AP - 49

STAGE 1 & 2 WORKPLANS

DATE:

July 2005

STAGE I ABATEMENT PLAN

JUSTIS SWD WELL #H-2

UNIT "H", SEC. 2, T-26-S, R-37-E

NMOCD CASE #1R0423-01

Prepared
for

RICE OPERATING COMPANY

JULY 2005

Highlander Environmental Corp.

Midland, Texas

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STAGE I ABATEMENT PLAN
Justis SWD Site Well #H-2
Unit H, Section 2, T-26-S, R-37-E, Lea County, New Mexico
NMOCD CASE #1R0423-01

1.0 EXECUTIVE SUMMARY

Tank replacement activities began at the Justis H-2 SWD facility in November 2001 and are complete. During the replacement, soil samples were taken, and the sample results prompted the placement of monitor wells. In January 2002, Rice installed three monitor wells to evaluate groundwater in the vicinity of the H-2 injection facility. Originally, two monitor wells, MW-1 and MW-2 showed elevated chloride levels. After several quarterly sampling events, MW-2 continued to show elevated chloride levels. As a result, Rice installed two additional monitor wells in February 2004. The wells have been sampled on a quarterly basis since 2002.

The hydraulic gradient has been consistently towards the north-northwest in the vicinity of this facility. Chloride concentrations from monitor wells MW-1, MW-3, MW-4 and MW-5 were all below the New Mexico Water Quality Control Commission (WQCC) standards of 250 mg/L during the last two quarterly sampling events of 2004 and the first two sampling events of 2005. Only MW-2 exceeded the WQCC standard for all four quarters, with chloride concentrations ranging from 1,130 mg/L to 1,310 mg/L. Benzene levels in all of the monitor wells have fluctuated between near or slightly above WQCC standards to below method detection limits. No BTEX at or above the reporting limits have been detected in the last two quarterly sampling events. Additionally, no Phase-Separated Hydrocarbon (PSH) has ever been observed in any of the monitor wells.

2.0 CHRONOLOGY OF EVENTS

August 2, 2001	ROC submitted a Redwood Tank Replacement Closure Plan with the NMOCD.
November 6, 2001	ROC began tank replacement/remediation activity
December 12, 2002	ROC submitted a Redwood Tank and Emergency Pit Closure Report for the Justis SWD Facility H-2.
January 4, 2002	Monitoring Wells MW-1, MW-2 and MW-3 were installed.
January 18, 2002	NMOCD director notified of groundwater impact.
March 1, 2002	Monitor Wells (MW-1, MW-2 & MW-3) were purged and sampled.
June 10, 2002	Monitor Wells (MW-1, MW-2 & MW-3) were purged and sampled.

August 16, 2002	Monitor Wells (MW-1, MW-2 & MW-3) were purged and sampled.
November 12, 2002	Monitor Wells (MW-1, MW-2 & MW-3) were purged and sampled.
February 13, 2003	Monitor Wells (MW-1, MW-2 & MW-3) were purged and sampled.
May 20, 2003	Monitor Wells (MW-1, MW-2 & MW-3) were purged and sampled.
August 25, 2003	Workplan for additional monitor well drilling was submitted to the NMOCD.
September 23, 2003	Monitor Wells (MW-1, MW-2 & MW-3) were purged and sampled.
December 16, 2003	Monitor Wells (MW-1, MW-2 & MW-3) were purged and sampled.
February 16, 2004	Installed Monitor Wells MW-4 and MW-5.
March 11, 2004	All 5 Monitor Wells were purged and sampled.
June 28, 2004	All 5 Monitor Wells were purged and sampled.
September 23, 2004	All 5 Monitor Wells were purged and sampled.
December 21, 2004	All 5 Monitor Wells were purged and sampled.
March 21, 2005	2004 Monitor Well Report/Sampling Summary was submitted to the NMOCD.
March 23, 2005	Corrective Action Plan (CAP) submitted to the NMOCD.
March 29, 2005	All 5 Monitor Wells were purged and sampled.
May 5, 2005	Daniel Sanchez (NMOCD) requested a Rule 19, Stage I Abatement Plan for this site.
June 16, 2005	All 5 Monitor Wells were purged and sampled.

3.0 BACKGROUND & PREVIOUS WORK

On August 2, 2001, ROC submitted a Redwood Tank Replacement Closure Plan with the NMOCD. Tank replacement activities began at the Justis H-2 SWD facility on November 6, 2001 and are complete. On December 12, 2002, ROC submitted a Redwood Tank and Emergency Pit Closure Report for the Justis SWD Facility H-2.

During the replacement, soil samples were taken, and the sample results prompted the placement of monitor wells. On January 4, 2002, Rice installed three monitor wells to evaluate groundwater in the vicinity of the H-2 injection facility. Originally, two monitor wells, MW-1 and MW-2 showed elevated chloride levels. After several quarterly sampling events, MW-2 continued to show elevated chloride levels. As a result, Rice installed two additional monitor wells in February 2004. The wells have been sampled on a quarterly basis since 2002.

As detailed in the most recently submitted annual summary report dated March 21, 2005, the general hydraulic gradient has been consistently towards the north-northwest in the vicinity of this facility. Chloride concentrations from monitor wells MW-1, MW-3, MW-4 and MW-5 were all below the New Mexico Water Quality Control Commission (WQCC) standards of 250

mg/L during the last two quarterly sampling events of 2004 and the first two sampling events of 2005. Only MW-2 exceeded the WQCC standard for all four quarters, with chloride concentrations ranging from 1,130 mg/L to 1,310 mg/L. Benzene levels in all of the monitor wells have fluctuated between near or slightly above WQCC standards to below method detection limits. No BTEX at or above the reporting limits have been detected in the last two quarterly sampling events. Additionally, no Phase-Separated Hydrocarbon (PSH) has ever been observed in any of the monitor wells.

Hydrographs representing fluctuations in groundwater levels and benzene concentration graphs were prepared for all of the monitoring wells and are included in annual summary report. The hydrographs show a general decline in water levels in the past four quarters, although throughout this period there has been significant precipitation. Benzene levels have fluctuated up and down during this decline and do not show a distinct correlation between water level and benzene concentration at this time. Chloride levels have been consistently elevated in MW-2. Total Dissolved Solids (TDS) values were calculated for the December 21, 2004 sample event due to apparent discrepancies between the cation/anion concentrations in comparison to TDS concentrations.

4.0 GEOLOGY & HYDROGEOLOGY

4.1 Regional and Local Geology

This site is located in what is referred to as the South Plain physiographic subdivision of southern Lea County. This area is located south of the Eunice Plain. The topography is very irregular and without integrated drainage. Several well developed gullies head in the Eunice Plain area, but do not completely traverse the South Plain. The area is almost completely covered by a thick layer of sand. Sediments of Quaternary age are present in this area in the form of alluvial deposits, probably both of Pleistocene and Recent age and the dune sands of Recent age. The alluvium was deposited in topographically low areas where the Ogallala formation had been stripped away. The dune sands mantle the older alluvium in most places, with some dunes locally extending to 20-40 feet high. The Quaternary alluvium is underlain by the Dockum group of Triassic age. The uppermost formation of the Dockum Group is the Chinle.

4.2 Regional and Local Hydrogeology

The Ogallala has been mostly stripped away in the area that is referred to as the South Plain and the principal aquifer is alluvium, consisting mostly of fine sand with some silt and clay. Towards the eastern end of the South Plain, approximately 20 feet of quaternary sediments are saturated and receive some recharge from the Eunice Plain. The movement of groundwater in this area is primarily to the south-southwest. The depth to water in this area is approximately 120 feet below ground surface.

4.3 Water Well Inventory

A water well inventory will be performed to encompass a ½ mile radius around the facility. The inventory will include a review of water well records on the New Mexico Office of the State Engineer W.A.T.E.R.S. database and United States Geologic Survey (USGS) website. Any water wells denoted on the USGS 7.5 minute topographic quadrangle map within the search radius will be inspected.

5.0 SUBSURFACE SOILS

The soils in the vicinity of this site are of the Kermit soils and Dune land association. The Kermit series consists of excessively drained, non-calcareous, loose sands. Typically, the surface layer is a pale-brown fine sand about 8 inches thick. The subsoil is light yellowish-brown fine sand to a depth of more than 60 inches. The monitor well lithologies at this site indicate sand with some clay stringers to a depth of approximately 135 feet.

6.0 GROUNDWATER QUALITY

6.1 Monitoring Program

The original three monitoring wells have been sampled on a quarterly basis since March 1, 2002. The most recent sampling was performed on June 21, 2005, and the data was submitted to the NMOCD most recently on January 21, 2005, in the Annual Ground Water Report. Quarterly sampling of these wells and any additional well(s) will continue.

6.2 Hydrocarbons in Groundwater

Benzene levels in all of the monitor wells have fluctuated between near or slightly above WQCC standards to below method detection limits. No BTEX at or above the reporting limits have been detected in the last two quarterly sampling events. Additionally, no Phase-Separated Hydrocarbon (PSH) has ever been observed in any of the monitor wells.

6.3 Other Constituents of Concern

Chloride concentrations from monitor wells MW-1, MW-3, MW-4 and MW-5 were all below the New Mexico Water Quality Control Commission (WQCC) standards of 250 mg/L during the last two quarterly sampling events of 2004 and the first two sampling events of 2005. Only MW-2 exceeded the WQCC standard for all four quarters, with chloride concentrations ranging from 1,130 mg/L to 1,310 mg/L.

7.0 STAGE I ABATEMENT PLAN

It is anticipated that in 2005, a groundwater treatment plan will be initiated at this site. A Stage 2 Abatement Plan will be prepared and submitted. Quarterly sampling and evaluation of all monitor wells will continue.

8.0 QUALITY ASSURANCE/ QUALITY CONTROL

All monitor wells will be constructed to EPA and industry standards. All downhole equipment (i.e., drill pipe, drill bits, etc.) will be thoroughly decontaminated between each use with a steam cleaner.

The wells will be inspected for the presence of phase-separated hydrocarbons (PSH) and, if present, a sample will be collected and analyzed by gas chromatography (GC) to determine composition and origin. The wells will be properly purged and sampled with clean, dedicated, polyethylene bailers and disposable line. The groundwater samples will be submitted to a laboratory for analysis of Benzene, Toluene, Ethylbenzene, and Xylene (BTEX) by method EPA 8021B, and chloride by method 300.0.

9.0 PROPOSED SCHEDULE OF ACTIVITIES

Upon approval, the work outlined above will be implemented in a timely manner, dependent upon availability of local drilling contractors. Quarterly sampling of the existing monitor well will be continued and all results will be submitted in an annual summary report within the first quarter of 2006.

Respectfully submitted,
Highlander Environmental Corp.

Tim Reed

Timothy M. Reed, P.G.
Vice President

TABLES

Table 1

Rice Operating Co.
Justis SWD #H-2
Water Level Data

MW#	Sample Date	Total Depth (TOC) (feet)	Depth to Water (TOC) (feet)	Purge Volume (gallons)
MW-1	8/16/2002	137	116.20	66
	11/12/2002	144*	123.32	60
	2/13/2003	144*	122.95	70
	5/20/2003	144*	123.34	70
	9/16/2003	144*	122.94	70
	12/16/2003	144*	123.19	70
	3/11/2004	144*	122.43	70
	6/28/2004	144*	122.24	70
	9/23/2004	144*	122.22	70
	12/21/2004	144*	122.18	68
	3/29/2005	144*	121.97	75
	6/16/2005	144*	122.08	80
MW-2	8/16/2002	142	121.85	25
	11/12/2002	142	122.10	25
	2/13/2003	142	121.71	25
	5/20/2003	142	122.08	25
	9/16/2003	142	121.70	25
	12/16/2003	142	122.00	30
	3/11/2004	142	121.87	30
	6/28/2004	142	121.74	30
	9/23/2004	142	121.70	25
	12/21/2004	142	121.65	10
	3/29/2005	142	121.45	25
	6/16/2005	142	121.58	30
MW-3	8/16/2003	133	118.68	20
	11/12/2002	133	118.90	25
	2/13/2003	133	118.53	25
	5/20/2003	133	118.87	25
	9/16/2003	133	118.53	25
	12/16/2003	133	118.79	30
	3/11/2004	133	118.71	30
	6/28/2004	133	118.53	30
	9/23/2004	133	118.52	25
	12/21/2004	133	118.52	7
	3/29/2005	133	118.31	25
	6/16/2005	133	118.41	30
MW-4	3/11/2004	137	122.12	30
	6/28/2004	137	121.96	30
	9/23/2004	137	121.93	25
	12/21/2004	137	121.88	8
	3/29/2005	137	121.66	25
	6/16/2005	137	121.80	30
MW-5	3/11/2004	135	120.15	30
	6/28/2004	135	120.04	30
	9/23/2004	135	119.98	25
	12/21/2004	135	119.93	8
	3/29/2005	135	119.73	25
	6/16/2005	135	119.88	30

* Denotes new TD measurement due to monitor well pipe extension

Table 2
Rice Operating Co.
Justis SWD #H-2
Sample Analysis (in mg/L)

