KAPREALIAN ENGINEERING
INCORPORATED

KEI-P90-1003.R8
November 16, 1992

Unocal Corporation
2000 Crow Canyon Place, Suite 400
P.O. Box 5155
San Ramon, California 94583

Attention: Mr. Bob Boust

RE: **Aquifer Pumping Test Report**
Unocal Service Station #7004
15599 Hesperian Boulevard
San Leandro, California

Dear Mr. Boust:

This report presents the results of an aquifer pumping test performed during the period May 19, 1992, through May 21, 1992, at the subject site, in accordance with Kaprealian Engineering, Inc's. (KEI) proposal (KEI-P90-1003.P3) dated March 23, 1992. **The purpose of the aquifer test was to calculate various aquifer parameters that will serve as a basis for determining the location and number of additional wells that may be required for ground water remediation.** The scope of work performed by KEI consisted of the following:

Coordination with regulatory agencies

Development of aquifer test protocol

Installation of a six-inch diameter well

Conducting an aquifer test to determine additional hydraulic parameters for remedial design purposes

Data analysis, interpretation, and report preparation

SITE DESCRIPTION AND BACKGROUND

The subject site is presently used as a self-service gasoline station, and is located adjacent to a Kragen Auto Parts store (see Figure 1). The site is situated on gently sloping, southwest trending topography, and is located approximately 700 to 800 feet northeast of San Lorenzo Creek and 2.1 miles northeast of the present shoreline of San Francisco Bay. A former Chevron service station is located approximately 450 feet north-northeast from the Unocal site, at the intersection of Sycamore Street and Hesperian Boulevard (see Figure 2).

2401 Stanwell Drive, Suite 400
Concord, California 94520
Tel: 510.602.5100 Fax: 510.687.0602

A site description, detailed background information including a summary of all of the soil and ground water subsurface investigation/remediation work conducted to date, site hydrogeologic conditions, and tables that summarize all of the soil and ground water sample analytical results are presented in KEI's report (KEI-P90-1003.R6) dated May 29, 1992.

HYDROLOGY AND GEOLOGY

The depth to ground water in monitoring wells MW1 through MW6 ranged from 14.43 to 16.09 on May 19, 1992 (the pre-pumping monitoring event). Monitoring data are summarized in Table 1. The pre-pumping potentiometric surface is shown on Figure 2. As shown on Figure 2, the ground water flow direction was to the west-southwest and consistent with that of the January 14, 1992, monitoring event. The gradient across the site ranged from 0.002 to 0.0025. Figure 3 shows the potentiometric surface on May 21, 1992, after nearly 48 hours of continuous pumping.

Based on review of regional geologic maps (U.S. Geological Survey Professional Paper 943 "Flatland Deposits of the San Francisco Bay Region, California - Their Geology and Engineering Properties and their Importance to Comprehensive Planning," by E.J. Helley and K.R. Lajoie, 1979), the subject site is underlain by Holocene Coarse-grained Alluvium (Qhac). The coarse-grained alluvium is described as typically consisting of unconsolidated, moderately sorted, permeable sand and silt, with a thickness ranging from less than 10 feet to as much as 50 feet.

Cross-Section A-A' (Figure 4) illustrates the subsurface hydrogeologic conditions beneath the site. The location of Cross-Section A-A' is shown on Figure 5. The subject site is underlain by clayey and gravelly fill to depths ranging from 1.5 feet to about 5.5 feet below grade, and interbedded silt and clay to depths ranging between 8 and 17 feet below grade. **Two somewhat laterally continuous sand units were encountered beneath the site as shown on Figure 4.** The first sand unit, typically consisting of poorly graded sand with traces of gravel and silt, was logged in all borings except MW3. This sand unit was not saturated at the time of the pumping test, and as shown on Figure 4, is part of the unsaturated zone. **The second sand unit consists of either silty sand or clayey sand, and was encountered in all borings (except MW1) between approximate depths of 15 and 23 feet below grade. This sand unit constitutes the first aquifer beneath the subject site.** In monitoring well borings MW2 and MW3, the first aquifer is a clayey sand overlain by silt, and was encountered slightly higher in the stratigraphic section, between depths of 15 and 20 feet below grade. **The primary saturated sand encountered in the MW4, MW5, RW1, and MW6 borings was typically a silty sand, 2 to 3 feet**

thick, and was encountered between depths of 20 to 23 feet below grade. An additional sand lens, about 1 foot thick, was encountered at the MW4 and MW6 well locations between depths of 17.5 and 18.5 feet below grade. This sand was also saturated. As shown on Figure 4, the first aquifer is underlain by silt and/or clay from about 23 feet to the total depth explored, 29.5 feet.

AQUIFER TEST

1. Aquifer Test Design and Parameters

Geologic and water level data collected during the installation of monitoring wells and well RW1 suggest that ground water is semi-confined at the site. During drilling, the first apparent ground water was encountered in the aquifer test well boring at a depth of approximately 16 feet below grade. Prior to the aquifer test, the static depth to water in RW1 was approximately 15.74 feet below grade. The location of RW1 is shown on Figure 2.

The aquifer test pumping well (RW1) is constructed of six-inch diameter polyvinyl chloride (PVC) casing and screen with 0.010-inch machine slotted perforations. The perforated length is 15 feet, extending from 12.5 to 27.5 feet below grade. The perforated interval is exposed to clayey silt and silty clay from a depth of 12.5 to 20 feet, silty sand from 20 to 22.5 feet, clay and silty clay from 22.5 to 25.5 feet, and sandy silty clayey sand from 25.5 to 27.5 feet, as shown on the attached Boring Log for RW1 (see Appendix A).

Based on the results of water recovery tests performed on monitoring wells MW3 and MW5, and on water recovery rates observed while purging the monitoring wells prior to sample collection, it was determined that a flow rate of approximately 1.0 gallon per minute (gpm) would be appropriate for the test. A submersible electric pump was selected for this application, and was set at a depth of approximately 25 feet below grade. The pump discharge line was connected to a flow totalizer and to a temporary holding tank. Flow rates were calculated by subtracting the difference in totalizer readings over a specified time interval.

2. Aquifer Test Procedures and Data Collection

The aquifer test was conducted during the period May 19 through May 21, 1992. The total duration of the test was 48 hours, with an average flow rate of 0.90 gpm. Time/drawdown data from RW1 was collected manually using an electric water level meter. Data was collected using logarithmic time

intervals such that measurements were taken at one minute intervals for the first ten minutes, at five minute intervals for the next 115 minutes, and at approximately 30 minute intervals until completion. Time/drawdown data obtained from RW1 are included in Appendix B.

Monitoring wells MW2, MW3, MW4 and MW5 were used as observation wells during the test. Radial distances from RW1 to the observation wells range between 21 and 85 feet. The observation wells are screened between 10 and 26 feet below the surface, with pre-test saturated screen lengths ranging from 9.25 and 11.57 feet.

Pressure transducers were installed in observation wells MW2, MW3, MW4 and MW5 at a depth of 24 feet below the surface. Time/drawdown data was collected using AGM Electronics, Inc. data loggers with Ametek Pressure transducers, capable of measuring water elevation changes of 0.01 feet. The data loggers were programmed to record data at five-minute intervals. The timers for each data logger were synchronized using the clock of an IBM compatible computer. Upon completion of the aquifer test, the data were downloaded from the data loggers to an IBM compatible computer. Time/drawdown data obtained from the data loggers are included in Appendix B.

DATA ANALYSIS AND TEST RESULTS

1. Data Analysis Methodology

Data collected from the aquifer test was analyzed using the AQTESOLV Aquifer Test and Design Software Package developed by Geraghty & Miller, Inc. of Reston, Virginia. The aquifer test data was analyzed by plotting the drawdown for each observation well versus time on a log-log scale and matching the data plots to type curves developed by Theis (1935), by Neuman (1975), and by Papadopulos & Cooper (1967). This graphical analytical method of curve matching provided estimates of aquifer transmissivity (T) and storativity (S). In addition, the data were analyzed by the above listed curve matching methods using a statistical nonlinear least-squares parameter estimation algorithm developed by Marquardt (1963). The results of this algorithm also provided estimates of T and S for comparative purposes.

The mathematical development of the Theis analytical technique is dependent on a number of governing assumptions, which include the following:

1. The aquifer is level and infinite in extent
2. The aquifer is homogeneous, isotropic, of uniform thickness and horizontal
3. Darcy's law is valid
4. The pumping well fully screens the aquifer
5. Water is discharged from storage instantaneously
6. Flow within the aquifer is horizontal
7. The pumping rate is constant
8. Flow is unsteady

Additionally, the Neuman curve matching method (Kruseman and de Ridder, 1990) needs to satisfy the following assumptions:

1. The aquifer is unconfined
2. The aquifer is isotropic or anisotropic
3. The flow to the well is unsteady
4. The influence of the unsaturated zone on the drawdown is negligible
5. The ratio of specific yield (Sy) to elastic storativity (Sa) is greater than 10
6. The observation well screened over its entire length penetrates the full thickness of the aquifer
7. The diameters of the pumped and observation wells are small, i.e., the storage in them can be neglected

Neuman describes the flow to a pumping well in an unconfined aquifer as consisting of three phases. In the first phase, water is derived from storage by the expansion of ground water and the compression of the aquifer. The time-drawdown plot for phase one is similar to a Theis (1935) curve. In the second phase, water remaining in the pores is drained by gravity. This gravity drainage replenishes that portion of the aquifer supplying water to the well, resulting in a reduction in the rate of drawdown from phase one. During phase three, the rate of delayed yield by gravity drainage and the rate of drawdown reach an equilibrium. The result is an increase in the rate of drawdown and the time-drawdown plot is again similar to a Theis curve. It is unlikely that the flow to the pumping well developed beyond phase two conditions based on the 48 hour duration of this test. Logarithmic time-drawdown plots of data collected from the observation wells verify this assumption.

The Neuman method is based on well-defined physical parameters of the unconfined aquifer. The Neuman method for delayed water table response recognizes the existence of vertical flow components and the solution for drawdown is a function of both r (distance from the pumping well) and the elevation head (Freeze and Cherry, 1979). This solution reproduces all three

segments of the time-drawdown curve and treats the elastic storativity, Sa, and the specific yield, Sy, as constants.

The Papadopulos & Cooper curve matching method was developed as a solution for drawdown in a confined aquifer produced by a large diameter pumping well. The governing assumptions for this solution are similar to the Theis solution except that water pumped from the well may also come from wellbore storage. The Papadopulos-Cooper curve matching method is more appropriate for the pumping well analysis than the Theis confined method because it includes a correction for wellbore storage effects.

The accuracy of the aquifer parameters determined from these analyses is dependent on how closely the actual field conditions approach the governing assumptions. A real aquifer seldom adheres to the above listed governing assumptions for an ideal case. However, many aquifers approach these conditions closely enough to consider the results of these analyses as valid and usable.

2. Test Results

The maximum drawdown observed in well RW1 during the 48 hour aquifer pumping test was 7.82 feet. Observation wells MW2, MW3, MW4 and MW5 located 85, 21, 51 and 60 feet from RW1, respectively, showed maximum drawdowns of 0.08, 0.16, 0.11, and 0.09 feet, respectively, according to manual field measurements. In addition, manual monitoring of background monitoring wells MW1 and MW6, located approximately 69 and 103 feet from RW1, respectively, indicated drawdowns of 0.09 and 0.06 feet, respectively.

Data collected from the data loggers in observation wells MW2, MW3 and MW5 were analyzed by plotting the approximate depth to water versus time. Plots of ground water level data from MW2, MW3 and MW5 versus time are shown on Figures 4 through 6, respectively. **The resulting plots indicate that MW2 and MW5 experienced diurnal water level fluctuations and were not affected by pumping RW1. Therefore, type curve matching was conducted using the data collected from MW3 and RW1 only.** Reasonable curve matches could not be obtained using the data collected from observation wells MW2 and MW5.

Continuous water level measurements obtained from upgradient observation well MW2 and downgradient well MW5 indicated diurnal fluctuations of approximately 0.20 feet and 0.30 feet, respectively. The water levels were highest between 1:00 p.m. and 6:00 p.m. in the afternoons and lowest between 5:00 a.m.

and 7:00 a.m. in the mornings. In contrast, water level measurements obtained from upgradient observation well MW3 indicated a steady decrease in the ground water level with no diurnal fluctuations, indicating an influence from pumping RW1.

Data collected from the data logger installed in MW4 was not analyzed because the record that was obtained did not correlate with results of manual field monitoring as did the other observation wells. Therefore, the data collected from MW4 is not considered valid.

Solutions derived using the Theis and Neuman methods for unconfined aquifers indicate an average transmissivities of 680 feet squared per day (ft^2/day) and 620 ft^2/day, respectively, and an storativities of $2.1E^{-3}$ and $2.6E^{-3}$, respectively, for MW3. Solutions derived using the Theis method for confined aquifers indicate an average transmissivity of 700 ft^2/day and an average storativity of $2.2E^{-3}$ for MW3.

Solutions derived using the data from RW1 indicate an average transmissivity of 16 ft^2/day and an average storativity of $1.4E^{-2}$ when using the Neuman method for unconfined aquifers. Results of the Theis and Papadopulos confined aquifer methods indicate average transmissivities of 35 ft^2/day and 42 ft^2/day, respectively, and average storativities of $6.3E^{-6}$ and $4.4E^{-3}$, respectively, when using the data from RW1.

Hydraulic conductivity values were calculated using the equation T=Kb where T = transmissivity, K = hydraulic conductivity and b = aquifer thickness. The results indicate average hydraulic conductivities of 74 ft/day and 67 ft/day for the Theis (unconfined) and Neuman (unconfined) methods, respectively, and a hydraulic conductivity value of 76 ft/day for the Theis (confined) method when using data from MW3. The results indicate average hydraulic conductivity values of 1.4 ft/day for the Neuman unconfined method and hydraulic conductivity values of $3.0E^{-1}$ and $3.6E^{-1}$ for the Theis confined and Papadopulos methods, respectively, using drawdown data from RW1.

The hydraulic conductivity values obtained during the analysis of data from the pumping test differ by an order of magnitude when comparing the results for MW3 to the results for RW1. The above listed hydraulic conductivity values for MW3 and RW1 fall within the general range of K and S values for silty sands (see Freeze & Cherry, 1979).

The reason for the difference in transmissivity values may be due to the different saturated geologic materials encountered in the pumping well, RW1, and in observation well MW3. Ground water supplied to RW1 is thought to be largely from the thin, 2-foot-thick silty sand bed between depths of 20 and 22 feet, for this sand bed is both overlain and underlain by clay. The first aquifer in the vicinity of MW3 is a 2.5-foot-thick clayey sand with 3/8-inch diameter gravel. The water bearing materials overlying the clayey sand encountered in the MW3 boring are silt (versus clay in RW1) and are likely to have a higher transmissivity than the clay encountered in RW1. Therefore, the average transmissivity of the saturated section in MW3 (2.3 feet of clayey sand with gravel and 4.3 feet of silt and clayey silt) may be greater than that of the geologic materials adjacent to the RW1 well screen.

Another factor which may have influenced the curve matching results is the presence of considerable scatter in the data sets for both wells. This scatter may be due, in part, to the effects of diurnal water level fluctuations, as observed in Figures 6 and 8 for wells MW2 and MW5. The scatter is likely to have had a greater effect on results from MW3 than on the results for RW1, due to the small amount of drawdown observed in MW3 (0.16 feet in MW3 versus 7.82 feet in RW1).

Results of the time-drawdown solutions for T, S and K are summarized in Table 2. Type curve matching plots for observation well MW3 and well RW1 are presented in Appendix C.

The drawdown in RW1 was 7.07 feet after 2779 minutes of pumping, resulting in a specific capacity of 0.13 gallons per minute per foot (gpm/ft). Well efficiency results and calculations are summarized in Table 3.

DISCUSSION AND RECOMMENDATIONS

Curve matching analyses using both unconfined and confined curve matching methods yield similar results for each well. Hydraulic conductivity values for the MW3 data set ranged from 67 ft/day to 76 ft/day. Storativity values ranged from $2.1E^{-3}$ to $2.6\ E^{-3}$. Hydraulic conductivity values for the RW1 data set ranged from 0.3 ft/day to 1.4 ft/day. Storativity values for the RW1 data set ranged from $1.4E^{-2}$ to $6.3E^{-6}$. Therefore, the saturated zone is believed to be best described as semi-confined. According to the results, the saturated geologic materials in the vicinity of MW3 have a slightly higher average transmissivity than those in the vicinity of RW1.

Analysis of the data collected during the aquifer test resulted in obtaining average values of transmissivity for the area between and in the immediate vicinity of RW1 and MW3. **Should it become necessary to hydraulically control the ground water contamination at this site, the aquifer parameters obtained during this pumping test will be used in a semi-analytical capture zone analysis in an attempt to determine the necessary parameters to achieve hydraulic control.**

LIMITATIONS

Environmental changes, either naturally-occurring or artificially-induced, may cause changes in ground water levels and flow paths, thereby changing the extent and concentration of any contaminants.

Our studies assume that the field and laboratory data are reasonably representative of the site as a whole, and assume that subsurface conditions are reasonably conducive to interpolation and extrapolation.

The results of this study are based on the data obtained from the field and laboratory analyses obtained from a state-certified laboratory. We have analyzed these data using what we believe to be currently applicable engineering techniques and principles in the Northern California region. We make no warranty, either expressed or implied, regarding the above, including laboratory analyses, except that our services have been performed in accordance with generally accepted professional principles and practices existing for such work.

Should you have any questions on this matter, please call me at (510) 602-5100.

Sincerely,

Kaprealian Engineering, Inc.

Aram B. Kaloustian
Project Engineer

Mark R. Lafferty, R.G.
Project Manager

License No. 4701
Exp. Date 6/30/94

abk\jad

Attachments: Tables 1, 2 & 3
Figures 1 through 8
References
Appendix A - Boring Logs and Well Construction Schematics
Appendix B - Field Time/Drawdown Data
Appendix C - Type Curve Matching Plots and Results

KEI-P90-1003.R8
November 16, 1992

TABLE 1

SUMMARY OF MONITORING DATA

Well #	Ground Water Elevation (feet)*	Depth to Water (feet)	Product Thickness	Sheen
	(Monitored on May 21, 1992)			
MW1	21.49	15.40	0	--
MW2	21.54	15.81	0	--
MW3	21.30	15.92	0	--
MW4	21.27	14.54	0	--
MW5	21.21	15.80	0	--
MW6	21.40	16.15	0	--
	(Monitored on May 19, 1992)			
MW1	21.58	15.31	0	--
MW2	21.62	15.73	0	--
MW3	21.47	15.75	0	--
MW4	21.38	14.43	0	--
MW5	21.31	15.70	0	--
MW6	21.46	16.09	0	--

Well #	Well Cover Elevation (feet)*
MW1	36.89
MW2	37.35
MW3	37.22
MW4	35.81
MW5	37.01
MW6	37.55

-- Sheen determination was not performed.

* The elevation of the tops of the well covers have been surveyed relative to Mean Sea Level.

NOTE: Monitoring on May 19, 1992, was conducted before the aquifer test began. Monitoring on May 21, 1992, was conducted before the aquifer test was completed, after nearly 48 hours of continuous pumping.

KEI-P90-1003.R8
November 16, 1992

TABLE 2

SUMMARY OF AQUIFER TEST RESULTS

Well	Transmissivity (ft^2day)	Storativity	Hydraulic Conductivity (ft/day)
MW3 (Theis-Unconfined)	$6.8E^{+2}$	$2.1E^{-3}$	$7.4E^{1}$
MW3 (Neuman-Unconfined)	$6.2E^{+2}$	$2.6E^{-3}$	$6.7E^{1}$
MW3 (Theis-Confined)	$7.0E^{+2}$	$2.2E^{-3}$	$7.6E^{1}$
RW1 (Neuman-Unconfined)	$1.6E^{+1}$	$1.4E^{-2}$	1.4
RW1 (Theis-Confined)	$3.5E^{+1}$	$6.3E^{-6}$	$3.0E^{-1}$
RW1 (Papadopulos-Confined)	$4.2E^{+1}$	$4.4E^{-3}$	$3.6E^{-1}$

NOTE: Results are average values of the various graphical and automatic estimations performed using Theis, Neuman and Papadopulos curve matching methods. See aquifer test results, Appendix B.

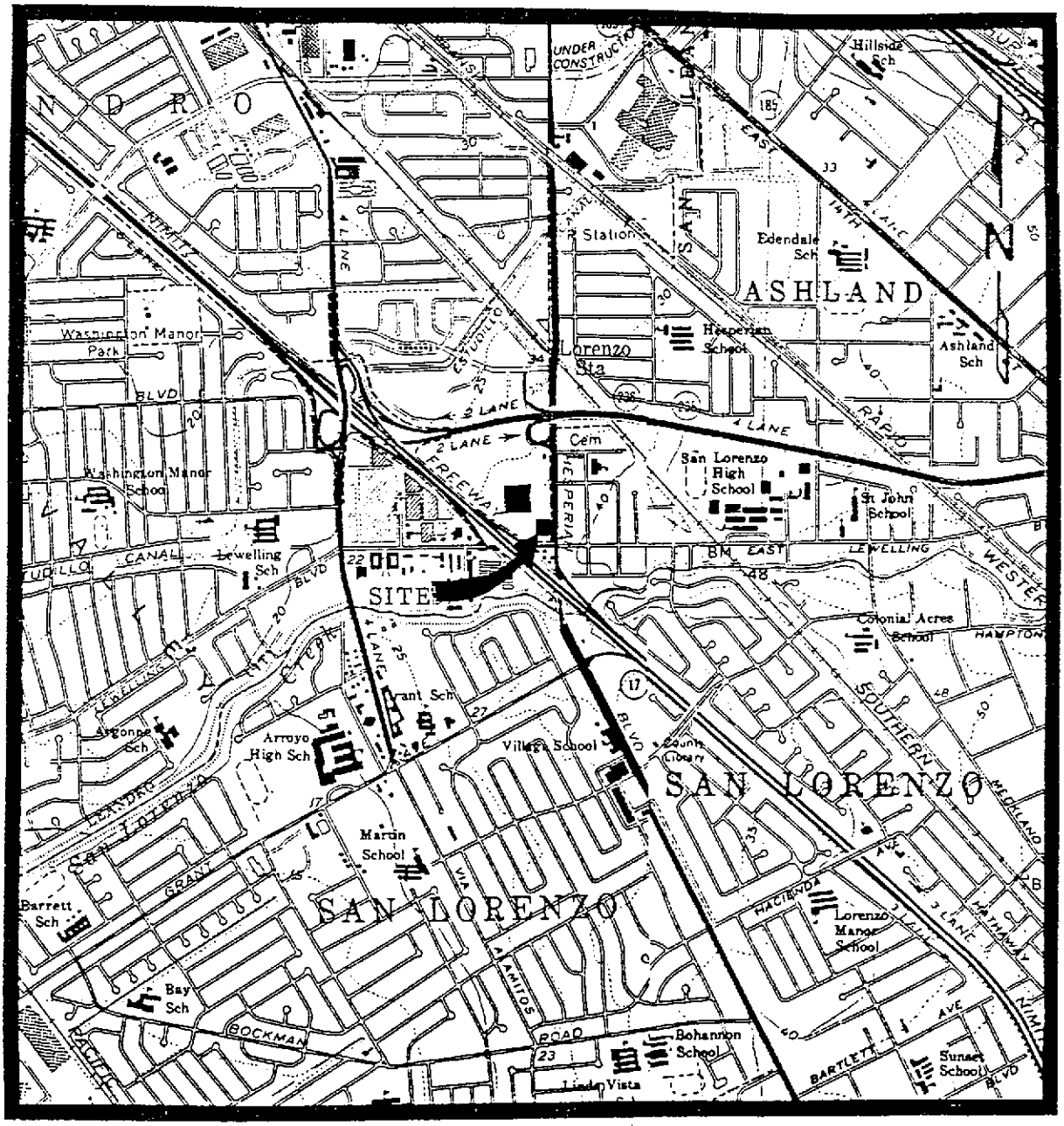
KEI-P90-1003.R8
November 16, 1992

TABLE 3

SUMMARY OF AQUIFER TEST RESULTS

WELL EFFICIENCY DATA (RW1)

