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Elf Atochem Acid Plant Area Remedial Investigation Interim Data Report

Prepared for

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Portland, Oregon

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Studies by LOC/Portland x

Exponent

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June 1999

Doc. No.: 8601192.001 0664 DL27

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Acronyms and Abbreviations

bgs	below ground surface
CoI	chemical of interest
CPD	City of Portland Datum
DEQ	Department of Environmental Quality
DGPS	differential global positioning system
EPA	U.S. Environmental Protection Agency
FSP	field sampling plan
HCID	petroleum hydrocarbon identification
NAPL	nonaqueous-phase liquid
OD	outside diameter
PAH	polycyclic aromatic hydrocarbon
PHSMP	Portland Harbor Sediment Management Plan
PID	photoionization detector
PPE	personal protective equipment
ppm	part per million
PSEP	Puget Sound Estuary Program
QA/QC	quality assurance and quality control
Rf	relative response factor
RI/FS	remedial investigation and feasibility study
SPLP	synthetic precipitation leaching procedure
SVOC	semivolatile organic compound
TCLP	toxicity characteristic leaching procedure
TLC	thin-layer chromatography
TOC	total organic carbon
UN	United Nations
VOC	volatile organic compound

Introduction

This interim data report presents the initial findings of the Elf Atochem Acid Plant Area remedial investigation and feasibility study (RI/FS) field activities conducted between November 1998 and February 1999 at the Elf Atochem North America Portland, Oregon plant. The plant is located at 6400 NW Front Avenue, Portland, Oregon (Figure 1). The objectives of the RI/FS are to:

- Identify chemicals of interest (CoIs) related to the former DDT manufacturing facility
- Delineate the nature and extent of CoIs related to the former DDT manufacturing facility in soil, groundwater, and sediments
- Evaluate ongoing or future CoI migration pathways and receptors based on the physical features and transport processes
- Identify potential risks to human health or ecological receptors associated with CoIs
- Identify a range of remedial action options for soil, groundwater, and sediment
- Develop the information necessary to select a remedial option from the identified alternatives.

The tasks required to accomplish these objectives are described in the *Elf Atochem Acid Plant Area Remedial Investigation and Feasibility Study Work Plan* (Exponent 1998a) and in supplemental modifications to the scope of work submitted to the Oregon Department of Environmental Quality (DEQ) on December 3, 1998 and January 27, 1999 (Exponent 1998b, 1999). DEQ approvals of the work plan and supplemental work have

been provided in letters dated September 18, 1998; December 17, 1998; and February 2, 1999 (DEQ 1998a,b; DEQ 1999).

The purpose of this data report is to summarize the field investigation activities completed between November 1998 and February 1999 in accordance with the approved work plan and supplemental scopes of work. A preliminary analysis of the data is included in this report to provide the basis for the recommendation of additional investigations to fill remaining data gaps.

Field investigation activities described in this data report include:

- Surface and subsurface soil sampling
- Intermediate- and deep-zone monitoring well installation
- Shallow, intermediate, and deep zone groundwater quality monitoring (first quarter)
- Storm water sampling
- Aquifer testing and tidal monitoring of selected wells
- Riverbank sediment sampling
- Offshore sediment sampling
- Bathymetric survey.

Field Investigation Summary

The Acid Plant RI/FS field investigations include the sampling and analysis of soil, groundwater, sediment, and storm water to meet the objectives of the work plan. Presented in this section of the report is a summary of the sampling procedures and modifications to the work plan scope or procedures. The summary is presented separately below, by medium.

Soil Investigation

Soil sampling was conducted for several purposes, including description of soil characteristics, field screening, and laboratory analysis of selected samples. Summarized below are the soil investigation tasks by area of investigation. Each section summarizes the methods used and modifications, if any, to the methods or procedures described in the work plan and field sampling plan (FSP) (Exponent 1998).

Acid Plant Perimeter Soil Sampling

During field investigation activities, five soil boreholes (B-49, B-50, B-51, B-51b, and B-52) were advanced using Geoprobe® direct-push methods to a target depth of approximately 8 ft below ground surface (bgs) (Figure 2). Soil was continuously collected, visually inspected, and logged for stratigraphy in accordance with procedures in the FSP. Discrete soil samples were collected from 0.5-to-1.0, 1.0-to-2.0, 2.0-to-2.5, 2.5-to-4.0, 4.0-to-4.5, 4.5-to-5.0, 5.0-to-5.5, 5.5-to-6.0, 6.0-to-7.0 and 7.0-to-8.0-ft-bgs depth intervals. Discrete soil samples were field screened for DDT using thin-layer chromatography (TLC), nonaqueous-phase liquids (NAPLs) using Sudan IV®, a hydrophobic dye, and volatile organic compounds (VOCs) with a photoionization detector (PID) using methods described in the FSP. Soil samples were collected for possible

analysis from each soil interval and submitted to the laboratory for archiving. Two soil samples from each borehole were submitted to the laboratory for organochlorine pesticide analysis by U.S. Environmental Protection Agency (EPA) Method 8081A and VOC analysis by EPA Method 8260B. Following completion of each Geoprobe® borehole, the boreholes were abandoned with bentonite grout as described in the FSP.

Modifications to the scope or procedures for this task, as described in the Elf Atochem Acid Plant Area RI/FS work plan, include the following:

- B-51b was advanced approximately 30 ft to the south of B-51 due to the presence of DDT based on field screening.
- Soil samples were collected by advancing the Geoprobe® split-barrel sampler in consecutive 1-ft depth intervals to a target depth of 8.0 ft bgs. This method increased the percentage of soil recovered over the originally proposed 4-ft sample interval.
- Discrete soil sample intervals were extended below the proposed 5.5-ft depth to 8.0 ft bgs. The increased depth interval sampling allowed for recovery of soil from below the target soil interval for field screening, if needed, and to maintain field sampling schedules, while minimizing the need to return to the sample borehole location.

Unpaved Area Soil Sampling

Three shallow soil boreholes (Stations US-01, US-02, and US-03) were installed in the unpaved gravel surface area soil east of the former overflow trench (Figure 2). The soil boreholes were advanced using Geoprobe® direct-push methods to a target depth of 4.0 ft bgs. Soil was continuously collected, visually inspected, and logged in accordance with procedures in the FSP. Soil samples were collected from the 0–0.5, 0.5–2.0, 2.0–2.5, and 2.5–4.0 ft bgs depth intervals for possible analysis from each soil interval and submitted to the laboratory for archiving. Discrete soil samples were field screened for DDT using

TLC, NAPL using Sudan IV® hydrophobic dye, and VOCs using a PID. Soil samples from the 0-to-0.5- and 2.0-to-2.5-ft-depth intervals were submitted to the laboratory for organochlorine pesticide analysis by U.S EPA Method 8081A. Following completion of each Geoprobe® borehole, the boreholes were abandoned with bentonite grout as described in the FSP.

No modifications to the FSP were made during field investigation activities at these locations.

Former DDT Manufacturing Process Residue Pond Borehole

One borehole (B-53) was advanced near the center of the former manufacturing process residue pond (Figure 2). The soil borehole was advanced using a 10.25-in. outside diameter (OD) hollow-stem auger to a target depth of 30 ft bgs. Soil was collected continuously from 1.5-ft intervals for field screening, including visual observation (i.e., pink coloration), TLC, PID, and Sudan IV® hydrophobic dye. In addition, soil samples were visually inspected and logged in accordance with procedures in the FSP. Soil samples were collected for possible analysis from each 1.5-ft soil interval and submitted to the laboratory for archiving. One soil sample from the 4.5-to-6.0-ft-depth interval was submitted to the laboratory for organochlorine pesticide analysis by EPA Method 8081A, VOC analysis by EPA Method 8260B, and synthetic precipitation leaching procedure (SPLP) analysis by EPA Method 1312/8260B. Following completion, the borehole was abandoned with bentonite grout as described in the FSP.

Modifications to the FSP as described in the Elf Atochem Acid Plant Area RI/FS work plan included the following:

- A 1.5-ft-long split-barrel sampler was used in lieu of a 2.5-ft split-barrel sampler to enhance sample recovery.

Other Potential Source Area Investigations

Elf Atochem agreed to conduct additional investigations in other potential source areas for the Acid Plant RI/FS. As described in the DEQ-approved January 27, 1999 supplemental investigation plan for other potential sources, three additional boreholes (B-54, B-55, and B-56) were advanced to address concerns about potential source areas in selected portions of the Acid Plant Area (Figure 2). The boreholes were advanced using Geoprobe® direct-push methods to target depths of 10 ft bgs for B-54, and the shallow groundwater surface (approximately 20–25 ft bgs) for B-55 and B-56.

For boreholes B-55 and B-56, Geoprobe® soil sampling was conducted continuously from ground surface to a total depth of 15 ft bgs. Field screening methods included TLC, PID, and Sudan IV® hydrophobic dye testing, which was conducted at 1-ft sample intervals to 15 ft. Below 15 ft, soil samples were collected every 5 ft to a target depth of 25 ft bgs, approximately 2–3 ft below the shallow groundwater surface. In addition, soil samples were visually inspected and logged for stratigraphy in accordance with procedures in the FSP. Soil samples were collected for possible analysis from each 1-ft soil interval and submitted to the laboratory for archiving. Based on field screening results, two soil samples from each borehole (6–7 and 12–13 ft bgs in B-55 and 4–5 and 19–20 ft bgs in B-56) were submitted to the laboratory and analyzed for VOCs by EPA Method 8260B and for organochlorine pesticides by EPA Method 8081B.

After the shallow groundwater surface was reached, a groundwater grab sample was collected from the upper 2–3 ft of the water column. The groundwater sample was collected with a stainless-steel Geoprobe® (mini) bailer and transferred to the appropriate sample containers. The groundwater grab sample was submitted for VOC analysis by EPA Method 8260B and for petroleum hydrocarbon identification (HCID) analysis by EPA method 8015B. A field-filtered sample was collected for organochlorine pesticide analysis and submitted to the laboratory for archiving.

Borehole B-54 Geoprobe® soil sampling was conducted continuously from ground surface to a total depth of 10 ft. Field screening methods included TLC, PID, and Sudan IV® hydrophobic dye testing, and was conducted at 1-ft sample intervals to 10 ft. Soil samples were collected for possible analysis from each 1-ft soil interval and submitted to the laboratory for archiving. Based on field screening results, one soil sample from 4–5 ft bgs was submitted to the laboratory and analyzed for organochlorine pesticides by EPA Method 8081B and VOCs by EPA Method 8260B.

Modifications to the FSP described in the January 27, 1999 supplemental investigation plan (and approved by DEQ on February 2, 1999) include the following:

- Soil samples were collected by advancing the Geoprobe® split-barrel sampler in consecutive 1-ft-depth intervals, in lieu of the 2-to-4-ft-sample interval proposed, to a target depth of 10 ft bgs. This method enhanced soil recovery.

Monitoring Well Boreholes

This section summarizes borehole drilling and sampling activities conducted during the installation of new shallow and intermediate monitoring wells in the Acid Plant Area.

Shallow-Zone Monitoring Well Boreholes

Three new shallow-zone monitoring wells (MWA-5, MWA-6, and MWA-7) were installed in locations shown on Figure 3. The boreholes were advanced using a 10.25-in.-O.D. hollow-stem auger casing to depths ranging from 33–39 ft bgs, targeting the top of a continuous silt horizon (Table 1, Appendix A). Soil samples were collected continuously using a 1.5-ft-long stainless-steel split-barrel sampler and field screened using TLC, PID, and Sudan IV® hydrophobic dye. In addition, soil samples were visually inspected and logged for stratigraphy in accordance with procedures in the FSP. Soil samples were

collected for possible analysis from each 1.5-ft soil interval and submitted to the laboratory for archiving. Because of the close proximity of the shallow monitoring wells to the intermediate well locations (Figure 3), no soil samples were collected from these boreholes for laboratory analysis.

Modifications to the FSP as described in the work plan included the following:

- A 1.5-ft long split-barrel sampler was used in lieu of a 2.5-ft split-barrel sampler to enhance soil sample recovery.

Intermediate Monitoring Well Boreholes

Six intermediate-zone soil boreholes (MWA-8i, MWA-9i, MWA-10i, MWA-11i, MWA-12i, and MWA-14i) were advanced to target depths ranging from 45.6 to 52.3 ft bgs (Figure 3). Of the six intermediate-depth boreholes, one (MWA-12i) was drilled upgradient of MWA-1, collocated with the new shallow monitoring well MWA-7; four are collocated with shallow monitoring wells (MWA-8i with shallow well MWA-2, MWA-9i with shallow well MWA-3, MWA-10i with shallow well MWA-4, and MWA-14i with a new shallow well, MWA-5); and one (MWA-11i) was installed in the former MCB recovery unit area. The boreholes were advanced and monitoring wells were installed using cable tool drilling techniques in accordance with the FSP.