H:O&G/1863/Table 2 6/15/05

MW#	Sample Date	Chloride	TDS	Benzene	Toluene	Ethyl Benzene	Total Xylenes
MW-1 (5")	3/1/2002	301	971	-	-	-	-
	6/10/2002	173	-	0.001	0.008	0.01	0.066
	8/16/2002	111	619	<0.001	<0.001	<0.001	<0.001
	11/12/2002	257	971	<0.001	0.001	<0.001	<0.001
	2/13/2003	97.5	647	<0.001	<0.001	<0.001	<0.001
	5/20/2003	102	682	<0.001	<0.001	<0.001	<0.001
	9/16/2003	594	1920	<0.001	<0.001	<0.001	<0.001
	12/16/2003	81.5	587	0.013	<0.001	<0.001	<0.001
	3/11/2004	727	2060	<0.001	<0.001	<0.001	<0.001
	6/28/2004	1030	3230	0.0056	<0.001	<0.001	<0.001
	9/23/2004	106	749	<0.001	<0.001	<0.001	<0.001
	12/29/2004	93.1	858*	<0.001	<0.001	<0.001	0.00108
	3/29/2005	98.2	608	<0.001	<0.001	<0.001	<0.001
	6/16/2005	173	711	<0.001	<0.001	<0.001	<0.001
MW-2	3/1/2002	700	1780	-	-	-	-
	5/23/2002	904	2710	<0.001	<0.001	<0.001	<0.001
	8/16/2002	1040	3390	<0.001	<0.001	<0.001	<0.001
	11/12/2002	1130	2600	0.002	0.003	<0.001	<0.001
	2/13/2003	1110	2780	<0.001	<0.001	<0.001	<0.001
	5/20/2003	1130	3600	<0.001	<0.001	<0.001	<0.001
	9/16/2003	1070	3540	<0.001	<0.001	<0.001	<0.001
	12/16/2003	1230	2490	0.032	0.003	<0.001	<0.001
	3/11/2004	1200	3660	<0.001	<0.001	<0.001	<0.001
	6/28/2004	2570	6290	0.0112	<0.001	<0.001	<0.001
	9/23/2004	1130	3760	<0.001	<0.001	<0.001	<0.001
	12/29/2004	1150	2877*	0.0055	<0.001	<0.001	<0.001
	3/29/2005	1130	2620	<0.001	<0.001	<0.001	<0.001
	6/16/2005	1280	3080	<0.001	<0.001	<0.001	<0.001

Table 2
Rice Operating Co.
Justis SWD #H-2
Sample Analysis (in mg/L)

H:O&G/1863/Table 2 6/15/05

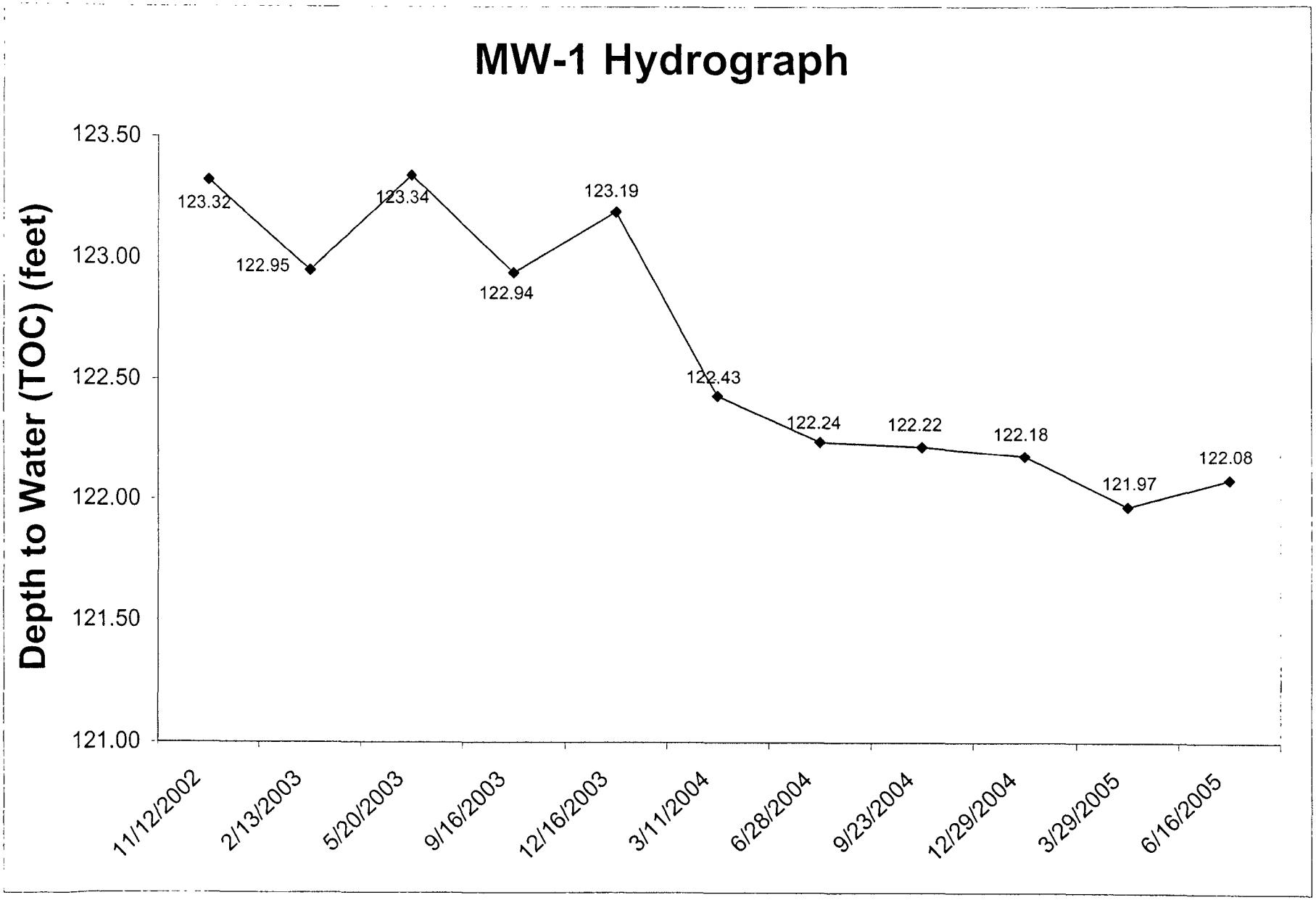
MW#	Sample Date	Chloride	TDS	Benzene	Toluene	Ethyl Benzene	Total Xylenes
MW-3	5/16/2002	35.4	570	<0.001	<0.001	<0.001	<0.001
	8/16/2002	93.1	631	<0.001	<0.001	<0.001	<0.001
	11/12/2002	97.5	688	0.03	0.014	0.002	0.003
	2/13/2003	102	666	<0.001	<0.001	<0.001	<0.001
	5/20/2003	168	885	<0.001	<0.001	<0.001	<0.001
	9/16/2003	204	568	<0.001	<0.001	<0.001	<0.001
	12/16/2003	40.8	517	0.013	<0.001	<0.001	<0.001
	3/11/2004	65	666	<0.001	<0.001	<0.001	<0.001
	6/28/2004	124	735	0.0124	<0.001	<0.001	<0.001
	9/23/2004	115	703	0.00113	<0.001	<0.001	<0.001
	12/29/2004	154	1057*	0.0127	<0.001	0.00144	<0.001
	3/29/2005	108	670	<0.001	<0.001	<0.001	<0.001
	6/16/2005	62.4	535	<0.001	<0.001	<0.001	<0.001
MW-4	3/1/2002	-	-	-	-	-	-
	6/10/2002	-	-	-	-	-	-
	8/16/2002	-	-	-	-	-	-
	11/12/2002	-	-	-	-	-	-
	2/13/2003	-	-	-	-	-	-
	5/20/2003	-	-	-	-	-	-
	9/16/2003	-	-	-	-	-	-
	12/16/2003	-	-	-	-	-	-
	3/11/2004	35.4	610	<0.001	<0.001	<0.001	<0.001
	6/28/2004	57.6	596	0.00749	<0.001	<0.001	<0.001
	9/23/2004	53.2	648	<0.001	<0.001	<0.001	<0.001
	12/29/2004	59.1	865*	0.00275	<0.001	<0.001	<0.001
	3/29/2005	55.7	506	<0.001	<0.001	<0.001	<0.001
	6/16/2005	49.8	543	<0.001	<0.001	<0.001	<0.001

Table 2
Rice Operating Co.
Justis SWD #H-2
Sample Analysis (in mg/L)

H:O&G/1863/Table 2 6/15/05

MW#	Sample Date	Chloride	TDS	Benzene	Toluene	Ethyl Benzene	Total Xylenes
MW-5	5/23/2002	-	-	-	-	-	-
	8/16/2002	-	-	-	-	-	-
	11/12/2002	-	-	-	-	-	-
	2/13/2003	-	-	-	-	-	-
	5/20/2003	-	-	-	-	-	-
	9/16/2003	-	-	-	-	-	-
	12/16/2003	-	-	-	-	-	-
	3/11/2004	195	894	<0.001	<0.001	<0.001	<0.001
	6/28/2004	310	1130	0.0105	<0.001	0.00108	<0.001
	9/23/2004	160	792	<0.001	<0.001	<0.001	<0.001
	12/29/2004	165	1072*	0.00292	<0.001	<0.001	<0.001
	3/29/2005	202	636	<0.001	<0.001	<0.001	<0.001
	6/16/2005	172	767	<0.001	<0.001	<0.001	<0.001

NOTE: * TDS values calculated.
- Denotes not analyzed.


MW-1 Hydrograph
Depth to Water (TOC) (feet)
123.50
123.00
122.50
122.00
121.50
121.00
123.32
122.95
123.34
122.94
123.19
122.43
122.24
122.22
122.18
121.97
122.08
11/12/2002
2/13/2003
5/20/2003
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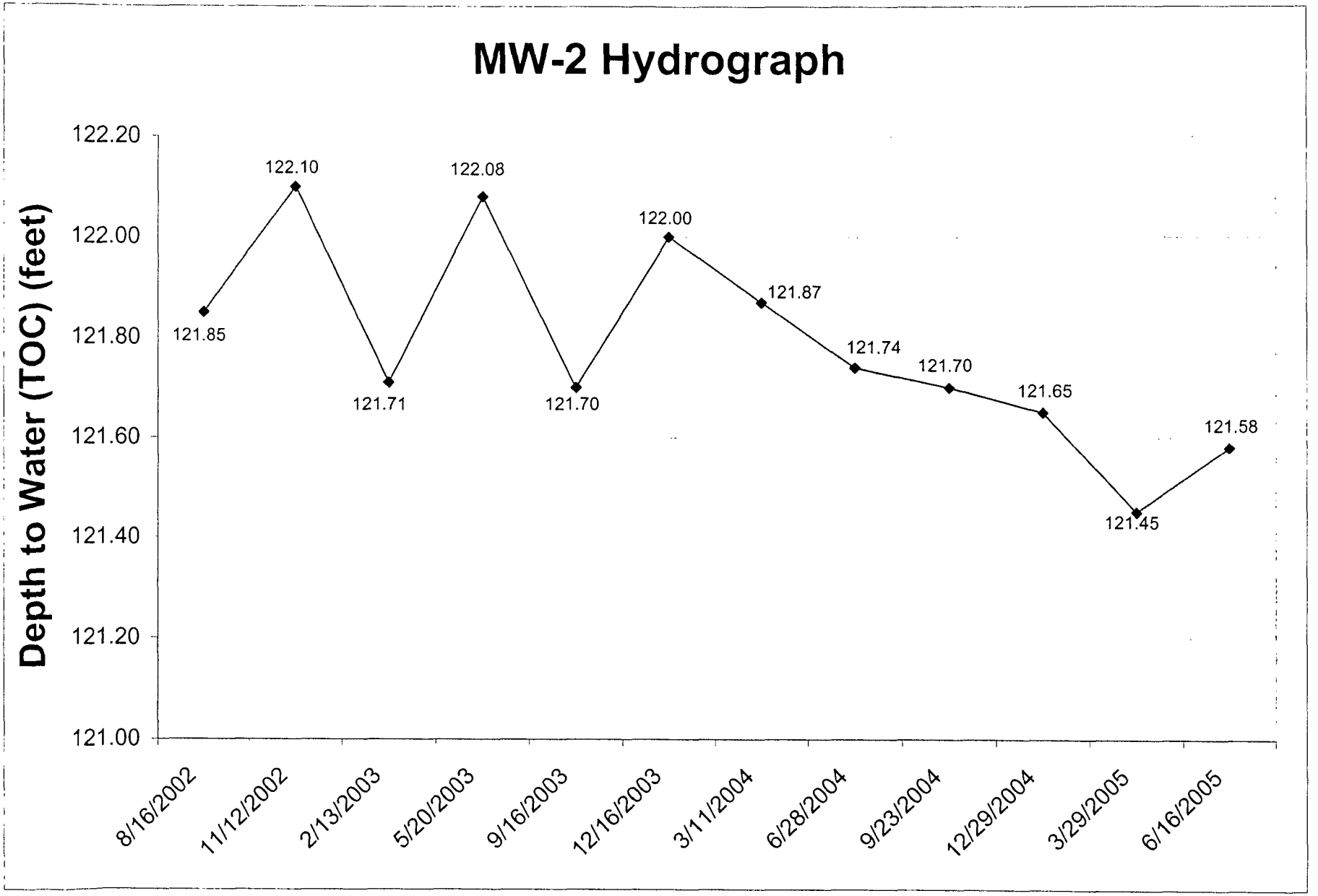
6/16/2005


