which has been updated and is also provided in Attachment 11. As seen on Table 812.314-1, the calculated mean hydraulic conductivities for the Lower Radnor Till Sand and the Organic Soil have slightly decreased with the addition of this data.

Quarterly measurements of the potentiometric surface was and currently is routinely conducted at the facility. Table 812.314-7 (previously submitted in Log No. 2005-070) has been updated to include potentiometric data collected since the submittal of the previously approved permit application. Updated Table 812.314-7 is contained in Attachment 12. Groundwater hydrographs for each well was supplied in Appendix 812.314-F of Log No. 2005-070. These groundwater hydrographs have been updated and are included in Attachment 12 of this application. In addition, potentiometric contour maps for each zone for the 1st quarter 2004 through the 4th quarter 2004 were supplied in the previously approved permit application submitted under Log No. 2005-070 as Figures 812.314-23 through 812.314-34. These are being supplemented with Figures 812.314-35 through 812.314-46, which provide updated potentiometric contour maps for each zone for the 1st quarter 2007 through the 4th quarter 2007. Figures 812.314-35 through 812.314-46 are provided in Attachment 12. Furthermore, flow velocities for each zone for each quarter, calculated from the potentiometric data from 2004, were supplied in Table 812-314-8 of Log No. 2005-070. New Table 812.314-9, included in Attachment 12, provides flow velocities based on data collected in 2007.

SECTION 812.315 – PLUGGING AND SEALING OF DRILL HOLES

The approved permit application previously submitted under Log No. 2005-070 provided a description of the techniques and materials that will be used to plug and seal drill holes in accordance with 35 Ill. Adm. Code Part 811.316. No changes are proposed to the previously approved methods.

SECTION 812.316 – RESULTS OF THE GROUNDWATER IMPACT ASESSMENT

812.316.1 Introduction

The approved permit application previously submitted under Log No. 2005-070 provided a detailed groundwater impact assessment (GIA) of Clinton Landfill No. 3. The application provided documentation of the contaminant transport models used for the assessment, all data and input used in the modeling, sensitivity analyses of the effects of changes in the model's input parameters and model results, predicted concentrations versus time and distance profiles, documentation showing the reliability of the model, and documentation demonstrating the validity of all model parameters and assumptions. The application also included a written evaluation of the assessment demonstrating that the facility will not negatively effect groundwater quality and meets the requirements of 35 Ill. Adm. Code Part 811.317.

The approved GIA models the performance of Clinton Landfill No. 3 as a Municipal Solid Waste (MSW) Landfill. The MSW Unit design, operating procedures and expected leachate characteristics remain as modeled by the approved GIA and, therefore, the approved GIA results apply to the MSW Unit. However, the CWU design, operating procedures and expected leachate characteristics differ from those previously modeled. For this reason, a separate GIA has been conducted for the CWU and is documented in the following sections of this application.

A GIA was not performed for the Upper Radnor Till Sand for the CWU. The proposed design for the facility calls for the installation of a minimum, 20-foot wide cutoff trench to be installed at the toe of the landfill invert sidewalls to restrict lateral migration in the Upper Radnor Till Sand unit (see Drawing Nos. P-EX1 and P-EX2, included with the approved application previously submitted under Log No. 2005-070). This cut-off trench, or keyway, was modeled for the MSW unit to determine if lateral migration of contaminants will occur through the keyway. For purposes of the MSW study, it was very conservatively assumed that complete liner failure had occurred and that full-strength leachate is present in the Upper Radnor Till Sand directly beneath the landfill invert. The maximum surrogate concentration at the downgradient edge of the zone of attenuation at the end of the 145-year assessment period predicted by the Upper Radnor Till Sand baseline model for the MSW unit was 2.929×10^{-4} when a porosity of 0.05 was used. The maximum surrogate concentration at the downgradient edge of the zone of attenuation at the end of the 135-year assessment period predicted by the Upper Radnor Till Sand baseline model for the MSW unit was 1.585×10^{-4} when a porosity of 0.05 in the Upper Radnor Till Sand was used. Using this same assumption for the CWU would result in the same results as this model essentially neglects the effect of the landfill liner.

A demonstration GIA was also not performed for the Mahomet Sand. The demonstration model for the Mahomet Sand used the MSW site liner system, which is comprised of 60 mil HDPE liner and three feet of compacted clay is based on a Darcy Velocity through the liner system of 3.515×10^{-3} meters per year (m/a). The results of this previous modeling revealed a maximum surrogate concentration in the Mahomet Sand Unit at the end of the 145-year assessment of 2.014×10^{-14} when a porosity of 0.05 was used for the Mahomet Sand Unit. The maximum surrogate concentration predicted in the Mahomet

Sand Unit at the end of the 135-year assessment was 5.691 x 10^{-15} when a porosity of 0.05 was used. As described in Section 812.316.7 of this application, the Darcy Velocity through the CWU liner system is three orders of magnitude less than that for the MSW liner system. As a result, the modeling results for the MSW can be conservatively applied to the CWU, and additional demonstration modeling efforts were not conducted for the Mahomet Sand.

812.316.2 Site Geology Summary

A thorough discussion of the site geology may be found in Section 812.314 (Description of the Hydrogeology) of the application previously submitted under Log No. 2005-070. An overview, however, may be helpful in understanding the conceptual models used and to elaborate on some of the model specific data needed.

The Clinton Landfill No. 3 CWU will be located within glacial and interglacial deposits of the Pleistocene Stage. The glacial deposits primarily consist of silty clay and clayey silt. Some silt and sand units are also present; however, the majority of these units are relatively thin and are not laterally continuous across the entire facility. Lithologies associated with these deposits include Wisconsinan and Illinoian glacial (and interglacial) deposits which consist primarily of silty clay tills. The deposits contain outwash sands which are water-bearing and have been defined as the upper-most aquifers at the site. Underlying the Wisconsinan and Illinoian glacial deposits are deposits of pre- Illinoian age. These deposits include the Mahomet Sand.

Geologic and hydrogeologic investigations at the facility have identified three distinct units at the facility within the glacial deposits which are considered potential contaminant migration pathways:

- A gray sand unit located in the southeastern portion of the Clinton Landfill No. 3 facility between approximate Elevations 654 and 647 feet AMSL. This unit is referenced as the "Upper Radnor Till Sand". This sand is judged to be an intra-till outwash deposit of the Radnor Till. Where present, this unit varies in thickness across the site from approximately 0.25 to 2.8 feet with the average thickness being 1.46 feet below the southeastern portion of the facility based upon soil boring data (see Table 812.316-1 provided under Log No. 2005-070). The elevation of the top and bottom of this sand and thickness isopleths are shown on Figures 812.314-14 through 812.314-16 of the application previously submitted under Log No. 2005-070. The flow direction in the Upper Radnor Till Sand at the facility is toward the southwest (see Figures 812.314-23 through 821.314-26 included with the application previously submitted under Log No. 2005-070 and Figures 812.314-39 through 812.314-42 in Attachment 12 of this application). The average hydraulic gradient in this unit was determined to be 7.62 x 10^{-3} based upon 20 quarters (five years) of data.

Because of its limited lateral extent and its proximity to the landfill floor, this unit will be removed from beneath the landfill floor perimeter as shown on Drawing Nos. P-EX1 and P-EX2 (submitted previously under Log No. 2005-070). As stated above, a new GIA was not performed on this unit.

- A gray sand unit is located beneath the liner invert between approximate Elevations 644 and 635 feet AMSL. This unit is referenced as the "Lower Radnor Till Sand" for the groundwater impact assessment. This sand is judged to be an intra-till outwash deposit of the Radnor Till Member. This unit varies in thickness across the site from approximately 0.20 to 5.3 feet with the average thickness being 2.8 feet below the facility based upon soil boring data (see Table 812.316-1 provided in the application previously submitted under Log No. 2005-070). The elevation of the top and bottom of this sand and thickness isopleths are shown on Figures 812.314-17 through 812.314-19 of the application previously submitted under Log No. 2005-070. The average flow direction in the Lower Radnor Till Sand at the facility is toward the southwest (Figures 812.314-27 through 821.314-30 of the application previously submitted under Log No. 2005-070, and Figures 812.314-35 through 812.314-38 in Attachment 12 of this application). The average hydraulic gradient in this unit was determined to be 1.07 x 10^{-2}. Potentiometric contours based on five-year mean groundwater levels are provided on Figure 812.316-6 in Attachment 13 of this application.

- An organic soil unit is located beneath the liner invert between approximate Elevations 644 and 623 feet AMSL. This unit is referenced as the "Organic Soil" for the groundwater impact assessment. This organic unit is judged to be an intra-till organic unit within the Radnor Till. It most likely represents an inter-glacial episode or substage of the Illinoian glaciation. This unit varies in thickness across the site from approximately 0.60 to 10.0 feet with the average thickness being 3.42 feet below the facility based upon soil boring data (Table 812.316-1 provided in the application previously submitted under Log No. 2005-070). The elevation of the top and bottom of this organic soil and thickness isopleths are shown on Figures 812.314-20 through 812.314-22 of the application previously submitted under Log No. 2005-070. The average flow direction in the Organic Soil at the facility is toward the southwest (Figures 812.314-31 through 821.314-34 of the application previously submitted under Log No. 2005-

070, and Figures 812.314.43 through 812.314.46 in Attachment 12 of this application). The average hydraulic gradient in this unit was determined to be 5.62 x 10^{-3}. Potentiometric contours based on mean groundwater levels are provided on Figure 812.316-7 in Attachment 13 of this application.

812.316.3 CWU Conceptual Models

Due to the complex stratigraphy at this site, simplified hydrogeologic models were developed for the Organic Soil and the Lower Radnor Till Sand groundwater impact assessments. The two conceptual models are illustrated on Figures 812.316-6 and 812.316-7 in Attachment 13, and are summarized below:

Lower Radnor Till Sand: This model (see Figure 812.316-6) is based on the average geologic conditions found under the proposed landfill invert. Figure 812.316-6 (Attachment 13) shows the interpreted mean potentiometric contours (mean of five years of data) in this unit. These contours indicate a flow direction toward the southwest.

The landfill liner thickness is based on the requirements of 35 IAC 811 and 812 (3 feet-thick compacted clay liner). The proposed compacted earth liner subgrade is located within the organic silt of the Roxana Silt-Robein Member in most areas of the landfill. To improve the landfill foundation, this organic silt, where encountered at the compacted earth liner subgrade, will be removed to the surface of the Berry Clay. The resulting over-excavation will be backfilled with compacted clay exhibiting a hydraulic conductivity no greater than 1 x 10^{-7} centimeters per second (cm/sec). The clay thickness above the sand unit is based on the average thickness of this unit underneath the liner of the landfill.

In order to calculate the average thickness of the compacted clay fill layer, surface models of the bottom of the 3-foot compacted earth liner (subgrade), top of the Berry Clay, and top of the Lower Radnor Till Sand were created using AutoDesk Land Desktop Release 3, which is a digital terrain model (DTM). These surfaces were then used in Land Desktop to calculate the volume of geologic material between the compacted earth liner subgrade and top of the Berry Clay, and the volume between the subgrade and the top of the Lower Radnor Till Sand. Dividing the volume (cubic feet) by the appropriate area (square feet) yields an average thickness (feet) of clay between the subgrade and top of each geologic unit. The average thickness of the compacted clay fill was calculated to be 3.15 feet (see Attachment 13 for calculations).

In order to calculate the average thickness of the Berry Clay/Radnor Till above the Lower Radnor Till Sand, the surfaces of the compacted earth liner subgrade and top of Lower Radnor Till Sand were also modeled in a digital terrain model (DTM). The DTM software (AutoDesk Land Desktop Release 3) was used. The Civil Design module of the DTM software was used to calculate the volumes between the compacted earth liner subgrade and top of Lower Radnor Till Sand. Dividing these volumes by the appropriate area provides the average thickness from the compacted earth liner subgrade to the top of the Lower Radnor Till Sand. The average thickness of clay from subgrade to the top of the Berry Clay is 3.15 feet. The average thickness of clay from the subgrade to the top of the Lower Radnor Till Sand is 21.87 feet (see Attachment 13 for calculations). In order to find the average thickness of the Berry Clay/Radnor Till above the Lower Radnor Till Sand, subtract 3.15 feet (average thickness of compacted clay fill) from 21.87 (average thickness of Berry Clay/Radnor Till) to get 18.72 feet.

The average thickness of the Lower Radnor Till Sand is 2.8 feet based on soil boring data (see Table 812.316-1 of the application previously submitted under Log No. 2005-070). The hydraulic conductivity of this unit is based upon the geometric mean of the results of in-situ slug testing of monitoring wells screened in this unit (See Table 812.316-2 in Attachment 13 of this application). The potentiometric surface in this unit is above the landfill invert over most of the site except for the southern edge of the facility. Therefore, a two-dimensional model was used for this potential pathway.

- Organic Soil - This model (see Figure 812.316-7 provided in Attachment 13 of this application) is based on the hydrogeologic conditions across the entire landfill. The landfill liner thickness is based on the requirements of 35 IAC 811 and 812 (3 feet-thick compacted clay liner). As stated above, the proposed compacted earth liner subgrade is located within the organic silt of the Roxana Silt-Robein Member in most areas of the landfill. To improve the landfill foundation, the Roxana Silt-Robein Member, where encountered at the compacted earth liner subgrade, will be removed to the surface of the Berry Clay. The resulting over-excavation will be backfilled with compacted clay exhibiting a hydraulic conductivity no greater than 1×10^{-7} centimeters per second (cm/sec).

  For conservatism, the Organic Soil model assumed that the clay thickness above the organic soil was the same as the clay thickness above the Lower Radnor Till Sand which is 18.72 feet.

The average thickness of the Organic Soil is 3.42 feet based on soil boring data (see Table 812.316-1 provided with the application previously submitted under Log No. 2005-070). The hydraulic conductivity of this unit is based upon the geometric mean of the results of in-situ slug testing of monitoring wells screened in this unit (See Table 812.316-2 in Attachment 13 of this application). The potentiometric surface in this unit is above the landfill invert over most of the site except for the south western edge of the facility. Therefore, a two-dimensional model was used for this potential pathway.

812.316.4 CWU Conversion Assumptions

Several assumptions were made in the conversion to the conceptual models. These are:

1) <u>All geologic units and earthen structures are homogeneous and isotropic with respect to all lithologic and hydrologic parameters.</u> Most contaminant transport models are incapable of working with the small scale changes for these parameters, seen within many geologic materials. Sensitivity analyses performed over the observed range of values provide an adequate examination of this variability.

2) <u>All geologic units are of uniform thickness. These thicknesses are based on the average thicknesses found at the site.</u> Therefore, the average values used here provide a reasonable estimate of the transport progresses at the site. Sensitivity analysis provides a tool to appraise the effects of localized variability in these parameters.

3) <u>Geologic and hydrologic parameters used are mean values for site specific data, or mean values taken from literature research. Ranges for these values are also taken into consideration.</u> Again, the mean values analyzed provide a reasonable analysis of the site conditions. Details of material properties used for the modeling are provided in Section 812.316.7 of this application. Transport through a geologic unit with a high variability of hydraulic conductivity, transmissivity, porosity, etc., will actually produce an "average" movement through the geologic unit. Again, sensitivity analysis was performed to evaluate the effect of varying the parameters.

4) <u>The uppermost aquifer is of infinite lateral extent.</u> Generally a required assumption in mathematical models.

5) The geomembrane liner system possesses several "holes" such that it is not a completely impermeable barrier. A conservative assumption that provides for a migration pathway through the liner system. Calculations were performed using very conservative assumptions to maximize seepage through the liner (see Attachment 14 provided with this application).

6) All angles are assumed to be 90°. Providing right angle corners removes extra thickness from the liner and other parts of the landfill, and hence adds additional conservatism to the conceptual model.

812.316.5 CWU Transport Processes

Using the conservative design and geologic simplifications presented on Figures 812.316-6 and 812.316-7, and combining the analysis of groundwater flow information presented in Section 812.314 of this application, the transport process within each layer may be analyzed with respect to migration of the leachate constituents. Within the systems, migration of contaminants is first controlled by diffusion and vertical advection through the liner system, compacted clay fill, and Berry Clay/Radnor Till existing above the Lower Radnor Till Sand and Organic Soil. Once the leachate constituents move into the upper-most aquifer (Lower Radnor Till Sand and Organic Soil), horizontal advection and dispersion will be dominant, driven by groundwater flow. With the liner/aquitard/aquifer models as shown on Figures 812.316-6 and 812.316-7 (Attachment 13), a two-dimensional diffusion/advection model is adequate to properly characterize the potential impact of the facility on groundwater.

812.316.6 CWU Mathematical Models

The same mathematical models that were used for the approved GIA (Log No. 2005-070) were used to conduct the CWU GIA. A detailed description of these models were provided in Section 812.316.6 of the application that was previously submitted under Log No. 2005-070.

812.316.7 CWU Model Input

Input parameters have for the most part been determined from site specific data. These parameters include hydraulic conductivity, thickness of the units, leachate constituent concentrations, and porosity. Parameters that are not site specific are taken from literature values for comparable materials. Tables 812.316-13 and 812.316-14 in Attachment 15 contain a list of the input parameters for the models used in the GIA.

The following sections describe in more detail how each parameter was selected. Given are the input parameters that are assumed to stay constant and a justification for each.

A. Source Concentration

A surrogate leachate constituent concentration of 1 milligram per liter (mg/l) is assumed in the models.

B. Layer Thickness

The modeled stratigraphy and layer thickness are based upon the average site geologic conditions and are detailed in Section 812.316.3. The average clay thickness above the Organic Soil was conservatively assumed to be the thickness of the clay above the Lower Radnor Till Sand.

C. Distribution Coefficient

Adsorption is not simulated and adsorption coefficients are set equal to 0 for all layers. This is highly conservative given most leachate constituents will be subject to some measure of attenuation within the liner and the underlying clay units.

D. Bulk Density

MIGRATE only uses bulk density when there is retardation. A review of the governing equation for the model shows that if K = 0.0, then that section of the equation equals zero. Because adsorption is not simulated, density values have no bearing on the predicted concentrations for this study. The MIGRATE model default value of 1.9 grams per cubic centimeter (g/cm^3) was used for each layer.

E. Effective Porosity

An important aquifer characteristic of geologic environments used in time and travel calculations, is effective porosity. Fetter (1980) defines effective porosity as "the amount of interconnected pore space through which fluids can pass, expressed as a percent of bulk volume." The relative value of effective porosity (n_e) is very important since it is used to calculate seepage velocity of a given geologic unit. Effective porosity is very difficult to measure; however, total porosity is commonly determined using laboratory test data. In all cases effective porosity is less than total porosity. Therefore, although literature values for effective porosity are available, total porosity values based on site-specific laboratory test data were used in the clay units. Site specific porosity data are summarized on Table 812.314-2 of the application previously submitted under Log No. 2005-070.

The compacted earth liner porosity is based on many tests conducted on the Clinton Landfill No. 2 Initial Fill Area compacted clay liner. Clays of the Tiskilwa Formation and Berry Clay Member were used for the compacted earth liner at Clinton Landfill No. 2 Initial Fill Area. The test results reveal a mean porosity of 0.288 (See Appendix 812.316-B of the application previously submitted under Log No. 2005-070). The proposed facility will use the clay of these units to construct the Clinton Landfill No. 3 compacted clay liner. The mean porosity of 0.288 is used for the model input for the compacted earth liner and the compacted clay fill in the models.

The mean value of the total porosity test results for samples from the Berry/Radnor Till below the compacted clay fill is 0.286 beneath the Clinton Landfill No. 3 liner invert elevation (see Table 812.314-2 in Section 812.314 of the application previously submitted under Log No. 2005-070). The mean porosity of 0.286 is used for the model input for the Berry/Radnor Till.

Freeze and Cherry (1979) reported typical total porosity values for sand ranging from 0.25 to 0.50. However, a conservative value of 0.05 was chosen to be used for the baseline model for the Lower Radnor Till Sand. This value was also used in the baseline models for the MSW site (submitted under Log No. 2005-070) as requested by the Agency. Using a value well below the range is a highly conservative assumption given that using a lower porosity results in higher concentrations, as demonstrated by model sensitivity analysis.

US EPA (1990) reported typical effective porosity values for silt to range from 0.34 to 0.61. However, a conservative value of 0.05 was chosen to be used for the baseline model for the Lower Radnor Till Sand. This value was also used in the baseline models for the MSW site (submitted under Log No. 2005-070) as requested by the Agency. Using a value well below the range is a highly conservative assumption given that using a lower porosity results in higher concentrations, as demonstrated by model sensitivity analysis.

F. Hydraulic Conductivity

The hydraulic conductivity values for each of the layers at the Clinton Landfill No. 3 have been measured by both laboratory testing and in-situ testing (slug testing) as detailed in Section 812.314 (submitted under Log No. 2005-070). A summary of all hydraulic conductivity test data for in-situ geologic materials at this site is provided in Table 812.316-2 in Attachment 13 of this application and Table 812.314-2 (in Section 812.314 of the application previously submitted under Log No. 2005-070).

The hydraulic conductivity of the 3-foot compacted earth liner in the Clinton Landfill No. 3 is assumed to have a value of 1 x 10^{-7} cm/sec since this is the minimum regulatory value for acceptance. A review of the construction quality assurance laboratory data obtained during several phases of liner construction at the Clinton Landfill No. 2 shows values in the 10^{-8} and 10^{-9} cm/sec range. Therefore, using a value of 1 x 10^{-7} cm/sec is considered to be a conservative value.

The hydraulic conductivity of the insitu clay (Berry Clay and Radnor Till) below the liner is assumed to be 1 x 10^{-7} cm/sec although laboratory data from this unit shows values in the 10^{-8} and 10^{-9} cm/sec range.

The hydraulic conductivities for the Lower Radnor Till Sand and the Organic Soil migration pathways were determined by insitu slug testing. The geometric mean of the slug testing data was used for each unit. The geometric mean of the hydraulic conductivities values was used because it is commonly accepted that multiple conductivity measurements in the same formation tend to show a log-normal distribution and that the geometric mean is appropriate to use this type of data distribution. For the Lower Radnor Till Sand, a geometric mean value of 2.21 x 10^{-4} cm/sec (69.69 m/a) was used. For the Organic Soil, a geometric mean value of 2.6 x 10^{-5} cm/sec (8.19 m/a) was used (see Table 812.316-2 in Attachment 13 of this application).

G. Gradient

Site gradient calculations were based on a statistical evaluation of the groundwater elevations at the site. For the Lower Radnor Till Sand and Organic Soil, the elevation of the top of piezometric surface for each well was calculated from each water level measurement made during 2003 through 2007 resulting in 20 quarters of data (see Table 812.314-7 in Attachment 12 of this application).

For the Lower Radnor Till Sand, the mean values of the 20 quarters of water level measurements were utilized. The gradient in this unit was calculated by taking the difference in the mean groundwater elevation from well EX-15 to well EX-7 and dividing it by the distance between these wells (3,753.69 feet). This resulted in a gradient of 1.07 x 10^{-2}.

For the Organic Soil, the mean values of 20 quarters of water level measurements were utilized. The gradient in this unit was calculated by taking the difference in the mean groundwater elevation from well EX-24 to well EX-20 and dividing it by the distance between these wells (2765.50 feet). This resulted in a gradient of 5.62×10^{-3}.

H. Darcy Flux and Darcy Velocity

The vertical leachate Darcy Velocity (or Darcy Flux) through the composite liner was calculated using equations provided in the HELP Model (calculations are provided in Attachment 14 of this application). These calculations, indicate a vertical Darcy Flux of 1.42×10^{-7} meters per year (m/A) through the composite liner. However, a conservative value of 1.42×10^{-6} m/A was used for the baseline models.

The horizontal Darcy Velocity in the sand units were based on the statistical potentiometric surface gradient calculations as explained above.

The Lower Radnor Till Sand beneath Clinton Landfill No. 3 with a mean hydraulic conductivity of 2.21×10^{-4} cm/sec (69.69 m/A) and a horizontal gradient of 1.07×10^{-2}, gives a Darcy Velocity of 0.746 m/A. This value was used in the model for this unit.

The Organic Soil beneath the Clinton Landfill No. 3 with a mean hydraulic conductivity of 2.6×10^{-5} cm/sec (8.2 m/A) and a horizontal gradient of 5.62×10^{-3}, gives a Darcy Velocity of 0.046 m/A. This value was used in the model for this unit.

I. Diffusion Coefficient

Several studies have been published to determine the coefficient of hydrodynamic dispersion. The diffusion of chemical constituents within the upper-most aquifer materials (i.e., silt and sand) at the site required a study that was performed in porous media. Freeze and Cherry (1979) explains that diffusion coefficients of a non-reactive species for coarse-grained unconsolidated materials can be somewhat higher than 1×10^{-10} square meters per second (m^2/s) but are less than the coefficients for chemical species in water (2×10^{-9} m^2/s). Therefore, for conservatism, a value of $1 \times 10^{-9} m^2/s$ or 0.0315 square meters per year (m^2/A) was chosen. Using a value lower than the diffusion coefficient for water provides conservatism to the model, as demonstrated by sensitivity analysis.

The diffusion of chemical constituents within the clay liner and clay strata at the site required a study that evaluated low-permeability materials. Freeze and Cherry (1979) looked at one-dimensional diffusion of a non-reactive species in clayey geologic materials. This study indicated diffusion coefficients ranging from 1×10^{-10} to 1×10^{-11} m^2/s. An approximate average of 5×10^{-10} m^2/s or 0.0158 m/A was chosen for the model. This value was also suggested by the IEPA's Groundwater Assistance Unit.

J. Dispersivity

A value for dispersivity (needed for the calculation of mechanical dispersion) was calculated based upon a study conducted by Xu and Eckstein (1995). This method is approved by the Agency. The Xu and Eckstein equation is:

$$\alpha_x = 0.83[\log_{10}(L_p)]^{2.414}$$

where:

α_x = Longitudinal dispersivity

L_p = Length (meters).

The value for transverse dispersivity was calculated by multiplying the longitudinal value by 20 percent. The result is:

Transverse dispersivity = Longitudinal dispersivity x 20 percent.

In the Lower Radnor Till Sand, the flow length (measured from the center of the CWU to the edge of the zone of attenuation) is 765.89 feet (233.44 meters) as shown on Figure 812.316-6 in Attachment 13 of this application. Using the above formulas, the longitudinal dispersivity and transverse dispersivity are estimated to be:

$$\alpha_L = 0.83[\log_{10}(233.44)]^{2.414} = 6.65 \text{ meters}$$

$$\alpha_T = 0.20 \times 6.65 \text{ meters} = 1.33 \text{ meters}$$

In the Organic Soil, the flow length (measured from the center of the CWU to the edge of the zone of attenuation) is 578.09 feet (176.20 meters) as shown on Figure 812.316-7 in Attachment

13 of this application. Using the above formulas, the longitudinal dispersivity and transverse dispersivity are estimated to be:

$$\alpha_L = 0.83[\log_{10}(176.20)]^{2.414} = 5.85 \text{ meters}$$

$$\alpha_T = 0.20 \text{ x } 5.85 \text{ meters} = 1.17 \text{ meters}$$

K. Dispersion Coefficients

Hydrodynamic dispersion (D_H) occurs as a result of mechanical mixing and molecular diffusion. The coefficient of hydrodynamic dispersion can be expressed in terms of two components:

$$D_H = \alpha \overline{V} + D^*$$

where:

α = dispersivity (α_L for longitudinal and α_T for transverse)

$\overline{V}$ = average linear velocity

D^*= coefficient of molecular diffusion.

Freeze and Cherry (1979) state that at low velocities, diffusion is the important contributor to the dispersion and therefore the coefficient of hydrodynamic dispersion equals the diffusion coefficient ($D_H = D^*$). The clay and liner materials both exhibit very low velocities and therefore were assigned a dispersion coefficient equal to the diffusion coefficient used for the clay materials (0.0158 m^2/A).

Within the Lower Radnor Till Sand, advection is the dominant transport process and is controlled by the hydrodynamic coefficient D_H. The vertical and horizontal dispersion coefficients are estimated as:

Horizontal Dispersion Coefficient

$$D_H = \alpha_L \overline{V} + D^*$$

$$D_H = 6.65 \text{ meters x } (0.746 \frac{m}{A} / 0.05) + 0.0315 \frac{m^2}{A} = 99.25 \frac{m^2}{A}$$

Vertical Dispersion Coefficient

$$D_H = \alpha_L \overline{V} + D^*$$

$$D_H = 1.33 \text{ meters x } (0.746 \frac{m}{A} / 0.05) + 0.0315 \frac{m^2}{A} = 19.88 \frac{m^2}{A}$$

Within the Organic Soil, advection is the dominant transport process and is controlled by the hydrodynamic coefficient D_H. The vertical and horizontal dispersion coefficients are estimated as:

Horizontal Dispersion Coefficient

$$D_H = \alpha_L \overline{V} + D^*$$

$$D_H = 5.85 \text{ meters x } (0.046 \frac{m}{A} / 0.05) + 0.0315 \frac{m^2}{A} = 5.41 \frac{m^2}{A}$$

Vertical Dispersion Coefficient

$$D_H = \alpha_L \overline{V} + D^*$$

$$D_H = 1.17 \text{ meters x } (0.046 \frac{m}{A} / 0.05) + 0.0315 \frac{m^2}{A} = 1.11 \frac{m^2}{A}$$

L. Lateral Distances

Five lateral distances were specified in the Lower Radnor Till Sand and Organic Soil models. The distances selected are: 1) at the waste boundary, 2) 25 feet from the waste boundary, 3) 50 feet from the waste boundary, 4) 75 feet from the waste boundary, and 5) at the edge of the zone of attenuation (100 feet from the waste boundary).

M. Integration

MIGRATE uses a LaPlace transform to find the solution to the advective-dispersion equation. The numerical inversion of the LaPlace transform depends on the Talbot parameters. The model provides default values for the three parameters or they can be selected by the user. The numerical inversion in MIGRATE depends on Talbot Integration Parameters and Gauss Integration Parameters. The default values of these parameters will generally produce satisfactory results. Occasionally a solution will need more than the default integration parameters if negative values are given or if concentrations appear at the surface outside the landfill. According to the authors (Booker and Rowe), these negative values may be merely a poor numerical approximation of zero concentrations or flux and can be eliminated by increasing the integration parameters. However, using very high integration parameters usually increase the computational time without significantly improving the solution. For the models used in the GIA, the default parameters were used.

812.316.8 CWU Contaminant Transport Results

The maximum surrogate concentration at the downgradient edge of the zone of attenuation at the end of the 134-year assessment period predicted by the Lower Radnor Till Sand baseline model is 1.345×10^{-3}. The maximum surrogate concentration at the downgradient edge of the zone of attenuation at the end of the 134-year assessment period predicted by the Organic Soil baseline model is 5.655×10^{-7}. These concentrations were used as prediction factors (PF) to calculate the predicted leachate constituent concentration (LCC) in groundwater at the zone of attenuation at the end of the 134-year assessment period for all expected leachate constituents. The baseline input and output files along with a computer compact disk (CD) are provided in Attachment 16 of this application. Model sensitivity analyses are summarized in Tables 812.316-15 (Lower Radnor Till Sand), and Table 812.316-16 (Organic Soil) contained in Attachment 16 of this application.

The predicted concentrations were compared against actual leachate concentrations from facilities that accept the primary types of waste that is expected to be received at the CWU. These are the poly-chlorinated bi-phenyl (PCB) wastes and manufactured gas plant (MGP) wastes at concentrations above those listed at 35 Ill. Adm. Code Part 721.124.

Leachate data from two USEPA-permitted Chemical Waste Landfills that accept PCB waste were acquired via the Freedom of Information Act (FOIA). These two facilities, Wayne Disposal, Inc. (WDI) located in Michigan (USEPA Region 5) and Clean Harbors Grassy Mountain Facility located in Utah (USEPA Region 8) are also permitted as RCRA Subtitle C landfills. The leachate data from the facilities were reviewed and summarized. The WDI facility leachate data (monthly data from 2005 to 2007) indicated that PCBs were detected in only 7 of 231 samples analyzed for PCBs. The highest concentration of PCBs detected was 5.6 parts per billion (ppb). The Grassy Mountain facility leachate data (semi-annual from 2001 to 2007) indicated that PCBs were detected in only 2 of 1,575 samples analyzed for PCBs. The highest concentration of PCBs detected at this facility was 1.48 ppb. CLI notes that both of these facilities are allowed to dispose PCB wastes exhibiting concentrations greater than

500 ppm. However, CLI has agreed to not accept PCB wastes at concentrations greater than 500 ppm. Considering this limitation, and the leachate data from the WDI and Grassy Mountain facilities, a conservative concentration for PCBs of 100 ppb was used to evaluate the GIA. Attachment 17 contains a computer compact disk (CD) with the laboratory data from these two facilities along with a summary of the results.

Information on leachate data for facilities that accept MGP waste was difficult to locate. However, Peoria Disposal Company's RCRA Subtitle C facility (PDC #1) located in Peoria, Illinois is permitted to accept MGP waste of concentrations above those listed at 35 Ill. Adm. Code Part 721.124 and has done so since December of 2001. PDC has accepted approximately 125,440 tons of MGP waste since December of 2001. As a result, leachate data from Peoria Disposal Company's Cell C4 (the only landfill cell in which MGP waste has been disposed) was evaluated for this study. Maximum leachate values were taken from annual leachate data from years 2002 through 2007. Benzene, ethlybenzene, toluene, xylenes (total), and poly-nuclear aromatics (PNAs) are widely recognized as the constituents of concern for MGP wastes. The maximum concentrations of these constituents that were detected in leachate samples collected from PDC #1 cell C4 during the years 2002 through 2007 are provided in Tables 812.316-17 and 812.316-18 in Attachment 17. As seen on Tables 812.316-17 and Tables 812.316-18, to be conservative, we multiplied the maximum detected leachate concentrations by at least a factor of ten to derive the leachate concentrations that were used to evaluate the GIA.

The baseline models predict that the concentration of all leachate constituents in the Lower Radnor Till Sand and the Organic Soil will be less than their respective MDL at the downgradient edge of the zone of attenuation 100 years after closure of Clinton Landfill No. 3 CWU. Tables 812.316-17 and 812.316-18 in Attachment 17 list source concentrations, AGQS values, and predicted concentrations for all leachate constituents for the Lower Radnor Till Sand and the Organic Soil, respectively. The AGQS for the parameters of concern shown on Tables 812.316-17 and 812.316-18 were set equal to the typical MDL for each parameter of concern in groundwater.

Plots of the baseline results for concentration versus time and concentration versus distance are provided in Attachment 18 of this application. The plots show an overall reasonable distribution at depths in the Lower Radnor Till Sand and Organic Soil. However, negative concentrations were found at various lateral distances within the liner and till in these models which are caused by the integration inherent in the program. The error due to integration decreases with depth and time, and the MIGRATE output shows a reasonable concentration distribution in the uppermost aquifers (migration pathways) at all lateral distances. The migration pathways were the only layers shown on the plots.

812.316.9 CWU Model Sensitivity Analysis

Model sensitivity analyses were performed on the model input parameters. The input parameters from the hydrogeologic investigation were increased and decreased using values which usually exceed the maximum reasonably expected variation of geologic properties at the site. The sensitivity analyses model output was obtained for 100 years after closure at the zone of attenuation. The model sensitivity analyses are summarized in Tables 812.316-15 (Lower Radnor Till Sand), and Table 812.316-16 (Organic Soil) contained in Attachment 16 of this application. A computer compact disk (CD) with the sensitivity analysis input and output files are also provided in Attachment 16 of this application.

812.316.10 CWU Maximum Allowable Predicted Concentrations

Maximum allowable predicted concentrations (MAPCs) are projected concentrations of leachate constituents in the uppermost aquifer that, when exceeded within the zone of attenuation, indicate potential for exceedance of a groundwater quality standard at the limit of the zone of attenuation. To be conservative, it is proposed that the site AGQS values be used as MAPC values for all new monitoring wells. AGQS values for the site are listed in Attachment 1 of the facility's permit (Permit No. 2005-070-LF).

812.316.11 Conclusions

A discussion of the model input data should be made to address the impact of the unit on the surrounding groundwater. For the most part, input parameters such as Darcy Flux, coefficient of chemical diffusion, dispersivity, coefficient of hydrodynamic dispersion, liner leakage, and layer thickness have been selected in such a way as to maximize the computed solute transport over time. Values for hydraulic conductivity were based on a relatively large sampling of site specific data. Therefore, these assessments are a conservative representation of the expected impact of the unit on the groundwater at the site.

A final analysis has been made to review the model assumptions, and determine if any conflict with the conceptual model and the model assumptions exists. The first assumption states that contaminate transport is governed by the two-dimensional and one-dimensional advection/dispersion equation within a porous medium. The general solute transportation equation is not violated by any of the simplifying assumptions made in the conceptual model. The second assumption states that sorption-desorption of a non-conservative species of contaminant is linearly controlled. Since no retardation was applied, there was no sorption of contaminant species. Therefore, one may say that this assumption is true.

The third assumption states that transport through multiple layers with variable properties may be used. One of the requirements of the conceptual model states that multiple "environments" will be encountered; therefore a primary requirement of the model is this multi-layer ability. Finally, it is assumed that the Darcy Flux/Darcy Velocity does not vary with position within any layer of the deposit. The conceptual model uses average Darcy Flux/Darcy Velocity within each unit. Contaminant transport through a geologic material with a high variability of hydrogeologic parameters will actually produce an "average" movement through the layer. Therefore, this assumption was not violated in the conceptual models.

Groundwater impact assessments were performed for the proposed Clinton Landfill No. 3 CWU facility. The impact assessments reviewed the site geology and hydrogeology to produce conservative conceptual models for the site. These conceptual models were then analyzed to determine what type of contaminant transport model would best represent the site. The model selected for the facility is a two-dimensional contaminant transport model MIGRATE produced by Rowe and Booker. This model provided the best solution to the multi-layered diffusion and advection dominated environments at the facility.

On the basis of the modeling, CLI concludes that leachate constituent concentrations of all expected leachate constituents will be less than the final AGQSs throughout the operating life and 100-years past landfill closure, pursuant to 35 Ill. Adm. Code Parts 811.317 and 811.320.

SECTION 812.317 –GROUNDWATER MONITORING PROGRAM

The approved permit application previously submitted under Log No. 2005-070 provided documentation that the groundwater monitoring program will meet the requirements of 35 Ill. Adm. Code Part 811.317. The following sections describe the additional well-spacing modeling that was conducted to establish appropriate groundwater monitoring well locations to adequately monitor groundwater downgradient of the CWU. Also included in the application are proposed revisions to the Detection Monitoring Program consistent with the recently amended regulations at 35 Ill. Adm. Code 811.318 and 811.319.

The approved permit application previously submitted under Log No. 2005-070 included the locations of monitoring wells for the MSW Unit. The locations of the MSW monitoring wells are not being revised; however, temporary monitoring wells which were formerly located within the footprint of the currently proposed CWU have been eliminated. In addition, no changes are proposed to the remaining sections in the approved permit application previously submitted under Log No. 2005-070 describing monitoring well construction and design, well development and hydraulic conductivity testing, sample collection and analysis, confirmation of a monitored increase, assessment monitoring, assessment of potential groundwater impact, remedial actions, and groundwater quality standards.

812.317.1 Location of Monitoring Points

A groundwater monitoring system will be installed to detect any contaminant plume which exceeds the groundwater quality standards prior to the plume reaching the edge of the zone of attenuation. To address spacing of the monitoring wells at the CWU facility for the purposes of a proposed groundwater monitoring system, a computer-aided contaminant transport model was utilized. Presented herein is a discussion of the contaminant transport model, data input, sensitivity analysis of the computer model, and the resulting well spacing for the CWU. It should be noted that the well spacing model was only ran for the Lower Radnor Till Sand and the Organic Soil. The Upper Radnor Till Sand was not ran since only a very small portion of the sand is present in the extreme southeast corner of the proposed CWU. Because of its limited lateral extent and its proximity to the landfill floor, this unit will be removed from beneath the landfill floor perimeter as shown on Drawing Nos. P-EX1 and P-EX2 (submitted previously under Log No. 2005-070). The lateral extent of this sand, the elevation of the top and bottom, and the thickness is shown on Figures 812-314-13 through 812.314-16 of the previously approved application submitted under Log No. 2005-070.

A. Model Assumptions

The modeling procedures used to assess well spacing are the same as those described for the groundwater impact assessment (Section 812.316), except that liner failures are assumed in the well spacing model.

To simulate a liner failure, a one-foot square breach in the floor liner was assumed near the downgradient edge of the landfill CWU. The location of the breach was determined by first finding the groundwater flow length beneath the CWU invert in each zone (Lower Radnor Till Sands and Organic Soil). Each invert flow length was then multiplied by 0.05, or, in essence, calculating 5% of the invert

ATTACHMENT 11: Table 812.314-1 Summary of Slug Test Results (updated) and Slug Test Data

TABLE 812.314-1

SUMMARY OF SLUG TEST RESULTS

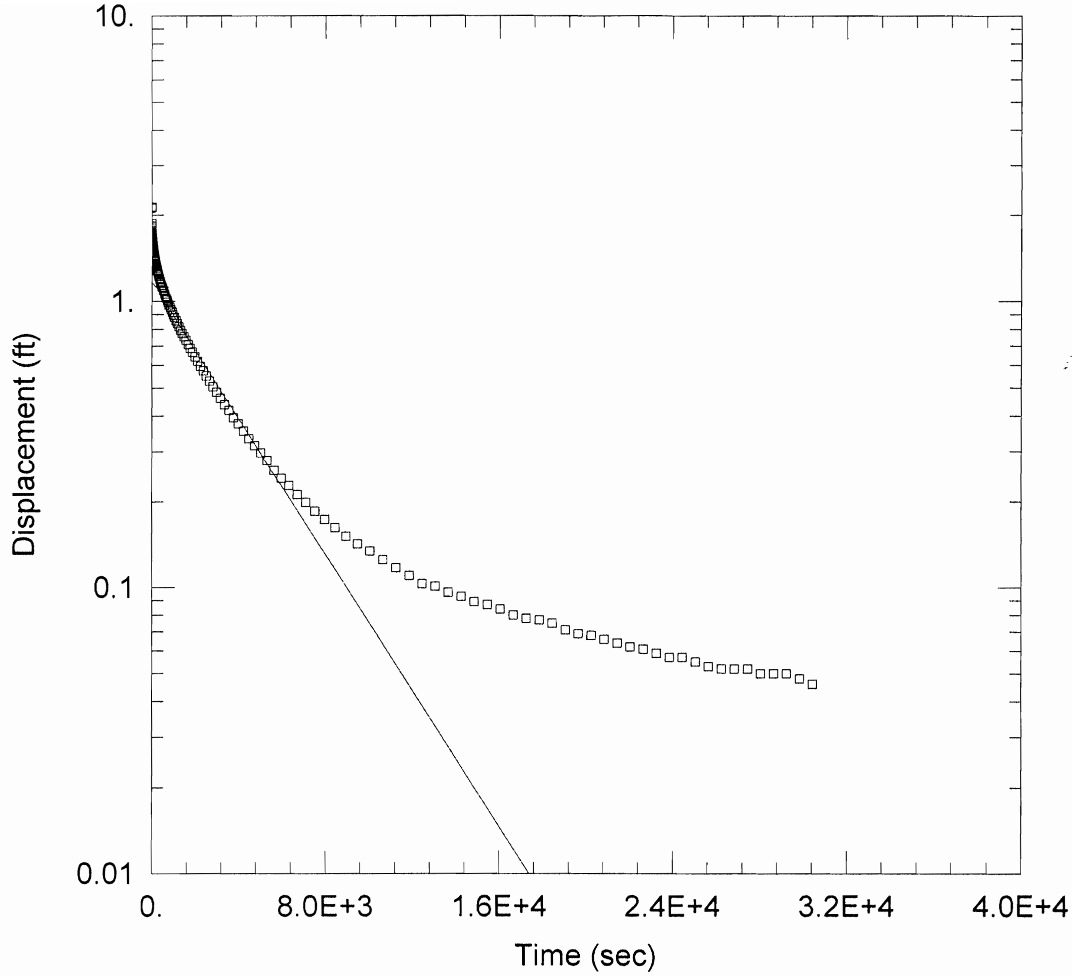
Clinton Landfill No. 3

Well No.	Geologic Unit	Hvorslev Method: Hydraulic Conductivity (K), cm/sec.		
		Falling Head (K_f)	Rising Head (K_r)	Geometric Mean K (cm/sec.)
EX-22S	Upper Radnor Till Sand	9.39E-05	1.36E-04	1.13E-04
EX-23S	Upper Radnor Till Sand	1.13E-05	7.94E-06	9.47E-06
EX-21S	Upper Radnor Till Sand	1.50E-04	1.73E-04	1.61E-04
			Geometric Mean, all wells:	5.57E-05

Well No.	Geologic Unit	Hvorslev Method: Hydraulic Conductivity (K), cm/sec.		
		Falling Head (K_f)	Rising Head (K_r)	Geometric Mean K (cm/sec.)
EX-12S	Lower Radnor Till Sand	3.22E-04	2.70E-04	2.95E-04
EX-4	Lower Radnor Till Sand	3.12E-05	3.22E-05	3.17E-05
EX-5	Lower Radnor Till Sand	1.49E-03	1.10E-03	1.28E-03
EX-6	Lower Radnor Till Sand	4.66E-03	4.00E-03	4.32E-03
EX-8S	Lower Radnor Till Sand	9.93E-04	8.63E-04	9.26E-04
EX-21	Lower Radnor Till Sand	5.23E-04	4.76E-04	4.99E-04
G10M	Lower Radnor Till Sand	1.01E-05	1.03E-05	1.02E-05
G11M	Lower Radnor Till Sand	2.98E-05	1.87E-05	2.36E-05
			Geometric Mean, all wells:	2.21E-04

Well No.	Geologic Unit	Hvorslev Method: Hydraulic Conductivity (K), cm/sec.		
		Falling Head (K_f)	Rising Head (K_r)	Geometric Mean K (cm/sec.)
EX-12D	Organic Soil	5.97E-05	7.75E-05	6.80E-05
EX-13	Organic Soil	6.77E-06	4.23E-06	5.35E-06
EX-14	Organic Soil	1.14E-05	6.88E-06	8.86E-06
EX-17	Organic Soil	2.76E-05	1.81E-05	2.24E-05
EX-20	Organic Soil	8.68E-05	8.59E-05	8.63E-05
EX-22D	Organic Soil	1.07E-04	8.09E-05	9.30E-05
EX-23D	Organic Soil	2.64E-03	2.69E-03	2.66E-03
EX-24	Organic Soil	3.79E-05	4.94E-05	4.33E-05
G08D	Organic Soil	3.55E-05	4.49E-05	3.99E-05
G09D	Organic Soil	7.44E-07	4.37E-07	5.70E-07
G10D	Organic Soil	5.62E-06	2.38E-06	3.66E-06
G11D	Organic Soil	1.84E-05	1.58E-05	1.71E-05
			Geometric Mean, all wells:	2.60E-05

Note: cm/sec. = centimeters per second



G10M FALLING HEAD 10-4-07

Data Set: T:\...\G10M fh 10-4-07.aqt
Date: 12/03/07 Time: 09:02:50

PROJECT INFORMATION

Company: PDC Technical Services, Inc.
Client: Clinton Landfill #3
Project: 91-0118.10
Location: Clinton, IL
Test Well: G10M
Test Date: 10-4-07

AQUIFER DATA

Saturated Thickness: 7.5 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (G10M)

Initial Displacement: 2.118 ft
Total Well Penetration Depth: 8.5 ft
Casing Radius: 0.08333 ft
Static Water Column Height: 27.27 ft
Screen Length: 9.68 ft
Wellbore Radius: 0.3333 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Confined
Solution Method: Hvorslev

K = 1.009E-5 cm/sec
y0 = 1.17 ft

Data Set: T:\Projects\91-118 CLI\Technical\Groundwater\CLI #3 slug test data\CLI#3 slug test data 2007\CLI #3
Title: G10M Falling Head 10-4-07
Date: 12/03/07
Time: 09:02:54

PROJECT INFORMATION

Company: PDC Technical Services, Inc.
Client: Clinton Landfill #3
Project: 91-0118.10
Location: Clinton, IL
Test Date: 10-4-07
Test Well: G10M

AQUIFER DATA

Saturated Thickness: 7.5 ft
Anisotropy Ratio (Kz/Kr): 1.

SLUG TEST WELL DATA

Test Well: : G10M

X Location: 0. ft
Y Location: 0. ft

Initial Displacement: 2.118 ft
Static Water Column Height: 27.27 ft
Casing Radius: 0.08333 ft
Wellbore Radius: 0.3333 ft
Well Skin Radius: 0.3333 ft
Screen Length: 9.68 ft
Total Well Penetration Depth: 8.5 ft
Corrected Casing Radius (Bouwer-Rice Method): 0.08333 ft
Gravel Pack Porosity: 0.3

No. of Observations: 152

Observation Data

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
0.	2.118	935.6	0.917
0.7	2.136	991.9	0.897
1.5	1.276	1051.5	0.878
2.3	1.63	1114.7	0.856
3.1	1.826	1181.6	0.837
4.	1.865	1252.5	0.815
4.9	1.833	1327.6	0.794
5.9	1.797	1407.1	0.774
7.	1.769	1491.4	0.753
8.1	1.749	1580.7	0.732
9.3	1.739	1675.2	0.709
10.5	1.733	1775.3	0.687
11.9	1.733	1881.4	0.666
13.3	1.726	1993.8	0.641
14.8	1.719	2112.8	0.62
16.3	1.712	2238.9	0.595
17.9	1.705	2372.5	0.575
19.6	1.694	2514.	0.552
21.4	1.689	2663.9	0.529
23.3	1.682	2822.7	0.506
25.4	1.675	2990.9	0.484
27.6	1.666	3169.	0.461
29.9	1.658	3357.7	0.438
32.4	1.65	3557.6	0.418
35.	1.641	3769.3	0.395

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
37.8	1.635	3993.6	0.376
40.7	1.628	4231.2	0.354
43.8	1.614	4482.8	0.333
47.1	1.604	4749.4	0.315
50.6	1.593	5031.8	0.297
54.3	1.58	5330.9	0.279
58.2	1.57	5647.7	0.258
62.4	1.561	5983.3	0.242
66.8	1.55	6338.8	0.228
71.5	1.54	6715.3	0.212
76.5	1.529	7114.2	0.199
81.8	1.515	7536.7	0.185
87.4	1.504	7984.2	0.173
93.3	1.493	8458.2	0.162
99.6	1.479	8960.3	0.151
106.2	1.467	9492.2	0.142
113.2	1.452	1.006E+4	0.134
120.7	1.44	1.065E+4	0.125
128.6	1.426	1.125E+4	0.117
137.	1.413	1.185E+4	0.11
145.9	1.401	1.245E+4	0.103
155.3	1.387	1.305E+4	0.101
165.3	1.373	1.365E+4	0.096
175.9	1.358	1.425E+4	0.093
187.1	1.344	1.485E+4	0.089
199.	1.333	1.545E+4	0.087
211.6	1.317	1.605E+4	0.084
224.9	1.303	1.665E+4	0.08
239.	1.287	1.725E+4	0.078
253.9	1.275	1.785E+4	0.077
269.7	1.259	1.845E+4	0.075
286.5	1.246	1.905E+4	0.071
304.3	1.235	1.965E+4	0.069
323.1	1.218	2.025E+4	0.068
343.	1.2	2.085E+4	0.066
364.1	1.187	2.145E+4	0.064
386.5	1.17	2.205E+4	0.062
410.2	1.154	2.265E+4	0.061
435.3	1.138	2.325E+4	0.059
461.9	1.12	2.385E+4	0.057
490.1	1.109	2.445E+4	0.057
520.	1.089	2.505E+4	0.055
551.6	1.084	2.565E+4	0.053
585.1	1.059	2.625E+4	0.052
620.6	1.043	2.685E+4	0.052
658.2	1.025	2.745E+4	0.052
698.	1.008	2.805E+4	0.05
740.2	0.99	2.865E+4	0.05
784.9	0.972	2.925E+4	0.05
832.3	0.954	2.985E+4	0.048
882.5	0.935	3.045E+4	0.046

SOLUTION

Aquifer Model: Confined
Solution Method: Hvorslev
Shape Factor: 3.37

VISUAL ESTIMATION RESULTS

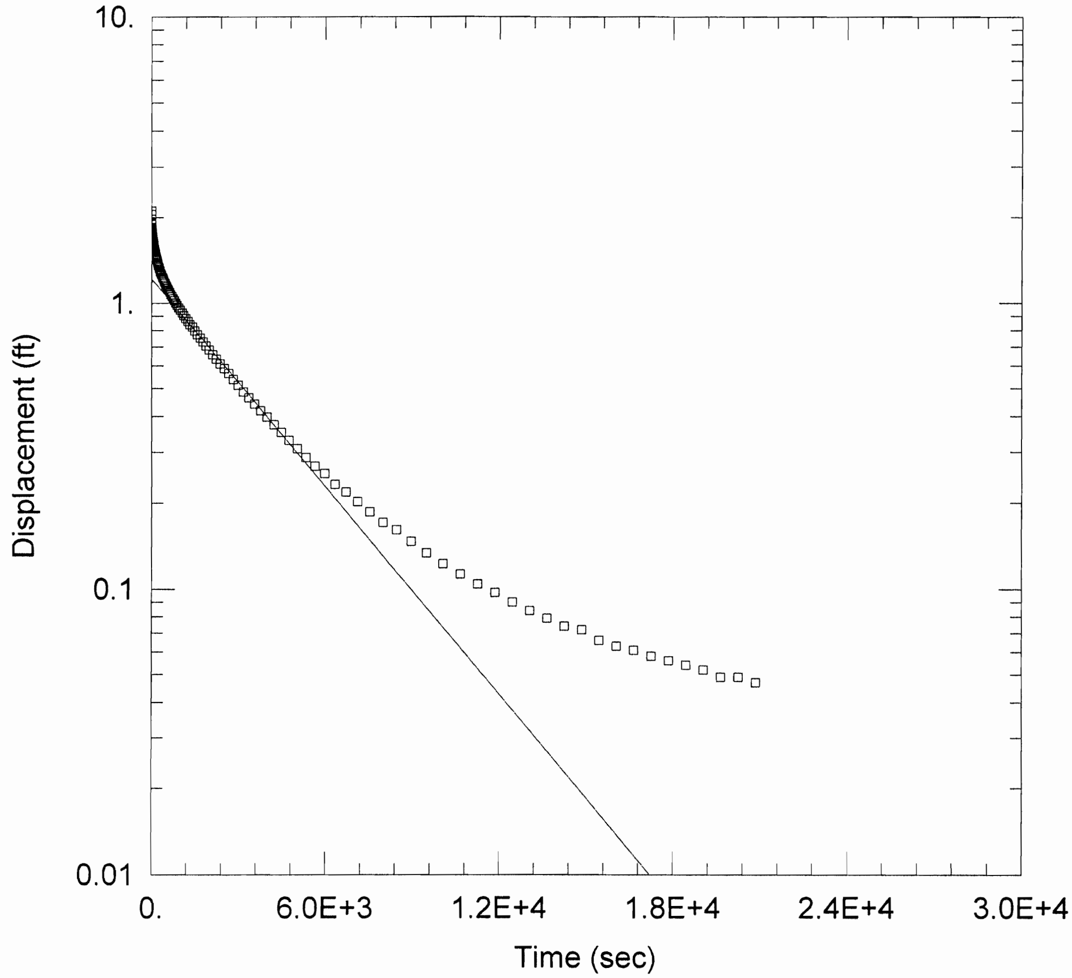
Estimated Parameters

Parameter	Estimate	
K	1.009E-5	cm/sec

y0	1.17	ft

NOTES

Error due to early time noise.



G10M RISING HEAD 10-5-07

Data Set: T:\...\G10M rh 10-5-07.aqt
Date: 12/03/07 Time: 09:27:01

PROJECT INFORMATION

Company: PDC Technical Services, Inc.
Client: Clinton Landfill #3
Project: 91-0118.10
Location: Clinton, IL
Test Well: G10M
Test Date: 10-5-07

AQUIFER DATA

Saturated Thickness: 7.5 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (G10M)

Initial Displacement: 2.11 ft
Total Well Penetration Depth: 8.5 ft
Casing Radius: 0.08333 ft
Static Water Column Height: 27.27 ft
Screen Length: 9.68 ft
Wellbore Radius: 0.3333 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Confined Solution Method: Hvorslev

K = 1.028E-5 cm/sec y0 = 1.214 ft

Data Set: T:\Projects\91-118 CLI\Technical\Groundwater\CLI #3 slug test data\CLI#3 slug test data 2007\CLI #3
Title: G10M Rising Head 10-5-07
Date: 12/03/07
Time: 09:27:06

PROJECT INFORMATION

Company: PDC Technical Services, Inc.
Client: Clinton Landfill #3
Project: 91-0118.10
Location: Clinton, IL
Test Date: 10-5-07
Test Well: G10M

AQUIFER DATA

Saturated Thickness: 7.5 ft
Anisotropy Ratio (Kz/Kr): 1.

SLUG TEST WELL DATA

Test Well: : G10M

X Location: 0. ft
Y Location: 0. ft

Initial Displacement: 2.11 ft
Static Water Column Height: 27.27 ft
Casing Radius: 0.08333 ft
Wellbore Radius: 0.3333 ft
Well Skin Radius: 0.3333 ft
Screen Length: 9.68 ft
Total Well Penetration Depth: 8.5 ft
Corrected Casing Radius (Bouwer-Rice Method): 0.08333 ft
Gravel Pack Porosity: 0.3

No. of Observations: 145

Observation Data

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
0.	2.11	466.7	1.172
0.4	1.686	494.9	1.156
0.9	2.051	524.8	1.14
1.3	1.789	556.4	1.124
1.8	1.892	589.9	1.106
2.4	1.932	625.4	1.089
2.9	1.794	663.	1.071
3.5	1.906	702.8	1.053
4.2	1.894	745.	1.035
4.8	1.841	789.7	1.019
5.5	1.839	837.1	1.
6.3	1.849	887.3	0.982
7.1	1.851	940.4	0.962
7.9	1.848	996.7	0.944
8.8	1.84	1056.3	0.923
9.7	1.837	1119.5	0.903
10.7	1.83	1186.4	0.882
11.8	1.824	1257.3	0.861
12.9	1.821	1332.4	0.839
14.1	1.815	1411.9	0.822
15.3	1.81	1496.2	0.798
16.7	1.803	1585.5	0.774
18.1	1.798	1680.	0.752
19.6	1.79	1780.1	0.729
21.1	1.785	1886.2	0.706

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
22.7	1.778	1998.6	0.683
24.4	1.771	2117.6	0.657
26.2	1.764	2243.7	0.634
28.1	1.757	2377.3	0.61
30.2	1.748	2518.8	0.587
32.4	1.741	2668.7	0.565
34.7	1.732	2827.5	0.538
37.2	1.724	2995.7	0.514
39.8	1.716	3173.8	0.487
42.6	1.707	3362.5	0.465
45.5	1.696	3562.4	0.442
48.6	1.689	3774.1	0.419
51.9	1.68	3998.4	0.398
55.4	1.669	4236.	0.374
59.1	1.659	4487.6	0.352
63.	1.648	4754.2	0.33
67.2	1.637	5036.6	0.309
71.6	1.625	5335.7	0.287
76.3	1.614	5652.5	0.268
81.3	1.602	5988.1	0.253
86.6	1.589	6343.6	0.232
92.2	1.576	6720.1	0.218
98.1	1.562	7119.	0.202
104.4	1.55	7541.5	0.186
111.	1.535	7989.	0.171
118.	1.523	8463.	0.161
125.5	1.511	8965.1	0.147
133.4	1.491	9497.	0.134
141.8	1.48	1.006E+4	0.123
150.7	1.468	1.066E+4	0.113
160.1	1.455	1.126E+4	0.104
170.1	1.441	1.186E+4	0.097
180.7	1.425	1.246E+4	0.09
191.9	1.409	1.306E+4	0.084
203.8	1.395	1.366E+4	0.079
216.4	1.381	1.426E+4	0.074
229.7	1.365	1.486E+4	0.072
243.8	1.35	1.546E+4	0.066
258.7	1.334	1.606E+4	0.063
274.5	1.318	1.666E+4	0.061
291.3	1.3	1.726E+4	0.058
309.1	1.284	1.786E+4	0.056
327.9	1.268	1.846E+4	0.054
347.8	1.254	1.906E+4	0.052
368.9	1.236	1.966E+4	0.049
391.3	1.222	2.026E+4	0.049
415.	1.208	2.086E+4	0.047
440.1	1.187		

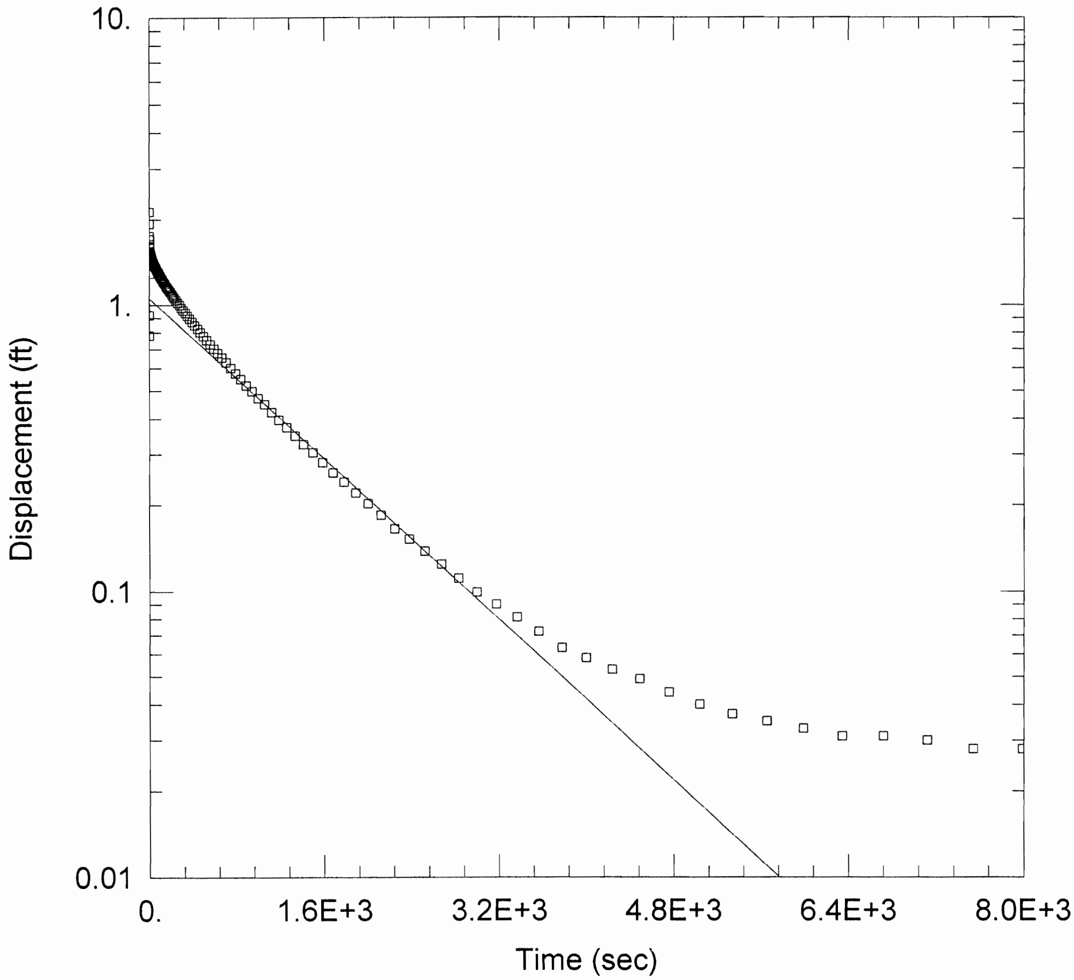
SOLUTION

Aquifer Model: Confined
Solution Method: Hvorslev
Shape Factor: 3.37

VISUAL ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	
K	1.028E-5	cm/sec
y0	1.214	ft



G11M FALLING HEAD 10-12-07

Data Set: T:\...\G11M fh 10-12-07.aqt
Date: 12/03/07 Time: 09:01:06

PROJECT INFORMATION

Company: PDC Technical Services, Inc.
Client: Clinton Landfill #3
Project: 91-0118.10
Location: Clinton, IL
Test Well: G11M
Test Date: 10-12-07

AQUIFER DATA

Saturated Thickness: 2. ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (G11M)

Initial Displacement: 1.931 ft
Total Well Penetration Depth: 8.26 ft
Casing Radius: 0.08333 ft
Static Water Column Height: 27.06 ft
Screen Length: 9.67 ft
Wellbore Radius: 0.3333 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Confined
Solution Method: Hvorslev
K = 2.978E-5 cm/sec
y0 = 1.055 ft

Data Set: T:\Projects\91-118 CLI\Technical\Groundwater\CLI #3 slug test data\CLI#3 slug test data 2007\CLI #3
Title: G11M Falling Head 10-12-07
Date: 12/03/07
Time: 09:01:11

PROJECT INFORMATION

Company: PDC Technical Services, Inc.
Client: Clinton Landfill #3
Project: 91-0118.10
Location: Clinton, IL
Test Date: 10-12-07
Test Well: G11M

AQUIFER DATA

Saturated Thickness: 2. ft
Anisotropy Ratio (Kz/Kr): 1.

SLUG TEST WELL DATA

Test Well: : G11M

X Location: 0. ft
Y Location: 0. ft

Initial Displacement: 1.931 ft
Static Water Column Height: 27.06 ft
Casing Radius: 0.08333 ft
Wellbore Radius: 0.3333 ft
Well Skin Radius: 0.3333 ft
Screen Length: 9.67 ft
Total Well Penetration Depth: 8.26 ft
Corrected Casing Radius (Bouwer-Rice Method): 0.08333 ft
Gravel Pack Porosity: 0.3

No. of Observations: 127

Observation Data

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
0.	1.928	217.8	1.074
0.3	0.781	231.1	1.057
0.7	0.92	245.2	1.037
1.	1.931	260.1	1.017
1.4	2.127	275.9	0.998
1.8	1.44	292.7	0.977
2.3	1.287	310.5	0.957
2.7	1.748	329.3	0.937
3.2	1.703	349.2	0.916
3.8	1.436	370.3	0.895
4.3	1.602	392.7	0.872
4.9	1.613	416.4	0.848
5.6	1.505	441.5	0.825
6.2	1.588	468.1	0.802
6.9	1.535	496.3	0.777
7.7	1.547	526.2	0.752
8.5	1.537	557.8	0.727
9.3	1.531	591.3	0.702
10.2	1.522	626.8	0.677
11.1	1.521	664.4	0.653
12.1	1.51	704.2	0.628
13.2	1.506	746.4	0.601
14.3	1.501	791.1	0.574
15.5	1.496	838.5	0.549
16.7	1.487	888.7	0.522

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
18.1	1.48	941.8	0.498
19.5	1.473	998.1	0.471
21.	1.465	1057.7	0.448
22.5	1.464	1120.9	0.421
24.1	1.46	1187.8	0.396
25.8	1.448	1258.7	0.373
27.6	1.441	1333.8	0.348
29.5	1.433	1413.3	0.325
31.6	1.426	1497.6	0.304
33.8	1.419	1586.9	0.281
36.1	1.412	1681.4	0.259
38.6	1.403	1781.5	0.24
41.2	1.396	1887.6	0.22
44.	1.387	2000.	0.202
46.9	1.38	2119.	0.184
50.	1.371	2245.1	0.165
53.3	1.362	2378.7	0.152
56.8	1.355	2520.2	0.138
60.5	1.344	2670.1	0.124
64.4	1.335	2828.9	0.111
68.6	1.325	2997.1	0.099
73.	1.316	3175.2	0.09
77.7	1.307	3363.9	0.081
82.7	1.297	3563.8	0.072
88.	1.291	3775.5	0.063
93.6	1.275	3999.8	0.058
99.5	1.263	4237.4	0.053
105.8	1.25	4489.	0.049
112.4	1.238	4755.6	0.044
119.4	1.225	5038.	0.04
126.9	1.211	5337.1	0.037
134.8	1.199	5653.9	0.035
143.2	1.185	5989.5	0.033
152.1	1.165	6345.	0.031
161.5	1.154	6721.5	0.031
171.5	1.14	7120.4	0.03
182.1	1.124	7542.9	0.028
193.3	1.11	7990.4	0.028
205.2	1.09		

SOLUTION

Aquifer Model: Confined
Solution Method: Hvorslev
Shape Factor: 3.369

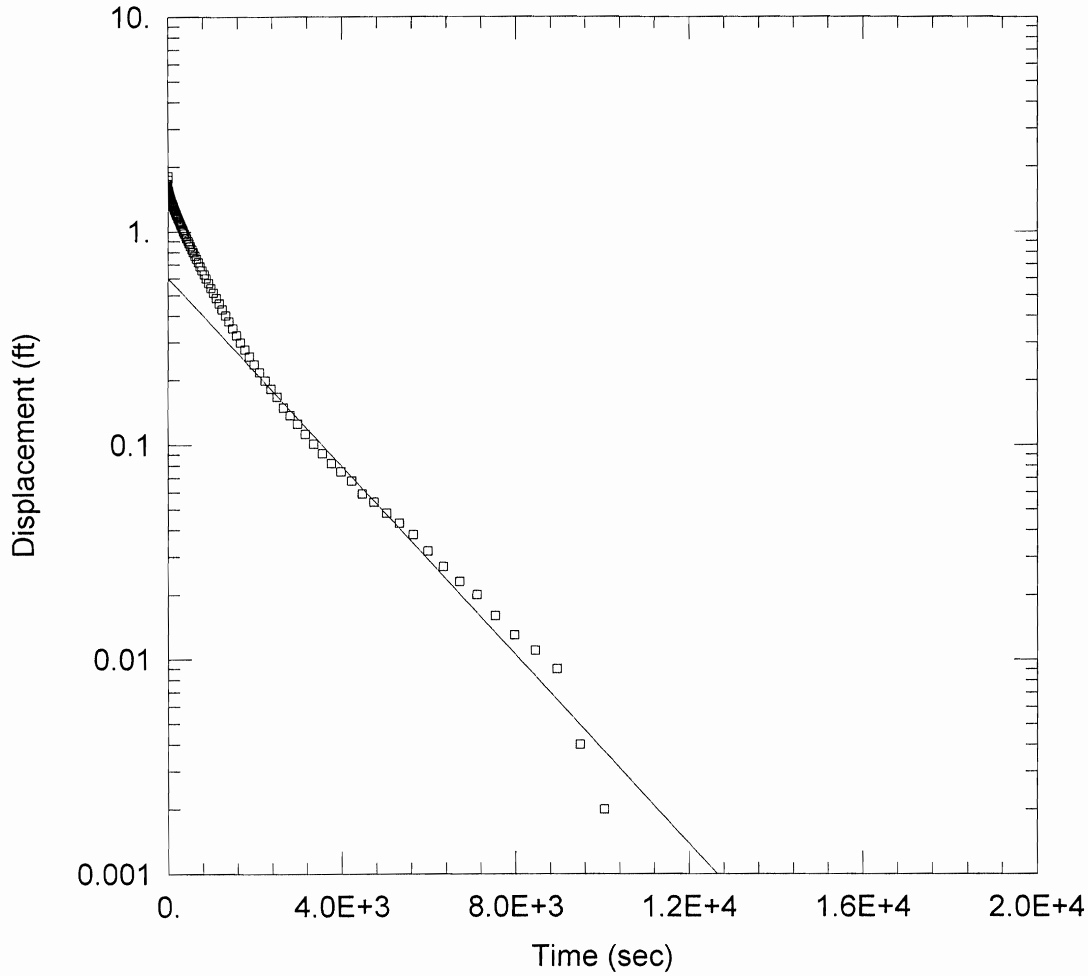
VISUAL ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	
K	2.978E-5	cm/sec
y0	1.055	ft

NOTES

Error due to noisy early-time data.



G11M RISING HEAD 10-12-07

Data Set: T:\...\G11M rh 10-12-07.aqt
Date: 12/03/07 Time: 09:01:25

PROJECT INFORMATION

Company: PDC Technical Services, Inc.
Client: Clinton Landfill #3
Project: 91-0118.10
Location: Clinton, IL
Test Well: G11M
Test Date: 10-12-07

AQUIFER DATA

Saturated Thickness: 2. ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (G11M)

Initial Displacement: 1.81 ft
Total Well Penetration Depth: 8.26 ft
Casing Radius: 0.08333 ft
Static Water Column Height: 27.1 ft
Screen Length: 9.67 ft
Wellbore Radius: 0.3333 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Confined
Solution Method: Hvorslev
K = 1.866E-5 cm/sec
y0 = 0.603 ft

Data Set: T:\Projects\91-118 CLI\Technical\Groundwater\CLI #3 slug test data\CLI#3 slug test data 2007\CLI #3
Title: G11M Rising Head 10-12-07
Date: 12/03/07
Time: 09:01:29

PROJECT INFORMATION

Company: PDC Technical Services, Inc.
Client: Clinton Landfill #3
Project: 91-0118.10
Location: Clinton, IL
Test Date: 10-12-07
Test Well: G11M

AQUIFER DATA

Saturated Thickness: 2. ft
Anisotropy Ratio (Kz/Kr): 1.

SLUG TEST WELL DATA

Test Well: : G11M

X Location: 0. ft
Y Location: 0. ft

Initial Displacement: 1.81 ft
Static Water Column Height: 27.1 ft
Casing Radius: 0.08333 ft
Wellbore Radius: 0.3333 ft
Well Skin Radius: 0.3333 ft
Screen Length: 9.67 ft
Total Well Penetration Depth: 8.26 ft
Corrected Casing Radius (Bouwer-Rice Method): 0.08333 ft
Gravel Pack Porosity: 0.3

No. of Observations: 116

Observation Data

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
0.	1.81	362.6	1.001
0.8	1.619	385.	0.978
1.6	1.742	408.7	0.953
2.5	1.633	433.8	0.93
3.4	1.667	460.4	0.905
4.4	1.656	488.6	0.88
5.5	1.63	518.5	0.853
6.6	1.624	550.1	0.826
7.8	1.617	583.6	0.8
9.	1.608	619.1	0.771
10.4	1.598	656.7	0.744
11.8	1.589	696.5	0.716
13.3	1.578	738.7	0.687
14.8	1.569	783.4	0.657
16.4	1.56	830.8	0.628
18.1	1.551	881.	0.6
19.9	1.544	934.1	0.571
21.8	1.535	990.4	0.541
23.9	1.525	1050.	0.514
26.1	1.518	1113.2	0.484
28.4	1.509	1180.1	0.457
30.9	1.5	1251.	0.429
33.5	1.491	1326.1	0.402
36.3	1.482	1405.6	0.376
39.2	1.473	1489.9	0.349

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
42.3	1.466	1579.2	0.324
45.6	1.457	1673.7	0.299
49.1	1.448	1773.8	0.278
52.8	1.437	1879.9	0.258
56.7	1.428	1992.3	0.237
60.9	1.419	2111.3	0.217
65.3	1.411	2237.4	0.199
70.	1.402	2371.	0.182
75.	1.391	2512.5	0.167
80.3	1.38	2662.4	0.149
85.9	1.37	2821.2	0.137
91.8	1.359	2989.4	0.125
98.1	1.35	3167.5	0.112
104.7	1.338	3356.2	0.101
111.7	1.325	3556.1	0.091
119.2	1.314	3767.8	0.082
127.1	1.302	3992.1	0.075
135.5	1.287	4229.7	0.068
144.4	1.273	4481.3	0.059
153.8	1.261	4747.9	0.054
163.8	1.246	5030.3	0.048
174.4	1.23	5329.4	0.043
185.6	1.216	5646.2	0.038
197.5	1.198	5981.8	0.032
210.1	1.179	6337.3	0.027
223.4	1.161	6713.8	0.023
237.5	1.143	7112.7	0.02
252.4	1.125	7535.2	0.016
268.2	1.106	7982.7	0.013
285.	1.088	8456.7	0.011
302.8	1.068	8958.8	0.009
321.6	1.045	9490.7	0.004
341.5	1.024	1.005E+4	0.002

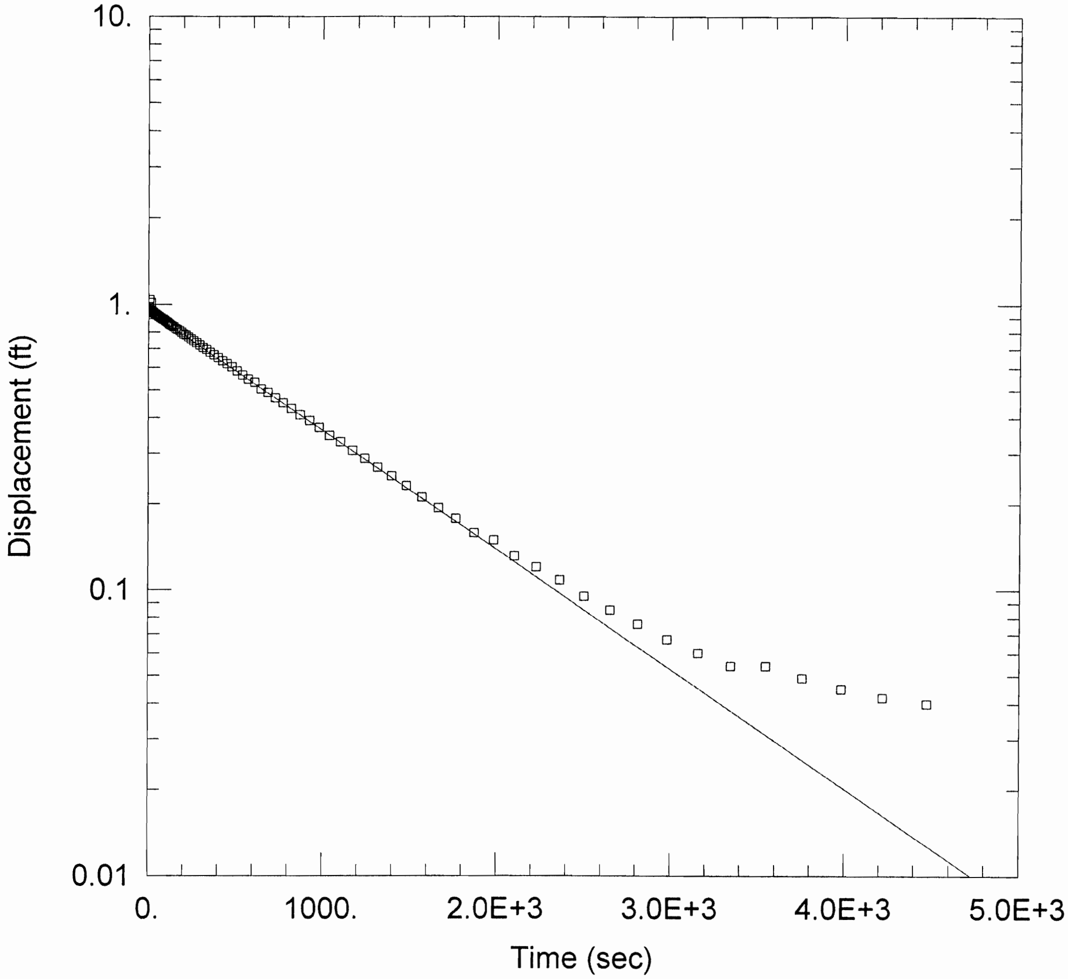
SOLUTION

Aquifer Model: Confined
Solution Method: Hvorslev
Shape Factor: 3.369

VISUAL ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	
K	1.866E-5	cm/sec
y0	0.603	ft



G08D FALLING HEAD 11-16-07

Data Set: T:\...\G08D fh 11-16-07.aqt
Date: 11/29/07 Time: 16:27:07

PROJECT INFORMATION

Company: PDC Technical Services, Inc.
Client: Clinton Landfill #3
Project: 91-0118.10
Location: Clinton, IL
Test Well: G08D
Test Date: 11-16-07

AQUIFER DATA

Saturated Thickness: 2. ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (G08D)

Initial Displacement: 0.981 ft
Total Well Penetration Depth: 6.94 ft
Casing Radius: 0.08333 ft
Static Water Column Height: 46.76 ft
Screen Length: 9.68 ft
Wellbore Radius: 0.3333 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Confined
Solution Method: Hvorslev

K = 3.546E-5 cm/sec
y0 = 0.946 ft

Data Set: T:\Projects\91-118 CLI\Technical\Groundwater\CLI #3 slug test data\CLI#3 slug test data 2007\CLI #3
Title: G08D Falling Head 11-16-07
Date: 11/29/07
Time: 16:27:12

PROJECT INFORMATION

Company: PDC Technical Services, Inc.
Client: Clinton Landfill #3
Project: 91-0118.10
Location: Clinton, IL
Test Date: 11-16-07
Test Well: G08D

AQUIFER DATA

Saturated Thickness: 2. ft
Anisotropy Ratio (Kz/Kr): 1.