During advancement of borehole MWA-11i, soil samples were collected continuously from the surface to the target depth using a 1.5-ft-long split-barrel sampler. For boreholes that were advanced immediately adjacent to existing or new shallow-zone monitoring wells (i.e., all but MWA-11i), soil samples were collected at 5-ft intervals to depths of 20 ft bgs, followed by continuous soil sample collection to target depths. Soil samples were field screened using TLC, PID, and Sudan IV® hydrophobic dye. In addition, soil samples were visually inspected and logged for stratigraphy in accordance with procedures in the FSP.

At the location of MWA-8i, MWA-9i, and MWA-10i, a 12-5/8-in.-OD conductor casing was advanced to approximately 36 ft bgs to the top of a silt horizon to prevent potential cross-contamination between the shallow and intermediate groundwater zones. Another split-barrel soil sample was collected to confirm the minimum 1-to-2-ft thickness of silt layer above the intermediate zone required for setting the conductor casing. Upon reaching the appropriate depth for installing the conductor casing, the borehole was bailed dry and a 2-ft bentonite chip seal was placed in the bottom of the casing and hydrated. An 8-5/8-in.-OD steel casing was telescoped inside the 12-5/8-in. conductor casing. The annulus between the two casings was filled with bentonite grout to ground surface and allowed to set for a minimum of 1 hour. After the bentonite seal had hydrated, the 8-5/8-in. OD casing was advanced approximately 1 ft beyond the conductor casing into the silt layer. The bentonite seal inside the 8-5/8-in.-OD casing was drilled out and a soil sample was collected to confirm the presence and document the thickness of the silt layer. The 8-5/8-in. OD casing was then advanced to the total depth of the borehole.

Based on visual observations and field screening results, four soil samples were submitted to the analytical laboratory from two soil boreholes (MWA-8i and MWA-11i). Soil samples submitted from MWA-8i included the 36-to-36.3-ft-bgs interval and from MWA-11i included the 6-to-8, 26-to-28, and 28-to-30-ft-bgs intervals. The soil samples were submitted to the laboratory for analysis of either organochlorine pesticides by EPA Method 8081A, VOCs by EPA Method 8260B, semivolatile organic compounds (SVOCs) by EPA Method 8270B-SIM, or a combination of these analyses. Soil samples were collected from each 1.5-ft soil interval and submitted to the laboratory for archiving.

Groundwater grab samples were collected for field screening purposes approximately every 10 ft during advancement of casing. Prior to collection of a groundwater grab sample the borehole was bailed numerous times and allowed to equilibrate for approximately 15 minutes prior to sample collection. The groundwater grab sample was collected with a disposable bailer from the top 1–2 ft of the water column and transferred into the appropriate sample container. Two or three groundwater grab samples were collected from

each of the intermediate boreholes during borehole advancement and field screened using TLC and a PID.

Modifications to the FSP included the following:

- A 1.5-ft-long split-barrel sampler was used in lieu of a 2.5-ft split-barrel sampler to enhance soil sample recovery volume.
- Groundwater grab samples were field screened, but were not submitted to the laboratory for VOC analysis. This decision was made in consultation with DEQ after review of soil stratigraphy data indicating that the intervals from which groundwater grab samples were collected would not enhance the understanding of the vertical distribution of CoIs.
- One additional intermediate-zone borehole (MWA-14i) was advanced cross-gradient to the Acid Plant and collocated with new shallow monitoring well MWA-5 in accordance with the December 3, 1998 modification proposal approved by DEQ on December 17, 1998.

Deep Monitoring Well Borehole

Elf Atochem proposed drilling an additional deep-zone soil borehole downgradient of the Acid Plant Area for the installation of a deep monitoring well (MWA-13d) as part of the December 3, 1998 modification proposal. The deep soil borehole was advanced to a depth of 53.8 ft bgs. The well installed at this location, MWA-13d, is collocated with an existing shallow-zone monitoring well (MWA-3) and a new intermediate-zone monitoring well (MWA-9i) (Figure 3). The borehole was advanced using the same methods and techniques described previously for the intermediate-zone monitoring well boreholes except that, in addition to advancing the borehole using 12-5/8-in. and 8-5/8-in.-OD casing during step-down, 6-5/8-in.-OD casing was used from 48 ft bgs to the total drilled depth of 53.8 ft bgs.

Due to the close proximity of the new deep monitoring well to monitoring wells MWA-3 and MWA-9i, only one soil sample was collected at this location for physical testing. The soil sample was collected with a Shelby® tube from a depth interval of 48–50 ft bgs from the silty clay horizon that delineates the intermediate groundwater zone from the deeper groundwater zone. The soil sample was submitted to Hong West Laboratories for soil physical properties as described in the *Physical and Other Soil Testing* section below.

Modifications to the FSP as described in the December 3, 1998 additional monitoring well proposal (approved by DEQ on December 17, 1998) included the following:

- The target depth for the new deep-zone monitoring well was shortened to a depth of 51–53 ft bgs as a result of bedrock that was encountered at 53 ft bgs.

Physical and Other Soil Testing

Eleven soil samples were collected from six boreholes for analysis of soil physical properties. Of the 11 soil samples collected, 3 undisturbed Shelby® tube samples (MWA-10i from 45.3–46.8 ft.; MWA-11i from 39–40.25 ft; and MWA-9i from 48–50 ft) were submitted to Hong West Laboratories for vertical hydraulic conductivity, bulk density, liquid limit, plastic limit, and percent moisture tests. The remaining eight soil samples (MWA-12i from 48–50 ft bgs, MWA-8i from 36.5–37.8 and 48–49 ft bgs, MWA-9i from 30–32 and 38-40 ft bgs, and MWA-10i from 30–32, 36–38, and 44–46 ft bgs) were collected from silt or clay horizons and submitted to Hong West Laboratories or CAS for physical property tests including liquid limit, plastic limit, plasticity index, percent moisture, and grain size.

Five soil samples (MWA-8i from 24–26 and 40–42 ft bgs and MWA-10i from 24–26, 40–42, and 45–46 ft bgs) were submitted for total organic carbon (TOC) analysis by EPA Method 415.1. Modifications to the FSP plan included the following:

- One additional Shelby® tube sample was collected to evaluate the lateral variation in hydraulic conductivity of the lower silty clay horizon.

Field Screening

Soil, sediment, and groundwater samples collected during the RI/FS investigation activities were field screened using a PID for the detection of VOCs, Sudan IV® hydrophobic dye for the detection of residual NAPL, and DDT using TLC in accordance with the FSP. The field screening methods are summarized below.

Photoionization Detector

Soil and sediment samples from discrete depth intervals were screened for the presence of chlorobenzene or other VOCs using a PID. A 300–500 g aliquot was placed in a Ziploc® bag and labeled with the station location and depth interval. The samples were allowed to equilibrate to ambient air temperature inside the field laboratory for a minimum of 1 hour prior to field screening. The PID inlet was inserted into the bag, sampling the headspace. All PID field screening results were documented in the field screening notebook.

Sudan IV® Hydrophobic Dye

Groundwater, soil, and sediment samples were screened for the potential presence of NAPL using Sudan IV® hydrophobic dye. Sudan IV® is a dye that turns NAPL bright red for easy detection. For NAPL detection in soil and sediment, approximately 10 g of soil or sediment and a small amount Sudan IV® (approximately 1 g) were placed in a Ziploc® bag, hydrated with deionized water (approximately 50 mL), and thoroughly mixed. NAPL detection in groundwater was conducted by adding a small amount of Sudan IV®

(approximately 1 g) to an aliquot of water in a Ziploc® bag and mixing thoroughly. Positive results were qualified according to the intensity of color — positive/low for a "slightly" red or pink color or positive/high for "bright" red color. All Sudan IV® field screening results were documented in the field screening notebook.

Thin-Layer Chromatography

All groundwater, soil, and sediment samples were screened for the presence of DDT using TLC. Approximately 10 g of soil and 40 mL of water were extracted with methanol, spotted on silica gel slides, and allowed to develop in hexane until the solvent front reached within 5 mm of the end of the slide (approximately 5 minutes). Once developed, the slides were irradiated with short-wave ultraviolet light for 15 minutes (increasing the intensity of the DDT spot; all samples and standards were exposed in this fashion prior to examination). The individual slides were then examined under short-wave UV light and compared to a set of DDT standards. DDT identification was determined by comparing the relative response factor (Rf) (distance of spot/distance of solvent front) on the sample slide to that of the standards. Relative concentrations were determined by comparing the intensity of the spot to the standards.

Detection limits of 50 mg/kg DDT in soil and 0.5 mg/L DDT in water were established for this method. Standards were prepared at concentrations of 50, 100, 500, 1,000, and 5,000 mg/kg. Qualitative identification of DDD and DDE could also be determined from the TLC analysis. Quantification of DDD and DDE was not attempted with the TLC method.

No modifications were made to the TLC procedures described in the FSP.

Groundwater Investigation

This section summarizes the groundwater investigation field methods, including monitoring well installation and sampling, measurement of groundwater levels, and evaluation of aquifer parameters through the use of slug tests.

Monitoring Well Installation and Development

Ten new monitoring wells were installed in three separate groundwater zones during this investigation. Shallow-, intermediate-, and deep-groundwater-zone monitoring wells were installed in the soil boreholes described in the previous section in accordance with Oregon Administrative Rules, Water Resources Department, Chapter 690, Division 240; DEQ Groundwater Monitoring Well Drilling, Construction and Decommissioning Guidelines; and the DEQ-approved work plan. Monitoring well locations are shown on Figure 3.

Shallow–Zone Monitoring Well Installation

Three new shallow-zone monitoring wells were installed to target depths between 30 and 38 ft bgs. The shallow-zone monitoring wells were installed and screened at elevations similar to existing shallow monitoring wells (Table 1). The new monitoring wells were constructed of 2-in. stainless-steel Type 304 casing assembly with approximately a 10-ft section of Schedule 40 PVC riser pipe extending above the shallow groundwater surface. The shallow monitoring wells have a 2.5-ft-long section of 0.010-in.-slot stainless-steel (Type 304) wire wrap well screen. The shallow zone monitoring wells are screened in alluvial sands, with the bottom of the screen placed at or near the interface with an underlying silt horizon.

A 0.3-ft-long stainless-steel threaded end cap is attached at the base of each monitoring well. Two stainless-steel centralizers were placed approximately 10 ft apart, both below

and above the well screen. Washed silica sand (Colorado Silica Sand 10–20) was used as filter pack around each well screen and was generally placed to 2 ft above the top of the screen interval. To develop a uniform annular sand pack, the screen interval was surged as the sand pack was placed in the annular space around the stainless-steel screen. As-built construction specifications for existing and new site wells are summarized in Table 1. Borehole drilling and well construction logs are provided in Appendix A.

No modifications were made to the shallow monitoring well installation procedures described in the FSP.

Intermediate-Zone Monitoring Well Installation

Six new intermediate-zone monitoring wells were installed to target depths ranging from 40 to 52 ft bgs. The intermediate-zone well screen intervals were placed within the lower 5 ft (MWA-12i, the upgradient well, is within the lower 10 ft) of the intermediate alluvial sands below one or more confining silt or equivalent fine-grained soil horizons (Table 1). The new monitoring wells were constructed of 2-in. stainless-steel Type 304 casing with approximately 10 ft of Schedule 40 PVC riser pipe extending above the shallow groundwater surface. The intermediate monitoring wells have a 5-ft-long section (MWA-12i has a 10-ft-long section) of 0.010-in.-slot stainless-steel (Type 304) wire wrap well screen.

A 0.3-ft-long stainless-steel threaded end cap was attached at the base of each monitoring well. Two stainless-steel centralizers were placed approximately 10 ft apart, both below and above the well screen. Washed silica sand (Colorado Silica Sand 10–20 and 20–40) was used as filter pack around each well screen and was generally placed to 2 ft above the top of the screen interval (see exceptions below). To develop a uniform annular sand pack, the screen interval was surged as the sand pack was placed in the annular space around the stainless-steel screen. As-built construction specifications for pre-existing and

new site wells are summarized in Table 1. Borehole drilling and well construction logs are provided in Appendix A.

