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NSEB0828956299

February 01, 2009

Mr. Mike Bratcher **Environmental Engineer Specialist** Oil Conservation Division, District 2 1301 West Grand Avenue Artesia, NM 88210

Work Plan for the St. Mary Land & Exploration Co., Tuesday Federal #1, Re: Flowline Leak, Unit M, Section 34, Township 19 South, Range 29 East, Eddy County, New Mexico. (2RP-#251)

Mr. Bratcher:

Tetra Tech Inc. (Tetra Tech) was contacted by St. Mary Land & Exploration Co. (St. Mary) to assess a flowline spill at the Tuesday Federal #1 located in Unit M, Section 34, Township 19 South, Range 29 East, Eddy County, New Mexico (Site). The spill site coordinates are N 32.61543°, W 104.06412°. The site location is shown on Figures 1 and 2.

Background

According to the State of New Mexico C-141 Initial Report, the leak was discovered on September 17, 2008. Approximately 3 barrels of oil and 80 barrels of produced water were released from a 3-inch poly line. No free fluids were recovered. The 3-inch poly line was repaired with new connections. The initial C-141 is enclosed in Appendix A.

Hvdrology

The New Mexico State Engineers Well Report listed one well in Section 34 with an average depth of 60' and wells in Sections 35 and 36, with reported depths of 110' and 115', respectively. The Geology and Groundwater Resources of Eddy County New Mexico (Report 3) showed one well Section 3 of Township 20 South and Range 29 East. with a reported depth to water of 91' bgs. The well reports are shown in Appendix B.

According to the Geology and Groundwater Resources of Eddy County, New Mexico (Report 3), the Rustler and Castile formations (Ochoa Series) are present west and east of the Pecos River. The Rustler and Castile formations consist of anhydrite, gypsum, interbedded sandy clay and beds of dolomite. Groundwater from the Castile and Rustler formations west of the Pecos River is historically high in chloride and sulfate

Tetra Tech



concentrations which increase towards the river. The site is located on the east edge of the Rustler formation.

On March 11, 2009, Tetra Tech personnel supervised the installation of a temporary well (TMW-1) to establish groundwater quality and depth at the Site. The well construction log is shown in Appendix C. During the installation, the well drilled dry. The well was drilled through gray limestone and gypsum layers to a total depth of 72', to the top of a dense, gray and red clay formation. The well was measured two days later and showed a depth of 62' below surface. During the development of the well, the well purged dry and showed a slow recovery rate. On March 16, 2009, the well was purged dry and allowed to recover, prior to sampling. The groundwater quality showed a chloride of 280 mg/L and sulfate of 1,800 mg/L.

Regulatory

A risk-based evaluation was performed for the Site in accordance with the New Mexico Oil Conservation Division (NMOCD) Guidelines for Remediation of Leaks, Spills and Releases, dated August 13, 1993. The guidelines require a risk-based evaluation of the site to determine recommended remedial action levels (RRAL) for benzene, toluene, ethylbenzene and xylene (collectively referred to as BTEX) and total petroleum hydrocarbons (TPH) in soil. The proposed RRAL for benzene was determined to be 10 parts per million (ppm) or milligrams per kilogram (mg/kg) and 50 ppm for total BTEX (sum of benzene, toluene, ethylbenzene, and xylene). Based upon the depth to groundwater, the proposed RRAL for TPH is 1,000 mg/kg.

Soil Assessment and Results

On October 30, 2008, Tetra Tech personnel supervised the installation of boreholes to assess the spill area. The main spill area measured approximately 20' x 150' south of the release, then migrated down a two track road (6" to 1.0' wide) to a plugged and abandoned well location, which measured approximately 30' x 140'. A total of five (5) boreholes were installed in the spill area to a total depth of 40' to 50' below surface. One borehole was installed for background soil concentrations. The borehole locations are shown on Figure 3. Select samples were analyzed for TPH analysis by EPA method 8015 modified, BTEX by EPA Method 8021B and chloride by EPA method 300.0.

Referring to Table 1, all of the samples analyzed were below the RRAL for both BTEX and TPH, except for the samples at AH-4 and AH-5. These samples exceeded the TPH at 0-1' and declined below the RRAL at 2-3' below surface. Analytical results indicate the maximum extent of chloride impact greater than 1,000 mg/kg extending to 10' (BH-4), 20' (BH-3 and BH-5) and 30' (BH-1). Borehole (BH-2) showed a chloride of 1,250 mg/kg at 50-51' bgs. All samples had chloride concentrations that decreased with depth. Borehole logs are shown in Appendix C. Copies of laboratory analysis and chain-of-custody documentation are included in Appendix D. The results of the sampling are summarized in Table 1. The borehole locations are shown on Figure 3.



Work Plan

On July 27, 2009, Tetra Tech personnel met with the NMOCD in Artesia to discuss the corrective action for the site. As discussed, the proposed excavation depths are shown in Table 1. The areas of BH-1 and BH-2 are proposed to be excavated to a depth of approximately 20' below surface. This area will be backfilled with clean soil to a depth of 4.0' below surface, where the 40 mil liner will be placed. A pipeline (DCP) is located immediately west of the spill area, which may hinder the excavation on the west side of the spill area. The remaining areas of BH-3, BH-4 and BH-5 are proposed to be excavated down to approximately 10' bgs. Once excavated to the appropriate depths, the excavation will be backfilled with clean soil.

Once the remedial activities are performed a closure report will be submitted for the soils at the site. If you require any additional information or have any questions or comments concerning this work plan, please call at (432) 682-4559.

Respectfully submitted,

TETRA TECH

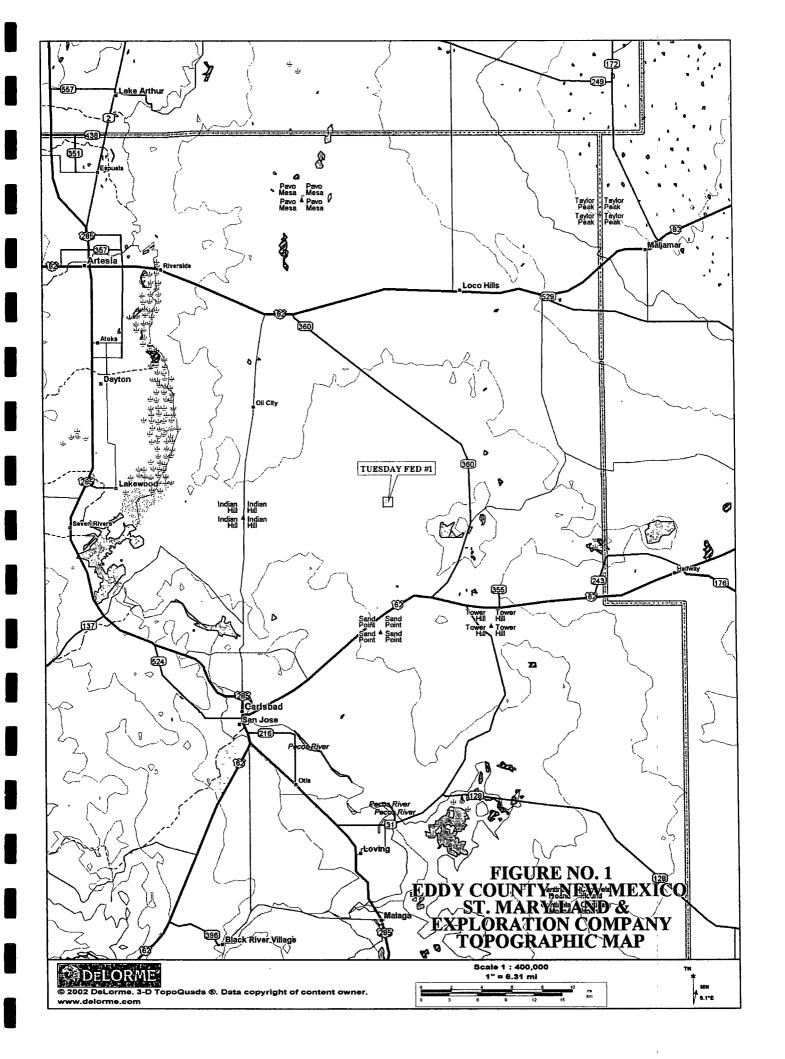
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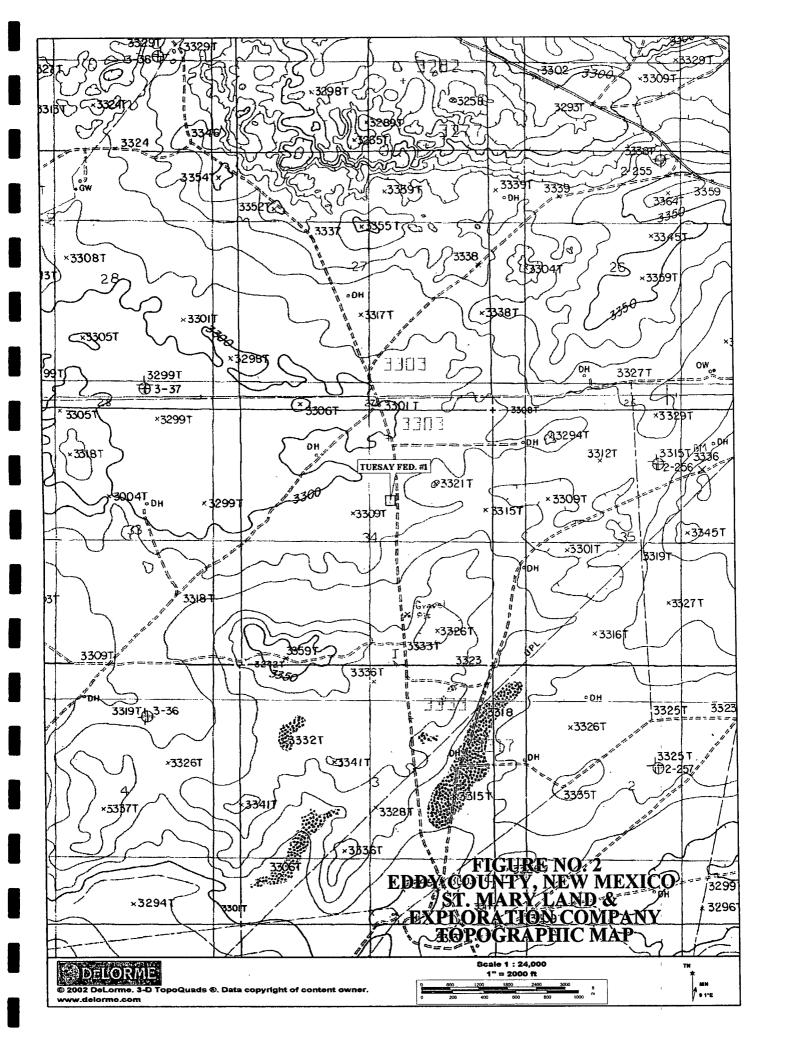
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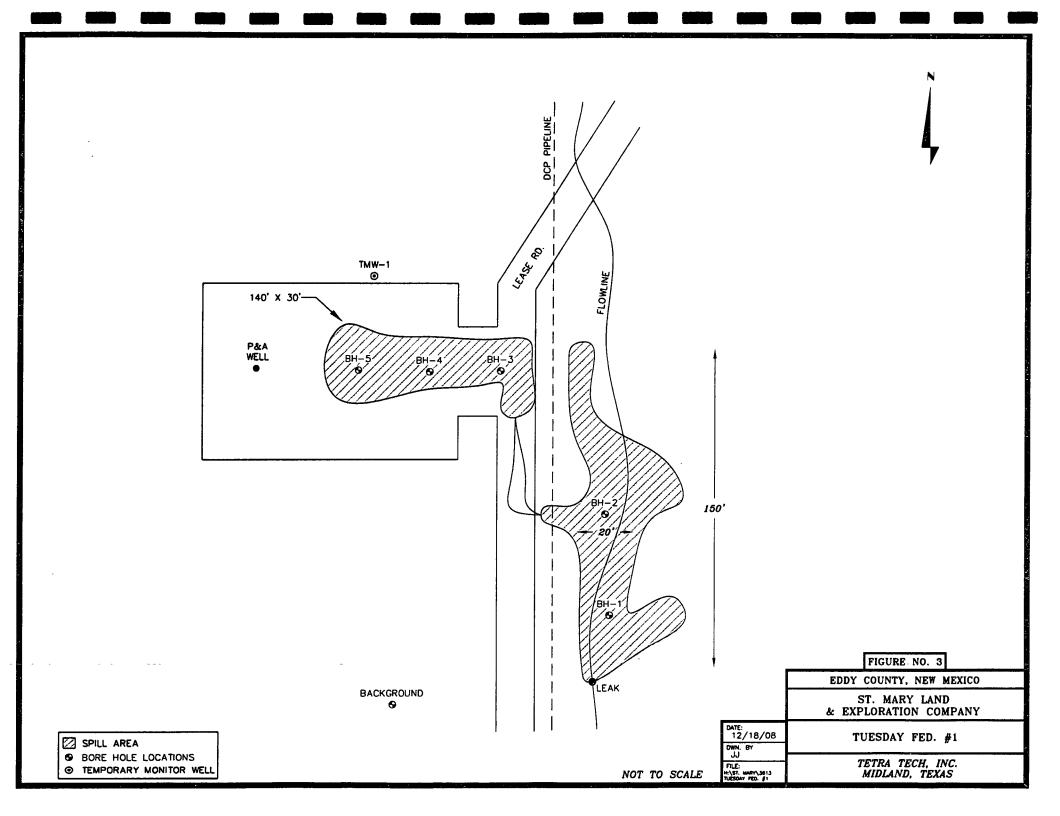
cc: Don Riggs – St. Mary Land & Exploration Co. Mark Bondy – St. Mary Land & Exploration Co.

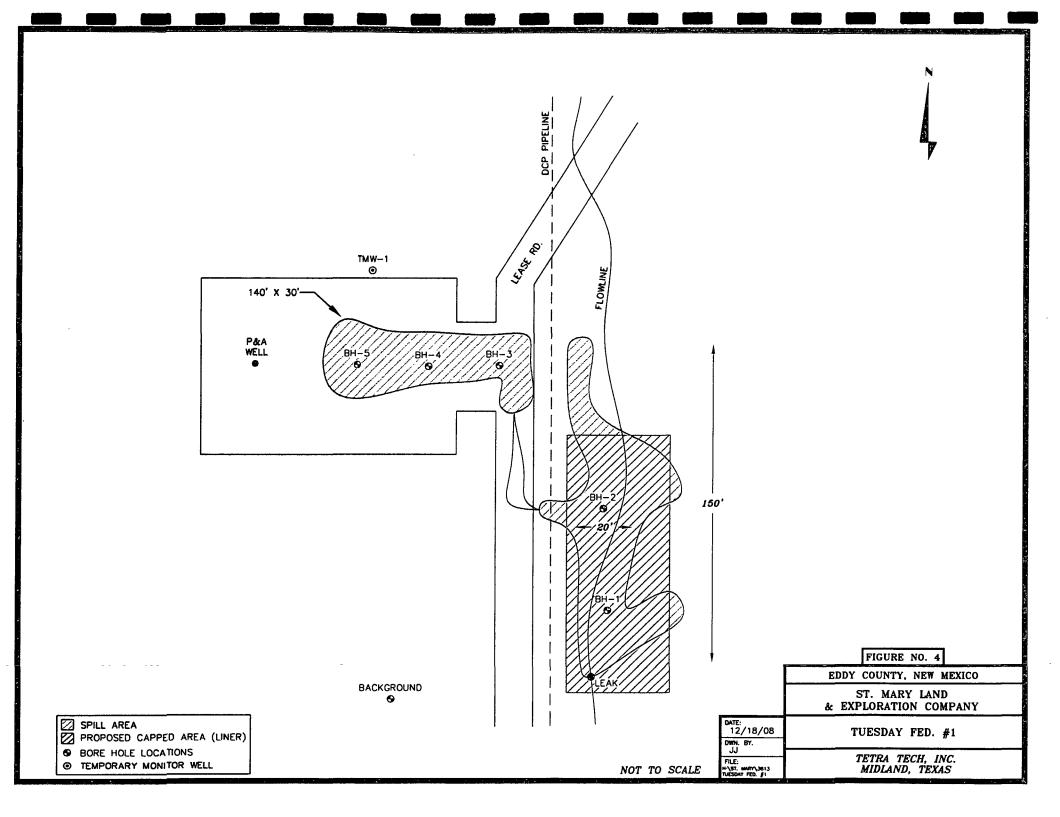
BLM - Jim Amos

FIGURES









TABLES

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St. Mary Land & Exploration Tuesday Federal #1 Flowline Eddy County, New Mexico

Sample	Date	Sample	Soil	Status		TPH (mg/k	g)	Benzene	Toluene	Ethlybenzene	Xylene	Chloride
1D	Sampled	Depth (ft)	In-Situ	Removed	DRO	GRO	Total	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
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⁽⁻⁾ Not Analyzed

Liner Installation (4.0' below surface)

Proposed Excavation Depths

Table

St. Mary Land & Exploration Tuesday Federal #1 Flowline Eddy County, New Mexico

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Liner Installation (4.0' below surface)

Proposed Excavation Depths

APPENDIX A

1625 N. French Dr., Hobbs, NM 88240 District II
1301 W. Grand Avenue, Artesia, NM 88210 District III
1000 Rio Brazos Road, Aztec, NM 87410 District IV 1220 S. St. Francis Dr., Santa Fc, NM 87505

State of New Mexico Energy Minerals and Natural Resources

Submit 2 Copies to appropriate District Office in accordance with Rule 116 on back side of form

Form C-141

Revised October 10, 2003

Oil Conservation Division Santa Fe, NM 87505

1220 South St. Francis Dr.

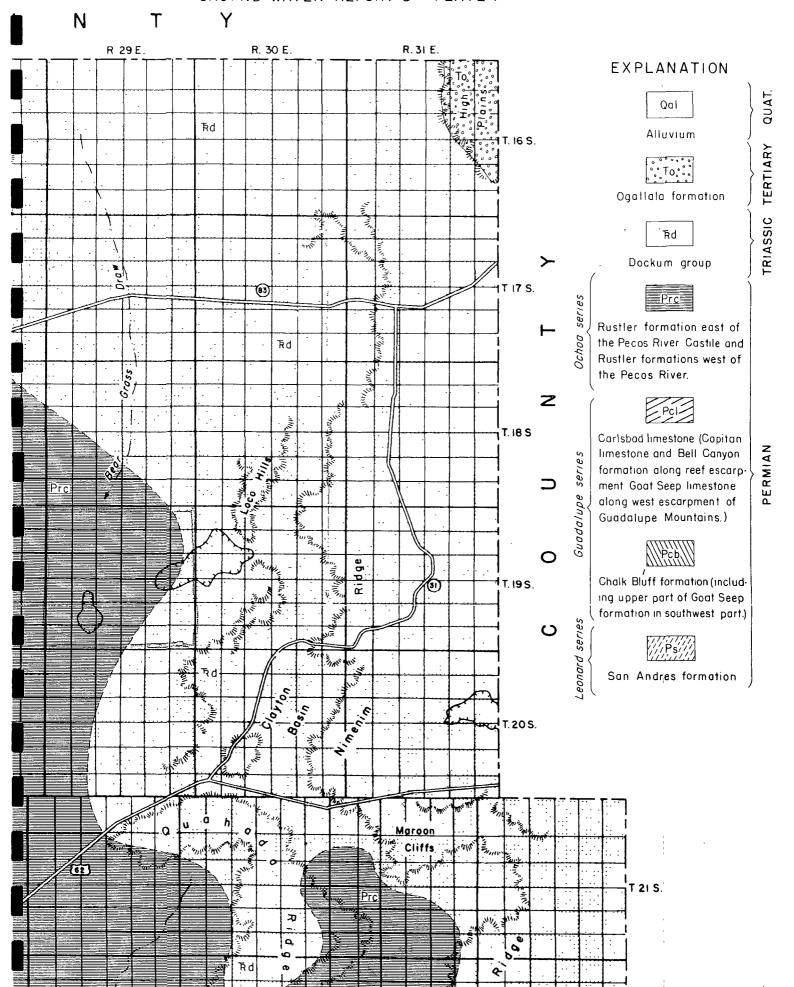
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						OPERA	TOR		X Initi	al Report		Final Report	
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Printed Name	: Donna H					Approved by	District Supervise	or:					
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E-mail Addre	ss: dhuddl	eston@stmar	yland.com	1		Conditions of Approval:				Attached	: []		
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Date: 09/17/08 Phone: (432) 688-1789 Attach Additional Sheets If Necessary											,		

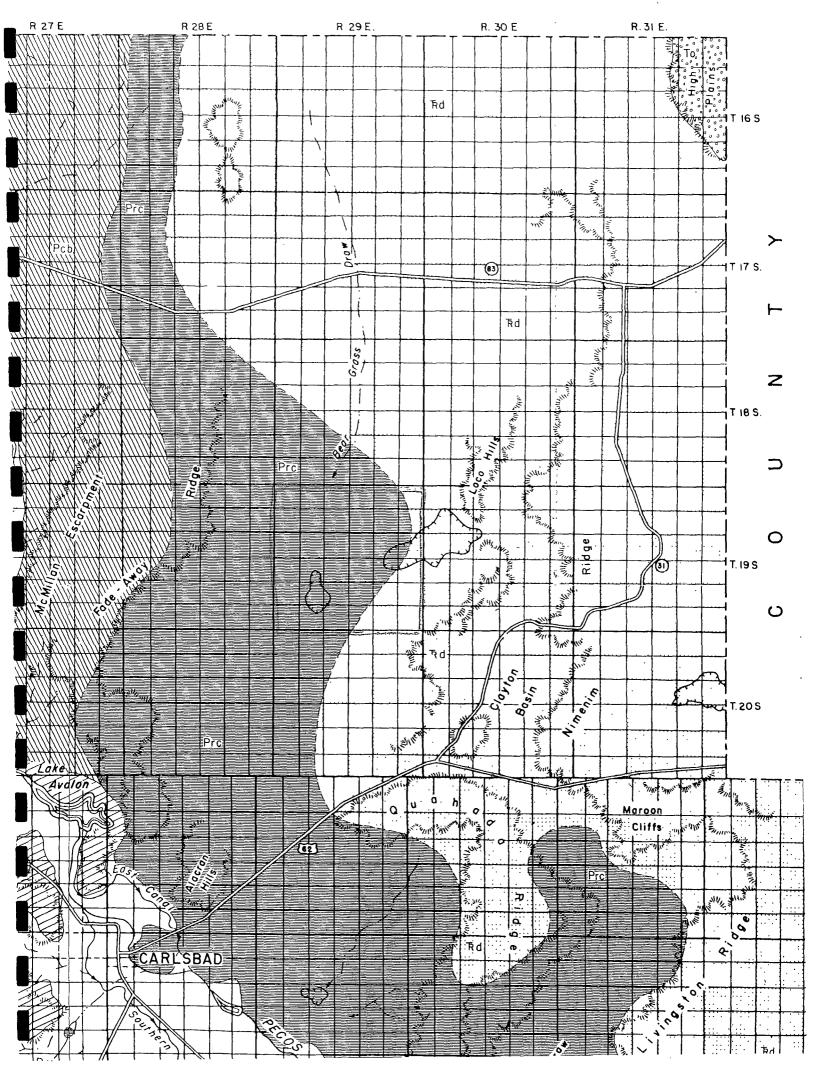
APPENDIX B

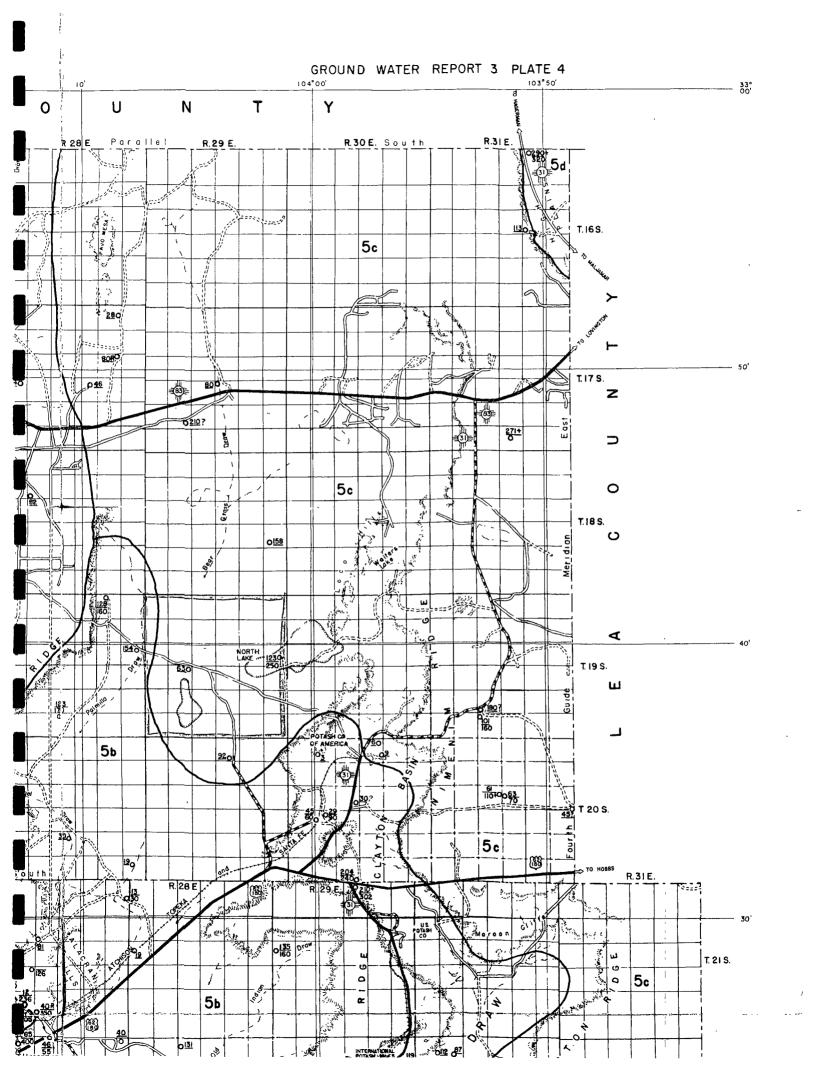
Water Well Data Average Depth to Groundwater (ft) St. Mary Land & Exploration Co. - Tueday Federal #1

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31	32	33	34	35	36	31	32	33	34	35	36	31	32	33	34	35	36

- 88 New Mexico State Engineers Well Reports
- 105 USGS Well Reports
- 90 Geology and Groundwater Conditions in Southern Lea, County, NM (Report 6) Geology and Groundwater Resources of Eddy County, NM (Report 3)
- 34 NMOCD Groundwater Data
- 123 Field water level Temporary Wells installed to establish depth to water







AVAILABILITY OF GROUND WATER BY AREAS

AREA 1. GUADALUPE MOUNTAINS:

- a. Azotea Mesa: Stock and domestic supplies generally available at depths of less than 300 feet in Carlsbad limestone; perched water available locally in arroyo gravels. Irrigation supplies obtainable from Carlsbad limestone and overlying alluvium in La Huerta and Happy Valley, but shallow water in these areas is generally impotable.
- b. Guadalupe Ridge and Mountains proper: Potable but generally hard water in small quantities available at depths of several hundred feet in uplands; shallow water available locally in arroyo gravels. Small springs from perched water southeast of White City on Guadalupe Ridge.
- c. Seven Rivers embayment: Depths to water cannot be predicted accurately. Shallow wells can be obtained locally along arroyos, but most produce from Queen Sandstone member of Goat Seep limestone at depths as great as 900 feet. Water generally potable. Quantity generally sufficient for stock and domestic supplies.

