

1R - 177

REPORTS

DATE:

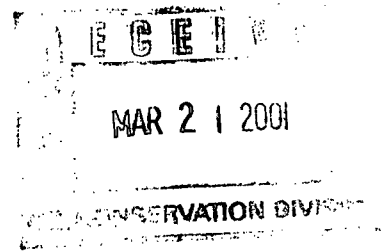
3/19/2001

R.T. HICKS CONSULTANTS, LTD.

4665 Indian School NE Suite 106 Albuquerque, NM 87110 505.266.5004 Fax: 505.266.7738

March 19, 2001

Mr. Wayne Price
New Mexico Conservation Division
1220 South St. Francis Drive
Santa Fe, New Mexico 87505



RE: Conoco Federal #2, Mewbourne Oil

Dear Mr. Price:

R.T. Hicks Consultants, Ltd. (Hicks Consultants) reviewed several recent reports in NMOCD files submitted by Mr. McCasland or his representative. None of these reports discuss long-term pumping of the windmill, sampling of the discharge and the effect, if any, of this pumping on the water quality of the windmill water. We understood that this work element was critical to NMOCD's understanding of potential source area for the observed calcium, sodium and chloride in the windmill water. Therefore, we plan to conduct the following scope of work at the Conoco Federal #2 well site on March 26-28.

- Measure the water level in the McCasland Windmill (about 5:00 pm on Day 1).
- Activate the McCasland Windmill at Conoco Federal #2 (if necessary) and obtain a sample of water directly from the well (Day 1). Allow the well to continue pumping water to a separate tank. Discharge to a separate location will permit us to estimate volume of water pumped.
- On Day 2, measure water levels in Mewbourne A, Mewbourne #2, Mewbourne #3, Mewbourne #4 (see Plate 6 of September 3, 1999 Report) and the three newly-drilled monitor wells (MW-1, MW-2, MW-3) at the Conoco Federal # 2 well Pad (see Hydrogeologic Services, Inc. Report, January 2001).
- Obtain groundwater samples from MW-1, MW-2, MW-3 and Mewbourne A (Day 2).
- Obtain a water sample from the water storage tank at Conoco Federal #2 and from the windmill (Day 2).
- Estimate the volume of water pumped from the windmill (Day 2).
- On the morning of Day 3, estimate the total volume of water pumped from the windmill and obtain an additional sample of water from the well.
- We will return to the McCasland windmill on Day 4 or Day 5, we will obtain a final sample of the windmill discharge and estimate the total volume pumped.
- We will discharge the pumped water from the small storage tank to the large storage tank.

Mr. Wayne Price
03/19/01
Page 2

We will evaluate these data and submit a report on our findings.

Sincerely,
R.T. Hicks Consultants, Ltd.

A handwritten signature in cursive script, appearing to read "Randall Hicks".

Randall Hicks
Principal

Copy: Mr. Robert McCasland
Mr. Richard Olson, Hinkle, Hensley, Shanoor & Martin
Mr. Gary Larson, Hinkle, Hensley, Shanoor & Martin
Mr. Mike Shepard, Mewbourne Oil

6701 Aberdeen Avenue, Ste. 9
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TraceAnalysis, Inc.

4725 Ripley Dr., Ste A
El Paso, Texas 79922-1028
Tel (915) 585-3443
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Company Name:

OIL CONSERVATION DIV.

Phone #:

505-476-3487

Address:

(Street, City, Zip)
1220 SOUTH ST FRANCIS DR. SANTA FE NM 87505

Contact Person:

WAYNE PRICE

Invoice to:
(if different from above)

Project #:

Project Name:

MEUBARQUE OIL

Location:

McASLAND WINDMILL

Sampler Signature:

Wayne Price

LAB #
(LAB USE ONLY)
FIELD CODE
SAMPLE I.D.

0105021400

CONTAINERS

Volume/Amount

WATER

SOIL

AIR

SLUDGE

HCL

HNO3

NaHSO4

H2SO4

NaOH

ICE

NONE

DATE

TIME

MATRIX

PRESERVATIVE

METHOD

SAMPLING

MTBE 8021B/602

BTEX 8021B/602

TPH 418.1/TX1005

PAH 8270C

Total Metals Ag As Ba Cd Cr Pb Se Hg 6010B/200.7 + Bromine

TCLP Metals Ag As Ba Cd Cr Pb Se Hg

TCLP Volatiles

TCLP Semi Volatiles

TCLP Pesticides

RCI

GC-MS Vol. 8260B/624

GC/MS Semi. Vol. 8270C/625

PCB's 8082/608

Pesticides 8081A/608

BOD, TSS, pH

OCD GEN CHEM

Turn Around Time if different from standard

Hold

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

LAB Order ID #

ANALYSIS REQUEST
(Circle or Specify Method No.)

LAB USE ONLY

Intact Y / N

Headspace Y / N

Temp °

Log-in Review

REMARKS:

DELETE

5/2/01 1:45 PM

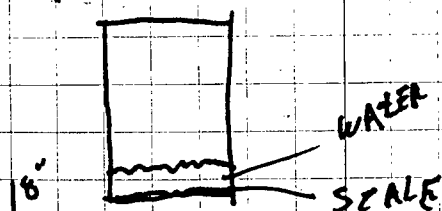
RANDY HIGGS
BO SNEY
W PRIZO
P SHEELEY

MELO BUONINCONTI FEB #1
1980/60
FEL / FSL

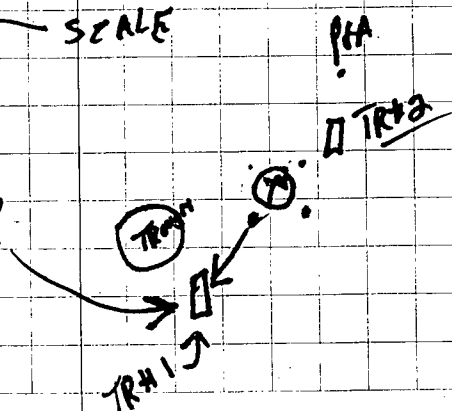
SEC 30 T205- 1232

WINDMILL TR OPERATED -
ONLY VERY SMALL SIGN OF SAND & SCALE
NOTED ON BOTTOM -

WATER LEVEL 18"



NO SAMPLE 12'
SWAY WM -
3'-5'
BLOWN SAND
BRN



TRACE ANALYSIS, INC.

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El Paso, Texas 79932 888•588•3443
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915•585•3443 FAX 915•585•4944

Bill To: **OCD**
1220 S. Saint Francis Dr.
Santa Fe, NM 87504

Invoice # **48085**

Invoice Date: **Jun 21, 2001**

Attn: **Wayne Price**

Order ID: **A01050434**

APPROVED 7/17/01

Project #: **N/A**

Project Name: **McCasland**

Contract no: **00-521.07-015**

Project Location: **N/A**

Test	Quantity	Matrix	Description	Price	SubTotal
Cd, Total	3	Soil	170572 - 170574	\$10.00	\$30.00
Ag, Total	2	Water	170570 - 170571	\$10.00	\$20.00
Ag, Total	3	Soil	170572 - 170574	\$10.00	\$30.00
Anions /Cations/Gen. Chem.	2	Water	170570 - 170571	\$120.00	\$240.00
Anions /Cations/Gen. Chem.	3	Soil	170572 - 170574	\$130.00	\$390.00
As, Total	2	Water	170570 - 170571	\$10.00	\$20.00
As, Total	3	Soil	170572 - 170574	\$10.00	\$30.00
Ba, Total	2	Water	170570 - 170571	\$10.00	\$20.00
Ba, Total	3	Soil	170572 - 170574	\$10.00	\$30.00
Bromide	2	Water	170570 - 170571	\$10.00	\$20.00
Bromide	3	Soil	170572 - 170574	\$10.00	\$30.00
8260	1	Soil	170574 - 170574	\$135.00	\$135.00
Cd, Total	2	Water	170570 - 170571	\$10.00	\$20.00
TDS	1	Soil	170581 - 170581	\$11.00	\$11.00
Cl	1	Soil	170581 - 170581	\$15.00	\$15.00
Cr, Total	2	Water	170570 - 170571	\$10.00	\$20.00
Cr, Total	3	Soil	170572 - 170574	\$10.00	\$30.00
Pb, Total	2	Water	170570 - 170571	\$10.00	\$20.00
Pb, Total	3	Soil	170572 - 170574	\$10.00	\$30.00
pH	1	Soil	170581 - 170581	\$9.00	\$9.00
Hg, Total	2	Water	170570 - 170571	\$12.00	\$24.00
Hg, Total	3	Soil	170572 - 170574	\$12.00	\$36.00
Se, Total	2	Water	170570 - 170571	\$10.00	\$20.00
Se, Total	3	Soil	170572 - 170574	\$10.00	\$30.00
Ca, Dissolved	1	Soil	170581 - 170581	\$10.00	\$10.00
Payment Terms: Net 30 Days				Total	\$1,270.00

Director, Dr. Blair Leftwich

Report Date: June 28, 2001 Order Number: A01050434

Page Number: 1 of 2

N/A

McCasland

N/A

Summary Report

Wayne Price
OCD
1220 S. Saint Francis Dr.
Santa Fe, NM 87504

Report Date: June 28, 2001

Order ID Number: A01050434

Project Number: N/A
Project Name: McCasland
Project Location: N/A

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
170570	0105021400	Water	5/2/01	14:00	5/4/01
170571	0105021436 WM Water	Water	5/2/01	14:36	5/4/01

This report consists of a total of 2 page(s) and is intended only as a summary of results for the sample(s) listed above.

Sample: 170570 - 0105021400

Param	Flag	Result	Units
Hydroxide Alkalinity		<1.0	mg/L as CaCo3
Carbonate Alkalinity		<1.0	mg/L as CaCo3
Bicarbonate Alkalinity		136	mg/L as CaCo3
Total Alkalinity		136	mg/L as CaCo3
Specific Conductance		6500	μMHOS/cm
Total Mercury		<0.0002	mg/L
Bromide		6.08	mg/L
CL	1	2250	mg/L
Fluoride		1.04	mg/L
Nitrate-N	2	2.56	mg/L
Sulfate		113	mg/L
Dissolved Calcium		894	mg/L
Dissolved Magnesium		81.4	mg/L
Dissolved Potassium		15.6	mg/L
Dissolved Sodium		399	mg/L
Total Dissolved Solids		4040	mg/L
Total Arsenic		<0.05	mg/L
Total Barium		0.252	mg/L
Total Cadmium		<0.025	mg/L
Total Chromium		<0.01	mg/L
Total Lead		<0.01	mg/L
Total Selenium		<0.05	mg/L
Total Silver		<0.0125	mg/L
pH	3	8.0	s.u.

¹Chloride re-ran on IC050801A-2.sch (PB09558; QC11184). ICV %IA = 98; CCV %IA = 99; matrix spikes RPD = 1; matrix spikes %EA = 97; blank spikes RPD = 0; blank spikes %EA = 98.

²Sample ran out of hold time for NO3.

³Sample run out of holding time

Report Date: June 28, 2001 Order Number: A01050434

Page Number: 2 of 2

N/A

McCasland

N/A

Sample: 170571 - 0105021436 WM Water

Param	Flag	Result	Units
Hydroxide Alkalinity		<1.0	mg/L as CaCo3
Carbonate Alkalinity		<1.0	mg/L as CaCo3
Bicarbonate Alkalinity		186	mg/L as CaCo3
Total Alkalinity		186	mg/L as CaCo3
Specific Conductance		6830	μ MHOS/cm
Total Mercury		0.00028	mg/L
Bromide		6.22	mg/L
CL	4	2380	mg/L
Fluoride		1.07	mg/L
Nitrate-N	5	1.57	mg/L
Sulfate		118	mg/L
Dissolved Calcium		1010	mg/L
Dissolved Magnesium		85	mg/L
Dissolved Potassium		17.5	mg/L
Dissolved Sodium		420	mg/L
Total Dissolved Solids		4480	mg/L
Total Arsenic		<0.05	mg/L
Total Barium		0.274	mg/L
Total Cadmium		<0.025	mg/L
Total Chromium		0.0124	mg/L
Total Lead		0.0305	mg/L
Total Selenium		<0.05	mg/L
Total Silver		<0.0125	mg/L
pH	6	8.0	s.u.