Modifications to the FSP included the following:

- Exponent received variances from the Oregon Water Resources Department for wells MWA-9i and MWA-10i to allow placement of 1 ft of sand pack above the well screen instead of the proposed 2-ft sand pack. A 1-ft sand pack was required to assure a proper seal through the overlying silt aquitard.

Deep-Zone Monitoring Well Installation

One monitoring well (MWA-13d) was installed to a target depth of 53 ft bgs. The new deep monitoring well was constructed of 2-in. stainless-steel Type 304 casing with approximately a 10-ft section of Schedule 40 PVC riser pipe extending above the shallow groundwater surface. The deep monitoring well was constructed with a 2-ft section of 0.010-in.-slot stainless-steel (Type 304) wire wrap well screen. The deep-zone monitoring well is screened at the bottom of the deep alluvial silts and sands at or near the interface with the underlying basalt horizon. A 0.3-ft-long stainless-steel threaded end cap is attached at the base of each monitoring well.

Monitoring well construction procedures were similar to those for intermediate and shallow wells, as described above. As-built construction specifications for preexisting and new site wells are summarized in Table 1. Borehole drilling and well construction logs are provided in Appendix A.

Monitoring Well Development

New monitoring wells were developed approximately 24 hours or longer (up to a week) after installation by surging and overpumping using a positive-displacement pump. In addition, three of the four existing wells (MWA-2, MWA-3, and MWA-4) were redeveloped by overpumping with the positive-displacement pump in an effort to remove silt that had accumulated since they were originally installed and developed. The pump intake was repositioned within the screen interval during development to allow uniform surging across the screen interval sand pack. Approximately 30 well casing volumes (approximately 150 gal) for the intermediate-zone monitoring wells and approximately 20 well casing volumes (approximately 55 gal) for shallow-zone monitoring wells were removed during well development. Well development procedures were conducted as described in the FSP.

Modifications to the FSP included the following:

- Well development generally required two to three times more groundwater removal than was proposed in the FSP. The additional development was required as a result of the presence of abundant suspended fine-grained materials in the development water, in addition to the required removal of drilling fluids used during borehole advancement for intermediate wells.

Groundwater Elevation Monitoring

Groundwater levels were measured in the new and existing wells on January 25, 1999, prior to quarterly groundwater sample collection. Groundwater levels were also measured in site and selected offsite monitoring wells on February 5, 1999. Data from these two events are reported along with previous groundwater monitoring data in Table 2. Water levels were measured with an electronic water level indicator in accordance with procedures described in the FSP.

No modifications were made to the groundwater monitoring procedures described in the FSP.

Tidal Influence Monitoring

Groundwater levels in shallow-, intermediate-, and deep-zone groundwater monitoring wells were monitored to measure the effects of tidal fluctuations and river stage in the Willamette River on Acid Plant Area groundwater levels. The data were used to gain an understanding of groundwater gradients and flow direction beneath the site. Diurnal tidal fluctuations were monitored during a mid-winter typical river stage event February 3–8, 1999. During the tidal monitoring event, pressure transducers were installed in five shallow-zone wells (MWA-2, MWA-3, MWA-4, MWA-5, and MWA-7), six intermediate-zone wells (MWA-8i, MWA-9i, MWA-10i, MWA-11i, MWA-12i, and MWA-14i), one deep-zone well (MWA-13d), and a river stage stilling well mounted on Dock #1 (Figure 3). The pressure transducers were mounted at a fixed depth so that changes in groundwater levels could be accurately recorded. The data loggers were synchronized and automatically recorded the pressure of the overlying fluids in each well at 15-minute intervals for a period of approximately 120 hours. Water levels were manually collected at the beginning, middle, and end of the monitoring period; manual water level measurements were collected using an electronic water level indicator to verify the automatically recorded data. Data were analyzed using a mathematical averaging method presented by Serfes (1991). The mathematically averaged data were used to generate a groundwater elevation map and to evaluate representative groundwater gradients and flow directions for the intermediate zone.

Aquifer Testing

Aquifer testing was conducted on all newly installed shallow-zone, intermediate-zone, and deep-zone monitoring wells (three shallow, six intermediate, and one deep) and on two existing site wells (MWA-1 and MWA-3), in accordance with the FSP. Aquifer

testing was conducted to determine hydraulic conductivity and to provide information on the variation in hydraulic conductivity laterally and vertically in the shallow, intermediate, and deep groundwater zones.

The aquifer tests consisted of the insertion and withdrawal of a fixed volume solid tube or "slug" such that the rate of recovery in the well could be monitored before and after slug insertion and removal from the well. Water level data for each slug test were collected using a pressure transducer and data logger that automatically recorded changes in water levels during the test. Two tests were conducted on each well. The slug test data were evaluated using the Bouwer & Rice (1986) analytical method. Slug test data and plots are provided in Appendix B.

Modifications to the FSP were as follows:

- Slug tests were conducted on two additional new monitoring wells, one intermediate and one deep, that were added as a result of modifications to the work plan scope.

Groundwater Quality Sampling

Following well development, each well was allowed to stand for a minimum of 7 days prior to groundwater sample collection. The first-quarter groundwater sampling event was conducted January 25–29, 1999, on all existing (MWA-1, MWA-2, MWA-3, and MWA-4) and new (MWA-5, MWA-6, MWA-7, MWA-8i, MWA-9i, MWA-10i, MWA-11i, MWA-12i, MWA-13d, and MWA-14i) site monitoring wells. Site wells were sampled in accordance with the work plan (Exponent 1998). Groundwater samples were collected after a minimum of three well casing volumes were purged using a pneumatic bladder pump. During purging, field parameters (i.e., temperature, pH, Eh, dissolved oxygen, specific conductance, and turbidity) were measured within a flow-through cell to verify that water quality had stabilized prior to sample collection. Groundwater samples were then collected directly from pump discharge tubing. Following collection of

unfiltered samples for VOC and pesticide analysis, a field-filtered sample was collected for pesticide analysis by passing the groundwater through an inline dedicated disposable 0.45-μm cartridge filter. Groundwater samples were placed in a cooler with ice and transported under chain-of-custody to the laboratory. Groundwater sampling methods are described in more detail in the work plan (Exponent 1998).

Groundwater samples collected during the January 1999 groundwater sampling event, including field duplicates and equipment rinsate samples, were analyzed for VOCs by EPA Method 8260B; SVOCs by EPA Method 8270B-SIM; and total and dissolved organochlorine pesticides by EPA Method 8081A. Additional analyses to assess general groundwater conditions included total metals (calcium, iron, magnesium, potassium, sodium) by EPA Method 6010; carbonate, bicarbonate, and alkalinity by EPA Method 310.1; chloride, total nitrate, total nitrite, and sulfate by EPA Method 300.0; and TOC by EPA Method 415.1. Quality assurance reviews are provided in Appendix C.

Modifications to the FSP and work plan are as follows:

- The first quarterly groundwater monitoring event was postponed, in consultation with DEQ, from the last quarter of 1998 to the first quarter of 1999 to allow for the completion of two additional new monitoring wells prior to sampling.

Well Survey

Upon completion of monitoring well installation and development, a horizontal and vertical control survey was conducted on existing and new monitoring wells and other sample locations (i.e., boreholes, storm water sample stations, stilling wells) to establish well coordinates and elevations. W&H Pacific Inc., an Oregon-licensed surveyor, conducted the survey. Reference elevations were established to the nearest 0.01 ft and are referenced to the City of Portland Datum (CPD). Horizontal coordinates were established to the nearest 0.1 ft and referenced to Oregon State Plane Coordinates. The

measuring point (top of PVC casing) elevation for each of the site wells is reported in Table 1.

Modifications to the FSP and work plan are as follows:

- Two additional new monitoring wells were included in the survey.

Storm Water Sampling

Storm water samples were collected from two storm drains that enter manholes within the Acid Plant Area as shown on Figure 4. The first storm water sampling event was conducted on January 22, 1999, during a rainfall event of sufficient intensity to result in flow through the storm drain.

The storm water samples were collected from each drain at its point of entry to the manhole prior to mixing with the non-contact cooling water discharge. Access to the storm water sampling point was achieved with an extension pole attached to laboratory-supplied non-preserved 1-L amber glass bottle. The sample apparatus was extended below the storm water flow and allowed to fill. Storm water collected with the sampling apparatus was then transferred into the appropriate sample container. During sample collection, a portion of the storm water was field-filtered with a 0.45-μm filter for the analysis of dissolved organochlorine pesticides. A new sample bottle was used to collect storm water from each sample location.

The storm water samples were submitted to the laboratory for analysis of total and dissolved organochlorine pesticides by EPA Method 8081A. During storm water sample collection, field parameters (temperature, pH, specific conductance, Eh, dissolved oxygen, and turbidity) were measured in a separate aliquot of water.

No modifications to the FSP were required during field investigation activities at these locations.

Sediment Investigation

Sediment investigation activities included sediment sample collection from six riverbank stations and six offshore stations in the Willamette River adjacent to the Elf Atochem site (Figure 5). Also included in the sediment investigation was a bathymetric survey. Each of these sediment investigation activities is discussed separately below.

Riverbank Sediment Sampling

Riverbank sediment samples were collected from exposed river sediments during a relatively low river stage on November 23 and 24, 1998. Surface and subsurface sediment samples were collected from six stations, including one station upstream of Dock #1 added at the request of DEQ (Figure 5). Station locations were modified slightly from the locations proposed in the FSP due to the presence of coarse fill material and/or core refusal at shallow depths at several locations.

IMPC

MISC

Surface samples were collected from 0–10 cm at each station with a stainless-steel spoon. Sediment coring below 10 cm was achieved with a titanium drive corer. Coring depths to the 90-cm target depth could be achieved at only one station (RB-6). Subsurface refusal limited penetration to 35 cm or less at stations RB-1, RB-2, RB-3, RB-4, and RB-5.

Surface sediments and sediment core samples were submitted for the analysis of SVOCs by EPA Method 8270B-SIM (Modified); VOCs by EPA Method 8260B; organochlorine pesticides by EPA Method 8081A; TOC by ASTM D4129-82M; and grain size by the Puget Sound Estuary Program (PSEP) Modified method. Each sediment increment was also field-screened using a PID for the presence of VOCs, DDT using TLC, and NAPL using Sudan IV® as described in the FSP.

Modifications to the proposed scope of work and procedures included the following:

- Station locations were modified from those proposed in the FSP as a result of conditions encountered in the field
- One additional sediment core station was added upstream of Dock #1 at DEQ's request
- Sediment penetration to 90 cm could not be achieved at five of the six stations due to refusal on dense or coarse granular sediments.

Offshore Sediment

CORE

Sediment samples were collected from six stations offshore of the Elf Atochem Portland facility on January 19 and 20, 1999 (Figure 5). Samples were collected from the 0–10 cm surface interval and subsequent 20-cm increments to a total depth of 90 cm. Sediment cores were collected with Livingston®, gravity, and Vibracore® coring apparatus, depending on the type of material encountered. The Vibracore® coring apparatus was required at sample stations OSS003 and OSS005 due to strong river currents and dense sediment material at these locations.

VCOR

EPA 82 / 6C-D

The surface sediment (i.e., 0–10 cm) and one deeper sediment interval (i.e., either one 20-cm interval from within the deeper stratum, or, at two stations, the entire 10–90-cm stratum) from each core were submitted for the analysis of VOCs by EPA Method 8260B; SVOCs by EPA Method 8270B-SIM (Modified); organochlorine pesticides by EPA Method 8081A; TOC by ASTM D4129-82M; and grain size by the PSEP Modified method. Each subsurface sediment interval was also field-screened for the presence of VOCs using a PID; DDT using TLC; and NAPL using Sudan IV® hydrophobic dye.

Modifications to the proposed scope of work and procedures are as follows:

- The work plan originally called for the analysis of one 20-cm interval sample from a depth between 10 and 90 cm. Due to the lack of discernable field screening data from stations OSS002 and OSS005,

and in consultation with DEQ, the entire 10–90-cm interval was composited from those stations.

Bathymetric Survey

The baseline bathymetric survey was conducted on February 3, 1999, during a seasonally high river stage. The bathymetric survey was conducted using multi-beam depth sounders linked to a differential global positioning system (DGPS). Transects were run both parallel and perpendicular to shore at varying spacings from the upstream Elf Atochem property boundary to the downstream property boundary near the Burlington Northern Railroad Bridge. A map showing the contoured bottom of the Willamette River directly offshore of the Elf Atochem facility is shown in (Figure 6).

Modifications to the FSP included the following:

- Bathymetric contouring could not be completed in a near-shore area downstream of the Acid Plant Area due to the presence of densely placed pilings (Figure 6).