AREA 2. ALLUVIUM SOUTH OF CARLSBAD:

- Irrigation supplies generally obtainable. Generally impotable.
- b. Stock and domestic supplies generally available at depths ranging from 100 to 225 feet.

Area 3. Between Guadalupe Mountains and Pecos River and South of Latitude 32°15':

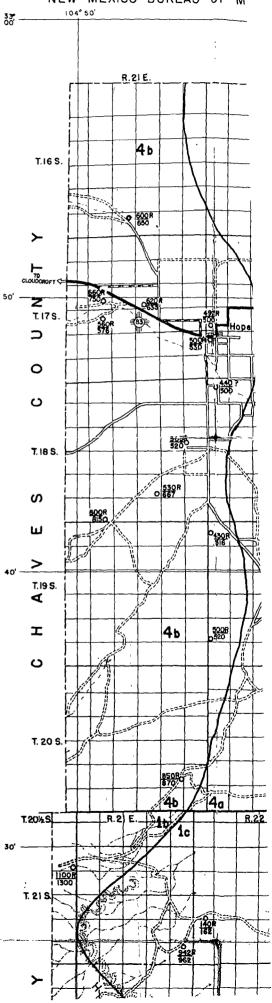
- a. Stock and domestic supplies and, locally, irrigation supplies, obtainable from alluvium at depths generally less than 200 feet.
- b. Stock and domestic supplies generally available in gypsum of Castile formation. Impotable over most of eastern part of area but usable for stock.

AREA 4. ROSWELL BASIN:

- a. Stock and domestic water available from alluvium or limestones of Chalk Bluff and San Andres formation at depths less than 50 feet on the east to 400 feet in west. Irrigation water available in eastern part.
- b. Stock and domestic water available from limestone of San Andres formation at depths from 400 feet on the east to more than 800 feet on the west.

AREA 5. EAST OF PECOS RIVER:

- a. Stock and domestic supplies available at depths less than 200 feet in Chalk Bluff formation or Whitehorse group; locally impotable.
- b. Stock water generally obtainable at depths less than 250 feet in Rustler formation; generally impotable and locally unfit for livestock.
- c. Stock and domestic supplies available at depths less than 300 feet in Triassic redbeds; quality generally fair but locally impotable.
- d: Potable water obtainable from sand and gravel or from underlying redbeds at a depth of about 300 feet.





USGS Home Contact USGS Search USGS

National Water Information System: Web Interface

USGS Water Resources

Data Category Ground Water Geographic Area New Mexico

G GO

News: Recent changes

Ground-water levels for New Mexico

Search Results -- 1 sites found

Search Criteria

site_no list = • 323936104012601

Minimum number of levels = 1

Save file of selected sites to local disk for future upload

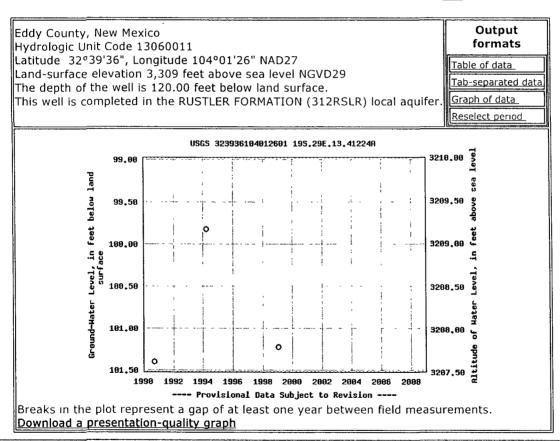
USGS 323936104012601 19S.29E.13.41224A

Available data for this site

Ground-water Field measurements

2

GO



Questions about sites/data? Feedback on this web site

Top Explanation of terms Subscribe to NWISWeb notifications

Automated retrievals

Accessibility

FOIA

Privacy

Policies and Notices

U.S. Department of the Interior | U.S. Geological Survey
Title: Ground water for New Mexico: Water Levels
URL: http://waterdata.usgs.gov/nm/nwis/gwlevels?

Page Contact Information: New Mexico NWISWeb Maintainer

Page Last Modified: 2008-12-16 10:03:49 EST



New Mexico Office of the State Engineer **POD Reports and Downloads**

Township: Range: Sections: Search Radius: NAD27 X: Y: Zone: Basin: CP(Capitan) Number: 00741 Suffix: County: Owner Name: (First) O Non-Domestic O Domestic All (Last) POD / Surface Data Report Avg Depth to Water Report Water Column Report iWATERS Menu Help Clear Form

POD Number

CP 00741

POD / SURFACE DATA REPORT 12/10/2008

* WW

(acre ft per annum)

Use Diversion Owner PRO

SIETE OIL & GAS

(quarters are 1=NW 2=NE 3=SW 4=SE)

(quarters are biggest to smallest Tws Rng Sec q q q Zc

29E 34 2 3 1 Shallow 19S

Record Count: 1

DB File Nbr

CP 00741

New Mexico Office of the State Engineer Point of Diversion Summary

Back

(quarters are 1=NW 2=NE 3=SW 4=SE) (quarters are biggest to smallest)

POD Number Tws Rng Sec q q q Zone X Y

CP 00741 19S 29E 34 2 3 1

Driller Licence: 1107 DUBOSE DRILLING, INC.

Driller Name: Source: Shallow

Log File Date: 04/24/1989 PCW Received Date:
Pump Type: Pipe Discharge Size:
Casing Size: Estimated Yield:

Depth Well: 230 Depth Water: 60

New Mexico Office of the State Engineer Water Right Summary

Back

DB File Nbr:

CP 00827

Primary Purpose:

STK

72-12-1 LIVESTOCK WATERING

Primary Status:

DCL

Declaration

Total Acres: Total Diversion:

0

Owner: SNYDER RANCHES

Contact: LARRY C SQUIRES

Documents on File

Doc

File/Act Status 1 2 3 Trans Desc 72121 11/17/1993 DCL PRC CNV CONVERSION From/To

Acres Diversion Consumptive

CP 008

(qtr are 1=NW 2=NE 3=SW 4=SE)

Point of Diversion POD Number

(qtr are biggest to smallest Source

X Y are in Feet

UTM are in Meters)

Tws Rng Sec q q q Zone Х Y UTM Zone Easting Northing

Latit

19S 30E 35 3 3 CP 00827

13

598596 3608694 0

New Mexico Office of the State Engineer Point of Diversion Summary

Back

(quarters are 1=NW 2=NE 3=SW 4=SE) (quarters are biggest to smallest)

 POD Number
 Tws
 Rng
 Sec
 q
 q
 Zone
 X
 Y

 CP
 00827
 19S
 30E
 35
 3
 3

Driller Licence:

Driller Name: Source:

Drill Start Date:

Log File Date:

Pump Type:

Casing Size:

Drill Finish Date:

PCW Received Date:

Pipe Discharge Size:

Estimated Yield:

Casing Size: Estimated Yield: Depth Well: 100 Depth Water:

New Mexico Office of the State Engineer Water Right Summary

Back

DB File Nbr: CP 00828

Primary Purpose: STK 72-12-1 LIVESTOCK WATERING

Primary Status: DCL Declaration

Total Acres: 0
Total Diversion: 0

Owner: SNYDER RANCHES

Contact: LARRY C SQUIRES

Documents on File

Doc File/Act Status 1 2 3 Trans Desc From/To Acres Diversion Consumptive

72121 11/17/1993 DCL PRC CNV CONVERSION CP 008 T 0

(qtr are 1=NW 2=NE 3=SW 4=SE)

Point of Diversion (qtr are biggest to smallest X Y are in Feet UTM are in Meters)

 POD Number
 Source
 Tws
 Rng
 Sec
 q
 Q
 Zone
 X
 Y
 UTM_Zone
 Easting
 Northing
 Latit

 CP
 00828
 19S
 30E
 35
 1
 1
 13
 598585
 3609900
 0

New Mexico Office of the State Engineer Point of Diversion Summary

Back

(quarters are 1=NW 2=NE 3=SW 4=SE) (quarters are biggest to smallest)

POD Number Tws Rng Sec q q q Zone X Y

CP 00828 19S 30E 35 1 1

Driller Licence:

Driller Name: Source:

Drill Start Date:

Log File Date:

Pump Type:

Print Size:

Print Size

Casing Size: Estimated Yield:
Depth Well: 90 Depth Water:



(quarters are 1=NW 2=NE 3=SW 4=SE)

		(quarte	rs a	re s	sma	llest	to large	est)	(NAD83 UTM	1 in meters)		(In feet)	
Sub POD Number basin	建设设施	ounty	in the second	Q 16	Service .	Sec	Tws	Rng	X	高、湖 园 中、中、五次公	49. 34. 100	epth Wa VaterCol	
CP 00646	PRO	ED	1	1	4	07	198	29E	583155	3615552*	199		
CP 00681	PRO	ED	1	1	3	34	198	29E	587230	3609127*			
CP 00703	PRO	ED		4	1	36 -	198	29E	590945	3609441*	200	115	85
CP 00739	PRO	ED	3	4	4	35	198	29E	590046	3608532*	200	110	90
CP 00741	PRO	ED	1	3	2	34	198	29E	588030	3609533*	230	60	170
CP 00820	STK	LE		2	4	13	198	29E	591713	3613870*	120		
CP 00821	STK	LE		4	4	25	198	29E	591743	3610248*	120		
									Avera	age Depth to	Water:	95 feet	t

Record Count: 7

PLSS Search:

Township: 19S Range: 29E

*UTM location was derived from PLSS - see Help

The data is furnished by the NMOSE/ISC and is accepted by the recipient with the expressed understanding that the OSE/ISC make no warranties, expressed or implied, concerning the accuracy, completeness, reliability, usability, or suitability for any particular purpose of the data.

Minimum Depth:

Maximum Depth:

60 feet 115 feet



(quarters are 1=NW 2=NE 3=SW 4=SE)

		(quarte	rs a	re s	ma	llest	to larg	est)	(NAD83 UTM	l in meters)		(in feet)	
Control of the second s	Sub basin: Use C	Super Survey Bear	Q* 64		1	March Sec	Tws	Rng	X	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Contract April 1	Depth W WaterCo	1.7.27
CP 00740	STK	ED	2	3	3	12	208	29E	590669	3605509*	150		
CP 00745	PRO	ED	4	1	3	12	208	29E	590666	3605711*	232		
CP 00830	STK	LE		2	1	04	208	29E	586118	3608193*	120		
CP 00831	STK	LE		2	2	10	208	29E	588548	3606605*	100		
CP 00832	STK	LE		2	3	12	208	29E	590971	3605815*	200		
CP 00833	STK	LE		1	2	16	208	29E	586548	3604978*	100		
CP 00924	STK	ED	3	3	2	30	20S	29E	583259	3601235*	70		
CP 00936 POD1	PLS	ED	3	4	2	30	208	29E	583661	3601238*	70	52	18
									Avera	age Depth to	Water:	52 fee	et
										Minimum	Depth:	52 fee	et

Record Count: 8

PLSS Search:

Township: 20S Range: 29E

*UTM location was derived from PLSS - see Help

The data is furnished by the NMOSE/ISC and is accepted by the recipient with the expressed understanding that the OSE/ISC make no warranties, expressed or implied, concerning the accuracy, completeness, reliability, usability, or suitability for any particular purpose of the data.

Maximum Depth:

52 feet



(quarters are 1=NW 2=NE 3=SW 4=SE)

		(quarte	rs e	re :	sma	llest	to larg	est)	(NAD83 UTN	I in meters)		(In feet))
	ub sin Use (County	1	Q 16		Sec	Tws	Rng	X	A STATE OF THE PARTY OF THE PAR	150 CT 180 CONT	epth V VaterCo	378
CP 00522	STK	LE			3	30	198	30E	592347	3610451*	120	90	30
CP 00742	PRO	ED	3	1	3	31	198	30E	592054	3608940*	223	115	108
CP 00822	STK	LE		4	4	15	198	30E	598148	3613516*	90		
CP 00823	STK	LE		1	3	17	198	30E	593715	3613885*	120		
CP 00824	DOM	LE		4	1	20	198	30E	594129	3612680*	70		
CP 00825	STK	LE		3	4	28	198	30E	596164	3610282*	100		
CP 00827	STK	LE		3	3	35	198	30E	598596	3608694*	100		
CP 00828	STK	LE		1	1	35	198	30E	598585	3609900*	90		
									Avera	age Depth to	Water:	102 fe	et
										Minimum	Depth:	90 fe	et
		··· ··· ··								Maximum	Depth:	115 fe	et

Record Count: 8

PLSS Search:

Township: 19S Range: 30E

*UTM location was derived from PLSS - see Help

The data is furnished by the NMOSE/ISC and is accepted by the recipient with the expressed understanding that the OSE/ISC make no warranties, expressed or implied, concerning the accuracy, completeness, reliability, usability, or suitability for any particular purpose of the data.



(quarters are 1=NW 2=NE 3=SW 4=SE)

(quarters are smallest to largest) (NAD83 UTM in meters)

		(dance	,, o c		2000		to idig		(11000011)	n an motoroj		(III ICCI)	
	ub sin Use (County	3 W.	Q 16	1000	Sec	Tws	Rng	X	Y Y	在一个人的人的人的人	epth W VaterCo	F3 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7
CP 00419	PRO	ED	rional La		3	32	208		594250	3599003*	262	170	92
CP 00431	PRO	ED		2	3	33	208	30E	595857	3599419*	235	195	40
CP 00532	PRO	xx	4	3	4	21	208	30E	596328	3602138*	335	150	185
CP 00551	PRO	ED	1	1	1	33	20\$	30E	595343	3600320*	286	187	99
CP 00834	STK	LE		2	3	06	208	30E	592566	3607436*	120		
									Aver	age Depth to	Water:	175 fee	et
										Minimum	Depth:	150 fee	et
		•								Maximum	Depth:	195 fee	et

Record Count: 5

PLSS Search:

Township: 20S Range: 30E

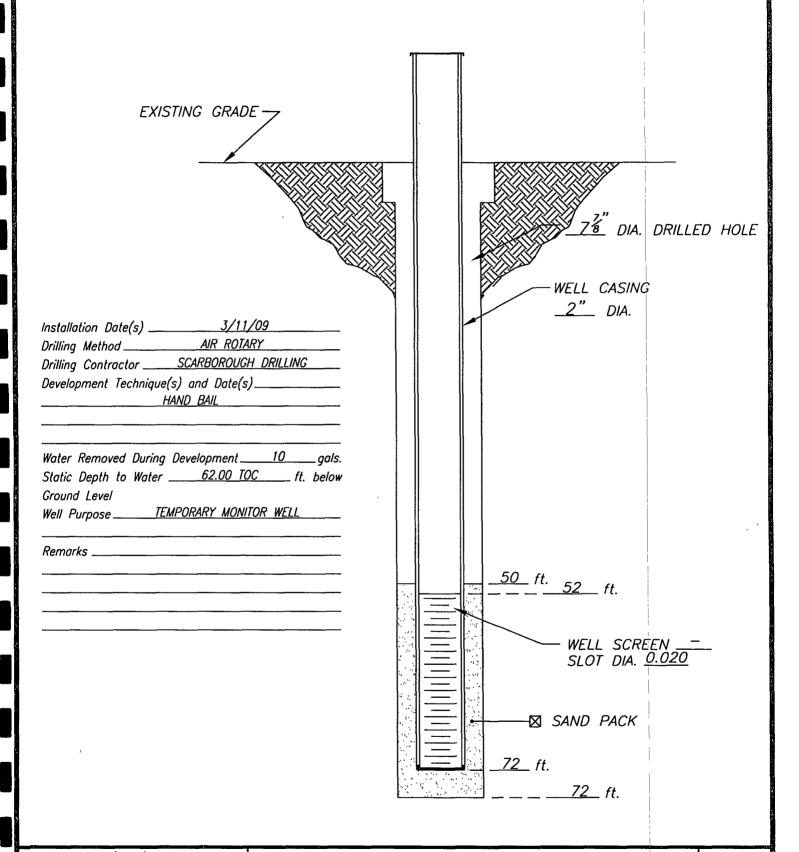
"UTM location was derived from PLSS - see Help

The data is furnished by the NMOSE/ISC and is accepted by the recipient with the expressed understanding that the OSE/ISC make no warranties, expressed or implied, concerning the accuracy, completeness, reliability, usability, or suitability for any particular purpose of the data.

(In feet)

APPENDIX C

TEMPORARY WELL CONSTRUCTION LOG



DATE: 3/11/09

TETRA TECH, INC. MIDLAND, TEXAS

CLIENT: ST. MARY LAND & EXPLRATION

PROJECT: TUESDAY FED. #1 FLOWLINE LEAK

LOCATION: EDDY COUNTY, NEW MEXICO

WELL NO.

TMW-1

Boring/Well: TW-1

Project Number: 3613

Client: St.Mary Land & Exploration

Site Location: Tuesday Federal #1 Flowline Leak

Location: Eddy County, New Mexico

Total Depth - 72'

Date Installed: 3/11/09

DEPTH (ft)	SAMPLE DESCRIPTION
0-1_	Tan, fine grain sand and gypsum
5-6	White gypsum and tan silty sand, clean, loose
10-11	White gypsum and tan silty sand, clean, loose
15-16	Lt. brown fine grain sand, trace of clay
20-21	White, gypsum, clean, friable
25-26	White, gypsum, clean, friable
30-31	White, gypsum, clean, friable
35-38	Yellow and greenish shale and fine grain sand
38-40	Red and yellow shale, sandy clay @ 39'-40'
40-43	Brown, sandy clay, clean
43-50	Gray, limestone, dense layer
50-55	Gray, limestone, dense layer, streaks of shale layers
55-60	Gray, limestone, dense layer, streaks of gypsum layers
60-65	Gray, limestone, dense layer, streaks of gypsum layers
65-70	Gray, limestone, dense layer, streaks of gypsum layers
70-72	Gray and red clay, dense

Boring/Well: BH-1

Project Number: 3613

Client: St.Mary Land & Exploration

Site Location: Tuesday Federal #1 Flowline Leak

Location: Eddy County, New Mexico

Total Depth - 61'

Date Installed: 10/30/08

DEPTH	SAMPLE DESCRIPTION
(in feet)	
0-1	Light tan sand with some caliche, Staining on top with odor
2-3	Light tan caliche, with no stain or odor
4-5	Light tan caliche
6-9	Tan sandy clay
10-16	Light tan caliche
20-26	Tan sand and caliche
30-31	Light Tan Sandstone
35-36	Yellowish Tan Sandstone
40-41	Tan Sandstone
45-61	White to tan gypsum some dense
TD - 61 BGS	

Boring/Well: BH-2

Project Number: 3613

Client: St.Mary Land & Exploration

Site Location: Tuesday Federal #1 Flowline Leak

Location: Eddy County, New Mexico

Total Depth - 61'

Date Installed: 10/30/08

DEPTH	SAMPLE DESCRIPTION
(in feet)	·
0-1	Light tan sand with some caliche, stained on top with odor
2-3	Light tan sand, with no stain or odor
4-5	Light tan sand and caliche
6-9	Tan sandy clay
10-16	Light tan sandstone
20-26	Tan sandy clay and caliche
30-40	Light tan sandstone
41-50	Tan sandstone with clay
51-61	White to tan gypsum some dense
TD - 61 BGS	

Boring/Well: BH-3 Project Number: 3613

Client: St.Mary Land & Exploration

Site Location: Tuesday Federal #1 Flowline Leak

Location: Eddy County, New Mexico

Total Depth - 51'

Date Installed: 11/3/08

DEPTH	SAMPLE DESCRIPTION
(in feet)	
0-1	Light tan sand with some caliche, stained on top with odor
2-5	Light tan sand and caliche
6-15	Light tan cementd sandstone
16-20	Light tan silt with some clay
21-30	Redish tan clay with some gypsum
30-50	White to tan gypsum some dense
50-51	Silicated sandstone
TD - 51 BGS	

SOIL BORING LOG

Boring/Well: BH-4

Project Number: 3613

Client: St.Mary Land & Exploration

Site Location: Tuesday Federal #1 Flowline Leak

Location: Eddy County, New Mexico

Total Depth - 51'

Date Installed: 11/3/08

DEPTH	SAMPLE DESCRIPTION		
(in feet)			
0-1	Brown silty clay with staining and odor		
2-3	Tan silt		
4-25	Tan silt with some clay		
25-40	Redish tan silty clay with some gypsum		
41-50	Tan silty clay with mixed with gypsum		
50-51	Silicated sandstone		
TD - 51 BGS			

SOIL BORING LOG

Boring/Well: BH-5

Project Number: 3613

Client: St.Mary Land & Exploration

Site Location: Tuesday Federal #1 Flowline Leak

Location: Eddy County, New Mexico

Total Depth - 31'

Date Installed: 11/4/08

DEPTH	SAMPLE DESCRIPTION
(in feet)	
0-1	Brown silty clay with staining and odor
2-8	Brown silty clay
9-20	Tan silty clay
20-25	Light tan gypsum
25-31	White to tan gypsum
TD - 31 BGS	

TD - 31 BGS

SOIL BORING LOG

Boring/Well: Background

Project Number: 3613

Client: St.Mary Land & Exploration

Site Location: Tuesday Federal #1 Flowline Leak

Location: Eddy County, New Mexico

Total Depth - 41'

Date Installed: 11/3/08

DEPTH	SAMPLE DESCRIPTION			
(in feet)				
0-5	Light tan fine grain sand			
5-15	Tan sand with caliche			
16-30	Light tan fine grain sand and silt			
31-40	Tan sandy clay with some sandstone			
40-41	Light tan cemented sandstone			
TD - 41 BGS				

APPENDIX D

115-6403613

Work Order: 8110630 St. Mary/Tuesday Federal #1 Page Number: 1 of 9 Eddy County, NM

Summary Report

Ike Tavarez Tetra Tech

1910 N. Big Spring Street Midland, TX 79705

Report Date: November 14, 2008

Work Order: 8110630

Project Location: Eddy County, NM

Project Name: St. Mary/Tuesday Federal #1

Project Number: 115-6403613

			Date	\mathbf{Time}	Date
\mathbf{Sample}	Description	Matrix	Taken	Taken	Received
178542	BH-1 0-1'	soil	2008-10-30	00:00	2008-11-06
178543	BH-1 2-3'	soil	2008-10-30	00:00	2008-11-06
178544	BH-1 4-5'	soil	2008-10-30	00:00	2008-11-06
178545	BH-1 6-7'	soil	2008-10-30	00:00	2008-11-06
178546	BH-1 8-9'	soil	2008-10-30	00:00	2008-11-06
178547	BH-1 10-11'	soil	2008-10-30	00:00	2008-11-06
178549	BH-1 20-21'	soil	2008-10-30	00:00	2008-11-06
178551	BH-1 30-31'	soil	2008-10-30	00:00	2008-11-06
178553	BH-1 40-41'	soil	2008-10-30	00:00	2008-11-06
178555	BH-1 50-51'	soil	2008-10-30	00:00	2008-11-06
178558	BH-2 0-1'	soil	2008-10-30	00:00	2008-11-06
178559	BH-2 2-3'	soil	2008-10-30	00:00	2008-11-06
178560	BH-2 4-5'	soil	2008-10-30	00:00	2008-11-06
178561	BH-2 6-7'	soil	2008-10-30	00:00	2008-11-06
178562	BH-2 8-9'	soil	2008-10-30	00:00	2008-11-06
178563	BH-2 10-11'	soil	2008-10-30	00:00	2008-11-06
178565	BH-2 20-21'	soil	2008-10-30	00:00	2008-11-06
178567	BH-2 30-31'	soil	2008-10-30	00:00	2008-11-06
178568	BH-2 40-41'	soil	2008-10-30	00:00	2008-11-06
178569	BH-2 50-51'	soil	2008-10-30	00:00	2008-11-06
178571	BH-3 0-1'	soil	2008-11-03	00:00	2008-11-06
178572	BH-3 2-3'	soil	2008-11-03	00:00	2008-11-06
178573	BH-3 4-5'	soil	2008-11-03	00:00	2008-11-06
178574	BH-3 6-7'	soil	2008-11-03	00:00	2008-11-06
178575	BH-3 8-9'	soil	2008-11-03	00:00	2008-11-06
178576	BH-3 10-11'	soil	2008-11-03	00:00	2008-11-06
178578	BH-3 20-21'	soil	2008-11-03	00:00	2008-11-06
178580	BH-3 30-31'	soil	2008-11-03	00:00	2008-11-06
178582	BH-3 40-41'	soil	2008-11-03	00:00	2008-11-06
178584	BH-4 0-1'	soil	2008-11-03	00:00	2008-11-06

