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REPORTS

DATE:

11/29/1999

Tipperary
CORPORATION

Tipperary Corporation
Tatum Pit Closure Project
Annual Sampling Summary

RECEIVED
APR 3 0 2001
ENVIRONMENTAL BUREAU
OIL CONSERVATION DIVISION

Whole Earth Environmental
19606 San Gabriel
Houston, Tx. 77084

Tipperary
CORPORATION

633 Seventeenth Street
Suite 1550
Denver, Colorado 80202

November 29, 1999

CERTIFIED MAIL

Mr. William C. Olson
New Mexico Oil Conservation Division
2040 South Pacheco
Santa Fe, NM 87505

RE: July 1999 Progress Report
October 1999 Progress Report
Tatum Pit Closure Project
Lea County, NM

Dear Mr. Olson:

Please find enclosed additional monitor well results from the subject project area. This data represents results from our eighth and ninth quarters of monitoring. We would like to request permission to submit our monitoring results annually to your office. Of course, we will continue to sample and monitor the project quarterly.

We have also addressed the requests and issues in your letter of August 6, 1999 correspondence (copy attached). Our responses are found in the Executive Summary section. Additional data included in the Executive Summary section is summarized below:

- Surveyed locations of each pit center and all recovery and monitor wells including surface elevations. The above information is plotted on a topographic base map. Individual site plat maps are included within each well/pit section.
- A table of monitor well water elevations. This table includes a calculation of the hydraulic gradient for each well/pit site.
- A graph of the depths to water in each monitor well. The data covers the last two sampling quarters and the depth of water when the monitor wells were drilled.
- A graph of the monthly rainfall totals as measured in Lovington, NM. Also included is a table of weather data recorded by Lea County Electric Co-Op.
- A graph comparing the average BTEX concentrations measured each quarter with the quarterly rainfall to establish a direct relationship with the amount of precipitation.
- A summary table of results from BTEX sampling with a plot of results.
- Copies of the BTEX analyses from Environmental Lab of Texas, Inc.
- A procedure for developing cased water monitoring wells.

Data for each well/pit is summarized in its own section. The following data is included under each well/pit section.

- A summary of monitoring activity for each monitor well.
- A summary of BTEX results for each recovery and monitor well. A bar graph of this data is presented.
- A topographic map for each well/pit.
- A site map with the location of the pit and monitor wells including the surface elevations.
- A table of water elevations from the monitor wells along with a calculation of the hydraulic gradient for each well/pit.

We have also submitted formal closure reports for the Vera #1 and State NBN #1 sites under separate cover. If you have any questions, please call me at (303) 293-9379.

Very truly yours,

Larry G. Sugano

Larry G. Sugano
Vice President - Engineering

cc: NMOCD Hobbs Office
Enclosures

STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION DIVISION
2040 S. PACHECO
SANTA FE, NEW MEXICO 87505
(505) 827-7131

August 6, 1999

CERTIFIED MAIL
RETURN RECEIPT NO. Z-274-520-689

Mr. Larry G. Sugano
Tipperary Corporation
633 Seventeenth St., Suite 1550
Denver, Colorado 80202

RE: TATUM PIT CLOSURES

Dear Mr. Sugano:

The New Mexico Oil Conservation Division (OCD) has reviewed Tipperary Corporation's (TC) April 27, 1999 "APRIL 1999 PROGRESS REPORT, TATUM PIT CLOSURE PROJECT, LEA COUNTY, NEW MEXICO". This document contains the results of TC's monitoring of ground water contamination related to the closure of 10 unlined pits west of Tatum, New Mexico. The document also requests final closure of the remedial actions related to unlined pits at the State NBN #1 and Vera #1 sites and proposes modifications to the ground water sampling program.

In order to complete a review of the above referenced closure requests and sampling modifications, the OCD requires that TC submit the following information, with all maps, tables and data segregated into separate case files for each site:

1. A water table potentiometric map for each site which shows the location of the pit and excavated areas, the surveyed locations of all monitor wells and recovery wells and any other pertinent site features as well as the direction and magnitude of the hydraulic gradient created using the water table elevation in each monitor well On March 29, 1999, the OCD required that TC submit this information. The above referenced document states that TC was preparing the maps. To date the OCD has not received this required information.

2. Tables of water table elevations in each monitor well during each sampling event. The document discusses seasonal fluctuations in the water table as responsible for increases in contaminant concentrations in ground water. However, the supporting water table elevation vs. time data for each monitor well is not provided.

3. Tables of all past and present water quality sampling results for each ground water monitoring and recovery well as required in the OCD's January 15, 1999 conditions of approval. The document only contains analytical data for ground water monitoring wells that are currently being sampled.

4. An explanation of the use of drill cuttings as backfill in the annular space above the bentonite plug in each newly constructed monitor well . This is a direct violation of the OCD's January 15, 1999 conditions of approval which required that the remainder of the annular space be grouted to the surface with cement containing 3-5% bentonite. As a result the monitor wells as constructed by TC are potentially direct conduits to ground water.

5. The monitor well development procedures and volumes for each monitor well.

6. The volume of ground water and product recovered to date at all sites with fluid recovery as required in the OCD's January 15, 1999 conditions of approval.

7. A completed OCD pit closure and remediation report form for each site requested for closure. Each form will contain a discussion and the results of all soil and ground water site closure activities including all soil analytical data from the excavations and the backfilled materials as well as figures showing all sample locations.

The above required information shall be submitted to the OCD Santa Fe Office by October 4, 1999 with a copy provided to the OCD Hobbs District Office. Submission of this information will allow the OCD to complete a review of TC's closure requests and proposed ground water sampling plan modifications.

If you have any questions or comments, please call me at (505) 827-7154.

Sincerely,

William C. Olson
Hydrologist
Environmental Bureau

xc: Chris Williams, OCD Hobbs District Office
Mike Matush, NM State Land Office
Mike Griffin, Whole Earth Environmental, Inc.

OCD 8/6/99 Request for Additional Data

Scope
This report addresses the August 6th request from Mr. Olson (enclosed) requesting additional information.

Request # 1
A water table potentiometric map for each site which shows the location of the pit and excavated areas, the surveyed locations of all monitoring wells and recovery wells and any other pertinent features as well as the direction and magnitude of the hydraulic gradient created using the water table elevation in each monitoring well.

Response
The locations of each pit center, and of all recovery and monitor wells was surveyed by Adkins Engineering on August 18, 1999 (see *Coordinate File: Tipperary.CRD* within this section). The data was incorporated into previously rendered plat AutoCad maps and overlaid atop USGS 7.5' maps by Basin Surveying. A copy of each site's plat map is enclosed within the appropriate section of this report. Similar maps are included within a final closure report for Vera and State NBN submitted under separate cover.

Request # 2
Tables of water table elevations in each monitor well during each sampling event. The document discusses seasonal fluctuations in the water table as responsible for increases in contaminant concentrations in ground water. However the supporting water table elevation vs. time data for each monitor well is not provided.

Response
We've only three data points for the water table elevations within the monitoring wells. The first is from the original drilling report when the well was first installed; the second, was measured on 8/9/99; the third, on 10/21/99. In the future, the elevations for each monitor well will be measured at the time of sampling and included within the annual report.

Included within this Executive Summary section are the following charts and graphs:

A. Chart titled *"Tipperary Corporation Tatum Pit Closure Project Monitor Well Water Elevation Table"*. This table summarizes the results of the original drillers log and the two sampling events. the chart also provides the calculated gradient for each monitor well.

B. Line Graph titled *"Tipperary Corporation Monitor Well Depths"*. This graph compares the depth to water during each sampling event.

C. Chart titled *"Lea County Electrical Coop Weather Report 1998, 1999"*. These are detailed daily measurements of the precipitation received at the LEACO Lovington, New Mexico plant located approximately twenty-five miles southeast of the Tatum Field.

D. Line Graph titled *"Monthly Rainfall Totals"*. This graph takes the detailed monthly total rainfall figures from the LEACO chart and plots the information into line form for comparison purposes. Included within the map is a line showing the average monthly rainfall for the Tatum area. This number was calculated by taking the average annual rainfall for Tatum and dividing by 12.

Request # 3
Tables of all past and present water quality sampling results for each ground water monitoring and recovery well as required in the OCD's January 15, 1999 conditions of approval.

Response
Each monitor well was generally sampled each quarter and the results of each test are summarized within the Sampling Results charts and graphs for each well. The only exceptions to this are Monitor Well #1 in which we had five consecutive quarters of acceptable concentrations, Monitor Well # 3 in which we encountered mechanical problems in removing a bailer, NBN and Vera in which we've requested final closure and the three recovery wells.

Each recovery and monitor well will be sampled each quarter and the results provided to the OCD on an annual basis.

Request # 4
An explanation of the use of drill cuttings in the annular space above the bentonite plug in each newly constructed monitor well.

Response
The error is a result of a lack of oversight of the completion of the wells by Whole Earth Environmental. We believed that the instructions were correctly conveyed to the driller. We did not directly supervise the final completion of the wells.

Request # 5
The monitor well development procedures and volumes for each monitoring well.

Response
Enclosed within this Executive Summary section is *"WEQP-28, Procedure for Developing Cased Water Monitoring Wells"*. The procedure calls for the removal of three well casing volumes. The formula for determining casing volume is attached as a supplement to WEQP-28 and shows that with a water column height of 15', a total of 7.344 gallons of water must be bailed to achieve the minimum volume. In fact at least fifteen gallons of fluid were removed from each well in order to minimize turbidity. Neither Whole Earth nor Adkins Engineering maintained a log of the volumes of water removed however the procedure has been amended to insure that such information will be recorded and transmitted to the OCD in the future.

Request # 6
The volume of ground water and product recovered to date at all sites with fluid recovery as required in the OCD's January 15, 1999 conditions of approval.

Response
The fluids removed from each recovery well are pumped directly from the windmills into an open top fiberglass tank. Each tank is equipped with a liquid level controller which, when activated, engages an electric pump that sends the fluids to a steel water storage tank used in conjunction with the normal operations of the oil wells at each location. The water is subsequently pumped into the Burro Pipeline disposal system to the Satellite 5 facility. Satellite 5 is equipped with separation equipment that strips the hydrocarbons from the water through gravity separation. The eventual fate of the hydrocarbon fractions is to the sales line, and the water into a Burro Pipeline disposal well.

The fluid volumes are so low that they cannot be accurately measured by comparing "before" and "after" process volumes. However, each windmill has the capacity to produce up to 1,375 gallons per day. The approximate ratio of recovered oil to water is 1:100. The windmills are shut in during freezing weather, and otherwise operate at an estimated efficiency of between 25-75% of capacity. We therefore estimate that a liberal estimate of the total fluid removal would be in the range of 50% of the windmill's capacity or 687 gallons per day with a hydrocarbon fraction of up to 6.9 g/d.

Using these figures, we calculate that each windmill has produced a water volume of approximately 17,862 gallons and a hydrocarbon volume of 179 gallons in the time period between September, 1997, (the date of their erection), and October, 1999.

Request # 7
A completed pit closure and remediation report for each site requested for closure. Each form will contain a discussion of the results of all soil and ground water site closure activities including all soil analytical data from the excavations and the backfilled materials as well as figures showing all sample locations.

Response
As requested, the information is provided to you under separate cover.

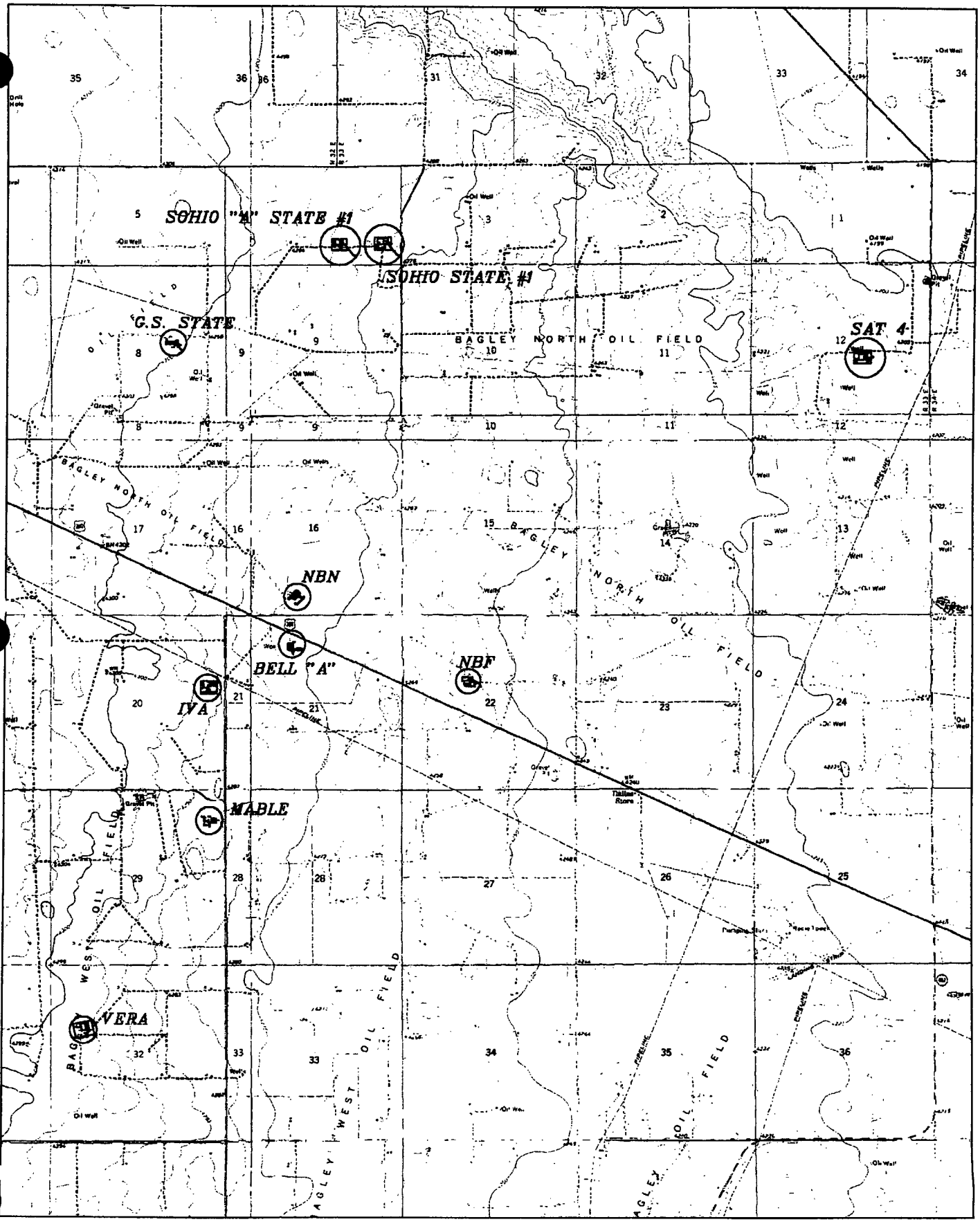
COORDINATE FILE : TIPARARY.CRD

ST COORDINATES

	PT#	NORTH	EAST	ELEV
SOHIO A STATE 1 PIT	253	870084.293	760084.206	4286.84
SOHIO A STATE 1 MW11	254	869981.125	760134.902	4285.88
SOHIO A STATE 1 MW19	255	869974.033	760205.397	4285.97
SOHIO A STATE 1 MW28	256	869892.771	760255.240	4285.61
SOHIO A STATE 1 MW31	257	869667.200	760452.460	4283.54
SOHIO STATE 1 PIT	258	870105.632	761381.498	4285.42
SOHIO STATE 1 MW10	259	870027.049	761459.334	4283.63
SOHIO STATE 1 MW17	260	869969.168	761443.837	4283.31
SOHIO STATE 1 MW18	261	870017.865	761533.683	4283.59
SOHIO STATE 1 MW28	262	869892.594	761534.416	4283.21
SOHIO STATE 1 MW30	263	869677.360	761728.469	4281.13
VERA 1 PIT	264	846366.089	752525.766	4289.49
VERA #1 MW5	265	846217.026	752582.067	4298.90
STATE NBF 1 PIT	266	856893.939	764024.682	4266.86
STATE NBF 1 MW8	267	856806.388	764165.403	4259.41
STATE NBF 1 MW15	268	856747.667	764157.788	4259.68
STATE NBF 1 MW16	269	856774.041	764241.604	4259.06
STATE NBF 1 MW26	270	856658.728	764331.675	4258.04
BELL A 1 PIT	271	857796.692	758625.535	4279.64
BELL A 1 MW6	272	857857.556	758583.503	4281.12
BELL A 1 MW13	273	857754.617	758597.054	4280.84
BELL A 1 MW14	274	857821.944	758664.690	4280.80
BELL A 1 MW25	275	857614.080	758714.518	4280.37
GS STATE 1 SOURCE	276	867037.530	755087.975	4307.00
GS STATE 1 MW21	277	866953.249	755213.712	4303.08
GS STATE 1 MW22	278	866905.186	755154.733	4302.77
GS STATE 1 MW29	279	866798.038	755260.271	4303.20
GS STATE 1 MW?	280	867001.862	755131.639	4303.27
MABEL COM 1 SOURCE	281	852659.555	756329.277	4290.55
MABEL COM 1 MW3	282	852517.536	756370.356	4287.22
MABEL COM 1 MW4	283	852592.288	756473.774	4287.46
STATE NBN 1 PIT	284	859499.318	758793.854	4282.45
STATE NBN 1 MW7	285	859397.517	758825.203	4281.59
SATELLITE 4 MW9	286	866587.512	775890.421	4208.66
SATELLITE 4 MW23	287	866507.846	775901.105	4209.03
SATELLITE 4 MW24	288	866562.481	775964.699	4208.64
IVA COM 1 SOURCE	289	856721.216	756252.189	4298.42
IVA COM 1 MW1	290	856654.035	756344.507	4292.10
IVA COM 1 MW2	291	856695.146	756388.036	4291.93

HORIZONTAL DATUM NAD 83
VERTICAL DATUM NAVD 88

WHOLE EARTH ENVIROMENTAL, INC.



BASIN SURVEYS P.O. BOX 1786 – HOBBS, NEW MEXICO	W.O. Number: 9352	Drawn By: K. GOAD
	Date: 10-21-99	Disk: KJG #122 – WE9352.DWG

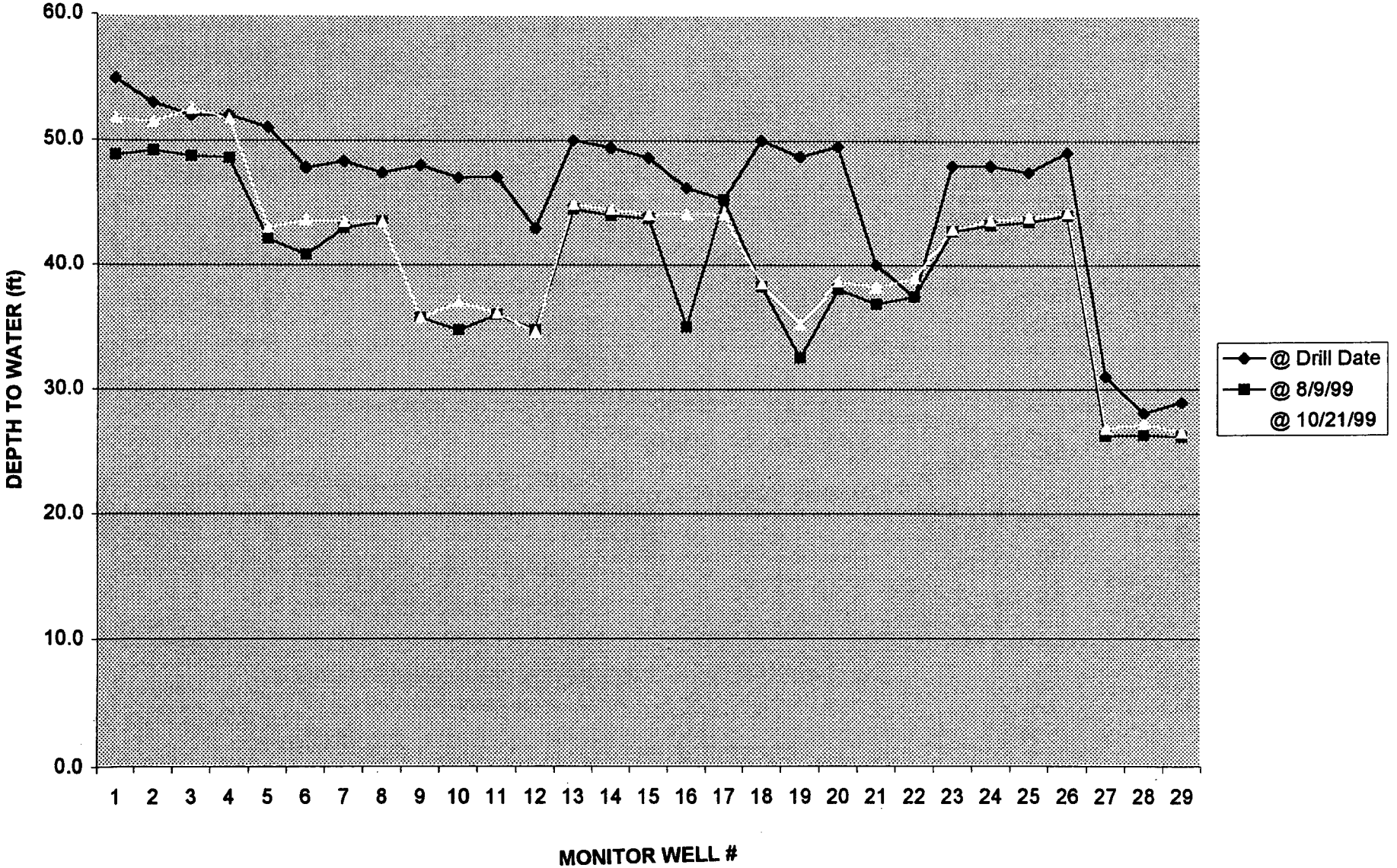
Tipperary Corporation

Tipperary Corporation
Tatum Plt Closure Project
Monitor Well Water Elevation Table

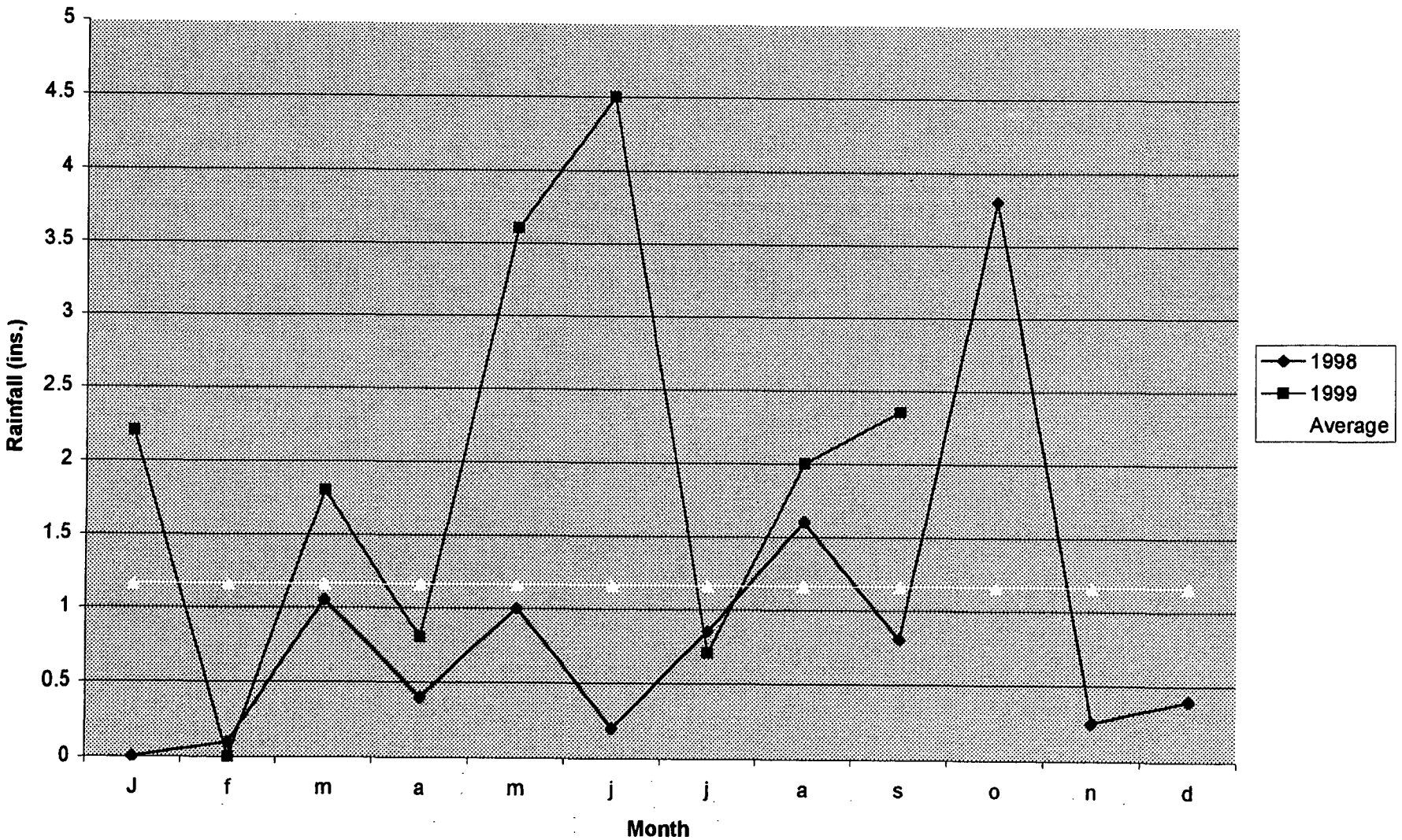
Well Name	Monitor Well No.	Surface Elevation	Date Well Drilled	Water Depth @ Drill Date	Water Elevation	Water Depth @ 8/8/99	Water Elev. @ 8/8/99	Water Depth @ 10/21/99	Water Elev. @ 10/21/99	Depth Change Aug. / Oct. '99	Distance to Plt Center (ft)	Gradient (Ft. / Ft.)	Gradient (Ft. /100 Ft.)
Ivil	Recovery Well	4,298.42	Aug-97	52.0	4,246.42								
	1	4,292.10	Aug-97	54.9	4,237.20	48.83	4,243.27	51.75	4,240.35	2.92	115	0.080174	8.02
	2	4,291.93	Aug-97	53.0	4,238.93	49.17	4,242.76	51.50	4,240.43	2.33	140	0.053500	5.35
Mable	Recovery Well	4,290.55	Aug-97	52.0	4,238.55								
	3	4,287.22	Aug-97	52.0	4,235.22	48.75	4,238.47	52.50	4,234.72	3.75	148	0.022500	2.25
	4	4,287.46	Aug-97	52.0	4,235.46	48.58	4,238.88	51.75	4,235.71	3.17	160	0.019313	1.93
Vera	Plt Center	4,292.98			4,289.50								
	6	4,298.90	Aug-97	53.0	4,235.90	51.50	4,237.40				159	-0.037233	-3.72
Bell	Plt Center	4,283.09			4,279.60								
	6	4,281.12	Aug-97	51.0	4,230.12	42.13	4,238.99	43.01	4,238.11	0.88	93	0.021183	2.12
	13	4,280.84	Oct-97	47.8	4,233.04	40.83	4,240.01	43.66	4,237.18	2.83	61	0.044118	4.41
	14	4,280.80	Oct-97	48.3	4,232.50	43.00	4,237.80	43.50	4,237.30	0.50	47	0.048723	4.87
	26	4,280.37	Mar-99	47.4	4,232.97	43.50	4,236.87	43.50	4,236.87	0.00	164	0.017662	1.77
NBN	Plt Center	4,282.45			4,282.45								
	7	4,281.59	Aug-97	50.0	4,231.59	43.50	4,238.09				107	0.008037	0.80
NBF	Plt Center	4,266.86			4,266.86								
	8	4,259.41	Aug-97	48.0	4,211.41	35.75	4,223.66	35.75	4,223.66	0.00	165	0.045152	4.52
	15	4,259.68	Oct-97	47.0	4,212.68	34.75	4,224.93	37.00	4,222.68	2.25	198	0.036263	3.63
	16	4,259.06	Oct-97	47.1	4,211.96	36.00	4,223.06	36.10	4,222.96	0.10	247	0.031579	3.16
	26	4,258.04	Mar-99	43.0	4,215.04	34.75	4,223.29	34.60	4,223.44	-0.15	387	0.022791	2.28
Sohio # 1	Plt Center	4,285.42			4,285.42								
	10	4,283.63	Aug-97	50.0	4,233.63	44.50	4,239.13	44.90	4,238.73	0.40	110	0.016273	1.63
	17	4,283.31	Oct-97	49.4	4,233.91	44.00	4,239.31	44.60	4,238.81	0.50	262	0.008053	0.81
	18	4,283.59	Oct-97	48.6	4,234.99	43.75	4,239.84	44.10	4,239.49	0.35	176	0.010398	1.04
	28	4,283.21	Mar-99	46.3	4,236.96	35.00	4,248.21	44.15	4,239.06	9.15	552	0.004004	0.40
	30	4,281.13	Aug-99	45.3	4,235.82	45.31	4,235.82	44.10	4,237.03	-1.21	776	0.005528	0.55
Sohio "A"	Plt Center	4,286.84			4,286.84								
	11	4,285.88	Aug-97	50.0	4,235.88	38.25	4,247.63	38.50	4,247.38	0.25	116	0.008348	0.83
	19	4,285.97	Sep-97	48.7	4,237.27	32.50	4,253.47	35.15	4,250.82	2.65	184	0.006306	0.63
	20	4,285.96	Sep-97	49.5	4,236.46	38.00	4,247.96	38.66	4,247.30	0.66	151	0.005828	0.58
	27	4,285.61	Mar-99	40.0	4,245.61	36.83	4,248.78	38.20	4,247.41	1.37	264	0.004659	0.47
	31	4,283.64	Aug-99	37.5	4,246.09	37.45	4,246.09	38.90	4,244.64	1.45	624	0.005288	0.53
G.S. State	Source Well	4,307.00	Sep-97	48.0	4,259.00								
	12	4,303.27	Aug-97	48.0	4,255.27	42.75	4,260.52	42.90	4,260.37	0.15	52	0.071731	7.17
	21	4,303.08	Oct-97	48.0	4,255.08	43.25	4,259.83	43.66	4,259.42	0.41	151	0.025960	2.60
	22	4,302.77	Oct-97	47.5	4,255.27	43.50	4,259.27	43.90	4,258.87	0.40	148	0.025203	2.52
	29	4,303.20	Mar-99	49.1	4,254.14	44.00	4,259.20	44.25	4,258.95	0.25	296	0.016475	1.65
Sat. # 4	Plt Center	4,211.49			4,208.00								
	9	4,208.66	Aug-97	31.0	4,177.66	26.17	4,182.49	26.75	4,181.91	0.58	80	0.035375	3.54
	23	4,209.03	Oct-97	28.0	4,181.03	26.25	4,182.78	27.15	4,181.88	0.90	156	0.015570	1.56
	24	4,208.64	Oct-97	28.9	4,179.74	26.08	4,182.56	26.45	4,182.19	0.37	150	0.019000	1.90

Note: Vera, Bell and Satellite 4 had significant subsidance within the pit area.
The red elevations include an added 3.49' (Ave. of seven other sites)
Correct elevations noted in column 6.

