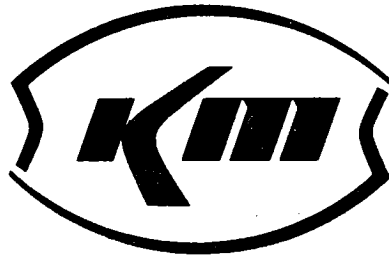


***KERR-McGEE CORPORATION***

SEMI-ANNUAL PERFORMANCE REPORT  
CHROMIUM MITIGATION PROGRAM  
KERR-McGEE CHEMICAL CORPORATION  
HENDERSON NEVADA

JULY - DECEMBER, 1990

January 25, 1991



Engineering Services

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***SEMI-ANNUAL PERFORMANCE REPORT  
CHROMIUM MITIGATION PROGRAM  
KERR-McGEE CHEMICAL CORPORATION  
HENDERSON, NEVADA***

***JULY - DECEMBER, 1990***


**Submitted in Accordance with:**

**Chromium Mitigation Program  
Consent Order  
September 9, 1986**

**Prepared by:**

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***January 25, 1991***

  
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Henderson, Nevada**

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**SEMI-ANNUAL PERFORMANCE REPORT  
CHROMIUM MITIGATION PROGRAM  
KERR-McGEE CHEMICAL CORPORATION  
HENDERSON, NEVADA**

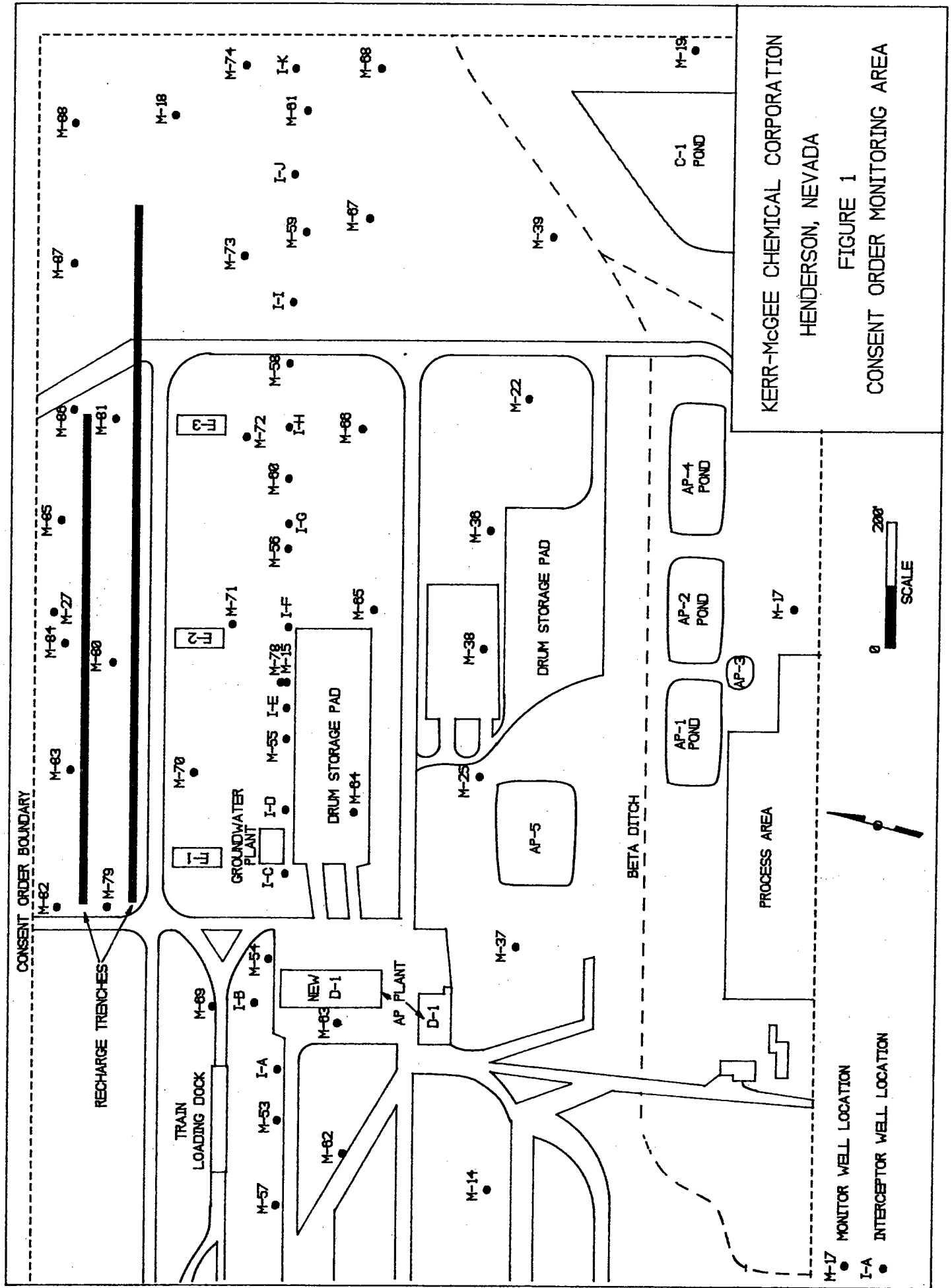
**INTRODUCTION**

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 semi-annual performance report to the Nevada Department of Environmental Protection. This report, covering July through December, 1990, 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.

## *GROUNDWATER SURFACE CONFIGURATION*

Figure 1 illustrates the Consent Order Monitoring Area as defined in Appendix D of the Consent Order, and shows the locations of all groundwater interceptor and monitor wells installed by KMCC within this area. Appendix A lists monthly groundwater elevations recorded since January 1988 in wells within the Consent Order area. Appendix B presents the water table configuration in two formats for the first half of 1990, reflecting quarterly groundwater level measurements.

Figure B-1 in Appendix B illustrates the potentiometric surface within the consent order monitoring area for the third quarter of 1990. Groundwater elevation data was recorded on August 11, 1990. Figure B-2 presents a cross-section of the groundwater interceptor line for the same date. Figures B-3 and B-4 present the same type maps for the fourth quarter of 1990, based on groundwater elevation data recorded November 2, 1990. The static water level shown on the cross-sections represents the Consent Order reference groundwater elevation, established September 14, 1987, prior to startup of the interception system. Groundwater elevations (Appendix A) continue to confirm that water levels in the Consent Order monitoring area have stabilized since the discharge of cooling water to the beta ditch was discontinued in November, 1987. Figures B-1 through B-4 show that groundwater interception has been optimized with the existing groundwater interception system.



KERR-McGEE CHEMICAL CORPORATION  
 HENDERSON, NEVADA

FIGURE 1  
 CONSENT ORDER MONITORING AREA

## *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 first half of 1990. The current hydrologic configuration has stabilized throughout both the interception and recharge areas.

One water level recorder chart for well M-78 (July, 1990) shows what appears to be an instantaneous and dramatic change in water level. The float on the recorder developed a leak, and the float sunk, causing an apparent drop in water elevation. The float was repaired, and the recorder chart shows that the water level had not changed significantly.

## *INTERCEPTOR SYSTEM PERFORMANCE*

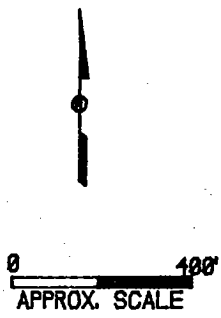
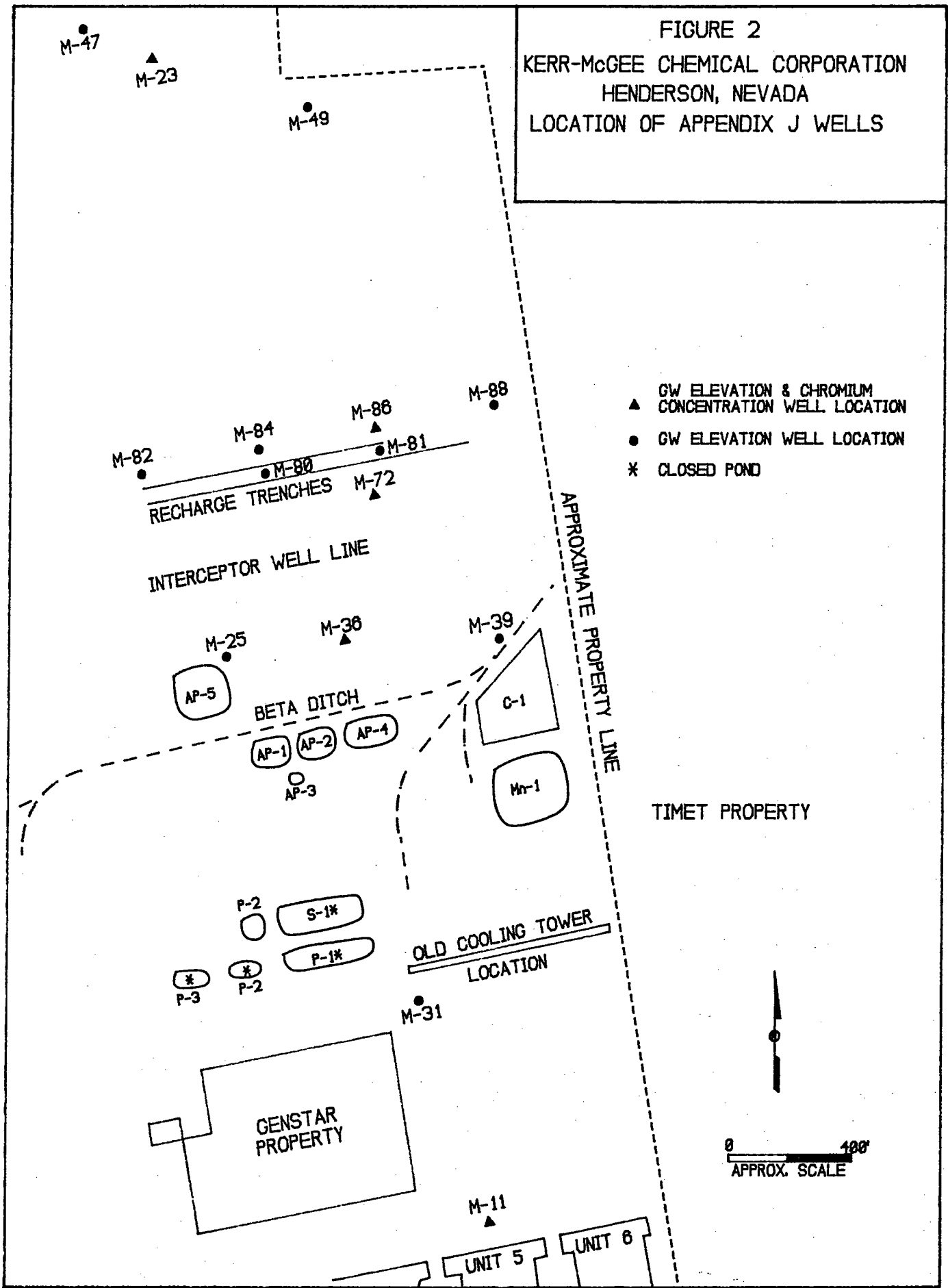
Figures B-1 through B-4, attached as Appendix B, show the potentiometric surface configuration in the interceptor area during the second half of 1990. Cross-sections show that drawdown consistently exceeded the one foot below reference water level criterion across the entire interceptor well line.

Although the potentiometric surface maps (Figures B-1 and B-3) do not appear to show overlapping drawdown cones along the interceptor line, the cross-sections show that all interceptor wells are drawn down to the Muddy Creek Clay. Drawdowns to this degree indicate that the alluvial aquifer is being depleted of water locally. This provides evidence that interception of groundwater has been optimized with this recovery system. Any groundwater flow through the interceptor line is rapidly diluted and meets the release concentration limits by the time it reaches the recharge line.

The effectiveness of the groundwater interception and treatment system in reducing chromium levels in the groundwater is also demonstrated by review of chemical analyses of treatment plant effluent and groundwater samples taken from downgradient monitor wells (M-86 and M-23). 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

FIGURE 2  
 KERR-McGEE CHEMICAL CORPORATION  
 HENDERSON, NEVADA  
 LOCATION OF APPENDIX J WELLS

- ▲ GW ELEVATION & CHROMIUM CONCENTRATION WELL LOCATION
- GW ELEVATION WELL LOCATION
- \* CLOSED POND



chromium are displayed in Table 1. Appendix D portrays this data graphically.

Well M-11 was selected for monitoring the upgradient concentration of chromium because it is nearest the identified source. Figure D-1 shows that the chromium concentration in M-11 has not declined significantly. The slow rate of decline is due to the slow release of chromium laterally from the low permeability Muddy Creek Clay, the horizon in which the basement of the building that was the source of chromium resides.

Well M-36, located approximately 350 feet upgradient from the interceptor line, shows a gradual increase in chromium concentration with time (Figure D-2). This is due to the normal downgradient progression of chromium from the source, near M-11, being diluted by dispersion as it approaches the interception line.

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 concentration increase that began in October is approaching 5.5 mg/l and reflects some flowthrough of groundwater in the vicinity of well I-H. The drawdown at well I-H has been maximized to reduce potential flowthrough. Figure B-2 shows well I-H is drawn down to the Muddy Creek Clay.

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

MONTH	WELL #				
	M-11	M-36	M-72	M-86	M-23
DEC 1988	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
JUL 1989	34.00	4.00	1.28	0.13	2.70
AUG 1989	36.00	4.20	1.40	0.38	2.70

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

MONTH	M-11	M-36	WELL # M-72	M-86	M-23
SEP 1989	35.00	3.80	1.30	0.17	2.30
OCT 1989	35.00	4.30	1.60	0.12	2.40
NOV 1989	33.00	4.00	1.80	0.13	2.30
DEC 1989	35.00	4.40	1.90	0.14	2.10
JAN 1990	34.00	4.50	2.60	0.14	2.00
FEB 1990	32.00	4.90	2.90	0.10	2.00
MAR 1990	31.00	5.00	3.00	0.25	1.80
APR 1990	30.00	5.10	3.20	0.12	1.70
MAY 1990	34.00	4.90	3.50	0.07	1.60
JUN 1990	33.00	5.10	3.50	0.06	1.50
JUL 1990	34.00	5.50	4.30	0.04	1.50
AUG 1990	37.00	5.02	4.60	0.19	1.40
SEP 1990	36.00	5.05	5.00	0.21	1.40
OCT 1990	36.00	5.04	5.30	0.12	1.30
NOV 1990	38.00	5.04	5.30	0.14	1.40
DEC 1990	37.00	5.50	5.30	0.13	1.30

M-11 is 2500 ft. upgradient of the interceptor line.  
M-36 is 550 ft. upgradient of the interceptor line.  
M-72 is between the interceptor line and the recharge trenches.  
M-86 is immediately downgradient of the recharge trenches.  
M-23 is 1350 ft. downgradient of the recharge trenches.

In response to the concerns raised by the increasing trend of chromium concentration in monitor well M-72, KMCC instituted monthly chromium analysis on groundwater samples from the following monitor wells: M-71, M-73, M-84, and M-86 (Figure 1). Table 2 lists the total chromium concentration of groundwater taken from each of these wells.

The data shows that the elevated levels of chromium seen in monitor well M-72 (3.5 mg/l) is a localized phenomenon. KMCC believes there is an erosional channel on the Muddy Creek Clay, hydrologically near but not fully influenced by interceptor well I-H, conducting a small quantity of groundwater through the interceptor line. This is only evident when the alluvial aquifer is extensively dewatered, as it is now. The fact that none of the four monitor wells downgradient from the recharge trenches displays greater than 0.78 mg/l total chromium shows that any flowthrough is insignificant, and that downgradient groundwater quality requirements are met. KMCC will continue to monitor chromium levels in wells M-71, M-73, M-86, and M-88 as long as monitor well M-72 shows these elevated chromium levels.