MW-2 Hydrograph
Depth to Water (TOC) (feet)
122.20
122.00
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121.60
121.40
121.20
121.00
121.85
122.10
121.71
122.08
121.70
122.00
121.87
121.74
121.70
121.65
121.45
121.58
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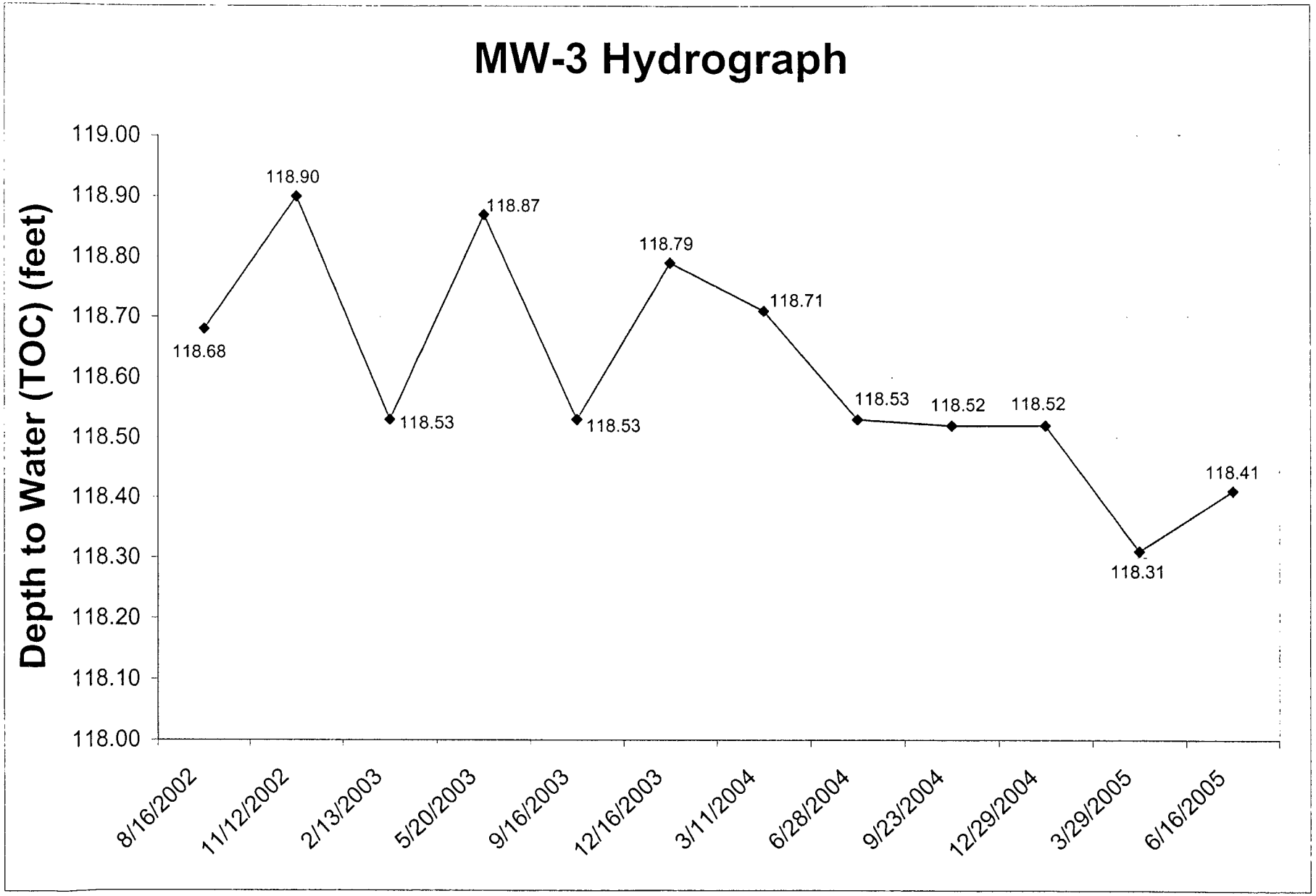
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Depth to Water (TOC) (feet)
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118.70
118.60
118.50
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118.20
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118.00
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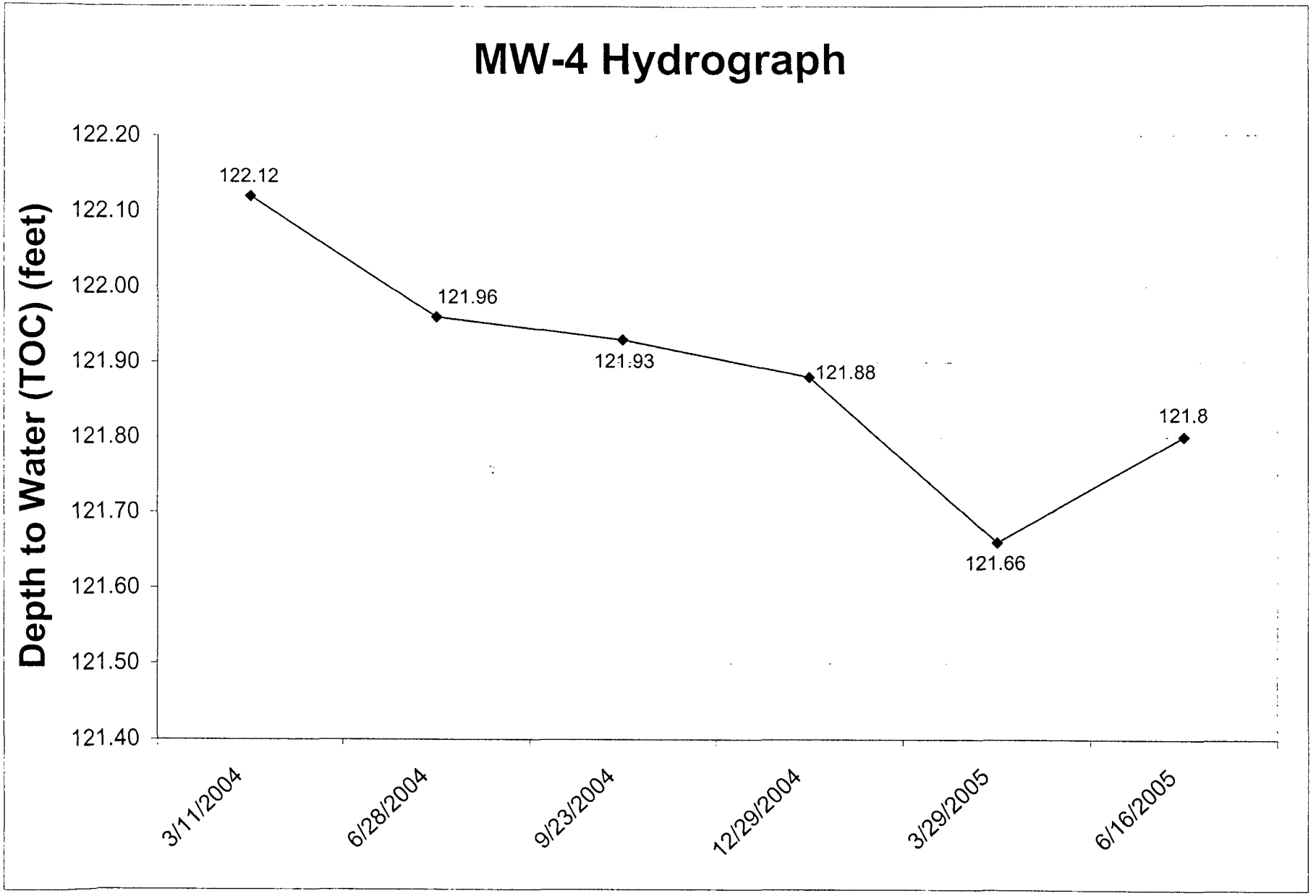
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Depth to Water (TOC) (feet)
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121.80
121.70
121.60
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121.40
122.12
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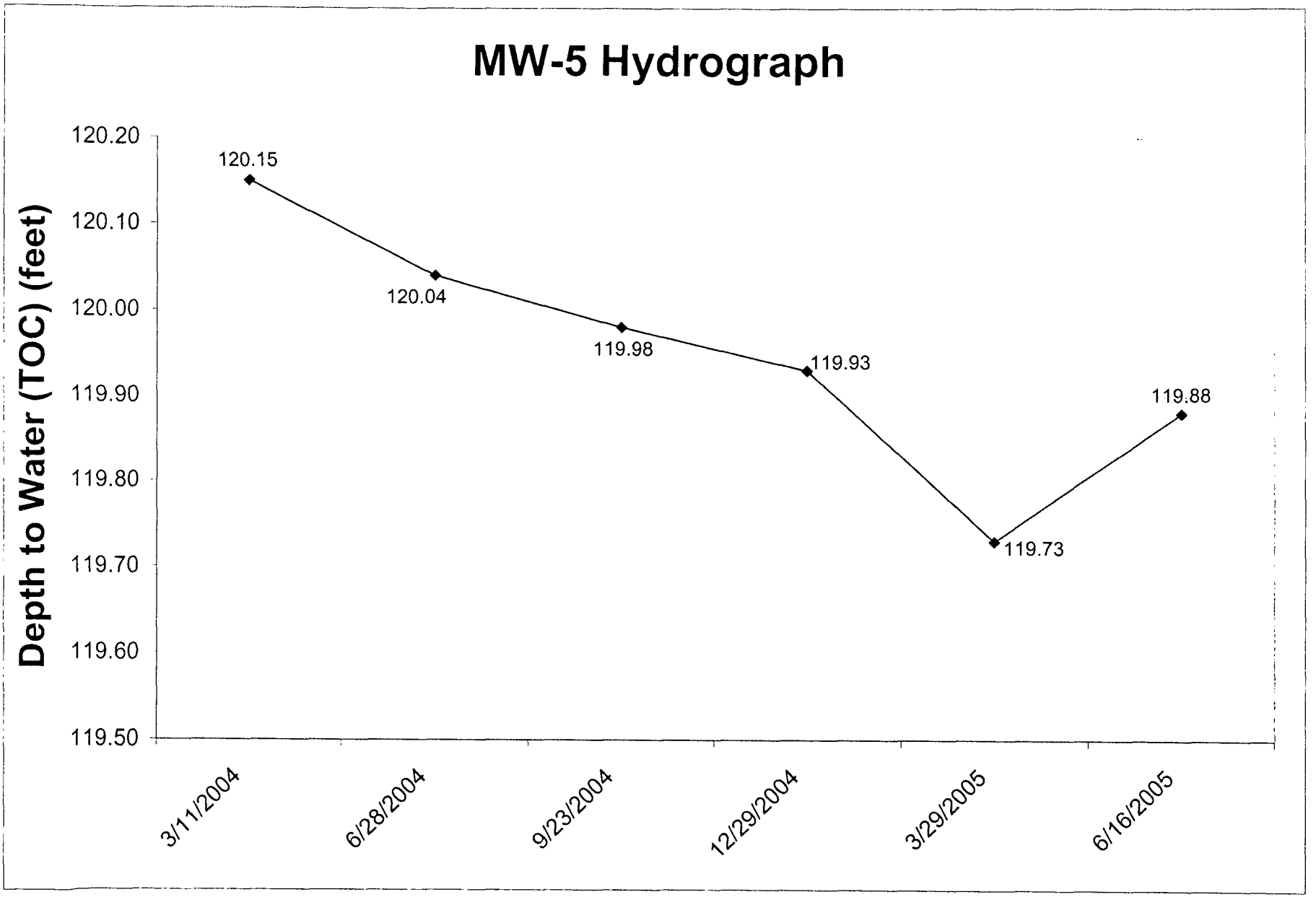
MW-5 Hydrograph
Depth to Water (TOC) (feet)
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120.00
119.90
119.80
119.70
119.60
119.50
120.15
120.04
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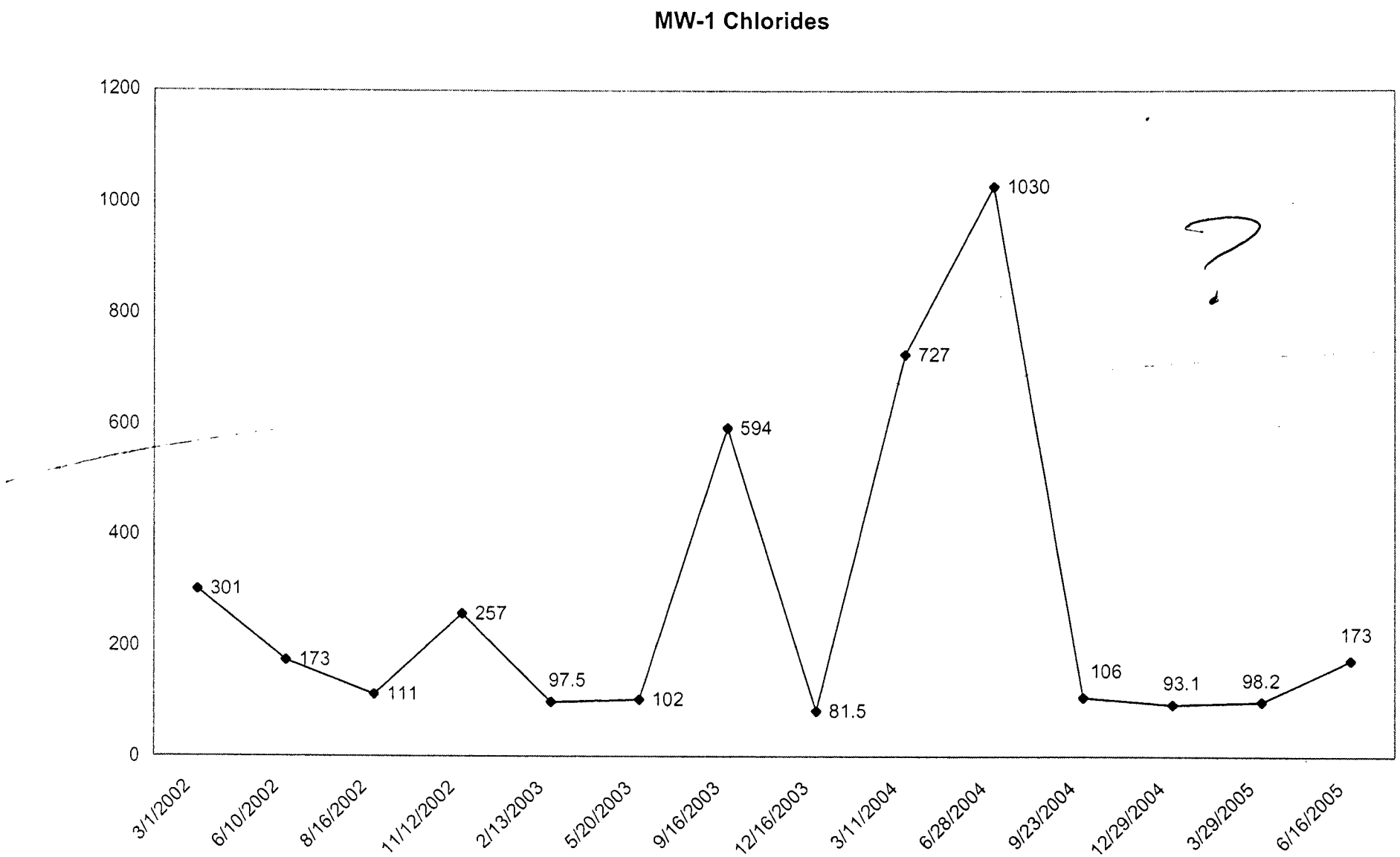
6/16/2005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1000
800
600
400
200
0
301
173
111
257
97.5
102
594
81.5
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106
93.1
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11/12/2002
2/13/2003
5/20/2003
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6/16/2005

