1R - 441

REPORTS

DATE:

9/30/2005

MACK Energy Corporation

P.O. Box 960
Artesia, NM 88211-0960
Office (505) 748-1288
Fax (505) 746-9539

September 30, 2005

Mr. Roger C. Anderson
Environmental Bureau Chief
New Mexico Oil Conservation Division
1220 South St. Francis Drive
Santa Fe, New Mexico 87505

1R-441

RE: Monsanto 30 State #4 Drilling Pit Site,
Unit Letter P, Section 30, Township 16 South, Range 37 East
Lea County, New Mexico
File Reference 1R-0441

Dear Mr. Anderson:

This letter responds to your letter of September 6, 2005 to Mr. J. Sherrill of Mack Energy regarding the above location. The letter presents information generated by our consultant, Safety and Environmental Solutions, Inc., that indicates chloride is exceeding the New Mexico groundwater standard of 250 mg/L at one of the four monitor wells at the above location. The letter further requests that Mack Energy submit a remediation plan for groundwater at the site by September 30, 2005.

Although we agree with the facts of the letter, we respectfully believe that a remediation plan is not necessary or at the very least premature at this time. We present additional information below to show that concentrations are decreasing and may soon approach regulatory levels. If such levels are not attained in the immediate future, additional investigation and delineation will be necessary to establish the extent of the chloride plume, and to determine if a remediation plan is necessary.

Attached to this letter is a figure showing water quality changes beginning in June 2004 through September 7 of this year. Water quality sampling was performed following purging of three casing volumes of water from the well. The graph shows concentration spikes in December, April and July of this year, but with each spike declining in magnitude. The most recent three samplings show continued declines in chloride and total dissolved solids (TDS) concentrations.

Also attached are figures showing groundwater flow direction in the vicinity of the site. Groundwater movement is slightly east of south in the figures. Interestingly, the monitor well having the highest concentration of chloride and TDS (MW-1) is not downgradient from the suspected chloride source but is to the southeast of the pit location.

Finally, a map is provided showing the proximity of the site to the City of Lovington's Water Well #7. The distance from the Monsanto #4 location to water well is approximately 1,400 feet or slightly more than one-quarter of a mile.

At this time, in lieu of a remediation plan, Mack Energy is proposing to take the following immediate action to determine impacts from the release of chlorides from the pit.

1. Sample monitor wells #1 and #4 at least monthly for the next four months to ascertain if chloride and TDS concentrations decline to less than regulatory standards. Sampling of wells #2 and #3 will be performed once during this time period.
2. Perform water level measurements at all four monitor wells at the time of sampling to construct a groundwater elevation map showing direction of flow.
3. Provide results of the testing and the groundwater maps to the agency and the City of Lovington within 14 days of receipt of the analysis results.
4. Provided we are granted access, we will sample City of Lovington well #7 on the same schedule as MW-1 and MW-4. The purpose of such sampling will be to provide a baseline of current water quality information for comparison with future data to determine concentration trends in water quality.
5. Provide a report to the OCD by February 28, 2006 summarizing results of the testing and, as necessary, proposing additional steps to investigate the chloride plume. Such work would likely include drilling of one or more additional monitor wells to delineate extent of the plume and to provide sampling points for future work as needed. The City of Lovington will be provided a copy of this report.

The above actions are expected to generate sufficient data to determine if additional investigation is required or if a remediation plan is necessary.

If you have any questions, please contact Johnny Knorr at Mack Energy Corp.

