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7. Abstract

WHC, 1992, *Hydrogeologic Model for the 200 East Groundwater Aggregate Area*, WHC-SD-EN-TI-019, Rev. 0, prepared by M. P. Connelly, B. H. Ford, J. W. Lindberg, S. J. Trent and C. D. Delaney, Westinghouse Hanford Company, Richland, Washington, and J. V. Borghese, Pacific Northwest Laboratory for Westinghouse Hanford Company, Richland, Washington.

The hydrogeology and hydrochemistry of the 200 East groundwater aggregate area is interpreted and described in support of the 200 Aggregate Area Management Study using the most currently available hydrogeologic and hydrochemical data. Hydrogeologic interpretation includes detailed assessment of the physical characteristics of vadose zone and uppermost aquifer system beneath the 200 East Area. A comprehensive set of detailed contaminant plume maps are developed for the uppermost aquifer system. Finally, a hydrogeologic conceptual model of the 200 East groundwater aggregate area is provided.

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1.0 INTRODUCTION

Recent modifications to the *Hanford Federal Facility Agreement and Consent Order* (Tri-Party Agreement [Ecology et al. 1990]) require the U.S. Department of Energy (DOE) to implement the *Hanford Past-Practice Strategy* (HPPS) (DOE-RL 1992c). The first step in the implementation of the HPPS is the 200 Aggregate Area Management Study (200 AAMS; Tri-Party Agreement milestone M-27-00). The purpose for the 200 AAMS will be to compile all environmental data and evaluate the usefulness of the data, identify contaminants of concern and applicable remedial actions, focus future site characterization activities, and provide defensible conceptual models. The 200 Areas have been divided into eight source aggregate areas and two groundwater aggregate areas. The source aggregate areas are based on major facility groups and the associated waste disposal operations (B Plant, PUREX, etc.). Two groundwater aggregate areas have been identified that encompass groundwater contamination underlying or originating in the 200 West Area and the 200 East Area, respectively.

This document is a topical report that provides a compilation and evaluation of available hydrogeologic and hydrochemical data collected in and surrounding the 200 East Area. The data compilation and evaluation effort has been conducted in support of the 200 East Groundwater Aggregate Area Management Study report. Information and conclusions found in the document will be incorporated into the 200 East Groundwater Aggregate Area Management Study report where appropriate.

1.1 PURPOSE AND OBJECTIVES

The purpose of the document is to provide a comprehensive overview of groundwater flow characteristics in the 200 East Area and identify the extent and nature of groundwater contamination associated with current and historical liquid waste management operations in the 200 East Area. An emphasis has been placed on integrating the available data so that an aggregate area-scale hydrogeologic conceptual model can be constructed.

Objectives of the document are as follows:

- Compile and analyze hydrogeologic and hydrochemical data collected from within and surrounding the 200 East Area
- Describe groundwater flow characteristics for both the unsaturated and saturated zones
- Develop a comprehensive hydrogeologic conceptual model for the 200 East groundwater aggregate area
- Identify and describe the present nature and extent of groundwater contamination associated with 200 East Area waste management operations.

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2.0 GEOLOGY OF THE 200 EAST AREA

A detailed geologic discussion of the 200 East Area and vicinity has been presented previously by Lindsey et al. (1992). The following geologic discussion is largely a summary of that report. However, more recent geologic interpretations of the areas near B Pond and the Grout Treatment Facility have provided additional geologic information. Those more recent interpretations are reflected in this report. Additional information on Hanford Site and 200 East Area geology can be found in Delaney et al. (1991), Myers et al. (1979), Last et al. (1989), and DOE (1988).

The general stratigraphy of the area is shown in Figure 2-1. Basalt flows of the Columbia River Basalt Group form the bedrock underlying the entire region. In the southern two-thirds of the area, basalt flows are overlain by the Ringold Formation, which is in turn overlain by the Hanford formation (informal designation). In the northern one-third of the area, the Ringold Formation is absent, but the Hanford formation is present except for the areas where basalt is exposed on Gable Mountain. A discontinuous veneer of Holocene eolian deposits consisting of sand and silty sand overlies the Hanford formation. Each of these stratigraphic units is discussed in more detail in the remainder of Chapter 2.0.

2.1 BASALT AND INTERBED STRATIGRAPHY AND GEOLOGIC STRUCTURE

The uppermost Columbia River Basalt flows underlying the 200 East Area and vicinity are within the Elephant Mountain Member of the Saddle Mountain Basalt Formation (Reidel and Fecht 1981). (Hereafter, the 200 East Area and vicinity is called the "map area" and corresponds roughly to the area shown in Figures 2-2 through 2-15.) The Elephant Mountain Member contains two basalt flows (the Ward Gap and lower Elephant Mountain flows) and thickens from approximately 21 m in the northwestern portion of the map area to over 30 m to the south. In the map area most of the Ward Gap flow has been removed by erosion (Reidel and Fecht 1981). Basalt flows of the Elephant Mountain Member are underlain by the Rattlesnake Ridge interbed of the Ellensburg Formation. Typical sediments in the Rattlesnake Ridge interbed are a lower clay or tuffaceous sandstone, a middle micaceous-arkosic and/or tuffaceous sandstone, and an upper tuffaceous siltstone or sandstone. In the map area, the Rattlesnake Ridge interbed thickens from 6 m in the north to about 24 m in the south. The Pomona Member of the Saddle Mountain Basalt lies beneath the Rattlesnake Ridge interbed and thickens from 46 m in the west to 58 m in the east.

The 200 East Area is situated on the generally south-dipping south limb of the Gable Mountain anticline. This anticline consists of a series of *en echelon*, southeast to northwest trending folds (Fecht 1978). The main axis lies about 3 to 4 km north-northeast of the 200 East Area. Several small *en echelon* folds similar to those on Gable Mountain occur on the south limb of the anticline between the main axis of the Gable Mountain anticline and the

northern boundary of the 200 East Area (Figure 2-2).[1] One of these subsidiary anticlines lies about 1 to 2 km northeast of the 200 East Area, and another lies on the northern boundary of the 200 East Area. Both subsidiary anticlines trend northwest-southeast and have been uplifted high enough that basalt is above the current water table. South of the two subsidiary anticlines, basalt flows, sedimentary interbeds, and the Ringold Formation dip southward into the Cold Creek syncline.

Elephant Mountain Member basalt flows are not encountered in two adjacent boreholes (6-53-55 and 6-55-55) north of the 200 East Area (Hoffmann et al. 1992). At this locality the first formation encountered beneath the Hanford formation is the Rattlesnake Ridge interbed of the Ellensburg Formation (Figure 2-2). Although this "window" is portrayed in Figure 2-2 as a nearly oval hole of limited extent, the exact shape of this "window" is unknown because of the lack of subsurface data. The "window" may be connected to the structural low to the north or elongated in a northwest-southeast direction by

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[1]All contour maps in this report were generated by Interactive Surface Modeling (ISM) (a trademark of Dynamic Graphics Inc.) from Dynamic Graphics Inc. on a Silicon Graphics Personal Iris (a trademark of Silicon Graphics) engineering workstation. This program uses a bi-harmonic cubic spline to fit a surface through the data points. The isopach maps and structure contour maps were built by generating the top of basalt map and then working upward. Each succeeding layer must account for the layers beneath it. Finally, the uppermost layer must be consistent with the ground surface. Therefore, at times the reader will note that there seems to be more detail then the data would suggest. This extra detail is from information that was passed from the layers below.

There are both advantages and disadvantages to computerized contouring. The major advantages are ease of contouring, the ability to manipulate the contour maps after generating them, and to have a consistent contour method in order to compare changes from map to map. The major disadvantages are poor extrapolation in areas with little or no data, bulls-eyes around inconsistent data points, and extra contour lines with little or no data to explain the contour line. Generally the advantages outweigh the disadvantages. However, it should be remembered that creating two-dimensional maps (showing the general trend and values between boreholes) from one-dimensional borehole data is an approximation at best.

In the contour maps presented in this appendix, there was an attempt to use all available data. However, only the actual borehole data relating to the particular surface or layer are shown on the maps. For example, if a borehole did not fully penetrate a geologic layer (unit, sequence, formation), an interpolated thickness value was calculated. This thickness value was calculated by subtracting the elevation on the overlying structure contour map from the elevation on the underlying structure contour map. However, at that position on the map a value would not be printed. In contrast, when a borehole fully penetrates a geologic layer, the data derived from that borehole would be printed on the map.

Additionally, control points were used to control the extrapolation in areas where there are few data points. These control points are based on the geologists knowledge of how these units were trending outside the boundaries used on these maps.

scouring during Pleistocene cataclysmic flooding. Regardless, the window is probably erosional and formed during cataclysmic flooding.

2.2 RINGOLD FORMATION

Ringold Formation strata are found throughout the southern two-thirds of the map area where they disconformably overlie basalt. They are missing in the northern one-third of the area. The Ringold Formation locally is divided, from the bottom to the top of the section, into fluvial gravels of unit A, the paleosol and lucustrine muds of the lower mud sequence, and the fluvial gravels of unit E. Units B and D are not present in the map area. Unit C and the overbank dominated deposits of the upper Ringold unit are found only in the extreme southern portion of the map area. There they pinch out to the north and thicken to the south toward the Cold Creek syncline. Most of the Ringold Formation deposited in the northern one-third of the map area was subsequently removed by erosion prior to deposition of the Hanford formation. Detailed descriptions of units and sequences are provided by Lindsey et al. (1992).

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2.2.1 Unit A of the Ringold Formation

The fluvial gravels and intercalated fluvial sands of unit A generally thicken and dip to the south (Figures 2-3 and 2-4). The zero thickness line runs approximately east-west through the northern half of the 200 East Area and immediately north of B Pond. This pinchout is against the structural highs in the underlying basalt. However, thin, lenticular occurrences of unit A are found locally in the area between the 200 East Area and Gable Mountain. In the southern portion of the map area, the unit is over 30 m thick. The southward dip is relatively uniform into the Cold Creek syncline in the southern portion of the map area where unit A is overlain by other Ringold Formation units. However, where the unit forms the Ringold top (from the pinchout on the east side of the 200 East Area to the southeastern portion of the Grout Treatment Facility), its upper surface is irregular, probably due to erosion by Pleistocene flooding.

2.2.2 Lower Mud Sequence of the Ringold Formation

The overbank and lacustrine deposits of the lower mud sequence overlie unit A in the southwestern portion of the 200 East Area and like unit A, generally thicken and dip to the south (Figures 2-5 and 2-6). Muds within this sequence are sometimes paleosols that show evidence of bioturbation or subaerial exposure and sometimes are mixed with coarser sediment. The lower mud sequence is generally absent in and north of the northern part of the 200 East Area, at the main lobe of B Pond, and at the Grout Treatment Facility (see Figure 2-2 for locations). To the north of B Pond, thin beds of clay or silt that directly overlie basalt may correlate with the lower mud sequence. The zero thickness line is irregular and generally runs across the southern portion of the 200 East Area, around the southern portion of the Grout Treatment Facility, through the main and "A" lobes of B Pond, around the thin beds of mud north of B Pond, and then northward through the structural low near Gable Mountain. At some locations the pinchout is against uplifted

basalt, and in other locations the sequence is truncated by overlying deposits of Ringold unit E or Hanford formation. The greatest thickness of lower mud sequence is over 30 m in the southern portion of the map area.

2.2.3 Unit E of the Ringold Formation

Unit E, the uppermost unit of the Ringold Formation in the 200 East Area, is located in the southwestern portion of the map area and generally thickens to the west and south (Figures 2-7 and 2-8). It is dominantly composed of fluvial gravel, but strata typical of the fluvial sand and overbank facies may be encountered locally. Predicting where intercalated lithologies occur is very difficult. The zero thickness line enters the 200 East Area on the west side, crosses the southern portion of the area, and then continues nearly in an east-west direction south of the Grout Treatment Facility. The unit is thickest in the southern portion 200 East Area where it is over 35 m thick. Irregularities in the upper surface of the unit are probably due to scouring by Pleistocene cataclysmic flooding.

Figure 2-9 is a structure contour map of the top surface of the Ringold Formation (or basalt where Ringold sediments are missing) and shows (by contrasting shades) the formations that lie directly under the Hanford formation. From this map it can be seen that the uppermost Ringold Formation unit in the southwestern one-third of the map area is unit E. The lower mud sequence forms the upper Ringold Formation surface east of the Grout Treatment Facility and in low basalt areas north and east of B Pond. The top of unit A is the upper surface of the Ringold Formation in the central portion of the 200 East Area and to the east through the Grout Treatment Facility and the main lobe of B Pond.

In the 200 East Area, the relationship between Ringold and Hanford formations is a contact that is a combination of both erosional and depositional processes. To the northeast and northwest of the 200 East Area, the pinchouts of Ringold Formation units are apparently "on-lap" or depositional in nature because the younger units extend further into the pinchout than the older units. However, in the immediate vicinity of the 200 East Area, the relationship between Ringold Formation units appears to be "off-lap" or erosional because the older units extend further. This "off-lap" area has a northwest-southeast trend that is consistent with the location and direction of the underlying basalt structure, which, in turn, controlled the direction of floodwaters during Pleistocene cataclysmic flooding. Apparently, floodwaters scouring the 200 East Area during Pleistocene time were directed there by Gable Gap and the subsidiary anticlines of Gable Mountain.

2.3 PLIO-PLEISTOCENE UNIT AND EARLY "PALOUSE" SOIL

The Plio-Pleistocene unit and early "Palouse" soil are not found in or near the 200 East Area. The closest occurrence of these sediments is near the eastern boundary of the 200 West Area. These units are described in more detail in Last et al. (1989), DOE (1988), and Lindsey et al. (1991).

2.4 HANFORD FORMATION

The Hanford formation (informal designation), consisting of sediments deposited during cataclysmic flooding, is continuous over all of the map area except for Gable Mountain where basalt crops out. Generally it overlies basalt where the Ringold Formation is not present and overlies Ringold Formation elsewhere.

As discussed by Lindsey et al. (1992), the cataclysmic flood deposits of the Hanford formation are divided into three facies: gravel-dominated, sand-dominated, and silt-dominated. Based on the distribution of these three facies, the Hanford formation is divided locally into three informal stratigraphic sequences. These sequences are designated as the (1) lower gravel, (2) sandy unit, and (3) upper gravel. However, because of the variability of Hanford formation sediments, contacts between these sequences are sometimes difficult to distinguish, especially where the sandy sequence is missing and the upper gravel directly overlies the lower gravel.

The Hanford formation characteristically has intervals of sediments that are persistently coarse, fine upward, and sometimes contain fine-grained beds. Mineralogical and geochemical data were not used in differentiating sequences because of the lack of a comprehensive mineralogical and geochemical data set. The three Hanford formation sequences discussed here are essentially the same units as defined by Last et al. (1989). None of the three sequences are continuous across the entire 200 East Area and vicinity; they display marked changes in thickness and continuity and are lithologically heterogenous.

The sequences comprising the Hanford formation in the vicinity of the 200 East Area are composed mostly of the gravel-dominated and sand-dominated facies. Silt-dominated facies are relatively rare except in some areas toward the south. Sediments typical of the gravel-dominated facies comprise most of the lower and upper gravel sequences. Thin (<1 m) silt- and sand-dominated facies probably are intercalated throughout these gravel sequences. The third sequence, where it occurs, consists of the sand-dominated facies with lesser intercalated occurrences from both the gravel-dominated and silt-dominated facies. This third or sandy sequence generally is situated between the lower and upper gravel sequences. More detailed characteristics and distribution of the three sequences are summarized in the following sections.

2.4.1 Lower Gravel Sequence

The lower gravel sequence is dominated by deposits typical of the gravel-dominated facies. Local intercalated sandy beds typical of the sand-dominated facies also are found. The lower gravel sequence ranges in thickness from 0 to over 45 m, and it is found throughout most of the 200 East Area (Figure 2-10). However, it is absent in the east-central portion of the 200 East Area and in part of the area between 200 East and 200 West areas. The isopach map (Figure 2-10) and structure contour map (Figure 2-11) of the lower gravel sequence do not show the lower gravel sequence to the northeast or northwest (north of the zero thickness of the sandy sequence). The lower gravel sequence may be present to the northeast or northwest, but because the sandy sequence is missing in these areas, the upper and lower gravel sequences are indistinguishable. Where the sandy sequence is present, the contact

between the sandy and lower gravel sequences is interpreted to be at the top of the first thick gravelly interval (6 m or greater in thickness) encountered below the sand-dominated strata of the sandy sequence. This contact is not at the same horizon at all localities because of local facies variability.

2.4.2 Sandy Sequence

The sandy sequence consists of a heterogenous mix of sands typical of the sand-dominated facies. Although it is composed predominantly of sand, gravel becomes more common toward the north, and silt becomes more common to the south. Thickness of the sandy sequence ranges from 0 m north and east of the 200 East Area to over 90 m (see Figure 2-12) in the central portion of the 200 East Area. It is laterally equivalent with the lower fine sequence in the 200 West Area (Last et al. 1989, Lindsey et al. 1991). The sandy sequence is differentiated from the overlying upper gravel sequence on the basis of the relative abundance of sand-dominated versus gravel-dominated deposits. The top of the sandy sequence is placed at the top of the highest thick (>6 m) sand-dominated interval. The top surface of the sandy sequence generally rises to the southwest with the highest levels in the south and west of the 200 East Area (Figure 2-13). This rise to the southwest of the upper surface of the sandy sequence corresponds roughly with a general thickening of the sequence in the same direction. Also it reflects a depositional environment with decreasing flood velocities away from the major flood channels to the northeast. This depositional environment resulted in a large flood bar covering most of the 200 East and West areas and is largely responsible for the prominent 200 Area Plateau.

2.4.3 Upper Gravel Sequence

The uppermost deposits of the Hanford formation in the vicinity of the 200 East Area consist of gravel-dominated strata with lesser occurrences of the sand-dominated facies locally. This gravel-dominated unit, identified as the upper gravel sequence by Lindsey et al. (1992), ranges from over 60 m thick in the north to zero in the south (Figure 2-14). The sequence varies greatly in thickness and is even absent locally in three areas. Those areas are (1) near the southwestern corner of the 200 East Area, (2) in the east-central portion of 200 East Area, and (3) in the area of the Grout Treatment Facility. Where the upper gravel sequence is thickest, in the north, it is in the form of an elongate northwest-southeast sedimentary body. The upper gravel sequence is laterally contiguous with the upper gravel unit described in the 200 West Area (Lindsey et al. 1991).

As indicated in Section 2.4.1 on the lower gravel sequence, upper and lower gravel sequences are not differentiated in areas where the sandy sequence is missing. Therefore, northeast and northwest of the 200 East Area where Figure 2-14 shows that the upper gravel sequence is missing, the sequence may actually be present. Figure 2-15 is an isopach map of the total Hanford formation thickness showing the thickness in areas where the Hanford formation is undifferentiated, as well as in areas where the sandy sequence is present.

2.4.4 Clastic Dikes

Clastic dikes occur in the Hanford formation in the 200 East Area and vicinity. For instance, many were found in the excavation of the Grout Treatment Facility. Because they do not occur in Holocene eolian deposits and are sometimes truncated by Hanford formation sediments, their age is probably Pleistocene. It is not known whether clastic dikes occur in the Ringold Formation in the map area because they are difficult to identify in drill core, and excavations in the area do not reach the Ringold Formation. They do occur in Ringold Formation sediments elsewhere (Grolier and Bingham 1978), but these occurrences are rare. Total depth of the dikes in the 200 East Area is also unknown, but they may extend over 30 m as in the Touchet beds of the Walla Walla River valley (Alwin 1970). Some extend below the deepest excavations in the 200 East Area. Where clastic dikes occur they are often quite abundant and may form polygonal networks where they intersect the ground surface. Newcomb (1962) measured networks of clastic dikes and found they have cell diameters ranging from 15 m to 120 m.

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Clastic dikes are found in all facies of the Hanford formation in the 200 East Area and vicinity, but they are more common in the finer grained facies and rare in open-work gravel. Widths of the clastic dikes range from only a few centimeters to over a meter. Attitudes of the dikes range from vertical to horizontal, with near-vertical dikes being more common. Material filling the dikes is locally derived and ranges from mud to gravel. Mud to sand is most common. In some cases, filling material can be traced to underlying, overlying, or interbedded sediments. The dikes are either simple and composed of one layer of filling material or composite and composed of multiple layers. Sometimes there is a fine layer of mud on dike walls.

Origin of clastic dikes in the Columbia Plateau has been attributed to earthquakes (Jenkins 1925), melting of buried ice and frozen sediments (Lupher 1944), upward injections of groundwater (Newcomb 1962), thermal contraction of permafrost (Alwin 1970), desiccation cracks or deep frost cracks (Alwin 1970), and extension fracturing from the loading of turbidites on unstable underlying sediments (Baker 1973). None of these suggested origins can explain all the characteristics displayed by the clastic dikes. They may actually be multigenetic. One mechanism proposed by Black (1979) accommodates most of the characteristics of dikes in the 200 East Area and vicinity. It is mentioned here as an example. Black (1979) suggests that the dikes were formed during Pleistocene cataclysmic flooding and are the result of hydraulic injection of water and sediment into cracks formed by the sudden loading of water on the ground surface.

2.5 HOLOCENE SURFICIAL DEPOSITS

Holocene-aged deposits in the 200 East Area and vicinity are dominated by laterally discontinuous eolian sheet sands and dunes. These deposits consist of very fine- to medium-grained sand to silty sand. The eolian deposits have been removed from some of the area by construction activities. Where the eolian sands are present, they are predominantly composed of thin sheets, usually less than 3 m thick. Longitudinal (east-west to southwest-northeast trending) dunes are well developed in the southern part of the study area.

Although the dunes are stabilized at the present time, there is the chance that they could become active again with a change in the climate. The Holocene surficial deposits are not differentiated from the upper gravel sequence of the Hanford formation because they are relatively thin and because of the lack of definition on many of the borehole geologic logs available for the 200 East Area and vicinity.

3.0 HYDRAULIC PROPERTIES OF THE VADOSE ZONE AND SATURATED ZONE

An understanding of how water migrates through the different lithologic units is essential in evaluating the health and environmental risks associated with a waste disposal site at the surface. It is of critical importance to determine each unit's hydraulic properties for use in predicitive numerical models. These numerical models are used to estimate contaminant flux to either the water table (unsaturated flow models) or to a point of compliance (unsaturated and/or saturated flow models). This discussion will focus on the measurement of hydraulic properties, where these properties were measured, and their application to the stratigraphic units described in Chapter 2.0.

3.1 VADOSE ZONE

The vadose zone is the region above the water table in which the pore spaces of the sediments are usually only partially filled with water. This zone in the 200 East groundwater aggregate area encompasses, in descending order, the following major lithologic units (Lindsey et al. 1991): Hanford coarse-grained sequence, Hanford fine-grained sequence, Ringold gravel unit E, Ringold lower mud unit, Ringold gravel unit A, and the Elephant Mountain Basalt. A generalized description of each of these units is given in Chapter 2.0. Movement of water through the vadose zone to the water table is controlled by the following factors: depth to the water table (Figure 3-1); amount of natural and artificial recharge; thickness, lateral distribution, and dip of the underlying sediments; and the hydraulic properties and moisture content of these sediments.

3.1.1 Measurement of Unsaturated Hydraulic Conductivity

Although a variety of methods have been developed to measure hydraulic functions (Klute 1986), these are often costly and difficult to implement, especially for unsaturated hydraulic conductivity. An alternative to direct measurement of unsaturated hydraulic conductivity is to use theoretical methods that predict the unsaturated hydraulic conductivity from measured soil water retention data (van Genuchten et al. 1991). Rockhold et al. (1988) compared direct measurement of unsaturated hydraulic conductivities to those predicted from measured water retention data for three sites at Hanford. They found that each method produced different results and recommend that several methods should be used to determine unsaturated hydraulic conductivities. Although only water retention data have been reported for the sediments in the 200 East Area, there is an ongoing effort to directly measure the unsaturated hydraulic conductivity. When that data become available, a comparison will be made between directly measured unsaturated hydraulic conductivity and that predicted by measured soil water retention data.

Sixty samples from the 200 East Area have had water retention data measured. These samples were collected from the wells shown in Figure 3-2. Fourteen samples were measured as part of the grout performance assessment and are reported in Smoot et al. (1989). Another 24 were measured as part of the site characterization at U.S. Ecology (Bergeron et al. 1987). The remaining 22 samples were analyzed as part of the ongoing RCRA and CERCLA activities

within the 200 East Area. Only the water retention data for the drainage curves have been measured. For each of these samples, a laboratory-measured, saturated hydraulic conductivity is also given (Appendix A). van Genuchten's computer program RETC (1978) uses a nonlinear, least-squares curve-fitting routine to match the measured soil water retention data to the following equation:

$$\theta = \theta_r + \frac{(\theta_s - \theta_r)}{[1+(\alpha\varphi)^n]^m} \tag{1}$$

where

θ	=	Volumetric moisture content (percentage of water in the total volume of the sample)
θ_s	=	Saturated moisture content (pore space total filled with water)
θ_r	=	Residual moisture content
α	=	van Genuchten curve-fitting parameter (1/cm)
φ	=	Matric potential (suction head (-cm))
n	=	van Genuchten curve-fitting parameter
m	=	1 - 1/n.

Using Mualem's (1976) general model (equation 2) to predict the hydraulic conductivity from soil retention data,

$$K(S_e) = K_s S_e^{\ell}\left[\frac{f(S_e)}{f(1)}\right]^2 \tag{2}$$

$$\text{where} \qquad f(S_e) = \int_0^{S_e} \frac{1}{\varphi(x)}\,dx$$

where $S_e = (\theta - \theta_r)/(\theta_s - \theta_r)$, and ℓ is a pore-connectivity parameter estimated by Mualem (1976) to be about 0.5 as an average for many soils. Equations 2 and 3 are from van Genuchten et al. (1991, p. 13).

van Genuchten (1978) derived a closed form analytic solution to equation 1 to predict the relative hydraulic conductivity (K_r) by assuming m = 1 - 1/n at a specified volumetric moisture content. This solution is given in equation 3.

$$K_r = \left[\frac{(\theta-\theta_r)}{(\theta_s-\theta_r)}\right]^{1/2}\left\{1-\left[1-\left(\frac{(\theta-\theta_r)}{(\theta_s-\theta_r)}\right)^{1/m}\right]^m\right\}^2 \tag{3}$$

The unsaturated hydraulic conductivity at a specified moisture content is:

$$K(\theta) = K_{(sat)} * K_r \tag{4}$$

Saturated hydraulic conductivities for each of the samples were measured in the laboratory using a permeameter. Drying curve parameters were obtained by setting θ_s at total porosity. The values of θ_r, α_d, and n were then fitted to the drainage data. The results of the linear regression analyses for the sediment samples from the 200 East Area are given in Appendix A.

3.1.1.1 Hanford Gravels. Fifteen drainage curves were measured within the Hanford gravels. No effort was made to separate the water retention data between the upper and lower gravels sequence, since only the presence of the Hanford sand sequence differentiates between the upper and lower gravel sequences. One sample came from well 299-E25-234 (Smoot et al. 1989) at the Grout Test Facility and one sample each from wells MW-5, MW-8, and MW-10 on the U.S. Ecology site (Bergeron et al. 1987). The remaining samples were measured as part of RCRA and CERCLA activities at B Pond (one sample each from wells 699-43-41H and 699-42-41B) and 200-BP-1 (four samples from vadose boring B-61-A, three samples from well 299-E33-38, and one sample from well 299-E33-40). The samples taken as part of the ongoing RCRA and CERCLA activities were from undisturbed split-tube samples and measured according to ASTM D 422-63 (sieve analyses), and ASTM D 2325-68 and ASTM D 3152-72 (moisture retention data for both coarse- and fine-grained sediments).

The functional relationship between the volumetric moisture content (percentage of the total volume of the sample) and the unsaturated hydraulic conductivity as predicted by the van Genuchten model for these samples is plotted in Figure 3-3. It can be readily seen from this figure that this is a nonlinear relationship; with a small change in volumetric moisture content, the unsaturated hydraulic conductivity can change by orders of magnitude. Laboratory-measured saturated hydraulic conductivity ranges from 2.1E-6 cm/s in well 299-E33-38 at 57.9 m (sandy clay) to 5.4E-3 cm/s from well 6-42-41B cm/s (sandy gravel). These samples indicate a high degree of variability for moisture retention within the Hanford gravels. Particle size analyses for the samples from the Grout Test Facility and U.S. Ecology are recorded in Smoot (1989) and Bergeron (1987). No seive analyses are available from B Pond, while the sieve analyses for 200-BP-1 are provided in Appendix A. Calculated moisture retention curves for all the samples and the data used to generate these curves are also provided in Appendix A.

3.1.1.2 Hanford Sand Sequence. A total of 41 samples have been measured for the Hanford sand sequence in the 200 East Area. The majority of these samples were measured for site characterization at the Grout Test Facility (Smoot et al. 1989) and U.S. Ecology (Bergeron et al. 1987). There are 21 samples from U.S. Ecology's monitoring wells MW-5 (9 samples), MW-8 (2 samples), and MW-10 (10 samples). From the Grout Test Facility, 17 samples were measured. These samples came from well 299-E25-234 (12 samples) and the east wall of the 241 AP Tank Farms (5 samples). The remaining samples were measured as part of the ongoing CERCLA site characterization at 200-BP-1 Operable Unit. Here, three samples were measured from well 299-E33-38.

The unsaturated hydraulic conductivity curves are plotted in Figures 3-4 and 3-5. The range in laboratory-measured saturated hydraulic conductivity is from 1.38E-05 cm/s for the sample at 16.7 m in well 299-E25-234 to 4.4E-02 cm/s for the sample at 39.6 m in MW-5. These samples exhibit a wide degree of variability for the soil moisture retention data. Particle size distribution for the Grout Test Facility and U.S. Ecology can be found in Smoot et al. (1989) and Bergeron et al. (1987), respectively. Particle size distributions for the 200-BP-1 samples are presented in Appendix A.

3.1.1.3 Ringold Gravel Unit E. One soil moisture retention curve was measured as part of the site characterization for the U.S. Ecology site. This sample was collected from U.S. Ecology's monitoring well MW-5 at depth of 91.3 m. Future work plans in areas where this unit is exposed above the water table should include collecting soil moisture retention data.

3.1.1.4 Ringold Lower Mud Unit. Two samples from Ringold Lower Mud Unit have had soil moisture retention measured as part of the RCRA groundwater investigation at the B Pond. The samples were collected from wells 699-42-41B and 699-40-40B at depths of 36.1 m and 38.3 m, respectively. These samples are characterized by low hydraulic conductivity (1.0E-08 and 3.0E-08 cm/s) and high porosity (0.568 and 0.573). Unsaturated hydraulic conductivity curves have been calculated and are shown in Figure 3-6. This unit is primarily exposed above the water table to the east and north of 200 East Area. Work plans in areas where this unit is exposed above the water table should include collecting more undisturbed samples to measure soil retention data for this unit.

3.1.1.5 Ringold Gravel Unit A. Soil moisture retention was measured in two samples from this unit in the area of B Pond. These samples were taken from wells 699-43-41G (50.8) and 699-43-40 (39.9 m) in the saturated zone. Unsaturated Ringold Gravel Unit A does not exist near B Pond. The laboratory-measured saturated hydraulic conductivity for these samples are 1.9E-06 cm/s and 1.9E-04 cm/s. The unsaturated hydraulic conductivity curves are provided in Figure 3-6. This unit is present in the unsaturated zone throughout the south-central portion of the 200 East Area (see Chapter 5.0), and future work plans should include collecting more undisturbed samples to measure soil retention data in this unit.

3.1.1.6 Elephant Mountain Member of the Saddle Mountain Basalt. This unit exists above the water table just to the north of the 200 East Area and underlying the western half of the 200 North Area. Because this unit acts as an aquitard in this area, no soil moisture retention data have been collected on the basalts.

3.1.2 Summary of Unsaturated Zone Hydrologic Parameters

The functional relationship between unsaturated hydraulic conductivity, matric potential, and moisture content has been calculated for a number of samples in the sediments underlying the 200 East Area. The curve-fitting parameters for all of the samples measured are given in Table 3-1. It is evident from these samples that both saturated and unsaturated hydraulic conductivity can vary by several orders of magnitude within a lithologic unit.

Table 3-1. Summary of van Genuchten Curve Fitting Parameters for the Major Lithologic Units. (sheet 1 of 2)

Hanford Sand Sequence (Sample Location: Well and Depth)	Residual Vol. Water Content	Saturated Vol. Water Content	Alpha 1/cm	n	Saturated Hydraulic Conductivity
TANK FARM : 241-AP-1					
Elev. 192 m above MSL	0.032	0.417	0.1008	2.9224	2.60e-03
TANK FARM : 241-AP-2					
Elev. 194 m above MSL	0.096	0.521	0.0309	3.1071	6.00e-04
TANK FARM : 241-AP-3					
Elev. 196 m above MSL	0.055	0.436	0.0494	3.2863	8.26e-04
TANK FARM : 241-AP-4					
Elev. 200 m above MSL	0.042	0.454	0.0666	2.6751	2.30e-03
TANK FARM : 241-AP-5					
Elev. 201 m above MSL	0.013	0.428	0.0118	1.3945	4.90e-05
200-BP-1 : Well 299-E33-38, 15.1 m	0.005	0.239	1.4263	1.2658	5.70e-05
200-BP-1 : Well 299-E33-38, 51 m	0.000	0.246	0.4612	1.2507	5.00e-04
200-BP-1 : Well 299-E33-38, 57.1 m	0.002	0.371	0.0513	1.5057	7.10e-05
GROUT:Well 299-E25-234: 1.5 m	0.025	0.381	0.0863	1.3135	5.73e-04
GROUT: Well 299-E25-234: 5.9 m	0.022	0.499	0.5474	1.2814	8.88e-04
GROUT: Well 299-E25-234: 7.8 m	0.028	0.511	0.0761	1.3888	1.80e-03
GROUT:Well 299-E25-234: 8.9 m	0.023	0.435	0.1521	1.2299	2.41e-05
GROUT: Well 299-E25-234: 11.3 m	0.060	0.522	0.0912	1.2833	5.77e-04
GROUT: Well 299-E25-234: 14.1 m	0.008	0.418	0.1763	1.3625	2.99e-04
GROUT: Well 299-E25-234: 16.7 m	0.009	0.453	0.1563	1.3959	1.38e-05
GROUT: Well 299-E25-234: 21.2 m	0.010	0.392	0.3946	1.3456	1.21e-03
GROUT: Well 299-E25-234: 25.6 m	0.007	0.383	0.2095	1.3412	1.78e-04
GROUT: Well 299-E25-234: 30.5 m	0.007	0.372	0.4868	1.2997	2.24e-04
GROUT: Well 299-E25-234: 33.7 m	0.007	0.429	0.2512	1.6008	2.82e-04
GROUT: Well 299-E25-234: 35.8 m	0.007	0.430	0.1007	1.4015	3.64e-03
US Ecology: Well MW10: 13.7 m	0.022	0.420	0.0640	1.6950	5.30e-03
US Ecology: Well MW10: 26.2 m	0.025	0.460	0.0462	1.9281	2.00e-02
US Ecology: Well MW10: 32.0 m	0.027	0.390	0.0460	1.6380	1.70e-03
US Ecology: Well MW10: 38.1 m	0.021	0.440	0.0441	1.7647	4.40e-03
US Ecology: Well MW10: 50.3 m	0.031	0.460	0.0351	2.3036	6.60e-03
US Ecology: Well MW10: 59.4 m	0.049	0.330	0.0267	2.3731	2.60e-03
US Ecology: Well MW10: 62.5 m	0.021	0.360	0.0760	1.6255	6.60e-03
US Ecology: Well MW10: 74.7 m	0.018	0.440	0.0630	1.7787	7.30e-03
US Ecology: Well MW10: 80.8 m	0.017	0.420	0.0386	2.1405	2.60e-03
US Ecology: Well MW10: 86.9 m	0.017	0.470	0.0512	2.0848	3.50e-03
US Ecology: Well MW5: 15.2 m	0.029	0.440	0.0810	1.9709	3.50e-02
US Ecology: Well MW5: 21.3 m	0.049	0.440	0.0144	5.4201	1.60e-03
US Ecology: Well MW5: 27.4 m	0.022	0.440	0.0605	2.4414	2.20e-03
US Ecology: Well MW5: 39.6 m	0.031	0.470	0.0184	3.3059	4.40e-02
US Ecology: Well MW5: 51.8 m	0.028	0.440	0.0278	2.7143	3.80e-03
US Ecology: Well MW5: 57.9 m	0.024	0.430	0.0427	3.0699	5.80e-03
US Ecology: Well MW5: 64.0 m	0.030	0.430	0.1553	2.0330	5.40e-03
US Ecology: Well MW5: 70.1 m	0.024	0.440	0.0427	3.1603	5.30e-03
US Ecology: Well MW5: 82.3 m	0.000	0.440	0.1109	1.3428	5.50e-04
Us Ecology: Well MW8: 44.2 m	0.034	0.520	0.0186	2.1503	8.80e-04
US Ecology: Well MW8: 56.5 m	0.037	0.400	0.0764	2.0668	7.10e-03
Hanford Upper and Lower Gravel Units (Sample Location: Well and Depth)					
200-BP-1 : Well 299-E33-38, 1.9 m	0.000	0.526	0.0081	1.7389	2.00e-05
200-BP-1 : Well 299-E33-38, 62.3 m	0.000	0.291	0.0101	1.3652	4.20e-03
200-BP-1 : Well 299-E33-38, 57.9 m	0.000	0.419	0.0027	1.5688	2.10e-06
200-BP-1 : Well 299-E33-40, 14 m	0.000	0.302	0.1028	1.2734	6.00e-04
200-BP-1 : Well 216-B-61A, 4.1 m	0.035	0.347	0.0061	1.5248	1.80e-03
200-BP-1 : Well 216-B-61A, 5.8 m	0.049	0.325	0.0060	1.5120	2.80e-03
200-BP-1 : Well 216-B-61A, 7.0 m	0.000	0.343	0.0134	1.2816	4.00e-04
200-BP-1 : Well 216-B-61A, 8.8 m	0.020	0.280	0.0609	1.2811	1.80e-05
B Pond: Well 6-43-41H: 16.6 m	0.104	0.451	0.0165	1.7894	1.10e-05
B Pond: Well 6-42-41B: 25.8 m	0.030	0.355	0.0426	1.3900	5.40e-03
GROUT: Well 299-E25-234: 38.4 m	0.008	0.366	0.8522	1.3429	1.98e-03
GROUT: Well 299-E25-234: 40.8 m	0.011	0.263	0.0195	1.3183	2.76e-05
US Ecology: Well MW10: 93.0 m	0.021	0.400	0.0427	2.2500	4.40e-03
US Ecology: Well MW5: 91.4 m	0.000	0.400	0.0456	1.3661	7.70e-04
US Ecology: Well MW8: 4.6 m	0.039	0.440	0.0440	3.0387	1.70e-03

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Table 3-1. Summary of van Genuchten Curve Fitting Parameters for the Major Lithologic Units. (sheet 2 of 2)

Hanford Sand Sequence (Sample Location: Well and Depth)	Residual Vol. Water Content	Saturated Vol. Water Content	Alpha 1/cm	n	Saturated Hydraulic Conductivity
Ringold Gravel Unit E (Sample Location: Well and Depth)					
US Ecology: Well MW5: 91.4 m	0.000	0.400	0.0456	1.3661	7.70e-04
Ringold Lower Mud Unit (Sample Location: Well and Depth)					
B Pond: Well 6-42-41B: 36.1 m	0.008	0.573	0.0132	1.2586	3.00e-08
B Pond: Well 699-40-40B: 38.3 m	0.000	0.568	0.0051	1.1732	1.00e-08
Ringold Gravel Unit A (Sample Location: Well and Depth)					
B Pond: Well 699-43-41G: 50.8 m	0.094	0.571	0.0150	1.4173	1.90e-06
B Pond: Well 699-43-40: 39.9 m	0.039	0.379	0.0089	1.4739	1.90e-04

*Saturated hydraulic conductivity is the second of a paired samples.

This illustrates the need for evaluating sample location and textural description when selecting moisture characteristic curves. Typically, the choice of a water retention curve is made by examining water retention curves (Appendix A) along with the particle size analyses (Appendix A, Smoot et al. 1989, Bergeron et al. 1987) to distinguish lithologies with significantly different soil textures and hydraulic conductivities.

3.2 SATURATED ZONE

The hydrologic characteristics of the saturated zone above the basalt within the 200 East groundwater aggregate area are varied. Portions of the saturated zone within the Hanford Site have been described using a variety of names, including the suprabasalt aquifer, unconfined aquifer, semiconfined aquifer, uppermost aquifer, Ringold/Hanford producing layer, and Ringold confined aquifer. None of these names truly fit the aquifer system within the 200 East Aggregate Area or the Hanford Site. For lack of a better name, this report will utilize the term "uppermost aquifer system" for the saturated zone above the basalt in the 200 East groundwater aggregate area. This term was used in Delaney et al. (1991).

The uppermost aquifer system is complex because of variability in hydrologic condition and geologic units. Throughout the 200 East Area and the area to the west and south, the uppermost aquifer is contained in the suprabasalt sediments. North of 200 East Area, where erosion has removed a portion of the basalt sequence, the uppermost aquifer includes the Rattlesnake Ridge interbed. East of the 200 East Area in the vicinity of the eastern lobes of B Pond, the uppermost aquifer system is semiconfined by the Ringold Formation lower mud unit. Underlying the uppermost aquifer system are regionally extensive confined aquifers that are contained in the permeable units of the basalts and interbeds. The uppermost confined aquifer is the Rattlesnake Ridge aquifer.

The following sections describe the hydrologic characteristics of the uppermost aquifer system and the Rattlesnake Ridge aquifer within the aggregate area.

3.2.1 Uppermost Aquifer System

The uppermost aquifer system within the 200 East groundwater aggregate area is defined in this report as the saturated units above the uppermost basalt surface. The aquifer system may include the Hanford formation, Ringold Formation, and the Rattlesnake Ridge interbed geologic units. The base of the uppermost aquifer system is typically the Elephant Mountain Member of the Saddle Mountain Basalt Formation. As discussed in Chapter 2.0, local areas exist where the Elephant Mountain Member has been removed by erosion during cataclysmic flooding (Lindsey et al. 1992). Such erosion has occurred north of the 200 East Area. Here stratigraphically lower basalts are the base of the uppermost aquifer system. Figure 2-2 is a structure contour map of the top of the uppermost basalt for the study area.

The relatively more permeable units of uppermost aquifer system include the sands and gravels of the Hanford formation, the fluvial gravel units of the Ringold Formation, and the sands of the Rattlesnake Ridge interbed of the Ellensburg Formation. The fine-grained lower mud unit of the Ringold Formation acts as a confining layer to underlying permeable units within the uppermost aquifer system. The permeable units beneath this confining layer in the study area are considered to be under semiconfined to confined hydraulic conditions.

The top of the uppermost aquifer system within the study area is contained within a variety of geologic units. Figure 3-7 shows the geologic units that the water table intersects. In the central and southern part of the 200 East Area and to the west, the water table is contained within the Ringold Formation (Unit E). The water table is generally located at the Hanford/Ringold contact in the central and southern portion of the 200 East Area. The water table is in the undifferentiated Hanford gravel sequence in the southwest portion of the 200 East Area. In the northern portion of the 200 East Area and the northern part of the 200 East groundwater aggregate area, the water table is in the Hanford formation.

The uppermost aquifer system thickens to the south and west within the study area (Figure 3-8). The map was constructed by taking the difference in elevation between the December 1991 water table and the top of basalt. The aquifer is thin (less than 10 m) in the northeast portion of 200 East where there is a structural high in the basalt and 30 m in thickness in the southeastern part of B Pond, where the aquifer is semiconfined and thickest (100 m) in the area to the south and west.

The uppermost aquifer system is under unconfined hydraulic conditions throughout most of the study area. However, information obtained from drilling and completion of groundwater monitoring wells near the B Pond indicate an absence of an unconfined aquifer in the southeastern part of the pond. Graham et al. (1984) noted that the Ringold Formation lower mud unit acts as an aquitard in the southwest portion of the 200 East Area. Davis and Delaney (1992) have stated that in the B Pond area the lower mud unit also appears to act as a confining unit to the Ringold Unit A. Where the Ringold lower mud is present above unit A, unit A is considered to be a semiconfined-confined aquifer. Figures 2-4 and 2-6 show the extent of unit A and the lower mud unit of the Ringold Formation, respectively. The lower mud unit pinches out to the west of B Pond and thickens to the southeast (Figure 2-5 and Davis and Delaney 1992).

3.2.1.1 Groundwater Flow. The direction of the regional groundwater flow in the uppermost aquifer system beneath the study area is inferred from the Hanford Site water table map and the 200 Areas water table elevation map presented in Kasza et al. (1991). A more detailed map for the study area is shown in Figure 3-9. Regionally, groundwater flows from west to east.

Regional flow has been altered by artificial recharge within the study area. Newcomer (1990) reports the major influence on the configuration of the water table in the study area is the B Pond groundwater mound. Artificial recharge from B Pond has elevated the water table elevation in the east and southeast of the 200 East Area, but at present is declining (Newcomer 1990, DOE-RL 1992a, 1992d). Groundwater flow is from west to east in the area

between the 200 East and 200 West Area, radially outward from B Pond, and generally to the north between Gable Mountain and Gable Butte in the area north of 200 East.

The direction of groundwater flow of the uppermost aquifer system, within the 200 East Area, outside of the B Pond mound, is difficult to determine because of the lack of a pronounced horizontal hydraulic gradient. The horizontal gradient has been reported to be very slight (0.0001 to 0.0002) (DOE-RL 1992a). Contaminant plumes (DOE-RL 1992a and Figure 4-13) show that the groundwater flow direction in the northern part of 200 East Area is to the north and in the southeastern part to the southeast (DOE-RL 1992a).

The future configuration of the water table within the study area depends on the decline of the B Pond groundwater mound, discharge to the B Pond, discharge to a proposed soil column disposal facility to be built east of B Pond, and natural influences. It is likely that regional flow from west to east will predominate over most of the 200 East groundwater aggregate area, except near the proposed facility. The discharge rate to the soil column disposal facility probably will be substantially less than the present 2,000 gal/min discharged to B Pond (Davis and Delaney 1992). Numerical modeling studies may facilitate estimation of groundwater flow beneath the proposed facility.

Data really are limited to describe the semiconfined unit A. The semiconfined aquifer is monitored extensively near B Pond, where 12 wells are screened in the semiconfined aquifer (DOE-RL 1992d). The head in the semiconfined Ringold Unit A corresponds to the head in the adjacent water-table aquifer (DOE-RL 1992d, WHC 1990). The head distribution in the semiconfined aquifer depicts the B Pond mound. The groundwater flow direction is also similar to the unconfined aquifer that radiates outward from B Pond.

3.2.1.2 Vertical Gradients. Vertical gradients in the uppermost aquifer system are determined from wells located in close proximity to each other that are completed at different intervals within the aquifer system. In general, downward vertical gradients exit in the uppermost aquifer system, by B Pond mound. Outside of this area, but still within the 200 East Area, it is difficult to determine the vertical gradients. Data from three groups of wells have been analyzed to determine the vertical gradient. Wells 699-43-42J and 699-42-42B that monitor the top and lower part, respectively, of the uppermost aquifer under unconfined conditions near B Pond have an approximate head difference of 0.6 m over a vertical length of about 9 m, indicating a downward gradient (Figure 3-10). This equates to a downward vertical gradient of 0.07. Wells 699-53-55A, 699-53-55B, and 699-53-55C monitor the uppermost aquifer system under unconfined conditions within the erosional window north of 200 East Area. Well A presently has a 9-m screened interval in the top of the uppermost aquifer, well C monitors about 7 m of the upper middle of the aquifer, and well B has a screened interval of 6 m of the lower middle of the aquifer (Figure 3-11). The head in well A is higher than the head in well C completed at a lower interval, which is higher than the head in well B completed at an even lower interval (Figure 3-12). The vertical gradient direction is downward. Prior to December 1990, well A monitored the top to the lower middle of the unconfined aquifer thereby yielding an average head for the screened interval. At that time the head in well A was equal to or slightly higher than well C. During December 1990 the monitored interval was

reduced to about 9 m of the upper uppermost aquifer system. This change in monitored interval did not change the relation between head values from well A compared to wells B and C.

Limited data available from wells located near the Grout Treatment Facility and 216-A-29 Ditch suggest that the vertical head differences are so slight that they are indistinguishable from measurement errors (DOE-RL 1992a, 1992d). However, the hydraulic head in wells located adjacent to B Pond (699-43-41E, 41F, and 41G) indicated that the vertical gradient is downward (Figure 3-13). These wells are screened at or near the top of the semiconfined aquifer (wells 41E and 41F) and at the bottom of the semiconfined aquifer (well 41G).

3.2.1.3 Hydraulic Properties. Transmissivity and/or hydraulic conductivity has been estimated from aquifer tests conducted in a limited number of wells in the 200 East groundwater aggregate area. The properties were determined by analyzing the results of aquifer tests, either constant discharge/recovery tests or slug injection/withdrawal tests. The constant discharge/recovery data were predominantly analyzed using the Cooper-Jacob straight-line method. The slug injection/withdrawal tests were analyzed using either the Cooper et al. method (Cooper et al. 1967) or the Bouwer-Rice method (Bouwer and Rice 1976). The majority of the constant discharge/recovery pumping tests were single-well tests using partially penetrating wells, and therefore little information on storage properties for the uppermost aquifer was obtained. Limitations of single-well pumping tests and pumping tests in general include pump influences, well losses, partial penetration, and borehole storage. Limitations of slug injection/withdrawal tests include limited areal influence of the test, potential sandpack influences, limited stress applied to the aquifer, difficulty in obtaining a complete data set in quick response formations, and the relatively low values of transmissivity for which the tests are interpretable.

Table 3-2 lists the transmissivity (T) and hydraulic conductivity (K) values for the upper portion of the uppermost aquifer system in the 200 East Area that were determined by pumping tests. Compilation of test data can be found in Newcomer et al. (1992a) and Swanson et al. (1992). The equivalent K is given for tests in which T was the property determined. The equivalent K was determined by dividing T by the thickness of the tested interval. Ideally, the thickness of the stressed interval should be used for this calculation. Since the thickness of the stressed interval cannot easily be determined, the thickness of the tested interval was used.

Data from approximately 20 slug injection/withdrawal tests were reviewed. Results of the slug injection/withdrawal tests yielded much lower values of hydraulic properties than results from constant discharge tests from adjacent wells. The lower values may in part be due to the shortcomings listed above. An attempt was made to map K for the upper uppermost aquifer using all data. This resulted in a map that did not correspond to the generally hydrology and geology characteristics of the area. A second map of K (Figure 3-14) was constructed using only the results of the constant discharge tests. This second map, although constructed with a limited number of data points and contoured without consideration of the abrupt changes that may exist in the lithology of the suprabasalt sediments, is supported by the general hydrologic

Table 3-2. Transmissivity and Hydraulic Conductivity Values for the Uppermost Aquifer System.

Map number	Well number	T ft^2/day (m^2/day)	Equivalent K ft/day (m/day)
1	2-E18-1	700 (65)	50 (15)
2	2-E18-2	2000 (180)	150 (45)
3	2-E18-3	3000 (280)	210 (64)
4	2-E25-22	150000 (14000)	6200 (1900)
5	2-E25-34	>250000 (23000)	19000 (5800)
6	2-E25-35	>80000 (7400)	6500 (2100)
7	2-E27-8	>68000 (6300)	6800 (2100)
8	2-E27-9	35000 (3200)	3500 (1100)
9	2-E27-10	35000 (3200)	3500 (1100)
A	2-E28-27	>48000 (4500)	4800 (1500)
B	2-E32-4	>9500 (900)	950 (300)
C	2-E33-28	>53000 (5000)	5300 (1600)
D	2-E33-29	>51000 (4700)	5100 (1600)
E	2-E33-30	>56000 (5200)	5600 (1700)
F	2-E34-2	114000 (10600)	11400 (3500)
G	2-E34-3	14000 (1300)	1400 (430)
H	6-31-53A	14900 (1400)	125 (40)
I	6-31-53B	14200 (1300)	120 (40)
J	6-33-56	21000 (1950)	170 (50)
K	6-36-61B	4200 (390)	25 (8)
L	6-43-43	37000 (3400)	2050 (620)
M	6-44-42	76000 (7000)	4000 (1200)
N	6-52-54	2000 (180)	400 (120)
O	6-52-57	120 (11)	30 (9)
P	6-53-55C	80000 (7400)	3300 (1000)
Q	6-55-50C	600000 (56000)	25000 (7600)
R	6-55-50D	400000 (37000)	8500 (2600)
S	6-55-60A	64000 (6000)	1600 (500)
T	6-55-60B	400000 (37000)	7300 (2200)

Source: Newcomer et al. (1992a).

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and geologic knowledge of the area. This map should be used only as a general indication of relative hydraulic conductivity trend and not as an exact value for a given location.

There appear to be two relatively high K zones in the study area. One is located north of the basalt subcrop and is defined by the test conducted at the 699-53-55 and the 699-55-50 well clusters. A second high K zone trends cross the 200 East Area from the northwest corner southeastward to the Grout complex. Lower values of K are apparent to the west and southwest in the study area. A comparison of the hydraulic conductivity map to the geology of the water table (Figure 3-8) indicated that the high K values are associated with the undifferentiated Hanford gravel sequence and the lower K values are associated with the Hanford sand sequence and Ringold Gravel Unit E.

The area in the southwest corner of the 200 East Area appears anomalous with respect to this association. Here, the geology at the water table is the undifferentiated Hanford gravel sequence, and the K values are relatively low. However, the gravel sequence is thin in this area, and most of the interval is tested in Ringold Unit E, which generally yields lower K values than the Hanford gravels.

3.2.2 Confined Aquifer

The uppermost regionally confined aquifer in the study area is the Rattlesnake Ridge aquifer. Hydraulic heads in the Rattlesnake Ridge aquifer are given in Kasza et al. (1991) and Jackson (1992). These reports indicate that the groundwater flow direction north and west of the 200 East Area is northward through the gap between Gable Butte and Gable Mountain. East and south of the 200 East Area the flow is generally to the east. The vertical hydraulic gradient between uppermost aquifer system and the Rattlesnake Ridge aquifer is downward in the vicinity of B Pond (Kasza et al. 1991). Outside of this area the vertical hydraulic gradient is upward. The vertical gradient within the erosional windows is unknown.

Hydraulic properties of the confined aquifer are given in Table 3-3. The test results are derived from constant discharge tests summarized in Newcomer et al. (1992b).

3.2.3 Aquifer Communication

Aquifer communication is a process by which groundwaters from distinct hydrogeologic systems are permitted to intermingle and mix. Although the term "aquifer communication" can be applied to various groundwater flow and mixing scenarios, its use will be limited in this study to describing the flow of groundwater from the uppermost aquifer system into the Rattlesnake Ridge aquifer. The study and analysis of communication between the uppermost aquifer system and the Rattlesnake Ridge aquifer is important because contaminated groundwater in the uppermost aquifer system can be introduced into the Rattlesnake Ridge aquifer due to aquifer communication processes. Contamination of the Rattlesnake Ridge aquifer is of significant environmental concern because the aquifer has discharge points outside of the Hanford Site boundaries.

Table 3-3. Transmissivity and Equivalent Hydraulic Conductivity Values for the Confined Aquifer.

Well number	Transmissivity ft^2/day (m^2/day)	Equivalent hydraulic conductivity ft/day (m/day)	Geologic unit
6-60-57	10,000 (930)	770 (230)	Basalt
2-E16-1	950 (90)	20 (6)	Elephant Mountain Interflow Zone
2-E26-8	230 (21)	20 (6)	Rattlesnake Ridge Interbed
2-E33-12	50 (5)	0.4 (.1)	Rattlesnake Ridge Interbed
6-42-40C	300 (27)	4 (1)	Rattlesnake Ridge Interbed
6-42-40C	7 (.7)	--	Elephant Mountain Interflow Zone
6-47-42	470 (43)	7 (2)	Rattlesnake Ridge Interbed
6-47-50	1,000 (90)	12 (4)	Rattlesnake Ridge Interbed
6-49-55B	780 (70)	15 (4)	Rattlesnake Ridge Interbed
6-49-57B	150 (14)	15 (4)	Rattlesnake Ridge Interbed
6-50-45	175 (16)	4 (1)	Rattlesnake Ridge Interbed
6-50-48B	280 (26)	8 (2)	Rattlesnake Ridge Interbed
6-51-46	110 (10)	2 (.6)	Rattlesnake Ridge Interbed
6-52-46A	135 (12)	3 (.9)	Rattlesnake Ridge Interbed
6-52-48	35 (3)	1 (.3)	Rattlesnake Ridge Interbed
6-53-50	640 (60)	13 (4)	Rattlesnake Ridge Interbed
6-54-57	140 (13)	2 (.6)	Rattlesnake Ridge Interbed
6-56-53	690 (64)	10 (3)	Rattlesnake Ridge Interbed

Source: Newcomer et al. (1992b).

Evidence of aquifer communication between the uppermost aquifer system and the Rattlesnake Ridge aquifer has been documented by Graham et al. (1984) and Jensen (1987). Studies conducted by Graham et al. (1984) used several direct and indirect methods to assess locations and extent of aquifer communication. These methods included (1) an analysis of the geologic conditions that could permit communication (i.e., presence of erosional windows, significant joint and fracture systems in the basalt), (2) comparison of hydraulic heads in the uppermost aquifer system and Rattlesnake Ridge aquifers for determining the direction of the vertical component of groundwater flow, (3) qualitative use of barometric efficiencies for identification of Rattlesnake Ridge aquifer monitoring wells installed near erosional windows and significant joint and fracture systems, (4) analysis of stable isotopes and natural water chemistry to indicate if mixing of the uppermost aquifer system and Rattlesnake Ridge aquifer ground waters is occurring, and (5) an analysis of various contaminant concentrations in the Rattlesnake Ridge aquifer to determine if man-made contaminants where actually present. Graham et al. (1984) concluded that several mechanisms permit hydraulic interconnection of the uppermost aquifer system and the Rattlesnake Ridge aquifer. These mechanisms included erosional windows in the Elephant Mountain basalt member, significant joint and fracture systems in the Elephant Mountain basalt member, and man-made intrusions (i.e., groundwater well drilling and installation) through the Elephant Mountain basalt member. For aquifer communication to occur, these mechanisms needed to be combined with downward-directed vertical hydraulic gradients or gravity-driven density plume migration. Significant downward vertical hydraulic gradients have existed in the past throughout much of the 200 East Area due to large-scale liquid waste disposal associated with 200 East Area plant operations. In addition, high-salt wastes with densities greater than 1.0 are known to have been disposed to various waste water disposal facilities in the 200 East Area (Smith 1980, Graham et al. 1984).

Jensen (1987) conducted a less rigorous study of aquifer communication in and around the 200 East Area. He compared hydraulic heads in the uppermost aquifer system to hydraulic heads in the Rattlesnake Ridge aquifer. Jensen (1987) found that in most cases the vertical component of groundwater flow between the uppermost aquifer system and the Rattlesnake Ridge aquifer was directed upward and that the hydraulic head trends in the Rattlesnake Ridge aquifer typically mimicked hydraulic head trends in the uppermost aquifer system. Notable exceptions existed in the vicinity of the B Pond during the time period of his study. In locations near B Pond, heads in the uppermost aquifer system were typically greater than heads in the Rattlesnake Ridge aquifer,. thus providing a driving force for the flow of uppermost aquifer system groundwater into the Rattlesnake Ridge aquifer via erosional windows and joint/fracture systems in the Elephant Mountain Basalt member. Jensen (1987) also examined the groundwater quality of several Rattlesnake Ridge aquifer monitoring wells. He found only two Rattlesnake Ridge aquifer monitoring wells (699-47-50 and 299-E33-12) exhibited significant levels of contaminants that could be related to 200 Area processing operations. Contaminants detected in these two wells included tritium and nitrate.

3.2.4 Evaluation of Aquifer Communication

The potential for aquifer communication has decreased primarily due to changes in operating practices in the 200 East Area. As liquid waste disposal operations have decreased due to termination of various plant operations, water levels in the uppermost aquifer system have gradually decreased throughout the 200 East groundwater aggregate area, reducing the likelihood of downward vertical hydraulic gradients. Also, the disposal of high-salt wastes to the ground was terminated as processing methods were changed or terminated and better waste handling and storage procedures were introduced. Although the potential for aquifer communication has been reduced, it is likely that some areas within the 200 East groundwater aggregate area are still conducive to aquifer communication. Therefore, it is expedient to perform a current evaluation of aquifer communication within the 200 East groundwater aggregate area.

Since the studies of Graham et al. (1984) and Jensen (1987), additional hydrogeologic data have been collected that can be used to assess the current extent and magnitude of aquifer communication in the 200 East groundwater aggregate area. These datasets include groundwater quality data collected under the various ongoing groundwater monitoring programs and hydrogeologic site characterization data collected for the 200-BP-1 Remedial Investigation (RI). The following sections focus on assessing the current state of aquifer communication in the 200 East Area using these hydrogeologic data. Historical hydrogeologic data will also be used to supplement the current datasets to facilitate time series trend analysis of the data.

Ongoing groundwater monitoring programs of interest include *Resource Conservation and Recovery Act of 1976* (RCRA) groundwater monitoring at 200 East Area transportation, storage, and disposal (TSD) facilities; the Pacific Northwest Laboratory sitewide groundwater monitoring program; and the operational groundwater monitoring program. These groundwater monitoring programs provide the bulk of the groundwater quality data (historical and current) available for analysis of aquifer communication. The location of all Rattlesnake Ridge aquifer groundwater monitoring wells in and surrounding the 200 East Area are illustrated in Figure 3-15.

Hydrogeologic site characterization data quality objectives for the 200-BP-1 RI required an assessment of aquifer communication in the northern portion of the 200 East Area and north of the 200 East Area. Several groundwater monitoring wells were installed to determine geologic, hydrologic, and groundwater quality characteristics of the uppermost aquifer system and Rattlesnake Ridge aquifer. In addition, several older carbon steel wells were refurbished to assist in accomplishing these data objectives. Five well clusters were established to allow observation and comparison of hydraulic heads and groundwater quality in the uppermost aquifer system and the Rattlesnake Ridge aquifer. These well clusters are listed in Table 3-4. Figure 3-15 is a map of cluster well locations utilized in the 200-BP-1 RI.

3.2.4.1 Barometric Efficiencies and Hydraulic Head Comparisons.

Barometric Efficiencies. All Rattlesnake Ridge aquifer monitoring wells used in a cluster configuration for the 200-BP-1 RI were tested to determine the barometric efficiency of the wells. Determination of well barometric

Table 3-4. Well Clusters and Associated Barometric Efficiency and Vertical Hydraulic Gradient Data.

Well cluster	Barometric efficiency	Maximum vertical hydraulic gradient	Direction of vertical flow component (during max. Vertical hydraulic gradient)
299-E33-07 (Uppermost aquifer system - Hanford fm.)	--	0.0050 ft/ft	↑
299-E33-40 (Rattlesnake Ridge aquifer)	25%		
699-49-55A (Uppermost aquifer system - Hanford fm.)	--	0.0023 ft/ft	↑
699-49-55B (Rattlesnake Ridge aquifer)	22%		
699-49-57A (Uppermost aquifer system - Hanford fm.)	--	0.0015 ft/ft	↑
699-49-57B (Rattlesnake Ridge aquifer)	19%		
699-50-53A (Uppermost aquifer system - Hanford fm.)	--	0.0037 ft/ft	↑
699-50-53B (Rattlesnake Ridge aquifer)	15%		
699-55-57 (Uppermost aquifer system - Hanford fm.)	--	0.0038 ft/ft	↑
699-54-57 (Rattlesnake Ridge aquifer)	15%		

efficiency is important since the observed hydraulic head in a confined aquifer monitoring well or piezometer is affected by atmospheric pressure fluctuations. To determine the true hydraulic head in a confined aquifer, it is necessary to correct for the effects of atmospheric pressure fluctuations.

The Clark (1967) method was used to determine the barometric efficiencies of the Rattlesnake Ridge aquifer wells used in the 200-BP-1 RI. This method involves summing changes in water levels and barometric pressures over an extended period of time. These cumulative data are then plotted against each other to generate an x-y plot. The slope of the best-fit line drawn through the data represents the barometric efficiency of the well. Barometric efficiencies for wells tested are listed in Table 3-4, and test data are included in Tables B-1 through B-5 of Appendix B. A graphical calculation of barometric efficiencies for these wells is provided in Figures 3-16 through 3-20. Overall, barometric efficiencies for monitoring wells in Table 3-4 are fairly low when compared to values for monitoring wells installed in other deeper confined aquifers on the Hanford Site. The highest value is 25% at well 299-E33-40, while wells 699-54-57 and 699-50-53B exhibit low values of 15%. Values for barometric efficiencies are plotted at well points in Figure 3-21. Barometric efficiencies as determined by Graham et al. (1984) are also included in Figure 3-21 for comparison.

Graham et al. (1984) used their barometric efficiency calculations as a qualitative indicator of the presence erosional windows in the Elephant Mountain basalt member. Near erosional windows, the Rattlesnake Ridge aquifer is less influenced by atmospheric pressure effects because the upper confining unit is absent; thus, the barometric efficiency of wells installed near erosional windows will be less than wells installed in truly confined areas. Using this analysis method, Graham et al. (1984) delineated two major erosional windows. One erosional window is located north of 200 East Area (Figure 3-15). This erosional window has been shown to exist from borehole geologic data. The second erosional window is thought to exist in the northeast corner of the 200 East Area (Figure 3-15). The new barometric efficiency data collected during the 200-BP-1 RI appear to corroborate the conclusions of Graham et al. (1984) with respect to the erosional window directly north of the 200 East Area. The barometric efficiencies for wells north of the 200 East Area are low in areas where drilling data show an erosional window exists. The presence of an erosional window in the northeast corner of the 200 East Area was hypothesized by Graham et al. (1984) based partly on the low barometric efficiency exhibited by monitoring well 699-47-50. However, this hypothesis has not been confirmed by borehole geologic data. A reasonable alternate hypothesis is that a well-developed fracture system in the Elephant Mountain Basalt exists at this locality.

Hydraulic Head Comparisons. To determine if a hydraulic driving force exists to permit the establishment of aquifer communication, the magnitude and direction of the vertical groundwater flow component must be determined. Figures 3-22 to 3-26 are hydrographs of simultaneous hydraulic heads in uppermost aquifer system/Rattlesnake Ridge aquifer well clusters. Rattlesnake Ridge aquifer hydraulic head values where corrected for atmospheric pressure effects using the methodology described by Clark (1967). All hydraulic heads for the Rattlesnake Ridge were adjusted to an atmospheric pressure of 29.292 in. of Hg; this value represents the 30-yr Hanford Site average atmospheric pressure (Stone et al. 1983). Table 3-4 summarizes vertical

hydraulic gradient values and direction of the vertical component of groundwater flow for all well clusters.

In general, the hydrographs depicted in Figures 3-22 to 3-26 indicate that the head differential between the uppermost aquifer system and the Rattlesnake Ridge aquifer is minimal in the northern portion of the 200 East Area and farther north. The greatest head differential occurs at the 299-E33-40/299-E33-07 well cluster (Figure 3-22). At this well cluster location the vertical hydraulic gradient shows a maximum value of 0.005 ft/ft (Figure 3-22) with an upward-directed vertical flow component. Other well clusters exhibit more modest vertical hydraulic gradients.

Heads at cluster sites 699-49-55A/B and 699-49-57A/B (Figures 3-23 and 3-24) indicate that there is virtually no vertical hydraulic gradient most of the year. During the fall and winter months, heads in the Rattlesnake Ridge aquifer are slightly greater than those in the uppermost aquifer system, probably reflecting different recharge rates and/or different recharge areas for the two aquifers. The strongest upward vertical hydraulic gradients for well clusters 699-49-55A/B and 699-49-57A/B are 0.0023 ft/ft and 0.0015 ft/ft, respectively.

There is a slight upward hydraulic gradient during all months of the year at well cluster 699-50-53A/B (Figure 3-25), with the strongest upward hydraulic gradient during the early fall. The maximum vertical hydraulic gradient at this well cluster is 0.0037 ft/ft.

Well cluster 699-54-57/699-55-57 shows the greatest head differential of all well clusters north of the 200 East Area and exhibits a maximum vertical hydraulic gradient of 0.0038 ft/ft (Figure 3-26). Although these two wells are separated by horizontal distance of approximately 700 ft, they are located in an area of minimal horizontal hydraulic gradients in both the uppermost aquifer system and the Rattlesnake Ridge aquifer.

An interesting aspect of the hydrographs for the well clusters is the fact that head trends seen in the uppermost aquifer system are typically mirrored by head trends in the Rattlesnake Ridge aquifer. This mirroring in the Rattlesnake Ridge aquifer is probably related to the hydraulic interconnectivity of these two aquifers (Jensen 1987).

3.2.4.2 Groundwater Quality as an Indicator of Aquifer Communication. The presence of various man-made radionuclides in the Rattlesnake Ridge aquifer is indicative of aquifer communication between the uppermost aquifer system and the Rattlesnake Ridge aquifer. Since the uppermost aquifer system contains detectable quantities of certain man-made radiological constituents in numerous locations throughout the 200 Areas (see Chapter 4.0), the presence of man-made radiological constituents in Rattlesnake Ridge aquifer should provide the best unequivocal evidence that aquifer communication has occurred. This premise assumes that no other mechanism other than aquifer communication is providing substantial quantities of the radiological constituents to the Rattlesnake Ridge aquifer.

Man-made radionuclides which are used in this study to assess aquifer communication include Tc-99, Co-60, I-129, and tritium. In addition, gross beta activity greater than 35.5 pCi/L is also considered to be indicative of

aquifer communication. The activity level of 35.5 pCi/L represents the uppermost background value for gross beta activity for groundwater derived from the uppermost aquifer system and the Rattlesnake Ridge aquifer on the Hanford Site (DOE-RL 1992b). Activity levels greater than 35.5 pCi/L are most likely due to the presence of a man-made beta-emitting radionuclide(s).

Tables C-1 through C-12 in Appendix C summarizes all Rattlesnake Ridge aquifer groundwater monitoring wells in the 200 East groundwater aggregate area and the associated activity levels for the aquifer communication indicator constituents (historical and current data). The geographic locations of the monitoring wells are illustrated in Figure 3-15. Activity levels for the aquifer communication indicator constituents where then plotted on x-y plots to facilitate trend analysis. Activity trend plots for the Rattlesnake Ridge aquifer monitoring wells are illustrated in Figures 3-27 through 3-40. Note that a significant number of the activity trend plots contain singular data points for some of the aquifer communication indicator constituents. Lack of multiple detections for these constituents over time casts some doubt on the representativeness of the result, especially if the constituent was analyzed several times with out additional detects (compare Tables C-1 through C-12 in Appendix C with activity trend plots).

The activity trend plots provide the best means of qualitatively assessing the impact and general localities where aquifer communication has occurred. Localities and magnitude of aquifer communication change over time as a result of variations in the flow system vertical gradients and changing concentrations and character of the contaminants in the uppermost aquifer system. Based on review of data contained in Tables C-1 through C-12 in Appendix C and Figures 3-27 through 3-39, the following Rattlesnake Ridge aquifer monitoring wells demonstrate past and/or present groundwater quality impacts related to aquifer communication:

- 699-42-40C
- 699-47-50
- 699-54-57
- 299-E33-12
- 299-E26-8.

Rattlesnake Ridge aquifer monitoring wells that do not strongly demonstrate water quality impacts due to aquifer communication include:

- 699-49-55B
- 699-49-57B
- 699-50-45
- 699-50-53B
- 699-52-46A
- 699-52-48
- 699-53-50
- 699-56-53
- 299-E33-40.

The following sections provide an assessment of the groundwater quality data available for wells that demonstrated impacts from aquifer communication.

Well 699-42-40C. Monitoring well 699-42-40C is located in close proximity to the B Pond. As a result of the B Pond (in operation since 1945), a groundwater mound has developed beneath the disposal facility in the uppermost aquifer system. In the vicinity of the groundwater mound, the vertical hydraulic gradient between the uppermost aquifer system and the Rattlesnake Ridge aquifer is substantial (Figure 3-41). Jensen (1987) showed that a significant downward vertical hydraulic gradient (hydraulic head differential of approximately 6 ft) existed between the uppermost aquifer system and the Rattlesnake Ridge aquifer in the vicinity of the 699-42-40A/B/C monitoring well cluster. Although there is no evidence for an erosional window in the Elephant Mountain basalt member in the area of the well cluster, historical groundwater quality data from monitoring well 699-42-40C seem to indicate that aquifer communication has occurred in the vicinity of the B Pond (Figure 3-27). Graham et al. (1984) first sampled the well for tritium to support their study of aquifer communication. Although Graham et al. (1984) detected tritium in samples taken from monitoring well 699-42-40C, they believed that the tritium had been introduced during the drilling and completion of the well. However, the activity trend plot (Figure 3-27) indicates increase activity levels for tritium since this time. The increase in tritium activity level over time does not support the Graham et al. (1984) assumption. Rather, it seems likely that tritium-contaminated groundwater from the uppermost aquifer system has been introduced to the Rattlesnake Ridge aquifer under a downward vertical hydraulic gradient via fractures and joints or an undetected erosional window in the Elephant Mountain basalt member in the vicinity of the B Pond.

Well 699-47-50. Groundwater quality data from monitoring well 699-47-50 shows historical evidence that aquifer communication has occurred in the vicinity of the well (Figure 3-28). Both Graham et al. (1984) and Jensen (1987) report indirect evidence for the presence of an erosional window near monitoring well 699-47-50. The presence of a true erosional window is somewhat equivocal since no direct evidence (i.e., geophysical data or drilling data) exists to support the presence of an erosional feature through the basalt. It is equally possible that the presence of significant fracture system in the basalt at this location could also permit aquifer communication in the vicinity of well 699-47-50.

Historical groundwater quality data show elevated tritium activity levels for this well. These data are illustrated on an activity trend plot (Figure 3-28). The activity trend plot indicates increasing tritium activity levels during 1984-1985, followed by a rapid decrease in 1986. Subsequent to 1986, tritium levels have gradually decreased. The decreasing tritium levels observed in well 699-47-50 may indicate that the downward flux of contaminants through the Elephant Mountain Basalt is no longer operative in this locality, that the source of tritium in the uppermost aquifer system has dissipated, or a combination of both.

Well 699-54-57. Monitoring well 699-54-57 possesses a long history of groundwater quality data that indicate that aquifer communication has been an active process in the vicinity of this well. The activity trends for Co-60, gross beta, tritium, and Tc-99 (Figure 3-29) all show elevated activity levels over most of the sampling history for this well. Aquifer communication in the vicinity of monitoring well 699-54-57 is probably associated with an erosional window in the Elephant Mountain Basalt member located east of the monitoring

well (Figure 3-15). The uppermost aquifer system in the area of the erosional window contains substantial quantities of man-made radionuclides associated primarily with waste disposal activities at the BY cribs and perhaps effluents disposed to the old Gable Mountain pond (see Chapter 4.0). More recent data indicate that activity levels are diminishing. This may be due to recent decreases in the water level in the uppermost aquifer system, thus reducing the driving force for aquifer communication in this area, and diminishing quantities of contaminants in the uppermost aquifer system that are introduced to the Rattlesnake Ridge aquifer via the erosional window.

Well 299-E33-12. Monitoring well 299-E33-12 was drilled in the mid-1950's and left uncompleted until 1982. The incomplete nature of the well permitted a direct hydraulic connection between the uppermost aquifer system and the Rattlesnake Ridge aquifer. This hydraulic connection in turn allowed a high-salt waste density plume (probably originating from the BY cribs) to migrate from the uppermost aquifer system to the Rattlesnake Ridge aquifer via the annular space between the basalt and the well casing (Smith 1980, Graham et al. 1984). Figure 3-30 illustrates the activity trends for well 299-E33-12. The activity trends for Co-60 and gross beta are extremely high from 1955 to 1965. Unfortunately, the well was not sampled from 1966 until the well was finally completed in 1982. Analyses performed subsequent to 1982 indicate that activity levels have decreased substantially for Co-60 and gross beta from levels seen during the 1955-1965 time frame.

Although the activity trend plot for well 299-E33-12 indicates that activity levels have decreased substantially, recent data (1990-1991) indicate slight increases for Co-60, gross beta, Tc-99, and tritium. The reason for this increase is uncertain at this time. A possible explanation may be related to recent well maintenance activities and changing of sample collection methodology and equipment. During 1990, monitoring well 299-E33-12 was scrubbed and redeveloped as part of the 200-BP-1 groundwater monitoring well refurbishing project. In addition to the various maintenance activities, the sampling bailer was replaced with a submersible sampling pump. Using a submersible pump permits proper well purging and collection of representative samples, whereas samples collected by bailing techniques may only represent the stagnant water in the borehole. As a result, historical samples collected with the bailer at well 299-E33-12 may not have been representative. Also, remobilization of contaminants could have occurred as a result of purging the well during redevelopment or during sampling events.

Well 299-E26-8. Monitoring well 299-E26-8 exhibited elevated tritium levels which fell off rapidly during the 1984-1985 time period (Figure 3-31). The explanation for elevated tritium activity and the subsequent decline in activity is not clear. It is not apparent that any geologic or hydrologic conditions exist in the vicinity of this well to permit aquifer communication. Although the well is near a postulated locality of hydraulic interconnection between the uppermost aquifer system and the Rattlesnake Ridge aquifer (Figure 3-15), it is situated hydraulically upgradient from the postulated hydraulic interconnection locality as indicated by Figure 3-40. It may be that tritium levels are a result of contamination introduced during the drilling and completion of the well or that the tritium originated from aquifer communication in the vicinity of the B Pond and has subsequently been advectively transported into the vicinity of monitoring well 299-E26-8. Figure 3-40 indicates that well 299-E26-8 is downgradient from the portion of

the Rattlesnake Ridge aquifer that is potentially being impacted beneath the B Pond groundwater mound. Tritium levels have decreased to below the detection limit since 1985.

3.2.5 Summary of Aquifer Communication

Aquifer communication between the uppermost aquifer system and the Rattlesnake Ridge aquifer has been an demonstrated to be an active process in the 200 East groundwater aggregate area. Figure 3-41 illustrates geographical locations where past and present aquifer communication has occurred. Based on current geologic, hydrologic, and groundwater quality data, areas of aquifer communication currently appear to be limited to the vicinity of B Pond. A substantial vertical gradient with a downward flow component exists beneath the B Pond due to the development of a large groundwater mound in the uppermost aquifer system. Groundwater quality data from monitoring well 699-42-40C demonstrates an increase in tritium activity over time, indicating that groundwater from the uppermost aquifer system is being introduced to the Rattlesnake Ridge aquifer in the vicinity of monitoring well 699-42-40C. Graham et al. (1984) calculated a barometric efficiency of 44% for monitoring well 699-42-40C, indicating that the well is installed in a location where the Rattlesnake Ridge aquifer is relatively well confined. The actual location of hydraulic interconnection may be located some distance away from monitoring well 699-42-40C.

Aquifer communication indicator constituent activity levels in monitoring well 299-E33-12 were very high during the late 1950's to early 1960's. After a significant decrease, activity levels appear to be increasing again. The recent transient behavior of these constituents in monitoring well 299-E33-12 is not related to any current aquifer communication process; rather, it is associated with a historical contamination of the Rattlesnake Ridge aquifer due to poor well construction techniques at monitoring well 299-E33-12 and subsequent remobilization of this contamination due to recent sampling and well maintenance activities at the well.

Activity levels for aquifer communication indicator constituents at monitoring wells 699-47-50 and 699-54-57 tapered off, indicating that aquifer communication at these localities is probably not operative.

Interpretation of activity level trends at well 299-E26-8 is equivocal. Although the well shows historical impacts from tritium, it is not certain as to whether this constituent was introduced into the well as a result of well construction techniques, aquifer communication processes in the near vicinity of the well, or adjective transport of tritium in the Rattlesnake Ridge aquifer from beneath the B Pond area. The current groundwater quality data indicate that the tritium activity level is now below detection limits.

4.0 HYDROCHEMISTRY

This chapter describes contaminant plume distributions in the uppermost aquifer system beneath the 200 East Area. The plume geometries were developed from a review of published contaminant plume studies and compilation of information from the Hanford Environmental Information System (HEIS) database. This section does not contain a discussion of the source units that contributed to the groundwater contamination in this area. That information is contained in the Technical Baseline Reports and Aggregate Area Management Study Source Reports for B Plant, PUREX, and Semi-Works Aggregate Areas. Contaminant plume distribution beneath the 200 West Area has been discussed in Chapter 4.0 of the companion technical report to this volume (WHC 1992).

As part of the 200 AAMS program, limited groundwater sampling is being conducted to help refine the list of contaminants of concern and contaminant plume geometries. The goal is to supplement existing information to assess more accurately contaminant plume distributions. The analytical results are added to the database as it is received and validated from the laboratories and used to modify the plume geometries.

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4.1 EXISTING CONTAMINANT PLUME INFORMATION

Groundwater contaminant plume mapping in the 200 East Area has been conducted on selected constituents since the 1940's. In support of the current 200 AAM study program, the most recent information regarding plume distributions in the area has been reviewed. Four studies have been identified that contain contaminant plume maps and/or information on contaminant detections in the 200 East Area (Evans et al. 1992, Woodruff et al. 1991, Serkowski and Jordan 1989, Harris and Delaney 1991, and DOE-RL 1992d).

There was an interruption of laboratory services during the period from June 1990 until May 1991 during which time no sampling for hazardous chemical constituents was conducted. Samples for radioactive constituents were collected from select wells and archived for later analysis. Those samples are currently being analyzed in conjunction with normally scheduled samples, and results are being validated and entered into the groundwater database.

4.2 CONTAMINANT PLUME MAPPING

The Hanford Site Groundwater Database was queried for all contaminants that have been detected in the 200 East, 200 West, and surrounding 600 Area groundwater samples analyzed since January 1, 1988. The term "contaminants" refers to any chemical or constituent that is listed in the following:

- 40 CFR 141 and 143 - Primary and Secondary Drinking Water Regulations
- FR 54 22062 - Proposed Drinking Water MCL
- 40 CFR 264 Appendix IV - the RCRA "Long List"

- WAC 173-200-040 - Model Toxics Control Act
- DOE Order 5400.5, *Derived Concentration Guides (DCG) for Radionuclides* (DOE 1990).

The contaminants that exceeded a standard were then compiled, and the results are presented in Table 4-1. The information from the most recent published studies has been integrated with the contaminant detection determinations to develop plume distribution maps for the constituents identified in Table 4-1. Maps were developed from average concentration values from the period January 1, 1988 to the present. This approach was chosen so as to provide a gross indication of the extent of contamination of each constituent as well as to provide sufficient data for contouring. The average values for each well (by constituent) that were used in developing the 200 East Area plume maps reported in this study are contained in Appendix D.

The maps can be categorized into four qualitative groupings based on areal extent of contamination (widespread, intermediate, localized, and indeterminate). A summary of these categorizations (by contaminant) is contained Table 4-2. These plume maps accompany brief discussions of each contaminant found in the groundwater beneath the 200 East Area.

4.2.1 Arsenic

At least four areas of arsenic contamination exist beneath the 200 East, and surrounding 600 Area (Figure 4-1). Two problem exists in data presentation: (1) the contract required quantitation limit (CRQL) for arsenic is different for RCRA and CERCLA projects (5 ppb vs. 10 ppb respectively), and (2) the WWQS for arsenic is .05 ppb, two orders of magnitude less than the RCRA CRQL. Therefore, the areas of contamination indicated in Figure 4-1 are contoured on the minimum level supported by the data. Areas of contamination, when compared to the most stringent standard available, may be much larger.

4.2.2 Chromium

Three minor plumes of chromium (filtered) contamination are illustrated in Figure 4-2. Each plume is defined by single well contamination. The contamination at each well is, however, persistent and appears to be real. All three of the applicable regulatory standards for this constituent (WWQS, Drinking Water Standard [DWS], and Maximum Concentration Limit [MCL]) are equivalent (50 ppb) and exceed the detection limit (10 ppb).

4.2.3 Cyanide

A proposed drinking water standard for cyanide has been issued (200 ppb) and one plume of cyanide contamination identified based on this limit (Figure 4-3). The plume is centered on well 699-50-53A, approximately 3,200 ft north of the 200 East Area boundary fence. The RCRA and CERCLA CRQLs are equivalent (10 ppb) and well below the proposed standard.

Table 4-1. Constituents that Exceed a Regulatory Standard.

Constituent	Standard exceeded	Limit
Arsenic	WWQS	.05 ppb
Chromium	WWQS, DWS	50 ppb
Fluoride	WWQS, DWS	4000 ppb
Iron	WWQS, DWS	300 ppb
Manganese	WWQS, DWS	50 ppb
Carbon tetrachloride	WWQS, DWS	0.3 ppb
Chloroform	WWQS, DWS	7 ppb
Trichloroethylene	WWQS, DWS	3 ppb*
Hydrazine	WWQS	0.03 ppb*
Styrene	DWS	5 ppb
Cyanide	DWS (PROPOSED)	200 ppb
Nitrate	WWQS, DWS	45 ppm
Sulfate	WWQS, DWS	250 ppm
Bis(2- ethylhexyl)phthalate	WWQS	6 ppb*
Coliform	DWS	1 ppb
Alpha	WWQS, DWS	15 pCi/L
Beta	WWQS, DWS	50 pCi/L
Cesium-137	1/25 DCG, DWS	120 pCi/L
Cobalt-60	DWS, 1/25 DCG	100 pCi/L
Iodine-129	DWS, 1/25 DCG	1 pCi/L
Plutonium-239/240	1/25 DCG, DWS	1 pCi/L
Radium	WWQS, DWS	3 pCi/L
Strontium-90	DWS, WWQS, 1/25 DCG	8 pCi/L
Technetium-99	DWS, 1/25 DCG	900 pCi/L
Tritium	DWS, WWQS, 1/25 DCG	20,000 pCi/L
Uranium	DWS	40 pCi/L

*Indicates that the detection limit for this constituent is higher than the most stringent regulatory limit.

WWQS = Washington Water Quality Standard (WAC 173-200)
DWS = Drinking Water Standard
DCG = Derived Concentration Guide

Table 4-2. Contaminant Plume Distribution.

Constituent	Plume distribution	Areas of contamination		
		200 West	200 East	600 Area
Arsenic	Localized	X	X	
Chromium	Intermediate	X	X	
Fluoride	Intermediate	X		
Iron	Indeterminate			
Manganese	Indeterminate			
Aluminum	Indeterminate			
Carbon tetrachloride	Intermediate	X		
Chloroform	Intermediate	X		
Trichloroethylene	Intermediate	X		
Hydrazine	Indeterminate			
Styrene	Indeterminate			
Cyanide	Intermediate	X	X	X
Nitrate	Widespread	X	X	X
Sulfate	Indeterminate			
Bis(2-ethylhexyl) phthalate	Indeterminate			
Coliform	Indeterminate			
Alpha	Intermediate	X	X	X
Beta	Intermediate	X	X	X
Cesium-137	Localized		X	
Cobalt-60	Intermediate			X
Iodine-129	Intermediate	X	X	X
Plutonium-239/240	Localized	X	X	
Radium	Indeterminate			
Strontium-90	Localized		X	X
Technetium-99	Intermediate	X	X	X
Tritium	Widespread	X	X	X
Uranium	Localized	X		

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4.2.4 Nitrate

Nitrate contamination in excess of the WWQS and DWS of 45 ppm (nitrate as NO_3) is present in five areas in and north of the 200 East Area (Figure 4-4). The highest nitrate concentrations are associated with the plume of contamination centered on well 699-50-53A (see Section 4.2.3). The plume that extends into map from the west is from a 200 West Area source and is discussed in *Hydrogeologic Model for the 200 West Groundwater Aggregate Area* (WHC 1992). The detection limit for nitrate for both RCRA and CERCLA programs is 0.2 ppm.

4.2.5 Gross Alpha

Four gross alpha contaminant plumes are illustrated in Figure 4-5. Surprisingly high averages (38.0 and 20 pCi/L) have been reported for wells 699-55-57 and 699-52-54, which define the northernmost plumes. Only two values have been reported for well 699-55-57 (74 and <4), and one has been reported for well 699-52-54. Additional analytical results may indicate that the first values reported are anomalous. A similar situation is probable for the plume indicated along the 200 East northern fenceline (beneath the 200-BP-1 operable unit). This plume was defined by wells that had only one or two results reported, and no associated alpha-emitting contaminant has been identified in the area. The only gross alpha plume that has positive correlation with alpha emitters is the southernmost plume which is centered on the 216-B-5 reverse well. The minimum detectable concentration (MDC) for gross alpha is 4 pCi/L.

4.2.6 Gross Beta

Widespread beta contamination exists beneath the 200 East groundwater AAMS area (Figure 4-6). Good correlation exists between the individual plumes and known beta-emitting contaminants (Sr-90, Co-60, Tc-99, Cs-137) except for the plume located to the southwest of the 200 East fenceline. In addition, the plume that extends off the northwestern corner of the map is very poorly constrained. The WWQS and DWS standard of 50 pCi/L is well above the contract minimum detectable activity for gross beta (8 pCi/L), and therefore the reported data are believed to be representative.

4.2.7 Cesium-137

One cesium-137 plume of contamination greater than the DWS and 1/25 DCG standard of 120 pCi/L is indicated in Figure 4-7. The plume is associated with known contamination in the vicinity of the 216-B-5 reverse well. The plume is not well constrained to the east, north, and west.

4.2.8 Cobalt-60

Cobalt-60 contamination (Figure 4-8) is associated with the cyanide plume discussed in Section 4.2.3 and centered on well 699-50-53A. Chemical complexation of cobalt-60 with cyanide or ferrocyanide has been offered as an explanation for the distribution of the cobalt-60, which is generally immobile

in the subsurface (Evans et al. 1992). The applicable standard for cobalt-60 is 100 pCi/L (1/25 DCG and DWS), which is well above the minimum detectable activities.

4.2.9 Iodine-129

Iodine-129 contamination exists over a fairly large area (Figure 4-9); however, well distribution is absent in some critical areas, which would help constrain or confirm the plume geometries shown. The plume that extends to the southeast is a good example of this restriction. The DWS and 1/25 DCG of 1 pCi/L is equal to the contract minimum detectable activity.

4.2.10 Plutonium-239/240

As with the cesium-137 plume, the single plutonium-239/240 plume is centered on the 216-B-5 reverse well (Figure 4-10). Only four wells define the plume. The standard (DWS and 1/25 DCG) of 1 pCi/L is above the minimum detectable activity of .1 pCi/L required in the laboratory contract.

4.2.11 Strontium-90

Strontium-90 contaminant plumes in excess of the 8-pCi/L standard (DWS/WWQS/1/25 DCG) occurs in four areas (Figure 4-11). The highest concentrations are associated with the plume centered on the 216-B-5 reverse well. The plumes in the southeast corner of 200 East are not well constrained, and additional well information might significantly modify the shape of the plumes, particularly the northernmost of the two. The contract minimum detectable activity is 5 pCi/L.

4.2.12 Technetium-99

Two plumes of technetium-99 contamination are located to the north of the 200 East Area (Figure 4-12). The highest concentration is found in well 699-50-53A. The standard for technetium-99 is 900 pCi/L (1/25 DCG and DWS), well above the contract minimum detectable activity of 15 pCi/L.

4.2.13 Tritium

Tritium contamination covers the largest area of any contaminant in the 200 East groundwater AAMS area (Figure 4-13). The contamination extending into the map area from the west is from a 200 West source (see WHC 1992). The possible merging of this 200 West plume and the 200 East plume that appears to be moving to the northwest is indicated by the dashed lines infilled with question marks. The highest tritium concentrations are found in wells located near the southeast corner of the 200 East Area. These wells monitor active and inactive liquid disposal facilities associated with the PUREX facility. The regulatory limit for tritium is 20,000 pCi/L (20 nCi/L), and the contract minimum detectable activity is 500 pCi/L (0.5 nCi/L).

5.0 HYDROGEOLOGIC MODEL FOR THE 200 EAST GROUNDWATER AGGREGATE AREA

One of the difficulties in describing the hydrogeologic system in the 200 East Area is explaining the spatial relationship of the major lithologic units to the uppermost aquifer system. This chapter provides a graphical interpretation of these relationships in the form of a three-dimensional conceptual hydrogeologic model. The purpose of these graphical interpretations is to contribute to an understanding of how these units spatially relate to each other. The model is restricted to the uppermost aquifer system and the vadose zone for two reasons: (1) future characterization and remediation activities will likely focus on these units since they contain the vast majority of the process waste in the 200 East groundwater and source aggregate areas, and (2) data sets for extending the model laterally and vertically at the present level of detail are insufficient in quality and quantity. The conceptual hydrogeologic model, in graphical form, provides a powerful tool by which several key hydrogeologic features can be qualitatively studied and assessed. These features include the following:

- Lateral and vertical extent and spatial relationship of unsaturated and saturated geologic units
- Variability in hydraulic conditions of the uppermost aquifer system
- Hydrologic boundaries
- Relationship between various geologic and hydrologic properties and/or characteristics.

The first step in the construction of the conceptual hydrogeologic model was to generate a geologic model using the structure-contour and isopach map data sets provided in Chapter 2.0. The maps were created from borehole data using Interactive Surface Modeling (ISM) (a trademark of Dynamic Graphics Inc.) from Dynamic Graphics Inc. (DGI) on a Silicon Graphics Personal Iris (SGI) (a trademark of Silicon Graphics) engineering workstation. Once the structure-contour and isopach maps for all of the units are complete, they were sequenced together using Geological Modeling Program (GMP) (a trademark of Dynamic Graphics Inc.) also from DGI. The result is a three-dimensional geologic model showing major lithologic units as illustrated in Figure 5-1. Hydrologic information was added to the geologic model using the SGI workstation computer and the GMP software. The uppermost aquifer system data set combined with the geologic model permits the delineation of the various unsaturated and saturated geologic units.

An advantage of the graphical hydrogeologic conceptual model is the ability to manipulate the viewing aspect and remove various geologic units. This permits clear visualization and study of the geometry of a unit from any viewing aspect. The model can also be easily updated with new hydrogeologic data as they become available. Any geologic unit or a group of units can be viewed.

Figures 5-2 through 5-6 illustrate the geometry and features of the geologic units discussed in Chapter 2.0. In Figure 5-2 only the unsaturated

and saturated Hanford formation sandy sequence are illustrated. This unit is unsaturated throughout most of the 200 East groundwater aggregate area. In Figure 5-3, the unsaturated Hanford formation lower gravel sequence, saturated Hanford formation undifferentiated gravels, and saturated Hanford formation sandy sequence are illustrated. The unsaturated Hanford formation lower gravel sequence exists throughout much of the 200 East Area except for a large hole underlying PUREX and Semi-Works aggregate areas. The unit pinches out to the west and south of the 200 East Area. The lower Hanford formation gravel sequence only can be distinguished from the overlying Hanford formation upper gravel sequence when the two units are separated by the Hanford formation sandy sequence. Figure 5-4 shows the Ringold Gravel Unit E with all of the overlying saturated units. The unsaturated portion of this unit exists primarily to the west and south of 200 East Area with a small lobe extending north to underlay the PUREX facility.

All of the unsaturated units except for Ringold Gravel Unit A have been graphically removed in Figure 5-5. The unsaturated section of Ringold Gravel Unit A exists as an east-west trending mound through the center of the 200 East Area. No physical properties have been measured in the unsaturated portion of this unit, and future work plans for PUREX, Semiworks, and B Plant aggregate areas should include the collection of these data. Figure 5-6 is the same as Figure 5-5 except the Ringold lower mud unit and the basalt have been added to show where these units occur above the water table.

The hydraulic conditions of the uppermost aquifer system can be illustrated with the conceptual hydrogeologic model. In summary, this system consists of all saturated units bounded on top either by the water table or the base of the Ringold lower mud unit, and bounded on the bottom by basalt. The Ringold lower mud unit acts as a confining layer to the saturated units that lie beneath. The base of the Ringold lower mud may be the top of the uppermost aquifer system if a water table does not exist above it. The uppermost aquifer system has unconfined, semiconfined, and confined hydraulic conditions. Unconfined hydraulic conditions exist from the water table to the top of the underlying confining layer. Semiconfined conditions exist where the unit underlying the confining layer, Ringold Unit A, has a potentiometric level higher than its top and is located in proximity of the termination of the confining unit, the Ringold lower mud unit. Confined conditions exists beneath the confining layer where it is continuous. Since the lateral and vertical extent of the confining unit can be shown with the model, hydraulic conditions for areas of interest can be identified. The uppermost aquifer system beneath B Pond is in a transition zone between unconfined and confined condition (Figure 5-7).

Hydrologic boundaries can be identified with the use of the conceptual model. Identification of these boundaries may be useful in the interpretation of aquifer tests or in the determination of boundary conditions for a numerical model. The uppermost aquifer system varies in the units it encompasses throughout the study area. Because of the numerous changes in lithology, a graphical portrayal of the units near an aquifer test location will benefit data analysis. An example is within an erosional window through basalt (Figure 5-8). Within an erosional window through the Elephant Mountain Basalt, the uppermost aquifer system includes the sediments of the Rattlesnake Ridge Interbed, and the base of the system is the top of the Pomona basalt.

The sediments of the Rattlesnake Ridge interbed area not differentiated from the Hanford formation in Figure 5-8. The hydrogeologic model within the erosional window lumps the sediments above the basalt and the undifferentiated Hanford formation gravels to emphasize the existence of the window in the block diagram. Numerical model boundary conditions can be identified with the use of this model. Basalt is not only a lower boundary to the aquifer system but may also be a lateral boundary (Figures 5-9 and 5-10). Basalt highs or outcrops of the underlying basalt may act as a no-flow boundary to the uppermost aquifer system.

The relationship between various geologic and hydrologic properties and/or characteristics can be illustrated by merging data sets within the model. Equivalent hydraulic conductivities (Figure 5-11) were contoured for the top 20 ft (6 m) of the uppermost aquifer system and are shown with the geology of the water table. A comparison of the high and low zones of equivalent hydraulic conductivities to the geology at the water table indicates that relatively high values are associated with the Hanford formation undifferentiated gravel sequence and lower values are associated with Ringold Unit E.

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APPENDIX A

SUMMARY OF MOISTURE RETENTION DATA FOR THE WELLS IN 200 EAST AREA

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Hanford Sand Sequence
U. S. Ecology Site

Well	MW10	Well	MW10	Well	MW10	Well	MW10	Well	MW10	Well	MW10
Depth	26.2 m	Depth	32.0 m	Depth	38.1 m	Depth	50.3 m	Depth	59.4 m	Depth	62.5 m
WCR	0.0253	WCR	0.0271	WCR	0.0214	WCR	0.0308	WCR	0.0487	WCR	0.0214
WCS	0.4600	WCS	0.3900	WCS	0.4400	WCS	0.4600	WCS	0.3300	WCS	0.3600
Alpha	0.0462	Alpha	0.0460	Alpha	0.0441	Alpha	0.0351	Alpha	0.0267	Alpha	0.0760
n	1.9281	n	1.6380	n	1.7647	n	2.3036	n	2.3731	n	1.6255
Ksat	2.00E-02	Ksat	1.70E-03	Ksat	4.40E-03	Ksat	6.60E-03	Ksat	2.60E-03	Ksat	6.60E-03
Matric Potential	Volumetric Water Content	Matric Potential	Volumetric Water Content	Matric Potential	Volumetric Water Content	Matric Potential	Volumetric Water Content	Matric Potential	Volumetric Water Content	Matric Potential	Volumetric Water Content
0.1	0.3970	0.1	0.3220	0.1	0.3720	0.1	0.3240	0.1	0.3430	0.1	0.3300
5.0	0.3560	5.0	0.3220	5.0	0.3670	5.0	0.3220	5.0	0.3400	5.0	0.3280
10.0	0.3540	10.0	0.3220	10.0	0.3650	10.0	0.3220	10.0	0.3380	10.0	0.2820
15.0	0.3510	15.0	0.3210	15.0	0.3520	15.0	0.3200	15.0	0.3160	15.0	0.2800
20.0	0.3500	20.0	0.2120	20.0	0.3520	20.0	0.3190	20.0	0.2930	20.0	0.2460
30.0	0.3100	30.0	0.2820	30.0	0.3200	30.0	0.2980	30.0	0.2610	30.0	0.2120
40.0	0.2610	40.0	0.2560	40.0	0.2860	40.0	0.2660	40.0	0.2280	40.0	0.1880
60.0	0.1720	60.0	0.2030	60.0	0.2120	60.0	0.1910	60.0	0.1820	60.0	0.1570
102.0	0.1020	102.0	0.1420	102.0	0.0970	102.0	0.0880	102.0	0.1040	102.0	0.0930
306.0	0.0690	306.0	0.0980	306.0	0.0960	306.0	0.0580	306.0	0.0800	306.0	0.0640
1020.0	0.0460	1020.0	0.0680	1020.0	0.0450	1020.0	0.0470	1020.0	0.0510	1020.0	0.0460
3060.0	0.0340	3060.0	0.0390	3060.0	0.0320	3060.0	0.0290	3060.0	0.0410	3060.0	0.0370
15300.0	0.0200	15300.0	0.0300	15300.0	0.0260	15300.0	0.0230	15300.0	0.0300	15300.0	0.0270

Well	MW10	Well	MW10	Well	MW10
Depth	74.7 m	Depth	80.8 m	Depth	86.9 m
WCR	0.0179	WCR	0.0169	WCR	0.0168
WCS	0.4400	WCS	0.4200	WCS	0.4700
Alpha	0.0630	Alpha	0.0386	Alpha	0.0512
n	1.7787	n	2.1405	n	2.0848
Ksat	7.30E-03	Ksat	2.60E-03	Ksat	3.50E-03
Matric Potential	Volumetric Water Content	Matric Potential	Volumetric Water Content	Matric Potential	Volumetric Water Content
0.1	0.3620	0.1	0.3570	0.1	0.3660
5.0	0.3590	5.0	0.3530	5.0	0.3560
10.0	0.3580	10.0	0.3510	10.0	0.3550
15.0	0.3550	15.0	0.3500	15.0	0.3510
20.0	0.3200	20.0	0.3290	20.0	0.3340
30.0	0.2590	30.0	0.2830	30.0	0.2710
40.0	0.2100	40.0	0.2230	40.0	0.2040
60.0	0.1620	60.0	0.1720	60.0	0.1590
102.0	0.0870	102.0	0.0740	102.0	0.0610
306.0	0.0760	306.0	0.0430	306.0	0.0380
1020.0	0.0340	1020.0	0.0290	1020.0	0.0290
3060.0	0.0250	3060.0	0.0200	3060.0	0.0250
15300.0	0.0200	15300.0	0.0160	15300.0	0.0170

Hanford Sand Sequence
U. S. Ecology Site

Well	MW5	Well	MW5	Well	MW5	Well	MW5	Well	MW5	Well	MW5
Depth	15.2 m	Depth	21.3 m	Depth	27.4 m	Depth	39.6 m	Depth	51.8 m	Depth	57.9 m
WCR	0.0293	WCR	0.0485	WCR	0.0218	WCR	0.0311	WCR	0.0282	WCR	0.0242
WCS	0.4400	WCS	0.4400	WCS	0.4400	WCS	0.4700	WCS	0.4400	WCS	0.4300
Alpha	0.0810	Alpha	0.0144	Alpha	0.0605	Alpha	0.0184	Alpha	0.0278	Alpha	0.0427
n	1.9709	n	5.4201	n	2.4414	n	3.3059	n	2.7143	n	3.0699
Ksat	3.50E-02	Ksat	1.60E-03	Ksat	2.20E-03	Ksat	4.40E-02	Ksat	3.80E-03	Ksat	5.80E-03
Matric Potential	Volumetric Water Content	Matric Potential	Volumetric Water Content	Matric Potential	Volumetric Water Content	Matric Potential	Volumetric Water Content	Matric Potential	Volumetric Water Content	Matric Potential	Volumetric Water Content
0.1	0.3310	0.1	0.4550	0.1	0.3780	0.1	0.4190	0.1	0.3900	0.1	0.4490
5.0	0.3310	5.0	0.4550	5.0	0.3780	5.0	0.4190	5.0	0.3900	5.0	0.4490
10.0	0.3180	10.0	0.4390	10.0	0.3770	10.0	0.4130	10.0	0.3890	10.0	0.4430
15.0	0.3030	15.0	0.4380	15.0	0.3370	15.0	0.4100	15.0	0.3890	15.0	0.3860
20.0	0.2700	20.0	0.4340	20.0	0.2620	20.0	0.4100	20.0	0.3880	20.0	0.2920
30.0	0.1880	30.0	0.4300	30.0	0.1710	30.0	0.4100	30.0	0.3400	30.0	0.2000
40.0	0.1580	40.0	0.4140	40.0	0.1270	40.0	0.4060	40.0	0.2850	40.0	0.1730
60.0	0.1130	60.0	0.3420	60.0	0.0890	60.0	0.2890	60.0	0.1850	60.0	0.0730
102.0	0.0610	102.0	0.1100	102.0	0.0450	102.0	0.0950	102.0	0.0600	102.0	0.0370
306.0	0.0420	306.0	0.0690	306.0	0.0320	306.0	0.0520	306.0	0.0430	306.0	0.0280
1020.0	0.0440	1020.0	0.0500	1020.0	0.0300	1020.0	0.0390	1020.0	0.0380	1020.0	0.0320
3060.0	0.0430	3060.0	0.0340	3060.0	0.0180	3060.0	0.0260	3060.0	0.0280	3060.0	0.0190
15300.0	0.0250	15300.0	0.0430	15300.0	0.0230	15300.0	0.0310	15300.0	0.0340	15300.0	0.0220
Well	MW5	Well	MW5	Well	MW5	Well	MW8	Well	MW8	Well	MW10
Depth	64.0 m	Depth	70.1 m	Depth	82.3 m	Depth	44.2 m	Depth	56.5 m	Depth	13.7 m
WCR	0.0302	WCR	0.0243	WCR	0.0000	WCR	0.0335	WCR	0.0367	WCR	0.0223
WCS	0.4300	WCS	0.4400	WCS	0.4400	WCS	0.5200	WCS	0.4000	WCS	0.4200
Alpha	0.1553	Alpha	0.0427	Alpha	0.1109	Alpha	0.0186	Alpha	0.0764	Alpha	0.0640
n	2.0330	n	3.1603	n	1.3428	n	2.1503	n	2.0668	n	1.6950
Ksat	5.40E-03	Ksat	5.30E-03	Ksat	5.50E-04	Ksat	8.80E-04	Ksat	7.10E-03	Ksat	5.30E-03
Matric Potential	Volumetric Water Content	Matric Potential	Volumetric Water Content	Matric Potential	Volumetric Water Content	Matric Potential	Volumetric Water Content	Matric Potential	Volumetric Water Content	Matric Potential	Volumetric Water Content
0.1	0.2690	0.1	0.4090	0.1	0.3180	0.1	0.4150	0.1	0.3840	0.1	0.3400
5.0	0.2690	5.0	0.4090	5.0	0.3180	5.0	0.4150	5.0	0.3840	5.0	0.3340
10.0	0.2580	10.0	0.4030	10.0	0.3160	10.0	0.4150	10.0	0.3290	10.0	0.3320
15.0	0.1810	15.0	0.4020	15.0	0.3150	15.0	0.4150	15.0	0.2700	15.0	0.3290
20.0	0.1340	20.0	0.3340	20.0	0.3110	20.0	0.4150	20.0	0.2250	20.0	0.3030
30.0	0.1020	30.0	0.1930	30.0	0.2840	30.0	0.4150	30.0	0.1690	30.0	0.2630
40.0	0.0950	40.0	0.1350	40.0	0.2550	40.0	0.4150	40.0	0.1430	40.0	0.2250
60.0	0.0810	60.0	0.0980	60.0	0.2310	60.0	0.4110	60.0	0.1160	60.0	0.1650
102.0	0.0730	102.0	0.0440	102.0	0.1890	102.0	0.2030	102.0	0.0740	102.0	0.1080
306.0	0.0370	306.0	0.0350	306.0	0.1440	306.0	0.0990	306.0	0.0540	306.0	0.0660
1020.0	0.0320	1020.0	0.0240	1020.0	0.0840	1020.0	0.0590	1020.0	0.0480	1020.0	0.0660
3060.0	0.0170	3060.0	0.0170	3060.0	0.0490	3060.0	0.0390	3060.0	0.0330	3060.0	0.0300
15300.0	0.0300	15300.0	0.0130	15300.0	0.0210	15300.0	0.0270	15300.0	0.0280	15300.0	0.0210

Hanford Sand Sequence
AP1 Tank Farm Samples from the East Wall

Sample Loc.	241-AP-1	Sample Loc.	241-AP-2	Sample Loc.	241-AP-3	Sample Loc.	241-AP-4	Sample Loc.	241-AP-5
Elevation: 192 m above MSL		Elevation: 194 m above MSL		Elevation: 196 m above MSL		Elevation: 200 m above MSL		Elevation: 201 m above MSL	
WCR	0.0322	WCR	0.0958	WCR	0.0552	WCR	0.0419	WCR	0.0133
WCS	0.4170	WCS	0.5210	WCS	0.4360	WCS	0.4540	WCS	0.4280
Alpha	0.1008	Alpha	0.0309	Alpha	0.0494	Alpha	0.0666	Alpha	0.0118
n	2.9224	n	3.1071	n	3.2863	n	2.6751	n	1.3945
Ksat	2.60E-03	Ksat	6.00E-04	Ksat	8.26E-04	Ksat	2.30E-03	Ksat	4.90E-05
Matric Potential	Volumetric Water Content	Matric Potential	Volumetric Water Content	Matric Potential	Volumetric Water Content	Matric Potential	Volumetric Water Content	Matric Potential	Volumetric Water Content
2.0	0.4140	2.0	0.5200	2.0	0.4350	2.0	0.4530	5.0	0.4250
4.0	0.4050	4.0	0.5170	4.0	0.4320	4.0	0.4490	10.0	0.4220
6.0	0.3730	6.0	0.5160	6.0	0.4280	6.0	0.4450	15.0	0.4190
8.0	0.3260	8.0	0.5140	8.0	0.4250	8.0	0.4280	20.0	0.4160
10.0	0.2680	10.0	0.5050	10.0	0.4180	10.0	0.4050	50.0	0.4030
20.0	0.1220	20.0	0.4770	20.0	0.2920	20.0	0.2060	70.0	0.3970
50.0	0.0580	50.0	0.2310	50.0	0.0990	50.0	0.1270	100.0	0.3880
100.0	0.0500	100.0	0.1570	100.0	0.0770	100.0	0.0790	100.0	0.3100
100.0	0.0460	100.0	0.1400	100.0	0.0700	100.0	0.0700	100.0	0.2800
100.0	0.0300	100.0	0.1200	100.0	0.0600	100.0	0.0500	500.0	0.2300
500.0	0.0400	500.0	0.1100	500.0	0.0700	500.0	0.0300	1000.0	0.1600
1000.0	0.0300	1000.0	0.1100	1000.0	0.0600	1000.0	0.0400	15300.0	0.0700
15300.0	0.0200	15300.0	0.0700	15300.0	0.0500	15300.0	0.0400		

Hanford Sand Sequence
Grout Test Facility

Well	299-E25-234	Well	299-E25-234	Well	299-E25-234	Well	299-E25-234	Well	299-E25-234	Well	299-E25-234
Depth	16.7 m	Depth	21.2 m	Depth	25.6 m	Depth	30.5 m	Depth	33.7 m	Depth	35.8 m
WCR	0.0090	WCR	0.0100	WCR	0.0070	WCR	0.0070	WCR	0.0070	WCR	0.0070
WCS	0.4530	WCS	0.3920	WCS	0.3827	WCS	0.3723	WCS	0.4286	WCS	0.4303
Alpha	0.1563	Alpha	0.3946	Alpha	0.2095	Alpha	0.4868	Alpha	0.2512	Alpha	0.1007
n	1.3959	n	1.3456	n	1.3412	n	1.2997	n	1.6008	n	1.4015
Ksat	1.38E-05	Ksat	1.21E-03	Ksat	1.78E-04	Ksat	2.24E-04	Ksat	2.82E-04	Ksat	3.64E-03
Matric Potential	Volumetric Water Content	Matric Potential	Volumetric Water Content	Matric Potential	Volumetric Water Content	Matric Potential	Volumetric Water Content	Matric Potential	Volumetric Water Content	Matric Potential	Volumetric Water Content
0.1	0.4520	0.1	0.3740	0.1	0.3970	0.1	0.3660	0.1	0.4300	0.1	0.4560
0.1	0.4700	0.1	0.4040	0.1	0.3840	0.1	0.3750	0.1	0.4200	0.1	0.4130
5.0	0.3630	5.0	0.2930	5.0	0.2790	5.0	0.2550	5.0	0.3160	5.0	0.3850
5.0	0.3520	5.0	0.2930	5.0	0.3090	5.0	0.2740	5.0	0.3100	5.0	0.3730
10.0	0.3510	10.0	0.2510	10.0	0.2710	10.0	0.2300	10.0	0.2630	10.0	0.3540
10.0	0.3360	10.0	0.2650	10.0	0.2850	10.0	0.2620	10.0	0.2690	10.0	0.3640
15.0	0.3380	15.0	0.2250	15.0	0.2420	15.0	0.2020	15.0	0.1840	15.0	0.3210
15.0	0.3270	15.0	0.1780	15.0	0.2710	15.0	0.2260	15.0	0.1660	15.0	0.3540
20.0	0.3160	20.0	0.2100	20.0	0.2170	20.0	0.1750	20.0	0.1410	20.0	0.2660
20.0	0.3140	20.0	0.1460	20.0	0.2550	20.0	0.1880	20.0	0.1360	20.0	0.3390
30.0	0.2330	30.0	0.1990	30.0	0.1950	30.0	0.1570	30.0	0.1130	30.0	0.1850
30.0	0.2480	30.0	0.1220	30.0	0.2230	30.0	0.1590	30.0	0.1160	30.0	0.3210
40.0	0.1990	40.0	0.1900	40.0	0.1780	40.0	0.1470	40.0	0.0970	40.0	0.1520
40.0	0.2080	40.0	0.1090	40.0	0.2010	40.0	0.1460	40.0	0.1020	40.0	0.2990
50.0	0.1640	50.0	0.1850	50.0	0.1650	50.0	0.1410	50.0	0.0880	50.0	0.1430
50.0	0.1980	50.0	0.1010	50.0	0.1840	50.0	0.1400	50.0	0.0960	50.0	0.2840
70.0	0.1600	70.0	0.1760	70.0	0.1490	70.0	0.1320	70.0	0.0840	70.0	0.1370
70.0	0.1630	70.0	0.0930	70.0	0.1620	70.0	0.1280	70.0	0.0810	70.0	0.2540
100.0	0.1590	100.0	0.1690	100.0	0.1420	100.0	0.1260	100.0	0.0760	100.0	0.1290
100.0	0.1240	100.0	0.0850	100.0	0.1440	100.0	0.1230	100.0	0.0790	100.0	0.2430
150.0	0.1360	150.0	0.1590	150.0	0.1280	150.0	0.1180	150.0	0.0740	150.0	0.1050
150.0	0.1100	150.0	0.0780	150.0	0.1240	150.0	0.1140	150.0	0.0720	150.0	0.2360
510.0	0.1390	510.0	0.0690	510.0	0.0670	510.0	0.0910	510.0	0.0760	510.0	0.0780
1020.0	0.1040	1020.0	0.0560	1020.0	0.0530	1020.0	0.0680	1020.0	0.0550	1020.0	0.0580
3060.0	0.0630	3060.0	0.0420	3060.0	0.0320	3060.0	0.0510	3060.0	0.0420	3060.0	0.0420

Hanford Sand Sequence
Grout Test Facility

Well	299-E25-234	Well	299-E25-234	Well	299-E25-234	Well	299-E25-234	Well	299-E25-234	Well	299-E25-234
Depth	1.5 m	Depth	5.9 m	Depth	7.8 m	Depth	8.9 m	Depth	11.3 m	Depth	14.1 m
WCR	0.0250	WCR	0.0220	WCR	0.0280	WCR	0.0230	WCR	0.0600	WCR	0.0080
WCS	0.3806	WCS	0.4993	WCS	0.5112	WCS	0.4347	WCS	0.5224	WCS	0.4183
Alpha	0.0863	Alpha	0.5474	Alpha	0.0761	Alpha	0.1521	Alpha	0.0912	Alpha	0.1763
n	1.3135	n	1.2814	n	1.3888	n	1.2299	n	1.2833	n	1.3625
Ksat	5.73E-04	Ksat	8.88E-04	Ksat	1.80E-03	Ksat	2.41E-05	Ksat	5.77E-04	Ksat	2.99E-04
Matric Potential	Volumetric Water Content	Matric Potential	Volumetric Water Content	Matric Potential	Volumetric Water Content	Matric Potential	Volumetric Water Content	Matric Potential	Volumetric Water Content	Matric Potential	Volumetric Water Content
0.1	0.4270	0.1	0.4780	0.1	0.4980	0.1	0.4360	0.1	0.5180	0.1	0.4650
0.1	0.3800	0.1	0.5100	0.1	0.5190	0.1	0.4450	0.1	0.5130	0.1	0.4000
5.0	0.3450	5.0	0.3990	0.1	0.5090	5.0	0.3660	5.0	0.4660	5.0	0.3160
5.0	0.3300	5.0	0.3290	0.1	0.5200	5.0	0.4060	5.0	0.5000	5.0	0.3250
10.0	0.3190	10.0	0.3720	5.0	0.3800	10.0	0.3430	10.0	0.4570	10.0	0.2960
10.0	0.3130	10.0	0.3020	5.0	0.5510	10.0	0.3790	10.0	0.4830	10.0	0.3120
15.0	0.3050	15.0	0.3480	5.0	0.4990	15.0	0.3270	15.0	0.4570	15.0	0.2790
15.0	0.3060	15.0	0.2780	5.0	0.4040	15.0	0.3590	15.0	0.4770	15.0	0.3080
20.0	0.2900	20.0	0.3310	10.0	0.3720	20.0	0.3090	20.0	0.4420	20.0	0.2510
20.0	0.2960	20.0	0.2600	10.0	0.5390	20.0	0.3480	20.0	0.4510	20.0	0.2940
30.0	0.2640	30.0	0.2660	10.0	0.4810	30.0	0.2880	30.0	0.3930	30.0	0.2020
30.0	0.2840	30.0	0.1960	10.0	0.3970	30.0	0.3350	30.0	0.3210	30.0	0.2490
40.0	0.2460	40.0	0.2150	15.0	0.3700	40.0	0.2700	40.0	0.3630	40.0	0.1800
40.0	0.2790	40.0	0.1440	15.0	0.5350	40.0	0.3070	40.0	0.3490	40.0	0.2260
50.0	0.2380	50.0	0.2070	15.0	0.4720	50.0	0.2540	50.0	0.3350	50.0	0.1720
50.0	0.2700	50.0	0.1360	15.0	0.3870	50.0	0.2960	50.0	0.3490	50.0	0.2140
70.0	0.2150	70.0	0.1870	20.0	0.3580	70.0	0.2380	70.0	0.3350	70.0	0.1620
70.0	0.2540	70.0	0.1160	20.0	0.5190	70.0	0.2710	70.0	0.2980	70.0	0.2030
100.0	0.2010	100.0	0.1730	20.0	0.4630	100.0	0.2310	100.0	0.3210	100.0	0.1500
100.0	0.2270	100.0	0.1020	20.0	0.3760	100.0	0.2630	100.0	0.2980	100.0	0.1850
150.0	0.1910	150.0	0.1680	30.0	0.3060	150.0	0.2210	150.0	0.2850	150.0	0.1020
150.0	0.2120	150.0	0.0970	30.0	0.4270	150.0	0.2560	150.0	0.2860	150.0	0.1650
510.0	0.0960	510.0	0.2320	30.0	0.4450	510.0	0.1760	510.0	0.2040	510.0	0.0500
1020.0	0.0800	1020.0	0.2010	30.0	0.2530	1020.0	0.1560	1020.0	0.1880	1020.0	0.0450
3060.0	0.0640	3060.0	0.1380	40.0	0.2090	3060.0	0.1100	3060.0	0.1740	3060.0	0.0300
				40.0	0.3920						
				40.0	0.4170						
				40.0	0.2090	100.0	0.3070				
				50.0	0.1760	100.0	0.3430				
				50.0	0.3610	100.0	0.1580				
				50.0	0.3890	150.0	0.1160				
				50.0	0.1930	150.0	0.2560				
				70.0	0.1460	150.0	0.3430				
				70.0	0.3210	150.0	0.1570				
				70.0	0.3470	510.0	0.2050				
				70.0	0.1790	1020.0	0.1630				
				100.0	0.1290	3060.0	0.1160				

Hanford Sand Sequence
200-BP-1 Samples

Well	299-E33-38	Well	299-E33-38	Well	299-E33-38
Depth	15.1 m	Depth	51 m	Depth	57.1 m
WCR	0.0050	WCR	0.0000	WCR	0.0018
WCS	0.2390	WCS	0.2459	WCS	0.3714
Alpha	1.4263	Alpha	0.4612	Alpha	0.0513
n	1.2658	n	1.2507	n	1.5057
Ksat	5.70E-05	Ksat	5.00E-04	Ksat	7.10E-05
Matric Potential	Volumetric Water Content	Matric Potential	Volumetric Water Content	Matric Potential	Volumetric Water Content
0.1	0.2390	0.1	0.2448	0.1	0.3705
10.0	0.1100	10.0	0.1387	10.0	0.3211
20.0	0.0998	20.0	0.1406	20.0	0.2926
30.0	0.1055	30.0	0.1346	30.0	0.2784
50.0	0.0875	50.0	0.1217	50.0	0.2039
70.0	0.0765	70.0	0.1147	70.0	0.1805
100.0	0.0615	100.0	0.1093	100.0	0.1566
200.0	0.0538	200.0	0.1001	200.0	0.1244
300.0	0.0456	300.0	0.0576	300.0	0.1094
500.0	0.0482	500.0	0.0544	500.0	0.0891
700.0	0.0372	700.0	0.0519	700.0	0.0466
1000.0	0.0369	1000.0	0.0482	1000.0	0.0394
2000.0	0.0385	2000.0	0.0388	2000.0	0.0302
3000.0	0.0316	3000.0	0.0331	3000.0	0.0261
5000.0	0.0293	5000.0	0.0338	5000.0	0.0418
1000.0	0.0365	1000.0	0.0429	1000.0	0.0397
3000.0	0.0269	3000.0	0.0333	3000.0	0.0258
5000.0	0.0293	5000.0	0.0366	5000.0	0.0221
7000.0	0.0262	7000.0	0.0350	7000.0	0.0244
10000.0	0.0233	10000.0	0.0362	10000.0	0.0230
12800.0	0.0225	13000.0	0.0279	13000.0	0.0164

