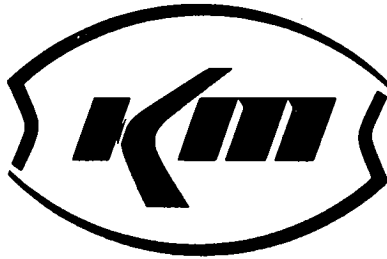


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KERR-McGEE CORPORATION

SECOND QUARTER PERFORMANCE REPORT
CHROMIUM MITIGATION PROGRAM
KERR-McGEE CHEMICAL CORPORATION
HENDERSON, NEVADA
APRIL - JUNE, 1989
JULY 27, 1989



Engineering Services

SECOND QUARTER PERFORMANCE REPORT
CHROMIUM MITIGATION PROGRAM
KERR-McGEE CHEMICAL CORPORATION
HENDERSON, NEVADA

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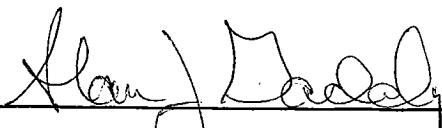
Submitted in Accordance with:

Chromium Mitigation Program
Consent Order
September 9, 1986

Prepared by:

Jeff Lux
Senior Hydrologist
Hydrology Department
Engineering Services Division
Kerr-McGee Corporation

July 27, 1989



A. J. Gaddy, Environmental Engineer
Kerr-McGee Chemical Corporation
Henderson, Nevada

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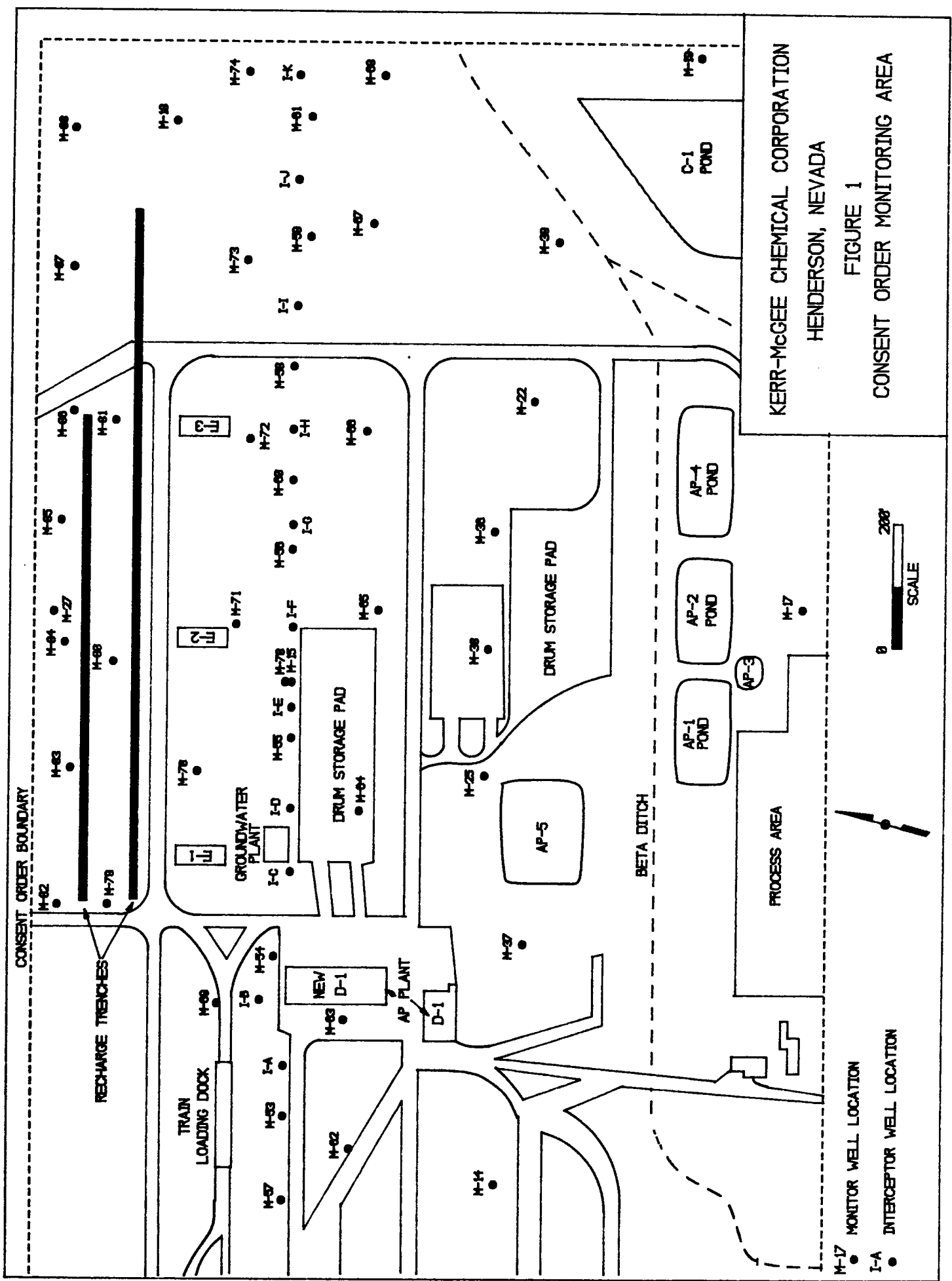
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SECOND QUARTER 1989 PERFORMANCE REPORT
CHROMIUM MITIGATION PROGRAM
KERR-McGEE CHEMICAL CORPORATION
HENDERSON, NEVADA

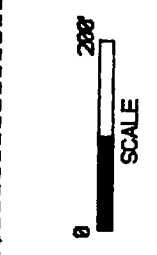
INTRODUCTION

In accordance with the Consent Order for cleanup of chromium contaminated groundwater at the Henderson facility, finalized September 9, 1986, Kerr-McGee Chemical Corporation (KMCC) submits this quarterly performance report to the Nevada Department of Environmental Protection. This report for the second quarter of 1989 summarizes performance data for the groundwater treatment plant and evaluates the effectiveness of the groundwater interception and treatment system installed to carry out the chromium mitigation program.



KERR-McGEE CHEMICAL CORPORATION
 HENDERSON, NEVADA

FIGURE 1
 CONSENT ORDER MONITORING AREA



M-17 ● MONITOR WELL LOCATION
 I-A ○ INTERCEPTOR WELL LOCATION

groundwater level decline is a response to the lowering of the regional water table due to the cessation of cooling water discharge, which provided upgradient recharge from the beta ditch. The significant lowering of interceptor line water level elevations in December 1988 also reflects increased pumpage from several of the interceptor wells.

CONTINUOUS WATER LEVEL RECORDERS

Wells M-78 and M-80 (Figure 1) are equipped with continuous water level recorders. Appendix C contains copies of the recorder charts generated during the second quarter of 1989. During the second quarter of 1989, water levels throughout the consent order area showed negligible decline, indicating that the hydrologic environment has stabilized throughout both the interception and recharge areas.

INTERCEPTOR SYSTEM PERFORMANCE

Figures B-1 through B-6, attached as Appendix B, show the potentiometric surface configuration in the interceptor area during the second quarter. Figures B-2, B-4, and B-6 show that drawdown consistently exceeded the one foot below reference water level criterion across the entire interceptor well line.

The potentiometric surface maps (Figures B-1, B-3, and B-5) do not show overlapping drawdown cones along the interceptor line that would indicate complete interception of the chromium plume. Some underflow is occurring and is discussed below.

The flow of groundwater toward the interceptor well line is approximately 95-105 gallons per minute, based on aquifer properties calculated from pump test data. The pumping system is discharging an average of 91.3 gallons per minute to the treatment plant, indicating an approximate 5-15 gpm shortfall in total interception capacity.

Evaluation of the effectiveness of the groundwater interception and treatment system in reducing chromium levels in the groundwater includes the review of chemical data. KMCC is monitoring chromium concentrations in five Consent Order Appendix J wells, located up and downgradient from the plume interceptor line (Figure 2). Hexavalent chromium concentrations in the five Appendix J wells sampled and analyzed for chromium are displayed in Table 1. Appendix D portrays this data graphically.

FIGURE 2
KERR-MCGEE CHEMICAL CORPORATION
HENDERSON, NEVADA

LOCATION OF APPENDIX J WELLS

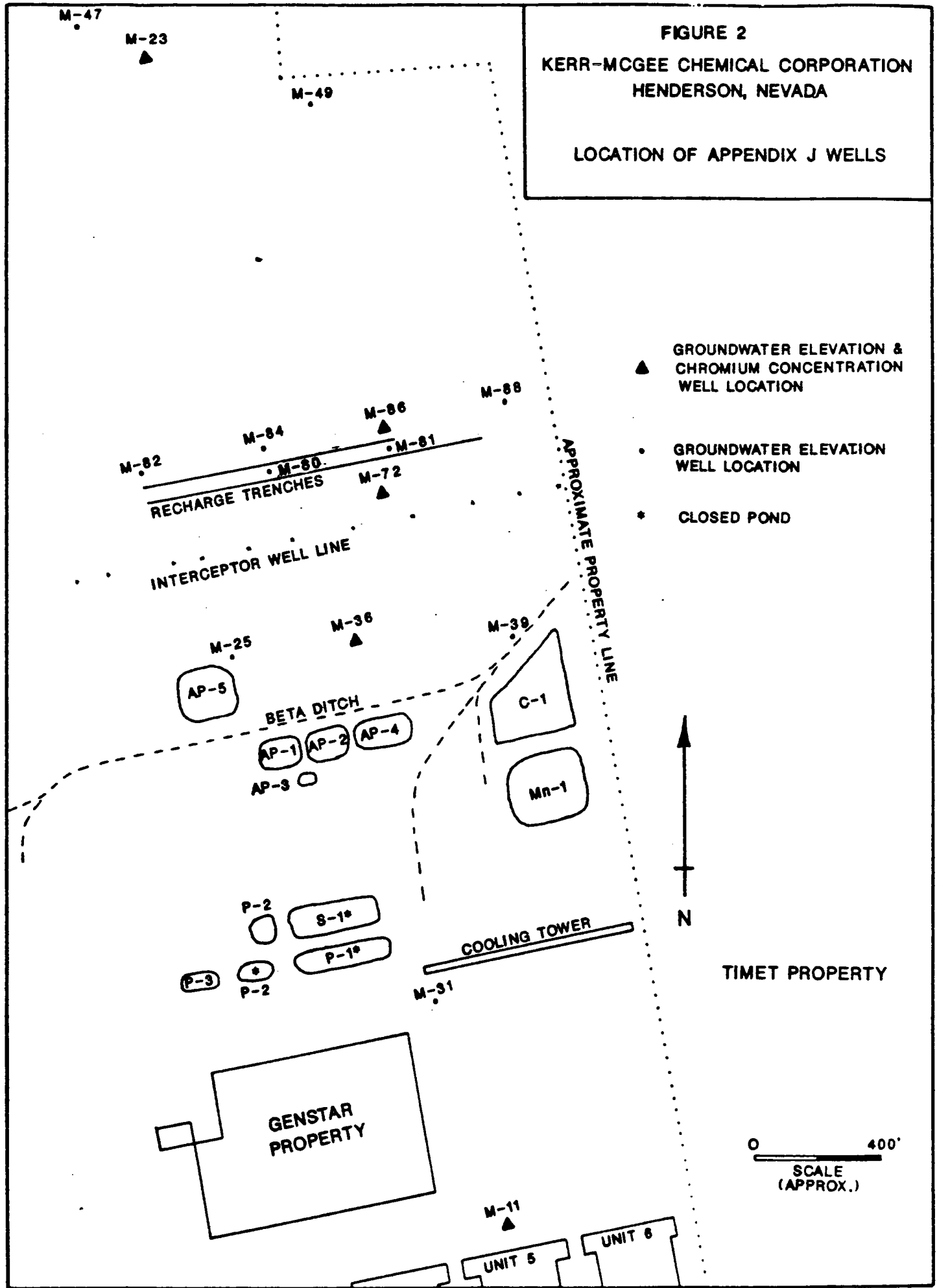


TABLE 1
TOTAL CHROMIUM CONCENTRATION (mg/l)
IN APPENDIX J WELLS

MONTH	WELL #				
	M-11	M-36	M-72	M-86	M-23
DEC 1987	46.00	0.47	1.20	0.83	5.40
JAN 1988	20.00	0.65	1.20	0.40	5.50
FEB 1988	17.00	0.75	1.10	0.35	5.40
MAR 1988	55.00	1.00	1.10	0.17	5.10
APR 1988	55.00	1.80	1.00	0.29	5.00
MAY 1988	44.00	2.20	1.00	0.21	5.40
JUN 1988	44.00	2.50	1.00	0.21	5.40
JUL 1988	43.00	2.80	0.89	0.18	5.00
AUG 1988	39.00	2.80	0.91	0.21	5.10
SEP 1988	46.00	2.60	0.82	0.30	5.00
OCT 1988	46.00	8.80	1.00	0.31	4.60
NOV 1988	40.00	12.40	1.20	0.20	4.80
DEC 1988	54.00	2.90	1.40	0.12	4.90
JAN 1989	6.70	2.90	1.40	0.31	4.60
FEB 1989	40.00	3.10	1.20	0.06	4.10
MAR 1989	42.00	3.80	1.40	0.19	3.80
APR 1989	43.00	3.50	1.40	0.42	3.30
MAY 1989	44.00	3.60	1.40	0.27	3.20
JUN 1989	35.00	3.90	1.16	0.20	2.70

M-11 2500 ft. upgradient of interceptor line.
M-36 550 ft. upgradient of interceptor line.
M-72 Between interceptor line and recharge trench.
M-86 Immediately downgradient of recharge trench.
M-23 1350 ft. downgradient of recharge trench.

