116669

# Remedial Investigation/Feasibility Study

## INTERIM REPORT

## OCCIDENTAL CHEMICAL CORPORATION

Pottstown, Pennsylvania

**MAY 1991**

BCM

Engineers, Planners, Scientists
and Laboratory Services

REPORT

AR302489

INTERIM REPORT

OCCIDENTAL CHEMICAL CORPORATION
POTTSTOWN, PENNSYLVANIA

MAY 1991

/9701q

BCM

Engineers, Planners, Scientists and Laboratory Services
One Plymouth Meeting • Plymouth Meeting, PA 19462 • Phone: (215) 825-3800

BCM

CONTENTS


1.0 INTRODUCTION 1

2.0 METHODOLOGY AND OVERVIEW OF THE FIELD PROGRAM 3

2.1 Reconnaissance Borehole Drilling 3
2.2 Reconnaissance Borehole Camera Surveys 4
2.3 Reconnaissance Borehole Geophysical Surveys 4
2.4 Reconnaissance Borehole Packer Testing 4
2.5 Sampling and Monitoring of Field Parameters 5

3.0 RECONNAISSANCE BOREHOLE TESTING RESULTS 6

3.1 Bedrock Aquifer Geology 6
3.2 Bedrock Aquifer Hydraulic Characteristics 7
3.3 Bedrock Aquifer Groundwater Quality 11

3.3.1 Field Parameter Results 11
3.3.2 Groundwater Quality Screening Results 12

4.0 DISCUSSION OF CHEMICAL OCCURRENCE IN THE BEDROCK AQUIFER 14

5.0 WELL COMPLETION AND FUTURE RI/FS EFFORTS 16

5.1 Borehole and Well Completion Specification 16
5.2 Considerations for Future RI/FS Efforts 19

APPENDICES

Appendix A Reconnaissance Borehole Lithologic Logs
Appendix B Reconnaissance Borehole Camera Logs
Appendix C Reconnaissance Borehole Geophysical Logs
Appendix D Packer Testing Time - Drawdown Graphs




AR302491

BCM

Table (continued)

TABLES

Table 2.1 Reconnaissance Borehole Completion Specifications

Table 2.2 Reconnaissance Borehole Camera and Geophysical Surveys

Table 2.3 Reconnaissance Borehole Packer Intervals

Table 2.4 Total Organic Vapor Field Analytical Results

Table 3.1 Reconnaissance Borehole Hydraulic Parameters

Table 3.2 Reconnaissance Borehole Packer Testing Water Quality Field Parameters

Table 3.3 Bedrock and Alluvial Aquifer Groundwater Elevation Data

Table 3.4 Reconnaissance Borehole Groundwater Quality Screening Results

Table 3.5 Drinking Water MCLs of Chemicals Detected in the Bedrock Aquifer

Table 5.1 Additional Bedrock Aquifer Monitoring Well Completion Specifications

FIGURES

Figure 2.1 Reconnaissance Borehole Location Plan

Figure 3.1 TB-1 Borehole Data Graphic

Figure 3.2 TB-2 Borehole Data Graphic

Figure 3.3 TB-4 Borehole Data Graphic

Figure 3.4 TB-5 Borehole Data Graphic



AR302492

Figure 3.5 TB-6 Borehole Data Graphic

Figure 3.6 TB-7 Borehole Data Graphic

Figure 3.7 TB-8 Borehole Data Graphic

Figure 3.8 TB-9 Borehole Data Graphic

Figure 3.9 TB-10 Borehole Data Graphic

Figure 3.10 PW-1R Borehole Data Graphic

Figure 3.11 PW-7 Borehole Data Graphic

Figure 3.12 Bedrock Aquifer Cross Sections

Figure 3.13 Pumping Piezometric Surface Map (2/11/91)

Figure 3.14 Pumping Piezometric Surface Map (3/28/91)

Figure 3.15 Piezometric Surface Map Upper Pumping Intervals (190-10 ft msl)

Figure 3.16 Piezometric Surface Map Middle Pumping Intervals (-70 to -180 feet msl)

Figure 3.17 Piezometric Surface Map Lower Pumping Intervals (-140 to -230 feet msl)

Figure 4.1 Reconnaissance Borehole TCE Concentrations with Depth

Figure 4.2 Reconnaissance Borehole Trans-1,2-DCE Concentrations with Depth

Figure 4.3 Reconnaissance Borehole VCM Concentrations with Depth

Figure 4.4 Reconnaissance Borehole Ethylbenzene Concentrations with Depth

Figure 4.5 Reconnaissance Borehole Styrene Concentrations with Depth

Figure 5.1 Additional Bedrock Aquifer Monitoring Well Locations



AR302493

BCM

# 1.0 INTRODUCTION

This Interim Report summarizes the results of the reconnaissance borehole drilling and testing programs at the Occidental Chemical Corporation (OxyChem) site (Site) in Pottstown, Pennsylvania. It is submitted in accordance with the Remedial Investigation/Feasibility Study Final Work Plan (November 1990). This report presents completion specifications for monitoring wells within the reconnaissance boreholes, and the rationale and completion specifications for drilling and installing additional bedrock aquifer monitoring wells.

Bedrock aquifer groundwater quality analytical results and hydraulic parameter estimates obtained via packer testing are provided in this report. Included are discussions of chemical and groundwater occurrence and movement within the bedrock aquifer.

There are several significant conclusions made from the reconnaissance borehole testing program with respect to both the characterization of the hydrogeological regime and groundwater quality. These have been considered in the proposed well completion program and in directing the remainder of the RI/FS. A summary of conclusions from the RI efforts to date follows:

- The bedrock aquifer is characterized best as a leaky-confined system. Bedding plane separations and oblique to vertical fractures are the principal types of secondary porosity controlling groundwater flow through the aquifer; these are significantly more abundant in the sandstone members than in the finer-grained rock types encountered.

- Plant production well pumping maintains a radially inward gradient to the center of the Site. Piezometric contouring of packer zones at different depths across the Site demonstrate that this inward gradient is present at all depths through that portion of the aquifer investigated.

- Recharge to the bedrock aquifer is primarily from the Schuylkill River, as a result of the gradient induced by the pumping production wells. No significant recharge appears to occur from the alluvial aquifer overlying the bedrock.

- There is a correlation between higher concentrations of chemicals in the groundwater and higher permeabilities calculated from the packer testing program; this demonstrates a preferential flow through the sandstones and other highly fractured bedrock zones.



AR302494

- None of the samples analyzed for TAL metals showed concentrations above MCLs.

- Groundwater samples from the center of the Site (TB-1, TB-2, and TB-3) had concentrations of volatile organic compounds (VOCs) above promulgated or current MCLs. The chemicals are TCE, trans-1,2-DCE, VCM, styrene, and ethylbenzene. The outlying boreholes generally did not yield concentrations of these compounds above MCLs.

- Styrene, which is less dense than water, is localized to a shallow portion of the bedrock aquifer in the center of the site. Chemicals which are denser than water (e.g., TCE and trans-1,2-DCE) occur at greater depths in this area.

The reconnaissance borehole program has allowed characterization of the hydrogeologic regime and groundwater quality to the extent that areas for remediation are definable (i.e., shallow and deeper zones within the bedrock aquifer in the center of the Site). Therefore, the majority of the additional drilling activity, which includes completion of the twelve reconnaissance borings and four additional bedrock wells will occur in the center of the Site. The specifications for those boring/well completions, and other considerations for the remainder of the RI/FS, are discussed in the final chapter of this document.

# 2.0 METHODOLOGY AND OVERVIEW OF THE FIELD PROGRAM

## 2.1 RECONNAISSANCE BOREHOLE DRILLING

Twelve bedrock aquifer reconnaissance boreholes were drilled at the Site between December 1990 and April 1991. Figure 2.1 shows the borehole locations. Table 2.1 lists the respective borehole completion depths, cased intervals, and completion dates. Appendix A contains the drilling lithologic logs. The boreholes were drilled to allow packer testing of discrete zones to determine groundwater hydraulic and chemical characteristics within the bedrock aquifer.

All boreholes were drilled using the compressed air percussion rotary drilling method. Reconnaissance boreholes TB-4 through TB-9 and existing water production well PW-7 were drilled or redeveloped as outlined in the Work Plan. The drilling or completion of boreholes TB-1, TB-2, TB-3, TB-10, and PW-1 deviated slightly from the Work Plan because of site conditions encountered during drilling.

Borehole TB-1 was re-drilled at a location about 20 feet from the original location. The original borehole became misaligned when the previously drilled core hole was reamed to accommodate the 100 feet of steel casing.

Borehole TB-2 was completed at a depth of 450 feet instead of the anticipated depth of 500 feet. Borehole water yield in excess of 250 gpm encountered during drilling exceeded the capacity of the onsite treatment basins. Completion of TB-2 at the 450 depth met the Work Plan objective of affording investigation of bedrock water quality below the production well pump intake levels.

Borehole TB-3 was drilled, tested, and cased to a depth of 100 feet during the 1990 plant maintenance period. This borehole will be completed during the 1991 plant maintenance period.

Borehole TB-10 was drilled to a depth of 350 feet instead of the anticipated completion depth of 300 feet. This was because of the intersection of a significant water bearing zone at 300 feet.

Existing water production well PW-1 was not drilled deeper because of overhead electric powerline interference. A new borehole, designated PW-1R, was advanced to a depth of 550 feet at a location approximately 40 feet from PW-1.



AR302496

## 2.2 RECONNAISSANCE BOREHOLE CAMERA SURVEYS

Reconnaissance boreholes TB-1, TB-2, TB-4 through TB-10, PW-1R and existing boreholes PW-7 and BR-2 were surveyed with a downhole television camera during February, March, and April 1991. The upper 100 feet of borehole TB-3 was surveyed in July 1990. The remainder of that borehole will be surveyed following completion of drilling during the 1991 plant maintenance period. Table 2.2 lists the completion dates and total depth logged per reconnaissance borehole. Appendix B contains downhole camera log observations compiled during review of the video tapes.

The boreholes were surveyed with a forward viewing color television camera. Copies of camera video tapes were submitted to the EPA, or the EPA designate following completion of a borehole.

## 2.3 RECONNAISSANCE BOREHOLE GEOPHYSICAL SURVEYS

Reconnaissance boreholes TB-1, TB-2, TB-4, through TB-10, PW-1R, and existing boreholes PW-7 and BR-2 were geophysically logged during February, March, and April 1991. The upper 100 feet of borehole TB-3 was geophysically logged during July 1990. The remainder of that borehole will be geophysically logged following completion of drilling during the Summer 1991 maintenance period. The following suite of geophysical logs were performed in each borehole: natural gamma, resistivity, specific conductance, caliper and temperature. Copies of all geophysical logs were forwarded to the EPA, or the EPA designate following completion of the borehole.

Table 2.2 lists the completion dates and total depth logged per borehole. Appendix C contains a copy of each geophysical log generated.

## 2.4 RECONNAISSANCE BOREHOLE PACKER TESTING

Reconnaissance boreholes TB-1, TB-2, TB-4 through TB-10, PW-1R, and existing borehole PW-7 were packer tested during February, March, and April 1991. The upper 100 feet of borehole TB-3 was packer tested during July 1990; the remainder of that borehole will be packer tested following completion of drilling during the 1991 plant maintenance period. Table 2.3 lists the completion dates of the respective packer tests, the depth intervals tested, and the rationale for testing the intervals. The selected testing intervals were approved by an EPA representative prior to implementing the testing program in the field.

Packer intervals were selected on the basis of the geophysical logs, drilling logs, and camera surveys. Natural gamma logs, together with rock core examination and borehole drilling logs, were used primarily for



AD302497

describing lithology. Caliper logs and camera survey tapes provided specific information on fracture occurrence and orientation and assisted in selecting smooth-wall zones for packer inflation. Inflections noted on the temperature logs were considered as potential groundwater flow zone indicators.

Both single and double (straddle) packer test configurations were utilized. Packer spreads for straddle packer configurations ranged from 19 to 65 feet, depending on fracture occurrence. Water elevations were measured before and after packer inflation. These levels were obtained with pressure transducers on the packer testing assemblage at locations above, between, and below the inflatable packers.

Prior to pumping a selected interval, a one gallon slug of deionized water was instantaneously introduced into the interval, with recovery of the water level recorded until the original water elevation was reestablished. This allowed an order of magnitude estimate of the permeability and yield of the isolated zone, and helped assess the quality of the seal between the packer(s) and the borehole wall.

Following the slug test, the pump was started and allowed to pump approximately one hour while drawdown data were recorded. The selected pumping rate per interval, determined from the slug tests, was in the range of 1 to 30 gpm. For those intervals with a slow slug test recovery time, increasing stepped-flowrate drawdown tests were performed to determine a sustainable flow rate for the final test. Water level recovery was monitored following the end of pumping each interval. Hydraulic parameter estimates are presented and discussed in Section 3.0.

## 2.5 SAMPLING AND MONITORING OF FIELD PARAMETERS

Water quality samples for volatiles analysis (Method 601 and modified Method 602) were collected from each packer test zone following the removal of at least five volumes of water within the tested zone. Samples for CLP TAL metals analysis were collected from the basal test interval at each borehole in the same manner indicated above.

A separate water quality sample was obtained at the time that the laboratory samples were collected. These samples were analyzed in the field for temperature, dissolved oxygen (DO), specific conductance (EC), oxidation reduction potential (Eh), and pH. Laboratory and field analytical results are presented and discussed in Sections 3.3.1 and 3.3.2, respectively.

Total organic vapor concentrations were monitored (HNu or OVA) during reconnaissance borehole drilling. Readings obtained during the drilling program are presented in Table 2.4.

# 3.0 RECONNAISSANCE BOREHOLE TESTING RESULTS

## 3.1 BEDROCK AQUIFER GEOLOGY

The bedrock aquifer beneath the site consists principally of reddish-brown shale (mudstone) and siltstone beds, thicker and less abundant sandstone members and thin gray argillite layers. Subsurface geology was determined from the reconnaissance borehole drilling lithologic logs (Appendix A), camera logs (Appendix B), geophysical logs (Appendix C) and the NX core from borehole location TB-1 (Appendix A). The geophysical gamma logs were correlated for lithology to the TB-1 core and drilling logs. Local bedrock structure was obtained from published literature.

The bedrock beneath the Site is primarily of the Brunswick Formation. The general strike of bedrock is northeast to southwest, with an average dip of 12 degrees to the northwest.

Reconnaissance borehole gamma logs (Figures 3.1 through 3.11) best illustrate the relative thickness and occurrence of the various lithologic members encountered beneath the site. The gamma logs on Figures 3.2 and 3.3 provide representative examples of these members. The depth intervals 130 to 200 feet, 235 to 350 feet, and 370 to 450 feet on the gamma log in Figure 3.2 are examples of the abundant, finer grained, reddish-brown mudstone and siltstone to very fine sandstone members. Individual beds range in thickness from several inches to several feet. The depth intervals 110 to 125 feet, 200 to 235 feet, and 350 to 370 feet are typical of the medium to coarse grained sandstone members. Sandstones range in thickness from a few feet to about 40 feet, with an average of about 25 feet. Well rounded gravel occurs in layers several inches thick in the thicker, coarser sandstone units. Lastly, the depth interval at about 150 feet on the gamma log on Figure 3.3 is representative of the thin, gray argillites. These beds range from several inches to several feet.

The cross sections on Figure 3.12 illustrate those units in the central part of the Site which can be correlated between borings. The thicker, coarser sandstone members can be correlated in the central part of the Site along strike up to about 2000 feet, and down dip approximately 800 feet. The thin, gray argillite members appear arealy limited (downdip and along strike) relative to the sandstones, yet more extensive than the reddish-brown mudstones and siltstones. Several argillite beds traced from PW-7 to TB-7 indicate a down dip extent of about 600 feet (Figures 3.6 and 3.11). An argillite bed at about 150 feet below ground surface



AR302499

(bgs) at borehole TB-4 (Figure 3.3) could not be traced down dip to borehole TB-2 (Figure 3.2), a distance of about 800 feet. The argillite beds identified at PW-7 could not be traced along strike to borehole TB-6 (Figure 3.5), a distance of 1200 feet.

Gently dipping (approximately 12 degrees) bedding plane separations between different previously described lithologic members and oblique to vertical fractures are the principal types of secondary porosity in the aquifer. The occurrence and orientation of fractures beneath the site is dependent on lithology. Review of the caliper logs and gamma logs on Figures 3.1 through 3.11 indicate several associations. Bedding plane separations, whether observed to be tight or open (as noted on the camera logs, Appendix B), occur throughout the vertical extent of the formation investigated. Noted occurrences are between the reddish-brown mudstones and siltstones and at the base of the thicker, coarse sandstones. Oblique to vertical fractures, on the order of 1 to 15 feet in length, are more sporadically distributed throughout the formation, but tend to increase in length and abundance within the sandstone members. Based on a review of the downhole video tapes, the shape of a borehole is relatively round and smooth where it intersects the finer grained reddish-brown members. Formation openings are limited to principally horizontal bedding plane separations and short (1 to 2 feet) vertical fractures. Where a borehole intersects the coarser sandstones, the borehole shape is typically angular or blocky, as a result of removal of rock from the fractures during drilling. Vertical fractures traced above and below the sandstone appear to tighten and disappear several feet into the finer grained rocks.

Visual examination of dry sections of the TB-1 core when wetted indicated that water would noticeably penetrate into the medium to coarse grained sandstone members. This suggests some level of primary porosity exists within the aquifer. Water did not readily penetrate into wetted sections of finer grained portions of the core.

## 3.2 BEDROCK AQUIFER HYDRAULIC CHARACTERISTICS

The movement of groundwater beneath the Site under continuous pumping of plant production wells PW-5, PW-6, PW-8, and PW-10 is controlled by lithology, fracture occurrence and orientation, formation structure, and vertical and lateral distances from pumping centers. Groundwater within the bedrock aquifer is predominantly leaky confined. Thicker, more vertically fractured sandstone members tend to be more permeable than the finer grained units. Across the Site, permeabilities and, therefore, transmissivities are greater along strike than perpendicular to strike. Permeabilities estimated for the various types of lithologies tested in the center of the Site are higher than for similar lithologies in

outlying areas. Bedrock aquifer hydraulic parameters and groundwater flow behavior were determined from the pumping out drawdown tests performed on the 72 discrete intervals at the 12 reconnaissance boreholes and from piezometric surface maps constructed from open reconnaissance borehole and specific packer interval piezometric head measurements (Table 3.1; Figures 3.1-3.11; Figures 3.13-3.17; Appendix D).

Permeability estimates were obtained via packer test pumping data. Drawdowns in the majority of the intervals tested stabilized to steady-state conditions within the typical 1-hour pumping period (Appendix D). This allowed estimation of hydraulic conductivities by a constant-head/constant flow rate equation (Bureau of Reclamation, 1960). Specific capacities and corresponding hydraulic conductivities for the test intervals range from 0.02 to 10.38 gpm/ft and 0.07 to 60.8 ft/day, respectively, with an average of about 1.16 gpm/ft and 5.52 ft/day, respectively. In general, high specific capacities correlate to high conductivities.

Continuous pumping of the bedrock aquifer by the Site water production wells imposes a considerable stress on the aquifer as shown in the Work Plan and further demonstrated though the RI program to date. Water level drawdown in the bedrock aquifer due to the combined production well pumping could not be determined prior to packer testing because of the absence of a reference static piezometric surface. The individual drawdown tests performed on select portions of the aquifer at the reconnaissance boreholes across the site imposed additional additive pumping stresses that were superimposed on the production well network pumping stress. Specific capacities and hydraulic conductivities estimated from the packer drawdown test data are potentially lower than values that might be obtained under non-pumping conditions. Permeability estimates for portions of the aquifer in the central Site area have the highest potential offset because drawdowns induced by the production wells are at a maximum in this area. Other factors which affect the permeability estimates include: the use of pumping interval drawdown data as opposed to observation well data; nonmeasured recharge to the aquifer over the two-month testing period; slightly variable production well pumping flow rates; and, occasional leakage around the packers as a result of a poor seal to the formation. These later factors are assumed to have less of an impact relative to the initial pumping stress factor.

The depth at which the first saturated fractures were encountered during drilling were typically deeper than the water levels in the completed open boreholes, indicating confinement. Water levels in boreholes TB-1 and TB-2 tended to be lower than the first saturated fractures encountered during drilling because of the drawdown due to production well pumping. The majority of the fracture intervals tested show a leaky confined response to pumping (Appendix D). Semiconfinement of the aquifer occurs from intercalation of the arealy limited mudstones and

siltstones with the more laterally extensive, coarser grained sandstones. This leaky confined behavior results from groundwater flow through less abundant vertical fractures across the finer grained units.

The borehole data graphics (Figures 3.1 - 3.11) illustrate the distribution of permeability relative to lithology and borehole depth. Figure 3.1 shows the relationship of higher permeable sandstones relative to less permeable finer grained members. This relationship is typical for the majority of the boreholes.

Fracture occurrence and orientation appear to be dominant controls on groundwater movement through the aquifer. Permeabilities tend to increase with increasing fracture density. The highest permeabilities are associated with the vertically fractured sandstone members. Arithmetic time-drawdown graphs for the tested intervals indicate minor vertical leakage occurs when a particular interval is pumped (Appendix D). The time lag in drawdown in the upper or lower intervals relative to the start of pumping/drawdown in the pumped interval indicates leakage occurred through the formation and not around the packers when a particular interval was tested. Variations in the different types of lithologies above and below tested intervals did not have noticeable differences in leakage rates. Low vertical leakage observed through the formation relative to the sustained yields obtained in the tested intervals indicate that horizontal hydraulic conductivities are significantly higher than vertical conductivities. The typical leaky confined response to pumping observed within tested intervals indicates recharge does occur.

Figures 3.13 and 3.14 illustrate the site wide pumping piezometric surfaces for the two production well pumping arrangements that existed during the course of packer testing. Water level elevations were measured in the production wells and the reconnaissance boreholes which are both open over their entire saturated intervals. Prior to packer testing and during the majority of the packer testing program, production wells PW-5, PW-8, and PW-10 were pumping continuously at a combined rate of 275 gpm. Production well PW-6 would turn on and off automatically for several hours each day at a flow rate of about 200 gpm under this pumping scenario for a temporary combined pumping rate of 475 gpm. During the testing of boreholes TB-1 and TB-2, production well PW-6 was pumping continuously along with PW-5 and PW-8 to stabilize pumping rates within the center of the site. PW-10 was turned off. The combined flow rate for this pumping arrangement was about 367 gpm. Based on these maps, groundwater flow is predominantly radially inward to the center of the Site under either pumping scenario. The shapes of the composite radii of influence for both arrangements are slightly elongate along strike. This site-wide response to pumping combined with the occurrence of horizontal bedding plane separations and relatively thin laterally extensive lithologic members indicate that aquifer transmissivities are higher along strike than perpendicular to strike.

Figures 3.15, 3.16, and 3.17 are piezometric surface maps constructed from piezometric head measurements for the isolated intervals recorded during packer testing. The piezometric surface maps were constructed to illustrate the site wide aquifer response to pumping with depth relative to production well pump intake elevations. Head measurements were recorded after water levels had stabilized above, within, and below the inflated packers. The maps were constructed using one head measurement from one packed-off interval per borehole for a given aquifer thickness across the site. Figure 3.15 was constructed from head measurements from the shallowest interval tested at each borehole which ranged in elevation from +190 to -10 ft msl. Figure 3.16 was constructed from head measurements from intervals within the elevation range of -70 to -180 ft msl. Figure 3.17 was constructed from head measurements from intervals within the elevation range of -140 to -230 ft msl. Two boreholes, TB-4 and TB-9 were completed above the depth of the intervals selected for construction of the third map. The elevations of the pump intakes are as follows: PW-6 (-150 ft msl); PW-7 (-161 ft msl); PW-8 (-163 ft msl); PW-9 (-87 ft msl); and, PW-10 (-130 ft msl). The elevation of the pump intake for PW-5 is not known.

Each packer piezometric surface map indicates groundwater flows radially inward towards the center of the Site. All three drawdown surfaces are elongate parallel to strike indicating higher permeability and, therefore, higher transmissivities along strike relative to a direction perpendicular to strike. These maps show that production well pumping controls flow of groundwater towards the respective pumping centers down to depths slightly below the composite intake horizon.

Some of the highest permeabilities determined for the aquifer occur in sandstones within the center of the site, while sandstones of similar character with similar degrees of fracturing in outlying areas of the aquifer have lower permeability. Overdevelopment as a result of decades of production well pumping is the probable cause of the higher central site permeabilities.

The primary recharge to the bedrock aquifer is from the Schuylkill River. Piezometric surface maps developed at several times and for specific depth intervals in the bedrock aquifer indicate that the influence of production well pumping extends beyond the edge of the river. Additional evidence of recharge from the river was observed on the downhole camera log from TB-8, where flow into the borehole was observed at a depth of 62 feet.

The alluvial aquifer does not appear to be a significant source for recharge to the bedrock aquifer. No water level changes were noted in alluvial aquifer monitoring wells OW-21, OW-22, and OW-24A when the shallowest intervals at reconnaissance boreholes TB-4, TB-9, and TB-10 were tested, respectively.

## 3.3 BEDROCK AQUIFER GROUNDWATER QUALITY

### 3.3.1 Field Parameter Results

At each packer interval sampled, a separate aliquot of groundwater was collected for field analysis of temperature, dissolved oxygen (DO), Eh, pH, and specific conductance (EC). The results of analyses are presented on Table 3.2 and are summarized below for each parameter.

Temperature for most samples ranged form 10°C to 15°C, although temperatures as low as 4°C and as high as 20°C were reported. These temperature extremes appear to be related to the air temperature at the site as recorded in the daily field logs. That is, temperatures were not obtained instantaneously after pumping an interval and the aliquots were likely affected by the ambient air temperature at the time. In general, sampling intervals with higher temperatures (15°C to 20°C) were measured in the central portion of the site at wells TB-1, TB-2, and TB-6, while cooler temperatures (10°C to 12°C) were reported along the western portion of the site at wells TB-9, TB-10, and PW-1R. This general trend is probably related to Schuylkill River surface water recharging the aquifer. The surface water temperature of the Schuylkill River in the winter was colder than local groundwater, and thus a temperature gradient with cooler groundwater closer to the river could be expected.

Dissolved oxygen (D.O.) concentrations of samples ranged form 2.7 mg/l to 14.6 mg/l. DO does not appear to vary within each well according to temperature and depth. However, comparisons between wells indicate lower DO concentrations (less than 5 mg/l) in the eastern portion of the site at wells TB-2, TB-4, and TB-8 and higher DO concentrations in the western portion of the site at wells TB-9, TB-10 and PW-1R. These wells generally had samples with the lowest temperatures.

The oxidation/reduction potential (Eh) of samples ranges from -138.4 mv to 273 mv, with the majority of samples in the 150 to 250 mv range. The lowest Eh was measured at wells TB-2, TB-4 and PW-7 with negative Eh values of -66 mv and -138.4 mv reported at well TB-2, packer test zones 2 (79-100 ft) and 3, (100-130 ft) respectively. The highest Eh values were distributed across the site and do not appear to be related to depth or location of the sample interval.

The pH of samples ranged from 5.4 to 11.4 with most samples between a pH of 6.0 and 7.5. The lowest pH of 5.37 was measured on the sample from Zone 3 (85-105 ft) in Well TB-4. Other sampling intervals with relatively low pH included PW-1R, Zone 1 (surface-125 ft) (5.8), PW-7, Zone 1B, (surface-65 ft) (6.0), and TB-10, (surface-38 ft) (5.6). The samples with the highest pH were encountered at TB-2, Zone 2, (79-100 ft), (11.4) and Zone 3, (100-130 ft) (10.9).

The specific conductance (EC) of samples ranged between 190 and 2200 umhos with most of the samples within the 200-400 umhos range. The lowest conductances measured in well TB-9 were between 190 to 250 umhos for Zones 1-3. The highest EC values were reported for wells TB-1 and TB-2. TB-1, Zones 1 (surface-101 ft) and 2 (71-101 ft) had an EC of 700 umhos and the specific conductance for TB-2 Zone 2 (79-100 ft) and Zone 3 (100-130 ft) were 2200 and 1800 umhos, respectively.

### 3.3.2 Groundwater Quality Screening Results

A total of 70 groundwater samples were collected for analyses from the 72 intervals which were packer tested. Groundwater samples were collected at the end of each drawdown phase of pumping. The two lowest intervals at TB-7 did not yield sufficient water for sample collection.

Groundwater samples were analyzed for purgeable halocarbons by Method 601 and for select purgeable aromatics (ethylbenzene and stryene) by modified Method 602. Groundwater samples from the basal interval of each borehole were also analyzed for CLP TAL metals.

Table 3.4 lists detected VOC concentrations and the results of the TAL metals analyses. Figures 3.18 through 3.22 show the distribution of target VOC concentrations with depth at each reconnaissance borehole. Table 3.5 lists Maximum Contaminant Levels (MCLs) for key analytes in groundwater.

Groundwater samples from reconnaissance boreholes in the center of the Site (TB-1, TB-2, and TB-3) had a larger diversity and higher concentrations of detected VOCs (Table 3.4) relative to groundwater samples from the outlying reconnaissance boreholes. Trichloroethylene (TCE), trans-1,2-dichloroethylene (trans-1,2-DCE), vinyl chloride monomer (VCM), ethylbenzene and styrene are the principal chemicals present.

Borehole TB-3 has shown the highest concentrations of TCE (82.0 mg/l at a depth of 75 to 95 ft bgs), trans-1,2-DCE (25.0 mg/l at a depth of 62 to 77 ft bgs), and ethylbenzene (26.0 mg/l at a depth of surface to 49 ft bgs). Borehole TB-2 has shown the highest concentration of VCM (2.63 mg/l at a depth of 100 to 130 ft bgs). Borehole TB-1 has shown the highest concentration of styrene (81.6 mg/l at a depth of 72 to 101 ft bgs).

Concentrations of the less dense (relative to water) compound styrene at borehole locations TB-1, TB-2 and TB-3 are highest in samples from the shallower tested intervals. Styrene concentrations in samples from these borehole locations decrease to levels of nondetect or below the MCL at depths between 100 to 180 feet.

Concentrations of those compounds which are denser than water (e.g., TCE and trans-1,2-DCE) tend to be found at deeper intervals in the center of the Site. There is also a general decrease in concentrations with depth, as observed in TB-1 and TB-2.

For the remainder of the reconnaissance boreholes, VOC analytical results ranged from nondetect to slightly above the respective MCLs. No VOCs were detected in samples from boreholes TB-4, TB-9 and PW-1R above the respective MCLs (Table 3.4).

For borehole TB-5, the shallowest sample (surface to 85 ft) contained TCE at a concentration of 0.053 mg/l. TCE and other VOCs were found at concentrations slightly above the MCLs in the TB-5 sample interval from 100 to 141 ft. The remainder of borehole TB-5 samples were nondetect for VOCs.

Borehole TB-6 contained TCE at a concentration of 0.006 mg/l at the sample interval 350 to 384 ft. Compounds detected in the remainder of the samples collected from this borehole were below the corresponding MCLs.

TCE was detected in the two shallowest samples from borehole TB-7 (surface to 107 ft, and 115 to 156 ft) at concentrations of 0.105 and 0.092 mg/l, respectively. No VOCs were detected in the lowest sample from this borehole, (190 to 231 ft).

Styrene was the only VOC detected above the MCL in samples from TB-8. This was limited to the interval at 85 to 105 ft. No other VOC were detected above the corresponding MCLs in the remainder of the samples collected from this borehole.

The sample from 86 to 117 ft collected from borehole TB-10 contained TCE at a concentration of 0.006 mg/l. No other VOCs were detected above MCLs in the remainder of the samples collected from this borehole.

Three samples from the former production well PW-7 contained either TCE or trans-1,2-DCE at concentrations slightly above the MCLs (Table 3.4). These intervals were above a depth of 347 feet. No other VOCs were detected above the corresponding MCLs in the remaining samples from this borehole.

# 4.0 DISCUSSION OF CHEMICAL OCCURRENCE IN THE BEDROCK AQUIFER

The chemicals detected in the bedrock aquifer are primarily contained within the center of the Site. With a few exceptions, the concentrations of VOC chemicals of concern were not found above MCLs beyond boreholes TB-1, TB-2, and TB-3 situated in the middle of the Site.

The chemicals detected within the bedrock aquifer are those associated with past plant operations or the subsequent degradation of introduced chemicals. The central portion of the aquifer where the chemicals are most abundant is coincidental with the plant area where these chemicals were handled, and most likely released. The occurrence of TCE, ethylbenzene and styrene in the groundwater has resulted from vertical infiltration through the bedrock. Bedrock in the center portion of the Site is topographically high and relatively weathered. The migration pathway of past releases of these chemicals would tend to have a preferred vertical migration through the weathered bedrock into the aquifer. The presence of trans-1,2-DCE and VCM are the result of the breakdown of TCE within the aquifer. The highest concentration of VCM at borehole TB-2, Zone 3 (100 to 130 ft) relative to anaerobic, reducing conditions indicated by D.O. and Eh measurements for this interval supports occurrence by degradation.

Figures 4.1 through 4.5 present the results of the groundwater screening analyses for the five principal VOCs detected. These illustrate the relative distribution of the individual compounds both arealy and with depth.

As shown on Figure 4.1, TCE is the VOC which is most widespread in the bedrock aquifer. TCE had widespread use in former plant operations. The occurrence of TCE relatively deep in the bedrock aquifer is a function of the density of the chemical and the greater vertical gradient in the center of the Site produced by the pumping production wells. Outside of the center borings (TB-1, TB-2, and TB-3), TCE is not typically found above the MCL of 0.005 mg/l. Four areas of exception are discussed below.

The presence of TCE in TB-7 and PW-7 in that portion of the aquifer appears contradictory to the general model of groundwater flow toward the center of the Site. Well PW-7 was once an active pumping well and may have acted to pull TCE in that direction.

The occurrence of TCE deep in TB-6 (0.006 mg/l at 349 to 384 feet) is also a potential remnant of past production well pumping. Production well PW-2 existed north of TB-6 and was pumped in the 1940's-1950's. It is probable that this affected a gradient in that direction, drawing TCE deeper into the bedrock aquifer and toward the former production well. Currently, the flow from TB-6 is toward the center of the Site.

The occurrence of TCE in TB-5 appears to be lateral migration from the center of the Site along the shallowest bedding plane fractures. This could have been promoted by the intermittent pumping of PW-9.

The occurrence of TCE in TB-10 is potentially from vertical migration from a portion of the Site not associated with releases in the center of the plant. In any event, the detection of TCE in TB-10 at 0.006 mg/l at packer tested zone 86 to 177 ft bgs is only slightly above the MCL of 0.005 mg/l.

As shown on Figure 4.2, trans-1,2-DCE is a VOC whose presence at concentrations above the MCL of 0.100 mg/l was limited entirely to TB-1, TB-2, and TB-3. Its occurrences in less significant concentrations appear to mimic the distribution pattern of TCE in the bedrock aquifer. This is very probably related to the phenomena of TCE degrading to trans-1,2-DCE in the groundwater. Both TB-1 and TB-2 show a significant decrease in trans-1,2-DCE concentrations below a depth of 100 feet in the center of the site.

As shown on Figure 4.3, VCM is a VOC which is detected almost exclusively in the center of the Site. This limited occurrence and distribution suggests that the VCM is also present as a degradation product of TCE.

As shown on Figure 4.4, ethylbenzene is a VOC which is detected almost exclusively in the center of the Site. It appears to be limited to the upper portion of the bedrock aquifer, as it was not found in excess of its MCL below the packer interval of 102 to 132 ft at borehole TB-1.

As shown on Figure 4.5, styrene is only found above the MCL of 0.100 mg/l in the center of the Site. It is only detected at relatively shallow depths, as it is a chemical which is less dense than water. The less significant concentrations of styrene in TB-4 and TB-8 are potentially related to other source areas. The presence of styrene in the shallowest sample of TB-4 is probably the result of being drawndown from the saturated alluvium. The upper portion of the bedrock aquifer was dry when originally drilled, which prohibits any direct yield from this zone. In addition, volatile organic vapor concentrations were detected by an HNu during drilling through the saturated alluvium at this location.

# 5.0 WELL COMPLETION AND FUTURE RI/FS EFFORTS

## 5.1 BOREHOLE AND WELL COMPLETION SPECIFICATION

The reconnaissance borehole program to date has allowed characterization of the hydrogeologic regime and groundwater quality to the extent that areas for remediation are definable (i.e., the bedrock aquifer in the center of the Site). The completion specifications for the reconnaissance boreholes, and the proposed additional boreholes, consider this characterization. Therefore, the majority of the additional drilling activity associated with the RI is proposed for the center of the Site. Completion specifications for the 12 boreholes drilled and tested for the RI program are discussed in the following paragraphs along with completion details for four additional bedrock wells. Figure 5.1 shows the locations of the four additional wells.

Production Well PW-1R will be left open for plant use. It has been shown to be an upgradient well under both plant production well pumping conditions and non-pumping conditions. No chemicals were detected in the groundwater at this location.

Production Well PW-7 will be completed as a PVC-screened monitoring well within the zone 175 to 210 feet. The existing open borehole will first be grouted to a depth of 210 feet. The selection of the monitoring interval is based on the relatively high yield and the presence of TCE at a concentration close to the MCL. Its location, upgradient of the center of the Site under induced gradient, will make PW-7 a suitable well to monitor an enhanced recovery program planned for the center of the Site.

Borehole TB-1 is in a location requiring further characterization and remediation. The existing borehole will be deepened by 100 feet, or to the next deeper sandstone unit of significant yield. A PVC-screened monitoring well will be installed in that deeper zone. The purpose of this well is to define the bottom depth of chemical migration, which has not been accomplished by the testing to date.

Two new boreholes will also be drilled in the ~~immediate vicinity~~ of TB-1. One of the boreholes will be completed as a PVC-screened monitoring well within a zone 290 to 321 feet. This well will provide samples for CLP confirmation of the packer test interval screening results, and, based on those results, may be considered as a recovery well in the remediation program. The other borehole will be completed as a PVC-screened monitoring well within a zone 102 to 132 feet bgs. This new well will be a recovery well in the remediation program, based on CLP analysis of groundwater from the new well.

The above two new wells in the immediate vicinity of TB-1 address TCE and other denser-than-water VOCs present in that area. The less dense VOC, styrene, will also be addressed in the remediation program. Existing monitoring well BR-B is within 20 feet of TB-1 and is completed at a depth comparable to where high stryene concentrations were detected in TB-1. Well BR-B will be sampled and analyzed for VOCs by CLP methodology and, based on those results, will be considered as a recovery well for styrene remediation.