Well M-86 (Figure D-4), located immediately downgradient from the recharge trench, continues to show a decreasing trend in chromium concentration. Prior to the installation of the groundwater treatment system, the chromium concentration at well M-86 was near 5.0 mg/l. At no time since December 1987 has the chromium concentration at this location exceeded 0.5 mg/l. The consent order

**TABLE 2**  
**TOTAL CHROMIUM CONCENTRATION (mg/l)**  
**IN SELECTED GROUNDWATER MONITOR WELLS**

DATE	M-71	M-73	M-84	M-88
MAY 1990	0.22	0.65	0.78	0.28
JUL 1990	0.18	0.64	0.78	0.28
AUG 1990	0.18	0.64	0.31	0.30
SEP 1990	0.19	0.64	0.21	0.33
OCT 1990	0.24	0.68	0.07	0.34
NOV 1990	0.24	0.69	0.14	0.36
DEC 1990	0.27	0.74	0.12	0.38

stipulates that treated water discharged to the ground must have an average chromium concentration of 1.7 mg/l or lower. Cleanup conditions are therefore well within criterion. With chromium levels in well M-86 typically below 0.2 mg/l, the interception and treatment system installed at the facility is effectively lowering the chromium concentration of the groundwater and is meeting the Chromium Mitigation Program objectives.

Well M-23 (Figure D-5), the farthest downgradient Appendix J well, shows a continued decreasing trend in chromium concentration. The fact that the chromium concentration at well M-23 continues to decrease provides definitive evidence that groundwater quality is being restored. This trend, demonstrating the overall effectiveness of the chromium mitigation program, is expected to continue.

KMCC instituted a management program to assure maximization of groundwater removal at the individual well locations along the interceptor line that exhibit the highest chromium concentrations. Figure D-6 presents the chromium concentration of the water discharged from each of the interceptor wells at three times since beginning operation. Discharge rates for each interceptor well are continually monitored and adjusted to provide maximum recovery of chromium on the basis of the potentiometric surface configuration, chromium concentrations from that well, and interceptor well production capabilities. Table 3 lists the pumping rate of each interceptor well, measured in December, 1990.

**TABLE 3**  
**INTERCEPTOR WELL DISCHARGE RATES**  
**DISCHARGE RATE (GPM)**

WELL #	SEP. 1987	DEC. 1988	DEC. 1989	DEC. 1990
I-A	2.0	3.0	3.0	2.1
I-B	2.0	3.0	2.9	2.0
I-C*	2.5	8.8	5.5	3.8
I-D*	20.0	18.0	8.0	1.2
I-E*	5.0	2.4	5.2	1.2
I-F*	30.0	26.0	13.4	12.6
I-G	7.0	5.0	4.0	3.1
I-H*	8.0	3.0	7.8	2.0
I-I	15.0	15.0	16.0	9.5
I-J	10.0	8.0	8.0	5.8
I-K	10.0	8.2	7.5	4.9
	-----	-----	-----	-----
	111.5	100.4	81.3	48.2

\* - Wells containing relatively high chromium concentrations (see Figure D-6 in Appendix D).

Cross-sections in Appendix B show that the interceptor wells are drawn down to the Muddy Creek Clay, minimizing both groundwater and chromium flow through the interceptor line.

## ***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 any impact from recharge of treated water into the alluvium. Fifteen wells are monitored monthly for groundwater levels. Kerr-McGee Chemical Corporation selected 5 of these wells in Appendix J of the Consent Order for quarterly chromium analysis. These wells have been sampled and analyzed monthly. 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 (evidenced 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 no undesirable impact to groundwater levels exists 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 4 lists treatment plant feed and discharge chromium concentration data for July through December, 1990.

The discharge concentration of hexavalent chromium for the week of July 23 through July 29, 1990 was 0.378 mg/l. This value caused the July average to exceed the 0.05 mg/l limit, at 0.097 mg/l. The average hexavalent chromium concentration for the month of October was 0.146 mg/l. The hexavalent chromium value for the week of November 12 through 18 was 0.171; this resulted in a November average of 0.05314 mg/l. The hexavalent chromium concentration for the week of December 10 through 16 was 0.322 mg/l, which contributed to a December average of 0.133 mg/l.

All the above-referenced elevated concentrations were caused by deteriorated electrodes in the operating electrolytic cell. The standby electrolytic cell is placed into service when laboratory data shows an increase in discharge chromium concentration due to deteriorating electrodes within the cell. The laboratory results are not received for several days after discharge sampling.

**TABLE 4**  
**GROUNDWATER TREATMENT ANALYSIS**

WEEK OF	VOLUME TREATED (M gal.)	FEED CHROMIUM (mg/l)	TREATED TOTAL (mg/l)	EFFLUENT HEXAVALENT (mg/l)
Jul. 2 - Jul. 8	597	2.99	0.110	0.0028
Jul. 9 - Jul. 15	368	2.24	0.068	0.0036
Jul. 16 - Jul. 22	435	2.95	0.023	0.0027
Jul. 23 - Jul. 29	572	3.55	0.433	0.378
July, 1990 Average		2.93	0.159	0.097
Jul. 30 - Aug. 5	658	3.25	0.610	0.294
Aug. 5 - Aug. 12	499	2.85	0.065	0.041
Aug. 13 - Aug. 19	556	3.35	0.038	0.0032
Aug. 20 - Aug. 26	556	3.10	0.328	0.245
Aug. 27 - Sep. 2	560	3.30	0.037	0.0045
August, 1990 Average		3.17	0.216	0.1175
Sep. 3 - Sep. 9	446	3.40	0.037	0.024
Sep. 10 - Sep. 16	482	3.70	0.030	0.027
Sep. 17 - Sep. 23	476	3.90	0.460	0.0183
Sep. 24 - Sep. 30	403	3.70	0.134	0.0488
September, 1990 Average		3.68	0.165	0.0295

**TABLE 4 (cont.)**  
**GROUNDWATER TREATMENT ANALYSIS**

WEEK OF	VOLUME TREATED (M gal.)	FEED CHROMIUM (mg/l)	TREATED TOTAL (mg/l)	EFFLUENT HEXAVALENT (mg/l)
Oct. 1 - Oct. 7	444	3.70	0.210	0.0172
Oct. 8 - Oct. 14	434	3.05	0.054	0.008
Oct. 15 - Oct. 21	447	2.75	0.532	0.494
Oct. 22 - Oct. 28	481	3.20	0.073	0.063
October, 1990 Average		3.175	0.217	0.146
Oct. 29 - Nov. 4	474	3.45	0.038	0.0066
Nov. 5 - Nov. 11	402	2.30	0.126	0.0818
Nov. 12 - Nov. 18	451	3.70	0.215	0.171
Nov. 19 - Nov. 25	406	4.80	0.035	0.0020
Nov. 26 - Dec. 2	635	3.20	0.025	0.0043
November, 1990 Average		3.49	0.0878	0.0534
Dec. 3 - Dec. 9	476	3.75	0.042	0.0024
Dec. 10 - Dec. 16	455	3.60	0.460	0.322
Dec. 17 - Dec. 23	447	3.70	0.247	0.206
Dec. 24 - Dec. 30	340	3.80	0.047	0.003
December, 1990 Average		3.713	0.199	0.133

Potential combinations of sampling and turnaround times near cell exhaustion may result in two samples displaying high chromium concentrations within the same week. Although not fully reflective of actual operating conditions, this may yield a high weekly average discharge chromium concentration value. Such a high weekly average may then raise the monthly average concentration value.

Switchover to the standby cell occurs on a scheduled basis to minimize possible occurrences of elevated chromium concentration. The normal period of efficient operation of the electrolytic cells is 20 days. However, since the life of the electrodes is dependent upon several variables, such as temperature, flowrate, and adjusted amperage, it is not possible to accurately predict the life of the electrodes. To the extent practicable, electrodes are replaced prior to receiving discharge data showing electrode depletion.

The week of July 30 through August 5, the average Cr+6 concentration was 0.294 mg/l, and the week of August 20 through 26, a weekly average concentration of 0.245 mg/l was recorded, resulting in a monthly average of 0.1175 mg/l for August. The maximum weekly average for Cr+6 is 0.10 mg/l, and the maximum monthly average is 0.05 mg/l. All of these high values were the result of amperage drop in the operating electrolytic cell. When laboratory analysis shows an increase in chromium concentration, the electrode amperage is increased.

The weekly average for October 15 through 21 was 0.494 mg/l, due to a power failure at the treatment plant. This contributed to the high monthly average for October. A blown fuse on November 9 contributed to that month's high average. Finally, a cold spell during the week of December 17 through 23 caused fluid lines in the treatment plant to burst. The resulting maintenance difficulties resulted in a high weekly average, contributing to the high monthly average for December.

Pumps were replaced in wells I-H and I-K on October 5th and in well I-G on November 30th. Operating records showed that the pumps were not able to maintain adequate flow, so the pumps were replaced.

## *ADDITIONAL WORK PERFORMED*

Approximately every twenty days, the electrodes in the treatment plant's electrolytic cells deteriorate to the point they require replacement. During the second half of 1990, electrodes were replaced July 20, August 10, September 4, September 25, October 24, November 13, and December 14, 1990. Each time, the cell that was on standby replaced the disconnected cell in the treatment circuit.

Engine hour meters are being used to determine the average number of hours per day individual pumps are running. Six of the interceptor wells utilize a time-marking device that shuts the pump off for a pre-determined amount of time if the well runs dry. If a pump spends a significant amount of time shut down, recovery can be increased by decreasing the pump rate, allowing discharge to occur a greater percentage of the time. Well discharge rates are adjusted periodically, as engine hour meters show either continuous pumping or a low percentage of pumping time.

All interceptor wells are checked for operation each day; flow rates are recorded for each well twice weekly. Flowmeter readings (total volume) are recorded for each time-marking well twice weekly. These records indicate when a pump needs to be replaced or a flowrate adjusted. For example, the pump for well I-B failed on June 29, and was replaced July 2, 1990.

## *PROPOSED FUTURE ACTIVITIES*

KMCC will continue to record all water levels in the consent order area on a quarterly basis. Quarterly potentiometric surface maps and cross-sections will be developed, and the water level recorders on monitor wells M-78 and M-80 will continue to operate.

Electronic pressure transducers are being placed in a number of 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. KMCC anticipates that this format of groundwater elevation monitoring will provide more accurate data and will replace the continuous water level recorder currently used in well M-78. This water level monitoring system will also yield the same data as the current monthly manual recording of groundwater elevations throughout the consent order monitoring area. Provisions for discontinuing the use of the continuous water level recorder are given in Section 6 of the Consent Order.

## *CONCLUSIONS*

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 responses (i.e.- future pump rate adjustments) will be taken to assure optimal drawdown and plume interception.

Discharge chromium concentrations for the treatment facility are generally below established requirements. Groundwater samples obtained from monitor wells downgradient of the recharge trenches show that groundwater is being remediated. No adverse impacts to downgradient groundwater levels 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-MCCOY CHEMICAL CORPORATION  
 HENDERSON, NEVADA FACILITY  
 GROUNDWATER ELEVATIONS

TOC-->	M-11		M-14		M-15		M-17		M-18		M-19		M-22		M-22B		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	1726.40	30.64	1738.90	11.73	1726.55	27.60	1738.95	23.78	1734.35			14.58	1698.20	26.63	1731.52
05-Feb-88	44.78	1768.68	28.70	1730.13	23.59	1726.10	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	1725.66	31.72	1737.82	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	1725.07	32.42	1737.12	12.73	1725.55	28.92	1737.63	25.25	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	1736.64	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	1767.26	31.36	1727.47	25.94	1723.75	34.18	1735.36	13.91	1724.37	29.24	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	34.39	1735.24	13.40	1724.88	29.75	1736.80					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					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	29.30	1736.65					16.85	1698.93	30.70	1727.45
15-Dec-88	46.10	1767.38	37.70	1721.13	30.18	1719.51	33.75	1735.79	14.00	1724.28	30.40	1736.15					15.10	1697.68	30.95	1727.20
19-Jan-89	46.15	1767.31	31.80	1727.03	25.05	1724.64	34.75	1734.79	14.80	1723.48	30.60	1735.95					16.45	1698.33	32.10	1726.05
23-Feb-89	45.27	1768.19	32.15	1726.68	28.35	1721.34	35.00	1734.54	15.35	1722.93	30.80	1735.75					16.50	1698.28	32.20	1725.95
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					16.60	1698.18	32.00	1726.15
23-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					16.00	1698.78	32.30	1725.85
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					16.10	1698.68	32.10	1726.05
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					16.20	1698.58	32.10	1726.05
03-Jul-89	45.00	1768.46	32.60	1726.23	27.60	1722.09	35.35	1734.19	16.55	1721.73	31.45	1735.10					16.30	1698.48	32.10	1726.05
16-Aug-89	46.00	1767.48	32.70	1726.13	28.30	1721.39	35.50	1734.04	16.85	1721.43	34.55	1732.00					16.40	1698.38	32.10	1726.05
12-Sep-89	45.30	1768.16	32.55	1726.28	28.55	1721.14	35.55	1733.99	16.80	1721.48	36.80	1729.75					16.50	1698.28	32.65	1725.50
25-Oct-89	45.00	1768.46	32.60	1726.23	28.40	1721.29	35.35	1734.19	17.10	1721.18	31.60	1734.95					16.85	1698.33	32.60	1725.55
17-Nov-89	44.10	1769.36	32.00	1726.83	30.00	1719.69	35.15	1734.39	17.10	1721.18	31.20	1735.35					16.85	1698.33	32.80	1725.35
07-Dec-89	45.00	1768.46	32.85	1725.98	28.30	1721.39	35.35	1734.19	17.25	1721.03	31.85	1734.70					16.95	1698.83	32.55	1725.60
12-Jan-90	45.05	1768.41	32.95	1725.88	28.40	1721.29	35.55	1733.99	17.55	1720.73	31.70	1734.85					17.10	1698.68	32.75	1725.40
23-Feb-90	45.30	1768.16	32.90	1725.93	28.50	1721.19	34.90	1734.64	17.60	1720.68	31.15	1735.11					17.10	1698.68	32.90	1725.25
11-Jul-90	44.60	1768.86	33.45	1725.38	29.45	1720.24	37.00	1732.54	18.20	1720.08	32.20	1734.06					16.65	1698.13	33.30	1724.85
11-Aug-90	44.70	1768.76	33.50	1725.33	30.20	1719.49	36.15	1733.39	18.40	1719.88	32.40	1733.86					16.70	1698.08	33.70	1724.45
02-Nov-90	44.90	1768.56	33.70	1725.13	31.00	1718.69	36.10	1733.44	18.75	1719.53	32.90	1733.36					18.35	1694.43	34.10	1724.05