⁴Chloride re-ran on 1C050801A-2.sch (PB09558; QC11184). ICV %IA = 98; CCV %IA = 99; matrix spikes RPD = 1; matrix spikes %EA = 97; blank spikes RPD = 0; blank spikes %EA = 98.

⁵Sample ran out of hold time for NO3.

⁶Sample run out of holding time

Report Date: June 28, 2001 Order Number: A01050434

Page Number: 1 of 4

N/A

McCasland

N/A

Summary Report

Wayne Price
OCD
1220 S. Saint Francis Dr.
Santa Fe, NM 87504

Report Date: June 28, 2001

Order ID Number: A01050434

Project Number: N/A
Project Name: McCasland
Project Location: N/A

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
170572	0105021400 Scale	Soil	5/2/01	14:00	5/4/01
170573	0108021430 Trench 1-8'	Soil	5/2/01	14:30	5/4/01
170574	0105021521 Trench #2- 12'	Soil	5/2/01	15:20	5/4/01
170581	0105021522	Soil	5/2/01	:	5/4/01

This report consists of a total of 4 page(s) and is intended only as a summary of results for the sample(s) listed above.

Sample: 170572 - 0105021400 Scale

Param	Flag	Result	Units
Hydroxide Alkalinity		<1.0	mg/Kg as CaCo3
Carbonate Alkalinity		<1.0	mg/Kg as CaCo3
Bicarbonate Alkalinity		34	mg/Kg as CaCo3
Total Alkalinity		34	mg/Kg as CaCo3
Specific Conductance		1770	μMHOS/cm
Total Mercury		0.32	mg/Kg
Bromide	1	<5.0	mg/Kg
CL		520	mg/Kg
Fluoride	2	<5.0	mg/Kg
Nitrate-N	3	<5.0	mg/Kg
Sulfate	4	31.6	mg/Kg
Dissolved Calcium		263000	mg/kg
Dissolved Magnesium		696	mg/kg
Dissolved Potassium		80.4	mg/kg
Dissolved Sodium		1656	mg/kg
Total Dissolved Solids		943	mg/Kg
Total Arsenic		<5	mg/Kg
Total Barium		79.1	mg/Kg
Total Cadmium		2.82	mg/Kg
Total Chromium		<5	mg/Kg
Total Lead		46.6	mg/Kg

Continued on next page ...

¹Bromide ran on IC051001A-2.sch (PB09567; QC11178). ICV %IA = 101; CCV %IA = 104; matrix spikes RPD = 2; matrix spikes %EA = 107; blank spikes RPD = 1; blank spikes %EA = 104.

²Fluoride ran on IC051001A-2.sch (PB09567; QC11178). ICV %IA = 102; CCV %IA = 96; matrix spikes RPD = 3; matrix spikes %EA = 92; blank spikes RPD = 0; blank spikes %EA = 109.

³Nitrate ran on IC051001A-2.sch (PB09567; QC11178). ICV %IA = 97; CCV %IA = 97; matrix spikes RPD = 1; matrix spikes %EA = 101; blank spikes RPD = 0; blank spikes %EA = 102.

⁴Sulfate ran on IC051001A-2.sch (PB09567; QC11178). ICV %IA = 98; CCV %IA = 96; matrix spikes RPD = 1; matrix spikes %EA = 96; blank spikes RPD = 2; blank spikes %EA = 95.

Report Date: June 28, 2001 Order Number: A01050434

Page Number: 2 of 4

N/A

McCasland

N/A

Sample 170572 continued ...

Param	Flag	Result	Units
Total Selenium		<5	mg/Kg
Total Silver		<1	mg/Kg
pH		7.9	s.u.

Sample: 170573 - 0108021430 Trench 1-8'

Param	Flag	Result	Units
Hydroxide Alkalinity		<1.0	mg/Kg as CaCo3
Carbonate Alkalinity		<1.0	mg/Kg as CaCo3
Bicarbonate Alkalinity		16	mg/Kg as CaCo3
Total Alkalinity		16	mg/Kg as CaCo3
Specific Conductance		1250	μ MHOS/cm
Total Mercury		<0.19	mg/Kg
Bromide		<5.0	mg/Kg
CL		372	mg/Kg
Fluoride		<5.0	mg/Kg
Nitrate-N		<5.0	mg/Kg
Sulfate		<25	mg/Kg
Dissolved Calcium		6842	mg/kg
Dissolved Magnesium		270	mg/kg
Dissolved Potassium		393	mg/kg
Dissolved Sodium		766	mg/kg
Total Dissolved Solids		1060	mg/kg
Total Arsenic		<5	mg/Kg
Total Barium		40.3	mg/Kg
Total Cadmium		<2	mg/Kg
Total Chromium		<5	mg/Kg
Total Lead		<5	mg/Kg
Total Selenium		<5	mg/Kg
Total Silver		<1	mg/Kg
pH		8.1	s.u.

Sample: 170574 - 0105021521 Trench #2- 12'

Param	Flag	Result	Units
Bromochloromethane		<25.0	μ g/Kg
Dichlorodifluoromethane		<25.0	μ g/Kg
Chloromethane (methyl chloride)		<25.0	μ g/Kg
Vinyl Chloride		<25.0	μ g/Kg
Bromomethane (methyl bromide)		<25.0	μ g/Kg
Chloroethane		<25.0	μ g/Kg
Trichlorofluoromethane		<25.0	μ g/Kg
Acetone		<250	μ g/Kg
Iodomethane (methyl iodide)		<125	μ g/Kg
Carbon Disulfide		<25.0	μ g/Kg
Acrylonitrile		<25.0	μ g/Kg
2-Butanone (MEK)		<125	μ g/Kg
4-methyl-2-pentanone (MIBK)		<125	μ g/Kg
2-hexanone		<125	μ g/Kg
trans 1,4-Dichloro-2-butene		<250	μ g/Kg

Continued on next page ...

Report Date: June 28, 2001 Order Number: A01050434

Page Number: 3 of 4

N/A

McCasland

N/A

Sample 170574 continued ...

Param	Flag	Result	Units
1,1-Dichloroethene		<25.0	µg/Kg
Methylene chloride		<125	µg/Kg
MTBE		<25.0	µg/Kg
trans-1,2-Dichloroethene		<25.0	µg/Kg
1,1-Dichloroethane		<25.0	µg/Kg
cis-1,2-Dichloroethene		<25.0	µg/Kg
2,2-Dichloropropane		<25.0	µg/Kg
1,2-Dichloroethane (EDC)		<25.0	µg/Kg
Chloroform		<25.0	µg/Kg
1,1,1-Trichloroethane		<25.0	µg/Kg
1,1-Dichloropropene		<25.0	µg/Kg
Benzene		<25.0	µg/Kg
Carbon Tetrachloride		<25.0	µg/Kg
1,2-Dichloropropane		<25.0	µg/Kg
Trichloroethene (TCE)		<25.0	µg/Kg
Dibromomethane (methylene bromide)		<25.0	µg/Kg
Bromodichloromethane		<25.0	µg/Kg
2-Chloroethyl vinyl ether		<125	µg/Kg
cis-1,3-Dichloropropene		<25.0	µg/Kg
trans-1,3-Dichloropropene		<25.0	µg/Kg
Toluene		<25.0	µg/Kg
1,1,2-Trichloroethane		<25.0	µg/Kg
1,3-Dichloropropane		<25.0	µg/Kg
Dibromochloromethane		<25.0	µg/Kg
1,2-Dibromoethane (EDB)		<25.0	µg/Kg
Tetrachloroethene (PCE)		<25.0	µg/Kg
Chlorobenzene		<25.0	µg/Kg
1,1,1,2-Tetrachloroethane		<25.0	µg/Kg
Ethylbenzene		<25.0	µg/Kg
m,p-Xylene		<25.0	µg/Kg
Bromoform		<25.0	µg/Kg
Styrene		<25.0	µg/Kg
o-Xylene		<25.0	µg/Kg
1,1,2,2-Tetrachloroethane		<25.0	µg/Kg
2-Chlorotoluene		<25.0	µg/Kg
1,2,3-Trichloropropane		<25.0	µg/Kg
Isopropylbenzene		<25.0	µg/Kg
Bromobenzene		<25.0	µg/Kg
n-Propylbenzene		<25.0	µg/Kg
1,3,5-Trimethylbenzene		<25.0	µg/Kg
tert-Butylbenzene		<25.0	µg/Kg
1,2,4-Trimethylbenzene		<25.0	µg/Kg
1,4-Dichlorobenzene (para)		<25.0	µg/Kg
sec-Butylbenzene		<25.0	µg/Kg
1,3-Dichlorobenzene		<25.0	µg/Kg
p-Isopropyltoluene		<25.0	µg/Kg
4-Chlorotoluene		<25.0	µg/Kg
1,2-Dichlorobenzene (ortho)		<25.0	µg/Kg
n-Butylbenzene		<25.0	µg/Kg
1,2-Dibromo-3-chloropropane		<125	µg/Kg
1,2,3-Trichlorobenzene		<125	µg/Kg
1,2,4-Trichlorobenzene		<125	µg/Kg
Naphthalene		<125	µg/Kg

Continued on next page ...

Report Date: June 28, 2001 Order Number: A01050434

Page Number: 4 of 4

N/A

McCasland

N/A

Sample 170574 continued ...

Param	Flag	Result	Units
Hexachlorobutadiene		<125	µg/Kg
Hydroxide Alkalinity		<1.0	mg/Kg as CaCo3
Carbonate Alkalinity		<1.0	mg/Kg as CaCo3
Bicarbonate Alkalinity		6.0	mg/Kg as CaCo3
Total Alkalinity		6.0	mg/Kg as CaCo3
Specific Conductance		2870	µMHOS/cm
Total Mercury		<0.19	mg/Kg
Bromide		<5.0	mg/Kg
CL		863	mg/Kg
Fluoride		<5.0	mg/Kg
Nitrate-N		<5.0	mg/Kg
Sulfate		53.5	mg/Kg
Dissolved Calcium		1650	mg/kg
Dissolved Magnesium		1208	mg/kg
Dissolved Potassium		1665	mg/kg
Dissolved Sodium		824	mg/kg
Total Dissolved Solids		2220	mg/kg
Total Arsenic		<5	mg/Kg
Total Barium		17.7	mg/Kg
Total Cadmium		<2	mg/Kg
Total Chromium		<5	mg/Kg
Total Lead		<5	mg/Kg
Total Selenium		<5	mg/Kg
Total Silver		<1	mg/Kg
pH		7.3	s.u.

Sample: 170581 - 0105021522

Param	Flag	Result	Units
CL		683	mg/Kg
Total Dissolved Solids		1870	mg/Kg
pH		7.5	s.u.

Cation-Anion Balance Sheet

DATE: 7/1/01

13

Sample #	Calcium ppm	Magnesium ppm	Sodium ppm	Potassium ppm	Alkalinity ppm	Sulfate ppm	Chloride ppm	Nitrate ppm	Fluoride ppm	Bromide ppm	TDS ppm	EC µMHOs/cm
170570	894	81.4	399	15.6	136	113	2250	2.56	1.04	6.08	4040	6500
170571	1010	85	420	17.5	186	118	2380	1.57	1.07	6.22	4480	6830

Sample #	Calcium in meq/L	Magnesium in meq/L	Sodium in meq/L	Potassium in meq/L	Alkalinity in meq/L	Sulfate in meq/L	Chloride in meq/L	Nitrate in meq/L	Fluoride in meq/L	Bromide in meq/L	Cations in meq/L	Anions in meq/L	Percentage Error
170570	44.61	6.70	17.36	0.40	2.72	2.35	63.47	0.1827584	0.0547456	0.152	69.06	68.78	0.40898903
170571	50.40	6.99	18.27	0.45	3.72	2.46	67.14	0.1120823	0.0563248	0.1555	76.11	73.48	3.511227855

EC/Cation	EC/Anion
6906.4554	6878.2664
7611.13	7348.49671

TDS/EC	TDS/Cat	TDS/Anion
0.62	0.58	0.59
0.66	0.59	0.61

range 6147 to 7150
range 6147 to 7513
needs to be 0.55-0.77
needs to be 0.55-0.77

TRACE ANALYSIS, INC.

