the referenced well location operated by Conoco.

If there are any questions regarding this status report, please contact either Myke Lane or Larry Trujillo at On Site Technologies, (505) 325-5667. Thank you for your consideration.

Respectfully submitted,

Reviewed by:



Larry Trujillo
Project Manager

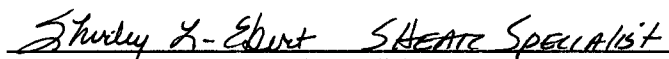


Michael K. Lane, P.E.
Senior Engineer

On Site Technologies, Limited Partnership

Attachments: Table 1: Monitoring Well Details and Ground Water Levels Summary
Table 2: Ground Water BTEX Analytical Summary
Table 3: Other Constituents Analytical Summary
Figure 1: Site Sketch
Figure 2: Ground Water Potentiometric Map (August, 1997)
Figure 3: Ground Water Potentiometric Map (December, 1997)
Boring Logs and Monitoring Well Diagrams
Laboratory Results, QA/QC, Chain of Custody

Acknowledgment:
CONOCO, Inc.


(Name/Title)


(Date)

MKL/mkl: 41429-97.doc

On Site Technologies

Table 1

Ground Water Level Summary

Shephard & Kelsey #1E

Unit D, Sec. 29, T29N, R11W

Well Number	Top of Casing elevation (ft)	Total Depth of Well (ft)*	Well Type	Screen Interval (ft) (BGS)*	Sample Date	Depth to Groundwater (ft) (B, OC)*	Relative Groundwater Elevation (ft)
MW #1	99.957	6.10		1.10 to 6.10 ft	8/20/97	3.51	96.447
					12/30/97	3.96	95.997
MW #2	100.758	10.00 ft.		5.0 to 10.0 ft	8/20/97	5.61	95.148
					12/30/97	5.81	94.948
MW #3	100.867	10.00		5.0 to 10.0 ft	8/20/97	5.86	95.007
					12/30/97	5.75	95.117

BGS - approximate measurements taken as Below Ground Surface

BTOC - Below Top of Casing

NM - Not Measured

On Site Technologies
Table 2
BTEX Analytical Summary
Shephard & Kelsey #1E
Unit D, Sec. 29, T29N, R11W

Sample Date	Sample ID#	Monitor Well	Remarks	BTEX per EPA 8020 (ppb)				
				Benzene	Toluene	Ethylbenzene	Total Xylene	Total BTEX
03/20/97	13999	Sep. Pit MW	On Site Lab.	50.3	10.2	6.3	43.9	110.7
08/19/97	15825	MW-1		7.8	BDL	BDL	0.2	8.0
12/30/97	17247			1.6	BDL	BDL	0.2	1.8
08/20/97	15830	MW-2	On Site Lab.	BDL	BDL	BDL	BDL	BDL
12/30/97	17248			BDL	BDL	BDL	BDL	BDL
08/20/97	15381	MW-3	On Site Lab.	BDL	BDL	BDL	BDL	BDL
12/30/97	17249			BDL	BDL	BDL	BDL	BDL

BDL Below Detection Levels

Other Constituent Analytical Summary
Shephard & Kelsey #1E
Unit D, Sec. 29, T29N, R11W

API Results

CATIONS				ANIONS			
PARAMETER	RESULTS	UNIT OF MEASURE	WQCC Standards	PARAMETER	RESULTS	UNIT OF MEASURE	WQCC Standards
Sodium	Na	1625	mg/L	Chloride	Cl	1696	mg/L
Calcium	Ca	439	mg/L	Sulfate	SO ₄	2828	mg/L
Magnesium	Mg	91	mg/L	Carbonate	CO ₃	<1	mg/L
Potassium	K	23	mg/L	Bicarbonate	HCO ₃	227	mg/L
				Hydroxide	HO	<1	mg/L
				Sulfide	S ₂	NA	mg/L
				Iron	Fe	0.1	mg/L
Cation-Anion Balance				Total Dissolved Solids		6929	mg/L
Difference Cation-Anion				Total Naphthalene		<0.03	mg/l
Difference Cation-Anion me/L				benzo-a-pyrene		<0.0007	mg/L
Total Cation-Anion me/L				pH		7.27	between 6 and 9
				Resistivity		1.0718	ohm-m
				Specific Gravity		1.0061	
				Total hardness of CaCO ₃		1471	mg/L

Sample Date: August 20, 1997

Cation-Anion Balance

Difference Cation-Anion 4.6 %

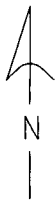
Difference Cation-Anion me/L 9.78

Total Cation-Anion me/L 211.09

RCRA Metals

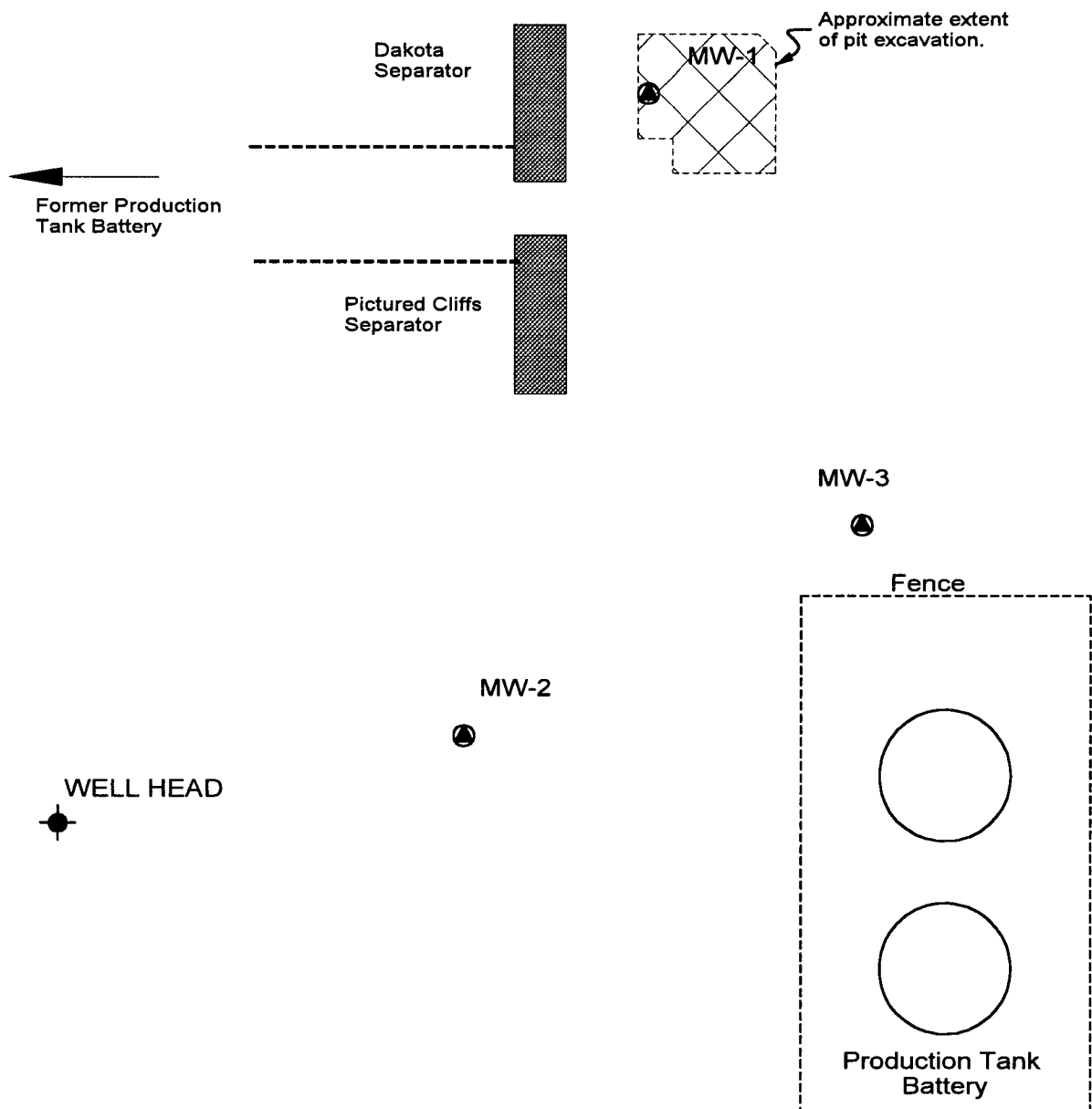
Test Method SW-846

PARAMETER	RESULTS	UNITS	WQCC	UNITS
Mercury by CVAA	<0.0005	mg/L	0.002	mg/L
Arsenic by ICP	<0.15	mg/L	0.1	mg/L
Barium by ICP	0.60	mg/L	1.0	mg/L
Cadmium by ICP	<0.020	mg/L	0.01	mg/L
Chromium by ICP	<0.050	mg/L	0.05	mg/L
Lead by ICP	<0.20	mg/L	0.05	mg/L
Selenium by ICP	<0.35	mg/L	0.05	mg/L
Silver by ICP	<0.030	mg/L	0.05	mg/L