Well M-11 was selected for monitoring of chromium because it is nearest the source. Figure D-1 shows that the chromium concentration in M-11, (upgradient from the Consent Order monitoring area) has not declined significantly. Concentrations have not declined due to the slow release of chromium laterally from the low permeability Muddy Creek Clay. This is the horizon that surrounds the basement of the building that was the source of chromium.

Well M-36, located approximately 350 feet upgradient from the interceptor line, shows a gradual increase in chromium concentration with time (Figure D-2). The concentration "spike" seen in October and November, 1988 appears to be due to a precipitation event, which resulted in leaching of previously deposited chromium from the unsaturated zone upgradient from M-36. Future precipitation events would be expected to continue to flush the upgradient unsaturated zone, so these concentration spikes would be expected to occur sporadically and in direct relation to precipitation events.

Well M-72 (Figure D-3), which is located between the interceptor line and the recharge trench, had exhibited a steady decline in chromium concentration until October, 1988. The increase in concentration that began in October has apparently stabilized at approximately 1.4 ppm. KMCC believes this increase and subsequent stabilization in concentration is due to limited flowthrough of the plume through the interception line.

Well M-86 (Figure D-4), located just downgradient from the recharge trench, has shown a decreasing trend in chromium concentration. The chromium concentration may now be stabilizing, although the variability of the data for the last several months is greater than might be projected. However, at no time since December 1987 has the chromium concentration at this location exceeded 0.5 mg/l. The consent order stipulates that treated water discharged to the ground must have an average chromium concentration of 1.7 mg/l or lower.

Well M-23 (Figure D-5), the farthest downgradient of the Appendix J wells, shows a dramatic continued decreasing trend in chromium concentration. This trend, which is an indication of the overall effectiveness of the chromium mitigation program, is expected to continue. Historically low chromium concentrations are now being recorded in the groundwater extracted from this well.

Since chromium levels in well M-86 are typically below 0.3 mg/l, KMCC believes the interception and treatment system is effectively lowering the chromium concentration of the groundwater and is meeting the Chromium Mitigation Program objectives. Prior to the installation of the groundwater treatment system, the chromium concentration at well M-86 was near 5.0 mg/l. The fact that the chromium concentration at well M-23 continues to decrease provides definitive evidence that groundwater quality is being restored.

KMCC instituted a program that provides for maximization of

groundwater removal at those locations along the interception line that exhibit the highest chromium concentrations. Figure D-6 presents the chromium concentration in each of the interceptor well discharges. On the basis of the potentiometric surface configuration, individual well chromium concentrations, and well production capabilities, new pump rates for each recovery well were established in December, 1988 and March, 1989. Table 2 lists the initial pumping rate of each interceptor well and the changes in pumping rate that have been made to maximize flow to the treatment plant and total chromium interception efficiency.

Figure B-6 shows that most of the interceptor wells are drawn down nearly to the Muddy Creek Clay, so that flow through has been minimized. Continued monitoring of downgradient wells M-72 and M-86 is expected to continue to demonstrate the effectiveness of the interception system.

TABLE 2
INTERCEPTOR WELL DISCHARGE RATES

WELL #	DISCHARGE RATE (GPM)			
	SEP. 14 1987	OCT. 1 1988	DEC. 19 1988	MARCH 1989
I-A	2.0	4.0	3.0	3.0
I-B	2.0	2.5	3.0	6.8
I-C*	2.5	5.0	8.8	7.3
I-D*	20.0	23.0	18.0	13.5
I-E*	5.0	2.2	2.4	2.5
I-F*	30.0	21.0	26.0	26.5
I-G	7.0	4.2	5.0	6.0
I-H	8.0	2.8	3.0	2.7
I-I	15.0	15.0	15.0	20.0
I-J	10.0	5.9	8.0	7.8
I-K	10.0	5.7	8.2	8.6
	113.5	91.3	100.4	104.7

* - Wells containing the highest chromium concentrations (see Figure D-6 in Appendix D).

IMPACT OF DISPOSAL SYSTEM ON DOWNGRAIENT WATER LEVELS

Appendix J of the Consent Order, the Disposal System Contingency Plan, identifies specific monitor wells that are to be utilized to evaluate the impact of the downgradient recharge of treated water into the groundwater. In addition, Kerr-McGee Chemical Corporation identified wells in Appendix J of the Consent Order that would be sampled and analyzed for chromium on a quarterly basis. Figure 2 illustrates the location of the Consent Order Appendix J wells.

Appendix A of this report shows that groundwater elevations have stabilized in that portion of the facility that lies downgradient from the recharge system (evidences by wells M-47, M-23, and M-49), and are lower than in January, 1988. No surface wetting downgradient from the recharge trenches has been observed. KMCC is confident that there exists no undesirable impact to groundwater elevations downgradient from the recharge trench.

CHROMIUM TREATMENT SYSTEM EFFECTIVENESS

The Consent Order specifies the following effluent concentration limits for the treatment plant discharge water: Total Chromium 1.7 mg/l and Hexavalent Chromium 0.05 mg/l as a monthly average; Total Chromium 3.4 mg/l and Hexavalent Chromium 0.1 mg/l as a maximum single value on a composite sample.

Table 3 lists treatment plant feed and discharge flow/concentration data for April 1, 1989 through June 30, 1989. Table 3 shows that the discharge limits were never exceeded during the second quarter, 1989.

TABLE 3
GROUNDWATER TREATMENT ANALYSIS

WEEK OF	VOLUME TREATED (M gal.)	FEED CHROMIUM (mg/l)	TREATED TOTAL (mg/l)	EFFLUENT HEXAVALENT (mg/l)
Apr. 1 - Apr. 7	965	3.0	0.055	0.002
Apr. 8 - Apr. 14	955	3.3	0.035	0.0020
Apr. 15 - Apr. 21	902	2.7	0.034	0.0054
Apr. 22 - Apr. 28	917	3.0	0.048	0.0020
April, 1989 Average		3.0	0.043	0.0028
Apr. 229 - May 5	847	3.1	0.050	0.015
May 6 - May 13	780	2.75	0.054	0.0068
May 14 - May 20	847	2.85	0.024	0.003
May 21 - May 26	836	3.15	0.432	0.0053
May 27 - Jun. 2	814	2.85	0.153	0.032
May Average		2.94	0.143	0.0124
Jun. 3 - Jun. 9	792	3.15	0.048	0.004
Jun. 10 - Jun. 16	812	3.10	0.028	0.008
Jun. 17 - Jun. 23	695	2.30	0.300	0.006
Jun. 24 - Jun. 30	724	3.0	0.274	0.0052
June, 1989 Average		2.89	0.163	0.0046

ADDITIONAL WORK PERFORMED

During the second quarter of 1989, installation of an automated water level recording system was initiated for wells along the interceptor line. Electronic pressure transducers are being placed in a number of the groundwater monitor wells stationed between recovery wells. A telephone-addressable datalogger will record the pressure head in each of the wells at a regular interval and convert the pressure head to groundwater elevation. It is anticipated that this format of groundwater elevation monitoring will eventually replace the monthly manual recording of groundwater elevations throughout the consent order monitoring area, according to the provisions of Section 6 of the Consent Order.

CONCLUSIONS

Kerr-McGee Chemical Corporation continues to observe water levels in the interceptor system area. Monthly water elevations will be recorded, and groundwater control will be monitored. KMCC is confident that effective groundwater interception and treatment are being attained. The effect of changing the pumping rates of the interceptor wells will continue to be monitored, and appropriate response measures (i.e. future pump rate adjustments) will be taken to achieve optimal drawdown and plume interception.

Treatment facility discharge chromium concentrations are consistently below established requirements. No adverse impacts to downgradient groundwater elevations have been observed as a result of returning treated groundwater to the near-surface aquifer via the recharge trenches. No other design modifications to the treatment plant facility are contemplated at this time.

APPENDIX A
GROUNDWATER ELEVATIONS

APPENDIX A
 KERR-MCGHEE CHEMICAL CORPORATION
 BRIDGEMAN, NEVADA FACILITY
 GROUNDWATER ELEVATIONS

TOC-->	M-11		M-14		M-15		M-17		M-18		M-19		M-22		M-22R		M-23		M-25	
	DTW	ELEV.	DTW	ELEV.	DTW	ELEV.	DTW	ELEV.	DTW	ELEV.	DTW	ELEV.	DTW	ELEV.	DTW	ELEV.	DTW	ELEV.	DTW	ELEV.
20-Jan-88	44.78	1768.68	28.56	1730.27	23.29	1728.40	30.64	1738.90	11.73	1726.55	27.60	1738.95	23.78	1734.35			14.58	1698.20	26.93	1731.52
05-Feb-88	44.78	1768.68	28.70	1730.13	23.59	1728.10	31.12	1738.42	11.87	1726.41	27.88	1738.67	24.20	1733.93			14.52	1698.26	27.07	1731.08
01-Mar-88	44.76	1768.70	29.38	1729.47	24.03	1728.66	31.72	1737.92	12.13	1726.15	28.36	1738.19	24.65	1733.48			14.67	1698.11	28.33	1729.82
19-Apr-88	45.17	1768.29	30.14	1728.69	24.82	1728.07	32.42	1737.12	12.73	1725.55	28.92	1737.63	25.81	1732.88			14.94	1697.84	28.75	1729.40
18-May-88	45.13	1768.33	30.48	1728.35	25.05	1724.64	32.90	1736.84	13.08	1725.20	29.34	1737.21	25.61	1732.52			15.05	1697.73	29.00	1729.15
07-Jun-88	45.39	1768.07	30.67	1728.16	25.24	1724.45	33.03	1736.51	13.30	1724.98	29.64	1736.91	26.19	1731.94			15.29	1697.49	29.60	1728.55
14-Jul-88	46.16	1767.30	31.06	1727.77	25.83	1723.86	33.96	1735.58	13.73	1724.55	29.98	1736.57					15.73	1697.05	29.65	1728.50
06-Aug-88	46.20	1767.28	31.36	1727.47	25.94	1723.75	34.18	1735.36	13.91	1724.37	29.74	1737.31					15.45	1697.33	30.10	1728.05
03-Sep-88	46.12	1767.34	31.32	1727.51	25.95	1723.74	34.30	1735.24	13.40	1724.88	29.75	1736.80			26.50	1732.18	15.50	1697.28	30.15	1728.00
10-Oct-88	45.40	1768.06	31.50	1727.33	26.00	1723.69	34.40	1735.14	14.30	1723.98	29.70	1736.85			36.20	1722.48	15.55	1697.23	30.70	1727.45
26-Nov-88	41.65	1771.81	31.65	1727.18	27.10	1722.59	34.30	1735.24	14.40	1723.88	29.90	1736.65			26.90	1731.78	16.85	1695.93	30.70	1727.45
15-Dec-88	46.10	1767.36	37.70	1721.13	30.18	1719.51	33.75	1735.79	14.00	1724.28	30.40	1736.15			26.90	1731.55	15.10	1697.68	30.95	1727.20
19-Jan-89	46.15	1767.31	31.80	1721.03	25.05	1724.64	34.75	1734.79	14.80	1723.48	30.60	1735.95			27.13	1731.55	16.45	1696.33	32.10	1726.05
23-Feb-89	45.27	1768.19	32.15	1726.88	28.35	1721.34	35.00	1734.54	15.35	1722.93	30.80	1735.75			27.75	1730.93	16.50	1696.28	32.10	1726.05
23-Mar-89	45.90	1767.56	32.20	1726.63	28.40	1721.29	35.10	1734.44	15.70	1722.58	31.00	1735.55			27.85	1730.83	16.60	1696.18	32.20	1725.95
09-Apr-89	46.10	1767.36	32.30	1726.53	28.40	1721.29	35.10	1734.44	15.85	1722.43	31.00	1735.55			27.95	1730.73	16.00	1696.78	32.00	1726.15
09-May-89	44.95	1768.51	32.40	1726.43	27.80	1721.89	35.00	1734.54	16.00	1722.28	31.00	1735.55			28.05	1730.63	16.10	1696.68	32.30	1725.85
01-Jun-89	45.50	1767.96	32.50	1726.33	28.50	1721.19	35.25	1734.29	16.25	1722.03	31.30	1735.25								