Borehole TB-2 has exhibited two zones of interest from the packer testing program. The existing borehole will be grouted to 370 feet, and the zone from 350 to 370 feet will be completed as a PVC-screened monitoring well. Based on CLP confirmation sampling of the screening results, this well will be used to either define the lateral extent of VCM migration, or function as a recovery well in the remedial program. The second zone of interest in TB-2 is from 100 to 130 feet. A new boring, adjacent to TB-2, will be drilled to 130 feet bgs and completed as a PVC-screened monitoring well within that 30-foot interval. Based on CLP confirmation sampling of the screening results, this new well may be considered as a recovery well in the remedial program.

Borehole TB-3 will be completed during the 1991 plant maintenance period. Based on the results of the reconnaissance borehole testing program, it may be converted to a monitoring well or a recovery well.

Borehole TB-4 will be grouted and abandoned. The principal chemical detected in TB-4 during the packer testing program (stryene) appears to be not associated with the bedrock aquifer. Shallow well OW-21 will be sampled during the two CLP rounds. Based on the results of this later sampling, if impact to the bedrock aquifer from the alluvial aquifer is indicated, existing well BR-4 is available for conversion to a specifically screened well. Existing bedrock monitoring well BR-4 is near TB-4 and will be sampled and analyzed for VOCs (including stryene) by CLP methodology.

Borehole TB-5 has exhibited two zones of interest from the packer testing program. The existing borehole will be grouted to 140 feet, and the zone from 100 to 140 feet will be completed as a PVC-screened monitoring well. This will be used to collect groundwater samples within the sandstone zone which has shown the presence of TCE and other VOCs. The analysis will be by CLP methodology for confirming the results of the screening analyses. The second zone of interest in TB-5 is from 40 to 85 feet. A new well will be drilled and completed with PVC screen in this zone to conduct CLP analysis as a follow-up to the screening analysis which has shown elevated TCE concentrations. The potential vertical gradient of TCE will be assessed in this area by a well triplet which will consist of existing borehole TB-5 completed as the deep well, the

new borehole, which will monitor the intermediate 40 to 85 feet zone, and existing well OW-14A, which will monitor the shallow perched water zone. Based on CLP results and risk considerations, the TB-5 area may be considered as a second area for groundwater recovery.

Borehole TB-6 will be grouted to 384 feet and completed as a PVC-screened monitoring well within the zone of 349 to 384 feet. This is the only zone which showed TCE slightly above the MCL. As discussed, the presence of TCE here is probably associated with the previous pumping of the former production well PW-2 to the north of TB-6. It is likely that PW-2 could have pulled TCE in the groundwater from the center of the Site when it was in operation. Completion of TB-6 as specified will be useful in defining and monitoring the fringes of the capture zone once an enhanced remediation program is implemented in the center of the Site.

Borehole TB-7 will be grouted to 190 feet and completed as an open bedrock well above that depth. Only TCE was detected in this well above the MCL. TB-7 is upgradient of the center portion of the Site under plant production well pumping conditions. The future use of TB-7 as either a monitoring well or potential recovery well will be dependent on the CLP methodology analysis which will be performed as confirmation of the screening results.

Borehole TB-8 will be grouted to 105 feet, and completed as a PVC-screened monitoring well within the zone of 85 to 105 feet. The principal chemical present (styrene) at this location, as identified from the packer testing program screening analyses, will be monitored in the completed well by CLP methodology.

Borehole TB-9 will be grouted and abandoned. This boring has been demonstrated to be free of chemicals and is located in an upgradient direction to the center of the Site under plant production well pumping conditions. It will serve no useful purpose in either a future monitoring or remediation program.

Borehole TB-10 will be grouted to a depth of 117 feet, and completed as a PVC-screened monitoring well within the zone 86 to 117. This was the only zone of interest identified during the packer testing program, as TCE was detected just above the MCL within this zone. Groundwater flows from TB-6 toward the center of the Site under production well pumping conditions.

## 5.2 CONSIDERATIONS FOR FUTURE RI/FS EFFORTS

The findings and conclusions from the reconnaissance boreholes to date, and the extensive testing conducted therein, have allowed defined characterizations of the hydrogeological regime and groundwater quality which help direct the future RI/FS efforts. A significant conclusion from the RI to date is that the existing production well pumping is controlling the chemical migration. Therefore, it is specifically the bedrock aquifer in the center of the Site which will be addressed in FS.

The RI/FS Work Plan indicated that an existing offsite well survey, and offsite well sampling, would be conducted if the results of the RI indicated potential offsite chemical migration. This survey and sampling will not be required because it has been demonstrated that groundwater flow is radially inward toward the center of the Site.

The RI/FS Work Plan also indicated that an aquifer pumping test would be conducted to determine the local hydraulic properties of the bedrock aquifer. Typically, an aquifer pumping test is used to estimate bedrock and alluvial aquifer interconnection, groundwater flow rates, and the extent of pumping influence. This information would then be used in the remediation design. It is considered, however, that the results of the extensive packer testing program has provided a substantial amount of information which will be applicable directly to remedial design. Therefore, a site-wide and a multi-day aquifer pump test will not be required for characterization purposes. Alternately, shorter term pump test(s) for final remedial design basis in the center of the Site may be more appropriate; the need for such will be determined upon review of CLP analyses from the completed wells.

It is also considered that certain elements of the FS can be initiated with respect to the bedrock aquifer as a media/operable unit. The potential exposure route of residential use of the bedrock aquifer has been eliminated as a concern; without offsite migration of groundwater in the bedrock aquifer, there is no need to calculate a potential carcinogenic risk range to offsite exposure receptors. This simplifies the general objective of groundwater remediation to be that of restoring the bedrock aquifer to a 2A classification proposed in the EPA Groundwater Protection Strategy Guidance.

BCM

TABLES

TABLE 2.1

RECONNAISSANCE BOREHOLE COMPLETION SPECIFICATIONS

OCCIDENTAL CHEMICAL COPROATION,
Pottstown, Pennsylvania

| Borehole | Completion Date | Completion Depth (ft) | Depth of 8 inch Casing (ft) | Comments |
|---|---|---|---|---|
| TB-1* | 4/10/91 | 500 | 100 | |
| TB-2 | 3/14/91 | 450 | 100 | |
| TB-3 | 7/6/90 | 100 | 100 | Current completion depth. Remainder of borehole to be drilled 1991 Maintenance period |
| TB-4 | 12/19/90 | 300 | 30 | |
| TB-5 | 1/31/91 | 450 | 37 | |
| TB-6 | 1/31/91 | 450 | 40 | |
| TB-7 | 1/24/91 | 350 | 64 | |
| TB-8 | 1/18/91 | 350 | 30 | |
| TB-9 | 1/25/91 | 300 | 30 | |
| TB-10 | 1/7/91 | 350 | 28 | |
| PW-1R | 1/23/91 | 550 | 37 | Original production well not used |
| PW-7 | 2/25/91 | 347 | 40 | Redeveloped only |

* The first 100 feet of core from this location was collected on 1/28-29/91, with the remainder of the core (100-400') collected on 3/12-18/91.

OXYCHEM\04161ES9.XLS/jad

TABLE 2.2

RECONNAISSANCE BOREHOLE CAMERA
AND GEOPHYSICAL SURVEYS

OCCIDENTAL CHEMICAL CORPORATION
Pottstown, Pennsylvania

| Borehole ID | Camera Survey Completion | Geophysical Survey Completion | Completion Depth |
|---|---|---|---|
| PW-1R | 1/29/91 | 1/28/91 | 550 ft |
| PW-7 | 2/13/91 | 2/6/91 | 350 ft |
| TB-1 | 2/13/91/3/12/91 | 2/13/91/3/12/91 | 100 ft/500 ft |
| TB-2 | 2/13/91/3/15/91 | 2/14/91/3/15/91 | 100 ft/450 ft |
| TB-3 | 7/7/90 | 7/7/90 | 100 ft/ |
| TB-4 | 1/28/91 | 1/29/91 | 300 ft |
| TB-5 | 2/2/91 | 2/5/91 | 450 ft |
| TB-6 | 2/1/91 | 2/5/91 | 450 ft |
| TB-7 | 1/31/91 | 2/4/91 | 350 ft |
| TB-8 | 1/31/91 | 2/5/91 | 350 ft |
| TB-9 | 2/1/91 | 2/13/91 | 300 ft |
| TB-10 | 1/28/91 | 2/6/91 | 350 ft |
| BR-2 | 2/2/91 | 2/6/91 | 120 ft |

OXYCHEM\04161ES9.XLS/jad

TABLE 2.3

RECONNAISSANCE BOREHOLE PACKER INTERVALS
OCCIDENTIAL CHEMICAL CORPORATION
POTTSTOWN, PENNSYLVANIA

| Borehole | Completion Date | Zone | Depth Interval (Feet) | Testing Rationale |
|---|---|---|---|---|
| TB-1 | 2/20/91 | 1 | Surface to 101 | Isolate upper fracture zone in which dense suspended material was encountered |
| TB-1 | 2/20/91 | 2 | 72 to 101 | Isolate lower fracture zone and evaluate area in which change noted on temperature log |
| TB-1 | 4/26/91 | 3 | 102.0 - 132.0 | Observed flow at 160 feet open horizontal and vertical fractures |
| TB-1 | 4/27/91 | 4 | 158.0 - 180.0 | Horizontal and vertical fractures |
| TB-1 | 4/27/91 | 5 | 218.0 - 302.0 | Observed flow at 219 feet horizontal and vertical fractures |
| TB-1 | 4/26/91 | 6 | 292.0 - 302.0 | Heavily fractured zone at 295-305 feet, 305-320 feet |
| TB-1 | 4/27/91 | 7 | 354.0 - 376.0 | Heavily fractured at 370-375 feet |
| TB-1 | 4/26/91 | 8 | 390.0 - 420.0 | Fractured zone at 395-400 feet 412-418 feet |
| TB-1 | 4/25/91 | 9 | 450.0 - 500.0 | Heavily fractured at 450-462 feet |

OXYCHEM\04161ES6.XLS/jad

TABLE 2.3

RECONNAISSANCE BOREHOLE PACKER INTERVALS
OCCIDENTIAL CHEMICAL CORPORATION
POTTSTOWN, PENNSYLVANIA

| Borehole | Completion Date | Zone | Depth Interval (Feet) | Testing Rationale |
|---|---|---|---|---|
| TB-2 | 2/25/91 | 1 | 80.0 and Above | Isolate upper fracture zone |
| TB-2 | 3/27/91 | 2 | 80.0 - 100.0 | Evaluate visually tight zone below upper fracture zone for difference in hydraulic chacteristics and groundwater quality |
| TB-2 | 3/17/91 | 3 | 100.4 to 130.1 | Evaluate fracture zones observed at 105 feet, 110 feet, 114 feet-115 feet and 120 feet to 125 feet, provide depth profile of possible styrene presence; assess significance of temperature change at 125 feet |
| TB-2 | 3/26/91 | 4 | 190.4 to 210.1 | Evaluate hydraulic characteristics and groundwater quality associated with fractures observed at 200 feet,-203 feet, 205 feet-207 feet |
| TB-2 | 3/26/91 | 5 | 215.4 to 235.1 | Evaluate first zone where increased water production was noted during drilling; fractures observed at 218 feet, and 220 feet-222 feet |

OXYCHEM\04161ES6.XLS/jad

TABLE 2.3

RECONNAISSANCE BOREHOLE PACKER INTERVALS
OCCIDENTIAL CHEMICAL CORPORATION
POTTSTOWN, PENNSYLVANIA

| Borehole | Completion Date | Zone | Depth Interval (Feet) | Testing Rationale |
|---|---|---|---|---|
| TB-2 | 3/25/91 | 6 | 248.4 to 268.1 | Evaluate second zone where increased water production was noted during drilling fractures observed at 263 feet |
| TB-2 | 3/22/91 | 7 | 350.9 to 370.9 | Evaluate fracture zone where slight temperature cnange and increase in water production were noted |
| TB-2 | 3/21/91 | 8 | 405.4 to 450.0 | Evaluate groundwater quality and hydraulic properties in deep portion of boring relatively free of fractures |

OXYCHEM\04161ES6.XLS/jad

TABLE 2.3

RECONNAISSANCE BOREHOLE PACKER INTERVALS
OCCIDENTIAL CHEMICAL CORPORATION
POTTSTOWN, PENNSYLVANIA

| Borehole | Completion Date | Zone | Depth Interval (Feet) | Testing Rationale |
|---|---|---|---|---|
| TB-3 | | 1 | 75.3 to 95.00 | Isolate bottom of borehole with upper packer set in smooth and round portion of bore |
| TB-3 | | 2 | Above 48.45 | Evaluate yield from upper portion of borehole |
| TB-3 | | 3 | 51.20 to 66.50 | Isolate fracture zone observed at 51-66 feet |
| TB-3 | | 4 | Above 65.55 | Evaluate combined yield from middle and upper fracture zones |
| TB-3 | | 5 | 62.20 to 77.55 | Isolate smooth and round portion of borehole to evaluate yield of this zone |

OXYCHEM\04161ES6.XLS/jad

TABLE 2.3

RECONNAISSANCE BOREHOLE PACKER INTERVALS
OCCIDENTIAL CHEMICAL CORPORATION
POTTSTOWN, PENNSYLVANIA

| Borehole | Completion Date | Zone | Depth Interval (Feet) | Testing Rationale |
|---|---|---|---|---|
| TB-4 | 2/6/91 | 1 | 65 and above | Assess upper fracture zone |
| TB-4 | 2/6/91 | 2 | 65.0 to 85 | Isolate fracture zones at 72 feet and 79 feet above sandstone member |
| TB-4 | 2/6/91 | 3 | 85.0 to 105.0 | Evaluate sandstone member with significant fractures |
| TB-4 | 2/8/91 | 4 | 110.0 to 145.0 | Evaluate significantly fractured siltstone zone between sandstone and shale members; assess with observed temperature change at 135 feet |
| TB-4 | 2/11/91 | 5 | 150.0 to 212.0 | Evaluate zone which is visually relatively tight for hydraulic and groundwater quality characteristics |
| TB-4 | 2/7/91 | 6 | 240.0 to 300.0 | Assess abrupt temperature change observed below 245 feet |

OXYCHEM\04161ES6.XLS/jad

TABLE 2.3

RECONNAISSANCE BOREHOLE PACKER INTERVALS
OCCIDENTIAL CHEMICAL CORPORATION
POTTSTOWN, PENNSYLVANIA

| Borehole | Completion Date | Zone | Depth Interval (Feet) | Testing Rationale |
|---|---|---|---|---|
| TB-5 | 2/15/91 | 1 | 85.0 and Above | Assess upper fracrtured zone |
| TB-5 | 2/15/91 | 2 | 100.0 to 140.0 | Isolate and assess zone with moderate fracturing |
| TB-5 | 2/14/91 | 3 | 185.0 to 225.0 | Assess zone showing possible inflow at 189' and fractures at 220' |
| TB-5 | 2/14/91 | 4 | 260.0 to 300.0 | Assess sandstone with potential inflow |
| TB-5 | 2/13/91 | 5 | 340.0 to 380.0 | Assess relatively tight zone with few fractures |
| TB-5 | 2/13/91 | 6 | 410.0 to 450.0 | Assess lower sandstone with potential inflow |

OXYCHEM\04161ES6.XLS/jad

TABLE 2.3
RECONNAISSANCE BOREHOLE PACKER INTERVALS
OCCIDENTIAL CHEMICAL CORPORATION
POTTSTOWN, PENNSYLVANIA

| Borehole | Completion Date | Zone | Depth Interval (Feet) | Testing Rationale |
|---|---|---|---|---|
| TB-6 | 3/5/91 | 1 | 121.1 and Above | Access upper fractured zone for groundwater and hydraulic characteristics |
| TB-6 | 3/5/91 | 2 | 160.0 - 179.0 | Isolate zone in which significant change in temperature was noted, and in which very large crevices were observed (162 feet to 166 feet,, and 172 feet to 178 feet) |
| TB-6 | 3/4/91 | 3 | 197.0 - 216.0 | Isolate fracture zone from visually tight zones above and below noted temperature change was observed within this zone |
| TB-6 | 3/1/91 | 4 | 246.0 - 265.0 | Evaluate hydraulic properties of zone which appear relatively tight by visual obersations; assess this zone as a barrier to vertical migration. Also, temperature change observed in this zone. |
| TB-6 | 2/28/91 | 5 | 280.0 - 315.0 | Assess deeper fractured zone for groundwater and hydraulic characteristics |
| TB-6 | 2/28/91 | 6 | 349.0 - 384.0 | Assess zone which appears relatively tight by visual observation, with minor fractures noted |
| TB-6 | 2/27/91 | 7 | 406.0 or Below | Isolate bottom portion of borehole and evaluate for groundwater and hydraulic characteristics |

OXYCHEM\04161ES6.XLS/jad

TABLE 2.3

RECONNAISSANCE BOREHOLE PACKER INTERVALS
OCCIDENTIAL CHEMICAL CORPORATION
POTTSTOWN, PENNSYLVANIA

| Borehole | Completion Date | Zone | Depth Interval (Feet) | Testing Rationale |
|---|---|---|---|---|
| TB-7 | 2/28/91 | 1 | 107.0 and Above | Assess upper fractured zone above shale layer |
| TB-7 | 2/27/91 | 2 | 115.0 to 155.0 | Assess zone with few fractures |
| TB-7 | 2/27/91 | 3 | 190.4 to 231.2 | Assess sandstone zone with moderate fractures |
| TB-7 | 2/26/91 | 4 | 265.4 to 306.2 | Isolate and assess relatively tight zone above pronounced shale zone |
| TB-7 | 2/26/91 | 5 | 302.4 and Below | Evaluate zone below change observed on temperature log |

OXYCHEM\04161ES6.XLS/jad

TABLE 2.3

RECONNAISSANCE BOREHOLE PACKER INTERVALS
OCCIDENTIAL CHEMICAL CORPORATION
POTTSTOWN, PENNSYLVANIA

| Borehole | Completion Date | Zone | Depth Interval (Feet) | Testing Rationale |
|---|---|---|---|---|
| TB-8 | 2/22/91 | 1 | 80.0 and Above | Evaluate upper fracture zone with observed inflow at 62' and temperature variation relative to lower zones |
| TB-8 | 2/20/91 | 2 | 85.4 to 105.4 | Isolate zone of vertical and horizontal fracturing |
| TB-8 | 2/20/91 | 3 | 120.4 to 140.4 | Isolate zone of vertical and horizontal fracturing |
| TB-8 | 2/22/91 | 4 | 195.0 to 235.0 | Isolate zone of minor horizontal fracturing |
| TB-8 | 2/21/91 | 5 | 245.4 to 285.2 | Isolate zone of minor fracturing |
| TB-8 | 2/21/91 | 6 | 295.4 and Below | Evaluate water quality and hydraulic characteristics in sandstone member with minor fracturing |

OXYCHEM\04161ES6.XLS/jad

TABLE 2.3

RECONNAISSANCE BOREHOLE PACKER INTERVALS
OCCIDENTIAL CHEMICAL CORPORATION
POTTSTOWN, PENNSYLVANIA

| Borehole | Completion Date | Zone | Depth Interval (Feet) | Testing Rationale |
|---|---|---|---|---|
| TB-9 | 3/19/91 | 1 | 77.0 and Above | Assess upper fracture zone for groundwater and hydraulic characteristics |
| TB-9 | 3/19/91 | 2 | 155.0 to 180.0 | Isolate moderately fractured zone for groundwater and hydraulic characteristics |
| TB-9 | 3/18/91 | 3 | 225.0 to 260.0 | Isolate highly fractured zone for groundwater and hydraulic characteristics; evaluate zone where slight temperature change was noted |

OXYCHEM\04161ES6.XLS/jad

TABLE 2.3

RECONNAISSANCE BOREHOLE PACKER INTERVALS
OCCIDENTIAL CHEMICAL CORPORATION
POTTSTOWN, PENNSYLVANIA

| Borehole | Completion Date | Zone | Depth Interval (Feet) | Testing Rationale |
|---|---|---|---|---|
| TB-10 | 3/15/91 | 1 | 38.0 and Above | Assess upper fracture zones for groundwater quality and hydraulic characteristics |
| TB-10 | 3/15/91 | 2 | 46.4 to 77.1 | Assess fracture zones at 55-57 feet and 67-68 feet. Increase in water yield noted on drilling log |
| TB-10 | 3/13/91 | 3 | 86.4 to 117.1 | Assess fractures at 90-95, 105 and 110-112 feet. Increase in water yield indicated on drilling log. |
| TB-10 | 3/13/91 | 4 | 166.4 to 197.1 | Assess fractures at 168, 180-185 and 188-193 feet. Increase in water yield noted or drilling log. Temperature change noted over this interval |
| TB-10 | 3/12/91 | 5 | 246.4 to 290.7 | Assess fractures at 255, 260-262, 268 and 275-280 feet. Temperature changes notes at 280 and 285 feet |
| TB-10 | 3/12/91 | 6 | 296.4 and Below | Assess fractures at 317-319, 323-326 and 330 feet. Temperature change noted on log. Increase in water yield noted on drilling log. |

OXYCHEM\04161ES6.XLS/jad

TABLE 2.3

RECONNAISSANCE BOREHOLE PACKER INTERVALS
OCCIDENTIAL CHEMICAL CORPORATION
POTTSTOWN, PENNSYLVANIA

| Borehole | Completion Date | Zone | Depth Interval (Feet) | Testing Rationale |
|---|---|---|---|---|
| PW-1R | 3/14/91 | 1 | 125.0 and Above | Evaluate upper zone with significant fractures observed at 72-83 feet, 92-94 feet, 83 feet., 92-94 feet., 98 feet to 100 feet 112 feett. and 122 feet |
| PW-1R | 3/13/91 | 2 | 200.0 to 220.0 | Isolate fracture zone at 204 to 215 |
| PW-1R | 3/12/91 | 3 | 261.0 to 291.0 | Isolate zone with significant fractures at 260 to 261 feet, 273 to 281 feet, and 285 feet |
| PW-1R | 3/12/91 | 4 | 359.0 to 389.0 | Evaluate shale as a potential confining layer and isolate fractures observed at 365 feet, and 307 to 380 feet |
| PW-1R | 3/11/91 | 5 | 441.0 to 471.2 | Isolate fracture zone between 445 and 462 ft. |
| PW-1R | 3/8/91 | 6 | 491.6 or Below | Evaluate hydraulic characteristics and groundwater quality in argillite with minor fractures |

OXYCHEM\04161ES6.XLS/jad

TABLE 2.3

RECONNAISSANCE BOREHOLE PACKER INTERVALS
OCCIDENTIAL CHEMICAL CORPORATION
POTTSTOWN, PENNSYLVANIA

| Borehole | Completion Date | Zone | Depth Interval (Feet) | Testing Rationale |
|---|---|---|---|---|
| PW-7 | 3/4/91 | 1 | 65.0 and Above | Assess water quality and permeability on fractures at 35-59 feet. Temperature change noted on log |
| PW-7 | 3/5/91 | 2 | 100.1 and Above | Assess fractures at 66-80 and 85-90 feet. Evaluate confining effects of shale layer |
| PW-7 | 3/5/91 | 3 | 105.0 to 140.0 | Assess fractures at 133-138 feet. Evaluate confining effects of shale layers. Temperature change noted on log |
| PW-7 | 3/8/91 | 4 | 177.1 to 212.1 | Assess fractures at 190 and 203 feet. Temperature change noted on log |
| PW-7 | 3/6/91 | 5 | 216.0 to 251.0 | Assess fractures at 223, 230 and 247 feet. Temperature change noted on log |
| PW-7 | 3/7/91 | 6 | 310.0 and Below | Assess fractures at 315, 320, 325, and 340 feet. Temperature change noted on log |

OXYCHEM\04161ES6.XLS/jad

TABLE 2.4
TOTAL ORGANIC VAPOR FIELD ANALYTICAL RESULTS

OCCIDENTAL CHEMICAL CORPORATION
Pottstown, Pennsylvania

| Borehole Depth | TB 1 | TB 2 | TB 3 | TB 4 | TB 5 | TB 6 | TB 7 | TB 8 | TB 9 | TB 10 | PW 1R | PW 7 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Background | 0.4 | | | 1.0 | 1.0 | 0.5 | 1.0 | 1.0 | 1.0 | 0.5 | 0.5 | 0.8 |
| 5 | --- | --- | | 0.2 | 50 | --- | 7 | --- | --- | --- | --- | --- |
| 10 | --- | --- | | --- | 600 | --- | --- | --- | --- | --- | --- | --- |
| 15 | --- | --- | | 3.5 | 700 | --- | --- | 5 | --- | 20 | --- | --- |
| 20 | --- | --- | | 3.5 | 0.4 | --- | --- | 2000 | --- | --- | --- | --- |
| 25 | --- | --- | | 50 | 2.2 | --- | --- | 500 | --- | --- | --- | --- |
| 30 | --- | --- | --- | 100 | --- | --- | --- | --- | | 35 | --- | --- |
| 40 | --- | --- | --- | --- | --- | --- | | | | | | |
| 45 | --- | --- | | | | | | | | | | |
| 50 | --- | --- | | | | | | | | | | |
| 55 | --- | --- | | | | | | | | | | |
| 60 | --- | --- | | | | | | | | | | |
| 65 | 2000+ | --- | | | | | | | | | | |
| 70 | --- | 0.4 | | | | | | | | | | |
| 75 | --- | --- | | | | | | | | | | |
| 80 | | --- | | | | | | | | | | |
| 85 | | | | | | | | | | | | |
| 90 | | | | | | | | | | | | |
| 100 | | | | | | | | | | | | |

Concentrations are in ppm from borehole
Concentrations measured by Hnu.
Borehole monitored to total depth with no further detected vapors below last indicated concentration.

OXYCHEM\04161E10.XLS/jad

AR302529

TABLE 3.1

Reconnaissance Borehole Hydraulic Parameters
Occidental Chemical Corporation
Pottstown, Pennsylvania

| Borehole | Zone | Depth of Pumped Interval (Feet) Below T.O.C. | Pumping Flow Rate (1) (GPM) | Duration of Pumping (Minutes) | Pumped Interval Potentio-metric Head Prior to Pumping (Ft. above sea level) | Drawdowns Prior to End of Pumping (Feet Below T. O. C.) Pumped Interval | Upper Interval | Lower Interval | Pumped Interval Specific Capacity Cs (gpm/ft.) | Pumped Interval Hydraulic Conductivity K(Ft./Day) | Degree of Interconnection (2) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| TB-1 | 1 | Surface - 101 | 13.5 | 97.75 | 93.7 | 15.46 | - | - | 0.87 | ** | Entire Interval pumped as composite |
| TB-1 | 2B | 72-101 | 25 | 50 | 92.6 | 26.13 | 0.12 | - | 0.96 | 4.49 | Low Interconnection |
| TB-1 | 3 | 102.2 -132.4 | 10.5 | 59.5 | 93.0 | 21.76 | 0.05 | 1.29 | 0.48 | 2.21 | Moderate Interconnection |
| TB-1 | 4 | 158.4 - 180.5 | 8 | 63 | 89.5 | 53.09 | 0.11 | 1.73 | 0.15 | 0.88 | Low Interconnection |
| TB-1 | 5 | 200.4 - 232.4 | 20 | 46.75 | 105.8 | 65.25 | -0.06 | 1.97 | 0.31 | 1.34 | Low Interconnection |
| TB-1 | 6 | 290.4 - 321 | 27 | 59 | 93.5 | 5.54 | -0.17 | -0.11 | 4.87 | 22.06 | Low Interconnection |
| TB-1 | 7 | 354.2 - 376.3 | 17 | 59.5 | 93.0 | 144.70 | 0.06 | 9.25 | 0.12 | 0.68 | Low Interconnection |
| TB-1 | 8 | 390.6 - 420.9 | 14.6 | 58 | 94.5 | 165.82 | 0.57 | 5.60 | 0.09 | 0.40 | Low Interconnection |
| TB-1 | 9 | 440.5 - 500 | 25 | 66 | 86.5 | 17.10 | 0.34 | - | 1.46 | 3.90 | Low Interconnection |

(1) Average flow rate unless otherwise noted

(2) Relative interconnection between pumped interval and upper and lower invervals infered from drawdowns at end of pumping in upper and lower intervals. Calculated as percent of drawndown of both upper or lower interval to the drawndown in the pumped interval. Low = 0-5%, Moderate = 5-10%, and High = over 10%

T.O.C. = Top of Casing

** Conductivity not determined due to transient drawdown at the end of pumping

OXYCHEM\04161ES4.XLS/jad

AR302530

TABLE 3.1

Reconnaissance Borehole Hydraulic Parameters
Occidental Chemical Corporation
Pottstown, Pennsylvania

| Borehole | Zone | Depth of Pumped Interval (Feet) Below T.O.C. | Pumping Flow Rate (1) (GPM) | Duration of Pumping (Minutes) | Pumped Interval Potentio-metric Head Prior to Pumping (Ft. above sea level) | Drawdowns Prior to End of Pumping (Feet Below T. O. C.) Pumped Interval | Upper Interval | Lower Interval | Pumped Interval Specific Capacity Cs (gpm/ft.) | Pumped Interval Hydraulic Conductivity K(Ft./Day) | Degree of Interconnection (2) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| TB-2 | 1 | Surface-80.0 | 2.5 | 62.25 | 94.4 | 7.59 | - | 1.75 | 0.33 | ** | Possibly Bad Seal, High Interconnection |
| TB-2 | 2 | 80.0-100.0 | 2.0 | 63.5 | 95.0 | 32.26 | 1.09 | - | 0.06 | 0.39 | Low Interconnection |
| TB-2 | 3 | 100.4-130.1 | 28.4 | 70.5 | 92.4 | 7.50 | -0.07 | -0.52 | 3.79 | 17.54 | Moderate Interconnection |
| TB-2 | 4 | 190.4-210.1 | 27.5 | 62.25 | 88.7 | 10.99 | -0.33 | -0.55 | 2.50 | 15.88 | Moderate Interconnection |
| TB-2 | 5 | 215.4-235.1 | 27.5 | 68.25 | 93.1 | 2.87 | -0.15 | 3.44 | 9.58 | ** | *Moderate to High Interconnection |
| TB-2 | 6 | 248.4-268.1 | 25.5 | 69 | 91.2 | 45.90 | -0.38 | -1.73 | 0.56 | 3.53 | *Low Interconnection |
| TB-2 | 7 | 350.4-370.9 | 27.5 | 55 | 96.0 | 2.65 | -0.42 | 0.27 | 10.38 | ** | *High Interconnection |
| TB-2 | 8 | 405.4-450.0 | 14.2 | 64 | 100.8 | 169.90 | 0 | - | 0.08 | 0.28 | Low Interconnection |

T.O.C. = Top of Casing
* *Influence from site pumping wells*
** Conductivity not determined due to transient drawdown at end of pumping or excessive leakage from upper or lower intervals

(1) *Average flow rate unless otherwise noted*

(2) Relative interconnection between pumped interval and upper and lower invervals infered from drawdowns at end of pumping in upper and lower intervals. Calculated as percent of drawndown of both upper or lower interval to the drawndown in the pumped interval. Low = 0-5%, Moderate = 5-10%, and High = over 10%

OXYCHEM\04161ES4.XLS/jad

AR302531

TABLE 3.1

Reconnaissance Borehole Hydraulic Parameters
Occidental Chemical Corporation
Pottstown, Pennsylvania

| Borehole | Zone | Depth of Pumped Interval (Feet) Below T.O.C. | Pumping Flow Rate (1) (GPM) | Duration of Pumping (Minutes) | Pumped Interval Potentio-metric Head Prior to Pumping (Ft. above sea level) | Drawdowns Prior to End of Pumping (Feet Below T. O. C.) Pumped Interval | Upper Interval | Lower Interval | Pumped Interval Specific Capacity Cs (gpm/ft.) | Pumped Interval Hydraulic Conductivity K(Ft./Day) | Degree of Interconnection (2) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| TB-3 | 1 | 75.3 -95.0 | 15.4 | 20 | 115.8 | 26.22 | 0.86 | - | 0.59 | ** | Low Interconnection |
| TB-3 | 2 | Surface - 48.5 | 4.2 | 35 | 117.3 | 4.77 | - | 2.01 | 0.88 | ** | High Interconnection |
| TB-3 | 3 | 51.2 - 66.6 | 15.4 | 25 | 117.2 | 8.58 | 3.33 | -3.15 | 1.79 | ** | High Interconnection |
| TB-3 | 4 | Surface - 65.6 | 16.0 | 60 | 120.2 | 12.92 | - | 2.88 | 1.24 | 3.06 | Moderate Interconnection |
| TB-3 | 5 | 62.2 - 75.6 | 10.0 | 83 | 118.9 | 18.37 | 6.20 | 9.97 | 0.54 | ** | High Interconnection |

T.O.C. = Top of Casing

** Conductivity not calculated due to transient drawdown at the end of pumping and leakage from upper of lower intervals

OXYCHEM\04161ES4.XLS/jad

AR302532

TABLE 3.1

Reconnaissance Borehole Hydraulic Parameters
Occidental Chemical Corporation
Pottstown, Pennsylvania

| Borehole | Zone | Depth of Pumped Interval (Feet) Below T.O.C. | Pumping Flow Rate (1) (GPM) | Duration of Pumping (Minutes) | Pumped Interval Potentio-metric Head Prior to Pumping (Ft. above sea level) | Drawdowns Prior to End of Pumping (Feet Below T. O. C.) Pumped Interval | Upper Interval | Lower Interval | Pumped Interval Specific Capacity Cs (gpm/ft.) | Pumped Interval Hydraulic Conductivity K (Ft./Day) | Degree of Interconnection (2) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| TB-4 | 1 | Surface-65.1 | 2.56 | 85.25 | 114.7 | 49.89 | - | 2.44 | 0 | - | No Sustained Yield |
| TB-4 | 2 | 65.0-85.0 | 2.0 | 70.25 | 115.1 | 45.52 | -0.33 | 0.04 | 0.04 | 0.28 | Low Interconnection |
| TB-4 | 3 | 85.0-105.0 | 1.81 | 76.5 | 114.3 | 5.00 | 0.26 | 0.42 | 0.36 | 2.27 | Moderate Interconnection |
| TB-4 | 4 | 110.4-145.1 | 10.19 | 67.75 | 114.0 | 5.20 | 1.12 | 0.95 | 1.96 | ** | High Interconnection |
| TB-4 | 5 | 150.4-212.0 | 31.53 | 84.25 | 112.4 | 24.16 | 1.79 | 0.46 | 1.31 | ** | Low to Moderate Interconnection |
| TB-4 | 6 | 239.0-300.0 | 20.97 | 63.00 | 113.6 | 140.83 | 0.23 | - | 0.15 | 0.39 | Low Interconnection |

T.O.C. = Top of Casing
** Conductivity not determined due to transient drawdown at end of pumping

(1) Average flow rate unless otherwise noted

(2) Relative interconnection between pumped interval and upper and lower invervals infered from drawdowns at end of pumping in upper and lower intervals. Calculated as percent of drawndown of both upper or lower interval to the drawndown in the pumped interval. Low = 0-5%, Moderate = 5-10%, and High = over 10%

OXYCHEM\04161ES4.XLS/jad

AR302533

TABLE 3.1

Reconnaissance Borehole Hydraulic Parameters
Occidental Chemical Corporation
Pottstown, Pennsylvania

| Borehole | Zone | Depth of Pumped Interval (Feet) Below T.O.C. | Pumping Flow Rate (1) (GPM) | Duration of Pumping (Minutes) | Pumped Interval Potentio-metric Head Prior to Pumping (Ft. above sea level) | Drawdowns Prior to End of Pumping (Feet Below T. O. C.) Pumped Interval | Upper Interval | Lower Interval | Pumped Interval Specific Capacity Cs (gpm/ft.) | Pumped Interval Hydraulic Conductivity K (Ft./Day) | Degree of Interconnection (2) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| TB-5* | 1 | Surface-85.1 | 8.8 | 62.25 | 105.7 | 12.93 | - | -0.37 | - | ** | Low Interconnection |
| TB-5 | 2 | 100.4-141.1 | 20.6 | 93.0 | 104.0 | 68.39 | 4.26 | -0.16 | - | ** | Low to Moderate Interconnection |
| TB-5 | 3 | 185.4-226.1 | 33.0 | 61.0 | 110.6 | 11.00 | 1.88 | 2.3 | 3.0 | ** | High Interconnection |
| TB-5 | 4 | 260.4-301.1 | 23.5 | 89.75 | 104.9 | 141.56 | 0.23 | 2.06 | 0.17 | 0.60 | Low Interconnection |
| TB-5 | 5 | 340.4-381.1 | 25.0 | 63.50 | 110.3 | 117.07 | 0.11 | -1.39 | 0.21 | 0.77 | Low Interconnection |
| TB-5 | 6 | 398.4-450 | 30.0 | 119.75 | 116.3 | 53.68 | 0.65 | - | 0.56 | 1.67 | Low Interconnection |

T.O.C. = Top of Casing
* Note TB-5 Zone 1 drawing down prior to pumping
** Conductivities not determined due to transient drawdown at end of pumping

(1) Average flow rate unless otherwise noted

(2) Relative interconnection between pumped interval and upper and lower invervals infered from drawdowns at end of pumping in upper and lower intervals. Calculated as percent of drawndown of both upper or lower interval to the drawndown in the pumped interval. Low = 0-5%, Moderate = 5-10%, and High = over 10%

OXYCHEM\04161ES4.XLS/jad

AR302534

TABLE 3.1

Reconnaissance Borehole Hydraulic Parameters
Occidental Chemical Corporation
Pottstown, Pennsylvania

| Borehole | Zone | Depth of Pumped Interval (Feet) Below T.O.C. | Pumping Flow Rate (1) (GPM) | Duration of Pumping (Minutes) | Pumped Interval Potentio-metric Head Prior to Pumping (Ft. above sea level) | Drawdowns Prior to End of Pumping (Feet Below T. O. C.) Pumped Interval | Upper Interval | Lower Interval | Pumped Interval Specific Capacity Cs (gpm/ft.) | Pumped Interval Hydraulic Conductivity K(Ft./Day) | Degree of Interconnection (2) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| TB-6 | 1 | Surface-121.2 | 28 | 59.0 | 104.4 | 24.53 | - | 0.10 | 1.14 | 1.70 | Low Interconnection |
| TB-6 | 2 | 160.6-179.1 | 28 | 62.0 | 99.0 | 10.02 | -0.06 | 0.26 | 2.79 | 18.59 | Low Interconnection |
| TB-6 | 3 | 197.6-216.1 | 24 | 64.0 | 100.5 | 56.32 | 1.2 | 0.49 | 0.43 | 2.83 | Low Interconnection |
| TB-6 | 4 | 246.6-265.1 | 26.5 | 65.75 | 100.0 | 13.03 | 0.23 | 1.15 | 2.03 | 13.53 | Low to Moderate Interconnection |
| TB-6 | 5 | 280.7-315.7 | 26.5 | 53.5 | 100.3 | 9.21 | 0.69 | 1.39 | 2.88 | ** | Moderate to High Interconnection |
| TB-6 | 6 | 349.2-384.2 | 22 | 61.5 | 100.8 | 111.13 | 0.46 | 1.34 | 0.20 | 0.81 | Low Interconnection |
| TB-6 | 7 | 406.7-450.0 | 22 | 58.0 | 100.5 | 83.13 | 0.06 | - | 0.26 | 0.91 | Low Interconnection |