Scale: 1" = 20'

⊙ Approximate location of
ground water monitoring wells



SHEPHARD & KELSEY #1E NE/NE, Sec. 29, T29W, R11W SAN JUAN BASIN, NM		Site Sketch		 ON SITE TECHNOLOGIES, LTD. P.O. BOX 2606, FARMINGTON, NM 87499 (505) 325-5667
		DRWN: 01-08-98		
PROJECT NO: 4-1303-5		DRWN BY: MKL		
FIGURE: 1	FILE: 41303F1.CAD	PROJECT: Pit Reclamation		



Scale: 1" = 20'

Ground water surface
contour (water elevations
measured 8/20/97)

Approximate location of
ground water monitoring wells

Dakota
Separator

96.5

Approximate extent
of pit excavation.

96.0

Ground Water Gradient
(0.029 ft/ft)

Former Production
Tank Battery

Pictured Cliffs
Separator

95.5

95.0

MW-3
(94.98)

MW-2
(95.13)

Fence

WELL HEAD

Production Tank
Battery

SHEPHARD & KELSEY #1E
NE/NE, Sec. 29, T29W, R11W
SAN JUAN BASIN, NM

Ground Water
Potentiometric Map
August, 1997

DRWN: 01-08-98

PROJECT NO: 4-1303-5

DRWN BY: MKL

FIGURE: 2

FILE: 41303F2.CAD

PROJECT: Pit Reclamation

ON SITE TECHNOLOGIES, LTD.

P.O. BOX 2606, FARMINGTON, NM 87499
(505) 325-5667



Scale: 1" = 20'

Ground water surface
contour (water elevations
measured 11/26/97)

Approximate location of
ground water monitoring wells

Approximate extent
of pit excavation.

Dakota
Separator

MW-1
(96.29)

Former Production
Tank Battery

Pictured Cliffs
Separator

Ground Water Gradient
(0.019 ft/ft)

96.0

95.5

MW-3
(95.28)

MW-2
(95.18)

95.0

Fence

WELL HEAD

Production Tank
Battery

SHEPHARD & KELSEY #1E
NE/NE, Sec. 29, T29W, R11W
SAN JUAN BASIN, NM

Ground Water
Potentiometric Map
November, 1997

DRWN: 01-08-98

PROJECT NO: 4-1303-5

DRWN BY: MKL

FIGURE: 3

FILE: 41303F2.CAD

PROJECT: Pit Reclamation

ON SITE TECHNOLOGIES, LTD.

P.O. BOX 2606, FARMINGTON, NM 87499
(505) 325-5667

OFF: (505) 325-5667



LAB: (505) 325-1556

ANALYTICAL REPORT

Attn: *Larry Trujillo*
Company: *On Site Technologies, Ltd. c/o Conoco, Inc.*
Address: *612 E. Murray Drive*
City, State: *Farmington, NM 87401*

Date: *6-Jan-98*
COC No.: *6787*
Sample No.: *17247*
Job No.: *4-1303-5*

Project Name: *Conoco, Inc. - Shepard & Kelsey 1E*

Project Location: *MW #1*

Sampled by: *LT* Date: *30-Dec-98* Time: *8:45*

Analyzed by: *DC* Date: *5-Jan-98*

Sample Matrix: *Liquid*

Parameter	Results as Received	Unit of Measure	Limit of Quantitation	Unit of Measure
<i>Benzene</i>	<i>1.6</i>	<i>ug/L</i>	<i>0.2</i>	<i>ug/L</i>
<i>Toluene</i>	<i>ND</i>	<i>ug/L</i>	<i>0.2</i>	<i>ug/L</i>
<i>Ethylbenzene</i>	<i>ND</i>	<i>ug/L</i>	<i>0.2</i>	<i>ug/L</i>
<i>m,p-Xylene</i>	<i>0.2</i>	<i>ug/L</i>	<i>0.2</i>	<i>ug/L</i>
<i>o-Xylene</i>	<i>ND</i>	<i>ug/L</i>	<i>0.2</i>	<i>ug/L</i>
<i>TOTAL</i>	<i>1.8</i>	<i>ug/L</i>		

ND - Not Detected at Limit of Quantitation

Method - *SW-846 EPA Method 8020A Aromatic Volatile Organics by Gas Chromatography*

Approved By: *[Signature]*
Date: *1/6/98*

OFF: (505) 325-5667



LAB: (505) 325-1556

ANALYTICAL REPORT

Attn: *Larry Trujillo*
Company: *On Site Technologies, Ltd. c/o Conoco, Inc.*
Address: *612 E. Murray Drive*
City, State: *Farmington, NM 87401*

Date: *6-Jan-98*
COC No.: *6787*
Sample No.: *17248*
Job No.: *4-1303-5*

Project Name: *Conoco, Inc. - Shepard & Kelsey 1E*
Project Location: *MW #2*
Sampled by: *LT* Date: *30-Dec-98* Time: *8:07*
Analyzed by: *DC* Date: *5-Jan-98*
Sample Matrix: *Liquid*

Parameter	Results as Received	Unit of Measure	Limit of Quantitation	Unit of Measure
<i>Benzene</i>	ND	ug/L	0.2	ug/L
<i>Toluene</i>	ND	ug/L	0.2	ug/L
<i>Ethylbenzene</i>	ND	ug/L	0.2	ug/L
<i>m,p-Xylene</i>	ND	ug/L	0.2	ug/L
<i>o-Xylene</i>	ND	ug/L	0.2	ug/L
<i>TOTAL</i>	ND	ug/L		

ND - Not Detected at Limit of Quantitation

Method - *SW-846 EPA Method 8020A Aromatic Volatile Organics by Gas Chromatography*

Approved By: *[Signature]*
Date: *1/6/98*

OFF: (505) 325-5667



LAB: (505) 325-1556

ANALYTICAL REPORT

Attn: **Larry Trujillo**
Company: **On Site Technologies, Ltd. c/o Conoco, Inc.**
Address: **612 E. Murray Drive**
City, State: **Farmington, NM 87401**

Date: **6-Jan-98**
COC No.: **6787**
Sample No.: **17249**
Job No.: **4-1303-5**

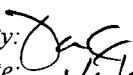
Project Name: **Conoco, Inc. - Shepard & Kelsey 1E**
Project Location: **MW #3**
Sampled by: **LT**
Analyzed by: **DC**
Sample Matrix: **Liquid**

Date: **30-Dec-98** Time: **8:19**
Date: **5-Jan-98**

Parameter	Results as Received	Unit of Measure	Limit of Quantitation	Unit of Measure
<i>Benzene</i>	ND	ug/L	0.2	ug/L
<i>Toluene</i>	ND	ug/L	0.2	ug/L
<i>Ethylbenzene</i>	ND	ug/L	0.2	ug/L
<i>m,p-Xylene</i>	ND	ug/L	0.2	ug/L
<i>o-Xylene</i>	ND	ug/L	0.2	ug/L
TOTAL	ND	ug/L		

ND - Not Detected at Limit of Quantitation

Method - SW-846 EPA Method 8020A Aromatic Volatile Organics by Gas Chromatography

Approved By: 
Date: **1/6/98**



ON SITE
TECHNOLOGIES, LTD.