SLUG TEST WELL DATA

Test Well: : G08D

X Location: 0. ft
Y Location: 0. ft

Initial Displacement: 0.981 ft
Static Water Column Height: 46.76 ft
Casing Radius: 0.08333 ft
Wellbore Radius: 0.3333 ft
Well Skin Radius: 0.3333 ft
Screen Length: 9.68 ft
Total Well Penetration Depth: 6.94 ft
Corrected Casing Radius (Bouwer-Rice Method): 0.08333 ft
Gravel Pack Porosity: 0.3

No. of Observations: 94

Observation Data

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
0.	0.981	295.	0.72
1.2	0.955	313.8	0.706
2.6	0.965	333.7	0.694
4.	0.98	354.8	0.679
5.5	0.965	377.2	0.665
7.	1.038	400.9	0.649
8.6	0.919	426.	0.633
10.3	0.917	452.6	0.619
12.1	0.951	480.8	0.603
14.	0.948	510.7	0.583
16.1	1.015	542.3	0.564
18.3	0.948	575.8	0.546
20.6	0.944	611.3	0.532
23.1	0.942	648.9	0.505
25.7	0.94	688.7	0.491
28.5	0.937	730.9	0.469
31.4	0.932	775.6	0.451
34.5	0.93	823.	0.43
37.8	0.926	873.2	0.409
41.3	0.924	926.3	0.391
45.	0.919	982.6	0.369
48.9	0.916	1042.2	0.346
53.1	0.914	1105.4	0.329
57.5	0.907	1172.3	0.307
62.2	0.903	1243.2	0.288

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
67.2	0.896	1318.3	0.268
72.5	0.894	1397.8	0.25
78.1	0.887	1482.1	0.231
84.	0.886	1571.4	0.211
90.3	0.88	1665.9	0.193
96.9	0.875	1766.	0.177
103.9	0.868	1872.1	0.158
111.4	0.861	1984.5	0.149
119.3	0.853	2103.5	0.131
127.7	0.846	2229.6	0.12
136.6	0.84	2363.2	0.108
146.	0.832	2504.7	0.095
156.	0.823	2654.6	0.085
166.6	0.816	2813.4	0.076
177.8	0.808	2981.6	0.067
189.7	0.797	3159.7	0.06
202.3	0.786	3348.4	0.054
215.6	0.779	3548.3	0.054
229.7	0.767	3760.	0.049
244.6	0.756	3984.3	0.045
260.4	0.745	4221.9	0.042
277.2	0.733	4473.5	0.04

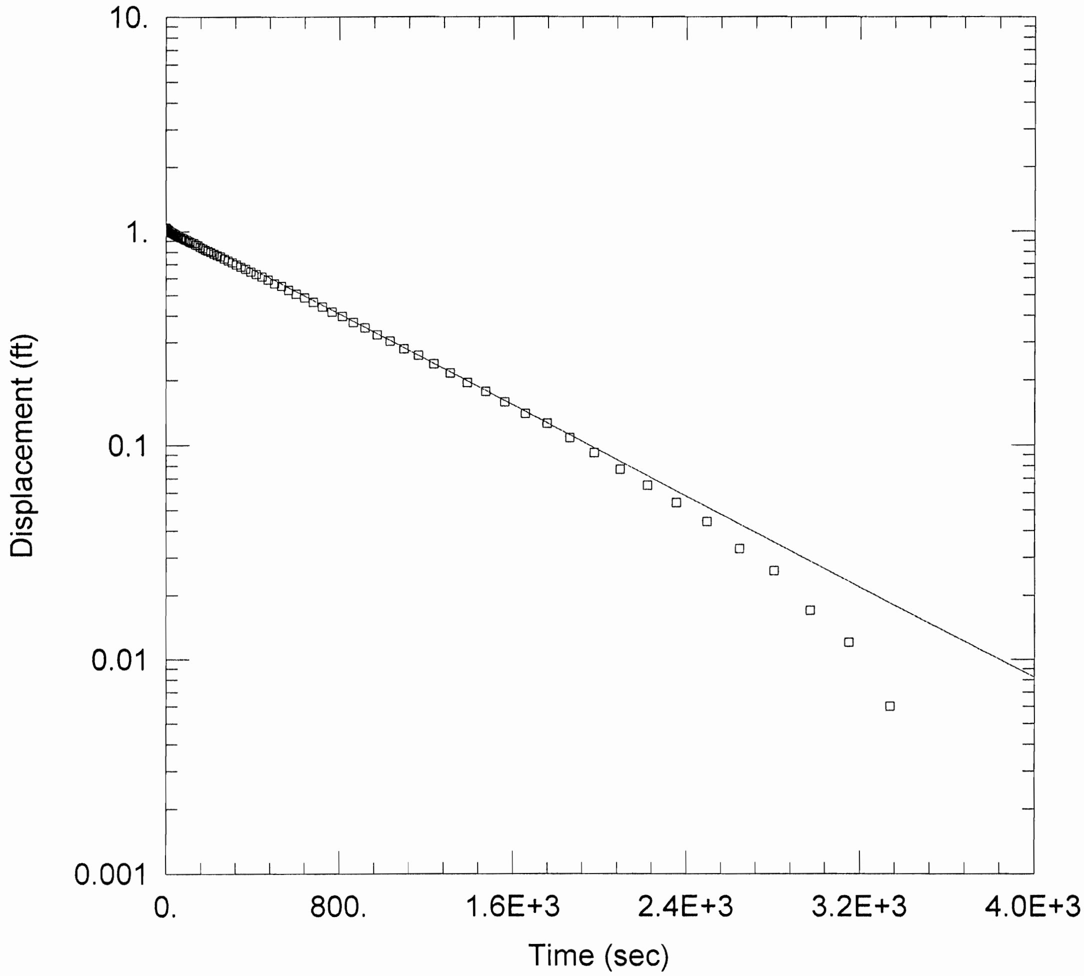
SOLUTION

Aquifer Model: Confined
Solution Method: Hvorslev
Shape Factor: 3.37

VISUAL ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	
K	3.546E-5	cm/sec
y0	0.946	ft



G08D RISING HEAD 11-16-07

Data Set: T:\...\G08D rh 11-16-07.aqt
Date: 11/29/07 Time: 16:27:20

PROJECT INFORMATION

Company: PDC Technical Services, Inc.
Client: Clinton Landfill #3
Project: 91-0118.10
Location: Clinton, IL
Test Well: G08D
Test Date: 11-16-07

AQUIFER DATA

Saturated Thickness: 2. ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (G08D)

Initial Displacement: 1.045 ft
Total Well Penetration Depth: 6.94 ft
Casing Radius: 0.08333 ft
Static Water Column Height: 46.88 ft
Screen Length: 9.68 ft
Wellbore Radius: 0.3333 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Confined
Solution Method: Hvorslev
K = 4.489E-5 cm/sec
y0 = 1.077 ft

Data Set: T:\Projects\91-118 CLI\Technical\Groundwater\CLI #3 slug test data\CLI#3 slug test data 2007\CLI #3
Title: G08D Rising Head 11-16-07
Date: 11/29/07
Time: 16:27:24

PROJECT INFORMATION

Company: PDC Technical Services, Inc.
Client: Clinton Landfill #3
Project: 91-0118.10
Location: Clinton, IL
Test Date: 11-16-07
Test Well: G08D

AQUIFER DATA

Saturated Thickness: 2. ft
Anisotropy Ratio (Kz/Kr): 1.

SLUG TEST WELL DATA

Test Well: : G08D

X Location: 0. ft
Y Location: 0. ft

Initial Displacement: 1.045 ft
Static Water Column Height: 46.88 ft
Casing Radius: 0.08333 ft
Wellbore Radius: 0.3333 ft
Well Skin Radius: 0.3333 ft
Screen Length: 9.68 ft
Total Well Penetration Depth: 6.94 ft
Corrected Casing Radius (Bouwer-Rice Method): 0.08333 ft
Gravel Pack Porosity: 0.3

No. of Observations: 83

Observation Data

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
0.	1.045	305.2	0.711
1.7	1.034	325.1	0.695
3.5	1.033	346.2	0.679
5.4	1.025	368.6	0.663
7.5	1.02	392.3	0.644
9.7	1.018	417.4	0.626
12.	1.015	444.	0.608
14.5	1.008	472.2	0.589
17.1	1.002	502.1	0.565
19.9	0.997	533.7	0.549
22.8	0.993	567.2	0.526
25.9	0.99	602.7	0.505
29.2	0.984	640.3	0.485
32.7	0.983	680.1	0.462
36.4	0.977	722.3	0.439
40.3	0.97	767.	0.416
44.5	0.965	814.4	0.396
48.9	0.959	864.6	0.371
53.6	0.956	917.7	0.35
58.6	0.949	974.	0.325
63.9	0.938	1033.6	0.304
69.5	0.936	1096.8	0.28
75.4	0.932	1163.7	0.261
81.7	0.922	1234.6	0.238
88.3	0.915	1309.7	0.216

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
95.3	0.909	1389.2	0.195
102.8	0.9	1473.5	0.177
110.7	0.892	1562.8	0.158
119.1	0.883	1657.3	0.14
128.	0.879	1757.4	0.126
137.4	0.865	1863.5	0.108
147.4	0.859	1975.9	0.092
158.	0.842	2094.9	0.077
169.2	0.831	2221.	0.065
181.1	0.816	2354.6	0.054
193.7	0.808	2496.1	0.044
207.	0.797	2646.	0.033
221.1	0.783	2804.8	0.026
236.	0.77	2973.	0.017
251.8	0.761	3151.1	0.012
268.6	0.743	3339.8	0.006
286.4	0.726		

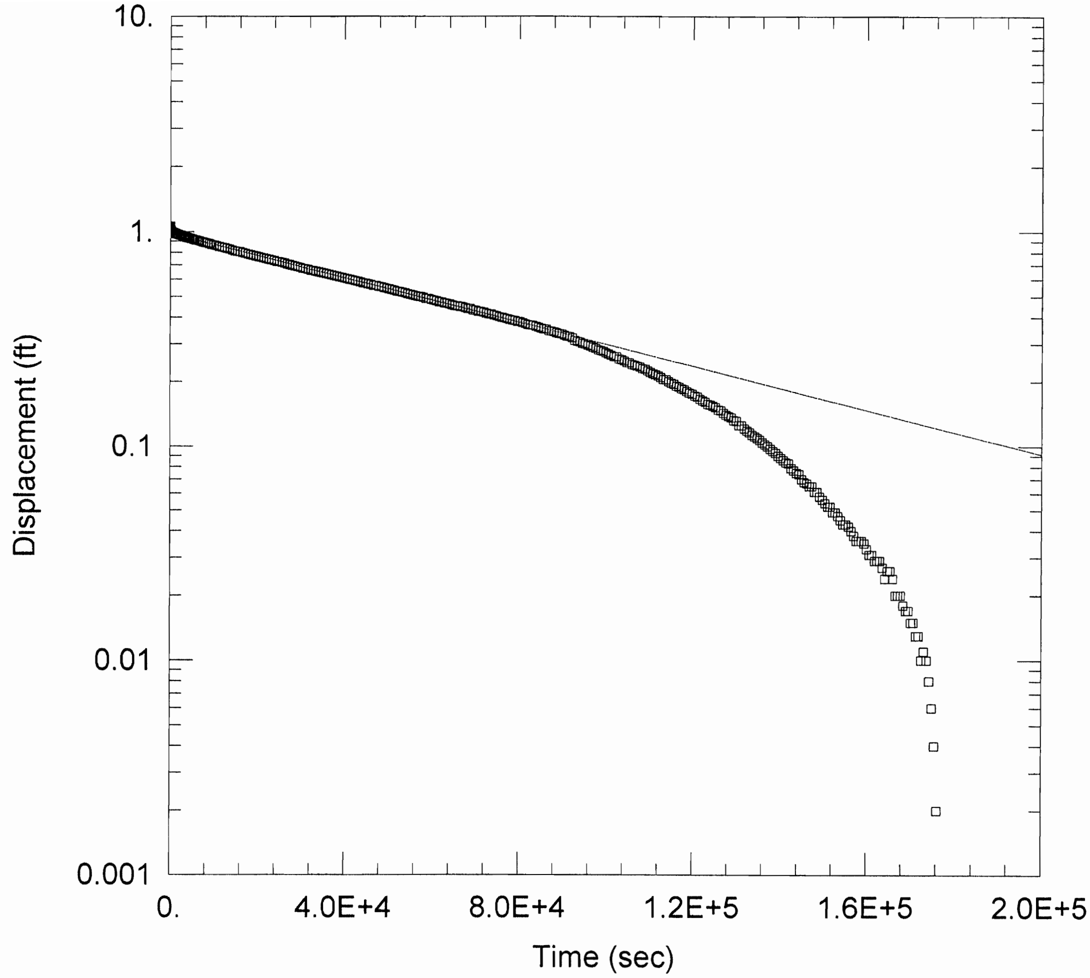
SOLUTION

Aquifer Model: Confined
Solution Method: Hvorslev
Shape Factor: 3.37

VISUAL ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	
K	4.489E-5	cm/sec
y0	1.077	ft



G09D RISING HEAD 11-12-07

Data Set: T:\...\G09D rh 11-12-07.aqt
Date: 11/29/07 Time: 16:28:39

PROJECT INFORMATION

Company: PDC Technical Services, Inc.
Client: Clinton Landfill #3
Project: 91-0118.10
Location: Clinton, IL
Test Well: G09D
Test Date: 11-12-07

AQUIFER DATA

Saturated Thickness: 7.5 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (G09D)

Initial Displacement: 1.057 ft
Total Well Penetration Depth: 9.42 ft
Casing Radius: 0.08333 ft
Static Water Column Height: 45.81 ft
Screen Length: 9.67 ft
Wellbore Radius: 0.3333 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Confined
Solution Method: Hvorslev
K = 4.367E-7 cm/sec
y0 = 0.9788 ft

Data Set: T:\Projects\91-118 CLI\Technical\Groundwater\CLI #3 slug test data\CLI#3 slug test data 2007\CLI #3
Title: G09D Rising Head 11-12-07
Date: 11/29/07
Time: 16:28:43

PROJECT INFORMATION

Company: PDC Technical Services, Inc.
Client: Clinton Landfill #3
Project: 91-0118.10
Location: Clinton, IL
Test Date: 11-12-07
Test Well: G09D

AQUIFER DATA

Saturated Thickness: 7.5 ft
Anisotropy Ratio (Kz/Kr): 1.

SLUG TEST WELL DATA

Test Well: : G09D

X Location: 0. ft
Y Location: 0. ft

Initial Displacement: 1.057 ft
Static Water Column Height: 45.81 ft
Casing Radius: 0.08333 ft
Wellbore Radius: 0.3333 ft
Well Skin Radius: 0.3333 ft
Screen Length: 9.67 ft
Total Well Penetration Depth: 9.42 ft
Corrected Casing Radius (Bouwer-Rice Method): 0.08333 ft
Gravel Pack Porosity: 0.3

No. of Observations: 403

Observation Data

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
0.	1.057	5.626E+4	0.503
0.5	1.048	5.686E+4	0.499
0.9	1.051	5.746E+4	0.497
1.4	1.047	5.806E+4	0.494
2.	1.043	5.866E+4	0.488
2.5	1.048	5.926E+4	0.487
3.1	1.045	5.986E+4	0.483
3.8	1.045	6.046E+4	0.48
4.4	1.043	6.106E+4	0.476
5.1	1.043	6.166E+4	0.472
5.9	1.043	6.226E+4	0.469
6.7	1.041	6.286E+4	0.465
7.5	1.043	6.346E+4	0.464
8.4	1.041	6.406E+4	0.46
9.3	1.043	6.466E+4	0.456
10.3	1.043	6.526E+4	0.453
11.4	1.041	6.586E+4	0.451
12.5	1.041	6.646E+4	0.448
13.7	1.041	6.706E+4	0.446
14.9	1.041	6.766E+4	0.442
16.3	1.039	6.826E+4	0.439
17.7	1.043	6.886E+4	0.437
19.2	1.041	6.946E+4	0.431
20.7	1.039	7.006E+4	0.43
22.3	1.041	7.066E+4	0.426

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
24.	1.039	7.126E+4	0.424
25.8	1.039	7.186E+4	0.421
27.7	1.037	7.246E+4	0.417
29.8	1.037	7.306E+4	0.414
32.	1.037	7.366E+4	0.412
34.3	1.036	7.426E+4	0.408
36.8	1.034	7.486E+4	0.405
39.4	1.032	7.546E+4	0.401
42.2	1.03	7.606E+4	0.399
45.1	1.032	7.666E+4	0.396
48.2	1.03	7.726E+4	0.394
51.5	1.028	7.786E+4	0.389
55.	1.028	7.846E+4	0.387
58.7	1.035	7.906E+4	0.385
62.6	1.025	7.966E+4	0.382
66.8	1.019	8.026E+4	0.38
71.2	1.019	8.086E+4	0.376
75.9	1.018	8.146E+4	0.373
80.9	1.014	8.206E+4	0.369
86.2	1.021	8.266E+4	0.367
91.8	1.012	8.326E+4	0.366
97.7	1.01	8.386E+4	0.362
104.	1.014	8.446E+4	0.359
110.6	1.012	8.506E+4	0.355
117.6	1.01	8.566E+4	0.353
125.1	1.01	8.626E+4	0.351
133.	1.008	8.686E+4	0.346
141.4	1.007	8.746E+4	0.344
150.3	1.007	8.806E+4	0.342
159.7	1.007	8.866E+4	0.339
169.7	1.007	8.926E+4	0.335
180.3	1.005	8.986E+4	0.334
191.5	1.005	9.046E+4	0.33
203.4	1.003	9.106E+4	0.326
216.	1.003	9.166E+4	0.325
229.3	1.003	9.226E+4	0.321
243.4	1.001	9.286E+4	0.312
258.3	1.001	9.346E+4	0.309
274.1	1.001	9.406E+4	0.307
290.9	0.999	9.466E+4	0.303
308.7	0.998	9.526E+4	0.3
327.5	0.998	9.586E+4	0.296
347.4	0.998	9.646E+4	0.293
368.5	0.996	9.706E+4	0.289
390.9	0.996	9.766E+4	0.286
414.6	0.996	9.826E+4	0.282
439.7	0.996	9.886E+4	0.28
466.3	0.994	9.946E+4	0.277
494.5	0.994	1.001E+5	0.273
524.4	0.992	1.007E+5	0.269
556.	0.992	1.013E+5	0.266
589.5	0.99	1.019E+5	0.262
625.	0.989	1.025E+5	0.261
662.6	0.989	1.031E+5	0.255
702.4	0.987	1.037E+5	0.253
744.6	0.987	1.043E+5	0.25
789.3	0.987	1.049E+5	0.246
836.7	0.987	1.055E+5	0.245
886.9	0.985	1.061E+5	0.241
940.	0.983	1.067E+5	0.239
996.3	0.982	1.073E+5	0.237
1055.9	0.982	1.079E+5	0.234
1119.1	0.98	1.085E+5	0.23
1186.	0.98	1.091E+5	0.229

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
1256.9	0.976	1.097E+5	0.225
1332.	0.976	1.103E+5	0.221
1411.5	0.974	1.109E+5	0.218
1495.8	0.973	1.115E+5	0.216
1585.1	0.973	1.121E+5	0.213
1679.6	0.971	1.127E+5	0.209
1779.7	0.969	1.133E+5	0.205
1885.8	0.967	1.139E+5	0.204
1998.2	0.964	1.145E+5	0.2
2117.2	0.962	1.151E+5	0.197
2243.3	0.962	1.157E+5	0.195
2376.9	0.96	1.163E+5	0.191
2518.4	0.958	1.169E+5	0.189
2668.3	0.955	1.175E+5	0.186
2827.1	0.951	1.181E+5	0.184
2995.3	0.948	1.187E+5	0.18
3173.4	0.946	1.193E+5	0.177
3362.1	0.944	1.199E+5	0.175
3562.	0.941	1.205E+5	0.172
3773.7	0.937	1.211E+5	0.17
3998.	0.935	1.217E+5	0.166
4235.6	0.932	1.223E+5	0.163
4487.2	0.928	1.229E+5	0.161
4753.8	0.925	1.235E+5	0.157
5036.2	0.923	1.241E+5	0.156
5335.3	0.917	1.247E+5	0.154
5652.1	0.914	1.253E+5	0.152
5987.7	0.91	1.259E+5	0.148
6343.2	0.907	1.265E+5	0.147
6719.7	0.903	1.271E+5	0.143
7118.6	0.898	1.277E+5	0.14
7541.1	0.893	1.283E+5	0.138
7988.6	0.887	1.289E+5	0.136
8462.6	0.882	1.295E+5	0.132
8964.7	0.877	1.301E+5	0.131
9496.6	0.869	1.307E+5	0.125
1.006E+4	0.864	1.313E+5	0.125
1.066E+4	0.859	1.319E+5	0.121
1.126E+4	0.85	1.325E+5	0.118
1.186E+4	0.846	1.331E+5	0.116
1.246E+4	0.839	1.337E+5	0.113
1.306E+4	0.832	1.343E+5	0.111
1.366E+4	0.827	1.349E+5	0.109
1.426E+4	0.82	1.355E+5	0.107
1.486E+4	0.812	1.361E+5	0.104
1.546E+4	0.807	1.367E+5	0.102
1.606E+4	0.804	1.373E+5	0.1
1.666E+4	0.796	1.379E+5	0.097
1.726E+4	0.791	1.385E+5	0.095
1.786E+4	0.784	1.391E+5	0.093
1.846E+4	0.779	1.397E+5	0.09
1.906E+4	0.773	1.403E+5	0.088
1.966E+4	0.768	1.409E+5	0.086
2.026E+4	0.763	1.415E+5	0.084
2.086E+4	0.757	1.421E+5	0.083
2.146E+4	0.752	1.427E+5	0.079
2.206E+4	0.747	1.433E+5	0.077
2.266E+4	0.741	1.439E+5	0.075
2.326E+4	0.736	1.445E+5	0.074
2.386E+4	0.731	1.451E+5	0.07
2.446E+4	0.725	1.457E+5	0.068
2.506E+4	0.721	1.463E+5	0.067
2.566E+4	0.716	1.469E+5	0.065
2.626E+4	0.711	1.475E+5	0.065

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
2.686E+4	0.706	1.481E+5	0.061
2.746E+4	0.7	1.487E+5	0.061
2.806E+4	0.695	1.493E+5	0.058
2.866E+4	0.691	1.499E+5	0.056
2.926E+4	0.686	1.505E+5	0.054
2.986E+4	0.681	1.511E+5	0.052
3.046E+4	0.675	1.517E+5	0.052
3.106E+4	0.672	1.523E+5	0.049
3.166E+4	0.668	1.529E+5	0.049
3.226E+4	0.661	1.535E+5	0.047
3.286E+4	0.658	1.541E+5	0.045
3.346E+4	0.654	1.547E+5	0.043
3.406E+4	0.65	1.553E+5	0.043
3.466E+4	0.645	1.559E+5	0.042
3.526E+4	0.64	1.565E+5	0.04
3.586E+4	0.636	1.571E+5	0.038
3.646E+4	0.633	1.577E+5	0.036
3.706E+4	0.627	1.583E+5	0.036
3.766E+4	0.624	1.589E+5	0.036
3.826E+4	0.62	1.595E+5	0.035
3.886E+4	0.615	1.601E+5	0.033
3.946E+4	0.611	1.607E+5	0.031
4.006E+4	0.606	1.613E+5	0.031
4.066E+4	0.602	1.619E+5	0.029
4.126E+4	0.599	1.625E+5	0.029
4.186E+4	0.595	1.631E+5	0.029
4.246E+4	0.59	1.637E+5	0.027
4.306E+4	0.586	1.643E+5	0.024
4.366E+4	0.583	1.649E+5	0.026
4.426E+4	0.577	1.655E+5	0.026
4.486E+4	0.574	1.661E+5	0.024
4.546E+4	0.57	1.667E+5	0.02
4.606E+4	0.567	1.673E+5	0.02
4.666E+4	0.561	1.679E+5	0.02
4.726E+4	0.56	1.685E+5	0.018
4.786E+4	0.556	1.691E+5	0.017
4.846E+4	0.553	1.697E+5	0.017
4.906E+4	0.547	1.703E+5	0.015
4.966E+4	0.544	1.709E+5	0.015
5.026E+4	0.54	1.715E+5	0.013
5.086E+4	0.537	1.721E+5	0.013
5.146E+4	0.533	1.727E+5	0.01
5.206E+4	0.528	1.733E+5	0.011
5.266E+4	0.526	1.739E+5	0.01
5.326E+4	0.522	1.745E+5	0.008
5.386E+4	0.519	1.751E+5	0.006
5.446E+4	0.513	1.757E+5	0.004
5.506E+4	0.51	1.763E+5	0.002
5.566E+4	0.506		

SOLUTION

Aquifer Model: Confined
Solution Method: Hvorslev
Shape Factor: 3.369

VISUAL ESTIMATION RESULTS

Estimated Parameters

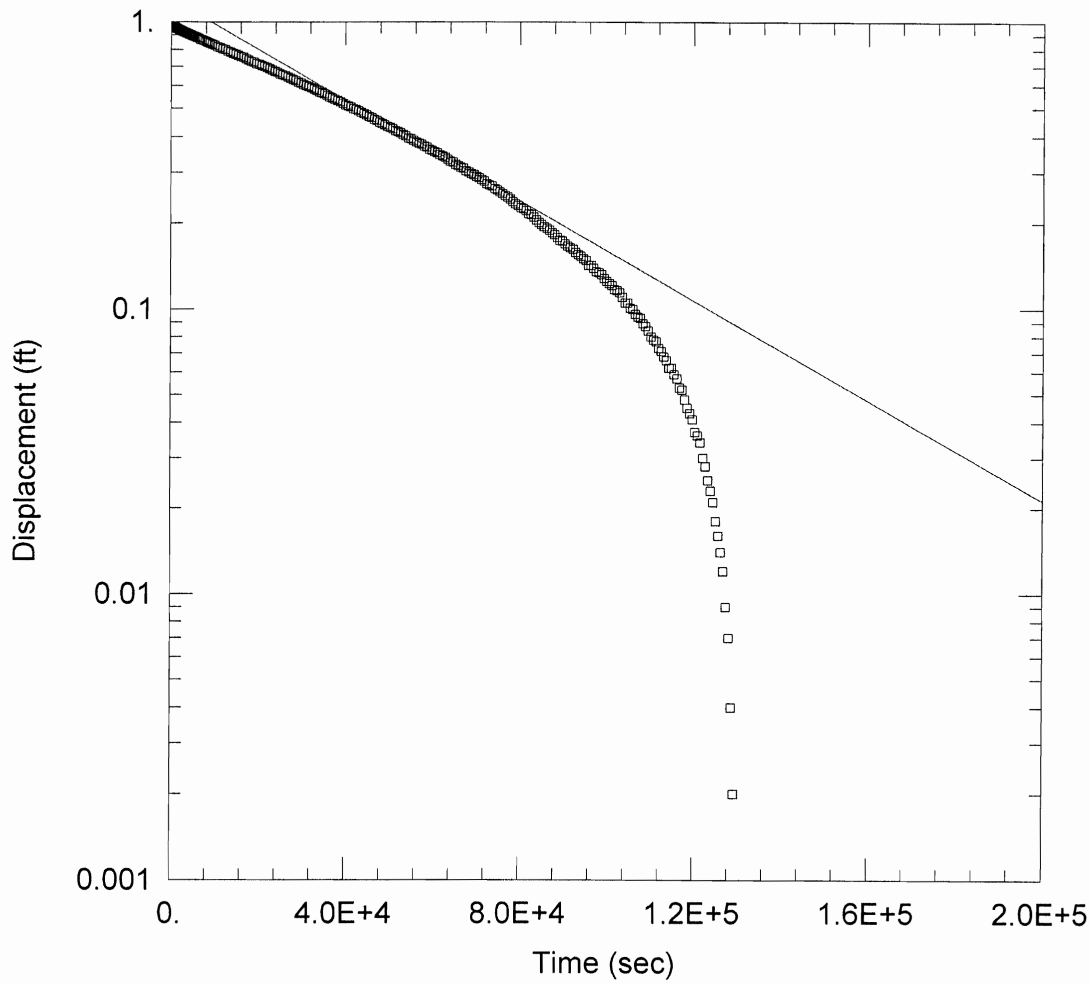
Parameter	Estimate	
K	4.367E-7	cm/sec
y0	0.9788	ft

Solution Method: Hvorslev
Shape Factor: 3.369

VISUAL ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	
K	7.437E-7	cm/sec
y0	1.202	ft



G09D FALLING HEAD 11-8-07

Data Set: T:\...\G09D fh 11-8-07.aqt
Date: 11/29/07 Time: 16:28:25

PROJECT INFORMATION

Company: PDC Technical Services, Inc.
Client: Clinton Landfill #3
Project: 91-0118.10
Location: Clinton, IL
Test Well: G09D
Test Date: 11-8-07

AQUIFER DATA

Saturated Thickness: 7.5 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (G09D)

Initial Displacement: 0.987 ft
Total Well Penetration Depth: 9.42 ft
Casing Radius: 0.08333 ft
Static Water Column Height: 46.02 ft
Screen Length: 9.67 ft
Wellbore Radius: 0.3333 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Confined Solution Method: Hvorslev

K = 7.437E-7 cm/sec y0 = 1.202 ft

Data Set: T:\Projects\91-118 CLI\Technical\Groundwater\CLI #3 slug test data\CLI#3 slug test data 2007\CLI #3
Title: G09D Falling Head 11-8-07
Date: 11/29/07
Time: 16:28:30

PROJECT INFORMATION

Company: PDC Technical Services, Inc.
Client: Clinton Landfill #3
Project: 91-0118.10
Location: Clinton, IL
Test Date: 11-8-07
Test Well: G09D

AQUIFER DATA

Saturated Thickness: 7.5 ft
Anisotropy Ratio (Kz/Kr): 1.

SLUG TEST WELL DATA

Test Well: : G09D

X Location: 0. ft
Y Location: 0. ft

Initial Displacement: 0.987 ft
Static Water Column Height: 46.02 ft
Casing Radius: 0.08333 ft
Wellbore Radius: 0.3333 ft
Well Skin Radius: 0.3333 ft
Screen Length: 9.67 ft
Total Well Penetration Depth: 9.42 ft
Corrected Casing Radius (Bouwer-Rice Method): 0.08333 ft
Gravel Pack Porosity: 0.3

No. of Observations: 297

Observation Data

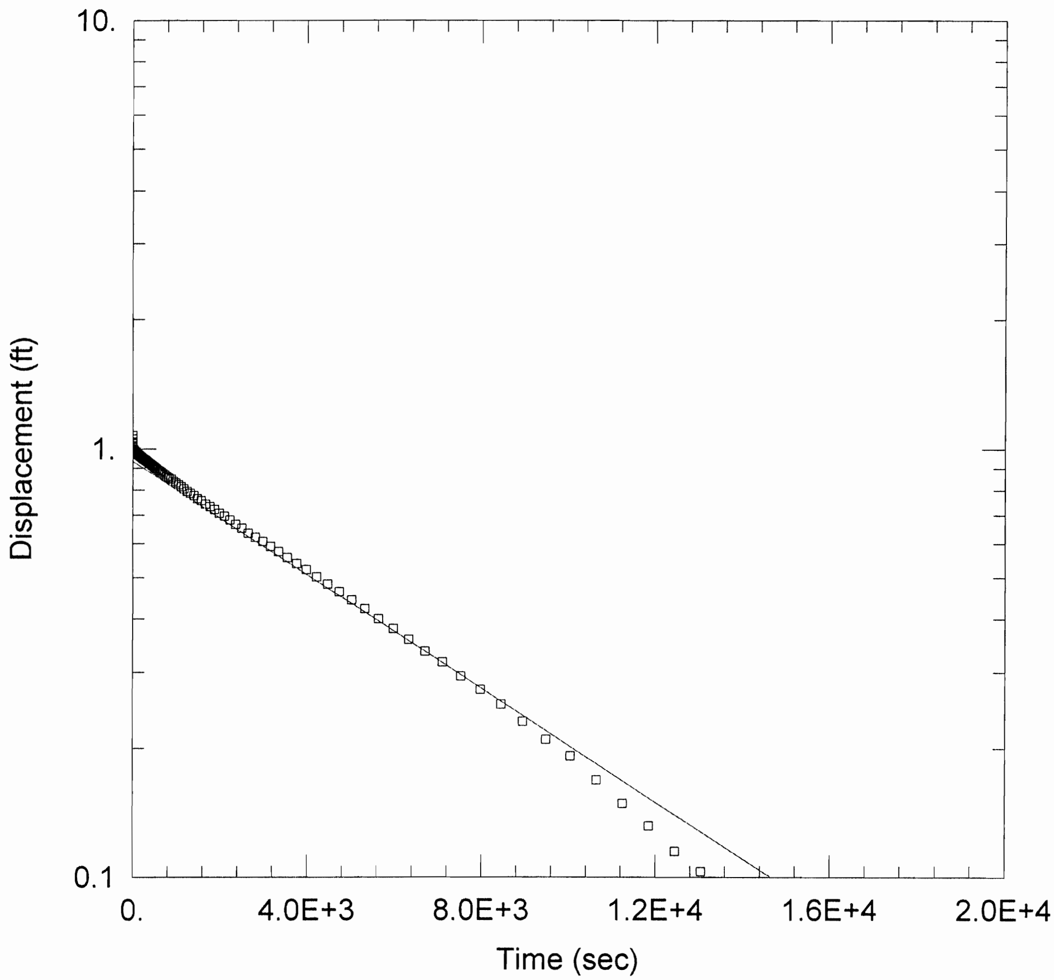
Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
0.	0.987	4.123E+4	0.506
2.2	0.982	4.183E+4	0.498
4.5	0.98	4.243E+4	0.495
7.	0.98	4.303E+4	0.49
9.6	0.982	4.363E+4	0.484
12.4	0.984	4.423E+4	0.479
15.3	0.984	4.483E+4	0.474
18.4	0.982	4.543E+4	0.468
21.7	0.98	4.603E+4	0.465
25.2	0.98	4.663E+4	0.458
28.9	0.98	4.723E+4	0.454
32.8	0.978	4.783E+4	0.447
37.	0.978	4.843E+4	0.443
41.4	0.977	4.903E+4	0.438
46.1	0.978	4.963E+4	0.433
51.1	0.986	5.023E+4	0.429
56.4	0.977	5.083E+4	0.425
62.	0.979	5.143E+4	0.418
67.9	0.977	5.203E+4	0.415
74.2	0.977	5.263E+4	0.411
80.8	0.977	5.323E+4	0.406
87.8	0.975	5.383E+4	0.402
95.3	0.977	5.443E+4	0.395
103.2	0.977	5.503E+4	0.393
111.6	0.977	5.563E+4	0.388

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
120.5	0.975	5.623E+4	0.383
129.9	0.973	5.683E+4	0.379
139.9	0.975	5.743E+4	0.376
150.5	0.977	5.803E+4	0.37
161.7	0.975	5.863E+4	0.367
173.6	0.972	5.923E+4	0.361
186.2	0.973	5.983E+4	0.358
199.5	0.973	6.043E+4	0.354
213.6	0.973	6.103E+4	0.351
228.5	0.972	6.163E+4	0.345
244.3	0.972	6.223E+4	0.342
261.1	0.972	6.283E+4	0.338
278.9	0.97	6.343E+4	0.333
297.7	0.97	6.403E+4	0.328
317.6	0.968	6.463E+4	0.326
338.7	0.968	6.523E+4	0.32
361.1	0.968	6.583E+4	0.317
384.8	0.968	6.643E+4	0.313
409.9	0.967	6.703E+4	0.31
436.5	0.967	6.763E+4	0.304
464.7	0.967	6.823E+4	0.301
494.6	0.965	6.883E+4	0.297
526.2	0.963	6.943E+4	0.294
559.7	0.96	7.003E+4	0.29
595.2	0.961	7.063E+4	0.287
632.8	0.96	7.123E+4	0.283
672.6	0.958	7.183E+4	0.279
714.8	0.958	7.243E+4	0.274
759.5	0.956	7.303E+4	0.271
806.9	0.956	7.363E+4	0.269
857.1	0.956	7.423E+4	0.263
910.2	0.954	7.483E+4	0.26
966.5	0.954	7.543E+4	0.256
1026.1	0.952	7.603E+4	0.253
1089.3	0.952	7.663E+4	0.249
1156.2	0.951	7.723E+4	0.246
1227.1	0.949	7.783E+4	0.242
1302.2	0.947	7.843E+4	0.237
1381.7	0.947	7.903E+4	0.233
1466.	0.945	7.963E+4	0.23
1555.3	0.944	8.023E+4	0.226
1649.8	0.942	8.083E+4	0.224
1749.9	0.942	8.143E+4	0.221
1856.	0.938	8.203E+4	0.215
1968.4	0.936	8.263E+4	0.214
2087.4	0.935	8.323E+4	0.21
2213.5	0.935	8.383E+4	0.205
2347.1	0.931	8.443E+4	0.201
2488.6	0.927	8.503E+4	0.198
2638.5	0.927	8.563E+4	0.194
2797.3	0.924	8.623E+4	0.192
2965.5	0.92	8.683E+4	0.189
3143.6	0.919	8.743E+4	0.185
3332.3	0.917	8.803E+4	0.182
3532.2	0.913	8.863E+4	0.178
3743.9	0.91	8.923E+4	0.174
3968.2	0.908	8.983E+4	0.173
4205.8	0.904	9.043E+4	0.169
4457.4	0.901	9.103E+4	0.166
4724.	0.897	9.163E+4	0.164
5006.4	0.892	9.223E+4	0.162
5305.5	0.89	9.283E+4	0.158
5622.3	0.885	9.343E+4	0.155
5957.9	0.881	9.403E+4	0.153

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
6313.4	0.876	9.463E+4	0.15
6689.9	0.867	9.523E+4	0.148
7088.8	0.865	9.583E+4	0.142
7511.3	0.86	9.643E+4	0.142
7958.8	0.855	9.703E+4	0.139
8432.8	0.847	9.763E+4	0.135
8934.9	0.842	9.823E+4	0.134
9466.8	0.835	9.883E+4	0.132
1.003E+4	0.828	9.943E+4	0.128
1.063E+4	0.819	1.0E+5	0.125
1.123E+4	0.814	1.006E+5	0.123
1.183E+4	0.805	1.012E+5	0.121
1.243E+4	0.801	1.018E+5	0.117
1.303E+4	0.792	1.024E+5	0.116
1.363E+4	0.785	1.03E+5	0.114
1.423E+4	0.778	1.036E+5	0.11
1.483E+4	0.771	1.042E+5	0.105
1.543E+4	0.765	1.048E+5	0.105
1.603E+4	0.758	1.054E+5	0.101
1.663E+4	0.753	1.06E+5	0.1
1.723E+4	0.744	1.066E+5	0.096
1.783E+4	0.737	1.072E+5	0.094
1.843E+4	0.73	1.078E+5	0.093
1.903E+4	0.725	1.084E+5	0.089
1.963E+4	0.717	1.09E+5	0.087
2.023E+4	0.712	1.096E+5	0.084
2.083E+4	0.705	1.102E+5	0.08
2.143E+4	0.7	1.108E+5	0.078
2.203E+4	0.694	1.114E+5	0.077
2.263E+4	0.687	1.12E+5	0.073
2.323E+4	0.68	1.126E+5	0.071
2.383E+4	0.673	1.132E+5	0.068
2.443E+4	0.668	1.138E+5	0.066
2.503E+4	0.66	1.144E+5	0.062
2.563E+4	0.655	1.15E+5	0.062
2.623E+4	0.65	1.156E+5	0.059
2.683E+4	0.643	1.162E+5	0.057
2.743E+4	0.637	1.168E+5	0.053
2.803E+4	0.63	1.174E+5	0.052
2.863E+4	0.625	1.18E+5	0.048
2.923E+4	0.618	1.186E+5	0.045
2.983E+4	0.612	1.192E+5	0.043
3.043E+4	0.605	1.198E+5	0.041
3.103E+4	0.6	1.204E+5	0.037
3.163E+4	0.595	1.21E+5	0.036
3.223E+4	0.589	1.216E+5	0.034
3.283E+4	0.584	1.222E+5	0.03
3.343E+4	0.577	1.228E+5	0.028
3.403E+4	0.571	1.234E+5	0.025
3.463E+4	0.566	1.24E+5	0.023
3.523E+4	0.561	1.246E+5	0.021
3.583E+4	0.554	1.252E+5	0.018
3.643E+4	0.548	1.258E+5	0.016
3.703E+4	0.543	1.264E+5	0.014
3.763E+4	0.538	1.27E+5	0.012
3.823E+4	0.532	1.276E+5	0.009
3.883E+4	0.527	1.282E+5	0.007
3.943E+4	0.52	1.288E+5	0.004
4.003E+4	0.514	1.294E+5	0.002
4.063E+4	0.509		

SOLUTION

Aquifer Model: Confined



G10D FALLING HEAD 10-3-07

Data Set: T:\...\G10D fh 10-3-07.aqt
Date: 12/03/07 Time: 09:02:15

PROJECT INFORMATION

Company: PDC Technical Services, Inc.
Client: Clinton Landfill #3
Project: 91-0118.10
Location: Clinton, IL
Test Well: G10D
Test Date: 10-3-07

AQUIFER DATA

Saturated Thickness: 9. ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (G10D)

Initial Displacement: 1.076 ft
Total Well Penetration Depth: 9.5 ft
Casing Radius: 0.08333 ft
Static Water Column Height: 40.12 ft
Screen Length: 9.68 ft
Wellbore Radius: 0.3333 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Confined
Solution Method: Hvorslev

K = 5.623E-6 cm/sec
y0 = 0.9349 ft

Data Set: T:\Projects\91-118 CLI\Technical\Groundwater\CLI #3 slug test data\CLI#3 slug test data 2007\CLI #3
Title: G10D Falling Head 10-3-07
Date: 12/03/07
Time: 09:02:23

PROJECT INFORMATION

Company: PDC Technical Services, Inc.
Client: Clinton Landfill #3
Project: 91-0118.10
Location: Clinton, IL
Test Date: 10-3-07
Test Well: G10D

AQUIFER DATA

Saturated Thickness: 9. ft
Anisotropy Ratio (Kz/Kr): 1.

SLUG TEST WELL DATA

Test Well: : G10D

X Location: 0. ft
Y Location: 0. ft

Initial Displacement: 1.076 ft
Static Water Column Height: 40.12 ft
Casing Radius: 0.08333 ft
Wellbore Radius: 0.3333 ft
Well Skin Radius: 0.3333 ft
Screen Length: 9.68 ft
Total Well Penetration Depth: 9.5 ft
Corrected Casing Radius (Bouwer-Rice Method): 0.08333 ft
Gravel Pack Porosity: 0.3

No. of Observations: 117

Observation Data

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
0.	1.076	485.2	0.908
1.	1.055	515.1	0.902
2.1	1.037	546.7	0.897
3.2	1.03	580.2	0.892
4.4	1.028	615.7	0.887
5.6	1.017	653.3	0.881
7.	1.	693.1	0.874
8.4	0.995	735.3	0.869
9.9	1.007	780.	0.862
11.4	1.	827.4	0.855
13.	1.	877.6	0.849
14.7	1.	930.7	0.84
16.5	1.	987.	0.833
18.4	0.998	1046.6	0.824
20.5	0.998	1109.8	0.815
22.7	0.996	1176.7	0.806
25.	0.995	1247.6	0.795
27.5	0.994	1322.7	0.787
30.1	0.993	1402.2	0.778
32.9	0.993	1486.5	0.765
35.8	0.991	1575.8	0.757
38.9	0.991	1670.3	0.742
42.2	0.989	1770.4	0.732
45.7	0.986	1876.5	0.721
49.4	0.987	1988.9	0.707

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
53.3	0.987	2107.9	0.696
57.5	0.984	2234.	0.682
61.9	0.986	2367.6	0.666
66.6	0.982	2509.1	0.652
71.6	0.984	2659.	0.635
76.9	0.98	2817.8	0.621
82.5	0.979	2986.	0.607
88.4	0.977	3164.1	0.591
94.7	0.977	3352.8	0.575
101.3	0.973	3552.7	0.557
108.3	0.975	3764.4	0.539
115.8	0.972	3988.7	0.522
123.7	0.97	4226.3	0.502
132.1	0.968	4477.9	0.482
141.	0.968	4744.5	0.463
150.4	0.966	5026.9	0.443
160.4	0.963	5326.	0.422
171.	0.961	5642.8	0.4
182.2	0.959	5978.4	0.379
194.1	0.957	6333.9	0.358
206.7	0.956	6710.4	0.336
220.	0.952	7109.3	0.317
234.1	0.95	7531.8	0.294
249.	0.947	7979.3	0.274
264.8	0.945	8453.3	0.253
281.6	0.943	8955.4	0.231
299.4	0.94	9487.3	0.21
318.2	0.936	1.005E+4	0.192
338.1	0.933	1.065E+4	0.169
359.2	0.929	1.125E+4	0.149
381.6	0.924	1.185E+4	0.132
405.3	0.922	1.245E+4	0.115
430.4	0.917	1.305E+4	0.103
457.	0.913		

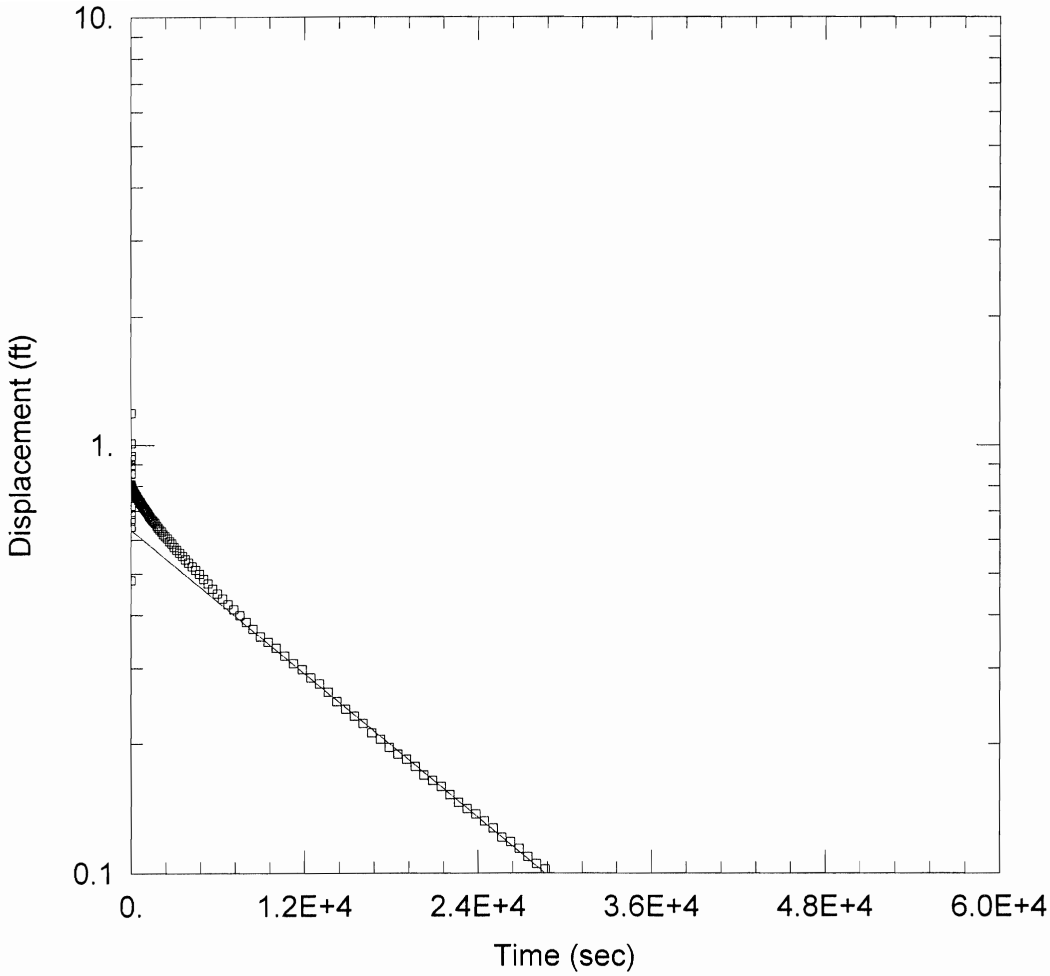
SOLUTION

Aquifer Model: Confined
Solution Method: Hvorslev
Shape Factor: 3.37

VISUAL ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	
K	5.623E-6	cm/sec
y0	0.9349	ft



G10D RISING HEAD 10-3-07

Data Set: T:\...\G10D rh 10-3-07.aqt
Date: 12/03/07 Time: 09:02:31

PROJECT INFORMATION

Company: PDC Technical Services, Inc.
Client: Clinton Landfill #3
Project: 91-0118.10
Location: Clinton, IL
Test Well: G10D
Test Date: 10-3-07

AQUIFER DATA

Saturated Thickness: 9. ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (G10D)

Initial Displacement: 1.188 ft
Total Well Penetration Depth: 9.5 ft
Casing Radius: 0.08333 ft
Static Water Column Height: 40.12 ft
Screen Length: 9.68 ft
Wellbore Radius: 0.3333 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Confined
Solution Method: Hvorslev

K = 2.375E-6 cm/sec
y0 = 0.6326 ft

Data Set: T:\Projects\91-118 CLI\Technical\Groundwater\CLI #3 slug test data\CLI#3 slug test data 2007\CLI #3
Title: G10D Rising Head 10-3-07
Date: 12/03/07
Time: 09:02:35

PROJECT INFORMATION

Company: PDC Technical Services, Inc.
Client: Clinton Landfill #3
Project: 91-0118.10
Location: Clinton, IL
Test Date: 10-3-07
Test Well: G10D

AQUIFER DATA

Saturated Thickness: 9. ft
Anisotropy Ratio (Kz/Kr): 1.

SLUG TEST WELL DATA

Test Well: : G10D

X Location: 0. ft
Y Location: 0. ft

Initial Displacement: 1.188 ft
Static Water Column Height: 40.12 ft
Casing Radius: 0.08333 ft
Wellbore Radius: 0.3333 ft
Well Skin Radius: 0.3333 ft
Screen Length: 9.68 ft
Total Well Penetration Depth: 9.5 ft
Corrected Casing Radius (Bouwer-Rice Method): 0.08333 ft
Gravel Pack Porosity: 0.3

No. of Observations: 197

Observation Data

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
0.	1.188	2243.3	0.618
0.5	0.482	2376.9	0.611
0.9	1.01	2518.4	0.604
1.4	0.666	2668.3	0.595
2.	0.896	2827.1	0.588
2.5	0.689	2995.3	0.577
3.1	0.943	3173.4	0.568
3.8	0.644	3362.1	0.559
4.4	0.927	3562.	0.55
5.1	0.776	3773.7	0.54
5.9	0.719	3998.	0.531
6.7	0.856	4235.6	0.52
7.5	0.859	4487.2	0.51
8.4	0.797	4753.8	0.499
9.3	0.765	5036.2	0.486
10.3	0.767	5335.3	0.474
11.4	0.774	5652.1	0.461
12.5	0.781	5987.7	0.449
13.7	0.792	6343.2	0.437
14.9	0.806	6719.7	0.424
16.3	0.809	7118.6	0.412
17.7	0.797	7541.1	0.399
19.2	0.801	7988.6	0.385
20.7	0.802	8462.6	0.371
22.3	0.797	8964.7	0.356

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
24.	0.8	9496.6	0.346
25.8	0.801	1.006E+4	0.335
27.7	0.799	1.066E+4	0.321
29.8	0.799	1.126E+4	0.308
32.	0.799	1.186E+4	0.298
34.3	0.797	1.246E+4	0.285
36.8	0.799	1.306E+4	0.276
39.4	0.797	1.366E+4	0.264
42.2	0.797	1.426E+4	0.251
45.1	0.797	1.486E+4	0.241
48.2	0.795	1.546E+4	0.232
51.5	0.795	1.606E+4	0.223
55.	0.793	1.666E+4	0.212
58.7	0.793	1.726E+4	0.205
62.6	0.793	1.786E+4	0.196
66.8	0.792	1.846E+4	0.189
71.2	0.792	1.906E+4	0.184
75.9	0.792	1.966E+4	0.177
80.9	0.789	2.026E+4	0.169
86.2	0.79	2.086E+4	0.164
91.8	0.788	2.146E+4	0.159
97.7	0.788	2.206E+4	0.152
104.	0.788	2.266E+4	0.146
110.6	0.786	2.326E+4	0.141
117.6	0.786	2.386E+4	0.137
125.1	0.784	2.446E+4	0.132
133.	0.782	2.506E+4	0.127
141.4	0.782	2.566E+4	0.121
150.3	0.781	2.626E+4	0.118
159.7	0.779	2.686E+4	0.114
169.7	0.777	2.746E+4	0.109
180.3	0.777	2.806E+4	0.105
191.5	0.777	2.866E+4	0.102
203.4	0.773	2.926E+4	0.098
216.	0.773	2.986E+4	0.096
229.3	0.772	3.046E+4	0.093
243.4	0.77	3.106E+4	0.089
258.3	0.768	3.166E+4	0.086
274.1	0.768	3.226E+4	0.084
290.9	0.765	3.286E+4	0.08
308.7	0.763	3.346E+4	0.077
327.5	0.762	3.406E+4	0.075
347.4	0.759	3.466E+4	0.071
368.5	0.757	3.526E+4	0.068
390.9	0.759	3.586E+4	0.065
414.6	0.753	3.646E+4	0.063
439.7	0.752	3.706E+4	0.059
466.3	0.75	3.766E+4	0.055
494.5	0.746	3.826E+4	0.054
524.4	0.743	3.886E+4	0.052
556.	0.739	3.946E+4	0.048
589.5	0.737	4.006E+4	0.047
625.	0.736	4.066E+4	0.041
662.6	0.732	4.126E+4	0.038
702.4	0.727	4.186E+4	0.036
744.6	0.725	4.246E+4	0.033
789.3	0.72	4.306E+4	0.031
836.7	0.716	4.366E+4	0.027
886.9	0.713	4.426E+4	0.023
940.	0.709	4.486E+4	0.023
996.3	0.704	4.546E+4	0.022
1055.9	0.7	4.606E+4	0.018
1119.1	0.695	4.666E+4	0.016
1186.	0.689	4.726E+4	0.015

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
1256.9	0.682	4.786E+4	0.013
1332.	0.677	4.846E+4	0.009
1411.5	0.672	4.906E+4	0.006
1495.8	0.666	4.966E+4	0.006
1585.1	0.661	5.026E+4	0.006
1679.6	0.656	5.086E+4	0.004
1779.7	0.647	5.146E+4	0.004
1885.8	0.64	5.206E+4	0.002
1998.2	0.634	5.266E+4	0.
2117.2	0.627		

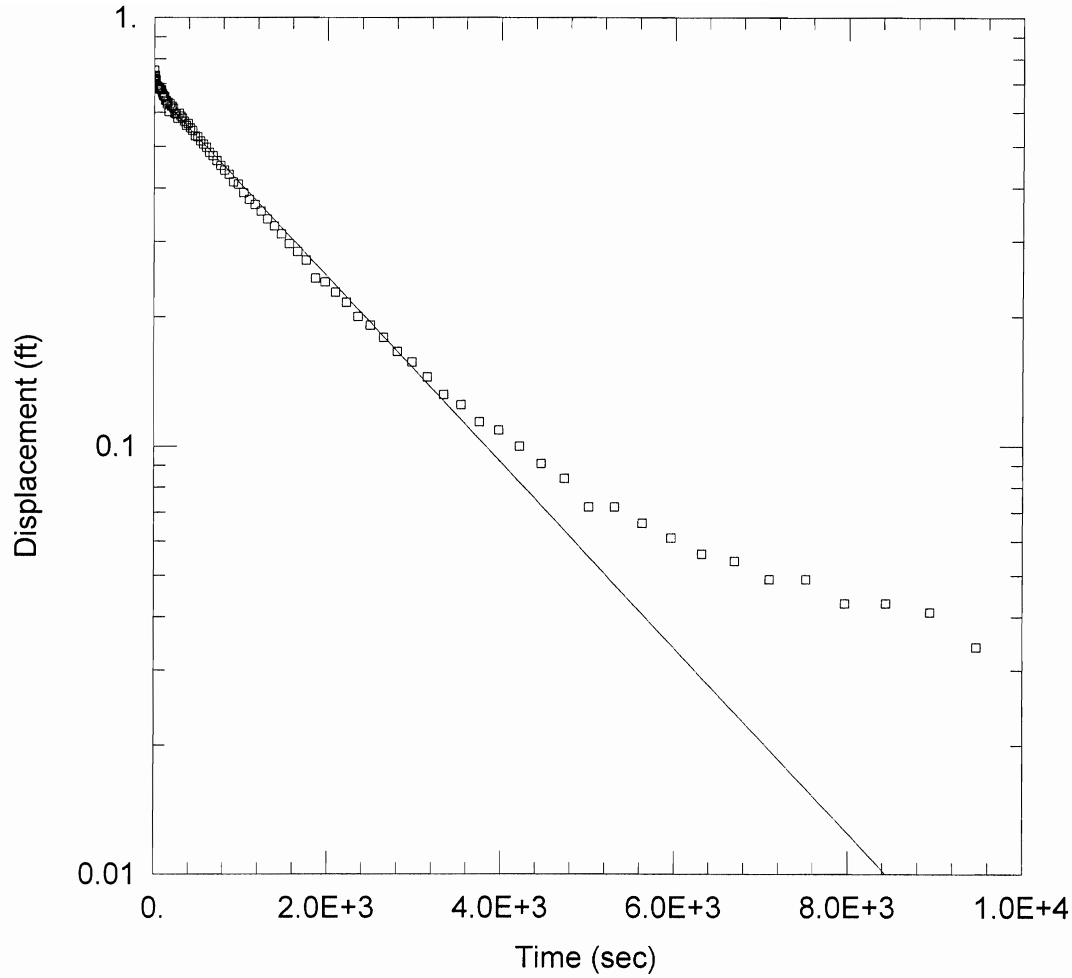
SOLUTION

Aquifer Model: Confined
Solution Method: Hvorslev
Shape Factor: 3.37

VISUAL ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	
K	2.375E-6	cm/sec
y0	0.6326	ft



G11D FALLING HEAD 10-18-07

Data Set: T:\...\G11D fh 10-18-07.aqt
Date: 12/03/07 Time: 08:58:26

PROJECT INFORMATION

Company: PDC Technical Services, Inc.
Client: Clinton Landfill #3
Project: 91-0118.10
Location: Clinton, IL
Test Well: G11D
Test Date: 10-18-07

AQUIFER DATA

Saturated Thickness: 5. ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (G11D)

Initial Displacement: 0.753 ft
Total Well Penetration Depth: 5.73 ft
Casing Radius: 0.08333 ft
Static Water Column Height: 40.32 ft
Screen Length: 9.68 ft
Wellbore Radius: 0.3333 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Confined Solution Method: Hvorslev

K = 1.838E-5 cm/sec y0 = 0.6737 ft

Data Set: T:\Projects\91-118 CLI\Technical\Groundwater\CLI #3 slug test data\CLI#3 slug test data 2007\CLI #3
Title: G11D Falling Head 10-18-07
Date: 12/03/07
Time: 08:58:32

PROJECT INFORMATION

Company: PDC Technical Services, Inc.
Client: Clinton Landfill #3
Project: 91-0118.10
Location: Clinton, IL
Test Date: 10-18-07
Test Well: G11D

AQUIFER DATA

Saturated Thickness: 5. ft
Anisotropy Ratio (Kz/Kr): 1.

SLUG TEST WELL DATA

Test Well: : G11D

X Location: 0. ft
Y Location: 0. ft

Initial Displacement: 0.753 ft
Static Water Column Height: 40.32 ft
Casing Radius: 0.08333 ft
Wellbore Radius: 0.3333 ft
Well Skin Radius: 0.3333 ft
Screen Length: 9.68 ft
Total Well Penetration Depth: 5.73 ft
Corrected Casing Radius (Bouwer-Rice Method): 0.08333 ft
Gravel Pack Porosity: 0.3

No. of Observations: 101

Observation Data

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
0.	0.753	533.7	0.515
1.7	0.73	567.2	0.506
3.5	0.726	602.7	0.497
5.4	0.721	640.3	0.484
7.5	0.717	680.1	0.476
9.7	0.728	722.3	0.463
12.	0.732	767.	0.451
14.5	0.71	814.4	0.44
17.1	0.714	864.6	0.43
19.9	0.716	917.7	0.413
22.8	0.71	974.	0.408
25.9	0.707	1033.6	0.39
29.2	0.691	1096.8	0.376
32.7	0.685	1163.7	0.366
36.4	0.687	1234.6	0.353
40.3	0.691	1309.7	0.338
44.5	0.682	1389.2	0.326
48.9	0.684	1473.5	0.312
53.6	0.686	1562.8	0.296
58.6	0.686	1657.3	0.284
63.9	0.68	1757.4	0.271
69.5	0.679	1863.5	0.246
75.4	0.677	1975.9	0.241
81.7	0.677	2094.9	0.228
88.3	0.668	2221.	0.216

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
95.3	0.664	2354.6	0.2
102.8	0.657	2496.1	0.191
110.7	0.654	2646.	0.179
119.1	0.652	2804.8	0.166
128.	0.639	2973.	0.157
137.4	0.639	3151.1	0.145
147.4	0.627	3339.8	0.132
158.	0.634	3539.7	0.125
169.2	0.602	3751.4	0.114
181.1	0.629	3975.7	0.109
193.7	0.62	4213.3	0.1
207.	0.62	4464.9	0.091
221.1	0.613	4731.5	0.084
236.	0.597	5013.9	0.072
251.8	0.595	5313.	0.072
268.6	0.581	5629.8	0.066
286.4	0.597	5965.4	0.061
305.2	0.588	6320.9	0.056
325.1	0.582	6697.4	0.054
346.2	0.572	7096.3	0.049
368.6	0.559	7518.8	0.049
392.3	0.565	7966.3	0.043
417.4	0.552	8440.3	0.043
444.	0.544	8942.4	0.041
472.2	0.529	9474.3	0.034
502.1	0.526		

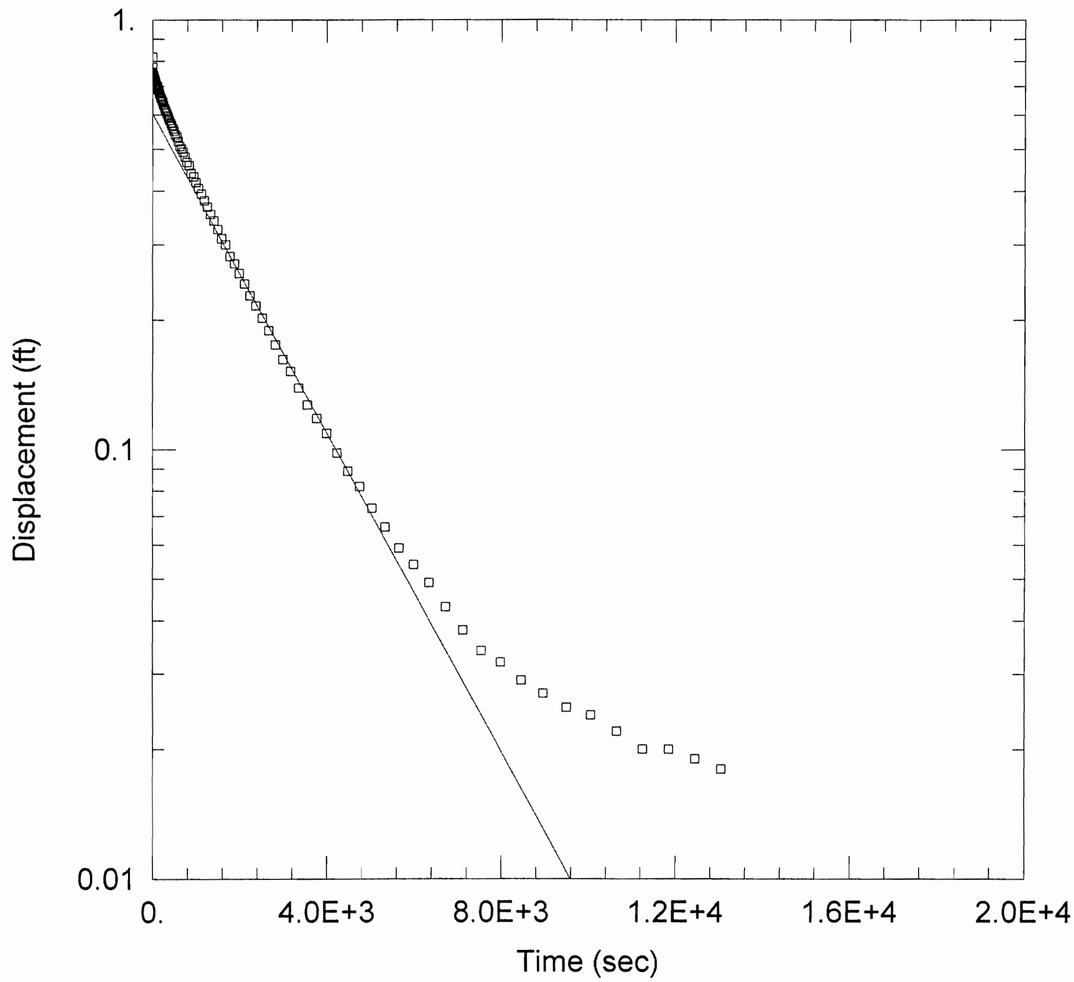
SOLUTION

Aquifer Model: Confined
Solution Method: Hvorslev
Shape Factor: 3.37

VISUAL ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	
K	1.838E-5	cm/sec
y0	0.6737	ft



G11D RISING HEAD 10-19-07

Data Set: T:\...\G11D rh 10-19-07.aqt
Date: 12/03/07 Time: 08:58:53

PROJECT INFORMATION

Company: PDC Technical Services, Inc.
Client: Clinton Landfill #3
Project: 91-0118.10
Location: Clinton, IL
Test Well: G11D
Test Date: 10-19-07

AQUIFER DATA

Saturated Thickness: 5. ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (G11D)

Initial Displacement: 0.819 ft
Total Well Penetration Depth: 5.73 ft
Casing Radius: 0.08333 ft
Static Water Column Height: 40.32 ft
Screen Length: 9.68 ft
Wellbore Radius: 0.3333 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Confined
Solution Method: Hvorslev

K = 1.575E-5 cm/sec
y0 = 0.6037 ft

Data Set: T:\Projects\91-118 CLI\Technical\Groundwater\CLI #3 slug test data\CLI#3 slug test data 2007\CLI #3
Title: G11D Rising Head 10-19-07
Date: 12/03/07
Time: 08:58:58

PROJECT INFORMATION

Company: PDC Technical Services, Inc.
Client: Clinton Landfill #3
Project: 91-0118.10
Location: Clinton, IL
Test Date: 10-19-07
Test Well: G11D

AQUIFER DATA

Saturated Thickness: 5. ft
Anisotropy Ratio (Kz/Kr): 1.

SLUG TEST WELL DATA

Test Well: : G11D

X Location: 0. ft
Y Location: 0. ft

Initial Displacement: 0.819 ft
Static Water Column Height: 40.32 ft
Casing Radius: 0.08333 ft
Wellbore Radius: 0.3333 ft
Well Skin Radius: 0.3333 ft
Screen Length: 9.68 ft
Total Well Penetration Depth: 5.73 ft
Corrected Casing Radius (Bouwer-Rice Method): 0.08333 ft
Gravel Pack Porosity: 0.3

No. of Observations: 133

Observation Data

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
0.	0.819	309.5	0.612
0.4	0.755	328.3	0.604
0.8	0.734	348.2	0.597
1.3	0.775	369.3	0.59
1.7	0.73	391.7	0.583
2.2	0.755	415.4	0.574
2.8	0.738	440.5	0.567
3.3	0.751	467.1	0.558
3.9	0.748	495.3	0.551
4.6	0.746	525.2	0.54
5.2	0.749	556.8	0.533
5.9	0.749	590.3	0.521
6.7	0.745	625.8	0.508
7.5	0.744	663.4	0.501
8.3	0.744	703.2	0.492
9.2	0.742	745.4	0.48
10.1	0.742	790.1	0.466
11.1	0.744	837.5	0.458
12.2	0.745	887.7	0.44
13.3	0.744	940.8	0.432
14.5	0.74	997.1	0.419
15.7	0.742	1056.7	0.406
17.1	0.739	1119.9	0.394
18.5	0.742	1186.8	0.38
20.	0.745	1257.7	0.367

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
21.5	0.744	1332.8	0.353
23.1	0.739	1412.3	0.341
24.8	0.739	1496.6	0.326
26.6	0.739	1585.9	0.31
28.5	0.735	1680.4	0.3
30.6	0.735	1780.5	0.282
32.8	0.735	1886.6	0.271
35.1	0.729	1999.	0.257
37.6	0.731	2118.	0.243
40.2	0.726	2244.1	0.228
43.	0.726	2377.7	0.216
45.9	0.726	2519.2	0.202
49.	0.724	2669.1	0.189
52.3	0.72	2827.9	0.175
55.8	0.719	2996.1	0.162
59.5	0.719	3174.2	0.152
63.4	0.717	3362.9	0.139
67.6	0.715	3562.8	0.127
72.	0.71	3774.5	0.118
76.7	0.71	3998.8	0.109
81.7	0.706	4236.4	0.098
87.	0.708	4488.	0.089
92.6	0.703	4754.6	0.082
98.5	0.699	5037.	0.073
104.8	0.699	5336.1	0.066
111.4	0.699	5652.9	0.059
118.4	0.693	5988.5	0.054
125.9	0.688	6344.	0.049
133.8	0.685	6720.5	0.043
142.2	0.679	7119.4	0.038
151.1	0.676	7541.9	0.034
160.5	0.672	7989.4	0.032
170.5	0.665	8463.4	0.029
181.1	0.661	8965.5	0.027
192.3	0.656	9497.4	0.025
204.2	0.654	1.006E+4	0.024
216.8	0.647	1.066E+4	0.022
230.1	0.644	1.126E+4	0.02
244.2	0.636	1.186E+4	0.02
259.1	0.631	1.246E+4	0.019
274.9	0.622	1.306E+4	0.018
291.7	0.617		

SOLUTION

Aquifer Model: Confined
Solution Method: Hvorslev
Shape Factor: 3.37

VISUAL ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	
K	1.575E-5	cm/sec
y0	0.6037	ft

ATTACHMENT 12: Updated Potentiometric Data

TABLE 812.314-7
Potentiometric Elevations
1st Quarter 2003 - 4th Quarter 2007
CLINTON CHEMICAL WASTE LANDFILL NO. 3

Well	3/21/2003	6/17/2003	8/25/2003	10/15/2003	1/15/2004	4/28/2004	8/31/2004	11/18/2004	2/18/2005	5/24/2005	8/16/2005	11/17/2005	1/30/2006	4/24/2006	8/23/2006	12/20/2006	1/22/2007	6/27/2007	9/25/2007	12/28/2007	Mean
EX-4	691.44	691.17	691.50	691.08	691.08	691.60	691.59	691.43	692.07	692.25	691.56	691.23	691.51	691.70	691.61	691.78	692.16	692.46	691.81	691.80	**691.64**
EX-5	672.60	672.69	671.76	671.77	673.00	673.33	672.94	672.81	674.27	673.8	672.18	671.58	672.25	673.14	672.32	672.93	673.73	673.22	671.73	672.14	**672.71**
EX-6	672.05	672.11	671.14	671.11	672.03	672.80	672.37	672.26	673.81	671.7	671.53	670.89	671.67	672.56	671.68	672.35	673.18	NM	671.02	671.47	**671.99**
EX-7	644.52	643.81	643.03	643.00	645.00	645.48	648.09	645.90	646.76	644.69	644.14	658.73	650.83	662.96	660.20	660.37	661.20	661.09	660	660.72	**651.53**
EX-8S	646.49	646.19	643.99	643.66	646.27	646.84	645.92	646.13	647.27	645.88	643.38	642.77	646.06	646.69	645.54	646.45	646.61	645.05	642.95	645.29	**645.47**
EX-12S	665.39	665.46	664.55	664.33	664.47	665.44	665.61	665.23	665.57	665.64	665.27	666.89	660.85	668.48	669.65	670.18	670.45	NM	671.85	671.35	**666.67**
EX-12D	664.41	664.89	662.76	662.53	663.52	663.52	665.01	663.94	664.03	663.79	663.57	667.56	665.94	669.34	671.08	671.73	672.01	NM	672.35	672.63	**666.56**
EX-13	670.54	670.76	669.90	669.86	669.85	670.44	670.92	669.50	670.48	670.39	670.02	671.54	671.15	672.53	673.41	673.87	674.01	NM	NM	NM	**671.13**
EX-14	678.72	678.06	678.23	678.35	678.36	678.85	680.05	678.65	679.35	679.41	678.8	679.04	679.07	679.62	679.73	679.89	680.20	679.38	679.59	679.86	**679.16**
EX-15	691.66	691.48	691.17	691.28	691.32	691.82	691.79	691.64	692.29	692.48	691.76	691.43	691.71	691.92	691.82	691.99	691.96	692.67	692.16	692.01	**691.82**
EX-17	665.26	665.43	665.10	664.97	665.01	665.72	666.16	665.50	666.18	665.91	665.44	667.94	667.05	669.62	670.08	670.44	670.61	670.40	668.97	669.10	**667.24**
EX-19	639.95	639.89	640.10	640.34	640.98	641.68	644.79	642.00	640.26	640.46	639.16	657.66	650.94	662.49	659.07	658.95	659.55	660.09	659.48	659.83	**648.88**
EX-20	658.23	658.93	657.48	657.19	659.18	660.67	659.81	659.25	660.3	661.14	658.33	658.85	658.80	662.26	660.07	661.12	662.70	661.84	659.31	659.80	**659.76**
EX-21S	NA	NA	NA	660.32	661.61	664.00	662.74	662.48	667.01	667.18	662.58	660.71	661.75	663.00	661.29	661.61	663.30	664.82	660.78	661.26	**662.73**
EX-21D	658.15	658.23	656.35	656.12	657.98	659.10	658.24	658.29	660.86	659.89	657.1	656.59	657.76	658.91	657.09	658.32	659.46	658.67	655.91	657.58	**658.03**
EX-22S	664.02	663.65	660.06	659.53	663.67	664.16	664.08	664.40	665.2	664.57	659.55	658.88	664.36	664.55	663.25	664.46	664.66	663.85	658.78	664.08	**662.99**
EX-22D	665.61	665.29	663.94	663.40	665.54	666.45	665.57	665.70	667.56	666.31	663.85	663.42	664.69	665.90	664.43	665.64	666.73	665.43	663.05	664.44	**665.15**
EX-23S	673.91	673.82	673.10	673.05	673.67	677.42	674.09	674.01	675.69	675.47	673.91	673.2	673.91	674.68	673.99	675.43	675.31	675.01	673.54	675.36	**674.43**
EX-23D	673.61	673.65	672.73	672.76	673.60	674.28	673.91	673.81	675.27	674.68	673.07	672.49	673.19	674.10	673.19	673.91	674.76	674.14	672.63	673.06	**673.64**
EX-24	675.56	675.73	675.06	675.08	675.49	676.21	675.98	675.77	676.93	676.79	675.5	675.06	675.34	675.97	675.48	675.83	676.42	675.28	675.31	675.33	**675.71**

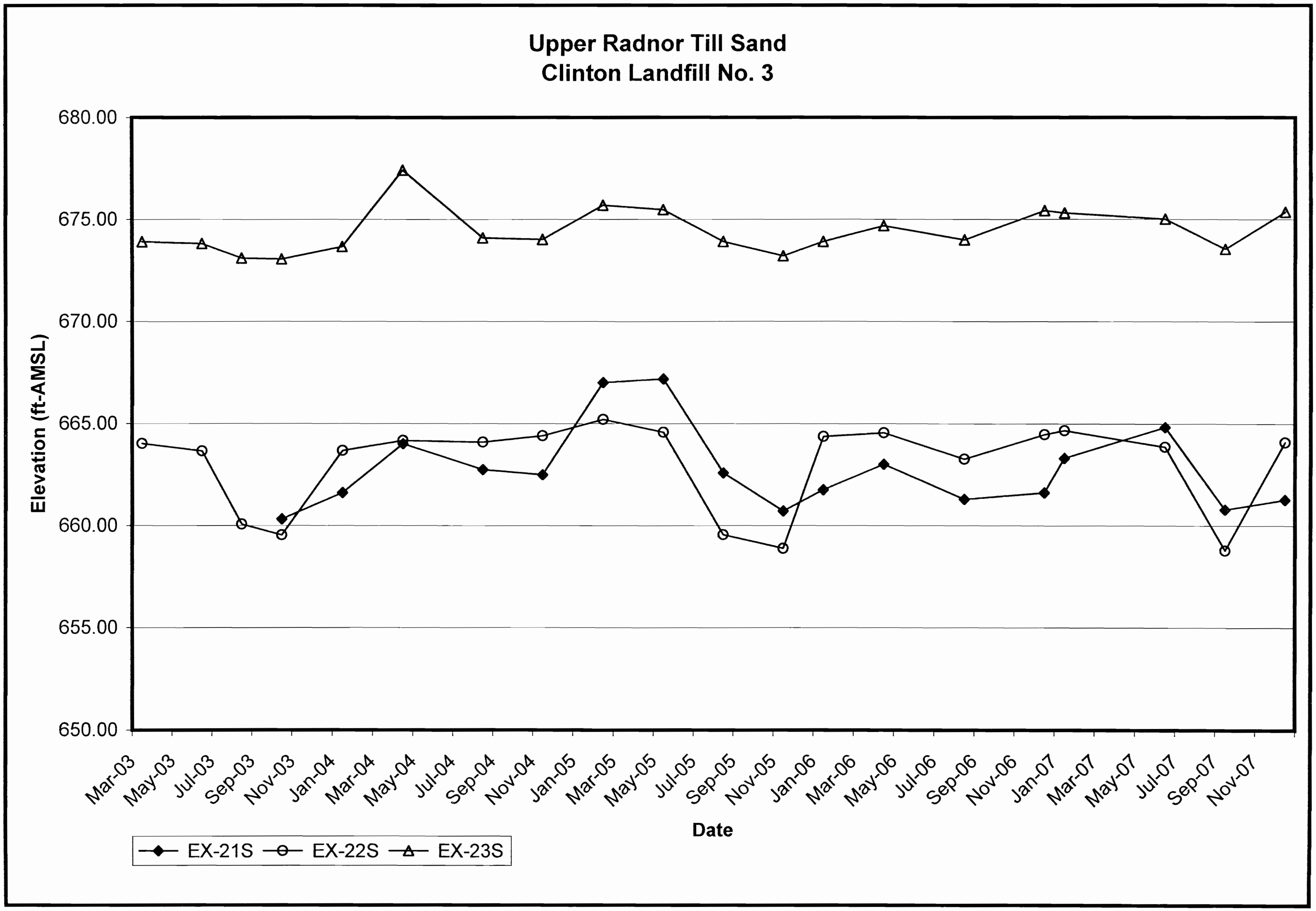
Notes:
1) Values are in feet Above Mean Sea Level (ft. AMSL)
2) EX-21S installed October 6-7, 2003.
3) NM = Not Measured

TABLE 812.314-9
Flow Rates in the Water Bearing Units
Clinton Landfill No. 3

Quarter Water Table Elevation Measured	Groundwater Gradient (i) (feet/foot)	Groundwater Flow Velocity (V) (feet/day)	Groundwater Flow Velocity (V) (meters/year)
Upper Radnor Till			
1st Quarter of 2007	7.82E-03	3.53E-03	3.93E-01
2nd Quarter of 2007	6.63E-03	2.99E-03	3.33E-01
3rd Quarter of 2007	9.46E-03	4.27E-03	4.75E-01
4th Quarter of 2007	9.16E-03	4.14E-03	4.60E-01
Average =	8.27E-03	3.73E-03	4.15E-01
Lower Radnor Till			
1st Quarter of 2007	8.19E-03	1.47E-02	1.63
2nd Quarter of 2007	2.62E-03	4.69E-03	0.52
3rd Quarter of 2007	8.57E-03	1.53E-02	1.70
4th Quarter of 2007	8.34E-03	1.49E-02	1.66
Average =	6.93E-03	1.24E-02	1.38
Organic Soil			
1st Quarter of 2007	4.96E-03	8.13E-04	9.04E-02
2nd Quarter of 2007	4.86E-03	7.96E-04	8.85E-02
3rd Quarter of 2007	5.79E-03	9.48E-04	1.05E-01
4th Quarter of 2007	5.62E-03	9.20E-04	1.02E-01
Average =	5.31E-03	8.69E-04	9.67E-02

Notes:

1. Hydraulic gradients (i) for the Upper Radnor Till sand are estimated using potentiometric data from wells EX-21S and EX-23S.
   Hydraulic gradients (i) for the Lower Radnor Till sand are estimated using potentiometric data from wells EX-7 and EX-15.
   Hydraulic gradients (i) for the Organic Soil are estimated using potentiometric data data from wells EX-20 and EX-24.
2. Average groundwater flow velocity, V = K i/n.
3. Average hydraulic conductivity (K): Upper Radnor Till sand = 1.58E-01 feet per day;
   Lower Radnor Till sand = 0.626 feet per day;
   Organic Soil = 7.37E-02 feet per day;
4. n = Effective porosity of the Upper and Lower Radnor Till sands = 0.35 (from published ranges).
   n = Effective porosity of the Organic Soil = 0.45 (from published ranges).