6701 Aberdeen Avenue, Suite 9
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E-Mail: lab@traceanalysis.com

Analytical and Quality Control Report

Wayne Price
OCD
1220 S. Saint Francis Dr.
Santa Fe, NM 87504

Report Date: June 28, 2001

Order ID Number: A01050434

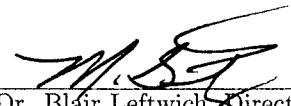
Project Number: N/A
Project Name: McCasland
Project Location: N/A

Enclosed are the Analytical Results and Quality Control Data Reports for the following samples submitted to Trace-Analysis, Inc.

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
170570	0105021400	Water	5/2/01	14:00	5/4/01
170571	0105021436 WM Water	Water	5/2/01	14:36	5/4/01

These results represent only the samples received in the laboratory. The Quality Control Report is generated on a batch basis. All information contained in this report is for the analytical batch(es) in which your sample(s) were analyzed.

This report consists of a total of 13 pages and shall not be reproduced except in its entirety including the chain of custody (COC), without written approval of TraceAnalysis, Inc.


Dr. Blair Leftwich, Director

Analytical Report

Sample: 170570 - 0105021400

Analysis: Alkalinity Analytical Method: E 310.1 QC Batch: QC11029 Date Analyzed: 5/8/01
Analyst: JS Preparation Method: N/A Prep Batch: PB09468 Date Prepared: 5/8/01

Param	Flag	Result	Units	Dilution	RDL
Hydroxide Alkalinity		<1.0	mg/L as CaCo3	1	1
Carbonate Alkalinity		<1.0	mg/L as CaCo3	1	1
Bicarbonate Alkalinity		136	mg/L as CaCo3	1	1
Total Alkalinity		136	mg/L as CaCo3	1	1

Sample: 170570 - 0105021400

Analysis: Conductivity Analytical Method: SM 2510B QC Batch: QC11021 Date Analyzed: 5/7/01
Analyst: RS Preparation Method: N/A Prep Batch: PB09457 Date Prepared: 5/7/01

Param	Flag	Result	Units	Dilution	RDL
Specific Conductance		6500	μMHOS/cm	1	

Sample: 170570 - 0105021400

Analysis: Hg, Total Analytical Method: S 7470A QC Batch: QC11036 Date Analyzed: 5/9/01
Analyst: SSC Preparation Method: N/A Prep Batch: PB09473 Date Prepared: 5/8/01

Param	Flag	Result	Units	Dilution	RDL
Total Mercury		<0.0002	mg/L	1	0.0002

Sample: 170570 - 0105021400

Analysis: Ion Chromatography (IC) Analytical Method: E 300.0 QC Batch: QC11030 Date Analyzed: 5/4/01
Analyst: JS Preparation Method: N/A Prep Batch: PB09469 Date Prepared: 5/4/01

Param	Flag	Result	Units	Dilution	RDL
Bromide		6.08	mg/L	5	0.20
CL	1	2250	mg/L	50	0.50
Fluoride		1.04	mg/L	5	0.20
Nitrate-N	2	2.56	mg/L	5	0.20
Sulfate		113	mg/L	5	0.50

Sample: 170570 - 0105021400

Analysis: Salts Analytical Method: S 6010B QC Batch: QC11045 Date Analyzed: 5/7/01
Analyst: LB Preparation Method: E 3005 A Prep Batch: PB09415 Date Prepared: 5/7/01

Param	Flag	Result	Units	Dilution	RDL
Dissolved Calcium		894	mg/L	1	0.50

Continued ...

¹Chloride re-ran on IC050801A-2.sch (PB09558; QC11184). ICV %IA = 98; CCV %IA = 99; matrix spikes RPD = 1; matrix spikes %EA = 97; blank spikes RPD = 0; blank spikes %EA = 98.

²Sample ran out of hold time for NO3.

... Continued Sample: 170570 Analysis: Salts

Param	Flag	Result	Units	Dilution	RDL
Dissolved Magnesium		81.4	mg/L	1	0.50
Dissolved Potassium		15.6	mg/L	1	0.50
Dissolved Sodium		399	mg/L	1	0.50

Sample: 170570 - 0105021400

Analysis: TDS Analytical Method: E 160.1 QC Batch: QC11007 Date Analyzed: 5/7/01
Analyst: JS Preparation Method: N/A Prep Batch: PB09445 Date Prepared: 5/4/01

Param	Flag	Result	Units	Dilution	RDL
Total Dissolved Solids		4040	mg/L	5	10

Sample: 170570 - 0105021400

Analysis: Total Metals Analytical Method: S 6010B QC Batch: QC11469 Date Analyzed: 5/24/01
Analyst: RR Preparation Method: E 3010A Prep Batch: PB09463 Date Prepared: 5/9/01

Param	Flag	Result	Units	Dilution	RDL
Total Arsenic		<0.05	mg/L	1	0.05
Total Barium		0.252	mg/L	1	0.10
Total Cadmium		<0.025	mg/L	1	0.02
Total Chromium		<0.01	mg/L	1	0.01
Total Lead		<0.01	mg/L	1	0.01
Total Selenium		<0.05	mg/L	1	0.05
Total Silver		<0.0125	mg/L	1	0.01

Sample: 170570 - 0105021400

Analysis: pH Analytical Method: E 150.1 QC Batch: QC11027 Date Analyzed: 5/4/01
Analyst: RS Preparation Method: N/A Prep Batch: PB09465 Date Prepared: 5/4/01

Param	Flag	Result	Units	Dilution	RDL
pH	3	8.0	s.u.	1	1

Sample: 170571 - 0105021436 WM Water

Analysis: Alkalinity Analytical Method: E 310.1 QC Batch: QC11029 Date Analyzed: 5/8/01
Analyst: JS Preparation Method: N/A Prep Batch: PB09468 Date Prepared: 5/8/01

Param	Flag	Result	Units	Dilution	RDL
Hydroxide Alkalinity		<1.0	mg/L as CaCo3	1	1
Carbonate Alkalinity		<1.0	mg/L as CaCo3	1	1
Bicarbonate Alkalinity		186	mg/L as CaCo3	1	1
Total Alkalinity		186	mg/L as CaCo3	1	1

Sample: 170571 - 0105021436 WM Water

Analysis: Conductivity Analytical Method: SM 2510B QC Batch: QC11021 Date Analyzed: 5/7/01
Analyst: RS Preparation Method: N/A Prep Batch: PB09457 Date Prepared: 5/7/01

³Sample run out of holding time

Param	Flag	Result	Units	Dilution	RDL
Specific Conductance		6830	μ MHOS/cm	1	

Sample: 170571 - 0105021436 WM Water

Analysis: Hg, Total Analytical Method: S 7470A QC Batch: QC11036 Date Analyzed: 5/9/01
Analyst: SSC Preparation Method: N/A Prep Batch: PB09473 Date Prepared: 5/8/01

Param	Flag	Result	Units	Dilution	RDL
Total Mercury		0.00028	mg/L	1	0.0002

Sample: 170571 - 0105021436 WM Water

Analysis: Ion Chromatography (IC) Analytical Method: E 300.0 QC Batch: QC11030 Date Analyzed: 5/4/01
Analyst: JS Preparation Method: N/A Prep Batch: PB09469 Date Prepared: 5/4/01

Param	Flag	Result	Units	Dilution	RDL
Bromide		6.22	mg/L	5	0.20
CL	4	2380	mg/L	50	0.50
Fluoride		1.07	mg/L	5	0.20
Nitrate-N	5	1.57	mg/L	5	0.20
Sulfate		118	mg/L	5	0.50

Sample: 170571 - 0105021436 WM Water

Analysis: Salts Analytical Method: S 6010B QC Batch: QC11045 Date Analyzed: 5/7/01
Analyst: LB Preparation Method: E 3005 A Prep Batch: PB09415 Date Prepared: 5/7/01

Param	Flag	Result	Units	Dilution	RDL
Dissolved Calcium		1010	mg/L	1	0.50
Dissolved Magnesium		85	mg/L	1	0.50
Dissolved Potassium		17.5	mg/L	1	0.50
Dissolved Sodium		420	mg/L	1	0.50

Sample: 170571 - 0105021436 WM Water

Analysis: TDS Analytical Method: E 160.1 QC Batch: QC11007 Date Analyzed: 5/7/01
Analyst: JS Preparation Method: N/A Prep Batch: PB09445 Date Prepared: 5/4/01

Param	Flag	Result	Units	Dilution	RDL
Total Dissolved Solids		4480	mg/L	5	10

Sample: 170571 - 0105021436 WM Water

Analysis: Total Metals Analytical Method: S 6010B QC Batch: QC11469 Date Analyzed: 5/24/01
Analyst: RR Preparation Method: E 3010A Prep Batch: PB09463 Date Prepared: 5/9/01

Param	Flag	Result	Units	Dilution	RDL
Total Arsenic		<0.05	mg/L	1	0.05

Continued ...

⁴Chloride re-ran on IC050801A-2.sch (PB09558; QC11184). ICV %IA = 98; CCV %IA = 99; matrix spikes RPD = 1; matrix spikes %EA = 97; blank spikes RPD = 0; blank spikes %EA = 98.

⁵Sample ran out of hold time for NO3.

... Continued Sample: 170571 Analysis: Total Metals

Param	Flag	Result	Units	Dilution	RDL
Total Barium		0.274	mg/L	1	0.10
Total Cadmium		<0.025	mg/L	1	0.02
Total Chromium		0.0124	mg/L	1	0.01
Total Lead		0.0305	mg/L	1	0.01
Total Selenium		<0.05	mg/L	1	0.05
Total Silver		<0.0125	mg/L	1	0.01

Sample: 170571 - 0105021436 WM Water

Analysis: pH Analytical Method: E 150.1 QC Batch: QC11027 Date Analyzed: 5/4/01
Analyst: RS Preparation Method: N/A Prep Batch: PB09465 Date Prepared: 5/4/01

Param	Flag	Result	Units	Dilution	RDL
pH	⁶	8.0	s.u.	1	1

⁶Sample run out of holding time

Quality Control Report Method Blank

Method Blank QCBatch: QC11007

Param	Flag	Results	Units	Reporting Limit
Total Dissolved Solids		<10	mg/L	10

Method Blank QCBatch: QC11021

Param	Flag	Results	Units	Reporting Limit
Specific Conductance		4.12	μ MHOS/cm	

Method Blank QCBatch: QC11029

Param	Flag	Results	Units	Reporting Limit
Hydroxide Alkalinity		<1.0	mg/L as CaCo3	1
Carbonate Alkalinity		<1.0	mg/L as CaCo3	1
Bicarbonate Alkalinity		<4.0	mg/L as CaCo3	1
Total Alkalinity		<4.0	mg/L as CaCo3	1

Method Blank QCBatch: QC11030

Param	Flag	Results	Units	Reporting Limit
Bromide		<0.2	mg/L	0.20
CL		<2.0	mg/L	0.50
Fluoride		<0.2	mg/L	0.20
Nitrate-N		<0.2	mg/L	0.20
Sulfate		<2.0	mg/L	0.50

Method Blank QCBatch: QC11036

Param	Flag	Results	Units	Reporting Limit
Total Mercury		<0.0002	mg/L	0.0002

Method Blank QCBatch: QC11045

Param	Flag	Results	Units	Reporting Limit
Dissolved Calcium		<0.5	mg/L	0.50
Dissolved Magnesium		<0.5	mg/L	0.50
Dissolved Potassium		<0.5	mg/L	0.50
Dissolved Sodium		<0.5	mg/L	0.50

Method Blank

QCBatch: QC11469

Param	Flag	Results	Units	Reporting Limit
Total Arsenic		<0.05	mg/L	0.05
Total Barium		<0.1	mg/L	0.10
Total Cadmium		<0.025	mg/L	0.02
Total Chromium		<0.01	mg/L	0.01
Total Lead		<0.01	mg/L	0.01
Total Selenium		<0.05	mg/L	0.05
Total Silver		<0.0125	mg/L	0.01

**Quality Control Report
Duplicate Samples**

Duplicate

QCBatch: QC11007

Param	Flag	Duplicate Result	Sample Result	Units	Dilution	RPD	RPD Limit
Total Dissolved Solids		34200	31300	mg/L	1	8	14

Duplicate

QCBatch: QC11021

Param	Flag	Duplicate Result	Sample Result	Units	Dilution	RPD	RPD Limit
Specific Conductance		6395	6500	μ MHOS/cm	1	1	4.6

Duplicate

QCBatch: QC11027

Param	Flag	Duplicate Result	Sample Result	Units	Dilution	RPD	RPD Limit
pH		9.1	9.1	s.u.	1	0	0.99

Duplicate

QCBatch: QC11029

Param	Flag	Duplicate Result	Sample Result	Units	Dilution	RPD	RPD Limit
Hydroxide Alkalinity		<1.0	<1.0	mg/L as CaCo3	1	0	7

Continued ...