Tipperary Corporation Monitor Well Depths



Monthly Rainfall Totals



Le[redacted]ounty Electric Co-Op Inc.
18 W. Washington; P.O. Dr. 1447
Lovington, N.M. 88260

Weather Report 1998

L=Lightning I=Ice
W=Wind 35mph+ R=Rain
F=Fog S=Snow

January				February				March				April				May				June			
Day	Hi	Lo	Wth	Day	Hi	Lo	Wth	Day	Hi	Lo	Wth	Day	Hi	Lo	Wth	Day	Hi	Lo	Wth	Day	Hi	Lo	Wth
1	59	26		1	57	20		1	51	12		1	74	21	W	1	87	48		1	103	52	
2	74	26		2	64	15		2	53	10		2	61	44	W	2	89	46		2	106	56	
3	64	31		3	59	28		3	68	23		3	69	34		3	83	47		3	104	62	
4	57	36		4	33	25	F	4	78	33		4	73	30		4	90	47		4	92	65	
5	58	29		5	45	31		5	62	29		5	78	32		5	87	50		5	83	54	
6	50	24		6	52	28		6	61	32	.05L	6	70	37	W	6	87	52		6	76	48	
7	46	26		7	61	23		7	58	33	S&W	7	68	32	W	7	84	46		7	79	56	
8	56	22		8	67	33		8	41	16	W	8	66	36		8	86	47	W	8	91	62	
9	59	22		9	63	31		9	47	10		9	72	24		9	83	45		9	95	54	
10	59	17	F	10	55	27	W	10	48	13		10	78	27		10	86	41		10	82	64	.2R
11	61	26		11	55	17		11	44	15		11	79	38	W	11	89	51	W	11	86	51	
12	64	22		12	52	21	W	12	49	14		12	78	42	W	12	89	51		12	94	58	
13	50	25		13	61	15		13	67	22	F	13	76	35		13	93	48		13	97	65	
14	53	28		14	64	36		14	67	36		14	79	47		14	87	57	W	14	94	56	
15	57	15		15	64	42	L&W.1	15	61	44	.5R&W	15	74	33		15	81	46	W	15	88	54	
16	58	32		16	56	30	W	16	40	36		16	65	26		16	91	38		16	99	64	
17	66	29		17	56	24		17	56	32	.5L	17	56	28	.4R	17	97	60		17	99	64	
18	61	30		18	54	31	W	18	68	34	W	18	66	26		18	94	62	W	18	98	58	
19	64	27		19	56	29		19	54	26	W	19	70	27		19	97	63	RLW	19	102	53	
20	66	36		20	58	25		20	78	20		20	69	39		20	99	55		20	104	65	
21	46	31		21	53	37		21	76	40		21	69	27		21	92	59		21	104	59	
22	52	15		22	67	26		22	70	42		22	75	31		22	85	66		22	103	67	
23	55	26		23	71	28		23	66	38		23	86	38		23	91	61		23	102	66	
24	60	23		24	77	30	W	24	64	44		24	88	53	W	24	93	48		24	104	70	
25	64	24		25	61	39	W	25	75	39		25	81	48		25	89	53		25	106	70	
26	61	20		26	50	28	W	26	70	42	W	26	72	42	W	26	86	51	1RL	26	107	66	
27	70	21		27	50	20		27	73	44	W	27	59	38		27	91	54		27	109	66	
28	69	30		28	55	25		28	77	39	W	28	65	32		28	97	59		28	107	66	
29	62	17		29				29	78	40	W	29	73	31		29	98	58		29	99	66	
30	66	28		30				30	67	33	W	30	82	36		30	99	62		30	96	67	
31	63	27		31				31	63	30		31				31	99	60		31			
H/L	74	15		H/L	77	15	.1"	H/L	78	10	1.05"	H/L	88	21	.4"	H/L	99	38	1	H/L	109	48	.2"

Lea County Electric Co-Op Inc.
18 W. Washington; P.O. Dr. 1447
Lovington, N.M. 88260

Weather Report 1998

L=Lightning I=Ice
W=Wind 35mph+ R=Rain
F=Fog S=Snow

July				August				September				October				November				December			
Day	Hi	Lo	Wth	Day	Hi	Lo	Wth	Day	Hi	Lo	Wth	Day	Hi	Lo	Wth	Day	Hi	Lo	Wth	Day	Hi	Lo	Wth
1	94	67		1	96	65	L	1	90	58		1	94	54		1	55	36		1	65	29	
2	91	68		2	98	69		2	90	57		2	86	60	.1 L	2	60	34		2	70	40	
3	93	58		3	95	69		3	91	59		3	87	46		3	45	36	F	3	56	44	.4L
4	96	66		4	82	59	W	4	92	59		4	86	61	W	4	42	37	F	4	70	34	
5	100	68	L	5	77	61	.1 L&W	5	92	62		5	72	52		5	39	36	F	5	70	36	
6	101	68	.15L	6	86	56		6	90	60		6	70	32		6	42	35	F	6	70	36	
7	100	68		7	92	55		7	88	62		7	72	32		7	63	36	F	7	52	26	
8	100	67		8	95	64		8	92	59		8	76	46		8	69	37		8	44	12	
9	97	63		9	95	68		9	90	58	.5 L	9	86	44		9	71	39	F & W	9	44	20	
10	100	63		10	95	65		10	82	61	.3 L	10	89	44		10	53	27	W	10	48	30	S
11	104	69		11	96	65		11	92	54		11	92	44		11	65	24		11	44	26	
12	108	70		12	88	66	.1 L	12	84	56		12	78	49		12	56	31		12	54	14	
13	100	63	L	13	79	60	.75 L	13	91	56		13	87	44		13	56	38		13	60	20	
14	102	62	L	14	85	58		14	90	60		14	85	52		14	71	32		14	60	17	
15	99	64	L	15	90	57		15	83	61		15	86	52		15	70	29		15	54	17	
16	92	64	L	16	91	62		16	83	56		16	84	57		16	72	35		16	65	18	
17	94	62	L	17	89	59	F	17	84	54		17	74	42		17	71	29		17	52	20	
18	95	61	.6RL	18	88	62	F	18	86	57		18	68	32		18	79	43		18	64	36	RFW
19	96	64		19	84	66	F	19	93	60		19	70	40		19	73	37		19	42	25	F
20	96	71		20	82	65		20	98	61		20	44	43	0.3	20	45	30		20	62	33	F
21	94	68	.1RL	21	88	62	F	21	94	64		21	50	42	0.6	21	64	30		21	49	34	
22	95	60		22	89	59		22	84	57		22	57	45		22	75	33		22	20	2	
23	93	62		23	89	59		23	84	52		23	59	46		23	69	38		23	28	6	
24	95	63	L	24	91	58		24	92	63		24	70	41		24	74	25		24	36	12	
25	96	82		25	86	63		25	68	63		25	76	44		25	68	34		25	56	14	
26	96	65	L	26	89	65		26	94	62		26	74	55		26	74	28		26	62	18	
27	92	66	L	27	93	66		27	94	65		27	63	57	.9 L	27	75	35		27	59	40	W
28	95	63		28	81	63	.65" L	28	87	57		28	70	46		28	77	42		28	53	24	W
29	99	67		29	86	62		29	90	56		29	74	38		29	62	40		29	51	27	
30	102	68	L	30	90	56		30	92	58		30	73	53	1.8 LW	30	62	36	0.25	30	68	26	
31	95	61	L	31	90	57		31				31	60	48	.1 L	31				31	45	27	
H/L	108	58	.85"	H/L	98	55	1.6"	H/L	98	52	.8"	H/L	94	32	3.8"	H/L	79	24	.25"	H/L	70	2	.4

Lea County Electric Co-Op Inc.
18[illegible] Washington; P.O. Dr. 1447
Lovington, N.M. 88260

Weather Report 1999

L=Lightning I=Ice
W=Wind 35mph+ R=Rain
F=Fog S=Snow

January				February				March				April				May				June			
Day	Hi	Lo	Wth	Day	Hi	Lo	Wth	Day	Hi	Lo	Wth	Day	Hi	Lo	Wth	Day	Hi	Lo	Wth	Day	Hi	Lo	Wth
1	57	32	F	1	60	30		1	76	37		1	72	42	W	1	71	47	0.2	1	88	56	
2	35	19		2	53	27		2	67	43		2	76	39	W	2	75	35		2	90	62	0.7 L,R
3	31	10		3	67	32	W	3	60	20		3	59	32	W	3	78	45		3	88	65	F
4	43	5		4	60	26	W	4	75	34		4	74	34	W	4	73	45		4	89	54	
5	68	22		5	74	38		5	72	44		5	67	34	W	5	66	43		5	84	57	
6	64	25		6	63	35		6	53	32		6	78	47	W	6	66	31		6	89	50	
7	68	23		7	70	31		7	39	34	.2" F,L	7	84	54		7	80	32		7	90	56	
8	68	27	W	8	73	39		8	62	33		8	75	55		8	90	52		8	91	68	
9	67	28		9	73	40		9	68	29		9	79	43		9	88	55		9	88	58	
10	65	28		10	78	34	W	10	77	34		10	73	37		10	85	52		10	93	56	
11	66	33		11	47	15	W	11	40	32	F	11	67	36		11	78	43		11	87	59	
12	69	35	W	12	40	10		12	52	31	F	12	72	44		12	76	42		12	79	52	
13	70	36		13	60	14		13	47	19	W	13	79	55	W	13	90	49		13	63	51	1.3R,L
14	69	34		14	53	22		14	63	23		14	76	46	W	14	93	52		14	72	55	0.1
15	70	29		15	73	31	W	15	79	40		15	64	30		15	91	53		15	78	50	
16	63	30		16	57	23		16	62	39	.8"	16	83	31		16	91	59		16	81	54	
17	68	28		17	67	30		17	70	31		17	87	51		17	78	53		17	76	51	
18	66	23		18	62	26		18	35	33		18	90	52		18	81	45		18	82	60	
19	74	35		19	70	27		19	48	28		19	96	54		19	85	48		19	83	60	L
20	73	33	W	20	57	30		20	64	25		20	96	54		20	91	52		20	79	56	1.6L
21	61	35	LW	21	69	23		21	70	33		21	91	55		21	86	53	L	21	80	62	
22	43	25	.1R.1SW	22	65	36		22	74	29		22	92	59		22	87	51	L,W	22	85	58	.6L
23	63	23		23	65	23		23	78	33		23	64	49		23	86	53	.3RLW	23	91	59	
24	78	41		24	75	27		24	73	31		24	44	37		24	82	55	.9RLW	24	84	62	.2L
25	72	35		25	76	30		25	60	41		25	73	41	0.2	25	66	52	LW	25	86	55	
26	68	31	W	26	74	45		26	52	46	.8" F L	26	76	35		26	68	50	F	26	96	64	
27	67	29		27	64	31		27	62	37	F L	27	83	45		27	72	50	F	27	99	65	
28	43	27	1RFLISW	28	75	36		28	59	47	F	28	86	43	W	28	86	51	.5RL	28	100	69	
29	48	24	1SFLIW	29				29	56	42	F	29	60	52	W	29	90	60	1.7RL	29	93	66	
30	42	23		30				30	66	43	F	30	63	56	.6 L,W	30	88	58		30	103	67	
31	55	24		31				31	77	46		31				31	87	52		31			
H/L	78	5	1.1S1.1R	H/L	78	10		H/L	79	19	1.8	H/L	96	30	0.8	H/L	93	31	3.6	H/L	103	50	4.5

Lea County Electric Co-Op Inc.
1[illegible] Washington; P.O. Dr. 1447
Lovington, N.M. 88260

Weather Report 1999

L=Lightning I=Ice
W=Wind 35mph+ R=Rain
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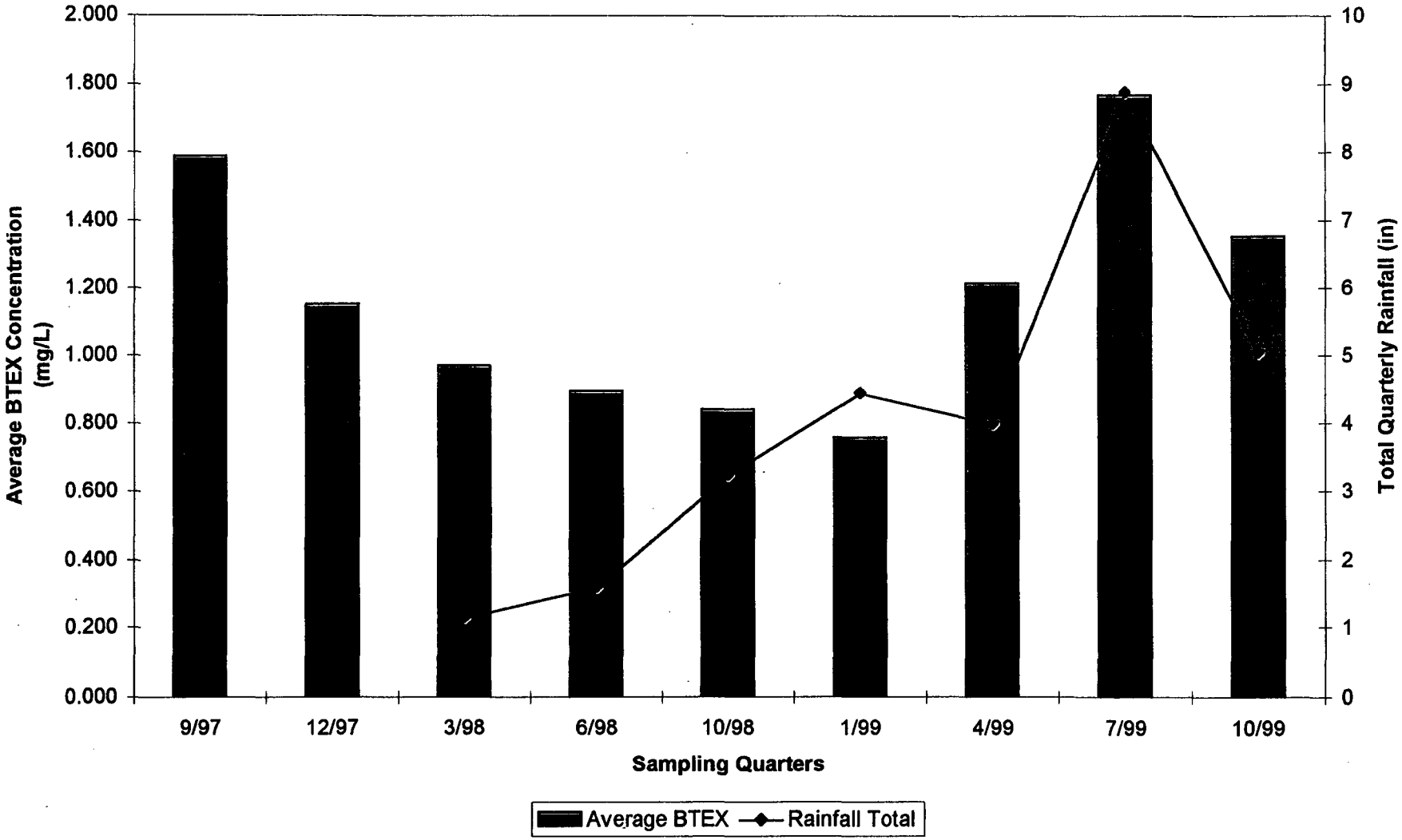
July				August				September				October				November				December			
Day	Hi	Lo	Wth	Day	Hi	Lo	Wth	Day	Hi	Lo	Wth	Day	Hi	Lo	Wth	Day	Hi	Lo	Wth	Day	Hi	Lo	Wth
1	99	66		1	89	62		1	92	62		1	86	46		1				1			
2	96	71		2	80	62	.3"R	2	89	60	.1"R L	2	72	42		2				2			
3	92	68		3	84	65	.5"R	3	89	61		3	91	44		3				3			
4	87	64		4	85	62		4	92	58	.9"R L	4	72	43		4				4			
5	88	61		5	83	60	1.1"R	5	80	59		5	86	40		5				5			
6	89	63		6	88	62		6	83	56		6	84	51		6				6			
7	91	58		7	92	62		7	88	59	.2"R L	7	84	58		7				7			
8	95	63		8	92	65		8	82	63		8	87	44		8				8			
9	95	68	L	9	92	60		9	82	56		9	77	38		9				9			
10	66	60	.5" R	10	96	66		10	90	56		10	84	36		10				10			
11	76	53		11	96	65		11	96	59		11	80	37		11				11			
12	82	50		12	97	60		12	82	58		12	83	40		12				12			
13	89	53		13	98	60		13	74	52		13	86	41		13				13			
14	93	52	.2" L&W	14	95	64		14	82	53		14	82	39		14				14			
15	88	67		15	95	61		15	78	57	.2"R L	15		50		15				15			
16	88	65		16	96	58		16	70	54	.8"R L	16				16				16			
17	87	64		17	96	61		17	76	53	.15"R L	17				17				17			
18	89	60		18	93	61		18	81	52		18				18				18			
19	88	59		19	93	57		19	89	52		19				19				19			
20	90	60		20	95	64		20	74	52	F	20				20				20			
21	91	61		21	99	61		21	66	48		21				21				21			
22	93	63		22	97	60		22	76	42		22				22				22			
23	95	61		23	93	62	.1"R	23	84	49		23				23				23			
24	99	66		24	85	61		24	89	54		24				24				24			
25	98	66		25	88	60		25	90	52		25				25				25			
26	94	60		26	91	60		26	93	56		26				26				26			
27	92	63		27	93	60		27	78	50		27				27				27			
28	94	60		28	97	59		28	58	41		28				28				28			
29	98	66		29	95	59		29	65	29		29				29				29			
30	97	66		30	95	56		30	81	39		30				30				30			
31	89	70	L	31	94	55		31				31				31				31			
H/L	99	50		H/L	99	55		H/L	96	29		H/L	91	36		H/L	0	0		H/L	0	0	

Comparison of Average BTEX and Total Rainfall

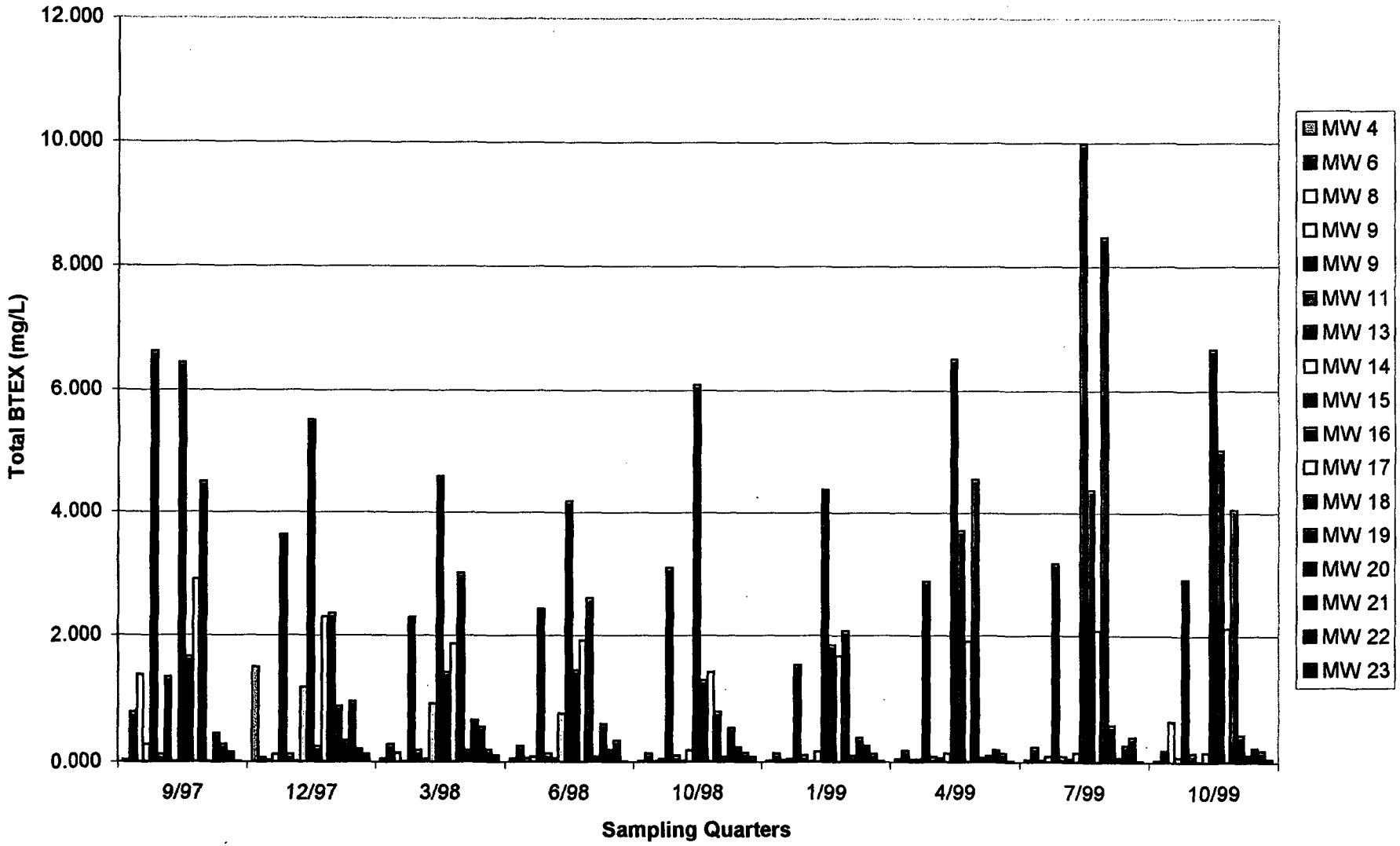


Tipperary CORPORATION

Tipperary Corporation
Tatum Pit Closure Project
Quarterly Sampling Comparison

Well #	9/5/97	12/3/97	3/23/98	6/25/98	10/1/98	1/6/99	4/1/99	7/14/99	10/5/99
4	0.031	1.501	0.047	0.049	0.013	0.019	0.038	0.034	0.025
6	0.790	0.068	0.281	0.249	0.141	0.137	0.175	0.232	0.175
8	1.377	0.023	0.146	0.058	0.018	0.036	0.042	0.028	0.634
9	0.285	0.123	0.007	0.081	0.050	0.049	0.042	0.090	0.080
10	6.626	3.626	2.292	2.423	3.096	1.532	2.878	3.172	2.913
11	0.122	0.124	0.184	0.141	0.108	0.105	0.084	0.091	0.143
13	1.346	0.010	0.037	0.056	0.017	0.007	0.057	0.045	0.007
14	0.005	1.183	0.918	0.764	0.184	0.161	0.141	0.146	0.155
15	6.432	5.499	4.588	4.189	6.086	4.380	6.506	9.972	6.665
16	1.662	0.256	1.419	1.446	1.287	1.845	3.709	4.379	5.016
17	2.908	2.305	1.863	1.920	1.419	1.665	1.907	2.083	2.125
18	4.498	2.361	3.013	2.601	0.786	2.072	4.544	8.472	4.060
19	0.011	0.875	0.184	0.079	0.082	0.094	0.068	0.579	0.432
20	0.454	0.345	0.658	0.604	0.539	0.390	0.100	0.065	0.110
21	0.287	0.953	0.554	0.198	0.238	0.259	0.193	0.272	0.227
22	0.152	0.200	0.195	0.344	0.144	0.134	0.141	0.396	0.184
23	0.009	0.122	0.106	0.008	0.078	0.014	0.014	0.018	0.051
	26.995	19.574	16.492	15.210	14.286	12.899	20.639	30.074	23.002

Quarterly BTEX Concentrations



ENVIRONMENTAL LAB OF TEXAS, INC.

"Don't Treat Your Soil Like Dirt!"

TIPPERARY
ATTN: MR. VICTOR A. VICE
P.O. BOX 857
TATUM, NM 88267
FAX: 505-398-6510
FAX: 281-646-8996

Sample Type: Water
Sample Condition: Intact/Iced
Project #: None Given
Project Name: None Given
Project Location: None Given

Sampling Date: 10/05/99
Receiving Date: 10/06/99
Analysis Date: 10/6-10/8/99

ELT#	FIELD CODE	BENZENE (mg/L)	TOLUENE (mg/L)	ETHYLBENZENE (mg/L)	m,p-XYLENE (mg/L)	o-XYLENE (mg/L)
20597	Iva Com #1 S/W	0.001	<0.001	<0.001	<0.001	0.001
20598	Mable Com #3 S/W	0.003	0.021	0.010	0.038	0.020
20599	Bell A M/W #6	0.149	<0.001	0.015	0.008	0.002
20600	NBF M/W #8	0.160	0.214	0.036	0.143	0.081
20601	Sohio St #1 M/W	2.04	0.255	0.157	0.261	0.200
20602	Sohio Sta M/W #11	0.056	0.022	0.008	0.035	0.022
20603	GS State #M/W #21	0.116	0.016	0.053	0.027	0.015
20604	Satellite #9	0.034	0.008	0.009	0.019	0.010
20605	Iva Com S/W	1.67	1.80	0.126	1.42	1.03
20606	Iva Com #2	0.001	<0.001	<0.001	<0.001	<0.001
20607	Mable Com #4	0.002	0.005	0.002	0.010	0.006
20608	Mable Com # S/W	0.467	0.395	0.094	0.868	0.685
20609	Bell A M/W #13	0.003	<0.001	<0.001	0.001	<0.001
20610	Bell A M/W #14	0.109	0.005	0.004	0.024	0.013
20611	Bell A M/W#25	0.001	<0.001	<0.001	<0.001	<0.001
20612	NBF M/W #15	2.85	1.85	0.303	1.05	0.612
20613	NBF M/W #16	3.22	0.776	0.179	0.576	0.265
20614	NBF M/W #26	0.066	0.059	0.016	0.057	0.031
20615	Sohio St #1 M/W #17	1.150	0.206	0.289	0.304	0.176
20616	Sohio St #1 M/W #18	2.47	0.486	0.066	0.594	0.444
20617	Sohio St #1 M/W #28	0.192	0.042	0.070	<0.001	0.034
20618	Sohio St #1 M/W #30	0.188	0.087	0.023	0.081	0.050
	% IA	98	92	94	96	95
	% EA	91	90	87	86	88
	BLANK	<0.001	<0.001	<0.001	<0.001	<0.001

METHODS: SW 846-8020,5030

Raland K. Tuttle

10-12-99
Date

ENVIRONMENTAL LAB OF , INC.

"Don't Treat Your Soil Like Dirt!"

TIPPERARY
ATTN: MR. VICTOR A. VICE
P.O. BOX 857
TATUM, NM 88267
FAX: 505-398-6510
FAX: 281-646-8996

Sample Type: Water
Sample Condition: Intact/Iced
Project #: None Given
Project Name: None Given
Project Location: None Given

Sampling Date: 10/05/99
Receiving Date: 10/06/99
Analysis Date: 10/6-10/8/99

ELT#	FIELD CODE	BENZENE (mg/L)	TOLUENE (mg/L)	ETHYLBENZENE (mg/L)	m,p-XYLENE (mg/L)	o-XYLENE (mg/L)
20619	Sohio Sta M/W #19	0.346	0.020	0.008	0.038	0.020
20620	Sohio Sta M/W #20	0.023	0.023	0.008	0.035	0.021
20621	Sohio Sta M/W #27	0.265	0.014	0.006	0.029	0.017
20622	Sohio Sta M/W #31	0.362	0.015	0.006	0.039	0.022
20623	GS State M/W #22	0.070	0.015	0.047	0.032	0.020
20624	GS State M/W #29	0.022	0.017	0.006	0.035	0.038
20625	GS State M/W #12	0.008	0.007	0.006	0.024	0.007
20626	Satelite #23	0.007	0.009	0.006	0.019	0.010
20627	Satelite #24	0.011	0.011	0.006	0.021	0.012
	% IA	99	92	93	92	91
	% EA	91	90	87	86	86
	BLANK	<0.001	<0.001	<0.001	<0.001	<0.001

METHODS: SW 846-8020,5030

Raland K. Tuttle

10-12-99
Date

292.