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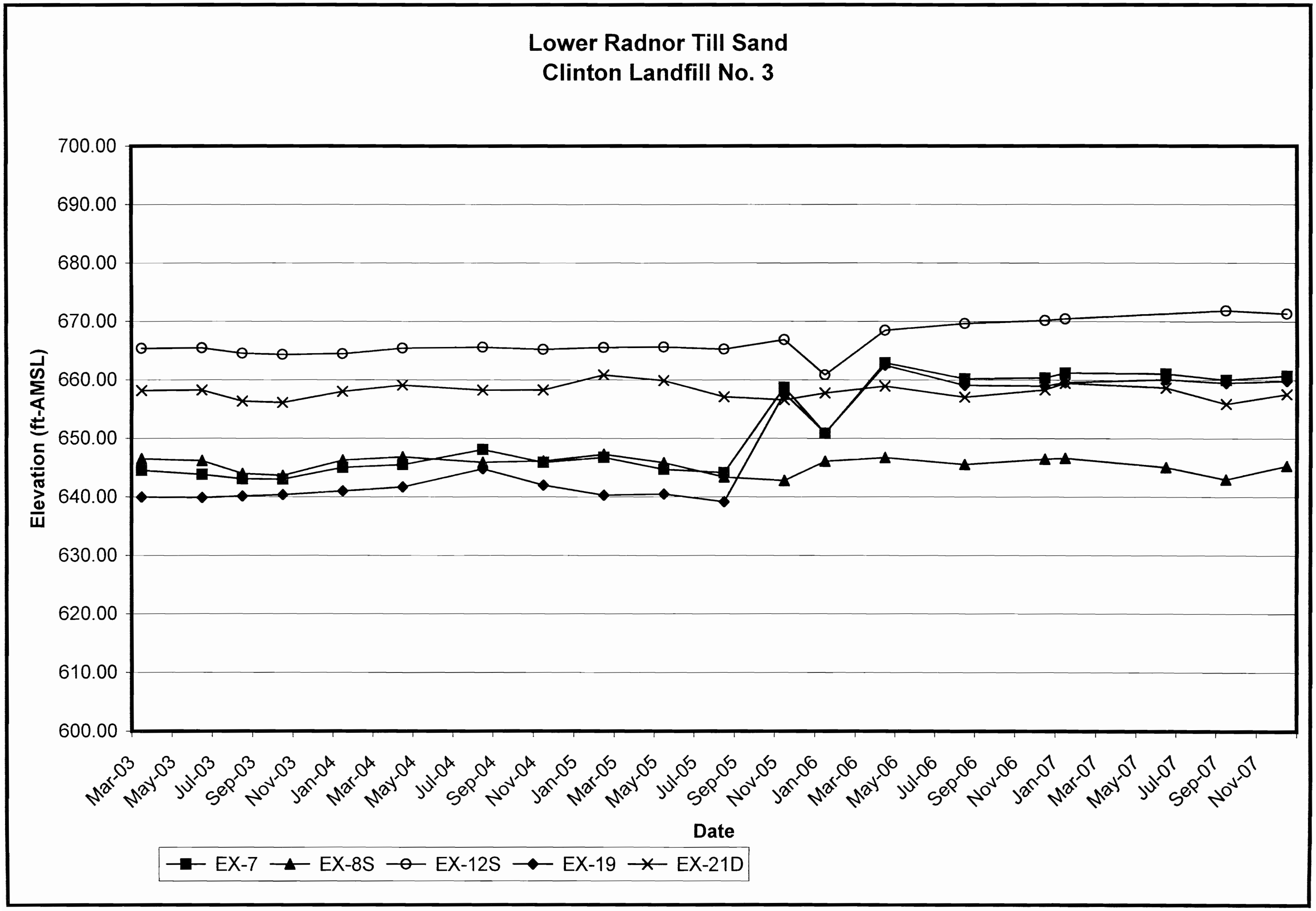

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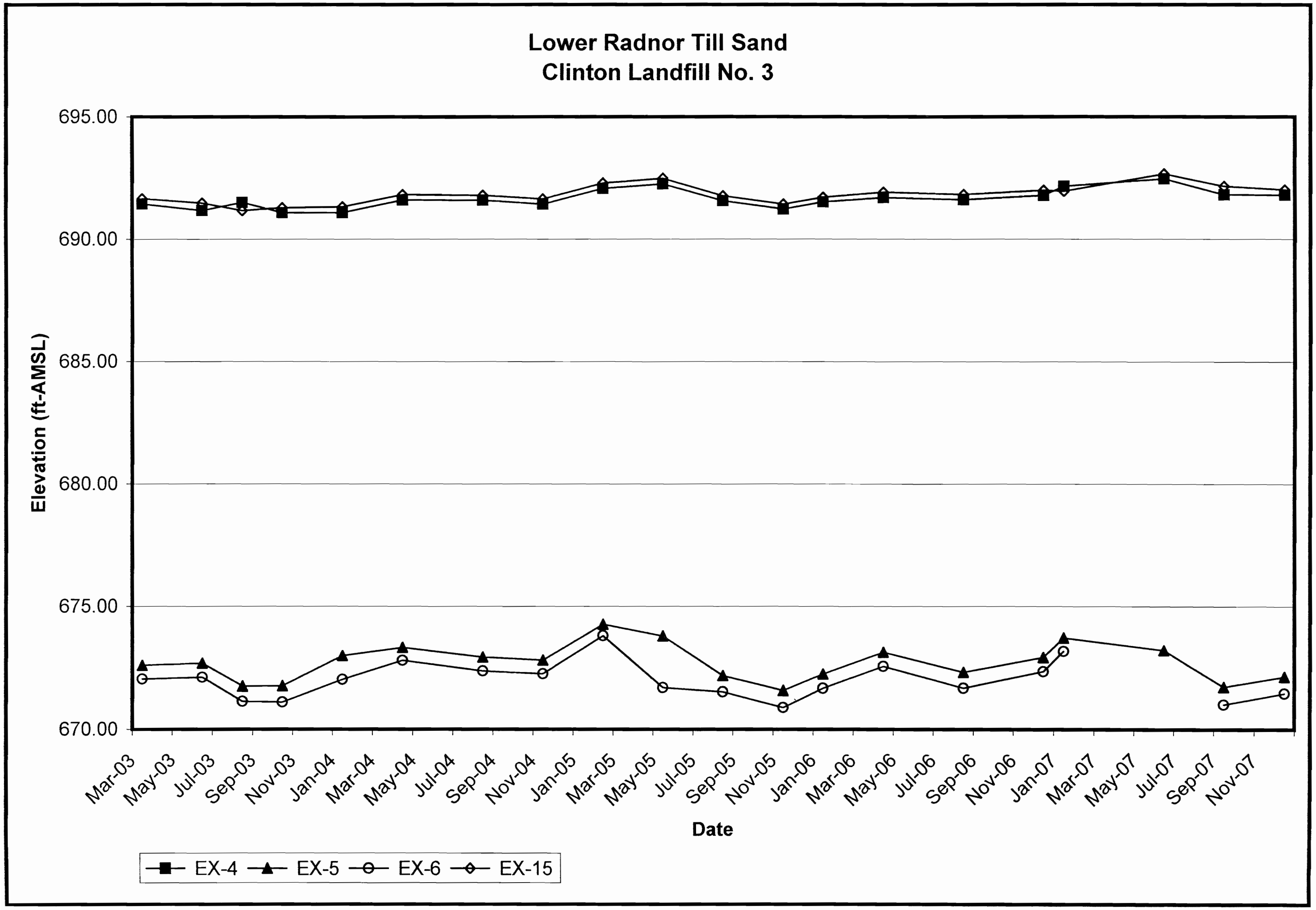

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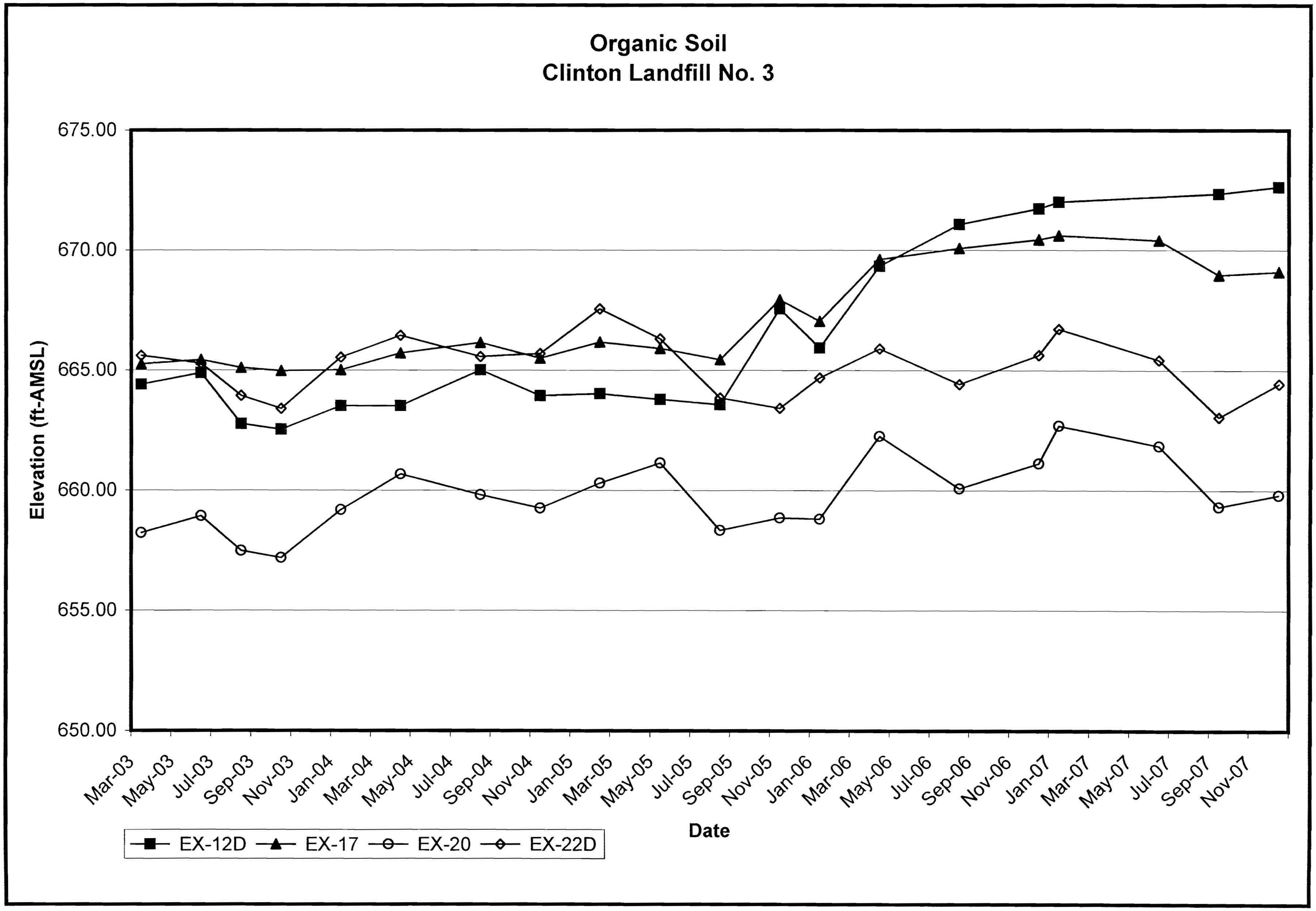

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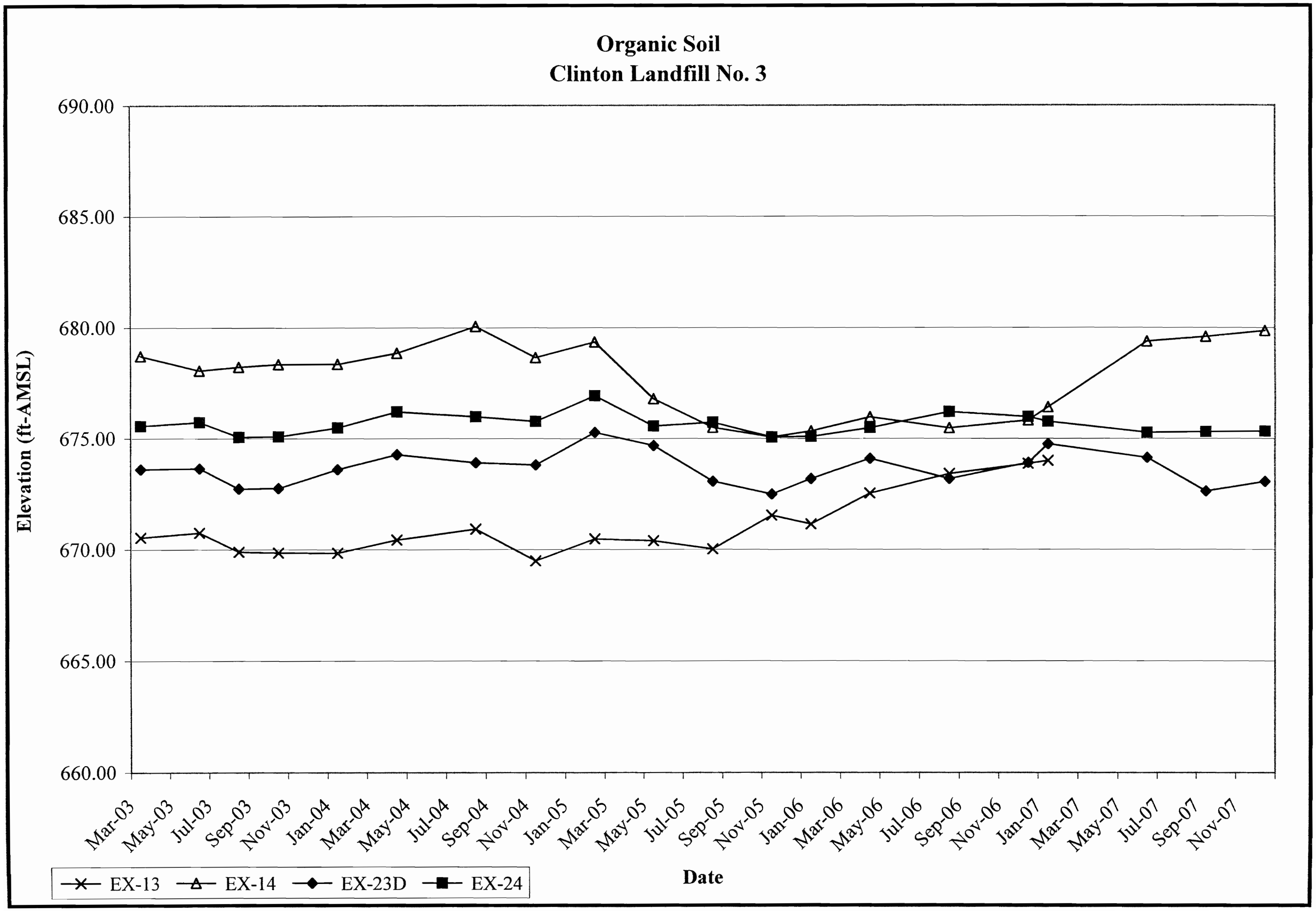
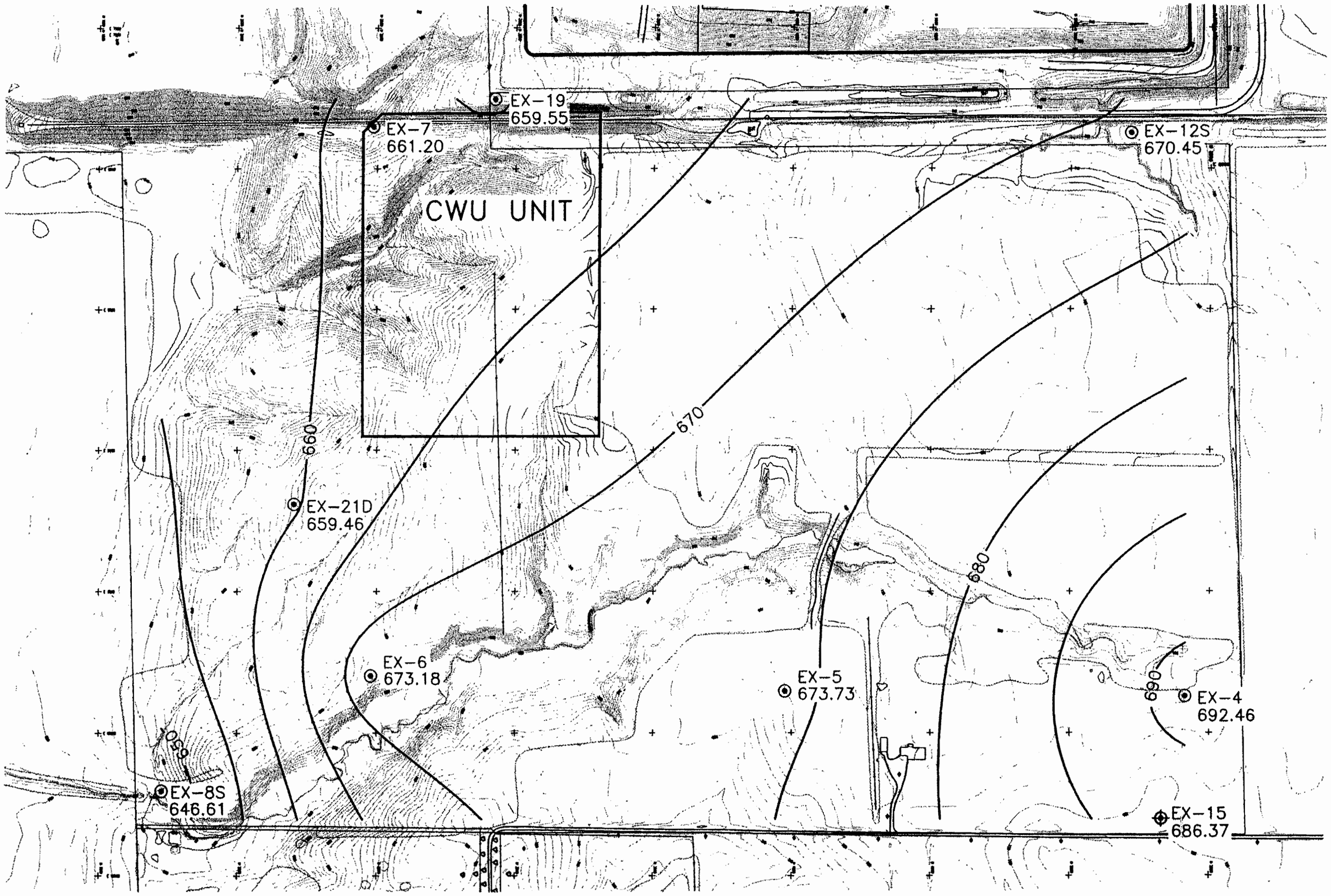

Organic Soil
Clinton Landfill No. 3
690.00
685.00
680.00
675.00
670.00
665.00
660.00
Elevation (ft-AMSL)
Mar-03
May-03
Jul-03
Sep-03
Nov-03
Jan-04
Mar-04
May-04
Jul-04
Sep-04
Nov-04
Jan-05
Mar-05
May-05
Jul-05
Sep-05
Nov-05
Jan-06
Mar-06
May-06
Jul-06
Sep-06
Nov-06
Jan-07
Mar-07
May-07
Jul-07
Sep-07
Nov-07
Date
EX-13
EX-14
EX-23D
EX-24

CAD DWG NO:9111891261-CWU EMPLOYEE NO: 9834 DATE/TIME: 01/29/08 09:58 ACAD-16.



LEGEND

⊙ PIEZOMETER

673.73 POTENTIOMETRIC ELEVATION

— 670 — POTENTIOMETRIC CONTOUR LINE

400' 200' 0 400' 800'

1"=400'

Illinois Licensed Professional Design Firm 184-001145

PDC Technical Services, Inc.

Peoria, Illinois

FIGURE 812.314-35

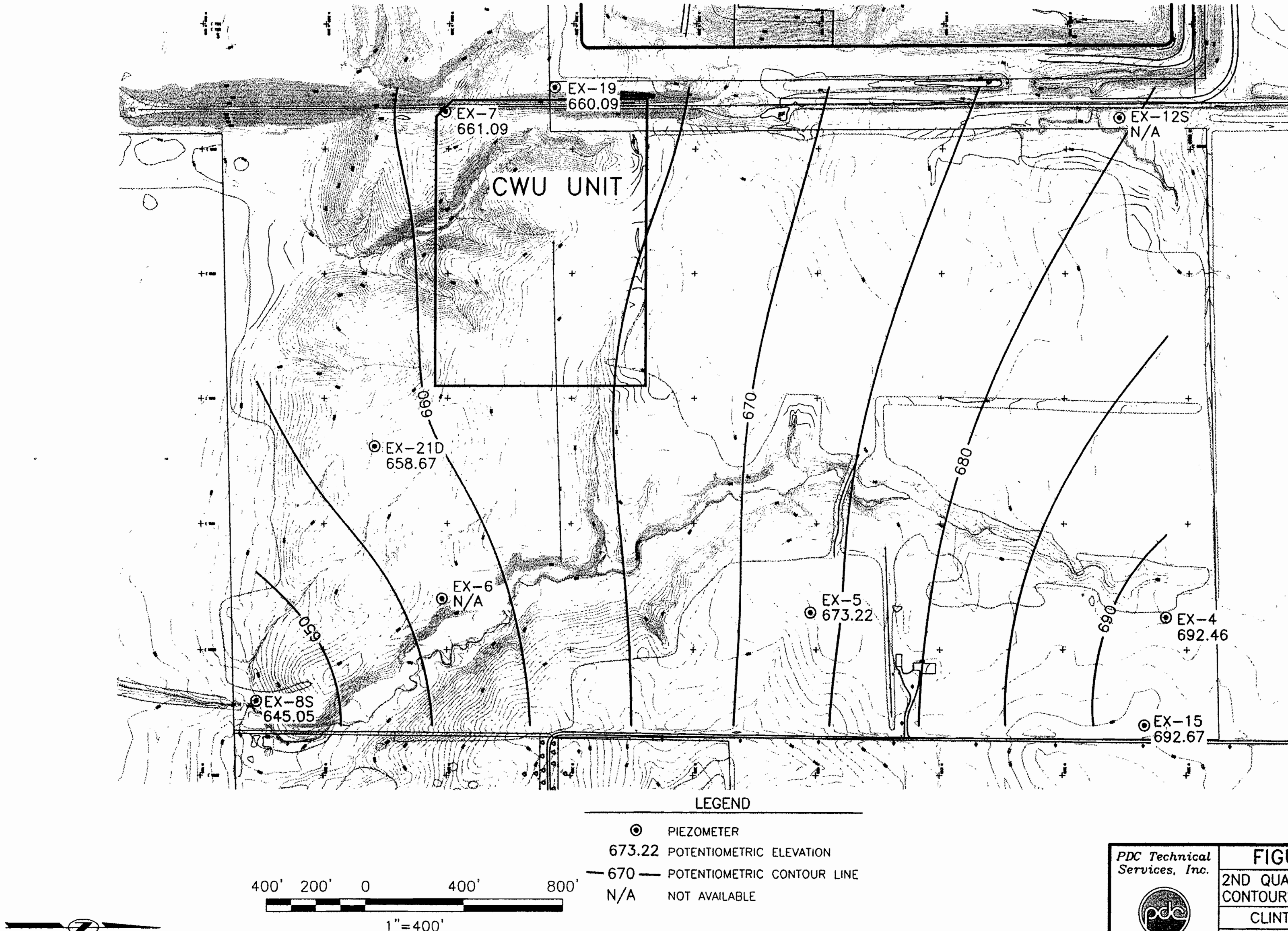
1ST QUARTER 2007 POTENTIOMETRIC CONTOURS-LOWER RADNOR TILL SAND

CLINTON LANDFILL, INC. CWU

CLINTON, ILLINOIS

PROJECT NO. 91-118

CAD DWG NO:9111891262-CWU EMPLOYEE NO: 9834 DATE/TIME: 01/29/08 11:06 ACAD-16.



LEGEND

⊙	PIEZOMETER
673.22	POTENTIOMETRIC ELEVATION
—670—	POTENTIOMETRIC CONTOUR LINE
N/A	NOT AVAILABLE

Illinois Licensed Professional
Design Firm 184-001145

PDC Technical Services, Inc.

Peoria, Illinois

FIGURE 812.314-36

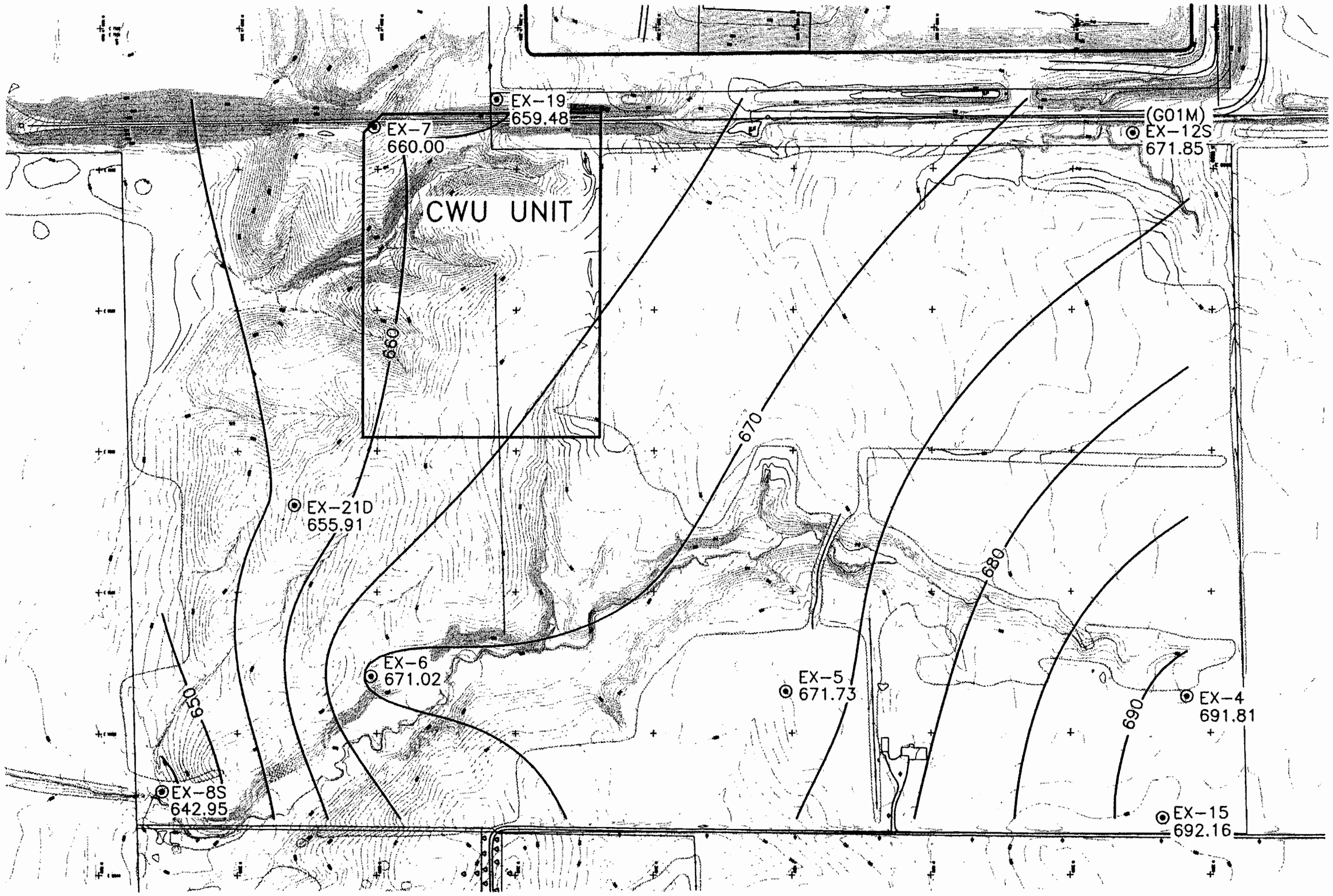
2ND QUARTER 2007 POTENTIOMETRIC CONTOURS-LOWER RADNOR TILL SAND

CLINTON LANDFILL, INC. CWU

CLINTON, ILLINOIS

PROJECT NO. 91-118

CAD DWG NO.9111891328-CWU EMPLOYEE NO: 9834 DATE/TIME: 01/29/08 11:51 ACAD-16.



LEGEND

⊙ PIEZOMETER

671.73 POTENTIOMETRIC ELEVATION

—670— POTENTIOMETRIC CONTOUR LINE

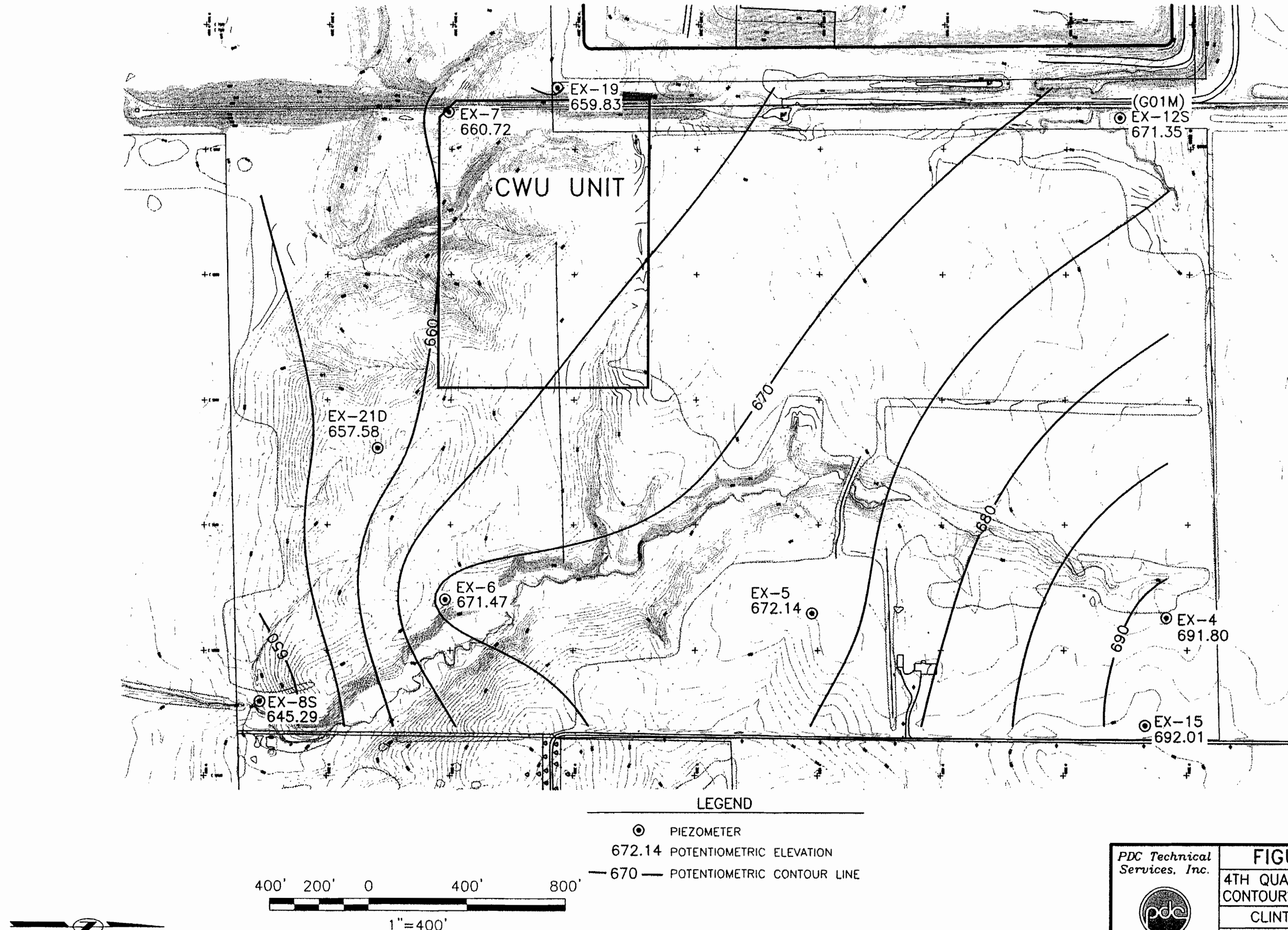
400' 200' 0 400' 800'

1"=400'

Illinois Licensed Professional
Design Firm 184-001145

PDC Technical Services, Inc.	FIGURE 812.314-37
	3RD QUARTER 2007 POTENTIOMETRIC CONTOURS-LOWER RADNOR TILL SAND
	CLINTON LANDFILL, INC. CWU
	CLINTON, ILLINOIS
Peoria, Illinois	PROJECT NO. 91-118

CAD DWG NO:9111891329-CWU EMPLOYEE NO: 9834 DATE/TIME: 01/29/08 11:46 ACAD-16.



LEGEND

⊙ PIEZOMETER

672.14 POTENTIOMETRIC ELEVATION

—670— POTENTIOMETRIC CONTOUR LINE

Illinois Licensed Professional
Design Firm 184-001145

PDC Technical Services, Inc.
Peoria, Illinois

FIGURE 812.314-38

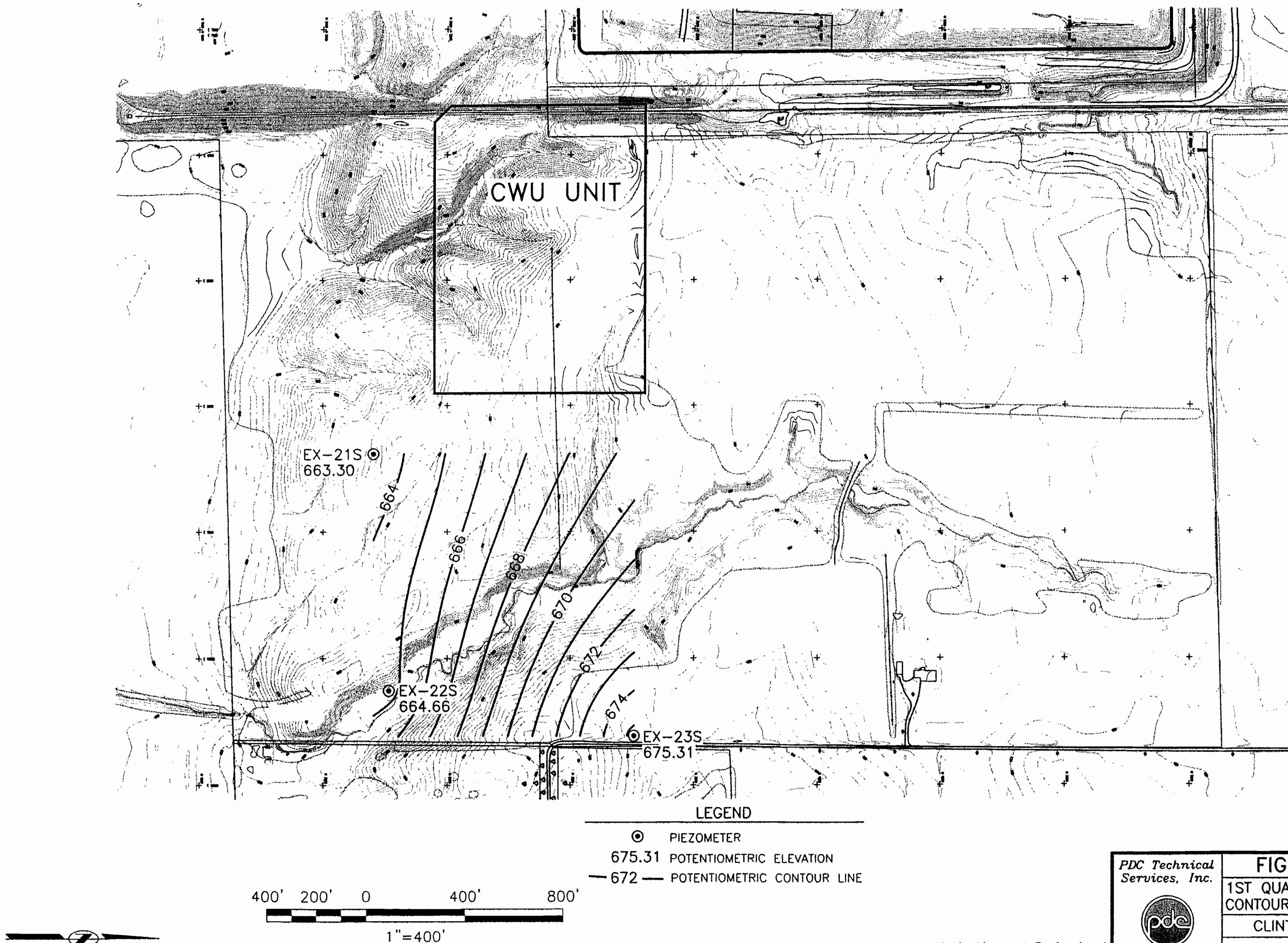
4TH QUARTER 2007 POTENTIOMETRIC CONTOURS-LOWER RADNOR TILL SAND

CLINTON LANDFILL, INC. CWU

CLINTON, ILLINOIS

PROJECT NO. 91-118

CAD DWG NO:911181265-CWU EMPLOYEE NO: 9834 DATE/TIME: 01/29/08 11:52 ACAD-16.



Illinois Licensed Professional Design Firm 184-001145

PDC Technical Services, Inc.

Peoria, Illinois

FIGURE 812.314-39

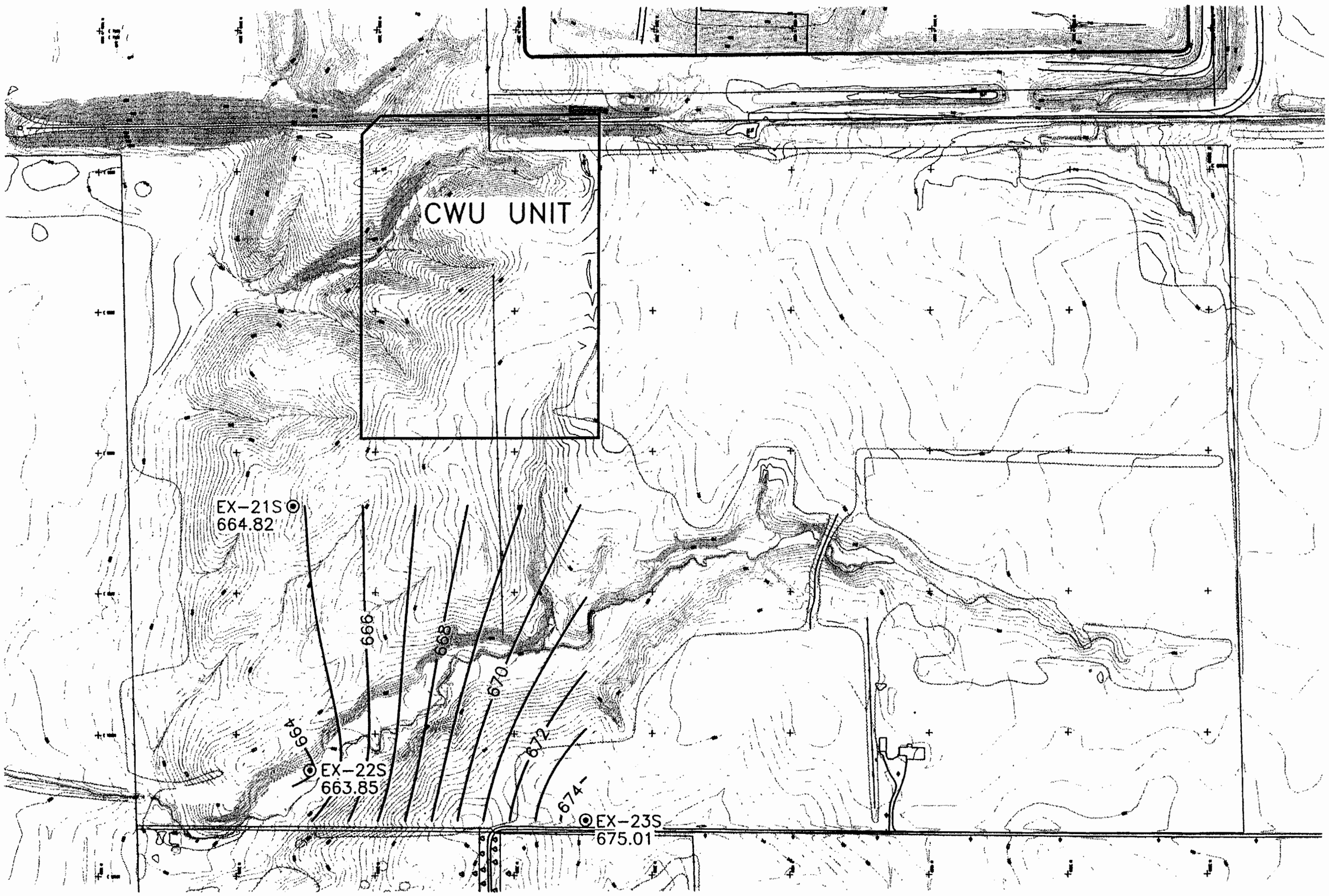
1ST QUARTER 2007 POTENTIOMETRIC CONTOURS-UPPER RADNOR TILL SAND

CLINTON LANDFILL, INC. CWU

CLINTON, ILLINOIS

PROJECT NO. 91-118

CAD DWG NO:911181266-CWU EMPLOYEE NO: 9834 DATE/TIME: 01/29/08 11:12 ACAD-16.



LEGEND

⊙ PIEZOMETER
675.01 POTENTIOMETRIC ELEVATION
—672— POTENTIOMETRIC CONTOUR LINE

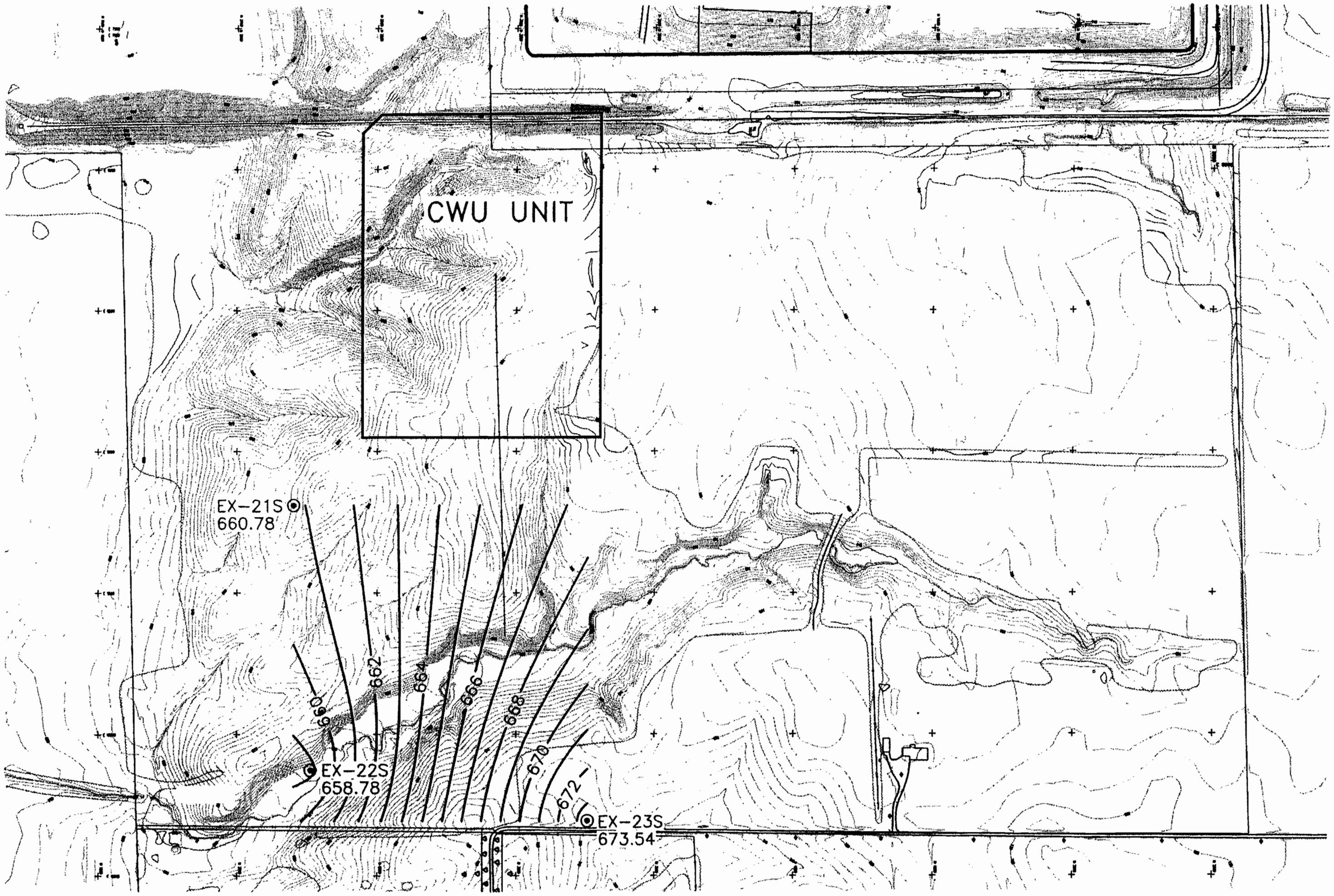
400' 200' 0 400' 800'
1"=400'

Illinois Licensed Professional
Design Firm 184-001145

PDC Technical Services, Inc.
Peoria, Illinois

FIGURE 812.314-40
2ND QUARTER 2007 POTENTIOMETRIC CONTOURS-UPPER RADNOR TILL SAND
CLINTON LANDFILL, INC. CWU
CLINTON, ILLINOIS
PROJECT NO. 91-118

CAD DWG NO:911181330-CWU EMPLOYEE NO: 9834 DATE/TIME: 01/29/08 11:38 ACAD-16.



LEGEND

⊙ PIEZOMETER

673.54 POTENTIOMETRIC ELEVATION

— 672 — POTENTIOMETRIC CONTOUR LINE

400' 200' 0 400' 800'

1"=400'

Illinois Licensed Professional Design Firm 184-001145

PDC Technical Services, Inc.

Peoria, Illinois

FIGURE 812.314-41

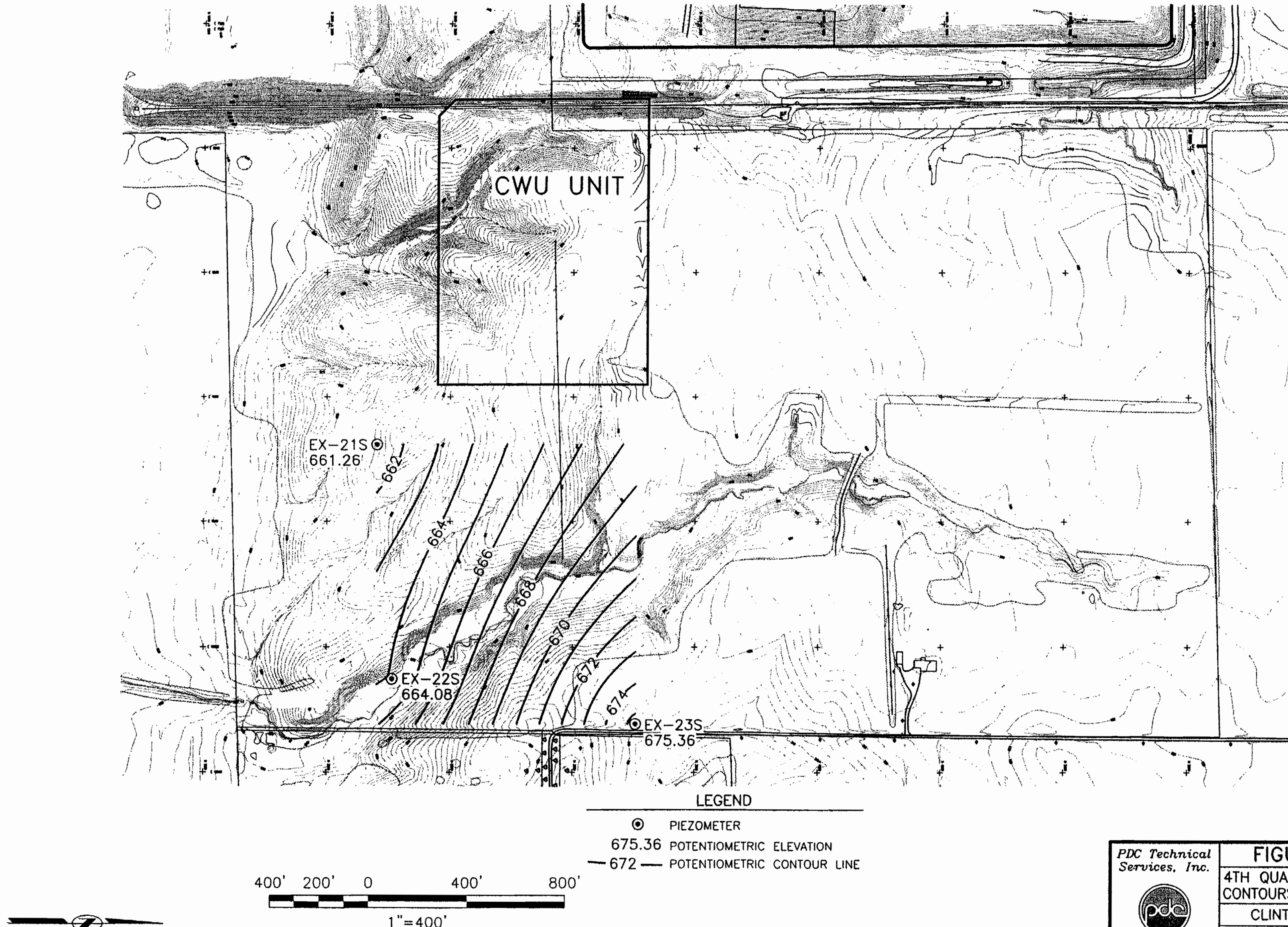
3RD QUARTER 2007 POTENTIOMETRIC CONTOURS-UPPER RADNOR TILL SAND

CLINTON LANDFILL, INC. CWU

CLINTON, ILLINOIS

PROJECT NO. 91-118

CAD DWG NO:911181331-CWU EMPLOYEE NO: 9834 DATE/TIME: 01/29/08 11:24 ACAD-16.



Illinois Licensed Professional Design Firm 184-001145

PDC Technical Services, Inc.
Peoria, Illinois

FIGURE 812.314-42

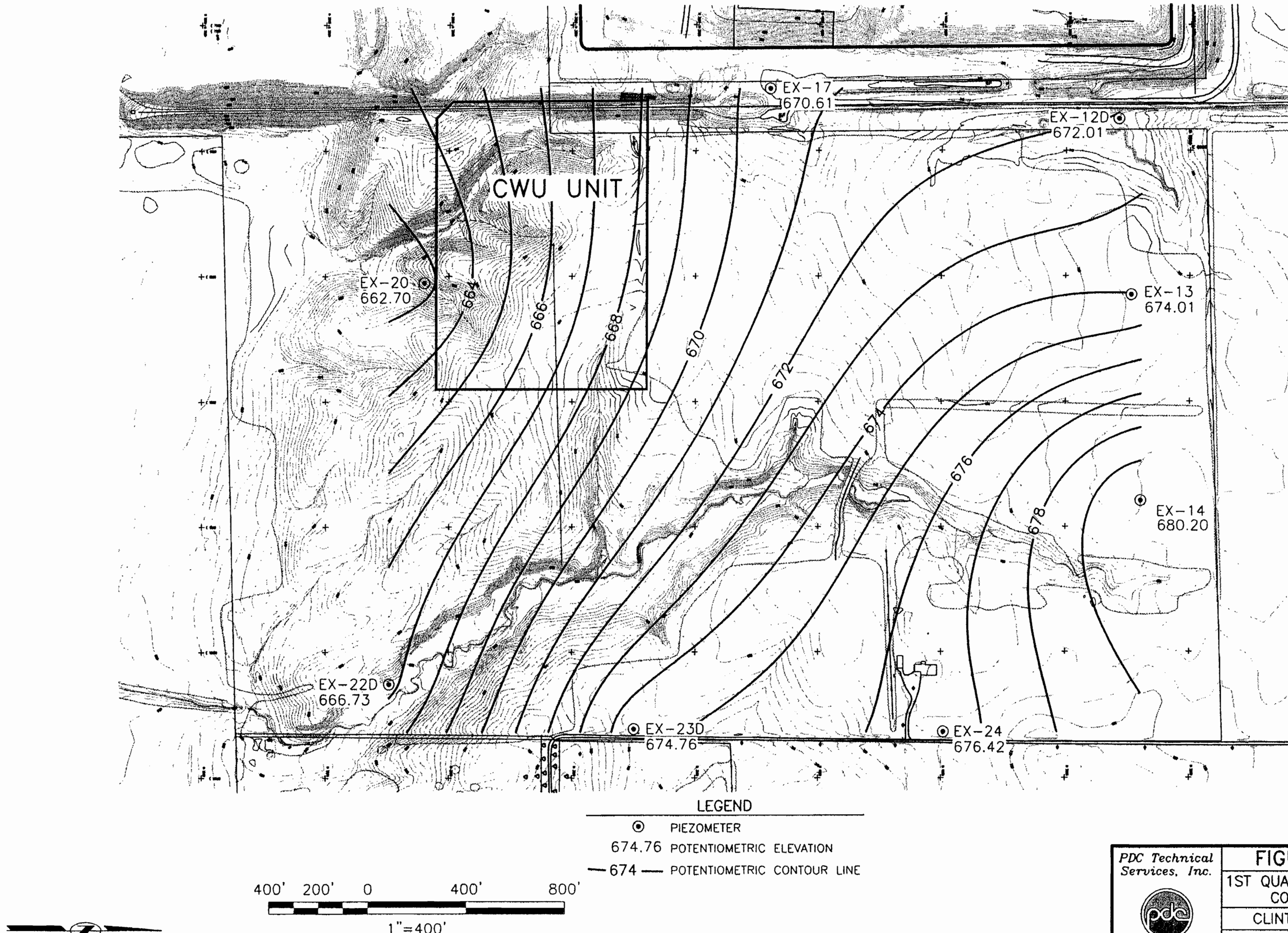
4TH QUARTER 2007 POTENTIOMETRIC CONTOURS-UPPER RADNOR TILL SAND

CLINTON LANDFILL, INC. CWU

CLINTON, ILLINOIS

PROJECT NO. 91-118

CAD DWG NO.911181257-CWU EMPLOYEE NO: 9834 DATE/TIME: 01/29/08 11:10 ACAD-16.



LEGEND

⊙ PIEZOMETER

674.76 POTENTIOMETRIC ELEVATION

—674— POTENTIOMETRIC CONTOUR LINE

Illinois Licensed Professional
Design Firm 184-001145

PDC Technical Services, Inc.
Peoria, Illinois

FIGURE 812.314-43

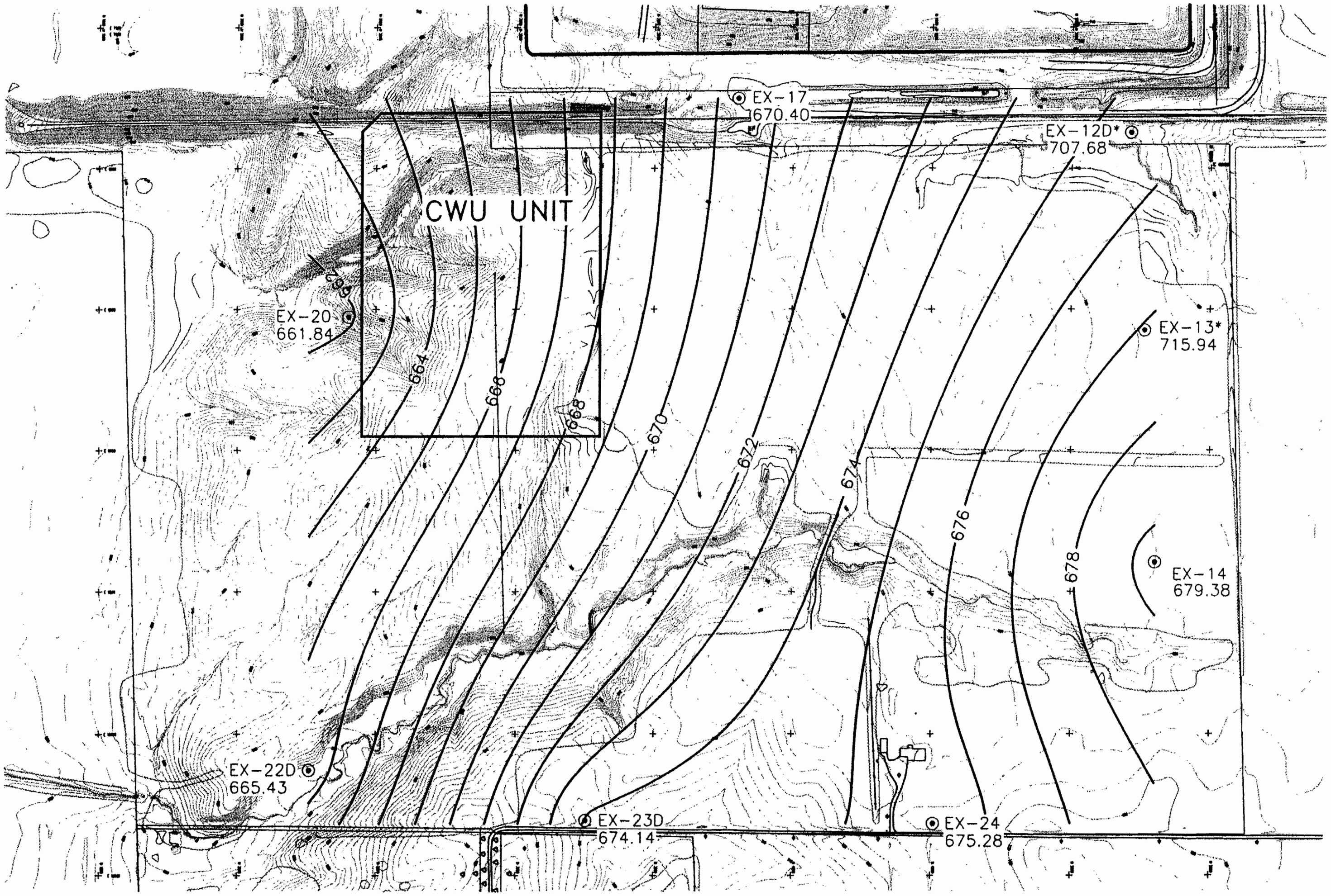
1ST QUARTER 2007 POTENTIOMETRIC CONTOURS-ORGANIC SOIL

CLINTON LANDFILL, INC. CWU

CLINTON, ILLINOIS

PROJECT NO. 91-118

CAD DWG NO:911181258-CWU EMPLOYEE NO: 9834 DATE/TIME: 01/29/08 13:12 ACAD-16.



LEGEND

⊙ PIEZOMETER

674.14 POTENTIOMETRIC ELEVATION

—674— POTENTIOMETRIC CONTOUR LINE

400' 200' 0 400' 800'

1"=400'

*NOTE: WELLS EX-12D AND EX-13 WERE NOT USED TO CONTOUR.

Illinois Licensed Professional Design Firm 184-001145

PDC Technical Services, Inc.

Peoria, Illinois

FIGURE 812.314-44

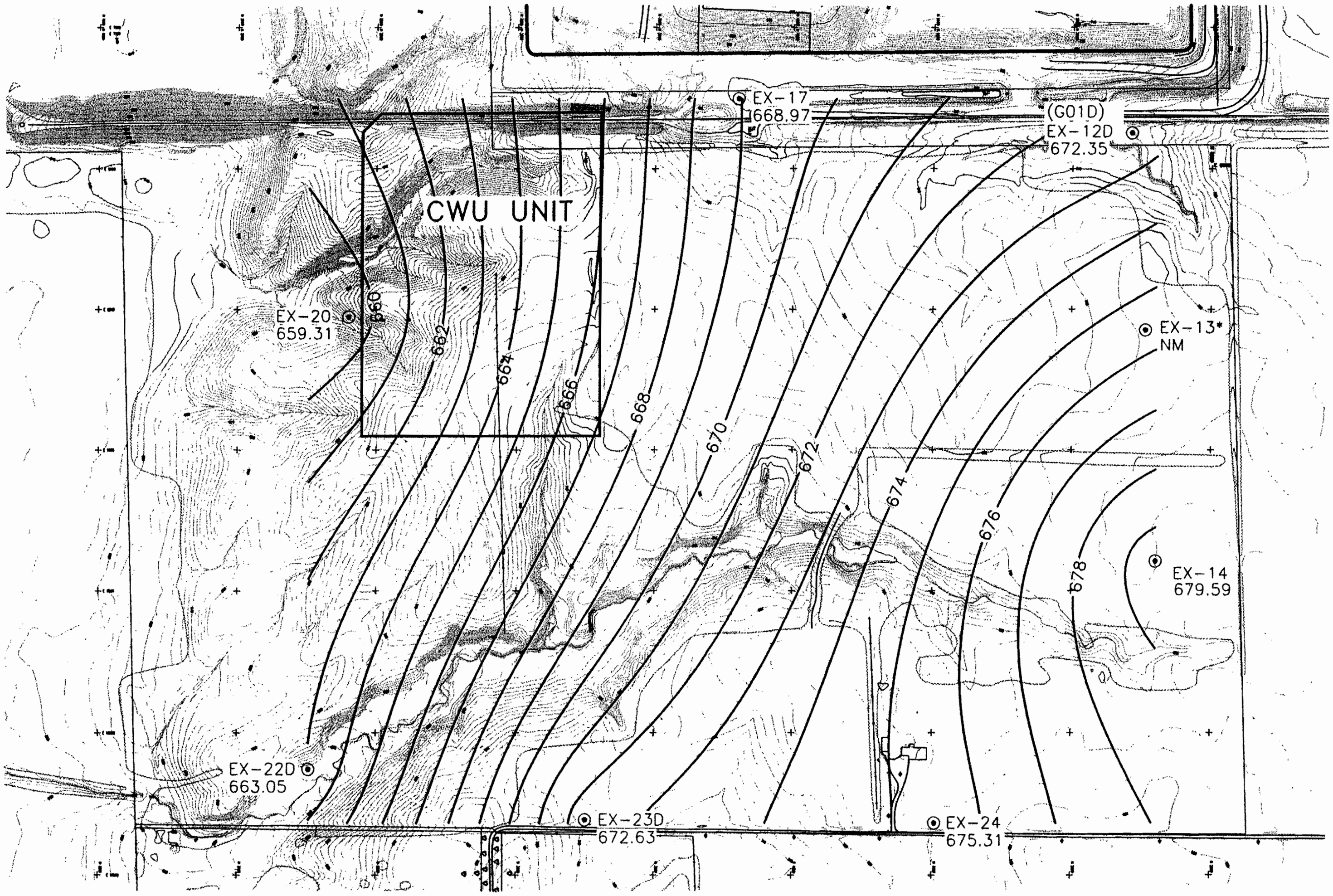
2ND QUARTER 2007 POTENTIOMETRIC CONTOURS-ORGANIC SOIL

CLINTON LANDFILL, INC. CWU

CLINTON, ILLINOIS

PROJECT NO. 91-118

CAD DWG NO:911181326-CWU EMPLOYEE NO: 9834 DATE/TIME: 01/29/08 13:45 ACAD-16.



LEGEND

⊙ PIEZOMETER

672.63 POTENTIOMETRIC ELEVATION

—674— POTENTIOMETRIC CONTOUR LINE

400' 200' 0 400' 800'

1"=400'

*NOTE: WELL EX-13 WAS NOT USED TO CONTOUR.

Illinois Licensed Professional Design Firm 184-001145

PDC Technical Services, Inc.

Peoria, Illinois

FIGURE 812.314-45

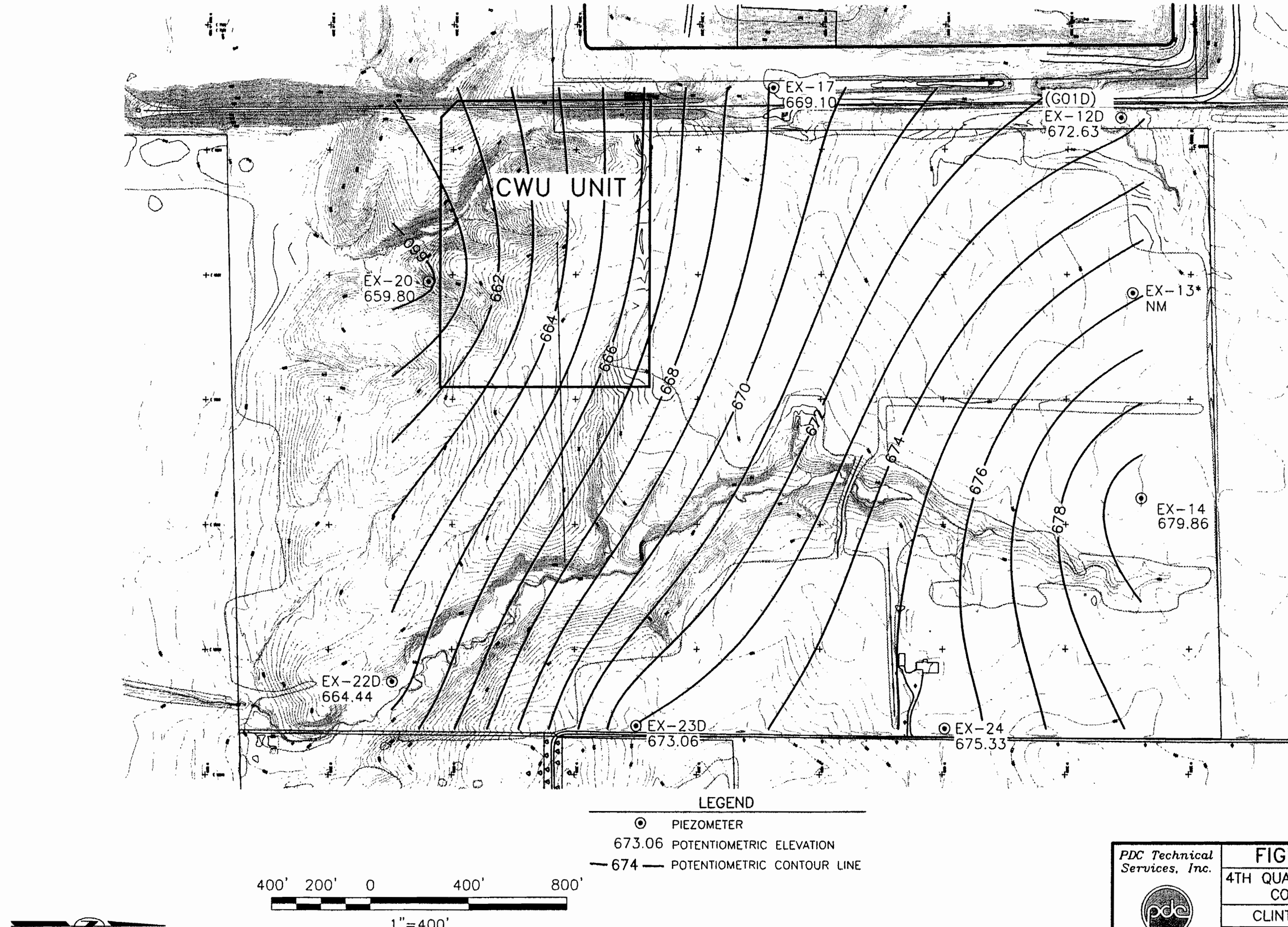
3RD QUARTER 2007 POTENTIOMETRIC CONTOURS-ORGANIC SOIL

CLINTON LANDFILL, INC. CWU

CLINTON, ILLINOIS

PROJECT NO. 91-118

CAD DWG NO.911181327-CWU EMPLOYEE NO: 9834 DATE/TIME: 01/29/08 13.55 ACAD-16.



*NOTE: WELL EX-13 WAS NOT USED TO CONTOUR.

Illinois Licensed Professional
Design Firm 184-001145

PDC Technical Services, Inc.

Peoria, Illinois

FIGURE 812.314-46

4TH QUARTER 2007 POTENTIOMETRIC CONTOURS-ORGANIC SOIL

CLINTON LANDFILL, INC. CWU

CLINTON, ILLINOIS

PROJECT NO. 91-118

ATTACHMENT 13: CWU Groundwater Impact Assessment Conceptual Models

TABLE 812.316-2

SUMMARY OF SLUG TEST RESULTS

Clinton Landfill No. 3

Well No.	Geologic Unit	Hvorslev Method: Hydraulic Conductivity (K), cm/sec. Falling Head (K_f)	Hvorslev Method: Hydraulic Conductivity (K), cm/sec. Rising Head (K_r)	Geometric Mean K (cm/sec.)
EX-22S	Upper Radnor Till Sand	9.39E-05	1.36E-04	1.13E-04
EX-23S	Upper Radnor Till Sand	1.13E-05	7.94E-06	9.47E-06
EX-21S	Upper Radnor Till Sand	1.50E-04	1.73E-04	1.61E-04
			Geometric Mean, all wells:	**5.57E-05**

Well No.	Geologic Unit	Hvorslev Method: Hydraulic Conductivity (K), cm/sec. Falling Head (K_f)	Hvorslev Method: Hydraulic Conductivity (K), cm/sec. Rising Head (K_r)	Geometric Mean K (cm/sec.)
EX-12S	Lower Radnor Till Sand	3.22E-04	2.70E-04	2.95E-04
EX-4	Lower Radnor Till Sand	3.12E-05	3.22E-05	3.17E-05
EX-5	Lower Radnor Till Sand	1.49E-03	1.10E-03	1.28E-03
EX-6	Lower Radnor Till Sand	4.66E-03	4.00E-03	4.32E-03
EX-8S	Lower Radnor Till Sand	9.93E-04	8.63E-04	9.26E-04
EX-21	Lower Radnor Till Sand	5.23E-04	4.76E-04	4.99E-04
G10M	Lower Radnor Till Sand	1.01E-05	1.03E-05	1.02E-05
G11M	Lower Radnor Till Sand	2.98E-05	1.87E-05	2.36E-05
			Geometric Mean, all wells:	**2.21E-04**

Well No.	Geologic Unit	Hvorslev Method: Hydraulic Conductivity (K), cm/sec. Falling Head (K_f)	Hvorslev Method: Hydraulic Conductivity (K), cm/sec. Rising Head (K_r)	Geometric Mean K (cm/sec.)
EX-12D	Organic Soil	5.97E-05	7.75E-05	6.80E-05
EX-13	Organic Soil	6.77E-06	4.23E-06	5.35E-06
EX-14	Organic Soil	1.14E-05	6.88E-06	8.86E-06
EX-17	Organic Soil	2.76E-05	1.81E-05	2.24E-05
EX-20	Organic Soil	8.68E-05	8.59E-05	8.63E-05
EX-22D	Organic Soil	1.07E-04	8.09E-05	9.30E-05
EX-23D	Organic Soil	2.64E-03	2.69E-03	2.66E-03
EX-24	Organic Soil	3.79E-05	4.94E-05	4.33E-05
G08D	Organic Soil	3.55E-05	4.49E-05	3.99E-05
G09D	Organic Soil	7.44E-07	4.37E-07	5.70E-07
G10D	Organic Soil	5.62E-06	2.38E-06	3.66E-06
G11D	Organic Soil	1.84E-05	1.58E-05	1.71E-05
			Geometric Mean, all wells:	**2.60E-05**

Note: cm/sec. = centimeters per second

PDC TECHNICAL SERVICES, INC.
LDD REPORT

Project Name: Clinton LF No. 3 Chemical Waste Cell Models — Sheet 2 of 2

Description: Volumes to obtain average thickness * Top of Lower Radnor Till sand * — Project No. 91-118

Run By: MNC — Source Dwg. 91118 1322 - subgrade — Date: 1-4-08

Stratum: Lower sand to Chem cell subgrade 1-4-08

Site: Chemical Waste Cell — Surface 1: Chem Cell subgrade JRB 1-4-08

Surface 2: Lower sand JRB model 1-4-08

Volumes	Cut	Fill	Net (cu. yds.)
gridvol			
CV Low sand vs chem subgrade 1-4-08	527829	0	527829 cuyds

Avg. End Area

Chem cell subgrade floor area with any lower sand = 651726 sqft.

527829 cuyds x 27 = 14251383 cuft. Avg thk = 21.87 ft.