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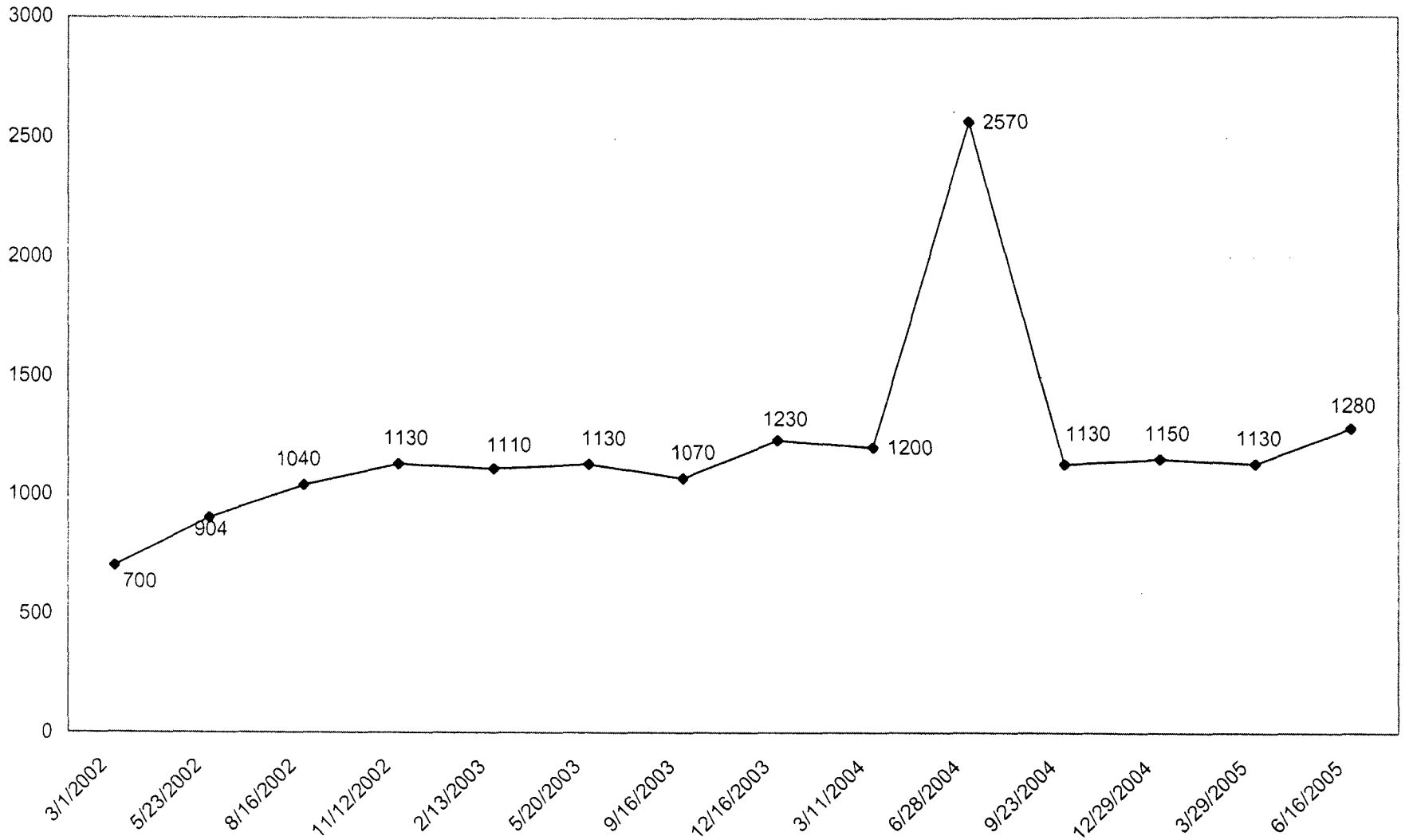
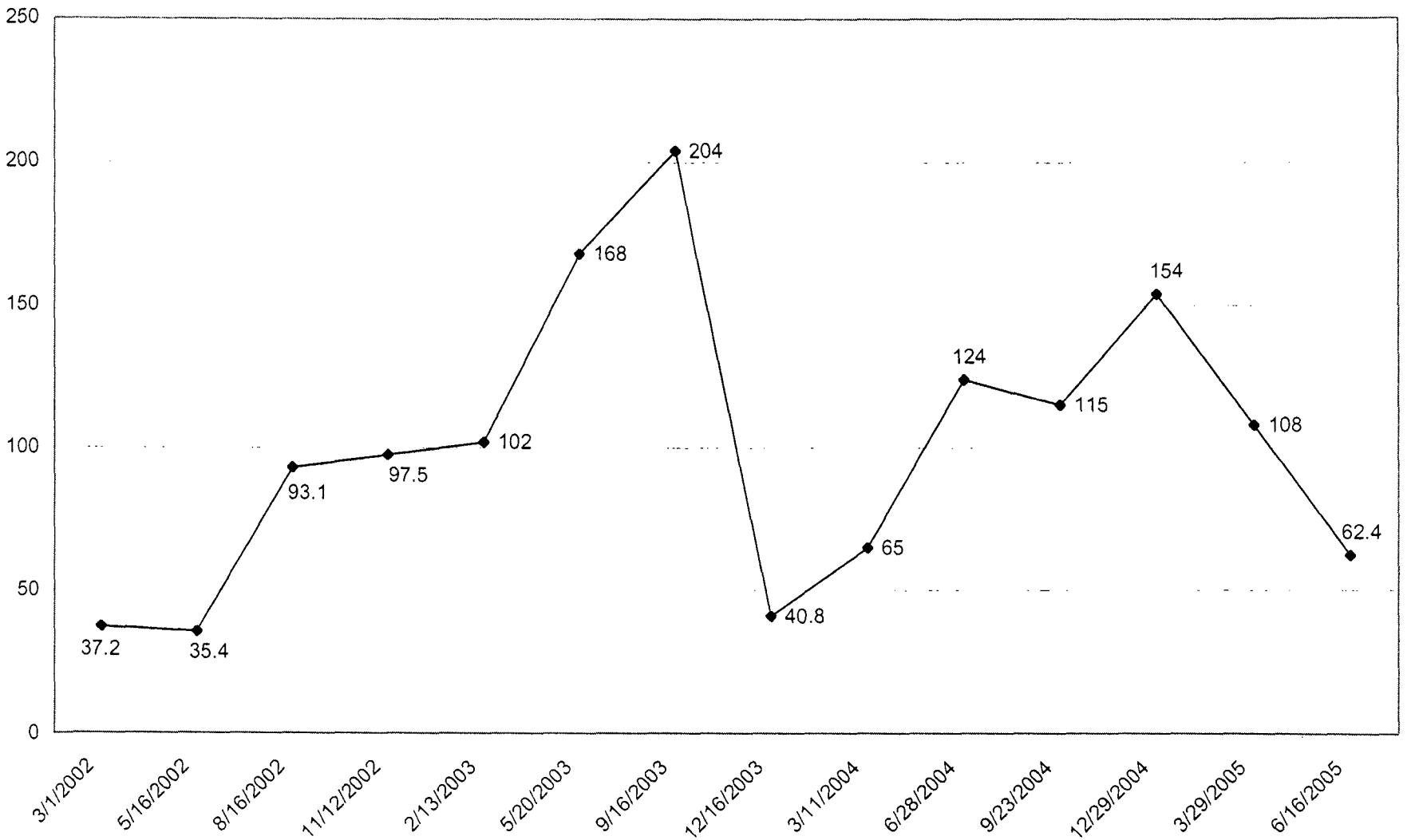
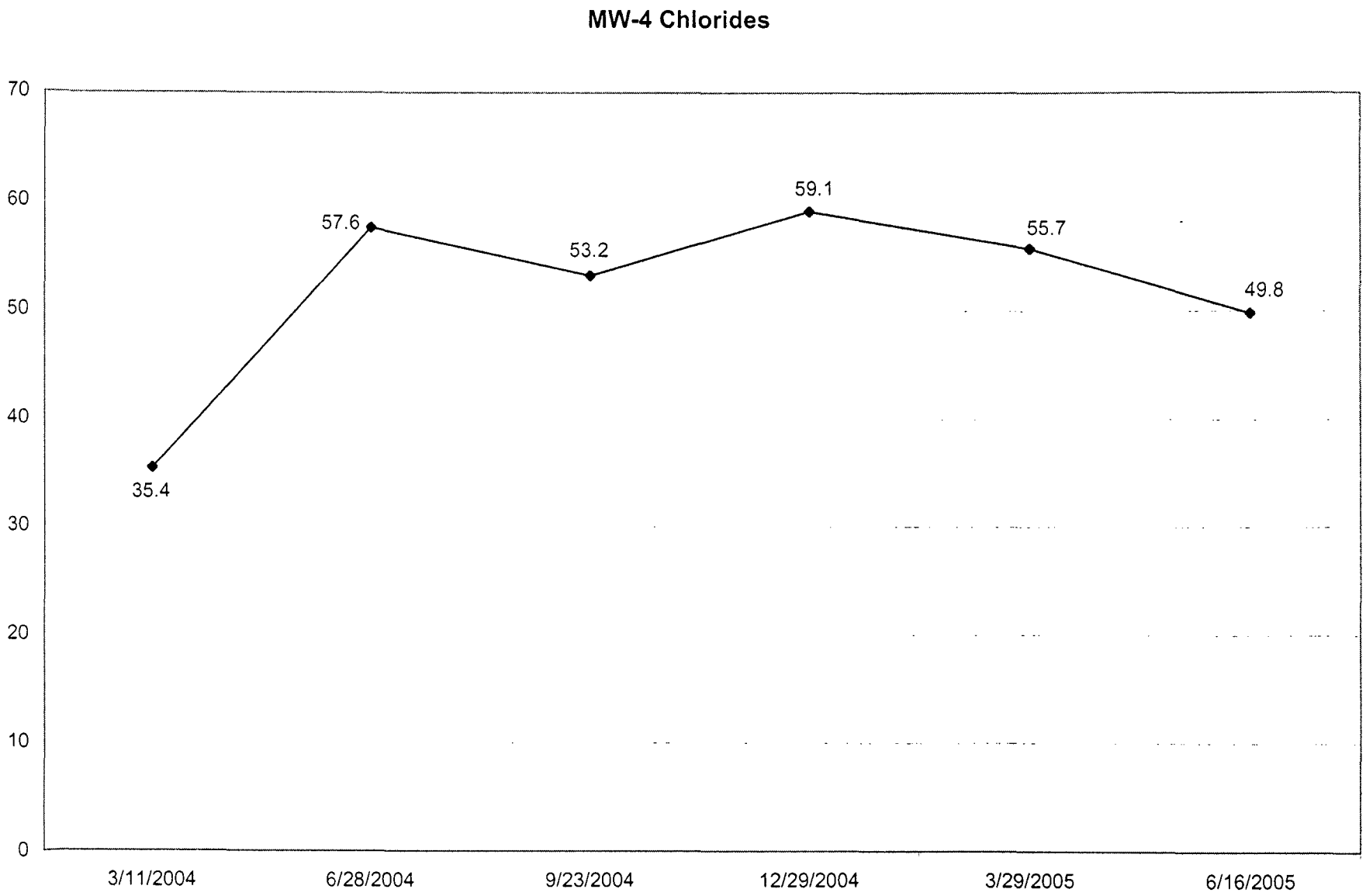
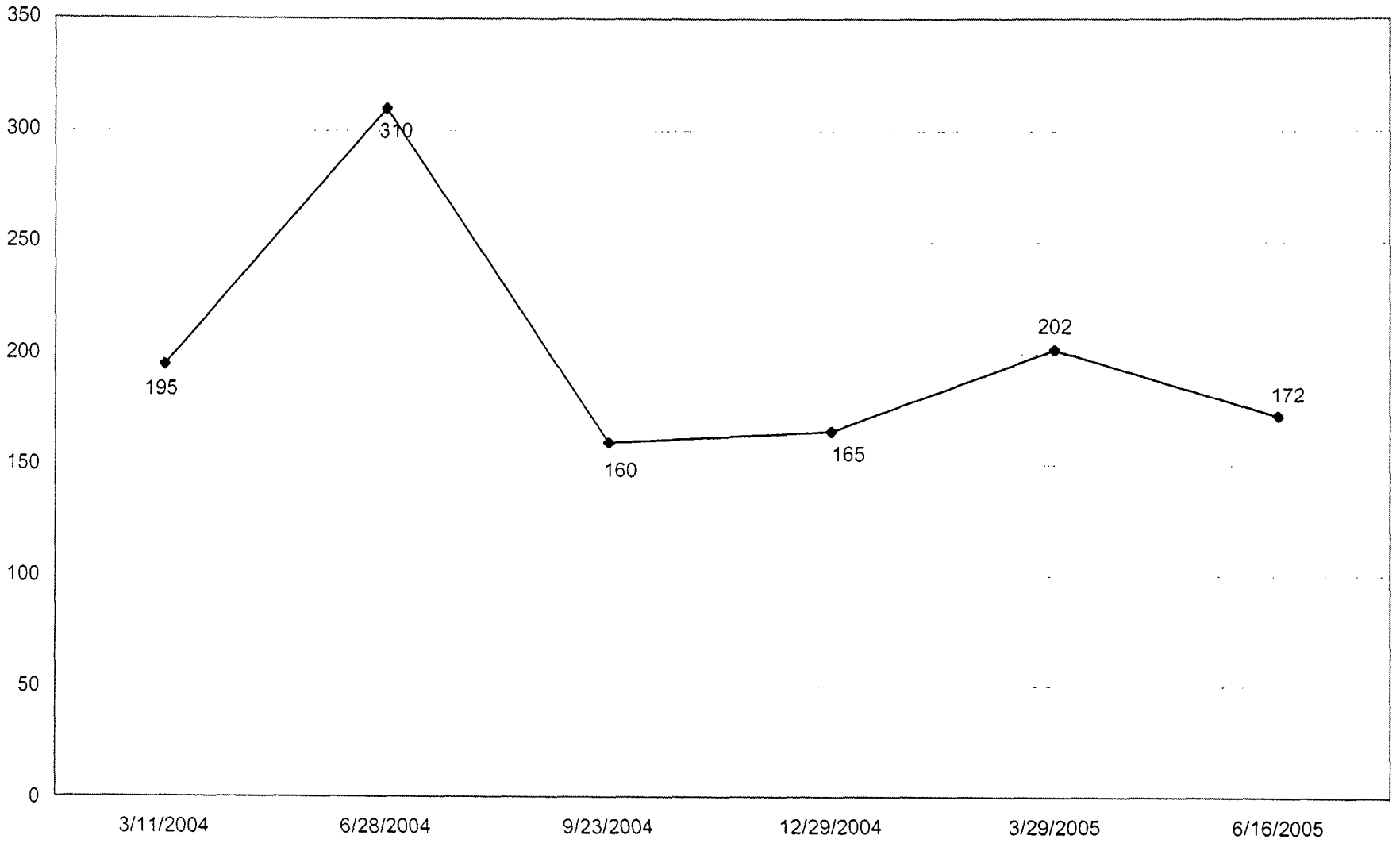