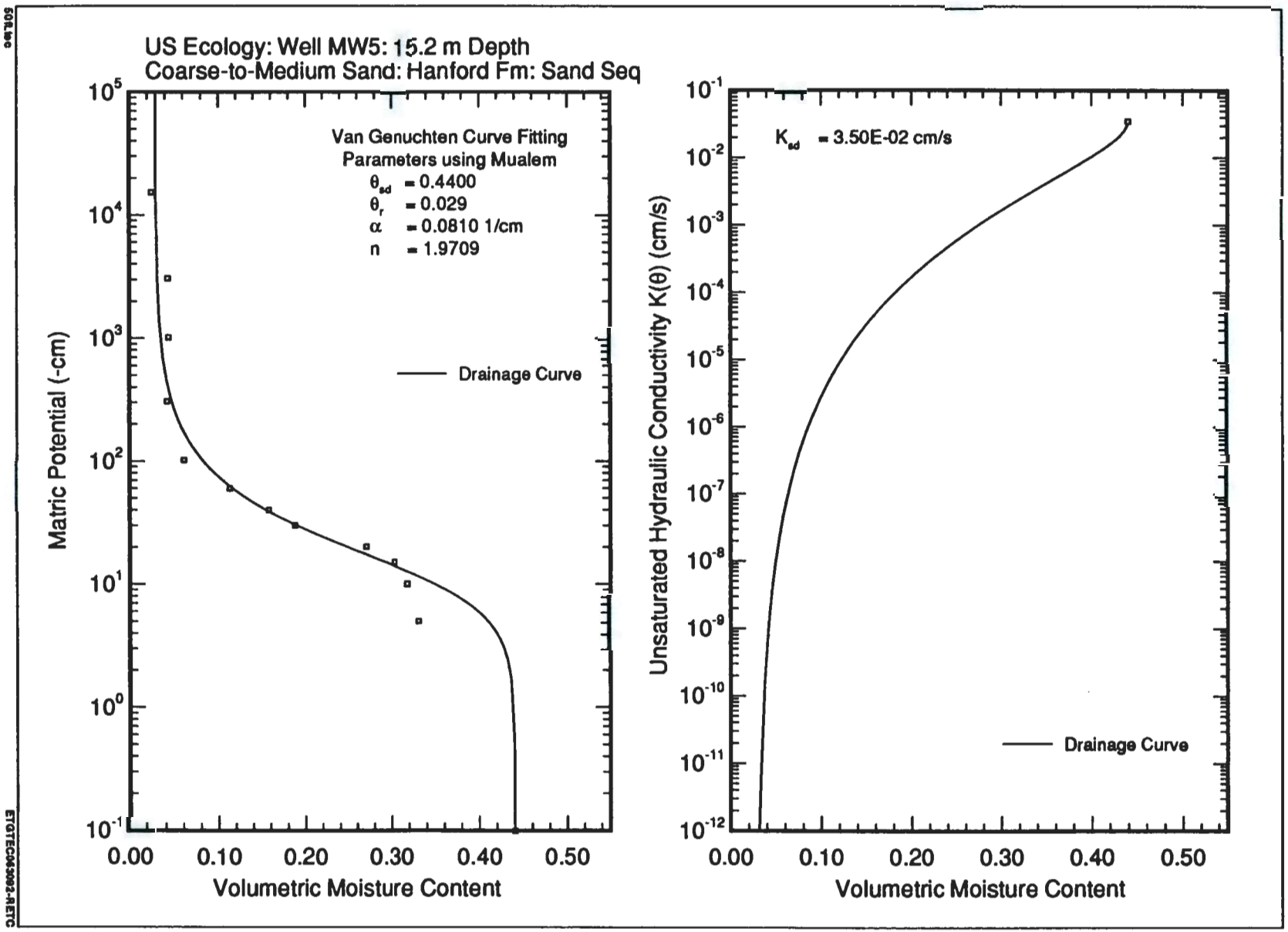
Hanford Gravels (Upper, Lower and Undifferentiated)											
200-BP-1 SAMPLES											
Well	216-B-61A	Well	216-B-61A	Well	216-B-61A	Well	216-B-61A	Well	299-E33-38	Well	299-E33-38
Depth	4.1 m	Depth	5.8 m	Depth	7.0 m	Depth	8.8 m	Depth	1.9 m	Depth	62.3 m
WCR	0.0352	WCR	0.0488	WCR	0.0000	WCR	0.0201	WCR	0.0000	WCR	0.0000
WCS	0.3465	WCS	0.3253	WCS	0.3430	WCS	0.2801	WCS	0.5256	WCS	0.2905
Alpha	0.0061	Alpha	0.0060	Alpha	0.0134	Alpha	0.0609	Alpha	0.0081	Alpha	0.0101
n	1.5248	n	1.5120	n	1.2816	n	1.2811	n	1.7389	n	1.3652
Ksat	1.80E-03	Ksat	2.80E-03	Ksat	4.00E-04	Ksat	1.80E-05	Ksat	2.00E-05	Ksat	4.20E-03
Matric Potential	Volumetric Water Content	Matric Potential	Volumetric Water Content	Matric Potential	Volumetric Water Content	Matric Potential	Volumetric Water Content	Matric Potential	Volumetric Water Content	Matric Potential	Volumetric Water Content
0.1	0.3424	0.1	0.3248	0.1	0.3354	0.1	0.2624	0.1	0.5261	0.1	0.2908
10.4	0.3544	10.4	0.3211	10.4	0.3337	10.4	0.2498	10.0	0.4921	10.0	0.2892
18.0	0.3526	18.0	0.3215	18.0	0.3304	18.0	0.2352	20.0	0.5115	20.0	0.2933
32.7	0.3491	32.7	0.3171	32.7	0.3096	32.7	0.2210	30.0	0.5066	30.0	0.2924
49.3	0.3465	49.3	0.3053	49.3	0.3047	49.3	0.2062	50.0	0.4795	50.0	0.2410
71.1	0.2980	71.1	0.2987	71.1	0.2988	71.1	0.1915	70.0	0.4773	70.0	0.2381
100.0	0.2910	100.0	0.2840	100.0	0.2903	100.0	0.1738	100.0	0.4839	100.0	0.2157
205.0	0.2754	205.0	0.2625	205.0	0.2496	205.0	0.1471	200.0	0.3692	200.0	0.2058
300.0	0.2422	300.0	0.2386	300.0	0.2159	300.0	0.1319	300.0	0.1584	300.0	0.1927
500.0	0.2020	500.0	0.2013	500.0	0.1891	500.0	0.1136	500.0	0.1269	500.0	0.1915
700.0	0.1740	700.0	0.1758	700.0	0.1724	700.0	0.1049	700.0	0.1122	700.0	0.1767
1000.0	0.1490	1000.0	0.1525	1000.0	0.1574	1000.0	0.0983	1000.0	0.1030	1000.0	0.1135
500.0	0.2008	500.0	0.1919	500.0	0.2099	500.0	0.1230	2000.0	0.0924	2000.0	0.0841
700.0	0.1785	700.0	0.1835	700.0	0.1953	700.0	0.1223	3000.0	0.0807	3000.0	0.0741
1000.0	0.1438	1000.0	0.1446	1000.0	0.1653	1000.0	0.0970	5000.0	0.0497	5000.0	0.0702
2200.0	0.1097	2200.0	0.1179	2200.0	0.1266	2200.0	0.0932	1000.0	0.1049	1000.0	0.1141
3000.0	0.1085	3000.0	0.1111	3000.0	0.1195	3000.0	0.0662	3000.0	0.0706	3000.0	0.0773
5000.0	0.0731	5000.0	0.0920	5000.0	0.1121	5000.0	0.0768	5000.0	0.0752	5000.0	0.0693
6500.0	0.0926	6500.0	0.1107	6500.0	0.1007	6500.0	0.0611	7000.0	0.0692	7000.0	0.0591
10000.0	0.0826	10000.0	0.0823	10000.0	0.0817	10000.0	0.0773	10000.0	0.0575	10000.0	0.0493
13700.0	0.0561	13700.0	0.0713	13700.0	0.0772	13700.0	0.0561	12800.0	0.0478	13000.0	0.0402

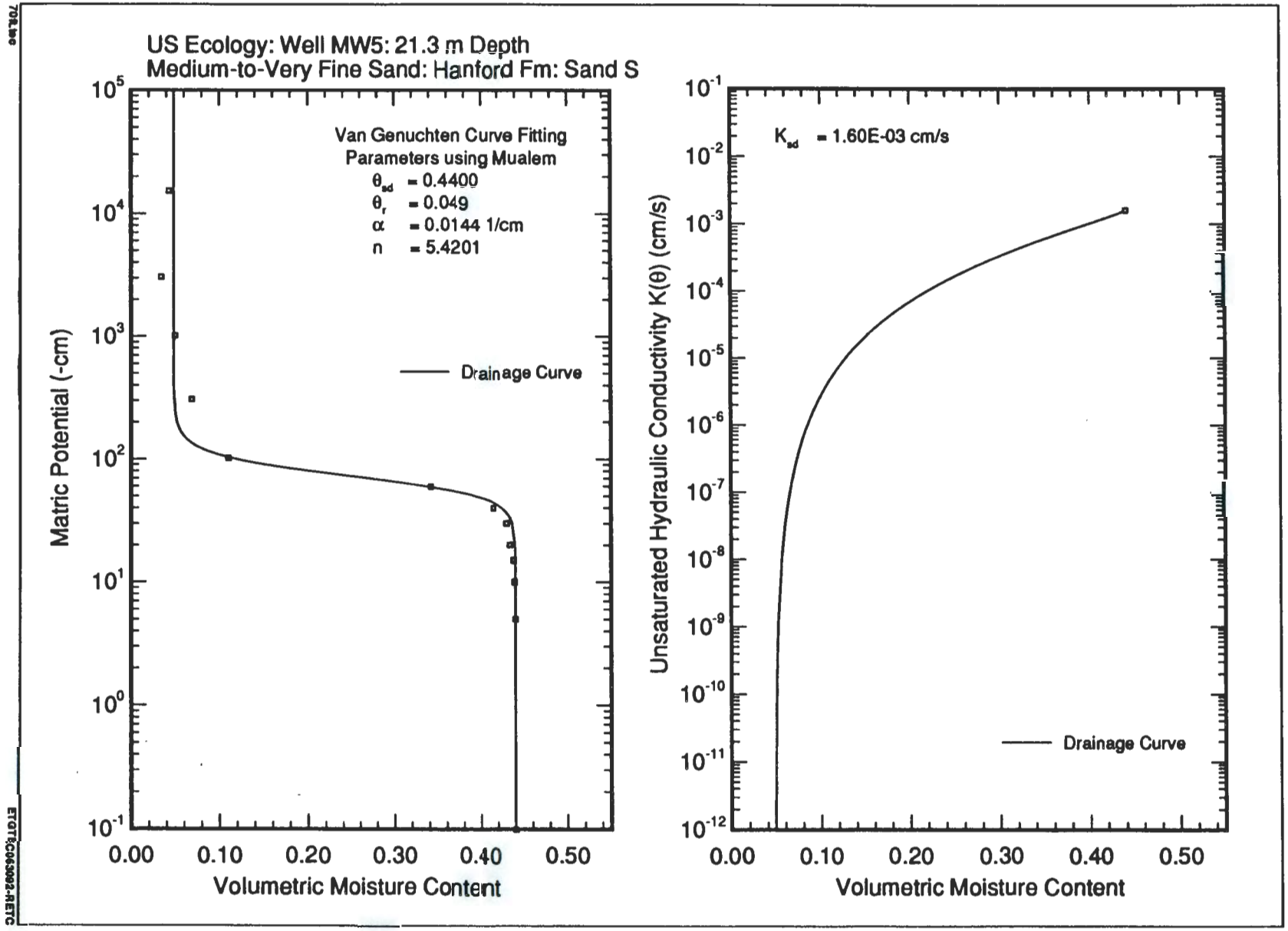
Hanford Gravels (Upper, Lower and Undifferentiated)											
200-BP-1 SAMPLES				GROUT SAMPLES				B-POND SAMPLES			
Well	299-E33-38	Well	299-E33-40	Well	299-E25-234	Well	299-E25-234	Well	6-42-41B	Well	6-43-41H
Depth	57.9 m	Depth	14 m	Depth	38.4 m	Depth	40.8 m	Depth	25.8 m	Depth	16.6 m
WCR	0.0000	WCR	0.0000	WCR	0.0080	WCR	0.0110	WCR	0.0301	WCR	0.1041
WCS	0.4187	WCS	0.3021	WCS	0.3661	WCS	0.2633	WCS	0.3550	WCS	0.4510
Alpha	0.0027	Alpha	0.1028	Alpha	0.8522	Alpha	0.0195	Alpha	0.0426	Alpha	0.0165
n	1.5688	n	1.2734	n	1.3429	n	1.3183	n	1.3900	n	1.7894
Ksat	2.10E-06	Ksat	6.00E-04	Ksat	1.98E-03	Ksat	2.76E-05	Ksat	5.40E-03	Ksat	1.10E-05
Matric Potential	Volumetric Water Content	Matric Potential	Volumetric Water Content	Matric Potential	Volumetric Water Content	Matric Potential	Volumetric Water Content	Matric Potential	Volumetric Water Content	Matric Potential	Volumetric Water Content
0.1	0.4181	0.1	0.3019	0.1	0.3540	0.1	0.2800	0.1	0.3550	0.1	0.4506
10.0	0.3967	10.0	0.2199	0.1	0.3690	0.1	0.2820	9.0	0.3214	9.0	0.4396
20.0	0.3942	20.0	0.2196	5.0	0.2260	5.0	0.2440	24.7	0.2970	24.7	0.4181
30.0	0.3900	30.0	0.2139	5.0	0.2570	5.0	0.2520	37.8	0.2795	37.8	0.4024
50.0	0.3812	50.0	0.1991	10.0	0.1660	10.0	0.2540	51.0	0.2560	51.0	0.3810
70.0	0.3831	70.0	0.1724	10.0	0.1880	10.0	0.2520	70.0	0.2316	70.0	0.3487
100.0	0.3708	100.0	0.1655	15.0	0.1370	15.0	0.2570	100.0	0.2066	100.0	0.2986
200.0	0.3468	200.0	0.1569	15.0	0.1500	15.0	0.2490	200.0	0.1645	200.0	0.2332
300.0	0.3245	300.0	0.1425	20.0	0.1180	20.0	0.2570	300.0	0.1381	300.0	0.2011
500.0	0.3192	500.0	0.1261	20.0	0.1320	20.0	0.2420	480.0	0.1318		
700.0	0.3062	700.0	0.1349	30.0	0.1140	30.0	0.2460	480.0	0.1242		
1000.0	0.2275	1000.0	0.0624	30.0	0.1180	30.0	0.2300	700.0	0.1152		
2000.0	0.1363	2000.0	0.0576	40.0	0.1060	40.0	0.2370	700.0	0.1103		
3000.0	0.1137	3000.0	0.0542	40.0	0.1090	40.0	0.2190	1000.0	0.0985		
5000.0	0.0919	5000.0	0.0353	50.0	0.0990	50.0	0.2340	1000.0	0.0999		
1000.0	0.2281	1000.0	0.0625	50.0	0.1040	50.0	0.2130	2000.0	0.1055		
3000.0	0.1179	3000.0	0.0545	70.0	0.0970	70.0	0.2220	2000.0	0.0986		
5000.0	0.0922	5000.0	0.0492	70.0	0.0990	70.0	0.2010	2980.0	0.0873		
7000.0	0.0780	7000.0	0.0398	100.0	0.0960	100.0	0.2030	2980.0	0.0940		
10000.0	0.0702	10000.0	0.0419	100.0	0.0920	100.0	0.1890	5000.0	0.0751		
13000.0	0.0517	12800.0	0.0310	150.0	0.0870	150.0	0.1960	5000.0	0.0752		
				150.0	0.0830	150.0	0.1780	7200.0	0.0667		
				510.0	0.0730	510.0	0.1550	7200.0	0.0627		
				1020.0	0.0640	1020.0	0.1030	10000.0	0.0580		
				3060.0	0.0420	3060.0	0.0640	10000.0	0.0578		
								12500.0	0.0459		
								12500.0	0.0465		

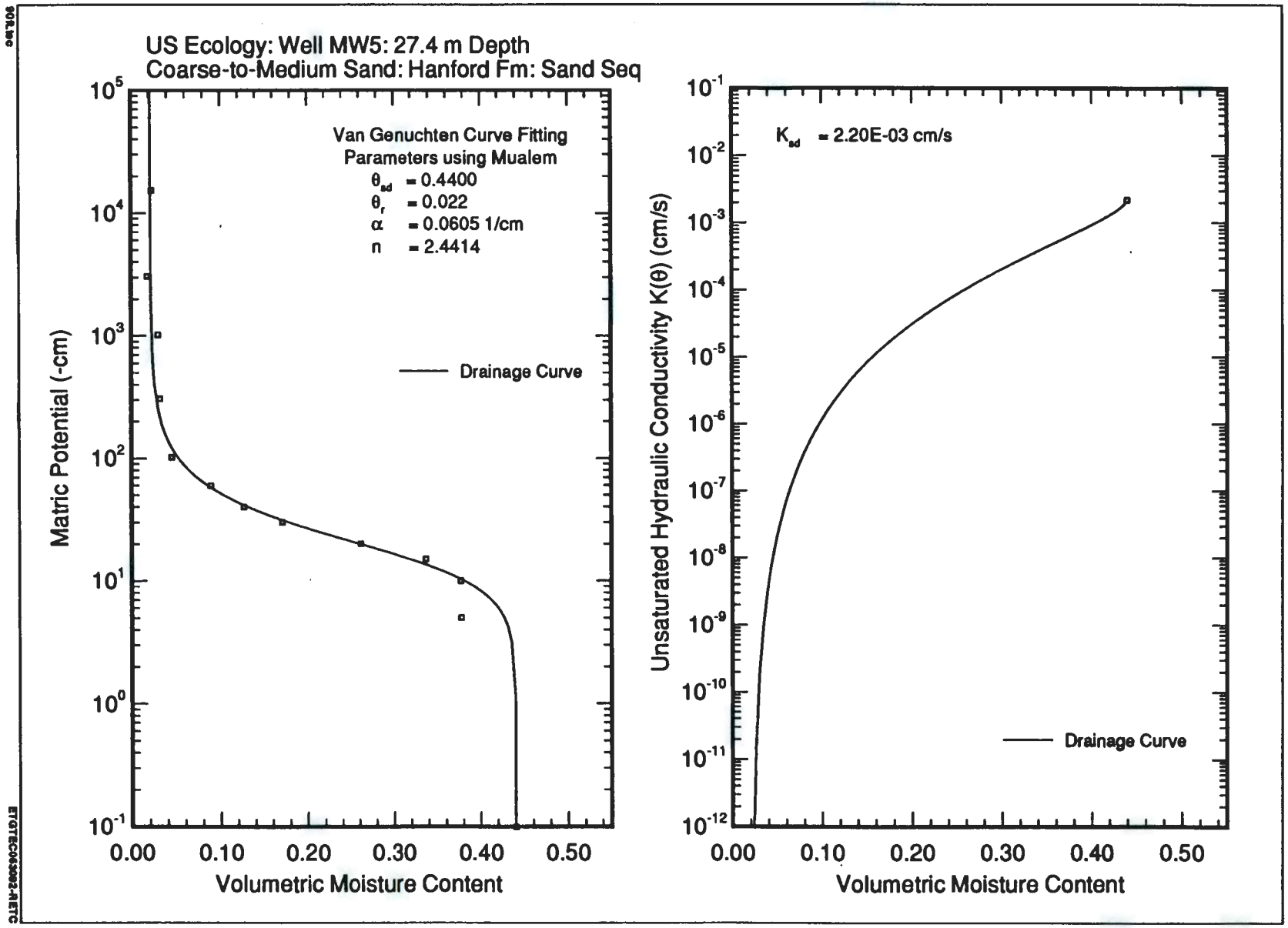
Hanford Gravels (Upper, Lower and Undifferentiated)			
U. S. Ecology			
Well	MW8	Well	MW10
Depth	4.6 m	Depth	93.0 m
WCR	0.0390	WCR	0.0205
WCS	0.4400	WCS	0.4000
Alpha	0.0440	Alpha	0.0427
n	3.0387	n	2.2500
Ksat	1.70E-03	Ksat	4.40E-03
Matric Potential	Volumetric Water Content	Matric Potential	Volumetric Water Content
0.1	0.4210	0.1	0.3630
5.0	0.4210	5.0	0.3600
10.0	0.4190	10.0	0.3590
15.0	0.4000	15.0	0.3330
20.0	0.3210	20.0	0.3040
30.0	0.1980	30.0	0.2460
40.0	0.1510	40.0	0.1890
60.0	0.1150	60.0	0.1420
102.0	0.0630	102.0	0.0530
306.0	0.0470	306.0	0.0440
1020.0	0.0400	1020.0	0.0250
3060.0	0.0300	3060.0	0.0210
15300.0	0.0260	15300.0	0.0240

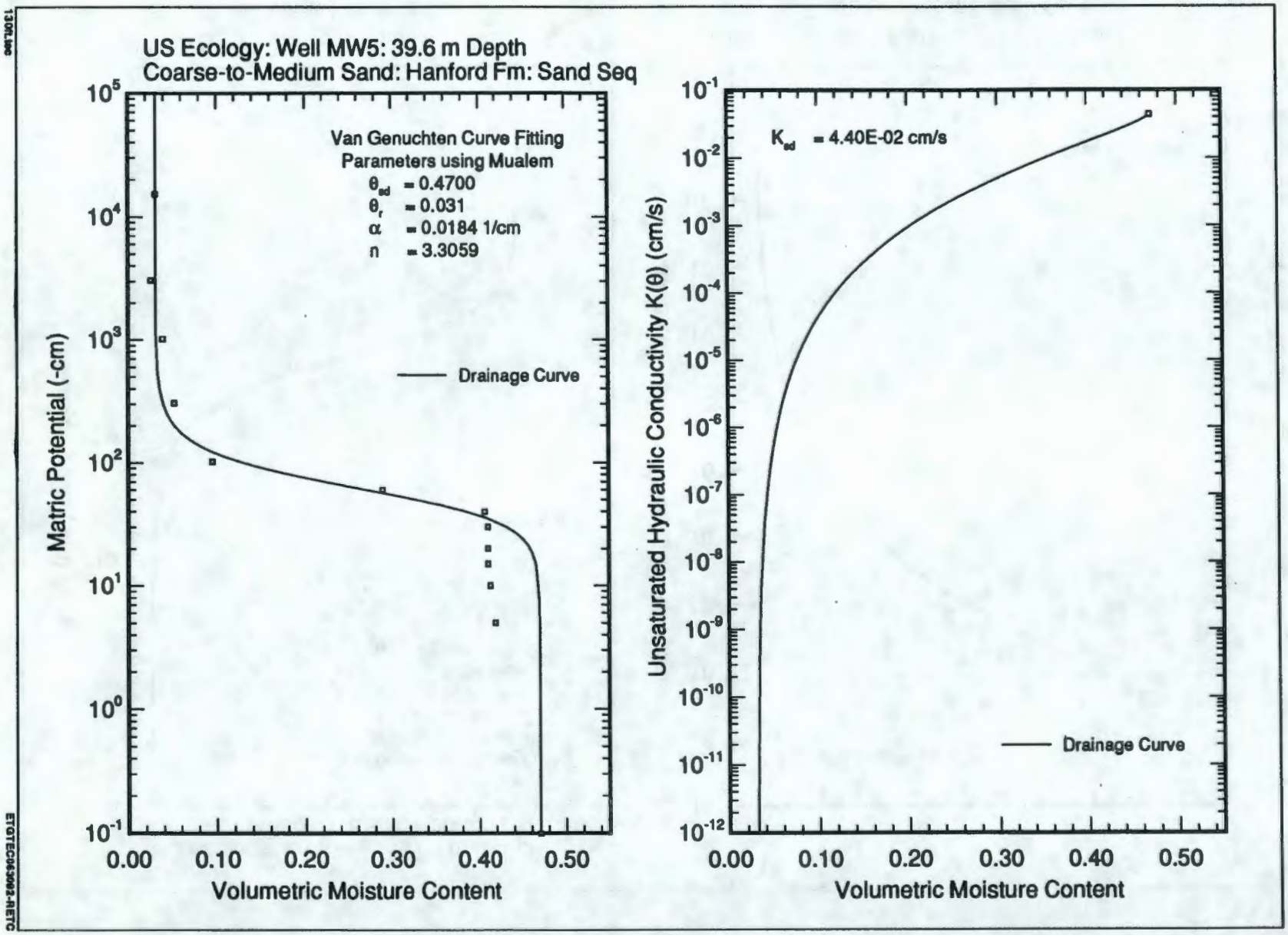
B- Pond Samples

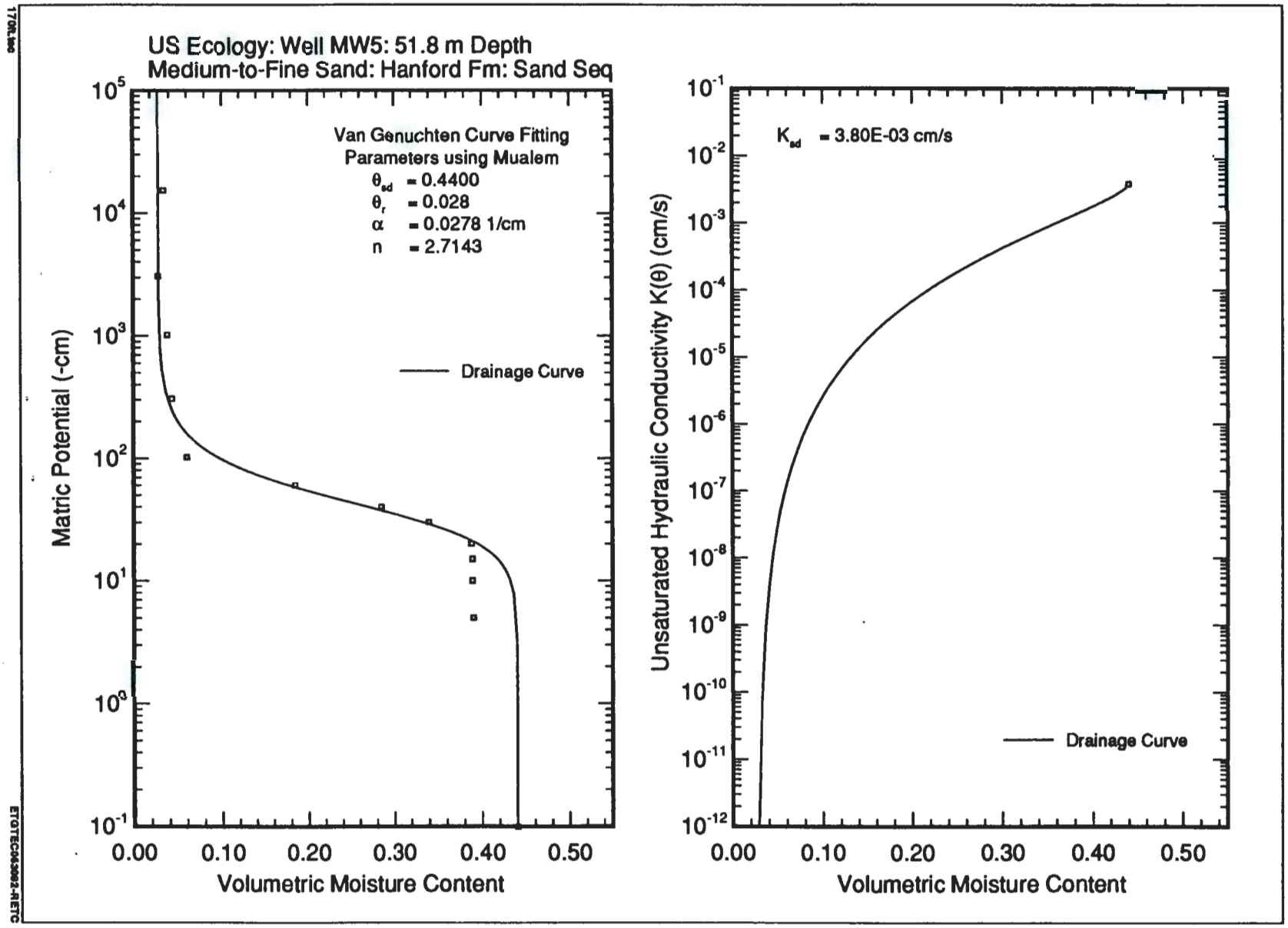
Ringold Gravel Unit E		Ringold Lower Mud Unit				Ringold Gravel Unit A			
Well	MW5	Well	6-42-41B	Well	699-40-40B	Well	699-43-41G	Well	699-43-40
Depth	91.4 m	Depth	36.1 m	Depth	38.3 m	Depth	50.8 m	Depth	39.9 m
WCR	0.0000	WCR	0.0083	WCR	0.0000	WCR	0.0941	WCR	0.0387
WCS	0.4000	WCS	0.5730	WCS	0.5680	WCS	0.5710	WCS	0.3790
Alpha	0.0456	Alpha	0.0132	Alpha	0.0051	Alpha	0.0150	Alpha	0.0089
n	1.3661	n	1.2586	n	1.1732	n	1.4173	n	1.4739
Ksat	7.70E-04	Ksat	3.00E-08	Ksat	1.00E-08	Ksat	1.90E-06	Ksat	1.90E-04
Matric Potential	Volumetric Water Content	Matric Potential	Volumetric Water Content	Matric Potential	Volumetric Water Content	Matric Potential	Volumetric Water Content	Matric Potential	Volumetric Water Content
0.1	0.2830	0.1	0.5726	0.1	0.5681	0.1	0.5711	23.0	0.3789
5.0	0.2830	9.0	0.5716	13.2	0.5466	13.2	0.5457	31.2	0.3525
10.0	0.2830	24.7	0.5657	23.0	0.5431	23.0	0.5382	54.5	0.3463
15.0	0.2830	37.8	0.5491	31.2	0.5409	31.2	0.5339	73.5	0.3402
20.0	0.2830	51.0	0.5335	54.5	0.5344	54.5	0.4980	99.2	0.3238
30.0	0.2830	70.0	0.5132	73.5	0.5293	73.5	0.4817	202.0	0.2730
40.0	0.2830	100.0	0.4751	99.2	0.5238	99.2	0.4592	300.0	0.2295
60.0	0.2830	200.0	0.4049	202.0	0.5019	202.0	0.3753	500.0	0.1947
102.0	0.1980	300.0	0.3631	300.0	0.4798	300.0	0.3295	700.0	0.1755
306.0	0.1480	2000.0	0.2727	500.0	0.4601	500.0	0.2868	1000.0	0.1602
1020.0	0.1050	2000.0	0.2731	700.0	0.4481	700.0	0.2698	1000.0	0.1599
3060.0	0.0630	2980.0	0.2233	1000.0	0.4354	1000.0	0.2471	1000.0	0.1630
15300.0	0.0300	2980.0	0.2253	1000.0	0.4291	1000.0	0.2444	1000.0	0.1595
		5000.0	0.2028	3000.0	0.3821	1000.0	0.2548	2000.0	0.1196
		5000.0	0.2002	3000.0	0.3797	1000.0	0.2538	2000.0	0.1217
		7200.0	0.1797	5000.0	0.3315	2000.0	0.1980	3000.0	0.1139
		7200.0	0.1814	5000.0	0.3304	2000.0	0.2062	3000.0	0.1147
		10000.0	0.1697	7000.0	0.2977	3000.0	0.1950	5000.0	0.0986
		10000.0	0.1712	7000.0	0.3011	3000.0	0.2000	5000.0	0.0976
		12500.0	0.1455	10000.0	0.2764	5000.0	0.1710	7000.0	0.0899
		12500.0	0.1494	10000.0	0.2785	5000.0	0.1710	7000.0	0.0847
				15000.0	0.2483	7000.0	0.1713	10000.0	0.0824
				15000.0	0.2529	7000.0	0.1912	10000.0	0.0804
						10000.0	0.1355	15000.0	0.0691
						10000.0	0.1680	15000.0	0.0632
						15000.0	0.1283		
						15000.0	0.1321		

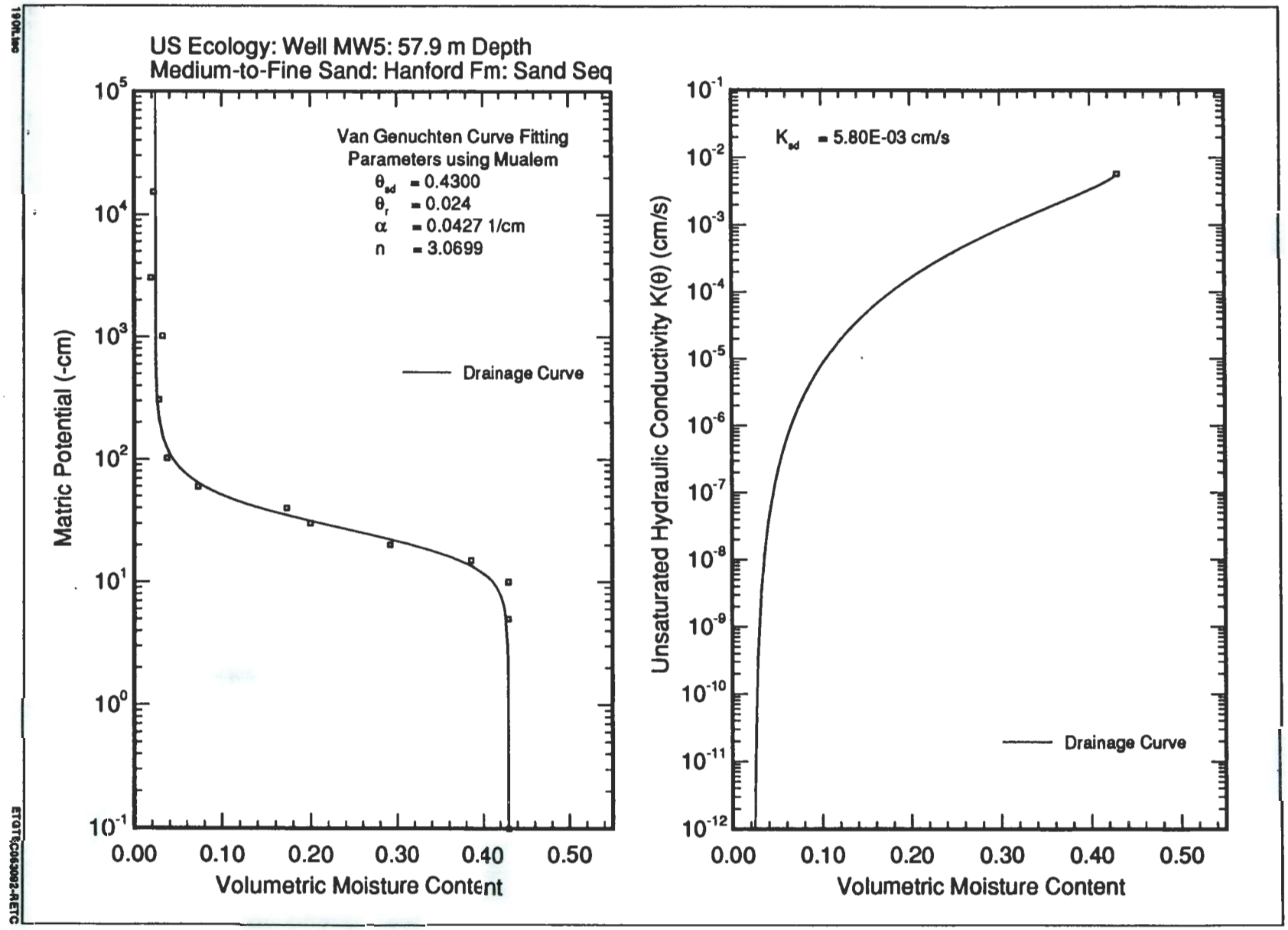

US Ecology: Well MW5: 15.2 m Depth
Coarse-to-Medium Sand: Hanford Fm: Sand Seq
Van Genuchten Curve Fitting
Parameters using Mualem
θ_{sd} = 0.4400
θ_r = 0.029
α = 0.0810 1/cm
n = 1.9709
Drainage Curve
Matric Potential (-cm)
Volumetric Moisture Content
K_{sd} = 3.50E-02 cm/s
Drainage Curve
Unsaturated Hydraulic Conductivity K(θ) (cm/s)
Volumetric Moisture Content

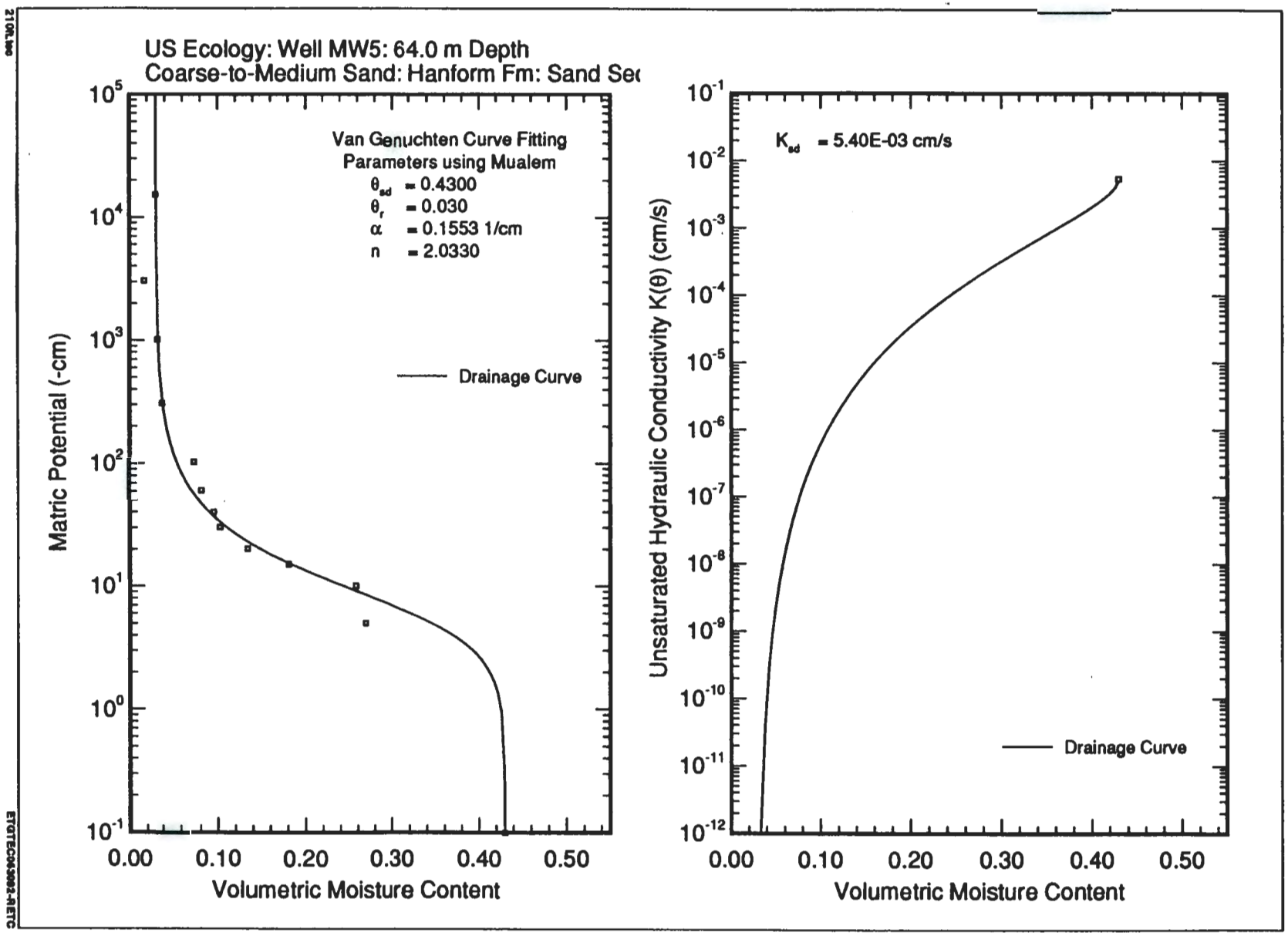

US Ecology: Well MW5: 21.3 m Depth
Medium-to-Very Fine Sand: Hanford Fm: Sand S
Van Genuchten Curve Fitting
Parameters using Mualem
θ_{sd} = 0.4400
θ_r = 0.049
α = 0.0144 1/cm
n = 5.4201
Drainage Curve
Matric Potential (-cm)
Volumetric Moisture Content
K_{sd} = 1.60E-03 cm/s
Drainage Curve
Unsaturated Hydraulic Conductivity K(θ) (cm/s)
Volumetric Moisture Content

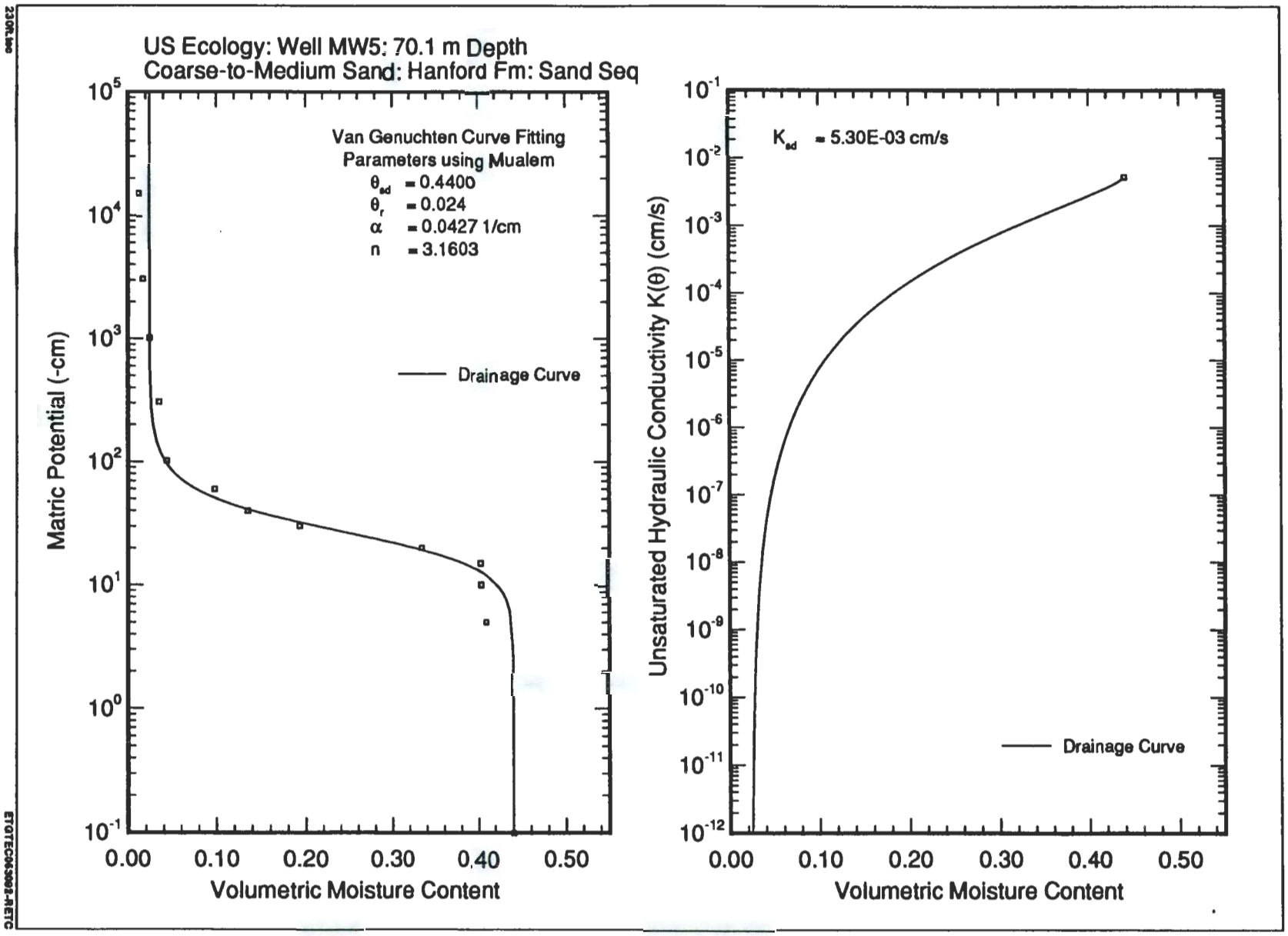

US Ecology: Well MW5: 27.4 m Depth
Coarse-to-Medium Sand: Hanford Fm: Sand Seq
Van Genuchten Curve Fitting
Parameters using Mualem
θ_{sd} = 0.4400
θ_r = 0.022
α = 0.0605 1/cm
n = 2.4414
Drainage Curve
Matric Potential (-cm)
Volumetric Moisture Content
K_{sd} = 2.20E-03 cm/s
Drainage Curve
Unsaturated Hydraulic Conductivity K(θ) (cm/s)
Volumetric Moisture Content

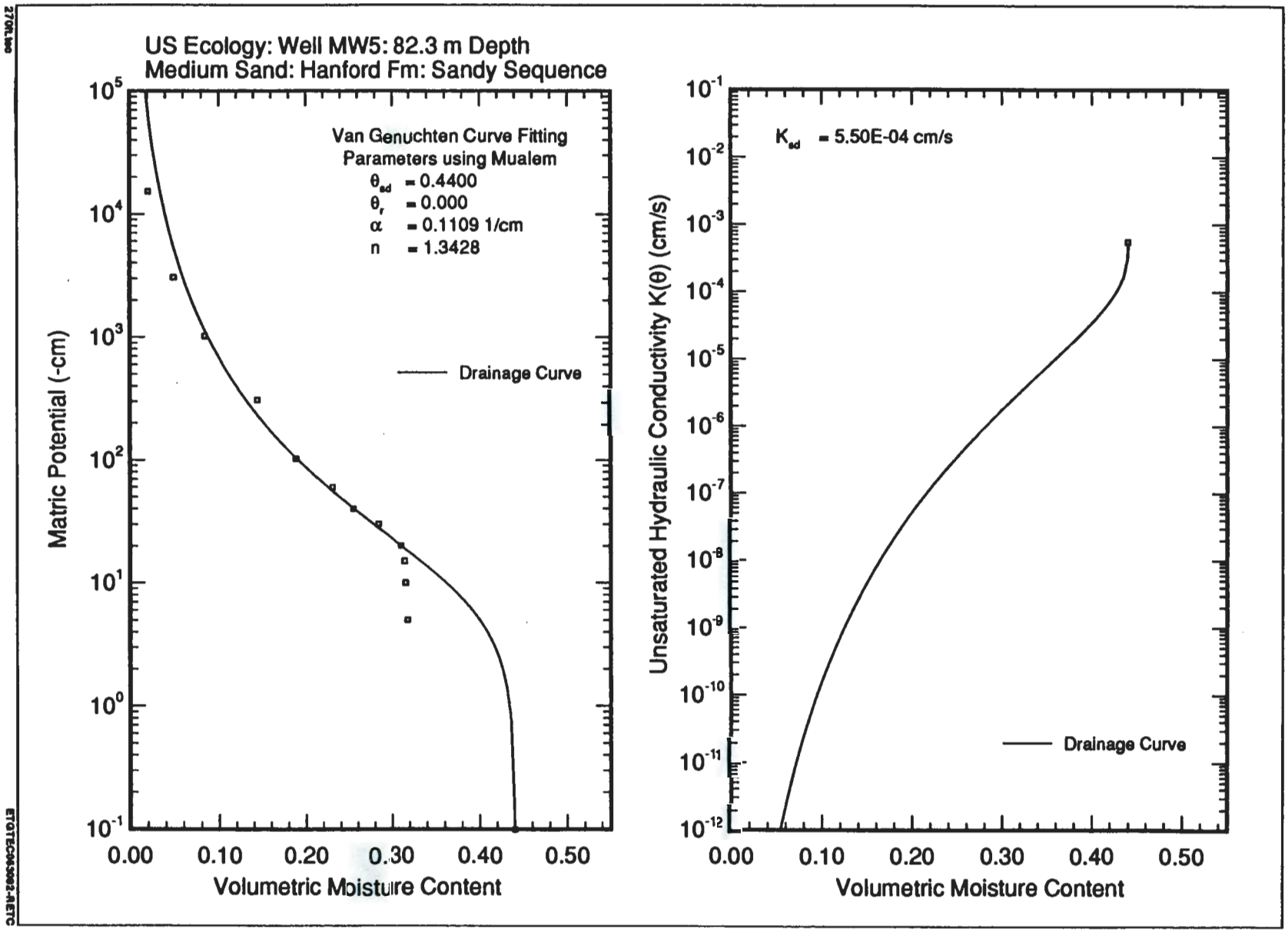

US Ecology: Well MW5: 39.6 m Depth
Coarse-to-Medium Sand: Hanford Fm: Sand Seq
Van Genuchten Curve Fitting
Parameters using Mualem
θ_{sd} = 0.4700
θ_r = 0.031
α = 0.0184 1/cm
n = 3.3059
Drainage Curve
Matric Potential (-cm)
Volumetric Moisture Content
K_{sd} = 4.40E-02 cm/s
Drainage Curve
Unsaturated Hydraulic Conductivity K(θ) (cm/s)
Volumetric Moisture Content

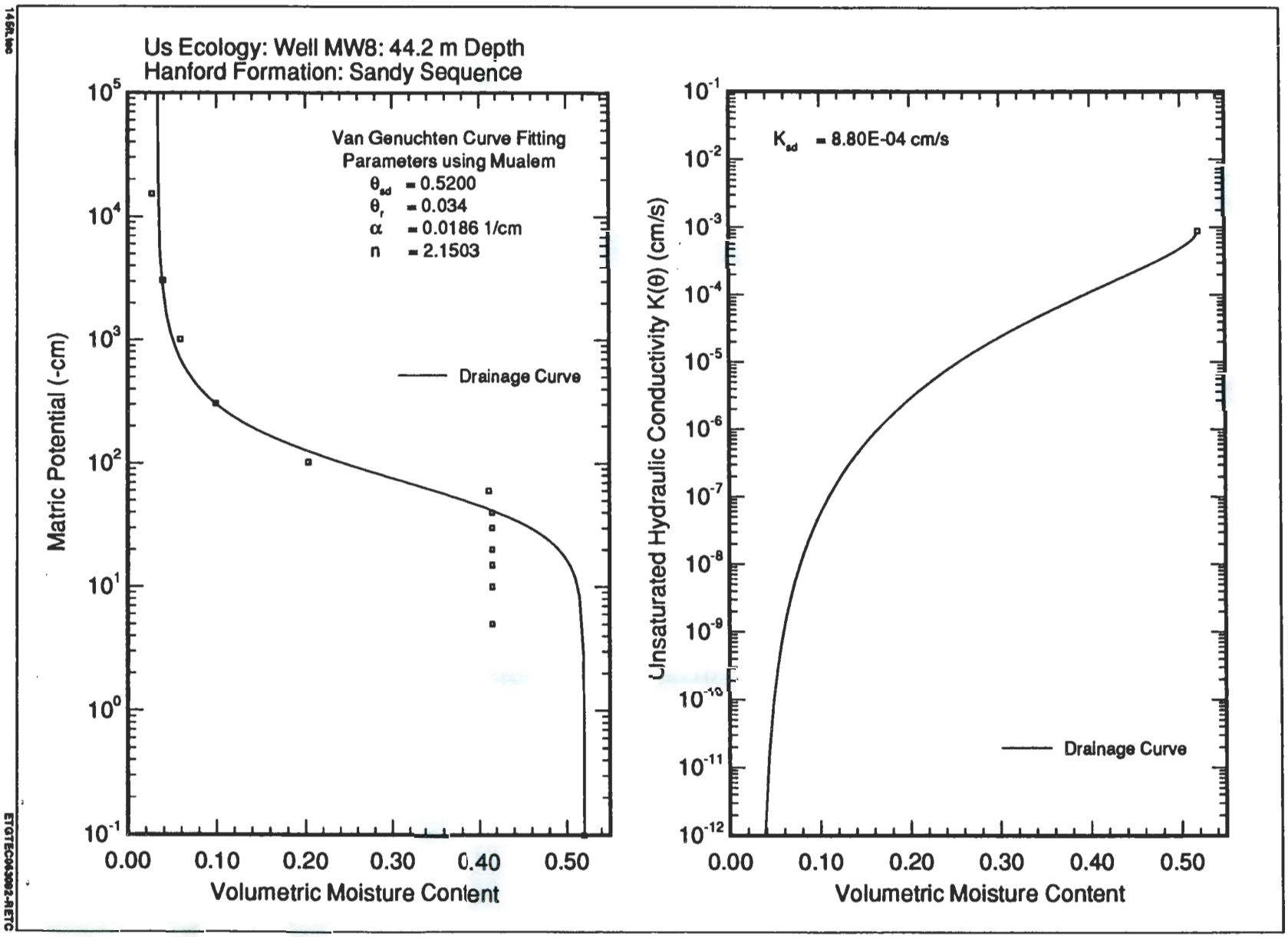

US Ecology: Well MW5: 51.8 m Depth
Medium-to-Fine Sand: Hanford Fm: Sand Seq
Van Genuchten Curve Fitting
Parameters using Mualem
θ_{sd} = 0.4400
θ_r = 0.028
α = 0.0278 1/cm
n = 2.7143
Drainage Curve
Matric Potential (-cm)
Volumetric Moisture Content
K_{sd} = 3.80E-03 cm/s
Drainage Curve
Unsaturated Hydraulic Conductivity K(θ) (cm/s)
Volumetric Moisture Content

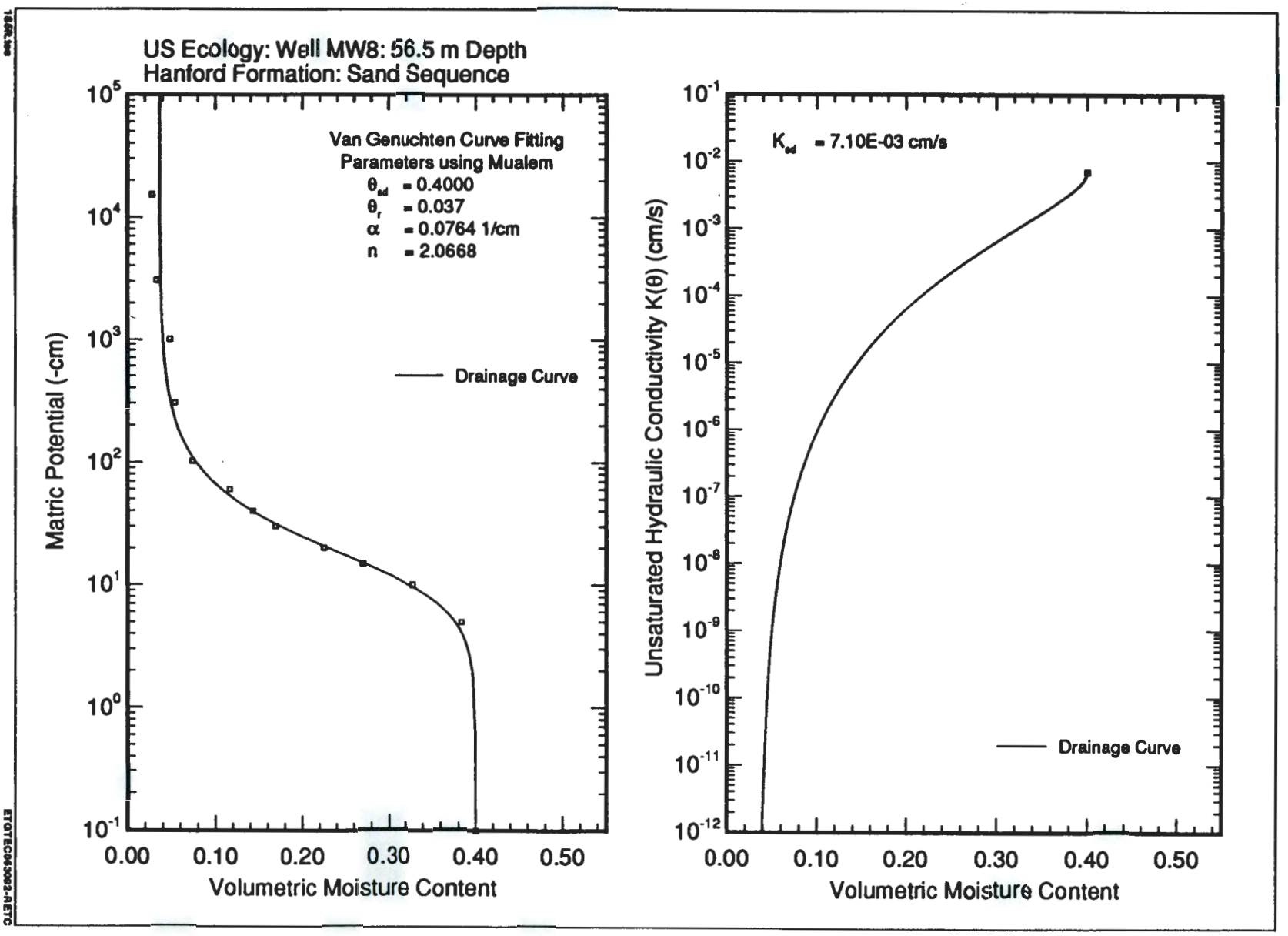

US Ecology: Well MW5: 57.9 m Depth
Medium-to-Fine Sand: Hanford Fm: Sand Seq
Van Genuchten Curve Fitting
Parameters using Mualem
θ_{sd} = 0.4300
θ_r = 0.024
α = 0.0427 1/cm
n = 3.0699
Drainage Curve
Matric Potential (-cm)
Volumetric Moisture Content
K_{sd} = 5.80E-03 cm/s
Drainage Curve
Unsaturated Hydraulic Conductivity K(θ) (cm/s)
Volumetric Moisture Content

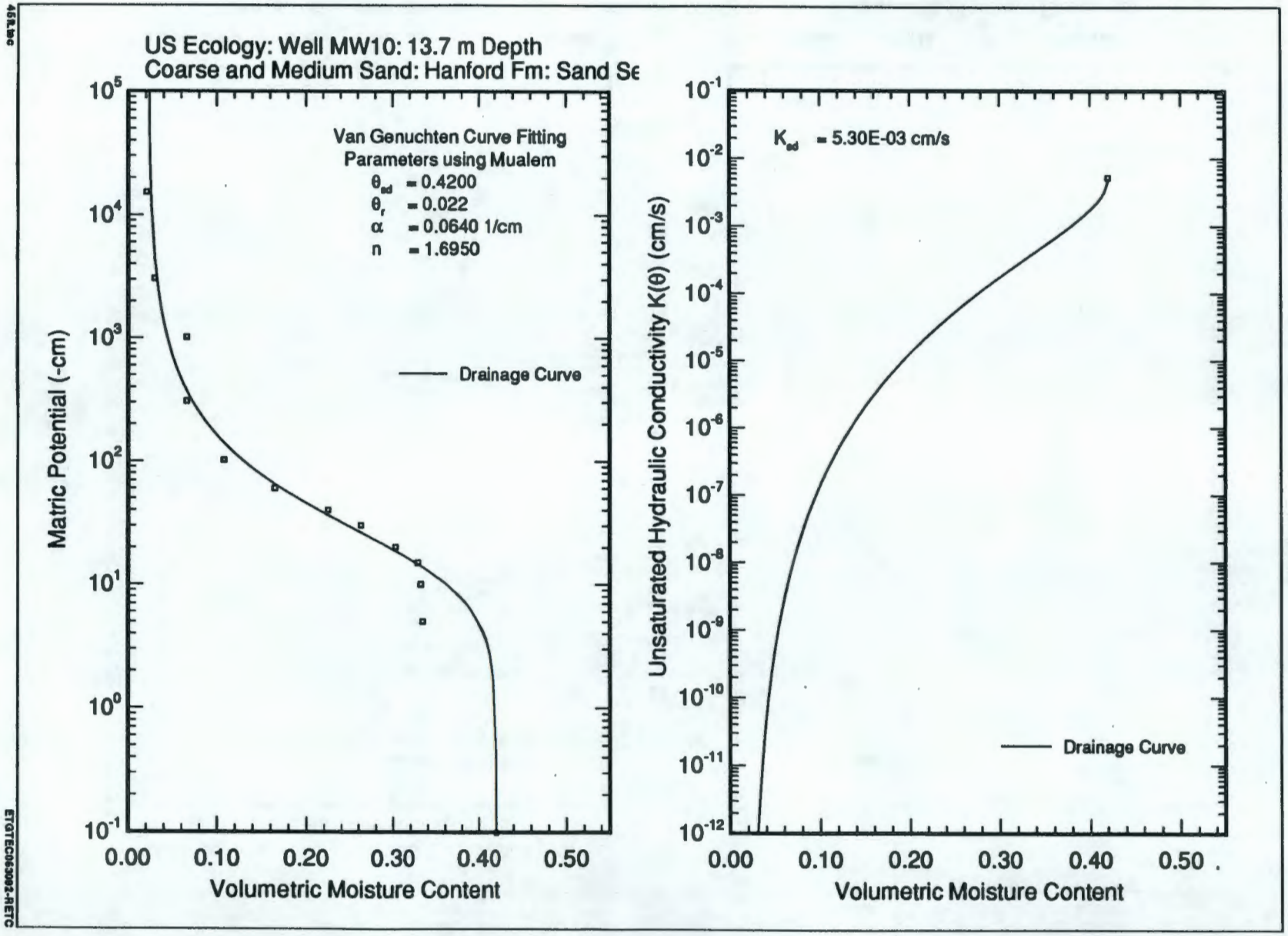

US Ecology: Well MW5: 64.0 m Depth
Coarse-to-Medium Sand: Hanform Fm: Sand Sec
Van Genuchten Curve Fitting
Parameters using Mualem
θ_{sd} = 0.4300
θ_r = 0.030
α = 0.1553 1/cm
n = 2.0330
Drainage Curve
Matric Potential (-cm)
Volumetric Moisture Content
K_{sd} = 5.40E-03 cm/s
Drainage Curve
Unsaturated Hydraulic Conductivity K(θ) (cm/s)
Volumetric Moisture Content

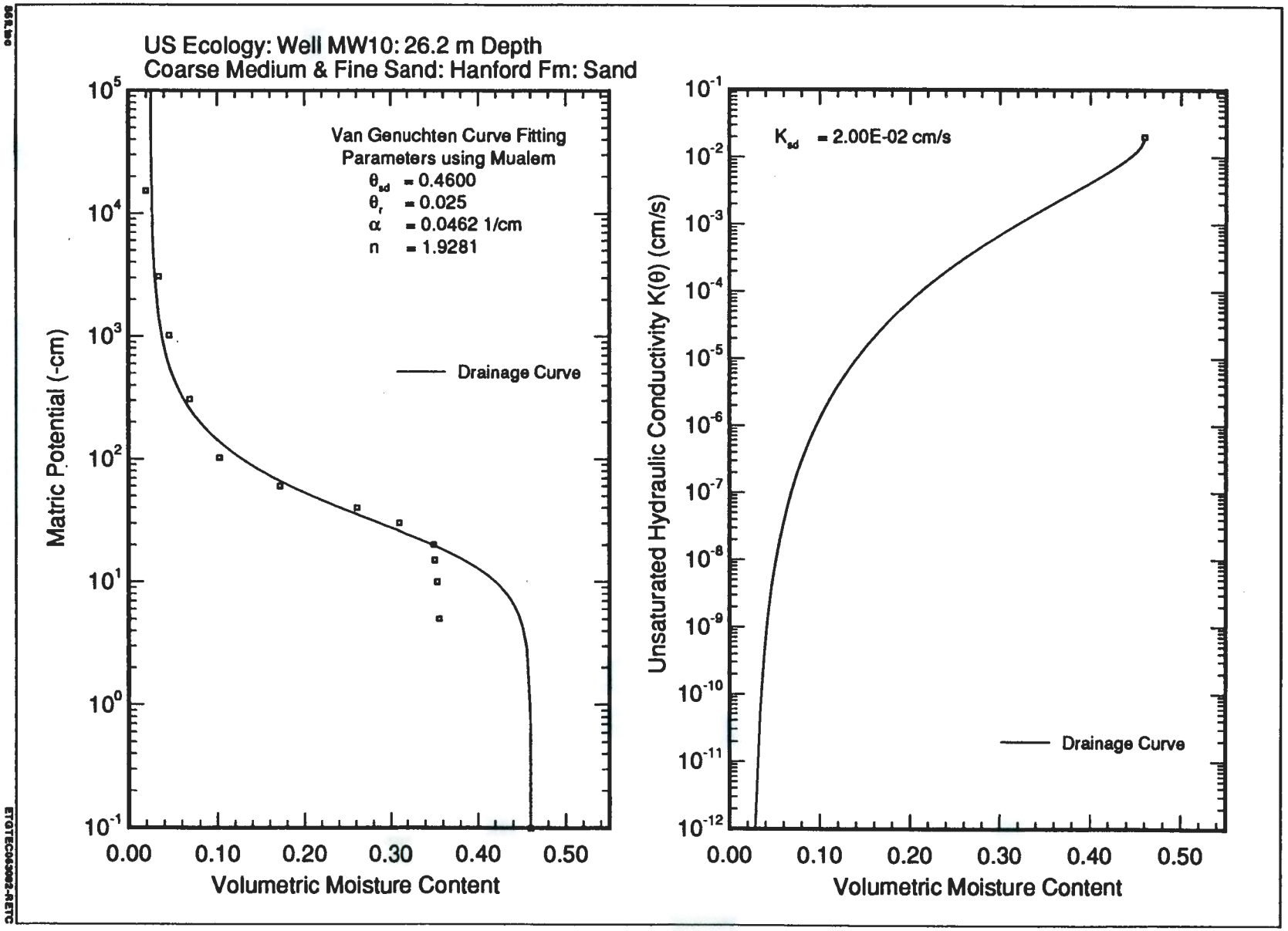

US Ecology: Well MW5: 70.1 m Depth
Coarse-to-Medium Sand: Hanford Fm: Sand Seq
Van Genuchten Curve Fitting
Parameters using Mualem
θ_{sd} = 0.4400
θ_r = 0.024
α = 0.0427 1/cm
n = 3.1603
Drainage Curve
Matric Potential (-cm)
Volumetric Moisture Content
K_{sd} = 5.30E-03 cm/s
Drainage Curve
Unsaturated Hydraulic Conductivity K(θ) (cm/s)
Volumetric Moisture Content

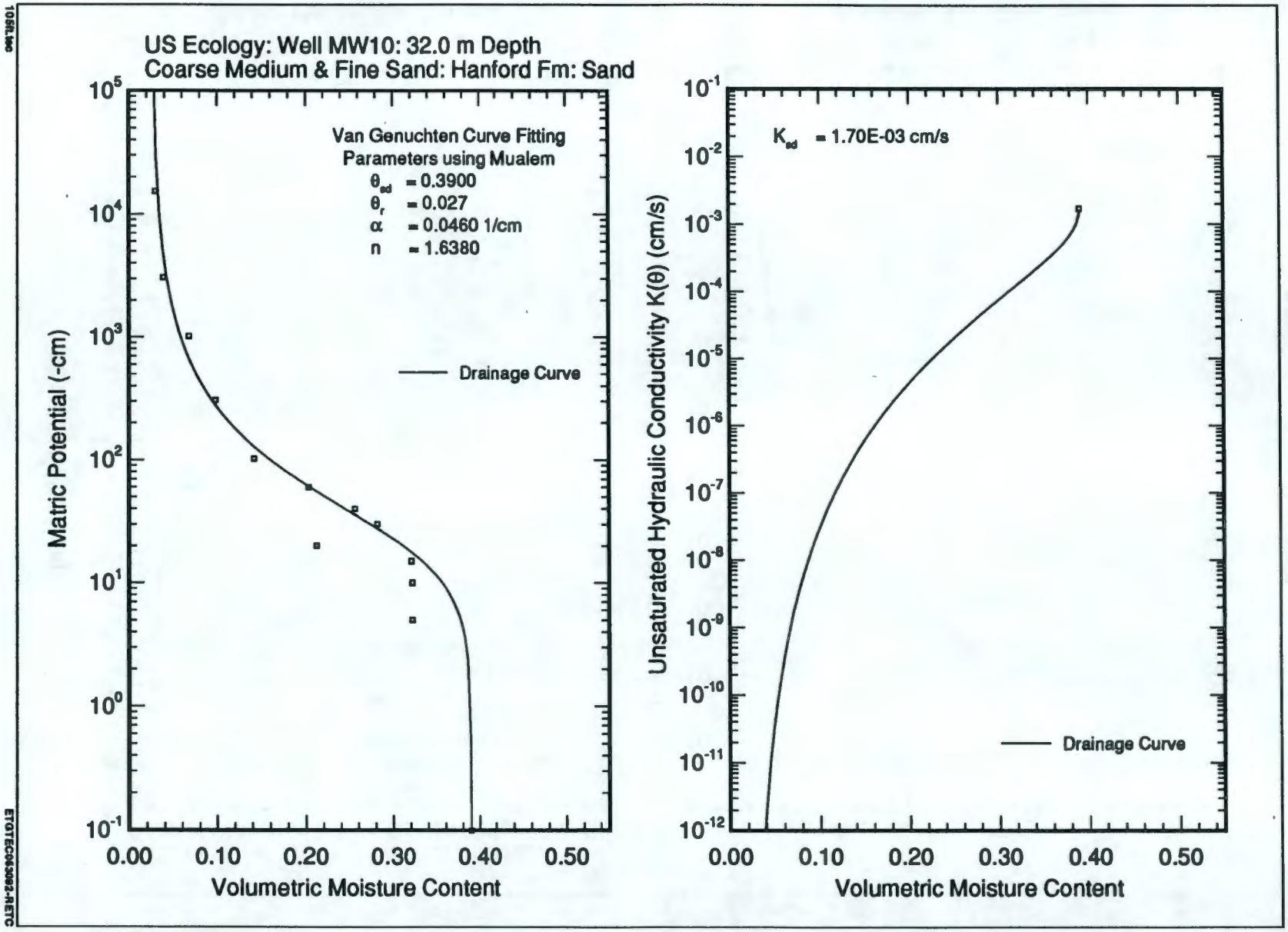

US Ecology: Well MW5: 82.3 m Depth
Medium Sand: Hanford Fm: Sandy Sequence
Van Genuchten Curve Fitting
Parameters using Mualem
θ_{sd} = 0.4400
θ_r = 0.000
α = 0.1109 1/cm
n = 1.3428
Drainage Curve
Matric Potential (-cm)
Volumetric Moisture Content
K_{sd} = 5.50E-04 cm/s
Drainage Curve
Unsaturated Hydraulic Conductivity K(θ) (cm/s)
Volumetric Moisture Content

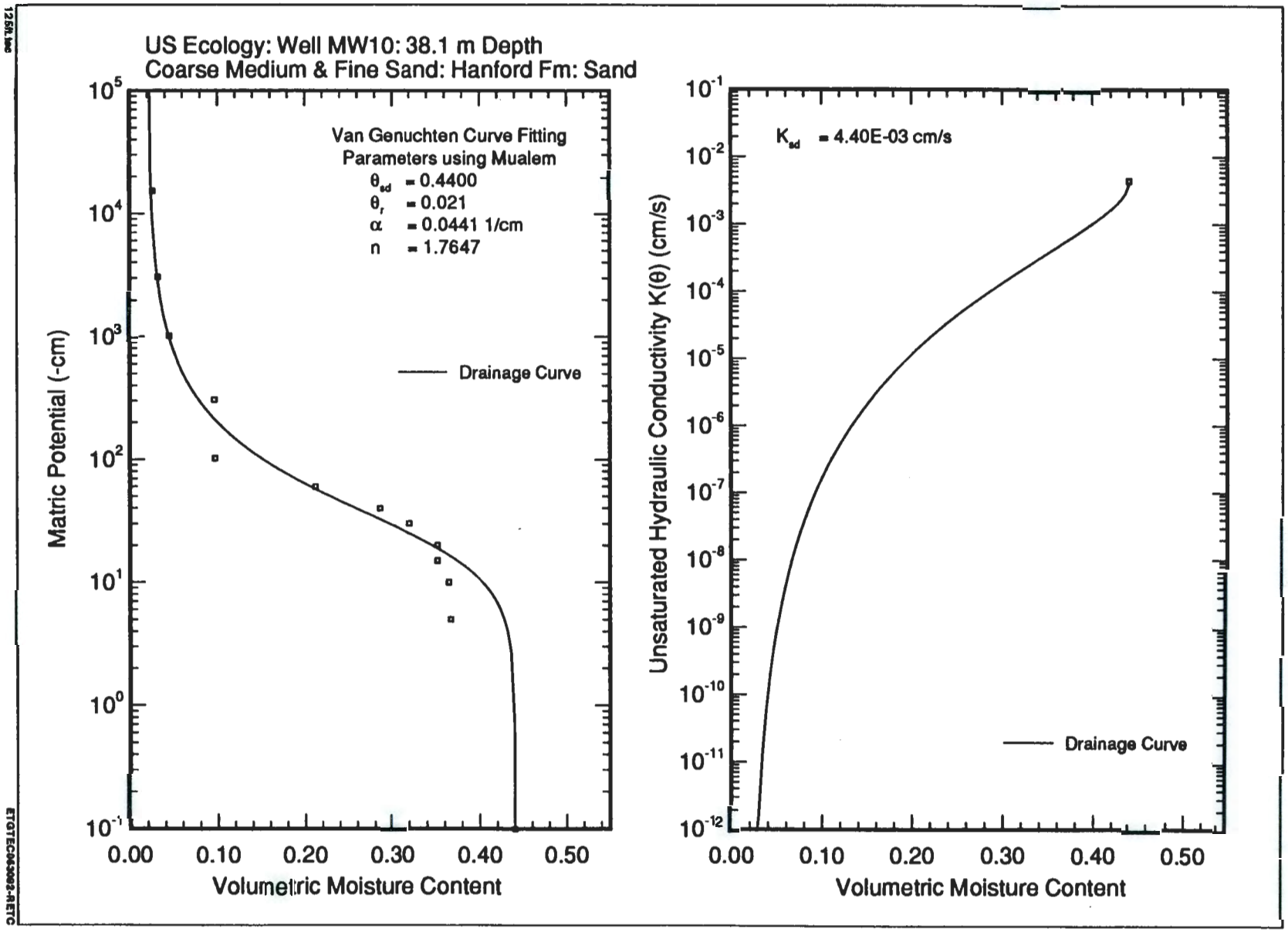

Us Ecology: Well MW8: 44.2 m Depth
Hanford Formation: Sandy Sequence
Van Genuchten Curve Fitting
Parameters using Mualem
θ_{sd} = 0.5200
θ_r = 0.034
α = 0.0186 1/cm
n = 2.1503
Drainage Curve
Matric Potential (-cm)
Volumetric Moisture Content
K_{sd} = 8.80E-04 cm/s
Drainage Curve
Unsaturated Hydraulic Conductivity K(θ) (cm/s)
Volumetric Moisture Content

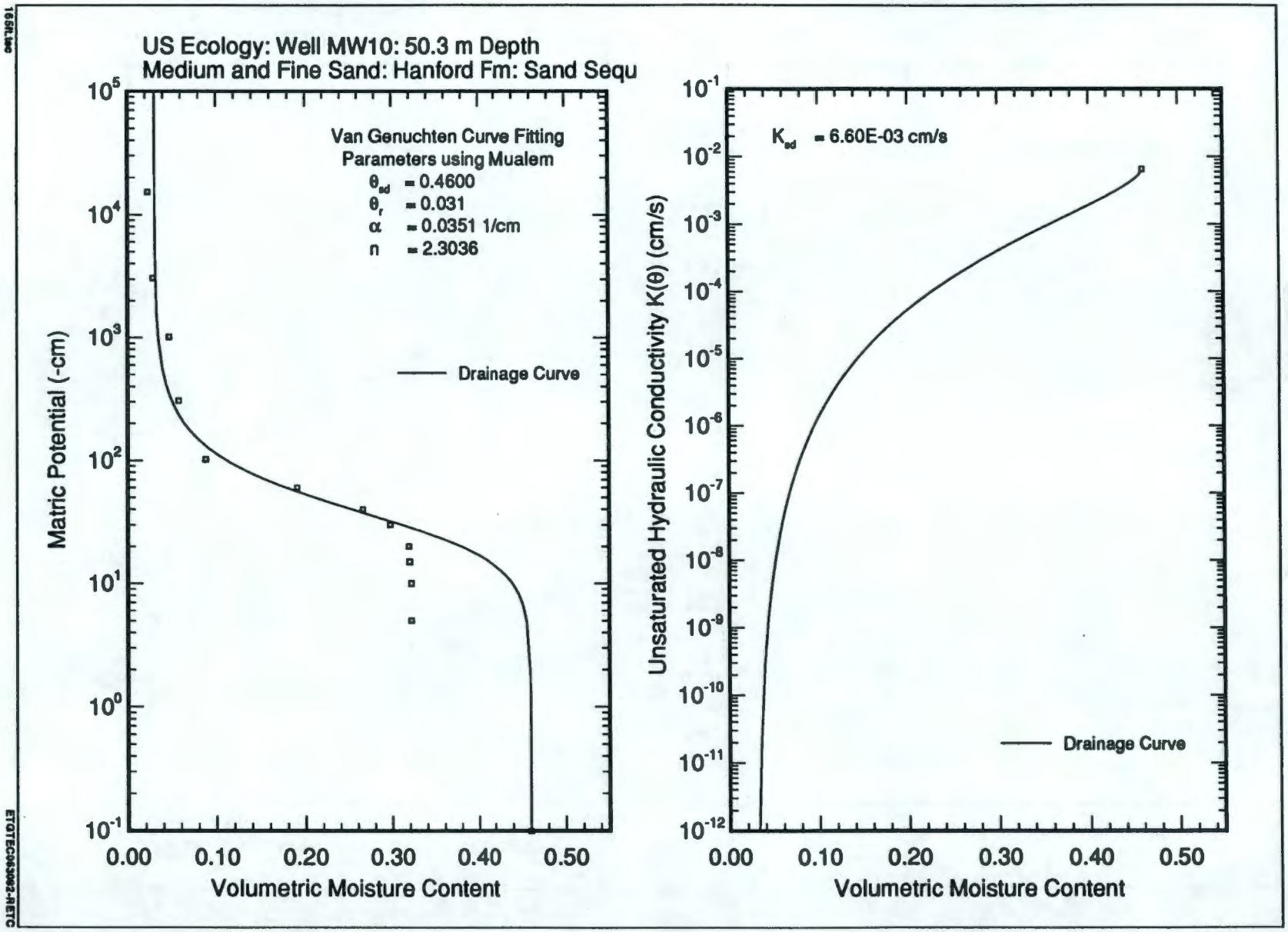

US Ecology: Well MW8: 56.5 m Depth
Hanford Formation: Sand Sequence
Van Genuchten Curve Fitting
Parameters using Mualem
θ_{sd} = 0.4000
θ_r = 0.037
α = 0.0764 1/cm
n = 2.0668
Drainage Curve
Matric Potential (-cm)
Volumetric Moisture Content
K_{sd} = 7.10E-03 cm/s
Drainage Curve
Unsaturated Hydraulic Conductivity K(θ) (cm/s)
Volumetric Moisture Content

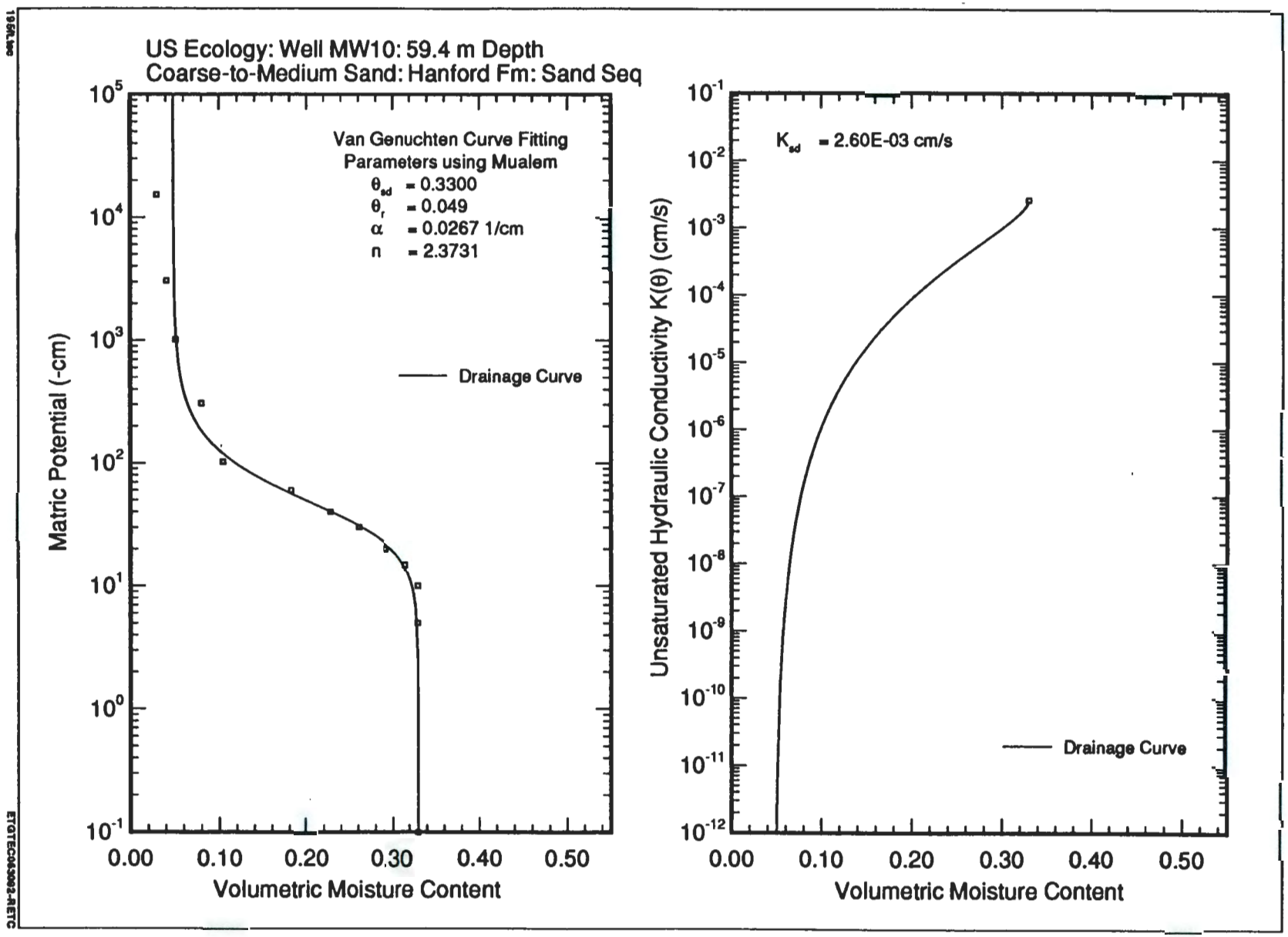

US Ecology: Well MW10: 13.7 m Depth
Coarse and Medium Sand: Hanford Fm: Sand Se
Van Genuchten Curve Fitting
Parameters using Mualem
θsd = 0.4200
θr = 0.022
α = 0.0640 1/cm
n = 1.6950
Drainage Curve
Matric Potential (-cm)
Volumetric Moisture Content
Ksd = 5.30E-03 cm/s
Drainage Curve
Unsaturated Hydraulic Conductivity K(θ) (cm/s)
Volumetric Moisture Content

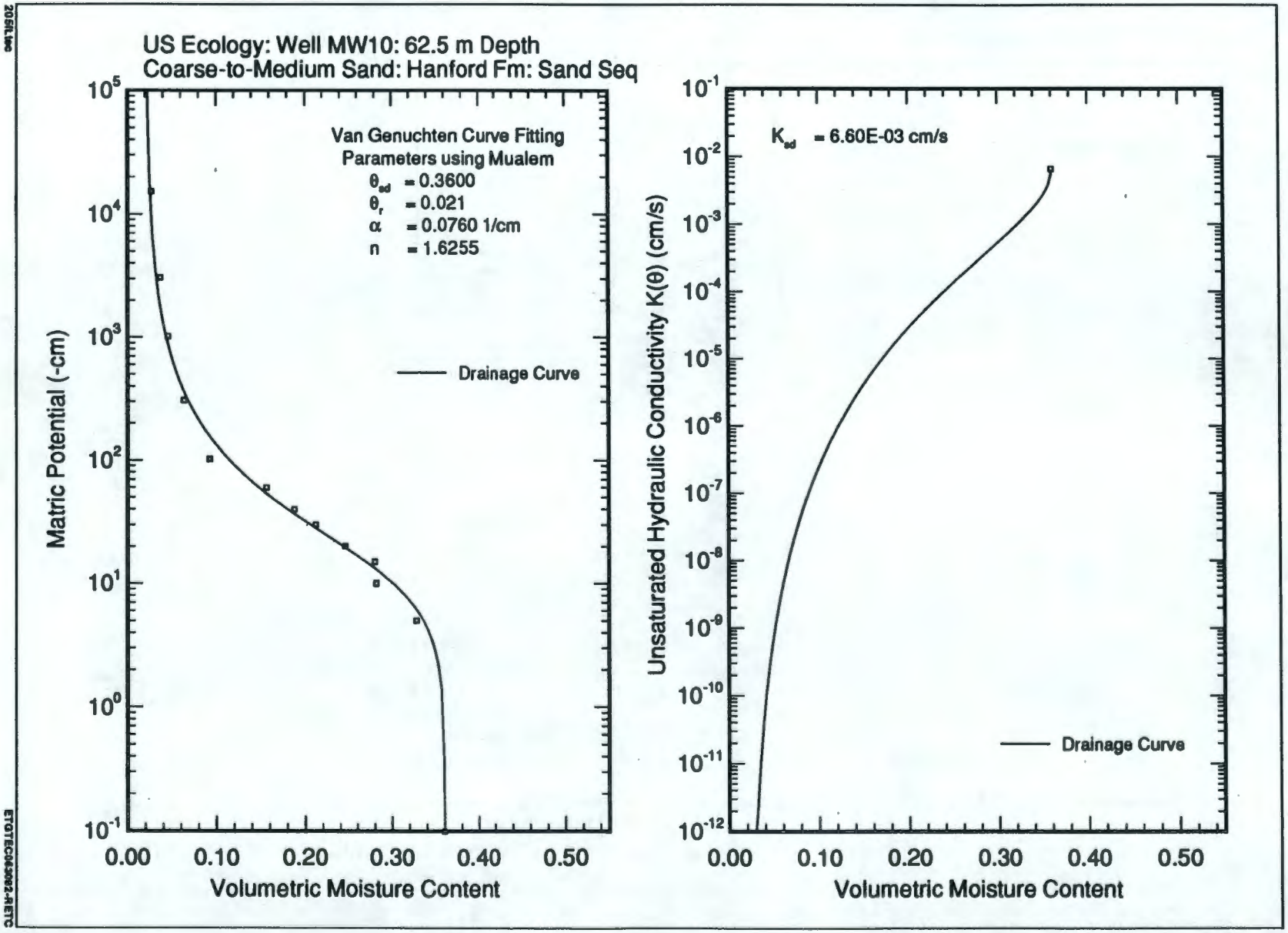

US Ecology: Well MW10: 26.2 m Depth
Coarse Medium & Fine Sand: Hanford Fm: Sand
Van Genuchten Curve Fitting
Parameters using Mualem
θ_{sd} = 0.4600
θ_r = 0.025
α = 0.0462 1/cm
n = 1.9281
Drainage Curve
Matric Potential (-cm)
Volumetric Moisture Content
K_{sd} = 2.00E-02 cm/s
Drainage Curve
Unsaturated Hydraulic Conductivity K(θ) (cm/s)
Volumetric Moisture Content

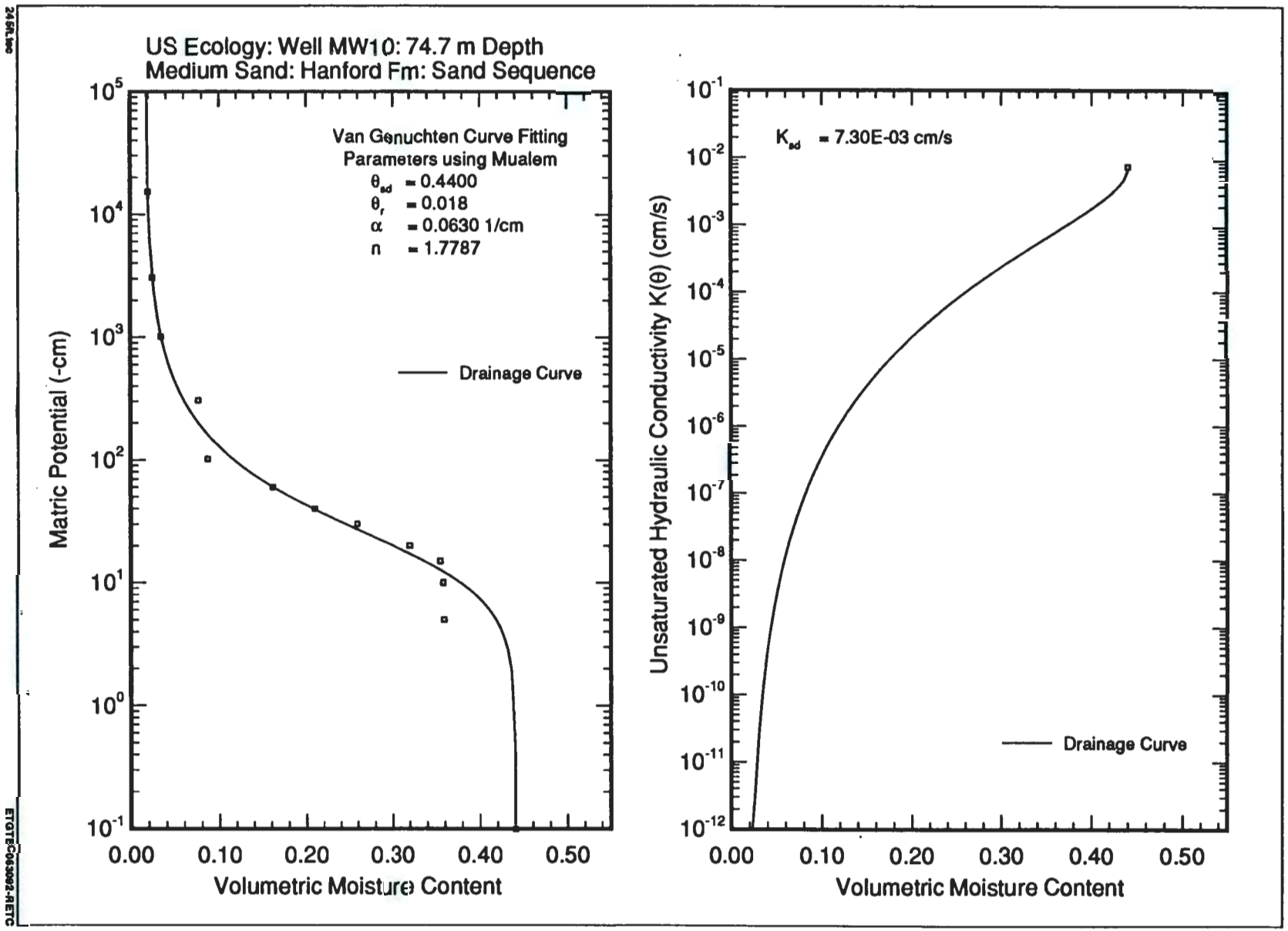

US Ecology: Well MW10: 32.0 m Depth
Coarse Medium & Fine Sand: Hanford Fm: Sand
Van Genuchten Curve Fitting
Parameters using Mualem
θsd = 0.3900
θr = 0.027
α = 0.0460 1/cm
n = 1.6380
Drainage Curve
Matric Potential (-cm)
Volumetric Moisture Content
Ksd = 1.70E-03 cm/s
Drainage Curve
Unsaturated Hydraulic Conductivity K(θ) (cm/s)
Volumetric Moisture Content

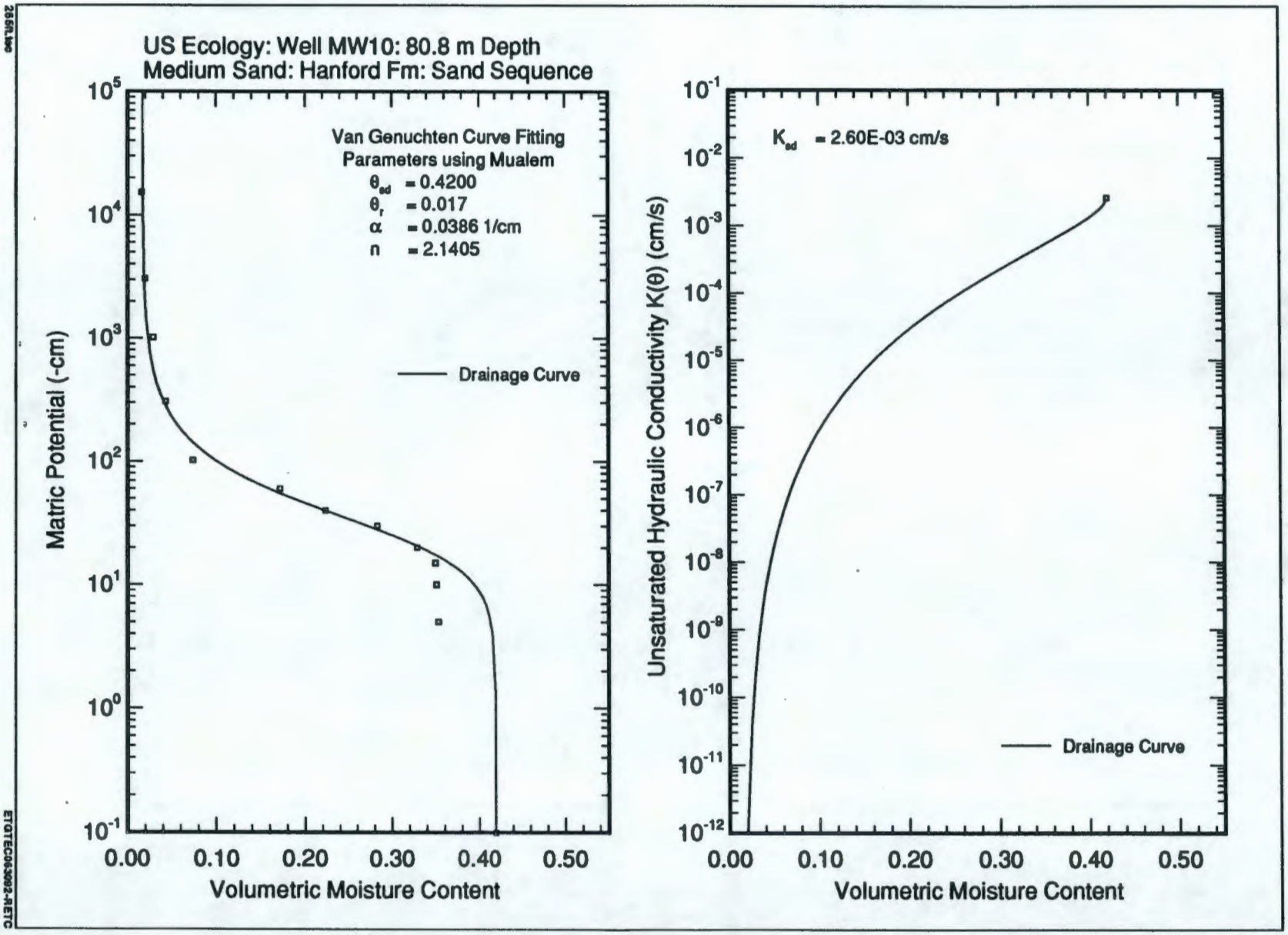

US Ecology: Well MW10: 38.1 m Depth
Coarse Medium & Fine Sand: Hanford Fm: Sand
Van Genuchten Curve Fitting
Parameters using Mualem
θ_{sd} = 0.4400
θ_r = 0.021
α = 0.0441 1/cm
n = 1.7647
Drainage Curve
Matric Potential (-cm)
Volumetric Moisture Content
K_{sd} = 4.40E-03 cm/s
Drainage Curve
Unsaturated Hydraulic Conductivity K(θ) (cm/s)
Volumetric Moisture Content

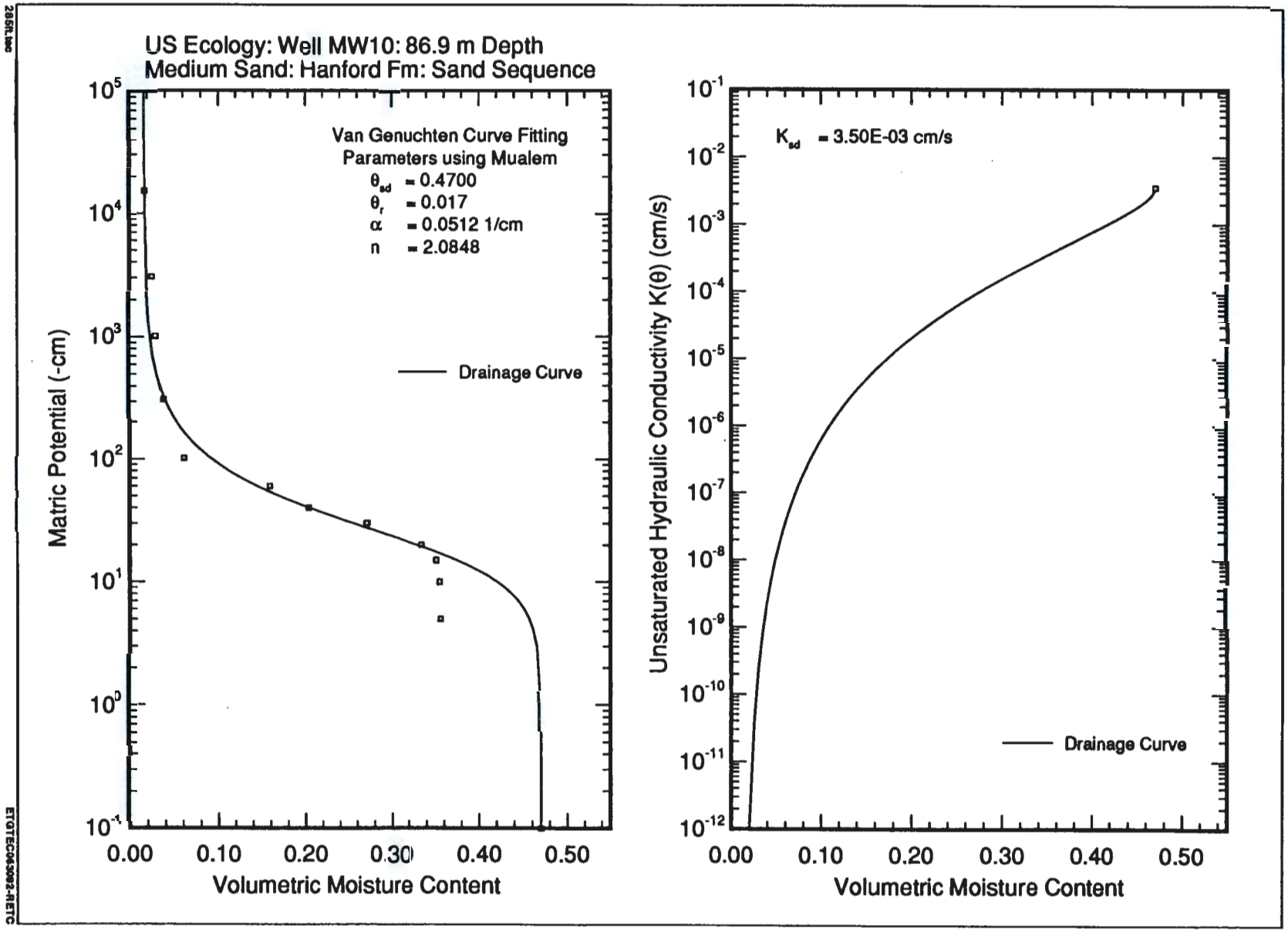

US Ecology: Well MW10: 50.3 m Depth
Medium and Fine Sand: Hanford Fm: Sand Sequ
Van Genuchten Curve Fitting
Parameters using Mualem
θsd = 0.4600
θr = 0.031
α = 0.0351 1/cm
n = 2.3036
Drainage Curve
Matric Potential (-cm)
Volumetric Moisture Content
Ksd = 6.60E-03 cm/s
Drainage Curve
Unsaturated Hydraulic Conductivity K(θ) (cm/s)
Volumetric Moisture Content

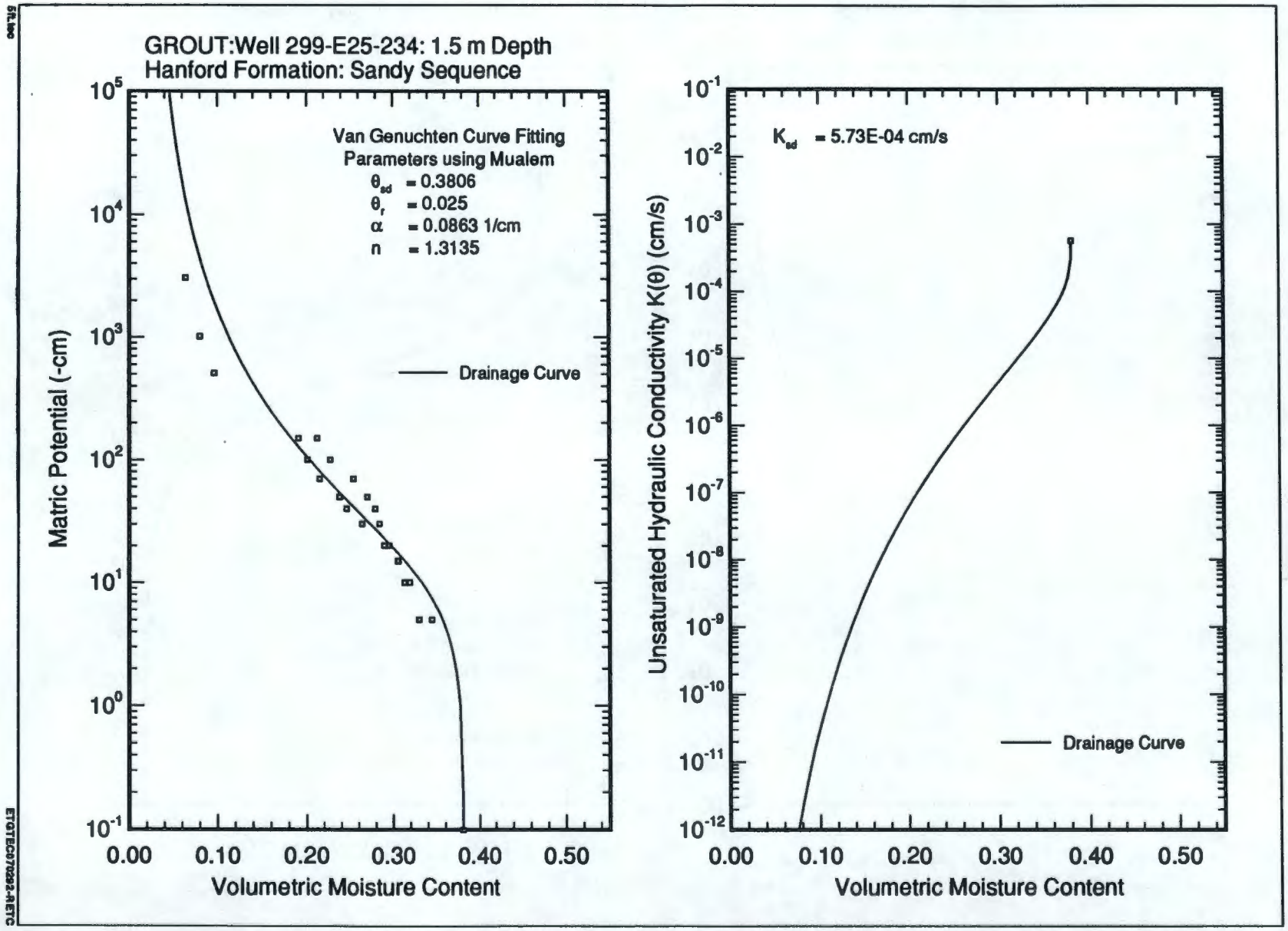

US Ecology: Well MW10: 59.4 m Depth
Coarse-to-Medium Sand: Hanford Fm: Sand Seq
Van Genuchten Curve Fitting
Parameters using Mualem
θ_{sd} = 0.3300
θ_r = 0.049
α = 0.0267 1/cm
n = 2.3731
Drainage Curve
Matric Potential (-cm)
Volumetric Moisture Content
K_{sd} = 2.60E-03 cm/s
Drainage Curve
Unsaturated Hydraulic Conductivity K(θ) (cm/s)
Volumetric Moisture Content

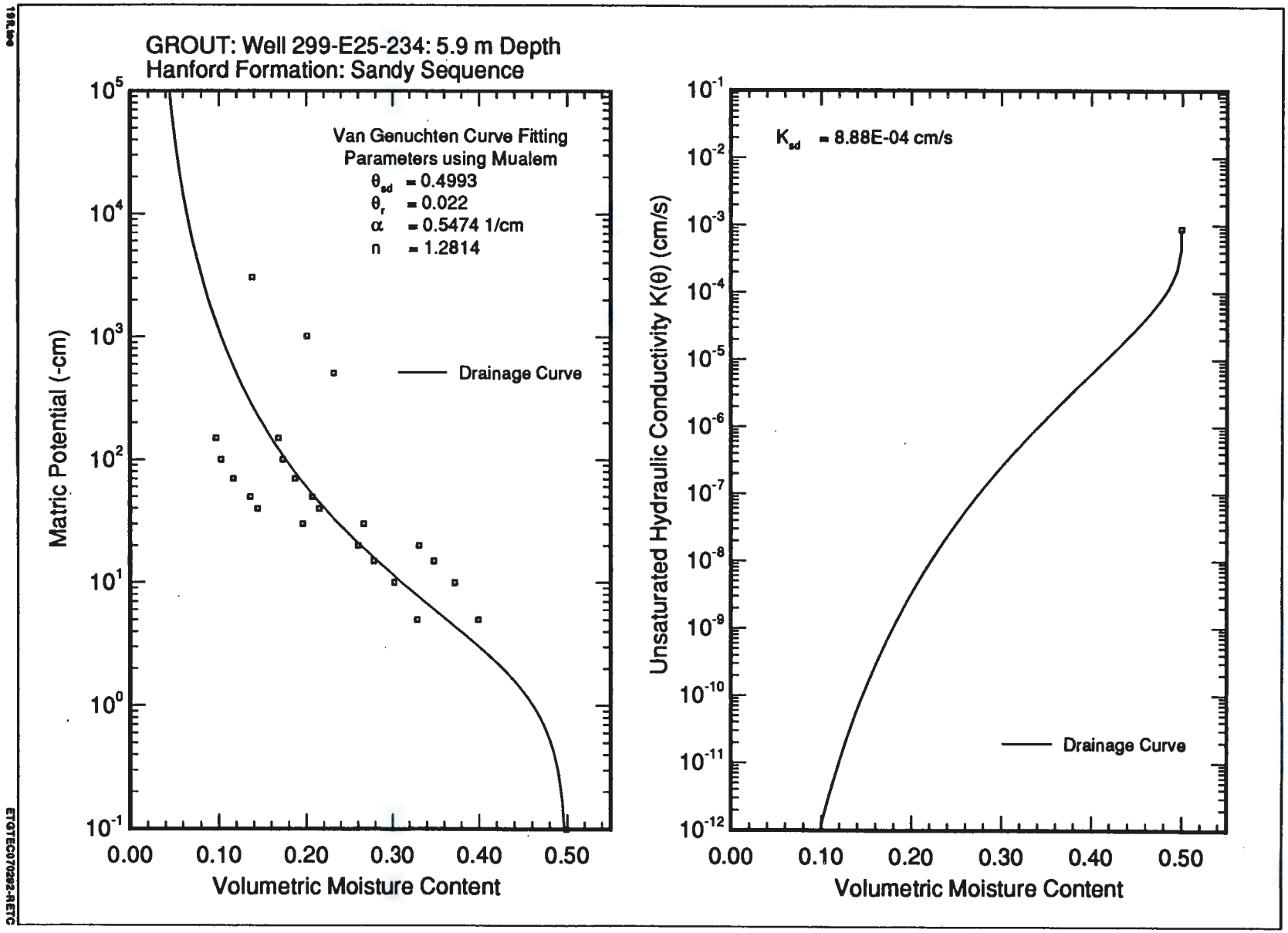

US Ecology: Well MW10: 62.5 m Depth
Coarse-to-Medium Sand: Hanford Fm: Sand Seq
Van Genuchten Curve Fitting
Parameters using Mualem
θ_{sd} = 0.3600
θ_r = 0.021
α = 0.0760 1/cm
n = 1.6255
Drainage Curve
Matric Potential (-cm)
Volumetric Moisture Content
K_{sd} = 6.60E-03 cm/s
Drainage Curve
Unsaturated Hydraulic Conductivity K(θ) (cm/s)
Volumetric Moisture Content

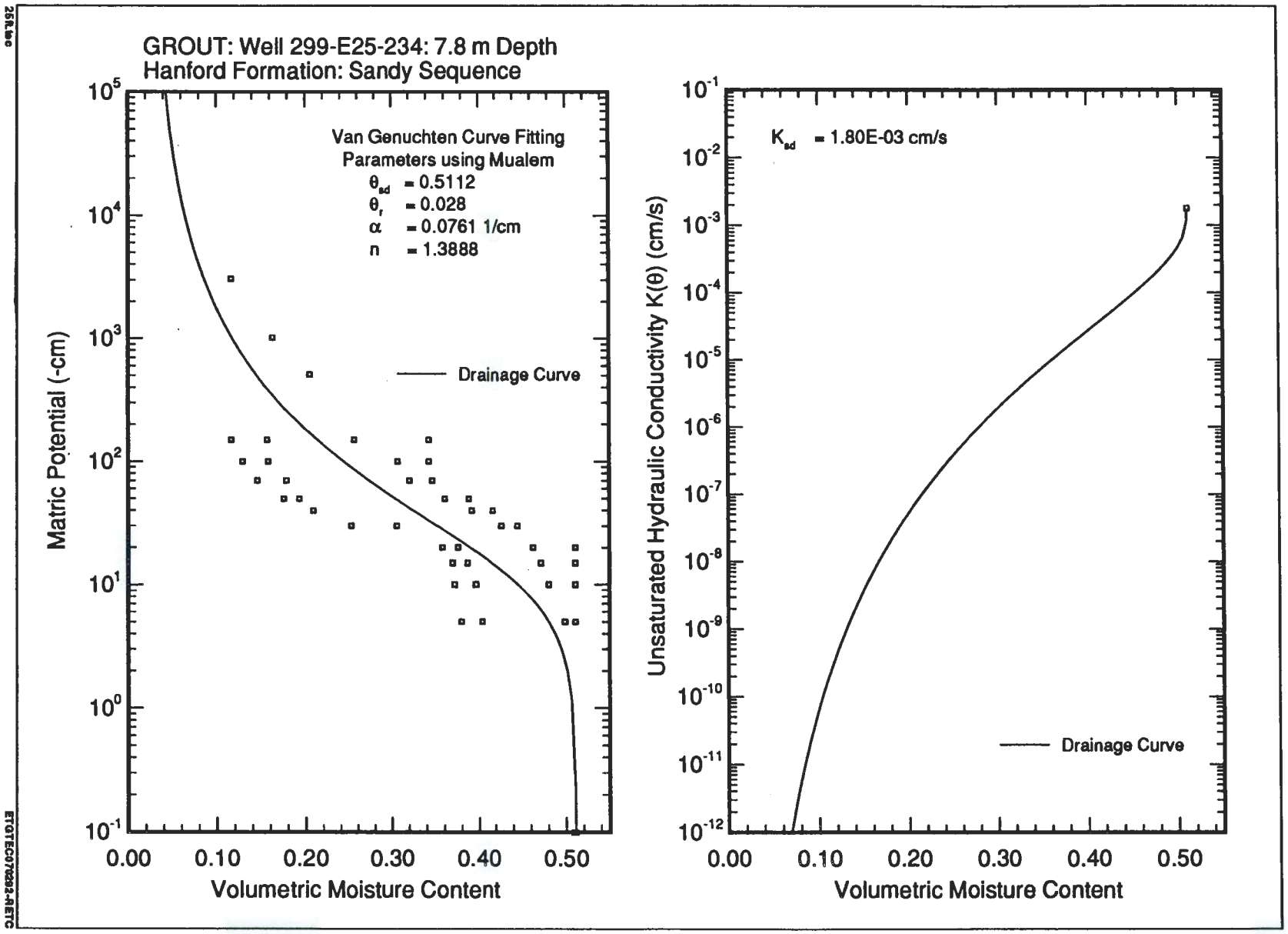

US Ecology: Well MW10: 74.7 m Depth
Medium Sand: Hanford Fm: Sand Sequence
Van Genuchten Curve Fitting
Parameters using Mualem
θ_{sd} = 0.4400
θ_r = 0.018
α = 0.0630 1/cm
n = 1.7787
Drainage Curve
Matric Potential (-cm)
Volumetric Moisture Content
K_{sd} = 7.30E-03 cm/s
Drainage Curve
Unsaturated Hydraulic Conductivity K(θ) (cm/s)
Volumetric Moisture Content

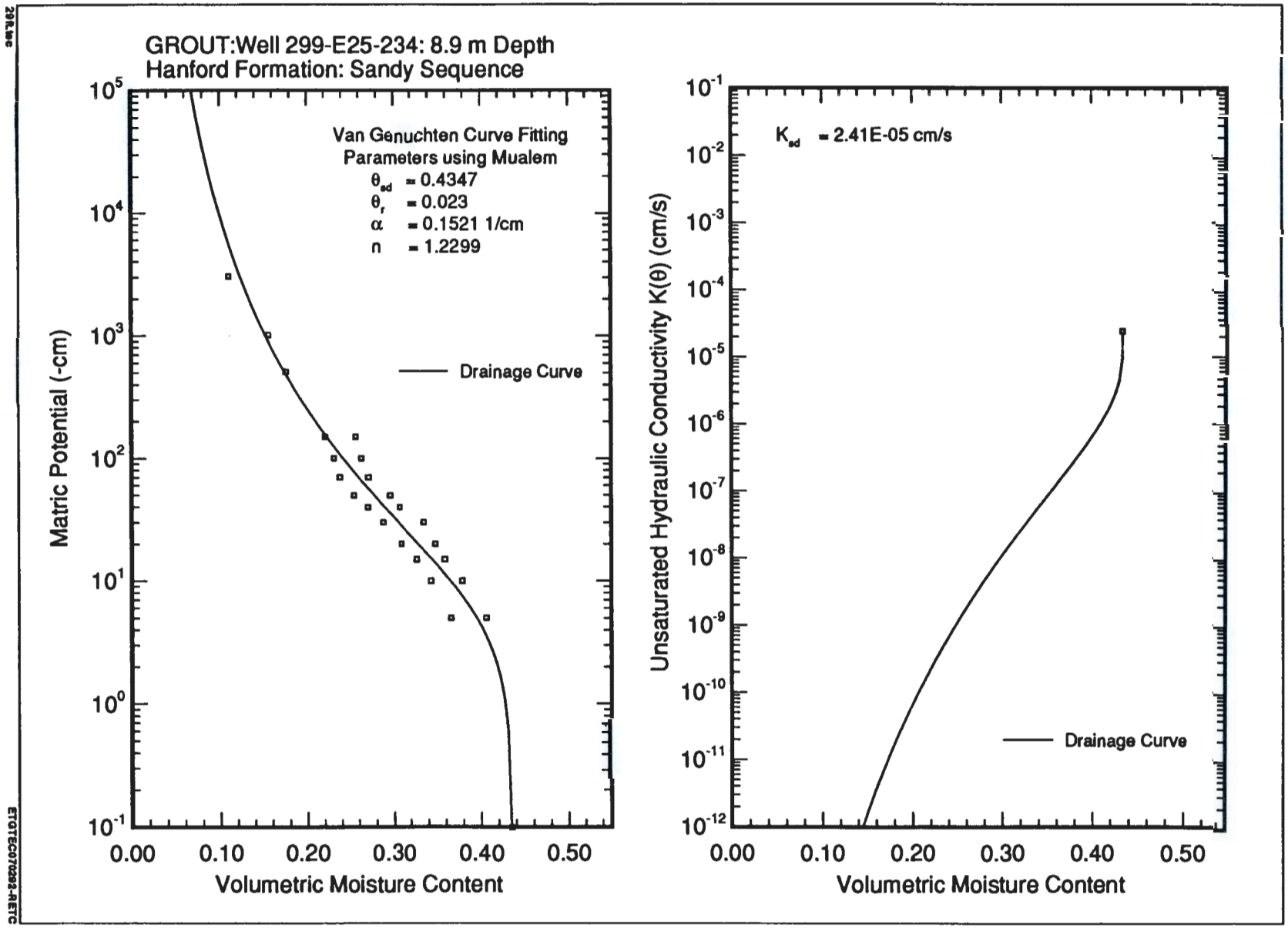

US Ecology: Well MW10: 80.8 m Depth
Medium Sand: Hanford Fm: Sand Sequence
Van Genuchten Curve Fitting
Parameters using Mualem
θ_{sd} = 0.4200
θ_r = 0.017
α = 0.0386 1/cm
n = 2.1405
Drainage Curve
Matric Potential (-cm)
Volumetric Moisture Content
K_{sd} = 2.60E-03 cm/s
Drainage Curve
Unsaturated Hydraulic Conductivity K(θ) (cm/s)
Volumetric Moisture Content

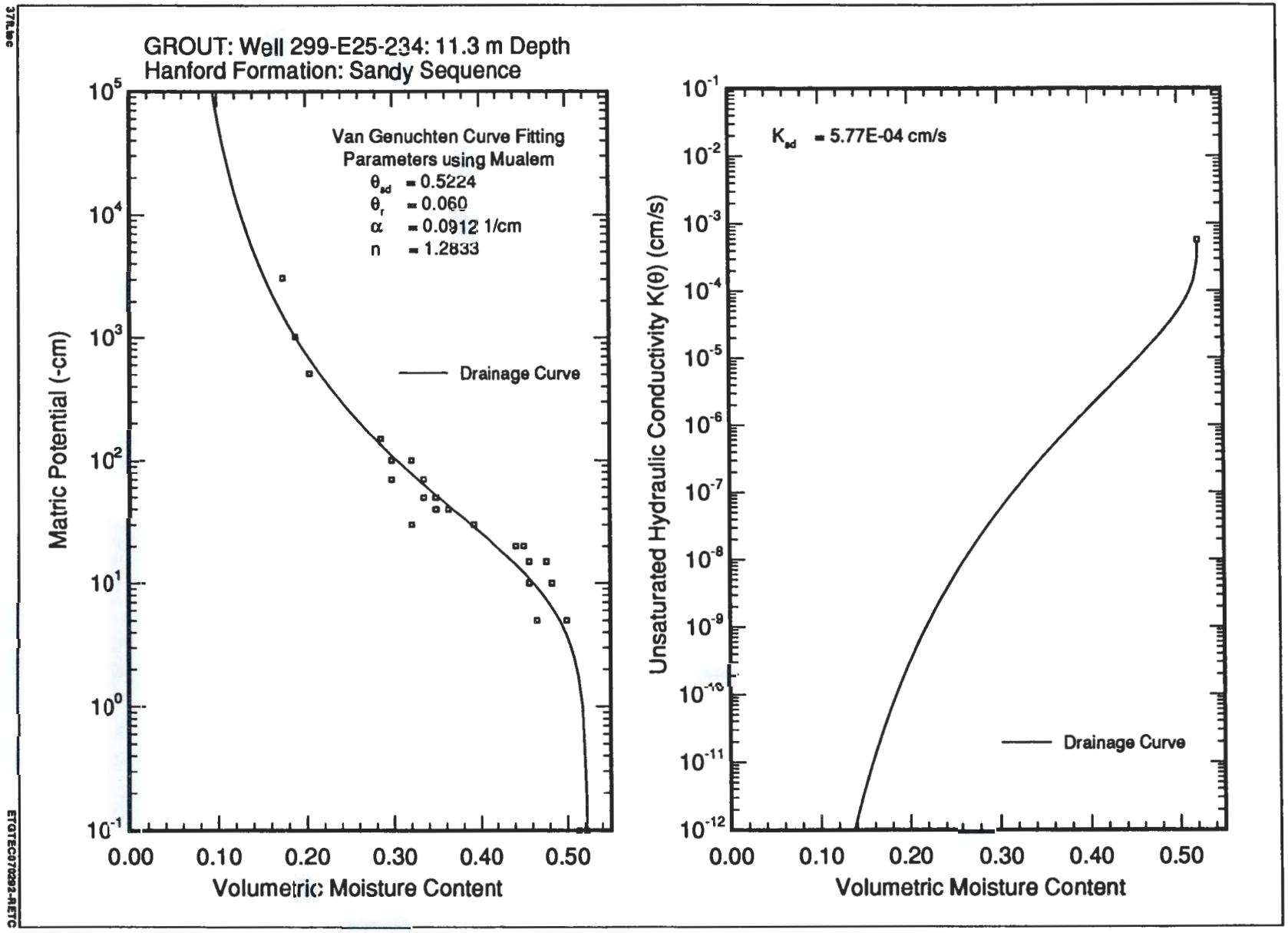

US Ecology: Well MW10: 86.9 m Depth
Medium Sand: Hanford Fm: Sand Sequence
Van Genuchten Curve Fitting
Parameters using Mualem
θ_{sd} = 0.4700
θ_r = 0.017
α = 0.0512 1/cm
n = 2.0848
Drainage Curve
Matric Potential (-cm)
Volumetric Moisture Content
K_{sd} = 3.50E-03 cm/s
Drainage Curve
Unsaturated Hydraulic Conductivity K(θ) (cm/s)
Volumetric Moisture Content

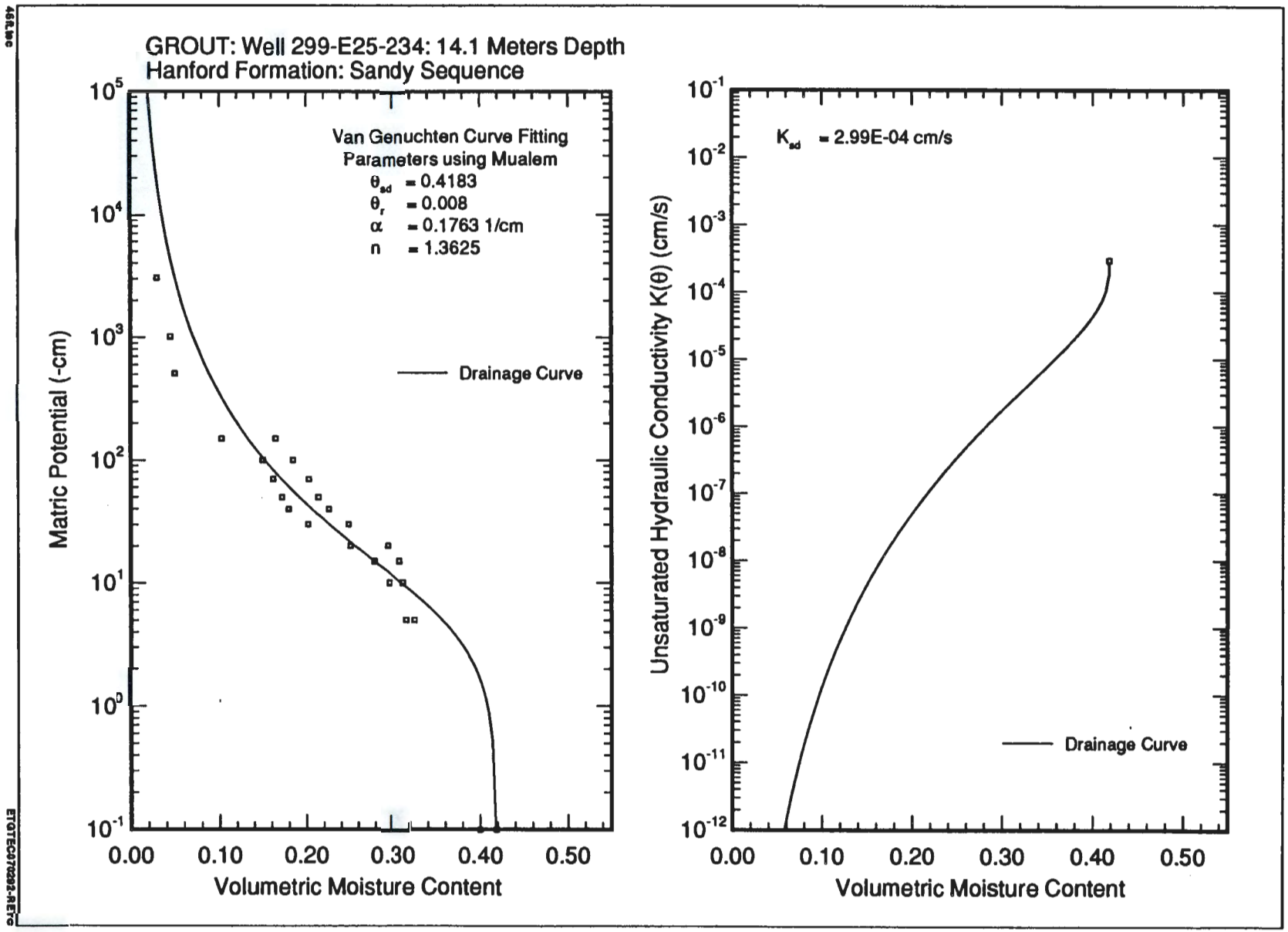

GROUT:Well 299-E25-234: 1.5 m Depth
Hanford Formation: Sandy Sequence
Van Genuchten Curve Fitting
Parameters using Mualem
θ_{sd} = 0.3806
θ_r = 0.025
α = 0.0863 1/cm
n = 1.3135
Drainage Curve
Matric Potential (-cm)
Volumetric Moisture Content
K_{sd} = 5.73E-04 cm/s
Drainage Curve
Unsaturated Hydraulic Conductivity K(θ) (cm/s)
Volumetric Moisture Content