TOC-->	M-27		M-31		M-36		M-37		M-38		M-39		M-47		M-49		M-53		M-54	
	DTW	ELEV.	DTW	ELEV.	DTW	ELEV.	DTW	ELEV.	DTW	ELEV.	DTW	ELEV.	DTW	ELEV.	DTW	ELEV.	DTW	ELEV.	DTW	ELEV.
20-Jan-88	15.36	1729.11	39.34	1749.05	25.62	1732.32	26.98	1732.30	26.04	1731.84	23.80	1735.51	13.08	1703.43	12.53	1708.25	25.60	1725.98	22.14	1726.79
05-Feb-88	15.70	1728.77	39.53	1748.86	25.95	1731.99	27.28	1732.00	26.37	1731.51	24.32	1734.99	13.04	1703.47	12.49	1706.29	25.73	1725.83	22.31	1726.62
01-Mar-88	15.88	1728.59	39.68	1748.71	26.50	1731.44	27.87	1731.41	26.99	1730.89	24.81	1734.50	13.60	1703.51	12.47	1708.31	26.21	1725.35	22.88	1726.05
19-Apr-88	16.45	1728.92	40.08	1748.31	27.14	1730.80	28.82	1730.66	27.60	1730.28	25.42	1733.89	13.10	1703.41	12.60	1706.18	26.75	1724.81	23.50	1725.43
18-May-88	16.95	1727.52	40.38	1748.03	27.50	1730.44	28.90	1730.38	28.00	1729.88	25.83	1733.48	13.29	1703.22	12.94	1705.84	27.09	1724.47	23.60	1725.33
07-Jun-88	17.21	1727.26	40.50	1747.89	27.73	1730.21	29.16	1730.12	28.27	1729.61	26.07	1733.24	13.47	1703.04	13.09	1705.69	27.25	1724.31	23.83	1725.10
14-Jul-88	17.52	1726.95	40.70	1747.69	28.60	1729.34	29.60	1729.68	28.75	1729.13	26.50	1732.81	13.72	1702.79	13.35	1705.43	27.60	1723.96	24.50	1724.43
06-Aug-88	17.87	1726.80	40.53	1747.86	28.45	1729.49	29.08	1729.42	28.94	1728.94	26.77	1732.54	14.07	1702.44	13.81	1704.97	27.94	1723.82	24.52	1724.41
03-Sep-88	16.66	1727.81	40.52	1747.87	29.50	1728.44	29.60	1729.48	29.20	1728.88	26.71	1732.60	13.72	1702.79	13.35	1705.43	28.12	1723.44	24.48	1724.45
10-Oct-88	18.30	1726.17	40.15	1748.24	28.80	1729.14	30.10	1729.18	29.50	1728.36	26.80	1732.51	13.65	1702.86	13.60	1705.18	26.30	1723.26	24.90	1724.03
26-Nov-88	18.60	1725.87	40.30	1748.09	29.00	1728.94	29.90	1729.38	29.30	1728.58	26.90	1732.41	13.60	1702.71	13.10	1705.68	28.10	1723.83	25.10	1723.83
15-Dec-88	19.30	1725.17	39.83	1748.56	29.40	1728.54	31.90	1727.38	29.70	1728.18	26.75	1732.56	13.75	1705.03	13.75	1705.03	28.60	1722.98	26.60	1720.33
19-Jan-89	18.75	1725.72	40.15	1748.24	26.60	1731.34	30.40	1727.88	29.90	1727.98	26.85	1732.46	14.10	1702.41	14.10	1704.68	28.85	1722.71	24.45	1724.48
23-Feb-89	19.15	1724.72	40.47	1747.92	29.80	1728.63	30.65	1728.63	32.70	1725.18	27.65	1731.66	14.45	1702.06	14.23	1704.55	28.90	1722.66	25.90	1723.63
23-Mar-89	19.75	1724.72	40.80	1747.59	30.50	1727.44	30.70	1728.58	30.30	1727.58	27.85	1731.48	14.65	1701.86	14.30	1704.48	28.40	1721.61	26.30	1722.03
23-Apr-89	19.65	1724.92	40.80	1747.59	30.30	1727.64	31.75	1727.53	30.40	1727.48	27.90	1731.41	14.70	1701.81	14.40	1704.38	29.40	1722.16	26.40	1722.53
09-May-89	19.90	1724.67	39.90	1748.49	30.20	1727.74	30.70	1728.58	30.40	1727.48	28.05	1731.26	14.80	1701.71	14.50	1704.28	29.75	1721.81	26.40	1722.53
01-Jun-89	19.70	1724.77	40.35	1748.04	30.35	1727.59	14.60	1744.68	30.45	1727.43	28.20	1731.11	14.60	1701.91	14.65	1704.13	29.75	1721.81	26.60	1722.33

APPENDIX A
 KERR-McGEE CHEMICAL CORPORATION
 HENDERSON, NEVADA FACILITY
 GROUNDWATER ELEVATIONS

TOC-->	M-55		M-56		M-57		M-58		M-59		M-60		M-61		M-62		M-63		M-64	
	DTW	ELEV.	DTW	ELEV.	DTW	ELEV.	DTW	ELEV.	DTW	ELEV.	DTW	ELEV.	DTW	ELEV.	DTW	ELEV.	DTW	ELEV.	DTW	ELEV.
20-Jan-88	23.27	1726.08	22.48	1727.12	26.44	1725.85	20.58	1728.87	14.22	1728.79	22.06	1728.07	16.60	1728.95	25.51	1727.41	22.54	1728.05	22.91	1726.85
05-Feb-88	23.74	1725.61	22.87	1726.73	26.87	1725.82	20.80	1728.45	14.48	1728.53	22.38	1727.75	17.12	1728.43	25.74	1727.18	22.78	1727.81	23.15	1726.61
01-Mar-88	24.15	1725.20	23.35	1726.25	27.10	1725.19	21.09	1728.16	14.86	1728.15	22.80	1727.33	17.34	1728.21	26.18	1726.74	23.43	1727.16	23.87	1725.89
19-Apr-88	24.75	1724.60	24.04	1725.56	27.58	1724.71	21.67	1727.58	15.54	1727.47	23.94	1726.59	17.81	1727.74	26.77	1726.15	24.08	1726.51	24.52	1725.24
18-May-88	25.05	1724.30	24.57	1725.03	27.86	1724.41	22.12	1727.13	15.83	1727.18	23.82	1726.31	18.16	1727.39	27.05	1725.87	24.40	1726.19	24.74	1725.02
07-Jun-88	25.27	1724.08	24.68	1724.92	27.97	1724.32	22.35	1728.90	16.08	1726.93	24.01	1726.12	18.35	1727.20	27.25	1725.87	24.55	1726.04	25.00	1724.76
14-Jul-88	25.78	1723.57	25.14	1724.46	28.32	1723.97	22.90	1726.35	16.57	1726.44	24.48	1725.65	18.78	1726.77	27.63	1725.29	24.88	1725.71	25.50	1724.26
06-Aug-88	25.91	1723.44	25.33	1724.27	28.81	1723.88	23.24	1728.01	16.78	1726.23	24.69	1725.50	19.05	1726.50	27.99	1724.93	25.20	1725.39	25.66	1724.10
03-Sep-88	26.20	1723.15	25.30	1724.30	28.82	1723.67	23.15	1726.10	16.57	1726.44	20.80	1729.33	16.50	1729.95	28.10	1724.82	25.30	1725.29	25.80	1723.86
10-Oct-88	26.40	1722.95	25.65	1723.95	28.75	1723.54	23.30	1725.95	16.90	1726.11	25.00	1725.13	19.80	1725.95	28.20	1724.72	25.20	1725.39	26.20	1723.56
26-Nov-88	26.80	1722.55	25.80	1723.80	28.85	1723.44	23.30	1725.95	16.90	1726.11	25.00	1725.13	19.80	1725.95	28.20	1724.72	25.20	1725.39	26.20	1723.56
15-Dec-88	28.75	1720.60	31.00	1718.60	29.10	1723.19	26.90	1722.35	17.30	1725.71	26.40	1723.73	19.25	1726.30	28.60	1724.32	31.50	1719.09	29.45	1720.31
19-Jan-89	24.20	1725.15	26.50	1723.10	29.10	1723.19	24.10	1725.15	17.70	1725.31	25.00	1725.13	19.70	1725.85	28.75	1724.17	25.85	1724.74	26.65	1723.11
23-Feb-89	27.80	1721.55	26.95	1722.85	29.40	1722.89	24.75	1724.50	18.40	1724.61	26.15	1723.98	22.50	1723.05	28.80	1724.12	26.15	1724.44	27.35	1722.41
23-Mar-89	26.80	1722.55	27.00	1722.60	29.60	1722.89	25.00	1724.25	18.60	1724.41	26.30	1723.83	20.80	1724.95	29.00	1723.92	26.55	1724.04	27.40	1722.36
23-Apr-89	27.85	1721.50	27.15	1722.45	29.65	1722.64	24.95	1724.30	18.80	1724.21	26.40	1723.73	20.70	1724.85	29.10	1723.82	26.40	1724.19	27.50	1722.26
09-May-89	27.85	1721.50	26.60	1723.00	29.80	1722.49	25.10	1724.15	18.70	1724.31	26.40	1723.73	20.80	1724.95	29.25	1723.87	26.65	1723.94	27.45	1722.31
01-Jun-89	27.90	1721.45	27.15	1722.45	29.85	1722.44	25.50	1723.75	19.10	1723.91	26.60	1723.53	21.05	1724.50	29.30	1723.82	26.70	1723.89	27.60	1722.16

TOC-->	M-65		M-66		M-67		M-68		M-69		M-70		M-71		M-72		M-73		M-74	
	DTW	ELEV.	DTW	ELEV.	DTW	ELEV.	DTW	ELEV.	DTW	ELEV.	DTW	ELEV.	DTW	ELEV.	DTW	ELEV.	DTW	ELEV.	DTW	ELEV.
20-Jan-88	24.97	1727.91	22.69	1729.64	14.59	1730.39	16.12	1731.32	23.61	1725.16	21.61	1725.35	19.37	1726.51	17.22	1728.27	12.02	1728.03	15.40	1728.02
05-Feb-88	25.24	1727.84	22.97	1729.36	14.90	1730.08	16.53	1730.91	23.84	1724.93	21.97	1724.99	19.77	1726.11	17.48	1728.03	12.27	1727.78	15.63	1727.79
01-Mar-88	25.89	1728.99	23.54	1728.79	15.33	1729.65	16.96	1730.48	24.31	1724.46	22.53	1724.43	20.11	1725.77	17.77	1727.72	12.50	1727.55	16.00	1727.42
19-Apr-88	26.58	1726.30	23.92	1728.41	15.81	1729.17	17.50	1729.94	24.82	1723.95	23.10	1723.86	20.75	1725.13	18.31	1727.18	13.12	1726.93	16.56	1726.86
18-May-88	27.00	1725.88	24.33	1728.00	16.18	1728.80	17.84	1729.60	25.07	1723.70	23.34	1723.62	21.30	1724.58	18.73	1726.76	13.55	1726.50	16.80	1726.62
07-Jun-88	27.24	1725.84	24.52	1727.81	16.44	1728.54	18.08	1729.36	25.34	1723.43	23.55	1723.41	21.55	1724.33	18.97	1726.52	13.82	1726.23	17.05	1726.37
14-Jul-88	27.85	1725.03	25.05	1727.28	16.93	1728.05	18.46	1728.98	24.54	1724.23	23.95	1723.01	22.04	1723.84	19.49	1728.00	14.30	1725.75	17.47	1725.95
06-Aug-88	27.97	1724.91	25.20	1727.13	17.20	1727.78	18.76	1728.68	26.02	1722.75	24.26	1722.70	22.25	1723.63	19.40	1726.09	14.51	1725.54	17.71	1725.71
03-Sep-88	28.25	1724.63	25.35	1726.98	17.00	1727.98	17.95	1729.49	25.90	1722.87	24.40	1722.56	22.15	1723.73	19.70	1725.79	14.30	1725.75	17.00	1726.42
10-Oct-88	28.65	1724.23	25.40	1726.93	17.10	1727.88	18.80	1730.64	26.00	1722.77	24.80	1722.16	22.80	1723.08	20.25	1725.24	14.85	1725.20	18.00	1725.42
26-Nov-88	28.90	1723.98	25.70	1726.63	17.80	1727.18	19.00	1728.44	26.25	1722.52	25.35	1721.61	23.20	1722.68	20.10	1725.39	15.00	1725.05	18.30	1725.12
15-Dec-88	26.75	1726.18	25.95	1726.38	17.60	1727.38	18.75	1728.69	29.55	1719.22	26.65	1720.31	24.10	1721.78	21.55	1723.94	14.60	1725.45	17.90	1725.52
19-Jan-89	30.00	1722.88	26.10	1726.23	18.00	1726.98	19.00	1728.44	26.50	1722.27	25.95	1721.41	24.10	1721.78	20.00	1723.49	14.70	1725.35	18.00	1725.42
23-Feb-89	30.40	1722.48	26.70	1725.63	18.45	1726.53	19.40	1728.04	26.50	1722.27	25.90	1721.06	24.75	1721.13	21.40	1724.09	16.30	1723.75	18.90	1724.52
23-Mar-89	30.30	1722.58	26.90	1725.43	18.70	1726.28	19.85	1727.59	28.35	1720.42	26.00	1720.96	24.65	1721.23	21.70	1723.79	16.60	1723.45	19.30	1724.12
23-Apr-89	30.55	1722.33	27.00	1725.33	18.80	1726.18	20.00	1727.44	27.40	1721.37	26.00	1720.96	24.70	1721.18	21.80	1723.69	16.80	1723.25	19.40	1724.02
09-May-89	30.35	1722.53	27.15	1725.18	18.80	1726.18	20.15	1727.29	27.70	1721.07	26.10	1720.86	24.65	1721.23	22.80	1723.49	16.80	1723.25	19.50	1723.92
01-Jun-89	30.50	1722.38	27.35	1724.98	19.10	1725.88	20.35	1727.09	27.75	1721.02	26.15	1720.81	24.70	1721.18	22.20	1723.29	17.10	1722.95	19.75	1723.67