MW-3 Chlorides

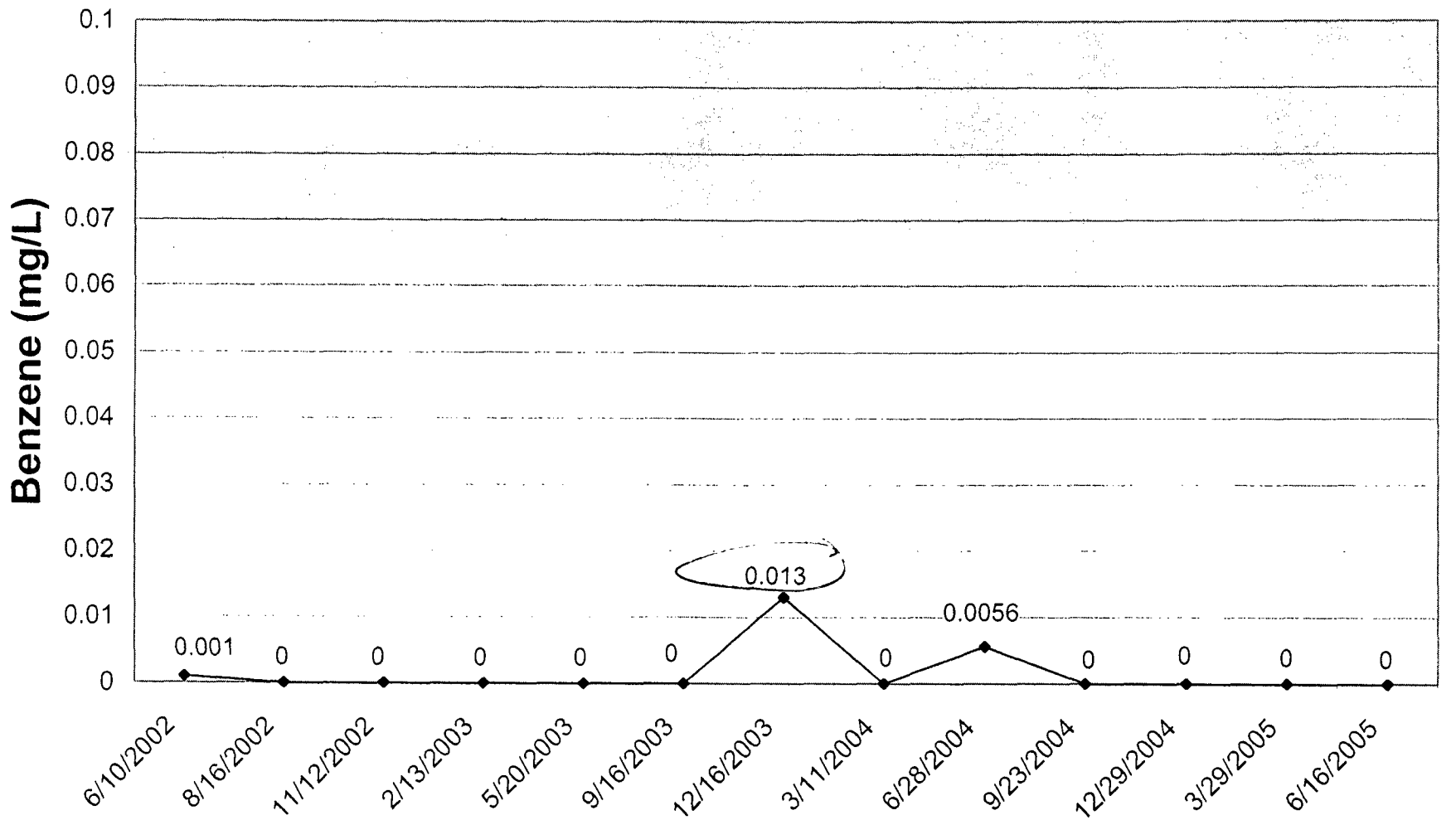



MW-4 Chlorides
70
60
50
40
30
20
10
0
35.4
57.6
53.2
59.1
55.7
49.8
3/11/2004
6/28/2004
9/23/2004
12/29/2004
3/29/2005
6/16/2005