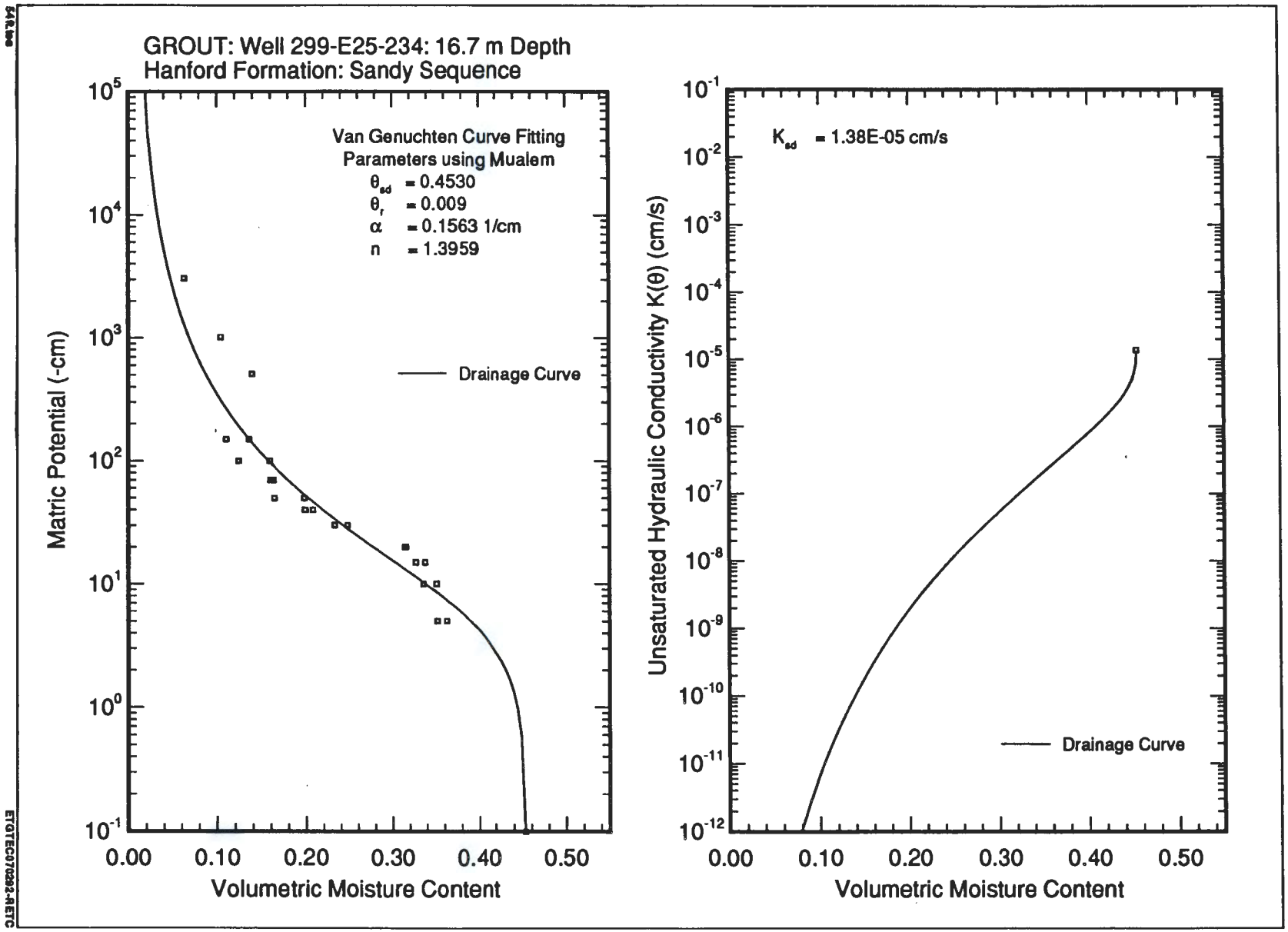

GROUT: Well 299-E25-234: 5.9 m Depth
Hanford Formation: Sandy Sequence
Van Genuchten Curve Fitting
Parameters using Mualem
θsd = 0.4993
θr = 0.022
α = 0.5474 1/cm
n = 1.2814
Drainage Curve
Matric Potential (-cm)
Volumetric Moisture Content
Ksd = 8.88E-04 cm/s
Drainage Curve
Unsaturated Hydraulic Conductivity K(θ) (cm/s)
Volumetric Moisture Content

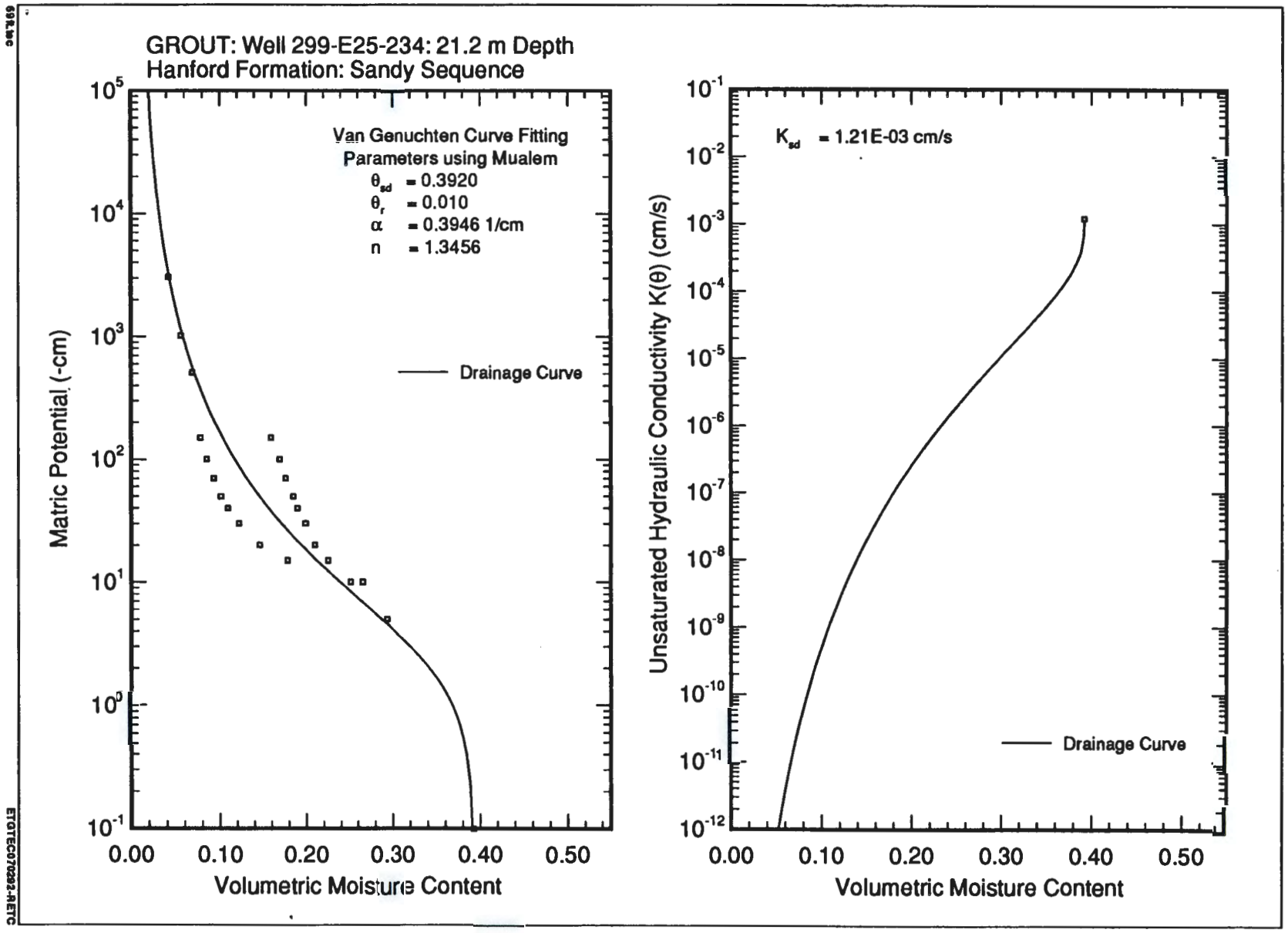

GROUT: Well 299-E25-234: 7.8 m Depth
Hanford Formation: Sandy Sequence
Van Genuchten Curve Fitting
Parameters using Mualem
θ_{sd} = 0.5112
θ_r = 0.028
α = 0.0761 1/cm
n = 1.3888
Drainage Curve
Matric Potential (-cm)
Volumetric Moisture Content
K_{sd} = 1.80E-03 cm/s
Drainage Curve
Unsaturated Hydraulic Conductivity K(θ) (cm/s)
Volumetric Moisture Content

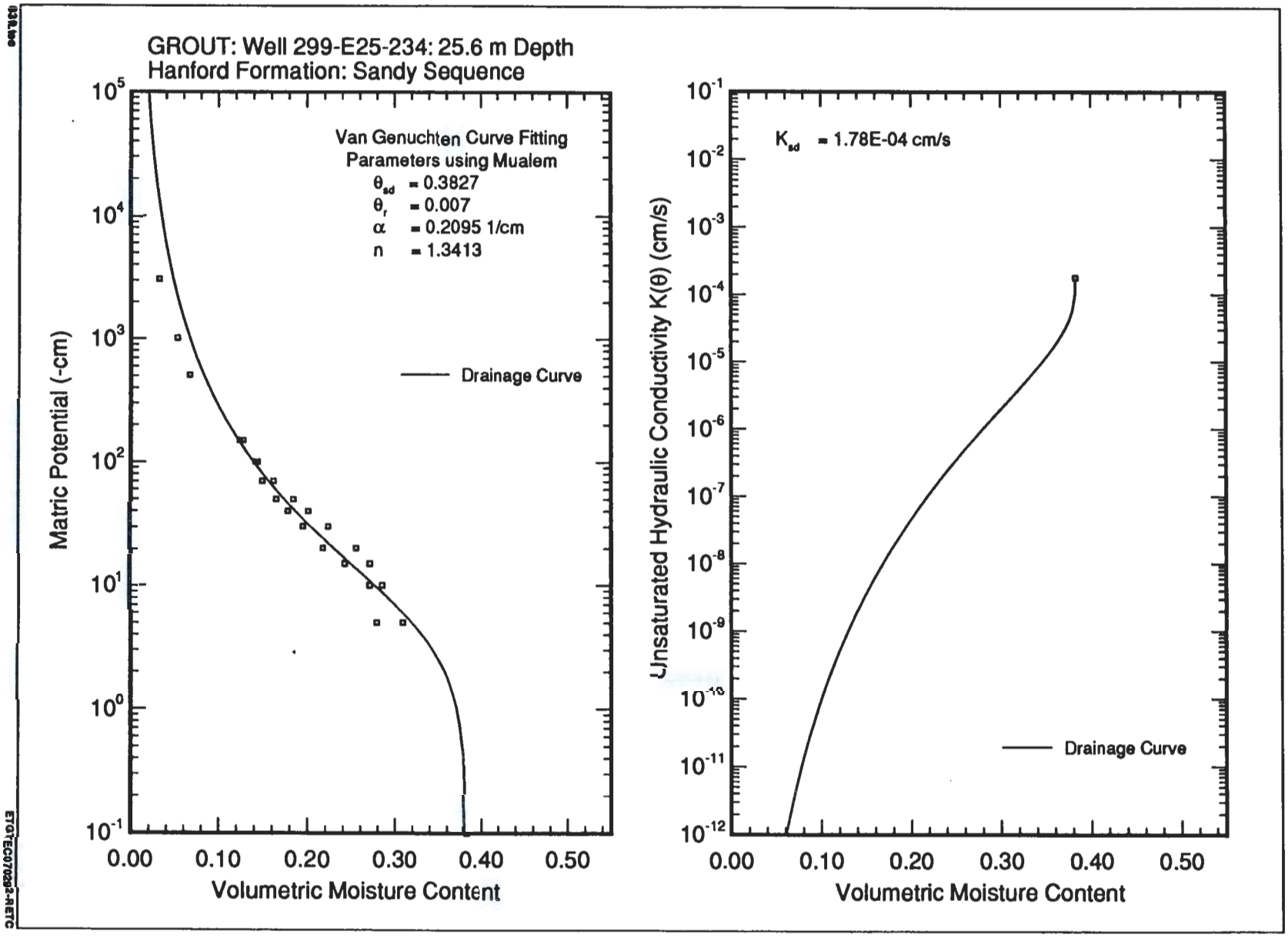

GROUT:Well 299-E25-234: 8.9 m Depth
Hanford Formation: Sandy Sequence
Van Genuchten Curve Fitting
Parameters using Mualem
θ_{sd} = 0.4347
θ_r = 0.023
α = 0.1521 1/cm
n = 1.2299
Drainage Curve
Matric Potential (-cm)
Volumetric Moisture Content
K_{sd} = 2.41E-05 cm/s
Drainage Curve
Unsaturated Hydraulic Conductivity K(θ) (cm/s)
Volumetric Moisture Content

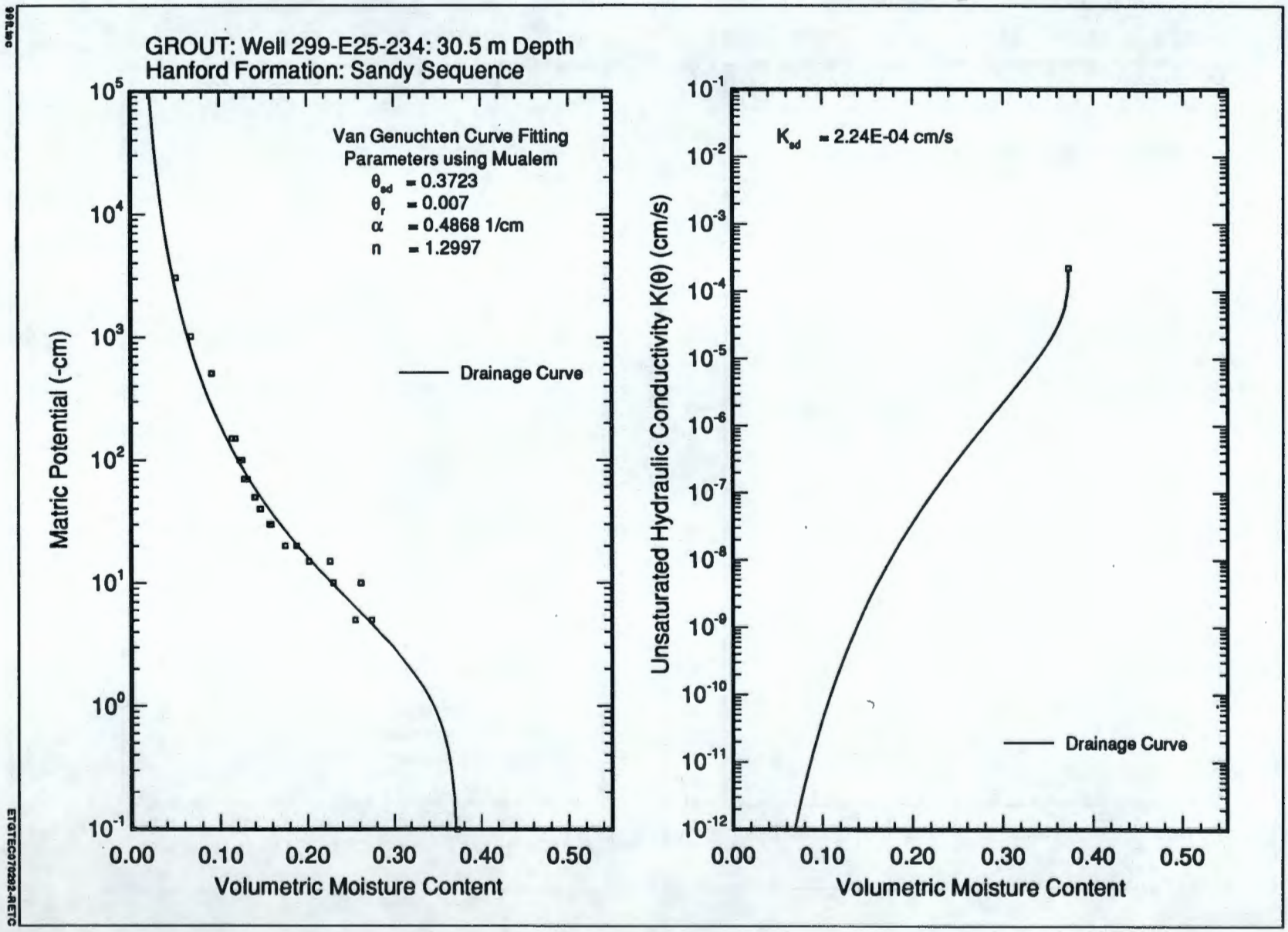

GROUT: Well 299-E25-234: 11.3 m Depth
Hanford Formation: Sandy Sequence
Van Genuchten Curve Fitting
Parameters using Mualem
θ_{sd} = 0.5224
θ_r = 0.060
α = 0.0912 1/cm
n = 1.2833
Drainage Curve
Matric Potential (-cm)
Volumetric Moisture Content
K_{sd} = 5.77E-04 cm/s
Drainage Curve
Unsaturated Hydraulic Conductivity K(θ) (cm/s)
Volumetric Moisture Content

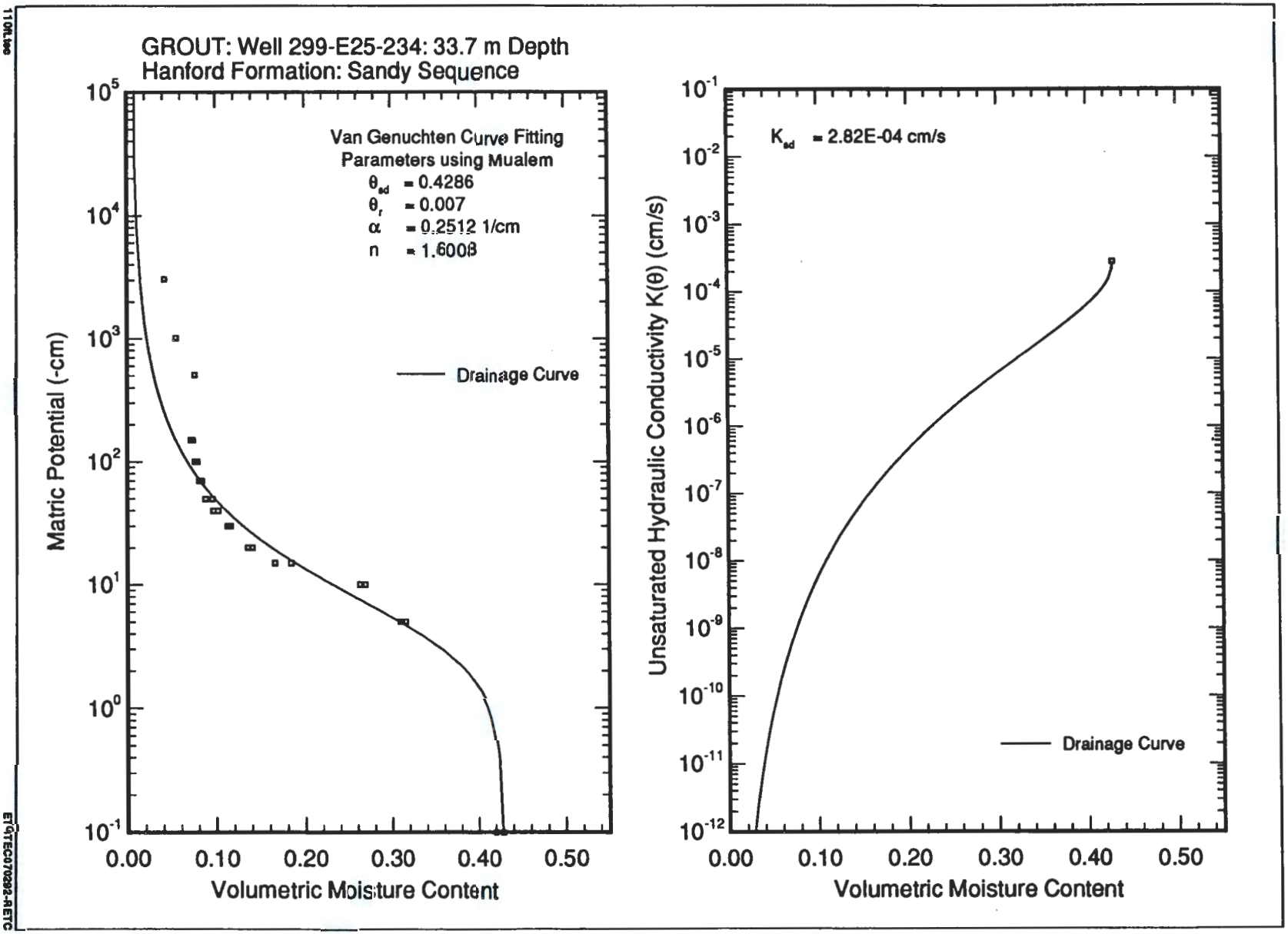

GROUT: Well 299-E25-234: 14.1 Meters Depth
Hanford Formation: Sandy Sequence
Van Genuchten Curve Fitting
Parameters using Mualem
θ_{sd} = 0.4183
θ_r = 0.008
α = 0.1763 1/cm
n = 1.3625
Drainage Curve
Matric Potential (-cm)
Volumetric Moisture Content
K_{sd} = 2.99E-04 cm/s
Drainage Curve
Unsaturated Hydraulic Conductivity K(θ) (cm/s)
Volumetric Moisture Content

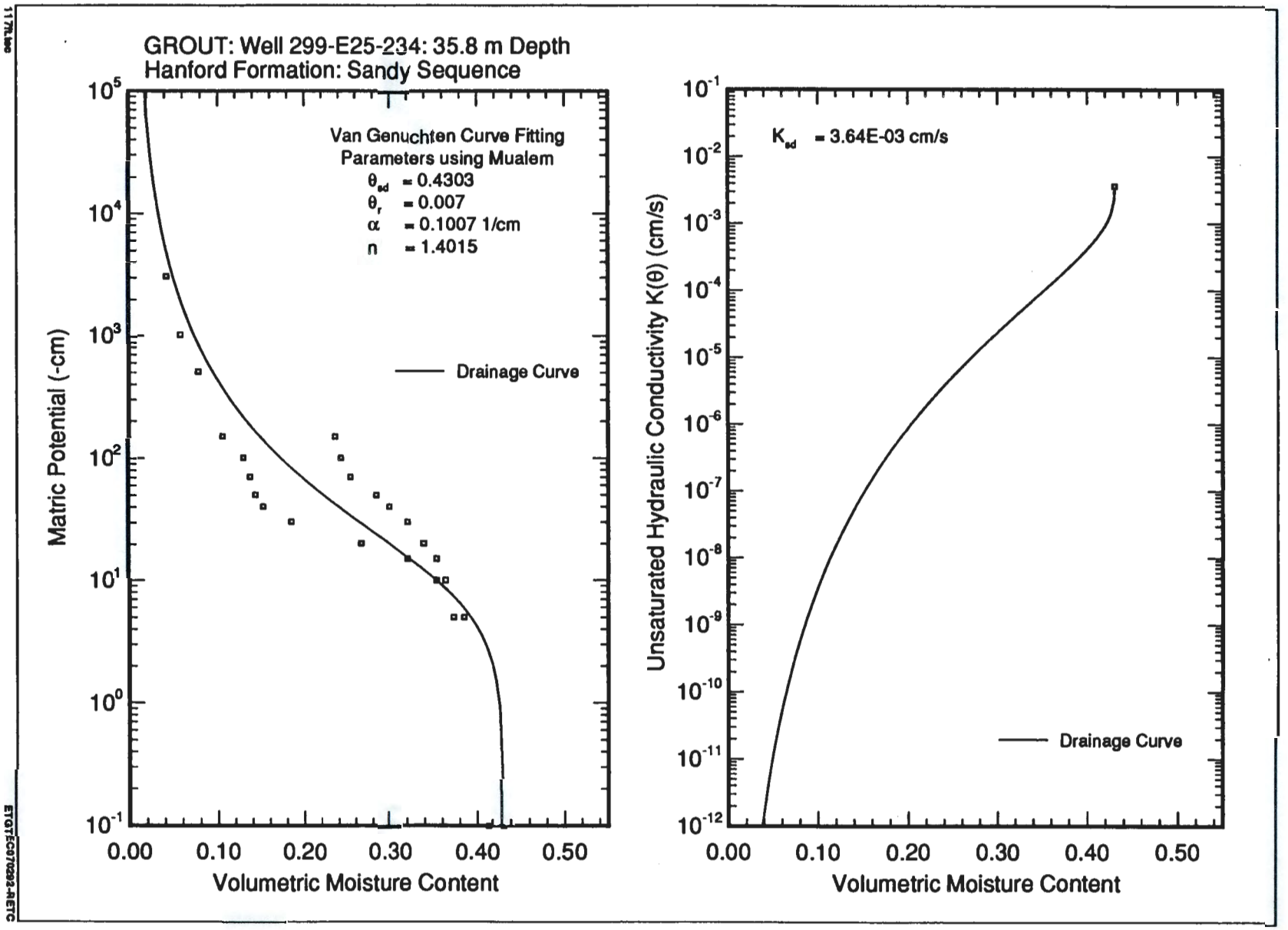

GROUT: Well 299-E25-234: 16.7 m Depth
Hanford Formation: Sandy Sequence
Van Genuchten Curve Fitting
Parameters using Mualem
θ_{sd} = 0.4530
θ_r = 0.009
α = 0.1563 1/cm
n = 1.3959
Drainage Curve
Matric Potential (-cm)
Volumetric Moisture Content
K_{sd} = 1.38E-05 cm/s
Drainage Curve
Unsaturated Hydraulic Conductivity K(θ) (cm/s)
Volumetric Moisture Content

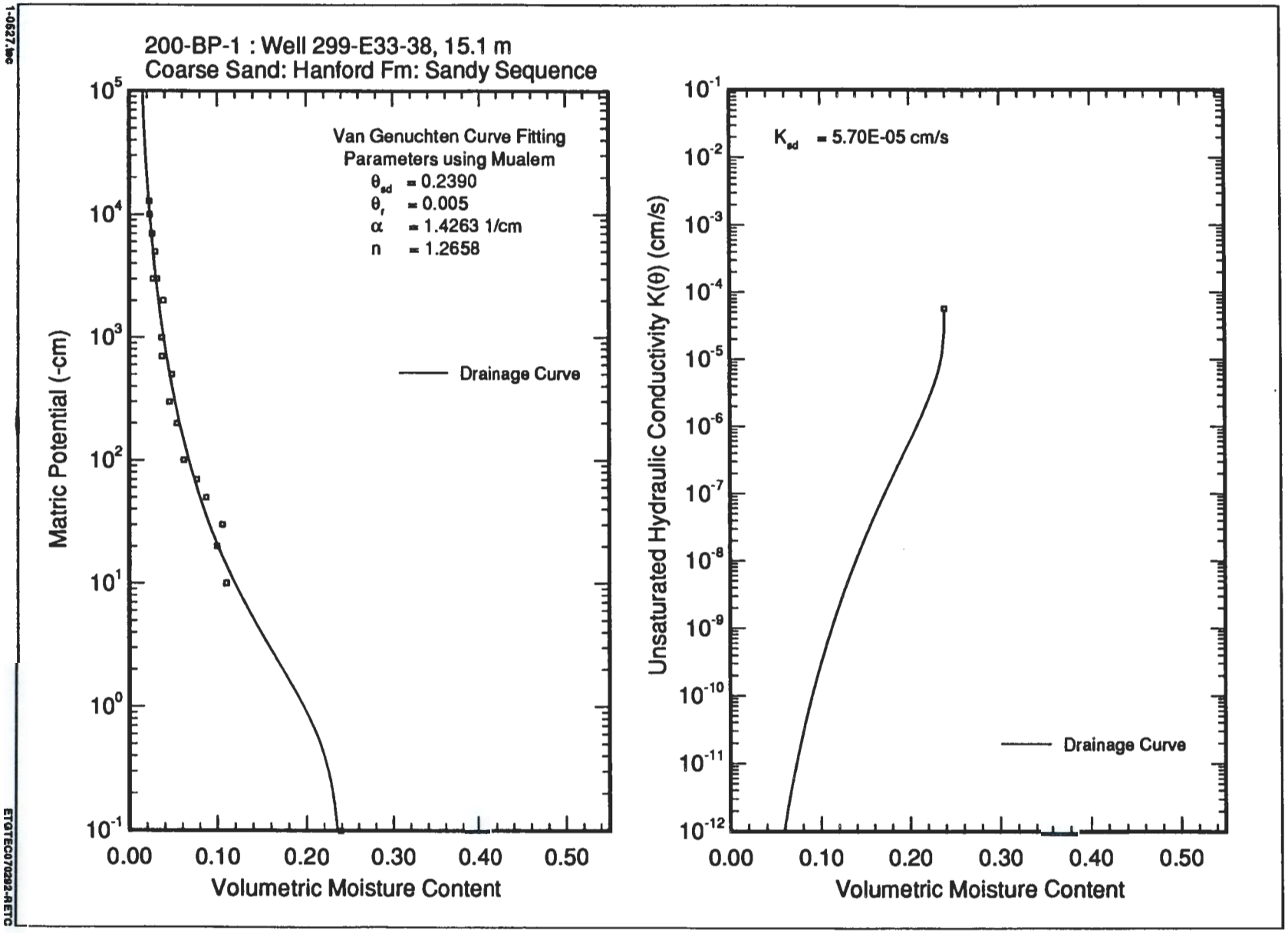

GROUT: Well 299-E25-234: 21.2 m Depth
Hanford Formation: Sandy Sequence
Van Genuchten Curve Fitting
Parameters using Mualem
θ_{sd} = 0.3920
θ_r = 0.010
α = 0.3946 1/cm
n = 1.3456
Drainage Curve
Matric Potential (-cm)
Volumetric Moisture Content
K_{sd} = 1.21E-03 cm/s
Drainage Curve
Unsaturated Hydraulic Conductivity K(θ) (cm/s)
Volumetric Moisture Content


GROUT: Well 299-E25-234: 25.6 m Depth
Hanford Formation: Sandy Sequence
Van Genuchten Curve Fitting
Parameters using Mualem
θ_{sd} = 0.3827
θ_r = 0.007
α = 0.2095 1/cm
n = 1.3413
Drainage Curve
Matric Potential (-cm)
Volumetric Moisture Content
K_{sd} = 1.78E-04 cm/s
Drainage Curve
Unsaturated Hydraulic Conductivity K(θ) (cm/s)
Volumetric Moisture Content


GROUT: Well 299-E25-234: 30.5 m Depth
Hanford Formation: Sandy Sequence
Van Genuchten Curve Fitting
Parameters using Mualem
θ_{sd} = 0.3723
θ_r = 0.007
α = 0.4868 1/cm
n = 1.2997
Drainage Curve
Matric Potential (-cm)
Volumetric Moisture Content
K_{sd} = 2.24E-04 cm/s
Drainage Curve
Unsaturated Hydraulic Conductivity K(θ) (cm/s)
Volumetric Moisture Content


GROUT: Well 299-E25-234: 33.7 m Depth
Hanford Formation: Sandy Sequence
Van Genuchten Curve Fitting
Parameters using Mualem
θsd = 0.4286
θr = 0.007
α = 0.2512 1/cm
n = 1.6008
Drainage Curve
Matric Potential (-cm)
Volumetric Moisture Content
Ksd = 2.82E-04 cm/s
Drainage Curve
Unsaturated Hydraulic Conductivity K(θ) (cm/s)
Volumetric Moisture Content


GROUT: Well 299-E25-234: 35.8 m Depth
Hanford Formation: Sandy Sequence
Van Genuchten Curve Fitting
Parameters using Mualem
θ_{sd} = 0.4303
θ_r = 0.007
α = 0.1007 1/cm
n = 1.4015
Drainage Curve
Matric Potential (-cm)
Volumetric Moisture Content
K_{sd} = 3.64E-03 cm/s
Drainage Curve
Unsaturated Hydraulic Conductivity K(θ) (cm/s)
Volumetric Moisture Content



1-0527.bmp

ETGTEC070292-RETC

9413096.0222

GRAIN SIZE ANALYSIS PLOT

Sample No. L-0527

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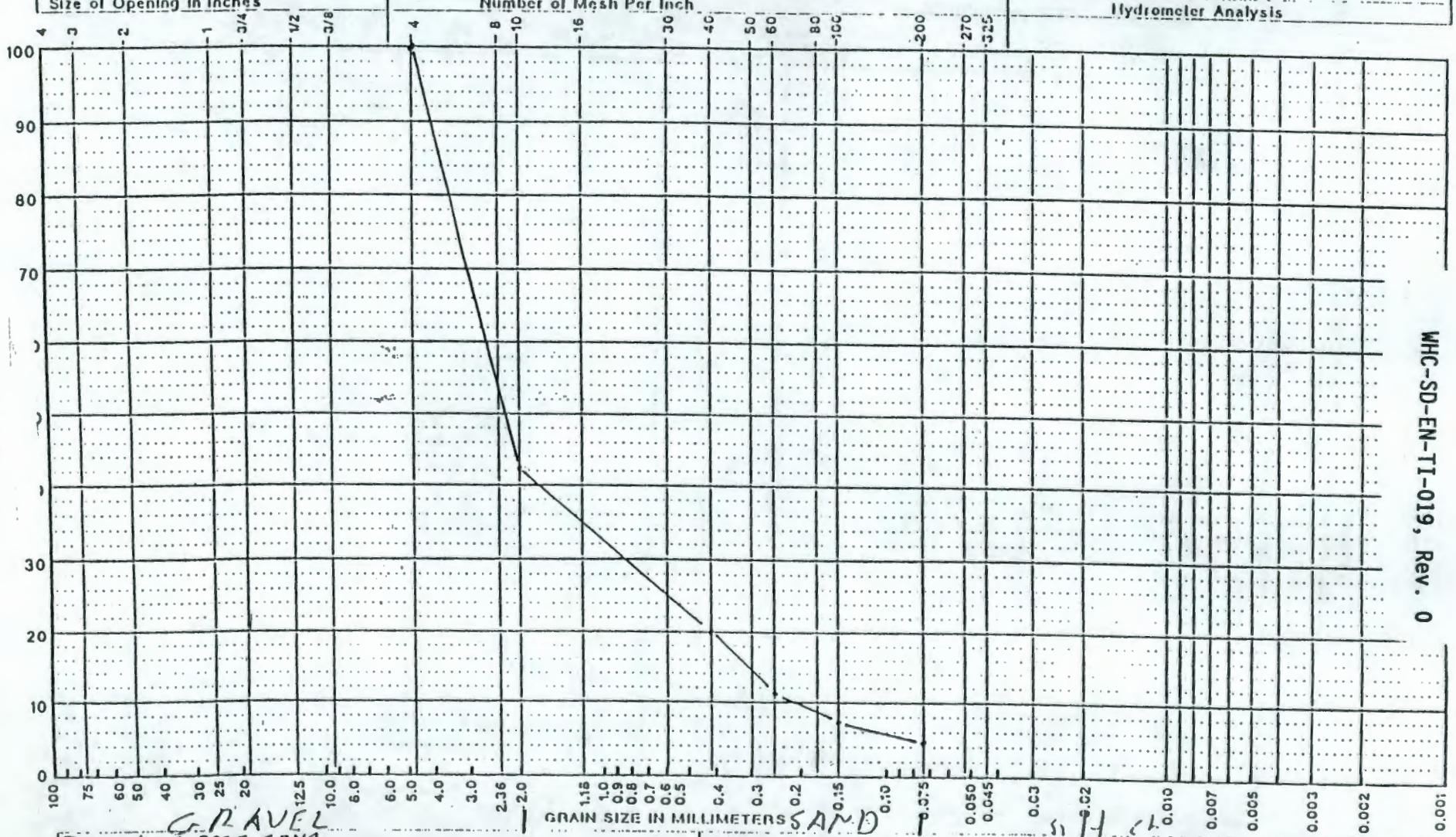
Procedure No. ETAL-07 Rev. 1 Date Issued 11-15-89

Test Plan No. N/A Rev. N/A Date Issued N/A

Plotted By JERRY L. ENGLAND

Date 2-1991

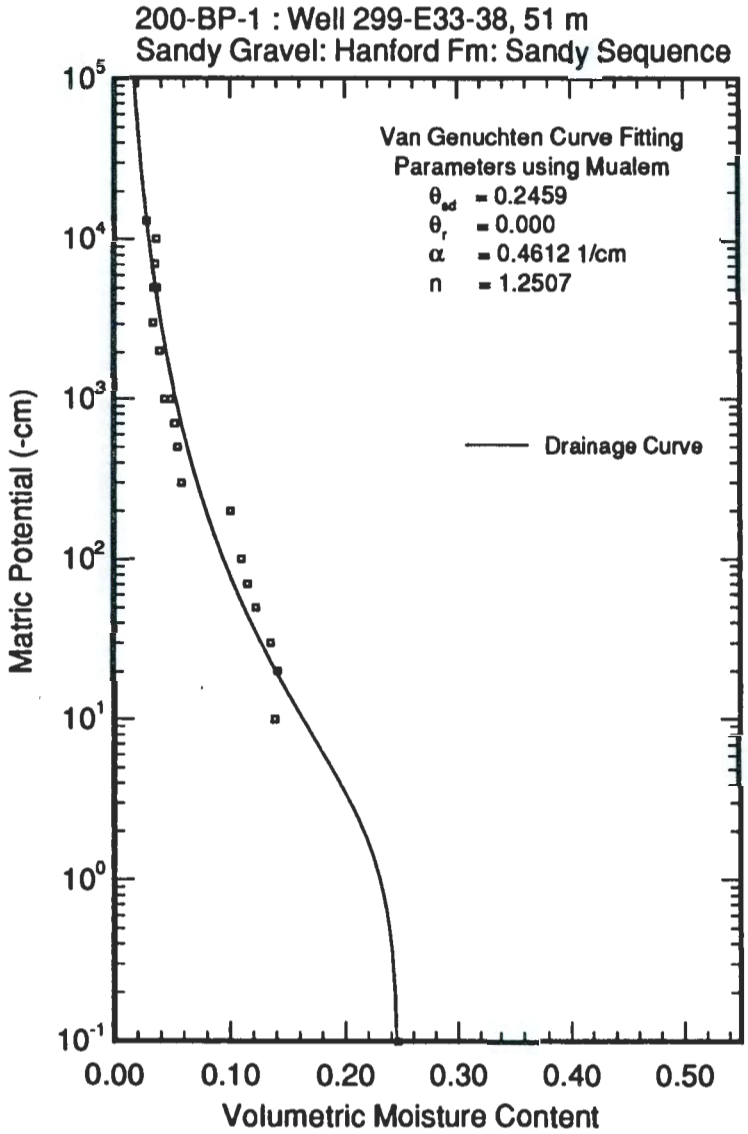


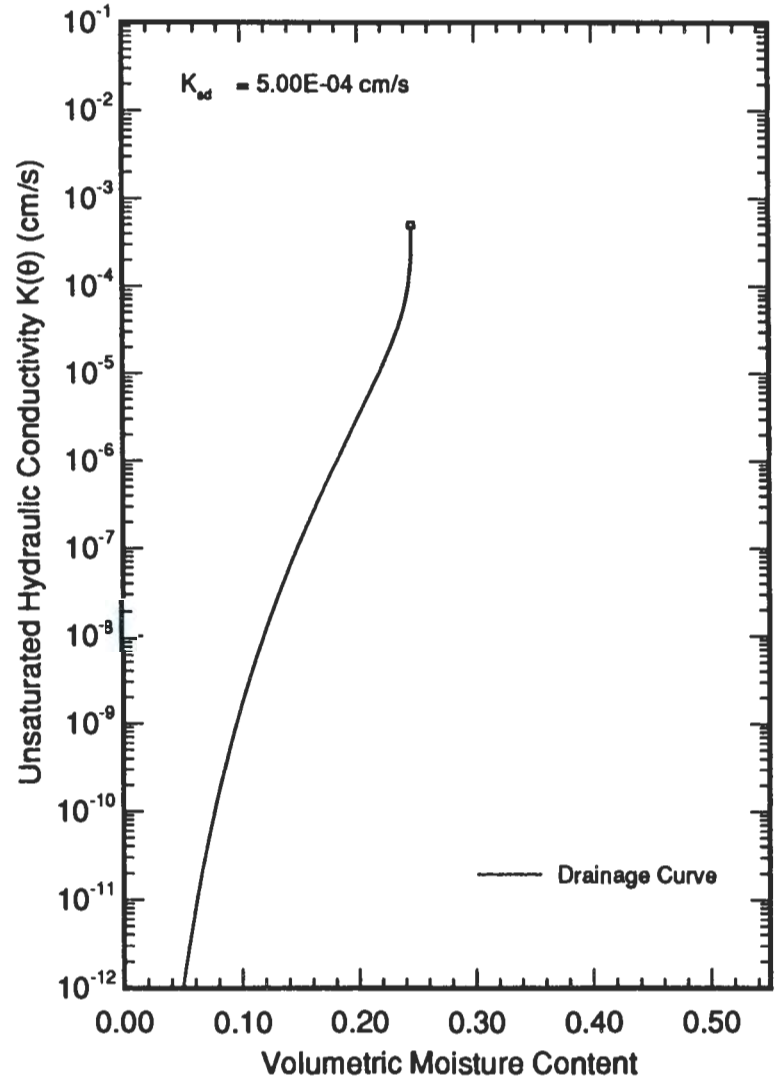
Remarks COARSE SAND

299-E33-38 49.4'

All data are accurately and completely recorded. The test operator was trained and used calibrated instruments.

Checked By: R.G. ALEXANDER Date 2-28-91


200-BP-1 : Well 299-E33-38, 51 m
Sandy Gravel: Hanford Fm: Sandy Sequence
Van Genuchten Curve Fitting
Parameters using Mualem
θ_{sd} = 0.2459
θ_r = 0.000
α = 0.4612 1/cm
n = 1.2507
Drainage Curve
Matric Potential (-cm)
Volumetric Moisture Content


K_{sd} = 5.00E-04 cm/s
Drainage Curve
Unsaturated Hydraulic Conductivity K(θ) (cm/s)
Volumetric Moisture Content

GRAIN SIZE ANALYSIS PLOT

Sample No. 1-0528

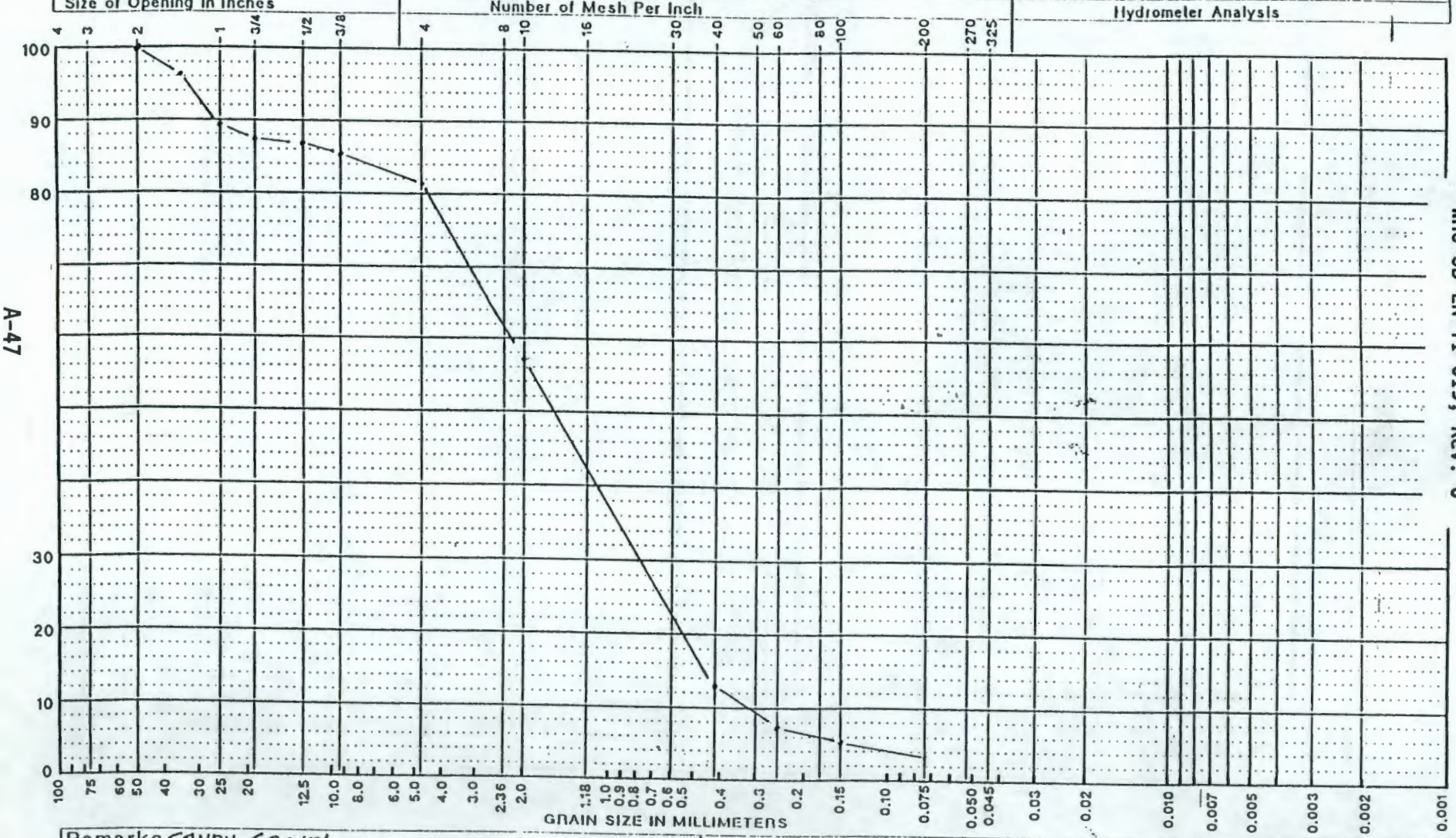
Page 1 of 1

Procedure No. ETAL-07 Rev. 1 Date Issued 11-15-89

Test Plan No. N/A Rev. N/A Date Issued N/A

Plotted By JERRY L. ENGLAND

Date 2.20.91

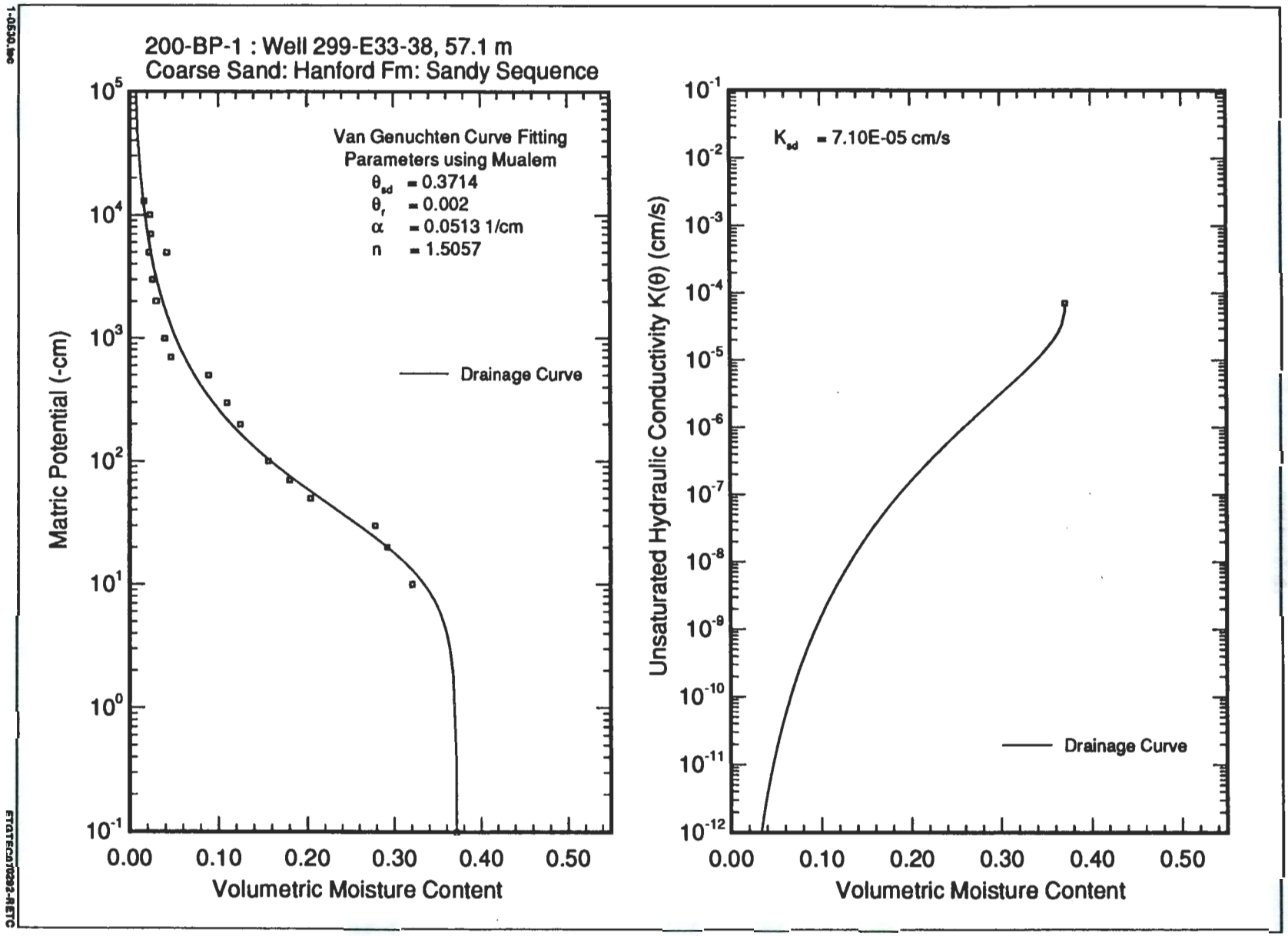


Remarks SANDY GRAVEL

299-E33-38 167.4'

All data are accurately and completely recorded. The test operator was trained and used calibrated instruments.

Checked By: RG ALEXANDER Date 2-20-91


200-BP-1 : Well 299-E33-38, 57.1 m
Coarse Sand: Hanford Fm: Sandy Sequence
Van Genuchten Curve Fitting
Parameters using Mualem
θ_{sd} = 0.3714
θ_r = 0.002
α = 0.0513 1/cm
n = 1.5057
Drainage Curve
Matric Potential (-cm)
Volumetric Moisture Content
K_{sd} = 7.10E-05 cm/s
Drainage Curve
Unsaturated Hydraulic Conductivity K(θ) (cm/s)
Volumetric Moisture Content

GRAIN SIZE ALYSIS PLOT

ple No. 1-0530

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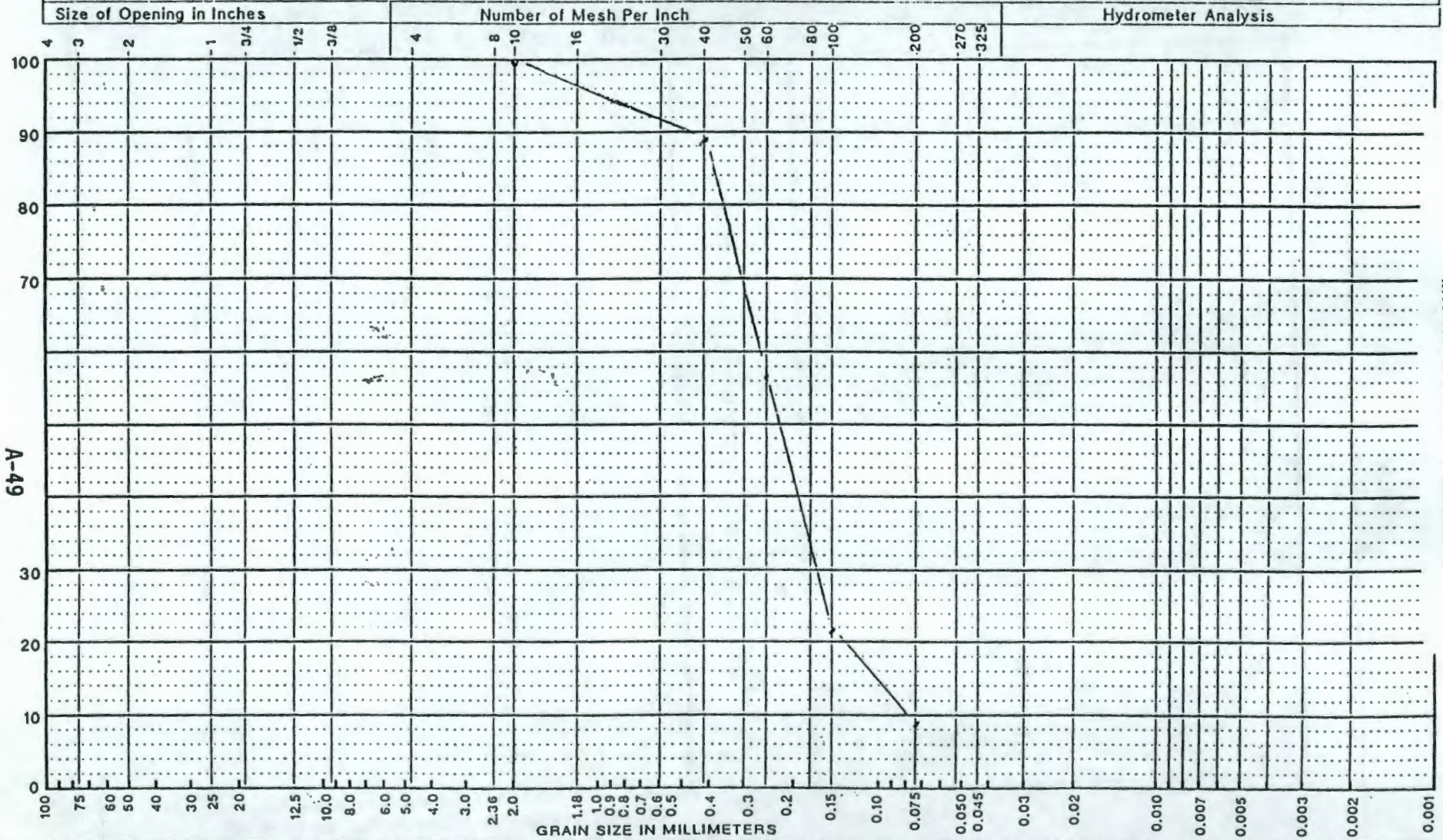
Procedure No. ETAL-07 Rev. 1 Date Issued 11-15-89

Plotted By L D Bruggeman

Test Plan No. N/A Rev. N/A Date Issued N/A

Date 2-28-91

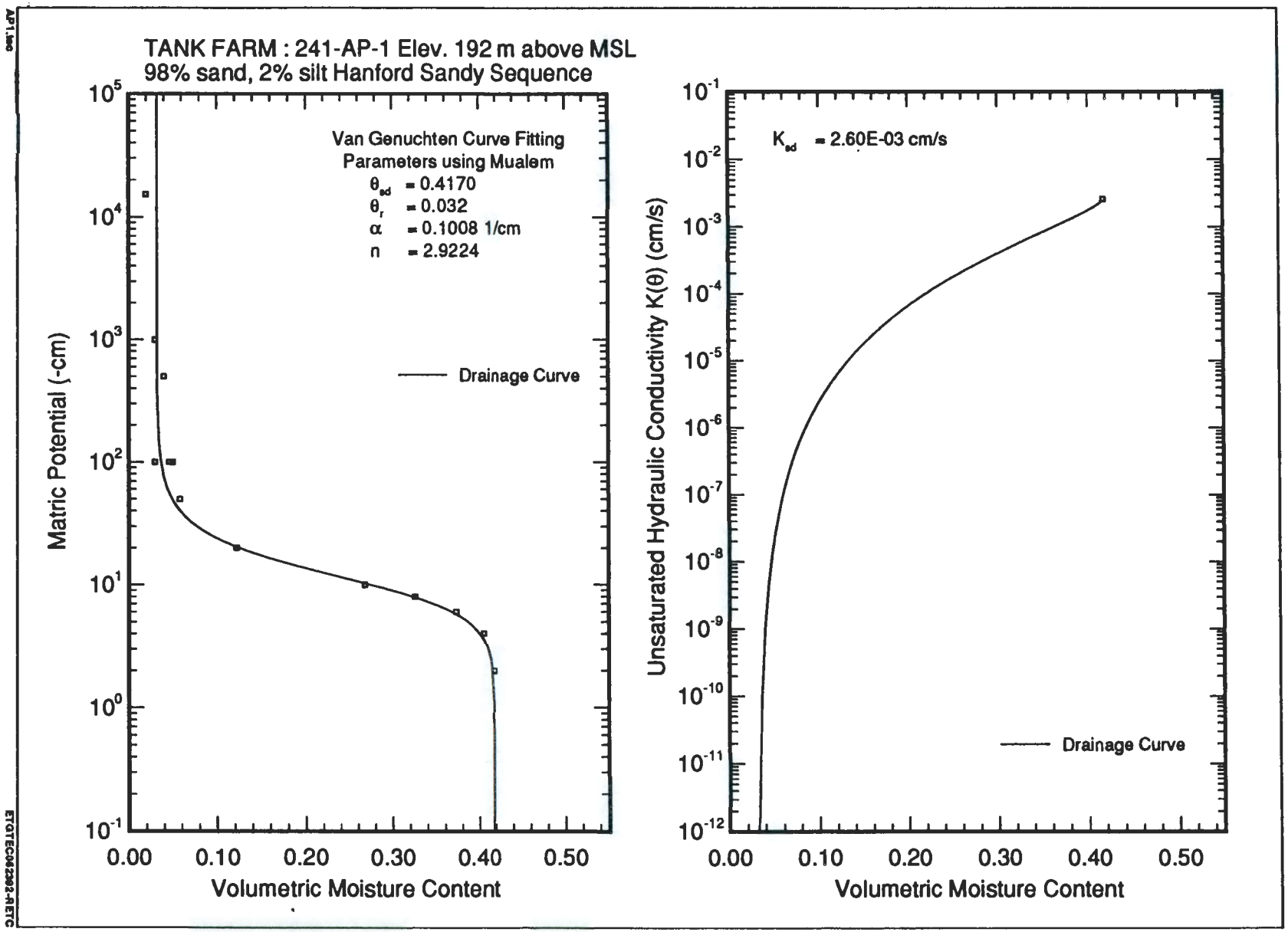


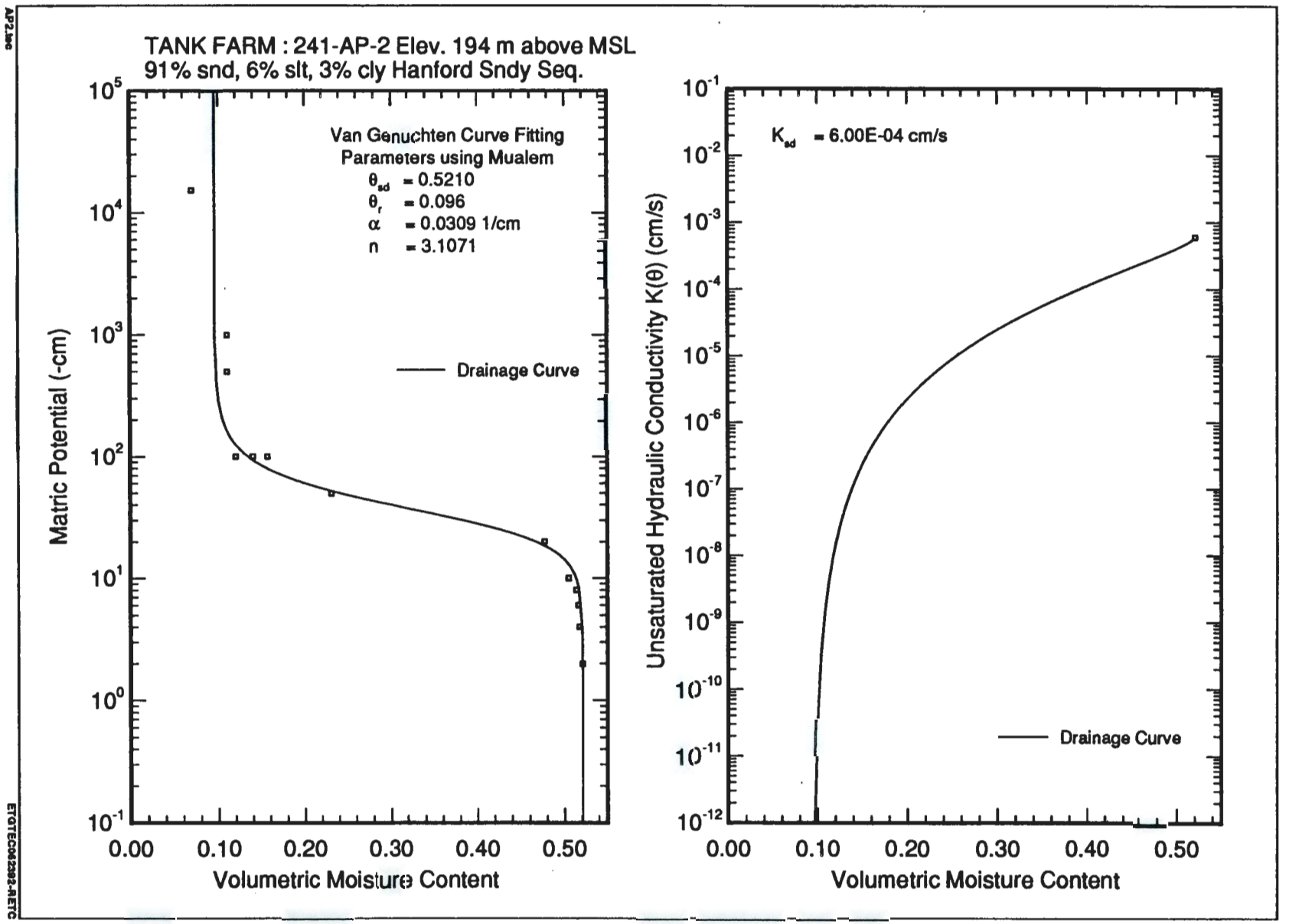
Remarks COARSE SAND

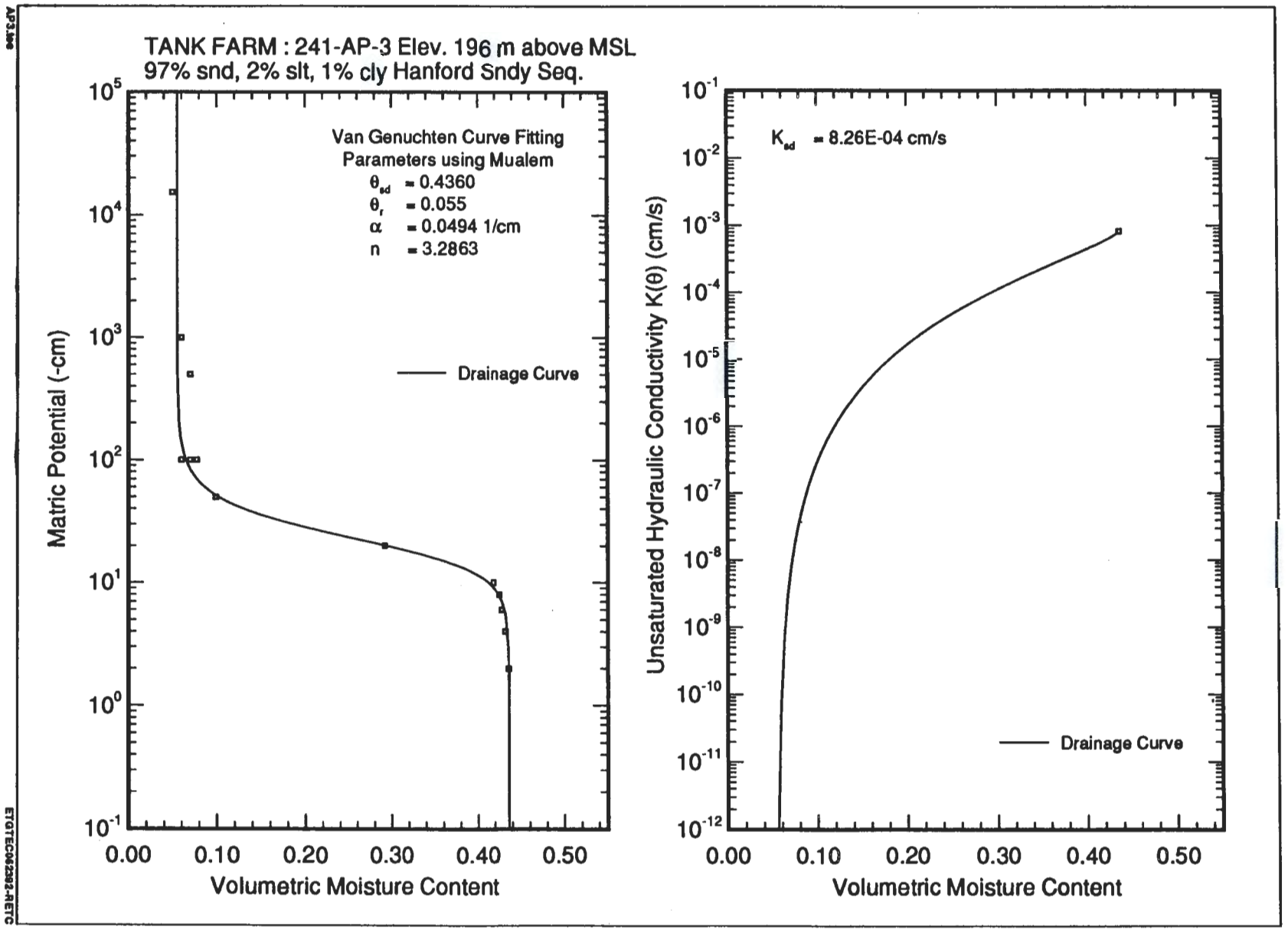
299-E33-38 187.4'

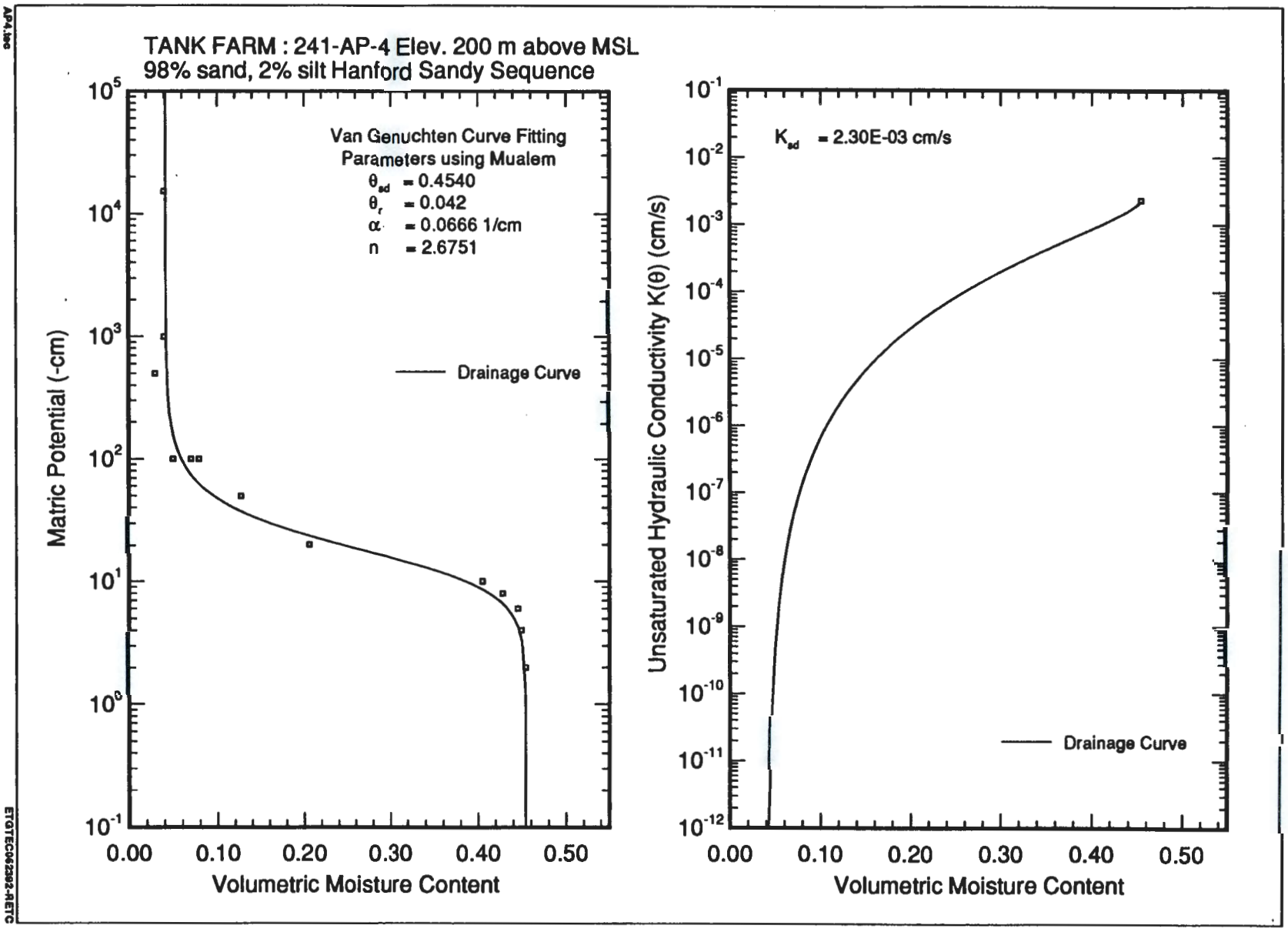
All data are accurately and completely recorded. The test operator was trained and used calibrated instruments.

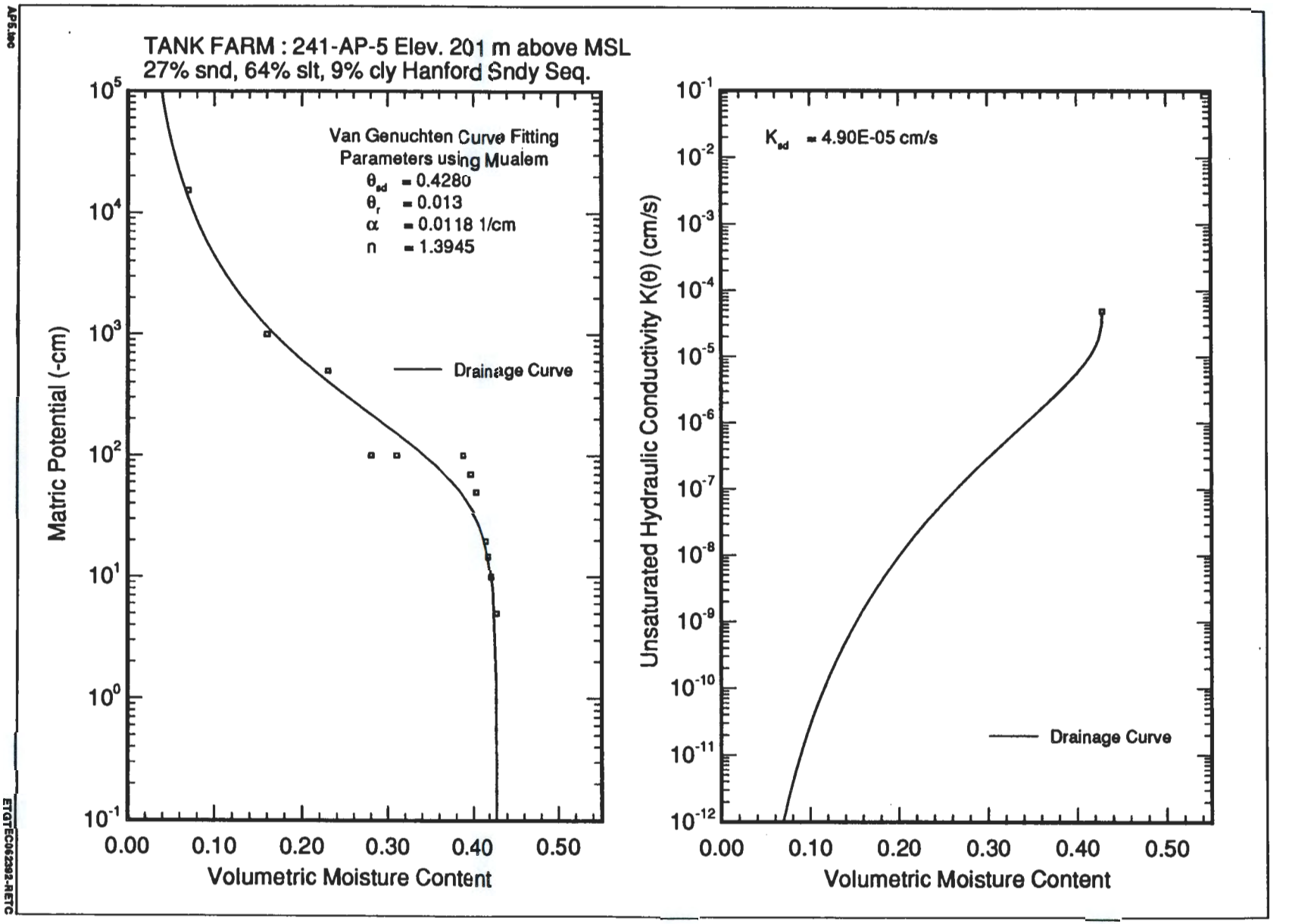
Checked By: RG ALEXANDER Date 2-28-91

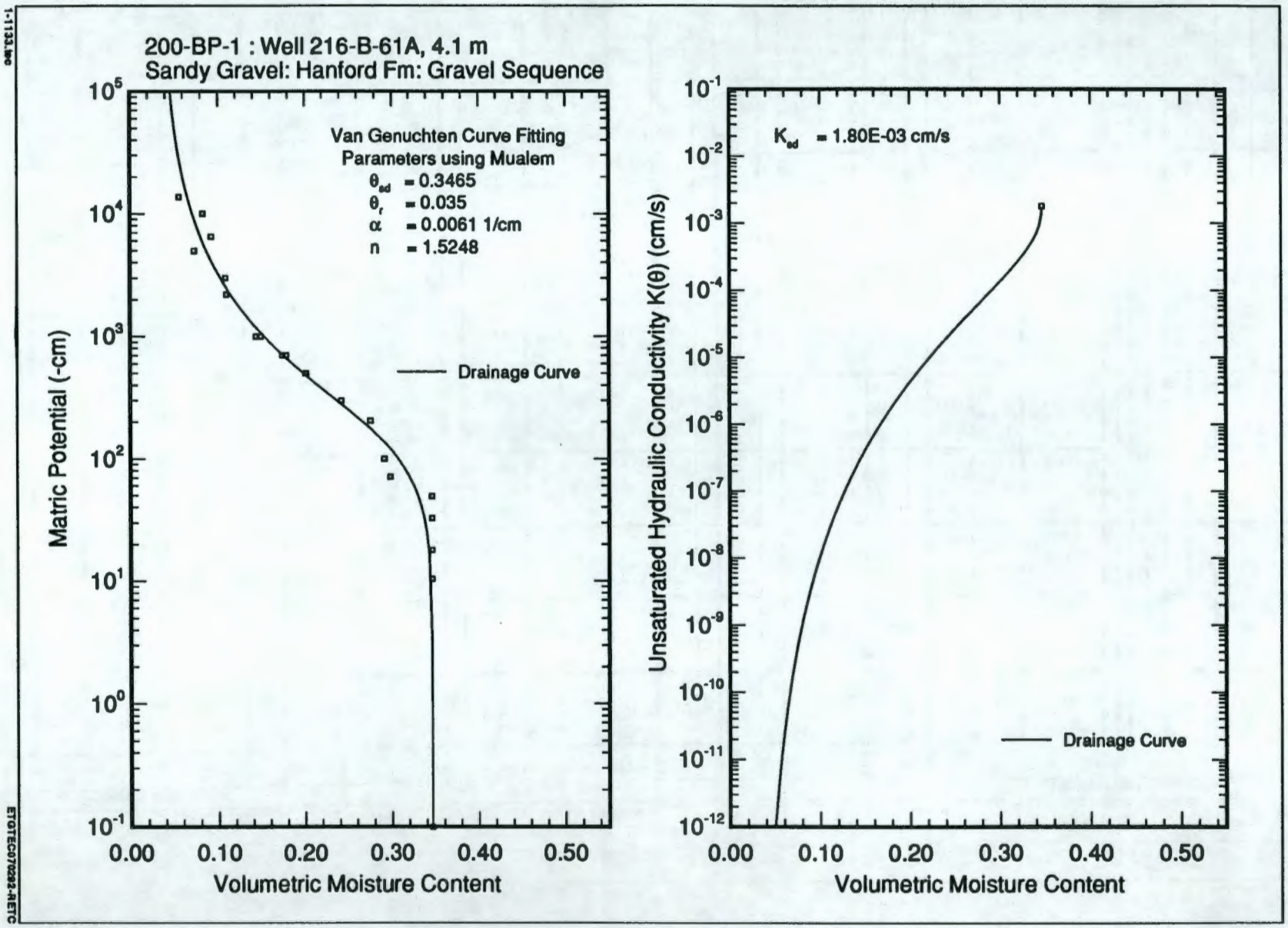

TANK FARM : 241-AP-1 Elev. 192 m above MSL
98% sand, 2% silt Hanford Sandy Sequence
Van Genuchten Curve Fitting
Parameters using Mualem
θ_{sd} = 0.4170
θ_r = 0.032
α = 0.1008 1/cm
n = 2.9224
Drainage Curve
Matric Potential (-cm)
Volumetric Moisture Content
K_{sd} = 2.60E-03 cm/s
Drainage Curve
Unsaturated Hydraulic Conductivity K(θ) (cm/s)
Volumetric Moisture Content


TANK FARM : 241-AP-2 Elev. 194 m above MSL
91% snd, 6% slt, 3% cly Hanford Sndy Seq.
Van Genuchten Curve Fitting
Parameters using Mualem
θ_{sd} = 0.5210
θ_r = 0.096
α = 0.0309 1/cm
n = 3.1071
Drainage Curve
Matric Potential (-cm)
Volumetric Moisture Content
K_{sd} = 6.00E-04 cm/s
Drainage Curve
Unsaturated Hydraulic Conductivity K(θ) (cm/s)
Volumetric Moisture Content
AP2.tec
ETGTEC0423B2-RETC


TANK FARM : 241-AP-3 Elev. 196 m above MSL
97% snd, 2% slt, 1% cly Hanford Sndy Seq.
Van Genuchten Curve Fitting
Parameters using Mualem
θ_{sd} = 0.4360
θ_r = 0.055
α = 0.0494 1/cm
n = 3.2863
Drainage Curve
Matric Potential (-cm)
Volumetric Moisture Content
K_{sd} = 8.26E-04 cm/s
Drainage Curve
Unsaturated Hydraulic Conductivity K(θ) (cm/s)
Volumetric Moisture Content


TANK FARM : 241-AP-4 Elev. 200 m above MSL
98% sand, 2% silt Hanford Sandy Sequence
Van Genuchten Curve Fitting
Parameters using Mualem
θ_{sd} = 0.4540
θ_r = 0.042
α = 0.0666 1/cm
n = 2.6751
Drainage Curve
Matric Potential (-cm)
Volumetric Moisture Content
K_{sd} = 2.30E-03 cm/s
Drainage Curve
Unsaturated Hydraulic Conductivity K(θ) (cm/s)
Volumetric Moisture Content
AP4.bmp
ETGTEC062392-RETC


TANK FARM : 241-AP-5 Elev. 201 m above MSL
27% snd, 64% slt, 9% cly Hanford Sndy Seq.
Van Genuchten Curve Fitting
Parameters using Mualem
θ_{sd} = 0.4280
θ_r = 0.013
α = 0.0118 1/cm
n = 1.3945
Drainage Curve
Matric Potential (-cm)
Volumetric Moisture Content
K_{sd} = 4.90E-05 cm/s
Drainage Curve
Unsaturated Hydraulic Conductivity K(θ) (cm/s)
Volumetric Moisture Content
AP5.wpg
ETGTEC062392-RETC


200-BP-1 : Well 216-B-61A, 4.1 m
Sandy Gravel: Hanford Fm: Gravel Sequence
Van Genuchten Curve Fitting
Parameters using Mualem
θsd = 0.3465
θr = 0.035
α = 0.0061 1/cm
n = 1.5248
Drainage Curve
Matric Potential (-cm)
Volumetric Moisture Content
Ksd = 1.80E-03 cm/s
Drainage Curve
Unsaturated Hydraulic Conductivity K(θ) (cm/s)
Volumetric Moisture Content
1-1133.bmp
ETGTEC070282-RETC

GRAIN SIZE ANALYSIS PLOT

Sample No. 1-1133

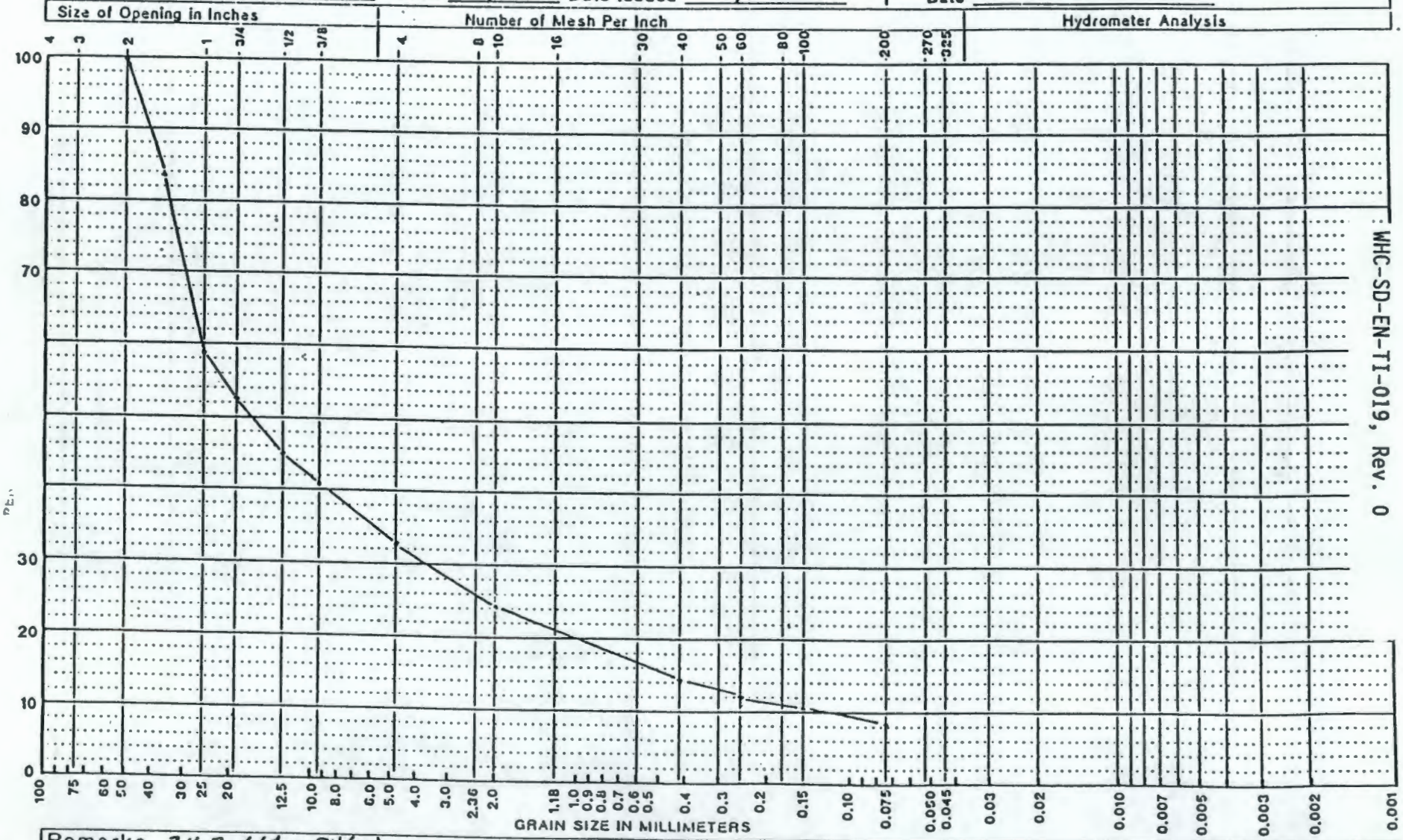
Page 1 of 1

Procedure No. ETAL-07 Rev. 1 Date Issued 11-15-89

Plotted By R.G. ALEXANDER

Test Plan No. N/A Rev. N/A Date Issued N/A

Date 7-10-91

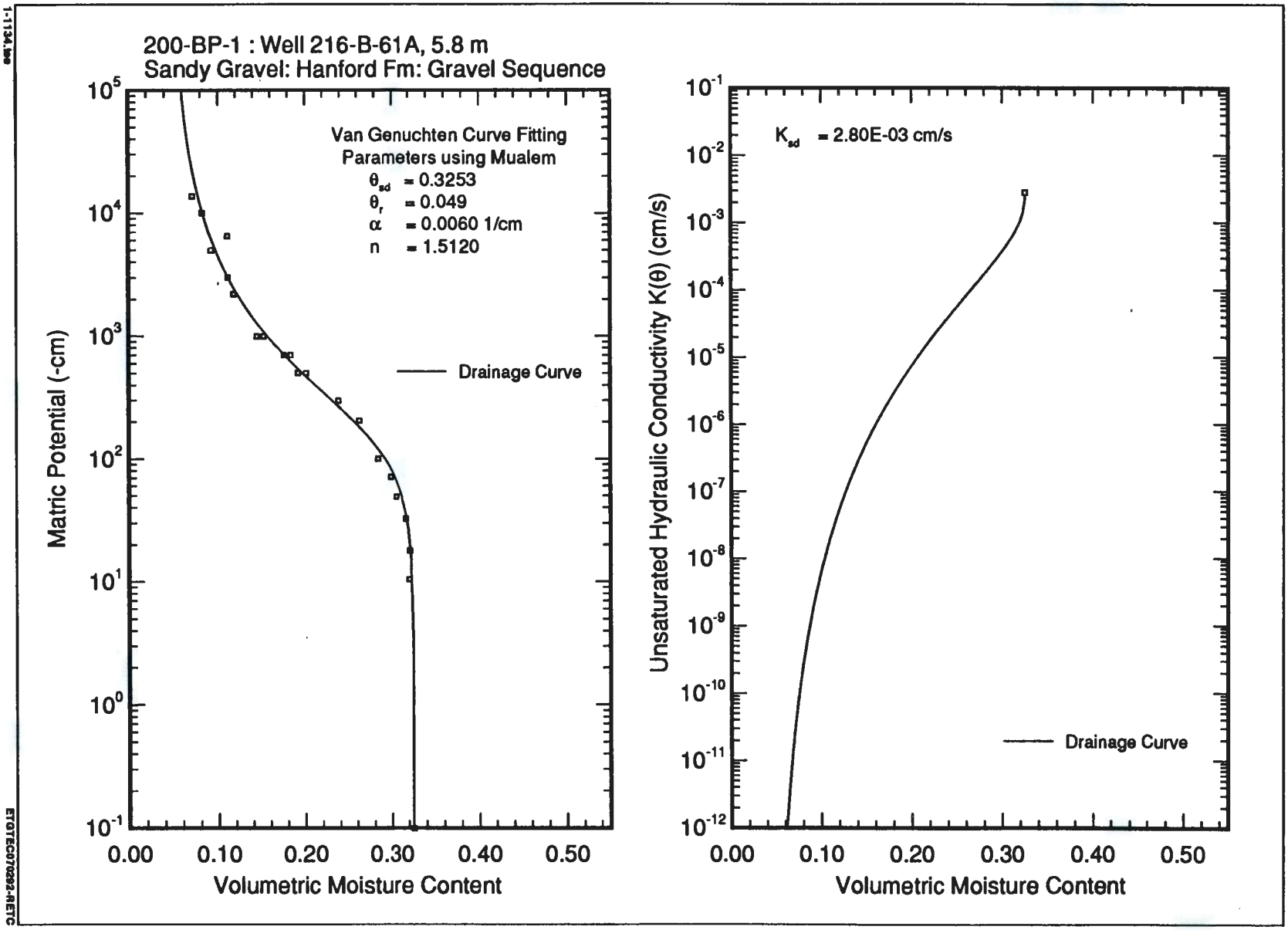


Remarks 216B-61A- PH(M) 13.5'

All data are accurately and completely recorded. The test operator was trained and used calibrated instrument

Checked By: [signature] Date 7-12-91

WHC-SD-EN-TI-019, Rev. 0



1-1134.tpe

ETGTEC070292-RETC

GRAIN SIZE ANALYSIS PLOT

Sample No. 1-1134

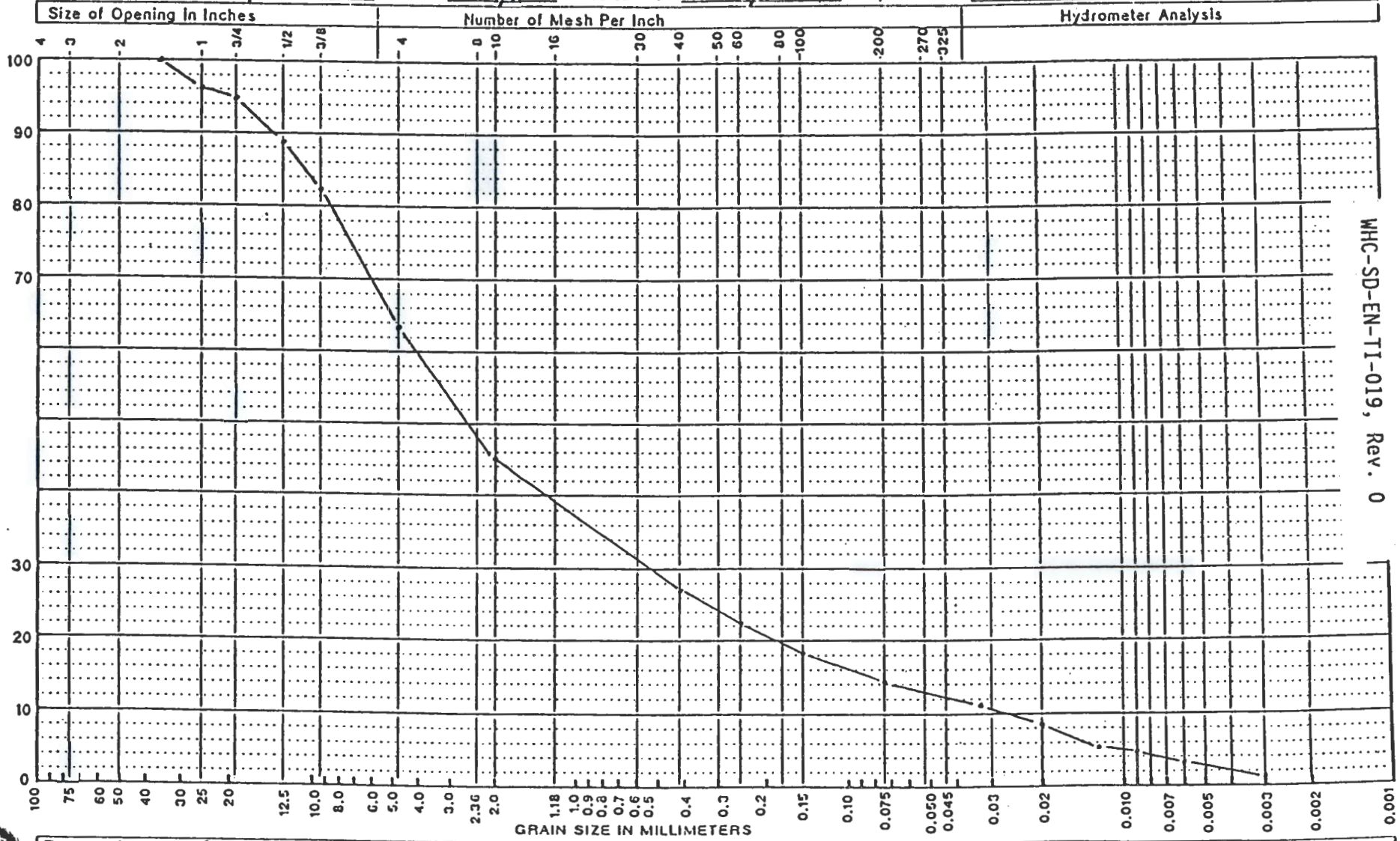
Page 1 of 1

Procedure No. ETAL-07 Rev. 1 Date Issued 11-15-89

Test Plan No. N/A Rev. N/A Date Issued N/A

Plotted By JERRY L. ENGLAND

Date 7-10-91

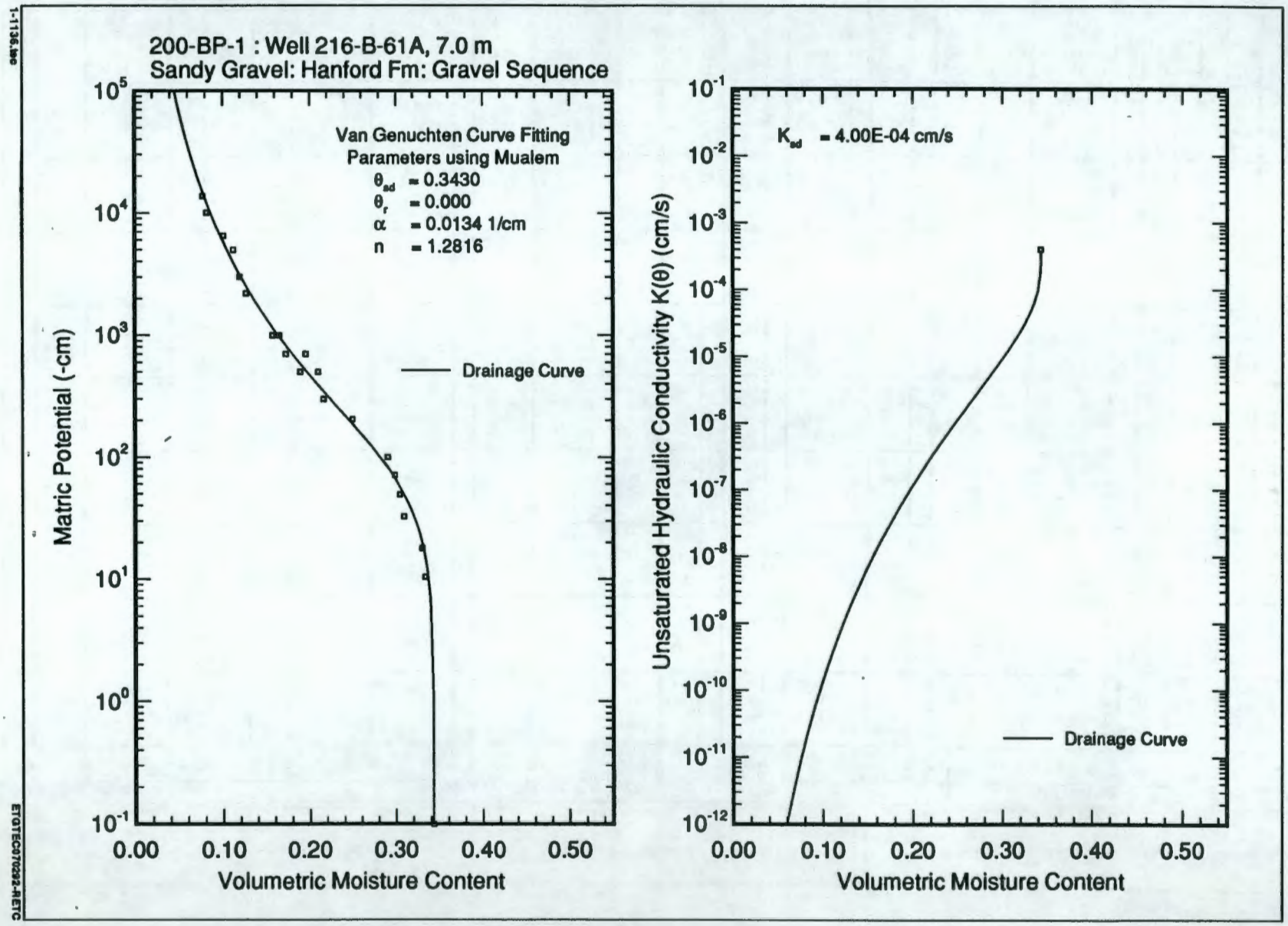


Remarks SANDY GRAVEL

B-C1A-PH (m) 19.1'

All data are accurately and completely recorded. The test
erator was trained and used calibrated instrume

Checked By: R.G. ALEXANDER Date 7-12-9


200-BP-1 : Well 216-B-61A, 7.0 m
Sandy Gravel: Hanford Fm: Gravel Sequence
Van Genuchten Curve Fitting
Parameters using Mualem
θ_{sd} = 0.3430
θ_r = 0.000
α = 0.0134 1/cm
n = 1.2816
Drainage Curve
Matric Potential (-cm)
Volumetric Moisture Content
K_{sd} = 4.00E-04 cm/s
Drainage Curve
Unsaturated Hydraulic Conductivity K(θ) (cm/s)
Volumetric Moisture Content
1-1136.bse
ETGTEC070292-RETC

GRAIN SIZE ANALYSIS PLOT

Sample No. 1-113C

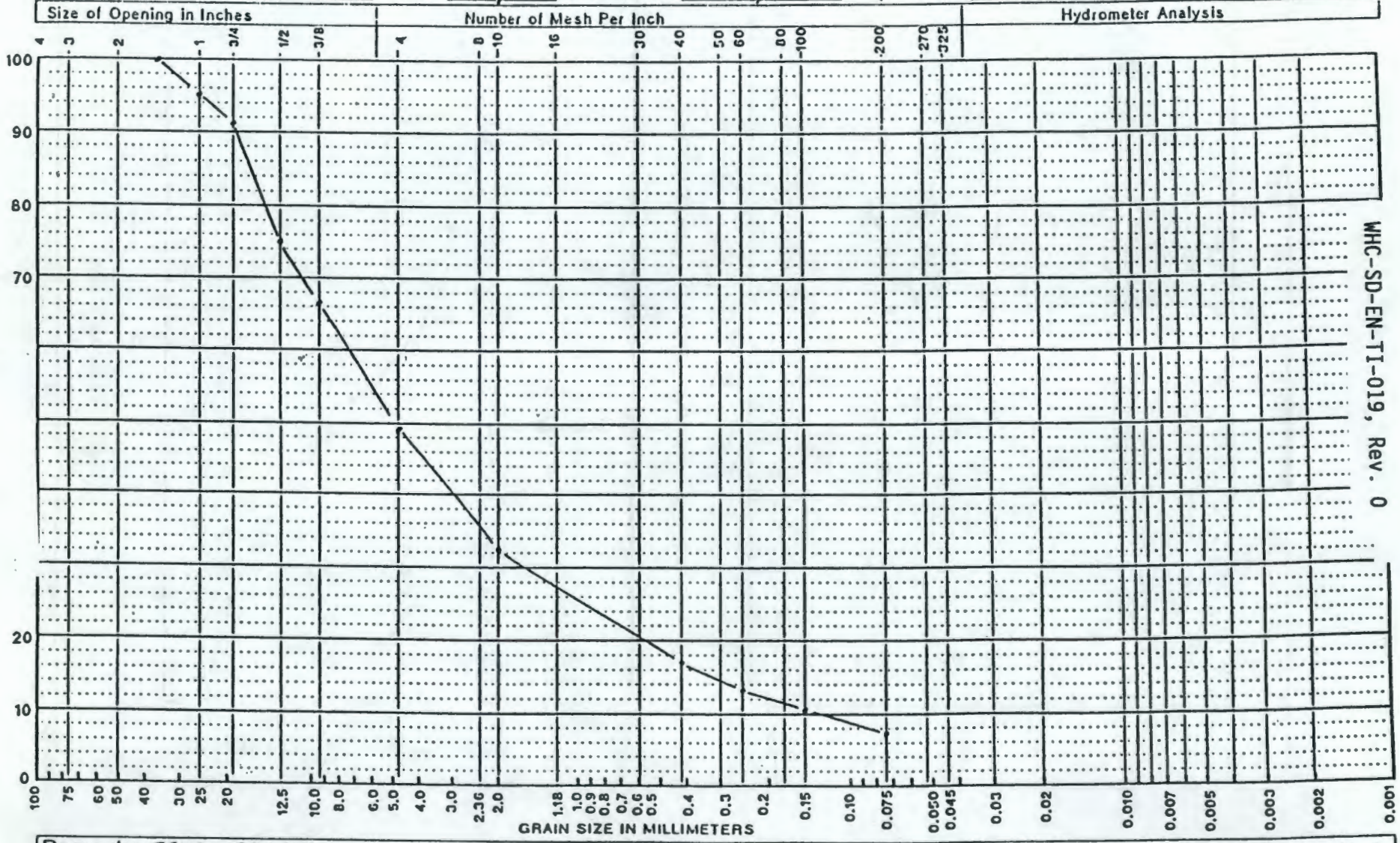
Page 1 of 1

Procedure No. ETAL-07 Rev. 1 Date Issued 11-16-89

Plotted By JERRY L. ENGLAND

Test Plan No. N/A Rev. N/A Date Issued N/A

Date 7-11-91

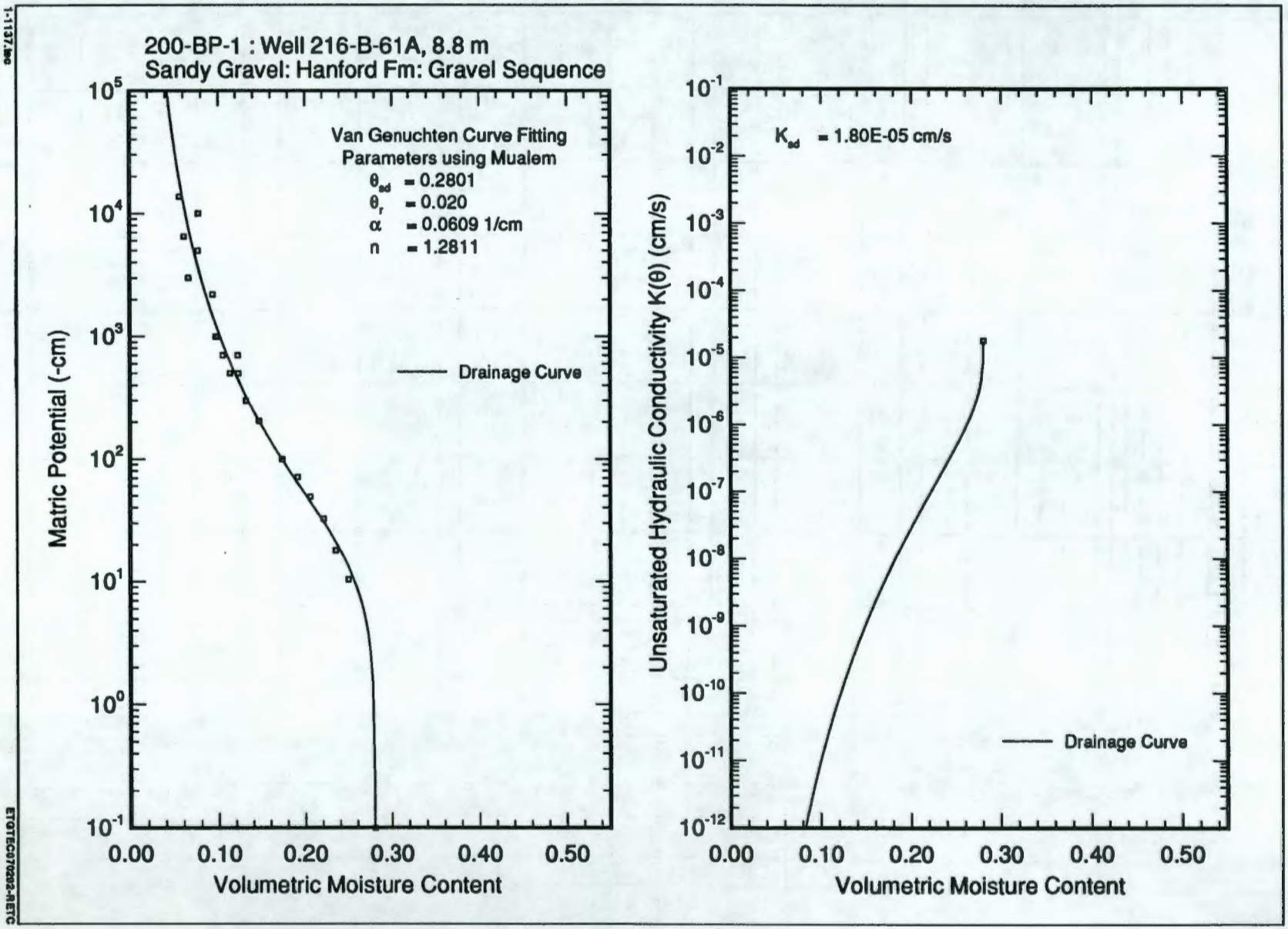


Remarks SANDY GRAVEL

-B- C1A-PH(M) 23.0'

All data are accurately and completely recorded. The test operator was trained and used calibrated instruments.

Checked By: R.G. ALEXANDER Date 7-15-


200-BP-1 : Well 216-B-61A, 8.8 m
Sandy Gravel: Hanford Fm: Gravel Sequence
Van Genuchten Curve Fitting
Parameters using Mualem
θ_{sd} = 0.2801
θ_r = 0.020
α = 0.0609 1/cm
n = 1.2811
Drainage Curve
Matric Potential (-cm)
Volumetric Moisture Content
K_{sd} = 1.80E-05 cm/s
Drainage Curve
Unsaturated Hydraulic Conductivity K(θ) (cm/s)
Volumetric Moisture Content
1-1137.tec
ETGTEC07d292-RETC

GRAIN SIZE ANALYSIS PLOT

Sample No. 1-1137

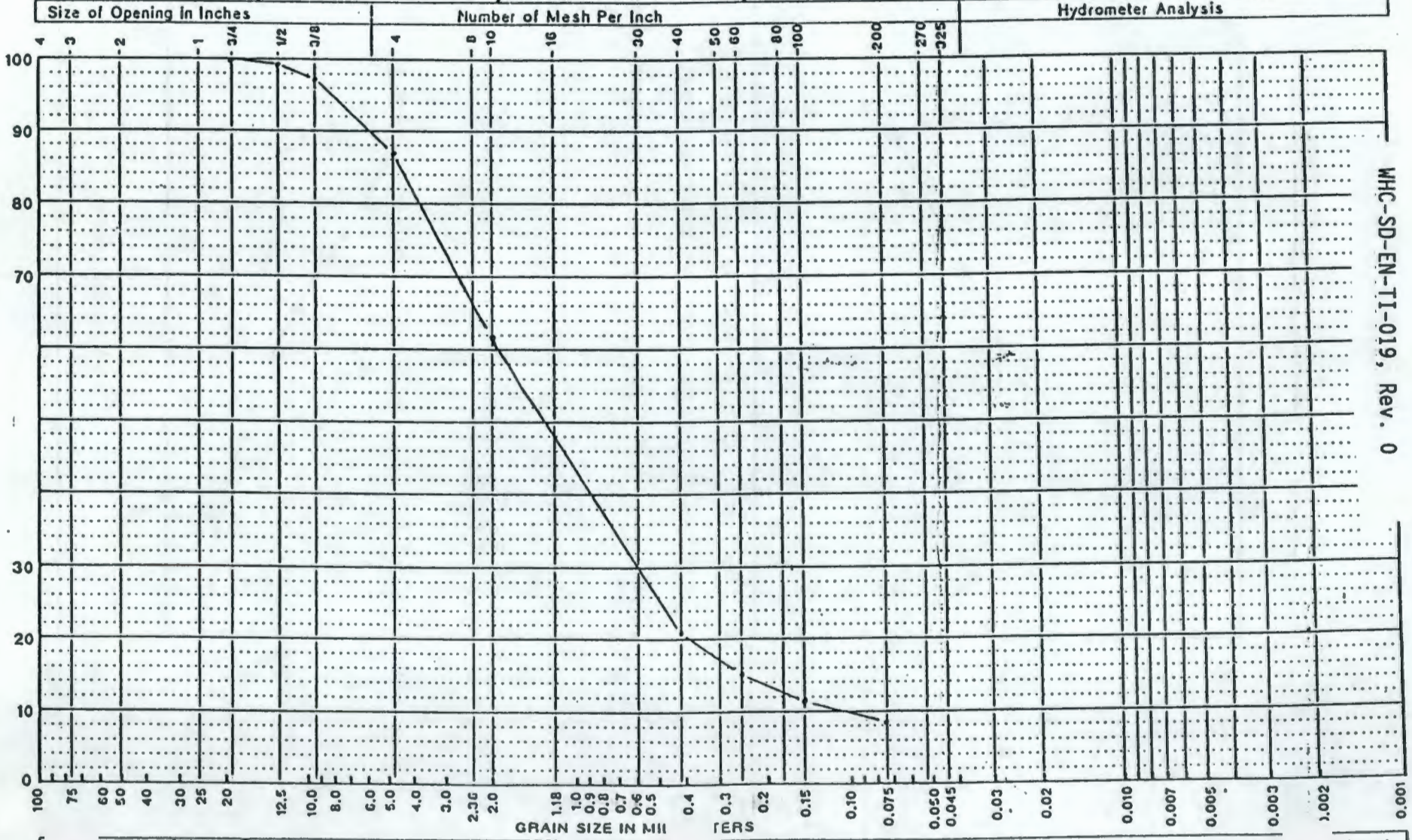
Page 1 of 1

Procedure No. ETAL-07 Rev. 1 Date Issued 11-15-89

Plotted By JERRY L. ENGLAND

Test Plan No. N/A Rev. N/A Date Issued N/A

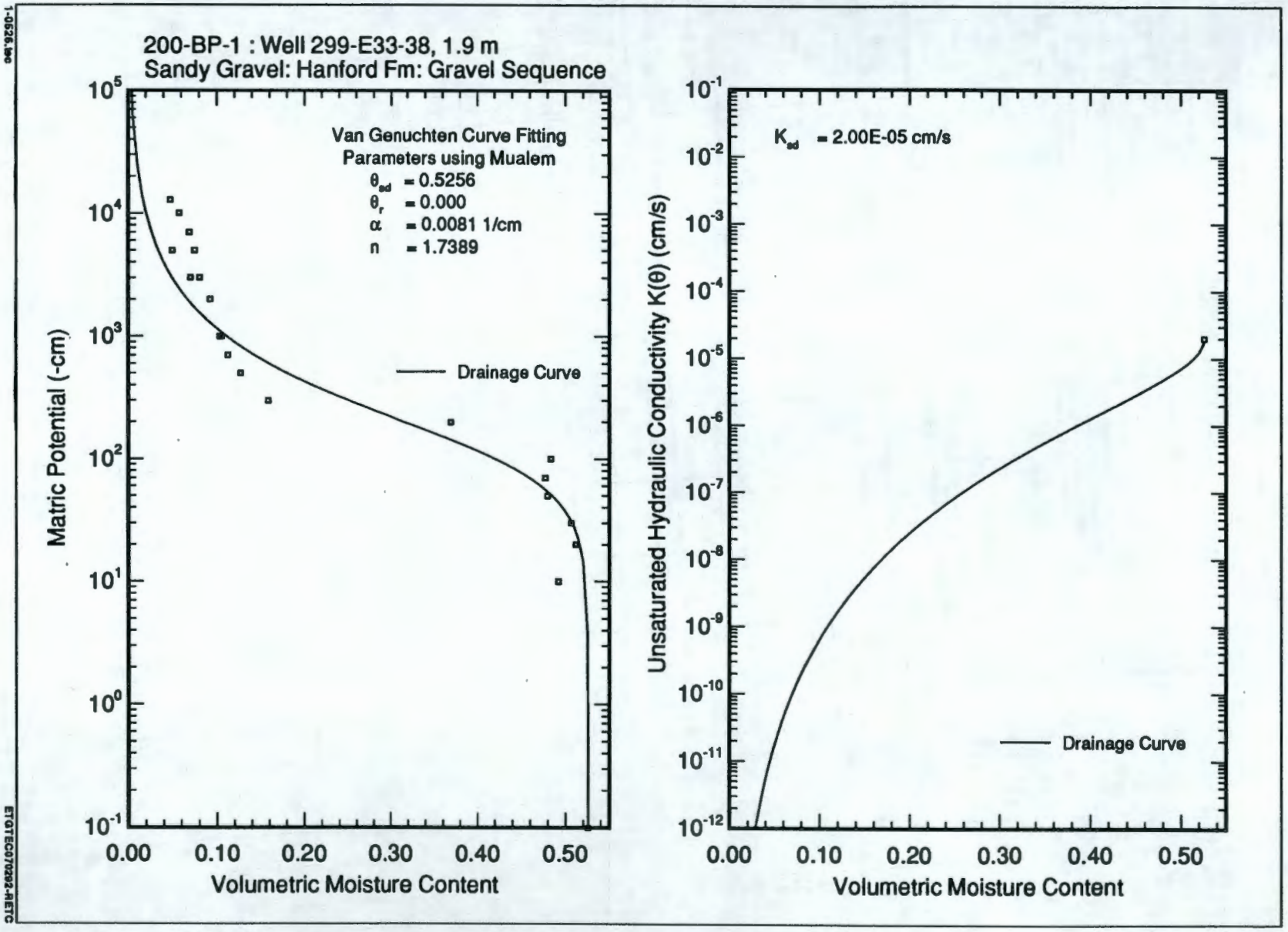
Date 7-11-91



arks SANDY GRAVEL

data are accurately and completely recorded. test

operator was trained and used calibrated instruments.

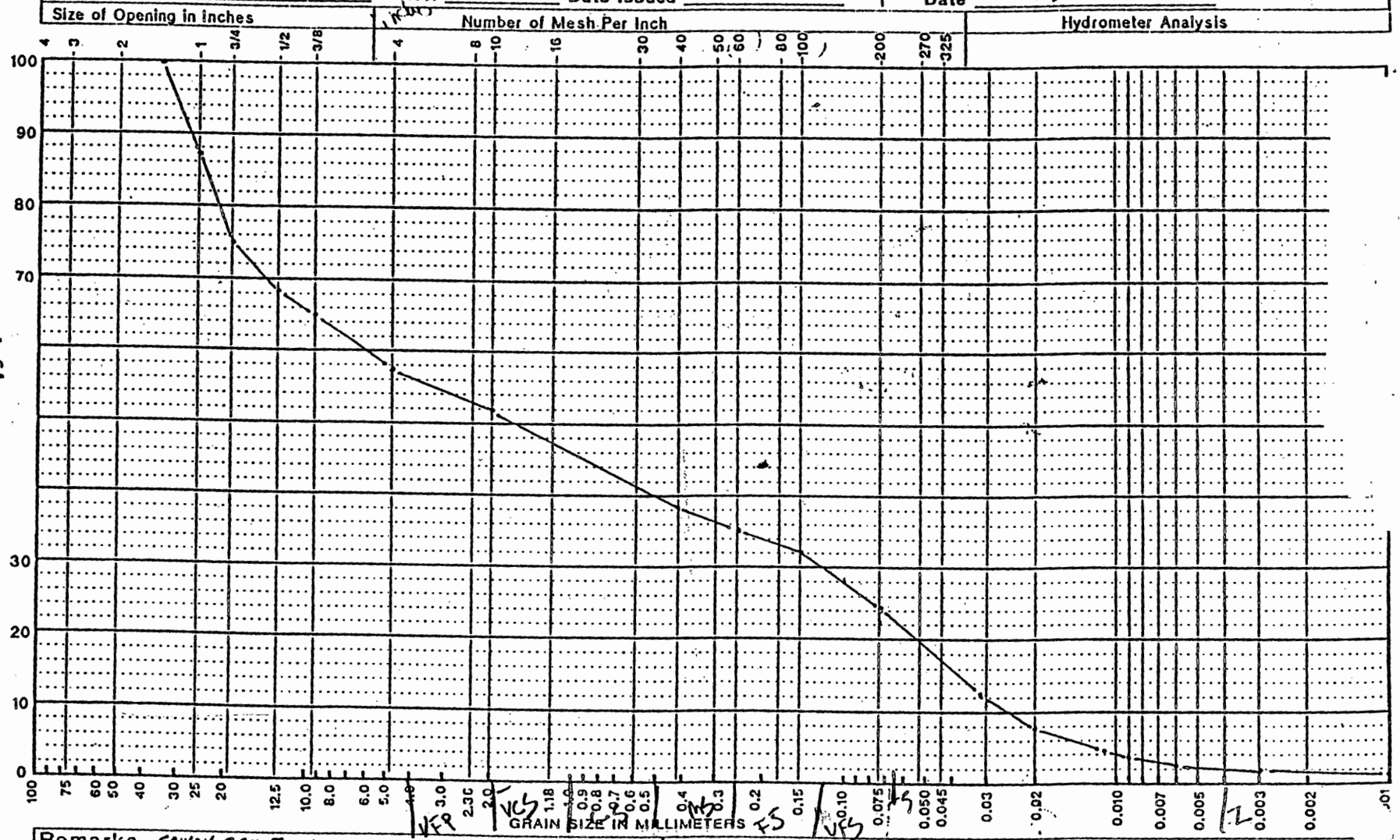

200-BP-1 : Well 299-E33-38, 1.9 m
Sandy Gravel: Hanford Fm: Gravel Sequence
Van Genuchten Curve Fitting
Parameters using Mualem
θ_{sd} = 0.5256
θ_r = 0.000
α = 0.0081 1/cm
n = 1.7389
Drainage Curve
Matric Potential (-cm)
Volumetric Moisture Content
K_{sd} = 2.00E-05 cm/s
Drainage Curve
Unsaturated Hydraulic Conductivity K(θ) (cm/s)
Volumetric Moisture Content
1-0526.bmp
ETGTEC070292-RETC

GRAIN SIZE ANALYSIS PLOT

Sample No. 1-0526 Page 1 of 1

Procedure No. ETAL-07 Rev. 1 Date Issued 11-15-89 Plotted By JERRY L. ENGLAND

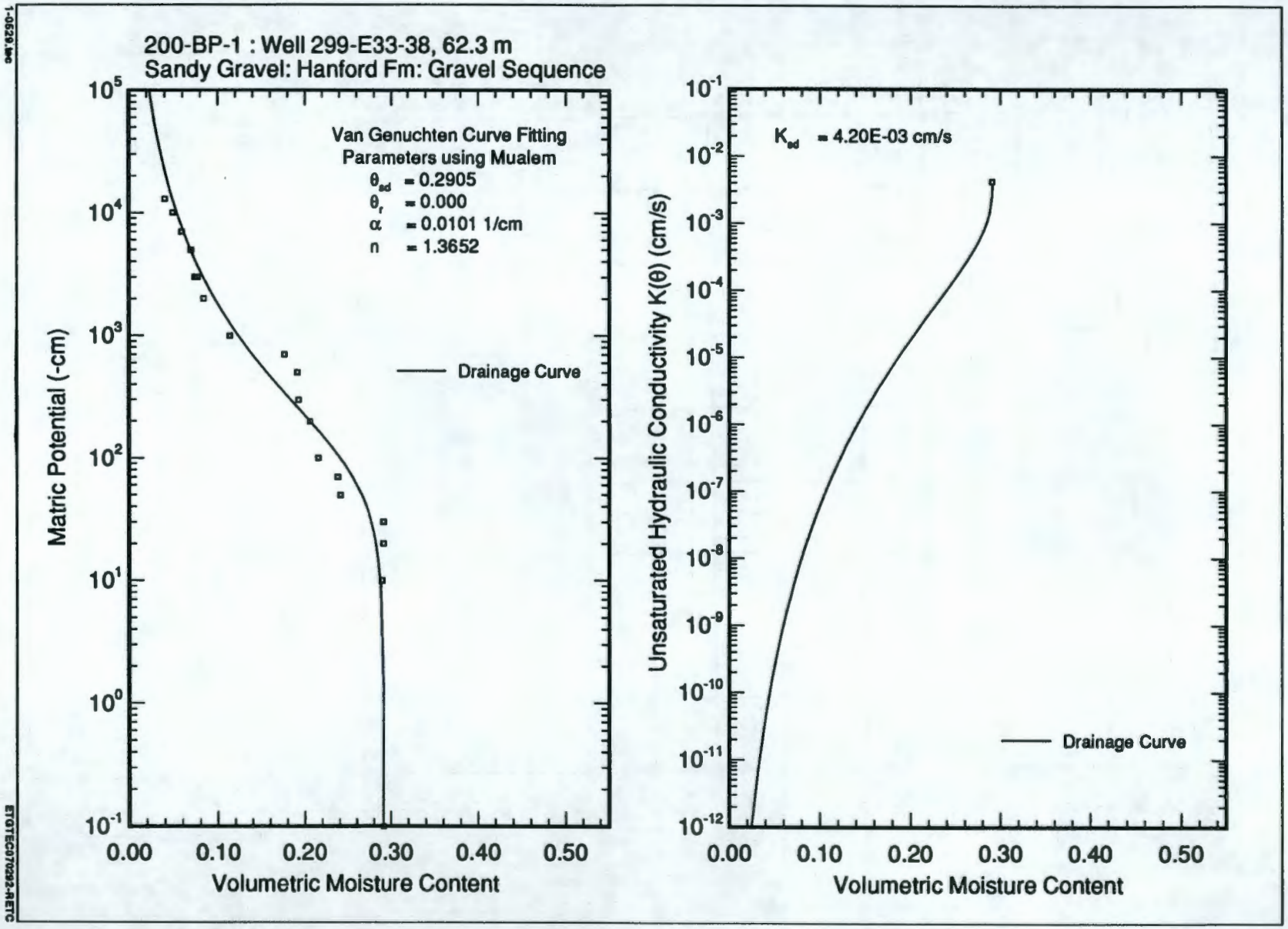
Test Plan No. N/A Rev. Date Issued N/A Date 2-19-91



Remarks SANDY GRAVEL

-E33-38 62'

All da' are accurately and completely recorded. The test operat.. was trained and used calib..

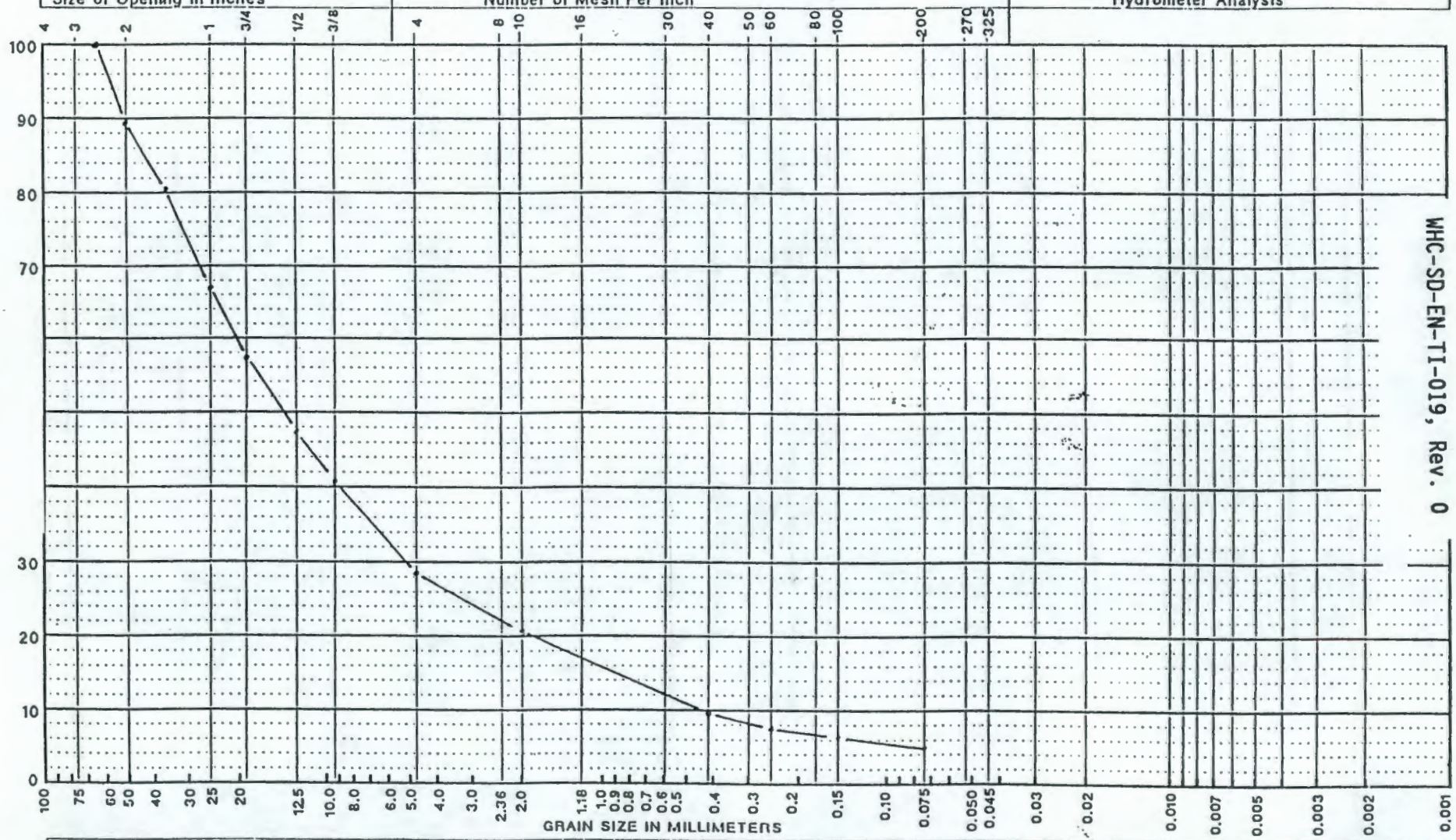

200-BP-1 : Well 299-E33-38, 62.3 m
Sandy Gravel: Hanford Fm: Gravel Sequence
Van Genuchten Curve Fitting
Parameters using Mualem
θ_{sd} = 0.2905
θ_r = 0.000
α = 0.0101 1/cm
n = 1.3652
Drainage Curve
Matric Potential (-cm)
Volumetric Moisture Content
K_{sd} = 4.20E-03 cm/s
Drainage Curve
Unsaturated Hydraulic Conductivity K(θ) (cm/s)
Volumetric Moisture Content

GRAIN SIZE ANALYSIS PLOT

Sample No. 1-0529 Page 1 of 1

Procedure No. ETAL-07 Rev. 1 Date Issued 11-15-89 Plotted By JERRY L. ENGLAND

Test Plan No. N/A Rev. N/A Date Issued N/A Date 2-21-91

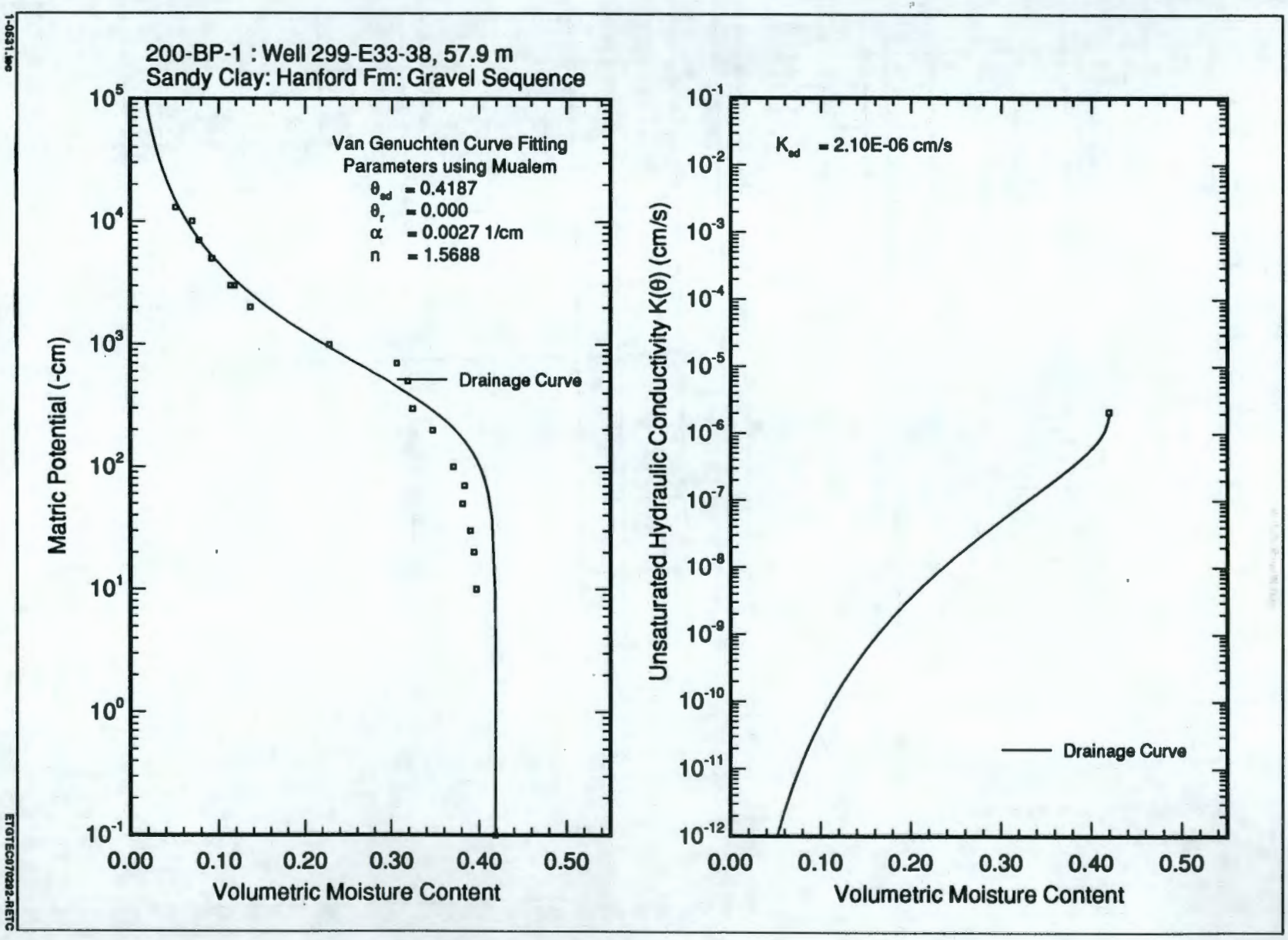


Remarks SANDY GRAVEL

299-E33-38 204.4'

All data are accurately and completely recorded. The test operator was trained and used calibrated instruments.