Management of Investigation-Derived Wastes

Investigation-derived wastes included soils, groundwater, and decontamination fluids generated during drilling, well installation, development, and sampling activities. Approximately 150 sealed and labeled United Nations- (UN-) approved, 55-gal drums consisting of drilling fluids, soil cuttings, decontamination water, groundwater, and personal protective equipment (PPE) were generated as a result of the RI/FS field investigation activities between November 1998 and February 1999. To characterize VOC concentrations of the drill cuttings, groundwater, and other fluids generated during the RI/FS investigation activities, several composite soil samples and a single groundwater grab sample were collected and submitted to CAS for toxicity characteristic

leaching procedure (TCLP) VOCs by EPA Method 1311/8260B. Based on the RI data and drum composite sample analysis, the drums were segregated into hazardous and non-hazardous groups and transported to the Chemical Waste Management Subtitle C Landfill located in Arlington, Oregon.

Investigation Results

The results of the RI/FS investigation activities, including a summary of soil and groundwater characteristics and soil, storm water, groundwater, and sediment sampling, are summarized below.

Soil and Groundwater Setting

This section presents a summary of the current understanding of soil and groundwater conditions in the Acid Plant Area based on data collected during the RI, previous site investigations, and investigations on neighboring facilities.

Acid Plant Area Soils

The Elf Atochem facility is situated on fill and alluvial deposits of the Willamette River (Figures 7 and 8). In the Acid Plant Area, surface soils are primarily dredge fill that was placed prior to the construction of the plant in 1941 (Geraghty & Miller 1991). Based on aerial photos and accounts of former employees, additional fill was placed approximately 150–200 ft further into the Willamette River. Sources of this fill material included the City of Portland, private excavation contractors, and Elf Atochem. Fill material included clean soil, asphalt, concrete, metal piping, and miscellaneous parts from spent chlorine cells (i.e., concrete cell heads). In many areas, the fill and alluvium are similar materials, including fine- to medium-grained sands, silty sands, sandy silts, clayey silts, and clays. Where native alluvial deposits are encountered, sands and silts are massive to finely laminated and laterally discontinuous, and the contacts between sand and silt can be gradational (Geraghty & Miller 1991).

Figure 8 is a cross-section showing the generalized soil stratigraphy through the Acid Plant Area from Front Avenue to the Willamette River. Figure 9 is a cross-section showing the soil stratigraphy along the riverbank parallel to the river. Within the Acid Plant Area, shallow soils (fill) generally consist of silty sands to sandy gravelly silts. Fill thickness ranges from a few feet in the former manufacturing area to approximately 25 ft along the riverbank (Figure 8). Alluvial soils encountered below the shallow fill are predominantly dark gray-brown, poorly sorted, fine-to-medium, slightly silty to silty sands with occasional silt lenses. At depths of 30–38 ft in the Acid Plant Area, a 1-to-2-ft-thick silt horizon separates the shallow alluvial sands from an intermediate-depth 5-to-10-ft-thick black fine-to-medium sand horizon (Figures 8 and 9). Below a depth of 35–40 ft, the black sand horizon is underlain by a bedded silt, clay, and silty/clayey fine sand horizon. Physical properties of alluvial soils in the Acid Plant Area are reported in Table 3.

Basalt was encountered at depths of 49–53 ft bgs in two boreholes (MWA-14i and MW-13d) along the riverbank downgradient of the Acid Plant. Basalt was not observed in two upgradient boreholes (MWA-11i and MWA-12i) that were advanced to depths of 51–52 ft bgs. The depth to the top of the basalt is about 65 ft bgs (at well W-19) at the north end of the Elf Atochem facility, approximately 1/3 of a mile northwest of the Acid Plant Area (Geraghty & Miller 1991). About 1,000 ft southwest of the acid plant (i.e., toward the Tualatin Mountains), the top of the basalt has been identified at depths of 90–100 ft bgs (W-3 and W-16; Geraghty & Miller 1991).

The Columbia River Basalt surface dips regionally to the east; however, a trough or basin has been identified by other investigators in the upper basalt surface near the Elf Atochem facility (Geraghty & Miller 1991); this finding is supported by data from this investigation. The limited occurrence of the Troutdale Formation and the trough-shaped feature of the basalt surface are probably attributable to erosion by the ancestral Willamette River.

Acid Plant Area Hydrogeology

Groundwater occurs in at least two distinct groundwater zones beneath the site. Shallow unconfined groundwater is found at depths of approximately 7–20 ft bgs in the fill and sand alluvium. Shallow groundwater at the site flows to the north or northeast to the Willamette River. The saturated thickness of the shallow groundwater zone ranges from less than10 ft near Front Avenue to 20 ft or greater near the bank of the Willamette River. The saturated thickness of the shallow groundwater zone fluctuates due to seasonal variations in shallow groundwater levels. Along the riverbank, the shallow groundwater zone can be further subdivided into a shallow and shallow-intermediate zone based on soil stratigraphy. A thin (1-to-2-ft thick) upper silt horizon identified at depths of 31–33 ft bgs between MWA-8i and MWA-6 along the riverbank separates the shallow and shallow-intermediate zones (Figure 8). The upper silt, which is apparently continuous throughout this riverbank area, was not observed in any of the upgradient boreholes in the Acid Plant Area.

Intermediate confined or semi-confined groundwater is found in alluvial black sands below a lower silt horizon at depths of 25–30 ft bgs in the Acid Plant Area and 37–38 ft in the riverbank area. The shallow and intermediate zones are separated by a continuous 1-to-2-ft-thick silt horizon that has been observed in both the Acid Plant Area and along the riverbank (Figures 8 and 9). The intermediate zone has a saturated thickness of 5–10 ft. Intermediate-zone groundwater flow is to the northeast toward the Willamette River. Intermediate-zone groundwater levels are influenced by the fluctuating Willamette River, which responds to both seasonal river conditions and daily tidal oscillations during lower river stages.

Deeper-zone groundwater is found in the primarily finer-grained deposits below the black alluvial sands and above the Columbia River Basalt. Below the alluvial black sand deposits, at depths of 40–45 ft bgs, silt, clay, or silty fine-sand deposits are predominant. Because of the fine-grained deposits that comprise this deeper zone, groundwater is not expected to be readily transmitted through these deeper alluvial deposits.

Shallow-Zone Groundwater Elevations

The shallow-zone groundwater surface at the site is generally found between 17 and 22 ft bgs in and downgradient of the Acid Plant Area (MWA-1, MWA-2, MWA-3, MWA-4, MWA-5, and MWA-6), and at approximately 6.5 ft bgs at the upgradient monitoring well (MWA-7) near Front Avenue. January and February 1999 groundwater elevation data are presented along with historical data in Table 3. In February 1999, shallow groundwater elevations ranged from 27.84 ft CPD in MWA-7 to 13.74 ft CPD in MWA-5. Groundwater elevations in January and February were generally higher than in the previous measurement period (May 1998).

The shallow groundwater surface for February 1999 is shown in Figure 10. During this period, shallow groundwater flow was to the north and northeast; the calculated shallow-zone horizontal hydraulic gradient ranged from 0.0067 to 0.0075.

Intermediate-Zone Groundwater Elevations

The intermediate-zone groundwater surface at the site was measured between approximately 17.5 and 21 ft bgs in and downgradient of the Acid Plant Area (MWA-8i, MWA-9i, MWA-10i, MWA-11i, and MWA-14i) and at approximately 9 ft bgs at the upgradient monitoring well (MWA-12i), near Front Avenue. Intermediate-zone potentiometric surface elevations ranged from 13.87 ft CPD in MWA-8i to 25.51 ft CPD in MWA-12i during February 1999 as shown in Figure 11. During this period, intermediate-zone groundwater flow was to the north-northeast. The calculated intermediate-zone hydraulic gradient for the February monitoring event is approximately 0.0033–0.0037.

Deep-Zone Groundwater Elevations

The deep-zone groundwater surface was evaluated using two monitoring wells on the Elf Atochem facility (MWA-13d and W-19d) in addition to one offsite upgradient deep monitoring well (MW-4d) located on the Rhône-Poulenc facility. A summary of the well construction data for monitoring wells outside of the Acid Plant Area is presented in Table 1. The deep-zone groundwater surface in this general area was measured between approximately 12 and 23 ft bgs during this period. Deep-zone potentiometric elevations ranged from 13.91 ft CPD in MWA-13d to 34.51 ft CPD in MW-4d (Rhône-Poulenc Property) in February as shown in Figure 12.

Based on the February 1999 data, deep-zone groundwater flow was generally to the north-northeast. The calculated deep-zone hydraulic gradient across the area for the February monitoring event is approximately 0.009.

Vertical Hydraulic Gradients

Vertical hydraulic gradients between the shallow and intermediate groundwater zones were calculated using the data from the shallow/intermediate cluster well pairs (MWA-3/MWA-9i, MWA-4/MWA-10i, MWA-2/MWA-8i, and MWA-5/MWA-14i). Based on the February 1999 data, the potentiometric head difference at these locations ranged between 0.33 and 0.75 ft over a vertical distance ranging from 9.65 to 18.2 ft (based on the distance between the midpoints of the screen intervals in these wells). At three of the four well pairs, the vertical gradients were downward. At well pair MWA-5/MWA-14i, an upward vertical hydraulic gradient of 0.04 was measured. At the remaining well pairs, downward vertical gradients ranged from 0.02 to 0.04.

The vertical hydraulic gradient between intermediate and deep groundwater zones was measured using the intermediate/deep cluster well pair MWA-9i and MWA-13d. For February 1999, a downward vertical gradient of 0.14 was calculated.

Tidal Influence Monitoring

The monitoring of groundwater levels in February 1999 provided an initial understanding of the effects of tidal and river stage fluctuations in the Willamette River on the groundwater flow system in the Acid Plant Area.

During the period of tidal monitoring, the Willamette River stage ranged from about 11–13 ft CPD and daily tidal fluctuations generally ranged between 0.5 and 1.0 ft. During this period, shallow-zone groundwater levels were not affected by fluctuations in the river, whereas intermediate- and deep-zone groundwater levels exhibited some influence from Willamette River tidal fluctuations up to 300 ft from the river. Figure 13 is a hydrograph of nested shallow, intermediate, and deep groundwater monitoring wells located less than 100 ft from the edge of the river. The hydrograph clearly shows the separation between the shallow groundwater surface (at MWA-3), and the intermediate- and deep-zone potentiometric surface (e.g., at wells MWA-9i and MWA-13d). The intermediate- and deep-zone groundwater potentiometric surfaces closely emulate the fluctuations in the Willamette River. Note that the river surface is about 2 ft lower in elevation than the intermediate/deep groundwater surfaces during this monitoring period, indicating that river stage does not substantially affect groundwater flow directions. A lag in the arrival time and dampening of the tidal "peaks" can also be observed in the hydrograph, which illustrates the attenuation of the propagating pressure wave from the river to the groundwater monitoring wells.

Figure 14 shows the degree of influence that river stage fluctuations have on intermediate-zone wells progressively further inland from the river. At the bottom of the figure, the Willamette River stage is shown with its daily tidal fluctuations on the order of 1–2 ft. Approximately 90 ft from the shoreline, MWA-9i clearly has tidal influences on the order of 0.5 ft. About 300 ft from the shoreline, tidal influences can be still observed in MWA-11i, albeit highly dampened. About 900 ft from the shoreline at MWA-12i, no observed groundwater fluctuations suggest any influence from the Willamette River stage fluctuations.

The initial results of the tidal influence monitoring suggest that Willamette River tidal fluctuations are propagated inland through the groundwater system but do not significantly alter the groundwater flow system in the Acid Plant Area.

Aquifer Testing

Slug test data were collected from 10 newly installed monitoring wells (MWA-5, MWA-6, MWA-7, MWA-8i, MWA-9i, MWA-10i, MWA-11i, MWA-12i, MWA-13d, and MWA-14i) and from 2 existing site wells (MWA-1 and MWA-3) to estimate the hydraulic conductivity of the shallow, intermediate, and deep groundwater zones. The Bouwer and Rice (1986) method was used to analyze the slug test results. The Bouwer and Rice analytical method was developed for use with partially or fully penetrating wells in unconfined aquifers; however, this method can also be used for wells in confined aquifers (Bouwer 1989). In most cases, a double straight-line effect was observed in the plot of recovery data from the wells. Bouwer (1989) attributes this effect to rapid drainage in the sand pack, which forms a steeper initial line followed by a less steep line that represents the formation permeability. In these cases, the second, straight-line portion was used to calculate the hydraulic conductivity. Recovery data and graphical plots are presented in Appendix B.