QUALITY ASSURANCE REPORT

for EPA Method 8020

Internal QC No.: 0559-STD

Reference Standard QC No.: 0529/30-QC

Method Blank

Parameter	Result	Unit of Measure
Average Amount of All Analytes In Blank	< 0.2	ppb

Calibration Check

<i>Parameter</i>	<i>Unit of Measure</i>	<i>True Value</i>	<i>Analyzed Value</i>	<i>RPD</i>	<i>Limit</i>
<i>Benzene</i>	ppb	20.0	20.2	1	15%
<i>Toluene</i>	ppb	20.0	21.1	5	15%
<i>Ethylbenzene</i>	ppb	20.0	21.3	6	15%
<i>m,p-Xylene</i>	ppb	40.0	41.1	3	15%
<i>o-Xylene</i>	ppb	20.0	21.1	5	15%

Matrix Spike

<i>Parameter</i>	<i>1 - Percent Recovered</i>	<i>2 - Percent Recovered</i>	<i>Limit</i>	<i>RPD</i>	<i>Limit</i>
<i>Benzene</i>	93	84	(39-150)	5	20%
<i>Toluene</i>	96	90	(46-148)	5	20%
<i>Ethylbenzene</i>	98	92	(32-160)	5	20%
<i>m,p-Xylene</i>	94	88	(35-145)	6	20%
<i>o-Xylene</i>	96	91	(35-145)	5	20%

Surrogate Recoveries

	S1 Percent Recovered	S2 Percent Recovered		S1 Percent Recovered	S2 Percent Recovered
Laboratory Identification			Laboratory Identification		
Limit Percent Recovered	(70-130)		Limit Percent Recovered	(70-130)	
17247-6787	96				
17248-6787	96				
17249-6787	96				
				THK	(DC)
				1/10/98	1/6/98

S1: Flourobenezene

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[illegible]

OFF: (505) 325-5667



LAB: (505) 325-1556

ANALYTICAL REPORT

Attn: **Larry Trujillo**
Company: **On Site Technologies, Ltd. c/o Conoco, Inc.**
Address: **612 E. Murray Drive**
City, State: **Farmington, NM 87401**

Date: **28-Aug-97**
COC No.: **6709**
Sample No.: **15830**
Job No.: **4-1303-5**

Project Name: **Conoco, Inc. - Shepard & Kelsey 1E**

Project Location: **S&K 1E; MW-2**

Sampled by: **LT** Date: **20-Aug-97** Time: **11:50**

Analyzed by: **DC** Date: **25-Aug-97**

Sample Matrix: **Liquid**

Parameter	Results as Received	Unit of Measure	Limit of Quantitation	Unit of Measure
<i>Benzene</i>	ND	ug/L	0.2	ug/L
<i>Toluene</i>	ND	ug/L	0.2	ug/L
<i>Ethylbenzene</i>	ND	ug/L	0.2	ug/L
<i>m,p-Xylene</i>	ND	ug/L	0.2	ug/L
<i>o-Xylene</i>	ND	ug/L	0.2	ug/L
TOTAL	ND	ug/L		

ND - Not Detected at Limit of Quantitation

Method - SW-846 EPA Method 8020A Aromatic Volatile Organics by Gas Chromatography

Approved By: 
Date: **8/28/97**

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LAB: (505) 325-1556

ANALYTICAL REPORT

Attn: *Larry Trujillo*
Company: *On Site Technologies, Ltd. c/o Conoco, Inc.*
Address: *612 E. Murray Drive*
City, State: *Farmington, NM 87401*

Date: *28-Aug-97*
COC No.: *6709*
Sample No.: *15831*
Job No.: *4-1303-5*

Project Name: *Conoco, Inc. - Shepard & Kelsey 1E*
Project Location: *S&K 1E; MW-3*
Sampled by: *LT* Date: *20-Aug-97* Time: *11:51*
Analyzed by: *DC* Date: *25-Aug-97*
Sample Matrix: *Liquid*

Parameter	Results as Received	Unit of Measure	Limit of Quantitation	Unit of Measure
<i>Benzene</i>	ND	ug/L	0.2	ug/L
<i>Toluene</i>	ND	ug/L	0.2	ug/L
<i>Ethylbenzene</i>	ND	ug/L	0.2	ug/L
<i>m,p-Xylene</i>	ND	ug/L	0.2	ug/L
<i>o-Xylene</i>	ND	ug/L	0.2	ug/L
<i>TOTAL</i>	ND	ug/L		

ND - Not Detected at Limit of Quantitation

Method - SW-846 EPA Method 8020A Aromatic Volatile Organics by Gas Chromatography

Approved By: *[Signature]*
Date: *8/28/97*

OFF: (505) 325-5667



LAB: (505) 325-1556

API WATER ANALYSIS

Attn: **Larry Trujillo**
 Company: **On Site Technologies, Ltd. c/o Conoco, Inc.**
 Address: **612 E. Murray Drive**
 City, State: **Farmington, NM 87401**

Date: **4-Sep-97**
 COC No.: **6709**
 Sample ID: **15828**
 Job No.: **4-1303-5**

Project Name: **Conoco, Inc. - Shepard & Kelsey 1E**
 Project Location: **S&K 1E; MW-1**

Sampled by: **LT/ML** Date: **20-Aug-97** Time: **11:30**
 Analyzed by: **HR** Date: **3-Sep-97**

API RP-45 Laboratory Analysis

Parameter	Result	Unit of Measure		Result	Unit of Measure	
Cations						
Sodium Na	1625	mg/L		70.68	me/L	
Calcium Ca	439	mg/L		21.91	me/L	
Magnesium Mg	91	mg/L		7.49	me/L	
Potassium K	23	mg/L		0.58	me/L	
Anions						
Chloride Cl	1696	mg/L		47.84	me/L	
Sulfate SO4	2828	mg/L		58.88	me/L	
Carbonate CO3	< 1	mg/L		< 0.01	me/L	
Bicarbonate HCO3	227	mg/L		3.72	me/L	
Hydroxide OH	< 1	mg/L		< 0.01	me/L	
Sulfide S2	NA	mg/L		NA	me/L	
Iron Fe	0.1	mg/L		< 0.01	me/L	
Total Dissolved Solids			Cation-Anion Balance 9.78 Difference Cation-Anion, me/L 211.09 Total Cation-Anion, me/L 4.6 % Difference Cation-Anion Comments NA: Not Analyzed			
Calculated, Sum of Cation/Anion	6929	mg/L				
pH	7.27					
Resistivity	1.0718	ohm-m				
Specific Gravity	1.0061					
Total Hardness as CaCO3	1471	mg/L				

Approved by:

Date: 9/4/97

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QUALITY ASSURANCE REPORT

API RP-45 Water Analysis

Date: 3-Sep-97

Quality Control Sample

Parameter	Laboratory Identification	True Value	Analyzed Value	Unit of Measure	% Diff	Limit % Diff
Sodium, Na	0451-QC	2.32	2.31	mg/L	0	10
Calcium, Ca	0465-QC	2.18	2.22	mg/L	2	10
Magnesium, Mg	0465-QC	1.14	1.23	mg/L	8	10
Potassium, K	0451-QC	1.33	1.34	mg/L	1	10
Chloride, Cl	0437-QC	200	207	mg/L	4	10
Sulfate, SO ₄	0541-QC	78	81	mg/L	4	10
Alkalinity	0541-QC	159	167	mg/L	5	10
Iron, Fe	0495-QC	2.00	2.03	mg/L	1	10
pH	0541-QC	9.13	9.29		2	10
Conductivity	0541-QC	740	735	uS/cm	-1	15

Matrix Spike

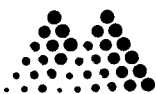
Parameter	Laboratory Identification	Analyzed Value	Matrix Spike	Spike Value	Unit of Measure	Spike Recovery
Sodium, Na	15843-5650	1.40	0.50	1.93	mg/L	102%
Calcium, Ca	15843-5650	1.86	0.50	2.50	mg/L	106%
Magnesium, Mg	15853-5652	0.81	0.50	1.36	mg/L	104%
Potassium, K	15853-5652	1.46	0.50	2.00	mg/L	102%
Iron, Fe	15835-6708	0.98	0.50	1.51	mg/L	102%

Method Blank

Parameter	Laboratory Identification	Analyzed Value	Unit of Measure
Sodium, Na	LF-Blank	<0.2	mg/L
Calcium, Ca	LF-Blank	<0.05	mg/L
Magnesium, Mg	LF-Blank	<0.05	mg/L
Potassium, K	LF-Blank	<0.05	mg/L
Iron, Fe	LF-Blank	<0.05	mg/L
Chloride, Cl	LF-Blank	<3 X DL	mg/L
Sulfate, SO ₄	LF-Blank	<1	mg/L
Sulfide, SO ₂	LF-Blank	NA	mg/L
Conductivity	LF-Blank	<2	uS/cm

(2) JMC
9/4/97 9/4/97

RECEIVED SEP 15 1997



Mountain States Analytical, Inc.