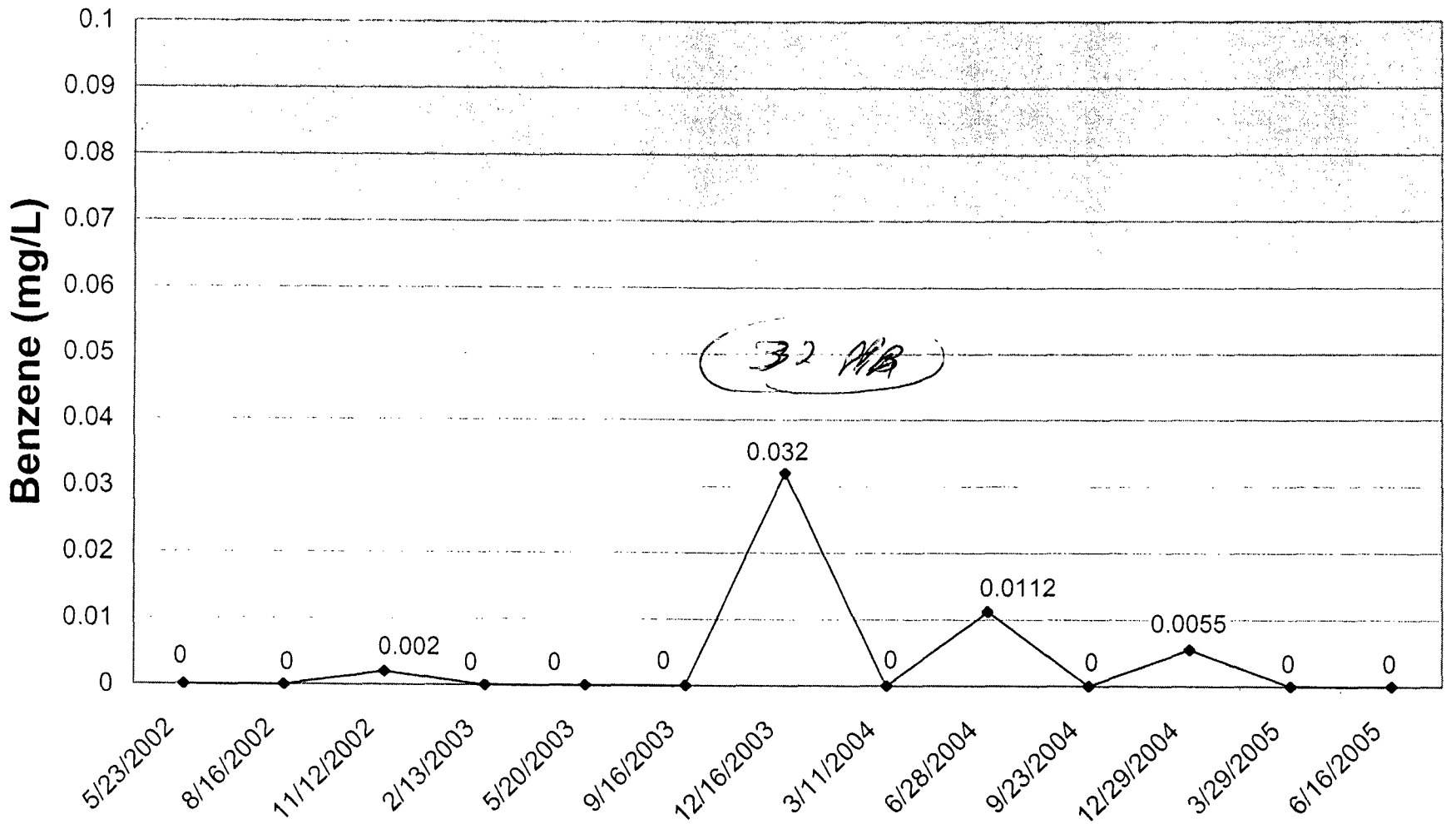
MW-5 Chlorides



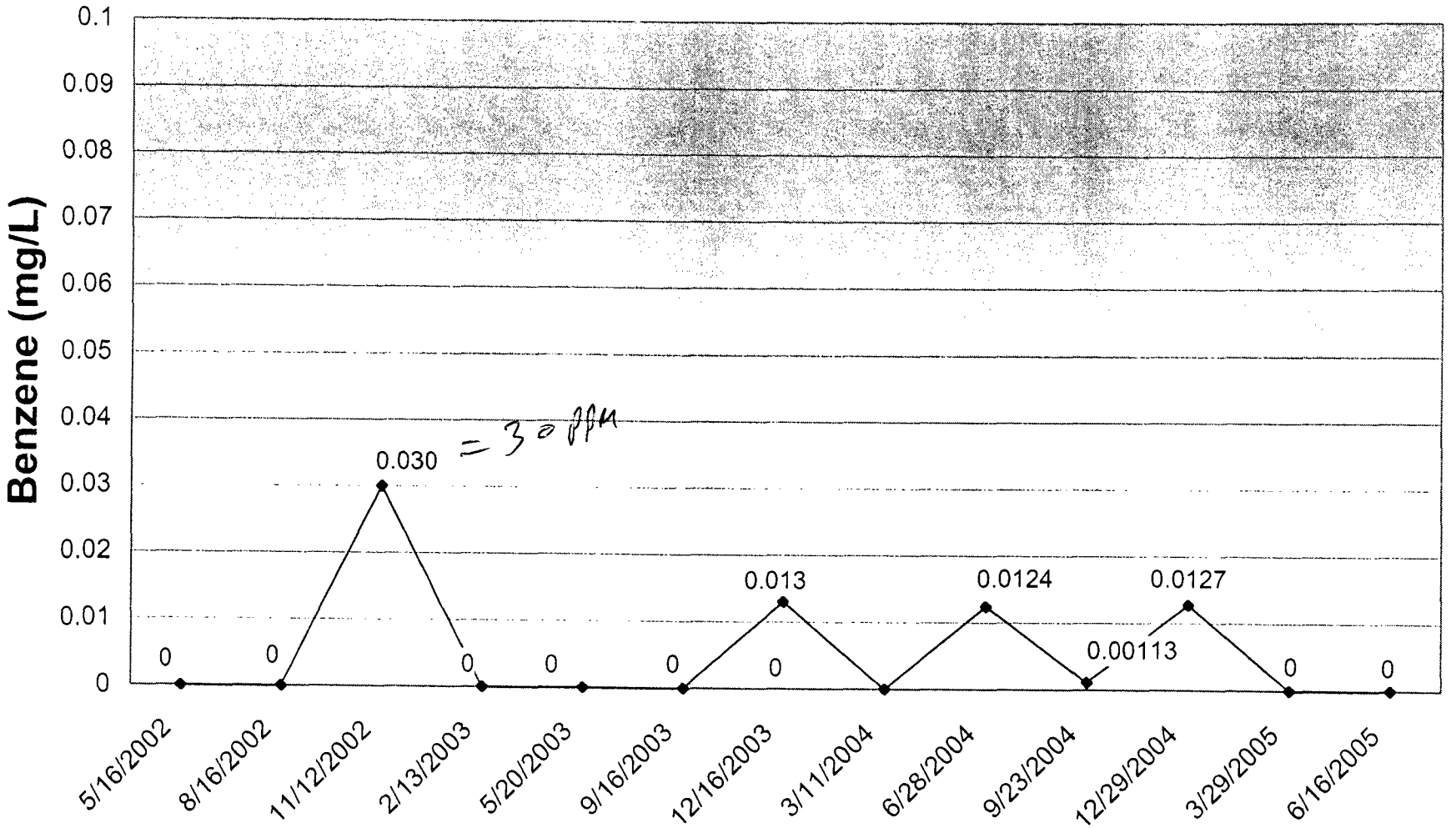
MW-1 Benzene Concentrations



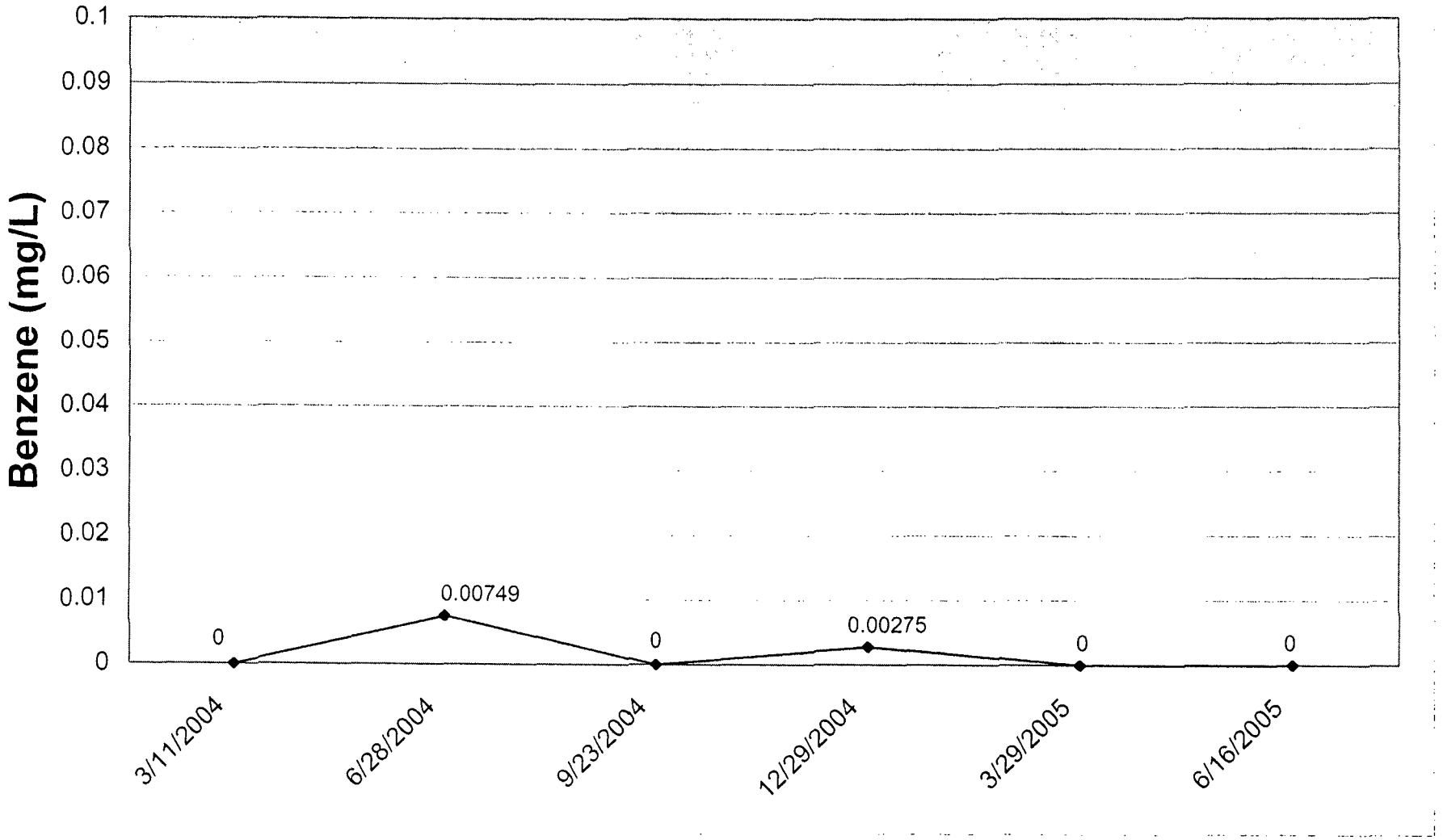
MW-2 Benzene Concentrations

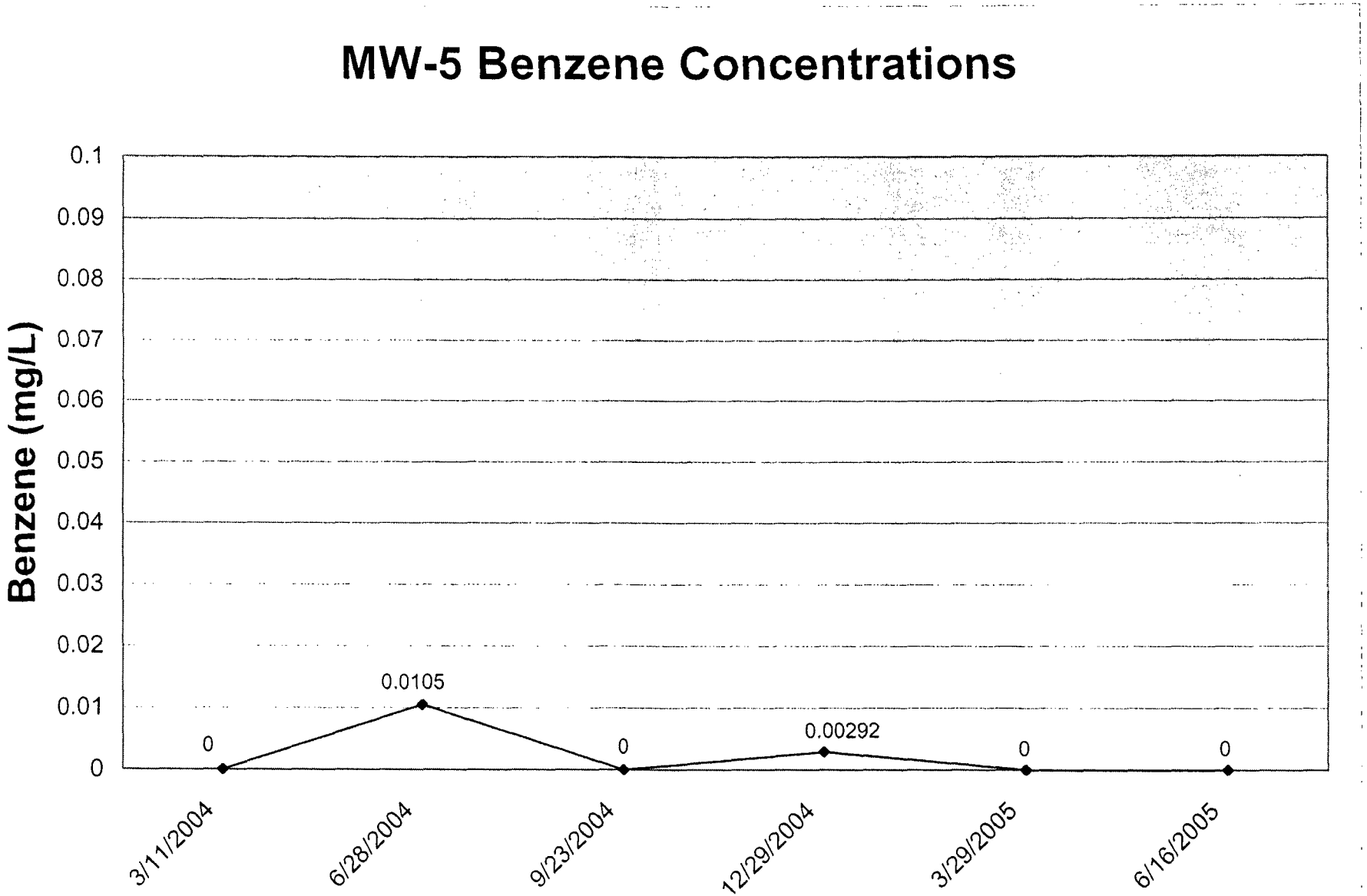


MW-3 Benzene Concentrations



MW-4 Benzene Concentrations




MW-5 Benzene Concentrations
Benzene (mg/L)
0.1
0.09
0.08
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0
0
0.0105
0
0.00292
0
0
3/11/2004
6/28/2004
9/23/2004
12/29/2004
3/29/2005
6/16/2005

FIGURES

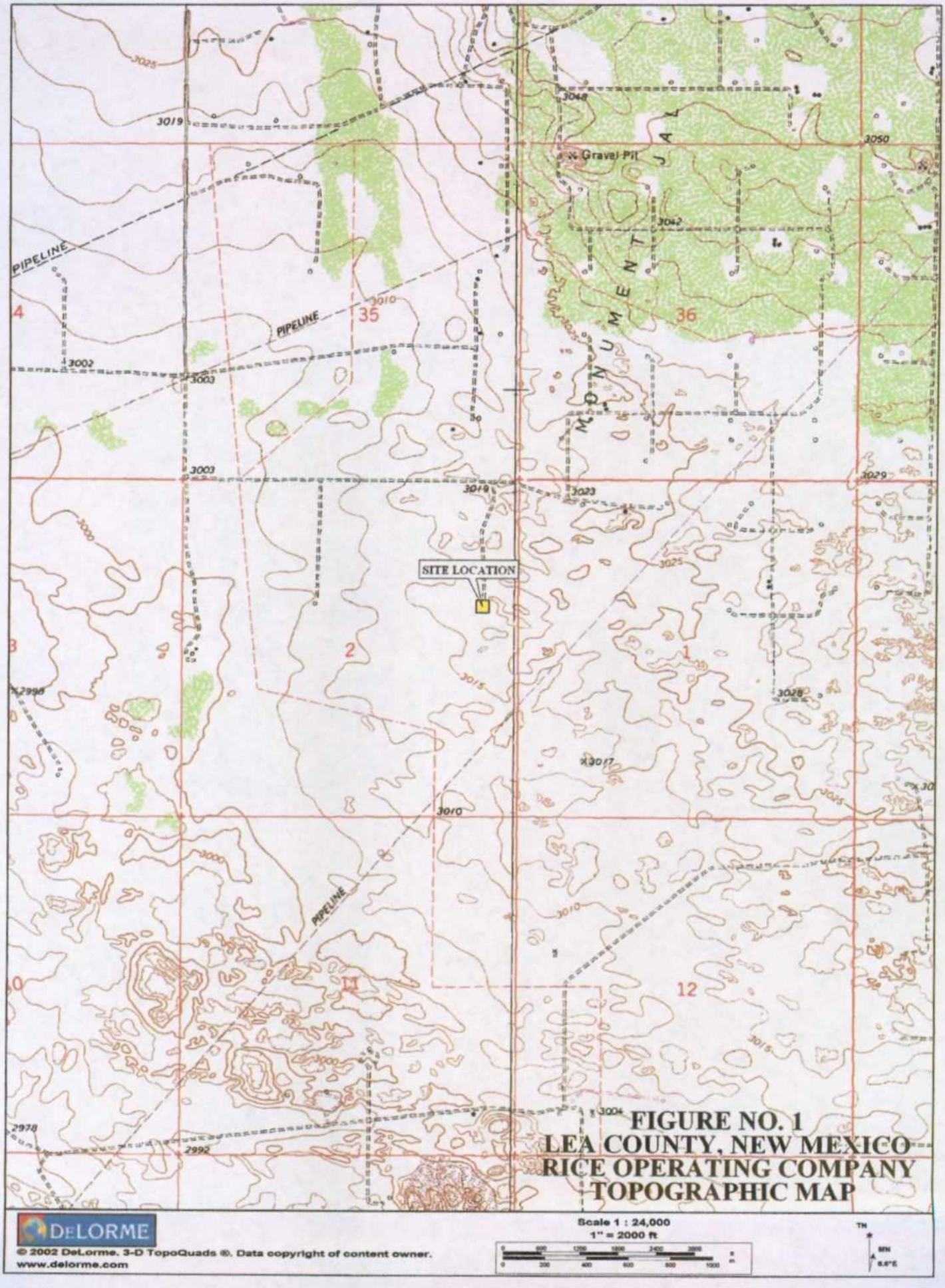
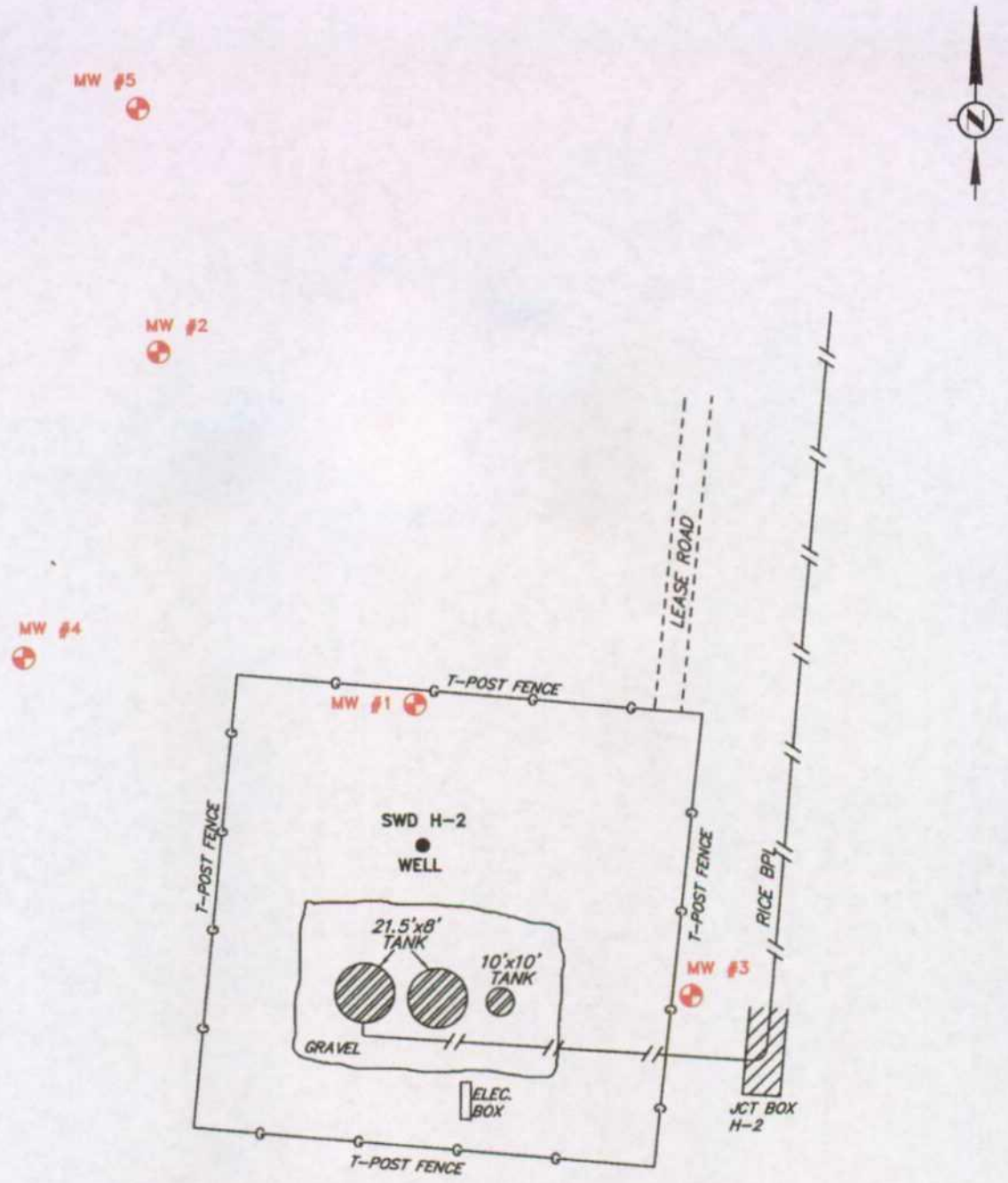


