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REPORTS

DEC DATE:

1998

STATUS REPORT

AMOCO PIPE LINE
COMPANY
ARTESIA, NEW MEXICO
STATION

December 28, 1998

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APPENDICES

STATUS REPORT
Amoco Pipe Line Company Station
Artesia, New Mexico

1. INTRODUCTION

The objective of this Status Report is to provide the State of New Mexico Energy, Minerals & Natural Resources Department, Oil Conservation Division (OCD) an update on the current status of the remediation activities at the subject site. Activities recently completed include removal of the water treatment equipment near the recovery wells, and relocation of the product storage tank to the Monitoring Well MW-2 location. In addition, plans to abandon selected monitoring wells and recovery wells are also discussed.

A release of free phase hydrocarbon (FPH) was discovered at an Amoco Pipe Line Company (APL) site located approximately 12 miles southeast of Artesia, New Mexico (Site). APL installed an interception trench and a groundwater separation/air stripper remediation system in November 1994 to control and remediate the FPH and dissolved hydrocarbon associated with the release. The system operated from that time until early 1997, when a request was made to and granted by the OCD to discontinue operation of the active remediation system due to lack of FPH and dissolved hydrocarbon in the monitoring wells in the vicinity of the remediation system at the site.

Quarterly reporting has been submitted to the OCD throughout operation of the remediation system. The most recent report submitted by is APL titled "Remediation System Operations Third Annual Report" and dated June 30, 1998. That annual report describes activities that had occurred at the site from June 1997 through June 1998.

The report summarized current activities ongoing at the site, including:

- Monitoring of water levels in wells;
- Sampling Monitoring Wells MW-11 and MW-14 for BTEX; and
- Monitoring for FPH in wells.

The historic fluid thickness monitoring data and groundwater sampling data taken from the Clayton Environmental Consultants June 30, 1998 report are included in Appendix A of this report. Site figures showing historic FPH thicknesses are also included in Appendix A.

During 1998, the New Mexico Land Commission expressed a concern related to soils in the area where the sprinkle irrigation system sprayed treated water from the air stripper (letter to APL from Mr. Mike Matush dated August 4, 1998, Appendix B). Mr. Matush stated that the site should be returned to a productive state following removal of the interception trench and treatment shed. He also requested that APL determine the extent of damage in the sprayed area by conducting soil testing. The sprinkle irrigation system,

which is no longer operational, was located adjacent to and west of the stripper building (see figures in Appendix A).

During October 1998, Mr. Sam Senn of BASCOR Environmental, Inc. (BEI) met at the site with Mr. Jack Ford and Mr. Mike Stubblefield of the OCD. The purpose of the meeting was to discuss the status of the site, including removal of the treatment system and additional action required at the site to return the soil near the former sprinkle irrigation system to its original condition.

2. INFORMATION FROM PREVIOUS REPORTS AND FROM THE OCTOBER 1998 SITE VISIT

Review of previous submitted reports, along with information collected during the inspection, yielded the following observations:

- The treatment shed and equipment in the shed have been out of service for some time and are in poor condition;
- There has been no free phase hydrocarbon in the recovery sumps since they were installed;
- Based on the quarterly monitoring, there is currently no free phase hydrocarbon migrating from the source of the release;
- The only wells with measurable FPH, based on recent measurements, are located in the immediate vicinity of the release area; and
- There has not been and detectable BTEX in downgradient wells MW-11 and MW-14 for the previous year.

The area identified by the New Mexico Commissioner of Public Lands was inspected and soil samples were collected during October 1998 to analyze potential contamination of the soils caused by irrigation with treated water from the air stripper operation.

Review of the area showed that an outcrop of gypsum was present within 4 to 6 inches below the ground surface. Topsoil was apparently stripped in order to create a runoff control berm and control runoff from the sprinkle irrigation operation. This soil stripping process exposed the gypsum outcrop, leaving very little to no remaining topsoil to support vegetation growth.

Soil samples were submitted to the SWAT laboratory at New Mexico State University in Las Cruces. The laboratory analyzed the samples for hydrocarbon compounds and properties associated with soils in this area of New Mexico (salinity, etc.). Results (included in Appendix C) of the analysis showed that there were no benzene, toluene, ethylbenzene, or xylene (BTEX) compounds, or semi-volatile compounds in the soil. The tests did indicate that there was a high content of selected elements (for example sulfate) in the soils, however it is not known whether those elements caused any impacts to the vegetation. It is most likely that the shallow gypsum outcrop in the affected area is the primary reason that vegetation is sparse.

During the October 1998 site visit, the recovery wells downgradient from the diversion berm were inspected. One of the recovery wells was dry, and the other two did not contain significant amounts of water. The diversion berm had native vegetation growth on its slopes and top.

3. SYSTEM DISMANTLING AND RESTORATION OF SITE TO NATURAL CONDITIONS

Removal of the treatment system was previously approved by the OCD in a letter dated October 6, 1998 (See Appendix B). The treatment system was dismantled during late-November and early-December 1998. All equipment, including air strippers, oil/water separators, and pumps and tanks, along with the building used to house the equipment and the underlying concrete pad, were removed from the treatment area at that time. The product storage tank was relocated to the tank battery area for storage of FPH removed from MW-2, as discussed in Section 4. All other equipment that was salvageable was transported offsite to the APL storage facility in Lovington, or otherwise properly disposed of.

Following removal of the equipment and building, the area in the vicinity of the remediation building, including the sprinkle irritation system, was restored to its natural condition. The suspected impacted soil area identified by the New Mexico Land Commission Office, which was determined to be a gypsum outcrop with minimal soil cover, was restored to its natural condition by removing clean soil from the area of the diversion berm and spreading it over the gypsum outcrop area. Following spreading, the soil area was regraded to allow natural drainage of surface water and to establish conditions that will be conducive for growth of native vegetation. Erosion control mounds were built into the restored soil area to prevent erosion during intense storm events until vegetation is established.

4. RECOMMENDATIONS FOR FUTURE MONITORING/REMEDIATION

APL recommended in the June 30, 1998 report the following:

- That groundwater monitoring continue for an additional year;
- That the treatment shed and associated facilities be removed; and
- That FPH recovery continues from Monitoring Well MW-2.

Additional review of the existing information, and information gathered during the October 1998 inspection with the OCD and from recent fluid level collection, have resulted in development of further recommendations for monitoring and remediation activities at the site.

Several of the monitoring wells at the site have never had measurable accumulations of FPH, and many have had little or no dissolved hydrocarbon concentrations. Fluid levels collected on December 5th, 1998 indicate that monitoring wells MW-2, MW-3, and MW-4 had accumulations of FPH (see Table I, which is derived from data collected by Clayton Barnhill on December 5th, 1998). The current monitoring and sampling program

require that fluid levels are monitored and dissolved hydrocarbon checked in the two wells MW-11 and MW-14. APL believes that the objective of the groundwater monitoring program can be met by conducting monitoring from a representative cross section of wells extending from the release area to the treatment area. Therefore, APL recommends selected monitoring wells be abandoned and excluded from the current monitoring program. The specific monitoring wells recommended for abandonment include:

- MW-1
- MW-5
- MW-6
- MW-7
- MW-9
- MW-10
- MW-13.

Even with these seven monitoring wells abandoned, there will still be seven monitoring wells (MW-2, MW-3, MW-4, MW-8, MW-11, MW-12, and MW-14) for continued monitoring of the site groundwater conditions. The remaining wells are strategically located at the site to allow continued groundwater monitoring. Data from these wells will continue to allow APL to adequately evaluate critical elements, such as groundwater levels, FPH presence and thickness, and groundwater dissolved hydrocarbon concentrations at the site. APL will schedule abandonment of the monitoring wells within 90 days of approval from the OCD.

In addition to the seven monitoring wells recommended for abandonment, APL also recommends that the three large-diameter recovery wells, located north of the interceptor trench and diversion berm, and the associated groundwater pumping equipment, be abandoned. As previously stated, those wells have little or no groundwater accumulations, and no FPH accumulations, within the well casings. Further, all equipment associated with the three recovery wells has been dismantled from the site. APL will schedule abandonment of the recovery wells within 90 days of approval from the OCD.

Recovery of FPH from monitoring well MW-2 has been implemented by hand bailing the FPH and placing it in a storage tank adjacent to the well. Records of the amount of FPH recovered are being compiled. APL recommends that this recovery program be continued monthly for one year. After one year, the data will be evaluated to determine if a more aggressive method of FPH recovery is warranted. Possible methods for more aggressive FPH recovery include installing hydrophilic skimmers along with low maintenance air or solar-powered pumping equipment. Another possible FPH removal system incorporates a self-adjusting pump that continues to pump FPH, even if water levels should change dramatically. Such a system would be practical only if there were ample quantities of recoverable FPH to justify the use and expense of that technology. FPH will be periodically removed from storage tanks for proper disposal.

APL will continue site activities outlined in the June 1998 annual report until response from the OCD is received relating to this report. Abandonment of the specified monitoring wells, and monthly recovery of FPH from MW-2 will commence at that time.

TABLE

TABLE 1. Fluid Level Measurements
Collected 12/5/98

Well No.	Depth to FPH, ft.	Depth to Water, ft.	FPH Thickness, ft.
MW-1	--[1]	17.94	--
MW-2	24.90	26.70	1.8
MW-3	16.40	16.50	0.10
MW-4	29.52	29.70	0.18
MW-5	--	18.94	--
MW-6	--	15.95	--
MW-7	--	35.24	--
MW-8	--	15.30	--
MW-9	--	23.18	--
MW-10	--	19.69	--
MW-11	--	19.47	--
MW-12	--	16.83	--
MW-13	--	21.60	--
MW-14	--	18.15	--

1 No measurable FPH present

APPENDICES

APPENDIX A

Fluid Thickness Data From Clayton Environmental Consultant's June 1998 Report

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TABLE 2
Monitoring Well Water / Product Levels