Stratum

Site — Surface 1

Surface 2

Volumes	Cut	Fill	Net (cu. yds.)
gridvol			
CV			

Avg. End Area

Stratum

Site — Surface 1

Surface 2

Volumes	Cut	Fill	Net (cu. yds.)
gridvol			
CV			

Avg. End Area

PDC TECHNICAL SERVICES, INC.
LDD REPORT

Project Name: Clinton LF No. 3 Chemical Waste Cell Models — Sheet 1 of 2

Description: Volumes to obtain average thicknesses *Top of Berry Clay* — Project No. 91-118

Run By: MNC — Source Dwg. 911181322-subgrade — Date 1-4-08

see also 91118965JRBmodel, 91118970JRB model, 91118971JRB model

• Stratum: Berry Clay to Chem Cell Subgrade 1-4-08

Site: Chemical Waste Cell — Surface 1: Chem cell subgrade JRB 1-4-08

Surface 2: Berry Clay JRB Model 2-3-05

Volumes	Cut	Fill	Net (cu. yds.)
gridvol			
CV Berry Clay to Subgrade 1-4-08	86827	4604	82223 cut
Avg. End Area			

Chem Cell subgrade floor area = 717 627 ft²; 82223 yd³ x 27 = 2 220 021 ft³

Avg. thickness : $\frac{2\ 220\ 021\ ft^3}{717\ 627\ ft^2}$ = 3.09 feet

* Stratum

Site — Surface 1

Surface 2

Volumes	Cut	Fill	Net (cu. yds.)
gridvol			
CV			
Avg. End Area			

• Stratum: full Berry Clay to Chem subgrade 1-4-08

Site: Chemical Waste Cell — Surface 1: Chem cell subgrade JRB 1-4-08

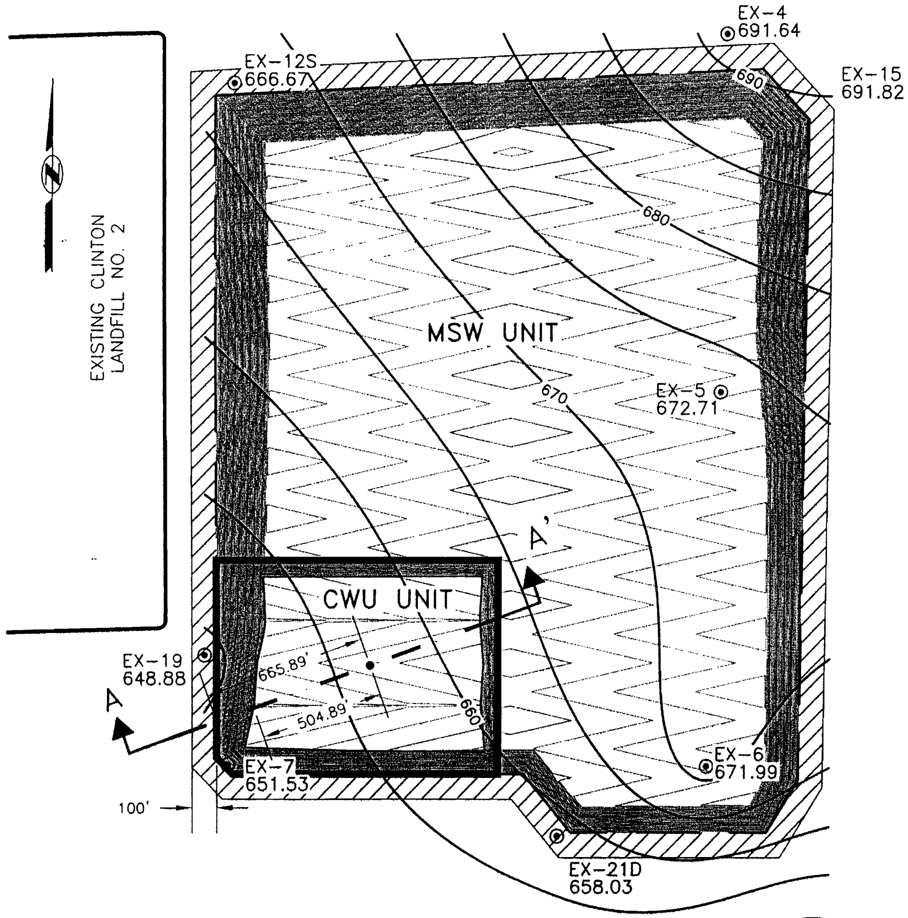
Surface 2: Berry Clay JRB Model 1-4-08

Volumes	Cut	Fill	Net (cu. yds.)
gridvol			
CV Berry Clay vs Chem subgrade 1-4-08	88671	5058	83613
Avg. End Area			

Chem Cell subgrade floor area = 717627 ft² — 83613 c.y. x 27 = 225 755 cuft

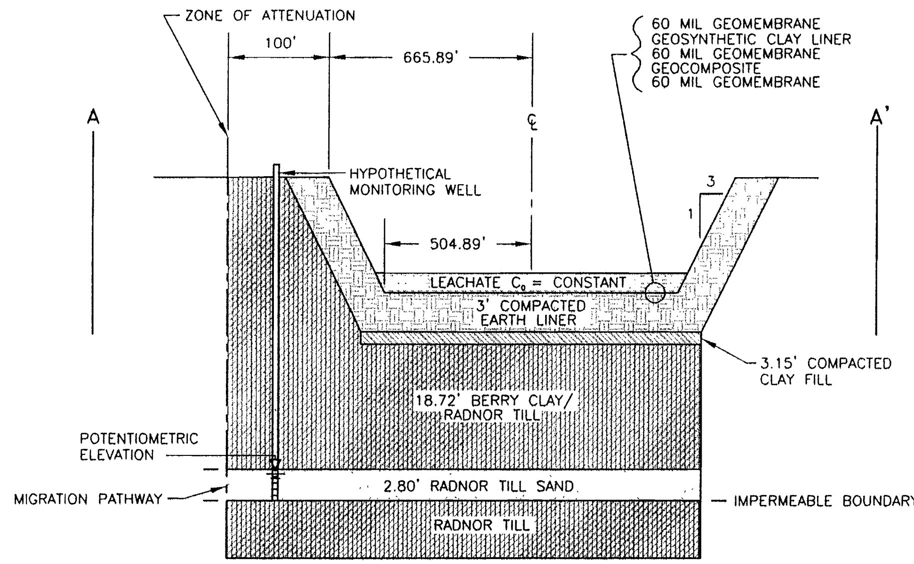
Avg. thk = $\frac{225\ 755\ ft^3}{717627\ ft^2}$ = 3.15 ft

CAD DWG NO:911181324 EMPLOYEE NO: 9834 DATE/TIME: 01/28/08 16:25 ACAD-16.



LANDFILL INVERT PLAN

NOT TO SCALE



SECTION A–A'

NOT TO SCALE

LEGEND

- ⊙ PIEZOMETER SCREENED IN LOWER RADNOR TILL SAND
- 671.99 MEAN POTENTIOMETRIC ELEVATION (LOWER RADNOR TILL SAND, FEET – MSL)
- —670— MEAN POTENTIOMETRIC ELEVATION CONTOUR LINE (LOWER RADNOR TILL SAND, FEET – MSL)
- (hatched box) ZONE OF ATTENUATION

NOTE: MEAN POTENTIOMETRIC ELEVATIONS BASED ON 2003–2007 MONITORING DATA

Illinois Licensed Professional Design Firm 184-001145

PDC Technical Services, Inc.
Peoria, Illinois

FIGURE 812.316-6

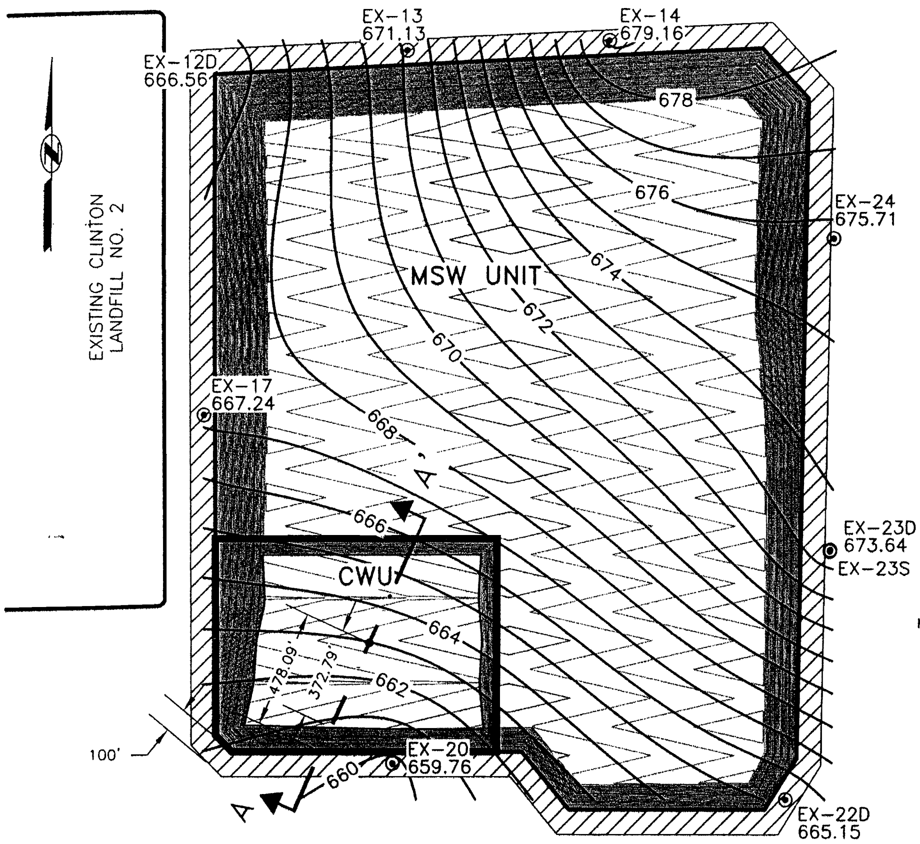
HYDROGEOLOGIC MODEL
LOWER RADNOR TILL SAND

CLINTON LANDFILL NO. 3 CWU

CLINTON, ILLINOIS

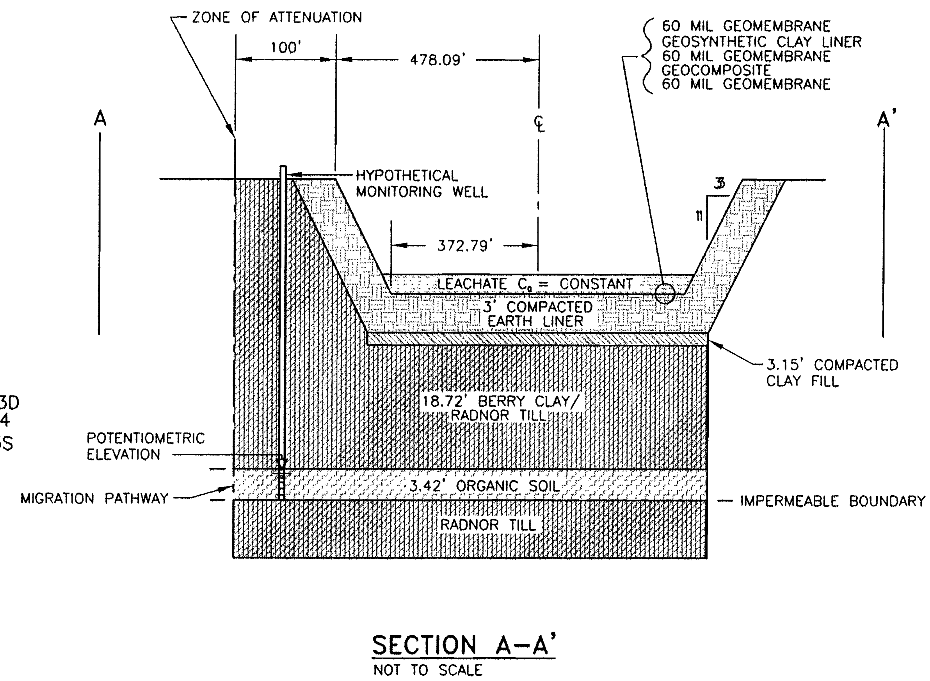
PROJECT NO. 91-118.02

CAD DWG NO:911181325 EMPLOYEE NO 9834 DATE/TIME: 01/30/08 16:50 ACAD-16.



LANDFILL INVERT PLAN

NOT TO SCALE



SECTION A–A'

NOT TO SCALE

LEGEND

⊙	PIEZOMETER SCREENED IN ORGANIC SOIL
665.15	MEAN POTENTIOMETRIC ELEVATION (ORGANIC SOIL, FEET – MSL)
—660—	MEAN POTENTIOMETRIC ELEVATION CONTOUR LINE (ORGANIC SOIL, FEET – MSL)
(hatched box)	ZONE OF ATTENUATION

NOTE: MEAN POTENTIOMETRIC ELEVATIONS BASED ON 2003-2007 MONITORING DATA

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PDC Technical Services, Inc.

Peoria, Illinois

FIGURE 812.316-7

HYDROGEOLOGIC MODEL ORGANIC SOIL

CLINTON LANDFILL NO. 3 CWU

CLINTON, ILLINOIS

PROJECT NO. 91-118.02

ATTACHMENT 14: Darcy Velocity Through CWU Liner System Calculations

PDC Technical Services, Inc.

Project: Clinton Landfill No. 3 Chemical Waste Unit   Computed By: Ganesh Krish

Project No: 91-0118.31   Task No.: 42000   Checked By: LA   Date: 12/26/2007

DARCY VELOCITY

Calculate the Darcy Velocity through the Chemical Waste Unit liner system using the methodolgy described below:

1. Calculate the leachate impingement into the redundant leachate collection system which lies the upper liner system and the bottom-most liner system. Although HELP modeling demonstrates that the maximum head acting on the upper liner system will at all times be less than 12 inches, base the impingement on a uniform 12 inches of head acting on the upper liner. The upper liner system consists of a 60 mil HDPE geomembrane over a Geosynthetic Clay Liner (GCL) which is underlain by another 60 mil HDPE geomembrane. To simplify the calculations, ignore the HDPE geomembrane which directly underlies the GCL. Ignoring this geomembrane will result in a significant overstatement of the leachate impingement into the underlying redundant leachate collection system and is, therefore, a very conservative assumption.

2. Calculate the maximum head acting on the bottom-most liner system based on the impingement into the overlying redundant leachate collection system as calculated during step 1. The redundant leachate collection system consists of a 200 mil thick HDPE geonet with a specified transmissivity no less than 1×10^{-3} m^2 per second which equivalent to a hydraulic conductivity of 20 cm/sec. The bottom-most liner system consists of 60 mil HDPE geomembrane over 3 feet of compacted Earth Liner with a hydraulic conductivity no greater than 1×10^{-7} cm/sec.

3. Calculate the Darcy Velocity through the bottom-most liner system assuming a uniform head equal to the maximum head calculated during step 2. The maximum head calculated during step 2 acts on only a small portion of the liner system and, therefore, the assumption that the maximum calculated head uniformly acts on the whole liner system is very conservative as it overstates the true average head acting on the liner.

STEP 1 - IMPINGEMENT INTO REDUNDANT LEACHATE COLLECTION SYSTEM

Reference: *The Hydrologic Evaluation of Landfill Performance (HELP) Model Engineering Documentation for Version 3*, EPA/600/R-94/168b, September 1994

There are two components to consider:
1 Vapor diffusion through intact geomembrane.
2. Leakage through holes in the geomembrane from both manufacturing and installation defects.

VAPOR DIFFUSION

$$q_d = \frac{K_g \times (h_g + T_g)}{T_g} \text{ inches / day}$$ p. 76   Eq. 141

K_g = Equivalent saturated hydraulic conductivity of geomembrane (inches / day)
= 2.00E-13 cm / sec (p. 77, Table 8 - HELP Model default)
= 6.80E-09 inches per day

h_g = Average hydraulic head on geomembrane (inches)

h_g = 12 inches (conservative assumption as described above)
h_g = 0.3048 meters

T_g = Geomembrane thickness (inches)
= 0.06 inches

q_d = 1.367E-06 inches / day
4.020E-13 meters / second

MANUFACTURING DEFECTS

Wetted Radius - Poor Liner Contact

$R = 0.61 \times a^{0.05} \times h^{0.45} \times K_s^{-0.13}$ (meters) p. 92 Eq. 165

a = Defect area (meter^2)
= 7.84E-07 m^2 (p. 77 - HELP Model Guidance)

h = Average hydraulic head on geomembrane (meters)
= 0.3048 meters

K_s = GCL saturated hydraulic conductivity (meters / second)
= 5.00E-09 cm / sec (maximum specified)
= 5.00E-11 meters / sec
= 0.0001701 inches / day

R = 3.864 meters
R = 152.1 inches

Average Hydraulic Gradient

$$i_2 = 1 + \frac{h}{2 \times T_s \times \ln(R_2/r_{o2})}$$ p. 85 Eq. 150

h = Average hydraulic head on geomembrane (meters)
= 0.3048 meters

T_s = GCL thickness (meters)
= 0.24 inches (typical)
= 0.006 meters

R_2 = Wetted radius (meters)
= 3.864 meters

r_{o2} = Radius of flaw in geomembrane (meters)
= 0.0005 meters (p. 77 - HELP Model Guidance)

i_2 = 3.837

Seepage Through Geomembrane Manufacturing Defect

$q_{h(m)} = K_s \times i_{avg} \times n \times \pi \times R^2 \times (\eta_{20} / \eta_{15})$ (meters / second) p. 83 Eq. 149

K_s = GCL saturated hydraulic conductivity (meters / second)
= 5E-11 meters / second

i_{avg} = Average hydraulic gradient on wetted area in controlling soil layer (from above)
= 3.837

n = Number of manufacturing defects (number / m^2)
= 4 number of defects per acre (IEPA guidance)
= 9.88E-04 number of defects per m^2

π = 3.1416

R = Wetted radius (from above) (meters)
= 3.86 meters

η_{20} = Absolute viscosity of water at 20^0 C
= 0.00100 kg / m-sec (p. 85 - HELP Model Guidance)

η_{15} = Absolute viscosity of water at 15^0 C
= 0.00114 kg / m-sec (p. 85 - HELP Model Guidance)

$q_{h(m)}$ = 7.80E-12 meters / second

INSTALLATION DEFECTS

Wetted Radius - Poor Liner Contact

$R = 0.61 \times a^{0.05} \times h^{0.45} \times K_s^{-0.13}$ (meters) p. 92 Eq. 165

a = Defect area ($meter^2$)
= 1.00E-04 m^2 (p. 78 - HELP Model Guidance)

h = Average hydraulic head on geomembrane (meters)
= 0.3048 meters

K_s = GCL saturated hydraulic conductivity (meters / second)
= 5.00E-09 cm / sec
= 5.00E-11 meters / sec
= 0.0001701 inches / day

R = 4.923 meters
R = 193.8 inches

Average Hydraulic Gradient

$$i_2 = 1 + \frac{h}{2 \times T_s \times \ln(R_2/r_{o2})}$$ p. 85 Eq. 150

h = Average hydraulic head on geomembrane (meters)
= 0.3048 meters

T_s = GCL thickness (meters)
= 0.24 inches
= 0.006 meters

R_2 = Wetted radius (meters)
= 4.923 meters

r_{o2} = Radius of flaw in geomembrane (meters)
= 0.00559 meters (p. 78 - HELP Model Guidance)

i_2 = 4.746

Seepage Through Geomembrane Installation Defect

$q_{h(i)} = K_s \times i_{avg} \times n \times \pi \times R^2 \times (\eta_{20} / \eta_{15})$ (meters / second) p. 83 Eq. 149

K_s = GCL saturated hydraulic conductivity (meters / second)
= 5E-11 meters / second

i_{avg} = Average hydraulic gradient on wetted area in controlling soil layer (from above)
= 4.746

n = Number of manufacturing defects (number / m^2)
= 10 number of defects per acre (IEPA guidance)
= 2.47E-03 number of defects per m^2

π = 3.1416

R = Wetted radius (from above) (meters)
= 4.923 meters

η_{20} = Absolute viscosity of water at 20^0 C
= 0.00100 kg / m-sec (p. 85 - HELP Model Guidance)

η_{15} = Absolute viscosity of water at 15^0 C
= 0.00114 kg / m-sec (p. 85 - HELP Model Guidance)

$q_{h(i)}$ = 3.92E-11 meters / second

IMPINGEMENT INTO REDUNDANT LEACHATE COLLECTION SYSTEM

$q = q_d + q_{h(m)} + q_{h(i)}$

q = 4.74E-11 meters per second
1.49E-03 meters per year
5.88E-02 inches per year

STEP 2 -MAXIMUM HEAD ON BOTTOM-MOST LINER SYSTEM

Reference: *Geotechnical Aspects of Landfill Design and Construction,* Xuede Qian, Robert M. Koerner, and Donald H. Gray (2002 Print Version)

This is calculated using Giroud's 1992 Method (Equations 8.29 and 8.30 within Section 8.5.1.3)

$$y_{max} = \frac{j \times L \times [(4 \times r / k + S^2)^{1/2} - S]}{2 \times \cos\alpha}$$ inches p. 276 Eq. 8.29

$$j = 1 - 0.12 \times \exp\{-[\log(1.6 \times r / k / S^2)^{5/8}]^2\}$$ p. 276 Eq. 8.30
= 1.00E+00

where,

y_{max} = maximum liquid head on the landfill liner in inches
L = horizontal drainage distance in inches
= 170 feet (maximum design drainage length)
= 2040 inches
r = inflow rate in inches per day
= 5.88E-02 inches per year (q_L from Step 1 above)
= 1.61E-04 inches per day (365 days per year)
k = design hydraulic conductivity of the drainage layer in inches per day

$$= \frac{k_{specified}}{\text{Factor of Safety (FS)} \times \text{Reduction Factor (RF)}}$$

Reference: *Design of Lateral Drainage Systems for Landfills,* Gregory N. Richardson, Ph.D., P.E. and Aigen Zhao, Ph.D., P.E. (1999 Print Version) where,

$k_{specified}$ = 20 cm/sec (project - specific)
FS = 2 (recommended by Richardson and Zhao, p. 22)
RF = $RF_{in} + RF_{cr} + RF_{cc} + RF_{bc}$
= 6.95

where,

RF_{in} = reduction factor for elastic deformation, or intrusion of the adjacent geotextiles into the drainage channel
= 1.75 (Mean recommended value for Leachate Collection and Removal Systems, Table 3.1 of the above reference)
RF_{cr} = reduction factor for creep deformation of the drainage core and/or adjacent geotextile into the drainage channel
= 1.70 (Mean recommended value for Leachate Collection and Removal Systems, Table 3.1 of the above reference)
RF_{cc} = reduction factor for chemical clogging and/or precipitation of chemicals in the drainage core space
= 1.75 (Mean recommended value for Leachate Collection and Removal Systems, Table 3.1 of the above reference)
RF_{bc} = reduction factor for biological clogging in the drainage core space
= 1.75 (Mean recommended value for Leachate Collection and Removal Systems, Table 3.1 of the above reference)

k = 1.439 cm/sec
= 48,944 inches per day

α = slope angle of drainage layer, measured from horizontal in degrees
= 2.6 percent (design drainage slope)
= 1.49 degrees
S = $\tan \alpha$
= 0.026

$\boxed{y_{max} = 0.0003 \text{ inches}}$

STEP 3 - DARCY VELOCITY THROUGH THE BOTTOM-MOST LINER SYSTEM

Reference: *The Hydrologic Evaluation of Landfill Performance (HELP) Model Engineering Documentation for Version 3*, EPA/600/R-94/168b, September 1994

There are two components to consider:
1. Vapor diffusion through intact geomembrane.
2. Leakage through holes in the geomembrane from both manufacturing and installation defects.

VAPOR DIFFUSION

$$q_d = \frac{K_g \times (h_g + T_g)}{T_g} \text{ inches / day}$$ p. 76 Eq. 141

K_g = Equivalent saturated hydraulic conductivity of geomembrane (inches / day)
= 2.00E-13 cm / sec (p. 77, Table 8 - HELP Model default)
= 6.80E-09 inches per day

h_g = Average hydraulic head on geomembrane (inches)

h_g = 0.0003 inches (equals y_{max} from Step 2)
h_g = 0.00001 meters

T_g = Geomembrane thickness (inches)
= 0.06 inches

q_d = 6.832E-09 inches / day
2.009E-15 meters / second

MANUFACTURING DEFECTS

Wetted Radius - Poor Liner Contact

$R = 0.61 \times a^{0.05} \times h^{0.45} \times K_s^{-0.13}$ (meters) p. 92 Eq. 165

a = Defect area (meter^2)
= 7.84E-07 m^2 (p. 77 - HELP Model Guidance)

h = Average hydraulic head on the compacted earth liner [CEL] (meters)
= 0.00001 meters (from Step 2)

K_s = CEL saturated hydraulic conductivity (meters / second)
= 1.00E-07 cm/sec (maximum specified)
= 1.00E-09 meters / sec
= 3.40E-03 inches / day

R = 0.025 meters
R = 1.0 inches

Average Hydraulic Gradient

$$i_2 = 1 + \frac{h}{2 \times T_s \times \ln(R_2/r_{o2})}$$ p. 85 Eq. 150

h = Average hydraulic head on the compacted earth liner (meters)
= 0.00001 meters (from Step 2)

T_s = CEL thickness (meters)
= 36 inches (minimum specified)
= 0.914 meters

R_2 = Wetted radius (meters)
= 0.025 meters

r_{o2} = Radius of flaw in geomembrane (meters)
= 0.0005 meters (p. 77 - HELP Model Guidance)

i_2 = 1.000

Seepage Through Geomembrane Manufacturing Defect

$q_{h(m)} = K_s \times i_{avg} \times n \times \pi \times R^2 \times (\eta_{20} / \eta_{15})$ (meters / second) p. 83 Eq. 149

K_s = CEL saturated hydraulic conductivity (meters / second)
= 1.00E-09 meters / second

i_{avg} = Average hydraulic gradient on wetted area in controlling soil layer (from above)
= 1.000

n = Number of manufacturing defects (number / m^2)
= 4 number of defects per acre (IEPA guidance)
= 9.88E-04 number of defects per m^2

π = 3.1416

R = Wetted radius (from above) (meters)
= 0.0251 meters

η_{20} = Absolute viscosity of water at 20^0 C
= 0.00100 kg / m-sec (p. 85 - HELP Model Guidance)

η_{15} = Absolute viscosity of water at 15^0 C
= 0.00114 kg / m-sec (p. 85 - HELP Model Guidance)

$q_{h(m)}$ = 1.72E-15 meters / second

INSTALLATION DEFECTS

Wetted Radius - Poor Liner Contact

$R = 0.61 \times a^{0.05} \times h^{0.45} \times K_s^{-0.13}$ (meters) p. 92 Eq. 165

a = Defect area (meter^2)
= 1.00E-04 m^2 (p. 78 - HELP Model Guidance)

h = Average hydraulic head on the CEL (meters)
= 0.00001 meters (from Step 2)

K_s = CEL saturated hydraulic conductivity (meters / second)
= 5.00E-11 meters / sec
= 0.000170 inches / day

R = 0.047 meters
R = 1.9 inches

Average Hydraulic Gradient

$$i_2 = 1 + \frac{h}{2 \times T_s \times \ln(R_2/r_{o2})}$$ p. 85 Eq. 150

h = Average hydraulic head on the CEL (meters)
= 0.00001 meters (from Step 2)

T_s = CEL thickness (meters)
= 36 inches
= 0.914 meters

R_2 = Wetted radius (meters)
= 0.047 meters

r_{o2} = Radius of flaw in geomembrane (meters)
= 0.00559 meters (p. 78 - HELP Model Guidance)

i_2 = 1.000

Seepage Through Geomembrane Installation Defect

$q_{h(i)} = K_s \times i_{avg} \times n \times \pi \times R^2 \times (\eta_{20} / \eta_{15})$ (meters / second) p. 83 Eq. 149

K_s = CEL saturated hydraulic conductivity (meters / second)
= 5E-11 meters / second

i_{avg} = Average hydraulic gradient on wetted area in controlling soil layer (from above)
= 1.000

n = Number of manufacturing defects (number / m^2)
= 10 number of defects per acre (IEPA guidance)
= 2.47E-03 number of defects per m^2

π = 3.1416

R = Wetted radius (from above) (meters)
= 0.047 meters

η_{20} = Absolute viscosity of water at 20^0 C
= 0.00100 kg / m-sec (p. 85 - HELP Model Guidance)

η_{15} = Absolute viscosity of water at 15^0 C
= 0.00114 kg / m-sec (p. 85 - HELP Model Guidance)

$q_{h(i)}$ = 7.60E-16 meters / second

IMPINGEMENT THROUGH LINER SYSTEM

$q = q_d + q_{h(m)} + q_{h(i)}$

q = 4.49E-15 meters per second
1.42E-07 meters per year
5.57E-06 inches per year

United States
Environmental Protection
Agency

Office of Research and
Development
Washington DC 20460

EPA/600/R-94/168b
September 1994

EPA

The Hydrologic Evaluation of Landfill Performance (HELP) Model

Engineering Documentation for Version 3

T_g = thickness of geomembrane, cm

q_L = geomembrane leakage rate, cm/sec

ρ = density of water, g/cm^3

K_g = equivalent saturated hydraulic conductivity of geomembrane, cm/sec

Δh = hydraulic head difference, cm H_2O

Expressing Δp in terms of hydraulic head, Δh, diffusivity (also known as permeance or coefficient of diffusion) and hydraulic conductivity are related as follows:

$$K_g = \frac{diffusivity \cdot T_g}{\rho} \tag{140}$$

Equation 139 applies to the diffusion of water through the geomembrane induced by hydraulic head or vapor pressure differences. The program applies Darcy's law to geomembrane liners in the same manner as for soil liners (Equation 137). Diffusivity is expressed in the program as equivalent hydraulic conductivity. Table 8 provides default "equivalent hydraulic conductivities" for geomembranes of various polymer types. Leakage through intact sections of geomembranes is computed as follows:

$$q_{L_1}(k)_i = \begin{cases} 0 & for\ h_g(k)_i = 0 \\ K_g(k)\,\dfrac{h_g(k)_i + T_g(k)}{T_g(k)} & for\ h_g(k)_i > 0 \end{cases} \tag{141}$$

where

$q_{L_1}(k)_i$ = geomembrane leakage rate by diffusion during time step i, inches/day

$K_g(k)$ = equivalent saturated hydraulic conductivity of geomembrane in subprofile k, inches/day

$h_g(k)_i$ = average hydraulic head on geomembrane liner in subprofile k during time step i, inches

$T_g(k)$ = thickness of geomembrane in subprofile k, inches

4.16.2 Leakage Through Holes in Geomembranes

Properly designed and constructed geomembrane liners are seldom installed completely free of flaws as evident from leakage flows and post installation leak tests.

TABLE 8. GEOMEMBRANE DIFFUSIVITY PROPERTIES*

Geomembrane Material	Coefficient of Migration, cm^2/sec	Equivalent Hydraulic Conductivity, cm/sec
Butyl Rubber	$2x10^{-11}$	$1x10^{-12}$
Chlorinated Polyethylene (CPE)	$6x10^{-11}$	$4x10^{-12}$
Chlorosulfonated Polyethylene (CSPE) or Hypalon	$5x10^{-11}$	$3x10^{-12}$
Epichlorohydrin Rubber (CO)	$3x10^{-9}$	$2x10^{-10}$
Elasticized Polyolefin	$1x10^{-11}$	$8x10^{-13}$
Ethylene-Propylene Diene Monomer (EPDM)	$2x10^{-11}$	$2x10^{-12}$
Neoprene	$4x10^{-11}$	$3x10^{-12}$
Nitrile Rubber	$5x10^{-10}$	$3x10^{-11}$
Polybutylene	$7x10^{-12}$	$5x10^{-13}$
Polyester Elastomer	$2x10^{-10}$	$2x10^{-11}$
Low-Density Polyethylene (LDPE)	$5x10^{-12}$	$4x10^{-13}$
High-Density Polyethylene (HDPE)	$3x10^{-12}$	$2x10^{-13}$
Polyvinyl Chloride (PVC)	$2x10^{-10}$	$2x10^{-11}$
Saran Film	$9x10^{-13}$	$6x10^{-14}$

* From Giroud and Bonaparte (1985)

Geomembrane flaws can range in size from pinholes that are generally a result of manufacturing flaws such as polymerization deficiencies to larger defects resulting from seaming errors, abrasion, and punctures occurring during installation. Giroud and Bonaparte (1989) defines pinhole-sized flaws to be smaller than the thickness of the geomembrane. Since geomembrane liner thicknesses are typically 40 mils or greater, the HELP program assigns the diameter of pinholes to be 40 mils or 0.001 m (defect area = $7.84x10^{-7}$ m^2). Giroud and Bonaparte (1989) indicates that pinhole flaws are more commonly associated with the original, less sophisticated, geomembrane manufacturing

techniques. Current manufacturing and polymerization techniques have made pinhole flaws less common. Giroud and Bonaparte (1989) defined installation defect flaws to be of a size equal to or larger than the thickness of the geomembrane. Based on 6 case studies that produced consistent results, Giroud and Bonaparte (1989) recommended using a defect area of 1 cm^2 (20 x 5 mm) for conservatively high predictions of liner leakage on projects with intensive quality assurance/quality control monitoring during liner construction. Therefore, the HELP program uses a defect area of 1 cm^2. Finally, the HELP program user must define the flaw density or frequency (pinholes or defects/acre) for each geomembrane liner. Giroud and Bonaparte (1989) recommended using a flaw density of 1 flaw/acre for intensively monitored projects. A flaw density of 10 flaws/acre or more is possible when quality assurance is limited to spot checks or when environmental difficulties are encountered during construction. Greater frequency of defects may also result from poor selection of materials, poor foundation preparation and inappropriate equipment as well as other design flaws and poor construction practices.

Geosyntec (1993) indicated that geomembranes may undergo deterioration due to aging or external elements such as chemicals, oxygen, micro-organisms, temperature, high-energy radiation, and mechanical action (i.e., foundation settlement, slope failure, etc.). Although geomembrane deterioration can create geomembrane flaws or increase the size of existing flaws, the HELP program does not account for this time-dependent deterioration in the liner.

The liquid that passes through a geomembrane hole will flow laterally between the geomembrane and the flow limiting (controlling) layer of material adjacent to the geomembrane, unless there is perfect contact between the geomembrane and the controlling soil or free flow from the hole. The space between the geomembrane and the soil is assumed to be uniform. The size of this space depends on the roughness of the soil surface, the soil particle size, the rugosity and stiffness of the geomembrane, and the magnitude of the normal stress (overburden pressure) that tends to press the geomembrane against the soil. The HELP program ranks the contact between a geomembrane and soil as perfect, excellent, good, poor, and worst case (free flow). The HELP program also permits designs where a geomembrane is separated from a low permeability soil by a geotextile. The leakage is controlled by the hydraulic transmissivity of the gap or geotextile between the geomembrane and the soil. This interfacial flow between the geomembrane and soil layer covers an area called the wetted area. The hole in the geomembrane is assumed to be circular and the interfacial flow is assumed to be radial; therefore, the wetted area is circular. Giroud and Bonaparte (1989); Bonaparte et al. (1989); and Giroud et al. (1992) examined steady-state leakage through a geomembrane liner for all of these qualitative levels of contact and provided either theoretical or empirical solutions for the leakage rate and the radius of interfacial flow. Leakage and wetted area are dependent on the static hydraulic head on the liner; the hydraulic conductivity and thickness of the surrounding soil, waste, or geotextile layers; the size of the flaw; and the contact (interface thickness) between the geomembrane and the controlling soil layer.

$T_s(k)$ = thickness of soil layer at base of subprofile k, inches

Interfacial Flow

Problems associated with the installation of geomembrane liners typically causes an interface or gap to develop between the installed geomembrane liner and the adjacent materials. Even with a large overburden pressure on the geomembrane liner, gaps exist due to geomembrane wrinkles from installation; clods, large particle size and irregularities in the subsoil; and the stiffness of the geomembrane preventing the liner from filling the small voids between soil particles. However, the thickness of the interface is dependent on the effective stress on the liner. Percolation through geomembrane flaws typically involves radial flow through the interface and vertical flow through the controlling layer (See Figure 9). This flow also occurs in reverse when the controlling layer is placed over the geomembrane (See Figure 10). Layer erosion and consolidation can increase the interface thickness over time; however, such increases are not considered in the HELP program.

The head acting on the geomembrane liner decreases from a maximum at the edge of the geomembrane flaw to zero at the edge of the wetted area. Flow through the interface and controlling layer completely dissipates the leachate head or, as with intact liners, the total head on the liner. The leachate is assumed to flow radially until this head is dissipated; this radial distance is called the wetted area.

Giroud and Bonaparte (1989) indicated that the interfacial flow is dependent on the hydraulic transmissivity (thickness) of the air or geotextile cushion occupying the interface, the hydraulic head on the geomembrane, the hydraulic conductivity of the controlling soil layer, and the size of the geomembrane flaw. Vertical flow through the controlling layer is dependent on the hydraulic conductivity of the layer, the hydraulic gradient on the layer at various locations in the wetted area, and the area of the wetted area.

Giroud and Bonaparte (1989) and Giroud et al. (1992) used Darcy's law for flow through a porous media, considering both radial and interfacial flow, and developed the following equation, modified for flow per unit area and temperature corrected, for estimating leakage through circular flaws in geomembranes with interfacial flow.

$$q_h = K_s \, i_{avg} \, n \, \pi \, R^2 \left(\frac{\eta_{20}}{\eta_{15}} \right) \tag{149}$$

where

q_h = interfacial flow leakage rate through flawed geomembrane, m/sec

K_s = saturated hydraulic conductivity of controlling soil layer, m/sec

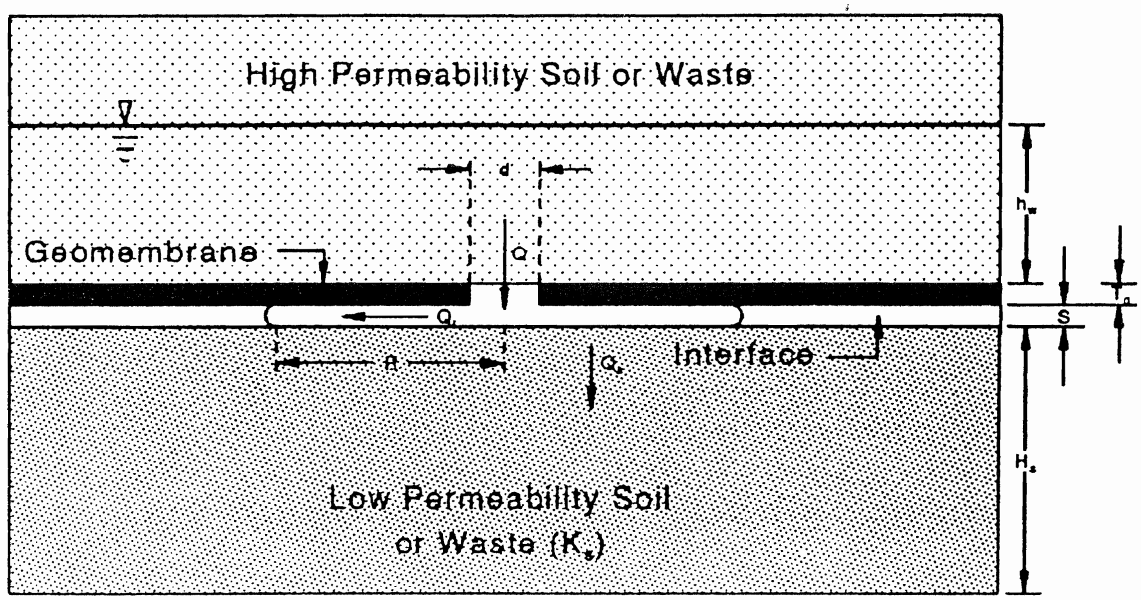

Figure 9. Leakage with Interfacial Flow Below Flawed Geomembrane

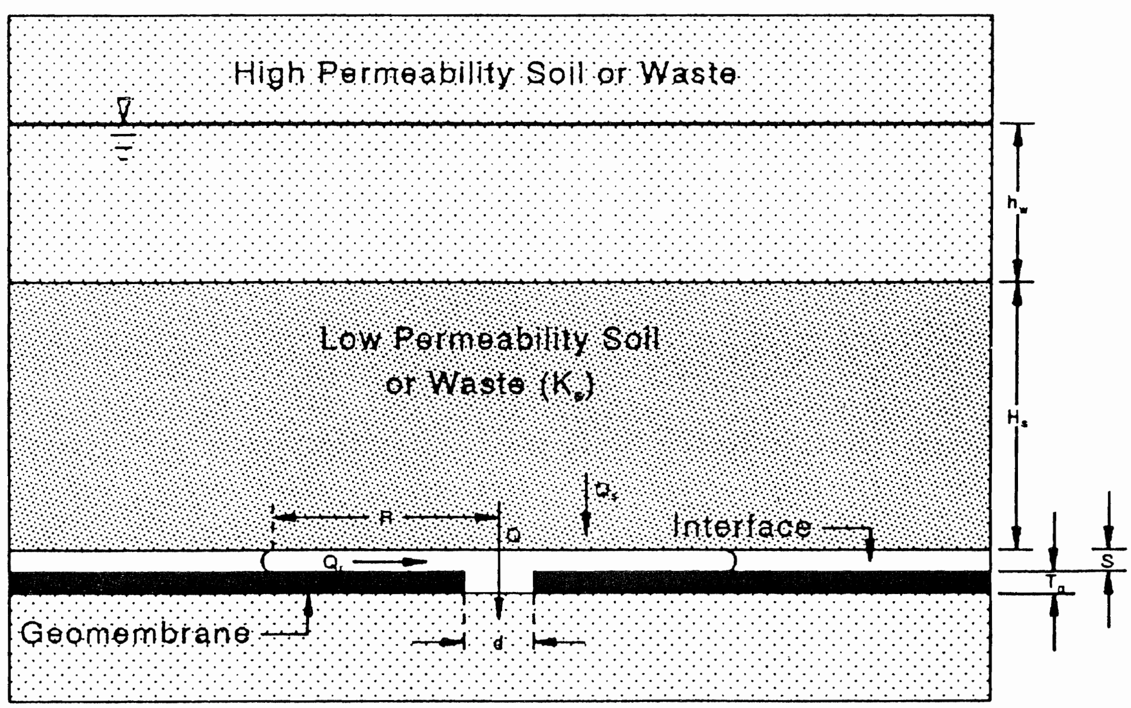

Figure 10. Leakage with Interfacial Flow Above Flawed Geomembrane

i_{avg} = average hydraulic gradient on wetted area of controlling soil layer, dimensionless

n = density of flaws, # per m^2

R = radius of wetted area or interfacial flow around a flaw, m

η_{20} = absolute viscosity of water at 20°C, 0.00100 kg/m-sec

η_{15} = absolute viscosity of water at 15°C, 0.00114 kg/m-sec

Since the U.S. Geological Survey defined hydraulic conductivity, in Meinzer units, as the number of gallons per day of water passing through 1 ft^2 of medium under a unit hydraulic gradient (1 ft/1 ft) at a temperature of 60°F (15°C) (Viessman et al., 1977; Linsley et al., 1982), Equation 149 was corrected to reflect an absolute water viscosity at 15°C (Giroud and Bonaparte, 1989).

Giroud et al. (1992) developed the following equation to describe the average hydraulic gradient on the geomembrane; a description of the development is presented in the following paragraphs.

$$i_{avg} = 1 + \left[\frac{h_g}{2 \; T_s \; \ln\left(\frac{R}{r_o}\right)} \right] \tag{150}$$

where

h_g = total hydraulic head on geomembrane, m

T_s = thickness of controlling soil layer, m

r_o = radius of a geomembrane flaw, m

Methods for calculating the wetted area radius for various liner contact conditions and design cases are presented in the following sections.

The HELP program applies Equations 149 and 150 as follows:

$$q_{L_{2,3}}(k)_i = \left(\frac{0.00100}{0.00114}\right) \left[\frac{K_s(k) \; i_{avg_{2,3}}(k)_i \; n_{2,3}(k) \; \pi \; R_{2,3}(k)_i^2}{6{,}276{,}640} \right] \tag{151}$$

$$i_{avg_{2,3}}(k)_i = 1 + \left[\frac{h_g(k)_i}{2\ T_s(k)\ \ln\left(\frac{R_{2,3}(k)_i}{r_{o_{2,3}}} \right)} \right] \tag{152}$$

where

$q_{L_{2,3}}(k)_i$ = leakage rate through pinholes (2) or installation defects (3) with interfacial flow in subprofile k during time step i, inches/day

$K_s(k)$ = saturated hydraulic conductivity of controlling soil layer in subprofile k, inches/day

$i_{avg_{2,3}}(k)_i$ = average hydraulic gradient on wetted area of controlling soil layer from pinholes (2) or installation defects (3) in subprofile k during time step i, dimensionless

$n_{2,3}(k)$ = density of pinholes (2) or defects (3) in subprofile k, #/acre

$R_{2,3}(k)_i$ = radius of wetted area or interfacial flow around a pinhole (2) or an installation defect (3) in subprofile k during time step i, inches

6,272,640 = units conversion, 6,272,640 square inches per acre

$r_{o_{2,3}}$ = radius of flaw; pinhole r_{o_2} = 0.02 inches; defect r_{o_3} = 0.22 inches

$h_g(k)_i$ = average hydraulic head on liner in subprofile k during time step i, inches

$T_s(k)$ = thickness of soil layer at base of subprofile k, inches

Geotextile Interface

Giroud and Bonaparte (1989) assumed a unit hydraulic gradient for vertical flow through the controlling layer (i.e., Equation 149 without the i_{avg} term) and applied the principle of conservation of mass to the radial and vertical flow through the geomembrane. They integrated the resulting equation and developed the following equation for estimating the radius of the wetted area:

$$R = \left[\frac{4\ h_g\ \theta_{int}}{K_s \left[2\ \ln\left(\frac{R}{r_o} \right) + \left(\frac{r_o}{R} \right)^2 - 1 \right]} \right]^{\frac{1}{2}} \tag{153}$$

$$R_3(k)_i = 0.124\ h_g(k)_i^{0.5}\ K_s(k)^{-0.06} \tag{161}$$

Good Liner Contact

Using the equations for perfect and excellent liner contact and free-flow percolation through geomembrane liners, Giroud and Bonaparte (1989) developed leakage rate curves for a variety of conditions (i.e., leachate head, saturated hydraulic conductivity, etc.). The worst case field leakage was arbitrarily defined to be midway between free-flow and excellent contact leakage estimates. The area between worst case field leakage and excellent contact leakage was arbitrarily divided into thirds and defined as good and poor field leakage. However, due to the lengthy calculations required to estimate good and poor liner leakage, Giroud and Bonaparte (1989) developed empirical equations to predict leakage through geomembrane liners under good and poor field conditions. These equations are discussed in the following paragraphs.

Giroud and Bonaparte (1989) indicated that good geomembrane liner contact can be defined as a geomembrane, installed with as few wrinkles as possible, on an adequately compacted, low-permeability layer with a smooth surface. Similar to Equations 156 and 159, Giroud and Bonaparte (1989) observed families of approximately parallel linear curves when plotting the leakage rate as a function of total head on the geomembrane liner, geomembrane flaw area, and saturated hydraulic conductivity of the controlling soil or waste layer. Giroud and Bonaparte (1989) concluded that the leakage rate through damaged geomembranes is approximately proportional to equations of the form $a_o^y\ h_g^x\ K_s^z$. Therefore, Giroud and Bonaparte (1989) proposed the following equation for determining the wetted area radius for good liner contact:

$$\underset{m}{R} = 0.26\ \underset{m^2}{a_o^{0.05}}\ \underset{m}{h_g^{0.45}}\ \underset{m/sec}{K_s^{-0.13}} \tag{162}$$

This radius, as it is actually computed below in Equations 163 or 164, is then used in Equation 152 to compute the average hydraulic gradient. The radius and average hydraulic gradient are then used in Equation 151 to compute the leakage rate for geomembrane flaws. Similar to Equation 159, Equation 162 has the limitation that the saturated hydraulic conductivity of the controlling soil layer must be less than $1\text{x}10^{-4}$ cm/sec. Equation 162 is valid only in units of meters and seconds.

Pinholes. Inserting pinhole area, performing units conversion and simplifying, Equation 162 is converted for radius of leakage from pinholes in geomembranes with good contact with low permeability controlling soil layers as follows:

$$R_2(k)_i = 0.174\ h_g(k)_i^{0.45}\ K_s(k)^{-0.13} \tag{163}$$

Installation Defects. By inserting the installation defect area, converting units and simplifying, Equation 162 is converted to the following equation for radius of leakage from installation defects in geomembranes with good contact with low permeability controlling soil layers.

$$R_3(k)_i = 0.222\ h_g(k)_i^{0.45}\ K_s(k)^{-0.13} \tag{164}$$

Poor Liner Contact

Giroud and Bonaparte (1989) indicated that poor geomembrane liner contact can be defined as a geomembrane, installed with a certain number of wrinkles, on a poorly compacted, low-permeability soil or waste layer, with a surface that does not appear smooth. Similar to Equation 162, Giroud and Bonaparte (1989) proposed the following equation for determining the radius of leakage through a geomembrane for poor contact with a low permeability controlling soil layer:

$$\underset{m}{R} = 0.61\ \underset{m^2}{a_o^{0.05}}\ \underset{m}{h_g^{0.45}}\ \underset{m/sec}{K_s^{-0.13}} \tag{165}$$

This radius, as it is actually computed below in Equations 166 or 167, is then used in Equation 152 to compute the average hydraulic gradient. The radius and average hydraulic gradient are then used in Equation 151 to compute the leakage rate for geomembrane flaws. Similar to Equations 159 and 162, Equation 165 has the limitation that the saturated hydraulic conductivity of the controlling soil layer must be less than $1x10^{-4}$ cm/sec. Equation 165 is valid using units of meters and seconds.

Pinholes. By inserting pinhole area, performing units conversion and simplifying, Equation 165 is converted to the following equation for radius of leakage from pinholes in geomembranes with poor contact with low permeability controlling soil layers.

$$R_2(k)_i = 0.174\ h_g(k)_i^{0.45}\ K_s(k)^{-0.13} \tag{166}$$

Installation Defects. By inserting the installation defect area, converting units and simplifying, Equation 165 is converted to the following equation for radius of leakage

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k = hydraulic conductivity of the drainage layer, in./day or mm/sec;
S = slope of the drainage layer, $S = \tan\alpha$; and
α = slope angle of drainage layer, measured from horizontal, degrees.

This formula was first presented by C. A. Moore in 1980 without derivation or explanation of its origin or limitations.

8.5.1.2 Moore's 1983 Method. Moore presented another formula for estimating the maximum liquid head over a sloping barrier in 1983 (USEPA, 1983). This formula is expressed as:

$$y_{\max} = L\cdot[(r/k + S^2)^{1/2} - S] \tag{8.28}$$

where $y_{\max}$ = maximum liquid head on the landfill liner, in. or mm;
L = horizontal drainage distance, in. or mm;
r = inflow rate, in./day or mm/sec;
k = hydraulic conductivity of the drainage layer, in./day or mm/sec;
S = slope of the drainage layer, $S = \tan\alpha$; and
α = slope angle of drainage layer, measured from horizontal, degrees.

This formula is simpler than Moore's 1980 formula. But again, neither derivation nor explanation of its origin or limitations was included in the 1983 report.

8.5.1.3 Giroud's 1992 Method. Giroud et al. presented a different formula for estimating the maximum liquid head over a sloping liner based on a simplifying assumption and numerical methods in 1992 (Giroud et al., 1992; Giroud and Houlihan, 1995). This formula is expressed as

$$y_{\max} = j\cdot L\cdot[(4\cdot r/k + S^2)^{1/2} - S]/(2\cdot\cos\alpha) \tag{8.29}$$

A parameter j in the formula can be calculated as

$$j = 1 - 0.12\cdot\exp\{-[\log(1.6\cdot r/k/S^2)^{5/8}]^2\} \tag{8.30}$$

where $y_{\max}$ = maximum liquid head on the landfill liner, in. or mm;
L = horizontal drainage distance, in. or mm;
r = inflow rate, in./day or mm/sec;
k = hydraulic conductivity of the drainage layer, in./day or mm/sec;
S = slope of the drainage layer, $S = \tan\alpha$; and
α = slope angle of drainage layer, measured from horizontal, degrees.

8.5.1.4 McEnroe's 1993 Method. Based on the standard Dupuit assumptions, McEnroe presented a graphic method in 1989 (McEnroe, 1989) to estimate the maximum leachate head over the liner. It is only suitable for slopes of less than 10%. McEnroe presented another set of formulas for estimating the maximum saturated depth over a sloping liner in 1993 (McEnroe, 1993). In the derivation of these formulas, the lateral drainage over the liner was described by an extended form of the Dupuit discharge formula (Harr, 1962; Childs, 1971; Chapman, 1980).

According to McEnroe (1993), the explicit formulas for estimating the maximum liquid head over a landfill liner that is draining freely, with no backwater effect from the collection trough, are expressed as

3.1.2 Geocomposite Drains

Hazardous waste landfill regulation 40 CFR 264.301(3) requires a minimum $3x10^{-5}$ m^3/sec-m transmissivity for a composite drainage media. Composite drainage media are composed of a geonet drainage core with a geotextile laminated to one or both faces. A geocomposite drain is designed to replace or augment soil drainage over a large surface area. There are obvious advantages for geocomposites to be used as landfill lateral drainage, such as, a significant saving in landfill volume, ease of installation, consistency in material properties inherent with manufacturing quality control (MQC) plans, and lower cost in general. However, geocomposites are made of polymeric materials, which exhibit different characteristics from natural drainage soils. To demonstrate an equivalence between soil drains and geocomposite drains, two equations based on a design by function approach (Koerner, 1998) can be applied as follows:

$$FS = \frac{\Psi_{allow}}{\Psi_{req'd}} \qquad \text{Eq. 3.2}$$

$$\Psi_{allow} = \frac{\Psi_{ultimate}}{RF_{in} \cdot RF_{cr} \cdot RF_{cc} \cdot RF_{bc}} \qquad \text{Eq. 3.3}$$

where FS is the overall safety factor for drainage, Ψ_{allow} is the allowable transmissivity of the drainage geocomposite, $\Psi_{req'd}$ is the required transmissivity (e.g., for MTG= $3*10^{-5}$ m^3/sec-m), $\Psi_{ultimate}$ is the transmissivity measured in accordance with ASTM D4716, and RF are service reduction factors described as follows:

- RF_{in} = reduction factor for elastic deformation, or intrusion of the adjacent geotextiles into the drainage channel.
- RF_{cr} = reduction factor for creep deformation of the drainage core and/or adjacent geotextile into the drainage channel.
- RF_{cc} = reduction factor for chemical clogging and/or precipitation of chemicals in the drainage core space.
- RF_{bc} = reduction factor for biological clogging in the drainage core space.

The suggested default values of the reduction factors are listed in Table 3.1 (Koerner, 1998).

Table 3.1 Recommended preliminary reduction factor values for determining allowable flow rate or transmissivity of geonets (Koerner, 1998)

Application area	RF_{in}	RF_{cr}	RF_{cc}	RF_{bc}
Surface water drains for covers	1.3 - 1.5	1.1 - 1.4	1.0 - 1.2	1.2 – 1.5
Leachate Collection and Removal Systems (LCRS)	1.5 - 2.0	1.4 - 2.0	1.5 - 2.0	1.5 - 2.0
Leachate Detection Systems (LDS)	1.5 - 2.0	1.4 - 2.0	1.5 - 2.0	1.5 - 2.0

In the absence of site specific testing data, the authors recommend the upper limits of the above default values for landfill covers, average default values for leachate collection systems, and lower limits for leak detection systems. This reflects the extreme service life of the final cover, the potential for significant compressive creep or intrusion and the large quantity of leachate to be handled by the leachate collection system, and the expected lower level of intrusion and leachate volume to be conveyed by the leak detection system. When a design drainage safety factor of 2 is used, the total safety factor (including the reduction factors) suggested (Richardson and Zhao, 1998) is as follows:

- **8 for landfill closures** (design drainage safety factor (2), intrusion (1.5), creep (1.4), biological clogging (1.2), chemical clogging (1.5), i.e., 2*1.5*1.4*1.2*1.5 = 7.6);
- **20 for leachate collection systems** (2*1.75*1.7*1.75*1.75 = 18.2);
- **10 for leak detection systems** (2*1.5*1.4*1.5*1.5 = 9.5).

Thus

$\psi_{ultimate} = 8*3*10^{-5}$ m^3/sec-m $= 2.4*10^{-4}$ m^3/sec-m for cover drains
$\psi_{ultimate} = 20*3*10^{-5}$ m^3/sec-m $= 6*10^{-4}$ m^3/sec-m for leachate collection drains.
$\psi_{ultimate} = 10*3*10^{-5}$ m^3/sec-m $= 3*10^{-4}$ m^3/sec-m for leakage collection drains.

Research by Thiel and Stewart (1993), Soong and Koerner (1997) indicate that the HELP model significantly underestimates percolation into a lateral drainage layer. Eight seepage-induced landfill slope failures have been recorded and analyzed to confirm this by Soong and Koerner (1997). The federal and state minimum permeability value of $1*10^{-2}$ cm/sec or $1*10^{-3}$ cm/sec for drainage soils was found too low by a factor of 10, and in some cases 100. Higher permeability drainage media or high performance drainage geocomposites are recommended. When the permeability of drainage media is increased to $1*10^{-1}$ cm/sec (increased by a factor of 10 over $1*10^{-2}$ cm/sec), the minimum 'prescriptive' transmissivity of a geosynthetic product is increased to $(2.4 - 6.0)*10^{-3}$ m^3/sec-m.

While the above total safety factors may appear to be very conservative, there may be long-term service reduction factors not accounted for. For instance, Figure 3.1 shows extensive root penetration into a geonet that was recovered from a failed landfill cover. The root penetration was so dense that the transmissivity of the geonet drainage core was essentially reduced to zero. The authors feel that root penetration in cover lateral drains can be minimized only by using high capacity drainage composites that quickly remove water from the drain so that roots are not attracted within the core.

DESIGN OF LATERAL DRAINAGE SYSTEMS FOR LANDFILLS

Gregory N. Richardson, Ph.D., P.E.
G.N. Richardson & Associates
Raleigh, North Carolina 27603

Aigen Zhao, Ph.D., P.E.
Tenax Corporation
Baltimore, Maryland 21205

1999

ATTACHMENT 15: GIA Model Input Values

TABLE 812.316-13
INPUT VALUES FOR MODEL - LOWER RADNOR TILL SAND
Clinton Landfill No. 3

	MIGRATE V.9 Input	Values	Units
File Information	Baseline Input File:	CWLRB.IN	
	Baseline Output File:	CWLRB.OU	
Landfill Parameters	Surface Width of Landfill	405.93	m
	Base Width	307.78	m
	Landfill is treated as a	Surface Boundary Condition	
	Initial Source Concentration	1	mg/l
	Number of Layers	4	
	Lower Boundary Condition	Impermeable	
	Change in Source Concentration	Constant Source	
LAYER 1 Clay Liner Input Parameters	Vertical Dispersion Coefficient	0.0158	m^2/a
	Effective Porosity	0.288	
	Adsorption Coefficient	0	cm^3/g
	Density	1.9	g/cm^3
	Thickness	0.9144	m
	Number of Sublayers	3	
	Horizontal Dispersion Coefficient	0.0158	m^2/a
	Horizontal Darcy Velocity	0	m/a
	Vertical Darcy Velocity	1.420E-06	m/a
LAYER 2 Clay Fill Input Parameters	Vertical Dispersion Coefficient	0.0158	m^2/a
	Effective Porosity	0.288	
	Adsorption Coefficient	0	cm^3/g
	Density	1.9	g/cm^3
	Thickness	0.9601	m
	Number of Sublayers	3	
	Horizontal Dispersion Coefficient	0.0158	m^2/a
	Horizontal Darcy Velocity	0	m/a
	Vertical Darcy Velocity	1.420E-06	m/a
LAYER 3 Silty Clay Input Parameters	Vertical Dispersion Coefficient	0.0158	m^2/a
	Effective Porosity	0.286	
	Adsorption Coefficient	0	cm^3/g
	Density	1.9	g/cm^3
	Thickness	5.71	m
	Number of Sublayers	3	
	Horizontal Dispersion Coefficient	0.0158	m^2/a
	Horizontal Darcy Velocity	0	m/a
	Vertical Darcy Velocity	1.420E-06	m/a
LAYER 4 Aquifer Input Parameters	Vertical Dispersion Coefficient	19.9	m^2/a
	Effective Porosity	0.05	
	Adsorption Coefficient	0	cm^3/g
	Density	1.9	g/cm^3
	Thickness	0.8543	m
	Number of Sublayers	3	
	Horizontal Dispersion Coefficient	99.38	m^2/a
	Horizontal Darcy Velocity	0.746	m/a

TABLE 812.316-13
INPUT VALUES FOR MODEL - LOWER RADNOR TILL SAND
Clinton Landfill No. 3

	MIGRATE V.9 Input	Values	Units
	Vertical Darcy Velocity	0	m/a
Times	Times for Simulation 1	5, 10, 15, …, 134	a
Distances	Lateral Distances	202.96, 210.58, 218.20, 225.82, 233.44	m
Integration	Talbot	7, 11, 0, 1	
Parameters	Gauss	Normal	

Notes:

1) m = meters
2) mg/l = milligrams per liter
3) m^2/a = meters squared per year
4) m/a = meters per year
5) cm^3/g = centimeters cubed per gram
6) cm/g^3 = centimeters per cubic gram
7) a = year

TABLE 812.316-14
INPUT VALUES FOR MODEL - ORGANIC SOIL
Clinton Landfill No. 3

	MIGRATE V.9 Input	Values	Units
File Information	Baseline Input File:	COSB.IN	
	Baseline Output File:	COSB.OU	
Landfill Parameters	Surface Width	291.44	m
	Base Width	227.26	m
	Landfill is treated as a	Surface Boundary Condition	
	Initial Source Concentration	1	mg/l
	Number of Layers	4	
	Lower Boundary Condition	Impermeable	
	Change in Source Concentration	Constant Source	
LAYER 1 Clay Liner Input Parameters	Vertical Dispersion Coefficient	0.0158	m^2/a
	Effective Porosity	0.288	
	Adsorption Coefficient	0	cm^3/g
	Density	1.9	g/cm^3
	Thickness	0.9144	m
	Number of Sublayers	3	
	Horizontal Dispersion Coefficient	0.0158	m^2/a
	Horizontal Darcy Velocity	0	m/a
	Vertical Darcy Velocity	1.420E-06	m/a
LAYER 2 Clay Fill Input Parameters	Vertical Dispersion Coefficient	0.0158	m^2/a
	Effective Porosity	0.288	
	Adsorption Coefficient	0	cm^3/g
	Density	1.9	g/cm^3
	Thickness	0.9601	m
	Number of Sublayers	3	
	Horizontal Dispersion Coefficient	0.0158	m^2/a
	Horizontal Darcy Velocity	0	m/a
	Vertical Darcy Velocity	1.420E-06	m/a
LAYER 3 Silty Clay Input Parameters	Vertical Dispersion Coefficient	0.0158	m^2/a
	Effective Porosity	0.286	
	Adsorption Coefficient	0	cm^3/g
	Density	1.9	g/cm^3
	Thickness	5.71	m
	Number of Sublayers	3	
	Horizontal Dispersion Coefficient	0.0158	m^2/a
	Horizontal Darcy Velocity	0	m/a
	Vertical Darcy Velocity	1.420E-06	m/a
LAYER 4 Aquifer Input Parameters	Vertical Dispersion Coefficient	1.11	m^2/a
	Effective Porosity	0.05	
	Adsorption Coefficient	0	cm^3/g
	Density	1.9	g/cm^3
	Thickness	1.042	m
	Number of Sublayers	3	
	Horizontal Dispersion Coefficient	5.41	m^2/a
	Horizontal Darcy Velocity	0.0461	m/a

TABLE 812.316-14
INPUT VALUES FOR MODEL - ORGANIC SOIL
Clinton Landfill No. 3

	MIGRATE V.9 Input	Values	Units
	Vertical Darcy Velocity	0	m/a
TimesDistances	Times for Simulation 1	5, 10, 15, …, 134	a
Distances	Lateral Distances	145.72, 153.34, 160.96, 168.58, 176.20	m
Integration	Talbot	7, 11, 0, 1	
Parameters	Gauss	Normal	

Notes:

1) m = meters
2) mg/l = milligrams per liter
3) m^2/a = meters squared per year
4) m/a = meters per year
5) cm^3/g = centimeters cubed per gram
6) cm/g^3 = centimeters per cubic gram
7) a = year

ATTACHMENT 16: GIA Model Input and Output Files and Sensitivity Analysis Results

SECTION 812.316

GIA MODELING DATA

CLINTON LANDFILL, INC. #3

CHEMICAL WASTE UNIT

PDC TECHNICAL SERVICES, INC.
P.O. BOX 9071
PEORIA, IL 61612-9071

CD 1 of 1

FEBRUARY 2008

TABLE 812.316-15
SENSITIVITY ANALYSIS SUMMARY FOR MIGRATE MODEL - LOWER RADNOR TILL SAND
Clinton Landfill No. 3

Layer	Input Parameter	Model Input			Model Output			File Name	File Name	Results
		Base Model	Low	High	Base Model	Low	High	Low	High	
1	Porosity	0.288	0.1	1.0	1.345E-04	6.988E-05	2.069E-04	CLR1.IN	CLR2.IN	Higher Porosity-Incr.
1	Vert. Diff. Coefficient, m^2/a	0.0158	0.01	0.02	1.345E-04	7.317E-05	1.749E-04	CLR3.IN	CLR4.IN	Higher Coefficient - Incr.
1	Horiz. Diff. Coefficient, m^2/a	0.0158	0.01	0.02	1.345E-04	1.345E-04	1.345E-04	CLR5.IN	CLR6.IN	No Change
1	Vert. Velocity, m/a	1.420E-06	1.420E-07	1.420E-05	1.345E-04	1.345E-04	1.347E-04	CLR7.IN	CLR8.IN	Higher Velocity - Incr
2	Thickness, m	0.9601	0.48	1.92	1.345E-04	3.508E-04	1.691E-05	CLR9.IN	CLR10.IN	Thicker - Decr.
2	Porosity	0.288	0.1	0.5	1.345E-04	1.026E-04	1.253E-04	CLR11.IN	CLR12.IN	Lower Porosity- Incr.
2	Vert. Diff. Coefficient, m^2/a	0.0158	0.01	0.02	1.345E-04	7.937E-05	1.667E-04	CLR13.IN	CLR14.IN	Higher Coefficient - Incr.
2	Horiz. Diff. Coefficient, m^2/a	0.0158	0.01	0.02	1.345E-04	1.345E-04	1.345E-04	CLR15.IN	CLR16.IN	No Change
2	Vert. Velocity, m/a	1.420E-06	1.420E-07	1.420E-05	1.345E-04	1.345E-04	1.347E-04	CLR17.IN	CLR18.IN	Higher Velocity - Incr
3	Thickness, m	5.71	4.71	6.71	1.345E-04	9.347E-04	1.544E-05	CLR19.IN	CLR20.IN	Thicker - Decr.
3	Porosity	0.286	0.1	0.5	1.345E-04	2.154E-04	6.791E-05	CLR21.IN	CLR22.IN	Lower Porosity- Incr.
3	Vert. Diff. Coefficient, m^2/a	0.0158	0.01	0.02	1.345E-04	6.323E-06	4.216E-04	CLR23.IN	CLR24.IN	Higher Coefficient - Incr.
3	Horiz. Diff. Coefficient, m^2/a	0.0158	0.01	0.02	1.345E-04	1.345E-04	1.345E-04	CLR25.IN	CLR26.IN	No Change
3	Vert. Velocity, m/a	1.420E-06	1.420E-07	1.420E-05	1.345E-04	1.344E-04	1.357E-04	CLR27.IN	CLR28.IN	Higher Velocity - Incr
4	Thickness, m	0.8543	0.7543	0.9543	1.345E-04	1.266E-04	1.405E-04	CLR29.IN	CLR30.IN	Thicker - Incr.
4	Porosity	0.05	0.04	0.5	1.345E-04	1.469E-04	7.934E-06	CLR31.IN	CLR32.IN	Lower Porosity - Incr.
4	Vert. Diff. Coefficient, m^2/a	19.86	9.86	29.86	1.345E-04	1.348E-04	1.344E-04	CLR33.IN	CLR34.IN	No Real Change
4	Horiz. Diff. Coefficient, m^2/a	99.25	79.25	109.25	1.345E-04	1.345E-04	1.345E-04	CLR35.IN	CLR36.IN	Higher Coeff.- Incr.
4	Vert. Velocity, m/a	0	1.420E-06	1.420E-05	1.345E-04	1.345E-04	1.345E-04	CLR37.IN	CLR38.IN	No Change
4	Horiz. Velocity, m/a	0.746	0.5	1	1.345E-04	8.924E-05	1.683E-04	CLR39.IN	CLR40.IN	Higher Velocity - Incr
	Bottom Boundary	Impermeable	Zero Concentration			0		CLR41.IN		
	Top Boundary	Constant Conc.	Impermeable			0		CLR42.IN		

Notes: 1) **Baseline Model Input File = CLRB.IN and Baseline Model Output File = CLRB.OU**

2) The results are for 134 years at 100 feet from the waste boundary in Layer 4 - Lower Radnor Till Sand

3) m = meters, a = year, m^2/a = square meters per year, m/a = meters per year

4) Incr. = increase in concentration, Decr. = Decrease in Concentration

TABLE 812.316-16
SENSITIVITY ANALYSIS SUMMARY FOR MIGRATE MODEL - ORGANIC SOIL
Clinton Landfill No. 3

Layer	Input Parameter	Model Input			Model Output			File Name	File Name	Results
		Base Model	Low	High	Base Model	Low	High	Low	High	
1	Porosity	0.288	0.1	1.0	5.565E-07	2.881E-07	8.601E-07	COS1.IN	COS2.IN	Higher Porosity - Decr.
1	Vert. Diff. Coefficient, m^2/a	0.0158	0.01	0.02	5.565E-07	2.784E-07	7.513E-07	COS3.IN	COS4.IN	Higher Coefficient - Incr.
1	Horiz. Diff. Coefficient, m^2/a	0.0158	0.01	0.02	5.565E-07	5.558E-07	5.571E-07	COS5.IN	COS6.IN	Higher Coefficient - Incr.
1	Vert. Velocity, m/a	1.420E-06	1.420E-07	1.420E-05	5.565E-07	5.565E-07	5.740E-07	COS7.IN	COS8.IN	Higher Velocity - Incr
2	Thickness, m	0.9601	0.48	1.92	5.565E-07	1.726E-06	4.988E-08	COS9.IN	COS10.IN	Thicker - Decr.
2	Porosity	0.288	0.1	0.5	5.565E-07	4.256E-07	5.172E-07	COS11.IN	COS12.IN	Lower Porosity- Incr.
2	Vert. Diff. Coefficient, m^2/a	0.0158	0.01	0.02	5.565E-07	3.011E-07	7.167E-07	COS13.IN	COS14.IN	Higher Coefficient - Incr.
2	Horiz. Diff. Coefficient, m^2/a	0.0158	0.01	0.02	5.565E-07	5.556E-07	5.573E-07	COS15.IN	COS16.IN	Higher Coefficient - Incr.
2	Vert. Velocity, m/a	1.420E-06	1.420E-07	1.420E-05	5.565E-07	5.565E-07	5.573E-07	COS17.IN	COS18.IN	Higher Velocity - Incr
3	Thickness, m	5.71	4.71	6.71	5.565E-07	5.565E-07	4.491E-07	COS19.IN	COS20.IN	Thicker - Decr.
3	Porosity	0.286	0.1	0.5	5.565E-07	3.890E-06	9.396E-08	COS21.IN	COS22.IN	Lower Porosity- Incr.
3	Vert. Diff. Coefficient, m^2/a	0.0158	0.01	0.02	5.565E-07	2.292E-08	1.765E-06	COS23.IN	COS24.IN	Higher Coefficient - Incr.
3	Horiz. Diff. Coefficient, m^2/a	0.0158	0.01	0.02	5.565E-07	5.499E-07	5.615E-07	COS25.IN	COS26.IN	Higher Coefficient - Incr.
3	Vert. Velocity, m/a	1.420E-06	1.420E-07	1.420E-05	5.565E-07	5.560E-07	5.619E-07	COS27.IN	COS28.IN	Higher Velocity - Incr
4	Thickness, m	1.042	0.5042	1.5042	5.565E-07	5.125E-08	1.270E-06	COS29.IN	COS30.IN	Thicker - Incr..
4	Porosity	0.05	0.04	0.5	5.565E-07	7.695E-07	1.064E-09	COS31.IN	COS32.IN	Lower Porosity - Incr.
4	Vert. Diff. Coefficient, m^2/a	1.11	0.8	1.5	5.565E-07	5.971E-07	5.301E-07	COS33.IN	COS34.IN	Lower Coeff.- Incr.
4	Horiz. Diff. Coefficient, m^2/a	5.41	2.41	8.41	5.565E-07	1.298E-07	1.194E-06	COS35.IN	COS36.IN	Higher Coeff.- Incr.
4	Vert. Velocity, m/a	0	1.420E-07	1.420E-05	5.565E-07	5.566E-07	5.569E-07	COS37.IN	COS38.IN	Higher Velocity - Incr
4	Horiz. Velocity, m/a	0.046	0.026	0.086	5.565E-07	5.000E-08	4.556E-06	COS39.IN	COS40.IN	Higher Velocity - Incr
	Bottom Boundary	Impermeable	Zero Concentration			0		COS41.IN		
	Top Boundary	Constant Conc.	Impermeable			0		COS42.IN		

Notes: 1) **<u>Baseline Model Input File</u> = COSB.IN and <u>Baseline Model Output File</u> = COSB.OU**

2) The results are for 134 years at 100 feet from the waste boundary in Layer 4 - Organic Soil

3) m = meters, a = year, m^2/a = square meters per year, m/a = meters per year

4) Incr. = increase in concentration, Decr. = Decrease in Concentration

```
 Clinton Landfill CWU -Lower Radnor Till Baseline Model-INPUT FILE CLRB.IN
MIGRATE VERSION 9:  Output Units = SI
          4                  Number of Layers
            1                                  Number of Landfills
            1                                  Top Boundary Condition
            0       m            0        m   Offset - Landfill 1
    405.927002      m   405.927002        m   Surface Width
    307.781006      m   307.781006        m   Base Width
            1    mg/L            1     mg/L   Concentration
            0     yrs            0      yrs   Half-Life
            1                                  Bottom Boundary Condition
            3                          #Sublayers - Layer 1
       0.9144       m       0.9144        m   Thickness
        0.288                                  Porosity
         1900   kg/m3          1.9    g/cm3   Density
       0.0158    m2/a       0.0158     m2/a   Vertical Diffusion Coef.
       0.0158    m2/a       0.0158     m2/a   Horz. Diffusion Coef.
     1.42e-06     m/a     1.42e-06      m/a   Vertical Velocity
            0     m/a            0      m/a   Horz. Velocity
            0   m3/kg            0     mL/g   Distribution Coef.
            0     yrs            0      yrs   Half-Life
            0     m/a            0      m/a   Sink Removal
            0                                  Type of Fractures
            3                          #Sublayers - Layer 2
       0.9601       m       0.9601        m   Thickness
        0.288                                  Porosity
         1900   kg/m3          1.9    g/cm3   Density
       0.0158    m2/a       0.0158     m2/a   Vertical Diffusion Coef.
       0.0158    m2/a       0.0158     m2/a   Horz. Diffusion Coef.
     1.42e-06     m/a     1.42e-06      m/a   Vertical Velocity
            0     m/a            0      m/a   Horz. Velocity
            0   m3/kg            0     mL/g   Distribution Coef.
            0     yrs            0      yrs   Half-Life
            0     m/a            0      m/a   Sink Removal
            0                                  Type of Fractures
            3                          #Sublayers - Layer 3
         5.71       m         5.71        m   Thickness
        0.286                                  Porosity
         1900   kg/m3          1.9    g/cm3   Density
       0.0158    m2/a       0.0158     m2/a   Vertical Diffusion Coef.
       0.0158    m2/a       0.0158     m2/a   Horz. Diffusion Coef.
     1.42e-06     m/a     1.42e-06      m/a   Vertical Velocity
            0     m/a            0      m/a   Horz. Velocity
            0   m3/kg            0     mL/g   Distribution Coef.
            0     yrs            0      yrs   Half-Life
            0     m/a            0      m/a   Sink Removal
            0                                  Type of Fractures
            3                          #Sublayers - Layer 4
       0.8534       m       0.8534        m   Thickness
         0.05                                  Porosity
         1900   kg/m3          1.9    g/cm3   Density
    19.879999    m2/a    19.879999     m2/a   Vertical Diffusion Coef.
        99.25    m2/a        99.25     m2/a   Horz. Diffusion Coef.
            0     m/a            0      m/a   Vertical Velocity
        0.746     m/a        0.746      m/a   Horz. Velocity
            0   m3/kg            0     mL/g   Distribution Coef.
            0     yrs            0      yrs   Half-Life
            0     m/a            0      m/a   Sink Removal
            0                                  Type of Fractures
  27                           No. of times of interest
            5     yrs            5      yrs   Time
```

10	yrs	10	yrs	Time
15	yrs	15	yrs	Time
20	yrs	20	yrs	Time
25	yrs	25	yrs	Time
30	yrs	30	yrs	Time
35	yrs	35	yrs	Time
40	yrs	40	yrs	Time
45	yrs	45	yrs	Time
50	yrs	50	yrs	Time
55	yrs	55	yrs	Time
60	yrs	60	yrs	Time
65	yrs	65	yrs	Time
70	yrs	70	yrs	Time
75	yrs	75	yrs	Time
80	yrs	80	yrs	Time
85	yrs	85	yrs	Time
90	yrs	90	yrs	Time
95	yrs	95	yrs	Time
100	yrs	100	yrs	Time
105	yrs	105	yrs	Time
110	yrs	110	yrs	Time
115	yrs	115	yrs	Time
120	yrs	120	yrs	Time
125	yrs	125	yrs	Time
130	yrs	130	yrs	Time
134	yrs	134	yrs	Time
5		No. of distances of interest		
202.962997	m	202.962997	m	Distance
210.582993	m	210.582993	m	Distance
218.203003	m	218.203003	m	Distance
225.822998	m	225.822998	m	Distance
233.442993	m	233.442993	m	Distance
7 11		0	1	TAU, N, SIG, RNU : Talbot Integ

NORMAL

```
**************************************************
*                                                *
*                                                *
*     M I G R A T E v 9   S I M U L A T I O N    *
*                                                *
*              RUN DATE -   18- 1- 8             *
*              TIME     -   19: 0:38             *
*                                                *
*              REVISION - 09/05/1996             *
*                                                *
*                   VERSION 9.0.9                *
*                                                *
* COPYRIGHT(c) R.K. ROWE & J.R. BOOKER 1983-1996 *
*                                                *
*  LICENSED USER: PDC Technical Services□□□□□□□□  *
*                                                *
**************************************************
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**************************************************************************
  Clinton Landfill CWU -Lower Radnor Till Baseline Model-INPUT FILE CLRB.IN
**************************************************************************
```

SURFACE BOUNDARY
~~~~~~~~~~~~~~~~

SURFACE BOUNDARY CONDITION DEFINED BY A CONSTANT CONCENTRATION C0

OFFSET OF CENTER OF LANDFILL 1 IS 0.0000E+00

WIDTH OF BASE OF LANDFILL IS BETWEEN -153.8905< X < 153.8905
WIDTH OF SURFACE OF LANDFILL IS BETWEEN -202.9635< X < 202.9635

THE INITIAL SOURCE CONCENTRATION = 0.1000E+01

BASE BOUNDARY
~~~~~~~~~~~~~
BASE BOUNDARY CONDITION DEFINED BY
AN IMPERMEABLE BASE(I.E. ZERO FLUX)