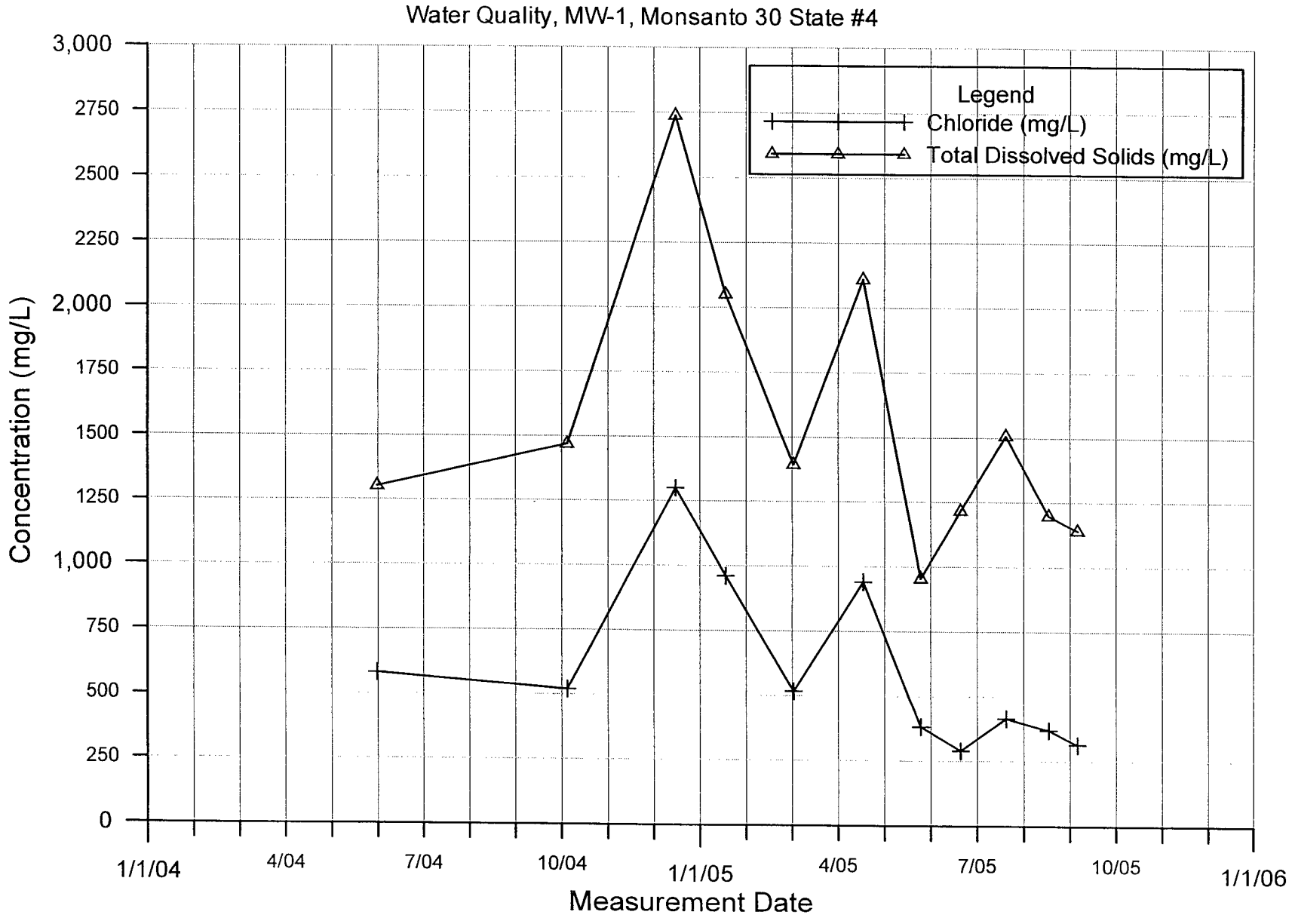
Sincerely,