... Continued

Param	Flag	Duplicate Result	Sample Result	Units	Dilution	RPD	RPD Limit
Carbonate Alkalinity		<1.0	<1.0	mg/L as CaCo3	1	0	7
Bicarbonate Alkalinity		48	46	mg/L as CaCo3	1	4	7
Total Alkalinity		48	46	mg/L as CaCo3	1	4	7

Quality Control Report Lab Control Spikes and Duplicate Spikes

Laboratory Control Spikes

QCBatch: QC11030

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount Added	Matrix Result	% Rec	RPD	% Rec Limit	RPD Limit
Bromide	2.55	2.66	mg/L	1	2.50	<0.2	102	4	90 - 110	20
CL	12.19	12.21	mg/L	1	12.50	<2.0	97	0	90 - 110	20
Fluoride	2.36	2.38	mg/L	1	2.50	<0.2	94	0	90 - 110	20
Nitrate-N	2.33	2.29	mg/L	1	2.50	<0.2	93	1	90 - 110	20
Sulfate	11.62	11.70	mg/L	1	12.50	<2.0	92	0	90 - 110	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spikes

QCBatch: QC11036

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount Added	Matrix Result	% Rec	RPD	% Rec Limit	RPD Limit
Total Mercury	0.00102	0.00119	mg/L	1	0.001	<0.0002	102	15	84 - 125	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spikes

QCBatch: QC11045

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount Added	Matrix Result	% Rec	RPD	% Rec Limit	RPD Limit
Dissolved Calcium	96.2	103	mg/L	1	100	<0.5	96	6	75 - 125	20
Dissolved Magnesium	105	108	mg/L	1	100	<0.5	105	2	75 - 125	20
Dissolved Potassium	102	103	mg/L	1	100	<0.5	102	0	75 - 125	20
Dissolved Sodium	107	110	mg/L	1	100	<0.5	107	2	75 - 125	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spikes

QCBatch: QC11469

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount Added	Matrix Result	% Rec	RPD	% Rec Limit	RPD Limit
Total Arsenic	0.503	0.482	mg/L	1	0.50	<0.05	100	4	75 - 125	20
Total Barium	1.05	1.04	mg/L	1	1	<0.1	105	0	75 - 125	20
Total Cadmium	0.261	0.258	mg/L	1	0.25	<0.025	104	1	75 - 125	20
Total Chromium	0.112	0.105	mg/L	1	0.10	<0.01	112	6	75 - 125	20
Total Lead	0.536	0.526	mg/L	1	0.50	<0.01	107	1	75 - 125	20

Continued ...

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Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount Added	Matrix Result	% Rec	RPD	% Rec Limit	RPD Limit
Total Selenium	0.474	0.474	mg/L	1	0.50	<0.05	94	0	75 - 125	20
Total Silver	0.128	0.127	mg/L	1	0.12	<0.0125	102	0	75 - 125	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Quality Control Report Matrix Spikes and Duplicate Spikes

Matrix Spikes QCBatch: QC11030

Param	MS Result	MSD Result	Units	Dil.	Spike Amount Added	Matrix Result	% Rec	RPD	% Rec Limit	RPD Limit
Bromide	125.77	128.44	mg/L	1	125	<10	100	2	56 - 160	20
CL	1966.55	1953.52	mg/L	1	1250	754	97	0	52 - 131	20
Fluoride	129.94	126.81	mg/L	1	125	13.04	93	2	80 - 113	20
Nitrate-N	136.15	135.31	mg/L	1	125	21.86	91	0	86 - 110	20
Sulfate	1771.76	1790.68	mg/L	1	625	1209	90	3	71 - 121	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spikes QCBatch: QC11036

Param	MS Result	MSD Result	Units	Dil.	Spike Amount Added	Matrix Result	% Rec	RPD	% Rec Limit	RPD Limit
Total Mercury	⁷ 0.00124	0.00115	mg/L	1	0.001	<0.0002	124	7	84 - 127	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spikes QCBatch: QC11045

Param	MS Result	MSD Result	Units	Dil.	Spike Amount Added	Matrix Result	% Rec	RPD	% Rec Limit	RPD Limit
Dissolved Calcium	205	199	mg/L	1	100	95.7	109	5	75 - 125	20
Dissolved Magnesium	273	266	mg/L	1	100	176	97	7	75 - 125	20
Dissolved Potassium	153	149	mg/L	1	100	43.4	109	3	75 - 125	20
Dissolved Sodium	499	483	mg/L	1	100	415	84	21	75 - 125	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spikes QCBatch: QC11469

⁷ use lcs and lcsd to show run under control. Ssc

Param	MS Result	MSD Result	Units	Dil.	Spike Amount Added	Matrix Result	% Rec	RPD	% Rec Limit	RPD Limit
Total Arsenic	0.454	0.451	mg/L	1	0.50	<0.05	90	0	75 - 125	20
Total Barium	1.16	1.15	mg/L	1	1	0.252	90	1	75 - 125	20
Total Cadmium	0.218	.22	mg/L	1	0.25	<0.025	87	0	75 - 125	20
Total Chromium	0.0911	.098	mg/L	1	0.10	<0.01	91	7	75 - 125	20
Total Lead	0.446	.442	mg/L	1	0.50	<0.01	89	0	75 - 125	20
Total Selenium	0.457	.44	mg/L	1	0.50	<0.05	91	3	75 - 125	20
Total Silver	0.113	.112	mg/L	1	0.12	<0.0125	90	0	75 - 125	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Quality Control Report Continuing Calibration Verification Standards

CCV (1) QCBatch: QC11007

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Dissolved Solids		mg/L	1000	948	94	90 - 110	5/7/01

ICV (1) QCBatch: QC11007

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Dissolved Solids		mg/L	1000	939	93	90 - 110	5/7/01

CCV (1) QCBatch: QC11021

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Specific Conductance		μ MHOS/cm	1413	1412	99	90 - 110	5/7/01

ICV (1) QCBatch: QC11021

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Specific Conductance		μ MHOS/cm	1413	1424	100	90 - 110	5/7/01

ICV (1) QCBatch: QC11027

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
pH		s.u.	7	7.0	100	-0.1 s.u. - +0.1 s.u.	5/4/01

CCV (1) QCBatch: QC11029

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Hydroxide Alkalinity		mg/L as CaCo3	0	<1.0	0	90 - 110	5/8/01
Carbonate Alkalinity		mg/L as CaCo3	0	232	0	90 - 110	5/8/01
Bicarbonate Alkalinity		mg/L as CaCo3	0	16	0	90 - 110	5/8/01
Total Alkalinity		mg/L as CaCo3	250	248	99	90 - 110	5/8/01

ICV (1) QCBatch: QC11029

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Hydroxide Alkalinity		mg/L as CaCo3	0	<1.0	0	90 - 110	5/8/01
Carbonate Alkalinity		mg/L as CaCo3	0	224	0	90 - 110	5/8/01
Bicarbonate Alkalinity		mg/L as CaCo3	0	24	0	90 - 110	5/8/01
Total Alkalinity		mg/L as CaCo3	250	248	99	90 - 110	5/8/01

CCV (1) QCBatch: QC11030

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Bromide		mg/L	2.50	2.47	98	90 - 110	5/4/01
CL		mg/L	12.50	12.32	98	90 - 110	5/4/01
Fluoride		mg/L	2.50	2.41	96	90 - 110	5/4/01
Nitrate-N		mg/L	2.50	2.33	93	90 - 110	5/4/01
Sulfate		mg/L	12.50	11.57	92	90 - 110	5/4/01

ICV (1) QCBatch: QC11030

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Bromide		mg/L	2.50	2.58	103	90 - 110	5/4/01
CL		mg/L	12.50	12.24	97	90 - 110	5/4/01
Fluoride		mg/L	2.50	2.39	95	90 - 110	5/4/01
Nitrate-N		mg/L	2.50	2.38	95	90 - 110	5/4/01
Sulfate		mg/L	12.50	11.80	94	90 - 110	5/4/01

CCV (1) QCBatch: QC11036

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Mercury		mg/L	0.001	0.00082	82	80 - 120	5/9/01

ICV (1) QCBatch: QC11036

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Mercury		mg/L	0.001	0.00109	109	80 - 120	5/9/01

CCV (1) QCBatch: QC11045

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Dissolved Calcium		mg/L	25	25.8	103	90 - 110	5/7/01
Dissolved Magnesium		mg/L	25	26.0	104	90 - 110	5/7/01
Dissolved Potassium		mg/L	25	24.8	99	90 - 110	5/7/01
Dissolved Sodium		mg/L	25	26.2	104	90 - 110	5/7/01

ICV (1) QCBatch: QC11045

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Dissolved Calcium		mg/L	25	25.0	100	95 - 105	5/7/01
Dissolved Magnesium		mg/L	25	24.7	98	95 - 105	5/7/01
Dissolved Potassium		mg/L	25	23.9	95	95 - 105	5/7/01
Dissolved Sodium		mg/L	25	25.8	103	95 - 105	5/7/01

CCV (1) QCBatch: QC11469

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Arsenic		mg/L	1	1	100	90 - 110	5/24/01
Total Barium		mg/L	2	2.12	106	90 - 110	5/24/01
Total Cadmium		mg/L	0.50	0.531	106	90 - 110	5/24/01
Total Chromium		mg/L	0.20	0.206	103	90 - 110	5/24/01
Total Lead		mg/L	1	1.04	104	90 - 110	5/24/01
Total Selenium		mg/L	1	1.03	103	90 - 110	5/24/01
Total Silver		mg/L	0.25	0.261	104	90 - 110	5/24/01

ICV (1) QCBatch: QC11469

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Arsenic		mg/L	1	0.991	99	90 - 110	5/24/01
Total Barium		mg/L	2	2	100	90 - 110	5/24/01
Total Cadmium		mg/L	0.50	0.502	100	90 - 110	5/24/01
Total Chromium		mg/L	0.20	0.2	100	90 - 110	5/24/01
Total Lead		mg/L	1	1.01	101	90 - 110	5/24/01
Total Selenium		mg/L	1	1.01	101	90 - 110	5/24/01
Total Silver		mg/L	0.25	0.249	99	90 - 110	5/24/01

TRACE ANALYSIS, INC.