Environmental Lab of Texas, Inc.

12600 West I-20 East Odessa, Texas 79763
(915) 563-1800 FAX (915) 563-1713

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

Project Manager: V.A. Vice

Phone #: 505-398-6509

FAX #: 505-398-6510

Company Name & Address: Tipperary Oil & Gas Corp

Mike @ Griffin 1-800-854-4358
Whole Earth

Project #:

Project Name:

Project Location:

Sampler Signature:

LAB # (LAB USE ONLY)	FIELD CODE	# CONTAINERS	Volume/Amount	MATRIX: WATER	SOIL	AIR	SLUDGE	OTHER	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE	OTHER	SAMPLING: DATE	TIME	BTEX 8020/5030	TPH 418.1	TCLP Metals Ag As Ba Cd Cr Pb Hg Se	Total Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Volatiles	TCLP Semi Volatiles	TDS	RCI
0597	Iva Com #1 #2 S/W	2									X			10/5/99		✓							
0598	Mablecom #3 #4 Source Wtr	2									X					✓							
0599	Bell-A M/W #6 #13 #14 #25	2									X					✓							
0600	NBF M/W #8 #15 #16 #26	2									X					✓							
0601	Sohio ST #1 M/W #10 #17 #18 #28 #30	2									X					✓							
0602	Sohio STA M/W #11 #19 #20 #27 #31	2									X					✓							
0603	GS State M/W #21 #22 #29 #32	2									X					✓							
0604	Satellite #9 #23 #24	2									X					✓							
0605	Iva Com Source Water	2														✓							

Relinquished by:	Date:	Time:	Received by:

Relinquished by:	Date:	Time:	Received by:

Relinquished by:	Date:	Time:	Received by Laboratory:
[signature]	10/6/99	10:45	[signature]

REMARKS

Environmental Lab of Texas, Inc.

12600 West I-20 E[illegible] [illegible]esa, Texas 79763
(915) 563-1800 FAX (915) 563-1713

CHAIN-OF-CUSTODY RECORD AND ANALYSIS R[illegible]

Project Manager: V.A Vice
Phone #:
FAX #:
Company Name & Address: Tipperary Oil & Gas Corp
Project #:
Project Name :
Project Location:
Sampler Signature:

ANALYSIS REQUEST

LAB # (LAB USE ONLY)	FIELD CODE	# CONTAINERS	Volume/Amount	MATRIX: WATER	SOIL	AIR	SLUDGE	OTHER	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE	OTHER	SAMPLING: DATE	TIME	BTEX 8020/5030	TPH 418.1	TCLP Metals Ag As Ba Cd Cr Pb Hg Se	Total Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Volatiles	TCLP Semi Volatiles	TDS	RCI
206006	Iva Com #2	2		✓							✓			10/5		✓							
206007	Mable Com #4			✓												✓							
206008	Mable Com #Source Well			✓												✓							
206009	Bell A MW #13			✓												✓							
206010	" " #14			✓												✓							
206011	" " #25			✓												✓							
206012	NBF MW # 15			✓												✓							
206013	" " # 16			✓												✓							
206014	" " # 26			✓												✓							
206015	Sohio ST #1 MW #[illegible]			✓												✓							
206016	" " 18										✓			✓		✓							

Relinquished by:	Date:	Time:	Received by:	REMARKS
Relinquished by:	Date:	Time:	Received by:	
Relinquished by:	Date:	Time:	Received by Laboratory:	

Environmental Lab of Texas, Inc.

12600 West I-20 East, Odessa, Texas 79763
(915) 563-1800 FAX (915) 563-1713

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

Project Manager: V. A. Vick
Phone #:
FAX #:
Company Name & Address: Tippecanoe Oil & Gas
Project #:
Project Name:
Project Location:
Sampler Signature:

LAB # (LAB USE ONLY)	FIELD CODE	# CONTAINERS	Volume/Amount	MATRIX: WATER	SOIL	AIR	SLUDGE	OTHER	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE	OTHER	SAMPLING: DATE	TIME	BTEX 8020/5030	TPH 418.1	TCLP Metals Ag As Ba Cd Cr Pb Hg Se	Total Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Volatiles	TCLP Semi Volatiles	TDS	RCI
20617	Sohio ST #1 MW-28	2		✓							✓			10/5/94		✓							
20618	Sohio ST #1 MW-30															✓							
20619	Sohio Sta MW-19															✓							
20620	" " 20															✓							
20621	" " 27															✓							
20622	" " 31															✓							
20623	GS State MW #22															✓							
20624	" " 29															✓							
20625	" " 12															✓							
20626	Satellite # 23															✓							
20627	" #24	↓		↓							↓			↓		✓							

Relinquished by:	Date:	Time:	Received by:
Relinquished by:	Date:	Time:	Received by:
Relinquished by:	Date:	Time:	Received by Laboratory:

REMARKS

ENVIRONMENTAL LAB OF , INC.

"Don't Treat Your Soil Like Dirt!"

WHOLE EARTH ENVIRONMENTAL
ATTN: MR. MIKE GRIFFIN
19606 SAN GABRIEL
HOUSTON, TEXAS 77084
FAX: 1-281-646-8996

Sample Type: Water
Sample Condition: Intact/ Iced/ HCl
Project #: Tatum Step-Out
Project Name: None Given
Project Location: 13 Miles West Tatum, N.M.

Sampling Date: 08/11/99
Receiving Date: 08/13/99
Analysis Date: 08/13/99

ELT#	FIELD CODE	BENZENE mg/L	TOLUENE mg/L	ETHYLBENZENE mg/L	m,p-XYLENE mg/L	o-XYLENE mg/L
19165	MW-30	<0.001	<0.001	<0.001	0.001	<0.001
19166	MW-31	0.396	0.004	0.001	0.017	0.012
	% IA	96	88	85	86	89
	% EA	94	91	91	90	92
	BLANK	<0.001	<0.001	<0.001	<0.001	<0.001

METHODS: SW 846-8020,5030

Raland K. Tuttle

8-16-99
Date

Environmental Lab of Texas, Inc.

12600 West I-20 [illegible] Odessa, Texas 79763
(915) 563-1800 FAX (915) 563-1713

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

Project Manager: M. Griffin
Phone #: (800) 854-4358
FAX #: (281) 646-8996

Company Name & Address: Whole Earth Environmental

Project #: Tatum Step-out
Project Name:

Project Location: 13 miles west, Tatum NM.
Sampler Signature: M. Griffin

LAB # (LAB USE ONLY)	FIELD CODE	# CONTAINERS	Volume/Amount	MATRIX: WATER	SOIL	AIR	SLUDGE	OTHER	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE	OTHER	SAMPLING: DATE	TIME	ANALYSIS REQUEST: BTEX 8020/5030	TPH 418.1	TCLP Metals Ag As Ba Cd Cr Pb Hg Se	Total Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Volatiles	TCLP Semi Volatiles	TDS	RCI
7165	MW-30	2		✓					✓		✓			8-11		✓							
7166	MW-31	2		✓					✓		✓			8-11		✓							

Relinquished by:	Date:	Time:	Received by:
M. Griffin	8-13-99	1050	[signature]
Relinquished by:	Date:	Time:	Received by:
Relinquished by:	Date:	Time:	Received by Laboratory:

REMARKS

ENVIRONMENTAL LAB OF , INC.

"Don't Treat Your Soil Like Dirt!"

TIPPERARY
ATTN: MR. VICTOR A. VICE
P.O. BOX 857
TATUM, NM 88267
FAX: 505-398-6510
FAX: 281-646-8996 Mike Griffin

Sample Type: Water
Sample Condition: Intact/Iced
Project #: None Given
Project Name: None Given
Project Location: Tatum, New Mexico

Sampling Date: 07/14/99
Receiving Date: 07/15/99
Analysis Date: 07/16/99

ELT#	FIELD CODE	BENZENE (mg/L)	TOLUENE (mg/L)	ETHYLBENZENE (mg/L)	m,p-XYLENE (mg/L)	o-XYLENE (mg/L)
18590	Iva Com Source Well	4.46	6.85	1.24	8.16	5.57
18591	Mable Com Source Well	0.568	0.376	0.068	1.23	0.908
18592	Mable Com #4 MW	0.008	0.006	0.002	0.012	0.006
18593	Bell A #6	0.177	0.010	0.020	0.015	0.010
18594	NBF #8	0.023	0.001	0.001	0.002	0.001
18595	Sohio St #1 - #10	2.34	0.110	0.243	0.343	0.136
18596	Sohio St #A #11	0.060	0.008	0.003	0.011	0.009
18597	GS St #21	0.140	0.010	0.044	0.062	0.016
18598	Satellite #4 - MW #9	0.010	0.004	0.009	0.020	0.007
18599	Bell A #13	0.011	0.011	0.005	0.012	0.006
18600	Bell A #14	0.132	0.005	0.002	0.005	0.002
18601	Bell A #25	0.012	0.010	0.002	0.006	0.004
18602	NBF #15	3.97	3.07	0.436	1.61	0.886
18603	NBF #16	3.64	0.116	0.151	0.343	0.129
18604	NBF #26	0.030	0.027	0.006	0.019	0.011
18605	Sohio St. #1 - #17	1.01	0.205	0.146	0.482	0.240
18606	Sohio St. #1 - #18	3.54	0.553	0.288	0.967	0.532
18607	Sohio St. #1 - #28	0.019	0.003	0.004	0.008	0.005
18608	Sohio St. A - #19	0.532	0.009	0.004	0.026	0.006
18609	Sohio St. A #20	0.023	0.010	0.006	0.018	0.010
18610	Sohio St. A #27	0.268	0.024	0.006	0.030	0.024
18611	GS St. #22	0.109	0.017	0.085	0.144	0.041
18612	GS St. #29	0.014	0.007	0.019	0.125	0.062
18613	Satellite #4 MW #23	0.003	0.002	0.002	0.008	0.003
	% IA	98	93	91	91	93
	% EA	98	93	91	90	93
	BLANK	<0.001	<0.001	<0.001	<0.001	<0.001

METHODS: SW 846-8020,5030

Raland K. Tuttle

07-16-99
Date

ENVIRONMENTAL LAB OF , INC.

"Don't Treat Your Soil Like Dirt!"

TIPPERARY
ATTN: MR. VICTOR A. VICE
P.O. BOX 857
TATUM, NM 88267
FAX: 505-398-6510
FAX: 281-648-8996

Receiving Date: 04/02/99
Sample Type: Water
Project : None Given
Project Location: None Given

Analysis Date: 4/05 & 4/06/99
Sampling Date: 04/01/99
Sample Condition: Intact/Iced

ELT#	FIELD CODE	BENZENE (mg/l)	TOLUENE (mg/l)	ETHYLBENZENE (mg/l)	m,p-XYLENE (mg/l)	o-XYLENE (mg/l)
17428	Iva Com Source Well	2.05	4.15	0.902	5.50	3.80
17429	Mable Com Source Well	0.486	0.432	0.066	1.00	0.713
17430	Mable Com #4	0.012	0.008	0.002	0.010	0.006
17431	Bell A #6	0.139	0.013	0.006	0.011	0.006
17432	Bell A #13	0.021	0.018	0.003	0.009	0.006
17433	Bell A #14	0.108	0.015	0.004	0.009	0.005
17434	NBF #8	0.032	0.002	0.004	0.003	0.001
17435	NBF #15	3.11	1.98	0.214	0.767	0.435
17436	NBF #16	3.15	0.164	0.078	0.219	0.098
17437	Sohio St. #1- #10	2.34	0.067	0.168	0.203	0.100
17438	Sohio St. #1- #17	1.35	0.092	0.079	0.248	0.138
17439	Sohio St. #1- #18	3.35	0.331	0.114	0.469	0.280
17440	Sohio St. #1- #28	0.446	0.065	0.011	0.041	0.058
17441	Sohio St. A - #11	0.048	0.008	0.004	0.014	0.010
17442	Sohio St. A - #19	0.026	0.010	0.006	0.016	0.010
17443	Sohio St. A - #20	0.547	0.011	0.005	0.030	0.009
17444	Sohio St. A - #27	0.056	0.007	0.006	0.007	0.013
17445	G.S. State #21	0.124	0.008	0.042	0.012	0.007
17446	G.S. State #22	0.059	0.010	0.036	0.022	0.014
17447	G.S. State #29	0.004	<0.001	<0.001	0.035	<0.001
17448	Satellite #4 - #9	0.027	0.005	0.004	0.004	0.002
17449	Satellite #4 - #23	0.004	0.004	0.001	0.003	0.002
	% IA	102	99	97	97	99
	% EA	100	97	97	91	95
	BLANK	<0.001	<0.001	<0.001	<0.001	<0.001

METHODS: SW 846-8020,5030

Raland K. Tuttle

4-7-99
Date

Environmental Lab of Texas, Inc.

12600 West I-20 East Odessa, Texas 79763
(915) 563-1800 FAX (915) 563-1713

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

Project Manager: Tipperary Oil & Gas

Phone #: 505-398-6504

FAX #:

Mike Griffin

Company Name & Address:

Project #:

Project Name:

Project Location:

Sampler Signature:

LAB # (LAB USE ONLY)	FIELD CODE	# CONTAINERS	Volume/Amount	MATRIX: WATER	SOIL	AIR	SLUDGE	OTHER	PRESERVATIVE METHOD: HCl	HNO3	ICE	NONE	OTHER	SAMPLING: DATE	TIME	BTEX 8020/5030	TPH 418.1	TCLP Metals Ag As Ba Cd Cr Pb Hg Se	Total Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Volatiles	TCLP Semi Volatiles	TDS	RCI
17428	IVA Com Source Well	2		X							X			4-1		X							
17429	Mable Com Source Well	2		X							X			4-1		X							
17430	Mable Com # 4	2		X							X			4-1		X							
17431	Bell A #6 #13 #4	2	EA	X							X			4-1		X							
17432	NBF #8 #15 #16	2	EA	X							X			4-1		X							
17433	Sohio ST#1 — #10 #17 #18 #28	2	EA	X							X			4-1		X							
17434	Sohio ST #A #11 #19 #20 #27	2	EA	X							X			4-1		X							
17435	GS. STAR # 21 #22 #29	2	EA	X							X			4-1		X							
17436	Satellite #4 — M Well #9 #23															X							

Relinquished by:	Date:	Time:	Received by:
D.A. Vere	4-2-99	1010	[signature]
Relinquished by:	Date:	Time:	Received by:
Relinquished by:	Date:	Time:	Received by Laboratory:

REMARKS

Environmental Lab of Texas, Inc.

12600 West I-20 [illegible] dessa, Texas 79763
(915) 563-1800 FAX (915) 563-1713

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

Project Manager: | Phone #: | FAX #:

Company Name & Address: Tipperary

Project #: | Project Name : | Project Location: | Sampler Signature:

ANALYSIS REQUEST

LAB # (LAB USE ONLY)	FIELD CODE	# CONTAINERS	Volume/Amount	MATRIX: WATER	SOIL	AIR	SLUDGE	OTHER	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE	OTHER	SAMPLING: DATE	TIME	BTEX 8020/5030	TPH 418.1	TCLP Metals Ag As Ba Cd Cr Pb Hg Se	Total Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Volatiles	TCLP Semi Volatiles	TDS	RCI
7431	BELLA #6																						
7432	#13																						
7433	#14																						
7434	NBF #8																						
7435	#15																						
7436	#16																						
7437	Sohio St.#1 #10																						
7438	#17																						
7439	#18																						
7440	#28																						
7441	Sohio St. #A #11																						

Relinquished by:	Date:	Times:	Received by:	REMARKS
	04-02-99	1010		
Relinquished by:	Date:	Times:	Received by:	
Relinquished by:	Date:	Times:	Received by Laboratory:	

Env[illegible]mental Lab of Texas, Inc.

12600 West I-20 [illegible] dessa, Texas 79763
(915) 563-1800 FAX (915) 563-1713

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

Project Manager: | Phone #: | FAX #:

Company Name & Address: Tipperary

Project #: | Project Name : | Sampler Signature:

Project Location:

ANALYSIS REQUEST

LAB # (LAB USE ONLY)	FIELD CODE	# CONTAINERS	Volume/Amount	MATRIX: WATER	SOIL	AIR	SLUDGE	OTHER	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE	OTHER	SAMPLING: DATE	TIME	BTEX 8020/5030	TPH 418.1	TCLP Metals Ag As Ba Cd Cr Pb Hg Se	Total Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Volatiles	TCLP Semi Volatiles	TDS	RCI
17442	SonicSt. #A	# 19																					
17443	↓	# 20																					
17444	↓	# 27																					
17445	G.S.State	# 21																					
17446	↓	# 22																					
17447	↓	# 29																					
17448	Satellite #4	# 9																					
17449	↓	# 23																					

Relinquished by:	Date:	Times:	Received by:	REMARKS
Relinquished by:	Date: 04-02-99	Times: 1010	Received by:	
Relinquished by:	Date:	Times:	Received by Laboratory:	

ENVIRONMENTAL LAB OF , INC.

"Don't Treat Your Soil Like Dirt!"

TIPPERARY OIL & GAS
633 17TH
DENVER, COLORADO 80202
FAX: 281-646-8993(Mike Griffin)

Receiving Date: 03/17/99
Sample Type: Water
Project : Tatum Dileneation
Project Location: Tatum, N.M.

Analysis Date: See below
Sampling Date: 3/17/99
Sample Condition: Intact/Iced

ELT#	Field Code	Ca (mg/L)	Mg (mg/L)	Na (mg/L)	K (mg/L)	Chloride (mg/L)	Sulfate (mg/L)	CO3 (mg/L)	HCO3 (mg/L)
17265	#25 Bell	189	46	281	8.7	851	300	0	159
17266	#26 NBF	31.4	16	65	6.4	53	175	0	159
17267	#27 Sohio A	144	78	377	16.2	1028	195	0	329
17268	#28 Sohio #1	715	140	4660	20.8	8685	195	0	329
17269	#29 G.S. State	178	44	102	8.1	487	150	0	281
	ANALYSIS DATE	3/24/99	3/24/99	3/24/99	3/24/99	3/18/99	3/18/99	3/18/99	3/18/99
	QUALITY CONTROL	53.9	5.1	55.9	5.2	5140	48	*	*
	TRUE VALUE	50.0	5.0	50.0	5.0	5000	50	*	*
	% PRECISION	108	102	111	104	103	96	*	*

METHODS: EPA 4.1.1, 215.1,242.1, 273.1, 258.1,325.3, 375.4, 310.2.

Raland K. Tuttle

Raland K. Tuttle

3-26-99

Date

ENVIRONMENTAL LAB OF , INC.

"Don't Treat Your Soil Like Dirt!"

TIPPERARY OIL & GAS
633 17TH
DENVER, COLORADO 80202
FAX: 281-646-8996(Mike Griffin)

Receiving Date: 03/17/99
Sample Type: Water
Project : Tatum Dileneation
Project Location: Tatum, N.M.

Analysis Date: Hg 3/23/99
Analysis Date: 3/25/99
Sampling Date: 3/17/99
Sample Condition: Intact/Iced

TOTAL METALS (mg/L)

ELT#	Field Code	Ag	As	Ba	Cd	Cr	Hg	Pb	Se
17265	#25 Bell	ND	ND	0.250	ND	0.0110	ND	ND	ND
17266	#26 NBF	ND	ND	0.201	ND	0.0060	ND	ND	ND
17267	#27 Sohio A	ND	ND	0.276	ND	0.0110	ND	ND	ND
17268	#28 Sohio #1	ND	0.028	0.709	ND	0.0220	ND	0.0090	ND
17269	#29 G.S. State	ND	ND	0.369	ND	0.0080	ND	ND	ND
	REPORTING LIMIT	0.0050	0.005	0.010	0.0010	0.0050	0.00020	0.0030	0.0050
	% INSTRUMENT ACCURACY	100	106	95	100	94	103	98	112
	% EXTRACTION ACCURACY	96	104	97	100	96	96	99	102

ND = Not detected at the reporting limit.

METHODS: EPA 200.7, 245.2

Raland K. Tuttle

3-26-99
Date

ENVIRONMENTAL LAB OF , INC.

"Don't Treat Your Soil Like Dirt!"

TIPPERARY OIL & GAS
633 17TH
DENVER, COLORADO 80202
FAX: 281-646-8996 (Mike Griffin)

Receiving Date: 03/17/99
Sample Type: Water
Project : Tatum Dileneation
Project Location: Tatum, New Mexico

Analysis Date: 03/17/99
Sampling Date: 03/17/99
Sample Condition: Intact/Iced

ELT#	FIELD CODE	BENZENE (mg/l)	TOLUENE (mg/l)	ETHYLBENZENE (mg/l)	m,p-XYLENE (mg/l)	o-XYLENE (mg/l)
17265	#25 Bell	0.006	0.004	0.004	0.005	0.004
17266	#26 NBF	0.002	0.003	0.001	0.002	0.001
17267	#27 Sohio A	0.118	0.019	0.005	0.004	0.008
17268	#28 Sohio #1	0.156	0.008	0.003	0.010	0.005
17269	#29 G.S. State	0.012	0.012	0.004	0.021	0.041
	% IA	104	100	99	98	99
	% EA	108	104	101	102	103
	BLANK	<0.001	<0.001	<0.001	<0.001	<0.001

METHODS: SW 846-8020,5030

Raland K Tuttle
Raland K. Tuttle

3-26-99
Date

CORE LAB

GULF STATES ANALYTICAL

6310 Rothway, Houston, Texas 77040
(713) 690-4444, Fax (713) 690-5646

Company: Tippenany OPG

Address: Denver, CO 80202

Tele #:

Fax #:

Reports Sent To: Whole Earth

P O #:

Project #:

Project Name: Tatum Dineation

Project Location: Tatum, NM

Sampler(s) Name: (Signature) M. Griffin

Courier:

Relinquished by: (Signature) M. Griffin — Date 3-17-99 — Time 1345

Relinquished by Sampler: (Signature) — Date — Time

Received by: (Signature) — Date 3-17-99 — Time 1345

Received by Laboratory: (Signature) — Date — Time

	Date	Time	Water	Soil	Sludge	Oil	Other	# of Containers	Haz. Sample (Y/N)	BTEX	RCRA 8 Metals	Major cat & anions <Chlorides carb/bicarb SO_4^{2-} Ca, Mg, K, Na	
1. #25 Bell (17265)	3-17	8:10	✓					3	N	/	/	/	
2. #26 NBE (17266)	3-17	8:26	✓					3	N	/	/	/	
3. #27 Sohio A (17267)	3-17	8:44	✓					3	N	/	/	/	
4. #28 Sohio #1 (17268)	3-17	9:05	✓					3	N	/	/	/	
5. #29 GS State (17269)	3-17	9:25	✓					3	N	/	/	/	
6.													
7.													
8.													
9.													
10.													
11.													
12.													
13.													

Remarks:

Requested Turnaround: Minutes?

GSAI Group:

Special Detection Limits

QC Package: (check one)
☐ CLP ☐ Site Specific
☐ Tier 1 ☐ Tier 2 ☐ QC Summary

ERN LITHOGRAPH, INC. - (713) 780-0400 — White Copy to Accompany Samples to Lab — Yellow Copy Retained by Client — Pink Copy Retained by Sampler

ENVIRONMENTAL LAB OF TEXAS, INC.

"Don't Treat Your Soil Like Dirt!"

TIPPERARY
ATTN: MR. VICTOR A. VICE
P.O. BOX 857
TATUM, NM 88267
FAX: 505-398-6510
FAX: 281-648-8996

Receiving Date: 01/08/99
Sample Type: Water
Project : None Given
Project Location: Tatum, New Mexico 88237

Analysis Date: 01/08/99
Sampling Date: 01/06 & 01/07/99
Sample Condition: Intact/Iced/HCl

ELT#	FIELD CODE	BENZENE (mg/l)	TOLUENE (mg/l)	ETHYLBENZENE (mg/l)	m,p-XYLENE (mg/l)	o-XYLENE (mg/l)
16587	Sohio St. #1 - #17	0.676	0.136	0.094	0.339	0.163
16588	Sohio St. #1 - #18	1.10	0.247	0.107	0.415	0.203
16589	Sohio Sta. M/W #19	0.040	0.014	0.006	0.021	0.013
16590	Sohio Sat. M/W #20	0.341	0.010	0.005	0.026	0.008
16591	GS State M/W #21	0.133	0.010	0.054	0.056	0.006
16592	GS State M/W #22	0.039	0.010	0.020	0.048	0.017
16593	Sat. #4 M/W #23	0.004	0.003	0.001	0.004	0.002
16594	Sat. #4 M/W #24	0.004	0.003	<0.001	0.002	<0.001
16595	Iva Com. M/W #1	0.003	0.001	<0.001	0.002	0.004
16596	Iva Com. M/W #2	0.004	0.001	<0.001	0.003	0.001
16597	Mable Com. M/W #3	<0.001	0.002	0.012	0.042	0.016
16598	Mable Com. M/W #4	0.007	0.002	0.002	0.006	0.002
16599	Vera M/W #5	0.002	0.002	0.001	0.004	0.002
16600	Bell A M/W #6	0.127	0.001	0.003	0.005	0.001
16601	NBN M/W #7	0.003	<0.001	<0.001	0.002	<0.001
16602	NBF M/W #8	0.026	0.001	0.003	0.003	<0.001
16603	Sat. 4 M/W #9	0.034	0.003	0.006	0.005	0.001
16604	Sohio St. #1 M/W #10	1.00	0.067	0.156	0.214	0.095
16605	Sohio Sta. M/W #11	0.061	0.011	0.005	0.018	0.012
16606	Bell A M/W #13	0.001	<0.001	<0.001	0.003	0.001
16607	Bell A M/W #14	0.154	<0.001	0.002	0.003	0.001
16608	NBF M/W #15	1.63	1.49	0.182	0.728	0.350
16609	NBF M/W #16	1.47	0.122	0.047	0.144	0.062
	% IA	86	86	87	85	87
	% EA	90	90	89	88	90
	BLANK	<0.001	<0.001	<0.001	<0.001	<0.001

METHODS: SW 846-8020,5030

Roland K. Tuttle

Roland K. Tuttle

1-11-99

Date

Environmental Lab of Texas, Inc.

12600 West I-20 East Odessa, Texas 79763
(915) 563-1800 FAX (915) 563-1713

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

V.A. Vice 7. Whole Earth

Project Manager: Tipperary Oil & Gas

Phone #: 1-800-864-4358
FAX #: 505-398-6509

Company Name & Address: Tatum, N. Mex #88267

Project #: M/W

Project Name:

Project Location: Tatum, N. Mex

Sampler Signature: D.A. Vice

LAB # (LAB USE ONLY)	FIELD CODE	# CONTAINERS	Volume/Amount	MATRIX: WATER	SOIL	AIR	SLUDGE	OTHER	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE	OTHER	SAMPLING: DATE	TIME
16595	IVA Com. M/W #1 #2	2												1/6/99	
16596															
16597	Mable Com. #3 #4	2												1/6/99	
16598															
16599	Vera #M/W #5	2												1/6/99	
16600	Bell A M/W #6	2												1/6/99	
16601	NBN M/W #7	2												1/6/99	
16602	NBF M/W #8	2												1/6/99	
16603	Satellite 4-M/W #9	2												1/6/99	
16604	Solo ST #1 - M/W #10	2												1/7/99	
16605	Solo ST #- M/W #11	2												1/7/99	
16606															
16607	Bell A M/W #13 #14	2												1/6/99	
16608															
16609	NBF M/W #15-16	2												1/6/99	

ANALYSIS REQUEST

BTEX 8020/5030	TPH 418.1	TCLP Metals Ag As Ba Cd Cr Pb Hg Se	Total Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Volatiles	TCLP Semi Volatiles	TDS	RCI

Relinquished by:	Date:	Time:	Received by:
	01-08-99	0855	
Relinquished by:	Date:	Time:	Received by:
Relinquished by:	Date:	Time:	Received by Laboratory:

REMARKS

P. 03

Environmental Lab of Texas, Inc.

12600 West I-20 East Odessa, Texas 79763
(915) 563-1800 FAX (915) 563-1713

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

V.A. Vice - Whole Earth

Project Manager: 505-398-6509 Off — Phone #: 1-800-854-4358

Tipperary Oil & Gas — FAX #:

Company Name & Address: Tatum, New Mexico 88267

Project #: — Project Name:

Project Location: — Sampler Signature: Victor A. Vice

LAB # (LAB USE ONLY)	FIELD CODE	# CONTAINERS	Volume/Amount	MATRIX: WATER	SOIL	AIR	SLUDGE	OTHER	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE	OTHER	SAMPLING: DATE	TIME	BTEX 8020/5030	TPH 418.1	TCLP Metals Ag As Ba Cd Cr Pb Hg Se	Total Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Volatiles	TCLP Semi Volatiles	TDS	RCI
16987	Sohio STA #17-18	2												1/1/99									
16988	Sohio STA #19-20	2												1/1/99									
16989	Sohio STA #21-22	2												1/1/99									
16990	GS STATE #23-24	2												1/1/99									
16991	Satellite #4 #23 #24	2												1/6/99									
16992																							
16993																							
16994																							

Relinquished by:	Date:	Time:	Received by:
	01-08-99	0855	
Relinquished by:	Date:	Time:	Received by:
Relinquished by:	Date:	Time:	Received by Laboratory:

REMARKS

P.02

QP-28

WHOLE EARTH ENVIRONMENTAL QUALITY PROCEDURE

Procedure for Developing Cased Water Monitoring Wells

Completed By: Approved By: Effective Date: / /

1.0 Purpose

This procedure outlines the methods to be employed to develop cased monitoring wells.