AQUIFER TEST FLOW RATE (Q)	0.90 GPM
DRAWDOWN AT 2,779 MINUTES (S)	7.07 FT
SPECIFIC CAPACITY (Q/S)	0.13 GPM/FT

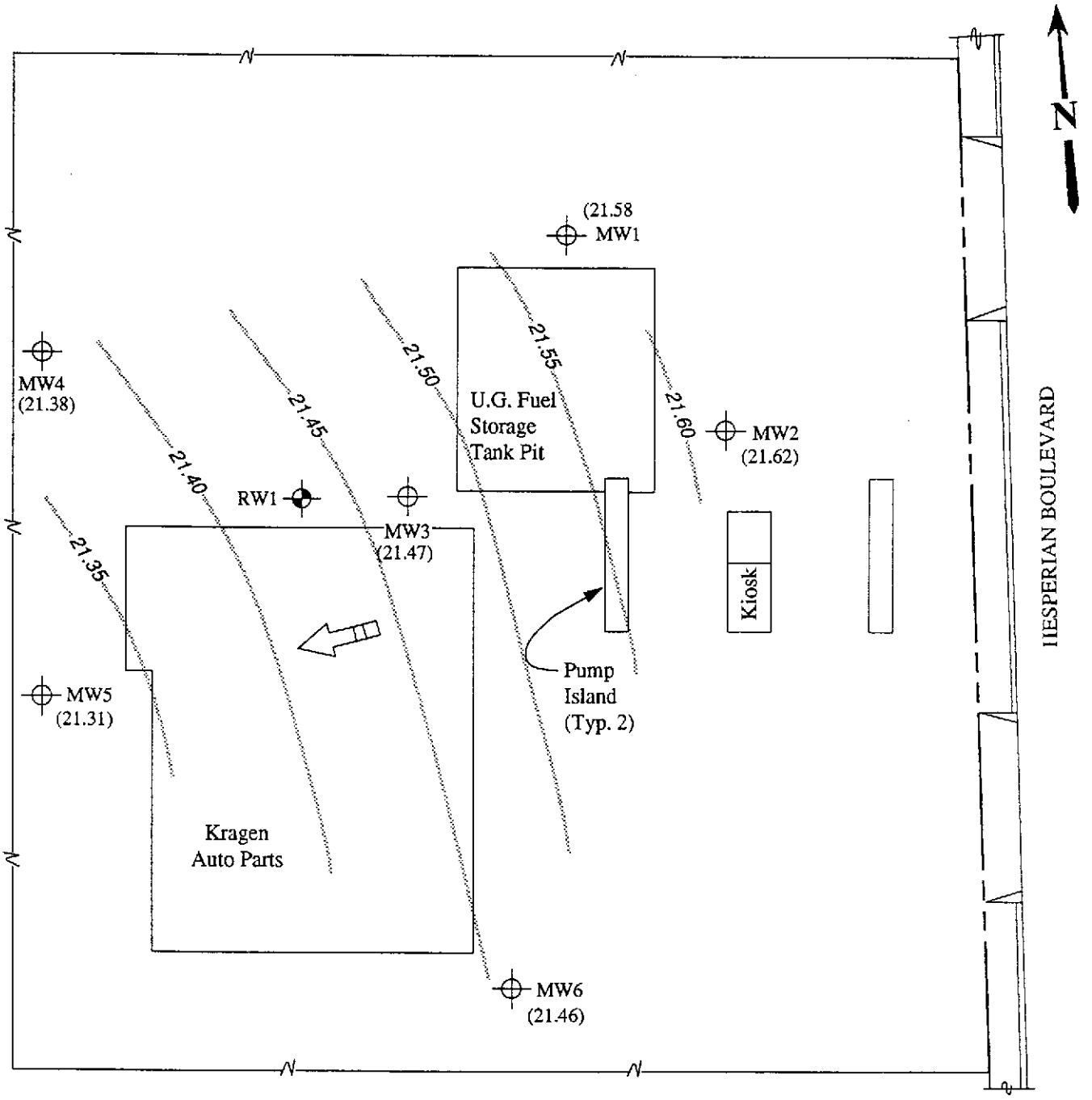


Base modified from 7.5 minute U.S.G.S. Hayward and San Leandor Quadrangles (photorevised 1980)

0 2000 4000

Approx. scale feet

LOCATION MAP		
KAPREALIAN ENGINEERING INCORPORATED	UNOCAL SERVICE STATION #7004 15599 HESPERIAN BOULEVARD SAN LEANDRO, CA	FIGURE 1



LEGEND

- Monitoring well
- Recovery well
- ( ) Ground water elevation in feet above Mean Sea Level
- Direction of ground water flow
- Contours of ground water elevation

0 30 60

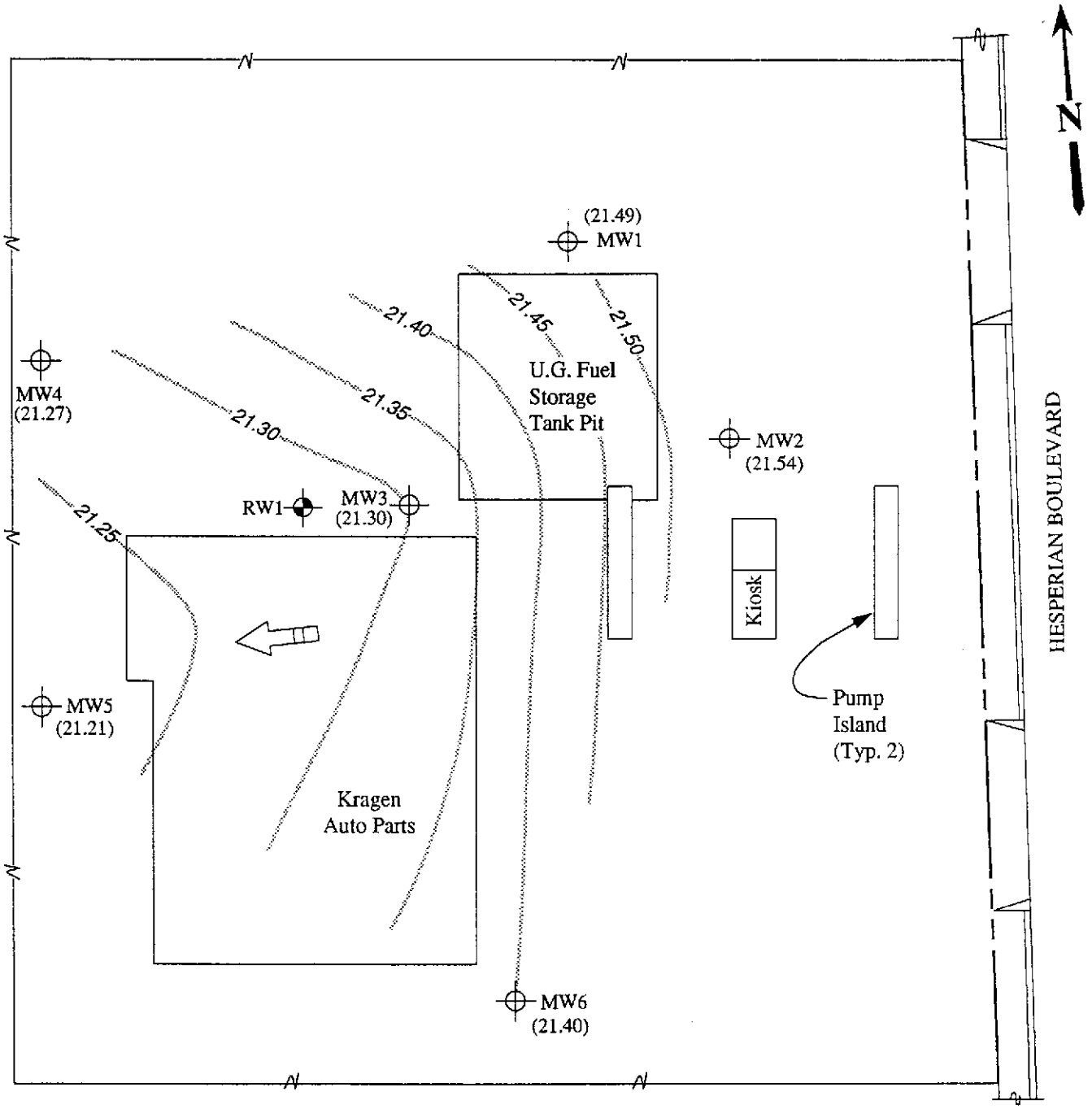
Approx. scale feet

PRE-PUMPING POTENTIOMETRIC SURFACE MAP FOR THE MAY 19, 1992 MONITORING EVENT

KAPREALIAN ENGINEERING
INCORPORATED

UNOCAL SERVICE STATION #7004
15599 HESPERIAN BOULEVARD
SAN LEANDRO, CA

FIGURE
2



LEGEND

- Monitoring well
- Recovery well
- ( ) Ground water elevation in feet above Mean Sea Level
- Direction of ground water flow
- Contours of ground water elevation

0 30 60

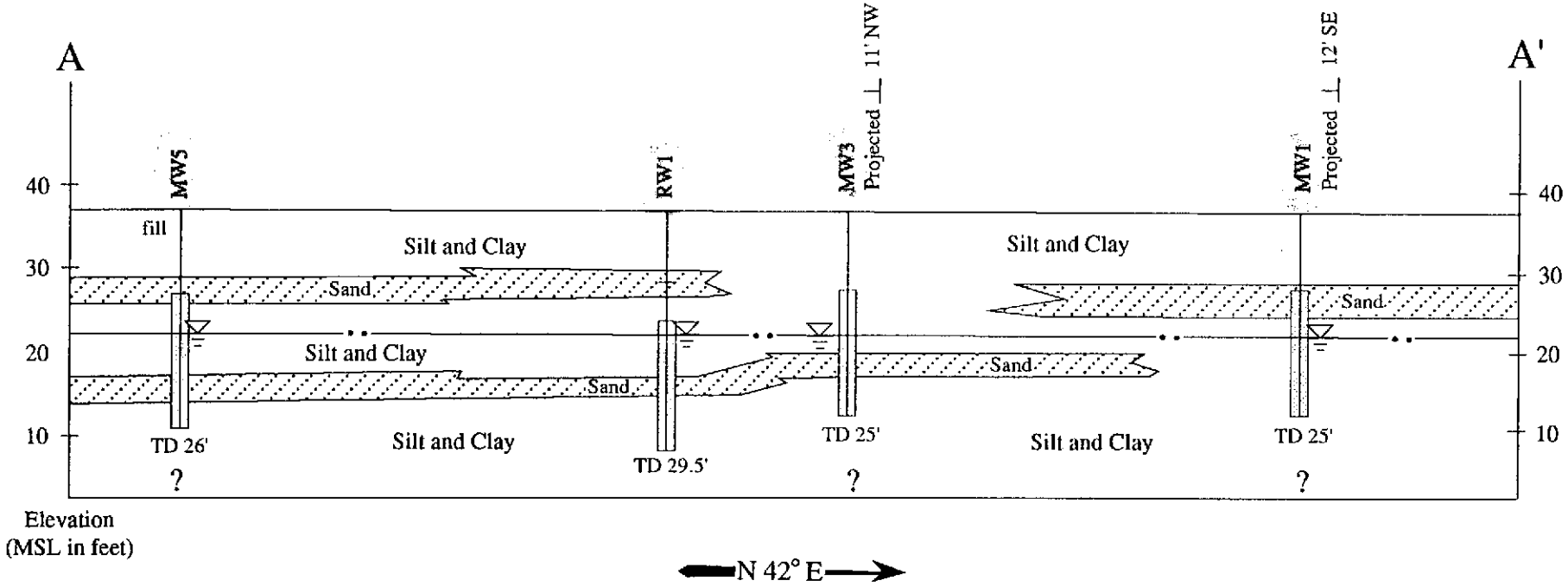
Approx. scale feet

POTENTIOMETRIC SURFACE MAP FOR THE MAY 21, 1992 MONITORING EVENT

KAPREALIAN ENGINEERING
INCORPORATED

UNOCAL SERVICE STATION #7004
15599 HESPERIAN BOULEVARD
SAN LEANDRO, CA

FIGURE
3



LEGEND

Screened interval of well

Ground water elevation in feet above Mean Sea Level on 5/19/92

0 20 40

Approx. scale (Horizontal & Vertical) feet

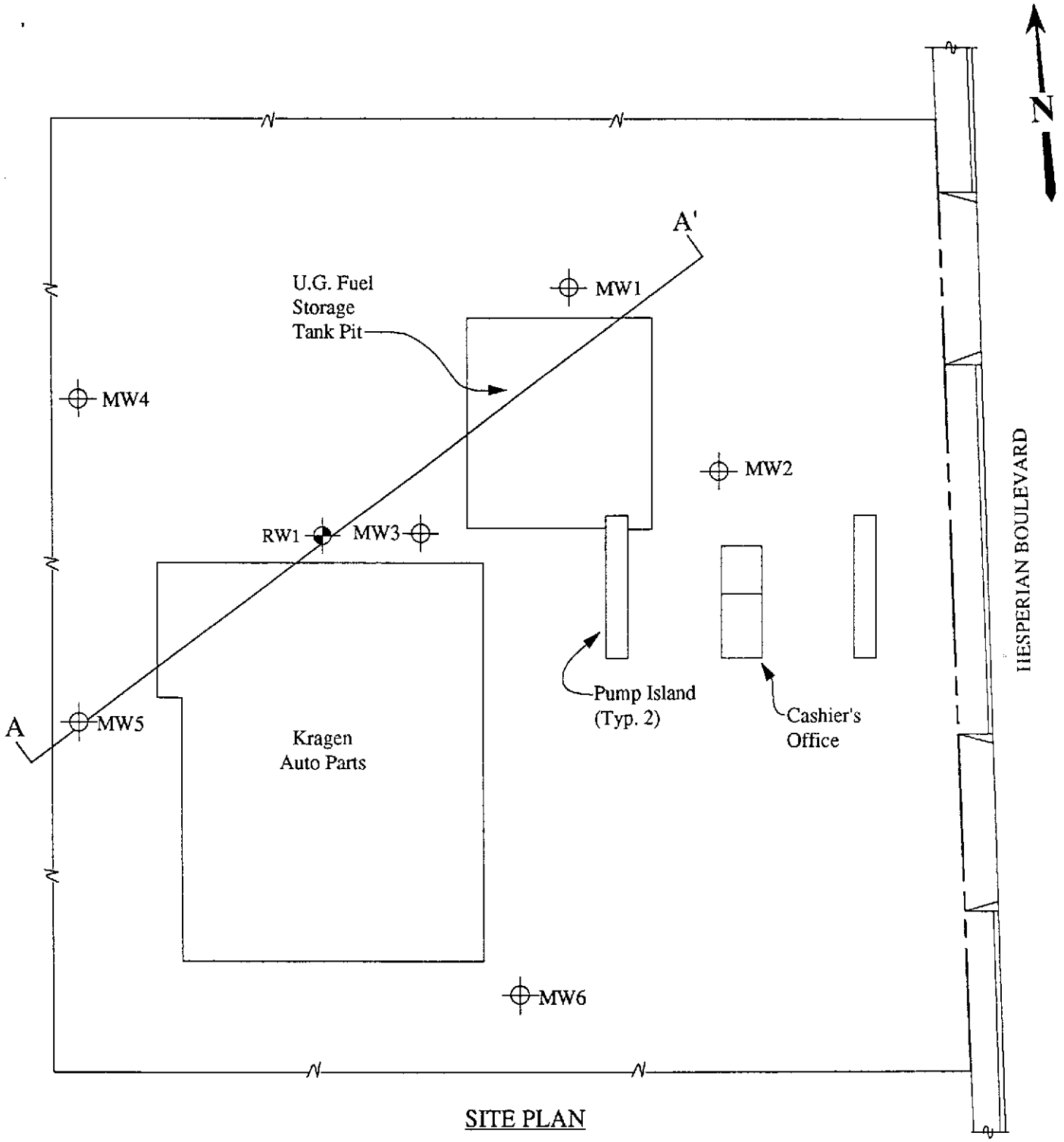
Approved by:

GEOLOGIC CROSS-SECTION A-A'

KAPREALIAN ENGINEERING INCORPORATED

UNOCAL SERVICE STATION #7004
15599 HESPERIAN BLVD.
SAN LEANDRO, CALIFORNIA

FIGURE
4



SITE PLAN

LEGEND

- Monitoring Well
- Recovery well
- A A' Location of Cross-Section A-A'

0 30 60

Approx. scale feet

KAPREALIAN ENGINEERING
INCORPORATED

UNOCAL SERVICE STATION #7004
15599 HESPERIAN BOULEVARD
SAN LEANDRO, CA

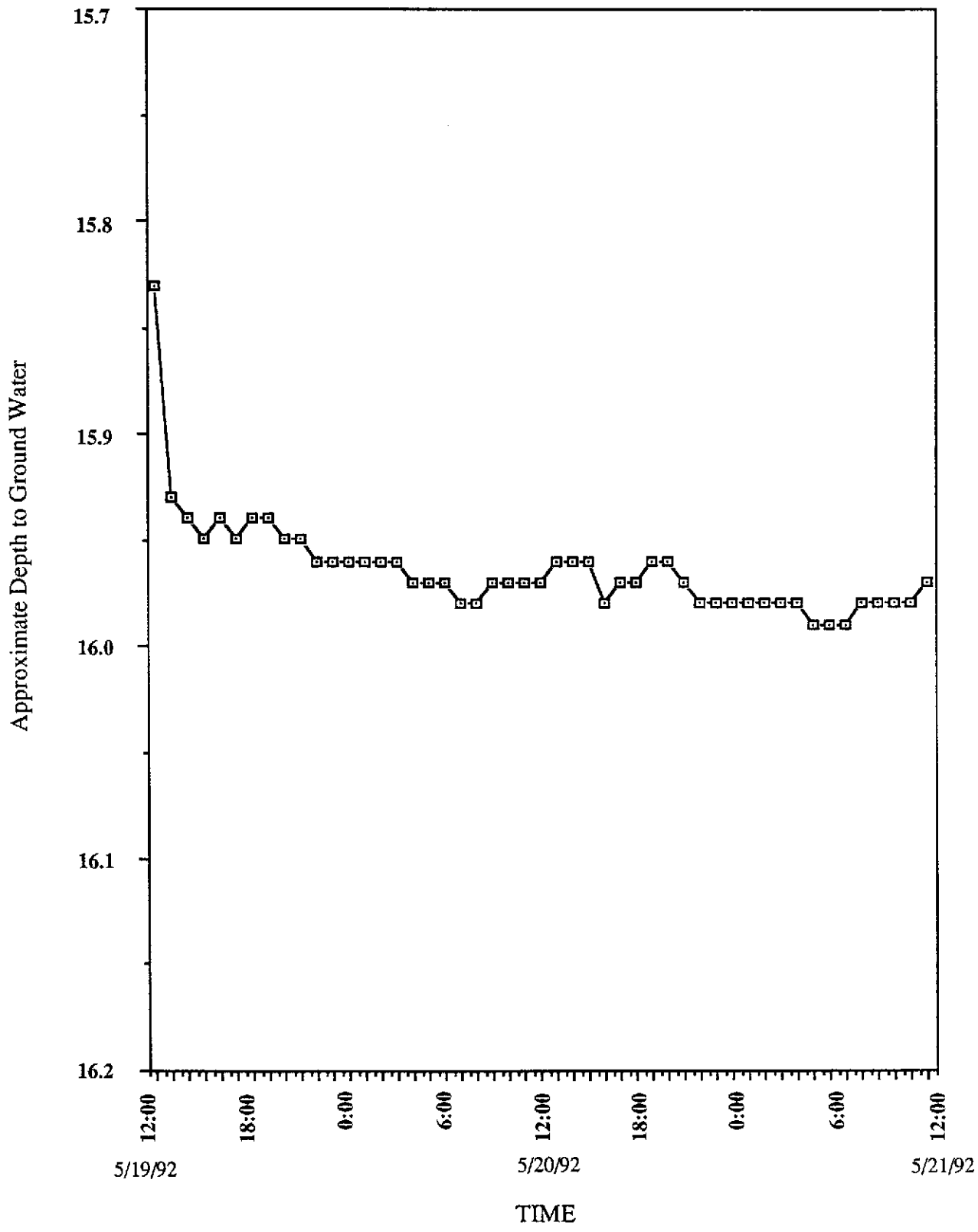
FIGURE
5

PLOT OF CONTINUOUS GROUND WATER LEVEL DATA - MW2

KAPREALIAN ENGINEERING
INCORPORATED

UNOCAL SERVICE STATION #7004
15599 HESPERIAN BOULEVARD
SAN LEANDRO, CA

FIGURE
6

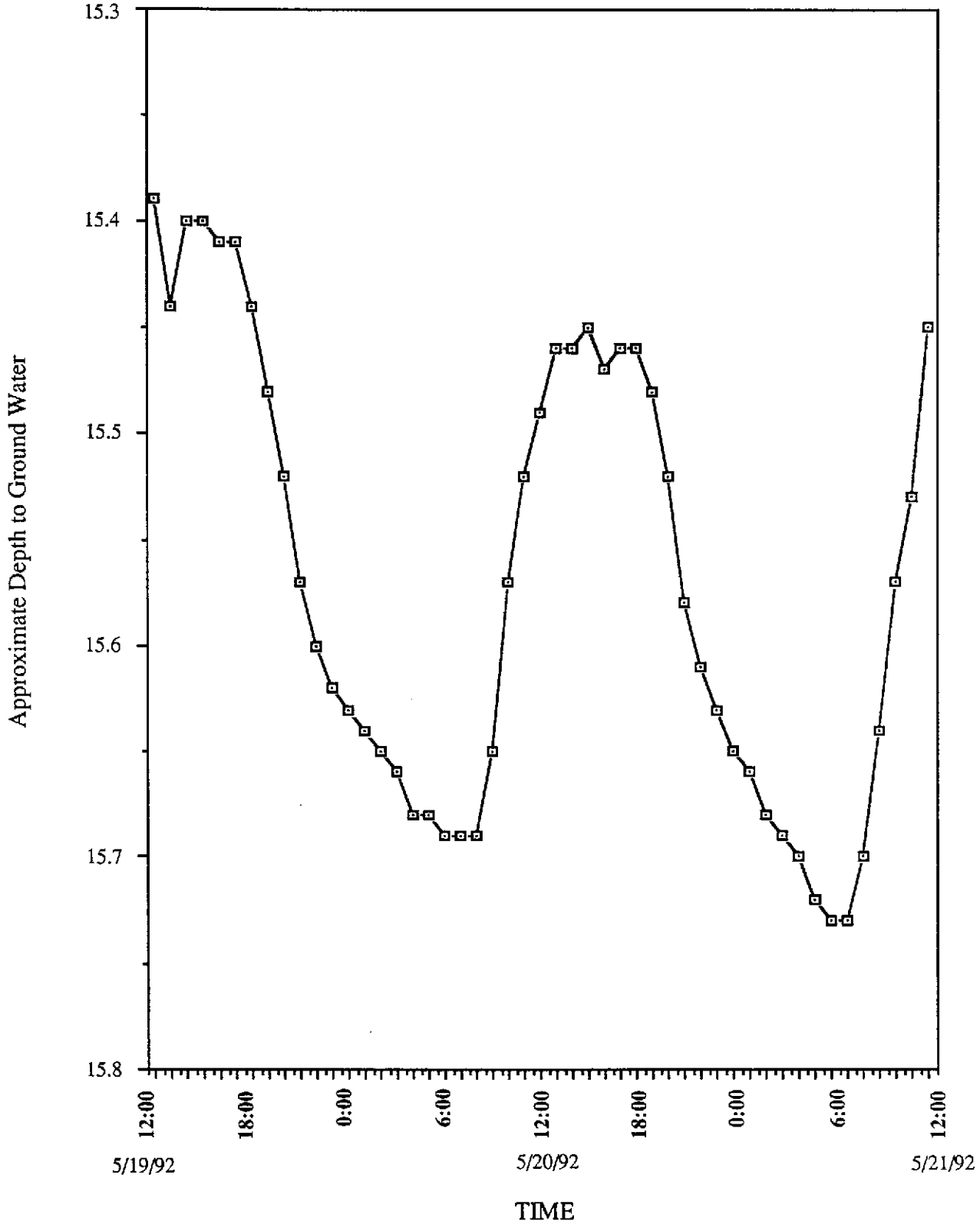


PLOT OF CONTINUOUS GROUND WATER LEVEL DATA - MW3

KAPREALIAN ENGINEERING
INCORPORATED

UNOCAL SERVICE STATION #7004
15599 HESPERIAN BOULEVARD
SAN LEANDRO, CA

FIGURE
7



PLOT OF CONTINUOUS GROUND WATER LEVEL DATA - MW5

KAPREALIAN ENGINEERING
INCORPORATED

UNOCAL SERVICE STATION #7004
15599 HESPERIAN BOULEVARD
SAN LEANDRO, CA

FIGURE
8

REFERENCES

Freeze, A.R., and J.A. Cherry, 1979. Groundwater, Prentice-Hall, Inc., Englewood Cliffs, N.J.

Geraghty & Miller, 1992, AQTESOLV, Version 1.1, Reston, Virginia

Marquardt, D.W., 1963. An algorithm for least-squares estimation of nonlinear parameters, Journ. Soc. Indust. Appl. Math., Vol. 11, No. 2, pp. 431-441.