Amoco Pipeline Company / Artesia, New Mexico

Well Identification	Date	Depth To Product (feet)	Depth To Water (feet)	Product Level Thickness (feet)	
MW-1	05/21/93		20.73	0.21	
	11/17/94	17.54	17.56	0.02	
	02/09/95	18.02	18.05	0.03	
	06/16/95	19.15	19.21	0.06	
	10/02/95	SKIM	16.48	SKIM	
	11/26/95	15.85	15.87	0.02	(1)
	04/16-17/96	14.32	14.33	0.01	
	07/06/96	15.55	15.57	0.02	
	09/30/96	11.70	11.75	0.05	
	01/10/97	12.79	12.90	0.11	
	04/02/97	13.60	13.62	0.02	
	7/10/97	14.78	14.79	0.01	
	10/17/97	14.62	14.63	0.01	
	1/18/98	NONE	13.74	NONE	
	4/18/98	13.75	13.76	0.01	
MW-2	05/21/93		27.56	1.75	
	11/17/94	23.28	26.67	3.39	
	02/09/95	23.98	26.50	2.52	
	06/16/95	25.63	26.45	0.82	
	10/02/95	22.01	26.18	4.17	
	11/26/95	21.23	26.17	4.94	(1)
	04/16-17/96	20.58	22.46	1.88	
	07/06/96	21.86	25.18	3.32	
	09/30/96	19.17	20.94	1.77	
	01/10/97	20.20	22.98	2.78	
	04/02/97	21.00	24.04	3.04	
	7/10/97	22.41	23.50	1.09	(1)
	10/17/97	21.92	26.18	4.26	
	1/18/98	20.03	24.00	3.97	
	4/18/98	21.04	25.31	4.27	
MW-3	05/21/93		17.81	1.36	
	11/17/94	13.07	13.65	0.58	
	02/09/95	13.75	14.32	0.57	
	06/16/95	15.20	15.84	0.64	
	10/02/95	10.69	11.43	0.74	
	11/26/95	9.69	10.41	0.72	(1)
	04/16-17/96	9.58	9.63	0.05	
	07/06/96	11.70	11.80	0.10	
	09/30/96	8.71	8.75	0.04	
	01/10/97	10.33	10.40	0.07	
	04/02/97	11.36	11.42	0.06	
	7/10/97	13.02	13.10	0.08	
	10/17/97	13.22	13.24	0.02	
	1/18/98	10.68	10.78	0.10	
	4/18/98	11.47	11.55	0.08	

TABLE 2
Monitoring Well Water / Product Levels

Amoco Pipeline Company / Artesia, New Mexico

Well Identification	Date	Depth To Product (feet)	Depth To Water (feet)	Product Level Thickness (feet)
MW-4	11/17/94	NONE	28.28	NONE
	02/09/95	NONE	28.51	NONE
	06/16/95	NONE	29.58	NONE
	10/02/95	NONE	24.42	NONE
	11/26/95	NONE	22.61	NONE
	04/16-17/96	NONE	20.63	NONE
	07/06/96	NONE	26.44	NONE
	09/30/96	NONE	21.88	NONE
	01/10/97	NONE	25.24	NONE
	04/02/97	NONE	25.49	NONE
	4/18/98	NONE	25.02	NONE
MW-5	11/17/94	16.22	24.19	7.97
	02/09/95	16.84	24.85	8.01 (1)
	06/16/95	19.44	21.14	1.70
	10/02/95	16.19	17.85	1.66
	11/26/95	17.58	19.31	1.73 (1)
	04/16-17/96	17.04	17.25	0.21
	07/06/96	16.20	16.36	0.16
	09/30/96	11.17	11.38	0.21
	01/10/97	13.45	13.60	0.15
	04/02/97	14.19	14.35	0.16
	7/10/97	16.22	16.25	0.03
	10/17/97	13.37	13.39	0.02
	1/18/98	13.57	13.58	0.01
	4/18/98	14.04	14.05	0.01
MW-6	11/17/94	TRACE	14.53	TRACE
	02/09/95	NONE	15.02	NONE
	06/16/95	16.24	16.27	0.03
	10/02/95	NONE	13.55	NONE
	11/26/95	NONE	14.84	NONE
	04/16-17/96	NONE	13.80	NONE
	07/06/96	NONE	14.55	NONE
	09/30/96	NONE	9.62	NONE
	01/10/97	NONE	12.26	NONE
	04/02/97	NONE	12.03	NONE
	4/18/98	NONE	12.14	NONE

TABLE 2
Monitoring Well Water / Product Levels

Amoco Pipeline Company / Artesia, New Mexico

Well Identification	Date	Depth To Product (feet)	Depth To Water (feet)	Product Level Thickness (feet)
MW-7	11/17/94	NONE	34.33	NONE
	02/09/95	NONE	34.67	NONE
	06/16/95	NONE	35.61	NONE
	10/02/95	NONE	33.79	NONE
	11/26/95	NONE	33.2	NONE
	04/16-17/96	NONE	30.95	NONE
	07/06/96	NONE	33.36	NONE
	09/30/96	NONE	29.15	NONE
	01/10/97	NONE	30.72	NONE
	04/02/97	NONE	31.85	NONE
	4/18/98	NONE	31.94	NONE
MW-8	11/17/94	13.69	14.95	1.26
	02/09/95	14.46	15.02	0.56
	06/16/95	15.50	16.41	0.91
	10/02/95	13.03	13.45	0.42
	11/26/95	14.16	14.71	0.55 (1)
	04/16-17/96	13.66	13.70	0.04
	07/05/96	13.05	13.07	0.02 (1)
	09/30/96	8.04	8.07	0.03
	01/10/97	9.89	9.90	0.01
	04/02/97	10.58	10.60	0.02
	7/10/97	NONE	12.59	NONE
	10/17/97	NONE	10.20	NONE
	1/18/98	NONE	10.08	NONE
	4/18/98	NONE	10.52	NONE
MW-9	11/17/94	23.07	23.10	0.03
	02/09/95	TRACE	23.41	TRACE
	06/16/95	TRACE	24.65	TRACE
	10/02/95	SKIM	20.73	SKIM
	11/26/95	SKIM	19.52	SKIM
	04/16-17/96	17.53	17.54	0.01
	07/06/96	21.20	21.23	0.03
	09/30/96	16.00	16.02	0.02
	01/10/97	17.55	17.57	0.02
	04/02/97	18.91	18.92	0.01
	7/10/97	20.39	20.41	0.02
	10/17/97	20.13	20.15	0.02
	1/18/98	18.39	18.40	0.01
	4/18/98	18.80	18.81	0.01

TABLE 2
Monitoring Well Water / Product Levels

Amoco Pipeline Company / Artesia, New Mexico

Well Identification	Date	Depth To Product (feet)	Depth To Water (feet)	Product Level Thickness (feet)
MW-10	11/17/94	19.02	21.24	2.22
	02/09/95	19.74	22.36	2.62
	06/16/95	20.97	23.30	2.33
	10/02/95	18.49	19.55	1.06
	11/25/95	20.13	22.03	1.90 (1)
	04/16-17/96	20.26	20.88	0.62
	07/05/96	19.86	20.03	0.17 (1)
	09/30/96	NONE	15.62	NONE
	01/10/97	19.00	19.05	0.05
	04/02/97	19.35	19.40	0.05
	7/10/97	20.37	20.42	0.05
	10/17/97	NONE	16.58	NONE
	1/18/98	NONE	17.82	NONE
	4/18/98	NONE	18.27	NONE
MW-11	11/17/94	NONE	19.34	NONE
	02/09/95	NONE	19.61	NONE
	06/16/95	NONE	20.08	NONE
	10/02/95	NONE	19.74	NONE
	11/25/95	NONE	19.94	NONE
	04/16-17/96	NONE	19.68	NONE
	07/06/96	NONE	19.75	NONE
	09/30/96	NONE	18.65	NONE
	01/10/97	NONE	19.92	NONE
	04/02/97	NONE	14.50	NONE
	1/18/98	NONE	18.91	NONE
	4/18/98	NONE	19.07	NONE
MW-12	11/17/94	NONE	16.47	NONE
	02/09/95	NONE	16.78	NONE
	06/16/95	NONE	17.28	NONE
	10/02/95	NONE	16.03	NONE
	11/25/95	NONE	16.63	NONE
	04/16-17/96	NONE	16.55	NONE
	07/06/96	NONE	16.45	NONE
	09/30/96	NONE	13.81	NONE
	01/10/97	NONE	18.92	NONE
	04/02/97	NONE	15.20	NONE
	4/18/98	NONE	14.91	NONE

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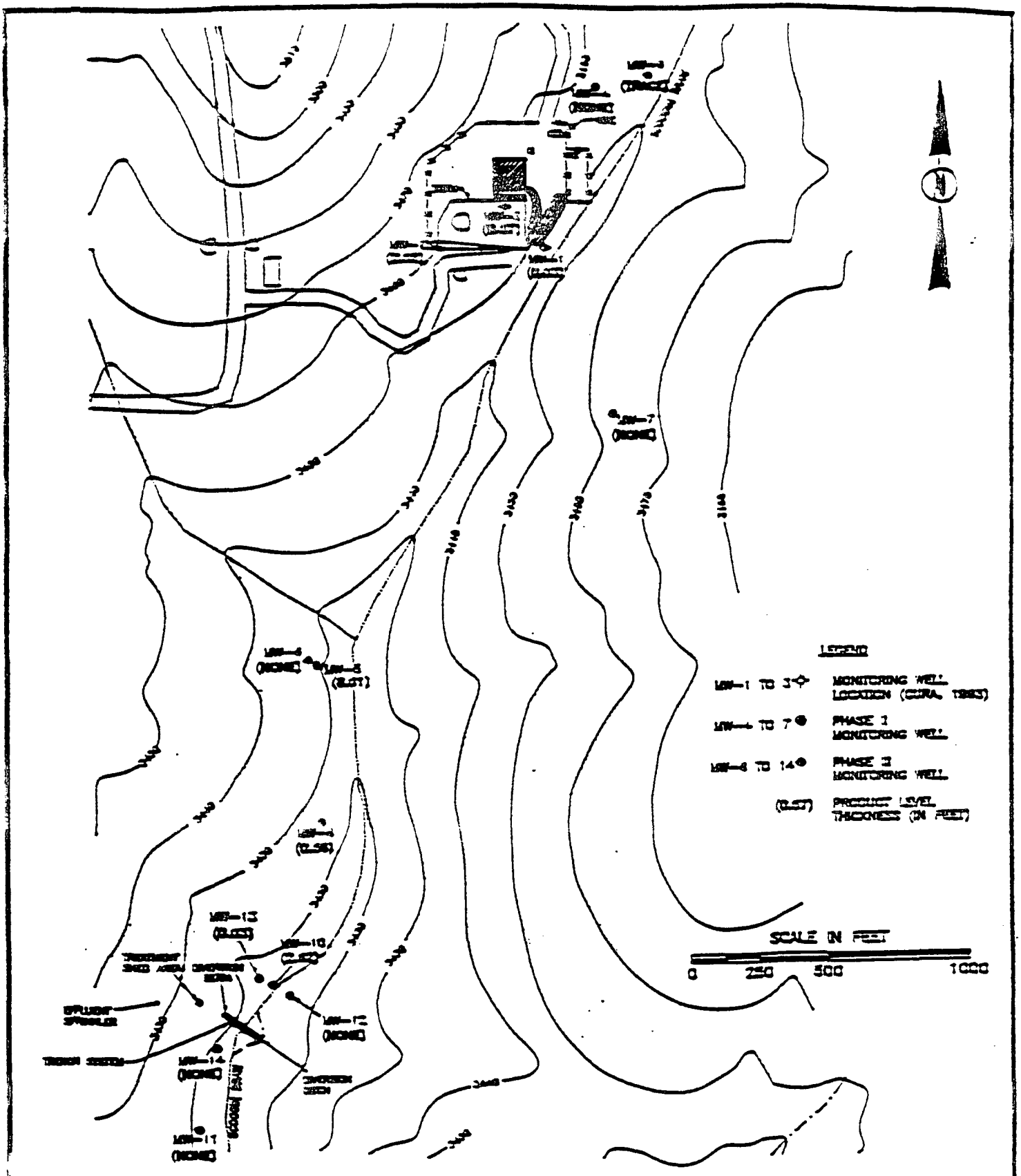
TABLE 2
Monitoring Well Water / Product Levels