September 10, 1997

Mr. David Cox
On Site Technologies, Ltd.
612 E Murray Drive
Farmington, NM 87401

Reference:

Project: Shepard & Kelsey IE
MSAI Group: 17567

Dear Mr. Cox:

Enclosed are the analytical results for your project referenced above. The following sample is included in the report.

15827-6716

All holding times were met for the tests performed on these samples.

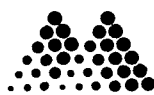
If the report is acceptable, please approve the enclosed invoice and forward it for payment.

Thank you for selecting Mountain States Analytical, Inc. to serve as your analytical laboratory on this project. If you have any questions concerning these results, please feel free to contact me at any time.

We look forward to working with you on future projects.

With Regards,

Rolf E. Larsen
Project Manager



Mountain States Analytical, Inc.

The Quality Solution

On Site Technologies, Ltd.
612 E Murray Drive
Farmington, NM 87401

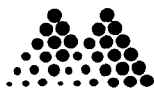
Attn: Mr. David Cox
Project: Shepard & Kelsey IE

Sample ID: 15827-6716
Matrix: Waste Water

RECEIVED SEP 15 1997

MSAI Sample: 67370
MSAI Group: 17567
Date Reported: 09/10/97
Discard Date: 10/10/97
Date Submitted: 08/22/97
Date Sampled: 08/20/97
Collected by:
Purchase Order: 6709
Project No.:

Test Analysis	Results as Received	Units	Limit of Quantitation
0259B Mercury by CVAA, w/ww, 7470 Method: SW-846 7470	ND	mg/l	0.0005
0392I Flame/ICP Prep, w/ww, 3005A Method: SW-846 3005A	Complete		
0392M Mercury Prep CVAA, w/ww, 7470 Method: SW-846 7470	Complete		
245 Arsenic by ICP, w/ww, 6010A Method: SW-846 6010A	ND	mg/l	0.15
246 Barium by ICP, w/ww, 6010A Method: SW-846 6010A	0.60	mg/l	0.02
7249 Cadmium by ICP, w/ww, 6010A Method: SW-846 6010A	ND	mg/l	0.020
7251 Chromium by ICP, w/ww, 6010A Method: SW-846 6010A	ND	mg/l	0.050
7255 Lead by ICP, w/ww, 6010A Method: SW-846 6010A	ND	mg/l	0.20
7264 Selenium by ICP, w/ww, 6010A Method: SW-846 6010A	ND	mg/l	0.35
7266 Silver by ICP, w/ww, 6010A Method: SW-846 6010A	ND	mg/l	0.030



Mountain States Analytical, Inc.

On Site Technologies, Ltd.

The Quality Solution

Page 2

Sample ID: 15827-6716

MSAI Sample: 67370

MSAI Group: 17567

ND - Not detected at the limit of quantitation

This report consists of the following items: A cover letter, a signed analytical report for each sample specified on the cover letter, and if applicable, an inorganic quality control summary. Organic sample reports contain footnotes which describe any quality control anomalies which may have occurred.

Respectfully Submitted,
Reviewed and Approved by:

Rolf E. Larsen
Project Manager

Analysis Batch Number: 0259B-09/03/97-107 -1

Test Identification : 0259B-Mercury by CVAA, w/ww, 7470

Sequence : 0259B-1

Number of Samples : 14

Batch Data-Date/Time : 09/04/97 / 07:43:31

OK
09/09/97

BLANK#	ANALYTE	CONC FOUND #	CONC LIMIT
PBW1-583	Mercury	-0.0700	0.1000
PBW2-583-2	Mercury	-0.0600	0.1000

SPIKE						QC LIMITS	
SAMPLE#	ANALYTE	CONC ADDED	CONC SAMPLE	CONC SPIKE	% REC #	LOWER	UPPER
17589-67415	Mercury	1.0000	-0.0500	0.9900	104.0	80.0	120.0

MSD						QC LIMITS			
SAMPLE#	ANALYTE	CONC ADDED	CONC SAMPLE	RESULT 2	%REC2 #	LOWER	UPPER	RPD #	LIMIT
17589-67416	Mercury	1.0000	-0.0500	0.9600	101.0	80.0	120.0	3.1	20.0

DUPLICATE							
SAMPLE#	ANALYTE	RESULT 1	RESULT 2	RPD #	LIMIT	DILUTION	
17589-67414	Mercury	-0.0500	-0.0800	46.2(11)	20.0	1.00	

CONTROL						QC LIMITS	
SAMPLE#	ANALYTE	CONC FOUND	CONC KNOWN	% REC #	LOWER	UPPER	
LCSW-	Mercury	2.4200	2.5000	96.8	80.0	120.0	

		QC LIMITS				
CCV #	ANALYTE	TRUE VALUE	BATCH READ	% REC #	LOWER	UPPER
ICV-	Mercury	3.0000	2.9500	98.3	80.0	120.0
CCV--2	Mercury	5.0000	4.9600	99.2	80.0	120.0
CCV--3	Mercury	5.0000	4.9800	99.6	80.0	120.0
CCV--4	Mercury	5.0000	4.9300	98.6	80.0	120.0

CCB#	ANALYTE	CONC FOUND #	CONC LIMIT
ICB-	Mercury	-0.0400	0.1000
CCB-	Mercury	-0.0300	0.1000
CCB-	Mercury	0.0300	0.1000
CCB-	Mercury	ND	0.1000

----- Result Footnotes -----

(11) - Both Duplicate results are less than the MDL.

Groups & Samples

17488-67100	17490-67108	17538-67299	17549-67332	17565-67368	17566-67369	17567-67370	17569-67372
17569-67373	17570-67374	17570-67375	17589-67414	17589-67415	17589-67416	17589-67417	17589-67418

Analysis Batch Number: ICPWA-09/06/97-118 -2

Test Identification : ICPWA-*Metals by ICP

Sequence : DATD249

Number of Samples : 14

Batch Date/Time : 09/08/97 / 16:10:21

ok
09/09/97

BLANK#	ANALYTE	CONC FOUND #	CONC LIMIT
PBW1-569	Silver	0.0010	0.0060
	Aluminum	0.0064	0.0500
	Arsenic	ND	0.0300
	Barium	0.0004	0.0030
	Cadmium	ND	0.0040
	Chromium	ND	0.0100
	Iron	0.0066	0.2000
	Sodium	0.0471	0.2000
	Lead	0.0069	0.0400
	Selenium	ND	0.0700
	Zinc	0.0039	0.0300
PBW2-569-2	Silver	0.0022	0.0060
	Aluminum	ND	0.0500
	Arsenic	0.0027	0.0300
	Barium	0.0005	0.0030
	Cadmium	0.0004	0.0040
	Chromium	ND	0.0100
	Iron	0.0094	0.2000
	Sodium	0.0465	0.2000
	Lead	0.0013	0.0400
	Selenium	ND	0.0700
	Zinc	0.0086	0.0300

SPIKE						QC LIMITS	
SAMPLE#	ANALYTE	CONC ADDED	CONC SAMPLE	CONC SPIKE	% REC #	LOWER	UPPER
17589-67415	Silver	0.0500	-0.0030	0.0504	106.8	80.0	120.0
	Aluminum	2.0000	-0.0103	2.0439	102.7	80.0	120.0
	Arsenic	2.0000	0.0090	2.0429	101.7	80.0	120.0
	Barium	2.0000	0.1444	2.1168	98.6	80.0	120.0
	Cadmium	0.0500	-0.0021	0.0513	106.8	80.0	120.0
	Chromium	0.2000	-0.0037	0.2027	103.2	80.0	120.0
	Iron	1.0000	0.1685	1.0142	84.6	80.0	120.0
	Sodium	3.0000	43.3325	45.1625	61.0(2a)	80.0	120.0
	Lead	0.5000	-0.0269	0.4845	102.3	80.0	120.0
	Selenium	2.0000	-0.0596	1.9558	100.8	80.0	120.0
	Zinc	0.5000	0.0273	0.5295	100.4	80.0	120.0