2.0 Scope

This procedure shall be used for developed, cased water monitoring wells. It is not to be used for standing water samples such as ponds or streams.

3.0 Preliminary

3.1 Prior to development, the static water level and height of the water column within the well casing will be measured with the use of an electric D.C. probe or a steel engineer's tape and water sensitive paste.

3.2 All measurements will be recorded within a field log notebook and subsequently reported within the driller's boring log report.

3.3 All equipment used to measure the static water level will be decontaminated after each use by means of Alconox, a phosphate free laboratory detergent, and water to reduce the possibility of cross-contamination. The volume of water in each well casing will be calculated.

4.0 Purging

4.1 Wells will be purged by removing a minimum of three well casing volumes by using a 2" decontaminated submersible pump or dedicated one liter Teflon bailer.

4.2 If a submersible is used the pump will be decontaminated prior to use by scrubbing the outside surface of tubing and wiring with an Alconox-water mixture, pumping an Alconox-water mixture through the pump, and a final flush with fresh water.

5.0 Water Disposal

5.1 All purge and decontamination water will be temporarily stored within a 60 gallon portable tank and then pumped into a permanent storage tank to be later disposed of in an appropriate manner.

6.0 Records

6.1 Whole Earth will record the amount of water removed from the well during development procedures. The purge volume will be reported to the appropriate regulatory authority when filing the closure report.

Calculation for Determining the Minimum Bailing Volume for Monitor Wells

Formula $V = (\pi r^2 h)$

V= volume
π= pi
r= inside radius of the well bore
h= maximum height of well bore in water table

π	r^2	h (in)	V (cu. in)	V (gal)	X 3 Volumes	Actual
3.1416	1	180	565.488	2.448	7.344	>10

G.S. State #1
1999 Activity Summary

Monitor Well # 12
This well had not been routinely sampled due to the presence of free product within the well bore. The well was recently bailed dry and we've successfully obtained clear water samples reflecting BTEX concentrations meeting NMWQCC standards. We will continue to monitor this well on a quarterly basis.

Monitor Well # 21
This well also reflected the "summer spike" in BTEX concentrations and is now reflecting declining values as the water table subsides.

Monitor Well # 22
This well also reflected the "summer spike" in BTEX concentrations. We anticipate that the January 2000 sampling round will show lower results.

Monitor Well # 29
This lateral delineation well was drilled and completed in March 1999. We anticipate that the January 2000 sampling round will show lower results.

Monitor Well # 12
G.S. State # 1

Benzene	0.092	0.008
Toluene	0.010	0.007
Ethylbenzene	0.015	0.006
m,p Xylene	0.082	0.024
o Xylene	0.002	0.007
Total Xylene	0.084	0.031
Total BTEX	0.285	0.052

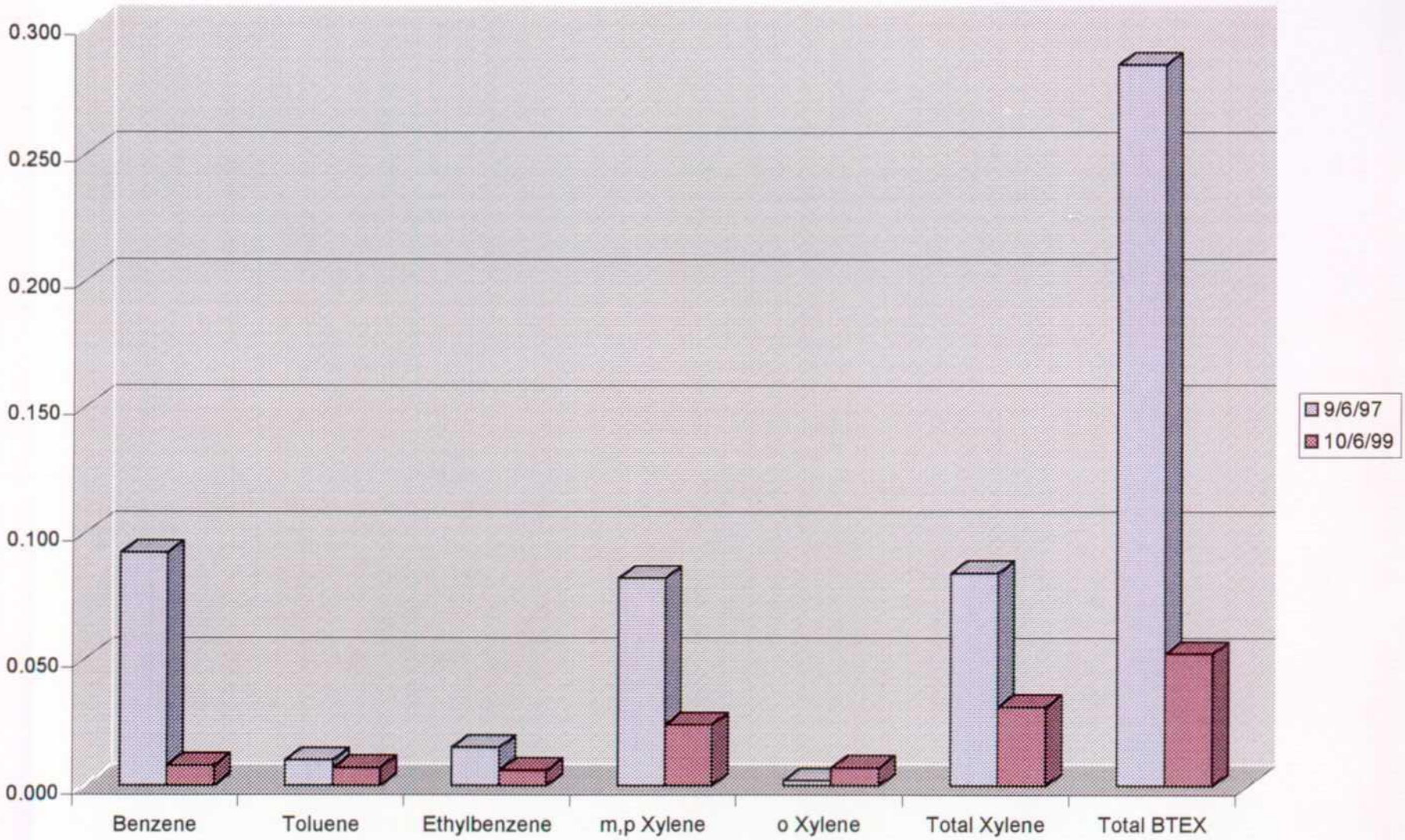
Monitor Well # 21
G.S. State # 1
Sampling Results

Benzene	0.026	0.166	0.233	0.047	0.128	0.133	0.124	0.140	0.116
Toluene	0.008	0.013	0.019	0.009	0.005	0.010	0.008	0.010	0.016
Ethylbenzene	0.005	0.059	0.067	0.018	0.069	0.054	0.042	0.044	0.053
m,p Xylene	0.090	0.705	0.221	0.086	0.030	0.056	0.012	0.062	0.027
o Xylene	0.034	0.01	0.014	0.038	0.006	0.006	0.007	0.016	0.015
Total Xylene	0.124	0.715	0.235	0.124	0.036	0.062	0.019	0.078	0.042
Total BTEX	0.287	0.953	0.554	0.198	0.238	0.259	0.193	0.272	0.227

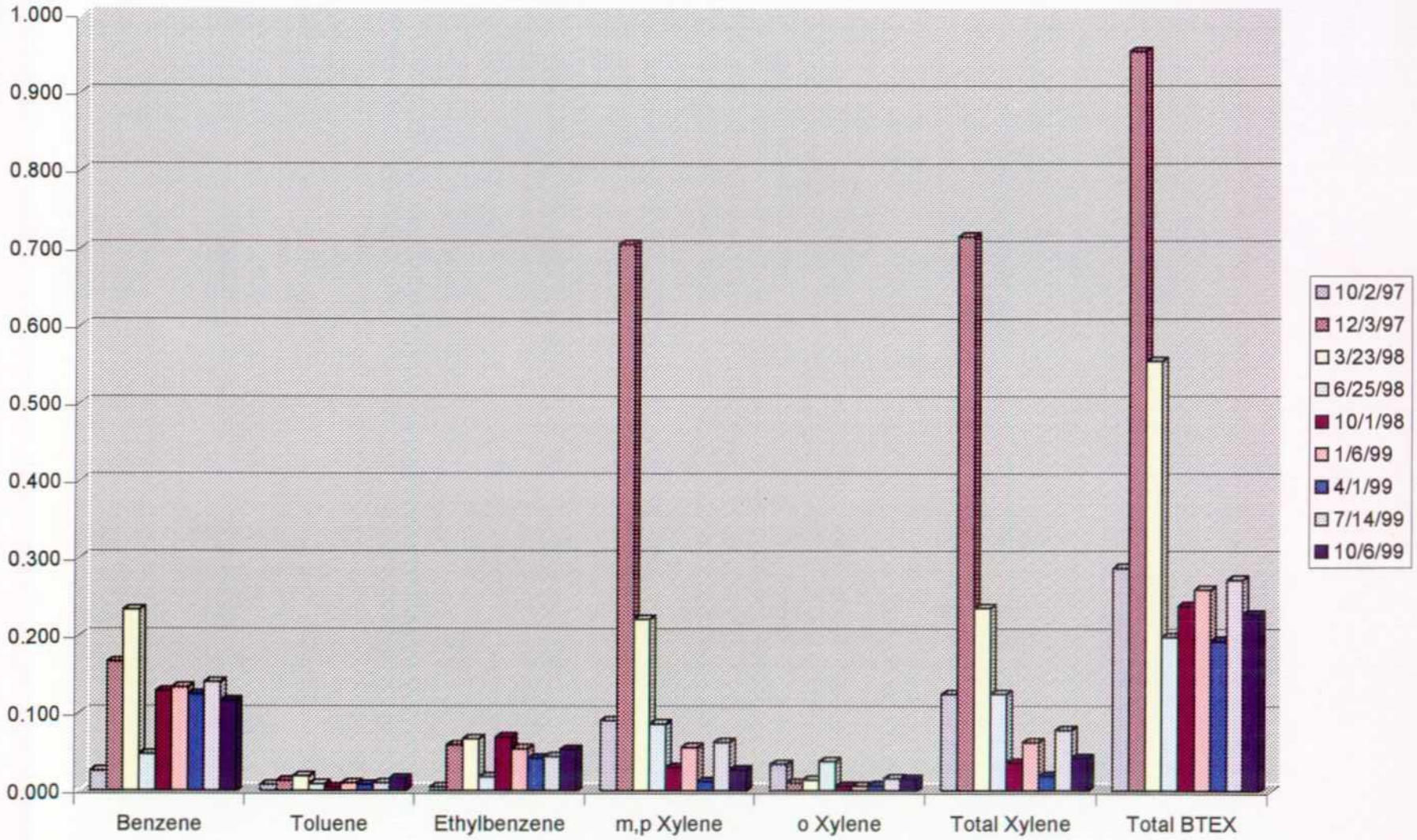
Monitor Well # 22
G.S. State # 1
Sampling Results

Lab. #	12722	13134	14056	14676	15611	16592	18611	20623
Sample Date	10/2/97	12/3/97	3/23/98	6/25/98	10/1/98	1/6/99	7/14/99	10/6/99
Benzene	0.138	0.015	0.05	0.183	0.049	0.039	0.109	0.070
Toluene	0.005	0.005	0.017	0.012	0.011	0.01	0.017	0.015
thylbenzen	0.001	0.010	0.016	0.062	0.026	0.020	0.085	0.047
m,p Xylene	0.002	0.142	0.086	0.077	0.040	0.048	0.144	0.032
o Xylene	0.002	0.028	0.026	0.010	0.018	0.017	0.041	0.020
Total Xylene	0.004	0.170	0.112	0.087	0.058	0.065	0.185	0.052
Total BTEX	0.152	0.200	0.195	0.344	0.144	0.134	0.396	0.184

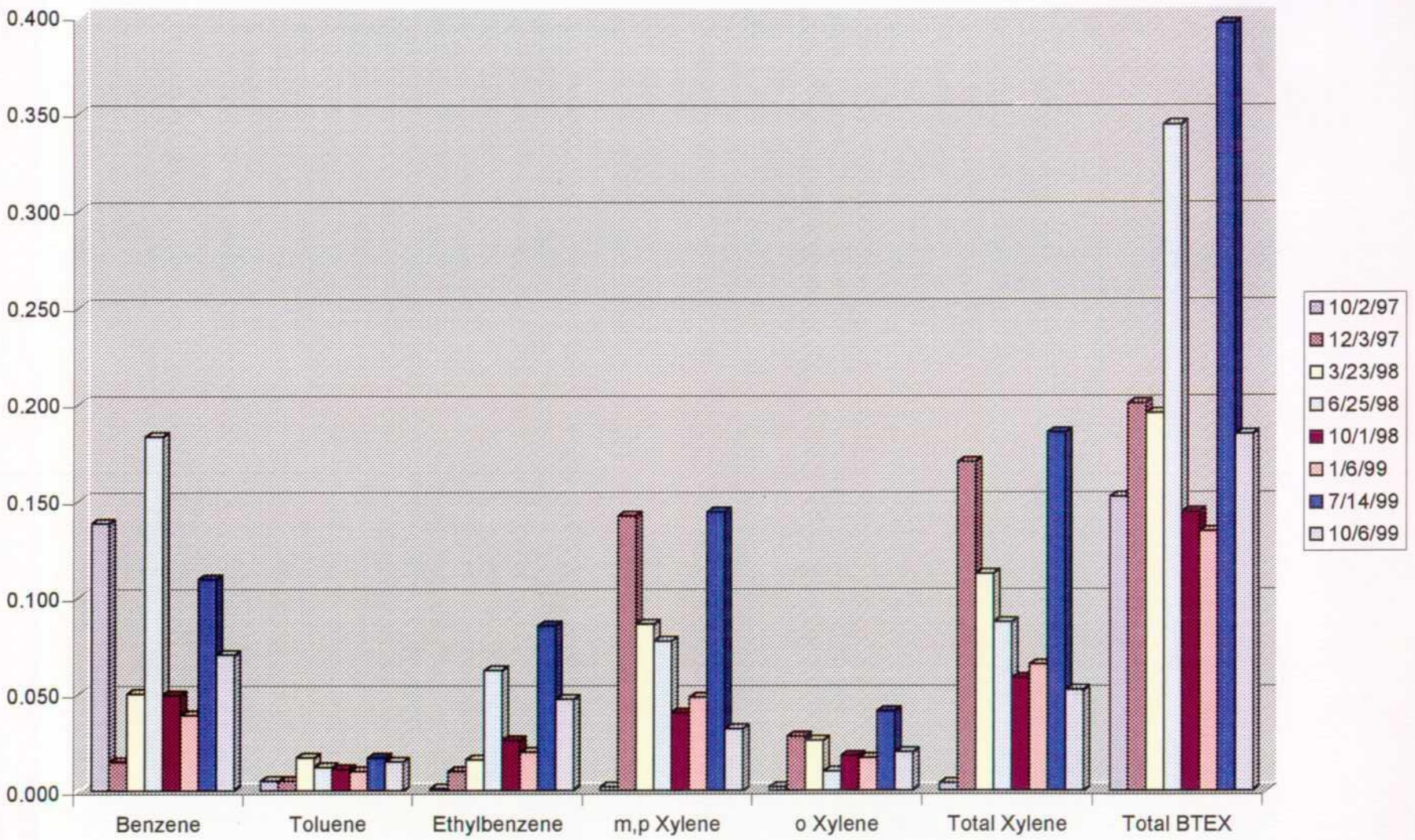
G.S. State MW # 12



G.S. State MW # 21



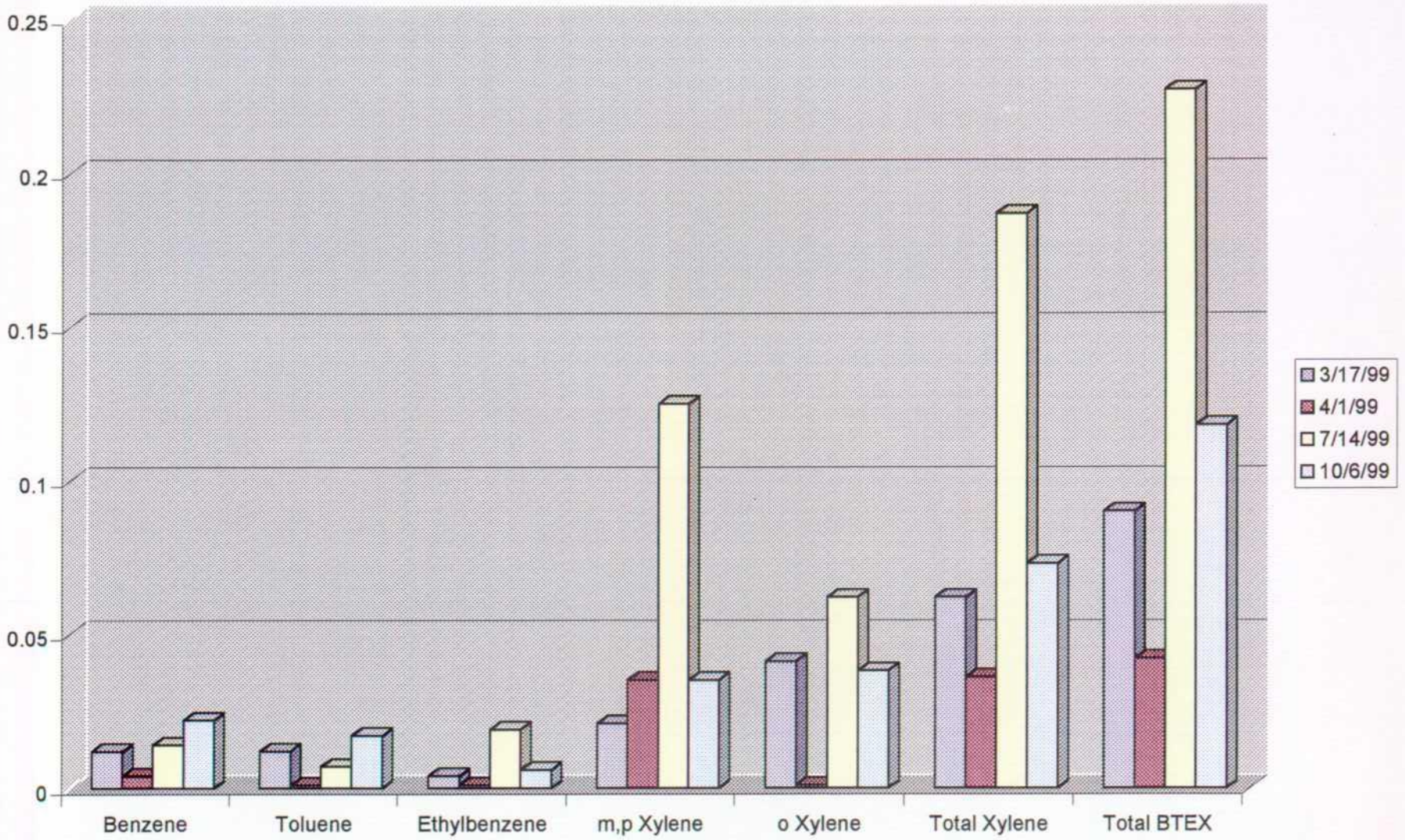
G.S. State MW # 22



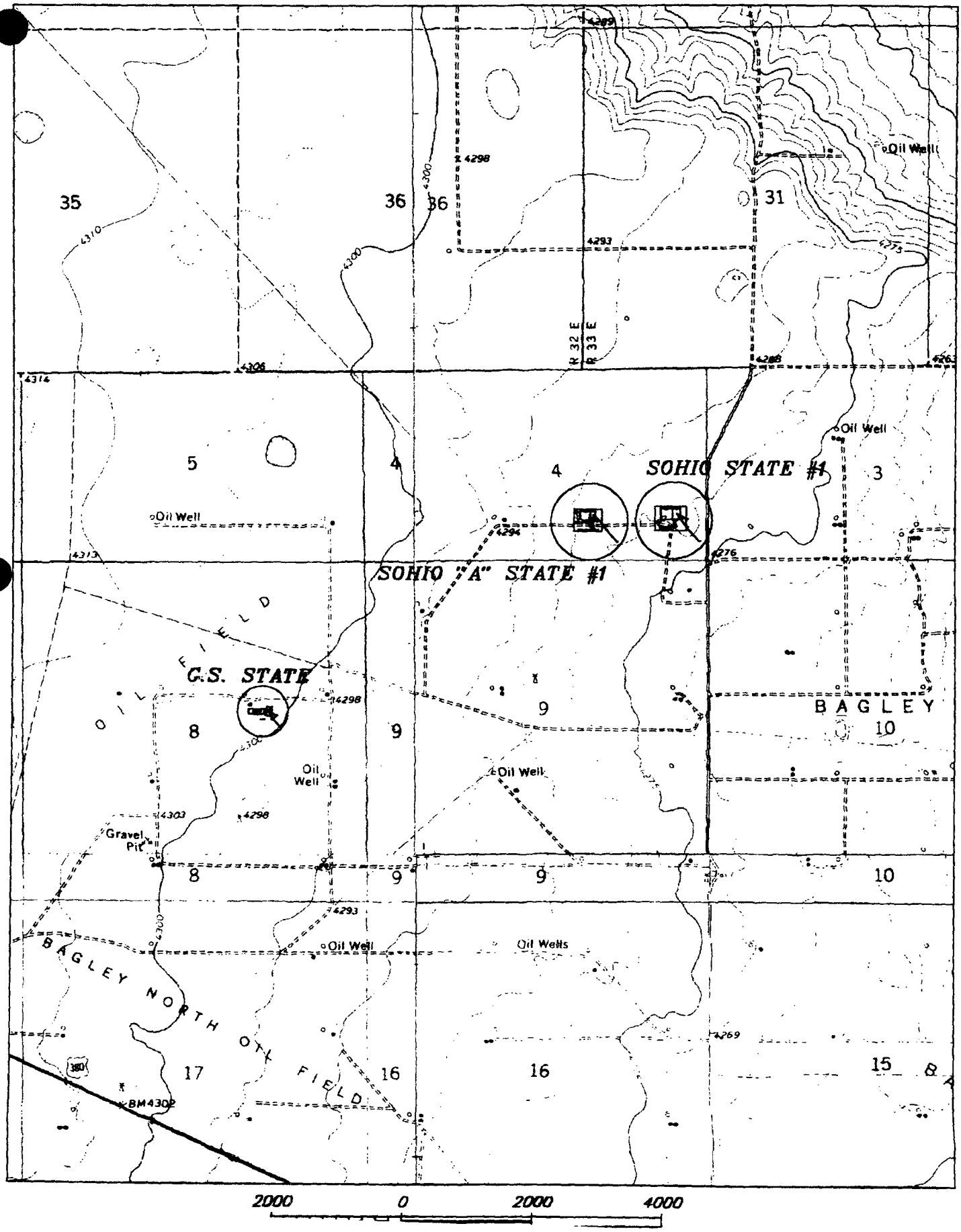
Monitor Well # 29
G.S. State # 1
Sampling Results

Lab. #	17269	17447	18612	20624
Sample Date	3/17/99	4/1/99	7/14/99	10/6/99
Benzene	0.012	0.004	0.014	0.022
Toluene	0.012	0.001	0.007	0.017
thylbenzen	0.004	0.001	0.019	0.006
m,p Xylene	0.021	0.035	0.125	0.035
o Xylene	0.041	0.001	0.062	0.038
Total Xylene	0.062	0.036	0.187	0.073
Total BTEX	0.090	0.042	0.227	0.118

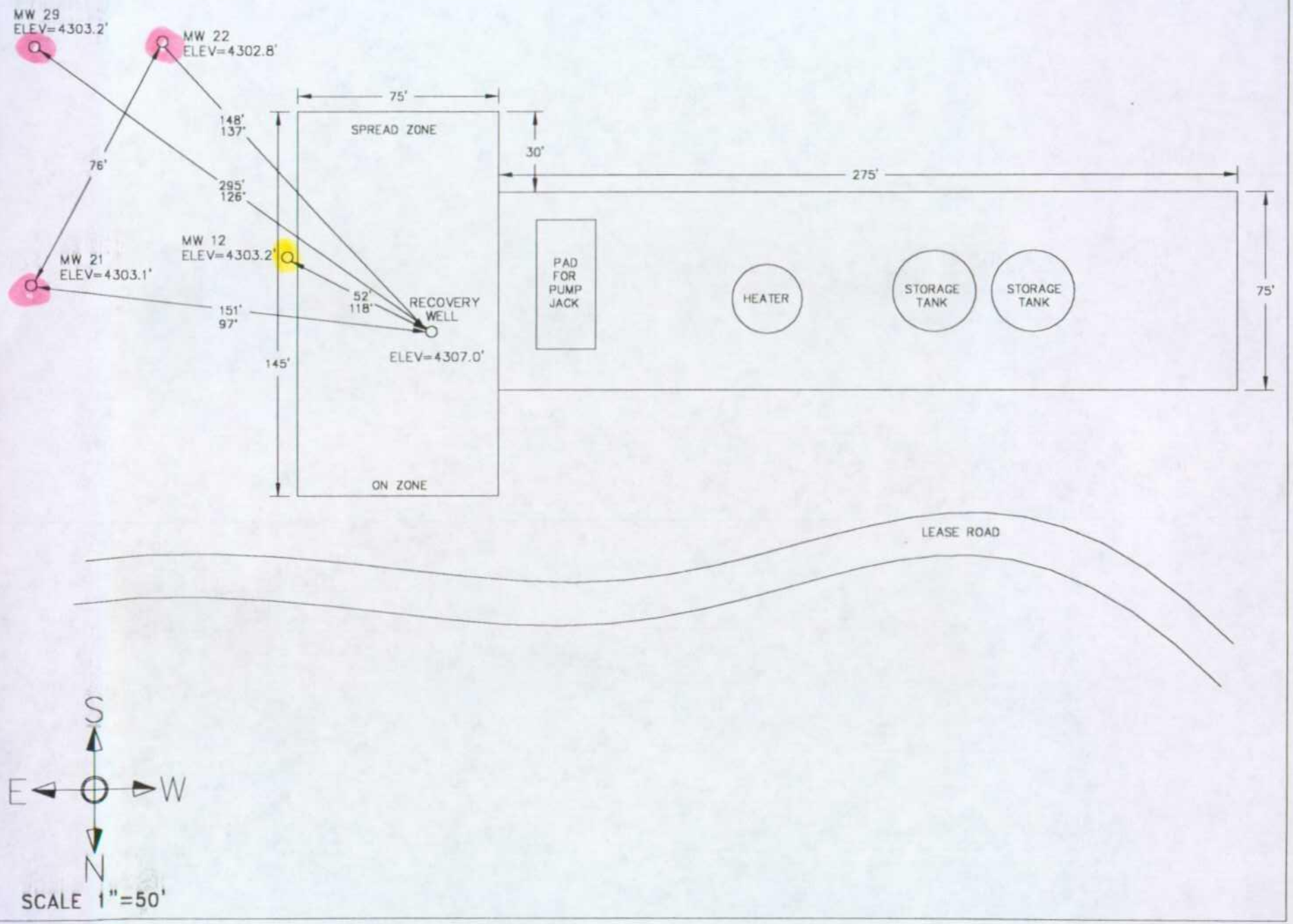
G.S. State MW # 29



WHOLE EARTH ENVIROMENTAL, INC.