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Analytical and Quality Control Report

Wayne Price
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Report Date: June 27, 2001

Order ID Number: A01050434

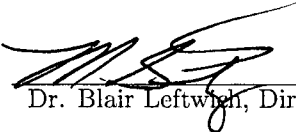
Project Number: N/A
Project Name: McCasland
Project Location: N/A

Enclosed are the Analytical Results and Quality Control Data Reports for the following samples submitted to Trace-Analysis, Inc.

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
170572	0105021400 Scale	Soil	5/2/01	14:00	5/4/01
170573	0108021430 Trench 1-8'	Soil	5/2/01	14:30	5/4/01
170574	0105021521 Trench #2- 12'	Soil	5/2/01	15:20	5/4/01
170581	0105021522	Soil	5/2/01	:	5/4/01

These results represent only the samples received in the laboratory. The Quality Control Report is generated on a batch basis. All information contained in this report is for the analytical batch(es) in which your sample(s) were analyzed.

This report consists of a total of 21 pages and shall not be reproduced except in its entirety including the chain of custody (COC), without written approval of TraceAnalysis, Inc.


Dr. Blair Leftwich, Director

Analytical Report

Sample: 170572 - 0105021400 Scale

Analysis: Alkalinity Analytical Method: E 310.1 QC Batch: QC11295 Date Analyzed: 5/17/01
Analyst: RS Preparation Method: N/A Prep Batch: PB09662 Date Prepared: 5/17/01

Param	Flag	Result	Units	Dilution	RDL
Hydroxide Alkalinity		<1.0	mg/Kg as CaCo3	1	1
Carbonate Alkalinity		<1.0	mg/Kg as CaCo3	1	1
Bicarbonate Alkalinity		34	mg/Kg as CaCo3	1	1
Total Alkalinity		34	mg/Kg as CaCo3	1	1

Sample: 170572 - 0105021400 Scale

Analysis: Conductivity Analytical Method: SM 2510B QC Batch: QC11153 Date Analyzed: 5/9/01
Analyst: JS Preparation Method: N/A Prep Batch: PB09552 Date Prepared: 5/9/01

Param	Flag	Result	Units	Dilution	RDL
Specific Conductance		1770	μMHOS/cm	1	

Sample: 170572 - 0105021400 Scale

Analysis: Hg, Total Analytical Method: S 7471A QC Batch: QC11032 Date Analyzed: 5/8/01
Analyst: SSC Preparation Method: N/A Prep Batch: PB09470 Date Prepared: 5/8/01

Param	Flag	Result	Units	Dilution	RDL
Total Mercury		0.32	mg/Kg	1	0.19

Sample: 170572 - 0105021400 Scale

Analysis: Ion Chromatography (IC) Analytical Method: E 300.0 QC Batch: QC11235 Date Analyzed: 5/15/01
Analyst: JS Preparation Method: N/A Prep Batch: PB09622 Date Prepared: 5/9/01

Param	Flag	Result	Units	Dilution	RDL
Bromide	1	<5.0	mg/Kg	5	0.20
CL		520	mg/Kg	20	0.50
Fluoride	2	<5.0	mg/Kg	5	0.20
Nitrate-N	3	<5.0	mg/Kg	5	0.20
Sulfate	4	31.6	mg/Kg	5	0.50

Sample: 170572 - 0105021400 Scale

Analysis: Salts Analytical Method: S 6010B QC Batch: QC11402 Date Analyzed: 5/14/01
Analyst: LDB Preparation Method: E 3005 A Prep Batch: PB09441 Date Prepared: 5/8/01

¹Bromide ran on IC051001A-2.sch (PB09567; QC11178). ICV %IA = 101; CCV %IA = 104; matrix spikes RPD = 2; matrix spikes %EA = 107; blank spikes RPD = 1; blank spikes %EA = 104.

²Fluoride ran on IC051001A-2.sch (PB09567; QC11178). ICV %IA = 102; CCV %IA = 96; matrix spikes RPD = 3; matrix spikes %EA = 92; blank spikes RPD = 0; blank spikes %EA = 109.

³Nitrate ran on IC051001A-2.sch (PB09567; QC11178). ICV %IA = 97; CCV %IA = 97; matrix spikes RPD = 1; matrix spikes %EA = 101; blank spikes RPD = 0; blank spikes %EA = 102.

⁴Sulfate ran on IC051001A-2.sch (PB09567; QC11178). ICV %IA = 98; CCV %IA = 96; matrix spikes RPD = 1; matrix spikes %EA = 96; blank spikes RPD = 2; blank spikes %EA = 95.

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Param	Flag	Result	Units	Dilution	RDL
Dissolved Calcium		263000	mg/kg	10000	0.50
Dissolved Magnesium		696	mg/kg	100	0.50
Dissolved Potassium		80.4	mg/kg	100	0.50
Dissolved Sodium		1656	mg/kg	100	0.90

Sample: 170572 - 0105021400 Scale

Analysis: TDS Analytical Method: E 160.1 QC Batch: QC11259 Date Analyzed: 5/16/01
Analyst: JS Preparation Method: N/A Prep Batch: PB09621 Date Prepared: 5/15/01

Param	Flag	Result	Units	Dilution	RDL
Total Dissolved Solids		943	mg/Kg	14	10

Sample: 170572 - 0105021400 Scale

Analysis: Total Metals Analytical Method: S 6010B QC Batch: QC11123 Date Analyzed: 5/12/01
Analyst: RR Preparation Method: E 3050B Prep Batch: PB09414 Date Prepared: 5/7/01

Param	Flag	Result	Units	Dilution	RDL
Total Arsenic		<5	mg/Kg	100	0.05
Total Barium		79.1	mg/Kg	100	0.05
Total Cadmium		2.82	mg/Kg	100	0.02
Total Chromium		<5	mg/Kg	100	0.05
Total Lead		46.6	mg/Kg	100	0.05
Total Selenium		<5	mg/Kg	100	0.05
Total Silver		<1	mg/Kg	100	0.01

Sample: 170572 - 0105021400 Scale

Analysis: pH Analytical Method: E 150.1 QC Batch: QC11251 Date Analyzed: 5/9/01
Analyst: RS Preparation Method: N/A Prep Batch: PB09627 Date Prepared: 5/9/01

Param	Flag	Result	Units	Dilution	RDL
pH		7.9	s.u.	1	1

Sample: 170573 - 0108021430 Trench 1-8'

Analysis: Alkalinity Analytical Method: E 310.1 QC Batch: QC11295 Date Analyzed: 5/17/01
Analyst: RS Preparation Method: N/A Prep Batch: PB09662 Date Prepared: 5/17/01

Param	Flag	Result	Units	Dilution	RDL
Hydroxide Alkalinity		<1.0	mg/Kg as CaCo3	1	1
Carbonate Alkalinity		<1.0	mg/Kg as CaCo3	1	1
Bicarbonate Alkalinity		16	mg/Kg as CaCo3	1	1
Total Alkalinity		16	mg/Kg as CaCo3	1	1

Sample: 170573 - 0108021430 Trench 1-8'

Analysis: Conductivity Analytical Method: SM 2510B QC Batch: QC11153 Date Analyzed: 5/9/01
Analyst: JS Preparation Method: N/A Prep Batch: PB09552 Date Prepared: 5/9/01

Param	Flag	Result	Units	Dilution	RDL
Specific Conductance		1250	μ MHOS/cm	1	

Sample: 170573 - 0108021430 Trench 1-8'

Analysis: Hg, Total Analytical Method: S 7471A QC Batch: QC11032 Date Analyzed: 5/8/01
Analyst: SSC Preparation Method: N/A Prep Batch: PB09470 Date Prepared: 5/8/01

Param	Flag	Result	Units	Dilution	RDL
Total Mercury		<0.19	mg/Kg	1	0.19

Sample: 170573 - 0108021430 Trench 1-8'

Analysis: Ion Chromatography (IC) Analytical Method: E 300.0 QC Batch: QC11178 Date Analyzed: 5/10/01
Analyst: JS Preparation Method: N/A Prep Batch: PB09567 Date Prepared: 5/9/01

Param	Flag	Result	Units	Dilution	RDL
Bromide		<5.0	mg/Kg	5	0.20
CL		372	mg/Kg	10	0.50
Fluoride		<5.0	mg/Kg	5	0.20
Nitrate-N		<5.0	mg/Kg	5	0.20
Sulfate		<25	mg/Kg	5	0.50

Sample: 170573 - 0108021430 Trench 1-8'

Analysis: Salts Analytical Method: S 6010B QC Batch: QC11402 Date Analyzed: 5/14/01
Analyst: LDB Preparation Method: E 3005 A Prep Batch: PB09441 Date Prepared: 5/8/01

Param	Flag	Result	Units	Dilution	RDL
Dissolved Calcium		6842	mg/kg	1000	0.50
Dissolved Magnesium		270	mg/kg	100	0.50
Dissolved Potassium		393	mg/kg	100	0.50
Dissolved Sodium		766	mg/kg	100	0.90

Sample: 170573 - 0108021430 Trench 1-8'

Analysis: TDS Analytical Method: E 160.1 QC Batch: QC11259 Date Analyzed: 5/16/01
Analyst: JS Preparation Method: N/A Prep Batch: PB09621 Date Prepared: 5/15/01

Param	Flag	Result	Units	Dilution	RDL
Total Dissolved Solids		1060	mg/kg	5	10

Sample: 170573 - 0108021430 Trench 1-8'

Analysis: Total Metals Analytical Method: S 6010B QC Batch: QC11123 Date Analyzed: 5/12/01
Analyst: RR Preparation Method: E 3050B Prep Batch: PB09414 Date Prepared: 5/7/01

Param	Flag	Result	Units	Dilution	RDL
Total Arsenic		<5	mg/Kg	100	0.05
Total Barium		40.3	mg/Kg	100	0.05
Total Cadmium		<2	mg/Kg	100	0.02

Continued ...

... Continued Sample: 170573 Analysis: Total Metals

Param	Flag	Result	Units	Dilution	RDL
Total Chromium		<5	mg/Kg	100	0.05
Total Lead		<5	mg/Kg	100	0.05
Total Selenium		<5	mg/Kg	100	0.05
Total Silver		<1	mg/Kg	100	0.01

Sample: 170573 - 0108021430 Trench 1-8'

Analysis: pH Analytical Method: E 150.1 QC Batch: QC11251 Date Analyzed: 5/9/01
Analyst: RS Preparation Method: N/A Prep Batch: PB09627 Date Prepared: 5/9/01

Param	Flag	Result	Units	Dilution	RDL
pH		8.1	s.u.	1	1

Sample: 170574 - 0105021521 Trench #2- 12'

Analysis: 8260 Analytical Method: S 8260B QC Batch: QC11113 Date Analyzed: 5/11/01
Analyst: JG Preparation Method: E 5035 Prep Batch: PB09525 Date Prepared: 5/11/01

Param	Flag	Result	Units	Dilution	RDL
Bromochloromethane		<25.0	µg/Kg	25	1
Dichlorodifluoromethane		<25.0	µg/Kg	25	1
Chloromethane (methyl chloride)		<25.0	µg/Kg	25	1
Vinyl Chloride		<25.0	µg/Kg	25	1
Bromomethane (methyl bromide)		<25.0	µg/Kg	25	1
Chloroethane		<25.0	µg/Kg	25	1
Trichlorofluoromethane		<25.0	µg/Kg	25	1
Acetone		<250	µg/Kg	25	10
Iodomethane (methyl iodide)		<125	µg/Kg	25	5
Carbon Disulfide		<25.0	µg/Kg	25	1
Acrylonitrile		<25.0	µg/Kg	25	1
2-Butanone (MEK)		<125	µg/Kg	25	5
4-methyl-2-pentanone (MIBK)		<125	µg/Kg	25	5
2-hexanone		<125	µg/Kg	25	5
trans 1,4-Dichloro-2-butene		<250	µg/Kg	25	10
1,1-Dichloroethene		<25.0	µg/Kg	25	1
Methylene chloride		<125	µg/Kg	25	5
MTBE		<25.0	µg/Kg	25	1
trans-1,2-Dichloroethene		<25.0	µg/Kg	25	1
1,1-Dichloroethane		<25.0	µg/Kg	25	1
cis-1,2-Dichloroethene		<25.0	µg/Kg	25	1
2,2-Dichloropropane		<25.0	µg/Kg	25	1
1,2-Dichloroethane (EDC)		<25.0	µg/Kg	25	1
Chloroform		<25.0	µg/Kg	25	1
1,1,1-Trichloroethane		<25.0	µg/Kg	25	1
1,1-Dichloropropene		<25.0	µg/Kg	25	1
Benzene		<25.0	µg/Kg	25	1
Carbon Tetrachloride		<25.0	µg/Kg	25	1
1,2-Dichloropropane		<25.0	µg/Kg	25	1
Trichloroethene (TCE)		<25.0	µg/Kg	25	1
Dibromomethane (methylene bromide)		<25.0	µg/Kg	25	1
Bromodichloromethane		<25.0	µg/Kg	25	1
2-Chloroethyl vinyl ether		<125	µg/Kg	25	5

Continued ...