Neuman, S.P., 1975. Analysis of pumping test data from anisotropic unconfined aquifers considering delayed yield, Water Resources Research, Vol. 11, No. 2, pp. 329-342.

Papadopulos, I.S., and Cooper, H.H., 1967. Drawdown in a well of large diameter, Water Resources Research, Vol. 3, No. 1, pp. 241-244.

Theis, C.V., 1935. The relation between the lowering of the piezometric surface and the rate and duration of discharge of a well using groundwater storage, Am. Geophys. Union Trans., Vol. 16, pp. 519-524.

APPENDIX A

BORING LOG, WELL SCHEMATIC, SIEVE ANALYSES FOR RW1

KAPREALIAN ENGINEERING
INCORPORATED

MAJOR DIVISIONS		SYMBOLS	TYPICAL SOIL DESCRIPTIONS
GRAVELS (More than 1/2 of coarse fraction > No. 4 sieve size)		GW	Well graded gravels or gravel - sand mixtures, little or no fines
		GP	Poorly graded gravels or gravel - sand mixtures, little or no fines
		GM	Silty gravels, gravel - sand - silt mixtures
		GC	Clayey gravels, gravel - sand - clay mixtures
SANDS (More than 1/2 of coarse fraction < No. 4 sieve size)		SW	Well graded sands or gravelly sands, little or no fines
		SP	Poorly graded sands or gravelly sands, little or no fines
		SM	Silty sands, sand - silt mixtures
		SC	Clayey sands, sand - clay mixtures
SILTS & CLAYS LL < 50		ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts with slight plasticity
		CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays
		OL	Organic silts and organic silty clays of low plasticity
SILTS & CLAYS LL > 50		MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts
		CH	Inorganic clays of high plasticity, fat clays
		OH	Organic clays of medium to high plasticity, organic silty clays, organic silts
HIGHLY ORGANIC SOILS		Pt	Peat and other highly organic soils
DUAL (TRANSITION) SOILS			Soil characterisitics are transitional between the soil classifications listed above

CLASSIFICATION CHART (Unified Soil Classification System)

BORING LOG

Project No. KEI-P90-1003	**Boring & Casing Diameter** 12" 6"	**Logged By** D.L. JGG LEG 1633
Project Name Unocal # 7004 15599 Hesperian Blvd, San Leandro	**Well Cover Elevation** N/A	**Date Drilled** 4-15-92
Boring No. RW1	**Drilling Method** Hollow-stem Auger	**Drilling Company** Woodward Drilling

Penetration blows/6"	G. W. level	Depth (feet) Samples	Strati-graphy USCS	Description
		0		Asphalt pavement over sand and gravel base.
				Clay, sand and gravel with cobbles to 8 inches in diameter, very dark grayish brown and black (fill).
			SM	Silty sand, sand is very fine to fine-grained, moist, loose, dark olive gray.
2/3/5		5	CL	Silty clay, moist, firm, dark greenish gray.
			MH	Silt with clay, estimated at 10-15% fine-grained sand, moist, stiff, dark olive gray.
			SW	Well graded sand, dry, loose, light olive brown.
3/4/5			SW/ ML	Well graded sand, moist, loose, dark olive gray with lenses of sandy silt to 1 inch thick. Silt is moist, firm, dark olive gray.
		10	ML	Silt with sand, trace clay, sand is very fine-grained, moist, firm, dark olive gray.
3/4/6			MH	Clayey silt, estimated at 10-15% sand, moist, stiff, black, grades to dark olive gray.
			CL	Silty clay, moist, stiff, very dark gray to black.
NO BLOW COUNT DATA - CONTINUOUSLY CORED	▽	15	MH	Clayey silt very moist to wet, stiff, black with molds and root holes.
			CL	Silty clay, trace fine-grained sand, moist, very stiff, dark olive gray and very dark gray, mottled.
				Clay with silt, moist, very stiff, very dark grayish brown and very dark gray, mottled.
		20	SM	Silty sand, estimated at 15-20% silt, sand is fine to medium grained, saturated, medium dense, olive and olive brown, mottled.

BORING LOG

Project No. KEI-P90-1003	**Boring & Casing Diameter** 12" 6"	**Logged By** D.L. JGG LEG 1633
Project Name Unocal #7004 15599 Hesperian Blvd, San Leandro	**Well Cover Elevation** N/A	**Date Drilled** 4-15-92
Boring No. RW1	**Drilling Method** Hollow-stem Auger	**Drilling Company** Woodward Drilling

Penetration blows/6"	G. W. level	Depth (feet) Samples	Strati-graphy USCS	Description
			SM	Silty sand as above.
			CH	Clay with trace silt and sand, locally trace caliche, moist, hard, very stiff, black.
		25	CL	Silty clay with root holes and organic matter, moist, stiff, olive gray.
Particle Size Analysis Sample			CH	Sandy silty clay, significant caliche development locally, moist, very stiff to hard, olive and olive brown, mottled.
		30		TOTAL DEPTH: 29.5'
		35		
		40		

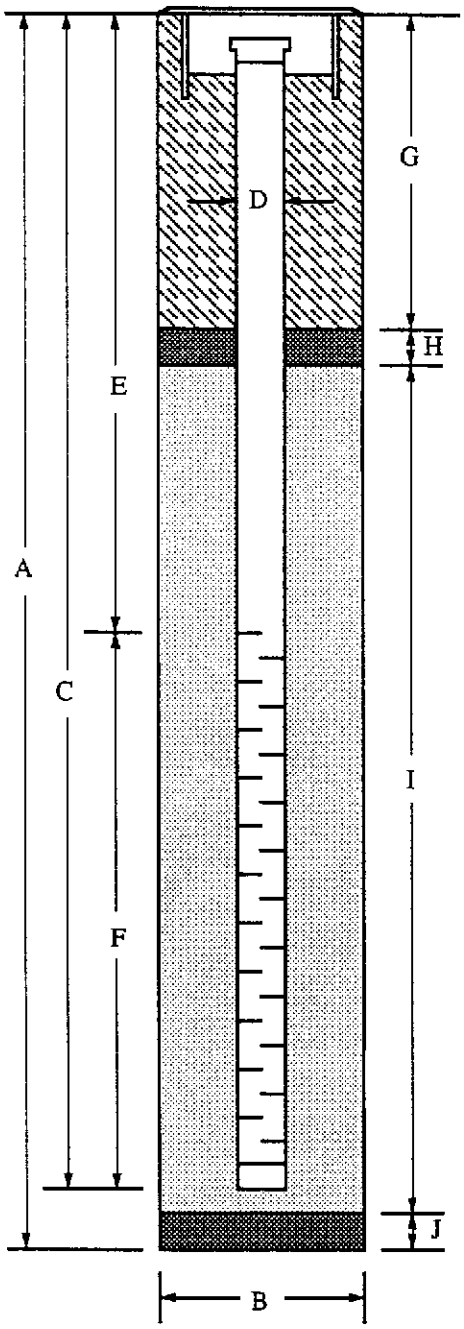
WELL COMPLETION DIAGRAM

PROJECT NAME: Unocal #7004, 15599 Hesperian Blvd., San Leandro WELL NO. RW1

PROJECT NUMBER: KEI-P90-1003

WELL PERMIT NO.: ACF-C & WCD #92151

Flush-mounted Well Cover



A. Total Depth : 27.5"

B. Boring Diameter*: 12"

Drilling Method: Hollow Stem Auger

C. Casing Length: 27.5'

Material: Schedule 40 PVC

D. Casing Diameter: OD = 6.625

ID = 6.065

E. Depth to Perforations: 12.5'

F. Perforated Length: 15'

Perforation Type: Machined Slot

Perforation Size: 0.010"

G. Surface Seal: 8.5'

Seal Material: Neat Cement

H. Seal: 2'

Seal Material: Bentonite

I. Filter Pack: 17'

Pack Material: Silica Resources Inc. Sand

Size: #2/12

J. Bottom Seal: 2'

Seal Material: Bentonite

* Boring diameter can vary from 11 1/4" to 12" depending on bit wear.

APPENDIX B

FIELD TIME/DRAWDOWN DATA

Unocal Service Station # 7004
15599 Hesperian Boulevard
San Leandro, California

Recovery Well, RW1
Well Discharge(Q) = 0.90gpm
Date: 5/19/92 to 5/21/92
Pumping Test Data

Date	Field Time	Test Time	Depth to Water	Drawdown
5/19/92	9:36:00	0:00:00	15.74	0.00
	12:01:00	0:01:00	16.80	1.06
	12:02:00	0:02:00	17.20	1.46
	12:03:00	0:03:00	17.53	1.79
	12:04:00	0:04:00	17.86	2.12
	12:05:00	0:05:00	18.20	2.46
	12:06:00	0:06:00	18.50	2.76
	12:07:00	0:07:00	18.79	3.05
	12:08:00	0:08:00	19.08	3.34
	12:09:00	0:09:00	19.32	3.58
	12:10:00	0:10:00	19.57	3.83
	12:15:00	0:15:00	20.70	4.96
	12:20:00	0:20:00	21.73	5.99
	12:25:00	0:25:00	22.48	6.74
	12:30:00	0:30:00	22.86	7.12
	12:35:00	0:35:00	23.30	7.56
	12:40:00	0:40:00	23.25	7.51
	12:45:00	0:45:00	23.02	7.28
	12:50:00	0:50:00	22.81	7.07
	12:55:00	0:55:00	22.66	6.92
	13:00:00	1:00:00	22.57	6.83
	13:05:00	1:05:00	22.50	6.76
	13:10:00	1:10:00	22.45	6.71
	13:15:00	1:15:00	22.43	6.69
	13:20:00	1:20:00	22.42	6.68
	13:25:00	1:25:00	22.42	6.68
	13:30:00	1:30:00	22.42	6.68
	13:35:00	1:35:00	22.43	6.69
	13:40:00	1:40:00	22.42	6.68
	13:45:00	1:45:00	22.42	6.68
	13:50:00	1:50:00	22.44	6.70
	13:55:00	1:55:00	22.47	6.73
	14:00:00	2:00:00	22.50	6.76
	14:05:00	2:05:00	22.48	6.74
	14:20:00	2:20:00	22.60	6.86
	14:50:00	2:50:00	23.06	7.32
	15:20:00	3:20:00	22.97	7.23
	15:50:00	3:50:00	23.11	7.37
	16:20:00	4:20:00	23.15	7.41
	16:50:00	4:50:00	21.96	6.22

Unocal Service Station # 7004
15599 Hesperian Boulevard
San Leandro, California

Recovery Well, RW1
Well Discharge(Q) = 0.90gpm
Date: 5/19/92 to 5/21/92
Pumping Test Data

Date	Field Time	Test Time	Depth to Water	Drawdown
5/19/92	17:20:00	5:20:00	22.41	6.67
	17:50:00	5:50:00	22.58	6.84
	18:20:00	6:20:00	22.86	7.12
	18:50:00	6:50:00	22.98	7.24
	18:55:00	6:55:00	23.00	7.26
	19:00:00	7:00:00	23.00	7.26
	19:05:00	7:05:00	23.01	7.27
	19:10:00	7:10:00	23.02	7.28
	19:15:00	7:15:00	23.03	7.29
5/20/92	7:20:00	19:20:00	22.90	7.16
	7:50:00	19:50:00	22.85	7.11
	8:20:00	20:20:00	22.82	7.08
	8:50:00	20:50:00	22.83	7.09
	9:20:00	21:20:00	22.82	7.08
	9:50:00	21:50:00	22.86	7.12
	10:20:00	22:20:00	22.94	7.20
	10:50:00	22:50:00	22.99	7.25
	11:20:00	23:20:00	23.01	7.27
	11:50:00	23:50:00	23.01	7.27
	12:20:00	24:20:00	23.09	7.35
	12:50:00	24:50:00	22.92	7.18
	13:20:00	25:20:00	22.97	7.23
	14:20:00	26:20:00	23.32	7.58
	14:55:00	26:55:00	23.43	7.69
	15:05:00	27:05:00	23.46	7.72
	15:20:00	27:20:00	23.47	7.73
	15:35:00	27:35:00	23.48	7.74
	16:00:00	28:00:00	23.49	7.75
	16:10:00	28:10:00	23.50	7.76
	16:20:00	28:20:00	23.55	7.81
	16:22:00	28:22:00	23.56	7.82
	16:24:00	28:24:00	23.46	7.72
	16:30:00	28:30:00	23.30	7.56
	16:45:00	28:45:00	23.05	7.31
	16:55:00	28:55:00	22.98	7.24
	17:00:00	29:00:00	22.96	7.22
	17:20:00	29:20:00	22.92	7.18
	17:30:00	29:30:00	22.92	7.18
	18:20:00	30:20:00	22.80	7.06
	19:00:00	31:00:00	22.80	7.06

Unocal Service Station # 7004
15599 Hesperian Boulevard
San Leandro, California

Recovery Well, RW1
Well Discharge(Q) = 0.90gpm
Date: 5/19/92 to 5/21/92
Pumping Test Data

Date	Field Time	Test Time	Depth to Water	Drawdown
5/21/92	7:05:00	43:05:00	22.70	6.96
	7:30:00	43:30:00	22.72	6.98
	8:00:00	44:00:00	22.80	7.06
	8:30:00	44:30:00	22.84	7.10
	9:00:00	45:00:00	22.82	7.08
	9:30:00	45:30:00	22.77	7.03
	10:10:00	46:10:00	22.77	7.03
	10:55:00	46:55:00	22.80	7.06
	11:30:00	47:30:00	22.81	7.07
	11:59:00	47:59:00	22.81	7.07

Unocal Service Station #7004
15599 Hesperian Boulevard
San Leandro, California

Observation Well, MW2
Data Logger #1
Distance, MW2 to RW1 = 85ft
Well Discharge(Q) = 0.90gpm
Date: 5/19/92 to 5/21/92

05/19/92 10:00:00 05/21/92 12:00:50

0001	05/19 10:00:00	7.93
0002	05/19 10:05:00	7.95
0003	05/19 10:10:00	7.95
0004	05/19 10:15:00	7.97
0005	05/19 10:20:00	7.97
0006	05/19 10:25:00	7.98
0007	05/19 10:30:00	7.99
0008	05/19 10:35:00	7.98
0009	05/19 10:40:00	7.94
0010	05/19 10:45:00	7.98
0011	05/19 10:50:00	7.98
0012	05/19 10:55:00	7.95
0013	05/19 11:00:00	7.97
0014	05/19 11:05:00	7.97
0015	05/19 11:10:00	7.97
0016	05/19 11:15:00	7.98
0017	05/19 11:20:00	7.99
0018	05/19 11:25:00	7.99
0019	05/19 11:30:00	7.99
0020	05/19 11:35:00	7.99
0021	05/19 11:40:00	8.03
0022	05/19 11:45:00	8.03
0023	05/19 11:50:00	8.02
0024	05/19 11:55:00	8.02
0025	05/19 12:00:00	7.95
0026	05/19 12:05:00	8.03
0027	05/19 12:10:00	8.03
0028	05/19 12:15:00	8.04
0029	05/19 12:20:00	8.02
0030	05/19 12:25:00	7.98
0031	05/19 12:30:00	8.01
0032	05/19 12:35:00	7.97
0033	05/19 12:40:00	8.01
0034	05/19 12:45:00	8.02
0035	05/19 12:50:00	8.03
0036	05/19 12:55:00	8.02
0037	05/19 13:00:00	8.00
0038	05/19 13:05:00	7.97
0039	05/19 13:10:00	8.01
0040	05/19 13:15:00	7.99
0041	05/19 13:20:00	7.99
0042	05/19 13:25:00	8.01
0043	05/19 13:30:00	8.01
0044	05/19 13:35:00	8.02
0045	05/19 13:40:00	7.98
0046	05/19 13:45:00	8.00
0047	05/19 13:50:00	8.03

Observation Well, MW2
Data Logger #1
Distance, MW2 to RW1 = 85ft
Well Discharge(Q) = 0.90gpm
Date: 5/19/92 to 5/21/92

0048	05/19 13:55:00	8.00
0049	05/19 14:00:00	8.01
0050	05/19 14:05:00	8.02
0051	05/19 14:10:00	8.03
0052	05/19 14:15:00	8.02
0053	05/19 14:20:00	8.03
0054	05/19 14:25:00	8.01
0055	05/19 14:30:00	8.02
0056	05/19 14:35:00	8.02
0057	05/19 14:40:00	7.98
0058	05/19 14:45:00	7.98
0059	05/19 14:50:00	8.00
0060	05/19 14:55:00	8.01
0061	05/19 15:00:00	8.04
0062	05/19 15:05:00	8.03
0063	05/19 15:10:00	8.03
0064	05/19 15:15:00	8.03
0065	05/19 15:20:00	8.03
0066	05/19 15:25:00	8.03
0067	05/19 15:30:00	8.02
0068	05/19 15:35:00	8.03
0069	05/19 15:40:00	8.01
0070	05/19 15:45:00	8.01
0071	05/19 15:50:00	8.02
0072	05/19 15:55:00	8.00
0073	05/19 16:00:00	8.01
0074	05/19 16:05:00	8.02
0075	05/19 16:10:00	8.01
0076	05/19 16:15:00	8.01
0077	05/19 16:20:00	8.00
0078	05/19 16:25:00	8.01
0079	05/19 16:30:00	7.99
0080	05/19 16:35:00	8.02
0081	05/19 16:40:00	8.01
0082	05/19 16:45:00	8.00
0083	05/19 16:50:00	8.00
0084	05/19 16:55:00	7.99
0085	05/19 17:00:00	7.99
0086	05/19 17:05:00	8.00
0087	05/19 17:10:00	8.00
0088	05/19 17:15:00	8.02
0089	05/19 17:20:00	8.01
0090	05/19 17:25:00	8.01
0091	05/19 17:30:00	8.00
0092	05/19 17:34:56	8.01
0093	05/19 17:39:55	8.01
0094	05/19 17:44:55	8.00
0095	05/19 17:49:55	8.01

Observation Well, MW2
Data Logger #1
Distance, MW2 to RW1 = 85ft
Well Discharge(Q) = 0.90gpm
Date: 5/19/92 to 5/21/92

0096:05/19 17:54:55 8.01
0097:05/19 17:59:55 7.99
0098:05/19 18:04:55 7.98
0099:05/19 18:09:55 7.98
0100:05/19 18:14:55 7.99
0101:05/19 18:19:55 8.00
0102:05/19 18:24:55 7.99
0103:05/19 18:29:55 8.01
0104:05/19 18:34:55 7.98
0105:05/19 18:39:55 7.99
0106:05/19 18:44:55 7.98
0107:05/19 18:49:55 7.99
0108:05/19 18:54:55 8.00
0109:05/19 18:59:55 7.98
0110:05/19 19:04:55 7.98
0111:05/19 19:09:55 7.98
0112:05/19 19:14:55 7.97
0113:05/19 19:19:55 7.98
0114:05/19 19:24:55 7.97
0115:05/19 19:29:55 7.97
0116:05/19 19:34:55 7.95
0117:05/19 19:39:55 7.97
0118:05/19 19:44:48 7.96
0119:05/19 19:49:47 7.96
0120:05/19 19:54:47 7.96
0121:05/19 19:59:47 7.96
0122:05/19 20:04:47 7.95
0123:05/19 20:09:47 7.95
0124:05/19 20:14:47 7.95
0125:05/19 20:19:47 7.95
0126:05/19 20:24:47 7.95
0127:05/19 20:29:47 7.94
0128:05/19 20:34:47 7.95
0129:05/19 20:39:47 7.95
0130:05/19 20:44:47 7.95
0131:05/19 20:49:47 7.94
0132:05/19 20:54:47 7.94
0133:05/19 20:59:47 7.93
0134:05/19 21:04:47 7.93
0135:05/19 21:09:47 7.93
0136:05/19 21:14:47 7.93
0137:05/19 21:19:47 7.93
0138:05/19 21:24:47 7.92
0139:05/19 21:29:47 7.92
0140:05/19 21:34:47 7.92
0141:05/19 21:39:47 7.91
0142:05/19 21:44:47 7.91
0143:05/19 21:49:47 7.91

Observation Well, MW2
Data Logger #1
Distance, MW2 to RW1 = 85ft
Well Discharge(Q) = 0.90gpm
Date: 5/19/92 to 5/21/92

0144:05/19 21:54:47 7.91
0145:05/19 21:59:47 7.91
0146:05/19 22:04:47 7.91
0147:05/19 22:09:47 7.91
0148:05/19 22:14:47 7.91
0149:05/19 22:19:47 7.91
0150:05/19 22:24:47 7.91
0151:05/19 22:29:47 7.90
0152:05/19 22:34:47 7.91
0153:05/19 22:39:47 7.90
0154:05/19 22:44:47 7.90
0155:05/19 22:49:47 7.91
0156:05/19 22:54:47 7.91
0157:05/19 22:59:47 7.90
0158:05/19 23:04:47 7.90
0159:05/19 23:09:47 7.90
0160:05/19 23:14:47 7.90
0161:05/19 23:19:47 7.90
0162:05/19 23:24:47 7.90
0163:05/19 23:29:47 7.91
0164:05/19 23:34:47 7.90
0165:05/19 23:39:47 7.90
0166:05/19 23:44:47 7.90
0167:05/19 23:49:47 7.90
0168:05/19 23:54:47 7.90
0169:05/19 23:59:47 7.90
0170:05/20 00:04:47 7.90
0171:05/20 00:09:47 7.90
0172:05/20 00:14:47 7.90
0173:05/20 00:19:47 7.90
0174:05/20 00:24:47 7.90
0175:05/20 00:29:47 7.90
0176:05/20 00:34:47 7.90
0177:05/20 00:39:47 7.89
0178:05/20 00:44:47 7.90
0179:05/20 00:49:47 7.89
0180:05/20 00:54:47 7.89
0181:05/20 00:59:47 7.89
0182:05/20 01:04:47 7.89
0183:05/20 01:09:47 7.90
0184:05/20 01:14:47 7.90
0185:05/20 01:19:47 7.89
0186:05/20 01:24:47 7.89
0187:05/20 01:29:47 7.89
0188:05/20 01:34:47 7.89
0189:05/20 01:39:47 7.89
0190:05/20 01:44:47 7.88
0191:05/20 01:49:47 7.88

Observation Well, MW2
Data Logger #1
Distance, MW2 to RW1 = 85ft
Well Discharge(Q) = 0.90gpm
Date: 5/19/92 to 5/21/92

0192	05/20 01:54:47	7.88
0193	05/20 01:59:47	7.88
0194	05/20 02:04:47	7.88
0195	05/20 02:09:47	7.88
0196	05/20 02:14:47	7.88
0197	05/20 02:19:47	7.88
0198	05/20 02:24:47	7.88
0199	05/20 02:29:47	7.88
0200	05/20 02:34:47	7.88
0201	05/20 02:39:47	7.88
0202	05/20 02:44:47	7.88
0203	05/20 02:49:47	7.88
0204	05/20 02:54:47	7.88
0205	05/20 02:59:47	7.88
0206	05/20 03:04:47	7.87
0207	05/20 03:09:47	7.88
0208	05/20 03:14:47	7.87
0209	05/20 03:19:47	7.87
0210	05/20 03:24:47	7.87
0211	05/20 03:29:47	7.87
0212	05/20 03:34:47	7.87
0213	05/20 03:39:47	7.87
0214	05/20 03:44:47	7.87
0215	05/20 03:49:47	7.86
0216	05/20 03:54:47	7.86
0217	05/20 03:59:47	7.87
0218	05/20 04:04:47	7.86
0219	05/20 04:09:47	7.87
0220	05/20 04:14:47	7.87
0221	05/20 04:19:47	7.86
0222	05/20 04:24:47	7.87
0223	05/20 04:29:47	7.86
0224	05/20 04:34:47	7.86
0225	05/20 04:39:47	7.86
0226	05/20 04:44:47	7.86
0227	05/20 04:49:47	7.86
0228	05/20 04:54:47	7.86
0229	05/20 04:59:47	7.86
0230	05/20 05:04:47	7.86
0231	05/20 05:09:47	7.86
0232	05/20 05:14:47	7.86
0233	05/20 05:19:47	7.86
0234	05/20 05:24:47	7.86
0235	05/20 05:29:47	7.86
0236	05/20 05:34:47	7.86
0237	05/20 05:39:47	7.86
0238	05/20 05:44:47	7.86
0239	05/20 05:49:47	7.86

Observation Well, MW2
Data Logger #1
Distance, MW2 to RW1 = 85ft
Well Discharge(Q) = 0.90gpm
Date: 5/19/92 to 5/21/92