Amoco Pipeline Company / Artesia, New Mexico

Well Identification	Date	Depth To Product (feet)	Depth To Water (feet)	Product Level Thickness (feet)
MW-13	11/17/94	20.41	20.49	0.08
	02/09/95	20.84	20.87	0.03
	06/16/95	21.35	21.40	0.05
	10/02/95	19.35	19.44	0.09
	11/25/95	21.53	21.58	0.05 (1)
	04/16-17/96	21.82	21.90	0.08
	07/05/96	21.00	21.05	0.05 (1)
	09/30/96	16.40	16.42	0.02
	01/10/97	19.17	19.19	0.02
	04/02/97	18.50	18.52	0.02
	7/10/97	NONE	19.00	NONE
	10/17/97	NONE	18.03	NONE
	1/18/98	NONE	19.11	NONE
	4/18/98	NONE	19.60	NONE
MW-14	11/17/94	NONE	18.11	NONE
	02/09/95	NONE	18.45	NONE
	06/16/95	NONE	18.93	NONE
	10/02/95	NONE	18.63	NONE
	11/26/95	NONE	18.83	NONE
	04/16-17/96	NONE	18.55	NONE
	07/06/96	NONE	18.58	NONE
	09/30/96	NONE	17.63	NONE
	01/10/97	NONE	17.42	NONE
	04/02/97	NONE	17.82	NONE
	1/18/98	NONE	17.61	NONE
	4/18/98	NONE	17.71	NONE

NOTES:

(1) Well bailed after level measurements taken.



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DATE	5-3-95
SCALE	AS SHOWN
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PRJ NO.	2775.020

FREE PRODUCT
THICKNESS MAP
FEBRUARY 9, 1995

AMOCO PIPELINE COMPANY
ARTESIA, NEW MEXICO

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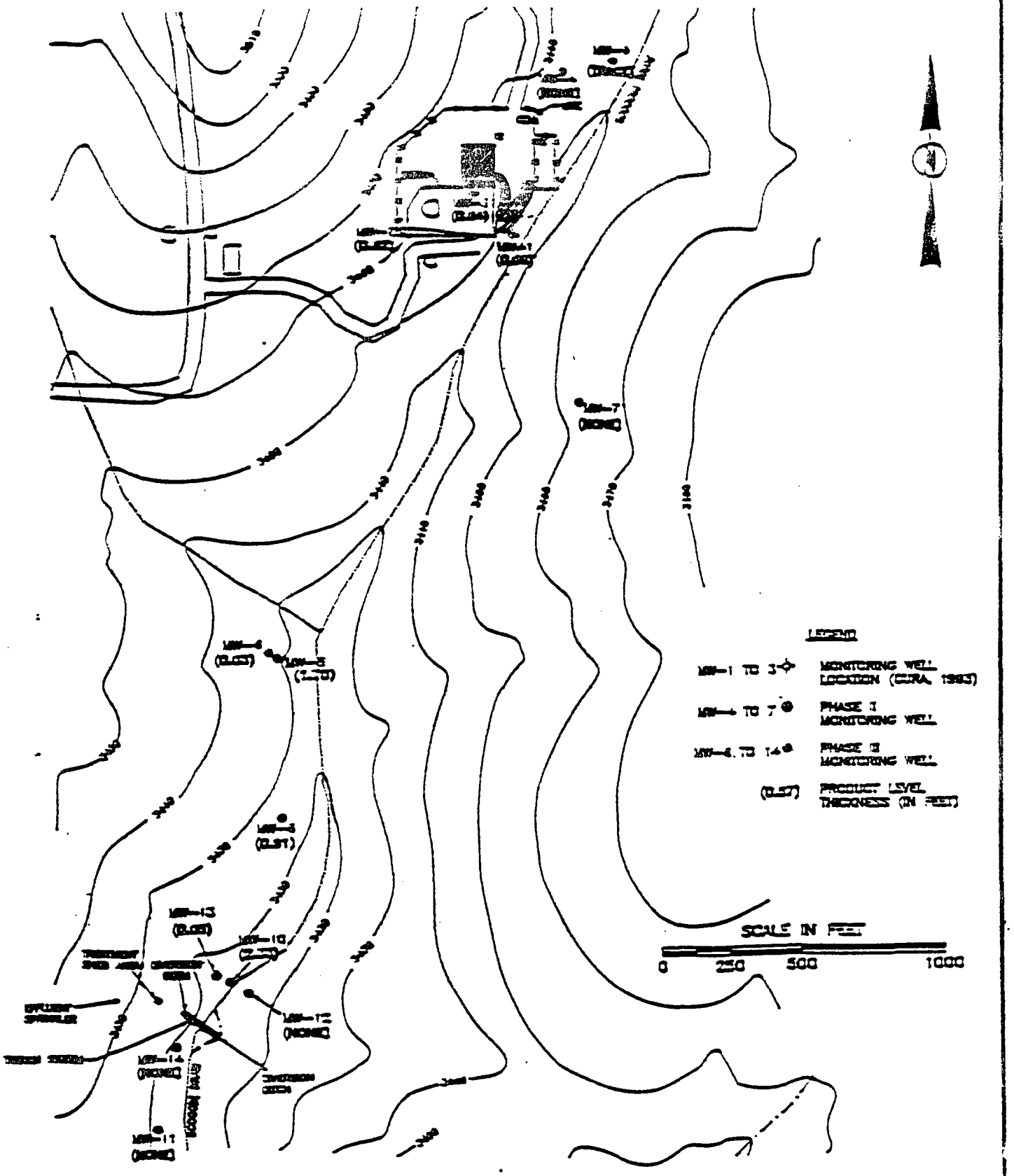
ENVIRONMENTAL CONSULTANTS

FIGURE 1



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PRJ NO.	27731.00-12

FREE PRODUCT
THICKNESS MAP
JUNE 16, 1995

AMOCO PIPELINE COMPANY
ARTESIA, NEW MEXICO

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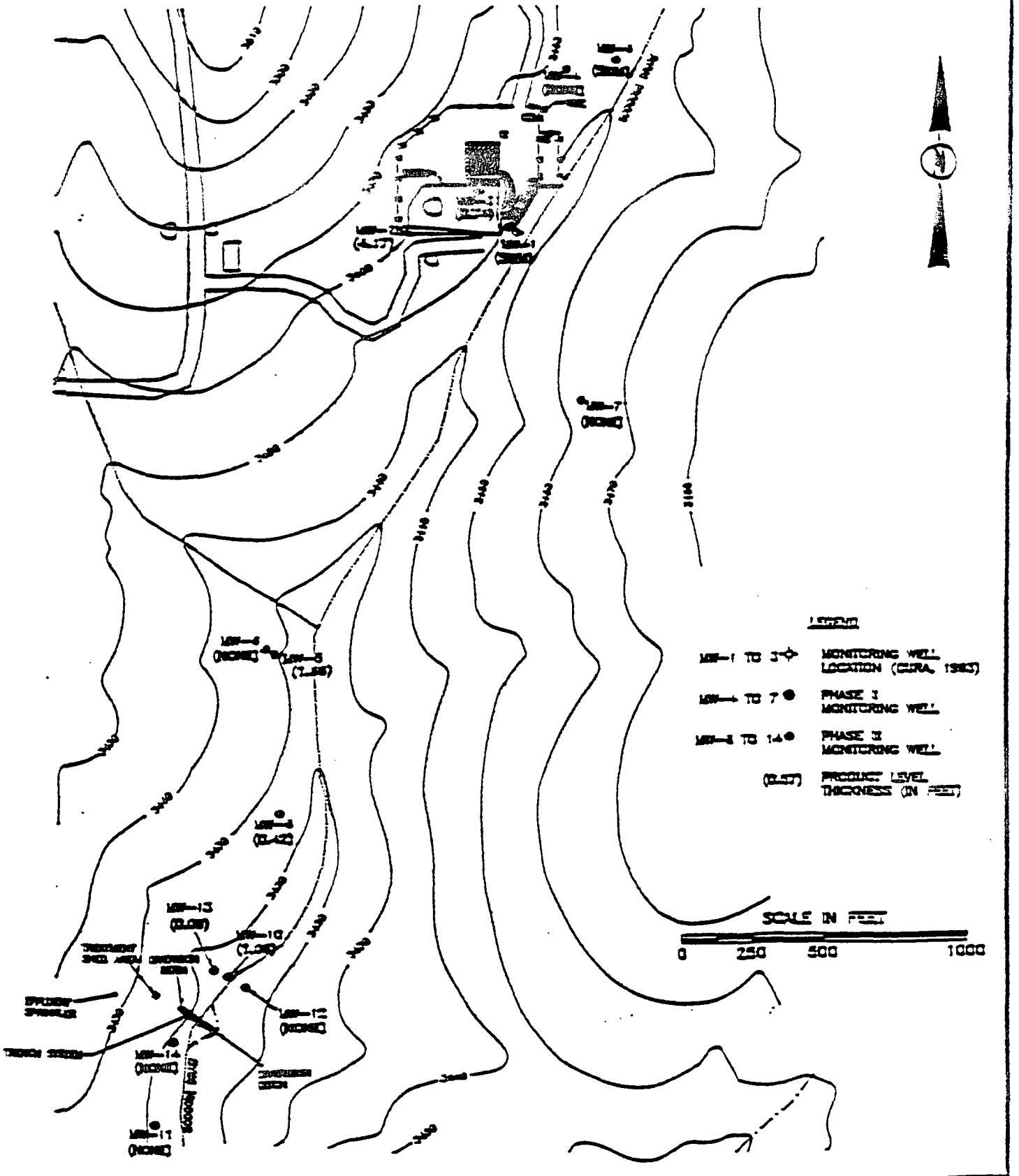
ENVIRONMENTAL CONSULTANTS

FIGURE 2



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FREE PRODUCT
THICKNESS MAP
OCTOBER 2, 1995