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

TOC---->	M-27		M-31		M-36		M-37		M-38		M-39		M-47		M-49		M-53		M-54	
	DTM	ELEV.	DTM	ELEV.	DTM	ELEV.	DTM	ELEV.	DTM	ELEV.	DTM	ELEV.	DTM	ELEV.	DTM	ELEV.	DTM	ELEV.	DTM	ELEV.
20-Jan-88	15.36	1725.11	39.34	1748.05	25.62	1732.32	26.98	1732.30	26.94	1731.84	23.80	1735.51	13.08	1703.43	12.53	1706.25	25.60	1725.96	22.14	1726.79
05-Feb-88	15.70	1724.77	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	1724.59	39.68	1748.71	26.50	1731.44	27.87	1731.41	26.99	1730.89	24.81	1734.50	13.00	1703.51	12.47	1706.31	26.21	1725.35	22.88	1726.05
19-Apr-88	16.45	1724.02	40.08	1748.31	27.14	1730.80	28.62	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	1723.52	40.36	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	1723.26	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	1722.95	40.70	1747.59	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	17.67	1722.80	40.53	1747.86	28.45	1729.49	29.86	1729.42	28.94	1728.94	26.77	1732.54	14.07	1702.44	13.81	1704.97	27.94	1723.62	24.48	1724.45
03-Sep-88	16.66	1723.81	40.52	1747.87	29.50	1728.44	29.80	1729.48	29.20	1728.68	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	1722.17	40.15	1748.24	28.80	1729.14	30.10	1729.18	29.50	1728.38	26.80	1732.51	13.65	1702.86	13.60	1705.18	28.30	1723.25	24.90	1724.03
26-Nov-88	18.60	1721.87	40.30	1748.09	29.00	1728.94	29.90	1729.38	29.30	1728.58	26.90	1732.41	13.80	1702.71	13.10	1703.46	28.10	1723.46	25.10	1723.83
15-Dec-88	19.30	1721.17	39.83	1748.56	29.40	1728.54	31.90	1727.38	29.70	1728.18	26.75	1732.58	13.75	1702.76	13.75	1705.03	28.60	1722.96	28.60	1720.33
19-Jan-89	18.75	1721.72	40.15	1748.24	26.60	1731.34	30.40	1728.88	29.30	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	19.75	1720.72	40.47	1747.92	29.80	1728.14	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	1723.03
23-Mar-89	19.75	1720.72	40.80	1747.59	30.50	1727.44	30.70	1728.58	30.30	1727.58	27.85	1731.46	14.65	1701.86	14.30	1704.48	20.40	1731.16	26.30	1722.63
23-Apr-89	19.65	1720.82	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	19.80	1720.67	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	1720.77	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
03-Jul-89	19.85	1720.62	40.30	1748.09	31.70	1726.24	30.80	1728.48	30.40	1727.48	28.30	1731.01	15.00	1701.51	14.60	1704.18	30.00	1721.56	26.55	1722.38
16-Aug-89	20.25	1720.22	41.00	1747.39	30.50	1727.44	30.90	1728.38	30.65	1727.23	28.30	1731.01	20.50	1696.01	20.25	1698.53	30.10	1721.46	26.75	1722.18
12-Sep-89	20.50	1719.97	40.55	1747.64	30.70	1727.24	30.90	1728.38	30.65	1727.23	28.50	1730.81	19.50	1697.01	20.30	1698.48	30.10	1721.46	26.75	1722.18
25-Oct-89	20.75	1719.72	39.20	1749.19	30.80	1727.14	31.00	1728.28	30.55	1727.33	28.50	1730.81	26.50	1690.01	20.60	1698.18	30.35	1721.21	27.25	1721.68
17-Nov-89	21.10	1719.37	39.80	1748.59	30.40	1727.54	31.00	1728.28	30.55	1727.33	28.75	1730.81	15.80	1700.71	15.35	1703.43	29.00	1722.56	27.10	1721.83
07-Dec-89	20.80	1719.67	40.25	1748.14	30.55	1727.39	31.05	1728.23	30.60	1727.28	28.60	1730.71	15.70	1700.81	15.50	1703.28	30.50	1721.06	27.40	1721.53
12-Jan-90	21.00	1719.47	41.05	1747.34	30.60	1727.34	31.10	1728.18	30.65	1727.23	28.75	1730.56	15.85	1700.66	15.65	1703.13	30.60	1720.96	28.50	1720.43
23-Feb-90	21.10	1719.37	40.75	1747.64	31.50	1726.44	31.20	1728.08	30.70	1727.18	28.50	1730.81	15.80	1700.71	15.65	1703.13	30.65	1720.91	27.60	1720.43
11-Jul-90	22.05	1718.42	41.10	1747.29	32.20	1725.74	31.60	1727.68	31.10	1726.78	29.30	1730.81	16.35	1700.16	16.05	1702.73	31.05	1720.51	28.30	1720.63
11-Aug-90	22.30	1718.17	41.15	1747.24	32.00	1725.94	31.70	1727.58	31.10	1726.78	29.45	1729.66	16.35	1700.16	16.10	1702.68	31.15	1720.41	28.35	1720.58
02-Nov-90	23.50	1716.97	41.30	1747.09	32.00	1725.94	31.90	1727.38	31.25	1726.63	29.50	1729.81	16.80	1699.71	16.75	1702.03	31.40	1720.16	28.65	1720.28

APPENDIX A  
 KBBB-McGEEB 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	1728.67	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	26.67	1725.62	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	23.54	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	27.88	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	1726.90	16.08	1726.93	24.01	1726.12	18.35	1727.20	27.25	1725.67	24.55	1726.04	25.00	1724.76
14-Jul-88	25.78	1723.57	25.14	1724.46	28.32	1723.97	22.80	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	28.61	1723.68	23.24	1726.01	16.78	1726.23	24.69	1725.44	19.05	1726.50	27.99	1724.93	25.20	1725.39	25.86	1724.10
03-Sep-88	26.20	1723.15	25.30	1724.30	28.62	1723.67	23.15	1726.10	16.57	1726.44	20.80	1729.33	16.50	1729.05	28.10	1724.82	25.30	1725.29	25.80	1723.96
10-Oct-88	26.40	1722.95	25.65	1723.95	28.75	1723.54	23.30	1725.95	16.60	1726.41	25.00	1725.13	19.20	1726.35	28.10	1724.82	25.15	1725.44	25.90	1723.86
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	19.60	1726.35	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	1722.95	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	1722.65	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	1722.69	25.00	1724.25	18.60	1724.41	26.30	1723.83	20.60	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	29.85	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	20.60	1724.95	29.25	1723.67	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	1723.62	26.70	1723.89	27.60	1722.16
03-Jul-89	27.85	1721.50	27.15	1722.45	30.00	1722.29	25.75	1723.50	19.40	1723.61	26.70	1723.43	21.35	1724.20	29.30	1723.62	26.65	1723.94	27.50	1722.26
16-Aug-89	28.20	1721.15	27.60	1722.00	30.15	1722.14	25.80	1723.45	19.55	1723.46	26.95	1723.18	21.50	1724.05	29.55	1723.37	26.95	1723.64	27.80	1721.96
12-Sep-89	28.35	1721.00	27.70	1721.90	30.15	1722.14	25.90	1723.35	19.50	1723.51	27.05	1723.08	20.80	1724.75	29.55	1723.37	26.90	1723.69	27.90	1721.86
25-Oct-89	28.45	1720.90	27.65	1721.95	30.25	1722.04	26.10	1723.15	19.65	1723.36	27.15	1722.98	21.55	1724.00	29.70	1723.22	27.15	1723.44	28.05	1721.71
17-Nov-89	28.30	1721.05	27.20	1722.40	31.00	1721.29	26.10	1723.15	19.50	1723.51	26.90	1723.23	21.40	1724.15	30.20	1722.72	27.10	1723.49	28.00	1721.76
07-Dec-89	28.45	1720.90	27.75	1721.85	30.40	1721.89	26.15	1723.10	19.90	1723.11	27.30	1722.83	21.85	1723.70	29.85	1723.07	27.30	1723.29	28.10	1721.66
12-Jan-90	28.55	1720.80	27.65	1721.95	30.50	1721.79	26.30	1722.95	20.15	1722.86	27.30	1722.83	22.15	1723.40	29.95	1722.97	27.40	1723.19	28.20	1721.56
23-Feb-90	28.65	1720.70	28.00	1721.60	30.55	1721.74	26.40	1722.85	20.05	1722.96	27.50	1722.63	21.85	1723.70	30.00	1722.92	27.50	1723.09	28.35	1721.41
11-Jul-90	29.45	1719.90	28.60	1721.00	30.90	1721.39	26.95	1722.30	20.60	1722.41	28.15	1721.98	22.55	1723.00	30.40	1722.52	28.00	1722.59	29.00	1720.76
11-Aug-90	29.70	1719.65	28.95	1720.65	31.05	1721.24	27.10	1722.15	20.75	1722.26	28.25	1721.88	22.70	1722.85	30.50	1722.42	28.10	1722.49	29.10	1720.66
02-Nov-90	30.25	1719.10	29.40	1720.20	31.30	1720.99	27.40	1721.85	21.00	1722.01	28.60	1721.53	23.00	1722.55	30.75	1722.17	28.30	1722.29	29.45	1720.31

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

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-86	24.37	1727.91	22.69	1729.64	14.59	1730.39	16.12	1731.32	23.61	1725.18	21.61	1725.35	19.37	1726.51	17.22	1726.27	12.02	1728.03	15.40	1728.02
05-Feb-86	25.24	1727.64	22.97	1729.36	14.90	1730.08	16.53	1730.91	23.84	1724.93	21.97	1724.99	19.77	1726.11	17.46	1728.03	12.27	1727.78	15.63	1727.79
01-Mar-86	25.89	1726.99	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-86	26.58	1726.30	23.92	1728.41	15.61	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-86	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-86	27.24	1725.64	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-86	27.85	1725.03	25.05	1727.26	16.93	1728.05	18.46	1728.98	24.54	1724.23	23.95	1723.01	22.94	1723.84	19.49	1726.00	14.30	1725.75	17.47	1725.95
06-Aug-86	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	1723.53	19.40	1726.09	14.51	1725.54	17.71	1725.71
03-Sep-86	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-86	28.65	1724.23	25.40	1726.93	17.10	1727.88	16.80	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-86	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-86	26.75	1726.13	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	1722.86	26.10	1726.23	18.00	1726.98	19.00	1728.44	26.00	1722.77	25.55	1721.41	24.10	1721.78	20.00	1725.49	14.70	1725.35	18.00	1725.42
23-Feb-89	30.40	1722.48	26.70	1726.63	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	22.00	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
03-Jul-89	30.55	1722.33	27.55	1724.78	19.35	1725.63	20.60	1728.04	27.95	1720.82	26.15	1720.81	24.75	1721.13	22.55	1722.94	17.50	1722.55	20.00	1723.42
16-Aug-89	30.95	1721.93	27.70	1724.63	19.45	1725.53	20.70	1726.74	28.20	1720.57	26.35	1720.61	25.25	1720.63	22.65	1722.84	17.60	1722.45	20.25	1723.17
12-Sep-89	31.10	1721.78	27.75	1724.58	19.45	1725.53	20.30	1727.14	28.00	1720.77	26.55	1720.41	25.50	1720.38	22.85	1722.64	17.70	1722.35	19.80	1723.62
25-Oct-89	29.60	1723.28	PLUGGED		19.55	1725.43	20.85	1726.59	28.65	1720.12	26.90	1720.06	25.25	1720.63	23.05	1722.44	17.90	1722.15	20.50	1722.92
17-Nov-89	30.70	1722.18	PLUGGED		19.40	1725.58	20.85	1726.59	28.00	1720.77	25.80	1721.16	25.00	1720.88	23.80	1721.69	17.85	1722.20	20.40	1723.02
07-Dec-89	30.70	1722.18	27.60	1724.73	19.65	1725.33	21.00	1726.44	28.95	1719.82	26.85	1720.11	25.25	1720.63	23.15	1722.34	18.05	1722.00	20.65	1722.77
12-Jan-90	30.75	1722.13	27.75	1724.58	20.00	1724.98	21.20	1726.24	29.10	1719.67	27.00	1719.96	25.25	1720.63	23.30	1722.19	18.30	1721.75	20.95	1722.47
23-Feb-90	30.95	1721.93	27.80	1724.53	19.75	1725.23	20.70	1726.74	29.30	1719.47	27.10	1719.86	25.40	1720.48	23.50	1721.99	18.35	1721.70	20.75	1722.67
11-Jul-90	31.80	1721.08	28.40	1723.93	20.40	1724.58	21.70	1725.74	30.15	1718.62	27.90	1719.06	26.45	1719.43	24.15	1721.34	18.90	1721.15	21.45	1721.97
11-Aug-90	32.40	1720.48	28.50	1723.83	20.55	1724.43	21.65	1725.59	30.25	1718.52	27.90	1719.06	27.30	1718.58	24.30	1721.19	19.10	1720.95	21.55	1721.77
02-Nov-90	32.90	1719.98	28.80	1723.53	20.70	1724.28	22.15	1725.29	30.75	1718.02	28.30	1718.66	26.30	1717.58	24.70	1720.79	19.40	1720.65	21.95	1721.47

APPENDIX A  
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 HENDERSON, NEVADA FACILITY  
 GROUNDWATER ELEVATIONS

TOC----	M-78		M-79		M-80		M-81		M-82		M-83	
	DWN	ELEV.	DWN	ELEV.	DWN	ELEV.	DWN	ELEV.	DWN	ELEV.	DWN	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	16.64	1724.19
01-Mar-88	25.68	1725.33	18.37	1724.56	19.72	1726.01	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	18.07	1721.31	19.00	1721.83
06-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	1722.83	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	1721.88	19.20	1721.63
26-Nov-88	23.20	1721.61	20.75	1722.18	28.10	1717.63	17.75	1725.98	18.50	1720.88	19.30	1721.53
15-Dec-88	28.65	1722.36	22.45	1720.48	23.60	1722.13	18.25	1725.48	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	19.85	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	1720.58
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	1720.88	20.45	1720.38
01-Jun-89	29.40	1721.61	22.00	1720.93	23.85	1721.88	20.50	1723.23	19.40	1719.98	20.40	1720.43
03-Jul-89	29.50	1721.51	22.25	1720.68	24.10	1721.63	20.55	1723.18	19.60	1719.78	20.35	1720.48
16-Aug-89	30.05	1720.96	22.50	1720.43	24.50	1721.23	21.00	1722.73	19.85	1719.53	20.75	1720.08
12-Sep-89	30.10	1720.91	22.65	1720.08	24.70	1721.03	21.40	1722.33	20.15	1719.23	21.00	1719.83
25-Oct-89	29.80	1721.21	23.00	1719.93	25.10	1720.63	21.70	1722.03	20.35	1719.03	21.40	1719.43
17-Nov-89	30.20	1720.81	23.00	1719.93	24.50	1721.23	22.00	1721.73	20.00	1719.38	21.90	1718.93
07-Dec-89	29.00	1722.01	23.15	1719.78	25.15	1720.58	21.75	1721.98	20.50	1718.88	21.55	1719.28
12-Jan-90	30.00	1721.01	23.35	1719.58	25.25	1720.48	22.00	1721.73	20.70	1718.68	21.65	1719.18
23-Feb-90	30.10	1720.91	23.15	1719.78	25.30	1720.43	22.10	1721.63	20.80	1718.58	21.65	1719.18
11-Jul-90	31.40	1719.61	24.80	1718.13	26.15	1719.58	23.10	1720.63	22.00	1717.38	22.80	1718.03
11-Aug-90	31.60	1719.41	24.60	1718.33	26.45	1719.28	22.95	1720.78	22.00	1717.38	22.85	1717.98
02-Sep-90	32.45	1718.56	24.90	1718.03	27.70	1718.03	24.35	1719.38	22.30	1717.08	23.40	1717.43

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70C--->	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	1726.17	13.02	1724.97
06-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	1724.96	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	1724.86	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	1724.60	18.15	1724.12	14.97	1723.02
06-Aug-88	17.03	1722.68	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	1724.18	18.85	1723.42	15.75	1722.24
15-Dec-88	23.00	1715.93	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
09-May-89	18.90	1720.73	19.45	1721.74	20.15	1722.58	20.75	1721.52	17.10	1720.89
23-Apr-89	18.75	1720.88	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
03-Jul-89	18.90	1720.73	19.60	1721.59	20.75	1721.98	21.55	1720.72	17.85	1720.14
16-Aug-89	19.30	1720.33	20.15	1721.04	21.00	1721.73	21.70	1720.57	18.10	1719.89
12-Sep-89	19.55	1720.08	20.50	1720.69	21.50	1721.23	21.95	1720.32	18.20	1719.79
25-Oct-89	19.80	1719.83	20.75	1720.44	21.65	1721.08	22.35	1719.92	18.40	1719.59
17-Nov-89	20.00	1719.63	20.50	1720.69	22.00	1720.73	22.30	1719.97	19.50	1719.49
07-Dec-89	19.90	1719.73	20.70	1720.49	21.75	1720.98	22.45	1719.82	18.60	1719.39
12-Jan-90	20.05	1719.58	20.85	1720.34	22.00	1720.73	22.65	1719.62	18.95	1719.14
23-Feb-90	20.05	1719.58	21.00	1720.19	22.10	1720.63	22.75	1719.52	18.95	1719.04
11-Jul-90	21.10	1718.53	22.10	1719.09	22.90	1719.83	23.40	1718.87	19.60	1718.39
11-Aug-90	21.35	1718.28	22.20	1718.99	22.80	1719.93	23.60	1718.67	19.75	1718.24
02-Nov-90	22.35	1717.28	23.85	1717.34	24.00	1718.73	24.10	1718.17	20.95	1717.94