115-6403613

Work Order: 8110630 St. Mary/Tuesday Federal #1 Page Number: 2 of 9 Eddy County, NM

			Date	Time	Date
Sample	Description	Matrix	Taken	Taken	Received
178585	BH-4 2-3'	soil	2008-11-03	00:00	2008-11-06
178586	BH-4 4-5'	soil	2008-11-03	00:00	2008-11-06
178587	BH-4 6-7'	soil	2008-11-03	00:00	2008-11-06
178588	BH-4 10-11'	soil	2008-11-03	00:00	2008-11-06
178590	BH-4 20-21'	soil	2008-11-03	00:00	2008-11-06
178592	BH-4 30-31'	soil	2008-11-03	00:00	2008-11-06
178594	BH-4 40-41'	soil	2008-11-03	00:00	2008-11-06
178596	BH-5 0-1'	soil	2008-11-04	00:00	2008-11-06
178597	BH-5 2-3'	soil	2008-11-04	00:00	2008-11-06
178598	BH-5 4-5'	soil	2008-11-04	00:00	2008-11-06
178599	BH-5 6-7'	soil	2008-11-04	00:00	2008-11-06
178600	BH-5 8-9'	soil	2008-11-04	00:00	2008-11-06
178601	BH-5 10-11'	soil	2008-11-04	00:00	2008-11-06
178603	BH-5 20-21'	soil	2008-11-04	00:00	2008-11-06
178605	BH-5 30-31'	soil	2008-11-04	00:00	2008-11-06
178606	Background 0-1'	soil	2008-11-03	00:00	2008-11-06
178607	Background 5-6'	soil	2008-11-03	00:00	2008-11-06
178608	Background 10-11'	soil	2008-11-03	00:00	2008-11-06
178609	Background 15-16'	soil	2008-11-03	00:00	2008-11-06
178610	Background 20-21'	soil	2008-11-03	00:00	2008-11-06
178611	Background 30-31'	soil	2008-11-03	00:00	2008-11-06
178612	Background 40-41'	soil	2008-11-03	00:00	2008-11-06

	BTEX			TPH DRO	TPH GRO	
	Benzene	Toluene	Ethylbenzene	Xylene	DRO	GRO
Sample - Field Code	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)
178542 - BH-1 0-1'					< 50.0	8.41
178558 - BH-2 0-1'	< 0.0100	< 0.0100	< 0.0100	0.0302	51.2	4.49
178571 - BH-3 0-1'					< 50.0	2.04
178584 - BH-4 0-1'	< 0.0500	< 0.0500	< 0.0500	< 0.0500	1340	73.5
178585 - BH-4 2-3'					168	13.2
178596 - BH-5 0-1'	< 0.0200	< 0.0200	< 0.0200	< 0.0200	2400	69.4
178597 - BH-5 2-3'				1	< 50.0	6.98
178598 - BH-5 4-5'					< 50.0	4.97

Sample: 178542 - BH-1 0-1'

Param	Flag	Result	Units	RL
Chloride		19500	mg/Kg	2.00

Sample: 178543 - BH-1 2-3'

Param	Flag	Result	Units	RL
Chloride		13000	mg/Kg	2.00

Work Order: 8110630 Page Number: 3 of 9 Report Date: November 14, 2008 Eddy County, NM 115-6403613 St. Mary/Tuesday Federal #1 Sample: 178544 - BH-1 4-5' Flag Result Units RLParam 10100 2.00 Chloride mg/Kg Sample: 178545 - BH-1 6-7' Result Units RLParam Flag 11600 2.00 Chloride mg/Kg Sample: 178546 - BH-1 8-9' Param Flag Result Units RLChloride 11100 2.00 mg/Kg Sample: 178547 - BH-1 10-11' Param Result Units RLFlag Chloride 7590 mg/Kg 2.00Sample: 178549 - BH-1 20-21' Param Result Units RLFlag Chloride 13300 2.00 mg/Kg Sample: 178551 - BH-1 30-31' Flag RLParam Result Units Chloride 2580 2.00 mg/Kg Sample: 178553 - BH-1 40-41' Param Flag Result Units RLChloride 903 mg/Kg 2.00 Sample: 178555 - BH-1 50-51' Param Flag Result Units RLChloride 806 mg/Kg 2.00

TraceAnalysis, Inc. • 6701 Aberdeen Ave., Suite 9 • Lubbock, TX 79424-1515 • (806) 794-1296

This is only a summary. Please, refer to the complete report package for quality control data.

Work Order: 8110630 Page Number: 4 of 9 Report Date: November 14, 2008 Eddy County, NM 115-6403613 St. Mary/Tuesday Federal #1 Sample: 178558 - BH-2 0-1' Param Flag Result Units RL10500 Chloride mg/Kg 2.00Sample: 178559 - BH-2 2-3' Result Units RLParam Flag 8420 2.00 Chloride mg/Kg Sample: 178560 - BH-2 4-5' Param Result Units RLChloride 6130 2.00 mg/Kg Sample: 178561 - BH-2 6-7' Param Flag Result Units RLChloride 8200 2.00 mg/Kg Sample: 178562 - BH-2 8-9' Result Units RLParam Flag 8120 Chloride mg/Kg 2.00Sample: 178563 - BH-2 10-11' Param Result Units RLChloride 12800 mg/Kg 2.00 Sample: 178565 - BH-2 20-21' Flag Param Result Units RLChloride 9390 2.00mg/Kg Sample: 178567 - BH-2 30-31' Param Flag Result Units RL3230 Chloride mg/Kg 2.00

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This is only a summary. Please, refer to the complete report package for quality control data.

Work Order: 8110630 Page Number: 5 of 9 Report Date: November 14, 2008 Eddy County, NM 115-6403613 St. Mary/Tuesday Federal #1 Sample: 178568 - BH-2 40-41' Units RLParam Flag Result 2040 2.00 Chloride mg/Kg Sample: 178569 - BH-2 50-51' Param Flag Result Units RLChloride 1250 mg/Kg 2.00 Sample: 178571 - BH-3 0-1' Param Result Units RLFlag Chloride 2470 2.00 mg/Kg Sample: 178572 - BH-3 2-3' Param Result Units RLFlag 8410 2.00 Chloride mg/Kg Sample: 178573 - BH-3 4-5' RLFlag Result Units Param Chloride 8320 2.00 mg/Kg Sample: 178574 - BH-3 6-7' Param Flag Result Units RLChloride 12100 2.00 mg/Kg Sample: 178575 - BH-3 8-9' Param Flag Result Units RLChloride 8660 2.00mg/Kg Sample: 178576 - BH-3 10-11' Param Flag Result Units RL

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This is only a summary. Please, refer to the complete report package for quality control data.

6780

mg/Kg

2.00

Chloride

Sample: 178578 - BH-3 20-21' Param Flag Result Units Chloride 6170 mg/Kg Sample: 178580 - BH-3 30-31' Param Flag Result Units Chloride 974 mg/Kg Sample: 178582 - BH-3 40-41' Param Flag Result Units Chloride 545 mg/Kg Sample: 178584 - BH-4 0-1' Param Flag Result Units Chloride 9300 mg/Kg Sample: 178585 - BH-4 2-3' Param Flag Result Units Chloride 9820 mg/Kg Sample: 178586 - BH-4 4-5' Param Flag Result Units Chloride 6550 mg/Kg Sample: 178587 - BH-4 6-7' Param Flag Result Units Chloride 8980 mg/Kg	Work Order: 8110630 Page Number: 6 of 9 Iary/Tuesday Federal #1 Eddy County, NM	 ember 14, 2008	Report Date: Nove
Chloride 6170 mg/Kg Sample: 178580 - BH-3 30-31' Param Flag Result Units Chloride 974 mg/Kg Sample: 178582 - BH-3 40-41' Param Flag Result Units Chloride 545 mg/Kg Sample: 178584 - BH-4 0-1' Param Flag Result Units Chloride 9300 mg/Kg Sample: 178585 - BH-4 2-3' Param Flag Result Units Chloride 9820 mg/Kg Sample: 178586 - BH-4 4-5' Param Flag Result Units Chloride 6550 mg/Kg		- BH-3 20-21'	Sample: 178578 -
Sample: 178580 - BH-3 30-31' Param Flag Result Units Chloride 974 mg/Kg Sample: 178582 - BH-3 40-41' Param Flag Result Units Chloride 545 mg/Kg Sample: 178584 - BH-4 0-1' Param Flag Result Units Chloride 9300 mg/Kg Sample: 178585 - BH-4 2-3' Param Flag Result Units Chloride 9820 mg/Kg Sample: 178586 - BH-4 4-5' Param Flag Result Units Chloride 6550 mg/Kg Sample: 178587 - BH-4 6-7' Param Flag Result Units	Result Units RL	Flag	Param
Param Flag Result Units Chloride 974 mg/Kg Sample: 178582 - BH-3 40-41' Param Flag Result Units Chloride 545 mg/Kg Sample: 178584 - BH-4 0-1' Param Flag Result Units Chloride 9300 mg/Kg Sample: 178585 - BH-4 2-3' Param Flag Result Units Chloride 9820 mg/Kg Sample: 178586 - BH-4 4-5' Param Flag Result Units Chloride 6550 mg/Kg Sample: 178587 - BH-4 6-7' Param Flag Result Units	6170 mg/Kg 2.00		Chloride
Chloride 974 mg/Kg Sample: 178582 - BH-3 40-41' Param Flag Result Units Chloride 545 mg/Kg Sample: 178584 - BH-4 0-1' Param Flag Result Units Chloride 9300 mg/Kg Sample: 178585 - BH-4 2-3' Param Flag Result Units Chloride 9820 mg/Kg Sample: 178586 - BH-4 4-5' Param Flag Result Units Chloride 6550 mg/Kg Sample: 178587 - BH-4 6-7' Param Flag Result Units		- BH-3 30-31'	Sample: 178580 -
Chloride 974 mg/Kg Sample: 178582 - BH-3 40-41' Param Flag Result Units Chloride 545 mg/Kg Sample: 178584 - BH-4 0-1' Param Flag Result Units Chloride 9300 mg/Kg Sample: 178585 - BH-4 2-3' Param Flag Result Units Chloride 9820 mg/Kg Sample: 178586 - BH-4 4-5' Param Flag Result Units Chloride 6550 mg/Kg Sample: 178587 - BH-4 6-7' Param Flag Result Units	Result Units RL	Flag	Param
Param Flag Result Units Chloride 545 mg/Kg Sample: 178584 - BH-4 0-1' Param Flag Result Units Chloride 9300 mg/Kg Sample: 178585 - BH-4 2-3' Param Flag Result Units Chloride 9820 mg/Kg Sample: 178586 - BH-4 4-5' Param Flag Result Units Chloride 6550 mg/Kg Sample: 178587 - BH-4 6-7' Param Flag Result Units		 	Chloride
Chloride 545 mg/Kg Sample: 178584 - BH-4 0-1' Param Flag Result Units Chloride 9300 mg/Kg Sample: 178585 - BH-4 2-3' Param Flag Result Units Chloride 9820 mg/Kg Sample: 178586 - BH-4 4-5' Param Flag Result Units Sample: 178587 - BH-4 6-7' Param Flag Result Units		- BH-3 40-41'	Sample: 178582
Chloride 545 mg/Kg Sample: 178584 - BH-4 0-1' Param Flag Result Units Chloride 9300 mg/Kg Sample: 178585 - BH-4 2-3' Param Flag Result Units Chloride 9820 mg/Kg Sample: 178586 - BH-4 4-5' Param Flag Result Units Chloride 6550 mg/Kg Sample: 178587 - BH-4 6-7' Param Flag Result Units	Result Units RL	Flag	Param
Param Flag Result Units Chloride 9300 mg/Kg Sample: 178585 - BH-4 2-3' Param Flag Result Units Chloride 9820 mg/Kg Sample: 178586 - BH-4 4-5' Param Flag Result Units Chloride 6550 mg/Kg Sample: 178587 - BH-4 6-7' Param Flag Result Units	545 mg/Kg 2.00	 	Chloride
Chloride 9300 mg/Kg Sample: 178585 - BH-4 2-3' Param Flag Result Units Chloride 9820 mg/Kg Sample: 178586 - BH-4 4-5' Param Flag Result Units Chloride 6550 mg/Kg Sample: 178587 - BH-4 6-7' Param Flag Result Units		- BH-4 0-1'	Sample: 178584
Chloride 9300 mg/Kg Sample: 178585 - BH-4 2-3' Param Flag Result Units Chloride 9820 mg/Kg Sample: 178586 - BH-4 4-5' Param Flag Result Units Chloride 6550 mg/Kg Sample: 178587 - BH-4 6-7' Param Flag Result Units	Result Units RL	Flag	Param
Param Flag Result Units Chloride 9820 mg/Kg Sample: 178586 - BH-4 4-5' Param Flag Result Units Chloride 6550 mg/Kg Sample: 178587 - BH-4 6-7' Param Flag Result Units			Chloride
Chloride 9820 mg/Kg Sample: 178586 - BH-4 4-5' Param Flag Result Units Chloride 6550 mg/Kg Sample: 178587 - BH-4 6-7' Param Flag Result Units		- BH-4 2-3'	Sample: 178585
Sample: 178586 - BH-4 4-5' Param Flag Result Units Chloride 6550 mg/Kg Sample: 178587 - BH-4 6-7' Param Flag Result Units	Result Units RL	Flag	Param
Param Flag Result Units Chloride 6550 mg/Kg Sample: 178587 - BH-4 6-7' Param Flag Result Units	9820 mg/Kg 2.00		Chloride
Chloride 6550 mg/Kg Sample: 178587 - BH-4 6-7' Param Flag Result Units		- BH-4 4-5'	Sample: 178586
Chloride 6550 mg/Kg Sample: 178587 - BH-4 6-7' Result Units	Result Units RL	Flag	Param
Param Flag Result Units			Chloride
		- BH-4 6-7'	Sample: 178587
Chloride 8980 mg/Kg	Result Units RL	Flag	Param
			Chloride
Sample: 178588 - BH-4 10-11'		- BH-4 10-11'	Sample: 178588
Param Flag Result Units	Result Units RL	Flag	Param
Chloride 7380 mg/Kg		 1 106	

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This is only a summary. Please, refer to the complete report package for quality control data.

Page Number: 7 of 9 Report Date: November 14, 2008 Work Order: 8110630 Eddy County, NM 115-6403613 St. Mary/Tuesday Federal #1 Sample: 178590 - BH-4 20-21' Units RLParam Flag Result Chloride 156 mg/Kg 2.00 Sample: 178592 - BH-4 30-31' Param Flag Result Units RLChloride 914 mg/Kg 2.00 Sample: 178594 - BH-4 40-41' Result Units RLParam Chloride 326 mg/Kg 2.00Sample: 178596 - BH-5 0-1' Param Flag Result Units RL9360 2.00 Chloride mg/Kg Sample: 178597 - BH-5 2-3' Flag Param Result Units RL12100 2.00Chloride mg/Kg Sample: 178598 - BH-5 4-5' Flag RLParam Result Units Chloride 12700 mg/Kg 2.00Sample: 178599 - BH-5 6-7' Param Flag Units RLResult Chloride 12400 mg/Kg 2.00Sample: 178600 - BH-5 8-9' RLParam Flag Result Units

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This is only a summary. Please, refer to the complete report package for quality control data.

16200

2.00

mg/Kg

Chloride

Page Number: 8 of 9 Report Date: November 14, 2008 Work Order: 8110630 115-6403613 St. Mary/Tuesday Federal #1 Eddy County, NM Sample: 178601 - BH-5 10-11' Result Units RLFlag Param Chloride 9680 mg/Kg 2.00Sample: 178603 - BH-5 20-21' RLParam Result Units Flag Chloride 1100 mg/Kg 2.00Sample: 178605 - BH-5 30-31' Param Result Units RLFlag Chloride mg/Kg 2.00 176 Sample: 178606 - Background 0-1' Param Units RLResult Flag Chloride <100 2.00 mg/Kg Sample: 178607 - Background 5-6' Flag Result Units RLParam Chloride 2.00 <100 mg/Kg Sample: 178608 - Background 10-11' Flag Param Result Units RLChloride <100 mg/Kg 2.00Sample: 178609 - Background 15-16' Param Flag Result Units RLChloride <100 2.00 mg/Kg Sample: 178610 - Background 20-21' Param Flag Result Units RLChloride

<100

2.00

mg/Kg

Report Date: November 14, 2008 115-6403613

Work Order: 8110630 St. Mary/Tuesday Federal #1 Page Number: 9 of 9 Eddy County, NM

Sample: 178611 - Background 30-31'

Param	Flag	Result	Units	RL
Chloride		<100	m mg/Kg	2.00

Sample: 178612 - Background 40-41'

Param	Flag	\mathbf{Result}	Units	RL
Chloride		<100	mg/Kg	2.00



6701 Aberdeen Avenue, Suite 9 200 East Sunset Road, Suite E 5002 Basın Street, Suite A1

Lubbock, Texas 79424 El Paso, Texas 79922 Midland, Texas 79703 800 • 378 • 1296 888 • 588 • 3443

806 • 794 • 1296 915 • 585 • 3443 432 • 689 • 6301

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6015 Harris Parkway, Suite 110 Ft. Worth, Texas 76132

817 • 201 • 5260

E-Mail: lab@traceanalysis com

Certifications

WBENC: 237019

HUB:

1752439743100-86536

DBE: VN 20657

NCTRCA WFWB38444Y0909

NELAP Certifications

Lubbock: T104704219-08-TX

LELAP-02003

Kansas E-10317

El Paso: T104704221-08-TX

LELAP-02002

Midland: T104704392-08-TX

Analytical and Quality Control Report

Ike Tavarez Tetra Tech

1910 N. Big Spring Street Midland, TX, 79705

Report Date: November 14, 2008

Work Order:

8110630

Project Location: Eddy County, NM

Project Name:

St. Mary/Tuesday Federal #1

Project Number:

115-6403613

Enclosed are the Analytical Report and Quality Control Report for the following sample(s) submitted to TraceAnalysis, Inc.

			Date	Time	1	Date
Sample	Description	Matrix	Taken	\mathbf{Taken}		Received
178542	BH-1 0-1'	soil	2008-10-30	00:00	1	2008-11-06
178543	BH-1 2-3'	soil	2008-10-30	00:00		2008-11-06
178544	BH-1 4-5'	soil	2008-10-30	00:00		2008-11-06
178545	BH-1 6-7'	soil	2008-10-30	00:00		2008-11-06
178546	BH-1 8-9'	soil	2008-10-30	00:00		2008-11-06
178547	BH-1 10-11'	soil	2008-10-30	00:00		2008-11-06
178549	BH-1 20-21'	soil	2008-10-30	00:00		2008-11-06
178551	BH-1 30-31'	soil	2008-10-30	00:00		2008-11-06
178553	BH-1 40-41'	soil	2008-10-30	00:00		2008-11-06
178555	BH-1 50-51'	soil	2008-10-30	00:00		2008-11-06

			Date	Time	Date
Sample	Description	Matrix	Taken	Taken	Received
178558	BH-2 0-1'	soil	2008-10-30	00:00	2008-11-06
178559	BH-2 2-3'	soil	2008-10-30	00:00	2008-11-06
178560	BH-2 4-5'	soil	2008-10-30	00:00	2008-11-06
178561	BH-2 6-7'	soil	2008-10-30	00:00	2008-11-06
178562	BH-2 8-9'	soil	2008-10-30	00:00	2008-11-06
178563	BH-2 10-11'	soil	2008-10-30	00:00	2008-11-06
178565	BH-2 20-21'	soil	2008-10-30	00:00	2008-11-06
178567	BH-2 30-31'	soil	2008-10-30	00:00	2008-11-06
178568	BH-2 40-41'	soil	2008-10-30	00:00	2008-11-06
178569	BH-2 50-51'	soil	2008-10-30	00:00	2008-11-06
178571	BH-3 0-1'	soil	2008-11-03	00:00	2008-11-06
178572	BH-3 2-3'	soil	2008-11-03	00:00	2008-11-06
178573	BH-3 4-5'	soil	2008-11-03	00:00	2008-11-06
178574	BH-3 6-7'	soil	2008-11-03	00:00	2008-11-06
178575	BH-3 8-9'	soil	2008-11-03	00:00	2008-11-06
178576	BH-3 10-11'	soil	2008-11-03	00:00	2008-11-06
178578	BH-3 20-21'	soil	2008-11-03	00:00	2008-11-06
178580	BH-3 30-31'	soil	2008-11-03	00:00	2008-11-06
178582	BH-3 40-41'	soil	2008-11-03	00:00	2008-11-06
178584	BH-4 0-1'	soil	2008-11-03	00:00	2008-11-06
178585	BH-4 2-3'	soil	2008-11-03	00:00	2008-11-06
178586	BH-4 4-5'	soil	2008-11-03	00:00	2008-11-06
178587	BH-4 6-7'	soil	2008-11-03	00:00	2008-11-06
178588	BH-4 10-11'	soil	2008-11-03	00:00	2008-11-06
178590	BH-4 20-21'	soil	2008-11-03	00:00	2008-11-06
178592	BH-4 30-31'	soil	2008-11-03	00:00	2008-11-06
178594	BH-4 40-41'	soil	2008-11-03	00:00	2008-11-06
178596	BH-5 0-1'	soil	2008-11-04	00:00	2008-11-06
178597	BH-5 2-3'	soil	2008-11-04	00:00	2008-11-06
178598	BH-5 4-5'	soil	2008-11-04	00:00	2008-11-06
178599	BH-5 6-7'	soil	2008-11-04	00:00	2008-11-06
178600	BH-5 8-9'	soil	2008-11-04	00:00	2008-11-06
178601	BH-5 10-11'	soil	2008-11-04	00:00	2008-11-06
178603	BH-5 20-21'	soil	2008-11-04	00:00	2008-11-06
178605	BH-5 30-31'	soil	2008-11-04	00:00	2008-11-06
178606	Background 0-1'	soil	2008-11-03	00:00	2008-11-06
178607	Background 5-6'	soil	2008-11-03	00:00	2008-11-06
178608	Background 10-11'	soil	2008-11-03	00:00	2008-11-06
178609	Background 15-16'	soil	2008-11-03	00:00	2008-11-06
178610	Background 20-21'	soil	2008-11-03	00:00	2008-11-06
178611	Background 30-31'	soil	2008-11-03	00:00	2008-11-06
178612	Background 40-41'	soil	2008-11-03	00:00	2008-11-06

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 42 pages and shall not be reproduced except in its entirety, without written approval of Page 2 of 42

TraceAnalysis, Inc.

Slan Latinos

Dr. Blair Leftwich, Director

Standard Flags

 $\, B \,$ - $\,$ The sample contains less than ten times the concentration found in the method blank.

Case Narrative

Samples for project St. Mary/Tuesday Federal #1 were received by TraceAnalysis, Inc. on 2008-11-06 and assigned to work order 8110630. Samples for work order 8110630 were received intact at a temperature of 3.2 deg. C.

Samples were analyzed for the following tests using their respective methods.

Test	Method
BTEX	S 8021B
Chloride (Titration)	SM 4500-Cl B
TPH DRO	Mod. 8015B
TPH GRO	S 8015B

Results for these samples are reported on a wet weight basis unless data package indicates otherwise.

A matrix spike (MS) and matrix spike duplicate (MSD) sample is chosen at random from each preparation batch. The MS and MSD will indicate if a site specific matrix problem is occurring, however, it may not pertain to the samples for work order 8110630 since the sample was chosen at random. Therefore, the validity of the analytical data reported has been determined by the laboratory control sample (LCS) and the method blank (MB). These quality control measures are performed with each preparation batch to ensure data integrity.

All other exceptions associated with this report have been footnoted on the appropriate analytical page to assist in general data comprehension. Please contact the laboratory directly if there are any questions regarding this project.