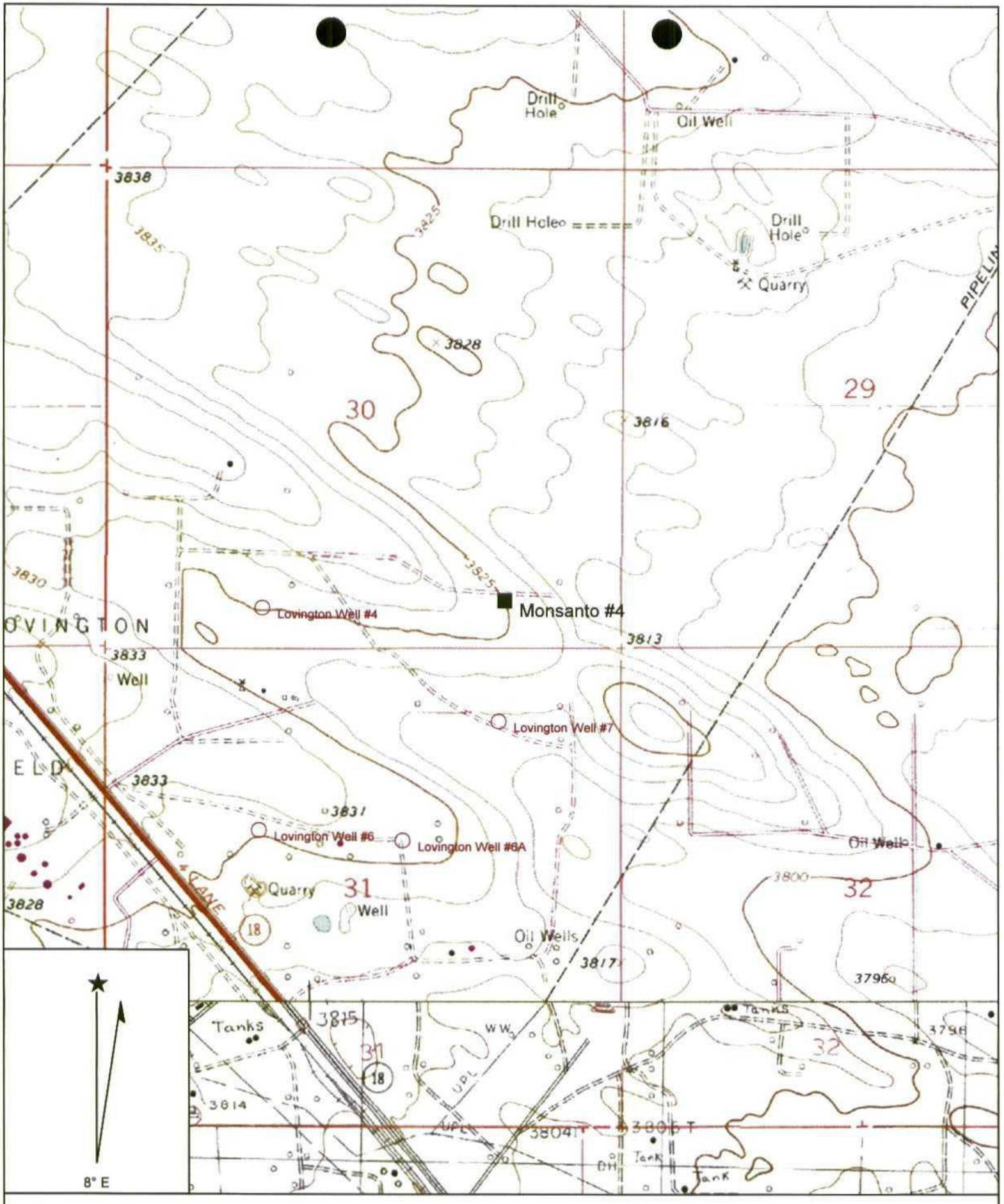
Mack C. Chase

Mack C. Chase
President

encl.