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TOC-->	I-A		I-B		I-C		I-D		I-E		I-F	
	DTH	ELEV.	DTH	ELEV.	DTH	ELEV.	DTH	ELEV.	DTH	ELEV.	DTH	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
19-Apr-88	28.42	1722.64	27.89	1722.60	27.75	1722.69	29.79	1720.75	29.69	1720.53	25.21	1722.37
18-May-88	28.83	1722.23	28.07	1722.62	26.03	1724.41	30.06	1720.48	32.22	1718.00	25.74	1721.34
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	1723.67	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	27.60	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	27.60	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	1713.33
19-Jan-89	28.10	1722.96	27.70	1722.99	42.90	1707.54	39.55	1710.99	40.65	1709.57	28.20	1719.38
23-Feb-89	28.20	1722.86	28.00	1722.69	44.10	1706.34	44.55	1705.99	45.79	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	38.80	1719.42	29.10	1718.48
23-Apr-89	30.70	1720.36	29.00	1721.69	28.90	1721.34	40.00	1710.54	35.70	1714.52	29.90	1717.68
09-May-89	38.70	1712.36			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	39.40	1711.14	40.35	1709.87	29.00	1718.58
03-Jul-89	29.30	1721.76			29.10	1721.34	40.30	1710.24	42.90	1707.32	29.10	1718.48
16-Aug-89	30.30	1720.76			28.60	1721.84	44.10	1706.44	33.55	1716.67	30.60	1716.98
12-Sep-89	30.70	1720.36			29.00	1721.44	44.20	1706.34	34.00	1716.22	30.85	1716.73
25-Oct-89	31.25	1719.81			43.85	1706.59	44.20	1706.34	36.25	1713.97	28.75	1718.63
17-Nov-89	32.00	1719.06	42.00	1706.69	42.00	1708.44	31.95	1718.59	37.00	1713.22	29.00	1718.58
07-Dec-89	42.00	1709.06	48.00	1702.69	50.00	1700.44	31.60	1718.94	39.00	1711.22	28.80	1718.78
12-Jan-90	44.00	1707.06	36.00	1714.59	36.20	1714.24	31.60	1718.94	45.50	1704.72	28.45	1719.13
23-Feb-90	44.00	1707.06	48.00	1702.69	44.00	1706.44	36.85	1713.69	34.95	1715.27	28.65	1718.73
11-Jul-90	46.00	1705.06	47.00	1703.69	37.20	1713.24	34.20	1716.34	40.00	1710.22	29.00	1718.58
11-Aug-90	44.15	1706.91	48.00	1702.69	44.05	1706.39	44.15	1706.39	45.30	1704.92	44.60	1702.98
02-Nov-90	43.05	1708.01	40.00	1710.69	35.90	1714.34	44.15	1706.39	45.85	1704.37	45.10	1702.48

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

TOC-->	I-6		I-H		I-I		I-J		I-K	
	DTW	ELEV.	DTW	ELEV.	DTW	ELEV.	DTW	ELEV.	DTW	ELEV.
20-Jun-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	1724.36	33.08	1717.99	18.87	1724.49	18.87	1724.49	22.90	1725.05
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	1723.05	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
06-Aug-88	38.01	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	28.50	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
03-Jul-89	27.95	1722.47	28.80	1722.27	28.80	1714.56	28.00	1719.95	34.20	1709.77
16-Aug-89	29.70	1720.72	29.20	1721.87	31.00	1712.36	29.35	1718.60	34.00	1709.97
12-Sep-89	30.45	1719.97	29.00	1722.07	30.00	1713.36	27.35	1720.60	18.55	1725.42
25-Oct-89	30.25	1720.17	28.65	1722.42	26.80	1716.56	26.30	1721.65	31.10	1712.87
17-Nov-89	32.80	1717.62	31.65	1719.22	25.00	1718.36	24.20	1723.75	32.60	1711.37
07-Dec-89	37.00	1713.42	43.30	1707.77	28.10	1715.26	36.10	1711.85	34.40	1709.57
12-Jan-90	28.40	1722.02	42.60	1708.47	34.90	1709.36	39.00	1708.95	33.00	1710.97
23-Feb-90	35.00	1715.42	37.45	1713.62	32.10	1711.26	41.60	1706.35	32.20	1711.77
31-Jul-90	35.10	1715.32	44.50	1706.57	32.90	1710.46	36.20	1711.75	36.00	1707.97
11-Aug-90	35.65	1714.77	44.50	1706.57	33.10	1710.26	48.10	1699.85	37.00	1706.97
02-Nov-90	30.70	1719.72	33.45	1717.62	30.50	1712.86	48.00	1699.95	38.60	1705.37

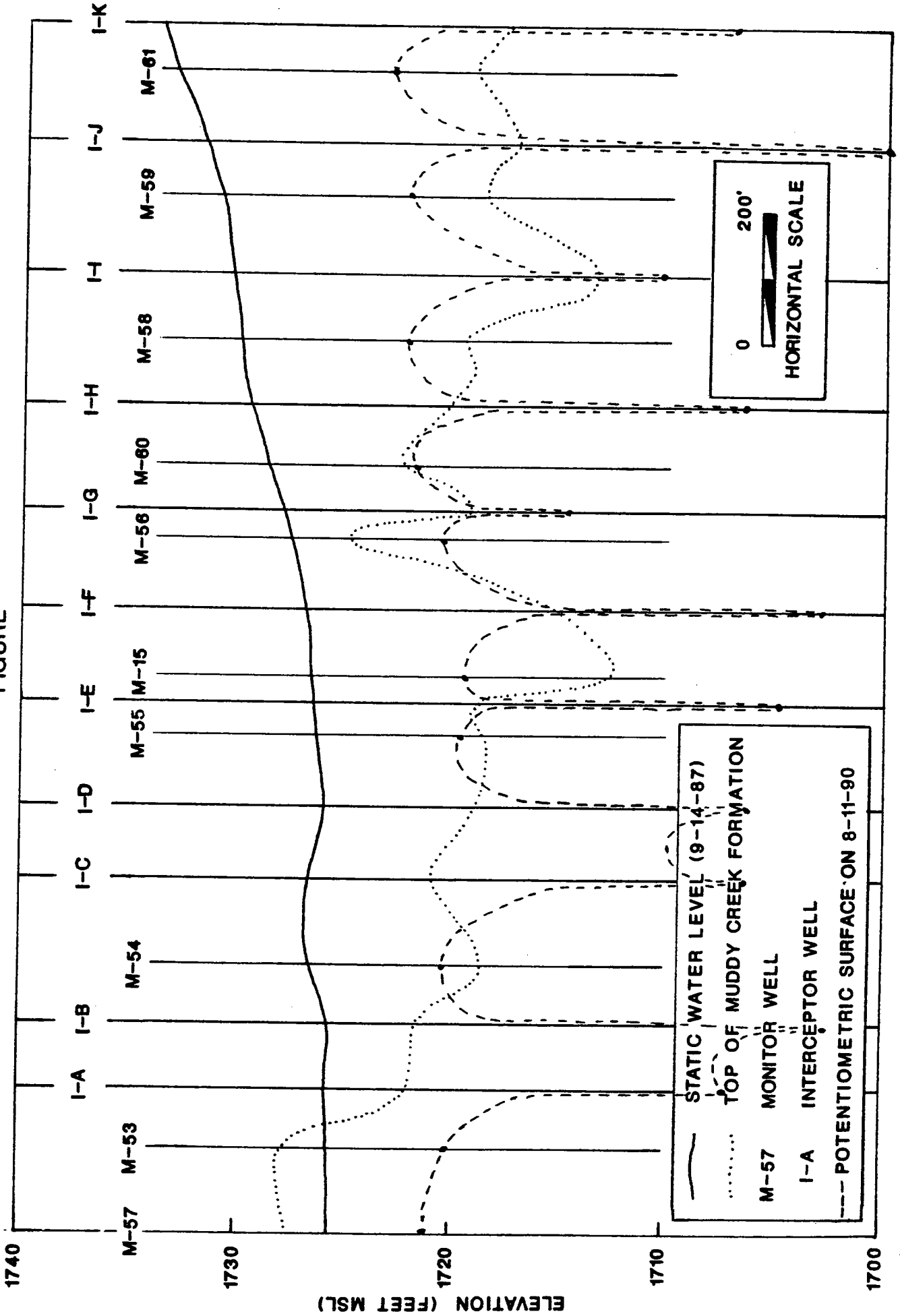
*APPENDIX B*

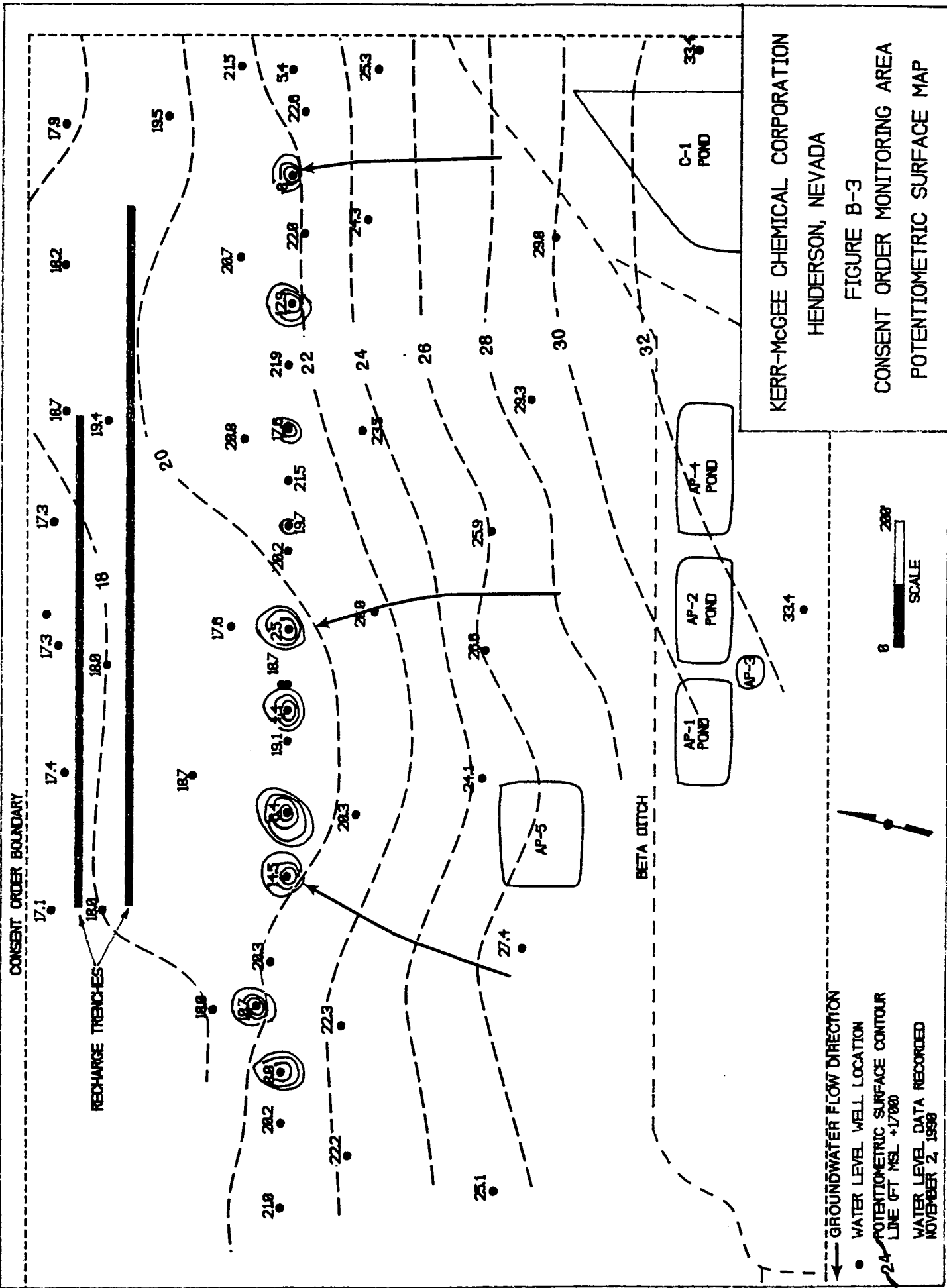
*POTENTIOMETRIC SURFACE MAPS*

*INTERCEPTOR AREA CROSS-SECTIONS*



KERR-McGEE CHEMICAL CORPORATION - HENDERSON, NEVADA  
 GROUNDWATER INTERCEPTOR LINE CROSS-SECTION  
 FIGURE



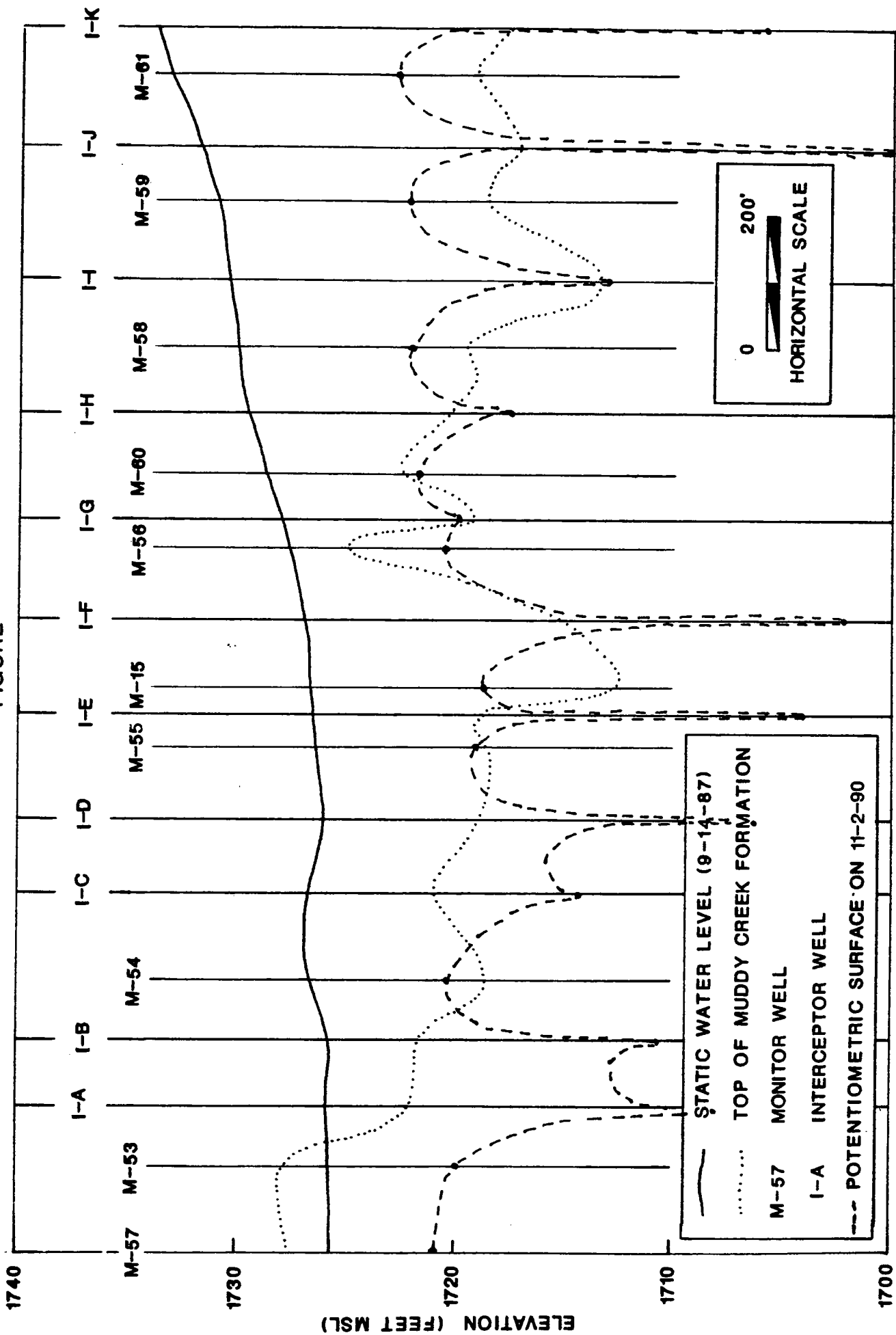


KERR-McGEE CHEMICAL CORPORATION  
 HENDERSON, NEVADA  
 FIGURE B-3  
 CONSENT ORDER MONITORING AREA  
 POTENTIOMETRIC SURFACE MAP

--- GROUNDWATER FLOW DIRECTION  
 ● WATER LEVEL WELL LOCATION  
 — POTENTIOMETRIC SURFACE CONTOUR  
 — RECHARGE TRENCHES  
 WATER LEVEL DATA RECORDED  
 NOVEMBER 2, 1980