115-6403613

Work Order: 8110630 St. Mary/Tuesday Federal #1 Page Number: 5 of 42 Eddy County, NM

Analytical Report

Sample: 178542 - BH-1 0-1'

Laboratory:

Midland

Analysis:

Chloride (Titration)

QC Batch: 54208 Prep Batch: 46323

Analytical Method: Date Analyzed:

Sample Preparation:

SM 4500-Cl B

2008-11-12 2008-11-11

Prep Method: N/A

Analyzed By: ARPrepared By: AR

RL

Units Dilution RLParameter Flag Result 2.00 19500 mg/Kg 50 Chloride

Sample: 178542 - BH-1 0-1'

Laboratory:

Midland

Analysis: QC Batch: Prep Batch: 46243

TPH DRO 54063

Analytical Method:

Date Analyzed:

Mod. 8015B 2008-11-07 Sample Preparation: 2008-11-07

N/A Prep Method:

Analyzed By: LDPrepared By: LD

RL

Result Units Dilution RLParameter Flag < 50.0 mg/Kg 50.0 DRO

					Spike	Percent	Recovery
Surrogate	Flag	Result	${f Units}$	Dilution	Amount	Recovery	Limits
n-Triacontane		90.0	mg/Kg	1	100	90	10 - 250.4

Sample: 178542 - BH-1 0-1'

Laboratory:

Midland

Analysis: TPH GRO 54090 QC Batch: Prep Batch: 46277

Analytical Method: Date Analyzed:

S 8015B 2008-11-08 Sample Preparation: 2008-11-08 Prep Method: S 5035 Analyzed By: AG Prepared By: \mathbf{AG}

RL

Flag Units Dilution RLParameter Result 1.00 GRO 8.41 mg/Kg

					Spike	Percent	Recovery
Surrogate	\mathbf{Flag}	Result	Units	Dilution	Amount	Recovery	Limits
Trifluorotoluene (TFT)		0.842	mg/Kg	1	1.00	84	75 - 117.2
4-Bromofluorobenzene (4-BFB)		0.669	mg/Kg	1	1.00	67	66 - 142.8

Work Order: 8110630 Report Date: November 14, 2008 Page Number: 6 of 42 115-6403613 St. Mary/Tuesday Federal #1 Eddy County, NM Sample: 178543 - BH-1 2-3' Laboratory: Midland Chloride (Titration) Analysis: Analytical Method: SM 4500-Cl B Prep Method: N/A QC Batch: 54208 Date Analyzed: 2008-11-12 Analyzed By: ARPrep Batch: 46323 Sample Preparation: 2008-11-11 Prepared By: ARRLParameter Result Units Dilution Flag RLChloride 13000 50 mg/Kg 2.00 Sample: 178544 - BH-1 4-5' Laboratory: Midland Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A QC Batch: 54208 Date Analyzed: 2008-11-12 Analyzed By: AR Prep Batch: 46323 Sample Preparation: 2008-11-11 Prepared By: AR RLParameter Result Flag Units Dilution RLChloride 10100 mg/Kg 50 2.00Sample: 178545 - BH-1 6-7' Laboratory: Midland Chloride (Titration) Analysis: Analytical Method: SM 4500-Cl B Prep Method: N/A QC Batch: 54208 Date Analyzed: 2008-11-12 Analyzed By: AR46323 Prep Batch: Sample Preparation: 2008-11-11 Prepared By: ARRLResult Units Parameter Flag Dilution RLChloride 11600 mg/Kg 50 2.00 Sample: 178546 - BH-1 8-9' Laboratory: Midland Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A QC Batch: 54208 Date Analyzed: Analyzed By: AR2008-11-12 Prep Batch: 46323 Sample Preparation: 2008-11-11 Prepared By: AR

RL

Units

mg/Kg

Dilution

50

RL

2.00

Result

11100

Parameter

Chloride

Flag

Work Order: 8110630 Page Number: 7 of 42 Report Date: November 14, 2008 115-6403613 St. Mary/Tuesday Federal #1 Eddy County, NM Sample: 178547 - BH-1 10-11' Laboratory: Midland Chloride (Titration) SM 4500-Cl B Prep Method: N/A Analysis: **Analytical Method:** QC Batch: 54208 Analyzed By: ARDate Analyzed: 2008-11-12 Prep Batch: 46323 Sample Preparation: 2008-11-11 Prepared By: \mathbf{AR} RLParameter Flag Result Units Dilution RL7590 2.00 Chloride mg/Kg 50 Sample: 178549 - BH-1 20-21' Laboratory: Midland Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A QC Batch: Analyzed By: AR54209 Date Analyzed: 2008-11-12 Prep Batch: 46324 Sample Preparation: 2008-11-11 Prepared By: AR. RLParameter Units Dilution RLFlag Result 50 2.00Chloride 13300 mg/Kg Sample: 178551 - BH-1 30-31' Laboratory: Midland Prep Method: N/A Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B 54209 Analyzed By: QC Batch: Date Analyzed: 2008-11-12 AR Prep Batch: 46324 Sample Preparation: 2008-11-11 Prepared By: AR RLResult Units Dilution RLParameter Flag 2580 50 2.00 Chloride mg/Kg Sample: 178553 - BH-1 40-41' Laboratory: Midland Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A Analysis: QC Batch: 54209 2008-11-12 Analyzed By: \mathbf{AR} Date Analyzed: Prep Batch: 46324 Sample Preparation: 2008-11-11 Prepared By: AR

RL

903

Units

mg/Kg

Dilution

50

RL

2.00

Result

Parameter

Chloride

Flag

115-6403613

Work Order: 8110630 St. Mary/Tuesday Federal #1 Page Number: 8 of 42 Eddy County, NM

Sample: 178555 - BH-1 50-51'

Laboratory: Midland

Analysis: QC Batch: Chloride (Titration)

54209 Prep Batch: 46324 Analytical Method: Date Analyzed:

SM 4500-Cl B 2008-11-12

Prep Method: N/A Analyzed By:

Dilution

50

Sample Preparation: 2008-11-11

ARPrepared By: AR

RLResult

806

Parameter Chloride

Flag

Units mg/Kg RL

2.00

Sample: 178558 - BH-2 0-1'

Laboratory: Midland

Analysis: QC Batch:

BTEX 54089 Prep Batch: 46277

Analytical Method: Date Analyzed:

S 8021B 2008-11-08 2008-11-08 Prep Method: S 5035

Analyzed By: \mathbf{AG} AG Prepared By:

RL

Sample Preparation:

		102			
Parameter	${f Flag}$	Result	Units	Dilution	RL
Benzene		< 0.0100	mg/Kg	1	0.0100
Toluene		< 0.0100	${ m mg/Kg}$	1	0.0100
Ethylbenzene		< 0.0100	mg/Kg	1	0.0100
Xylene		$\boldsymbol{0.0302}$	mg/Kg	1	0.0100

					\mathbf{Spike}	Percent	Recovery
Surrogate	Flag	Result	Units	Dilution	Amount	Recovery	Limits
Trifluorotoluene (TFT)		0.949	mg/Kg	1	1.00	95	49 - 129.7
4-Bromofluorobenzene (4-BFB)		0.622	${ m mg/Kg}$	1	1.00	62	45.2 - 144.3

Sample: 178558 - BH-2 0-1'

Laboratory:

Midland

Chloride (Titration) Analysis: QC Batch: 54209 Prep Batch: 46324

Analytical Method: Date Analyzed: Sample Preparation: SM 4500-Cl B 2008-11-12

2008-11-11

Prep Method: N/A Analyzed By: ARPrepared By: AR

RL

Parameter	Flag	Result	Units	Dilution	RL
Chloride		10500	mg/Kg	50	2.00

115-6403613

Work Order: 8110630 St. Mary/Tuesday Federal #1 Page Number: 9 of 42 Eddy County, NM

Sample: 178558 - BH-2 0-1'

Laboratory:

Midland

Analysis: QC Batch:

TPH DRO 54063 Prep Batch: 46243

Analytical Method:

Date Analyzed: Sample Preparation:

Mod. 8015B 2008-11-07 2008-11-07

Prep Method: N/A Analyzed By:

LDPrepared By: LD

RL

Flag Result Units Dilution RLParameter 50.0 DRO $\overline{51.2}$ mg/Kg

					Spike	${f Percent}$	$\operatorname{Recovery}$
Surrogate	Flag	Result	\mathbf{Units}	Dilution	Amount	Recovery	Limits
n-Triacontane		100	mg/Kg	1	100	100	10 - 250.4

Sample: 178558 - BH-2 0-1'

Laboratory: Midland

Analysis: TPH GRO

QC Batch: 54090 Prep Batch: 46277 Analytical Method:

Sample Preparation:

S 8015B Date Analyzed: 2008-11-08

2008-11-08

Prep Method: S 5035

 \mathbf{AG} Analyzed By: Prepared By: \mathbf{AG}

RL

Parameter Result Units Dilution RLFlag 4.49 mg/Kg 1.00 GRO

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		0.884	mg/Kg	1	1.00	88	75 - 117.2
4-Bromofluorobenzene (4-BFB)	1	0.537	mg/Kg	1	1.00	54	66 - 142.8

Sample: 178559 - BH-2 2-3'

Laboratory:

Midland

Chloride (Titration) Analysis: QC Batch: 54209 Prep Batch: 46324

Analytical Method: Date Analyzed:

Sample Preparation:

SM 4500-Cl B 2008-11-12 2008-11-11

Prep Method: N/A Analyzed By: ARPrepared By: AR

RL

Parameter Result Units RLFlag Dilution Chloride 8420 mg/Kg 50 2.00

¹Surrogate out due to peak interference.

Report Date: November 14, 2008 Work Order: 8110630 Page Number: 10 of 42 115-6403613 St. Mary/Tuesday Federal #1 Eddy County, NM Sample: 178560 - BH-2 4-5' Laboratory: Midland Prep Method: N/A Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B QC Batch: 54209 Date Analyzed: 2008-11-12 Analyzed By: AR. Sample Preparation: 2008-11-11 Prepared By: AR Prep Batch: 46324 RLParameter Flag Result Units Dilution RL6130 50 2.00 Chloride mg/Kg Sample: 178561 - BH-2 6-7' Midland Laboratory: Chloride (Titration) Analysis: Analytical Method: SM 4500-Cl B Prep Method: N/A QC Batch: 54209 Date Analyzed: 2008-11-12 Analyzed By: ARPrep Batch: 46324 Sample Preparation: 2008-11-11 Prepared By: ARRLParameter Flag Result Units Dilution RLChloride 8200 mg/Kg 50 2.00 Sample: 178562 - BH-2 8-9' Laboratory: Midland Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A Analysis: Analyzed By: QC Batch: 54209 Date Analyzed: 2008-11-12 AR 46324 Sample Preparation: 2008-11-11 Prepared By: AR Prep Batch: RLResult Dilution RLParameter Flag Units Chloride 8120 mg/Kg 2.00 Sample: 178563 - BH-2 10-11' Laboratory: Midland Chloride (Titration) Analysis: Analytical Method: SM 4500-Cl B Prep Method: N/A QC Batch: 54209 Date Analyzed: 2008-11-12 Analyzed By: ARPrep Batch: 46324 Sample Preparation: 2008-11-11 Prepared By: ARRL

Parameter

Chloride

Flag

Result

12800

Units

mg/Kg

Dilution

50

 $\frac{\mathrm{RL}}{2.00}$

Work Order: 8110630 Page Number: 11 of 42 Report Date: November 14, 2008 Eddy County, NM 115-6403613 St. Mary/Tuesday Federal #1 Sample: 178565 - BH-2 20-21' Laboratory: Midland Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A Analysis: QC Batch: 54210 Date Analyzed: 2008-11-13 Analyzed By: ARPrepared By: ARPrep Batch: 46325 Sample Preparation: 2008-11-11 RLFlag Result Units Dilution RLParameter 9390 50 2.00 Chloride mg/Kg Sample: 178567 - BH-2 30-31' Laboratory: Midland Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A QC Batch: 54210 Analyzed By: AR Date Analyzed: 2008-11-13 AR Prep Batch: 46325 Sample Preparation: 2008-11-11 Prepared By: RLParameter Result Units Dilution RLFlag 3230 Chloride mg/Kg 50 2.00 Sample: 178568 - BH-2 40-41' Midland Laboratory: Chloride (Titration) SM 4500-Cl B Prep Method: N/A Analysis: Analytical Method: QC Batch: 54210 Analyzed By: ARDate Analyzed: 2008-11-13 Prep Batch: 46325 Sample Preparation: 2008-11-11 Prepared By: ARRLParameter Result Units Dilution RLFlag Chloride 2040 mg/Kg 50 2.00 Sample: 178569 - BH-2 50-51' Laboratory: Midland Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A QC Batch: 54210 2008-11-13 Analyzed By: \mathbf{AR} Date Analyzed: Prep Batch: 46325 Sample Preparation: 2008-11-11 Prepared By: ARRLDilution Parameter Result RLFlag Units

1250

mg/Kg

50

2.00

Chloride

115-6403613

Work Order: 8110630 St. Mary/Tuesday Federal #1

Sample Preparation: 2008-11-11

Page Number: 12 of 42 Eddy County, NM

Sample: 178571 - BH-3 0-1'

Laboratory: Midland Analysis:

Chloride (Titration)

QC Batch: 54210 Prep Batch: 46325

Analytical Method: Date Analyzed:

SM 4500-Cl B 2008-11-13

Prep Method: N/A Analyzed By: Prepared By:

RL

Parameter Chloride

Result Flag 2470

Units mg/Kg Dilution 50

RL2.00

AR

AR

Sample: 178571 - BH-3 0-1'

Laboratory:

Midland

Analysis: TPH DRO QC Batch: 5406346243 Prep Batch:

Analytical Method: Date Analyzed:

Mod. 8015B 2008-11-07 2008-11-07

Prep Method: N/A Analyzed By: Γ D Prepared By: LD

RL

Sample Preparation:

Parameter Flag DRO

Result < 50.0

Units mg/Kg Dilution 1

RL50.0

					Spike	Percent	Recovery
Surrogate	Flag	Result	\mathbf{Units}	Dilution	Amount	Recovery	Limits
n-Triacontane		94.5	mg/Kg	1	100	94	10 - 250.4

Sample: 178571 - BH-3 0-1'

Laboratory:

Midland

Analysis: TPH GRO QC Batch: 54090 Prep Batch: 46277

Analytical Method: Date Analyzed:

S 8015B 2008-11-08 Sample Preparation: 2008-11-08 Prep Method: S 5035 Analyzed By: AGPrepared By: AG

RL

Parameter	Flag	Result	Units	Dilution	hoRL
GRO		2.04	mg/Kg	1 .	1.00

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		0.820	mg/Kg	1	1.00	82	75 - 117.2
4-Bromofluorobenzene (4-BFB)	2	0.556	mg/Kg	1	1.00	56	66 - 142.8

²Surrogate out due to peak interference.

Report Date: November 14, 2008 Work Order: 8110630 Page Number: 13 of 42 115-6403613 St. Mary/Tuesday Federal #1 Eddy County, NM Sample: 178572 - BH-3 2-3' Laboratory: Midland Chloride (Titration) Analysis: Analytical Method: SM 4500-Cl B Prep Method: N/A QC Batch: 54210 Date Analyzed: 2008-11-13 Analyzed By: ARPrep Batch: 46325 Sample Preparation: Prepared By: AR2008-11-11 RLParameter Flag Result Units Dilution RLChloride 8410 50 2.00mg/Kg Sample: 178573 - BH-3 4-5' Laboratory: Midland Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A QC Batch: 54210 Date Analyzed: 2008-11-13 Analyzed By: AR Prep Batch: 46325 Sample Preparation: Prepared By: AR2008-11-11 RLParameter Flag Result Units Dilution RLChloride 8320 50 mg/Kg 2.00 Sample: 178574 - BH-3 6-7' Laboratory: Midland Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A QC Batch: 54210 Date Analyzed: 2008-11-13 Analyzed By: AR Prep Batch: 46325 Sample Preparation: 2008-11-11 Prepared By: ARRLResult Parameter Flag Units Dilution RLChloride 12100 mg/Kg 50 2.00 Sample: 178575 - BH-3 8-9' Laboratory: Midland Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A QC Batch: 54210 Date Analyzed: 2008-11-13 Analyzed By: ARPrep Batch: 46325 Sample Preparation: 2008-11-11 Prepared By: \mathbf{AR} RL

Dilution

50

Units

mg/Kg

RL

 $\overline{2.00}$

Parameter

Chloride

Flag

Result

8660

Report Date: November 14, 2008 Work Order: 8110630 Page Number: 14 of 42 115-6403613 St. Mary/Tuesday Federal #1 Eddy County, NM Sample: 178576 - BH-3 10-11' Laboratory: Midland Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A QC Batch: 54210 Date Analyzed: 2008-11-13 Analyzed By: AR Prep Batch: 46325 Sample Preparation: 2008-11-11 Prepared By: AR RLParameter Flag Result Units Dilution RL6780 50 2.00 Chloride mg/Kg Sample: 178578 - BH-3 20-21' Laboratory: Midland Chloride (Titration) Analytical Method: Analysis: SM 4500-Cl B Prep Method: N/A QC Batch: 54211 Date Analyzed: 2008-11-13 Analyzed By: AR Prep Batch: 46326 Sample Preparation: AR2008-11-11 Prepared By: RLParameter Flag Result Units Dilution RLChloride 6170 mg/Kg 50 2.00Sample: 178580 - BH-3 30-31' Laboratory: Midland Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B Prep Method: N/A QC Batch: 54211 Date Analyzed: 2008-11-13 Analyzed By: AR Prep Batch: 46326 Sample Preparation: 2008-11-11 Prepared By: ARRLResult Units Dilution RLParameter Flag Chloride 974 50 2.00 mg/Kg Sample: 178582 - BH-3 40-41' Laboratory: Midland Chloride (Titration) Analysis: Analytical Method: SM 4500-Cl B Prep Method: N/A QC Batch: 54211 Date Analyzed: 2008-11-13 Analyzed By: ARPrep Batch: 46326 Sample Preparation: 2008-11-11 Prepared By: ARRL

Parameter

Chloride

Flag

Result

545

Units

mg/Kg

Dilution

50

RL

2.00

115-6403613

Work Order: 8110630 St. Mary/Tuesday Federal #1 Page Number: 15 of 42 Eddy County, NM

 \mathbf{AG}

AG

Sample: 178584 - BH-4 0-1'

Laboratory: Midland

Analysis: QC Batch:

BTEX 54089 Prep Batch: 46277

Analytical Method: Date Analyzed:

S 8021B 2008-11-08

Sample Preparation: 2008-11-08 Prep Method: S 5035 Analyzed By: Prepared By:

RI.

		1111			
Parameter	Flag	Result	Units	Dilution	RL
Benzene		< 0.0500	mg/Kg	5	0.0100
Toluene		< 0.0500	mg/Kg	5	0.0100
Ethylbenzene		< 0.0500	mg/Kg	5	0.0100
Xylene		< 0.0500	mg/Kg	5	0.0100

					Spike	Percent	Recovery
Surrogate	\mathbf{Flag}	Result	Units	Dilution	Amount	Recovery	Limits
Trifluorotoluene (TFT)		4.77	mg/Kg	5	5.00	95	49 - 129.7
4-Bromofluorobenzene (4-BFB)		4.13	mg/Kg	5	5.00	83	45.2 - 144.3

Sample: 178584 - BH-4 0-1'

Laboratory:

Midland

Analysis: QC Batch: Chloride (Titration)

54211 Prep Batch: 46326

Analytical Method: Date Analyzed: Sample Preparation: 2008-11-11

SM 4500-Cl B 2008-11-13

Prep Method: N/A Analyzed By: AR

Prepared By: AR

RL

Parameter	Flag	Result	Units	Dilution	RL
Chloride		9300	mg/Kg	50	2.00

Sample: 178584 - BH-4 0-1'

Laboratory: Midland

Analysis: QC Batch:

TPH DRO 54063 Prep Batch: 46243

Analytical Method: Date Analyzed:

Mod. 8015B 2008-11-07 Sample Preparation: 2008-11-07

Prep Method: N/A Analyzed By: LD Prepared By: LD

RL

Parameter	Flag	Result	Units	Dilution	RL
DRO		1340	mg/Kg	1	50.0

					Spike	Percent	Recovery
Surrogate	Flag	Result	Units	Dilution	Amount	Recovery	Limits
n-Triacontane	3	1270	mg/Kg	1	100	1270	10 - 250.4

³High surrogate recovery due to peak interference.

115-6403613

Work Order: 8110630 St. Mary/Tuesday Federal #1 Page Number: 16 of 42 Eddy County, NM

Sample: 178584 - BH-4 0-1'

Laboratory: Midland

Analysis:

TPH GRO

QC Batch: 54090 Prep Batch: 46277

Analytical Method:

S 8015B

Date Analyzed:

2008-11-08 Sample Preparation: 2008-11-08 Prep Method: S 5035 Analyzed By: \mathbf{AG}

Prepared By: AG

RL

Parameter	Flag	Result	Units	Dilution	RL
GRO		73.5	mg/Kg	5	1.00

					\mathbf{Spike}	Percent	Recovery
Surrogate	Flag	Result	Units	Dilution	Amount	Recovery	Limits
Trifluorotoluene (TFT)		4.19	mg/Kg	5	5.00	84	75 - 117.2
4-Bromofluorobenzene (4-BFB)		3.62	mg/Kg	5	5.00	72	66 - 142.8

Sample: 178585 - BH-4 2-3'

Laboratory:

Midland

Analysis: QC Batch: Chloride (Titration)

54211 Prep Batch: 46326 Analytical Method: Date Analyzed:

Sample Preparation:

SM 4500-Cl B 2008-11-13

Prep Method: N/A Analyzed By:

2008-11-11

AR Prepared By: AR

RL

Parameter	Flag	Result	Units	Dilution	RL
Chloride		9820	mg/Kg	.50	2.00

Sample: 178585 - BH-4 2-3'

Laboratory:

Midland

Analysis: QC Batch: Prep Batch:

Parameter

DRO

TPH DRO 54109

46288

Analytical Method: Date Analyzed:

168

Mod. 8015B 2008-11-10 Sample Preparation: 2008-11-10

mg/Kg

Prep Method: N/A Analyzed By: LDLD

Prepared By:

Flag

RLResult Units

Dilution

50.0

RL

Surrogate	Flag	Result	Units	Dilution	$\begin{array}{c} {\rm Spike} \\ {\rm Amount} \end{array}$	Percent Recovery	$egin{array}{c} { m Recovery} \\ { m Limits} \end{array}$
n-Triacontane		128	mg/Kg	1	100	128	10 - 250.4

115-6403613

Work Order: 8110630 St. Mary/Tuesday Federal #1 Page Number: 17 of 42 Eddy County, NM

Sample: 178585 - BH-4 2-3'

Laboratory: Midland

Prep Batch: 46299

Analysis: QC Batch:

TPH GRO 54122

Analytical Method: Date Analyzed:

S 8015B

2008-11-10 Sample Preparation: 2008-11-10 Prep Method: S 5035 Analyzed By: AG

Prepared By: AG

R.L

Units RLResult Dilution Parameter Flag GRO 13.2 mg/Kg 1.00

				•	Spike	Percent	Recovery
Surrogate	Flag	Result	Units	Dilution	Amount	Recovery	Limits
Trifluorotoluene (TFT)		1.68	mg/Kg	2	2.00	84	75 - 117.2
4-Bromofluorobenzene (4-BFB)		1.64	mg/Kg	2	2.00	82	66 - 142.8

Sample: 178586 - BH-4 4-5'

Laboratory:

Midland

Analysis: QC Batch: Prep Batch: Chloride (Titration)

54211 46326 Analytical Method: Date Analyzed:

SM 4500-Cl B 2008-11-13

Prep Method: N/A Analyzed By: AR

RL

Prepared By: AR

Result Units Dilution RLParameter Flag 6550 Chloride mg/Kg 50 2.00

Sample Preparation: 2008-11-11

Sample: 178587 - BH-4 6-7'

Laboratory:

Midland

Analysis:

Chloride (Titration)

54211 46326 Analytical Method:

SM 4500-Cl B

Prep Method: N/A Analyzed By: AR

QC Batch: Prep Batch: Date Analyzed: Sample Preparation:

2008-11-13 2008-11-11

Prepared By: AR

RL

Flag Parameter Result Units Dilution RLChloride 8980 50 2.00 mg/Kg

Sample: 178588 - BH-4 10-11'

Laboratory:

Midland

Analysis:

Chloride (Titration)

Analytical Method: Date Analyzed:

SM 4500-Cl B 2008-11-13

2008-11-11

Prep Method: N/A Analyzed By: Prepared By:

AR.

AR

QC Batch: 54211 Prep Batch: 46326

Sample Preparation:

115-6403613

Work Order: 8110630 St. Mary/Tuesday Federal #1 Page Number: 18 of 42 Eddy County, NM

			m RL			
Parameter	4	Flag	Result	Units	Dilution	RL
Chloride			7380	mg/Kg	50	2.00

Sample: 178590 - BH-4 20-21'

Laboratory:

Midland

Analysis: Chloride (Titration) QC Batch: 54211 Prep Batch: 46326 Analytical Method: SM 4500-Cl B Date Analyzed: 2008-11-13

2008-11-11

Prep Method: N/A
Analyzed By: AR
Prepared By: AR

Sample Preparation:

Sample: 178592 - BH-4 30-31'

Laboratory:

Midland

Analysis: Chloride (Titration) QC Batch: 54211 Prep Batch: 46326 Analytical Method: SM 4500-Cl B Date Analyzed: 2008-11-13 Sample Preparation: 2008-11-11

Prep Method: N/A
Analyzed By: AR
Prepared By: AR

Sample: 178594 - BH-4 40-41'

Laboratory:

Midland

Analysis: Chlori QC Batch: 54212 Prep Batch: 46327

Chloride (Titration) 54212

Analytical Method: SM 4500-C Date Analyzed: 2008-11-13 Sample Preparation: 2008-11-11

SM 4500-Cl B Prep Method: N/A 2008-11-13 Analyzed By: AR 2008-11-11 Prepared By: AR

Sample: 178596 - BH-5 0-1'

Laboratory:

Midland

Analysis: BTEX QC Batch: 54089 Prep Batch: 46277 Analytical Method: S 8021B
Date Analyzed: 2008-11-08
Sample Preparation: 2008-11-08

Prep Method: S 5035 Analyzed By: AG Prepared By: AG

115-6403613

Work Order: 8110630 St. Mary/Tuesday Federal #1 Page Number: 19 of 42 Eddy County, NM

		m RL			
Parameter	Flag	Result	Units	Dilution	RL
Benzene		< 0.0200	mg/Kg	2	0.0100
Toluene		< 0.0200	mg/Kg	2	0.0100
Ethylbenzene		< 0.0200	mg/Kg	2	0.0100
Xylene		< 0.0200	mg/Kg	2	0.0100

					Spike	Percent	Recovery
Surrogate	\mathbf{Flag}	Result	Units	Dilution	Amount	Recovery	Limits
Trifluorotoluene (TFT)		1.92	mg/Kg	2	2.00	96	49 - 129.7
4-Bromofluorobenzene (4-BFB)		1.80	mg/Kg	2	2.00	90	45.2 - 144.3

Sample: 178596 - BH-5 0-1'

Laboratory:

Midland

Analysis: Chloride (Titration) QC Batch: 54212 Prep Batch: 46327 Analytical Method: SM 4500-Cl B Date Analyzed: 2008-11-13

Sample Preparation: 2008-11-11

Prep Method: N/A Analyzed By: AR Prepared By: AR

Sample: 178596 - BH-5 0-1'

Laboratory:
Analysis:

Midland TPH DRO

QC Batch: 54063 Prep Batch: 46243 Analytical Method: Mod. 8015B
Date Analyzed: 2008-11-07
Sample Preparation: 2008-11-07

Prep Method: N/A
Analyzed By: LD
Prepared By: LD

		RL			
Parameter	Flag	Result	${f Units}$	Dilution	RL
DRO		2400	mg/Kg	1 ,	50.0

					Spike	Percent	Recovery
Surrogate	Flag_	Result	Units	Dilution	Amount	Recovery	Limits
n-Triacontane	4	411	mg/Kg	1	100	411	10 - 250.4

Sample: 178596 - BH-5 0-1'

Laboratory:

Midland

Analysis: TPH GRO QC Batch: 54090 Prep Batch: 46277 Analytical Method: S 8015B
Date Analyzed: 2008-11-08
Sample Preparation: 2008-11-08

Prep Method: S 5035 Analyzed By: AG Prepared By: AG

⁴High surrogate recovery due to peak interference.