T.O.C. = Top of Casing
** Conductivity not determined due to transient drawdown at end of pumping

(1) Average flow rate unless otherwise noted

(2) Relative interconnection between pumped interval and upper and lower invervals infered from drawdowns at end of pumping in upper and lower intervals. Calculated as percent of drawndown of both upper or lower interval to the drawndown in the pumped interval. Low = 0-5%, Moderate = 5-10%, and High = over 10%

OXYCHEM\04161ES4.XLS/jad

AR302535

TABLE 3.1

Reconnaissance Borehole Hydraulic Parameters
Occidental Chemical Corporation
Pottstown, Pennsylvania

| Borehole | Zone | Depth of Pumped Interval (Feet) Below T.O.C. | Pumping Flow Rate (1) (GPM) | Duration of Pumping (Minutes) | Pumped Interval Potentio-metric Head Prior to Pumping (Ft. above sea level) | Drawdowns Prior to End of Pumping (Feet Below T. O. C.) Pumped Interval | Upper Interval | Lower Interval | Pumped Interval Specific Capacity Cs (gpm/ft.) | Pumped Interval Hydraulic Conductivity K(Ft./Day) | Degree of Interconnection (2) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| TB-7 | 1 | Surface-107.2 | 30 | 59.5 | 111.8 | 14 | 0 | 0.31 | 2.14 | 3.54 | Low Interconnection |
| TB-7 | 2 | 115.4-156.2 | 20.8 | 62.5 | 111.7 | 72.8 | 0.14 | 0.04 | 0.29 | 1.03 | Low Interconnection |
| TB-7 | 3 | 190.4-231.2 | 4.25 | 112.3 | 112.9 | 135.7 | 0.15 | 1.73 | 0.03 | 0.11 | Low Interconnection |
| TB-7 | 4 | 265.4-306.2 | 0.60 | 8 | 113.3 | Dewatered | -0.11 | 4.94 | - | - | No Sustained Yield |
| TB-7 | 5 | 302.4-350.0 | - | 2.75 | 111.7 | Dewatered | 0.04 | - | - | - | No Sustained Yield |

T.O.C. = Top of Casing
(1) Average flow rate unless otherwise noted

(2) Relative interconnection between pumped interval and upper and lower invervals infered from drawdowns at end of pumping in upper and lower intervals. Calculated as percent of drawndown of both upper or lower interval to the drawndown in the pumped interval. Low = 0-5%, Moderate = 5-10%, and High = over 10%

OXYCHEM\04161ES4.XLS/jad

AR302536

TABLE 3.1

Reconnaissance Borehole Hydraulic Parameters
Occidental Chemical Corporation
Pottstown, Pennsylvania

| Borehole | Zone | Depth of Pumped Interval (Feet) Below T.O.C. | Pumping Flow Rate (1) (GPM) | Duration of Pumping (Minutes) | Pumped Interval Potentio-metric Head Prior to Pumping (Ft. above sea level) | Drawdowns Prior to End of Pumping (Feet Below T. O. C.) Pumped Interval | Upper Interval | Lower Interval | Pumped Inerval Specific Capacity Cs (gpm/ft.) | Pumped Interval Hydraulic Conductivity K (Ft./Day) | Degree of Interconnection (2) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| TB-8 | 1B | Surface-80.2 | 31.6 | 68.5 | 105.0 | 25.84 | - | 1.09 | 1.22 | 2.56 | Low Interconnection |
| TB-8 | 2 | 85.4-105.4 | 30.0 | 37.25 | 97.9 | 48.36 | 2.71 | 2.68 | 0.62 | 3.89 | Moderate Interconnection |
| TB-8 | 3 | 120.0-140.0 | 30.0 | 43.5 | 93.4 | 72.38 | -0.09 | 0.64 | 0.41 | 2.60 | Low Interconnection |
| TB-8 | 4 | 195.4-236.2 | 1.7 | 60.5 | 94.4 | 38.58 | -0.04 | -0.34 | 0.04 | 0.16 | Low Interconnection |
| TB-8 | 5 | 245.4-286.2 | 10.7 | 60.85 | 95.4 | 199.37 | 0.11 | 0.72 | 0.05 | 0.24 | Low Interconnection |
| TB-8 | 6 | 300.0-350.0 | 30.0 | 5.5 | 98.0 | 4.92 | 4.79 | - | 0 | ** | Poor Packer Seal |

T.O.C. = Top of Casing
** Conductivity not determined due to leakage from upper interval

(1) Average flow rate unless otherwise noted

(2) Relative interconnection between pumped interval and upper and lower invervals infered from drawdowns at end of pumping in upper and lower intervals. Calculated as percent of drawndown of both upper or lower interval to the drawndown in the pumped interval. Low = 0-5%, Moderate = 5-10%, and High = over 10%

OXYCHEM\04161ES4.XLS/jad

AR302537

TABLE 3.1

Reconnaissance Borehole Hydraulic Parameters
Occidental Chemical Corporation
Pottstown, Pennsylvania

| Borehole | Zone | Depth of Pumped Interval (Feet) Below T.O.C. | Pumping Flow Rate (1) (GPM) | Duration of Pumping (Minutes) | Pumped Interval Potentio-metric Head Prior to Pumping (Ft. above sea level) | Drawdowns Prior to End of Pumping (Feet Below T. O. C.) Pumped Interval | Upper Interval | Lower Interval | Pumped Interval Specific Capacity Cs (gpm/ft.) | Pumped Interval Hydraulic Conductivity K (Ft./Day) | Degree of Interconnection (2) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| TB-9 | 1 | Surface-77.3 | 23 | 88.0 | 115.6 | 34.21 | N/A | 0.15 | 0.67 | 1.45 | Low Interconnection |
| TB-9 | 2 | 155.6-180.2 | 13.5 | 61.25 | 115.00 | 62.26 | 0.40 | -0.27 | 0.22 | 1.16 | Low Interconnection |
| *TB-9 | 3 | 225.6-260.0 | 22 | 80.0 | 117.1 | - | - | - | - | - | - |

T.O.C. = Top of Casing
* Data lost during downloading from data logger, reported values from field notes

(1) Average flow rate unless otherwise noted

(2) Relative interconnection between pumped interval and upper and lower invervals infered from drawdowns at end of pumping in upper and lower intervals. Calculated as percent of drawndown of both upper or lower interval to the drawndown in the pumped interval. Low = 0-5%, Moderate = 5-10%, and High = over 10%

OXYCHEM\04161ES4.XLS/jad

AR302538

TABLE 3.1

Reconnaissance Borehole Hydraulic Parameters
Occidental Chemical Corporation
Pottstown, Pennsylvania

| Borehole | Zone | Depth of Pumped Interval (Feet) Below T.O.C. | Pumping Flow Rate (1) (GPM) | Duration of Pumping (Minutes) | Pumped Interval Potentio-metric Head Prior to Pumping (Ft. above sea level) | Drawdowns Prior to End of Pumping (Feet Below T. O. C.) Pumped Interval | Upper Interval | Lower Interval | Pumped Interval Specific Capacity Cs (gpm/ft.) | Pumped Interval Hydraulic Conductivity K(Ft./Day) | Degree of Interconnection (2) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| TB-10 | 1 | Surface-38.0 | 7.9 | 59.50 | 115.1 | 8.07 | - | 0.59 | 0.98 | 3.74 | Moderate Interconnection |
| TB-10 | 2 | 46.4-77.1 | 19.6 | 60.25 | 115.4 | 34.95 | 2.17 | 0.16 | 0.56 | 2.53 | Low to Moderate Interconnection |
| TB-10 | 3 | 86.4-117.1 | 27 | 172.5 | 113.0 | 102.0 | 0.26 | 0.82 | 0.26 | ** | Low Interconnection |
| TB-10 | 4 | 166.4-197.1 | 30.8 | 192.75 | 113.2 | 13.69 | 0.64 | 1.74 | 2.25 | 10.16 | Low to High Interconnection |
| TB-10 | 5 | 246.4-290.7 | 28.4 | 59.5 | 113.0 | 9.72 | 0.23 | 2.56 | 2.92 | ** | Possible High Interconnection |
| TB-10 | 6 | 296.4-350.0 | 25.2 | 61.75 | 107.6 | 44.51 | 0.19 | - | 0.57 | ** | Low Interconnection |

T.O.C. = Top of Casing
** Conductivity not determined due to transient drawdown at end of pumping or leakage from upper or lower intervals

(1) Average flow rate unless otherwise noted

(2) Relative interconnection between pumped interval and upper and lower invervals infered from drawdowns at end of pumping in upper and lower intervals. Calculated as percent of drawndown of both upper or lower interval to the drawndown in the pumped interval. Low = 0-5%, Moderate = 5-10%, and High = over 10%

OXYCHEM\04161ES4.XLS/jad

AR302539

TABLE 3.1

Reconnaissance Borehole Hydraulic Parameters
Occidental Chemical Corporation
Pottstown, Pennsylvania

| Borehole | Zone | Depth of Pumped Interval (Feet) Below T.O.C. | Pumping Flow Rate (1) (GPM) | Duration of Pumping (Minutes) | Pumped Interval Potentio-metric Head Prior to Pumping (Ft. above sea level) | Drawdowns Prior to End of Pumping (Feet Below T. O. C.) Pumped Interval | Upper Interval | Lower Interval | Pumped Interval Specific Capacity Cs (gpm/ft.) | Pumped Interval Hydraulic Conductivity K(Ft./Day) | Degree of Interconnection (2) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| PW-1R | 1B | Surface-125.4 | 7.0 | 64.5 | 124.4 | 5.56 | - | 0.10 | 1.26 | 1.82 | Low Interconnection |
| PW-1R | 2 | 199.6-220.3 | 1.9 | 67.75 | 117.0 | 102.8 | 0.11 | 0.43 | 0.02 | ** | Low Interconnection |
| PW-1R | 3 | 261.0-291.1 | 8.5 | 62.0 | 123.9 | 139.9 | 0.34 | 0.45 | 0.06 | 0.28 | Low Interconnection |
| PW-1R | 4 | 358.6-388.7 | 3.3 | 97 | 116.5 | 200.36 | -0.11 | * | 0.02 | 0.08 | Low Interconnection |
| PW-1R | 5 | 441.0-471.1 | 2.0 | 59.5 | 116.3 | 74.4 | 0.29 | 2.81 | 0.27 | 1.23 | Low Interconnection |
| PW-1R | 6 | 491.6-550.0 | 13.5 | 87.75 | 117.0 | 145.6 | 1.20 | - | 0.09 | 0.25 | Low Interconnection |

T.O.C. = Top of Casing
* Data lost during downloading from data logger
** Conductivity not determined due to transient drawdown at the end of pumping

(1) Average flow rate unless otherwise noted

(2) Relative interconnection between pumped interval and upper and lower invervals infered from drawdowns at end of pumping in upper and lower intervals. Calculated as percent of drawndown of both upper or lower interval to the drawndown in the pumped interval. Low = 0-5%, Moderate = 5-10%, and High = over 10%

OXYCHEM\04161ES4.XLS/jad

AR302540

TABLE 3.1

Reconnaissance Borehole Hydraulic Parameters
Occidental Chemical Corporation
Pottstown, Pennsylvania

| Borehole | Zone | Depth of Pumped Interval (Feet) Below T.O.C. | Pumping Flow Rate (1) (GPM) | Duration of Pumping (Minutes) | Pumped Interval Potentio-metric Head Prior to Pumping (Ft. above sea level) | Drawdowns Prior to End of Pumping (Feet Below T. O. C.) Pumped Interval | Upper Interval | Lower Interval | Pumped Interval Specific Capacity Cs (gpm/ft.) | Pumped Interval Hydraulic Conductivity K(Ft./Day) | Degree of Interconnection (2) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| PW-7 | 1B | Surface-65.1 | 32.3 | 56.25 | 112.7 | 14.26 | - | 6.89 | 2.27 | ** | Poor Packer Seal/High Interconnection |
| PW-7 | 2 | Surface-100.1 | 32.0 | 59.5 | 113.2 | 12.84 | - | 0.94 | 2.49 | 4.35 | Moderate Interconnection |
| PW-7 | 3 | 105.1-140.1 | 1.71 | 102.25 | 108.1 | 86.6 | 0.15 | -0.23 | 0.02 | 0.08 | Low Interconnection |
| PW-7 | 4A | 177.1-212.1 | 25.0 | 60 | 114.5 | 101.7 | 7.8 | -0.39 | 0.25 | 1.00 | Low to Moderate Interconnection |
| PW-7 | 5 | 216.1-251.1 | 5.8 | 62.25 | 103.5 | 135.2 | 0.19 | 0.54 | 0.04 | 0.17 | Low Interconnection |
| PW-7 | 6 | 302-347 | 5.7 | 111.75 | 96.4 | 205.6 | 0.08 | - | 0.03 | 0.09 | Low Interconnection |

T.O.C. = Top of Casing
** Conductivity not determined due to excessive leakage from lower interval

(1) Average flow rate unless otherwise noted

(2) Relative interconnection between pumped interval and upper and lower invervals inferred from drawdowns at end of pumping in upper and lower intervals. Calculated as percent of drawdown of both upper or lower interval to the drawndown in the pumped interval. Low = 0-5%, Moderate = 5-10%, and High = over 10%

OXYCHEM\04161ES4.XLS/jad

AR302541

TABLE 3.2
RECONNAISSANCE BOREHOLE PACKER TESTING
WATER QUALITY/FIELD PARAMETERS

OCCIDENTAL CHEMICAL CORPORATION
POTTSTOWN, PENNSYLVANIA

| Borehole ID | Zone | Depth of Interval (feet) | Temperature (°C) | Dissolved Oxygen (mg/l) | Specific Conductance (umhos) | pH | EH (mV) | Physical Description |
|---|---|---|---|---|---|---|---|---|
| PW-1R | 1 | Surface-125.4 | 11 | 10.6 | 315 | 5.75 | 182.1 | Clear |
| | 2 | 199.6-220.3 | 10 | 11.8 | 190 | 6.7 | 228.2 | Clear |
| | 3 | 261-291.1 | 10 | 11.6 | 345 | 6.4 | 220.5 | Clear |
| | 4 | 358.6-388.7 | 10 | 11.2 | 330 | 6.8 | 158.4 | Clear |
| | 5 | 441-471.1 | 12 | 10.6 | 330 | 6.5 | 208.8 | Clear |
| | 6 | 491.6-550 | NA | NA | NA | NA | NA | Clear |
| PW-7 | 1B | Surface-65.1 | 15 | 8.2 | 312 | 6.04 | 266.6 | Clear |
| | 2 | Surface-100.1 | 12 | 7.6 | 300 | 6.23 | 162.4 | Clear |
| | 3 | 105.1-140.1 | 14 | 6.2 | 450 | 6.9 | 105.3 | Clear |
| | 4 | 177.1-212.1 | 11 | 10.4 | 280 | 6.3 | 144.5 | Clear |
| | 5 | 216.1-251.1 | 15 | 6.4 | 438 | 6.8 | 182.4 | Clear |
| | 6 | 302-347 | 12 | 9 | 370 | 6.6 | 108.7 | Clear |
| TB-1 | 1 | Surface-101 | NA | 5.4 | 700 | 6.57 | 154.2 | NA |
| | 2 | 71.8-101 | NA | 7.0 | 700 | 6.87 | 137.5 | Discharge 0-2 ppm HNu |
| | 3 | 102.2-132 | 26 | 6.6 | 1000 | 6.52 | 155.8 | Cloudy, 20-50 ppm HNu |
| | 4 | 158.4-180.5 | 18 | 1.2 | 1200 | NA | 122.8 | Clear, Trace Sediment HNu |
| | 5 | 200.4-232.4 | 18 | 2.3 | 550 | NA | 89 | Clear |
| | 6 | 290.4-321 | 24 | 3.6 | 780 | 6.62 | 161.5 | Clear, 4-5 ppm HNu |
| | 7 | 354.2-376.3 | 18.5 | 1.8 | 630 | NA | 54.8 | Lt. Grey, Trace Sediment |
| | 8 | 390.6-420.9 | 24 | 3.9 | 825 | 6.80 | 151.6 | Clear, 1-5 ppm HNu |
| | 9 | 440.5-500 | 18 | 2.1 | 890 | 6.82 | 153.4 | Cloudy, 1-5 ppm HNu |

NA - Not Available
OXYCHEM\04161ES5.XLS/jad

AR302542

TABLE 3.2
RECONNAISSANCE BOREHOLE PACKER TESTING
WATER QUALITY/FIELD PARAMETERS

OCCIDENTAL CHEMICAL CORPORATION
POTTSTOWN, PENNSYLVANIA

| Borehole ID | Zone | Depth of Interval (feet) | Temperature (°C) | Dissolved Oxygen (mg/l) | Specific Conductance (umhos) | pH | EH (mV) | Physical Description |
|---|---|---|---|---|---|---|---|---|
| TB-2 | 1 | Surface-80.2 | NA | NA | NA | NA | NA | Discharge 1-2 ppm HNu |
| | 2 | 79.9-100.1 | 18 | 4.9 | 2200 | 11.42 | -66 | Slightly Cloudy |
| | 3 | 100.4-130.1 | 14 | 3.2 | 1800 | 10.88 | -138.4 | NA |
| | 4 | 190.4-210.1 | 15 | 5.8 | 850 | 6.84 | 238.4 | Clear |
| | 5 | 215.4-235.1 | 15 | 4.8 | 900 | 6.92 | 246 | Clear |
| | 6 | 248.4-268.1 | 15 | 3.8 | 690 | 7.2 | 223.2 | Clear |
| | 7 | 350.4-370.9 | 15 | 6 | 900 | 7.72 | 227.5 | Clear |
| | 8 | 405.4-450 | 15 | 6 | 368 | 7.22 | 239 | Clear |
| TB-3 | 1 | 75.3-95.0 | NA | NA | NA | NA | NA | NA |
| | 2 | Surface-48.5 | 23 | 2.5 | 900 | 6.81 | NA | NA |
| | 3 | 51.2-66.6 | 22.5 | 5 | NA | 6.96 | NA | NA |
| | 4 | Surface-65.6 | 19 | 4.8 | 975 | 6.71 | NA | NA |
| | 5 | 62.2-75.6 | 23 | 4.3 | 985 | 6.85 | NA | NA |
| TB-4 | 1 | Surface-65.1 | 12 | 207 | 395 | 6.33 | 126.4 | Clear |
| | 2 | 65-85 | 12 | 408 | 340 | 5.97 | 258 | Clear |
| | 3 | 85-105 | 12 | 4.1 | 215 | 5.37 | 251.5 | Clear |
| | 4 | 110.4-145.1 | 14 | 3.6 | 225 | 6.58 | 228.5 | Clear |
| | 5 | 150.4-212 | 13 | 5.2 | 295 | 7.15 | 195 | Clear |
| | 6 | 239-300 | 12 | 6.2 | 300 | 6.47 | 214.5 | Clear |

NA - Not Available
OXYCHEM\04161ES5.XLS/jad

AR302543

TABLE 3.2
RECONNAISSANCE BOREHOLE PACKER TESTING
WATER QUALITY/FIELD PARAMETERS

OCCIDENTAL CHEMICAL CORPORATION
POTTSTOWN, PENNSYLVANIA

| Borehole ID | Zone | Depth of Interval (feet) | Temperature (°C) | Dissolved Oxygen (mg/l) | Specific Conductance (umhos) | pH | EH (mV) | Physical Description |
|---|---|---|---|---|---|---|---|---|
| TB-5 | 1 | Surface 85.1 | 14 | 9.2 | 408 | 7.2 | 240.4 | Clear |
| | 2 | 100.4-141.1 | 4.0 | 8.0 | 460 | 6.87 | 196.6 | Slight Color and Odor |
| | 3 | 185.4-226.1 | 14 | 3.0 | 395 | 7.55 | 202.5 | Clear |
| | 4 | 260.4-301.1 | 14 | 7.6 | 310 | 7.30 | 161.1 | Clear |
| | 5 | 340.4-381.1 | 14 | 5.4 | 270 | 7.40 | 247.1 | Clear |
| | 6 | 398.4-450 | 14 | 6.6 | 275 | 7.2 | 188 | Clear |
| TB-6 | 1 | Surface-121.2 | 19 | 5.4 | 450 | 7.21 | 240.5 | NA |
| | 2 | 160.6-179.1 | 17 | 4.2 | 430 | 7.15 | 210.2 | NA |
| | 3 | 197.6-216.1 | 15 | 6 | 330 | 6.96 | 270 | NA |
| | 4 | 246.6-265.1 | 20 | 4.4 | 375 | 6.75 | 155.4 | NA |
| | 5 | 280.7-315.7 | 13 | 8.9 | 340 | 7.15 | 218.5 | NA |
| | 6 | 349.2-384.2 | 14 | 9.2 | 410 | 7.52 | 212.1 | NA |
| | 7 | 406.7-450 | NA | NA | NA | NA | NA | NA |
| TB-7 | 1 | Surface-107.2 | 13 | 8.2 | 462 | 6.3 | 221.9 | Clear |
| | 2 | 115.4-156.2 | 13 | 7.8 | 450 | 6.7 | 249.7 | Clear |
| | 3 | 190.4-231.2 | 13 | 5.8 | 310 | 7.49 | 197.3 | Clear |
| | 4 | 265.4-306.2 | * | * | * | * | * | * |
| | 5 | 302.4-350 | * | * | * | * | * | * |

* No Samples Collected - Non-Productive Zone

NA - Not Available
OXYCHEM\04161ES5.XLS/jad

AR302544

TABLE 3.2
RECONNAISSANCE BOREHOLE PACKER TESTING
WATER QUALITY/FIELD PARAMETERS

OCCIDENTAL CHEMICAL CORPORATION
POTTSTOWN, PENNSYLVANIA

| Borehole ID | Zone | Depth of Interval (feet) | Temperature (°C) | Dissolved Oxygen (mg/l) | Specific Conductance (umhos) | pH | EH (mV) | Physical Description |
|---|---|---|---|---|---|---|---|---|
| TB-8 | 1B | Surface-80.2 | 14 | 3.5 | 290 | 6.93 | 273 | Clear, Trace Sediment |
| | 2 | 85.4-105.4 | 13 | 4.2 | 290 | 7.01 | 237.8 | Clear |
| | 3 | 120.4-140.4 | 13 | 8.2 | 278 | 6.8 | 231.3 | Turbid to Clear |
| | 4 | 195.4-236.2 | 14 | 5.2 | 290 | 7.1 | 170 | Clear |
| | 5 | 245.4-286.2 | 13.5 | 5.8 | 392 | 7.2 | 273.3 | Clear |
| | 6B | 295.4-350 | 16 | 4 | 340 | 7.45 | 204.2 | Clear |
| TB-9 | 1 | Surface-77.3 | 12 | 10 | 240 | 7.3 | 211.2 | Clear |
| | 2 | 155.6-180.2 | 12 | 10.2 | 190 | 7.2 | 180.1 | Clear |
| | 3 | 225.6-260 | 12 | 10.2 | 250 | NA | 150.3 | Clear |
| TB-10 | 1 | Surface-38 | 11 | 7.9 | 390 | 5.58 | 183.8 | Clear |
| | 2 | 46.4-77.1 | 6 | 14.6 | 370 | 6.23 | 171 | Clear |
| | 3 | 86.4-117.1 | 11 | 11.2 | 390 | 6.44 | 188.6 | Initially Discolored |
| | 4 | 166.4-197.1 | 10 | 11.2 | 305 | 6.1 | 133.9 | Clear |
| | 5 | 246.4-290.7 | 10 | 10.4 | 385 | 6.9 | 149.5 | Clear |
| | 6 | 296.4-350 | 11 | 8.4 | 480 | 6.6 | 200.6 | Clear |

NA - Not Available
OXYCHEM\04161ES5.XLS/jad

AR302545

TABLE 3.3
Bedrock and Alluvial Aquifer
Groundwater Elevation Data

Occidential Chemical Corporaiton
Pottstown, PA

| Well No. | Aquifer | Outer Casing Total Depth (feet) | Well Total Depth (feet) | Surface Elev. (feet) | Well Stick Up (feet) | Well Elev. (feet) | Gage Elev. (feet) | Well(1) Yield (gpm) | Screen(1) Interval (feet) | Well(1) Diameter (inches) | Groundwater Elevations 2/4/91 DTW | 2/4/91 Elev. | 2/11/91 DTW | 2/11/91 Elev. | 2/25/91 DTW | 2/25/91 Elev. | 3/8/91 DTW | 3/8/91 Elev. | 3/20/91 DTW | 3/20/91 Elev. | 3/28/91 DTW | 3/28/91 Elev. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PW-IR | Bedrock | 37 | 550 | 187.21 | 1.81 | 189.02 | N/A | 60 | Open | 8 | 69.48 | 119.54 | 69.75 | 119.27 | 70.53 | 118.49 | - | - | 63.90 | 125.12 | 68.25 | 120.77 |
| PW-7 | Bedrock | 37 | 350 | 130.27 | 0.86 | 131.02 | N/A | 81 | 175-210 | 10 | 18.60 | 112.42 | 18.10 | 112.92 | 18.52 | 112.50 | 17.50 | 113.52 | 17.60 | 113.42 | 16.98 | 114.04 |
| TB-1 | Bedrock | 97.5 | 500 | 150.46 | 2.05 | 152.51 | N/A | ? | 500-? | 4 | - | - | - | - | - | - | - | - | - | - | - | - |
| TB-2 | Bedrock | 99 | 450 | 142.69 | 2.28 | 144.97 | N/A | 25 | 350-370 | 4 | - | - | - | - | - | - | 46.65 | 98.32 | 47.04 | 97.93 | 61.90 | 83.07 |
| TB-3 | Bedrock | 101 | 101 | 152.35 | 1.77 | 154.12 | N/A | ? | ? | 4 | 82.00 | 72.12 | - | - | - | - | - | - | - | - | - | - |
| TB-4 | Bedrock | 39 | 300 | 121.17 | 1.67 | 122.84 | N/A | * | grouted | * | 9.15 | 113.69 | 9.06 | 113.78 | 9.69 | 113.15 | - | - | 9.21 | 113.63 | 8.40 | 114.44 |
| TB-5 | Bedrock | 37 | 450 | 150.32 | 1.93 | 152.25 | N/A | 20 | 100-140 | 4 | 40.73 | 111.52 | 42.29 | 109.96 | 42.50 | 109.75 | 41.22 | 111.03 | 41.63 | 110.62 | 42.40 | 109.85 |
| TB-6 | Bedrock | 40 | 450 | 167.49 | 1.76 | 169.25 | N/A | 22 | 350-385 | 4 | 67.70 | 101.55 | 67.02 | 102.23 | 68.23 | 101.02 | 57.51 | 111.74 | 66.65 | 102.60 | 62.45 | 106.80 |
| TB-7 | Bedrock | 64 | 350 | 155.85 | 1.75 | 157.60 | N/A | 90 | 0-190 | 8 | 45.65 | 111.95 | 45.12 | 112.48 | 45.66 | 111.94 | 44.12 | 113.48 | 44.70 | 112.90 | 43.97 | 113.63 |
| TB-8 | Bedrock | 29 | 350 | 120.25 | 1.90 | 122.15 | N/A | 30 | 85-105 | 4 | 22.75 | 99.40 | 23.28 | 98.87 | - | - | - | - | 23.72 | 98.43 | 22.15 | 100.00 |
| TB-9 | Bedrock | 39 | 300 | 122.53 | 1.56 | 124.09 | N/A | * | grouted | * | 7.94 | 116.15 | 7.48 | 116.61 | 7.90 | 116.19 | 8.88 | 115.21 | 7.15 | 116.94 | 5.75 | 118.34 |
| TB-10 | Bedrock | 28 | 350 | 125.65 | 2.13 | 127.78 | N/A | 27 | 86-117 | 4 | 14.31 | 113.47 | 14.00 | 113.78 | 14.27 | 113.51 | 13.28 | 114.50 | 13.75 | 114.03 | 13.48 | 114.30 |

- Was Not Measured
* Well porposed to be abandoned, ? Specification to be determined after well completion
(1) Proposed well sp[illegible]ions, well yield for screened interval inferred from packer testing
OXYCHEM\04161E[illegible]ad

TABLE 3.3
Bedrock and Alluvial Aquifer
Groundwater Elevation Data

Occidential Chemical Corporaiton
Pottstown, PA

| Well No. | Aquifer | Outer Casing Total Depth (feet) | Well Total Depth (feet) | Surface Elev. (feet) | Well Stick Up (feet) | Well Elev. (feet) | Gage Elev. (feet) | Well Yield (gpm) | Screen Interval (feet) | Well Diameter (inches) | Groundwater Elevations 2/4/91 DTW | 2/4/91 Elev. | 2/11/91 DTW | 2/11/91 Elev. | 2/25/91 DTW | 2/25/91 Elev. | 3/8/91 DTW | 3/8/91 Elev. | 3/20/91 DTW | 3/20/91 Elev. | 3/28/91 DTW | 3/28/91 Elev. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OW5A | Bedrock | N/A | 30.00 | 125.30 | 1.70 | 127.00 | N/A | 10.00 | 10.0 | 2.00 | 12.29 | 114.71 | - | N/A | - | N/A | 12.20 | 114.80 | 11.70 | 115.30 | 11.57 | 115.43 |
| OW6A | Bedrock | N/A | 30.00 | 123.39 | 1.30 | 124.69 | N/A | 5.00 | 15.0 | 2.00 | - | N/A | 7.88 | 116.81 | - | N/A | 8.48 | 116.21 | 7.60 | 117.09 | 7.61 | 117.08 |
| OW7A | Bedrock | N/A | 32.00 | 123.20 | 3.30 | 126.50 | N/A | 4.00 | 15.0 | 2.00 | - | N/A | - | N/A | - | N/A | 9.98 | 116.52 | 9.36 | 117.14 | 8.98 | 117.52 |
| OW8A | Bedrock | N/A | 29.00 | 120.56 | 1.80 | 122.36 | N/A | 4.00 | 15.0 | 2.00 | - | N/A | - | N/A | - | N/A | - | N/A | 10.01 | 112.35 | 6.42 | 115.94 |
| OW9 | Overburden | N/A | 19.50 | 124.16 | 2.00 | 126.16 | N/A | 0.80 | 10.0 | 1.25 | 8.09 | 118.07 | - | - | 8.91 | 117.25 | 11.28 | 114.88 | 8.04 | 118.12 | 7.24 | 118.92 |
| OW10 | Overburden | N/A | 20.50 | 124.44 | 1.85 | 126.29 | N/A | 0.67 | 10.0 | 1.25 | 8.13 | 118.16 | - | N/A | 8.77 | 117.52 | 8.26 | 118.03 | 8.01 | 118.28 | - | - |
| OW11 | Overburden | N/A | 21.50 | 125.66 | 1.30 | 126.96 | N/A | <1 | 10.0 | 1.25 | 12.34 | 114.62 | 8.45 | 118.51 | 12.52 | 114.44 | - | N/A | 11.92 | 115.04 | 11.82 | 115.14 |
| OW12 | Overburden | N/A | 24.50 | 134.29 | 2.00 | 136.29 | N/A | 1.30 | 10.0 | 1.25 | 20.17 | 116.12 | 20.03 | 116.26 | 20.30 | 115.99 | 19.61 | 116.68 | 19.84 | 116.45 | 19.02 | 117.27 |
| OW13 | Overburden | N/A | 15.75 | 124.88 | 2.10 | 126.98 | N/A | <1 | 10.0 | 2.00 | 9.31 | 117.67 | - | N/A | 8.82 | 118.16 | 6.02 | 120.96 | 6.00 | 120.98 | 5.56 | 121.42 |
| OW14A | Bedrock | N/A | 39.00 | 143.21 | 2.40 | 145.61 | N/A | 1.00 | 15.0 | 2.00 | 28.11 | 117.5 | 28.02 | 117.59 | 28.40 | 117.21 | 20.90 | 124.71 | 26.70 | 118.91 | 20.04 | 125.55 |
| OW16 | Overburden | N/A | 9.00 | 120.23 | 1.90 | 122.13 | N/A | <1 | 5.0 | 2.00 | 4.40 | 117.73 | 4.40 | 117.73 | 5.88 | 116.25 | - | N/A | 5.70 | 116.43 | 4.95 | 117.18 |
| OW17 | Overburden | N/A | 11.00 | 119.87 | 2.10 | 121.97 | N/A | Dry | 5.0 | 2.00 | - | N/A | 11.40 | 110.57 | - | N/A | 11.02 | 110.95 | 10.26 | 111.71 | 11.02 | 110.95 |

- Was Not Measured
OXYCHEM\04161ES2.XLS/jad

TABLE 3.3
Bedrock and Alluvial Aquifer
Groundwater Elevation Data

Occidential Chemical Corporaiton
Pottstown, PA

| Well No. | Aquifer | Outer Casing Total Depth (feet) | Well Total Depth (feet) | Surface Elev. (feet) | Well Stick Up (feet) | Well Elev. (feet) | Gage Elev. (feet) | Well Yield (gpm) | Screen Interval (feet) | Well Diameter (inches) | Groundwater Elevations 2/4/91 DTW | 2/4/91 Elev. | 2/11/91 DTW | 2/11/91 Elev. | 2/25/91 DTW | 2/25/91 Elev. | 3/8/91 DTW | 3/8/91 Elev. | 3/20/91 DTW | 3/20/91 Elev. | 3/28/91 DTW | 3/28/91 Elev. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OW18 | Overburden | N/A | 11.50 | 122.09 | 1.80 | 123.89 | N/A | <1 | 5.0 | 2.00 | 5.13 | 118.76 | 5.00 | 118.89 | 5.91 | 117.98 | 5.89 | 118 | 5.70 | 118.19 | 5.38 | 118.51 |
| OW19 | Overburden | N/A | 15.50 | 122.66 | 2.40 | 125.06 | N/A | <1 | 10.0 | 2.00 | 9.53 | 115.53 | 9.51 | 115.55 | 10.26 | 114.80 | - | - | 10.42 | 114.64 | 9.96 | 115.10 |
| OW20 | Overburden | N/A | 12.00 | 120.78 | 2.20 | 122.98 | N/A | 0.30 | 5.0 | 2.00 | 5.67 | 117.31 | 5.31 | 117.67 | 5.52 | 117.46 | 5.62 | 117.36 | 5.19 | 117.79 | 5.08 | 117.90 |
| OW21 | Overburden | N/A | 13.50 | 121.55 | 1.70 | 123.25 | N/A | 2.31 | 5.0 | 2.00 | 5.12 | 118.13 | 4.87 | 118.38 | 5.95 | 117.30 | - | - | 5.68 | 117.57 | 5.00 | 118.25 |
| OW22 | Overburden | N/A | 11.75 | 123.25 | 1.65 | 124.90 | N/A | 3.00 | 10.0 | 2.00 | 7.30 | 117.6 | 7.05 | 117.85 | 7.95 | 116.95 | 7.49 | 117.41 | 7.34 | 117.56 | 6.85 | 118.05 |
| OW24A | Bedrock | N/A | 23.00 | 126.03 | 1.85 | 127.88 | N/A | 3.00 | 15.0 | 2.00 | 11.82 | - | - | - | 11.9 | - | - | - | 11.33 | - | 11.00 | - |
| OW25 | Overburden | N/A | 16.25 | 121.38 | 2.00 | 123.38 | N/A | <1 | 5.0 | 2.00 | 8.90 | 114.48 | 8.45 | 114.93 | 8.87 | 114.51 | - | - | - | - | - | - |
| OW26 | Overburden | N/A | 11.50 | 122.85 | 2.10 | 124.95 | N/A | <1 | 5.0 | 2.00 | - | - | - | - | - | - | - | - | - | - | - | - |
| OW27A | Bedrock | 24 | 60.00 | N/A | N/A | N/A | N/A | 2.00 | 31.0 | 2.00 | 18.86 | - | - | - | 19.37 | - | 18.73 | - | 18.16 | - | 16.35 | - |
| PW1 | Bedrock | 42 | 387.0 | 85.56 | 0.94 | 186.50 | N/A | - | Open | 10.0 | 61.39 | 125.11 | 62.36 | 124.14 | 63.55 | 122.95 | - | - | 61.60 | 122.6 | 60.40 | - |
| PW3 | Bedrock | 47 | 265.0 | 164.46 | 0.00 | 164.46 | N/A | - | Open | 10.0 | - | - | - | - | - | - | N/A | - | - | - | - | - |
| PW4 | Bedrock | 50 | 258.0 | 156.15 | 0.00 | 156.15 | N/A | - | Open | 10.0 | - | - | - | - | - | - | N/A | - | - | - | - | - |