cc. NMOCD, Hobbs Office
Bob Allen, Safety and Environmental Solutions

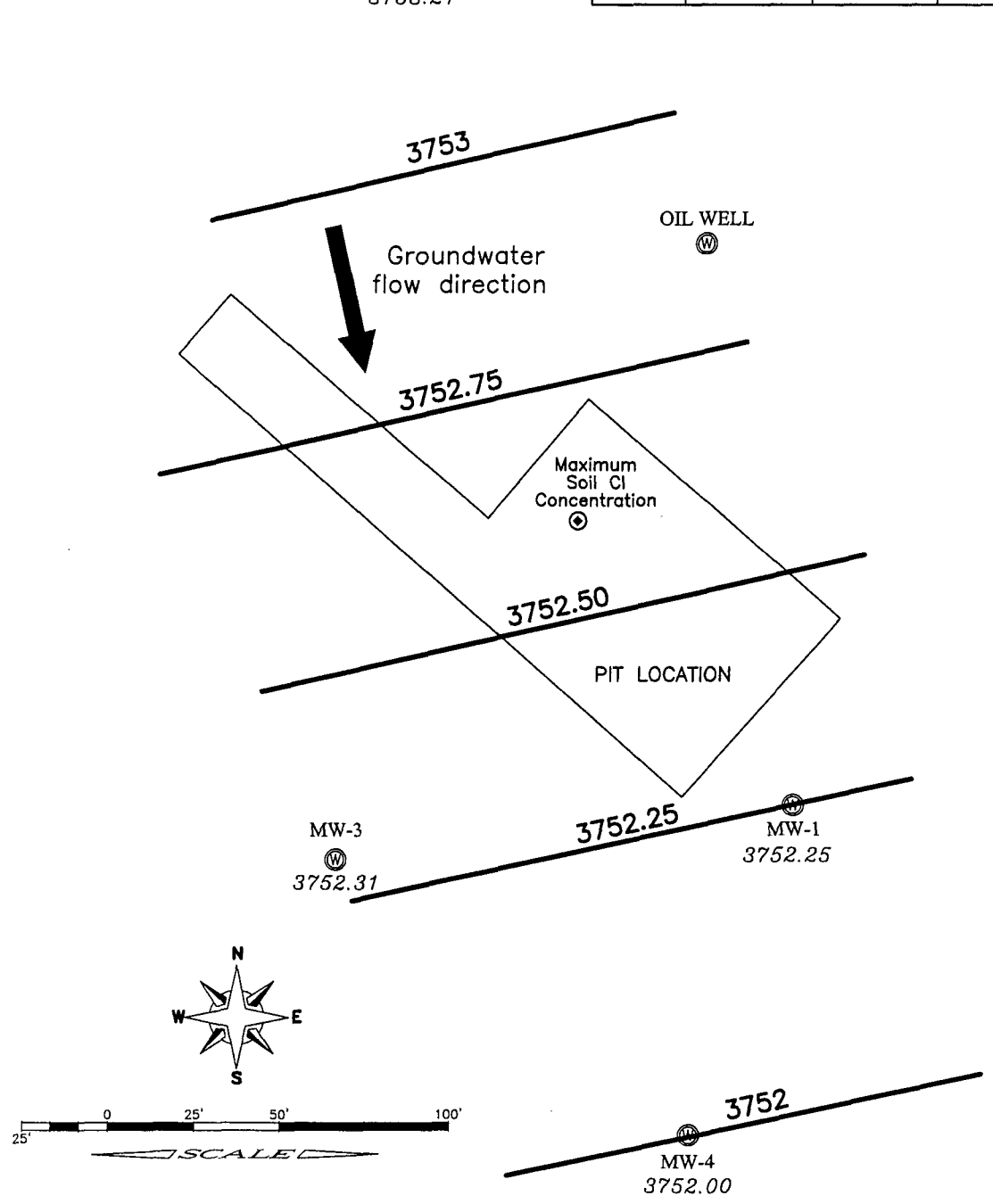

Water Quality, MW-1, Monsanto 30 State #4
Legend
Chloride (mg/L)
Total Dissolved Solids (mg/L)
Concentration (mg/L)
3,000
2750
2500
2250
2,000
1750
1500
1250
1,000
750
500
250
0
1/1/04
4/04
7/04
10/04
1/1/05
4/05
7/05
10/05
1/1/06
Measurement Date



Name: LOVINGTON
Date: 9/29/2005
Scale: 1 inch equals 1333 feet

Location: 13 0660439 E 3639881 N
Caption: Figure 1. Mack Energy Monsonto 30 #4 and Lovington Water Wells

	NORTHING	EASTING	CASING ELEV.
MW #1	687784.91	863394.98	3838.24
MW #2	688029.13	863280.50	3836.31
MW #3	687768.91	863260.63	3842.49
MW #4	687688.16	863364.97	3840.97



LEGEND:

MW-3 (W) 3752.31 — MONITOR WELL LOCATION W/GROUNDWATER ELEVATION (FT. ABOVE MSL)

GROUNDWATER COUTOUR INTERVAL 0.25'