ISD						QC LIMITS			
SAMPLE#	ANALYTE	CONC ADDED	CONC SAMPLE	RESULT 2	%REC2 #	LOWER	UPPER	RPD #	LIMIT
17589-67416	Silver	0.0500	-0.0030	0.0506	107.2	80.0	120.0	0.4	20.0
	Aluminum	2.0000	-0.0103	2.0427	102.7	80.0	120.0	0.1	20.0
	Arsenic	2.0000	0.0090	2.0192	100.5	80.0	120.0	1.2	20.0
	Barium	2.0000	0.1444	2.1286	99.2	80.0	120.0	0.6	20.0
	Cadmium	0.0500	-0.0021	0.0494	103.0	80.0	120.0	3.8	20.0
	Chromium	0.2000	-0.0037	0.2038	103.8	80.0	120.0	0.5	20.0
	Iron	1.0000	0.1685	1.0157	84.7	80.0	120.0	0.1	20.0
	Sodium	3.0000	43.3325	45.7332	80.0	80.0	120.0	1.3(2a)	20.0
	Lead	0.5000	-0.0269	0.4955	104.5	80.0	120.0	2.2	20.0
	Selenium	2.0000	-0.0596	1.9675	101.4	80.0	120.0	0.6	20.0
	Zinc	0.5000	0.0273	0.5295	100.4	80.0	120.0	0.0	20.0

Analysis Batch Number: ICPWA-09/06/97-118 -2

Test Identification : ICPWA-*Metals by ICP

Sequence : DATD249

Number of Samples : 14

Batch Data-Date/Time : 09/08/97 / 16:10:21

DUPLICATE

SAMPLE#	ANALYTE	RESULT 1	RESULT 2	RPD #	LIMIT	DILUTION
17589-67414	Silver	-0.0030	0.0000	200.0(11)	20.0	1.00
	Aluminum	-0.0103	0.0000	200.0(11)	20.0	1.00
	Arsenic	0.0090	0.0000	200.0(11)	20.0	1.00
	Barium	0.1444	0.1469	1.7	20.0	1.00
	Cadmium	-0.0021	0.0000	200.0(11)	20.0	1.00
	Chromium	-0.0037	0.0000	200.0(11)	20.0	1.00
	Iron	0.1685	0.1348	22.2(11)	20.0	1.00
	Sodium	43.3325	43.6790	0.8	20.0	1.00
	Lead	-0.0269	0.0000	200.0(11)	20.0	1.00
	Selenium	-0.0596	0.0000	200.0(11)	20.0	1.00
	Zinc	0.0273	0.0143	62.5(11)	20.0	1.00

CONTROL

SAMPLE#	ANALYTE	CONC FOUND	CONC KNOWN	% REC #	QC LIMITS	
LCSW-569	Silver	0.0512	0.0500	102.4	80.0	120.0
	Aluminum	2.0530	2.0000	102.7	80.0	120.0
	Arsenic	2.0115	2.0000	100.6	80.0	120.0
	Barium	1.9585	2.0000	97.9	80.0	120.0
	Cadmium	0.0537	0.0500	107.4	80.0	120.0
	Chromium	0.2036	0.2000	101.8	80.0	120.0
	Iron	1.0284	1.0000	102.8	80.0	120.0
	Sodium	3.0138	3.0000	100.5	80.0	120.0
	Lead	0.4983	0.5000	99.7	80.0	120.0
	Selenium	1.9959	2.0000	99.8	80.0	120.0
	Zinc	0.5237	0.5000	104.7	80.0	120.0

QC LIMITS

CCV #	ANALYTE	TRUE VALUE	BATCH READ	% REC #	LOWER	UPPER
ICV-	Silver	0.4000	0.4183	104.6	90.0	110.0
	Aluminum	20.0000	19.9139	99.6	90.0	110.0
	Arsenic	1.6000	1.5772	98.6	90.0	110.0
	Barium	4.0000	3.8217	95.5	90.0	110.0
	Cadmium	4.0000	3.9478	98.7	90.0	110.0
	Chromium	4.0000	4.0352	100.9	90.0	110.0
	Iron	4.0000	3.9539	98.8	90.0	110.0
	Sodium	40.0000	39.8229	99.6	90.0	110.0
	Lead	20.0000	19.4996	97.5	90.0	110.0
	Selenium	1.6000	1.5369	96.1	90.0	110.0
	Zinc	4.0000	3.9682	99.2	90.0	110.0
CCV1--2	Silver	0.4000	0.4232	105.8	90.0	110.0
	Aluminum	20.0000	20.0303	100.2	90.0	110.0
	Arsenic	1.6000	1.6245	101.5	90.0	110.0
	Barium	4.0000	3.8534	96.3	90.0	110.0
	Cadmium	4.0000	4.0517	101.3	90.0	110.0
	Chromium	4.0000	4.1166	102.9	90.0	110.0
	Iron	4.0000	4.0117	100.3	90.0	110.0
	Sodium	40.0000	39.8434	99.6	90.0	110.0
	Lead	20.0000	19.9258	99.6	90.0	110.0
	Selenium	1.6000	1.5364	96.0	90.0	110.0

Analysis Batch Number: ICPWA-09/06/97-118 -2

Test Identification : ICPWA-*Metals by ICP

Sequence : DATD249

Number of Samples : 14

Batch Data-Date/Time : 09/08/97 / 16:10:21

		QC LIMITS				
CCV #	ANALYTE	TRUE VALUE	BATCH READ	% REC #	LOWER	UPPER
CCV1--2	Zinc	4.0000	4.0588	101.5	90.0	110.0
CCV2--3	Silver	0.4000	0.4203	105.1	90.0	110.0
	Aluminum	20.0000	20.3618	101.8	90.0	110.0
	Arsenic	1.6000	1.5760	98.5	90.0	110.0
	Barium	4.0000	3.9114	97.8	90.0	110.0
	Cadmium	4.0000	3.9416	98.5	90.0	110.0
	Chromium	4.0000	4.0251	100.6	90.0	110.0
	Iron	4.0000	3.9545	98.9	90.0	110.0
	Sodium	40.0000	42.5832	106.5	90.0	110.0
	Lead	20.0000	19.5396	97.7	90.0	110.0
	Selenium	1.6000	1.5637	97.7	90.0	110.0
	Zinc	4.0000	3.9657	99.1	90.0	110.0
CCV3--4	Silver	0.4000	0.4165	104.1	90.0	110.0
	Aluminum	20.0000	19.9837	99.9	90.0	110.0
	Arsenic	1.6000	1.5529	97.1	90.0	110.0
	Barium	4.0000	3.8473	96.2	90.0	110.0
	Cadmium	4.0000	3.8764	96.9	90.0	110.0
	Chromium	4.0000	3.9690	99.2	90.0	110.0
	Iron	4.0000	3.8979	97.4	90.0	110.0
	Sodium	40.0000	40.0297	100.1	90.0	110.0
	Lead	20.0000	19.1086	95.5	90.0	110.0
	Selenium	1.6000	1.5115	94.5	90.0	110.0
	Zinc	4.0000	3.9112	97.8	90.0	110.0
CCV4--5	Silver	0.4000	0.4279	107.0	90.0	110.0
	Aluminum	20.0000	20.4280	102.1	90.0	110.0
	Arsenic	1.6000	1.6148	100.9	90.0	110.0
	Barium	4.0000	3.9422	98.6	90.0	110.0
	Cadmium	4.0000	4.0601	101.5	90.0	110.0
	Chromium	4.0000	4.1379	103.4	90.0	110.0
	Iron	4.0000	4.0424	101.1	90.0	110.0
	Sodium	40.0000	40.4766	101.2	90.0	110.0
	Lead	20.0000	19.9878	99.9	90.0	110.0
	Selenium	1.6000	1.5847	99.0	90.0	110.0
	Zinc	4.0000	4.0526	101.3	90.0	110.0

CCB#	ANALYTE	CONC FOUND #	CONC LIMIT
ICB-	Silver	ND	0.0060
	Aluminum	ND	0.0500
	Arsenic	0.0100	0.0300
	Barium	ND	0.0030
	Cadmium	ND	0.0040
	Chromium	ND	0.0100
	Iron	ND	0.2000
	Sodium	ND	0.2000
	Lead	0.0030	0.0400
	Selenium	ND	0.0700
	Zinc	ND	0.0300
CCB1-	Silver	ND	0.0060
	Aluminum	ND	0.0500