AMOCO PIPELINE COMPANY
ARTESIA, NEW MEXICO

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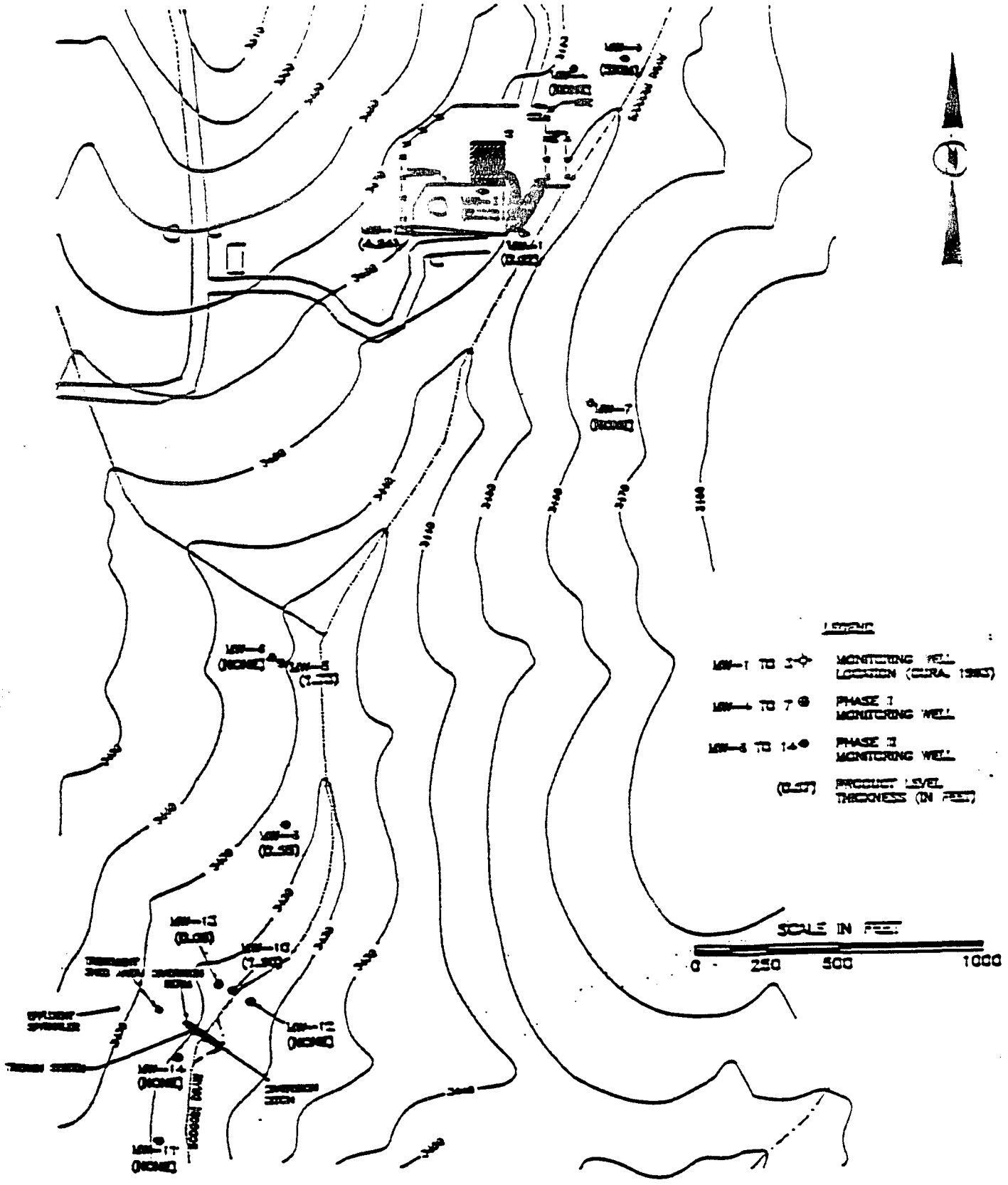
FIGURE 3



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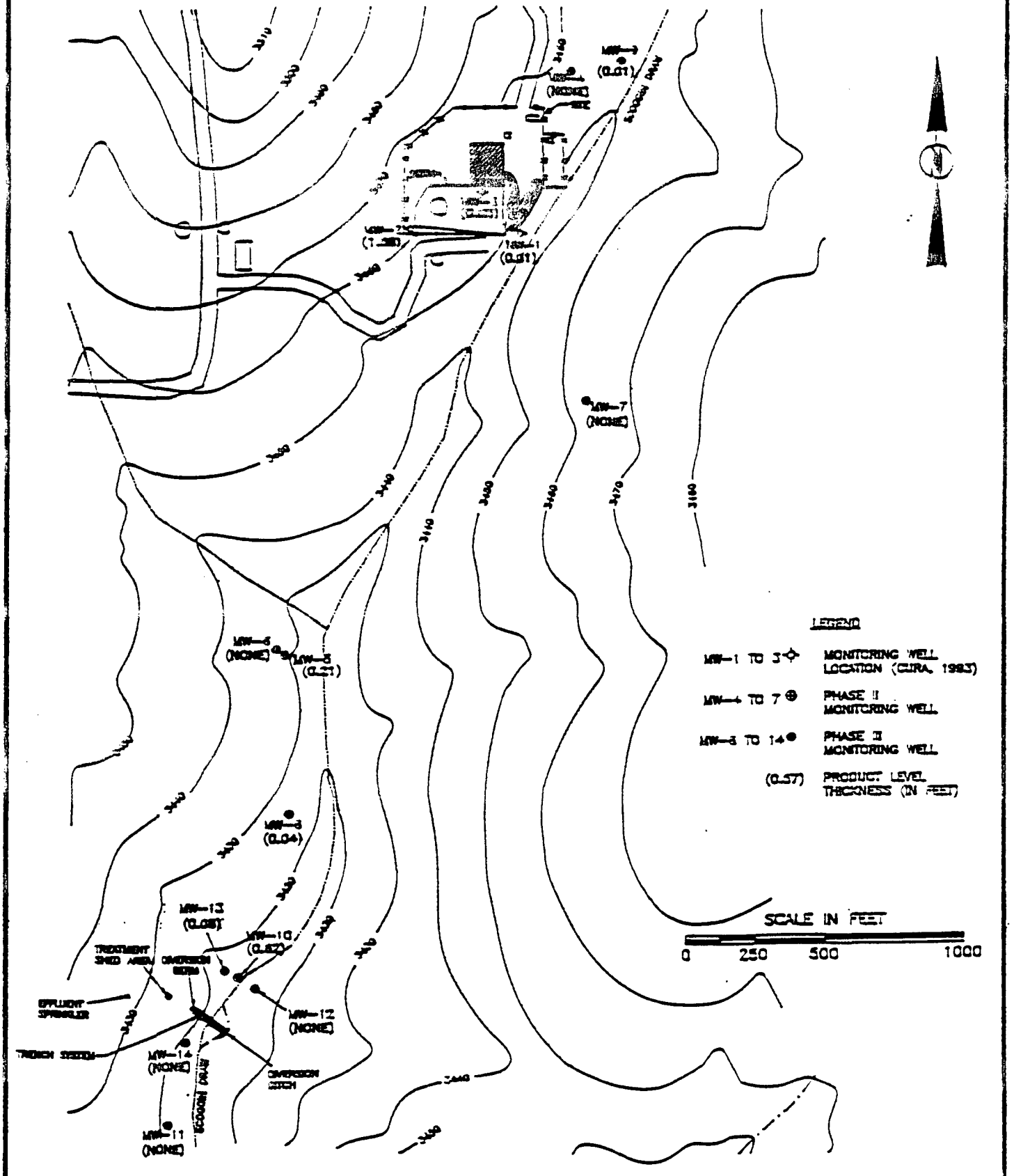
SCALE	AS SHOWN
CAD NO.	27752.00-02
PRJ NO.	27752020

FREE PRODUCT THICKNESS MAP
NOVEMBER 25-28, 1995

AMOCO PIPELINE COMPANY
ARTESIA, NEW MEXICO

Clayton ENVIRONMENTAL CONSULTANTS

FIGURE 4



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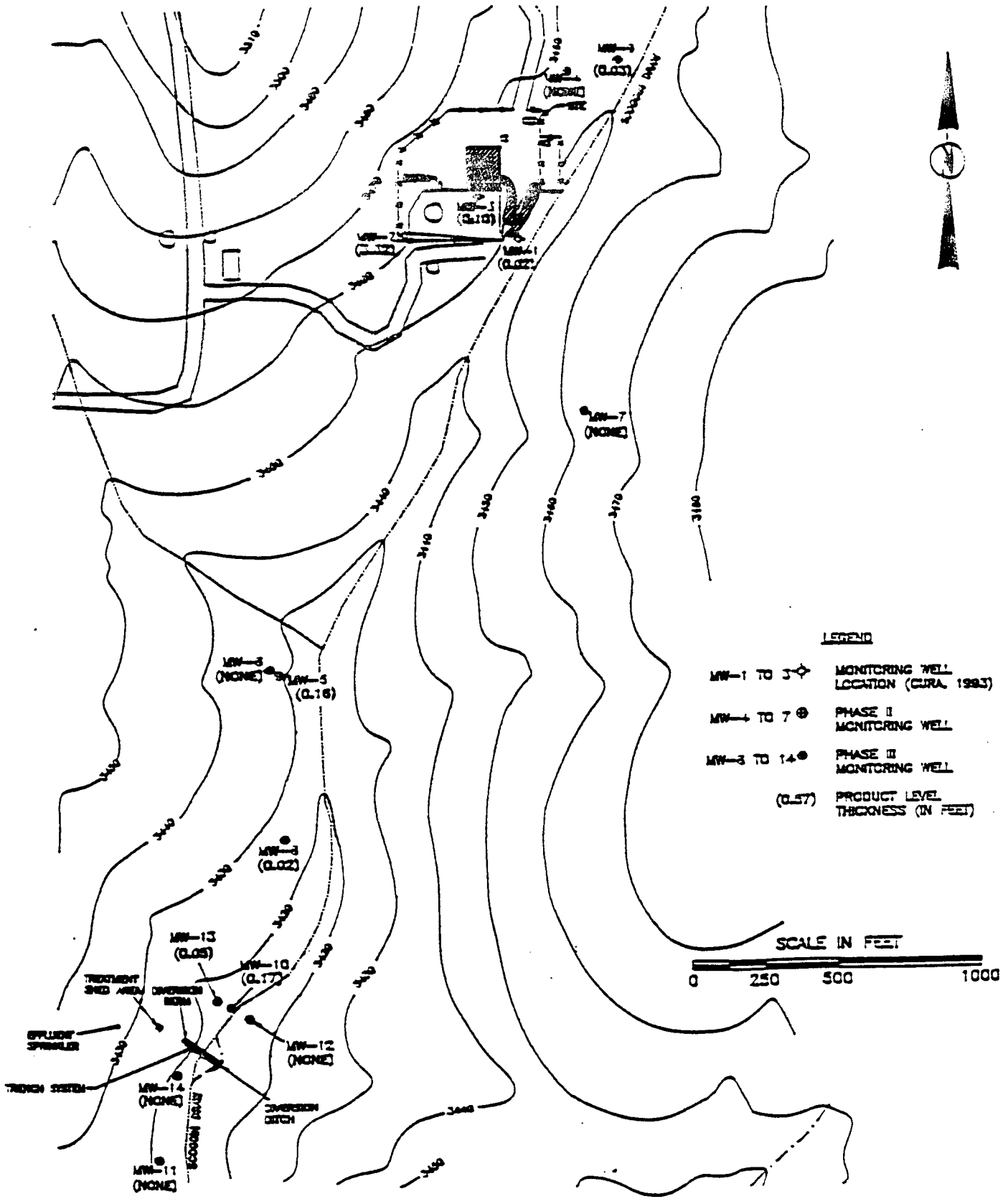
PROJ NO.	[illegible]