G.S. STATE


MW 29
ELEV=4303.2'
MW 22
ELEV=4302.8'
MW 21
ELEV=4303.1'
MW 12
ELEV=4303.2'
RECOVERY WELL
ELEV=4307.0'
75'
SPREAD ZONE
ON ZONE
148'
137'
76'
295'
126'
52'
118'
151'
97'
145'
30'
275'
75'
PAD FOR PUMP JACK
HEATER
STORAGE TANK
STORAGE TANK
LEASE ROAD
S
E
W
N
SCALE 1"=50'

Tipperary

Tipperary Corporation
Tatum Pit Closure Project
Monitor Well Water Elevation Table

Well Name	Monitor Well No.	Surface Elevation	Date Well Drilled	Water Depth @ Drill Date	Water Elevation	Water Depth @ 8/9/99	Water Elev. @ 8/9/99	Water Depth @ 10/21/99	Water Elev. @ 10/21/99	Depth Change Aug. / Oct. '99	Distance to Pit Center (ft)	Gradient (Ft. / Ft.)	Gradient (Ft. /100 Ft.)
Iva	Recovery Well	4 298 42	Aug-97	52 0	4,246 42								
	1	4,292 10	Aug-97	54 9	4,237 20	48 83	4,243 27	51 75	4,240 35	2 92	115	0 080174	8 02
	2	4 291 93	Aug-97	53 0	4,238 93	49 17	4,242 76	51 50	4,240 43	2 33	140	0 053500	5 35
Mable	Recovery Well	4,290 55	Aug-97	52 0	4,238 55								
	3	4 287 22	Aug-97	52 0	4,235 22	48 75	4,238 47	52 50	4,234 72	3 75	148	0 022500	2 25
	4	4,287 46	Aug-97	52 0	4 235 46	48 58	4,238 88	51 75	4,235 71	3 17	160	0 019313	1 93
Vera	Pit Center	4 292 98			4,289 50								
	5	4,298 90	Aug-97	63 0	4,235 90	61 50	4,237 40				159	-0 037233	-3 72
Bell	Pit Center	4 283 09			4,279 60								
	6	4 281 12	Aug-97	51 0	4,230 12	42 13	4,238 99	43 01	4,238 11	0 88	93	0 021183	2 12
	13	4,280 84	Oct-97	47 8	4,233 04	40 83	4,240 01	43 66	4,237 18	2 83	51	0 044118	4 41
	14	4,280 80	Oct-97	48 3	4,232 50	43 00	4,237 80	43 50	4,237 30	0 50	47	0 048723	4 87
	25	4 280 37	Mar-99	47 4	4,232 97	43 50	4,236 87	43 50	4,236 87	0 00	154	0 017662	1 77
NBN	Pit Center	4 282 45			4,282 45								
	7	4 281 59	Aug-97	50 0	4,231 59	43 50	4,238 09				107	0 008037	0 80
NBF	Pit Center	4 266 86			4,266 86								
	8	4 259 41	Aug-97	48 0	4,211 41	35 75	4,223 66	35 75	4,223 66	0 00	165	0 045152	4 52
	15	4,259 68	Oct-97	47 0	4,212 68	34 75	4,224 93	37 00	4,222 68	2 25	198	0 036263	3 63
	16	4,259 06	Oct-97	47 1	4,211 96	36 00	4,223 06	36 10	4,222 96	0 10	247	0 031579	3 16
	26	4,258 04	Mar-99	43 0	4,215 04	34 75	4,223.29	34 60	4,223 44	-0 15	387	0 022791	2 28
Sohio # 1	Pit Center	4 285 42			4,285 42								
	10	4 283 63	Aug-97	50 0	4,233 63	44 50	4,239 13	44 90	4,238 73	0 40	110	0 016273	1 63
	17	4,283 31	Oct-97	49 4	4,233 91	44 00	4,239 31	44 50	4,238 81	0 50	262	0 008053	0 81
	18	4 283 59	Oct-97	48 6	4,234 99	43 75	4,239 84	44 10	4,239 49	0 35	176	0 010398	1 04
	28	4,283 21	Mar-99	46 3	4,236 96	35 00	4,248 21	44 15	4,239.06	9 15	552	0 004004	0 40
	30	4,281 13	Aug-99	45 3	4,235 82	45 31	4,235 82	44 10	4,237 03	-1 21	776	0 005528	0 55
Sohio "A"	Pit Center	4,286 84			4,286 84								
	11	4,285 88	Aug-97	50 0	4,235 88	38 25	4,247 63	38 50	4,247 38	0 25	115	0 008348	0 83
	19	4,285 97	Sep-97	48 7	4,237 27	32 50	4,253 47	35.15	4,250 82	2 65	164	0 005305	0 53
	20	4,285 96	Sep-97	49 5	4,236 46	38 00	4,247 96	38 66	4,247 30	0 66	151	0 005828	0 58
	27	4,285 61	Mar-99	40 0	4,245 61	36 83	4,248 78	38 20	4,247 41	1 37	264	0 004659	0 47
	31	4,283 54	Aug-99	37 5	4,246 09	37 45	4,246 09	38 90	4,244 64	1 45	624	0 005288	0 53
G.S. State	Source Well	4,307 00	Sep-97	48 0	4,259 00								
	12	4,303 27	Aug-97	48 0	4,255 27	42 75	4,260 52	42.90	4,260 37	0 15	52	0 071731	7 17
	21	4,303 08	Oct-97	48 0	4,255 08	43 25	4,259 83	43 66	4,259 42	0 41	151	0 025960	2 60
	22	4,302 77	Oct-97	47 5	4,255 27	43 50	4,259 27	43 90	4,258 87	0 40	148	0 025203	2 52
	29	4,303 20	Mar-99	49 1	4,254 14	44 00	4,259.20	44.25	4,258 95	0 25	295	0 016475	1 65
Sat. # 4	Pit Center	4 211 49			4,208 00								
	9	4,208 66	Aug-97	31 0	4,177 66	26 17	4,182 49	26 75	4,181 91	0 58	80	0 035375	3 54
	23	4 209 03	Oct-97	28 0	4,181 03	26 25	4,182 78	27 15	4,181 88	0 90	158	0 015570	1 56
	24	4,208 64	Oct-97	28 9	4,179 74	26 08	4,182 56	26 45	4,182 19	0 37	150	0 019000	1 90

Note Vera Bell and Satellite 4 had significant subsidance within the pit area
The red elevations include an added 3 49' (Ave of seven other sites)
Correct elevations noted in column 6

NEW MEXICO ENERGY, MINERALS and NATURAL RESOURCES DEPARTMENT

GARY E. JOHNSON
Governor
Jennifer A. Salisbury
Cabinet Secretary

Lori Wrotenbery
Director
Oil Conservation Division

March 15, 2001

CERTIFIED MAIL
RETURN RECEIPT NO. 5051-4218

Mr. Larry Sugano
Tipperary Corporation
633 Seventeenth St., Suite 1550
Denver, Colorado 80202

RE: TATUM PIT CLOSURE PROJECT
LEA COUNTY, NEW MEXICO

Dear Mr. Sugano:

The New Mexico Oil Conservation Division (OCD) has reviewed Tipperary Corporation's (TC) December 7, 2000 "PROGRESS REPORT FOR YEAR 2000, TATUM PIT CLOSURE PROJECT, LEA COUNTY, NEW MEXICO". This document contains TC's annual report on the results of monitoring of ground water contamination related to the closure of 8 unlined pits west of Tatum, New Mexico.

The OCD has the following comments and requests for information regarding the above-referenced document:

1. A review of the OCD's files shows that TC has never responded to the OCD's August 6, 1999 correspondence requiring information related to the remediation and monitoring of contaminated ground water at TC's Tatum Pit closure sites. Please provide this information.

2. The report does not contain a water table potentiometric map for each sampling event at each site which shows the location of the pit and excavated areas, the surveyed locations of all monitor wells and recovery wells and any other pertinent site features as well as the direction and magnitude of the hydraulic gradient created using the water table elevation in each monitor well. This information has been required in prior correspondence and must be submitted with the annual reports in order to be able to evaluate the effectiveness of the monitoring system. Please provide this information.

3. The report does not contain information on the quarterly volume of ground water and product recovered at each site nor the total volume recovered at each site to date. This information has been required in prior correspondence and must be included in the annual reports in order to evaluate the effectiveness of the remediation system. Please provide this information.

4. The report does not contain information on the free product thickness in all wells containing products. Please provide this information such that the OCD can evaluate the effectiveness of the remediation system. In addition please provide this information in all future annual reports.

The above required information shall be submitted to the OCD Santa Fe Office by April 15, 2001 with a copy provided to the OCD Hobbs District Office.

If you have any questions, please call me at (505) 476-3491.

Sincerely,

William C. Olson
Hydrologist
Environmental Bureau

xc: Chris Williams, OCD Hobbs District Office
Mike Griffin, Whole Earth Environmental, Inc.

Tipperary
CORPORATION

633 Seventeenth Street
Suite 1550
Denver, Colorado 80202

December 7, 2000

VIA FEDERAL EXPRESS

Mr. William C. Olson
New Mexico Oil Conservation Division
2040 South Pacheco
Santa Fe, NM 87505

RE: Progress Report for Year 2000
Tatum Pit Closure Project
Lea County, NM

Dear Mr. Olson:

Please find enclosed additional results from our monitor wells in the subject project area. This report summarizes the results from water samples taken on January 8, April 13, July 20, and September 26, 2000. These results represent the tenth through thirteenth quarters of monitoring. In general, we are continuing to observe decreasing levels of BTEX in the monitor wells.

The Executive Summary section contains the following:

- Observations by well of sampling results.
- Summary of water depths in each monitor well.
- Lab results and chain of custody records for the water samples.

Detailed results are presented in tabular and graphical format for each monitor well. The monitor well data is grouped by site location in the report.

We will continue to sample the project quarterly and report the results to your office on an annual basis. If you have any questions, please call me at (303) 293-9379.

Very truly yours,

Larry G. Sugano
Vice President - Engineering

cc: NMOCD Hobbs Office

Enclosures

Tipperary
CORPORATION

Tipperary Corporation
Tatum Pit Closure Project
Monitor Wells
Sampling Results
For Year 2000

Whole Earth Environmental
19606 San Gabriel
Houston, Tx. 77084

Bagley Field
Water Sampling Results Summary

Iva COM
Monitor Wells # 1, 2
BTEX concentrations within the source well remain on a decline curve. They are approximately one half of the initial concentrations and one fifth of the peak concentrations. Monitor Well # 1 continues to show no criteria contaminant concentration exceeding NMWQCC standards however Monitor Well # 2 presented us with an unusual spike in the toluene and xylene concentrations. I'm certain that this is the result of cross contamination within the pump and tubing from Monitor Well # 3.

Mable COM
Monitor Wells # 3, 4
The BTEX concentrations within the source well continue to climb indicating that we are drawing free product. Monitor well # 3 pumped approximately 40% free product. We need to install a sock in the well bore to remove as much free oil as possible. Monitor Well # 4 shows the result of cross contamination from the Iva well # 3.

Bell
Monitor Wells # 6, 13, 14, 25
All wells within the Bell sample matrix continue to show a decline in BTEX concentrations. Two of the four wells are presently at acceptable levels and the other two very near. If this trend continues, we should show all four wells being at acceptable concentrations next year.

NBF
Monitor Wells # 8, 15, 16, 26
Well no. 8 (immediately adjacent to the pit site) continues to show acceptable concentrations. Wells # 15 & 26 have absorbent socks within the bores and resultantly showed a decline in BTEX concentrations of 58% over the last sampling round. Well # 16 shows large amounts of iron sulfide. I recommend that all three outlying wells be equipped with new absorbent socks.

Sohio State # 1
Monitor Wells # 10, 17, 18, 28, 30
Well # 10 continues to show modest declines over the last three sampling periods. Wells # 17 & 18 both have absorbent socks but still contain free product within the samples. I believe that the socks are now saturated beyond their useful lives and should be replaced. The two outermost wells both showed very significant reductions in concentrations. I hope that this is due to the upstream placement of the socks.

Sohio State "A"
Monitor Well # 11, 19, 20, 27, 31
The four nearest monitor wells show a 63% reduction in BTEX concentrations over the last sampling period. These four wells also showed the largest drop in the level of the water table. Only Well # 20 contains an absorbent sock but it registered an 87% reduction in BTEX concentrations. The outermost well, # 31 showed an increase in all BTEX concentrations.

GS State # 1
Monitor Wells # 12, 21, 22, 29
Wells # 12, 21, & 22 all contain absorbent socks and all showed a dramatic reduction in BTEX. Each well continues to contain free product and iron sulfide within the sample fluids. The outermost well, No. 29, also show a significant decline in concentrations over the previous sampling round.

Satellite # 4
Monitor Wells # 9, 23, 24
The Benzene concentrations within each of the three wells remain close to but above the water quality standards. Like Bell, we should have acceptable results next year.

Tipperary Corporation
Tatum Pit Closure Project
Depth to Water

Well Name	Monitor Well No.	Water Depth @ Drill Date	Water Depth 8/9/99	Water Depth 10/21/99	Water Depth 1/8/00	Water Depth 4/13/00	Water Depth 7/20/00	Water Depth 9/26/00
Iva	1	54.9	48.8	51.8	51.7	51.6	51.7	51.8
	2	53.0	49.2	51.5	51.4	51.5	51.6	51.7
Mable	3	52.0	48.8	52.5	52.4	53.7	53.7	53.7
	4	52.0	48.6	51.8	51.6	52.8	51.8	51.8
Bell	6	51.0	42.1	43.0	43.7	44.3	44.4	44.5
	13	47.8	40.8	43.7	44.2	44.0	43.9	44.0
	14	48.3	43.0	43.5	43.9	44.2	44.3	44.2
	25	47.4	43.5	43.5	43.9	44.0	44.0	44.0
NBF	8	48.0	35.8	35.8	36.1	37.1	35.6	35.9
	15	47.0	34.8	37.0	37.1	37.9	37.5	36.3
	16	47.1	36.0	36.1	36.2	36.2	36.2	36.2
	26	43.0	34.8	34.6	34.9	35.9	35.1	35.2
Sohio 1	10	50.0	44.5	44.9	43.9	44.2	45.0	44.9
	17	49.4	44.0	44.5	44.4	44.7	44.5	44.7
	18	48.6	43.8	44.1	45.4	46.4	45.7	45.4
	28	46.3	35.0	44.2	45.8	44.9	44.9	45.1
	30	45.3	45.3	44.1	44.2	44.8	44.3	44.3
Sohio A	11	50.0	38.3	38.5	37.8	38.3	38.3	38.8
	19	48.7	32.5	35.2	37.9	38.2	38.3	38.4
	20	49.5	38.0	38.7	38.0	38.4	38.5	38.4
	27	40.0	36.8	38.2	37.9	38.2	38.1	38.6
	31	37.5	37.5	38.9	39.7	38.5	38.5	38.1
G.S. State	12	48.0	42.8	42.9	44.1	43.2	44.7	44.2
	21	48.0	43.3	43.7	43.9	44.0	44.2	44.3
	22	47.5	43.5	43.9	44.0	44.0	44.0	44.1
	29	49.1	44.0	44.3	44.2	44.3	44.7	44.7
Sat. 4	9	31.0	26.2	26.8	26.8	27.1	27.0	27.0
	23	28.0	26.3	27.2	27.4	27.2	27.2	27.3
	24	28.9	26.1	26.5	26.8	26.9	26.8	26.8

ENVIRONMENTAL LAB OF TEXAS, INC.

"Don't Treat Your Soil Like Dirt!"

TIPPERARY
ATTN: VICTOR A. VICE
P.O. BOX 857
TATUM, N.M. 88267
FAX: 505-398-6510
FAX: 281-646-8996

SampleType: Water
Sample Condition: Intact/ Iced/ HCl/ -2 deg. C
Project #: None Given
Project Name: None Given
Project Location: Tatum, N.M.

Sampling Date: 09/26/00
Receiving Date: 09/28/00
Analysis Date: 10/06/00

ELT#	FIELD CODE	BENZENE mg/L	TOLUENE mg/L	ETHYLBENZENE mg/L	m,p-XYLENE mg/L	o-XYLENE mg/L
31487	MW 13	0.003	0.004	0.003	0.011	0.004
31488	MW 14	0.024	<0.001	0.006	0.011	0.004
31489	MW 25	0.001	<0.001	0.003	0.010	0 004
31490	MW 8	<0.001	<0.001	0.002	0.008	0.003
31491	MW 15	2.89	1.55	0.239	0.750	2.42
31492	MW 16	2.12	0.092	0.099	0.143	0.063
31493	MW 26	0.053	0.022	0.008	0.019	0.010
31494	Iva Source	0.865	0.495	0.080	0.833	0.636
31495	Mable Source	0.980	1.45	0.141	2.36	1.53
31496	G. S. Source	0.415	0.136	0.070	0.391	0.185
31497	MW 21	0.017	0.011	0.014	0.026	0.013
31498	MW 22	0.171	0.022	0.062	0.051	0.099
31499	MW 29	0.016	0.008	0.006	0.020	0.011
31500	MW 9	0.017	0.008	0.004	0.017	0.010
31501	MW 23	0.014	0.007	0.003	0.014	0.008
31502	MW 24	0.009	0.005	0.003	0.012	0.007
	% IA	95	95	96	100	92
	% EA	92	90	89	95	85
	BLANK	<0.001	<0.001	<0.001	<0.001	<0.001

METHODS: SW 846-8021B,5030

Raland K. Tuttle

10-13-00
Date

ENVIRONMENTAL LAB OF , INC.

"Don't Treat Your Soil Like Dirt!"

TIPPERARY
ATTN: VICTOR A. VICE
P.O. BOX 857
TATUM, N.M. 88267
FAX: 505-398-6510
FAX: 281-646-8996

SampleType: Water
Sample Condition: Intact/ Iced/ HCl/ -2 deg. C
Project #: None Given
Project Name: None Given
Project Location: Tatum, N.M.

Sampling Date: 09/26/00
Receiving Date: 09/28/00
Analysis Date: 10/06/00

ELT#	FIELD CODE	BENZENE mg/L	TOLUENE mg/L	ETHYLBENZENE mg/L	m,p-XYLENE mg/L	o-XYLENE mg/L
31503	MW 1	<0.001	0.003	0.006	0.020	0.008
31504	MW 2	<0.010	0.088	<0.010	0.072	0.019
31505	MW 3	<0.200	6.81	1.21	6.38	12.6
31506	MW 4	0.129	2.95	<0.005	1.76	<0.005
31507	MW 6	0.016	<0.001	0.010	0.006	0.002
31508	MW 10	1.62	0.036	0.127	0.308	0.109
31509	MW 17	1.30	0.291	0.165	0.610	0.324
31510	MW 18	2.46	0.432	0.201	0.920	0.544
31511	MW 28	0.076	0.041	0.014	0.186	0.111
31512	MW 30	0.026	0.016	0.010	0.025	0.019
31513	MW 11	0.043	0.009	0.007	0.013	0.008
	% IA	109	110	110	111	111
	% FA	103	94	99	94	93
	BLANK	<0.001	<0.001	<0.001	<0.001	<0.001

METHODS: SW 846-8021B,5030

Raland K. Tuttle

10-13-00
Date

ENVIRONMENTAL LAB OF , INC.

"Don't Treat Your Soil Like Dirt!"

TIPPERARY
ATTN: VICTOR A. VICE
P.O. BOX 857
TATUM, N.M. 88267
FAX: 505-398-6510
FAX: 281-646-8996

SampleType: Water
Sample Condition: Intact/ Iced/ HCl/ -2 deg. C
Project #: None Given
Project Name: None Given
Project Location: Tatum, N.M.

Sampling Date: 09/26/00
Receiving Date: 09/28/00
Analysis Date: 10/06/00

ELT#	FIELD CODE	BENZENE mg/L	TOLUENE mg/L	ETHYLBENZENE mg/L	m,p-XYLENE mg/L	o-XYLENE mg/L
31514	MW 19	0.229	0.005	0.003	0.011	0.004
31515	MW 20	0.008	0.005	0.004	0.012	0.007
31516	MW 27	0.249	0.004	0.003	0.023	0.010
31517	MW 31	0.118	0.004	0.004	0.010	0.004
31518	MW 12	0.820	0.066	0.354	1.48	0.365
	% IA	109	110	110	111	111
	% EA	102	101	104	103	102
	BLANK	<0.001	<0.001	<0.001	<0.001	<0.001

METHODS: SW 846-8021B,5030

Raland K. Tuttle

10-13-00
Date

Environmental Lab of Texas, Inc.

12600 West I-20 East Odessa, Texas 79763
(915) 563-1800 FAX (915) 563-1713

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

Project Manager: | Phone #: | FAX #:

Company Name & Address: Whole Earth Env.

Project #: Triannually Quarterly Sampling | Project Name:

Project Location: | Sampler Signature: M. Griffin

LAB # (LAB USE ONLY)	FIELD CODE	# CONTAINERS	Volume/Amount	MATRIX: WATER	SOIL	AIR	SLUDGE	OTHER	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE	OTHER	SAMPLING: DATE	TIME	ANALYSIS REQUEST: BTEX 8021B/5030	TPH 418.1	TCLP Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Metals Ag As Ba Cd Cr Pb Hg Se	Total Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Volatiles	TCLP Semi Volatiles	TDS	RCI
31508	MW 10	2		✓					✓		✓			9-26										
31509	" 17																							
31510	" 18																							
31511	" 28																							
31512	" 30																							
31513	MW 11																							
31514	19																							
31515	20																							
31516	27																							
31517	31																							
31518	12																							

Relinquished by:	Date:	Time:	Received by:	REMARKS
M. Griffin	9-28	0910	J McMurrey	Rec. 2°C
Relinquished by:	Date:	Time:	Received by:	
Relinquished by:	Date:	Time:	Received by Laboratory:	

Oct 13 00 09:36a

p.9

Environmental Lab of Texas, Inc.

12600 West I-20 East Odessa, Texas 79763
(915) 563-1800 FAX (915) 563-1713

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

Project Manager: | Phone #: | FAX #:

Company Name & Address: Whole Earth Env.

Project #: | Project Name: Tipperary Courtesy Sampling

Project Location: | Sampler Signature: M. Gallegos

LAB # (LAB USE ONLY)	FIELD CODE	# CONTAINERS	Volume/Amount	MATRIX: WATER	SOIL	AIR	SLUDGE	OTHER	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE	OTHER	SAMPLING: DATE	TIME	ANALYSIS REQUEST: BTEX 8020/5030	TPH 418.1	TCLP Metals Ag As Ba Cd Cr Pb Hg Se	Total Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Volatiles	TCLP Semi Volatiles	TDS	TCL
31497	MW 21	2		✓					✓		✓			9-26		✓							
31498	22																						
31499	29																						
31500	9																						
31501	23																						
31502	24																						
31503	1																						
31504	2																						
31505	3																						
31506	4																						
31507	6																						

Relinquished by:	Date:	Time:	Received by:	REMARKS
M. Gallegos	9-28	0910	g mcmurrey	Rec. - 2°C
Relinquished by:	Date:	Time:	Received by:	
Relinquished by:	Date:	Time:	Received by Laboratory:	

Oct 13 00 09:36a

P.5

Environmental Lab of Texas, Inc.

12600 West I-20 East Odessa, Texas 79763
(915) 563-1800 FAX (915) 563-1713

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

Project Manager: M. Griffin

Phone #: (800) 864-4358

FAX #:

Company Name & Address: Whole Earth Environ.

Project #:

Project Name:

Project Location: Tatum NM

Sampler Signature: M. Griffin

ANALYSIS REQUEST

LAB # (LAB USE ONLY)	FIELD CODE	# CONTAINERS	Volume/Amount	MATRIX: WATER	SOIL	AIR	SLUDGE	OTHER	PRESERVATIVE METHOD: HNO3	HCL	ICE	HOME	OTHER	SAMPLING: DATE	TIME	BTEX 8021B/5030	TPH 418.1	TCLP Metals Ag As Ba Cd Cr Pb Hg Se	Total Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Volatiles	TCLP Semi Volatiles	TDS	pH
31487	MW 13	2		✓							✓			9-26		✓							
31488	14																						
31489	25																						
31490	8																						
31491	15																						
31492	16																						
31493	26																						
31494	Iva Source																						
31495	Mable Source																						
31496	GS Source																						

Relinquished by:	Date:	Time:	Received by:	REMARKS
M. Griffin	9-28	0910	[signature]	Rec. -2°C
Relinquished by:	Date:	Time:	Received by:	
Relinquished by:	Date:	Time:	Received by Laboratory:	

ENVIRONMENTAL LAB OF , INC.

"Don't Treat Your Soil Like Dirt!"

TIPPERARY
ATTN: MR. VICTOR A. VICE
P.O. BOX 857
TATUM, NM 88267
FAX: 505-398-6510
FAX: 281-646-8996

Sample Type: Water
Sample Condition: Intact/ Iced/ HCl/ 34 deg. F
Project #: Monitoring Well Quarterly Sampling
Project Name: None Given
Project Location: Tatum

Sampling Date: 07/20/00
Receiving Date: 07/21/00
Analysis Date: 07/24/00

ELT#	FIELD CODE	BENZENE (mg/L)	TOLUENE (mg/L)	ETHYLBENZENE (mg/L)	m,p-XYLENE (mg/L)	o-XYLENE (mg/L)
28434	MW-9	0.047	0.081	0.026	0.126	0.061
28435	MW-4	0.002	0.006	0.008	0.028	0.016
28436	MW-2	<0.001	0.003	0.002	0.006	0.003
28437	MW-16	2.62	0.278	0.149	0.424	0.178
28438	MW-3	<0.001	<0.001	0.107	0.790	0.380
28439	MW-1	<0.001	<0.001	0.004	0.018	0.008
28440	MW-6	0.048	0.002	0.015	0.006	0.002
28441	MW-10	1.86	0.099	0.132	0.391	0.186
28442	MW-11	0.070	0.075	0.026	0.144	0.055
28443	MW-13	0.002	0.002	0.001	0.004	0.002
28444	MW-14	0.038	0.002	0.003	0.005	0.002
28445	MW-15	2.63	4.32	0.655	3.86	6.66
28446	MW-17	1.28	0.203	0.150	0.546	0.294
28447	MW-18	2.18	0.643	0.204	1.10	0.683
28448	MW-19	0.377	0.052	0.017	0.076	0.031
28449	MW-20	0.038	0.074	0.023	0.106	0.042
28450	MW-21	0.084	0.122	0.067	0.236	0.076
28451	MW-22	0.275	0.122	0.088	0.292	0.103
28452	MW-23	0.031	0.058	0.020	0.097	0.048
	% IA	94	94	94	104	96
	% EA	92	99	89	110	92
	BLANK	<0.001	<0.001	<0.001	<0.001	<0.001

METHODS: SW 846-8021B,5030

Raland K. Tuttle

7-26-00
Date

ENVIRONMENTAL LAB OF TEXAS, INC.

"Don't Treat Your Soil Like Dirt!"

TIPPERARY
ATTN: MR. VICTOR A. VICE
P.O. BOX 857
TATUM, NM 88267
FAX: 505-398-6510
FAX: 281-646-8996

Sample Type: Water
Sample Condition: Intact/ Iced/ HCl/ 34 deg. F
Project #: Monitoring Well Quarterly Sampling
Project Name: None Given
Project Location: Tatum

Sampling Date: 07/20/00
Receiving Date: 07/21/00
Analysis Date: 07/25/00

ELT#	FIELD CODE	BENZENE (mg/L)	TOLUENE (mg/L)	ETHYLBENZENE (mg/L)	m,p-XYLENE (mg/L)	o-XYLENE (mg/L)
28453	MW-24	0.021	0.046	0.018	0.083	0.041
28454	MW-25	<0.001	0.001	0.002	0.005	0.002
28455	MW-26	0.177	0.230	0.036	0.128	0.075
28456	MW-27	0.385	0.048	0.017	0.092	0.038
28457	WM-28	0.219	0.180	0.042	0.233	0.128
28458	MW-29	0.045	0.080	0.027	0.121	0.053
28459	MW-30	0.080	0.100	0.028	0.133	0.075
28460	MW-31	0.137	0.046	0.017	0.078	0.032
28461	GS Source	0.481	0.153	0.083	0.378	0.188
28462	MW-12	1.09	<0.025	1.37	10.5	2.28
28463	MW-8	0.002	0.003	0.002	0.008	0.003
28464	IVA Source	1.00	0.815	0.104	0.866	0.676
28465	Mabel Source	0.552	0.622	0.166	1.67	1.01
	% IA	94	94	94	104	96
	% EA	92	99	89	110	92
	BLANK	<0.001	<0.001	<0.001	<0.001	<0.001

METHODS: SW 846-8021B,5030

Raland K. Tuttle

7-26-00
Date

Environmental Lab of Texas, Inc.

12600 West I-20 East Odessa, Texas 79763
(915) 563-1800 FAX (915) 563-1713

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

Project Manager: Elliot Werner
Phone #: (600) 854-4358
FAX #:

ANALYSIS REQUEST

Company Name & Address: Whole Earth / Tipperary

Project #: Monitor well Quarterly
Project Name: Sampeling

Project Location: Tatum
Sampler Signature:

LAB # (LAB USE ONLY)	FIELD CODE	# CONTAINERS	Volume/Amount	MATRIX: WATER	SOIL	AIR	SLUDGE	OTHER	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE	OTHER	SAMPLING: DATE	TIME	BTEX 8020/5030	TPH 418.1	TCLP Metals Ag As Ba Cd Cr Pb Hg Se	Total Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Volatiles	TCLP Semi Volatiles	TDS	RCI
28434	MW-9	1		X					X		X			7/20	AM 4:35	✓							
28435	MW-4	1													AM 10:50	✓							
28436	MW-2	1													AM 11:20	✓							
28437	MW-16	1													PM 12:40	✓							
28438	MW-3	1													AM 10:30	✓							
28439	MW-1	1													AM 11:30	✓							
28440	MW-6	1													PM 12:05	✓							
28441	MW-10	1													PM 3:30	✓							
28442	MW-11	1													PM 2:00	✓							
28443	MW-13	1													PM 12:10	✓							
28444	MW-14	1													AM 12:15	✓							

Relinquished by:	Date:	Time:	Received by:
Elliot Werner	7-21-00	1100	D McInerney
Relinquished by:	Date:	Time:	Received by:
Relinquished by:	Date:	Time:	Received by Laboratory:

REMARKS: Rec 34° F

Environmental Lab of Texas, Inc.

12600 West I-20 East Odessa, Texas 79763
(915) 563-1800 FAX (915) 563-1713

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

Project Manager: Elliot Werner
Phone #: (915) 854-4354
Company Name & Address: Whole Earth / Tipperary
Project #: Monitor well Quarterly Sampling
Project Name:
Project Location: Tatum
Sampler Signature:

ANALYSIS REQUEST

LAB # (LAB USE ONLY)	FIELD CODE	# CONTAINERS	Volume/Amount	MATRIX: WATER	SOIL	AIR	SLUDGE	OTHER	PRESERVATIVE METHOD: HCL	HNO3	ICE	HONE	OTHER	SAMPLING: DATE	TIME	BTEX #8020/5030	TPH 418.1	TCLP Metals Ag As Ba Cd Cr Pb Hg Se	Total Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Volatiles	TCLP Semi Volatiles	TDS	RCI
28445	MW-15	1		X					X		X			7/20	AM 11:00	X							
28446	MW-17	1													PM 3:40								
28447	MW-18	1													PM 3:45								
28448	MW-19	1													PM 2:45								
28449	MW-20	1													PM 2:55								
28450	MW-21	1													PM 2:00								
28451	MW-22	1													PM 1:58								
28452	MW-23	1													PM 4:45								
28453	MW-24	1													PM 5:00								
28454	MW-25	1													PM 12:05								
28455	MW-26	1		↓					↓		↓			↓	PM 2:20	↓							

Relinquished by:	Date:	Time:	Received by:
Elliot Werner	7-21-00	1100	mcmurray
Relinquished by:	Date:	Time:	Received by:
Relinquished by:	Date:	Time:	Received by Laboratory:

REMARKS: Rec 34°F

Environmental Lab of Texas, Inc.