Analysis Batch Number: ICPWA-09/06/97-118 -2

Test Identification : ICPWA-*Metals by ICP

Sequence : DATD249

Number of Samples : 14

Batch Data-Date/Time : 09/08/97 / 16:10:21

CCB#	ANALYTE	CONC FOUND #	CONC LIMIT
CCB1-	Arsenic	ND	0.0300
	Barium	ND	0.0030
	Cadmium	ND	0.0040
	Chromium	ND	0.0100
	Iron	ND	0.2000
	Sodium	ND	0.2000
	Lead	ND	0.0400
	Selenium	ND	0.0700
	Zinc	ND	0.0300
	Silver	ND	0.0060
	Aluminum	ND	0.0500
	Arsenic	ND	0.0300
CCB2-	Barium	ND	0.0030
	Cadmium	ND	0.0040
	Chromium	ND	0.0100
	Iron	ND	0.2000
	Sodium	0.0216	0.2000
	Lead	0.0061	0.0400
	Selenium	ND	0.0700
	Zinc	ND	0.0300
	Silver	ND	0.0060
	Aluminum	ND	0.0500
	Arsenic	ND	0.0300
	Barium	ND	0.0030
CCB3-	Cadmium	ND	0.0040
	Chromium	ND	0.0100
	Iron	ND	0.2000
	Sodium	0.0293	0.2000
	Lead	0.0124	0.0400
	Selenium	ND	0.0700
	Zinc	ND	0.0300
	Silver	ND	0.0060
	Aluminum	ND	0.0500
	Arsenic	ND	0.0300
	Barium	ND	0.0030
	Cadmium	ND	0.0040
CCB3-	Chromium	ND	0.0100
	Iron	ND	0.2000
	Sodium	0.0236	0.2000
	Lead	0.0028	0.0400
	Selenium	ND	0.0700
	Zinc	ND	0.0300
	Silver	0.0010	0.0060
	Aluminum	ND	0.0500
	Arsenic	ND	0.0300
	Barium	0.0001	0.0030
	Cadmium	ND	0.0040
	Chromium	ND	0.0100
CCB4-	Iron	ND	0.2000
	Sodium	0.0228	0.2000

Analysis Batch Number: ICPWA-09/06/97-118 -2

Test Identification : ICPWA-*Metals by ICP

Sequence : DATD249

Number of Samples : 14

Batch Data-Date/Time : 09/08/97 / 16:10:21

CCB#	ANALYTE	CONC FOUND #	CONC LIMIT
CCB4-	Lead	ND	0.0400
	Selenium	ND	0.0700
	Zinc	ND	0.0300

----- Result Footnotes -----

(2a) - Recovery is insignificant because sample conc. is >4x spike added.

(11) - Both Duplicate results are less than the MDL.

Groups & Samples

17561-67359	17567-67370	17569-67372	17569-67373	17570-67374	17570-67375	17581-67395	17589-67414
17589-67415	17589-67416	17589-67417	17589-67418	17597-67467	17597-67468	17597-67469	17597-67470

CHAIN OF CUSTODY RECORD

6716



TECHNOLOGIES, LTD. 657 W. Maple • P. O. Box 2606 • Farmington NM 87499
LAB: (505) 325-5667 • FAX: (505) 325-6256

Date: 8/21/97

Page 1 of 1

Purchase Order No.: 6709		Job No.		Name: DAVID COX		Title	
SEND INVOICE TO		Name: ACCOUNTS REC.		Company: ON SITE		Company: ON SITE TECH	
		Address		Mailing Address			
		City, State, Zip		City, State, Zip			
		Telephone No.		Telephone No.		325-6256	
		Telefax No.		Telefax No.		325-2432	
Sampling Location: SHEPARD + KELSEY IE				ANALYSIS REQUESTED			
Sampler: LT/MAL				RECEIVED METALS TOTAL			
SAMPLE IDENTIFICATION				LAB ID			
DATE				TIME			
DATE				PRES.			
STKLE MWL-1/S-100				15827-6716			
Number of Containers				REPORT RESULTS TO			
Received by: J. S. 8/21/97 1030				Received by: RICHARD DAVIS			
Relinquished by:				Date/Time 08/28/97-1200			
Relinquished by:				Date/Time			
Relinquished by:				Date/Time			
Method of Shipment:				Special Instructions:			
Authorized by: (Client Signature Must Accompany Request)				Date			
Rush				24-48 Hours			
10 Working Days							
Pink - Sampler				Goldenrod - Client			

6716

Date: 8/21/97

Page 7 of 7

657 W. Maple • P. O. Box 2606 • Farmington NM 87499
LAB: (505) 325-5667 • FAX: (505) 325-6256

[illegible]

Distribution:	White – On Site	Yellow – LAB	Pink – Sampler	Goldenrod – Client
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HOUSTON LABORATORY

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713)660-0901

RECEIVED SEP 15 1997

September 10, 1997

Mr. David Cox
ON SITE TECHNOLOGIES
612 East Murray
Farmington, NM 87401

The following report contains analytical results for samples received at Southern Petroleum Laboratories (SPL) on August 26, 1997. The samples were assigned to Certificate of Analysis No.(s) 9708A78 and analyzed for all parameters as listed on the chain of custody.

There were no analytical problems encountered with this group of samples and all quality control data was within acceptance limits.

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 'Siok Hong Chen', is written over a horizontal line.

Siok Hong Chen
Project Manager



HOUSTON LABORATORY

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

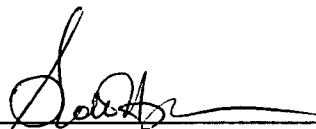
PHONE (713)660-0901

RECEIVED SEP 15 1997

SOUTHERN PETROLEUM LABORATORIES, INC.

Certificate of Analysis Number: 97-08-A78

Approved for Release by:



Siok Hong Chen, Project Manager

9/10/97

Date:

Greg Grandits
Laboratory Director

Idelis Williams
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. H9-9708A78-01

On Site Technologies

612 East Murray

Farmington, NM 87401

ATTN: David Cox

P.O.#

6709

09/10/97

PROJECT: Water Analysis**SITE:** Shepard & Kelsey**SAMPLED BY:** On Site**SAMPLE ID:** MW-1 15829-6709**PROJECT NO:****MATRIX:** WATER**DATE SAMPLED:** 08/20/97 11:30:00**DATE RECEIVED:** 08/26/97**ANALYTICAL DATA**

PARAMETER	RESULTS	PQL*	UNITS
Naphthalene	ND	0.1	ug/L
Acenaphthylene	ND	0.1	ug/L
Acenaphthene	ND	0.3	ug/L
Fluorene	ND	0.3	ug/L
Phenanthrene	ND	0.1	ug/L
Anthracene	ND	0.1	ug/L
Fluoranthene	ND	0.1	ug/L
Pyrene	ND	0.1	ug/L
Chrysene	ND	0.1	ug/L
Benzo (a) anthracene	ND	0.1	ug/L
Benzo (b) fluoranthene	ND	0.1	ug/L
Benzo (k) fluoranthene	ND	0.1	ug/L
Benzo (a) pyrene	ND	0.1	ug/L
Dibenzo (a,h) anthracene	ND	0.1	ug/L
Benzo (g,h,i) perylene	ND	0.1	ug/L
Indeno (1,2,3-cd) pyrene	ND	0.1	ug/L

SURROGATES	AMOUNT SPIKED	% RECOVERY	LOWER LIMIT	UPPER LIMIT
1-Fluoronaphthalene	0.20 ug/L	65	50	150
Phenanthrene d-10	0.20 ug/L	80	50	150