FREE PRODUCT
THICKNESS MAP
APRIL 16-17, 1996

AMOCO PIPELINE COMPANY
ARTESIA, NEW MEXICO

Clayton
ENVIRONMENTAL CONSULTANTS

FIGURE 5



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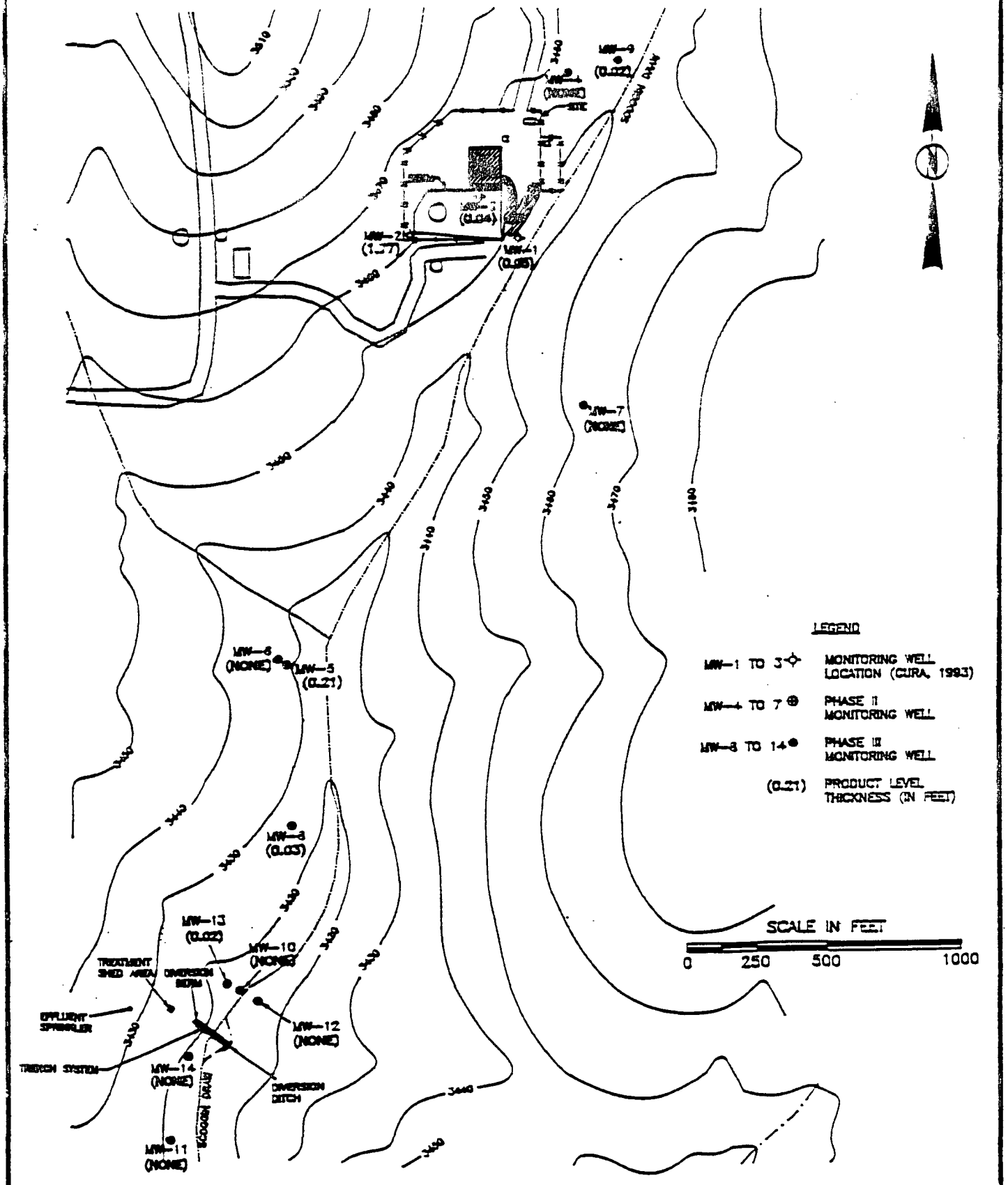
FREE PRODUCT THICKNESS MAP
JULY 2, 1996

AMOCO PIPELINE COMPANY
ARTESIA, NEW MEXICO

Clayton
ENVIRONMENTAL CONSULTANTS

FIGURE 6



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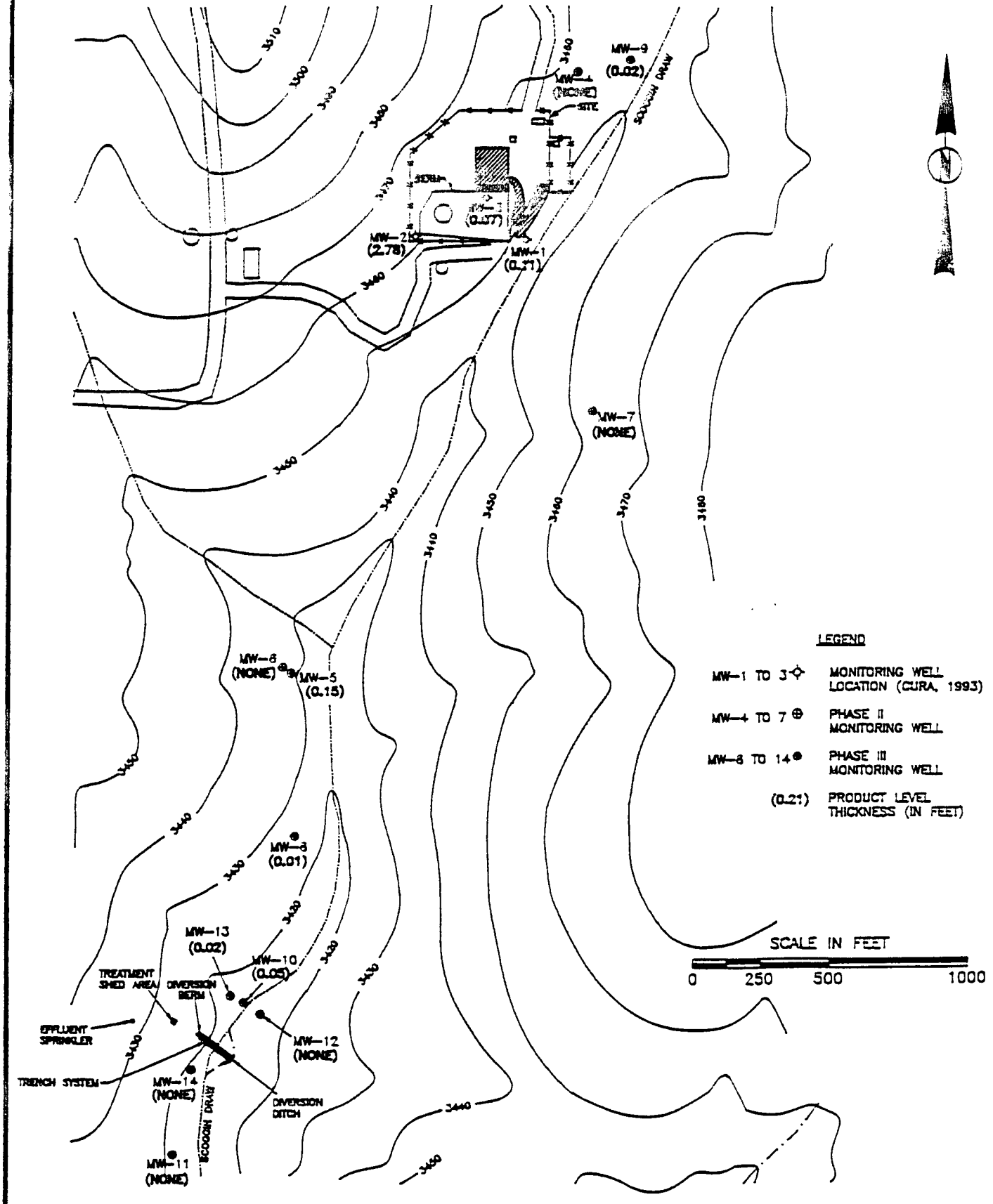
PRJ NO.	2775102J

FREE PRODUCT
THICKNESS MAP
SEPTEMBER 30, 1996

AMOCO PIPELINE COMPANY
ARTESIA, NEW MEXICO

Clayton
ENVIRONMENTAL CONSULTANTS

FIGURE 7



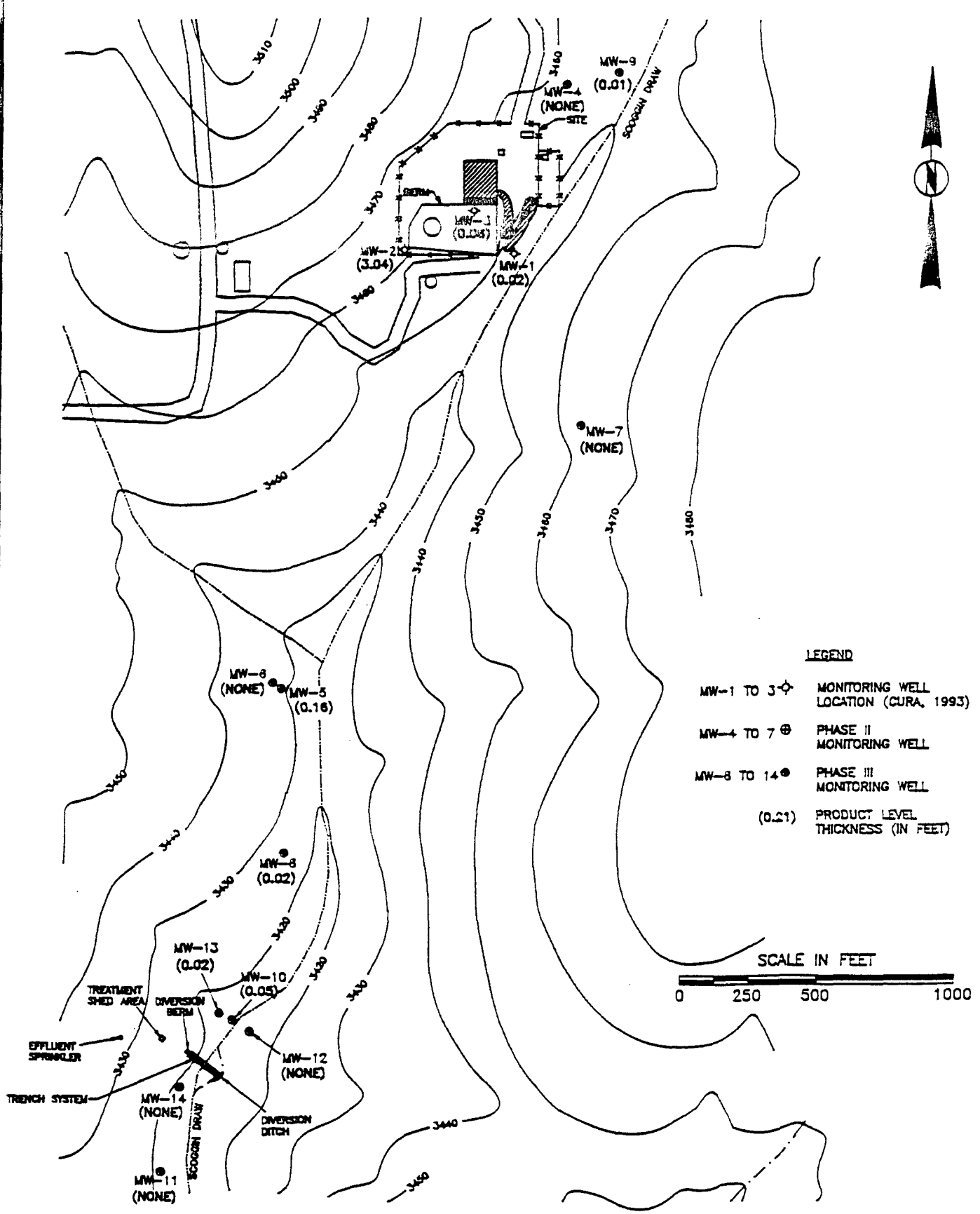
CHECK BY	HMM
DRAWN BY	BCP
DATE	1-23-97
SCALE	AS SHOWN
CAD NO.	2775.00-02
PRJ NO.	2775102K