APPENDIX A
 KERR-MCGEE CHEMICAL CORPORATION
 HENDERSON, NEVADA FACILITY
 GROUNDWATER ELEVATIONS

TOC-->	M-78		M-79		M-80		M-81		M-82		M-83	
	DTW	ELEV.	DTW	ELEV.	DTW	ELEV.	DTW	ELEV.	DTW	ELEV.	DTW	ELEV.
20-Jan-88	24.94	1726.07	17.54	1725.39	20.80	1724.93	15.13	1728.60	15.74	1723.64	16.52	1724.31
05-Feb-88	25.24	1725.77	17.88	1725.05	21.23	1724.50	15.18	1728.55	15.98	1723.40	16.84	1724.19
01-Mar-88	25.68	1725.33	18.37	1724.56	19.72	1728.01	15.46	1728.27	16.37	1723.01	17.05	1723.78
19-Apr-88	24.75	1726.26	18.87	1724.06	20.41	1725.32	16.08	1727.65	16.85	1722.53	17.54	1723.29
18-May-88	26.23	1724.78	19.47	1723.46	21.05	1724.68	16.80	1726.93	17.28	1722.10	18.00	1722.83
07-Jun-88	26.23	1724.78	19.70	1723.23	21.20	1724.53	17.11	1726.62	17.47	1721.91	18.24	1722.59
14-Jul-88	26.80	1724.21	20.00	1722.93	21.50	1724.23	17.55	1726.18	17.67	1721.71	18.45	1722.38
05-Aug-88	26.97	1724.04	20.42	1722.51	21.53	1724.20	17.79	1725.94	18.07	1721.31	19.00	1721.83
03-Sep-88	27.10	1723.91	20.10	1722.63	21.02	1724.71	17.40	1726.33	17.50	1721.88	17.87	1722.96
10-Oct-88	27.62	1723.39	20.50	1722.43	22.50	1723.23	18.15	1725.58	18.30	1721.08	19.20	1721.63
26-Nov-88	23.20	1727.81	20.75	1722.18	28.10	1717.63	17.75	1725.96	18.50	1720.88	19.30	1721.53
15-Dec-88	28.65	1722.36	22.45	1720.48	23.80	1722.13	18.25	1725.46	23.40	1715.98	24.10	1716.73
19-Jan-89	29.05	1721.96	20.15	1722.78	23.50	1722.23	18.80	1724.93	17.90	1721.48	19.65	1720.98
23-Feb-89	29.40	1721.61	20.20	1722.73	23.83	1721.90	19.90	1723.83	18.70	1720.68	20.25	1720.53
23-Mar-89	29.40	1721.61	21.20	1721.73	23.85	1721.88	20.00	1723.73	18.85	1720.53	20.30	1720.53
23-Apr-89	29.50	1721.51	21.25	1721.68	23.90	1721.83	19.80	1723.93	18.70	1720.68	20.20	1720.63
09-May-89	29.40	1721.61	21.85	1721.08	24.00	1721.73	20.35	1723.38	19.30	1720.08	20.45	1720.38
01-Jun-89	29.40	1721.61	22.00	1720.93	23.85	1721.68	20.50	1723.23	19.40	1719.98	20.40	1720.43

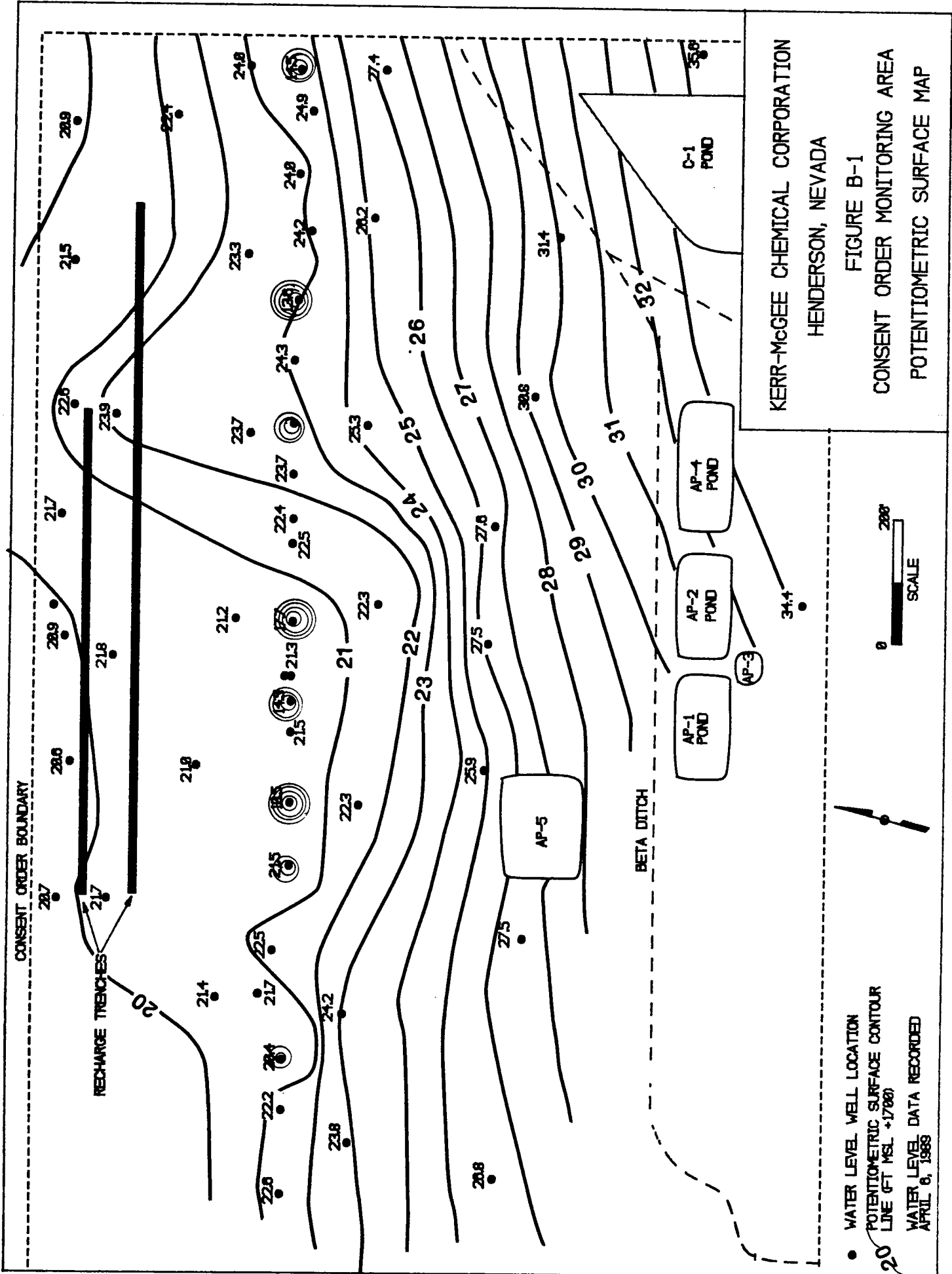
TOC-->	M-84		M-85		M-86		M-87		M-88	
	DTW	ELEV.	DTW	ELEV.	DTW	ELEV.	DTW	ELEV.	DTW	ELEV.
20-Jan-88	14.42	1725.21	15.14	1726.05	15.71	1727.02	16.10	1728.17	13.02	1724.97
05-Feb-88	14.82	1724.81	15.36	1725.83	15.96	1726.77	16.15	1726.12	13.19	1724.80
01-Mar-88	15.00	1724.63	15.63	1725.56	16.00	1726.73	16.32	1725.95	13.41	1724.58
19-Apr-88	15.56	1724.07	16.23	1724.98	16.62	1726.11	16.87	1725.40	13.93	1724.06
18-May-88	16.00	1723.63	16.80	1724.39	16.23	1726.50	17.31	1724.96	14.41	1723.58
07-Jun-88	16.32	1723.31	17.11	1724.08	17.50	1725.23	17.63	1724.64	14.57	1723.42
14-Jul-88	16.62	1723.01	17.42	1723.77	17.93	1724.80	18.15	1724.12	14.97	1723.02
06-Aug-88	17.03	1722.60	17.80	1723.39	18.21	1724.52	18.20	1724.07	15.08	1722.91
03-Sep-88	15.80	1723.83	16.90	1724.29	17.74	1724.99	17.80	1724.47	14.56	1723.43
10-Oct-88	17.30	1722.33	18.30	1722.89	18.90	1723.83	18.60	1723.67	15.60	1722.39
26-Nov-88	17.95	1721.68	18.35	1722.84	18.10	1724.63	18.25	1724.02	15.75	1722.24
15-Dec-88	23.80	1715.83	19.05	1722.14	18.55	1724.18	18.85	1723.42	15.60	1722.39
19-Jan-89	18.30	1721.33	19.10	1722.09	16.30	1726.43	19.35	1722.92	15.30	1722.69
23-Feb-89	18.77	1720.86	19.60	1721.59	20.15	1722.58	24.35	1717.92	16.70	1721.29
23-Mar-89	18.75	1720.88	19.55	1721.64	21.50	1721.23	20.60	1721.67	17.00	1720.99
23-Apr-89	18.75	1720.88	19.45	1721.74	20.15	1722.58	20.75	1721.52	17.10	1720.89
09-May-89	18.90	1720.73	19.75	1721.44	20.60	1722.13	20.70	1721.57	17.25	1720.74
01-Jun-89	18.75	1720.88	19.65	1721.54	20.50	1722.23	21.20	1721.07	17.55	1720.44

APPENDIX A
LEHR-MCGEE CHEMICAL CORPORATION
HENDERSON, NEVADA FACILITY
GROUNDWATER ELEVATIONS

YOC---	I-A		I-B		I-C		I-D		I-E		I-F	
	DTW	ELEV.	DTW	ELEV.	DTW	ELEV.	DTW	ELEV.	DTW	ELEV.	DTW	ELEV.
20-Jan-88	26.63	1724.43	26.66	1724.03	26.06	1724.38	28.29	1722.25	45.76	1704.46	23.81	1723.77
05-Feb-88	25.42	1725.64	25.40	1725.29	26.46	1723.98	28.72	1721.82	46.20	1704.02	23.99	1723.59
01-Mar-88	27.70	1723.36	27.38	1723.31	26.99	1723.45	29.16	1721.38	45.68	1704.54	24.55	1723.03
18-Apr-88	28.42	1722.64	27.89	1722.80	27.75	1722.69	29.79	1720.75	29.89	1720.53	25.21	1722.37
16-May-88	28.83	1722.23	28.07	1722.62	26.03	1724.41	30.06	1720.48	32.22	1718.00	25.74	1721.84
07-Jun-88	29.12	1721.94	28.30	1722.39	26.25	1724.19	30.43	1720.11	32.76	1717.46	25.87	1721.71
14-Jul-88	29.69	1721.37	27.02	1723.87	26.37	1724.07	33.12	1717.42	34.60	1715.62	26.50	1721.08
06-Aug-88	29.80	1721.26	28.94	1721.75	26.49	1723.95	32.06	1718.48	33.10	1717.12	26.60	1720.98
03-Sep-88	31.10	1719.96	28.90	1721.79	26.60	1723.84	35.10	1715.44	32.70	1717.52	26.75	1720.83
10-Oct-88	26.75	1724.31	27.68	1723.09	26.80	1723.64	27.35	1723.19	29.00	1721.22	26.80	1720.78
26-Nov-88	25.60	1725.46	29.40	1721.29	36.20	1714.24	32.20	1718.34	38.10	1712.12	27.80	1719.78
15-Dec-88	30.00	1721.06	29.65	1721.04	37.75	1712.69	45.40	1705.14	41.50	1708.72	33.65	1713.93
19-Jan-89	28.10	1722.86	27.70	1722.99	42.90	1707.54	39.55	1710.99	40.65	1709.57	28.20	1719.38
23-Feb-89	28.70	1722.86	28.00	1722.69	44.10	1706.34	44.55	1705.99	45.70	1704.52	31.00	1716.58
23-Mar-89	31.00	1720.06	30.60	1720.09	41.00	1709.44	32.20	1718.34	30.80	1719.42	29.10	1718.48
23-Apr-89	30.70	1720.36	29.00	1721.69	28.90	1721.54	40.00	1710.54	35.70	1714.52	29.90	1717.68
09-May-89	38.70	1712.36	28.60	1721.84	28.60	1721.84	37.20	1713.34	39.10	1711.12	29.00	1718.58
01-Jun-89	29.25	1721.81	29.00	1721.44	29.00	1721.44	39.40	1711.14	40.35	1709.87	29.00	1718.58

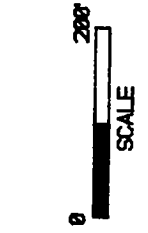
YOC---	I-G		I-H		I-I		I-J		I-K	
	DTW	ELEV.	DTW	ELEV.	DTW	ELEV.	DTW	ELEV.	DTW	ELEV.
20-Jan-88	25.62	1724.80	30.07	1721.00	18.65	1724.71	22.62	1725.33	21.48	1722.49
05-Feb-88	26.06	1724.38	33.08	1717.99	18.87	1724.49	22.90	1725.05	22.75	1721.22
01-Mar-88	26.59	1723.83	33.20	1717.87	19.30	1724.06	23.39	1724.56	24.02	1719.95
19-Apr-88	27.83	1722.59	28.54	1722.53	20.02	1723.34	23.50	1724.45	22.17	1721.80
18-May-88	29.13	1721.29	30.12	1720.95	20.30	1723.06	23.62	1724.33	22.79	1721.18
07-Jun-88	37.40	1713.02	30.85	1720.22	19.80	1723.56	23.87	1724.08	25.20	1718.77
14-Jul-88	37.50	1712.92	32.97	1718.10	21.40	1721.96	25.00	1718.97	25.00	1718.97
06-Aug-88	36.01	1712.41	31.45	1719.62	21.48	1721.88	24.65	1723.30	27.40	1716.57
03-Sep-88	40.50	1709.92	38.80	1712.27	21.12	1722.24	23.54	1724.41	23.75	1720.22
10-Oct-88	30.30	1720.12	27.90	1723.17	20.25	1723.11	24.00	1723.95	24.25	1719.72
26-Nov-88	27.50	1722.92	26.70	1724.37	21.60	1721.76	25.60	1722.35	28.00	1715.97
15-Dec-88	40.65	1709.77	34.90	1716.17	21.60	1721.76	26.70	1721.25	22.35	1721.62
19-Jan-89	37.00	1713.42	29.65	1721.42	25.40	1717.96	26.00	1721.95	22.95	1721.02
23-Feb-89	28.00	1722.42	31.00	1720.07	28.00	1715.36	26.57	1721.38	25.35	1718.62
23-Mar-89	29.00	1721.42	30.60	1720.47	24.80	1718.56	25.20	1722.75	27.00	1716.97
23-Apr-89	28.00	1722.42	22.00	1729.07	29.80	1713.56	24.00	1723.95	29.50	1714.47
09-May-89	27.60	1722.82	42.00	1709.07	28.40	1714.96	22.00	1725.95	30.50	1713.47
01-Jun-89	27.90	1722.52	28.90	1722.17	27.80	1715.56	26.80	1721.15	30.50	1713.47