115-6403613

Work Order: 8110630 St. Mary/Tuesday Federal #1 Page Number: 20 of 42 Eddy County, NM

Prepared By: AR

Prep Method: N/A Analyzed By: LD Prepared By: LD

Parameter	Flag		$egin{array}{c} ext{RL} \ ext{Result} \end{array}$		Units	D	ilution	RL
GRO			69.4		mg/Kg		2	1.00
Surrogate	•	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotolu	ene (TFT)		1.68	mg/Kg	2	2.00	84	75 - 117.2
4-Bromofluor	robenzene (4-BFB)		1.60	mg/Kg	2	2.00	80	66 - 142.8
Sample: 17	8597 - BH-5 2-3'							
Laboratory:	Midland		4 1		OM 4500	CL D	ъ м	.1 1 37//
Analysis: QC Batch:	Chloride (Titration) 54212			tical Method: Analyzed:	SM 4500- 2008-11-1		Prep Me Analyze	,

		RL			
Parameter	Flag	Result	Units	Dilution	RL
Chloride		12100	mg/Kg	50	2.00

Sample Preparation: 2008-11-11

Prep Batch: 46327

Laboratory:	Midland			
Analysis:	TPH DRO	Analytical Method:	Mod. 8015B	
QC Batch:	54109	Date Analyzed:	2008-11-10	
Prep Batch:	46288	Sample Preparation:	2008-11-10	

-		m RL			
Parameter	Flag	\mathbf{Result}	Units	Dilution	RL
DRO		< 50.0	mg/Kg	1	50.0

					Spike	Percent	Recovery
Surrogate	Flag	${f Result}$	Units	Dilution	Amount	Recovery	Limits
n-Triacontane		99.1	mg/Kg	1	100	99	10 - 250.4

Sample: 178597 - BH-5 2-3'

Prep Batch:	46299	Sample Preparation:	2008-11-10	Prepared By:	AG
QC Batch:	54122	Date Analyzed:	2008-11-10	Analyzed By:	\mathbf{AG}
Analysis:	TPH GRO	Analytical Method:	S 8015B	Prep Method:	S 5035
Laboratory:	Midland				

 $continued \dots$

115-6403613

Work Order: 8110630 St. Mary/Tuesday Federal #1 Page Number: 21 of 42 Eddy County, NM

sample 178597 continued ...

Parameter	Flag		RL Result		Units	D	ilution	RL
Parameter	Flag		RL Result		Units	r	ilution	RL
GRO	riag		6.98		mg/Kg		1	1.00
Surrogate		Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT 4-Bromofluorobenzene	,		0.979 0.808	mg/Kg mg/Kg	1 1	1.00 1.00	98 81	75 - 117.2 66 - 142.8

Sample: 178598 - BH-5 4-5'

Laboratory:

Midland

Analysis:

Chloride (Titration)

QC Batch: 54212 Prep Batch: 46327 Analytical Method:

Date Analyzed: Sample Preparation: SM 4500-Cl B 2008-11-13

Prep Method: Analyzed By: Prepared By: 2008-11-11

RLResult RLParameter Flag Units Dilution Chloride 12700 2.00 mg/Kg 50

Sample: 178598 - BH-5 4-5'

Laboratory:

Midland

Analysis: TPH DRO QC Batch:

54109 Prep Batch: 46288 Analytical Method: Date Analyzed:

Mod. 8015B 2008-11-10 Sample Preparation: 2008-11-10

Prep Method: N/A Analyzed By: LD Prepared By: LD

N/A

AR

AR

RLParameter Flag Result Units Dilution RL< 50.0 DRO mg/Kg 50.0

					Spike	Percent	Recovery
Surrogate	Flag	Result	Units	Dilution	Amount	Recovery	Limits
n-Triacontane		93.4	mg/Kg	1	100	. 93	10 - 250.4

115-6403613

Work Order: 8110630 St. Mary/Tuesday Federal #1 Page Number: 22 of 42 Eddy County, NM

Sample: 178598 - BH-5 4-5'

Laboratory:

Midland

Analysis: QC Batch:

TPH GRO 54122 Prep Batch: 46299

Analytical Method: Date Analyzed:

S 8015B 2008-11-10 Sample Preparation: 2008-11-10

Prep Method: S 5035 Analyzed By: AG Prepared By: AG

RL

Parameter Flag Result Units Dilution RLGRO 4.97 1.00 mg/Kg

					\mathbf{Spike}	$\mathbf{Percent}$	Recovery
Surrogate	Flag	Result	Units	Dilution	Amount	Recovery	Limits
Trifluorotoluene (TFT)		0.938	mg/Kg	1	1.00	94	75 - 117.2
4-Bromofluorobenzene (4-BFB)		0.796	mg/Kg	1	1.00	80	66 - 142.8

Sample: 178599 - BH-5 6-7'

Laboratory:

Midland

Analysis: QC Batch: Chloride (Titration)

54212 Date Analyzed: Prep Batch: 46327 Sample Preparation:

Analytical Method: SM 4500-Cl B 2008-11-13 2008-11-11

Prep Method: N/A Analyzed By: AR Prepared By: AR

RL

RL

Parameter	Flag	Result	Units	Dilution	RL
Chloride		12400	mg/Kg	50	2.00

Sample: 178600 - BH-5 8-9'

Laboratory:

Midland

Chloride (Titration) Analysis: QC Batch: 54212 Prep Batch: 46327

Analytical Method: Date Analyzed: Sample Preparation:

SM 4500-Cl B 2008-11-13 2008-11-11

Prep Method: N/A Analyzed By: AR Prepared By: AR

Flag

Result RLParameter Units Dilution 16200 Chloride 50 2.00mg/Kg

Sample: 178601 - BH-5 10-11'

Laboratory:

Midland

Analysis: Chloride (Titration)

QC Batch: 54212Prep Batch: 46327

Analytical Method: Date Analyzed:

SM 4500-Cl B 2008-11-13 Sample Preparation: 2008-11-11

Prep Method: N/A ARAnalyzed By: Prepared By: AR

115-6403613

Work Order: 8110630 St. Mary/Tuesday Federal #1 Page Number: 23 of 42 Eddy County, NM

		RL			
Parameter	Flag	Result	Units	Dilution	RL
Chloride		9680	mg/Kg	50	2.00

Sample: 178603 - BH-5 20-21'

Laboratory:

Midland

Chloride (Titration) Analysis: 54212 QC Batch: 46327 Prep Batch:

Analytical Method: Date Analyzed:

SM 4500-Cl B 2008-11-13 Sample Preparation: 2008-11-11

Prep Method: N/A Analyzed By: AR Prepared By: AR

RLParameter Flag Result Units Dilution RLChloride 1100 50 2.00 mg/Kg

Sample: 178605 - BH-5 30-31'

Laboratory:

Midland

Analysis: Chloride (Titration) QC Batch: 54212 Prep Batch: 46327

Analytical Method: Date Analyzed:

SM 4500-Cl B 2008-11-13 Sample Preparation: 2008-11-11

Prep Method: N/A Analyzed By: AR

AR

Prepared By:

RLParameter Flag Result Units Dilution RL $\overline{176}$ 50 2.00Chloride mg/Kg

Sample: 178606 - Background 0-1'

Laboratory:

Midland

Chloride (Titration) Analysis: QC Batch: 54212 Prep Batch: 46327

Analytical Method: Date Analyzed:

Sample Preparation:

SM 4500-Cl B 2008-11-13 2008-11-11

Prep Method: N/A Analyzed By: AR Prepared By: \mathbf{AR}

RLFlag Parameter Result Units Dilution RLChloride <100 mg/Kg 50 2.00

Sample: 178607 - Background 5-6'

Laboratory:

Midland

Chloride (Titration) Analysis: QC Batch: 54213 Prep Batch: 46328

Analytical Method: SM 4500-Cl B Date Analyzed: 2008-11-13 Sample Preparation: 2008-11-11

Prep Method: N/A Analyzed By: AR Prepared By: \mathbf{AR}

115 - 6403613

Work Order: 8110630 St. Mary/Tuesday Federal #1 Page Number: 24 of 42 Eddy County, NM

		${ m RL}$			
Parameter	Flag	Result	Units	Dilution	RL
Chloride		<100	mg/Kg	50	2.00

Sample: 178608 - Background 10-11'

Laboratory:

Midland

Analysis: Chloride (Titration) QC Batch: 54213 Prep Batch: 46328 Analytical Method: Date Analyzed:

Sample Preparation:

SM 4500-Cl B 2008-11-13 2008-11-11 Prep Method: N/A Analyzed By: AR Prepared By: AR

Sample: 178609 - Background 15-16'

Laboratory:

Midland

Analysis: Chloride (Titration) QC Batch: 54213 Prep Batch: 46328 Analytical Method: S
Date Analyzed: 2
Sample Preparation: 2

SM 4500-Cl B 2008-11-13 2008-11-11 Prep Method: N/A Analyzed By: AR Prepared By: AR

Sample: 178610 - Background 20-21'

Laboratory:

Midland

Analysis: Chloride (Titration)
QC Batch: 54213
Prep Batch: 46328

Analytical Method: Date Analyzed:

Sample Preparation:

SM 4500-Cl B 2008-11-13 2008-11-11

Prep Method: N/A Analyzed By: AR Prepared By: AR

Sample: 178611 - Background 30-31'

Laboratory:

Midland

Analysis: Chloride (Titration) QC Batch: 54213 Prep Batch: 46328 Analytical Method: Date Analyzed: Sample Preparation:

SM 4500-Cl B 2008-11-13 2008-11-11 Prep Method: N/A Analyzed By: AR Prepared By: AR

115-6403613

Work Order: 8110630 St. Mary/Tuesday Federal #1 Page Number: 25 of 42 Eddy County, NM

	10LL			
Flag	Result	Units	Dilution	RL
	<100	mg/Kg	50	2.00
	Flag	Flag Result <100	Flag Result Units <100 mg/Kg	Flag Result Units Dilution <100 mg/Kg 50

Sample: 178612 - Background 40-41'

Laboratory: Midland

Analysis: Chloride (Titration) Analytical Method:

SM 4500-Cl B

Prep Method: N/A

QC Batch:

54213

Date Analyzed:

2008-11-13

Analyzed By: AR

Prep Batch: 46328

Sample Preparation:

2008-11-11

Prepared By: AR

RL

Parameter	Flag	Result	Units	Dilution	RL
Chloride		<100	mg/Kg	50	2.00

Method Blank (1)

QC Batch: 54063

QC Batch:

54063

Date Analyzed:

2008-11-07

Analyzed By: LD

Prep Batch: 46243

QC Preparation: 2008-11-07

Prepared By: LD

		MDL		
Parameter	Flag	Result	Units	RL`
DRO		<15.8	mg/Kg	50

Surrogate	Flag	Result	Units	Dilution	$\begin{array}{c} {\bf Spike} \\ {\bf Amount} \end{array}$	Percent Recovery	Recovery Limits
n-Triacontane		90.8	mg/Kg	1	100	91	30.9 - 146.4

Method Blank (1)

QC Batch: 54089

QC Batch:

54089

Date Analyzed:

2008-11-08

Analyzed By: AG

Prep Batch: 46277

QC Preparation: 2008-11-08

Prepared By: AG

		MDL		
Parameter	Flag	Result	Units	RL
Benzene		< 0.00800	mg/Kg	0.01
Toluene		< 0.00800	mg/Kg	0.01
Ethylbenzene		< 0.00820	mg/Kg	0.01
Xylene		< 0.00960	mg/Kg	0.01

					Spike	Percent	Recovery
Surrogate	Flag	Result	Units	Dilution	Amount	Recovery	Limits
Trifluorotoluene (TFT)		0.942	mg/Kg	1	1.00	94	65.6 - 130.6

continued ...

115-6403613

Work Order: 8110630 St. Mary/Tuesday Federal #1 Page Number: 26 of 42 Eddy County, NM

T 31	5 1.	** •:	5 0	Spike	Percent ·	Recovery
Flag	Result	Units	Dilution	Amount	Recovery	${f Limits}$
	0.802	mg/Kg	1	1.00	80	51.9 - 128.1
_	Flag			<u> </u>	Flag Result Units Dilution Amount	Flag Result Units Dilution Amount Recovery

Method Blank (1)

QC Batch: 54090

QC Batch: Prep Batch: 46277

54090

Date Analyzed: 2008-11-08 QC Preparation: 2008-11-08 Analyzed By: AG Prepared By: AG

MDL

Flag Parameter Result Units RL $\overline{\text{GRO}}$ 0.749 mg/Kg

					Spike	Percent	Recovery
Surrogate	Flag	Result	Units	Dilution	Amount	Recovery	Limits
Trifluorotoluene (TFT)		0.837	mg/Kg	1	1.00	84	70 - 130
4-Bromofluorobenzene (4-BFB)		0.697	${ m mg/Kg}$	1	1.00	70	70 - 130

Method Blank (1)

QC Batch: 54109

QC Batch: Prep Batch: 46288

54109

Date Analyzed: QC Preparation:

2008-11-10 2008-11-10 Analyzed By: LD

Prepared By: LD

MDL

Parameter Flag Result Units RLDRO <15.8 mg/Kg

					\mathbf{Spike}	Percent	Recovery
Surrogate	Flag	Result	Units	Dilution	Amount	Recovery	Limits
n-Triacontane		108	mg/Kg	1	100	108	30.9 - 146.4

Method Blank (1)

QC Batch: 54122

QC Batch: Prep Batch: 46299

54122

Date Analyzed: QC Preparation:

2008-11-10 2008-11-10 Analyzed By: Prepared By: AG

MDL

Parameter Flag Result Units RL $\overline{\text{GRO}}$ 0.810 mg/Kg 1

115-6403613

Parameter

Chloride

Work Order: 8110630 St. Mary/Tuesday Federal #1 Page Number: 27 of 42 Eddy County, NM

		<u> </u>				
Surrogate	Flag	Result Uni	ts Dilution	Spike Amount		overy mits
Trifluorotoluene (TFT)	riag	0.835 mg/l		1.00		- 130
	romofluorobenzene (4-BFB)		Kg 1	1.00		- 130
Method Blank (1)	QC Batch: 54208					
QC Batch: 54208 Prep Batch: 46323		Date Analyzed: QC Preparation:	2008-11-12 2008-11-11		Analyzed By: Prepared By:	AR AR
Daramatar	Flag		IDL sult	Units		RL
Parameter Chloride	riag		.500	mg/Kg		$\frac{\kappa L}{2}$
Method Blank (1)	QC Batch: 54209					
QC Batch: 54209		Date Analyzed:	2008-11-12		Analyzed By:	\mathbf{AR}
Prep Batch: 46324		QC Preparation:	2008-11-11		Prepared By:	AR
			I DL			
Parameter	Flag		sult	Units		RL
Chloride	· · · · · · · · · · · · · · · · · · ·	<0	.500	mg/Kg		2
Method Blank (1)	QC Batch: 54210					
QC Batch: 54210		Date Analyzed:	2008-11-13		Analyzed By:	AR
Prep Batch: 46325		QC Preparation:	2008-11-11		Prepared By:	AR
D			MDL L	TT *:		DI
Parameter Chloride	Flag		sult .500	Units mg/Kg		$\frac{RI}{2}$
Omoride			.000	mg/ Ng	1	
Method Blank (1)	QC Batch: 54211					
QC Batch: 54211		Date Analyzed:	2008-11-13		Analyzed By:	AR
Prep Batch: 46326		QC Preparation:	2008-11-11		Prepared By:	\mathbf{AR}

MDL

Result

< 0.500

Flag

Units

mg/Kg

RL

2

115-6403613

Work Order: 8110630 St. Mary/Tuesday Federal #1 Page Number: 28 of 42 Eddy County, NM

Method Blank (1)

QC Batch: 54212

QC Batch: Prep Batch: 46327

54212

Date Analyzed: QC Preparation:

2008-11-13

2008-11-11

Analyzed By: AR Prepared By: AR

MDL

Parameter Flag Result Units RLChloride < 0.500 2 mg/Kg

Method Blank (1)

QC Batch: 54213

QC Batch: Prep Batch: 46328

54213

Date Analyzed: QC Preparation:

2008-11-13 2008-11-11

Analyzed By:

ARPrepared By: AR

MDL

Parameter Flag Result Units RL $\overline{\text{Chloride}}$ < 0.500 2 mg/Kg

Laboratory Control Spike (LCS-1)

QC Batch:

54063

Date Analyzed:

2008-11-07

Analyzed By: LD

Prep Batch:

46243

QC Preparation:

2008-11-07

Prepared By: LD

LCS Spike Matrix Rec. Param Result Units Dil. Amount Result Limit Rec. $\overline{\text{DRO}}$ 235 mg/Kg 1 250 <15.8 94 27.8 - 152.1

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

	LCSD			$_{ m Spike}$	Matrix		Rec .		RPD
Param	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
DRO	241	mg/Kg	1	250	<15.8	96	27.8 - 152.1	2	20

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

	LCS	LCSD			Spike	LCS	LCSD	Rec.
Surrogate	Result	Result	Units	Dil.	Amount	Rec.	Rec.	Limit
n-Triacontane	106	103	mg/Kg	1	100	106	103	38 - 130.4

Laboratory Control Spike (LCS-1)

QC Batch:

54089

Date Analyzed:

2008-11-08

Analyzed By: AG AG

Prep Batch: 46277

QC Preparation:

2008-11-08

Prepared By:

115-6403613

Work Order: 8110630 St. Mary/Tuesday Federal #1 Page Number: 29 of 42 Eddy County, NM

Param	LCS Result	Units	Dil.	$\begin{array}{c} {\bf Spike} \\ {\bf Amount} \end{array}$	Matrix Result	Rec.	Rec. Limit
Benzene	0.953	mg/Kg	1	1.00	< 0.00800	95	72.7 - 129.8
Toluene	0.960	mg/Kg	1	1.00	< 0.00800	96	71.6 - 129.6
Ethylbenzene	0.958	mg/Kg	1	1.00	< 0.00820	96	70.8 - 129.7
Xylene	2.83	mg/Kg	1	3.00	< 0.00960	94	70.9 - 129.4

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

	LCSD			Spike	Matrix		Rec.		RPD
Param	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Benzene	0.991	mg/Kg	1	1.00	< 0.00800	99	72.7 - 129.8	4	20
Toluene	0.998	mg/Kg	1	1.00	< 0.00800	100	71.6 - 129.6	4	20
Ethylbenzene	0.999	mg/Kg	1	1.00	< 0.00820	100	70.8 - 129.7	4	20
Xylene	2.95	mg/Kg	1	3.00	< 0.00960	98	70.9 - 129.4	4	20

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

	LCS	LCSD	TT **	2011	Spike	LCS	LCSD	Rec.
Surrogate	Result	Result	${f Units}$	Dil.	Amount	Rec.	Rec.	Limit
Trifluorotoluene (TFT)	0.945	0.952	mg/Kg	1	1.00	94	95	65.9 - 132
4-Bromofluorobenzene (4-BFB)	0.840	0.850	mg/Kg	1	1.00	84	85	55.2 - 128.9

Laboratory Control Spike (LCS-1)

QC Batch: 54090 Prep Batch: 46277 Date Analyzed: 2008-11-08 QC Preparation: 2008-11-08 Analyzed By: AG Prepared By: AG

	LCS			Spike	Matrix		Rec.
Param	Result	Units	Dil.	Amount	Result	Rec.	Limit
GRO	7.30	mg/Kg	1	10.0	< 0.171	73	70 - 130

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

	LCSD			Spike	Matrix		Rec.	Limit RPD	
Param	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
GRO	8.10	mg/Kg	1	10.0	< 0.171	81	70 - 130	10	20

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

	LCS	LCSD			Spike	LCS	LCSD	Rec.
Surrogate	Result	Result	Units	Dil.	Amount	Rec.	Rec.	Limit
Trifluorotoluene (TFT)	0.875	0.868	mg/Kg	1	1.00	88	87	70 - 130
4-Bromofluorobenzene (4-BFB)	0.748	0.750	mg/Kg	1	1.00	7 5	75	70 - 130

Laboratory Control Spike (LCS-1)

QC Batch: 54109 Prep Batch: 46288 Date Analyzed: 2008-11-10 QC Preparation: 2008-11-10 Analyzed By: LD Prepared By: LD

115-6403613

Work Order: 8110630 St. Mary/Tuesday Federal #1 Page Number: 30 of 42 Eddy County, NM

	LCS			Spike	Matrix		Rec.
Param	Result	Units	Dil.	Amount	Result	Rec.	Limit
DRO	219	mg/Kg	1	250	<15.8	88	27.8 - 152.1

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

	LCSD			Spike	Matrix		Rec.		RPD
Param	Result	\mathbf{Units}	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
DRO	231	mg/Kg	1	250	<15.8	92	27.8 - 152.1	5	20

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

	LCS	LCSD	•		Spike	LCS	LCSD	Rec.
Surrogate	Result	Result	Units	Dil.	Amount	Rec.	Rec.	Limit
n-Triacontane	95.8	99.8	mg/Kg	1	100	96	100	38 - 130.4

Laboratory Control Spike (LCS-1)

QC Batch: 54122 Prep Batch: 46299 Date Analyzed: 2008-11-10 QC Preparation: 2008-11-10

Analyzed By: AG Prepared By: AG

	LCS			Spike	Matrix		Rec.
Param	Result	Units	Dil.	Amount	Result	Rec.	Limit
GRO	8.11	mg/Kg	1	10.0	< 0.171	81	70 - 130

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

,	LCSD			Spike	Matrix		${ m Rec.}$		RPD
Param	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
GRO	8.34	mg/Kg	1	10.0	< 0.171	83	70 - 130	3	20

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

Surrogate	$egin{array}{c} ext{LCS} \ ext{Result} \end{array}$	LCSD Result	Units	Dil.	Spike Amount	$\frac{\text{LCS}}{\text{Rec.}}$	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	0.865	0.921	mg/Kg	1	1.00	86	92	70 - 130
4-Bromofluorobenzene (4-BFB)	0.850	0.849	${ m mg/Kg}$	1	1.00	85	85	70 - 130

Laboratory Control Spike (LCS-1)

QC Batch: 54208 Prep Batch: 46323 Date Analyzed: 2008-11-12 QC Preparation: 2008-11-11

Analyzed By: AR Prepared By: AR

	LCS			Spike	Matrix		Rec.
Param	Result	Units	Dil.	${\bf Amount}$	Result	Rec.	\mathbf{Limit}
Chloride	99.1	mg/Kg	1	100	< 0.500	99	85 - 115

115-6403613

Work Order: 8110630 St. Mary/Tuesday Federal #1 Page Number: 31 of 42 Eddy County, NM

	LCSD			Spike	Matrix		Rec.		RPD
Param	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Chloride	101	mg/Kg	1	100	< 0.500	101	85 - 115	2	20

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

Laboratory Control Spike (LCS-1)

QC Batch:

54209

Date Analyzed:

2008-11-12

Analyzed By: AR

Prep Batch: 46324

QC Preparation: 2008-11-11

Prepared By: AR

	LCS			Spike	Matrix		Rec.
Param	Result	Units	Dil.	Amount	Result	Rec.	Limit
Chloride	102	mg/Kg	1	100	< 0.500	102	85 - 115

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

	LCSD			Spike	Matrix		Rec.		RPD
Param	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Chloride	100	${ m mg/Kg}$	1	100	< 0.500	100	85 - 115	1	20

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

Laboratory Control Spike (LCS-1)

QC Batch: Prep Batch: 46325

54210

Date Analyzed: QC Preparation:

2008-11-13 2008-11-11

Analyzed By: AR

Prepared By: AR

	LCS			Spike	Matrix		Rec.
Param	Result	Units	Dil.	Amount	Result	Rec.	Limit
Chloride	99.8	mg/Kg	1	100	< 0.500	100	85 - 115

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

	LCSD			Spike	Matrix		Rec.		RPD
Param	Result	\mathbf{Units}	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Chloride	101	mg/Kg	1	100	< 0.500	101	85 - 115 '	1	20

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

Laboratory Control Spike (LCS-1)

QC Batch: Prep Batch:

54211 46326 Date Analyzed:

2008-11-13

Analyzed By: AR

QC Preparation: 2008-11-11 Prepared By: AR

 $\overline{continued}$...

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Work Order: 8110630 St. Mary/Tuesday Federal #1 Page Number: 32 of 42 Eddy County, NM

control spikes continued ...