- Was Not Measured
OXYCHEM\04161E9[illegible]/jad

TABLE 3.3
Bedrock and Alluvial Aquifer
Groundwater Elevation Data

Occidential Chemical Corporaiton
Pottstown, PA

| Well No. | Aquifer | Outer Casing Total Depth (feet) | Well Total Depth (feet) | Surface Elev. (feet) | Well Stick Up (feet) | Well Elev. (feet) | Gage Elev. (feet) | Well Yield (gpm) | Screen Interval (feet) | Well Diameter (inches) | Groundwater Elevations 2/4/91 DTW | 2/4/91 Elev. | 2/11/91 DTW | 2/11/91 Elev. | 2/25/91 DTW | 2/25/91 Elev. | 3/8/91 DTW | 3/8/91 Elev. | 3/20/91 DTW | 3/20/91 Elev. | 3/28/91 DTW | 3/28/91 Elev. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PW-5 | Bedrock | 36 | 220.0 | 135.92 | 0.71 | 136.63 | - | - | Open | 10.00 | >200 | - | 95.00 | 61.63 | 55.50 | 81.13 | - | - | 52.80 | 83.83 | 78.42 | 58.21 |
| PW-6 | Bedrock | 35 | 385.0 | 152.49 | 0.00 | 152.49 | - | - | Open | 10.00 | 45.6 | 106.89 | 52.97 | 99.52 | 53.22 | 99.27 | - | - | 87.50 | 64.99 | 136.20 | 16.29 |
| PW-7 | Bedrock | 37 | 350.0 | 130.27 | 0.86 | 131.02 | - | - | Open | 10.00 | 18.6 | 112.53 | 18.10 | 113.03 | 18.52 | 112.61 | 17.5 | 113.63 | 17.60 | 113.53 | 16.98 | 114.15 |
| PW-8 | Bedrock | 35 | 339.0 | 145.41 | 0.74 | 146.15 | - | 73.00 | Open | 10.00 | - | - | 74.15 | 72.00 | 110.00 | 36.15 | - | - | 73.95 | 72.20 | 68.10 | 78.05 |
| PW-9 | Bedrock | 38 | 350.0 | 152.96 | 0.00 | 152.59 | - | 117.00 | Open | 10.00 | 46.73 | 105.86 | 52.20 | 100.39 | 52.10 | 100.49 | - | - | 58.47 | 94.12 | 61.95 | 90.64 |
| PW-10 | Bedrock | 75 | 470.0 | 147.14 | 0.61 | 147.75 | - | 61.00 | Open | 10.00 | - | - | 74.13 | 73.62 | 88.00 | 59.75 | - | - | 90.15 | 57.60 | 49.00 | 98.75 |
| BRA | Bedrock | 19 | 65.00 | 151.98 | 1.94 | 153.92 | - | 3.50 | Open | 8.00 | 56.48 | 97.44 | 57.13 | 96.79 | 55.52 | 98.40 | - | - | 54.53 | 99.39 | 52.00 | 101.92 |
| BRB | Bedrock | 19 | 90.00 | 150.10 | -3.28 | 153.38 | - | 4.00 | Open | 8.00 | 67.85 | 85.53 | 59.86 | 93.52 | 61.47 | 91.91 | - | - | - | - | - | - |
| BRC | Bedrock | 19.5 | 90.00 | 146.37 | -3.21 | 149.58 | - | 1.00 | Open | 8.00 | 57.17 | 92.41 | 56.83 | 92.75 | 59.17 | 90.41 | 56.90 | 92.68 | 55.50 | 94.08 | 51.35 | 98.23 |
| BR1 | Bedrock | 46.5 | 117.00 | 134.93 | 0.30 | 135.23 | - | 17.60 | Open | 6.00 | 21.75 | 113.48 | 21.69 | 113.54 | 22.03 | 113.20 | 21.06 | 114.17 | 21.30 | 113.93 | 21.05 | 114.18 |
| BR2 | Bedrock | 32.0 | 125.00 | 124.42 | 0.40 | 124.82 | - | 19.35 | Open | 6.00 | 6.15 | 118.67 | 8.80 | 116.02 | 9.34 | 115.48 | 8.58 | 116.24 | 8.65 | 116.17 | 8.10 | 116.72 |

- Was Not Measured
OXYCHEM\04161ES2.XLS/jad

AR302354

TABLE 3.3
Bedrock and Alluvial Aquifer
Groundwater Elevation Data

Occidential Chemical Corporaiton
Pottstown, PA

| Well No. | Aquifer | Outer Casing Total Depth (feet) | Well Total Depth (feet) | Surface Elev. (feet) | Well Stick Up (feet) | Well Elev. (feet) | Gage Elev. (feet) | Well Yield (gpm) | Screen Interval (feet) | Well Diameter (inches) | Groundwater Elevations 2/4/91 DTW | 2/4/91 Elev. | 2/11/91 DTW | 2/11/91 Elev. | 2/25/91 DTW | 2/25/91 Elev. | 3/8/91 DTW | 3/8/91 Elev. | 3/20/91 DTW | 3/20/91 Elev. | 3/28/91 DTW | 3/28/91 Elev. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BR3 | Bedrock | 29.0 | 119.00 | 123.27 | 0.70 | 123.97 | - | 21.43 | Open | 6.00 | 8.32 | - | 7.91 | 116.06 | 6.43 | 117.54 | 7.41 | 116.56 | 6.32 | 117.65 | 5.98 | 118.00 |
| BR4 | Bedrock | 28.0 | 119.00 | 121.47 | 1.10 | 122.57 | - | 21.43 | Open | 6.00 | 8.32 | 114.25 | 8.48 | 114.09 | 8.90 | 113.59 | - | - | 8.50 | 114.07 | 8.03 | 114.54 |
| BR5 | Bedrock | 19.0 | 74.00 | 153.57 | 0.47 | 154.04 | - | 2.00 | Open | 5.00 | 40.55 | 113.49 | 40.33 | 113.71 | 40.60 | 113.44 | 39.50 | 114.54 | 39.95 | 114.09 | 39.34 | 114.70 |
| BR6 | Bedrock | 19.0 | 70.00 | 144.90 | 1.15 | 146.05 | - | 10.00 | Open | 5.00 | 31.77 | 114.28 | 31.50 | 114.55 | 31.95 | 114.10 | 32.00 | 114.05 | 31.33 | 114.72 | 30.75 | 115.00 |
| BR7 | Bedrock | 19.0 | 55.00 | 145.20 | 1.35 | 146.55 | - | 3.00 | Open | 5.00 | 31.27 | 115.28 | 31.19 | 115.36 | 31.55 | 115.00 | 30.87 | 115.68 | 30.90 | 115.65 | 30.02 | 116.53 |
| BR8 | Bedrock | 19.0 | 65.00 | 145.78 | 0.24 | 146.62 | - | 2.00 | Open | 5.00 | 32.49 | 114.13 | 32.28 | 114.34 | 32.78 | 113.84 | 33.56 | 113.06 | 31.89 | 114.73 | 31.30 | 115.32 |
| BR9 | Bedrock | 19.0 | 80.00 | 169.46 | 0.94 | 170.40 | - | 3.00 | Open | 5.00 | 49.62 | 120.78 | 50.18 | 120.22 | 50.95 | 119.45 | 50.59 | 119.81 | 51.15 | 119.25 | 49.44 | 120.96 |
| BR10 | Bedrock | 19.0 | 100.00 | 167.62 | 1.17 | 168.79 | - | 1.00 | Open | 5.00 | 50.60 | 118.19 | 50.85 | 117.94 | 51.32 | 116.47 | 50.88 | 117.91 | 50.70 | 118.09 | 50.15 | 118.64 |
| BR11 | Bedrock | 19.0 | 73.00 | 169.82 | 1.33 | 171.15 | - | 1.00 | Open | 5.00 | 51.65 | 119.50 | 52.22 | 118.93 | 53.20 | 117.95 | 52.42 | 118.73 | 52.41 | 118.74 | 51.48 | 119.67 |
| BR12 | Bedrock | 19.0 | 90.00 | 173.06 | 1.06 | 174.12 | - | 1.50 | Open | 5.00 | 51.76 | 112.36 | 52.52 | 121.60 | 53.15 | 120.97 | 52.43 | 121.69 | 57.82 | 116.30 | 51.00 | 123.12 |
| BR13 | Bedrock | 19.0 | 100.00 | 151.94 | 1.32 | 153.26 | - | 2.00 | Open | 5.00 | 56.57 | 96.69 | - | - | - | - | 56.85 | 96.41 | 55.85 | 97.41 | 51.48 | 101.78 |

- Was Not Measured
OXYCHEM\04161ES2.XLS/jad

00 25 02 18

TABLE 3.3
Bedrock and Alluvial Aquifer
Groundwater Elevation Data

Occidential Chemical Corporaiton
Pottstown, PA

| Well No. | Aquifer | Outer Casing Total Depth (feet) | Well Total Depth (feet) | Surface Elev. (feet) | Well Stick Up (feet) | Well Elev. (feet) | Gage Elev. (feet) | Well Yield (gpm) | Screen Interval (feet) | Well Diameter (inches) | Groundwater Elevations 2/4/91 DTW | 2/4/91 Elev. | 2/11/91 DTW | 2/11/91 Elev. | 2/25/91 DTW | 2/25/91 Elev. | 3/8/91 DTW | 3/8/91 Elev. | 3/20/91 DTW | 3/20/91 Elev. | 3/28/91 DTW | 3/28/91 Elev. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BR14 | Bedrock | 19 | 94.00 | 152.73 | 1.01 | 153.74 | - | 1.00 | Open | 5.00 | 56.85 | 96.89 | 56.97 | 96.77 | 58.80 | 94.90 | 57.25 | 96.49 | 56.25 | 97.49 | 52.30 | 101.44 |
| BR15 | Bedrock | 20 | 94.00 | 152.59 | 0.27 | 152.32 | - | 2.00 | Open | 5.00 | - | - | - | - | - | - | - | - | - | - | - | - |
| BR16 | Bedrock | 19 | 94.00 | 155.44 | 1.76 | 157.20 | - | 2.00 | Open | 5.00 | 55.60 | 101.60 | 56.59 | 100.61 | 57.58 | 99.92 | 56.95 | 100.25 | 55.85 | 101.35 | 50.95 | 106.25 |
| SG1 | River | N/A | N/A | N/A | N/A | N/A | 113.12 | N/A | N/A | N/A | 0.88 | 114.00 | 1.45 | 114.57 | 1.10 | 114.22 | 2.28 | 115.40 | 1.86 | 114.98 | 2.40 | 114.44 |
| SG2 | River | N/A | N/A | N/A | N/A | N/A | 112.70 | N/A | N/A | N/A | 0.10 | 112.80 | 0.70 | 113.40 | 0.35 | 113.05 | 1.65 | 114.35 | 1.18 | 113.88 | 1.85 | 113.21 |
| SG3 | River | N/A | N/A | N/A | N/A | N/A | 109.78 | N/A | N/A | N/A | - | - | 2.30 | 112.08 | 1.90 | 111.68 | 3.06 | 112.84 | 2.82 | 112.60 | 3.42 | 112.00 |

AR302551

- Was Not Measured

OXYCHEM\04161ES2.XLS/jad

TABLE 3.4
RECONNAISSANCE BOREHOLE GROUNDWATER QUALITY
OCCIDENTAL CHEMICAL CORPORATION, POTTSTOWN PENNSYLVANIA

| SAMPLING LOCATION: | | OXY-TB1-GW101A | OXY-TB1-GW-101 | OXY-TB1-GW-102 | OXY-TB1GW-180 | OXY-TB1GW-222 | OXY-TB1-GW-290 | OXY-TB1GW-376 | OXY-TB1-GW-390 |
|---|---|---|---|---|---|---|---|---|---|
| SAMPLING DATE: | | 02/20/91 | 02/20/91 | 04/26/91 | 04/27/91 | 04/27/91 | 04/26/91 | 04/27/91 | 04/26/91 |
| BCM SAMPLE NUMBER | | 105270 | 105267 | 113889 | 113900 | 113899 | 113868 | 113898 | 113887 |
| VOLATILE ORGANICS | | | | | | | | | |
| Bromoform | ug/l | -- | - | -- | 2.0 | -- | | - | - |
| Carbon Tetrachloride | ug/l | -- | -- | -- | - | - | 2.0 | - | - |
| Chloroform | ug/l | -- | -- | -- | 4.0 | -- | 7.0 | -- | -- |
| Ethylbenzene | ug/l | 11700.0 | 10500.0 | 740.0 | 58.0 | 5.0 | - | -- | -- |
| Methylene Chloride | ug/l | 7280.0 | 7890.0 | -- | -- | -- | -- | -- | -- |
| Styrene | ug/l | 62100.0 | 81600.0 | 380.0 | 4.0 | 3.0 | -- | 7.0 J | -- |
| Toluene | ug/l | -- | -- | 140.0 | 3.0 | -- | 8.0 | 930.0 | 700.0 |
| Trichloroethene (TCE) | ug/l | 19600.0 | 19600.0 | 19000.0 | 1000.0 | 390.0 | 6800.0 | - | - |
| Vinyl Chloride | ug/l | -- | -- | -- | -- | -- | 28.0 | 250.0 | [illegible] |
| trans-1,2-Dichloroethene | ug/l | 7550.0 | 8100.0 | 6000.0 | 280.0 | 200.0 | 1600.0 | | |

-- : NONE DETECTED
PRLM : PRELIMINARY RESULT SUBJECT TO CONFIRMATION BY LABORATORY SUPERVISOR
J : INDICATES AN ESTIMATED VALUE
M : DUPLICATE INJECTION PRECISION WAS NOT MET
SOURCE: BCM LABORATORY, INC.
ND (< 0.005) NONDETECT (DETECTION LIMIT)

AR302552

TABLE 3.4
RECONNAISSANCE BOREHOLE GROUNDWATER QUALITY
OCCIDENTAL CHEMICAL CORPORATION, POTTSTOWN PENNSYLVANIA

| SAMPLING LOCATION: | | OXY-TB-1-GW- | OXY-TB2-GW-80 | OXY-TB2-GW-100 | OXY-TB2-GW-130 | OXY-TB2-GW-210 | OXY-TB2-GW-235 | DUP 109314 | OXY TB2-GW-370 |
|---|---|---|---|---|---|---|---|---|---|
| SAMPLING DATE: | | 04/25/91 | 02/25/91 | 02/26/91 | 03/27/91 | 03/26/91 | 03/26/91 | 03/19/91 | 03/22/91 |
| BCM SAMPLE NUMBER: | | 113752 | 105781 | 105892 | 110614 | 110410 | 110409 | 109319 | 109787 |
| SAMPLE ID: | | 500 UNFILT | | | | | | | |
| METALS: | | | | | | | | | |
| Barium | mg/l | 0 056 | NT | NT | NT | NT | NT | NT | NT |
| Calcium | mg/l | 83 5 | NT | NT | NT | NT | NT | NT | NT |
| Chromium | mg/l | 0 0325 | NT | NT | NT | NT | NT | NT | NT |
| Cobalt | mg/l | 0 015 | NT | NT | NT | NT | NT | NT | NT |
| Copper | mg/l | 0 032 | NT | NT | NT | NT | NT | NT | NT |
| Iron | mg/l | 0 0569 | NT | NT | NT | NT | NT | NT | NT |
| Magnesium | mg/l | 28 8 | NT | NT | NT | NT | NT | NT | NT |
| Manganese | mg/l | 0 363 | NT | NT | NT | NT | NT | NT | NT |
| Nickel | mg/l | 0 0313 | NT | NT | NT | NT | NT | NT | NT |
| Potassium | mg/l | 1 30 | NT | NT | NT | NT | NT | NT | NT |
| Sodium | mg/l | 31 1 | NT | NT | NT | NT | NT | NT | NT |
| Thallium | mg/l | 0 0014 | NT | NT | NT | NT | NT | NT | NT |
| Zinc | mg/l | 0 243 | NT | NT | NT | NT | NT | NT | NT |
| VOLATILE ORGANICS | | | | | | | | | |
| 1,1-Dichloroethane | ug/l | -- | 1.8 | 3.0 | -- | -- | -- | NT | 1 2 |
| 1,1-Dichloroethene | RPD | NT | NT | NT | NT | NT | NT | 4 0 | NT |
| 1,1-Dichloroethene | ug/l | -- | 18 5 | 37 0 | 47.6 | - | - | NT | 4.1 |
| 1,2-Dichloroethane | ug/l | -- | -- | -- | -- | -- | - | NT | 1.0 |
| Benzene | RPD | NT | NT | NT | NT | NT | NT | 4 0 | NT |
| Chlorobenzene | RPD | NT | NT | NT | NT | NT | NT | 4.0 | NT |
| Chlorobenzene | ug/l | -- | -- | -- | -- | -- | - | NT | -- |
| Ethylbenzene | RPD | NT | NT | NT | NT | NT | NT | 5.0 | NT |
| Ethylbenzene | ug/l | -- | 4.6 | -- | -- | - | -- | NT | - |
| Styrene | ug/l | -- | -- | 228.0 | -- | -- | -- | NT | -- |
| Toluene | RPD | NT | NT | NT | NT | NT | NT | 4.0 | NT |
| Toluene | ug/l | -- | 69.0 | 210.0 | 573.0 | -- | 2.8 | NT | 69.0 |
| Trichloroethene (TCE) | RPD | NT | NT | NT | NT | NT | NT | 1.0 | NT |
| Trichloroethene (TCE) | ug/l | 3000 0 | 782 0 | 903 0 | 2850.0 | 109 0 | 70.5 | NT | 756.0 |

-- : NONE DETECTED
NT : NOT TESTED AS PART OF THIS STUDY
PRLM : PRELIMINARY RESULT SUBJECT TO CONFIRMATION BY LABORATORY SUPERVISOR
M : DUPLICATE INJECTION PRECISION WAS NOT MET
SOURCE: BCM LABORATORY, INC.
ND (< 0 005) NONDETECT (DETECTION LIMIT)

AR302553

TABLE 3.4
RECONNAISSANCE BOREHOLE GROUNDWATER QUALITY
OCCIDENTAL CHEMICAL CORPORATION, POTTSTOWN PENNSYLVANIA

| SAMPLING LOCATION: | | OXY-TB-1-GW- | OXY-TB2-GW-80 | OXY-TB2-GW-100 | OXY TB2-GW-130 | OXY-TB2-GW-210 | OXY-TB2-GW-235 | DUP 109314 | OXY-TB2-GW-370 |
|---|---|---|---|---|---|---|---|---|---|
| SAMPLING DATE: | | 04/25/91 | 02/25/91 | 02/26/91 | 03/27/91 | 03/26/91 | 03/26/91 | 03/19/91 | 03/22/91 |
| BCM SAMPLE NUMBER: | | 113752 | 105781 | 105892 | 110614 | 110410 | 110409 | 109319 | 109787 |
| SAMPLE ID: | | 500 UNFILT | | | | | | | |
| VOLATILE ORGANICS (CONT.) | | | | | | | | | |
| Vinyl Chloride | ug/l | - | 298.0 | 298.0 | 2630.0 | 70.9 | 40.7 | NI | 328.0 |
| trans-1,2-Dichloroethene | ug/l | 1300.0 | -- | 1510.0 | 267.0 | 92.2 | 51.2 | NI | 754.0 |

-- NONE DETECTED
NI NOT TESTED AS PART OF THIS STUDY
PRLM : PRELIMINARY RESULT SUBJECT TO CONFIRMATION BY LABORATORY SUPERVISOR
M : DUPLICATE INJECTION PRECISION WAS NOT MET
SOURCE: BCM LABORATORY, INC
ND (< 0.005) NONDETECT (DETECTION LIMIT)

AR302554

TABLE 3.4
RECONNAISSANCE BOREHOLE GROUNDWATER QUALITY
OCCIDENTAL CHEMICAL CORPORATION, POTTSTOWN PENNSYLVANIA

| SAMPLING LOCATION: | | OXY-TB2-GW-450 | OXY-TB2-GW-450 | OXY-TB4GW-65 | OXY-TB4GW-85 | OXY-TB 4GW-105 | OXY-TB4GW-145 | OXY-TB4GW-145A | OXY-TB4GW-212 |
|---|---|---|---|---|---|---|---|---|---|
| SAMPLING DATE: | | 03/21/91 | 03/21/91 | 02/06/91 | 02/06/91 | 02/06/91 | 02/08/91 | 02/08/91 | 02/11/91 |
| BCM SAMPLE NUMBER: | | 109715 | 109717 | 103627 | 103628 | 103629 | 104029 | 104030 | 104235 |
| SAMPLE TO: | | UNFILTERED | A FILTERED | | | | | | |
| METALS: | | | | | | | | | |
| Aluminum | mg/l | 0.708 | 0.084 | NT | NT | NT | NT | NT | NT |
| Arsenic | mg/l | 0.0087 | 0.007 | NT | NT | NT | NT | NT | NT |
| Barium | mg/l | 0.074 | 0.045 | NT | NT | NT | NT | NT | NT |
| Beryllium | mg/l | 0.0008 | 0.0008 | NT | NT | NT | NT | NT | NT |
| Calcium | mg/l | 43.8 | 32.2 | NT | NT | NT | NT | NT | NT |
| Chromium | mg/l | 0.007 | -- | NT | NT | NT | NT | NT | NT |
| Copper | mg/l | 0.023 | 0.013 | NT | NT | NT | NT | NT | NT |
| Iron | mg/l | 1.88 | 0.257 | NT | NT | NT | NT | NT | NT |
| Lead | mg/l | 0.0067 | 0.0035 | NT | NT | NT | NT | NT | NT |
| Magnesium | mg/l | 35.3 | 26.4 | NT | NT | NT | NT | NT | NT |
| Manganese | mg/l | 0.057 | 0.005 | NT | NT | NT | NT | NT | NT |
| Potassium | mg/l | 1.24 | 0.744 | NT | NT | NT | NT | NT | NT |
| Sodium | mg/l | 14.5 | 11.2 | NT | NT | NT | NT | NT | NT |
| Thallium | mg/l | 0.0017 | - | NT | NT | NT | NT | NT | NT |
| Zinc | mg/l | 0.340 | 0.338 | NT | NT | NT | NT | NT | NT |
| VOLATILE ORGANICS: | | | | | | | | | |
| Styrene | ug/l | NT | NT | 2.6 | -- | -- | -- | -- | -- |
| Toluene | ug/l | -- | -- | 3.9 | -- | -- | | -- | - |
| Trichloroethene (TCE) | ug/l | - | -- | 1.5 | 1.1 | -- | -- | - | -- |

-- : NONE DETECTED
NT : NOT TESTED AS PART OF THIS STUDY.
PRLM : PRELIMINARY RESULT SUBJECT TO CONFIRMATION BY LABORATORY SUPERVISOR.
M : DUPLICATE INJECTION PRECISION WAS NOT MET
SOURCE: BCM LABORATORY, INC.
ND (< 0.005) NONDETECT (DETECTION LIMIT)

AR302555

TABLE 3.4
RECONNAISSANCE BOREHOLE GROUNDWATER QUALITY
OCCIDENTAL CHEMICAL CORPORATION, POTTSTOWN PENNSYLVANIA

| SAMPLING LOCATION: | | OXY-IB4GW-300 | OXY-IB4GW-30 | OXY-IB5-GW-85 | OXY-IB5-GW-141 | OXY-IB5-GW-226 | OXY IB5-GW-301 | OXY IB5GW 391 | OXY IB5GW-447 |
|---|---|---|---|---|---|---|---|---|---|
| SAMPLING DATE: | | 02/07/91 | 02/07/91 | 02/15/91 | 02/15/91 | 02/14/91 | 02/14/91 | 02/13/91 | 02/13/91 |
| BCM SAMPLE NUMBER: | | 103745 | 103754 | 104966 | 104965 | 104811 | 104810 | 104519 | 104517 |
| SAMPLE ID | | | FILTERED | | | | | UNFILTERED | UNFILTERED |
| **METALS:** | | | | | | | | | |
| Aluminum | mg/l | 0 108 | 0 070 | NT | NT | NT | NT | NT | 0 088 |
| Arsenic | mg/l | 0 0108 | 0 0114 | NT | NT | NT | NT | NT | 0 0039 |
| Barium | mg/l | 0 249 | 0.267 | NT | NT | NT | NT | NT | 0 079 |
| Calcium | mg/l | 43 0 | 46 7 | NT | NT | NT | NT | NT | 32 9 |
| Chromium | mg/l | 0.005 | - | NT | NT | NT | NT | NT | - |
| Cobalt | mg/l | 0 008 | - | NT | NT | NT | NT | NT | - |
| Copper | mg/l | 0 083 | 0 072 | NT | NT | NT | NT | NT | 0 002 |
| Iron | mg/l | 0 202 | 0 038 | NT | NT | NT | NT | NT | 0 070 |
| Lead | mg/l | 0 0171 | 0.0034 | NT | NT | NT | NT | NT | 0 0319 |
| Magnesium | mg/l | 13.6 | 14 4 | NT | NT | NT | NT | NT | 16 2 |
| Manganese | mg/l | 0 238 | 0.245 | NT | NT | NT | NT | NT | - |
| Potassium | mg/l | 0 938 | -- | NT | NT | NT | NT | NT | 0 706 |
| Sodium | mg/l | 13 6 | 15 1 | NT | NT | NT | NT | NT | 8 73 |
| Zinc | mg/l | 0 216 | 0.147 | NT | NT | NT | NT | NT | 0 196 |
| **VOLATILE ORGANICS** | | | | | | | | | |
| 1,1,2-Trichloroethane | ug/l | -- | NT | -- | 1 8 | -- | -- | -- | |
| 1,2-Dichloropropane | ug/l | -- | NT | -- | 1 5 | | | - | |
| Benzene | ug/l | -- | NT | -- | 5 0 | -- | | | - |
| Bromoform | ug/l | - | NT | -- | 1 1 | - | | - | |
| Carbon Tetrachloride | ug/l | - | NT | 4 7 | 87 2 | - | | | |
| Chlorobenzene | ug/l | - | NT | -- | 1 8 | | - | -- | |
| Chloroform | ug/l | | NT | 5 7 | 145 0 | -- | - | - | - |
| Methylene Chloride | ug/l | | NT | - | 3 1 | | -- | - | |
| Tetrachloroethene (PCE) | ug/l | -- | NT | - | 8 9 | | | 7 7 | - |
| Trichloroethene (TCE) | ug/l | -- | NT | 53.1 | 8 4 | | - | -- | |
| Vinyl Chloride | ug/l | - | NT | -- | 1 2 | - | | -- | - |

-- NONE DETECTED
NT NOT TESTED AS PART OF THIS STUDY.
SOURCE: BCM LABORATORY, INC.
ND (< 0 005) NONDETECT (DETECTION LIMIT)

AR302556

TABLE 3.4
RECONNAISSANCE BOREHOLE GROUNDWATER QUALITY
OCCIDENTAL CHEMICAL CORPORATION, POTTSTOWN PENNSYLVANIA

| SAMPLING LOCATION | | OXY TB5GW-447A | OXY-TB6-GW-121 | OXY-TB6-GW-140 | OXY-TB6-GW-179 | OXY-TB6-GW-216 | OXY-TB6-GW-265 | OXY-TB6-GW-315 | OXY-TB6-GW-384 |
|---|---|---|---|---|---|---|---|---|---|
| SAMPLING DATE: | | 02/13/91 | 03/05/91 | 03/05/91 | 03/05/91 | 03/04/91 | 03/01/91 | 02/28/91 | 02/28/91 |
| BCM SAMPLE NUMBER: | | 104518 | 106963 | 106966 | 106964 | 106776 | 106299 | 106115 | 106114 |
| SAMPLE ID: | | UNFILTERED | | | | | | | |
| METALS: | | | | | | | | | |
| Aluminum | mg/l | 0.040 | NT | NT | NT | NT | NT | NT | NT |
| Arsenic | mg/l | 0.0049 | NT | NT | NT | NT | NT | NT | NT |
| Barium | mg/l | 0.029 | NT | NT | NT | NT | NT | NT | NT |
| Calcium | mg/l | 31.0 | NT | NT | NT | NT | NT | NT | NT |
| Iron | mg/l | 0.019 | NT | NT | NT | NT | NT | NT | NT |
| Lead | mg/l | 0.0012 | NT | NT | NT | NT | NT | NT | NT |
| Magnesium | mg/l | 15.5 | NT | NT | NT | NT | NT | NT | NT |
| Sodium | mg/l | 8.34 | NT | NT | NT | NT | NT | NT | NT |
| Zinc | mg/l | 0.187 | NT | NT | NT | NT | NT | NT | NT |
| VOLATILE ORGANICS | | | | | | | | | |
| Benzene | ug/l | -- | 1.6 | -- | -- | - | - | -- | -- |
| Methylene Chloride | ug/l | -- | - | -- | - | -- | -- | 1.1 | - |
| Styrene | ug/l | -- | 1.7 | -- | 1.2 | 1.8 | - | 1.2 | 1.8 |
| Trichloroethene (TCE) | ug/l | -- | -- | 2.8 | 1.1 | - | -- | 1.0 | 6.3 |
| trans 1,2 Dichloroethene | ug/l | - | - | 4.1 | -- | -- | - | | |

-- : NONE DETECTED
NT : NOT TESTED AS PART OF THIS STUDY
SOURCE: BCM LABORATORY, INC.
ND (< 0.005) NONDETECT (DETECTION LIMIT)

AR302557

TABLE 3.4
RECONNAISSANCE BOREHOLE GROUNDWATER QUALITY
OCCIDENTAL CHEMICAL CORPORATION, POTTSTOWN PENNSYLVANIA

| SAMPLING LOCATION | | OXY-TB6-GW-450 | OXY-TB7-GW-107 | OXY-TB7-GW-156 | OXY-TB7-GW-231 | OXY-TB8-GW-80 | OXY-TB8-GW-105 | OXY-TB8-GW-140 | OXY-TB8-GW-236 |
|---|---|---|---|---|---|---|---|---|---|
| SAMPLING DATE: | | 02/27/91 | 02/28/91 | 02/27/91 | 02/27/91 | 02/22/91 | 02/20/91 | 02/20/91 | 02/22/91 |
| BCM SAMPLE NUMBER | | 106018 | 106113 | 106016 | 106017 | 105664 | 105268 | 105269 | 105663 |
| SAMPLE ID | | UNFILTERED | | UNFILTERED | UNFILTERED | | | | |
| METALS | | | | | | | | | |
| Aluminum | mg/l | 0.101 | NT | NT | 0.072 | NT | NT | NT | NT |
| Barium | mg/l | 0.109 | NT | NT | 0.049 | NT | NT | NT | NT |
| Calcium | mg/l | 47.4 | NT | NT | 48.8 | NT | NT | NT | NT |
| Chromium | mg/l | -- | NT | NT | 0.005 | NT | NT | NT | NT |
| Copper | mg/l | 0.004 | NT | NT | 0.015 | NT | NT | NT | NT |
| Iron | mg/l | 0.031 | NT | NT | 0.174 | NT | NT | NT | NT |
| Lead | mg/l | - | NT | NT | 0.021 | NT | NT | NT | NT |
| Magnesium | mg/l | 25.9 | NT | NT | 12.6 | NT | NT | NT | NT |
| Manganese | mg/l | 0.005 | NT | NT | 0.024 | NT | NT | NT | NT |
| Potassium | mg/l | 0.981 | NT | NT | 0.825 | NT | NT | NT | NT |
| Sodium | mg/l | 9.63 | NT | NT | 8.64 | NT | NT | NT | NT |
| Zinc | mg/l | 0.138 | NT | NT | 0.401 | NT | NT | NT | NT |
| VOLATILE ORGANICS | | | | | | | | | |
| 1,1,1-Trichloroethane | ug/l | -- | 1.5 | - | - | -- | - | | - |
| Ethylbenzene | ug/l | -- | | - | -- | - | 4.4 | | - |
| Methylene Chloride | ug/l | 1.5 | - | -- | 1.2 | - | | - | |
| Styrene | ug/l | - | -- | -- | -- | - | 73.8 | 6.6 | - |
| Trichloroethene (TCE) | ug/l | 2.3 | 105.0 | 92.4 | -- | -- | - | 2.2 | - |
| Trichlorofluoromethane | ug/l | - | - | | - | | 1.1 | | |
| trans 1,2-Dichloroethene | ug/l | 1.1 | 1.5 | 3.8 | - | | | | |

-- NONE DETECTED
NT : NOT TESTED AS PART OF THIS STUDY
SOURCE: BCM LABORATORY, INC.
ND (< 0.005) NONDETECT (DETECTION LIMIT)

AR302558

TABLE 3.4
RECONNAISSANCE BOREHOLE GROUNDWATER QUALITY
OCCIDENTAL CHEMICAL CORPORATION, POTTSTOWN PENNSYLVANIA

| SAMPLING LOCATION: | | OXY-IB8-GW-285 | OXY-IB8-GW-350 | OXY-IB9-GW-77 | OXY-IB9-GW-180 | OXY-IB9-GW-240 | OXY-IB10-GW | OXY-IB10-GW | OXY-IB10-GW |
|---|---|---|---|---|---|---|---|---|---|
| SAMPLING DATE: | | 02/21/91 | 02/21/91 | 03/19/91 | 03/19/91 | 03/18/91 | 03/15/91 | 03/15/91 | 02/13/91 |
| BCM SAMPLE NUMBER | | 105524 | 105532 | 109314 | 109315 | 109252 | 109015 | 109014 | 108310 |
| SAMPLE TYPE: | | UNFILTERED | UNFILTERED | | | UNFILTERED | 78 | 77 | 117 |
| METALS: | | | | | | | | | |
| Aluminum | mg/l | NT | 0.061 | NT | NT | -- | NT | NT | NT |
| Arsenic | mg/l | NT | - | NT | NT | 0.0013 | NT | NT | NT |
| Barium | mg/l | NT | 0.037 | NT | NT | 0.078 | NT | NT | NT |
| Beryllium | mg/l | NT | - | NT | NT | 0.001 | NT | NT | NT |
| Calcium | mg/l | NT | 39.6 | NT | NT | 33.2 | NT | NT | NT |
| Copper | mg/l | NT | 0.017 | NT | NT | 0.020 | NT | NT | NT |
| Iron | mg/l | NT | 0.054 | NT | NT | 0.126 | NT | NT | NT |
| Lead | mg/l | NT | 0.005 | NT | NT | 0.0072 | NT | NT | NT |
| Magnesium | mg/l | NT | 14.9 | NT | NT | 12.3 | NT | NT | NT |
| Manganese | mg/l | NT | 0.110 | NT | NT | | NT | NT | NT |
| Potassium | mg/l | NT | 1.49 | NT | NT | | NT | NT | NT |
| Sodium | mg/l | NT | 13.3 | NT | NT | 9.96 | NT | NT | NT |
| Zinc | mg/l | NT | 0.175 | NT | NT | 0.273 | NT | NT | NT |
| VOLATILE ORGANICS | | | | | | | | | |
| Trichloroethene (TCE) | ug/l | -- | -- | -- | -- | | 1.4 | 1.9 | 5.6 |
| trans 1,2-Dichloroethene | ug/l | -- | -- | -- | -- | | 1.2 | 2.3 | 7.0 |

-- : NONE DETECTED.
NT : NOT TESTED AS PART OF THIS STUDY
PRLM : PRELIMINARY RESULT SUBJECT TO CONFIRMATION BY LABORATORY SUPERVISOR.
M : DUPLICATE INJECTION PRECISION WAS NOT MET
SOURCE: BCM LABORATORY, INC.
ND (< 0.005) NONDETECT (DETECTION LIMIT)

AR302559

TABLE 3.4
RECONNAISSANCE BOREHOLE GROUNDWATER QUALITY
OCCIDENTAL CHEMICAL CORPORATION, POTTSTOWN PENNSYLVANIA

| SAMPLING LOCATION: | | OXY-TB10-GW- | OXY-TB10-GW- | OXY-TB10-GW- | OXY-PW7-GW-65 | OXY-PW7-GW-100 | OXY-PW7-GW-251 | OXY-PW7-GW-315 | OXY-PW18-GW |
|---|---|---|---|---|---|---|---|---|---|
| SAMPLING DATE: | | 03/13/91 | 03/12/91 | 03/12/91 | 03/04/91 | 03/05/91 | 03/06/91 | 03/07/91 | 03/14/91 |
| BCM SAMPLE NUMBER | | 108308 | 108195 | 108192 | 106775 | 106963 | 107199 | 107457 | 108364 |
| SAMPLE ID | | 197 | 290 UNFILT | 350 UNFILT | | | | UNFILTERED | 125 |
| METALS: | | | | | | | | | |
| Aluminum | mg/l | NT | NT | 0.049 | NT | NT | NT | - | NT |
| Barium | mg/l | NT | NT | 0.091 | NT | NT | NT | 0.045 | NT |
| Calcium | mg/l | NT | NT | 79.2 | NT | NT | NT | 52.4 | NT |
| Copper | mg/l | NT | NT | 0.014 | NT | NT | NT | 0.009 | NT |
| Iron | mg/l | NT | NT | 0.096 | NT | NT | NT | 0.162 | NT |
| Lead | mg/l | NT | NT | 0.0047 | NT | NT | NT | 0.0025 | NT |
| Magnesium | mg/l | NT | NT | 27.1 | NT | NT | NT | 12.2 | NT |
| Manganese | mg/l | NT | NT | 0.272 | NT | NT | NT | 0.089 | NT |
| Potassium | mg/l | NT | NT | 1.58 | NT | NT | NT | 2.82 | NT |
| Sodium | mg/l | NT | NT | 24.4 | NT | NT | NT | 21.1 | NT |
| Zinc | mg/l | NT | NT | 0.608 | NT | NT | NT | 1.30 | NT |
| VOLATILE ORGANICS | | | | | | | | | |
| Chloroethane | ug/l | - | - | -- | - | | | 2.7 | |
| Trichloroethene (TCE) | ug/l | -- | -- | -- | 5.7 | 5.1 | 4.8 | 6.3 | - |
| Trichlorofluoromethane | ug/l | -- | -- | -- | -- | -- | - | -- | 6.0 |
| trans-1,2-Dichloroethene | ug/l | -- | - | -- | 7.7 | 7.9 | 6.1 | -- | -- |

-- NONE DETECTED
NT : NOT TESTED AS PART OF THIS STUDY
SOURCE: BCM LABORATORY, INC
ND (< 0.005) NONDETECT (DETECTION LIMIT)

AR302560

TABLE 3.4
RECONNAISSANCE BOREHOLE GROUNDWATER QUALITY
OCCIDENTAL CHEMICAL CORPORATION, POTTSTOWN PENNSYLVANIA

| SAMPLING LOCATION: | | OXY-PW7-GW-212 | OXY-PW1R-GW- | OXY-PW1R-GW | OXY-PW1R-GW | OXY-PW1RGW-371 | OXY-PW-1R-GW | OXY-PW 1R GW | RINSE BLANK |
|---|---|---|---|---|---|---|---|---|---|
| SAMPLING DATE: | | 03/08/91 | 03/13/91 | 03/12/91 | 03/12/91 | 03/11/91 | 03/08/91 | 03/08/91 | 01/28/91 |
| BCM SAMPLE NUMBER: | | 107596 | 108309 | 108196 | 108194 | 108122 | 107593 | 107595 | 102679 |
| SAMPLE ID: | | UNFILTERED | 220 | 291 UNFILT | 389 UNFILT | | 491 UNFILTERED | 491 DUP UNFILT | |
| **PHYSICAL PROPERTIES** | | | | | | | | | |
| pH-Laboratory | Std.Un | NT | NT | NT | NT | NT | NT | NT | 5.00 |
| **METALS** | | | | | | | | | |
| Aluminum | mg/l | NT | NT | NT | NT | NT | - | -- | 0.049 |
| Antimony | mg/l | NT | NT | NT | NT | NT | -- | 0.034 | - |
| Barium | mg/l | NT | NT | NT | NT | NT | 0.227 | 0.241 | - |
| Calcium | mg/l | NT | NT | NT | NT | NT | 67.4 | 68.5 | - |
| Copper | mg/l | NT | NT | NT | NT | NT | 0.007 | 0.011 | 0.003 |
| Iron | mg/l | NT | NT | NT | NT | NT | 0.046 | 0.071 | 0.037 |
| Lead | mg/l | NT | NT | NT | NT | NT | | 0.0056 | |
| Magnesium | mg/l | NT | NT | NT | NT | NT | 14.3 | 14.7 | - |
| Manganese | mg/l | NT | NT | NT | NT | NT | 0.038 | 0.04[illegible] | - |
| Potassium | mg/l | NT | NT | NT | NT | NT | 1.05 | 1.14 | - |
| Sodium | mg/l | NT | NT | NT | NT | NT | 16.8 | 17.3 | 0.798 |
| Zinc | mg/l | NT | NT | NT | NT | NT | 0.203 | 0.2[illegible] | 0.036 |
| **VOLATILE ORGANICS** | | | | | | | | | |
| Chloroform | ug/l | 1.5 | - | -- | - | - | - | - | - |
| Trichloroethene (TCE) | ug/l | 6.4 | -- | -- | -- | - | - | -- | -- |
| Trichlorofluoromethane | ug/l | -- | -- | 2.7 | 1.7 | 2.4 | 3.7 | 5.6 | NT |
| trans 1,2-Dichloroethene | ug/l | 9.0 | -- | -- | -- | - | -- | -- | NT |