Checked By: R.G. ALEXANDER Date 3-13-91


200-BP-1 : Well 299-E33-38, 57.9 m
Sandy Clay: Hanford Fm: Gravel Sequence
Van Genuchten Curve Fitting
Parameters using Mualem
θ_{sd} = 0.4187
θ_r = 0.000
α = 0.0027 1/cm
n = 1.5688
Drainage Curve
Matric Potential (-cm)
Volumetric Moisture Content
K_{sd} = 2.10E-06 cm/s
Drainage Curve
Unsaturated Hydraulic Conductivity K(θ) (cm/s)
Volumetric Moisture Content
1-0631.wp
ETGTEC07/0292-RETC

GRAIN SIZE ANALYSIS PLOT

Sample No. 1-0531

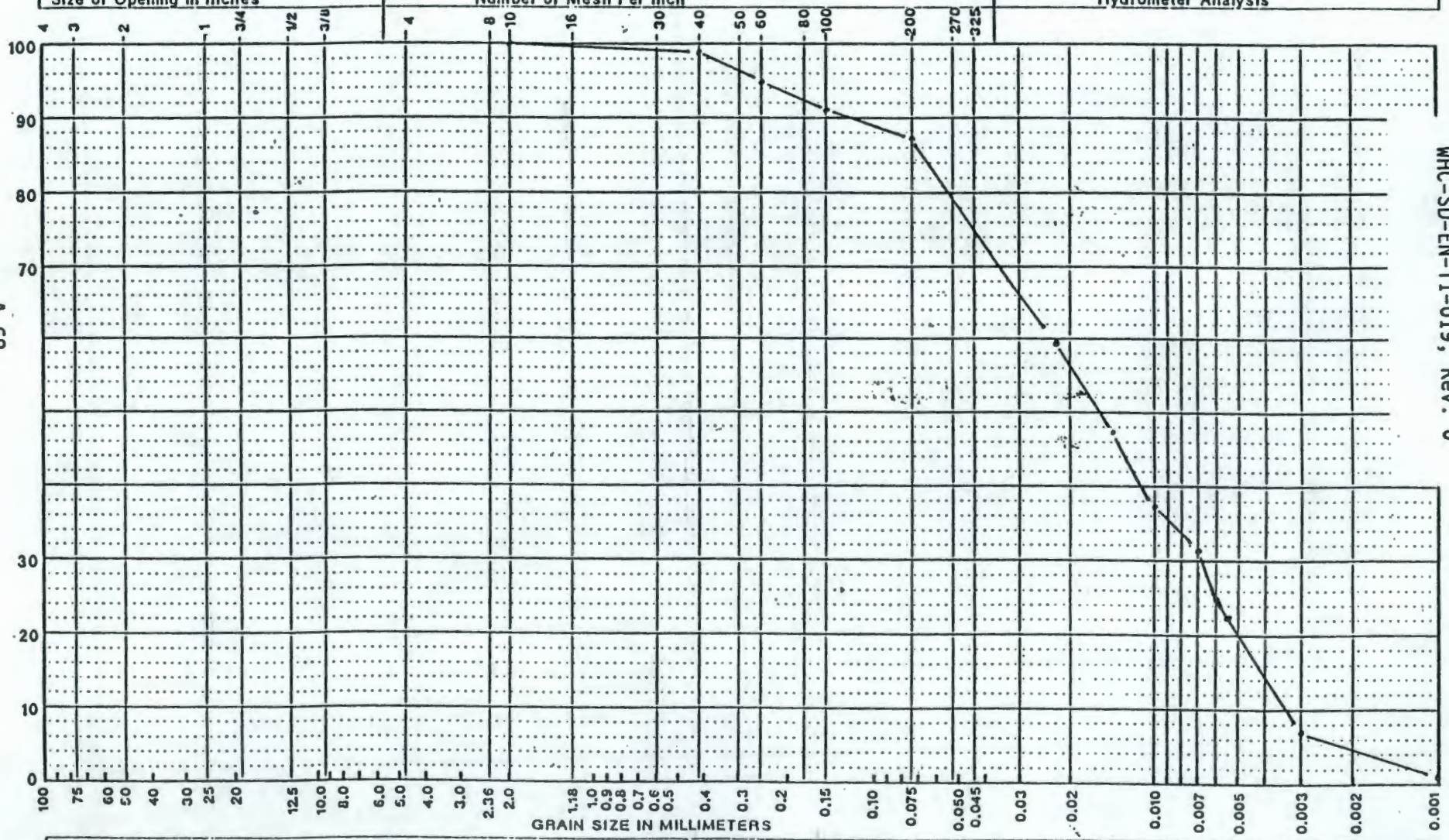
Page 1 of 1

Procedure No. ETAL-07 Rev. 1 Date Issued 11-15-89

Plotted By JERRY L. ENGLAND

Test Plan No. N/A Rev. N/A Date Issued N/A

Date

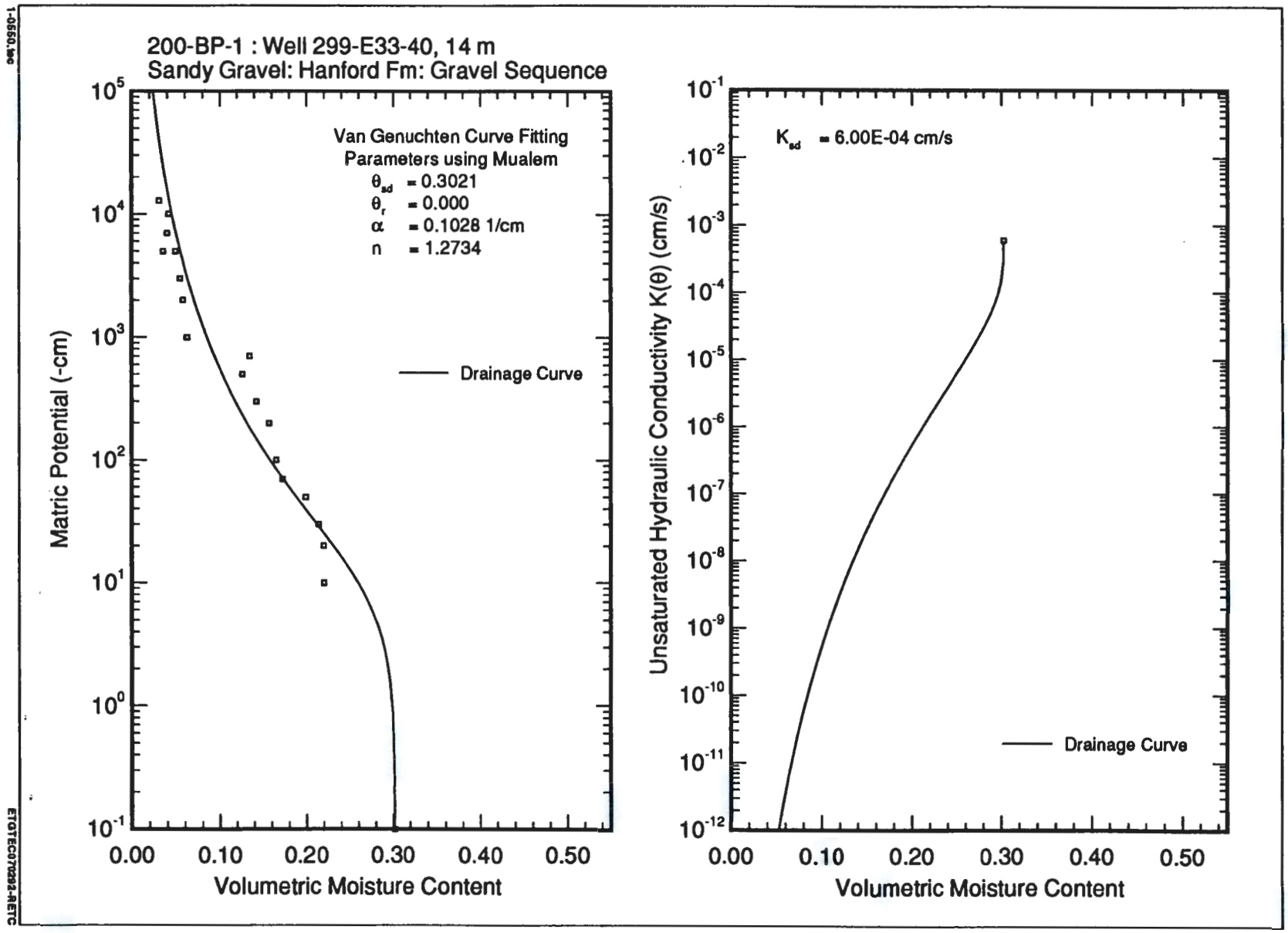


Remarks SANDY CLAY

-E33-38 170.0'

All data are accurately and completely recorded. The op[illegible]or was trained and used calibrated instruments.

Checked By L. D. Bu[illegible]

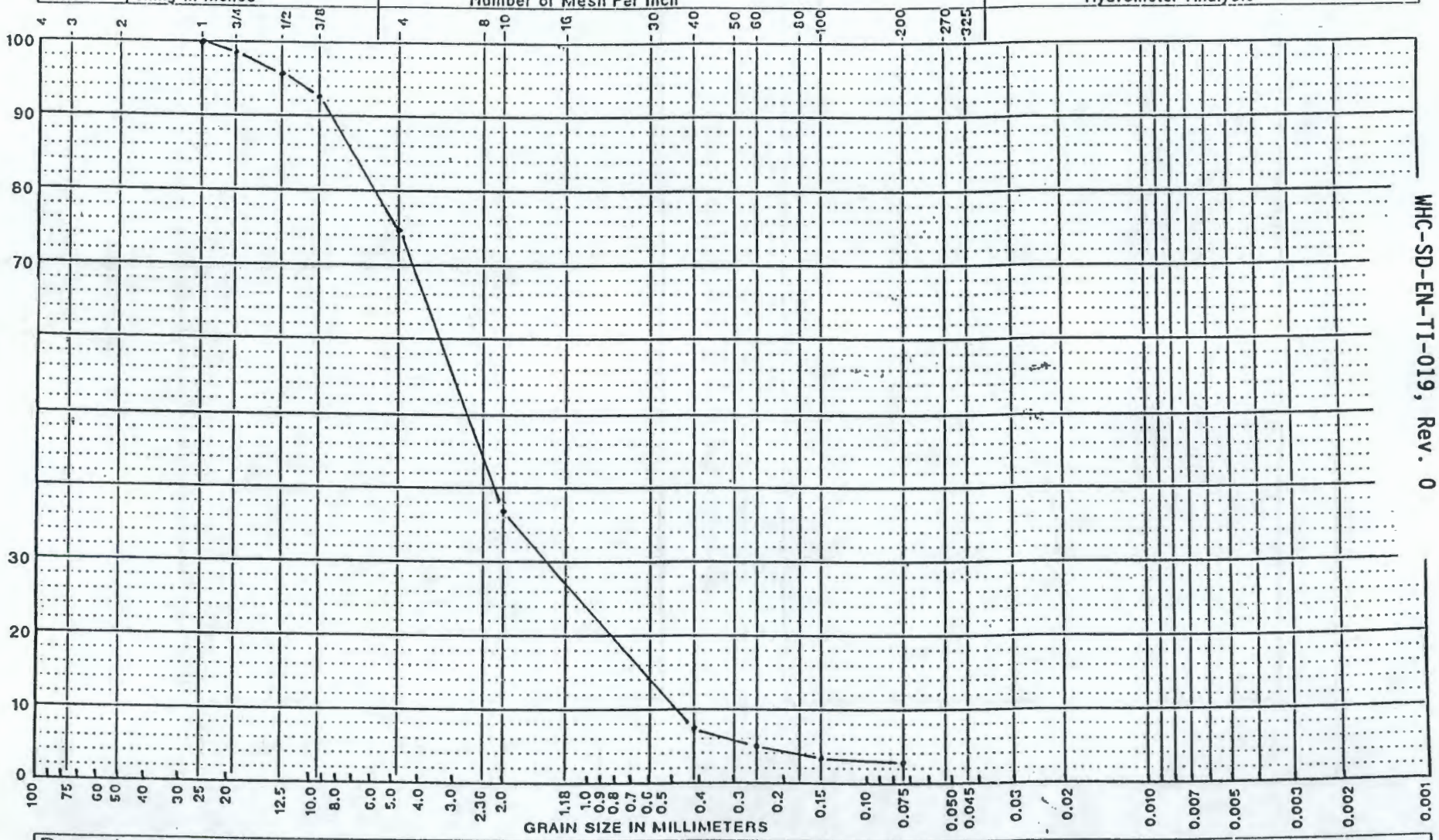

200-BP-1 : Well 299-E33-40, 14 m
Sandy Gravel: Hanford Fm: Gravel Sequence
Van Genuchten Curve Fitting
Parameters using Mualem
θ_{sd} = 0.3021
θ_r = 0.000
α = 0.1028 1/cm
n = 1.2734
Drainage Curve
Matric Potential (-cm)
Volumetric Moisture Content
K_{sd} = 6.00E-04 cm/s
Drainage Curve
Unsaturated Hydraulic Conductivity K(θ) (cm/s)
Volumetric Moisture Content

GRAIN SIZE ANALYSIS PLOT

Sample No. 1-0650 Page 1 of 1

Procedure No. ETAL-07 Rev. 1 Date Issued 11-15-89 Plotted By JERRY L. ENGLAND

Test Plan No. N/A Rev. N/A Date Issued N/A Date 3-7-91

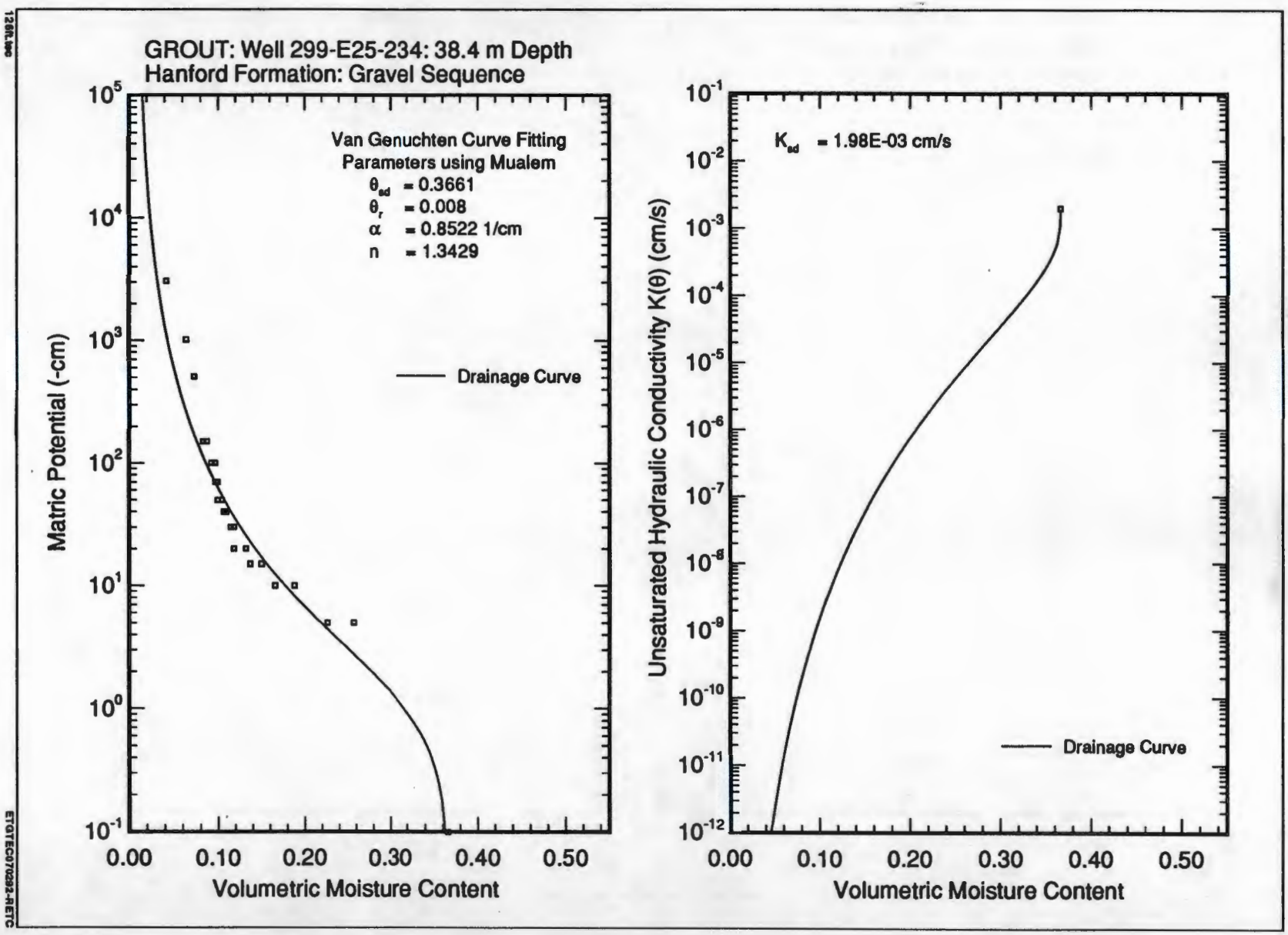


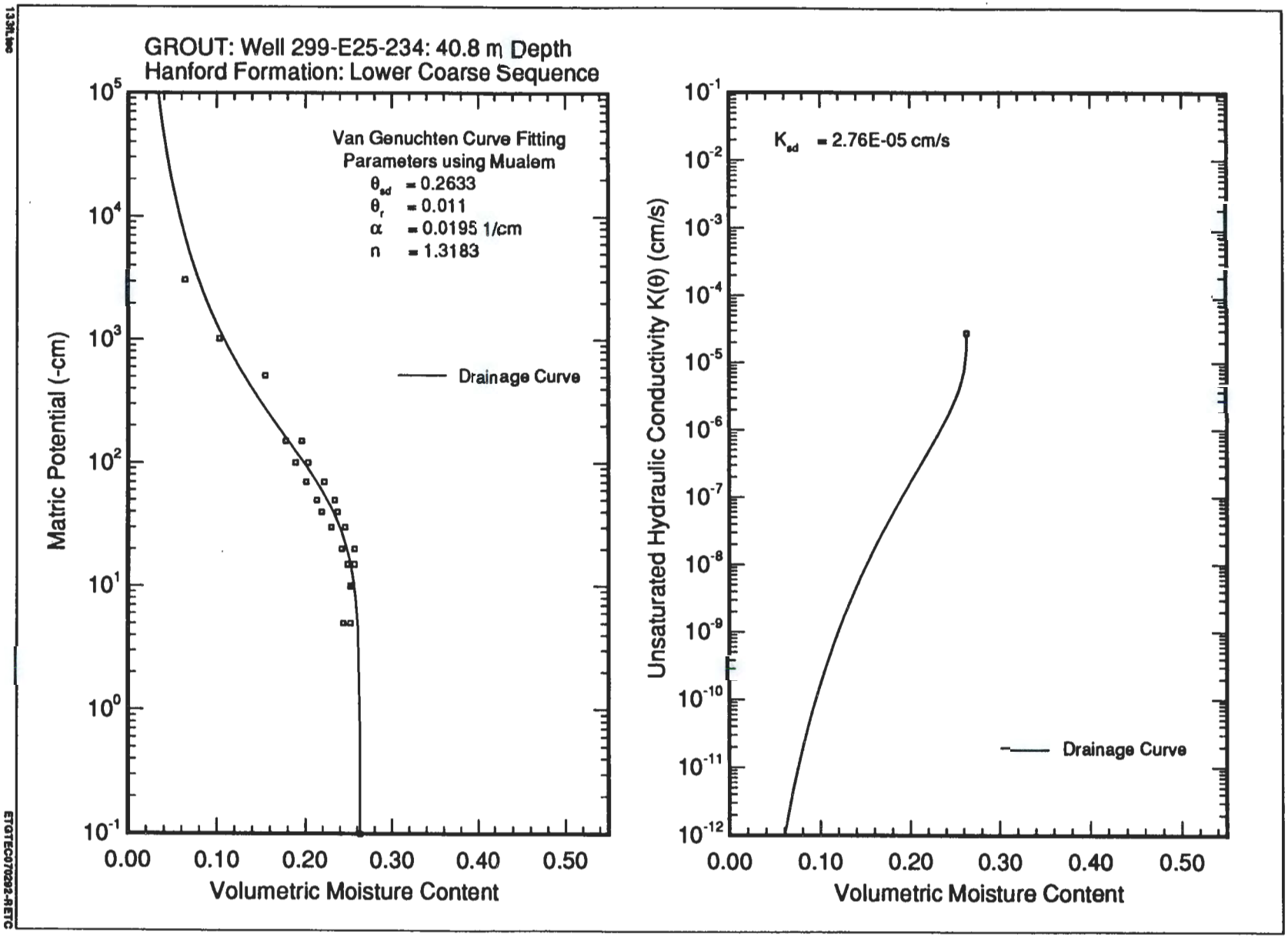
Remarks SANDY GRAVEL

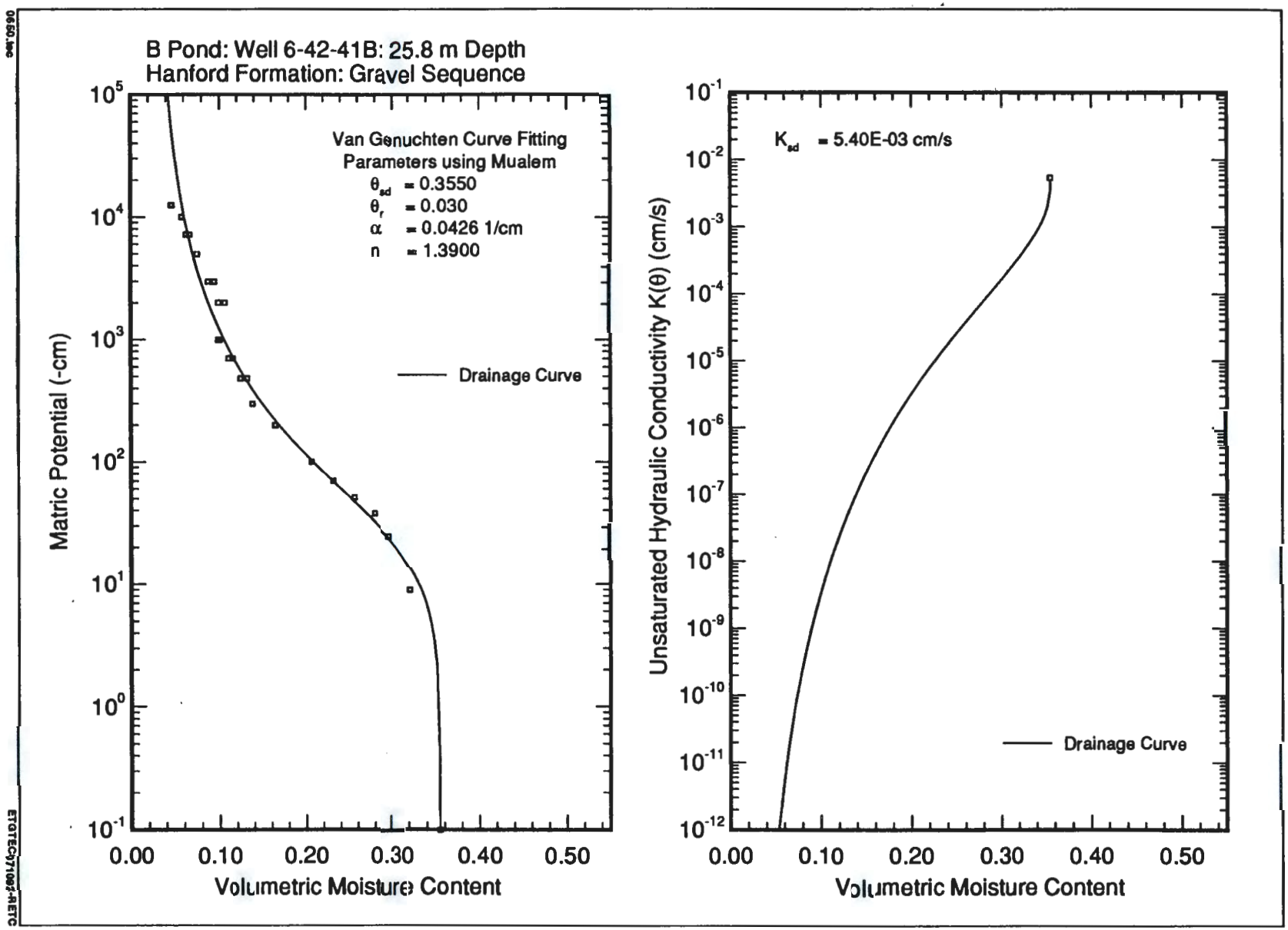
9-E33-40 45-47'

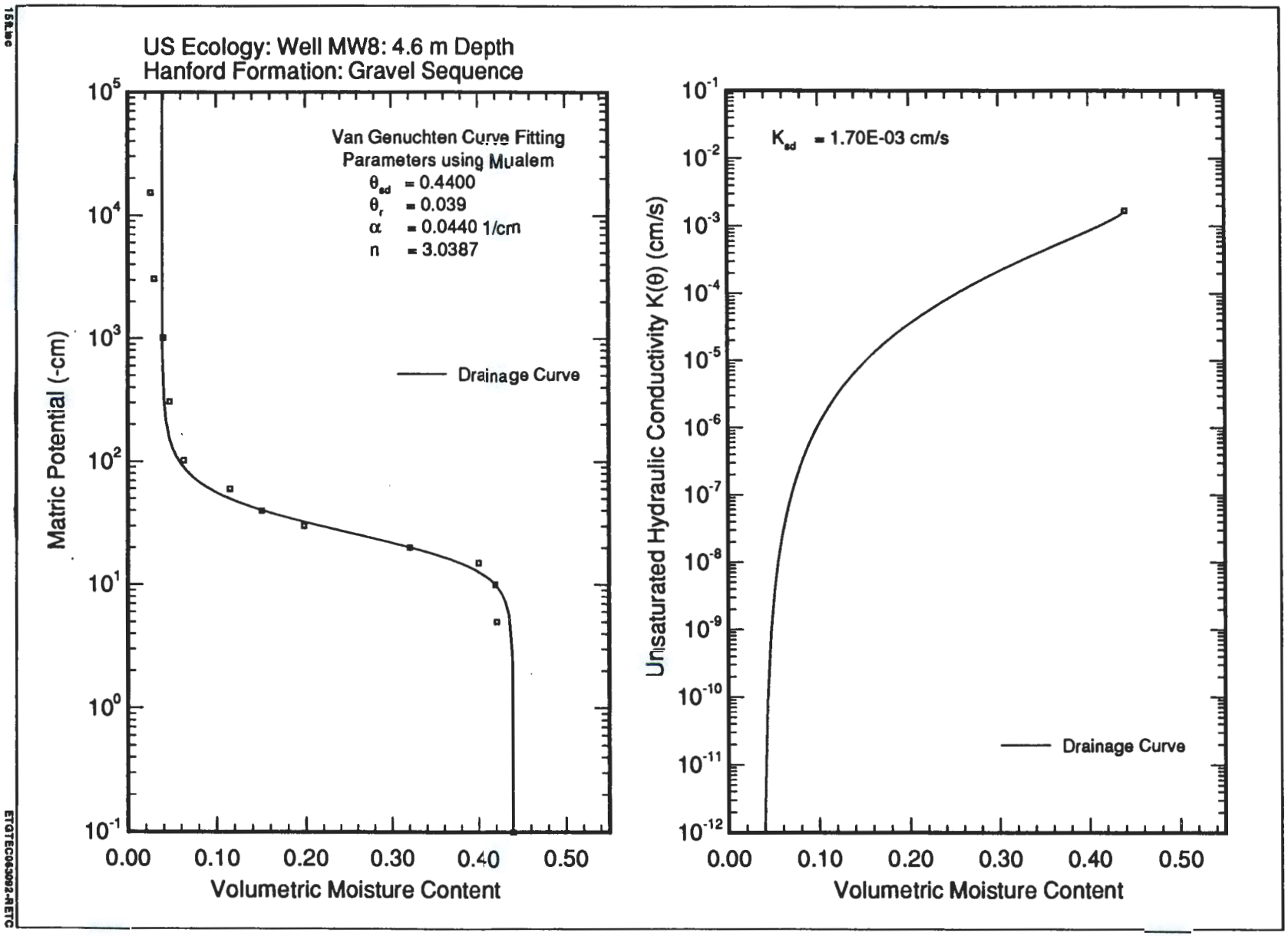
All data are accurately and completely recorded. The test operator was trained and used calibrated instruments.

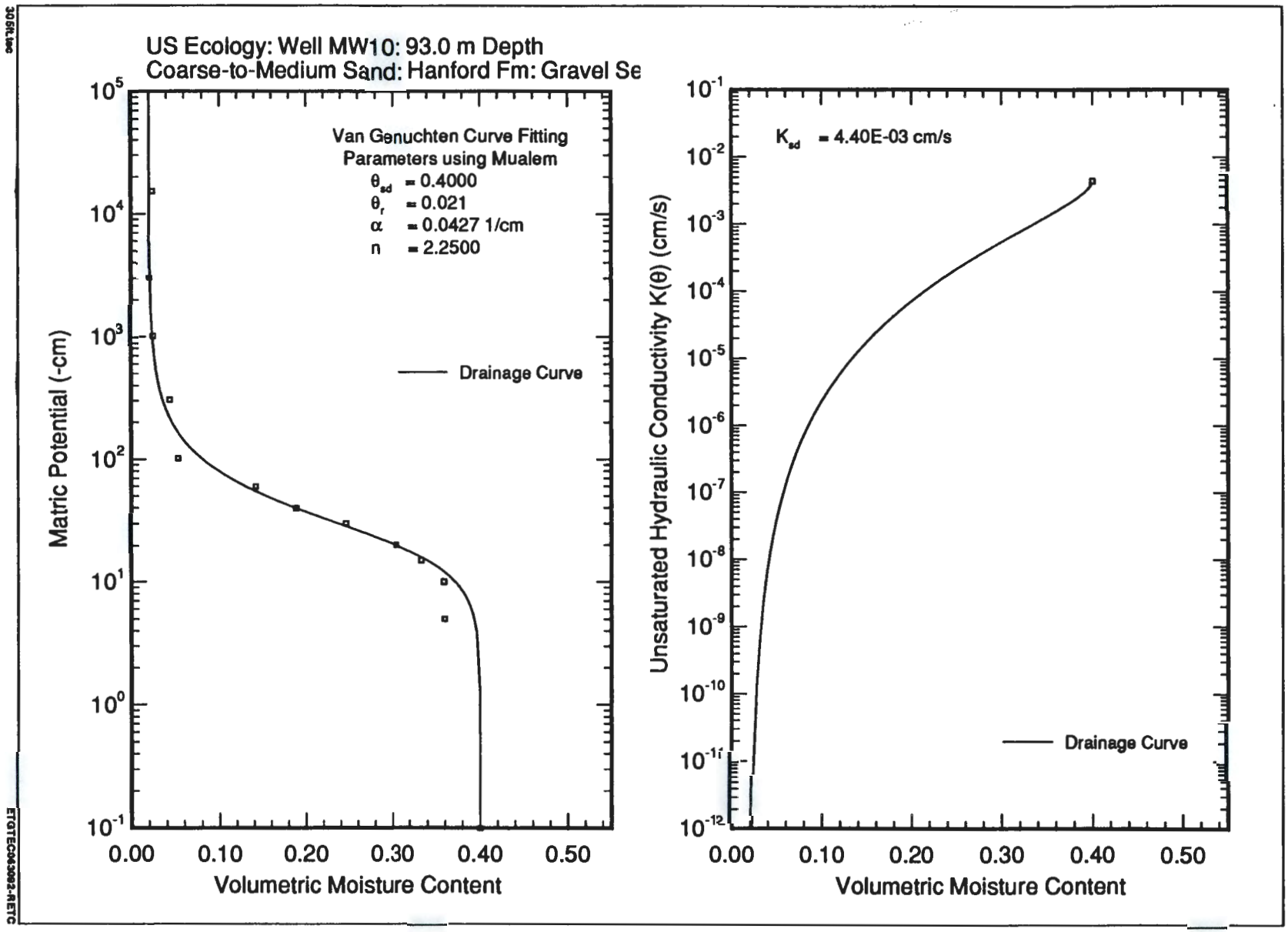
Checked By: R.G. ALEXANDER Date 3-14-9

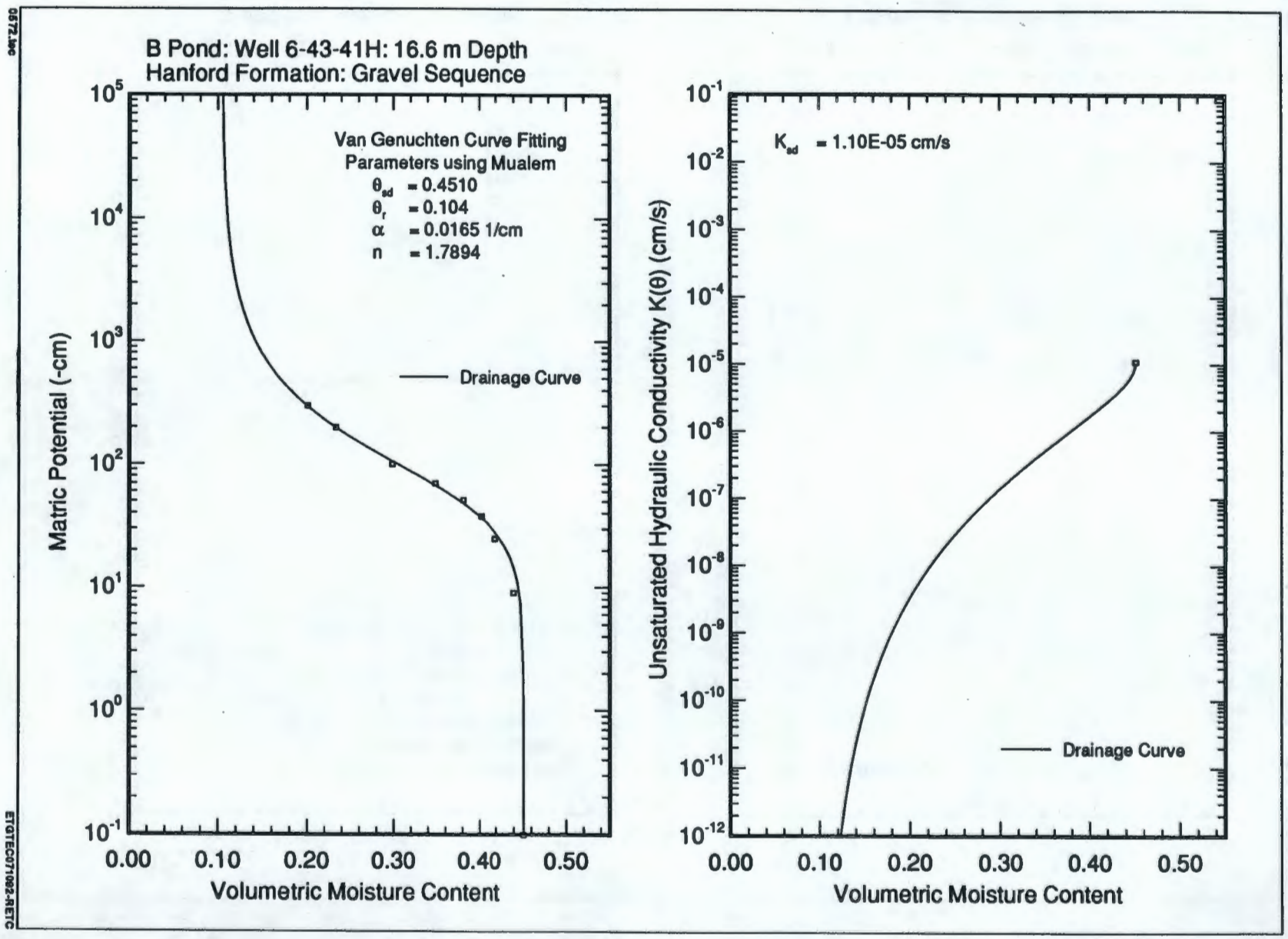

GROUT: Well 299-E25-234: 38.4 m Depth
Hanford Formation: Gravel Sequence
Van Genuchten Curve Fitting
Parameters using Mualem
θsd = 0.3661
θr = 0.008
α = 0.8522 1/cm
n = 1.3429
Drainage Curve
Matric Potential (-cm)
Volumetric Moisture Content
Ksd = 1.98E-03 cm/s
Drainage Curve
Unsaturated Hydraulic Conductivity K(θ) (cm/s)
Volumetric Moisture Content
126R.wpg
ETGTEC070292-RETC

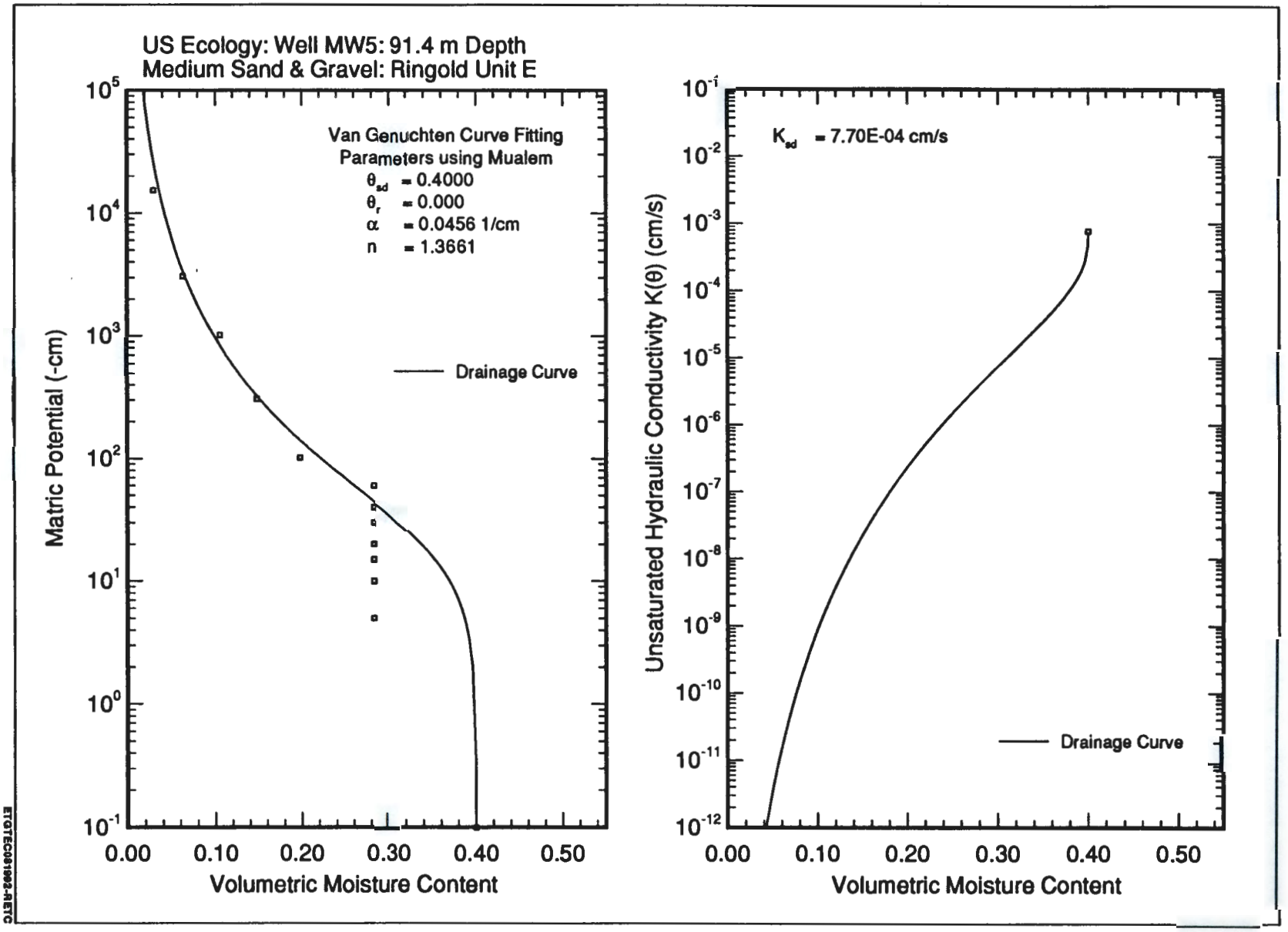

GROUT: Well 299-E25-234: 40.8 m Depth
Hanford Formation: Lower Coarse Sequence
Van Genuchten Curve Fitting
Parameters using Mualem
θsd = 0.2633
θr = 0.011
α = 0.0195 1/cm
n = 1.3183
Drainage Curve
Matric Potential (-cm)
Volumetric Moisture Content
Ksd = 2.76E-05 cm/s
Drainage Curve
Unsaturated Hydraulic Conductivity K(θ) (cm/s)
Volumetric Moisture Content


B Pond: Well 6-42-41B: 25.8 m Depth
Hanford Formation: Gravel Sequence
Van Genuchten Curve Fitting
Parameters using Mualem
θ_{sd} = 0.3550
θ_r = 0.030
α = 0.0426 1/cm
n = 1.3900
Drainage Curve
Matric Potential (-cm)
Volumetric Moisture Content
K_{sd} = 5.40E-03 cm/s
Drainage Curve
Unsaturated Hydraulic Conductivity K(θ) (cm/s)
Volumetric Moisture Content

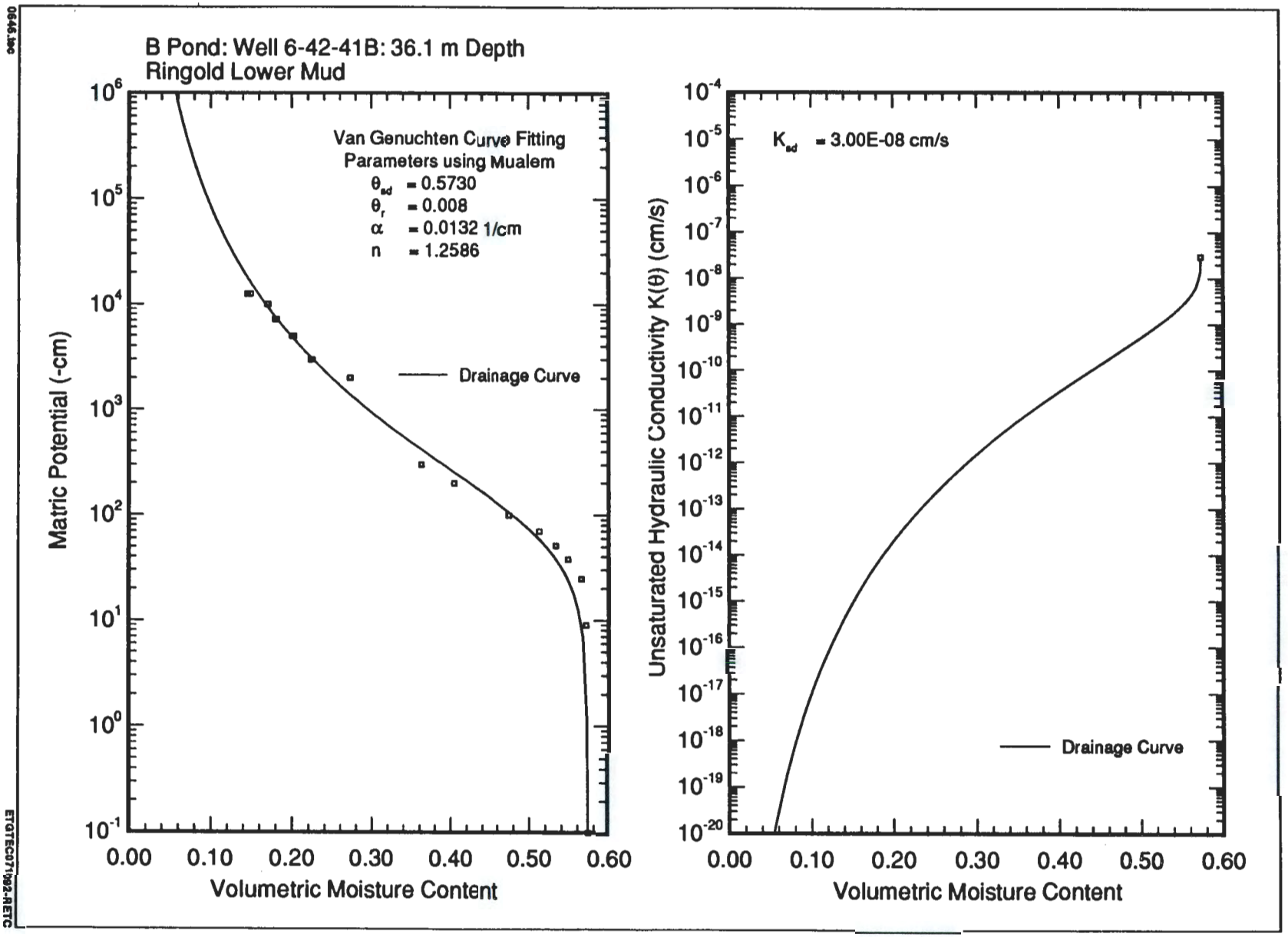

US Ecology: Well MW8: 4.6 m Depth
Hanford Formation: Gravel Sequence
Van Genuchten Curve Fitting
Parameters using Mualem
θsd = 0.4400
θr = 0.039
α = 0.0440 1/cm
n = 3.0387
Drainage Curve
Matric Potential (-cm)
Volumetric Moisture Content
Ksd = 1.70E-03 cm/s
Drainage Curve
Unsaturated Hydraulic Conductivity K(θ) (cm/s)
Volumetric Moisture Content

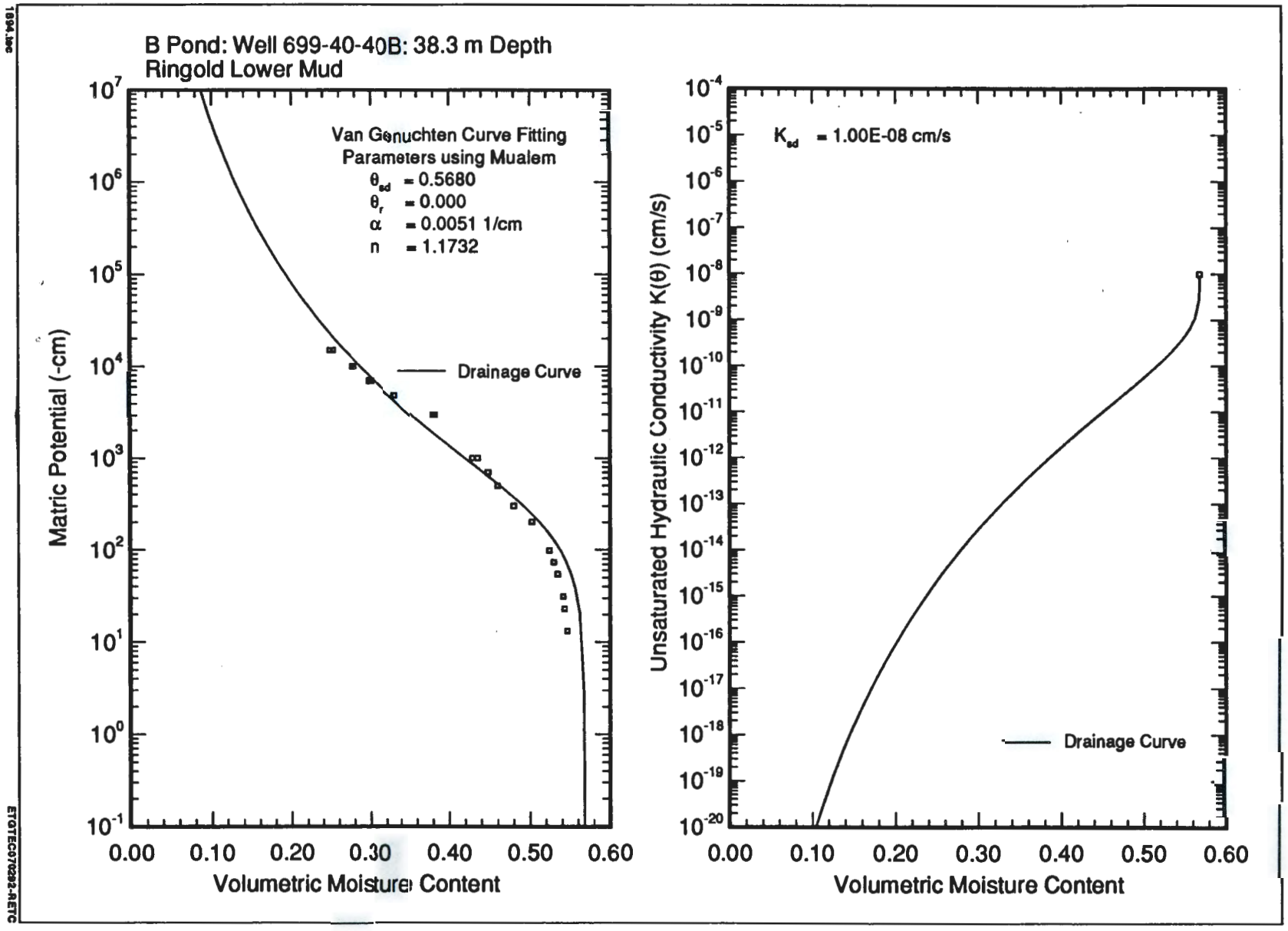

US Ecology: Well MW10: 93.0 m Depth
Coarse-to-Medium Sand: Hanford Fm: Gravel Se
Van Genuchten Curve Fitting
Parameters using Mualem
θsd = 0.4000
θr = 0.021
α = 0.0427 1/cm
n = 2.2500
Drainage Curve
Matric Potential (-cm)
Volumetric Moisture Content
Ksd = 4.40E-03 cm/s
Drainage Curve
Unsaturated Hydraulic Conductivity K(θ) (cm/s)
Volumetric Moisture Content


B Pond: Well 6-43-41H: 16.6 m Depth
Hanford Formation: Gravel Sequence
Van Genuchten Curve Fitting
Parameters using Mualem
θ_{sd} = 0.4510
θ_r = 0.104
α = 0.0165 1/cm
n = 1.7894
Drainage Curve
Matric Potential (-cm)
Volumetric Moisture Content
K_{sd} = 1.10E-05 cm/s
Drainage Curve
Unsaturated Hydraulic Conductivity K(θ) (cm/s)
Volumetric Moisture Content
0572.bmp
ETGTEC071092-RETC



ETGTEC091992-RETG


B Pond: Well 6-42-41B: 36.1 m Depth
Ringold Lower Mud
Van Genuchten Curve Fitting
Parameters using Mualem
θ_{sd} = 0.5730
θ_r = 0.008
α = 0.0132 1/cm
n = 1.2586
Drainage Curve
Matric Potential (-cm)
Volumetric Moisture Content
K_{sd} = 3.00E-08 cm/s
Drainage Curve
Unsaturated Hydraulic Conductivity K(θ) (cm/s)
Volumetric Moisture Content


B Pond: Well 699-40-40B: 38.3 m Depth
Ringold Lower Mud
Van Genuchten Curve Fitting
Parameters using Mualem
θ_{sd} = 0.5680
θ_r = 0.000
α = 0.0051 1/cm
n = 1.1732
Drainage Curve
Matric Potential (-cm)
Volumetric Moisture Content
K_{sd} = 1.00E-08 cm/s
Drainage Curve
Unsaturated Hydraulic Conductivity K(θ) (cm/s)
Volumetric Moisture Content

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APPENDIX B

BAROMETRIC EFFICIENCY TEST DATA

9413096.0259

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TABLES:

B-1 Barometric efficiency test data for well 299-E33-40 . . . . . B-1

B-2 Barometric efficiency test data for well 699-50-53B B-5

B-3 Barometric efficiency test data for well 699-49-57B B-9

B-4 Barometric efficiency test data for well 699-49-55B B-13

B-5 Barometric efficiency test data for well 699-54-57 . . . . . B-17

9413096.0259

Table B-1. Barometric efficiency test data for well 299-E33-40.

DATE	HOUR	HEAD (Ft. AMSL)	B. PRES. (In. Hg)
5/15/92	13	403.06	29.02
5/15/92	14	403.06	29.00
5/15/92	15	403.07	28.99
5/15/92	16	403.08	29.00
5/15/92	17	403.09	29.00
5/15/92	18	403.09	29.02
5/15/92	19	403.09	29.04
5/15/92	20	403.08	29.08
5/15/92	21	403.07	29.12
5/15/92	22	403.05	29.15
5/15/92	23	403.04	29.18
5/16/92	0	403.03	29.20
5/16/92	1	403.02	29.21
5/16/92	2	403.02	29.23
5/16/92	3	403.02	29.24
5/16/92	4	403.02	29.24
5/16/92	5	403.02	29.26
5/16/92	6	403.01	29.28
5/16/92	7	403.00	29.29
5/16/92	8	403.00	29.29
5/16/92	9	403.00	29.28
5/16/92	10	403.00	29.27
5/16/92	11	403.00	29.26
5/16/92	12	403.00	29.24
5/16/92	13	403.01	29.22
5/16/92	14	403.03	29.20
5/16/92	15	403.04	29.18
5/16/92	16	403.06	29.16
5/16/92	17	403.08	29.14
5/16/92	18	403.10	29.12
5/16/92	19	403.11	29.11
5/16/92	20	403.12	29.12
5/16/92	21	403.12	29.12
5/16/92	22	403.11	29.12
5/16/92	23	403.11	29.12
5/17/92	0	403.11	29.13
5/17/92	1	403.11	29.12
5/17/92	2	403.12	29.12
5/17/92	3	403.12	29.11
5/17/92	4	403.13	29.11
5/17/92	5	403.13	29.12
5/17/92	6	403.12	29.12
5/17/92	7	403.12	29.12
5/17/92	8	403.12	29.12
5/17/92	9	403.11	29.12
5/17/92	10	403.11	29.11
5/17/92	11	403.11	29.10
5/17/92	12	403.12	29.08
5/17/92	13	403.13	29.06
5/17/92	14	403.14	29.04
5/17/92	15	403.15	29.01
5/17/92	16	403.17	29.00
5/17/92	17	403.19	28.97
5/17/92	18	403.21	28.97
5/17/92	19	403.21	28.99
5/17/92	20	403.20	29.02
5/17/92	21	403.20	29.01
5/17/92	22	403.20	29.00
5/17/92	23	403.20	29.00
5/18/92	0	403.20	29.01
5/18/92	1	403.20	29.01
5/18/92	2	403.20	29.01
5/18/92	3	403.20	29.02
5/18/92	4	403.21	29.02
5/18/92	5	403.20	29.04
5/18/92	6	403.20	29.05
5/18/92	7	403.19	29.06
5/18/92	8	403.19	29.06
5/18/92	9	403.19	29.05
5/18/92	10	403.19	29.05
5/18/92	11	403.18	29.05
5/18/92	12	403.18	29.03
5/18/92	13	403.19	29.01
5/18/92	14	403.20	28.99
5/18/92	15	403.21	28.99
5/18/92	16	403.22	29.00
5/18/92	17	403.22	29.00
5/18/92	18	403.23	29.00
5/18/92	19	403.23	29.00
5/18/92	20	403.24	29.03
5/18/92	21	403.22	29.04
5/18/92	22	403.22	29.04
5/18/92	23	403.23	29.05
5/19/92	0	403.22	29.05
5/19/92	1	403.22	29.05
5/19/92	2	403.22	29.04
5/19/92	3	403.22	29.04
5/19/92	4	403.23	29.04
5/19/92	5	403.23	29.05
5/19/92	6	403.22	29.05
5/19/92	7	403.22	29.04
5/19/92	8	403.23	29.04
5/19/92	9	403.23	29.03
5/19/92	10	403.23	29.02
5/19/92	11	403.23	29.01
5/19/92	12	403.24	29.00
5/19/92	13	403.24	28.98
5/19/92	14	403.25	28.96
5/19/92	15	403.26	28.93
5/19/92	16	403.27	28.91
5/19/92	17	403.28	28.90
5/19/92	18	403.29	28.89
5/19/92	19	403.29	28.91
5/19/92	20	403.29	28.92
5/19/92	21	403.29	28.93
5/19/92	22	403.28	28.95
5/19/92	23	403.28	28.97
5/20/92	0	403.27	28.96
5/20/92	1	403.27	28.97
5/20/92	2	403.27	28.99
5/20/92	3	403.26	29.01
5/20/92	4	403.25	29.02
5/20/92	5	403.25	29.04
5/20/92	6	403.24	29.06
5/20/92	7	403.23	29.07
5/20/92	8	403.22	29.08
5/20/92	9	403.22	29.09
5/20/92	10	403.21	29.11
5/20/92	11	403.21	29.11
5/20/92	12	403.21	29.12
5/20/92	13	403.21	29.12
5/20/92	14	403.20	29.12
5/20/92	15	403.20	29.12
5/20/92	16	403.20	29.13
5/20/92	17	403.21	29.14
5/20/92	18	403.20	29.16
5/20/92	19	403.19	29.20
5/20/92	20	403.19	29.23
5/20/92	21	403.18	29.26
5/20/92	22	403.17	29.28
5/20/92	23	403.17	29.29
5/21/92	0	403.16	29.30
5/21/92	1	403.16	29.31
5/21/92	2	403.16	29.32
5/21/92	3	403.15	29.33
5/21/92	4	403.15	29.34
5/21/92	5	403.15	29.35
5/21/92	6	403.14	29.37
5/21/92	7	403.14	29.37
5/21/92	8	403.13	29.38
5/21/92	9	403.13	29.38
5/21/92	10	403.13	29.37
5/21/92	11	403.16	29.37
5/21/92	12	403.16	29.35
5/21/92	13	403.16	29.34
5/21/92	14	403.17	29.33
5/21/92	15	403.17	29.32
5/21/92	16	403.17	29.32
5/21/92	17	403.18	29.30
5/21/92	18	403.18	29.30
5/21/92	19	403.19	29.32
5/21/92	20	403.19	29.33
5/21/92	21	403.18	29.34
5/21/92	22	403.18	29.36
5/21/92	23	403.18	29.36
5/22/92	0	403.18	29.36
5/22/92	1	403.18	29.36
5/22/92	2	403.18	29.36
5/22/92	3	403.18	29.35
5/22/92	4	403.18	29.35
5/22/92	5	403.17	29.35
5/22/92	6	403.17	29.36
5/22/92	7	403.17	29.37
5/22/92	8	403.16	29.37
5/22/92	9	403.16	29.37

9413096.0269

Table B-1. Barometric efficiency test data for well 299-E33-40.

DATE	HOUR	HEAD (Ft. AMSL)	B. PRES. (In. Hg)
5/22/92	10	403.17	29.36
5/22/92	11	403.18	29.34
5/22/92	12	403.19	29.32
5/22/92	13	403.19	29.30
5/22/92	14	403.20	29.29
5/22/92	15	403.21	29.26
5/22/92	16	403.21	29.26
5/22/92	17	403.22	29.25
5/22/92	18	403.22	29.24
5/22/92	19	403.23	29.24
5/22/92	20	403.23	29.25
5/22/92	21	403.22	29.26
5/22/92	22	403.23	29.27
5/22/92	23	403.23	29.27
5/23/92	0	403.23	29.27
5/23/92	1	403.23	29.27
5/23/92	2	403.23	29.27
5/23/92	3	403.23	29.26
5/23/92	4	403.22	29.27
5/23/92	5	403.22	29.27
5/23/92	6	403.22	29.28
5/23/92	7	403.21	29.29
5/23/92	8	403.21	29.29
5/23/92	9	403.21	29.29
5/23/92	10	403.21	29.30
5/23/92	11	403.21	29.28
5/23/92	12	403.23	29.26
5/23/92	13	403.23	29.24
5/23/92	14	403.24	29.22
5/23/92	15	403.25	29.20
5/23/92	16	403.26	29.19
5/23/92	17	403.26	29.17
5/23/92	18	403.27	29.17
5/23/92	19	403.27	29.17
5/23/92	20	403.27	29.17
5/23/92	21	403.27	29.17
5/23/92	22	403.27	29.18
5/23/92	23	403.27	29.19
5/24/92	0	403.27	29.19
5/24/92	1	403.27	29.19
5/24/92	2	403.27	29.20
5/24/92	3	403.26	29.20
5/24/92	4	403.26	29.21
5/24/92	5	403.25	29.22
5/24/92	6	403.25	29.23
5/24/92	7	403.24	29.24
5/24/92	8	403.24	29.24
5/24/92	9	403.24	29.23
5/24/92	10	403.25	29.22
5/24/92	11	403.25	29.20
5/24/92	12	403.26	29.18
5/24/92	13	403.27	29.15
5/24/92	14	403.28	29.13
5/24/92	15	403.29	29.11
5/24/92	16	403.30	29.09
5/24/92	17	403.30	29.07
5/24/92	18	403.31	29.05
5/24/92	19	403.32	29.05
5/24/92	20	403.32	29.04
5/24/92	21	403.32	29.05
5/24/92	22	403.32	29.06
5/24/92	23	403.32	29.06
5/25/92	0	403.32	29.06
5/25/92	1	403.32	29.06
5/25/92	2	403.32	29.05
5/25/92	3	403.32	29.05
5/25/92	4	403.32	29.05
5/25/92	5	403.31	29.06
5/25/92	6	403.30	29.07
5/25/92	7	403.30	29.06
5/25/92	8	403.29	29.06
5/25/92	9	403.30	29.05
5/25/92	10	403.30	29.04
5/25/92	11	403.31	29.02
5/25/92	12	403.32	29.00
5/25/92	13	403.33	28.97
5/25/92	14	403.34	28.95
5/25/92	15	403.35	28.93
5/25/92	16	403.36	28.91
5/25/92	17	403.37	28.90
5/25/92	18	403.37	28.91
5/25/92	19	403.36	28.94
5/25/92	20	403.34	28.98
5/25/92	21	403.33	28.98
5/25/92	22	403.33	29.02
5/25/92	23	403.31	29.03
5/26/92	0	403.31	29.04
5/26/92	1	403.30	29.04
5/26/92	2	403.30	29.04
5/26/92	3	403.30	29.04
5/26/92	4	403.30	29.05
5/26/92	5	403.30	29.07
5/26/92	6	403.29	29.09
5/26/92	7	403.28	29.09
5/26/92	8	403.27	29.09
5/26/92	9	403.27	29.09
5/26/92	10	403.27	29.10
5/26/92	11	403.27	29.09
5/26/92	12	403.28	29.08
5/26/92	13	403.28	29.07
5/26/92	14	403.29	29.06
5/26/92	15	403.29	29.06
5/26/92	16	403.29	29.08
5/26/92	17	403.29	29.08
5/26/92	18	403.28	29.08
5/26/92	19	403.29	29.10
5/26/92	20	403.27	29.10
5/26/92	21	403.27	29.12
5/26/92	22	403.26	29.13
5/26/92	23	403.26	29.14
5/27/92	0	403.26	29.14
5/27/92	1	403.26	29.16
5/27/92	2	403.25	29.16
5/27/92	3	403.25	29.18
5/27/92	4	403.24	29.18
5/27/92	5	403.24	29.18
5/27/92	6	403.23	29.20
5/27/92	7	403.22	29.20
5/27/92	8	403.21	29.20
5/27/92	9	403.21	29.19
5/27/92	10	403.22	29.21
5/27/92	11	403.22	29.20
5/27/92	12	403.23	29.17
5/27/92	13	403.25	29.14
5/27/92	14	403.26	29.13
5/27/92	15	403.27	29.11
5/27/92	16	403.28	29.09
5/27/92	17	403.28	29.08
5/27/92	18	403.29	29.08
5/27/92	19	403.29	29.08
5/27/92	20	403.28	29.08
5/27/92	21	403.27	29.10
5/27/92	22	403.27	29.11
5/27/92	23	403.26	29.11
5/28/92	0	403.26	29.11
5/28/92	1	403.26	29.11
5/28/92	2	403.27	29.11
5/28/92	3	403.26	29.11
5/28/92	4	403.26	29.13
5/28/92	5	403.25	29.14
5/28/92	6	403.25	29.14
5/28/92	7	403.24	29.15
5/28/92	8	403.23	29.15
5/28/92	9	403.23	29.14
5/28/92	10	403.23	29.13
5/28/92	11	403.24	29.12
5/28/92	12	403.25	29.10
5/28/92	13	403.26	29.08
5/28/92	14	403.27	29.06
5/28/92	15	403.28	29.05
5/28/92	16	403.29	29.04
5/28/92	17	403.30	29.03
5/28/92	18	403.30	29.03
5/28/92	19	403.29	29.04
5/28/92	20	403.29	29.06
5/28/92	21	403.28	29.08
5/28/92	22	403.27	29.10
5/28/92	23	403.26	29.10
5/29/92	0	403.26	29.10
5/29/92	1	403.26	29.10
5/29/92	2	403.26	29.12
5/29/92	3	403.25	29.13
5/29/92	4	403.25	29.14
5/29/92	5	403.24	29.16
5/29/92	6	403.24	29.18

9413096.0261

Table B-1. Barometric efficiency test data for well 299-E33-40.

DATE	HOUR	HEAD (Ft. AMSL)	B. PRES. (In. Hg)
5/29/92	7	403.22	29.18
5/29/92	8	403.21	29.18
5/29/92	9	403.21	29.18
5/29/92	10	403.21	29.18
5/29/92	11	403.22	29.16
5/29/92	12	403.22	29.14
5/29/92	13	403.23	29.12
5/29/92	14	403.26	29.11
5/29/92	15	403.26	29.09
5/29/92	16	403.27	29.08
5/29/92	17	403.28	29.06
5/29/92	18	403.28	29.07
5/29/92	19	403.28	29.07
5/29/92	20	403.28	29.08
5/29/92	21	403.27	29.10
5/29/92	22	403.26	29.12
5/29/92	23	403.25	29.11
5/30/92	0	403.25	29.12
5/30/92	1	403.25	29.12
5/30/92	2	403.25	29.13
5/30/92	3	403.24	29.14
5/30/92	4	403.24	29.16
5/30/92	5	403.23	29.18
5/30/92	6	403.22	29.20
5/30/92	7	403.21	29.20
5/30/92	8	403.20	29.22
5/30/92	9	403.19	29.22
5/30/92	10	403.19	29.21
5/30/92	11	403.19	29.21
5/30/92	12	403.20	29.20
5/30/92	13	403.20	29.20
5/30/92	14	403.21	29.18
5/30/92	15	403.22	29.17
5/30/92	16	403.24	29.15
5/30/92	17	403.25	29.14
5/30/92	18	403.25	29.14
5/30/92	19	403.26	29.14
5/30/92	20	403.26	29.14
5/30/92	21	403.25	29.16
5/30/92	22	403.24	29.18
5/30/92	23	403.23	29.19
5/31/92	0	403.23	29.19
5/31/92	1	403.22	29.19
5/31/92	2	403.22	29.21
5/31/92	3	403.22	29.22
5/31/92	4	403.22	29.22
5/31/92	5	403.21	29.23
5/31/92	6	403.21	29.24
5/31/92	7	403.20	29.26
5/31/92	8	403.18	29.26
5/31/92	9	403.18	29.26
5/31/92	10	403.18	29.25
5/31/92	11	403.18	29.24
5/31/92	12	403.18	29.22
5/31/92	13	403.19	29.20
5/31/92	14	403.20	29.19
5/31/92	15	403.21	29.17
5/31/92	16	403.23	29.15
5/31/92	17	403.24	29.13
5/31/92	18	403.26	29.13
5/31/92	19	403.26	29.12
5/31/92	20	403.27	29.12
5/31/92	21	403.26	29.12
5/31/92	22	403.26	29.13
5/31/92	23	403.25	29.13
6/1/92	0	403.25	29.12
6/1/92	1	403.25	29.13
6/1/92	2	403.25	29.12
6/1/92	3	403.25	29.11
6/1/92	4	403.25	29.11
6/1/92	5	403.26	29.11
6/1/92	6	403.26	29.11
6/1/92	7	403.25	29.12
6/1/92	8	403.24	29.11
6/1/92	9	403.24	29.10
6/1/92	10	403.24	29.09
6/1/92	11	403.24	29.08
6/1/92	12	403.24	29.07
6/1/92	13	403.25	29.05
6/1/92	14	403.26	29.05
6/1/92	15	403.27	29.04
6/1/92	16	403.27	29.02
6/1/92	17	403.28	29.02
6/1/92	18	403.28	29.03
6/1/92	19	403.29	29.04
6/1/92	20	403.29	29.06
6/1/92	21	403.27	29.09
6/1/92	22	403.26	29.11
6/1/92	23	403.25	29.11
6/2/92	0	403.25	29.12
6/2/92	1	403.23	29.16
6/2/92	2	403.22	29.18
6/2/92	3	403.22	29.19
6/2/92	4	403.21	29.21
6/2/92	5	403.21	29.23
6/2/92	6	403.21	29.24
6/2/92	7	403.20	29.25
6/2/92	8	403.19	29.25
6/2/92	9	403.19	29.25
6/2/92	10	403.19	29.23
6/2/92	11	403.19	29.21
6/2/92	12	403.20	29.19
6/2/92	13	403.20	29.17
6/2/92	14	403.21	29.14
6/2/92	15	403.22	29.12
6/2/92	16	403.24	29.10
6/2/92	17	403.24	29.09
6/2/92	18	403.25	29.09
6/2/92	19	403.26	29.10
6/2/92	20	403.26	29.11
6/2/92	21	403.25	29.13
6/2/92	22	403.24	29.15
6/2/92	23	403.23	29.16
6/3/92	0	403.22	29.18
6/3/92	1	403.21	29.19
6/3/92	2	403.21	29.20
6/3/92	3	403.21	29.22
6/3/92	4	403.20	29.24
6/3/92	5	403.20	29.26
6/3/92	6	403.19	29.28
6/3/92	7	403.19	29.29
6/3/92	8	403.18	29.29
6/3/92	9	403.18	29.28
6/3/92	10	403.18	29.28
6/3/92	11	403.18	29.27
6/3/92	12	403.18	29.25
6/3/92	13	403.18	29.24
6/3/92	14	403.18	29.21
6/3/92	15	403.20	29.18
6/3/92	16	403.21	29.16
6/3/92	17	403.22	29.14
6/3/92	18	403.24	29.12
6/3/92	19	403.25	29.12
6/3/92	20	403.25	29.12
6/3/92	21	403.25	29.12
6/3/92	22	403.26	29.12
6/3/92	23	403.25	29.12
6/4/92	0	403.25	29.11
6/4/92	1	403.25	29.10
6/4/92	2	403.25	29.09
6/4/92	3	403.25	29.08
6/4/92	4	403.26	29.09
6/4/92	5	403.26	29.09
6/4/92	6	403.25	29.09
6/4/92	7	403.25	29.09
6/4/92	8	403.26	29.09
6/4/92	9	403.25	29.09
6/4/92	10	403.26	29.08
6/4/92	11	403.25	29.08
6/4/92	12	403.25	29.08
6/4/92	13	403.25	29.08
6/4/92	14	403.25	29.07
6/4/92	15	403.25	29.06
6/4/92	16	403.25	29.05
6/4/92	17	403.25	29.03
6/4/92	18	403.27	29.03
6/4/92	19	403.27	29.03
6/4/92	20	403.27	29.03
6/4/92	21	403.27	29.06
6/4/92	22	403.26	29.07
6/4/92	23	403.26	29.08
6/5/92	0	403.26	29.08
6/5/92	1	403.25	29.09
6/5/92	2	403.25	29.09
6/5/92	3	403.25	29.09

Table B-1. Barometric efficiency test data for well 299-E33-40.

DATE	HOUR	HEAD (Ft. AMSL)	B. PRES. (In. Hg)
6/5/92	4	403.25	29.09
6/5/92	5	403.24	29.10
6/5/92	6	403.24	29.11
6/5/92	7	403.23	29.11
6/5/92	8	403.23	29.11
6/5/92	9	403.23	29.10
6/5/92	10	403.24	29.09
6/5/92	11	403.25	29.08
6/5/92	12	403.25	29.07
6/5/92	13	403.25	29.06
6/5/92	14	403.25	29.03
6/5/92	15	403.26	29.01
6/5/92	16	403.27	28.99
6/5/92	17	403.27	28.97
6/5/92	18	403.28	28.96
6/5/92	19	403.29	28.96
6/5/92	20	403.29	28.96
6/5/92	21	403.30	28.96
6/5/92	22	403.30	28.97
6/5/92	23	403.29	28.98
6/6/92	0	403.29	28.98
6/6/92	1	403.29	28.98
6/6/92	2	403.29	28.97
6/6/92	3	403.28	28.97
6/6/92	4	403.28	28.98
6/6/92	5	403.27	28.98
6/6/92	6	403.27	28.99
6/6/92	7	403.27	29.00
6/6/92	8	403.27	29.00
6/6/92	9	403.27	28.99
6/6/92	10	403.27	28.98
6/6/92	11	403.28	28.96
6/6/92	12	403.28	28.94
6/6/92	13	403.29	28.92
6/6/92	14	403.29	28.90
6/6/92	15	403.30	28.89
6/6/92	16	403.31	28.87
6/6/92	17	403.31	28.84
6/6/92	18	403.32	28.84
6/6/92	19	403.32	28.85
6/6/92	20	403.32	28.86
6/6/92	21	403.32	28.88
6/6/92	22	403.31	28.89
6/6/92	23	403.30	28.89
6/7/92	0	403.31	28.89
6/7/92	1	403.30	28.90
6/7/92	2	403.30	28.91
6/7/92	3	403.29	28.92
6/7/92	4	403.28	28.93
6/7/92	5	403.28	28.95
6/7/92	6	403.27	28.96
6/7/92	7	403.26	28.97
6/7/92	8	403.26	28.99
6/7/92	9	403.26	28.99
6/7/92	10	403.26	28.99
6/7/92	11	403.26	28.98
6/7/92	12	403.26	28.97
6/7/92	13	403.27	28.96
6/7/92	14	403.27	28.95
6/7/92	15	403.28	28.94
6/7/92	16	403.28	28.93
6/7/92	17	403.28	28.94
6/7/92	18	403.28	28.94
6/7/92	19	403.27	28.95
6/7/92	20	403.27	28.97
6/7/92	21	403.27	28.98
6/7/92	22	403.26	28.99
6/7/92	23	403.26	29.03
6/8/92	0	403.25	29.04
6/8/92	1	403.24	29.05
6/8/92	2	403.23	29.05
6/8/92	3	403.23	29.07
6/8/92	4	403.22	29.09
6/8/92	5	403.21	29.10
6/8/92	6	403.21	29.11
6/8/92	7	403.20	29.11
6/8/92	8	403.20	29.11
6/8/92	9	403.20	29.09
6/8/92	10	403.21	29.08
6/8/92	11	403.22	29.05
6/8/92	12	403.23	29.03

9413096.0365

Table B-2. Barometric efficiency test data for well 699-50-53B.

DATE	TIME	HEAD (Ft. AMSL)	B. PRES. (In. Hg)
5/22/91	11	403.03	29.21
5/22/91	12	403.02	29.20
5/22/91	13	403.03	29.18
5/22/91	14	403.05	29.17
5/22/91	15	403.07	29.16
5/22/91	16	403.08	29.14
5/22/91	17	403.09	29.14
5/22/91	18	403.10	29.14
5/22/91	19	403.11	29.16
5/22/91	20	403.11	29.18
5/22/91	21	403.11	29.20
5/22/91	22	403.10	29.22
5/22/91	23	403.09	29.23
5/23/91	0	403.09	29.25
5/23/91	1	403.09	29.26
5/23/91	2	403.09	29.27
5/23/91	3	403.09	29.27
5/23/91	4	403.09	29.26
5/23/91	5	403.09	29.28
5/23/91	6	403.09	29.28
5/23/91	7	403.08	29.28
5/23/91	8	403.07	29.28
5/23/91	9	403.07	29.28
5/23/91	10	403.07	29.28
5/23/91	11	403.07	29.26
5/23/91	12	403.08	29.24
5/23/91	13	403.10	29.22
5/23/91	14	403.11	29.20
5/23/91	15	403.13	29.19
5/23/91	16	403.14	29.17
5/23/91	17	403.14	29.15
5/23/91	18	403.16	29.15
5/23/91	19	403.16	29.15
5/23/91	20	403.17	29.16
5/23/91	21	403.17	29.17
5/23/91	22	403.17	29.18
5/23/91	23	403.16	29.18
5/24/91	0	403.16	29.18
5/24/91	1	403.16	29.19
5/24/91	2	403.16	29.18
5/24/91	3	403.16	29.18
5/24/91	4	403.16	29.16
5/24/91	5	403.16	29.17
5/24/91	6	403.16	29.17
5/24/91	7	403.15	29.16
5/24/91	8	403.15	29.16
5/24/91	9	403.14	29.16
5/24/91	10	403.13	29.14
5/24/91	11	403.15	29.14
5/24/91	12	403.15	29.15
5/24/91	13	403.16	29.14
5/24/91	14	403.15	29.12
5/24/91	15	403.17	29.12
5/24/91	16	403.15	29.11
5/24/91	17	403.16	29.11
5/24/91	18	403.17	29.11
5/24/91	19	403.17	29.13
5/24/91	20	403.17	29.15
5/24/91	21	403.17	29.18
5/24/91	22	403.17	29.20
5/24/91	23	403.17	29.22
5/25/91	0	403.17	29.22
5/25/91	1	403.17	29.22
5/25/91	2	403.17	29.22
5/25/91	3	403.18	29.23
5/25/91	4	403.18	29.23
5/25/91	5	403.18	29.24
5/25/91	6	403.17	29.24
5/25/91	7	403.15	29.25
5/25/91	8	403.14	29.25
5/25/91	9	403.14	29.25
5/25/91	10	403.14	29.24
5/25/91	11	403.15	29.24
5/25/91	12	403.15	29.22
5/25/91	13	403.16	29.22
5/25/91	14	403.17	29.20
5/25/91	15	403.19	29.20
5/25/91	16	403.20	29.19
5/25/91	17	403.19	29.19
5/25/91	18	403.21	29.20
5/25/91	19	403.21	29.21
5/25/91	20	403.21	29.22
5/25/91	21	403.21	29.23
5/25/91	22	403.20	29.24
5/25/91	23	403.20	29.24
5/26/91	0	403.19	29.24
5/26/91	1	403.19	29.24
5/26/91	2	403.19	29.25
5/26/91	3	403.19	29.25
5/26/91	4	403.19	29.24
5/26/91	5	403.20	29.25
5/26/91	6	403.19	29.25
5/26/91	7	403.17	29.26
5/26/91	8	403.16	29.27
5/26/91	9	403.16	29.26
5/26/91	10	403.16	29.26
5/26/91	11	403.16	29.25
5/26/91	12	403.16	29.24
5/26/91	13	403.18	29.22
5/26/91	14	403.19	29.22
5/26/91	15	403.20	29.20
5/26/91	16	403.21	29.18
5/26/91	17	403.21	29.17
5/26/91	18	403.22	29.17
5/26/91	19	403.23	29.19
5/26/91	20	403.24	29.19
5/26/91	21	403.23	29.21
5/26/91	22	403.23	29.21
5/26/91	23	403.22	29.21
5/27/91	0	403.21	29.22
5/27/91	1	403.21	29.22
5/27/91	2	403.21	29.22
5/27/91	3	403.21	29.23
5/27/91	4	403.21	29.24
5/27/91	5	403.21	29.25
5/27/91	6	403.20	29.25
5/27/91	7	403.19	29.26
5/27/91	8	403.18	29.25
5/27/91	9	403.18	29.25
5/27/91	10	403.17	29.25
5/27/91	11	403.17	29.24
5/27/91	12	403.18	29.22
5/27/91	13	403.19	29.21
5/27/91	14	403.20	29.19
5/27/91	15	403.22	29.17
5/27/91	16	403.23	29.16
5/27/91	17	403.22	29.15
5/27/91	18	403.23	29.15
5/27/91	19	403.25	29.16
5/27/91	20	403.25	29.18
5/27/91	21	403.25	29.20
5/27/91	22	403.24	29.20
5/27/91	23	403.23	29.21
5/28/91	0	403.23	29.22
5/28/91	1	403.22	29.22
5/28/91	2	403.22	29.22
5/28/91	3	403.22	29.22
5/28/91	4	403.22	29.22
5/28/91	5	403.22	29.23
5/28/91	6	403.21	29.24
5/28/91	7	403.19	29.24
5/28/91	8	403.18	29.25
5/28/91	9	403.18	29.24
5/28/91	10	403.18	29.24
5/28/91	11	403.18	29.22
5/28/91	12	403.18	29.21
5/28/91	13	403.19	29.19
5/28/91	14	403.20	29.16
5/28/91	15	403.22	29.14
5/28/91	16	403.22	29.12
5/28/91	17	403.24	29.11
5/28/91	18	403.26	29.09
5/28/91	19	403.26	29.09
5/28/91	20	403.26	29.09
5/28/91	21	403.27	29.09
5/28/91	22	403.27	29.09
5/28/91	23	403.27	29.08
5/29/91	0	403.26	29.06
5/29/91	1	403.27	29.03
5/29/91	2	403.27	29.03
5/29/91	3	403.27	29.02
5/29/91	4	403.27	29.01
5/29/91	5	403.27	29.00
5/29/91	6	403.27	28.99
5/29/91	7	403.26	28.98

Table B-2. Barometric efficiency test data for well 699-50-53B.

DATE	TIME	HEAD (Ft. AMSL)	B. PRES. (In. Hg)
5/29/91	8	403.25	28.97
5/29/91	9	403.25	28.94
5/29/91	10	403.25	28.92
5/29/91	11	403.26	28.89
5/29/91	12	403.27	28.87
5/29/91	13	403.28	28.84
5/29/91	14	403.28	28.81
5/29/91	15	403.29	28.80
5/29/91	16	403.30	28.78
5/29/91	17	403.30	28.78
5/29/91	18	403.31	28.79
5/29/91	19	403.31	28.78
5/29/91	20	403.31	28.78
5/29/91	21	403.31	28.80
5/29/91	22	403.31	28.79
5/29/91	23	403.31	28.79
5/30/91	0	403.31	28.80
5/30/91	1	403.30	28.81
5/30/91	2	403.29	28.82
5/30/91	3	403.29	28.83
5/30/91	4	403.29	28.85
5/30/91	5	403.28	28.87
5/30/91	6	403.27	28.90
5/30/91	7	403.26	28.93
5/30/91	8	403.24	28.95
5/30/91	9	403.23	28.97
5/30/91	10	403.22	28.98
5/30/91	11	403.22	29.00
5/30/91	12	403.21	29.00
5/30/91	13	403.21	29.02
5/30/91	14	403.21	29.02
5/30/91	15	403.22	29.03
5/30/91	16	403.20	29.02
5/30/91	17	403.22	29.03
5/30/91	18	403.23	29.04
5/30/91	19	403.23	29.06
5/30/91	20	403.24	29.08
5/30/91	21	403.23	29.12
5/30/91	22	403.22	29.14
5/30/91	23	403.21	29.16
5/31/91	0	403.21	29.17
5/31/91	1	403.20	29.19
5/31/91	2	403.20	29.21
5/31/91	3	403.19	29.22
5/31/91	4	403.19	29.23
5/31/91	5	403.19	29.24
5/31/91	6	403.19	29.25
5/31/91	7	403.17	29.27
5/31/91	8	403.16	29.27
5/31/91	9	403.16	29.27
5/31/91	10	403.16	29.26
5/31/91	11	403.17	29.25
5/31/91	12	403.17	29.23
5/31/91	13	403.18	29.22
5/31/91	14	403.18	29.20
5/31/91	15	403.20	29.19
5/31/91	16	403.20	29.17
5/31/91	17	403.20	29.15
5/31/91	18	403.22	29.15
5/31/91	19	403.23	29.15
5/31/91	20	403.24	29.16
5/31/91	21	403.24	29.18
5/31/91	22	403.24	29.18
5/31/91	23	403.23	29.18
6/1/91	0	403.23	29.18
6/1/91	1	403.22	29.20
6/1/91	2	403.22	29.20
6/1/91	3	403.22	29.20
6/1/91	4	403.22	29.20
6/1/91	5	403.22	29.21
6/1/91	6	403.21	29.22
6/1/91	7	403.19	29.22
6/1/91	8	403.19	29.23
6/1/91	9	403.19	29.21
6/1/91	10	403.19	29.20
6/1/91	11	403.19	29.18
6/1/91	12	403.20	29.16
6/1/91	13	403.20	29.14
6/1/91	14	403.21	29.11
6/1/91	15	403.23	29.08
6/1/91	16	403.23	29.08
6/1/91	17	403.24	29.06
6/1/91	18	403.25	29.05
6/1/91	19	403.26	29.04
6/1/91	20	403.27	29.04
6/1/91	21	403.28	29.06
6/1/91	22	403.27	29.05
6/1/91	23	403.27	29.05
6/2/91	0	403.27	29.04
6/2/91	1	403.27	29.03
6/2/91	2	403.26	29.03
6/2/91	3	403.26	29.03
6/2/91	4	403.26	29.03
6/2/91	5	403.26	29.03
6/2/91	6	403.25	29.03
6/2/91	7	403.24	29.03
6/2/91	8	403.23	29.03
6/2/91	9	403.23	29.02
6/2/91	10	403.23	29.00
6/2/91	11	403.24	28.98
6/2/91	12	403.24	28.96
6/2/91	13	403.25	28.94
6/2/91	14	403.25	28.94
6/2/91	15	403.26	28.93
6/2/91	16	403.27	28.96
6/2/91	17	403.27	28.96
6/2/91	18	403.26	29.00
6/2/91	19	403.26	29.02
6/2/91	20	403.25	29.06
6/2/91	21	403.25	29.08
6/2/91	22	403.25	29.08
6/2/91	23	403.24	29.11
6/3/91	0	403.23	29.13
6/3/91	1	403.23	29.14
6/3/91	2	403.22	29.16
6/3/91	3	403.22	29.17
6/3/91	4	403.21	29.18
6/3/91	5	403.21	29.19
6/3/91	6	403.19	29.21
6/3/91	7	403.19	29.22
6/3/91	8	403.18	29.23
6/3/91	9	403.18	29.23
6/3/91	10	403.18	29.23
6/3/91	11	403.17	29.22
6/3/91	12	403.18	29.22
6/3/91	13	403.19	29.22
6/3/91	14	403.19	29.22
6/3/91	15	403.20	29.21
6/3/91	16	403.19	29.22
6/3/91	17	403.20	29.24
6/3/91	18	403.21	29.25
6/3/91	19	403.21	29.26
6/3/91	20	403.21	29.29
6/3/91	21	403.21	29.32
6/3/91	22	403.20	29.32
6/3/91	23	403.19	29.33
6/4/91	0	403.20	29.34
6/4/91	1	403.19	29.36
6/4/91	2	403.19	29.36
6/4/91	3	403.19	29.36
6/4/91	4	403.19	29.36
6/4/91	5	403.19	29.38
6/4/91	6	403.18	29.40
6/4/91	7	403.16	29.40
6/4/91	8	403.15	29.40
6/4/91	9	403.15	29.38
6/4/91	10	403.16	29.35
6/4/91	11	403.17	29.33
6/4/91	12	403.18	29.31
6/4/91	13	403.20	29.30
6/4/91	14	403.19	29.28
6/4/91	15	403.21	29.27
6/4/91	16	403.21	29.25
6/4/91	17	403.22	29.23
6/4/91	18	403.22	29.23
6/4/91	19	403.23	29.22
6/4/91	20	403.24	29.23
6/4/91	21	403.25	29.25
6/4/91	22	403.24	29.24
6/4/91	23	403.24	29.24
6/5/91	0	403.24	29.23
6/5/91	1	403.24	29.22
6/5/91	2	403.24	29.22
6/5/91	3	403.23	29.20
6/5/91	4	403.23	29.22

9413096.0265

Table B-2. Barometric efficiency test data for well 699-50-53B.

DATE	TIME	HEAD (Ft. AMSL)	B. PRES. (In. Hg)
6/5/91	5	403.23	29.22
6/5/91	6	403.23	29.22
6/5/91	7	403.23	29.21
6/5/91	8	403.23	29.23

9413096.0266

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Table B-3. Barometric efficiency test data for well 699-49-57B.

DATE	HOUR	HEAD (Ft. AMSL)	B. PRES. (In. Hg)
5/22/91	12	403.22	29.20
5/22/91	13	403.22	29.18
5/22/91	14	403.24	29.17
5/22/91	15	403.25	29.15
5/22/91	16	403.27	29.14
5/22/91	17	403.28	29.14
5/22/91	18	403.28	29.14
5/22/91	19	403.29	29.16
5/22/91	20	403.28	29.19
5/22/91	21	403.28	29.20
5/22/91	22	403.27	29.22
5/22/91	23	403.26	29.23
5/23/91	0	403.26	29.25
5/23/91	1	403.26	29.26
5/23/91	2	403.27	29.27
5/23/91	3	403.27	29.27
5/23/91	4	403.27	29.26
5/23/91	5	403.28	29.28
5/23/91	6	403.27	29.28
5/23/91	7	403.27	29.28
5/23/91	8	403.26	29.28
5/23/91	9	403.27	29.28
5/23/91	10	403.28	29.28
5/23/91	11	403.28	29.26
5/23/91	12	403.30	29.24
5/23/91	13	403.32	29.22
5/23/91	14	403.33	29.20
5/23/91	15	403.35	29.19
5/23/91	16	403.36	29.17
5/23/91	17	403.37	29.15
5/23/91	18	403.38	29.15
5/23/91	19	403.38	29.15
5/23/91	20	403.39	29.16
5/23/91	21	403.38	29.17
5/23/91	22	403.38	29.18
5/23/91	23	403.38	29.18
5/24/91	0	403.38	29.18
5/24/91	1	403.38	29.19
5/24/91	2	403.38	29.18
5/24/91	3	403.38	29.18
5/24/91	4	403.38	29.16
5/24/91	5	403.39	29.17
5/24/91	6	403.39	29.17
5/24/91	7	403.39	29.16
5/24/91	8	403.38	29.16
5/24/91	9	403.38	29.16
5/24/91	10	403.38	29.14
5/24/91	11	403.39	29.14
5/24/91	12	403.41	29.15
5/24/91	13	403.41	29.14
5/24/91	14	403.41	29.12
5/24/91	15	403.42	29.12
5/24/91	16	403.44	29.11
5/24/91	17	403.44	29.11
5/24/91	18	403.44	29.11
5/24/91	19	403.44	29.13
5/24/91	20	403.44	29.15
5/24/91	21	403.44	29.18
5/24/91	22	403.43	29.20
5/24/91	23	403.42	29.22
5/25/91	0	403.42	29.22
5/25/91	1	403.42	29.22
5/25/91	2	403.43	29.22
5/25/91	3	403.43	29.23
5/25/91	4	403.43	29.23
5/25/91	5	403.44	29.24
5/25/91	6	403.43	29.24
5/25/91	7	403.41	29.25
5/25/91	8	403.42	29.25
5/25/91	9	403.42	29.25
5/25/91	10	403.43	29.24
5/25/91	11	403.43	29.24
5/25/91	12	403.44	29.22
5/25/91	13	403.45	29.22
5/25/91	14	403.46	29.20
5/25/91	15	403.49	29.20
5/25/91	16	403.49	29.19
5/25/91	17	403.49	29.19
5/25/91	18	403.49	29.20
5/25/91	19	403.49	29.21
5/25/91	20	403.49	29.22
5/25/91	21	403.49	29.23
5/25/91	22	403.48	29.24
5/25/91	23	403.48	29.24
5/26/91	0	403.48	29.24
5/26/91	1	403.48	29.24
5/26/91	2	403.49	29.25
5/26/91	3	403.49	29.25
5/26/91	4	403.49	29.24
5/26/91	5	403.49	29.25
5/26/91	6	403.49	29.25
5/26/91	7	403.47	29.26
5/26/91	8	403.47	29.27
5/26/91	9	403.46	29.26
5/26/91	10	403.47	29.26
5/26/91	11	403.48	29.25
5/26/91	12	403.49	29.24
5/26/91	13	403.50	29.22
5/26/91	14	403.52	29.22
5/26/91	15	403.53	29.20
5/26/91	16	403.54	29.18
5/26/91	17	403.54	29.17
5/26/91	18	403.55	29.17
5/26/91	19	403.55	29.19
5/26/91	20	403.55	29.19
5/26/91	21	403.55	29.21
5/26/91	22	403.54	29.21
5/26/91	23	403.53	29.21
5/27/91	0	403.53	29.22
5/27/91	1	403.53	29.22
5/27/91	2	403.53	29.22
5/27/91	3	403.53	29.23
5/27/91	4	403.53	29.24
5/27/91	5	403.53	29.25
5/27/91	6	403.53	29.25
5/27/91	7	403.52	29.26
5/27/91	8	403.50	29.25
5/27/91	9	403.50	29.25
5/27/91	10	403.50	29.25
5/27/91	11	403.52	29.24
5/27/91	12	403.53	29.22
5/27/91	13	403.54	29.21
5/27/91	14	403.55	29.19
5/27/91	15	403.57	29.17
5/27/91	16	403.57	29.16
5/27/91	17	403.57	29.15
5/27/91	18	403.58	29.15
5/27/91	19	403.59	29.16
5/27/91	20	403.59	29.18
5/27/91	21	403.58	29.20
5/27/91	22	403.57	29.20
5/27/91	23	403.56	29.21
5/28/91	0	403.55	29.22
5/28/91	1	403.55	29.22
5/28/91	2	403.56	29.22
5/28/91	3	403.56	29.22
5/28/91	4	403.56	29.22
5/28/91	5	403.56	29.23
5/28/91	6	403.55	29.24
5/28/91	7	403.53	29.24
5/28/91	8	403.53	29.25
5/28/91	9	403.53	29.24
5/28/91	10	403.53	29.24
5/28/91	11	403.54	29.22
5/28/91	12	403.55	29.21
5/28/91	13	403.55	29.19
5/28/91	14	403.57	29.16
5/28/91	15	403.59	29.14
5/28/91	16	403.60	29.12
5/28/91	17	403.61	29.11
5/28/91	18	403.61	29.09
5/28/91	19	403.62	29.09
5/28/91	20	403.62	29.09
5/28/91	21	403.62	29.09
5/28/91	22	403.61	29.09
5/28/81	23	403.61	29.08
5/29/91	0	403.61	29.05
5/29/91	1	403.61	29.03
5/29/91	2	403.61	29.03
5/29/91	3	403.61	29.02
5/29/91	4	403.62	29.01
5/29/91	5	403.62	29.00
5/29/91	6	403.61	28.99
5/29/91	7	403.60	28.98
5/29/91	8	403.60	28.97

9413096.0268

Table B-3. Barometric efficiency test data for well 699-49-57B.

DATE	HOUR	HEAD (Ft. AMSL)	B. PRES. (In. Hg)
5/29/91	9	403.60	28.94
5/29/91	10	403.61	28.92
5/29/91	11	403.62	28.89
5/29/91	12	403.63	28.87
5/29/91	13	403.64	28.84
5/29/91	14	403.64	28.81
5/29/91	15	403.65	28.80
5/29/91	16	403.66	28.78
5/29/91	17	403.66	28.78
5/29/91	18	403.66	28.79
5/29/91	19	403.66	28.78
5/29/91	20	403.65	28.78
5/29/91	21	403.65	28.80
5/29/91	22	403.64	28.79
5/29/91	23	403.63	28.79
5/30/91	0	403.63	28.80
5/30/91	1	403.62	28.81
5/30/91	2	403.62	28.82
5/30/91	3	403.61	28.83
5/30/91	4	403.61	28.85
5/30/91	5	403.60	28.87
5/30/91	6	403.59	28.90
5/30/91	7	403.58	28.93
5/30/91	8	403.56	28.95
5/30/91	9	403.55	28.97
5/30/91	10	403.55	28.98
5/30/91	11	403.55	29.00
5/30/91	12	403.54	29.00
5/30/91	13	403.55	29.02
5/30/91	14	403.55	29.02
5/30/91	15	403.55	29.03
5/30/91	16	403.56	29.02
5/30/91	17	403.57	29.03
5/30/91	18	403.58	29.04
5/30/91	19	403.58	29.06
5/30/91	20	403.58	29.08
5/30/91	21	403.57	29.12
5/30/91	22	403.56	29.14
5/30/91	23	403.55	29.16
5/31/91	0	403.55	29.17
5/31/91	1	403.55	29.19
5/31/91	2	403.55	29.21
5/31/91	3	403.55	29.22
5/31/91	4	403.55	29.23
5/31/91	5	403.55	29.24
5/31/91	6	403.54	29.25
5/31/91	7	403.53	29.27
5/31/91	8	403.52	29.27
5/31/91	9	403.52	29.27
5/31/91	10	403.53	29.26
5/31/91	11	403.54	29.25
5/31/91	12	403.55	29.23
5/31/91	13	403.55	29.22
5/31/91	14	403.56	29.20
5/31/91	15	403.57	29.19
5/31/91	16	403.58	29.17
5/31/91	17	403.60	29.15
5/31/91	18	403.61	29.15
5/31/91	19	403.61	29.15
5/31/91	20	403.61	29.16
5/31/91	21	403.61	29.18
5/31/91	22	403.60	29.18
5/31/91	23	403.59	29.18
6/1/91	0	403.59	29.18
6/1/91	1	403.58	29.20
6/1/91	2	403.58	29.20
6/1/91	3	403.58	29.20
6/1/91	4	403.58	29.20
6/1/91	5	403.58	29.21
6/1/91	6	403.57	29.22
6/1/91	7	403.56	29.22
6/1/91	8	403.56	29.23
6/1/91	9	403.56	29.21
6/1/91	10	403.56	29.20
6/1/91	11	403.57	29.18
6/1/91	12	403.58	29.16
6/1/91	13	403.59	29.14
6/1/91	14	403.60	29.11
6/1/91	15	403.60	29.08
6/1/91	16	403.61	29.08
6/1/91	17	403.62	29.06
6/1/91	18	403.64	29.05
6/1/91	19	403.64	29.04
6/1/91	20	403.64	29.04
6/1/91	21	403.64	29.06
6/1/91	22	403.63	29.05
6/1/91	23	403.62	29.05
6/2/91	0	403.62	29.04
6/2/91	1	403.62	29.03
6/2/91	2	403.62	29.03
6/2/91	3	403.62	29.03
6/2/91	4	403.61	29.03
6/2/91	5	403.61	29.03
6/2/91	6	403.61	29.03
6/2/91	7	403.59	29.03
6/2/91	8	403.59	29.03
6/2/91	9	403.59	29.02
6/2/91	10	403.60	29.00
6/2/91	11	403.60	28.98
6/2/91	12	403.61	28.96
6/2/91	13	403.61	28.94
6/2/91	14	403.62	28.94
6/2/91	15	403.62	28.93
6/2/91	16	403.62	28.96
6/2/91	17	403.62	28.96
6/2/91	18	403.62	29.00
6/2/91	19	403.61	29.02
6/2/91	20	403.61	29.06
6/2/91	21	403.60	29.08
6/2/91	22	403.58	29.08
6/2/91	23	403.58	29.11
6/3/91	0	403.57	29.13
6/3/91	1	403.56	29.14
6/3/91	2	403.56	29.16
6/3/91	3	403.56	29.17
6/3/91	4	403.56	29.18
6/3/91	5	403.55	29.19
6/3/91	6	403.55	29.21
6/3/91	7	403.54	29.22
6/3/91	8	403.54	29.23
6/3/91	9	403.53	29.23
6/3/91	10	403.54	29.23
6/3/91	11	403.55	29.22
6/3/91	12	403.55	29.22
6/3/91	13	403.55	29.22
6/3/91	14	403.56	29.22
6/3/91	15	403.57	29.21
6/3/91	16	403.57	29.22
6/3/91	17	403.57	29.24
6/3/91	18	403.57	29.25
6/3/91	19	403.57	29.26
6/3/91	20	403.57	29.29
6/3/91	21	403.57	29.32
6/3/91	22	403.55	29.32
6/3/91	23	403.55	29.33
6/4/91	0	403.55	29.34
6/4/91	1	403.55	29.36
6/4/91	2	403.55	29.36
6/4/91	3	403.55	29.36
6/4/91	4	403.55	29.36
6/4/91	5	403.55	29.38
6/4/91	6	403.54	29.40
6/4/91	7	403.53	29.40
6/4/91	8	403.53	29.40
6/4/91	9	403.53	29.38
6/4/91	10	403.55	29.35
6/4/91	11	403.55	29.33
6/4/91	12	403.57	29.31
6/4/91	13	403.58	29.30
6/4/91	14	403.58	29.28
6/4/91	15	403.59	29.27
6/4/91	16	403.59	29.25
6/4/91	17	403.60	29.23
6/4/91	18	403.61	29.23
6/4/91	19	403.61	29.22
6/4/91	20	403.61	29.23
6/4/91	21	403.62	29.25
6/4/91	22	403.61	29.24
6/4/91	23	403.60	29.24
6/5/91	0	403.60	29.23
6/5/91	1	403.60	29.22
6/5/91	2	403.60	29.22
6/5/91	3	403.60	29.20
6/5/91	4	403.59	29.22
6/5/91	5	403.59	29.22

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Table B-3. Barometric efficiency test data for well 699-49-57B.

DATE	HOUR	HEAD (Ft. AMSL)	B. PRES. (In. Hg)
6/5/91	6	403.59	29.22
6/5/91	7	403.59	29.21
6/5/91	8	403.59	29.23
6/5/91	9	403.59	29.23
6/5/91	10	403.59	29.23
6/5/91	11	403.57	29.24
6/5/91	12	403.57	29.24
6/5/91	13	403.56	29.24
6/5/91	14	403.56	29.26
6/5/91	15	403.56	29.26
6/5/91	16	403.56	29.28
6/5/91	17	403.56	29.28
6/5/91	18	403.56	29.29
6/5/91	19	403.57	29.28
6/5/91	20	403.57	29.28
6/5/91	21	403.57	29.28
6/5/91	22	403.57	29.29
6/5/91	23	403.57	29.28
6/6/91	0	403.57	29.30
6/6/91	1	403.57	29.30
6/6/91	2	403.58	29.30
6/6/91	3	403.57	29.32
6/6/91	4	403.58	29.31
6/6/91	5	403.56	29.32
6/6/91	6	403.55	29.32
6/6/91	7	403.54	29.32
6/6/91	8	403.53	29.31
6/6/91	9	403.55	29.30
6/6/91	10	403.55	29.31
6/6/91	11	403.55	29.29
6/6/91	12	403.56	29.28
6/6/91	13	403.57	29.27
6/6/91	14	403.57	29.25
6/6/91	15	403.58	29.24
6/6/91	16	403.59	29.22
6/6/91	17	403.59	29.20
6/6/91	18	403.61	29.19
6/6/91	19	403.60	29.19
6/6/91	20	403.60	29.19
6/6/91	21	403.61	29.19
6/6/91	22	403.60	29.19
6/6/91	23	403.60	29.19
6/7/91	0	403.59	29.19
6/7/91	1	403.59	29.19
6/7/91	2	403.59	29.18
6/7/91	3	403.58	29.18
6/7/91	4	403.58	29.20
6/7/91	5	403.58	29.20
6/7/91	6	403.56	29.20
6/7/91	7	403.55	29.22
6/7/91	8	403.55	29.22
6/7/91	9	403.55	29.21
6/7/91	10	403.56	29.21
6/7/91	11	403.58	29.20
6/7/91	12	403.59	29.20
6/7/91	13	403.58	29.19
6/7/91	14	403.58	29.19
6/7/91	15	403.59	29.20
6/7/91	16	403.59	29.21
6/7/91	17	403.59	29.22
6/7/91	18	403.57	29.22
6/7/91	19	403.57	29.21
6/7/91	20	403.58	29.22
6/7/91	21	403.57	29.22
6/7/91	22	403.57	29.23
6/7/91	23	403.57	29.24
6/8/91	0	403.57	29.23
6/8/91	1	403.57	29.23
6/8/91	2	403.57	29.23
6/8/91	3	403.57	29.23
6/8/91	4	403.57	29.23
6/8/91	5	403.57	29.23
6/8/91	6	403.56	29.24
6/8/91	7	403.54	29.24
6/8/91	8	403.54	29.23
6/8/91	9	403.55	29.23
6/8/91	10	403.55	29.24
6/8/91	11	403.56	29.23
6/8/91	12	403.57	29.22
6/8/91	13	403.58	29.21
6/8/91	14	403.59	29.20
6/8/91	15	403.59	29.20
6/8/91	16	403.60	29.19
6/8/91	17	403.60	29.18
6/8/91	18	403.60	29.18
6/8/91	19	403.60	29.18
6/8/91	20	403.61	29.20
6/8/91	21	403.60	29.21
6/8/91	22	403.59	29.23
6/8/91	23	403.58	29.24
6/9/91	0	403.57	29.24
6/9/91	1	403.57	29.24
6/9/91	2	403.57	29.25
6/9/91	3	403.57	29.26
6/9/91	4	403.57	29.26
6/9/91	5	403.56	29.29
6/9/91	6	403.55	29.31
6/9/91	7	403.52	29.31
6/9/91	8	403.52	29.31
6/9/91	9	403.52	29.31
6/9/91	10	403.53	29.32
6/9/91	11	403.55	29.30
6/9/91	12	403.55	29.29
6/9/91	13	403.57	29.28
6/9/91	14	403.57	29.26
6/9/91	15	403.59	29.25
6/9/91	16	403.60	29.24
6/9/91	17	403.61	29.22
6/9/91	18	403.61	29.21
6/9/91	19	403.61	29.21
6/9/91	20	403.61	29.21
6/9/91	21	403.61	29.22
6/9/91	22	403.60	29.22
6/9/91	23	403.59	29.22
6/10/91	0	403.59	29.20
6/10/91	1	403.59	29.21
6/10/91	2	403.59	29.20
6/10/91	3	403.59	29.20
6/10/91	4	403.59	29.20
6/10/91	5	403.59	29.20
6/10/91	6	403.57	29.21
6/10/91	7	403.55	29.20
6/10/91	8	403.56	29.20

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Table B-4. Barometric efficiency test data for well 699-49-55B.

DATE	HOUR	HEAD (Ft. AMSL)	B. PRES. (In. Hg)
5/15/92	13	403.06	29.02
5/15/92	14	403.05	29.00
5/15/92	15	403.07	28.99
5/15/92	16	403.08	29.00
5/15/92	17	403.09	29.00
5/15/92	18	403.09	29.02
5/15/92	19	403.09	29.04
5/15/92	20	403.08	29.08
5/15/92	21	403.07	29.12
5/15/92	22	403.05	29.15
5/15/92	23	403.04	29.18
5/16/92	0	403.03	29.20
5/16/92	1	403.02	29.21
5/16/92	2	403.02	29.23
5/16/92	3	403.02	29.24
5/16/92	4	403.02	29.24
5/16/92	5	403.02	29.26
5/16/92	6	403.01	29.28
5/16/92	7	403.00	29.29
5/16/92	8	403.00	29.29
5/16/92	9	403.00	29.28
5/16/92	10	403.00	29.27
5/16/92	11	403.00	29.26
5/16/92	12	403.00	29.24
5/16/92	13	403.01	29.22
5/16/92	14	403.03	29.20
5/16/92	15	403.04	29.18
5/16/92	16	403.06	29.16
5/16/92	17	403.08	29.14
5/16/92	18	403.10	29.12
5/16/92	19	403.11	28.11
5/16/92	20	403.12	29.12
5/16/92	21	403.12	29.12
5/16/92	22	403.11	29.12
5/16/92	23	403.11	29.12
5/17/92	0	403.11	29.13
5/17/92	1	403.11	29.12
5/17/92	2	403.12	29.12
5/17/92	3	403.12	29.11
5/17/92	4	403.13	29.11
5/17/92	5	403.13	29.12
5/17/92	6	403.12	29.12
5/17/92	7	403.12	29.12
5/17/92	8	403.12	29.12
5/17/92	9	403.11	29.12
5/17/92	10	403.11	29.11
5/17/92	11	403.11	29.10
5/17/92	12	403.12	29.08
5/17/92	13	403.13	29.06
5/17/92	14	403.14	29.04
5/17/92	15	403.15	29.01
5/17/92	16	403.17	29.00
5/17/92	17	403.19	28.97
5/17/92	18	403.21	28.97
5/17/92	19	403.21	28.98
5/17/92	20	403.20	29.02
5/17/92	21	403.20	29.01
5/17/92	22	403.20	29.00
5/17/92	23	403.20	29.00
5/18/92	0	403.20	29.01
5/18/92	1	403.20	29.01
5/18/92	2	403.20	29.01
5/18/92	3	403.20	29.02
5/18/92	4	403.21	29.02
5/18/92	5	403.20	29.04
5/18/92	6	403.20	29.05
5/18/92	7	403.19	29.06
5/18/92	8	403.19	29.06
5/18/92	9	403.19	29.05
5/18/92	10	403.19	29.05
5/18/92	11	403.18	29.05
5/18/92	12	403.18	29.03
5/18/92	13	403.19	29.01
5/18/92	14	403.20	28.99
5/18/92	15	403.21	28.99
5/18/92	16	403.22	29.00
5/18/92	17	403.22	29.00
5/18/92	18	403.23	29.00
5/18/92	19	403.23	29.00
5/18/92	20	403.24	29.03
5/18/92	21	403.22	29.04
5/18/92	22	403.22	29.04
5/18/92	23	403.23	29.05
5/19/92	0	403.22	29.05
5/19/92	1	403.22	29.05
5/19/92	2	403.22	29.04
5/19/92	3	403.22	29.04
5/19/92	4	403.23	29.04
5/19/92	5	403.23	29.05
5/19/92	6	403.22	29.05
5/19/92	7	403.22	29.04
5/19/92	8	403.23	29.04
5/19/92	9	403.23	29.03
5/19/92	10	403.23	29.02
5/19/92	11	403.23	29.01
5/19/92	12	403.24	29.00
5/19/92	13	403.24	28.98
5/19/92	14	403.25	28.96
5/19/92	15	403.26	28.93
5/19/92	16	403.27	28.91
5/19/92	17	403.28	28.90
5/19/92	18	403.29	28.89
5/19/92	19	403.29	28.91
5/19/92	20	403.29	28.92
5/19/92	21	403.29	28.93
5/19/92	22	403.28	28.95
5/19/92	23	403.28	28.97
5/20/92	0	403.27	28.96
5/20/92	1	403.27	28.97
5/20/92	2	403.27	28.99
5/20/92	3	403.26	29.01
5/20/92	4	403.25	29.02
5/20/92	5	403.25	29.04
5/20/92	6	403.24	29.06
5/20/92	7	403.23	29.07
5/20/92	8	403.22	29.08
5/20/92	9	403.22	29.09
5/20/92	10	403.21	29.11
5/20/92	11	403.21	29.11
5/20/92	12	403.21	29.12
5/20/92	13	403.21	29.12
5/20/92	14	403.20	29.12
5/20/92	15	403.20	29.12
5/20/92	16	403.20	29.13
5/20/92	17	403.21	29.14
5/20/92	18	403.20	29.16
5/20/92	19	403.19	29.20
5/20/92	20	403.19	29.23
5/20/92	21	403.18	29.26
5/20/92	22	403.17	29.28
5/20/92	23	403.17	29.29
5/21/92	0	403.16	29.30
5/21/92	1	403.16	29.31
5/21/92	2	403.16	29.32
5/21/92	3	403.15	29.33
5/21/92	4	403.15	29.34
5/21/92	5	403.15	29.35
5/21/92	6	403.14	29.37
5/21/92	7	403.14	29.37
5/21/92	8	403.13	29.38
5/21/92	9	403.13	29.38
5/21/92	10	403.13	29.37
5/21/92	11	403.16	29.37
5/21/92	12	403.16	29.35
5/21/92	13	403.16	29.34
5/21/92	14	403.17	29.33
5/21/92	15	403.17	29.32
5/21/92	16	403.17	29.32
5/21/92	17	403.18	29.30
5/21/92	18	403.18	29.30
5/21/92	19	403.19	29.32
5/21/92	20	403.19	29.33
5/21/92	21	403.18	29.34
5/21/92	22	403.18	29.36
5/21/92	23	403.18	29.36
5/22/92	0	403.18	29.36
5/22/92	1	403.18	29.36
5/22/92	2	403.18	29.36
5/22/92	3	403.18	29.35
5/22/92	4	403.18	29.35
5/22/92	5	403.17	29.35
5/22/92	6	403.17	29.36
5/22/92	7	403.17	29.37
5/22/92	8	403.16	29.37
5/22/92	9	403.16	29.37

9413096.0273

Table B-4. Barometric efficiency test data for well 699-49-55B.

DATE	HOUR	HEAD (Ft. AMSL)	B. PRES. (In. Hg)
5/22/92	10	403.17	29.36
5/22/92	11	403.18	29.34
5/22/92	12	403.19	29.32
5/22/92	13	403.19	29.30
5/22/92	14	403.20	29.29
5/22/92	15	403.21	29.26
5/22/92	16	403.21	29.26
5/22/92	17	403.22	29.25
5/22/92	18	403.22	29.24
5/22/92	19	403.23	29.24
5/22/92	20	403.23	29.25
5/22/92	21	403.22	29.26
5/22/92	22	403.23	29.27
5/22/92	23	403.23	29.27
5/23/92	0	403.23	29.27
5/23/92	1	403.23	29.27
5/23/92	2	403.23	29.27
5/23/92	3	403.23	29.28
5/23/92	4	403.22	29.27
5/23/92	5	403.22	29.27
5/23/92	6	403.22	29.28
5/23/92	7	403.21	29.29
5/23/92	8	403.21	29.29
5/23/92	9	403.21	29.29
5/23/92	10	403.21	29.30
5/23/92	11	403.21	29.28
5/23/92	12	403.23	29.26
5/23/92	13	403.23	29.24
5/23/92	14	403.24	29.22
5/23/92	15	403.25	29.20
5/23/92	16	403.26	29.19
5/23/92	17	403.26	29.17
5/23/92	18	403.27	29.17
5/23/92	19	403.27	29.17
5/23/92	20	403.27	29.17
5/23/92	21	403.27	29.17
5/23/92	22	403.27	29.18
5/23/92	23	403.27	29.19
5/24/92	0	403.27	29.19
5/24/92	1	403.27	29.19
5/24/92	2	403.27	29.20
5/24/92	3	403.26	29.20
5/24/92	4	403.26	29.21
5/24/92	5	403.25	29.22
5/24/92	6	403.25	29.23
5/24/92	7	403.24	29.24
5/24/92	8	403.24	29.24
5/24/92	9	403.24	29.23
5/24/92	10	403.25	29.22
5/24/92	11	403.25	29.20
5/24/92	12	403.26	29.18
5/24/92	13	403.27	29.15
5/24/92	14	403.28	29.13
5/24/92	15	403.29	29.11
5/24/92	16	403.30	29.09
5/24/92	17	403.30	29.07
5/24/92	18	403.31	29.05
5/24/92	19	403.32	29.05
5/24/92	20	403.32	29.04
5/24/92	21	403.32	29.05
5/24/92	22	403.32	29.06
5/24/92	23	403.32	29.06
5/25/92	0	403.32	29.06
5/25/92	1	403.32	29.06
5/25/92	2	403.32	29.05
5/25/92	3	403.32	29.05
5/25/92	4	403.32	29.05
5/25/92	5	403.31	29.06
5/25/92	6	403.30	29.07
5/25/92	7	403.30	29.06
5/25/92	8	403.29	29.06
5/25/92	9	403.30	29.05
5/25/92	10	403.30	29.04
5/25/92	11	403.31	29.02
5/25/92	12	403.32	29.00
5/25/92	13	403.33	28.97
5/25/92	14	403.34	28.95
5/25/92	15	403.35	28.93
5/25/92	16	403.36	28.91
5/25/92	17	403.37	28.90
5/25/92	18	403.37	28.91
5/25/92	19	403.36	28.94
5/25/92	20	403.34	28.98
5/25/92	21	403.33	28.98
5/25/92	22	403.33	29.02
5/25/92	23	403.31	29.03
5/26/92	0	403.31	29.04
5/26/92	1	403.30	29.04
5/26/92	2	403.30	29.04
5/26/92	3	403.30	29.04
5/26/92	4	403.30	29.05
5/26/92	5	403.30	29.07
5/26/92	6	403.29	29.09
5/26/92	7	403.28	29.09
5/26/92	8	403.27	29.09
5/26/92	9	403.27	29.09
5/26/92	10	403.27	29.10
5/26/92	11	403.27	29.09
5/26/92	12	403.28	29.08
5/26/92	13	403.28	29.07
5/26/92	14	403.29	29.06
5/26/92	15	403.29	29.06
5/26/92	16	403.29	29.08
5/26/92	17	403.29	29.08
5/26/92	18	403.28	29.08
5/26/92	19	403.29	29.10
5/26/92	20	403.27	29.10
5/26/92	21	403.27	29.12
5/26/92	22	403.26	29.13
5/26/92	23	403.26	29.14
5/27/92	0	403.26	29.14
5/27/92	1	403.26	29.16
5/27/92	2	403.25	29.16
5/27/92	3	403.25	29.18
5/27/92	4	403.24	29.18
5/27/92	5	403.24	29.18
5/27/92	6	403.23	29.20
5/27/92	7	403.22	29.20
5/27/92	8	403.21	29.20
5/27/92	9	403.21	29.19
5/27/92	10	403.22	29.21
5/27/92	11	403.22	29.20
5/27/92	12	403.23	29.17
5/27/92	13	403.25	29.14
5/27/92	14	403.26	29.13
5/27/92	15	403.27	29.11
5/27/92	16	403.28	29.09
5/27/92	17	403.28	29.08
5/27/92	18	403.29	29.08
5/27/92	19	403.29	29.08
5/27/92	20	403.28	29.08
5/27/92	21	403.27	29.10
5/27/92	22	403.27	29.11
5/27/92	23	403.26	29.11
5/28/92	0	403.26	29.11
5/28/92	1	403.26	29.11
5/28/92	2	403.27	29.11
5/28/92	3	403.26	29.11
5/28/92	4	403.26	29.13
5/28/92	5	403.25	29.14
5/28/92	6	403.25	29.14
5/28/92	7	403.24	29.15
5/28/92	8	403.23	29.15
5/28/92	9	403.23	29.14
5/28/92	10	403.23	29.13
5/28/92	11	403.24	29.12
5/28/92	12	403.25	29.10
5/28/92	13	403.26	29.08
5/28/92	14	403.27	29.06
5/28/92	15	403.28	29.05
5/28/92	16	403.29	29.04
5/28/92	17	403.30	29.03
5/28/92	18	403.30	29.03
5/28/92	19	403.29	29.04
5/28/92	20	403.29	29.06
5/28/92	21	403.28	29.08
5/28/92	22	403.27	29.10
5/28/92	23	403.26	29.10
5/29/92	0	403.26	29.10
5/29/92	1	403.26	29.10
5/29/92	2	403.26	29.12
5/29/92	3	403.25	29.13
5/29/92	4	403.25	29.14
5/29/92	5	403.24	29.16
5/29/92	6	403.24	29.18

9413096.0273

Table B-4. Barometric efficiency test data for well 699-49-55B.