Param	LCS Result	Units	Dil.	$egin{array}{c} \mathbf{Spike} \\ \mathbf{Amount} \end{array}$	Matrix Result	Rec.	Rec. Limit
	LCS			Spike	Matrix		Rec.
Param	Result	${f Units}$	Dil.	Amount	Result	Rec.	\mathbf{Limit}
Chloride	98.9	mg/Kg	1	100	< 0.500	99	85 - 115

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

	LCSD			Spike	Matrix		${f Rec.}$		RPD
Param	Result	Units	Dil.	Amount	Result	Rec.	\mathbf{Limit}	RPD	Limit
Chloride	99.6	mg/Kg	1	100	< 0.500	100	85 - 115	1	20

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

Laboratory Control Spike (LCS-1)

QC Batch: 54212 Prep Batch: 46327 Date Analyzed: 2008-11-13 QC Preparation: 2008-11-11 Analyzed By: AR Prepared By: AR

	LCS			Spike	Matrix		Rec.
Param	Result	Units	Dil.	Amount	Result	Rec.	Limit
Chloride	98.9	mg/Kg	1	100	< 0.500	99 .	85 - 115

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

	LCSD			Spike	Matrix		Rec.		RPD
Param	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Chloride	100	mg/Kg	1	100	< 0.500	100	85 - 115	2	20

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

Laboratory Control Spike (LCS-1)

QC Batch: 54213 Prep Batch: 46328 Date Analyzed: 2008-11-13 QC Preparation: 2008-11-11 Analyzed By: AR Prepared By: AR

	LCS			Spike	Matrix		Rec.
Param	Result	Units	Dil.	Amount	Result	Rec.	Limit
Chloride	97.8	mg/Kg	1	100	< 0.500	98	85 - 115

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

	LCSD			Spike	Matrix		${ m Rec.}$		RPD
Param	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Chloride	100	mg/Kg	1	100	< 0.500	100	85 - 115	2	20

115-6403613

Work Order: 8110630 St. Mary/Tuesday Federal #1 Page Number: 33 of 42 Eddy County, NM

Matrix Spike (MS-1)

Spiked Sample: 178533

QC Batch:

54063 Prep Batch: 46243 Date Analyzed:

2008-11-07

QC Preparation: 2008-11-07 Analyzed By: LD

Prepared By: LD

	MS			Spike	Matrix		Rec.
Param	Result	Units	Dil.	Amount	Result	Rec.	Limit
DRO	244	mg/Kg	1	250	31.58	85	18 - 179.5

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

	MSD			Spike	Matrix		Rec.		RPD
Param	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
DRO	249	mg/Kg	1	250	31.58	87	18 - 179.5	2	20

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

	MS	MSD			Spike	MS	MSD	Rec.
Surrogate	Result	Result	$_{ m Units}$	Dil.	Amount	Rec.	Rec.	Limit
n-Triacontane	95.6	93.1	mg/Kg	1	100	96	93	34.1 - 158

Matrix Spike (MS-1)

Spiked Sample: 178532

QC Batch: Prep Batch: 46277

54089

Date Analyzed:

2008-11-08

Analyzed By: AG

QC Preparation: 2008-11-08 Prepared By: AG

	MS			Spike	Matrix		Rec.
Param	Result	Units	Dil.	Amount	Result	Rec.	Limit
Benzene	5.07	mg/Kg	5	5.00	0.1665	98	58.6 - 165.2
Toluene	6.46	mg/Kg	5	5.00	0.4335	120	64.2 - 153.8
Ethylbenzene	5.95	mg/Kg	5	5.00	0.5518	108	61.6 - 159.4
Xylene	19.0	mg/Kg	5	15.0	3.5197	103	64.4 - 155.3

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

	MSD			Spike	Matrix		Rec.		RPD
Param	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Benzene	5.01	mg/Kg	5	5.00	0.1665	97	58.6 - 165.2	1	20
Toluene	6.23	mg/Kg	5	5.00	0.4335	116	64.2 - 153.8	4	20
Ethylbenzene	5.84	mg/Kg	5	5.00	0.5518	106	61.6 - 159.4	2	20
Xylene	18.5	mg/Kg	5	15.0	3.5197	100	64.4 - 155.3	3	20

	MS	MSD			Spike	MS	MSD	Rec.
Surrogate	Result	\mathbf{Result}	Units	Dil.	Amount	Rec.	Rec.	Limit
Trifluorotoluene (TFT)	4.70	4.66	mg/Kg	5	5	94	93	76 - 127.9
4-Bromofluorobenzene (4-BFB)	4.79	4.78	mg/Kg	5	5	96	96	72 - 127.8

115-6403613

Work Order: 8110630 St. Mary/Tuesday Federal #1 Page Number: 34 of 42 Eddy County, NM

Matrix Spike (MS-1)

Spiked Sample: 178793

QC Batch:

54090

Date Analyzed:

2008-11-08

Analyzed By: AG

Prep Batch: 46277

QC Preparation:

2008-11-08

Prepared By: AG

	MS			Spike	Matrix		Rec.
Param	Result	Units	Dil.	Amount	Result	Rec.	Limit
GRO	13.2	mg/Kg	1	10.0	6	72	22.3 - 134.6

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

	MSD			$_{ m Spike}$	Matrix		${ m Rec.}$		RPD
Param	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
GRO	13.2	mg/Kg	1	10.0	6	72	22.3 - 134.6	0	20

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

		MS	MSD			$_{ m Spike}$	MS	MSD	${ m Rec.}$
Surrogate		Result	Result	Units	Dil.	Amount	Rec.	Rec.	Limit
Trifluorotoluene (TFT)	5	1.05	1.22	mg/Kg	1	1	105	122	68.4 - 113.1
4-Bromofluorobenzene (4-BFB)		0.878	0.819	mg/Kg	1	1	88	82	66.7 - 134.3

Matrix Spike (MS-1)

Spiked Sample: 178793

QC Batch:

54109

Date Analyzed:

2008-11-10

Analyzed By: LD

Prep Batch: 46288

QC Preparation:

2008-11-10

Prepared By: LD

		MS			Spike	Matrix		Rec.
Param		Result	\mathbf{Units}	Dil.	Amount	Result	Rec.	Limit
DRO	6	288	mg/Kg	1	250	249.44	15	18 - 179.5

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

		MSD			Spike	Matrix		Rec.		RPD
Param		Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
DRO	7	276	mg/Kg	1	250	249.44	11	18 - 179.5	4	20

	MS	MSD			Spike	MS	MSD	Rec.
Surrogate	Result	Result	\mathbf{Units}	Dil.	Amount	Rec.	Rec.	Limit
n-Triacontane	132	119	mg/Kg	ĺ	100	132	119	34.1 - 158

⁵High surrogate recovery due to peak interference.

⁶Matrix spike recovery out of control limits due to peak interference. Use LCS/LCSD to demonstrate analysis is under control.

⁷Matrix spike recovery out of control limits due to peak interference. Use LCS/LCSD to demonstrate analysis is under control.

115-6403613

Work Order: 8110630 St. Mary/Tuesday Federal #1 Page Number: 35 of 42 Eddy County, NM

Matrix Spike (MS-1)

Spiked Sample: 178598

QC Batch: Prep Batch: 46299

54122

Date Analyzed:

2008-11-10

QC Preparation: 2008-11-10 Analyzed By: AG

Prepared By: AG

MS Spike Matrix Rec. Param Result Units Dil. Amount Result Rec. Limit GRO 9.42 4.97 44 22.3 - 134.6 mg/Kg 10.0 1

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

	MSD			Spike	Matrix		Rec.		RPD
Param	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
GRO	9.48	mg/Kg	1	10.0	4.97	45	22.3 - 134.6	1	20

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

	MS	MSD			Spike	MS	MSD	Rec.
Surrogate	Result	Result	Units	Dil.	Amount	Rec.	Rec.	Limit
Trifluorotoluene (TFT)	0.737	0.741	mg/Kg	1	1	74	74	68.4 - 113.1
4-Bromofluorobenzene (4-BFB)	0.832	0.828	mg/Kg	1	1	83	83	66.7 - 134.3

Matrix Spike (MS-1)

Spiked Sample: 178547

QC Batch: Prep Batch:

54208 46323 Date Analyzed:

2008-11-12

Analyzed By: AR

QC Preparation: 2008-11-11 Prepared By: AR

	MS			Spike	Matrix		Rec.
Param	Result	Units	Dil.	Amount	Result	Rec.	Limit
Chloride	12600	mg/Kg	50	5000	7590	100	85 - 115

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

	MSD			Spike	Matrix		Rec.		RPD
Param	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Chloride	12600	mg/Kg	50	5000	7590	100	85 - 115	0	20

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

Matrix Spike (MS-1)

Spiked Sample: 178563

QC Batch:

54209

Date Analyzed:

2008-11-12

Analyzed By: AR

Prep Batch: 46324

QC Preparation:

2008-11-11

Prepared By: AR

MS Spike Matrix Rec. Param Result Units Dil. Amount Result Rec. Limit Chloride 17700 mg/Kg 50 5000 12800 98 85 - 115

115-6403613

Work Order: 8110630 St. Mary/Tuesday Federal #1 Page Number: 36 of 42 Eddy County, NM

	MSD			Spike	Matrix		Rec.		RPD
Param	Result	Units	Dil.	Amount	Result	Rec.	\mathbf{Limit}	RPD	Limit
Chloride	18000	mg/Kg	50	5000	12800	104	85 - 115	2	20

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

Matrix Spike (MS-1)

Spiked Sample: 178576

QC Batch:

54210

Date Analyzed:

2008-11-13

Analyzed By: AR

Prepared By: AR

Prep Batch: 46325

QC Preparation: 2008-11-11

MS Spike Matrix Rec. Limit Param Result Units Dil. Amount Result Rec. Chloride 11400 mg/Kg 50 5000 6780 92 85 - 115

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

	MSD			Spike	Matrix		${f Rec.}$		RPD
Param	Result	Units	Dil.	Amount	Result	Rec.	\mathbf{Limit}	RPD	Limit
Chloride	11900	mg/Kg	50	5000	6780	102	85 - 115	4	20

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

Matrix Spike (MS-1)

Spiked Sample: 178592

QC Batch:

54211 Prep Batch: 46326 Date Analyzed: QC Preparation: 2008-11-13

2008-11-11

Analyzed By: AR

Prepared By:

	MS			Spike	Matrix		Rec.
Param	Result	\mathbf{Units}	Dil.	Amount	Result	Rec.	Limit
Chloride	5910	mg/Kg	50	5000	914	100	85 - 115

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

	MSD			Spike	Matrix		${ m Rec.}$		RPD
Param	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Chloride	5990	mg/Kg	50	5000	914	102	85 - 115	1	20

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

Matrix Spike (MS-1)

Spiked Sample: 178606

QC Batch:

54212

Date Analyzed:

2008-11-13

Analyzed By: AR AR

Prep Batch:

46327

2008-11-11

Prepared By:

QC Preparation:

 $continued \dots$

115-6403613

Work Order: 8110630 St. Mary/Tuesday Federal #1 Page Number: 37 of 42 Eddy County, NM

matrix spikes continued . . .

	MS			Spike	Matrix		Rec.
Param	Result	Units	Dil.	Amount	Result	Rec.	Limit
	MS			Spike	Matrix		Rec.
Param	Result	\mathbf{Units}	Dil.	Amount	Result	Rec.	Limit
Chloride	4930	mg/Kg	50	5000	<25.0	99	85 - 115

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

	MSD	•		Spike	Matrix		Rec.		RPD
Param	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Chloride	4980	mg/Kg	50	5000	<25.0	100	85 - 115	1	20

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

Matrix Spike (MS-1)

Spiked Sample: 178793

QC Batch:

54213

Date Analyzed:

2008-11-13

Analyzed By: AR Prepared By: AR

Prep Batch: 46328

QC Preparation: 2008-11-11

	MS			Spike	Matrix		Rec.
Param	Result	Units	Dil.	Amount	Result	Rec.	Limit
Chloride	5010	mg/Kg	50	5000	65.2	99	85 - 115

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

	MSD			Spike	Matrix		Rec.		RPD
Param	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Chloride	5100	mg/Kg	50	5000	65.2	101	85 - 115	$\overline{2}$	20

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

Standard (CCV-1)

QC Batch: 54063

Date Analyzed: 2008-11-07

Analyzed By: LD

	T)	T T 4.	CCVs True	CCVs Found	CCVs Percent	Percent Recovery	Date
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed
DRO		mg/Kg	250	240	96	85 - 115	2008-11-07

Standard (CCV-2)

QC Batch: 54063

Date Analyzed: 2008-11-07

Analyzed By: LD

115-6403613

Work Order: 8110630 St. Mary/Tuesday Federal #1 Page Number: 38 of 42 Eddy County, NM

			CCVs	CCVs	CCVs	Percent	.
			${f True}$	\mathbf{Found}	$\operatorname{Percent}$	Recovery	${f Date}$
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed
DRO		mg/Kg	250	235	94	85 - 115	2008-11-07

Standard (ICV-1)

QC Batch: 54089

Date Analyzed: 2008-11-08

Analyzed By: AG

			ICVs True	$egin{array}{l} ext{ICVs} \ ext{Found} \end{array}$	$\begin{array}{c} \text{ICVs} \\ \text{Percent} \end{array}$	Percent Recovery	Date
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Benzene		mg/Kg	0.100	0.0927	93	85 - 115	2008-11-08
Toluene		$_{ m mg/Kg}$	0.100	0.0935	94	85 - 115	2008-11-08
Ethylbenzene		mg/Kg	0.100	0.0930	93	85 - 115	2008-11-08
Xylene		mg/Kg	0.300	0.268	89	85 - 115	2008-11-08

Standard (CCV-1)

QC Batch: 54089

Date Analyzed: 2008-11-08

Analyzed By: AG

			CCVs	CCVs	CCVs	Percent	
			True	Found	Percent	Recovery	Date
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	$\mathbf{Analyzed}$
Benzene		mg/Kg	0.100	0.0921	92	85 - 115	2008-11-08
Toluene		${ m mg/Kg}$	0.100	0.0916	92	85 - 115	2008-11-08
Ethylbenzene		m mg/Kg	0.100	0.0872	87	85 - 115	2008-11-08
Xylene		mg/Kg	0.300	0.256	85	85 - 115	2008-11-08

Standard (ICV-1)

QC Batch: 54090

Date Analyzed: 2008-11-08

Analyzed By: AG

			ICVs	ICVs	ICVs	Percent	
			True	Found	Percent	Recovery	Date
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed
GRO		mg/Kg	1.00	0.926	93	85 - 115	2008-11-08

Standard (CCV-1)

QC Batch: 54090

Date Analyzed: 2008-11-08

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			CCVs True	CCVs Found	${ m CCVs} \ { m Percent}$	Percent Recovery	Date
Param	\mathbf{Flag}	\mathbf{Units}	Conc.	Conc.	Recovery	Limits	Analyzed
GRO		mg/Kg	1.00	0.957	96	85 - 115	2008-11-08

Standard (ICV-1)

QC Batch: 54109

Date Analyzed: 2008-11-10

Analyzed By: LD

Param	Flag	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent	Percent Recovery Limits	Date
Laram	riag	Units	Conc.	Conc.	Recovery	Linnes	Analyzed
DRO		mg/Kg	250	216	86	85 - 115	2008-11-10

Standard (CCV-1)

QC Batch: 54109

Date Analyzed: 2008-11-10

Analyzed By: LD

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date
i arann	riag	Omes	Conc.	Conc.	necovery	Limits	Analyzed
DRO		mg/Kg	250	228	91	85 - 115	2008-11-10

Standard (ICV-1)

QC Batch: 54122

Date Analyzed: 2008-11-10

Analyzed By: AG

			ICVs	ICVs	ICVs	Percent	
			True	Found	Percent	Recovery	Date
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed
GRO		mg/Kg	1.00	1.10	110	85 - 115	2008-11-10

Standard (CCV-1)

QC Batch: 54122

Date Analyzed: 2008-11-10

Analyzed By: AG

			CCVs	CCVs	CCVs	Percent	
			True	Found	Percent	Recovery	Date
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed
GRO		mg/Kg	1.00	1.01	101	85 - 115	2008-11-10

Standard (ICV-1)

QC Batch: 54208

Date Analyzed: 2008-11-12

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Work Order: 8110630 St. Mary/Tuesday Federal #1 Page Number: 40 of 42 Eddy County, NM

						_ <u>i</u> _	
			ICVs True	ICVs Found	ICVs Percent	Percent Recovery	Date
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Chloride	1145	mg/Kg	100	101	101	85 - 115	2008-11-12
Omorrae		***6/ **8	200		,	00 110	2000 11 12
Standard (CCV-1)						
QC Batch:	54208		Date Ana	lyzed: 2008-11	L-12	Anal	yzed By: AR
			CCVs	CCVs	CCVs	Percent	
			True	Found	Percent	Recovery	Date
Param	\mathbf{Flag}	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Chloride		mg/Kg	100	98.7	99	85 - 115	2008-11-12
Standard (ICV-1)						
QC Batch:	54209		Date Ana	lyzed: 2008-11	l-1 2	Anal	yzed By: AR
			ICVs	ICVs	ICVs	Percent	•
			True	Found	Percent	Recovery	Date
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Chloride		mg/Kg	100	99.8	100	85 - 115	2008-11-12
Standard ((CCV-1)						
QC Batch:	54209		Date Ana	lyzed: 2008-1	1-12	Anal	yzed By: AR
			CCVs	CCVs	CCVs	Percent	
			True	Found	Percent	Recovery	Date
Param	Flag	\mathbf{Units}	Conc.	Conc.	Recovery	Limits	Analyzed
Chloride		mg/Kg	100	100	100	85 - 115	2008-11-12
Standard (ICV-1)						
QC Batch:	54210		Date Ana	lyzed: 2008-1	1-13	Ana	lyzed By: AR
			ICVs	ICVs	ICVs	Percent	
			True	Found	Percent	Recovery	Date
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed
~ 1 1	,	777	100	400	100		

Standard (CCV-1)

 $\overline{\text{Chloride}}$

QC Batch: 54210

 $Date\ Analyzed:\ \ 2008-11-13$

100

100

mg/Kg

100

85 - 115

2008-11-13

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Work Order: 8110630 St. Mary/Tuesday Federal #1 Page Number: 41 of 42 Eddy County, NM

			CCVs True	CCVs Found	CCVs Percent	Percent Recovery	Date
Param	Flag	\mathbf{Units}	Conc.	Conc.	Recovery	Limits	Analyzed
Chloride		${ m mg/Kg}$	100	99.9	100	85 - 115	2008-11-13

Standard (ICV-1)

QC Batch: 54211

Date Analyzed: 2008-11-13

Analyzed By: AR

			ICVs True	ICVs Found	ICVs Percent	Percent Recovery	Date
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Chloride		${ m mg/Kg}$	100	99.0	99	85 - 115	2008-11-13

Standard (CCV-1)

QC Batch: 54211

Date Analyzed: 2008-11-13

Analyzed By: AR

			CCVs	CCVs	CCVs	Percent	
			True	Found	Percent	Recovery	Date
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Chloride		mg/Kg	100	101	101	85 - 115	2008-11-13

Standard (ICV-1)

QC Batch: 54212

Date Analyzed: 2008-11-13

Analyzed By: AR

			ICVs	ICVs	ICVs	Percent	ъ.
-		•• •	$\overline{\text{True}}$	Found	Percent	Recovery	Date
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Chloride	· · · · · · · · · · · · · · · · · · ·	mg/Kg	100	100	100	85 - 115	2008-11-13

Standard (CCV-1)

QC Batch: 54212

Date Analyzed: 2008-11-13

Analyzed By: AR

			CCVs	CCVs	\mathbf{CCVs}	Percent	
			True	Found	Percent	Recovery	Date
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Chloride		mg/Kg	100	99.6	100	85 - 115	2008-11-13

Standard (ICV-1)

QC Batch: 54213

Date Analyzed: 2008-11-13

Report Date: November 14, 2008 115-6403613

Work Order: 8110630 St. Mary/Tuesday Federal #1 Page Number: 42 of 42 Eddy County, NM

			ICVs True	ICVs Found	ICVs Percent	Percent Recovery	Date
Param	Flag	${f Units}$	Conc.	Conc.	Recovery	Limits	Analyzed
Chloride		mg/Kg	100	99.6	100	85 - 115	2008-11-13

Standard (CCV-1)

QC Batch: 54213

Date Analyzed: 2008-11-13

			CCVs True	CCVs Found	$rac{ ext{CCVs}}{ ext{Percent}}$	Percent Recovery	Date
Param	Flag	\mathbf{Units}	Conc .	Conc.	Recovery	Limits	$\mathbf{Analyzed}$
Chloride		mg/Kg	100	100	100	85 - 115	2008-11-13

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559 5 X BH-2 2'	-3'	1			χ											X	4		\perp	$oldsymbol{\perp}$		1
560 S X 13H -2 4'	-5'	1			X		L									_\X						
561 + 5 XBH-2, 6	-7'.	1		_	X											X					 	L
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CONTACT: PHONE: SAMPLE CONDITION WHEN RECEIVED: REMARKS:	DATE:	_ TIM	<u> </u>					=											Y	es	No	<u>, </u>

811063C

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				-	_														(6	P Circle				QUE Meth		Vo.)				
							Midland, Tex	Spring St. as 79705								5 (Ext. to C35)	S. B.	d Vr Pd Hg Se									TDS	,		
CLIENT NAM St Mary	La	ndL	Explo	retio	m		SITE MANAGE	A: Ille Tauwez	C	NETS	F					3 TX1005	Ba C	As Ba Cd			260/624	270/625					ns. pH.			
PROJECT N 115-64	0.:			PRC).IF	CT 4/2	NAME: 1/Tursday Fed	leral #1		(N/X	Γ				7	MOD	ls Ag A	ls Ag A	les	Volatile	8240/82	i. Vol. 8	809/	g	96	(Air)	rtos, is/Catio			
LAB I.D. NUMBER	562 W3008 5 X BH-2 8'-9' 1 X													NONE	GTEX 8027B	CPH 8015	PAH 8270 RCRA Meta	TCLP Metals Ag /	TCLP Volatiles	TCLP Semi	GC.MS Vol. 8240/8260/624	GC,MS Semi. Vol. 8270/625	PCB's 8080	Chloride	Gamma Sp	Alpha Beta (Air)	PLM (Asbestos) Major Anions/Cations, pH,			
178502	1430	WU8	PROJECT NAME: S+Murg / Tursday Federal #1																					X						
563				5		X	BH -2 1	0'-11'					X											Х				\coprod		
564				5	ŀ	1	BH-2 1.	5'-16'		1			Х																	
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570				5		1	BH -2 6	0'-61'					Х																	
	D) ((6)	· ·					Date: ///				L				J,												le: /			
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RECEIVING LAS ADDRESS: CITY: 1,d/a	ORAT	ORY:	STATE:	raci	77		ZIP:	RECEIVED BY: (Signature)								_		I K	(c)	140	ur	:2					RUSH Authoi	Charç rized:	jes	
CONTACT: SAMPLE COND	TION	3	2	copie	PH(REMARKS:	DATE:		TIME:		Proje	ect N	Manac	er re		Pin	k GO	by -	- Ac	cour	tina	rec	elve	GO.	ld c	Ye.	3	No)

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<i>7</i>	<u> </u>				10				<u> </u>		<u> </u>					<u> </u>	<u> </u>						(C						EST thod)			
							1 N	910 N ⁄Iidlar	N. Bi	g Spring exas 797	St. '05	:								6 (Ext. to C35)	d Cr Pb Hg Se	d Vr Pd Hg Se										LDS		
CLIENT NAM	IE:		1) 15	r 1	<i></i>	/ a		SITE	ANA	GER:			BS					VΕ			Ba Cd	Ba Cd			7624	0/625						E		
PROJECT NO	1 <u>29</u> 0.: 640	30	613	PRO.	JECT Mu	NAM	ME:	Tise.	sd4	re 140 9 Fede	16162 1664 # 1)	CONTAINE	(<u>R</u>		MEI	HOD			8015 MOD: 7 TX1005	s Ag As Ba	A As	es Admilian	Volgules	8240/8260	i. Vol. 827	809		o;	Air)	tos)	s/Cations		
LAB I.D. NUMBER	11 11/3/08 5 X BH-3 0-1' 1)													NONE		BIEX 8021B)	TPH 8015	RCRA Metals Ag	TCLP Metals Ag As	TCLP Volatiles	ICLF Serii Volaules	GC.MS Vol.	GC.MS Sem	PCB's 8080/608	Pest. 808/60	Gamma Spe	Alpha Beta (Air)	PLM (Asbes	Major Anions/Cations, pH, TDS					
178571	(432) 682-4559 • Fax (432) 682-3946 IAME: INVITAGE OF THE SITE MANAGER: THE TIME HAVE TO COUNTY, NM SAMPLE IDENTIFICATION SHAME: TOO:: PROJECT NAME: SITE MANAGER: The Tavarez PROJECT NAME: SHAME: TIME HAVE TO TUP SOLAY Federal # 1 SAMPLE IDENTIFICATION SAMPLE IDENTIFICATION SAMPLE 10 S X BH - 3 D - 1 SAMPLE 10 S X BH - 3 S - 3 SAMPLE 10 S X BH - 3 S - 9 SAMPLE 10 S X BH - 3															У				X)	(
572	1	SITE MANAGER: TKC Tavare Z PRESER MET)								
573			1910 N. Big Spring St. Midland, Texas 79705 (432) 682-4559 • Fax (432) 682-3946 J Exploration																								_)	XL.						
574				Midland, Texas 79705 (432) 682-4559 • Fax (432) 682-3946 Exploration The Tavarez PRESERVAT METHOD PROJECT NAME: St. May Federal # 1 St. Method St. May The sday Federal # 1 St. Method St. May St. Method St. May St. Method St																									X		Ц			
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RELINQUISHED	BY: (Sig	natur	e) //			Date Tîm				RECEIVED	DBY: (Signature)) ;			Dat Tim					- [AMP FED	E SI	IIPPE	D BY	: (Circ BU	le)				AIRE	BILL#	=		
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CITY: MI	1440	1	STATE:	-7/	PHONE	E:	_ ZIP:			DATE:			TIN	Æ:							7	-	•	"	y. 7 6	_					1	iorized Yes		No
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An	nalysis Request of Chain of Custody Record														L								GE:		_5		OF	:	8					
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							1 N	910 N ⁄Iidlan	. Big S d, Texa	Fax (432)	St.									5 (Ext. to C35)	Cd Cr Pb Hg Se	d Vr Pd Hg Se										SQ		
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<i>S+ M₄/</i> PROJECT N	<i></i>	inu	d FX/II	PRO	OJE OJE	CT	NAME:				Tuvanz		- 1	ŀ		IVIE	ГНО	-	-		2	2		selles	/8260	. 827	1				.	tons		
115-6	40	36	/3	5.	71	14,	7/7	vesda	7 Fro	legy/ 1	#/		8	2					A	WO S	ls Ag	ils Ag	les	Volat	8240	. Yo	808	8	į,	₹ E	itos)	s/Ca		
LAB I.D. NUMBER	DA	ATE	TIME	MATRIX	COMP.	GHAB	Eo	Wy C	OUNTY SAMPLE	, NP1 : IDENTIFI	ICATION		NUMBER OF	FILTERED (TC.	HNOS	ב ב ב ב ב ב ב ב ב ב ב ב ב ב ב ב ב ב ב	NONE	ATEX BOZIE	CTPH 8015 MODS.	PAH 8270 RCRA Metals Ag /	TCLP Metals Ag	TCLP Volatiles	ICLP Semi volatiles	GC.MS Vol.	GC.MS Semi. Vol. 8270/625	PCB's 8080/608	Pest. 808/6	Gamma Spec.	Aipha Beta (Air)	PLM (Asbes	Major Anions/Cations, pH, TDS		
	11/3,	b8		5		X	BH.	- 3	3.5	<u>5' - 3</u>	36'		1			,	X																	
582				5			BH	-3	40		1				(X							
583				5	,	\langle	BH	- 3	5	0'-5	511		(
584				5		Mary / Two solvy Feedery / #/ 0 2 1 1														X									X					T
585				5		X	BH-3 35'-36' BH-3 40'-41' BH-3 50'-51' BH-4 0-1' BH-4 2'-3' 1 X																					\\ \(\);	X					floor
586				5		X	BH	- 4	4	1' - 5	5'		1			Ì	X												X					
587				5		X	BH	-4	6		7'		1				X											`	X					
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589				5	,	X	1314	-4)(5'-11	6'		ı			Ì												_				_		
590)	V	<u> </u>	5		K	BH	- 4	, 2	0'-2	211		الم														Ш	`	XL	L	Ш		\coprod	
RELINQUISHED			///-	i I		\perp	Date: Time:	11/6/ 15/30		RECEIVED	∃y; (Signature)	- 1 lell	4,		Da: Tin		<u> </u>	15:	37	2	SAME	M J	TAY	int a	Initia	3/1					ate: _ me: _			
RELINQUISHED	BY: (S	Signatu	(re)		_		Date: Time:			RECEIVED B	3Y: (Signature)				Da Tin	te: _ ne: _					FEC				Вι	s				AIRE OTH	31LL #	:		
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RECEIVING LAE ADDRESS:	NG LABORATORY: TREE RECEIVED BY: (Signature)																	7	م	7		·•					RUS	H Cha	irges					
CONTACT:	TIME:TIME:TIME:															-	الا		10	00 1	<i>(</i>	<i>,</i>					orized Yes		lo					
SAMPLE COND	ONDITION WHEN RECEIVED: REMARKS: 3.7 Please fill out all copies - Laboratory retains Yellow copy - Return Orginal copy to Tetra Tech - Project Manage																						مجمعه											
	Pi	0256	till out all	copi	es	- L	aporator	ry retain	s Yellow	copy - Re	eturn Orginal	copy to Tet	ra Te	ech	. P	rojec	zt Ma	anage	r re	tains	: Pini	(col	эу -	Ac	cou	านเท	y nec	;0iV(es G	old (юру	•		