... Continued Sample: 170574 Analysis: 8260

Param	Flag	Result	Units	Dilution	RDL
cis-1,3-Dichloropropene		<25.0	µg/Kg	25	1
trans-1,3-Dichloropropene		<25.0	µg/Kg	25	1
Toluene		<25.0	µg/Kg	25	1
1,1,2-Trichloroethane		<25.0	µg/Kg	25	1
1,3-Dichloropropane		<25.0	µg/Kg	25	1
Dibromochloromethane		<25.0	µg/Kg	25	1
1,2-Dibromoethane (EDB)		<25.0	µg/Kg	25	1
Tetrachloroethene (PCE)		<25.0	µg/Kg	25	1
Chlorobenzene		<25.0	µg/Kg	25	1
1,1,1,2-Tetrachloroethane		<25.0	µg/Kg	25	1
Ethylbenzene		<25.0	µg/Kg	25	1
m,p-Xylene		<25.0	µg/Kg	25	1
Bromoform		<25.0	µg/Kg	25	1
Styrene		<25.0	µg/Kg	25	1
o-Xylene		<25.0	µg/Kg	25	1
1,1,2,2-Tetrachloroethane		<25.0	µg/Kg	25	1
2-Chlorotoluene		<25.0	µg/Kg	25	1
1,2,3-Trichloropropane		<25.0	µg/Kg	25	1
Isopropylbenzene		<25.0	µg/Kg	25	1
Bromobenzene		<25.0	µg/Kg	25	1
n-Propylbenzene		<25.0	µg/Kg	25	1
1,3,5-Trimethylbenzene		<25.0	µg/Kg	25	1
tert-Butylbenzene		<25.0	µg/Kg	25	1
1,2,4-Trimethylbenzene		<25.0	µg/Kg	25	1
1,4-Dichlorobenzene (para)		<25.0	µg/Kg	25	1
sec-Butylbenzene		<25.0	µg/Kg	25	1
1,3-Dichlorobenzene		<25.0	µg/Kg	25	1
p-Isopropyltoluene		<25.0	µg/Kg	25	1
4-Chlorotoluene		<25.0	µg/Kg	25	1
1,2-Dichlorobenzene (ortho)		<25.0	µg/Kg	25	1
n-Butylbenzene		<25.0	µg/Kg	25	1
1,2-Dibromo-3-chloropropane		<125	µg/Kg	25	5
1,2,3-Trichlorobenzene		<125	µg/Kg	25	5
1,2,4-Trichlorobenzene		<125	µg/Kg	25	5
Naphthalene		<125	µg/Kg	25	5
Hexachlorobutadiene		<125	µg/Kg	25	5

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Dibromofluoromethane		45.01	µg/Kg	1	50	90	87 - 121
Toluene-d8		50.90	µg/Kg	1	50	101	91 - 114
4-Bromofluorobenzene		47.88	µg/Kg	1	50	95	86 - 114

Sample: 170574 - 0105021521 Trench #2- 12'

Analysis: Alkalinity Analytical Method: E 310.1 QC Batch: QC11295 Date Analyzed: 5/17/01
Analyst: RS Preparation Method: N/A Prep Batch: PB09662 Date Prepared: 5/17/01

Param	Flag	Result	Units	Dilution	RDL
Hydroxide Alkalinity		<1.0	mg/Kg as CaCo3	1	1
Carbonate Alkalinity		<1.0	mg/Kg as CaCo3	1	1
Bicarbonate Alkalinity		6.0	mg/Kg as CaCo3	1	1
Total Alkalinity		6.0	mg/Kg as CaCo3	1	1

Sample: 170574 - 0105021521 Trench #2- 12'

Analysis: Conductivity Analytical Method: SM 2510B QC Batch: QC11189 Date Analyzed: 5/9/01
Analyst: JS Preparation Method: N/A Prep Batch: PB09552 Date Prepared: 5/9/01

Param	Flag	Result	Units	Dilution	RDL
Specific Conductance		2870	μMHOS/cm	1	

Sample: 170574 - 0105021521 Trench #2- 12'

Analysis: Hg, Total Analytical Method: S 7471A QC Batch: QC11033 Date Analyzed: 5/8/01
Analyst: SSC Preparation Method: N/A Prep Batch: PB09470 Date Prepared: 5/8/01

Param	Flag	Result	Units	Dilution	RDL
Total Mercury		<0.19	mg/Kg	1	0.19

Sample: 170574 - 0105021521 Trench #2- 12'

Analysis: Ion Chromatography (IC) Analytical Method: E 300.0 QC Batch: QC11178 Date Analyzed: 5/10/01
Analyst: JS Preparation Method: N/A Prep Batch: PB09567 Date Prepared: 5/9/01

Param	Flag	Result	Units	Dilution	RDL
Bromide		<5.0	mg/Kg	5	0.20
CL		863	mg/Kg	50	0.50
Fluoride		<5.0	mg/Kg	5	0.20
Nitrate-N		<5.0	mg/Kg	5	0.20
Sulfate		53.5	mg/Kg	5	0.50

Sample: 170574 - 0105021521 Trench #2- 12'

Analysis: Salts Analytical Method: S 6010B QC Batch: QC11402 Date Analyzed: 5/14/01
Analyst: LDB Preparation Method: E 3005 A Prep Batch: PB09441 Date Prepared: 5/8/01

Param	Flag	Result	Units	Dilution	RDL
Dissolved Calcium		1650	mg/kg	100	0.50
Dissolved Magnesium		1208	mg/kg	100	0.50
Dissolved Potassium		1665	mg/kg	100	0.50
Dissolved Sodium		824	mg/kg	100	0.90

Sample: 170574 - 0105021521 Trench #2- 12'

Analysis: TDS Analytical Method: E 160.1 QC Batch: QC11259 Date Analyzed: 5/16/01
Analyst: JS Preparation Method: N/A Prep Batch: PB09621 Date Prepared: 5/15/01

Param	Flag	Result	Units	Dilution	RDL
Total Dissolved Solids		2220	mg/kg	5	10

Sample: 170574 - 0105021521 Trench #2- 12'

Analysis: Total Metals Analytical Method: S 6010B QC Batch: QC11123 Date Analyzed: 5/12/01
Analyst: RR Preparation Method: E 3050B Prep Batch: PB09414 Date Prepared: 5/7/01

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Param	Flag	Result	Units	Dilution	RDL
Total Arsenic		<5	mg/Kg	100	0.05
Total Barium		17.7	mg/Kg	100	0.05
Total Cadmium		<2	mg/Kg	100	0.02
Total Chromium		<5	mg/Kg	100	0.05
Total Lead		<5	mg/Kg	100	0.05
Total Selenium		<5	mg/Kg	100	0.05
Total Silver		<1	mg/Kg	100	0.01

Sample: 170574 - 0105021521 Trench #2- 12'

Analysis: pH Analytical Method: E 150.1 QC Batch: QC11251 Date Analyzed: 5/9/01
Analyst: RS Preparation Method: N/A Prep Batch: PB09627 Date Prepared: 5/9/01

Param	Flag	Result	Units	Dilution	RDL
pH		7.3	s.u.	1	1

Sample: 170581 - 0105021522

Analysis: Ion Chromatography (IC) Analytical Method: E 300.0 QC Batch: QC11175 Date Analyzed: 5/11/01
Analyst: JS Preparation Method: N/A Prep Batch: PB09566 Date Prepared: 5/9/01

Param	Flag	Result	Units	Dilution	RDL
CL		683	mg/Kg	50	0.50

Sample: 170581 - 0105021522

Analysis: TDS Analytical Method: E 160.1 QC Batch: QC11259 Date Analyzed: 5/16/01
Analyst: JS Preparation Method: N/A Prep Batch: PB09621 Date Prepared: 5/15/01

Param	Flag	Result	Units	Dilution	RDL
Total Dissolved Solids		1870	mg/Kg	8	10

Sample: 170581 - 0105021522

Analysis: pH Analytical Method: E 150.1 QC Batch: QC11251 Date Analyzed: 5/9/01
Analyst: RS Preparation Method: N/A Prep Batch: PB09627 Date Prepared: 5/9/01

Param	Flag	Result	Units	Dilution	RDL
pH		7.5	s.u.	1	1

Quality Control Report Method Blank

Method Blank QCBatch: QC11032

Param	Flag	Results	Units	Reporting Limit
Total Mercury		<0.19	mg/Kg	0.19

Method Blank QCBatch: QC11033

Param	Flag	Results	Units	Reporting Limit
Total Mercury		<0.19	mg/Kg	0.19

Method Blank QCBatch: QC11113

Param	Flag	Results	Units	Reporting Limit
Bromochloromethane		<25.0	µg/Kg	1
Dichlorodifluoromethane		<25.0	µg/Kg	1
Chloromethane (methyl chloride)		<25.0	µg/Kg	1
Vinyl Chloride		<25.0	µg/Kg	1
Bromomethane (methyl bromide)		<25.0	µg/Kg	1
Chloroethane		<25.0	µg/Kg	1
Trichlorofluoromethane		<25.0	µg/Kg	1
Acetone		<250	µg/Kg	10
Iodomethane (methyl iodide)		<125	µg/Kg	5
Carbon Disulfide		<25.0	µg/Kg	1
Acrylonitrile		<25.0	µg/Kg	1
2-Butanone (MEK)		<125	µg/Kg	5
4-methyl-2-pentanone (MIBK)		<125	µg/Kg	5
2-hexanone		<125	µg/Kg	5
trans 1,4-Dichloro-2-butene		<250	µg/Kg	10
1,1-Dichloroethene		<25.0	µg/Kg	1
Methylene chloride		<125	µg/Kg	5
MTBE		<25.0	µg/Kg	1
trans-1,2-Dichloroethene		<25.0	µg/Kg	1
1,1-Dichloroethane		<25.0	µg/Kg	1
cis-1,2-Dichloroethene		<25.0	µg/Kg	1
2,2-Dichloropropane		<25.0	µg/Kg	1
1,2-Dichloroethane (EDC)		<25.0	µg/Kg	1
Chloroform		<25.0	µg/Kg	1
1,1,1-Trichloroethane		<25.0	µg/Kg	1
1,1-Dichloropropene		<25.0	µg/Kg	1
Benzene		<25.0	µg/Kg	1
Carbon Tetrachloride		<25.0	µg/Kg	1
1,2-Dichloropropane		<25.0	µg/Kg	1
Trichloroethene (TCE)		<25.0	µg/Kg	1
Dibromomethane (methylene bromide)		<25.0	µg/Kg	1