The results of the Bouwer and Rice analysis are presented in Table 4. Based on results from the Bouwer and Rice analysis, shallow-zone horizontal hydraulic conductivity (K) ranges from 5.9 ft/day in MWA-7 to 34 ft/day in MWA-5, with a mean value of 17 ft/day. Slug test data from monitoring well MWA-6 showed an unusually slow response, indicating possible screen interval blockage. Data collected from MWA-6 are inconclusive and were not used to estimate the hydraulic conductivity from the shallow-zone formation.

The Bouwer and Rice analysis was also used to estimate the hydraulic conductivity of the intermediate groundwater zone. Data collected from the intermediate zone indicate that

horizontal hydraulic conductivity (K) ranges from 0.04 ft/day at the new upgradient location MWA-12i to 21 ft/day in MWA-9i, with a mean value of 5.8 ft/day. Aquifer test data from monitoring well MWA-10i exhibited a rapid response, indicating that the test only evaluated the annular space surrounding the monitoring well. Data from MWA-10i were not used to estimate the hydraulic conductivity of the intermediate-zone soils. Slug test data collected from MWA-13d (in the deep zone) indicate a horizontal hydraulic conductivity (K) of 0.3 ft/day.

Field Screening Summary

Soil, sediment, and groundwater samples collected during RI field activities were subjected to field screening as described in the previous section of this report. Summarized below are the results of PID, Sudan IV®, and TLC field screening analyses.

Photoionization Detector

Soil samples collected from discrete depth intervals during drilling operations were screened for the detection of VOCs using a PID. PID field screening detections ranged from 1 to 2,251 parts per million (ppm) (the upper limit of VOC detection on the PID).

In general, the highest VOC detections were measured in the Acid Plant Area within the upper 10–15 ft of soil above the water table and below 30 ft in the shallow and intermediate zones. In most cases, PID values below about 3–5 ppm likely represent high moisture content of soils from the particular interval. Field screening results obtained from the PID were effective indicators of chlorobenzene. For example, two soil samples from the borehole for MWA-11i had elevated PID and chlorobenzene concentrations. From a depth of 6–8 ft, the PID measurement was 1,973 ppm and the chlorobenzene concentration was 15,000 mg/kg; soil from a depth of 26–28 ft had a PID detection of 1,336 ppm and a chlorobenzene concentration of 880 mg/kg.

Sediment samples collected from the riverbank and offshore stations were also subjected to field screening for VOCs using the PID. Detections were limited to a few lower concentrations reported at the offshore stations: OSS001, OSS003, OSS004, and OSS006. No PID detections were measured at the riverbank sediment stations.

Sudan IV® Hydrophobic Dye

Soil, sediment, and groundwater samples collected during RI/FS investigation activities were screened for the detection of residual NAPL in soil using Sudan IV® hydrophobic dye. Residual NAPL is defined as immobile NAPL that remains trapped in soil pores or that coats soil particles in either the vadose or saturated zones. Positive results were qualified according to the intensity of color; positive/low for "slightly" red or pink color or positive/high for "bright" red color. Residual NAPL was detected in soils from five boreholes, including B-53 from approximately 25–30 ft, MWA-8i, MWA-9i, and MWA-13d at approximately 36 ft, and MWA-11i from 4–14 ft and 26–28 ft (Figures 15 and 16). NAPL was not detected in sediments or groundwater.

The presence of residual NAPL was generally accompanied by elevated field screening concentrations of DDT by TLC and VOCs by PID. Laboratory analytical results generally confirmed the field screening results. Sudan IV® thus provided an effective method for the detection of residual NAPL in soil samples.

Thin-Layer Chromatography

Soil, sediment, and groundwater samples were screened for DDT using TLC. Concentrations of DDT ranged from 50 (method detection limit) to greater than 5,000 mg/kg; concentrations above 5,000 mg/kg exceeded the calibration range of the field method and therefore were reported as estimated based on the field chemist's best professional judgement. Of the 34 samples analyzed by both the field TLC and laboratory organochlorine pesticide methods, the TLC results generally agreed with or

slightly overestimated actual DDT concentrations. Elevated DDT concentrations were measured in soils from at approximately 36 ft bgs at MWA-8i, MWA-9i, and MWA-13i and were associated with a zone of residual NAPL (as detected with Sudan IV®). DDT was also detected near the surface at MWA-11i, US01, US02, and B53 (DDT was detected throughout the entire interval at B-53).

None of the samples with DDT concentrations exceeding the 50-mg/kg TLC method detection limit were reported as undetected by laboratory analysis. These results indicate that the TLC method is an effective means of field screening for the presence of DDT to concentrations of 50 mg/kg or greater. All TLC field screening results were documented in the field screening notebook.

Soil Analytical Results

During the RI/FS field activities soil samples were collected from three unpaved area soil locations (US-01, US-02, and US-03), four Acid Plant perimeter soil boreholes (B-49, B-50, B-51, and B-52), one former manufacturing process residue pond borehole (B-53), three other potential source area boreholes (B-54, B-55, and B-56), and three intermediate-zone monitoring well locations (MWA-8i, MWA-10i, and MWA-11i). Analytical results are discussed separately for each of these areas below. Analytical results for organochlorine pesticides, VOCs, and SVOCs are summarized in Table 5. The quality assurance and quality control (QA/QC) review is presented in Appendix C.

The discussion of analytical results for soils centers on a focused list of selected site-related CoIs based on the historical use or relationship to chemicals used during DDT manufacturing operations as well as their generally greater frequency of detection. Organochlorine pesticide constituents discussed include DDT and its metabolites DDD and DDE, and the VOC chlorobenzene. Other constituents detected are not discussed in detail; however, all analytical results are presented in Table 5.

Acid Plant Perimeter Soil

In the Acid Plant perimeter area, soil samples were submitted from the following boreholes and depth intervals:

- B-49 — samples from 2–2.5 and 7–8 ft bgs
- B-50 — samples from 0.5–1 and 5–5.5 ft bgs
- B-51 — samples from 0.5–1 and 5–5.5 ft bgs
- B-52 — samples from 0.5–1 and 5–5.5 ft bgs.

With few exceptions, the analytical and TLC field screening data for Acid Plant Area perimeter boreholes indicated negligible concentrations of DDT and other organochlorine pesticides (Figure 17).

At boreholes on the Acid Plant Area perimeter in the southwestern corner (borehole B-50) and along the southern boundary (borehole B-51), DDT was detected at a maximum concentration of 2.4 mg/kg. In borehole B-50, DDT was detected at 0.02 mg/kg from 0.5–1.0 ft bgs and not detected at a depth of 5.0–5.5 ft bgs. In borehole B-51, DDT concentrations were 1.8 mg/kg (from 0.5–1.0 ft bgs) and 2.4 mg/kg (at 5.0–5.5 ft bgs). DDT metabolites, DDD and DDE, were detected in selected samples from B-50 and B-51 at concentrations less than 0.5 mg/kg (where detected). The TLC field screening results from B-51 and B-51b suggest that the distribution of DDT in soils is similar at these two locations. In general, TLC field screening results for soils from these boreholes corroborate the general lack of detectable concentrations of DDT and DDT metabolites at these perimeter locations.

At B-52, a borehole placed immediately north of the terminus of the former process residue trench, negligible concentrations of DDT were measured. DDT concentrations in B-52 were 0.03 mg/kg and 0.048 mg/kg at depths of 0.5–1.0 and 5.0–5.5 ft bgs, respectively. DDD and DDE were not detected in soils from B-52. TLC field screening

results for soils from B-52 did not exhibit detectable concentrations of DDT to depths of 8 ft bgs.

At B-49, along the western margin of the DDT storage pad area, DDT was detected at a concentration of 3,600 mg/kg at a depth of 2.0–2.5 ft bgs. At 7–8 ft bgs, DDT was detected at a concentration of 0.217 *J* mg/kg (average of sample and sample duplicate). DDD (48 mg/kg) and DDE (44 mg/kg) were detected in the 2.0–2.5 ft bgs sample and were undetected in the 7–8 ft sample. TLC field screening results for borehole B-49 indicate that 2.0–2.5 ft is the only interval with detectable concentrations of DDT. The TLC data along with field observations of soil from this interval suggest that this was the historic ground surface at this location.

Except for one detection of chlorobenzene (0.005 mg/kg in B-51 at a depth of 0.5–1.0 ft bgs), no detectable concentrations of VOCs were measured in Acid Plant Area perimeter soils.

Unpaved Area Soil

Two discrete soil samples (0-to-0.5-ft- and 2.0-to-2.5-ft-depth intervals) from each unpaved area borehole (US-01, US-02, and US-03) were submitted to the laboratory for organochlorine pesticide analysis. With some exceptions, organochlorine pesticides were detected at low concentrations at each location. Figure 18 presents DDT concentrations in unpaved area soils.

In unpaved area surface soils (0–0.5 ft), DDT concentrations ranged from 1.9 mg/kg at US-02 to 140 mg/kg at US-03. Shallow subsurface soils (2.0–2.5 ft bgs) at these locations had DDT concentrations that ranged from 0.239 mg/kg at US-02 to 690 mg/kg at US-01. DDD and DDE were also detected in most of the unpaved soil samples, but typically at lower concentrations (i.e., generally an order of magnitude or more lower) than DDT concentrations.

TLC field screening results for soils to a depth of 4 ft bgs suggest that DDT is detected (but decreases in concentration with depth) in soil from US-01. In US-03, the maximum DDT concentration is apparently at the 0.5–2.0 ft interval with decreasing concentrations at depth. TLC field screening results also support the analytical results for US-02, which indicate a negligible concentration of DDT in soil to depths of 4 ft bgs at this location.

Former DDT Manufacturing Process Residue Pond Borehole

One soil sample from borehole B-53, located within the footprint of the former manufacturing process residue pond was submitted for total and SPLP analysis for organochlorine pesticides and VOCs to evaluate the potential for leaching from soils in the process area. Results of these analyses are presented in Table 5. A summary of the detected constituents only is provided in Table 6.

In a soil sample from the former manufacturing process residue pond borehole, DDT, DDD, and DDE were detected at concentrations of 16,000 mg/kg, 80 mg/kg, and 14 mg/kg, respectively. In the SPLP extract, DDT and DDD were detected at concentrations of 9 μg/L and 7 μg/L; DDE was not detected. Chlorobenzene concentrations in the soil and the SPLP extract were 1.4 mg/kg and 44 μg/L, respectively. Other chemicals detected in the soil and/or SPLP extract are shown in Table 6. None of the other chemicals detected were found in the SPLP extract at a concentration greater than 5 μg/L.

These data continue to support the conclusion that DDT mobility in a dissolved aqueous phase is expected to be minimal. Chlorobenzene is expected to have a higher mobility than DDT because of its higher aqueous solubility.

Intermediate-Zone Monitoring Well Boreholes

During advancement of intermediate-zone monitoring well boreholes, four soil samples from two locations (MWA-8i and MWA-11i) were submitted for laboratory analyses based

on field screening results. Soil samples were submitted from the following borehole locations and discrete depth intervals:

- MWA-8i from 36–36.3 ft bgs
- MWA-11i from 6–8, 26–28, and 28–30 ft bgs.

At MWA-8i, the sample from 36–36.3 ft bgs was analyzed for organochlorine pesticides, VOCs, and SVOCs to determine which chemicals were present in a sample with a positive indication for NAPL in soil. As previously discussed, the hydrophobic dye field screening results for soils from MWA-8i were generally negative, except for the sample from 36–36.3 ft which had a positive (bright red) result (i.e., indication of residual NAPL).

Eleven chemicals were detected in the sample from MWA-8i (Table 5). Organochlorine pesticides detected include DDT (5,800 mg/kg), DDD (210 mg/kg) and DDE (59 mg/kg). Chlorobenzene was the only VOC detected, at a concentration of 1,100 mg/kg. Five SVOCs were detected at lower concentrations than organochlorine pesticides and VOCs and included hexachloroethane (44 mg/kg), hexachlorobutadiene (1.4 mg/kg), 1,4-dichlorobenzene (4.0 mg/kg), 1,2-dichlorobenzene (1.5 mg/kg), and 2-chlorophenol (0.30 mg/kg).