8110650

Analysis Reque	st of Chain of Custody	Re	ecc	ord							PAG	E:		2	OF:	: 8	3	
									(Circle			REQ)			
	1910 N. Big Spring St. Midland, Texas 79705 (432) 682-4559 • Fax (432) 682-3946					5 (Ext. to C35)		Vr Pd Hg							96	3		
CLIENT NAME:	SITE MANAGER:	RS.		SERVATIV	VE	TX1005	Ba Cd	Ba Cd		/624	0/625				E P	rd.		
St Musy Land & Explosation PROJECT NO.: PROJECT N 115-640 3613 St Mary	TKC Tavarez AME: Tvesday Federal # / Eddy County, NM	CONTAINE		IETHOD 		NOD?	As	Ag As	Volatites	8240/8260	ii. Vol. 827	98		'Ar)	tos)	Sycanons		
LAB I.D. DATE TIME WAITHIX COMP.	Eddy County, NPI SAMPLE IDENTIFICATION	NUMBER OF CONTAINERS FILTERED (Y/N)	HCL HNO3	ICE	ATFX 80213	4PH 8015	RCRA Metals Ag	TCLP Metals Ag	TCLP Semi Volatiles	GC.MS Vol. 8240/8260/624	GC.MS Semi. Vol. 8270/625	Pest. 808/608	Chlorida	Alpha Beta (Air)	PLM (Asbestos)	wajor Anon		
178591 11/368 S X 1	3H-4 25'-26'			X														
592 5 X/	3H-4 30'-31'	j		χ									X					
593 5 X	BH-4 35'-36'	ĺ		X														
594 SXI	34 - 4 40' - 41'			X									X					
595 V S X	34-4 50'-51'			X														
596 11/4/08 5 X	34-5 0-1'	Ш		X		X							X					
597 1 5 X/	34-5 2'-3'			χ									X					
598 S X/	3H -5 4'-5'			X									X					
599 SX	3H -5 6'-7'			X									X					
600 4 3 1 1/2	3H - 5, 8'-9'			Y									X					
(hrtt)	ine: 15.26 RECEIVED BY: (Signature)		Date: Time:		:36	90	la	Ta	(Print &	(Firtial)	PPT				ate: me:			
	rate: RECEIVED BY: (Signy fure)		Date: Time:				FEDE	X	PED BY:	BUS	5				31LL #: ER:			
, , , ,	ate: RECEIVED BY: (Signature)		Date: Time:					TECH (CONTAC	T PER						its by:		
RECEIVING LABORATORY: 7/a((ADDRESS: CITY: 4/a (OU) STATE: 7/	RECEIVED BY: (Signature) ZIP:						7	The	-740	usc	2					H Chan prized:		
SAMPLE CONDITION WHEN RECEIVED:	DATE: DATE:	TIME:				1			***************************************						<u> М</u>	es	No)

An	al	VS	is F	le:	a	u	est of Cha	ain of Cust	odv	R	e	CC	or	d									PAC					OF;	8		
					- 1	taritanis			y											(Ci				REC			lo.)				
							Midland, Tex	Spring St.									5 (Ext. to C36)	d Cr Pb Hg Se	Vr Pd Hg									DS			
SHMUY PROJECT N	NE:	nd)	EFP	lora	f n	iu	SITE MANAGER	r: Kc Tavasez	C.	AINERS				RVATI	VE		N X	As Ba Cd	As Ba Co	se		3260/624	8270/625					ons, pH, 1		:	
PROJECT N 115-640				St	OJE <i>F J</i>	ECT 100	NAME: Y/Tuesda, Fed	lesal #1	1	200	ξĺ					ام	MOD	ls Ag ,	ls Ag	Volatile		8240/8	ıi. Vol.	808		ပ္ထ	(Air)	is/Cati			
LAB I.D. NUMBER		ITE	TIME	IJ	COMP.		Eddy County Sampli	/ NM E IDENTIFICATION		NUMBER OF CONTAINERS	FILTERED (Y/N)	HNO3	<u>GE</u>	NONE		BTEX 8021B>	PAH 8270	RCRA Metals Ag /	TCLP Meta	TCLP Volati	RCI	GC,MS Vol.	GC.MS Sen	PCB's 8080/608 Pest, 808/608	Chloride	Gamma Spo	Alpha Beta (Air)	Major Anions/Cations, pH, TDS			
178601	11/4	108		5		X	<u>.</u>	0'-11'					X												X						
602				5		X		5'-16'		4			X					L													
603				5		X		0'-21'					X												X						
604				5		X	BH-5 2	5'-26')			X																		
605	V	′		5		X	BH - 5 3	60'-31'		1			X												X						
606	11/3	3/08		5		X	Back ground	0 - 1'		1			X												X						
607				5		X		5'-6'					X												X						
008				5		χ		10' -11'		1			X												X						
609				5		X		15'-16'					X												X						
610	7			5		χ	Back Sound	20'-21'					17												X						
RELINQUISHED		_	41	1	7	5	Date: 1/8/08 Time: 1530	RECEIVED BY: (8ignature)	· Del	12		Date Time	: <u>.</u>	13	: 5 : 3	8	S	MA	ED E	Y; (Pri	pt & I	nitial) //	17	,			Dati Tim				
RELINQUISHED	BY: (S	ignatur	*)//				Date:	RECEIVED BY: (Signature)				Date Time					_ 8	AMP FED		IPPEL	BY:	(Circi					AIRBII	-			
RELINQUISHED	BY: (S	ignatur	тө)				Date:	RECEIVED BY: (Signature)				Date	»:							IVER		-UP	s				THE	R: Results	- bug		
RECEIVING LAB	ORAT	ORY:	71	ule	_		Time:	RECEIVED BY: (Signature)				Time	3:				┧,										L				
ADDRESS:	land		STATE:	<i>T,</i>	PI	HONE	ZIP:	DATE:		TIM	E: _						-		IX	e	Tu	W	2					RUSH (Authori Yes	zea:	es No	D
SAMPLE COND		3.	2				REMARKS:																		واعادانا						
	Pi	ease 1	fill out all	copi	ies	- L	aboratory retains Yellow	copy - Return Orginal c	opy to Tetra	Te	ch -	Pro	oject	Mar	nage	reta	ins	Pink	COL	у -	Acc	oun	ting	rece	ives	Go	d cc	ъру.			

An	alys	is F	łе	q	ue	est of Cha	ain of Custo	ody l	R	ec	0	rd					******			NAI		GE: S RE	:OIII	8 EST		OF:	8	?	
		·							_					_	, , , , , , , , , , , , , , , , , , , 		—	(i	Circl				-		No.)				_
			and the second second			Midland, Tex	Spring St.)5 (Ext. to C35)	Cd Cr Pb Hg Se	Cd Vr Pd Hg Se									90			
St Mary	NE: Land	LEXP	lusa	ti	(pr	SITE MANAGE	R: IKe Tevarz	NEBS		Р		ERVA	ATIVE DD		TX1005	s Ba C	s Ba C		<i>"</i>	260/624	270/625					100			
15-64	0.: <i>10 361</i> 3	3	PRO	OJE <i>F</i>	CT 1 14/7	NAME: 1/Tuesday Fe	H: The Tevarez Ideral # 1 NA FIRENTIFICATION	F CONTA	Į Ž					6	S MOD	als Ag A	als Ag A	iles	Volatile	8240/8	ni. Vol. 8	9/608	2	Š.	(Air)	stos)			
LAB I.D. NUMBER	DATE	TIME	MATRIX	COMP.	GRAB	Eddy County / SAMPL	NM E IDENTIFICATION	NUMBER OF CONTAINERS	FILTERED (Y/N)	HCL	HNO3	핃	NONE	BTEX 8021	TX100 TX100	RCRA Met	TCLP Met	TCLP Votat	TCLP Semi Volatiles	GC.MS Vol. 8240/8260/624	GC.MS Semi. Vol. 8270/625	PCB's 8080/608	Chlorida -	Gamma Spec.	Alpha Beta	PLM (Asbestos)			
178611	11/3108		3		X	Back sound	30'-31'	ı				X)						
612	11/3/08		5		Zļ,	Back sround Back sround	40'-41'	(<u> </u>	racklet					
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		-	\sqcup	4	_				\bot			_	_	_		_			_	$oldsymbol{\downarrow}$				_		_	1	$\bot \bot$	_
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				_	_				_			_	_	\bot		1	\sqcup		_	igspace			1	_		_	1	4	_
RELINQUISHED	BY: (Signatur	re) ///				Date: N/6/00	RECEIVED By (Signature)		_		ate:		ZE	بإ		SAMP	LED	BY: (F	rint &	Initia					Da	ite:			<u>_</u>
RELINQUISHED	BY: (Signatur	1	Z.			Time:	RECEIVED BY: (Signature)	afell		D	ime: late: ime:) F	12	- (1)	SAMP F <u>ED</u>	LE SI	HIPPE	ED BY	(Circ	le) \$	-				I L L #:			
RECEIVING LAB		•	Trac	e		Date:	RECEIVED BY: (Signature) RECEIVED BY: (Signature)				ate: Ime:					TETR	TEC	H CC	RED)	T PE	RSON					Resul			
ADDRESS:		STATE:		Z PH	ONE:	ZIP:	DATE:	7	IME:								\mathcal{I}	ke	- 7	lev	a/i	2				RUSH Autho Ye		rges : No	0
SAMPLE COND	TION WHEN I					REMARKS:																							

Report Date: March 31, 2009 Work Order: 9031723 Page Number: 1 of 1 115-6403613 St. Mary/Tuesday Federal #1 Eddy County, NM

Summary Report

Ike Tavarez

Tetra Tech

1910 N. Big Spring Street Midland, TX 79705

Project Location: Eddy County, NM

Project Name: St. Mary/Tuesday Federal #1

Project Number: 115-6403613

Work Order: 9031723

Report Date: March 31, 2009

Date Time Date Sample Description Taken Taken Received Matrix 190477 TMW-1 water 2009-03-16 15:15 2009-03-17

Sample: 190477 - TMW-1

Param	Flag	Result	Units	m RL
Hydroxide Alkalinity		< 1.00	mg/L as CaCo3	1.00
Carbonate Alkalinity		< 1.00	mg/L as CaCo3	1.00
Bicarbonate Alkalinity		84.0	mg/L as CaCo3	4.00
Total Alkalinity		84.0	mg/L as $CaCo3$	4.00
Dissolved Calcium		520	mg/L	1.00
Chloride		280	m mg/L	0.500
Hardness (by ICP)		1780	mg eq CaCO3/L	0.00
Dissolved Potassium		$\boldsymbol{9.57}$	m mg/L	1.00
Dissolved Magnesium		116	mg/L	1.00
Dissolved Sodium	•	147	m mg/L	1.00
pН		7.78	s.u.	0.00
Sulfate		1800	${ m mg/L}$	0.500
Total Dissolved Solids		2530	m mg/L	10.0



6701 Aberdeen Avenue, Suite 9 200 East Sunset Road, Suite E 5002 Basin Street, Suite A1 6015 Harris Parkway, Suite 110 Ft. Worth, Texas 76132

Lubbock, Texas 79424 El Paso, Texas 79922 Midiand, Texas 79703

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817 • 201 • 5260

E-Mail lab@traceanalysis.com

Certifications

WBENC: 237019

HUB:

1752439743100-86536

DBE: VN 20657

NCTRCA WFWB38444Y0909

NELAP Certifications

T104704219-08-TX Lubbock:

LELAP-02003

Kansas E-10317

El Paso: T104704221-08-TX

LELAP-02002

Midland: T104704392-08-TX

Analytical and Quality Control Report

Ike Tavarez Tetra Tech 1910 N. Big Spring Street Midland, TX, 79705

Report Date: March 31, 2009

Work Order:

9031723

Project Location:

Eddy County, NM

Project Name:

St. Mary/Tuesday Federal #1

Project Number:

115-6403613

Enclosed are the Analytical Report and Quality Control Report for the following sample(s) submitted to TraceAnalysis, Inc.

			Date	Time	Date
Sample	Description	Matrix	Taken	Taken	Received
190477	TMW-1	water	2009-03-16	15:15	2009-03-17

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 17 pages and shall not be reproduced except in its entirety, without written approval of TraceAnalysis, Inc.

Michael april

Dr. Blair Leftwich, Director

Standard Flags

 $\, B \,$ - $\,$ The sample contains less than ten times the concentration found in the method blank.

Case Narrative

Samples for project St. Mary/Tuesday Federal #1 were received by TraceAnalysis, Inc. on 2009-03-17 and assigned to work order 9031723. Samples for work order 9031723 were received intact at a temperature of 3.7 deg. C.

Samples were analyzed for the following tests using their respective methods.

		Prep	Prep	$_{ m QC}$	Analysis
Test	Method	Batch	Date	Batch	Date
Alkalinity	SM 2320B	49376	2009-03-19 at 10:14	57796	2009-03-19 at 16:15
Ca, Dissolved	S 6010B	49435	2009-03-23 at 13:14	57934	2009-03-25 at 08:22
Chloride (IC)	E 300.0	49602	2009-03-30 at 08:39	58113	2009-03-31 at 08:30
Hardness	S 6010B	49435	2009-03-23 at 13:14	57934	2009-03-25 at 08:22
K, Dissolved	S 6010B	49435	2009-03-23 at 13:14	57934	2009-03-25 at $08:22$
Mg, Dissolved	S 6010B	49435	2009-03-23 at 13:14	57934	2009-03-25 at $08:22$
Na, Dissolved	S 6010B	49435	2009-03-23 at 13:14	57934	2009-03-25 at 08:22
pН	SM 4500-H+	49297	2009-03-17 at 15:30	57707	2009-03-17 at 16:19
SO4 (IC)	E 300.0	49602	2009-03-30 at 08:39	58113	2009-03-31 at $08:30$
TDS	SM 2540C	49328	2009-03-18 at 12:09	57885	2009-03-23 at 14:56

Results for these samples are reported on a wet weight basis unless data package indicates otherwise.

A matrix spike (MS) and matrix spike duplicate (MSD) sample is chosen at random from each preparation batch. The MS and MSD will indicate if a site specific matrix problem is occurring, however, it may not pertain to the samples for work order 9031723 since the sample was chosen at random. Therefore, the validity of the analytical data reported has been determined by the laboratory control sample (LCS) and the method blank (MB). These quality control measures are performed with each preparation batch to ensure data integrity.

All other exceptions associated with this report have been footnoted on the appropriate analytical page to assist in general data comprehension. Please contact the laboratory directly if there are any questions regarding this project.

115-6403613

Work Order: 9031723 St. Mary/Tuesday Federal #1 Page Number: 4 of 17 Eddy County, NM

Analytical Report

Sample: 190477 - TMW-1

Laboratory:

Midland

Analysis: QC Batch:

Alkalinity 57796 Prep Batch: 49376

Analytical Method: Date Analyzed:

SM 2320B

2009-03-19 Sample Preparation: 2009-03-19 Prep Method: N/A

Analyzed By: AR Prepared By: \mathbf{AR}

		TUL			
Parameter	Flag	Result	Units	Dilution	RL
Hydroxide Alkalinity		<1.00	mg/L as CaCo3	1	1.00
Carbonate Alkalinity		< 1.00	mg/L as CaCo3	1	1.00
Bicarbonate Alkalinity		84.0	mg/L as CaCo3	1	4.00
Total Alkalinity		84.0	mg/L as CaCo3	1	4.00

Sample: 190477 - TMW-1

Laboratory: Lubbock

Analysis:

Ca, Dissolved

QC Batch: Prep Batch: 49435

57934

Analytical Method: Date Analyzed:

S 6010B

2009-03-25 2009-03-23 Prep Method: S 3005A

Analyzed By: RRPrepared By: KV

RL

Sample Preparation:

Parameter	Flag	Result	Units	Dilution	RL
Dissolved Calcium		520	mg/L	1	1.00

Sample: 190477 - TMW-1

Laboratory:

Midland

Analysis: QC Batch: Chloride (IC) 58113

Prep Batch: 49602

Analytical Method:

Date Analyzed:

E 300.0

2009-03-31 Sample Preparation: 2009-03-30 Prep Method: N/A

AR

Analyzed By: Prepared By: AR

RL

Parameter	Flag	Result	Units	Dilution	RL
Chloride		280	m mg/L	50	0.500

Sample: 190477 - TMW-1

Lubbock Laboratory:

Analysis: Hardness QC Batch: 57934 Prep Batch: 49435

Analytical Method: Date Analyzed:

S 6010B 2009-03-25 Sample Preparation: 2009-03-23 Prep Method: N/A Analyzed By: RR

Prepared By: KV

115-6403613

Work Order: 9031723 St. Mary/Tuesday Federal #1 Page Number: 5 of 17 Eddy County, NM

		RL			
Parameter	Flag	Result	${ m Units}$	Dilution	RL
Hardness (by ICP)		1780	mg eq CaCO3/L	1	0.00
maruness (by 101)		1700	ing eq CaCO3/L	1	_

Sample: 190477 - TMW-1

Laboratory:

Lubbock

Analysis: K, Dissolved QC Batch: 57934 Prep Batch: 49435

Analytical Method: Date Analyzed:

S 6010B 2009-03-25 Sample Preparation: 2009-03-23 Prep Method: S 3005A

Analyzed By: RRPrepared By: KV

		RL			
Parameter	${f Flag}$	Result	Units	Dilution	RL
Dissolved Potassium		9.57	m mg/L	1	1.00

Sample: 190477 - TMW-1

Laboratory: Analysis:

Lubbock

Mg, Dissolved QC Batch: 57934 Prep Batch: 49435

Analytical Method: Date Analyzed:

S 6010B 2009-03-25 Sample Preparation: 2009-03-23 Prep Method: S 3005A

Analyzed By: RRPrepared By: KV

		m RL			
Parameter	Flag	Result	Units	Dilution	RL
Dissolved Magnesium		116	m mg/L	1	1.00

Sample: 190477 - TMW-1

Laboratory: Analysis:

Lubbock

Na, Dissolved QC Batch: 57934 Prep Batch: 49435

Analytical Method: Date Analyzed:

S 6010B 2009-03-25 Sample Preparation: 2009-03-23 Prep Method: S 3005A

Analyzed By: RR Prepared By: KV

		m RL			
Parameter	Flag	Result	Units	Dilution	RL
Dissolved Sodium		147	mg/L	1	1.00

Sample: 190477 - TMW-1

Laboratory:

Midland

Analysis: pН QC Batch: 57707 Prep Batch: 49297 Analytical Method: Date Analyzed:

SM 4500-H+ 2009-03-17 Sample Preparation: 2009-03-17

Prep Method: N/A Analyzed By: ARPrepared By: AR

115-6403613

Work Order: 9031723 St. Mary/Tuesday Federal #1 Page Number: 6 of 17 Eddy County, NM

		RL			
Parameter	Flag	Result	Units	Dilution	RL
pН		7.78	s.u.	1	0.00

Sample: 190477 - TMW-1

Laboratory: Midland

Analysis: SO4 (IC) QC Batch: 58113 Prep Batch: 49602 Analytical Method: E 300.0
Date Analyzed: 2009-03-31
Sample Preparation: 2009-03-30

Prep Method: N/A Analyzed By: AR Prepared By: AR

		m RL			
Parameter	Flag	Result	Units	Dilution	RL
Sulfate		1800	mg/L	50	0.500
				1	

Sample: 190477 - TMW-1

Laboratory: Midland

Analysis: TDS QC Batch: 57885 Prep Batch: 49328 Analytical Method: SM 2540C Date Analyzed: 2009-03-23 Sample Preparation: 2009-03-18

Prep Method: N/A
Analyzed By: AR
Prepared By: AR

*		RL			
Parameter	Flag	Result	Units	Dilution	RL
Total Dissolved Solids		2530	mg/L	2	10.0

Method Blank (1) QC Batch: 57796

QC Batch: 57796 Prep Batch: 49376

Date Analyzed: 2009-03-19 QC Preparation: 2009-03-19 Analyzed By: AR Prepared By: AR

		MDL		
Parameter	Flag	Result	Units	RL
Hydroxide Alkalinity		<1.00	mg/L as CaCo3	1
Carbonate Alkalinity		< 1.00	mg/L as CaCo3	1
Bicarbonate Alkalinity		<4.00	mg/L as CaCo3	4
Total Alkalinity		<4.00	mg/L as CaCo3	4

Method Blank (1) QC Batch: 57885

QC Batch: 57885 Prep Batch: 49328 Date Analyzed: 2009-03-23 QC Preparation: 2009-03-18 Analyzed By: AR Prepared By: AR

115-6403613

Prep Batch: 49435

Work Order: 9031723

St. Mary/Tuesday Federal #1

Page Number: 7 of 17 Eddy County, NM

	50. 1.1013/ 1.00		addy of	
Parameter	Flag	MDL Result	Units	m RL
Total Dissolved Solids	riag	<5.00	mg/L	10
Total Dissolved Bollds		\u0.00	mg/L	10
Method Blank (1)	QC Batch: 57934			
QC Batch: 57934	Date Analyzed:	2009-03-25	Analyzed 1	By: RR
Prep Batch: 49435	QC Preparation:	2009-03-23	Prepared I	
		MDL		
Parameter	Flag	Result	Units	RL
Dissolved Calcium		< 0.117	mg/L	1
Method Blank (1)	QC Batch: 57934			
QC Batch: 57934	Date Analyzed:	2009-03-25	Analyzed	By: RR
Prep Batch: 49435	QC Preparation:	2009-03-23	Prepared 1	By: KV
		MDL		
Parameter	Flag	Result	Units	RL
Dissolved Potassium		< 0.172	mg/L	1
Method Blank (1)	QC Batch: 57934			
QC Batch: 57934	Date Analyzed:	2009-03-25	Analyzed	By: RR
Prep Batch: 49435	QC Preparation:	2009-03-23	Prepared 1	•
		MDL		
Parameter	Flag	Result	Units	RL
Dissolved Magnesium		< 0.160	mg/L	1
Method Blank (1)	QC Batch: 57934			
QC Batch: 57934	Date Analyzed:	2009-03-25	Analyzed	By: RR
Dron Dotoh, 40425	OC Deep and in	2000 02 02	D 1 '	D 1/3/

QC Preparation:

2009-03-23

continued ...