0 200  
 SCALE

KERR-McGEE CHEMICAL CORPORATION - HENDERSON, NEVADA  
 GROUNDWATER INTERCEPTOR LINE CROSS-SECTION  
 FIGURE



***APPENDIX C***

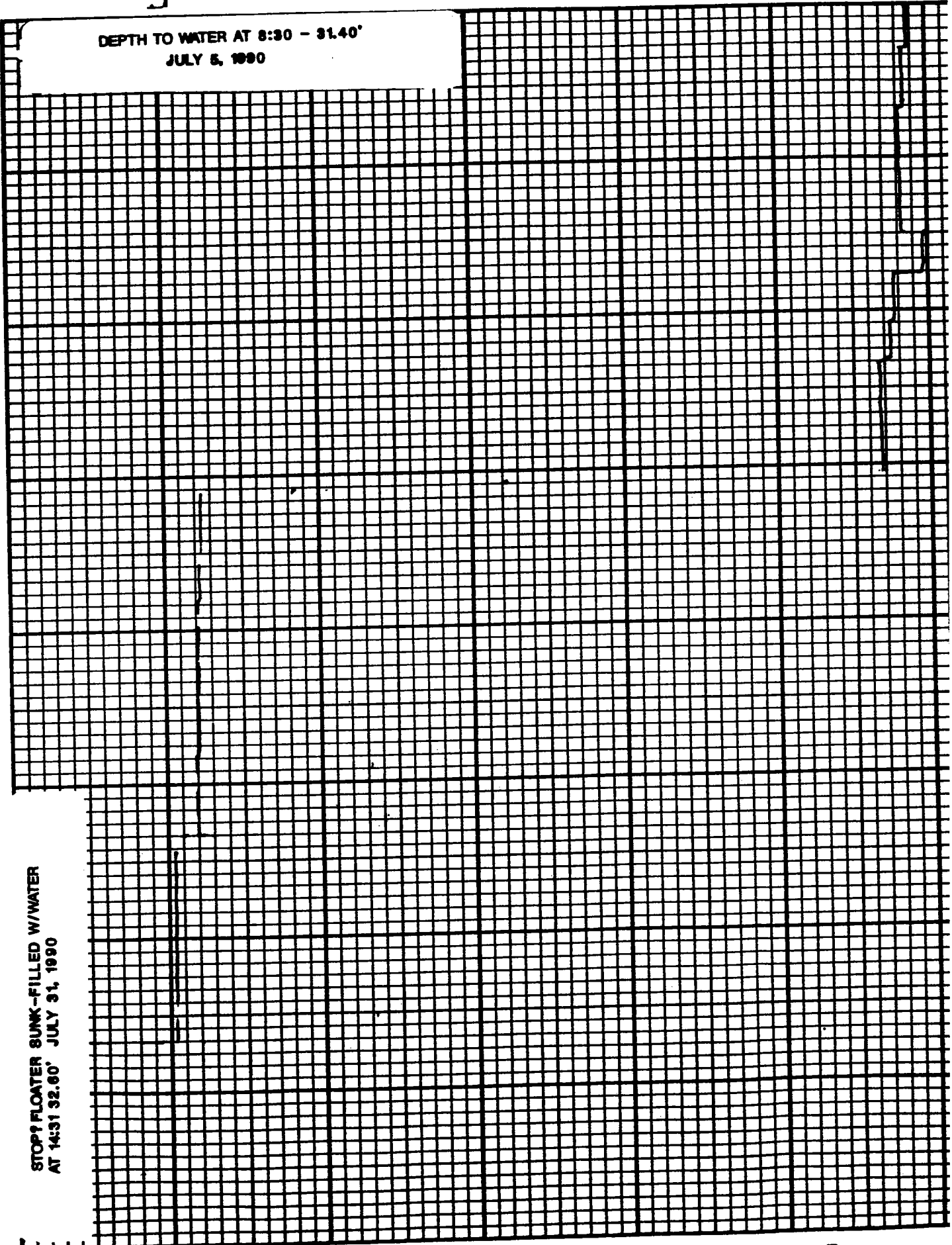
***CONTINUOUS WATER LEVEL RECORDER CHARTS***

DEPTH TO WATER AT 8:30 - 31.40'  
JULY 5, 1990

CONTINUOUS WATER LEVEL RECORDER CHART

WELL M-78  
7-5-90 TO 7-31-90

STOP? FLOATER SUNK--FILLED W/WATER  
AT 14:31 32.60' JULY 31, 1990



CONTINUOUS WATER LEVEL RECORDER CHART

WELL M-80

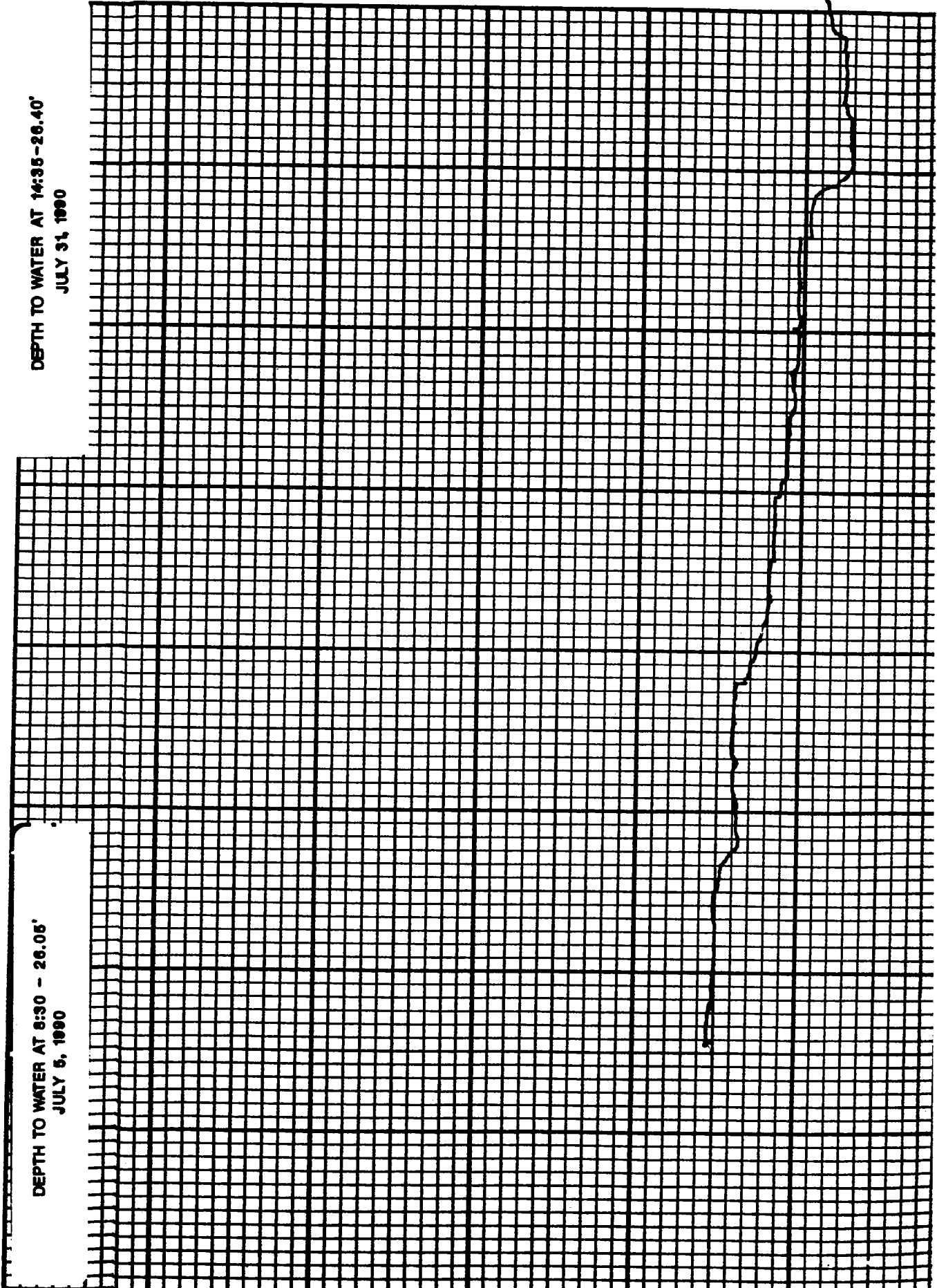
7-5-90 TO 7-31-90

, Inc., Beaverton, Ore.

Printed in U.S.A.

DEPTH TO WATER AT 8:30 - 26.06'  
JULY 5, 1990

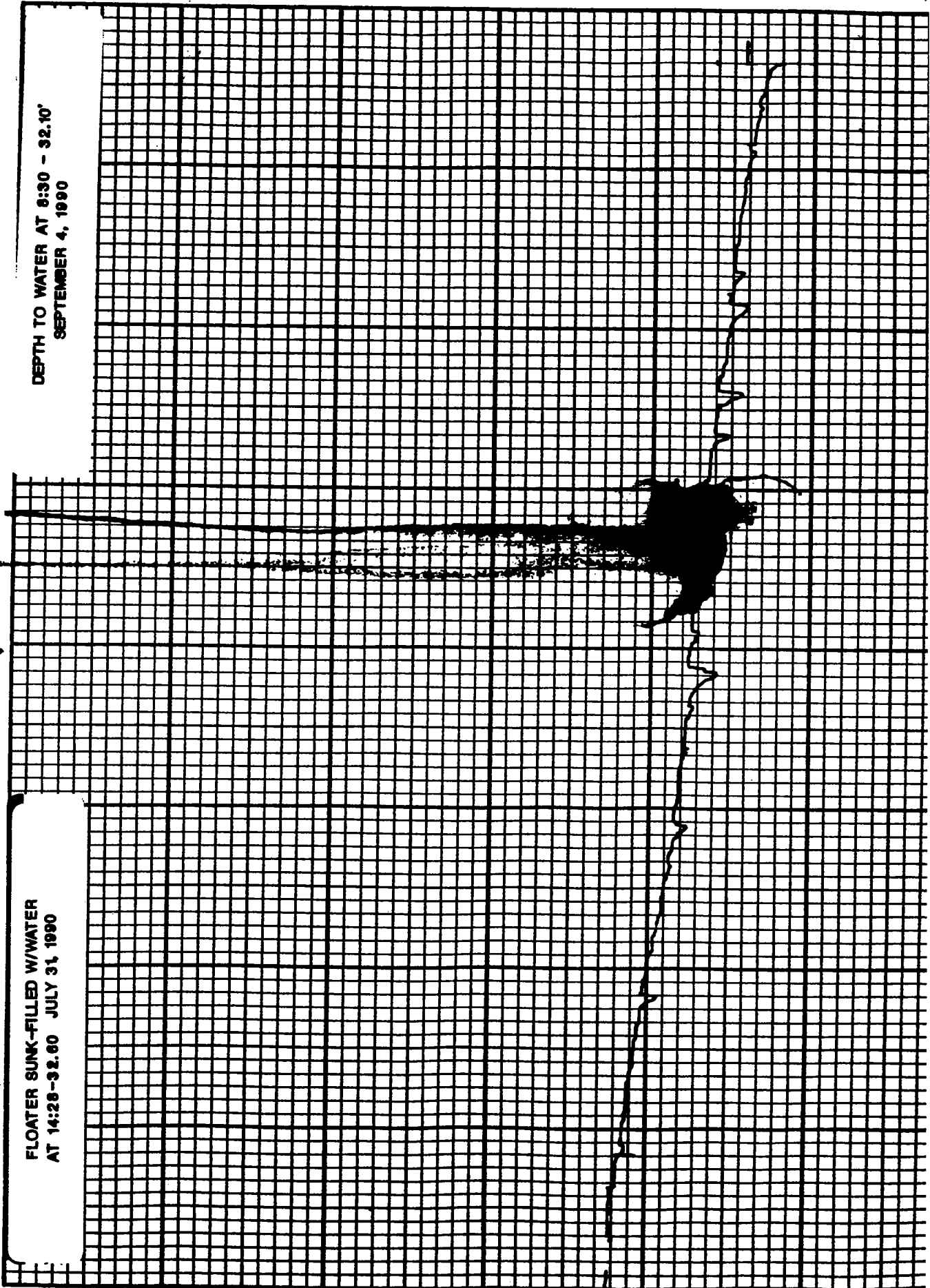
DEPTH TO WATER AT 14:35 - 26.40'  
JULY 31, 1990



CONTINUOUS WATER LEVEL RECORDER CHART  
WELL M-78  
7-31-90 TO 9-4-90

FLOATER SUNK-FILLED W/WATER  
AT 14:28-32.60 JULY 31, 1990

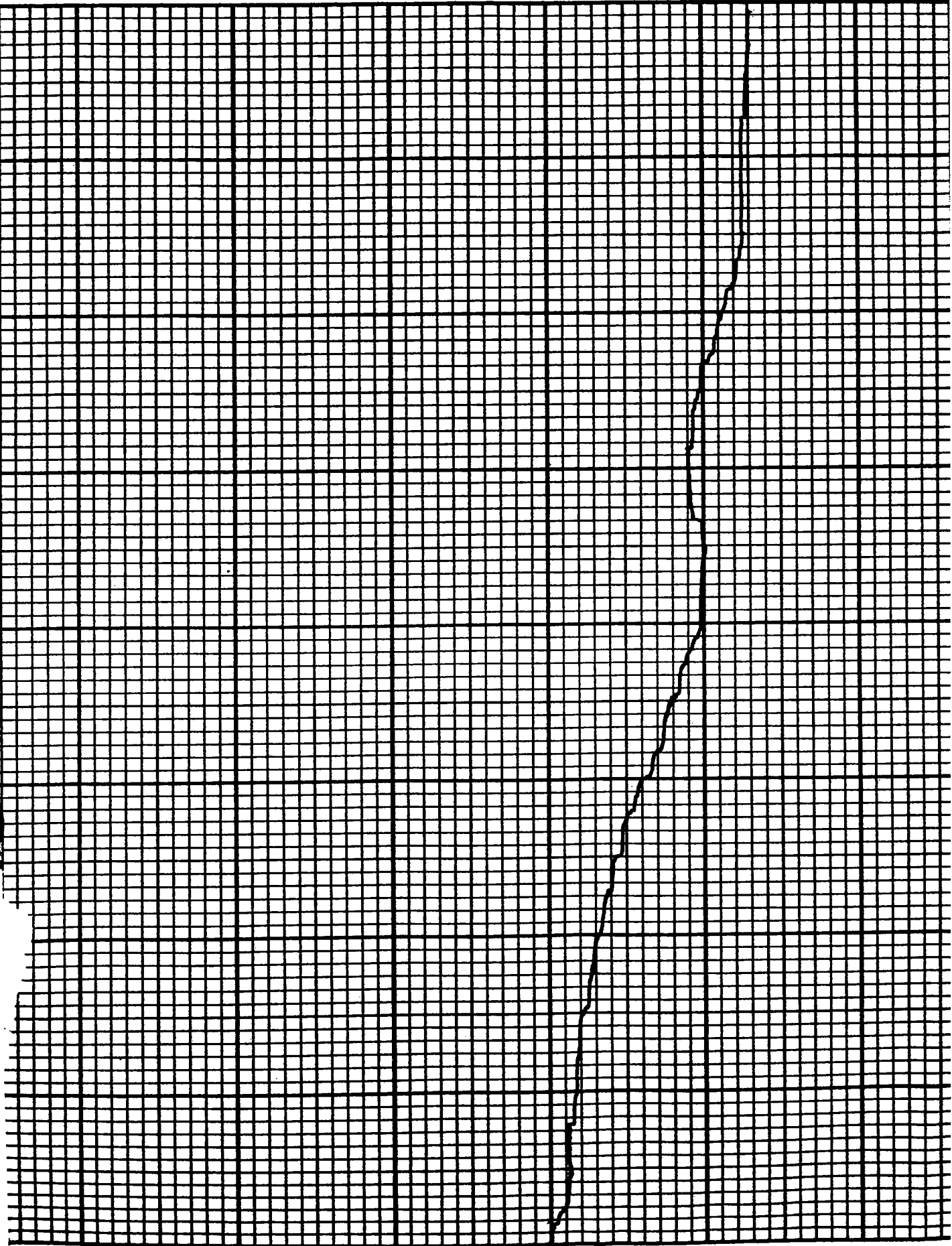
DEPTH TO WATER AT 8:30 - 32.10'  
SEPTEMBER 4, 1990



DEPTH TO WATER AT 6:30 - 27.05'  
SEPTEMBER 4, 1990

7-31-90 TO 9-4-90

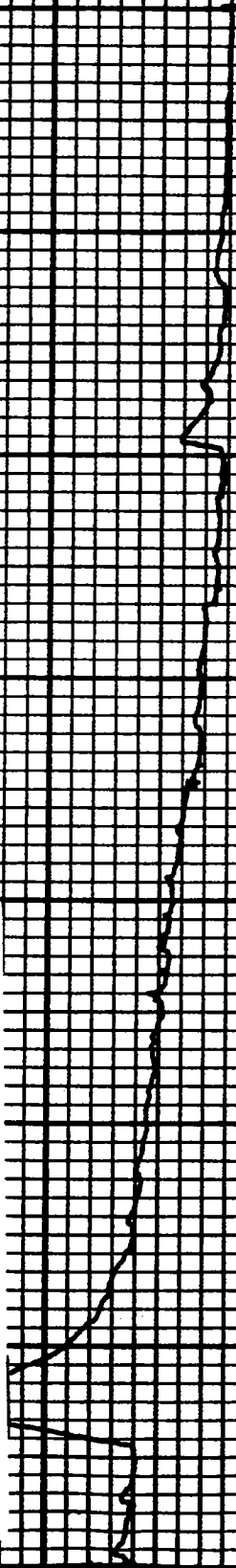
DEPTH TO WATER AT 14:35 - 26.40'  
JULY 31, 1990