PROPERTIES OF THE MATRIX
========================

LAYER	DISPERSION COEFF. VERT.	HORZ.	POROSITY	ADSORPTION COEFF.	DENSITY	ADV. VELOCITY HORZ.	VERT.	THICKNESS
1	.158E-01	.158E-01	0.288	0.000E+00	1900.000	0.0000	0.0000	0.30
2	.158E-01	.158E-01	0.288	0.000E+00	1900.000	0.0000	0.0000	0.30
3	.158E-01	.158E-01	0.288	0.000E+00	1900.000	0.0000	0.0000	0.30
4	.158E-01	.158E-01	0.288	0.000E+00	1900.000	0.0000	0.0000	0.32

5	.158E-01	.158E-01	0.288	0.000E+00	1900.000	0.0000	0.0000	0.32
6	.158E-01	.158E-01	0.288	0.000E+00	1900.000	0.0000	0.0000	0.32
7	.158E-01	.158E-01	0.286	0.000E+00	1900.000	0.0000	0.0000	1.90
8	.158E-01	.158E-01	0.286	0.000E+00	1900.000	0.0000	0.0000	1.90
9	.158E-01	.158E-01	0.286	0.000E+00	1900.000	0.0000	0.0000	1.90
10	.199E+02	.993E+02	0.050	0.000E+00	1900.000	0.7460	0.0000	0.28
11	.199E+02	.993E+02	0.050	0.000E+00	1900.000	0.7460	0.0000	0.28
12	.199E+02	.993E+02	0.050	0.000E+00	1900.000	0.7460	0.0000	0.28

INTEGRATION PARAMETERS

THE PARAMETERS USED TO INVERT THE LAPLACE TRANSFORM ARE
TAU =0.700E+01 N = 11 SIG =0.000E+00 RNU =0.100E+01

A NORMAL INTEGRATION LEVEL HAS BEEN CHOSEN WITH THE
FOLLOWING GAUSS QUADRATURE PARAMETERS:

GAUSSIAN INTEGRATION SUBINTERVAL SIZE = 0.493E-01
NUMBER OF SUBINTERVALS = 12
NUMBER OF SAMPLE POINTS USED PER STEP = 20

TOTAL WIDTH OF INTEGRATION 0.5912E+00

TOTAL NUMBER OF INTEGRATION POINTS 480

RESULTS

CALCULATED CONCENTRATIONS AT SELECTED DEPTHS,
LATERAL DISTANCES AND TIMES:

TIME	LATERAL DISTANCE	DEPTH	CONCENTRATION	TOTAL MASS INTO SOIL	TOTAL MASS INTO BASE
0.5000E+01	0.2030E+03	0.0000E+00	0.1067E-01	0.3260E+02	0.0000E+00
		0.3048E+00	0.4792E-02		
		0.6096E+00	0.1362E-02		
		0.9144E+00	0.2340E-03		
		0.1234E+01	0.2078E-04		
		0.1554E+01	0.1008E-05		
		0.1875E+01	0.2649E-07		
		0.3778E+01	0.2106E-16		
		0.5681E+01	0.2349E-22		
		0.7585E+01	-0.1032E-29		
		0.7869E+01	-0.1073E-29		
		0.8153E+01	-0.1098E-29		
		0.8438E+01	-0.1106E-29		
0.5000E+01	0.2106E+03	0.0000E+00	0.2169E-02	0.3260E+02	0.0000E+00
		0.3048E+00	0.9468E-03		
		0.6096E+00	0.2652E-03		
		0.9144E+00	0.4522E-04		

		0.1234E+01	0.3999E-05		
		0.1554E+01	0.1935E-06		
		0.1875E+01	0.5075E-08		
		0.3778E+01	0.4248E-17		
		0.5681E+01	0.3684E-23		
		0.7585E+01	0.1383E-29		
		0.7869E+01	0.1373E-29		
		0.8153E+01	0.1367E-29		
		0.8438E+01	0.1365E-29		
0.5000E+01	0.2182E+03	0.0000E+00	-0.5665E-03	0.3260E+02	0.0000E+00
		0.3048E+00	-0.2491E-03		
		0.6096E+00	-0.7006E-04		
		0.9144E+00	-0.1197E-04		
		0.1234E+01	-0.1060E-05		
		0.1554E+01	-0.5133E-07		
		0.1875E+01	-0.1347E-08		
		0.3778E+01	-0.1113E-17		
		0.5681E+01	-0.1034E-23		
		0.7585E+01	0.1631E-29		
		0.7869E+01	0.1637E-29		
		0.8153E+01	0.1641E-29		
		0.8438E+01	0.1643E-29		
0.5000E+01	0.2258E+03	0.0000E+00	-0.9148E-03	0.3260E+02	0.0000E+00
		0.3048E+00	-0.4001E-03		
		0.6096E+00	-0.1122E-03		
		0.9144E+00	-0.1914E-04		
		0.1234E+01	-0.1693E-05		
		0.1554E+01	-0.8196E-07		
		0.1875E+01	-0.2150E-08		
		0.3778E+01	-0.1793E-17		
		0.5681E+01	-0.1587E-23		
		0.7585E+01	0.1002E-29		
		0.7869E+01	0.1012E-29		
		0.8153E+01	0.1018E-29		
		0.8438E+01	0.1020E-29		
0.5000E+01	0.2334E+03	0.0000E+00	0.5149E-03	0.3260E+02	0.0000E+00
		0.3048E+00	0.2257E-03		
		0.6096E+00	0.6337E-04		
		0.9144E+00	0.1082E-04		
		0.1234E+01	0.9573E-06		
		0.1554E+01	0.4634E-07		
		0.1875E+01	0.1216E-08		
		0.3778E+01	0.1010E-17		
		0.5681E+01	0.9126E-24		
		0.7585E+01	0.3106E-30		
		0.7869E+01	0.3182E-30		
		0.8153E+01	0.3228E-30		
		0.8438E+01	0.3243E-30		

TIME	LATERAL DISTANCE	DEPTH	CONCENTRATION	TOTAL MASS INTO SOIL	TOTAL MASS INTO BASE
~~	~~~~~~~~~	~~~~~~~~~	~~~~~~~~~~~~~	~~~~~~~~~~	~~~~~~~~~~~
0.1000E+02	0.2030E+03	0.0000E+00	0.1067E-01	0.4610E+02	0.0000E+00
		0.3048E+00	0.6398E-02		
		0.6096E+00	0.3065E-02		
		0.9144E+00	0.1152E-02		
		0.1234E+01	0.3134E-03		

		0.1554E+01	0.6366E-04		
		0.1875E+01	0.9615E-05		
		0.3778E+01	0.1986E-12		
		0.5681E+01	-0.5720E-17		
		0.7585E+01	0.5738E-20		
		0.7869E+01	0.5762E-20		
		0.8153E+01	0.5777E-20		
		0.8438E+01	0.5781E-20		
0.1000E+02	0.2106E+03	0.0000E+00	0.2169E-02	0.4610E+02	0.0000E+00
		0.3048E+00	0.1245E-02		
		0.6096E+00	0.5807E-03		
		0.9144E+00	0.2147E-03		
		0.1234E+01	0.5774E-04		
		0.1554E+01	0.1164E-04		
		0.1875E+01	0.1750E-05		
		0.3778E+01	0.3569E-13		
		0.5681E+01	-0.7871E-18		
		0.7585E+01	0.4345E-20		
		0.7869E+01	0.4367E-20		
		0.8153E+01	0.4380E-20		
		0.8438E+01	0.4385E-20		
0.1000E+02	0.2182E+03	0.0000E+00	-0.5665E-03	0.4610E+02	0.0000E+00
		0.3048E+00	-0.3289E-03		
		0.6096E+00	-0.1546E-03		
		0.9144E+00	-0.5741E-04		
		0.1234E+01	-0.1549E-04		
		0.1554E+01	-0.3129E-05		
		0.1875E+01	-0.4710E-06		
		0.3778E+01	-0.9639E-14		
		0.5681E+01	0.2309E-18		
		0.7585E+01	0.3079E-20		
		0.7869E+01	0.3097E-20		
		0.8153E+01	0.3107E-20		
		0.8438E+01	0.3110E-20		
0.1000E+02	0.2258E+03	0.0000E+00	-0.9148E-03	0.4610E+02	0.0000E+00
		0.3048E+00	-0.5267E-03		
		0.6096E+00	-0.2462E-03		
		0.9144E+00	-0.9114E-04		
		0.1234E+01	-0.2453E-04		
		0.1554E+01	-0.4950E-05		
		0.1875E+01	-0.7443E-06		
		0.3778E+01	-0.1520E-13		
		0.5681E+01	0.3436E-18		
		0.7585E+01	0.2077E-20		
		0.7869E+01	0.2090E-20		
		0.8153E+01	0.2097E-20		
		0.8438E+01	0.2100E-20		
0.1000E+02	0.2334E+03	0.0000E+00	0.5149E-03	0.4610E+02	0.0000E+00
		0.3048E+00	0.2975E-03		
		0.6096E+00	0.1393E-03		
		0.9144E+00	0.5166E-04		
		0.1234E+01	0.1392E-04		
		0.1554E+01	0.2810E-05		
		0.1875E+01	0.4226E-06		
		0.3778E+01	0.8638E-14		
		0.5681E+01	-0.2001E-18		
		0.7585E+01	0.1343E-20		

TIME	LATERAL DISTANCE	DEPTH	CONCENTRATION	TOTAL MASS INTO SOIL	TOTAL MASS INTO BASE
		0.7869E+01	0.1352E-20		
		0.8153E+01	0.1357E-20		
		0.8438E+01	0.1359E-20		
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0.1500E+02	0.2030E+03	0.0000E+00	0.1067E-01	0.5646E+02	0.0000E+00
		0.3048E+00	0.7202E-02		
		0.6096E+00	0.4183E-02		
		0.9144E+00	0.2071E-02		
		0.1234E+01	0.8274E-03		
		0.1554E+01	0.2731E-03		
		0.1875E+01	0.7436E-04		
		0.3778E+01	0.4732E-09		
		0.5681E+01	-0.4070E-15		
		0.7585E+01	0.1921E-16		
		0.7869E+01	0.1931E-16		
		0.8153E+01	0.1937E-16		
		0.8438E+01	0.1939E-16		
0.1500E+02	0.2106E+03	0.0000E+00	0.2169E-02	0.5646E+02	0.0000E+00
		0.3048E+00	0.1385E-02		
		0.6096E+00	0.7751E-03		
		0.9144E+00	0.3744E-03		
		0.1234E+01	0.1469E-03		
		0.1554E+01	0.4789E-04		
		0.1875E+01	0.1292E-04		
		0.3778E+01	0.8049E-10		
		0.5681E+01	-0.5498E-16		
		0.7585E+01	0.1321E-16		
		0.7869E+01	0.1329E-16		
		0.8153E+01	0.1335E-16		
		0.8438E+01	0.1337E-16		
0.1500E+02	0.2182E+03	0.0000E+00	-0.5665E-03	0.5646E+02	0.0000E+00
		0.3048E+00	-0.3671E-03		
		0.6096E+00	-0.2075E-03		
		0.9144E+00	-0.1009E-03		
		0.1234E+01	-0.3980E-04		
		0.1554E+01	-0.1302E-04		
		0.1875E+01	-0.3523E-05		
		0.3778E+01	-0.2208E-10		
		0.5681E+01	0.1630E-16		
		0.7585E+01	0.7977E-17		
		0.7869E+01	0.8046E-17		
		0.8153E+01	0.8087E-17		
		0.8438E+01	0.8101E-17		
0.1500E+02	0.2258E+03	0.0000E+00	-0.9148E-03	0.5646E+02	0.0000E+00
		0.3048E+00	-0.5864E-03		
		0.6096E+00	-0.3292E-03		
		0.9144E+00	-0.1593E-03		
		0.1234E+01	-0.6260E-04		
		0.1554E+01	-0.2043E-04		
		0.1875E+01	-0.5517E-05		
		0.3778E+01	-0.3443E-10		
		0.5681E+01	0.2405E-16		
		0.7585E+01	0.3918E-17		
		0.7869E+01	0.3967E-17		

		0.8153E+01	0.3996E-17		
		0.8438E+01	0.4006E-17		
0.1500E+02	0.2334E+03	0.0000E+00	0.5149E-03	0.5646E+02	0.0000E+00
		0.3048E+00	0.3315E-03		
		0.6096E+00	0.1867E-03		
		0.9144E+00	0.9052E-04		
		0.1234E+01	0.3562E-04		
		0.1554E+01	0.1164E-04		
		0.1875E+01	0.3145E-05		
		0.3778E+01	0.1966E-10		
		0.5681E+01	-0.1405E-16		
		0.7585E+01	0.1090E-17		
		0.7869E+01	0.1120E-17		
		0.8153E+01	0.1139E-17		
		0.8438E+01	0.1145E-17		

TIME	LATERAL DISTANCE	DEPTH	CONCENTRATION	TOTAL MASS INTO SOIL	TOTAL MASS INTO BASE
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0.2000E+02	0.2030E+03	0.0000E+00	0.1067E-01	0.6520E+02	0.0000E+00
		0.3048E+00	0.7712E-02		
		0.6096E+00	0.4972E-02		
		0.9144E+00	0.2846E-02		
		0.1234E+01	0.1386E-02		
		0.1554E+01	0.5859E-03		
		0.1875E+01	0.2149E-03		
		0.3778E+01	0.2387E-07		
		0.5681E+01	0.1153E-13		
		0.7585E+01	-0.6149E-15		
		0.7869E+01	-0.6130E-15		
		0.8153E+01	-0.6118E-15		
		0.8438E+01	-0.6114E-15		
0.2000E+02	0.2106E+03	0.0000E+00	0.2169E-02	0.6520E+02	0.0000E+00
		0.3048E+00	0.1468E-02		
		0.6096E+00	0.9042E-03		
		0.9144E+00	0.5009E-03		
		0.1234E+01	0.2380E-03		
		0.1554E+01	0.9887E-04		
		0.1875E+01	0.3579E-04		
		0.3778E+01	0.3847E-08		
		0.5681E+01	0.1626E-14		
		0.7585E+01	-0.7502E-15		
		0.7869E+01	-0.7500E-15		
		0.8153E+01	-0.7499E-15		
		0.8438E+01	-0.7498E-15		
0.2000E+02	0.2182E+03	0.0000E+00	-0.5665E-03	0.6520E+02	0.0000E+00
		0.3048E+00	-0.3902E-03		
		0.6096E+00	-0.2434E-03		
		0.9144E+00	-0.1360E-03		
		0.1234E+01	-0.6508E-04		
		0.1554E+01	-0.2717E-04		
		0.1875E+01	-0.9874E-05		
		0.3778E+01	-0.1071E-08		
		0.5681E+01	-0.4729E-15		
		0.7585E+01	-0.7619E-15		
		0.7869E+01	-0.7631E-15		
		0.8153E+01	-0.7638E-15		

		0.8438E+01	-0.7640E-15		
0.2000E+02	0.2258E+03	0.0000E+00	-0.9148E-03	0.6520E+02	0.0000E+00
		0.3048E+00	-0.6222E-03		
		0.6096E+00	-0.3846E-03		
		0.9144E+00	-0.2136E-03		
		0.1234E+01	-0.1017E-03		
		0.1554E+01	-0.4232E-04		
		0.1875E+01	-0.1534E-04		
		0.3778E+01	-0.1653E-08		
		0.5681E+01	-0.7091E-15		
		0.7585E+01	-0.6871E-15		
		0.7869E+01	-0.6891E-15		
		0.8153E+01	-0.6903E-15		
		0.8438E+01	-0.6907E-15		
0.2000E+02	0.2334E+03	0.0000E+00	0.5149E-03	0.6520E+02	0.0000E+00
		0.3048E+00	0.3520E-03		
		0.6096E+00	0.2184E-03		
		0.9144E+00	0.1216E-03		
		0.1234E+01	0.5803E-04		
		0.1554E+01	0.2418E-04		
		0.1875E+01	0.8773E-05		
		0.3778E+01	0.9483E-09		
		0.5681E+01	0.4105E-15		
		0.7585E+01	-0.5617E-15		
		0.7869E+01	-0.5641E-15		
		0.8153E+01	-0.5655E-15		
		0.8438E+01	-0.5660E-15		

TIME	LATERAL DISTANCE	DEPTH	CONCENTRATION	TOTAL MASS INTO SOIL	TOTAL MASS INTO BASE
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0.2500E+02	0.2030E+03	0.0000E+00	0.1067E-01	0.7289E+02	0.0000E+00
		0.3048E+00	0.8076E-02		
		0.6096E+00	0.5570E-02		
		0.9144E+00	0.3490E-02		
		0.1234E+01	0.1921E-02		
		0.1554E+01	0.9449E-03		
		0.1875E+01	0.4153E-03		
		0.3778E+01	0.2585E-06		
		0.5681E+01	0.1992E-11		
		0.7585E+01	0.4299E-14		
		0.7869E+01	0.4256E-14		
		0.8153E+01	0.4231E-14		
		0.8438E+01	0.4222E-14		
0.2500E+02	0.2106E+03	0.0000E+00	0.2169E-02	0.7289E+02	0.0000E+00
		0.3048E+00	0.1524E-02		
		0.6096E+00	0.9961E-03		
		0.9144E+00	0.5999E-03		
		0.1234E+01	0.3202E-03		
		0.1554E+01	0.1540E-03		
		0.1875E+01	0.6653E-04		
		0.3778E+01	0.3955E-07		
		0.5681E+01	0.3014E-12		
		0.7585E+01	0.7129E-14		
		0.7869E+01	0.7106E-14		
		0.8153E+01	0.7091E-14		
		0.8438E+01	0.7086E-14		

0.2500E+02	0.2182E+03	0.0000E+00	-0.5665E-03	0.7289E+02	0.0000E+00
		0.3048E+00	-0.4060E-03		
		0.6096E+00	-0.2693E-03		
		0.9144E+00	-0.1640E-03		
		0.1234E+01	-0.8828E-04		
		0.1554E+01	-0.4273E-04		
		0.1875E+01	-0.1856E-04		
		0.3778E+01	-0.1118E-07		
		0.5681E+01	-0.8541E-13		
		0.7585E+01	0.8657E-14		
		0.7869E+01	0.8651E-14		
		0.8153E+01	0.8648E-14		
		0.8438E+01	0.8647E-14		
0.2500E+02	0.2258E+03	0.0000E+00	-0.9148E-03	0.7289E+02	0.0000E+00
		0.3048E+00	-0.6464E-03		
		0.6096E+00	-0.4243E-03		
		0.9144E+00	-0.2564E-03		
		0.1234E+01	-0.1372E-03		
		0.1554E+01	-0.6611E-04		
		0.1875E+01	-0.2861E-04		
		0.3778E+01	-0.1708E-07		
		0.5681E+01	-0.1302E-12		
		0.7585E+01	0.9037E-14		
		0.7869E+01	0.9046E-14		
		0.8153E+01	0.9052E-14		
		0.8438E+01	0.9054E-14		
0.2500E+02	0.2334E+03	0.0000E+00	0.5149E-03	0.7289E+02	0.0000E+00
		0.3048E+00	0.3660E-03		
		0.6096E+00	0.2412E-03		
		0.9144E+00	0.1463E-03		
		0.1234E+01	0.7846E-04		
		0.1554E+01	0.3788E-04		
		0.1875E+01	0.1642E-04		
		0.3778E+01	0.9838E-08		
		0.5681E+01	0.7514E-13		
		0.7585E+01	0.8506E-14		
		0.7869E+01	0.8526E-14		
		0.8153E+01	0.8538E-14		
		0.8438E+01	0.8541E-14		

TIME	LATERAL DISTANCE	DEPTH	CONCENTRATION	TOTAL MASS INTO SOIL	TOTAL MASS INTO BASE
0.3000E+02	0.2030E+03	0.0000E+00	0.1067E-01	0.7985E+02	0.0000E+00
		0.3048E+00	0.8354E-02		
		0.6096E+00	0.6044E-02		
		0.9144E+00	0.4034E-02		
		0.1234E+01	0.2414E-02		
		0.1554E+01	0.1317E-02		
		0.1875E+01	0.6540E-03		
		0.3778E+01	0.1291E-05		
		0.5681E+01	0.6706E-10		
		0.7585E+01	-0.5140E-13		
		0.7869E+01	-0.5130E-13		
		0.8153E+01	-0.5124E-13		
		0.8438E+01	-0.5122E-13		

0.3000E+02	0.2106E+03	0.0000E+00	0.2169E-02	0.7985E+02	0.0000E+00
		0.3048E+00	0.1565E-02		
		0.6096E+00	0.1065E-02		
		0.9144E+00	0.6786E-03		
		0.1234E+01	0.3915E-03		
		0.1554E+01	0.2077E-03		
		0.1875E+01	0.1010E-03		
		0.3778E+01	0.1878E-06		
		0.5681E+01	0.9579E-11		
		0.7585E+01	-0.5904E-13		
		0.7869E+01	-0.5903E-13		
		0.8153E+01	-0.5902E-13		
		0.8438E+01	-0.5902E-13		
0.3000E+02	0.2182E+03	0.0000E+00	-0.5665E-03	0.7985E+02	0.0000E+00
		0.3048E+00	-0.4176E-03		
		0.6096E+00	-0.2890E-03		
		0.9144E+00	-0.1866E-03		
		0.1234E+01	-0.1088E-03		
		0.1554E+01	-0.5817E-04		
		0.1875E+01	-0.2846E-04		
		0.3778E+01	-0.5387E-07		
		0.5681E+01	-0.2763E-11		
		0.7585E+01	-0.6056E-13		
		0.7869E+01	-0.6062E-13		
		0.8153E+01	-0.6066E-13		
		0.8438E+01	-0.6068E-13		
0.3000E+02	0.2258E+03	0.0000E+00	-0.9148E-03	0.7985E+02	0.0000E+00
		0.3048E+00	-0.6639E-03		
		0.6096E+00	-0.4541E-03		
		0.9144E+00	-0.2905E-03		
		0.1234E+01	-0.1682E-03		
		0.1554E+01	-0.8943E-04		
		0.1875E+01	-0.4358E-04		
		0.3778E+01	-0.8151E-07		
		0.5681E+01	-0.4165E-11		
		0.7585E+01	-0.5700E-13		
		0.7869E+01	-0.5713E-13		
		0.8153E+01	-0.5721E-13		
		0.8438E+01	-0.5723E-13		
0.3000E+02	0.2334E+03	0.0000E+00	0.5149E-03	0.7985E+02	0.0000E+00
		0.3048E+00	0.3761E-03		
		0.6096E+00	0.2585E-03		
		0.9144E+00	0.1660E-03		
		0.1234E+01	0.9640E-04		
		0.1554E+01	0.5138E-04		
		0.1875E+01	0.2508E-04		
		0.3778E+01	0.4715E-07		
		0.5681E+01	0.2413E-11		
		0.7585E+01	-0.4964E-13		
		0.7869E+01	-0.4981E-13		
		0.8153E+01	-0.4991E-13		
		0.8438E+01	-0.4994E-13		

TIME	LATERAL DISTANCE	DEPTH	CONCENTRATION	TOTAL MASS INTO SOIL	TOTAL MASS INTO BASE
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0.3500E+02	0.2030E+03	0.0000E+00	0.1067E-01	0.8625E+02	0.0000E+00

		0.3048E+00	0.8578E-02		
		0.6096E+00	0.6435E-02		
		0.9144E+00	0.4501E-02		
		0.1234E+01	0.2865E-02		
		0.1554E+01	0.1684E-02		
		0.1875E+01	0.9138E-03		
		0.3778E+01	0.4131E-05		
		0.5681E+01	0.8380E-09		
		0.7585E+01	0.3571E-12		
		0.7869E+01	0.3585E-12		
		0.8153E+01	0.3593E-12		
		0.8438E+01	0.3596E-12		
0.3500E+02	0.2106E+03	0.0000E+00	0.2169E-02	0.8625E+02	0.0000E+00
		0.3048E+00	0.1595E-02		
		0.6096E+00	0.1118E-02		
		0.9144E+00	0.7422E-03		
		0.1234E+01	0.4529E-03		
		0.1554E+01	0.2577E-03		
		0.1875E+01	0.1364E-03		
		0.3778E+01	0.5727E-06		
		0.5681E+01	0.1135E-09		
		0.7585E+01	0.2774E-12		
		0.7869E+01	0.2787E-12		
		0.8153E+01	0.2794E-12		
		0.8438E+01	0.2796E-12		
0.3500E+02	0.2182E+03	0.0000E+00	-0.5665E-03	0.8625E+02	0.0000E+00
		0.3048E+00	-0.4265E-03		
		0.6096E+00	-0.3046E-03		
		0.9144E+00	-0.2052E-03		
		0.1234E+01	-0.1267E-03		
		0.1554E+01	-0.7280E-04		
		0.1875E+01	-0.3881E-04		
		0.3778E+01	-0.1666E-06		
		0.5681E+01	-0.3323E-10		
		0.7585E+01	0.2076E-12		
		0.7869E+01	0.2087E-12		
		0.8153E+01	0.2094E-12		
		0.8438E+01	0.2096E-12		
0.3500E+02	0.2258E+03	0.0000E+00	-0.9148E-03	0.8625E+02	0.0000E+00
		0.3048E+00	-0.6772E-03		
		0.6096E+00	-0.4773E-03		
		0.9144E+00	-0.3183E-03		
		0.1234E+01	-0.1950E-03		
		0.1554E+01	-0.1113E-03		
		0.1875E+01	-0.5902E-04		
		0.3778E+01	-0.2497E-06		
		0.5681E+01	-0.4959E-10		
		0.7585E+01	0.1439E-12		
		0.7869E+01	0.1449E-12		
		0.8153E+01	0.1455E-12		
		0.8438E+01	0.1457E-12		
0.3500E+02	0.2334E+03	0.0000E+00	0.5149E-03	0.8625E+02	0.0000E+00
		0.3048E+00	0.3838E-03		
		0.6096E+00	0.2720E-03		
		0.9144E+00	0.1822E-03		
		0.1234E+01	0.1120E-03		
		0.1554E+01	0.6409E-04		

		0.1875E+01	0.3407E-04		
		0.3778E+01	0.1451E-06		
		0.5681E+01	0.2886E-10		
		0.7585E+01	0.8568E-13		
		0.7869E+01	0.8654E-13		
		0.8153E+01	0.8706E-13		
		0.8438E+01	0.8724E-13		

TIME	LATERAL DISTANCE	DEPTH	CONCENTRATION	TOTAL MASS INTO SOIL	TOTAL MASS INTO BASE
0.4000E+02	0.2030E+03	0.0000E+00	0.1067E-01	0.9220E+02	0.0000E+00
		0.3048E+00	0.8764E-02		
		0.6096E+00	0.6765E-02		
		0.9144E+00	0.4908E-02		
		0.1234E+01	0.3276E-02		
		0.1554E+01	0.2039E-02		
		0.1875E+01	0.1183E-02		
		0.3778E+01	0.9992E-05		
		0.5681E+01	0.5640E-08		
		0.7585E+01	0.3790E-11		
		0.7869E+01	0.3812E-11		
		0.8153E+01	0.3824E-11		
		0.8438E+01	0.3829E-11		
0.4000E+02	0.2106E+03	0.0000E+00	0.2169E-02	0.9220E+02	0.0000E+00
		0.3048E+00	0.1619E-02		
		0.6096E+00	0.1160E-02		
		0.9144E+00	0.7944E-03		
		0.1234E+01	0.5056E-03		
		0.1554E+01	0.3032E-03		
		0.1875E+01	0.1709E-03		
		0.3778E+01	0.1322E-05		
		0.5681E+01	0.7245E-09		
		0.7585E+01	0.2475E-11		
		0.7869E+01	0.2489E-11		
		0.8153E+01	0.2498E-11		
		0.8438E+01	0.2501E-11		
0.4000E+02	0.2182E+03	0.0000E+00	-0.5665E-03	0.9220E+02	0.0000E+00
		0.3048E+00	-0.4336E-03		
		0.6096E+00	-0.3172E-03		
		0.9144E+00	-0.2207E-03		
		0.1234E+01	-0.1424E-03		
		0.1554E+01	-0.8635E-04		
		0.1875E+01	-0.4910E-04		
		0.3778E+01	-0.3899E-06		
		0.5681E+01	-0.2156E-09		
		0.7585E+01	0.1679E-11		
		0.7869E+01	0.1688E-11		
		0.8153E+01	0.1694E-11		
		0.8438E+01	0.1696E-11		
0.4000E+02	0.2258E+03	0.0000E+00	-0.9148E-03	0.9220E+02	0.0000E+00
		0.3048E+00	-0.6877E-03		
		0.6096E+00	-0.4959E-03		
		0.9144E+00	-0.3413E-03		
		0.1234E+01	-0.2181E-03		
		0.1554E+01	-0.1313E-03		
		0.1875E+01	-0.7422E-04		

		0.3778E+01	-0.5793E-06		
		0.5681E+01	-0.3185E-09		
		0.7585E+01	0.1203E-11		
		0.7869E+01	0.1208E-11		
		0.8153E+01	0.1212E-11		
		0.8438E+01	0.1213E-11		
0.4000E+02	0.2334E+03	0.0000E+00	0.5149E-03	0.9220E+02	0.0000E+00
		0.3048E+00	0.3900E-03		
		0.6096E+00	0.2829E-03		
		0.9144E+00	0.1956E-03		
		0.1234E+01	0.1255E-03		
		0.1554E+01	0.7579E-04		
		0.1875E+01	0.4296E-04		
		0.3778E+01	0.3378E-06		
		0.5681E+01	0.1862E-09		
		0.7585E+01	0.9151E-12		
		0.7869E+01	0.9185E-12		
		0.8153E+01	0.9205E-12		
		0.8438E+01	0.9212E-12		

TIME	LATERAL DISTANCE	DEPTH	CONCENTRATION	TOTAL MASS INTO SOIL	TOTAL MASS INTO BASE
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0.4500E+02	0.2030E+03	0.0000E+00	0.1067E-01	0.9780E+02	0.0000E+00
		0.3048E+00	0.8922E-02		
		0.6096E+00	0.7050E-02		
		0.9144E+00	0.5267E-02		
		0.1234E+01	0.3651E-02		
		0.1554E+01	0.2378E-02		
		0.1875E+01	0.1456E-02		
		0.3778E+01	0.2003E-04		
		0.5681E+01	0.2509E-07		
		0.7585E+01	0.6024E-10		
		0.7869E+01	0.6058E-10		
		0.8153E+01	0.6078E-10		
		0.8438E+01	0.6084E-10		
0.4500E+02	0.2106E+03	0.0000E+00	0.2169E-02	0.9780E+02	0.0000E+00
		0.3048E+00	0.1638E-02		
		0.6096E+00	0.1195E-02		
		0.9144E+00	0.8379E-03		
		0.1234E+01	0.5510E-03		
		0.1554E+01	0.3442E-03		
		0.1875E+01	0.2038E-03		
		0.3778E+01	0.2533E-05		
		0.5681E+01	0.3062E-08		
		0.7585E+01	0.3945E-10		
		0.7869E+01	0.3970E-10		
		0.8153E+01	0.3985E-10		
		0.8438E+01	0.3989E-10		
0.4500E+02	0.2182E+03	0.0000E+00	-0.5665E-03	0.9780E+02	0.0000E+00
		0.3048E+00	-0.4394E-03		
		0.6096E+00	-0.3276E-03		
		0.9144E+00	-0.2339E-03		
		0.1234E+01	-0.1562E-03		
		0.1554E+01	-0.9878E-04		
		0.1875E+01	-0.5908E-04		
		0.3778E+01	-0.7573E-06		

		0.5681E+01	-0.9254E-09		
		0.7585E+01	0.2567E-10		
		0.7869E+01	0.2583E-10		
		0.8153E+01	0.2593E-10		
		0.8438E+01	0.2597E-10		
0.4500E+02	0.2258E+03	0.0000E+00	-0.9148E-03	0.9780E+02	0.0000E+00
		0.3048E+00	-0.6961E-03		
		0.6096E+00	-0.5112E-03		
		0.9144E+00	-0.3605E-03		
		0.1234E+01	-0.2382E-03		
		0.1554E+01	-0.1494E-03		
		0.1875E+01	-0.8878E-04		
		0.3778E+01	-0.1115E-05		
		0.5681E+01	-0.1354E-08		
		0.7585E+01	0.1661E-10		
		0.7869E+01	0.1672E-10		
		0.8153E+01	0.1678E-10		
		0.8438E+01	0.1680E-10		
0.4500E+02	0.2334E+03	0.0000E+00	0.5149E-03	0.9780E+02	0.0000E+00
		0.3048E+00	0.3949E-03		
		0.6096E+00	0.2919E-03		
		0.9144E+00	0.2069E-03		
		0.1234E+01	0.1373E-03		
		0.1554E+01	0.8646E-04		
		0.1875E+01	0.5151E-04		
		0.3778E+01	0.6529E-06		
		0.5681E+01	0.7948E-09		
		0.7585E+01	0.1071E-10		
		0.7869E+01	0.1078E-10		
		0.8153E+01	0.1082E-10		
		0.8438E+01	0.1083E-10		

TIME	LATERAL DISTANCE	DEPTH	CONCENTRATION	TOTAL MASS INTO SOIL	TOTAL MASS INTO BASE
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0.5000E+02	0.2030E+03	0.0000E+00	0.1067E-01	0.1031E+03	0.0000E+00
		0.3048E+00	0.9059E-02		
		0.6096E+00	0.7300E-02		
		0.9144E+00	0.5588E-02		
		0.1234E+01	0.3996E-02		
		0.1554E+01	0.2701E-02		
		0.1875E+01	0.1726E-02		
		0.3778E+01	0.3519E-04		
		0.5681E+01	0.8348E-07		
		0.7585E+01	0.5692E-09		
		0.7869E+01	0.5721E-09		
		0.8153E+01	0.5738E-09		
		0.8438E+01	0.5744E-09		
0.5000E+02	0.2106E+03	0.0000E+00	0.2169E-02	0.1031E+03	0.0000E+00
		0.3048E+00	0.1654E-02		
		0.6096E+00	0.1223E-02		
		0.9144E+00	0.8745E-03		
		0.1234E+01	0.5903E-03		
		0.1554E+01	0.3810E-03		
		0.1875E+01	0.2346E-03		
		0.3778E+01	0.4258E-05		
		0.5681E+01	0.9686E-08		

		0.7585E+01	0.3932E-09		
		0.7869E+01	0.3954E-09		
		0.8153E+01	0.3967E-09		
		0.8438E+01	0.3971E-09		
0.5000E+02	0.2182E+03	0.0000E+00	-0.5665E-03	0.1031E+03	0.0000E+00
		0.3048E+00	-0.4442E-03		
		0.6096E+00	-0.3364E-03		
		0.9144E+00	-0.2452E-03		
		0.1234E+01	-0.1683E-03		
		0.1554E+01	-0.1101E-03		
		0.1875E+01	-0.6858E-04		
		0.3778E+01	-0.1290E-05		
		0.5681E+01	-0.2973E-08		
		0.7585E+01	0.2703E-09		
		0.7869E+01	0.2718E-09		
		0.8153E+01	0.2727E-09		
		0.8438E+01	0.2730E-09		
0.5000E+02	0.2258E+03	0.0000E+00	-0.9148E-03	0.1031E+03	0.0000E+00
		0.3048E+00	-0.7031E-03		
		0.6096E+00	-0.5239E-03		
		0.9144E+00	-0.3768E-03		
		0.1234E+01	-0.2558E-03		
		0.1554E+01	-0.1658E-03		
		0.1875E+01	-0.1025E-03		
		0.3778E+01	-0.1884E-05		
		0.5681E+01	-0.4307E-08		
		0.7585E+01	0.1848E-09		
		0.7869E+01	0.1859E-09		
		0.8153E+01	0.1866E-09		
		0.8438E+01	0.1868E-09		
0.5000E+02	0.2334E+03	0.0000E+00	0.5149E-03	0.1031E+03	0.0000E+00
		0.3048E+00	0.3990E-03		
		0.6096E+00	0.2994E-03		
		0.9144E+00	0.2165E-03		
		0.1234E+01	0.1477E-03		
		0.1554E+01	0.9614E-04		
		0.1875E+01	0.5962E-04		
		0.3778E+01	0.1107E-05		
		0.5681E+01	0.2540E-08		
		0.7585E+01	0.1257E-09		
		0.7869E+01	0.1265E-09		
		0.8153E+01	0.1269E-09		
		0.8438E+01	0.1270E-09		

TIME	LATERAL DISTANCE	DEPTH	CONCENTRATION	TOTAL MASS INTO SOIL	TOTAL MASS INTO BASE
0.5500E+02	0.2030E+03	0.0000E+00	0.1067E-01	0.1081E+03	0.0000E+00
		0.3048E+00	0.9180E-02		
		0.6096E+00	0.7522E-02		
		0.9144E+00	0.5878E-02		
		0.1234E+01	0.4314E-02		
		0.1554E+01	0.3007E-02		
		0.1875E+01	0.1991E-02		
		0.3778E+01	0.5612E-04		
		0.5681E+01	0.2247E-06		
		0.7585E+01	0.3561E-08		

		0.7869E+01	0.3577E-08		
		0.8153E+01	0.3587E-08		
		0.8438E+01	0.3591E-08		
0.5500E+02	0.2106E+03	0.0000E+00	0.2169E-02	0.1081E+03	0.0000E+00
		0.3048E+00	0.1667E-02		
		0.6096E+00	0.1247E-02		
		0.9144E+00	0.9057E-03		
		0.1234E+01	0.6245E-03		
		0.1554E+01	0.4139E-03		
		0.1875E+01	0.2632E-03		
		0.3778E+01	0.6505E-05		
		0.5681E+01	0.2481E-07		
		0.7585E+01	0.2556E-08		
		0.7869E+01	0.2569E-08		
		0.8153E+01	0.2577E-08		
		0.8438E+01	0.2579E-08		
0.5500E+02	0.2182E+03	0.0000E+00	-0.5665E-03	0.1081E+03	0.0000E+00
		0.3048E+00	-0.4483E-03		
		0.6096E+00	-0.3439E-03		
		0.9144E+00	-0.2550E-03		
		0.1234E+01	-0.1791E-03		
		0.1554E+01	-0.1205E-03		
		0.1875E+01	-0.7755E-04		
		0.3778E+01	-0.1996E-05		
		0.5681E+01	-0.7731E-08		
		0.7585E+01	0.1828E-08		
		0.7869E+01	0.1837E-08		
		0.8153E+01	0.1843E-08		
		0.8438E+01	0.1845E-08		
0.5500E+02	0.2258E+03	0.0000E+00	-0.9148E-03	0.1081E+03	0.0000E+00
		0.3048E+00	-0.7089E-03		
		0.6096E+00	-0.5346E-03		
		0.9144E+00	-0.3908E-03		
		0.1234E+01	-0.2711E-03		
		0.1554E+01	-0.1806E-03		
		0.1875E+01	-0.1153E-03		
		0.3778E+01	-0.2892E-05		
		0.5681E+01	-0.1110E-07		
		0.7585E+01	0.1303E-08		
		0.7869E+01	0.1309E-08		
		0.8153E+01	0.1314E-08		
		0.8438E+01	0.1315E-08		
0.5500E+02	0.2334E+03	0.0000E+00	0.5149E-03	0.1081E+03	0.0000E+00
		0.3048E+00	0.4025E-03		
		0.6096E+00	0.3057E-03		
		0.9144E+00	0.2249E-03		
		0.1234E+01	0.1568E-03		
		0.1554E+01	0.1049E-03		
		0.1875E+01	0.6722E-04		
		0.3778E+01	0.1706E-05		
		0.5681E+01	0.6573E-08		
		0.7585E+01	0.9249E-09		
		0.7869E+01	0.9297E-09		
		0.8153E+01	0.9326E-09		
		0.8438E+01	0.9335E-09		
TIME	LATERAL	DEPTH	CONCENTRATION	TOTAL MASS	TOTAL MASS

	DISTANCE			INTO SOIL	INTO BASE
0.6000E+02	0.2030E+03	0.0000E+00	0.1067E-01	0.1129E+03	0.0000E+00
		0.3048E+00	0.9288E-02		
		0.6096E+00	0.7721E-02		
		0.9144E+00	0.6142E-02		
		0.1234E+01	0.4609E-02		
		0.1554E+01	0.3297E-02		
		0.1875E+01	0.2250E-02		
		0.3778E+01	0.8318E-04		
		0.5681E+01	0.5155E-06		
		0.7585E+01	0.1650E-07		
		0.7869E+01	0.1657E-07		
		0.8153E+01	0.1662E-07		
		0.8438E+01	0.1663E-07		
0.6000E+02	0.2106E+03	0.0000E+00	0.2169E-02	0.1129E+03	0.0000E+00
		0.3048E+00	0.1678E-02		
		0.6096E+00	0.1267E-02		
		0.9144E+00	0.9324E-03		
		0.1234E+01	0.6544E-03		
		0.1554E+01	0.4434E-03		
		0.1875E+01	0.2895E-03		
		0.3778E+01	0.9248E-05		
		0.5681E+01	0.5424E-07		
		0.7585E+01	0.1221E-07		
		0.7869E+01	0.1227E-07		
		0.8153E+01	0.1230E-07		
		0.8438E+01	0.1232E-07		
0.6000E+02	0.2182E+03	0.0000E+00	-0.5665E-03	0.1129E+03	0.0000E+00
		0.3048E+00	-0.4518E-03		
		0.6096E+00	-0.3504E-03		
		0.9144E+00	-0.2636E-03		
		0.1234E+01	-0.1886E-03		
		0.1554E+01	-0.1299E-03		
		0.1875E+01	-0.8596E-04		
		0.3778E+01	-0.2874E-05		
		0.5681E+01	-0.1715E-07		
		0.7585E+01	0.9011E-08		
		0.7869E+01	0.9053E-08		
		0.8153E+01	0.9079E-08		
		0.8438E+01	0.9087E-08		
0.6000E+02	0.2258E+03	0.0000E+00	-0.9148E-03	0.1129E+03	0.0000E+00
		0.3048E+00	-0.7139E-03		
		0.6096E+00	-0.5437E-03		
		0.9144E+00	-0.4029E-03		
		0.1234E+01	-0.2846E-03		
		0.1554E+01	-0.1939E-03		
		0.1875E+01	-0.1272E-03		
		0.3778E+01	-0.4133E-05		
		0.5681E+01	-0.2440E-07		
		0.7585E+01	0.6627E-08		
		0.7869E+01	0.6658E-08		
		0.8153E+01	0.6677E-08		
		0.8438E+01	0.6684E-08		
0.6000E+02	0.2334E+03	0.0000E+00	0.5149E-03	0.1129E+03	0.0000E+00
		0.3048E+00	0.4055E-03		

TIME	LATERAL DISTANCE	DEPTH	CONCENTRATION	TOTAL MASS INTO SOIL	TOTAL MASS INTO BASE
		0.6096E+00	0.3112E-03		
		0.9144E+00	0.2321E-03		
		0.1234E+01	0.1649E-03		
		0.1554E+01	0.1129E-03		
		0.1875E+01	0.7432E-04		
		0.3778E+01	0.2446E-05		
		0.5681E+01	0.1452E-07		
		0.7585E+01	0.4858E-08		
		0.7869E+01	0.4881E-08		
		0.8153E+01	0.4895E-08		
		0.8438E+01	0.4900E-08		
0.6500E+02	0.2030E+03	0.0000E+00	0.1067E-01	0.1175E+03	0.0000E+00
		0.3048E+00	0.9385E-02		
		0.6096E+00	0.7903E-02		
		0.9144E+00	0.6384E-02		
		0.1234E+01	0.4883E-02		
		0.1554E+01	0.3573E-02		
		0.1875E+01	0.2502E-02		
		0.3778E+01	0.1165E-03		
		0.5681E+01	0.1046E-05		
		0.7585E+01	0.6077E-07		
		0.7869E+01	0.6101E-07		
		0.8153E+01	0.6116E-07		
		0.8438E+01	0.6120E-07		
0.6500E+02	0.2106E+03	0.0000E+00	0.2169E-02	0.1175E+03	0.0000E+00
		0.3048E+00	0.1687E-02		
		0.6096E+00	0.1285E-02		
		0.9144E+00	0.9556E-03		
		0.1234E+01	0.6807E-03		
		0.1554E+01	0.4698E-03		
		0.1875E+01	0.3136E-03		
		0.3778E+01	0.1244E-04		
		0.5681E+01	0.1049E-06		
		0.7585E+01	0.4613E-07		
		0.7869E+01	0.4633E-07		
		0.8153E+01	0.4645E-07		
		0.8438E+01	0.4649E-07		
0.6500E+02	0.2182E+03	0.0000E+00	-0.5665E-03	0.1175E+03	0.0000E+00
		0.3048E+00	-0.4548E-03		
		0.6096E+00	-0.3561E-03		
		0.9144E+00	-0.2711E-03		
		0.1234E+01	-0.1972E-03		
		0.1554E+01	-0.1385E-03		
		0.1875E+01	-0.9383E-04		
		0.3778E+01	-0.3914E-05		
		0.5681E+01	-0.3368E-07		
		0.7585E+01	0.3492E-07		
		0.7869E+01	0.3508E-07		
		0.8153E+01	0.3517E-07		
		0.8438E+01	0.3520E-07		
0.6500E+02	0.2258E+03	0.0000E+00	-0.9148E-03	0.1175E+03	0.0000E+00
		0.3048E+00	-0.7181E-03		
		0.6096E+00	-0.5517E-03		

		0.9144E+00	-0.4134E-03		
		0.1234E+01	-0.2966E-03		
		0.1554E+01	-0.2059E-03		
		0.1875E+01	-0.1382E-03		
		0.3778E+01	-0.5586E-05		
		0.5681E+01	-0.4748E-07		
		0.7585E+01	0.2636E-07		
		0.7869E+01	0.2648E-07		
		0.8153E+01	0.2655E-07		
		0.8438E+01	0.2657E-07		
0.6500E+02	0.2334E+03	0.0000E+00	0.5149E-03	0.1175E+03	0.0000E+00
		0.3048E+00	0.4080E-03		
		0.6096E+00	0.3159E-03		
		0.9144E+00	0.2384E-03		
		0.1234E+01	0.1721E-03		
		0.1554E+01	0.1201E-03		
		0.1875E+01	0.8091E-04		
		0.3778E+01	0.3318E-05		
		0.5681E+01	0.2837E-07		
		0.7585E+01	0.1984E-07		
		0.7869E+01	0.1993E-07		
		0.8153E+01	0.1999E-07		
		0.8438E+01	0.2000E-07		

TIME	LATERAL DISTANCE	DEPTH	CONCENTRATION	TOTAL MASS INTO SOIL	TOTAL MASS INTO BASE
0.7000E+02	0.2030E+03	0.0000E+00	0.1067E-01	0.1220E+03	0.0000E+00
		0.3048E+00	0.9473E-02		
		0.6096E+00	0.8068E-02		
		0.9144E+00	0.6607E-02		
		0.1234E+01	0.5139E-02		
		0.1554E+01	0.3835E-02		
		0.1875E+01	0.2747E-02		
		0.3778E+01	0.1561E-03		
		0.5681E+01	0.1926E-05		
		0.7585E+01	0.1866E-06		
		0.7869E+01	0.1873E-06		
		0.8153E+01	0.1877E-06		
		0.8438E+01	0.1878E-06		
0.7000E+02	0.2106E+03	0.0000E+00	0.2169E-02	0.1220E+03	0.0000E+00
		0.3048E+00	0.1695E-02		
		0.6096E+00	0.1300E-02		
		0.9144E+00	0.9758E-03		
		0.1234E+01	0.7039E-03		
		0.1554E+01	0.4935E-03		
		0.1875E+01	0.3357E-03		
		0.3778E+01	0.1602E-04		
		0.5681E+01	0.1844E-06		
		0.7585E+01	0.1448E-06		
		0.7869E+01	0.1453E-06		
		0.8153E+01	0.1457E-06		
		0.8438E+01	0.1458E-06		
0.7000E+02	0.2182E+03	0.0000E+00	-0.5665E-03	0.1220E+03	0.0000E+00
		0.3048E+00	-0.4575E-03		
		0.6096E+00	-0.3610E-03		
		0.9144E+00	-0.2778E-03		

		0.1234E+01	-0.2049E-03		
		0.1554E+01	-0.1464E-03		
		0.1875E+01	-0.1012E-03		
		0.3778E+01	-0.5101E-05		
		0.5681E+01	-0.6002E-07		
		0.7585E+01	0.1120E-06		
		0.7869E+01	0.1125E-06		
		0.8153E+01	0.1127E-06		
		0.8438E+01	0.1128E-06		
0.7000E+02	0.2258E+03	0.0000E+00	-0.9148E-03	0.1220E+03	0.0000E+00
		0.3048E+00	-0.7218E-03		
		0.6096E+00	-0.5585E-03		
		0.9144E+00	-0.4227E-03		
		0.1234E+01	-0.3072E-03		
		0.1554E+01	-0.2168E-03		
		0.1875E+01	-0.1483E-03		
		0.3778E+01	-0.7227E-05		
		0.5681E+01	-0.8392E-07		
		0.7585E+01	0.8645E-07		
		0.7869E+01	0.8681E-07		
		0.8153E+01	0.8702E-07		
		0.8438E+01	0.8709E-07		
0.7000E+02	0.2334E+03	0.0000E+00	0.5149E-03	0.1220E+03	0.0000E+00
		0.3048E+00	0.4102E-03		
		0.6096E+00	0.3201E-03		
		0.9144E+00	0.2440E-03		
		0.1234E+01	0.1785E-03		
		0.1554E+01	0.1266E-03		
		0.1875E+01	0.8703E-04		
		0.3778E+01	0.4307E-05		
		0.5681E+01	0.5037E-07		
		0.7585E+01	0.6655E-07		
		0.7869E+01	0.6683E-07		
		0.8153E+01	0.6699E-07		
		0.8438E+01	0.6704E-07		

TIME	LATERAL DISTANCE	DEPTH	CONCENTRATION	TOTAL MASS INTO SOIL	TOTAL MASS INTO BASE
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0.7500E+02	0.2030E+03	0.0000E+00	0.1067E-01	0.1263E+03	0.0000E+00
		0.3048E+00	0.9554E-02		
		0.6096E+00	0.8221E-02		
		0.9144E+00	0.6814E-02		
		0.1234E+01	0.5380E-02		
		0.1554E+01	0.4084E-02		
		0.1875E+01	0.2983E-02		
		0.3778E+01	0.2017E-03		
		0.5681E+01	0.3280E-05		
		0.7585E+01	0.4951E-06		
		0.7869E+01	0.4968E-06		
		0.8153E+01	0.4979E-06		
		0.8438E+01	0.4982E-06		
0.7500E+02	0.2106E+03	0.0000E+00	0.2169E-02	0.1263E+03	0.0000E+00
		0.3048E+00	0.1702E-02		
		0.6096E+00	0.1313E-02		
		0.9144E+00	0.9935E-03		
		0.1234E+01	0.7245E-03		

		0.1554E+01	0.5148E-03		
		0.1875E+01	0.3559E-03		
		0.3778E+01	0.1991E-04		
		0.5681E+01	0.3001E-06		
		0.7585E+01	0.3913E-06		
		0.7869E+01	0.3928E-06		
		0.8153E+01	0.3937E-06		
		0.8438E+01	0.3940E-06		
0.7500E+02	0.2182E+03	0.0000E+00	-0.5665E-03	0.1263E+03	0.0000E+00
		0.3048E+00	-0.4598E-03		
		0.6096E+00	-0.3654E-03		
		0.9144E+00	-0.2838E-03		
		0.1234E+01	-0.2118E-03		
		0.1554E+01	-0.1536E-03		
		0.1875E+01	-0.1080E-03		
		0.3778E+01	-0.6418E-05		
		0.5681E+01	-0.9894E-07		
		0.7585E+01	0.3086E-06		
		0.7869E+01	0.3097E-06		
		0.8153E+01	0.3105E-06		
		0.8438E+01	0.3107E-06		
0.7500E+02	0.2258E+03	0.0000E+00	-0.9148E-03	0.1263E+03	0.0000E+00
		0.3048E+00	-0.7250E-03		
		0.6096E+00	-0.5646E-03		
		0.9144E+00	-0.4309E-03		
		0.1234E+01	-0.3167E-03		
		0.1554E+01	-0.2267E-03		
		0.1875E+01	-0.1577E-03		
		0.3778E+01	-0.9028E-05		
		0.5681E+01	-0.1373E-06		
		0.7585E+01	0.2427E-06		
		0.7869E+01	0.2437E-06		
		0.8153E+01	0.2442E-06		
		0.8438E+01	0.2444E-06		
0.7500E+02	0.2334E+03	0.0000E+00	0.5149E-03	0.1263E+03	0.0000E+00
		0.3048E+00	0.4122E-03		
		0.6096E+00	0.3237E-03		
		0.9144E+00	0.2489E-03		
		0.1234E+01	0.1842E-03		
		0.1554E+01	0.1326E-03		
		0.1875E+01	0.9270E-04		
		0.3778E+01	0.5399E-05		
		0.5681E+01	0.8284E-07		
		0.7585E+01	0.1905E-06		
		0.7869E+01	0.1912E-06		
		0.8153E+01	0.1917E-06		
		0.8438E+01	0.1918E-06		
TIME	LATERAL DISTANCE	DEPTH	CONCENTRATION	TOTAL MASS INTO SOIL	TOTAL MASS INTO BASE
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0.8000E+02	0.2030E+03	0.0000E+00	0.1067E-01	0.1304E+03	0.0000E+00
		0.3048E+00	0.9629E-02		
		0.6096E+00	0.8362E-02		
		0.9144E+00	0.7006E-02		
		0.1234E+01	0.5606E-02		
		0.1554E+01	0.4322E-02		

		0.1875E+01	0.3212E-02		
		0.3778E+01	0.2530E-03		
		0.5681E+01	0.5244E-05		
		0.7585E+01	0.1166E-05		
		0.7869E+01	0.1170E-05		
		0.8153E+01	0.1172E-05		
		0.8438E+01	0.1173E-05		
0.8000E+02	0.2106E+03	0.0000E+00	0.2169E-02	0.1304E+03	0.0000E+00
		0.3048E+00	0.1708E-02		
		0.6096E+00	0.1324E-02		
		0.9144E+00	0.1009E-02		
		0.1234E+01	0.7428E-03		
		0.1554E+01	0.5340E-03		
		0.1875E+01	0.3745E-03		
		0.3778E+01	0.2405E-04		
		0.5681E+01	0.4590E-06		
		0.7585E+01	0.9368E-06		
		0.7869E+01	0.9401E-06		
		0.8153E+01	0.9421E-06		
		0.8438E+01	0.9427E-06		
0.8000E+02	0.2182E+03	0.0000E+00	-0.5665E-03	0.1304E+03	0.0000E+00
		0.3048E+00	-0.4619E-03		
		0.6096E+00	-0.3694E-03		
		0.9144E+00	-0.2892E-03		
		0.1234E+01	-0.2181E-03		
		0.1554E+01	-0.1602E-03		
		0.1875E+01	-0.1144E-03		
		0.3778E+01	-0.7845E-05		
		0.5681E+01	-0.1529E-06		
		0.7585E+01	0.7508E-06		
		0.7869E+01	0.7535E-06		
		0.8153E+01	0.7551E-06		
		0.8438E+01	0.7557E-06		
0.8000E+02	0.2258E+03	0.0000E+00	-0.9148E-03	0.1304E+03	0.0000E+00
		0.3048E+00	-0.7278E-03		
		0.6096E+00	-0.5699E-03		
		0.9144E+00	-0.4382E-03		
		0.1234E+01	-0.3253E-03		
		0.1554E+01	-0.2356E-03		
		0.1875E+01	-0.1663E-03		
		0.3778E+01	-0.1096E-04		
		0.5681E+01	-0.2107E-06		
		0.7585E+01	0.6005E-06		
		0.7869E+01	0.6027E-06		
		0.8153E+01	0.6040E-06		
		0.8438E+01	0.6044E-06		
0.8000E+02	0.2334E+03	0.0000E+00	0.5149E-03	0.1304E+03	0.0000E+00
		0.3048E+00	0.4139E-03		
		0.6096E+00	0.3270E-03		
		0.9144E+00	0.2534E-03		
		0.1234E+01	0.1894E-03		
		0.1554E+01	0.1381E-03		
		0.1875E+01	0.9795E-04		
		0.3778E+01	0.6576E-05		
		0.5681E+01	0.1281E-06		
		0.7585E+01	0.4792E-06		
		0.7869E+01	0.4809E-06		

TIME	LATERAL DISTANCE	DEPTH	CONCENTRATION	TOTAL MASS INTO SOIL	TOTAL MASS INTO BASE
		0.8153E+01	0.4820E-06		
		0.8438E+01	0.4823E-06		
0.8500E+02	0.2030E+03	0.0000E+00	0.1067E-01	0.1344E+03	0.0000E+00
		0.3048E+00	0.9699E-02		
		0.6096E+00	0.8494E-02		
		0.9144E+00	0.7187E-02		
		0.1234E+01	0.5820E-02		
		0.1554E+01	0.4549E-02		
		0.1875E+01	0.3434E-02		
		0.3778E+01	0.3098E-03		
		0.5681E+01	0.7957E-05		
		0.7585E+01	0.2490E-05		
		0.7869E+01	0.2498E-05		
		0.8153E+01	0.2502E-05		
		0.8438E+01	0.2504E-05		
0.8500E+02	0.2106E+03	0.0000E+00	0.2169E-02	0.1344E+03	0.0000E+00
		0.3048E+00	0.1713E-02		
		0.6096E+00	0.1334E-02		
		0.9144E+00	0.1023E-02		
		0.1234E+01	0.7591E-03		
		0.1554E+01	0.5513E-03		
		0.1875E+01	0.3914E-03		
		0.3778E+01	0.2838E-04		
		0.5681E+01	0.6675E-06		
		0.7585E+01	0.2028E-05		
		0.7869E+01	0.2035E-05		
		0.8153E+01	0.2039E-05		
		0.8438E+01	0.2040E-05		
0.8500E+02	0.2182E+03	0.0000E+00	-0.5665E-03	0.1344E+03	0.0000E+00
		0.3048E+00	-0.4638E-03		
		0.6096E+00	-0.3729E-03		
		0.9144E+00	-0.2940E-03		
		0.1234E+01	-0.2239E-03		
		0.1554E+01	-0.1663E-03		
		0.1875E+01	-0.1203E-03		
		0.3778E+01	-0.9363E-05		
		0.5681E+01	-0.2238E-06		
		0.7585E+01	0.1649E-05		
		0.7869E+01	0.1655E-05		
		0.8153E+01	0.1658E-05		
		0.8438E+01	0.1659E-05		
0.8500E+02	0.2258E+03	0.0000E+00	-0.9148E-03	0.1344E+03	0.0000E+00
		0.3048E+00	-0.7303E-03		
		0.6096E+00	-0.5746E-03		
		0.9144E+00	-0.4446E-03		
		0.1234E+01	-0.3329E-03		
		0.1554E+01	-0.2438E-03		
		0.1875E+01	-0.1743E-03		
		0.3778E+01	-0.1300E-04		
		0.5681E+01	-0.3066E-06		
		0.7585E+01	0.1338E-05		
		0.7869E+01	0.1343E-05		
		0.8153E+01	0.1345E-05		

TIME	LATERAL DISTANCE	DEPTH	CONCENTRATION	TOTAL MASS INTO SOIL	TOTAL MASS INTO BASE
		0.8438E+01	0.1346E-05		
0.8500E+02	0.2334E+03	0.0000E+00	0.5149E-03	0.1344E+03	0.0000E+00
		0.3048E+00	0.4154E-03		
		0.6096E+00	0.3299E-03		
		0.9144E+00	0.2573E-03		
		0.1234E+01	0.1941E-03		
		0.1554E+01	0.1430E-03		
		0.1875E+01	0.1028E-03		
		0.3778E+01	0.7823E-05		
		0.5681E+01	0.1885E-06		
		0.7585E+01	0.1083E-05		
		0.7869E+01	0.1087E-05		
		0.8153E+01	0.1089E-05		
		0.8438E+01	0.1090E-05		

TIME	LATERAL DISTANCE	DEPTH	CONCENTRATION	TOTAL MASS INTO SOIL	TOTAL MASS INTO BASE
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0.9000E+02	0.2030E+03	0.0000E+00	0.1067E-01	0.1383E+03	0.0000E+00
		0.3048E+00	0.9763E-02		
		0.6096E+00	0.8617E-02		
		0.9144E+00	0.7357E-02		
		0.1234E+01	0.6022E-02		
		0.1554E+01	0.4766E-02		
		0.1875E+01	0.3649E-02		
		0.3778E+01	0.3716E-03		
		0.5681E+01	0.1156E-04		
		0.7585E+01	0.4896E-05		
		0.7869E+01	0.4910E-05		
		0.8153E+01	0.4919E-05		
		0.8438E+01	0.4922E-05		
0.9000E+02	0.2106E+03	0.0000E+00	0.2169E-02	0.1383E+03	0.0000E+00
		0.3048E+00	0.1718E-02		
		0.6096E+00	0.1343E-02		
		0.9144E+00	0.1035E-02		
		0.1234E+01	0.7737E-03		
		0.1554E+01	0.5670E-03		
		0.1875E+01	0.4069E-03		
		0.3778E+01	0.3284E-04		
		0.5681E+01	0.9317E-06		
		0.7585E+01	0.4038E-05		
		0.7869E+01	0.4051E-05		
		0.8153E+01	0.4059E-05		
		0.8438E+01	0.4061E-05		
0.9000E+02	0.2182E+03	0.0000E+00	-0.5665E-03	0.1383E+03	0.0000E+00
		0.3048E+00	-0.4654E-03		
		0.6096E+00	-0.3761E-03		
		0.9144E+00	-0.2984E-03		
		0.1234E+01	-0.2291E-03		
		0.1554E+01	-0.1719E-03		
		0.1875E+01	-0.1258E-03		
		0.3778E+01	-0.1096E-04		
		0.5681E+01	-0.3121E-06		
		0.7585E+01	0.3325E-05		
		0.7869E+01	0.3335E-05		
		0.8153E+01	0.3342E-05		
		0.8438E+01	0.3344E-05		

0.9000E+02	0.2258E+03	0.0000E+00	-0.9148E-03	0.1383E+03	0.0000E+00
		0.3048E+00	-0.7325E-03		
		0.6096E+00	-0.5788E-03		
		0.9144E+00	-0.4504E-03		
		0.1234E+01	-0.3399E-03		
		0.1554E+01	-0.2512E-03		
		0.1875E+01	-0.1816E-03		
		0.3778E+01	-0.1511E-04		
		0.5681E+01	-0.4260E-06		
		0.7585E+01	0.2732E-05		
		0.7869E+01	0.2741E-05		
		0.8153E+01	0.2746E-05		
		0.8438E+01	0.2748E-05		
0.9000E+02	0.2334E+03	0.0000E+00	0.5149E-03	0.1383E+03	0.0000E+00
		0.3048E+00	0.4168E-03		
		0.6096E+00	0.3325E-03		
		0.9144E+00	0.2609E-03		
		0.1234E+01	0.1984E-03		
		0.1554E+01	0.1476E-03		
		0.1875E+01	0.1073E-03		
		0.3778E+01	0.9124E-05		
		0.5681E+01	0.2667E-06		
		0.7585E+01	0.2241E-05		
		0.7869E+01	0.2248E-05		
		0.8153E+01	0.2253E-05		
		0.8438E+01	0.2254E-05		

TIME	LATERAL DISTANCE	DEPTH	CONCENTRATION	TOTAL MASS INTO SOIL	TOTAL MASS INTO BASE
0.9500E+02	0.2030E+03	0.0000E+00	0.1067E-01	0.1421E+03	0.0000E+00
		0.3048E+00	0.9824E-02		
		0.6096E+00	0.8733E-02		
		0.9144E+00	0.7517E-02		
		0.1234E+01	0.6215E-02		
		0.1554E+01	0.4974E-02		
		0.1875E+01	0.3857E-02		
		0.3778E+01	0.4381E-03		
		0.5681E+01	0.1618E-04		
		0.7585E+01	0.8981E-05		
		0.7869E+01	0.9006E-05		
		0.8153E+01	0.9022E-05		
		0.8438E+01	0.9027E-05		
0.9500E+02	0.2106E+03	0.0000E+00	0.2169E-02	0.1421E+03	0.0000E+00
		0.3048E+00	0.1722E-02		
		0.6096E+00	0.1351E-02		
		0.9144E+00	0.1046E-02		
		0.1234E+01	0.7868E-03		
		0.1554E+01	0.5812E-03		
		0.1875E+01	0.4210E-03		
		0.3778E+01	0.3738E-04		
		0.5681E+01	0.1258E-05		
		0.7585E+01	0.7490E-05		
		0.7869E+01	0.7512E-05		
		0.8153E+01	0.7526E-05		
		0.8438E+01	0.7530E-05		

0.9500E+02	0.2182E+03	0.0000E+00	-0.5665E-03	0.1421E+03	0.0000E+00
		0.3048E+00	-0.4669E-03		
		0.6096E+00	-0.3789E-03		
		0.9144E+00	-0.3023E-03		
		0.1234E+01	-0.2339E-03		
		0.1554E+01	-0.1770E-03		
		0.1875E+01	-0.1310E-03		
		0.3778E+01	-0.1261E-04		
		0.5681E+01	-0.4161E-06		
		0.7585E+01	0.6236E-05		
		0.7869E+01	0.6255E-05		
		0.8153E+01	0.6266E-05		
		0.8438E+01	0.6270E-05		
0.9500E+02	0.2258E+03	0.0000E+00	-0.9148E-03	0.1421E+03	0.0000E+00
		0.3048E+00	-0.7345E-03		
		0.6096E+00	-0.5826E-03		
		0.9144E+00	-0.4557E-03		
		0.1234E+01	-0.3461E-03		
		0.1554E+01	-0.2580E-03		
		0.1875E+01	-0.1884E-03		
		0.3778E+01	-0.1728E-04		
		0.5681E+01	-0.5679E-06		
		0.7585E+01	0.5183E-05		
		0.7869E+01	0.5198E-05		
		0.8153E+01	0.5208E-05		
		0.8438E+01	0.5211E-05		
0.9500E+02	0.2334E+03	0.0000E+00	0.5149E-03	0.1421E+03	0.0000E+00
		0.3048E+00	0.4180E-03		
		0.6096E+00	0.3348E-03		
		0.9144E+00	0.2641E-03		
		0.1234E+01	0.2023E-03		
		0.1554E+01	0.1518E-03		
		0.1875E+01	0.1115E-03		
		0.3778E+01	0.1047E-04		
		0.5681E+01	0.3661E-06		
		0.7585E+01	0.4300E-05		
		0.7869E+01	0.4313E-05		
		0.8153E+01	0.4321E-05		
		0.8438E+01	0.4323E-05		

TIME	LATERAL DISTANCE	DEPTH	CONCENTRATION	TOTAL MASS INTO SOIL	TOTAL MASS INTO BASE
0.1000E+03	0.2030E+03	0.0000E+00	0.1067E-01	0.1458E+03	0.0000E+00
		0.3048E+00	0.9881E-02		
		0.6096E+00	0.8842E-02		
		0.9144E+00	0.7669E-02		
		0.1234E+01	0.6398E-02		
		0.1554E+01	0.5173E-02		
		0.1875E+01	0.4058E-02		
		0.3778E+01	0.5090E-03		
		0.5681E+01	0.2195E-04		
		0.7585E+01	0.1553E-04		
		0.7869E+01	0.1557E-04		
		0.8153E+01	0.1560E-04		
		0.8438E+01	0.1560E-04		
0.1000E+03	0.2106E+03	0.0000E+00	0.2169E-02	0.1458E+03	0.0000E+00

		0.3048E+00	0.1726E-02		
		0.6096E+00	0.1358E-02		
		0.9144E+00	0.1056E-02		
		0.1234E+01	0.7986E-03		
		0.1554E+01	0.5941E-03		
		0.1875E+01	0.4340E-03		
		0.3778E+01	0.4194E-04		
		0.5681E+01	0.1656E-05		
		0.7585E+01	0.1308E-04		
		0.7869E+01	0.1312E-04		
		0.8153E+01	0.1314E-04		
		0.8438E+01	0.1315E-04		
0.1000E+03	0.2182E+03	0.0000E+00	-0.5665E-03	0.1458E+03	0.0000E+00
		0.3048E+00	-0.4683E-03		
		0.6096E+00	-0.3815E-03		
		0.9144E+00	-0.3060E-03		
		0.1234E+01	-0.2382E-03		
		0.1554E+01	-0.1818E-03		
		0.1875E+01	-0.1358E-03		
		0.3778E+01	-0.1430E-04		
		0.5681E+01	-0.5307E-06		
		0.7585E+01	0.1100E-04		
		0.7869E+01	0.1103E-04		
		0.8153E+01	0.1105E-04		
		0.8438E+01	0.1105E-04		
0.1000E+03	0.2258E+03	0.0000E+00	-0.9148E-03	0.1458E+03	0.0000E+00
		0.3048E+00	-0.7363E-03		
		0.6096E+00	-0.5860E-03		
		0.9144E+00	-0.4604E-03		
		0.1234E+01	-0.3518E-03		
		0.1554E+01	-0.2642E-03		
		0.1875E+01	-0.1947E-03		
		0.3778E+01	-0.1948E-04		
		0.5681E+01	-0.7281E-06		
		0.7585E+01	0.9233E-05		
		0.7869E+01	0.9260E-05		
		0.8153E+01	0.9276E-05		
		0.8438E+01	0.9281E-05		
0.1000E+03	0.2334E+03	0.0000E+00	0.5149E-03	0.1458E+03	0.0000E+00
		0.3048E+00	0.4191E-03		
		0.6096E+00	0.3369E-03		
		0.9144E+00	0.2671E-03		
		0.1234E+01	0.2058E-03		
		0.1554E+01	0.1557E-03		
		0.1875E+01	0.1154E-03		
		0.3778E+01	0.1184E-04		
		0.5681E+01	0.4918E-06		
		0.7585E+01	0.7738E-05		
		0.7869E+01	0.7761E-05		
		0.8153E+01	0.7774E-05		
		0.8438E+01	0.7779E-05		

TIME	LATERAL DISTANCE	DEPTH	CONCENTRATION	TOTAL MASS INTO SOIL	TOTAL MASS INTO BASE
0.1050E+03	0.2030E+03	0.0000E+00	0.1067E-01	0.1494E+03	0.0000E+00
		0.3048E+00	0.9935E-02		

		0.6096E+00	0.8945E-02		
		0.9144E+00	0.7812E-02		
		0.1234E+01	0.6572E-02		
		0.1554E+01	0.5365E-02		
		0.1875E+01	0.4253E-02		
		0.3778E+01	0.5837E-03		
		0.5681E+01	0.2900E-04		
		0.7585E+01	0.2552E-04		
		0.7869E+01	0.2558E-04		
		0.8153E+01	0.2562E-04		
		0.8438E+01	0.2564E-04		
0.1050E+03	0.2106E+03	0.0000E+00	0.2169E-02	0.1494E+03	0.0000E+00
		0.3048E+00	0.1729E-02		
		0.6096E+00	0.1364E-02		
		0.9144E+00	0.1065E-02		
		0.1234E+01	0.8093E-03		
		0.1554E+01	0.6057E-03		
		0.1875E+01	0.4459E-03		
		0.3778E+01	0.4650E-04		
		0.5681E+01	0.2137E-05		
		0.7585E+01	0.2168E-04		
		0.7869E+01	0.2174E-04		
		0.8153E+01	0.2178E-04		
		0.8438E+01	0.2179E-04		
0.1050E+03	0.2182E+03	0.0000E+00	-0.5665E-03	0.1494E+03	0.0000E+00
		0.3048E+00	-0.4695E-03		
		0.6096E+00	-0.3839E-03		
		0.9144E+00	-0.3093E-03		
		0.1234E+01	-0.2423E-03		
		0.1554E+01	-0.1862E-03		
		0.1875E+01	-0.1403E-03		
		0.3778E+01	-0.1602E-04		
		0.5681E+01	-0.6457E-06		
		0.7585E+01	0.1840E-04		
		0.7869E+01	0.1845E-04		
		0.8153E+01	0.1848E-04		
		0.8438E+01	0.1849E-04		
0.1050E+03	0.2258E+03	0.0000E+00	-0.9148E-03	0.1494E+03	0.0000E+00
		0.3048E+00	-0.7379E-03		
		0.6096E+00	-0.5891E-03		
		0.9144E+00	-0.4647E-03		
		0.1234E+01	-0.3570E-03		
		0.1554E+01	-0.2699E-03		
		0.1875E+01	-0.2005E-03		
		0.3778E+01	-0.2170E-04		
		0.5681E+01	-0.8978E-06		
		0.7585E+01	0.1558E-04		
		0.7869E+01	0.1563E-04		
		0.8153E+01	0.1565E-04		
		0.8438E+01	0.1566E-04		
0.1050E+03	0.2334E+03	0.0000E+00	0.5149E-03	0.1494E+03	0.0000E+00
		0.3048E+00	0.4201E-03		
		0.6096E+00	0.3388E-03		
		0.9144E+00	0.2697E-03		
		0.1234E+01	0.2090E-03		
		0.1554E+01	0.1592E-03		
		0.1875E+01	0.1191E-03		

TIME	LATERAL DISTANCE	DEPTH	CONCENTRATION	TOTAL MASS INTO SOIL	TOTAL MASS INTO BASE
		0.3778E+01	0.1322E-04		
		0.5681E+01	0.6522E-06		
		0.7585E+01	0.1318E-04		
		0.7869E+01	0.1322E-04		
		0.8153E+01	0.1324E-04		
		0.8438E+01	0.1325E-04		
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0.1100E+03	0.2030E+03	0.0000E+00	0.1067E-01	0.1529E+03	0.0000E+00
		0.3048E+00	0.9986E-02		
		0.6096E+00	0.9042E-02		
		0.9144E+00	0.7949E-02		
		0.1234E+01	0.6739E-02		
		0.1554E+01	0.5549E-02		
		0.1875E+01	0.4442E-02		
		0.3778E+01	0.6620E-03		
		0.5681E+01	0.3745E-04		
		0.7585E+01	0.4013E-04		
		0.7869E+01	0.4023E-04		
		0.8153E+01	0.4029E-04		
		0.8438E+01	0.4031E-04		
0.1100E+03	0.2106E+03	0.0000E+00	0.2169E-02	0.1529E+03	0.0000E+00
		0.3048E+00	0.1732E-02		
		0.6096E+00	0.1370E-02		
		0.9144E+00	0.1072E-02		
		0.1234E+01	0.8189E-03		
		0.1554E+01	0.6164E-03		
		0.1875E+01	0.4569E-03		
		0.3778E+01	0.5102E-04		
		0.5681E+01	0.2722E-05		
		0.7585E+01	0.3437E-04		
		0.7869E+01	0.3446E-04		
		0.8153E+01	0.3451E-04		
		0.8438E+01	0.3453E-04		
0.1100E+03	0.2182E+03	0.0000E+00	-0.5665E-03	0.1529E+03	0.0000E+00
		0.3048E+00	-0.4707E-03		
		0.6096E+00	-0.3861E-03		
		0.9144E+00	-0.3123E-03		
		0.1234E+01	-0.2460E-03		
		0.1554E+01	-0.1903E-03		
		0.1875E+01	-0.1445E-03		
		0.3778E+01	-0.1776E-04		
		0.5681E+01	-0.7436E-06		
		0.7585E+01	0.2940E-04		
		0.7869E+01	0.2947E-04		
		0.8153E+01	0.2952E-04		
		0.8438E+01	0.2954E-04		
0.1100E+03	0.2258E+03	0.0000E+00	-0.9148E-03	0.1529E+03	0.0000E+00
		0.3048E+00	-0.7393E-03		
		0.6096E+00	-0.5918E-03		
		0.9144E+00	-0.4685E-03		
		0.1234E+01	-0.3618E-03		
		0.1554E+01	-0.2751E-03		
		0.1875E+01	-0.2058E-03		
		0.3778E+01	-0.2392E-04		

TIME	LATERAL DISTANCE	DEPTH	CONCENTRATION	TOTAL MASS INTO SOIL	TOTAL MASS INTO BASE
		0.5681E+01	-0.1062E-05		
		0.7585E+01	0.2511E-04		
		0.7869E+01	0.2517E-04		
		0.8153E+01	0.2521E-04		
		0.8438E+01	0.2523E-04		
0.1100E+03	0.2334E+03	0.0000E+00	0.5149E-03	0.1529E+03	0.0000E+00
		0.3048E+00	0.4210E-03		
		0.6096E+00	0.3406E-03		
		0.9144E+00	0.2722E-03		
		0.1234E+01	0.2120E-03		
		0.1554E+01	0.1625E-03		
		0.1875E+01	0.1224E-03		
		0.3778E+01	0.1462E-04		
		0.5681E+01	0.8600E-06		
		0.7585E+01	0.2141E-04		
		0.7869E+01	0.2147E-04		
		0.8153E+01	0.2150E-04		
		0.8438E+01	0.2152E-04		

TIME	LATERAL DISTANCE	DEPTH	CONCENTRATION	TOTAL MASS INTO SOIL	TOTAL MASS INTO BASE
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0.1150E+03	0.2030E+03	0.0000E+00	0.1067E-01	0.1563E+03	0.0000E+00
		0.3048E+00	0.1003E-01		
		0.6096E+00	0.9135E-02		
		0.9144E+00	0.8080E-02		
		0.1234E+01	0.6899E-02		
		0.1554E+01	0.5727E-02		
		0.1875E+01	0.4626E-02		
		0.3778E+01	0.7435E-03		
		0.5681E+01	0.4742E-04		
		0.7585E+01	0.6072E-04		
		0.7869E+01	0.6087E-04		
		0.8153E+01	0.6096E-04		
		0.8438E+01	0.6098E-04		
0.1150E+03	0.2106E+03	0.0000E+00	0.2169E-02	0.1563E+03	0.0000E+00
		0.3048E+00	0.1734E-02		
		0.6096E+00	0.1375E-02		
		0.9144E+00	0.1080E-02		
		0.1234E+01	0.8276E-03		
		0.1554E+01	0.6261E-03		
		0.1875E+01	0.4669E-03		
		0.3778E+01	0.5547E-04		
		0.5681E+01	0.3439E-05		
		0.7585E+01	0.5239E-04		
		0.7869E+01	0.5252E-04		
		0.8153E+01	0.5260E-04		
		0.8438E+01	0.5263E-04		
0.1150E+03	0.2182E+03	0.0000E+00	-0.5665E-03	0.1563E+03	0.0000E+00
		0.3048E+00	-0.4717E-03		
		0.6096E+00	-0.3881E-03		
		0.9144E+00	-0.3151E-03		
		0.1234E+01	-0.2494E-03		
		0.1554E+01	-0.1941E-03		
		0.1875E+01	-0.1484E-03		
		0.3778E+01	-0.1950E-04		
		0.5681E+01	-0.7968E-06		