0240:05/20 05:54:47 7.86
0241:05/20 05:59:47 7.86
0242:05/20 06:04:47 7.85
0243:05/20 06:09:47 7.85
0244:05/20 06:14:47 7.85
0245:05/20 06:19:47 7.85
0246:05/20 06:24:47 7.85
0247:05/20 06:29:47 7.85
0248:05/20 06:34:47 7.85
0249:05/20 06:39:47 7.85
0250:05/20 06:44:47 7.85
0251:05/20 06:49:47 7.85
0252:05/20 06:54:47 7.84
0253:05/20 06:59:47 7.84
0254:05/20 07:04:47 7.85
0255:05/20 07:09:47 7.85
0256:05/20 07:14:47 7.85
0257:05/20 07:19:47 7.85
0258:05/20 07:24:47 7.85
0259:05/20 07:29:47 7.85
0260:05/20 07:34:47 7.87
0261:05/20 07:39:47 7.86
0262:05/20 07:44:47 7.88
0263:05/20 07:49:47 7.87
0264:05/20 07:54:47 7.88
0265:05/20 07:59:47 7.90
0266:05/20 08:04:47 7.90
0267:05/20 08:09:47 7.87
0268:05/20 08:14:47 7.87
0269:05/20 08:19:47 7.89
0270:05/20 08:24:47 7.89
0271:05/20 08:29:47 7.89
0272:05/20 08:34:47 7.91
0273:05/20 08:39:47 7.91
0274:05/20 08:44:47 7.91
0275:05/20 08:49:47 7.93
0276:05/20 08:54:47 7.92
0277:05/20 08:59:47 7.90
0278:05/20 09:04:47 7.91
0279:05/20 09:09:47 7.92
0280:05/20 09:14:47 7.93
0281:05/20 09:19:47 7.91
0282:05/20 09:24:47 7.89
0283:05/20 09:29:47 7.96
0284:05/20 09:34:47 7.93
0285:05/20 09:39:47 7.93
0286:05/20 09:44:47 7.93
0287:05/20 09:49:47 7.90

Observation Well, MW2
Data Logger #1
Distance, MW2 to RW1 = 85ft
Well Discharge(Q) = 0.90gpm
Date: 5/19/92 to 5/21/92

0288:05/20 09:54:47 7.93
0289:05/20 09:59:47 7.94
0290:05/20 10:04:47 7.93
0291:05/20 10:09:47 7.92
0292:05/20 10:14:47 7.91
0293:05/20 10:19:47 7.93
0294:05/20 10:24:47 7.96
0295:05/20 10:29:47 7.93
0296:05/20 10:34:47 7.94
0297:05/20 10:39:47 7.96
0298:05/20 10:44:47 7.93
0299:05/20 10:49:47 7.95
0300:05/20 10:54:47 7.93
0301:05/20 10:59:47 7.95
0302:05/20 11:04:47 7.94
0303:05/20 11:09:47 7.94
0304:05/20 11:14:47 7.92
0305:05/20 11:19:47 7.94
0306:05/20 11:24:47 7.95
0307:05/20 11:29:47 7.98
0308:05/20 11:34:47 7.99
0309:05/20 11:39:47 7.95
0310:05/20 11:44:47 7.96
0311:05/20 11:49:47 7.95
0312:05/20 11:54:47 7.96
0313:05/20 11:59:47 7.97
0314:05/20 12:04:47 7.98
0315:05/20 12:09:47 7.95
0316:05/20 12:14:47 7.97
0317:05/20 12:19:47 7.95
0318:05/20 12:24:47 7.97
0319:05/20 12:29:47 7.97
0320:05/20 12:34:47 7.97
0321:05/20 12:39:47 7.96
0322:05/20 12:44:47 7.99
0323:05/20 12:49:47 7.99
0324:05/20 12:54:47 7.99
0325:05/20 12:59:47 7.98
0326:05/20 13:04:47 7.98
0327:05/20 13:09:47 7.99
0328:05/20 13:14:47 8.00
0329:05/20 13:19:47 7.97
0330:05/20 13:24:47 7.99
0331:05/20 13:29:47 7.99
0332:05/20 13:34:47 7.98
0333:05/20 13:39:47 7.98
0334:05/20 13:44:47 7.99
0335:05/20 13:49:47 7.98

Observation Well, MW2
Data Logger #1
Distance, MW2 to RW1 = 85ft
Well Discharge(Q) = 0.90gpm
Date: 5/19/92 to 5/21/92

0336:05/20 13:54:47 8.02
0337:05/20 13:59:47 8.00
0338:05/20 14:04:47 8.03
0339:05/20 14:09:47 7.97
0340:05/20 14:14:47 7.99
0341:05/20 14:19:47 8.00
0342:05/20 14:24:47 7.98
0343:05/20 14:29:47 7.99
0344:05/20 14:34:47 7.98
0345:05/20 14:39:47 7.98
0346:05/20 14:44:47 8.00
0347:05/20 14:49:47 7.98
0348:05/20 14:54:47 7.99
0349:05/20 14:59:47 7.99
0350:05/20 15:04:47 7.99
0351:05/20 15:09:47 8.00
0352:05/20 15:14:47 8.00
0353:05/20 15:19:47 7.98
0354:05/20 15:24:47 8.02
0355:05/20 15:29:47 7.98
0356:05/20 15:34:47 8.01
0357:05/20 15:39:47 7.99
0358:05/20 15:44:47 7.97
0359:05/20 15:49:47 8.00
0360:05/20 15:54:47 7.98
0361:05/20 15:59:47 8.00
0362:05/20 16:04:47 7.98
0363:05/20 16:09:47 7.98
0364:05/20 16:14:47 7.96
0365:05/20 16:19:47 7.99
0366:05/20 16:24:47 7.98
0367:05/20 16:29:47 7.99
0368:05/20 16:34:47 7.97
0369:05/20 16:39:47 7.96
0370:05/20 16:44:47 8.00
0371:05/20 16:49:47 7.97
0372:05/20 16:54:47 7.96
0373:05/20 16:59:47 7.99
0374:05/20 17:04:47 7.97
0375:05/20 17:09:47 7.98
0376:05/20 17:14:47 7.98
0377:05/20 17:19:47 7.98
0378:05/20 17:24:47 7.98
0379:05/20 17:29:47 7.97
0380:05/20 17:34:47 7.98
0381:05/20 17:39:47 7.98
0382:05/20 17:44:47 7.98
0383:05/20 17:49:47 7.96

Observation Well, MW2
Data Logger #1
Distance, MW2 to RW1 = 85ft
Well Discharge(Q) = 0.90gpm
Date: 5/19/92 to 5/21/92

0384:05/20 17:54:47 7.96
0385:05/20 17:59:47 7.98
0386:05/20 18:04:47 7.98
0387:05/20 18:09:47 7.99
0388:05/20 18:14:47 7.96
0389:05/20 18:15:51 7.96
0390:05/20 18:20:50 7.99
0391:05/20 18:25:50 7.97
0392:05/20 18:30:50 7.97
0393:05/20 18:35:50 7.97
0394:05/20 18:40:50 7.98
0395:05/20 18:45:50 7.98
0396:05/20 18:50:50 7.99
0397:05/20 18:55:50 7.97
0398:05/20 19:00:50 7.98
0399:05/20 19:05:50 7.97
0400:05/20 19:10:50 7.97
0401:05/20 19:15:50 7.97
0402:05/20 19:20:50 7.96
0403:05/20 19:25:50 7.96
0404:05/20 19:30:50 7.97
0405:05/20 19:35:50 7.97
0406:05/20 19:40:50 7.97
0407:05/20 19:45:50 7.97
0408:05/20 19:50:50 7.96
0409:05/20 19:55:50 7.96
0410:05/20 20:00:50 7.95
0411:05/20 20:05:50 7.95
0412:05/20 20:10:50 7.94
0413:05/20 20:15:50 7.95
0414:05/20 20:20:50 7.94
0415:05/20 20:25:50 7.94
0416:05/20 20:30:50 7.94
0417:05/20 20:35:50 7.93
0418:05/20 20:40:50 7.93
0419:05/20 20:45:50 7.93
0420:05/20 20:50:50 7.92
0421:05/20 20:55:50 7.92
0422:05/20 21:00:50 7.92
0423:05/20 21:05:50 7.91
0424:05/20 21:10:50 7.91
0425:05/20 21:15:50 7.91
0426:05/20 21:20:50 7.91
0427:05/20 21:25:50 7.91
0428:05/20 21:30:50 7.91
0429:05/20 21:35:50 7.90
0430:05/20 21:40:50 7.90
0431:05/20 21:45:50 7.90

Observation Well, MW2
Data Logger #1
Distance, MW2 to RW1 = 85ft
Well Discharge(Q) = 0.90gpm
Date: 5/19/92 to 5/21/92

0432:05/20 21:50:50 7.90
0433:05/20 21:55:50 7.90
0434:05/20 22:00:50 7.90
0435:05/20 22:05:50 7.89
0436:05/20 22:10:50 7.89
0437:05/20 22:15:50 7.89
0438:05/20 22:20:50 7.89
0439:05/20 22:25:50 7.89
0440:05/20 22:30:50 7.89
0441:05/20 22:35:50 7.89
0442:05/20 22:40:50 7.89
0443:05/20 22:45:50 7.88
0444:05/20 22:50:50 7.88
0445:05/20 22:55:50 7.88
0446:05/20 23:00:50 7.88
0447:05/20 23:05:50 7.88
0448:05/20 23:10:50 7.88
0449:05/20 23:15:50 7.88
0450:05/20 23:20:50 7.88
0451:05/20 23:25:50 7.88
0452:05/20 23:30:50 7.88
0453:05/20 23:35:50 7.87
0454:05/20 23:40:50 7.88
0455:05/20 23:45:50 7.87
0456:05/20 23:50:50 7.87
0457:05/20 23:55:50 7.87
0458:05/21 00:00:50 7.87
0459:05/21 00:05:50 7.87
0460:05/21 00:10:50 7.87
0461:05/21 00:15:50 7.87
0462:05/21 00:20:50 7.87
0463:05/21 00:25:50 7.87
0464:05/21 00:30:50 7.87
0465:05/21 00:35:50 7.87
0466:05/21 00:40:50 7.87
0467:05/21 00:45:50 7.87
0468:05/21 00:50:50 7.86
0469:05/21 00:55:50 7.87
0470:05/21 01:00:50 7.86
0471:05/21 01:05:50 7.86
0472:05/21 01:10:50 7.86
0473:05/21 01:15:50 7.86
0474:05/21 01:20:50 7.86
0475:05/21 01:25:50 7.86
0476:05/21 01:30:50 7.86
0477:05/21 01:35:50 7.86
0478:05/21 01:40:50 7.85
0479:05/21 01:45:50 7.86

Observation Well, MW2
Data Logger #1
Distance, MW2 to RW1 = 85ft
Well Discharge(Q) = 0.90gpm
Date: 5/19/92 to 5/21/92

0480:05/21 01:50:50 7.86
0481:05/21 01:55:50 7.86
0482:05/21 02:00:50 7.85
0483:05/21 02:05:50 7.86
0484:05/21 02:10:50 7.85
0485:05/21 02:15:50 7.85
0486:05/21 02:20:50 7.85
0487:05/21 02:25:50 7.85
0488:05/21 02:30:50 7.85
0489:05/21 02:35:50 7.85
0490:05/21 02:40:50 7.85
0491:05/21 02:45:50 7.85
0492:05/21 02:50:50 7.85
0493:05/21 02:55:50 7.85
0494:05/21 03:00:50 7.85
0495:05/21 03:05:50 7.85
0496:05/21 03:10:50 7.85
0497:05/21 03:15:50 7.84
0498:05/21 03:20:50 7.84
0499:05/21 03:25:50 7.84
0500:05/21 03:30:50 7.85
0501:05/21 03:35:50 7.85
0502:05/21 03:40:50 7.84
0503:05/21 03:45:50 7.84
0504:05/21 03:50:50 7.85
0505:05/21 03:55:50 7.84
0506:05/21 04:00:50 7.84
0507:05/21 04:05:50 7.84
0508:05/21 04:10:50 7.84
0509:05/21 04:15:50 7.84
0510:05/21 04:20:50 7.84
0511:05/21 04:25:50 7.84
0512:05/21 04:30:50 7.83
0513:05/21 04:35:50 7.83
0514:05/21 04:40:50 7.83
0515:05/21 04:45:50 7.83
0516:05/21 04:50:50 7.83
0517:05/21 04:55:50 7.82
0518:05/21 05:00:50 7.82
0519:05/21 05:05:50 7.82
0520:05/21 05:10:50 7.82
0521:05/21 05:15:50 7.82
0522:05/21 05:20:50 7.82
0523:05/21 05:25:50 7.82
0524:05/21 05:30:50 7.82
0525:05/21 05:35:50 7.81
0526:05/21 05:40:50 7.81
0527:05/21 05:45:50 7.81

Observation Well, MW2
Data Logger #1
Distance, MW2 to RW1 = 85ft
Well Discharge(Q) = 0.90gpm
Date: 5/19/92 to 5/21/92

0528:05/21 05:50:50 7.81
0529:05/21 05:55:50 7.81
0530:05/21 06:00:50 7.81
0531:05/21 06:05:50 7.81
0532:05/21 06:10:50 7.81
0533:05/21 06:15:50 7.81
0534:05/21 06:20:50 7.81
0535:05/21 06:25:50 7.80
0536:05/21 06:30:50 7.81
0537:05/21 06:35:50 7.80
0538:05/21 06:40:50 7.80
0539:05/21 06:45:50 7.80
0540:05/21 06:50:50 7.80
0541:05/21 06:55:50 7.80
0542:05/21 07:00:50 7.80
0543:05/21 07:05:50 7.81
0544:05/21 07:10:50 7.80
0545:05/21 07:15:50 7.81
0546:05/21 07:20:50 7.81
0547:05/21 07:25:50 7.81
0548:05/21 07:30:50 7.81
0549:05/21 07:35:50 7.81
0550:05/21 07:40:50 7.82
0551:05/21 07:45:50 7.84
0552:05/21 07:50:50 7.83
0553:05/21 07:55:50 7.84
0554:05/21 08:00:50 7.85
0555:05/21 08:05:50 7.87
0556:05/21 08:10:50 7.86
0557:05/21 08:15:50 7.85
0558:05/21 08:20:50 7.86
0559:05/21 08:25:50 7.87
0560:05/21 08:30:50 7.87
0561:05/21 08:35:50 7.86
0562:05/21 08:40:50 7.87
0563:05/21 08:45:50 7.88
0564:05/21 08:50:50 7.89
0565:05/21 08:55:50 7.89
0566:05/21 09:00:50 7.88
0567:05/21 09:05:50 7.89
0568:05/21 09:10:50 7.90
0569:05/21 09:15:50 7.89
0570:05/21 09:20:50 7.90
0571:05/21 09:25:50 7.89
0572:05/21 09:30:50 7.91
0573:05/21 09:35:50 7.92
0574:05/21 09:40:50 7.92
0575:05/21 09:45:50 7.91

Observation Well, MW2
Data Logger #1
Distance, MW2 to RW1 = 85ft
Well Discharge(Q) = 0.90gpm
Date: 5/19/92 to 5/21/92

0576:05/21 09:50:50 7.93
0577:05/21 09:55:50 7.91
0578:05/21 10:00:50 7.91
0579:05/21 10:05:50 7.93
0580:05/21 10:10:50 7.92
0581:05/21 10:15:50 7.94
0582:05/21 10:20:50 7.91
0583:05/21 10:25:50 7.93
0584:05/21 10:30:50 7.94
0585:05/21 10:35:50 7.92
0586:05/21 10:40:50 7.93
0587:05/21 10:45:50 7.94
0588:05/21 10:50:50 7.92
0589:05/21 10:55:50 7.93
0590:05/21 11:00:50 7.93
0591:05/21 11:05:50 7.93
0592:05/21 11:10:50 7.93
0593:05/21 11:15:50 7.93
0594:05/21 11:20:50 7.94
0595:05/21 11:25:50 7.94
0596:05/21 11:30:50 7.94
0597:05/21 11:35:50 7.94
0598:05/21 11:40:50 7.90
0599:05/21 11:45:50 7.96
0600:05/21 11:50:50 7.99
0601:05/21 11:55:50 7.95
0602:05/21 12:00:50 7.93

<EOT>

Unocal Service Station #7004
15599 Hesperian Boulevard
San Leandro, California

Observation Well, MW3
Data Logger #2
Distance, MW3 to RW1 = 21.0ft
Well Discharge(Q) = 0.90gpm
Date: 5/19/92 to 5/21/92

05/19/92 10:00:00 05/21/92 11:59:56

0001	05/19 10:00:00	8.15
0002	05/19 10:05:00	8.16
0003	05/19 10:10:00	8.15
0004	05/19 10:15:00	8.16
0005	05/19 10:20:00	8.16
0006	05/19 10:25:00	8.16
0007	05/19 10:30:00	8.16
0008	05/19 10:35:00	8.15
0009	05/19 10:40:00	8.16
0010	05/19 10:45:00	8.17
0011	05/19 10:50:00	8.14
0012	05/19 10:55:00	8.15
0013	05/19 11:00:00	8.15
0014	05/19 11:05:00	8.16
0015	05/19 11:10:00	8.16
0016	05/19 11:15:00	8.15
0017	05/19 11:20:00	8.16
0018	05/19 11:25:00	8.15
0019	05/19 11:30:00	8.15
0020	05/19 11:35:00	8.18
0021	05/19 11:40:00	8.16
0022	05/19 11:45:00	8.16
0023	05/19 11:50:00	8.15
0024	05/19 11:55:00	8.14
0025	05/19 12:00:00	8.17
0026	05/19 12:05:00	8.14
0027	05/19 12:10:00	8.14
0028	05/19 12:15:00	8.12
0029	05/19 12:17:06	8.12
0030	05/19 12:22:05	8.10
0031	05/19 12:27:05	8.12
0032	05/19 12:32:05	8.09
0033	05/19 12:37:05	8.11
0034	05/19 12:42:05	8.08
0035	05/19 12:47:05	8.09
0036	05/19 12:52:05	8.09
0037	05/19 12:57:05	8.06
0038	05/19 13:02:05	8.07
0039	05/19 13:07:05	8.08
0040	05/19 13:12:05	8.08
0041	05/19 13:17:05	8.08
0042	05/19 13:22:05	8.07
0043	05/19 13:27:05	8.09
0044	05/19 13:32:05	8.08
0045	05/19 13:37:05	8.06
0046	05/19 13:42:05	8.09
0047	05/19 13:47:05	8.06

Observation Well, MW3
Data Logger #2
Distance, MW3 to RW1 = 21.0ft
Well Discharge(Q) = 0.90gpm
Date: 5/19/92 to 5/21/92

0048:05/19 13:52:05 8.06
0049:05/19 13:57:05 8.08
0050:05/19 14:02:05 8.06
0051:05/19 14:07:05 8.08
0052:05/19 14:12:05 8.07
0053:05/19 14:17:05 8.07
0054:05/19 14:22:05 8.07
0055:05/19 14:27:05 8.07
0056:05/19 14:32:05 8.07
0057:05/19 14:37:05 8.06
0058:05/19 14:42:05 8.06
0059:05/19 14:47:05 8.07
0060:05/19 14:52:05 8.07
0061:05/19 14:57:05 8.06
0062:05/19 15:02:05 8.05
0063:05/19 15:07:05 8.06
0064:05/19 15:12:05 8.06
0065:05/19 15:17:05 8.05
0066:05/19 15:22:05 8.07
0067:05/19 15:27:05 8.05
0068:05/19 15:32:05 8.06
0069:05/19 15:37:05 8.05
0070:05/19 15:42:05 8.06
0071:05/19 15:47:05 8.06
0072:05/19 15:52:05 8.06
0073:05/19 15:57:05 8.05
0074:05/19 16:02:05 8.06
0075:05/19 16:07:05 8.05
0076:05/19 16:12:05 8.05
0077:05/19 16:17:05 8.06
0078:05/19 16:22:05 8.06
0079:05/19 16:27:05 8.05
0080:05/19 16:32:05 8.06
0081:05/19 16:37:05 8.06
0082:05/19 16:42:05 8.06
0083:05/19 16:47:05 8.06
0084:05/19 16:52:05 8.06
0085:05/19 16:57:05 8.06
0086:05/19 17:02:05 8.05
0087:05/19 17:07:05 8.07
0088:05/19 17:12:05 8.06
0089:05/19 17:17:05 8.05
0090:05/19 17:22:05 8.07
0091:05/19 17:27:05 8.05
0092:05/19 17:32:05 8.04
0093:05/19 17:34:57 8.07
0094:05/19 17:39:56 8.06
0095:05/19 17:44:56 8.06

Observation Well, MW3
Data Logger #2
Distance, MW3 to RW1 = 21.0ft
Well Discharge(Q) = 0.90gpm
Date: 5/19/92 to 5/21/92

0096:05/19 17:49:56 8.06
0097:05/19 17:54:56 8.05
0098:05/19 17:59:56 8.06
0099:05/19 18:04:56 8.06
0100:05/19 18:09:56 8.06
0101:05/19 18:14:56 8.06
0102:05/19 18:19:56 8.06
0103:05/19 18:24:56 8.07
0104:05/19 18:29:56 8.06
0105:05/19 18:34:56 8.06
0106:05/19 18:39:56 8.06
0107:05/19 18:44:56 8.07
0108:05/19 18:49:56 8.06
0109:05/19 18:54:56 8.06
0110:05/19 18:59:56 8.06
0111:05/19 19:04:56 8.06
0112:05/19 19:09:56 8.06
0113:05/19 19:14:56 8.06
0114:05/19 19:19:56 8.06
0115:05/19 19:24:56 8.06
0116:05/19 19:29:56 8.05
0117:05/19 19:34:56 8.06
0118:05/19 19:39:56 8.06
0119:05/19 19:44:56 8.06
0120:05/19 19:49:56 8.06
0121:05/19 19:54:56 8.05
0122:05/19 19:59:56 8.05
0123:05/19 20:04:56 8.05
0124:05/19 20:09:56 8.05
0125:05/19 20:14:56 8.05
0126:05/19 20:19:56 8.05
0127:05/19 20:24:56 8.05
0128:05/19 20:29:56 8.05
0129:05/19 20:34:56 8.05
0130:05/19 20:39:56 8.05
0131:05/19 20:44:56 8.05
0132:05/19 20:49:56 8.05
0133:05/19 20:54:56 8.05
0134:05/19 20:59:56 8.05
0135:05/19 21:04:56 8.04
0136:05/19 21:09:56 8.05
0137:05/19 21:14:56 8.04
0138:05/19 21:19:56 8.05
0139:05/19 21:24:56 8.05
0140:05/19 21:29:56 8.04
0141:05/19 21:34:56 8.04
0142:05/19 21:39:56 8.04
0143:05/19 21:44:56 8.04

Observation Well, MW3
Data Logger #2
Distance, MW3 to RW1 = 21.0ft
Well Discharge(Q) = 0.90gpm
Date: 5/19/92 to 5/21/92

0144:05/19 21:49:56 8.04
0145:05/19 21:54:56 8.04
0146:05/19 21:59:56 8.04
0147:05/19 22:04:56 8.04
0148:05/19 22:09:56 8.03
0149:05/19 22:14:56 8.04
0150:05/19 22:19:56 8.04
0151:05/19 22:24:56 8.04
0152:05/19 22:29:56 8.04
0153:05/19 22:34:56 8.04
0154:05/19 22:39:56 8.04
0155:05/19 22:44:56 8.04
0156:05/19 22:49:56 8.04
0157:05/19 22:54:56 8.04
0158:05/19 22:59:56 8.04
0159:05/19 23:04:56 8.04
0160:05/19 23:09:56 8.04
0161:05/19 23:14:56 8.04
0162:05/19 23:19:56 8.04
0163:05/19 23:24:56 8.04
0164:05/19 23:29:56 8.04
0165:05/19 23:34:56 8.04
0166:05/19 23:39:56 8.04
0167:05/19 23:44:56 8.04
0168:05/19 23:49:56 8.04
0169:05/19 23:54:56 8.04
0170:05/19 23:59:56 8.04
0171:05/20 00:04:56 8.04
0172:05/20 00:09:56 8.04
0173:05/20 00:14:56 8.04
0174:05/20 00:19:56 8.04
0175:05/20 00:24:56 8.04
0176:05/20 00:29:56 8.04
0177:05/20 00:34:56 8.04
0178:05/20 00:39:56 8.04
0179:05/20 00:44:56 8.03
0180:05/20 00:49:56 8.04
0181:05/20 00:54:56 8.03
0182:05/20 00:59:56 8.04
0183:05/20 01:04:56 8.03
0184:05/20 01:09:56 8.04
0185:05/20 01:14:56 8.05
0186:05/20 01:19:56 8.04
0187:05/20 01:24:56 8.04
0188:05/20 01:29:56 8.03
0189:05/20 01:34:56 8.04
0190:05/20 01:39:56 8.04
0191:05/20 01:44:56 8.04