DEPTH TO WATER AT 10:30-32.37'  
OCTOBER 2, 1990

DEPTH TO WATER AT 6:30 - 32.10'  
SEPTEMBER 4, 1990



CONTINUOUS WATER LEVEL RECORDER CHART

WELL M-78

9-4-90 TO 10-21-90

DEPTH TO WATER AT 10:30 - 27.50'  
OCTOBER 2, 1990

DEPTH TO WATER AT 8:30 - 27.05'  
SEPTEMBER 4, 1990

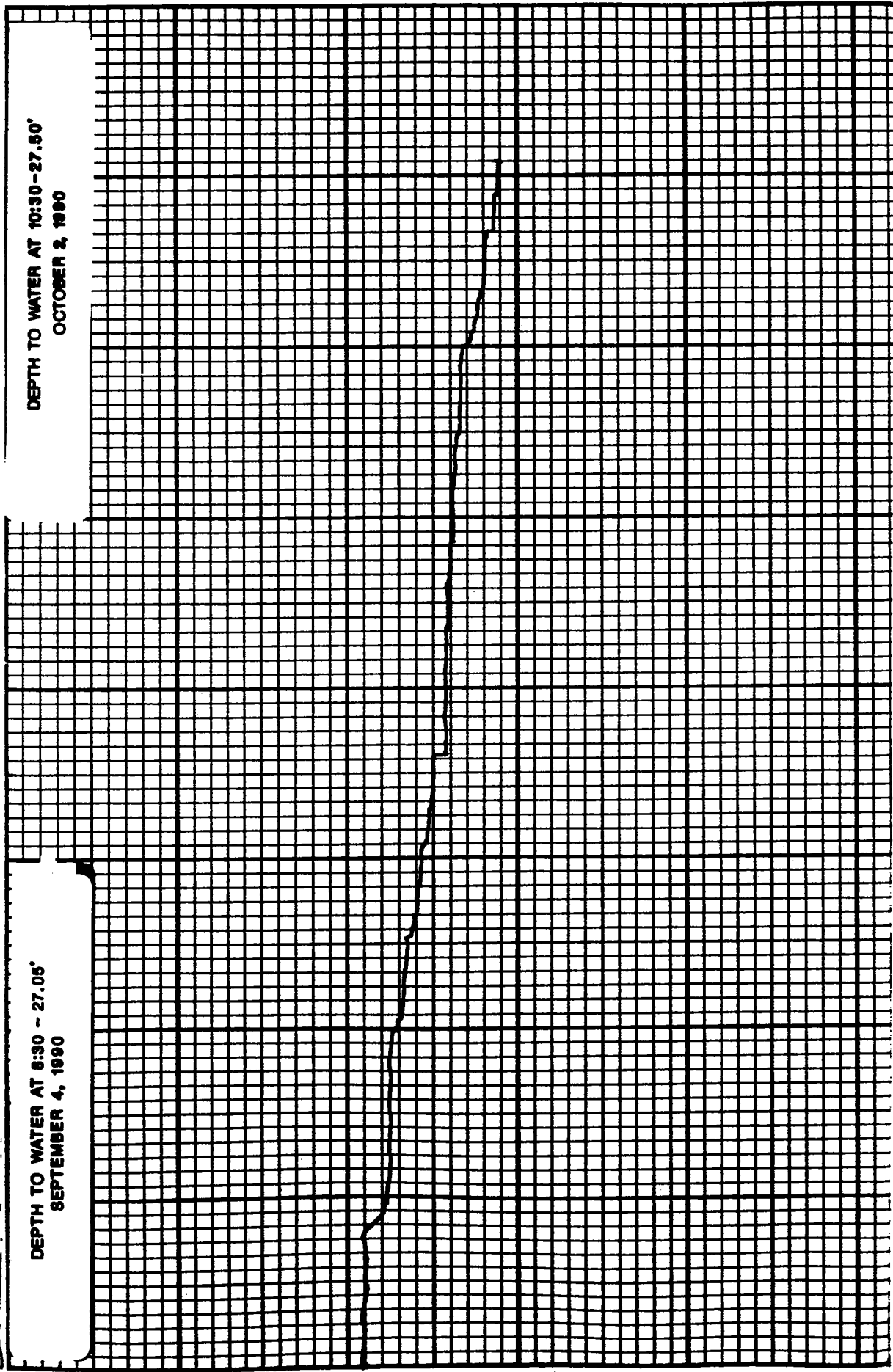


Chart F-1



Type F

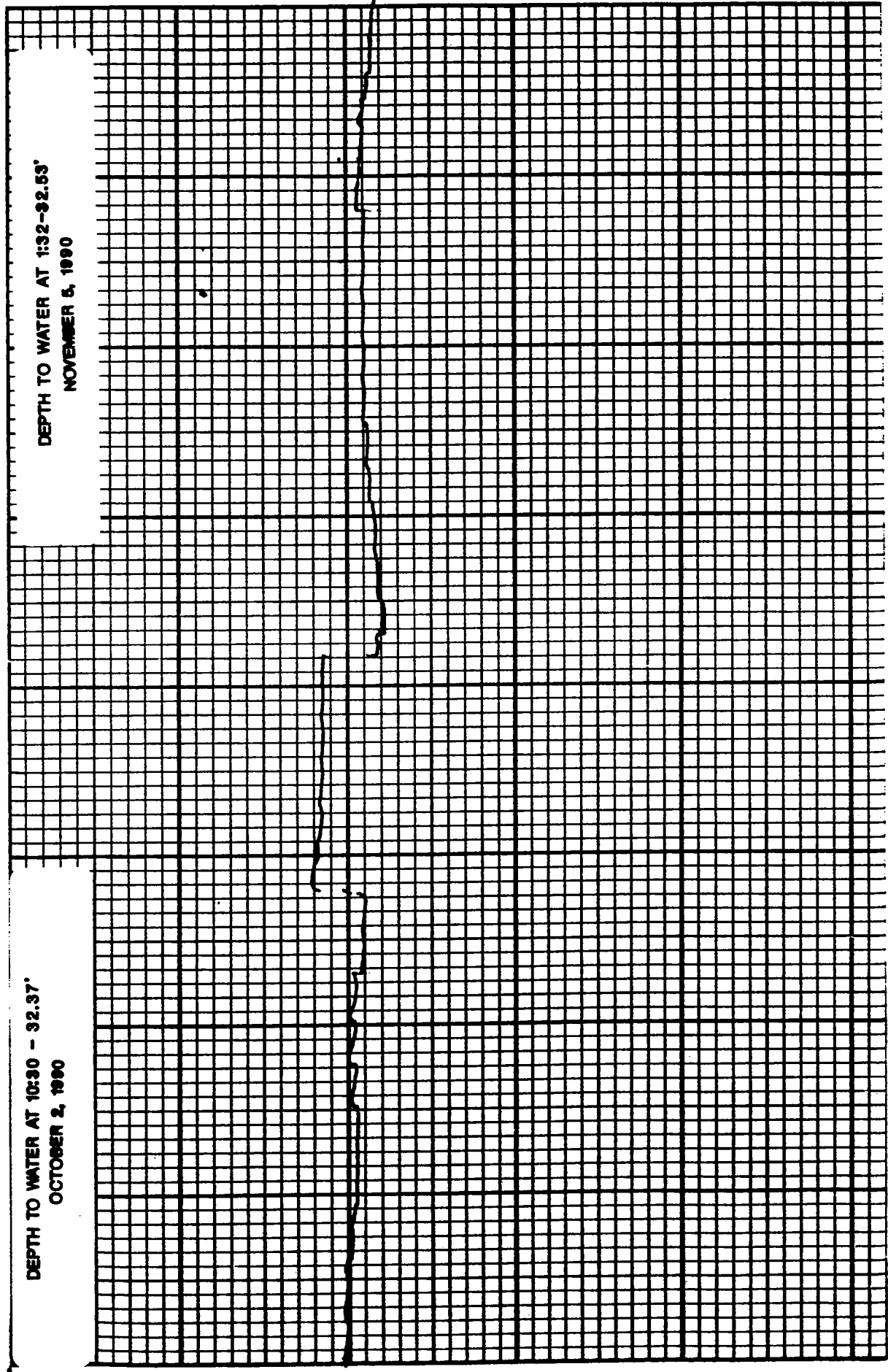
Printed in U.S.A.

Inc., Beaverton, Ore.

CONTINUOUS WATER LEVEL RECORDER CHART  
WELL M-80  
9-4-90 TO 10-21-90

DEPTH TO WATER AT 10:30 - 32.37'  
OCTOBER 2, 1990

DEPTH TO WATER AT 1:32-32.53'  
NOVEMBER 5, 1990



CONTINUOUS WATER LEVEL RECORDER CHART

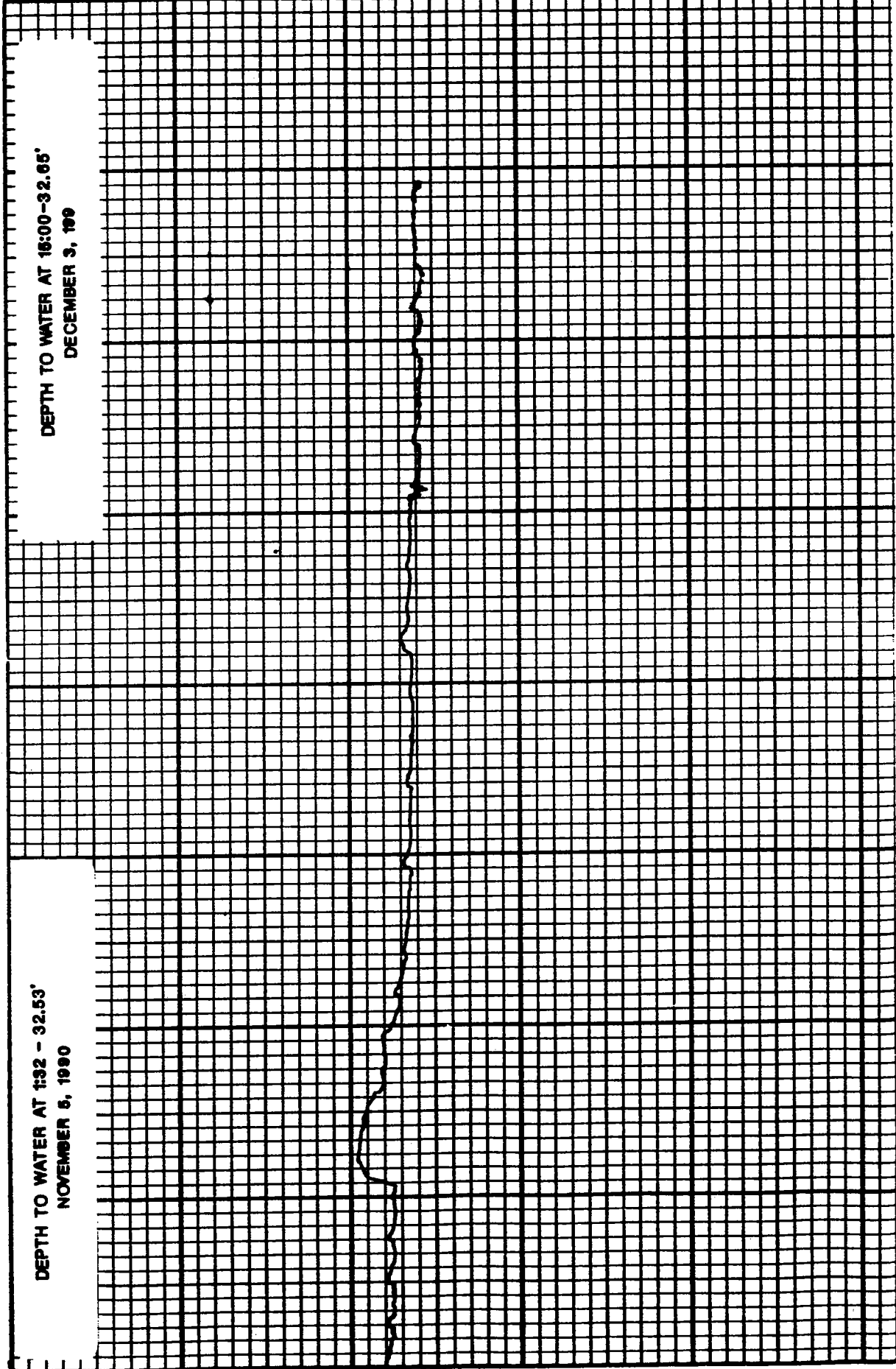
WELL M-78

10-2-90 TO 11-5-90



- Type B

Chart F-1



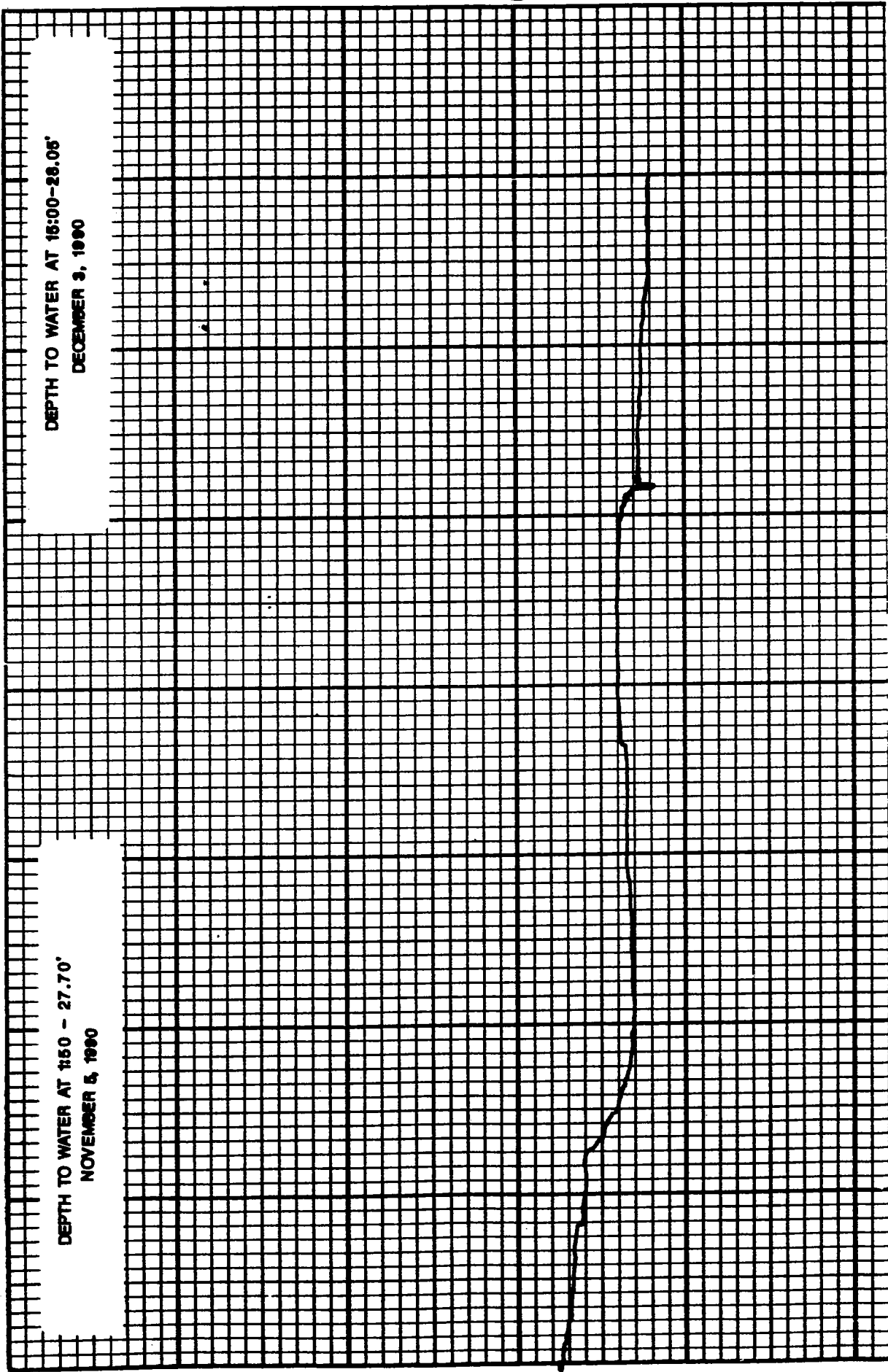
DEPTH TO WATER AT 1:32 - 32.53'  
NOVEMBER 5, 1990