APPENDIX B
POTENTIOMETRIC SURFACE MAPS
INTERCEPTOR AREA CROSS-SECTIONS

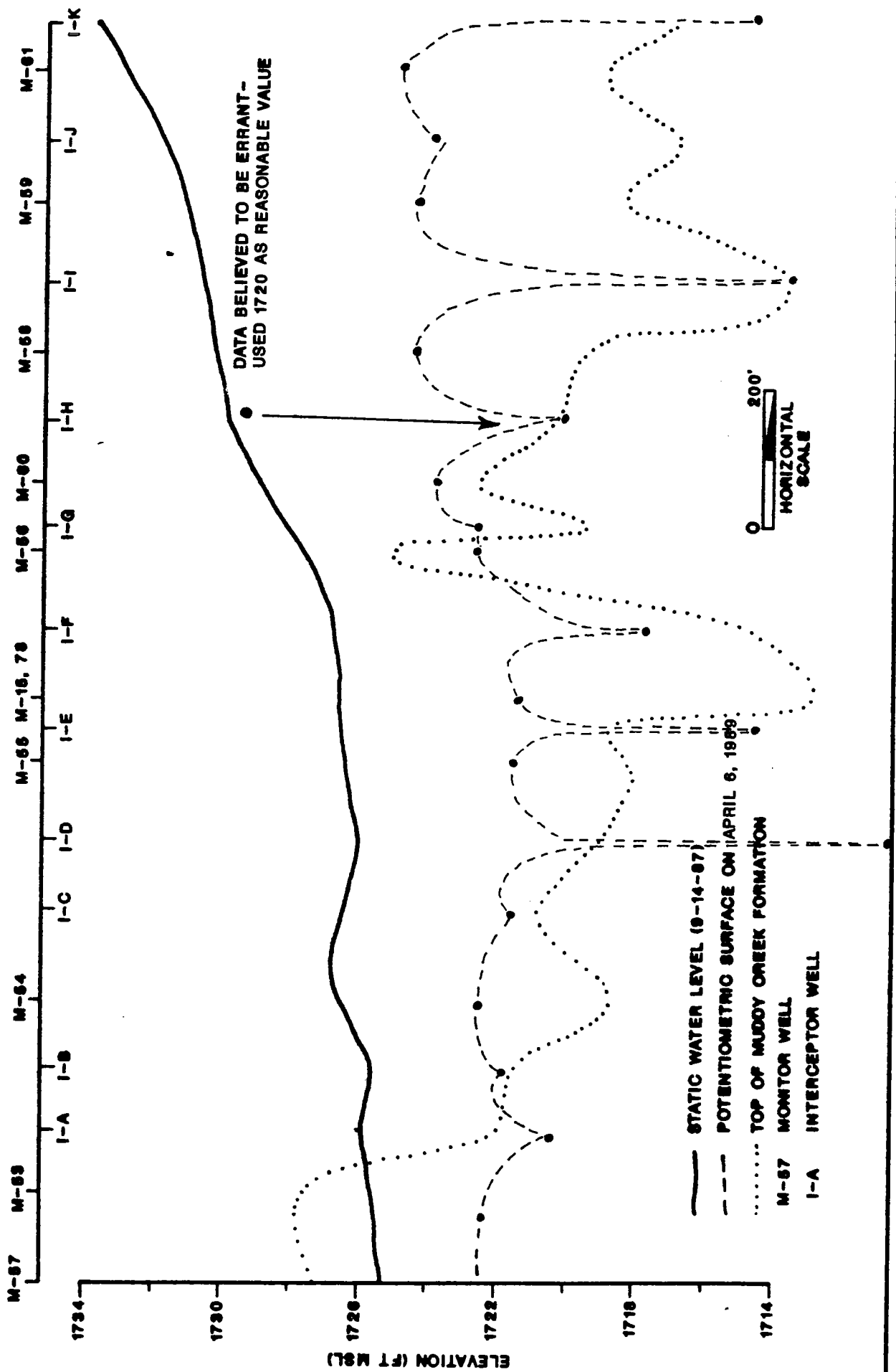


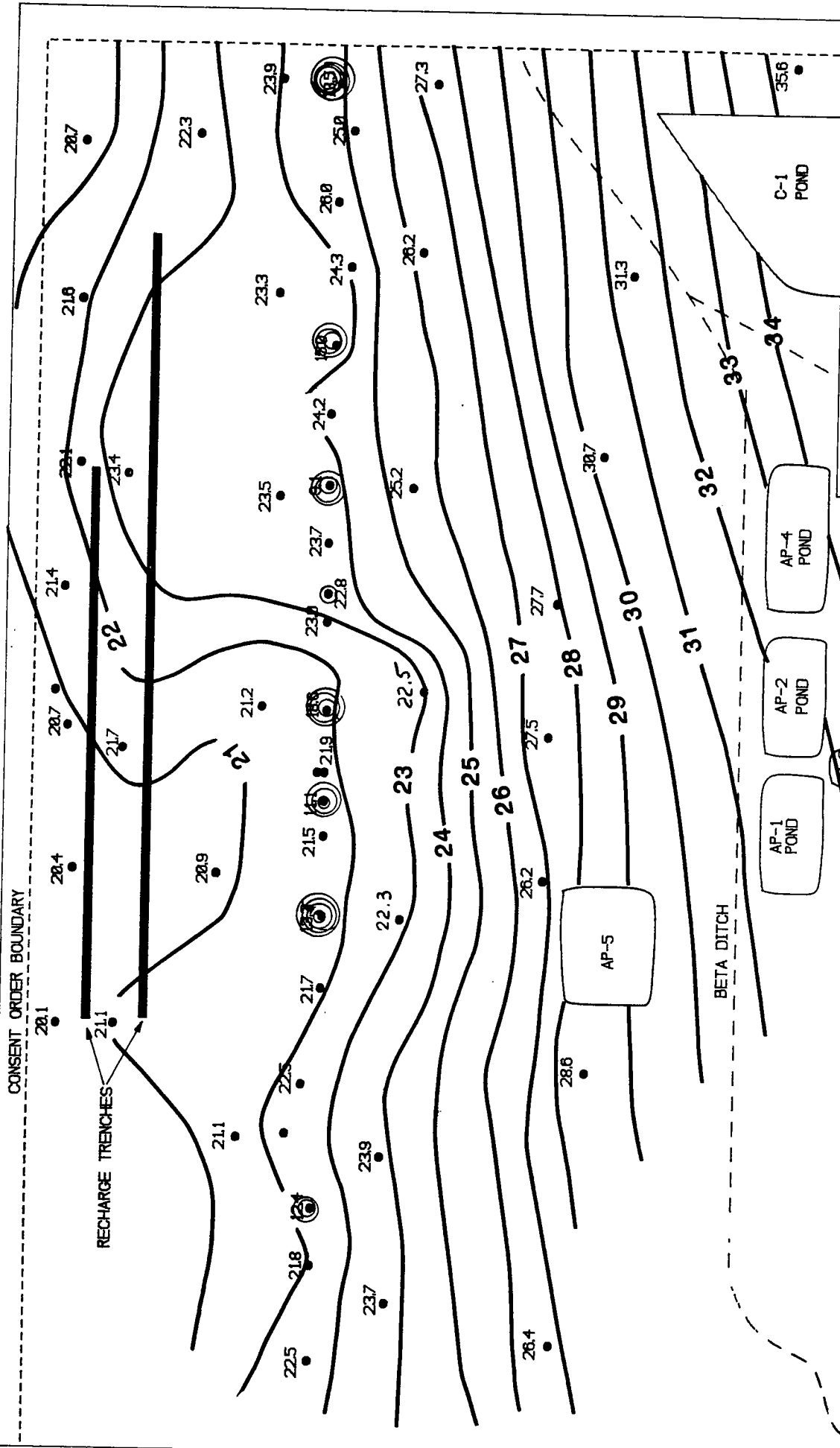
KERR-McGEE CHEMICAL CORPORATION
 HENDERSON, NEVADA
 FIGURE B-1
 CONSENT ORDER MONITORING AREA
 POTENTIOMETRIC SURFACE MAP

• WATER LEVEL WELL LOCATION
 POTENTIOMETRIC SURFACE CONTOUR
 LINE (FT MSL +1700)
 WATER LEVEL DATA RECORDED
 APRIL 6, 1988

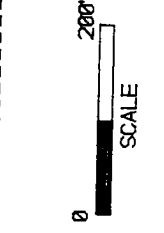


**KERR-MCGEE CHEMICAL CORPORATION
HENDERSON, NEVADA
GROUNDWATER INTERCEPTOR LINE CROSS-SECTION
FIGURE B-2**



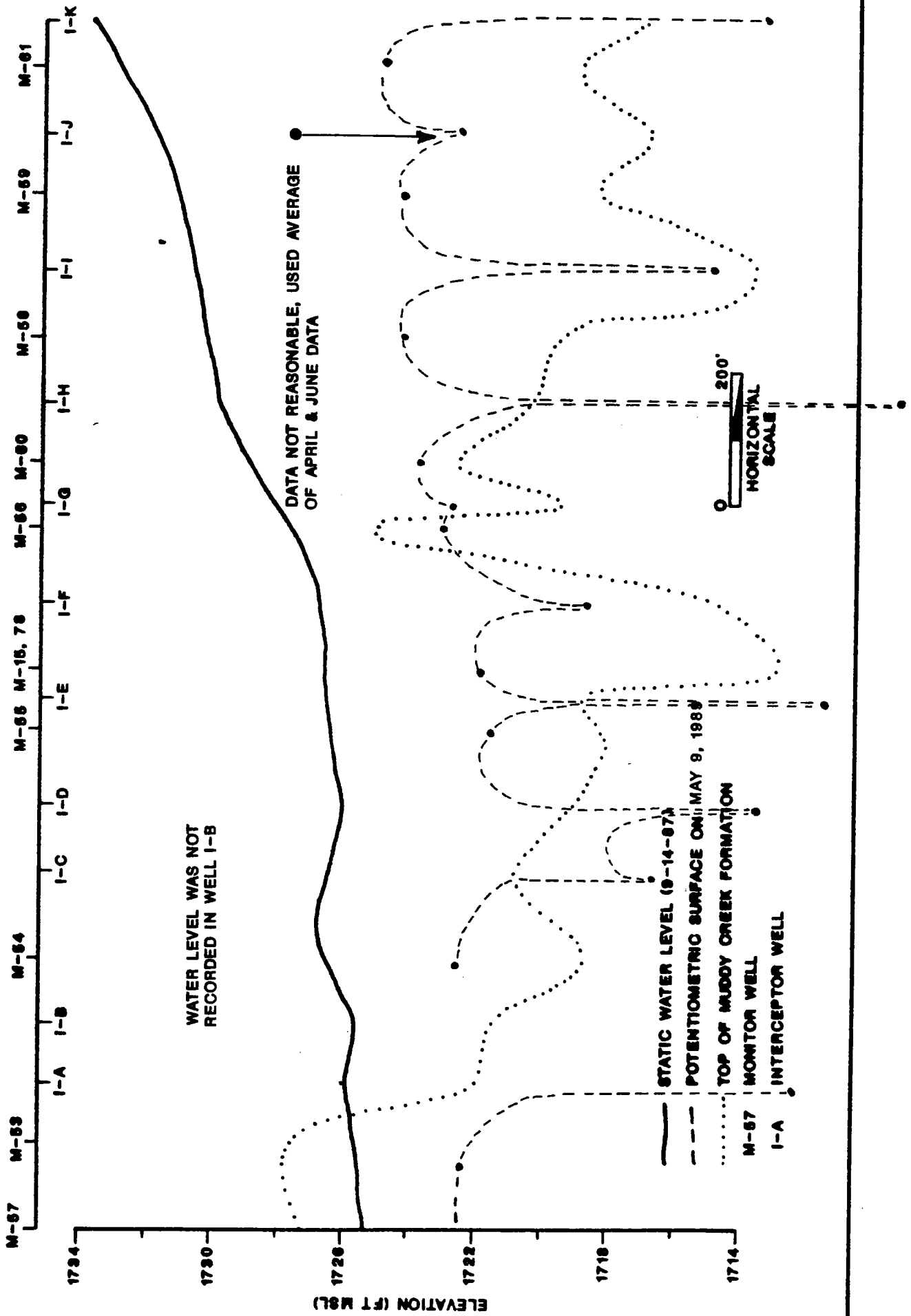


KERR-McGEE CHEMICAL CORPORATION
 HENDERSON, NEVADA
 FIGURE B-3
 CONSENT ORDER MONITORING AREA
 POTENTIOMETRIC SURFACE MAP



• WATER LEVEL WELL LOCATION
 POTENTIOMETRIC SURFACE CONTOUR
 LINE (FT MSL +1700)
 WATER LEVEL DATA RECORDED
 MAY 9, 1989

**KERR-MCGEE CHEMICAL CORPORATION
HENDERSON, NEVADA
GROUNDWATER INTERCEPTOR LINE CROSS-SECTION
FIGURE B-4**



CONSENT ORDER BOUNDARY

RECHARGE TRENCHES

BETA DITCH

AP-1 POND

AP-2 POND

AP-4 POND

C-1 POND

AP-5

34.3

33

32

31

30

29

28

27

26

25

24

23

22

21

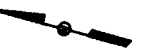
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19