-- : NONE DETECTED.
NT : NOT TESTED AS PART OF THIS STUDY.
SOURCE: BCM LABORATORY, INC
ND (< 0.005) NONDETECT (DETECTION LIMIT)

AR302561

TABLE 3.4
RECONNAISSANCE BOREHOLE GROUNDWATER QUALITY
OCCIDENTAL CHEMICAL CORPORATION, POTTSTOWN PENNSYLVANIA

| SAMPLING LOCATION | | FIELD RINSATE | FIELD RINSATE | FIELD RINSATE | FIELD BLANK | FIELD BLANK | FIELD BLANK | FIELD BLANK | FIELD BLANK |
|---|---|---|---|---|---|---|---|---|---|
| SAMPLING DATE: | | 02/06/91 | 02/07/91 | 02/07/91 | 02/08/91 | 02/11/91 | 02/13/91 | 02/13/91 | 02/14/91 |
| BCM SAMPLE NUMBER: | | 103631 | 103747 | 103755 | 104032 | 104237 | 104523 | 104524 | 104317 |
| SAMPLE ID | | BLANK | BLANK UNFILT | BLANK FILTERED | | | UNFILTERED | FILTERED | |
| METALS | | | | | | | | | |
| Aluminum | mg/l | NT | 0.053 | 0.057 | NT | NT | | 0.057 | NT |
| Cadmium | mg/l | NT | -- | -- | NT | NT | 0.004 | 0.004 | NT |
| Calcium | mg/l | NT | 0.582 | -- | NT | NT | -- | - | NT |
| Copper | mg/l | NT | 0.008 | 0.007 | NT | NT | 0.010 | 0.005 | NT |
| Iron | mg/l | NT | -- | 0.019 | NT | NT | 0.046 | - | NT |
| Lead | mg/l | NT | -- | 0.0025 | NT | NT | 0.0018 | -- | NT |
| Manganese | mg/l | NT | 0.003 | -- | NT | NT | | - | NT |
| Sodium | mg/l | NT | 0.533 | 1.61 | NT | NT | | - | NT |
| Zinc | mg/l | NT | 0.031 | 0.032 | NT | NT | 0.034 | 0.076 | NT |
| VOLATILE ORGANICS | | | | | | | | | |
| 1,1,1-Trichloroethane | ug/l | -- | -- | NT | -- | -- | -- | NT | 1.4 |
| Chloroform | ug/l | - | - | NT | -- | - | 1.5 | NT | 4 |

-- NONE DETECTED
NT NOT TESTED AS PART OF THIS STUDY
SOURCE: BCM LABORATORY, INC.
ND (< 0.005) NONDETECT (DETECTION LIMIT)

AR302562

TABLE 3.4
RECONNAISSANCE BOREHOLE GROUNDWATER QUALITY
OCCIDENTAL CHEMICAL CORPORATION, POTTSTOWN PENNSYLVANIA

| SAMPLING LOCATION | | FIELD BLANK | FIELD BLANK | FIELD BLANK | FIELD BLANK | FIELD BLANK | FIELD BLANK | FIELD BLANK | FIELD BLANK |
|---|---|---|---|---|---|---|---|---|---|
| SAMPLING DATE: | | 02/15/91 | 02/20/91 | 02/21/91 | 02/21/91 | 02/22/91 | 02/25/91 | 02/26/91 | 02/27/91 |
| BCM SAMPLE NUMBER | | 104968 | 105277 | 105536 | 105537 | 105666 | 105793 | 105894 | 106022 |
| SAMPLE ID | | | | UNFILTERED | FILTERED | | | | UNFILTERED |
| METALS | | | | | | | | | |
| Barium | mg/l | NT | NT | -- | 0.024 | NT | NT | NT | -- |
| Chromium | mg/l | NT | NT | -- | 0.005 | NT | NT | NT | 0.006 |
| Copper | mg/l | NT | NT | 0.010 | 0.009 | NT | NT | NT | 0.010 |
| Iron | mg/l | NT | NT | 0.024 | 0.039 | NT | NT | NT | 0.070 |
| Manganese | mg/l | NT | NT | -- | 0.001 | NT | NT | NT | -- |
| Sodium | mg/l | NT | NT | -- | 0.993 | NT | NT | NT | -- |
| Zinc | mg/l | NT | NT | 0.039 | 0.049 | NT | NT | NT | 0.048 |
| VOLATILE ORGANICS | | | | | | | | | |
| Carbon Tetrachloride | ug/l | 1.3 | -- | -- | NT | - | | - | - |
| Ethylbenzene | ug/l | -- | 5.2 | -- | NT | -- | - | -- | -- |
| Methylene Chloride | ug/l | -- | - | -- | NT | - | -- | - | 2.2 |
| Styrene | ug/l | -- | 74.1 | -- | NT | -- | - | -- | -- |
| Trichloroethene (TCE) | ug/l | | 13.4 | -- | NT | - | -- | - | - |

-- : NONE DETECTED
NT : NOT TESTED AS PART OF THIS STUDY
SOURCE: BCM LABORATORY, INC
ND (< 0.005) NONDETECT (DETECTION LIMIT)

AR302563

TABLE 3.4
RECONNAISSANCE BOREHOLE GROUNDWATER QUALITY
OCCIDENTAL CHEMICAL CORPORATION, POTTSTOWN PENNSYLVANIA

| SAMPLING LOCATION: | | FIELD BLANK | FIELD BLANK | FIELD BLANK | FIELD BLANK | FIELD BLANK | FIELD BLANK | FIELD BLANK | FIELD BLANK |
|---|---|---|---|---|---|---|---|---|---|
| SAMPLING DATE: | | 02/27/91 | 02/28/91 | 03/01/91 | 03/04/91 | 03/05/91 | 03/06/91 | 03/07/91 | 03/07/91 |
| BCM SAMPLE NUMBER | | 106023 | 106117 | 106301 | 106778 | 106968 | 107201 | 107459 | 107460 |
| SAMPLE ID: | | FILTERED | | | | | | UNFILTERED | FILTERED |
| METALS: | | | | | | | | | |
| Chromium | mg/l | 0.007 | NT | NT | NT | NT | NT | - | - |
| Copper | mg/l | 0.019 | NT | NT | NT | NT | NT | 0.004 | 0.006 |
| Iron | mg/l | 0.078 | NT | NT | NT | NT | NT | 0.026 | 0.067 |
| Manganese | mg/l | - | NT | NT | NT | NT | NT | - | 0.007 |
| Sodium | mg/l | | NT | NT | NT | NT | NT | - | 1.60 |
| Zinc | mg/l | 0.065 | NT | NT | NT | NT | NT | 0.032 | 0.035 |
| VOLATILE ORGANICS | | | | | | | | | |
| Trichloroethene (TCE) | ug/l | NT | -- | 1.6 | -- | - | - | - | ND |

-- : NONE DETECTED
NT : NOT TESTED AS PART OF THIS STUDY
SOURCE: BCM LABORATORY, INC
ND (< 0.005): NONDETECT (DETECTION LIMIT)

AR302564

TABLE 3.4
RECONNAISSANCE BOREHOLE GROUNDWATER QUALITY
OCCIDENTAL CHEMICAL CORPORATION, POTTSTOWN PENNSYLVANIA

| SAMPLING LOCATION | | FIELD BLANK | FIELD BLANK | FIELD BLANK | FIELD BLANK | FIELD BLANK | FIELD BLANK | FIELD BLANK | FIELD BLANK |
|---|---|---|---|---|---|---|---|---|---|
| SAMPLING DATE | | 03/08/91 | 03/08/91 | 03/11/91 | 03/12/91 | 03/12/91 | 03/13/91 | 03/14/91 | 03/15/91 |
| BCM SAMPLE NUMBER | | 107598 | 107599 | 108139 | 108198 | 108199 | 108317 | 108366 | 109017 |
| SAMPLE ID: | | UNFILTERED | FILTERED | | UNFILT | FILTERED | | | |
| METALS | | | | | | | | | |
| Chromium | mg/l | - | - | NT | - | 0.007 | NT | NT | NT |
| Copper | mg/l | 0.004 | 0.010 | NT | 0.005 | 0.009 | NT | NT | NT |
| Iron | mg/l | -- | 0.012 | NT | 0.023 | 0.037 | NT | NT | NT |
| Sodium | mg/l | -- | 1.72 | NT | -- | 0.460 | NT | NT | NT |
| Zinc | mg/l | 0.038 | 0.052 | NT | 0.038 | 0.069 | NT | NT | NT |
| VOLATILE ORGANICS | | | | | | | | | |
| Chloroform | ug/l | - | NT | -- | - | NT | 2.4 | 2.4 | - |

-- = NONE DETECTED
NT = NOT TESTED AS PART OF THIS STUDY.
SOURCE: BCM LABORATORY, INC
ND (< 0.005) NONDETECT (DETECTION LIMIT)

AR302595

TABLE 3.4
RECONNAISSANCE BOREHOLE GROUNDWATER QUALITY
OCCIDENTAL CHEMICAL CORPORATION, POTTSTOWN PENNSYLVANIA

| SAMPLING LOCATION | | FIELD BLANK | FIELD BLANK | FIELD BLANK | FIELD BLANK | FIELD BLANK | FIELD BLANK | FIELD BLANK | FIELD BLANK |
|---|---|---|---|---|---|---|---|---|---|
| SAMPLING DATE: | | 03/18/91 | 03/18/91 | 03/19/91 | 03/21/91 | 03/21/91 | 03/22/91 | 03/25/91 | 03/26/91 |
| BCM SAMPLE NUMBER | | 109255 | 109256 | 109317 | 109720 | 109721 | 109789 | 110311 | 110412 |
| SAMPLE TO | | UNFILTERED | FILTERED | | UNFILTERED | FILTERED | | | |
| METALS | | | | | | | | | |
| Beryllium | mg/l | 0.0015 | 0.0013 | NT | 0.001 | 0.0014 | NT | NT | NT |
| Cadmium | mg/l | 0.004 | -- | NT | 0.003 | 0.004 | NT | NT | NT |
| Copper | mg/l | 0.023 | 0.015 | NT | - | 0.010 | NT | NT | NT |
| Iron | mg/l | 0.043 | 0.027 | NT | 0.019 | 0.066 | NT | NT | NT |
| Mercury | mg/l | - | 0.0002 | NT | -- | | NT | NT | NT |
| Nickel | mg/l | 0.012 | -- | NT | - | -- | NT | NT | NT |
| Sodium | mg/l | - | 0.974 | NT | -- | 0.866 | NT | NT | NT |
| Thallium | mg/l | - | 0.001 | NT | -- | 0.0011 | NT | NT | NT |
| Zinc | mg/l | 0.235 | 0.197 | NT | -- | 0.122 | NT | NT | NT |

-- NONE DETECTED
NT NOT TESTED AS PART OF THIS STUDY
PRLM PRELIMINARY RESULT SUBJECT TO CONFIRMATION BY LABORATORY SUPERVISOR.
M - DUPLICATE INJECTION PRECISION WAS NOT MET
SOURCE: BCM LABORATORY, INC.
ND (< 0.005) NONDETECT (DETECTION LIMIT)

AR302566

TABLE 3.4
RECONNAISSANCE BOREHOLE GROUNDWATER QUALITY
OCCIDENTAL CHEMICAL CORPORATION, POTTSTOWN PENNSYLVANIA

| SAMPLING LOCATION | | TRIP BLANK | TRIP BLANK | TRIP BLANK | TRIP BLANK | TRIP BLANK | TRIP BLANK | TRIP BLANK | TRIP BLANK |
|---|---|---|---|---|---|---|---|---|---|
| SAMPLING DATE. | | 02/22/91 | 02/25/91 | 02/25/91 | 02/26/91 | 02/26/91 | 03/01/91 | 03/04/91 | 03/04/91 |
| BCM SAMPLE NUMBER | | 105665 | 105782 | 105893 | 106021 | 106116 | 106300 | 106777 | 106967 |
| VOLATILE ORGANICS | | | | | | | | | |
| 1,1,2,2-Tetrachloroethane | ug/l | -- | | -- | -- | -- | 2.0 | | |
| Chloroform | ug/l | -- | | -- | -- | 1.1 | -- | | |
| Methylene Chloride | ug/l | -- | -- | -- | 3.7 | | | -- | |
| Styrene | ug/l | -- | -- | -- | -- | | | 1.0 | |

-- : NONE DETECTED
SOURCE: BCM LABORATORY, INC.
ND (< 0.005) NONDETECT (DETECTION LIMIT)

AR302567

TABLE 3.4
RECONNAISSANCE BOREHOLE GROUNDWATER QUALITY
OCCIDENTAL CHEMICAL CORPORATION, POTTSTOWN PENNSYLVANIA

| SAMPLING LOCATION | | TRIP BLANK | TRIP BLANK | TRIP BLANK | TRIP BLANK | TRIP BLANK | TRIP BLANK | TRIP BLANK | TRIP BLANK |
|---|---|---|---|---|---|---|---|---|---|
| SAMPLING DATE: | | 02/06/91 | 02/06/91 | 02/11/91 | 02/13/91 | 02/14/91 | 02/15/91 | 02/18/91 | 02/18/91 |
| BCM SAMPLE NUMBER | | 103746 | 104031 | 104236 | 104522 | 104812 | 104967 | 105271 | 105535 |
| BASE/NEUTRAL ORGANICS | | | | | | | | | |
| 1,2-Dichlorobenzene | ug/l | -- | -- | -- | -- | -- | -- | 2.2 | -- |
| VOLATILE ORGANICS | | | | | | | | | |
| Bromoform | ug/l | -- | -- | -- | -- | -- | -- | 1.1 | -- |
| Styrene | ug/l | -- | NI | -- | -- | 1.8 | -- | -- | -- |
| Trichloroethene (TCE) | ug/l | -- | -- | -- | -- | 1.6 | -- | 2.2 | -- |

-- : NONE DETECTED
NT : NOT TESTED AS PART OF THIS STUDY.
SOURCE: BCM LABORATORY, INC
ND (< 0.005) NONDETECT (DETECTION LIMIT)

AR302568

TABLE 3.4
RECONNAISSANCE BOREHOLE GROUNDWATER QUALITY
OCCIDENTAL CHEMICAL CORPORATION, POTTSTOWN PENNSYLVANIA

| SAMPLING LOCATION: | | TRIP BLANK | TRIP BLANK | TRIP BLANK | TRIP BLANK | TRIP BLANK | TRIP BLANK | TRIP BLANK | TRIP BLANK |
|---|---|---|---|---|---|---|---|---|---|
| SAMPLING DATE: | | 03/06/91 | 03/06/91 | 03/08/91 | 03/11/91 | 03/11/91 | 03/12/91 | 03/12/91 | 03/14/91 |
| BCM SAMPLE NUMBER: | | 107200 | 107458 | 107597 | 108133 | 108197 | 108311 | 108365 | 109016 |
| VOLATILE ORGANICS: | | | | | | | | | |
| Chloroform | ug/l | -- | - | -- | - | - | 2.1 | 2.5 | |
| Toluene | ug/l | - | - | -- | - | - | | 1.1 | - |
| Trichloroethene (TCL) | ug/l | - | - | -- | 2.2 | | | -- | |
| trans 1,2-Dichloroethene | ug/l | -- | - | - | 1.9 | | | | |

-- : NONE DETECTED
SOURCE: BCM LABORATORY, INC.
ND (< 0.005) NONDETECT (DETECTION LIMIT)

AR302569

TABLE 3.4
RECONNAISSANCE BOREHOLE GROUNDWATER QUALITY
OCCIDENTAL CHEMICAL CORPORATION, POTTSTOWN PENNSYLVANIA

| SAMPLING LOCATION | | TRIP BLANK | TRIP BLANK | TRIP BLANK | TRIP BLANK | TRIP BLANK | TRIP BLANK | TRIP BLANK | TRIP BLANK |
|---|---|---|---|---|---|---|---|---|---|
| SAMPLING DATE: | | 03/18/91 | 03/18/91 | 03/20/91 | 03/22/91 | 03/25/91 | 03/25/91 | 03/27/91 | 04/09/91 |
| BCM SAMPLE NUMBER | | 109254 | 109316 | 109719 | 109788 | 110320 | 110411 | 110615 | 112756 |
| VOLATILE ORGANICS: | | | | | | | | | |
| 1,1,1-Trichloroethane | ug/l | -- | -- | -- | -- | - | - | - | RP |
| 1,1,2,2-Tetrachloroethane | ug/l | -- | | -- | -- | -- | | - | RP |
| 1,1,2-Trichloroethane | ug/l | - | - | -- | -- | -- | - | -- | RP |
| 1,1-Dichloroethane | ug/l | -- | - | -- | -- | - | - | | RP |
| 1,1-Dichloroethene | ug/l | -- | -- | -- | -- | - | - | -- | RP |
| 1,2-Dichloroethane | ug/l | -- | -- | -- | -- | -- | -- | -- | RP |
| 1,2-Dichloroethene(total) | ug/l | NT | NT | NT | NT | NT | NT | NT | RP |
| 1,2-Dichloropropane | ug/l | -- | -- | -- | -- | -- | -- | -- | RP |
| 2-Butanone (MEK) | ug/l | NT | NT | NT | NT | NT | NT | NT | RP |
| 2-Hexanone | ug/l | NT | NT | NT | NT | NT | NT | NT | RP |
| 4-Methyl-2-Pentanone (MIBK) | ug/l | NT | NT | NT | NT | NT | NT | NT | RP |
| Acetone | ug/l | NT | NT | NT | NT | NT | NT | NT | RP |
| Benzene | ug/l | | | -- | -- | - | | | RP |
| Bromodichloromethane | ug/l | -- | | -- | -- | -- | | - | RP |
| Bromoform | ug/l | -- | - | - | -- | - | - | - | RP |
| Bromomethane (Methyl Bromide) | ug/l | - | | -- | -- | -- | - | - | RP |
| Carbon Disulfide | ug/l | NT | NT | NT | NT | NT | NT | NT | RP |
| Carbon Tetrachloride | ug/l | -- | -- | -- | -- | -- | | - | RP |
| Chlorobenzene | ug/l | | - | - | - | | -- | | RP |
| Chloroethane | ug/l | - | | -- | - | - | -- | - | RP |
| Chloroform | ug/l | - | | - | -- | - | | | RP |
| Chloromethane (Methyl Chloride) | ug/l | -- | - | -- | -- | - | | - | RP |
| Cis-1,3-Dichloropropene | ug/l | - | -- | -- | -- | -- | | - | RP |
| Dibromochloromethane | ug/l | - | -- | -- | -- | -- | - | | RP |
| Ethylbenzene | ug/l | | - | - | -- | -- | -- | - | RP |
| Methylene Chloride | ug/l | -- | -- | -- | -- | | -- | - | RP |
| Styrene | ug/l | | -- | NT | -- | -- | - | | RP |
| Tetrachloroethene (PCE) | ug/l | | - | | -- | -- | -- | -- | RP |
| Toluene | ug/l | -- | -- | -- | -- | - | -- | -- | RP |
| Total Xylenes | ug/l | NT | NT | NT | NT | NT | NT | NT | RP |
| Trans-1,3-Dichloropropene | ug/l | -- | -- | -- | -- | | | -- | RP |
| Trichloroethene (TCE) | ug/l | -- | -- | -- | -- | -- | - | -- | RP |
| Vinyl Acetate | ug/l | NT | NT | NT | NT | NT | NT | NT | RP |
| Vinyl Chloride | ug/l | - | -- | -- | -- | | -- | -- | RP |

-- NONE DETECTED
NT NOT TESTED AS PART OF THIS STUDY
RP : RESULTS PENDING
SOURCE: BCM LABORATORY, INC.
ND ([illegible]05) NONDETECT (DETECTION LIMIT)

AR302570

SOURCE: BCM LABORATORY INC.
ND (< 0.005) NONDETECT (DETECTION LIMIT)

TABLE 3.4
RECONNAISSANCE BOREHOLE GROUNDWATER QUALITY
OCCIDENTAL CHEMICAL CORPORATION POTTSTOWN PENNSYLVANIA

| SAMPLING LOCATION | | TRIP BLANK | TRIP BLANK | TRIP BLANK | TRIP BLANK | TRIP BLANK | TRIP BLANK | METHOD BLANK | METHOD BLANK |
|---|---|---|---|---|---|---|---|---|---|
| SAMPLING DATE | | 04/24/91 | 04/24/91 | 04/24/91 | 04/24/91 | 04/25/91 | 04/25/91 | 01/28/91 | 02/06/91 |
| BCM SAMPLE NUMBER | | 113753 | 113753 | 113890 | 113890 | 113901 | 113901 | 102679 | 103632 |
| BASE/NEUTRAL ORGANICS | | | | | | | | | |
| bis(2 Ethylhexyl)phthalate | ug/l | NT | NT | NT | NT | NT | 2 0 J | NT | NT |
| PHYSICAL PROPERTIES | | | | | | | | | |
| pH-Laboratory | Std Un | NT | NT | NT | NT | NT | 4 80 | NT | NT |

NT NOT TESTED AS PART OF THIS STUDY
J INDICATES AN ESTIMATED VALUE
SOURCE BCM LABORATORY, INC.
ND (< 0 005) NONDETECT (DETECTION LIMIT)

AR302572

TABLE 3.4
RECONNAISSANCE BOREHOLE GROUNDWATER QUALITY
OCCIDENTAL CHEMICAL CORPORATION, POTTSTOWN PENNSYLVANIA

| SAMPLING LOCATION: | | METHOD BLANK | METHOD BLANK | METHOD BLANK | METHOD BLANK | METHOD BLANK | METHOD BLANK | METHOD BLANK | METHOD BLANK |
|---|---|---|---|---|---|---|---|---|---|
| SAMPLING DATE: | | 02/07/91 | 02/14/91 | 02/21/91 | 02/21/91 | 02/28/91 | 03/07/91 | 03/07/91 | 03/13/91 |
| BCM SAMPLE NUMBER: | | 103751 | 104814 | 105538 | 105541 | 106118 | 107461 | 107464 | 108313 |
| METALS | | | | | | | | | |
| Aluminum | mg/l | 0.016 | NT | -- | -- | NT | - | - | NT |
| Antimony | mg/l | -- | NT | -- | NT | NT | | 0.027 | NT |
| VOLATILE ORGANICS | | | | | | | | | |
| 1,1,2,2-Tetrachloroethane | ug/l | NT | 2.0 | -- | NT | - | NT | -- | - |

-- : NONE DETECTED
NT : NOT TESTED AS PART OF THIS STUDY.
SOURCE: BCM LABORATORY, INC
ND (< 0.005) NONDETECT (DETECTION LIMIT)

AR302573

TABLE 3.4
RECONNAISSANCE BOREHOLE GROUNDWATER QUALITY
OCCIDENTAL CHEMICAL CORPORATION, POTTSTOWN PENNSYLVANIA

| SAMPLING LOCATION | | FIELD BLANK | FIELD BLANK | FIELD BLANK | FIELD BLANK | FIELD BLANK | FIELD BLANK | TRIP BLANK | TRIP BLANK |
|---|---|---|---|---|---|---|---|---|---|
| SAMPLING DATE: | | 03/27/91 | 04/11/91 | 04/24/91 | 04/24/91 | 04/26/91 | 04/25/91 | 01/28/91 | 02/04/91 |
| BCM SAMPLE NUMBER | | 110616 | 112257 | 113754 | 113755 | 113891 | 113907 | 102677 | 103630 |
| SAMPLE ID: | | | | FILT | UNFILTERED | | | | |
| **ACID EXTRACTABLE ORGANICS** | | | | | | | | | |
| 2,4,5-Trichlorophenol | ug/l | NT | RP | NT | NT | NT | NT | NT | NT |
| 2,4,6-Trichlorophenol | ug/l | NT | RP | NT | NT | NT | NT | NT | NT |
| 2,4-Dichlorophenol | ug/l | NT | RP | NT | NT | NT | NT | NT | NT |
| 2,4-Dimethylphenol | ug/l | NT | RP | NT | NT | NT | NT | NT | NT |
| 2,4-Dinitrophenol | ug/l | NT | RP | NT | NT | NT | NT | NT | NT |
| 2-Chlorophenol | ug/l | NT | RP | NT | NT | NT | NT | NT | NT |
| 2-Methylphenol (o-cresol) | ug/l | NT | RP | NT | NT | NT | NT | NT | NT |
| 2-Nitrophenol | ug/l | NT | RP | NT | NT | NT | NT | NT | NT |
| 4,6-Dinitro-2-methylphenol | ug/l | NT | RP | NT | NT | NT | NT | NT | NT |
| 4-Chloro-3-methylphenol | ug/l | NT | RP | NT | NT | NT | NT | NT | NT |
| 4-Methylphenol (p-cresol) | ug/l | NT | RP | NT | NT | NT | NT | NT | NT |
| 4-Nitrophenol | ug/l | NT | RP | NT | NT | NT | NT | NT | NT |
| Benzoic acid | ug/l | NT | RP | NT | NT | NT | NT | NT | NT |
| Pentachlorophenol | ug/l | NT | RP | NT | NT | NT | NT | NT | NT |
| Phenol | ug/l | NT | RP | NT | NT | NT | NT | NT | NT |
| **BASE/NEUTRAL ORGANICS** | | | | | | | | | |
| 1,2,4-Trichlorobenzene | ug/l | NT | RP | NT | NT | NT | NT | NT | NT |
| 1,2-Dichlorobenzene | ug/l | | RP | NT | NT | NT | NT | NT | |
| 1,3-Dichlorobenzene | ug/l | | RP | NT | NT | NT | NT | NT | |
| 1,4-Dichlorobenzene | ug/l | -- | RP | NT | NT | NT | NT | NT | -- |
| 2,4-Dinitrotoluene | ug/l | NT | RP | NT | NT | NT | NT | NT | NT |
| 2,6-Dinitrotoluene | ug/l | NT | RP | NT | NT | NT | NT | NT | NT |
| 2-Chloronaphthalene | ug/l | NT | RP | NT | NT | NT | NT | NT | NT |
| 2-Methylnaphthalene | ug/l | NT | RP | NT | NT | NT | NT | NT | NT |
| 2-Nitroaniline | ug/l | NT | RP | NT | NT | NT | NT | NT | NT |
| 3,3'-Dichlorobenzidine | ug/l | NT | RP | NT | NT | NT | NT | NT | NT |
| 3-Nitroaniline | ug/l | NT | RP | NT | NT | NT | NT | NT | NT |
| 4-Bromophenyl-phenylether | ug/l | NT | RP | NT | NT | NT | NT | NT | NT |
| 4-Chloroaniline | ug/l | NT | RP | NT | NT | NT | NT | NT | NT |

-- NONE DETECTED
NT NOT TESTED AS PART OF THIS STUDY
RP RESULTS PENDING
SOURCE BCM LABORATORY, INC
ND (< 0.005) NONDETECT (DETECTION LIMIT)

AR302574

TABLE 3.4
RECONNAISSANCE BOREHOLE GROUNDWATER QUALITY
OCCIDENTAL CHEMICAL CORPORATION, POTTSTOWN PENNSYLVANIA

| SAMPLING LOCATION: | | FIELD BLANK | FIELD BLANK | FIELD BLANK | FIELD BLANK | FIELD BLANK | FIELD BLANK | TRIP BLANK | TRIP BLANK |
|---|---|---|---|---|---|---|---|---|---|
| SAMPLING DATE: | | 03/27/91 | 04/11/91 | 04/24/91 | 04/24/91 | 04/26/91 | 04/25/91 | 01/28/91 | 02/04/91 |
| BCM SAMPLE NUMBER | | 110616 | 112257 | 113754 | 113755 | 113891 | 113902 | 102677 | 103630 |
| SAMPLE ID: | | | | FILT | UNFILTERED | | | | |
| BASE/NEUTRAL ORGANICS (CONT.) | | | | | | | | | |
| 4-Chlorophenyl phenylether | ug/l | NT | RP | NT | NT | NT | NT | NT | NT |
| 4-Nitroaniline | ug/l | NT | RP | NT | NT | NT | NT | NT | NT |
| Acenaphthene | ug/l | NT | RP | NT | NT | NT | NT | NT | NT |
| Acenaphthylene | ug/l | NT | RP | NT | NT | NT | NT | NT | NT |
| Anthracene | ug/l | NT | RP | NT | NT | NT | NT | NT | NT |
| Benzo(a)anthracene | ug/l | NT | RP | NT | NT | NT | NT | NT | NT |
| Benzo(a)pyrene | ug/l | NT | RP | NT | NT | NT | NT | NT | NT |
| Benzo(b)fluoranthene | ug/l | NT | RP | NT | NT | NT | NT | NT | NT |
| Benzo(g,h,i)perylene | ug/l | NT | RP | NT | NT | NT | NT | NT | NT |
| Benzo(k)fluoranthene | ug/l | NT | RP | NT | NT | NT | NT | NT | NT |
| Benzyl alcohol | ug/l | NT | RP | NT | NT | NT | NT | NT | NT |
| Butylbenzylphthalate | ug/l | NT | RP | NT | NT | NT | NT | NT | NT |
| Chrysene | ug/l | NT | RP | NT | NT | NT | NT | NT | NT |
| Di-n-butylphthalate | ug/l | NT | RP | NT | NT | NT | NT | NT | NT |
| Di-n-octylphthalate | ug/l | NT | RP | NT | NT | NT | NT | NT | NT |
| Dibenz(a,h)anthracene | ug/l | NT | RP | NT | NT | NT | NT | NT | NT |
| Dibenzofuran | ug/l | NT | RP | NT | NT | NT | NT | NT | NT |
| Diethylphthalate | ug/l | NT | RP | NT | NT | NT | NT | NT | NT |
| Dimethylphthalate | ug/l | NT | RP | NT | NT | NT | NT | NT | NT |
| Fluoranthene | ug/l | NT | RP | NT | NT | NT | NT | NT | NT |
| Fluorene | ug/l | NT | RP | NT | NT | NT | NT | NT | NT |
| Hexachlorobenzene | ug/l | NT | RP | NT | NT | NT | NT | NT | NT |
| Hexachlorobutadiene | ug/l | NT | RP | NT | NT | NT | NT | NT | NT |
| Hexachlorocyclopentadiene | ug/l | NT | RP | NT | NT | NT | NT | NT | NT |
| Hexachloroethane | ug/l | NT | RP | NT | NT | NT | NT | NT | NT |
| Indeno(1,2,3-cd)pyrene | ug/l | NT | RP | NT | NT | NT | NT | NT | NT |
| Isophorone | ug/l | NT | RP | NT | NT | NT | NT | NT | NT |
| N-Nitroso-di-n-propylamine | ug/l | NT | RP | NT | NT | NT | NT | NT | NT |
| N-Nitrosodiphenylamine (1) | ug/l | NT | RP | NT | NT | NT | NT | NT | NT |
| Naphthalene | ug/l | NT | RP | NT | NT | NT | NT | NT | NT |
| Nitrobenzene | ug/l | NT | RP | NT | NT | NT | NT | NT | NT |
| Phenanthrene | ug/l | NT | RP | NT | NT | NT | NT | NT | NT |
| Pyrene | ug/l | NT | RP | NT | NT | NT | NT | NT | NT |
| bis(2 Chloroethoxy)methane | ug/l | NT | RP | NT | NT | NT | NT | NT | NT |

NT : NOT TESTED AS PART OF THIS STUDY
RP : RESULTS PENDING
SOURCE: BCM LABORATORY, INC
ND (< 0.005) NONDETECT (DETECTION LIMIT)

AR302575

TABLE 3.4
RECONNAISSANCE BOREHOLE GROUNDWATER QUALITY
OCCIDENTAL CHEMICAL CORPORATION, POTTSTOWN PENNSYLVANIA

| SAMPLING LOCATION | | FIELD BLANK | FIELD BLANK | FIELD BLANK | FIELD BLANK | FIELD BLANK | FIELD BLANK | TRIP BLANK | TRIP BLANK |
|---|---|---|---|---|---|---|---|---|---|
| SAMPLING DATE: | | 03/27/91 | 04/11/91 | 04/24/91 | 04/24/91 | 04/26/91 | 04/25/91 | 01/28/91 | 02/04/91 |
| BCM SAMPLE NUMBER | | 110416 | 117257 | 113754 | 113755 | 113891 | 117902 | 102627 | 103630 |
| SAMPLE ID: | | | | FILT | UNFILTERED | | | | |
| BASE/NEUTRAL ORGANICS (CONT.) | | | | | | | | | |
| bis(2 Chloroethyl)ether | ug/l | NT | RP | NT | NT | NT | NT | NT | NT |
| bis(2 Chloroisopropyl)ether | ug/l | NT | RP | NT | NT | NT | NT | NT | NT |
| bis(2-Ethylhexyl)phthalate | ug/l | NT | RP | NT | NT | NT | NT | NT | NT |
| METALS | | | | | | | | | |
| Aluminum | mg/l | NT | RP | - | - | NT | NT | NT | NT |
| Antimony | mg/l | NT | RP | - | -- | NT | NT | NT | NT |
| Barium | mg/l | NT | RP | | -- | NT | NT | NT | NT |
| Beryllium | mg/l | NT | RP | - | - | NT | NT | NT | NT |
| Cadmium | mg/l | NT | RP | 0.005 | 0.004 | NT | NT | NT | NT |
| Calcium | mg/l | NT | RP | - | | NT | NT | NT | NT |
| Chromium | mg/l | NT | RP | -- | - | NT | NT | NT | NT |
| Cobalt | mg/l | NT | RP | -- | - | NT | NT | NT | NT |
| Copper | mg/l | NT | RP | 0.015 | 0.009 | NT | NT | NT | NT |
| Iron | mg/l | NT | RP | 0.1963 | 0.0526 | NT | NT | NT | NT |
| Lead | mg/l | NT | RP | -- | -- | NT | NT | NT | NT |
| Magnesium | mg/l | NT | RP | - | - | NT | NT | NT | NT |
| Manganese | mg/l | NT | RP | 0.0013 | 0.0014 | NT | NT | NT | NT |
| Nickel | mg/l | NT | RP | -- | - | NT | NT | NT | NT |
| Potassium | mg/l | NT | RP | -- | -- | NT | NT | NT | NT |
| Silver | mg/l | NT | RP | -- | | NT | NT | NT | NT |
| Sodium | mg/l | NT | RP | NT | - | NT | NT | NT | NT |
| Thallium | mg/l | NT | -- | -- | 0.0014 | NT | NT | NT | NT |
| Vanadium | mg/l | NT | RP | -- | -- | NT | NT | NT | NT |
| Zinc | mg/l | NT | RP | 0.053 | 0.034 | NT | NT | NT | NT |

-- : NONE DETECTED
NT NOT TESTED AS PART OF THIS STUDY
RP RESULTS PENDING.
PRLM - PRELIMINARY RESULT SUBJECT TO CONFIRMATION BY LABORATORY SUPERVISOR
M DUPLICATE INJECTION PRECISION WAS NOT MET
SOURCE: BCM LABORATORY, INC
ND (< 0.005) NONDETECT (DETECTION LIMIT)

AR302576

TABLE 3.4
RECONNAISSANCE BOREHOLE GROUNDWATER QUALITY
OCCIDENTAL CHEMICAL CORPORATION, POTTSTOWN PENNSYLVANIA

| SAMPLING LOCATION: | | FIELD BLANK | FIELD BLANK | FIELD BLANK | FIELD BLANK | FIELD BLANK | FIELD BLANK | TRIP BLANK | TRIP BLANK |
|---|---|---|---|---|---|---|---|---|---|
| SAMPLING DATE: | | 03/27/91 | 04/11/91 | 04/24/91 | 04/24/91 | 04/26/91 | 04/25/91 | 01/28/91 | 02/04/91 |
| BCM SAMPLE NUMBER | | 110616 | 112257 | 113754 | 113753 | 113891 | 113902 | 102677 | 103630 |
| SAMPLE ID: | | | | FILT | UNFILTERED | | | | |
| VOLATILE ORGANICS | | | | | | | | | |
| 1,1,1-Trichloroethane | ug/l | | RP | NT | - | | | -- | |
| 1,1,2,2-Tetrachloroethane | ug/l | -- | RP | NT | -- | -- | -- | -- | |
| 1,1,2-Trichloroethane | ug/l | -- | RP | NT | -- | -- | - | -- | |
| 1,1-Dichloroethane | ug/l | -- | RP | NT | -- | -- | | -- | - |
| 1,1-Dichloroethene | ug/l | -- | RP | NT | -- | - | | - | |
| 1,2-Dichloroethane | ug/l | -- | RP | NT | -- | -- | | | - |
| 1,2-Dichloroethene (total) | ug/l | NT | RP | NT | NT | NT | NT | | NT |
| 1,2-Dichloropropane | ug/l | -- | RP | NT | -- | -- | | | - |
| 2-Butanone (MEK) | ug/l | NT | RP | NT | NT | NT | NT | -- | NT |
| 2-Hexanone | ug/l | NT | RP | NT | NT | NT | NT | - | NT |
| 4-Methyl-2-Pentanone (MIBK) | ug/l | NT | RP | NT | NT | NT | NT | - | NT |
| Acetone | ug/l | NT | RP | NT | NT | NT | NT | - | NT |
| Benzene | ug/l | -- | RP | NT | -- | - | - | - | -- |
| Bromodichloromethane | ug/l | | RP | NT | -- | | - | -- | -- |
| Bromoform | ug/l | -- | RP | NT | -- | - | | -- | -- |
| Bromomethane (Methyl Bromide) | ug/l | -- | RP | NT | -- | -- | -- | -- | -- |
| Carbon Disulfide | ug/l | NT | RP | NT | NT | NT | NT | -- | NT |
| Carbon Tetrachloride | ug/l | -- | RP | NT | -- | -- | -- | - | |
| Chlorobenzene | ug/l | -- | RP | NT | -- | -- | -- | -- | |
| Chloroethane | ug/l | -- | RP | NT | - | -- | | -- | - |
| Chloroform | ug/l | - | RP | NT | - | - | - | -- | |
| Chloromethane (Methyl Chloride) | ug/l | | RP | NT | - | -- | - | - | |
| Cis-1,3-Dichloropropene | ug/l | | RP | NT | -- | - | | | |
| Dibromochloromethane | ug/l | - | RP | NT | -- | | | | |
| Ethylbenzene | ug/l | - | RP | NT | -- | | | | |
| Methylene Chloride | ug/l | | RP | NT | - | | | | |
| Styrene | ug/l | | RP | NT | - | | | | |
| Tetrachloroethene (PCE) | ug/l | -- | RP | NT | - | | - | | - |
| Toluene | ug/l | - | RP | NT | -- | - | 1.0 | | |
| Total Xylenes | ug/l | NT | RP | NT | NT | NT | NT | - | NT |
| Trans-1,3-Dichloropropene | ug/l | -- | RP | NT | -- | -- | | | |