Observation Well, MW3
Data Logger #2
Distance, MW3 to RW1 = 21.0ft
Well Discharge(Q) = 0.90gpm
Date: 5/19/92 to 5/21/92

0192:05/20 01:49:56 8.04
0193:05/20 01:54:56 8.03
0194:05/20 01:59:56 8.04
0195:05/20 02:04:56 8.03
0196:05/20 02:09:56 8.04
0197:05/20 02:14:56 8.04
0198:05/20 02:19:56 8.04
0199:05/20 02:24:56 8.04
0200:05/20 02:29:56 8.04
0201:05/20 02:34:56 8.04
0202:05/20 02:39:56 8.04
0203:05/20 02:44:56 8.04
0204:05/20 02:49:56 8.04
0205:05/20 02:54:56 8.04
0206:05/20 02:59:56 8.04
0207:05/20 03:04:56 8.03
0208:05/20 03:09:56 8.04
0209:05/20 03:14:56 8.04
0210:05/20 03:19:56 8.03
0211:05/20 03:24:56 8.03
0212:05/20 03:29:56 8.03
0213:05/20 03:34:56 8.03
0214:05/20 03:39:56 8.03
0215:05/20 03:44:56 8.03
0216:05/20 03:49:56 8.03
0217:05/20 03:54:56 8.03
0218:05/20 03:59:56 8.03
0219:05/20 04:04:56 8.03
0220:05/20 04:09:56 8.03
0221:05/20 04:14:56 8.03
0222:05/20 04:19:56 8.03
0223:05/20 04:24:56 8.03
0224:05/20 04:29:56 8.03
0225:05/20 04:34:56 8.03
0226:05/20 04:39:56 8.03
0227:05/20 04:44:56 8.03
0228:05/20 04:49:56 8.03
0229:05/20 04:54:56 8.03
0230:05/20 04:59:56 8.03
0231:05/20 05:04:56 8.03
0232:05/20 05:09:56 8.03
0233:05/20 05:14:56 8.03
0234:05/20 05:19:56 8.03
0235:05/20 05:24:56 8.03
0236:05/20 05:29:56 8.03
0237:05/20 05:34:56 8.03
0238:05/20 05:39:56 8.03
0239:05/20 05:44:56 8.03

Observation Well, MW3
Data Logger #2
Distance, MW3 to RW1 = 21.0ft
Well Discharge(Q) = 0.90gpm
Date: 5/19/92 to 5/21/92

0240:05/20 05:49:56 8.03
0241:05/20 05:54:56 8.03
0242:05/20 05:59:56 8.03
0243:05/20 06:04:56 8.03
0244:05/20 06:09:56 8.03
0245:05/20 06:14:56 8.02
0246:05/20 06:19:56 8.02
0247:05/20 06:24:56 8.03
0248:05/20 06:29:56 8.03
0249:05/20 06:34:56 8.02
0250:05/20 06:39:56 8.02
0251:05/20 06:44:56 8.02
0252:05/20 06:49:56 8.02
0253:05/20 06:54:56 8.03
0254:05/20 06:59:56 8.02
0255:05/20 07:04:56 8.02
0256:05/20 07:09:56 8.02
0257:05/20 07:14:56 8.02
0258:05/20 07:19:56 8.02
0259:05/20 07:24:56 8.02
0260:05/20 07:29:56 8.02
0261:05/20 07:34:56 8.02
0262:05/20 07:39:56 8.03
0263:05/20 07:44:56 8.02
0264:05/20 07:49:56 8.02
0265:05/20 07:54:56 8.03
0266:05/20 07:59:56 8.02
0267:05/20 08:04:56 8.02
0268:05/20 08:09:56 8.03
0269:05/20 08:14:56 8.02
0270:05/20 08:19:56 8.03
0271:05/20 08:24:56 8.02
0272:05/20 08:29:56 8.03
0273:05/20 08:34:56 8.02
0274:05/20 08:39:56 8.03
0275:05/20 08:44:56 8.02
0276:05/20 08:49:56 8.03
0277:05/20 08:54:56 8.03
0278:05/20 08:59:56 8.03
0279:05/20 09:04:56 8.02
0280:05/20 09:09:56 8.06
0281:05/20 09:14:56 8.03
0282:05/20 09:19:56 8.04
0283:05/20 09:24:56 8.03
0284:05/20 09:29:56 8.03
0285:05/20 09:34:56 8.03
0286:05/20 09:39:56 8.03
0287:05/20 09:44:56 8.03

Observation Well, MW3
Data Logger #2
Distance, MW3 to RW1 = 21.0ft
Well Discharge(Q) = 0.90gpm
Date: 5/19/92 to 5/21/92

0288:05/20 09:49:56 8.03
0289:05/20 09:54:56 8.03
0290:05/20 09:59:56 8.03
0291:05/20 10:04:56 8.03
0292:05/20 10:09:56 8.01
0293:05/20 10:14:56 8.03
0294:05/20 10:19:56 8.03
0295:05/20 10:24:56 8.03
0296:05/20 10:29:56 8.04
0297:05/20 10:34:56 8.03
0298:05/20 10:39:56 8.03
0299:05/20 10:44:56 8.03
0300:05/20 10:49:56 8.02
0301:05/20 10:54:56 8.03
0302:05/20 10:59:56 8.03
0303:05/20 11:04:56 8.03
0304:05/20 11:09:56 8.02
0305:05/20 11:14:56 8.03
0306:05/20 11:19:56 8.03
0307:05/20 11:24:56 8.04
0308:05/20 11:29:56 8.03
0309:05/20 11:34:56 8.03
0310:05/20 11:39:56 8.03
0311:05/20 11:44:56 8.03
0312:05/20 11:49:56 8.02
0313:05/20 11:54:56 8.02
0314:05/20 11:59:56 8.03
0315:05/20 12:04:56 8.02
0316:05/20 12:09:56 8.03
0317:05/20 12:14:56 8.03
0318:05/20 12:19:56 8.03
0319:05/20 12:24:56 8.02
0320:05/20 12:29:56 8.03
0321:05/20 12:34:56 8.03
0322:05/20 12:39:56 8.03
0323:05/20 12:44:56 8.03
0324:05/20 12:49:56 8.03
0325:05/20 12:54:56 8.04
0326:05/20 12:59:56 8.04
0327:05/20 13:04:56 8.03
0328:05/20 13:09:56 8.03
0329:05/20 13:14:56 8.03
0330:05/20 13:19:56 8.04
0331:05/20 13:24:56 8.03
0332:05/20 13:29:56 8.03
0333:05/20 13:34:56 8.03
0334:05/20 13:39:56 8.03
0335:05/20 13:44:56 8.02

Observation Well, MW3
Data Logger #2
Distance, MW3 to RW1 = 21.0ft
Well Discharge(Q) = 0.90gpm
Date: 5/19/92 to 5/21/92

0336:05/20 13:49:56 8.03
0337:05/20 13:54:56 8.03
0338:05/20 13:59:56 8.04
0339:05/20 14:04:56 8.02
0340:05/20 14:09:56 8.03
0341:05/20 14:14:56 8.04
0342:05/20 14:19:56 8.03
0343:05/20 14:24:56 8.03
0344:05/20 14:29:56 8.04
0345:05/20 14:34:56 8.02
0346:05/20 14:39:56 8.03
0347:05/20 14:44:56 8.03
0348:05/20 14:49:56 8.03
0349:05/20 14:54:56 8.03
0350:05/20 14:59:56 8.04
0351:05/20 15:04:56 8.02
0352:05/20 15:09:56 8.04
0353:05/20 15:14:56 8.03
0354:05/20 15:19:56 8.03
0355:05/20 15:24:56 8.04
0356:05/20 15:29:56 8.03
0357:05/20 15:34:56 8.03
0358:05/20 15:39:56 8.03
0359:05/20 15:44:56 8.03
0360:05/20 15:49:56 8.03
0361:05/20 15:54:56 8.04
0362:05/20 15:59:56 8.02
0363:05/20 16:04:56 8.03
0364:05/20 16:09:56 8.02
0365:05/20 16:14:56 8.03
0366:05/20 16:19:56 8.03
0367:05/20 16:24:56 8.04
0368:05/20 16:29:56 8.03
0369:05/20 16:34:56 8.02
0370:05/20 16:39:56 8.03
0371:05/20 16:44:56 8.03
0372:05/20 16:49:56 8.03
0373:05/20 16:54:56 8.03
0374:05/20 16:59:56 8.03
0375:05/20 17:04:56 8.03
0376:05/20 17:09:56 8.03
0377:05/20 17:14:56 8.03
0378:05/20 17:19:56 8.03
0379:05/20 17:24:56 8.03
0380:05/20 17:29:56 8.03
0381:05/20 17:34:56 8.03
0382:05/20 17:39:56 8.03
0383:05/20 17:44:56 8.03

Observation Well, MW3
Data Logger #2
Distance, MW3 to RW1 = 21.0ft
Well Discharge(Q) = 0.90gpm
Date: 5/19/92 to 5/21/92

0384:05/20 17:49:56 8.03
0385:05/20 17:54:56 8.03
0386:05/20 17:59:56 8.03
0387:05/20 18:04:56 8.03
0388:05/20 18:09:56 8.03
0389:05/20 18:14:56 8.04
0390:05/20 18:19:56 8.04
0391:05/20 18:24:56 8.04
0392:05/20 18:29:56 8.04
0393:05/20 18:34:56 8.04
0394:05/20 18:39:56 8.04
0395:05/20 18:44:56 8.04
0396:05/20 18:49:56 8.04
0397:05/20 18:54:56 8.05
0398:05/20 18:59:56 8.04
0399:05/20 19:04:56 8.04
0400:05/20 19:09:56 8.04
0401:05/20 19:14:56 8.04
0402:05/20 19:19:56 8.04
0403:05/20 19:24:56 8.04
0404:05/20 19:29:56 8.04
0405:05/20 19:34:56 8.04
0406:05/20 19:39:56 8.04
0407:05/20 19:44:56 8.04
0408:05/20 19:49:56 8.04
0409:05/20 19:54:56 8.04
0410:05/20 19:59:56 8.04
0411:05/20 20:04:56 8.04
0412:05/20 20:09:56 8.03
0413:05/20 20:14:56 8.03
0414:05/20 20:19:56 8.03
0415:05/20 20:24:56 8.03
0416:05/20 20:29:56 8.03
0417:05/20 20:34:56 8.03
0418:05/20 20:39:56 8.03
0419:05/20 20:44:56 8.03
0420:05/20 20:49:56 8.03
0421:05/20 20:54:56 8.03
0422:05/20 20:59:56 8.03
0423:05/20 21:04:56 8.03
0424:05/20 21:09:56 8.03
0425:05/20 21:14:56 8.03
0426:05/20 21:19:56 8.03
0427:05/20 21:24:56 8.03
0428:05/20 21:29:56 8.03
0429:05/20 21:34:56 8.02
0430:05/20 21:39:56 8.02
0431:05/20 21:44:56 8.02

Observation Well, MW3
Data Logger #2
Distance, MW3 to RW1 = 21.0ft
Well Discharge(Q) = 0.90gpm
Date: 5/19/92 to 5/21/92

0432:05/20 21:49:56 8.02
0433:05/20 21:54:56 8.02
0434:05/20 21:59:56 8.02
0435:05/20 22:04:56 8.02
0436:05/20 22:09:56 8.02
0437:05/20 22:14:56 8.02
0438:05/20 22:19:56 8.02
0439:05/20 22:24:56 8.02
0440:05/20 22:29:56 8.02
0441:05/20 22:34:56 8.02
0442:05/20 22:39:56 8.02
0443:05/20 22:44:56 8.02
0444:05/20 22:49:56 8.02
0445:05/20 22:54:56 8.02
0446:05/20 22:59:56 8.02
0447:05/20 23:04:56 8.02
0448:05/20 23:09:56 8.02
0449:05/20 23:14:56 8.02
0450:05/20 23:19:56 8.02
0451:05/20 23:24:56 8.02
0452:05/20 23:29:56 8.02
0453:05/20 23:34:56 8.02
0454:05/20 23:39:56 8.02
0455:05/20 23:44:56 8.02
0456:05/20 23:49:56 8.02
0457:05/20 23:54:56 8.02
0458:05/20 23:59:56 8.02
0459:05/21 00:04:56 8.02
0460:05/21 00:09:56 8.02
0461:05/21 00:14:56 8.02
0462:05/21 00:19:56 8.02
0463:05/21 00:24:56 8.02
0464:05/21 00:29:56 8.02
0465:05/21 00:34:56 8.02
0466:05/21 00:39:56 8.02
0467:05/21 00:44:56 8.02
0468:05/21 00:49:56 8.02
0469:05/21 00:54:56 8.02
0470:05/21 00:59:56 8.02
0471:05/21 01:04:56 8.02
0472:05/21 01:09:56 8.02
0473:05/21 01:14:56 8.02
0474:05/21 01:19:56 8.02
0475:05/21 01:24:56 8.02
0476:05/21 01:29:56 8.02
0477:05/21 01:34:56 8.02
0478:05/21 01:39:56 8.02
0479:05/21 01:44:56 8.02

Unocal Service Station #7004
15599 Hesperian Boulevard
San Leandro, California

Observation Well, MW3
Data Logger #2
Distance, MW3 to RW1 = 21.0ft
Well Discharge(Q) = 0.90gpm
Date: 5/19/92 to 5/21/92

0480:05/21 01:49:56 8.02
0481:05/21 01:54:56 8.02
0482:05/21 01:59:56 8.02
0483:05/21 02:04:56 8.02
0484:05/21 02:09:56 8.02
0485:05/21 02:14:56 8.02
0486:05/21 02:19:56 8.02
0487:05/21 02:24:56 8.02
0488:05/21 02:29:56 8.02
0489:05/21 02:34:56 8.02
0490:05/21 02:39:56 8.02
0491:05/21 02:44:56 8.02
0492:05/21 02:49:56 8.01
0493:05/21 02:54:56 8.02
0494:05/21 02:59:56 8.02
0495:05/21 03:04:56 8.02
0496:05/21 03:09:56 8.02
0497:05/21 03:14:56 8.02
0498:05/21 03:19:56 8.02
0499:05/21 03:24:56 8.02
0500:05/21 03:29:56 8.02
0501:05/21 03:34:56 8.02
0502:05/21 03:39:56 8.02
0503:05/21 03:44:56 8.02
0504:05/21 03:49:56 8.02
0505:05/21 03:54:56 8.03
0506:05/21 03:59:56 8.02
0507:05/21 04:04:56 8.02
0508:05/21 04:09:56 8.02
0509:05/21 04:14:56 8.02
0510:05/21 04:19:56 8.02
0511:05/21 04:24:56 8.02
0512:05/21 04:29:56 8.02
0513:05/21 04:34:56 8.01
0514:05/21 04:39:56 8.01
0515:05/21 04:44:56 8.01
0516:05/21 04:49:56 8.01
0517:05/21 04:54:56 8.01
0518:05/21 04:59:56 8.01
0519:05/21 05:04:56 8.01
0520:05/21 05:09:56 8.01
0521:05/21 05:14:56 8.01
0522:05/21 05:19:56 8.01
0523:05/21 05:24:56 8.01
0524:05/21 05:29:56 8.01
0525:05/21 05:34:56 8.01
0526:05/21 05:39:56 8.01
0527:05/21 05:44:56 8.01

Observation Well, MW3
Data Logger #2
Distance, MW3 to RW1 = 21.0ft
Well Discharge(Q) = 0.90gpm
Date: 5/19/92 to 5/21/92

0528:05/21 05:49:56 8.01
0529:05/21 05:54:56 8.01
0530:05/21 05:59:56 8.01
0531:05/21 06:04:56 8.01
0532:05/21 06:09:56 8.01
0533:05/21 06:14:56 8.01
0534:05/21 06:19:56 8.01
0535:05/21 06:24:56 8.01
0536:05/21 06:29:56 8.01
0537:05/21 06:34:56 8.01
0538:05/21 06:39:56 8.01
0539:05/21 06:44:56 8.01
0540:05/21 06:49:56 8.01
0541:05/21 06:54:56 8.01
0542:05/21 06:59:56 8.01
0543:05/21 07:04:56 8.01
0544:05/21 07:09:56 8.01
0545:05/21 07:14:56 8.01
0546:05/21 07:19:56 8.01
0547:05/21 07:24:56 8.01
0548:05/21 07:29:56 8.01
0549:05/21 07:34:56 8.02
0550:05/21 07:39:56 8.01
0551:05/21 07:44:56 8.01
0552:05/21 07:49:56 8.01
0553:05/21 07:54:56 8.02
0554:05/21 07:59:56 8.02
0555:05/21 08:04:56 8.02
0556:05/21 08:09:56 8.02
0557:05/21 08:14:56 8.02
0558:05/21 08:19:56 8.03
0559:05/21 08:24:56 8.02
0560:05/21 08:29:56 8.01
0561:05/21 08:34:56 8.01
0562:05/21 08:39:56 8.02
0563:05/21 08:44:56 8.02
0564:05/21 08:49:56 8.02
0565:05/21 08:54:56 8.02
0566:05/21 08:59:56 8.02
0567:05/21 09:04:56 8.02
0568:05/21 09:09:56 8.02
0569:05/21 09:14:56 8.02
0570:05/21 09:19:56 8.01
0571:05/21 09:24:56 8.02
0572:05/21 09:29:56 8.02
0573:05/21 09:34:56 8.02
0574:05/21 09:39:56 8.02
0575:05/21 09:44:56 8.02

Observation Well, MW3
Data Logger #2
Distance, MW3 to RW1 = 21.0ft
Well Discharge(Q) = 0.90gpm
Date: 5/19/92 to 5/21/92

0576:05/21 09:49:56 8.02
0577:05/21 09:54:56 8.02
0578:05/21 09:59:56 8.02
0579:05/21 10:04:56 8.02
0580:05/21 10:09:56 8.03
0581:05/21 10:14:56 8.01
0582:05/21 10:19:56 8.02
0583:05/21 10:24:56 8.02
0584:05/21 10:29:56 8.02
0585:05/21 10:34:56 8.01
0586:05/21 10:39:56 8.01
0587:05/21 10:44:56 8.01
0588:05/21 10:49:56 8.02
0589:05/21 10:54:56 8.02
0590:05/21 10:59:56 8.02
0591:05/21 11:04:56 8.02
0592:05/21 11:09:56 8.02
0593:05/21 11:14:56 8.01
0594:05/21 11:19:56 8.02
0595:05/21 11:24:56 8.03
0596:05/21 11:29:56 8.02
0597:05/21 11:34:56 8.02
0598:05/21 11:39:56 8.02
0599:05/21 11:44:56 8.02
0600:05/21 11:49:56 8.01
0601:05/21 11:54:56 8.01
0602:05/21 11:59:56 8.03

<EOT>

Unocal Service Station #7004
15599 Hesperian Boulevard
San Leandro, California

Observation Well, MW5
Data Logger #4
Distance, MW5 to RW1 = 60ft
Well Discharge(Q) = 0.90gpm
Date: 5/19/92 to 5/21/92

05/19/92 10:00:01 05/21/92 12:00:00

0001	05/19 10:00:01	-0.03
0002	05/19 10:05:01	-0.05
0003	05/19 10:06:49	0.06
0004	05/19 10:06:52	0.07
0005	05/19 10:07:38	-0.07
0006	05/19 10:08:35	0.00
0007	05/19 10:09:29	-0.04
0008	05/19 10:10:29	7.09
0009	05/19 10:11:37	7.14
0010	05/19 10:13:51	8.27
0011	05/19 10:14:10	8.28
0012	05/19 10:15:06	8.26
0013	05/19 10:15:30	8.25
0014	05/19 10:15:51	8.23
0015	05/19 10:16:36	8.15
0016	05/19 10:17:25	8.23
0017	05/19 10:17:36	8.28
0018	05/19 10:20:29	8.31
0019	05/19 10:21:42	8.33
0020	05/19 10:22:09	8.31
0021	05/19 10:22:39	8.34
0022	05/19 10:24:08	8.33
0023	05/19 10:24:40	8.34
0024	05/19 10:24:44	8.35
0025	05/19 10:29:43	8.56
0026	05/19 10:30:56	8.55
0027	05/19 10:35:55	8.52
0028	05/19 10:40:55	8.54
0029	05/19 10:45:55	8.56
0030	05/19 10:50:55	8.55
0031	05/19 10:55:55	8.59
0032	05/19 11:00:55	8.56
0033	05/19 11:05:55	8.57
0034	05/19 11:10:55	8.56
0035	05/19 11:15:55	8.60
0036	05/19 11:20:55	8.59
0037	05/19 11:25:55	8.59
0038	05/19 11:30:55	8.58
0039	05/19 11:35:55	8.61
0040	05/19 11:40:55	8.61
0041	05/19 11:45:55	8.60
0042	05/19 11:50:55	8.60
0043	05/19 11:55:55	8.59
0044	05/19 12:00:55	8.61
0045	05/19 12:05:55	8.61
0046	05/19 12:10:55	8.60
0047	05/19 12:15:55	8.58

Observation Well, MW5
Data Logger #4
Distance, MW5 to RW1 = 60ft
Well Discharge(Q) = 0.90gpm
Date: 5/19/92 to 5/21/92

0048:05/19 12:20:55 8.58
0049:05/19 12:25:55 8.62
0050:05/19 12:30:55 8.60
0051:05/19 12:35:55 8.58
0052:05/19 12:40:55 8.59
0053:05/19 12:45:55 8.61
0054:05/19 12:50:55 8.59
0055:05/19 12:55:55 8.59
0056:05/19 13:00:55 8.56
0057:05/19 13:05:55 8.58
0058:05/19 13:10:55 8.60
0059:05/19 13:15:55 8.59
0060:05/19 13:20:55 8.58
0061:05/19 13:25:55 8.58
0062:05/19 13:30:55 8.59
0063:05/19 13:35:55 8.59
0064:05/19 13:40:55 8.60
0065:05/19 13:45:55 8.59
0066:05/19 13:50:55 8.59
0067:05/19 13:55:55 8.58
0068:05/19 14:00:55 8.60
0069:05/19 14:05:55 8.58
0070:05/19 14:10:55 8.60
0071:05/19 14:15:55 8.59
0072:05/19 14:20:55 8.58
0073:05/19 14:25:55 8.59
0074:05/19 14:30:55 8.59
0075:05/19 14:35:55 8.57
0076:05/19 14:40:55 8.61
0077:05/19 14:45:55 8.59
0078:05/19 14:50:55 8.58
0079:05/19 14:55:55 8.58
0080:05/19 15:00:55 8.60
0081:05/19 15:05:55 8.62
0082:05/19 15:10:55 8.58
0083:05/19 15:15:55 8.57
0084:05/19 15:20:55 8.61
0085:05/19 15:25:55 8.60
0086:05/19 15:30:55 8.61
0087:05/19 15:35:55 8.60
0088:05/19 15:40:55 8.59
0089:05/19 15:45:55 8.60
0090:05/19 15:50:55 8.59
0091:05/19 15:55:55 8.58
0092:05/19 16:00:55 8.59
0093:05/19 16:05:55 8.58
0094:05/19 16:10:55 8.59
0095:05/19 16:15:55 8.59

Observation Well, MW5
Data Logger #4
Distance, MW5 to RW1 = 60ft
Well Discharge(Q) = 0.90gpm
Date: 5/19/92 to 5/21/92

0096	05/19 16:20:55	8.60
0097	05/19 16:25:55	8.59
0098	05/19 16:30:55	8.59
0099	05/19 16:35:55	8.58
0100	05/19 16:40:55	8.58
0101	05/19 16:45:55	8.58
0102	05/19 16:50:55	8.58
0103	05/19 16:55:55	8.59
0104	05/19 17:00:55	8.59
0105	05/19 17:05:55	8.58
0106	05/19 17:10:55	8.58
0107	05/19 17:15:55	8.58
0108	05/19 17:20:55	8.59
0109	05/19 17:25:55	8.57
0110	05/19 17:30:55	8.58
0111	05/19 17:35:55	8.58
0112	05/19 17:40:55	8.55
0113	05/19 17:45:55	8.54
0114	05/19 17:50:55	8.55
0115	05/19 17:55:55	8.55
0116	05/19 18:00:55	8.56
0117	05/19 18:05:55	8.55
0118	05/19 18:10:55	8.54
0119	05/19 18:15:55	8.54
0120	05/19 18:20:55	8.54
0121	05/19 18:25:55	8.54
0122	05/19 18:30:55	8.54
0123	05/19 18:35:55	8.54
0124	05/19 18:40:55	8.54
0125	05/19 18:45:55	8.54
0126	05/19 18:50:55	8.53
0127	05/19 18:55:55	8.53
0128	05/19 19:00:55	8.52
0129	05/19 19:05:55	8.52
0130	05/19 19:10:55	8.52
0131	05/19 19:15:55	8.51
0132	05/19 19:20:55	8.51
0133	05/19 19:25:55	8.51
0134	05/19 19:30:55	8.50
0135	05/19 19:35:55	8.50
0136	05/19 19:40:55	8.50
0137	05/19 19:45:55	8.49
0138	05/19 19:50:55	8.48
0139	05/19 19:55:55	8.48
0140	05/19 20:00:55	8.48
0141	05/19 20:05:55	8.47
0142	05/19 20:10:55	8.47
0143	05/19 20:15:55	8.46