ANALYZED BY: KA

DATE/TIME: 08/29/97 08:11:17

EXTRACTED BY: RN

DATE/TIME: 08/27/97 10:00:00

METHOD: 8310 Polynuclear Aromatic Hydrocarbons

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



** SPL BATCH QUALITY CONTROL REPORT **

Method 8310 ***

HOUSTON LABORATORY

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713)660-0901

Matrix: Aqueous

Batch Id: 2970829031600

Units: ug/L

LABORATORY CONTROL SAMPLE

S P I K E C O M P O U N D S	Method Blank Result <2>	Spike Added <3>	Blank Spike		QC Limits(**) (Mandatory) % Recovery Range
			Result	Recovery	
			<1>	%	
Naphthalene	ND	0.50	0.38	76.0	32 - 148
Acenaphthylene	ND	0.50	0.37	74.0	42 - 138
Acenaphthene	ND	0.50	0.39	78.0	22 - 133
Fluorene	ND	0.50	0.41	82.0	11 - 148
Phenanthrene	ND	0.50	0.39	78.0	40 - 121
Anthracene	ND	0.50	0.35	70.0	32 - 121
Fluoranthene	ND	0.50	0.41	82.0	45 - 133
Pyrene	ND	0.50	0.39	78.0	39 - 136
Chrysene	ND	0.50	0.41	82.0	44 - 122
Benzo (a) anthracene	ND	0.50	0.39	78.0	53 - 137
Benzo (b) fluoranthene	ND	0.50	0.42	84.0	62 - 121
Benzo (k) fluoranthene	ND	0.50	0.42	84.0	66 - 128
Benzo (a) pyrene	ND	0.50	0.43	86.0	42 - 120
Dibenzo (a,h) anthracene	ND	0.50	0.41	82.0	59 - 129
Benzo (g,h,i) perylene	ND	0.50	0.42	84.0	67 - 124
Indeno (1,2,3-cd) pyrene	ND	0.50	0.44	88.0	65 - 125

M A T R I X S P I K E S

S P I K E C O M P O U N D S	Sample Results	Spike Added	Matrix Spike		Matrix Spike		MS/MSD Relative % Difference	QC Limits (***) (Advisory)	
			Duplicate		Duplicate			RPD Max.	Recovery Range
			Result <1>	Recovery <4>	Result <1>	Recovery <5>			
NAPHTHALENE	ND	0.5	0.37	74.0	0.28	56.0	27.7	30	1 - 122
ACENAPHTHYLENE	ND	0.5	0.26	52.0	0.21	42.0	21.3	30	1 - 124
ACENAPHTHENE	ND	0.5	0.33	66.0	0.27	54.0	20.0	30	1 - 124
FLUORENE	ND	0.5	0.35	70.0	0.28	56.0	22.2	30	1 - 142
PHENANTHRENE	ND	0.5	0.37	74.0	0.36	72.0	2.74	30	1 - 155
ANTHRACENE	ND	0.5	0.31	62.0	0.28	56.0	10.2	30	1 - 126
FLUORANTHENE	ND	0.5	0.50	100	0.55	110	9.52	30	14 - 123
PYRENE	ND	0.5	0.49	98.0	0.54	108	9.71	30	1 - 140
CHRYSENE	ND	0.5	0.49	98.0	0.53	106	7.84	30	1 - 199
BENZO (A) ANTHRACENE	ND	0.5	0.43	86.0	0.44	88.0	2.30	30	12 - 135
BENZO (B) FLUORANTHENE	0.12	0.5	0.55	86.0	0.65	106	20.8	30	6 - 150
BENZO (K) FLUORANTHENE	ND	0.5	0.46	92.0	0.50	100	8.33	30	1 - 159
BENZO (A) PYRENE	ND	0.5	0.52	104	0.59	118	12.6	30	1 - 128
DIBENZO (A,H) ANTHRACENE	ND	0.5	0.37	74.0	0.36	72.0	2.74	30	1 - 110
BENZO (G,H,I) PERYLENE	0.16	0.5	0.58	84.0	0.74	116	32.0 *	30	1 - 116
INDENO (1,2,3-CD) PYRENE	ND	0.5	0.49	98.0	0.48	96.0	2.06	30	1 - 116



** SPL BATCH QUALITY CONTROL REPORT **
Method 8310 ***

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

Matrix: Aqueous
Units: ug/L

Batch Id: 2970829031600

Analyst: KA

Sequence Date: 08/29/97

SPL ID of sample spiked: 9708A73-02B

Sample File ID: 970828C\026-2601

Method Blank File ID:

Blank Spike File ID: 970828C\018-1801

Matrix Spike File ID: 970828C\027-2601

Matrix Spike Duplicate File ID: 970828C\028-2801 (***) = Source: Temporary Limits

* = Values Outside QC Range. * = Data outside Method Specification limits.

NC = Not Calculated (Sample exceeds spike by factor of 4 or more)

ND = Not Detected/Below Detection Limit

% Recovery = $((<1> - <2>) / <3>) \times 100$

LCS % Recovery = $(<1> / <3>) \times 100$

Relative Percent Difference = $|(<4> - <5>) / [(<4> + <5>) \times 0.5] \times 100$

(**) = Source: SPL-Houston Historical Data (1st Q '97)

SAMPLES IN BATCH(SPL ID):

9708A79-01A 9708B09-05D 9708A73-02B 9708A73-01B
9708A73-03B 9708A78-01A

CHAIN OF CUSTODY
AND
SAMPLE RECEIPT CHECKLIST



TECHNOLOGIES, LTD.

657 W. Maple • P. O. Box 2606 • Farmington NM 87499
LAB: (505) 325-5667 • FAX: (505) 325-6256

CHAIN OF CUSTODY RECORD

6728

Date: 8/25/97

Page 1 of 1

9708A78

ANALYSIS REQUESTED

Purchase Order No.: 6709		Job No.	
Name ACCOUNTS REC.		Title	
Company ON SITE		Company ON SITE TECH	
Address		Mailing Address 612 E. MURRAY	
City, State, Zip		City, State, Zip FARMINGTON, NM 87401	
Telephone No. 505 325-2432		Telefax No. 325-6256	
SEND INVOICE TO		REPORT RESULTS TO	
Sampling Location: SHEPARD & KELSEY 1E		ANALYSIS REQUESTED	
Sampler: ML		Number of Containers	
SAMPLE IDENTIFICATION		LAB ID	
DATE	TIME	MATRIX	PRES.
8/20/97	1130	H ₂ O	COOL
SHEPARD & KELSEY 1E ML-1		15829-6709	
Relinquished by: [Signature]		Received by: Andrew [Signature]	
Date/Time 8/25/97 1600		Date/Time 8/26/97 0945	
Relinquished by:		Received by:	
Date/Time		Date/Time	
Relinquished by:		Received by:	
Date/Time		Date/Time	
Method of Shipment:		Rush	
Authorized by: [Signature]		24-48 Hours	
(Client Signature Must Accompany Request)		10 Working Days	
Date 8/25/97		Special Instructions:	

SPL Houston Environmental Laboratory

Sample Login Checklist

Date: 8/26/97	Time: 1300
---------------	------------

PL Sample ID: 9708

		<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:		4 c
10	Method of sample delivery to SPL:	SPL Delivery	
		Client Delivery	
		FedEx Delivery (airbill #)	4192767025
		Other:	
11	Method of sample disposal:	SPL Disposal	✓
		HOLD	
		Return to Client	

Name: Andrew Entel	Date: 8/26/97
--------------------	---------------

ON SITE

CHAIN OF CUSTODY RECORD

6709

TECHNOLOGIES, LTD.

657 W. Maple • P. O. Box 2606 • Farmington NM 87499
LAB: (505) 325-5667 • FAX: (505) 325-6256

Date: 8-20-1997

Page 1 of 1

Purchase Order No.:		Job No. 4-1303-5		Name Larry Trujillo		Title	
SEND INVOICE TO		Company Conoco		Company Conoco			
Address		Dept.		Mailing Address			
City, State, Zip				City, State, Zip			
Sampling Location: Shepard & Kelsey IE				Telephone No.		Telefax No.	
Sampler: Larry Trujillo / Myke Lane				ANALYSIS REQUESTED			
SAMPLE IDENTIFICATION		SAMPLE DATE		TIME		PRES.	
SJK IE Monterey Well #1		S-1		8-20-97 1130		H20	
SJK IE Monterey Well #1		S-2		8-20-97 1130		H20	
SJK IE MW #1		S-3		8-20-97 1130		H20	
SJK IE MW #1		dup.		8-20-97 1130		H20	
SJK IE MW #2				8-20-97 1150		H20	
SJK IE MW #3				8-20-97 1151		H20	
Relinquished by: Jay Trujillo		Date/Time 8-20-97 1415		Received by: Heidi Rees		Date/Time 8/20/97 1430	
Relinquished by:		Date/Time		Received by:		Date/Time	
Relinquished by:		Date/Time		Received by:		Date/Time	
Method of Shipment:		Rush		24-48 Hours		10 Working Days	
Authorized by:		(Client Signature Must Accompany Request)		Special Instructions:			