DEPTH TO WATER AT 15:00 - 32.65'  
DECEMBER 3, 1990

CONTINUOUS WATER LEVEL RECORDER CHART

WELL M-78

11-5-90 TO 12-3-90



DEPTH TO WATER AT 150 - 27.70'  
NOVEMBER 5, 1990

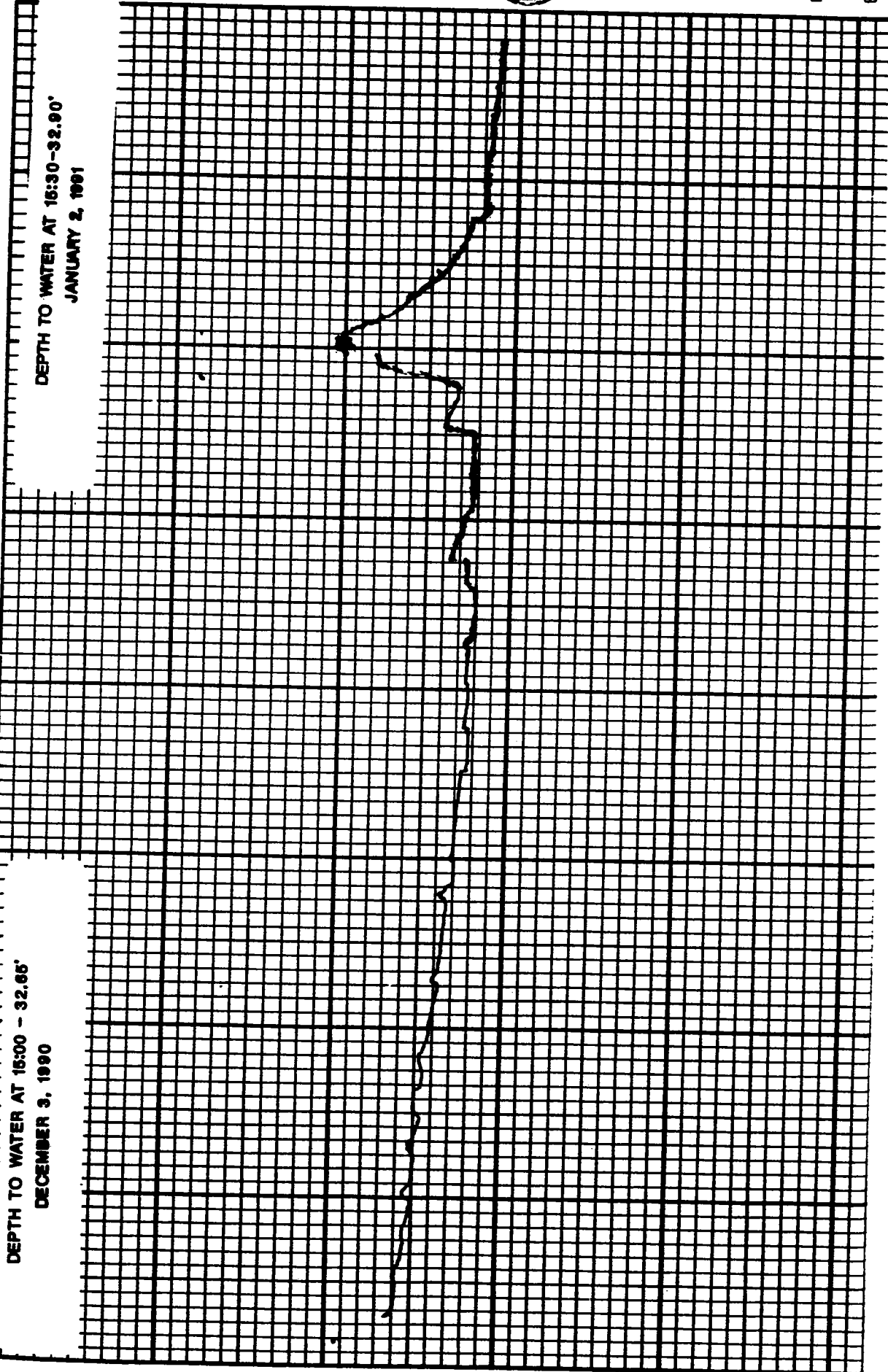
DEPTH TO WATER AT 15:00 - 28.06'  
DECEMBER 3, 1990

CONTINUOUS WATER LEVEL RECORDER CHART  
WELL M-80  
11-5-90 TO 12-3-90



DEPTH TO WATER AT 16:30 - 32.90'  
JANUARY 2, 1991

DEPTH TO WATER AT 15:00 - 32.65'  
DECEMBER 3, 1990



Printed in U.S.A.

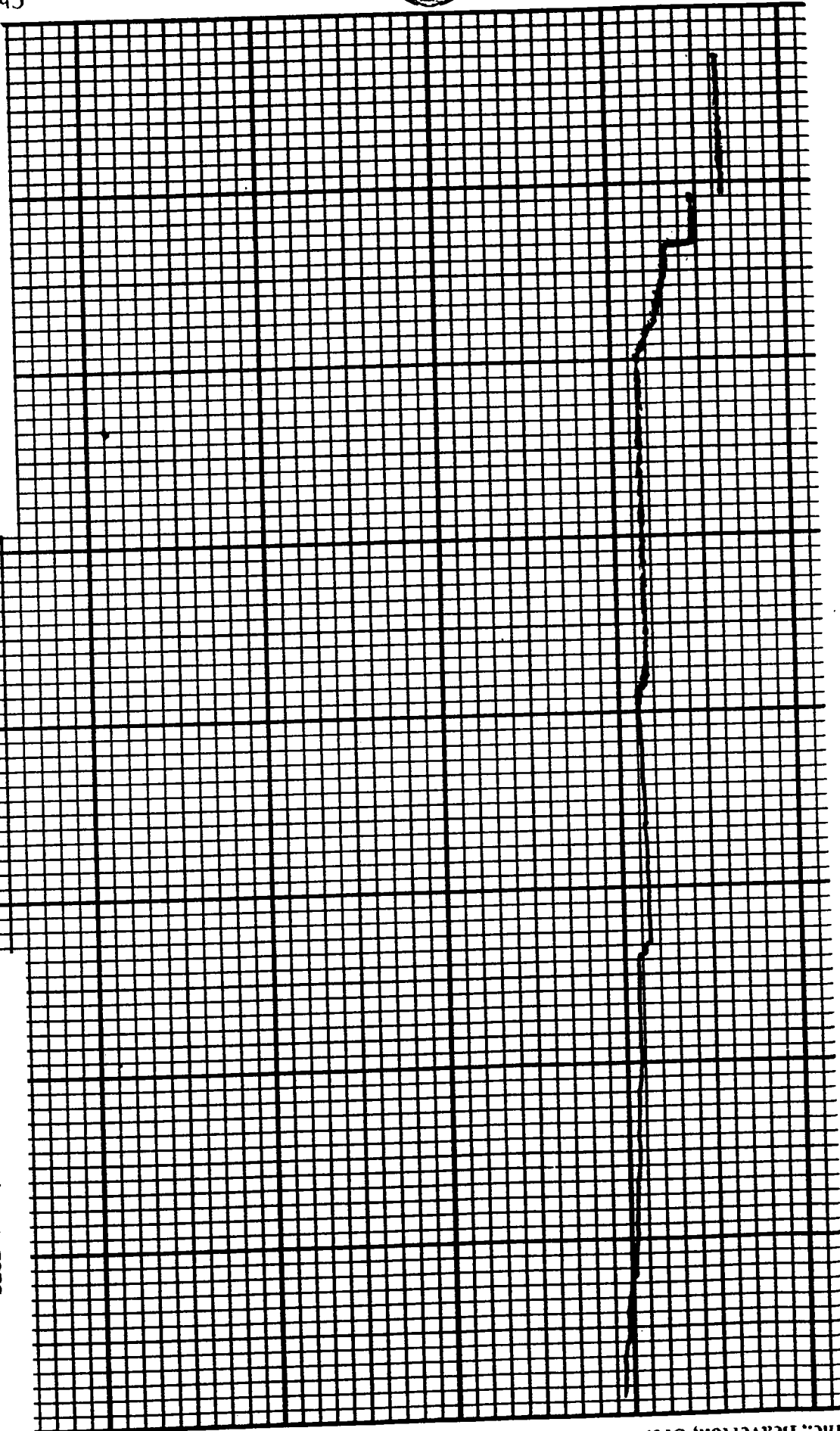
S. Inc., Beaverton, Ore.

CONTINUOUS WATER LEVEL RECORDER CHART  
WELL M-78

12-3-90 TO 1-2-91

DEPTH TO WATER AT 16:30-28.30'  
JANUARY 2, 1991

DEPTH TO WATER AT 15:00 - 28.05'  
DECEMBER 3, 1990



Printed in U.S.A.

Inc., Beaverton, Ore.