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Param	Flag	Results	Units	Reporting Limit
Bromodichloromethane		<25.0	µg/Kg	1
2-Chloroethyl vinyl ether		<125	µg/Kg	5
cis-1,3-Dichloropropene		<25.0	µg/Kg	1
trans-1,3-Dichloropropene		<25.0	µg/Kg	1
Toluene		<25.0	µg/Kg	1
1,1,2-Trichloroethane		<25.0	µg/Kg	1
1,3-Dichloropropane		<25.0	µg/Kg	1
Dibromochloromethane		<25.0	µg/Kg	1
1,2-Dibromoethane (EDB)		<25.0	µg/Kg	1
Tetrachloroethene (PCE)		<25.0	µg/Kg	1
Chlorobenzene		<25.0	µg/Kg	1
1,1,1,2-Tetrachloroethane		<25.0	µg/Kg	1
Ethylbenzene		<25.0	µg/Kg	1
m,p-Xylene		<25.0	µg/Kg	1
Bromoform		<25.0	µg/Kg	1
Styrene		<25.0	µg/Kg	1
o-Xylene		<25.0	µg/Kg	1
1,1,2,2-Tetrachloroethane		<25.0	µg/Kg	1
2-Chlorotoluene		<25.0	µg/Kg	1
1,2,3-Trichloropropane		<25.0	µg/Kg	1
Isopropylbenzene		<25.0	µg/Kg	1
Bromobenzene		<25.0	µg/Kg	1
n-Propylbenzene		<25.0	µg/Kg	1
1,3,5-Trimethylbenzene		<25.0	µg/Kg	1
tert-Butylbenzene		<25.0	µg/Kg	1
1,2,4-Trimethylbenzene		<25.0	µg/Kg	1
1,4-Dichlorobenzene (para)		<25.0	µg/Kg	1
sec-Butylbenzene		<25.0	µg/Kg	1
1,3-Dichlorobenzene		<25.0	µg/Kg	1
p-Isopropyltoluene		<25.0	µg/Kg	1
4-Chlorotoluene		<25.0	µg/Kg	1
1,2-Dichlorobenzene (ortho)		<25.0	µg/Kg	1
n-Butylbenzene		<25.0	µg/Kg	1
1,2-Dibromo-3-chloropropane		<125	µg/Kg	5
1,2,3-Trichlorobenzene		<125	µg/Kg	5
1,2,4-Trichlorobenzene		<125	µg/Kg	5
Naphthalene		<125	µg/Kg	5
Hexachlorobutadiene		<125	µg/Kg	5

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Dibromofluoromethane		48.83	µg/Kg	1	50	97	87 - 121
Toluene-d8		50.75	µg/Kg	1	50	101	91 - 114
4-Bromofluorobenzene		47.14	µg/Kg	1	50	94	86 - 114

Method Blank

QCBatch: QC11123

Param	Flag	Results	Units	Reporting Limit
Total Arsenic		<5	mg/Kg	0.05

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Param	Flag	Results	Units	Reporting Limit
Total Barium		<5	mg/Kg	0.05
Total Cadmium		<2	mg/Kg	0.02
Total Chromium		<5	mg/Kg	0.05
Total Lead		<5	mg/Kg	0.05
Total Selenium		<5	mg/Kg	0.05
Total Silver		<1	mg/Kg	0.01

Method Blank QCBatch: QC11153

Param	Flag	Results	Units	Reporting Limit
Specific Conductance		6.36	μMHOS/cm	

Method Blank QCBatch: QC11175

Param	Flag	Results	Units	Reporting Limit
CL		3.00	mg/Kg	0.50

Method Blank QCBatch: QC11178

Param	Flag	Results	Units	Reporting Limit
Bromide		<1.0	mg/Kg	0.20
CL		2.91	mg/Kg	0.50
Fluoride		<1.0	mg/Kg	0.20
Nitrate-N		<1.0	mg/Kg	0.20
Sulfate		7.89	mg/Kg	0.50

Method Blank QCBatch: QC11189

Param	Flag	Results	Units	Reporting Limit
Specific Conductance		6.77	μMHOS/cm	

Method Blank QCBatch: QC11235

Param	Flag	Results	Units	Reporting Limit
Bromide		<1.0	mg/Kg	0.20
CL		2.99	mg/Kg	0.50
Fluoride		<1.0	mg/Kg	0.20
Nitrate-N		<1.0	mg/Kg	0.20

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Param	Flag	Results	Units	Reporting Limit
Sulfate		8.16	mg/Kg	0.50

Method Blank QCBatch: QC11259

Param	Flag	Results	Units	Reporting Limit
Total Dissolved Solids		<10	mg/Kg	10

Method Blank QCBatch: QC11295

Param	Flag	Results	Units	Reporting Limit
Hydroxide Alkalinity		<1.0	mg/Kg as CaCo3	1
Carbonate Alkalinity		<1.0	mg/Kg as CaCo3	1
Bicarbonate Alkalinity		<4.0	mg/Kg as CaCo3	1
Total Alkalinity		<4.0	mg/Kg as CaCo3	1

Method Blank QCBatch: QC11402

Param	Flag	Results	Units	Reporting Limit
Dissolved Calcium		<.5	mg/Kg	0.50
Dissolved Magnesium		<.5	mg/Kg	0.50
Dissolved Potassium		<.5	mg/Kg	0.50
Dissolved Sodium		<.5	mg/Kg	0.90

Quality Control Report Duplicate Samples

Duplicate QCBatch: QC11153

Param	Flag	Duplicate Result	Sample Result	Units	Dilution	RPD	RPD Limit
Specific Conductance		1255	1250	μMHOS/cm	1	0	6.1

Duplicate QCBatch: QC11189

Param	Flag	Duplicate Result	Sample Result	Units	Dilution	RPD	RPD Limit
Specific Conductance		2875	2870	μMHOS/cm	1	0	6.1

Duplicate QCBatch: QC11251

Param	Flag	Duplicate Result	Sample Result	Units	Dilution	RPD	RPD Limit
pH		7.5	7.5	s.u.	1	0	0.85

Duplicate QCBatch: QC11295

Param	Flag	Duplicate Result	Sample Result	Units	Dilution	RPD	RPD Limit
Hydroxide Alkalinity		<1.0	<1.0	mg/Kg as CaCo3	1	0	7
Carbonate Alkalinity		<1.0	<1.0	mg/Kg as CaCo3	1	0	7
Bicarbonate Alkalinity	5	22	16	mg/Kg as CaCo3	1	31	7
Total Alkalinity		22	16	mg/Kg as CaCo3	1	31	7

Quality Control Report Lab Control Spikes and Duplicate Spikes

Laboratory Control Spikes QCBatch: QC11032

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount Added	Matrix Result	% Rec	RPD	% Rec Limit	RPD Limit
Total Mercury	2.55	2.48	mg/Kg	1	2.50	<0.19	102	2	83 - 124	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spikes QCBatch: QC11033

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount Added	Matrix Result	% Rec	RPD	% Rec Limit	RPD Limit
Total Mercury	2.55	2.48	mg/Kg	1	2.50	<0.19	102	2	83 - 124	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spikes QCBatch: QC11113

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount Added	Matrix Result	% Rec	RPD	% Rec Limit	RPD Limit
1,1-Dichloroethene	105	108	µg/Kg	1	100	<25.0	105	2	67 - 131	20
Benzene	98	99	µg/Kg	1	100	<25.0	98	1	74 - 120	20
Trichloroethene (TCE)	94	99	µg/Kg	1	100	<25.0	94	1	74 - 115	20
Toluene	97	96	µg/Kg	1	100	<25.0	97	2	74 - 117	20
Chlorobenzene	101	97	µg/Kg	1	100	<25.0	101	0	81 - 116	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

⁵Sample RPD was above acceptable control limits

Surrogate	LCS Result	LCSD Result	Units	Dilution	Spike Amount	LCS % Rec	LCSD % Rec	Recovery Limits
Dibromofluoromethane	44.19	44.64	µg/Kg	1	50	88	89	87 - 121
Toluene-d8	51.59	51.51	µg/Kg	1	50	103	103	91 - 114
4-Bromofluorobenzene	49.32	49.46	µg/Kg	1	50	98	98	86 - 114

Laboratory Control Spikes

QCBatch: QC11123

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount Added	Matrix Result	% Rec	RPD	% Rec Limit	RPD Limit
Total Arsenic	60.60	61.20	mg/Kg	1	50	<5	121	0	80 - 120	20
Total Barium	110	111	mg/Kg	1	100	<5	110	0	80 - 120	20
Total Cadmium	27.3	27.40	mg/Kg	1	25	<2	109	0	80 - 120	20
Total Chromium	11	11	mg/Kg	1	10	<5	110	0	80 - 120	20
Total Lead	55.4	55.1	mg/Kg	1	50	<5	110	0	80 - 120	20
Total Selenium	48.50	48.3	mg/Kg	1	50	<5	97	0	80 - 120	20
Total Silver	⁶ 4.57	4.64	mg/Kg	1	12.50	<1	36	1	80 - 120	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spikes

QCBatch: QC11175

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount Added	Matrix Result	% Rec	RPD	% Rec Limit	RPD Limit
CL	⁷ 15.17	15.23	mg/Kg	1	12.50	3.00	121	0	90 - 110	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spikes

QCBatch: QC11178

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount Added	Matrix Result	% Rec	RPD	% Rec Limit	RPD Limit
Bromide	2.59	2.61	mg/Kg	1	2.50	<1.0	103	0	90 - 110	20
CL	⁸ 14.16	⁹ 14.21	mg/Kg	1	12.50	2.91	113	0	90 - 110	20
Fluoride	¹⁰ 2.73	¹¹ 2.73	mg/Kg	1	2.50	<1.0	109	0	90 - 110	20
Nitrate-N	¹² 2.56	¹³ 2.55	mg/Kg	1	2.50	<1.0	102	0	90 - 110	20
Sulfate	¹⁴ 19.71	¹⁵ 20.02	mg/Kg	1	12.50	7.89	157	1	90 - 110	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spikes

QCBatch: QC11235

⁶Matrix spike and LCS recoveries were low on Ag due to the Ag falling out of solutions.⁷Sample master doesn't subtract the blank from the blank spikes. The correct %EA = 97.⁸Sample master doesn't subtract the blank from the spikes. The correct %EA = 90.⁹Sample master doesn't subtract the blank from the spikes. The correct %EA = 90.¹⁰Sample master doesn't subtract the blank from the spikes. The correct %EA = 109.¹¹Sample master doesn't subtract the blank from the spikes. The correct %EA = 109.¹²Sample master doesn't subtract the blank from the spikes. The correct %EA = 102.¹³Sample master doesn't subtract the blank from the spikes. The correct %EA = 102.¹⁴Sample master doesn't subtract the blank from the spikes. The correct %EA = 95.¹⁵Sample master doesn't subtract the blank from the spikes. The correct %EA = 97.

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount Added	Matrix Result	% Rec	RPD	% Rec Limit	RPD Limit
CL	¹⁶ 14.41	¹⁷ 14.40	mg/Kg	1	12.50	2.99	115	0	90 - 110	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spikes

QCBatch: QC11402

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount Added	Matrix Result	% Rec	RPD	% Rec Limit	RPD Limit
Dissolved Calcium	9719	10010	mg/Kg	400	10000	<.5	97	2	75 - 125	20
Dissolved Magnesium	9793	9708	mg/Kg	400	10000	<.5	97	0	75 - 125	20
Dissolved Potassium	9745	10490	mg/Kg	400	10000	<.5	97	7	75 - 125	20
Dissolved Sodium	9983	10890	mg/Kg	400	10000	<.5	99	8	75 - 125	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Quality Control Report Matrix Spikes and Duplicate Spikes

Matrix Spikes

QCBatch: QC11032

Param	MS Result	MSD Result	Units	Dil.	Spike Amount Added	Matrix Result	% Rec	RPD	% Rec Limit	RPD Limit
Total Mercury	2.62	2.54	mg/Kg	1	2.50	<0.19	104	3	83 - 124	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spikes

QCBatch: QC11033

Param	MS Result	MSD Result	Units	Dil.	Spike Amount Added	Matrix Result	% Rec	RPD	% Rec Limit	RPD Limit
Total Mercury	2.22	2.53	mg/Kg	1	2.50	<0.19	88	13	83 - 124	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spikes

QCBatch: QC11113

Param	MS Result	MSD Result	Units	Dil.	Spike Amount Added	Matrix Result	% Rec	RPD	% Rec Limit	RPD Limit
1,1-Dichloroethene	91	85	μg/Kg	1	100	<25.0	91	6	63 - 137	20
Benzene	94	86	μg/Kg	1	100	<25.0	94	8	74 - 125	20
Trichloroethene (TCE)	90	83	μg/Kg	1	100	<25.0	90	8	70 - 118	20
Toluene	93	85	μg/Kg	1	100	<25.0	93	8	72 - 120	20
Chlorobenzene	93	85	μg/Kg	1	100	<25.0	93	8	78 - 118	20

¹⁶Sample master doesn't subtract the blank from the spikes. The correct %EA = 91.