OFF: (505) 325-5667



LAB: (505) 325-1556

ANALYTICAL REPORT

Attn: **Larry Trujillo**
Company: **On Site Technologies, Ltd. c/o Conoco, Inc.**
Address: **612 E. Murray Drive**
City, State: **Farmington, NM 87401**

Date: **28-Aug-97**
COC No.: **6707**
Sample No.: **15825**
Job No.: **4-1303-5**

Project Name: **Conoco, Inc. - Shepard & Kelsey 1E**

Project Location: **4-1303-5; MW-1**

Sampled by: **LT**

Date: **19-Aug-97** Time: **11:46**

Analyzed by: **DC**

Date: **25-Aug-97**

Sample Matrix: **Liquid**

Parameter	Results as Received	Unit of Measure	Limit of Quantitation	Unit of Measure
<i>Benzene</i>	7.8	ug/L	0.2	ug/L
<i>Toluene</i>	ND	ug/L	0.2	ug/L
<i>Ethylbenzene</i>	ND	ug/L	0.2	ug/L
<i>m,p-Xylene</i>	0.2	ug/L	0.2	ug/L
<i>o-Xylene</i>	ND	ug/L	0.2	ug/L
TOTAL	8.0	ug/L		

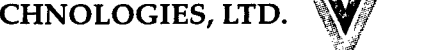
ND - Not Detected at Limit of Quantitation

Method - SW-846 EPA Method 8020A Aromatic Volatile Organics by Gas Chromatography

Approved By: *[Signature]*
Date: **8/28/97**

P.O. BOX 2606 • FARMINGTON, NM 87499

- TECHNOLOGY BLENDING INDUSTRY WITH THE ENVIRONMENT -

The logo for On Site Technologies, Ltd. features the words "ON SITE" in a large, bold, serif font. Below this, the words "TECHNOLOGIES, LTD." are written in a smaller, bold, sans-serif font. The text is flanked by stylized, jagged, metallic-looking lines that resemble a stylized 'A' or a mountain range.

QUALITY ASSURANCE REPORT *for EPA Method 8020*

Internal QC No.: 0527-STD
Surrogate QC No.: 0528-STD
Reference Standard QC No.: 0529/30-QC

<i>Parameter</i>	<i>Result</i>	<i>Unit of Measure</i>
<i>Average Amount of All Analytes In Blank</i>	< 0.2	ppb

<i>Parameter</i>	<i>Unit of Measure</i>	<i>True Value</i>	<i>Analyzed Value</i>	<i>RPD</i>	<i>Limit</i>
<i>Benzene</i>	ppb	20.0	19.5	3	15%
<i>Toluene</i>	ppb	20.0	20.4	2	15%
<i>Ethylbenzene</i>	ppb	20.0	20.7	3	15%
<i>m,p-Xylene</i>	ppb	40.0	39.5	1	15%
<i>o-Xylene</i>	ppb	20.0	20.5	2	15%

<i>Parameter</i>	<i>1 - Percent Recovered</i>	<i>2 - Percent Recovered</i>	<i>Limit</i>	<i>RPD</i>	<i>Limit</i>
<i>Benzene</i>	98	89	(39-150)	3	20%
<i>Toluene</i>	99	97	(46-148)	2	20%
<i>Ethylbenzene</i>	99	96	(32-160)	3	20%
<i>m,p-Xylene</i>	96	94	(35-145)	3	20%
<i>o-Xylene</i>	98	96	(35-145)	2	20%

	S1 Percent Recovered	S2 Percent Recovered		S1 Percent Recovered	S2 Percent Recovered
Laboratory Identification			Laboratory Identification		
Limit Percent Recovered	(70-130)		Limit Percent Recovered	(70-130)	
15825-6707	96				
				JHE	(pc)
				8/29/97	8/28/97

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TECHNOLOGIES, LTD.

657 W. Maple • P. O. Box 2606 • Farmington NM 87499
LAB: (505) 325-5667 • FAX: (505) 325-6256

Date: 8/11/17

[illegible]

Distribution: White - On Site Yellow - LAB Pink - Sampler Goldenrod - Client

OFF: (505) 325-5667



LAB: (505) 325-1556

ANALYTICAL REPORT

Attn: **Larry Trujillo**
Company: **On Site Technologies, Ltd. c/o Conoco, Inc.**
Address: **612 E. Murray Drive**
City, State: **Farmington, NM 87401**

Date: **27-Aug-97**
COC No.: **6706**
Sample No.: **15823**
Job No.: **4-1303-5**

Project Name: **Conoco, Inc. - Shepard & Kelsey 1E**
Project Location: **4-1303-5; TH#2**
Sampled by: **LT**
Analyzed by: **DC/HR**
Sample Matrix: **Soil**

Date: **19-Aug-97** Time: **9:51**
GRO Date: **21-Aug-97**
DRO Date: **25-Aug-97**

Laboratory Analysis

Parameter	Results as Received	Unit of Measure	Limit of Quantitation	Unit of Measure
Gasoline Range Organics (C5 - C9)	ND	mg/kg	0.5	mg/kg
Diesel Range Organics (C10 - C28)	ND	mg/kg	5	mg/kg

ND - Not Detected at Limit of Quantitation

Quality Assurance Report

GRO QC No.: 0537-STD

DRO QC No.: 0548-STD

Continuing Calibration Verification

Parameter	Method Blank	Unit of Measure	True Value	Analyzed Value	RPD	RPD Limit
Gasoline Range (C5 - C9)	ND	ppb	1,801	1,950	7.9	15%
Diesel Range (C10 - C28)	ND	ppm	200	206	2.8	15%

Matrix Spike

Parameter	1- Percent Recovered	2 - Percent Recovered	Limit	RPD	RPD Limit
Gasoline Range (C5-C9)	71	64	(80-120)	10	20%
Diesel Range (C10-C28)	76	74	(84-118)	2	20%

Method: SW-846 EPA Method 8015A mod. - Nonhalogenated Volatile Hydrocarbons by Gas Chromatography

Approved by: 
Date: **8/27/97**

OFF: (505) 325-5667



LAB: (505) 325-1556

ANALYTICAL REPORT

Attn: *Larry Trujillo*
Company: *On Site Technologies, Ltd. c/o Conoco, Inc.*
Address: *612 E. Murray Drive*
City, State: *Farmington, NM 87401*

Date: *27-Aug-97*
COC No.: *6706*
Sample No.: *15824*
Job No.: *4-1303-5*

Project Name: *Conoco, Inc. - Shepard & Kelsey 1E*
Project Location: *4-1303-5; TH#3*
Sampled by: *LT*
Analyzed by: *DC/HR*
Sample Matrix: *Soil*

Date: *19-Aug-97* Time: *10:15*
GRO Date: *21-Aug-97*
DRO Date: *25-Aug-97*

Laboratory Analysis

Parameter	Results as Received	Unit of Measure	Limit of Quantitation	Unit of Measure
<i>Gasoline Range Organics (C5 - C9)</i>	ND	mg/kg	0.5	mg/kg
<i>Diesel Range Organics (C10 - C28)</i>	ND	mg/kg	5	mg/kg

ND - Not Detected at Limit of Quantitation

Quality Assurance Report

GRO QC No.: 0537-STD

DRO QC No.: 0548-STD

Continuing Calibration Verification

Parameter	Method Blank	Unit of Measure	True Value	Analyzed Value	RPD	RPD Limit
<i>Gasoline Range (C5 - C9)</i>	ND	ppb	1,801	1,950	7.9	15%
<i>Diesel Range (C10 - C28)</i>	ND	ppm	200	206	2.8	15%

Matrix Spike

Parameter	1 - Percent Recovered	2 - Percent Recovered	Limit	RPD	RPD Limit
<i>Gasoline Range (C5-C9)</i>	71	64	(80-120)	10	20%
<i>Diesel Range (C10-C28)</i>	76	74	(84-118)	2	20%

Method: SW-846 EPA Method 8015A mod. - Nonhalogenated Volatile Hydrocarbons by Gas Chromatography

Approved by: *[Signature]*
Date: *8/27/97*

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LAB: (505) 325-5667 • FAX: (505) 325-6256

[illegible]

Distribution:	White - On Site	Yellow - LAB	Pink - Sampler	Goldenrod - Client
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