18

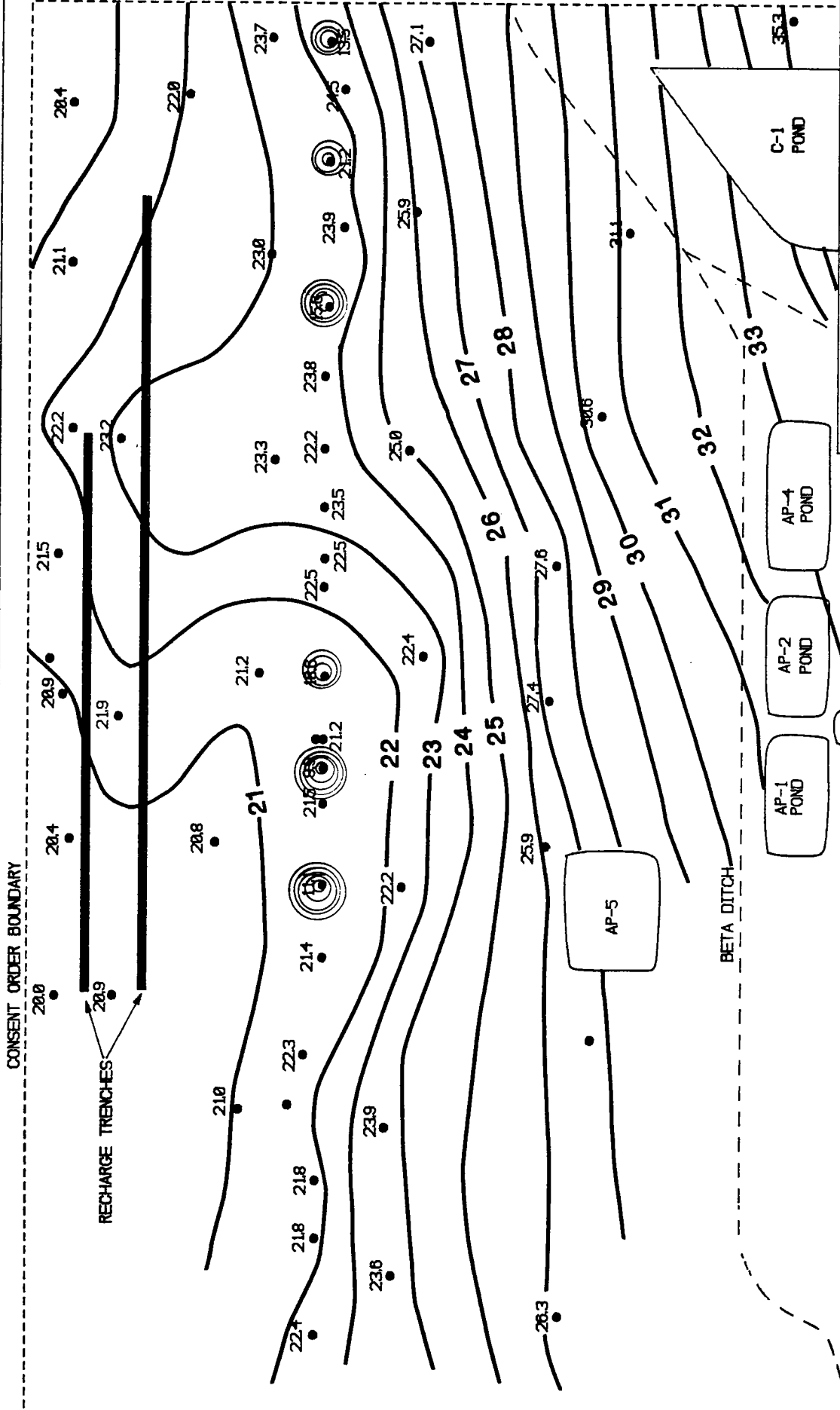
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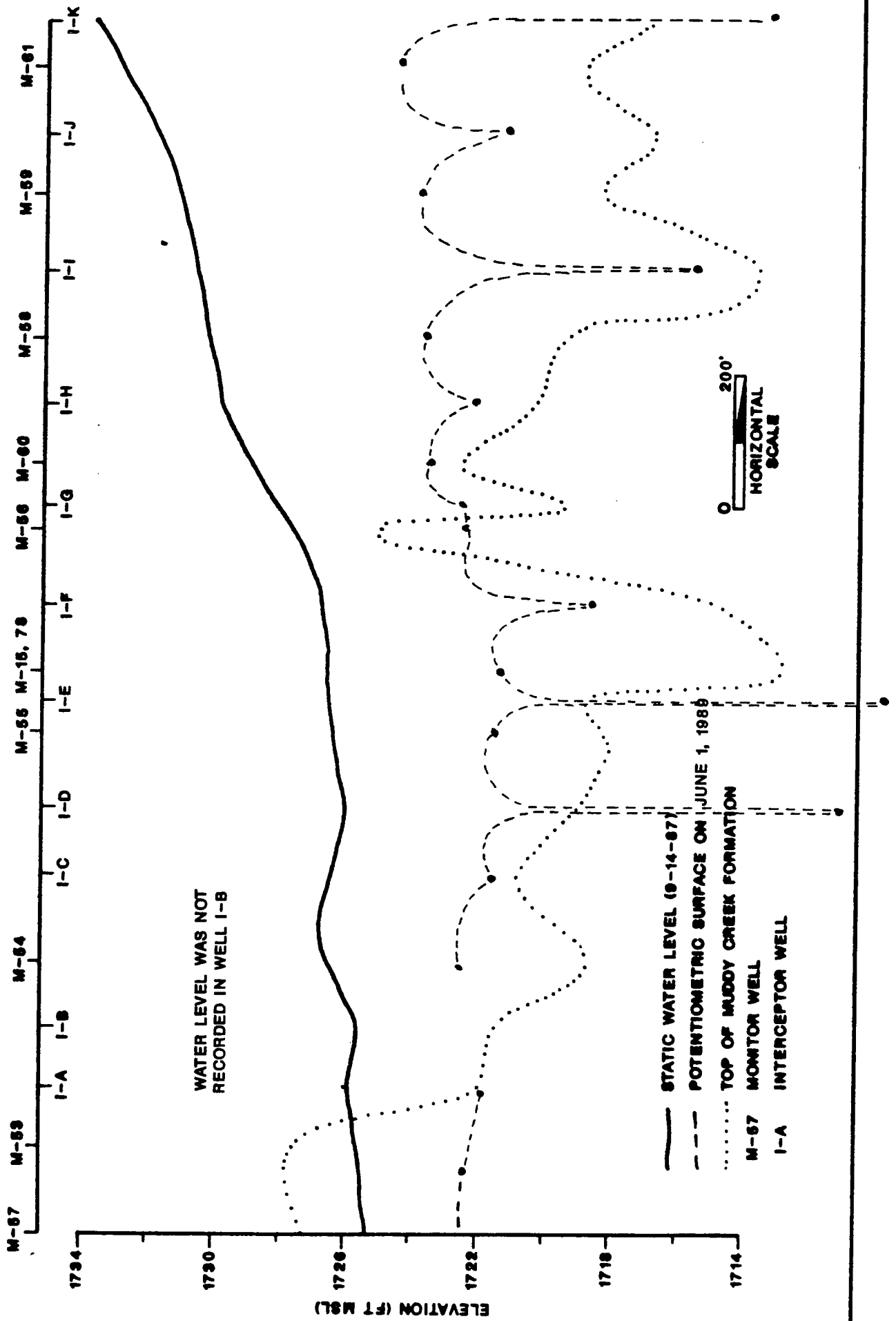


- WATER LEVEL WELL LOCATION
- POTENTIOMETRIC SURFACE CONTOUR LINE (FT MSL +1700)
- WATER LEVEL DATA RECORDED JUNE 1, 1989

KERR-McGEE CHEMICAL CORPORATION
 HENDERSON, NEVADA
 FIGURE B-5
 CONSENT ORDER MONITORING AREA
 POTENTIOMETRIC SURFACE MAP