12600 West I-20 East Odessa, Texas 79763
(915) 563-1800 FAX (915) 563-1713

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

Project Manager: Elliot Werner
Phone #:
FAX #: (800) 854-4358
Company Name & Address: Whole Earth / Tipparwy
Project #: Moniter Well Quartoly Sampling
Project Name:
Project Location: Tatum
Sampler Signature:

ANALYSIS REQUEST

LAB # (LAB USE ONLY)	FIELD CODE	# CONTAINERS	Volume/Amount	MATRIX: WATER	SOIL	AIR	SLUDGE	OTHER	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE	OTHER	SAMPLING: DATE	TIME	BTEX 8021B/5030	TPH 418.1	TCLP Metals Ag As Ba Cd Cr Pb Hg Se	Total Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Volatiles	TCLP Semi Volatiles	TDS	RCI
28456	MW-27	1		X					X		X			7/20	3:00 pm	X							
28457	MW-28 (DUP)	1													3:50 pm								
28458	MW-29	1													2:15 pm								
28459	MW-30	1													3:55 pm								
28460	MW-31	1													2:50 pm								
28461	GS Source	1													2:10 pm								
28462	MW-12	1													1:53 pm								
28463	MW-8	1													1:00 pm								
28464	IUA Source	1													11:20 Am								
28465	Mabel Source	1		↓					↓		↓			↓	11:Am ↓								

Relinquished by:	Date:	Time:	Received by:	REMARKS
[signature]	7-21-00	11:10 Am		
Relinquished by:	Date:	Time:	Received by:	
Relinquished by:	Date:	Time:	Received by Laboratory:	

ENVIRONMENTAL LAB OF , INC.

"Don't Treat Your Soil Like Dirt!"

TIPPERARY
ATTN: MR. VICTOR A. VICE
P.O. BOX 857
TATUM, NM 88267
FAX: 505-398-6510
FAX: 281-646-8996

Sample Type: Water
Sample Condition: Intact/Iced/HCl
Project #: Tatum Water Samples
Project Name: None Given
Project Location: None Given

Sampling Date: See Below
Receiving Date: 04/19/00
Analysis Date: 04/25/00

ELT#	FIELD CODE	BENZENE (mg/L)	TOLUENE (mg/L)	ETHYLBENZENE (mg/L)	m,p-XYLENE (mg/L)	o-XYLENE (mg/L)	Sample Date
25151	MW # 11	0.087	0.039	0.014	0.070	0.043	04/18/00
25152	MW #19	0.408	0.041	0.014	0.070	0.040	04/18/00
25153	MW #31	0.602	0.067	0.020	0.121	0.070	04/18/00
25154	MW #10	2.36	0.263	0.195	0.421	0.216	04/18/00
25155	MW #17	1.77	0.209	0.176	0.616	0.344	04/18/00
25156	MW #18 Fore Mod.	3.10	3.11	0.723	4.82	2.95	04/18/00
25157	MW #28	0.055	0.026	<0.010	0.033	0.011	04/18/00
25158	MW #30	0.003	0.005	0.003	0.010	0.004	04/18/00
25159	MW #2A	<0.001	0.011	0.005	0.014	0.006	04/13/00
25160	MW #20	0.025	0.030	0.012	0.057	0.033	04/18/00
25161	Mable Source	0.485	0.342	0.048	0.978	0.685	04/13/00
25162	MW #3	<0.001	0.030	0.022	0.062	0.023	04/13/00
25163	MW #4	0.006	0.009	0.004	0.011	0.005	04/13/00
% IA		99	96	96	103	96	
% EA		103	94	98	112	97	
BLANK		<0.001	<0.001	<0.001	<0.001	<0.001	

METHODS: SW 846-8021B,5030

Raland K. Tuttle

4-27-00
Date

ENVIRONMENTAL LAB OF , INC.

"Don't Treat Your Soil Like Dirt!"

TIPPERARY
ATTN: MR. VICTOR A. VICE
P.O. BOX 857
TATUM, NM 88267
FAX: 505-398-6510
FAX: 281-646-8996

Sample Type: Water
Sample Condition: Intact/Iced/HCl
Project #: Tatum Water Samples
Project Name: None Given
Project Location: None Given

Sampling Date: See Below
Receiving Date: 04/19/00
Analysis Date: 04/24/00

ELT#	FIELD CODE	BENZENE (mg/L)	TOLUENE (mg/L)	ETHYLBENZENE (mg/L)	m,p-XYLENE (mg/L)	o-XYLENE (mg/L)	Sample Date
25140	MW #15	2.40	1.78	0.254	1.08	0.540	04/13/00
25141	MW #16	3.05	0.226	0.153	0.473	0.203	04/13/00
25142	MW #26	0.092	0.108	0.024	0.090	0.048	04/13/00
25143	MW #9	0.048	0.065	0.016	0.054	0.030	04/13/00
25144	MW #23	0.030	0.056	0.014	0.051	0.027	04/13/00
25145	MW #24	0.020	0.041	0.012	0.043	0.022	04/13/00
25146	G.S. Source	0.763	0.184	0.068	0.434	0.189	04/14/00
25147	MW #12	0.871	0.162	0.246	0.932	0.261	04/14/00
25148	MW # 21	0.085	0.009	0.054	0.015	0.006	04/14/00
25149	MW #22	0.413	0.057	0.017	0.082	0.048	04/14/00
25150	MW # 29	0.006	0.008	0.003	0.016	0.018	04/18/00
% IA		96	95	95	98	93	
% EA		102	98	89	88	83	
BLANK		<0.001	<0.001	<0.001	<0.001	<0.001	

METHODS: SW 846-8021B,5030

Raland K. Tuttle

4-27-00
Date

ENVIRONMENTAL LAB OF , INC.

"Don't Treat Your Soil Like Dirt!"

TIPPERARY
ATTN: MR. VICTOR A. VICE
P.O. BOX 857
TATUM, NM 88267
FAX: 505-398-6510
FAX: 281-646-8996

Sample Type: Water
Sample Condition: Intact/Iced/HCl
Project #: Tatum Water Samples
Project Name: None Given
Project Location: None Given

Sampling Date: 04/13/00
Receiving Date: 04/19/00
Analysis Date: 04/26/00

ELT#	FIELD CODE	BENZENE (mg/L)	TOLUENE (mg/L)	ETHYLBENZENE (mg/L)	m,p-XYLENE (mg/L)	o-XYLENE (mg/L)
25164	Iva Source	1.43	1.51	0.176	1.52	1.10
25165	MW #1	<0.001	0.006	0.005	0.015	0.007
25166	MW #2	<0.001	0.007	0.005	0.016	0.006
25167	MW #6	0.208	0.007	0.020	0.022	0.005
25168	MW #13	0.004	0.002	0.002	0.006	0.002
25169	MW #14	0.195	0.004	0.004	0.009	0.003
25170	MW #25	0.002	0.002	0.002	0.005	0.002
25171	MW #8	0.002	0.002	0.002	0.003	0.001
25172	Sohio B (Blank)	<0.001	0.001	<0.001	0.001	<0.001
% IA		100	98	100	107	99
% EA		102	97	98	106	95
BLANK		<0.001	<0.001	<0.001	<0.001	<0.001

METHODS: SW 846-8021B,5030

Raland K. Tuttle

4-27-00
Date

Environmental Lab of Texas, Inc.

12600 West I-20 East Odessa, Texas 79763
(915) 563-1800 FAX (915) 563-1713

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

Project Manager: M. Griffin
Phone #: (800) 854-4358
FAX #: (281) 646-8996

Company Name & Address: Whole Earth Environmental

Project #: Tatum Waters Sampling
Project Name:

Project Location:
Sampler Signature:

LAB # (LAB USE ONLY)	FIELD CODE	# CONTAINERS	Volume/Amount	MATRIX: WATER	SOIL	AIR	SLUDGE	OTHER	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE	OTHER	SAMPLING: DATE	TIME	ANALYSIS REQUEST: BTEX 8021B/5030	TPH 418.1	TCLP Metals Ag As Ba Cd Cr Pb Hg Se	Total Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Volatiles	TCLP Semi Volatiles	TDS	RCI
25161	Mable Source	1		✓					✓		✓			4-13	9:33	✓							
25162	MW 3	✓													9:35	✓							
25163	" 4	✓													9:20	✓							
25164	Iva Source	✓													9:50	✓							
25165	MW 1	✓													10:33	✓							
25166	" 2	✓													10:10	✓							
25167	" 6	✓													11:15	✓							
25168	" 13	✓													11:49	✓							
25169	" 14	✓													11:32	✓							
25170	" 25	✓													1:46	✓							
25171	" 8	✓													2:12	✓							

Relinquished by:	Date:	Times:	Received by:
M. Griffin	4-19-00	6:04 PM	
Relinquished by:	Date:	Times:	Received by:
Relinquished by:	Date:	Times:	Received by Laboratory:

REMARKS

Environmental Lab of Texas, Inc.

12600 West I-20 East Odessa, Texas 79763
(915) 563-1800 FAX (915) 563-1713

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

Project Manager: M. Griffin
Phone #: (800)854-4358
FAX #: (281)646-8996
Company Name & Address: Whole Earth Environmental
Project #: Tatum Water Samplings
Project Name:
Project Location:
Sampler Signature:

LAB # (LAB USE ONLY)	FIELD CODE	# CONTAINERS	Volume/Amount	MATRIX: WATER	SOIL	AIR	SLUDGE	OTHER	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE	OTHER	SAMPLING: DATE	TIME	ANALYSIS REQUEST: BTEX 8020/5030	TPH 418.1	TCLP Metals Ag As Ba Cd Cr Pb Hg Se	Total Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Volatiles	TCLP Semi Volatiles	TDS	RCI	Chlorides
25151	MW 11	1		✓					✓		✓			4/18		✓								✓
25152	MW 19														11:15									
~~25153~~	MW 20T ✱														11:00									
25153	MW 31														10:45									
25154	MW 10														10:30									
25155	MW 17														10:15									
25156	MW 18														9:50									
25157	MW 28														9:40									
25158	MW 30	✓		✓					✓	✓				✓	9:20	✓								✓
25159	MW-2A	✓		✓					✓	✓				4/13	10:43	✓								✓
25160	MW-20	✓		✓					✓	✓				4-18		✓								✓

Relinquished by:	Date:	Time:	Received by:
M Griffin	4-19-00	6:10 pm	Rebecca Jones
Relinquished by:	Date:	Time:	Received by:
Relinquished by:	Date:	Time:	Received by Laboratory:

REMARKS: Can't run Chlorides on samples because of HCl preservative
MW-27 - damaged in transport as per Mike 4/24/00

* Also Fax Tipperary @ 303-291-0398 Attn: Larry Sugano

Environmental Lab of Texas, Inc.

12600 West I-20 East Odessa, Texas 79763
(915) 563-1800 FAX (915) 563-1713

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

Project Manager: M. Griffin
Phone #: (800) 854-4358
FAX #: (281) 646-8996
Company Name & Address: Whole Earth Environmental
Project #: Tatum Water Sampling
Project Name:
Project Location:
Sampler Signature: M. Griffin

LAB # (LAB USE ONLY)	FIELD CODE	# CONTAINERS	Volume/Amount	MATRIX: WATER	SOIL	AIR	SLUDGE	OTHER	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE	OTHER	SAMPLING: DATE	TIME	ANALYSIS REQUEST: BTEX 8020/5030	TPH 418.1	TCLP Metals Ag As Ba Cd Cr Pb Hg Se	Total Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Volatiles	TCLP Semi Volatiles	TDS	RCI
25140	MW # 15	1		✓					✓		✓			4-13	2:31	✓							
25141	MW # 16	✓													2:47								
25142	" 26	✓													3:05								
25143	" 9	✓													3:28								
25144	" 23	✓												↓	3:44								
25145	" 24	✓												4-13	4:08								
25146	GS Source	✓												4-14	8:15								
25147	MW # 12	✓													9:15								
25148	" 21	✓													8:40								
25149	" 22	✓												↓	9:48								
25150	" 29	✓		↓					↓		↓			4-18	8:15	↓							

Relinquished by:	Date:	Times:	Received by:
M. Griffin	4-19-'00	1810	Robert Judd
Relinquished by:	Date:	Times:	Received by:
Relinquished by:	Date:	Times:	Received by Laboratory:

REMARKS: ~~* Missing Sample MW29 of #14.~~

Environmental Lab of Texas, Inc.

12600 West I-20 East Odessa, Texas 79763
(915) 563-1800 FAX (915) 563-1713

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

Project Manager: M. Griffin
Phone #: (800) 854-4358
FAX #: (281) 646-8096
Company Name & Address: Whole Earth Environ.
Project #: Tatum Water Sampling
Project Name:
Project Location:
Sampler Signature: M. Griffin

LAB # (LAB USE ONLY)	FIELD CODE	# CONTAINERS	Volume/Amount	MATRIX: WATER	SOIL	AIR	SLUDGE	OTHER	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE	OTHER	SAMPLING: DATE	TIME	ANALYSIS REQUEST: BTEX 8021B/5030	TPH 418.1	TCLP Metals Ag As Ba Cd Cr Pb Hg Se	Total Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Volatiles	TCLP Semi Volatiles	TDS	RCI
	~~#2A~~ *	1		✓					✓		✓			4/3	1000	✓							
25172	Solid B (Blank)	1		✓					✓		✓					✓							

Relinquished by:	Date:	Time:	Received by:
M. Griffin	4-19-00	6:15	
Relinquished by:	Date:	Time:	Received by:
Relinquished by:	Date:	Time:	Received by Laboratory:

REMARKS: #2A same as MW-2A as per Mike 4/24/00

ENVIRONMENTAL LAB OF , INC.

"Don't Treat Your Soil Like Dirt!"

TIPPERARY
ATTN: MR. VICTOR A. VICE
P.O. BOX 857
TATUM, NM 88267
FAX: 505-398-6510
FAX: 281-646-8996

Sample Type: Water
Sample Condition: Intact/Iced/HCl
Project #: None Given
Project Name: None Given
Project Location: Tatum, N.M.

Sampling Date: 01/08/00
Receiving Date: 01/13/00
Analysis Date: 01/16/00

ELT#	FIELD CODE	BENZENE (mg/L)	TOLUENE (mg/L)	ETHYLBENZENE (mg/L)	m,p-XYLENE (mg/L)	o-XYLENE (mg/L)
22776	#30	0.086	0.095	0.024	0.104	0.063
22777	#23	0.019	0.031	0.019	0.083	0.033
22778	#24	0.016	0.030	0.016	0.071	0.030
22779	#13	0.056	0.005	0.004	0.008	0.004
22780	#4 SOH# 9-7	0.080	0.056	0.016	0.064	0.038
22781	#28	1.32	0.954	0.227	1.04	0.822
22782	G.S. SW	0.804	0.348	0.139	0.925	0.484
22783	#22	0.204	0.058	0.108	0.294	0.083
22784	#25	0.002	0.001	0.001	0.004	0.002
22785	#21	0.069	0.041	0.091	0.131	0.046
22786	#19	0.355	0.055	0.016	0.070	0.042
22787	#31	0.383	0.044	0.013	0.072	0.040
22788	#26	0.140	0.158	0.030	0.119	0.064
22789	MW-2	0.002	0.002	0.001	0.004	0.002
22790	#17	1.87	0.353	0.221	0.782	0.429
	% IA	92	90	86	88	86
	% EA	90	86	86	94	85
	BLANK	<0.001	<0.001	<0.001	<0.001	<0.001

METHODS: SW 846-8021B,5030

Roland K. Tuttle

1-19-00
Date

ENVIRONMENTAL LAB OF , INC.

"Don't Treat Your Soil Like Dirt!"

TIPPERARY
ATTN: MR. VICTOR A. VICE
P.O. BOX 857
TATUM, NM 88267
FAX: 505-398-6510
FAX: 281-646-8996

Sample Type: Water
Sample Condition: Intact/Iced/HCl
Project #: None Given
Project Name: None Given
Project Location: Tatum, N.M.

Sampling Date: 01/08/00
Receiving Date: 01/13/00
Analysis Date: 01/16/00

ELT#	FIELD CODE	BENZENE (mg/L)	TOLUENE (mg/L)	ETHYLBENZENE (mg/L)	m,p-XYLENE (mg/L)	o-XYLENE (mg/L)
22759	#15	3.25	2.55	0.335	1.24	0.654
22760	#18	0.334	0.186	0.074	0.257	0.149
22761	#8	0.007	0.008	0.007	0.015	0.008
22762	#10	2.35	0.520	0.187	0.586	0.329
22763	#11	0.088	0.075	0.035	0.086	0.054
22764	#12	1.03	0.336	1.24	8.03	2.09
22765	#6	0.170	0.007	0.026	0.022	0.008
22766	MW-3	0.022	0.032	0.046	0.215	0.131
22767	MW-1	0.002	0.002	<0.001	0.003	0.002
22768	MW-4	0.004	0.004	0.004	0.011	0.004
22769	#20	0.064	0.064	0.019	0.075	0.044
22770	#14	0.003	0.002	0.002	0.006	0.002
22771	G.S. Last #29	0.032	0.034	0.024	0.104	0.043
22772	#16	1.17	0.122	0.068	0.163	0.083
22773	#9	0.030	0.036	0.021	0.088	0.036
22774	IVA Source	2.35	3.76	0.458	3.21	1.91
22775	Mable Source	0.534	0.548	0.136	1.03	0.946
	% IA	92	90	88	88	86
	% EA	90	86	86	94	85
	BLANK	<0.001	<0.001	<0.001	<0.001	<0.001

METHODS: SW 846-8021B,5030

Raland K. Tuttle

1-19-00
Date

ENVIRONMENTAL LAB OF , INC.

"Don't Treat Your Soil Like Dirt!"

TIPPERARY
ATTN: MR. VICTOR A. VICE
P.O. BOX 857
TATUM, NM 88267
FAX: 505-398-6510
FAX: 281-646-8996

Sample Type: Water
Sample Condition: Intact/ Iced/ HCl/ 34 deg. F
Project #: Monitoring Well Quarterly Sampling
Project Name: None Given
Project Location: Tatum

Sampling Date: 07/20/00
Receiving Date: 07/21/00
Analysis Date: 07/24/00

ELT#	FIELD CODE	BENZENE (mg/L)	TOLUENE (mg/L)	ETHYLBENZENE (mg/L)	m,p-XYLENE (mg/L)	o-XYLENE (mg/L)
28434	MW-9	0.047	0.081	0.026	0.126	0.061
28435	MW-4	0.002	0.006	0.008	0.028	0.015
28436	MW-2	<0.001	0.003	0.002	0.006	0.003
28437	MW-16	2.62	0.278	0.149	0.424	0.178
28438	MW-3	<0.001	<0.001	0.107	0.790	0.380
28439	MW-1	<0.001	<0.001	0.004	0.018	0.008
28440	MW-6	0.048	0.002	0.015	0.006	0.002
28441	MW-10	1.86	0.099	0.132	0.391	0.186
28442	MW-11	0.070	0.075	0.026	0.144	0.055
28443	MW-13	0.002	0.002	0.001	0.004	0.002
28444	MW-14	0.038	0.002	0.003	0.005	0.002
28445	MW-15	2.63	4.32	0.655	3.86	6.66
28446	MW-17	1.28	0.203	0.150	0.546	0.294
28447	MW-18	2.18	0.643	0.204	1.10	0.683
28448	MW-19	0.377	0.052	0.017	0.076	0.031
28449	MW-20	0.038	0.074	0.023	0.106	0.042
28450	MW-21	0.084	0.122	0.067	0.236	0.076
28451	MW-22	0.275	0.122	0.088	0.292	0.103
28452	MW-23	0.031	0.058	0.020	0.097	0.048
	% IA	94	94	94	104	96
	% EA	92	99	89	110	92
	BLANK	<0.001	<0.001	<0.001	<0.001	<0.001

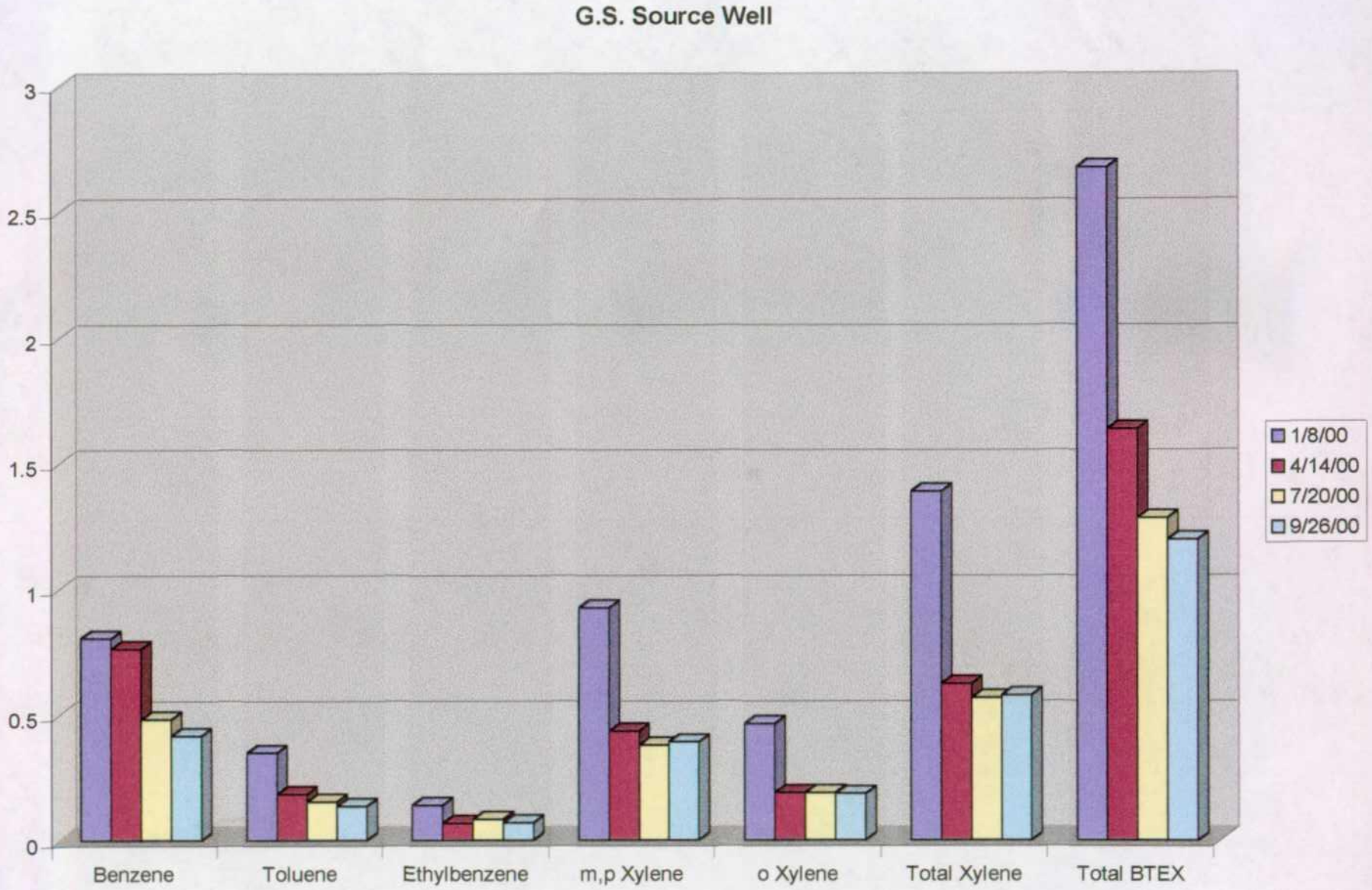
METHODS: SW 846-8021B,5030

Raland K. Tuttle

7-26-00
Date

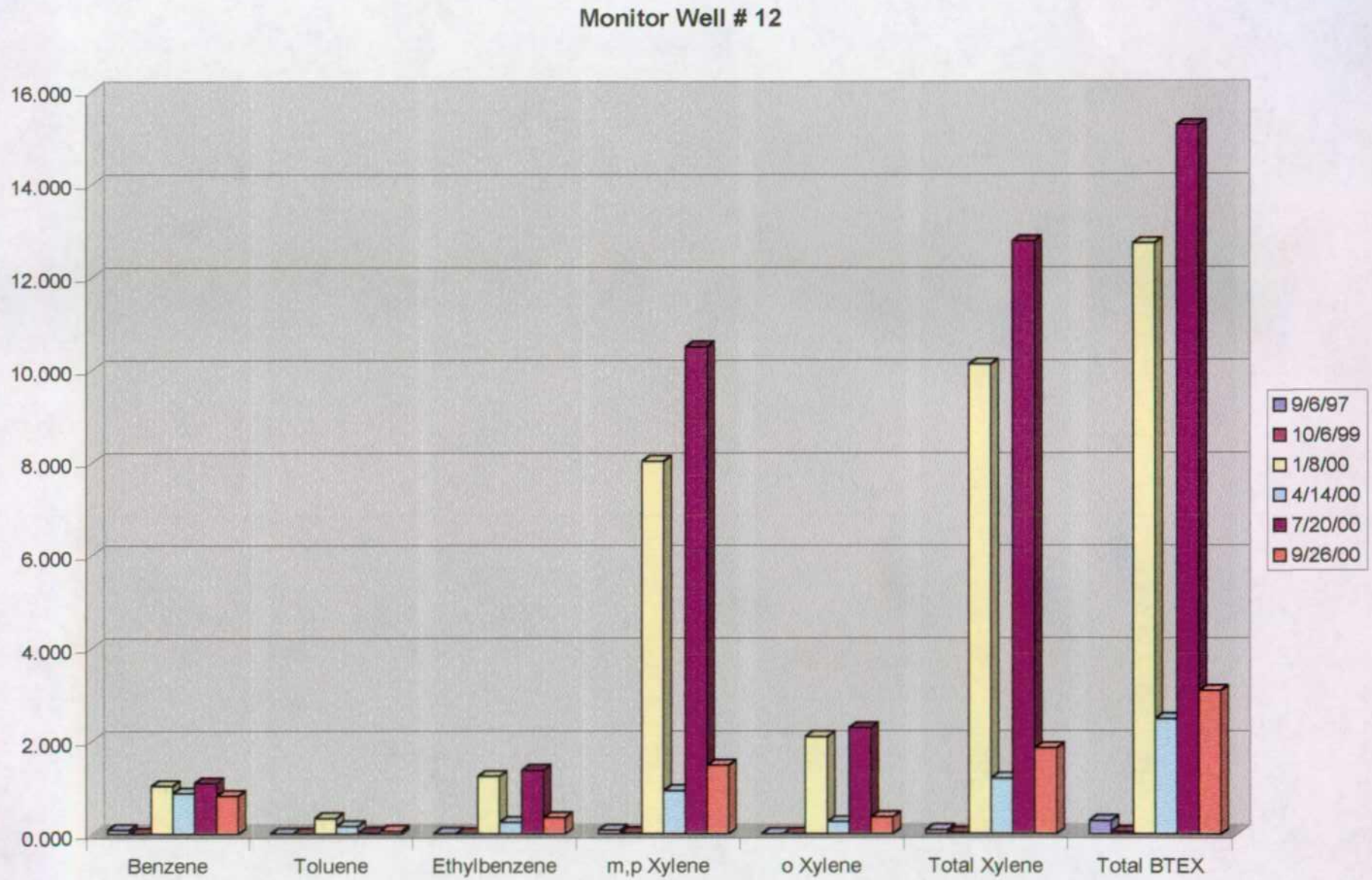
G.S. State # 1
Source Well

Lab. #	22782	25146	28461	31496
Sample Date	1/8/00	4/14/00	7/20/00	9/26/00
Benzene	0.804	0.763	0.481	0.415
Toluene	0.348	0.184	0.153	0.136
Ethylbenzene	0.139	0.068	0.083	0.070
m,p Xylene	0.925	0.434	0.378	0.391
o Xylene	0.464	0.189	0.188	0.185
Total Xylene	1.389	0.623	0.566	0.576
Total BTEX	2.680	1.638	1.283	1.197


G.S. Source Well
3
2.5
2
1.5
1
0.5
0
Benzene
Toluene
Ethylbenzene
m,p Xylene
o Xylene
Total Xylene
Total BTEX
1/8/00
4/14/00
7/20/00
9/26/00