At MWA-11i in the former MCB recovery unit area, soil samples were analyzed from three depth intervals to evaluate the vertical distribution of organochlorine pesticides and VOCs. DDT concentrations were highest in the vadose-zone soils (31,000 mg/kg at 6–8 ft bgs) and decrease rapidly below the shallow groundwater surface to 230 mg/kg (at 26–28 ft bgs) and 2.72 mg/kg (at 28–30 ft bgs). DDD and DDE are typically found at concentrations 1–2 orders of magnitude lower than DDT and similarly decrease with depth. Chlorobenzene exhibits a similar decreasing concentration with depth. In the vadose zone, chlorobenzene concentrations are 15,000 *J* mg/kg at a depth of 6–8 ft bgs. Chlorobenzene concentrations decrease below the shallow groundwater surface to 880 mg/kg (at 26–28 ft bgs) and 39 mg/kg (at 28–30 ft bgs). Other VOCs detected (at

concentrations below 12 mg/kg in all samples) include 1,4-dichlorobenzene, 1,2-dichlorobenzene, and 1,1,1-trichloroethane.

Other Potential Source Area Investigation

In other potential source areas, five soil samples were submitted from three boreholes as follows:

- B-54 — from 4–5 ft bgs
- B-55 — from 6–7 and 12–13 ft bgs
- B56 — from 4–5 and 19–20 ft bgs.

Samples were submitted for laboratory analysis based on field screening results. Laboratory analyses included organochlorine pesticide and VOCs on each soil sample. Groundwater screening samples from B-55 and B-56 were also analyzed for hydrocarbon identification. The results of these analyses are presented in Figure 19 and Tables 5 and 7.

At B-54 in the former DDT storage pad area, DDT was detected at a concentration of 13.6 mg/kg (average of sample and duplicate) at a depth of 4–5 ft bgs (Figure 19). Chlorobenzene was detected at 0.007 mg/kg in the sample duplicate at this depth but was not detected in the sample (at a detection limit of 0.005 mg/kg. Field screening results indicate that the 1-to-3-ft soil interval likely had the highest DDT concentration at this location but that it did not exceed 50 mg/kg. PID results indicate that the 4–5 ft interval had the highest PID response. These results indicate that the vertical extent of DDT-affected soils in the DDT storage pad area appears to be limited to the upper few feet of soil column.

At B-55, in the former Acid Recovery tank area, DDT and chlorobenzene were detected in soil at concentrations up to 297 mg/kg and 4,100 mg/kg, respectively, at a depth of 6–7 ft bgs. This soil interval was finer-grained (silt and clay) than the overlying sand fill. At

12–13 ft bgs in B-55, the DDT concentration was 2.8 mg/kg and chlorobenzene was not detected (at a detection limit of 0.005 mg/kg). Field screening results indicated that DDT concentrations are highest in the shallow subsurface soils (approximately 1–2 ft bgs), and decrease steadily to depths of 7–8 ft bgs. Based on PID and hydrophobic dye measurements in this borehole, the maximum VOC concentrations were observed at a depth of 6–7 ft bgs, corresponding with the laboratory-analyzed sample.

Non-petroleum hydrocarbons (e.g., naturally derived organic material) were detected in the groundwater sample from B-55 at 1,260 μg/L. VOCs detected in the groundwater sample included chlorobenzene (27,000 μg/L), chloroform (240 μg/L), and 1,1,1-trichlorethane (94.0 μg/L) (Table 7). No sheen or NAPL was observed in groundwater from B-55.

At B-56 in the former choral production area and downgradient of the former process building, DDT and chlorobenzene were detected in soil at concentrations up to 454 mg/kg and 0.007 mg/kg, respectively, at a depth of 4-5 ft bgs (Figure 19). At 19–20 ft bgs in B-56, DDT and chlorobenzene were not detected. Field screening results indicated that DDT was detected near the TLC screening limit to depths of 5–6 ft bgs. PID and hydrophobic dye results did not suggest any substantial VOCs in soils at this borehole.

Non-petroleum hydrocarbons were detected in the groundwater sample from B-56 at 388 μg/L. VOCs detected in the groundwater sample included chlorobenzene (120 μg/L), chloroform (9.7 μg/L), tetrachloroethene (9.7 μg/L), 1,1,1-trichlorethane (6.3 μg/L), and 1,4-dichlorobenzene (0.80 μg/L) (Table 7). No sheen or NAPL was observed in groundwater from B-56.

Storm Water Analytical Results

On January 22, 1999, storm water samples were collected from two storm drain outfalls (SW-01 and SW-02). Field parameter measurements for storm water samples are

summarized in Table 8. Analytical results for total and dissolved organochlorine pesticides are summarized in Table 9.

In the unfiltered storm water samples, DDT, DDD, and DDE were detected at both of the storm water locations (SW-01 and SW-02) during the January 1999 sampling event (Figure 20). DDT was detected in SW-01 and SW-02 at concentrations of 8 and 19 (average of sample and sample duplicate) μg/L, respectively. DDD was detected in SW-01 and SW-02 at concentrations of 1.1 and 2.5 (average of sample and sample duplicate) μg/L, respectively. DDE was detected in SW-01 and SW-02 at concentrations of 0.8 and 0.9 (average of sample and sample duplicate) μg/L, respectively. Dissolved organochlorine pesticides were not detected in the storm water samples with the exception of DDT, which was detected in the sample duplicate for SW-02 at a concentration of 0.14 *J* μg/L. Dissolved DDT, however, was not detected in the original sample at a detection limit of 0.040 μg/L.

Groundwater Analytical Results

January 1999 groundwater samples were collected from seven shallow-zone monitoring wells (MWA-1, MWA-2, MWA-3, MWA-4, MWA-5, MWA-6, and MWA-7), six intermediate-zone monitoring wells (MWA-8i, MWA-9i, MWA-10i, MWA-11i, MWA-12i, and MWA-14i), and one deep-zone monitoring well (MWA-13d). Final field parameter measurements for the groundwater sampling event are summarized in Table 10. Laboratory results for organochlorine pesticides, VOCs, and SVOCs are summarized in Table 11. The QA/QC reports are presented in Appendix C. Groundwater results for the previous monitoring period (May 1998) are provided in Appendix D.

Field parameter measurements of pH in groundwater at the Elf Atochem facility range from slightly acidic (ranging from pH 6.28 in MWA-2 to 6.97 in MWA-4) to alkaline (pH 8.9 in MWA-6 to 11.1 in MWA-1) within the general vicinity of the Acid Plant Area. Specific conductance ranges from 374 μS/cm in MWA-2 to 13,210 μS/cm in

MWA-9i. The deeper wells generally have the higher specific conductance values. Dissolved oxygen concentrations range from 0 mg/L in six wells (MWA-4, MWA-7, MWA-9i, MWA-10i, MWA-12i, and MWA-13d) to 9.45 mg/L in MWA-6. Oxidation-reduction potential (redox, measured as Eh) ranges from +152 to –461, indicating a range from aerobic to anaerobic conditions in groundwater. Of the 14 site monitoring wells, most exhibited negative redox values, suggesting primarily anaerobic conditions in Acid Plant Area groundwater (Table 10).

The discussion of analytical results for groundwater centers on a focused list of selected site-related CoIs based on the historical use or relationship to chemicals used during DDT manufacturing operations as well as their generally greater frequency of detection. Organochlorine pesticide constituents discussed include DDT and its metabolites DDD and DDE and the VOC chlorobenzene. SVOC constituents associated with process chemicals or their degradation are also included in the discussion and include 2-chlorophenol, 3- and 4-chlorophenol, 1,2-dichlorobenzene, and 1,4-dichlorobenzene. Other constituents detected are not discussed in detail; however, all analytical results are presented in Table 11.

Shallow-Zone Groundwater

Organochlorine pesticides were detected only in downgradient shallow-zone monitoring wells MWA-2, MWA-3, MWA-4, and MWA-6 (Table 11; Figures 21, 22, and 23). Total DDT was detected in monitoring wells MWA-2, MWA-3, MWA-4, and MWA-6 at concentrations ranging from 0.18 to 3.8 μg/L (Figure 21). Dissolved DDT was detected in only one shallow well (MWA-6) at a concentration of 1.4 μg/L. Neither DDT, DDD, nor DDE were detected in monitoring wells MWA-1, MWA-5, or MWA-7.

Total DDD was detected in three downgradient shallow-zone wells. Total DDD concentrations, where detected, ranged from 0.32 to 11 (average of sample and sample duplicate) μg/L (Figure 22). Dissolved DDD was detected in two monitoring wells,

MWA-2 and MWA-4, at concentrations of 0.13 and 2.2 (average of sample and sample duplicate) μg/L, respectively.

Total DDE was detected in groundwater from three downgradient shallow-zone monitoring wells (MWA-2, MWA-4, and MWA-6) at concentrations ranging from 0.04 to 3.7 μg/L (Figure 23). Dissolved DDE was detected at only one well, MWA-6, at a concentration of 1.3 μg/L.

VOCs were detected in all shallow-zone monitoring wells except MWA-7, the upgradient monitoring well (Table 11; Figures 24 and 25). Chlorobenzene was detected at concentrations ranging from 33 to 21,000 μg/L in five of the seven shallow-zone wells. The highest shallow-zone chlorobenzene concentration, 21,000 μg/L, was measured in MWA-1 (Figure 24). At four downgradient shallow monitoring wells, chlorobenzene was detected at concentrations ranging from 34 (average of sample and sample duplicate) to 94 μg/L. Chlorobenzene was not detected in MWA-3 or MWA-7.

Chloroform was detected at concentrations ranging from 18*J* to 810 μg/L in three of the seven shallow-zone monitoring wells. The highest shallow-zone chloroform concentration (810 μg/L) was measured in MWA-2 (Figure 25).

Other VOCs detected include tetrachloroethene (concentrations ranging from 3.5 to 1,000 μg/L) in four of the seven shallow-zone monitoring wells, trichloroethene (concentrations ranging from 2.1 to 14 μg/L) in four shallow-zone wells, *cis*-1,2-dichloroethene (concentrations ranging from 0.6 to 8 *J* μg/L) in four shallow-zone monitoring wells, and 1,1-dichloroethane (concentrations ranging from 0.6 to 5.7 μg/L) in two shallow-zone monitoring wells.

SVOCs were detected in five of the seven shallow-zone monitoring wells (Table 11). 2-chlorophenol was detected at concentrations ranging from 0.5 to 39 μg/L in three of the seven shallow-zone wells. The highest shallow-zone 2-chlorophenol concentration was

measured in MWA-1 at 39 μg/L. 2-chlorophenol was not detected in MWA-3, MWA-4, MWA-5, or MWA-7.

3-and 4-chlorophenol (reported as a single analyte) was detected at concentrations ranging from 0.5 to 67 μg/L in three of the seven shallow-zone monitoring wells. The highest shallow-zone 3- and 4-chlorophenol concentration was measured in MWA-1 at 67 μg/L. 3- and 4-chlorophenol was not detected in MWA-2, MWA-3, MWA-6, or MWA-7.

1,2-dichlorobenzene and 1,4-dichlorobenzene were detected at concentrations ranging from 0.1 to 5 and 0.3 to 10 μg/L, respectively, in two of the seven shallow-zone wells. The highest shallow-zone 1,2-dichlorobenzene and 1,4-dichlorobenzene concentrations were measured in MWA-1 at 5 and 10 μg/L, respectively. 1,2-dichlorobenzene and 1,4-dichlorobenzene were not detected in MWA-2, MWA-3, MWA-5, MWA-6, or MWA-7.

Intermediate-Zone Groundwater

Organochlorine pesticides were detected in five of the six intermediate-zone monitoring wells (Table 11; Figures 26, 27, and 28). Organochlorine pesticides were not detected in the upgradient intermediate-zone well, MWA-12i. Total DDT was detected in four downgradient intermediate-zone wells at concentrations ranging from 0.06 to 9 *J* μg/L. In the Acid Plant Area, total DDT was detected in intermediate-zone groundwater (MWA-11i) at a concentration of 0.20 μg/L. Dissolved DDT was only detected at two intermediate-zone wells, MWA-8i and MWA-9i, at concentrations of 0.64 *J* and 8 *J* μg/L, respectively (Figure 26).

Total DDD was detected in two intermediate-zone wells, MWA-8i and MWA-9i, at concentrations of 5.3 *J* and 20 *J* μg/L, respectively. MWA-8i and MWA-9i had

dissolved DDD concentrations of 2.4 *J* and 9 *J* μg/L, respectively. No other intermediate wells had detected concentrations of total or dissolved DDD (Figure 27).

Similar to DDD, total and dissolved DDE was detected at only two intermediate-zone monitoring wells, MWA-8i and MWA-9i. Total DDE concentrations at MWA-8i and MWA-9i were 0.07 *J* and 0.37 *J* μg/L, respectively. Dissolved DDE concentrations at MWA-8i and MWA-9i were 0.04 *J* and 0.33 *J* μg/L, respectively (Figure 28).