**KERR-MCGEE CHEMICAL CORPORATION
HENDERSON, NEVADA
GROUNDWATER INTERCEPTOR LINE CROSS-SECTION
FIGURE B-6**



APPENDIX C
CONTINUOUS WATER LEVEL RECORDER CHARTS

DEPTH TO WATER AT 1330 - 29.56'
MARCH 31, 1989

DEPTH TO WATER AT 2:45 - 29.38'
MAY 1, 1989

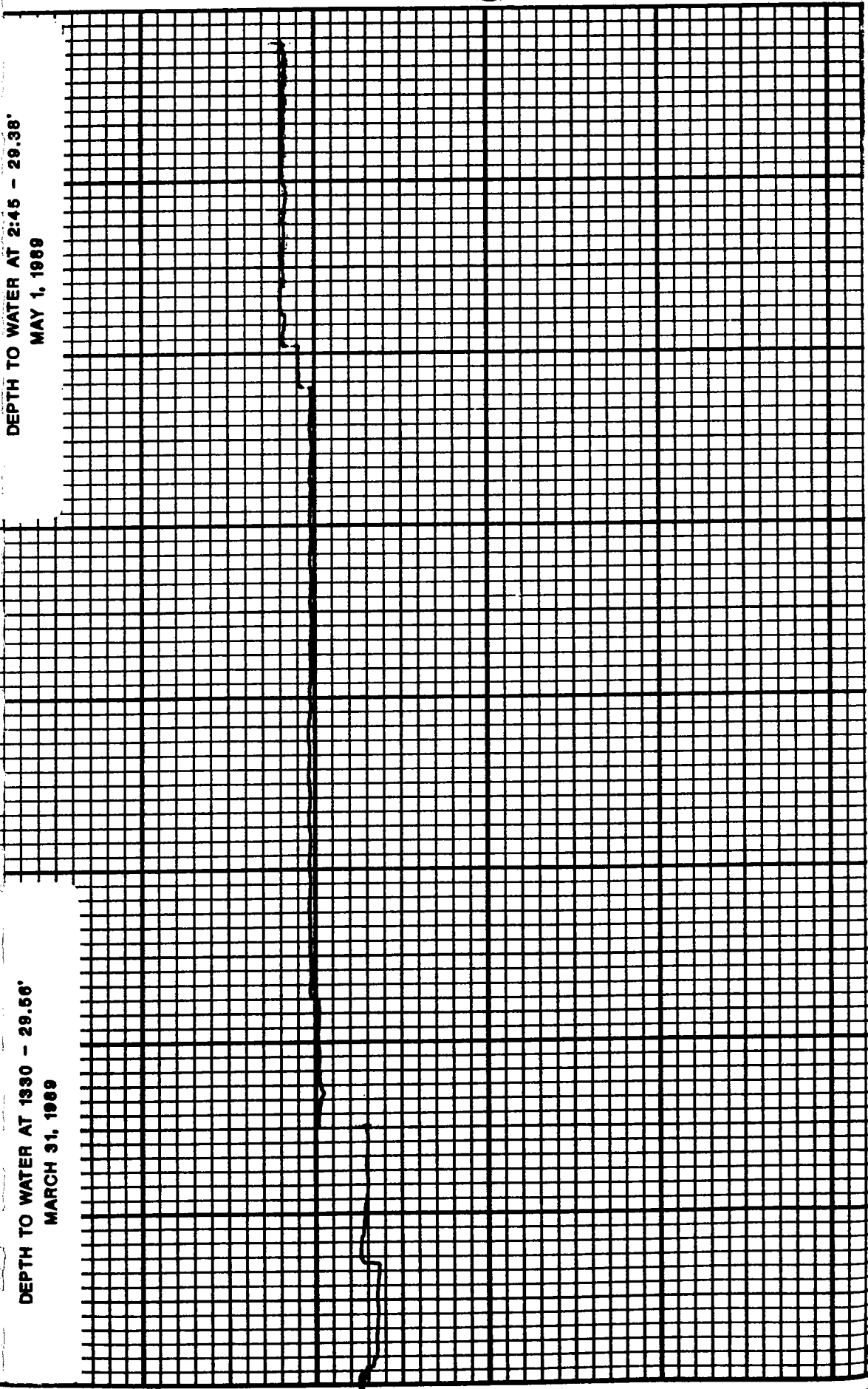


Chart F

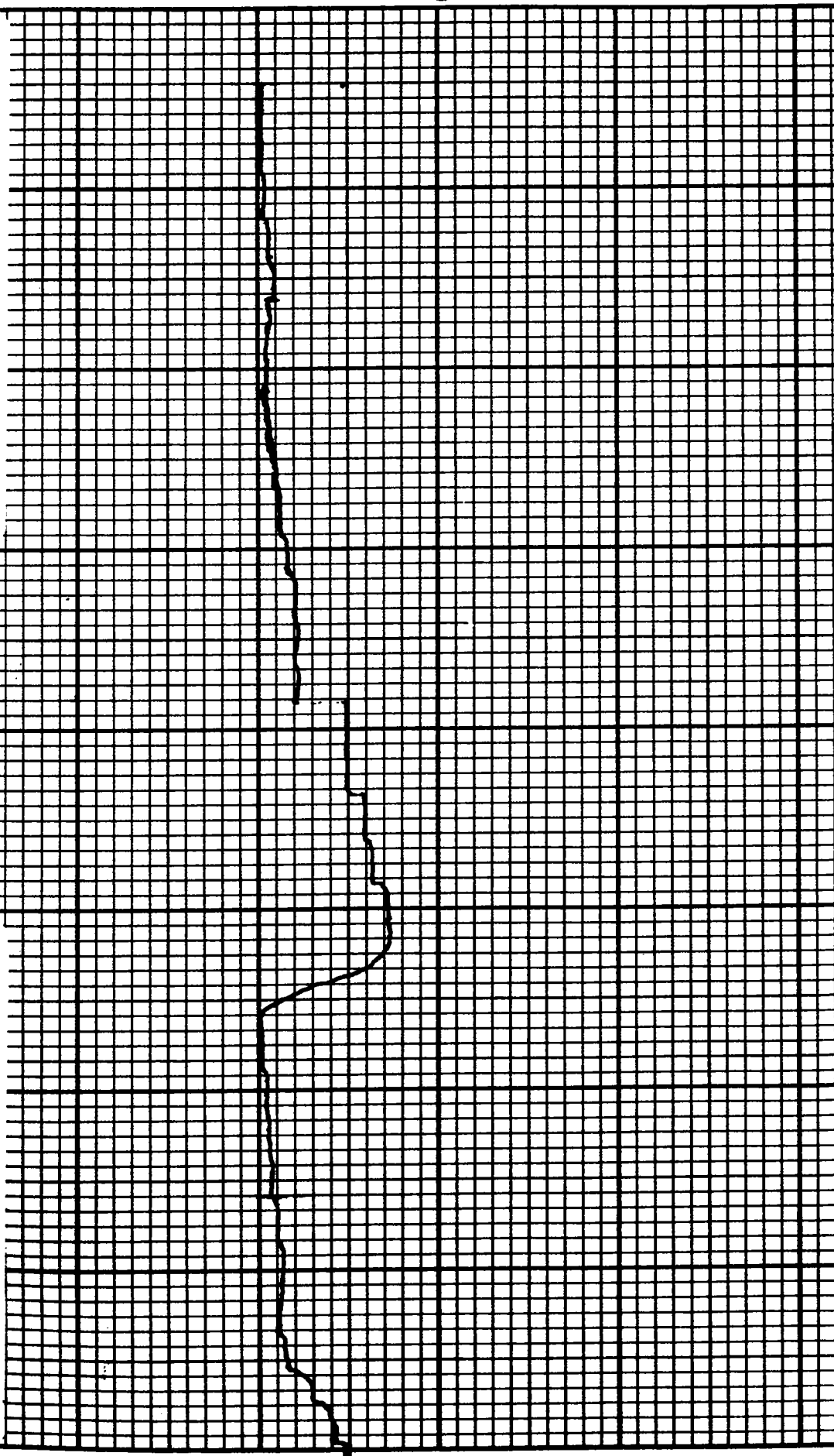


Type F

CONTINUOUS WATER LEVEL RECORDER CHART
WELL M-78
3-31-89 TO 5-1-89

DEPTH TO WATER AT 1000' - 2820'
MARCH 31, 1989

DEPTH TO WATER AT 2000' - 2000'
MAY 1, 1989



Printed in U.S.A.

Inc., Beaverton, Ore.



-Type R

Chart 1

CONTINUOUS WATER LEVEL RECORDER CHART

WELL M-80

3-31-89 TO 5-1-89

DEPTH TO WATER AT 2:45 - 29.38'
MAY 1, 1989

DEPTH TO WATER AT 11:47 - 29.50'
JUNE 2, 1989

Printed in U.S.A.

Inc., Beaverton, Ore.



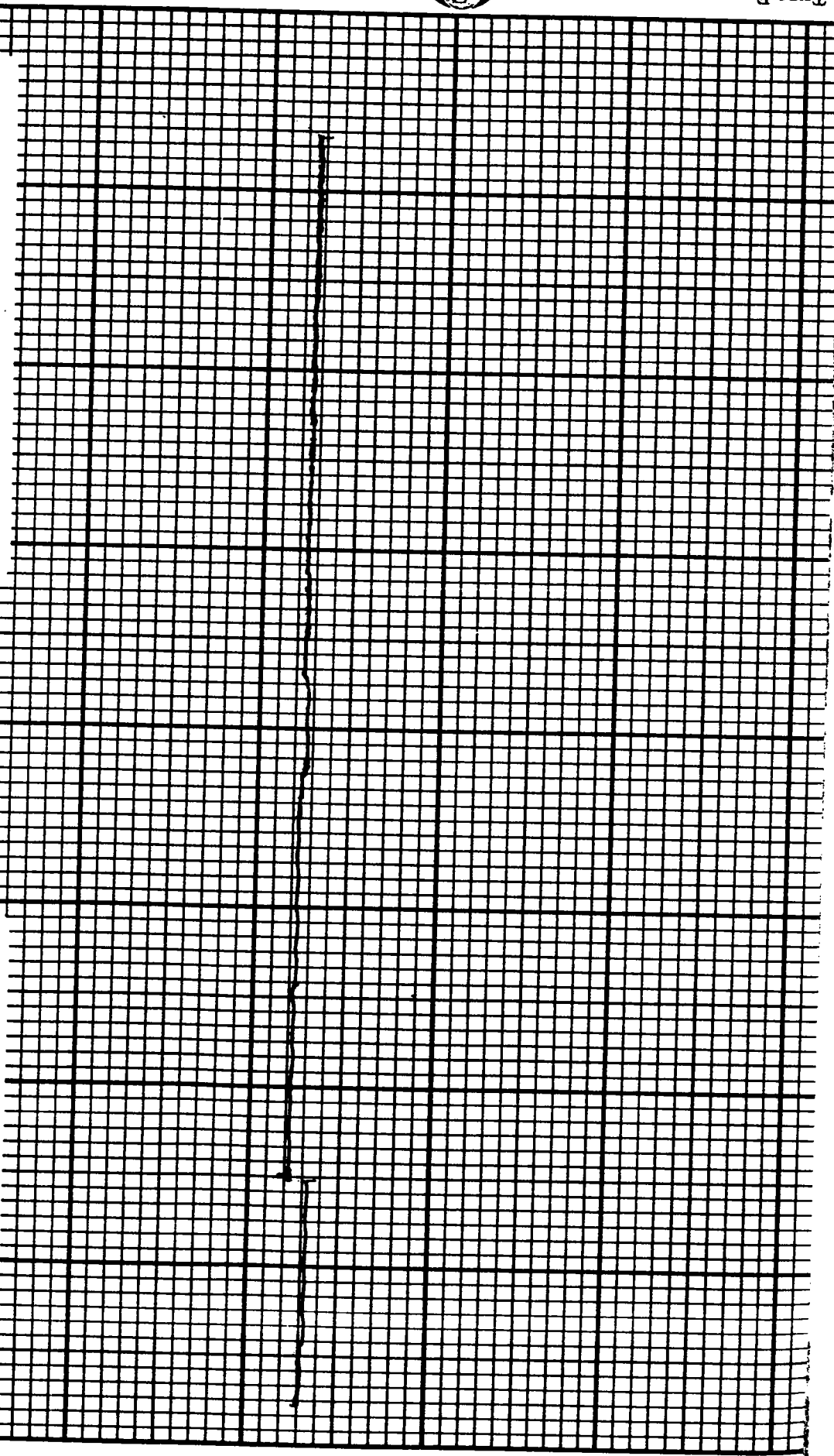
- Type B

CONTINUOUS WATER LEVEL RECORDER CHART
WELL M-78
5-1-89 TO 6-2-89



DEPTH TO WATER AT 11:47 - 29.50'
JUNE 2, 1989

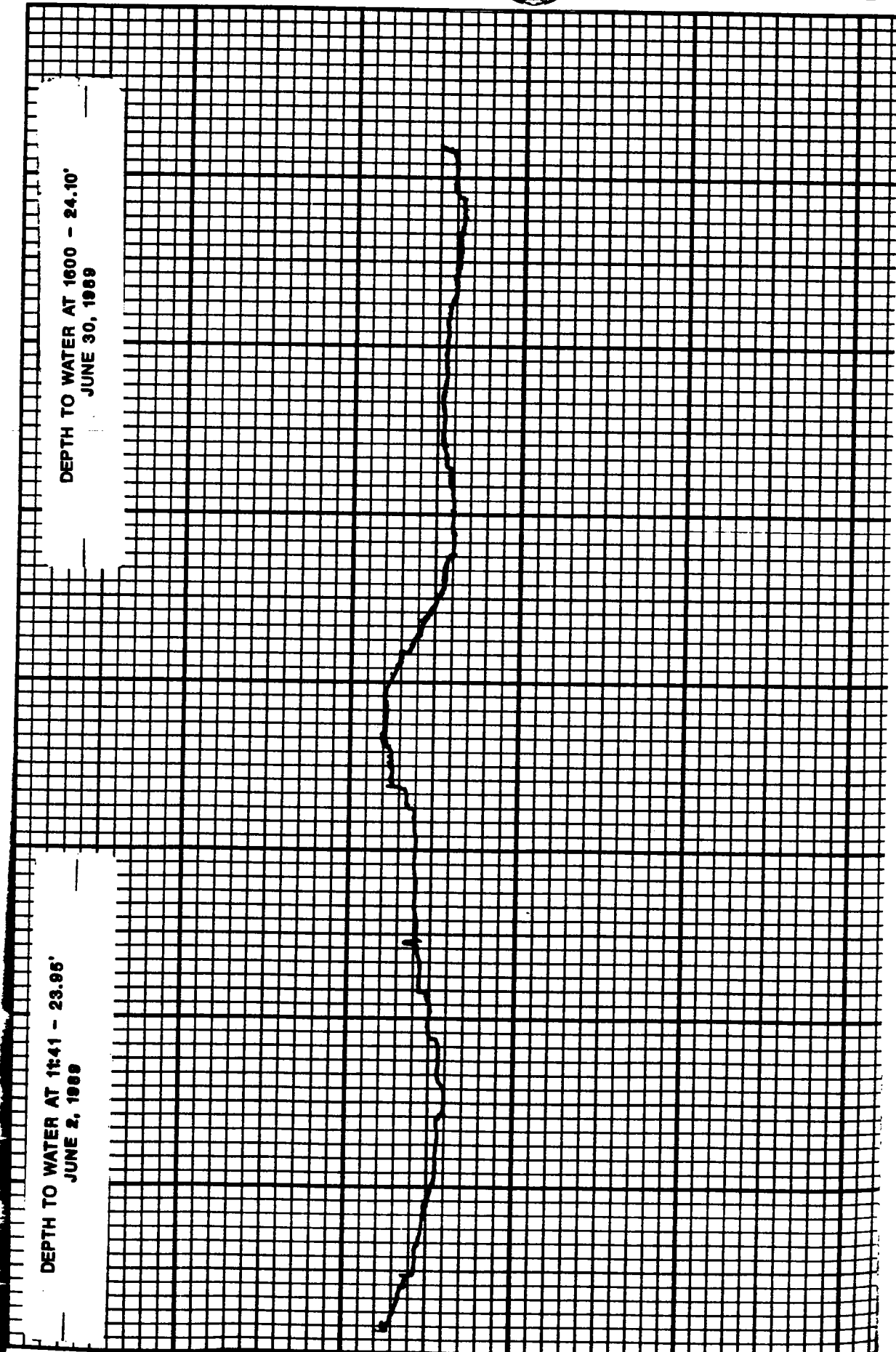
DEPTH TO WATER AT 1530 - 29.53'
JUNE 30, 1989