FREE PRODUCT
THICKNESS MAP
JANUARY 10, 1997

AMOCO PIPELINE COMPANY
ARTESIA, NEW MEXICO

Clayton
ENVIRONMENTAL CONSULTANTS

FIGURE 8



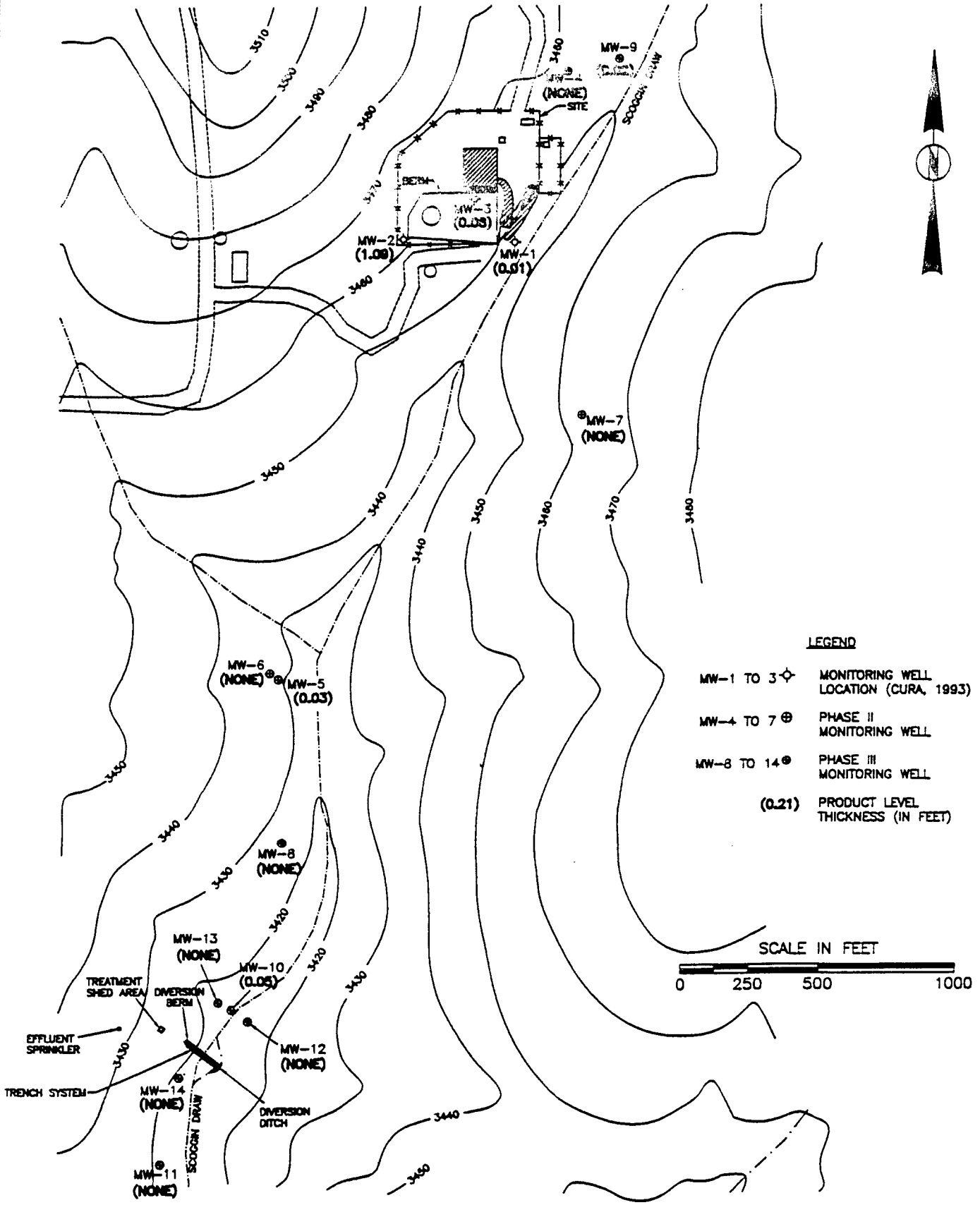
CHECK BY	HMM
DRAWN BY	BCP
DATE	4-16-97
SCALE	AS SHOWN
CAD NO.	2775.00-02
PRJ NO.	2775102L

FREE PRODUCT
THICKNESS MAP
APRIL 2, 1997

AMOCO PIPELINE COMPANY
ARTESIA, NEW MEXICO

Clayton
ENVIRONMENTAL CONSULTANTS

FIGURE 9



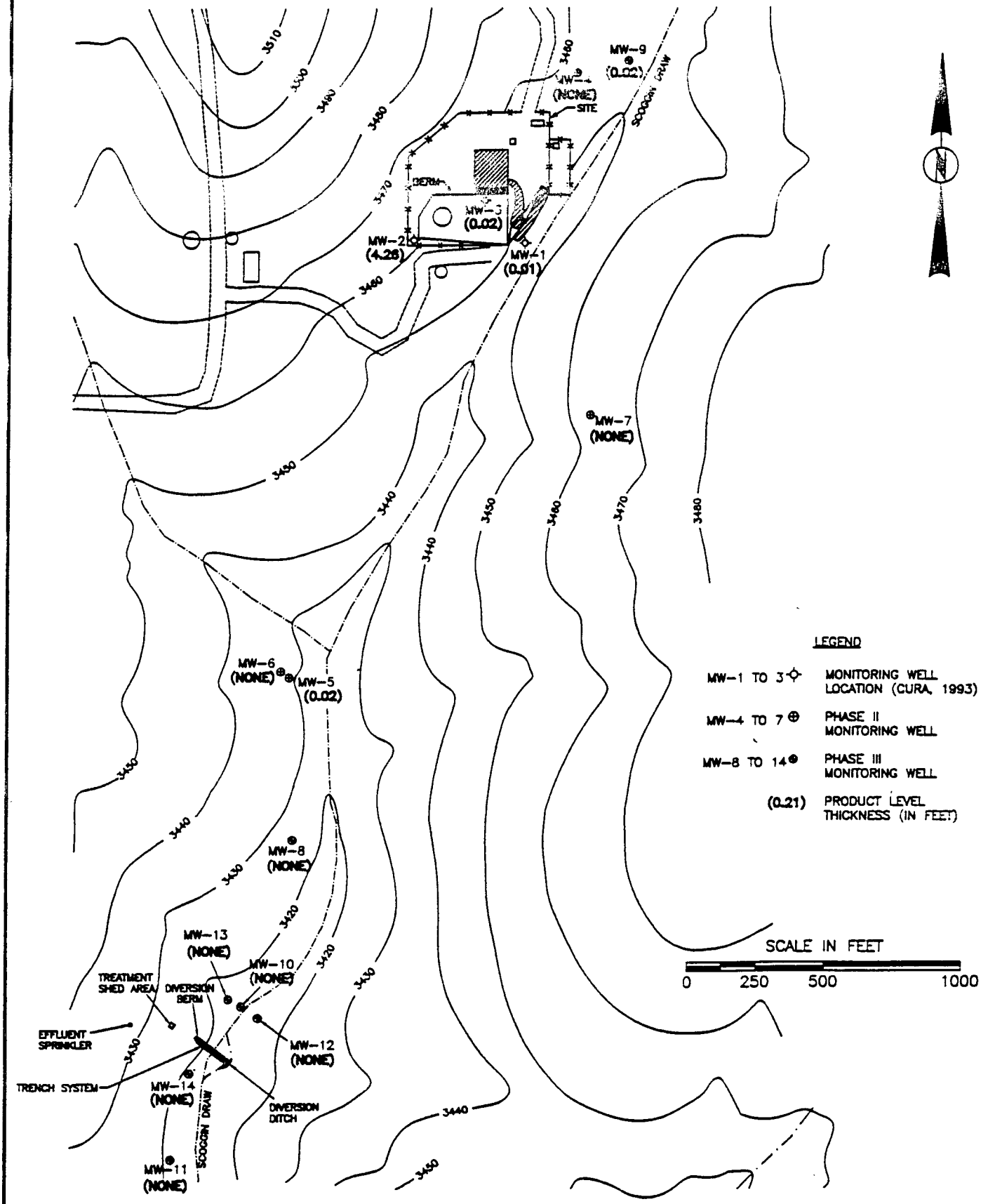
CHECK BY	HMM
DRAWN BY	BCP
DATE	5-11-98
SCALE	AS SHOWN
CAD NO.	2775.00-02
PRJ NO.	2775102M