-- : NONE DETECTED
NT : NOT TESTED AS PART OF THIS STUDY
RP : RESULTS PENDING
PRLM : PRELIMINARY RESULT SUBJECT TO CONFIRMATION BY LABORATORY SUPERVISOR
M : DUPLICATE INJECTION PRECISION WAS NOT MET
SOURCE: BCM LABORATORY, INC
ND (< 0.005) NONDETECT (DETECTION LIMIT)

TABLE 3.4
RECONNAISSANCE BOREHOLE GROUNDWATER QUALITY
OCCIDENTAL CHEMICAL CORPORATION, POTTSTOWN PENNSYLVANIA

| SAMPLING LOCATION: | | FIELD BLANK | FIELD BLANK | FIELD BLANK | FIELD BLANK | FIELD BLANK | FIELD BLANK | TRIP BLANK | TRIP BLANK |
|---|---|---|---|---|---|---|---|---|---|
| SAMPLING DATE: | | 03/27/91 | 04/11/91 | 04/24/91 | 04/24/91 | 04/26/91 | 04/25/91 | 01/28/91 | 02/04/91 |
| BCM SAMPLE NUMBER: | | 110616 | 112257 | 113754 | 113755 | 113891 | 113902 | 102677 | 103670 |
| SAMPLE ID: | | | | FILT | UNFILTERED | | | | |
| VOLATILE ORGANICS (CONT.) | | | | | | | | | |
| Trichloroethene (TCE) | ug/l | -- | RP | NT | 11.0 | 15.0 | -- | - | -- |
| Vinyl Acetate | ug/l | NT | RP | NT | NT | NT | NT | -- | NT |
| Vinyl Chloride | ug/l | - | RP | NT | -- | - | -- | -- | -- |
| trans-1,2-Dichloroethene | ug/l | - | NT | NT | 4.0 | 7.0 | -- | NT | |

-- : NONE DETECTED
NT : NOT TESTED AS PART OF THIS STUDY
RP : RESULTS PENDING.
PRLM : PRELIMINARY RESULT SUBJECT TO CONFIRMATION BY LABORATORY SUPERVISOR
M : DUPLICATE INJECTION PRECISION WAS NOT MET
SOURCE: BCM LABORATORY, INC
ND (< 0.005) NONDETECT (DETECTION LIMIT)

AR302578

TABLE 3.4
RECONNAISSANCE BOREHOLE GROUNDWATER QUALITY
OCCIDENTAL CHEMICAL CORPORATION, POTTSTOWN, PENNSYLVANIA

| SAMPLING LOCATION: | | METHOD BLANK | METHOD BLANK | METHOD BLANK | METHOD BLANK | METHOD BLANK | METHOD BLANK |
|---|---|---|---|---|---|---|---|
| SAMPLING DATE: | | 03/19/91 | 03/19/91 | 03/26/91 | 04/11/91 | 04/24/91 | 04/25/91 |
| BCM SAMPLE NUMBER: | | 109318 | 109321 | 110413 | 112258 | 113756 | 113759 |
| **ACID EXTRACTABLE ORGANICS:** | | | | | | | |
| 2,4,5-Trichlorophenol | ug/l | NT | NT | NT | RP | NT | NT |
| 2,4,6-Trichlorophenol | ug/l | NT | NT | NT | RP | NT | NT |
| 2,4-Dichlorophenol | ug/l | NT | NT | NT | RP | NT | NT |
| 2,4 Dimethylphenol | ug/l | NT | NT | NT | RP | NT | NT |
| 2,4-Dinitrophenol | ug/l | NT | NT | NT | RP | NT | NT |
| 2 Chlorophenol | ug/l | NT | NT | NT | RP | NT | NT |
| 2 Methylphenol (o-Cresol) | ug/l | NT | NT | NT | RP | NT | NT |
| 2 Nitrophenol | ug/l | NT | NT | NT | RP | NT | NT |
| 4,6-Dinitro 2-methylphenol | ug/l | NT | NT | NT | RP | NT | NT |
| 4-Chloro 3-methylphenol | ug/l | NT | NT | NT | RP | NT | NT |
| 4-Methylphenol (p-Cresol) | ug/l | NT | NT | NT | RP | NT | NT |
| 4-Nitrophenol | ug/l | NT | NT | NT | RP | NT | NT |
| Benzoic acid | ug/l | NT | NT | NT | RP | NT | NT |
| Pentachlorophenol | ug/l | NT | NT | NT | RP | NT | NT |
| Phenol | ug/l | NT | NT | NT | RP | NT | NT |
| **BASE/NEUTRAL ORGANICS** | | | | | | | |
| 1,2,4 Trichlorobenzene | ug/l | NT | NT | NT | RP | NT | NT |
| 1,2-Dichlorobenzene | ug/l | -- | NT | -- | RP | NT | NT |
| 1,3-Dichlorobenzene | ug/l | -- | NT | -- | RP | NT | NT |
| 1,4-Dichlorobenzene | ug/l | -- | NT | -- | RP | NT | NT |
| 2,4-Dinitrotoluene | ug/l | NT | NT | NT | RP | NT | NT |
| 2,6-Dinitrotoluene | ug/l | NT | NT | NT | RP | NT | NT |
| 2-Chloronaphthalene | ug/l | NT | NT | NT | RP | NT | NT |
| 2-Methylnaphthalene | ug/l | NT | NT | NT | RP | NT | NT |
| 2-Nitroaniline | ug/l | NT | NT | NT | RP | NT | NT |
| 3,3'-Dichlorobenzidine | ug/l | NT | NT | NT | RP | NT | NT |
| 3-Nitroaniline | ug/l | NT | NT | NT | RP | NT | NT |
| 4-Bromophenyl-phenylether | ug/l | NT | NT | NT | RP | NT | NT |
| 4-Chloroaniline | ug/l | NT | NT | NT | RP | NT | NT |
| 4 Chlorophenyl-phenylether | ug/l | NT | NT | NT | RP | NT | NT |

-- : NONE DETECTED
NT : NOT TESTED AS PART OF THIS STUDY
RP : RESULTS PENDING.
SOURCE: BCM LABORATORY, INC
ND (< 0.005) NONDETECT (DETECTION LIMIT)

AR302579

TABLE 3.4
RECONNAISSANCE BOREHOLE GROUNDWATER QUALITY
OCCIDENTAL CHEMICAL CORPORATION, POTTSTOWN PENNSYLVANIA

| SAMPLING LOCATION | | METHOD BLANK | METHOD BLANK | METHOD BLANK | METHOD BLANK | METHOD BLANK | METHOD BLANK |
|---|---|---|---|---|---|---|---|
| SAMPLING DATE: | | 03/19/91 | 03/19/91 | 03/26/91 | 04/11/91 | 04/24/91 | 04/25/91 |
| CCM SAMPLE NUMBER: | | 109318 | 109321 | 110413 | 112258 | 113756 | 113759 |
| BASE/NEUTRAL ORGANICS (CONT.) | | | | | | | |
| 4-Nitroaniline | ug/l | NT | NT | NT | RP | NT | NT |
| Acenaphthene | ug/l | NT | NT | NT | RP | NT | NT |
| Acenaphthylene | ug/l | NT | NT | NT | RP | NT | NT |
| Anthracene | ug/l | NT | NT | NT | RP | NT | NT |
| Benzo(a)anthracene | ug/l | NT | NT | NT | RP | NT | NT |
| Benzo(a)pyrene | ug/l | NT | NT | NT | RP | NT | NT |
| Benzo(b)fluoranthene | ug/l | NT | NT | NT | RP | NT | NT |
| Benzo(g,h,i)perylene | ug/l | NT | NT | NT | RP | NT | NT |
| Benzo(k)fluoranthene | ug/l | NT | NT | NT | RP | NT | NT |
| Benzyl alcohol | ug/l | NT | NT | NT | RP | NT | NT |
| Butylbenzylphthalate | ug/l | NT | NT | NT | RP | NT | NT |
| Chrysene | ug/l | NT | NT | NT | RP | NT | NT |
| Di-n-butylphthalate | ug/l | NT | NT | NT | RP | NT | NT |
| Di-n-octylphthalate | ug/l | NT | NT | NT | RP | NT | NT |
| Dibenz(a,h)anthracene | ug/l | NT | NT | NT | RP | NT | NT |
| Dibenzofuran | ug/l | NT | NT | NT | RP | NT | NT |
| Diethylphthalate | ug/l | NT | NT | NT | RP | NT | NT |
| Dimethylphthalate | ug/l | NT | NT | NT | RP | NT | NT |
| Fluoranthene | ug/l | NT | NT | NT | RP | NT | NT |
| Fluorene | ug/l | NT | NT | NT | RP | NT | NT |
| Hexachlorobenzene | ug/l | NT | NT | NT | RP | NT | NT |
| Hexachlorobutadiene | ug/l | NT | NT | NT | RP | NT | NT |
| Hexachlorocyclopentadiene | ug/l | NT | NT | NT | RP | NT | NT |
| Hexachloroethane | ug/l | NT | NT | NT | RP | NT | NT |
| Indeno(1,2,3-cd)pyrene | ug/l | NT | NT | NT | RP | NT | NT |
| Isophorone | ug/l | NT | NT | NT | RP | NT | NT |
| N-Nitroso-di-n-propylamine | ug/l | NT | NT | NT | RP | NT | NT |
| N-Nitrosodiphenylamine (1) | ug/l | NT | NT | NT | RP | NT | NT |
| Naphthalene | ug/l | NT | NT | NT | RP | NT | NT |
| Nitrobenzene | ug/l | NT | NT | NT | RP | NT | NT |
| Phenanthrene | ug/l | NT | NT | NT | RP | NT | NT |
| Pyrene | ug/l | NT | NT | NT | RP | NT | NT |
| bis(2-Chloroethoxy)methane | ug/l | NT | NT | NT | RP | NT | NT |
| bis(2-Chloroethyl)ether | ug/l | NT | NT | NT | RP | NT | NT |
| bis(2-Chloroisopropyl)ether | ug/l | NT | NT | NT | RP | NT | NT |

NT : NOT TESTED AS PART OF THIS STUDY
RP : RESULTS PENDING.
SOURCE: CCM LABORATORY, INC
ND ((DETECTION LIMIT) : NONDETECT (DETECTION LIMIT)

AR302580

TABLE 3.4
RECONNAISSANCE BOREHOLE GROUNDWATER QUALITY
OCCIDENTAL CHEMICAL CORPORATION, POTTSTOWN PENNSYLVANIA

| SAMPLING LOCATION: | | METHOD BLANK | METHOD BLANK | METHOD BLANK | METHOD BLANK | METHOD BLANK | METHOD BLANK |
|---|---|---|---|---|---|---|---|
| SAMPLING DATE: | | 03/19/91 | 03/19/91 | 03/26/91 | 04/11/91 | 04/24/91 | 04/25/91 |
| BCM SAMPLE NUMBER: | | 109318 | 109321 | 110413 | 112258 | 113756 | 113759 |
| BASE/NEUTRAL ORGANICS (CONT.) | | | | | | | |
| bis(2-Ethylhexyl)phthalate | ug/l | NT | NT | NT | RP | NT | NT |
| PHYSICAL PROPERTIES | | | | | | | |
| pH-Laboratory | Std.Un | NT | NT | NT | 5.60 PRLM | NT | NT |
| METALS: | | | | | | | |
| Aluminum | mg/l | NT | -- | NT | RP | | 0.106 |
| Antimony | mg/l | NT | -- | NT | RP | | |
| Barium | mg/l | NT | -- | NT | RP | - | -- |
| Beryllium | mg/l | NT | 0.0012 | NT | RP | - | -- |
| Cadmium | mg/l | NT | 0.005 | NT | RP | | -- |
| Calcium | mg/l | NT | -- | NT | RP | -- | -- |
| Chromium | mg/l | NT | -- | NT | RP | -- | -- |
| Cobalt | mg/l | NT | -- | NT | RP | - | - |
| Copper | mg/l | NT | - | NT | RP | 0.007 | 0.005 |
| Iron | mg/l | NT | -- | NT | RP | - | - |
| Lead | mg/l | NT | -- | NT | RP | - | -- |
| Magnesium | mg/l | NT | - | NT | RP | - | - |
| Manganese | mg/l | NT | 0.001 | NT | RP | 0.0015 | -- |
| Nickel | mg/l | NT | -- | NT | RP | -- | - |
| Potassium | mg/l | NT | -- | NT | RP | - | - |
| Silver | mg/l | NT | -- | NT | RP | -- | - |
| Sodium | mg/l | NT | - | NT | RP | - | -- |
| Vanadium | mg/l | NT | - | NT | RP | - | - |
| Zinc | mg/l | NT | -- | NT | RP | - | - |

-- : NONE DETECTED
NT : NOT TESTED AS PART OF THIS STUDY.
RP : RESULTS PENDING.
PRLM : PRELIMINARY RESULT SUBJECT TO CONFIRMATION BY LABORATORY SUPERVISOR
M : DUPLICATE INJECTION PRECISION WAS NOT MET
SOURCE: BCM LABORATORY, INC.
ND (< 0.005).NONDETECT (DETECTION LIMIT)

AR302581

TABLE 3.4
RECONNAISSANCE BOREHOLE GROUNDWATER QUALITY
OCCIDENTAL CHEMICAL CORPORATION, POTTSTOWN PENNSYLVANIA

| SAMPLING LOCATION | | METHOD BLANK | METHOD BLANK | METHOD BLANK | METHOD BLANK | METHOD BLANK | METHOD BLANK |
|---|---|---|---|---|---|---|---|
| SAMPLING DATE: | | 03/19/91 | 03/19/91 | 03/26/91 | 04/11/91 | 04/24/91 | 04/25/91 |
| BCM SAMPLE NUMBER: | | 109318 | 109321 | 110413 | 112258 | 113756 | 113759 |
| VOLATILE ORGANICS | | | | | | | |
| 1,1,1 Trichloroethane | ug/l | -- | NT | -- | RP | NT | |
| 1,1,2,2-Tetrachloroethane | ug/l | -- | NT | -- | RP | NT | - |
| 1,1,2-Trichloroethane | ug/l | . | NT | -- | RP | NT | |
| 1,1-Dichloroethane | ug/l | -- | NT | -- | RP | NT | -- |
| 1,1-Dichloroethene | ug/l | -- | NT | -- | RP | NT | -- |
| 1,2-Dichloroethane | ug/l | -- | NT | -- | RP | NT | -- |
| 1,2-Dichloroethene(total) | ug/l | NT | NT | NT | RP | NT | NT |
| 1,2-Dichloropropane | ug/l | - | NT | -- | RP | NT | -- |
| 2-Butanone (MEK) | ug/l | NT | NT | NT | RP | NT | NT |
| 2 Hexanone | ug/l | NT | NT | NT | RP | NT | NT |
| 4-Methyl 2-Pentanone (MIBK) | ug/l | NT | NT | NT | RP | NT | NT |
| Acetone | ug/l | NT | NT | NT | RP | NT | NT |
| Benzene | ug/l | - | NT | -- | RP | NT | - |
| Bromodichloromethane | ug/l | - | NT | -- | RP | NT | - |
| Bromoform | ug/l | - | NT | - | RP | NT | -- |
| Bromomethane (Methyl Bromide) | ug/l | - | NT | -- | RP | NT | -- |
| Carbon Disulfide | ug/l | NT | NT | NT | RP | NT | NT |
| Carbon Tetrachloride | ug/l | -- | NT | -- | RP | NT | - |
| Chlorobenzene | ug/l | - | NT | -- | RP | NT | |
| Chloroethane | ug/l | - | NT | -- | RP | NT | - |
| Chloroform | ug/l | - | NT | -- | RP | NT | |
| Chloromethane (Methyl Chloride) | ug/l | - | NT | - | RP | NT | - |
| Cis-1,3-Dichloropropene | ug/l | -- | NT | -- | RP | NT | - |
| Dibromochloromethane | ug/l | -- | NT | -- | RP | NT | - |
| Ethylbenzene | ug/l | -- | NT | -- | RP | NT | - |
| Methylene Chloride | ug/l | - | NT | -- | RP | NT | - |
| Styrene | ug/l | | NT | -- | RP | NT | - |
| Tetrachloroethene (PCE) | ug/l | -- | NT | -- | RP | NT | -- |
| Toluene | ug/l | -- | NT | -- | RP | NT | -- |
| Total Xylenes | ug/l | NT | NT | NT | RP | NT | NT |
| Trans-1,3-Dichloropropene | ug/l | - | NT | -- | RP | NT | - |
| Trichloroethene (TCE) | ug/l | -- | NT | -- | RP | NT | -- |
| Vinyl Acetate | ug/l | NT | NT | NT | RP | NT | NT |
| Vinyl Chloride | ug/l | -- | NT | -- | RP | NT | NT |

-- : NONE DETECTED
NT : NOT TESTED AS PART OF THIS STUDY
RP : RESULTS PENDING
SOURCE: BCM LABORATORY, INC
ND ((DETECTION LIMIT)) NONDETECT (DETECTION LIMIT)

AR302582

BCM

TABLE 3.5

DRINKING WATER MCLS OF CHEMICALS
DETECTED IN THE BEDROCK AQUIFER

| CHEMICAL | MCL (mg/L) | STATUS |
|---|---|---|
| Ethylbenzene | 0.700 (700 ppb) | promulgated, effective July 1992 |
| Styrene | 0.100 (100 ppb) | promulgated, effective July 1992 |
| TCE | 0.005 (5 ppb) | current |
| Trans-1,2-DCE | 0.100 (100 ppb) | promulgated, effective July 1992 |
| VCM | 0.002 (2 ppb) | current |

/9701q

TABLE 5.1

ADDITIONAL BEDROCK AQUIFER MONITORING
WELL COMPLETION SPECIFICICATIONS

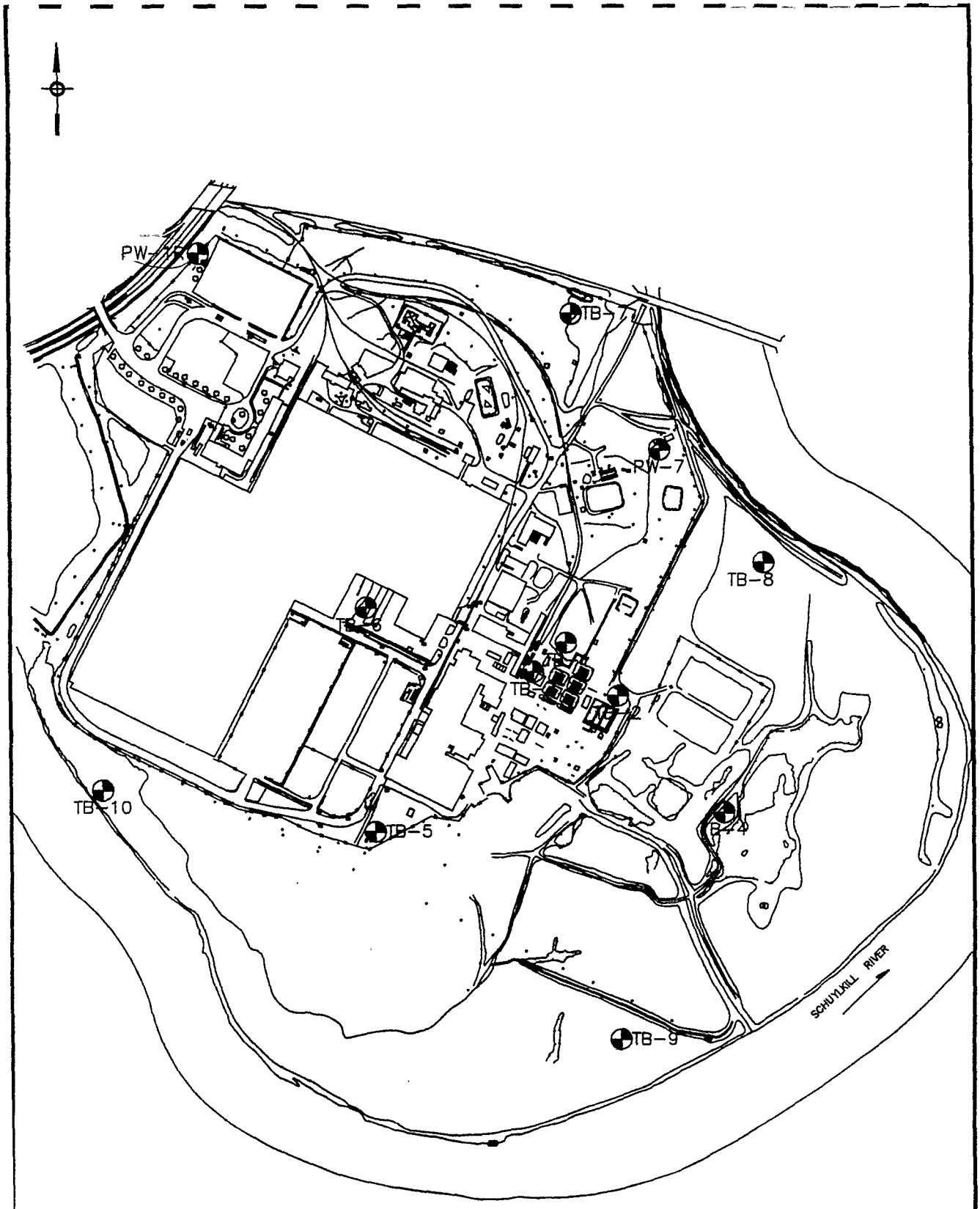
| Well Location | Borehole Diameter (inches) | Casing Diameter (inches) | Screen Diameter (inches) | Screen Slot Size (inches) | Screened Interval (feet) | Sand Pack Interval (feet) | Slurned Bentonite Interval (feet) | Grouted Interval (feet) |
|---|---|---|---|---|---|---|---|---|
| Adjacent to TB-1 | 12 | 8 | 4 | 0.02 | 102-132 | 100-132 | 5-100 | 0-5 |
| Adjacent to TB-1 | 12 | 8 | 4 | 0.02 | 290-321 | 288-321 | 5-288 | 0-5 |
| Adjacent to TB-2 | 12 | 8 | 4 | 0.02 | 100-130 | 98-130 | 5-98 | 0-5 |
| Adjacent to TB-5 | 12 | 8 | 4 | 0.02 | 40-85 | 38-85 | 5-38 | 0-5 |

AR302584

OXYCHEM\04161ES8,XLS/jad

BCM

FIGURES




LEGEND

TB-4 Reconnaissance Borehole Location

0 200 400 800 FT

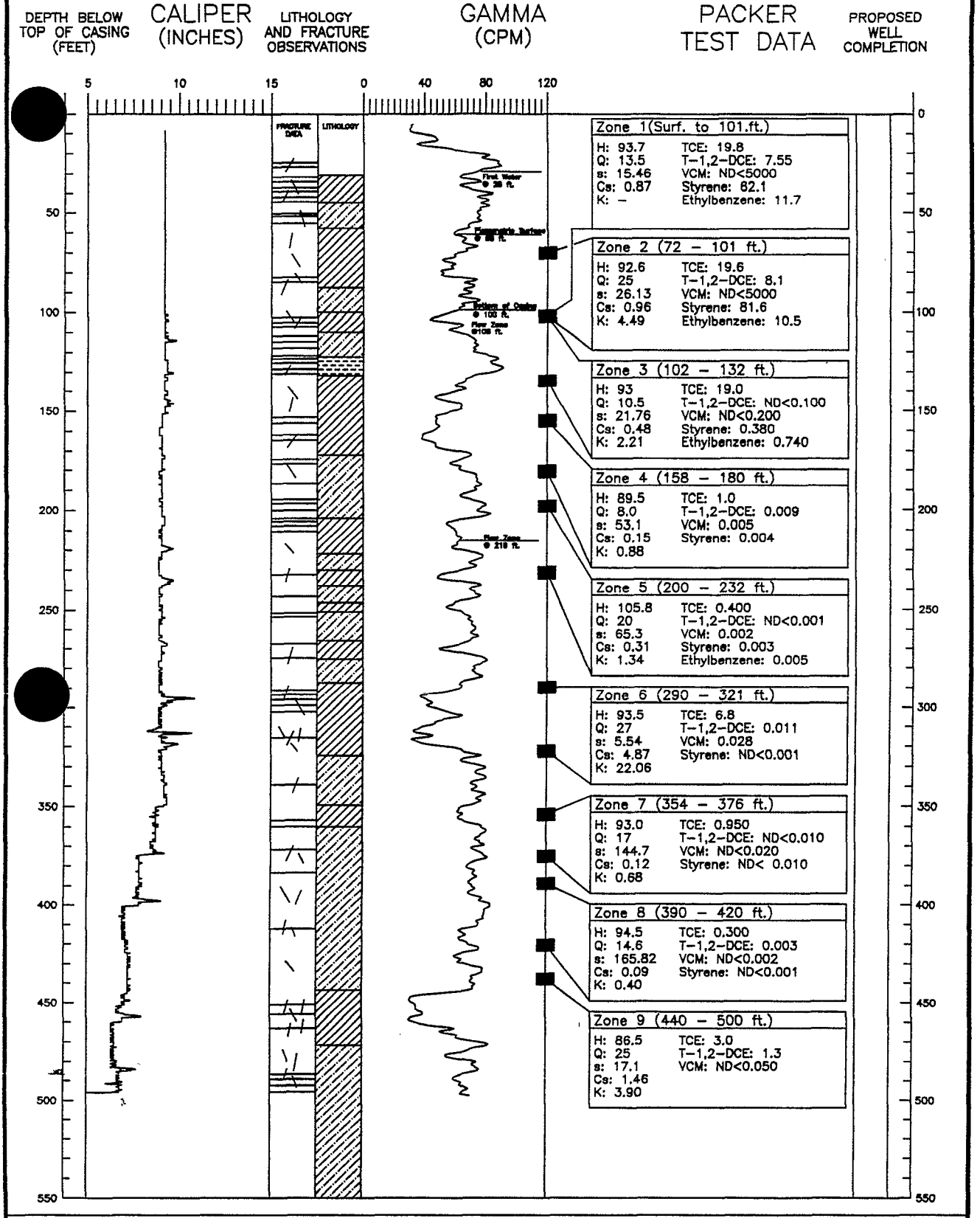
Figure 2.1

Occidental Chemical Corporation

Reconnaissance Borehole Location Map

Interim Report

AR302586




## Fracture Legend

horizontal — vertical \

## Bedrock Lithology Legend

Sandstone (med to coarse) — Sandstone (very fine) and Siltstone — Shale

## Packer Legend

H: Potentiometric Head (ft)
Q: Flow Rate (gpm)
s: Drawdown (ft)
Cs:Specific Capacity (gpm/ft)
K: Hydraulic Conductivity (ft/day)
mg/l: Chemical Concentrations
*ND<0.010: Nondetect (detection limit)*

## Monitoring Well Legend

Screen: 4-inch ID PVC (Sch 40) .020-slot
Casing: 4-inch ID PVC (Sch 40)
Grout: Bentonite/Cement

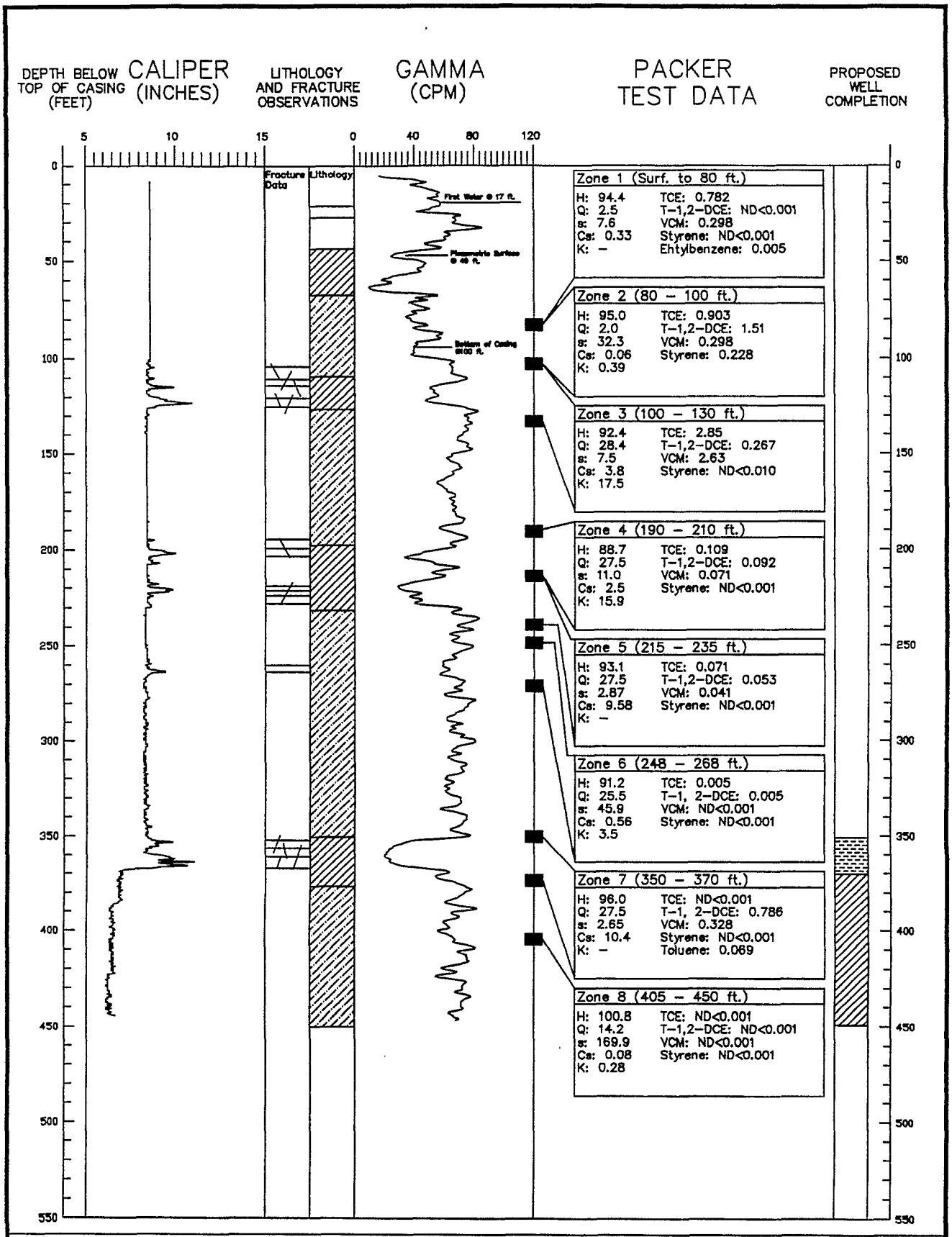
Figure 3.1

Occidental Chemical Corporation

TB-1 Borehole Data Graphic

Interim Report

AR302587




## Fracture Legend

horizontal — vertical \

## Bedrock Lithology Legend

Sandstone (med to coarse) — Sandstone (very fine) and Siltstone — Shale

## Packer Legend

H: Potentiometric Head (ft)
Q: Flow Rate (gpm)
s: Drawdown (ft)
Cs: Specific Capacity (gpm/ft)
K: Hydraulic Conductivity (ft/day)
mg/l: Chemical Concentrations
ND<0.010: Nondetect (detection limit)

## Monitoring Well Legend

Screen: 4-inch ID PVC (Sch 40) .020-slot
Casing: 4-inch ID PVC (Sch 40)
Grout: Bentonite/Cement

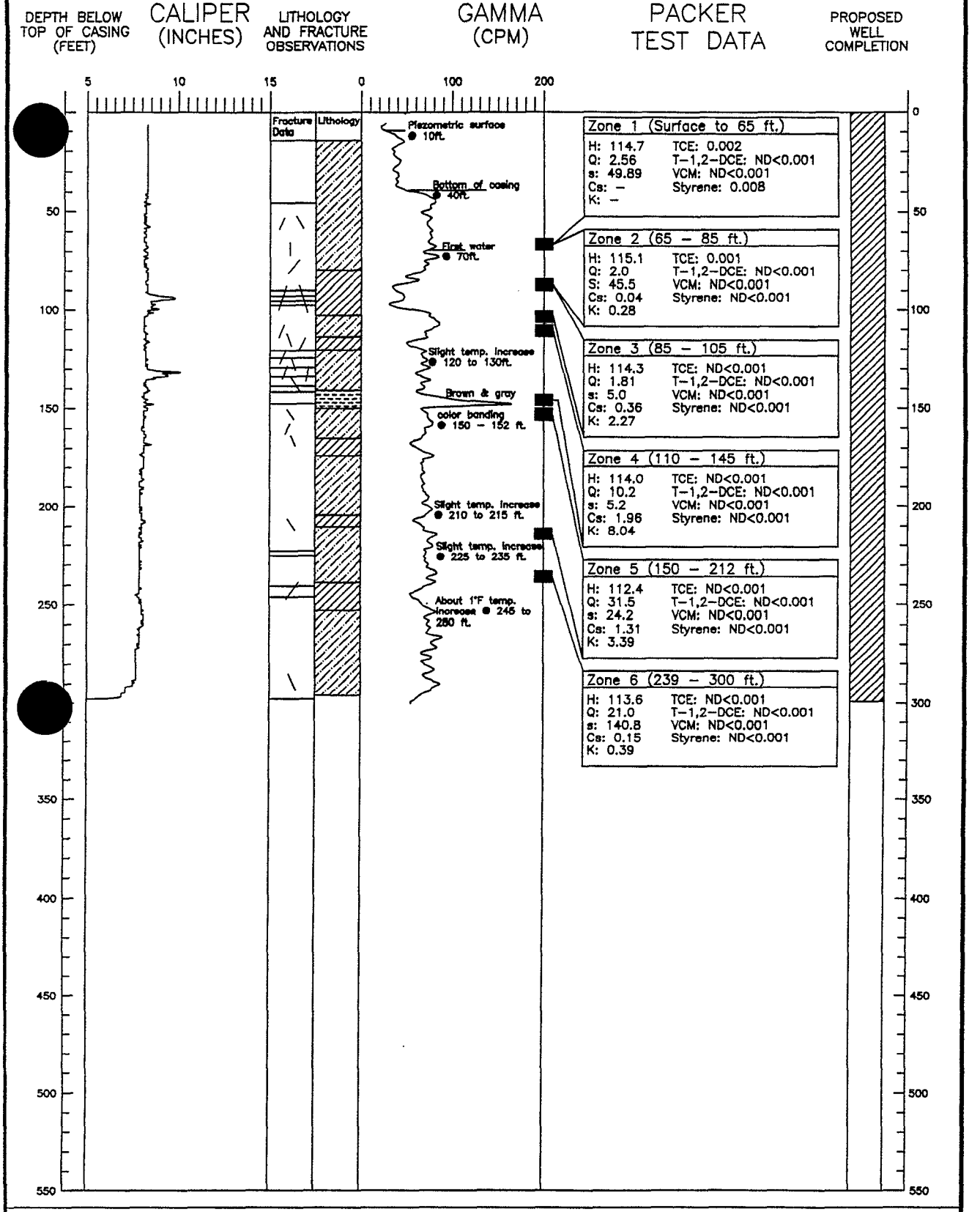
Figure 3.2

Occidental Chemical Corporation

TB-2 Borehole Data Graphic

Interim Report

AR302588




## Fracture Legend

horizontal — vertical \

## Bedrock Lithology Legend

Sandstone (med to coarse) — Sandstone (very fine) and Siltstone — Shale

## Packer Legend

H: Potentiometric Head (ft)
Q: Flow Rate (gpm)
s: Drawdown (ft)
Cs:Specific Capacity (gpm/ft)
K: Hydraulic Conductivity (ft/day)
mg/l: Chemical Concentrations
ND<0.010: Nondetect (detection limit)

## Monitoring Well Legend

Screen: 4-inch ID PVC (Sch 40) .020-slot
Casing: 4-inch ID PVC (Sch 40)
Grout: Bentonite/Cement