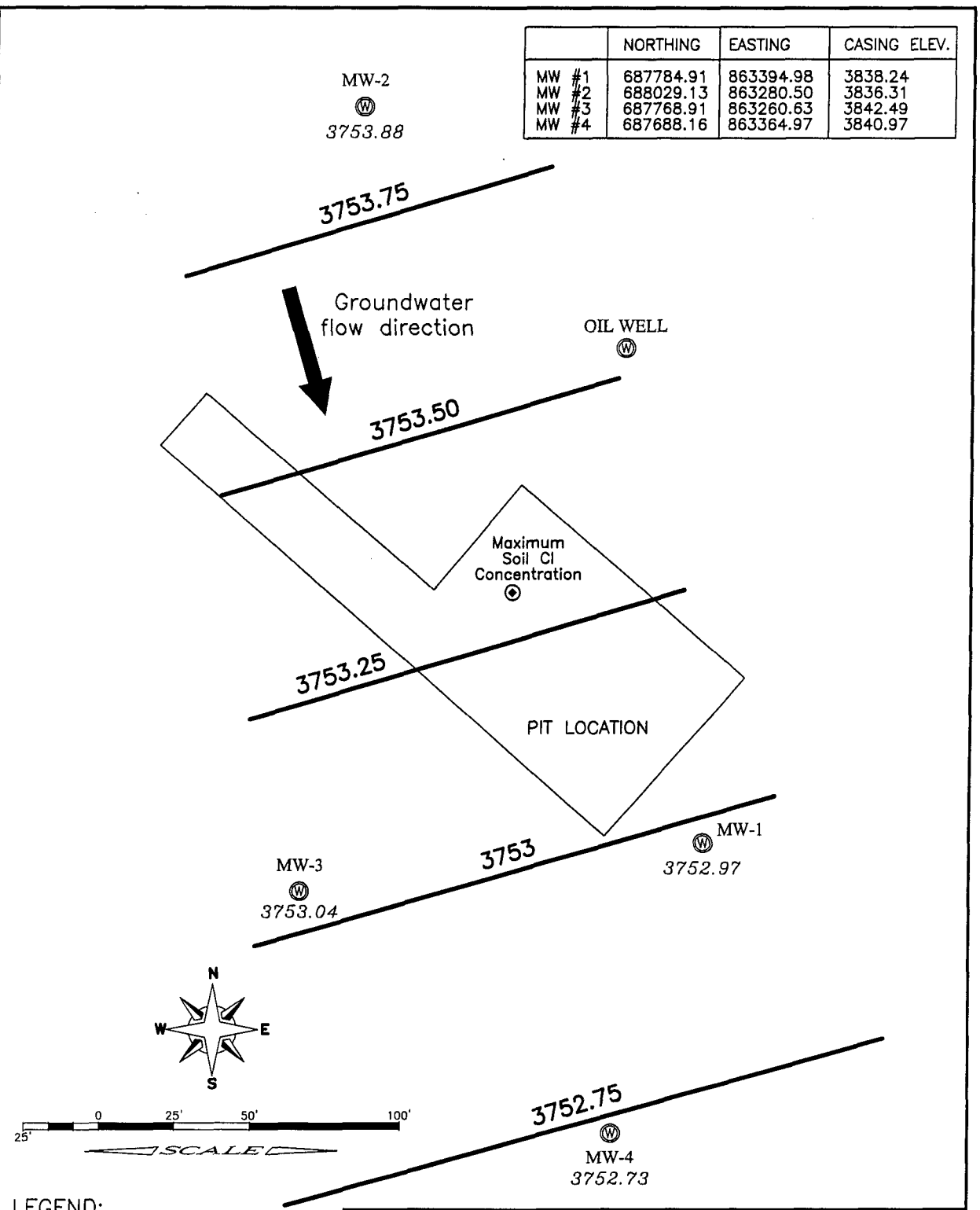
DRAWING TITLE

FIGURE 2
GROUNDWATER ELEVATION MAP
AUGUST 24, 2004

MACK ENERGY CORPORATION
ARTESIA, NEW MEXICO
MONSANTO 30, STATE #4

DRAWN BY	CHK'D BY	SCALE	
EJS	DB	1" = 150'-0"	
DATE	APPR BY	DRAWING NUMBER	REV.
9-29-05	–	Monsanto4_5.DWG	0

	NORTHING	EASTING	CASING ELEV.
MW #1	687784.91	863394.98	3838.24
MW #2	688029.13	863280.50	3836.31
MW #3	687768.91	863260.63	3842.49
MW #4	687688.16	863364.97	3840.97



LEGEND:

MW-3 (W) 3753.04 — MONITOR WELL LOCATION W/GROUNDWATER ELEVATION (FT. ABOVE MSL)