DATE	HOUR	HEAD (Ft. AMSL)	B. PRES. (In. Hg)
5/29/92	7	403.22	29.18
5/29/92	8	403.21	29.18
5/29/92	9	403.21	29.18
5/29/92	10	403.21	29.18
5/29/92	11	403.22	29.16
5/29/92	12	403.22	29.14
5/29/92	13	403.23	29.12
5/29/92	14	403.25	29.11
5/29/92	15	403.26	29.09
5/29/92	16	403.27	29.08
5/29/92	17	403.28	29.06
5/29/92	18	403.28	29.07
5/29/92	19	403.28	29.07
5/29/92	20	403.28	29.08
5/29/92	21	403.27	29.10
5/29/92	22	403.26	29.12
5/29/92	23	403.25	29.11
5/30/92	0	403.25	29.12
5/30/92	1	403.25	29.12
5/30/92	2	403.25	29.13
5/30/92	3	403.24	29.14
5/30/92	4	403.24	29.16
5/30/92	5	403.23	29.18
5/30/92	6	403.22	29.20
5/30/92	7	403.21	29.20
5/30/92	8	403.20	29.22
5/30/92	9	403.19	29.22
5/30/92	10	403.19	29.21
5/30/92	11	403.19	29.21
5/30/92	12	403.20	29.20
5/30/92	13	403.20	29.20
5/30/92	14	403.21	29.18
5/30/92	15	403.22	29.17
5/30/92	16	403.24	29.15
5/30/92	17	403.25	29.14
5/30/92	18	403.25	29.14
5/30/92	19	403.26	29.14
5/30/92	20	403.26	29.14
5/30/92	21	403.25	29.16
5/30/92	22	403.24	29.18
5/30/92	23	403.23	29.19
5/31/92	0	403.23	29.19
5/31/92	1	403.22	29.19
5/31/92	2	403.22	29.21
5/31/92	3	403.22	29.22
5/31/92	4	403.22	29.22
5/31/92	5	403.21	29.23
5/31/92	6	403.21	29.24
5/31/92	7	403.20	29.26
5/31/92	8	403.18	29.26
5/31/92	9	403.18	29.26
5/31/92	10	403.18	29.25
5/31/92	11	403.18	29.24
5/31/92	12	403.18	29.22
5/31/92	13	403.19	29.20
5/31/92	14	403.20	29.19
5/31/92	15	403.21	29.17
5/31/92	16	403.23	29.15
5/31/92	17	403.24	29.13
5/31/92	18	403.26	29.13
5/31/92	19	403.26	29.12
5/31/92	20	403.27	29.12
5/31/92	21	403.26	29.12
5/31/92	22	403.26	29.13
5/31/92	23	403.25	29.13
6/1/92	0	403.25	29.12
6/1/92	1	403.25	29.13
6/1/92	2	403.25	29.12
6/1/92	3	403.25	29.11
6/1/92	4	403.25	29.11
6/1/92	5	403.26	29.11
6/1/92	6	403.26	29.11
6/1/92	7	403.25	29.12
6/1/92	8	403.24	29.11
6/1/92	9	403.24	29.10
6/1/92	10	403.24	29.09
6/1/92	11	403.24	29.08
6/1/92	12	403.24	29.07
6/1/92	13	403.25	29.05
6/1/92	14	403.26	29.05
6/1/92	15	403.27	29.04
6/1/92	16	403.27	29.02
6/1/92	17	403.28	29.02
6/1/92	18	403.28	29.03
6/1/92	19	403.29	29.04
6/1/92	20	403.29	29.06
6/1/92	21	403.27	29.09
6/1/92	22	403.26	29.11
6/1/92	23	403.25	29.11
6/2/92	0	403.25	29.12
6/2/92	1	403.23	29.16
6/2/92	2	403.22	29.18
6/2/92	3	403.22	29.19
6/2/92	4	403.21	29.21
6/2/92	5	403.21	29.23
6/2/92	6	403.21	29.24
6/2/92	7	403.20	29.25
6/2/92	8	403.19	29.25
6/2/92	9	403.19	29.25
6/2/92	10	403.19	29.23
6/2/92	11	403.19	29.21
6/2/92	12	403.20	29.19
6/2/92	13	403.20	29.17
6/2/92	14	403.21	29.14
6/2/92	15	403.22	29.12
6/2/92	16	403.24	29.10
6/2/92	17	403.24	29.09
6/2/92	18	403.25	29.09
6/2/92	19	403.26	29.10
6/2/92	20	403.26	29.11
6/2/92	21	403.25	29.13
6/2/92	22	403.24	29.15
6/2/92	23	403.23	29.16
6/3/92	0	403.22	29.18
6/3/92	1	403.21	29.19
6/3/92	2	403.21	29.20
6/3/92	3	403.21	29.22
6/3/92	4	403.20	29.24
6/3/92	5	403.20	29.26
6/3/92	6	403.19	29.28
6/3/92	7	403.19	29.29
6/3/92	8	403.18	29.29
6/3/92	9	403.18	29.28
6/3/92	10	403.18	29.28
6/3/92	11	403.18	29.27
6/3/92	12	403.18	29.25
6/3/92	13	403.18	29.24
6/3/92	14	403.18	29.21
6/3/92	15	403.20	29.18
6/3/92	16	403.21	29.16
6/3/92	17	403.22	29.14
6/3/92	18	403.24	29.12
6/3/92	19	403.25	29.12
6/3/92	20	403.25	29.12
6/3/92	21	403.25	29.12
6/3/92	22	403.26	29.12
6/3/92	23	403.25	29.12
6/4/92	0	403.25	29.11
6/4/92	1	403.25	29.10
6/4/92	2	403.25	29.09
6/4/92	3	403.25	29.08
6/4/92	4	403.26	29.09
6/4/92	5	403.26	29.09
6/4/92	6	403.25	29.09
6/4/92	7	403.25	29.09
6/4/92	8	403.26	29.09
6/4/92	9	403.25	29.09
6/4/92	10	403.26	29.08
6/4/92	11	403.25	29.08
6/4/92	12	403.25	29.08
6/4/92	13	403.25	29.08
6/4/92	14	403.25	29.07
6/4/92	15	403.25	29.06
6/4/92	16	403.25	29.05
6/4/92	17	403.25	29.03
6/4/92	18	403.27	29.03
6/4/92	19	403.27	29.03
6/4/92	20	403.27	29.03
6/4/92	21	403.27	29.06
6/4/92	22	403.26	29.07
6/4/92	23	403.26	29.08
6/5/92	0	403.26	29.08
6/5/92	1	403.25	29.09
6/5/92	2	403.25	29.09
6/5/92	3	403.25	29.09

Table B-4. Barometric efficiency test data for well 699-49-55B.

DATE	HOUR	HEAD (Ft. AMSL)	B. PRES. (In. Hg)
6/5/92	4	403.25	29.09
6/5/92	5	403.24	29.10
6/5/92	6	403.24	29.11
6/5/92	7	403.23	29.11
6/5/92	8	403.23	29.11
6/5/92	9	403.23	29.10
6/5/92	10	403.24	29.09
6/5/92	11	403.25	29.08
6/5/92	12	403.25	29.07
6/5/92	13	403.25	29.06
6/5/92	14	403.25	29.03
6/5/92	15	403.26	29.01
6/5/92	16	403.27	28.99
6/5/92	17	403.27	28.97
6/5/92	18	403.28	28.96
6/5/92	19	403.29	28.96
6/5/92	20	403.29	28.96
6/5/92	21	403.30	28.96
6/5/92	22	403.30	28.97
6/5/92	23	403.29	28.98
6/6/92	0	403.29	28.98
6/6/92	1	403.29	28.98
6/6/92	2	403.29	28.97
6/6/92	3	403.28	28.97
6/6/92	4	403.28	28.98
6/6/92	5	403.27	28.98
6/6/92	6	403.27	28.99
6/6/92	7	403.27	29.00
6/6/92	8	403.27	29.00
6/6/92	9	403.27	28.99
6/6/92	10	403.27	28.98
6/6/92	11	403.28	28.96
6/6/92	12	403.28	28.94
6/6/92	13	403.29	28.92
6/6/92	14	403.29	28.90
6/6/92	15	403.30	28.89
6/6/92	16	403.31	28.87
6/6/92	17	403.31	28.84
6/6/92	18	403.32	28.84
6/6/92	19	403.32	28.85
6/6/92	20	403.32	28.86
6/6/92	21	403.32	28.88
6/6/92	22	403.31	28.89
6/6/92	23	403.30	28.89
6/7/92	0	403.31	28.89
6/7/92	1	403.30	28.90
6/7/92	2	403.30	28.91
6/7/92	3	403.29	28.92
6/7/92	4	403.28	28.93
6/7/92	5	403.28	28.95
6/7/92	6	403.27	28.96
6/7/92	7	403.26	28.97
6/7/92	8	403.26	28.99
6/7/92	9	403.26	28.99
6/7/92	10	403.26	28.99
6/7/92	11	403.26	28.98
6/7/92	12	403.26	28.97
6/7/92	13	403.27	28.95
6/7/92	14	403.27	28.95
6/7/92	15	403.28	28.94
6/7/92	16	403.28	28.93
6/7/92	17	403.28	28.94
6/7/92	18	403.28	28.94
6/7/92	19	403.27	28.95
6/7/92	20	403.27	28.97
6/7/92	21	403.27	28.98
6/7/92	22	403.26	28.99
6/7/92	23	403.26	29.03
6/8/92	0	403.25	29.04
6/8/92	1	403.24	29.05
6/8/92	2	403.23	29.05
6/8/92	3	403.23	29.07
6/8/92	4	403.22	29.09
6/8/92	5	403.21	29.10
6/8/92	6	403.21	29.11
6/8/92	7	403.20	29.11
6/8/92	8	403.20	29.11
6/8/92	9	403.20	29.09
6/8/92	10	403.21	29.08
6/8/92	11	403.22	29.05
6/8/92	12	403.23	29.03

Table B-5. Barometric efficiency test data for well 699-54-57.

DATE	HOUR	HEAD (Ft. AMSL)	B. PRES. (In. Hg)
4/23/91	15	402.89	28.86
4/23/91	16	402.89	28.89
4/23/91	17	402.89	28.90
4/23/91	18	402.88	28.92
4/23/91	19	402.87	28.93
4/23/91	20	402.86	28.94
4/23/91	21	402.85	28.94
4/23/91	22	402.85	28.94
4/23/91	23	402.85	28.94
4/24/91	0	402.86	28.93
4/24/91	1	402.86	28.92
4/24/91	2	402.86	28.92
4/24/91	3	402.87	28.92
4/24/91	4	402.86	28.91
4/24/91	5	402.86	28.91
4/24/91	6	402.86	28.96
4/24/91	7	402.84	28.99
4/24/91	8	402.83	29.00
4/24/91	9	402.82	29.02
4/24/91	10	402.81	29.02
4/24/91	11	402.81	29.00
4/24/91	12	402.82	29.00
4/24/91	13	402.83	29.00
4/24/91	14	402.83	29.00
4/24/91	15	402.84	29.00
4/24/91	16	402.84	29.00
4/24/91	17	402.85	29.01
4/24/91	18	402.84	29.02
4/24/91	19	402.85	29.03
4/24/91	20	402.84	29.06
4/24/91	21	402.83	29.07
4/24/91	22	402.83	29.06
4/24/91	23	402.84	29.06
4/25/91	0	402.84	29.06
4/25/91	1	402.85	29.06
4/25/91	2	402.85	29.06
4/25/91	3	402.86	29.06
4/25/91	4	402.86	29.06
4/25/91	5	402.86	29.07
4/25/91	6	402.86	29.09
4/25/91	7	402.84	29.08
4/25/91	8	402.84	29.08
4/25/91	9	402.84	29.07
4/25/91	10	402.84	29.08
4/25/91	11	402.84	29.08
4/25/91	12	402.84	29.06
4/25/91	13	402.86	29.07
4/25/91	14	402.85	29.08
4/25/91	15	402.86	29.08
4/25/91	16	402.87	29.07
4/25/91	17	402.87	29.06
4/25/91	18	402.87	29.08
4/25/91	19	402.87	29.10
4/25/91	20	402.87	29.12
4/25/91	21	402.86	29.13
4/25/91	22	402.85	29.13
4/25/91	23	402.86	29.13
4/26/91	0	402.85	29.13
4/26/91	1	402.85	29.15
4/26/91	2	402.86	29.15
4/26/91	3	402.86	29.15
4/26/91	4	402.86	29.15
4/26/91	5	402.86	29.17
4/26/91	6	402.86	29.18
4/26/91	7	402.85	29.19
4/26/91	8	402.84	29.19
4/26/91	9	402.84	29.19
4/26/91	10	402.84	29.17
4/26/91	11	402.84	29.16
4/26/91	12	402.85	29.15
4/26/91	13	402.85	29.13
4/26/91	14	402.86	29.11
4/26/91	15	402.87	29.10
4/26/91	16	402.88	29.09
4/26/91	17	402.89	29.09
4/26/91	18	402.89	29.09
4/26/91	19	402.89	29.10
4/26/91	20	402.88	29.13
4/26/91	21	402.87	29.15
4/26/91	22	402.87	29.17
4/26/91	23	402.86	29.18
4/27/91	0	402.86	29.20
4/27/91	1	402.86	29.22
4/27/91	2	402.86	29.23
4/27/91	3	402.86	29.24
4/27/91	4	402.86	29.26
4/27/91	5	402.86	29.27
4/27/91	6	402.85	29.28
4/27/91	7	402.84	29.30
4/27/91	8	402.84	29.30
4/27/91	9	402.84	29.29
4/27/91	10	402.84	29.29
4/27/91	11	402.84	29.29
4/27/91	12	402.83	29.29
4/27/91	13	402.84	29.28
4/27/91	14	402.85	29.27
4/27/91	15	402.86	29.27
4/27/91	16	402.86	29.27
4/27/91	17	402.87	29.27
4/27/91	18	402.87	29.27
4/27/91	19	402.87	29.28
4/27/91	20	402.87	29.32
4/27/91	21	402.86	29.33
4/27/91	22	402.86	29.34
4/27/91	23	402.85	29.34
4/28/91	0	402.85	29.34
4/28/91	1	402.85	29.36
4/28/91	2	402.85	29.36
4/28/91	3	402.86	29.36
4/28/91	4	402.87	29.36
4/28/91	5	402.87	29.37
4/28/91	6	402.86	29.37
4/28/91	7	402.86	29.36
4/28/91	8	402.85	29.36
4/28/91	9	402.85	29.34
4/28/91	10	402.86	29.32
4/28/91	11	402.86	29.30
4/28/91	12	402.86	29.28
4/28/91	13	402.87	29.26
4/28/91	14	402.87	29.27
4/28/91	15	402.87	29.26
4/28/91	16	402.88	29.24
4/28/91	17	402.89	29.24
4/28/91	18	402.90	29.24
4/28/91	19	402.90	29.24
4/28/91	20	402.90	29.28
4/28/91	21	402.88	29.29
4/28/91	22	402.89	29.30
4/28/91	23	402.88	29.28
4/29/91	0	402.88	29.28
4/29/91	1	402.88	29.30
4/29/91	2	402.88	29.30
4/29/91	3	402.87	29.32
4/29/91	4	402.87	29.34
4/29/91	5	402.87	29.36
4/29/91	6	402.87	29.38
4/29/91	7	402.86	29.39
4/29/91	8	402.85	29.40
4/29/91	9	402.85	29.40
4/29/91	10	402.85	29.39
4/29/91	11	402.84	29.39
4/29/91	12	402.85	29.37
4/29/91	13	402.85	29.36
4/29/91	14	402.85	29.35
4/29/91	15	402.86	29.34
4/29/91	16	402.87	29.33
4/29/91	17	402.88	29.32
4/29/91	18	402.88	29.31
4/29/91	19	402.89	29.31
4/29/91	20	402.89	29.31
4/29/91	21	402.89	29.32
4/29/91	22	402.89	29.32
4/29/91	23	402.89	29.32
4/30/91	0	402.88	29.32
4/30/91	1	402.88	29.33
4/30/91	2	402.88	29.34
4/30/91	3	402.88	29.34
4/30/91	4	402.88	29.33
4/30/91	5	402.89	29.33
4/30/91	6	402.88	29.34
4/30/91	7	402.87	29.34
4/30/91	8	402.87	29.33
4/30/91	9	402.87	29.31
4/30/91	10	402.87	29.30
4/30/91	11	402.87	29.27

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Table B-5. Barometric efficiency test data for well 699-54-57.

DATE	HOUR	HEAD (Ft. AMSL)	B. PRES. (In. Hg)
4/30/91	12	402.88	29.23
4/30/91	13	402.89	29.21
4/30/91	14	402.89	29.18
4/30/91	15	402.90	29.15
4/30/91	16	402.91	29.12
4/30/91	17	402.92	29.11
4/30/91	18	402.93	29.10
4/30/91	19	402.93	29.10
4/30/91	20	402.93	29.10
4/30/91	21	402.93	29.12
4/30/91	22	402.92	29.13
4/30/91	23	402.92	29.13
5/1/91	0	402.91	29.14
5/1/91	1	402.91	29.15
5/1/91	2	402.91	29.15
5/1/91	3	402.91	29.15
5/1/91	4	402.91	29.14
5/1/91	5	402.91	29.16
5/1/91	6	402.90	29.16
5/1/91	7	402.90	29.16
5/1/91	8	402.89	29.16
5/1/91	9	402.89	29.14
5/1/91	10	402.89	29.12
5/1/91	11	402.89	29.11
5/1/91	12	402.89	29.10
5/1/91	13	402.89	29.09
5/1/91	14	402.90	29.08
5/1/91	15	402.90	29.08
5/1/91	16	402.91	29.08
5/1/91	17	402.92	29.07
5/1/91	18	402.91	29.06
5/1/91	19	402.92	29.08
5/1/91	20	402.91	29.10
5/1/91	21	402.91	29.10
5/1/91	22	402.90	29.10
5/1/91	23	402.90	29.10
5/2/91	0	402.90	29.10
5/2/91	1	402.90	29.11
5/2/91	2	402.90	29.11
5/2/91	3	402.90	29.12
5/2/91	4	402.89	29.12
5/2/91	5	402.89	29.13
5/2/91	6	402.89	29.13
5/2/91	7	402.88	29.16
5/2/91	8	402.88	29.16
5/2/91	9	402.88	29.14
5/2/91	10	402.88	29.12
5/2/91	11	402.88	29.11
5/2/91	12	402.88	29.10
5/2/91	13	402.88	29.09
5/2/91	14	402.88	29.08
5/2/91	15	402.88	29.08
5/2/91	16	402.89	29.07
5/2/91	17	402.89	29.06
5/2/91	18	402.90	29.05
5/2/91	19	402.91	29.05
5/2/91	20	402.91	29.06
5/2/91	21	402.91	29.08
5/2/91	22	402.90	29.08
5/2/91	23	402.90	29.08
5/3/91	0	402.90	29.10
5/3/91	1	402.90	29.10
5/3/91	2	402.89	29.12
5/3/91	3	402.89	29.13
5/3/91	4	402.88	29.14
5/3/91	5	402.88	29.16
5/3/91	6	402.87	29.18
5/3/91	7	402.87	29.20
5/3/91	8	402.87	29.20
5/3/91	9	402.86	29.20
5/3/91	10	402.86	29.20
5/3/91	11	402.86	29.18
5/3/91	12	402.86	29.18
5/3/91	13	402.86	29.16
5/3/91	14	402.86	29.16
5/3/91	15	402.87	29.14
5/3/91	16	402.87	29.14
5/3/91	17	402.87	29.16
5/3/91	18	402.87	29.17
5/3/91	19	402.87	29.18
5/3/91	20	402.87	29.20
5/3/91	21	402.86	29.22
5/3/91	22	402.87	29.21
5/3/91	23	402.86	29.24
5/4/91	0	402.86	29.24
5/4/91	1	402.86	29.26
5/4/91	2	402.86	29.26
5/4/91	3	402.86	29.28
5/4/91	4	402.86	29.28
5/4/91	5	402.86	29.30
5/4/91	6	402.85	29.31
5/4/91	7	402.84	29.34
5/4/91	8	402.84	29.34
5/4/91	9	402.83	29.36
5/4/91	10	402.83	29.35
5/4/91	11	402.83	29.34
5/4/91	12	402.84	29.33
5/4/91	13	402.84	29.31
5/4/91	14	402.84	29.30
5/4/91	15	402.85	29.28
5/4/91	16	402.85	29.28
5/4/91	17	402.88	29.26
5/4/91	18	402.86	29.26
5/4/91	19	402.86	29.26
5/4/91	20	402.87	29.26
5/4/91	21	402.87	29.27
5/4/91	22	402.87	29.27
5/4/91	23	402.87	29.28
5/5/91	0	402.87	29.29
5/5/91	1	402.87	29.29
5/5/91	2	402.87	29.30
5/5/91	3	402.88	29.30
5/5/91	4	402.86	29.32
5/5/91	5	402.86	29.32
5/5/91	6	402.86	29.32
5/5/91	7	402.86	29.32
5/5/91	8	402.86	29.32
5/5/91	9	402.85	29.32
5/5/91	10	402.86	29.30
5/5/91	11	402.86	29.30
5/5/91	12	402.85	29.30
5/5/91	13	402.86	29.30
5/5/91	14	402.86	29.28
5/5/91	15	402.86	29.26
5/5/91	16	402.86	29.26
5/5/91	17	402.87	29.24
5/5/91	18	402.87	29.24
5/5/91	19	402.87	29.24
5/5/91	20	402.87	29.25
5/5/91	21	402.87	29.26
5/5/91	22	402.87	29.26
5/5/91	23	402.87	29.26
5/6/91	0	402.88	29.26
5/6/91	1	402.88	29.25
5/6/91	2	402.88	29.24
5/6/91	3	402.88	29.24
5/6/91	4	402.88	29.24
5/6/91	5	402.88	29.23
5/6/91	6	402.88	29.24
5/6/91	7	402.87	29.24
5/6/91	8	402.87	29.24
5/6/91	9	402.87	29.24
5/6/91	10	402.87	29.23
5/6/91	11	402.87	29.23
5/6/91	12	402.87	29.22
5/6/91	13	402.87	29.20
5/6/91	14	402.88	29.20
5/6/91	15	402.88	29.16
5/6/91	16	402.88	29.16
5/6/91	17	402.88	29.15
5/6/91	18	402.89	29.14
5/6/91	19	402.88	29.16
5/6/91	20	402.88	29.18
5/6/91	21	402.88	29.20
5/6/91	22	402.87	29.20
5/6/91	23	402.88	29.19
5/7/91	0	402.88	29.18
5/7/91	1	402.88	29.19
5/7/91	2	402.88	29.18
5/7/91	3	402.89	29.18
5/7/91	4	402.88	29.18
5/7/91	5	402.89	29.18
5/7/91	6	402.88	29.18
5/7/91	7	402.88	29.17
5/7/91	8	402.88	29.16

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Table B-5. Barometric efficiency test data for well 699-54-57.

DATE	HOUR	HEAD (Ft. AMSL)	B. PRES. (In. Hg)
5/7/91	9	402.88	29.16
5/7/91	10	402.88	29.16
5/7/91	11	402.88	29.14

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APPENDIX C

ACTIVITY DATA FOR AQUIFER COMMUNICATION INDICATOR CONSTITUENTS

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Table C-1. Aquifer communication indicator constituent activity data for wells 699-50-53B, 699-49-57B, and 299-E33-40.

WELL 699-50-53B

CONSTITUENT	COLLECTION DATE	ACTIVITY (pCi/L)	QUALIFIER
Cobalt-60	15-Feb-91	7	U
Gross beta	15-Feb-91	7	
Technetium-99	15-Feb-91	2	U

WELL 699-49-57B

CONSTITUENT	COLLECTION DATE	ACTIVITY (pCi/L)	QUALIFIER
Cobalt-60	15-Feb-91	5	U
Gross beta	15-Feb-91	4	U
Technetium-99	15-Feb-91	2	U

WELL 299-E33-40

CONSTITUENT	COLLECTION DATE	ACTIVITY (pCi/L)	QUALIFIER
Cobalt-60	15-Feb-91	6	U
Gross beta	15-Feb-91	20	
Technetium-99	15-Feb-91	3.2	

DATA QUALIFIERS: U = BELOW QUANTIFICATION LIMIT
UH = BELOW QUANTIFICATION LIMIT; HOLDING TIME EXCEEDED

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Table C-2. Aquifer communication indicator constituent activity data for well 699-42-40C.

CONSTITUENT	COLLECTION DATE	ACTIVITY (pCi/L)	QUALIFIER
Cobalt-60	09-Sep-86	-3.34	U
Gross beta	02-Feb-88	11.2	
Gross beta	23-May-88	12	
Gross beta	20-Jul-88	10.1	
Gross beta	15-Nov-88	14.4	
Gross beta	26-Apr-89	10.2	
Iodine-129	01-Apr-88	0.1401432	
Iodine-129	01-Apr-88	0.1522371	
Iodine-129 (Drinking Water)	10-Mar-89	0.045	U
Technetium-99	02-Feb-88	2.27	U
Technetium-99	20-Jul-88	13.2	
Technetium-99	10-Mar-89	-0.958	U
Tritium	25-Jun-84	-74	
Tritium	21-Apr-86	113	U
Tritium	09-Sep-86	313	
Tritium	27-Oct-86	170	U
Tritium	04-Jun-87	908	
Tritium	23-Sep-87	1170	
Tritium	02-Feb-88	1430	
Tritium	09-Sep-88	2220	
Tritium	23-Feb-89	2970	
Tritium	28-Aug-89	3830	

DATA QUALIFIERS: U = BELOW QUANTIFICATION LIMIT
UH = BELOW QUANTIFICATION LIMIT; HOLDING TIME EXCEEDED

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Table C-3. Aquifer communication indicator constituent activity data for well 699-49-55B.

CONSTITUENT	COLLECTION DATE	ACTIVITY (pCi/L)	QUALIFIER
Cobalt-60	09-Sep-86	-6.2	U
Cobalt-60	15-Feb-91	7	U
Gross beta	19-Feb-88	6.7	
Gross beta	03-May-88	6.24	
Gross beta	20-Jul-88	6.07	
Gross beta	15-Nov-88	5.88	
Gross beta	05-Apr-89	5.29	
Gross beta	20-Oct-89	5.9	
Gross beta	15-Feb-91	6.5	
Iodine-129 (Drinking Water)	24-Mar-89	0.0247	U
Technetium-99	19-Feb-88	0.486	U
Technetium-99	20-Jul-88	48	
Technetium-99	24-Mar-89	2.07	U
Technetium-99	15-Feb-91	2	U
Tritium	02-Nov-85	-269	U
Tritium	21-Apr-86	-92.6	U
Tritium	09-Sep-86	-245	U
Tritium	27-Oct-86	-103	U
Tritium	19-Feb-88	170	U
Tritium	20-Jul-88	26.9	U
Tritium	21-Feb-89	13.7	U
Tritium	28-Aug-89	53.4	U

DATA QUALIFIERS: U = BELOW QUANTIFICATION LIMIT
UH = BELOW QUANTIFICATION LIMIT; HOLDING TIME EXCEEDED

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Table C-4. Aquifer communication indicator constituent activity data for well 699-50-45.

CONSTITUENT	COLLECTION DATE	ACTIVITY (pCi/L)	QUALIFIER
Cobalt-60	10-Sep-86	-2.67	U
Gross beta	02-Feb-88	4.53	
Gross beta	03-May-88	7.74	
Gross beta	15-Jul-88	7.02	
Gross beta	08-Nov-88	4.6	
Gross beta	05-Apr-89	5.65	
Gross beta	19-Oct-89	5.68	
Gross beta	03-May-90	8.92	U
Iodine-129	01-Apr-88	0.0004712	
Iodine-129 (Drinking Water)	30-Mar-89	-0.0335	U
Technetium-99	02-Feb-88	2.19	U
Technetium-99	15-Jul-88	2.3	U
Technetium-99	30-Mar-89	-0.236	U
Tritium	19-Sep-85	-53.4	U
Tritium	18-Apr-86	-11.1	U
Tritium	10-Sep-86	-54.6	U
Tritium	27-Oct-86	-62.8	U
Tritium	01-May-87	56.1	U
Tritium	16-Sep-87	-33.4	U
Tritium	02-Feb-88	25.8	U
Tritium	21-Sep-88	-184	U
Tritium	21-Feb-89	98.6	U
Tritium	28-Aug-89	54.3	U
Tritium	03-May-90	-44.2	U

DATA QUALIFIERS: U = BELOW QUANTIFICATION LIMIT
UH = BELOW QUANTIFICATION LIMIT; HOLDING TIME EXCEEDED

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Table C-5. Aquifer communication indicator constituent activity data for well 699-47-50.

CONSTITUENT	COLLECTION DATE	ACTIVITY (pCi/L)	QUALIFIER
Cobalt-60	09-Sep-86	4.04	U
Cobalt-60	04-Aug-87	5.09	
Cobalt-60	15-Dec-87	2.33	U
Cobalt-60	08-Feb-88	-0.89	U
Cobalt-60	01-Jun-88	0.942	U
Cobalt-60	15-Feb-91	7	U
Cobalt-60	15-May-91	7	U
Gross beta	15-Dec-87	11	
Gross beta	08-Feb-88	6.82	
Gross beta	08-Feb-88	7.58	
Gross beta	01-Jun-88	6	
Gross beta	01-Jun-88	11.6	
Gross beta	15-Feb-91	6.9	
Gross beta	15-May-91	7.2	
Iodine-129	04-Aug-87	0.0060664	
Iodine-129	03-Jun-88	0.0059639	
Technetium-99	04-Aug-87	-0.622	U
Technetium-99	08-Feb-88	-0.0819	U
Technetium-99	13-Dec-90	0.782	UH
Technetium-99	15-Feb-91	610	
Technetium-99	15-May-91	3	U
Tritium	14-May-84	105	
Tritium	27-Nov-84	219	
Tritium	17-Apr-85	-15	
Tritium	12-Jul-85	6310	
Tritium	18-Apr-86	324	
Tritium	09-Sep-86	372	
Tritium	11-Jun-87	325	
Tritium	16-Sep-87	265	U
Tritium	08-Feb-88	297	U
Tritium	08-Feb-88	307	U
Tritium	01-Jun-88	168	U
Tritium	09-Sep-88	95	U
Tritium	21-Feb-89	288	
Tritium	15-May-91	230	

DATA QUALIFIERS: U = BELOW QUANTIFICATION LIMIT
UH = BELOW QUANTIFICATION LIMIT; HOLDING TIME EXCEEDED

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Table C-6. Aquifer communication indicator constituent activity data for well 699-52-46A.

CONSTITUENT	COLLECTION DATE	ACTIVITY (pCi/L)	QUALIFIER
Cobalt-60	10-Sep-86	3.03	U
Gross beta	06-Mar-88	9.1	
Gross beta	03-May-88	7.6	
Gross beta	15-Jul-88	9.52	
Gross beta	14-Nov-88	6.97	
Gross beta	21-Apr-89	8.92	
Gross beta	23-Oct-89	9.42	
Gross beta	02-May-90	9.79	
Iodine-129	01-Apr-88	0.0002135	
Iodine-129 (Drinking Water)	27-Mar-89	-0.0228	U
Technetium-99	06-Mar-88	0.365	U
Technetium-99	15-Jul-88	0.241	U
Technetium-99	27-Mar-89	1.41	U
Tritium	18-Apr-86	214	U
Tritium	10-Sep-86	-60.3	U
Tritium	27-Oct-86	-169	U
Tritium	23-Jun-87	-96	U
Tritium	06-Mar-88	3010	
Tritium	26-Sep-88	349	U
Tritium	21-Feb-89	-46.8	U
Tritium	31-Aug-89	187	U
Tritium	02-May-90	-113	U

DATA QUALIFIERS: U = BELOW QUANTIFICATION LIMIT
UH = BELOW QUANTIFICATION LIMIT; HOLDING TIME EXCEEDED

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Table C-7. Aquifer communication indicator constituent activity data for well 699-52-48.

CONSTITUENT	COLLECTION DATE	ACTIVITY (pCi/L)	QUALIFIER
Cobalt-60	10-Sep-86	-4.68	U
Gross beta	06-Mar-88	7.1	
Gross beta	03-May-88	7.79	
Gross beta	15-Jul-88	7.68	
Gross beta	14-Nov-88	10.9	
Gross beta	25-Apr-89	7.82	
Gross beta	23-Oct-89	7.51	
Gross beta	02-May-90	21.8	
Iodine-129	01-Apr-88	0.0000699	
Iodine-129	01-Apr-88	0.0001489	
Iodine-129 (Drinking Water)	27-Mar-89	0.0325	U
Technetium-99	06-Mar-88	0.852	U
Technetium-99	15-Jul-88	-0.248	U
Technetium-99	27-Mar-89	3.04	U
Tritium	14-May-84	325	
Tritium	18-Apr-86	57.6	U
Tritium	10-Sep-86	40.9	U
Tritium	27-Oct-86	-78.9	U
Tritium	11-Jun-87	190	U
Tritium	16-Sep-87	130	U
Tritium	06-Mar-88	12.9	U
Tritium	26-Sep-88	-209	U
Tritium	21-Feb-89	6.83	U
Tritium	31-Aug-89	-133	U
Tritium	02-May-90	24	U

DATA QUALIFIERS: U = BELOW QUANTIFICATION LIMIT
UH = BELOW QUANTIFICATION LIMIT; HOLDING TIME EXCEEDED

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Table C-8. Aquifer communication indicator constituent activity data for well 699-54-57.

CONSTITUENT	COLLECTION DATE	ACTIVITY (pCi/L)	QUALIFIER
Cobalt-60	27-Jul-61	2700	
Cobalt-60	16-Jul-64	200	
Cobalt-60	19-Nov-64	220	
Cobalt-60	18-Feb-65	200	
Cobalt-60	8-Sep-86	1.13	U
Cobalt-60	15-Feb-91	10	U
Cobalt-60	15-May-91	7	U
Gross beta	01-Aug-55	7.92	
Gross beta	01-Feb-56	6.2	
Gross beta	01-Feb-59	6.14	
Gross beta	01-Mar-59	3.4	
Gross beta	01-Apr-59	7.88	
Gross beta	01-May-59	0.0006077	
Gross beta	01-Jun-59	0.0764	U
Gross beta	01-Jul-59	9.7	
Gross beta	17-Jul-61	12	
Gross beta	26-Mar-62	200	
Gross beta	25-Apr-69	200	
Gross beta	20-Jun-69	200	
Gross beta	24-Jul-69	200	
Gross beta	03-Nov-69	200	
Gross beta	19-Feb-88	200	
Gross beta	25-May-88	840	
Gross beta	19-Jul-88	17	
Gross beta	16-Nov-88	150	
Gross beta	12-Apr-89	160	
Gross beta	23-Oct-89	150	
Gross beta	02-May-90	150	
Gross beta	15-Feb-91	21.4	
Gross beta	15-May-91	7.4	
Iodine-129 (Drinking Water)	27-Mar-89	-0.0294	U
Technetium-99	19-Feb-88	71.7	
Technetium-99	19-Jul-88	23.3	
Technetium-99	27-Mar-89	0.813	U
Technetium-99	15-Feb-91	2	U
Technetium-99	15-May-91	3	U
Tritium	03-Jan-62	10000	
Tritium	10-Jan-62	1000	
Tritium	28-Mar-62	1000	
Tritium	4-Apr-62	60000	
Tritium	21-Jun-62	1000	

DATA QUALIFIERS: U = BELOW QUANTIFICATION LIMIT
UH = BELOW QUANTIFICATION LIMIT; HOLDING TIME EXCEEDED

9413096.0296

Table C-8. Aquifer communication indicator constituent activity data for well 699-54-57.

CONSTITUENT	COLLECTION DATE	ACTIVITY (pCi/L)	QUALIFIER
Tritium	27-Jun-62	1000	
Tritium	10-Dec-62	1000	
Tritium	17-Jan-63	20000	
Tritium	24-Jan-63	1000	
Tritium	15-Apr-63	1000	
Tritium	26-Sep-63	1000	
Tritium	10-Jan-66	2300	
Tritium	29-Sep-66	2000	
Tritium	16-Dec-66	2100	
Tritium	15-Sep-67	1800	
Tritium	14-Dec-67	1800	
Tritium	12-Jan-68	1700	
Tritium	2-Jan-69	1200	
Tritium	19-Mar-69	9800	
Tritium	20-Jun-69	550	
Tritium	24-Jul-69	510	
Tritium	15-Jan-71	640	
Tritium	20-May-71	790	
Tritium	12-Jul-71	1100	
Tritium	13-Oct-71	820	
Tritium	3-Feb-72	710	
Tritium	12-Jun-72	740	
Tritium	11-Aug-72	660	
Tritium	16-Oct-72	510	
Tritium	6-Jun-73	1000	
Tritium	9-Jul-73	800	
Tritium	31-Oct-73	590	
Tritium	16-Jan-74	510	
Tritium	1-May-74	500	
Tritium	9-Jul-74	500	
Tritium	26-Nov-74	1000	
Tritium	27-Feb-75	700	
Tritium	30-May-75	710	
Tritium	28-Aug-75	1200	
Tritium	2-Dec-75	4700	
Tritium	27-Feb-76	770	
Tritium	2-Jun-76	1100	
Tritium	8-Sep-76	1100	
Tritium	1-Mar-77	1200	
Tritium	6-Jun-77	570	
Tritium	30-Aug-77	1100	

DATA QUALIFIERS: U = BELOW QUANTIFICATION LIMIT
UH = BELOW QUANTIFICATION LIMIT; HOLDING TIME EXCEEDED

9413096.0297

Table C-8. Aquifer communication indicator constituent activity data for well 699-54-57.

CONSTITUENT	COLLECTION DATE	ACTIVITY (pCi/L)	QUALIFIER
Tritium	1-Feb-78	830	
Tritium	17-Apr-78	710	
Tritium	21-Jul-78	680	
Tritium	5-Oct-78	1200	
Tritium	26-Apr-79	2200	
Tritium	13-Jul-79	970	
Tritium	4-Oct-79	740	
Tritium	28-Jan-80	960	
Tritium	16-Apr-80	1100	
Tritium	9-Jul-80	3400	
Tritium	27-Sep-80	480	
Tritium	15-Apr-81	440	
Tritium	15-Jul-81	1300	
Tritium	29-Sep-81	860	
Tritium	22-Jan-82	830	
Tritium	9-Jul-82	400	
Tritium	29-Sep-82	370	
Tritium	18-Jan-83	400	
Tritium	14-Apr-83	-250	
Tritium	6-Jul-83	-430	
Tritium	11-Oct-83	60	
Tritium	19-Jan-84	-520	
Tritium	8-May-84	-240	
Tritium	19-Jul-84	110	
Tritium	30-Oct-84	700	
Tritium	19-Sep-85	13.5	U
Tritium	18-Apr-86	-49.7	U
Tritium	8-Sep-86	159	U
Tritium	27-Oct-86	-8.05	U
Tritium	26-Apr-87	-93.6	U
Tritium	23-Sep-87	60.2	U
Tritium	19-Feb-88	445	
Tritium	19-Jul-88	89.3	U
Tritium	24-Feb-89	247	
Tritium	31-Aug-89	-73.1	U
Tritium	2-May-90	-29.8	U
Tritium	15-May-91	200	U

DATA QUALIFIERS: U = BELOW QUANTIFICATION LIMIT
UH = BELOW QUANTIFICATION LIMIT; HOLDING TIME EXCEEDED

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Table C-9. Aquifer communication indicator constituent activity data for well 699-53-50.

CONSTITUENT	COLLECTION DATE	ACTIVITY (pCi/L)	QUALIFIER
Cobalt-60	11-Sep-86	-25.2	U
Gross beta	12-Feb-88	7.92	
Gross beta	23-May-88	6.2	
Gross beta	22-Jul-88	6.14	
Gross beta	14-Nov-88	3.4	
Gross beta	19-Apr-89	7.88	
Iodine-129	03-Jun-88	0.0006077	
Iodine-129 (Drinking Water)	27-Mar-89	0.0764	U
Technetium-99	12-Feb-88	3.28	U
Technetium-99	22-Jul-88	0.0975	U
Technetium-99	27-Mar-89	2.22	U
Tritium	17-Apr-85	-156	
Tritium	12-Jul-85	272	
Tritium	18-Apr-86	122	U
Tritium	11-Sep-86	-129	U
Tritium	27-Oct-86	-100	U
Tritium	23-Jun-87	-74.4	U
Tritium	16-Sep-87	60.3	U
Tritium	12-Feb-88	-84	U
Tritium	22-Jul-88	119	U
Tritium	03-Mar-89	47.5	U

DATA QUALIFIERS: U = BELOW QUANTIFICATION LIMIT
UH = BELOW QUANTIFICATION LIMIT; HOLDING TIME EXCEEDED

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Table C-10. Aquifer communication indicator constituent activity data for well 699-53-56.

CONSTITUENT	COLLECTION DATE	ACTIVITY (pCi/L)	QUALIFIER
Cobalt-60	11-Sep-86	9.59	
Gross beta	6-Mar-88	5.23	
Gross beta	10-Jun-88	6.97	
Gross beta	21-Jul-88	6.43	
Gross beta	16-Nov-88	5.5	
Gross beta	3-Apr-89	8.56	
Gross beta	23-Oct-89	5.16	
Gross beta	2-May-90	43	
Iodine-129	01-Apr-88	0.0022941	
Technetium-99	06-Mar-88	1.26	U
Technetium-99	21-Jul-88	6.93	U
Technetium-99	28-Mar-89	-1.94	U
Tritium	18-Apr-86	74.8	U
Tritium	11-Sep-86	9.69	U
Tritium	27-Oct-86	176	U
Tritium	17-Jun-87	81.8	U
Tritium	16-Sep-87	75.3	U
Tritium	06-Mar-88	-29.1	U
Tritium	21-Jul-88	51.8	U
Tritium	03-Mar-89	-20.5	U
Tritium	31-Aug-89	86.2	U
Tritium	02-May-90	-29.8	U

DATA QUALIFIERS: U = BELOW QUANTIFICATION LIMIT
UH = BELOW QUANTIFICATION LIMIT; HOLDING TIME EXCEEDED

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Table C-11. Aquifer communication indicator constituent activity data for well 299-E26-8.

CONSTITUENT	COLLECTION DATE	ACTIVITY (pCi/L)	QUALIFIER
Cobalt-60	08-Sep-86	-3.5	U
Gross beta	22-Feb-88	10.6	
Gross beta	11-May-88	9.34	
Gross beta	28-Jul-88	8.31	
Gross beta	27-Oct-88	7.98	
Gross beta	02-Jun-89	9.67	
Gross beta	14-May-90	10.3	
Iodine-129 (Drinking Water)	02-Jun-89	-0.0298	U
Technetium-99	22-Feb-88	0.443	U
Technetium-99	28-Jul-88	1.75	U
Technetium-99	02-Jun-89	-0.314	U
Tritium	22-May-84	3030	
Tritium	13-Nov-84	701	
Tritium	03-Apr-85	16.1	
Tritium	18-Jul-85	96.9	U
Tritium	21-Apr-86	123	U
Tritium	08-Sep-86	-38.5	U
Tritium	01-Apr-87	180	U
Tritium	03-Sep-87	20.5	U
Tritium	22-Feb-88	1.08	U
Tritium	28-Jul-88	-288	U
Tritium	17-Mar-89	-29.2	U
Tritium	01-Sep-89	-47.8	U

DATA QUALIFIERS: U = BELOW QUANTIFICATION LIMIT
UH = BELOW QUANTIFICATION LIMIT; HOLDING TIME EXCEEDED

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Table C-12. Aquifer communication indicator constituent activity data for well 299-E33-12.

CONSTITUENT	COLLECTION DATE	ACTIVITY (pCi/L)	QUALIFIER
Cobalt-60	12-Mar-56	190000	
Cobalt-60	08-Oct-56	380000	
Cobalt-60	07-Jan-57	450000	
Cobalt-60	30-Dec-57	220000	
Cobalt-60	27-Jan-58	200000	
Cobalt-60	03-Feb-58	170000	
Cobalt-60	24-Feb-58	330000	
Cobalt-60	10-Mar-58	280000	
Cobalt-60	24-Mar-58	280000	
Cobalt-60	31-Mar-58	310000	
Cobalt-60	21-Apr-58	320000	
Cobalt-60	28-Apr-58	360000	
Cobalt-60	26-May-58	340000	
Cobalt-60	02-Jun-58	310000	
Cobalt-60	23-Jun-58	190000	
Cobalt-60	30-Jun-58	160000	
Cobalt-60	30-Jun-58	8900000	
Cobalt-60	28-Jul-58	140000	
Cobalt-60	04-Aug-58	190000	
Cobalt-60	25-Aug-58	210000	
Cobalt-60	02-Sep-58	170000	
Cobalt-60	22-Sep-58	110000	
Cobalt-60	29-Sep-58	190000	
Cobalt-60	27-Oct-58	190000	
Cobalt-60	03-Nov-58	130000	
Cobalt-60	24-Nov-58	190000	
Cobalt-60	01-Dec-58	170000	
Cobalt-60	13-Dec-58	190000	
Cobalt-60	26-Jan-59	160000	
Cobalt-60	02-Feb-59	160000	
Cobalt-60	23-Feb-59	140000	
Cobalt-60	02-Mar-59	160000	
Cobalt-60	27-Apr-59	150000	
Cobalt-60	04-May-59	98000	
Cobalt-60	25-May-59	120000	
Cobalt-60	01-Jun-59	120000	
Cobalt-60	19-Jun-59	130000	
Cobalt-60	29-Jun-59	97000	
Cobalt-60	03-Aug-59	150000	
Cobalt-60	24-Aug-59	130000	
Cobalt-60	31-Aug-59	110000	

DATA QUALIFIERS: U = BELOW QUANTIFICATION LIMIT
UH = BELOW QUANTIFICATION LIMIT; HOLDING TIME EXCEEDED

Table C-12. Aquifer communication indicator constituent activity data for well 299-E33-12.

CONSTITUENT	COLLECTION DATE	ACTIVITY (pCi/L)	QUALIFIER
Cobalt-60	28-Sep-59	96000	
Cobalt-60	05-Oct-59	130000	
Cobalt-60	27-Oct-59	120000	
Cobalt-60	04-Nov-59	95000	
Cobalt-60	26-Jul-60	56000	
Cobalt-60	22-Jan-62	22000	
Cobalt-60	22-Feb-62	1200	
Cobalt-60	20-Mar-62	15000	
Cobalt-60	16-Apr-62	19000	
Cobalt-60	14-May-62	15000	
Cobalt-60	11-Jun-62	15000	
Cobalt-60	09-Jul-62	17000	
Cobalt-60	04-Sep-62	16000	
Cobalt-60	01-Oct-62	19000	
Cobalt-60	29-Oct-62	8700	
Cobalt-60	26-Nov-62	11000	
Cobalt-60	26-Dec-62	15000	
Cobalt-60	11-Sep-86	19.6	
Cobalt-60	01-Apr-87	18.2	
Cobalt-60	01-Sep-87	16.2	
Cobalt-60	28-Feb-88	7.73	
Cobalt-60	01-Sep-88	16.7	
Cobalt-60	15-Feb-91	7	U
Cobalt-60	11-Jul-91	53.7	
Cobalt-60	29-Aug-91	52.1	
Cobalt-60	31-Oct-91	46.5	
Gross beta	30-Jan-56	890000	
Gross beta	06-Feb-56	680000	
Gross beta	13-Feb-56	3800000	
Gross beta	20-Feb-56	1400000	
Gross beta	27-Feb-56	1200000	
Gross beta	06-Mar-56	8600000	
Gross beta	12-Mar-56	15000000	
Gross beta	19-Mar-56	11000000	
Gross beta	02-Apr-56	8500000	
Gross beta	09-Apr-56	15000000	
Gross beta	16-Apr-56	14000000	
Gross beta	23-Apr-56	15000000	
Gross beta	30-Apr-56	17000000	
Gross beta	07-May-56	7400000	
Gross beta	14-May-56	28000000	

DATA QUALIFIERS: U = BELOW QUANTIFICATION LIMIT
UH = BELOW QUANTIFICATION LIMIT; HOLDING TIME EXCEEDED

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Table C-12. Aquifer communication indicator constituent activity data for well 299-E33-12.

CONSTITUENT	COLLECTION DATE	ACTIVITY (pCi/L)	QUALIFIER
Gross beta	21-May-56	15000000	
Gross beta	28-May-56	14000000	
Gross beta	04-Jun-56	20000000	
Gross beta	11-Jun-56	10000000	
Gross beta	18-Jun-56	12000000	
Gross beta	03-Jul-56	17000000	
Gross beta	09-Jul-56	19000000	
Gross beta	18-Jul-56	120000	
Gross beta	20-Aug-56	8600000	
Gross beta	27-Aug-56	24000000	
Gross beta	04-Sep-56	37000000	
Gross beta	10-Sep-56	36000000	
Gross beta	17-Sep-56	22000000	
Gross beta	24-Sep-56	48000000	
Gross beta	02-Oct-56	34000000	
Gross beta	09-Oct-56	37000000	
Gross beta	22-Oct-56	16000000	
Gross beta	29-Oct-56	40000000	
Gross beta	05-Nov-56	34000000	
Gross beta	13-Nov-56	27000000	
Gross beta	26-Nov-56	42000000	
Gross beta	03-Dec-56	34000000	
Gross beta	10-Dec-56	8500000	
Gross beta	17-Dec-56	38000000	
Gross beta	28-Dec-56	36000000	
Gross beta	07-Jan-57	36000000	
Gross beta	14-Jan-57	46000000	
Gross beta	06-Feb-57	25000000	
Gross beta	11-Feb-57	32000000	
Gross beta	12-Feb-57	32000000	
Gross beta	18-Feb-57	29000000	
Gross beta	25-Feb-57	34000000	
Gross beta	06-Mar-57	64000000	
Gross beta	11-Mar-57	28000000	
Gross beta	18-Mar-57	30000000	
Gross beta	25-Mar-57	30000000	
Gross beta	01-Apr-57	28000000	
Gross beta	22-Apr-57	27000000	
Gross beta	29-Apr-57	24000000	
Gross beta	31-May-57	22000000	
Gross beta	04-Jun-57	22000000	

DATA QUALIFIERS: U = BELOW QUANTIFICATION LIMIT
UH = BELOW QUANTIFICATION LIMIT; HOLDING TIME EXCEEDED

Table C-12. Aquifer communication indicator constituent activity data for well 299-E33-12.

CONSTITUENT	COLLECTION DATE	ACTIVITY (pCi/L)	QUALIFIER
Gross beta	26-Jun-57	19000000	
Gross beta	02-Jul-57	700000	
Gross beta	23-Jul-57	11000000	
Gross beta	30-Jul-57	10000000	
Gross beta	27-Aug-57	1300000	
Gross beta	04-Sep-57	15000000	
Gross beta	25-Sep-57	11000000	
Gross beta	30-Sep-57	13000000	
Gross beta	29-Oct-57	12000000	
Gross beta	06-Nov-57	14000000	
Gross beta	25-Nov-57	12000000	
Gross beta	02-Dec-57	13000000	
Gross beta	23-Dec-57	9800000	
Gross beta	30-Dec-57	12000000	
Gross beta	27-Jan-58	12000000	
Gross beta	03-Feb-58	10000000	
Gross beta	24-Feb-58	11000000	
Gross beta	03-Mar-58	10000000	
Gross beta	24-Mar-58	9000000	
Gross beta	31-Mar-58	9500000	
Gross beta	21-Apr-58	8900000	
Gross beta	28-Apr-58	16000000	
Gross beta	26-May-58	8700000	
Gross beta	02-Jun-58	8500000	
Gross beta	23-Jun-58	7800000	
Gross beta	30-Jun-58	7300000	
Gross beta	28-Jul-58	7600000	
Gross beta	04-Aug-58	6800000	
Gross beta	25-Aug-58	7000000	
Gross beta	02-Sep-58	7100000	
Gross beta	22-Sep-58	6700000	
Gross beta	29-Sep-58	6800000	
Gross beta	27-Oct-58	5500000	
Gross beta	28-Oct-58	5500000	
Gross beta	03-Nov-58	5700000	
Gross beta	21-Nov-58	5800000	
Gross beta	24-Nov-58	5800000	
Gross beta	01-Dec-58	6200000	
Gross beta	30-Dec-58	5700000	
Gross beta	26-Jan-59	9800000	
Gross beta	02-Feb-59	8400000	

DATA QUALIFIERS: U = BELOW QUANTIFICATION LIMIT
UH = BELOW QUANTIFICATION LIMIT; HOLDING TIME EXCEEDED

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Table C-12. Aquifer communication indicator constituent activity data for well 299-E33-12.

CONSTITUENT	COLLECTION DATE	ACTIVITY (pCi/L)	QUALIFIER
Gross beta	23-Feb-59	8200000	
Gross beta	02-Mar-59	7900000	
Gross beta	24-Mar-59	7100000	
Gross beta	30-Mar-59	3700000	
Gross beta	27-Apr-59	6400000	
Gross beta	04-May-59	6300000	
Gross beta	25-May-59	5100000	
Gross beta	01-Jun-59	5600000	
Gross beta	19-Jun-59	5600000	
Gross beta	29-Jun-59	5200000	
Gross beta	27-Jul-59	2200000	
Gross beta	03-Aug-59	5000000	
Gross beta	25-Aug-59	4100000	
Gross beta	31-Aug-59	4200000	
Gross beta	28-Sep-59	3600000	
Gross beta	05-Oct-59	3400000	
Gross beta	13-Jul-66	8900	
Gross beta	14-Jul-66	96	
Gross beta	28-Feb-88	49.3	
Gross beta	01-Sep-88	51.6	
Gross beta	14-May-90	46.7	
Gross beta	15-Feb-91	1000	
Gross beta	09-Apr-91	1100	
Gross beta	11-Jul-91	1100	
Gross beta	29-Aug-91	890	
Gross beta	31-Oct-91	890	
Technetium-99	28-Feb-88	132	
Technetium-99	01-Sep-88	82.9	
Technetium-99	15-Feb-91	1900	
Technetium-99	09-Apr-91	1500	
Technetium-99	11-Jul-91	1400	
Technetium-99	29-Aug-91	1700	
Technetium-99	31-Oct-91	1800	
Tritium	17-May-84	954	
Tritium	08-Nov-84	3460	
Tritium	02-Apr-85	419	
Tritium	16-Aug-85	311	
Tritium	21-Apr-86	419	
Tritium	11-Sep-86	390	
Tritium	01-Apr-87	492	
Tritium	01-Sep-87	385	

DATA QUALIFIERS: U = BELOW QUANTIFICATION LIMIT
UH = BELOW QUANTIFICATION LIMIT; HOLDING TIME EXCEEDED

Table C-12. Aquifer communication indicator constituent activity data for well 299-E33-12.

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CONSTITUENT	COLLECTION DATE	ACTIVITY (pCi/L)	QUALIFIER
Tritium	28-Feb-88	431	
Tritium	01-Sep-88	640	
Tritium	20-Mar-89	353	
Tritium	25-Aug-89	390	
Tritium	14-May-90	351	
Tritium	15-Feb-91	820	

DATA QUALIFIERS: U = BELOW QUANTIFICATION LIMIT
UH = BELOW QUANTIFICATION LIMIT; HOLDING TIME EXCEEDED

APPENDIX D

200 EAST GROUNDWATER CONTAMINANT REPORT

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Constituent	Well	Max of Result	Min of Result	Average of Result	Count of Result	Count of LT
Arsenic	2-E13-14	5.00	5.00	5.00	1	1
Arsenic	2-E16-2	38.00	24.00	31.00	2	0
Arsenic	2-E17-1	7.00	5.00	5.60	3	1
Arsenic	2-E17-12	9.00	5.00	7.00	3	1
Arsenic	2-E17-14	10.00	6.00	7.75	5	0
Arsenic	2-E17-15	9.00	5.00	7.35	6	0
Arsenic	2-E17-16	15.00	5.00	10.14	7	0
Arsenic	2-E17-17	7.10	5.00	6.19	5	1
Arsenic	2-E17-18	12.00	7.00	9.88	7	0
Arsenic	2-E17-19	8.00	6.00	6.80	3	0
Arsenic	2-E17-20	8.00	5.00	6.43	5	0
Arsenic	2-E17-5	8.00	5.00	7.00	4	1
Arsenic	2-E17-9	14.00	11.00	12.14	4	0
Arsenic	2-E18-1	5.00	5.00	5.00	1	1
Arsenic	2-E18-2	7.00	5.00	6.00	3	0
Arsenic	2-E18-3	51.00	11.00	16.78	4	0
Arsenic	2-E18-4	11.00	9.00	10.43	3	0
Arsenic	2-E24-16	11.00	5.90	8.91	5	0
Arsenic	2-E24-17	11.00	8.00	9.67	4	0
Arsenic	2-E24-18	7.00	5.00	6.17	3	0
Arsenic	2-E24-19	10.00	9.00	9.63	3	0
Arsenic	2-E24-2	12.00	7.00	9.50	4	0
Arsenic	2-E25-11	14.00	7.20	10.60	2	0
Arsenic	2-E25-17	56.00	56.00	56.00	1	0
Arsenic	2-E25-18	12.00	7.00	9.58	6	0
Arsenic	2-E25-19	9.00	7.00	8.30	3	0
Arsenic	2-E25-20	11.00	5.00	7.68	6	1
Arsenic	2-E25-21	14.00	12.00	12.80	3	0
Arsenic	2-E25-22	10.00	8.00	8.86	3	0

Constituent	Well	Max of Result	Min of Result	Average of Result	Count of Result	Count of LT
Arsenic	2-E25-23	24.00	24.00	24.00	1	0
Arsenic	2-E25-24	19.00	15.00	17.00	4	0
Arsenic	2-E25-25	6.00	5.00	5.07	2	2
Arsenic	2-E25-26	7.00	5.00	6.13	5	1
Arsenic	2-E25-27	7.00	5.00	5.60	3	1
Arsenic	2-E25-29P	14.00	7.70	11.69	7	0
Arsenic	2-E25-30P	46.00	15.00	31.38	6	0
Arsenic	2-E25-31	11.00	6.80	9.03	8	0
Arsenic	2-E25-32P	6.00	5.00	5.07	2	2
Arsenic	2-E25-33	15.00	5.00	10.33	9	0
Arsenic	2-E25-34	9.00	5.00	7.60	7	0
Arsenic	2-E25-35	17.00	9.00	11.41	7	1
Arsenic	2-E25-36	11.00	6.00	8.55	9	0
Arsenic	2-E28-23	5.00	5.00	5.00	1	1
Arsenic	2-E28-26	7.00	5.00	5.33	2	1
Arsenic	2-E28-27	7.00	5.00	5.86	3	1
Arsenic	2-E28-7	5.00	5.00	5.00	1	1
Arsenic	2-E32-2	7.00	5.00	6.00	3	0
Arsenic	2-E33-1	9.00	5.00	7.00	2	1
Arsenic	2-E33-28	9.00	7.00	7.86	3	0
Arsenic	2-E33-29	10.00	5.00	6.71	4	1
Arsenic	2-E33-3	10.00	10.00	10.00	1	0
Arsenic	2-E33-30	9.00	5.00	6.50	4	1
Arsenic	2-E33-31	7.00	7.00	7.00	1	0
Arsenic	2-E33-32	9.00	9.00	9.00	1	0
Arsenic	2-E33-33	8.00	8.00	8.00	1	0
Arsenic	2-E33-5	10.00	8.00	9.00	2	0
Arsenic	2-E33-8	8.00	8.00	8.00	1	0
Arsenic	2-E34-1	5.00	5.00	5.00	1	1
Arsenic	2-E34-2	11.00	5.00	6.63	5	0

Constituent	Well	Max of Result	Min of Result	Average of Result	Count of Result	Count of LT
Arsenic	2-E34-3	8.00	5.00	6.00	4	1
Arsenic	2-E34-5	7.00	5.00	5.55	5	0
Arsenic	2-E34-6	6.00	5.00	5.29	2	2
Arsenic	2-E34-7	5.00	5.00	5.00	1	2
Arsenic	2-E35-1	5.00	5.00	5.00	1	1
Arsenic	6-23-34	5.00	5.00	5.00	1	1
Arsenic	6-24-33	5.00	5.00	5.00	1	1
Arsenic	6-24-34A	5.00	5.00	5.00	1	1
Arsenic	6-24-34B	6.00	5.00	5.22	2	1
Arsenic	6-24-34C	5.00	5.00	5.00	1	1
Arsenic	6-24-35	7.00	5.00	5.56	3	1
Arsenic	6-25-34A	5.00	5.00	5.00	1	1
Arsenic	6-25-34B	5.00	5.00	5.00	1	1
Arsenic	6-25-34C	22.00	5.00	6.89	2	1
Arsenic	6-26-33	7.00	5.00	5.60	3	1
Arsenic	6-26-34	7.00	5.00	5.75	3	1
Arsenic	6-26-35A	5.00	5.00	5.00	1	1
Arsenic	6-34-42	5.70	5.00	5.35	2	1
Arsenic	6-35-70	5.00	5.00	5.00	1	1
Arsenic	6-36-61A	5.00	5.00	5.00	1	1
Arsenic	6-40-62	5.00	5.00	5.00	1	1
Arsenic	6-42-40B	5.00	5.00	5.00	1	1
Arsenic	6-42-42B	7.00	5.00	6.14	3	1
Arsenic	6-43-41E	5.00	5.00	5.00	1	2
Arsenic	6-43-42J	17.00	8.00	12.38	6	0
Arsenic	6-43-43	9.50	7.00	7.70	4	0
Arsenic	6-43-45	12.00	8.60	10.37	4	0
Arsenic	6-44-42	16.00	11.00	13.00	5	0
Arsenic	6-44-43B	9.00	5.00	6.89	4	1
Arsenic	6-45-42	5.50	5.00	5.17	2	2

Constituent	Well	Max of Result	Min of Result	Average of Result	Count of Result	Count of LT
Arsenic	6-45-69A	5.00	5.00	5.00	1	1
Arsenic	6-53-47A	5.00	5.00	5.00	1	1
Arsenic	6-55-50C	5.00	5.00	5.00	1	1
Cesium-137	2-E13-14	2.83	-.48	1.21	4	2
Cesium-137	2-E13-19	4.31	-1.06	1.62	2	1
Cesium-137	2-E13-5	11.00	3.31	6.36	3	1
Cesium-137	2-E13-8	4.97	-2.61	.75	6	1
Cesium-137	2-E16-2	5.65	-9.77	-.09	16	1
Cesium-137	2-E17-1	2.41	-1.94	.59	4	2
Cesium-137	2-E17-12	9.13	-5.93	.62	18	2
Cesium-137	2-E17-14	5.30	-2.86	-.22	7	2
Cesium-137	2-E17-15	4.47	-3.64	-.36	6	2
Cesium-137	2-E17-16	5.63	-1.64	2.67	8	2
Cesium-137	2-E17-17	5.96	-8.42	-1.32	7	2
Cesium-137	2-E17-18	5.22	-6.29	.28	8	2
Cesium-137	2-E17-2	7.51	-2.83	.29	7	1
Cesium-137	2-E17-20	1.55	.14	.84	2	1
Cesium-137	2-E17-5	3.77	-9.19	-1.35	23	2
Cesium-137	2-E17-8	5.59	1.13	3.20	5	1
Cesium-137	2-E17-9	5.77	-5.96	.42	16	1
Cesium-137	2-E18-1	1.18	.62	.90	2	2
Cesium-137	2-E18-2	.74	.74	.74	1	1
Cesium-137	2-E18-3	-1.79	-1.79	-1.79	1	1
Cesium-137	2-E18-4	-.13	-.13	-.13	1	1
Cesium-137	2-E23-1	-1.90	-1.90	-1.90	1	1
Cesium-137	2-E24-1	2.65	-4.35	-1.86	7	1
Cesium-137	2-E24-11	3.54	-7.10	-.64	7	1
Cesium-137	2-E24-12	4.22	-9.05	-3.18	11	1

Constituent	Well	Max of Result	Min of Result	Average of Result	Count of Result	Count of LT
Cesium-137	2-E24-13	1.41	-2.74	-.44	3	1
Cesium-137	2-E24-16	.89	-1.21	-.16	2	1
Cesium-137	2-E24-17	-.18	-.18	-.18	1	1
Cesium-137	2-E24-18	.22	.22	.22	1	1
Cesium-137	2-E24-19	-1.65	-4.60	-3.13	2	2
Cesium-137	2-E24-2	1.86	-2.12	-.19	5	1
Cesium-137	2-E24-4	2.12	-2.39	-.41	7	1
Cesium-137	2-E24-7	1.46	1.46	1.46	1	1
Cesium-137	2-E24-8	5.22	-2.25	1.04	5	1
Cesium-137	2-E25-10	.74	-1.91	-.58	2	1
Cesium-137	2-E25-11	6.76	-9.19	-.63	18	1
Cesium-137	2-E25-17	1.37	-6.72	-1.86	8	1
Cesium-137	2-E25-18	7.64	-5.65	.18	8	2
Cesium-137	2-E25-19	2.98	-2.97	.22	8	2
Cesium-137	2-E25-2	5.42	1.06	2.75	3	1
Cesium-137	2-E25-20	2.23	-4.47	-.30	8	1
Cesium-137	2-E25-21	3.01	.31	1.49	6	1
Cesium-137	2-E25-22	1.19	-6.01	-2.32	8	1
Cesium-137	2-E25-23	3.35	-6.18	-.48	6	1
Cesium-137	2-E25-24	4.24	-4.21	-1.22	6	1
Cesium-137	2-E25-25	2.64	-5.25	-.04	4	1
Cesium-137	2-E25-26	2.00	-2.72	.13	4	1
Cesium-137	2-E25-27	3.27	-2.98	.15	2	1
Cesium-137	2-E25-29P	3.76	-3.18	.07	3	1
Cesium-137	2-E25-30P	5.30	-2.93	-.53	4	1
Cesium-137	2-E25-31	4.97	-1.50	2.03	5	1
Cesium-137	2-E25-32P	3.51	-.75	1.28	3	1
Cesium-137	2-E25-33	5.46	-7.33	-1.43	4	2
Cesium-137	2-E25-34	-2.73	-2.73	-2.73	1	1
Cesium-137	2-E25-35	-.66	-.66	-.66	1	1

Constituent	Well	Max of Result	Min of Result	Average of Result	Count of Result	Count of LT
Cesium-137	2-E25-36	-.28	-3.11	-1.69	2	1
Cesium-137	2-E28-23	1800.00	844.00	1328.40	9	0
Cesium-137	2-E28-24	633.00	-1.88	112.31	6	1
Cesium-137	2-E28-25	1070.00	34.70	246.53	6	0
Cesium-137	2-E28-26	.30	-3.18	-.97	6	1
Cesium-137	2-E28-27	3.91	-4.41	.53	7	1
Cesium-137	2-E28-7	23.30	-.85	3.75	8	1
Cesium-137	2-E32-2	1.49	-3.64	-.50	7	1
Cesium-137	2-E33-1	3.89	-1.78	.88	4	1
Cesium-137	2-E33-12	.23	-4.10	-1.94	2	1
Cesium-137	2-E33-18	.88	-3.76	-1.86	3	1
Cesium-137	2-E33-24	3.01	-6.36	-2.37	3	1
Cesium-137	2-E33-26	1.94	-1.59	.35	3	1
Cesium-137	2-E33-28	4.83	-5.02	.23	7	1
Cesium-137	2-E33-29	6.51	-1.77	1.62	6	1
Cesium-137	2-E33-3	2.61	-8.19	-3.61	3	1
Cesium-137	2-E33-30	9.02	-4.51	2.15	6	1
Cesium-137	2-E33-31	-1.97	-1.97	-1.97	1	1
Cesium-137	2-E33-32	-.77	-.77	-.77	1	1
Cesium-137	2-E33-33	-1.01	-1.01	-1.01	1	1
Cesium-137	2-E33-5	7.50	-.53	2.20	4	1
Cesium-137	2-E33-7	6.33	-3.01	1.04	7	1
Cesium-137	2-E33-8	5.85	-3.20	.91	4	1
Cesium-137	2-E33-9	7.64	-3.75	2.61	6	1
Cesium-137	2-E34-1	11.30	-3.30	2.40	7	2
Cesium-137	2-E34-2	4.37	-4.76	-.37	8	2
Cesium-137	2-E34-3	1.51	-4.00	-1.55	6	2
Cesium-137	2-E34-5	3.64	-2.23	.18	7	2
Cesium-137	2-E34-6	1.64	-7.20	-1.68	6	2
Cesium-137	2-E34-7	-.71	-3.41	-2.09	3	2

Constituent	Well	Max of Result	Min of Result	Average of Result	Count of Result	Count of LT
Cesium-137	2-E35-1	.30	.30	.30	1	1
Cesium-137	6-20-39	4.24	-4.24	1.24	3	1
Cesium-137	6-23-34	3.60	-.33	2.29	5	1
Cesium-137	6-24-33	1.83	-5.84	-.83	12	2
Cesium-137	6-24-34A	2.86	-1.14	.28	5	1
Cesium-137	6-24-34B	8.27	-4.82	1.10	6	1
Cesium-137	6-24-34C	1.66	-3.72	-1.03	5	1
Cesium-137	6-24-35	2.63	-1.42	.55	5	1
Cesium-137	6-25-34C	3.65	-3.12	1.28	5	1
Cesium-137	6-31-31	5.18	-1.93	.53	3	2
Cesium-137	6-31-53B	-3.19	-3.73	-3.46	2	1
Cesium-137	6-32-43	3.83	-6.26	-.78	14	2
Cesium-137	6-34-39A	5.54	-2.26	1.64	2	1
Cesium-137	6-34-41B	.50	-7.89	-2.97	5	1
Cesium-137	6-34-42	.43	.43	.43	1	0
Cesium-137	6-34-51	2.65	-4.64	-.67	5	1
Cesium-137	6-35-70	3.70	-3.26	.98	9	2
Cesium-137	6-36-46Q	2.65	-4.24	-.80	2	1
Cesium-137	6-36-61A	-4.45	-4.45	-4.45	1	0
Cesium-137	6-39-39	3.01	-2.36	-.30	6	1
Cesium-137	6-40-33A	3.18	-2.01	.17	10	2
Cesium-137	6-40-62	-5.03	-5.03	-5.03	1	1
Cesium-137	6-42-40B	13.30	-3.90	.72	18	1
Cesium-137	6-43-41E	-.71	-.71	-.71	1	1
Cesium-137	6-43-45	-.22	-.22	-.22	1	1
Cesium-137	6-44-43B	-4.42	-9.51	-6.97	2	1
Cesium-137	6-45-42	6.14	-6.07	-1.04	18	2
Cesium-137	6-45-69A	.86	.86	.86	1	1
Cesium-137	6-47-46A	5.29	-3.01	1.13	6	1
Cesium-137	6-47-50	5.30	-1.37	1.97	2	1

Constituent	Well	Max of Result	Min of Result	Average of Result	Count of Result	Count of LT
Cesium-137	6-47-60	3.08	-6.51	-.35	6	1
Cesium-137	6-49-55A	1.49	-8.27	-2.19	11	2
Cesium-137	6-50-42	-.13	-.13	-.13	1	1
Cesium-137	6-50-53A	6.24	-9.94	-2.54	8	1
Cesium-137	6-53-47A	6.01	-5.30	1.48	14	1
Cesium-137	6-53-47B	4.13	-4.24	-.77	6	1
Cesium-137	6-53-48A	6.01	0.00	3.06	6	1
Cesium-137	6-53-48B	1.59	-1.89	-.50	6	1
Cesium-137	6-53-55A	5.64	.23	2.78	4	1
Cesium-137	6-54-48	2.76	-5.51	-1.74	6	1
Cesium-137	6-55-50A	5.54	-5.92	.80	6	1
Cesium-137	6-55-50C	4.84	-3.09	.24	6	2
Cesium-137	6-60-60	-1.37	-2.83	-2.10	2	1
Cesium-137	6-61-62	2.83	-4.85	-.60	6	1
Cesium-137	6-61-66	1.88	-3.71	-.19	6	1
Cesium-137	6-63-25A	.61	.61	.61	1	1
Cesium-137	6-63-58	1.71	-8.80	-2.01	6	1
Cesium-137	6-64-62	3.11	-.75	1.41	5	1
Chromium, filtered	2-E13-14	67.00	28.00	47.25	4	0
Chromium, filtered	2-E13-5	12.00	10.00	10.50	2	1
Chromium, filtered	2-E17-1	10.00	10.00	10.00	1	1
Chromium, filtered	2-E17-12	10.00	10.00	10.00	1	1
Chromium, filtered	2-E17-14	20.00	10.00	12.25	3	2
Chromium, filtered	2-E17-15	55.00	10.00	17.56	4	2
Chromium, filtered	2-E17-16	10.00	10.00	10.00	1	1
Chromium, filtered	2-E17-17	10.00	10.00	10.00	1	1
Chromium, filtered	2-E17-18	10.00	10.00	10.00	1	1
Chromium, filtered	2-E17-19	10.00	10.00	10.00	1	1

Constituent	Well	Max of Result	Min of Result	Average of Result	Count of Result	Count of LT
Chromium, filtered	2-E17-20	20.00	10.00	11.67	2	2
Chromium, filtered	2-E17-5	10.00	10.00	10.00	1	1
Chromium, filtered	2-E17-9	10.00	10.00	10.00	1	1
Chromium, filtered	2-E18-1	20.00	10.00	11.25	2	2
Chromium, filtered	2-E18-2	20.00	10.00	11.22	3	2
Chromium, filtered	2-E18-3	20.00	10.00	11.33	3	2
Chromium, filtered	2-E18-4	10.00	10.00	10.00	1	1
Chromium, filtered	2-E24-12	10.00	10.00	10.00	1	1
Chromium, filtered	2-E24-16	20.00	10.00	11.67	2	2
Chromium, filtered	2-E24-17	10.00	10.00	10.00	1	1
Chromium, filtered	2-E24-18	10.00	10.00	10.00	1	1
Chromium, filtered	2-E24-19	65.00	65.00	65.00	1	0
Chromium, filtered	2-E24-2	10.00	10.00	10.00	1	1
Chromium, filtered	2-E24-8	12.00	12.00	12.00	1	0
Chromium, filtered	2-E25-18	23.00	10.00	11.44	2	1
Chromium, filtered	2-E25-19	10.00	10.00	10.00	1	1
Chromium, filtered	2-E25-20	130.00	10.00	24.44	3	2
Chromium, filtered	2-E25-21	20.00	10.00	11.67	2	2
Chromium, filtered	2-E25-22	10.00	10.00	10.00	1	1
Chromium, filtered	2-E25-23	10.00	10.00	10.00	1	1
Chromium, filtered	2-E25-24	10.00	10.00	10.00	1	1
Chromium, filtered	2-E25-25	20.00	10.00	12.73	4	2
Chromium, filtered	2-E25-26	20.00	10.00	11.11	2	2
Chromium, filtered	2-E25-27	10.00	10.00	10.00	1	1
Chromium, filtered	2-E25-29P	40.00	10.00	15.14	5	2
Chromium, filtered	2-E25-30P	32.00	10.00	15.71	5	1
Chromium, filtered	2-E25-31	42.00	10.00	13.53	4	2
Chromium, filtered	2-E25-32P	20.00	10.00	11.62	3	2
Chromium, filtered	2-E25-33	26.00	10.00	13.45	4	2
Chromium, filtered	2-E25-34	20.00	10.00	11.67	2	2

Constituent	Well	Max of Result	Min of Result	Average of Result	Count of Result	Count of LT
Chromium, filtered	2-E25-35	55.00	10.00	17.50	3	2
Chromium, filtered	2-E25-36	20.00	10.00	12.86	2	2
Chromium, filtered	2-E28-23	20.00	10.00	12.50	2	2
Chromium, filtered	2-E28-26	10.00	10.00	10.00	1	1
Chromium, filtered	2-E28-27	10.00	10.00	10.00	1	1
Chromium, filtered	2-E32-2	10.00	10.00	10.00	1	1
Chromium, filtered	2-E33-1	11.00	10.00	10.20	2	1
Chromium, filtered	2-E33-18	10.00	10.00	10.00	1	1
Chromium, filtered	2-E33-24	10.00	10.00	10.00	1	1
Chromium, filtered	2-E33-28	10.00	10.00	10.00	1	1
Chromium, filtered	2-E33-29	14.00	10.00	10.67	2	1
Chromium, filtered	2-E33-3	15.00	10.00	11.67	2	1
Chromium, filtered	2-E33-30	10.00	10.00	10.00	1	1
Chromium, filtered	2-E33-31	10.00	10.00	10.00	1	1
Chromium, filtered	2-E33-32	10.00	10.00	10.00	1	1
Chromium, filtered	2-E33-33	10.00	10.00	10.00	1	1
Chromium, filtered	2-E33-5	10.00	10.00	10.00	1	1
Chromium, filtered	2-E33-8	10.00	10.00	10.00	1	1
Chromium, filtered	2-E34-1	10.00	10.00	10.00	1	1
Chromium, filtered	2-E34-2	92.00	10.00	35.93	6	1
Chromium, filtered	2-E34-3	20.00	10.00	11.43	2	2
Chromium, filtered	2-E34-5	11.00	10.00	10.17	2	1
Chromium, filtered	2-E34-6	10.00	10.00	10.00	1	1
Chromium, filtered	2-E34-7	20.00	20.00	20.00	1	1
Chromium, filtered	2-E35-1	10.00	10.00	10.00	1	1
Chromium, filtered	6-20-39	10.00	10.00	10.00	1	1
Chromium, filtered	6-23-34	10.00	10.00	10.00	1	1
Chromium, filtered	6-24-33	10.00	10.00	10.00	1	1
Chromium, filtered	6-24-34A	15.00	10.00	10.63	2	1
Chromium, filtered	6-24-34B	10.00	10.00	10.00	1	1

Constituent	Well	Max of Result	Min of Result	Average of Result	Count of Result	Count of LT
Chromium, filtered	6-24-34C	10.00	10.00	10.00	1	1
Chromium, filtered	6-24-35	10.00	10.00	10.00	1	1
Chromium, filtered	6-24-46	10.00	10.00	10.00	1	1
Chromium, filtered	6-25-34A	10.00	10.00	10.00	1	1
Chromium, filtered	6-25-34B	10.00	10.00	10.00	1	1
Chromium, filtered	6-25-34C	10.00	10.00	10.00	1	1
Chromium, filtered	6-26-33	20.00	10.00	12.00	2	2
Chromium, filtered	6-26-34	10.00	10.00	10.00	1	1
Chromium, filtered	6-26-35A	10.00	10.00	10.00	1	1
Chromium, filtered	6-31-31	10.00	10.00	10.00	1	1
Chromium, filtered	6-32-43	10.00	10.00	10.00	1	1
Chromium, filtered	6-33-56	21.00	21.00	21.00	1	0
Chromium, filtered	6-34-51	20.00	20.00	20.00	1	1
Chromium, filtered	6-35-66	26.00	20.00	22.75	4	0
Chromium, filtered	6-35-70	10.00	10.00	10.00	1	1
Chromium, filtered	6-36-61A	15.00	10.00	12.75	3	1
Chromium, filtered	6-39-39	10.00	10.00	10.00	1	1
Chromium, filtered	6-40-33A	10.00	10.00	10.00	1	1
Chromium, filtered	6-40-62	10.00	10.00	10.00	1	1
Chromium, filtered	6-42-42B	20.00	10.00	12.00	2	2
Chromium, filtered	6-43-41E	10.00	10.00	10.00	1	1
Chromium, filtered	6-43-42J	10.00	10.00	10.00	1	1
Chromium, filtered	6-43-43	20.00	10.00	11.43	2	2
Chromium, filtered	6-43-45	20.00	10.00	14.00	2	2
Chromium, filtered	6-44-42	20.00	10.00	11.67	2	2
Chromium, filtered	6-44-43B	40.00	10.00	17.50	4	2
Chromium, filtered	6-44-64	10.00	10.00	10.00	1	1
Chromium, filtered	6-45-42	10.00	10.00	10.00	1	1
Chromium, filtered	6-45-69A	10.00	10.00	10.00	1	1
Chromium, filtered	6-46-21B	10.00	10.00	10.00	1	1

Constituent	Well	Max of Result	Min of Result	Average of Result	Count of Result	Count of LT
Chromium, filtered	6-47-35A	10.00	10.00	10.00	1	1
Chromium, filtered	6-47-46A	10.00	10.00	10.00	1	1
Chromium, filtered	6-47-50	10.00	10.00	10.00	1	1
Chromium, filtered	6-47-60	10.00	10.00	10.00	1	1
Chromium, filtered	6-49-55A	10.00	10.00	10.00	1	1
Chromium, filtered	6-50-53A	10.00	10.00	10.00	1	1
Chromium, filtered	6-53-47A	10.00	10.00	10.00	1	1
Chromium, filtered	6-53-47B	10.00	10.00	10.00	1	1
Chromium, filtered	6-54-34	10.00	10.00	10.00	1	1
Chromium, filtered	6-54-48	10.00	10.00	10.00	1	1
Chromium, filtered	6-55-50C	10.00	10.00	10.00	1	1
Chromium, filtered	6-57-29A	10.00	10.00	10.00	1	1
Chromium, filtered	6-59-58	10.00	10.00	10.00	1	1
Cobalt-60	2-E13-14	4.17	-2.68	-.38	3	1
Cobalt-60	2-E13-19	1.14	-5.00	-1.93	2	1
Cobalt-60	2-E13-5	2.77	-6.74	-1.26	3	1
Cobalt-60	2-E13-8	3.02	-6.27	-.30	6	1
Cobalt-60	2-E16-2	7.09	-5.29	.60	17	1
Cobalt-60	2-E17-1	6.07	-7.84	-1.96	4	2
Cobalt-60	2-E17-12	12.40	-5.57	4.02	17	2
Cobalt-60	2-E17-14	54.40	8.27	30.30	7	0
Cobalt-60	2-E17-15	55.30	11.60	31.63	6	0
Cobalt-60	2-E17-16	61.10	-2.27	21.72	8	1
Cobalt-60	2-E17-17	15.30	.49	8.31	7	2
Cobalt-60	2-E17-18	4.54	-5.38	1.05	8	2
Cobalt-60	2-E17-2	20.60	7.08	13.94	7	1
Cobalt-60	2-E17-20	5.10	.24	2.67	2	1
Cobalt-60	2-E17-5	51.10	-2.84	24.18	23	2

Constituent	Well	Max of Result	Min of Result	Average of Result	Count of Result	Count of LT
Cobalt-60	2-E17-8	3.56	-4.55	-1.19	5	1
Cobalt-60	2-E17-9	7.24	-1.89	2.75	16	1
Cobalt-60	2-E18-1	.76	-3.59	-1.42	2	2
Cobalt-60	2-E18-2	2.44	2.44	2.44	1	1
Cobalt-60	2-E18-3	-2.12	-2.12	-2.12	1	1
Cobalt-60	2-E18-4	3.33	3.33	3.33	1	1
Cobalt-60	2-E23-1	6.68	6.68	6.68	1	0
Cobalt-60	2-E24-1	4.76	-5.70	.25	7	1
Cobalt-60	2-E24-11	4.58	-1.83	1.61	7	1
Cobalt-60	2-E24-12	9.92	-.21	4.94	11	1
Cobalt-60	2-E24-13	8.69	-5.27	1.01	3	1
Cobalt-60	2-E24-16	3.65	1.70	2.68	2	1
Cobalt-60	2-E24-17	.71	.71	.71	1	1
Cobalt-60	2-E24-18	.52	.52	.52	1	1
Cobalt-60	2-E24-19	11.40	-2.56	4.42	2	1
Cobalt-60	2-E24-2	6.88	-.76	4.25	6	1
Cobalt-60	2-E24-4	5.67	-2.32	1.32	7	1
Cobalt-60	2-E24-7	4.03	4.03	4.03	1	1
Cobalt-60	2-E24-8	2.83	-2.85	.24	5	1
Cobalt-60	2-E25-10	2.02	-4.71	-1.35	2	1
Cobalt-60	2-E25-11	7.30	-6.73	.38	17	1
Cobalt-60	2-E25-17	10.20	-3.31	.43	8	1
Cobalt-60	2-E25-18	6.87	-4.17	.02	8	2
Cobalt-60	2-E25-19	5.65	-5.73	2.02	8	1
Cobalt-60	2-E25-2	.38	-3.97	-1.45	3	1
Cobalt-60	2-E25-20	3.03	-4.17	-1.18	8	1
Cobalt-60	2-E25-21	3.52	-6.06	-.44	6	1
Cobalt-60	2-E25-22	7.93	-.58	2.44	8	1
Cobalt-60	2-E25-23	3.30	-2.23	.27	6	1
Cobalt-60	2-E25-24	7.04	-5.59	.07	6	1

Constituent	Well	Max of Result	Min of Result	Average of Result	Count of Result	Count of LT
Cobalt-60	2-E25-25	.67	-5.09	-1.91	4	1
Cobalt-60	2-E25-26	2.23	-13.70	-2.58	4	1
Cobalt-60	2-E25-27	6.12	-3.31	1.41	2	1
Cobalt-60	2-E25-29P	4.37	-2.83	.06	3	1
Cobalt-60	2-E25-30P	5.79	-5.81	.92	4	1
Cobalt-60	2-E25-31	1.60	-1.43	-.02	5	1
Cobalt-60	2-E25-32P	.76	-2.03	-.42	3	1
Cobalt-60	2-E25-33	6.57	-1.66	2.48	4	2
Cobalt-60	2-E25-34	-7.05	-7.05	-7.05	1	1
Cobalt-60	2-E25-35	-.36	-.36	-.36	1	1
Cobalt-60	2-E25-36	-3.55	-6.83	-5.19	2	1
Cobalt-60	2-E28-23	228.00	-4.15	28.46	10	2
Cobalt-60	2-E28-24	5.53	-3.50	1.09	6	1
Cobalt-60	2-E28-25	7.57	-2.82	1.75	6	1
Cobalt-60	2-E28-26	1.32	-4.37	-.80	6	1
Cobalt-60	2-E28-27	6.47	-.95	1.89	7	1
Cobalt-60	2-E28-7	9.63	-11.20	2.29	8	1
Cobalt-60	2-E32-2	6.06	-5.58	.88	7	1
Cobalt-60	2-E33-1	3.31	-1.71	1.58	4	1
Cobalt-60	2-E33-12	16.70	7.73	12.22	2	0
Cobalt-60	2-E33-18	1.42	-2.65	-.53	3	1
Cobalt-60	2-E33-24	9.30	2.63	4.99	3	1
Cobalt-60	2-E33-26	13.10	9.63	11.34	3	1
Cobalt-60	2-E33-28	3.78	-6.46	-.20	7	1
Cobalt-60	2-E33-29	5.87	-4.25	-.04	6	1
Cobalt-60	2-E33-3	34.70	2.02	14.87	3	1
Cobalt-60	2-E33-30	2.00	-2.83	-.66	6	1
Cobalt-60	2-E33-31	2.08	2.08	2.08	1	1
Cobalt-60	2-E33-32	-1.60	-1.60	-1.60	1	1
Cobalt-60	2-E33-33	-.86	-.86	-.86	1	1

Constituent	Well	Max of Result	Min of Result	Average of Result	Count of Result	Count of LT
Cobalt-60	2-E33-5	22.20	10.50	14.98	4	0
Cobalt-60	2-E33-7	70.70	26.30	46.77	7	0
Cobalt-60	2-E33-8	5.91	.76	2.86	4	1
Cobalt-60	2-E33-9	3.44	-2.85	-.55	6	1
Cobalt-60	2-E34-1	2.13	-4.13	-.88	7	2
Cobalt-60	2-E34-2	4.65	-3.97	.37	8	2
Cobalt-60	2-E34-3	1.77	-4.92	-.10	6	2
Cobalt-60	2-E34-5	2.11	-5.29	-1.73	7	2
Cobalt-60	2-E34-6	7.00	-3.31	1.60	6	1
Cobalt-60	2-E34-7	.29	-7.74	-2.44	3	2
Cobalt-60	2-E35-1	2.31	2.31	2.31	1	1
Cobalt-60	6-20-39	3.98	-2.27	.79	3	1
Cobalt-60	6-23-34	6.04	2.07	3.25	5	1
Cobalt-60	6-24-33	7.18	-.92	3.40	12	2
Cobalt-60	6-24-34A	4.74	-1.66	1.44	5	1
Cobalt-60	6-24-34B	4.80	.98	3.45	6	1
Cobalt-60	6-24-34C	4.03	-3.11	.63	5	1
Cobalt-60	6-24-35	6.48	-2.76	2.22	5	1
Cobalt-60	6-25-34C	1.70	-3.91	-.57	5	1
Cobalt-60	6-31-31	3.96	.59	1.71	3	1
Cobalt-60	6-31-53B	0.00	-7.52	-3.76	2	1
Cobalt-60	6-32-43	8.18	-3.21	3.01	12	2
Cobalt-60	6-34-39A	4.90	1.63	3.27	2	1
Cobalt-60	6-34-41B	9.93	-3.98	3.14	5	1
Cobalt-60	6-34-42	7.00	7.00	7.00	1	0
Cobalt-60	6-34-51	6.24	.98	3.29	6	1
Cobalt-60	6-35-70	7.15	-1.45	2.61	9	2
Cobalt-60	6-36-46Q	3.60	-2.31	.65	2	1
Cobalt-60	6-36-61A	-3.40	-3.40	-3.40	1	0
Cobalt-60	6-39-39	7.46	-4.55	-1.22	5	1

Constituent	Well	Max of Result	Min of Result	Average of Result	Count of Result	Count of LT
Cobalt-60	6-40-33A	4.54	-5.21	.78	10	2
Cobalt-60	6-40-62	1.39	1.39	1.39	1	1
Cobalt-60	6-42-40B	6.00	-6.24	1.01	18	1
Cobalt-60	6-43-41E	-.58	-.58	-.58	1	1
Cobalt-60	6-43-45	7.11	7.11	7.11	1	1
Cobalt-60	6-44-43B	9.09	3.46	6.28	2	1
Cobalt-60	6-45-42	4.34	-6.92	.21	18	2
Cobalt-60	6-45-69A	3.64	3.64	3.64	1	1
Cobalt-60	6-47-46A	5.33	-1.86	2.58	6	1
Cobalt-60	6-47-50	.94	-.89	.03	2	1
Cobalt-60	6-47-60	5.69	-3.95	1.33	6	1
Cobalt-60	6-49-55A	222.00	11.70	106.81	11	0
Cobalt-60	6-50-42	1.72	1.72	1.72	1	1
Cobalt-60	6-50-53A	532.00	352.00	473.00	8	0
Cobalt-60	6-53-47A	8.29	-5.48	1.18	14	1
Cobalt-60	6-53-47B	5.49	-3.04	1.39	6	1
Cobalt-60	6-53-48A	.82	-5.51	-2.90	6	1
Cobalt-60	6-53-48B	5.06	-1.57	1.35	6	1
Cobalt-60	6-53-55A	-.19	-3.04	-1.58	4	1
Cobalt-60	6-54-48	1.01	-6.58	-1.83	6	1
Cobalt-60	6-55-50A	5.16	-1.50	1.27	6	1
Cobalt-60	6-55-50C	1.78	-4.97	-1.13	6	2
Cobalt-60	6-60-60	5.86	.94	3.40	2	1
Cobalt-60	6-61-62	21.40	1.69	7.76	6	1
Cobalt-60	6-61-66	2.87	-3.04	.11	6	1
Cobalt-60	6-63-25A	2.99	2.99	2.99	1	1
Cobalt-60	6-63-58	5.16	-4.34	2.84	6	1
Cobalt-60	6-64-62	14.00	2.46	10.04	5	1

Constituent	Well	Max of Result	Min of Result	Average of Result	Count of Result	Count of LT
Cyanide	2-E13-14	10.00	10.00	10.00	1	1
Cyanide	2-E13-5	10.00	10.00	10.00	1	1
Cyanide	2-E16-2	10.00	10.00	10.00	1	1
Cyanide	2-E17-1	10.00	10.00	10.00	1	1
Cyanide	2-E17-12	10.00	10.00	10.00	1	1
Cyanide	2-E17-14	10.00	10.00	10.00	1	1
Cyanide	2-E17-15	10.00	10.00	10.00	1	1
Cyanide	2-E17-16	10.00	10.00	10.00	1	1
Cyanide	2-E17-17	10.00	10.00	10.00	1	1
Cyanide	2-E17-18	10.00	10.00	10.00	1	1
Cyanide	2-E17-19	10.00	10.00	10.00	1	1
Cyanide	2-E17-20	10.00	10.00	10.00	1	1
Cyanide	2-E17-5	10.00	10.00	10.00	1	1
Cyanide	2-E17-9	10.00	10.00	10.00	1	1
Cyanide	2-E18-1	10.00	10.00	10.00	1	1
Cyanide	2-E18-2	10.00	10.00	10.00	1	1
Cyanide	2-E18-3	10.00	10.00	10.00	1	1
Cyanide	2-E18-4	10.00	10.00	10.00	1	1
Cyanide	2-E24-12	10.00	10.00	10.00	1	1
Cyanide	2-E24-16	10.00	10.00	10.00	1	1
Cyanide	2-E24-17	10.00	10.00	10.00	1	1
Cyanide	2-E24-18	10.00	10.00	10.00	1	1
Cyanide	2-E24-19	20.00	20.00	20.00	1	1
Cyanide	2-E24-2	10.00	10.00	10.00	1	1
Cyanide	2-E24-4	10.00	10.00	10.00	1	1
Cyanide	2-E24-8	10.00	10.00	10.00	1	1
Cyanide	2-E25-11	10.00	10.00	10.00	1	1
Cyanide	2-E25-17	10.00	10.00	10.00	1	1
Cyanide	2-E25-18	20.00	10.00	13.33	2	2
Cyanide	2-E25-19	10.00	10.00	10.00	1	1

Constituent	Well	Max of Result	Min of Result	Average of Result	Count of Result	Count of LT
Cyanide	2-E25-20	10.00	10.00	10.00	1	1
Cyanide	2-E25-21	20.00	10.00	12.00	2	2
Cyanide	2-E25-22	10.00	10.00	10.00	1	1
Cyanide	2-E25-23	10.00	10.00	10.00	1	1
Cyanide	2-E25-24	10.00	10.00	10.00	1	1
Cyanide	2-E25-25	10.00	10.00	10.00	1	1
Cyanide	2-E25-26	20.00	10.00	12.50	2	2
Cyanide	2-E25-29P	20.00	10.00	15.00	2	2
Cyanide	2-E25-30P	10.00	10.00	10.00	1	1
Cyanide	2-E25-31	20.00	10.00	13.33	2	2
Cyanide	2-E25-32P	10.00	10.00	10.00	1	1
Cyanide	2-E25-33	20.00	10.00	15.00	2	2
Cyanide	2-E25-34	10.00	10.00	10.00	1	1
Cyanide	2-E25-35	10.00	10.00	10.00	1	1
Cyanide	2-E25-36	20.00	10.00	15.00	2	2
Cyanide	2-E28-23	10.00	10.00	10.00	1	1
Cyanide	2-E28-26	10.00	10.00	10.00	1	1
Cyanide	2-E28-27	10.00	10.00	10.00	1	1
Cyanide	2-E28-7	10.00	10.00	10.00	1	1
Cyanide	2-E32-2	10.00	10.00	10.00	1	1
Cyanide	2-E33-1	10.00	10.00	10.00	1	1
Cyanide	2-E33-18	10.00	10.00	10.00	1	1
Cyanide	2-E33-24	10.00	10.00	10.00	1	1
Cyanide	2-E33-28	10.00	10.00	10.00	1	1
Cyanide	2-E33-29	10.00	10.00	10.00	1	1
Cyanide	2-E33-3	17.00	10.00	12.33	2	1
Cyanide	2-E33-30	10.00	10.00	10.00	1	1
Cyanide	2-E33-42	20.00	20.00	20.00	1	1
Cyanide	2-E33-43	20.00	20.00	20.00	1	1
Cyanide	2-E33-5	17.00	10.00	12.33	2	1

Constituent	Well	Max of Result	Min of Result	Average of Result	Count of Result	Count of LT
Cyanide	2-E33-8	10.00	10.00	10.00	1	1
Cyanide	2-E34-1	10.00	10.00	10.00	1	1
Cyanide	2-E34-2	20.00	10.00	10.67	2	2
Cyanide	2-E34-3	20.00	10.00	11.43	2	2
Cyanide	2-E34-5	20.00	10.00	11.43	2	2
Cyanide	2-E34-6	20.00	10.00	11.43	2	2
Cyanide	2-E34-7	20.00	10.00	15.00	2	2
Cyanide	2-E35-1	10.00	10.00	10.00	1	1
Cyanide	6-20-39	10.00	10.00	10.00	1	1
Cyanide	6-23-34	10.00	10.00	10.00	1	1
Cyanide	6-24-33	10.00	10.00	10.00	1	1
Cyanide	6-24-34A	10.00	10.00	10.00	1	1
Cyanide	6-24-34B	10.00	10.00	10.00	1	1
Cyanide	6-24-34C	10.00	10.00	10.00	1	1
Cyanide	6-24-35	10.00	10.00	10.00	1	1
Cyanide	6-24-46	10.00	10.00	10.00	1	1
Cyanide	6-25-34A	10.00	10.00	10.00	1	1
Cyanide	6-25-34B	10.00	10.00	10.00	1	1
Cyanide	6-25-34C	10.00	10.00	10.00	1	1
Cyanide	6-26-33	10.00	10.00	10.00	1	1
Cyanide	6-26-34	10.00	10.00	10.00	1	1
Cyanide	6-26-35A	10.00	10.00	10.00	1	1
Cyanide	6-31-31	10.00	10.00	10.00	1	1
Cyanide	6-32-43	10.00	10.00	10.00	1	1
Cyanide	6-33-56	20.00	20.00	20.00	1	1
Cyanide	6-34-42	20.00	20.00	20.00	1	1
Cyanide	6-34-51	20.00	20.00	20.00	1	1
Cyanide	6-35-66	10.00	10.00	10.00	1	1
Cyanide	6-35-70	20.00	10.00	15.00	2	2
Cyanide	6-36-61A	20.00	10.00	12.50	2	2

Constituent	Well	Max of Result	Min of Result	Average of Result	Count of Result	Count of LT
Cyanide	6-39-39	10.00	10.00	10.00	1	1
Cyanide	6-40-33A	10.00	10.00	10.00	1	1
Cyanide	6-40-62	20.00	10.00	12.50	2	2
Cyanide	6-42-40B	10.00	10.00	10.00	1	1
Cyanide	6-42-42B	10.00	10.00	10.00	1	1
Cyanide	6-43-41E	10.00	10.00	10.00	1	1
Cyanide	6-43-42J	20.00	20.00	20.00	1	1
Cyanide	6-43-43	10.00	10.00	10.00	1	1
Cyanide	6-43-45	10.00	10.00	10.00	1	1
Cyanide	6-44-42	20.00	20.00	20.00	1	1
Cyanide	6-44-43B	10.00	10.00	10.00	1	1
Cyanide	6-44-64	20.10	10.00	15.25	6	2
Cyanide	6-45-42	151.00	10.00	35.17	3	2
Cyanide	6-45-69A	20.00	10.00	13.33	2	2
Cyanide	6-46-21B	10.00	10.00	10.00	1	1
Cyanide	6-47-35A	10.00	10.00	10.00	1	1
Cyanide	6-47-46A	10.00	10.00	10.00	1	1
Cyanide	6-47-50	10.00	10.00	10.00	1	1
Cyanide	6-47-60	10.00	10.00	10.00	1	1
Cyanide	6-49-55A	247.00	10.00	105.45	16	2
Cyanide	6-50-53A	1690.00	422.00	869.33	15	0
Cyanide	6-53-47A	10.00	10.00	10.00	1	1
Cyanide	6-54-34	10.00	10.00	10.00	1	1
Cyanide	6-55-50C	20.00	10.00	12.50	2	2
Cyanide	6-57-29A	10.00	10.00	10.00	1	1
Cyanide	6-59-58	10.00	10.00	10.00	1	1
Gross alpha	2-E13-14	13.20	.42	5.07	3	1
Gross alpha	2-E13-5	2.86	1.47	2.17	2	0

Constituent	Well	Max of Result	Min of Result	Average of Result	Count of Result	Count of LT
Gross alpha	2-E16-2	6.41	.63	1.35	13	0
Gross alpha	2-E17-1	4.15	1.08	2.79	5	1
Gross alpha	2-E17-12	4.41	2.47	3.56	15	0
Gross alpha	2-E17-14	14.50	4.76	8.22	4	0
Gross alpha	2-E17-15	5.18	.96	3.58	6	1
Gross alpha	2-E17-16	3.47	1.04	2.02	6	1
Gross alpha	2-E17-17	2.87	1.97	2.57	5	0
Gross alpha	2-E17-18	3.66	1.43	2.72	5	0
Gross alpha	2-E17-19	5.55	5.55	5.55	1	0
Gross alpha	2-E17-2	8.21	2.49	5.00	13	0
Gross alpha	2-E17-20	3.20	1.44	2.26	5	1
Gross alpha	2-E17-5	8.01	1.64	5.74	16	0
Gross alpha	2-E17-9	3.14	1.23	2.35	8	1
Gross alpha	2-E18-1	3.90	1.62	2.89	4	0
Gross alpha	2-E18-2	1.82	.42	1.41	4	0
Gross alpha	2-E18-3	1.19	.29	.61	3	1
Gross alpha	2-E18-4	2.08	.92	1.63	3	0
Gross alpha	2-E24-1	5.49	3.50	4.15	4	0
Gross alpha	2-E24-16	4.06	2.81	3.42	3	0
Gross alpha	2-E24-17	2.42	1.77	2.04	3	0
Gross alpha	2-E24-18	5.32	4.25	4.79	2	0
Gross alpha	2-E24-19	3.13	1.27	2.20	2	0
Gross alpha	2-E24-2	4.87	.93	2.85	7	0
Gross alpha	2-E24-4	.60	.60	.60	1	1
Gross alpha	2-E25-10	.92	.63	.77	2	0
Gross alpha	2-E25-11	3.19	.26	1.13	12	2
Gross alpha	2-E25-17	1.17	.10	.75	13	1
Gross alpha	2-E25-18	2.63	.20	1.22	9	1
Gross alpha	2-E25-19	1.92	-.40	.77	10	2
Gross alpha	2-E25-20	1.85	.23	1.03	8	1

Constituent	Well	Max of Result	Min of Result	Average of Result	Count of Result	Count of LT
Gross alpha	2-E25-21	2.04	.25	.97	9	2
Gross alpha	2-E25-22	2.21	.56	1.17	5	0
Gross alpha	2-E25-23	.90	-.19	.44	7	1
Gross alpha	2-E25-24	2.18	.67	1.15	7	1
Gross alpha	2-E25-25	1.59	.28	.87	10	1
Gross alpha	2-E25-26	1.61	.03	.92	4	2
Gross alpha	2-E25-29P	1.91	.18	1.13	6	2
Gross alpha	2-E25-31	2.03	.09	1.17	9	2
Gross alpha	2-E25-32P	2.27	.40	.98	9	2
Gross alpha	2-E25-33	3.02	.12	1.79	8	1
Gross alpha	2-E25-34	1.69	.26	1.04	4	2
Gross alpha	2-E25-35	4.34	.45	2.10	7	1
Gross alpha	2-E25-36	1.49	.66	.93	5	1
Gross alpha	2-E28-23	40.40	16.90	29.31	9	0
Gross alpha	2-E28-24	42.00	.19	8.70	5	1
Gross alpha	2-E28-25	71.50	8.73	24.23	5	0
Gross alpha	2-E28-26	24.00	20.70	22.35	2	0
Gross alpha	2-E28-27	3.39	2.01	2.70	2	0
Gross alpha	2-E28-7	2.56	.75	1.40	5	1
Gross alpha	2-E32-2	2.78	1.99	2.39	2	0
Gross alpha	2-E33-28	1.72	.93	1.32	2	1
Gross alpha	2-E33-29	1.30	1.27	1.29	2	0
Gross alpha	2-E33-30	1.31	.60	1.03	3	1
Gross alpha	2-E34-1	1.87	1.55	1.68	4	0
Gross alpha	2-E34-2	2.14	1.09	1.54	4	1
Gross alpha	2-E34-3	1.79	.75	1.27	3	1
Gross alpha	2-E34-5	3.81	2.43	2.93	4	0
Gross alpha	2-E34-6	3.37	2.25	2.78	3	0
Gross alpha	2-E34-7	.86	.86	.86	1	1
Gross alpha	6-20-39	3.36	.43	1.78	5	1

Constituent	Well	Max of Result	Min of Result	Average of Result	Count of Result	Count of LT
Gross alpha	6-23-34	5.17	2.41	3.88	8	0
Gross alpha	6-24-33	4.64	2.21	3.46	16	0
Gross alpha	6-24-34A	4.72	2.99	3.68	8	0
Gross alpha	6-24-34B	5.98	1.10	3.75	9	1
Gross alpha	6-24-34C	5.82	2.28	4.05	7	0
Gross alpha	6-24-35	4.76	1.53	3.41	7	0
Gross alpha	6-24-46	2.64	1.24	1.80	4	0
Gross alpha	6-25-34A	2.42	.57	1.70	4	1
Gross alpha	6-25-34B	3.79	1.46	2.13	4	0
Gross alpha	6-25-34C	3.41	1.46	2.65	7	0
Gross alpha	6-25-55	3.19	1.61	2.42	4	0
Gross alpha	6-26-33	2.56	1.00	1.84	4	0
Gross alpha	6-26-34	2.15	2.07	2.12	2	0
Gross alpha	6-26-35A	3.49	1.07	2.08	5	1
Gross alpha	6-28-40	4.10	2.39	3.29	4	0
Gross alpha	6-28-52A	4.73	-.14	2.30	2	1
Gross alpha	6-31-31	1.64	1.25	1.49	3	1
Gross alpha	6-32-22	2.82	2.12	2.52	4	0
Gross alpha	6-32-43	4.57	2.54	3.84	5	0
Gross alpha	6-32-62	2.49	1.70	1.95	4	0
Gross alpha	6-33-42	4.00	3.19	3.56	4	0
Gross alpha	6-33-56	3.95	2.83	3.51	3	0
Gross alpha	6-34-39A	1.16	.84	1.00	2	1
Gross alpha	6-34-42	3.98	2.32	3.44	4	0
Gross alpha	6-34-51	4.78	3.22	3.92	4	0
Gross alpha	6-35-66	2.40	1.39	1.74	3	0
Gross alpha	6-35-70	3.55	-.13	1.81	6	1
Gross alpha	6-36-46Q	.12	.07	.10	2	1
Gross alpha	6-36-61A	1.75	1.43	1.59	2	0
Gross alpha	6-36-61B	2.64	-.03	.76	4	1

Constituent	Well	Max of Result	Min of Result	Average of Result	Count of Result	Count of LT
Gross alpha	6-39-39	6.93	.21	1.61	6	1
Gross alpha	6-40-33A	3.26	.29	1.71	8	1
Gross alpha	6-40-62	2.65	1.56	2.00	7	0
Gross alpha	6-41-23	2.71	1.57	1.94	4	0
Gross alpha	6-42-40B	-.45	-.45	-.45	1	1
Gross alpha	6-42-42B	1.37	1.31	1.34	2	0
Gross alpha	6-43-41E	4.88	2.04	3.05	3	0
Gross alpha	6-43-42J	1.74	.64	1.03	3	2
Gross alpha	6-43-43	1.51	.96	1.15	3	0
Gross alpha	6-43-45	1.03	.69	.84	3	1
Gross alpha	6-44-42	1.84	.08	.71	3	2
Gross alpha	6-44-43B	3.49	2.24	2.67	3	0
Gross alpha	6-44-64	3.00	1.33	1.95	6	0
Gross alpha	6-45-42	2.62	.43	1.65	15	1
Gross alpha	6-45-69A	2.06	1.09	1.51	5	0
Gross alpha	6-46-21B	2.54	1.87	2.28	4	0
Gross alpha	6-47-35A	2.90	2.21	2.56	2	0
Gross alpha	6-47-46A	3.21	2.75	2.98	2	0
Gross alpha	6-47-50	2.10	1.46	1.79	4	0
Gross alpha	6-47-60	2.14	1.42	1.78	2	0
Gross alpha	6-49-28	.16	-.17	.00	4	1
Gross alpha	6-49-55A	3.47	1.92	2.84	8	1
Gross alpha	6-49-55B	2.48	2.09	2.33	4	0
Gross alpha	6-50-30	.48	.21	.32	4	1
Gross alpha	6-50-42	1.82	.21	1.04	6	1
Gross alpha	6-50-53A	8.05	2.05	4.23	15	1
Gross alpha	6-53-47A	3.94	-.07	1.55	13	1
Gross alpha	6-53-47B	4.02	2.80	3.40	5	0
Gross alpha	6-53-48A	9.49	-.25	2.23	5	1
Gross alpha	6-53-48B	1.21	-.17	.23	5	1

Constituent	Well	Max of Result	Min of Result	Average of Result	Count of Result	Count of LT
Gross alpha	6-53-55A	1.47	-.54	.69	3	1
Gross alpha	6-54-34	.93	-.22	.16	4	1
Gross alpha	6-54-45A	.40	-.33	-.02	4	1
Gross alpha	6-54-48	2.11	.82	1.54	5	0
Gross alpha	6-54-57	2.76	.15	1.17	4	1
Gross alpha	6-55-50C	1.33	.40	.91	8	2
Gross alpha	6-55-50D	4.75	.25	2.44	5	1
Gross alpha	6-56-43	.08	-.09	-.01	4	1
Gross alpha	6-57-29A	2.07	1.25	1.72	4	0
Gross alpha	6-59-58	1.18	1.18	1.18	1	1
Gross alpha	6-61-37	2.87	1.39	1.98	4	0
Gross alpha	6-61-41	1.70	1.39	1.58	3	0
Gross alpha	6-63-25A	3.49	1.83	2.65	4	0
Gross alpha	6-63-58	.58	.58	.58	1	1
Gross beta	2-E13-14	852.00	3.73	100.20	9	0
Gross beta	2-E13-19	8.04	4.38	6.22	7	0
Gross beta	2-E13-5	28.80	5.16	9.52	8	0
Gross beta	2-E13-8	8.50	3.82	6.86	7	0
Gross beta	2-E16-2	23.60	6.05	11.09	18	0
Gross beta	2-E17-1	34.20	22.30	27.91	9	0
Gross beta	2-E17-12	113.00	13.20	55.72	19	0
Gross beta	2-E17-14	846.00	96.70	376.63	9	0
Gross beta	2-E17-15	2950.00	85.80	937.71	11	0
Gross beta	2-E17-16	302.00	8.63	57.77	10	0
Gross beta	2-E17-17	208.00	40.40	95.17	10	0
Gross beta	2-E17-18	96.80	4.95	19.82	10	0
Gross beta	2-E17-19	1150.00	13.20	210.68	6	0
Gross beta	2-E17-2	240.00	25.90	91.12	16	0

Constituent	Well	Max of Result	Min of Result	Average of Result	Count of Result	Count of LT
Gross beta	2-E17-20	81.10	28.40	43.62	11	0
Gross beta	2-E17-5	814.00	28.80	378.86	25	0
Gross beta	2-E17-8	42.90	22.60	32.08	5	0
Gross beta	2-E17-9	37.30	17.00	26.54	16	0
Gross beta	2-E18-1	10.70	3.89	7.34	8	0
Gross beta	2-E18-2	9.44	1.13	4.96	9	1
Gross beta	2-E18-3	10.60	1.87	5.79	9	0
Gross beta	2-E18-4	7.60	2.05	5.15	8	0
Gross beta	2-E23-1	25.80	25.80	25.80	1	0
Gross beta	2-E24-1	66.80	17.00	44.64	16	0
Gross beta	2-E24-11	58.70	12.20	23.77	17	0
Gross beta	2-E24-12	809.00	36.40	261.40	12	0
Gross beta	2-E24-13	9.00	5.64	6.59	6	0
Gross beta	2-E24-16	71.30	21.40	40.23	8	0
Gross beta	2-E24-17	66.10	13.70	38.49	7	0
Gross beta	2-E24-18	64.90	7.93	26.49	6	0
Gross beta	2-E24-19	19.00	3.35	12.85	3	0
Gross beta	2-E24-2	45.60	9.11	26.74	12	0
Gross beta	2-E24-4	7.25	3.69	5.26	8	0
Gross beta	2-E24-7	4.52	4.52	4.52	1	0
Gross beta	2-E24-8	33.10	8.71	18.01	5	0
Gross beta	2-E25-10	4.65	3.97	4.31	2	0
Gross beta	2-E25-11	15.70	4.87	11.61	18	0
Gross beta	2-E25-13	15.20	6.71	9.81	6	0
Gross beta	2-E25-17	15.20	5.41	9.60	18	0
Gross beta	2-E25-18	13.30	4.61	8.13	14	0
Gross beta	2-E25-19	73.70	7.73	33.24	12	0
Gross beta	2-E25-2	8.71	3.44	5.57	5	0
Gross beta	2-E25-20	18.50	3.19	13.51	14	0
Gross beta	2-E25-21	13.10	1.01	8.28	11	1

Constituent	Well	Max of Result	Min of Result	Average of Result	Count of Result	Count of LT
Gross beta	2-E25-22	9.94	4.13	6.26	10	0
Gross beta	2-E25-23	16.10	5.64	10.08	9	0
Gross beta	2-E25-24	17.80	7.00	10.85	12	0
Gross beta	2-E25-25	8.40	1.12	5.20	15	2
Gross beta	2-E25-26	8.34	1.04	4.17	9	1
Gross beta	2-E25-27	9.51	2.12	5.49	3	1
Gross beta	2-E25-29P	11.60	3.00	5.12	12	0
Gross beta	2-E25-3	8.46	3.80	5.64	8	0
Gross beta	2-E25-30P	9.01	5.19	7.13	4	0
Gross beta	2-E25-31	10.80	2.16	5.13	14	0
Gross beta	2-E25-32P	23.00	2.32	5.92	16	0
Gross beta	2-E25-33	10.50	-.93	4.79	13	2
Gross beta	2-E25-34	5.48	1.69	3.31	9	1
Gross beta	2-E25-35	12.80	3.37	7.50	12	0
Gross beta	2-E25-36	10.30	4.28	7.35	9	0
Gross beta	2-E28-23	20000.00	7660.00	11229.00	9	0
Gross beta	2-E28-24	349.00	272.00	315.50	6	0
Gross beta	2-E28-25	12000.00	7160.00	9333.33	6	0
Gross beta	2-E28-26	17.50	7.25	11.11	7	0
Gross beta	2-E28-27	27.30	16.70	21.54	8	0
Gross beta	2-E28-7	218.00	116.00	148.00	7	0
Gross beta	2-E32-2	30.60	18.70	23.20	7	0
Gross beta	2-E33-1	167.00	47.70	89.85	4	0
Gross beta	2-E33-12	51.60	46.70	49.20	3	0
Gross beta	2-E33-18	10.40	6.19	8.31	3	0
Gross beta	2-E33-24	272.00	102.00	206.00	3	0
Gross beta	2-E33-26	233.00	110.00	192.00	2	0
Gross beta	2-E33-28	25.60	7.22	15.06	7	0
Gross beta	2-E33-29	27.60	10.30	14.16	6	0
Gross beta	2-E33-3	522.00	14.90	204.20	3	0

Constituent	Well	Max of Result	Min of Result	Average of Result	Count of Result	Count of LT
Gross beta	2-E33-30	31.30	9.98	15.07	8	0
Gross beta	2-E33-31	68.30	68.30	68.30	1	0
Gross beta	2-E33-32	14.20	14.20	14.20	1	0
Gross beta	2-E33-33	9.58	9.58	9.58	1	0
Gross beta	2-E33-5	245.00	102.00	180.25	4	0
Gross beta	2-E33-7	723.00	312.00	491.29	7	0
Gross beta	2-E33-8	80.20	55.60	71.08	4	0
Gross beta	2-E33-9	174.00	8.35	117.36	6	0
Gross beta	2-E34-1	9.05	4.79	7.67	6	0
Gross beta	2-E34-2	14.20	4.26	8.56	9	0
Gross beta	2-E34-3	17.80	3.17	10.37	7	0
Gross beta	2-E34-5	9.19	3.01	6.70	8	0
Gross beta	2-E34-6	18.00	4.26	9.29	7	0
Gross beta	2-E34-7	7.43	6.28	6.83	3	0
Gross beta	2-E35-1	5.18	5.18	5.18	1	0
Gross beta	6-20-39	8.61	4.38	6.61	5	0
Gross beta	6-23-34	30.40	10.70	18.26	12	0
Gross beta	6-24-33	34.10	10.10	18.43	21	0
Gross beta	6-24-34A	29.10	12.20	19.36	11	0
Gross beta	6-24-34B	30.00	13.30	20.19	14	0
Gross beta	6-24-34C	27.00	11.80	19.23	11	0
Gross beta	6-24-35	27.40	13.90	18.49	10	0
Gross beta	6-24-46	7.49	3.49	5.58	4	1
Gross beta	6-25-34A	33.60	6.98	23.40	5	0
Gross beta	6-25-34B	31.00	10.50	21.28	5	0
Gross beta	6-25-34C	34.00	12.00	21.99	11	0
Gross beta	6-25-55	5.23	2.30	3.90	6	0
Gross beta	6-26-33	32.40	8.45	23.88	6	0
Gross beta	6-26-34	36.30	11.00	27.33	4	0
Gross beta	6-26-35A	30.60	13.70	22.22	6	0

Constituent	Well	Max of Result	Min of Result	Average of Result	Count of Result	Count of LT
Gross beta	6-28-40	15.10	10.10	12.83	6	0
Gross beta	6-28-52A	11.10	5.72	8.41	2	0
Gross beta	6-31-31	12.00	6.24	9.31	3	0
Gross beta	6-32-22	46.90	22.20	34.83	6	0
Gross beta	6-32-43	30.50	-2.65	15.03	11	1
Gross beta	6-32-62	9.02	6.04	7.28	5	0
Gross beta	6-33-42	43.00	11.80	24.80	6	0
Gross beta	6-33-56	7.31	4.57	5.93	5	0
Gross beta	6-34-39A	7.39	4.82	6.11	2	0
Gross beta	6-34-42	20.60	6.44	11.90	6	0
Gross beta	6-34-51	9.57	4.10	6.78	6	0
Gross beta	6-35-66	12.20	7.24	10.28	8	0
Gross beta	6-35-70	32.80	11.70	18.72	12	0
Gross beta	6-36-46Q	10.00	7.95	8.93	4	0
Gross beta	6-36-61A	9.80	7.04	8.42	2	0
Gross beta	6-36-61B	9.75	5.15	7.41	5	0
Gross beta	6-39-39	13.20	2.43	6.19	8	0
Gross beta	6-40-33A	9.46	3.01	6.82	9	0
Gross beta	6-40-62	11.90	4.38	7.61	9	0
Gross beta	6-41-23	17.20	10.40	13.45	6	0
Gross beta	6-42-40B	121.00	2.89	10.88	17	0
Gross beta	6-42-42B	10.80	1.10	5.26	7	2
Gross beta	6-43-41E	11.60	2.74	6.20	7	0
Gross beta	6-43-42J	8.01	2.30	5.22	8	0
Gross beta	6-43-43	11.90	3.99	6.05	8	0
Gross beta	6-43-45	6.86	1.69	5.34	6	1
Gross beta	6-44-42	7.57	3.89	5.34	7	0
Gross beta	6-44-43B	7.79	3.44	5.25	6	0
Gross beta	6-44-64	21.40	18.30	19.88	8	0
Gross beta	6-45-42	7.25	2.36	4.38	18	0

Constituent	Well	Max of Result	Min of Result	Average of Result	Count of Result	Count of LT
Gross beta	6-45-69A	5.64	3.24	3.78	7	0
Gross beta	6-46-21B	10.30	6.22	7.69	6	0
Gross beta	6-47-35A	5.30	3.41	4.36	2	0
Gross beta	6-47-46A	13.50	7.39	9.28	8	0
Gross beta	6-47-50	11.60	6.00	8.00	4	0
Gross beta	6-47-60	7.96	5.73	6.52	8	0
Gross beta	6-49-28	7.50	1.68	4.37	6	0
Gross beta	6-49-55A	1550.00	278.00	979.80	9	0
Gross beta	6-49-55B	6.70	5.29	6.01	6	0
Gross beta	6-50-30	13.80	3.34	6.26	6	0
Gross beta	6-50-42	8.27	3.72	6.02	8	0
Gross beta	6-50-53A	3220.00	1350.00	2508.82	17	0
Gross beta	6-51-63	36.20	3.14	10.20	6	0
Gross beta	6-53-47A	147.00	68.30	114.32	15	0
Gross beta	6-53-47B	300.00	151.00	197.00	6	0
Gross beta	6-53-48A	209.00	29.30	111.15	6	0
Gross beta	6-53-48B	857.00	447.00	557.50	6	0
Gross beta	6-53-55A	10.20	4.18	8.16	4	0
Gross beta	6-54-34	6.35	1.93	3.90	5	0
Gross beta	6-54-45A	16.70	5.00	7.78	6	0
Gross beta	6-54-48	106.00	67.80	87.91	7	0
Gross beta	6-54-57	21.40	6.51	10.22	7	0
Gross beta	6-55-50A	46.70	6.39	34.68	6	0
Gross beta	6-55-50C	9.22	3.93	5.78	10	0
Gross beta	6-55-50D	49.20	3.74	12.29	7	0
Gross beta	6-55-70	11.20	4.25	7.73	2	0
Gross beta	6-56-43	4.78	2.00	2.96	6	0
Gross beta	6-57-29A	7.57	6.65	7.27	5	0
Gross beta	6-59-58	12.20	4.58	7.20	6	0
Gross beta	6-60-60	49.80	40.10	44.95	2	0

Constituent	Well	Max of Result	Min of Result	Average of Result	Count of Result	Count of LT
Gross beta	6-61-37	6.71	3.96	5.62	5	0
Gross beta	6-61-41	11.00	5.08	8.14	5	0
Gross beta	6-61-62	114.00	67.60	96.20	6	0
Gross beta	6-61-66	7.38	5.30	6.31	6	0
Gross beta	6-63-25A	12.80	4.31	6.53	6	0
Gross beta	6-63-55	21.50	12.30	16.68	5	0
Gross beta	6-63-58	51.10	34.60	41.10	7	0
Gross beta	6-64-62	108.00	69.10	91.96	5	0
Gross beta	6-65-50	11.50	6.10	8.32	6	0
Iodine-129 (Drinking Water Standard)	2-E13-14	-.01	-.01	-.01	1	1
Iodine-129 (Drinking Water Standard)	2-E13-19	.01	.01	.01	1	1
Iodine-129 (Drinking Water Standard)	2-E13-8	1.30	.01	.65	2	1
Iodine-129 (Drinking Water Standard)	2-E16-2	.21	.14	.17	2	1
Iodine-129 (Drinking Water Standard)	2-E17-1	18.30	6.42	12.36	2	0
Iodine-129 (Drinking Water Standard)	2-E17-12	7.76	1.65	4.77	7	0
Iodine-129 (Drinking Water Standard)	2-E17-14	18.90	14.60	16.75	2	0
Iodine-129 (Drinking Water Standard)	2-E17-16	9.54	8.42	8.98	2	0
Iodine-129 (Drinking Water Standard)	2-E17-17	7.80	6.62	7.21	2	0
Iodine-129 (Drinking Water Standard)	2-E17-18	5.68	5.68	5.68	1	0
Iodine-129 (Drinking Water Standard)	2-E17-2	1.18	.73	.97	3	0
Iodine-129 (Drinking Water Standard)	2-E17-5	15.60	1.99	6.22	6	0
Iodine-129 (Drinking Water Standard)	2-E17-8	5.01	5.01	5.01	1	0
Iodine-129 (Drinking Water Standard)	2-E17-9	14.20	14.20	14.20	1	0
Iodine-129 (Drinking Water Standard)	2-E23-1	5.61	1.65	3.63	2	0
Iodine-129 (Drinking Water Standard)	2-E24-1	26.60	26.60	26.60	1	0
Iodine-129 (Drinking Water Standard)	2-E24-12	1.91	1.91	1.91	1	0
Iodine-129 (Drinking Water Standard)	2-E24-13	7.44	2.22	4.07	3	0
Iodine-129 (Drinking Water Standard)	2-E24-17	11.90	11.90	11.90	1	0

Constituent	Well	Max of Result	Min of Result	Average of Result	Count of Result	Count of LT
Iodine-129 (Drinking Water Standard)	2-E24-18	5.21	5.21	5.21	1	0
Iodine-129 (Drinking Water Standard)	2-E24-19	5.68	5.14	5.41	2	0
Iodine-129 (Drinking Water Standard)	2-E24-7	2.09	.72	1.42	3	0
Iodine-129 (Drinking Water Standard)	2-E25-11	.54	.29	.41	2	0
Iodine-129 (Drinking Water Standard)	2-E25-17	2.52	2.52	2.52	1	0
Iodine-129 (Drinking Water Standard)	2-E25-18	2.78	2.12	2.45	3	0
Iodine-129 (Drinking Water Standard)	2-E25-19	2.27	.44	1.20	3	0
Iodine-129 (Drinking Water Standard)	2-E25-20	3.00	1.08	2.04	2	0
Iodine-129 (Drinking Water Standard)	2-E25-21	.88	.70	.79	2	0
Iodine-129 (Drinking Water Standard)	2-E25-22	1.41	.43	.92	2	0
Iodine-129 (Drinking Water Standard)	2-E25-23	.06	.05	.06	2	1
Iodine-129 (Drinking Water Standard)	2-E25-24	.04	-.09	-.03	2	1
Iodine-129 (Drinking Water Standard)	2-E25-25	.32	.32	.32	1	0
Iodine-129 (Drinking Water Standard)	2-E25-26	1.57	1.57	1.57	1	0
Iodine-129 (Drinking Water Standard)	2-E25-29P	3.46	3.46	3.46	1	0
Iodine-129 (Drinking Water Standard)	2-E25-3	1.31	1.17	1.24	2	0
Iodine-129 (Drinking Water Standard)	2-E25-30P	.28	.16	.22	2	0
Iodine-129 (Drinking Water Standard)	2-E25-31	5.10	5.10	5.10	1	0
Iodine-129 (Drinking Water Standard)	2-E25-32P	.68	.68	.68	1	0
Iodine-129 (Drinking Water Standard)	2-E25-33	2.72	2.72	2.72	1	0
Iodine-129 (Drinking Water Standard)	2-E28-23	2.49	2.49	2.49	1	0
Iodine-129 (Drinking Water Standard)	2-E28-7	1.26	.83	1.04	2	0
Iodine-129 (Drinking Water Standard)	2-E33-1	.70	.70	.70	1	0
Iodine-129 (Drinking Water Standard)	2-E33-18	.95	.95	.95	1	0
Iodine-129 (Drinking Water Standard)	2-E33-24	.99	.99	.99	1	0
Iodine-129 (Drinking Water Standard)	2-E33-5	.84	.84	.84	1	0
Iodine-129 (Drinking Water Standard)	2-E33-7	.50	.37	.44	2	0
Iodine-129 (Drinking Water Standard)	2-E33-8	1.48	1.48	1.48	1	0
Iodine-129 (Drinking Water Standard)	2-E34-1	.18	.18	.18	1	1
Iodine-129 (Drinking Water Standard)	6-24-33	2.71	.74	1.73	2	0