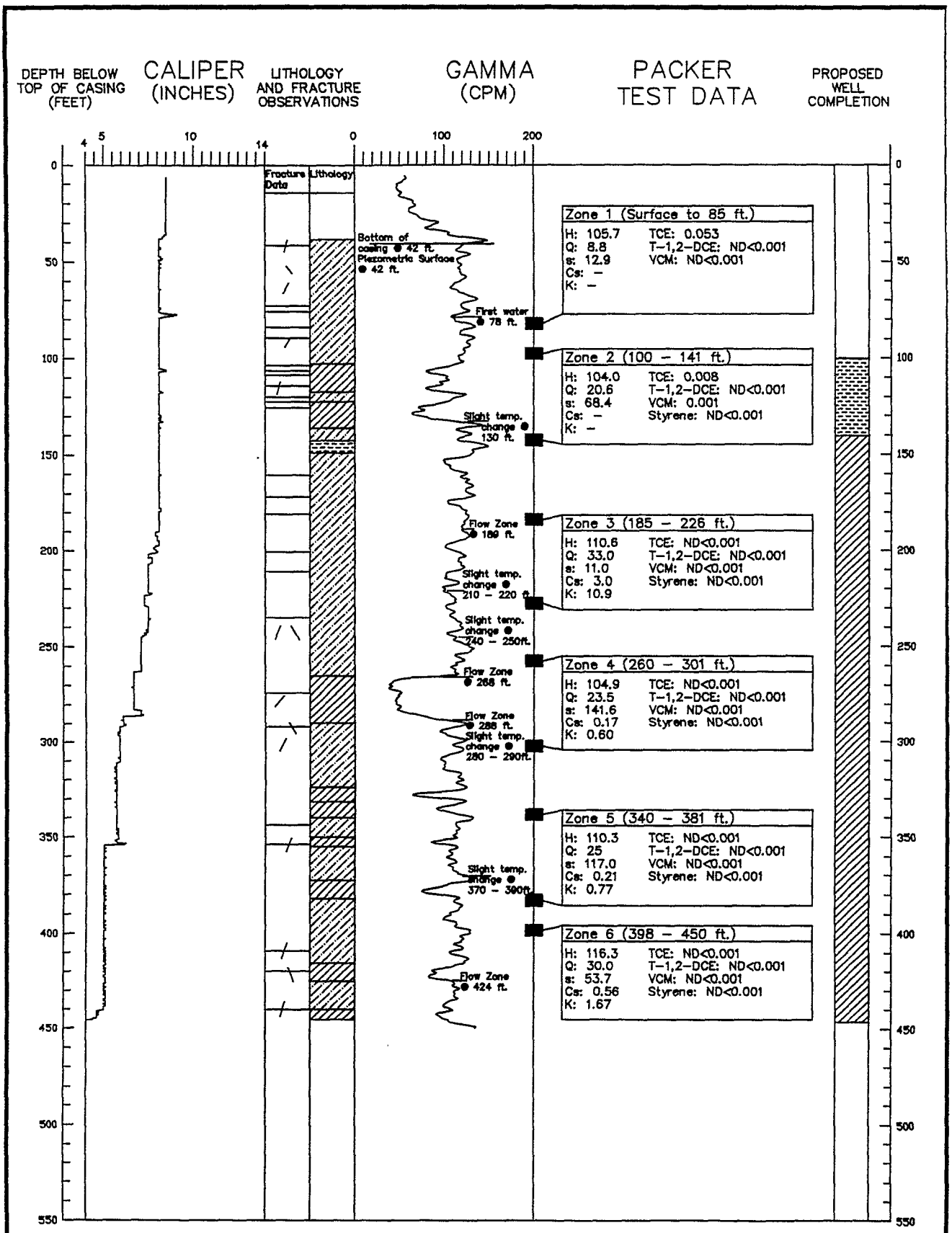
Figure 3.3

Occidental Chemical Corporation

TB-4 Borehole Data Graphic

Interim Report

AR302589




## Fracture Legend

horizontal — vertical \

## Bedrock Lithology Legend

Sandstone (med to coarse) — Sandstone (very fine) and Siltstone — Shale

## Packer Legend

H: Potentiometric Head (ft)
Q: Flow Rate (gpm)
s: Drawdown (ft)
Cs: Specific Capacity (gpm/ft)
K: Hydraulic Conductivity (ft/day)
mg/l: Chemical Concentrations
ND<0.010: Nondetect (detection limit)

## Monitoring Well Legend

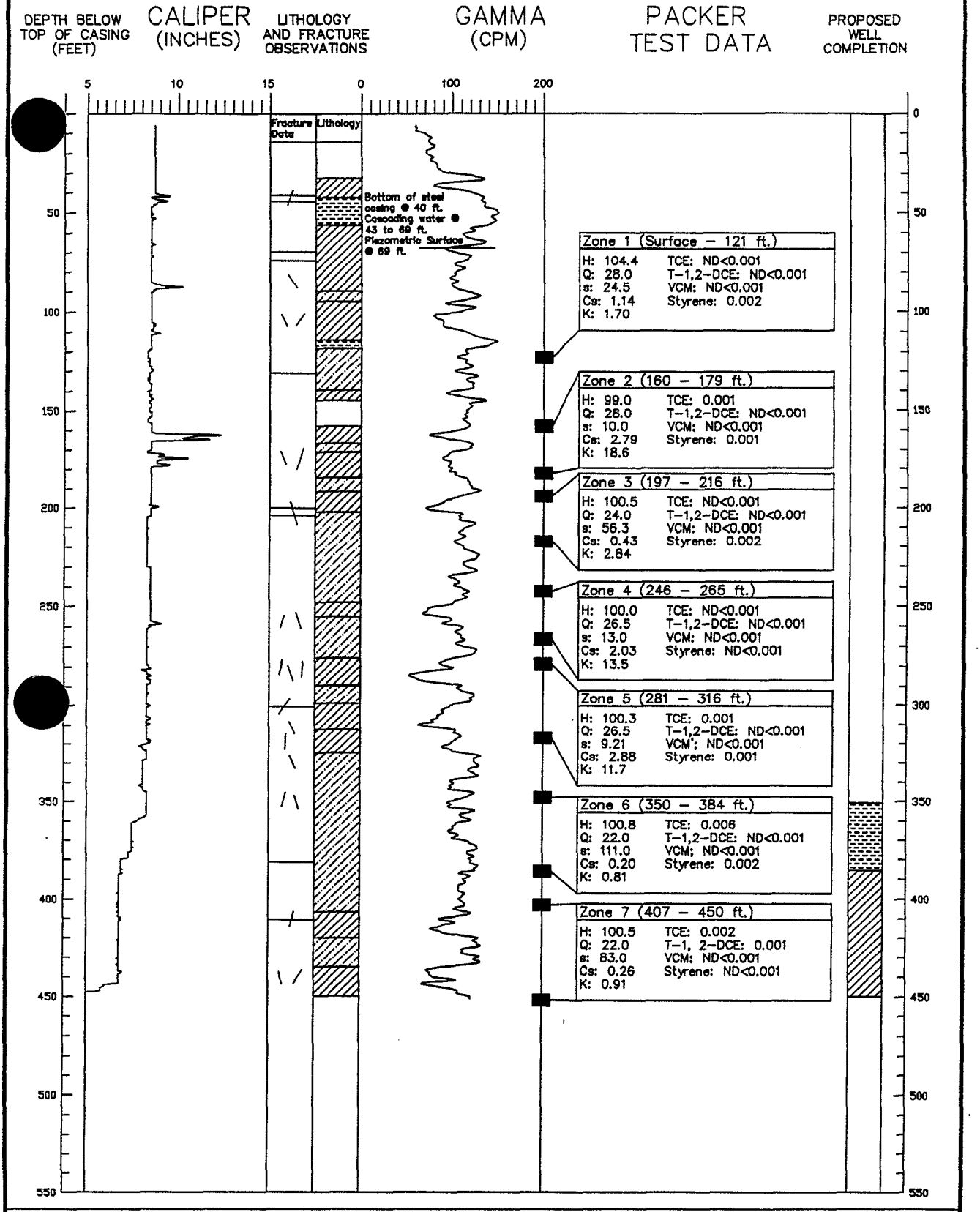
Screen: 4-inch ID PVC (Sch 40) .020-slot
Casing: 4-inch ID PVC (Sch 40)
Grout: Bentonite/Cement

Figure 3.4

Occidental Chemical Corporation

TB-5 Borehole Data Graphic

AR302590




## Fracture Legend

horizontal — vertical \

## Bedrock Lithology Legend

Sandstone (med to coarse) — Sandstone (very fine) and Siltstone — Shale

## Packer Legend

H: Potentiometric Head (ft)
Q: Flow Rate (gpm)
s: Drawdown (ft)
Cs: Specific Capacity (gpm/ft)
K: Hydraulic Conductivity (ft/day)
mg/l: Chemical Concentrations
ND<0.010: Nondetect (detection limit)

## Monitoring Well Legend

Screen: 4-inch ID PVC (Sch 40) .020-slot
Casing: 4-inch ID PVC (Sch 40)
Grout: Bentonite/Cement

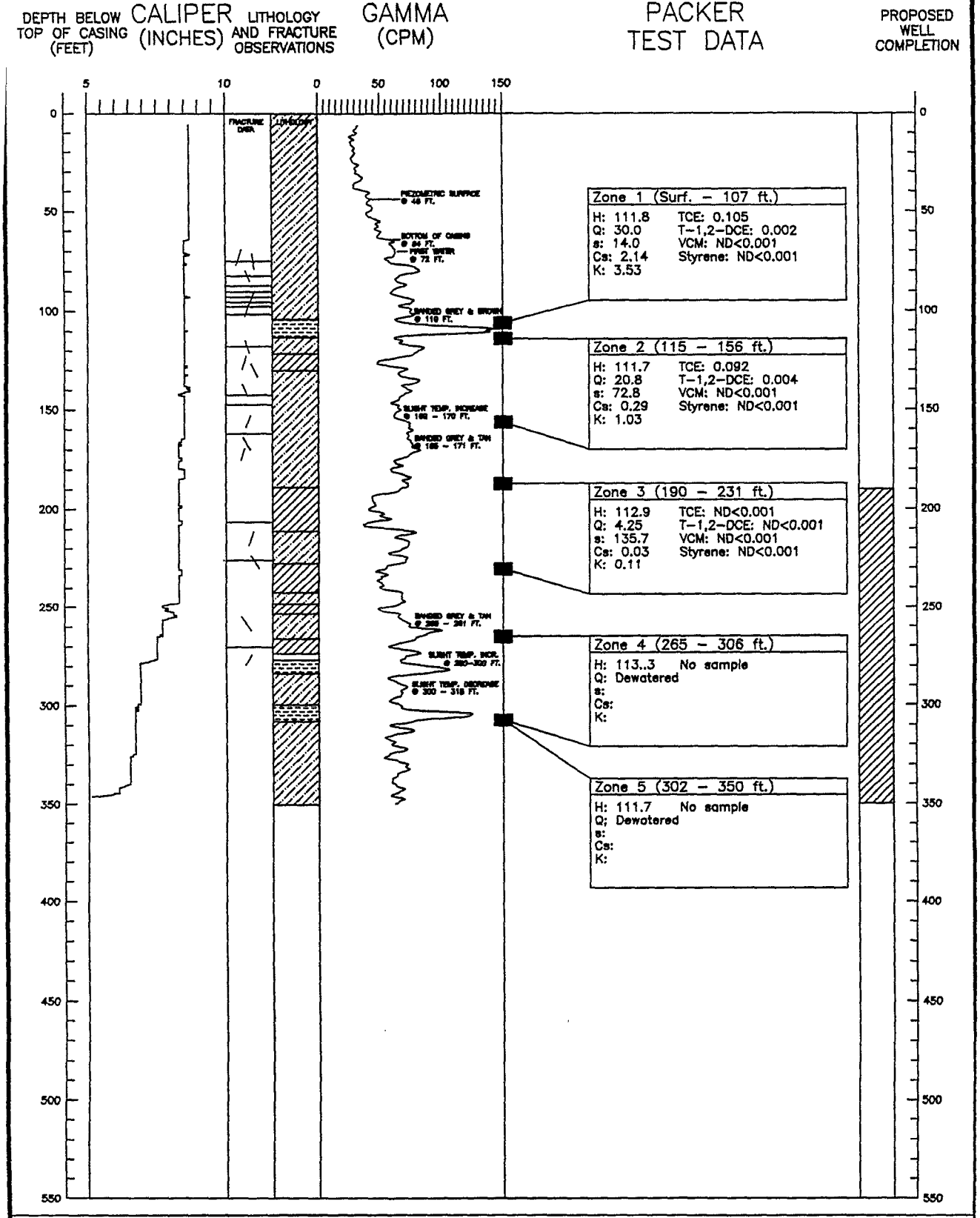
Figure 3.5

Occidental Chemical Corporation

TB-6 Borehole Data Graphic

Interim Report

AR302591




## Fracture Legend

horizontal — vertical \

## Bedrock Lithology Legend

Sandstone (med to coarse) — Sandstone (very fine) and Siltstone — Shale

## Packer Legend

H: Potentiometric Head (ft)
Q: Flow Rate (gpm)
s: Drawdown (ft)
Cs:Specific Capacity (gpm/ft)
K: Hydraulic Conductivity (ft/day)
mg/l: Chemical Concentrations
ND<0.010: Nondetect (detection limit)

## Monitoring Well Legend

Screen: 4-inch ID PVC (Sch 40) .020-slot
Casing: 4-inch ID PVC (Sch 40)
Grout: Bentonite/Cement

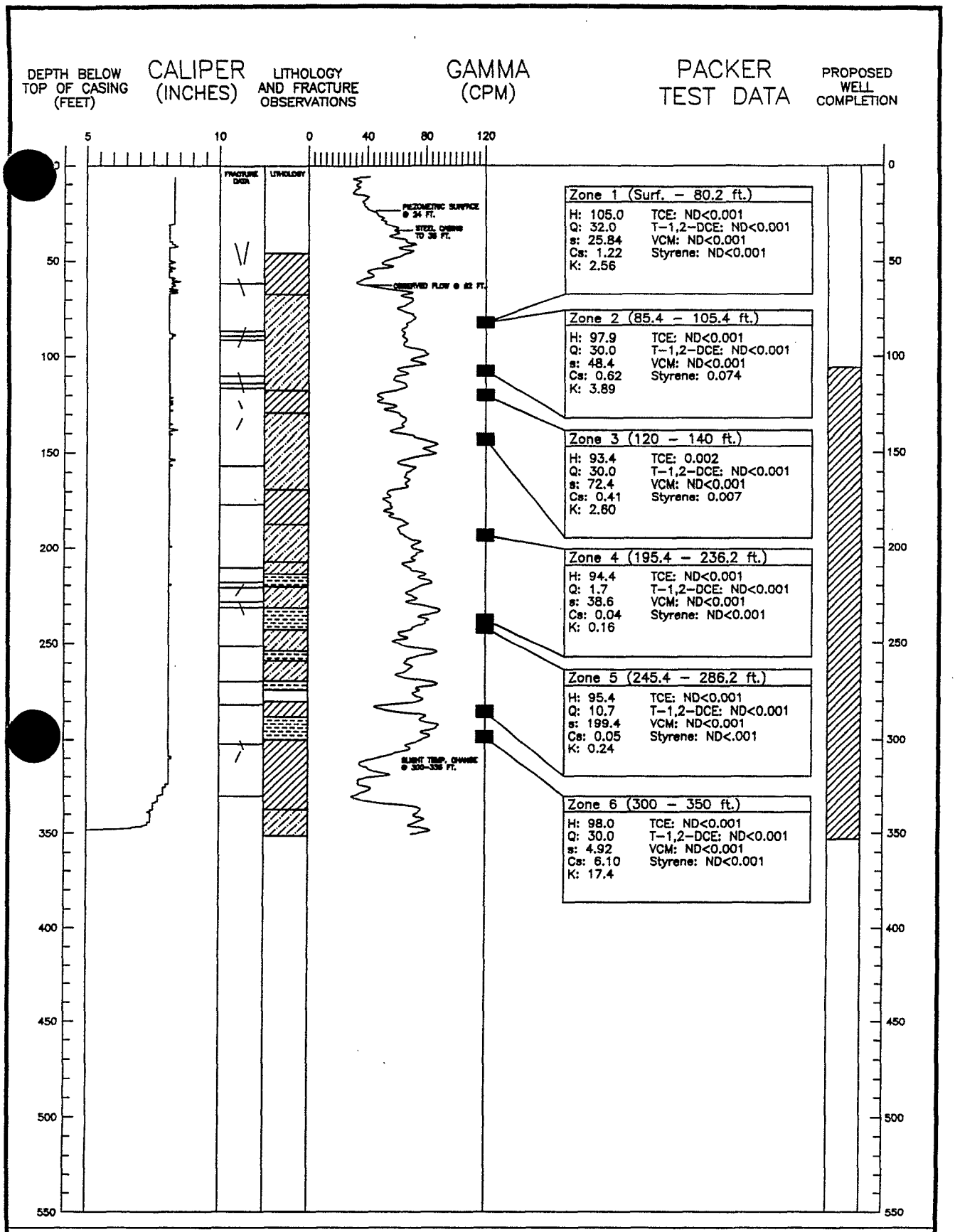
Figure 3.6

Occidental Chemical Corporation

TB-7 Borehole Data Graphic

Interim Report

AR302592




## Fracture Legend

horizontal — vertical \

## Bedrock Lithology Legend

Sandstone (med to coarse) — Sandstone (very fine) and Siltstone — Shale

## Packer Legend

H: Potentiometric Head (ft)
Q: Flow Rate (gpm)
s: Drawdown (ft)
Cs:Specific Capacity (gpm/ft)
K: Hydraulic Conductivity (ft/day)
mg/l: Chemical Concentrations
ND<0.010: Nondetect (detection limit)

## Monitoring Well Legend

Screen: 4-inch ID PVC (Sch 40) .020-slot
Casing: 4-inch ID PVC (Sch 40)
Grout: Bentonite/Cement

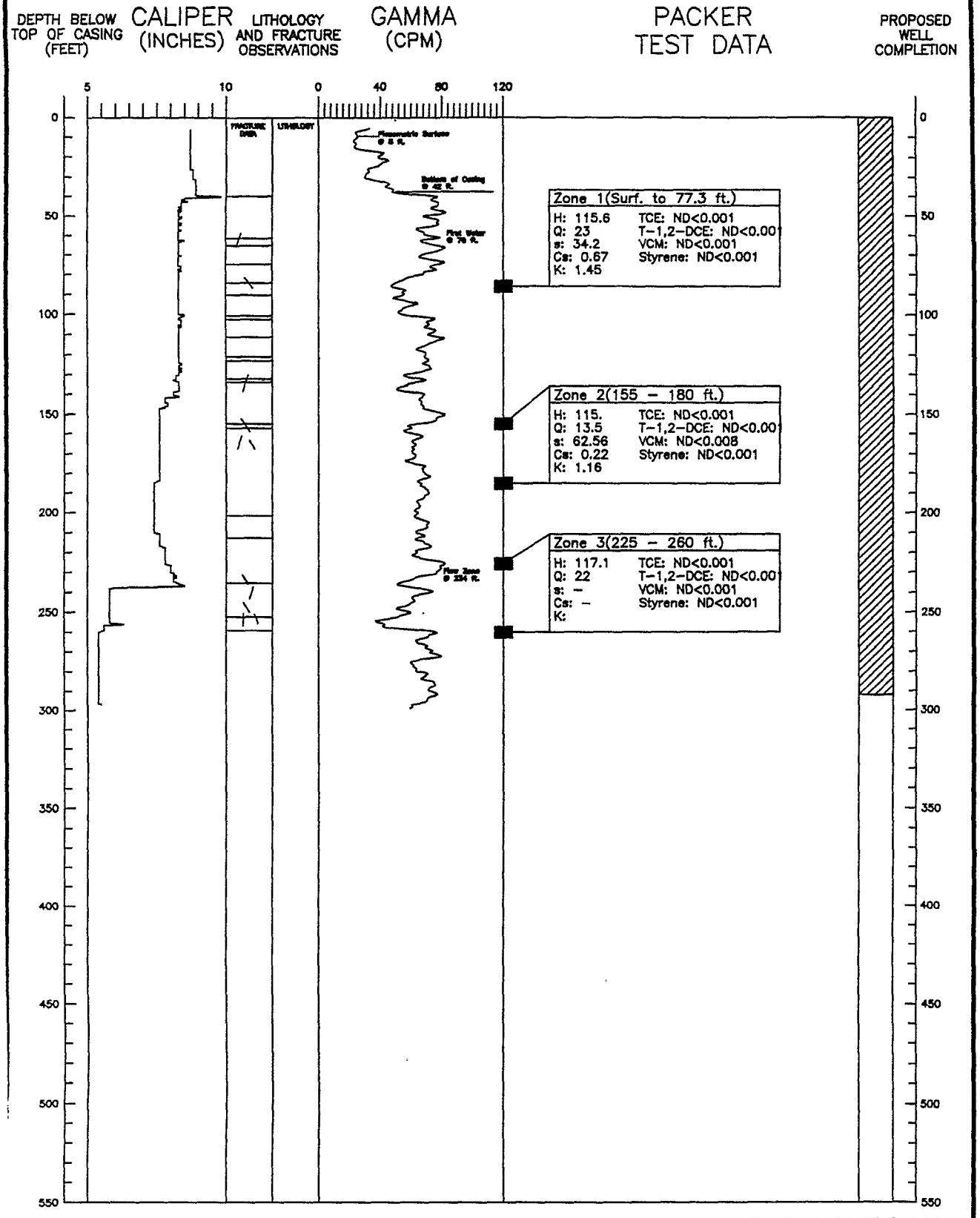
Figure 3.7

Occidental Chemical Corporation

TB-8 Borehole Data Graphic

Interim Report

AR302593




## Fracture Legend

horizontal — vertical \

## Bedrock Lithology Legend

Sandstone (med to coarse) — Sandstone (very fine) and Siltstone — Shale

## Packer Legend

H: Potentiometric Head (ft)
Q: Flow Rate (gpm)
s: Drawdown (ft)
Cs:Specific Capacity (gpm/ft)
K: Hydraulic Conductivity (ft/day)
mg/l: Chemical Concentrations
ND<0.010: Nondetect (detection limit)

## Monitoring Well Legend

Screen: 4-inch ID PVC (Sch 40) .020-slot
Casing: 4-inch ID PVC (Sch 40)
Grout: Bentonite/Cement

Figure 3.8

Occidental Chemical Corporation

TB-9 Borehole Data Graphic

Interim Report

AR302594

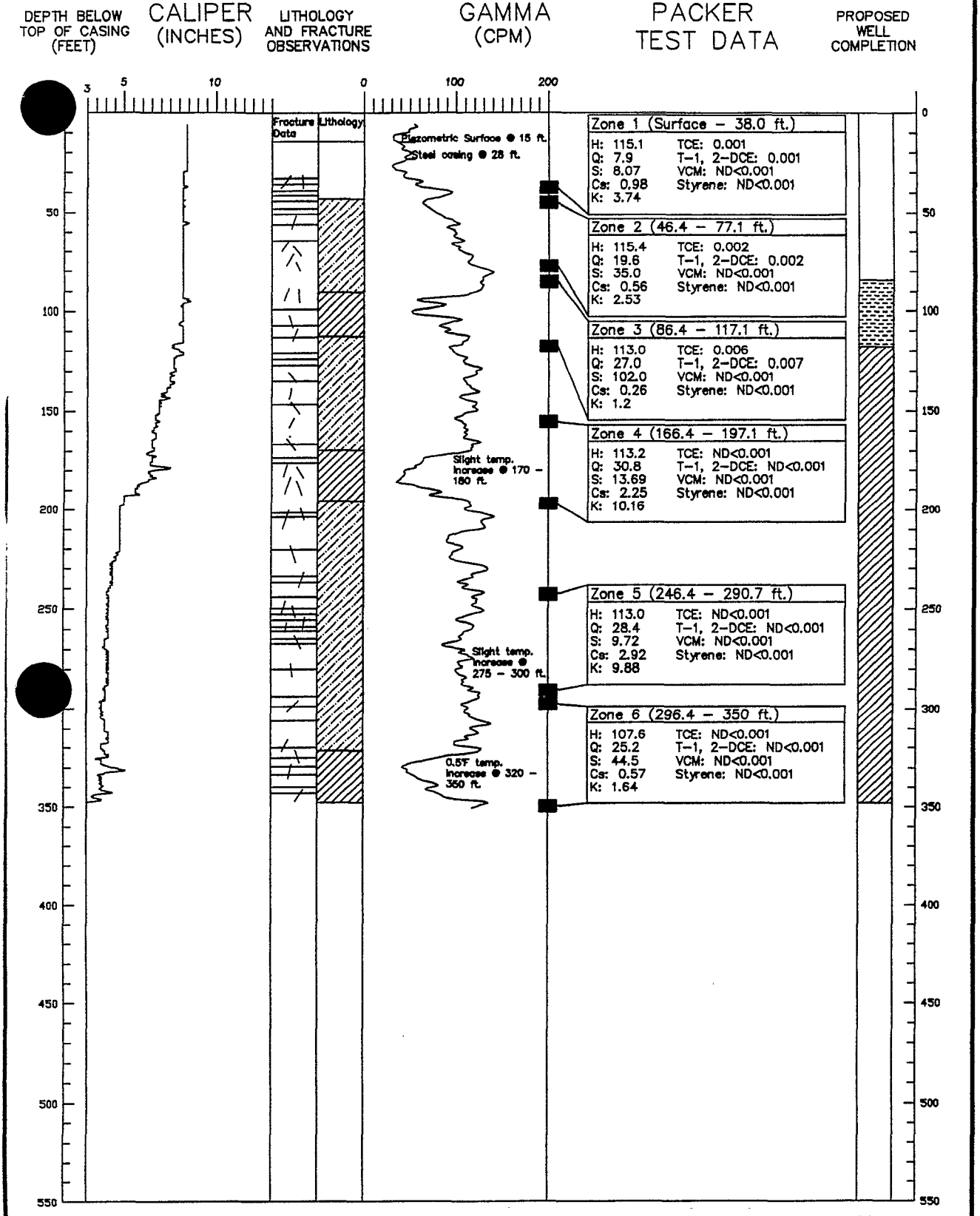


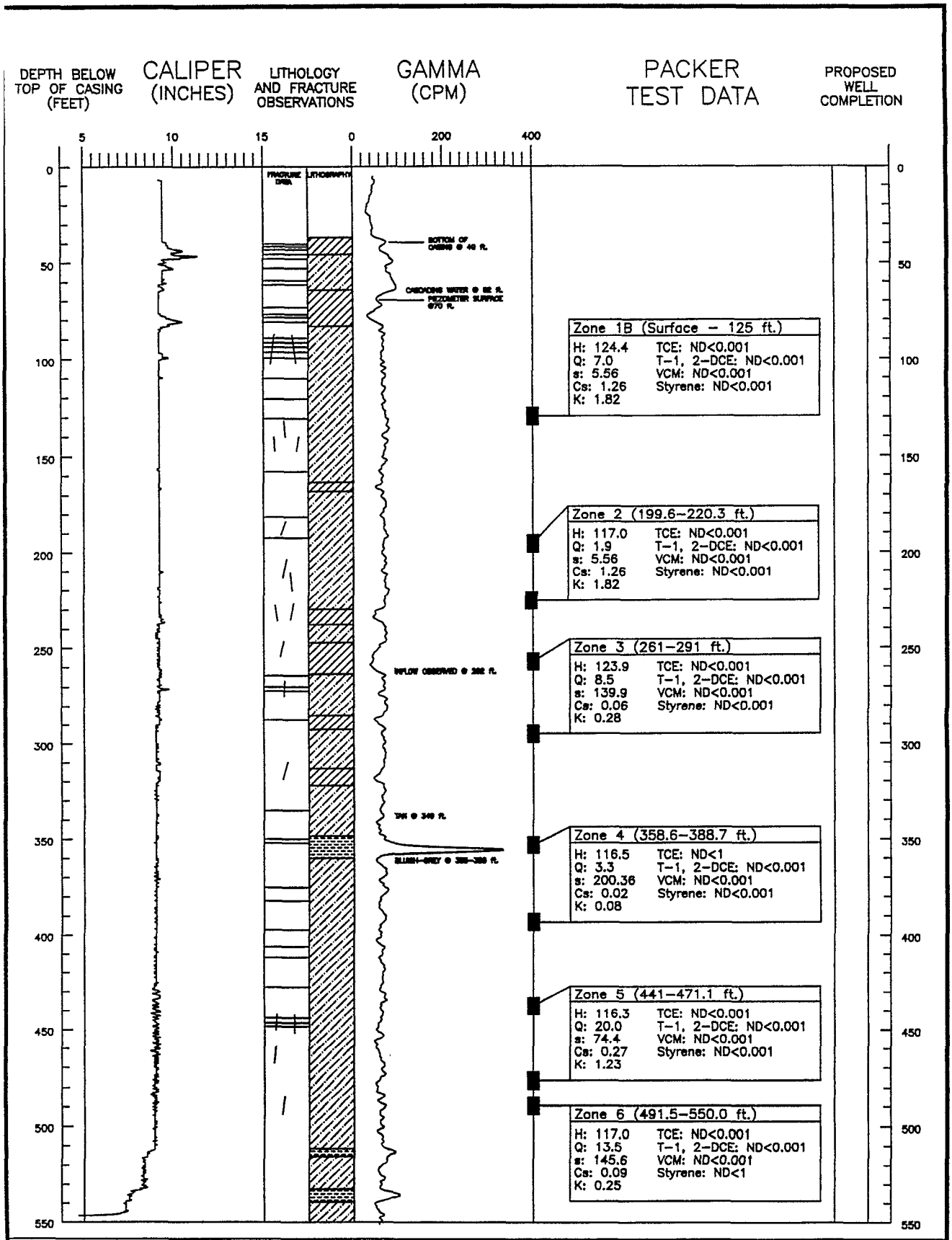

Figure 3.9

Occidental Chemical Corporation

TB-10 Borehole Data Graphic

Interim Report

AR302595




Freon: 0.006 mg/l

**Fracture Legend**

horizontal — vertical

**Bedrock Lithology Legend**

Sandstone (med to coarse) — Sandstone (very fine) and Siltstone — Shale

**Packer Legend**

H: Potentiometric Head (ft)
Q: Flow Rate (gpm)
s: Drawdown (ft)
Cs:Specific Capacity (gpm/ft)
K: Hydraulic Conductivity (ft/day)
mg/l: Chemical Concentrations
ND<0.010: Nondetect (detection limit)

**Monitoring Well Legend**

Screen: 4-inch ID PVC (Sch 40) .020-slot
Casing: 4-inch ID PVC (Sch 40)
Grout: Bentonite/Cement

Figure 3.10

Occidental Chemical Corporation

PW-1R Borehole Data Graphic

Interim Report

AR302596

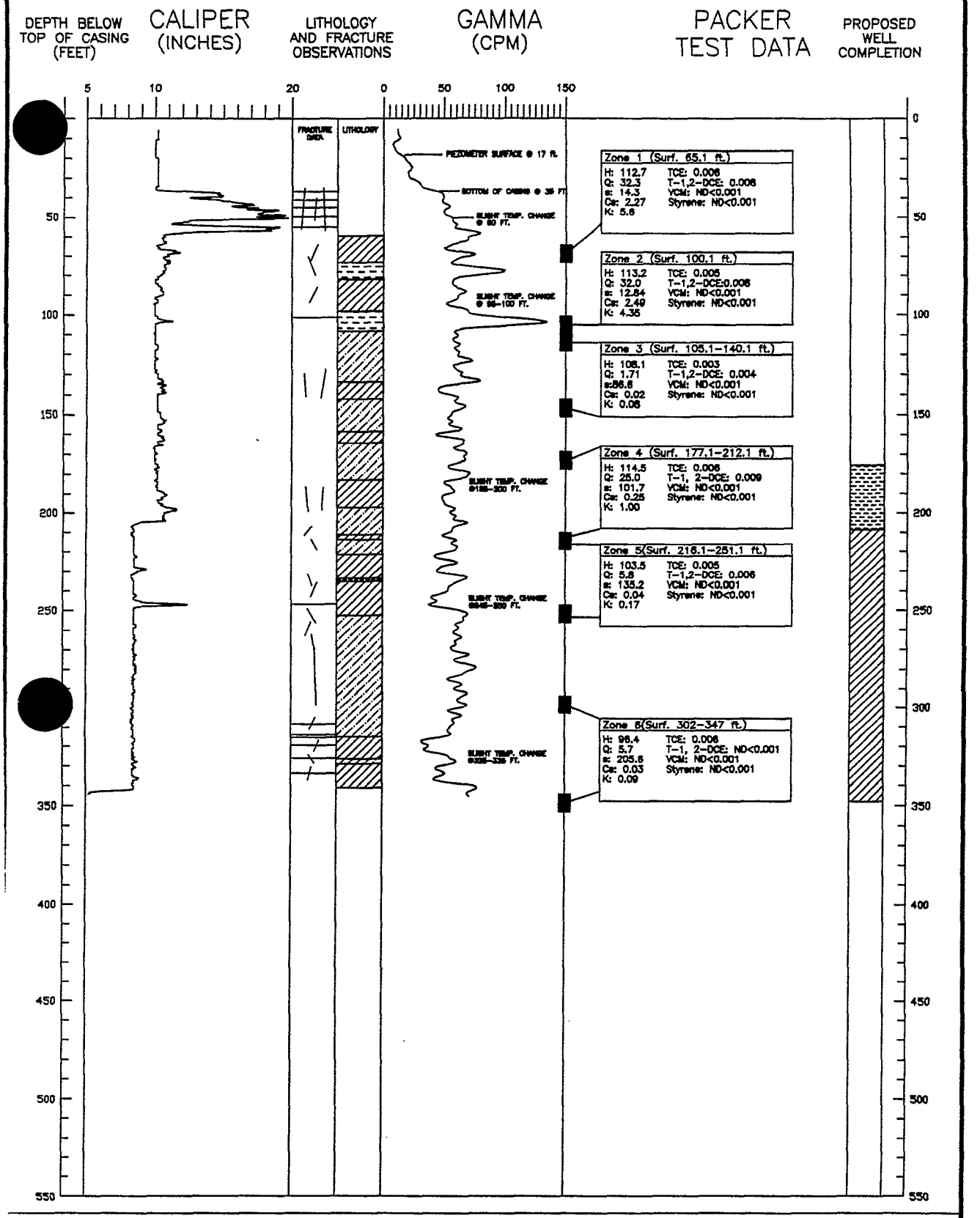


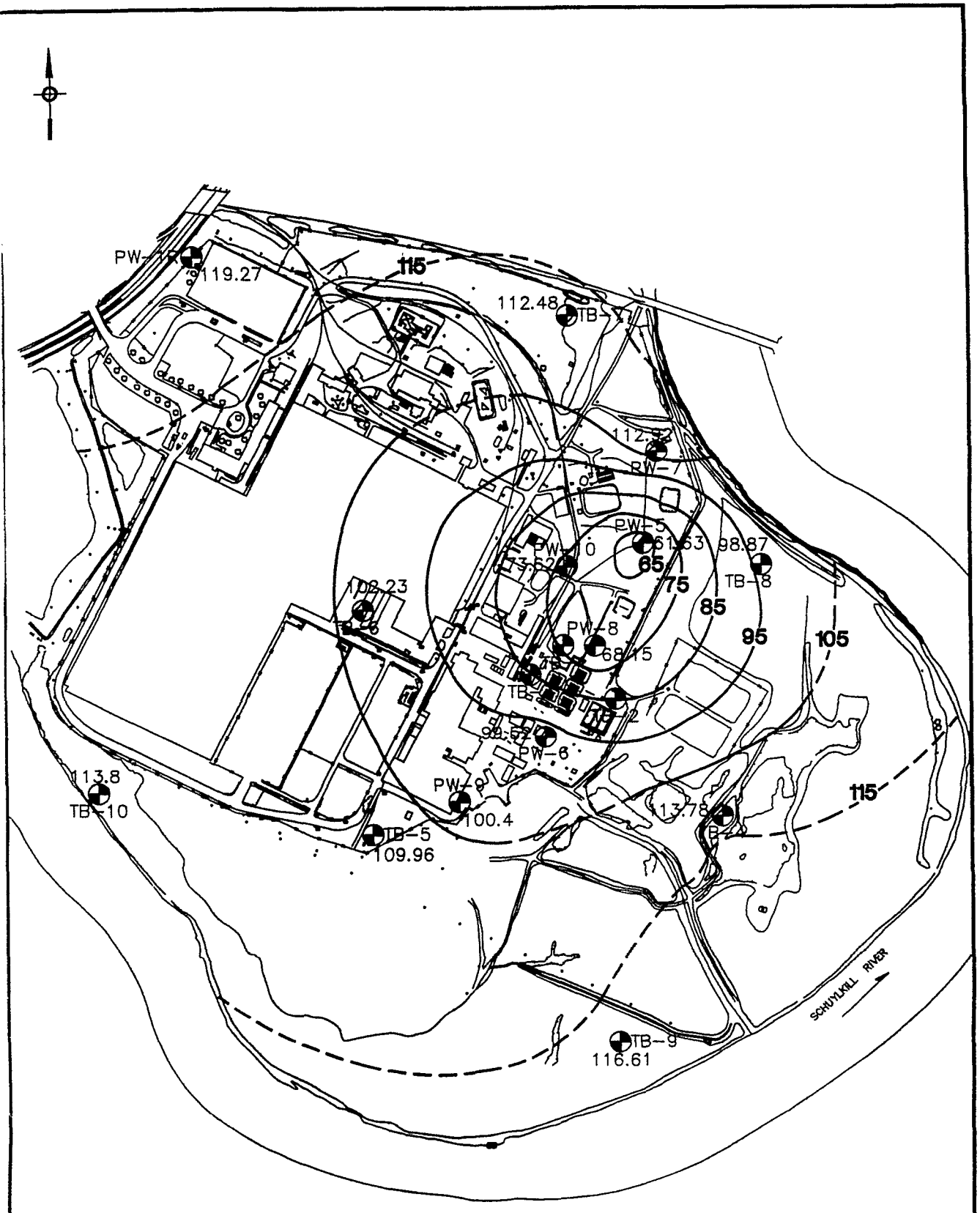

Figure 3.11

Occidental Chemical Corporation

PW-7 Borehole Data Graphic

Interim Report

AR302597




LEGEND

Reconnaissance Bedrock Well (TB-9) and Groundwater Elevation

115 Piezometric Surface Elevation Contour (C.I. 10 feet) (dashed where inferred)

Pumping Production Wells:
PW-5: 98 GPM
PW-8: 68 GPM
PW-10: 109 GPM

0 200 400 800 FT

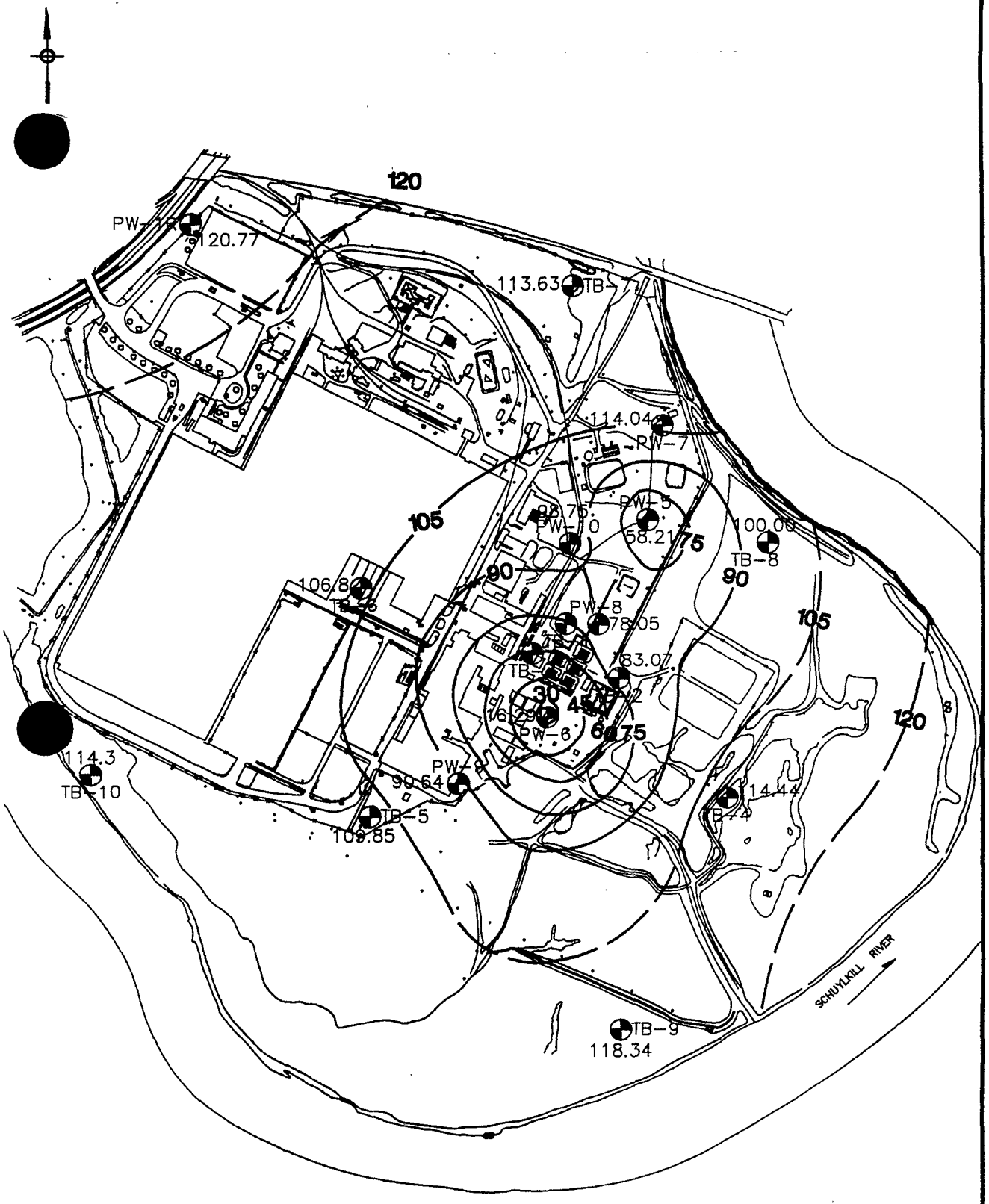
Figure 3.13

Occidental Chemical Corporation

Pumping Piezometric Surface Map (2/11/91)