CONTINUOUS WATER LEVEL RECORDER CHART
WELL M-78
6-2-89 TO 6-30-89

DEPTH TO WATER AT 11:41 - 23.95'
JUNE 2, 1989

DEPTH TO WATER AT 1600 - 24.10'
JUNE 30, 1989



CONTINUOUS WATER LEVEL RECORDER CHART
WELL M-80
6-2-89 TO 6-30-89



FIGURE D-1

APPENDIX J WELL CHROMIUM CONCENTRATION

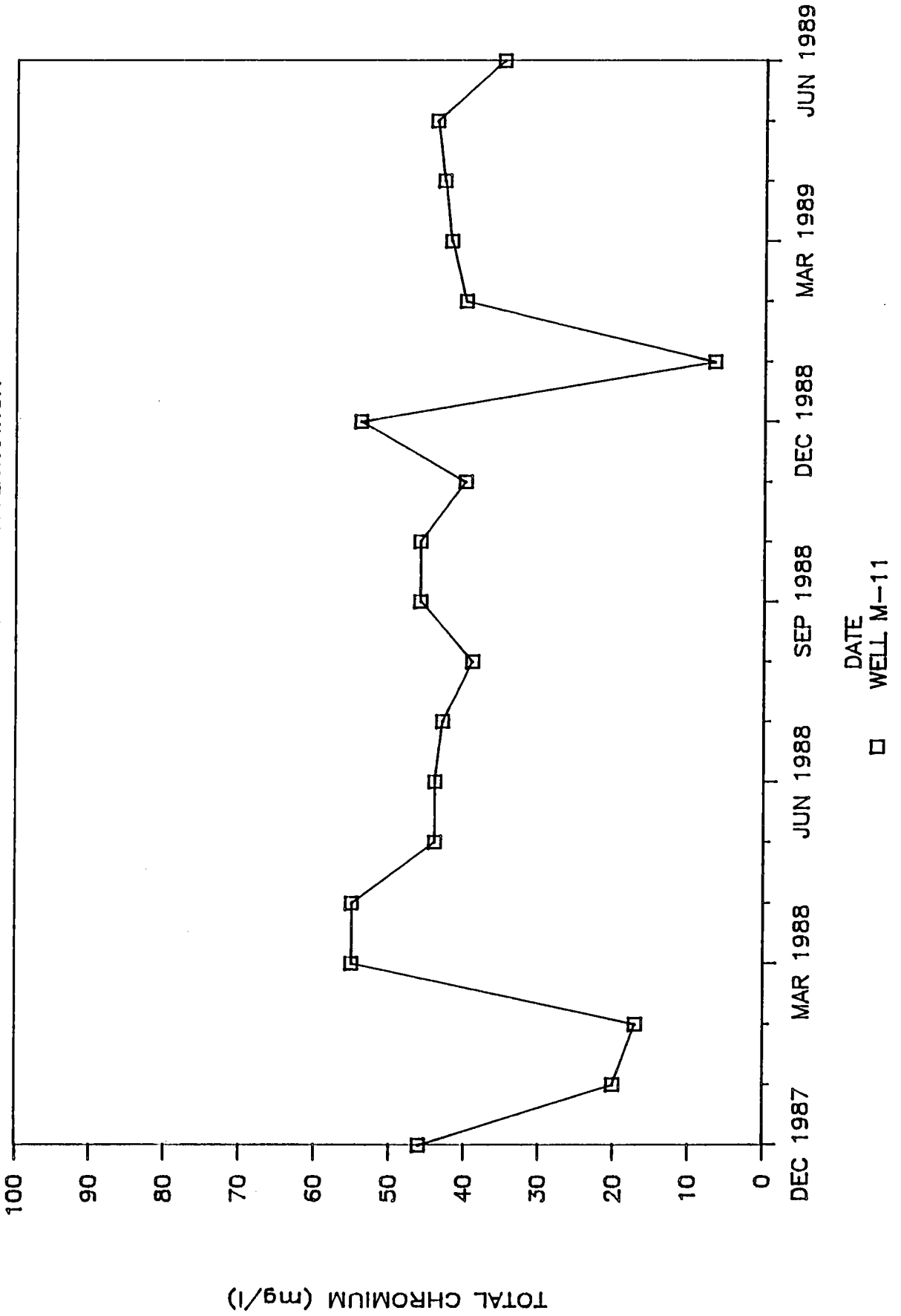


FIGURE D-2

APPENDIX J WELL CHROMIUM CONCENTRATION

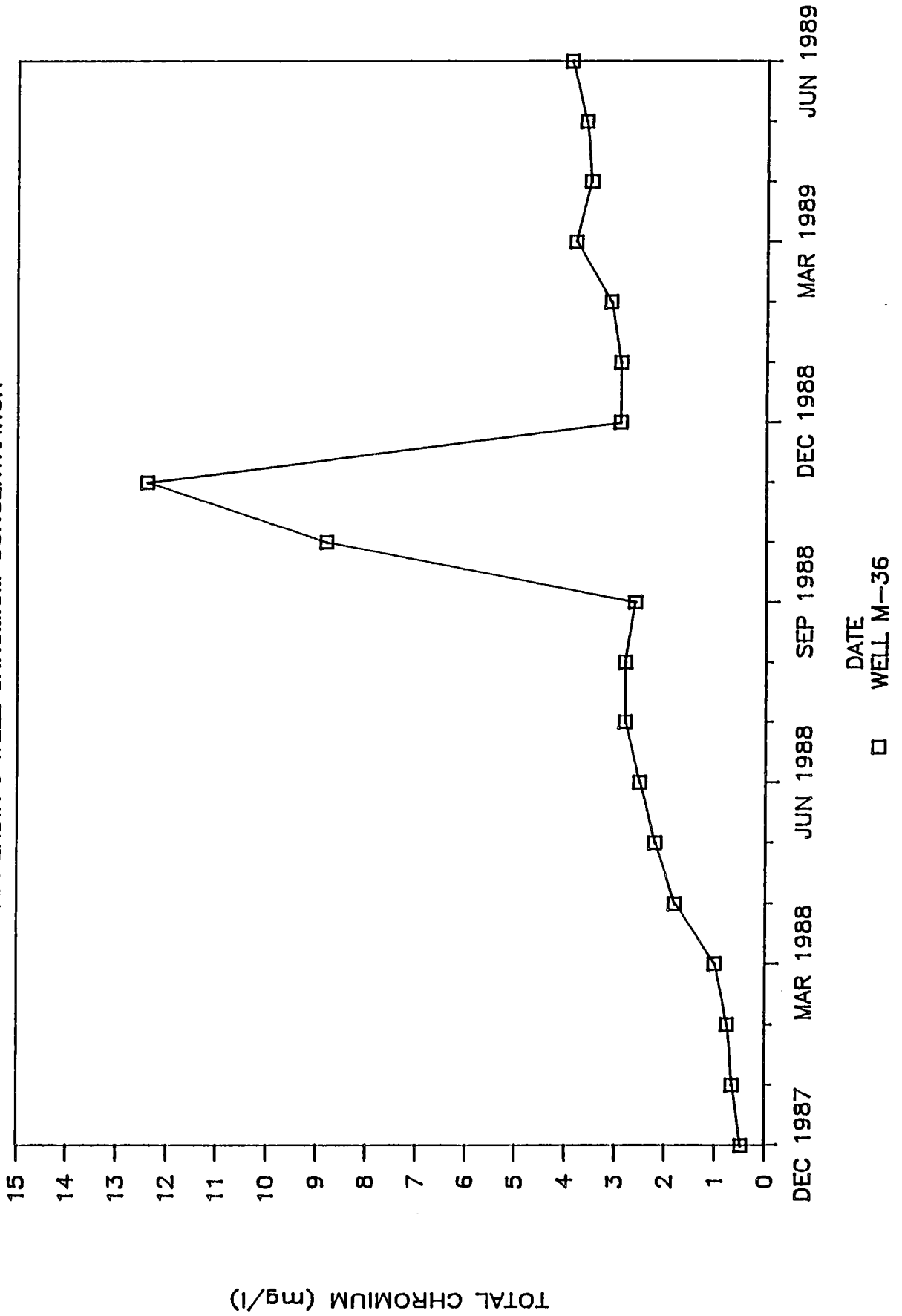


FIGURE D-3

APPENDIX J WELL CHROMIUM CONCENTRATION

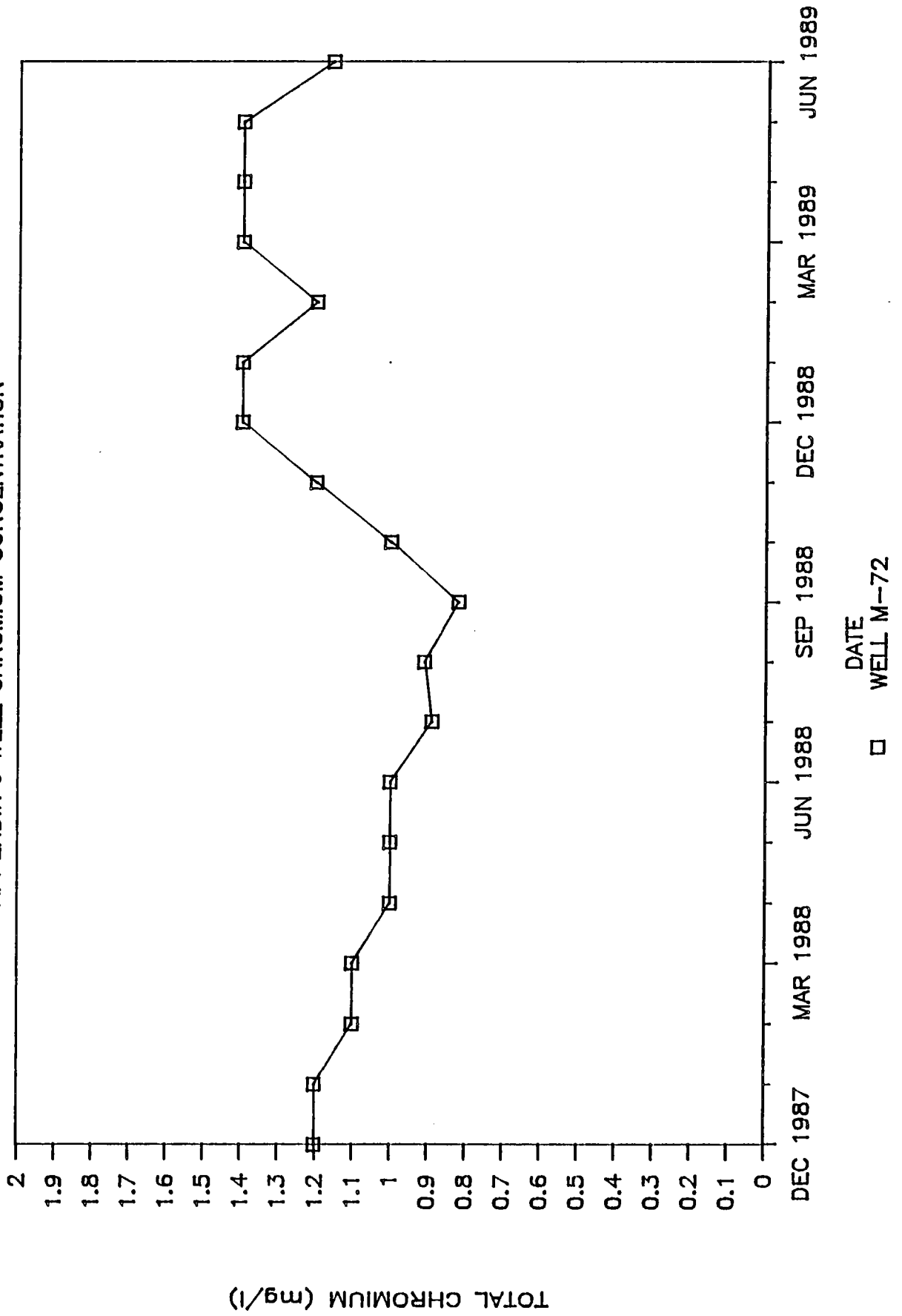


FIGURE D-4

APPENDIX J WELL CHROMIUM CONCENTRATION

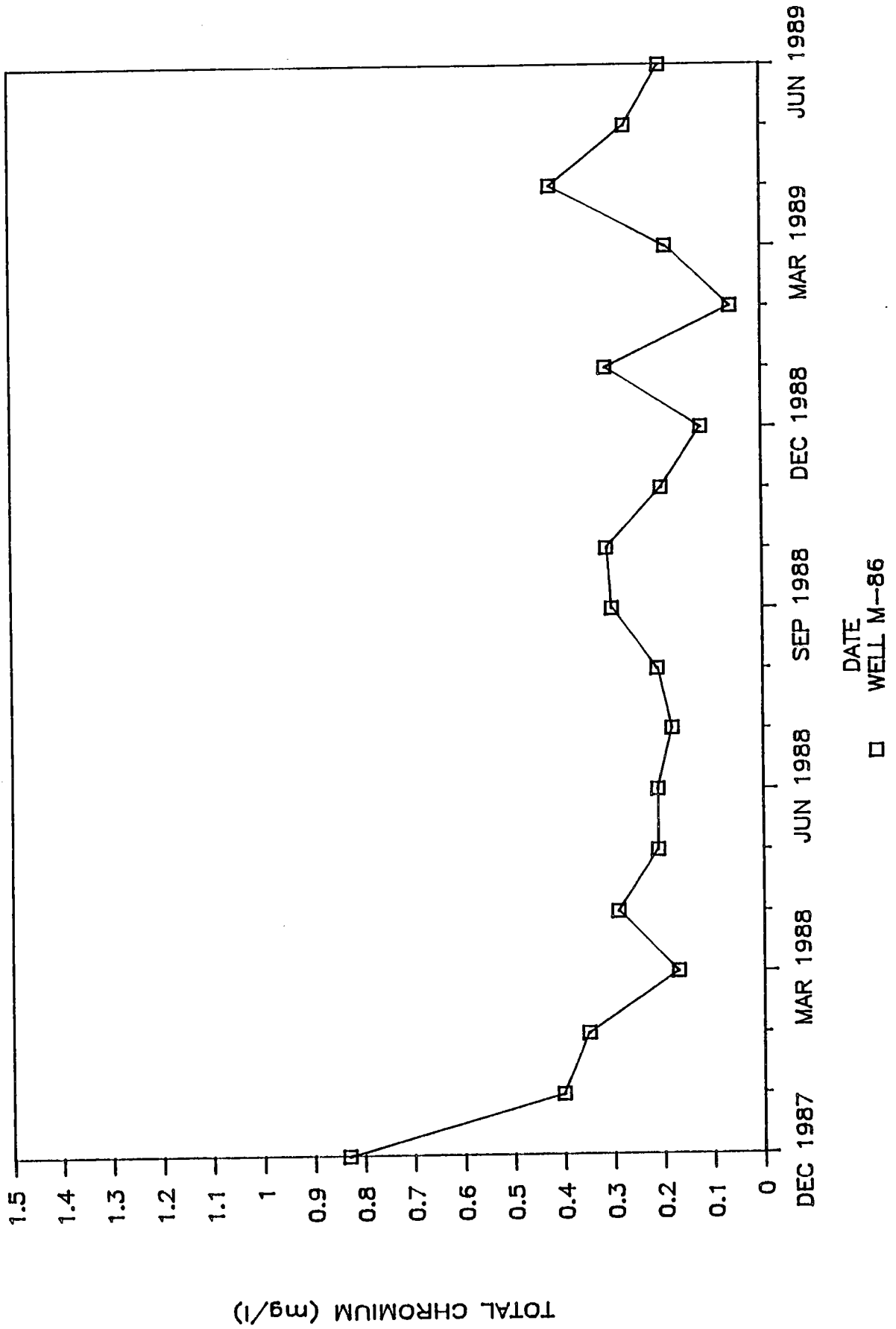


FIGURE D-6