		0.7585E+01	0.4514E-04		
		0.7869E+01	0.4525E-04		
		0.8153E+01	0.4532E-04		
		0.8438E+01	0.4535E-04		
0.1150E+03	0.2258E+03	0.0000E+00	-0.9148E-03	0.1563E+03	0.0000E+00
		0.3048E+00	-0.7406E-03		
		0.6096E+00	-0.5943E-03		
		0.9144E+00	-0.4721E-03		
		0.1234E+01	-0.3661E-03		
		0.1554E+01	-0.2799E-03		
		0.1875E+01	-0.2108E-03		
		0.3778E+01	-0.2613E-04		
		0.5681E+01	-0.1195E-05		
		0.7585E+01	0.3884E-04		
		0.7869E+01	0.3894E-04		
		0.8153E+01	0.3900E-04		
		0.8438E+01	0.3902E-04		
0.1150E+03	0.2334E+03	0.0000E+00	0.5149E-03	0.1563E+03	0.0000E+00
		0.3048E+00	0.4218E-03		
		0.6096E+00	0.3421E-03		
		0.9144E+00	0.2744E-03		
		0.1234E+01	0.2148E-03		
		0.1554E+01	0.1655E-03		
		0.1875E+01	0.1256E-03		
		0.3778E+01	0.1601E-04		
		0.5681E+01	0.1135E-05		
		0.7585E+01	0.3337E-04		
		0.7869E+01	0.3346E-04		
		0.8153E+01	0.3351E-04		
		0.8438E+01	0.3353E-04		

TIME	LATERAL DISTANCE	DEPTH	CONCENTRATION	TOTAL MASS INTO SOIL	TOTAL MASS INTO BASE
0.1200E+03	0.2030E+03	0.0000E+00	0.1067E-01	0.1597E+03	0.0000E+00
		0.3048E+00	0.1008E-01		
		0.6096E+00	0.9224E-02		
		0.9144E+00	0.8204E-02		
		0.1234E+01	0.7053E-02		
		0.1554E+01	0.5898E-02		
		0.1875E+01	0.4804E-02		
		0.3778E+01	0.8279E-03		
		0.5681E+01	0.5902E-04		
		0.7585E+01	0.8886E-04		
		0.7869E+01	0.8906E-04		
		0.8153E+01	0.8918E-04		
		0.8438E+01	0.8922E-04		
0.1200E+03	0.2106E+03	0.0000E+00	0.2169E-02	0.1597E+03	0.0000E+00
		0.3048E+00	0.1737E-02		
		0.6096E+00	0.1380E-02		
		0.9144E+00	0.1086E-02		
		0.1234E+01	0.8356E-03		
		0.1554E+01	0.6350E-03		
		0.1875E+01	0.4761E-03		
		0.3778E+01	0.5984E-04		
		0.5681E+01	0.4332E-05		
		0.7585E+01	0.7717E-04		

		0.7869E+01	0.7735E-04		
		0.8153E+01	0.7747E-04		
		0.8438E+01	0.7750E-04		
0.1200E+03	0.2182E+03	0.0000E+00	-0.5665E-03	0.1597E+03	0.0000E+00
		0.3048E+00	-0.4727E-03		
		0.6096E+00	-0.3899E-03		
		0.9144E+00	-0.3177E-03		
		0.1234E+01	-0.2526E-03		
		0.1554E+01	-0.1976E-03		
		0.1875E+01	-0.1521E-03		
		0.3778E+01	-0.2125E-04		
		0.5681E+01	-0.7648E-06		
		0.7585E+01	0.6693E-04		
		0.7869E+01	0.6710E-04		
		0.8153E+01	0.6719E-04		
		0.8438E+01	0.6723E-04		
0.1200E+03	0.2258E+03	0.0000E+00	-0.9148E-03	0.1597E+03	0.0000E+00
		0.3048E+00	-0.7418E-03		
		0.6096E+00	-0.5966E-03		
		0.9144E+00	-0.4753E-03		
		0.1234E+01	-0.3701E-03		
		0.1554E+01	-0.2844E-03		
		0.1875E+01	-0.2154E-03		
		0.3778E+01	-0.2831E-04		
		0.5681E+01	-0.1263E-05		
		0.7585E+01	0.5798E-04		
		0.7869E+01	0.5812E-04		
		0.8153E+01	0.5821E-04		
		0.8438E+01	0.5824E-04		
0.1200E+03	0.2334E+03	0.0000E+00	0.5149E-03	0.1597E+03	0.0000E+00
		0.3048E+00	0.4226E-03		
		0.6096E+00	0.3436E-03		
		0.9144E+00	0.2765E-03		
		0.1234E+01	0.2173E-03		
		0.1554E+01	0.1684E-03		
		0.1875E+01	0.1285E-03		
		0.3778E+01	0.1740E-04		
		0.5681E+01	0.1508E-05		
		0.7585E+01	0.5016E-04		
		0.7869E+01	0.5028E-04		
		0.8153E+01	0.5036E-04		
		0.8438E+01	0.5038E-04		

TIME	LATERAL DISTANCE	DEPTH	CONCENTRATION	TOTAL MASS INTO SOIL	TOTAL MASS INTO BASE
0.1250E+03	0.2030E+03	0.0000E+00	0.1067E-01	0.1630E+03	0.0000E+00
		0.3048E+00	0.1012E-01		
		0.6096E+00	0.9308E-02		
		0.9144E+00	0.8324E-02		
		0.1234E+01	0.7200E-02		
		0.1554E+01	0.6064E-02		
		0.1875E+01	0.4977E-02		
		0.3778E+01	0.9149E-03		
		0.5681E+01	0.7240E-04		
		0.7585E+01	0.1262E-03		
		0.7869E+01	0.1265E-03		

		0.8153E+01	0.1267E-03		
		0.8438E+01	0.1267E-03		
0.1250E+03	0.2106E+03	0.0000E+00	0.2169E-02	0.1630E+03	0.0000E+00
		0.3048E+00	0.1739E-02		
		0.6096E+00	0.1384E-02		
		0.9144E+00	0.1092E-02		
		0.1234E+01	0.8428E-03		
		0.1554E+01	0.6431E-03		
		0.1875E+01	0.4846E-03		
		0.3778E+01	0.6411E-04		
		0.5681E+01	0.5460E-05		
		0.7585E+01	0.1103E-03		
		0.7869E+01	0.1105E-03		
		0.8153E+01	0.1107E-03		
		0.8438E+01	0.1107E-03		
0.1250E+03	0.2182E+03	0.0000E+00	-0.5665E-03	0.1630E+03	0.0000E+00
		0.3048E+00	-0.4735E-03		
		0.6096E+00	-0.3916E-03		
		0.9144E+00	-0.3201E-03		
		0.1234E+01	-0.2555E-03		
		0.1554E+01	-0.2009E-03		
		0.1875E+01	-0.1556E-03		
		0.3778E+01	-0.2298E-04		
		0.5681E+01	-0.5912E-06		
		0.7585E+01	0.9624E-04		
		0.7869E+01	0.9646E-04		
		0.8153E+01	0.9660E-04		
		0.8438E+01	0.9664E-04		
0.1250E+03	0.2258E+03	0.0000E+00	-0.9148E-03	0.1630E+03	0.0000E+00
		0.3048E+00	-0.7429E-03		
		0.6096E+00	-0.5987E-03		
		0.9144E+00	-0.4783E-03		
		0.1234E+01	-0.3737E-03		
		0.1554E+01	-0.2885E-03		
		0.1875E+01	-0.2197E-03		
		0.3778E+01	-0.3046E-04		
		0.5681E+01	-0.1215E-05		
		0.7585E+01	0.8388E-04		
		0.7869E+01	0.8408E-04		
		0.8153E+01	0.8420E-04		
		0.8438E+01	0.8424E-04		
0.1250E+03	0.2334E+03	0.0000E+00	0.5149E-03	0.1630E+03	0.0000E+00
		0.3048E+00	0.4233E-03		
		0.6096E+00	0.3449E-03		
		0.9144E+00	0.2783E-03		
		0.1234E+01	0.2196E-03		
		0.1554E+01	0.1710E-03		
		0.1875E+01	0.1312E-03		
		0.3778E+01	0.1877E-04		
		0.5681E+01	0.2020E-05		
		0.7585E+01	0.7302E-04		
		0.7869E+01	0.7319E-04		
		0.8153E+01	0.7330E-04		
		0.8438E+01	0.7333E-04		
TIME	LATERAL DISTANCE	DEPTH	CONCENTRATION	TOTAL MASS INTO SOIL	TOTAL MASS INTO BASE

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0.1300E+03	0.2030E+03	0.0000E+00	0.1067E-01	0.1662E+03	0.0000E+00
		0.3048E+00	0.1017E-01		
		0.6096E+00	0.9389E-02		
		0.9144E+00	0.8438E-02		
		0.1234E+01	0.7342E-02		
		0.1554E+01	0.6224E-02		
		0.1875E+01	0.5146E-02		
		0.3778E+01	0.1004E-02		
		0.5681E+01	0.8768E-04		
		0.7585E+01	0.1746E-03		
		0.7869E+01	0.1750E-03		
		0.8153E+01	0.1752E-03		
		0.8438E+01	0.1753E-03		
0.1300E+03	0.2106E+03	0.0000E+00	0.2169E-02	0.1662E+03	0.0000E+00
		0.3048E+00	0.1741E-02		
		0.6096E+00	0.1388E-02		
		0.9144E+00	0.1097E-02		
		0.1234E+01	0.8494E-03		
		0.1554E+01	0.6505E-03		
		0.1875E+01	0.4924E-03		
		0.3778E+01	0.6826E-04		
		0.5681E+01	0.6903E-05		
		0.7585E+01	0.1534E-03		
		0.7869E+01	0.1538E-03		
		0.8153E+01	0.1540E-03		
		0.8438E+01	0.1540E-03		
0.1300E+03	0.2182E+03	0.0000E+00	-0.5665E-03	0.1662E+03	0.0000E+00
		0.3048E+00	-0.4743E-03		
		0.6096E+00	-0.3931E-03		
		0.9144E+00	-0.3223E-03		
		0.1234E+01	-0.2582E-03		
		0.1554E+01	-0.2040E-03		
		0.1875E+01	-0.1588E-03		
		0.3778E+01	-0.2469E-04		
		0.5681E+01	-0.1999E-06		
		0.7585E+01	0.1346E-03		
		0.7869E+01	0.1349E-03		
		0.8153E+01	0.1351E-03		
		0.8438E+01	0.1352E-03		
0.1300E+03	0.2258E+03	0.0000E+00	-0.9148E-03	0.1662E+03	0.0000E+00
		0.3048E+00	-0.7439E-03		
		0.6096E+00	-0.6006E-03		
		0.9144E+00	-0.4810E-03		
		0.1234E+01	-0.3771E-03		
		0.1554E+01	-0.2922E-03		
		0.1875E+01	-0.2237E-03		
		0.3778E+01	-0.3257E-04		
		0.5681E+01	-0.9818E-06		
		0.7585E+01	0.1180E-03		
		0.7869E+01	0.1183E-03		
		0.8153E+01	0.1185E-03		
		0.8438E+01	0.1185E-03		
0.1300E+03	0.2334E+03	0.0000E+00	0.5149E-03	0.1662E+03	0.0000E+00
		0.3048E+00	0.4239E-03		
		0.6096E+00	0.3462E-03		

TIME	LATERAL DISTANCE	DEPTH	CONCENTRATION	TOTAL MASS INTO SOIL	TOTAL MASS INTO BASE
		0.9144E+00	0.2801E-03		
		0.1234E+01	0.2218E-03		
		0.1554E+01	0.1734E-03		
		0.1875E+01	0.1338E-03		
		0.3778E+01	0.2013E-04		
		0.5681E+01	0.2729E-05		
		0.7585E+01	0.1033E-03		
		0.7869E+01	0.1036E-03		
		0.8153E+01	0.1037E-03		
		0.8438E+01	0.1038E-03		
~~	~~~~~~~~~	~~~~~~~~~	~~~~~~~~~~~~~	~~~~~~~~~~	~~~~~~~~~~~
0.1340E+03	0.2030E+03	0.0000E+00	0.1067E-01	0.1687E+03	0.0000E+00
		0.3048E+00	0.1020E-01		
		0.6096E+00	0.9451E-02		
		0.9144E+00	0.8527E-02		
		0.1234E+01	0.7452E-02		
		0.1554E+01	0.6348E-02		
		0.1875E+01	0.5277E-02		
		0.3778E+01	0.1077E-02		
		0.5681E+01	0.1014E-03		
		0.7585E+01	0.2226E-03		
		0.7869E+01	0.2231E-03		
		0.8153E+01	0.2234E-03		
		0.8438E+01	0.2234E-03		
0.1340E+03	0.2106E+03	0.0000E+00	0.2169E-02	0.1687E+03	0.0000E+00
		0.3048E+00	0.1742E-02		
		0.6096E+00	0.1390E-02		
		0.9144E+00	0.1101E-02		
		0.1234E+01	0.8542E-03		
		0.1554E+01	0.6560E-03		
		0.1875E+01	0.4982E-03		
		0.3778E+01	0.7149E-04		
		0.5681E+01	0.8355E-05		
		0.7585E+01	0.1964E-03		
		0.7869E+01	0.1968E-03		
		0.8153E+01	0.1971E-03		
		0.8438E+01	0.1972E-03		
0.1340E+03	0.2182E+03	0.0000E+00	-0.5665E-03	0.1687E+03	0.0000E+00
		0.3048E+00	-0.4749E-03		
		0.6096E+00	-0.3943E-03		
		0.9144E+00	-0.3239E-03		
		0.1234E+01	-0.2603E-03		
		0.1554E+01	-0.2063E-03		
		0.1875E+01	-0.1613E-03		
		0.3778E+01	-0.2604E-04		
		0.5681E+01	0.3353E-06		
		0.7585E+01	0.1731E-03		
		0.7869E+01	0.1734E-03		
		0.8153E+01	0.1737E-03		
		0.8438E+01	0.1737E-03		
0.1340E+03	0.2258E+03	0.0000E+00	-0.9148E-03	0.1687E+03	0.0000E+00
		0.3048E+00	-0.7446E-03		
		0.6096E+00	-0.6021E-03		
		0.9144E+00	-0.4830E-03		

		0.1234E+01	-0.3796E-03		
		0.1554E+01	-0.2951E-03		
		0.1875E+01	-0.2267E-03		
		0.3778E+01	-0.3423E-04		
		0.5681E+01	-0.6041E-06		
		0.7585E+01	0.1523E-03		
		0.7869E+01	0.1527E-03		
		0.8153E+01	0.1529E-03		
		0.8438E+01	0.1529E-03		
0.1340E+03	0.2334E+03	0.0000E+00	0.5149E-03	0.1687E+03	0.0000E+00
		0.3048E+00	0.4244E-03		
		0.6096E+00	0.3471E-03		
		0.9144E+00	0.2814E-03		
		0.1234E+01	0.2234E-03		
		0.1554E+01	0.1752E-03		
		0.1875E+01	0.1357E-03		
		0.3778E+01	0.2120E-04		
		0.5681E+01	0.3487E-05		
		0.7585E+01	0.1339E-03		
		0.7869E+01	0.1342E-03		
		0.8153E+01	0.1344E-03		
		0.8438E+01	0.1345E-03		

N O T I C E


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*************************************************
*                                               *
*                                               *
*                                               *
*     M I G R A T E   S I M U L A T I O N       *
*                                               *
*          ANALYSIS      COMPLETED              *
*                                               *
*        TIME     -        19: 0:48             *
*        EXECUTION TIME     0: 0:10             *
*                                               *
*                                               *
```

```
 Clinton Landfill CWU   Organic Soil Baseline Model   File Name COSB.IN
MIGRATE VERSION 9:  Output Units = SI
          4                  Number of Layers
          1                                         Number of Landfills
          1                                         Top Boundary Condition
          0        m               0          m  Offset - Landfill 1
 291.440002        m      291.440002          m  Surface Width
 227.253006        m      227.253006          m  Base Width
          1     mg/L               1       mg/L  Concentration
          0      yrs               0        yrs  Half-Life
          1                                      Bottom Boundary Condition
          3                                #Sublayers - Layer 1
     0.9144        m          0.9144          m  Thickness
      0.288                                      Porosity
       1900    kg/m3             1.9      g/cm3  Density
     0.0158     m2/a          0.0158       m2/a  Vertical Diffusion Coef.
     0.0158     m2/a          0.0158       m2/a  Horz. Diffusion Coef.
   1.42e-06      m/a        1.42e-06        m/a  Vertical Velocity
          0      m/a               0        m/a  Horz. Velocity
          0    m3/kg               0       mL/g  Distribution Coef.
          0      yrs               0        yrs  Half-Life
          0      m/a               0        m/a  Sink Removal
          0                                      Type of Fractures
          3                                #Sublayers - Layer 2
     0.9601        m          0.9601          m  Thickness
      0.288                                      Porosity
       1900    kg/m3             1.9      g/cm3  Density
     0.0158     m2/a          0.0158       m2/a  Vertical Diffusion Coef.
     0.0158     m2/a          0.0158       m2/a  Horz. Diffusion Coef.
   1.42e-06      m/a        1.42e-06        m/a  Vertical Velocity
          0      m/a               0        m/a  Horz. Velocity
          0    m3/kg               0       mL/g  Distribution Coef.
          0      yrs               0        yrs  Half-Life
          0      m/a               0        m/a  Sink Removal
          0                                      Type of Fractures
          3                                #Sublayers - Layer 3
       5.71        m            5.71          m  Thickness
      0.286                                      Porosity
       1900    kg/m3             1.9      g/cm3  Density
     0.0158     m2/a          0.0158       m2/a  Vertical Diffusion Coef.
     0.0158     m2/a          0.0158       m2/a  Horz. Diffusion Coef.
   1.42e-06      m/a        1.42e-06        m/a  Vertical Velocity
          0      m/a               0        m/a  Horz. Velocity
          0    m3/kg               0       mL/g  Distribution Coef.
          0      yrs               0        yrs  Half-Life
          0      m/a               0        m/a  Sink Removal
          0                                      Type of Fractures
          3                                #Sublayers - Layer 4
      1.042        m           1.042          m  Thickness
       0.05                                      Porosity
       1900    kg/m3             1.9      g/cm3  Density
       1.11     m2/a            1.11       m2/a  Vertical Diffusion Coef.
       5.41     m2/a            5.41       m2/a  Horz. Diffusion Coef.
          0      m/a               0        m/a  Vertical Velocity
      0.046      m/a           0.046        m/a  Horz. Velocity
          0    m3/kg               0       mL/g  Distribution Coef.
          0      yrs               0        yrs  Half-Life
          0      m/a               0        m/a  Sink Removal
          0                                      Type of Fractures
 27                            No. of times of interest
          5      yrs               5        yrs  Time
```