Observation Well, MW5
Data Logger #4
Distance, MW5 to RW1 = 60ft
Well Discharge(Q) = 0.90gpm
Date: 5/19/92 to 5/21/92

0144:05/19 20:20:55 8.46
0145:05/19 20:25:55 8.46
0146:05/19 20:30:55 8.45
0147:05/19 20:35:55 8.45
0148:05/19 20:40:55 8.45
0149:05/19 20:45:55 8.45
0150:05/19 20:50:55 8.44
0151:05/19 20:55:55 8.43
0152:05/19 21:00:55 8.43
0153:05/19 21:05:55 8.43
0154:05/19 21:10:55 8.42
0155:05/19 21:15:55 8.42
0156:05/19 21:20:55 8.42
0157:05/19 21:25:55 8.41
0158:05/19 21:30:55 8.41
0159:05/19 21:35:55 8.41
0160:05/19 21:40:55 8.40
0161:05/19 21:45:55 8.41
0162:05/19 21:50:55 8.40
0163:05/19 21:55:55 8.40
0164:05/19 22:00:55 8.40
0165:05/19 22:05:55 8.39
0166:05/19 22:10:55 8.39
0167:05/19 22:15:55 8.39
0168:05/19 22:20:55 8.39
0169:05/19 22:25:55 8.39
0170:05/19 22:30:55 8.39
0171:05/19 22:35:55 8.39
0172:05/19 22:40:55 8.39
0173:05/19 22:45:55 8.39
0174:05/19 22:50:55 8.38
0175:05/19 22:55:55 8.38
0176:05/19 23:00:55 8.38
0177:05/19 23:05:55 8.38
0178:05/19 23:10:55 8.38
0179:05/19 23:15:55 8.38
0180:05/19 23:20:55 8.38
0181:05/19 23:25:55 8.38
0182:05/19 23:30:55 8.38
0183:05/19 23:35:55 8.37
0184:05/19 23:40:55 8.37
0185:05/19 23:45:55 8.38
0186:05/19 23:50:55 8.37
0187:05/19 23:55:55 8.37
0188:05/20 00:00:55 8.37
0189:05/20 00:05:55 8.37
0190:05/20 00:10:55 8.37
0191:05/20 00:15:55 8.37

Unocal Service Station #7004
15599 Hesperian Boulevard
San Leandro, California

Observation Well, MW5
Data Logger #4
Distance, MW5 to RW1 = 60ft
Well Discharge(Q) = 0.90gpm
Date: 5/19/92 to 5/21/92

0192:05/20 00:20:55 8.37
0193:05/20 00:25:55 8.36
0194:05/20 00:30:55 8.36
0195:05/20 00:35:55 8.36
0196:05/20 00:40:55 8.36
0197:05/20 00:45:55 8.36
0198:05/20 00:50:55 8.36
0199:05/20 00:55:55 8.35
0200:05/20 01:00:55 8.36
0201:05/20 01:05:55 8.35
0202:05/20 01:10:55 8.36
0203:05/20 01:15:55 8.36
0204:05/20 01:20:55 8.36
0205:05/20 01:25:55 8.35
0206:05/20 01:30:55 8.35
0207:05/20 01:35:55 8.35
0208:05/20 01:40:55 8.35
0209:05/20 01:45:55 8.35
0210:05/20 01:50:55 8.34
0211:05/20 01:55:55 8.35
0212:05/20 02:00:55 8.35
0213:05/20 02:05:55 8.35
0214:05/20 02:10:55 8.35
0215:05/20 02:15:55 8.35
0216:05/20 02:20:55 8.35
0217:05/20 02:25:55 8.35
0218:05/20 02:30:55 8.35
0219:05/20 02:35:55 8.35
0220:05/20 02:40:55 8.34
0221:05/20 02:45:55 8.35
0222:05/20 02:50:55 8.34
0223:05/20 02:55:55 8.34
0224:05/20 03:00:55 8.34
0225:05/20 03:05:55 8.34
0226:05/20 03:10:55 8.34
0227:05/20 03:15:55 8.34
0228:05/20 03:20:55 8.33
0229:05/20 03:25:55 8.33
0230:05/20 03:30:55 8.33
0231:05/20 03:35:55 8.33
0232:05/20 03:40:55 8.33
0233:05/20 03:45:55 8.33
0234:05/20 03:50:55 8.33
0235:05/20 03:55:55 8.33
0236:05/20 04:00:55 8.32
0237:05/20 04:05:55 8.33
0238:05/20 04:10:55 8.33
0239:05/20 04:15:55 8.33

Observation Well, MW5
Data Logger #4
Distance, MW5 to RW1 = 60ft
Well Discharge(Q) = 0.90gpm
Date: 5/19/92 to 5/21/92

0240:05/20 04:20:55 8.32
0241:05/20 04:25:55 8.32
0242:05/20 04:30:55 8.32
0243:05/20 04:35:55 8.32
0244:05/20 04:40:55 8.32
0245:05/20 04:45:55 8.33
0246:05/20 04:50:55 8.32
0247:05/20 04:55:55 8.32
0248:05/20 05:00:55 8.32
0249:05/20 05:05:55 8.32
0250:05/20 05:10:55 8.32
0251:05/20 05:15:55 8.32
0252:05/20 05:20:55 8.32
0253:05/20 05:25:55 8.32
0254:05/20 05:30:55 8.32
0255:05/20 05:35:55 8.32
0256:05/20 05:40:55 8.31
0257:05/20 05:45:55 8.31
0258:05/20 05:50:55 8.31
0259:05/20 05:55:55 8.31
0260:05/20 06:00:55 8.31
0261:05/20 06:05:55 8.31
0262:05/20 06:10:55 8.31
0263:05/20 06:15:55 8.31
0264:05/20 06:20:55 8.30
0265:05/20 06:25:55 8.30
0266:05/20 06:30:55 8.30
0267:05/20 06:35:55 8.30
0268:05/20 06:40:55 8.31
0269:05/20 06:45:55 8.31
0270:05/20 06:50:55 8.31
0271:05/20 06:55:55 8.31
0272:05/20 07:00:55 8.31
0273:05/20 07:05:55 8.31
0274:05/20 07:10:55 8.31
0275:05/20 07:15:55 8.31
0276:05/20 07:20:55 8.30
0277:05/20 07:25:55 8.31
0278:05/20 07:30:55 8.31
0279:05/20 07:35:55 8.31
0280:05/20 07:40:55 8.31
0281:05/20 07:45:55 8.32
0282:05/20 07:50:55 8.32
0283:05/20 07:55:55 8.31
0284:05/20 08:00:55 8.31
0285:05/20 08:05:55 8.32
0286:05/20 08:10:55 8.33
0287:05/20 08:15:55 8.32

Observation Well, MW5
Data Logger #4
Distance, MW5 to RW1 = 60ft
Well Discharge(Q) = 0.90gpm
Date: 5/19/92 to 5/21/92

0288:05/20 08:20:55 8.32
0289:05/20 08:25:55 8.33
0290:05/20 08:30:55 8.33
0291:05/20 08:35:55 8.33
0292:05/20 08:40:55 8.33
0293:05/20 08:45:55 8.32
0294:05/20 08:50:55 8.35
0295:05/20 08:55:55 8.34
0296:05/20 09:00:55 8.35
0297:05/20 09:05:55 8.36
0298:05/20 09:10:55 8.37
0299:05/20 09:15:55 8.38
0300:05/20 09:20:55 8.38
0301:05/20 09:25:55 8.40
0302:05/20 09:30:55 8.39
0303:05/20 09:35:55 8.40
0304:05/20 09:40:55 8.42
0305:05/20 09:45:55 8.41
0306:05/20 09:50:55 8.43
0307:05/20 09:55:55 8.42
0308:05/20 10:00:55 8.43
0309:05/20 10:05:55 8.43
0310:05/20 10:10:55 8.43
0311:05/20 10:15:55 8.44
0312:05/20 10:20:55 8.45
0313:05/20 10:25:55 8.46
0314:05/20 10:30:55 8.45
0315:05/20 10:35:55 8.46
0316:05/20 10:40:55 8.46
0317:05/20 10:45:55 8.46
0318:05/20 10:50:55 8.47
0319:05/20 10:55:55 8.47
0320:05/20 11:00:55 8.48
0321:05/20 11:05:55 8.49
0322:05/20 11:10:55 8.48
0323:05/20 11:15:55 8.49
0324:05/20 11:20:55 8.49
0325:05/20 11:25:55 8.50
0326:05/20 11:30:55 8.50
0327:05/20 11:35:55 8.50
0328:05/20 11:40:55 8.50
0329:05/20 11:45:55 8.51
0330:05/20 11:50:55 8.50
0331:05/20 11:55:55 8.51
0332:05/20 12:00:55 8.51
0333:05/20 12:05:55 8.51
0334:05/20 12:10:55 8.52
0335:05/20 12:15:55 8.52

Observation Well, MW5
Data Logger #4
Distance, MW5 to RW1 = 60ft
Well Discharge(Q) = 0.90gpm
Date: 5/19/92 to 5/21/92

0336:05/20 12:20:55 8.53
0337:05/20 12:25:55 8.52
0338:05/20 12:30:55 8.52
0339:05/20 12:35:55 8.53
0340:05/20 12:39:41 8.52
0341:05/20 12:44:40 8.53
0342:05/20 12:49:40 8.53
0343:05/20 12:54:40 8.53
0344:05/20 12:59:40 8.54
0345:05/20 13:04:40 8.54
0346:05/20 13:09:40 8.53
0347:05/20 13:14:40 8.53
0348:05/20 13:19:40 8.55
0349:05/20 13:24:40 8.54
0350:05/20 13:29:40 8.54
0351:05/20 13:34:40 8.55
0352:05/20 13:39:40 8.55
0353:05/20 13:44:40 8.54
0354:05/20 13:49:40 8.54
0355:05/20 13:54:40 8.54
0356:05/20 13:59:40 8.54
0357:05/20 14:04:40 8.53
0358:05/20 14:09:40 8.53
0359:05/20 14:14:40 8.54
0360:05/20 14:19:40 8.54
0361:05/20 14:24:40 8.54
0362:05/20 14:29:40 8.54
0363:05/20 14:34:40 8.54
0364:05/20 14:39:40 8.54
0365:05/20 14:44:40 8.54
0366:05/20 14:49:40 8.55
0367:05/20 14:54:40 8.54
0368:05/20 14:59:40 8.55
0369:05/20 15:04:40 8.54
0370:05/20 15:09:40 8.54
0371:05/20 15:14:40 8.54
0372:05/20 15:19:40 8.54
0373:05/20 15:24:40 8.54
0374:05/20 15:29:40 8.54
0375:05/20 15:34:40 8.54
0376:05/20 15:39:40 8.55
0377:05/20 15:44:40 8.55
0378:05/20 15:49:40 8.54
0379:05/20 15:54:40 8.54
0380:05/20 15:59:40 8.53
0381:05/20 16:04:40 8.55
0382:05/20 16:09:40 8.54
0383:05/20 16:14:40 8.56

Observation Well, MW5
Data Logger #4
Distance, MW5 to RW1 = 60ft
Well Discharge(Q) = 0.90gpm
Date: 5/19/92 to 5/21/92

0384:05/20 16:19:40 8.54
0385:05/20 16:24:40 8.55
0386:05/20 16:29:40 8.55
0387:05/20 16:34:40 8.55
0388:05/20 16:39:40 8.55
0389:05/20 16:44:40 8.54
0390:05/20 16:49:40 8.54
0391:05/20 16:54:40 8.55
0392:05/20 16:59:40 8.54
0393:05/20 17:04:40 8.55
0394:05/20 17:09:40 8.54
0395:05/20 17:14:40 8.55
0396:05/20 17:19:40 8.54
0397:05/20 17:24:40 8.54
0398:05/20 17:29:40 8.54
0399:05/20 17:34:40 8.55
0400:05/20 17:39:40 8.54
0401:05/20 17:44:40 8.53
0402:05/20 17:49:40 8.54
0403:05/20 17:54:40 8.54
0404:05/20 17:59:40 8.54
0405:05/20 18:04:40 8.54
0406:05/20 18:09:40 8.54
0407:05/20 18:14:40 8.54
0408:05/20 18:19:40 8.55
0409:05/20 18:24:40 8.53
0410:05/20 18:29:40 8.54
0411:05/20 18:34:40 8.53
0412:05/20 18:39:40 8.53
0413:05/20 18:44:40 8.53
0414:05/20 18:49:40 8.52
0415:05/20 18:54:40 8.52
0416:05/20 18:59:40 8.52
0417:05/20 19:04:40 8.52
0418:05/20 19:09:40 8.52
0419:05/20 19:14:40 8.51
0420:05/20 19:19:40 8.50
0421:05/20 19:24:40 8.51
0422:05/20 19:29:40 8.50
0423:05/20 19:34:40 8.50
0424:05/20 19:39:40 8.49
0425:05/20 19:44:40 8.49
0426:05/20 19:49:40 8.49
0427:05/20 19:54:40 8.49
0428:05/20 19:59:40 8.48
0429:05/20 20:04:40 8.47
0430:05/20 20:09:40 8.47
0431:05/20 20:14:40 8.46

Observation Well, MW5
Data Logger #4
Distance, MW5 to RW1 = 60ft
Well Discharge(Q) = 0.90gpm
Date: 5/19/92 to 5/21/92

0432:05/20 20:19:40 8.46
0433:05/20 20:24:40 8.46
0434:05/20 20:29:40 8.45
0435:05/20 20:34:40 8.45
0436:05/20 20:39:40 8.44
0437:05/20 20:44:40 8.43
0438:05/20 20:49:40 8.43
0439:05/20 20:54:40 8.43
0440:05/20 20:59:40 8.42
0441:05/20 21:04:40 8.42
0442:05/20 21:09:40 8.42
0443:05/20 21:14:40 8.42
0444:05/20 21:19:40 8.41
0445:05/20 21:24:40 8.41
0446:05/20 21:29:40 8.41
0447:05/20 21:34:40 8.40
0448:05/20 21:39:40 8.40
0449:05/20 21:44:40 8.39
0450:05/20 21:49:40 8.40
0451:05/20 21:54:40 8.39
0452:05/20 21:59:40 8.39
0453:05/20 22:04:40 8.38
0454:05/20 22:09:40 8.39
0455:05/20 22:14:40 8.38
0456:05/20 22:19:40 8.38
0457:05/20 22:24:40 8.38
0458:05/20 22:29:40 8.38
0459:05/20 22:34:40 8.38
0460:05/20 22:39:40 8.37
0461:05/20 22:44:40 8.38
0462:05/20 22:49:40 8.37
0463:05/20 22:54:40 8.37
0464:05/20 22:59:40 8.37
0465:05/20 23:04:40 8.37
0466:05/20 23:09:40 8.37
0467:05/20 23:14:40 8.36
0468:05/20 23:19:40 8.36
0469:05/20 23:24:40 8.36
0470:05/20 23:29:40 8.36
0471:05/20 23:34:40 8.36
0472:05/20 23:39:40 8.36
0473:05/20 23:44:40 8.35
0474:05/20 23:49:40 8.35
0475:05/20 23:54:40 8.35
0476:05/20 23:59:40 8.35
0477:05/21 00:04:40 8.35
0478:05/21 00:09:40 8.35
0479:05/21 00:14:40 8.35

Observation Well, MW5
Data Logger #4
Distance, MW5 to RW1 = 60ft
Well Discharge(Q) = 0.90gpm
Date: 5/19/92 to 5/21/92

0480:05/21 00:19:40 8.34
0481:05/21 00:24:40 8.35
0482:05/21 00:29:40 8.35
0483:05/21 00:34:40 8.34
0484:05/21 00:39:40 8.34
0485:05/21 00:44:40 8.34
0486:05/21 00:49:40 8.34
0487:05/21 00:54:40 8.34
0488:05/21 00:59:40 8.34
0489:05/21 01:04:40 8.34
0490:05/21 01:09:40 8.34
0491:05/21 01:14:40 8.33
0492:05/21 01:19:40 8.33
0493:05/21 01:24:40 8.33
0494:05/21 01:29:40 8.33
0495:05/21 01:34:40 8.33
0496:05/21 01:39:40 8.33
0497:05/21 01:44:40 8.33
0498:05/21 01:49:40 8.33
0499:05/21 01:54:40 8.33
0500:05/21 01:59:40 8.32
0501:05/21 02:04:40 8.32
0502:05/21 02:09:40 8.32
0503:05/21 02:14:40 8.32
0504:05/21 02:19:40 8.32
0505:05/21 02:24:40 8.32
0506:05/21 02:29:40 8.32
0507:05/21 02:34:40 8.32
0508:05/21 02:39:40 8.31
0509:05/21 02:44:40 8.31
0510:05/21 02:49:40 8.31
0511:05/21 02:54:40 8.31
0512:05/21 02:59:40 8.31
0513:05/21 03:04:40 8.31
0514:05/21 03:09:40 8.30
0515:05/21 03:14:40 8.30
0516:05/21 03:19:40 8.31
0517:05/21 03:24:40 8.30
0518:05/21 03:29:40 8.31
0519:05/21 03:34:40 8.31
0520:05/21 03:39:40 8.31
0521:05/21 03:44:40 8.30
0522:05/21 03:49:40 8.30
0523:05/21 03:54:40 8.30
0524:05/21 03:59:40 8.30
0525:05/21 04:04:40 8.30
0526:05/21 04:09:40 8.30
0527:05/21 04:14:40 8.30

Observation Well, MW5
Data Logger #4
Distance, MW5 to RW1 = 60ft
Well Discharge(Q) = 0.90gpm
Date: 5/19/92 to 5/21/92

0528:05/21 04:19:40 8.30
0529:05/21 04:24:40 8.29
0530:05/21 04:29:40 8.29
0531:05/21 04:34:40 8.29
0532:05/21 04:39:40 8.29
0533:05/21 04:44:40 8.29
0534:05/21 04:49:40 8.28
0535:05/21 04:54:40 8.28
0536:05/21 04:59:40 8.28
0537:05/21 05:04:40 8.28
0538:05/21 05:09:40 8.28
0539:05/21 05:14:40 8.28
0540:05/21 05:19:40 8.28
0541:05/21 05:24:40 8.28
0542:05/21 05:29:40 8.27
0543:05/21 05:34:40 8.27
0544:05/21 05:39:40 8.28
0545:05/21 05:44:40 8.27
0546:05/21 05:49:40 8.27
0547:05/21 05:54:40 8.27
0548:05/21 05:59:40 8.27
0549:05/21 06:04:40 8.27
0550:05/21 06:09:40 8.27
0551:05/21 06:14:40 8.27
0552:05/21 06:19:40 8.27
0553:05/21 06:24:40 8.26
0554:05/21 06:29:40 8.26
0555:05/21 06:34:40 8.26
0556:05/21 06:39:40 8.27
0557:05/21 06:44:40 8.26
0558:05/21 06:49:40 8.26
0559:05/21 06:54:40 8.26
0560:05/21 06:59:40 8.27
0561:05/21 07:04:40 8.27
0562:05/21 07:09:40 8.27
0563:05/21 07:14:40 8.27
0564:05/21 07:19:40 8.26
0565:05/21 07:24:40 8.27
0566:05/21 07:29:40 8.27
0567:05/21 07:34:40 8.27
0568:05/21 07:39:40 8.28
0569:05/21 07:44:40 8.29
0570:05/21 10:00:00 8.43
0571:05/21 10:05:00 8.40
0572:05/21 10:10:00 8.43
0573:05/21 10:15:00 8.45
0574:05/21 10:20:00 8.44
0575:05/21 10:25:00 8.43

Observation Well, MW5
Data Logger #4
Distance, MW5 to RW1 = 60ft
Well Discharge(Q) = 0.90gpm
Date: 5/19/92 to 5/21/92

0576:05/21 10:30:00 8.46
0577:05/21 10:35:00 8.45
0578:05/21 10:40:00 8.46
0579:05/21 10:45:00 8.46
0580:05/21 10:50:00 8.46
0581:05/21 10:55:00 8.47
0582:05/21 11:00:00 8.47
0583:05/21 11:05:00 8.47
0584:05/21 11:10:00 8.48
0585:05/21 11:15:00 8.48
0586:05/21 11:20:00 8.50
0587:05/21 11:25:00 8.47
0588:05/21 11:30:00 8.49
0589:05/21 11:35:00 8.49
0590:05/21 11:40:00 8.49
0591:05/21 11:45:00 8.50
0592:05/21 11:50:00 8.54
0593:05/21 11:55:00 8.54
0594:05/21 12:00:00 8.55