GROUNDWATER COUTOUR INTERVAL 0.25'

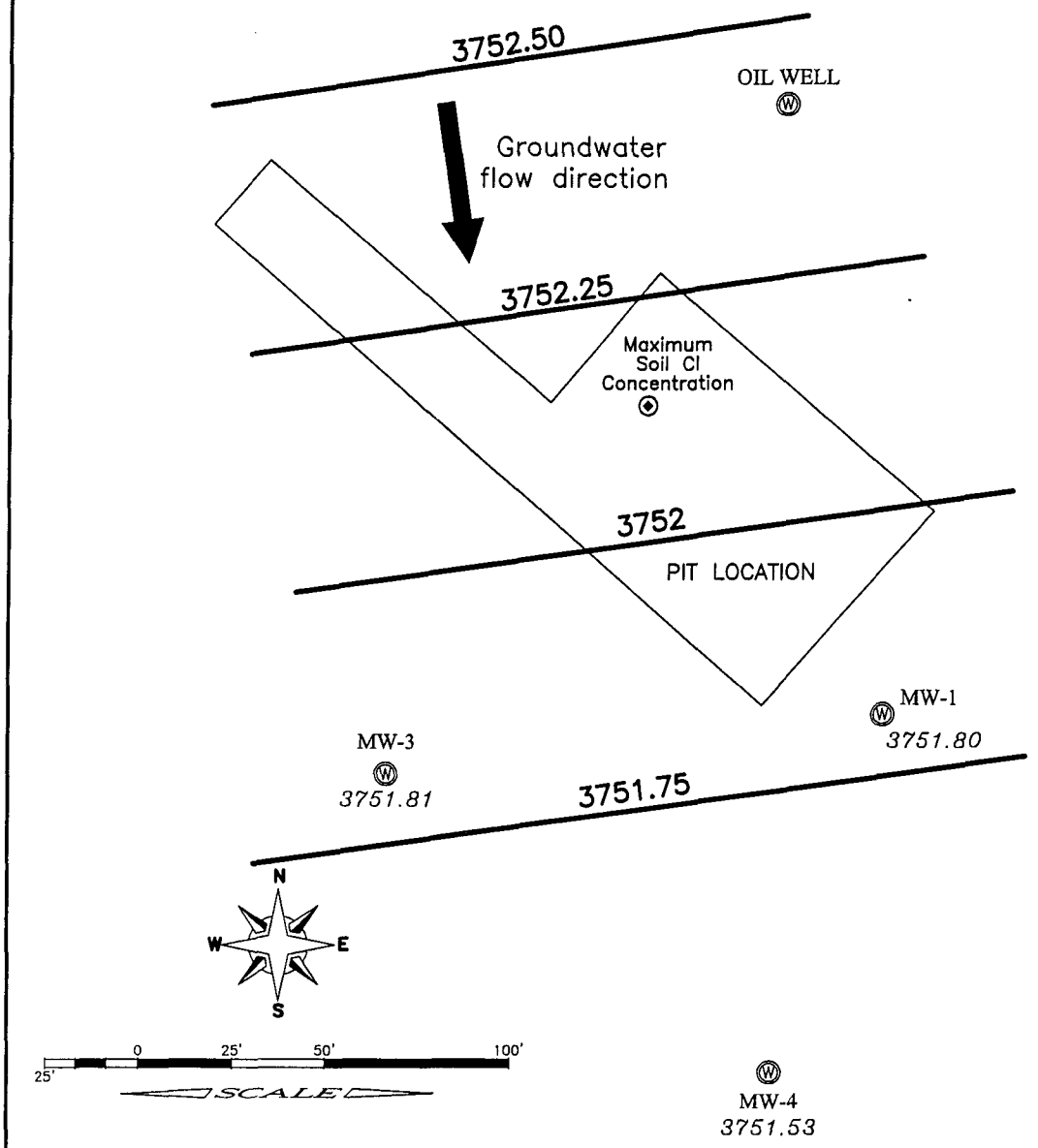
DRAWING TITLE

FIGURE 3
GROUNDWATER ELEVATION MAP
MARCH 04, 2005

MACK ENERGY CORPORATION
ARTESIA, NEW MEXICO
MONSANTO 30, STATE #4

DRAWN BY	CHK'D BY	SCALE	
EJS	DB	1" = 150'-0"	
DATE	APPR BY	DRAWING NUMBER	REV.
9-29-05	-	Monsanto4_5.DWG	0

	NORTHING	EASTING	CASING ELEV.
MW #1	687784.91	863394.98	3838.24
MW #2	688029.13	863280.50	3836.31
MW #3	687768.91	863260.63	3842.49
MW #4	687688.16	863364.97	3840.97