VOCs were detected in all six intermediate-zone monitoring wells during the January 1999 groundwater sampling event (Table 11). Chlorobenzene was detected at concentrations ranging from 2.5 to 38,000 μg/L in four of the six intermediate-zone wells (Figures 16 and 29). The highest intermediate-zone chlorobenzene concentrations were measured in MWA-8i, MWA-10i, and MWA-9i at 4,800, 8,700 *J*, and 38,000 μg/L, respectively. Chlorobenzene was not detected in MWA-12i or MWA-14i. Chloroform was detected at only one intermediate-zone monitoring well, MWA-9i, at a concentration of 120 μg/L. Chloroform was not detected in MWA-8i, MWA-10i, MWA-11i, MWA-12i, or MWA-14i (Figure 30).

Other VOCs detected include tetrachloroethene at concentrations ranging from 0.6 to 15 μg/L in three of the six intermediate-zone wells, trichloroethene at concentrations of 0.9 *J* and 10 μg/L in only two intermediate-zone monitoring wells, *cis*-1,2-dichloroethene at concentrations of 0.9 *J* and 1.2 μg/L in only two intermediate-zone monitoring wells, and 1,1-dichloroethane at concentrations of 3 and 3.2 *J* μg/L in only two intermediate-zone monitoring wells.

SVOCs were detected in three of the six intermediate-zone monitoring wells (Table 11). 2-chlorophenol was detected at concentrations ranging from 21 to 77 μg/L in three of the six intermediate-zone wells. The highest intermediate-zone 2-chlorophenol concentration was measured in MWA-9i, at 77 μg/L. 2-chlorophenol was not detected in MWA-11i, MWA-12i, or MWA-14i.

3- and 4-chlorophenol was detected at concentrations ranging from 42 to 110 μg/L in three of the six intermediate-zone monitoring wells. The highest intermediate-zone 3- and 4-chlorophenol concentration was measured in MWA-9i, at 110 μg/L. 3- and 4-chlorophenol was not detected in MWA-11i, MWA-12i, or MWA-14i.

1,2-dichlorobenzene was detected at concentrations ranging from 0.5 to 4.8 μg/L in three of the six intermediate-zone monitoring wells. The highest intermediate-zone 1,2-dichlorobenzene concentration was measured in MWA-9i, at 4.8 μg/L. 1,2-dichlorobenzene was not detected in MWA-11i, MWA-12i, or MWA-14i.

1,4-dichlorobenzene was detected at concentrations ranging from 0.3 to 8 μg/L in three of the six intermediate-zone wells. The highest intermediate-zone 1,4-dichlorobenzene concentration was measured in MWA-9i, at 8 μg/L. 1,4-dichlorobenzene was not detected in MWA-11i, MWA-12i, or MWA-14i.

Deep-Zone Groundwater

In January 1999, the only organochlorine pesticide detected in the deep zone, at MWA-13d, was total DDT at a concentration of 0.09 μg/L (Figure 26). No dissolved-phase DDT was detected at MWA-13d. Two VOCs, chlorobenzene and 1,2-dichloroethane, were detected in MWA-13d at concentrations of 240 and 0.6 μg/L, respectively. SVOCs detected in the deep groundwater zone at MWA-13d included 2-chlorophenol and 3- and 4-chlorophenol at concentrations of 0.7 and 0.5 μg/L, respectively.

Sediment Analytical Results

This section summarizes separately the results of riverbank sediment sampling conducted in November 1998 and offshore sediment sampling conducted in January 1999.

Riverbank Sediment

DDT was detected at all of the riverbank sediment sample locations (Table 12). DDT was detected in surface (0–10 cm) riverbank sediments at concentrations ranging from 0.034 to 2.4 *J* mg/kg. The highest surface sediment concentration of DDT was detected at RB-3 immediately upstream of Dock #2 (Figure 31). At most riverbank locations, DDT concentrations were higher in subsurface samples than in surface samples. The highest subsurface (i.e., greater than 10 cm) DDT concentrations were detected at riverbank sample stations RB-4, RB-3, and RB-2 at concentrations of 2.6 mg/kg, 2.0 mg/kg, and 1.3 mg/kg, respectively (Figure 31).

DDD was detected at every riverbank sediment sample location except RB-5. Where detected, riverbank sediment DDD concentrations ranged from 0.018–0.100 mg/kg in surface sediments and 0.018–0.360 mg/kg in subsurface samples. Similar to DDT, DDD concentrations, where detected, were generally higher in subsurface samples than in surface samples. The highest surface and subsurface concentrations of DDD were measured at RB-2 immediately downstream of Dock #1 (Figure 32).

DDE was detected in all riverbank sediment samples analyzed. DDE concentrations in surface riverbank sediment samples ranged from 0.023 to 0.150 *J* mg/kg. In subsurface riverbank samples, DDE concentrations ranged from 0.028–0.310 mg/kg. The highest DDE concentrations in both surface and subsurface sediment riverbank samples were measured at sample locations RB-2 and RB-3 between Docks #1 and #2 (Figure 33).

VOCs were not detected in any of the riverbank sediment samples, with one exception. In the subsurface sample from 10–31 cm at RB-3, tetrachloroethene was detected at a concentration of 0.008 mg/kg. Tetrachloroethene is not a CoI for the Acid Plant Area remedial investigation.

SVOCs detected in the riverbank sediments include ubiquitously detected chemicals in sediments harborwide, including polycyclic aromatic hydrocarbons (PAHs), which are

present at concentrations within the baseline range found in sediments throughout the Portland Harbor area. None of these chemicals are suspected site-related chemicals and are therefore not summarized further in this discussion.

Offshore Sediment

DDT, DDD, and DDE were detected at all of the offshore sediment sample locations (Table 13). Results for DDT, DDD, and DDE in offshore sediments collected for this RI as well as for sediments from the previous Portland Harbor sediment study are shown in Figures 34, 35, and 36, respectively. The discussion below focuses on the more recently collected RI data only.

DDT was detected in surface (0–10 cm) offshore sediments at concentrations ranging from 0.017–81 mg/kg. The highest surface sediment concentrations of DDT were measured inshore of Docks #1 and #2 at stations OSS002 (81 mg/kg) and OSS004 (18 mg/kg). DDT was measured at a concentration of 10 mg/kg (at OSS006) in surface sediments upstream of Dock #1 and the Acid Plant Area. Further offshore (outside of the docks), DDT was measured at a maximum concentration in surface sediments of 0.36 mg/kg.

DDT concentrations in subsurface offshore sediments are variable. As with the surface sediments, the highest DDT concentrations in subsurface offshore sediments are found inshore of Docks #1 and #2. The highest concentration of DDT in subsurface sediments was 17 mg/kg in the 10-to-90-cm interval at OSS002. The DDT concentration from the 10-to-30-cm interval at OSS006 upstream of the Acid Plant Area was 11 mg/kg. Farther from shore, subsurface sediments generally had lower DDT concentrations that ranged from 0.216 mg/kg (from 10–90 cm at OSS005) to 2.8 mg/kg (from 10–30 cm at OSS003).

The distributions of DDD and DDE were similar to that of DDT, but at lower concentrations than DDT. DDD concentrations ranged from 0.049–11 mg/kg in surface sediments and from 0.147–16 mg/kg in subsurface sediments (Figure 35). DDE concentrations ranged from undetected to 1.48 mg/kg in surface sediments and from undetected to 1.84 mg/kg in subsurface sediments (Figure 36). The highest surface and subsurface sediment concentrations of DDD and DDE were measured at OSS004 between Docks #1 and #2.

The only VOCs detected in the offshore sediment samples were chlorobenzene and acetone. Chlorobenzene was detected in four of the six offshore sediment stations. The highest chlorobenzene concentration (34 mg/kg) was measured in the surface (0-to-10-cm interval) at OSS003. The 10-to-30-cm interval at OSS003 had a chlorobenzene concentration of 18 mg/kg. At other locations, detected chlorobenzene concentrations ranged from 0.011–1.9 mg/kg (Figure 37). Acetone was detected at one sediment sample location, OSS006 (0–10 cm), at a concentration of 0.140 *J* mg/kg. Acetone results from the other stations were qualified as rejected (*R*) because of analytical instrument calibration problems.

As with the riverbank sediments, SVOCs detected in the offshore sediments include ubiquitously detected chemicals in sediments harborwide, including PAHs. As in the riverbank sediment samples, the concentrations of PAH compounds in the offshore sediment samples were generally within the baseline range found throughout the Portland Harbor area, with the one exception of Station OSS-004, where much higher concentrations of PAH compounds were detected. These chemicals are not related to the former DDT manufacturing process operations conducted in the Acid Plant Area. In addition, selected CoIs including hexachlorobutadiene (at three locations) and hexachloroethane (at three locations) have been detected in offshore sediment samples. SVOC CoIs detected in offshore sediments are reported with other chemicals in Table 13.

Findings

Initial RI findings, based on data collected to date, are presented by media (soils, groundwater, storm water, sediments) below.

Soils

Boreholes advanced at the perimeter of the Acid Plant Area during this and previous investigations indicate that CoIs (primarily DDT and metabolites) either were present in soils at low concentrations (typically less than 5 mg/kg) or were undetected. CoIs were generally limited to the upper few feet of the soil column. The exception to this finding is the area west of Warehouse No. 2 (i.e., in borehole B-49), where DDT was measured at a concentration of 3,600 mg/kg at a depth of 2–2.5 ft bgs. At 7–8 ft bgs in the same borehole, however, the DDT concentration was only 0.217 *J* mg/kg (average of sample and sample duplicate) and TLC field screening data indicated the highest DDT is limited to the 2-to-2.5-ft depth interval.

Acid Plant perimeter sampling has confirmed the boundary of DDT-affected soils to the north and south of the Acid Plant. On the east, the Acid Plant is bordered by the Willamette River. The boundary of DDT-affected soils west of the Acid Plant has been identified, with the exception of the area of B-49. Elf Atochem recommends additional soil sampling west of B-49 to complete the delineation of DDT-affected soils west of the Acid Plant.

Based on laboratory analytical and TLC field screening results from boreholes within the Acid Plant Area, DDT and metabolites, where detected, were generally limited to near-surface soils. The historical ground surface in the Acid Plant Area ranges from about 0.5–2 ft bgs, which explains why, in some areas, the maximum concentration of DDT and metabolites was found below the surface soil (0-to-0.5-ft) interval. In the general Acid

Plant Area, concentrations of DDT and metabolites in soil decreased rapidly with depth. DDT is found at greater soil depths in areas where liquid DDT-manufacturing process residues were managed, such as at the location of the former manufacturing process residue pond and trench. Volatile CoIs (primarily chlorobenzene) were found at the highest concentrations in soils beneath the former MCB recovery unit, but also in the former acid recovery tank area (i.e., borehole B-55). Where detected, chlorobenzene and other VOCs were found in fine-grained (i.e., clay or silt) soils in the vadose zone. Below the groundwater surface, chlorobenzene was detected in soils at locations where residual (or immobile) NAPL[1] was identified (e.g., in MWA-8i at 36–36.3 ft bgs).

In summary, shallow soils containing DDT are found throughout the Acid Plant Area at varying concentrations. Where DDT manufacturing process residues were handled (i.e., the MCB recovery unit, manufacturing process waste pond and trench, and acid recovery tank), VOCs have been detected in the fine-grained vadose-zone soils. Other potential source areas investigated do not account for any significant sources of DDT, chlorobenzene, or other CoIs.

The investigation of shallow soils within the general Acid Plant Area and the other potential source areas identified by DEQ is complete based on the findings of this investigation. Elf Atochem recommends further investigation of the former DDT manufacturing waste pond as defined in the *Groundwater* section below.

Groundwater

Groundwater in the alluvial sands and silts beneath the Acid Plant Area flows toward the Willamette River. For the description of groundwater flow and chemical distribution in groundwater, the alluvial groundwater flow system has been subdivided into shallow, intermediate, and deep zones.

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[1] Residual NAPL is defined as immobile NAPL; refer to *Sudan IV® Hydrophobic Dye* section.