```
             10       yrs              10       yrs  Time
             15       yrs              15       yrs  Time
             20       yrs              20       yrs  Time
             25       yrs              25       yrs  Time
             30       yrs              30       yrs  Time
             35       yrs              35       yrs  Time
             40       yrs              40       yrs  Time
             45       yrs              45       yrs  Time
             50       yrs              50       yrs  Time
             55       yrs              55       yrs  Time
             60       yrs              60       yrs  Time
             65       yrs              65       yrs  Time
             70       yrs              70       yrs  Time
             75       yrs              75       yrs  Time
             80       yrs              80       yrs  Time
             85       yrs              85       yrs  Time
             90       yrs              90       yrs  Time
             95       yrs              95       yrs  Time
            100       yrs             100       yrs  Time
            105       yrs             105       yrs  Time
            110       yrs             110       yrs  Time
            115       yrs             115       yrs  Time
            120       yrs             120       yrs  Time
            125       yrs             125       yrs  Time
            130       yrs             130       yrs  Time
            134       yrs             134       yrs  Time
    5                          No. of distances of interest
     145.720001         m     145.720001        m  Distance
     153.339996         m     153.339996        m  Distance
     160.960007         m     160.960007        m  Distance
     168.580002         m     168.580002        m  Distance
     176.199997         m     176.199997        m  Distance
         7    11              0            1  TAU, N, SIG, RNU : Talbot Integ
NORMAL
```

1

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*************************************************
*                                               *
*                                               *
*     M I G R A T E v 9   S I M U L A T I O N   *
*                                               *
*             RUN DATE -   18- 1- 8             *
*             TIME     -   15:59:34             *
*                                               *
*             REVISION - 09/05/1996             *
*                                               *
*                  VERSION 9.0.9                *
*                                               *
* COPYRIGHT(c) R.K. ROWE & J.R. BOOKER  1983-1996 *
*                                               *
*  LICENSED USER: PDC Technical Services□□□□□□□□  *
*                                               *
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*************************************************************************
  Clinton Landfill CWU   Organic Soil Baseline Model   File Name COSB.IN
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SURFACE BOUNDARY
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SURFACE BOUNDARY CONDITION DEFINED BY A CONSTANT CONCENTRATION C0

OFFSET OF CENTER OF LANDFILL 1 IS 0.0000E+00

WIDTH OF BASE OF LANDFILL IS BETWEEN -113.6265< X < 113.6265
WIDTH OF SURFACE OF LANDFILL IS BETWEEN -145.7200< X < 145.7200

THE INITIAL SOURCE CONCENTRATION = 0.1000E+01

BASE BOUNDARY
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BASE BOUNDARY CONDITION DEFINED BY
AN IMPERMEABLE BASE(I.E. ZERO FLUX)

PROPERTIES OF THE MATRIX
========================

LAYER	DISPERSION COEFF. VERT.	HORZ.	POROSITY	ADSORPTION COEFF.	DENSITY	ADV. VELOCITY HORZ.	VERT.	THICKNESS
1	.158E-01	.158E-01	0.288	0.000E+00	1900.000	0.0000	0.0000	0.30
2	.158E-01	.158E-01	0.288	0.000E+00	1900.000	0.0000	0.0000	0.30
3	.158E-01	.158E-01	0.288	0.000E+00	1900.000	0.0000	0.0000	0.30
4	.158E-01	.158E-01	0.288	0.000E+00	1900.000	0.0000	0.0000	0.32

5	.158E-01	.158E-01	0.288	0.000E+00	1900.000	0.0000	0.0000	0.32
6	.158E-01	.158E-01	0.288	0.000E+00	1900.000	0.0000	0.0000	0.32
7	.158E-01	.158E-01	0.286	0.000E+00	1900.000	0.0000	0.0000	1.90
8	.158E-01	.158E-01	0.286	0.000E+00	1900.000	0.0000	0.0000	1.90
9	.158E-01	.158E-01	0.286	0.000E+00	1900.000	0.0000	0.0000	1.90
10	.111E+01	.541E+01	0.050	0.000E+00	1900.000	0.0460	0.0000	0.35
11	.111E+01	.541E+01	0.050	0.000E+00	1900.000	0.0460	0.0000	0.35
12	.111E+01	.541E+01	0.050	0.000E+00	1900.000	0.0460	0.0000	0.35

INTEGRATION PARAMETERS

THE PARAMETERS USED TO INVERT THE LAPLACE TRANSFORM ARE
TAU =0.700E+01 N = 11 SIG =0.000E+00 RNU =0.100E+01

A NORMAL INTEGRATION LEVEL HAS BEEN CHOSEN WITH THE FOLLOWING GAUSS QUADRATURE PARAMETERS:

GAUSSIAN INTEGRATION SUBINTERVAL SIZE = 0.686E-01
NUMBER OF SUBINTERVALS = 12
NUMBER OF SAMPLE POINTS USED PER STEP = 20

TOTAL WIDTH OF INTEGRATION 0.8235E+00

TOTAL NUMBER OF INTEGRATION POINTS 480

RESULTS

CALCULATED CONCENTRATIONS AT SELECTED DEPTHS, LATERAL DISTANCES AND TIMES:

TIME	LATERAL DISTANCE	DEPTH	CONCENTRATION	TOTAL MASS INTO SOIL	TOTAL MASS INTO BASE
0.5000E+01	0.1457E+03	0.0000E+00	0.1242E-01	0.2369E+02	0.0000E+00
		0.3048E+00	0.5626E-02		
		0.6096E+00	0.1606E-02		
		0.9144E+00	0.2765E-03		
		0.1234E+01	0.2460E-04		
		0.1554E+01	0.1195E-05		
		0.1875E+01	0.3140E-07		
		0.3778E+01	0.2457E-16		
		0.5681E+01	0.2935E-22		
		0.7585E+01	-0.4952E-30		
		0.7932E+01	-0.4161E-30		
		0.8279E+01	-0.3248E-30		
		0.8627E+01	-0.2868E-30		
0.5000E+01	0.1533E+03	0.0000E+00	0.8031E-03	0.2369E+02	0.0000E+00
		0.3048E+00	0.3526E-03		
		0.6096E+00	0.9905E-04		
		0.9144E+00	0.1691E-04		

		0.1234E+01	0.1497E-05		
		0.1554E+01	0.7249E-07		
		0.1875E+01	0.1902E-08		
		0.3778E+01	0.1583E-17		
		0.5681E+01	0.1430E-23		
		0.7585E+01	-0.1876E-31		
		0.7932E+01	-0.3555E-32		
		0.8279E+01	0.5937E-32		
		0.8627E+01	0.9141E-32		
0.5000E+01	0.1610E+03	0.0000E+00	0.3993E-03	0.2369E+02	0.0000E+00
		0.3048E+00	0.1743E-03		
		0.6096E+00	0.4881E-04		
		0.9144E+00	0.8322E-05		
		0.1234E+01	0.7359E-06		
		0.1554E+01	0.3561E-07		
		0.1875E+01	0.9339E-09		
		0.3778E+01	0.7824E-18		
		0.5681E+01	0.6763E-24		
		0.7585E+01	-0.1037E-31		
		0.7932E+01	-0.7220E-32		
		0.8279E+01	-0.5311E-32		
		0.8627E+01	-0.4682E-32		
0.5000E+01	0.1686E+03	0.0000E+00	0.2832E-03	0.2369E+02	0.0000E+00
		0.3048E+00	0.1232E-03		
		0.6096E+00	0.3447E-04		
		0.9144E+00	0.5872E-05		
		0.1234E+01	0.5190E-06		
		0.1554E+01	0.2511E-07		
		0.1875E+01	0.6583E-09		
		0.3778E+01	0.5535E-18		
		0.5681E+01	0.4672E-24		
		0.7585E+01	-0.7163E-32		
		0.7932E+01	-0.4985E-32		
		0.8279E+01	-0.3680E-32		
		0.8627E+01	-0.3248E-32		
0.5000E+01	0.1762E+03	0.0000E+00	0.2253E-03	0.2369E+02	0.0000E+00
		0.3048E+00	0.9789E-04		
		0.6096E+00	0.2736E-04		
		0.9144E+00	0.4659E-05		
		0.1234E+01	0.4117E-06		
		0.1554E+01	0.1991E-07		
		0.1875E+01	0.5220E-09		
		0.3778E+01	0.4398E-18		
		0.5681E+01	0.3665E-24		
		0.7585E+01	-0.5415E-32		
		0.7932E+01	-0.3724E-32		
		0.8279E+01	-0.2727E-32		
		0.8627E+01	-0.2400E-32		

TIME	LATERAL DISTANCE	DEPTH	CONCENTRATION	TOTAL MASS INTO SOIL	TOTAL MASS INTO BASE
0.1000E+02	0.1457E+03	0.0000E+00	0.1242E-01	0.3350E+02	0.0000E+00
		0.3048E+00	0.7547E-02		
		0.6096E+00	0.3645E-02		
		0.9144E+00	0.1377E-02		
		0.1234E+01	0.3757E-03		

		0.1554E+01	0.7648E-04		
		0.1875E+01	0.1157E-04		
		0.3778E+01	0.2398E-12		
		0.5681E+01	-0.7355E-17		
		0.7585E+01	0.8588E-21		
		0.7932E+01	0.9594E-21		
		0.8279E+01	0.1021E-20		
		0.8627E+01	0.1042E-20		
0.1000E+02	0.1533E+03	0.0000E+00	0.8031E-03	0.3350E+02	0.0000E+00
		0.3048E+00	0.4649E-03		
		0.6096E+00	0.2180E-03		
		0.9144E+00	0.8087E-04		
		0.1234E+01	0.2180E-04		
		0.1554E+01	0.4401E-05		
		0.1875E+01	0.6621E-06		
		0.3778E+01	0.1353E-13		
		0.5681E+01	-0.3157E-18		
		0.7585E+01	0.7268E-22		
		0.7932E+01	0.8600E-22		
		0.8279E+01	0.9408E-22		
		0.8627E+01	0.9679E-22		
0.1000E+02	0.1610E+03	0.0000E+00	0.3993E-03	0.3350E+02	0.0000E+00
		0.3048E+00	0.2291E-03		
		0.6096E+00	0.1068E-03		
		0.9144E+00	0.3950E-04		
		0.1234E+01	0.1062E-04		
		0.1554E+01	0.2141E-05		
		0.1875E+01	0.3218E-06		
		0.3778E+01	0.6564E-14		
		0.5681E+01	-0.1442E-18		
		0.7585E+01	0.1082E-23		
		0.7932E+01	0.2313E-23		
		0.8279E+01	0.2982E-23		
		0.8627E+01	0.3193E-23		
0.1000E+02	0.1686E+03	0.0000E+00	0.2832E-03	0.3350E+02	0.0000E+00
		0.3048E+00	0.1618E-03		
		0.6096E+00	0.7523E-04		
		0.9144E+00	0.2776E-04		
		0.1234E+01	0.7458E-05		
		0.1554E+01	0.1502E-05		
		0.1875E+01	0.2257E-06		
		0.3778E+01	0.4597E-14		
		0.5681E+01	-0.9779E-19		
		0.7585E+01	-0.8786E-24		
		0.7932E+01	-0.3729E-24		
		0.8279E+01	-0.1369E-24		
		0.8627E+01	-0.6879E-25		
0.1000E+02	0.1762E+03	0.0000E+00	0.2253E-03	0.3350E+02	0.0000E+00
		0.3048E+00	0.1284E-03		
		0.6096E+00	0.5963E-04		
		0.9144E+00	0.2199E-04		
		0.1234E+01	0.5902E-05		
		0.1554E+01	0.1188E-05		
		0.1875E+01	0.1785E-06		
		0.3778E+01	0.3633E-14		
		0.5681E+01	-0.7593E-19		
		0.7585E+01	-0.7476E-24		

		0.7932E+01	-0.3499E-24		
		0.8279E+01	-0.1687E-24		
		0.8627E+01	-0.1170E-24		

TIME	LATERAL DISTANCE	DEPTH	CONCENTRATION	TOTAL MASS INTO SOIL	TOTAL MASS INTO BASE
0.1500E+02	0.1457E+03	0.0000E+00	0.1242E-01	0.4103E+02	0.0000E+00
		0.3048E+00	0.8526E-02		
		0.6096E+00	0.5006E-02		
		0.9144E+00	0.2497E-02		
		0.1234E+01	0.1002E-02		
		0.1554E+01	0.3320E-03		
		0.1875E+01	0.9059E-04		
		0.3778E+01	0.5798E-09		
		0.5681E+01	-0.5256E-15		
		0.7585E+01	0.2632E-17		
		0.7932E+01	0.2938E-17		
		0.8279E+01	0.3126E-17		
		0.8627E+01	0.3189E-17		
0.1500E+02	0.1533E+03	0.0000E+00	0.8031E-03	0.4103E+02	0.0000E+00
		0.3048E+00	0.5183E-03		
		0.6096E+00	0.2922E-03		
		0.9144E+00	0.1418E-03		
		0.1234E+01	0.5581E-04		
		0.1554E+01	0.1824E-04		
		0.1875E+01	0.4929E-05		
		0.3778E+01	0.3082E-10		
		0.5681E+01	-0.2238E-16		
		0.7585E+01	-0.7598E-19		
		0.7932E+01	-0.4845E-19		
		0.8279E+01	-0.3111E-19		
		0.8627E+01	-0.2520E-19		
0.1500E+02	0.1610E+03	0.0000E+00	0.3993E-03	0.4103E+02	0.0000E+00
		0.3048E+00	0.2548E-03		
		0.6096E+00	0.1426E-03		
		0.9144E+00	0.6885E-04		
		0.1234E+01	0.2701E-04		
		0.1554E+01	0.8803E-05		
		0.1875E+01	0.2375E-05		
		0.3778E+01	0.1479E-10		
		0.5681E+01	-0.1008E-16		
		0.7585E+01	-0.5308E-19		
		0.7932E+01	-0.5732E-19		
		0.8279E+01	-0.5999E-19		
		0.8627E+01	-0.6090E-19		
0.1500E+02	0.1686E+03	0.0000E+00	0.2832E-03	0.4103E+02	0.0000E+00
		0.3048E+00	0.1797E-03		
		0.6096E+00	0.1002E-03		
		0.9144E+00	0.4825E-04		
		0.1234E+01	0.1889E-04		
		0.1554E+01	0.6151E-05		
		0.1875E+01	0.1658E-05		
		0.3778E+01	0.1030E-10		
		0.5681E+01	-0.6784E-17		
		0.7585E+01	-0.3625E-20		
		0.7932E+01	-0.3546E-20		

TIME	LATERAL DISTANCE	DEPTH	CONCENTRATION	TOTAL MASS INTO SOIL	TOTAL MASS INTO BASE
		0.8279E+01	-0.3592E-20		
		0.8627E+01	-0.3622E-20		
0.1500E+02	0.1762E+03	0.0000E+00	0.2253E-03	0.4103E+02	0.0000E+00
		0.3048E+00	0.1426E-03		
		0.6096E+00	0.7931E-04		
		0.9144E+00	0.3815E-04		
		0.1234E+01	0.1492E-04		
		0.1554E+01	0.4855E-05		
		0.1875E+01	0.1308E-05		
		0.3778E+01	0.8119E-11		
		0.5681E+01	-0.5248E-17		
		0.7585E+01	-0.7455E-21		
		0.7932E+01	-0.1349E-21		
		0.8279E+01	0.1609E-21		
		0.8627E+01	0.2483E-21		

TIME	LATERAL DISTANCE	DEPTH	CONCENTRATION	TOTAL MASS INTO SOIL	TOTAL MASS INTO BASE
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0.2000E+02	0.1457E+03	0.0000E+00	0.1242E-01	0.4738E+02	0.0000E+00
		0.3048E+00	0.9157E-02		
		0.6096E+00	0.5983E-02		
		0.9144E+00	0.3455E-02		
		0.1234E+01	0.1693E-02		
		0.1554E+01	0.7192E-03		
		0.1875E+01	0.2646E-03		
		0.3778E+01	0.2964E-07		
		0.5681E+01	0.1475E-13		
		0.7585E+01	-0.8591E-16		
		0.7932E+01	-0.9055E-16		
		0.8279E+01	-0.9428E-16		
		0.8627E+01	-0.9569E-16		
0.2000E+02	0.1533E+03	0.0000E+00	0.8031E-03	0.4738E+02	0.0000E+00
		0.3048E+00	0.5504E-03		
		0.6096E+00	0.3419E-03		
		0.9144E+00	0.1905E-03		
		0.1234E+01	0.9092E-04		
		0.1554E+01	0.3789E-04		
		0.1875E+01	0.1375E-04		
		0.3778E+01	0.1486E-08		
		0.5681E+01	0.6426E-15		
		0.7585E+01	-0.2499E-16		
		0.7932E+01	-0.2898E-16		
		0.8279E+01	-0.3140E-16		
		0.8627E+01	-0.3220E-16		
0.2000E+02	0.1610E+03	0.0000E+00	0.3993E-03	0.4738E+02	0.0000E+00
		0.3048E+00	0.2701E-03		
		0.6096E+00	0.1663E-03		
		0.9144E+00	0.9208E-04		
		0.1234E+01	0.4374E-04		
		0.1554E+01	0.1817E-04		
		0.1875E+01	0.6576E-05		
		0.3778E+01	0.7064E-09		
		0.5681E+01	0.2980E-15		
		0.7585E+01	0.3809E-17		
		0.7932E+01	0.3492E-17		
		0.8279E+01	0.3299E-17		

		0.8627E+01	0.3234E-17		
0.2000E+02	0.1686E+03	0.0000E+00	0.2832E-03	0.4738E+02	0.0000E+00
		0.3048E+00	0.1904E-03		
		0.6096E+00	0.1166E-03		
		0.9144E+00	0.6437E-04		
		0.1234E+01	0.3050E-04		
		0.1554E+01	0.1265E-04		
		0.1875E+01	0.4571E-05		
		0.3778E+01	0.4895E-09		
		0.5681E+01	0.2036E-15		
		0.7585E+01	0.1340E-17		
		0.7932E+01	0.1380E-17		
		0.8279E+01	0.1411E-17		
		0.8627E+01	0.1422E-17		
0.2000E+02	0.1762E+03	0.0000E+00	0.2253E-03	0.4738E+02	0.0000E+00
		0.3048E+00	0.1509E-03		
		0.6096E+00	0.9225E-04		
		0.9144E+00	0.5082E-04		
		0.1234E+01	0.2405E-04		
		0.1554E+01	0.9961E-05		
		0.1875E+01	0.3599E-05		
		0.3778E+01	0.3846E-09		
		0.5681E+01	0.1587E-15		
		0.7585E+01	0.1548E-18		
		0.7932E+01	0.1023E-18		
		0.8279E+01	0.7623E-19		
		0.8627E+01	0.6840E-19		

TIME	LATERAL DISTANCE	DEPTH	CONCENTRATION	TOTAL MASS INTO SOIL	TOTAL MASS INTO BASE
0.2500E+02	0.1457E+03	0.0000E+00	0.1242E-01	0.5297E+02	0.0000E+00
		0.3048E+00	0.9614E-02		
		0.6096E+00	0.6733E-02		
		0.9144E+00	0.4264E-02		
		0.1234E+01	0.2365E-02		
		0.1554E+01	0.1170E-02		
		0.1875E+01	0.5164E-03		
		0.3778E+01	0.3248E-06		
		0.5681E+01	0.2509E-11		
		0.7585E+01	0.7814E-15		
		0.7932E+01	0.7697E-15		
		0.8279E+01	0.7694E-15		
		0.8627E+01	0.7704E-15		
0.2500E+02	0.1533E+03	0.0000E+00	0.8031E-03	0.5297E+02	0.0000E+00
		0.3048E+00	0.5722E-03		
		0.6096E+00	0.3776E-03		
		0.9144E+00	0.2290E-03		
		0.1234E+01	0.1229E-03		
		0.1554E+01	0.5932E-04		
		0.1875E+01	0.2570E-04		
		0.3778E+01	0.1539E-07		
		0.5681E+01	0.1174E-12		
		0.7585E+01	0.4232E-15		
		0.7932E+01	0.4699E-15		
		0.8279E+01	0.4978E-15		
		0.8627E+01	0.5072E-15		

0.2500E+02	0.1610E+03	0.0000E+00	0.3993E-03	0.5297E+02	0.0000E+00
		0.3048E+00	0.2804E-03		
		0.6096E+00	0.1832E-03		
		0.9144E+00	0.1103E-03		
		0.1234E+01	0.5882E-04		
		0.1554E+01	0.2828E-04		
		0.1875E+01	0.1222E-04		
		0.3778E+01	0.7256E-08		
		0.5681E+01	0.5527E-13		
		0.7585E+01	-0.4925E-16		
		0.7932E+01	-0.4159E-16		
		0.8279E+01	-0.3685E-16		
		0.8627E+01	-0.3525E-16		
0.2500E+02	0.1686E+03	0.0000E+00	0.2832E-03	0.5297E+02	0.0000E+00
		0.3048E+00	0.1974E-03		
		0.6096E+00	0.1283E-03		
		0.9144E+00	0.7691E-04		
		0.1234E+01	0.4090E-04		
		0.1554E+01	0.1962E-04		
		0.1875E+01	0.8461E-05		
		0.3778E+01	0.5003E-08		
		0.5681E+01	0.3807E-13		
		0.7585E+01	-0.3076E-16		
		0.7932E+01	-0.3261E-16		
		0.8279E+01	-0.3376E-16		
		0.8627E+01	-0.3416E-16		
0.2500E+02	0.1762E+03	0.0000E+00	0.2253E-03	0.5297E+02	0.0000E+00
		0.3048E+00	0.1565E-03		
		0.6096E+00	0.1014E-03		
		0.9144E+00	0.6065E-04		
		0.1234E+01	0.3220E-04		
		0.1554E+01	0.1543E-04		
		0.1875E+01	0.6647E-05		
		0.3778E+01	0.3921E-08		
		0.5681E+01	0.2982E-13		
		0.7585E+01	-0.1067E-17		
		0.7932E+01	-0.1135E-17		
		0.8279E+01	-0.1220E-17		
		0.8627E+01	-0.1256E-17		

TIME	LATERAL DISTANCE	DEPTH	CONCENTRATION	TOTAL MASS INTO SOIL	TOTAL MASS INTO BASE
0.3000E+02	0.1457E+03	0.0000E+00	0.1242E-01	0.5803E+02	0.0000E+00
		0.3048E+00	0.9968E-02		
		0.6096E+00	0.7337E-02		
		0.9144E+00	0.4956E-02		
		0.1234E+01	0.2993E-02		
		0.1554E+01	0.1643E-02		
		0.1875E+01	0.8200E-03		
		0.3778E+01	0.1640E-05		
		0.5681E+01	0.8551E-10		
		0.7585E+01	-0.7265E-14		
		0.7932E+01	-0.7560E-14		
		0.8279E+01	-0.7773E-14		
		0.8627E+01	-0.7850E-14		

0.3000E+02	0.1533E+03	0.0000E+00	0.8031E-03	0.5803E+02	0.0000E+00
		0.3048E+00	0.5880E-03		
		0.6096E+00	0.4045E-03		
		0.9144E+00	0.2599E-03		
		0.1234E+01	0.1509E-03		
		0.1554E+01	0.8037E-04		
		0.1875E+01	0.3922E-04		
		0.3778E+01	0.7356E-07		
		0.5681E+01	0.3761E-11		
		0.7585E+01	-0.1610E-14		
		0.7932E+01	-0.1903E-14		
		0.8279E+01	-0.2080E-14		
		0.8627E+01	-0.2140E-14		
0.3000E+02	0.1610E+03	0.0000E+00	0.3993E-03	0.5803E+02	0.0000E+00
		0.3048E+00	0.2878E-03		
		0.6096E+00	0.1957E-03		
		0.9144E+00	0.1247E-03		
		0.1234E+01	0.7190E-04		
		0.1554E+01	0.3812E-04		
		0.1875E+01	0.1853E-04		
		0.3778E+01	0.3443E-07		
		0.5681E+01	0.1755E-11		
		0.7585E+01	0.6872E-15		
		0.7932E+01	0.6679E-15		
		0.8279E+01	0.6556E-15		
		0.8627E+01	0.6514E-15		
0.3000E+02	0.1686E+03	0.0000E+00	0.2832E-03	0.5803E+02	0.0000E+00
		0.3048E+00	0.2025E-03		
		0.6096E+00	0.1369E-03		
		0.9144E+00	0.8680E-04		
		0.1234E+01	0.4987E-04		
		0.1554E+01	0.2637E-04		
		0.1875E+01	0.1279E-04		
		0.3778E+01	0.2363E-07		
		0.5681E+01	0.1203E-11		
		0.7585E+01	0.2106E-15		
		0.7932E+01	0.2311E-15		
		0.8279E+01	0.2437E-15		
		0.8627E+01	0.2480E-15		
0.3000E+02	0.1762E+03	0.0000E+00	0.2253E-03	0.5803E+02	0.0000E+00
		0.3048E+00	0.1604E-03		
		0.6096E+00	0.1081E-03		
		0.9144E+00	0.6838E-04		
		0.1234E+01	0.3921E-04		
		0.1554E+01	0.2070E-04		
		0.1875E+01	0.1003E-04		
		0.3778E+01	0.1847E-07		
		0.5681E+01	0.9393E-12		
		0.7585E+01	-0.2704E-16		
		0.7932E+01	-0.2663E-16		
		0.8279E+01	-0.2606E-16		
		0.8627E+01	-0.2582E-16		

TIME	LATERAL DISTANCE	DEPTH	CONCENTRATION	TOTAL MASS INTO SOIL	TOTAL MASS INTO BASE
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0.3500E+02	0.1457E+03	0.0000E+00	0.1242E-01	0.6268E+02	0.0000E+00

		0.3048E+00	0.1026E-01		
		0.6096E+00	0.7839E-02		
		0.9144E+00	0.5557E-02		
		0.1234E+01	0.3573E-02		
		0.1554E+01	0.2116E-02		
		0.1875E+01	0.1155E-02		
		0.3778E+01	0.5299E-05		
		0.5681E+01	0.1080E-08		
		0.7585E+01	0.4505E-13		
		0.7932E+01	0.4769E-13		
		0.8279E+01	0.4914E-13		
		0.8627E+01	0.4961E-13		
0.3500E+02	0.1533E+03	0.0000E+00	0.8031E-03	0.6268E+02	0.0000E+00
		0.3048E+00	0.6000E-03		
		0.6096E+00	0.4255E-03		
		0.9144E+00	0.2850E-03		
		0.1234E+01	0.1751E-03		
		0.1554E+01	0.1001E-03		
		0.1875E+01	0.5317E-04		
		0.3778E+01	0.2256E-06		
		0.5681E+01	0.4481E-10		
		0.7585E+01	-0.3161E-14		
		0.7932E+01	-0.2469E-14		
		0.8279E+01	-0.2031E-14		
		0.8627E+01	-0.1882E-14		
0.3500E+02	0.1610E+03	0.0000E+00	0.3993E-03	0.6268E+02	0.0000E+00
		0.3048E+00	0.2934E-03		
		0.6096E+00	0.2055E-03		
		0.9144E+00	0.1363E-03		
		0.1234E+01	0.8313E-04		
		0.1554E+01	0.4727E-04		
		0.1875E+01	0.2500E-04		
		0.3778E+01	0.1049E-06		
		0.5681E+01	0.2076E-10		
		0.7585E+01	-0.3484E-14		
		0.7932E+01	-0.3724E-14		
		0.8279E+01	-0.3865E-14		
		0.8627E+01	-0.3911E-14		
0.3500E+02	0.1686E+03	0.0000E+00	0.2832E-03	0.6268E+02	0.0000E+00
		0.3048E+00	0.2063E-03		
		0.6096E+00	0.1435E-03		
		0.9144E+00	0.9474E-04		
		0.1234E+01	0.5754E-04		
		0.1554E+01	0.3262E-04		
		0.1875E+01	0.1721E-04		
		0.3778E+01	0.7168E-07		
		0.5681E+01	0.1416E-10		
		0.7585E+01	0.9325E-16		
		0.7932E+01	-0.1723E-16		
		0.8279E+01	-0.8292E-16		
		0.8627E+01	-0.1047E-15		
0.3500E+02	0.1762E+03	0.0000E+00	0.2253E-03	0.6268E+02	0.0000E+00
		0.3048E+00	0.1634E-03		
		0.6096E+00	0.1133E-03		
		0.9144E+00	0.7457E-04		
		0.1234E+01	0.4518E-04		
		0.1554E+01	0.2557E-04		

TIME	LATERAL DISTANCE	DEPTH	CONCENTRATION	TOTAL MASS INTO SOIL	TOTAL MASS INTO BASE
		0.1875E+01	0.1347E-04		
		0.3778E+01	0.5590E-07		
		0.5681E+01	0.1103E-10		
		0.7585E+01	0.4264E-15		
		0.7932E+01	0.4255E-15		
		0.8279E+01	0.4264E-15		
		0.8627E+01	0.4269E-15		

TIME	LATERAL DISTANCE	DEPTH	CONCENTRATION	TOTAL MASS INTO SOIL	TOTAL MASS INTO BASE
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0.4000E+02	0.1457E+03	0.0000E+00	0.1242E-01	0.6701E+02	0.0000E+00
		0.3048E+00	0.1050E-01		
		0.6096E+00	0.8269E-02		
		0.9144E+00	0.6087E-02		
		0.1234E+01	0.4107E-02		
		0.1554E+01	0.2578E-02		
		0.1875E+01	0.1505E-02		
		0.3778E+01	0.1293E-04		
		0.5681E+01	0.7338E-08		
		0.7585E+01	0.6950E-12		
		0.7932E+01	0.7117E-12		
		0.8279E+01	0.7164E-12		
		0.8627E+01	0.7171E-12		
0.4000E+02	0.1533E+03	0.0000E+00	0.8031E-03	0.6701E+02	0.0000E+00
		0.3048E+00	0.6095E-03		
		0.6096E+00	0.4424E-03		
		0.9144E+00	0.3057E-03		
		0.1234E+01	0.1960E-03		
		0.1554E+01	0.1182E-03		
		0.1875E+01	0.6691E-04		
		0.3778E+01	0.5232E-06		
		0.5681E+01	0.2877E-09		
		0.7585E+01	0.6405E-13		
		0.7932E+01	0.6845E-13		
		0.8279E+01	0.7135E-13		
		0.8627E+01	0.7236E-13		
0.4000E+02	0.1610E+03	0.0000E+00	0.3993E-03	0.6701E+02	0.0000E+00
		0.3048E+00	0.2977E-03		
		0.6096E+00	0.2132E-03		
		0.9144E+00	0.1459E-03		
		0.1234E+01	0.9276E-04		
		0.1554E+01	0.5559E-04		
		0.1875E+01	0.3133E-04		
		0.3778E+01	0.2418E-06		
		0.5681E+01	0.1324E-09		
		0.7585E+01	0.4190E-14		
		0.7932E+01	0.4357E-14		
		0.8279E+01	0.4549E-14		
		0.8627E+01	0.4628E-14		
0.4000E+02	0.1686E+03	0.0000E+00	0.2832E-03	0.6701E+02	0.0000E+00
		0.3048E+00	0.2093E-03		
		0.6096E+00	0.1488E-03		
		0.9144E+00	0.1012E-03		
		0.1234E+01	0.6408E-04		
		0.1554E+01	0.3826E-04		
		0.1875E+01	0.2150E-04		

		0.3778E+01	0.1646E-06		
		0.5681E+01	0.8992E-10		
		0.7585E+01	-0.2243E-14		
		0.7932E+01	-0.2919E-14		
		0.8279E+01	-0.3264E-14		
		0.8627E+01	-0.3369E-14		
0.4000E+02	0.1762E+03	0.0000E+00	0.2253E-03	0.6701E+02	0.0000E+00
		0.3048E+00	0.1657E-03		
		0.6096E+00	0.1174E-03		
		0.9144E+00	0.7960E-04		
		0.1234E+01	0.5026E-04		
		0.1554E+01	0.2996E-04		
		0.1875E+01	0.1680E-04		
		0.3778E+01	0.1281E-06		
		0.5681E+01	0.6985E-10		
		0.7585E+01	0.4591E-15		
		0.7932E+01	-0.1371E-15		
		0.8279E+01	-0.4475E-15		
		0.8627E+01	-0.5435E-15		

TIME	LATERAL DISTANCE	DEPTH	CONCENTRATION	TOTAL MASS INTO SOIL	TOTAL MASS INTO BASE
0.4500E+02	0.1457E+03	0.0000E+00	0.1242E-01	0.7108E+02	0.0000E+00
		0.3048E+00	0.1071E-01		
		0.6096E+00	0.8643E-02		
		0.9144E+00	0.6559E-02		
		0.1234E+01	0.4601E-02		
		0.1554E+01	0.3024E-02		
		0.1875E+01	0.1863E-02		
		0.3778E+01	0.2614E-04		
		0.5681E+01	0.3293E-07		
		0.7585E+01	0.1045E-10		
		0.7932E+01	0.1086E-10		
		0.8279E+01	0.1104E-10		
		0.8627E+01	0.1109E-10		
0.4500E+02	0.1533E+03	0.0000E+00	0.8031E-03	0.7108E+02	0.0000E+00
		0.3048E+00	0.6171E-03		
		0.6096E+00	0.4561E-03		
		0.9144E+00	0.3231E-03		
		0.1234E+01	0.2141E-03		
		0.1554E+01	0.1346E-03		
		0.1875E+01	0.8004E-04		
		0.3778E+01	0.1007E-05		
		0.5681E+01	0.1221E-08		
		0.7585E+01	0.7579E-12		
		0.7932E+01	0.8281E-12		
		0.8279E+01	0.8740E-12		
		0.8627E+01	0.8900E-12		
0.4500E+02	0.1610E+03	0.0000E+00	0.3993E-03	0.7108E+02	0.0000E+00
		0.3048E+00	0.3012E-03		
		0.6096E+00	0.2195E-03		
		0.9144E+00	0.1538E-03		
		0.1234E+01	0.1011E-03		
		0.1554E+01	0.6308E-04		
		0.1875E+01	0.3733E-04		
		0.3778E+01	0.4629E-06		

		0.5681E+01	0.5590E-09		
		0.7585E+01	0.9603E-13		
		0.7932E+01	0.9257E-13		
		0.8279E+01	0.9149E-13		
		0.8627E+01	0.9130E-13		
0.4500E+02	0.1686E+03	0.0000E+00	0.2832E-03	0.7108E+02	0.0000E+00
		0.3048E+00	0.2116E-03		
		0.6096E+00	0.1530E-03		
		0.9144E+00	0.1066E-03		
		0.1234E+01	0.6968E-04		
		0.1554E+01	0.4332E-04		
		0.1875E+01	0.2556E-04		
		0.3778E+01	0.3139E-06		
		0.5681E+01	0.3779E-09		
		0.7585E+01	0.2353E-13		
		0.7932E+01	0.1745E-13		
		0.8279E+01	0.1448E-13		
		0.8627E+01	0.1359E-13		
0.4500E+02	0.1762E+03	0.0000E+00	0.2253E-03	0.7108E+02	0.0000E+00
		0.3048E+00	0.1675E-03		
		0.6096E+00	0.1207E-03		
		0.9144E+00	0.8375E-04		
		0.1234E+01	0.5460E-04		
		0.1554E+01	0.3387E-04		
		0.1875E+01	0.1995E-04		
		0.3778E+01	0.2437E-06		
		0.5681E+01	0.2929E-09		
		0.7585E+01	0.1070E-13		
		0.7932E+01	0.5155E-14		
		0.8279E+01	0.2378E-14		
		0.8627E+01	0.1540E-14		

TIME	LATERAL DISTANCE	DEPTH	CONCENTRATION	TOTAL MASS INTO SOIL	TOTAL MASS INTO BASE
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0.5000E+02	0.1457E+03	0.0000E+00	0.1242E-01	0.7492E+02	0.0000E+00
		0.3048E+00	0.1089E-01		
		0.6096E+00	0.8975E-02		
		0.9144E+00	0.6985E-02		
		0.1234E+01	0.5058E-02		
		0.1554E+01	0.3452E-02		
		0.1875E+01	0.2222E-02		
		0.3778E+01	0.4626E-04		
		0.5681E+01	0.1105E-06		
		0.7585E+01	0.9727E-10		
		0.7932E+01	0.1018E-09		
		0.8279E+01	0.1040E-09		
		0.8627E+01	0.1046E-09		
0.5000E+02	0.1533E+03	0.0000E+00	0.8031E-03	0.7492E+02	0.0000E+00
		0.3048E+00	0.6234E-03		
		0.6096E+00	0.4675E-03		
		0.9144E+00	0.3377E-03		
		0.1234E+01	0.2299E-03		
		0.1554E+01	0.1493E-03		
		0.1875E+01	0.9238E-04		
		0.3778E+01	0.1698E-05		
		0.5681E+01	0.3877E-08		

TIME	LATERAL DISTANCE	DEPTH	CONCENTRATION	TOTAL MASS INTO SOIL	TOTAL MASS INTO BASE
		0.7585E+01	0.8440E-11		
		0.7932E+01	0.9308E-11		
		0.8279E+01	0.9862E-11		
		0.8627E+01	0.1005E-10		
0.5000E+02	0.1610E+03	0.0000E+00	0.3993E-03	0.7492E+02	0.0000E+00
		0.3048E+00	0.3041E-03		
		0.6096E+00	0.2247E-03		
		0.9144E+00	0.1605E-03		
		0.1234E+01	0.1082E-03		
		0.1554E+01	0.6979E-04		
		0.1875E+01	0.4294E-04		
		0.3778E+01	0.7772E-06		
		0.5681E+01	0.1766E-08		
		0.7585E+01	0.8680E-12		
		0.7932E+01	0.8781E-12		
		0.8279E+01	0.8919E-12		
		0.8627E+01	0.8978E-12		
0.5000E+02	0.1686E+03	0.0000E+00	0.2832E-03	0.7492E+02	0.0000E+00
		0.3048E+00	0.2135E-03		
		0.6096E+00	0.1565E-03		
		0.9144E+00	0.1111E-03		
		0.1234E+01	0.7449E-04		
		0.1554E+01	0.4783E-04		
		0.1875E+01	0.2933E-04		
		0.3778E+01	0.5252E-06		
		0.5681E+01	0.1189E-08		
		0.7585E+01	0.1987E-12		
		0.7932E+01	0.1551E-12		
		0.8279E+01	0.1337E-12		
		0.8627E+01	0.1273E-12		
0.5000E+02	0.1762E+03	0.0000E+00	0.2253E-03	0.7492E+02	0.0000E+00
		0.3048E+00	0.1690E-03		
		0.6096E+00	0.1234E-03		
		0.9144E+00	0.8722E-04		
		0.1234E+01	0.5832E-04		
		0.1554E+01	0.3735E-04		
		0.1875E+01	0.2286E-04		
		0.3778E+01	0.4069E-06		
		0.5681E+01	0.9193E-09		
		0.7585E+01	0.1047E-12		
		0.7932E+01	0.6661E-13		
		0.8279E+01	0.4755E-13		
		0.8627E+01	0.4179E-13		

TIME	LATERAL DISTANCE	DEPTH	CONCENTRATION	TOTAL MASS INTO SOIL	TOTAL MASS INTO BASE
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0.5500E+02	0.1457E+03	0.0000E+00	0.1242E-01	0.7858E+02	0.0000E+00
		0.3048E+00	0.1105E-01		
		0.6096E+00	0.9272E-02		
		0.9144E+00	0.7373E-02		
		0.1234E+01	0.5484E-02		
		0.1554E+01	0.3861E-02		
		0.1875E+01	0.2577E-02		
		0.3778E+01	0.7426E-04		
		0.5681E+01	0.2995E-06		
		0.7585E+01	0.6099E-09		

	DISTANCE			INTO SOIL	INTO BASE
0.6000E+02	0.1457E+03	0.0000E+00	0.1242E-01	0.8207E+02	0.0000E+00
		0.3048E+00	0.1119E-01		
		0.6096E+00	0.9541E-02		
		0.9144E+00	0.7728E-02		
		0.1234E+01	0.5882E-02		
		0.1554E+01	0.4253E-02		
		0.1875E+01	0.2926E-02		
		0.3778E+01	0.1108E-03		
		0.5681E+01	0.6921E-06		
		0.7585E+01	0.2849E-08		
		0.7932E+01	0.2993E-08		
		0.8279E+01	0.3071E-08		
		0.8627E+01	0.3095E-08		
0.6000E+02	0.1533E+03	0.0000E+00	0.8031E-03	0.8207E+02	0.0000E+00
		0.3048E+00	0.6330E-03		
		0.6096E+00	0.4853E-03		
		0.9144E+00	0.3611E-03		
		0.1234E+01	0.2557E-03		
		0.1554E+01	0.1744E-03		
		0.1875E+01	0.1145E-03		
		0.3778E+01	0.3708E-05		
		0.5681E+01	0.2182E-07		
		0.7585E+01	0.3504E-09		
		0.7932E+01	0.3843E-09		
		0.8279E+01	0.4054E-09		
		0.8627E+01	0.4126E-09		
0.6000E+02	0.1610E+03	0.0000E+00	0.3993E-03	0.8207E+02	0.0000E+00
		0.3048E+00	0.3084E-03		
		0.6096E+00	0.2327E-03		
		0.9144E+00	0.1710E-03		
		0.1234E+01	0.1199E-03		
		0.1554E+01	0.8113E-04		
		0.1875E+01	0.5291E-04		
		0.3778E+01	0.1684E-05		
		0.5681E+01	0.9862E-08		
		0.7585E+01	0.4342E-10		
		0.7932E+01	0.4653E-10		
		0.8279E+01	0.4857E-10		
		0.8627E+01	0.4929E-10		
0.6000E+02	0.1686E+03	0.0000E+00	0.2832E-03	0.8207E+02	0.0000E+00
		0.3048E+00	0.2165E-03		
		0.6096E+00	0.1619E-03		
		0.9144E+00	0.1181E-03		
		0.1234E+01	0.8228E-04		
		0.1554E+01	0.5541E-04		
		0.1875E+01	0.3599E-04		
		0.3778E+01	0.1131E-05		
		0.5681E+01	0.6591E-08		
		0.7585E+01	0.6613E-11		
		0.7932E+01	0.6189E-11		
		0.8279E+01	0.6022E-11		
		0.8627E+01	0.5981E-11		
0.6000E+02	0.1762E+03	0.0000E+00	0.2253E-03	0.8207E+02	0.0000E+00
		0.3048E+00	0.1712E-03		

		0.6096E+00	0.1275E-03		
		0.9144E+00	0.9263E-04		
		0.1234E+01	0.6431E-04		
		0.1554E+01	0.4318E-04		
		0.1875E+01	0.2798E-04		
		0.3778E+01	0.8727E-06		
		0.5681E+01	0.5072E-08		
		0.7585E+01	0.2228E-11		
		0.7932E+01	0.1570E-11		
		0.8279E+01	0.1243E-11		
		0.8627E+01	0.1144E-11		

TIME	LATERAL DISTANCE	DEPTH	CONCENTRATION	TOTAL MASS INTO SOIL	TOTAL MASS INTO BASE
0.6500E+02	0.1457E+03	0.0000E+00	0.1242E-01	0.8542E+02	0.0000E+00
		0.3048E+00	0.1133E-01		
		0.6096E+00	0.9788E-02		
		0.9144E+00	0.8057E-02		
		0.1234E+01	0.6254E-02		
		0.1554E+01	0.4628E-02		
		0.1875E+01	0.3269E-02		
		0.3778E+01	0.1561E-03		
		0.5681E+01	0.1413E-05		
		0.7585E+01	0.1061E-07		
		0.7932E+01	0.1115E-07		
		0.8279E+01	0.1145E-07		
		0.8627E+01	0.1154E-07		
0.6500E+02	0.1533E+03	0.0000E+00	0.8031E-03	0.8542E+02	0.0000E+00
		0.3048E+00	0.6368E-03		
		0.6096E+00	0.4923E-03		
		0.9144E+00	0.3704E-03		
		0.1234E+01	0.2663E-03		
		0.1554E+01	0.1851E-03		
		0.1875E+01	0.1242E-03		
		0.3778E+01	0.4996E-05		
		0.5681E+01	0.4228E-07		
		0.7585E+01	0.1493E-08		
		0.7932E+01	0.1631E-08		
		0.8279E+01	0.1716E-08		
		0.8627E+01	0.1745E-08		
0.6500E+02	0.1610E+03	0.0000E+00	0.3993E-03	0.8542E+02	0.0000E+00
		0.3048E+00	0.3101E-03		
		0.6096E+00	0.2359E-03		
		0.9144E+00	0.1752E-03		
		0.1234E+01	0.1246E-03		
		0.1554E+01	0.8592E-04		
		0.1875E+01	0.5729E-04		
		0.3778E+01	0.2263E-05		
		0.5681E+01	0.1905E-07		
		0.7585E+01	0.2074E-09		
		0.7932E+01	0.2237E-09		
		0.8279E+01	0.2341E-09		
		0.8627E+01	0.2377E-09		
0.6500E+02	0.1686E+03	0.0000E+00	0.2832E-03	0.8542E+02	0.0000E+00
		0.3048E+00	0.2176E-03		
		0.6096E+00	0.1640E-03		

		0.9144E+00	0.1209E-03		
		0.1234E+01	0.8544E-04		
		0.1554E+01	0.5859E-04		
		0.1875E+01	0.3889E-04		
		0.3778E+01	0.1515E-05		
		0.5681E+01	0.1269E-07		
		0.7585E+01	0.3140E-10		
		0.7932E+01	0.3127E-10		
		0.8279E+01	0.3147E-10		
		0.8627E+01	0.3158E-10		
0.6500E+02	0.1762E+03	0.0000E+00	0.2253E-03	0.8542E+02	0.0000E+00
		0.3048E+00	0.1721E-03		
		0.6096E+00	0.1291E-03		
		0.9144E+00	0.9477E-04		
		0.1234E+01	0.6674E-04		
		0.1554E+01	0.4562E-04		
		0.1875E+01	0.3021E-04		
		0.3778E+01	0.1167E-05		
		0.5681E+01	0.9744E-08		
		0.7585E+01	0.8173E-11		
		0.7932E+01	0.6359E-11		
		0.8279E+01	0.5473E-11		
		0.8627E+01	0.5210E-11		

TIME	LATERAL DISTANCE	DEPTH	CONCENTRATION	TOTAL MASS INTO SOIL	TOTAL MASS INTO BASE
0.7000E+02	0.1457E+03	0.0000E+00	0.1242E-01	0.8865E+02	0.0000E+00
		0.3048E+00	0.1145E-01		
		0.6096E+00	0.1001E-01		
		0.9144E+00	0.8362E-02		
		0.1234E+01	0.6605E-02		
		0.1554E+01	0.4986E-02		
		0.1875E+01	0.3603E-02		
		0.3778E+01	0.2102E-03		
		0.5681E+01	0.2617E-05		
		0.7585E+01	0.3304E-07		
		0.7932E+01	0.3472E-07		
		0.8279E+01	0.3565E-07		
		0.8627E+01	0.3595E-07		
0.7000E+02	0.1533E+03	0.0000E+00	0.8031E-03	0.8865E+02	0.0000E+00
		0.3048E+00	0.6400E-03		
		0.6096E+00	0.4984E-03		
		0.9144E+00	0.3786E-03		
		0.1234E+01	0.2757E-03		
		0.1554E+01	0.1947E-03		
		0.1875E+01	0.1331E-03		
		0.3778E+01	0.6441E-05		
		0.5681E+01	0.7437E-07		
		0.7585E+01	0.5224E-08		
		0.7932E+01	0.5681E-08		
		0.8279E+01	0.5963E-08		
		0.8627E+01	0.6058E-08		
0.7000E+02	0.1610E+03	0.0000E+00	0.3993E-03	0.8865E+02	0.0000E+00
		0.3048E+00	0.3116E-03		
		0.6096E+00	0.2386E-03		
		0.9144E+00	0.1789E-03		

		0.1234E+01	0.1288E-03		
		0.1554E+01	0.9021E-04		
		0.1875E+01	0.6129E-04		
		0.3778E+01	0.2910E-05		
		0.5681E+01	0.3342E-07		
		0.7585E+01	0.8056E-09		
		0.7932E+01	0.8705E-09		
		0.8279E+01	0.9114E-09		
		0.8627E+01	0.9253E-09		
0.7000E+02	0.1686E+03	0.0000E+00	0.2832E-03	0.8865E+02	0.0000E+00
		0.3048E+00	0.2185E-03		
		0.6096E+00	0.1658E-03		
		0.9144E+00	0.1233E-03		
		0.1234E+01	0.8822E-04		
		0.1554E+01	0.6142E-04		
		0.1875E+01	0.4154E-04		
		0.3778E+01	0.1943E-05		
		0.5681E+01	0.2219E-07		
		0.7585E+01	0.1272E-09		
		0.7932E+01	0.1312E-09		
		0.8279E+01	0.1343E-09		
		0.8627E+01	0.1355E-09		
0.7000E+02	0.1762E+03	0.0000E+00	0.2253E-03	0.8865E+02	0.0000E+00
		0.3048E+00	0.1728E-03		
		0.6096E+00	0.1305E-03		
		0.9144E+00	0.9661E-04		
		0.1234E+01	0.6886E-04		
		0.1554E+01	0.4779E-04		
		0.1875E+01	0.3223E-04		
		0.3778E+01	0.1494E-05		
		0.5681E+01	0.1700E-07		
		0.7585E+01	0.2795E-10		
		0.7932E+01	0.2403E-10		
		0.8279E+01	0.2220E-10		
		0.8627E+01	0.2167E-10		

TIME	LATERAL DISTANCE	DEPTH	CONCENTRATION	TOTAL MASS INTO SOIL	TOTAL MASS INTO BASE
0.7500E+02	0.1457E+03	0.0000E+00	0.1242E-01	0.9176E+02	0.0000E+00
		0.3048E+00	0.1156E-01		
		0.6096E+00	0.1022E-01		
		0.9144E+00	0.8647E-02		
		0.1234E+01	0.6936E-02		
		0.1554E+01	0.5329E-02		
		0.1875E+01	0.3929E-02		
		0.3778E+01	0.2730E-03		
		0.5681E+01	0.4483E-05		
		0.7585E+01	0.8908E-07		
		0.7932E+01	0.9355E-07		
		0.8279E+01	0.9606E-07		
		0.8627E+01	0.9687E-07		
0.7500E+02	0.1533E+03	0.0000E+00	0.8031E-03	0.9176E+02	0.0000E+00
		0.3048E+00	0.6428E-03		
		0.6096E+00	0.5037E-03		
		0.9144E+00	0.3857E-03		
		0.1234E+01	0.2840E-03		

		0.1554E+01	0.2033E-03		
		0.1875E+01	0.1413E-03		
		0.3778E+01	0.8014E-05		
		0.5681E+01	0.1210E-06		
		0.7585E+01	0.1560E-07		
		0.7932E+01	0.1689E-07		
		0.8279E+01	0.1769E-07		
		0.8627E+01	0.1796E-07		
0.7500E+02	0.1610E+03	0.0000E+00	0.3993E-03	0.9176E+02	0.0000E+00
		0.3048E+00	0.3128E-03		
		0.6096E+00	0.2409E-03		
		0.9144E+00	0.1821E-03		
		0.1234E+01	0.1326E-03		
		0.1554E+01	0.9406E-04		
		0.1875E+01	0.6495E-04		
		0.3778E+01	0.3613E-05		
		0.5681E+01	0.5429E-07		
		0.7585E+01	0.2646E-08		
		0.7932E+01	0.2857E-08		
		0.8279E+01	0.2988E-08		
		0.8627E+01	0.3033E-08		
0.7500E+02	0.1686E+03	0.0000E+00	0.2832E-03	0.9176E+02	0.0000E+00
		0.3048E+00	0.2194E-03		
		0.6096E+00	0.1673E-03		
		0.9144E+00	0.1254E-03		
		0.1234E+01	0.9067E-04		
		0.1554E+01	0.6396E-04		
		0.1875E+01	0.4395E-04		
		0.3778E+01	0.2406E-05		
		0.5681E+01	0.3593E-07		
		0.7585E+01	0.4441E-09		
		0.7932E+01	0.4665E-09		
		0.8279E+01	0.4819E-09		
		0.8627E+01	0.4873E-09		
0.7500E+02	0.1762E+03	0.0000E+00	0.2253E-03	0.9176E+02	0.0000E+00
		0.3048E+00	0.1735E-03		
		0.6096E+00	0.1316E-03		
		0.9144E+00	0.9822E-04		
		0.1234E+01	0.7072E-04		
		0.1554E+01	0.4972E-04		
		0.1875E+01	0.3407E-04		
		0.3778E+01	0.1847E-05		
		0.5681E+01	0.2748E-07		
		0.7585E+01	0.8960E-10		
		0.7932E+01	0.8333E-10		
		0.8279E+01	0.8076E-10		
		0.8627E+01	0.8010E-10		

TIME	LATERAL DISTANCE	DEPTH	CONCENTRATION	TOTAL MASS INTO SOIL	TOTAL MASS INTO BASE
0.8000E+02	0.1457E+03	0.0000E+00	0.1242E-01	0.9477E+02	0.0000E+00
		0.3048E+00	0.1166E-01		
		0.6096E+00	0.1042E-01		
		0.9144E+00	0.8914E-02		
		0.1234E+01	0.7250E-02		
		0.1554E+01	0.5658E-02		

		0.1875E+01	0.4247E-02		
		0.3778E+01	0.3442E-03		
		0.5681E+01	0.7203E-05		
		0.7585E+01	0.2135E-06		
		0.7932E+01	0.2240E-06		
		0.8279E+01	0.2300E-06		
		0.8627E+01	0.2319E-06		
0.8000E+02	0.1533E+03	0.0000E+00	0.8031E-03	0.9477E+02	0.0000E+00
		0.3048E+00	0.6453E-03		
		0.6096E+00	0.5083E-03		
		0.9144E+00	0.3920E-03		
		0.1234E+01	0.2914E-03		
		0.1554E+01	0.2110E-03		
		0.1875E+01	0.1488E-03		
		0.3778E+01	0.9686E-05		
		0.5681E+01	0.1849E-06		
		0.7585E+01	0.4090E-07		
		0.7932E+01	0.4413E-07		
		0.8279E+01	0.4611E-07		
		0.8627E+01	0.4678E-07		
0.8000E+02	0.1610E+03	0.0000E+00	0.3993E-03	0.9477E+02	0.0000E+00
		0.3048E+00	0.3139E-03		
		0.6096E+00	0.2430E-03		
		0.9144E+00	0.1849E-03		
		0.1234E+01	0.1358E-03		
		0.1554E+01	0.9752E-04		
		0.1875E+01	0.6828E-04		
		0.3778E+01	0.4360E-05		
		0.5681E+01	0.8281E-07		
		0.7585E+01	0.7562E-08		
		0.7932E+01	0.8150E-08		
		0.8279E+01	0.8515E-08		
		0.8627E+01	0.8639E-08		
0.8000E+02	0.1686E+03	0.0000E+00	0.2832E-03	0.9477E+02	0.0000E+00
		0.3048E+00	0.2201E-03		
		0.6096E+00	0.1687E-03		
		0.9144E+00	0.1273E-03		
		0.1234E+01	0.9283E-04		
		0.1554E+01	0.6623E-04		
		0.1875E+01	0.4614E-04		
		0.3778E+01	0.2896E-05		
		0.5681E+01	0.5464E-07		
		0.7585E+01	0.1359E-08		
		0.7932E+01	0.1441E-08		
		0.8279E+01	0.1494E-08		
		0.8627E+01	0.1513E-08		
0.8000E+02	0.1762E+03	0.0000E+00	0.2253E-03	0.9477E+02	0.0000E+00
		0.3048E+00	0.1740E-03		
		0.6096E+00	0.1327E-03		
		0.9144E+00	0.9962E-04		
		0.1234E+01	0.7237E-04		
		0.1554E+01	0.5145E-04		
		0.1875E+01	0.3573E-04		
		0.3778E+01	0.2220E-05		
		0.5681E+01	0.4171E-07		
		0.7585E+01	0.2674E-09		
		0.7932E+01	0.2623E-09		

TIME	LATERAL DISTANCE	DEPTH	CONCENTRATION	TOTAL MASS INTO SOIL	TOTAL MASS INTO BASE
		0.8279E+01	0.2618E-09		
		0.8627E+01	0.2620E-09		
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0.8500E+02	0.1457E+03	0.0000E+00	0.1242E-01	0.9769E+02	0.0000E+00
		0.3048E+00	0.1176E-01		
		0.6096E+00	0.1060E-01		
		0.9144E+00	0.9166E-02		
		0.1234E+01	0.7547E-02		
		0.1554E+01	0.5975E-02		
		0.1875E+01	0.4555E-02		
		0.3778E+01	0.4232E-03		
		0.5681E+01	0.1098E-04		
		0.7585E+01	0.4643E-06		
		0.7932E+01	0.4867E-06		
		0.8279E+01	0.4995E-06		
		0.8627E+01	0.5036E-06		
0.8500E+02	0.1533E+03	0.0000E+00	0.8031E-03	0.9769E+02	0.0000E+00
		0.3048E+00	0.6474E-03		
		0.6096E+00	0.5123E-03		
		0.9144E+00	0.3976E-03		
		0.1234E+01	0.2979E-03		
		0.1554E+01	0.2180E-03		
		0.1875E+01	0.1556E-03		
		0.3778E+01	0.1143E-04		
		0.5681E+01	0.2682E-06		
		0.7585E+01	0.9634E-07		
		0.7932E+01	0.1036E-06		
		0.8279E+01	0.1080E-06		
		0.8627E+01	0.1095E-06		
0.8500E+02	0.1610E+03	0.0000E+00	0.3993E-03	0.9769E+02	0.0000E+00
		0.3048E+00	0.3149E-03		
		0.6096E+00	0.2448E-03		
		0.9144E+00	0.1873E-03		
		0.1234E+01	0.1388E-03		
		0.1554E+01	0.1006E-03		
		0.1875E+01	0.7132E-04		
		0.3778E+01	0.5139E-05		
		0.5681E+01	0.1199E-06		
		0.7585E+01	0.1925E-07		
		0.7932E+01	0.2070E-07		
		0.8279E+01	0.2160E-07		
		0.8627E+01	0.2190E-07		
0.8500E+02	0.1686E+03	0.0000E+00	0.2832E-03	0.9769E+02	0.0000E+00
		0.3048E+00	0.2207E-03		
		0.6096E+00	0.1699E-03		
		0.9144E+00	0.1289E-03		
		0.1234E+01	0.9475E-04		
		0.1554E+01	0.6827E-04		
		0.1875E+01	0.4813E-04		
		0.3778E+01	0.3406E-05		
		0.5681E+01	0.7893E-07		
		0.7585E+01	0.3703E-08		
		0.7932E+01	0.3945E-08		
		0.8279E+01	0.4098E-08		

TIME	LATERAL DISTANCE	DEPTH	CONCENTRATION	TOTAL MASS INTO SOIL	TOTAL MASS INTO BASE
		0.8627E+01	0.4150E-08		
0.8500E+02	0.1762E+03	0.0000E+00	0.2253E-03	0.9769E+02	0.0000E+00
		0.3048E+00	0.1745E-03		
		0.6096E+00	0.1336E-03		
		0.9144E+00	0.1009E-03		
		0.1234E+01	0.7382E-04		
		0.1554E+01	0.5299E-04		
		0.1875E+01	0.3724E-04		
		0.3778E+01	0.2606E-05		
		0.5681E+01	0.6014E-07		
		0.7585E+01	0.7383E-09		
		0.7932E+01	0.7487E-09		
		0.8279E+01	0.7597E-09		
		0.8627E+01	0.7641E-09		

TIME	LATERAL DISTANCE	DEPTH	CONCENTRATION	TOTAL MASS INTO SOIL	TOTAL MASS INTO BASE
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0.9000E+02	0.1457E+03	0.0000E+00	0.1242E-01	0.1005E+03	0.0000E+00
		0.3048E+00	0.1185E-01		
		0.6096E+00	0.1078E-01		
		0.9144E+00	0.9403E-02		
		0.1234E+01	0.7831E-02		
		0.1554E+01	0.6278E-02		
		0.1875E+01	0.4856E-02		
		0.3778E+01	0.5098E-03		
		0.5681E+01	0.1601E-04		
		0.7585E+01	0.9306E-06		
		0.7932E+01	0.9744E-06		
		0.8279E+01	0.9995E-06		
		0.8627E+01	0.1008E-05		
0.9000E+02	0.1533E+03	0.0000E+00	0.8031E-03	0.1005E+03	0.0000E+00
		0.3048E+00	0.6493E-03		
		0.6096E+00	0.5159E-03		
		0.9144E+00	0.4025E-03		
		0.1234E+01	0.3038E-03		
		0.1554E+01	0.2243E-03		
		0.1875E+01	0.1618E-03		
		0.3778E+01	0.1322E-04		
		0.5681E+01	0.3724E-06		
		0.7585E+01	0.2074E-06		
		0.7932E+01	0.2222E-06		
		0.8279E+01	0.2313E-06		
		0.8627E+01	0.2343E-06		
0.9000E+02	0.1610E+03	0.0000E+00	0.3993E-03	0.1005E+03	0.0000E+00
		0.3048E+00	0.3157E-03		
		0.6096E+00	0.2464E-03		
		0.9144E+00	0.1895E-03		
		0.1234E+01	0.1414E-03		
		0.1554E+01	0.1034E-03		
		0.1875E+01	0.7410E-04		
		0.3778E+01	0.5939E-05		
		0.5681E+01	0.1664E-06		
		0.7585E+01	0.4446E-07		
		0.7932E+01	0.4769E-07		
		0.8279E+01	0.4968E-07		
		0.8627E+01	0.5035E-07		

0.9000E+02	0.1686E+03	0.0000E+00	0.2832E-03	0.1005E+03	0.0000E+00
		0.3048E+00	0.2212E-03		
		0.6096E+00	0.1709E-03		
		0.9144E+00	0.1303E-03		
		0.1234E+01	0.9646E-04		
		0.1554E+01	0.7010E-04		
		0.1875E+01	0.4994E-04		
		0.3778E+01	0.3927E-05		
		0.5681E+01	0.1092E-06		
		0.7585E+01	0.9133E-08		
		0.7932E+01	0.9743E-08		
		0.8279E+01	0.1013E-07		
		0.8627E+01	0.1026E-07		
0.9000E+02	0.1762E+03	0.0000E+00	0.2253E-03	0.1005E+03	0.0000E+00
		0.3048E+00	0.1749E-03		
		0.6096E+00	0.1344E-03		
		0.9144E+00	0.1019E-03		
		0.1234E+01	0.7512E-04		
		0.1554E+01	0.5438E-04		
		0.1875E+01	0.3862E-04		
		0.3778E+01	0.3001E-05		
		0.5681E+01	0.8307E-07		
		0.7585E+01	0.1882E-08		
		0.7932E+01	0.1946E-08		
		0.8279E+01	0.1994E-08		
		0.8627E+01	0.2011E-08		

TIME	LATERAL DISTANCE	DEPTH	CONCENTRATION	TOTAL MASS INTO SOIL	TOTAL MASS INTO BASE
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0.9500E+02	0.1457E+03	0.0000E+00	0.1242E-01	0.1033E+03	0.0000E+00
		0.3048E+00	0.1194E-01		
		0.6096E+00	0.1094E-01		
		0.9144E+00	0.9629E-02		
		0.1234E+01	0.8101E-02		
		0.1554E+01	0.6571E-02		
		0.1875E+01	0.5148E-02		
		0.3778E+01	0.6034E-03		
		0.5681E+01	0.2249E-04		
		0.7585E+01	0.1741E-05		
		0.7932E+01	0.1820E-05		
		0.8279E+01	0.1867E-05		
		0.8627E+01	0.1882E-05		
0.9500E+02	0.1533E+03	0.0000E+00	0.8031E-03	0.1033E+03	0.0000E+00
		0.3048E+00	0.6509E-03		
		0.6096E+00	0.5190E-03		
		0.9144E+00	0.4069E-03		
		0.1234E+01	0.3091E-03		
		0.1554E+01	0.2300E-03		
		0.1875E+01	0.1675E-03		
		0.3778E+01	0.1504E-04		
		0.5681E+01	0.4987E-06		
		0.7585E+01	0.4136E-06		
		0.7932E+01	0.4419E-06		
		0.8279E+01	0.4591E-06		
		0.8627E+01	0.4649E-06		

0.9500E+02	0.1610E+03	0.0000E+00	0.3993E-03	0.1033E+03	0.0000E+00
		0.3048E+00	0.3164E-03		
		0.6096E+00	0.2478E-03		
		0.9144E+00	0.1915E-03		
		0.1234E+01	0.1437E-03		
		0.1554E+01	0.1060E-03		
		0.1875E+01	0.7664E-04		
		0.3778E+01	0.6750E-05		
		0.5681E+01	0.2227E-06		
		0.7585E+01	0.9455E-07		
		0.7932E+01	0.1011E-06		
		0.8279E+01	0.1052E-06		
		0.8627E+01	0.1066E-06		
0.9500E+02	0.1686E+03	0.0000E+00	0.2832E-03	0.1033E+03	0.0000E+00
		0.3048E+00	0.2217E-03		
		0.6096E+00	0.1718E-03		
		0.9144E+00	0.1316E-03		
		0.1234E+01	0.9798E-04		
		0.1554E+01	0.7175E-04		
		0.1875E+01	0.5159E-04		
		0.3778E+01	0.4455E-05		
		0.5681E+01	0.1457E-06		
		0.7585E+01	0.2066E-07		
		0.7932E+01	0.2203E-07		
		0.8279E+01	0.2289E-07		
		0.8627E+01	0.2318E-07		
0.9500E+02	0.1762E+03	0.0000E+00	0.2253E-03	0.1033E+03	0.0000E+00
		0.3048E+00	0.1753E-03		
		0.6096E+00	0.1350E-03		
		0.9144E+00	0.1029E-03		
		0.1234E+01	0.7627E-04		
		0.1554E+01	0.5563E-04		
		0.1875E+01	0.3986E-04		
		0.3778E+01	0.3400E-05		
		0.5681E+01	0.1106E-06		
		0.7585E+01	0.4442E-08		
		0.7932E+01	0.4647E-08		
		0.8279E+01	0.4785E-08		
		0.8627E+01	0.4833E-08		

TIME	LATERAL DISTANCE	DEPTH	CONCENTRATION	TOTAL MASS INTO SOIL	TOTAL MASS INTO BASE
0.1000E+03	0.1457E+03	0.0000E+00	0.1242E-01	0.1060E+03	0.0000E+00
		0.3048E+00	0.1202E-01		
		0.6096E+00	0.1109E-01		
		0.9144E+00	0.9843E-02		
		0.1234E+01	0.8360E-02		
		0.1554E+01	0.6853E-02		
		0.1875E+01	0.5433E-02		
		0.3778E+01	0.7035E-03		
		0.5681E+01	0.3061E-04		
		0.7585E+01	0.3069E-05		
		0.7932E+01	0.3206E-05		
		0.8279E+01	0.3286E-05		
		0.8627E+01	0.3312E-05		
0.1000E+03	0.1533E+03	0.0000E+00	0.8031E-03	0.1060E+03	0.0000E+00

		0.3048E+00	0.6524E-03		
		0.6096E+00	0.5219E-03		
		0.9144E+00	0.4108E-03		
		0.1234E+01	0.3138E-03		
		0.1554E+01	0.2351E-03		
		0.1875E+01	0.1727E-03		
		0.3778E+01	0.1686E-04		
		0.5681E+01	0.6476E-06		
		0.7585E+01	0.7731E-06		
		0.7932E+01	0.8235E-06		
		0.8279E+01	0.8544E-06		
		0.8627E+01	0.8647E-06		
0.1000E+03	0.1610E+03	0.0000E+00	0.3993E-03	0.1060E+03	0.0000E+00
		0.3048E+00	0.3171E-03		
		0.6096E+00	0.2491E-03		
		0.9144E+00	0.1932E-03		
		0.1234E+01	0.1459E-03		
		0.1554E+01	0.1083E-03		
		0.1875E+01	0.7896E-04		
		0.3778E+01	0.7565E-05		
		0.5681E+01	0.2890E-06		
		0.7585E+01	0.1873E-06		
		0.7932E+01	0.1999E-06		
		0.8279E+01	0.2076E-06		
		0.8627E+01	0.2102E-06		
0.1000E+03	0.1686E+03	0.0000E+00	0.2832E-03	0.1060E+03	0.0000E+00
		0.3048E+00	0.2222E-03		
		0.6096E+00	0.1726E-03		
		0.9144E+00	0.1327E-03		
		0.1234E+01	0.9935E-04		
		0.1554E+01	0.7324E-04		
		0.1875E+01	0.5309E-04		
		0.3778E+01	0.4983E-05		
		0.5681E+01	0.1886E-06		
		0.7585E+01	0.4334E-07		
		0.7932E+01	0.4619E-07		
		0.8279E+01	0.4796E-07		
		0.8627E+01	0.4855E-07		
0.1000E+03	0.1762E+03	0.0000E+00	0.2253E-03	0.1060E+03	0.0000E+00
		0.3048E+00	0.1756E-03		
		0.6096E+00	0.1357E-03		
		0.9144E+00	0.1038E-03		
		0.1234E+01	0.7730E-04		
		0.1554E+01	0.5675E-04		
		0.1875E+01	0.4099E-04		
		0.3778E+01	0.3798E-05		
		0.5681E+01	0.1429E-06		
		0.7585E+01	0.9765E-08		
		0.7932E+01	0.1028E-07		
		0.8279E+01	0.1061E-07		
		0.8627E+01	0.1073E-07		

TIME	LATERAL DISTANCE	DEPTH	CONCENTRATION	TOTAL MASS INTO SOIL	TOTAL MASS INTO BASE
0.1050E+03	0.1457E+03	0.0000E+00	0.1242E-01	0.1086E+03	0.0000E+00
		0.3048E+00	0.1209E-01		

		0.6096E+00	0.1124E-01		
		0.9144E+00	0.1005E-01		
		0.1234E+01	0.8608E-02		
		0.1554E+01	0.7125E-02		
		0.1875E+01	0.5710E-02		
		0.3778E+01	0.8095E-03		
		0.5681E+01	0.4053E-04		
		0.7585E+01	0.5144E-05		
		0.7932E+01	0.5368E-05		
		0.8279E+01	0.5498E-05		
		0.8627E+01	0.5541E-05		
0.1050E+03	0.1533E+03	0.0000E+00	0.8031E-03	0.1086E+03	0.0000E+00
		0.3048E+00	0.6537E-03		
		0.6096E+00	0.5243E-03		
		0.9144E+00	0.4143E-03		
		0.1234E+01	0.3180E-03		
		0.1554E+01	0.2398E-03		
		0.1875E+01	0.1774E-03		
		0.3778E+01	0.1867E-04		
		0.5681E+01	0.8196E-06		
		0.7585E+01	0.1366E-05		
		0.7932E+01	0.1452E-05		
		0.8279E+01	0.1504E-05		
		0.8627E+01	0.1521E-05		
0.1050E+03	0.1610E+03	0.0000E+00	0.3993E-03	0.1086E+03	0.0000E+00
		0.3048E+00	0.3177E-03		
		0.6096E+00	0.2502E-03		
		0.9144E+00	0.1948E-03		
		0.1234E+01	0.1478E-03		
		0.1554E+01	0.1104E-03		
		0.1875E+01	0.8108E-04		
		0.3778E+01	0.8377E-05		
		0.5681E+01	0.3654E-06		
		0.7585E+01	0.3491E-06		
		0.7932E+01	0.3716E-06		
		0.8279E+01	0.3854E-06		
		0.8627E+01	0.3901E-06		
0.1050E+03	0.1686E+03	0.0000E+00	0.2832E-03	0.1086E+03	0.0000E+00
		0.3048E+00	0.2225E-03		
		0.6096E+00	0.1734E-03		
		0.9144E+00	0.1337E-03		
		0.1234E+01	0.1006E-03		
		0.1554E+01	0.7458E-04		
		0.1875E+01	0.5446E-04		
		0.3778E+01	0.5508E-05		
		0.5681E+01	0.2377E-06		
		0.7585E+01	0.8521E-07		
		0.7932E+01	0.9068E-07		
		0.8279E+01	0.9406E-07		
		0.8627E+01	0.9520E-07		
0.1050E+03	0.1762E+03	0.0000E+00	0.2253E-03	0.1086E+03	0.0000E+00
		0.3048E+00	0.1759E-03		
		0.6096E+00	0.1362E-03		
		0.9144E+00	0.1045E-03		
		0.1234E+01	0.7822E-04		
		0.1554E+01	0.5776E-04		
		0.1875E+01	0.4203E-04		

		0.3778E+01	0.4193E-05		
		0.5681E+01	0.1798E-06		
		0.7585E+01	0.2012E-07		
		0.7932E+01	0.2125E-07		
		0.8279E+01	0.2197E-07		
		0.8627E+01	0.2221E-07		

TIME	LATERAL DISTANCE	DEPTH	CONCENTRATION	TOTAL MASS INTO SOIL	TOTAL MASS INTO BASE
0.1100E+03	0.1457E+03	0.0000E+00	0.1242E-01	0.1111E+03	0.0000E+00
		0.3048E+00	0.1216E-01		
		0.6096E+00	0.1138E-01		
		0.9144E+00	0.1024E-01		
		0.1234E+01	0.8846E-02		
		0.1554E+01	0.7387E-02		
		0.1875E+01	0.5979E-02		
		0.3778E+01	0.9210E-03		
		0.5681E+01	0.5242E-04		
		0.7585E+01	0.8250E-05		
		0.7932E+01	0.8600E-05		
		0.8279E+01	0.8803E-05		
		0.8627E+01	0.8870E-05		
0.1100E+03	0.1533E+03	0.0000E+00	0.8031E-03	0.1111E+03	0.0000E+00
		0.3048E+00	0.6549E-03		
		0.6096E+00	0.5266E-03		
		0.9144E+00	0.4174E-03		
		0.1234E+01	0.3218E-03		
		0.1554E+01	0.2440E-03		
		0.1875E+01	0.1817E-03		
		0.3778E+01	0.2046E-04		
		0.5681E+01	0.1015E-05		
		0.7585E+01	0.2300E-05		
		0.7932E+01	0.2438E-05		
		0.8279E+01	0.2522E-05		
		0.8627E+01	0.2550E-05		
0.1100E+03	0.1610E+03	0.0000E+00	0.3993E-03	0.1111E+03	0.0000E+00
		0.3048E+00	0.3182E-03		
		0.6096E+00	0.2512E-03		
		0.9144E+00	0.1962E-03		
		0.1234E+01	0.1495E-03		
		0.1554E+01	0.1122E-03		
		0.1875E+01	0.8302E-04		
		0.3778E+01	0.9179E-05		
		0.5681E+01	0.4519E-06		
		0.7585E+01	0.6170E-06		
		0.7932E+01	0.6554E-06		
		0.8279E+01	0.6788E-06		
		0.8627E+01	0.6867E-06		
0.1100E+03	0.1686E+03	0.0000E+00	0.2832E-03	0.1111E+03	0.0000E+00
		0.3048E+00	0.2229E-03		
		0.6096E+00	0.1740E-03		
		0.9144E+00	0.1346E-03		
		0.1234E+01	0.1017E-03		
		0.1554E+01	0.7580E-04		
		0.1875E+01	0.5571E-04		
		0.3778E+01	0.6025E-05		

		0.5681E+01	0.2929E-06		
		0.7585E+01	0.1582E-06		
		0.7932E+01	0.1681E-06		
		0.8279E+01	0.1742E-06		
		0.8627E+01	0.1763E-06		
0.1100E+03	0.1762E+03	0.0000E+00	0.2253E-03	0.1111E+03	0.0000E+00
		0.3048E+00	0.1761E-03		
		0.6096E+00	0.1367E-03		
		0.9144E+00	0.1052E-03		
		0.1234E+01	0.7905E-04		
		0.1554E+01	0.5868E-04		
		0.1875E+01	0.4296E-04		
		0.3778E+01	0.4582E-05		
		0.5681E+01	0.2211E-06		
		0.7585E+01	0.3913E-07		
		0.7932E+01	0.4138E-07		
		0.8279E+01	0.4279E-07		
		0.8627E+01	0.4327E-07		

TIME	LATERAL DISTANCE	DEPTH	CONCENTRATION	TOTAL MASS INTO SOIL	TOTAL MASS INTO BASE
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0.1150E+03	0.1457E+03	0.0000E+00	0.1242E-01	0.1136E+03	0.0000E+00
		0.3048E+00	0.1223E-01		
		0.6096E+00	0.1151E-01		
		0.9144E+00	0.1043E-01		
		0.1234E+01	0.9074E-02		
		0.1554E+01	0.7641E-02		
		0.1875E+01	0.6242E-02		
		0.3778E+01	0.1038E-02		
		0.5681E+01	0.6640E-04		
		0.7585E+01	0.1273E-04		
		0.7932E+01	0.1326E-04		
		0.8279E+01	0.1356E-04		
		0.8627E+01	0.1366E-04		
0.1150E+03	0.1533E+03	0.0000E+00	0.8031E-03	0.1136E+03	0.0000E+00
		0.3048E+00	0.6559E-03		
		0.6096E+00	0.5286E-03		
		0.9144E+00	0.4202E-03		
		0.1234E+01	0.3253E-03		
		0.1554E+01	0.2478E-03		
		0.1875E+01	0.1857E-03		
		0.3778E+01	0.2221E-04		
		0.5681E+01	0.1235E-05		
		0.7585E+01	0.3710E-05		
		0.7932E+01	0.3924E-05		
		0.8279E+01	0.4055E-05		
		0.8627E+01	0.4099E-05		
0.1150E+03	0.1610E+03	0.0000E+00	0.3993E-03	0.1136E+03	0.0000E+00
		0.3048E+00	0.3187E-03		
		0.6096E+00	0.2521E-03		
		0.9144E+00	0.1975E-03		
		0.1234E+01	0.1510E-03		
		0.1554E+01	0.1140E-03		
		0.1875E+01	0.8479E-04		
		0.3778E+01	0.9967E-05		
		0.5681E+01	0.5487E-06		

		0.7585E+01	0.1041E-05		
		0.7932E+01	0.1104E-05		
		0.8279E+01	0.1142E-05		
		0.8627E+01	0.1154E-05		
0.1150E+03	0.1686E+03	0.0000E+00	0.2832E-03	0.1136E+03	0.0000E+00
		0.3048E+00	0.2232E-03		
		0.6096E+00	0.1746E-03		
		0.9144E+00	0.1354E-03		
		0.1234E+01	0.1027E-03		
		0.1554E+01	0.7691E-04		
		0.1875E+01	0.5685E-04		
		0.3778E+01	0.6532E-05		
		0.5681E+01	0.3541E-06		
		0.7585E+01	0.2795E-06		
		0.7932E+01	0.2965E-06		
		0.8279E+01	0.3069E-06		
		0.8627E+01	0.3105E-06		
0.1150E+03	0.1762E+03	0.0000E+00	0.2253E-03	0.1136E+03	0.0000E+00
		0.3048E+00	0.1763E-03		
		0.6096E+00	0.1371E-03		
		0.9144E+00	0.1058E-03		
		0.1234E+01	0.7980E-04		
		0.1554E+01	0.5951E-04		
		0.1875E+01	0.4382E-04		
		0.3778E+01	0.4961E-05		
		0.5681E+01	0.2667E-06		
		0.7585E+01	0.7223E-07		
		0.7932E+01	0.7641E-07		
		0.8279E+01	0.7901E-07		
		0.8627E+01	0.7990E-07		

TIME	LATERAL DISTANCE	DEPTH	CONCENTRATION	TOTAL MASS INTO SOIL	TOTAL MASS INTO BASE
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0.1200E+03	0.1457E+03	0.0000E+00	0.1242E-01	0.1161E+03	0.0000E+00
		0.3048E+00	0.1230E-01		
		0.6096E+00	0.1164E-01		
		0.9144E+00	0.1061E-01		
		0.1234E+01	0.9295E-02		
		0.1554E+01	0.7887E-02		
		0.1875E+01	0.6498E-02		
		0.3778E+01	0.1159E-02		
		0.5681E+01	0.8260E-04		
		0.7585E+01	0.1899E-04		
		0.7932E+01	0.1976E-04		
		0.8279E+01	0.2020E-04		
		0.8627E+01	0.2035E-04		
0.1200E+03	0.1533E+03	0.0000E+00	0.8031E-03	0.1161E+03	0.0000E+00
		0.3048E+00	0.6568E-03		
		0.6096E+00	0.5304E-03		
		0.9144E+00	0.4227E-03		
		0.1234E+01	0.3284E-03		
		0.1554E+01	0.2512E-03		
		0.1875E+01	0.1893E-03		
		0.3778E+01	0.2392E-04		
		0.5681E+01	0.1482E-05		
		0.7585E+01	0.5767E-05		

		0.7932E+01	0.6087E-05		
		0.8279E+01	0.6282E-05		
		0.8627E+01	0.6348E-05		
0.1200E+03	0.1610E+03	0.0000E+00	0.3993E-03	0.1161E+03	0.0000E+00
		0.3048E+00	0.3191E-03		
		0.6096E+00	0.2529E-03		
		0.9144E+00	0.1986E-03		
		0.1234E+01	0.1524E-03		
		0.1554E+01	0.1155E-03		
		0.1875E+01	0.8642E-04		
		0.3778E+01	0.1074E-04		
		0.5681E+01	0.6561E-06		
		0.7585E+01	0.1687E-05		
		0.7932E+01	0.1784E-05		
		0.8279E+01	0.1844E-05		
		0.8627E+01	0.1864E-05		
0.1200E+03	0.1686E+03	0.0000E+00	0.2832E-03	0.1161E+03	0.0000E+00
		0.3048E+00	0.2234E-03		
		0.6096E+00	0.1751E-03		
		0.9144E+00	0.1362E-03		
		0.1234E+01	0.1036E-03		
		0.1554E+01	0.7791E-04		
		0.1875E+01	0.5790E-04		
		0.3778E+01	0.7026E-05		
		0.5681E+01	0.4211E-06		
		0.7585E+01	0.4726E-06		
		0.7932E+01	0.5004E-06		
		0.8279E+01	0.5175E-06		
		0.8627E+01	0.5232E-06		
0.1200E+03	0.1762E+03	0.0000E+00	0.2253E-03	0.1161E+03	0.0000E+00
		0.3048E+00	0.1765E-03		
		0.6096E+00	0.1375E-03		
		0.9144E+00	0.1063E-03		
		0.1234E+01	0.8047E-04		
		0.1554E+01	0.6026E-04		
		0.1875E+01	0.4460E-04		
		0.3778E+01	0.5331E-05		
		0.5681E+01	0.3162E-06		
		0.7585E+01	0.1273E-06		
		0.7932E+01	0.1346E-06		
		0.8279E+01	0.1392E-06		
		0.8627E+01	0.1407E-06		

TIME	LATERAL DISTANCE	DEPTH	CONCENTRATION	TOTAL MASS INTO SOIL	TOTAL MASS INTO BASE
0.1250E+03	0.1457E+03	0.0000E+00	0.1242E-01	0.1185E+03	0.0000E+00
		0.3048E+00	0.1236E-01		
		0.6096E+00	0.1176E-01		
		0.9144E+00	0.1078E-01		
		0.1234E+01	0.9507E-02		
		0.1554E+01	0.8126E-02		
		0.1875E+01	0.6747E-02		
		0.3778E+01	0.1284E-02		
		0.5681E+01	0.1011E-03		
		0.7585E+01	0.2750E-04		
		0.7932E+01	0.2858E-04		

		0.8279E+01	0.2921E-04		
		0.8627E+01	0.2942E-04		
0.1250E+03	0.1533E+03	0.0000E+00	0.8031E-03	0.1185E+03	0.0000E+00
		0.3048E+00	0.6577E-03		
		0.6096E+00	0.5320E-03		
		0.9144E+00	0.4250E-03		
		0.1234E+01	0.3312E-03		
		0.1554E+01	0.2544E-03		
		0.1875E+01	0.1926E-03		
		0.3778E+01	0.2557E-04		
		0.5681E+01	0.1758E-05		
		0.7585E+01	0.8672E-05		
		0.7932E+01	0.9137E-05		
		0.8279E+01	0.9420E-05		
		0.8627E+01	0.9515E-05		
0.1250E+03	0.1610E+03	0.0000E+00	0.3993E-03	0.1185E+03	0.0000E+00
		0.3048E+00	0.3195E-03		
		0.6096E+00	0.2536E-03		
		0.9144E+00	0.1996E-03		
		0.1234E+01	0.1537E-03		
		0.1554E+01	0.1170E-03		
		0.1875E+01	0.8791E-04		
		0.3778E+01	0.1149E-04		
		0.5681E+01	0.7749E-06		
		0.7585E+01	0.2637E-05		
		0.7932E+01	0.2783E-05		
		0.8279E+01	0.2873E-05		
		0.8627E+01	0.2903E-05		
0.1250E+03	0.1686E+03	0.0000E+00	0.2832E-03	0.1185E+03	0.0000E+00
		0.3048E+00	0.2237E-03		
		0.6096E+00	0.1756E-03		
		0.9144E+00	0.1368E-03		
		0.1234E+01	0.1044E-03		
		0.1554E+01	0.7882E-04		
		0.1875E+01	0.5885E-04		
		0.3778E+01	0.7506E-05		
		0.5681E+01	0.4938E-06		
		0.7585E+01	0.7683E-06		
		0.7932E+01	0.8122E-06		
		0.8279E+01	0.8391E-06		
		0.8627E+01	0.8481E-06		
0.1250E+03	0.1762E+03	0.0000E+00	0.2253E-03	0.1185E+03	0.0000E+00
		0.3048E+00	0.1767E-03		
		0.6096E+00	0.1379E-03		
		0.9144E+00	0.1068E-03		
		0.1234E+01	0.8108E-04		
		0.1554E+01	0.6094E-04		
		0.1875E+01	0.4532E-04		
		0.3778E+01	0.5690E-05		
		0.5681E+01	0.3694E-06		
		0.7585E+01	0.2153E-06		
		0.7932E+01	0.2275E-06		
		0.8279E+01	0.2350E-06		
		0.8627E+01	0.2375E-06		
TIME	LATERAL DISTANCE	DEPTH	CONCENTRATION	TOTAL MASS INTO SOIL	TOTAL MASS INTO BASE

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0.1300E+03	0.1457E+03	0.0000E+00	0.1242E-01	0.1208E+03	0.0000E+00
		0.3048E+00	0.1242E-01		
		0.6096E+00	0.1188E-01		
		0.9144E+00	0.1094E-01		
		0.1234E+01	0.9712E-02		
		0.1554E+01	0.8357E-02		
		0.1875E+01	0.6990E-02		
		0.3778E+01	0.1413E-02		
		0.5681E+01	0.1221E-03		
		0.7585E+01	0.3877E-04		
		0.7932E+01	0.4025E-04		
		0.8279E+01	0.4112E-04		
		0.8627E+01	0.4141E-04		
0.1300E+03	0.1533E+03	0.0000E+00	0.8031E-03	0.1208E+03	0.0000E+00
		0.3048E+00	0.6584E-03		
		0.6096E+00	0.5334E-03		
		0.9144E+00	0.4270E-03		
		0.1234E+01	0.3337E-03		
		0.1554E+01	0.2573E-03		
		0.1875E+01	0.1956E-03		
		0.3778E+01	0.2717E-04		
		0.5681E+01	0.2070E-05		
		0.7585E+01	0.1267E-04		
		0.7932E+01	0.1332E-04		
		0.8279E+01	0.1372E-04		
		0.8627E+01	0.1385E-04		
0.1300E+03	0.1610E+03	0.0000E+00	0.3993E-03	0.1208E+03	0.0000E+00
		0.3048E+00	0.3198E-03		
		0.6096E+00	0.2543E-03		
		0.9144E+00	0.2006E-03		
		0.1234E+01	0.1548E-03		
		0.1554E+01	0.1183E-03		
		0.1875E+01	0.8928E-04		
		0.3778E+01	0.1221E-04		
		0.5681E+01	0.9068E-06		
		0.7585E+01	0.3991E-05		
		0.7932E+01	0.4206E-05		
		0.8279E+01	0.4336E-05		
		0.8627E+01	0.4380E-05		
0.1300E+03	0.1686E+03	0.0000E+00	0.2832E-03	0.1208E+03	0.0000E+00
		0.3048E+00	0.2239E-03		
		0.6096E+00	0.1760E-03		
		0.9144E+00	0.1374E-03		
		0.1234E+01	0.1051E-03		
		0.1554E+01	0.7966E-04		
		0.1875E+01	0.5973E-04		
		0.3778E+01	0.7970E-05		
		0.5681E+01	0.5725E-06		
		0.7585E+01	0.1207E-05		
		0.7932E+01	0.1273E-05		
		0.8279E+01	0.1314E-05		
		0.8627E+01	0.1328E-05		
0.1300E+03	0.1762E+03	0.0000E+00	0.2253E-03	0.1208E+03	0.0000E+00
		0.3048E+00	0.1769E-03		
		0.6096E+00	0.1382E-03		

		0.9144E+00	0.1073E-03		
		0.1234E+01	0.8163E-04		
		0.1554E+01	0.6156E-04		
		0.1875E+01	0.4597E-04		
		0.3778E+01	0.6036E-05		
		0.5681E+01	0.4260E-06		
		0.7585E+01	0.3509E-06		
		0.7932E+01	0.3704E-06		
		0.8279E+01	0.3823E-06		
		0.8627E+01	0.3864E-06		

TIME	LATERAL DISTANCE	DEPTH	CONCENTRATION	TOTAL MASS INTO SOIL	TOTAL MASS INTO BASE
0.1340E+03	0.1457E+03	0.0000E+00	0.1242E-01	0.1226E+03	0.0000E+00
		0.3048E+00	0.1247E-01		
		0.6096E+00	0.1197E-01		
		0.9144E+00	0.1107E-01		
		0.1234E+01	0.9871E-02		
		0.1554E+01	0.8537E-02		
		0.1875E+01	0.7181E-02		
		0.3778E+01	0.1519E-02		
		0.5681E+01	0.1407E-03		
		0.7585E+01	0.5017E-04		
		0.7932E+01	0.5205E-04		
		0.8279E+01	0.5315E-04		
		0.8627E+01	0.5352E-04		
0.1340E+03	0.1533E+03	0.0000E+00	0.8031E-03	0.1226E+03	0.0000E+00
		0.3048E+00	0.6590E-03		
		0.6096E+00	0.5345E-03		
		0.9144E+00	0.4285E-03		
		0.1234E+01	0.3356E-03		
		0.1554E+01	0.2594E-03		
		0.1875E+01	0.1978E-03		
		0.3778E+01	0.2840E-04		
		0.5681E+01	0.2350E-05		
		0.7585E+01	0.1683E-04		
		0.7932E+01	0.1767E-04		
		0.8279E+01	0.1819E-04		
		0.8627E+01	0.1836E-04		
0.1340E+03	0.1610E+03	0.0000E+00	0.3993E-03	0.1226E+03	0.0000E+00
		0.3048E+00	0.3201E-03		
		0.6096E+00	0.2548E-03		
		0.9144E+00	0.2012E-03		
		0.1234E+01	0.1557E-03		
		0.1554E+01	0.1192E-03		
		0.1875E+01	0.9029E-04		
		0.3778E+01	0.1278E-04		
		0.5681E+01	0.1023E-05		
		0.7585E+01	0.5446E-05		
		0.7932E+01	0.5731E-05		
		0.8279E+01	0.5905E-05		
		0.8627E+01	0.5963E-05		
0.1340E+03	0.1686E+03	0.0000E+00	0.2832E-03	0.1226E+03	0.0000E+00
		0.3048E+00	0.2241E-03		
		0.6096E+00	0.1763E-03		
		0.9144E+00	0.1379E-03		

		0.1234E+01	0.1057E-03		
		0.1554E+01	0.8027E-04		
		0.1875E+01	0.6038E-04		
		0.3778E+01	0.8330E-05		
		0.5681E+01	0.6400E-06		
		0.7585E+01	0.1693E-05		
		0.7932E+01	0.1784E-05		
		0.8279E+01	0.1840E-05		
		0.8627E+01	0.1859E-05		
0.1340E+03	0.1762E+03	0.0000E+00	0.2253E-03	0.1226E+03	0.0000E+00
		0.3048E+00	0.1770E-03		
		0.6096E+00	0.1384E-03		
		0.9144E+00	0.1076E-03		
		0.1234E+01	0.8203E-04		
		0.1554E+01	0.6202E-04		
		0.1875E+01	0.4645E-04		
		0.3778E+01	0.6303E-05		
		0.5681E+01	0.4738E-06		
		0.7585E+01	0.5063E-06		
		0.7932E+01	0.5339E-06		
		0.8279E+01	0.5508E-06		
		0.8627E+01	0.5565E-06		

N O T I C E


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*      M I G R A T E   S I M U L A T I O N      *
*                                               *
*             ANALYSIS      COMPLETED           *
*                                               *
*           TIME     -       15:59:44           *
*           EXECUTION TIME    0: 0:10           *
*                                               *
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ATTACHMENT 17: Leachate Data and GIA Results

SECTION 812.316

FOIA – LEACHATE DATA

CLINTON LANDFILL, INC. #3

CHEMICAL WASTE UNIT

PDC TECHNICAL SERVICES, INC.

P.O. BOX 9071

PEORIA, IL 61612-9071

CD 1 of 1

FEBRUARY 2008

TABLE 812-316-17
SOURCE CONCENTRATIONS, AGQS VALUES, AND PREDICTED LEACHATE CONCENTRATIONS - LOWER RADNOR TILL SAND
Clinton Landfill No. 3 Chemical Waste Unit

Parameter	Units	Maximum Concentration in Leachate	Assumed Leachate Concentration	Predicted LCC in Groundwater	AGQS or MDL	AGQS/MDL> Predicted LCC?
Acenaphthene	ug/l	<20	200	2.6900E-02	2.0	Yes
Acenaphthylene	ug/l	<20	200	2.6900E-02	2.0	Yes
Anthracene	ug/l	<20	200	2.6900E-02	2.0	Yes
Benzene	ug/l	**7.9**	100	1.3450E-02	1.0	Yes
Benzo(a)anthracene	ug/l	<20	200	2.6900E-02	0.13	Yes
Benzo(a)pyrene	ug/l	<20	200	2.6900E-02	0.2	Yes
Benzo(b)fluoranthene	ug/l	<20	200	2.6900E-02	0.18	Yes
Benzo(ghi) perylene	ug/l	<20	200	2.6900E-02	0.2	Yes
Benzo(k)fluoranthene	ug/l	<20	200	2.6900E-02	0.2	Yes
Chrysene	ug/l	<20	200	2.6900E-02	0.2	Yes
Pentachlorophenol	ug/l	<100	1000	1.3450E-01	0.2	Yes
Dibenzo(a,h)anthracene	ug/l	<20	200	2.6900E-02	2.0	Yes
Ethylbenzene	ug/l	<2	20	2.6900E-03	0.2	Yes
Fluoranthene	ug/l	<20	200	2.6900E-02	0.2	Yes
Indeno(1,2,3-cd)pyrene	ug/l	<20	200	2.6900E-02	2.0	Yes
Naphthalene	ug/l	**43**	500	6.7250E-02	0.5	Yes
PCBs - Total	ug/l	**5.6**	100	1.3450E-02	10.0	Yes
Phenanthrene	ug/l	<20	200	2.6900E-02	2.0	Yes
Pyrene	ug/l	<20	200	2.6900E-02	0.2	Yes
Toluene	ug/l	**28**	300	4.0350E-02	1.0	Yes
Xylenes - Total	ug/l	<10	100	1.3450E-02	3.0	Yes

Notes:
1) Concentrations are maximum detected values for sites that accept comparable wastes
2) MDL = Method Detection Limit
3) Predicted Concentration in Groundwater are normalized concentrations based upon model results as detailed in Section 812.316. Normalized concentration for the Lower Radnor Till Sand = 1.345E-04
4) Applicable Groundwater Quality Standard (AGQS) is established as the lowest MDL
5) µg/l = micrograms per liter =parts per billion (ppb)
6) NA = Not Applicable

TABLE 812-316-18
SOURCE CONCENTRATIONS, AGQS VALUES, AND PREDICTED LEACHATE CONCENTRATIONS - ORGANIC SOIL
Clinton Landfill No. 3 Chemical Waste Unit

Parameter	Units	Maximum Concentration in Leachate	Assumed Leachate Concentration	Predicted LCC in Groundwater	AGQS or MDL	AGQS/MDL> Predicted LCC?
Acenaphthene	ug/l	<20	200	1.113E-04	2.0	Yes
Acenaphthylene	ug/l	<20	200	1.113E-04	2.0	Yes
Anthracene	ug/l	<20	200	1.113E-04	2.0	Yes
Benzene	ug/l	**7.9**	100	5.565E-05	1.0	Yes
Benzo(a)anthracene	ug/l	<20	200	1.113E-04	0.13	Yes
Benzo(a)pyrene	ug/l	<20	200	1.113E-04	0.2	Yes
Benzo(b)fluoranthene	ug/l	<20	200	1.113E-04	0.18	Yes
Benzo(ghi) perylene	ug/l	<20	200	1.113E-04	0.2	Yes
Benzo(k)fluoranthene	ug/l	<20	200	1.113E-04	0.2	Yes
Chrysene	ug/l	<20	200	1.113E-04	0.2	Yes
Pentachlorophenol	ug/l	<100	1000	5.565E-04	0.2	Yes
Dibenzo(a,h)anthracene	ug/l	<20	200	1.113E-04	2.0	Yes
Ethylbenzene	ug/l	<2	20	1.113E-05	0.2	Yes
Fluoranthene	ug/l	<20	200	1.113E-04	0.2	Yes
Indeno(1,2,3-cd)pyrene	ug/l	<20	200	1.113E-04	2.0	Yes
Naphthalene	ug/l	**43**	500	2.783E-04	0.5	Yes
PCBs - Total	ug/l	**6.5**	100	5.565E-05	10.0	Yes
Phenanthrene	ug/l	<20	200	1.113E-04	2.0	Yes
Pyrene	ug/l	<20	200	1.113E-04	0.2	Yes
Toluene	ug/l	**28**	300	1.670E-04	1.0	Yes
Xylenes - Total	ug/l	<10	100	5.565E-05	3.0	Yes

Notes:
1) Concentrations are maximum detected values for sites that accept comparable wastes
2) MDL = Method Detection Limit
3) Predicted Concentration in Groundwater are normalized concentrations based upon model results as detailed in Section 812.316. Normalized concentration for the Organic Soil = 5.565E-07
4) Applicable Groundwater Quality Standard (AGQS) is established as the lowest MDL
5) µg/l = micrograms per liter =parts per billion (ppb)
6) NA = Not Applicable

Summary of PCB results of Leachate Monitoring
WDI 2005-2007
Grassy Mountain 2001-2007

WDI Monthly Leachate Composite Monitoring 2005 -2007

Total Number of Sample Results=	231
Total Number of Non-Detects=	224
Total Detects of PCB Isomers=	7
Maximum Individual PCB Detect=	5.6 ppb*
Highest Total PCB Concentration=	5.6 ppb

*(PCB-1242, collected 10-5-2007)

Grassy Mountain Semi-Annual Leachate Monitoring 2001-2007

Total Number of Sample Results=	1575
Total Number of Non-Detects=	1573
Total Detects of PCB Isomers=	2
Maximum Individual PCB Detect=	1.48 ppb*
Highest Total PCB Concentration=	1.48 ppb

*(CZSW-A, PCB-1254, collected 6-10-2002)

Grassy Mountain
PCB Results Summary
of Semi-Annual Leachate Monitoring 2001-2007

Sample ID	Sample Type	Collect Date	PCB Isomers (results in ug/L) PCB-1016	PCB-1221	PCB-1232	PCB-1242	PCB-1248	PCB-1254	PCB-1260	Total PCB (ug/L)
CBNEA-A	Leachate	6/8/2001	ND	ND	ND	ND	ND	ND	ND	ND
CBNEB-A	Leachate	6/8/2001	ND	ND	ND	ND	ND	ND	ND	ND
CBNWB-A	Leachate	6/8/2001	ND	ND	ND	ND	ND	ND	ND	ND
CBSEA-A	Leachate	6/8/2001	ND	ND	ND	ND	ND	ND	ND	ND
CBSEB-A	Leachate	6/8/2001	ND	ND	ND	ND	ND	ND	ND	ND
CXSE-A	Leachate	6/8/2001	ND	ND	ND	ND	ND	ND	ND	ND
CYNE-A	Leachate	6/8/2001	ND	ND	ND	ND	ND	ND	ND	ND
CYNW-A	Leachate	6/8/2001	ND	ND	ND	ND	ND	ND	**0.83**	**0.83**
CYSE-A	Leachate	6/8/2001	ND	ND	ND	ND	ND	ND	ND	ND
CYSW-A	Leachate	6/8/2001	ND	ND	ND	ND	ND	ND	ND	ND
CZNE-A	Leachate	6/8/2001	ND	ND	ND	ND	ND	ND	ND	ND
CZNW-A	Leachate	6/8/2001	ND	ND	ND	ND	ND	ND	ND	ND
CZSE-A	Leachate	6/8/2001	ND	ND	ND	ND	ND	ND	ND	ND
CZSW-A	Leachate	6/8/2001	ND	ND	ND	ND	ND	ND	ND	ND
CZW-A	Leachate	6/8/2001	ND	ND	ND	ND	ND	ND	ND	ND
CZNW-B	Leachate	9/27/2001	ND	ND	ND	ND	ND	ND	ND	ND
CBNEA-A	Leachate	12/7/2001	ND	ND	ND	ND	ND	ND	ND	ND
CBNEB-A	Leachate	12/7/2001	ND	ND	ND	ND	ND	ND	ND	ND
CBSEA-A	Leachate	12/7/2001	ND	ND	ND	ND	ND	ND	ND	ND
CBSWA-A	Leachate	12/7/2001	ND	ND	ND	ND	ND	ND	ND	ND
CBSWB-A	Leachate	12/7/2001	ND	ND	ND	ND	ND	ND	ND	ND
CYNE-A	Leachate	12/7/2001	ND	ND	ND	ND	ND	ND	ND	ND
CYNW-A	Leachate	12/7/2001	ND	ND	ND	ND	ND	ND	ND	ND
CYSW-A	Leachate	12/7/2001	ND	ND	ND	ND	ND	ND	ND	ND
CZE-A	Leachate	12/7/2001	ND	ND	ND	ND	ND	ND	ND	ND
CZNE-A	Leachate	12/7/2001	ND	ND	ND	ND	ND	ND	ND	ND
CZNW-A	Leachate	12/7/2001	ND	ND	ND	ND	ND	ND	ND	ND
CZSE-A	Leachate	12/7/2001	ND	ND	ND	ND	ND	ND	ND	ND
CZSW-A	Leachate	12/7/2001	ND	ND	ND	ND	ND	ND	ND	ND
CZW-A	Leachate	12/7/2001	ND	ND	ND	ND	ND	ND	ND	ND
CBNEA-A	Leachate	6/10/2002	ND	ND	ND	ND	ND	ND	ND	ND
CBNEB-A	Leachate	6/10/2002	ND	ND	ND	ND	ND	ND	ND	ND
CBNWB-A	Leachate	6/10/2002	ND	ND	ND	ND	ND	ND	ND	ND
CBSEA-A	Leachate	6/10/2002	ND	ND	ND	ND	ND	ND	ND	ND
CBSEB-A	Leachate	6/10/2002	ND	ND	ND	ND	ND	ND	ND	ND
CBSWB-A	Leachate	6/10/2002	ND	ND	ND	ND	ND	ND	ND	ND
CXNW-B	Leachate	6/10/2002	ND	ND	ND	ND	ND	ND	ND	ND
CYNE-A	Leachate	6/10/2002	ND	ND	ND	ND	ND	ND	ND	ND
CYNW-A	Leachate	6/10/2002	ND	ND	ND	ND	ND	ND	ND	ND
CYSE-A	Leachate	6/10/2002	ND	ND	ND	ND	ND	ND	ND	ND
CYSW-A	Leachate	6/10/2002	ND	ND	ND	ND	ND	ND	ND	ND
CZE-A	Leachate	6/10/2002	ND	ND	ND	ND	ND	ND	ND	ND
CZNE-A	Leachate	6/10/2002	ND	ND	ND	ND	ND	ND	ND	ND
CZNW-A	Leachate	6/10/2002	ND	ND	ND	ND	ND	ND	ND	ND
CZSE-A	Leachate	6/10/2002	ND	ND	ND	ND	ND	ND	ND	ND
CZSW-A	Leachate	6/10/2002	ND	ND	ND	ND	ND	**1.48**	ND	**1.48**
CZW-A	Leachate	6/10/2002	ND	ND	ND	ND	ND	ND	ND	ND
CXSW-B	Leachate	9/19/2002	ND	ND	ND	ND	ND	ND	ND	ND
CBNEA-A	Leachate	12/17/2002	ND	ND	ND	ND	ND	ND	ND	ND
CBNEA-B	Leachate	12/17/2002	ND	ND	ND	ND	ND	ND	ND	ND
CBNWB-A	Leachate	12/17/2002	ND	ND	ND	ND	ND	ND	ND	ND
CBSEA-A	Leachate	12/17/2002	ND	ND	ND	ND	ND	ND	ND	ND
CBSEB-A	Leachate	12/17/2002	ND	ND	ND	ND	ND	ND	ND	ND
CYNE-A	Leachate	12/17/2002	ND	ND	ND	ND	ND	ND	ND	ND
CYNW-A	Leachate	12/17/2002	ND	ND	ND	ND	ND	ND	ND	ND
CYSE-A	Leachate	12/17/2002	ND	ND	ND	ND	ND	ND	ND	ND
CYSW-A	Leachate	12/17/2002	ND	ND	ND	ND	ND	ND	ND	ND
CZE-A	Leachate	12/17/2002	ND	ND	ND	ND	ND	ND	ND	ND
CZNE-A	Leachate	12/17/2002	ND	ND	ND	ND	ND	ND	ND	ND
CZNW-A	Leachate	12/17/2002	ND	ND	ND	ND	ND	ND	ND	ND

Grassy Mountain
PCB Results Summary
of Semi-Annual Leachate Monitoring 2001-2007

Sample ID	Sample Type	Collect Date	PCB-1016	PCB-1221	PCB-1232	PCB-1242	PCB-1248	PCB-1254	PCB-1260	Total PCB (ug/L)
			PCB Isomers (results in ug/L)							
CZSE-A	Leachate	12/17/2002	ND	ND	ND	ND	ND	ND	ND	ND
CZSW-A	Leachate	12/17/2002	ND	ND	ND	ND	ND	ND	ND	ND
CZW-A	Leachate	12/17/2002	ND	ND	ND	ND	ND	ND	ND	ND
CBNEA-A	Leachate	6/10/2003	ND	ND	ND	ND	ND	ND	ND	ND
CBNEB-A	Leachate	6/10/2003	ND	ND	ND	ND	ND	ND	ND	ND
CBNWB-A	Leachate	6/10/2003	ND	ND	ND	ND	ND	ND	ND	ND
CBSEA-A	Leachate	6/10/2003	ND	ND	ND	ND	ND	ND	ND	ND
CBSEB-A	Leachate	6/10/2003	ND	ND	ND	ND	ND	ND	ND	ND
CXSE-A	Leachate	6/10/2003	ND	ND	ND	ND	ND	ND	ND	ND
CYNE-A	Leachate	6/10/2003	ND	ND	ND	ND	ND	ND	ND	ND
CYNE-B	Leachate	6/10/2003	ND	ND	ND	ND	ND	ND	ND	ND
CYNW-A	Leachate	6/10/2003	ND	ND	ND	ND	ND	ND	ND	ND
CYSE-A	Leachate	6/10/2003	ND	ND	ND	ND	ND	ND	ND	ND
CYSW-A	Leachate	6/18/2003	ND	ND	ND	ND	ND	ND	ND	ND
CZE-A	Leachate	6/10/2003	ND	ND	ND	ND	ND	ND	ND	ND
CZNE-A	Leachate	6/10/2003	ND	ND	ND	ND	ND	ND	ND	ND
CZNW-A	Leachate	6/10/2003	ND	ND	ND	ND	ND	ND	ND	ND
CZSE-A	Leachate	6/10/2003	ND	ND	ND	ND	ND	ND	ND	ND
CZSW-A	Leachate	6/10/2003	ND	ND	ND	ND	ND	ND	ND	ND
CZW-A	Leachate	6/10/2003	ND	ND	ND	ND	ND	ND	ND	ND
CBNEA-A	Leachate	12/9/2003	ND	ND	ND	ND	ND	ND	ND	ND
CBNEB-A	Leachate	12/9/2003	ND	ND	ND	ND	ND	ND	ND	ND
CBNWB-A	Leachate	12/9/2003	ND	ND	ND	ND	ND	ND	ND	ND
CBSEA-A	Leachate	12/9/2003	ND	ND	ND	ND	ND	ND	ND	ND
CYNE-A	Leachate	12/9/2003	ND	ND	ND	ND	ND	ND	ND	ND
CYSE-A	Leachate	12/9/2003	ND	ND	ND	ND	ND	ND	ND	ND
CZE-A	Leachate	12/9/2003	ND	ND	ND	ND	ND	ND	ND	ND
CZNE-A	Leachate	12/9/2003	ND	ND	ND	ND	ND	ND	ND	ND
CZNW-A	Leachate	12/9/2003	ND	ND	ND	ND	ND	ND	ND	ND
CZSE-A	Leachate	12/9/2003	ND	ND	ND	ND	ND	ND	ND	ND
CZSW-A	Leachate	12/9/2003	ND	ND	ND	ND	ND	ND	ND	ND
CZW-A	Leachate	12/9/2003	ND	ND	ND	ND	ND	ND	ND	ND
CBNEA-A	Leachate	6/20/2004	ND	ND	ND	ND	ND	ND	ND	ND
CBNEB-A	Leachate	6/20/2004	ND	ND	ND	ND	ND	ND	ND	ND
CBNWB-A	Leachate	6/14/2004	ND	ND	ND	ND	ND	ND	ND	ND
CBSEA-A	Leachate	6/14/2004	ND	ND	ND	ND	ND	ND	ND	ND
CBSEB-A	Leachate	6/20/2004	ND	ND	ND	ND	ND	ND	ND	ND
CBSWA-A	Leachate	6/16/2004	ND	ND	ND	ND	ND	ND	ND	ND
CBSWB-A	Leachate	6/20/2004	ND	ND	ND	ND	ND	ND	ND	ND
CXSE-A	Leachate	6/14/2004	ND	ND	ND	ND	ND	ND	ND	ND
CYNE-A	Leachate	6/21/2004	ND	ND	ND	ND	ND	ND	ND	ND
CYNW-A	Leachate	6/22/2004	ND	ND	ND	ND	ND	ND	ND	ND
CYSE-A	Leachate	6/21/2004	ND	ND	ND	ND	ND	ND	ND	ND
CYSW-A	Leachate	6/22/2004	ND	ND	ND	ND	ND	ND	ND	ND
CZE-A	Leachate	6/15/2004	ND	ND	ND	ND	ND	ND	ND	ND
CZNE-A	Leachate	6/16/2004	ND	ND	ND	ND	ND	ND	ND	ND
CZNW-A	Leachate	6/14/2004	ND	ND	ND	ND	ND	ND	ND	ND
CZSE-A	Leachate	6/15/2004	ND	ND	ND	ND	ND	ND	ND	ND
CZSW-A	Leachate	6/14/2004	ND	ND	ND	ND	ND	ND	ND	ND
CZW-A	Leachate	6/14/2004	ND	ND	ND	ND	ND	ND	ND	ND
CBNEA-A	Leachate	12/20/2004	ND	ND	ND	ND	ND	ND	ND	ND
CBNEB-A	Leachate	12/20/2004	ND	ND	ND	ND	ND	ND	ND	ND
CBNWB-A	Leachate	12/20/2004	ND	ND	ND	ND	ND	ND	ND	ND
CBSEA-A	Leachate	12/19/2004	ND	ND	ND	ND	ND	ND	ND	ND
CBSEB-A	Leachate	12/19/2004	ND	ND	ND	ND	ND	ND	ND	ND
CBSWA-A	Leachate	12/19/2004	ND	ND	ND	ND	ND	ND	ND	ND
CBSWB-A	Leachate	12/19/2004	ND	ND	ND	ND	ND	ND	ND	ND
CXSE-A	Leachate	12/21/2004	ND	ND	ND	ND	ND	ND	ND	ND
CYNE-A	Leachate	12/22/2004	ND	ND	ND	ND	ND	ND	ND	ND
CYNW-A	Leachate	12/27/2004	ND	ND	ND	ND	ND	ND	ND	ND

Grassy Mountain
PCB Results Summary
of Semi-Annual Leachate Monitoring 2001-2007

Sample ID	Sample Type	Collect Date	PCB Isomers (results in ug/L) PCB-1016	PCB-1221	PCB-1232	PCB-1242	PCB-1248	PCB-1254	PCB-1260	Total PCB (ug/L)
CYSE-A	Leachate	12/22/2004	ND	ND	ND	ND	ND	ND	ND	ND
CYSW-A	Leachate	12/27/2004	ND	ND	ND	ND	ND	ND	ND	ND
CZE-A	Leachate	12/21/2004	ND	ND	ND	ND	ND	ND	ND	ND
CZNE-A	Leachate	12/22/2004	ND	ND	ND	ND	ND	ND	ND	ND
CZNW-A	Leachate	12/20/2004	ND	ND	ND	ND	ND	ND	ND	ND
CZSE-A	Leachate	12/21/2004	ND	ND	ND	ND	ND	ND	ND	ND
CZSW-A	Leachate	12/21/2004	ND	ND	ND	ND	ND	ND	ND	ND
CZW-A	Leachate	12/22/2004	ND	ND	ND	ND	ND	ND	ND	ND
CBNEA-A	Leachate	6/13/2005	ND	ND	ND	ND	ND	ND	ND	ND
CBNEA-B	Leachate	6/13/2005	ND	ND	ND	ND	ND	ND	ND	ND
CBNEB-A	Leachate	6/13/2005	ND	ND	ND	ND	ND	ND	ND	ND
CBNEB-B	Leachate	6/13/2005	ND	ND	ND	ND	ND	ND	ND	ND
CBNWA-A	Leachate	6/13/2005	ND	ND	ND	ND	ND	ND	ND	ND
CBNWA-B	Leachate	6/13/2005	ND	ND	ND	ND	ND	ND	ND	ND
CBNWB-A	Leachate	6/13/2005	ND	ND	ND	ND	ND	ND	ND	ND
CBSEA-A	Leachate	6/13/2005	ND	ND	ND	ND	ND	ND	ND	ND
CBSWA-A	Leachate	6/13/2005	ND	ND	ND	ND	ND	ND	ND	ND
CBSWB-A	Leachate	6/13/2005	ND	ND	ND	ND	ND	ND	ND	ND
CXNE-B	Leachate	6/14/2005	ND	ND	ND	ND	ND	ND	ND	ND
CXSE-A	Leachate	6/14/2005	ND	ND	ND	ND	ND	ND	ND	ND
CXSE-B	Leachate	6/14/2005	ND	ND	ND	ND	ND	ND	ND	ND
CXSW-B	Leachate	6/14/2005	ND	ND	ND	ND	ND	ND	ND	ND
CYNE-A	Leachate	6/13/2005	ND	ND	ND	ND	ND	ND	ND	ND
CYNE-B	Leachate	6/13/2005	ND	ND	ND	ND	ND	ND	ND	ND
CYNW-B	Leachate	6/13/2005	ND	ND	ND	ND	ND	ND	ND	ND
CYSE-A	Leachate	6/13/2005	ND	ND	ND	ND	ND	ND	ND	ND
CYSW-A	Leachate	6/13/2005	ND	ND	ND	ND	ND	ND	ND	ND
CZE-A	Leachate	6/13/2005	ND	ND	ND	ND	ND	ND	ND	ND
CZNE-A	Leachate	6/13/2005	ND	ND	ND	ND	ND	ND	ND	ND
CZSE-A	Leachate	6/13/2005	ND	ND	ND	ND	ND	ND	ND	ND
CBNEA-A	Leachate	12/9/2005	ND	ND	ND	ND	ND	ND	ND	ND
CBNEB-A	Leachate	12/9/2005	ND	ND	ND	ND	ND	ND	ND	ND
CBNWB-A	Leachate	12/9/2005	ND	ND	ND	ND	ND	ND	ND	ND
CBSEA-A	Leachate	12/9/2005	ND	ND	ND	ND	ND	ND	ND	ND
CBSEB-A	Leachate	12/9/2005	ND	ND	ND	ND	ND	ND	ND	ND
CBSWB-A	Leachate	12/9/2005	ND	ND	ND	ND	ND	ND	ND	ND
CXNW-A	Leachate	12/9/2005	ND	ND	ND	ND	ND	ND	ND	ND
CXNW-B	Leachate	12/9/2005	ND	ND	ND	ND	ND	ND	ND	ND
CXSW-B	Leachate	12/9/2005	ND	ND	ND	ND	ND	ND	ND	ND
CYNE-A	Leachate	12/9/2005	ND	ND	ND	ND	ND	ND	ND	ND
CYNE-B	Leachate	12/9/2005	ND	ND	ND	ND	ND	ND	ND	ND
CYNW-A	Leachate	12/9/2005	ND	ND	ND	ND	ND	ND	ND	ND
CYNW-B	Leachate	12/9/2005	ND	ND	ND	ND	ND	ND	ND	ND
CYSE-A	Leachate	12/9/2005	ND	ND	ND	ND	ND	ND	ND	ND
CYSW-A	Leachate	12/9/2005	ND	ND	ND	ND	ND	ND	ND	ND
CZE-A	Leachate	12/9/2005	ND	ND	ND	ND	ND	ND	ND	ND
CZNW-A	Leachate	12/9/2005	ND	ND	ND	ND	ND	ND	ND	ND
CZSE-A	Leachate	12/9/2005	ND	ND	ND	ND	ND	ND	ND	ND
CZSW-A	Leachate	12/9/2005	ND	ND	ND	ND	ND	ND	ND	ND
CZW-A	Leachate	12/9/2005	ND	ND	ND	ND	ND	ND	ND	ND
CBNEA-A	Leachate	4/21/2006	ND	ND	ND	ND	ND	ND	ND	ND
CBNEB-A	Leachate	4/21/2006	ND	ND	ND	ND	ND	ND	ND	ND
CBNWA-A	Leachate	4/21/2006	ND	ND	ND	ND	ND	ND	ND	ND
CBSEA-A	Leachate	4/21/2006	ND	ND	ND	ND	ND	ND	ND	ND
CBSEB-A	Leachate	4/21/2006	ND	ND	ND	ND	ND	ND	ND	ND
CBSWA-A	Leachate	4/21/2006	ND	ND	ND	ND	ND	ND	ND	ND
CBSWB-A	Leachate	4/21/2006	ND	ND	ND	ND	ND	ND	ND	ND
CXNW-A	Leachate	4/21/2006	ND	ND	ND	ND	ND	ND	ND	ND
CXSE-A	Leachate	4/21/2006	ND	ND	ND	ND	ND	ND	ND	ND
CYNE-A	Leachate	4/21/2006	ND	ND	ND	ND	ND	ND	ND	ND

Grassy Mountain
PCB Results Summary
of Semi-Annual Leachate Monitoring 2001-2007

Sample ID	Sample Type	Collect Date	PCB Isomers (results in ug/L) PCB-1016	PCB-1221	PCB-1232	PCB-1242	PCB-1248	PCB-1254	PCB-1260	Total PCB (ug/L)
CYNW-A	Leachate	4/21/2006	ND	ND	ND	ND	ND	ND	ND	ND
CYSE-A	Leachate	4/21/2006	ND	ND	ND	ND	ND	ND	ND	ND
CYSW-A	Leachate	4/21/2006	ND	ND	ND	ND	ND	ND	ND	ND
CZE-A	Leachate	4/21/2006	ND	ND	ND	ND	ND	ND	ND	ND
CZNE-A	Leachate	4/21/2006	ND	ND	ND	ND	ND	ND	ND	ND
CZNW-A	Leachate	4/21/2006	ND	ND	ND	ND	ND	ND	ND	ND
CZSE-A	Leachate	4/21/2006	ND	ND	ND	ND	ND	ND	ND	ND
CZSW-A	Leachate	4/21/2006	ND	ND	ND	ND	ND	ND	ND	ND
CZW-A	Leachate	4/21/2006	ND	ND	ND	ND	ND	ND	ND	ND
CBNEA-A	Leachate	11/14/2006	ND	ND	ND	ND	ND	ND	ND	ND
CBNEB-A	Leachate	11/14/2006	ND	ND	ND	ND	ND	ND	ND	ND
CBNWA-A	Leachate	11/14/2006	ND	ND	ND	ND	ND	ND	ND	ND
CBNWB-A	Leachate	11/14/2006	ND	ND	ND	ND	ND	ND	ND	ND
CBSEA-A	Leachate	11/14/2006	ND	ND	ND	ND	ND	ND	ND	ND
CBSEB-A	Leachate	11/14/2006	ND	ND	ND	ND	ND	ND	ND	ND
CBSWB-A	Leachate	11/14/2006	ND	ND	ND	ND	ND	ND	ND	ND
CYNE-A	Leachate	11/14/2006	ND	ND	ND	ND	ND	ND	ND	ND
CYNW-B	Leachate	11/14/2006	ND	ND	ND	ND	ND	ND	ND	ND
CYSE-A	Leachate	11/14/2006	ND	ND	ND	ND	ND	ND	ND	ND
CYSW-A	Leachate	11/14/2006	ND	ND	ND	ND	ND	ND	ND	ND
CZE-A	Leachate	11/14/2006	ND	ND	ND	ND	ND	ND	ND	ND
CZNE-A	Leachate	11/14/2006	ND	ND	ND	ND	ND	ND	ND	ND
CZNW-A	Leachate	11/14/2006	ND	ND	ND	ND	ND	ND	ND	ND
CZSE-A	Leachate	11/14/2006	ND	ND	ND	ND	ND	ND	ND	ND
CZSW-A	Leachate	11/14/2006	ND	ND	ND	ND	ND	ND	ND	ND
CZW-A	Leachate	11/14/2006	ND	ND	ND	ND	ND	ND	ND	ND
CBNEA-A	Leachate	5/22/2007	ND	ND	ND	ND	ND	ND	ND	ND
CBNEB-A	Leachate	5/22/2007	ND	ND	ND	ND	ND	ND	ND	ND
CBNWA-A	Leachate	5/22/2007	ND	ND	ND	ND	ND	ND	ND	ND
CBNWB-A	Leachate	5/22/2007	ND	ND	ND	ND	ND	ND	ND	ND
CBSEA-A	Leachate	5/22/2007	ND	ND	ND	ND	ND	ND	ND	ND
CBSEB-A	Leachate	5/22/2007	ND	ND	ND	ND	ND	ND	ND	ND
CBSWA-A	Leachate	5/22/2007	ND	ND	ND	ND	ND	ND	ND	ND
CBSWB-A	Leachate	5/22/2007	ND	ND	ND	ND	ND	ND	ND	ND
CXNW-B	Leachate	5/22/2007	ND	ND	ND	ND	ND	ND	ND	ND
CXSE-A	Leachate	5/22/2007	ND	ND	ND	ND	ND	ND	ND	ND
CYNE-A	Leachate	5/22/2007	ND	ND	ND	ND	ND	ND	ND	ND
CYSE-A	Leachate	5/22/2007	ND	ND	ND	ND	ND	ND	ND	ND
CYSW-A	Leachate	5/22/2007	ND	ND	ND	ND	ND	ND	ND	ND
CZE-A	Leachate	5/22/2007	ND	ND	ND	ND	ND	ND	ND	ND
CZNE-A	Leachate	5/22/2007	ND	ND	ND	ND	ND	ND	ND	ND
CZNW-A	Leachate	5/22/2007	ND	ND	ND	ND	ND	ND	ND	ND
CZSE-A	Leachate	5/22/2007	ND	ND	ND	ND	ND	ND	ND	ND
CZSW-A	Leachate	5/22/2007	ND	ND	ND	ND	ND	ND	ND	ND
CZW-A	Leachate	5/22/2007	ND	ND	ND	ND	ND	ND	ND	ND
		Subtotal data points=	**225**	**225**	**225**	**225**	**225**	**225**	**225**	**225**
		Maximum Column PCB conc.=	**0**	**0**	**0**	**0**	**0**	**1.48**	**0.83**	**1.48**
		Subtotal number of detects=	**0**	**0**	**0**	**0**	**0**	**1**	**1**	**2**
		Subtotal ND=	**225**	**225**	**225**	**225**	**225**	**224**	**224**	**223**
		Total ND=	**1573**							
		Total Detects=	**2**							
		Total data ponits=	**1575**							
		Maximum PCB Concentration=	**1.48**							
		Max Total PCB Concentration=	**1.48**							

WDI
PCB Results Summary
of Monthly Leachate Samples
2005-2007

Sample ID	Sample Type	Collect Date	PCB Isomers (results in ug/L) PCB-1016	PCB-1221	PCB-1232	PCB-1242	PCB-1248	PCB-1254	PCB-1260	Total PCB (ug/L)
MCVI	Composite	1/7/2005	ND	ND	ND	**1.8**	ND	ND	ND	**1.8**
MCVI	Composite	2/11/2005	ND	ND	ND	ND	ND	ND	ND	ND
MCVI	Composite	3/11/2005	ND	ND	ND	ND	ND	ND	ND	ND
MCVI	Composite	4/11/2005	ND	ND	ND	**0.52**	ND	ND	ND	**0.52**
MCVI	Composite	5/13/2005	ND	ND	ND	ND	ND	ND	ND	ND
Missing June Analytical Results - based on summary graph, all PCB's ND										
MCVI	Composite	7/12/2005	ND	ND	ND	ND	ND	ND	ND	ND
MCVI	Composite	8/12/2005	ND	ND	ND	ND	ND	ND	ND	ND
MCVI	Composite	9/12/2005	ND	ND	ND	ND	ND	ND	ND	ND
MCVI	Composite	10/7/2005	ND	ND	ND	ND	ND	ND	ND	ND
MCVI	Composite	11/11/2005	ND	ND	ND	ND	ND	ND	ND	ND
MCVI	Composite	12/13/2005	ND	ND	ND	ND	ND	ND	ND	ND
MCVI	Composite	1/10/2006	ND	ND	ND	ND	ND	ND	ND	ND
MCVI	Composite	2/14/2006	ND	ND	ND	ND	ND	ND	ND	ND
MCVI	Composite	3/14/2006	ND	ND	ND	ND	ND	ND	ND	ND
MCVI	Composite	4/13/2006	ND	ND	ND	ND	ND	ND	ND	ND
MCVI	Composite	5/11/2006	ND	ND	ND	ND	ND	ND	ND	ND
MCVI	Composite	6/8/2006	ND	ND	ND	ND	ND	ND	ND	ND
MCVI	Composite	7/13/2006	ND	ND	ND	**1.1**	ND	ND	ND	**1.1**
MCVI	Composite	8/4/2006	ND	ND	ND	ND	ND	ND	ND	ND
MCVI	Composite	9/7/2006	ND	ND	ND	ND	ND	ND	ND	ND
MCVI	Composite	10/10/2006	ND	ND	ND	ND	ND	ND	ND	ND
MCVI	Composite	11/9/2006	ND	ND	ND	ND	ND	ND	ND	ND
MCVI	Composite	12/7/2006	ND	ND	ND	ND	ND	ND	ND	ND
MCVI	Composite	1/9/2007	ND	ND	ND	ND	**2.6**	ND	ND	**2.6**
MCVI	Composite	2/9/2007	ND	ND	ND	ND	**0.7**	ND	ND	**0.7**
MCVI	Composite	3/7/2007	ND	ND	ND	**0.89**	ND	ND	ND	**0.89**
MCVI	Composite	4/13/2007	ND	ND	ND	ND	ND	ND	ND	ND
MCVI	Composite	5/11/2007	ND	ND	ND	ND	ND	ND	ND	ND
MCVI	Composite	6/14/2007	ND	ND	ND	ND	ND	ND	ND	ND
MCVI	Composite	7/10/2007	ND	ND	ND	ND	ND	ND	ND	ND
MCVI	Composite	8/9/2007	ND	ND	ND	ND	ND	ND	ND	ND
MCVI	Composite	9/13/2007	ND	ND	ND	ND	ND	ND	ND	ND
MCVI	Composite	10/5/2007	ND	ND	ND	**5.6**	ND	ND	ND	**5.6**
		Subtotal data points=	**33**	**33**	**33**	**33**	**33**	**33**	**33**	**33**
		Maximum Column PCB conc.=	**0**	**0**	**0**	**5.6**	**2.6**	**0**	**0**	**5.6**
		Subtotal number of detects=	**0**	**0**	**0**	**5**	**2**	**0**	**0**	**7**
		Subtotal ND=	**33**	**33**	**33**	**28**	**31**	**33**	**33**	**26**
		Total ND=	**224**							
		Total Detects=	**7**							
		Total data ponits=	**231**							
		Maximum PCB Concentration=	**5.6**							
		Max Total PCB Concentration=	**5.6**							

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Laboratory Results

Peoria Disposal Company
4349 Southport Rd.

Peoria, IL 61615

Attn: Mr. Ron Welk

Date Received: 11-Oct-02
Date Reported: 08-Nov-02
PO #: CPIT
PDC Cust. # : 280100

Login No. 02102176

Sample No: 02102176-5
Client ID: LEACHATE
Site: C4 PRIMARY
Locator:
Collect Date: 10-OCT-02 07:50

Parameter		Result	Units	Date	By
EPA METHOD 300.0 rev 2.1					
Chloride		6600	mg/l	06-Nov-02 09:52	ech
SM METHOD 4500 CN C,E / SW-846 METHOD 9012					
Cyanide, Total		0.017	mg/l	16-Oct-02 08:00	CS
SW-846 METHOD 9034					
Sulfide, Total		110	mg/l	14-Oct-02 11:15	KG
EPA METHOD 300.0 rev. 2.1					
Sulfate		460	mg/l	31-Oct-02 15:16	ech
SM METHOD 2540 C					
Solids, Total Dissolved		13000	mg/l	14-Oct-02 13:53	AS/JLR
SW-846 METHOD 3015					
Sample Preparation				17-Oct-02 09:00	MLT
SW-846 METHOD 6010B					
Silver	<	0.010	mg/l	22-Oct-02 07:00	JMP
Arsenic	<	0.020	mg/l	22-Oct-02 07:00	JMP
Barium		0.77	mg/l	22-Oct-02 07:00	JMP
Cadmium	<	0.0020	mg/l	22-Oct-02 07:00	JMP
Chromium	<	0.0040	mg/l	22-Oct-02 07:00	JMP
Nickel		0.19	mg/l	22-Oct-02 07:00	JMP
Lead	<	0.010	mg/l	22-Oct-02 07:00	JMP
Selenium	<	0.010	mg/l	22-Oct-02 07:00	JMP
SW-846 METHOD 7470A					
Mercury	<	0.00020	mg/l	16-Oct-02 12:15	ERS
SW-846 METHOD 8081A					
Sample Preparation				15-Oct-02 12:00	JA
EPA METHOD 515.1					
Sample Preparation				15-Oct-02 12:00	JA
SW-846 METHOD 8270					
Sample Preparation				15-Oct-02 12:00	JA
SW-846 METHOD 8081A					
Aldrin	<	0.050	ug/l	24-Oct-02 22:59	AMR
Dieldrin	<	0.10	ug/l	24-Oct-02 22:59	AMR
Endosulfan I	<	0.050	ug/l	24-Oct-02 22:59	AMR

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Laboratory Results

Peoria Disposal Company
4349 Southport Rd.

Peoria, IL 61615

Attn: Mr. Ron Welk

Date Received: 11-Oct-02
Date Reported: 08-Nov-02
PO #: CPIT
PDC Cust. # : 280100

Login No. 02102176

Sample No: 02102176-5
Client ID: LEACHATE
Site: C4 PRIMARY
Locator:
Collect Date: 10-OCT-02 07:50

Parameter		Result	Units	Date	By
Endosulfan II	<	0.10	ug/l	24-Oct-02 22:59	AMR
Endrin	<	0.10	ug/l	24-Oct-02 22:59	AMR
gamma-BHC (Lindane)	<V	0.050	ug/l	24-Oct-02 22:59	AMR
Heptachlor	<V	0.050	ug/l	24-Oct-02 22:59	AMR
Methoxychlor	<V	0.50	ug/l	24-Oct-02 22:59	AMR
Toxaphene	<	0.50	ug/l	24-Oct-02 22:59	AMR
EPA METHOD 515.1					
Silvex	<X	0.10	ug/l	19-Oct-02 06:02	JK
2,4-D	<X	0.20	ug/l	19-Oct-02 06:02	JK
I-846 METHOD 8015					
Ethanol	<	10.	mg/l	23-Oct-02 15:03	PSB
Isopropanol	<	10.	mg/l	23-Oct-02 15:03	PSB
Methanol	<	10.	mg/l	23-Oct-02 15:03	PSB
SW-846 Method 8260B					
1,1,1-Trichloroethane	<	5.0	ug/l	22-Oct-02 18:04	TJP
1,1,2-Trichloroethane	<	5.0	ug/l	22-Oct-02 18:04	TJP
1,1,2-Trichlorotrifluoroethane	<	5.0	ug/l	22-Oct-02 18:04	TJP
1,3-Dichlorobenzene	<	5.0	ug/l	22-Oct-02 18:04	TJP
Carbon Tetrachloride	<	5.0	ug/l	22-Oct-02 18:04	TJP
Chlorobenzene	<	5.0	ug/l	22-Oct-02 18:04	TJP
Cyclohexanone	<	10.	ug/l	22-Oct-02 18:04	TJP
Ethyl ether	<	20.	ug/l	22-Oct-02 18:04	TJP
Ethyl Acetate	<	20.	ug/l	22-Oct-02 18:04	TJP
Ethylbenzene	<	2.0	ug/l	22-Oct-02 18:04	TJP
2-Butanone		34.	ug/l	22-Oct-02 18:04	TJP
Methylene Chloride	<	5.0	ug/l	22-Oct-02 18:04	TJP
n-Butanol	<	1000	ug/l	22-Oct-02 18:04	TJP
Tetrachloroethene	<	5.0	ug/l	22-Oct-02 18:04	TJP
Toluene		28.	ug/l	22-Oct-02 18:04	TJP
Trichloroethene	<	5.0	ug/l	22-Oct-02 18:04	TJP
Trichlorofluoromethane	<	5.0	ug/l	22-Oct-02 18:04	TJP
Xylenes (Total)	<	10.	ug/l	22-Oct-02 18:04	TJP
SW-846 Method 8260B					

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Laboratory Results

Peoria Disposal Company
4349 Southport Rd.

Peoria, IL 61615

Attn: Mr. Ron Welk

Date Received: 11-Oct-02
Date Reported: 08-Nov-02
PO #: CPIT
PDC Cust. # : 280100

Login No. 02102176

Sample No: 02102176-5
Client ID: LEACHATE
Site: C4 PRIMARY
Locator:
Collect Date: 10-OCT-02 07:50

Parameter		Result	Units	Date	By
Acetone		280	ug/l	23-Oct-02 16:13	TJP
4-Methyl-2-pentanone		1400	ug/l	23-Oct-02 16:13	TJP
SW-846 METHOD 8270					
2,3,4,5-Tetrachlorophenol	<	10.	ug/l	17-Oct-02 01:18	CAH
2,3,4,6-Tetrachlorophenol	<	10.	ug/l	17-Oct-02 01:18	CAH
2,3,5,6-Tetrachlorophenol	<	10.	ug/l	17-Oct-02 01:18	CAH
2,4,5-Trichlorophenol	<	50.	ug/l	17-Oct-02 01:18	CAH
2,4,6-Trichlorophenol	<	10.	ug/l	17-Oct-02 01:18	CAH
2,4-Dimethylphenol		22.	ug/l	17-Oct-02 01:18	CAH
2,4-Dinitrophenol	<	50.	ug/l	17-Oct-02 01:18	CAH
2-Chlorophenol	<	10.	ug/l	17-Oct-02 01:18	CAH
4-Chloro-3-Methylphenol	<	10.	ug/l	17-Oct-02 01:18	CAH
Acenaphthene	<	10.	ug/l	17-Oct-02 01:18	CAH
Benzo(a)pyrene	<F	10.	ug/l	17-Oct-02 01:18	CAH
Benzo(b)fluoranthene	<F	10.	ug/l	17-Oct-02 01:18	CAH
Chrysene	<	10.	ug/l	17-Oct-02 01:18	CAH
Creosote	<	100	ug/l	17-Oct-02 01:18	CAH
Fluoranthene	<F	10.	ug/l	17-Oct-02 01:18	CAH
Indeno(1,2,3-cd)pyrene	<F	10.	ug/l	17-Oct-02 01:18	CAH
Naphthalene		43.	ug/l	17-Oct-02 01:18	CAH
Pentachlorophenol	<F	50.	ug/l	17-Oct-02 01:18	CAH
Phenanthrene	<F	10.	ug/l	17-Oct-02 01:18	CAH
Pyrene	<	10.	ug/l	17-Oct-02 01:18	CAH
SW-846 METHOD 8270					
Phenol		650	ug/l	18-Oct-02 08:36	CAH

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Laboratory Results

Peoria Disposal Company
4349 Southport Rd.

Peoria, IL 61615

Attn: Mr. Ron Welk

Date Received: 21-Nov-03
Date Reported: 15-Dec-03
PO #: CPIT
PDC Cust. # : 280100

Login No. 03112804

Sample No: 03112804-5
Client ID: LEACHATE
Site: C4 PRIMARY
Locator: MONTHLY
Collect Date: 21-NOV-03 07:52

Parameter		Result	Units	Date	By
EPA METHOD 300.0 rev 2.1					
Chloride		3300	mg/l	08-Dec-03 15:49	els
SM METHOD 4500 CN C,E / SW-846 METHOD 9012					
Cyanide, Total		0.029	mg/l	04-Dec-03 18:00	TCH/JF
SW-846 METHOD 9034					
Sulfide, Total	<	2.0	mg/l	24-Nov-03 10:00	JS
EPA METHOD 300.0 rev. 2.1					
Sulfate		900	mg/l	08-Dec-03 15:30	els
SM METHOD 2540 C					
Solids, Total Dissolved		7300	mg/l	26-Nov-03 16:39	KD
-846 METHOD 3015					
Sample Preparation				01-Dec-03 07:00	JVH
SW-846 METHOD 6010B					
Silver	<	0.10	mg/l	03-Dec-03 07:00	JMP
Arsenic	<	0.20	mg/l	03-Dec-03 07:00	JMP
Barium		0.27	mg/l	03-Dec-03 07:00	JMP
Cadmium		0.17	mg/l	03-Dec-03 07:00	JMP
Chromium	<	0.040	mg/l	03-Dec-03 07:00	JMP
Nickel		0.12	mg/l	03-Dec-03 07:00	JMP
Lead	<	0.10	mg/l	03-Dec-03 07:00	JMP
Selenium	<	0.10	mg/l	03-Dec-03 07:00	JMP
SW-846 METHOD 7470A					
Mercury		0.00041	mg/l	25-Nov-03 14:00	JVH
SW-846 METHOD 8081A					
Sample Preparation				24-Nov-03 12:00	NTL,EM
EPA METHOD 515.1					
Sample Preparation				25-Nov-03 12:00	EMS
SW-846 METHOD 8270					
Sample Preparation				25-Nov-03 12:00	EMS
SW-846 METHOD 8081A					
Aldrin	<	0.050	ug/l	05-Dec-03 12:00	AMR
Dieldrin	<	0.10	ug/l	05-Dec-03 12:00	AMR
Endosulfan I	<	0.050	ug/l	05-Dec-03 12:00	AMR

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Peoria Disposal Company
4349 Southport Rd.

Peoria, IL 61615

Attn: Mr. Ron Welk

Date Received: 21-Nov-03
Date Reported: 15-Dec-03
PO #: CPIT
PDC Cust. # : 280100

Login No. 03112804

Sample No: 03112804-5
Client ID: LEACHATE
Site: C4 PRIMARY
Locator: MONTHLY
Collect Date: 21-NOV-03 07:52

Parameter		Result	Units	Date	By
Endosulfan II	<	0.10	ug/l	05-Dec-03 12:00	AMR
Endrin	<	0.10	ug/l	05-Dec-03 12:00	AMR
gamma-BHC (Lindane)	<	0.050	ug/l	05-Dec-03 12:00	AMR
Heptachlor	<	0.050	ug/l	05-Dec-03 12:00	AMR
Methoxychlor	<	0.50	ug/l	05-Dec-03 12:00	AMR
Toxaphene	<	0.50	ug/l	05-Dec-03 12:00	AMR
EPA METHOD 515.1					
Silvex	<	0.050	ug/l	05-Dec-03 13:03	AMG
2,4-D	<	0.10	ug/l	05-Dec-03 13:03	AMG
-846 METHOD 8015					
Methanol	<	10.	mg/l	01-Dec-03 20:11	BL
SW-846 Method 8260B					
1,1,1-Trichloroethane	<	5.0	ug/l	24-Nov-03 18:48	AEW
1,1,2-Trichloroethane	<	5.0	ug/l	24-Nov-03 18:48	AEW
1,1,2-Trichlorotrifluoroethane	<	5.0	ug/l	24-Nov-03 18:48	AEW
1,3-Dichlorobenzene	<	5.0	ug/l	24-Nov-03 18:48	AEW
Acetone		66.	ug/l	24-Nov-03 18:48	AEW
Carbon Tetrachloride	<	5.0	ug/l	24-Nov-03 18:48	AEW
Chlorobenzene	<	5.0	ug/l	24-Nov-03 18:48	AEW
Cyclohexanone	<	10.	ug/l	24-Nov-03 18:48	AEW
Ethyl ether	<	20.	ug/l	24-Nov-03 18:48	AEW
Ethyl Acetate	<	20.	ug/l	24-Nov-03 18:48	AEW
Ethylbenzene	<	2.0	ug/l	24-Nov-03 18:48	AEW
2-Butanone	<	10.	ug/l	24-Nov-03 18:48	AEW
4-Methyl-2-pentanone		150	ug/l	24-Nov-03 18:48	AEW
Methylene Chloride	<	5.0	ug/l	24-Nov-03 18:48	AEW
n-Butanol	<	1000	ug/l	24-Nov-03 18:48	AEW
Tetrachloroethene	<	5.0	ug/l	24-Nov-03 18:48	AEW
Toluene	<	5.0	ug/l	24-Nov-03 18:48	AEW
Trichloroethene	<	5.0	ug/l	24-Nov-03 18:48	AEW
Trichlorofluoromethane	<	5.0	ug/l	24-Nov-03 18:48	AEW
Xylenes (Total)	<	10.	ug/l	24-Nov-03 18:48	AEW
SW-846 METHOD 8270					

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Laboratory Results

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4349 Southport Rd.

Peoria, IL 61615

Attn: Mr. Ron Welk

Date Received: 21-Nov-03
Date Reported: 15-Dec-03
PO #: CPIT
PDC Cust. # : 280100

Login No. 03112804

Sample No: 03112804-5
Client ID: LEACHATE
Site: C4 PRIMARY
Locator: MONTHLY
Collect Date: 21-NOV-03 07:52

Parameter		Result	Units	Date	By
2,3,4,5-Tetrachlorophenol	<	10.	ug/l	27-Nov-03 00:50	CAH
2,3,4,6-Tetrachlorophenol	<	10.	ug/l	27-Nov-03 00:50	CAH
2,3,5,6-Tetrachlorophenol	<	10.	ug/l	27-Nov-03 00:50	CAH
2,4,5-Trichlorophenol	<	50.	ug/l	27-Nov-03 00:50	CAH
2,4,6-Trichlorophenol	<	10.	ug/l	27-Nov-03 00:50	CAH
2,4-Dimethylphenol	<	10.	ug/l	27-Nov-03 00:50	CAH
2,4-Dinitrophenol	<	50.	ug/l	27-Nov-03 00:50	CAH
2-Chlorophenol	<	10.	ug/l	27-Nov-03 00:50	CAH
4-Chloro-3-Methylphenol	<	10.	ug/l	27-Nov-03 00:50	CAH
Acenaphthene	<	10.	ug/l	27-Nov-03 00:50	CAH
Benzo(a)pyrene	<	10.	ug/l	27-Nov-03 00:50	CAH
Benzo(b)fluoranthene	<	10.	ug/l	27-Nov-03 00:50	CAH
Chrysene	<	10.	ug/l	27-Nov-03 00:50	CAH
Creosote	<	100	ug/l	27-Nov-03 00:50	CAH
Fluoranthene	<	10.	ug/l	27-Nov-03 00:50	CAH
Indeno(1,2,3-cd)pyrene	<	10.	ug/l	27-Nov-03 00:50	CAH
Naphthalene	<	10.	ug/l	27-Nov-03 00:50	CAH
Pentachlorophenol	<	50.	ug/l	27-Nov-03 00:50	CAH
Phenanthrene	<	10.	ug/l	27-Nov-03 00:50	CAH
Pyrene	<	10.	ug/l	27-Nov-03 00:50	CAH
SW-846 METHOD 8270					
Phenol		110	ug/l	03-Dec-03 01:19	CAH

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Laboratory Results

Peoria Disposal Company
4349 Southport Rd.

Peoria, IL 61615

Attn: Mr. Ron Welk

Date Received: 09-Dec-04
Date Reported: 21-Jan-05
PO #: CPIT
PDC Cust. # : 280100

Login No. 04122253

Sample No: 04122253-7
Client ID: LEACHATE
Site: C4 PRIMARY
Locator: ANNUAL
Collect Date: 09-DEC-04 07:14

Parameter		Result	Units	Date	By
EPA METHOD 300.0 rev 2.1					
Chloride		800	mg/l	20-Dec-04 22:44	pli
SM METHOD 4500 CN C,E / SW-846 METHOD 9012					
Cyanide, Total	<	0.0050	mg/l	16-Dec-04 10:18	lgjfa
SM 4500 S2 E, USEPA 376.1					
Sulfide, Total	<	2.0	mg/l	14-Dec-04 13:00	PLI
EPA METHOD 300.0 rev. 2.1					
Sulfate		890	mg/l	20-Dec-04 22:44	pli
SM METHOD 2540 C					
Solids, Total Dissolved		3400	mg/l	10-Dec-04 08:49	KD
SW-846 METHOD 3015					
Sample Preparation				15-Dec-04 12:30	NJS
SW-846 METHOD 6010B					
Silver	<	0.010	mg/l	17-Dec-04 08:00	JMP
Arsenic	<	0.050	mg/l	17-Dec-04 08:00	JMP
Barium		0.062	mg/l	17-Dec-04 08:00	JMP
Cadmium		0.012	mg/l	17-Dec-04 08:00	JMP
Chromium	<	0.0040	mg/l	17-Dec-04 08:00	JMP
Nickel		0.016	mg/l	17-Dec-04 08:00	JMP
Lead	<	0.010	mg/l	17-Dec-04 08:00	JMP
Selenium	<	0.050	mg/l	17-Dec-04 08:00	JMP
SW-846 METHOD 7470A					
Mercury	<	0.00020	mg/l	10-Dec-04 13:45	JVH
SW-846 METHOD 8081A					
Sample Preparation				16-Dec-04 12:00	JT, KT
EPA METHOD 515.1					
Sample Preparation				15-Dec-04 12:00	JT, KT
SW-846 METHOD 8270					
Sample Preparation				14-Dec-04 12:00	JT, KT
SW-846 METHOD 8081A					
Aldrin	<	0.050	ug/l	11-Jan-05 07:39	JK
Dieldrin	<	0.10	ug/l	11-Jan-05 07:39	JK
Endosulfan I	<	0.050	ug/l	11-Jan-05 07:39	JK

recycled paper

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Laboratory Results

Peoria Disposal Company
4349 Southport Rd.

Peoria, IL 61615

Attn: Mr. Ron Welk

Date Received: 09-Dec-04
Date Reported: 21-Jan-05
PO #: CPIT
PDC Cust. # : 280100

Login No. 04122253

Sample No: 04122253-7
Client ID: LEACHATE
Site: C4 PRIMARY
Locator: ANNUAL
Collect Date: 09-DEC-04 07:14

Parameter		Result	Units	Date	By
Endosulfan II	<	0.10	ug/l	11-Jan-05 07:39	JK
Endrin	<	0.10	ug/l	11-Jan-05 07:39	JK
gamma-BHC (Lindane)	<	0.050	ug/l	11-Jan-05 07:39	JK
Heptachlor	<	0.050	ug/l	11-Jan-05 07:39	JK
Methoxychlor	<	0.50	ug/l	11-Jan-05 07:39	JK
Toxaphene	<	0.50	ug/l	11-Jan-05 07:39	JK
EPA METHOD 515.1					
Silvex	<	0.050	ug/l	31-Dec-04 22:41	ELS
2,4-D	<	0.10	ug/l	31-Dec-04 22:41	ELS
-846 METHOD 8015					
Methanol	H<	10.	mg/l	31-Dec-04 14:25	DJB
SW-846 Method 8260B					
1,1,1-Trichloroethane	<	5.0	ug/l	20-Dec-04 23:44	AMG
1,1,2-Trichloroethane	<	5.0	ug/l	20-Dec-04 23:44	AMG
1,1,2-Trichlorotrifluoroethane	<	5.0	ug/l	20-Dec-04 23:44	AMG
1,3-Dichlorobenzene	<	5.0	ug/l	20-Dec-04 23:44	AMG
Acetone	<	10.	ug/l	20-Dec-04 23:44	AMG
Carbon Tetrachloride	<	5.0	ug/l	20-Dec-04 23:44	AMG
Chlorobenzene	<	5.0	ug/l	20-Dec-04 23:44	AMG
Cyclohexanone		54.	ug/l	20-Dec-04 23:44	AMG
Ethyl ether	<	20.	ug/l	20-Dec-04 23:44	AMG
Ethyl Acetate	<	20.	ug/l	20-Dec-04 23:44	AMG
Ethylbenzene	<	2.0	ug/l	20-Dec-04 23:44	AMG
2-Butanone	<	10.	ug/l	20-Dec-04 23:44	AMG
4-Methyl-2-pentanone	<	10.	ug/l	20-Dec-04 23:44	AMG
Methylene Chloride		9.0	ug/l	20-Dec-04 23:44	AMG
n-Butanol	<	1000	ug/l	20-Dec-04 23:44	AMG
Tetrachloroethene	<	5.0	ug/l	20-Dec-04 23:44	AMG
Toluene	<	5.0	ug/l	20-Dec-04 23:44	AMG
Trichloroethene	<	5.0	ug/l	20-Dec-04 23:44	AMG
Trichlorofluoromethane	<	5.0	ug/l	20-Dec-04 23:44	AMG
Xylenes (Total)	<	10.	ug/l	20-Dec-04 23:44	AMG
SW-846 METHOD 8270					

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Laboratory Results

Peoria Disposal Company
4349 Southport Rd.

Peoria, IL 61615

Attn: Mr. Ron Welk

Date Received: 09-Dec-04
Date Reported: 21-Jan-05
PO #: CPIT
PDC Cust. # : 280100

Login No. 04122253

Sample No: 04122253-7
Client ID: LEACHATE
Site: C4 PRIMARY
Locator: ANNUAL
Collect Date: 09-DEC-04 07:14

Parameter		Result	Units	Date	By
2,3,4,6-Tetrachlorophenol	<	10.	ug/l	17-Dec-04 12:40	PSB
2,4,5-Trichlorophenol	<	50.	ug/l	17-Dec-04 12:40	PSB
2,4,6-Trichlorophenol	<	10.	ug/l	17-Dec-04 12:40	PSB
2,4-Dinitrophenol	<	50.	ug/l	17-Dec-04 12:40	PSB
2-Chlorophenol	<	10.	ug/l	17-Dec-04 12:40	PSB
4-Chloro-3-Methylphenol	<	10.	ug/l	17-Dec-04 12:40	PSB
Acenaphthene	<	10.	ug/l	17-Dec-04 12:40	PSB
Benzo(a)pyrene	<F	10.	ug/l	17-Dec-04 12:40	PSB
Benzo(b)fluoranthene	<F	10.	ug/l	17-Dec-04 12:40	PSB
Chrysene	<	10.	ug/l	17-Dec-04 12:40	PSB
Fluoranthene	<	10.	ug/l	17-Dec-04 12:40	PSB
Indeno(1,2,3-cd)pyrene	<F	10.	ug/l	17-Dec-04 12:40	PSB
Naphthalene	<	10.	ug/l	17-Dec-04 12:40	PSB
Pentachlorophenol	<	50.	ug/l	17-Dec-04 12:40	PSB
Phenanthrene	<	10.	ug/l	17-Dec-04 12:40	PSB
Phenol	<	10.	ug/l	17-Dec-04 12:40	PSB
Pyrene	<	10.	ug/l	17-Dec-04 12:40	PSB

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Laboratory Results

Peoria Disposal Company
4349 Southport Rd.

Peoria, IL 61615

Attn: Mr. Ron Welk

Date Received: 13-Dec-05
Date Reported: 04-Jan-06
PO #: CPIT
PDC Cust. # : 280100

Login No. 05122476

Sample No: 05122476-7
Client ID: LEACHATE
Site: C4 PRIMARY
Locator: ANNUAL
Collect Date: 13-DEC-05 08:25

Parameter		Result	Units	Date	By
EPA METHOD 300.0 rev 2.1					
Chloride		9000	mg/l	23-Dec-05 01:17	pli
SM 4500-CN C ,G/SW9012A					
Cyanide, Total		0.020	mg/l	16-Dec-05 09:46	lgnay
SM 4500 S2 E, USEPA 376.1					
Sulfide, Total		9.6	mg/l	14-Dec-05 11:30	JMA
EPA METHOD 300.0 rev. 2.1					
Sulfate		1300	mg/l	23-Dec-05 00:58	pli
SM METHOD 2540 C					
Solids, Total Dissolved		17000	mg/l	15-Dec-05 08:26	RU
/-846 METHOD 3015					
Sample Preparation				19-Dec-05 09:30	DAB
SW-846 METHOD 6010B					
Silver	<	0.010	mg/l	21-Dec-05 07:00	JMW/JV
Arsenic		0.027	mg/l	21-Dec-05 07:00	JMW/JV
Barium		0.66	mg/l	21-Dec-05 07:00	JMW/JV
Cadmium	<	0.0020	mg/l	21-Dec-05 07:00	JMW/JV
Chromium	<	0.0040	mg/l	21-Dec-05 07:00	JMW/JV
Nickel		0.12	mg/l	21-Dec-05 07:00	JMW/JV
Lead	<	0.010	mg/l	21-Dec-05 07:00	JMW/JV
Selenium		0.011	mg/l	21-Dec-05 07:00	JMW/JV
SW-846 METHOD 7470A					
Mercury	<	0.00020	mg/l	16-Dec-05 08:45	JMM
SW-846 METHOD 8081A					
Sample Preparation				14-Dec-05 09:00	RAC
SW-846 METHOD 8082					
Sample Preparation				14-Dec-05 10:00	RAC
EPA METHOD 515.1					
Sample Preparation				19-Dec-05 05:00	JT
SW-846 METHOD 8270					
Sample Preparation				15-Dec-05 05:00	JT
SW-846 METHOD 8081A					
Aldrin	<	0.10	ug/l	16-Dec-05 06:25	ELS

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Peoria, IL 61615

Attn: Mr. Ron Welk

Date Received: 13-Dec-05
Date Reported: 04-Jan-06
PO #: CPIT
PDC Cust. # : 280100

Login No. 05122476

Sample No: 05122476-7
Client ID: LEACHATE
Site: C4 PRIMARY
Locator: ANNUAL
Collect Date: 13-DEC-05 08:25

Parameter		Result	Units	Date	By
Dieldrin	<	0.20	ug/l	16-Dec-05 06:25	ELS
Endosulfan I	<	0.10	ug/l	16-Dec-05 06:25	ELS
Endosulfan II	<	0.20	ug/l	16-Dec-05 06:25	ELS
Endrin	<	0.20	ug/l	16-Dec-05 06:25	ELS
gamma-BHC (Lindane)	C<	0.10	ug/l	16-Dec-05 06:25	ELS
Heptachlor	<	0.10	ug/l	16-Dec-05 06:25	ELS
Methoxychlor	<	1.0	ug/l	16-Dec-05 06:25	ELS
Toxaphene	<	1.0	ug/l	16-Dec-05 06:25	ELS
SW-846 METHOD 8082					
Aroclor 1016	X<	0.50	ug/l	16-Dec-05 23:51	KP
Aroclor 1221	X<	1.0	ug/l	16-Dec-05 23:51	KP
Aroclor 1232	X<	0.50	ug/l	16-Dec-05 23:51	KP
Aroclor 1242	X<	0.50	ug/l	16-Dec-05 23:51	KP
Aroclor 1248	X<	0.50	ug/l	16-Dec-05 23:51	KP
Aroclor 1254	X<	1.0	ug/l	16-Dec-05 23:51	KP
Aroclor 1260	X<	1.0	ug/l	16-Dec-05 23:51	KP
PCBs Total	X<	5.0	ug/l	16-Dec-05 23:51	KP
EPA METHOD 515.1					
Silvex	X<	0.050	ug/l	21-Dec-05 15:39	KP
2,4-D	X<	0.10	ug/l	21-Dec-05 15:39	KP
SW-846 METHOD 8015					
Ethanol	<	10.	mg/l	15-Dec-05 22:21	BY
Isopropanol	<	10.	mg/l	15-Dec-05 22:21	BY
Methanol	<	10.	mg/l	15-Dec-05 22:21	BY
SW-846 Method 8260B					
1,1,1-Trichloroethane	<	5.0	ug/l	19-Dec-05 20:00	AMG
1,1,2-Trichloroethane	<	5.0	ug/l	19-Dec-05 20:00	AMG
1,1,2-Trichlorotrifluoroethane	<	5.0	ug/l	19-Dec-05 20:00	AMG
1,3-Dichlorobenzene	<	5.0	ug/l	19-Dec-05 20:00	AMG
Acetone		130	ug/l	19-Dec-05 20:00	AMG
Carbon Tetrachloride	<	5.0	ug/l	19-Dec-05 20:00	AMG
Chlorobenzene	<	5.0	ug/l	19-Dec-05 20:00	AMG
Cyclohexanone		500	ug/l	19-Dec-05 20:00	AMG

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Laboratory Results

Peoria Disposal Company
4349 Southport Rd.

Peoria, IL 61615

Attn: Mr. Ron Welk

Date Received: 13-Dec-05
Date Reported: 04-Jan-06
PO #: CPIT
PDC Cust. # : 280100

Login No. 05122476

Sample No: 05122476-7
Client ID: LEACHATE
Site: C4 PRIMARY
Locator: ANNUAL
Collect Date: 13-DEC-05 08:25

Parameter		Result	Units	Date	By
Ethyl ether	<	20.	ug/l	19-Dec-05 20:00	AMG
Ethyl Acetate	<	20.	ug/l	19-Dec-05 20:00	AMG
Ethylbenzene	<	2.0	ug/l	19-Dec-05 20:00	AMG
2-Butanone		18.	ug/l	19-Dec-05 20:00	AMG
Methylene Chloride	<	5.0	ug/l	19-Dec-05 20:00	AMG
n-Butanol		1500	ug/l	19-Dec-05 20:00	AMG
Tetrachloroethene	<	5.0	ug/l	19-Dec-05 20:00	AMG
Toluene		14.	ug/l	19-Dec-05 20:00	AMG
Trichloroethene	<	5.0	ug/l	19-Dec-05 20:00	AMG
Trichlorofluoromethane	<	5.0	ug/l	19-Dec-05 20:00	AMG
Xylenes (Total)	<	10.	ug/l	19-Dec-05 20:00	AMG
SW-846 Method 8260B					
4-Methyl-2-pentanone		280	ug/l	21-Dec-05 19:21	AMG
SW-846 METHOD 8270					
2,3,4,6-Tetrachlorophenol	<	20.	ug/l	16-Dec-05 20:31	PSB
2,4,6-Trichlorophenol	<	20.	ug/l	16-Dec-05 20:31	PSB
2,4-Dinitrophenol	<	100	ug/l	16-Dec-05 20:31	PSB
2-Chlorophenol	<	20.	ug/l	16-Dec-05 20:31	PSB
4-Chloro-3-Methylphenol	<	20.	ug/l	16-Dec-05 20:31	PSB
Acenaphthene	<	20.	ug/l	16-Dec-05 20:31	PSB
Benzo(a)pyrene	<	20.	ug/l	16-Dec-05 20:31	PSB
Benzo(b)fluoranthene	<	20.	ug/l	16-Dec-05 20:31	PSB
Chrysene	<	20.	ug/l	16-Dec-05 20:31	PSB
Fluoranthene	<	20.	ug/l	16-Dec-05 20:31	PSB
Indeno(1,2,3-cd)pyrene	<	20.	ug/l	16-Dec-05 20:31	PSB
Naphthalene	<	20.	ug/l	16-Dec-05 20:31	PSB
Pentachlorophenol	<	100	ug/l	16-Dec-05 20:31	PSB
Phenanthrene	<	20.	ug/l	16-Dec-05 20:31	PSB
Phenol		49.	ug/l	16-Dec-05 20:31	PSB
Pyrene	<	20.	ug/l	16-Dec-05 20:31	PSB

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Peoria Disposal Company
4349 Southport Rd.
Peoria, IL 61615

Attn: Mr. Ron Welk

Date Received: 27-Dec-06
Date Reported 25-Jan-07

Sample No: 06123480-7 | Collect Date: 27-Dec-06 11:35

Client Id: LEACHATE | Site: C4 PRIMARY | Locator: ANNUAL

		Result	Units	Date / Time	By
EPA 300.0 R2.1					
Chloride		17000	mg/l	03-Jan-07 13:43	PLI
Sulfate		950	mg/l	03-Jan-07 3:01	jfa
EPA 515.1 R4.0					
2,4-D	X<	0.1	ug/l	05-Jan-07 22:29	ELS
Silvex	X<	0.05	ug/l	05-Jan-07 22:29	ELS
SM (18) 2540C					
Solids, Total Dissolved		22000	mg/l	28-Dec-06 10:47	sh
SM 4500 CN C/SW9012A					
Cyanide, Total		0.1	mg/l	02-Jan-07 13:33	lgnay
SM 4500 S2 E, 376.1					
Sulfide, Total		6.6	mg/l	28-Dec-06 12:00	NY
SW-846 3015					
Sample Preparation				02-Jan-07 9:45	JEM
SW-846 6020B R0.0					
Arsenic		0.04	mg/l	08-Jan-07 9:56	JMW
Barium		0.66	mg/l	08-Jan-07 9:39	JMW
Cadmium		0.0047	mg/l	08-Jan-07 9:39	JMW
Chromium		0.26	mg/l	08-Jan-07 9:56	JMW
Lead		0.0026	mg/l	08-Jan-07 9:39	JMW
Mercury		0.0042	mg/l	08-Jan-07 9:39	JMW
Nickel		0.12	mg/l	08-Jan-07 9:56	JMW
Selenium		0.099	mg/l	08-Jan-07 11:57	JMW
Silver	<	0.01	mg/l	08-Jan-07 11:57	JMW
SW-846 8015B R2.0					
Ethanol	<	10	mg/l	04-Jan-07 5:04	AH
Isopropanol	<	10	mg/l	04-Jan-07 5:04	AH
Methanol	<	10	mg/l	04-Jan-07 5:04	AH
SW-846 8081A R1.0					
Aldrin	<	0.05	ug/l	04-Jan-07 2:41	KP
Dieldrin	<	0.1	ug/l	04-Jan-07 2:41	KP
Endosulfan I	<	0.05	ug/l	04-Jan-07 2:41	KP
Endosulfan II	<	0.1	ug/l	04-Jan-07 2:41	KP
Endrin	<	0.1	ug/l	04-Jan-07 2:41	KP

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Peoria Disposal Company
4349 Southport Rd.
Peoria, IL 61615

Attn: Mr. Ron Welk

Date Received: 27-Dec-06
Date Reported 25-Jan-07

Sample No: 06123480-7 | Collect Date: 27-Dec-06 11:35
Client Id: LEACHATE | Site: C4 PRIMARY | Locator: ANNUAL

		Result	Units	Date / Time	By
SW-846 8081A R1.0					
gamma-BHC (Lindane)	<	0.05	ug/l	04-Jan-07 2:41	KP
Heptachlor	<	0.05	ug/l	04-Jan-07 2:41	KP
Methoxychlor	V<	0.5	ug/l	04-Jan-07 2:41	KP
Toxaphene	<	0.5	ug/l	04-Jan-07 2:41	KP
SW-846 8082					
Sample Preparation				02-Jan-07 9:30	RR
SW-846 8082 R0.0					
Aroclor 1016	<	0.5	ug/l	04-Jan-07 6:30	KP
Aroclor 1221	<	1	ug/l	04-Jan-07 6:30	KP
Aroclor 1232	<	0.5	ug/l	04-Jan-07 6:30	KP
Aroclor 1242	<	0.5	ug/l	04-Jan-07 6:30	KP
Aroclor 1248	<	0.5	ug/l	04-Jan-07 6:30	KP
Aroclor 1254	<	1	ug/l	04-Jan-07 6:30	KP
Aroclor 1260	<	1	ug/l	04-Jan-07 6:30	KP
PCBs Total	<	5	ug/l	04-Jan-07 6:30	KP
SW-846 8260B R2.0					
1,1,1-Trichloroethane	<	5	ug/l	09-Jan-07 20:42	DF
1,1,2-Trichloroethane	<	5	ug/l	09-Jan-07 20:42	DF
1,1,2-Trichlorotrifluoroethane	<	5	ug/l	09-Jan-07 20:42	DF
1,3-Dichlorobenzene	<	5	ug/l	09-Jan-07 20:42	DF
2-Butanone		35	ug/l	09-Jan-07 20:42	DF
4-Methyl-2-pentanone		350	ug/l	09-Jan-07 19:12	DF
Acetone		27	ug/l	09-Jan-07 20:42	DF
Carbon Tetrachloride	<	5	ug/l	09-Jan-07 20:42	DF
Chlorobenzene	<	5	ug/l	09-Jan-07 20:42	DF
Cyclohexanone	<	10	ug/l	09-Jan-07 20:42	DF
Ethyl Acetate	<	20	ug/l	09-Jan-07 20:42	DF
Ethyl ether	<	20	ug/l	09-Jan-07 20:42	DF
Ethylbenzene	<	2	ug/l	09-Jan-07 20:42	DF
Methylene Chloride	<	5	ug/l	09-Jan-07 20:42	DF
n-Butanol	<	1000	ug/l	09-Jan-07 20:42	DF
Tetrachloroethene	<	5	ug/l	09-Jan-07 20:42	DF

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Peoria Disposal Company
4349 Southport Rd.
Peoria, IL 61615

Attn: Mr. Ron Welk

Date Received: 27-Dec-06
Date Reported 25-Jan-07

Sample No: 06123480-7 | Collect Date: 27-Dec-06 11:35
Client Id: LEACHATE | Site: C4 PRIMARY | Locator: ANNUAL

		Result	Units	Date / Time	By
SW-846 8260B R2.0					
Toluene		6	ug/l	09-Jan-07 20:42	DF
Trichloroethene	<	5	ug/l	09-Jan-07 20:42	DF
Trichlorofluoromethane	<	5	ug/l	09-Jan-07 20:42	DF
Xylenes (Total)	<	10	ug/l	09-Jan-07 20:42	DF
SW-846 8270C					
Sample Preparation				29-Dec-06 8:30	RR
SW-846 8270C R3.0					
2,3,4,6-Tetrachlorophenol	<	10	ug/l	03-Jan-07 15:53	PSB
2,4,5-Trichlorophenol	<	50	ug/l	03-Jan-07 15:53	PSB
2,4,6-Trichlorophenol	<	10	ug/l	03-Jan-07 15:53	PSB
2,4-Dinitrophenol	<	50	ug/l	03-Jan-07 15:53	PSB
2-Chlorophenol	<	10	ug/l	03-Jan-07 15:53	PSB
4-Chloro-3-Methylphenol		48	ug/l	03-Jan-07 15:53	PSB
Acenaphthene	<	10	ug/l	03-Jan-07 15:53	PSB
Benzo(a)pyrene	<	10	ug/l	03-Jan-07 15:53	PSB
Benzo(b)fluoranthene	<	10	ug/l	03-Jan-07 15:53	PSB
Chrysene	<	10	ug/l	03-Jan-07 15:53	PSB
Fluoranthene	<	10	ug/l	03-Jan-07 15:53	PSB
Indeno(1,2,3-cd)pyrene	<	10	ug/l	03-Jan-07 15:53	PSB
Naphthalene	<	10	ug/l	03-Jan-07 15:53	PSB
Pentachlorophenol	<	50	ug/l	03-Jan-07 15:53	PSB
Phenanthrene	<	10	ug/l	03-Jan-07 15:53	PSB
Phenol		28	ug/l	03-Jan-07 15:53	PSB
Pyrene	<	10	ug/l	03-Jan-07 15:53	PSB

X - surr. was out high on primary col., failed low on conf. col.

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4349 Southport Rd.

Peoria, IL 61615
Attn : Mr. Ron Welk

Date Received : 12/14/07 11:52
Report Date 01/17/08
Customer # : 280100
P.O. Number : CPIT
Facility :

Sample No: **07122801-7** Collect Date **12/14/07 10:50**
Client ID : **LEACHATE** Site : **C4 PRIMARY** Locator : **ANNUAL**

Parameter	Qualifier	Result	Analysis Date	Analyst
EPA 300.0 R2.1				
Chloride		15000 mg/l	12/18/07 23:35	lgjfa
Sulfate		420 mg/l	12/18/07 06:40	lgjfa
EPA 515.1				
Sample Preparation			12/20/07 07:00	JMB
EPA 515.1 R4.0				
2,4-D	T<	0.2 ug/l	01/01/08 11:49	ELS
Silvex	T<	0.1 ug/l	01/01/08 11:49	ELS
SM (18) 2540C				
Solids, Total Dissolved		22000 mg/l	12/18/07 10:19	jrw
SM 4500 CN C/SW9012A				
Cyanide, Total		0.037 mg/l	12/18/07 09:02	lgarg
SM 4500 S2 E, 376.1				
Sulfide, Total		62 mg/l	12/20/07 12:53	PLI
SW-846 3015				
Sample Preparation			12/24/07 11:00	TIN/JEM
SW-846 6010B R2.0				
Aluminum		1.1 mg/l	12/31/07 12:00	JMW
Antimony	<	0.02 mg/l	12/31/07 12:00	JMW
Arsenic		0.029 mg/l	12/31/07 12:00	JMW
Barium		0.46 mg/l	12/31/07 12:00	JMW
Cadmium	<	0.002 mg/l	12/31/07 12:00	JMW
Chromium	<	0.004 mg/l	12/31/07 12:00	JMW
Copper		0.056 mg/l	12/31/07 12:00	JMW
Iron		1.2 mg/l	12/31/07 12:00	JMW
Lead	<	0.01 mg/l	12/31/07 12:00	JMW
Manganese		0.072 mg/l	12/31/07 12:00	JMW
Nickel		0.24 mg/l	12/31/07 12:00	JMW
Selenium		0.011 mg/l	12/31/07 12:00	JMW
Silver	<	0.01 mg/l	12/31/07 12:00	JMW
Vanadium		0.0073 mg/l	12/31/07 12:00	JMW
Zinc		0.058 mg/l	12/31/07 12:00	JMW
SW-846 6020B R0.0				
Mercury	<	0.0002 mg/l	01/02/08 08:31	JMW
SW-846 8015B R2.0				
Ethanol	<	10 mg/l	12/28/07 20:08	AH
Isopropanol	V<	10 mg/l	12/28/07 20:08	AH

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Laboratory Results

Peoria Disposal Company
4349 Southport Rd.

Peoria, IL 61615
Attn : Mr. Ron Welk

Date Received : 12/14/07 11:52
Report Date 01/17/08
Customer # : 280100
P.O. Number : CPIT
Facility :

Sample No: **07122801-7** Collect Date **12/14/07 10:50**
Client ID : **LEACHATE** Site : **C4 PRIMARY** Locator : **ANNUAL**

Parameter	Qualifier	Result	Analysis Date	Analyst
SW-846 8015B R2.0				
Methanol	<	10 mg/l	12/28/07 20:08	AH
SW-846 8081A				
Sample Preparation	H		01/07/08 09:45	MCB
H - Method Hold Time Exceeded				
SW-846 8081A				
Sample Preparation			12/19/07 07:00	JMB
SW-846 8081A R1.0				
Aldrin	W<	0.1 ug/l	01/15/08 19:13	JT
Dieldrin	W<	0.2 ug/l	01/15/08 19:13	JT
Endosulfan I	W<	0.1 ug/l	01/15/08 19:13	JT
Endosulfan II	W<	0.2 ug/l	01/15/08 19:13	JT
Endrin	W<	0.2 ug/l	01/15/08 19:13	JT
Heptachlor	W<	0.1 ug/l	01/15/08 19:13	JT
Methoxychlor	W<	1 ug/l	01/15/08 19:13	JT
Toxaphene	W<	1 ug/l	01/15/08 19:13	JT
gamma-BHC (Lindane)	W<	0.1 ug/l	01/15/08 19:13	JT
SW-846 8082				
Sample Preparation			12/19/07 07:00	JMB
SW-846 8082 R0.0				
Aroclor 1016	<	0.5 ug/l	01/04/08 02:59	JT
Aroclor 1221	<	1 ug/l	01/04/08 02:59	JT
Aroclor 1232	<	0.5 ug/l	01/04/08 02:59	JT
Aroclor 1242	<	0.5 ug/l	01/04/08 02:59	JT
Aroclor 1248	<	0.5 ug/l	01/04/08 02:59	JT
Aroclor 1254	<	1 ug/l	01/04/08 02:59	JT
Aroclor 1260	<	1 ug/l	01/04/08 02:59	JT
PCBs Total	<	5 ug/l	01/04/08 02:59	JT
SW-846 8260B R2.0				
1,1,1-Trichloroethane	<	5 ug/l	12/26/07 18:15	MWS
1,1,2-Trichloroethane	<	5 ug/l	12/26/07 18:15	MWS
1,1,2-Trichlorotrifluoroethane	<	5 ug/l	12/26/07 18:15	MWS
1,3-Dichlorobenzene	<	5 ug/l	12/26/07 18:15	MWS
2-Butanone		20 ug/l	12/26/07 18:15	MWS
4-Methyl-2-pentanone		5600 ug/l	12/26/07 17:05	MWS
Acetone		290 ug/l	12/26/07 16:36	MWS
Benzene		7.9 ug/l	12/26/07 18:15	MWS
Carbon Tetrachloride	<	5 ug/l	12/26/07 18:15	MWS
Chlorobenzene	<	5 ug/l	12/26/07 18:15	MWS

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Laboratory Results

Peoria Disposal Company
4349 Southport Rd.

Peoria, IL 61615
Attn : Mr. Ron Welk

Date Received : 12/14/07 11:52
Report Date 01/17/08
Customer # : 280100
P.O. Number : CPIT
Facility :

Sample No: **07122801-7** Collect Date **12/14/07 10:50**
Client ID : **LEACHATE** Site : **C4 PRIMARY** Locator : **ANNUAL**

Parameter	Qualifier	Result	Analysis Date	Analyst
SW-846 8260B R2.0				
Cyclohexanone	<	10 ug/l	12/26/07 18:15	MWS
Ethyl Acetate		72 ug/l	12/26/07 18:15	MWS
Ethyl ether	<	20 ug/l	12/26/07 18:15	MWS
Ethylbenzene	<	2 ug/l	12/26/07 18:15	MWS
Methylene Chloride	<	5 ug/l	12/26/07 18:15	MWS
Tetrachloroethene	<	5 ug/l	12/26/07 18:15	MWS
Toluene		13 ug/l	12/26/07 18:15	MWS
Trichloroethene	<	5 ug/l	12/26/07 18:15	MWS
Trichlorofluoromethane	<	5 ug/l	12/26/07 18:15	MWS
Xylenes (Total)	<	10 ug/l	12/26/07 18:15	MWS
n-Butanol	<	1000 ug/l	12/26/07 18:15	MWS
SW-846 8270C				
Sample Preparation			12/20/07 14:30	JMB
Sample Preparation			12/18/07 08:00	TTS
SW-846 8270C R3.0				
2,3,4,5-Tetrachlorophenol	<	20 ug/l	01/03/08 02:40	CAH
2,3,4,6-Tetrachlorophenol	<	20 ug/l	01/03/08 02:40	CAH
2,3,5,6-Tetrachlorophenol	<	20 ug/l	01/03/08 02:40	CAH
2,4,5-Trichlorophenol	<	100 ug/l	01/03/08 02:40	CAH
2,4,6-Trichlorophenol	<	20 ug/l	01/03/08 02:40	CAH
2,4-Dimethylphenol	<	20 ug/l	01/03/08 02:40	CAH
2,4-Dinitrophenol	<	100 ug/l	01/03/08 02:40	CAH
2-Chlorophenol	<	20 ug/l	01/03/08 02:40	CAH
2-Methylphenol	<	20 ug/l	01/03/08 02:40	CAH
4-Chloro-3-Methylphenol	<	20 ug/l	01/03/08 02:40	CAH
4-Methylphenol	E	260 ug/l	01/03/08 02:40	CAH
Acenaphthene	<	20 ug/l	01/03/08 02:40	CAH
Acenaphthylene	<	20 ug/l	01/03/08 02:40	CAH
Anthracene	<	20 ug/l	01/03/08 02:40	CAH
Benzo(a)anthracene	<	20 ug/l	01/03/08 02:40	CAH
Benzo(a)pyrene	<	20 ug/l	01/03/08 02:40	CAH
Benzo(b)fluoranthene	<	20 ug/l	01/03/08 02:40	CAH
Benzo(ghi)perylene	<	20 ug/l	01/03/08 02:40	CAH
Benzo(k)fluoranthene	<	20 ug/l	01/03/08 02:40	CAH
Chrysene	<	20 ug/l	01/03/08 02:40	CAH
Creosote	<	200 ug/l	01/03/08 02:40	CAH
Dibenzo(a,h)anthracene	<	20 ug/l	01/03/08 02:40	CAH
Fluoranthene	<	20 ug/l	01/03/08 02:40	CAH
Indeno(1,2,3-cd)pyrene	<	20 ug/l	01/03/08 02:40	CAH
Naphthalene	<	20 ug/l	01/03/08 02:40	CAH

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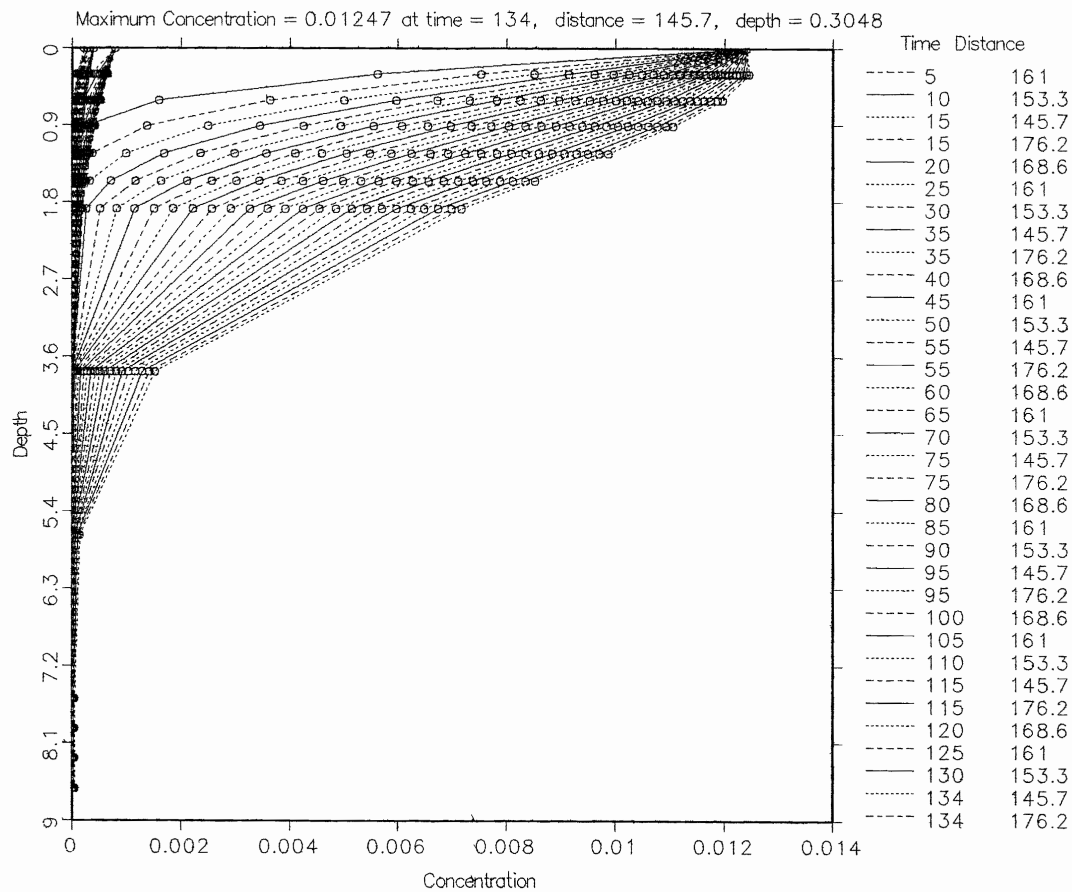
Date Received : 12/14/07 11:52
Report Date 01/17/08
Customer # : 280100
P.O. Number : CPIT
Facility :

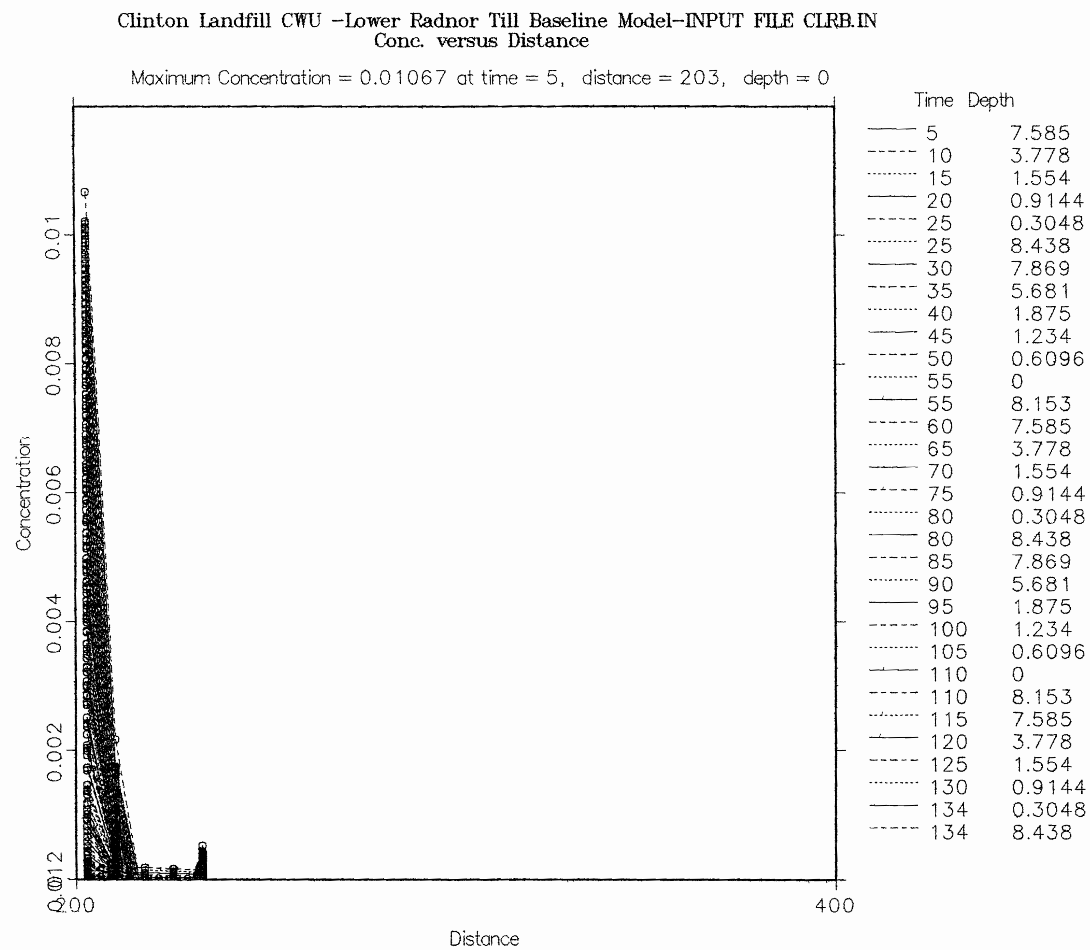
Sample No: **07122801-7** Collect Date **12/14/07 10:50**
Client ID : **LEACHATE** Site : **C4 PRIMARY** Locator : **ANNUAL**

Parameter	Qualifier	Result	Analysis Date	Analyst
SW-846 8270C R3.0				
Pentachlorophenol	<	100 ug/l	01/03/08 02:40	CAH
Phenanthrene	<	20 ug/l	01/03/08 02:40	CAH
Phenol		160 ug/l	01/03/08 02:40	CAH
Pyrene	<	20 ug/l	01/03/08 02:40	CAH

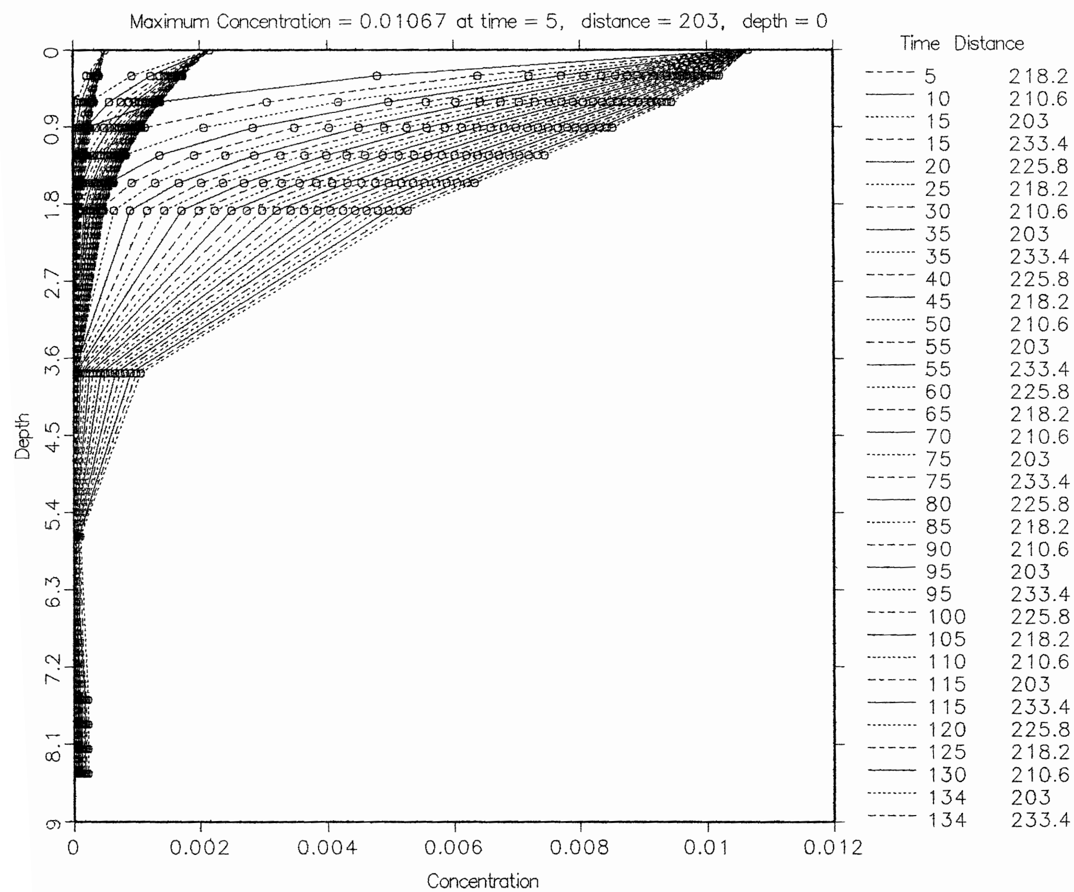
ATTACHMENT 18: GIA Model Graphs

Clinton Landfill CWU Organic Soil Baseline Model File Name COSB.IN
Concentration versus Depth

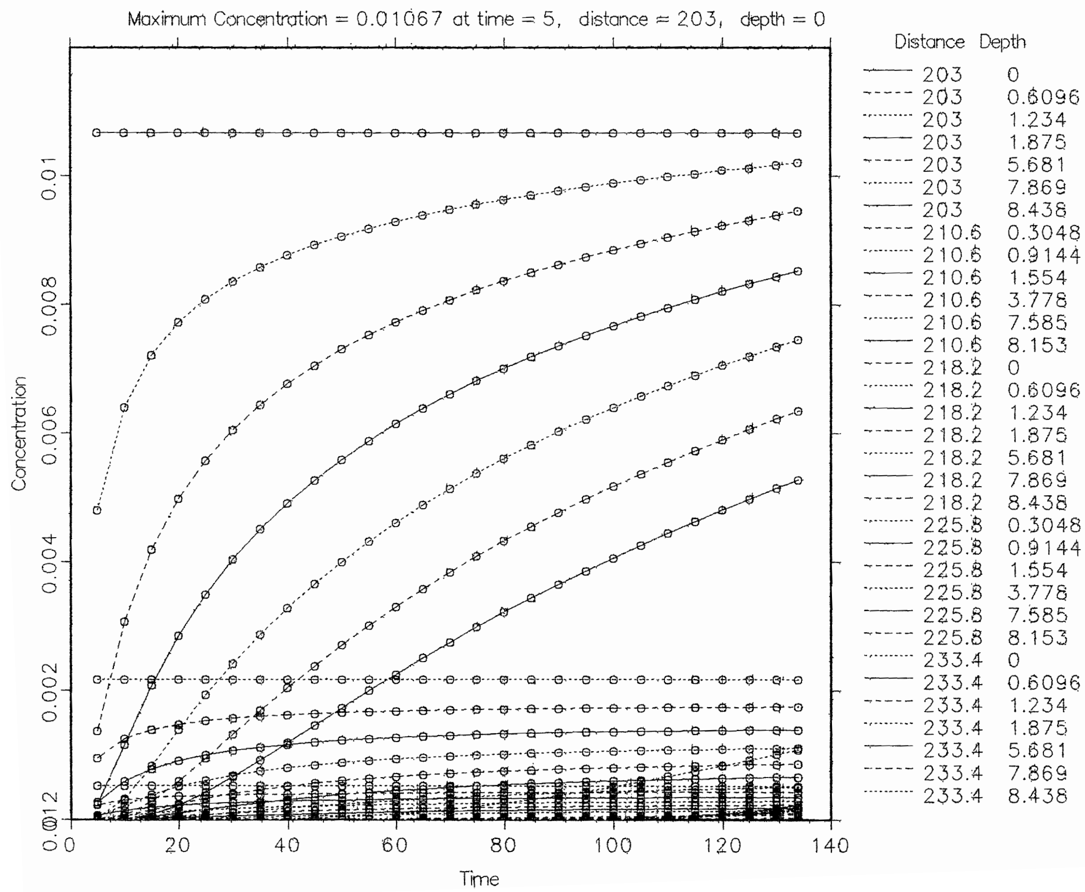



Clinton Landfill CWU -Lower Radnor Till Baseline Model-INPUT FILE CLRB.IN
Conc. versus Distance
Maximum Concentration = 0.01067 at time = 5, distance = 203, depth = 0
Concentration
0.01
0.008
0.006
0.004
0.002
0.0012
200
400
Distance
Time Depth
5 7.585
10 3.778
15 1.554
20 0.9144
25 0.3048
25 8.438
30 7.869
35 5.681
40 1.875
45 1.234
50 0.6096
55 0
55 8.153
60 7.585
65 3.778
70 1.554
75 0.9144
80 0.3048
80 8.438
85 7.869
90 5.681
95 1.875
100 1.234
105 0.6096
110 0
110 8.153
115 7.585
120 3.778
125 1.554
130 0.9144
134 0.3048
134 8.438

Clinton Landfill CWU -Lower Radnor Till Baseline Model-INPUT FILE CLRB.IN
Concentration versus Depth



Clinton Landfill CWU -Lower Radnor Till Baseline Model-INPUT FILE CLRB.IN
Concentration versus Time



ATTACHMENT 19: Monitoring Well Spacing Information

PLUME Model Data & Output Files - Lower Radnor Till Sand Zone
Clinton Landfill No. 3

Base Model Input:

Hydraulic Gradient, I =	0.0107 ft/ft
Mean Horizontal Hydraulic Conductivity, Kh =	2.21E-04 cm/s
Effective Porosity, n =	0.05
Average Darcy Velocity (Va = Kh x I) =	6.70E-03 ft/d
Average Interstitial Velocity (Vi = Kh x I/n) =	1.34E-01 ft/d
Retardation =	1 (no retardation)
Radioactive Decay =	0 (no decay)
Mean Aquifer Thickness =	2.8 ft
Length of Line Source, X =	1 ft
Pulse Divisions (Range = 1-50) =	Varies
Length of Shortest Flowline, L =	50.49 ft (for 5%*)
	504.89 ft (for Center**)
Dispersivity in X-direction = Dx *(Gelhar, 1992)*	44.3 ft (for 5%*)
(Xu and Eckstein, 1995)	33.5 ft (for Center**)
Dispersivity in Y-direction (Dy = 0.2 x Dx) =	8.9 ft (for 5%*)
	6.7 ft (for Center**)
Grid Size (for 5%*) =	20' x 20'
Grid Size (for Center**) =	20' x 20'
Ci = Initial Concentration =	500 mg/L
Source Strength at 0 day (Ci x Va x X^2) =	94.92 mg/d (use 500 mg/d)
Concentration at 48,910 days [134 yrs] (Ci x Va x X^2) =	94.92 mg/d (use 500 mg/d)

Time		Output File Name	
Days	**Years**	**For 5%***	**For Center****
1,825	5	CLR5	NR
3,650	10	CLR10	NR
5,475	15	CLR15	NR
7,300	20	CLR20	NR
9,125	25	CLR25	NR
10,950	30	CLR30	NR
12,775	35	CLR35	NR
14,600	40	CLR40	NR
16,425	45	CLR45	NR
18,250	50	CLR50	NR
20,075	55	CLR55	NR
21,900	60	CLR60	NR
23,725	65	CLR65	NR
25,550	70	CLR70	NR
27,375	75	CLR75	NR
29,200	80	CLR80	NR
31,025	85	CLR85	NR
32,850	90	CLR90	NR
34,675	95	CLR95	NR
36,500	100	CLR100	NR
38,325	105	CLR105	NR
40,150	110	CLR110	NR
41,975	115	CLR115	NR
43,800	120	CLR120	NR
45,625	125	CLR125	NR
47,450	130	CLR130	NR
48,910	134	CLR134	CLRC134

Notes:

* - Source located upgradient, at 5% of the total invert length, from downgradient invert end of fill area.

** - Source located at the mid-point of invert line drawn in the direction of groundwater flow.

NR = not run for corresponding time