Interim Report

AR302598




LEGEND

Reconnaissance Bedrock Well (TB-9) and Groundwater Elevation

115 Piezometric Surface Elevation Contour (C.I. 15 feet) (dashed where inferred)

Pumping Production Wells:
PW-5: 100 GPM
PW-6: 200 GPM
PW-8: 67 GPM

0 200 400 800 FT

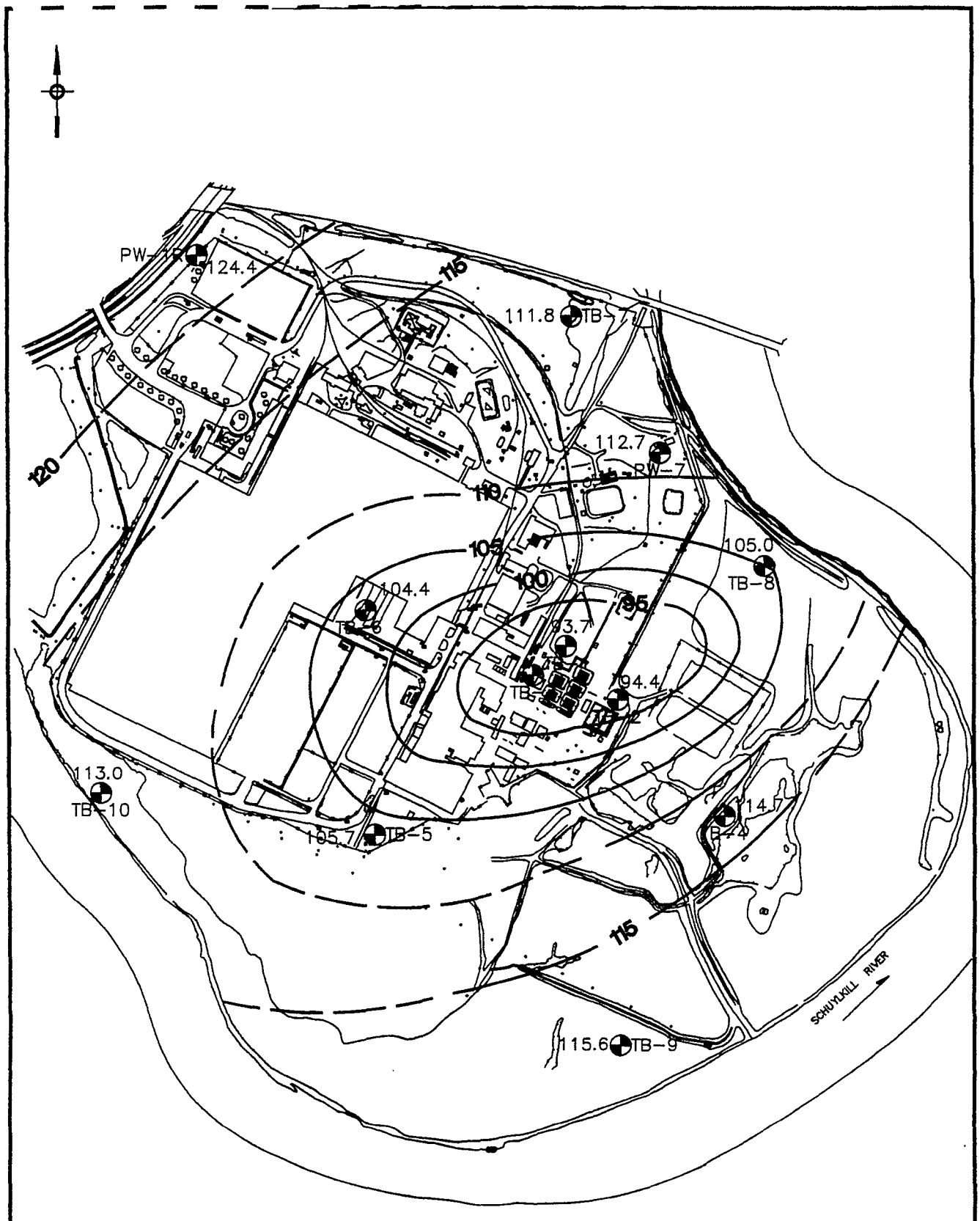
Figure 3.14

Occidental Chemical Corporation

Pumping Piezometric Surface Map (3/28/91)

Interim Report

AR302599




LEGEND

Reconnaissance Bedrock Well (TB-9) and Groundwater Elevation

115 Piezometric Surface Elevation Contour (C.I. 5 feet) (dashed where inferred)

0 200 400 800 FT

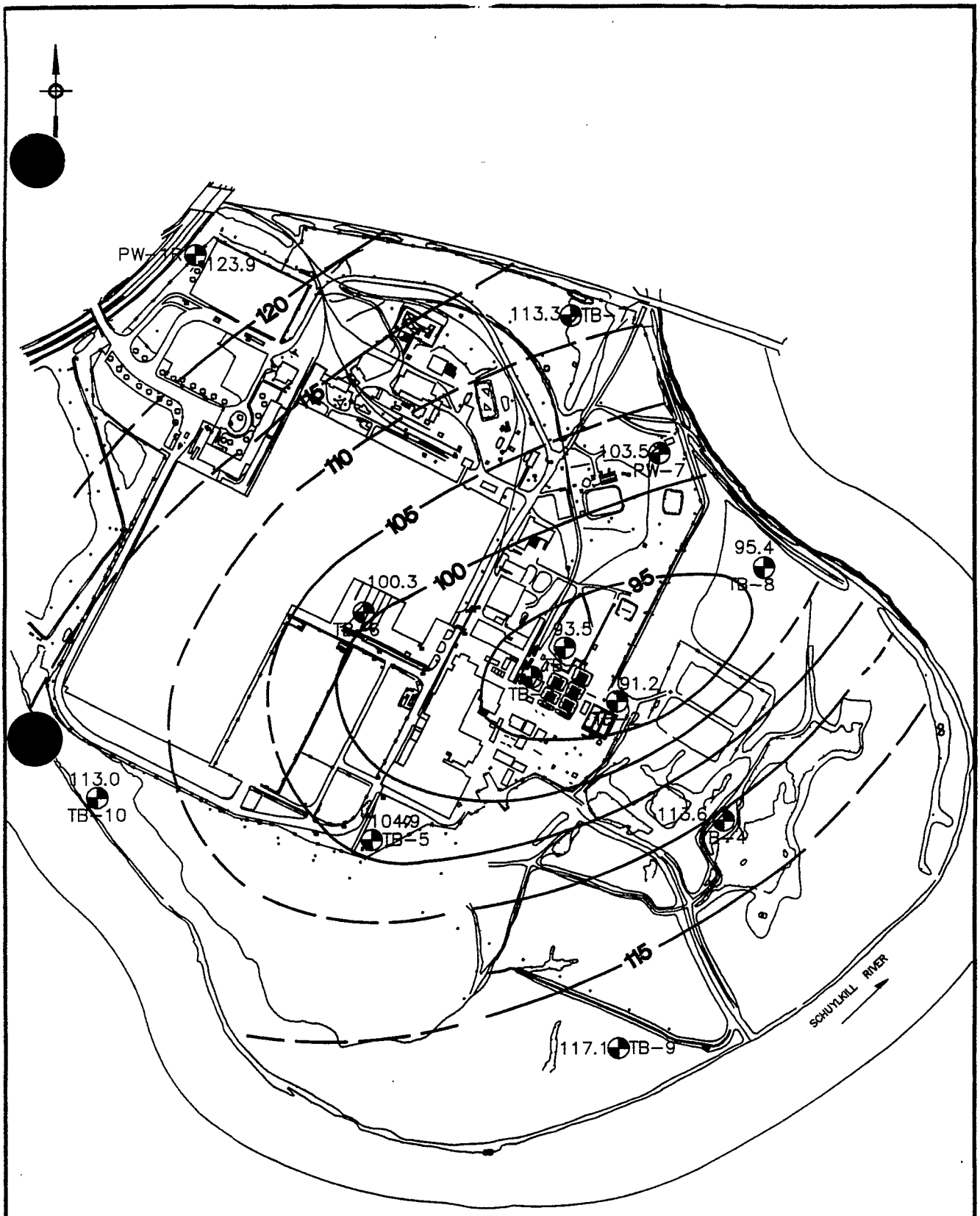
Figure 3.15

Occidental Chemical Corporation

Piezometric Surface Map
Upper Pumping Interval
(190 – 10 ft. amsl)

Interim Report

AR302600




LEGEND

Reconnaissance Bedrock Well (TB-9) and Groundwater Elevation

115 Piezometric Surface Elevation Contour (C.I. 5 feet) (dashed where inferred)

0 200 400 800 FT

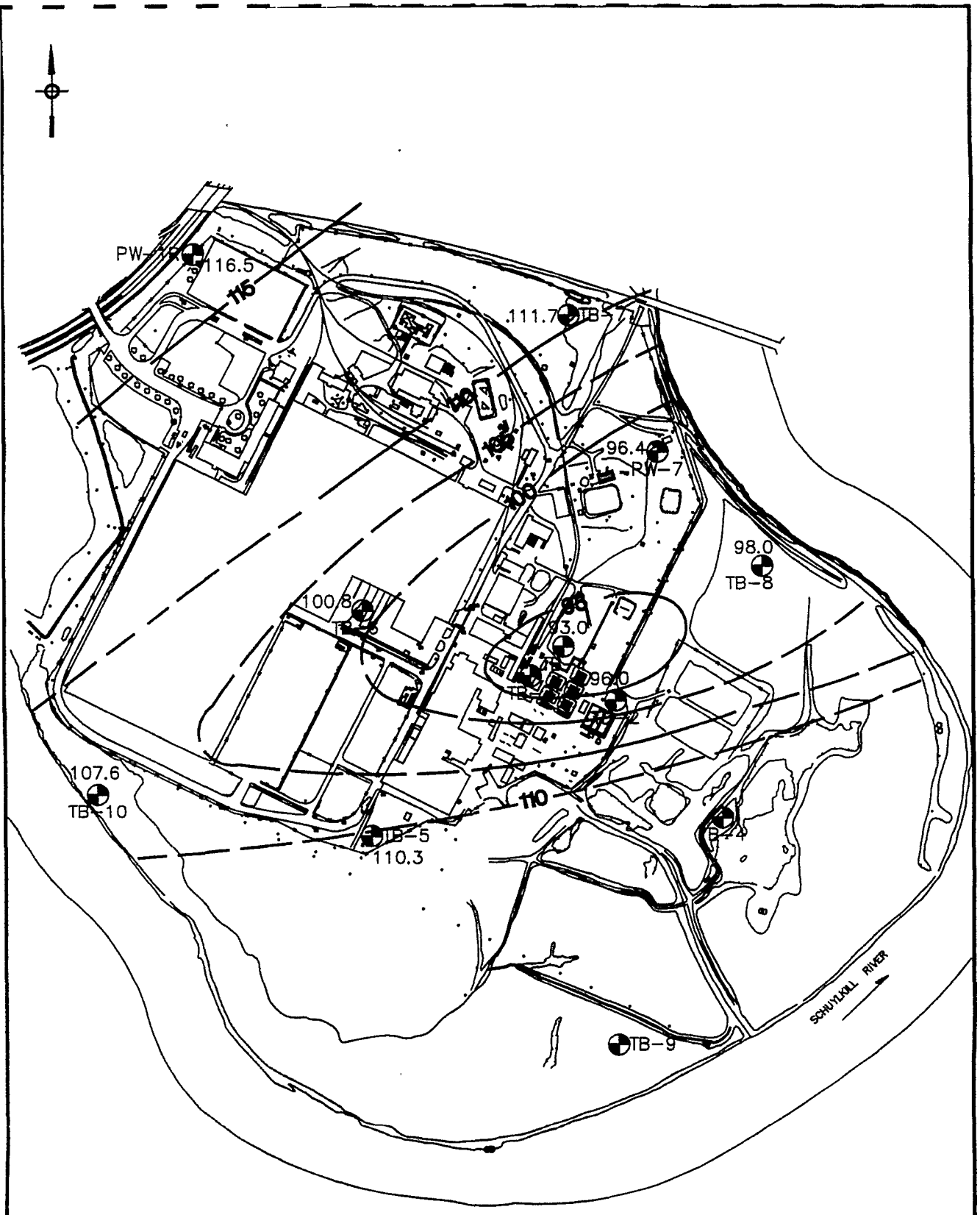
Figure 3.16

Occidental Chemical Corporation

Piezometric Surface Map
Middle Pumping Intervals
(-70 to -180 ft. bmsl)

Interim Report

AR302601




LEGEND

Reconnaissance Bedrock Well (TB-9) and Groundwater Elevation

115 Piezometric Surface Elevation Contour (C.I. 5 feet) (dashed where inferred)

0 200 400 800 FT

Figure 3.17

Occidental Chemical Corporation

Piezometric Surface Map
Lower Pumping Intervals
(-140 to -230 ft. msl)

Interim Report

AR302602

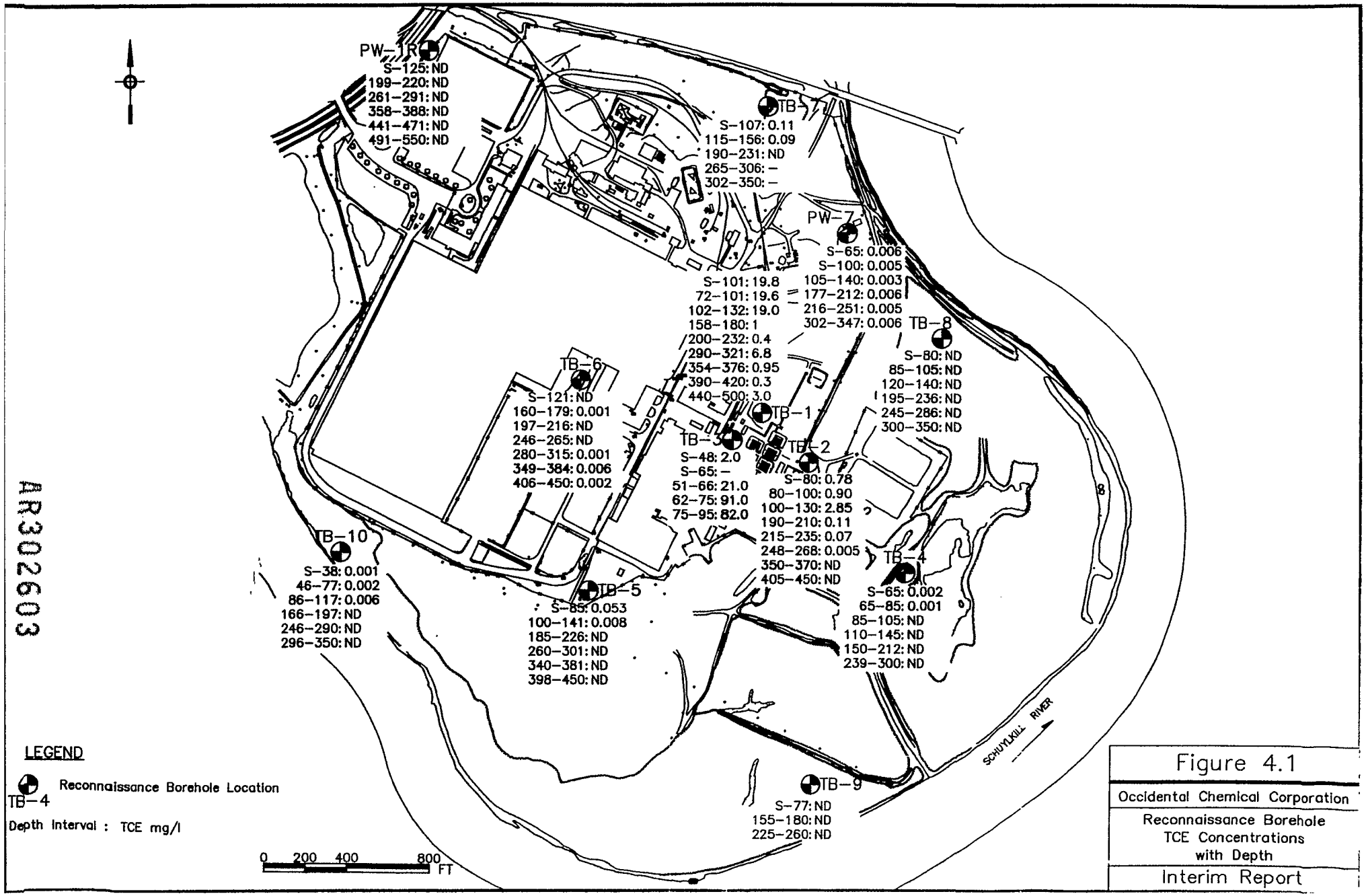



Figure 4.1

Occidental Chemical Corporation

Reconnaissance Borehole TCE Concentrations with Depth

Interim Report

AR302603

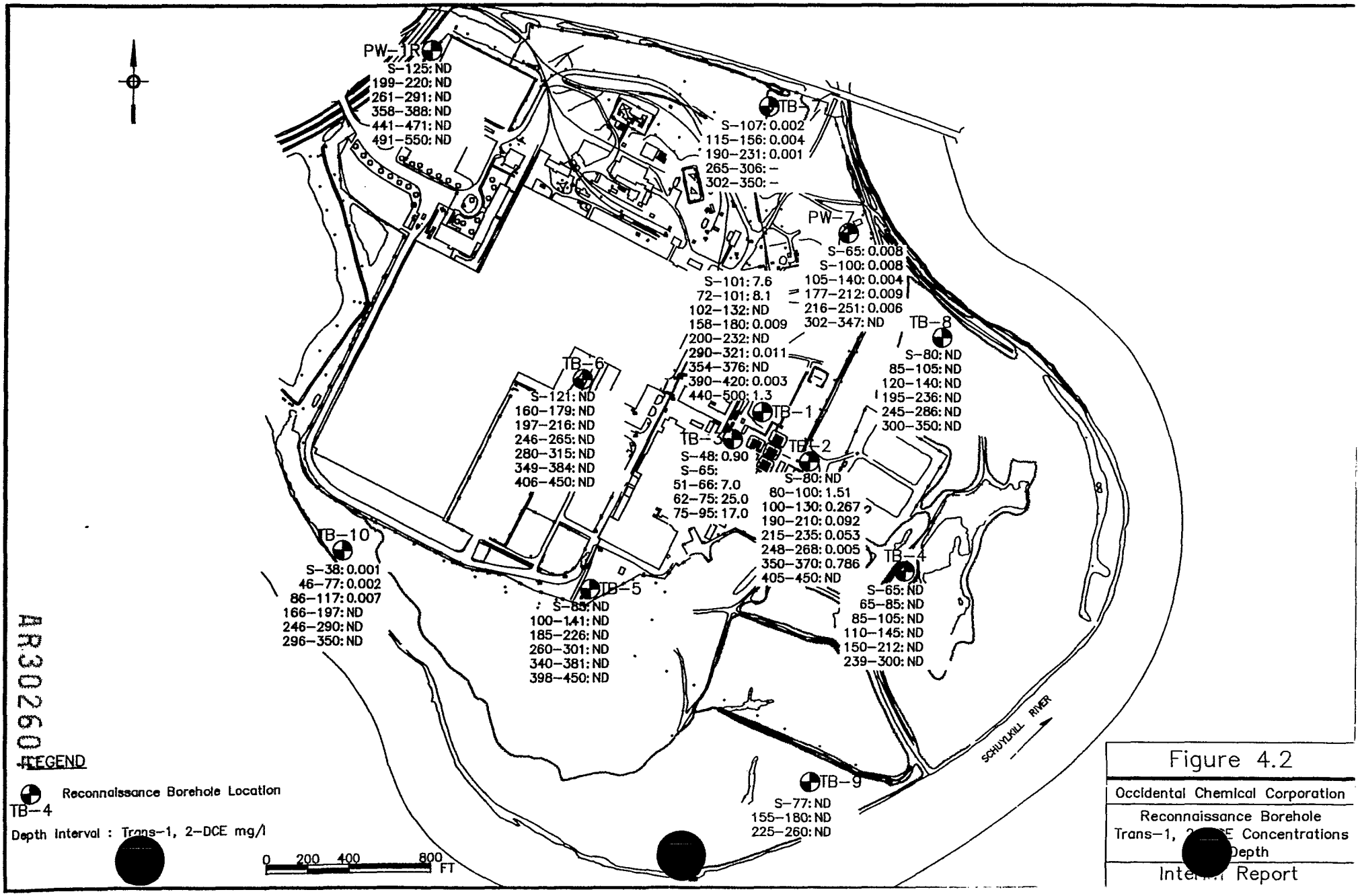



Figure 4.2

Occidental Chemical Corporation

Reconnaissance Borehole Trans-1, 2-DCE Concentrations Depth

Interim Report

AR302600

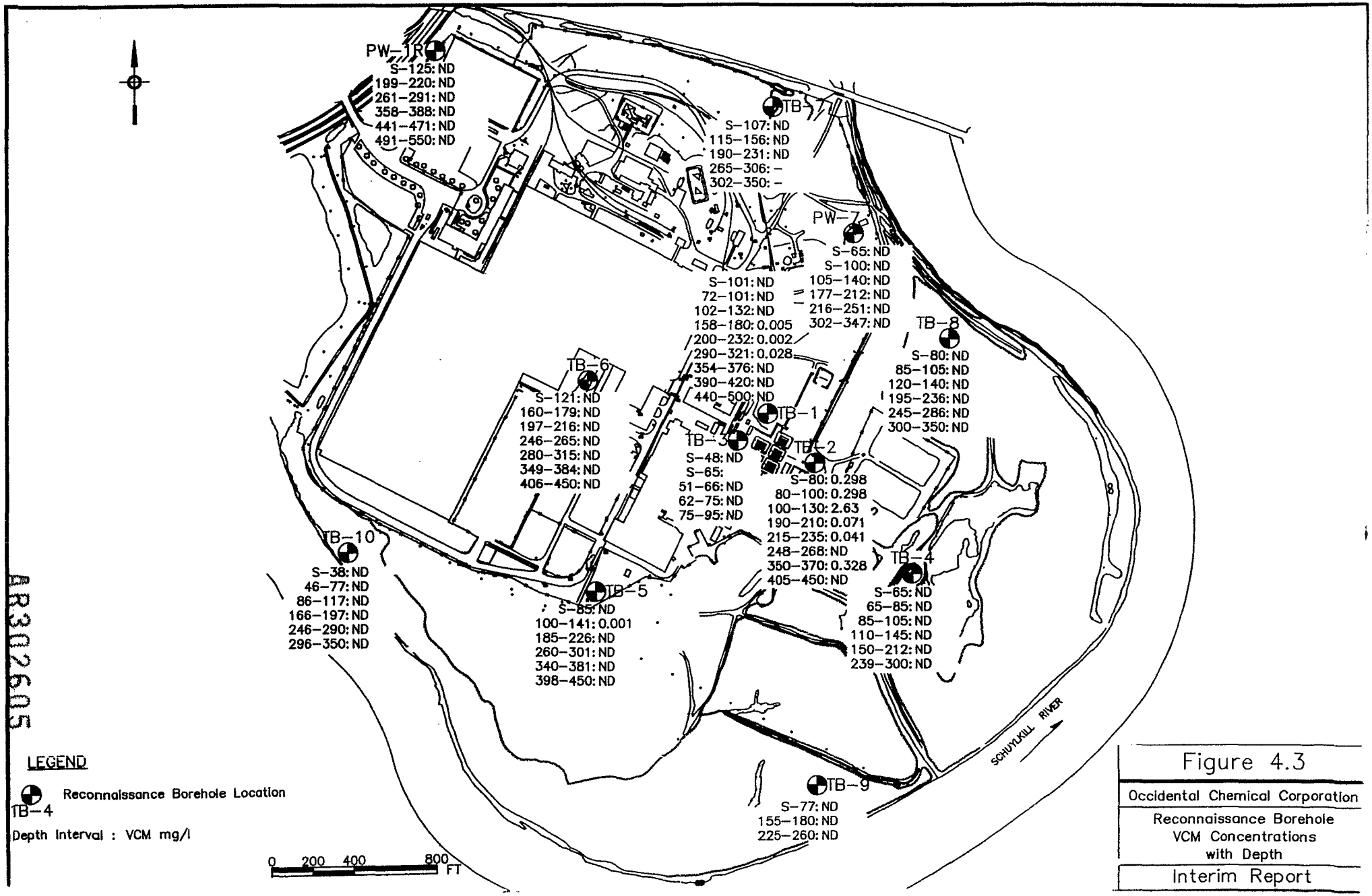



Figure 4.3

Occidental Chemical Corporation

Reconnaissance Borehole VCM Concentrations with Depth

Interim Report

AR302605

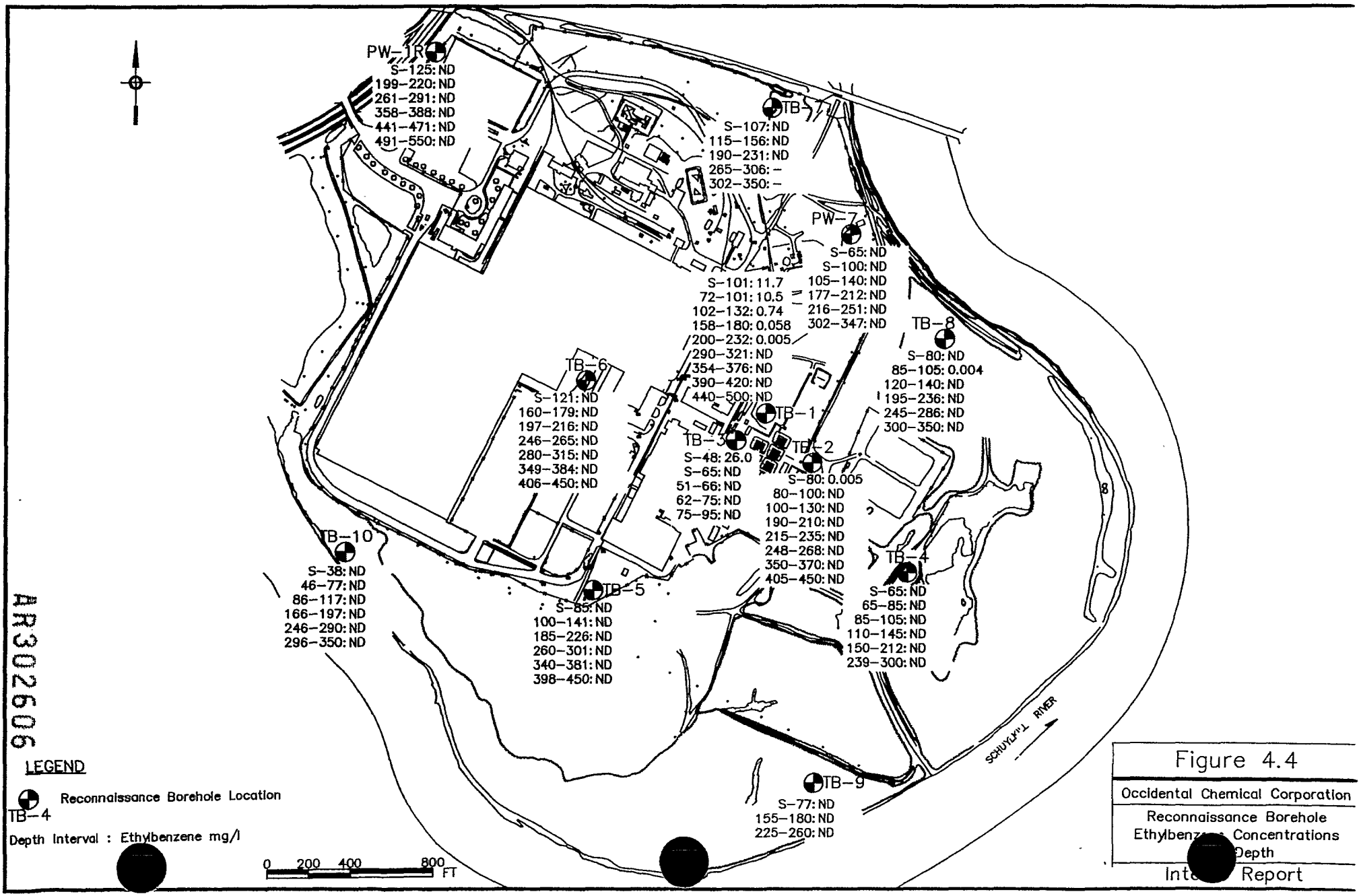



Figure 4.4

Occidental Chemical Corporation

Reconnaissance Borehole Ethylbenzene Concentrations Depth Interval Report

AR302606

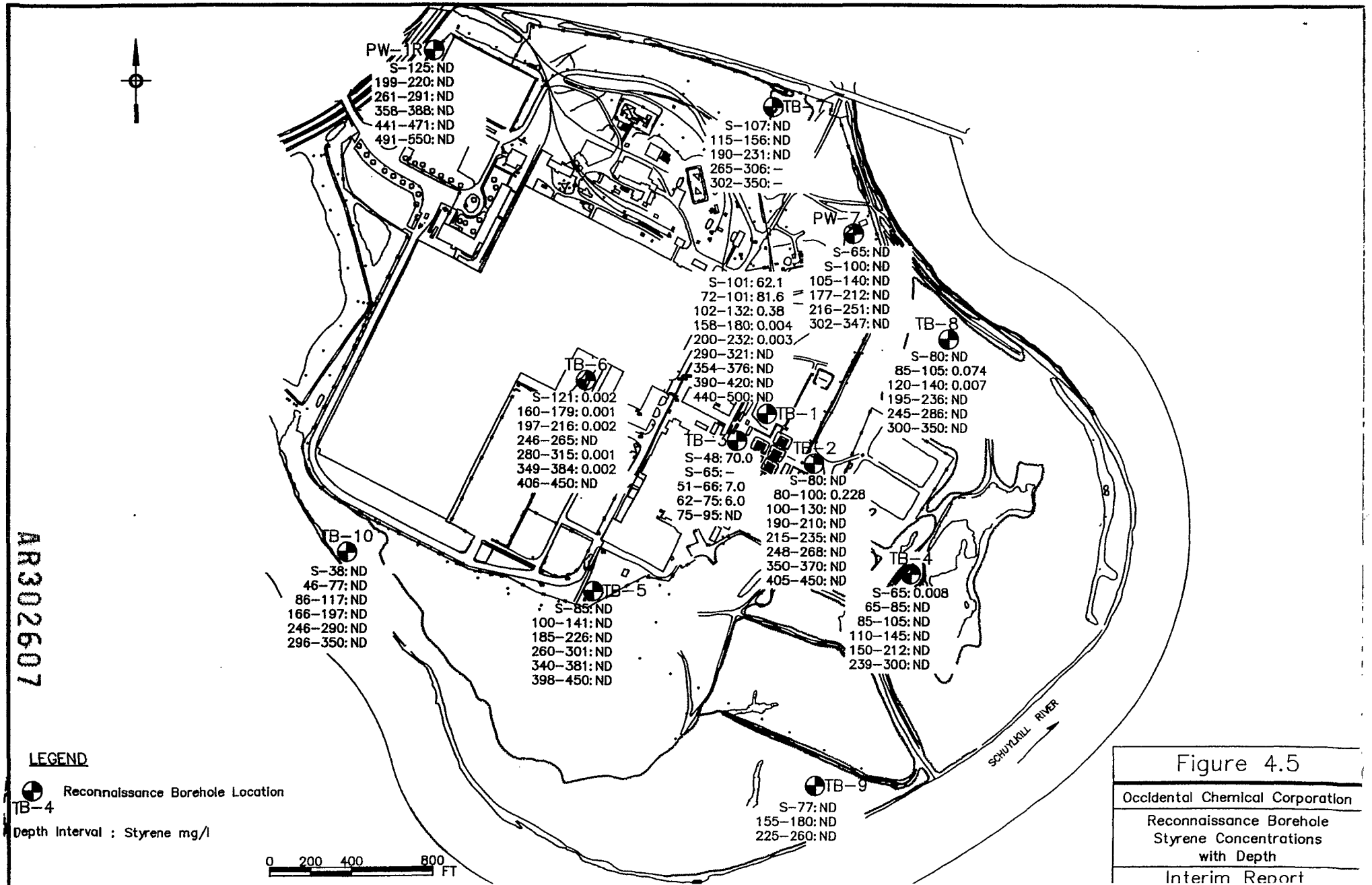



Figure 4.5

Occidental Chemical Corporation

Reconnaissance Borehole Styrene Concentrations with Depth

Interim Report

AR302607

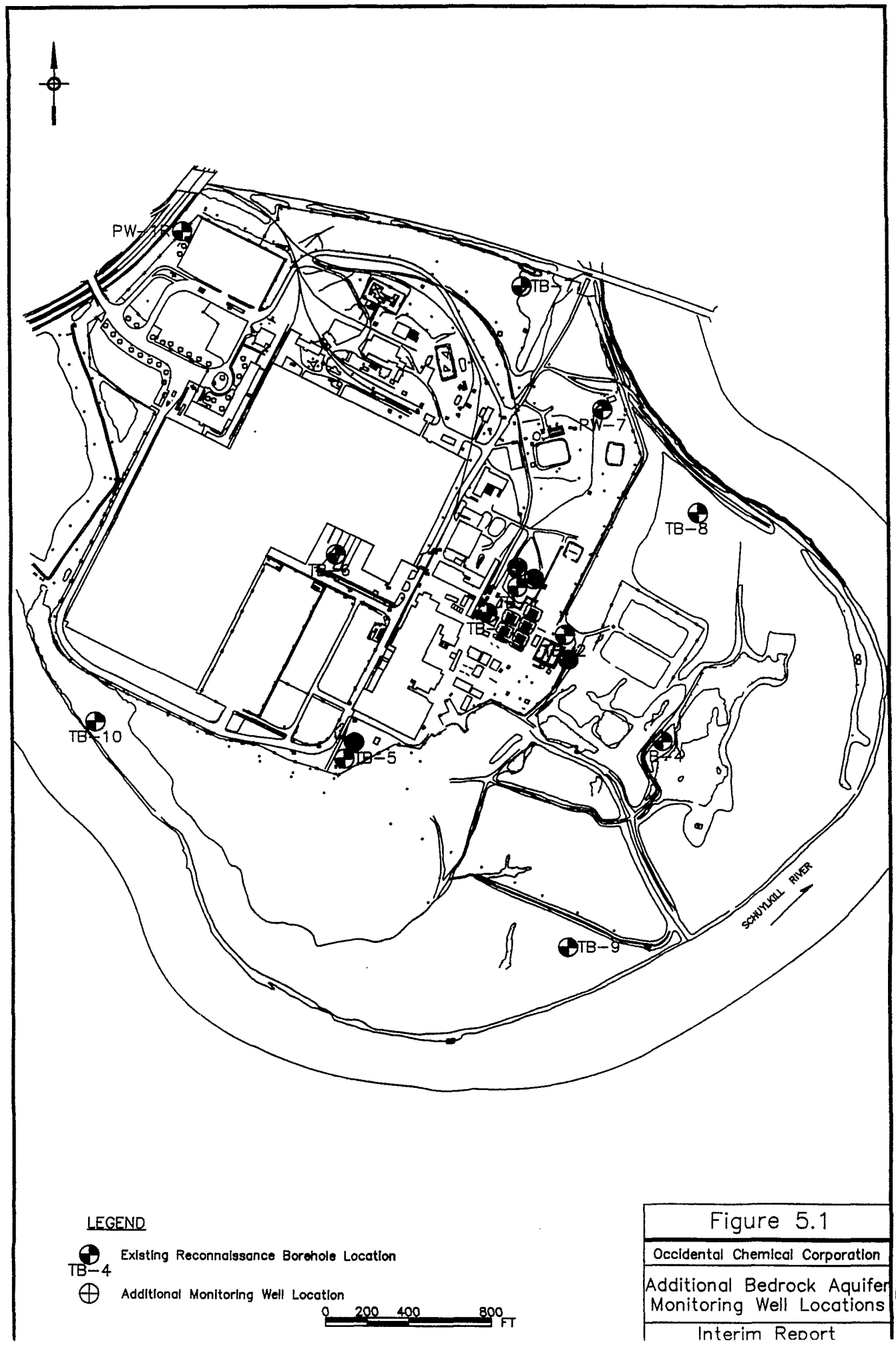



Figure 5.1

Occidental Chemical Corporation

Additional Bedrock Aquifer Monitoring Well Locations

Interim Report

AR302608