FIGURE NO. 1
LEA COUNTY, NEW MEXICO
RICE OPERATING COMPANY
TOPOGRAPHIC MAP

DeLORME

Scale 1 : 24,000
1" = 2000 ft



WELL #	ELEVATION
MW #1	3023.52'
MW #2	3023.03' (TOP STEEL LID), 3022.83' (TOC)
MW #3	3020.13' (TOP BRASS CAP)
MW #4	3023.17'
MW #5	3021.08'

MONITOR WELL LOCATION

SCALE: 1"=60'

60 0 60

FIGURE NO. 2

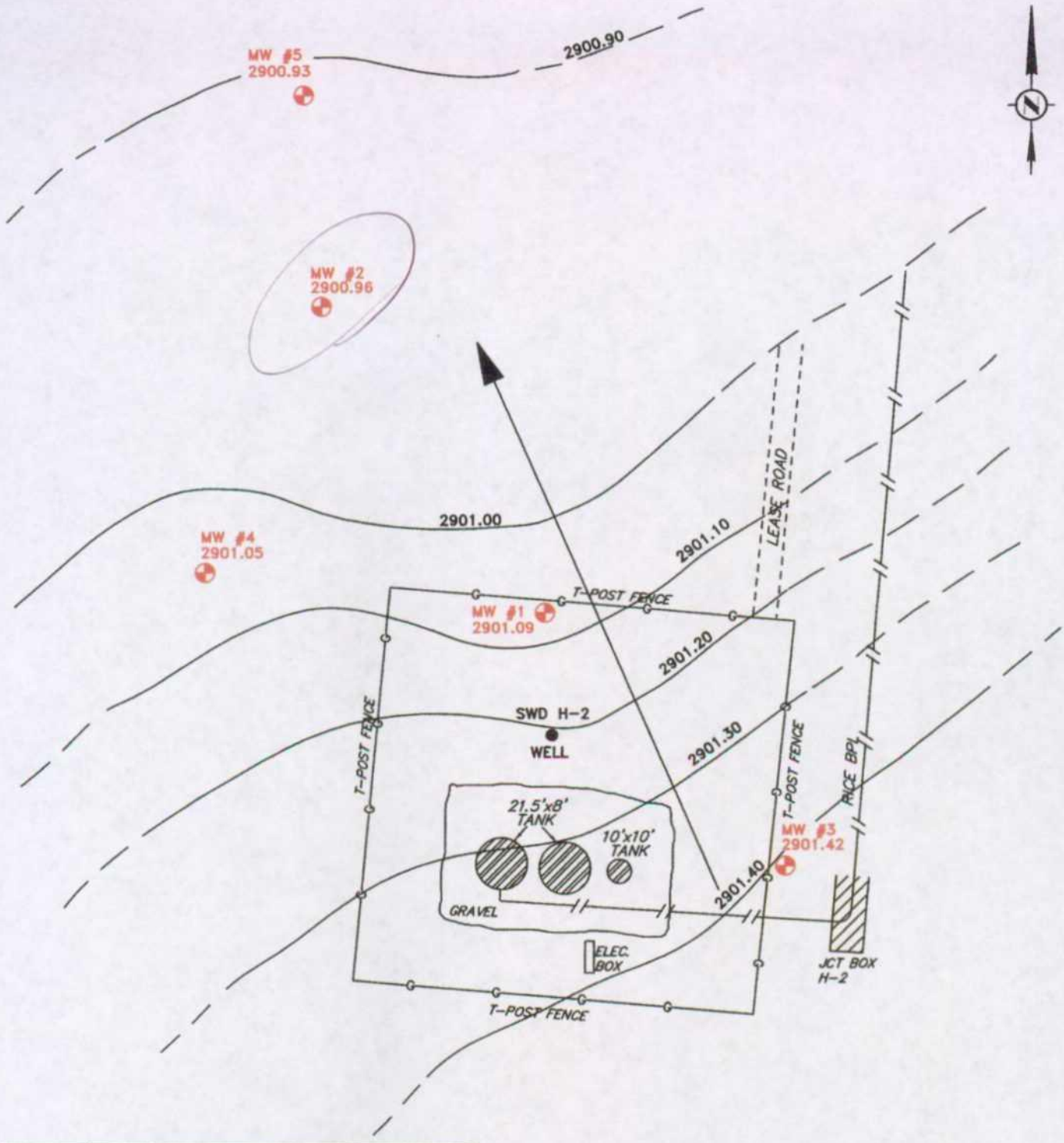
LEA COUNTY, NEW MEXICO

RICE OPERATING COMPANY

SITE MAP

HIGHLANDER ENVIRONMENTAL CORP.
MIDLAND, TEXAS

DATE: 4/30/04
DWG. BY: JJ
FILE: C:\RICE\SITE MAP JUSTIS



WELL#	ELEVATION
MW #1	3023.52'
MW #2	3023.03' (TOP STEEL LID), 3022.83' (TOC)
MW #3	3020.13' (TOP BRASS CAP)
MW #4	3023.17'
MW #5	3021.08'

MONITOR WELL LOCATION

SCALE: 1"=60'

60 0 60

FIGURE NO. 3

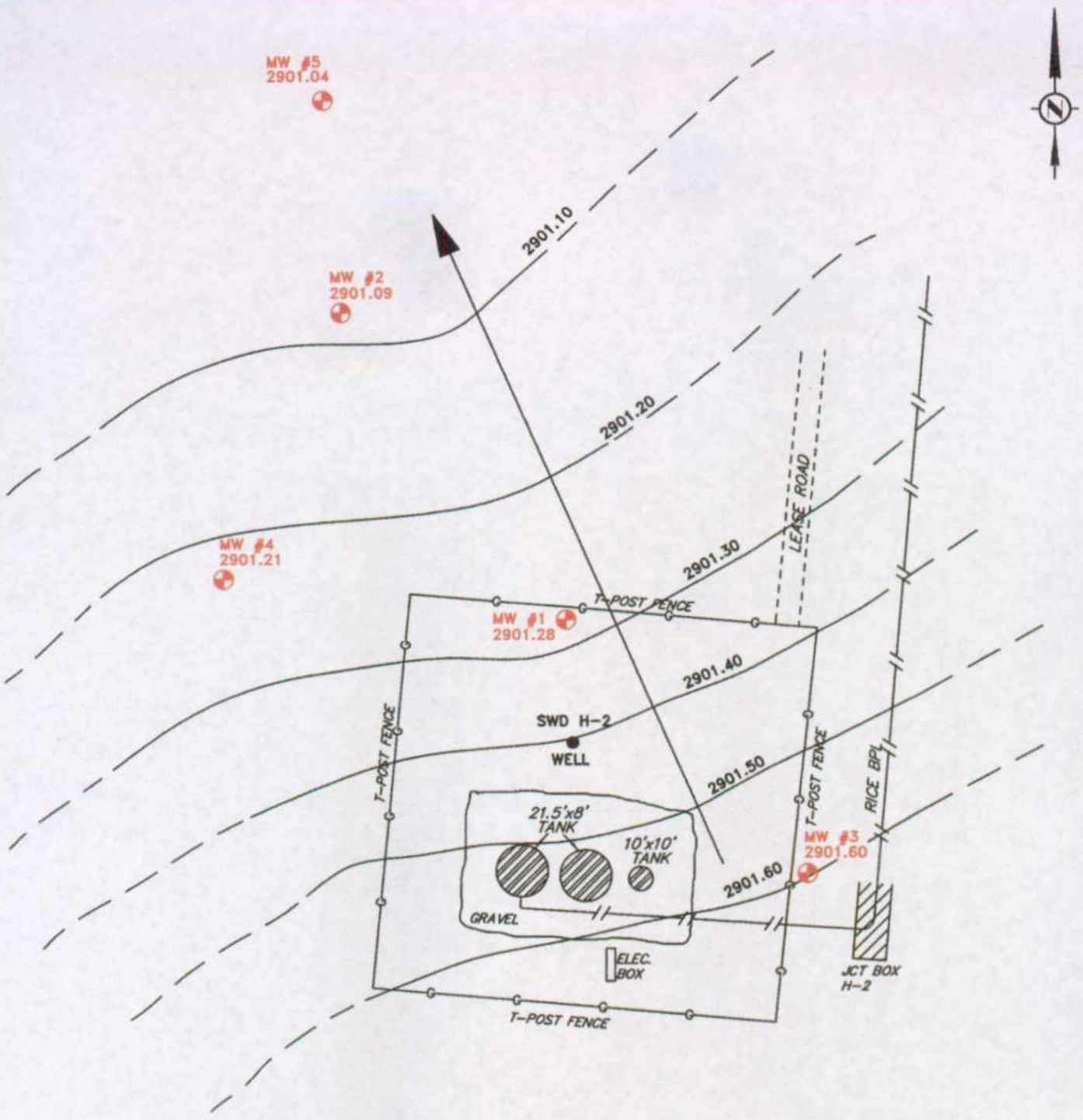
LEA COUNTY, NEW MEXICO

RICE OPERATING COMPANY

3/11/04 WATER TABLE MAP

HIGHLANDER ENVIRONMENTAL CORP.
MIDLAND, TEXAS

DATE: 9/13/04
DWG. BY: JJ
FILE: C:\RICE\MW 3-11 JUSTIS



WELL#	ELEVATION
MW #1	3023.52'
MW #2	3023.03' (TOP STEEL LID), 3022.83' (TOC)
MW #3	3020.13' (TOP BRASS CAP)
MW #4	3023.17'
MW #5	3021.08'

MONITOR WELL LOCATION

SCALE: 1"=60'

60 0 60

FIGURE NO. 4

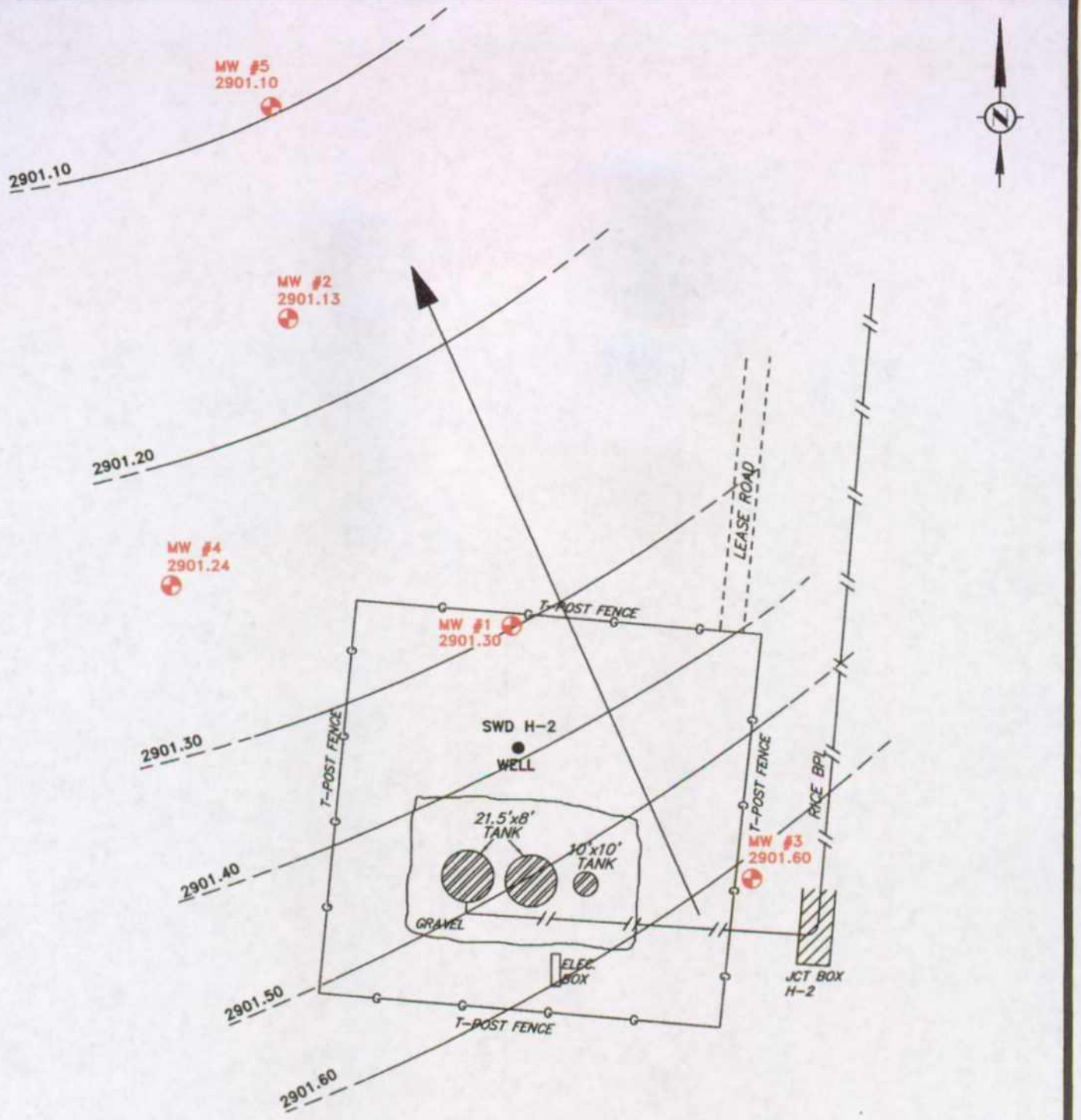
LEA COUNTY, NEW MEXICO

RICE OPERATING COMPANY

6/28/04 WATER TABLE MAP

HIGHLANDER ENVIRONMENTAL CORP.
MIDLAND, TEXAS

DATE: 9/13/04
DWG. BY: JJ
FILE: C:\RICE\MTH 6-28 JUSTIS



WELL#	ELEVATION
MW #1	3023.52'
MW #2	3023.03' (TOP STEEL LID), 3022.83' (TOC)
MW #3	3020.13' (TOP BRASS CAP)
MW #4	3023.17'
MW #5	3021.08'