LEGEND:

MW-3 (W) 3751.81 — MONITOR WELL LOCATION W/GROUNDWATER ELEVATION (FT. ABOVE MSL)

GROUNDWATER COUTOUR INTERVAL 0.25'

DRAWING TITLE

FIGURE 4
GROUNDWATER ELEVATION MAP
SEPTEMBER 7, 2005

MACK ENERGY CORPORATION
ARTESIA, NEW MEXICO
MONSANTO 30, STATE #4

DRAWN BY	CHK'D BY	SCALE	
EJS	DB	1" = 150'-0"	
DATE	APPR BY	DRAWING NUMBER	REV.
9-29-05	-	Monsanto4_5.DWG	0

Appendix A. Water Level Measurements, Mack Monsanto 30, State #4

Monitor Well Name, Total Depth Below TOC (ft.)	Elevation Top of Casing (feet)	Measurement Date	Depth to Water Below TOC (feet)	Water Level Elev. (feet)	Water Saturated Thickness (feet)	Change since last measurement (feet)
MW-1	3,838.24	07/01/04	85.99	3,752.25	17.2	- -
103.2		07/21/04	86.10	3,752.14	17.1	-0.11
		08/24/04	85.99	3,752.25	17.2	0.11
		10/05/04	86.04	3,752.20	17.1	-0.05
		12/16/04	85.82	3,752.42	17.3	0.22
		01/18/05	85.58	3,752.66	17.6	0.24
		03/04/05	85.27	3,752.97	17.9	0.31
		04/19/05	85.53	3,752.71	17.6	-0.26
		05/27/05	86.35	3,751.89	16.8	-0.82
		06/22/05	86.05	3,752.19	17.1	0.30
		07/22/05	86.39	3,751.85	16.8	-0.34
		08/18/05	86.35	3,751.89	16.8	0.04
		09/07/05	86.44	3,751.80	16.7	-0.09
MW-2	3,836.31	07/02/04	83.12	3,753.19	16.6	- -
99.8		07/08/04	83.03	3,753.28	16.7	0.09
		07/21/04	83.10	3,753.21	16.7	-0.07
		08/24/04	83.10	3,753.21	16.7	0.00
		10/05/04	83.03	3,753.28	16.7	0.07
		12/16/04	82.92	3,753.39	16.8	0.11
		01/18/05	82.70	3,753.61	17.1	0.22
		03/04/05	82.43	3,753.88	17.3	0.27
		04/19/05	82.69	3,753.62	17.1	-0.26
		05/27/05	83.31	3,753.00	16.4	-0.62
		06/22/05	83.19	3,753.12	16.6	0.12
		07/22/05	83.40	3,752.91	16.4	-0.21
		08/18/05	83.43	3,752.88	16.3	-0.03
		09/07/05	83.55	3,752.76	16.2	-0.12
MW-3	3842.49	07/08/04	90.15	3,752.34	14.4	- -
104.6		07/09/04	90.18	3,752.31	14.4	-0.03
		07/21/04	90.32	3,752.17	14.3	-0.14
		08/24/04	90.18	3,752.31	14.4	0.14
		10/05/04	90.40	3,752.09	14.2	-0.22
		12/16/04	90.03	3,752.46	14.6	0.37
		01/18/05	89.81	3,752.68	14.8	0.22
		03/04/05	89.45	3,753.04	15.1	0.36
		04/19/05	89.73	3,752.76	14.9	-0.28
		05/27/05	90.55	3,751.94	14.0	-0.82
		06/22/05	90.27	3,752.22	14.3	0.28
		07/22/05	90.62	3,751.87	14.0	-0.35
		08/18/05	90.58	3,751.91	14.0	0.04
		09/07/05	90.68	3,751.81	13.9	-0.10