Constituent	Well	Max of Result	Min of Result	Average of Result	Count of Result	Count of LT
Iodine-129 (Drinking Water Standard)	6-24-46	.05	.02	.03	2	1
Iodine-129 (Drinking Water Standard)	6-25-55	-.16	-.16	-.16	1	1
Iodine-129 (Drinking Water Standard)	6-28-40	.21	.13	.17	2	1
Iodine-129 (Drinking Water Standard)	6-31-31	6.43	5.09	5.76	2	0
Iodine-129 (Drinking Water Standard)	6-32-22	7.67	1.53	4.18	4	0
Iodine-129 (Drinking Water Standard)	6-32-43	6.69	1.14	3.04	3	0
Iodine-129 (Drinking Water Standard)	6-32-62	.06	.02	.04	2	1
Iodine-129 (Drinking Water Standard)	6-33-42	4.90	4.90	4.90	1	0
Iodine-129 (Drinking Water Standard)	6-33-56	.02	.02	.02	1	1
Iodine-129 (Drinking Water Standard)	6-34-42	6.13	6.13	6.13	1	0
Iodine-129 (Drinking Water Standard)	6-34-51	.29	-.08	.08	3	2
Iodine-129 (Drinking Water Standard)	6-35-66	7.72	1.49	5.26	3	0
Iodine-129 (Drinking Water Standard)	6-35-70	87.80	10.30	30.05	7	0
Iodine-129 (Drinking Water Standard)	6-36-61B	.04	-.01	.01	2	1
Iodine-129 (Drinking Water Standard)	6-39-39	.15	.03	.09	3	2
Iodine-129 (Drinking Water Standard)	6-40-33A	-.22	-.22	-.22	1	1
Iodine-129 (Drinking Water Standard)	6-40-62	.27	.03	.15	2	1
Iodine-129 (Drinking Water Standard)	6-41-23	7.43	1.55	5.14	4	0
Iodine-129 (Drinking Water Standard)	6-44-64	.08	-.02	.03	2	1
Iodine-129 (Drinking Water Standard)	6-45-69A	.11	.01	.06	2	1
Iodine-129 (Drinking Water Standard)	6-46-21B	.01	-.06	-.02	2	1
Iodine-129 (Drinking Water Standard)	6-47-35A	.17	-.04	.06	2	1
Iodine-129 (Drinking Water Standard)	6-47-46A	-.03	-.33	-.18	2	1
Iodine-129 (Drinking Water Standard)	6-47-60	.02	-.03	-.00	2	1
Iodine-129 (Drinking Water Standard)	6-49-28	.04	.03	.03	2	1
Iodine-129 (Drinking Water Standard)	6-49-55A	.06	.02	.04	2	1
Iodine-129 (Drinking Water Standard)	6-49-55B	.02	.02	.02	1	1
Iodine-129 (Drinking Water Standard)	6-50-42	.60	.03	.32	3	1
Iodine-129 (Drinking Water Standard)	6-50-53A	.27	.02	.15	2	1
Iodine-129 (Drinking Water Standard)	6-51-63	.06	-.10	-.02	2	1

Constituent	Well	Max of Result	Min of Result	Average of Result	Count of Result	Count of LT
Iodine-129 (Drinking Water Standard)	6-53-55A	-.05	-.05	-.05	1	1
Iodine-129 (Drinking Water Standard)	6-54-57	-.03	-.03	-.03	1	1
Iodine-129 (Drinking Water Standard)	6-55-50A	-.01	-.02	-.02	2	1
Iodine-129 (Drinking Water Standard)	6-55-50C	.03	-.01	.01	2	1
Iodine-129 (Drinking Water Standard)	6-55-50D	.07	-.01	.03	2	1
Iodine-129 (Drinking Water Standard)	6-56-43	.03	.03	.03	2	1
Iodine-129 (Drinking Water Standard)	6-59-58	.06	.03	.04	2	1
Iodine-129 (Drinking Water Standard)	6-60-60	-.02	-.02	-.02	1	1
Iodine-129 (Drinking Water Standard)	6-61-62	.53	.12	.32	2	0
Iodine-129 (Drinking Water Standard)	6-61-66	.21	.03	.12	2	1
Iodine-129 (Drinking Water Standard)	6-63-58	.31	.01	.16	2	1
Iodine-129 (Drinking Water Standard)	6-64-62	.34	.03	.18	3	1
Iodine-129 (Drinking Water Standard)	6-65-50	.25	-.12	.06	3	2
Nitrate	2-E13-14	16100.00	13800.00	15000.00	5	0
Nitrate	2-E13-19	10700.00	10700.00	10700.00	1	0
Nitrate	2-E13-5	18700.00	11200.00	13160.00	5	0
Nitrate	2-E13-8	16100.00	16100.00	16100.00	1	0
Nitrate	2-E16-2	1630.00	1100.00	1357.50	4	0
Nitrate	2-E17-1	300000.00	139000.00	177428.57	7	0
Nitrate	2-E17-12	46400.00	29100.00	36120.00	5	0
Nitrate	2-E17-14	300000.00	140000.00	218111.11	9	0
Nitrate	2-E17-15	354000.00	41000.00	243818.18	10	0
Nitrate	2-E17-16	128000.00	7290.00	39579.00	10	0
Nitrate	2-E17-17	105000.00	8400.00	62870.00	10	0
Nitrate	2-E17-18	27700.00	4900.00	11534.00	10	0
Nitrate	2-E17-19	316000.00	88800.00	141440.00	5	0
Nitrate	2-E17-2	63000.00	23000.00	43000.00	2	0
Nitrate	2-E17-20	245000.00	160000.00	204727.27	10	0

Constituent	Well	Max of Result	Min of Result	Average of Result	Count of Result	Count of LT
Nitrate	2-E17-5	234000.00	30000.00	96358.33	12	0
Nitrate	2-E17-8	66.60	66.60	66.60	1	0
Nitrate	2-E17-9	146000.00	103000.00	118444.44	9	0
Nitrate	2-E18-1	13300.00	8400.00	11690.00	9	0
Nitrate	2-E18-2	600.00	.33	462.76	4	1
Nitrate	2-E18-3	600.00	.40	457.31	4	1
Nitrate	2-E18-4	1000.00	.27	530.03	6	1
Nitrate	2-E23-1	30800.00	20.20	15410.10	2	0
Nitrate	2-E24-1	112.00	112.00	112.00	1	0
Nitrate	2-E24-11	88.80	88.80	88.80	1	0
Nitrate	2-E24-12	100000.00	88700.00	94350.00	2	0
Nitrate	2-E24-16	121000.00	18000.00	96557.14	7	0
Nitrate	2-E24-17	122000.00	84800.00	102850.00	6	0
Nitrate	2-E24-18	86300.00	22900.00	61033.33	6	0
Nitrate	2-E24-19	5100.00	730.00	3243.33	3	0
Nitrate	2-E24-2	172000.00	66400.00	97600.00	7	0
Nitrate	2-E24-4	2500.00	1.76	1647.94	4	0
Nitrate	2-E24-7	35400.00	22.20	17711.10	2	0
Nitrate	2-E24-8	3900.00	3900.00	3900.00	1	0
Nitrate	2-E25-11	43300.00	1000.00	15370.00	4	0
Nitrate	2-E25-13	370000.00	293.00	185146.50	2	0
Nitrate	2-E25-17	46400.00	43600.00	45000.00	2	0
Nitrate	2-E25-18	88700.00	15000.00	56430.00	10	0
Nitrate	2-E25-19	233000.00	20000.00	122145.45	11	0
Nitrate	2-E25-2	1400.00	1200.00	1300.00	2	0
Nitrate	2-E25-20	235000.00	1440.00	142785.45	11	0
Nitrate	2-E25-21	8400.00	480.00	4200.00	7	0
Nitrate	2-E25-22	5880.00	3100.00	3983.75	7	0
Nitrate	2-E25-23	1800.00	1100.00	1496.00	5	0
Nitrate	2-E25-24	3050.00	900.00	1548.75	7	0

Constituent	Well	Max of Result	Min of Result	Average of Result	Count of Result	Count of LT
Nitrate	2-E25-25	900.00	582.00	756.31	12	0
Nitrate	2-E25-26	1600.00	370.00	1269.00	6	0
Nitrate	2-E25-27	4000.00	1520.00	2438.00	4	0
Nitrate	2-E25-29P	12900.00	1300.00	7931.82	11	0
Nitrate	2-E25-3	2000.00	1.84	1000.92	2	0
Nitrate	2-E25-30P	8700.00	6.11	4568.26	8	0
Nitrate	2-E25-31	22400.00	880.00	9673.33	12	0
Nitrate	2-E25-32P	1270.00	340.00	825.00	11	0
Nitrate	2-E25-33	12900.00	3800.00	8410.00	12	0
Nitrate	2-E25-34	1500.00	320.00	1072.86	5	0
Nitrate	2-E25-35	9000.00	890.00	5741.00	10	0
Nitrate	2-E25-36	17000.00	2400.00	8133.33	9	0
Nitrate	2-E28-23	10500.00	6600.00	8570.00	4	0
Nitrate	2-E28-24	500.00	200.00	350.00	2	2
Nitrate	2-E28-25	7600.00	7200.00	7400.00	2	0
Nitrate	2-E28-26	52900.00	40100.00	46785.71	7	0
Nitrate	2-E28-27	31000.00	16300.00	26437.50	8	0
Nitrate	2-E28-7	8290.00	4600.00	6730.00	3	0
Nitrate	2-E32-2	28200.00	13600.00	20362.50	8	0
Nitrate	2-E33-1	45500.00	6640.00	34588.00	4	0
Nitrate	2-E33-12	500.00	500.00	500.00	1	1
Nitrate	2-E33-18	19900.00	19900.00	19900.00	1	0
Nitrate	2-E33-24	11300.00	11300.00	11300.00	1	0
Nitrate	2-E33-28	4200.00	3500.00	3927.14	7	0
Nitrate	2-E33-29	8740.00	6900.00	7662.86	7	0
Nitrate	2-E33-3	57600.00	40700.00	47633.33	3	0
Nitrate	2-E33-30	8300.00	6700.00	7482.50	8	0
Nitrate	2-E33-31	13000.00	13000.00	13000.00	1	0
Nitrate	2-E33-32	8200.00	8200.00	8200.00	1	0
Nitrate	2-E33-33	6700.00	6700.00	6700.00	1	0

Constituent	Well	Max of Result	Min of Result	Average of Result	Count of Result	Count of LT
Nitrate	2-E33-5	30900.00	29200.00	30150.00	4	0
Nitrate	2-E33-7	129.00	129.00	129.00	1	0
Nitrate	2-E33-8	9500.00	7700.00	8600.00	2	0
Nitrate	2-E34-1	13400.00	7.26	10115.32	4	0
Nitrate	2-E34-2	16400.00	10900.00	13353.33	8	0
Nitrate	2-E34-3	11800.00	3700.00	5722.86	7	0
Nitrate	2-E34-5	15000.00	13200.00	14014.29	7	0
Nitrate	2-E34-6	13700.00	500.00	6600.00	6	1
Nitrate	2-E34-7	7800.00	2500.00	5366.67	3	0
Nitrate	2-E35-1	10200.00	10200.00	10200.00	1	0
Nitrate	6-20-39	5590.00	4820.00	5205.00	2	0
Nitrate	6-23-34	29100.00	4000.00	22946.67	14	0
Nitrate	6-24-33	37000.00	35.40	24800.67	12	0
Nitrate	6-24-34A	33300.00	5200.00	27191.67	12	0
Nitrate	6-24-34B	35900.00	7100.00	30607.14	13	0
Nitrate	6-24-34C	37000.00	7600.00	30961.54	13	0
Nitrate	6-24-35	29400.00	4200.00	24514.29	13	0
Nitrate	6-24-46	9540.00	8310.00	9080.00	3	0
Nitrate	6-25-34A	34100.00	31.10	26641.39	8	0
Nitrate	6-25-34B	34000.00	27200.00	30414.29	7	0
Nitrate	6-25-34C	35100.00	7400.00	29738.46	11	0
Nitrate	6-26-33	34200.00	25600.00	29685.71	7	0
Nitrate	6-26-34	35400.00	24900.00	30366.67	6	0
Nitrate	6-26-35A	33800.00	7300.00	28112.50	7	0
Nitrate	6-31-31	6100.00	2.78	3400.56	3	0
Nitrate	6-32-22	13.60	13.60	13.60	1	0
Nitrate	6-32-43	27000.00	28.40	11231.30	7	0
Nitrate	6-33-42	5600.00	5600.00	5600.00	1	0
Nitrate	6-34-41B	11.20	11.20	11.20	1	0
Nitrate	6-34-42	5400.00	4800.00	5100.00	2	0

Constituent	Well	Max of Result	Min of Result	Average of Result	Count of Result	Count of LT
Nitrate	6-35-66	28500.00	23.00	20420.50	6	0
Nitrate	6-35-70	29200.00	23.20	10577.61	9	0
Nitrate	6-36-61A	21600.00	21.50	13517.36	7	0
Nitrate	6-36-61B	9300.00	20.00	4660.00	2	0
Nitrate	6-39-39	64000.00	54.00	20486.00	4	0
Nitrate	6-40-33A	500.00	.28	250.14	2	2
Nitrate	6-40-62	47000.00	11000.00	33800.00	5	0
Nitrate	6-41-23	8.23	8.23	8.23	1	0
Nitrate	6-42-40B	500.00	500.00	500.00	1	1
Nitrate	6-42-42B	6500.00	5880.00	6268.57	5	0
Nitrate	6-43-41E	10400.00	1400.00	7980.00	5	0
Nitrate	6-43-42J	5300.00	1000.00	2733.33	5	0
Nitrate	6-43-43	1100.00	700.00	945.71	5	0
Nitrate	6-43-45	1500.00	1000.00	1241.67	6	0
Nitrate	6-44-42	1600.00	1100.00	1377.14	6	0
Nitrate	6-44-43B	8300.00	940.00	6027.50	8	0
Nitrate	6-44-64	55000.00	18000.00	46700.00	4	0
Nitrate	6-45-42	8860.00	960.00	6006.67	6	0
Nitrate	6-45-69A	25600.00	6100.00	14900.00	4	0
Nitrate	6-46-21B	18700.00	18700.00	18700.00	1	0
Nitrate	6-47-35A	14400.00	14400.00	14400.00	1	0
Nitrate	6-47-46A	14700.00	12600.00	13775.00	4	0
Nitrate	6-47-50	8120.00	7470.00	7795.00	2	0
Nitrate	6-47-60	23500.00	24.70	19489.24	4	0
Nitrate	6-49-55A	233000.00	40.90	143746.72	10	0
Nitrate	6-50-53A	625000.00	665.00	478888.75	12	0
Nitrate	6-53-47A	5690.00	1200.00	3445.00	2	0
Nitrate	6-53-47B	30600.00	30600.00	30600.00	1	0
Nitrate	6-53-48B	113.00	113.00	113.00	1	0
Nitrate	6-54-34	8100.00	8100.00	8100.00	1	0

Constituent	Well	Max of Result	Min of Result	Average of Result	Count of Result	Count of LT
Nitrate	6-54-48	49200.00	49200.00	49200.00	1	0
Nitrate	6-54-57	500.00	500.00	500.00	1	1
Nitrate	6-55-40				0	1
Nitrate	6-55-50C	1900.00	1500.00	1617.50	4	0
Nitrate	6-57-29A	3300.00	3300.00	3300.00	1	0
Nitrate	6-58-24	4000.00	3.96	2001.98	2	0
Nitrate	6-59-58	6800.00	6800.00	6800.00	1	0
Nitrate	6-60-60	3.32	3.32	3.32	1	0
Nitrate	6-61-62	38000.00	39.10	19019.55	2	0
Nitrate	6-62-31	55000.00	41.40	27520.70	2	0
Nitrate	6-63-25A	18.20	18.20	18.20	1	0
Nitrate	6-63-55	10000.00	10000.00	10000.00	1	0
Nitrate	6-63-58	22000.00	31.50	11015.75	2	0
Nitrate	6-64-62	34000.00	34000.00	34000.00	1	0
Plutonium-239/40	2-E13-14	.01	.01	.01	1	0
Plutonium-239/40	2-E16-2	-.00	-.00	-.00	1	1
Plutonium-239/40	2-E17-1	-.00	-.00	-.00	1	1
Plutonium-239/40	2-E17-12	.02	-.00	.00	10	1
Plutonium-239/40	2-E17-14	-.00	-.00	-.00	2	1
Plutonium-239/40	2-E17-15	.00	.00	.00	1	1
Plutonium-239/40	2-E17-16	-.00	-.00	-.00	2	1
Plutonium-239/40	2-E17-17	.01	-.00	.01	2	1
Plutonium-239/40	2-E17-18	-.00	-.00	-.00	2	1
Plutonium-239/40	2-E17-20	-.00	-.00	-.00	1	1
Plutonium-239/40	2-E17-5	.00	-.00	.00	2	1
Plutonium-239/40	2-E17-8	.00	.00	.00	1	1
Plutonium-239/40	2-E17-9	-.00	-.00	-.00	1	1
Plutonium-239/40	2-E18-1	.00	-.00	.00	2	2

Constituent	Well	Max of Result	Min of Result	Average of Result	Count of Result	Count of LT
Plutonium-239/40	2-E18-2	-.00	-.00	-.00	1	1
Plutonium-239/40	2-E18-3	-.00	-.00	-.00	1	1
Plutonium-239/40	2-E18-4	.00	.00	.00	1	1
Plutonium-239/40	2-E24-16	-.00	-.00	-.00	1	1
Plutonium-239/40	2-E24-17	-.00	-.00	-.00	2	1
Plutonium-239/40	2-E24-18	-.00	-.01	-.00	2	1
Plutonium-239/40	2-E24-19	-.00	-.00	-.00	1	1
Plutonium-239/40	2-E24-2	.00	.00	.00	1	1
Plutonium-239/40	2-E25-11	.00	.00	.00	1	1
Plutonium-239/40	2-E25-17	.44	.44	.44	1	0
Plutonium-239/40	2-E25-18	.00	.00	.00	1	1
Plutonium-239/40	2-E25-19	-.00	-.00	-.00	1	1
Plutonium-239/40	2-E25-20	-.00	-.00	-.00	1	1
Plutonium-239/40	2-E25-21	.00	.00	.00	1	1
Plutonium-239/40	2-E25-22	-.00	-.00	-.00	1	1
Plutonium-239/40	2-E25-23	-.00	-.00	-.00	1	1
Plutonium-239/40	2-E25-24	.00	.00	.00	1	1
Plutonium-239/40	2-E25-25	-.00	-.00	-.00	1	1
Plutonium-239/40	2-E25-26	.00	.00	.00	2	1
Plutonium-239/40	2-E25-30P	.01	-.00	.00	2	1
Plutonium-239/40	2-E25-31	-.00	-.00	-.00	1	1
Plutonium-239/40	2-E25-32P	.01	-.00	.00	2	1
Plutonium-239/40	2-E25-33	-.00	-.00	-.00	1	1
Plutonium-239/40	2-E25-34	-.00	-.00	-.00	1	1
Plutonium-239/40	2-E25-35	.01	.01	.01	1	0
Plutonium-239/40	2-E28-23	449.00	7.21	68.75	8	0
Plutonium-239/40	2-E28-24	144.00	.08	34.37	8	0
Plutonium-239/40	2-E28-25	71.90	1.10	16.67	9	0
Plutonium-239/40	2-E28-7	.11	-.00	.02	8	1
Plutonium-239/40	2-E32-2	-.01	-.01	-.01	1	1

Constituent	Well	Max of Result	Min of Result	Average of Result	Count of Result	Count of LT
Plutonium-239/40	2-E33-28	-.00	-.00	-.00	1	1
Plutonium-239/40	2-E33-29	-.01	-.01	-.01	1	1
Plutonium-239/40	2-E33-30	-.00	-.00	-.00	1	1
Plutonium-239/40	2-E34-1	.07	.07	.07	1	0
Plutonium-239/40	2-E34-2	.02	-.00	.01	3	2
Plutonium-239/40	2-E34-3	.02	-.00	.01	2	2
Plutonium-239/40	2-E34-5	.00	-.00	.00	2	2
Plutonium-239/40	2-E34-6	.01	.01	.01	1	1
Plutonium-239/40	2-E34-7	-.00	-.01	-.00	2	2
Plutonium-239/40	6-31-31	-.00	-.00	-.00	1	1
Plutonium-239/40	6-32-43	-.00	-.00	-.00	1	1
Plutonium-239/40	6-35-70	-.00	-.00	-.00	1	1
Plutonium-239/40	6-40-33A	.00	-.00	.00	2	2
Plutonium-239/40	6-40-62	-.00	-.00	-.00	1	1
Plutonium-239/40	6-42-42B	-.00	-.00	-.00	1	1
Plutonium-239/40	6-43-41E	-.00	-.00	-.00	1	1
Plutonium-239/40	6-43-43	-.01	-.01	-.01	1	1
Plutonium-239/40	6-43-45	.00	.00	.00	1	1
Plutonium-239/40	6-44-42	-.01	-.01	-.01	1	1
Plutonium-239/40	6-44-43B	.02	-.00	.00	3	1
Plutonium-239/40	6-45-42	.00	-.00	-.00	13	1
Plutonium-239/40	6-50-42	-.00	-.00	-.00	1	1
Plutonium-239/40	6-53-47A	-.00	-.00	-.00	1	1
Plutonium-239/40	6-53-48A	.03	.03	.03	1	0
Plutonium-239/40	6-53-48B	.01	.01	.01	1	1
Plutonium-239/40	6-55-50C	-.00	-.00	-.00	1	1
Plutonium-239/40	6-63-25A	-.00	-.00	-.00	1	1
Strontium-90	2-E13-14	.96	-.13	.25	3	2

Constituent	Well	Max of Result	Min of Result	Average of Result	Count of Result	Count of LT
Strontium-90	2-E13-19	.69	.11	.40	2	1
Strontium-90	2-E13-5	3.90	.22	2.06	2	1
Strontium-90	2-E13-8	.47	.37	.41	3	1
Strontium-90	2-E16-2	.35	-.17	.04	7	1
Strontium-90	2-E17-1	6.34	3.18	4.16	4	0
Strontium-90	2-E17-12	.68	-.37	-.07	15	1
Strontium-90	2-E17-14	28.10	14.10	18.70	4	0
Strontium-90	2-E17-15	6.56	6.56	6.56	1	0
Strontium-90	2-E17-16	3.62	2.69	3.30	4	0
Strontium-90	2-E17-17	-.16	-.24	-.21	3	2
Strontium-90	2-E17-18	.28	-.05	.17	3	1
Strontium-90	2-E17-2	3.11	2.05	2.47	7	0
Strontium-90	2-E17-20	12.80	12.80	12.80	1	0
Strontium-90	2-E17-5	4.38	1.36	3.34	10	0
Strontium-90	2-E17-8	2.92	1.32	2.29	6	0
Strontium-90	2-E17-9	4.02	1.93	2.88	8	0
Strontium-90	2-E18-1	.43	.43	.43	1	1
Strontium-90	2-E24-1	14.30	5.36	10.35	4	0
Strontium-90	2-E24-11	1.66	.86	1.08	7	1
Strontium-90	2-E24-12	18.50	2.04	6.46	5	0
Strontium-90	2-E24-13	.68	-.01	.43	3	1
Strontium-90	2-E24-17	3.42	3.42	3.42	1	0
Strontium-90	2-E24-18	-.14	-.14	-.14	1	1
Strontium-90	2-E24-19	194.00	194.00	194.00	1	0
Strontium-90	2-E24-2	3.33	2.48	2.91	6	0
Strontium-90	2-E24-4	.47	-.38	.02	3	1
Strontium-90	2-E24-8	.40	-.18	.11	2	1
Strontium-90	2-E25-11	.20	-.34	-.03	8	1
Strontium-90	2-E25-17	.33	-.38	.08	7	1
Strontium-90	2-E25-18	.46	-.48	-.11	6	1

Constituent	Well	Max of Result	Min of Result	Average of Result	Count of Result	Count of LT
Strontium-90	2-E25-19	.30	-.56	-.01	6	1
Strontium-90	2-E25-2	.51	-.20	.12	3	1
Strontium-90	2-E25-20	.80	-.60	-.03	7	1
Strontium-90	2-E25-21	.23	-.24	-.02	5	1
Strontium-90	2-E25-22	.61	-.58	-.04	6	1
Strontium-90	2-E25-23	.45	-.39	.00	5	1
Strontium-90	2-E25-24	.72	-.58	-.14	6	1
Strontium-90	2-E25-25	-.20	-.20	-.20	1	1
Strontium-90	2-E25-26	-.25	-.32	-.28	2	1
Strontium-90	2-E25-29P	.15	.15	.15	1	1
Strontium-90	2-E25-3	.50	.42	.45	3	1
Strontium-90	2-E25-30P	.15	-.14	.01	2	1
Strontium-90	2-E25-31	-.32	-.32	-.32	1	1
Strontium-90	2-E25-32P	-.19	-.32	-.26	2	1
Strontium-90	2-E25-33	-.16	-.16	-.16	1	1
Strontium-90	2-E25-34	-.53	-.53	-.53	1	1
Strontium-90	2-E25-35	.00	.00	.00	1	1
Strontium-90	2-E28-23	6150.00	2330.00	4396.25	8	0
Strontium-90	2-E28-24	328.00	146.00	196.17	6	0
Strontium-90	2-E28-25	6270.00	3150.00	5148.57	7	0
Strontium-90	2-E28-26	1.11	-.37	-.04	6	1
Strontium-90	2-E28-27	.75	-.30	.04	7	1
Strontium-90	2-E28-7	113.00	46.00	75.59	9	0
Strontium-90	2-E32-2	.32	-.45	-.15	6	1
Strontium-90	2-E33-1	.04	-.15	-.07	3	1
Strontium-90	2-E33-12	.15	-.26	-.05	2	1
Strontium-90	2-E33-14	.11	-.15	-.02	2	1
Strontium-90	2-E33-18	-.03	-.34	-.15	3	1
Strontium-90	2-E33-24	.35	-.49	-.13	3	1
Strontium-90	2-E33-26	-.15	-.30	-.21	3	1

Constituent	Well	Max of Result	Min of Result	Average of Result	Count of Result	Count of LT
Strontium-90	2-E33-28	.16	-.51	-.16	6	1
Strontium-90	2-E33-29	.41	-.24	.12	6	1
Strontium-90	2-E33-3	.21	-.21	.01	3	1
Strontium-90	2-E33-30	.47	-.54	-.05	7	1
Strontium-90	2-E33-5	.16	-.33	-.10	3	1
Strontium-90	2-E33-7	2.61	.06	.84	7	1
Strontium-90	2-E33-8	-.01	-.19	-.08	3	1
Strontium-90	2-E33-9	1.14	.02	.75	6	1
Strontium-90	2-E34-1	.44	-.23	-.01	2	1
Strontium-90	2-E34-2	.35	-.26	-.04	9	2
Strontium-90	2-E34-3	.12	-.20	-.04	7	2
Strontium-90	2-E34-5	.72	-.43	.01	8	2
Strontium-90	2-E34-6	.51	-.31	.01	7	1
Strontium-90	2-E34-7	-.14	-.14	-.14	1	1
Strontium-90	2-E35-1	.14	.14	.14	1	1
Strontium-90	6-23-34	.88	-.31	.08	4	1
Strontium-90	6-24-33	.51	-.37	.10	5	1
Strontium-90	6-24-34A	.00	-.55	-.27	4	1
Strontium-90	6-24-34B	1.23	-.29	.27	4	1
Strontium-90	6-24-34C	.44	-.39	.11	4	1
Strontium-90	6-24-35	.53	-.49	-.01	4	1
Strontium-90	6-25-34C	.44	-.57	-.21	4	1
Strontium-90	6-31-31	-.10	-.10	-.10	1	1
Strontium-90	6-32-43	.18	-.30	-.06	2	2
Strontium-90	6-35-66	.42	-.38	-.00	5	1
Strontium-90	6-35-70	.97	-.14	.15	7	1
Strontium-90	6-40-33A	-.12	-.39	-.26	2	2
Strontium-90	6-42-40B	1.13	-.31	.29	8	1
Strontium-90	6-43-41E	.10	.10	.10	1	1
Strontium-90	6-43-45	-.06	-.06	-.06	1	1

Constituent	Well	Max of Result	Min of Result	Average of Result	Count of Result	Count of LT
Strontium-90	6-44-43B	-.23	-.49	-.36	2	1
Strontium-90	6-45-42	.41	-.37	.01	16	1
Strontium-90	6-47-50	.92	-.25	.33	2	1
Strontium-90	6-49-55A	.64	-.42	.10	9	1
Strontium-90	6-49-55B	.56	-.14	.19	5	1
Strontium-90	6-50-30	.40	-.38	-.02	6	1
Strontium-90	6-50-42	.44	-.36	.02	8	2
Strontium-90	6-50-53A	.47	-.36	-.03	8	1
Strontium-90	6-53-47A	78.80	38.70	59.69	16	0
Strontium-90	6-53-47B	116.00	85.50	100.30	7	0
Strontium-90	6-53-48A	124.00	10.10	55.50	6	0
Strontium-90	6-53-48B	477.00	171.00	310.71	7	0
Strontium-90	6-53-55A	.59	.02	.37	4	1
Strontium-90	6-54-48	126.00	29.30	54.04	7	0
Strontium-90	6-54-57	1.38	-.52	.29	6	1
Strontium-90	6-55-50A	.21	-.07	.09	6	1
Strontium-90	6-55-50C	.27	-.68	-.02	7	1
Strontium-90	6-55-50D	.35	-.36	-.03	7	1
Strontium-90	6-59-58	.18	-.58	-.12	6	1
Strontium-90	6-60-60	.19	.01	.10	2	1
Strontium-90	6-61-62	.68	-.56	.01	6	1
Strontium-90	6-61-66	.05	-.29	-.17	6	1
Strontium-90	6-63-58	.14	.14	.14	1	1
Strontium-90	6-64-62	.12	-.37	-.05	5	1
Technetium-99	2-E13-14	3.69	2.48	3.09	2	1
Technetium-99	2-E13-19	1.15	-1.14	.01	2	1
Technetium-99	2-E13-5	67.70	.07	33.89	2	1
Technetium-99	2-E13-8	2.82	1.30	1.95	3	1

Constituent	Well	Max of Result	Min of Result	Average of Result	Count of Result	Count of LT
Technetium-99	2-E16-2	4.60	4.60	4.60	1	1
Technetium-99	2-E17-1	68.40	68.40	68.40	1	0
Technetium-99	2-E17-12	755.00	128.00	341.67	3	0
Technetium-99	2-E17-14	599.00	288.00	443.50	2	0
Technetium-99	2-E17-15	110.00	110.00	110.00	1	0
Technetium-99	2-E17-16	14.10	-.50	8.77	3	1
Technetium-99	2-E17-17	238.00	164.00	201.00	2	0
Technetium-99	2-E17-18	7.30	2.25	4.78	2	1
Technetium-99	2-E17-5	312.00	117.00	209.33	3	0
Technetium-99	2-E17-8	13.10	13.10	13.10	1	0
Technetium-99	2-E17-9	126.00	70.40	96.20	3	0
Technetium-99	2-E18-1	.30	.30	.30	1	1
Technetium-99	2-E18-2	-.18	-.18	-.18	1	1
Technetium-99	2-E18-3	-.18	-.18	-.18	1	1
Technetium-99	2-E18-4	.21	.21	.21	1	1
Technetium-99	2-E24-19	39.00	6.75	22.88	2	0
Technetium-99	2-E24-8	32.90	15.70	24.30	2	0
Technetium-99	2-E25-11	7.62	7.62	7.62	1	0
Technetium-99	2-E25-17	3.82	3.82	3.82	1	1
Technetium-99	2-E25-18	4.13	1.29	2.30	4	2
Technetium-99	2-E25-19	3.79	3.79	3.79	1	1
Technetium-99	2-E25-20	2.36	2.36	2.36	1	1
Technetium-99	2-E25-21	2.28	2.28	2.28	1	1
Technetium-99	2-E25-22	29.97	1.33	13.04	3	0
Technetium-99	2-E25-23	2.14	2.14	2.14	1	0
Technetium-99	2-E25-24	4.88	4.88	4.88	1	1
Technetium-99	2-E25-25	1.50	.10	.73	12	1
Technetium-99	2-E25-26	3.14	-1.18	.84	3	1
Technetium-99	2-E25-27	4.41	1.40	2.91	2	0
Technetium-99	2-E25-29P	7.18	-.14	2.45	8	1

Constituent	Well	Max of Result	Min of Result	Average of Result	Count of Result	Count of LT
Technetium-99	2-E25-30P	5.43	1.48	3.00	3	0
Technetium-99	2-E25-31	2.44	.22	1.18	7	1
Technetium-99	2-E25-32P	2.75	.54	1.28	7	1
Technetium-99	2-E25-33	6.22	.10	1.83	8	1
Technetium-99	2-E28-23	142.00	21.90	88.30	3	0
Technetium-99	2-E28-26	26.90	6.64	17.14	6	1
Technetium-99	2-E28-27	171.00	99.30	132.33	7	0
Technetium-99	2-E28-7	136.00	61.40	92.43	3	0
Technetium-99	2-E32-2	159.00	98.80	131.97	5	0
Technetium-99	2-E33-1	880.00	625.00	752.50	2	0
Technetium-99	2-E33-12	132.00	82.90	107.45	2	0
Technetium-99	2-E33-18	32.30	21.20	26.75	2	0
Technetium-99	2-E33-24	1550.00	1190.00	1390.00	3	0
Technetium-99	2-E33-28	114.00	.25	71.19	6	1
Technetium-99	2-E33-29	87.90	45.30	58.90	6	0
Technetium-99	2-E33-30	112.00	49.70	72.11	7	0
Technetium-99	2-E33-5	1610.00	1480.00	1545.00	2	0
Technetium-99	2-E33-7	4460.00	3630.00	4170.00	3	0
Technetium-99	2-E33-8	399.00	287.00	343.00	2	0
Technetium-99	2-E34-1	5.34	-.52	1.43	2	1
Technetium-99	2-E34-2	2.75	-3.63	.00	9	2
Technetium-99	2-E34-3	2.24	-2.84	-.95	7	2
Technetium-99	2-E34-5	1.69	-4.81	-.87	8	2
Technetium-99	2-E34-6	17.60	-4.16	2.36	7	1
Technetium-99	2-E34-7	-.23	-.23	-.23	1	1
Technetium-99	2-E35-1	-3.54	-3.54	-3.54	1	1
Technetium-99	6-20-39	2.46	-.03	1.35	3	1
Technetium-99	6-24-33	1.07	1.07	1.07	1	1
Technetium-99	6-24-46	.51	.51	.51	1	1
Technetium-99	6-25-55	.70	.70	.70	1	1

Constituent	Well	Max of Result	Min of Result	Average of Result	Count of Result	Count of LT
Technetium-99	6-31-31	7.73	7.73	7.73	1	0
Technetium-99	6-32-22	244.00	48.10	181.03	3	0
Technetium-99	6-32-43	125.00	21.10	50.85	6	0
Technetium-99	6-33-42	16.00	16.00	16.00	1	0
Technetium-99	6-33-56	.65	.65	.65	1	1
Technetium-99	6-34-39A	2.76	2.76	2.76	1	0
Technetium-99	6-34-42	18.70	8.75	13.73	2	0
Technetium-99	6-34-51	31.60	31.60	31.60	1	0
Technetium-99	6-35-66	44.70	5.85	32.11	4	0
Technetium-99	6-35-70	135.00	26.80	89.70	6	0
Technetium-99	6-36-46Q	2.77	.12	1.44	2	1
Technetium-99	6-36-61A	6.08	1.33	3.71	2	1
Technetium-99	6-39-39	.88	.88	.88	1	1
Technetium-99	6-40-33A	93.90	-.18	31.51	3	2
Technetium-99	6-40-62	5.31	5.31	5.31	1	0
Technetium-99	6-41-23	68.20	14.30	46.45	4	0
Technetium-99	6-42-40B	4.10	4.10	4.10	1	1
Technetium-99	6-44-43B	1.86	1.82	1.84	2	1
Technetium-99	6-45-42	-.19	-.19	-.19	1	1
Technetium-99	6-46-21B	12.20	12.20	12.20	1	0
Technetium-99	6-47-35A	2.03	2.03	2.03	1	1
Technetium-99	6-47-46A	.91	.91	.91	1	1
Technetium-99	6-47-50	-.08	-.08	-.08	1	1
Technetium-99	6-47-60	1.30	1.30	1.30	1	1
Technetium-99	6-49-28	2.92	2.92	2.92	1	0
Technetium-99	6-49-55A	12500.00	125.00	7000.71	4	0
Technetium-99	6-49-55B	48.00	.49	16.85	3	1
Technetium-99	6-50-42	.39	.39	.39	1	1
Technetium-99	6-50-53A	32700.00	391.00	23198.20	5	0
Technetium-99	6-51-63	2.60	2.60	2.60	1	0

Constituent	Well	Max of Result	Min of Result	Average of Result	Count of Result	Count of LT
Technetium-99	6-53-47A	2.59	2.59	2.59	1	0
Technetium-99	6-53-48A	-.21	-.21	-.21	1	1
Technetium-99	6-53-48B	1.55	1.55	1.55	1	1
Technetium-99	6-54-34	.63	.63	.63	1	1
Technetium-99	6-54-57	71.70	.81	31.94	3	1
Technetium-99	6-55-50A	3.45	-1.07	1.27	3	1
Technetium-99	6-55-50C	38.70	-.48	19.11	2	1
Technetium-99	6-57-29A	.87	.87	.87	1	0
Technetium-99	6-59-58	40.80	5.31	22.10	4	1
Technetium-99	6-60-60	139.00	62.70	100.85	2	0
Technetium-99	6-61-37	7.37	7.37	7.37	1	0
Technetium-99	6-61-41	1.91	1.91	1.91	1	0
Technetium-99	6-61-62	740.00	93.90	491.73	4	0
Technetium-99	6-61-66	5.56	-2.70	.67	4	1
Technetium-99	6-62-31	1.15	1.15	1.15	1	1
Technetium-99	6-63-25A	.11	.11	.11	1	0
Technetium-99	6-63-55	96.40	77.90	87.15	2	0
Technetium-99	6-63-58	205.00	205.00	205.00	1	0
Technetium-99	6-64-62	637.00	307.00	475.75	4	0
Technetium-99	6-65-50	58.50	58.50	58.50	1	0
Tritium	2-E13-14	390.00	-174.00	105.88	4	2
Tritium	2-E13-19	218.00	-130.00	61.97	3	1
Tritium	2-E13-5	12.90	-324.00	-110.06	6	1
Tritium	2-E13-8	-26.10	-44.20	-35.23	4	1
Tritium	2-E16-2	17300.00	155.00	2705.11	18	1
Tritium	2-E17-1	8050000.00	2.87	3277500.73	8	1
Tritium	2-E17-12	3460000.00	1.19	1508157.96	17	1
Tritium	2-E17-14	2700000.00	2.68	1418714.67	7	1

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Constituent	Well	Max of Result	Min of Result	Average of Result	Count of Result	Count of LT
Tritium	2-E17-15	1800000.00	1.89	648898.98	7	1
Tritium	2-E17-16	947000.00	27400.00	237012.50	8	0
Tritium	2-E17-17	1100000.00	201000.00	611428.57	6	0
Tritium	2-E17-18	705000.00	35600.00	182337.50	8	0
Tritium	2-E17-19	2620000.00	-2.88	1360249.28	4	1
Tritium	2-E17-2	131000.00	22300.00	44726.32	19	0
Tritium	2-E17-20	4600000.00	-69.20	2024992.54	8	2
Tritium	2-E17-5	4210000.00	1.25	1109869.62	22	1
Tritium	2-E17-8	5830000.00	1.54	3591666.92	6	1
Tritium	2-E17-9	5200000.00	3180000.00	4155625.00	16	0
Tritium	2-E18-1	86.30	-287.00	-58.19	6	2
Tritium	2-E18-2	391.00	-216.00	47.07	5	2
Tritium	2-E18-3	3910.00	-341.00	896.28	4	2
Tritium	2-E18-4	1940.00	-48.00	697.73	4	2
Tritium	2-E23-1	1260000.00	135000.00	646333.33	3	0
Tritium	2-E24-1	7810000.00	1920000.00	3707500.00	15	0
Tritium	2-E24-11	8070000.00	2250000.00	4270000.00	7	0
Tritium	2-E24-12	2360000.00	45000.00	270591.67	12	0
Tritium	2-E24-13	6390.00	6120.00	6273.33	3	0
Tritium	2-E24-16	3050000.00	1.27	1875000.47	6	1
Tritium	2-E24-17	2990000.00	1.55	2142000.31	5	1
Tritium	2-E24-18	2320000.00	145000.00	1339000.00	4	0
Tritium	2-E24-19	4760.00	3720.00	4200.00	3	0
Tritium	2-E24-2	4630000.00	1.37	2154545.58	11	1
Tritium	2-E24-4	10800.00	5110.00	8361.43	7	0
Tritium	2-E24-7	1950000.00	418000.00	1174500.00	4	0
Tritium	2-E24-8	4820000.00	7570.00	972254.00	5	0
Tritium	2-E25-11	777000.00	68500.00	480319.05	21	0
Tritium	2-E25-13	37500.00	36000.00	36750.00	2	0
Tritium	2-E25-17	580000.00	163000.00	360055.56	17	0

Constituent	Well	Max of Result	Min of Result	Average of Result	Count of Result	Count of LT
Tritium	2-E25-18	627000.00	93900.00	403809.09	11	0
Tritium	2-E25-19	4750000.00	1.18	2061200.51	10	1
Tritium	2-E25-2	9650.00	5940.00	7266.67	3	0
Tritium	2-E25-20	1740000.00	1570.00	1047142.73	11	0
Tritium	2-E25-21	8680.00	2590.00	4276.67	9	0
Tritium	2-E25-22	10100.00	5070.00	6878.89	8	0
Tritium	2-E25-23	603.00	11.50	259.83	7	1
Tritium	2-E25-24	1040.00	130.00	418.14	7	1
Tritium	2-E25-25	558.00	-153.00	300.62	9	2
Tritium	2-E25-26	3590.00	1840.00	2714.29	7	0
Tritium	2-E25-27	3770.00	3120.00	3445.00	2	0
Tritium	2-E25-29P	104000.00	36400.00	61071.43	6	0
Tritium	2-E25-3	10800.00	3940.00	6147.50	4	0
Tritium	2-E25-30P	2160.00	306.00	1062.75	4	0
Tritium	2-E25-31	28100.00	107.00	16830.70	10	0
Tritium	2-E25-32P	1150.00	670.00	909.11	8	0
Tritium	2-E25-33	47300.00	234.00	26591.75	8	0
Tritium	2-E25-34	2210.00	922.00	1500.13	8	0
Tritium	2-E25-35	69900.00	51500.00	60409.09	11	0
Tritium	2-E25-36	9380.00	4680.00	6645.71	7	0
Tritium	2-E28-23	8170.00	3800.00	6835.45	11	0
Tritium	2-E28-24	71100.00	58700.00	64866.67	3	0
Tritium	2-E28-25	6280.00	6280.00	6280.00	1	0
Tritium	2-E28-26	169000.00	32800.00	112766.67	6	0
Tritium	2-E28-27	417000.00	65300.00	291185.71	7	0
Tritium	2-E28-7	7940.00	6430.00	7142.50	4	0
Tritium	2-E32-2	245000.00	36300.00	169537.50	8	0
Tritium	2-E33-1	5230.00	4500.00	4780.00	3	0
Tritium	2-E33-12	640.00	351.00	433.00	5	0
Tritium	2-E33-14	295.00	171.00	233.00	2	1

Constituent	Well	Max of Result	Min of Result	Average of Result	Count of Result	Count of LT
Tritium	2-E33-18	5470.00	4920.00	5195.00	2	0
Tritium	2-E33-24	16100.00	13400.00	14750.00	2	0
Tritium	2-E33-28	3440.00	2000.00	2838.33	6	0
Tritium	2-E33-29	7150.00	5600.00	6538.57	7	0
Tritium	2-E33-3	5230.00	2570.00	4153.33	3	0
Tritium	2-E33-30	6790.00	4870.00	5868.57	7	0
Tritium	2-E33-31	2290.00	2290.00	2290.00	1	0
Tritium	2-E33-32	2040.00	2040.00	2040.00	1	0
Tritium	2-E33-33	5450.00	5450.00	5450.00	1	0
Tritium	2-E33-5	5040.00	4200.00	4716.67	3	0
Tritium	2-E33-7	10900.00	4830.00	7941.43	4	0
Tritium	2-E33-8	4990.00	2350.00	3473.33	3	0
Tritium	2-E33-9	4580.00	23.50	2923.92	6	1
Tritium	2-E34-1	3520.00	1460.00	2166.15	7	0
Tritium	2-E34-2	3470.00	2090.00	2842.50	9	0
Tritium	2-E34-3	9480.00	829.00	7038.43	7	0
Tritium	2-E34-5	617.00	-178.00	223.71	8	2
Tritium	2-E34-6	476.00	87.40	315.63	7	2
Tritium	2-E34-7	2190.00	406.00	1525.33	3	0
Tritium	2-E35-1	654.00	654.00	654.00	1	0
Tritium	6-20-39	23.30	-65.60	-31.00	3	1
Tritium	6-23-34	158000.00	73300.00	119350.00	8	0
Tritium	6-24-33	330000.00	127000.00	284411.76	13	0
Tritium	6-24-34A	216000.00	139000.00	176750.00	4	0
Tritium	6-24-34B	303000.00	243000.00	282857.14	7	0
Tritium	6-24-34C	326000.00	279000.00	306166.67	6	0
Tritium	6-24-35	163000.00	68200.00	129142.86	7	0
Tritium	6-24-46	982.00	-100.00	292.93	3	1
Tritium	6-25-34A	269000.00	241000.00	255500.00	4	0
Tritium	6-25-34B	2600000.00	247000.00	732000.00	5	0

Constituent	Well	Max of Result	Min of Result	Average of Result	Count of Result	Count of LT
Tritium	6-25-34C	298000.00	268000.00	286333.33	6	0
Tritium	6-25-55	6080.00	-198.00	904.99	7	1
Tritium	6-26-33	258000.00	232000.00	244600.00	5	0
Tritium	6-26-34	270000.00	240000.00	255500.00	4	0
Tritium	6-26-35A	297000.00	275000.00	285400.00	5	0
Tritium	6-28-40	98800.00	18500.00	59816.67	6	0
Tritium	6-28-52A	-14.00	-101.00	-57.50	2	1
Tritium	6-31-31	19600.00	8570.00	14467.50	4	0
Tritium	6-32-22	226000.00	91300.00	169287.50	8	0
Tritium	6-32-43	427000.00	212000.00	298000.00	12	0
Tritium	6-32-62	3680.00	1990.00	2383.33	6	0
Tritium	6-33-42	384000.00	189000.00	283375.00	8	0
Tritium	6-33-56	91.70	-154.00	-60.78	6	2
Tritium	6-34-39A	8230.00	2030.00	6006.67	3	0
Tritium	6-34-41B	53900.00	15900.00	36971.43	7	0
Tritium	6-34-42	168000.00	31300.00	75850.00	8	0
Tritium	6-34-51	436.00	-152.00	130.11	7	1
Tritium	6-35-66	1210000.00	964000.00	1127714.29	6	0
Tritium	6-35-70	1180000.00	58.00	786389.08	13	1
Tritium	6-36-46Q	375.00	-41.80	144.80	4	1
Tritium	6-36-46S	140000.00	146.00	70073.00	2	1
Tritium	6-36-61A	31400.00	29500.00	30666.67	3	0
Tritium	6-36-61B	41900.00	77.80	16769.83	7	1
Tritium	6-39-39	316.00	6.81	172.23	8	2
Tritium	6-40-33A	15700.00	-208.00	1445.72	11	2
Tritium	6-40-62	88100.00	55700.00	78042.86	7	0
Tritium	6-41-23	135000.00	44500.00	90062.50	8	0
Tritium	6-42-40B	4510.00	-86.50	573.84	20	2
Tritium	6-42-42B	79500.00	63800.00	73628.57	7	0
Tritium	6-43-41E	100000.00	64.40	74910.73	6	1

Constituent	Well	Max of Result	Min of Result	Average of Result	Count of Result	Count of LT
Tritium	6-43-42J	13000.00	1080.00	5140.00	8	0
Tritium	6-43-43	539.00	283.00	386.13	8	0
Tritium	6-43-45	506.00	342.00	426.67	6	0
Tritium	6-44-42	1140.00	346.00	808.29	7	0
Tritium	6-44-43B	45000.00	21900.00	35850.00	8	0
Tritium	6-44-64	814.00	511.00	664.71	6	0
Tritium	6-45-42	52300.00	30200.00	45688.89	17	0
Tritium	6-45-69A	331.00	-32.10	181.99	7	1
Tritium	6-46-21B	49600.00	46000.00	48157.14	6	0
Tritium	6-47-35A	-42.80	-129.00	-75.23	3	1
Tritium	6-47-46A	198.00	-132.00	27.47	7	1
Tritium	6-47-50	307.00	95.00	231.00	5	1
Tritium	6-47-60	128.00	-176.00	-39.17	7	2
Tritium	6-49-28	2000.00	1340.00	1615.00	6	0
Tritium	6-49-55A	14800.00	1220.00	8787.62	11	0
Tritium	6-49-55B	170.00	13.70	66.00	4	1
Tritium	6-50-30	362.00	-54.80	167.67	7	1
Tritium	6-50-42	4540.00	2490.00	3947.14	7	0
Tritium	6-50-53A	5040.00	3070.00	3860.00	9	0
Tritium	6-51-63	223.00	-276.00	-44.53	6	1
Tritium	6-53-47B	70.40	70.40	70.40	1	1
Tritium	6-53-48B	245.00	245.00	245.00	1	0
Tritium	6-53-55A	63.80	63.80	63.80	1	1
Tritium	6-54-34	792.00	-204.00	132.87	6	1
Tritium	6-54-45A	117.00	-140.00	17.79	7	1
Tritium	6-54-48	108.00	108.00	108.00	1	1
Tritium	6-54-57	445.00	-73.10	135.68	5	1
Tritium	6-55-40	862.00	-77.80	203.59	5	2
Tritium	6-55-44	266.00	20.20	141.38	4	1
Tritium	6-55-50A	552.00	-95.30	167.25	6	1

Constituent	Well	Max of Result	Min of Result	Average of Result	Count of Result	Count of LT
Tritium	6-55-50C	229.00	-276.00	52.92	7	2
Tritium	6-55-50D	368.00	8.62	171.59	6	1
Tritium	6-55-70	66.20	-171.00	-36.85	3	1
Tritium	6-56-43	301.00	-136.00	40.46	7	1
Tritium	6-57-29A	890.00	373.00	593.33	6	0
Tritium	6-59-58	1110.00	442.00	754.50	6	1
Tritium	6-60-60	7640.00	5660.00	6603.33	3	0
Tritium	6-61-37	679.00	-32.10	456.18	5	1
Tritium	6-61-41	250.00	-293.00	115.80	5	1
Tritium	6-61-62	43700.00	7350.00	13731.43	7	0
Tritium	6-61-66	136.00	-134.00	36.00	5	1
Tritium	6-62-31	86.20	86.20	86.20	1	1
Tritium	6-63-25A	1670.00	-53.80	253.30	7	2
Tritium	6-63-55	1230.00	436.00	774.57	7	0
Tritium	6-63-58	1940.00	1440.00	1668.57	7	0
Tritium	6-64-62	8610.00	7080.00	8007.14	7	0
Tritium	6-65-50	1220.00	352.00	646.00	7	0

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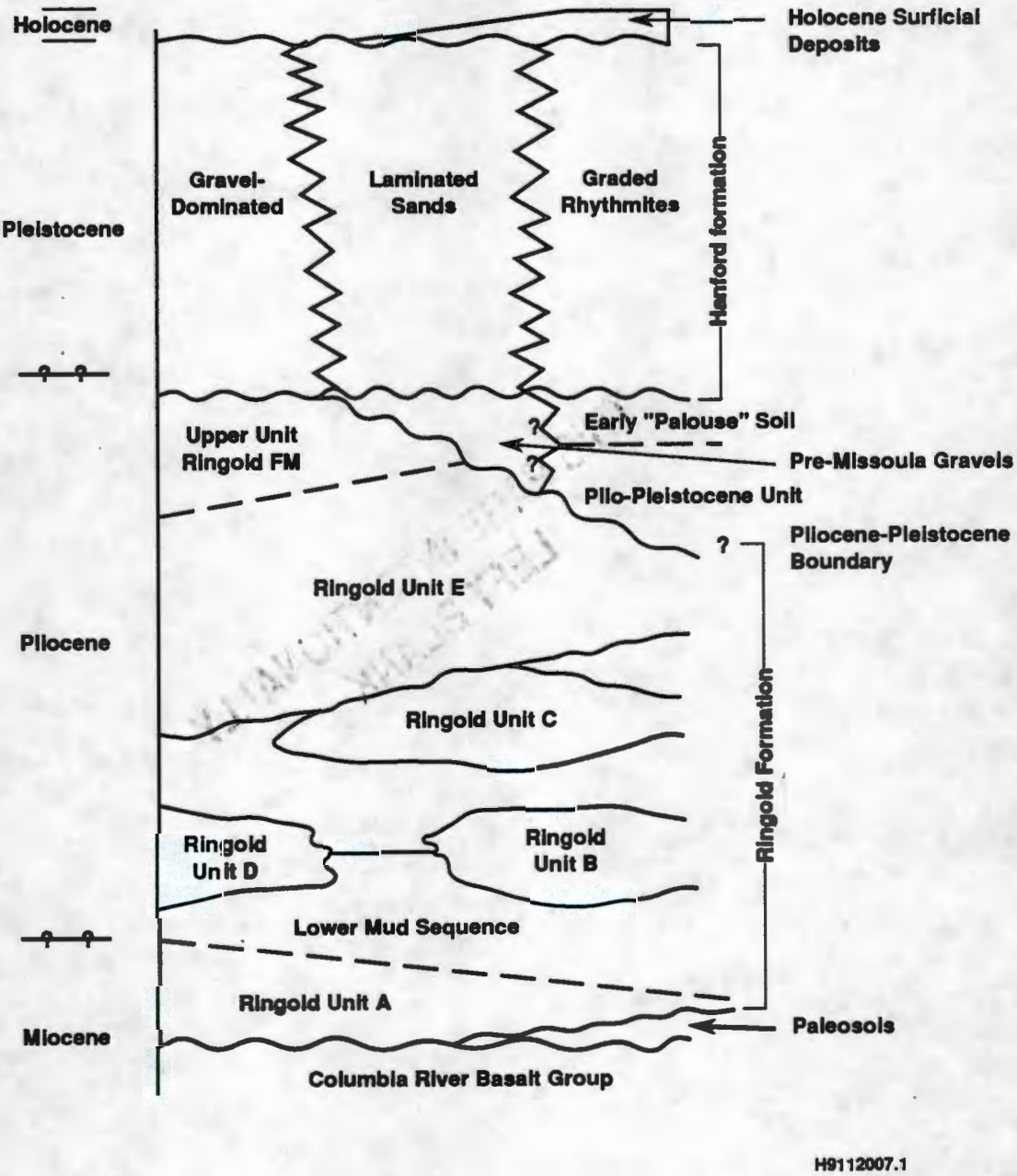
Figure 2-1. General Stratigraphy of the 200 East Area and Vicinity.



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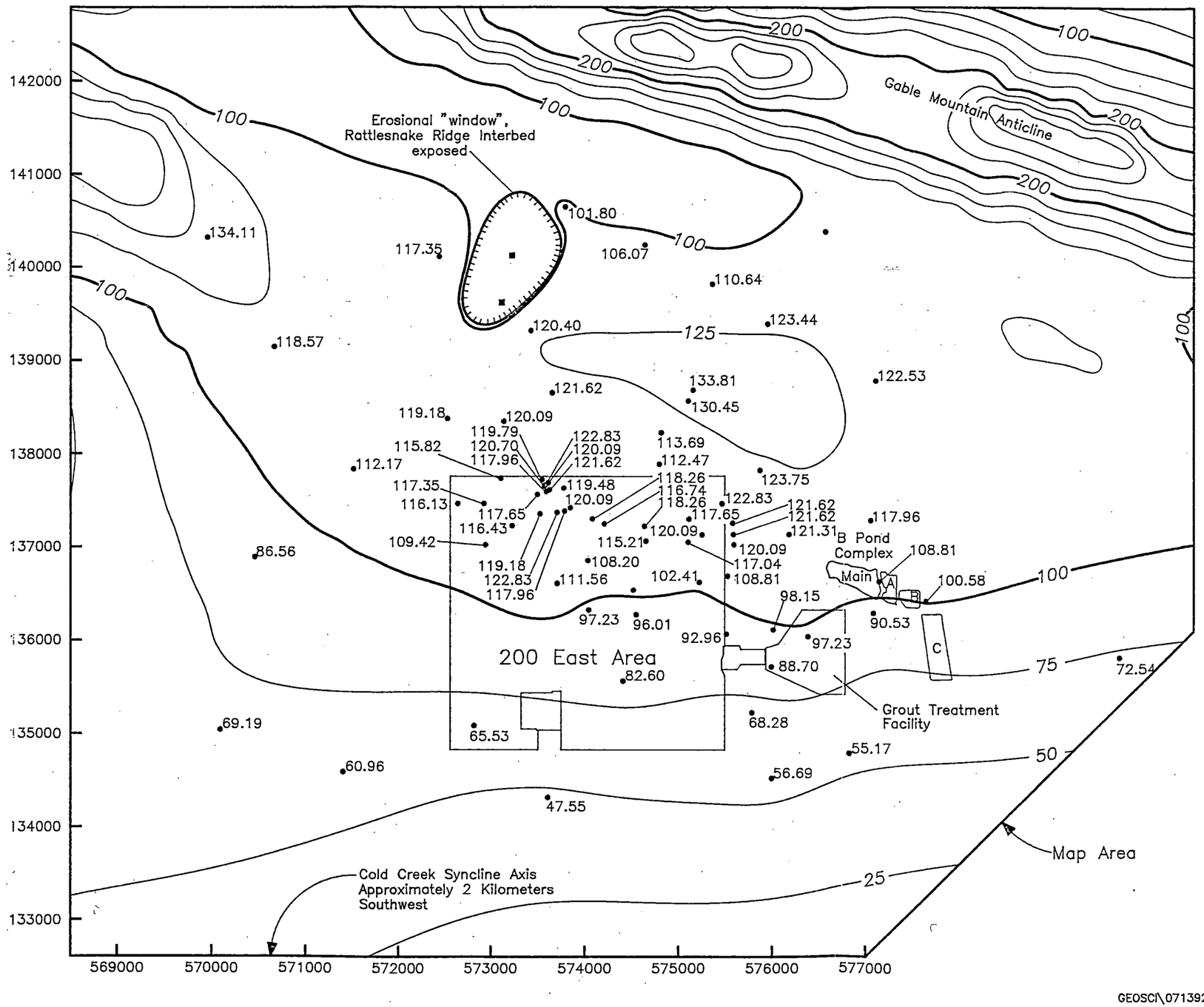


Structure Contour Map of the Top of Basalt Surface

Legend:

- • Borehole
- ▪ Borehole where Rattlesnake Ridge Interbed encountered before Basalt
- 123.44 Elevation (in meters) of the Upper Surface of Basalt
- —200— Contour on Upper Surface of Basalt

Contour Interval = 25 meters

-N-

0 1000 2000 Meters

Figure 2-2. Structure-Contour Map of the Top of Basalt Surface.

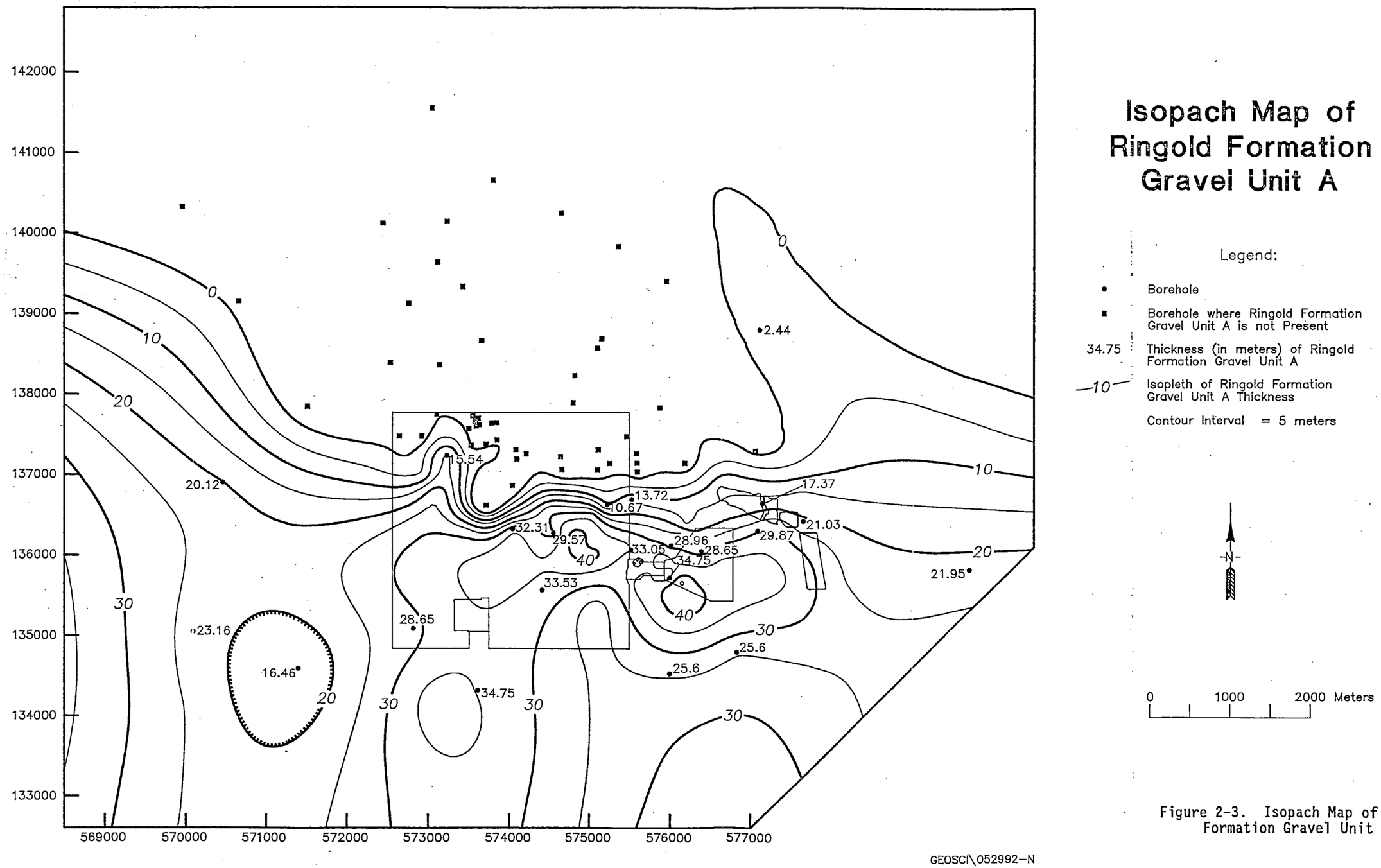
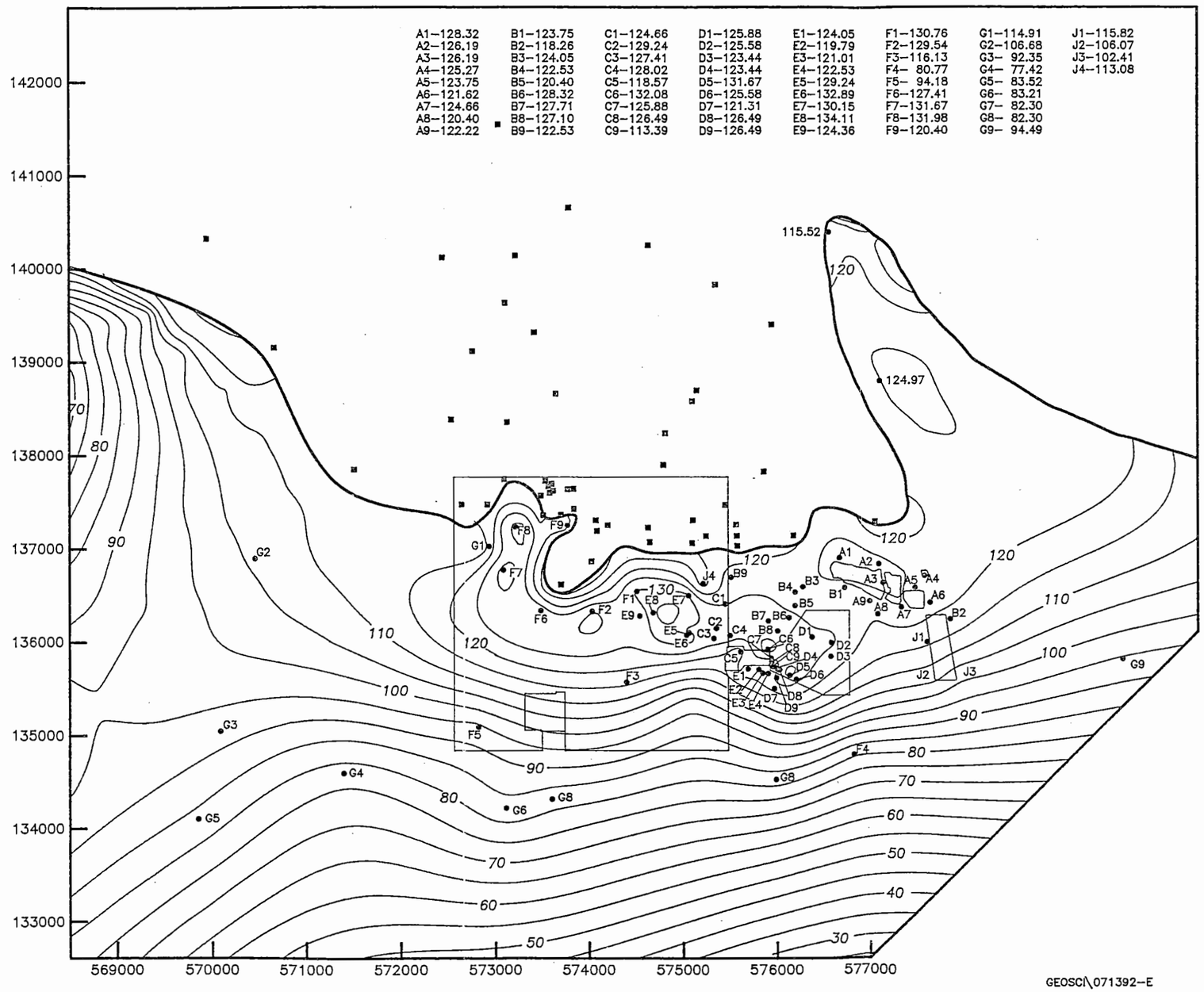


Figure 2-3. Isopach Map of Ringold Formation Gravel Unit A.



Structure Contour Map of Ringold Formation Gravel Unit A

Legend:

- • Borehole
- ▪ Borehole where Ringold Gravel Unit A is not Present
- 114.91 Elevation of the Upper Surface of Ringold Gravel Unit A
- —10— Isopleth of Upper Surface of Ringold Gravel Unit A

Contour Interval = 5 meters

0 1000 2000 Meters

Figure 2-4. Structure-Contour Map of the Ringold Formation Gravel Unit A.

Isopach Map of Ringold Formation Lower Mud Sequence

Legend:

- • Borehole
- ■ Borehole where Ringold Formation Lower Mud Sequence is not Present
- 12.19 Thickness (in meters) of Ringold Formation Lower Mud Sequence
- —50— Isopleth of Ringold Formation Lower Mud Sequence

Contour Interval = 12.5m

-N-

0 1000 2000 Meters

Figure 2-5. Isopach Map of the Ringold Formation Lower Mud Sequence.

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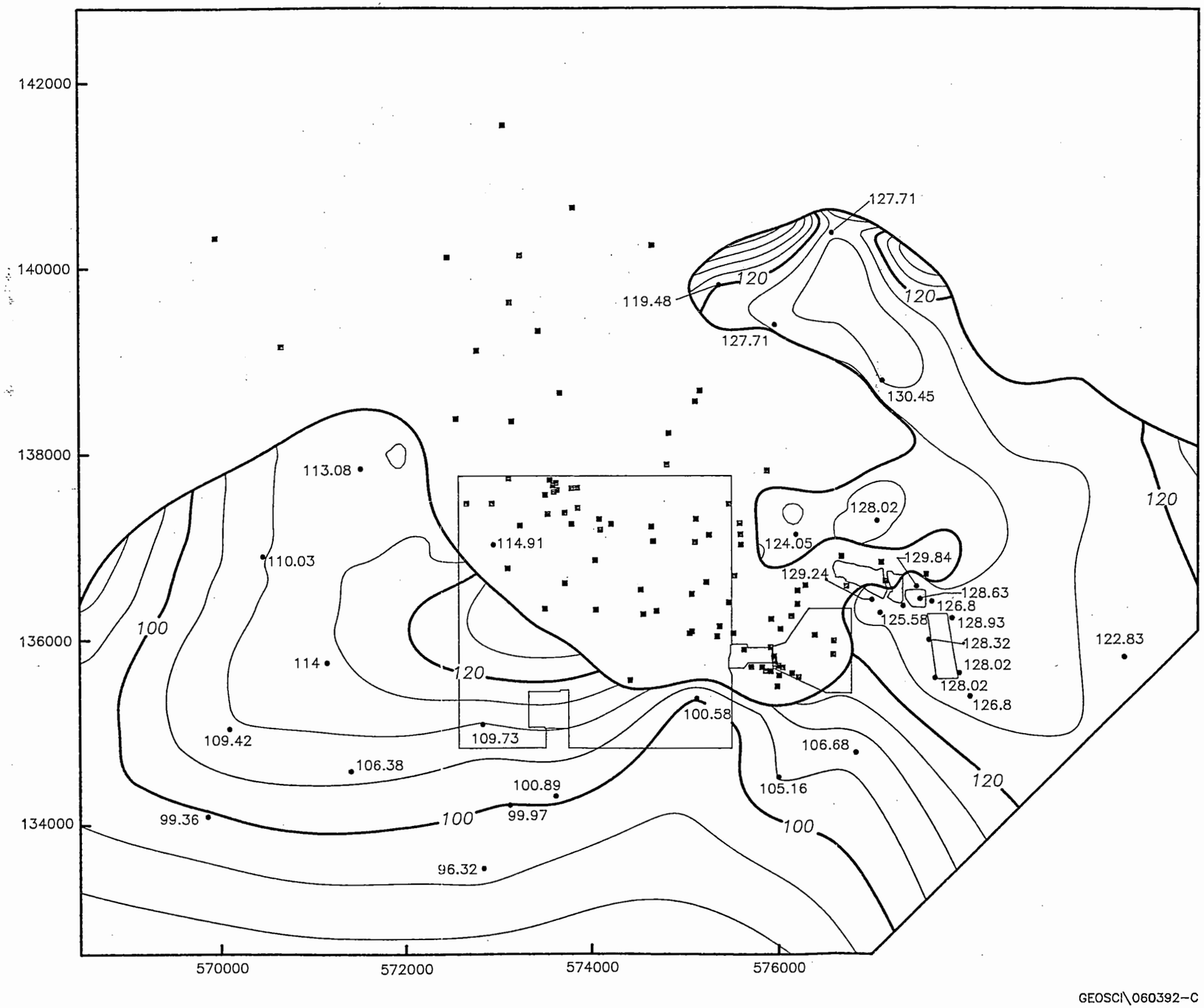


Structure Contour Map of Ringold Formation Lower Mud Sequence

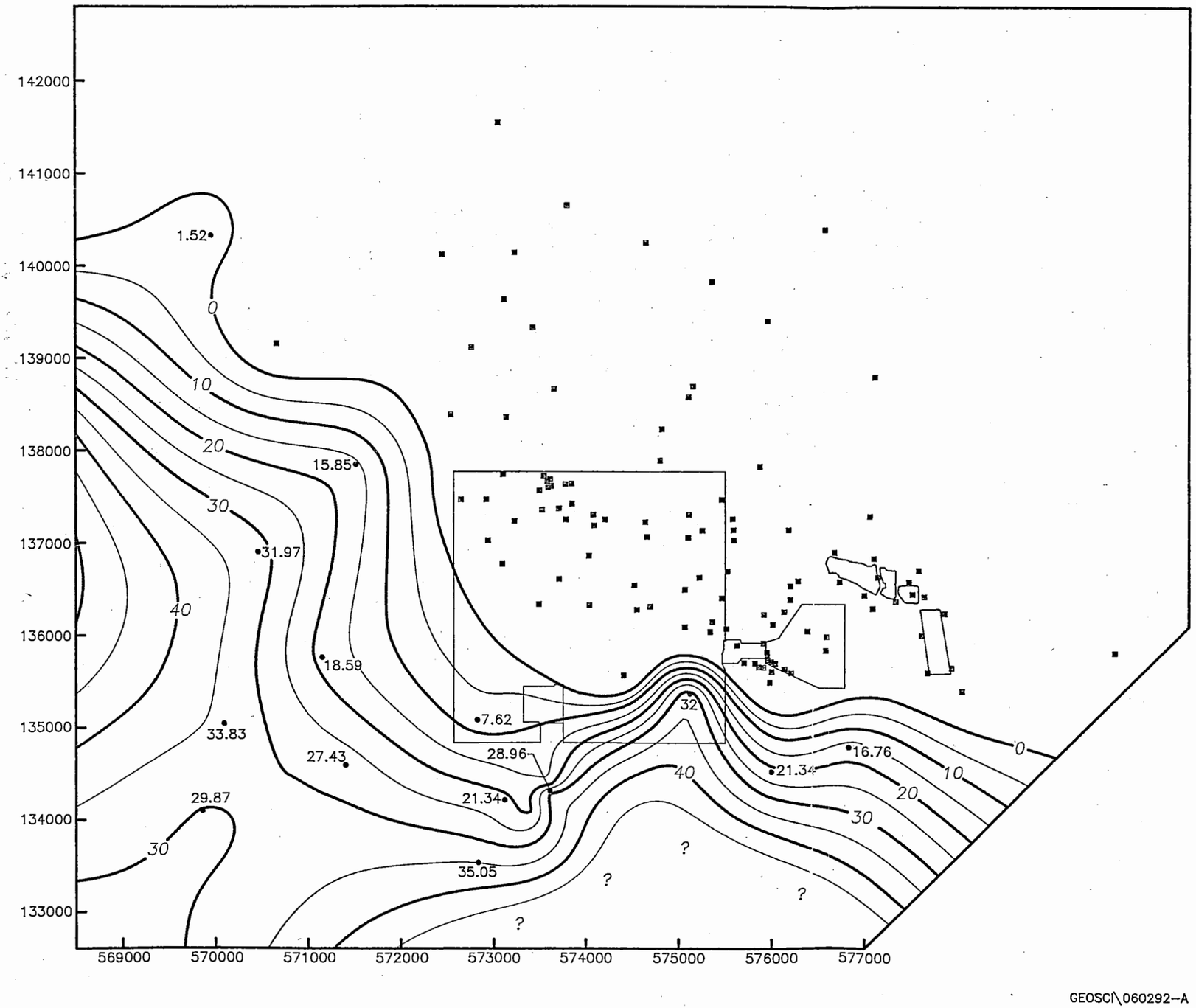
Legend:

- • Borehole
- ▪ Borehole where Ringold Formation Lower Mud Sequence is not Present
- 130.45 Elevation (in meters) of the Upper Surface of Ringold Formation Lower Mud Sequence
- —120— Contour on Upper Surface of Ringold Formation Lower Mud Sequence
- Contour Interval = 5 meters

-N-

0 1000 2000 Meters

Figure 2-6. Structure-Contour Map of the Ringold Formation Lower Mud Sequence.



Isopach Map of Ringold Formation Gravel Unit E

Legend:

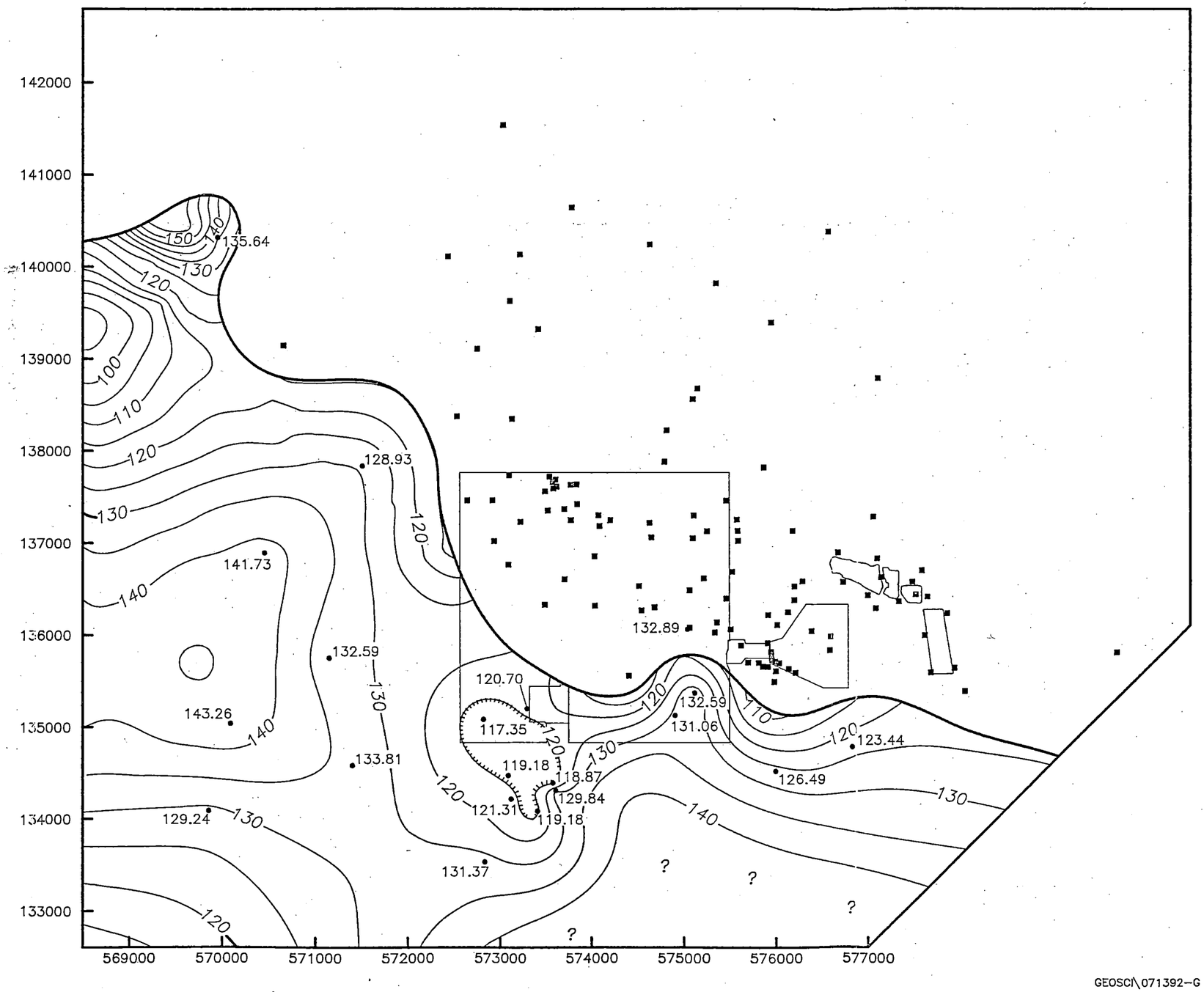
- • Borehole
- ▪ Borehole where Ringold Formation Gravel Unit E is not Present
- 21.34 Thickness (in meters) of Ringold Formation Gravel Unit E
- —60— Isopleth of Ringold Formation Gravel Unit E Thickness

Contour Interval = 5 meters

-N-

0 1000 2000 Meters

Figure 2-7. Isopach Map of the Ringold Formation Gravel Unit E.



Structure Contour Map of Ringold Formation Gravel Unit E

Legend:

- • Borehole
- ▪ Borehole where Ringold Formation Gravel Unit E is not Present
- 123.44 Elevation (in meters) of the Upper Surface of Ringold Formation Gravel Unit E
- —130— Contour on Upper Surface of Ringold Formation Gravel Unit E

Contour Interval = 5 meters

-N-

0 1000 2000 Meters

Figure 2-8. Structure-Contour Map of the Ringold Formation Gravel Unit E.

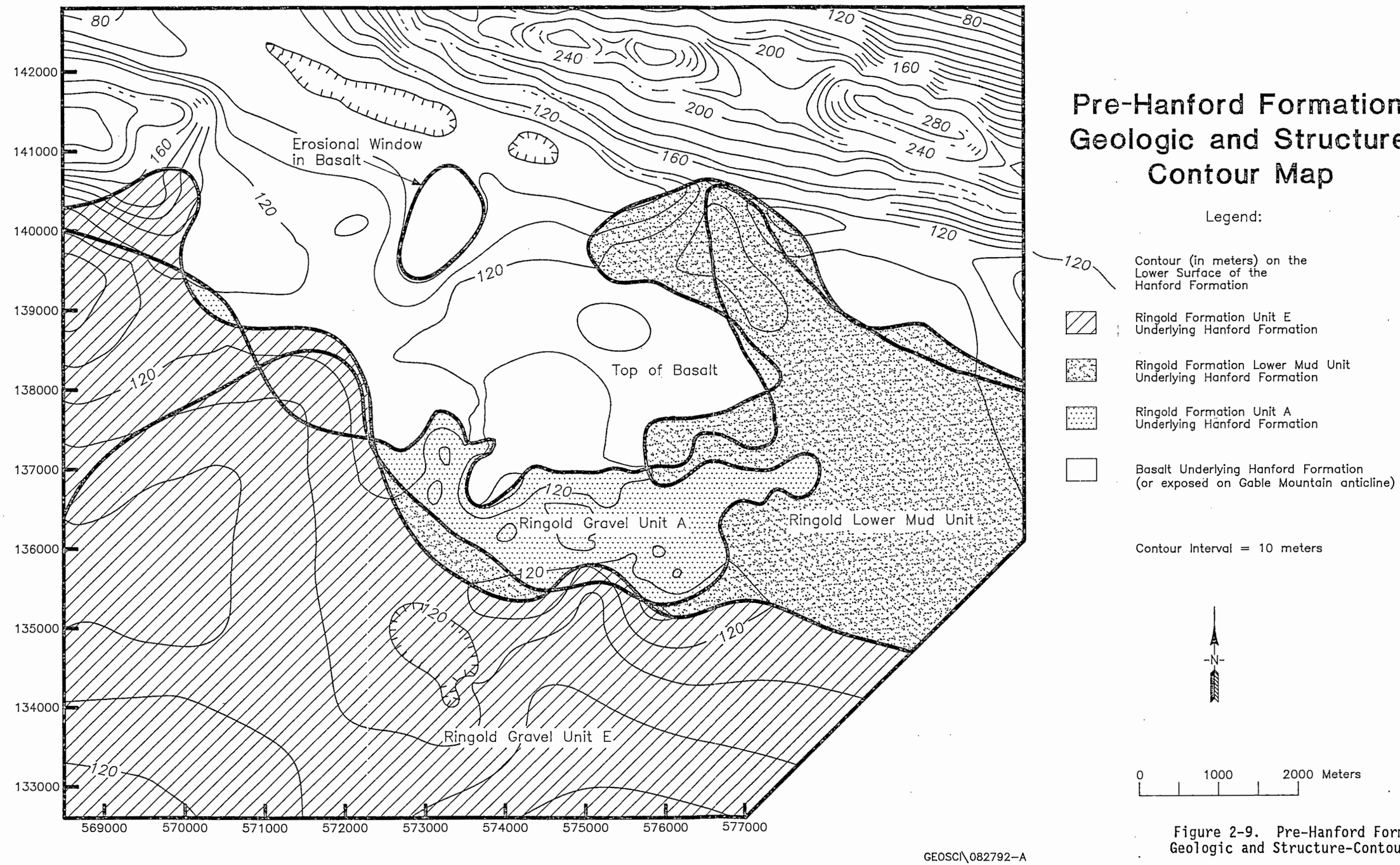


Figure 2-9. Pre-Hanford Formation Geologic and Structure-Contour Map.

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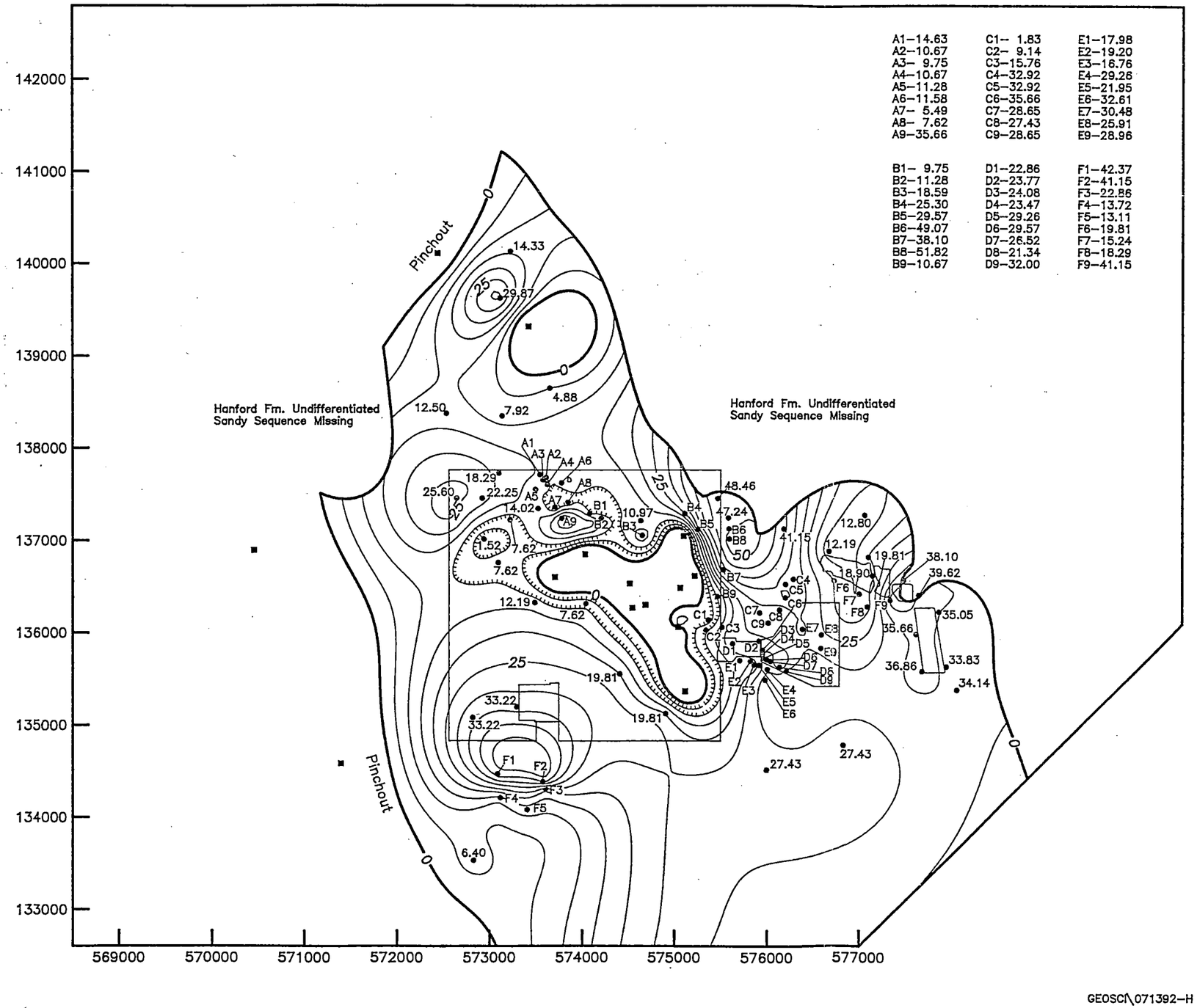


Isopach Map of Hanford Formation Lower Gravel Sequence

Legend:

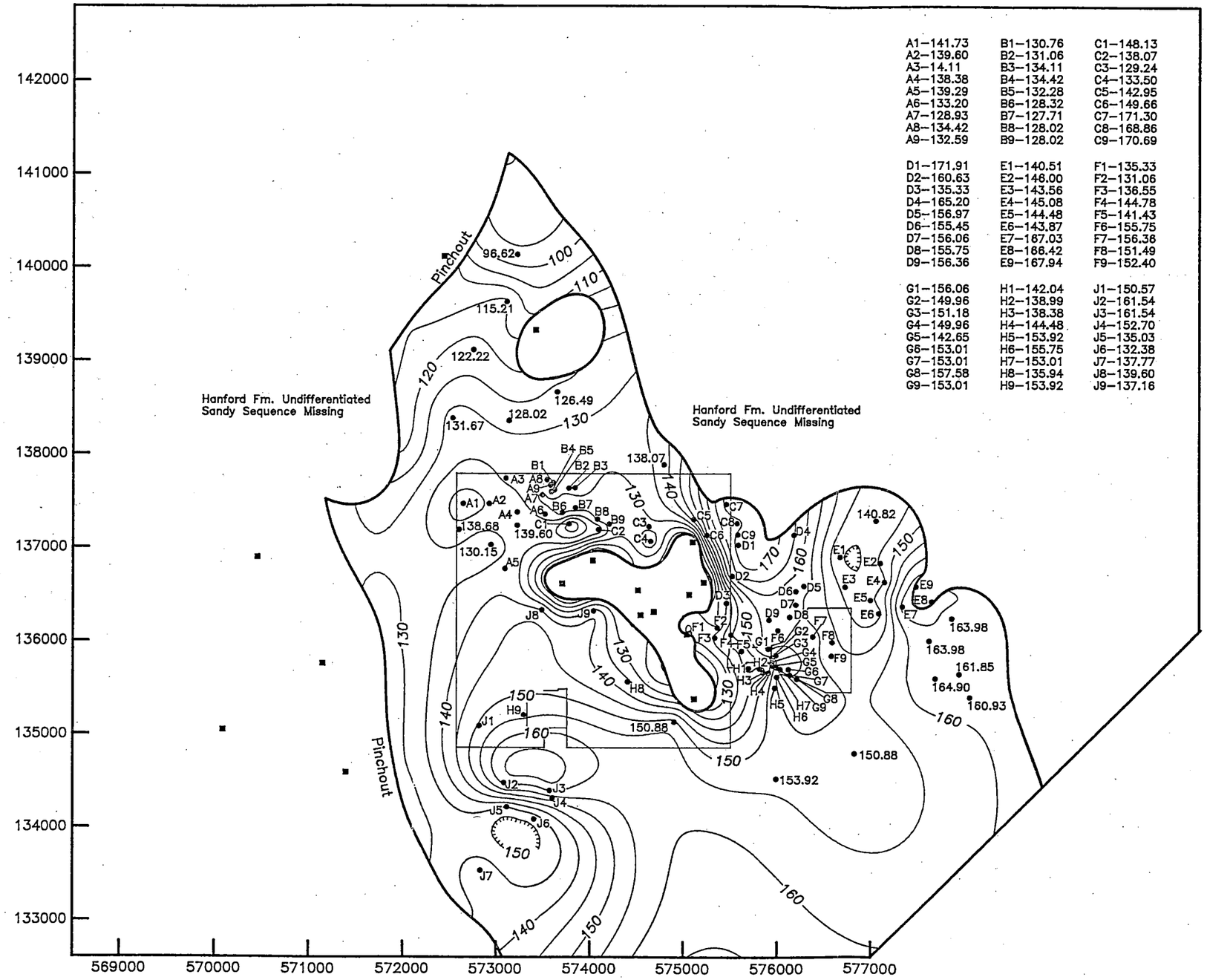
- • Borehole
- ▪ Borehole where Hanford formation Lower Gravel Sequence is not Present
- 33.14 Thickness (in meters) of Hanford Formation Lower Gravel Sequence
- —25— Isopleth of Hanford Formation Lower Gravel Sequence Thickness

Contour Interval = 5m

-N-

0 1000 2000 Meters

Figure 2-10. Isopach Map of the Hanford Formation Lower Gravel Sequence.



A1–141.73	B1–130.76	C1–148.13
A2–139.60	B2–131.06	C2–138.07
A3–14.11	B3–134.11	C3–129.24
A4–138.38	B4–134.42	C4–133.50
A5–139.29	B5–132.28	C5–142.95
A6–133.20	B6–128.32	C6–149.66
A7–128.93	B7–127.71	C7–171.30
A8–134.42	B8–128.02	C8–168.86
A9–132.59	B9–128.02	C9–170.69
D1–171.91	E1–140.51	F1–135.33
D2–160.63	E2–146.00	F2–131.06
D3–135.33	E3–143.56	F3–136.55
D4–165.20	E4–145.08	F4–144.78
D5–156.97	E5–144.48	F5–141.43
D6–155.45	E6–143.87	F6–155.75
D7–156.06	E7–167.03	F7–156.36
D8–155.75	E8–166.42	F8–151.49
D9–156.36	E9–167.94	F9–152.40
G1–156.06	H1–142.04	J1–150.57
G2–149.96	H2–138.99	J2–161.54
G3–151.18	H3–138.38	J3–161.54
G4–149.96	H4–144.48	J4–152.70
G5–142.65	H5–153.92	J5–135.03
G6–153.01	H6–155.75	J6–132.38
G7–153.01	H7–153.01	J7–137.77
G8–157.58	H8–135.94	J8–139.60
G9–153.01	H9–153.92	J9–137.16

Structure Contour Map of Hanford Formation Lower Gravel Sequence

Legend:

- • Borehole
- ■ Borehole where Hanford Formation Lower Gravel Sequence is not Present
- 137.16 Elevation of the Upper Surface of Hanford Formation Lower Gravel Sequence
- —150— Isopleth of Upper Surface of Hanford Formation Lower Gravel Sequence

-N-

0 1000 2000 Meters

Figure 2-11. Structure-Contour Map of the Hanford Formation Lower Gravel Sequence.

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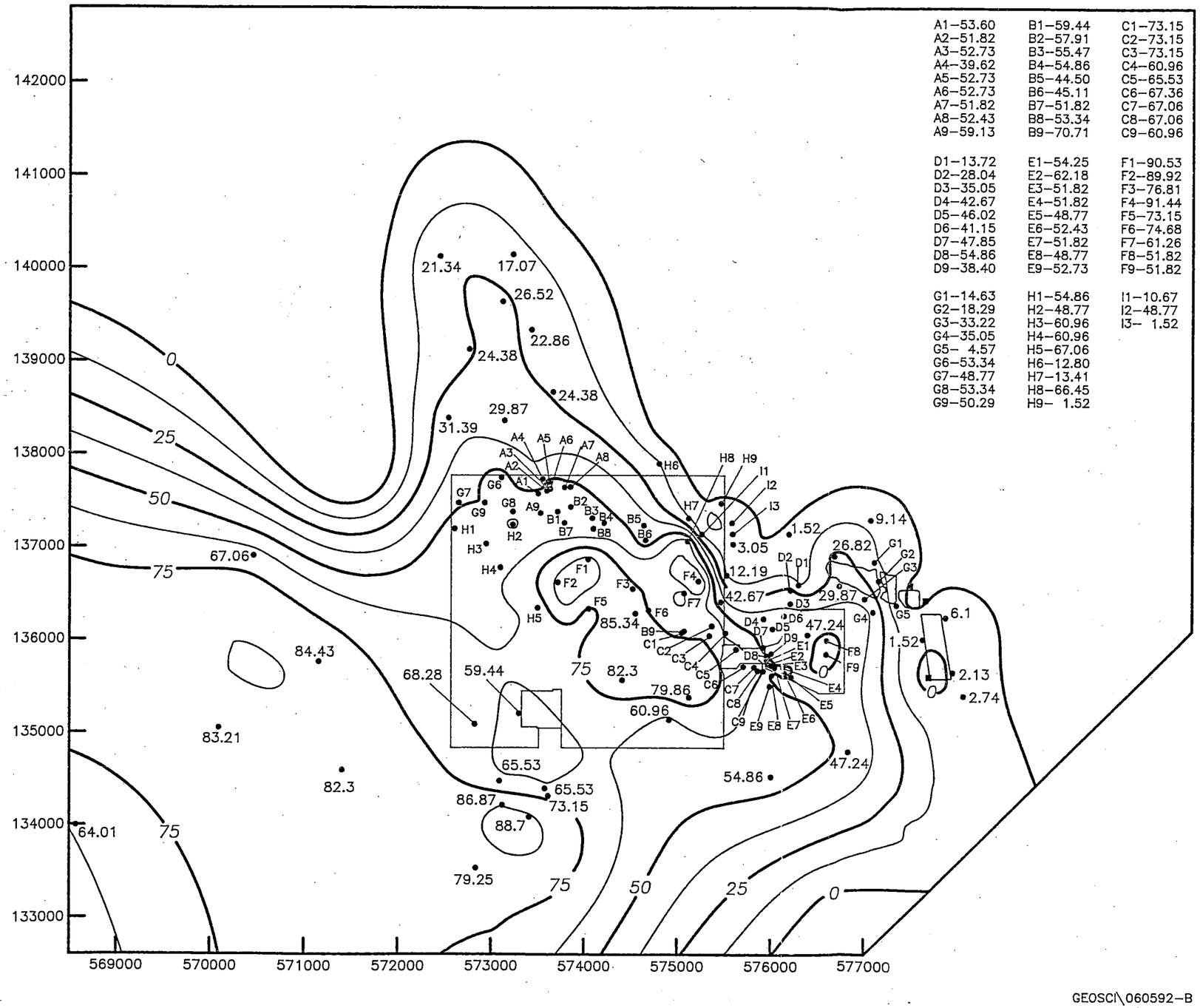
9413096.0390



A1–53.60	B1–59.44	C1–73.15
A2–51.82	B2–57.91	C2–73.15
A3–52.73	B3–55.47	C3–73.15
A4–39.62	B4–54.86	C4–60.96
A5–52.73	B5–44.50	C5–65.53
A6–52.73	B6–45.11	C6–67.36
A7–51.82	B7–51.82	C7–67.06
A8–52.43	B8–53.34	C8–67.06
A9–59.13	B9–70.71	C9–60.96
D1–13.72	E1–54.25	F1–90.53
D2–28.04	E2–62.18	F2–89.92
D3–35.05	E3–51.82	F3–76.81
D4–42.67	E4–51.82	F4–91.44
D5–46.02	E5–48.77	F5–73.15
D6–41.15	E6–52.43	F6–74.68
D7–47.85	E7–51.82	F7–61.26
D8–54.86	E8–48.77	F8–51.82
D9–38.40	E9–52.73	F9–51.82
G1–14.63	H1–54.86	I1–10.67
G2–18.29	H2–48.77	I2–48.77
G3–33.22	H3–60.96	I3– 1.52
G4–35.05	H4–60.96	
G5– 4.57	H5–67.06	
G6–53.34	H6–12.80	
G7–48.77	H7–13.41	
G8–53.34	H8–66.45	
G9–50.29	H9– 1.52	

Isopach Map of the Hanford Formation Sandy Sequence

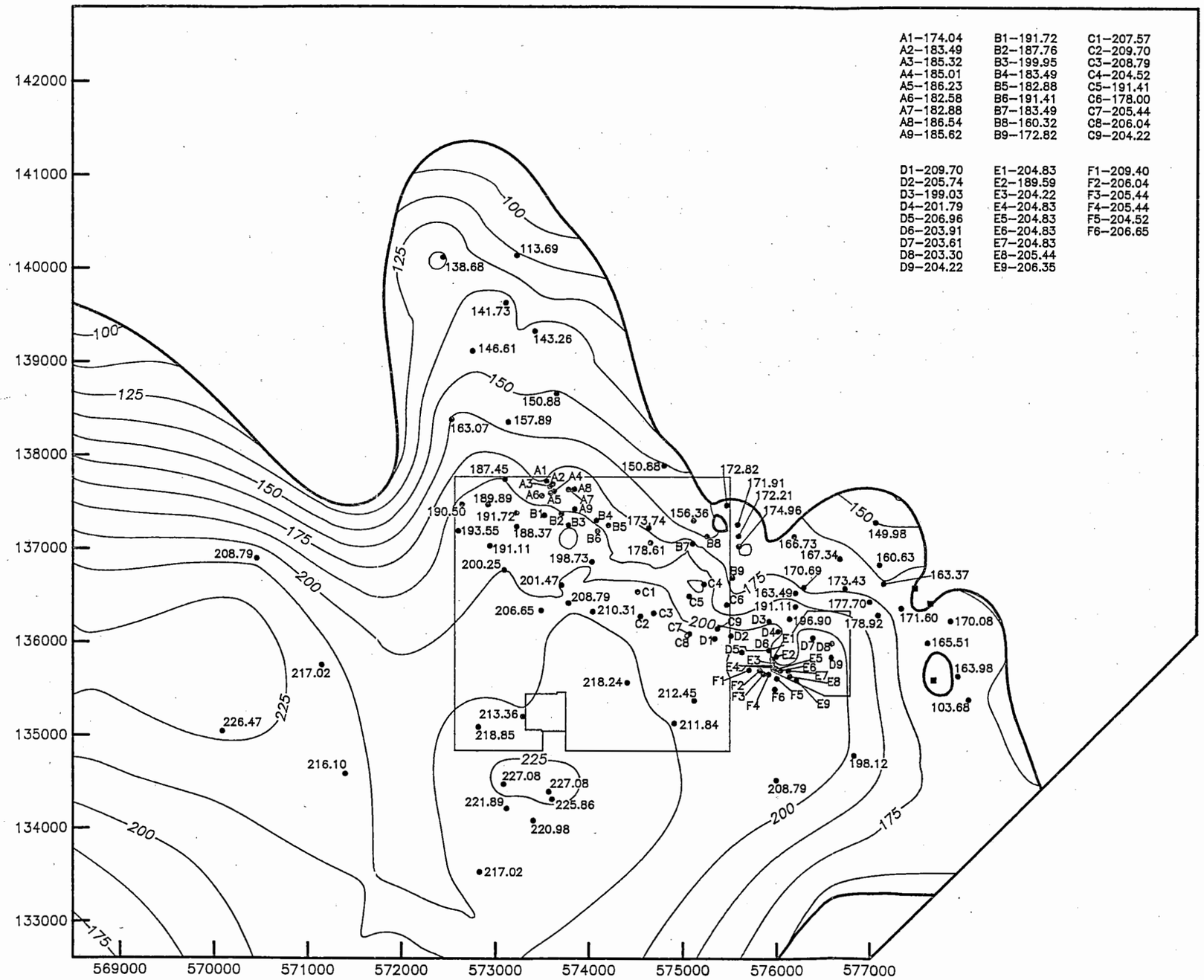
Legend:

- • Borehole
- Borehole where Hanford Formation Sandy Sequence is not Present
- 29.87 Thickness (in meters) of Hanford Formation Sandy Sequence
- —25— Isopleth of Hanford Formation Sandy Sequence Thickness
- Contour Interval = 12.5 meters

N

0 1000 2000 Meters

Figure 2-12. Isopach Map of the Hanford Formation Sandy Sequence.



Structure Contour Map of Hanford Formation Sandy Sequence

Legend:

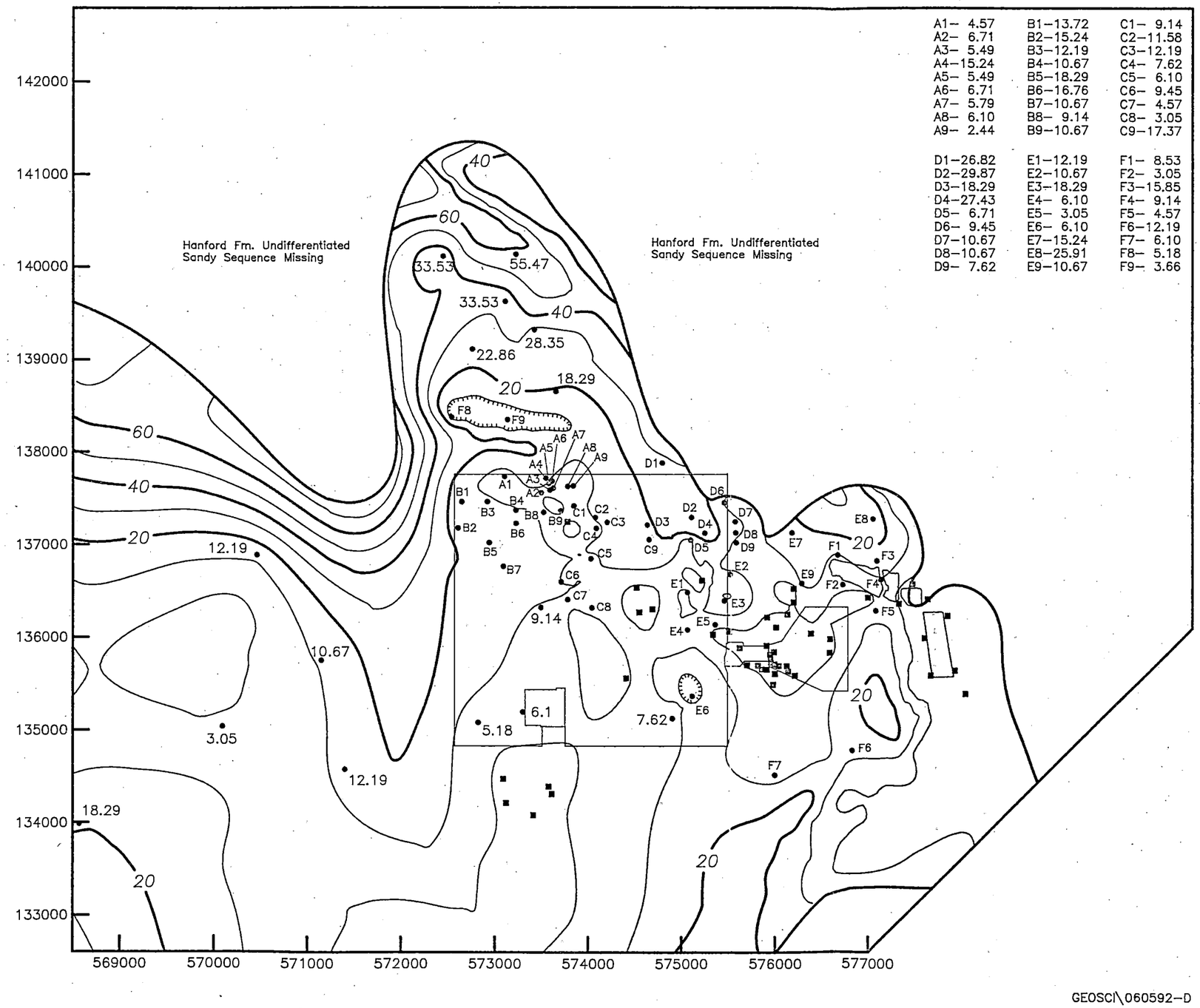
- • Borehole
- ■ Borehole where Hanford Formation Sandy Sequence is not Present
- 206.65 Elevation (in meters) of the Upper Surface of Hanford Formation Sandy Sequence
- —175— Contour on Upper Surface of Hanford Formation Sandy Sequence

Contour Interval = 12.5 meters

-N-

0 1000 2000 Meters

Figure 2-13. Structure-Contour Map of the Hanford Formation Sandy Sequence.



A1– 4.57	B1–13.72	C1– 9.14
A2– 6.71	B2–15.24	C2–11.58
A3– 5.49	B3–12.19	C3–12.19
A4–15.24	B4–10.67	C4– 7.62
A5– 5.49	B5–18.29	C5– 6.10
A6– 6.71	B6–16.76	C6– 9.45
A7– 5.79	B7–10.67	C7– 4.57
A8– 6.10	B8– 9.14	C8– 3.05
A9– 2.44	B9–10.67	C9–17.37
D1–26.82	E1–12.19	F1– 8.53
D2–29.87	E2–10.67	F2– 3.05
D3–18.29	E3–18.29	F3–15.85
D4–27.43	E4– 6.10	F4– 9.14
D5– 6.71	E5– 3.05	F5– 4.57
D6– 9.45	E6– 6.10	F6–12.19
D7–10.67	E7–15.24	F7– 6.10
D8–10.67	E8–25.91	F8– 5.18
D9– 7.62	E9–10.67	F9– 3.66

Isopach Map of the Hanford Formation Upper Gravel Sequence

Legend:

- • Borehole
- ▪ Borehole where Hanford Formation Upper Gravel Sequence is not Present
- 10.67 Thickness (in meters) of the Hanford Formation Upper Gravel Sequence
- —20— Isopleth of Hanford Formation Upper Gravel Sequence Thickness

Contour Interval = 10 meters

-N-

0 1000 2000 Meters

Figure 2-14. Isopach Map of the Hanford Formation Upper Gravel Sequence.

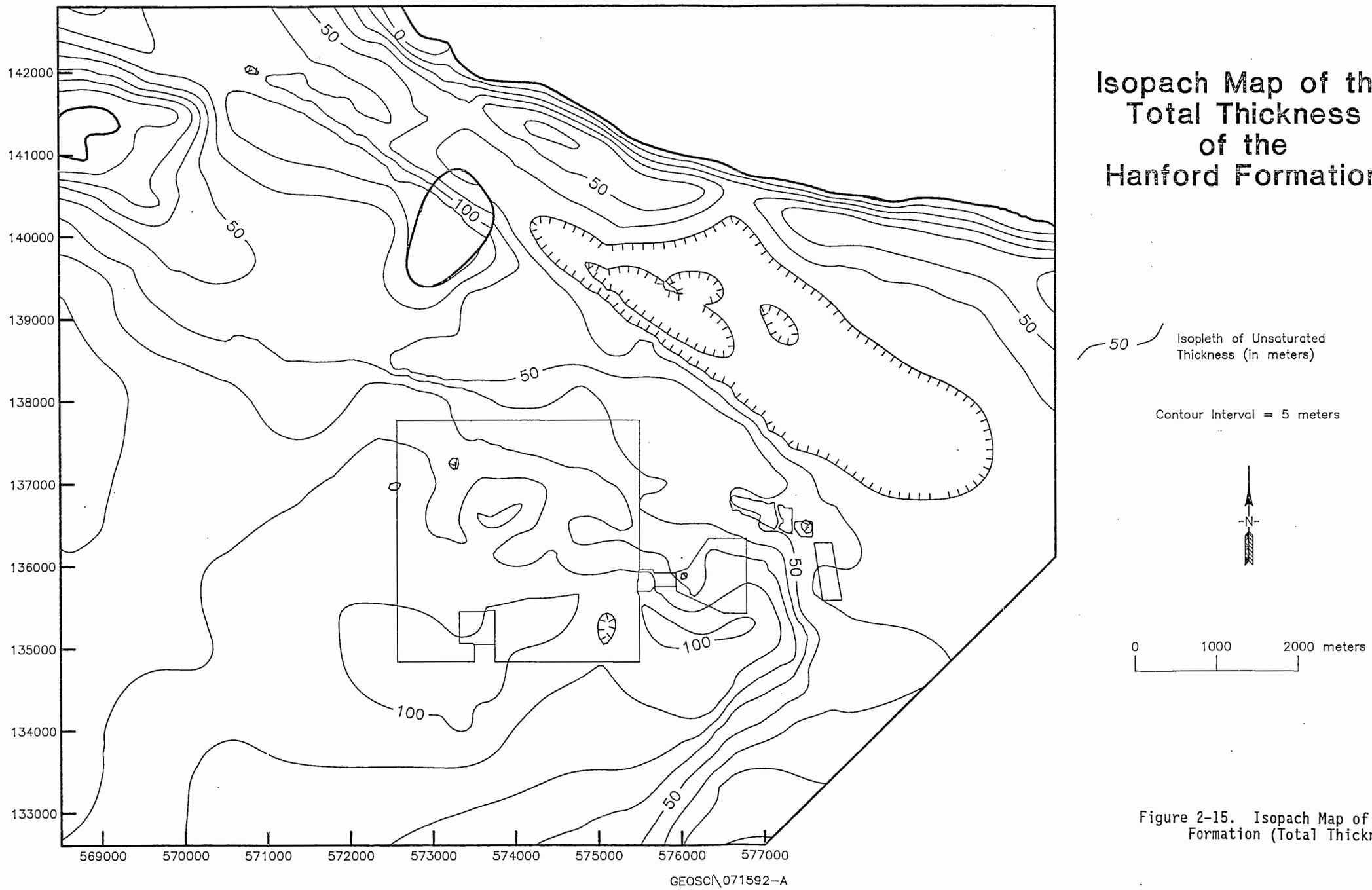
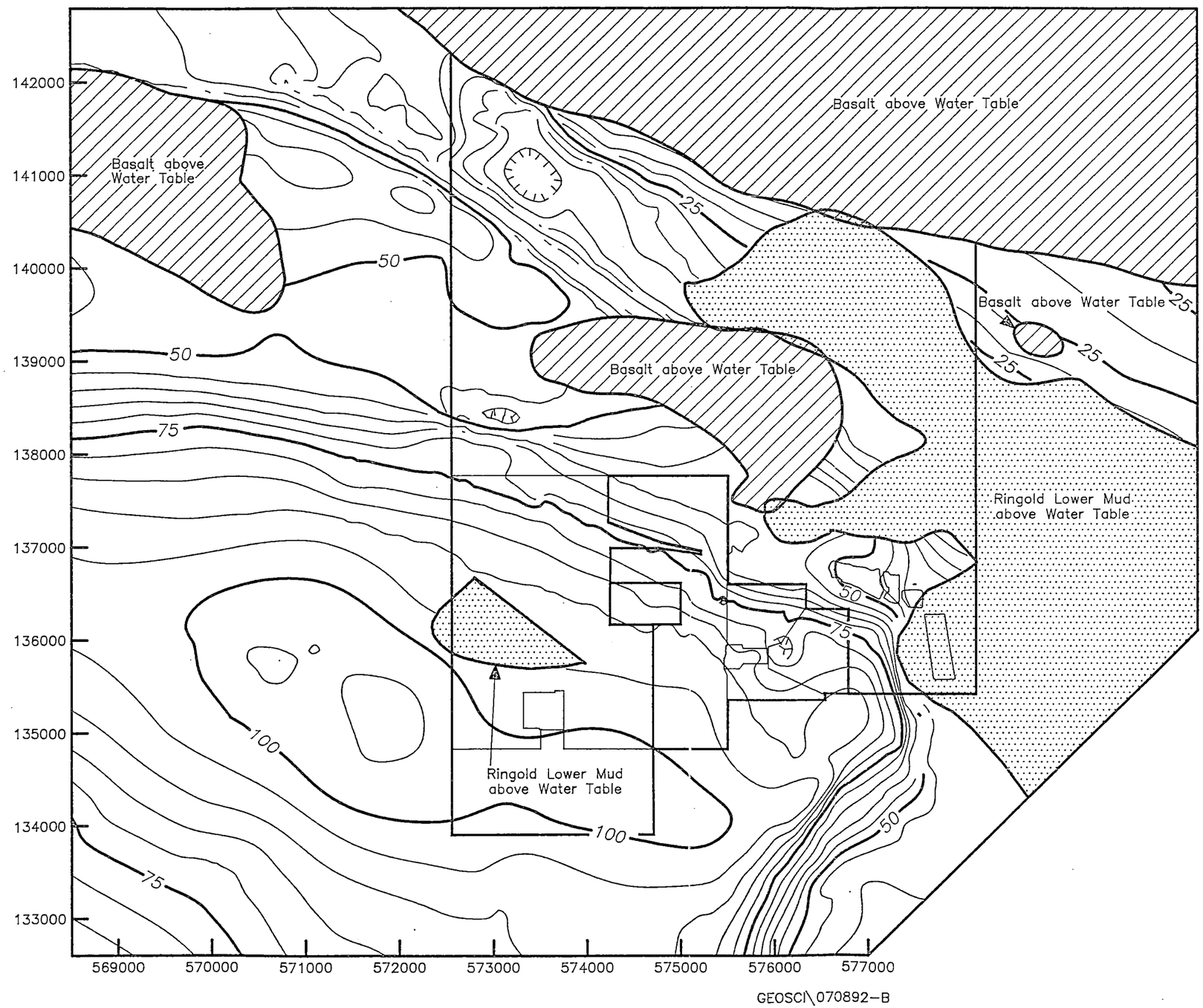


Figure 2-15. Isopach Map of the Hanford Formation (Total Thickness).



Isopach Map showing Total Thickness of the Unsaturated Sediments (Water Table, Dec. 1991)

50 Isopleth of Unsaturated Thickness (in meters)

Contour Interval = 5 meters

N

0 1000 2000 meters

Figure 3-1. Isopach Map of the Unsaturated Sediments Above the Water Table (December 1991).

Figure 3-2. Map Showing the Location of Wells from Which Physical Properties Samples were Taken.

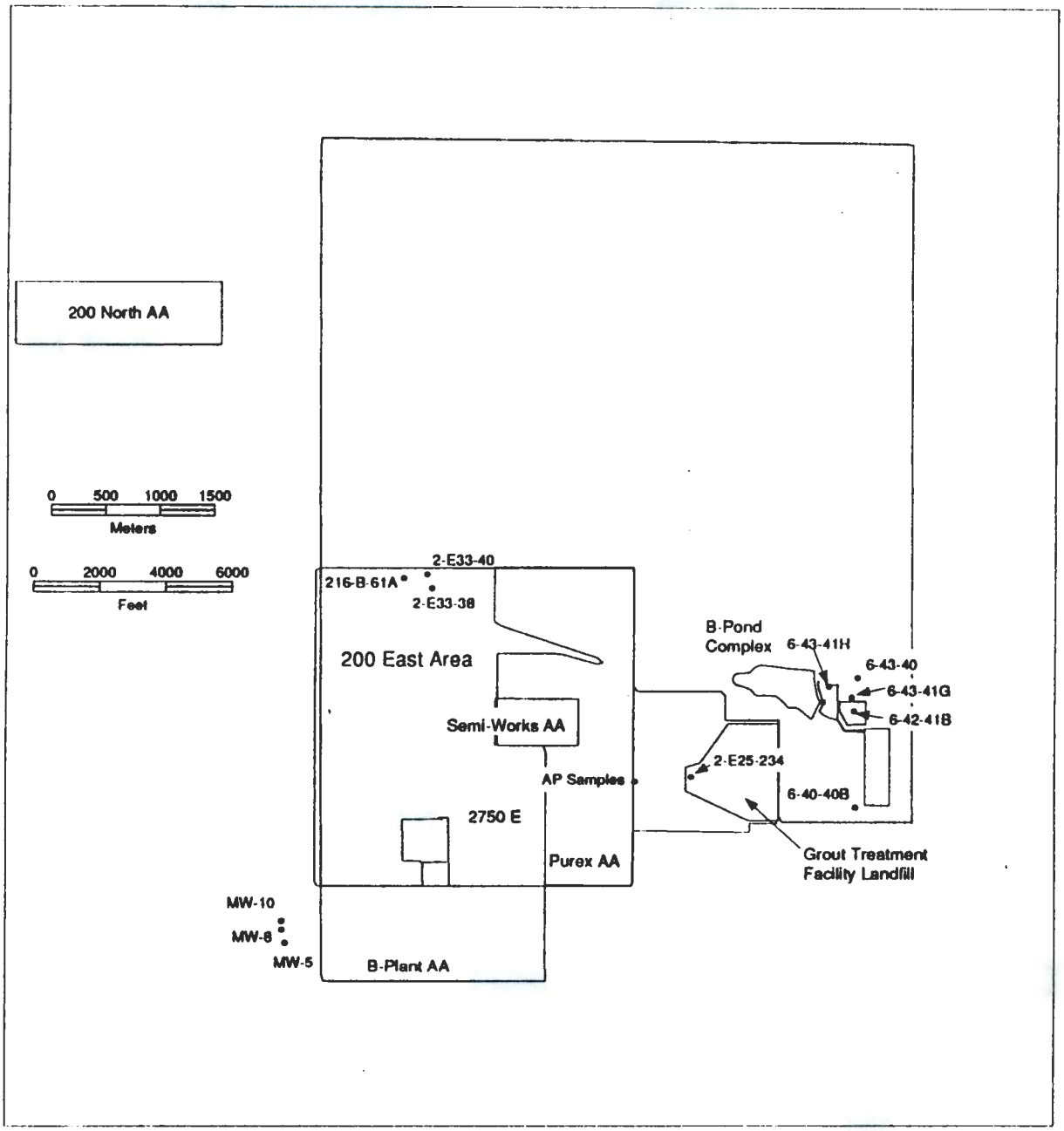


Figure 3-3. Hydraulic Conductivity as a Function of Volumetric Moisture Content for the Hanford Gravels in the 200 East Area.

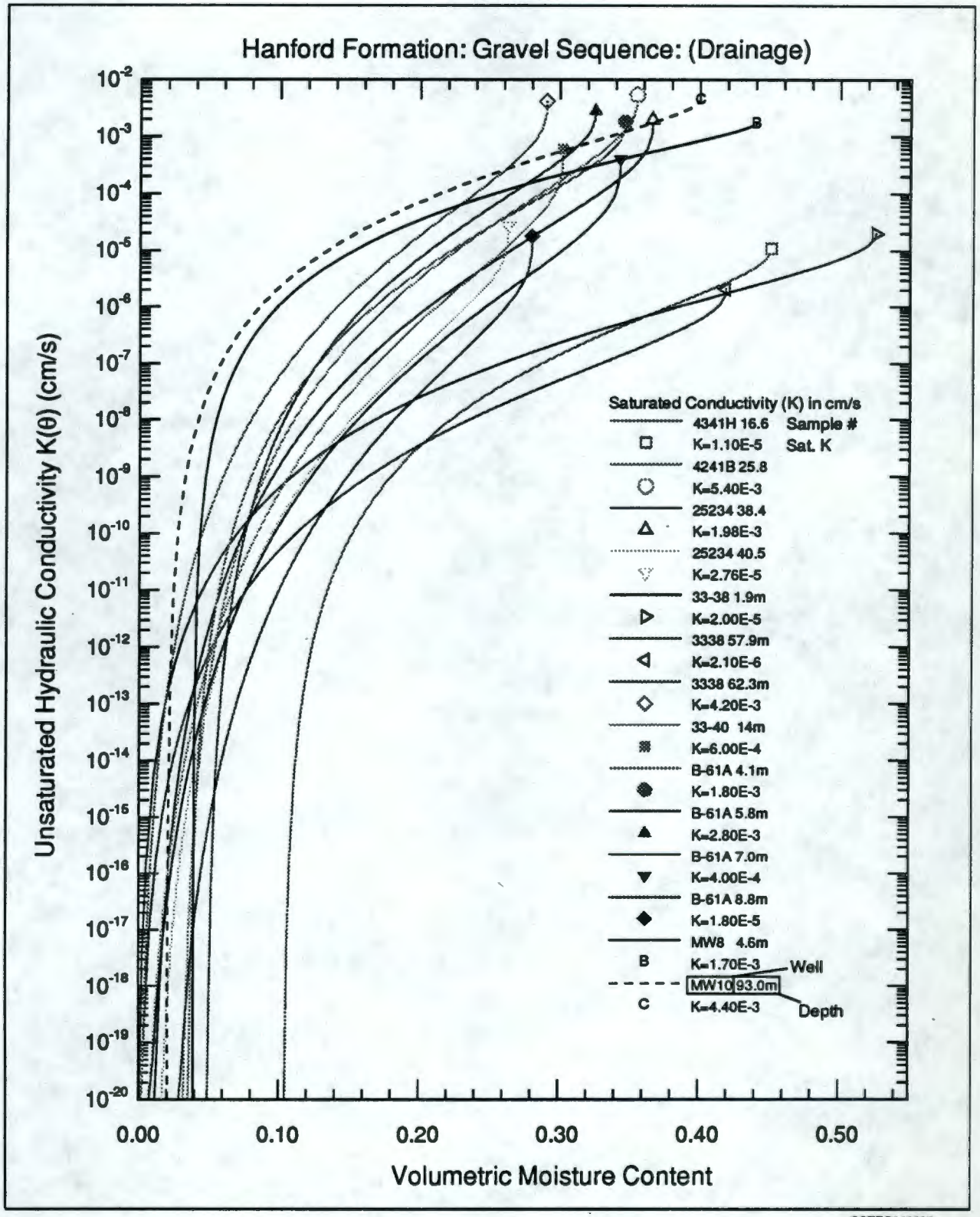


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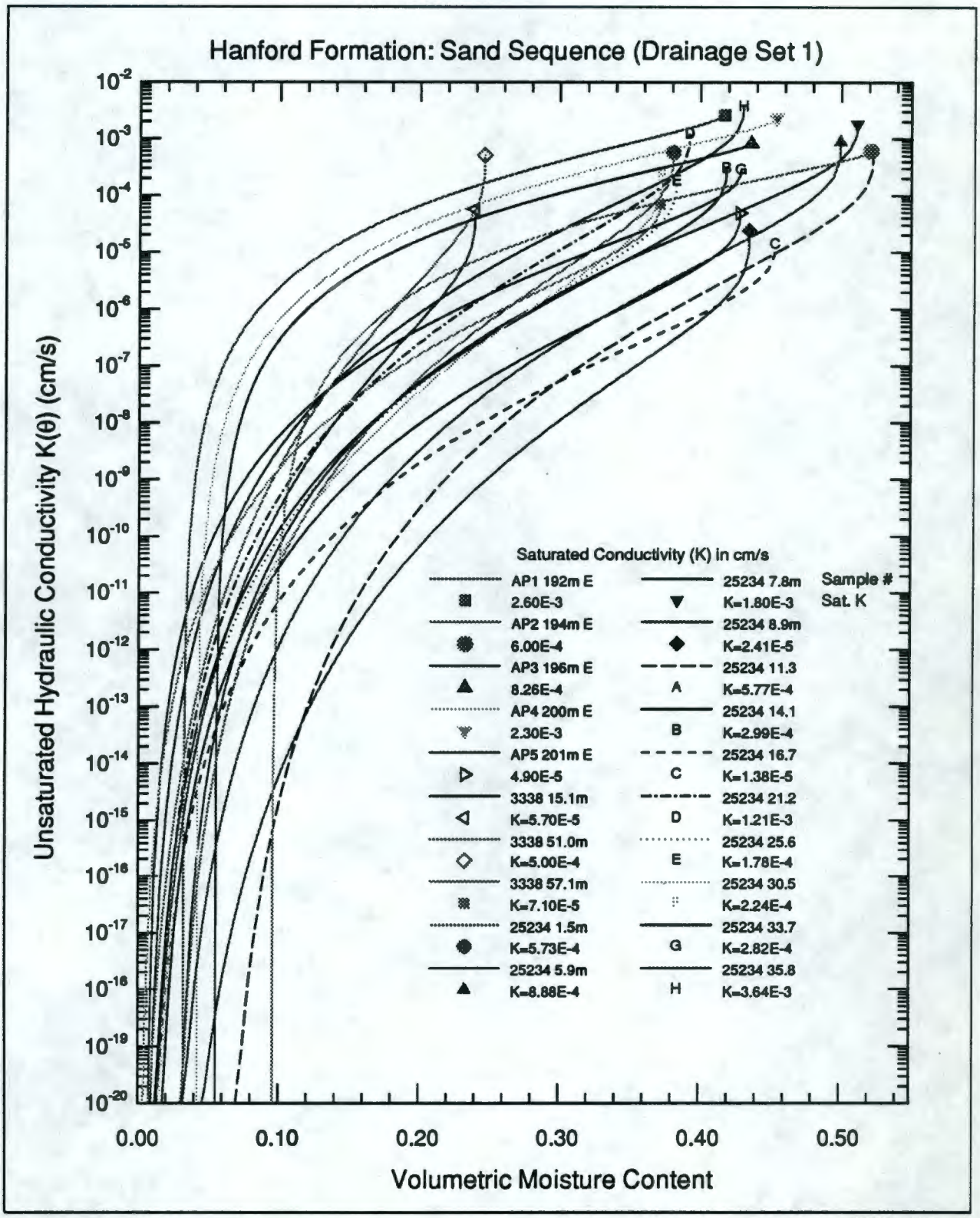
Figure 3-4. Hydraulic Conductivity as a Function of Volumetric Moisture Content for the Hanford Sandy Sequence in the 200 East Area (set 1).