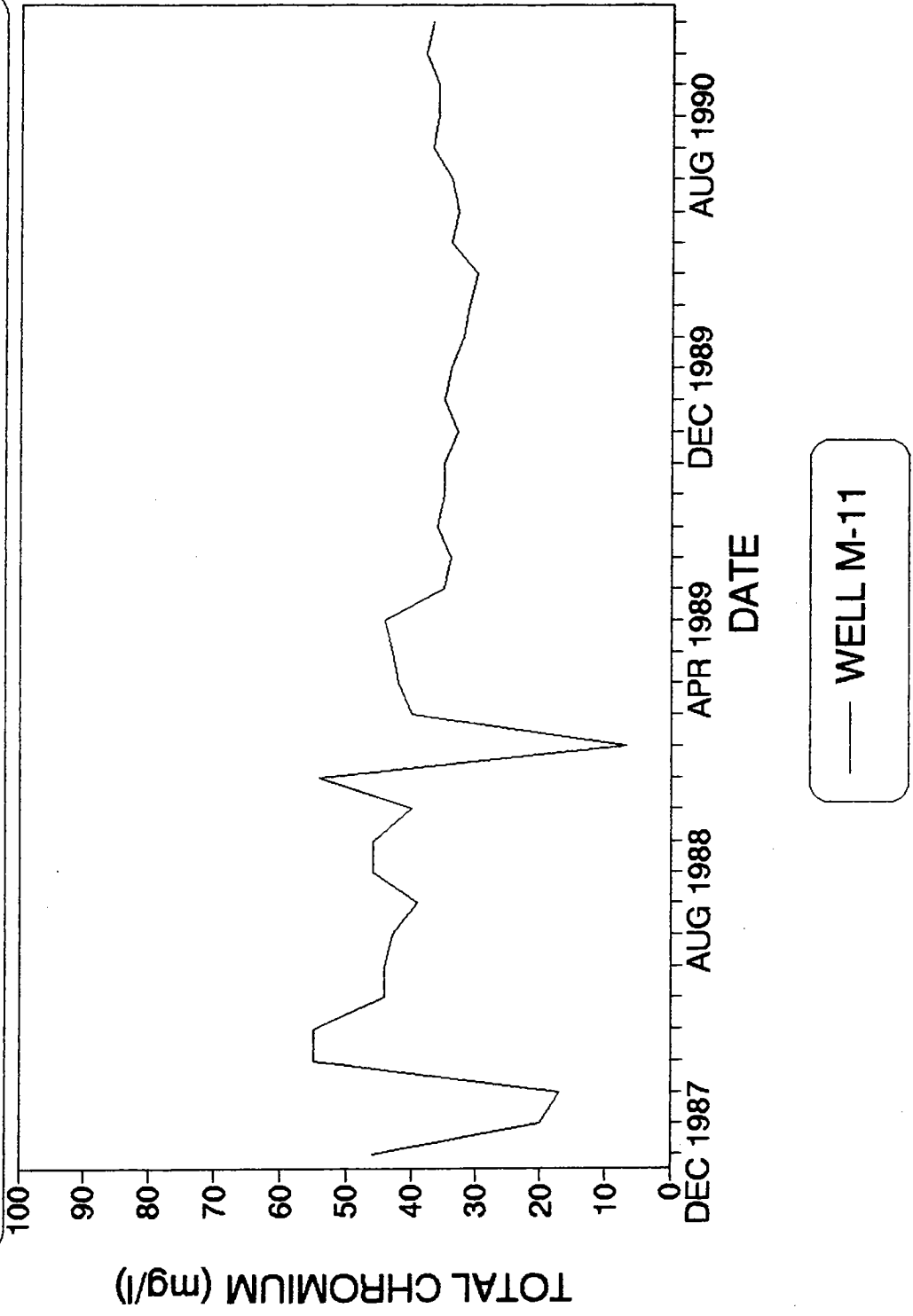
CONTINUOUS WATER LEVEL RECORDER CHART  
WELL M-80  
12-3-90 TO 1-2-91

***APPENDIX D***

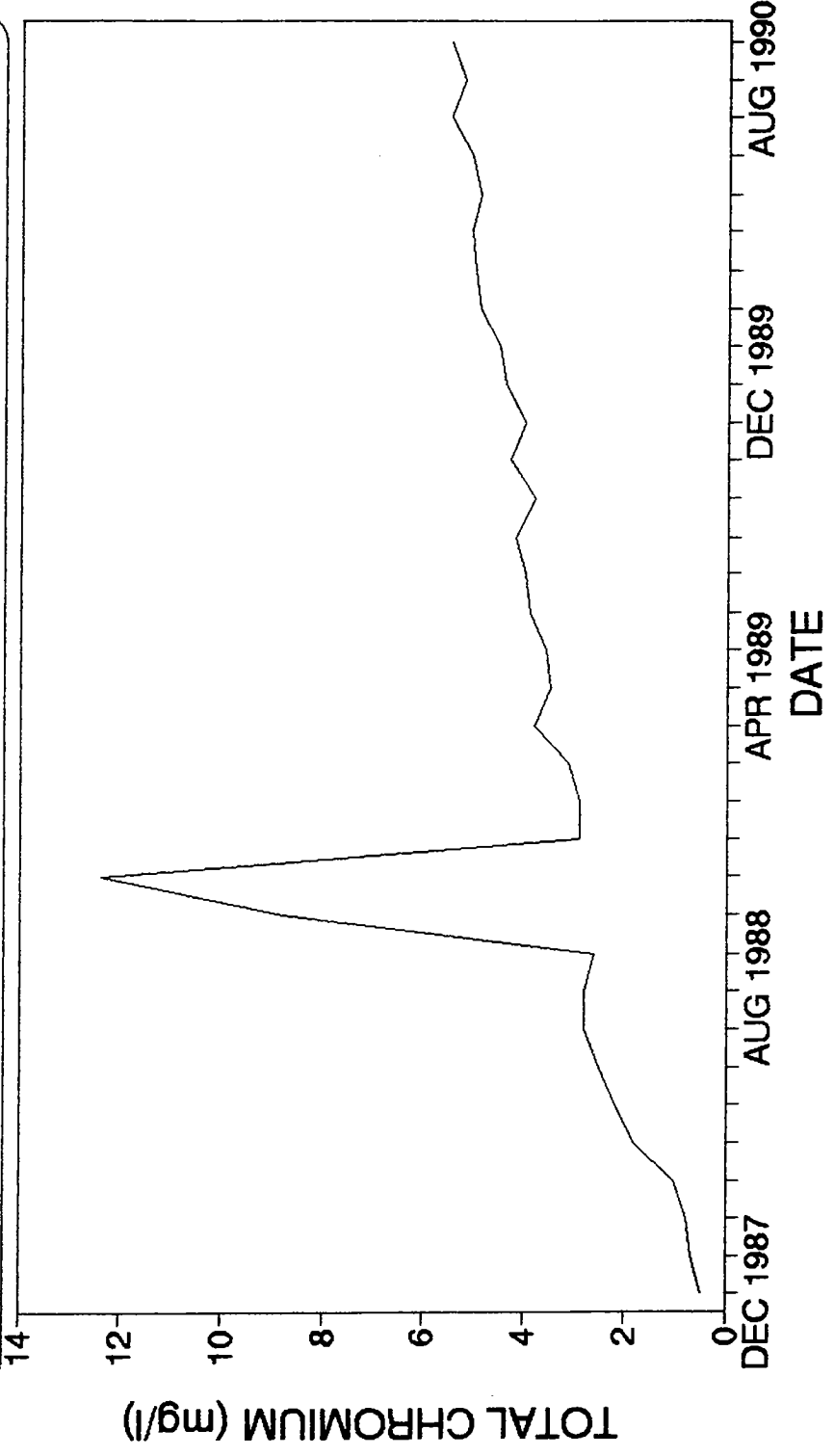
***CHROMIUM CONCENTRATIONS IN***

***APPENDIX J AND INTERCEPTOR WELLS***

**FIGURE D-1**  
**APPENDIX J WELL CHROMIUM CONCENTRATION**

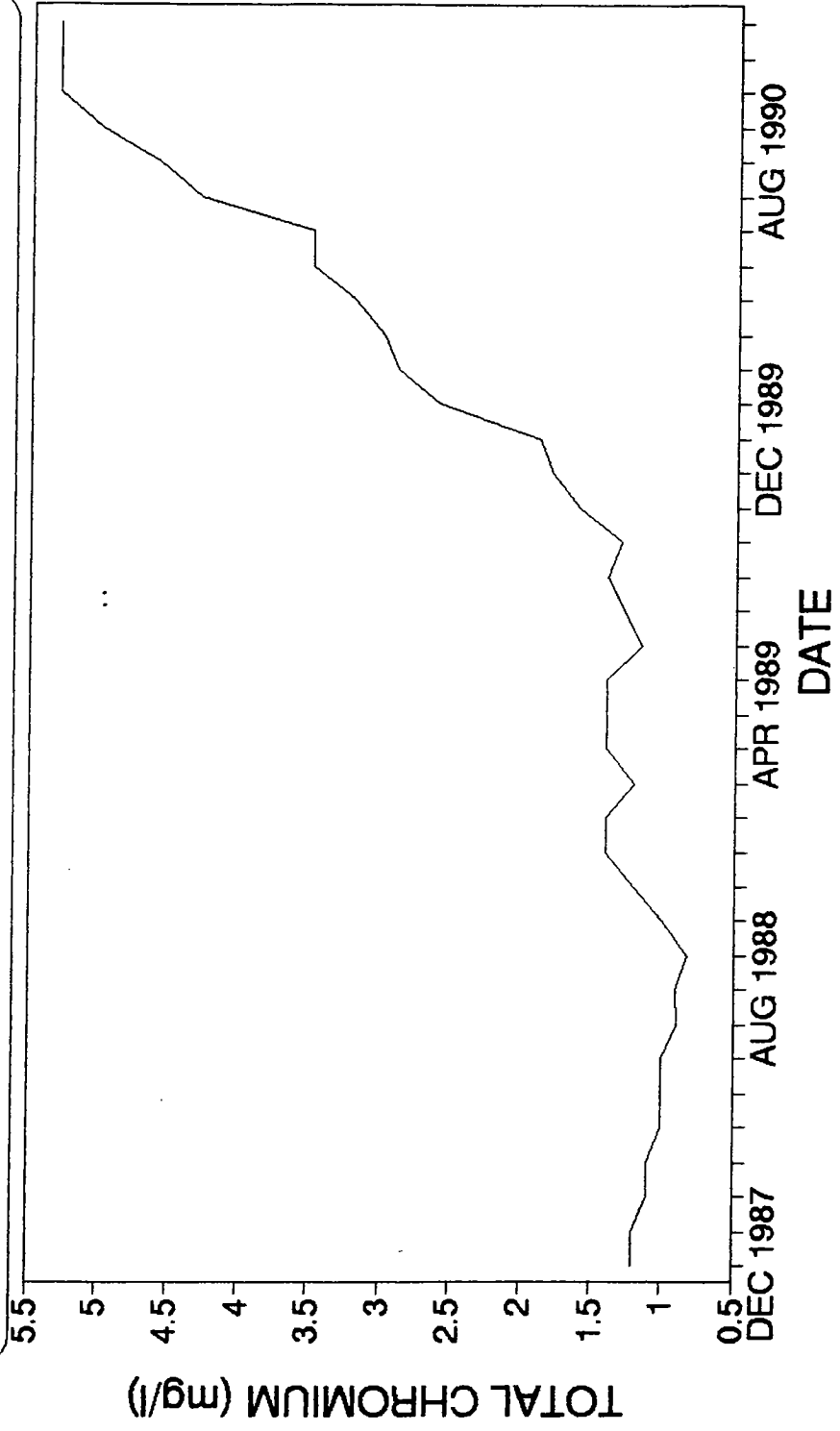


**FIGURE D-2**  
**APPENDIX J WELL CHROMIUM CONCENTRATION**



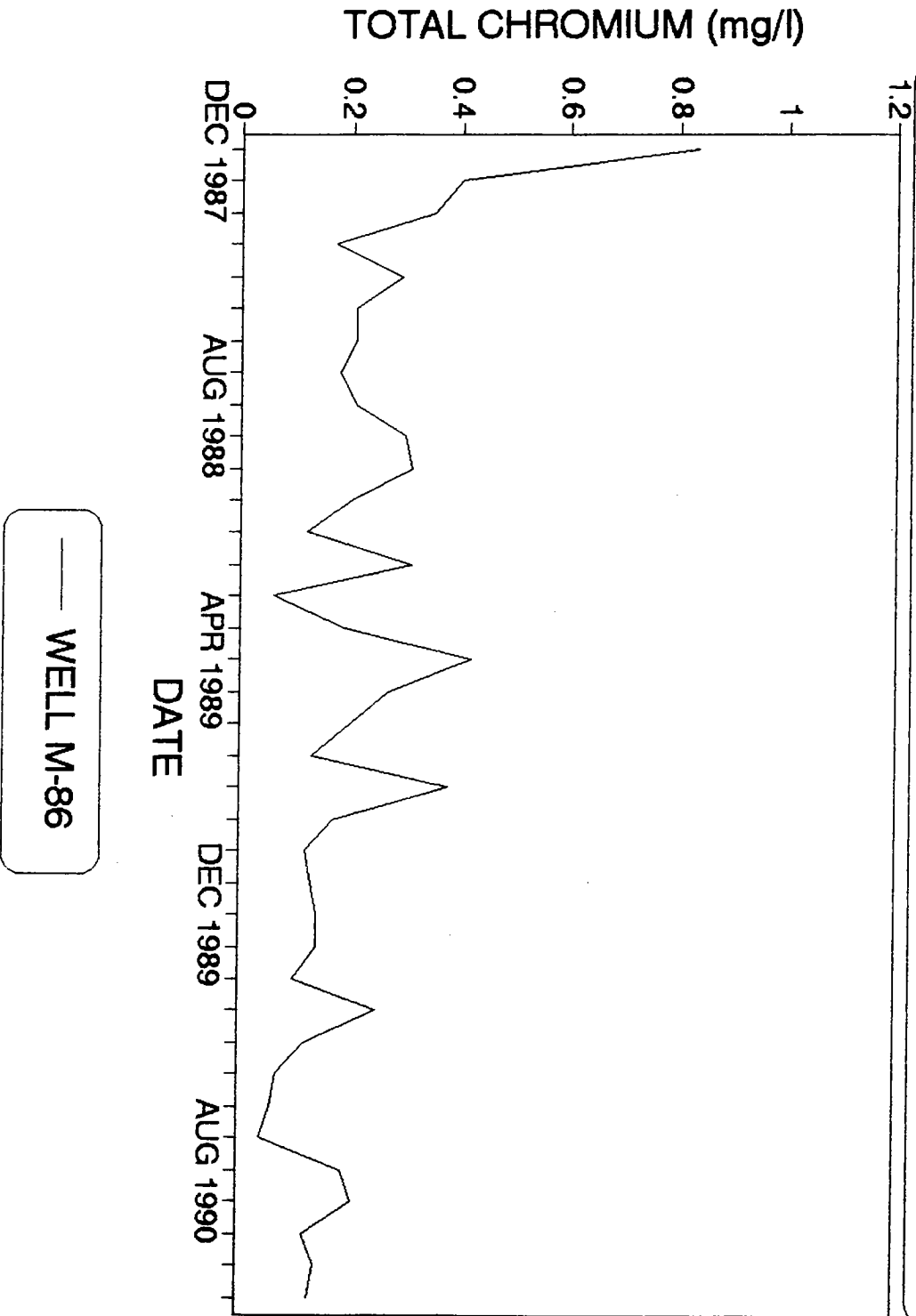
— WELL M-36

**FIGURE D-3**  
**APPENDIX J WELL CHROMIUM CONCENTRATION**

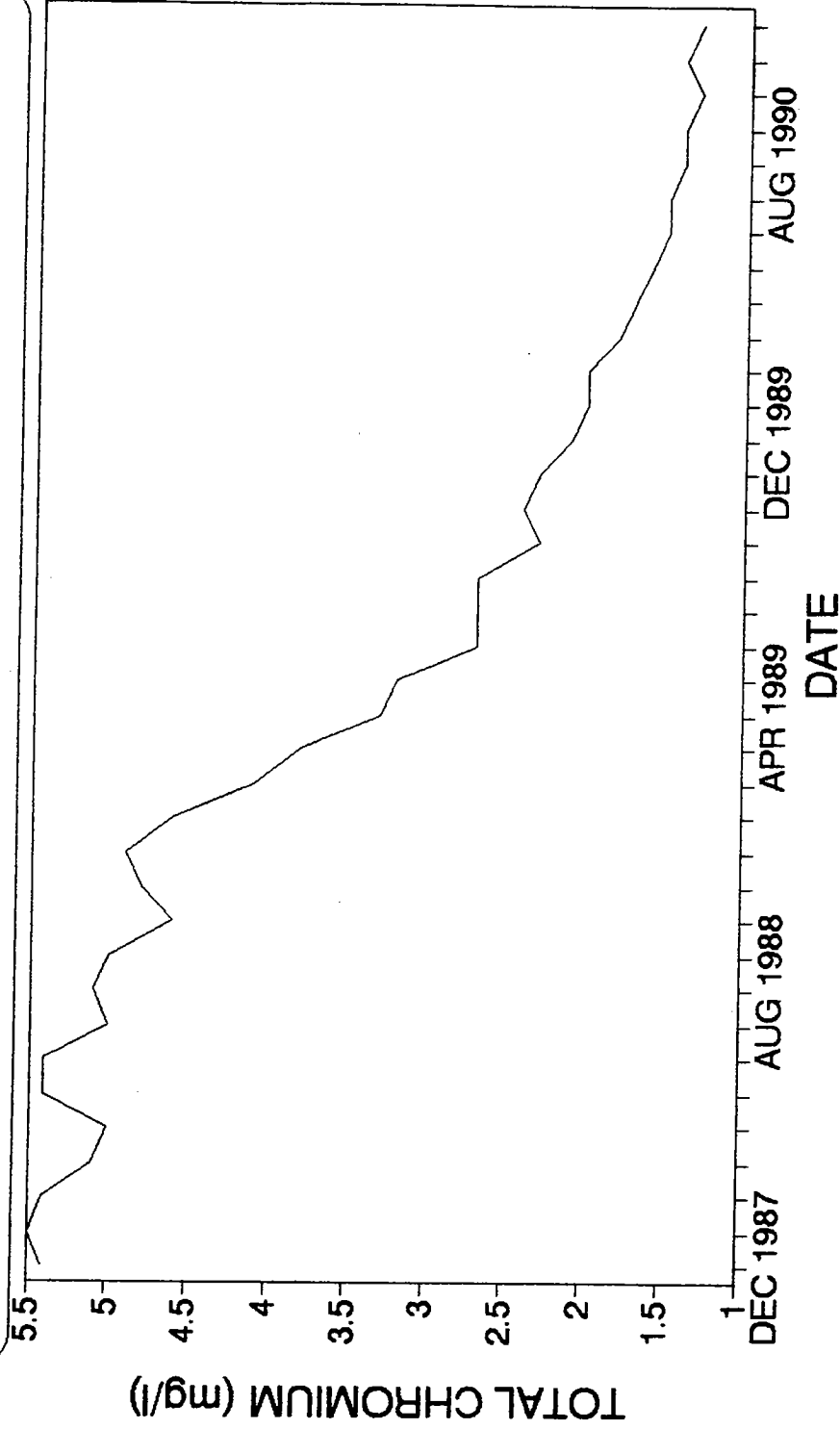


— WELL M-72

**FIGURE D-4**  
**APPENDIX J WELL CHROMIUM CONCENTRATION**

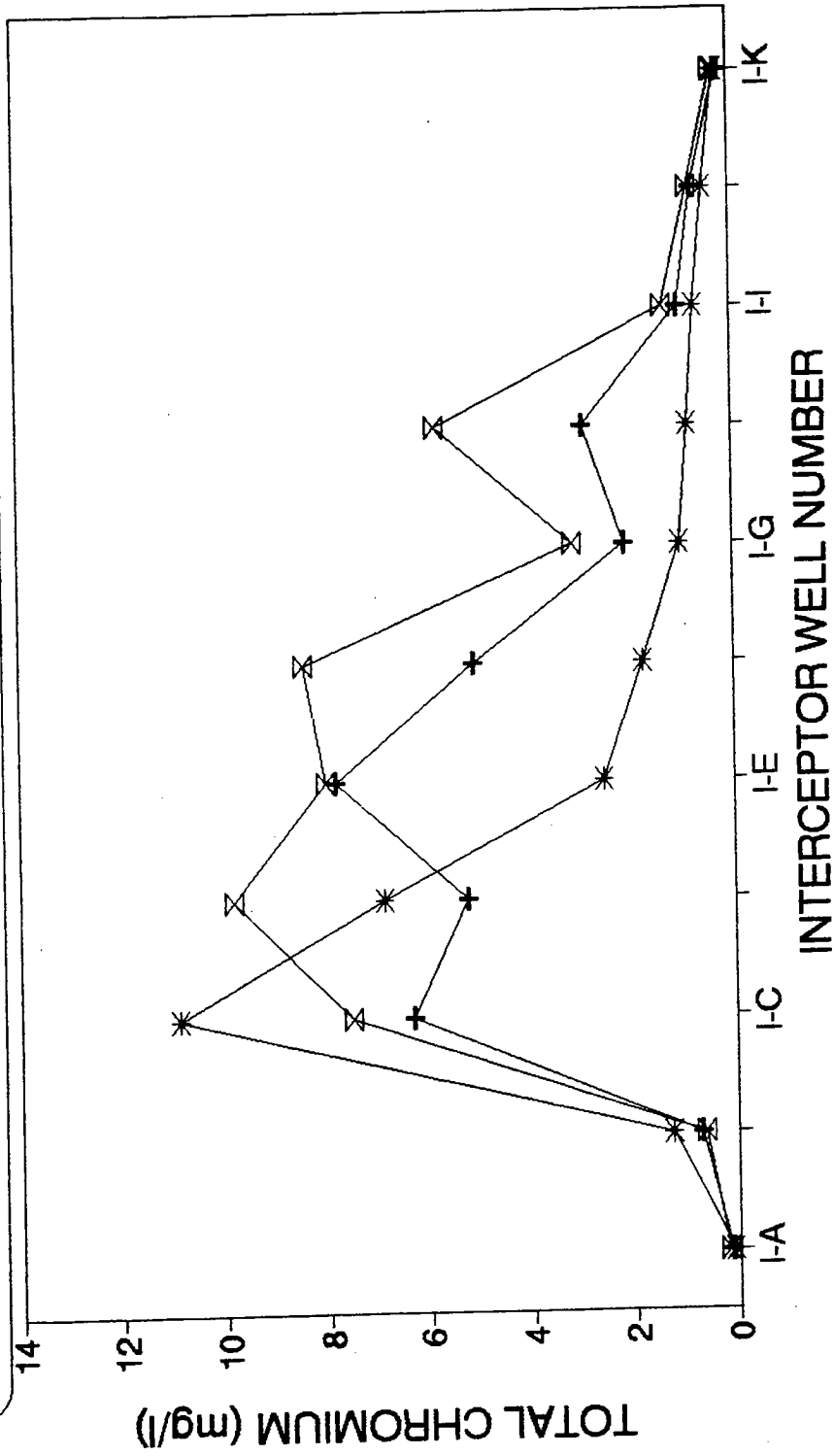


**FIGURE D-5**  
**APPENDIX J WELL CHROMIUM CONCENTRATION**



— WELL M-23

# FIGURE D-6 INTERCEPTOR LINE CHROMIUM CONCENTRATION



\*— JAN 1988 —+— DEC 1988 —x— SEP 1990