Prepared By: KV

Work Order: 9031723 Page Number: 8 of 17 Report Date: March 31, 2009 Eddy County, NM 115-6403613 St. Mary/Tuesday Federal #1 method blank continued ... MDL Flag Parameter Result Units RL**MDL** Parameter Flag Result Units RLDissolved Sodium < 0.0500 mg/L 1 Method Blank (1) QC Batch: 58113 Date Analyzed: Analyzed By: AR QC Batch: 58113 2009-03-31 Prep Batch: 49602 QC Preparation: 2009-03-30 Prepared By: MDL Parameter Flag Result Units RLChloride < 0.475 0.5 mg/L Method Blank (1) QC Batch: 58113 QC Batch: 58113 Date Analyzed: 2009-03-31 Analyzed By: AR Prep Batch: 49602 QC Preparation: 2009-03-30 Prepared By: AR

		MDL		
Parameter	Flag	Result	Units	RL
Sulfate		< 0.217	mg/L	0.5

Sulfate	< 0.217	mg/L	0.5

Duplicates (1) Duplicated Sample: 19	90478	
QC Batch: 57707	Date Analyzed:	Analyzed By: AR
Prep Batch: 49297	QC Preparation:	Prepared By: AR

	Duplicate	Sample				RPD
Param	Result	Result	Units	Dilution	RPD	Limit
pН	7.90	7.86	s.u.	1	0	1.5

QC Batch:	57796	Date Analyzed:	2009-03-19	Analyzed By:	\mathbf{AR}
Prep Batch:	49376	QC Preparation:	2009-03-19	Prepared By:	AR

115-6403613

Work Order: 9031723 St. Mary/Tuesday Federal #1 Page Number: 9 of 17 Eddy County, NM

Param	Duplicate Result	Sample Result	${ m Units}$	Dilution	RPD	RPD Limit
Hydroxide Alkalinity	<1.00	<1.00	mg/L as CaCo3	1	0	20
Carbonate Alkalinity	< 1.00	< 1.00	mg/L as CaCo3	1	0	20
Bicarbonate Alkalinity	181	182	mg/L as CaCo3	1	1	20
Total Alkalinity	181	182	mg/L as CaCo3	1	1	20

Duplicates (1) Duplicated Sample: 190478

QC Batch: 57885 Prep Batch: 49328 Date Analyzed: 2009-03-23 QC Preparation: 2009-03-18

Analyzed By: AR Prepared By: AR

	Duplicate	Sample				RPD
Param	Result	Result	Units	Dilution	\mathbf{RPD}	\mathbf{Limit}
Total Dissolved Solids	2820	2690	mg/L	2	5	20

Laboratory Control Spike (LCS-1)

QC Batch: Prep Batch: 49435

57934

Date Analyzed: QC Preparation:

2009-03-25 2009-03-23 Analyzed By: RR

Prepared By:

	LCS			Spike	Matrix		Rec.
Param	Result	\mathbf{Units}	Dil.	Amount	Result	Rec.	Limit
Dissolved Calcium	49.4	mg/L	1	50.0	< 0.117	99	85 - 115

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

	LCSD			Spike	Matrix		Rec.		RPD
Param	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	\mathbf{Limit}
Dissolved Calcium	47.5	mg/L	1	50.0	< 0.117	95	85 - 115	4	20

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

Laboratory Control Spike (LCS-1)

QC Batch:

Prep Batch: 49435

Date Analyzed: QC Preparation:

2009-03-25 2009-03-23

Analyzed By: RR Prepared By: KV

LCS Spike Matrix Rec. Param Result Units Dil. Amount Result Rec. Limit Dissolved Potassium 45.2 mg/L 50.0 < 0.17290 85 - 115

115-6403613

Work Order: 9031723 St. Mary/Tuesday Federal #1 Page Number: 10 of 17 Eddy County, NM

control spikes continued

Param Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
	LCSD			Spike	Matrix		Rec.		RPD
Param	Result	Units	Dil.	Amount	Result	Rec .	${f Limit}$	RPD	Limit
Dissolved Potassium	43.8	mg/L	1	50.0	< 0.172	88	85 - 115	3	20

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

Laboratory Control Spike (LCS-1)

QC Batch:

57934

Date Analyzed:

2009-03-25

2009-03-23

Analyzed By: RR

Prepared By: KV

Prep Batch: 49435

QC Preparation:

LCS. Spike Matrix Rec. Result Param Result Units Dil. Amount Rec. Limit Dissolved Magnesium 47.7 50.0 < 0.16095 85 - 115 mg/L

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

	LCSD			Spike	Matrix		Rec.		RPD
Param	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Dissolved Magnesium	45.9	mg/L	1	50.0	< 0.160	92	85 - 115	4	20

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

Laboratory Control Spike (LCS-1)

QC Batch: Prep Batch: 49435

57934

Date Analyzed:

2009-03-25 QC Preparation: 2009-03-23 Analyzed By: RR

Prepared By: KV

	LCS			Spike	Matrix		Rec.
Param	Result	Units	Dil.	Amount	Result	Rec.	Limit
Dissolved Sodium	51.4	mg/L	1	50.0	< 0.0500	103	85 - 115

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

	LCSD			Spike	Matrix		Rec.		RPD
Param	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Dissolved Sodium	50.5	m mg/L	1	50.0	< 0.0500	101	85 - 115	2	20

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

Laboratory Control Spike (LCS-1)

QC Batch:

Prep Batch: 49602

58113

Date Analyzed:

2009-03-31

QC Preparation: 2009-03-30 Analyzed By:

Prepared By: AR

115-6403613

Work Order: 9031723 St. Mary/Tuesday Federal #1 Page Number: 11 of 17 Eddy County, NM

	LCS			Spike	Matrix	Ì	Rec.
Param	\mathbf{Result}	Units	Dil.	Amount	${f Result}$	${ m Rec.}$	${f Limit}$
Chloride	12.5	mg/L	1	12.5	< 0.475	100	90 - 110

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

	LCSD			Spike	Matrix		Rec.		RPD
Param	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Chloride	12.6	mg/L	1	12.5	< 0.475	101	90 - 110	1	····

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

Laboratory Control Spike (LCS-1)

QC Batch: Prep Batch:

58113 49602 Date Analyzed: QC Preparation:

2009-03-31 2009-03-30 Analyzed By: AR

Prepared By: AR

	LCS			Spike	Matrix		Rec.
Param	Result	${ m Units}$	Dil.	Amount	Result	Rec.	${f Limit}$
Sulfate	13.4	mg/L	1	12.5	< 0.217	107	90 - 110

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

	LCSD			\mathbf{Spike}	Matrix		Rec.		RPD
Param	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Sulfate	13.4	mg/L	1	12.5	< 0.217	107	90 - 110	0	

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

Spiked Sample: 190255 Matrix Spike (MS-1)

QC Batch: Prep Batch: 49435

57934

Date Analyzed:

2009-03-25 QC Preparation: 2009-03-23

Analyzed By: RR Prepared By: KV

MS Spike Matrix Rec. Param Result Units Dil. Amount Result Rec. Limit Dissolved Calcium 851 mg/L 50.0 796 110 75 - 125

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

	MSD			\mathbf{Spike}	Matrix		Rec.		RPD
Param	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Dissolved Calcium	848	mg/L	1	50.0	796	104	75 - 125	0	20

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

Matrix Spike (MS-1) Spiked Sample: 190255

QC Batch: 57934 Prep Batch: 49435 Date Analyzed: 2009-03-25 QC Preparation: 2009-03-23

Analyzed By: RR Prepared By: KV

Matrix Spike (MS-1)

Prep Batch: 49602

58113

QC Batch:

Spiked Sample: 191564

Date Analyzed:

QC Preparation: 2009-03-30

2009-03-31

115-6403613

Work Order: 9031723 St. Mary/Tuesday Federal #1 Page Number: 12 of 17 Eddy County, NM

Analyzed By: AR

Prepared By: AR

								<u> </u>	
	MS				Spike	Mat	trix		Rec.
Param	Resul	lt	Units	Dil.	Amount	Res	sult Re	ec.	Limit
Dissolved Potassium	64.9		mg/L	1	50.0	19	0.8 9	0	75 - 12
Percent recovery is based on th	e spike result. R	PD is	based on t	the spike a	nd spike du	plicate r	esult.		
	MSD			Spike	Matrix		Rec.		RPD
Param	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limi
Dissolved Potassium	64.8	mg/L	1	50.0	19.8	90	75 - 125	0	20
Percent recovery is based on th	e spike result. R	RPD is	based on t	the spike a	nd spike du	plicate r	esult.		
Matrix Spike (MS-1) Spi	ked Sample: 190	255							
QC Batch: 57934	I	Date A	nalyzed:	2009-03-2	:5		Ana	 alyzed By	: RR
Prep Batch: 49435	(QC Pre	paration:	2009-03-2	3			pared By	
	MS				Spike	Ma	trix		Rec.
Param	Resul	lŧ	Units	Dil.	Amount	Res		ec.	Limit
Dissolved Magnesium	189		mg/L	1	50.0	14	42 9	4	75 - 12
Percent recovery is based on th	e spike result. R	RPD is	based on t	the spike a	nd spike du	plicate r	esult.		
·	_			-	-	•			DDI
Danam	MSD	IInita	D:I	Spike	Matrix	Dag	Rec.	DDD	RPI
Param Dissolved Magnesium	Result 189	Units mg/L	Dil.	Amount 50.0	Result 142	Rec. 94	Limit 75 - 125	RPD	Limi 20
								0	
Percent recovery is based on th	e spike result. H	RPD is	based on	the spike a	nd spike du	plicate r	esult.		
Matrix Spike (MS-1) Spi	ked Sample: 190	1255							
- , , , -	-								
QC Batch: 57934			nalyzed:	2009-03-2				alyzed By	
Prep Batch: 49435	(QC Pre	eparation:	2009-03-2	23		Pre	epared By	r: KV
	MS				Spike	Ma	trix		Rec.
_	Resu	lt	Units	Dil.	Amount	Rea	sult R	ec.	Limit
Param						04	20 1	12	75 - 12
	876		mg/L	1	50.0	87	20 1	12	10 12
Param Dissolved Sodium Percent recovery is based on th	876							12	10 12
Dissolved Sodium	876							12	RPI
Dissolved Sodium	876 e spike result. F			the spike a	nd spike du		result.	RPD	

115-6403613

 $\overline{\mathrm{pH}}$

Work Order: 9031723 St. Mary/Tuesday Federal #1 Page Number: 13 of 17 Eddy County, NM

2009-03-17

Result				MS			Spike	Ma	triv		Rec.
Chloride 2880 mg/L 100 1250 1622 101 90-	Param				Units	Dil	-			ec	Limit
Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result. Param Result Units Dil. Amount Result Rec. Limit RPD L											90 - 110
Param			l on the smiles was								00 110
Param	Percent reco	overy is based	i on the spike res	uit. RFD is	based on	тие spike a	ına spike au	рисате г	esuit.		
Chloride			MS	D		-	Matrix				RPD
Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.											Limit
Matrix Spike (MS-1) Spiked Sample: 191564	<u>Chloride</u>		289	$00 ext{ mg/L}$	100	1250	1622	101	90 - 110	0	
QC Batch: 58113 black Date Analyzed: 2009-03-31 black: Analyzed By: Prep Batch: 49602 QC Preparation: 2009-03-30 Prepared By: Param MS Result Units Dil. Amount Result Result Rec. Linit Rec. Result Dil. Amount Result Rec. Linit RPD LESTION Result Rec. Fercent Result RPD LESTION Result Rec. Param Result Units Dil. Amount Result Rec. Linit RPD LESTION Result Rec. Linit RPD LESTION Result RESULT RESULT RESULT RESULT RPD LESTION RESULT RE	Percent reco	overy is based	d on the spike res	ult. RPD is	based on	the spike a	and spike du	plicate r	esult.		
Prepared By: Prepared By: Prepared By: Prepared By: Param	Matrix Sp	ike (MS-1)	Spiked Sampl	e: 191564							
MS	QC Batch:	58113		Date A	nalyzed:	2009-03-	31		An	alyzed E	By: AR
Result Units Dil. Amount Result Rec. Lin	Prep Batch:	: 49602	,	QC Pr	eparation:	2009-03-	30		Pre	epared B	y: AR
Result Units Dil. Amount Result Rec. Lin				MC			0.1	3.6-	. •		D
3670 mg/L 100 1250 2279 111 90	Danam				Unita	Dil	-			00	Rec. Limit
Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result. MSD Spike Matrix Rec. Item Result Limit RPD Item Item			1								90 - 110
MSD		ia baga	d on the griles as								00 110
Param	Percent reco	overy is base	u on the spike res	suit. RPD is	based on	the spike a	ana spike au	pncate i	resuit.		
Sulfate 3660 mg/L 100 1250 2279 110 90 - 110 0			MS	D		Spike	Matrix		Rec.		RPD
Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result. Standard (ICV-1) QC Batch: 57707 Date Analyzed: 2009-03-17 Analyzed By: ICVs ICVs ICVs Percent True Found Percent Recovery Date Analyzed: Conc. Conc. Recovery Limits Analyzed pH s.u. 7.00 7.15 102 98 - 102 2009-05 Standard (CCV-1) QC Batch: 57707 Date Analyzed: 2009-03-17 Analyzed By: CCVs CCVs CCVs Percent True Found Percent Recovery Date Analyzed: Percent Recovery Date Analyzed By: CCVs CCVs CCVs Percent Recovery Date Analyzed: Conc. Recovery Limits Analyzed											Limit
Standard (ICV-1) QC Batch: 57707 Date Analyzed: 2009-03-17 Analyzed By: Param Flag Units Conc. Conc. Recovery Limits Analyzed: 2009-03-17 Limits Analyzed: 2009-03-17 Standard (CCV-1) QC Batch: 57707 Date Analyzed: 2009-03-17 Analyzed By: CCVs CCVs CCVs Percent Recovery Date Recovery Param Flag Units Conc. Conc. Recovery Limits Analyzed By:	Sulfate		360	$\frac{60 \text{ mg/L}}{1}$	100	1250	2279	110	90 - 110	0	
QC Batch: 57707 Date Analyzed: 2009-03-17 Analyzed By: Param Flag Units Conc. Conc. Recovery Limits Analyzed By: Param Flag Units Conc. Conc. Recovery Limits Analyzed: PH s.u. 7.00 7.15 102 98 - 102 2009-0 Standard (CCV-1) QC Batch: 57707 Date Analyzed: 2009-03-17 Analyzed By: CCVs CCVs CCVs Percent True Found Percent Recovery Date Param Flag Units Conc. Conc. Recovery Limits Analyzed By:	Percent reco	overy is base	d on the spike re	sult. RPD is	based on	the spike a	and spike du	plicate 1	result.		
CVs CCVs CCVs Percent	Standard	(ICV-1)									
ParamFlagUnitsConc.Conc.RecoveryDate Analyzed:pHs.u.7.007.1510298 - 1022009-0Standard (CCV-1)QC Batch: 57707Date Analyzed: 2009-03-17Analyzed By:CCVsCCVsCCVsPercentTrueFoundPercentRecoveryDate Analyzed: 2009-03-17ParamFlagUnitsConc.CCVsCCVsPercentRecoveryDate Analyzed: 2009-03-17	QC Batch:	57707		Date A	analyzed:	2009-03-1	7		An	alyzed F	By: AR
Param Flag Units Conc. Conc. Recovery Limits Analy pH s.u. 7.00 7.15 102 98 - 102 2009-0 Standard (CCV-1) QC Batch: 57707 Date Analyzed: 2009-03-17 Analyzed By: CCVs CCVs CCVs Percent True Found Percent Recovery Day Param Flag Units Conc. Conc. Recovery Limits Analyzed				ICVs	IC.	Vs	ICVs		Percent		
pH s.u. 7.00 7.15 102 98 - 102 2009-0 Standard (CCV-1) QC Batch: 57707 Date Analyzed: 2009-03-17 Analyzed By: CCVs CCVs Percent True Found Percent Recovery Date Analyzed: Param Flag Units Conc. Conc. Recovery Limits Analyzed By:				True	Fou	ınd	Percent		Recovery	Ì	Date
Standard (CCV-1) QC Batch: 57707 Date Analyzed: 2009-03-17 CCVs CCVs CCVs Percent True Found Percent Recovery Day Param Flag Units Conc. Conc. Recovery Limits Analyzed	Param	Flag	Units	Conc.	Coi	nc.			Limits	I A	analyzed
QC Batch: 57707 Date Analyzed: 2009-03-17 CCVs CCVs CCVs Percent True Found Percent Recovery Day Param Flag Units Conc. Conc. Recovery Limits Analyzed	pH		s.u.	7.00	7.1	15	102		98 - 102	20	009-03-17
CCVs CCVs CCVs Percent True Found Percent Recovery Day Param Flag Units Conc. Conc. Recovery Limits Analy	Standard	(CCV-1)									
Param Flag Units Conc. Found Percent Recovery Day Analy	QC Batch:	57707		Date A	Analyzed:	2009-03-1	.7		An	alyzed I	By: AR
Param Flag Units Conc. Found Percent Recovery Day Analy				CCVs	CC	Vs	CCVs		Percent		
				True	For	ınd	Percent		Recovery		Date
TT 00 000 00 100 100 100 100 100 100 100		Flag	Units	Conc.	Co	nc.	Recovery	_	Limits	Į A	Analyzed

¹Matrix spike recovery out of control limits due to peak interference. Use LCS/LCSD to demonstrate analysis is under control.

6.96

99

98 - 102

7.00

s.u.

115-6403613

Work Order: 9031723 St. Mary/Tuesday Federal #1 Page Number: 14 of 17 Eddy County, NM

Standard (ICV-1)

QC Batch: 57796

Date Analyzed: 2009-03-19

Analyzed By: AR

			ICVs	ICVs	ICV s	Percent	
			True	Found	Percent	Recovery	Date
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Hydroxide Alkalinity		mg/L as CaCo3	0.00	<1.00		0 - 200	2009-03-19
Carbonate Alkalinity		mg/L as CaCo3	0.00	248		0 - 200	2009-03-19
Bicarbonate Alkalinity		mg/L as CaCo3	0.00	7.00		0 - 200	2009-03-19
Total Alkalinity		mg/L as CaCo3	250	255	102	90 - 110	2009-03-19

Standard (CCV-1)

QC Batch: 57796

Date Analyzed: 2009-03-19

Analyzed By: AR

			CCVs	CCVs	CCVs	Percent	.
			${f True}$	Found	Percent	Recovery	Date
Param	\mathbf{Flag}	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Hydroxide Alkalinity		mg/L as CaCo3	0.00	<1.00		0 - 200	2009-03-19
Carbonate Alkalinity		mg/L as CaCo3	0.00	258		0 - 200	2009-03-19
Bicarbonate Alkalinity		mg/L as CaCo3	0.00	< 4.00		0 - 200	2009-03-19
Total Alkalinity		mg/L as CaCo3	250	260	104	90 - 110	2009-03-19

Standard (ICV-1)

QC Batch: 57885

Date Analyzed: 2009-03-23

Analyzed By: AR

			ICV s	ICVs	ICVs	Percent	
			True	Found	Percent	Recovery	Date
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Total Dissolved Solids		mg/L	1000	1030	103	90 - 110	2009-03-23

Standard (CCV-1)

QC Batch: 57885

Date Analyzed: 2009-03-23

Analyzed By: AR

			\mathbf{CCVs}	\mathbf{CCVs}	CCVs	Percent	
			True	Found	Percent	Recovery	Date
Param	\mathbf{Flag}	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Total Dissolved Solids		$\mathrm{mg/L}$	1000	998	100	90 - 110	2009-03-23

Standard (ICV-1)

QC Batch: 57934

Date Analyzed: 2009-03-25

115-6403613

Work Order: 9031723 St. Mary/Tuesday Federal #1 Page Number: 15 of 17 Eddy County, NM

Param	Flag	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	$\begin{array}{c} \text{Date} \\ \text{Analyzed} \end{array}$
Dissolved Calcium		mg/L	50.0	52.4	105	90 - 110	2009-03-25

Standard (ICV-1)

QC Batch: 57934

Date Analyzed: 2009-03-25

Analyzed By: RR

			ICVs True	$\begin{array}{c} \text{ICVs} \\ \text{Found} \end{array}$	ICVs Percent	Percent Recovery	\mathbf{Date}
Param	Flag	${f Units}$	$\operatorname{Conc.}$	$\operatorname{Conc.}$	Recovery	Limits	${f Analyzed}$
Dissolved Potassium		mg/L	50.0	49.0	98	90 - 110	2009-03-25

Standard (ICV-1)

QC Batch: 57934

Date Analyzed: 2009-03-25

Analyzed By: RR

			ICVs	ICVs Found	ICVs Paragent	Percent	Data
			True	Found	$\operatorname{Percent}$	Recovery	\mathbf{Date}
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Dissolved Magnesium		mg/L	50.0	52.5	105	90 - 110	2009-03-25

Standard (ICV-1)

QC Batch: 57934

Date Analyzed: 2009-03-25

Analyzed By: RR

			ICVs	ICVs	ICVs	Percent	
			True	Found	Percent	Recovery	\mathbf{Date}
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	$\mathbf{Analyzed}$
Dissolved Sodium		mg/L	50.0	48.6	97	90 - 110	2009-03-25

Standard (CCV-1)

QC Batch: 57934

Date Analyzed: 2009-03-25

Analyzed By: RR

			CCVs	CCVs	CCVs	Percent	Data
			True	Found	Percent	Recovery	Date
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Dissolved Calcium		mg/L	50.0	50.5	101	90 - 110	2009-03-25

Standard (CCV-1)

QC Batch: 57934

Date Analyzed: 2009-03-25

115-6403613

Work Order: 9031723 St. Mary/Tuesday Federal #1 Page Number: 16 of 17 Eddy County, NM

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Dissolved Potassium		mg/L	50.0	47.7	95	90 - 110	2009-03-25

Standard (CCV-1)

QC Batch: 57934

Date Analyzed: 2009-03-25

Analyzed By: RR

			CCVs	CCVs	CCVs	Percent	
			True	Found	Percent	Recovery	Date
Param	\mathbf{Flag}	\mathbf{Units}	Conc.	Conc.	Recovery	Limits	Analyzed
Dissolved Magnesium		$_{ m mg/L}$	50.0	48.5	97	90 - 110	2009-03-25

Standard (CCV-1)

QC Batch: 57934

Date Analyzed: 2009-03-25

Analyzed By: RR

			$egin{array}{c} ext{CCVs} \ ext{True} \end{array}$	CCVs Found	CCVs Percent	Percent Recovery	Date
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Dissolved Sodium		m mg/L	50.0	53.3	107	90 - 110	2009-03-25

Standard (ICV-1)

QC Batch: 58113

Date Analyzed: 2009-03-31

Analyzed By: AR

			ICVs	ICVs	ICVs	Percent	Data
Param	Flag	Units	True Conc.	Found Conc.	Percent Recovery	Recovery Limits	Date Analyzed
Chloride		m mg/L	12.5	12.5	100	90 - 110	2009-03-31

Standard (ICV-1)

QC Batch: 58113

Date Analyzed: 2009-03-31

Analyzed By: AR

			ICVs	ICVs	ICVs	Percent	
			True	Found	Percent	Recovery	Date
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Sulfate		mg/L	12.5	13.8	110	90 - 110	2009-03-31

Standard (CCV-1)

QC Batch: 58113

Date Analyzed: 2009-03-31

115-6403613

Work Order: 9031723 St. Mary/Tuesday Federal #1 Page Number: 17 of 17 Eddy County, NM

CCVs**CCVs** CCVsPercent Recovery Date True Found Percent Units Recovery Limits Analyzed Param Flag Conc. Conc. 12.5 12.5 100 90 - 110 2009-03-31 Chloride mg/L

Standard (CCV-1)

QC Batch: 58113

Date Analyzed: 2009-03-31

			CCVs	CCVs	CCVs	Percent	
			True	Found	Percent	Recovery	Date
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Sulfate		m mg/L	12.5	13.3	106	90 - 110	2009-03-31

Analysis Request of Cha	ain of Custody	Re	- C	0	rd									P/	GE:				OF	<u>:</u>		
	J						-				(4						EST hod)			
TETRA 1910 N. Big Midland, Tex (432) 682-4559	Spring St.							5 (Ext. to C35)	d Cr Pb Hg Se	Vr Pd Hg										(3)		
CLIENT NAME: SITE MANAGE	R:	2	Р			TIVE	1	TX1005	Ba Cd	Ba Cd			/624	0/625						8		
5t. Marys PROJECT NO.: 115-640 3613 PROJECT NAME: 5t. Marys / Tursday	Taxacez St.	- CONTAINE Y/N)		IVIE	THO	J.		8015 MOD.	is Ag As	ls Ag As	les	Volatiles	8240/8260	il. Vol. 827	809/	88	ģ	(Alr)	stos)	Cations		
LAB I.D. DATE TIME WAR SAMPLE	LE IDENTIFICATION	NUMBER OF CONTAINERS FILTERED (Y/N)	HCL	HNO3	GE	NONE	1 ~	TPH 801	PAR 62/0 RCRA Metals Ag As Ba	TCLP Metals Ag	TCLP Volati	TCLP Semi Volatiles	GC.MS Vol.	GC.MS Seml. Vol. 8270/625	PCB's 8080/608	Pest. 808/6	Gamma Sp	Alpha Beta (Alr)	PLM (Asbe	Major Anions) Cations OH (IDS)		
190477/14/2005 15-15-W X TMW-1		1 V			X																	
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	, chloride, pH, 504, TDS-	TIME:	idl	270	d M	Co	<u> </u>	tains	79 Plat	, /	Vc	ver A	//a	rd.	ne:	55 Selv	- / es G	U.C.	1	res OCK		No

Cation-Anion Balance Sheet

DATE:	3/31/2009	1											
Sample #	Calcium	Magnesium	Sodium	Potassium	Alkalinity	Sulfate	Chloride	Nitrate	Fluoride	Bromide	TDS	EC	
	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	μMHOs/cm	
190477	520	116	147	9.57	84	1800	280				2530		
Sample #	Calcium in meg/L	Magnesium in meg/L	Sodium in meg/L	Potassium	Alkalinity	Sulfate	Chloride	Nitrate	Fluoride	Bromide	Cations	Anions	Percentage
190477	25.95	9.55	6.39	in meq/L 0.24	in meq/L 1 68	in meq/L 37.48	in meq/L	in meq/L 0	in meq/L 0	in meq/L 0	in meq/L 42.13	in meq/L 47.05	Error 11.0370761
	EC/Cation	EC/Anion			· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·		TDS/EC	TDS/Cat	TDS/Anion	1		