9413096.0388

Figure 3-5. Hydraulic Conductivity as a Function of Volumetric Moisture Content for the Hanford Sandy Sequence in the 200 East Area (set 2).

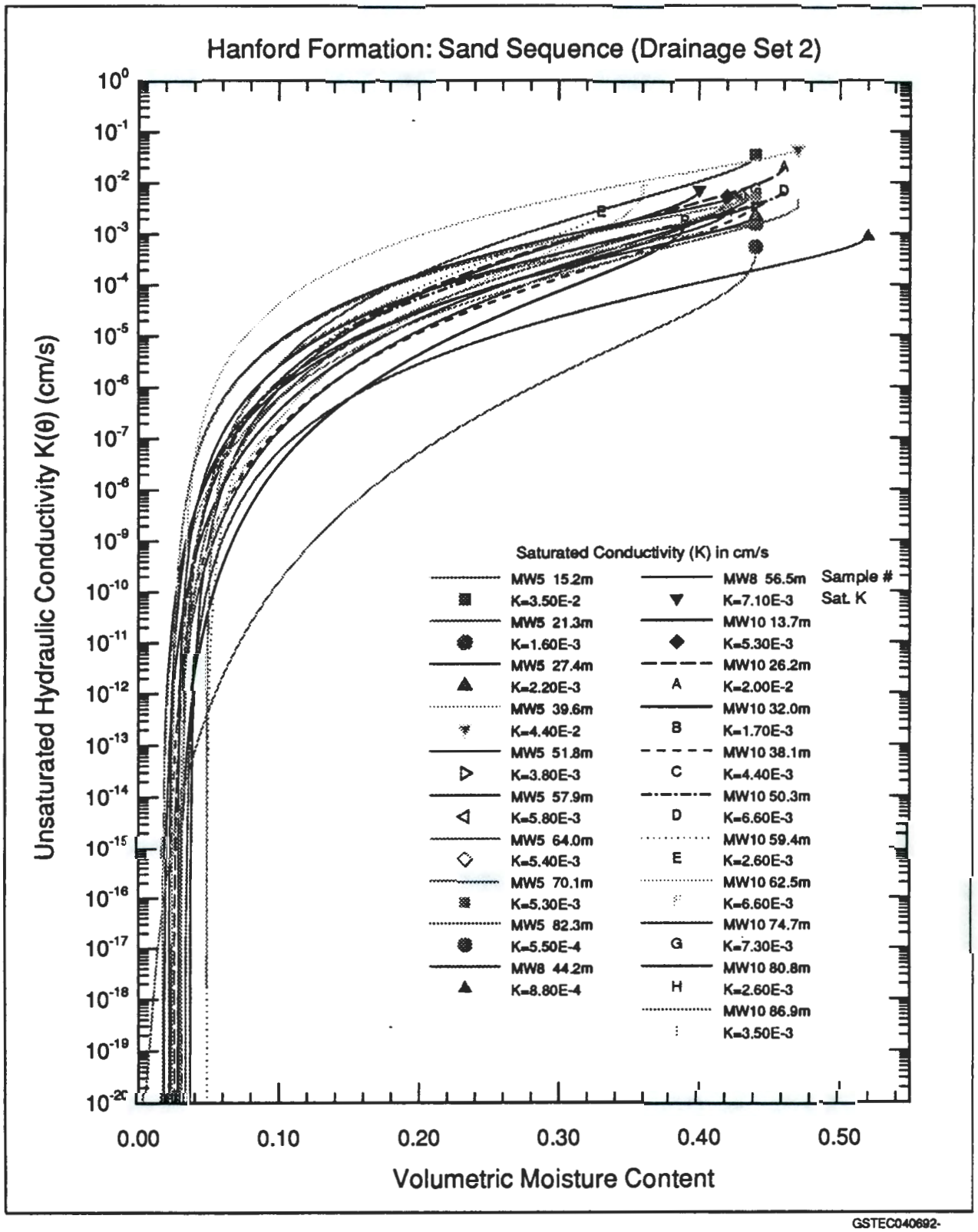


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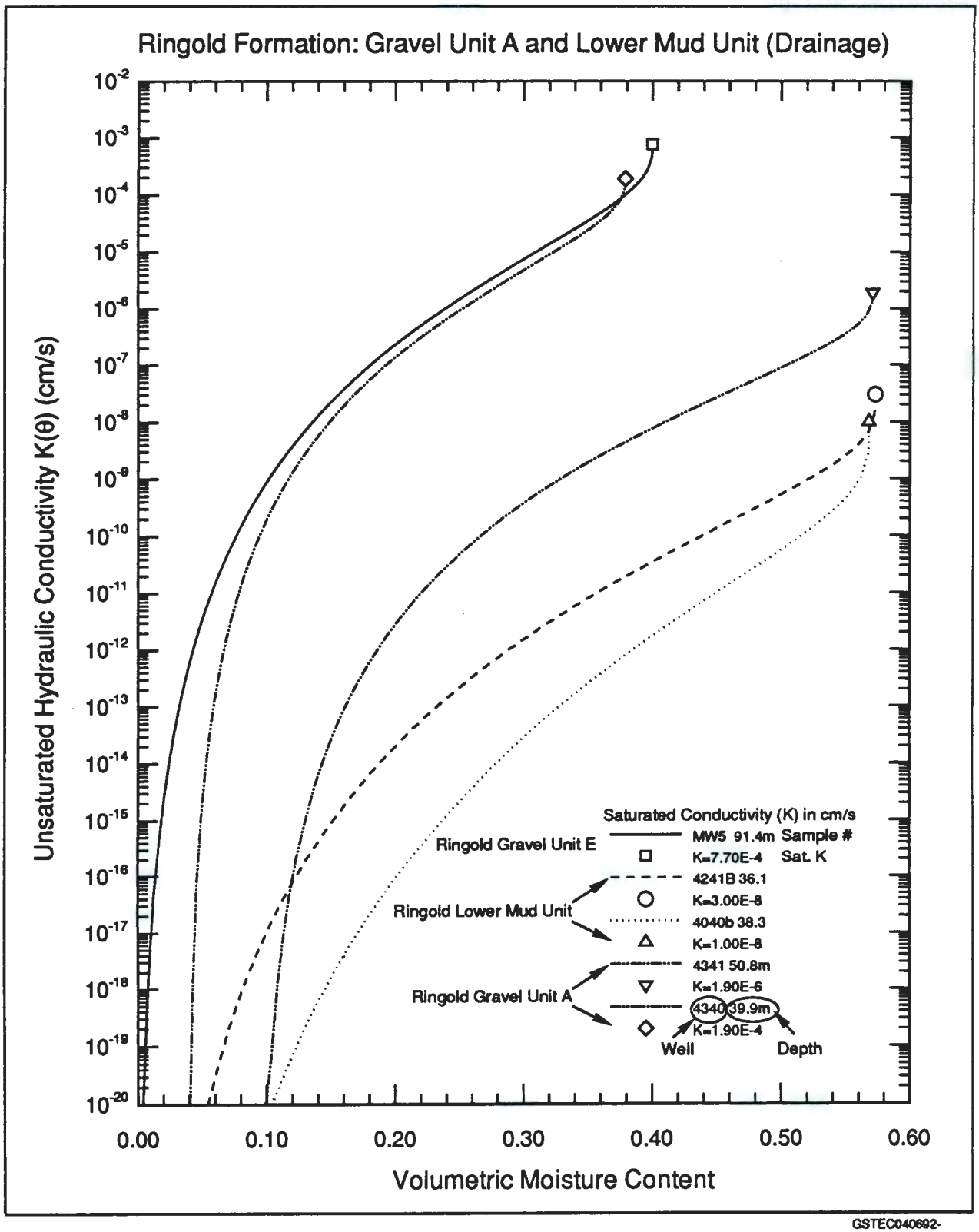
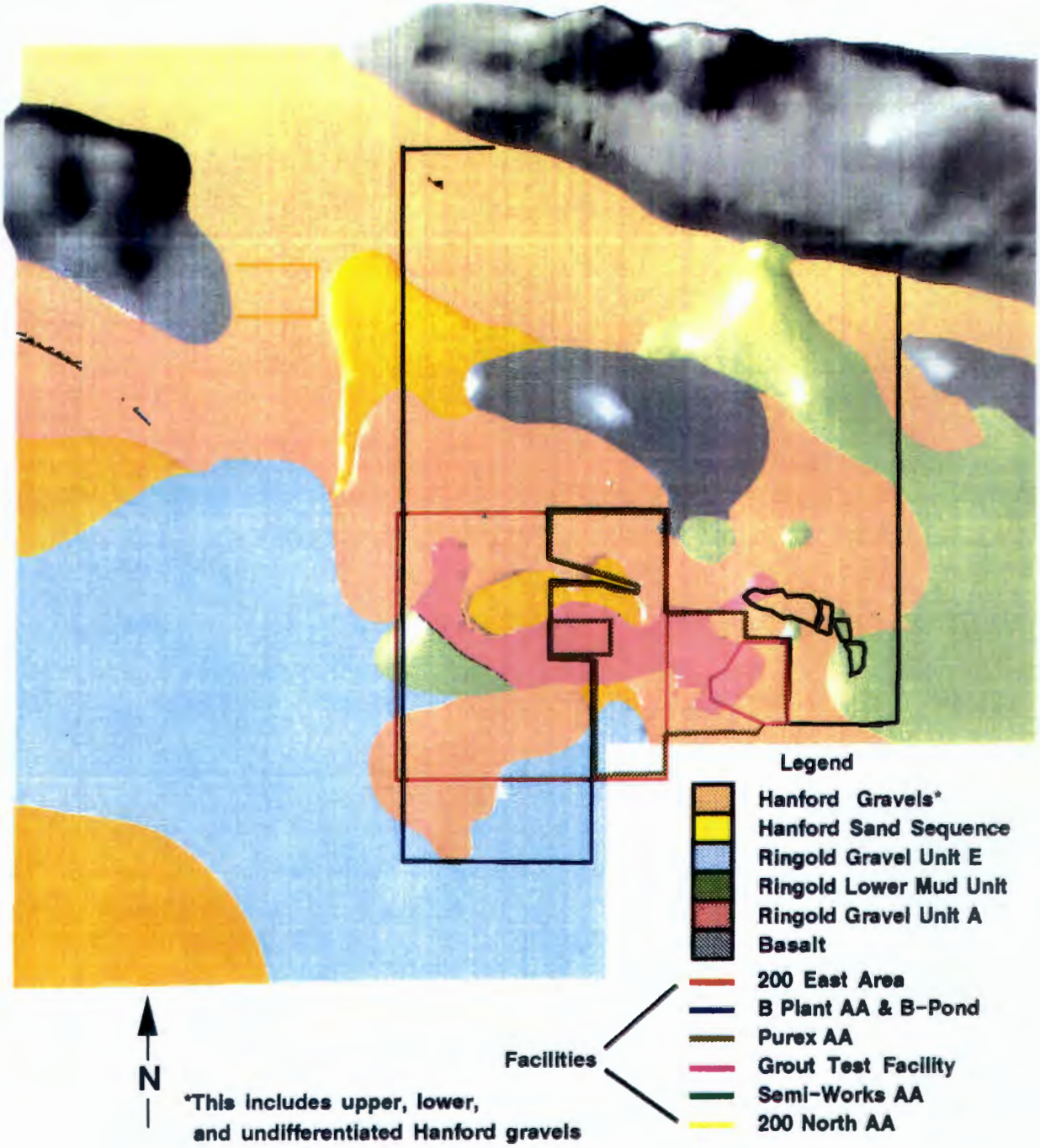
Figure 3-6. Hydraulic Conductivity as a Function of Volumetric Moisture Content for the Ringold Formation in the 200 East Area.



GSTEC040692-

Figure 3-7. Geologic Units at the Water Table.



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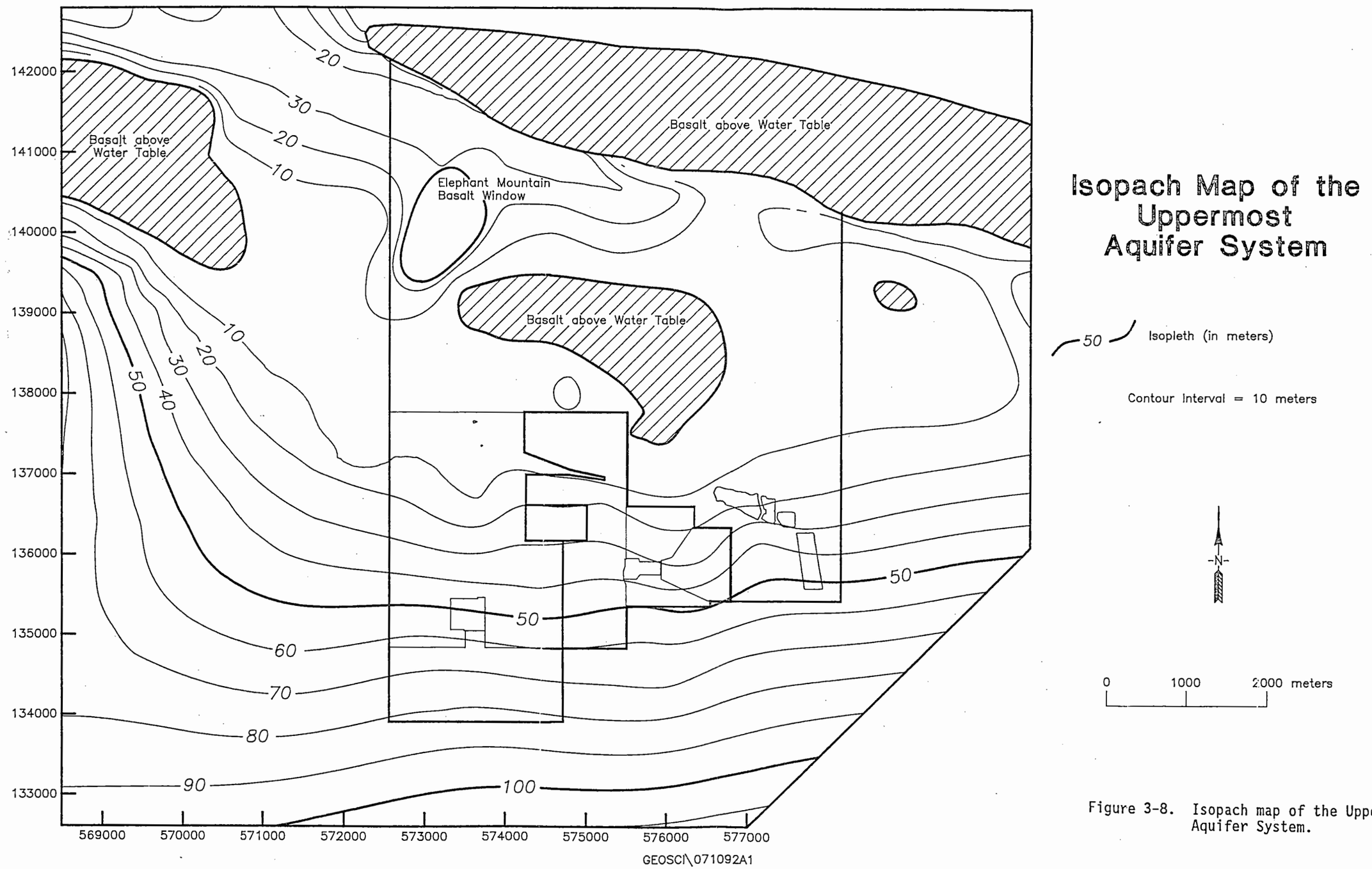
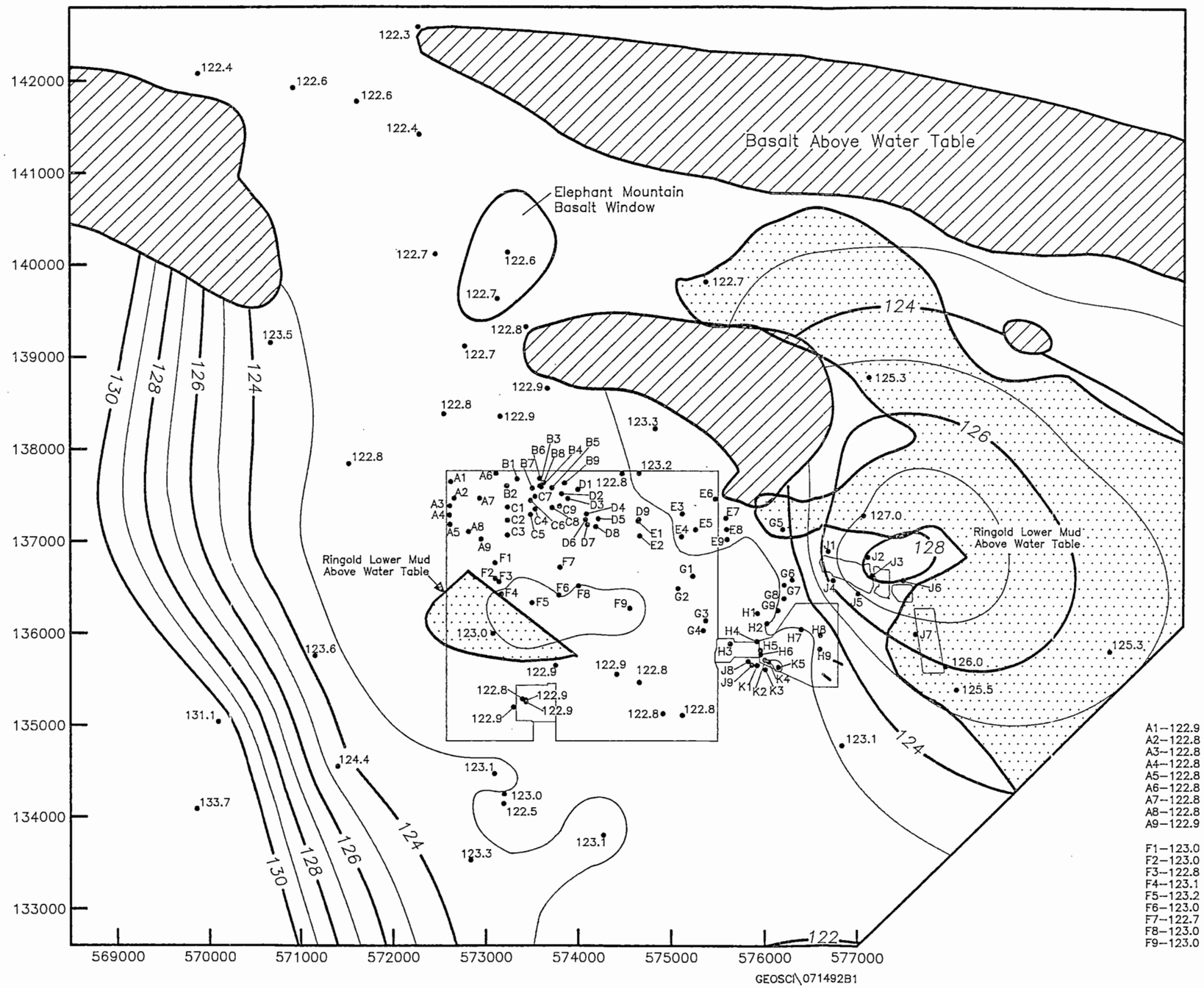


Figure 3-8. Isopach map of the Uppermost Aquifer System.



December 1991 Water Table Elevations

124 Isopleth (in meters)

Contour Interval = 1 meter

N

0 1000 2000 meters

A1–122.9	B1–122.4	C1–122.8	D1–122.9	E1–122.9
A2–122.8	B2–122.8	C2–122.8	D2–123.3	E2–122.9
A3–122.8	B3–122.7	C3–122.8	D3–122.9	E3–123.0
A4–122.8	B4–122.8	C4–122.8	D4–122.8	E4–123.0
A5–122.8	B5–122.5	C5–122.9	D5–122.8	E5–123.1
A6–122.8	B6–122.8	C6–122.8	D6–122.4	E6–123.1
A7–122.8	B7–122.9	C7–122.8	D7–122.8	E7–123.1
A8–122.8	B8–122.3	C8–122.9	D8–122.9	E8–123.1
A9–122.9	B9–122.8	C9–122.9	D9–122.9	E9–123.1
F1–123.0	G1–122.9	H1–122.3	J1–126.6	K1–122.9
F2–123.0	G2–122.9	H2–123.0	J2–128.1	K2–122.8
F3–122.8	G3–122.8	H3–122.9	J3–128.1	K3–122.9
F4–123.1	G4–122.8	H4–123.0	J4–126.4	K4–123.0
F5–123.2	G5–123.7	H5–122.9	J5–126.9	K5–123.0
F6–123.0	G6–123.2	H6–123.0	J6–128.0	
F7–122.7	G7–123.1	H7–123.0	J7–126.5	
F8–123.0	G8–123.1	H8–123.1	J8–123.0	
F9–123.0	G9–123.1	H9–123.2	J9–123.0	

Figure 3-9. December 1991 Water Table Elevations.

Figure 3-10. Hydrograph of Wells 699-43-42J and 699-42-42B.

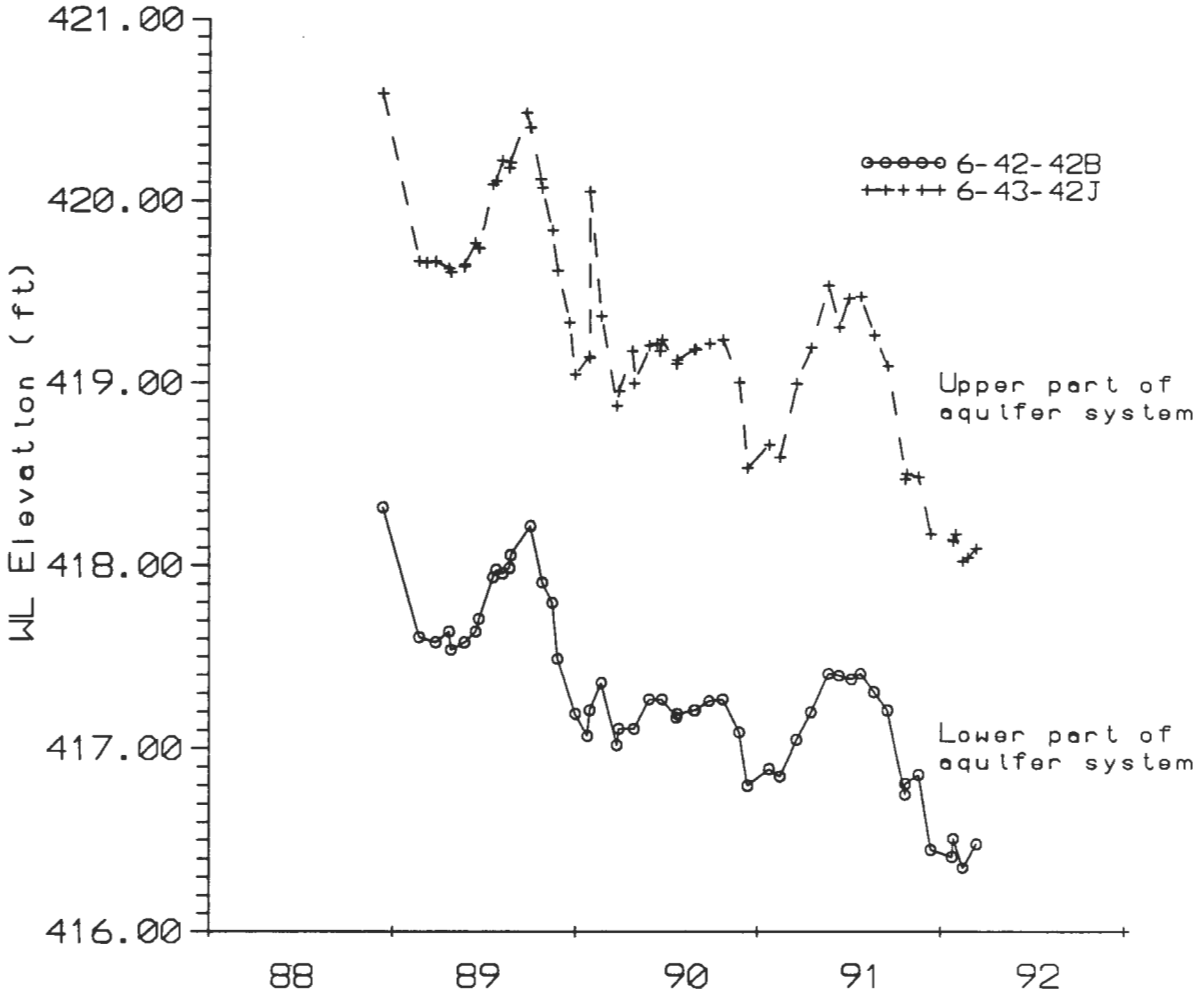


Figure 3-11. Screened Intervals of Wells 699-53-55A, 699-53-55B, and 699-53-55C.

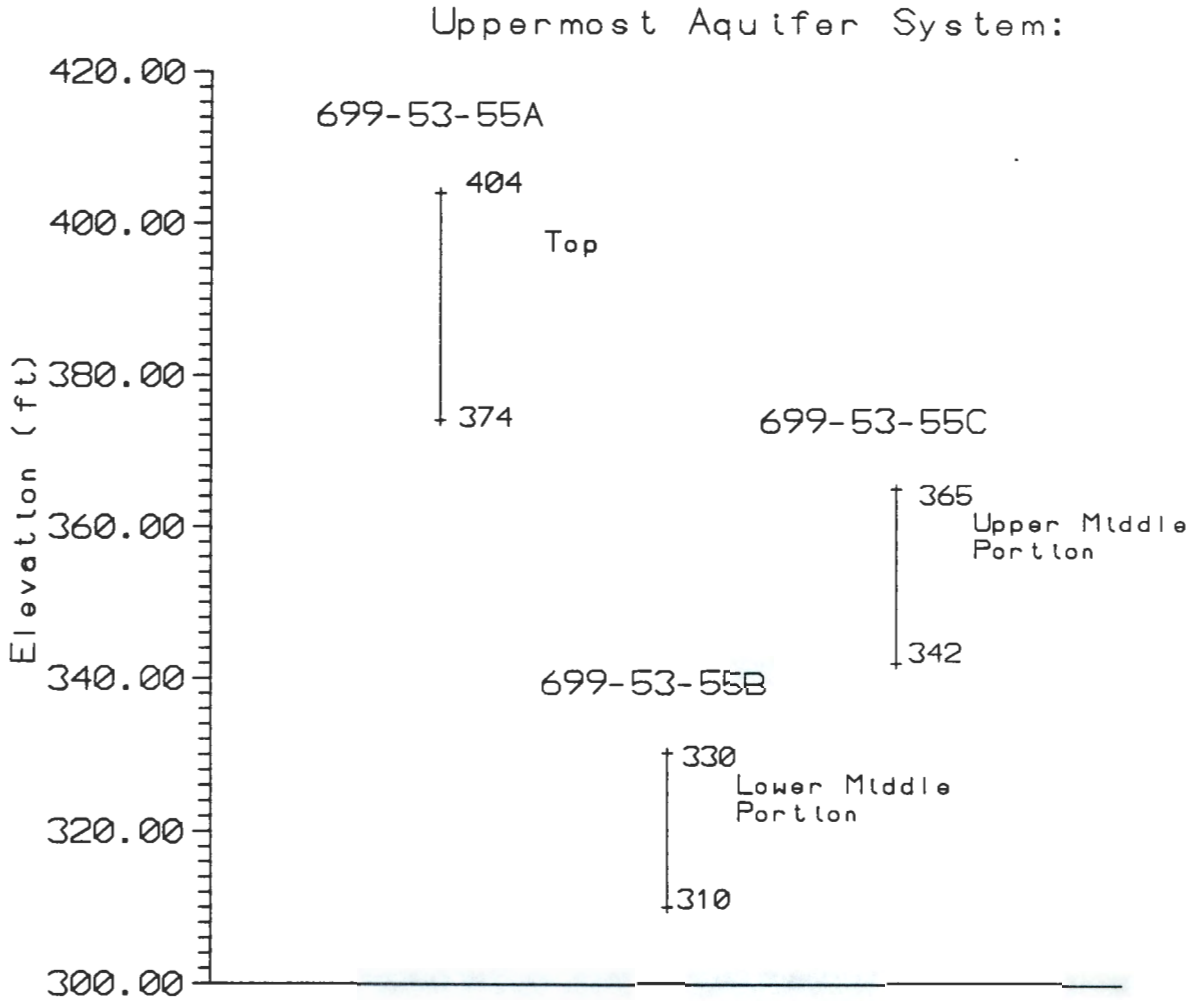


Figure 3-12. Hydrograph of Wells 699-53-55A, 699-53-55B, and 699-53-55C.

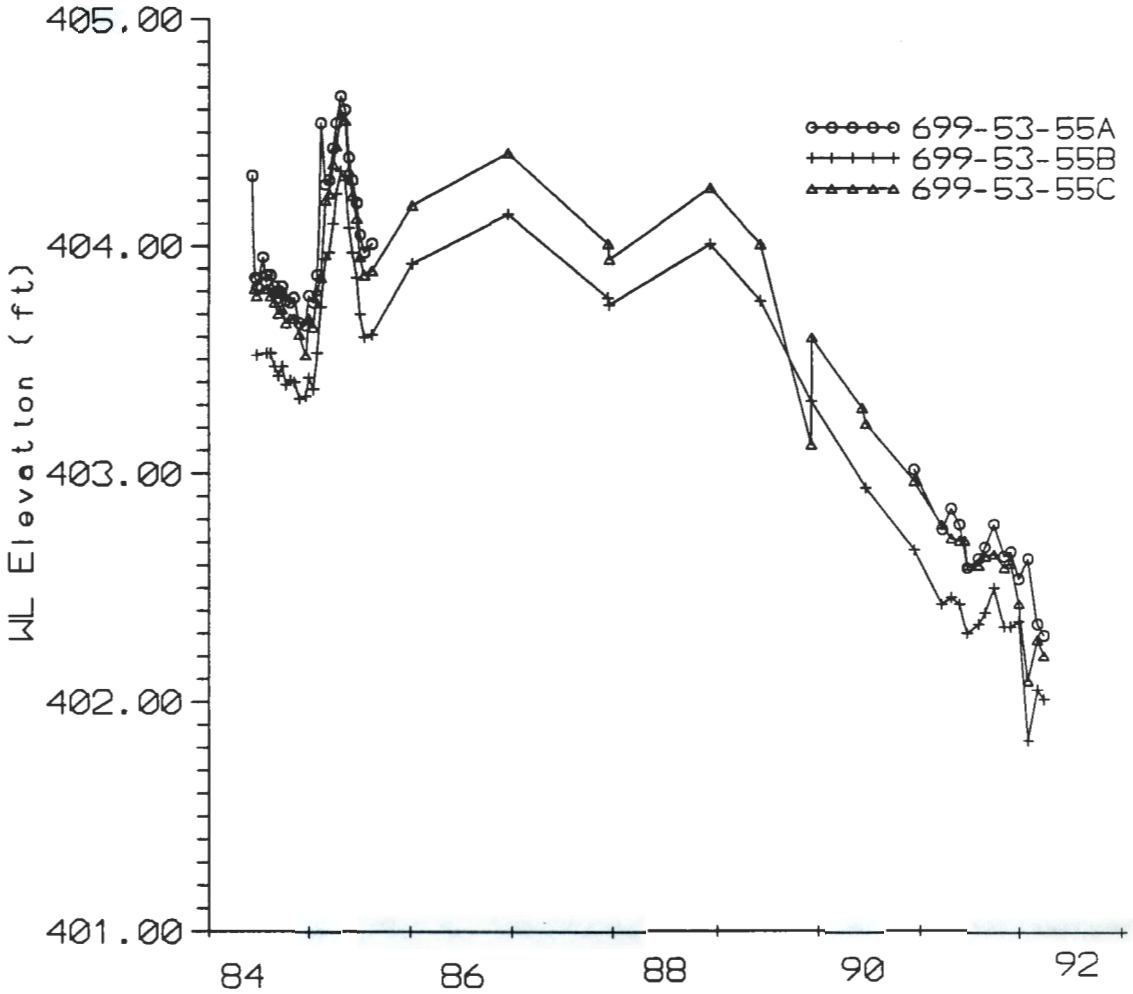


Figure 3-13. Hydrograph of Wells 699-43-41E, 699-43-41F, and 699-43-41G.

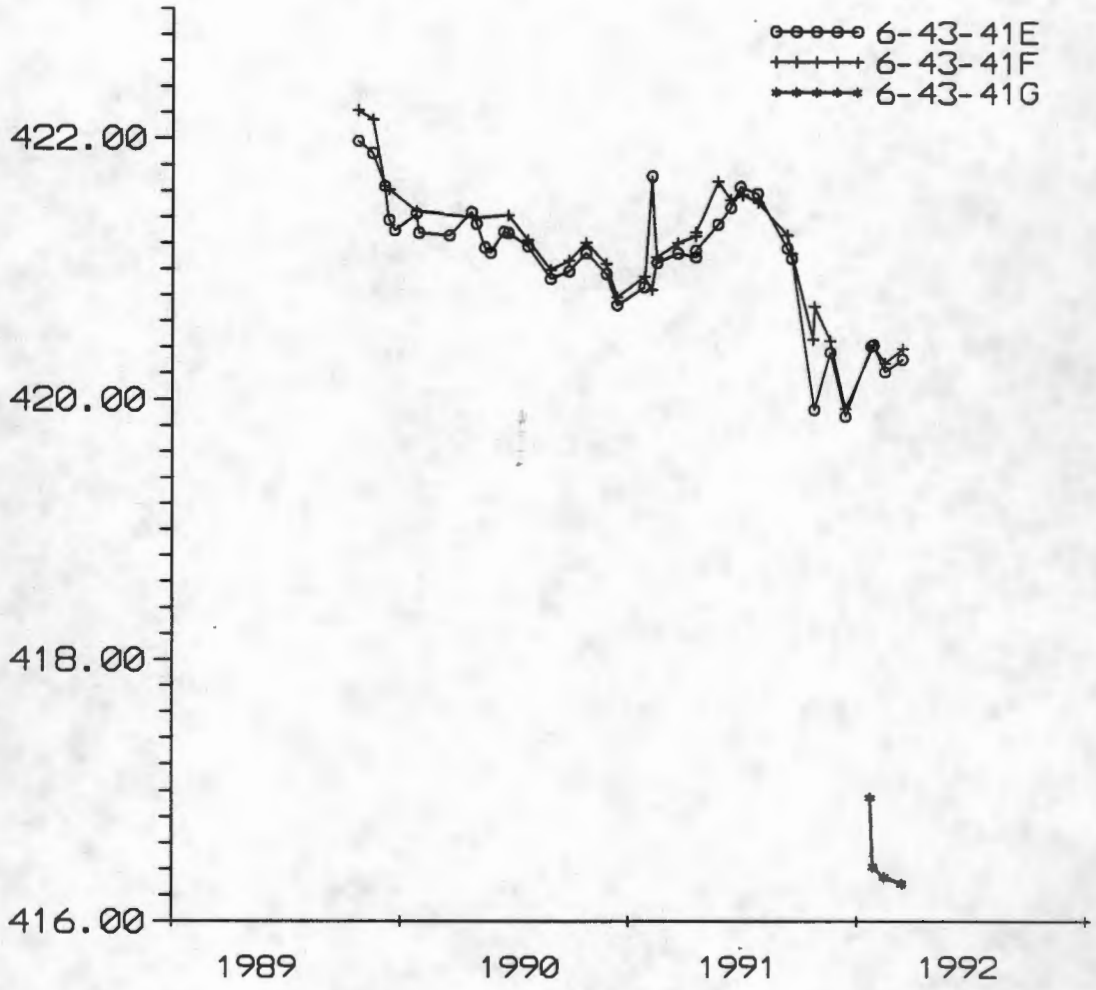


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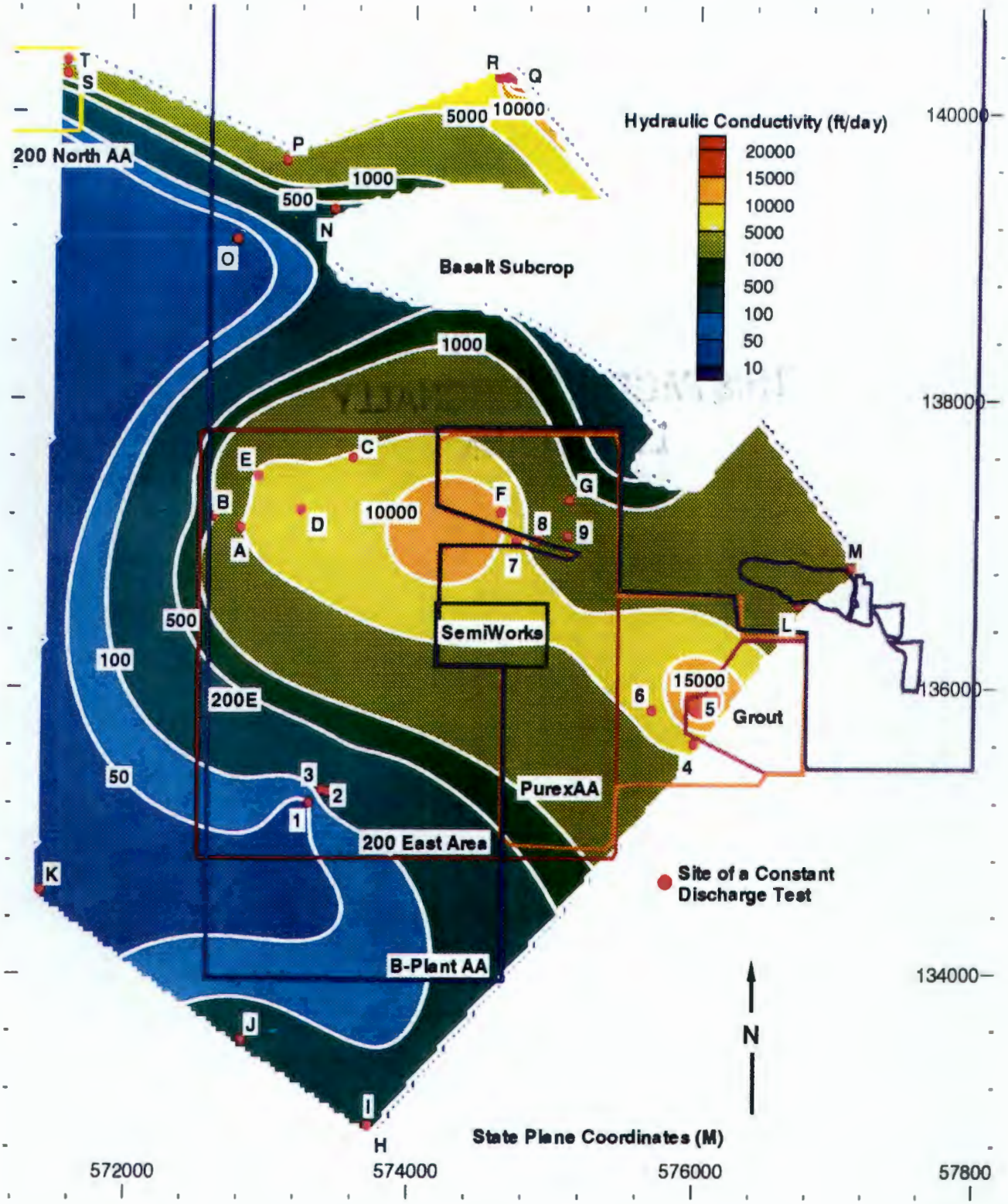
Figure 3-14. Hydraulic Conductivity Map for the Upper Uppermost Aquifer System.



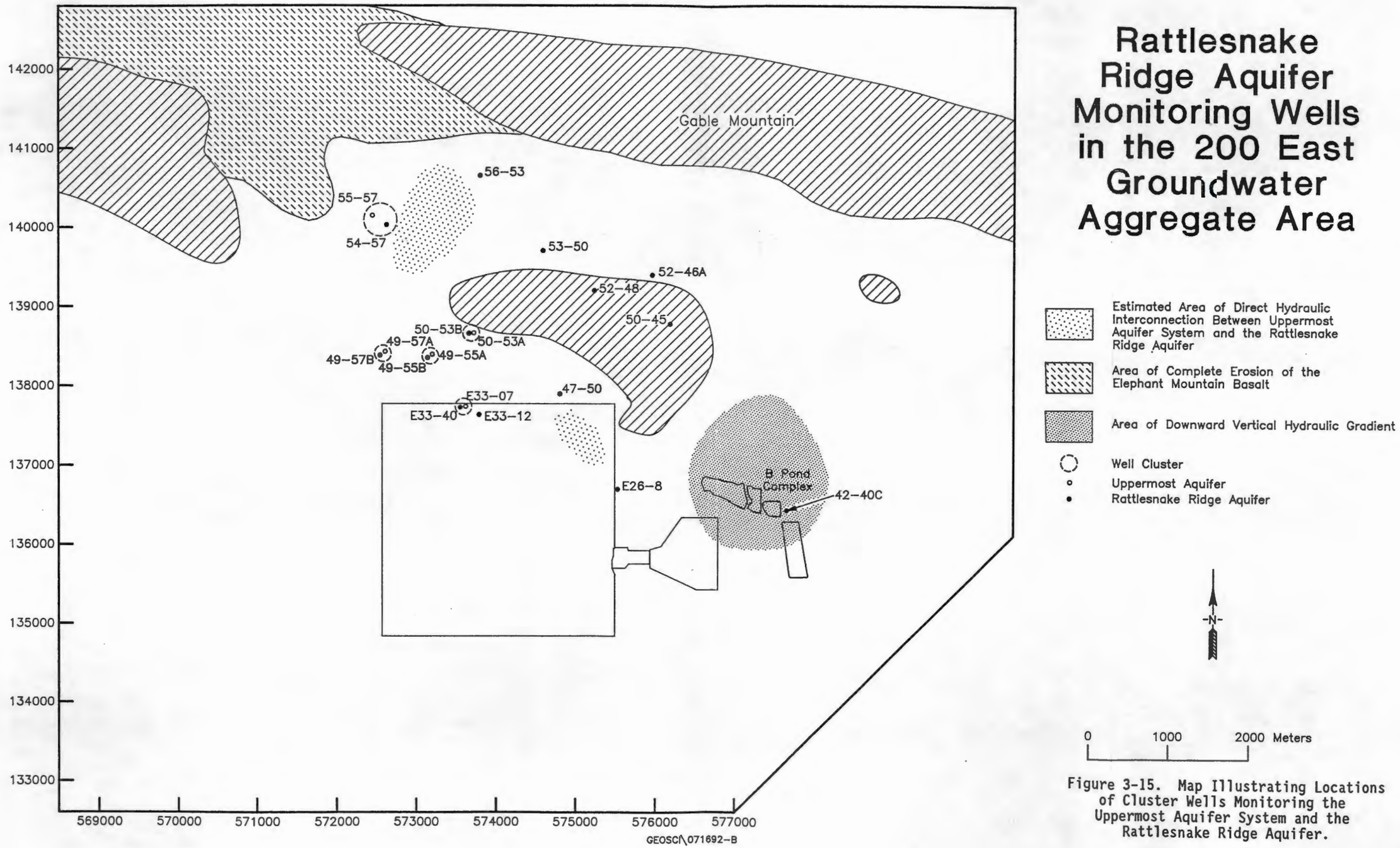
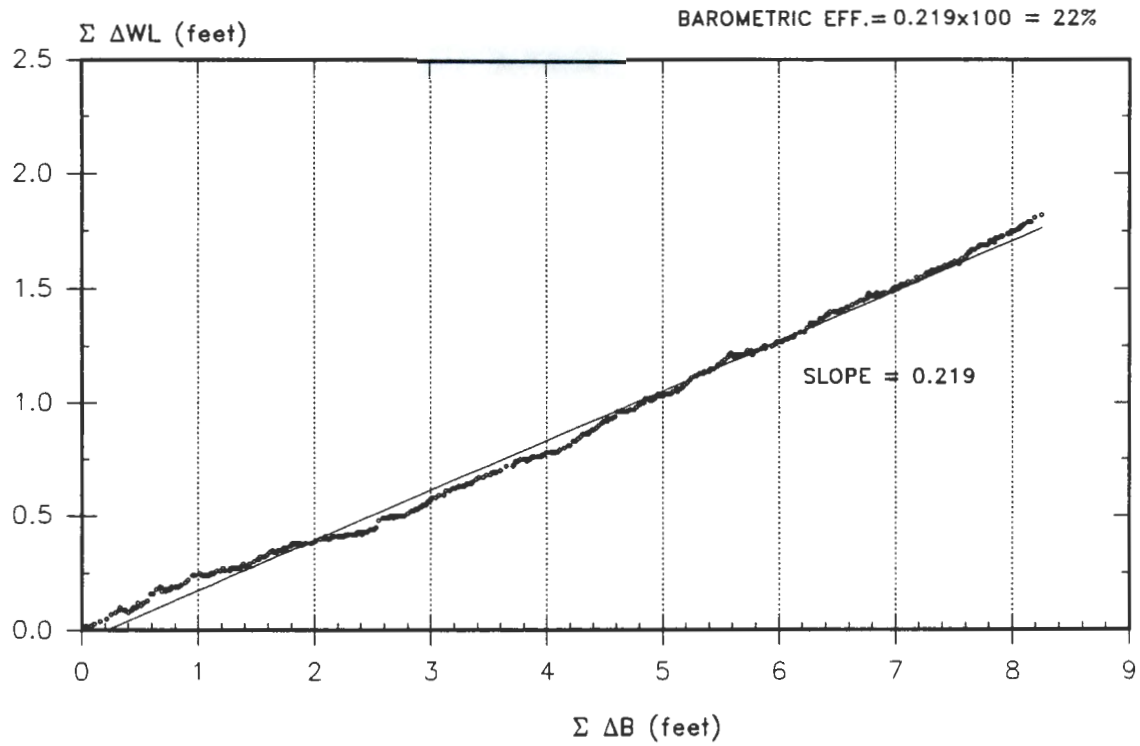


Figure 3-15. Map Illustrating Locations of Cluster Wells Monitoring the Uppermost Aquifer System and the Rattlesnake Ridge Aquifer.

9413096.0399

Figure 3-16. Barometric Efficiency Data and Calculation for Well 699-49-55B.



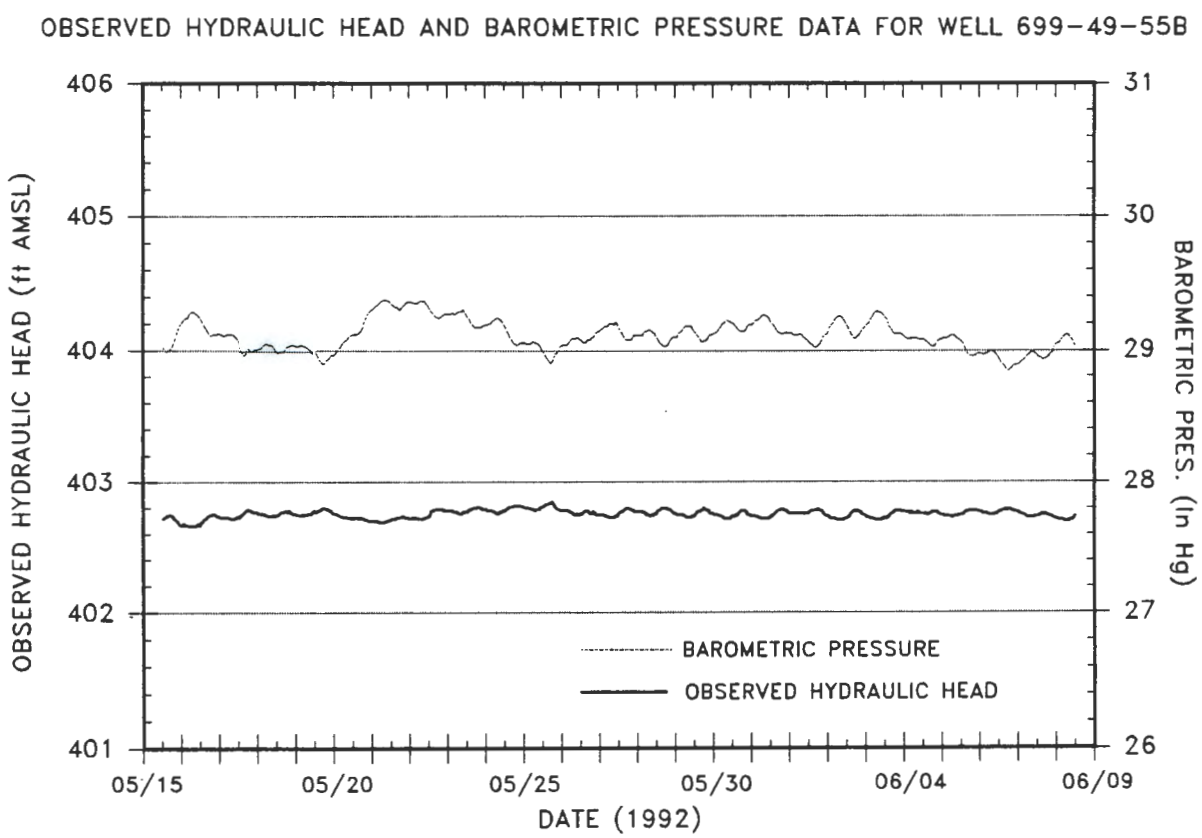
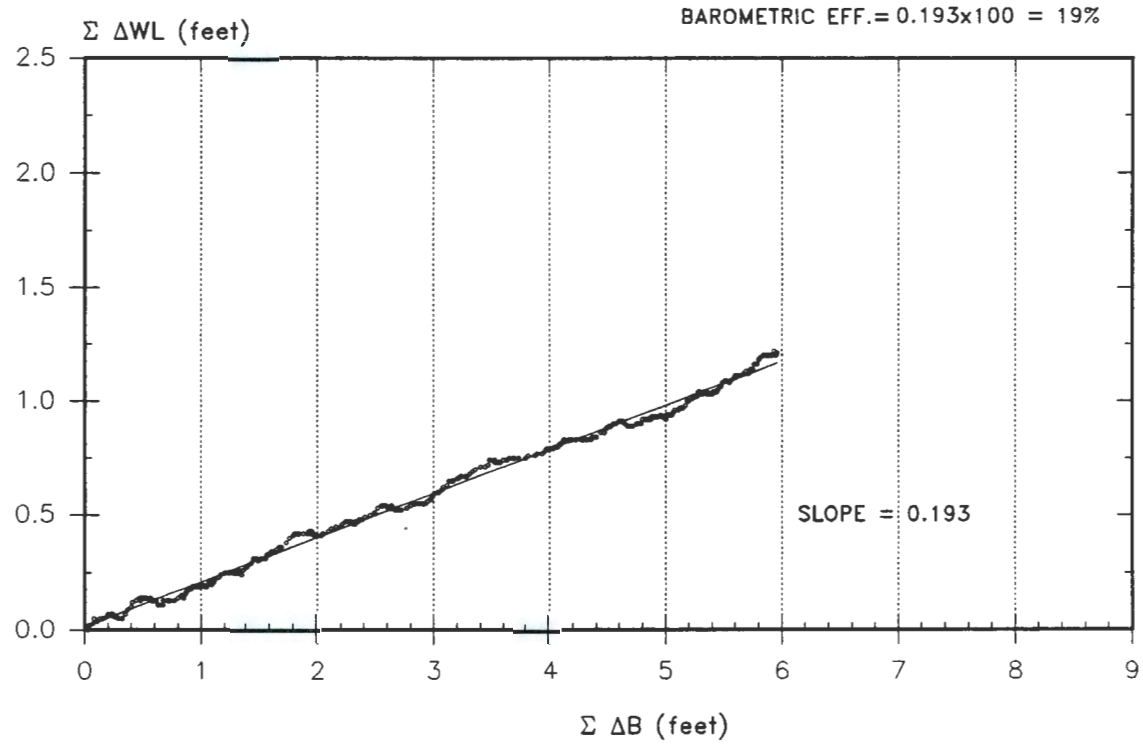


Figure 3-17. Barometric Efficiency Data and Calculation for Well 699-49-57B.



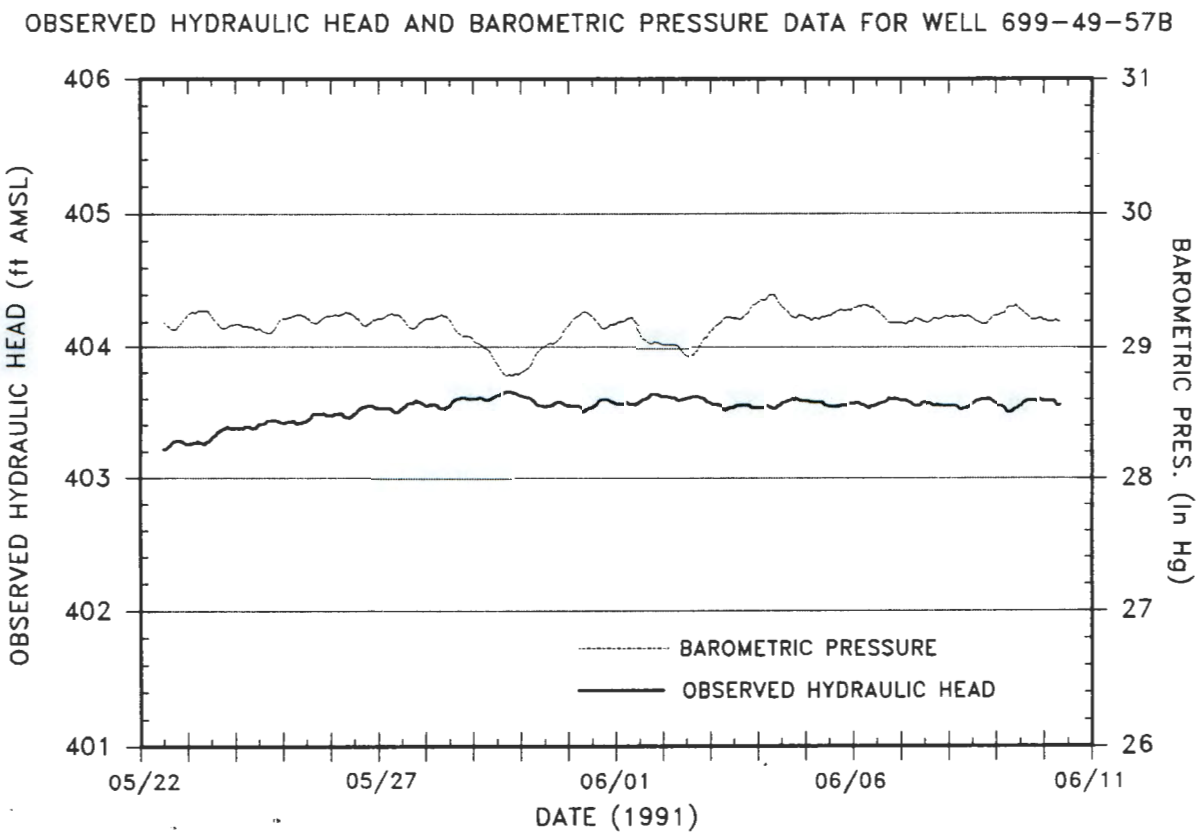
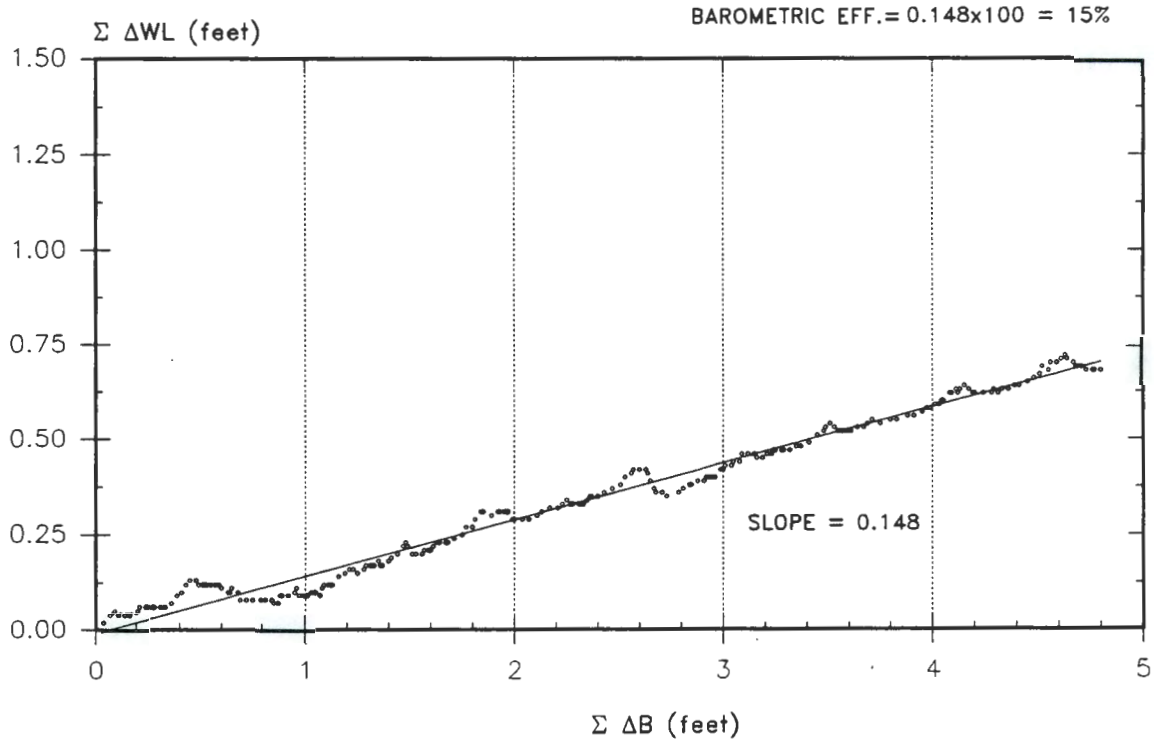


Figure 3-18. Barometric Efficiency Data and Calculation for Well 699-50-53B.



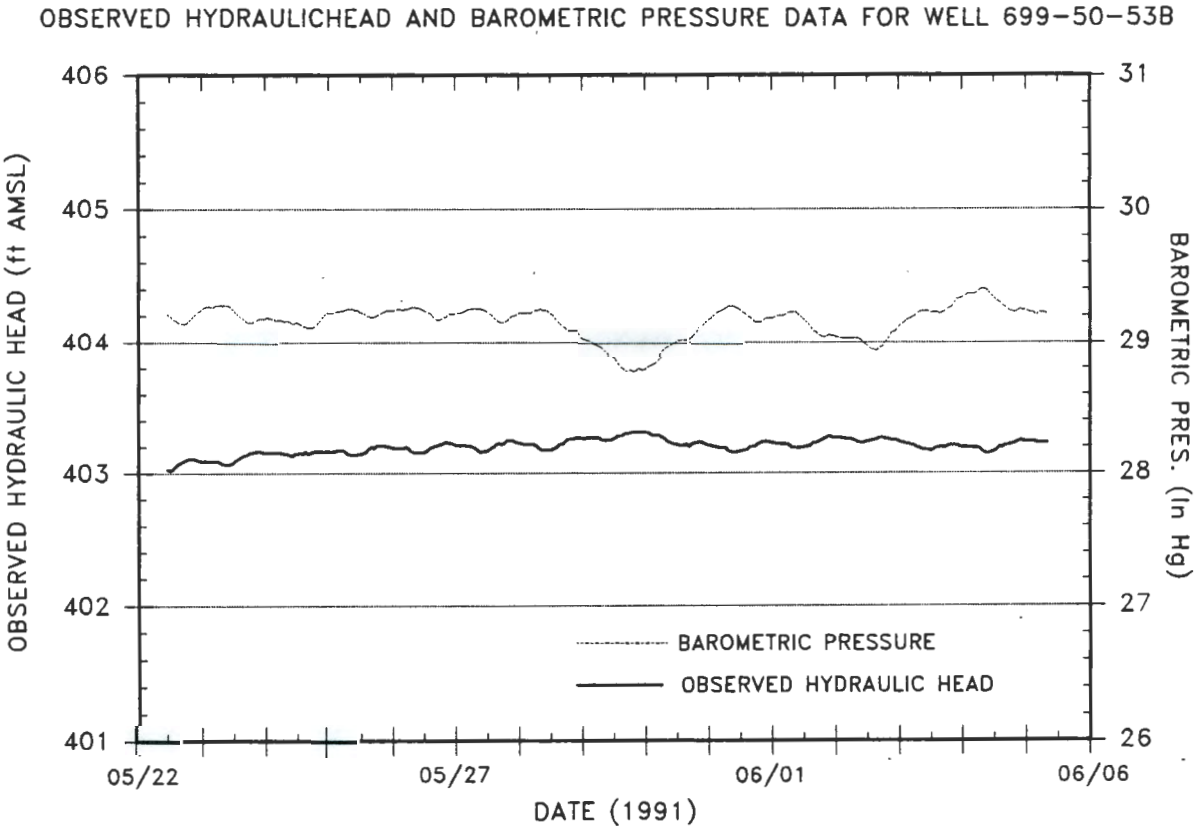
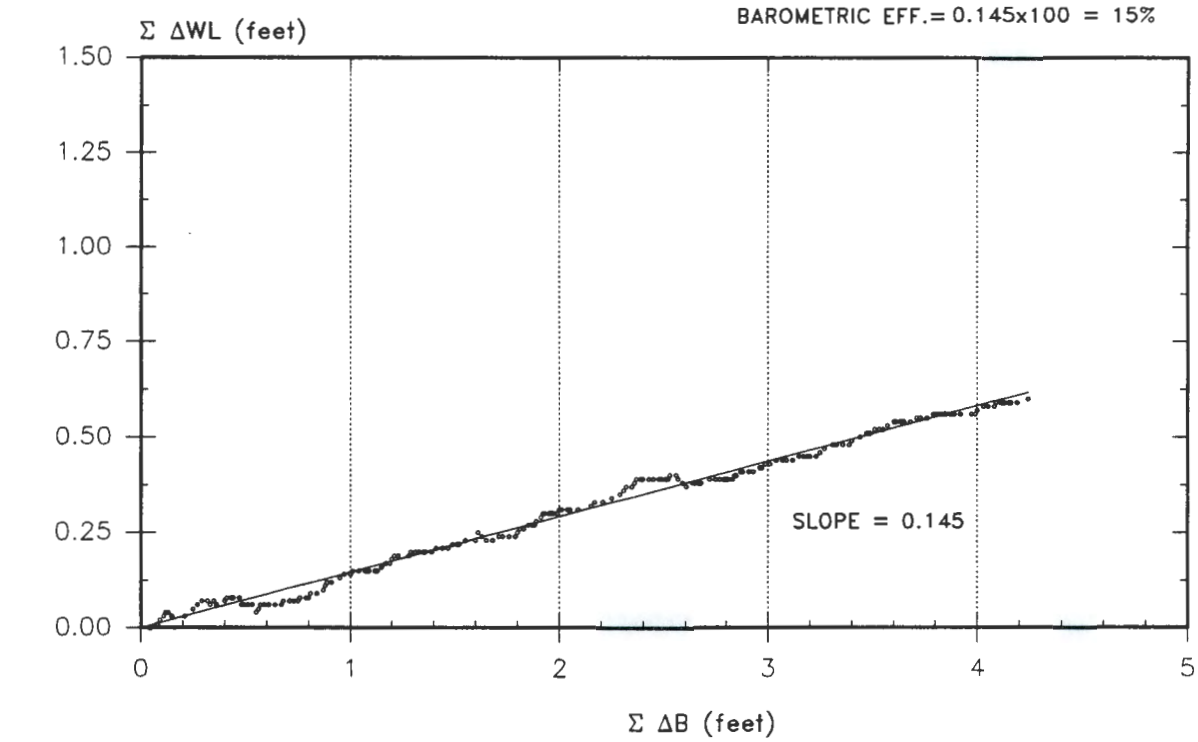


Figure 3-19. Barometric Efficiency Data and Calculation for Well 699-54-57.



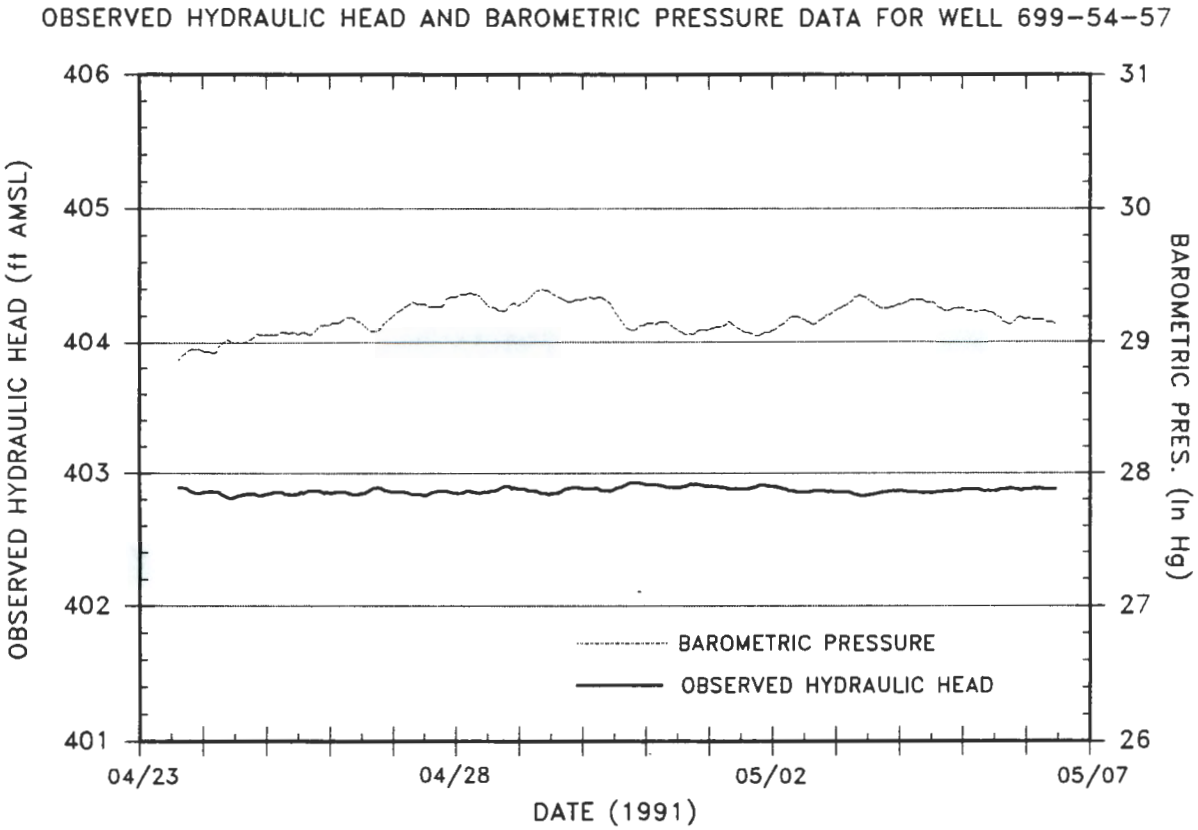
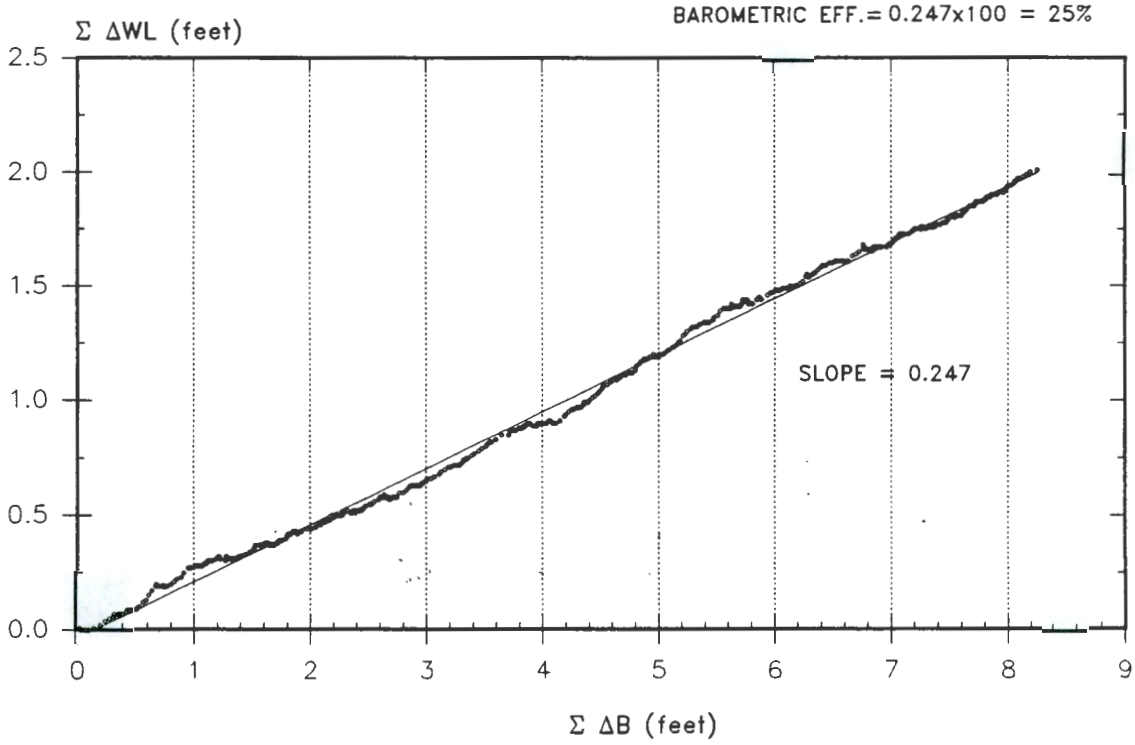
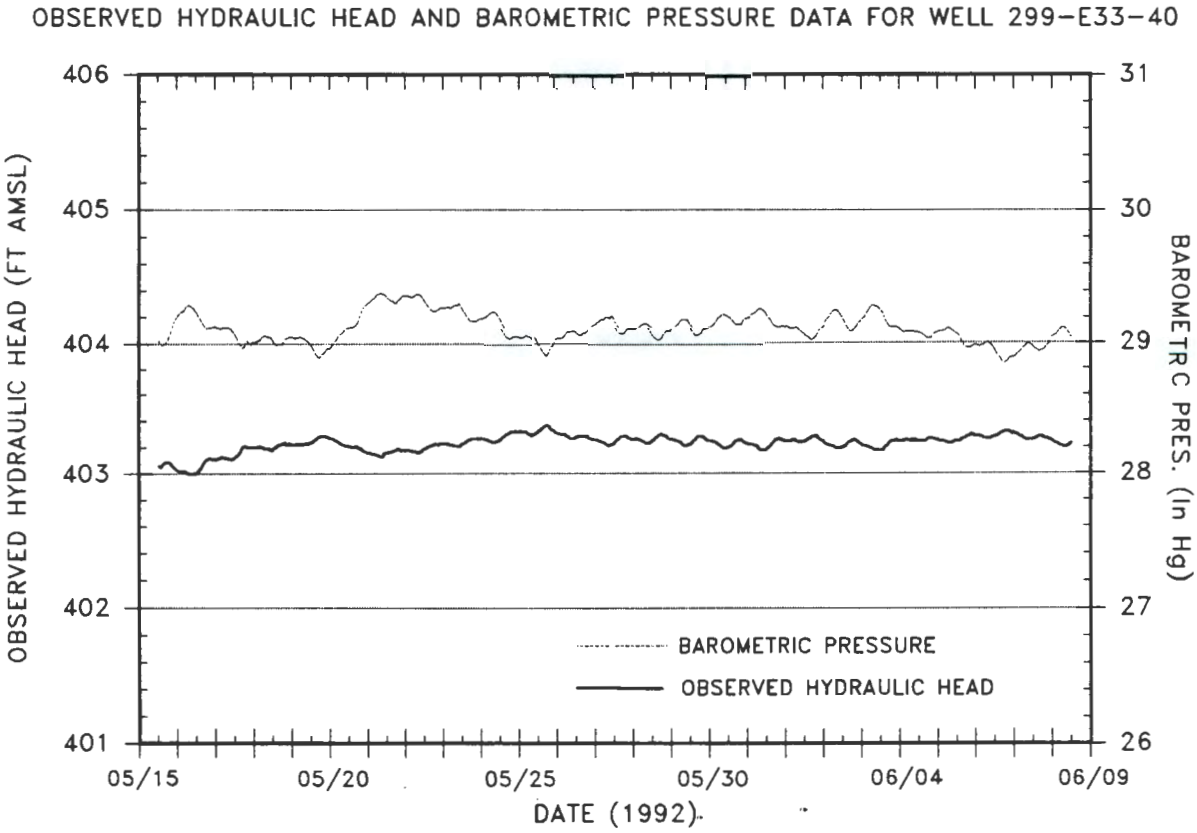


Figure 3-20. Barometric Efficiency Data and Calculation for Well 299-E33-40.





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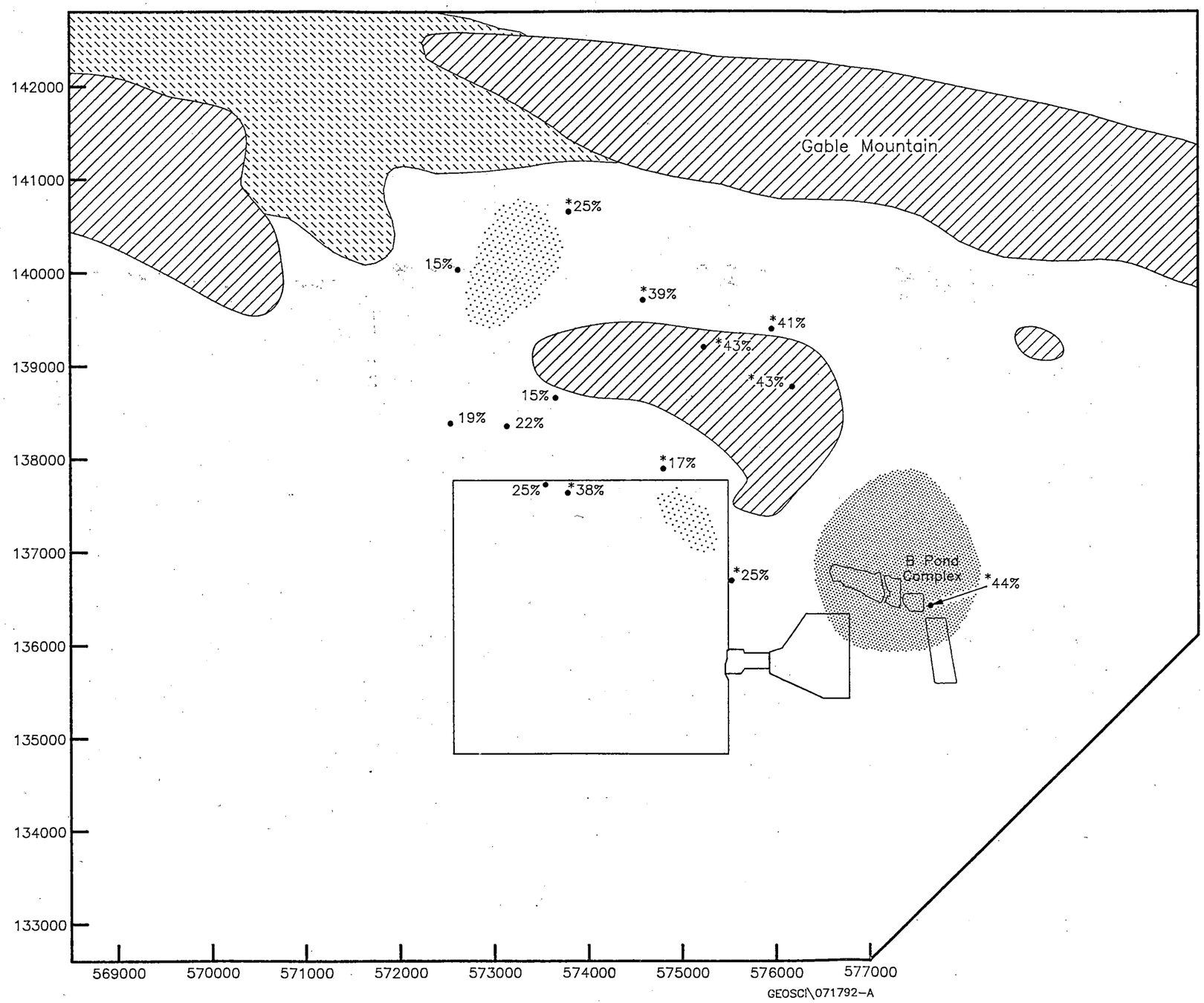


Barometric Efficiencies of Rattlesnake Ridge Aquifer Monitoring Wells in the 200 East Groundwater Aggregate Area

Estimated Area of Direct Hydraulic Interconnection Between Uppermost Aquifer System and the Rattlesnake Ridge Aquifer

Area of Complete Erosion of the Elephant Mountain Basalt

Area of Downward Vertical Hydraulic Gradient

* Data from Graham, etal, (1984)

N

0 1000 2000 meters

Figure 3-21. Map illustrating Barometric Efficiencies for Well Clusters.

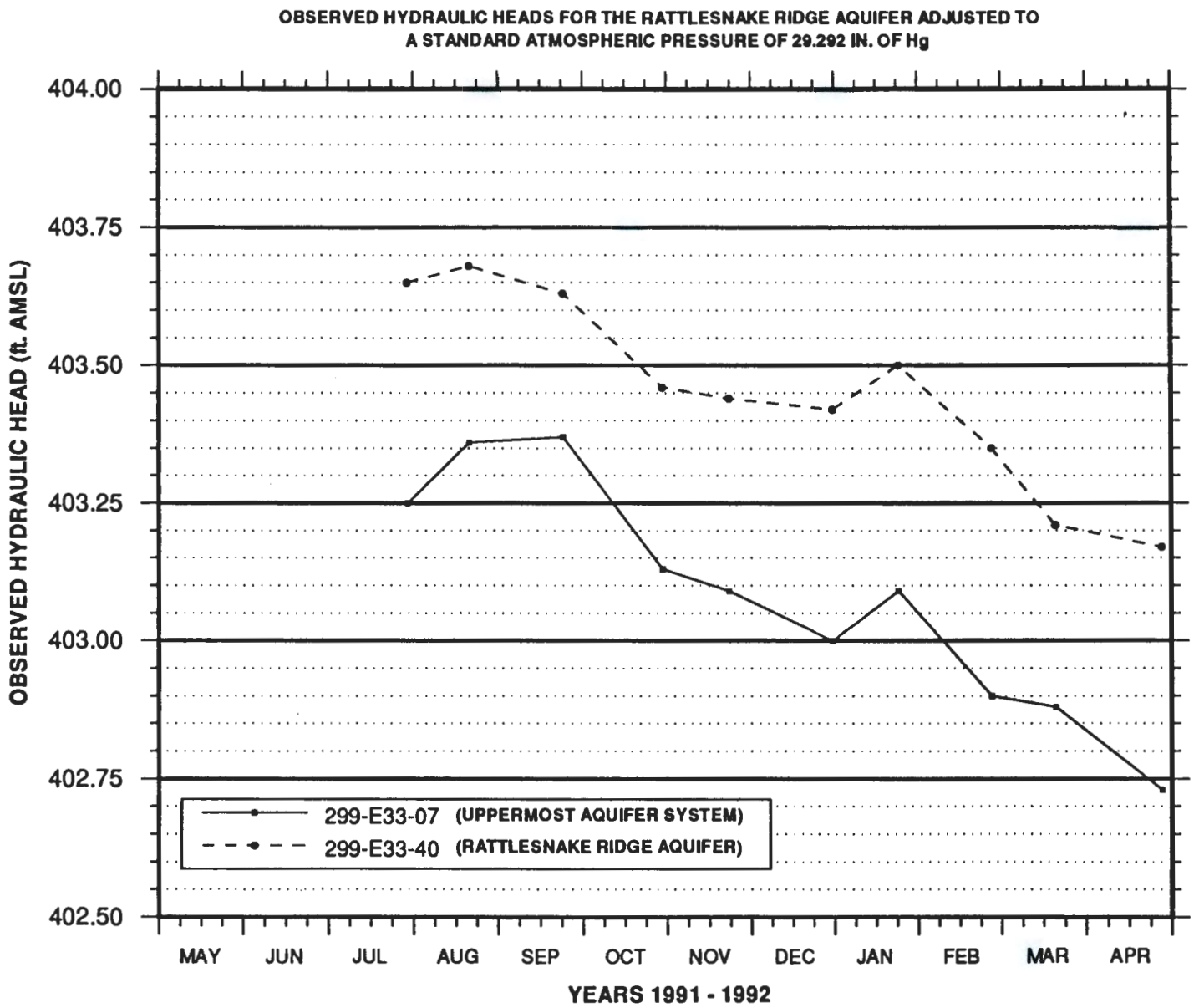
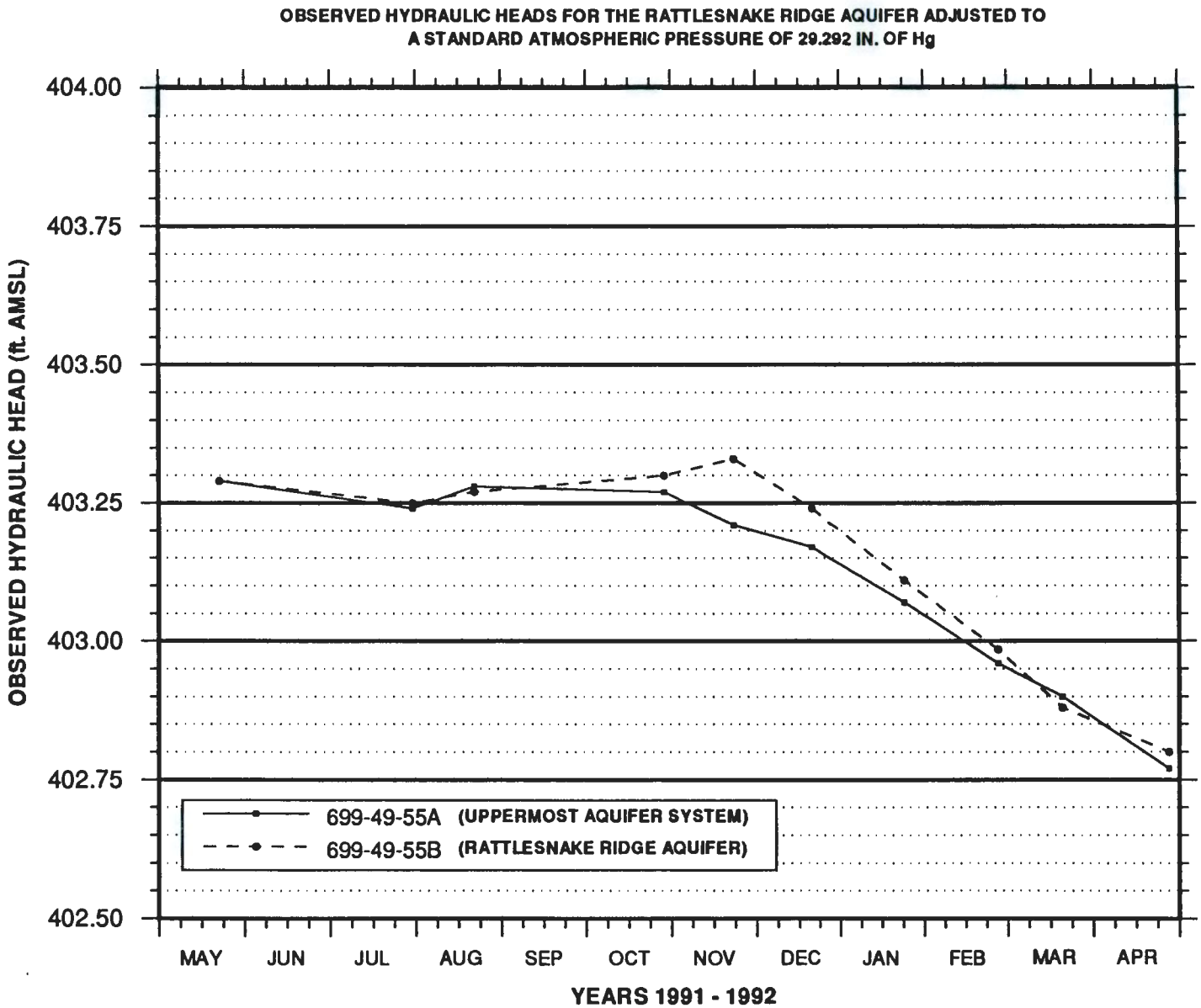


Figure 3-22. Hydrograph for Well Cluster 299-E33-40/299-E33-07.

Figure 3-23. Hydrograph for Well Cluster 699-49-55A/B.



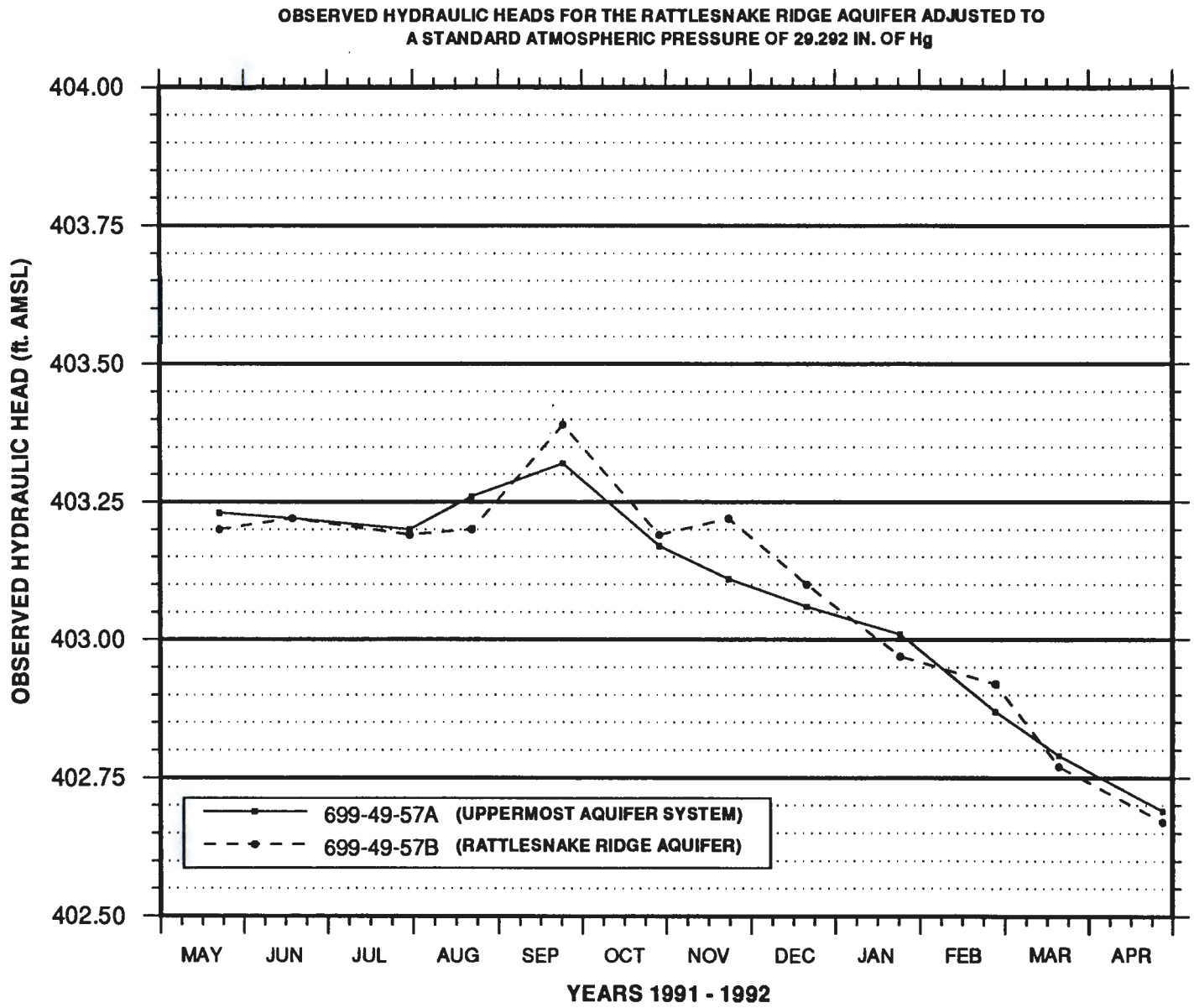


Figure 3-24. Hydrograph for Well Cluster 699-49-57A/B.

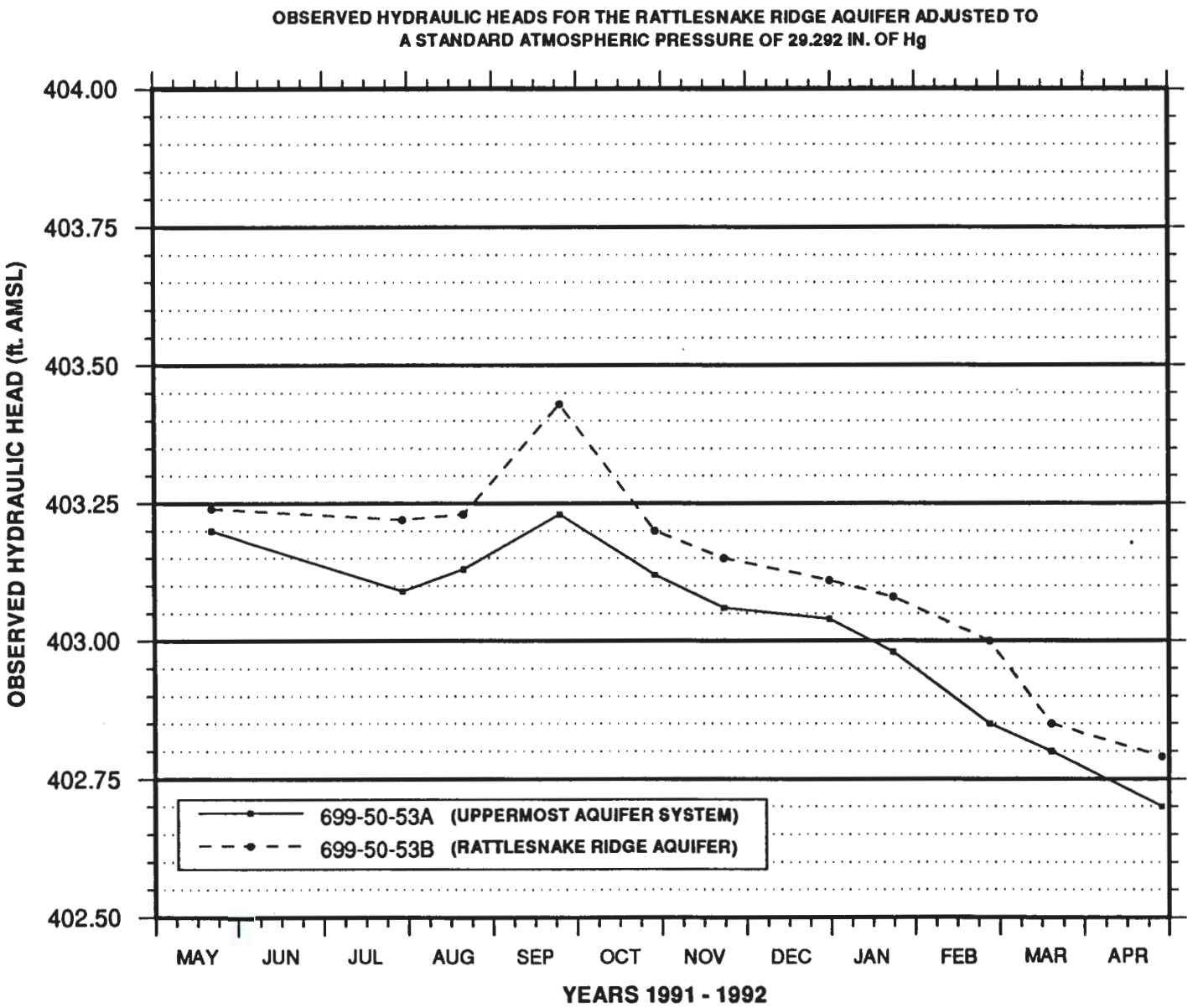


Figure 3-25. Hydrograph for Well Cluster 699-50-53A/B.

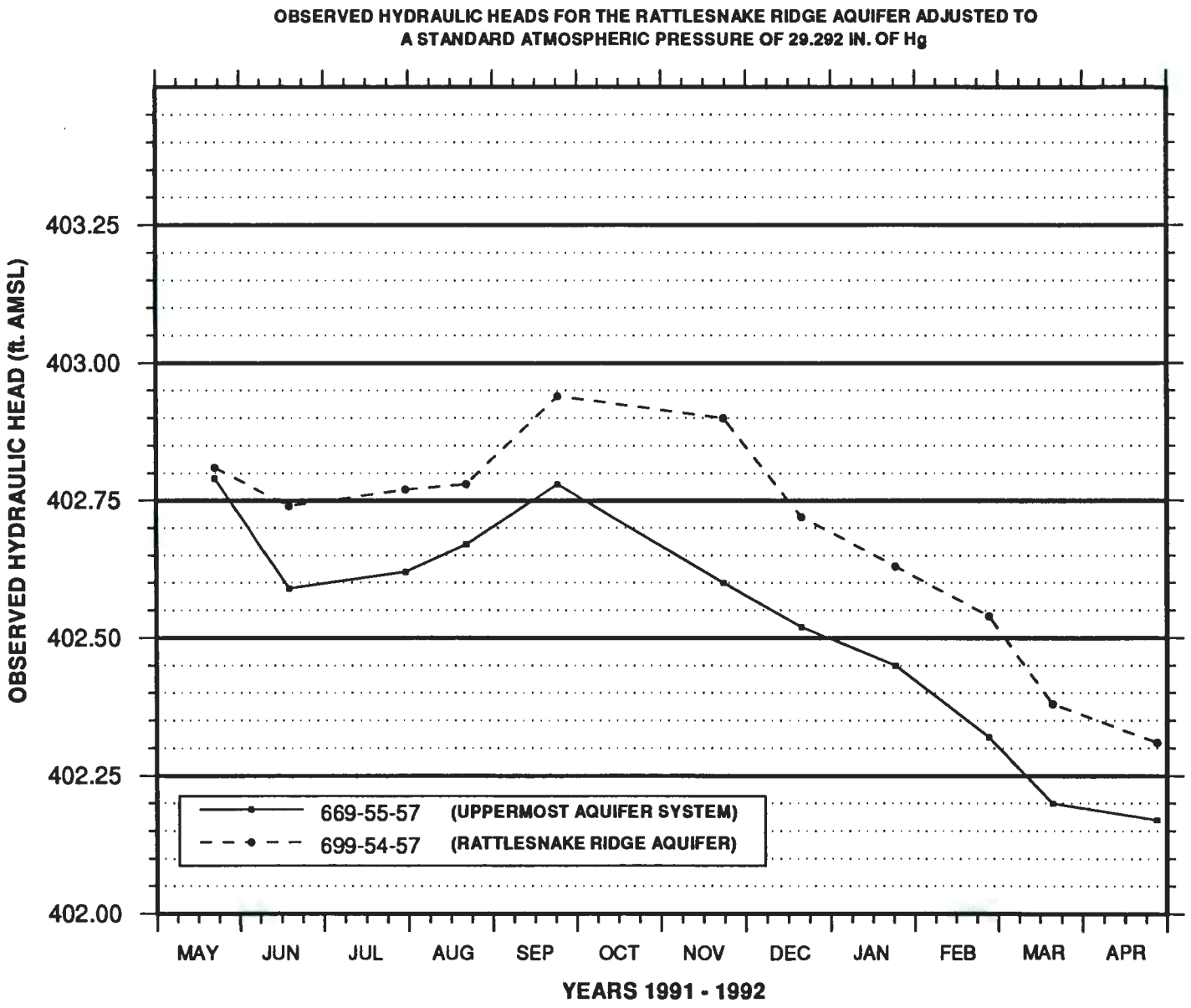


Figure 3-26. Hydrograph for Well Cluster 699-54-57/699-55-57.

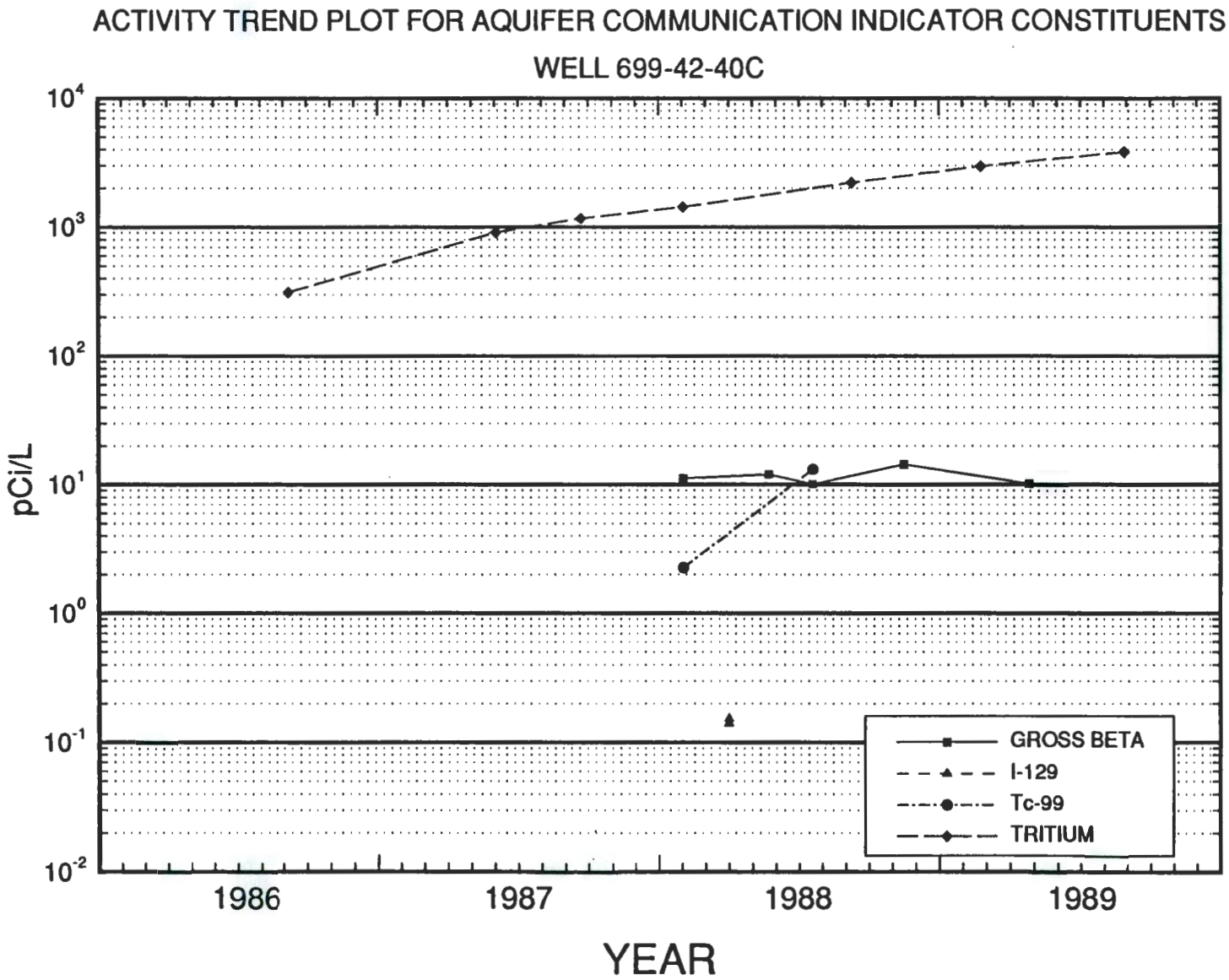


Figure 3-27. Activity Trend Plot for Well 699-42-40C.

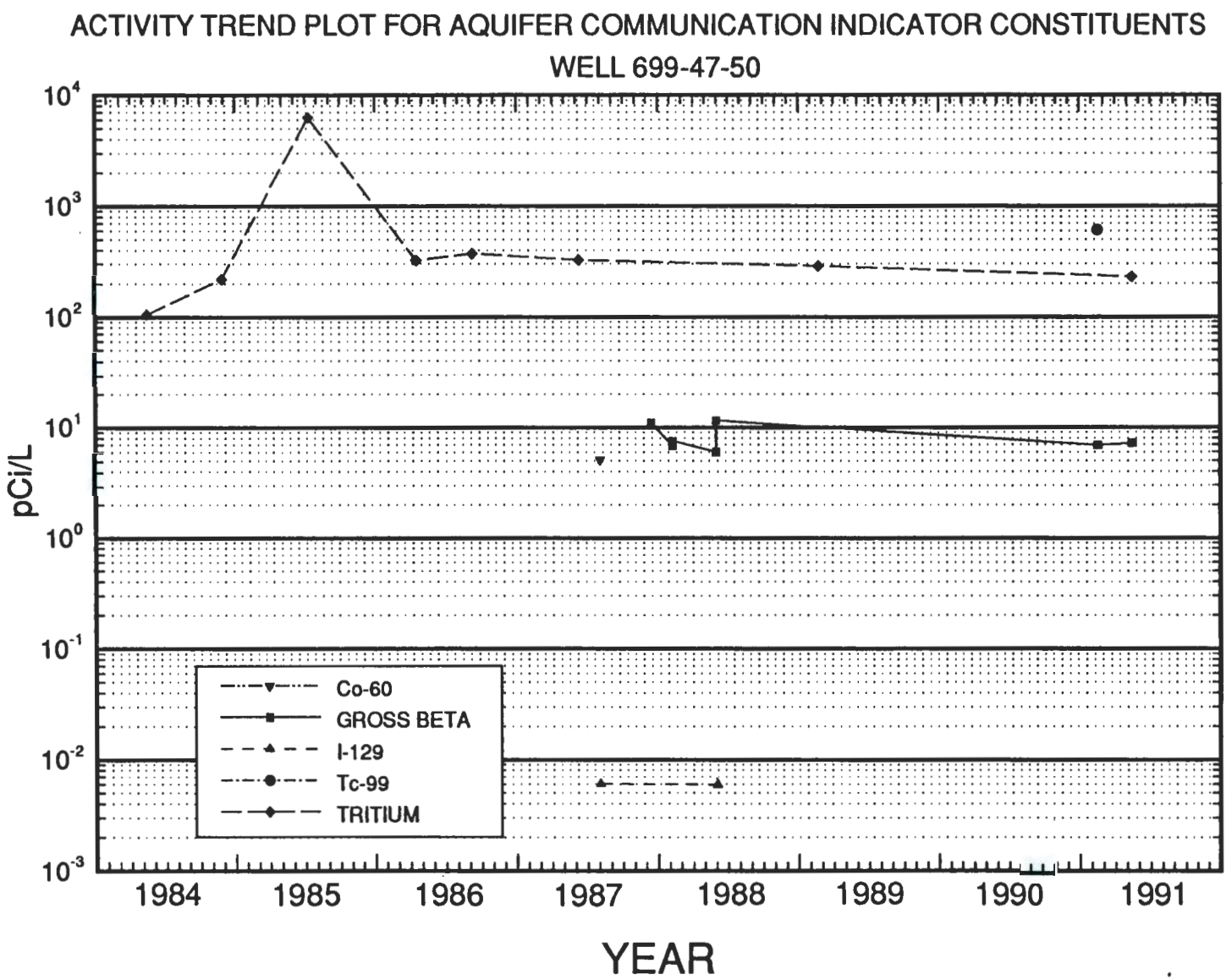


Figure 3-28. Activity Trend Plot for Well 699-47-50.

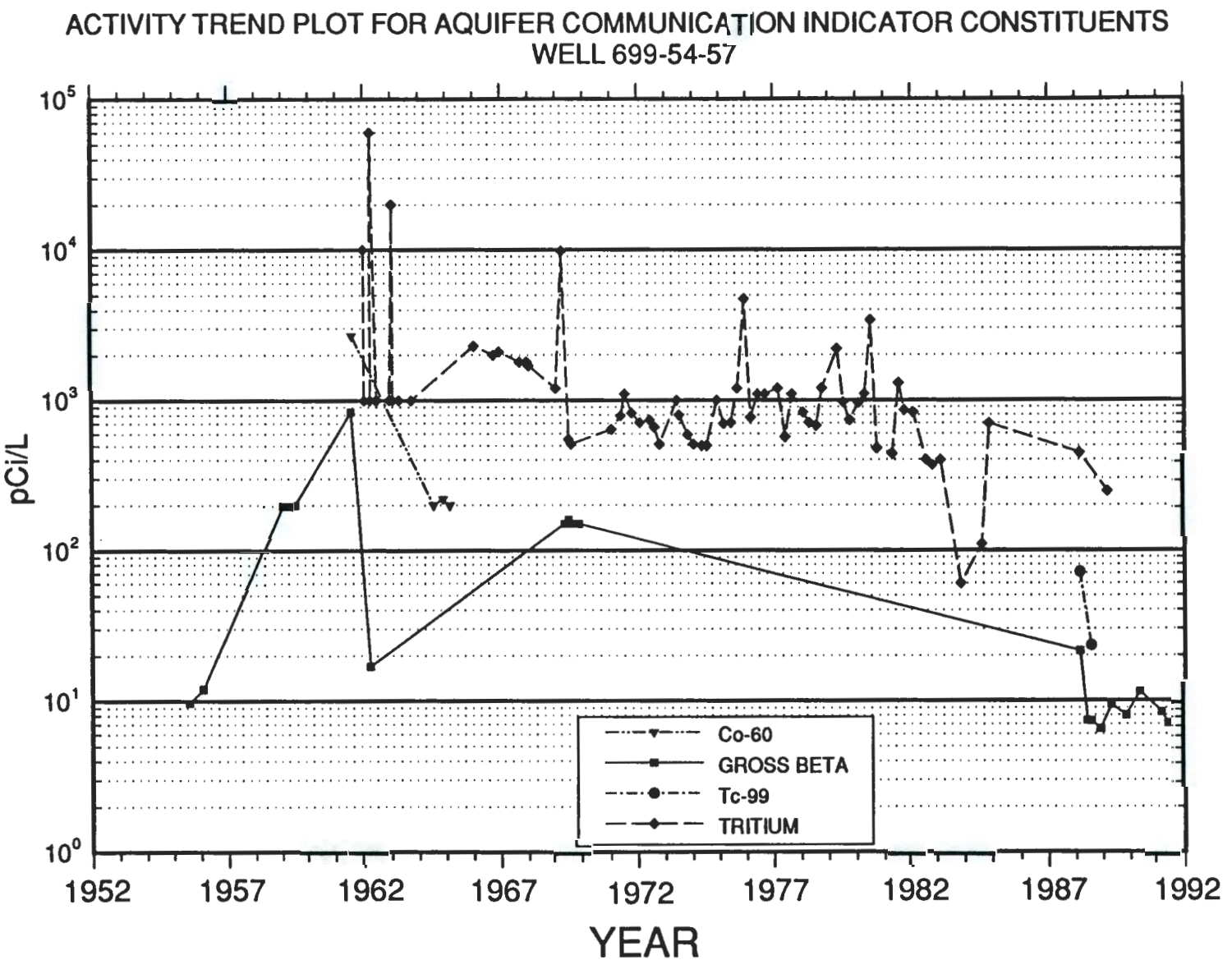


Figure 3-29. Activity Trend Plot for Well 699-54-57.

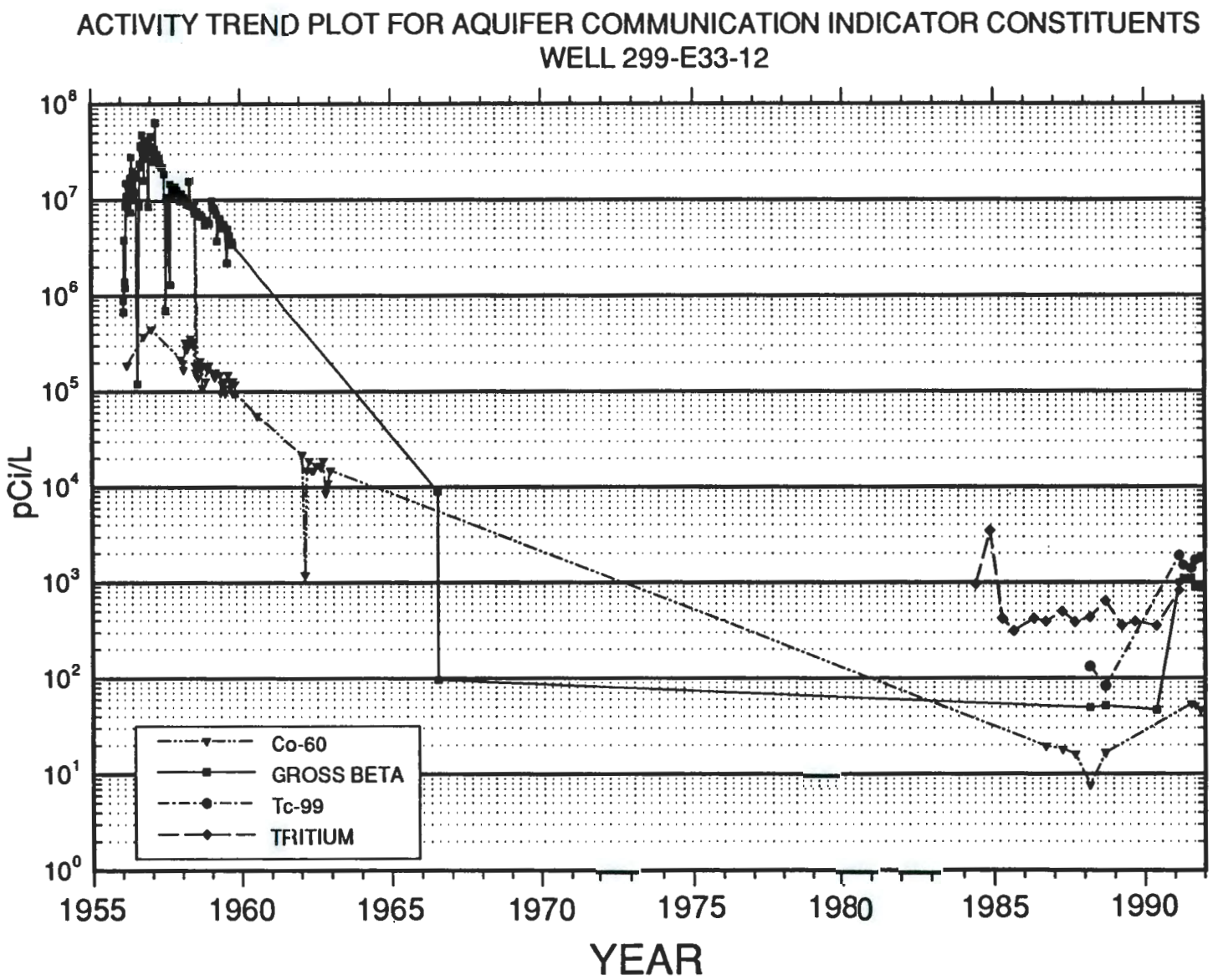
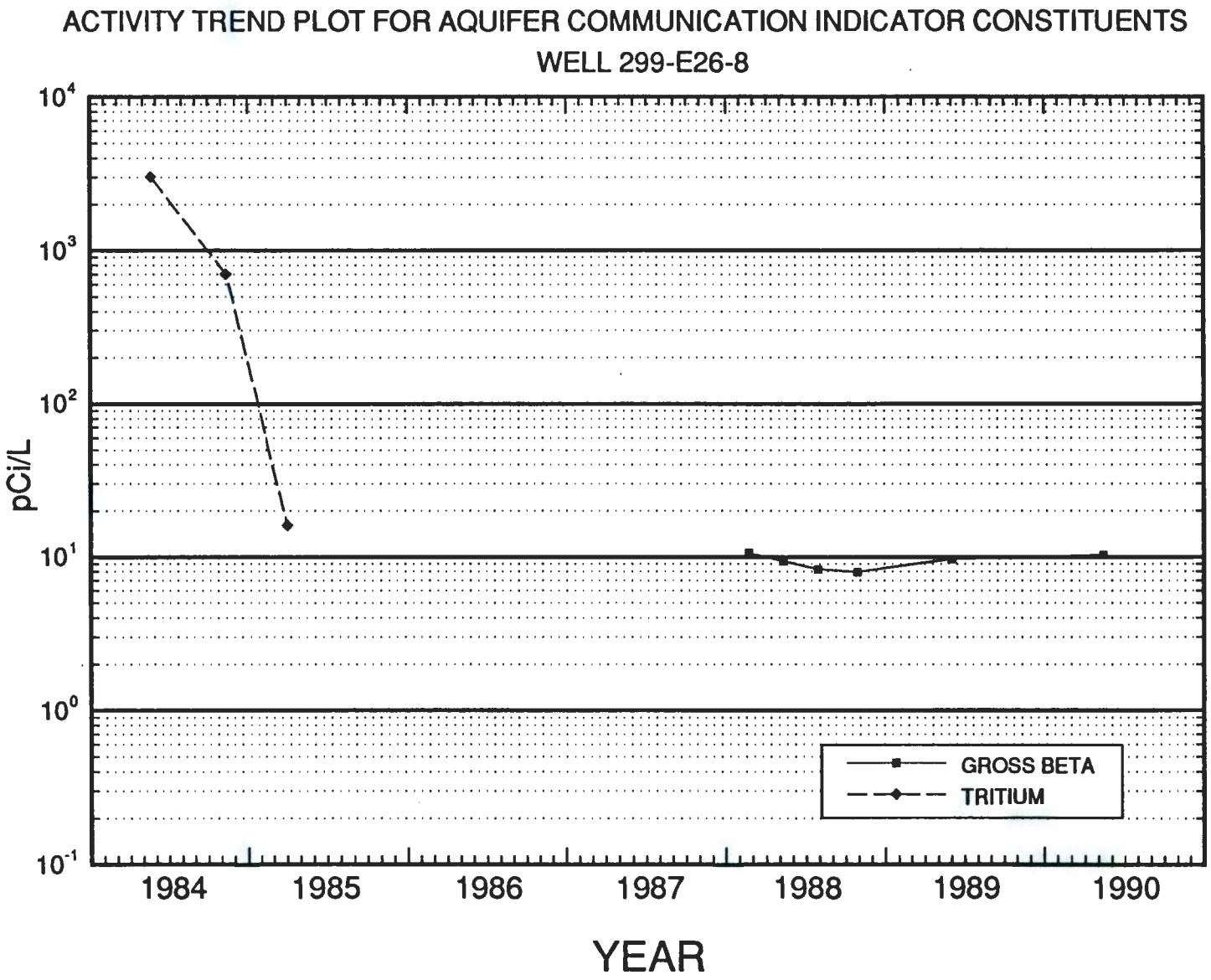


Figure 3-30. Activity Trend Plot for Well 299-E33-12.

Figure 3-31. Activity Trend Plot for Well 299-E26-8.



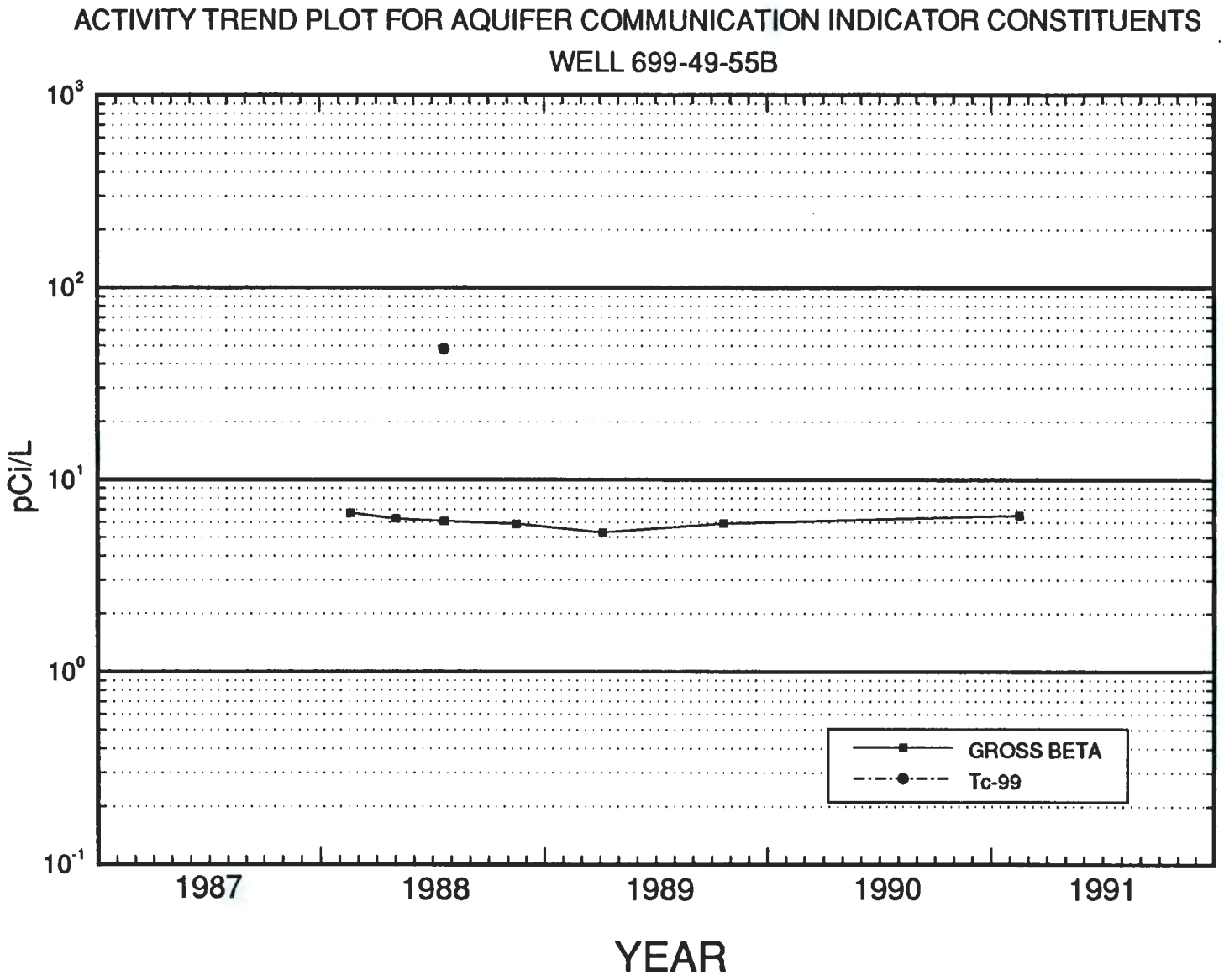


Figure 3-32. Activity Trend Plot for Well 699-49-55B.

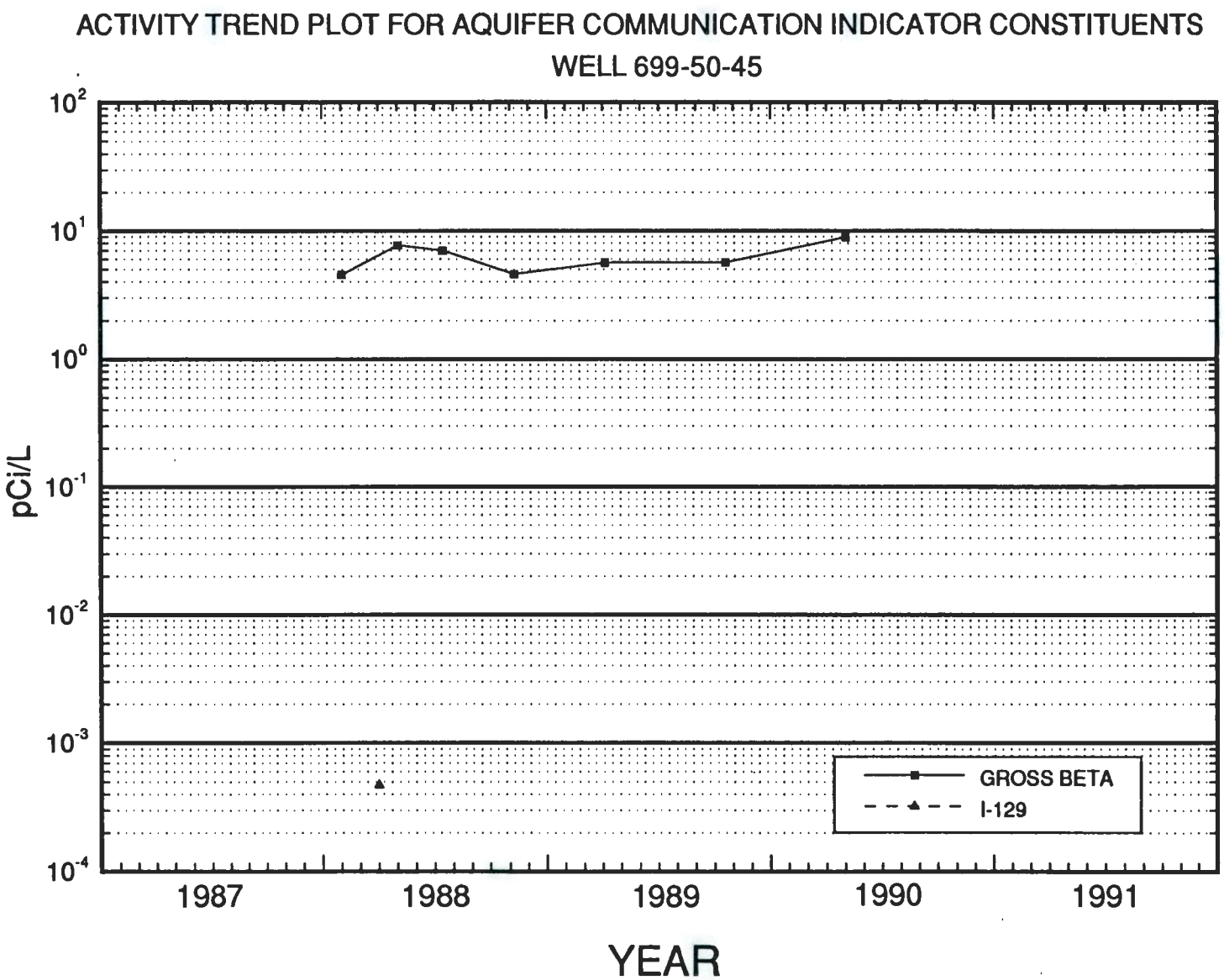
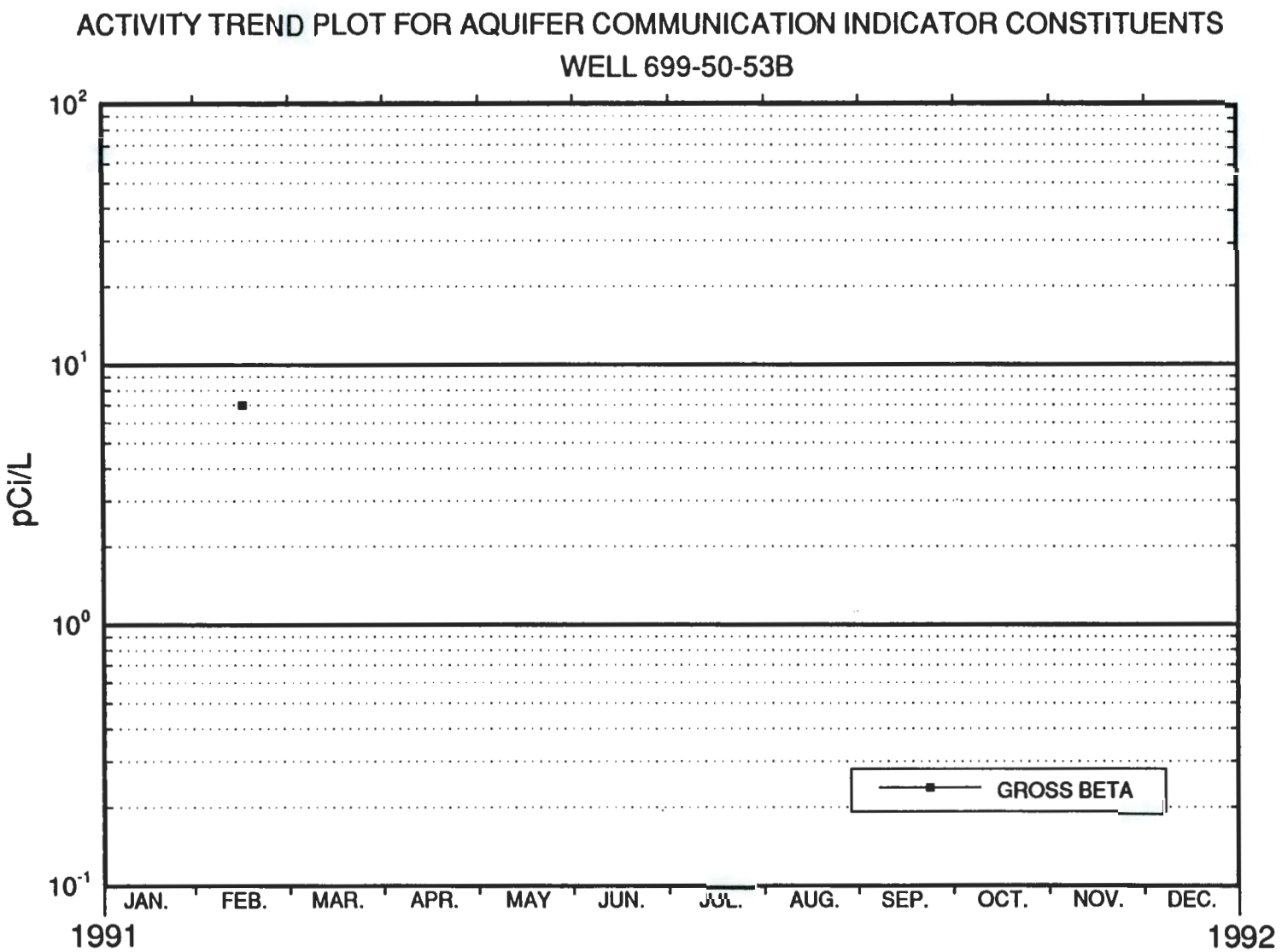


Figure 3-33. Activity Trend Plot for Well 699-50-45.