<EOT>

APPENDIX C

DRAWDOWN PLOTS AND RESULTS

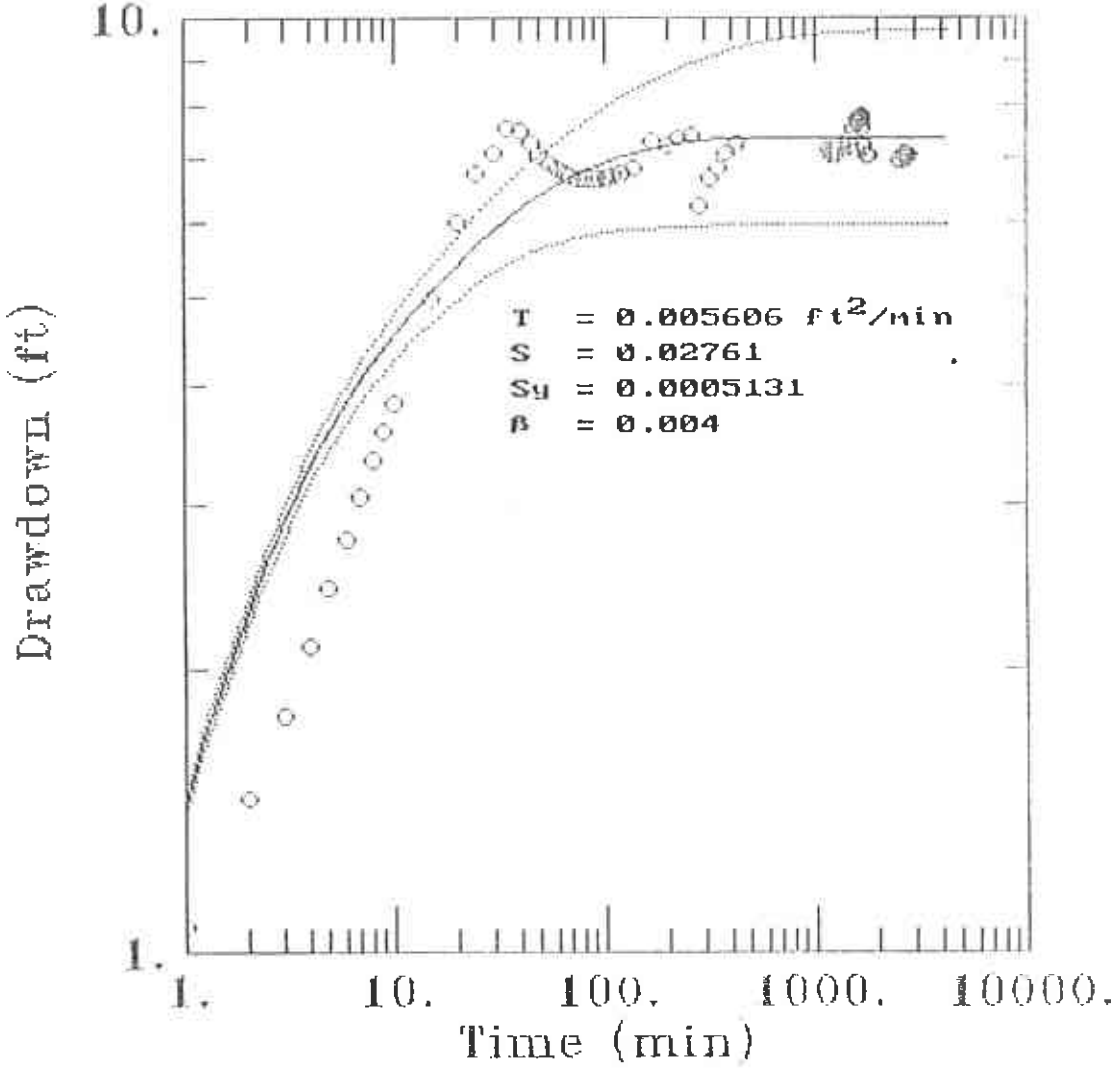
KEI-P90-1003.R8
November 16, 1992

AQUIFER TEST RESULTS

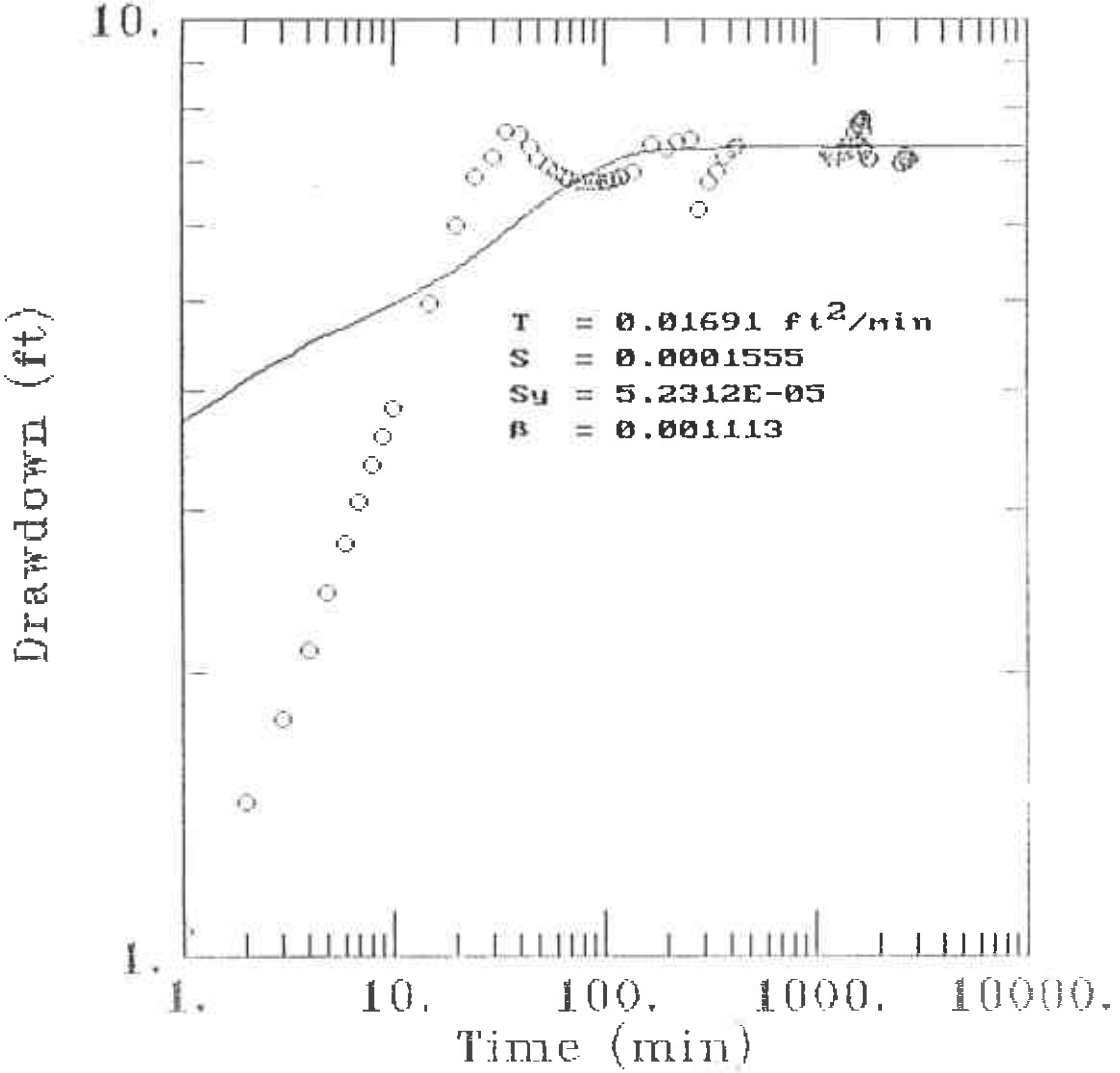
TIME/DRAWDOWN SOLUTIONS (RW1)

Analytical Method		Units	Pumping Well, RW1	Average
Neuman (Unconfined)				
Graphical Estimation	T	ft^2/day	8.1	$1.6E^{+1}$
	S		$2.8E^{-2}$	$1.4E^{-2}$
	Sy		$5.1E^{-4}$	
	B		$4.0E^{-3}$	
Automatic Estimation	T	ft^2/day	$2.4E^{+1}$	
	S		$1.6E^{-4}$	
	Sy		$5.2E^{-5}$	
	B		$1.1E^{-3}$	
Theis (Confined)				
Graphical Estimation	T	ft^2/day	$3.1E^{+1}$	$3.5E^{+1}$
	S		$1.2E^{-5}$	$6.3E^{-6}$
Automatic Estimation	T	ft^2/day	$3.8E^{+1}$	
	S		$4.4E^{-7}$	
Papadopulos (Confined)				
Graphical Estimation	T	ft^2/day	$4.3E^{+1}$	$4.2E^{+1}$
	S		$3.3E^{-8}$	$4.4E^{-3}$
	α		$3.4E^{-7}$	
Automatic Estimation	T	ft^2/day	$4.2E^{+1}$	
	S		$5.6E^{-8}$	
	α		$3.4E^{-7}$	

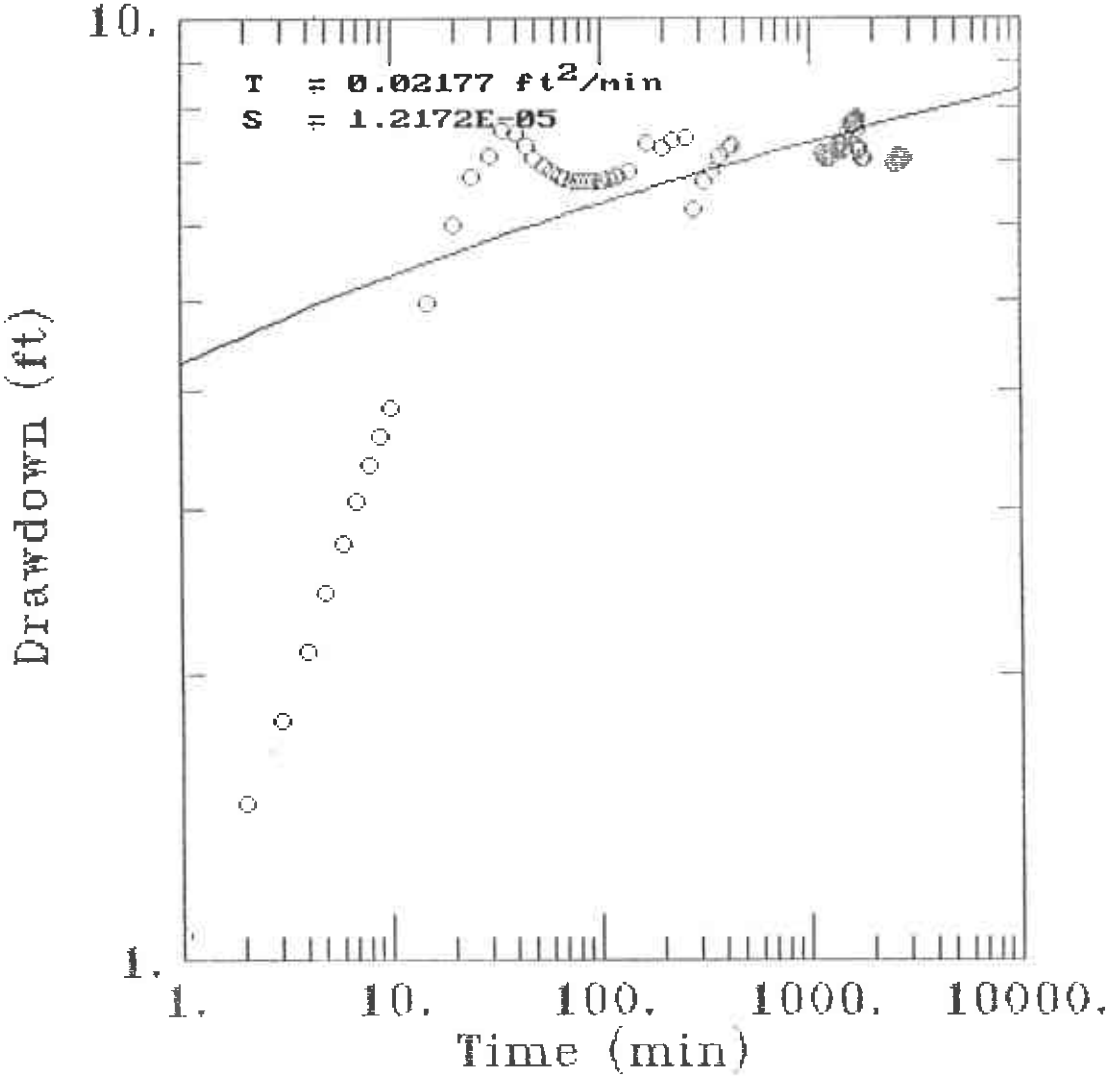
Recovery Well-RW1 Neuman (Unconfined)



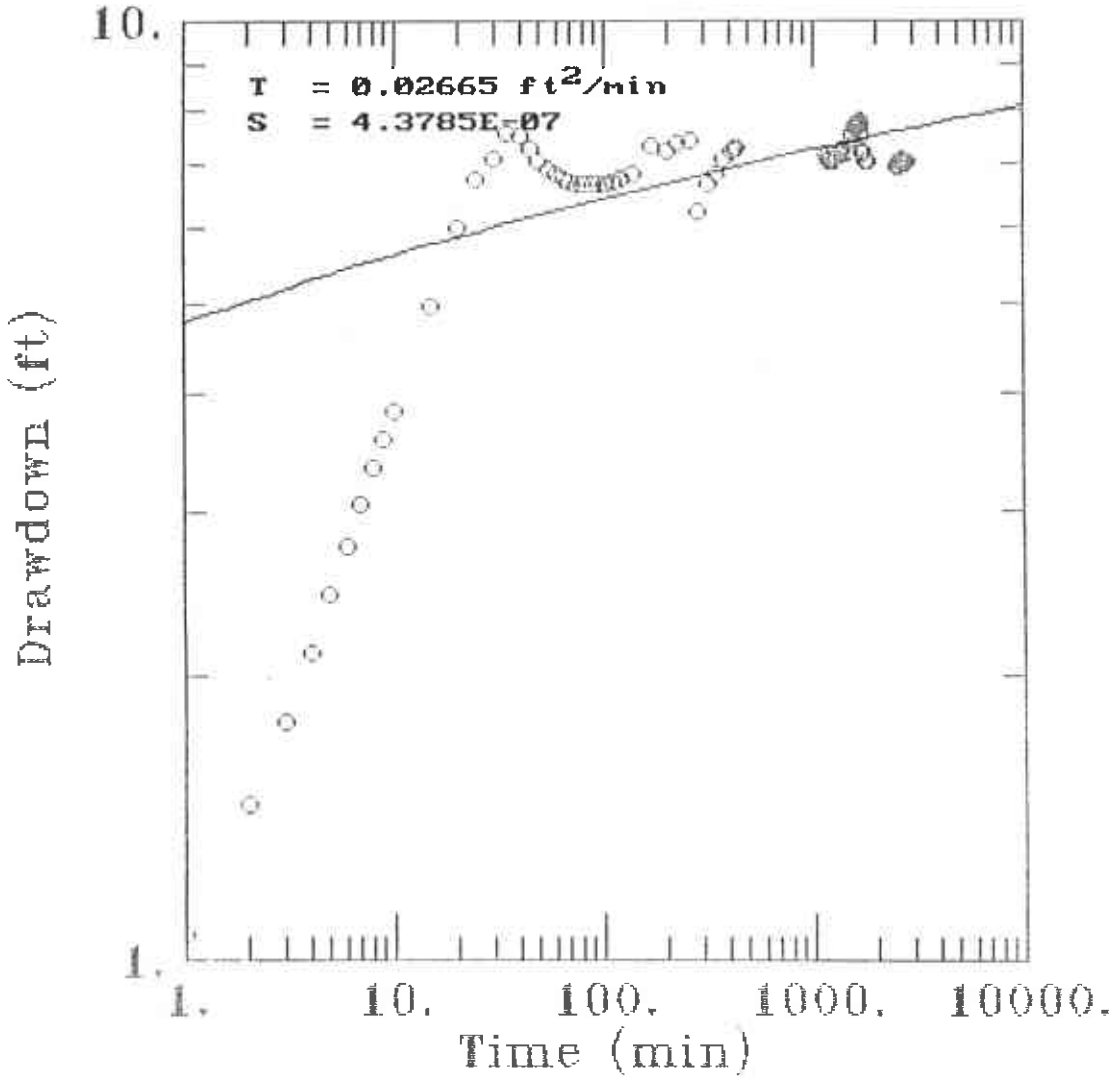
Recovery Well-RW1 Neuman (Unconfined)



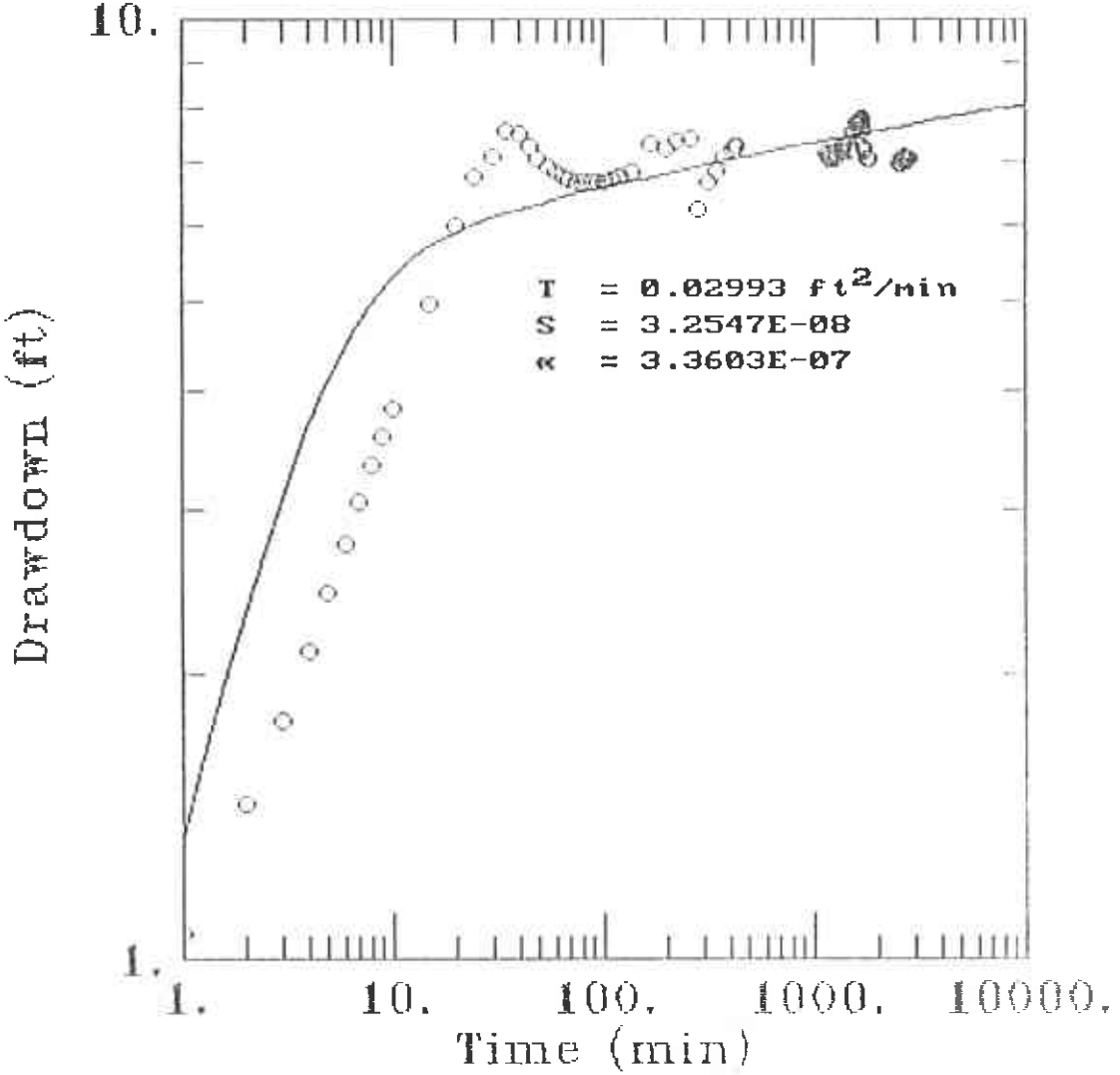
Recovery Well-RW1 Theis (Confined)



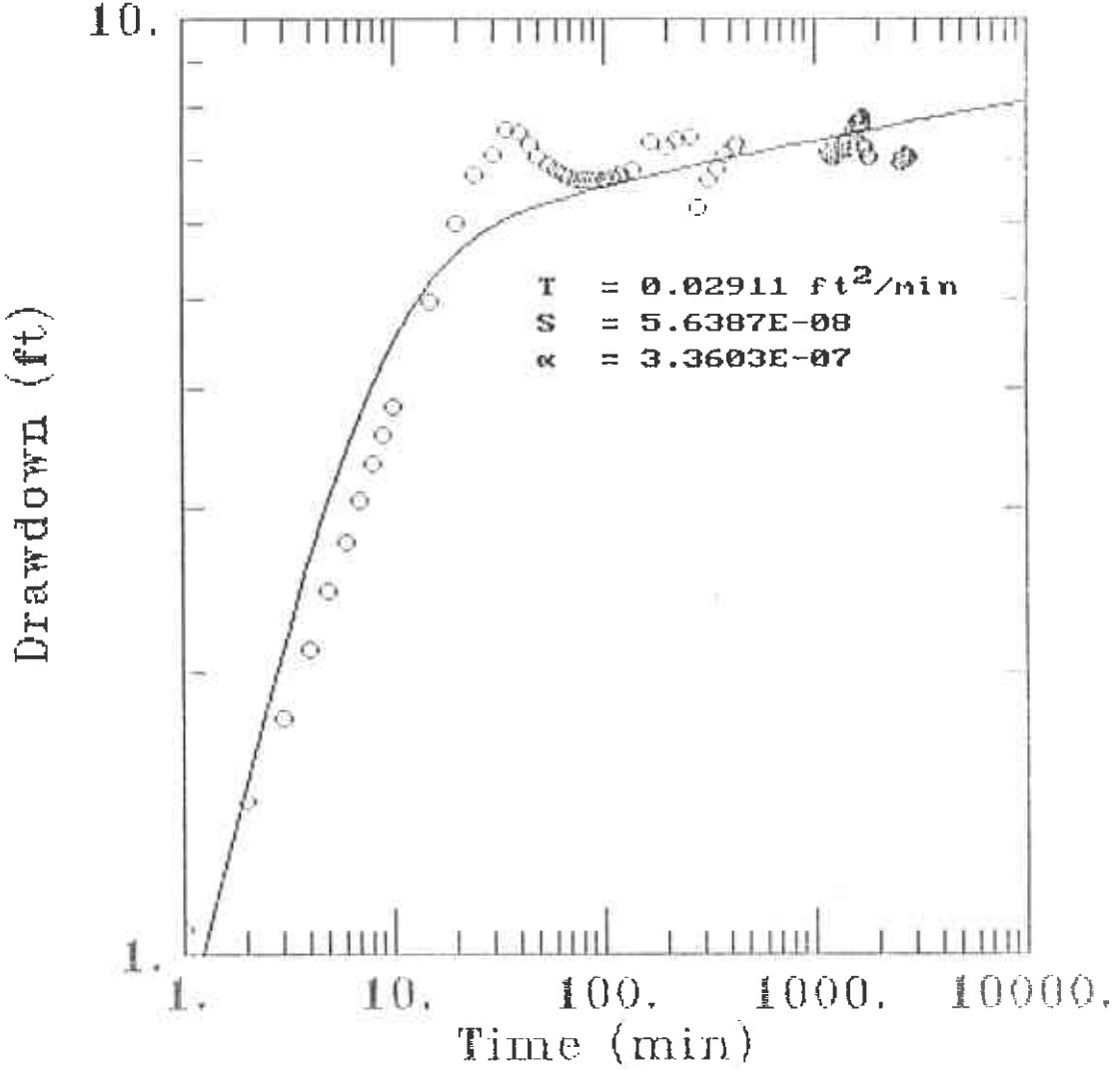
Recovery Well-RW1 Theis (Confined)



Recovery Well–RW1 Papadopulos (Confined)



Recovery Well–RW1 Papadopulos (Confined)