FREE PRODUCT
THICKNESS MAP
JULY 10, 1997

AMOCO PIPELINE COMPANY
ARTESIA, NEW MEXICO

Clayton
ENVIRONMENTAL CONSULTANTS

FIGURE
10



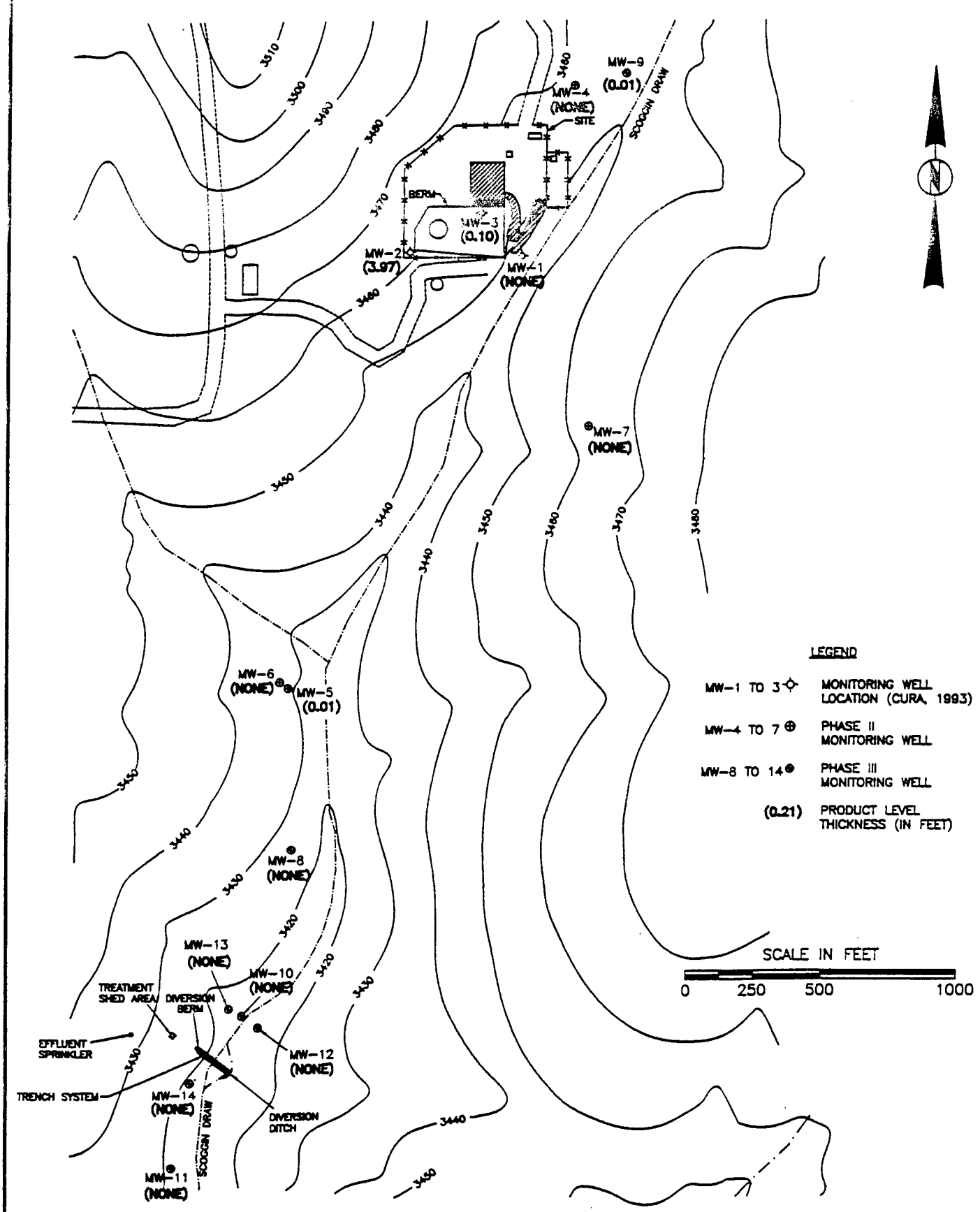
CHECK BY	HMM
DRAWN BY	BCP
DATE	5-11-98
SCALE	AS SHOWN
CAD NO.	2775.00-02
PRJ NO.	2775102N

FREE PRODUCT
THICKNESS MAP
OCTOBER 17, 1997

AMOCO PIPELINE COMPANY
ARTESIA, NEW MEXICO

Clayton
ENVIRONMENTAL
CONSULTANTS

FIGURE



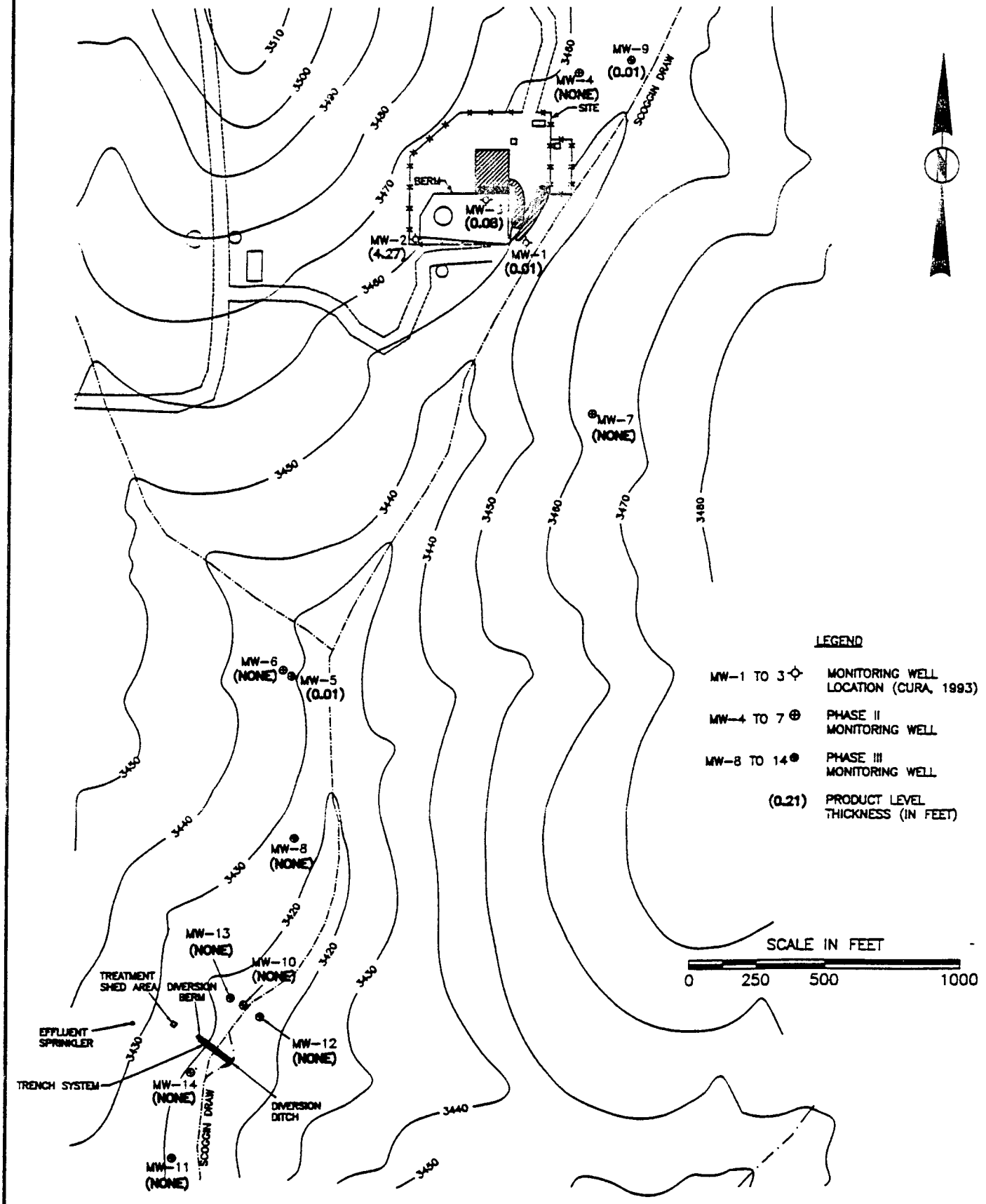
CHECK BY	HMM
DRAWN BY	BCP
DATE	5-11-98
SCALE	AS SHOWN
CAD NO.	2775.00-02
PRJ NO.	2775102o

FREE PRODUCT
THICKNESS MAP
JANUARY 18, 1998

AMOCO PIPELINE COMPANY
ARTESIA, NEW MEXICO

Clayton
ENVIRONMENTAL CONSULTANTS

FIGURE 12



CHECK BY	HMM
DRAWN BY	BCP
DATE	5-11-98
SCALE	AS SHOWN
CAD NO.	2775.00-02
PRJ NO.	2775102P

FREE PRODUCT
THICKNESS MAP
APRIL 18, 1998

AMOCO PIPELINE COMPANY
ARTESIA, NEW MEXICO

Clayton
ENVIRONMENTAL
CONSULTANTS

FIGURE
13

APPENDIX B

New Mexico Land Commission Letter of August 4, 1998 and OCD Letter of October 6, 1998

COMMERCIAL RESOURCES
(505)-827-5724

SURFACE RESOURCES
(505)-827-5793

MINERAL RESOURCES
(505)-827-5744

ROYALTY
(505)-827-5772

State of New Mexico
Commissioner of Public Lands
Ray Powell, M.S., D.V.M.
310 Old Santa Fe Trail, P. O. Box 1148
Santa Fe, New Mexico 87504-1148
Phone (505)-827-5760, Fax (505)-827-5766

PUBLIC AFFAIRS
(505)-827-5765

ADMINISTRATIVE MGMT.
(505)-827-5700

LEGAL
(505)-827-5713

PLANNING
(505)-827-5752

August 4, 1998

Amoco Pipeline Company
28100 Torch Parkway, Suite 800
Warrenville, IL 60555-3938

Attn: Doug Earney

Re: Water Development Easement No. WD-72 (Renewal)

Dear Mr. Earney:

You have recently received the approved copies for the captioned water development easement, however please be advised of the following condition:

Recently established water development easement, WD-72. It has come to my attention, from our field representative, that the immediate area (approximately 3000 square feet) south of the treatment shed has received saltwater and possible petroleum byproduct damage from the air stripping operation via water elimination system. It is in our best interest to return the site to a productive state following the removal of the interception trench and treatment shed. The Land Office would appreciate Amoco Pipeline Company's cooperation in determination by soil test the area extent of damage. This information would enable the Land Office to develop subsequent treatment protocols with Amoco and allowing for successful revegatation of the impacted site.

Please call me at your convenience. My phone number is (505) 827-5096.

Sincerely,

Mike Matush

→ [redacted] Rust/Earth Tech

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

October 6, 1998

CERTIFIED MAIL
RETURN RECEIPT NO. Z-274-520-564

Mr. Larry Malnor
Amoco Corporation
2810 Torch parkway, Suite 800
Warrenville, Illinois 60555-3938

RE: GROUND WATER REMEDIATION DISCHARGE PLAN GW-170
AMOCO ARTESIA PUMPING STATION
EDDY COUNTY, NEW MEXICO

Dear Mr. Malnor:

The New Mexico Oil Conservation Division has reviewed Amoco Corporation's (Amoco) June 30, 1998 "REMEDIATION SYSTEM OPERATIONS THIRD ANNUAL REPORT, AMOCO PIPELINE STATION, ARTESIA, NEW MEXICO" which was submitted on behalf of Amoco by their consultant Clayton Environmental Consultants. This document contains the results of Amoco's recent ground water remediation and monitoring activities. The document also contains a recommendation to modify the discharge plan by removing the oil-water separation and air stripper system from the site.