Figure 3-34. Activity Trend Plot for Well 699-50-53B.



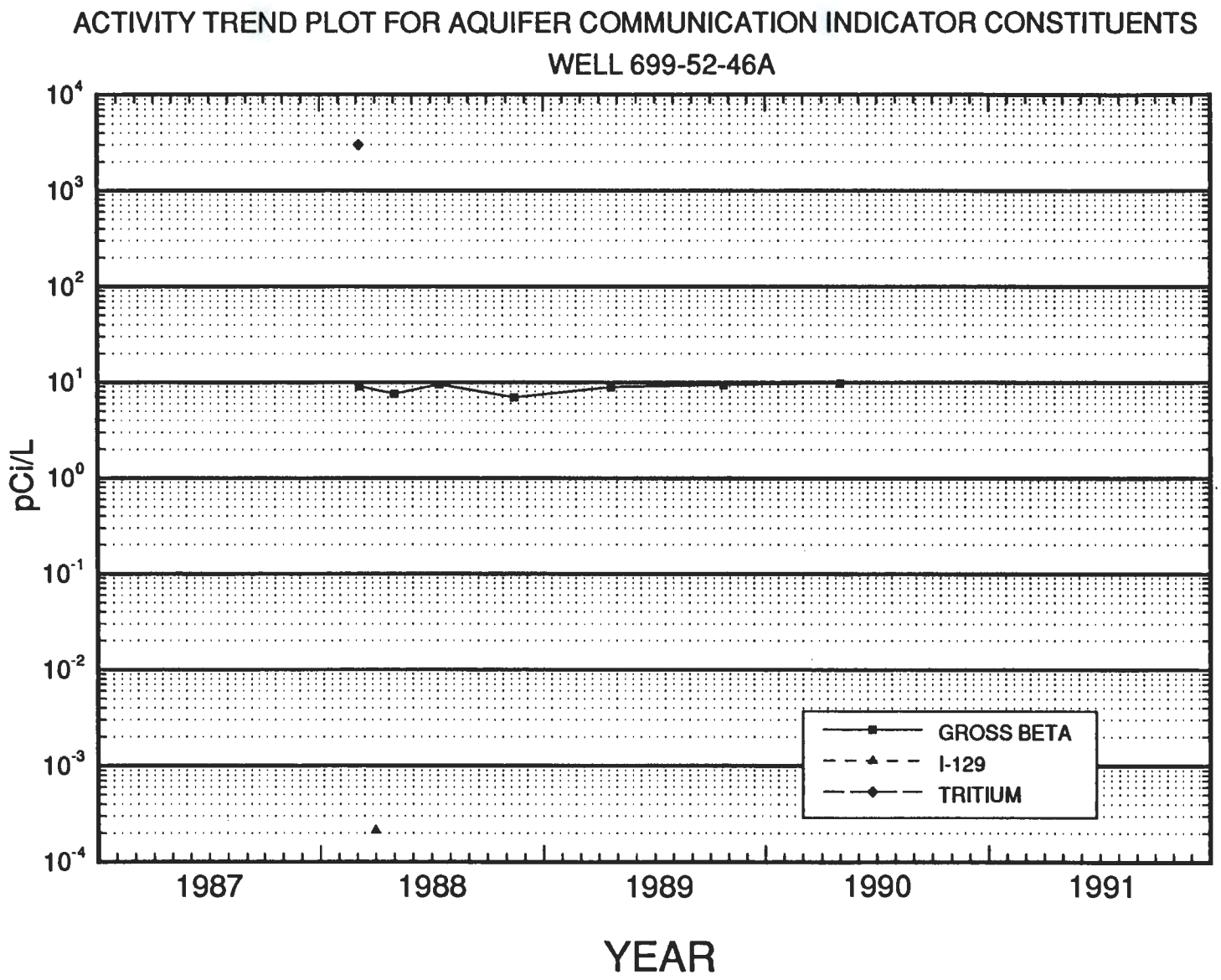


Figure 3-35. Activity Trend Plot for Well 699-52-46A.

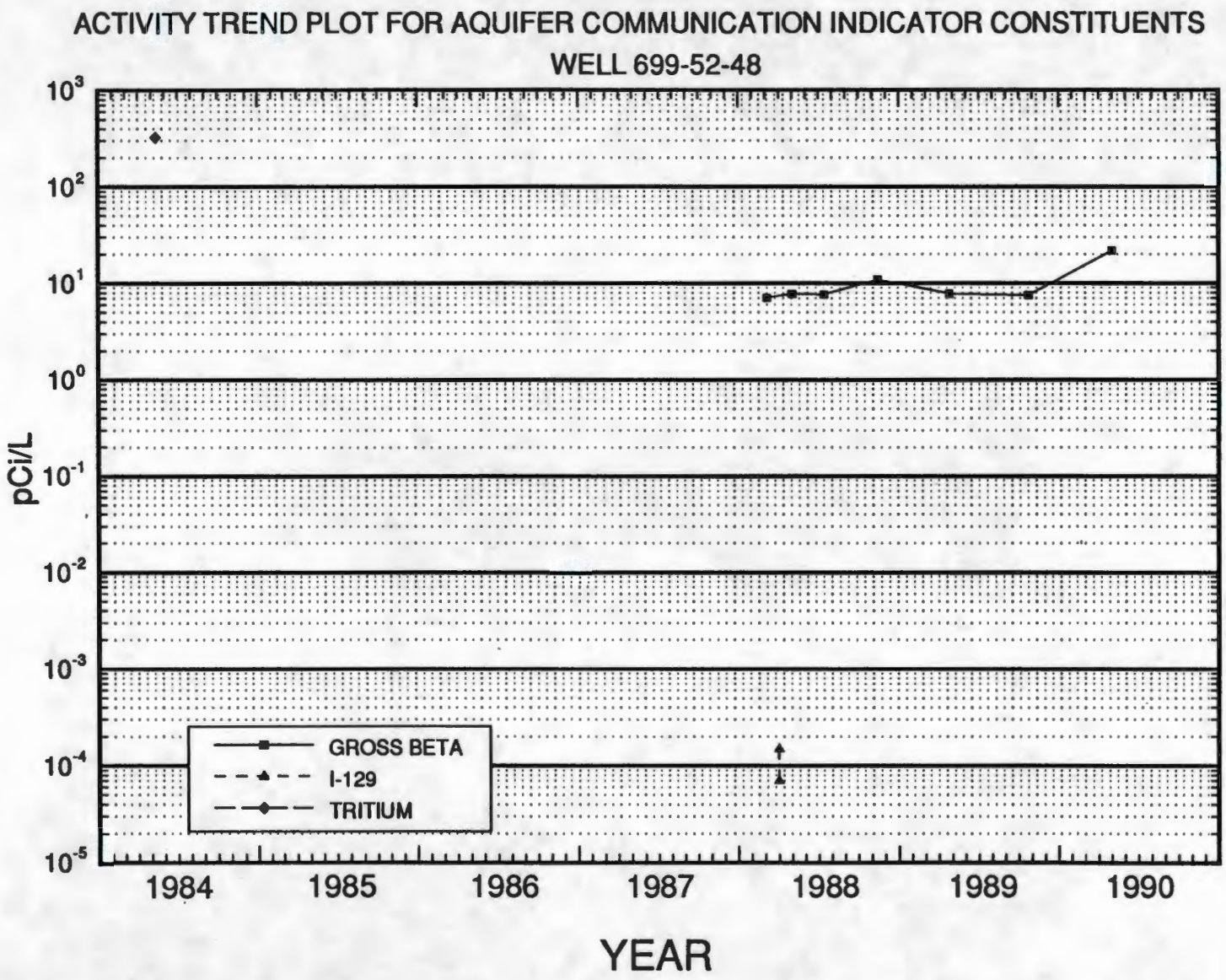


Figure 3-36. Activity Trend Plot for Well 699-52-48.

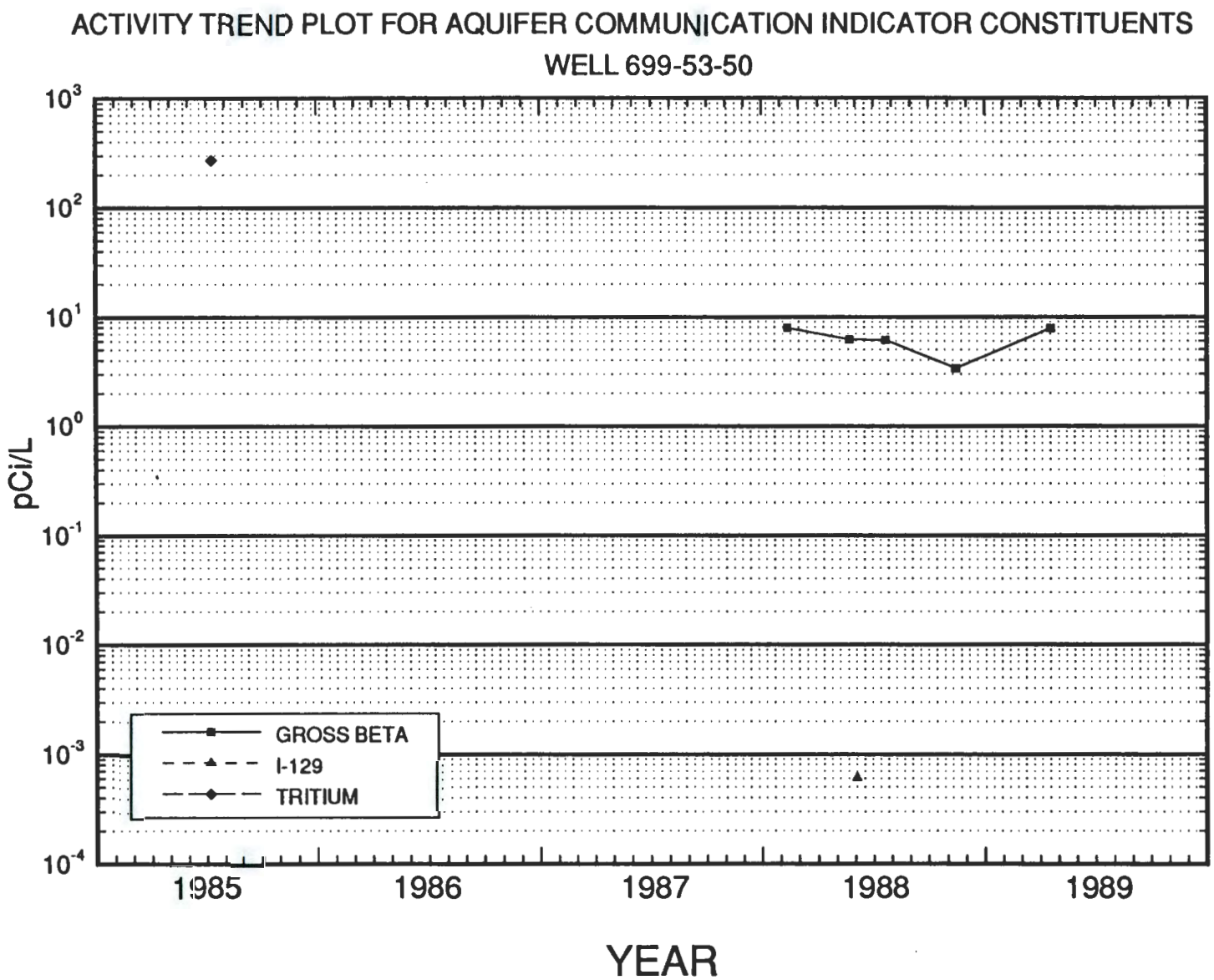


Figure 3-37. Activity Trend Plot for Well 699-53-50.

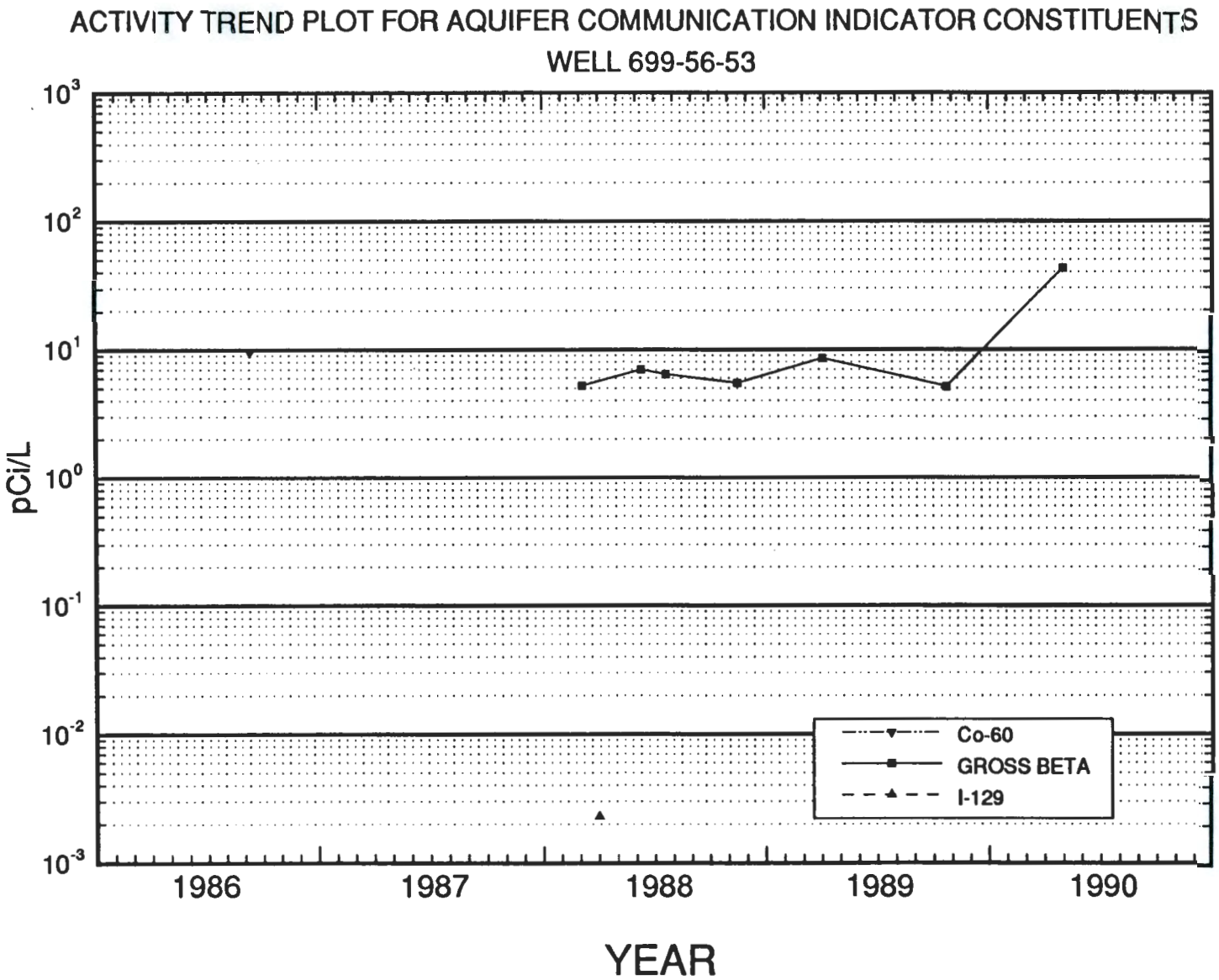
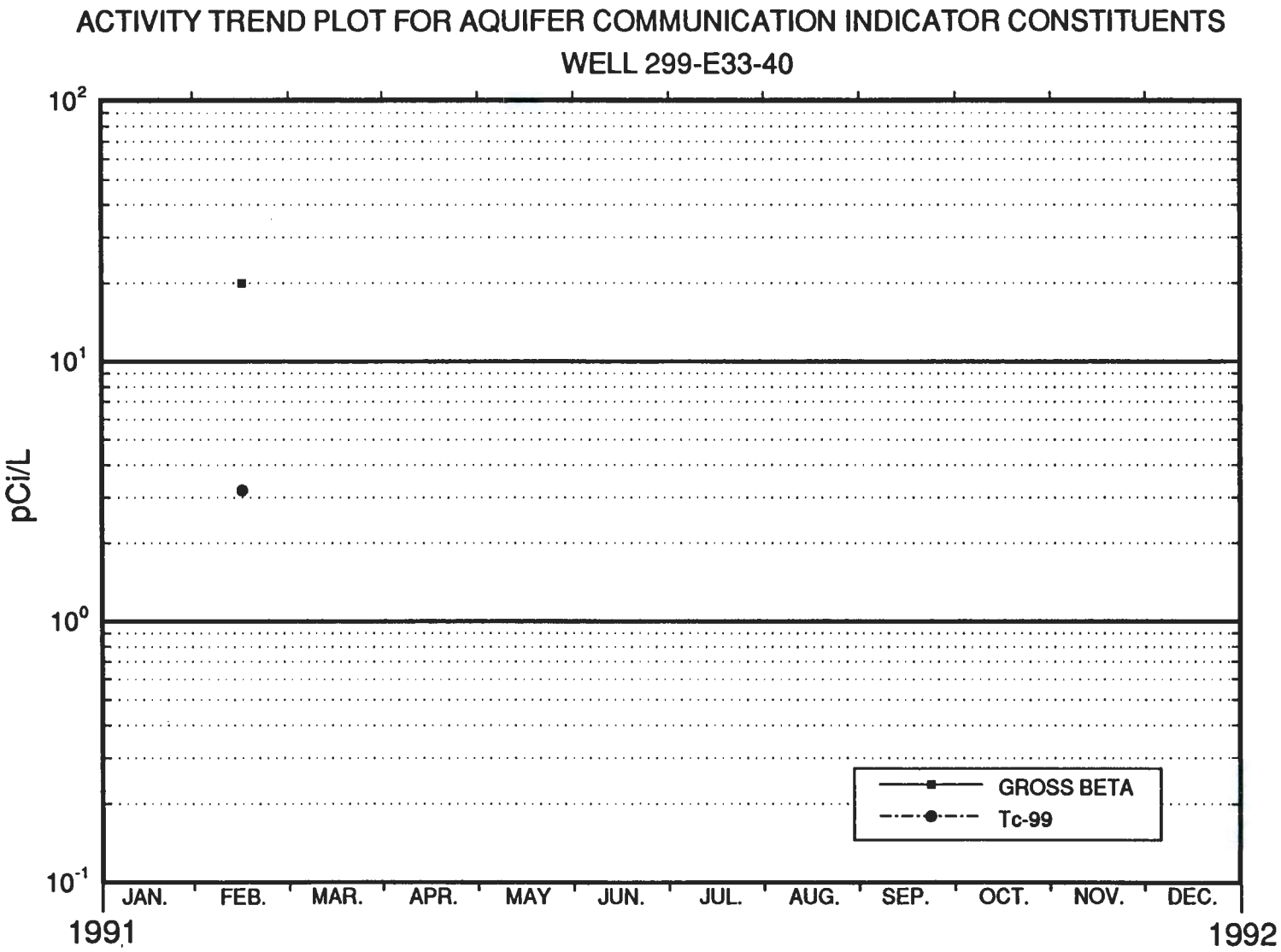
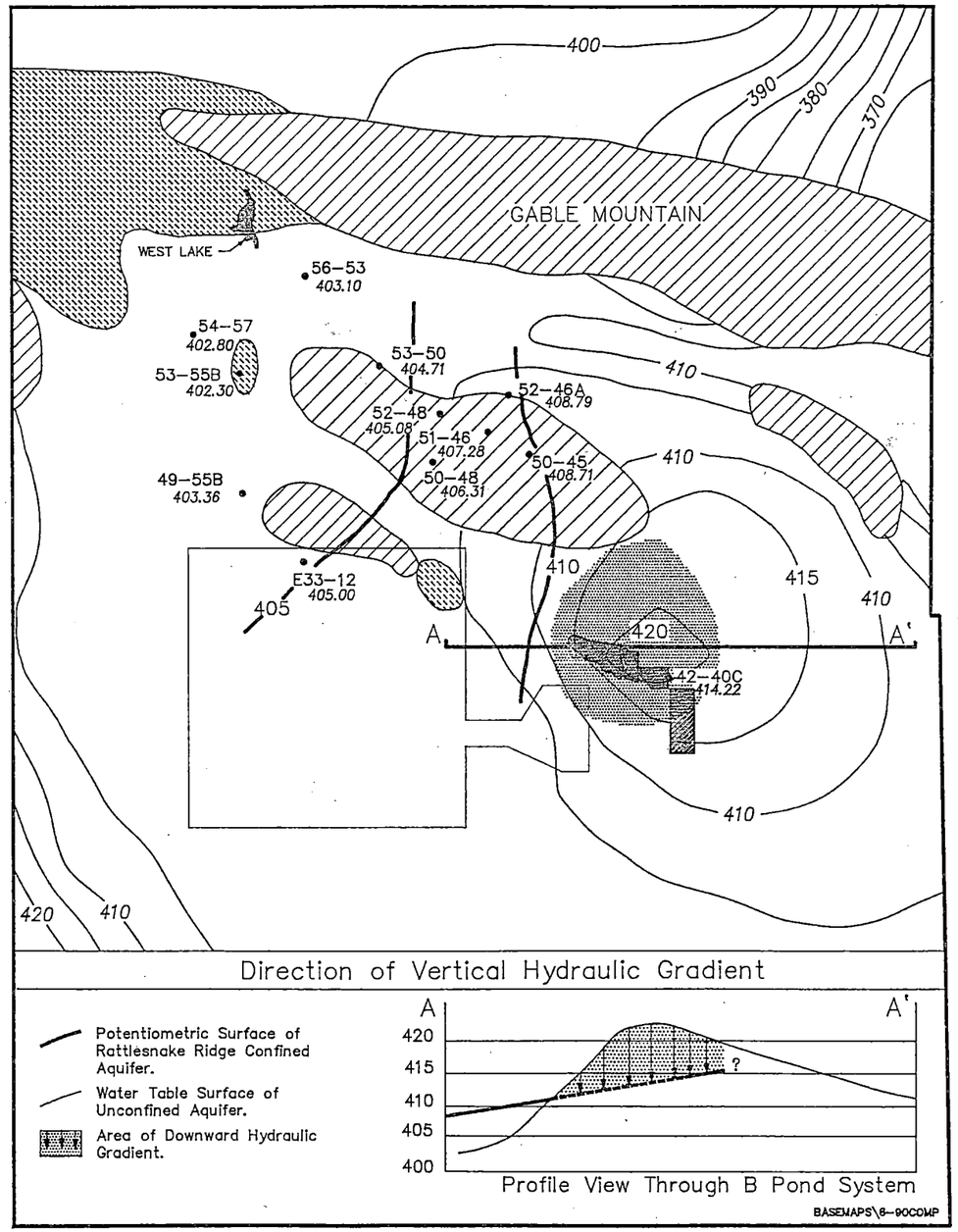


Figure 3-38. Activity Trend Plot for Well 699-56-53.

Figure 3-39. Activity Trend Plot for Well 699-E33-40.





Comparison of Potentiometric Surface of the Rattlesnake Ridge Confined Aquifer with the Water Table of the Unconfined Aquifer June 1991

- Potentiometric surface of the Rattlesnake Ridge confined aquifer in feet above mean sea level
- Water table contours in feet above mean sea level
- Areas of complete erosion of the Elephant Mountain Member (from RHO–RE–ST–12)
- Area of downward hydraulic gradient
- 50–45 / 405 — Wells in confined aquifer used to prepare map
- Pond
- Areas where the basalt surface is generally above the water table

The Rattlesnake Ridge aquifer, which is confined by the Elephant Mountain Member, is monitored quarterly in the eastern portion of 200 East Area. The June 1991 water level measurements in 12 wells completed in the Rattlesnake Ridge interbed were used to contour the potentiometric surface of the aquifer. Areal extent of downward hydraulic gradient from the unconfined aquifer to this confined aquifer is inferred from the water–table map and the contours of the potentiometric surface of the Rattlesnake Ridge. This area represents the zone in which downward flow might occur if a pathway is available due to complete erosion of the Elephant Mountain Member or sufficiently high hydraulic conductivity in the basalt. A profile view through the B Pond system shows the relationship between the unconfined water table and the potentiometric surface of the Rattlesnake Ridge confined aquifer.

The potentiometric surface of the Rattlesnake Ridge confined aquifer map has been prepared by the Geosciences Group, Environmental Division, Westinghouse Hanford Company.

Note: To convert to metric, multiply elevation (ft) by 0.3048 to obtain elevation (m).

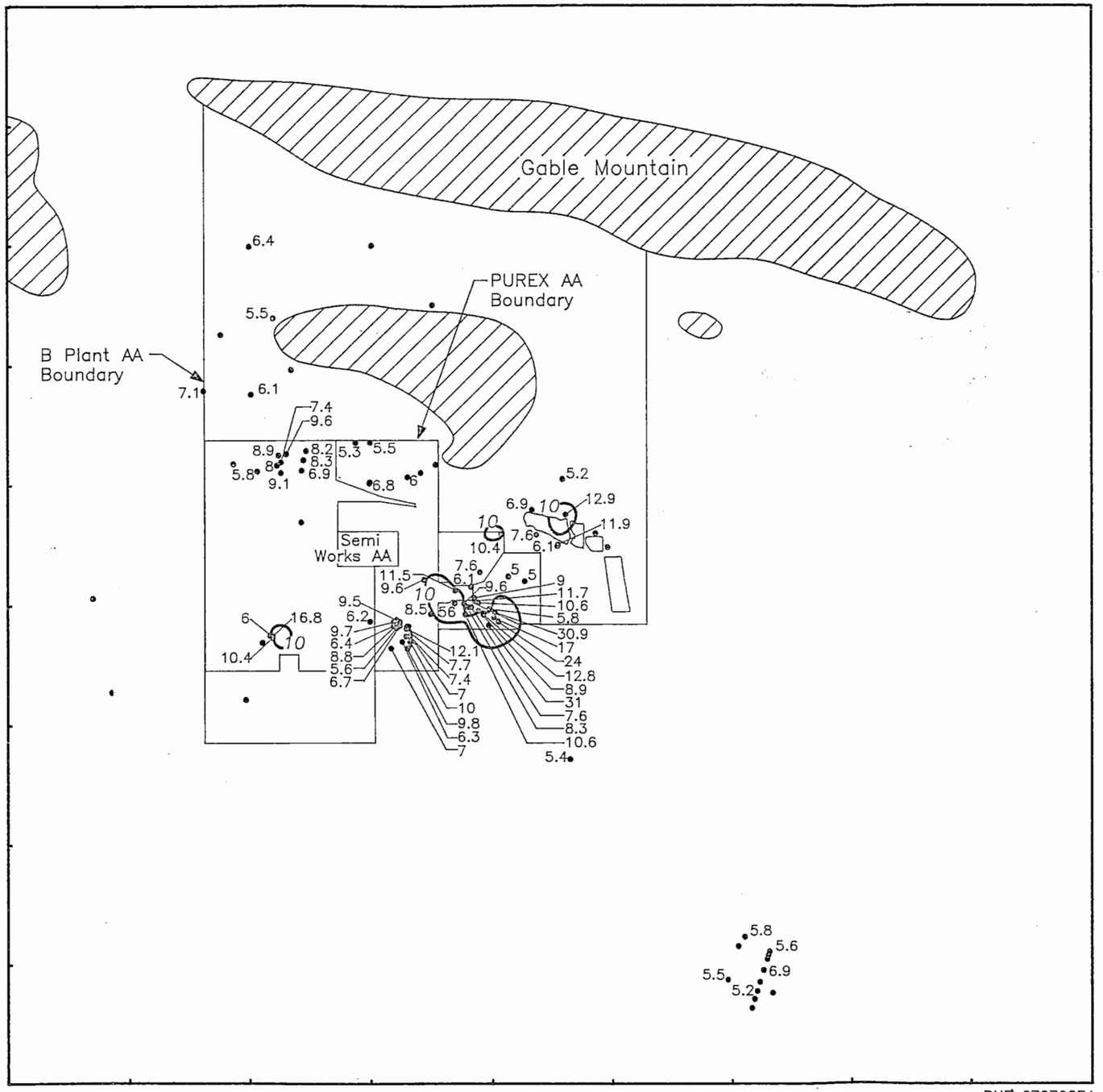
-N-

0 — 1 Mile

0 — 1 Kilometer

Figure 3-40. Potentiometric Surface Map for the Rattlesnake Ridge Aquifer (Kasza et al. 1991).

Figure 3-41. Geographical Locations of Past and Present Aquifer Communication.



Arsenic Plume Map

(200 East Groundwater Aggregate Area)

Legend

6.4 Well Location and Concentration (Wells without values have < Detectable Limits)

10 Concentration Isopleth (Isopleth Interval in ppb)

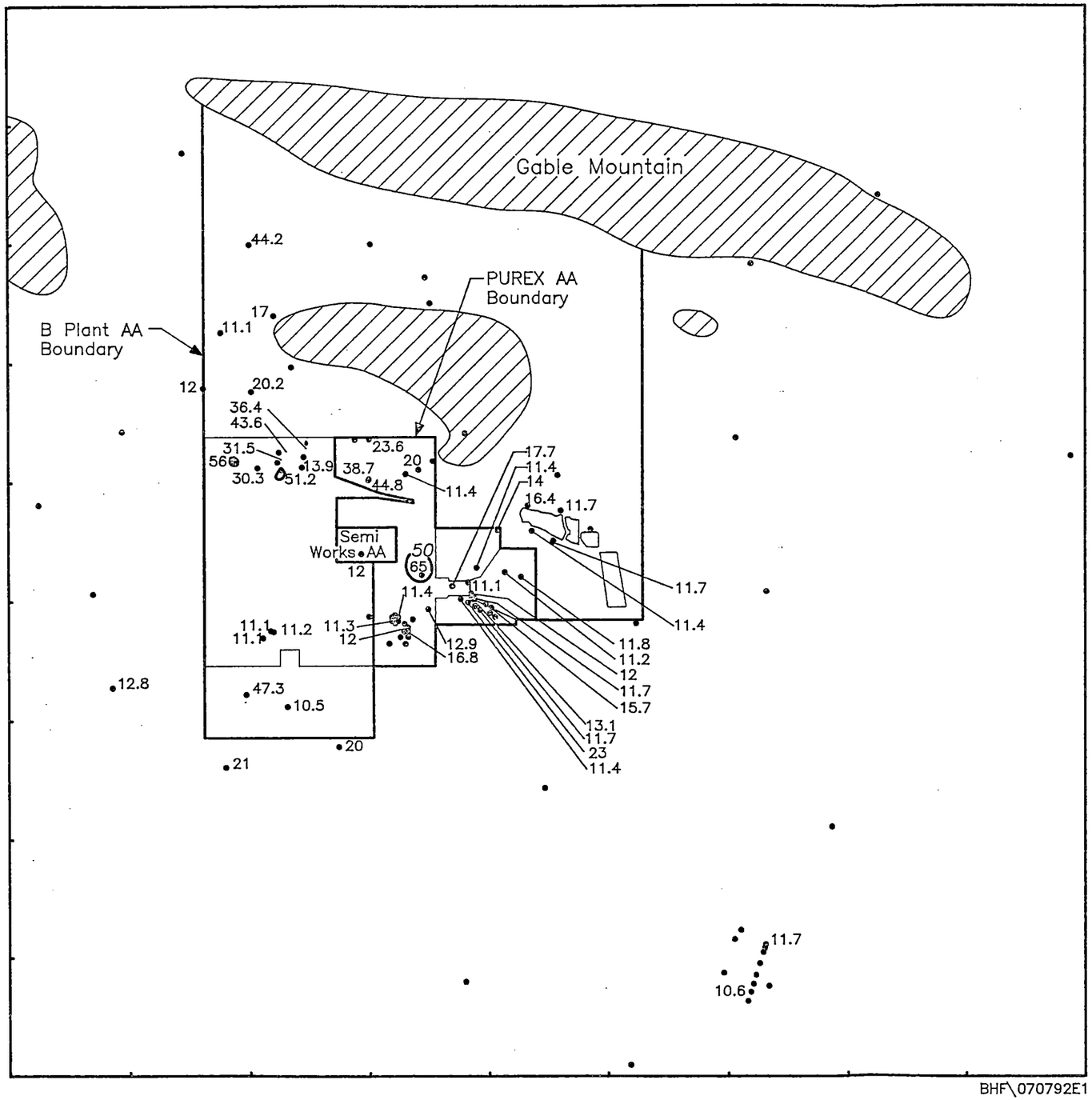
Detection Limit — 5 ppb
Washington Water Quality Standard — 0.05 ppb
Drinking Water Standard — 50 ppb
Maximum Concentration Limit — 50 ppb

N

0 5000 Feet

Figure 4-1. Arsenic Plume Map.

9413096.0427



Chromium Plume Map

(200 East Groundwater Aggregate Area)

Legend

17.7 Well Location and Concentration (Wells without values have < Detectable Limits)

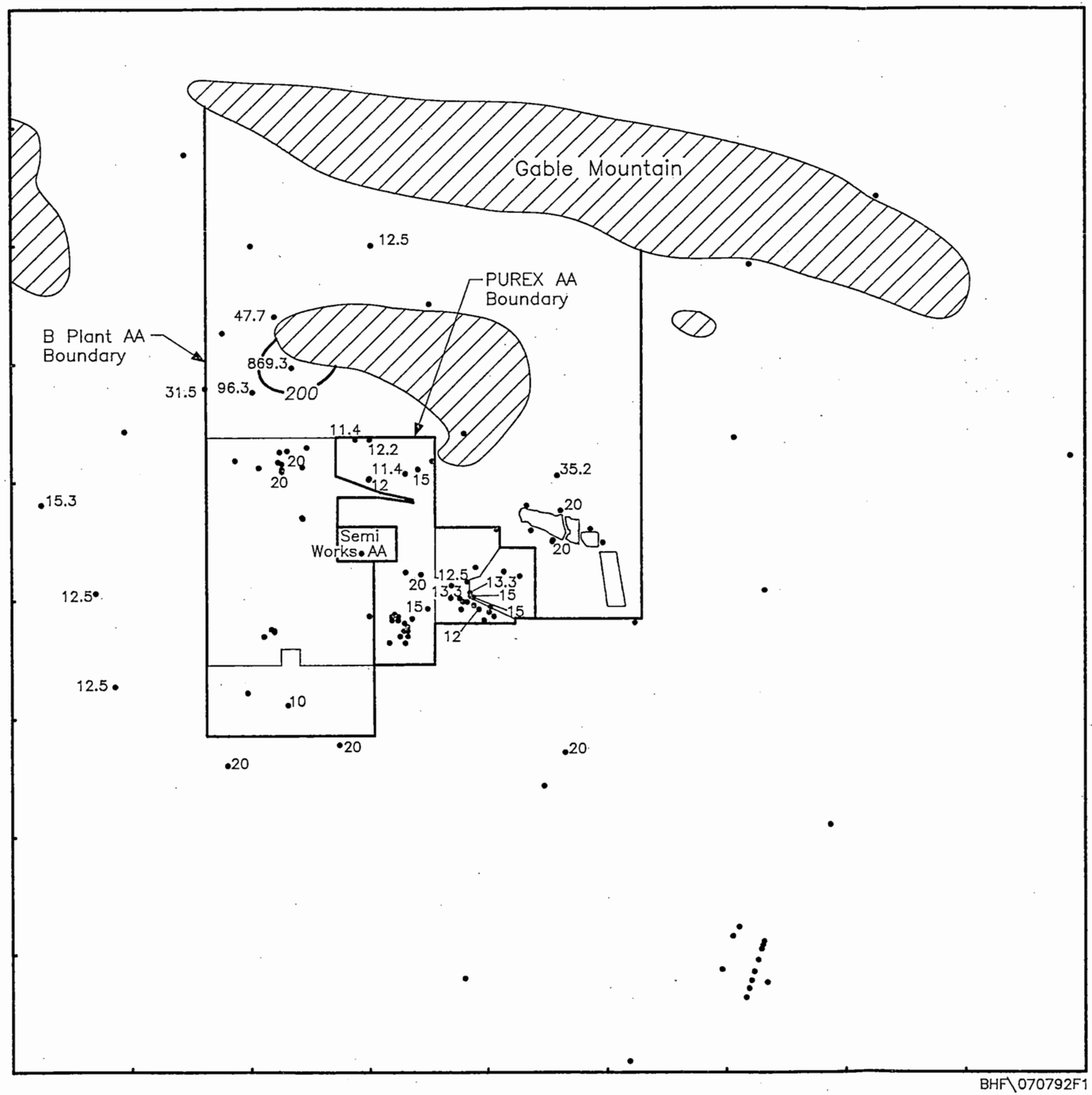
50 Concentration Isopleth (Isopleth Interval in ppb)

Detection Limit	10 ppb
Washington Water Quality Standard	50 ppb
Drinking Water Standard	50 ppb
Maximum Concentration Limit	50 ppb

N

0 5000 Feet

Figure 4-2. Chromium Plume Map.



Cyanide Plume Map

(200 East Groundwater Aggregate Area)

Legend

20 — Well Location and Concentration (Wells without values have < Detectable Limits)

200 — Concentration Isopleth (Isopleth Interval in ppb)

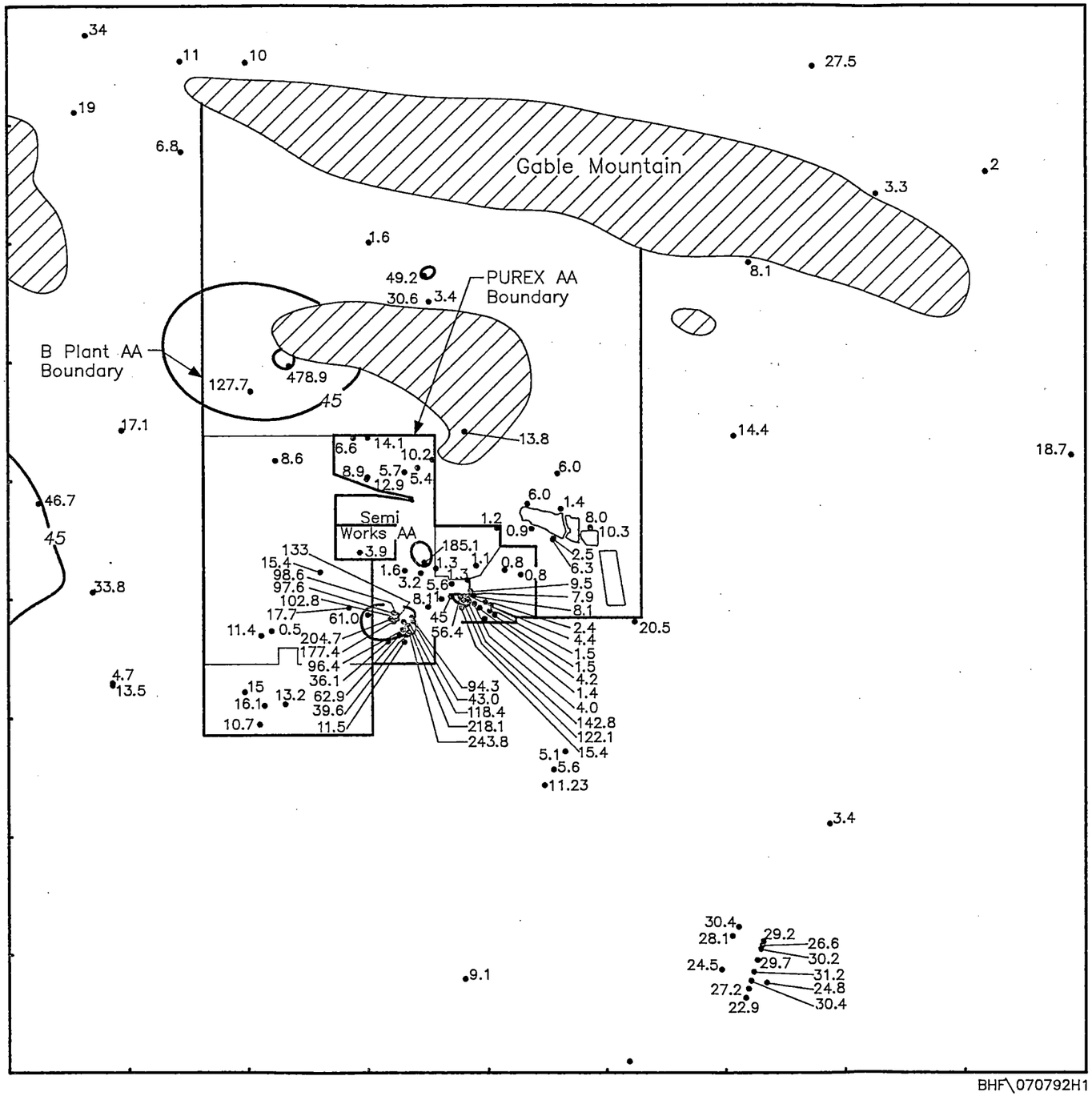
Detection Limit ———— 10 ppb
Drinking Water Standard (Proposed)—200 ppb

-N-

0 — 5000 Feet

Figure 4-3. Cyanide Plume Map.

9413096.0428



Nitrate Plume Map

(200 East Groundwater Aggregate Area)

Legend

•14.4 Well Location and Concentration (Wells without values have < Detectable Limits)

45 Concentration Isopleth (Isopleth Interval in ppm)

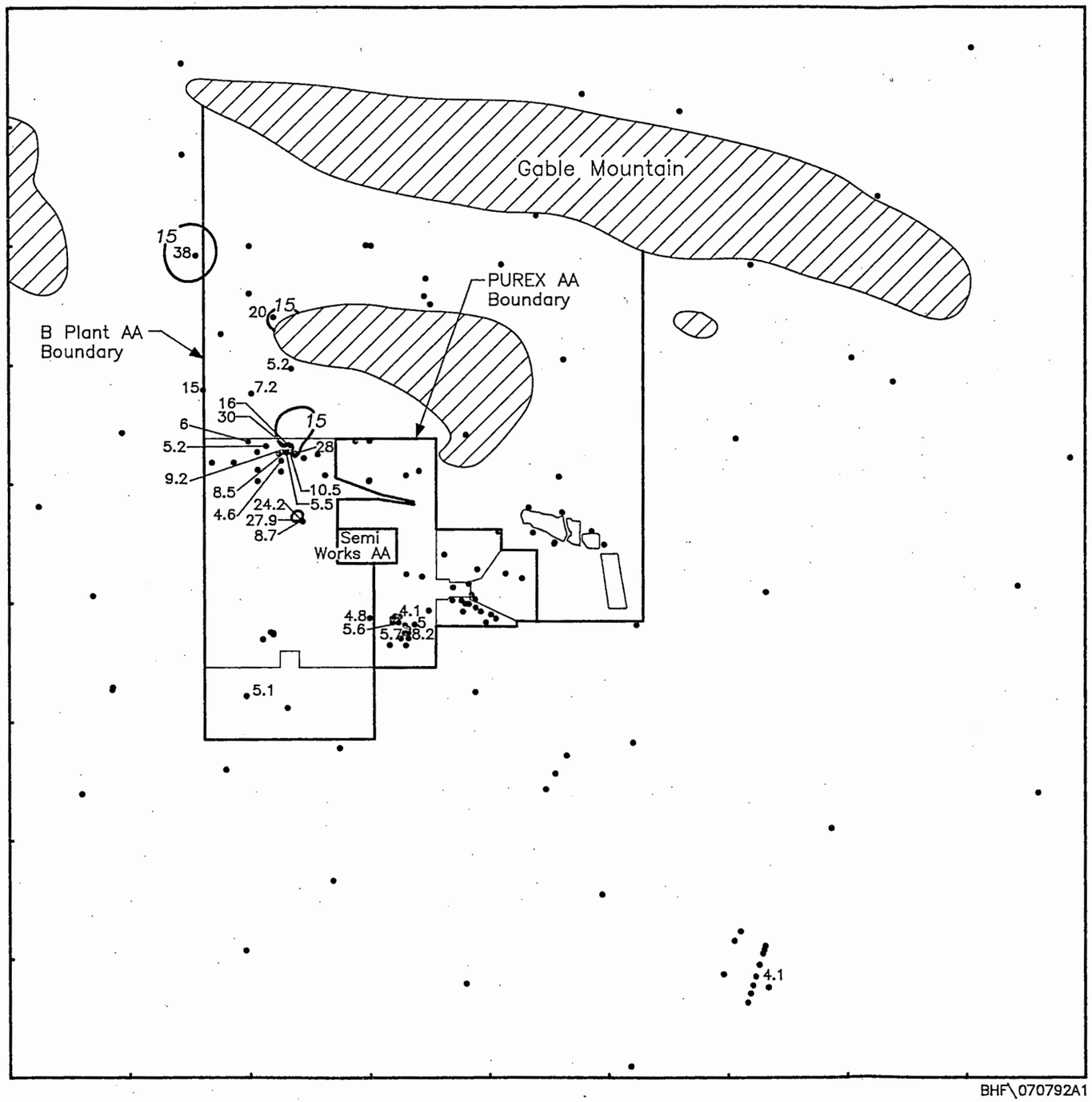
Detection Limit — 0.5 ppb
Drinking Water Standard — 45 ppb
Maximum Concentration Limit — 45 ppb

N

0 5000 Feet

Figure 4-4. Nitrate Plume Map.

9413096.0430



Gross Alpha Plume Map

(200 East Groundwater Aggregate Area)

Legend

4.8 • Well Location and Concentration (Wells without values have < Minimum Detectable Concentration)

15 Concentration Isopleth (Isopleth Interval in pCi/L)

Minimum Detectable Concentration— 4 pCi/L
Drinking Water Standard ————15 pCi/L
Washington Water Quality Standard—15 pCi/L

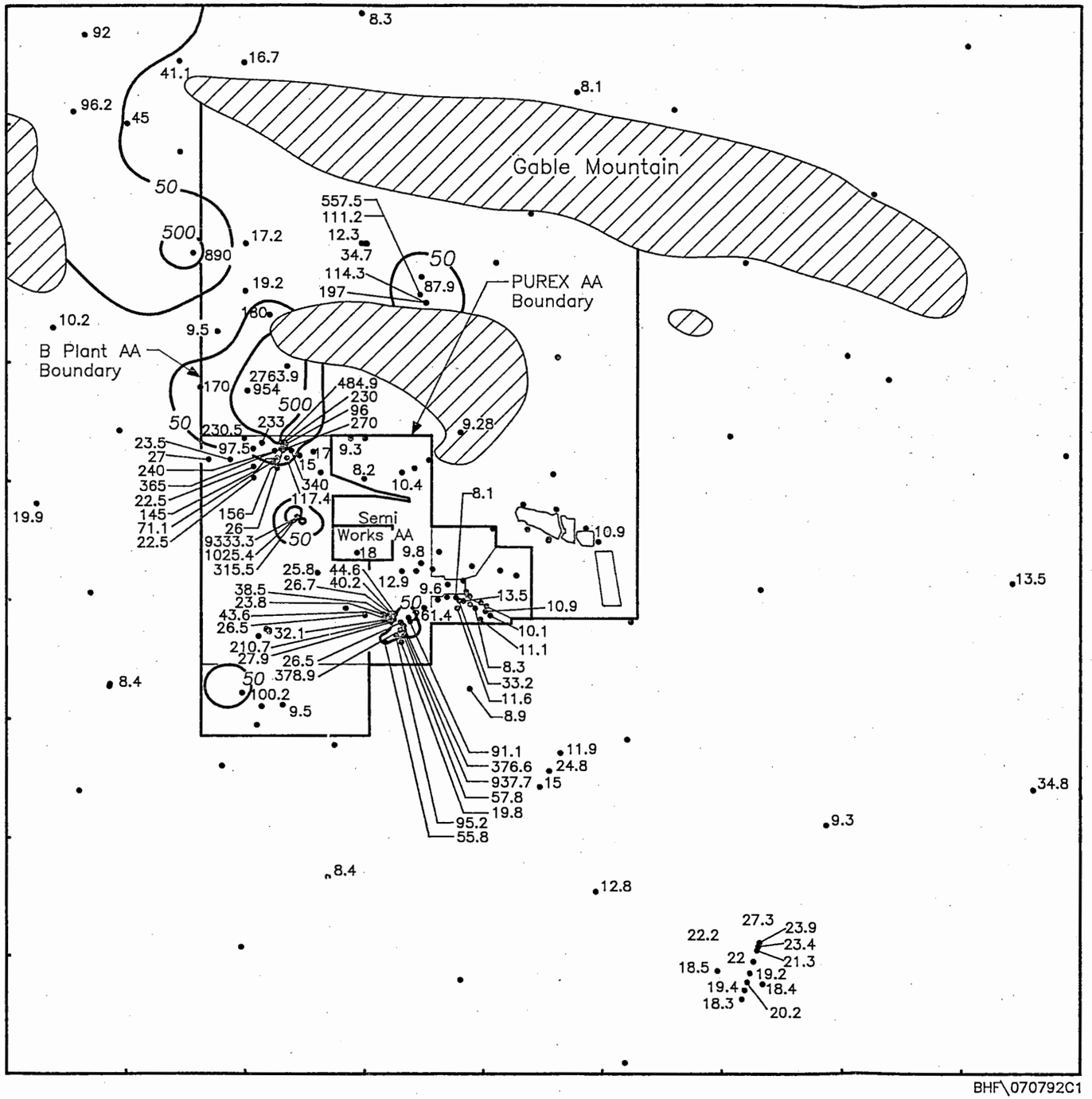
-N-

0 5000 Feet

Figure 4-5. Gross Alpha Plume Map.

Gross Beta Plume Map

(200 East Groundwater Aggregate Area)



Legend

•13.5 Well Location and Concentration (Wells without values have < Minimum Detectable Concentration)

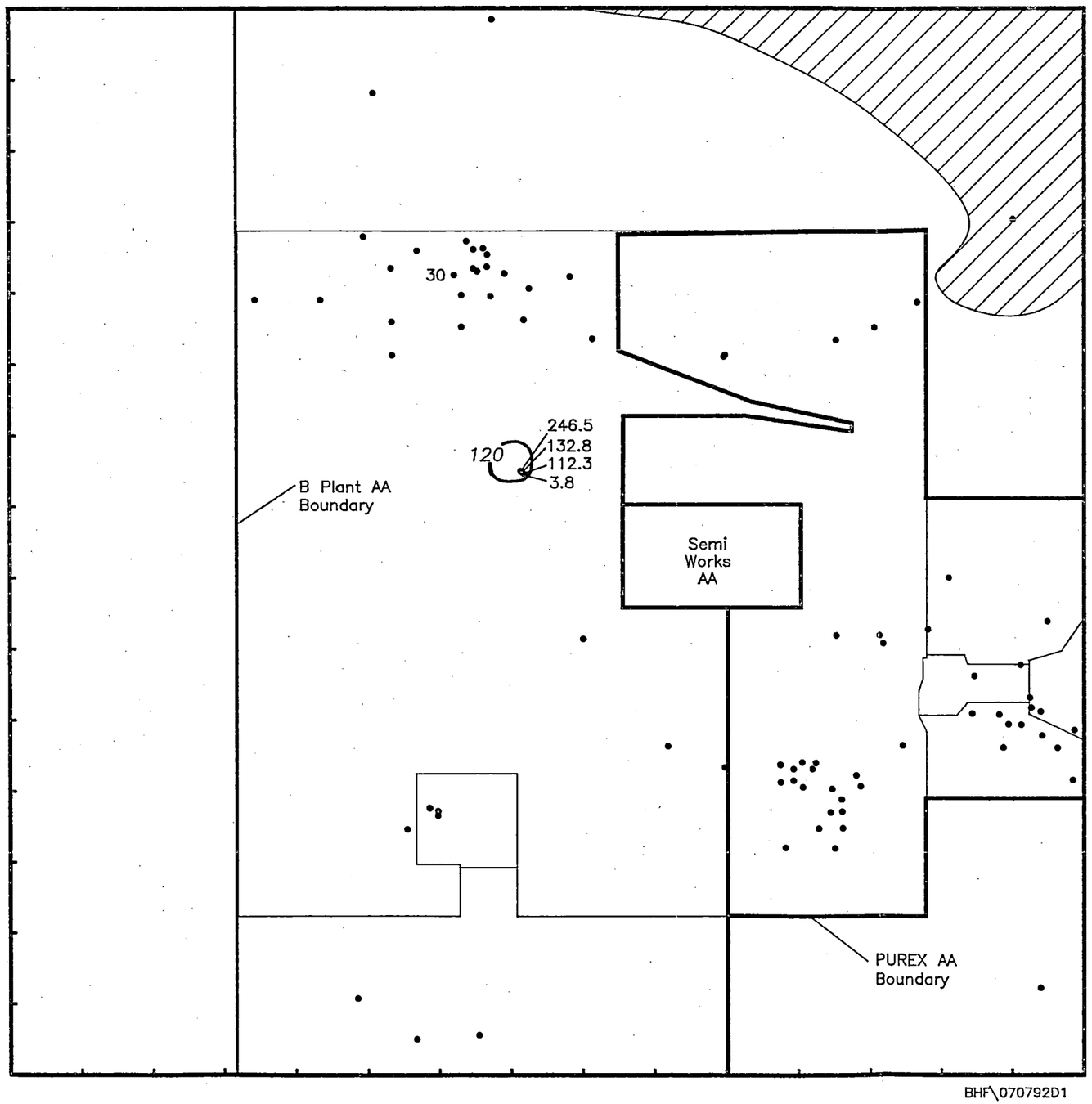
50 Concentration Isopleth (Isopleth Interval in pCi/L)

Minimum Detectable Concentration— 8 pCi/L
Drinking Water Standard ——— 50 pCi/L
Washington Water Quality Standard—50 pCi/L

-N-

0 5000 Feet

Figure 4-6. Gross Beta Plume Map.



Cesium - 137
Plume Map

(200 East Groundwater Aggregate Area)

Legend

30 — Well Location and Concentration (Wells without Values have < Minimum Detectable Concentration)

120 — Concentration Isopleth (Isopleth Interval in pCi/L)

Minimum Detectable Concentration— 20 pCi/L
Drinking Water Standard———— 200 pCi/L
1/25 Derived Concentration Guide— 120 pCi/L

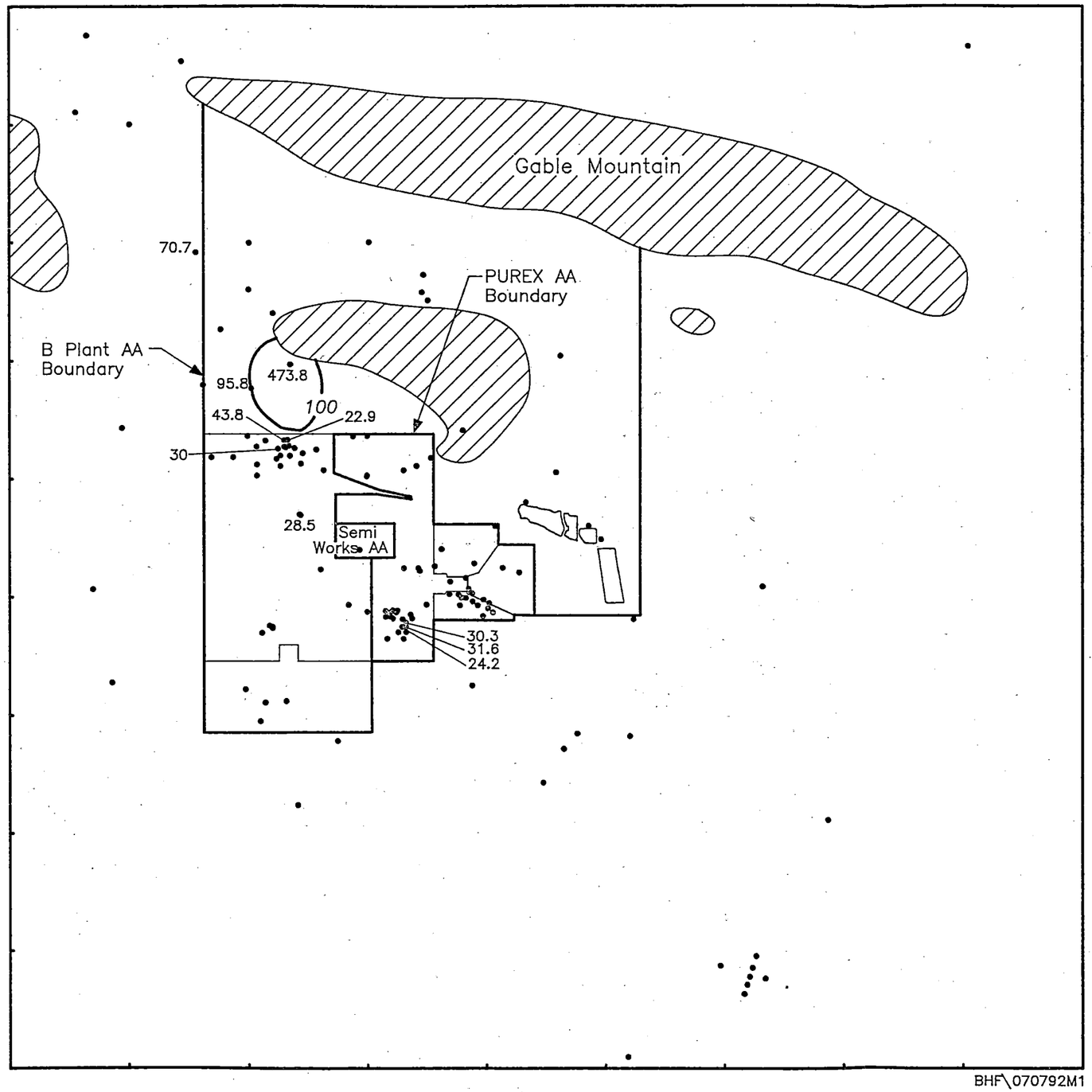
N

0 1000 2000 ft

Figure 4-7. Cesium-137 Plume Map.

Cobalt - 60 Plume Map

(200 East Groundwater Aggregate Area)



Legend

30 • Well Location and Concentration (Wells without values have < Minimum Detectable Concentration)

100 Concentration Isopleth (Isopleth Interval in pCi/L)

Minimum Detectable Concentration—22.5 pCi/L
Drinking Water Standard——————100 pCi/L
1/25 Derived Concentration Guide—200 pCi/L

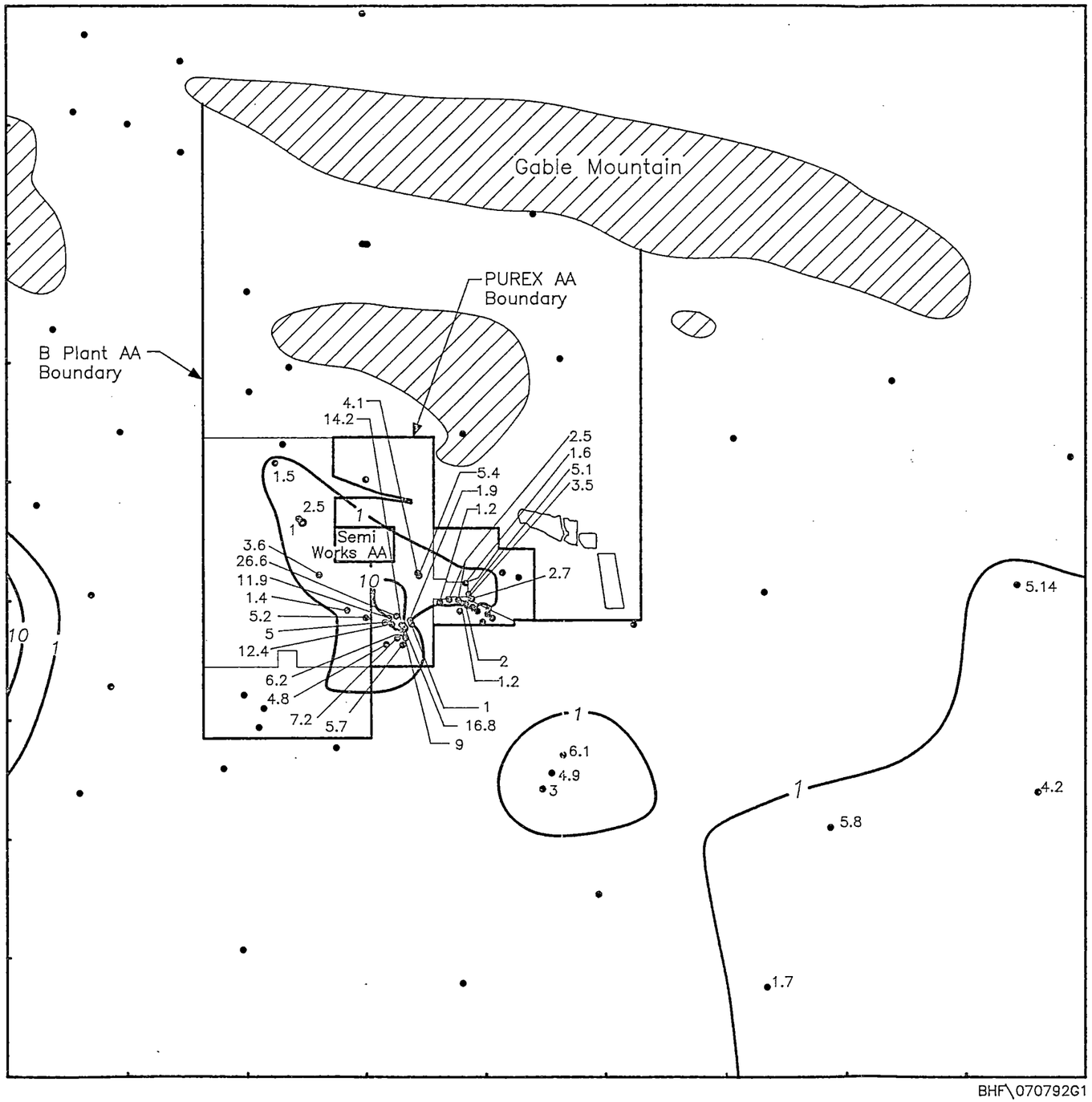
-N-

0 5000 Feet

Figure 4-8. Cobalt-60 Plume Map.

Iodine - 129 Plume Map

(200 East Groundwater Aggregate Area)



BHF\070792G1

Legend

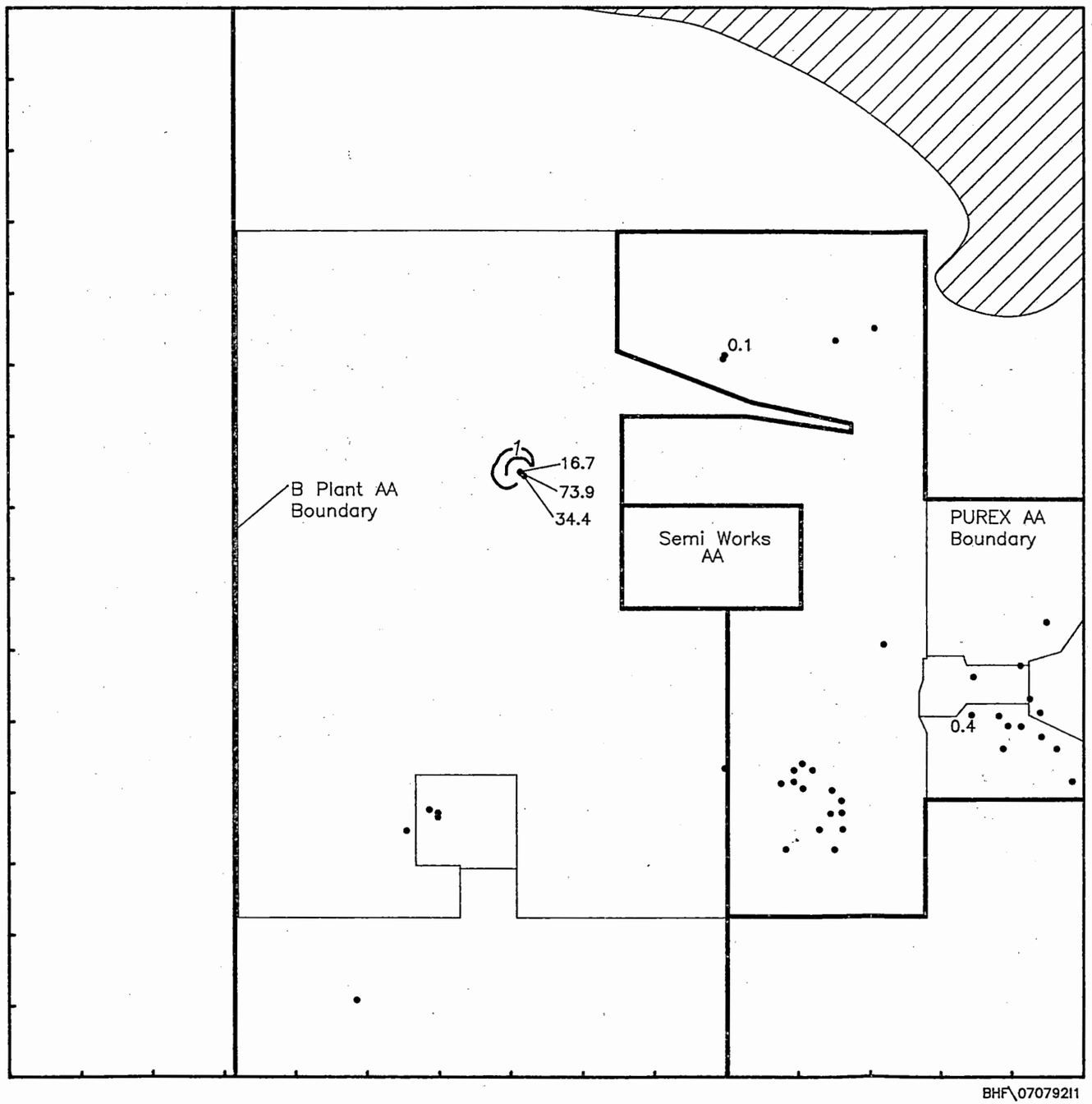
- 6.1 — Well Location and Concentration (Wells without values have < Minimum Detectable Concentration)
- 10 — Concentration Isopleth (Isopleth Interval in pCi/L)

Minimum Detectable Concentration	1 pCi/L
Drinking Water Standard	1 pCi/L
Maximum Concentration Limit	1 pCi/L
1/25 Derived Concentration Guide	20 pCi/L

N

0 — 5000 Feet

Figure 4-9. Iodine-129 Plume Map.



Plutonium - 239/240 Plume Map

(200 East Groundwater Aggregate Area)

Legend

•16.7 Well Location and Concentration (Wells without values have < Minimum Detectable Concentration)

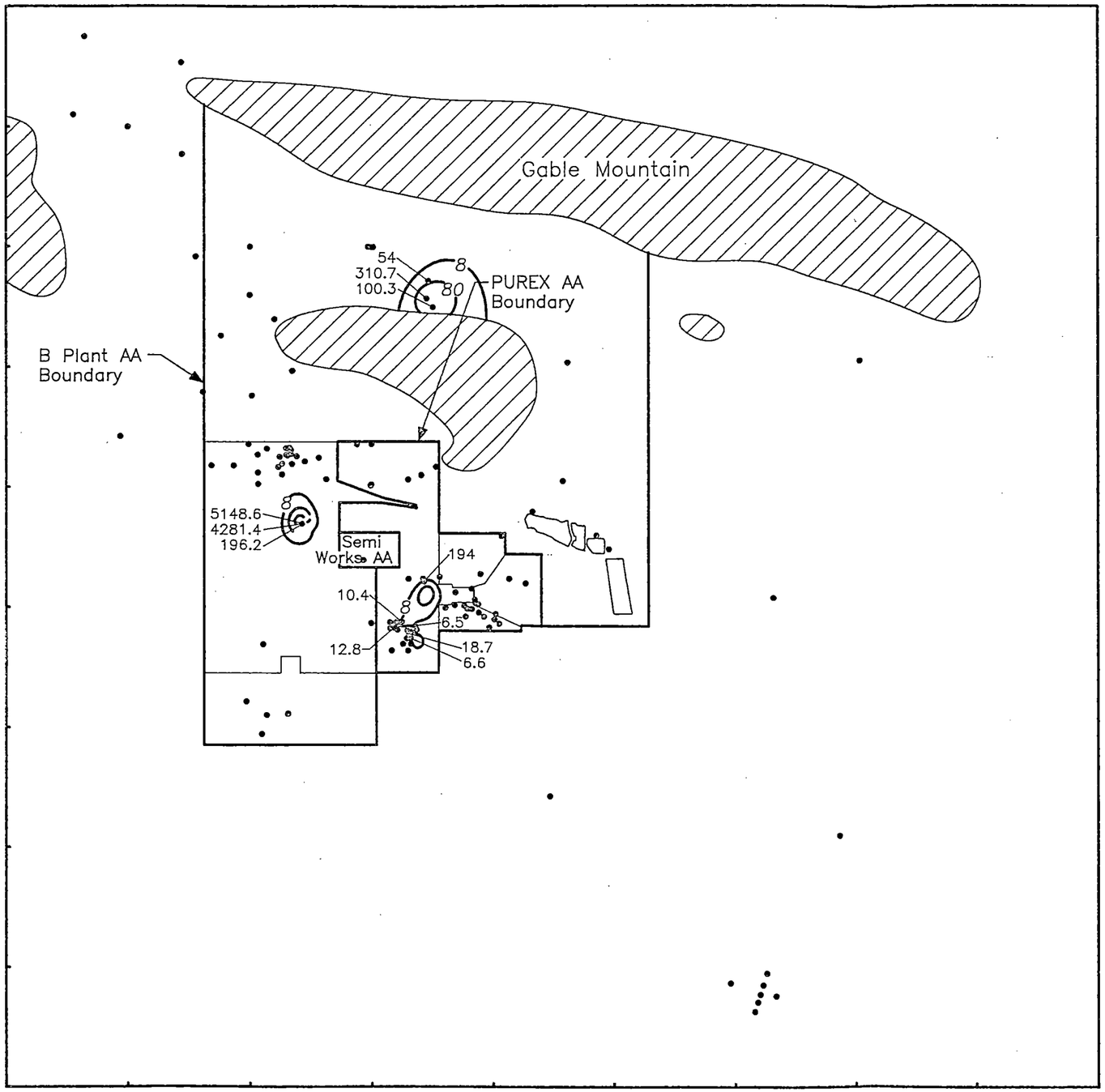
1 Concentration Isopleth (Isopleth Interval in pCi/L)

Minimum Detectable Concentration—0.1 pCi/L
Drinking Water Standard——1 pCi/L
1/25 Derived Concentration Guide——1 pCi/L

N

0 1000 2000 ft

Figure 4-10. Plutonium-239/240 Plume Map.



Strontium - 90
Plume Map
(200 East Groundwater Aggregate Area)

Legend

12.8 Well Location and Concentration (Wells without values have < Minimum Detectable Concentration)

8 Concentration Isopleth (Isopleth Interval in pCi/L)

Minimum Detectable Concentration—5 pCi/L
Washington Water Quality Standard—8 pCi/L
Maximum Concentration Limit———8 pCi/L

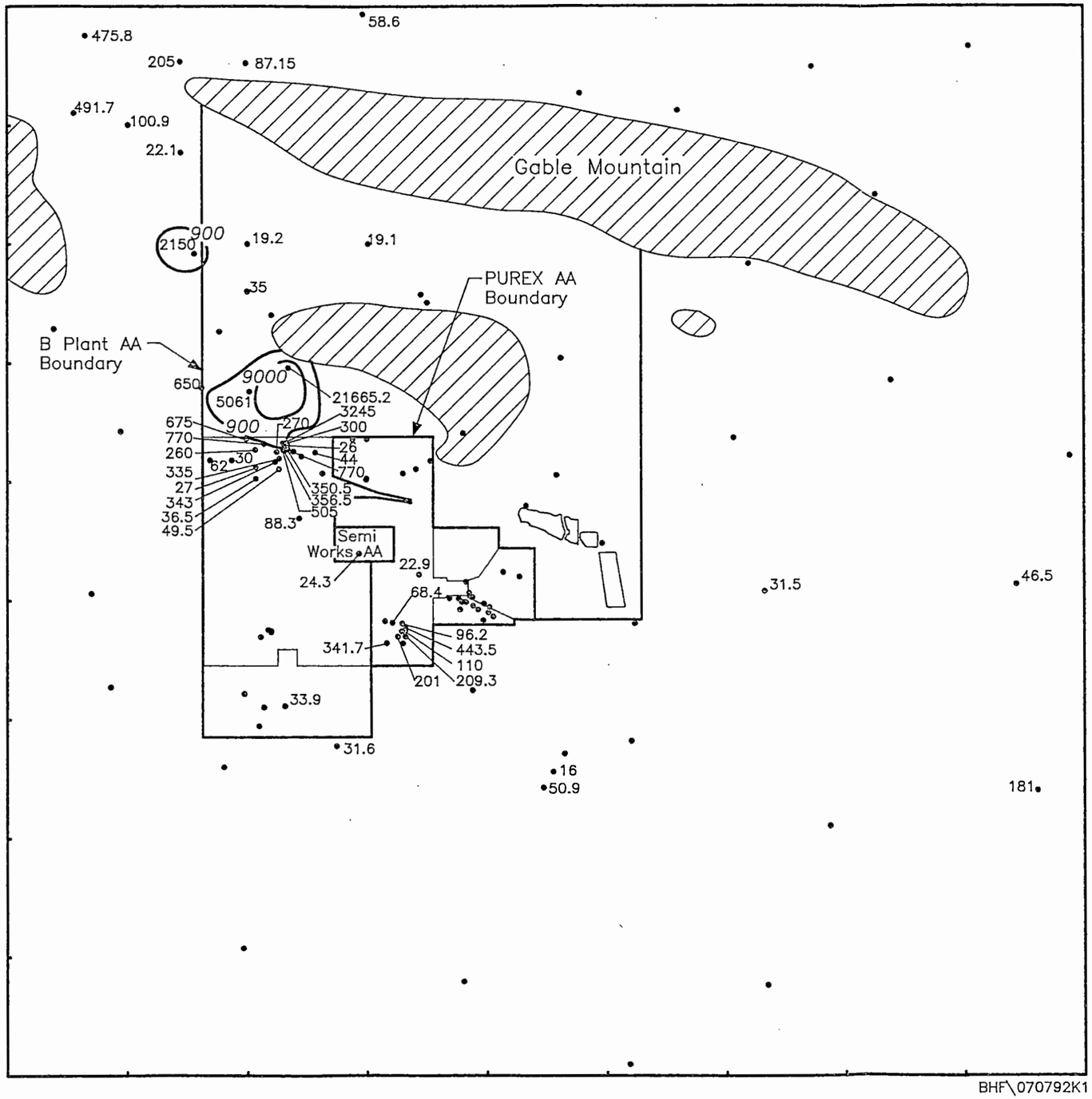
-N-

0 5000 Feet

Figure 4-11. Strontium-90 Plume Map.

Technetium - 99 Plume Map

(200 East Groundwater Aggregate Area)



Legend

46.5 Well Location and Concentration (Wells without values have < Minimum Detectable Concentration)

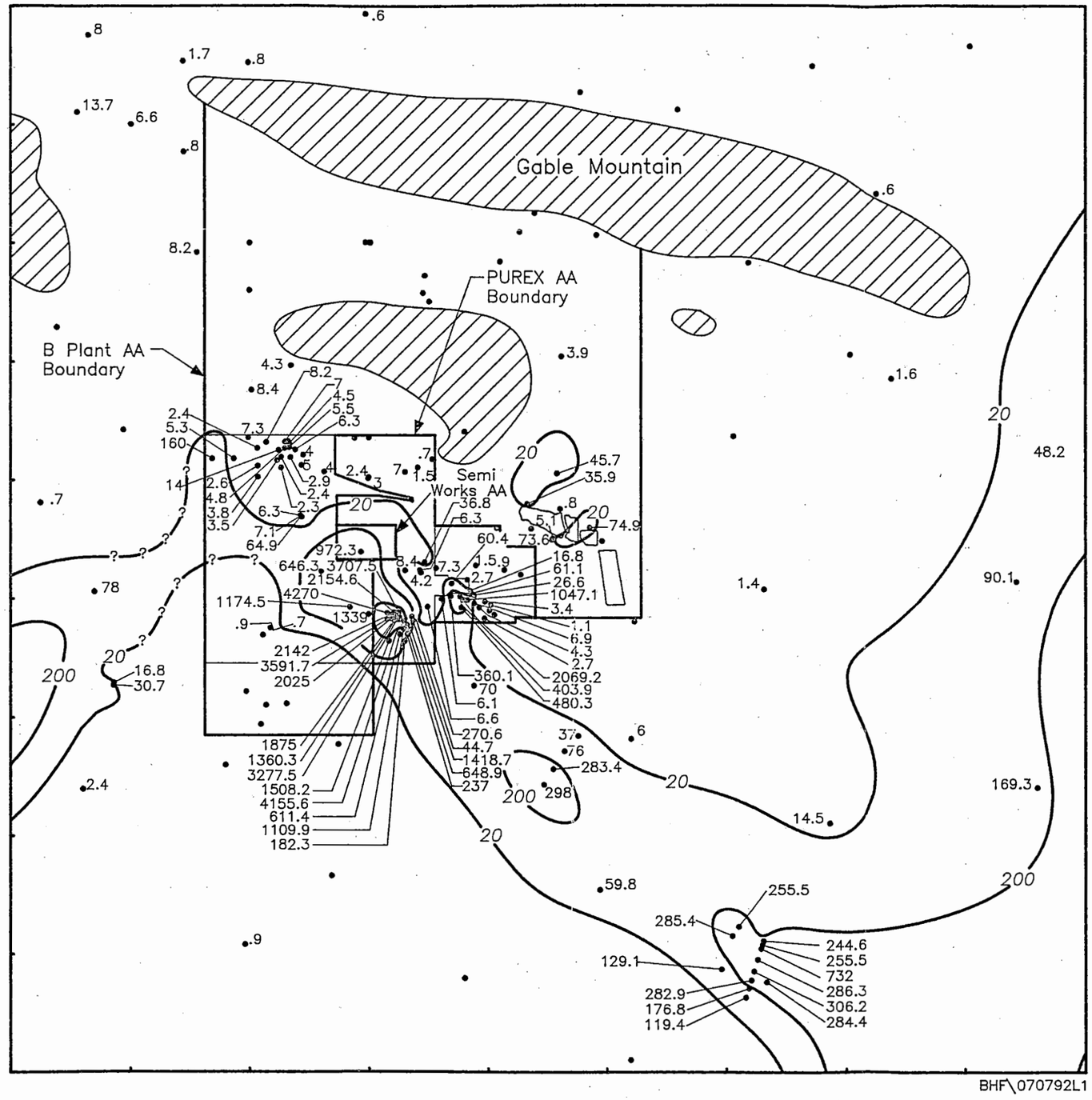
900 Concentration Isopleth (Isopleth Interval in pCi/L)

Minimum Detectable Concentration— 15 pCi/L
Drinking Water Standard ———— 900 pCi/L
Maximum Concentration Limit——— 900 pCi/L
1/25 Derived Concentration Guide—4000 pCi/L

-N-

0 5000 Feet

Figure 4-12. Technetium-99 Plume Map.



Tritium Plume Map

(200 East Groundwater Aggregate Area)

Legend

90.1 • Well Location and Concentration (Wells without values have < Minimum Detectable Concentration)

20 — Concentration Isopleth (Isopleth Interval in nCi/L)

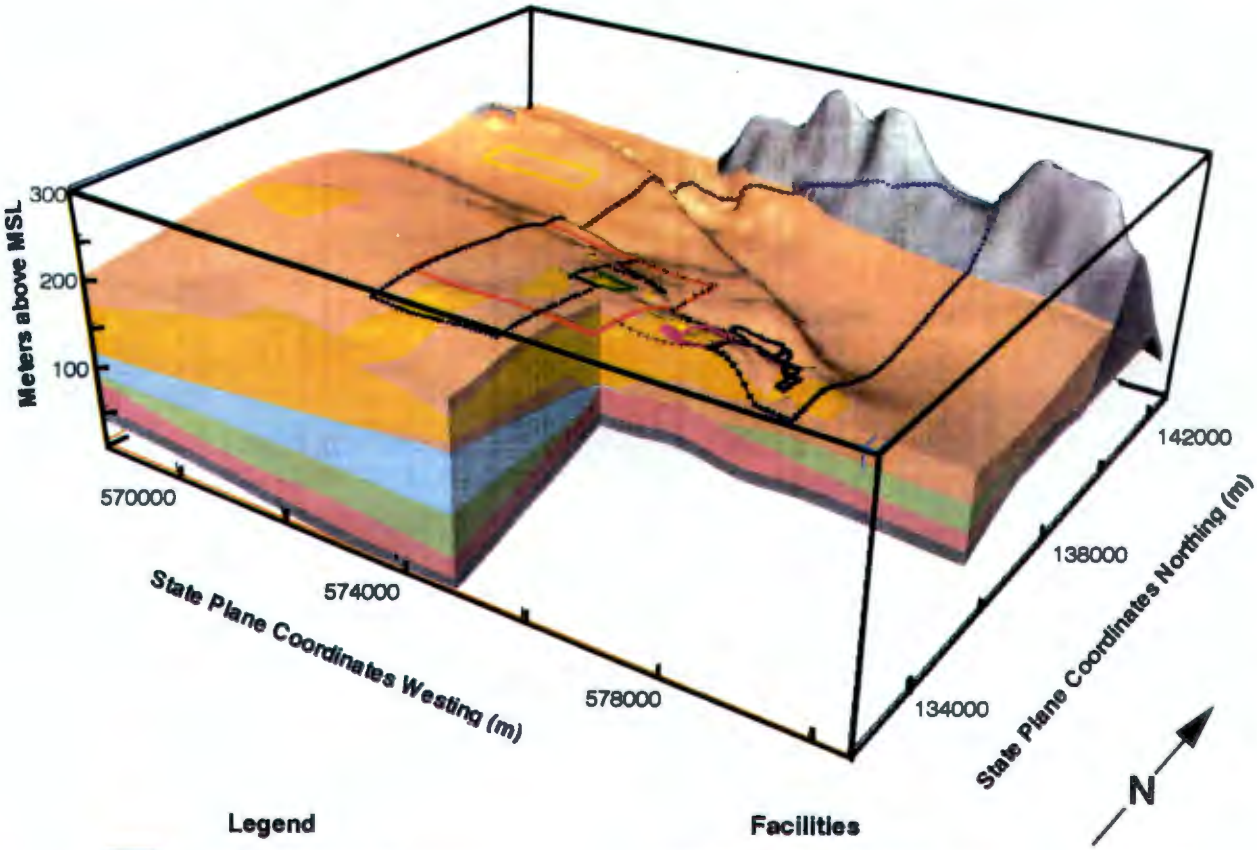
Minimum Detectable Concentration — 0.5 nCi/L
Drinking Water Standard — 20 nCi/L
Maximum Concentration Limit — 20 nCi/L
Washington Water Quality Standard — 20 nCi/L
1/25 Derived Concentration Guide — 80 nCi/L

-N-

0 5000 Feet

Figure 4-13. Tritium Plume Map.

Figure 5-1. Geologic Model for 200 East Groundwater Aggregate Area.



Legend

- Hanford Gravels*
- Hanford Sand Sequence
- Ringold Gravel Unit E
- Ringold Lower Mud Unit
- Ringold Gravel Unit A
- Basalt

Facilities

- 200 East Area
- B Plant AA & B-Pond
- Purex AA
- Grout Test Facility
- Semi-Works AA
- 200 North AA

*This includes upper, lower, and undifferentiated Hanford gravels

9413096.0439

Figure 5-2. Unsaturated and Saturated Hanford Sand Sequence.

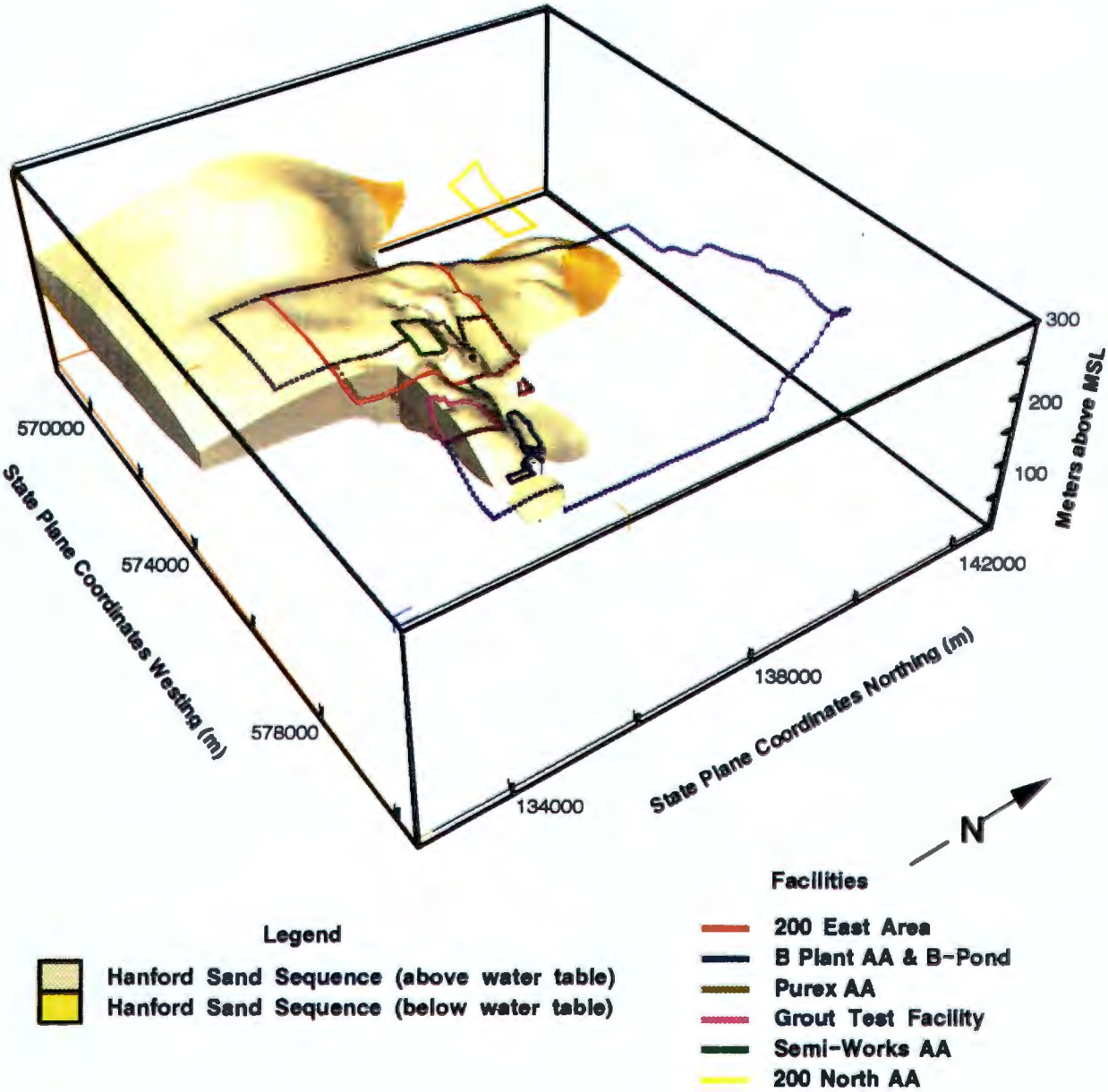
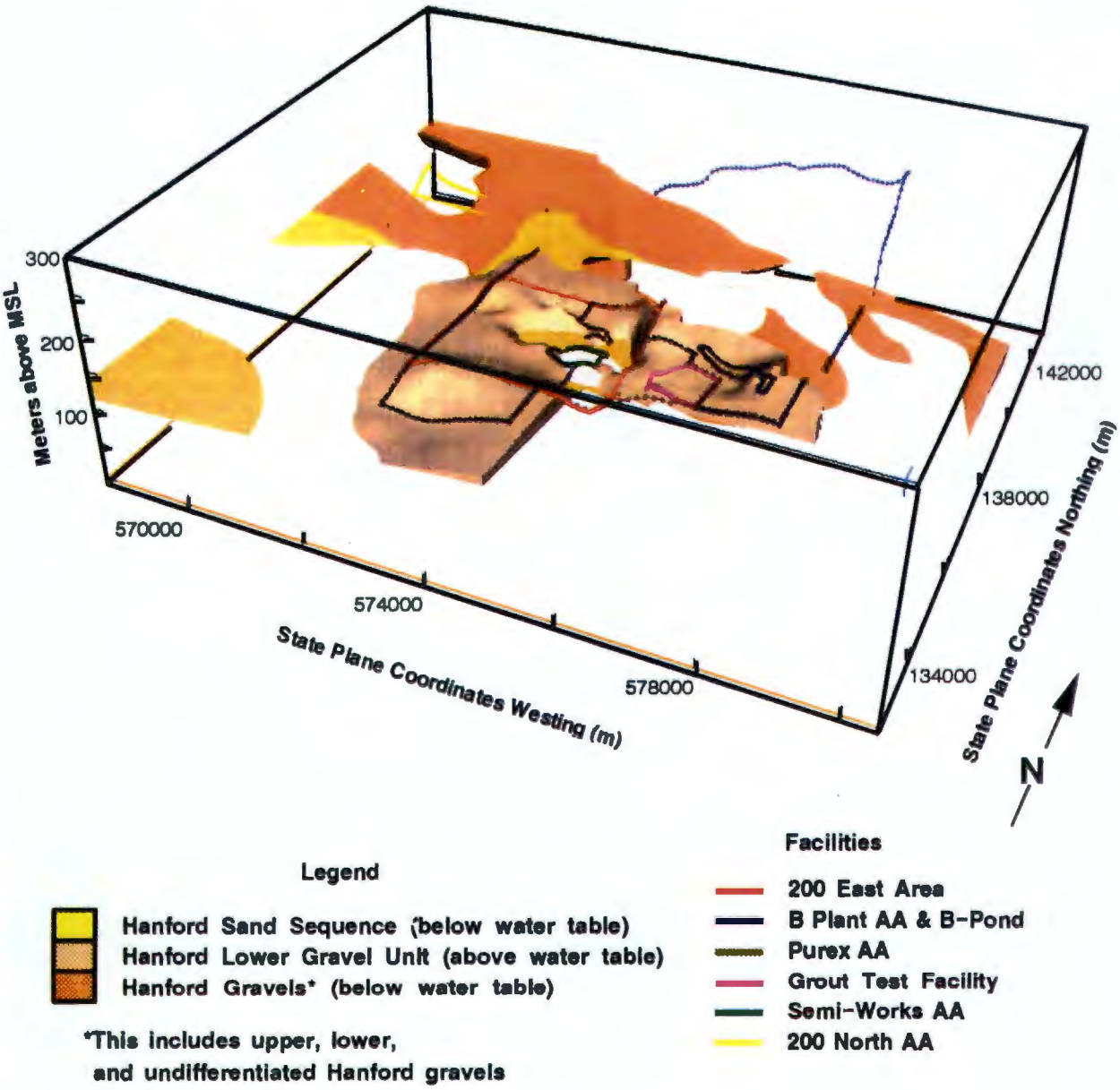
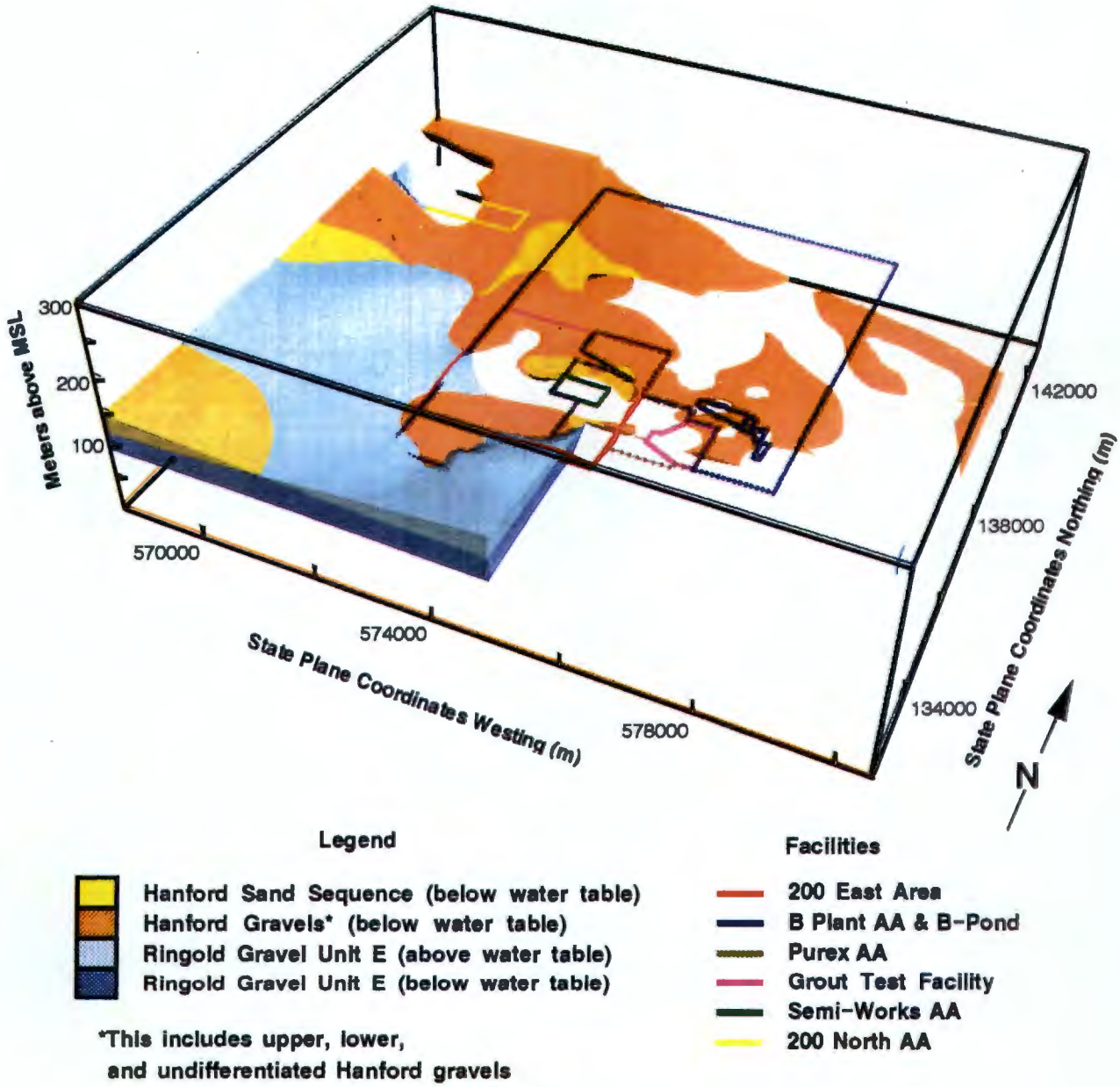


Figure 5-3. Unsaturated Hanford Lower Gravel Unit, Saturated Hanford Gravels, and Saturated Hanford Sand Sequence.



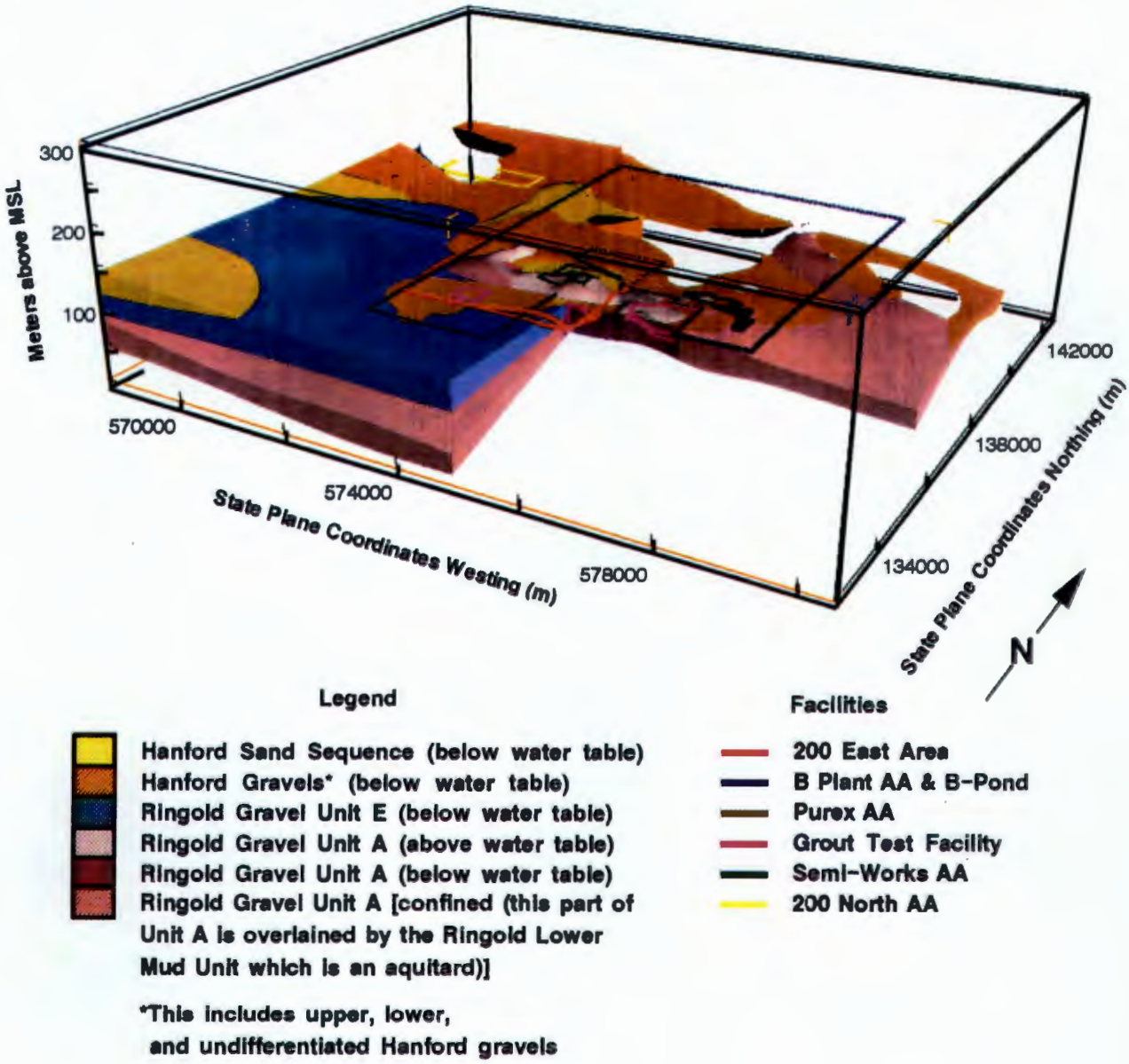
9413096.0941

Figure 5-4. Unsaturated and Saturated Ringold Gravel Unit E and Overlying Saturated Units.



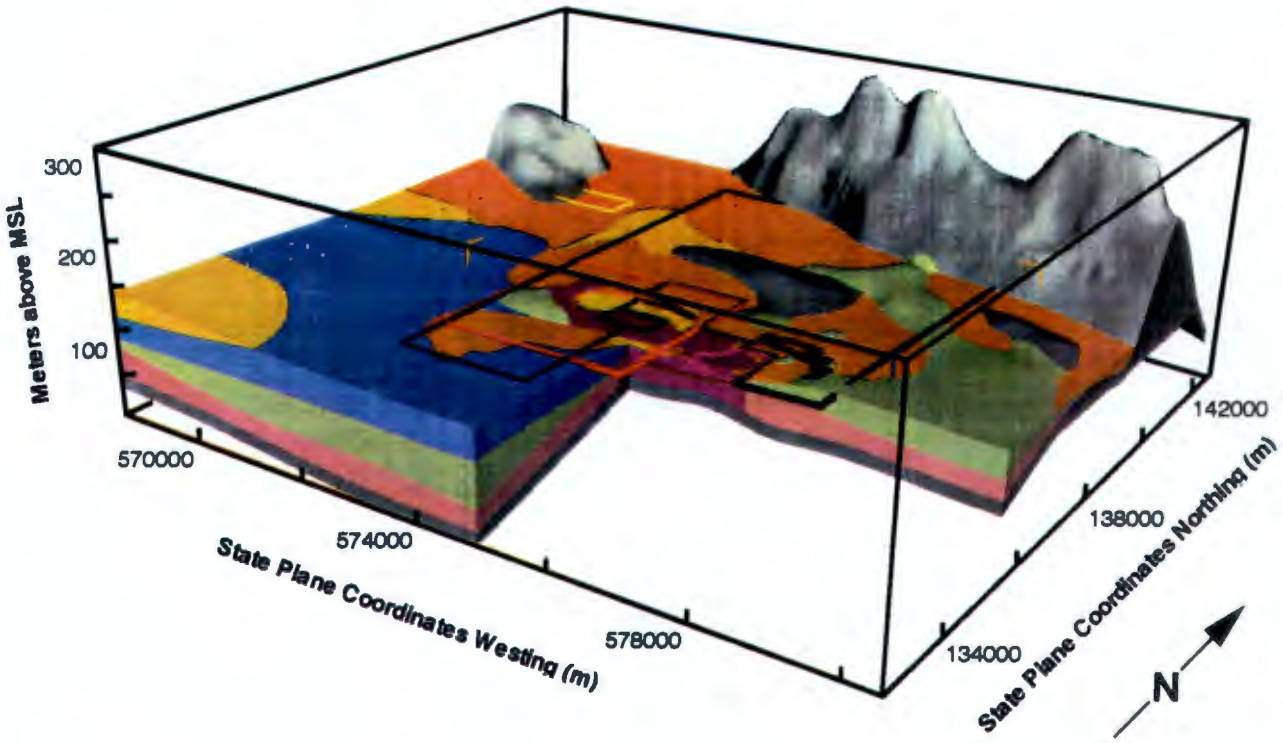
9413096.0942

Figure 5-5. Unsaturated and Saturated Ringold Gravel Unit A and Overlying Saturated Units.



9413030596.0443

Figure 5-6. Unsaturated and Saturated Ringold Gravel Unit A, Overlying Saturated Units, Ringold Lower Mud Unit and Basalt.



Legend

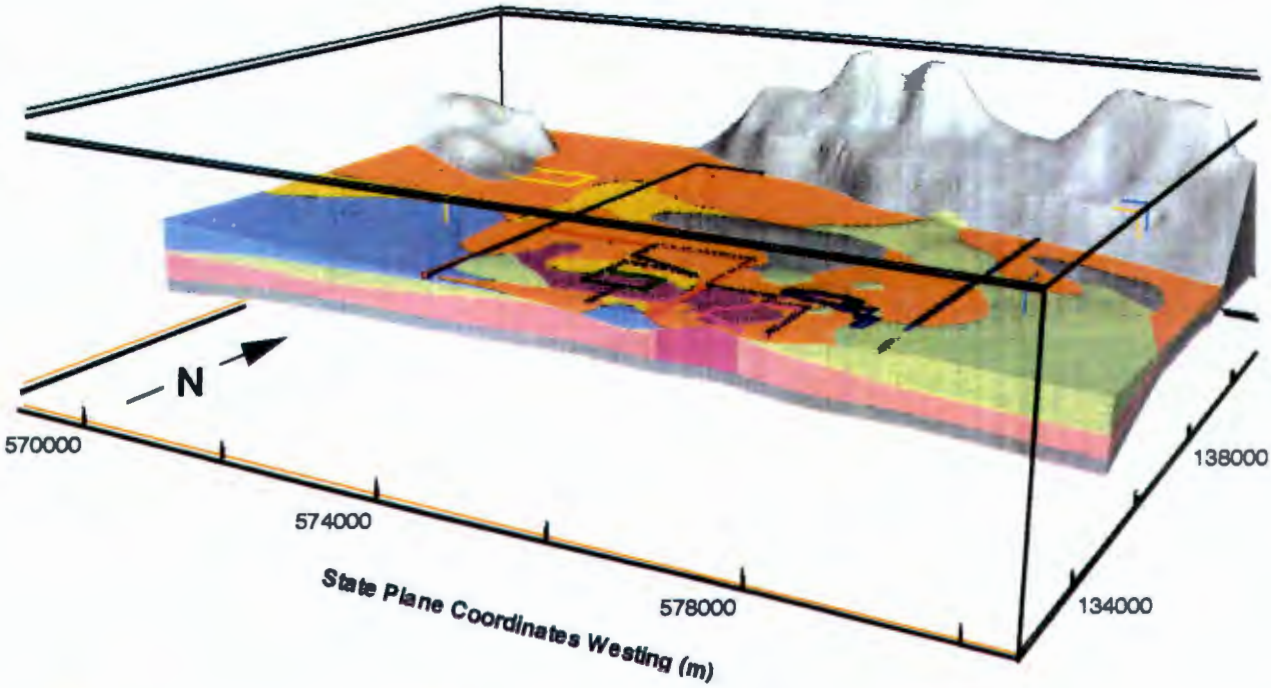
- Hanford Sand Sequence (below water table)
- Hanford Gravels* (below water table)
- Ringold Gravel Unit E (below water table)
- Ringold Gravel Lower Mud Unit
- Ringold Gravel Unit A (below water table)
- Ringold Gravel Unit A [confined (this part of Unit A is overlained by the Ringold Lower Mud Unit which is an aquitard)]

*This includes upper, lower, and undifferentiated Hanford gravels

Facilities

- 200 East Area
- B Plant AA & B-Pond
- Purex AA
- Grout Test Facility
- Semi-Works AA
- 200 North AA

Figure 5-7. Geologic Block Diagram with Section South of B Pond.



Legend

- Hanford Sand Sequence (below water table)
- Hanford Gravels* (below water table)
- Ringold Gravel Unit E (below water table)
- Ringold Gravel Lower Mud Unit
- Ringold Gravel Unit A (below water table)
- Ringold Gravel Unit A (confined by Lower Mud)
- Basalt (thickness depicted is not true)

Facilities

- 200 East Area
- B Plant AA & B-Pond
- Purex AA
- Grout Test Facility
- Semi-Works AA
- 200 North AA

*This includes upper, lower, and undifferentiated Hanford gravels

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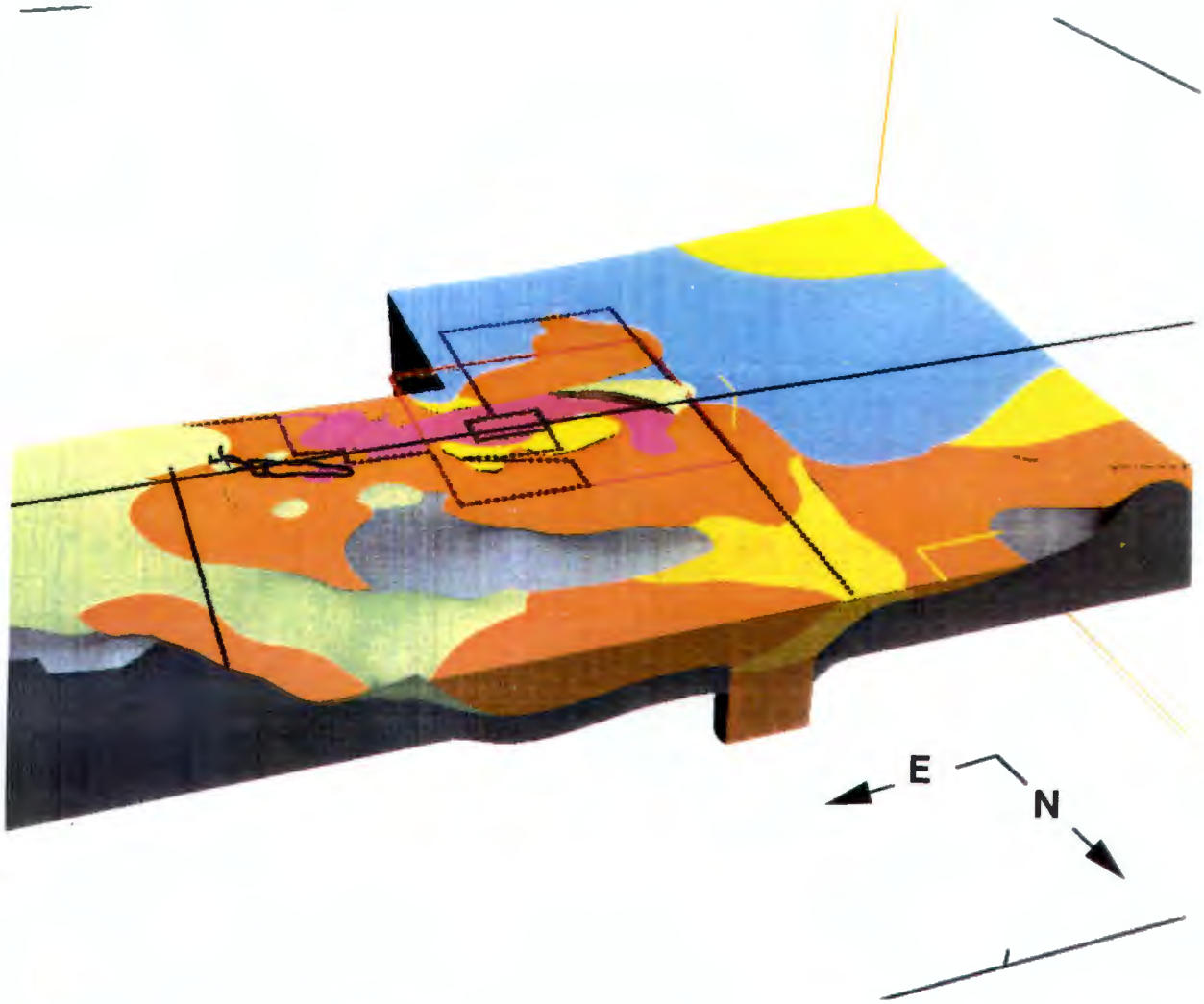
Figure 5-8. Geologic Block Diagram with Section Through Erosional Window.



Legend

- Hanford Sand Sequence (below water table)
- Hanford Gravels* (below water table)
- Ringold Gravel Unit E (below water table)
- Ringold Gravel Lower Mud Unit
- Ringold Gravel Unit A (below water table)
- Basalt (thickness depicted is not true)

*This includes upper, lower, and undifferentiated Hanford gravels

Facilities

- 200 East Area
- B Plant AA & B-Pond
- Purex AA
- Grout Test Facility
- Semi-Works AA
- 200 North AA

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Figure 5-9. Top of Basalt.

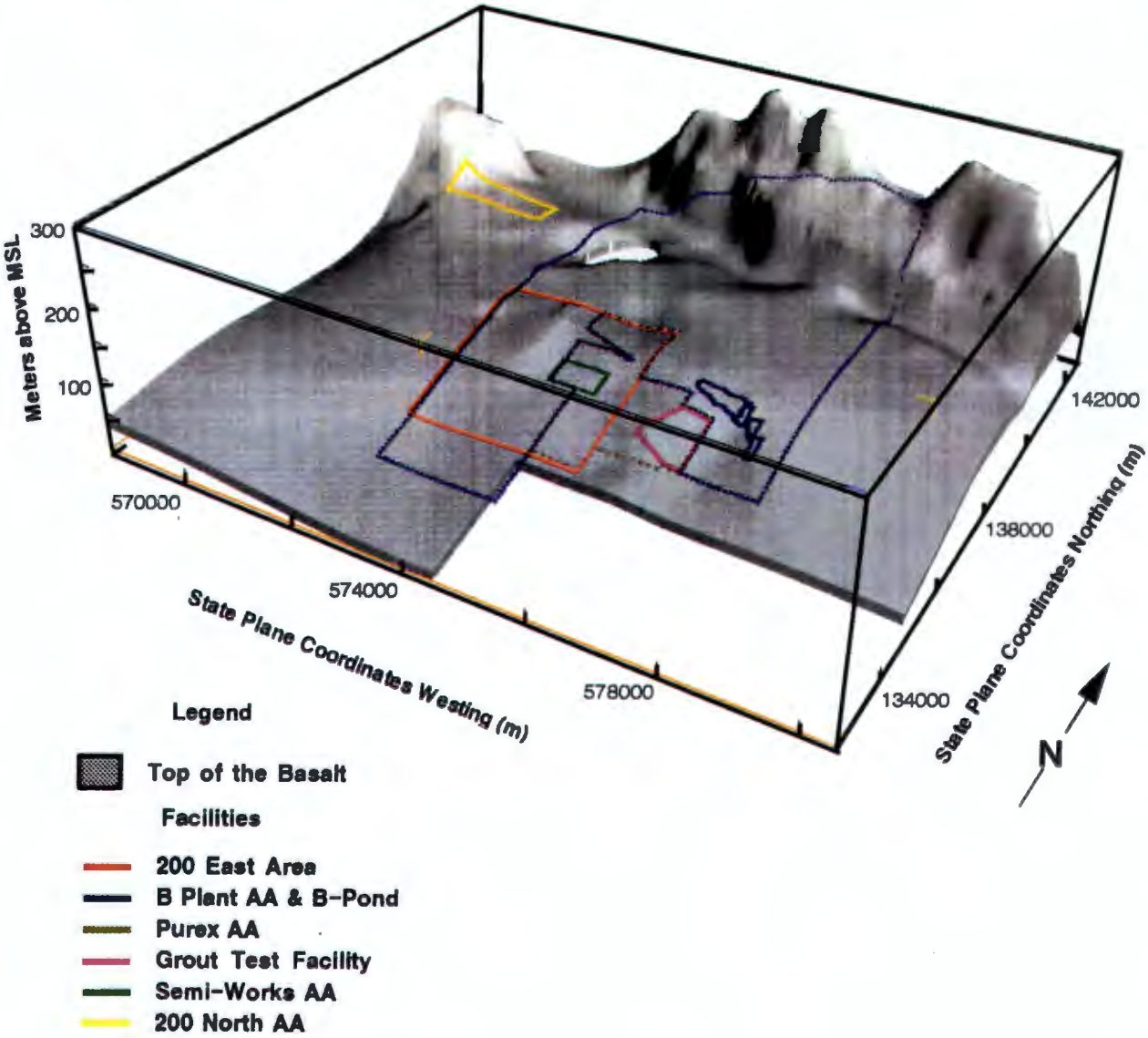

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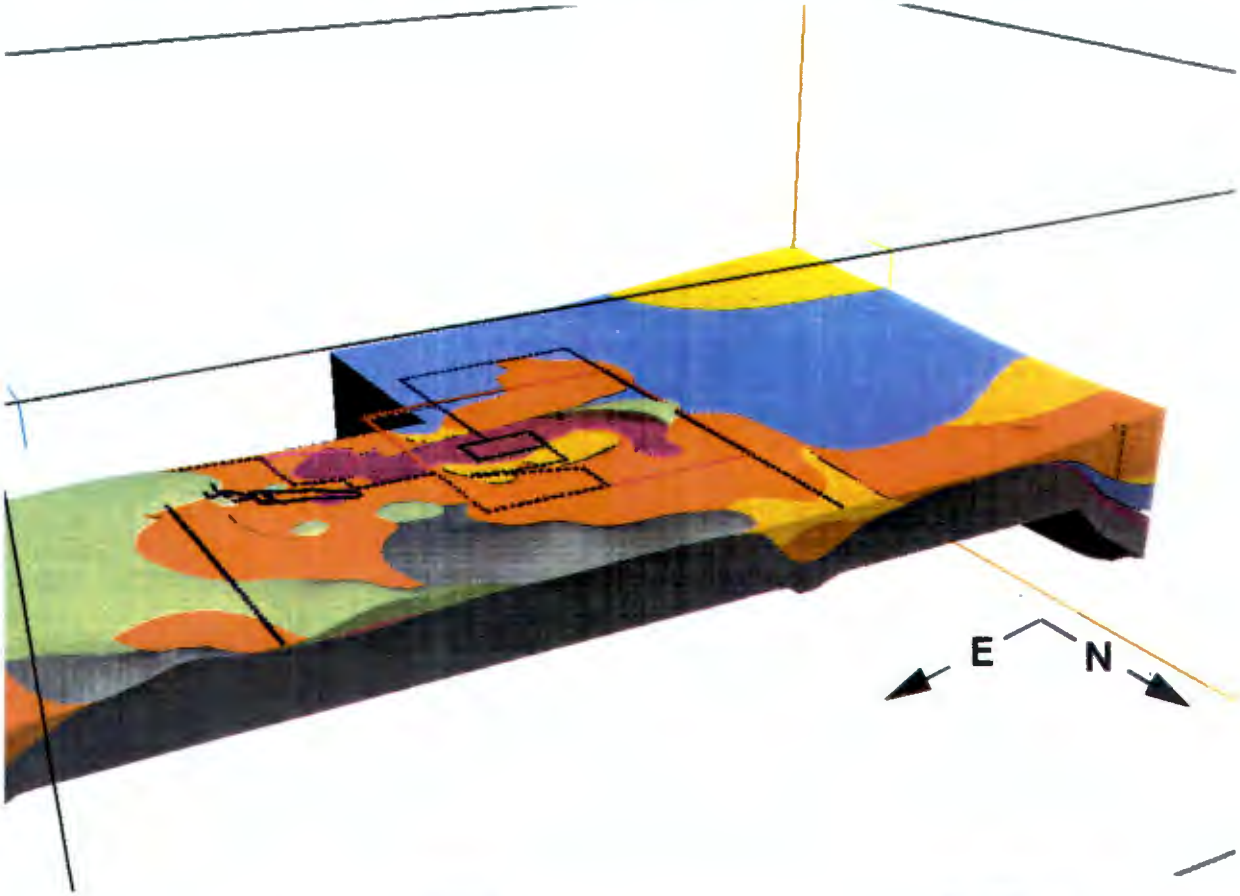
Figure 5-10. Geologic Block Diagram with Section Through Basalt High.



Legend

- Hanford Sand Sequence (below water table)
- Hanford Gravels* (below water table)
- Ringold Gravel Unit E (below water table)
- Ringold Gravel Lower Mud Unit
- Ringold Gravel Unit A (below water table)
- Basalt (thickness depicted is not true)

Facilities

- 200 East Area
- B Plant AA & B-Pond
- Purex AA
- Grout Test Facility
- Semi-Works AA
- 200 North AA

*This includes upper, lower, and undifferentiated Hanford gravels

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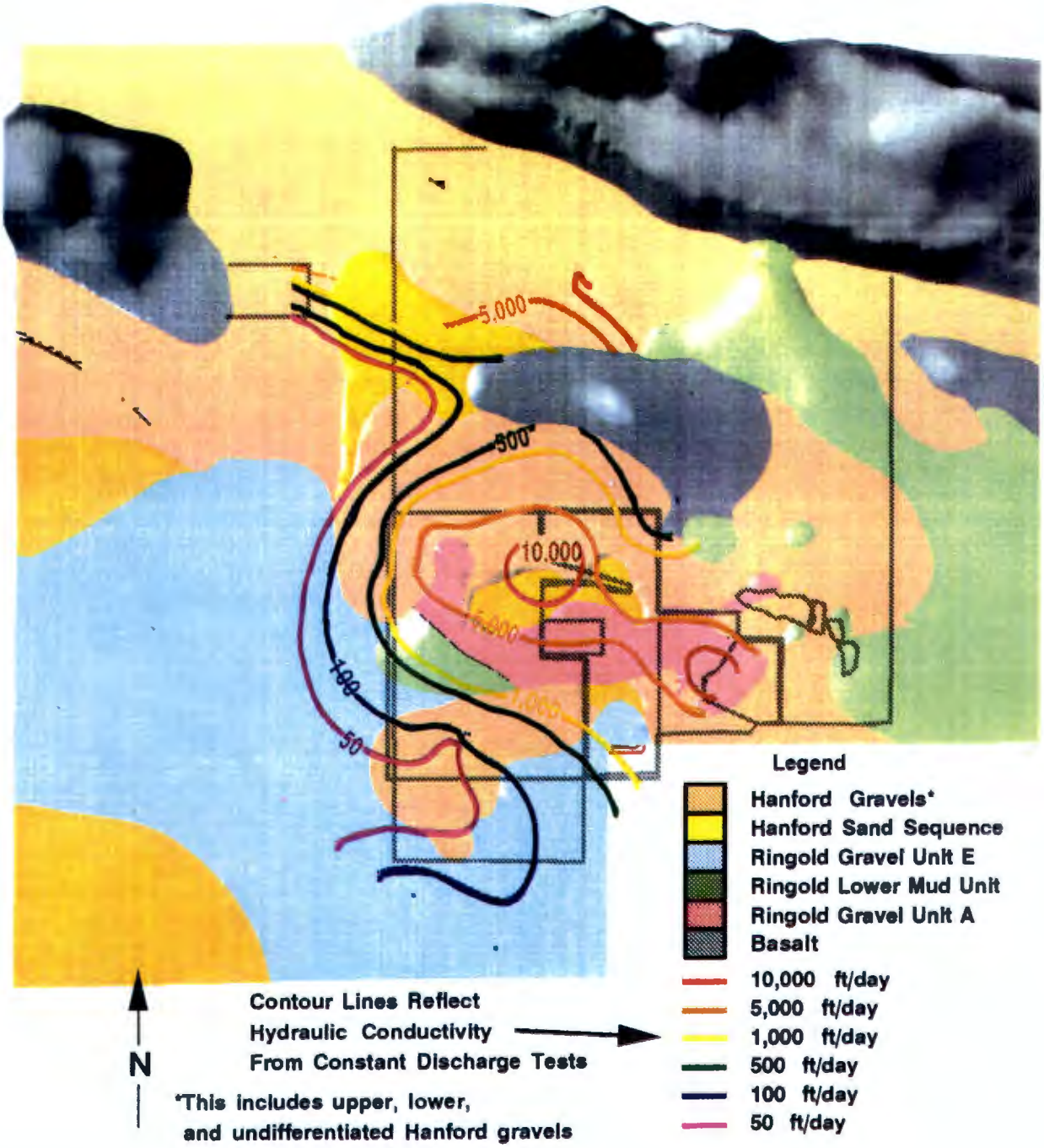
Figure 5-11. Geology at the Water Table with Hydraulic Conductivity Contours of the Upper Uppermost Aquifer System.



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