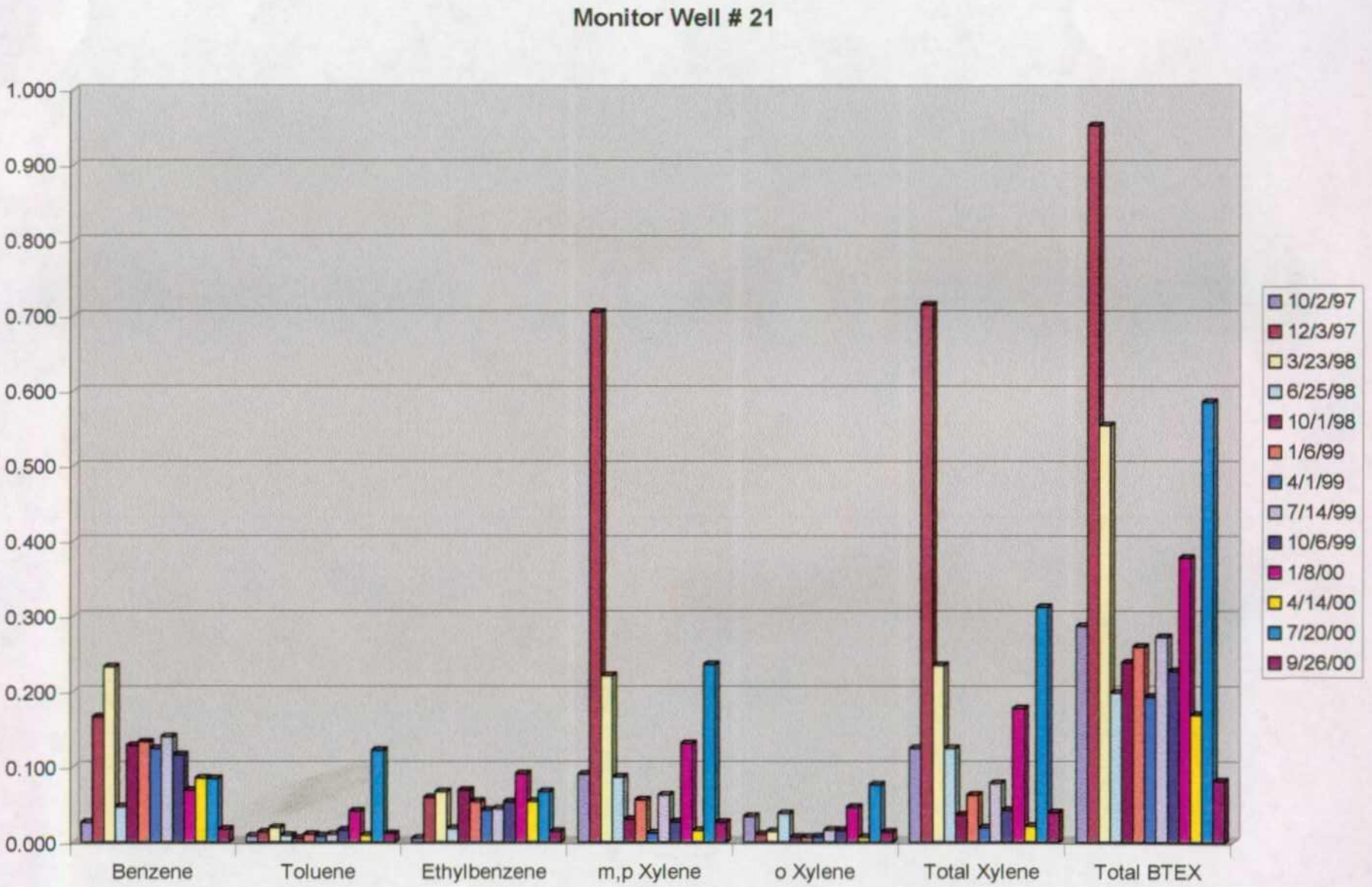
Monitor Well # 12
G.S. State # 1

Lab. #	12478	20625	22764	25147	28462	31518
Sample Date	9/6/97	10/6/99	1/8/00	4/14/00	7/20/00	9/26/00
Benzene	0.092	0.008	1.030	0.871	1.090	0.820
Toluene	0.010	0.007	0.336	0.162	0.025	0.066
Ethylbenzene	0.015	0.006	1.240	0.246	1.370	0.354
m,p Xylene	0.082	0.024	8.030	0.932	10.500	1.480
o Xylene	0.002	0.007	2.090	0.261	2.280	0.365
Total Xylene	0.084	0.031	10.120	1.193	12.780	1.845
Total BTEX	0.285	0.052	12.726	2.472	15.265	3.085


Monitor Well # 12
16.000
14.000
12.000
10.000
8.000
6.000
4.000
2.000
0.000
Benzene
Toluene
Ethylbenzene
m,p Xylene
o Xylene
Total Xylene
Total BTEX
9/6/97
10/6/99
1/8/00
4/14/00
7/20/00
9/26/00

Monitor Well # 21
G.S. State # 1
Sampling Results

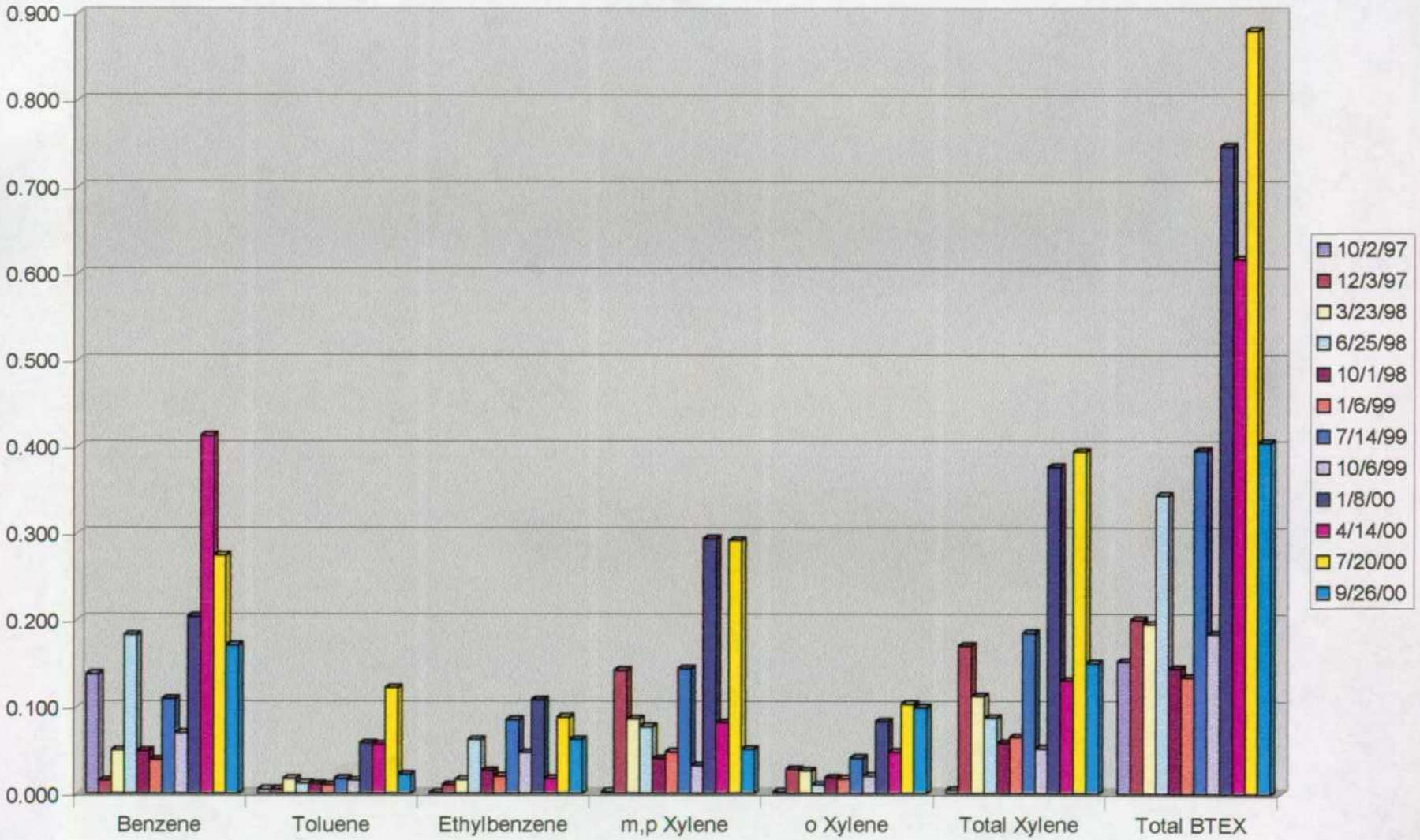
Lab. #	12721	13185	14055	14675	15603	16591	17445	18597	20603	22785	25148	28450	31497
Sample Date	10/2/97	12/3/97	3/23/98	6/25/98	10/1/98	1/6/99	4/1/99	7/14/99	10/6/99	1/8/00	4/14/00	7/20/00	9/26/00
Benzene	0.026	0.166	0.233	0.047	0.128	0.133	0.124	0.140	0.116	0.069	0.085	0.084	0.017
Toluene	0.008	0.013	0.019	0.009	0.005	0.010	0.008	0.010	0.016	0.041	0.009	0.122	0.011
Ethylbenzene	0.005	0.059	0.067	0.018	0.069	0.054	0.042	0.044	0.053	0.091	0.054	0.067	0.014
m,p Xylene	0.090	0.705	0.221	0.086	0.030	0.056	0.012	0.062	0.027	0.131	0.015	0.236	0.026
o Xylene	0.034	0.01	0.014	0.038	0.006	0.006	0.007	0.016	0.015	0.046	0.006	0.076	0.013
Total Xylene	0.124	0.715	0.235	0.124	0.036	0.062	0.019	0.078	0.042	0.177	0.021	0.312	0.039
Total BTEX	0.287	0.953	0.554	0.198	0.238	0.259	0.193	0.272	0.227	0.378	0.169	0.585	0.081


Monitor Well # 21
1.000
0.900
0.800
0.700
0.600
0.500
0.400
0.300
0.200
0.100
0.000
Benzene
Toluene
Ethylbenzene
m,p Xylene
o Xylene
Total Xylene
Total BTEX
10/2/97
12/3/97
3/23/98
6/25/98
10/1/98
1/6/99
4/1/99
7/14/99
10/6/99
1/8/00
4/14/00
7/20/00
9/26/00

Monitor Well # 22
G.S. State # 1
Sampling Results

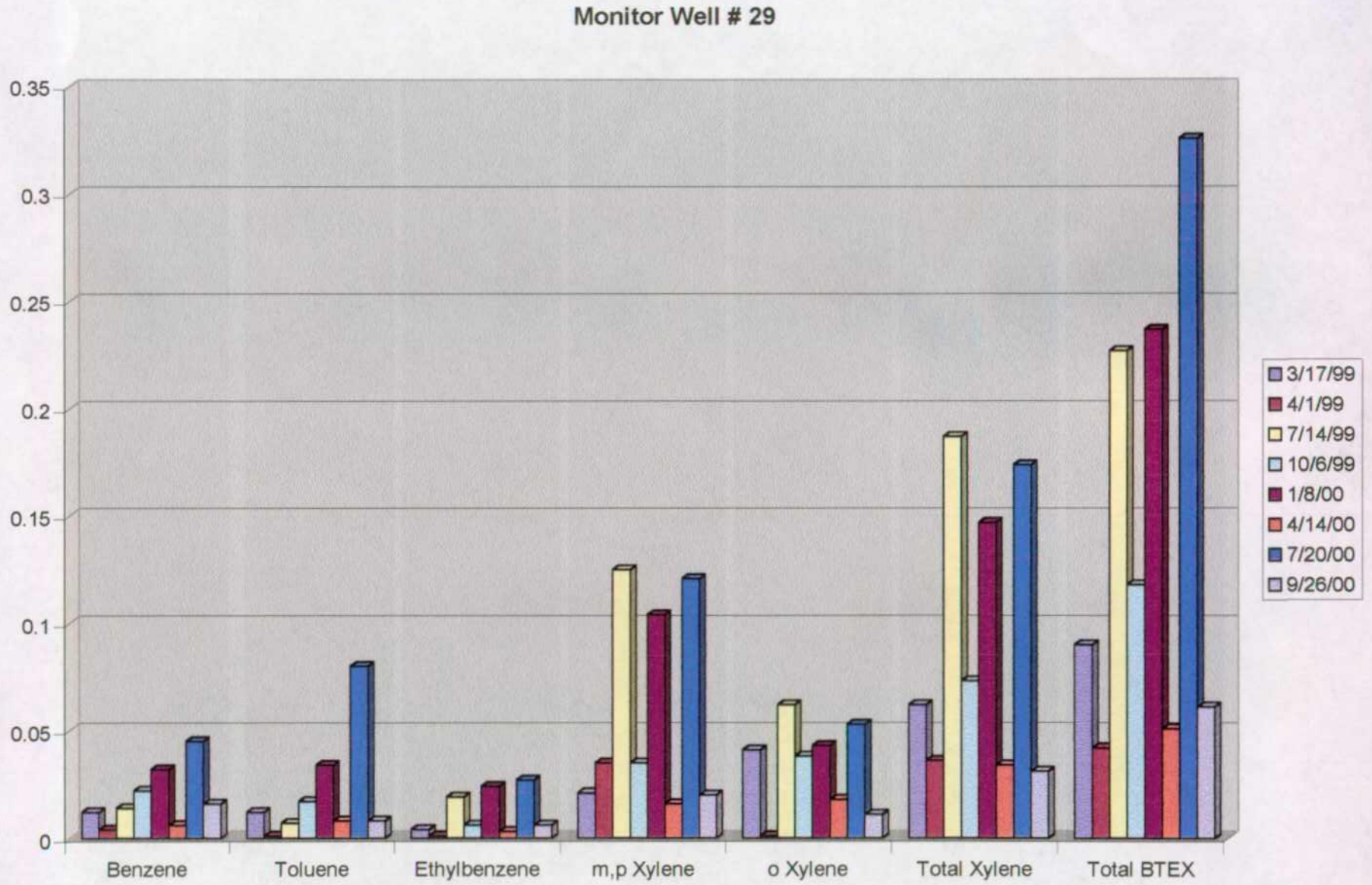
Lab. #	12722	13134	14056	14676	15611	16592	18611	20623	22783	25149	28451	31498
Sample Date	10/2/97	12/3/97	3/23/98	6/25/98	10/1/98	1/6/99	7/14/99	10/6/99	1/8/00	4/14/00	7/20/00	9/26/00
Benzene	0.138	0.015	0.05	0.183	0.049	0.039	0.109	0.070	0.204	0.413	0.275	0.171
Toluene	0.005	0.005	0.017	0.012	0.011	0.01	0.017	0.015	0.058	0.057	0.122	0.022
Ethylbenzene	0.001	0.010	0.016	0.062	0.026	0.020	0.085	0.047	0.108	0.017	0.088	0.062
m,p Xylene	0.002	0.142	0.086	0.077	0.040	0.048	0.144	0.032	0.294	0.082	0.292	0.051
o Xylene	0.002	0.028	0.026	0.010	0.018	0.017	0.041	0.020	0.083	0.048	0.103	0.099
Total Xylene	0.004	0.170	0.112	0.087	0.058	0.065	0.185	0.052	0.377	0.130	0.395	0.150
Total BTEX	0.152	0.200	0.195	0.344	0.144	0.134	0.396	0.184	0.747	0.617	0.880	0.405

Monitor Well # 22



Monitor Well # 29
G.S. State # 1
Sampling Results

Lab. #	17269	17447	18612	20624	22771	25150	28458	31499
Sample Date	3/17/99	4/1/99	7/14/99	10/6/99	1/8/00	4/14/00	7/20/00	9/26/00
Benzene	0.012	0.004	0.014	0.022	0.032	0.006	0.045	0.016
Toluene	0.012	0.001	0.007	0.017	0.034	0.008	0.080	0.008
Ethylbenzene	0.004	0.001	0.019	0.006	0.024	0.003	0.027	0.006
m,p Xylene	0.021	0.035	0.125	0.035	0.104	0.016	0.121	0.020
o Xylene	0.041	0.001	0.062	0.038	0.043	0.018	0.053	0.011
Total Xylene	0.062	0.036	0.187	0.073	0.147	0.034	0.174	0.031
Total BTEX	0.090	0.042	0.227	0.118	0.237	0.051	0.326	0.061


Monitor Well # 29
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
Benzene
Toluene
Ethylbenzene
m,p Xylene
o Xylene
Total Xylene
Total BTEX
3/17/99
4/1/99
7/14/99
10/6/99
1/8/00
4/14/00
7/20/00
9/26/00

STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION DIVISION
2040 S. PACHECO
SANTA FE, NEW MEXICO 87505
(505) 827-7131

August 6, 1999

CERTIFIED MAIL
RETURN RECEIPT NO. Z-274-520-689

Mr. Larry G. Sugano
Tipperary Corporation
633 Seventeenth St., Suite 1550
Denver, Colorado 80202

RE: TATUM PIT CLOSURES

Dear Mr. Sugano:

The New Mexico Oil Conservation Division (OCD) has reviewed Tipperary Corporation's (TC) April 27, 1999 "APRIL 1999 PROGRESS REPORT, TATUM PIT CLOSURE PROJECT, LEA COUNTY, NEW MEXICO". This document contains the results of TC's monitoring of ground water contamination related to the closure of 10 unlined pits west of Tatum, New Mexico. The document also requests final closure of the remedial actions related to unlined pits at the State NBN #1 and Vera #1 sites and proposes modifications to the ground water sampling program.

In order to complete a review of the above referenced closure requests and sampling modifications, the OCD requires that TC submit the following information, with all maps, tables and data segregated into separate case files for each site:

1. A water table potentiometric map for each site which shows the location of the pit and excavated areas, the surveyed locations of all monitor wells and recovery wells and any other pertinent site features as well as the direction and magnitude of the hydraulic gradient created using the water table elevation in each monitor well On March 29, 1999, the OCD required that TC submit this information. The above referenced document states that TC was preparing the maps. To date the OCD has not received this required information.

2. Tables of water table elevations in each monitor well during each sampling event. The document discusses seasonal fluctuations in the water table as responsible for increases in contaminant concentrations in ground water. However, the supporting water table elevation vs. time data for each monitor well is not provided.

3. Tables of all past and present water quality sampling results for each ground water monitoring and recovery well as required in the OCD's January 15, 1999 conditions of approval. The document only contains analytical data for ground water monitoring wells that are currently being sampled.

4. An explanation of the use of drill cuttings as backfill in the annular space above the bentonite plug in each newly constructed monitor well . This is a direct violation of the OCD's January 15, 1999 conditions of approval which required that the remainder of the annular space be grouted to the surface with cement containing 3-5% bentonite. As a result the monitor wells as constructed by TC are potentially direct conduits to ground water.

5. The monitor well development procedures and volumes for each monitor well.

6. The volume of ground water and product recovered to date at all sites with fluid recovery as required in the OCD's January 15, 1999 conditions of approval.

7. A completed OCD pit closure and remediation report form for each site requested for closure. Each form will contain a discussion and the results of all soil and ground water site closure activities including all soil analytical data from the excavations and the backfilled materials as well as figures showing all sample locations.

The above required information shall be submitted to the OCD Santa Fe Office by October 4, 1999 with a copy provided to the OCD Hobbs District Office. Submission of this information will allow the OCD to complete a review of TC's closure requests and proposed ground water sampling plan modifications.

If you have any questions or comments, please call me at (505) 827-7154.

Sincerely,

William C. Olson
Hydrologist
Environmental Bureau

xc: Chris Williams, OCD Hobbs District Office
Mike Matush, NM State Land Office
Mike Griffin, Whole Earth Environmental, Inc.

Tipperary
CORPORATION

633 Seventeenth Street
Suite 1550
Denver, Colorado 80202

April 27, 1999

CERTIFIED MAIL

Mr. William C. Olson
New Mexico Oil Conservation Division
2040 South Pacheco
Santa Fe, NM 87505

RE: April 1999 Progress Report
Tatum Pit Closure Project
Lea County, NM

Dear Mr. Olson:

Please find enclosed additional results from our monitor wells in the subject project area. These results are from water samples taken on April 1, 1999. These samples represent the seventh quarter of monitoring. We will continue to analyze water samples quarterly.

In our January 1999 progress report, we requested final closure for these projects: Vera (pit and monitor well #5) and State NBN (pit and monitor well #7). In your letter dated March 29, 1999, you requested a water table potentiometric map as well as the magnitude of the hydraulic gradient at these sites to complete your review of our request. Please be advised that we are currently constructing this data and it will be forwarded to you as soon as it is completed.

Additional monitor wells were constructed March 15-16 at the following pit sites: Bell A, State NBF, Sohio 1, Sohio A, and GS State. Complete water analyses from these new monitor wells are included in this report. It appears that an additional monitor well will be necessary for the Sohio 1 and Sohio A pit sites. These will be installed accordingly.

If you have any questions, please call me at (303) 293-9379.

Very truly yours,

Larry G. Sugano

Larry G. Sugano
Vice President - Engineering

cc: NMOCD Hobbs Office

Enclosures

Tipperary
CORPORATION

TATUM PIT CLOSURE PROJECT
WATER SAMPLING RESULTS
APRIL, 1999

Executive Summary

Iva COM
Having completed six consecutive quarters of sampling monitor wells 1 & 2 with no BTEX component exceeding WQCC standards, we began a sampling program from the source well. The results are presented in this report. We do not plan to continue to sample wells 1 & 2.

Mable COM
Monitor well #3 has passed six consecutive quarters with no BTEX component exceeding WQCC standards. We do not plan to continue monitoring the location, but will provide complete analyses (RCRA 8 metals, BTEX, and major cation / anions) at the conclusion of the sampling program for the source well. Monitor well #4 showed a slight increase in BTEX concentrations reflecting a normal seasonal increase in water table levels. The source well shows moderate benzene and xylene concentrations.

Vera
The analytical results of six consecutive quarterly samplings described in our February 16th summary revealed no BTEX component concentration in excess of WQCC standards. Tipperary requests final closure of this pit.

Bell A
Monitor wells 6, 13 & 14 show normal increases in BTEX concentrations due to seasonal changes within the water table. An additional delineation well (#25) was drilled a distance of 150' southeast of the mid-point of wells 13 & 14. The drilling log is included within this report. The analytical results of water samples obtained from this new well reflect no BTEX, RCRA 8 metals or cation / anion concentrations in excess of WQCC standards. (See Environmental Labs of Texas log no. 17265).

NBF
Monitor wells 8, 15 & 16 show normal increases in BTEX concentrations due to seasonal changes within the water table. An additional delineation well (#26) was drilled at a distance of 150' southeast of the mid-point of wells 15 & 16. The drilling log is included within this report. The analytical results of water samples obtained from this new well reflect no BTEX, RCRA 8 metals or cation / anion concentrations in excess of WQCC standards. (See Environmental Labs of Texas log no. 17266).

NBN
The analytical results of six consecutive quarterly samplings described in our February 16th summary revealed no BTEX component concentration in excess of WQCC standards. Tipperary requests final closure of this pit.

Sohio State #1
Monitor wells 10, 17 & 18 show normal increases in BTEX concentrations due to seasonal changes within the water table. An additional delineation well (#28) was drilled at a distance of 150' southeast of the mid-point of wells 17 & 18. The drilling log is included within this report. The analytical results of water samples obtained from this new wells reflect acceptable RCRA 8 metals and cation / anion concentrations however the BTEX concentrations are in excess of WQCC standards. (See Environmental Labs of Texas log no. 17268). A fifth monitor well will be drilled, cased, developed and tested.

Sohio State A
Monitor wells 10, 19 & 20 show normal increases in BTEX concentrations due to seasonal changes within the water table. An additional delineation well (#27) was drilled at a distance of 150' southeast of the mid-point of wells 19 & 20. The drilling log is included within this report. The analytical results of water samples obtained from this new well reflect acceptable RCRA 8 metals and cation / anion concentrations however the BTEX concentrations are in excess of WQCC standards. (See Environmental Labs of Texas log no. 17267). A fifth monitor well will be drilled, cased, developed and tested.

G.S. State
Monitor wells 21 & 22 show normal increases in BTEX concentrations due to seasonal changes within the water table. An additional delineation well (#29) was drilled at a distance of 150' southeast of the mid-point of wells 21 & 22. The drilling log is included within this report. The analytical results of water samples obtained from this new well reflect no BTEX, RCRA 8 metals or cation / anion concentrations in excess of WQCC standards. (See Environmental Labs of Texas log no. 17269).

Satellite #4
BTEX concentrations within monitor wells 9 & 23 remain essentially unchanged from the January, 1999 sampling round.

ENVIRONMENTAL
LAB OF , INC.
"Don't Treat Your Soil Like Dirt!"

TIPPERARY
ATTN: MR. VICTOR A. VICE
P.O. BOX 857
TATUM, NM 88267
FAX: 505-398-6510
FAX: 281-646-8996

Receiving Date: 04/02/99
Sample Type: Water
Project : None Given
Project Location: None Given

Analysis Date: 4/05 & 4/06/99
Sampling Date: 04/01/99
Sample Condition: Intact/Iced

ELT#	FIELD CODE	BENZENE (mg/l)	TOLUENE (mg/l)	ETHYLBENZENE (mg/l)	m,p-XYLENE (mg/l)	o-XYLENE (mg/l)
17428	Iva Com Source Well	2.05	4.15	0.902	5.50	3.80
17429	Mable Com Source Well	0.486	0.432	0.066	1.00	0.713
17430	Mable Com #4	0.012	0.008	0.002	0.010	0.006
17431	Bell A #6	0.139	0.013	0.006	0.011	0.006
17432	Bell A #13	0.021	0.018	0.003	0.009	0.006
17433	Bell A #14	0.108	0.015	0.004	0.009	0.005
17434	NBF #8	0.032	0.002	0.004	0.003	0.001
17435	NBF #15	3.11	1.98	0.214	0.767	0.435
17436	NBF #16	3.15	0.164	0.078	0.219	0.098
17437	Sohio St. #1- #10	2.34	0.067	0.168	0.203	0.100
17438	Sohio St. #1- #17	1.35	0.092	0.079	0.248	0.138
17439	Sohio St. #1- #18	3.35	0.331	0.114	0.469	0.280
17440	Sohio St. #1- #28	0.446	0.065	0.011	0.041	0.058
17441	Sohio St. A - #11	0.048	0.008	0.004	0.014	0.010
17442	Sohio St. A - #19	0.026	0.010	0.006	0.016	0.010
17443	Sohio St. A - #20	0.547	0.011	0.005	0.030	0.009
17444	Sohio St. A - #27	0.056	0.007	0.006	0.007	0.013
17445	G.S. State #21	0.124	0.008	0.042	0.012	0.007
17446	G.S. State #22	0.059	0.010	0.036	0.022	0.014
17447	G.S. State #29	0.004	<0.001	<0.001	0.035	<0.001
17448	Satellite #4 - #9	0.027	0.005	0.004	0.004	0.002
17449	Satellite #4 - #23	0.004	0.004	0.001	0.003	0.002
	% IA	102	99	97	97	99
	% EA	100	97	97	91	95
	BLANK	<0.001	<0.001	<0.001	<0.001	<0.001

METHODS: SW 846-8020,5030

Raland K. Tuttle

4-7-99
Date

Environmental Lab of Texas, Inc.

12600 West I-20 East Odessa, Texas 79763
(915) 563-1800 FAX (915) 563-1713

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

Project Manager: TIPPERARY OIL & GAS
Phone #: 505-398-6509
FAX #:
Company Name & Address: Mike Griffin
Project #:
Project Name:
Project Location:
Sampler Signature:

ANALYSIS REQUEST

LAB # (LAB USE ONLY)	FIELD CODE	# CONTAINERS	Volume/Amount	MATRIX: WATER	SOIL	AIR	SLUDGE	OTHER	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE	OTHER	SAMPLING: DATE	TIME	BTEX 8020/5030	TPH 418.1	TCLP Metals Ag As Ba Cd Cr Pb Hg Se	Total Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Volatiles	TCLP Semi Volatiles	TOS	RCI
17428	EVA Com Source Well	2		X							X			4-1		X							
17429	Mable Com Source Well	2		X							X			4-1		X							
17430	Mable Com # 4	2		X							X			4-1		X							
17431	Bell A #6 #13 #14	2	EA	X							X			4-1		X							
17432	NBF #8 #15 #16	2	EA	X							X			4-1		X							
17433	Sohio ST #1 - #10 #17 #18 #28	2	EA	X							X			4-1		X							
17434	Sohio ST #A #11 #19 #20 #27	2	EA	X							X			4-1		X							
17435	GS. STAR # 21 #22 #29	2	EA	X							X			4-1		X							
17436	SATELLITE #4 - Mwell #9 #23															X							

Relinquished by:	Date:	Times:	Received by:
D. A. Vera	4-2-99	1010	Rebecca Jones
Relinquished by:	Date:	Times:	Received by:
Relinquished by:	Date:	Times:	Received by Laboratory:

REMARKS

Env onmental Lab of Texas, Inc.

12600 West I-2\ st Odessa, Texas 79763
(915) 563-1800 FAX (915) 563-1713

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

Project Manager: | **Phone #:** | **FAX #:**

Company Name & Address: Tipperary

Project #: | **Project Name :**

Project Location: | **Sampler Signature:**

ANALYSIS REQUEST

LAB # (LAB USE ONLY)	FIELD CODE	# CONTAINERS	Volume/Amount	MATRIX: WATER	SOIL	AIR	SLUDGE	OTHER	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE	OTHER	SAMPLING: DATE	TIME	BTEX 8020/5030	TPH 418.1	TCLP Metals Ag As Ba Cd Cr Pb Hg Se	Total Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Volatiles	TCLP Semi Volatiles	TDS	RCI
17431	BELLA #6																						
17432	#13																						
17433	#14																						
17434	NBF #8																						
17435	#15																						
17436	#16																						
17437	Sohio St.#1 #10																						
17438	#17																						
17439	#18																						
17440	#28																						
17441	Sohio St. #A #11																						

Relinquished by:	Date:	Times:	Received by:
	04-02-99	1010	
Relinquished by:	Date:	Times:	Received by:
Relinquished by:	Date:	Times:	Received by Laboratory:

REMARKS

Env onmental Lab of Texas, Inc.