¹⁷Sample master doesn't subtract the blank from the spikes. The correct %EA = 91.

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	MS Result	MSD Result	Units	Dilution	Spike Amount	MS % Rec	MSD % Rec	Recovery Limits
Dibromofluoromethane	44.84	44.68	µg/Kg	1	50	89	89	87 - 121
Toluene-d8	51.98	51.40	µg/Kg	1	50	103	102	91 - 114
4-Bromofluorobenzene	47.90	48.80	µg/Kg	1	50	95	97	86 - 114

Matrix Spikes QCBatch: QC11123

Param	MS Result	MSD Result	Units	Dil.	Spike Amount Added	Matrix Result	% Rec	RPD	% Rec Limit	RPD Limit
Total Arsenic	57.5	58.3	mg/Kg	1	50	<5	115	1	75 - 125	20
Total Barium	211	196	mg/Kg	1	100	88.6	122	13	75 - 125	20
Total Cadmium	26.4	26.4	mg/Kg	1	25	<2	105	0	75 - 125	20
Total Chromium	¹⁸ 24.3	¹⁹ 23	mg/Kg	1	10	11	133	10	75 - 125	20
Total Lead	74.3	78.5	mg/Kg	1	50	29.3	90	8	75 - 125	20
Total Selenium	39	40.6	mg/Kg	1	50	<5	78	4	75 - 125	20
Total Silver	²⁰ 4.67	4.67	mg/Kg	1	12.50	<1	37	0	75 - 125	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spikes QCBatch: QC11175

Param	MS Result	MSD Result	Units	Dil.	Spike Amount Added	Matrix Result	% Rec	RPD	% Rec Limit	RPD Limit
CL	1311.66	1329.19	mg/Kg	1	625	683	100	2	70 - 115	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spikes QCBatch: QC11178

Param	MS Result	MSD Result	Units	Dil.	Spike Amount Added	Matrix Result	% Rec	RPD	% Rec Limit	RPD Limit
Bromide	133.97	136.67	mg/Kg	1	125	<5.0	107	1	77 - 126	20
CL	1435.61	1437.97	mg/Kg	1	625	863	91	0	70 - 115	20
Fluoride	²¹ 122.26	²² 126.20	mg/Kg	1	125	<5.0	97	3	77 - 111	20
Nitrate-N	²³ 126.15	²⁴ 127.18	mg/Kg	1	125	<5.0	100	0	80 - 112	20
Sulfate	²⁵ 675.59	²⁶ 682.15	mg/Kg	1	625	53.5	99	1	74 - 118	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

¹⁸Poor spike recovery due to matrix difficulties. LCS/LCSD show analysis in control.

¹⁹Poor spike recovery due to matrix difficulties. LCS/LCSD show analysis in control.

²⁰Matrix spike and LCS recoveries were low on Ag due to the Ag falling out of solutions.

²¹I spiked the * 50 dilution for 170574, but reported the *5 dilution. The correct %EA = 92.

²²I spiked the * 50 dilution for 170574, but reported the *5 dilution.

²³I spiked the * 50 dilution for 170574, but reported the *5 dilution.

²⁴I spiked the * 50 dilution for 170574, but reported the *5 dilution.

²⁵I spiked the * 50 dilution for 170574, but reported the *5 dilution. The correct %EA = 96.

²⁶I spiked the * 50 dilution for 170574, but reported the *5 dilution.

Matrix Spikes QCBatch: QC11235

Param	MS Result	MSD Result	Units	Dil.	Spike Amount Added	Matrix Result	% Rec	RPD	% Rec Limit	RPD Limit
CL	773.57	771.37	mg/Kg	1	250	520	101	0	70 - 115	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spikes QCBatch: QC11402

Param	MS Result	MSD Result	Units	Dil.	Spike Amount Added	Matrix Result	% Rec	RPD	% Rec Limit	RPD Limit
Dissolved Calcium	²⁷ 327000	²⁸ 256100	mg/Kg	1000	10000	263000	64	2	75 - 125	20
Dissolved Magnesium	10190	10120	mg/Kg	1000	10000	696	94	0	75 - 125	20
Dissolved Potassium	12190	12200	mg/Kg	1000	10000	80.4	121	0	75 - 125	20
Dissolved Sodium	13030	12720	mg/Kg	1000	10000	1656	113	2	75 - 125	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Quality Control Report Continuing Calibration Verification Standards

CCV (1) QCBatch: QC11032

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Mercury		mg/Kg	0.005	0.00491	98	80 - 120	5/8/01

ICV (1) QCBatch: QC11032

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Mercury		mg/Kg	0.005	0.00488	97	80 - 120	5/8/01

CCV (1) QCBatch: QC11033

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Mercury		mg/Kg	0.005	0.00491	98	80 - 120	5/8/01

²⁷Poor spike recovery due to matrix difficulties. LCS/LCSD show analysis in control.

²⁸Poor spike recovery due to matrix difficulties. LCS/LCSD show analysis in control.

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Mercury		mg/Kg	0.005	0.00488	97	80 - 120	5/8/01

CCV (1)

QCBatch: QC11113

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Vinyl Chloride		µg/Kg	100	88	88	80 - 120	5/11/01
1,1-Dichloroethene		µg/Kg	100	89	89	80 - 120	5/11/01
Chloroform		µg/Kg	100	89	89	80 - 120	5/11/01
1,2-Dichloropropane		µg/Kg	100	94	94	80 - 120	5/11/01
Toluene		µg/Kg	100	91	91	80 - 120	5/11/01
Chlorobenzene		µg/Kg	100	99	99	80 - 120	5/11/01
Ethylbenzene		µg/Kg	100	100	100	80 - 120	5/11/01
Dibromofluoromethane		µg/Kg	50	44.36	88	80 - 120	5/11/01
Toluene-d8		µg/Kg	50	50.67	101	80 - 120	5/11/01
4-Bromofluorobenzene		µg/Kg	50	48.92	97	80 - 120	5/11/01

CCV (1)

QCBatch: QC11123

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Arsenic		mg/L	1	1.07	107	90 - 110	5/12/01
Total Barium		mg/L	2	2.09	104	90 - 110	5/12/01
Total Cadmium		mg/L	0.50	0.531	106	90 - 110	5/12/01
Total Chromium		mg/L	0.20	0.209	104	90 - 110	5/12/01
Total Lead		mg/L	1	1.05	105	90 - 110	5/12/01
Total Selenium		mg/L	1	1.04	104	90 - 110	5/12/01
Total Silver		mg/L	0.25	0.251	100	90 - 110	5/12/01

ICV (1)

QCBatch: QC11123

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Arsenic		mg/L	1	1.03	103	90 - 110	5/12/01
Total Barium		mg/L	2	2	100	90 - 110	5/12/01
Total Cadmium		mg/L	0.50	0.501	100	90 - 110	5/12/01
Total Chromium		mg/L	0.20	0.20	100	90 - 110	5/12/01
Total Lead		mg/L	1	1	100	90 - 110	5/12/01
Total Selenium		mg/L	1	1	100	90 - 110	5/12/01
Total Silver		mg/L	0.25	0.249	99	90 - 110	5/12/01

CCV (1)

QCBatch: QC11153

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Specific Conductance		μ MHOS/cm	1412	1407	99	90 - 110	5/9/01

ICV (1) QCBatch: QC11153

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Specific Conductance		μ MHOS/cm	1411	1417	100	90 - 110	5/9/01

CCV (1) QCBatch: QC11175

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
CL		mg/L	12.50	12.77	102	90 - 110	5/11/01

ICV (1) QCBatch: QC11175

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
CL		mg/L	12.50	12.79	102	90 - 110	5/11/01

CCV (1) QCBatch: QC11178

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Bromide		mg/L	2.50	2.61	104	90 - 110	5/10/01
CL		mg/L	12.50	11.71	93	90 - 110	5/10/01
Fluoride		mg/L	2.50	2.41	96	90 - 110	5/10/01
Nitrate-N		mg/L	2.50	2.43	97	90 - 110	5/10/01
Sulfate		mg/L	12.50	12.02	96	90 - 110	5/10/01

ICV (1) QCBatch: QC11178

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Bromide		mg/L	2.50	2.52	100	90 - 110	5/10/01
CL		mg/L	12.50	11.82	94	90 - 110	5/10/01
Fluoride		mg/L	2.50	2.56	102	90 - 110	5/10/01
Nitrate-N		mg/L	2.50	2.43	97	90 - 110	5/10/01

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Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Fluoride		mg/L	2.50	2.56	102	90 - 110	5/10/01
Nitrate-N		mg/L	2.50	2.43	97	90 - 110	5/10/01
Sulfate		mg/L	12.50	12.24	97	90 - 110	5/10/01

CCV (1) QCBatch: QC11189

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Specific Conductance		μ MHOS/cm	1412	1388	98	90 - 110	5/9/01

ICV (1) QCBatch: QC11189

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Specific Conductance		μ MHOS/cm	1411	1397	99	90 - 110	5/9/01

CCV (1) QCBatch: QC11235

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
CL		mg/L	12.50	11.96	95	90 - 110	5/15/01

ICV (1) QCBatch: QC11235

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
CL		mg/L	12.50	12.47	99	90 - 110	5/15/01

CCV (1) QCBatch: QC11251

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
pH		s.u.	7	7.0	100	-0.1 s.u. - +0.1 s.u.	5/9/01

ICV (1) QCBatch: QC11251

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
pH		s.u.	7	7.0	100	-0.1 s.u. - +0.1 s.u.	5/9/01

CCV (1) QCBatch: QC11295

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Hydroxide Alkalinity		mg/Kg as CaCo3	0	<1.0	0	90 - 110	5/17/01
Carbonate Alkalinity		mg/Kg as CaCo3	0	236	0	90 - 110	5/17/01
Bicarbonate Alkalinity		mg/Kg as CaCo3	0	10	0	90 - 110	5/17/01
Total Alkalinity		mg/Kg as CaCo3	250	246	98	90 - 110	5/17/01

ICV (1) QCBatch: QC11295

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Hydroxide Alkalinity		mg/Kg as CaCo3	0	<1.0	0	90 - 110	5/17/01
Carbonate Alkalinity		mg/Kg as CaCo3	0	228	0	90 - 110	5/17/01
Bicarbonate Alkalinity		mg/Kg as CaCo3	0	18	0	90 - 110	5/17/01
Total Alkalinity		mg/Kg as CaCo3	250	246	98	90 - 110	5/17/01

CCV (1) QCBatch: QC11402

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Dissolved Calcium		mg/L	25	24.1	96	90 - 110	5/14/01
Dissolved Magnesium		mg/L	25	24.2	96	90 - 110	5/14/01
Dissolved Potassium		mg/L	25	25.3	101	90 - 110	5/14/01
Dissolved Sodium		mg/L	25	24.3	97	90 - 110	5/14/01

ICV (1) QCBatch: QC11402

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Dissolved Calcium		mg/L	25	26.2	104	95 - 105	5/14/01
Dissolved Magnesium		mg/L	25	26.1	104	95 - 105	5/14/01
Dissolved Potassium		mg/L	25	25.5	102	95 - 105	5/14/01
Dissolved Sodium		mg/L	25	25.3	101	95 - 105	5/14/01