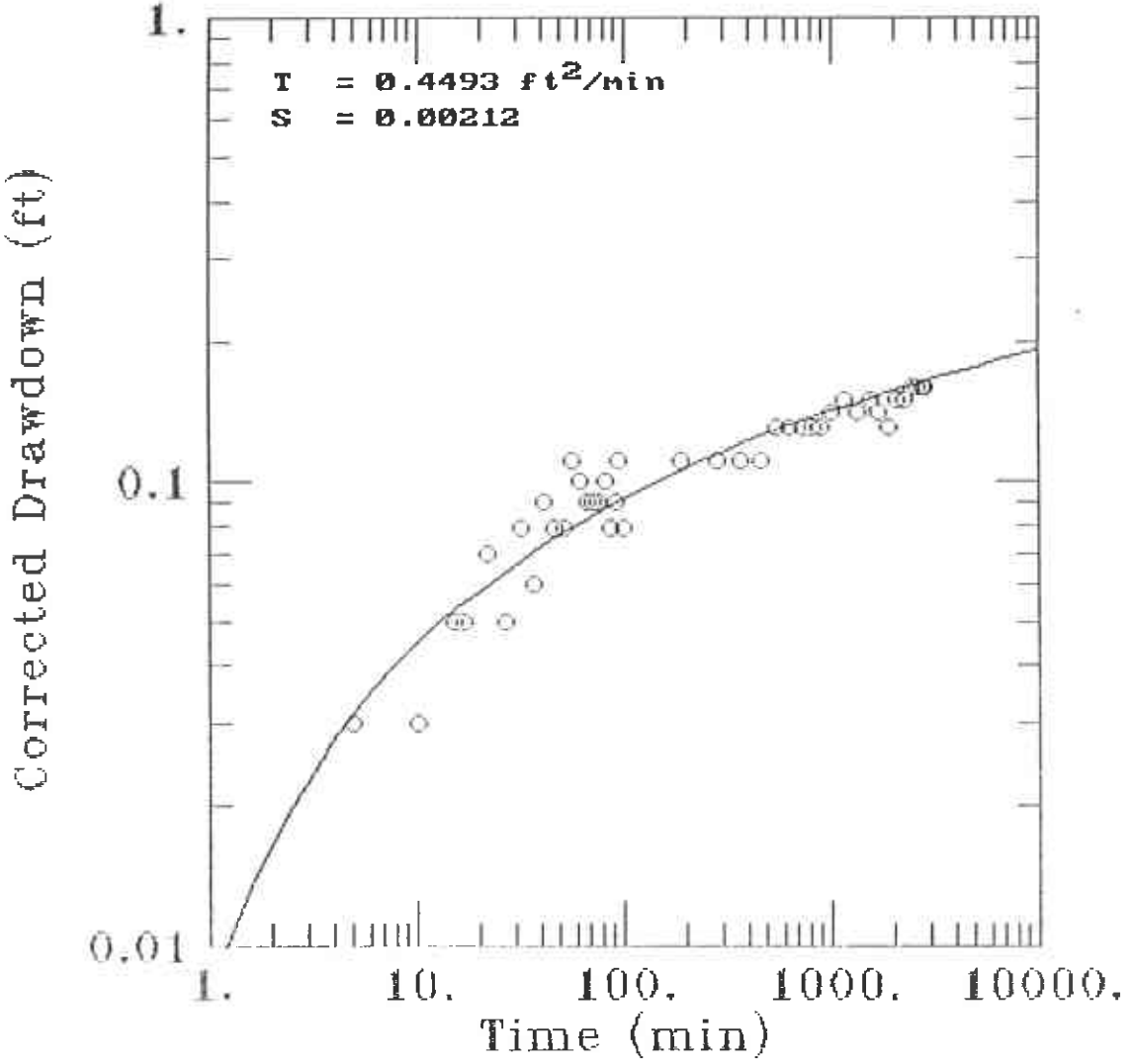
KEI-P90-1003.R8
November 16, 1992

AQUIFER TEST RESULTS

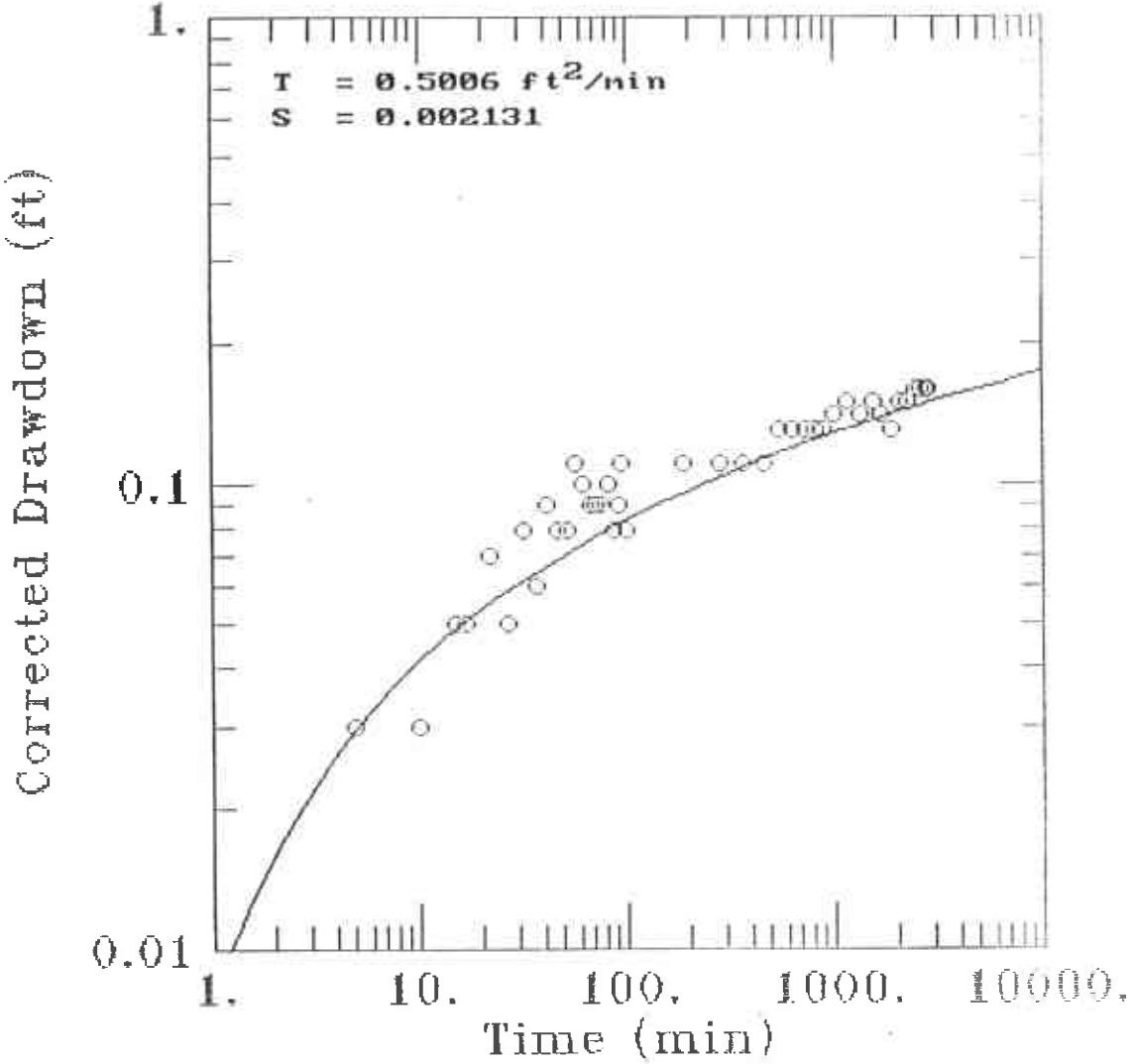
TIME/DRAWDOWN SOLUTIONS (MW3)

Analytical Method		Units	Observation Well, MW3	Average
Theis (unconfined)				
Graphical Estimation	T	ft^2/day	$6.5E^{+2}$	$6.8E^{+2}$
	S		2.1^{-3}	$2.1E^{-3}$
Automatic Estimation	T	ft^2/day	$7.2E^{+2}$	
	S		$2.1E^{-3}$	
Neuman (unconfined)				
Graphical Estimation	T	ft^2/day	$5.2E^{+2}$	$6.2E^{+2}$
	S		$4.1E^{-3}$	$2.6E^{-3}$
	Sy		$2.1E^{-3}$	
	B		$1.0E^{-3}$	
Automatic Estimation	T	ft^2/day	$7.3E^{+2}$	
	S		$1.1E^{-3}$	
	Sy		$9.3E^{-4}$	
	B		1.0	
Theis (Confined)				
Graphical Estimation	T	ft^2/day	$6.9E^{+2}$	$7.0E^{+2}$
	S		$2.3E^{-3}$	$2.2E^{-3}$
Automatic Estimation	T	ft^2/day	$7.1E^{+2}$	
	S		$2.2E^{-3}$	
Papadopulos (Confined)				
Graphical Estimation	T	ft^2/day	$7.2E^{+2}$	$7.7E^{+2}$
	S		$2.1E^{-3}$	$1.5E^{-3}$
	α		$8.5E^{-3}$	
Automatic Estimation	T	ft^2/day	$8.3E^{+2}$	
	S		$7.8E^{-4}$	
	α		$1.3E^{-4}$	

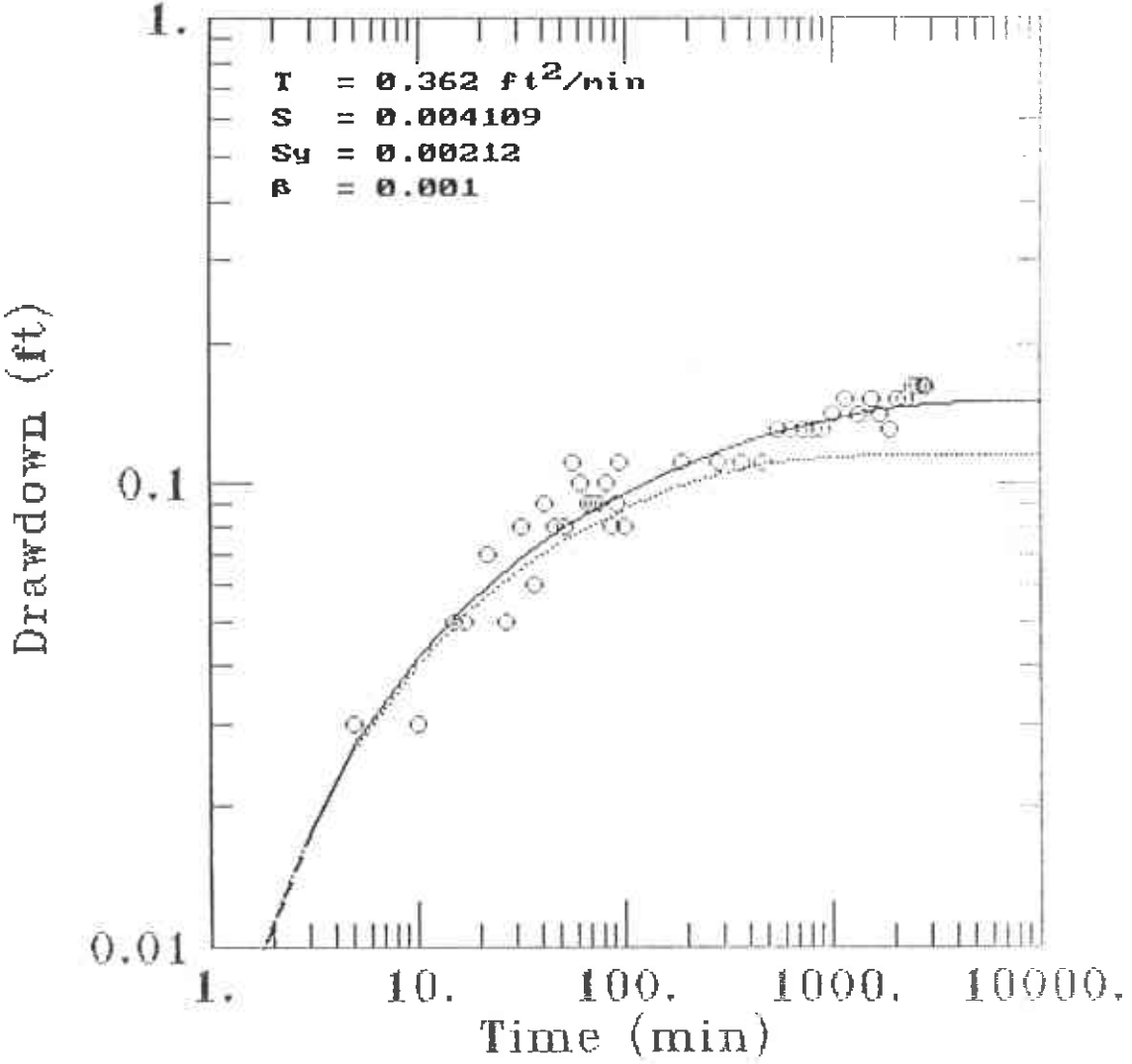
Observation Well-MW3 Theis (Unconfined)



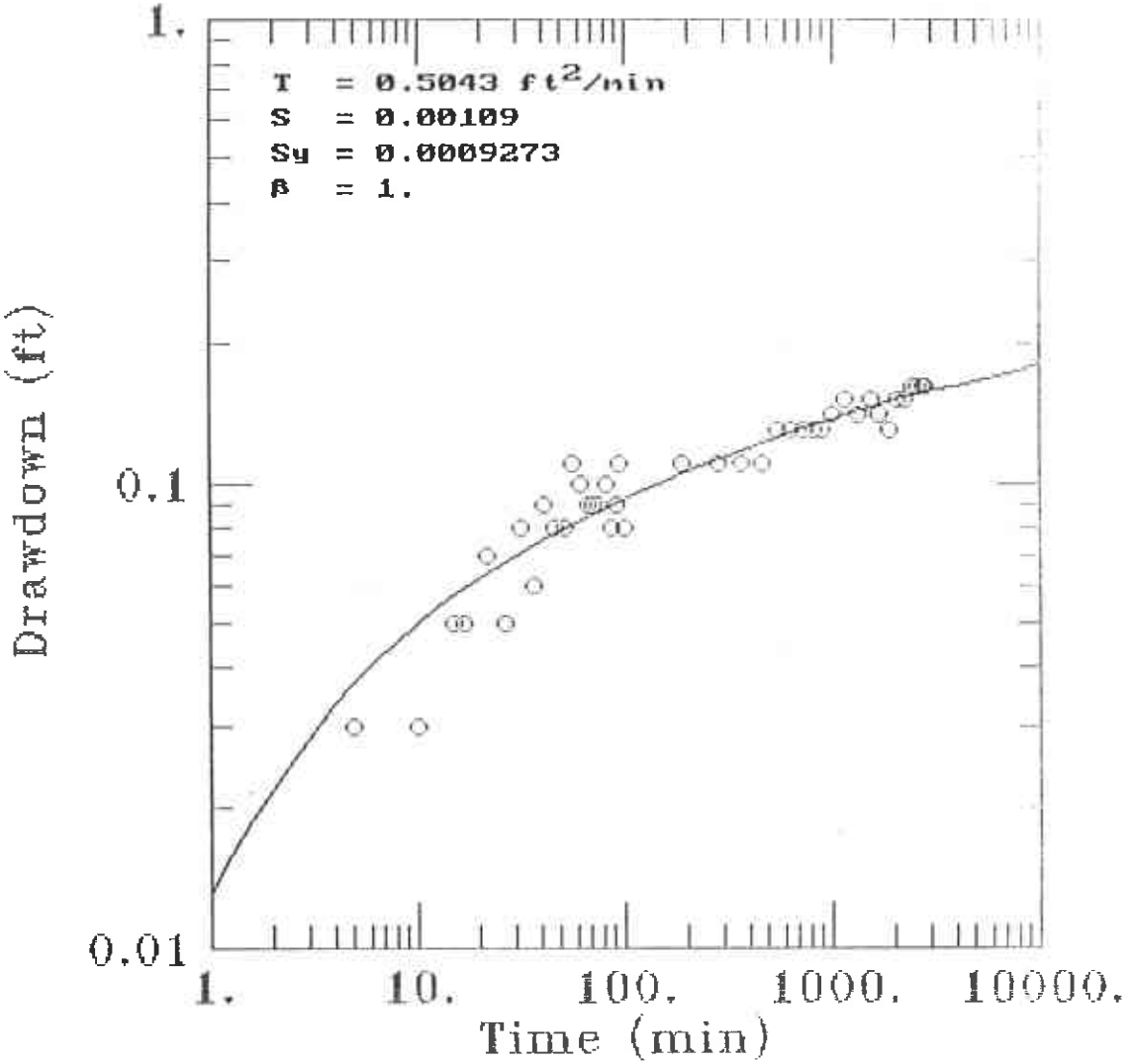
Observation Well-MW3 Theis (Unconfined)



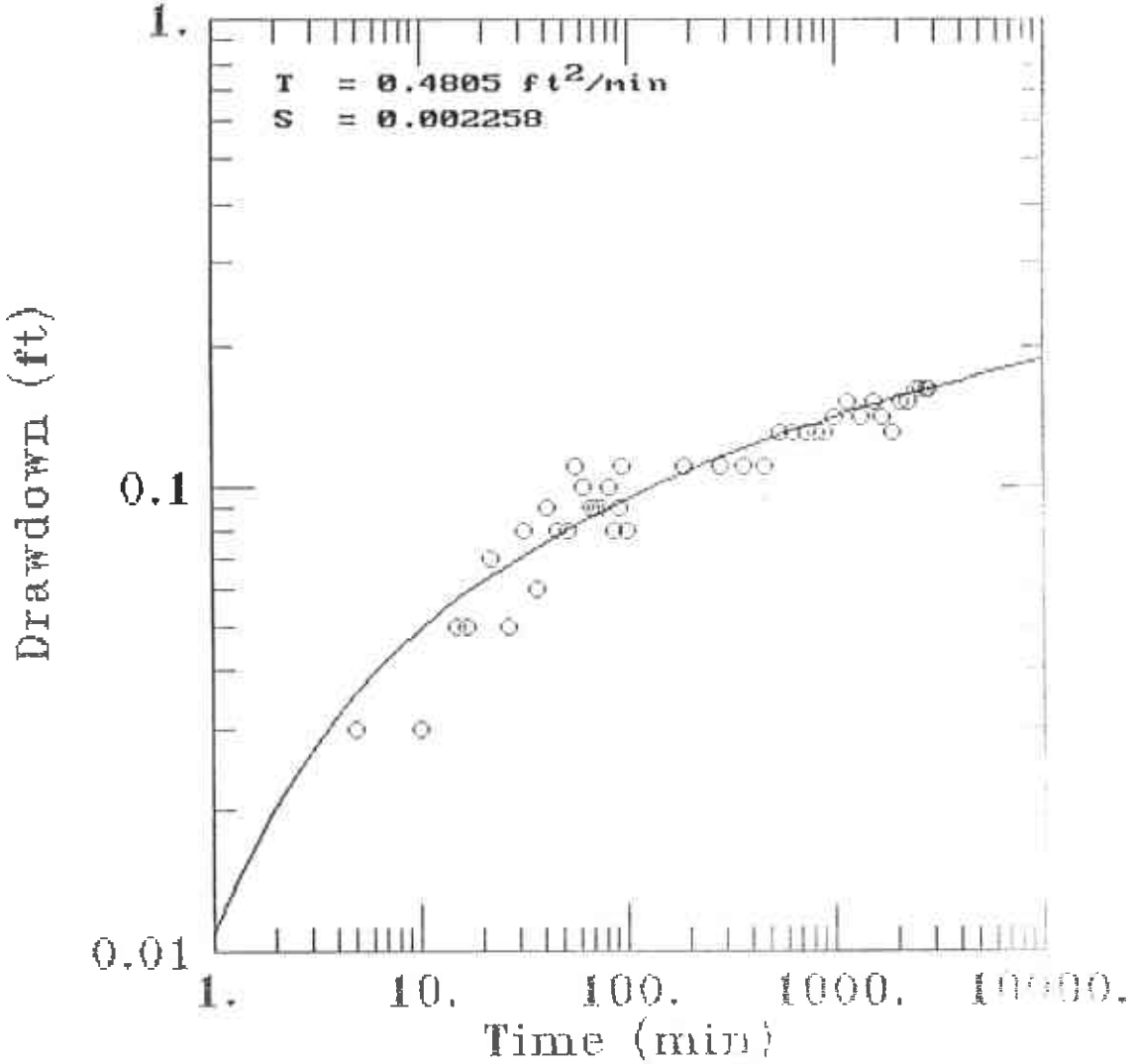
Observation Well-MW3 Neuman (Unconfined)



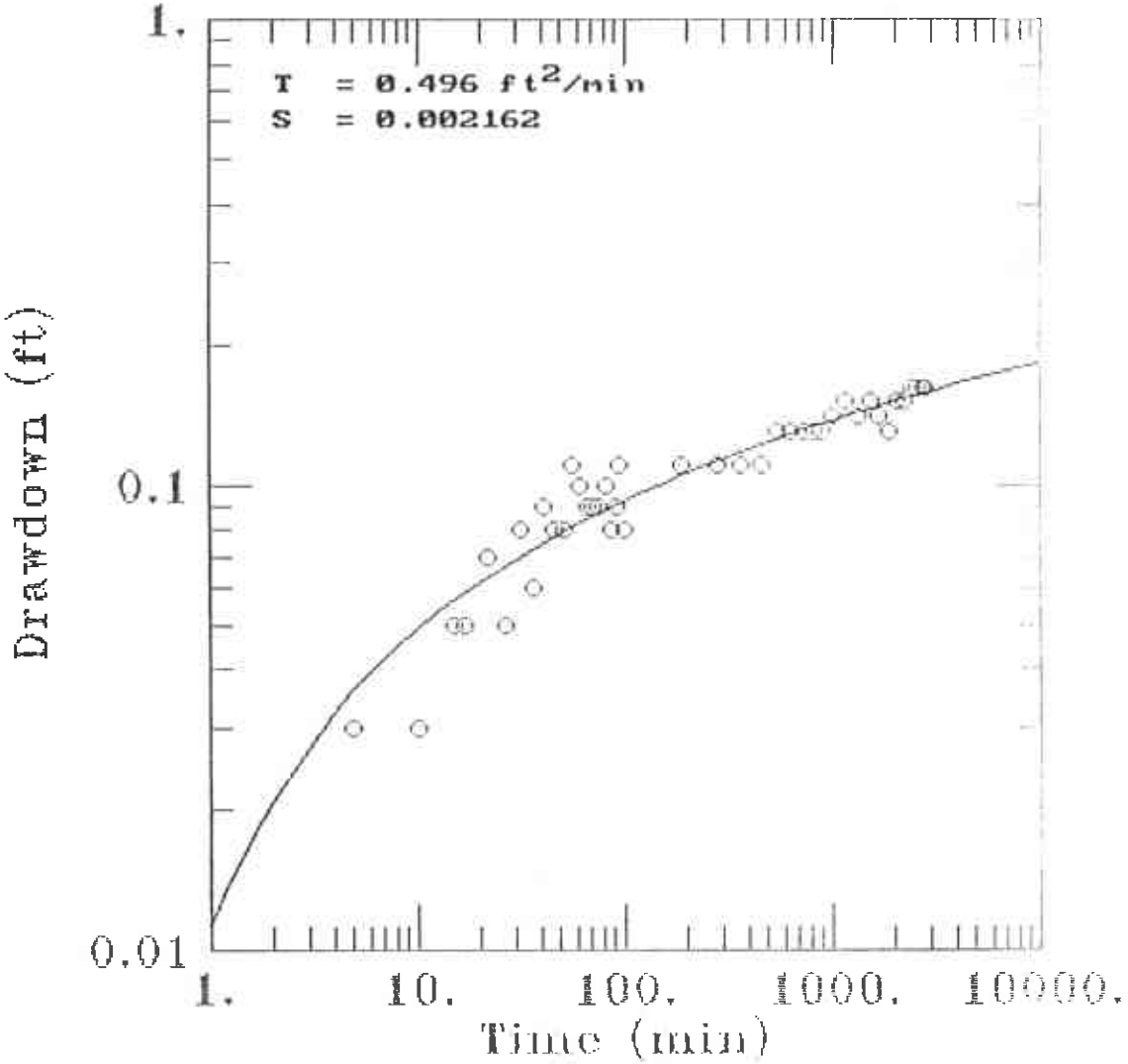
Observation Well-MW3 Neuman (Unconfined)



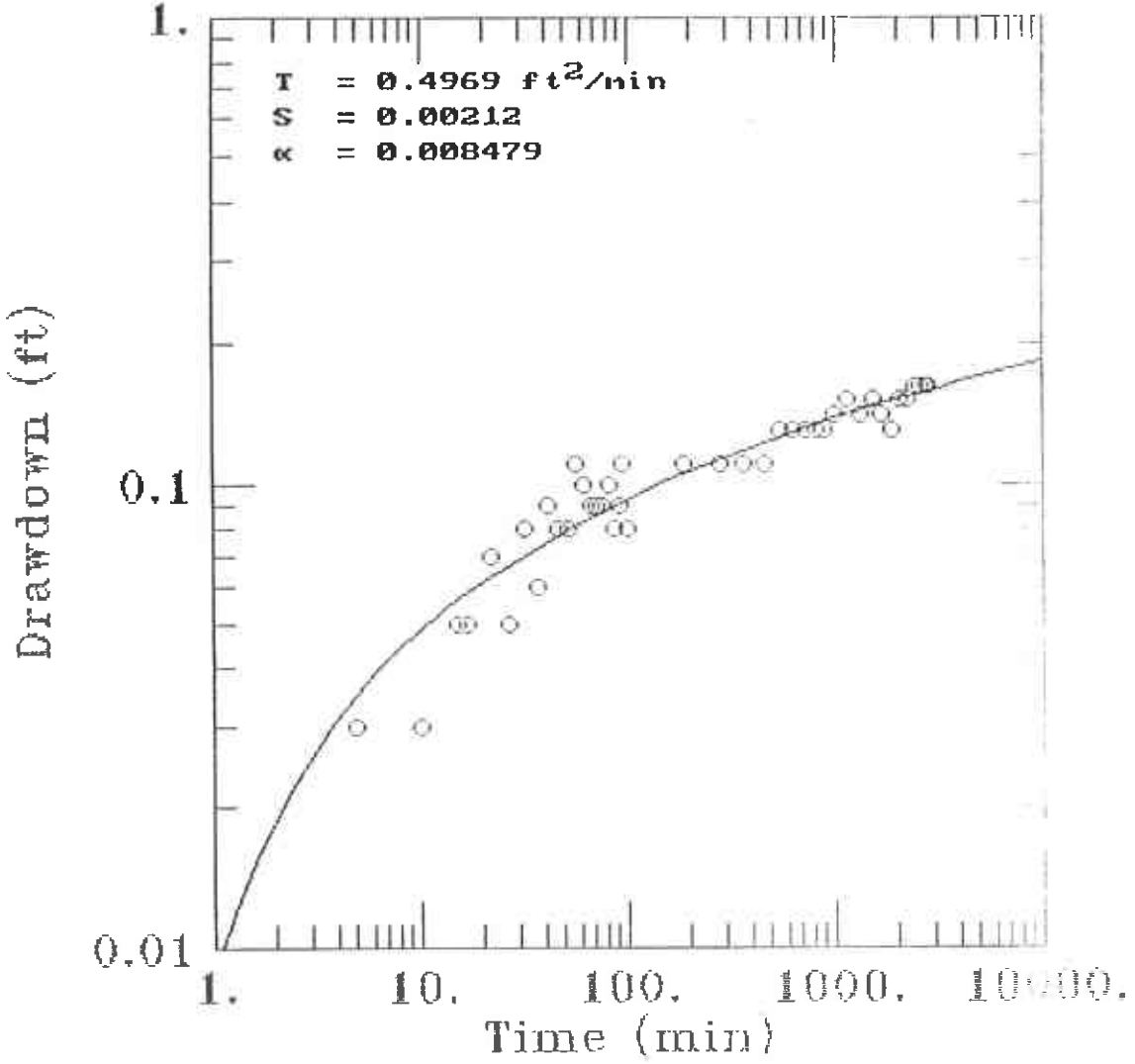
Observation Well-MW3 Theis (Confined)



Observation Well-MW3 Theis (Confined)



Obs. Well-MW3 Papadopulos (Confined)



Obs. Well-MW3 Papadopulos (Confined)