MONITOR WELL LOCATION

SCALE: 1"=60'

60 0 60

FIGURE NO. 5

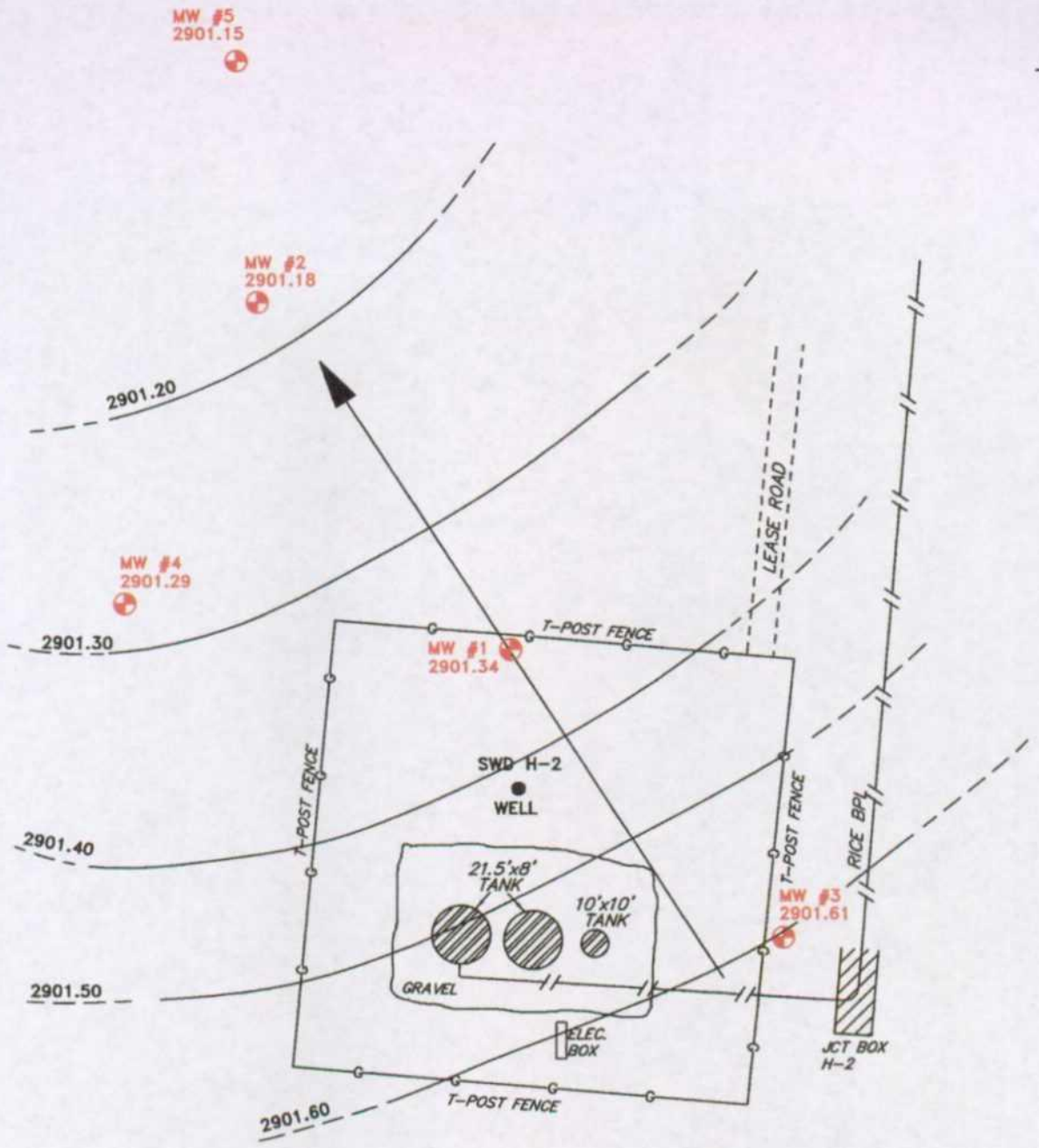
LEA COUNTY, NEW MEXICO

RICE OPERATING COMPANY

9/18/04 WATER TABLE MAP

HIGHLANDER ENVIRONMENTAL CORP.
MIDLAND, TEXAS

DATE: 10/29/04
DWG. BY: JJ
FILE: C:\RICE\9TH 9-04 JUSTIS



WELL#	ELEVATION
MW #1	3023.52'
MW #2	3023.03' (TOP STEEL LID), 3022.83' (TOC)
MW #3	3020.13' (TOP BRASS CAP)
MW #4	3023.17'
MW #5	3021.08'

MONITOR WELL LOCATION

SCALE: 1"=60'

60 0 60

FIGURE NO. 6

LEA COUNTY, NEW MEXICO

RICE OPERATING COMPANY

12/21/04 WATER TABLE MAP

HIGHLANDER ENVIRONMENTAL CORP.
MIDLAND, TEXAS

DATE: 3/11/05
DWG. BY: JJ
FILE: C:\VNCE\WTM 12-04 AUSTIS

PHOTOGRAPHS

Looking South Toward Facility.

Looking North from MW-4.

Looking South From MW-5, Toward Facility.

APPENDIX A

RICE Operating Company
122 West Taylor • Hobbs, New Mexico 88240
Phone: (505)393-9174 • Fax: (505) 397-1471

CERTIFIED MAIL
RETURN RECEIPT NO. 7000 1530 0005 9895 4466

January 18, 2002

Mr. Roger Anderson
NM Energy, Minerals, and Natural Resources
Oil Conservation Division, Environmental Bureau
1220 S. St. Francis Drive
Santa Fe, NM 87505

RE: NOTIFICATION OF GROUNDWATER IMPACT
EUNICE MONUMENT EUMONT (EME), VACUUM, JUSTIS SWD SYSTEMS
Lea County, NM

Mr. Anderson:

Rice Operating Company (ROC) takes this opportunity to notify the Director of the NMOCD, Environmental Bureau of groundwater impact in accordance with NM Rule 116. The attached document contains a list of the sites that qualify for this notification. The remediation of these sites may fall under NM Rule 19 procedures.

ROC is the service provider (operator) for the EME, Vacuum and Justis Salt Water Disposal Systems and has no ownership of any portion of the pipelines, wells or facilities. The EME, Vacuum and Justis Systems are owned by a consortium of oil producers, System Partners, who provide all operating capital on a percentage ownership/usage basis. Replacement/closure projects may require System Partner AFE approval and work begins as funds are received.

Please accept this notification for the attached sites.

RICE OPERATING COMPANY

Donnie Anderson
Project Leader-Environmental

Attachment – Site Listings
Cc: LBG, CDH, SC, file

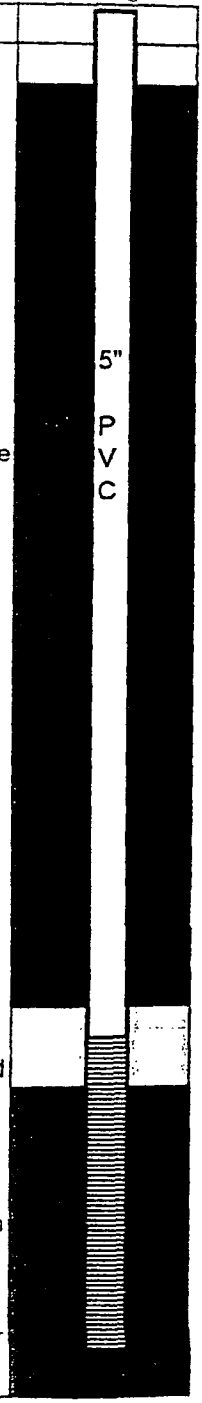
Mr. Chris Williams
NMOCD, District 1 Office
1625 N. French Drive
Hobbs, NM 88240

RICE OPERATING COMPANY
GROUNDWATER IMPACT

SYSTEM	SITE NAME	UNIT	SEC	T	R	TDS	BENZENE
EME	P-6	P	6	20S	37E	20248	<0.002
EME	Jct K-33-1	K	33	19S	37E	2635	<0.002
EME	Jct M-16-1	M	16	20S	37E	8016	<0.002
EME	Jct N-5	N	5	20S	37E	2652	<0.002
VACUUM	F-35 SWD	F	35	17S	35E	9425	0.05
VACUUM	G-35 SWD	G	35	17S	35E	1284	0.011
JUSTIS	H-2 MW1	H	2	26S	37E	1112	<0.002
JUSTIS	H-2 MW2	H	2	26S	37E	3908	<0.002
JUSTIS	H-2 MW3	H	2	26S	37E	577	<0.002

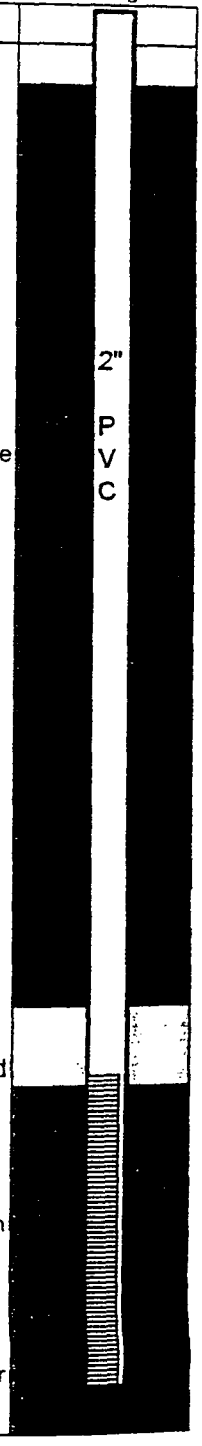
DRILLING LOG	Site Name/Location	BORING/WELL INFORMATION			Logged by: Eades
RICE Operarting Company	**H-2 SWD Facility**	Well No: MW - 1	Date Drilled: 1/4/02	Driller: Eades	Completion:
122 West Taylor	**2-T26S-R37E**	Well Depth: 134'	Boring Depth: 134'	Well Material: PVC	Sand and
Hobbs, New Mexico 88240	**Justis SWD Sys**	Casing Length: 137"	Boring Diameter: 6.25"	Casing Size: 5"	bentonite above
(505) 393-9174	**Lea County, NM**	Screen Length: 20'	Drilling Method: Air Rotary	Slot Size: N/A	screen.

DEPTH	SUBSURFACE LITHOLOGY	SAMPLE TYPE	Test Results (ppm) Cl⁻	TPH	REMARKS	Boring
0	Ground surface		Titrate	EPA 418.1		
	Topsoil				grout	
10	Sand	Grab	6000			
20	Dry Clay	Grab	2500			
	Sand					
30		Grab	1400			
40	Sand and clay stringers	Grab	1700			
	Sand					
50	Sand and clay stringers	Grab	1500			
					bentonite	
60		Grab	4500			
70		Grab	4000			
80	Sand	Grab	9000			
90						
100		Grab	11700			
105						
110						
115						
					sand	
120		Grab	6000			
125	Sand and sandy brown clay					
					screen	
130						
134					water	



DRILLING LOG	Site Name/Location	BORING/WELL INFORMATION			Logged by: Eades
RICE *Operarting Company*	**H-2 SWD Facility**	Well No. MW - 2	Date Drilled: 1/4/02	Driller: Eades	Completion:
122 West Taylor	**2-T26S-R37E**	Well Depth: 139'	Boring Depth: 139'	Well Material: PVC	Sand and
Hobbs, New Mexico 88240	**Justis SWD Sys**	Casing Length: 142"	Boring Diameter: 6.25"	Casing Size: 2"	bentonite above
(505) 393-9174-	**Lea County, NM**	Screen Length: 20'	Drilling Method: Air Rotary	Slot Size: N/A	screen.

DEPTH	SUBSURFACE LITHOLOGY	SAMPLE TYPE	Test Results (ppm) Cr	TPH	REMARKS	Boring
0	Ground surface		Titrate	EPA 418.1		
	Topsoil				grout	
10	Sand	Grab	1100.			
20	Dry Clay	Grab	900			
	Sand					
30		Grab	300			
40	Sand and clay stringers	Grab	600			
	Sand					
50	Sand and clay stringers	Grab	300			
					bentonite	
60		Grab	700			
70		Grab	900			
80	Sand	Grab	900			
90		Grab	1000			
100		Grab	1000			
105						
110		Grab	900			
115						
					sand	
120		Grab	900			
125	Sand and sandy brown clay					
					screen	
130						
135						
139					water	



DRILLING LOG	Site Name/Location	BORING/WELL INFORMATION			Logged by: Eades
RICE *Operarting Company*	**H-2 SWD Facility**	Well No. MW - 3	Date Drilled: 1/4/02	Driller: Eades	Completion:
122 West Taylor	**2-T26S-R37E**	Well Depth: 133'	Boring Depth: 133'	Well Material: PVC	Sand and
Hobbs, New Mexico 88240	**Justis SWD Sys**	Casing Length: 133"	Boring Diameter: 6.25"	Casing Size: 2"	bentonite above
(505) 393-9174	**Lea County, NM**	Screen Length: 20'	Drilling Method: Air Rotary	Slot Size: N/A	screen.

DEPTH	SUBSURFACE LITHOLOGY	SAMPLE TYPE	Test Results (ppm) Cl-	TPH	REMARKS	Boring
0	Ground surface		Titrate	EPA 418.1		
	Topsoil				grout	
10	Sand	Grab	300			
20	Dry Clay	Grab	400			
	Sand					
30		Grab	400			
40	Sand and clay stringers	Grab	250			
	Sand					
50	Sand and clay stringers	Grab	200			
					bentonite	
60		Grab	300			
70		Grab	200			
80	Sand	Grab	300			
90		Grab	300			
100		Grab	100			
105						
110		Grab	100			
115						
					sand	
120		Grab	150			
125	Sand and sandy brown clay					
					screen	
130						
133						
					water