Appendix A. Water Level Measurements, Mack Monsanto 30, State #4

Monitor Well Name, Total Depth Below TOC (ft.)	Elevation Top of Casing (feet)	Measurement Date	Depth to Water Below TOC (feet)	Water Level Elev. (feet)	Water Saturated Thickness (feet)	Change since last measurement (feet)
MW-4	3,840.95	08/10/04	89.11	3,751.84	13.2	- -
102.28		08/24/04	88.95	3,752.00	13.3	0.16
		10/05/04	89.20	3,751.75	13.1	-0.25
		12/16/04	88.81	3,752.14	13.5	0.39
		01/18/05	88.55	3,752.40	13.7	0.26
		03/04/05	88.22	3,752.73	14.1	0.33
		04/19/05	88.47	3,752.48	13.8	-0.25
		05/27/05	89.38	3,751.57	12.9	-0.91
		06/22/05	89.01	3,751.94	13.3	0.37
		07/22/05	89.42	3,751.53	12.9	-0.41
		08/18/05	89.34	3,751.61	12.9	0.08
		09/07/05	89.42	3,751.53	12.9	-0.08

Appendix B. Water Quality Results, Mack Monsanto 30, State #4

Sample Location	Date	Chloride (mg/L)	Sulfate (mg/L)	TDS (mg/L)	Benzene (mg/L)	Toluene (mg/L)	Ethyl-benzene (mg/L)	Total Xylenes (mg/L)
MW-1	06/01/04	580	47	1,302	<0.002	<0.002	<0.002	<0.006
	10/05/04	520	78	1,469	<0.002	<0.002	<0.002	<0.006
	12/16/04	1,300	100	2,738	--	--	--	--
	01/18/05	960	85.5	2,052	<0.002	<0.002	<0.002	<0.006
	03/04/05	516	49	1,393	--	--	--	--
	04/19/05	940	75	2,111	--	--	--	--
	05/27/05	380	70	953	--	--	--	--
	06/22/05	288	77	1,216	--	--	--	--
	07/22/05	412	68	1,507	--	--	--	--
	08/19/05	368	77	1,197	--	--	--	--
	09/07/05	312	--	1,140	--	--	--	--
MW-2	07/08/04	40	57	473	<0.002	<0.002	<0.002	<0.006
	10/05/04	44	86	502	<0.002	<0.002	<0.002	<0.006
	12/16/04	44	72	420	--	--	--	--
	01/18/05	44	58.6	480	<0.002	<0.002	<0.002	<0.006
	03/04/05	44	49	451	--	--	--	--
	04/19/05	40	44	412	--	--	--	--
	05/27/05	40	58	442	--	--	--	--
	06/22/05	32	86	488	--	--	--	--
	07/22/05	40	54	420	--	--	--	--
	08/19/05	40	67	421	--	--	--	--
	09/07/05	36	--	392	--	--	--	--
MW-3	10/06/04	32	51	423	<0.002	<0.002	<0.002	<0.006
	12/16/04	32	51	393	--	--	--	--
	01/18/05	32	39.4	428	<0.002	<0.002	<0.002	<0.006
	03/04/05	36	37	465	--	--	--	--
	04/19/05	26	47	404	--	--	--	--
	05/27/05	40	41	381	--	--	--	--
	06/22/05	24	55	408	--	--	--	--
	07/22/05	32	49	400	--	--	--	--
	08/19/05	32	56	404	--	--	--	--
	09/07/05	28	--	327	--	--	--	--
MW-4	09/01/04	36	49	376	<0.002	<0.002	<0.002	<0.006
	10/06/04	40	58	442	<0.002	<0.002	<0.002	<0.006
	12/16/04	40	55	408	--	--	--	--
	01/18/05	36	54.4	424	<0.002	<0.002	<0.002	<0.006
	03/04/05	36	35	398	--	--	--	--
	04/19/05	40	44	388	--	--	--	--
	05/27/05	40	56	434	--	--	--	--
	06/22/05	32	68	436	--	--	--	--
	07/22/05	44	54	433	--	--	--	--
	08/19/05	40	53	411	--	--	--	--
	09/07/05	32	--	385	--	--	--	--
NM WQCC Groundwater standards		**250**	**600**	**1,000**	**0.010**	**0.750**	**0.750**	**0.650**