The above referenced ground water remediation discharge plan modification for discharge plan GW-170 for the Amoco Oil Company's Artesia Crude Pump Station **is approved with the following condition**.

1. Amoco will implement product recovery from monitor well MW-2 and will include the results of the recovery operations in subsequent annual reports.

The discharge plan (GW-170) was originally approved on January 12, 1995. The modification does not significantly alter the discharge streams, therefore, public notice was not issued.

The application for modification was submitted pursuant to Water Quality Control Commission (WQCC) Regulation 3107.C and is approved pursuant to WQCC Regulation 3109. Please note Section 3109.G., which provides for possible future amendment of the plan.

Please note that Section 3104 of the regulations requires that "when a plan has been approved, discharges must be consistent with the terms and conditions of the plan." Pursuant to Section 3107.C. you are required to notify the Director of any expansion, production increase, or process modification that would result in any change in the discharge of water quality or volume.

This discharge plan approval will expire on January 12, 2000 and you should submit an application for renewal in ample time before that date.

Please be advised that approval of this plan does not relieve Amoco of liability should their operation fail to adequately remediate contamination related to Amoco's activities or should Amoco's operations result in additional pollution of surface or ground waters or the environment. In addition, OCD approval does not relieve Amoco of responsibility for compliance with any other federal, state or local laws and regulations.

If you have any questions, please contact Bill Olson of my staff at (505) 827-7154.

Sincerely,

Roger C. Anderson
Bureau Chief

xc: Tim Gum, OCD Artesia District Office
Hank Mittelhauser, Clayton Environmental Consultants

APPENDIX C

Soil Analytical Results
SWAT Laboratory

Soil **W**ater and **A**ir **T**esting **Lab**
New Mexico State University
BOX 30003
Las Cruces, NM 88003
(505)646-4422

Report # 9811181106

Date: 11/18/98

ANALYTICAL REPORT

To: Sam Senn (847)577-1380
800 W. Central Rd.
Suite 104N
Mt. Prospect, IL 60056 Purchase Order #

Below are the results for submitted sample(s). (MDL=Method detection limit)

Sample I.D. AA97992

Sample Description: Soil Sample CSS-01
Sample collection date: 10/15/98 Sample collection time: 12:20
Submittal date: 10/16/98 Submittal time: 09:30
WSS# Request ID No. Collector: SAM SENN
Sample Purpose: Sampling Information:

Element	Method	Result	Units	MDL	Date of Analysis	Analyst
Naphthalene	SW846 # 8310	Not detected	ug/Kg	25	11/16/98	SS
Acenaphthylene	SW846 # 8310	Not detected	ug/Kg	25	11/16/98	SS
Acenaphthene	SW846 # 8310	Not detected	ug/Kg	25	11/16/98	SS
Fluorene	SW846 # 8310	Not detected	ug/Kg	25	11/16/98	SS
Phenanthrene	SW846 # 8310	Not detected	ug/Kg	25	11/16/98	SS
Anthracene	SW846 # 8310	Not detected	ug/Kg	25	11/16/98	SS
Pyrene	SW846 # 8310	Not detected	ug/Kg	25	11/16/98	SS
Benzo (a) anthracene	SW846 # 8310	Not detected	ug/Kg	25	11/16/98	SS
Chrysene	SW846 # 8310	Not detected	ug/Kg	25	11/16/98	SS
Benzo (b) fluoranthene	SW846 # 8310	Not detected	ug/Kg	25	11/16/98	SS
Benzo (k) fluoranthene	SW846 # 8310	Not detected	ug/Kg	25	11/16/98	SS
Benzo (a) pyrene	SW846 # 8310	Not detected	ug/Kg	25	11/16/98	SS
Dibenzo (a,h) anthracene	SW846 # 8310	Not detected	ug/Kg	25	11/16/98	SS
Benzo (g,h,i) perylene	SW846 # 8310	Not detected	ug/Kg	25	11/16/98	SS
Indeno (1,2,3-cd) pyrene	SW846 # 8310	Not detected	ug/Kg	25	11/16/98	SS
Benzene	SW846 # 8021	Not detected	ug/Kg	25	10/28/98	MAC
Toluene	SW846 # 8021	Not detected	ug/Kg	25	10/28/98	MAC
Ethylbenzene	SW846 # 8021	Not detected	ug/Kg	25	10/28/98	MAC
m-,p-Xylenes	SW846 # 8021	Not detected	ug/Kg	25	10/28/98	MAC
o-Xylene	SW846 # 8021	Not detected	ug/Kg	25	10/28/98	MAC

Sample I.D. **AA97993**

Sample Description: Soil Sample BSS-03
Sample collection date: 10/15/98 Sample collection time: 12:30
Submittal date: 10/16/98 Submittal time: 09:30
WSS# Request ID No. Collector: SAM SENN
Sample Purpose: Sampling Information:

Element	Method	Result	Units	MDL	Date of Analysis	Analyst
Naphthalene	SW846 # 8310	Not detected	ug/Kg	25	11/16/98	SS
Acenaphthylene	SW846 # 8310	Not detected	ug/Kg	25	11/16/98	SS
Acenaphthene	SW846 # 8310	Not detected	ug/Kg	25	11/16/98	SS
Fluorene	SW846 # 8310	Not detected	ug/Kg	25	11/16/98	SS
Phenanthrene	SW846 # 8310	Not detected	ug/Kg	25	11/16/98	SS
Anthracene	SW846 # 8310	Not detected	ug/Kg	25	11/16/98	SS
Pyrene	SW846 # 8310	Not detected	ug/Kg	25	11/16/98	SS
Benzo (a) anthracene	SW846 # 8310	Not detected	ug/Kg	25	11/16/98	SS
Chrysene	SW846 # 8310	Not detected	ug/Kg	25	11/16/98	SS
Benzo (b) fluoranthene	SW846 # 8310	Not detected	ug/Kg	25	11/16/98	SS
Benzo (k) fluoranthene	SW846 # 8310	Not detected	ug/Kg	25	11/16/98	SS
Benzo (a) pyrene	SW846 # 8310	Not detected	ug/Kg	25	11/16/98	SS
Dibenzo (a,h) anthracene	SW846 # 8310	Not detected	ug/Kg	25	11/16/98	SS
Benzo (g,h,i) perylene	SW846 # 8310	Not detected	ug/Kg	25	11/16/98	SS
Indeno (1,2,3-cd) pyrene	SW846 # 8310	Not detected	ug/Kg	25	11/16/98	SS
Benzene	SW846 # 8021	Not detected	ug/Kg	25	10/28/98	MAC
Toluene	SW846 # 8021	Not detected	ug/Kg	25	10/28/98	MAC
Ethylbenzene	SW846 # 8021	Not detected	ug/Kg	25	10/28/98	MAC
m-,p-Xylenes	SW846 # 8021	Not detected	ug/Kg	25	10/28/98	MAC
o-Xylene	SW846 # 8021	Not detected	ug/Kg	25	10/28/98	MAC

Please advise should you have questions concerning these data.
Respectfully submitted,

Andrew Lee Bristol

Andrew Lee Bristol
Laboratory Manager
(505)646-4422

SWAT Laboratory
New Mexico State University
Agronomy & Horticulture Department
Box 30003, Department 3Q
Las Cruces, NM 88003-8003

November 11, 1998

Sam Senn
Bascor Environmental, Inc.
800 W. Central Rd. Suite 104N
Mt. Prospect, IL 60056
(847)577-1980

Dear Sam Senn:

Below are the results of analysis of 2 samples received for examination on October 16, 1998:

Sample I.D. AA97994 Client Code: STDSOIL
Sample Description: Soil Sample CSS-025
Sample collector: SAM SENN Sample collection date: 10/15/98
Lab submittal date: 10/16/98 Time: 09:36

TEST PARAMETER	UNITS	TEST RESULT	DETECTION LIMIT
pH of Soil Saturation Paste		7.52	
Elect. Cond. of Soil Paste Extr.	mmhos/cm	5.79	0.01
Magnesium (for SAR)-	meq/L	9.34	0.04
Calcium (for SAR)-	meq/L	40.94	0.04
Sodium (for SAR)-	meq/L	9.38	0.04
Sodium Adsorption Ratio (SAR)		1.87	0.01
Calculated Exchangeable Na %-ESP		1.5	0.1
Organic Matter	percent	0.45	0.01
NO3-N 1:5 (soil:water) extract	ppm	10.6	0.1
Phosphorus (NaHCO3 extracted)	ppm	4.8	0.1
K 1:5 (soil:water) extract	ppm	23	1
Texture of soil by feel		Loamy Sand	
Extractable Sodium	meq/100gr	.23	0.01
Extractable Potassium	meq/100gr	0.07	0.01
Extractable Calcium	meq/100gr	103.0	0.04
Extractable Magnesium	meq/100gr	.56	0.01
Hot water soluble boron	ppm	.84	0.05
Sulfate	mg/L	2006	50
Chloride by Autoanalyzer	mg/L	408	5
Bicarbonate	meq/L	3.20	0.01
Carbonate	meq/L	0.00	0.01

Sample I.D. AA97995 Client Code: STDSOIL
Sample Description: Soil Sample BSS-045
Sample collector: SAM SENN Sample collection date: 10/15/98
Lab submittal date: 10/16/98 Time: 09:36

TEST PARAMETER	UNITS	TEST RESULT	DETECTION LIMIT
pH of Soil Saturation Paste		7.18	
Elect. Cond. of Soil Paste Extr.	mmhos/cm	3.39	0.01
Magnesium (for SAR)-	meq/L	2.42	0.04
Calcium (for SAR)-	meq/L	36.15	0.04
Sodium (for SAR)-	meq/L	.23	0.04
Sodium Adsorption Ratio (SAR)		0.05	0.01
Calculated Exchangeable Na %-ESP		Less than	0.1
Organic Matter	percent	1.12	0.01
NO3-N 1:5 (soil:water) extract	ppm	3.4	0.1
Phosphorus (NaHCO3 extracted)	ppm	0.6	0.1
K 1:5 (soil:water) extract	ppm	26	1
Texture of soil by feel		Sandy Loam	
Extractable Sodium	meq/100gr	.02	0.01
Extractable Potassium	meq/100gr	.15	0.01
Extractable Calcium	meq/100gr	108.4	0.01
Extractable Magnesium	meq/100gr	.26	0.01
Hot water soluble boron	ppm	.49	0.05
Sulfate	mg/L	1701	50
Chloride by Autoanalyzer	mg/L	9.8	0.5
Bicarbonate	meq/L	1.88	0.01
Carbonate	meq/L	0.00	0.01

Please advise should you have questions concerning these data.

Respectfully submitted,

Andrew Lee Bristol
Laboratory Manager
(505)646-4422