12600 West I-2(st Odessa, Texas 79763
(915) 563-1800 FAX (915) 563-1713

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

Project Manager: | **Phone #:** | **FAX #:**

Company Name & Address: Tipperary

Project #: | **Project Name :**

Project Location: | **Sampler Signature:**

LAB # (LAB USE ONLY)	FIELD CODE	# CONTAINERS	Volume/Amount	MATRIX: WATER	SOIL	AIR	SLUDGE	OTHER	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE	OTHER	SAMPLING: DATE	TIME	BTEX 8020/5030	TPH 418.1	TCLP Metals Ag As Ba Cd Cr Pb Hg Se	Total Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Volatiles	TCLP Semi Volatiles	TDS	RCI
17442	SonicSt. #A	#19																					
17443	↓	#20																					
17444	↓	#27																					
17445	G.S. State	#21																					
17446	↓	#22																					
17447	↓	#29																					
17448	Satellite #4	#9																					
17449	↓	#23																					

Relinquished by:	Date:	Times:	Received by:	REMARKS
Relinquished by:	Date: 04-02-99	Times: 1010	Received by:	
Relinquished by:	Date:	Times:	Received by Laboratory:	

ENVIRONMENTAL
LAB OF TEXAS, INC.
"Don't Treat Your Soil Like Dirt!"

TIPPERARY OIL & GAS
633 17TH
DENVER, COLORADO 80202
FAX: 281-646-8996 (Mike Griffin)

Receiving Date: 03/17/99
Sample Type: Water
Project : Tatum Dileneation
Project Location: Tatum, New Mexico

Analysis Date: 03/17/99
Sampling Date: 03/17/99
Sample Condition: Intact/Iced

ELT#	FIELD CODE	BENZENE (mg/l)	TOLUENE (mg/l)	ETHYLBENZENE (mg/l)	m,p-XYLENE (mg/l)	o-XYLENE (mg/l)
17265	#25 Bell	0.006	0.004	0.004	0.005	0.004
17266	#26 NBF	0.002	0.003	0.001	0.002	0.001
17267	#27 Sohio A	0.118	0.019	0.005	0.004	0.008
17268	#28 Sohio #1	0.156	0.008	0.003	0.010	0.005
17269	#29 G.S. State	0.012	0.012	0.004	0.021	0.041
	% IA	104	100	99	98	99
	% EA	108	104	101	102	103
	BLANK	<0.001	<0.001	<0.001	<0.001	<0.001

METHODS: SW 846-8020,5030

Raland K. Tuttle

3-26-99
Date

ENVIRONMENTAL LAB OF , INC.

"Don't Treat Your Soil Like Dirt!"

TIPPERARY OIL & GAS
633 17TH
DENVER. COLORADO 80202
FAX: 281-646-8996(Mike Griffin)

Receiving Date: 03/17/99
Sample Type: Water
Project : Tatum Dileneation
Project Location: Tatum, N.M.

Analysis Date: Hg 3/23/99
Analysis Date: 3/25/99
Sampling Date: 3/17/99
Sample Condition: Intact/Iced

TOTAL METALS (mg/L)

ELT#	Field Code	Ag	As	Ba	Cd	Cr	Hg	Pb	Se
17265	#25 Bell	ND	ND	0.250	ND	0.0110	ND	ND	ND
17266	#26 NBF	ND	ND	0.201	ND	0.0060	ND	ND	ND
17267	#27 Sohio A	ND	ND	0.276	ND	0.0110	ND	ND	ND
17268	#28 Sohio #1	ND	0.028	0.709	ND	0.0220	ND	0.0090	ND
17269	#29 G.S. State	ND	ND	0.369	ND	0.0080	ND	ND	ND
	REPORTING LIMIT	0.0050	0.005	0.010	0.0010	0.0050	0.00020	0.0030	0.0050
	% INSTRUMENT ACCURACY	100	106	95	100	94	103	98	112
	% EXTRACTION ACCURACY	96	104	97	100	96	96	99	102

ND = Not detected at the reporting limit.

METHODS: EPA 200.7, 245.2

Raland K. Tuttle

3-26-99
Date

CORE LAB — GULF STATES ANALYTICAL

6310 Rothway, Houston, Texas 77040
(713) 690-4444, Fax (713) 690-5646

Company: Tipperary O&G
Address: 633 17th Denver, CO 80202
Tele #:
Fax #:
Reports Sent To: Whole Earth
P O #:
Project #:
Project Name: Tatum Dieneation
Project Location: Tatum, NM
Sampler(s) Name: (Signature) M. Griffin
Courier:

Relinquished by Sampler: (Signature) M. Griffin — Date 3-17-99 — Time 1345
Relinquished by: (Signature) — Date — Time
Received by: (Signature) Calvin Hubbard — Date 3-17-99 — Time 1345
Received by: (Signature) — Date — Time
Relinquished by: (Signature) — Date — Time
Received by Laboratory: (Signature) — Date — Time

Field Sample ID	Sampling Date	Sampling Time	Matrix: Water	Soil	Sludge	Oil	Other	# of Containers	Haz. Sample (Y/N)	Request for Analysis: BTEX	RCRA 8 Metals	Major cat & anions	Chlorides	carb/bicarb	SO_4^{2-}	Ca, Mg, K, Na
1. #25 Bell (17265)	3-17	8:10	✓					3	N	/	/	/				
2. #26 NBE (17266)	3-17	8:26	✓					3	N	/	/	/				
3. #27 Sohio A (17267)	3-17	8:44	✓					3	N	/	/	/				
4. #28 Sohio #1 (17268)	3-17	9:05	✓					3	N	/	/	/	X			
5. #29 G.S. State (17269)	3-17	9:25	✓					3	N	/	/	/				
6.																
7.																
8.																
9.																
10.																
11.																
12.																
13.																

Remarks:

Requested Turnaround: Minutes?

GSAI Group:

Special Detection Limits

QC Package: (check one)
☐ CLP ☐ Site Specific
☐ Tier 1 ☐ Tier 2 ☐ QC Summary

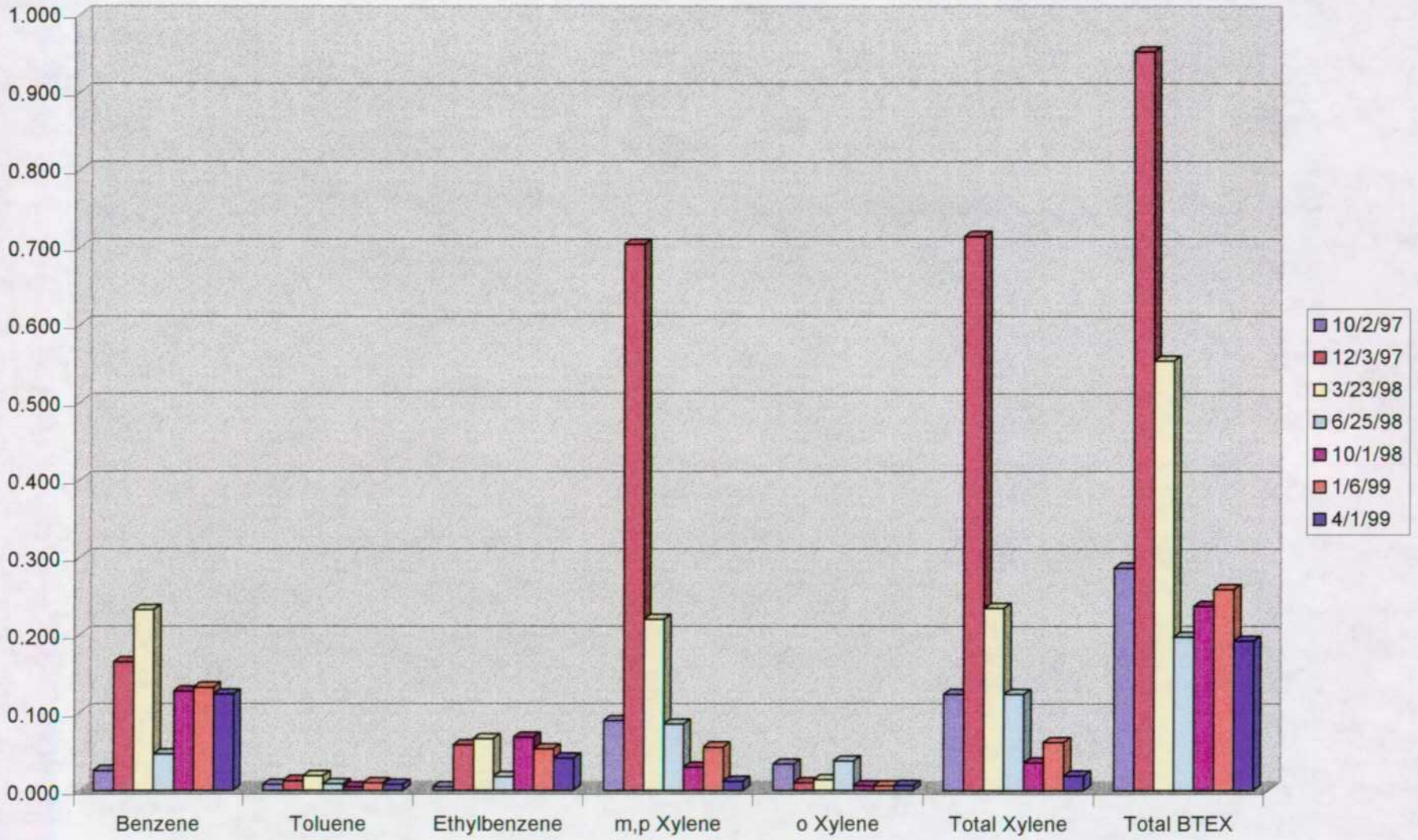
SOUTHERN LITHOGRAPH, INC. - (713) 780-0400

White Copy to Accompany Samples to Lab — Yellow Copy Retained by Client — Pink Copy Retained by Sampler

Monitor Well # 21
G.S. State # 1
Sampling Results

Lab. #	12721	13185	14055	14675	15603	16591	17445
Sample Date	10/2/97	12/3/97	3/23/98	6/25/98	10/1/98	1/6/99	4/1/99
Benzene	0.026	0.166	0.233	0.047	0.128	0.133	0.124
Toluene	0.008	0.013	0.019	0.009	0.005	0.010	0.008
Ethylbenzene	0.005	0.059	0.067	0.018	0.069	0.054	0.042
m,p Xylene	0.090	0.705	0.221	0.086	0.030	0.056	0.012
o Xylene	0.034	0.01	0.014	0.038	0.006	0.006	0.007
Total Xylene	0.124	0.715	0.235	0.124	0.036	0.062	0.019
Total BTEX	0.287	0.953	0.554	0.198	0.238	0.259	0.193

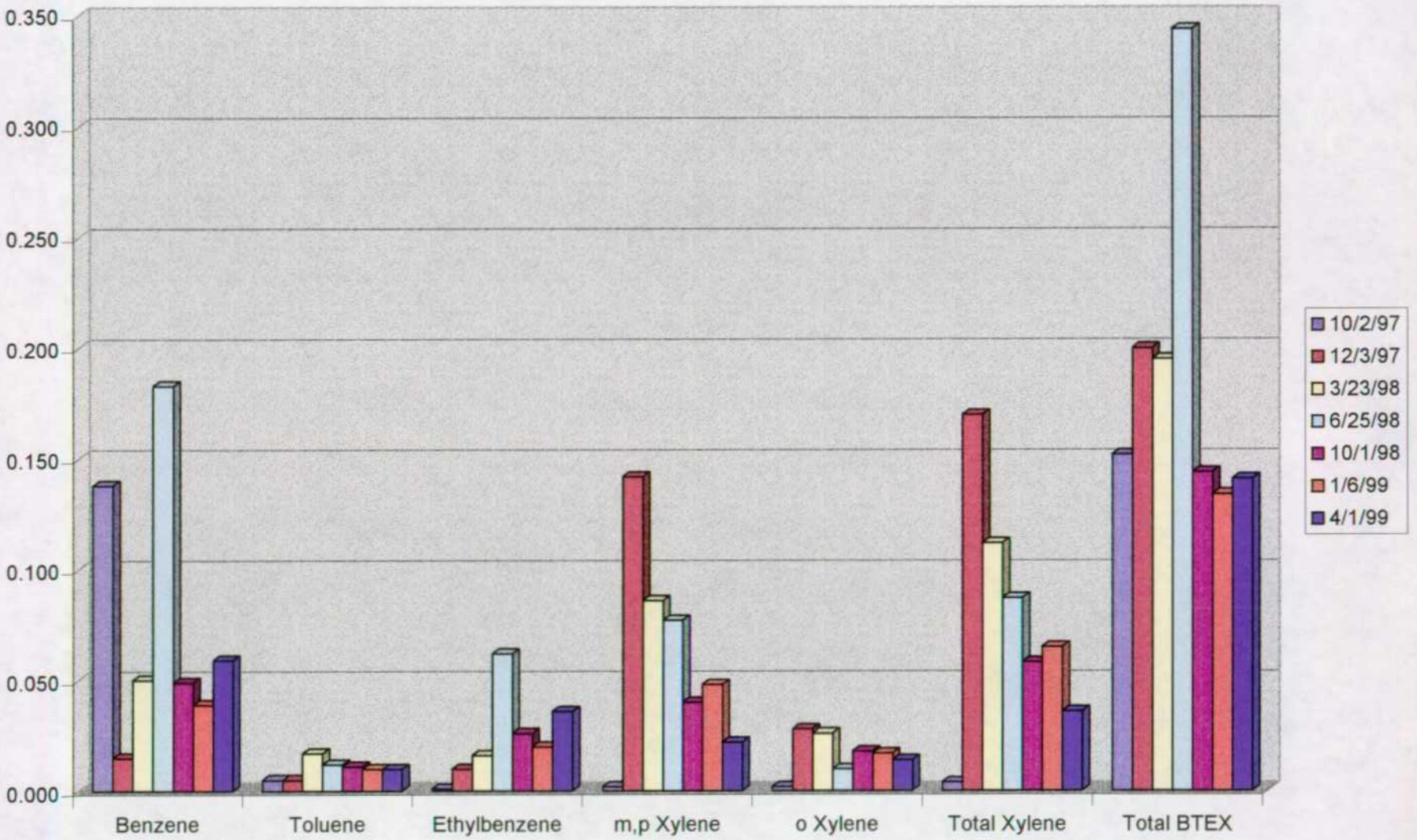
G.S. State # 21


1.000
0.900
0.800
0.700
0.600
0.500
0.400
0.300
0.200
0.100
0.000
Benzene
Toluene
Ethylbenzene
m,p Xylene
o Xylene
Total Xylene
Total BTEX
10/2/97
12/3/97
3/23/98
6/25/98
10/1/98
1/6/99
4/1/99

Monitor Well # 22
G.S. State # 1
Sampling Results

Lab. #	12722	13134	14056	14676	15611	16592	17446
Sample Date	10/2/97	12/3/97	3/23/98	6/25/98	10/1/98	1/6/99	4/1/99
Benzene	0.138	0.015	0.05	0.183	0.049	0.039	0.059
Toluene	0.005	0.005	0.017	0.012	0.011	0.01	0.010
Ethylbenzene	0.001	0.010	0.016	0.062	0.026	0.020	0.036
m,p Xylene	0.002	0.142	0.086	0.077	0.040	0.048	0.022
o Xylene	0.002	0.028	0.026	0.010	0.018	0.017	0.014
Total Xylene	0.004	0.170	0.112	0.087	0.058	0.065	0.036
Total BTEX	0.152	0.200	0.195	0.344	0.144	0.134	0.141

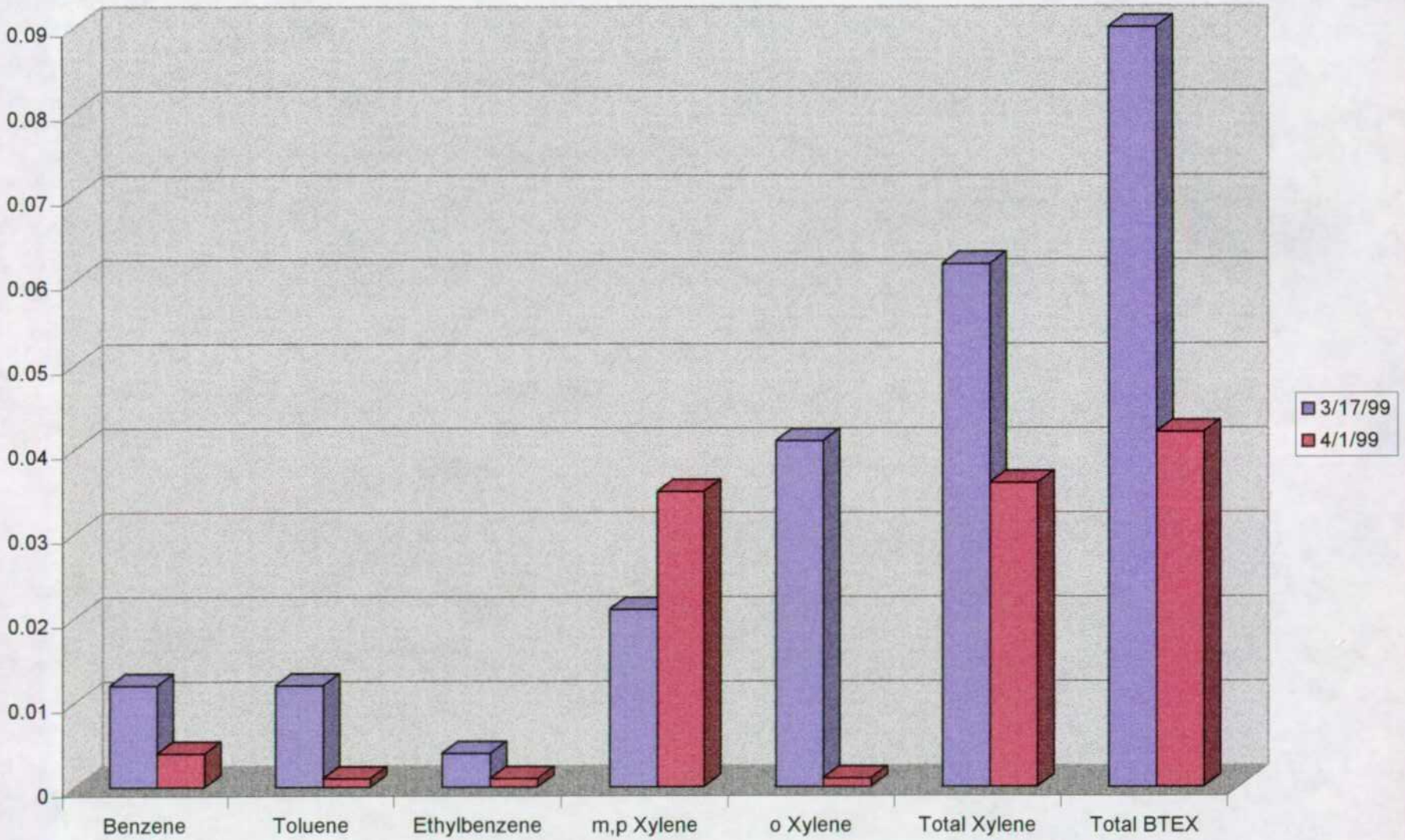
G.S. State # 22


0.350
0.300
0.250
0.200
0.150
0.100
0.050
0.000
Benzene
Toluene
Ethylbenzene
m,p Xylene
o Xylene
Total Xylene
Total BTEX
10/2/97
12/3/97
3/23/98
6/25/98
10/1/98
1/6/99
4/1/99

Monitor Well # 29
G.S. State # 1
Sampling Results

Lab. #	17269	17447
Sample Date	3/17/99	4/1/99
Benzene	0.012	0.004
Toluene	0.012	0.001
Ethylbenzene	0.004	0.001
m,p Xylene	0.021	0.035
o Xylene	0.041	0.001
Total Xylene	0.062	0.036
Total BTEX	0.090	0.042

G.S. State # 29


0.09
0.08
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0
Benzene
Toluene
Ethylbenzene
m,p Xylene
o Xylene
Total Xylene
Total BTEX
3/17/99
4/1/99

ENVIRONMENTAL LAB OF , INC.

"Don't Treat Your Soil Like Dirt!"

TIPPERARY OIL & GAS
633 17TH
DENVER, COLORADO 80202
FAX: 281-646-8996 (Mike Griffin)

Receiving Date: 03/17/99
Sample Type: Water
Project : Tatum Dileneation
Project Location: Tatum, New Mexico

Analysis Date: 03/17/99
Sampling Date: 03/17/99
Sample Condition: Intact/Iced

ELT#	FIELD CODE	BENZENE (mg/l)	TOLUENE (mg/l)	ETHYLBENZENE (mg/l)	m,p-XYLENE (mg/l)	o-XYLENE (mg/l)
17265	#25 Bell	0.006	0.004	0.004	0.005	0.004
17266	#26 NBF	0.002	0.003	0.001	0.002	0.001
17267	#27 Sohio A	0.118	0.019	0.005	0.004	0.008
17268	#28 Sohio #1	0.156	0.008	0.003	0.010	0.005
17269	#29 G.S. State	0.012	0.012	0.004	0.021	0.041
	% IA	104	100	99	98	99
	% EA	108	104	101	102	103
	BLANK	<0.001	<0.001	<0.001	<0.001	<0.001

METHODS: SW 846-8020,5030

Raland K. Tuttle

3-26-99
Date

ENVIRONMENTAL LAB OF , INC.

"Don't Treat Your Soil Like Dirt!"

TIPPERARY OIL & GAS
633 17TH
DENVER, COLORADO 80202
FAX: 281-646-8996(Mike Griffin)

Receiving Date: 03/17/99
Sample Type: Water
Project : Tatum Dileneation
Project Location: Tatum, N.M.

Analysis Date: See below
Sampling Date: 3/17/99
Sample Condition: Intact/Iced

ELT#	Field Code	Ca (mg/L)	Mg (mg/L)	Na (mg/L)	K (mg/L)	Chloride (mg/L)	Sulfate (mg/L)	CO3 (mg/L)	HCO3 (mg/L)
17265	#25 Bell	189	46	281	8.7	851	300	0	159
17266	#26 NBF	31.4	16	65	6.4	53	175	0	159
17267	#27 Sohio A	144	78	377	16.2	1028	195	0	329
17268	#28 Sohio #1	715	140	4660	20.8	8685	195	0	329
17269	#29 G.S. State	178	44	102	8.1	487	150	0	281
	ANALYSIS DATE	3/24/99	3/24/99	3/24/99	3/24/99	3/18/99	3/18/99	3/18/99	3/18/99
	QUALITY CONTROL	53.9	5.1	55.9	5.2	5140	48	*	*
	TRUE VALUE	50.0	5.0	50.0	5.0	5000	50	*	*
	% PRECISION	108	102	111	104	103	96	*	*

METHODS: EPA 4.1.1, 215.1,242.1, 273.1, 258.1,325.3, 375.4, 310.2.

Raland K. Tuttle

Raland K. Tuttle

3-26-99

Date

ENVIRONMENTAL LAB OF , INC.

"Don't Treat Your Soil Like Dirt!"

TIPPERARY OIL & GAS
633 17TH
DENVER, COLORADO 80202
FAX: 281-646-8996(Mike Griffin)

Receiving Date: 03/17/99
Sample Type: Water
Project : Tatum Dileneation
Project Location: Tatum, N.M.

Analysis Date: Hg 3/23/99
Analysis Date: 3/25/99
Sampling Date: 3/17/99
Sample Condition: Intact/Iced

TOTAL METALS (mg/L)

ELT#	Field Code	Ag	As	Ba	Cd	Cr	Hg	Pb	Se
17265	#25 Bell	ND	ND	0.250	ND	0.0110	ND	ND	ND
17266	#26 NBF	ND	ND	0.201	ND	0.0060	ND	ND	ND
17267	#27 Sohio A	ND	ND	0.276	ND	0.0110	ND	ND	ND
17268	#28 Sohio #1	ND	0.028	0.709	ND	0.0220	ND	0.0090	ND
17269	#29 G.S. State	ND	ND	0.369	ND	0.0080	ND	ND	ND
	REPORTING LIMIT	0.0050	0.005	0.010	0.0010	0.0050	0.00020	0.0030	0.0050
	% INSTRUMENT ACCURACY	100	106	95	100	94	103	98	112
	% EXTRACTION ACCURACY	96	104	97	100	96	96	99	102

ND = Not detected at the reporting limit.

METHODS: EPA 200.7, 245.2

Raland K. Tuttle

3-26-99
Date

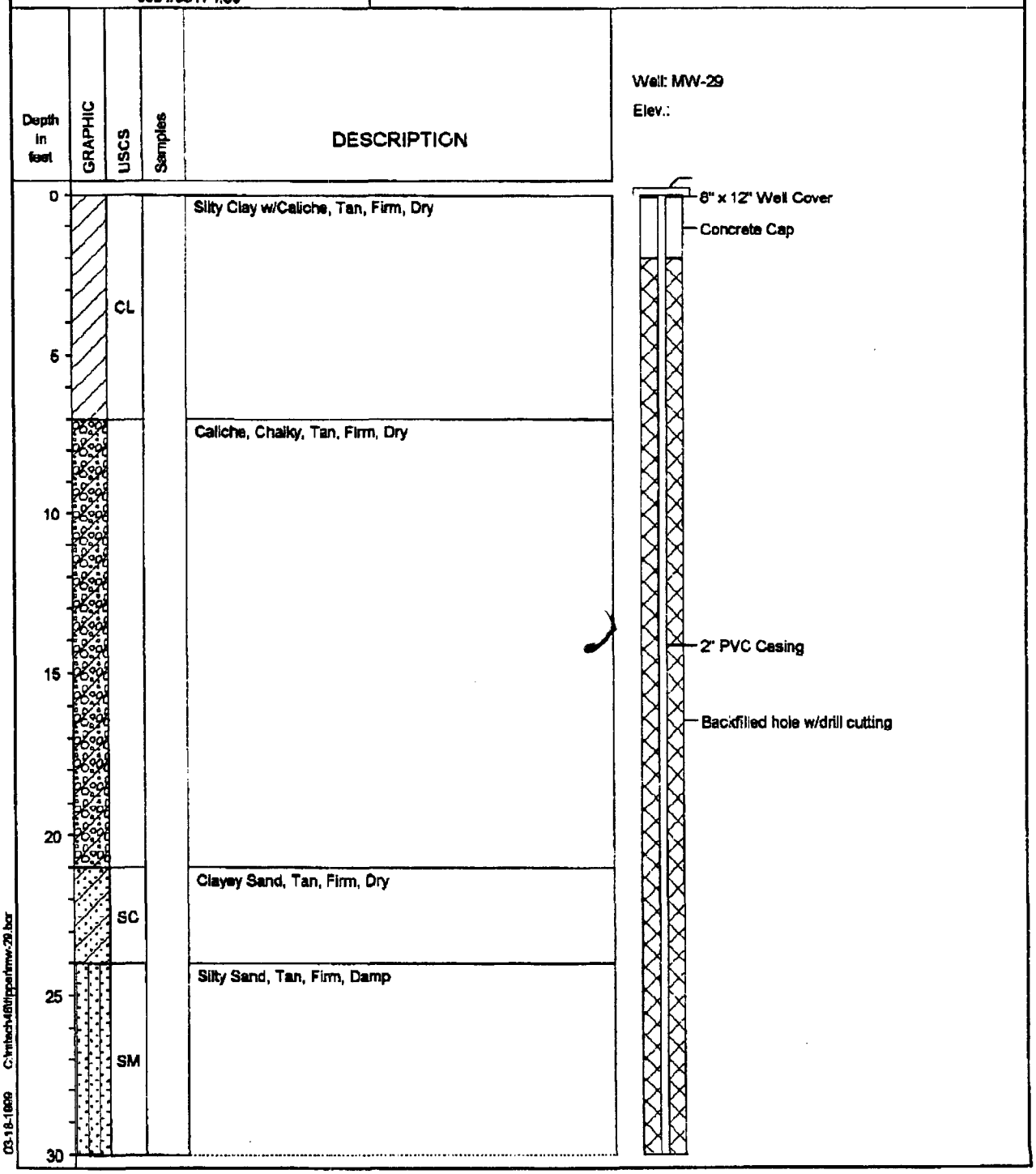
Atkins Engineering Associates, Inc.
P.O. Box 3156
Roswell, New Mexico 88202

LOG OF BORING GS State #1 MW-29

(Page 1 of 2)

Tipperary Corporation
633 17th Street, Suite 1550
Denver, CO 80202
Contact: Mike Griffin
Job #99174.00

Date	: 3-16-99	Site Location	: Lea County, NM
Drill Start	: 1:05 P.M.	Auger Type	: Hollow Stem
Drill End	: 5:10 P.M.	Logged By	: Mort Bates
Boring Location	: 126 ft. SE of MW-22		



03-18-1999 C:\mtech4\6\tipperlmw-29.bor

Atkins Engineering Associates, Inc.
P.O. Box 3156
Roswell, New Mexico 88202

LOG OF BORING GS State #1 MW-29

Tipperary Corporation
633 17th Street, Suite 1550
Denver, CO 80202

Contact: Mike Griffin

Job #99174.00

Date	: 3-18-99	Site Location	: Lea County, NM
Drill Start	: 1:05 P.M.	Auger Type	: Hollow Stem
Drill End	: 5:10 P.M.	Logged By	: Mort Bates
Boring Location	: 125 ft. SE of MW-22