```
***************************** PLUME ****************************

CALCULATION OF CONCENTRATION VALUES FOR A SINGLE RADIOACTIVE
OR NON-RADIOACTIVE TRACER IN A HOMOGENEOUS TWO- OR THREE-
DIMENSIONAL GROUND WATER SYSTEM WITH UNI-LATERAL REGIONAL FLOW

--------------------------------------------------------------------------
Clinton Landfill No.3 CWU - Lower Radnor Till Sand
--------------------------------------------------------------------------

****************************** INPUT DATA *****************************

AVERAGE INTERSTITIAL VELOCITY:  .134 [FT/DAY]

NO-RADIOACTIVE DECAY
RETARDATION FACTOR:  1

AQUIFER THICKNESS:  2.8 [FT]
EFFECTIVE POROSITY:  .05

VERTICALLY AVERAGED (=TWO-DIMENSIONAL) TRANSPORT

LENGTH OF LINE SOURCE:  1 [FT]

DISPERSIVITY IN X-DIRECTION:  44.3 [FT]
DISPERSIVITY IN Y-DIRECTION:  8.9 [FT]

------------------------ SOURCE STRENGTH TABLE --------------------------

NUMBER OF DATA PAIRS IN TABLE:  2

T( 1 )= 0          DAY      W( 1 )=  500      MG/DAY
T( 2 )= 1825       DAY      W( 2 )=  500      MG/DAY



AREA UNDER PULSE IN GRAPH (= TOTAL MASS RELEASE):  912500 MG
TIME CENTROID:  912.5 DAYS (= 7.884E+07 SEC)


NUMBER OF DIVISIONS IN SOURCE PULSE:  45




CALCULATION TIME:  1825  DAY

------------------------------- GRID DATA -------------------------------


X-COORDINATE OF ORIGIN OF GRID:  0 [FT]
```

OUTPUT FILE = CLR5.OUT

GRID SPACING IN X-DIRECTION: 20 [FT]
NUMBER OF NODES IN X-DIRECTION: 15

Y-COORDINATE OF ORIGIN OF GRID: 0 [FT]
GRID SPACING IN Y-DIRECTION: 20 [FT]
NUMBER OF NODES IN Y-DIRECTION: 10

************************* RESULTS *************************************

----------------------- CONCENTRATION IN [MG/L = ppm] -------------------

Y \ X->	0	20	40	60	80	100
0	-.1000E+01	0.1493E+02	0.1128E+02	0.9319E+01	0.8005E+01	0.6998E+01
20	0.6475E+01	0.7413E+01	0.7444E+01	0.7032E+01	0.6483E+01	0.5914E+01
40	0.2742E+01	0.3303E+01	0.3696E+01	0.3898E+01	0.3938E+01	0.3855E+01
60	0.1250E+01	0.1527E+01	0.1774E+01	0.1969E+01	0.2100E+01	0.2165E+01
80	0.5731E+00	0.7042E+00	0.8323E+00	0.9478E+00	0.1043E+01	0.1112E+01
100	0.2566E+00	0.3164E+00	0.3775E+00	0.4363E+00	0.4891E+00	0.5327E+00
120	0.1105E+00	0.1365E+00	0.1638E+00	0.1910E+00	0.2167E+00	0.2394E+00
140	0.4521E-01	0.5592E-01	0.6736E-01	0.7904E-01	0.9041E-01	0.1008E+00
160	0.1745E-01	0.2160E-01	0.2609E-01	0.3074E-01	0.3536E-01	0.3971E-01
180	0.6314E-02	0.7820E-02	0.9462E-02	0.1118E-01	0.1292E-01	0.1458E-01

Y \ X->	120	140	160	180	200	220
0	0.6171E+01	0.5459E+01	0.4828E+01	0.4257E+01	0.3736E+01	0.3256E+01
20	0.5362E+01	0.4836E+01	0.4336E+01	0.3863E+01	0.3417E+01	0.2997E+01
40	0.3688E+01	0.3466E+01	0.3208E+01	0.2931E+01	0.2645E+01	0.2358E+01
60	0.2170E+01	0.2124E+01	0.2035E+01	0.1914E+01	0.1770E+01	0.1611E+01
80	0.1152E+01	0.1163E+01	0.1147E+01	0.1108E+01	0.1049E+01	0.9744E+00
100	0.5645E+00	0.5832E+00	0.5882E+00	0.5802E+00	0.5602E+00	0.5302E+00
120	0.2577E+00	0.2706E+00	0.2775E+00	0.2783E+00	0.2730E+00	0.2623E+00
140	0.1097E+00	0.1166E+00	0.1211E+00	0.1230E+00	0.1222E+00	0.1188E+00
160	0.4357E-01	0.4670E-01	0.4895E-01	0.5018E-01	0.5035E-01	0.4946E-01
180	0.1609E-01	0.1736E-01	0.1832E-01	0.1893E-01	0.1914E-01	0.1895E-01

Y \ X->	240	260	280
0	0.2816E+01	0.2414E+01	0.2049E+01
20	0.2605E+01	0.2242E+01	0.1909E+01
40	0.2077E+01	0.1807E+01	0.1553E+01
60	0.1444E+01	0.1275E+01	0.1110E+01
80	0.8896E+00	0.7984E+00	0.7048E+00

OUTPUT FILE = CLR5.OUT

100	0.4922E+00	0.4485E+00	0.4014E+00
120	0.2470E+00	0.2282E+00	0.2068E+00
140	0.1133E+00	0.1058E+00	0.9691E-01
160	0.4760E-01	0.4488E-01	0.4149E-01
180	0.1838E-01	0.1746E-01	0.1627E-01

OUTPUT FILE = CLR5.OUT

PLUME Model Data & Output Files - Organic Soil

Clinton Landfill No. 3 - Chemical Waste Unit

Base Model Input:

Hydraulic Gradient, I =	5.62E-03 ft/ft
Mean Horizontal Hydraulic Conductivity, Kh =	2.60E-05 cm/s
Effective Porosity, n =	0.05
Average Darcy Velocity (Va = Kh x I) =	4.14E-04 ft/d
Average Interstitial Velocity (Vi = Kh x I/n) =	8.28E-03 ft/d
Retardation =	1 (no retardation)
Radioactive Decay =	0 (no decay)
Mean Aquifer Thickness =	3.42 ft
Length of Line Source, X =	1 ft
Pulse Divisions (Range = 5-50) =	Varies
Length of Shortest Flowline, L =	37.28 ft (for 5%*)
	372.79 ft (for Center**)
Dispersivity in X-direction = Dx *(Gelhar, 1992)*	13.0 ft (for 5%*)
(Xu and Eckstein, 1995)	19.20 ft (for Center**)
Dispersivity in Y-direction (Dy = 0.2 x Dx) =	3.0 ft (for 5%*)
	3.8 ft (for Center**)
Grid Size (for 5%*) =	20' x 20'
Grid Size (for Center**) =	20' x 20'
Ci = Initial Concentration =	100 mg/L
Source Strength at 0 day (Ci x Va x X^2) =	1.2 mg/d (use 100 mg/d)
Concentration at 48,910 days [134 yrs] (Ci x Va x X^2) =	1.2 mg/d (use 100 mg/d)

Time		Output File Name	
Days	**Years**	**For 5%***	**For Center****
1,825	5	CWOS5	NR
3,650	10	CWOS10	NR
5,475	15	CWOS15	NR
7,300	20	CWOS20	NR
9,125	25	CWOS25	NR
10,950	30	CWOS30	NR
12,775	35	CWOS35	NR
14,600	40	CWOS40	NR
16,425	45	CWOS45	NR
18,250	50	CWOS50	NR
20,075	55	CWOS55	NR
21,900	60	CWOS60	NR
23,725	65	CWOS65	NR
25,550	70	CWOS70	NR
27,375	75	CWOS75	NR
29,200	80	CWOS80	NR
31,025	85	CWOS85	NR
32,850	90	CWOS90	NR
34,675	95	CWOS95	NR
36,500	100	CWOS100	NR
38,325	105	CWOS105	NR
40,150	110	CWOS110	NR
41,975	115	CWOS115	NR
43,800	120	CWOS120	NR
45,625	125	CWOS125	NR
47,450	130	CWOS130	NR
48,910	134	CWOS134	CWOSC134

Notes:

* - Source located upgradient, at 5% of the total invert length, from downgradient invert end of fill area.

** - Source located at the mid-point of invert line drawn in the direction of groundwater flow.

NR = not run for corresponding time

```
***************************** PLUME *****************************

CALCULATION OF CONCENTRATION VALUES FOR A SINGLE RADIOACTIVE
OR NON-RADIOACTIVE TRACER IN A HOMOGENEOUS TWO- OR THREE-
DIMENSIONAL GROUND WATER SYSTEM WITH UNI-LATERAL REGIONAL FLOW

-------------------------------------------------------------------------
Clinton Landfill No. 3 CWU - Organic Soil
-------------------------------------------------------------------------



****************************** INPUT DATA ******************************

AVERAGE INTERSTITIAL VELOCITY:  .00828 [FT/DAY]

NO-RADIOACTIVE DECAY
RETARDATION FACTOR:  1

AQUIFER THICKNESS:  3.42 [FT]
EFFECTIVE POROSITY:  .05

VERTICALLY AVERAGED (=TWO-DIMENSIONAL) TRANSPORT

LENGTH OF LINE SOURCE:  1 [FT]

DISPERSIVITY IN X-DIRECTION:  13 [FT]
DISPERSIVITY IN Y-DIRECTION:  3 [FT]

------------------------ SOURCE STRENGTH TABLE --------------------------

NUMBER OF DATA PAIRS IN TABLE:  2

T( 1 )= 0        DAY      W( 1 )=  100      MG/DAY
T( 2 )= 48910    DAY      W( 2 )=  100      MG/DAY



AREA UNDER PULSE IN GRAPH (= TOTAL MASS RELEASE):  4891000 MG
TIME CENTROID:  24455 DAYS (= 2.112912E+09 SEC)


NUMBER OF DIVISIONS IN SOURCE PULSE:  45



CALCULATION TIME:  27375  DAY

------------------------------- GRID DATA -------------------------------


X-COORDINATE OF ORIGIN OF GRID:  0 [FT]
```

OUTPUT FILE = COS75.OUT

GRID SPACING IN X-DIRECTION: 20 [FT]
NUMBER OF NODES IN X-DIRECTION: 12

Y-COORDINATE OF ORIGIN OF GRID: 0 [FT]
GRID SPACING IN Y-DIRECTION: 20 [FT]
NUMBER OF NODES IN Y-DIRECTION: 10

************************* RESULTS *************************************

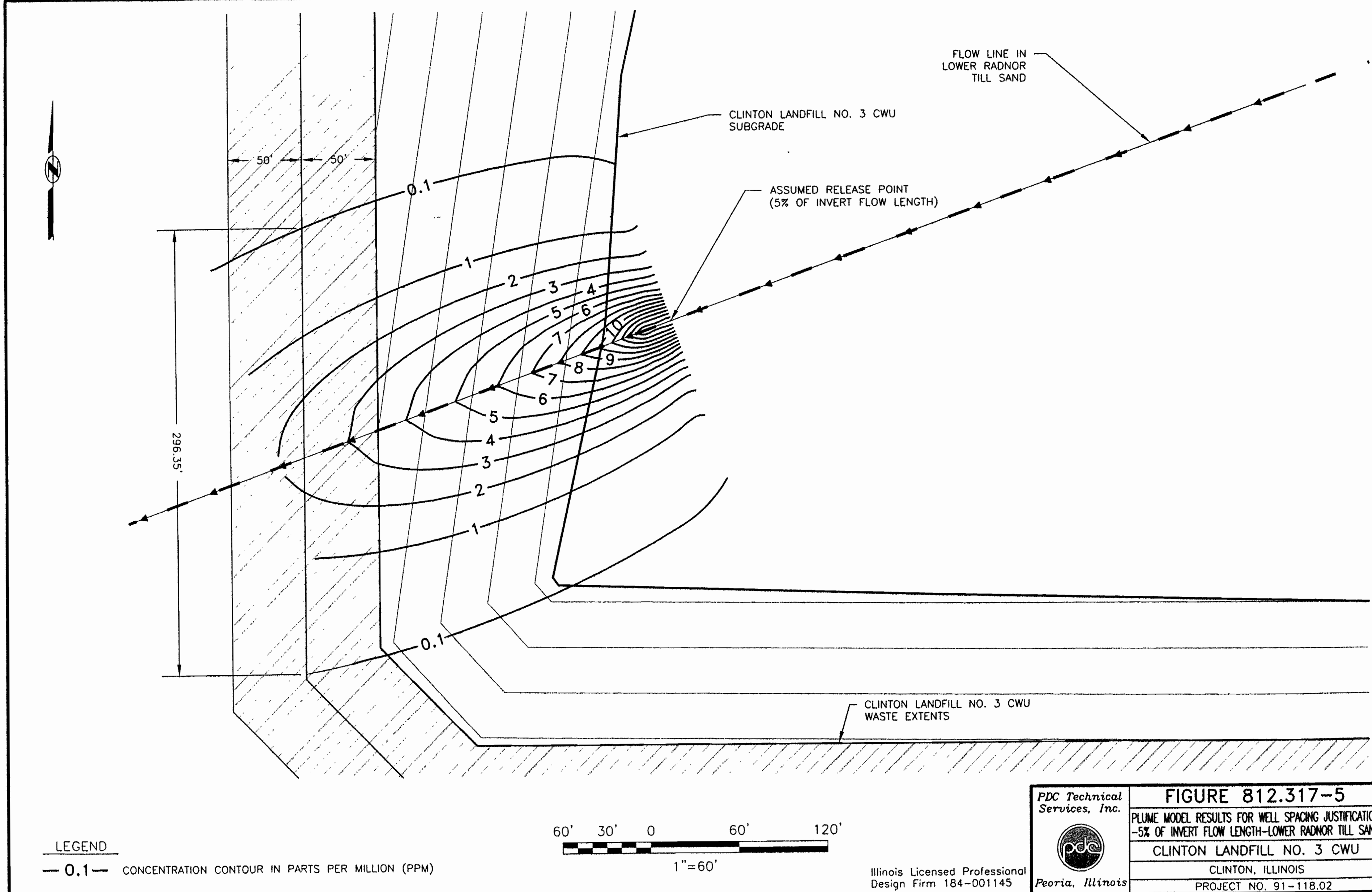
----------------------- CONCENTRATION IN [MG/L = ppm] -------------------

Y \ X->	0	20	40	60	80	100
0	-.1000E+01	0.8135E+02	0.5985E+02	0.4945E+02	0.4272E+02	0.3763E+02
20	0.1185E+02	0.2046E+02	0.2547E+02	0.2714E+02	0.2702E+02	0.2597E+02
40	0.1700E+01	0.3298E+01	0.5260E+01	0.7183E+01	0.8750E+01	0.9813E+01
60	0.2651E+00	0.5328E+00	0.9333E+00	0.1443E+01	0.2003E+01	0.2535E+01
80	0.4012E-01	0.8192E-01	0.1499E+00	0.2473E+00	0.3700E+00	0.5065E+00
100	0.5494E-02	0.1131E-01	0.2118E-01	0.3618E-01	0.5657E-01	0.8127E-01
120	0.6445E-03	0.1334E-02	0.2532E-02	0.4409E-02	0.7074E-02	0.1048E-01
140	0.6278E-04	0.1292E-03	0.2480E-03	0.4365E-03	0.7118E-03	0.1071E-02
160	0.5073E-05	0.1051E-04	0.1970E-04	0.3403E-04	0.5819E-04	0.8605E-04
180	0.3027E-06	0.6288E-06	0.1210E-05	0.1992E-05	0.3180E-05	0.6255E-05

Y \ X->	120	140	160	180	200	220
0	0.3332E+02	0.2934E+02	0.2549E+02	0.2168E+02	0.1793E+02	0.1433E+02
20	0.2435E+02	0.2231E+02	0.1993E+02	0.1730E+02	0.1453E+02	0.1175E+02
40	0.1033E+02	0.1033E+02	0.9867E+01	0.9008E+01	0.7864E+01	0.6554E+01
60	0.2967E+01	0.3240E+01	0.3326E+01	0.3220E+01	0.2948E+01	0.2553E+01
80	0.6389E+00	0.7474E+00	0.8151E+00	0.8317E+00	0.7960E+00	0.7159E+00
100	0.1077E+00	0.1323E+00	0.1509E+00	0.1605E+00	0.1593E+00	0.1480E+00
120	0.1435E-01	0.1820E-01	0.2144E-01	0.2351E-01	0.2402E-01	0.2290E-01
140	0.1506E-02	0.1945E-02	0.2353E-02	0.2630E-02	0.2743E-02	0.2673E-02
160	0.1220E-03	0.1609E-03	0.1984E-03	0.2257E-03	0.2421E-03	0.2316E-03
180	0.8568E-05	0.1183E-04	0.1336E-04	0.1579E-04	0.1539E-04	0.1463E-04

OUTPUT FILE = C0575.OUT

CAD DWG NO:911181333 EMPLOYEE NO: 9834 DATE/TIME: 01/30/08 16:06 ACAD-16.



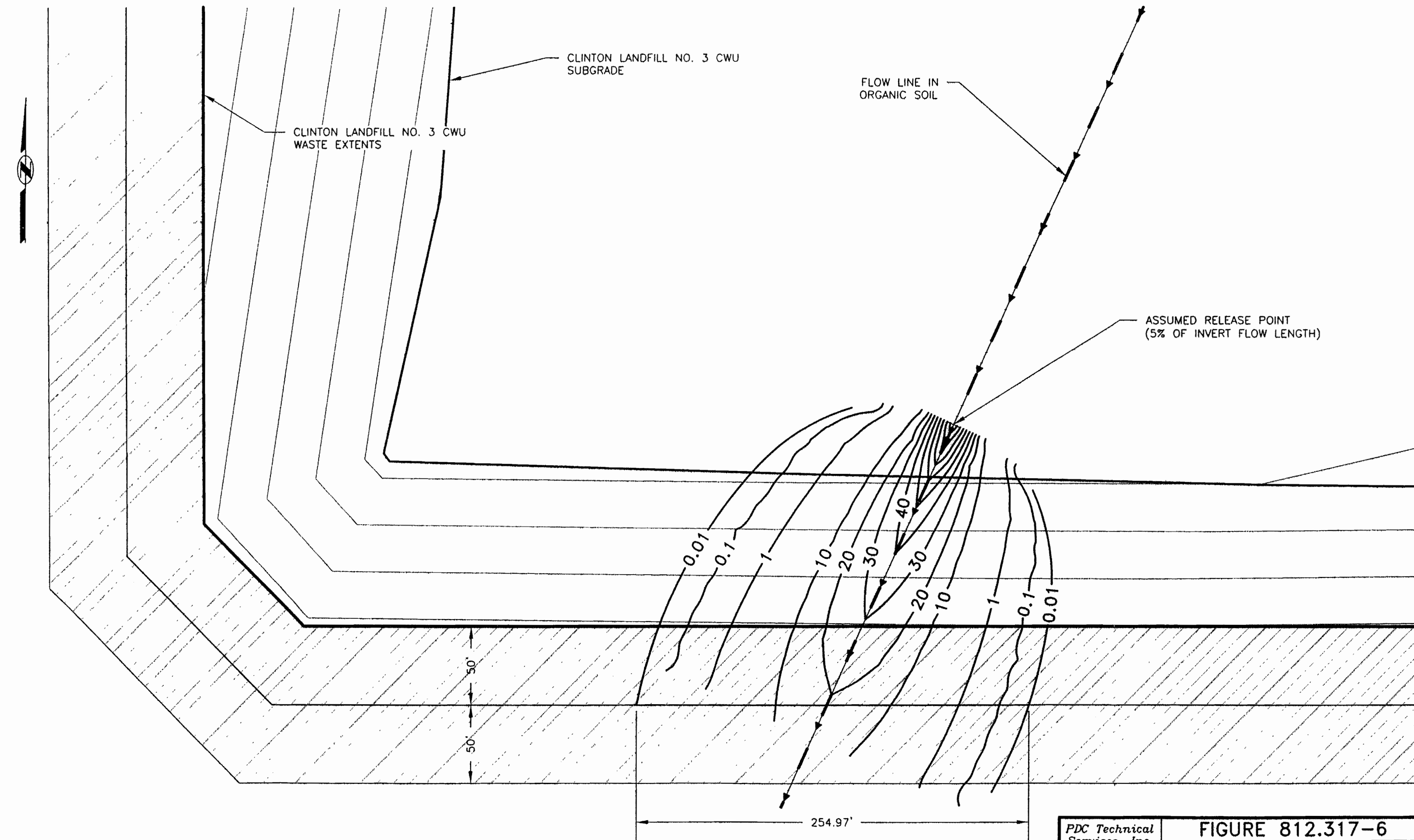
LEGEND

— 0.1 — CONCENTRATION CONTOUR IN PARTS PER MILLION (PPM)

Illinois Licensed Professional
Design Firm 184-001145

PDC Technical Services, Inc.	FIGURE 812.317-5
	PLUME MODEL RESULTS FOR WELL SPACING JUSTIFICATION -5% OF INVERT FLOW LENGTH-LOWER RADNOR TILL SAND
	CLINTON LANDFILL NO. 3 CWU
	CLINTON, ILLINOIS
Peoria, Illinois	PROJECT NO. 91-118.02

CAD DWG NO.911181334 EMPLOYEE NO: 9834 DATE/TIME: 01/30/08 16:22 ACAD-16.



LEGEND

— 0.1 — CONCENTRATION CONTOUR IN PARTS PER MILLION (PPM)

Illinois Licensed Professional Design Firm 184-001145

PDC Technical Services, Inc.

Peoria, Illinois

FIGURE 812.317-6

PLUME MODEL RESULTS FOR WELL SPACING JUSTIFICATION -5% OF INVERT FLOW LENGTH-ORGANIC SOIL

CLINTON LANDFILL NO. 3

CLINTON, ILLINOIS

PROJECT NO. 91-118.02


SECTION 812.317
PLUME MODEL DATA
CLINTON LANDFILL, INC. #3
CHEMICAL WASTE UNIT
PDC TECHNICAL SERVICES, INC.
P.O. BOX 9071
PEORIA, IL 61612-9071
CD 1 of 1
FEBRUARY 2008