VOCs (e.g., chlorobenzene) are the primary CoIs that have been detected in groundwater in and downgradient of the Acid Plant Area. To date, the highest concentrations of chlorobenzene have been measured in downgradient intermediate-zone wells (i.e., MWA-9i). Chlorobenzene concentrations in groundwater are typically 2–4 orders of magnitude higher in the intermediate zone than in the shallow zone at the same location. DDT and metabolites have also been detected in groundwater but are generally found as particulates (i.e., in the total samples but not in the dissolved phase) in shallow and intermediate groundwater. DDT is not mobile in groundwater as a particulate. Where measured, particulate DDT is assumed to be derived from DDT in the soil matrix immediately outside of the well screen. The highest dissolved DDT concentrations (8 μg/L) coincide with the highest chlorobenzene concentrations in the intermediate zone at MWA-9i. Based on the groundwater data collected to date, significant quantities of DDT are not transported via groundwater. Deeper-zone groundwater downgradient of the Acid Plant Area has measurable concentrations of CoIs; however, based on findings from the initial groundwater monitoring round, CoI concentrations in the deep zone were 2 orders of magnitude lower than intermediate-zone concentrations, strongly suggesting that downward vertical migration of CoIs into the silt, sand, and clay horizons beneath the intermediate zone is limited.

Residual NAPL was observed in soils in the shallow zone beneath the former manufacturing process residue pond and in a thin (i.e., 1–2 ft) "shallow-intermediate" zone downgradient of the Acid Plant Area. The presence of chlorobenzene and dissolved-phase DDT in MWA-9i indicates that the residual NAPL within the Acid Plant Area is potentially releasing CoIs to groundwater.

Preliminary results from the second-quarter groundwater monitoring event indicate that *p*-CBSA was not detected in groundwater and chloral hydrate was detected at a concentration of 1.7 μg/L in only one well (MWA-9i) downgradient of the Acid Plant Area. These data indicate that *p*-CBSA and chloral hydrate should not be considered CoIs for the Acid Plant Area RI.

The results of these investigations have bracketed the groundwater affected by CoIs upgradient and on the northern downgradient boundary of the Acid Plant. Further investigation is needed to define the southern downgradient boundary of groundwater affected by CoIs and to determine the nature of the residual NAPL in the shallow groundwater zone in the former DDT manufacturing process residue pond and downgradient within the "shallow-intermediate" zone.

Elf Atochem recommends the installation of three additional wells to complete this evaluation. Elf Atochem also recommends the abandonment of well MWA-1 due to the placement of the well screen across a potential confining silt horizon, and the replacement of MWA-6 due to the potential presence of bentonite within the well screen interval.

Storm Water

Dissolved DDT and metabolites were generally not detected in storm water from the Acid Plant Area. The presence of low-ppb total concentrations of DDT and metabolites in storm water during a mid-winter precipitation event suggests that some DDT-containing particulate material is being transported in storm water during rainfall events. The low concentrations of DDT and metabolites in the storm water indicate that this is unlikely to be a source of any significance to the nearshore Willamette River sediments.

Based on these findings, Elf Atochem will complete the second round of storm water sampling (in accordance with the work plan) in Fall 1999 to evaluate the "first flush" of storm water from the Acid Plant Area. Potential storm water remedial actions, if any, will be evaluated further in the feasibility study.

Sediments

The highest concentrations of DDT and metabolites in riverbank sediments are found between and immediately downstream of Docks #1 and #2 in close proximity to the Acid Plant Area. The concentrations of DDT and metabolites in riverbank sediment samples were generally an order of magnitude lower than the concentrations of these compounds in the offshore sediment samples, suggesting that CoIs found in offshore sediments are not derived from riverbank sediments. Surface riverbank sediment concentrations of DDT, DDD, and DDE were generally lower than subsurface concentrations of those compounds at the six riverbank stations, indicating possible recent deposition of cleaner sediments. The presence of DDT at order-of-magnitude lower concentrations at the two downstream riverbank stations (RB-5 and RB-6) compared with those in close proximity to the Acid Plant suggests limited downstream transport. No other chemicals potentially associated with the Acid Plant were detected in the riverbank sediment samples.

Offshore sediment stations were positioned to investigate the spatial extent of CoIs in sediment in areas adjacent to the Acid Plant Area. The results of the current investigation were consistent with EPA's earlier results. The additional spatial coverage demonstrates a pattern of high concentrations of DDT, DDD, and DDE just inshore of Docks #1 and #2, with decreasing concentrations of those chemicals offshore, upstream, and downstream. The highest concentrations of chlorobenzene were found outside the outermost portions of Docks #1 and #2, farther from shore than the highest concentrations of DDT and metabolites.

As a member of the Portland Harbor Group, Elf Atochem is participating in the proposed assessment of Portland Harbor sediments in accordance with the Portland Harbor Sediment Management Plan (PHSMP). Further investigation of sediments at the site to address the RI/FS objectives will be conducted in accordance with PHSMP procedures once the final PHSMP is approved by EPA.

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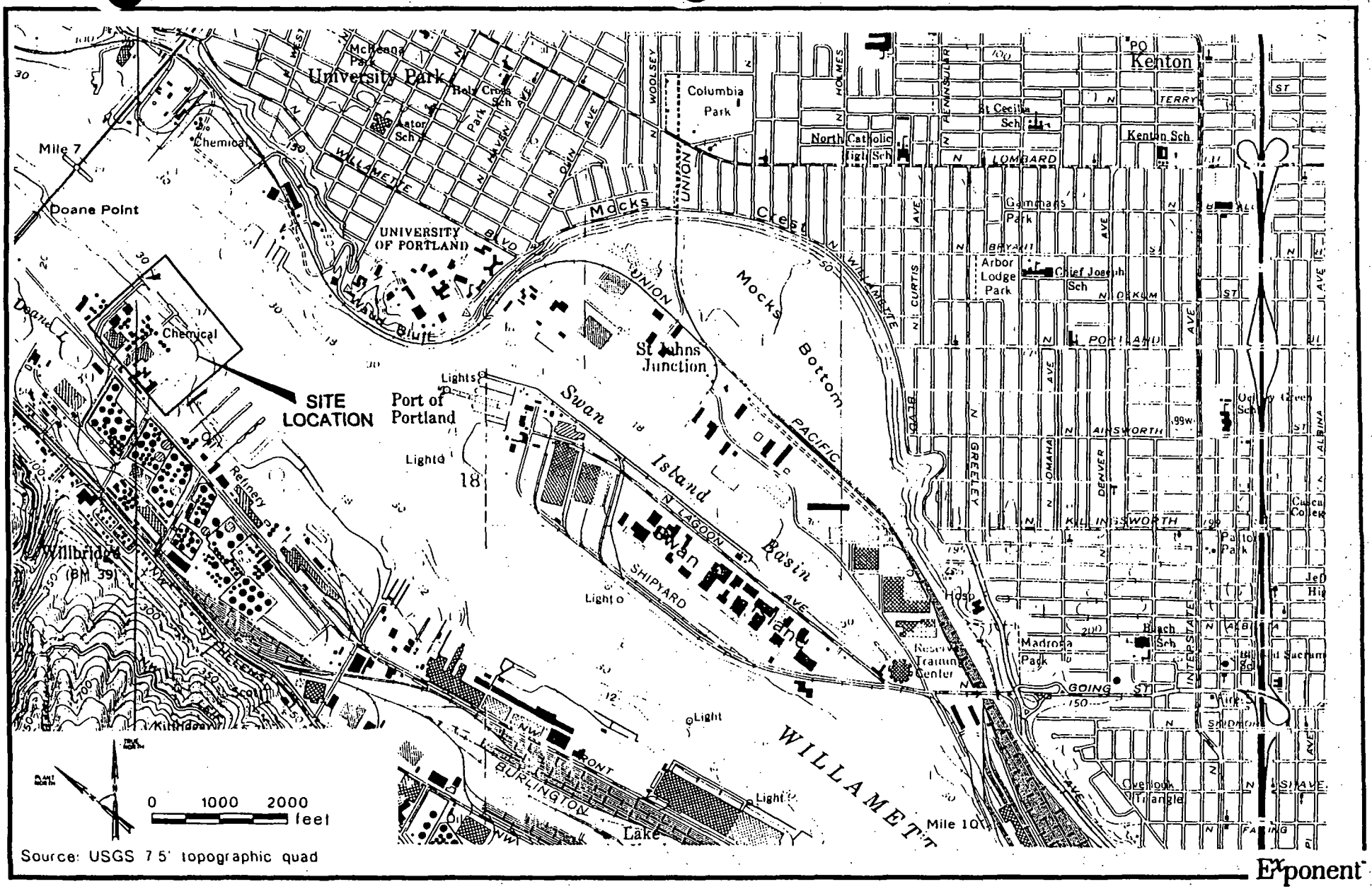
Figures



Exponent

Figure 1. Elf Atochem site location.

CBA20201\FRAME2.dwg 03/19/98 OR

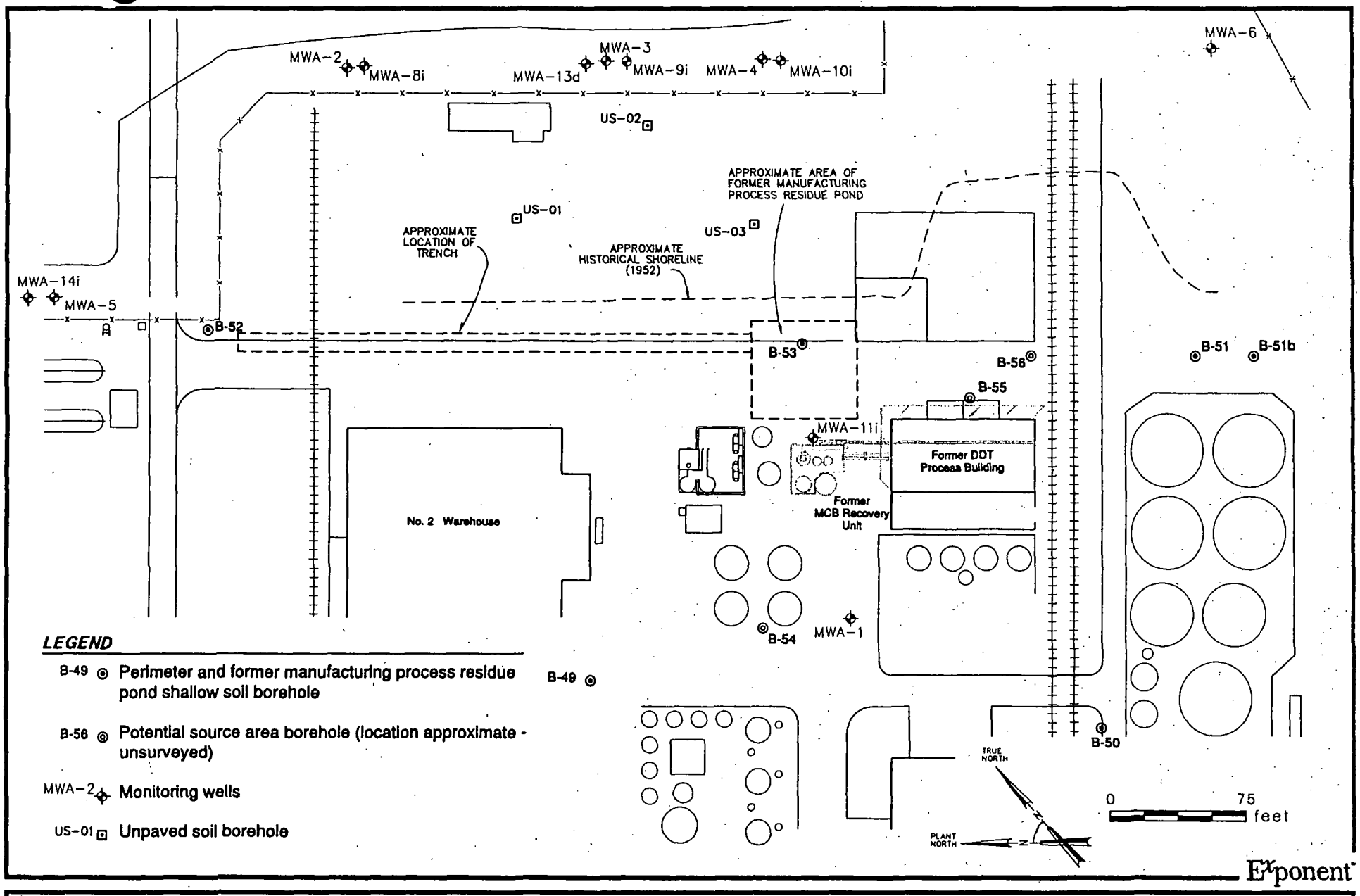


Figure 2. Remedial investigation soil sampling locations.

CBA20301\RI SAMPS.dwg 06/19/99 OR

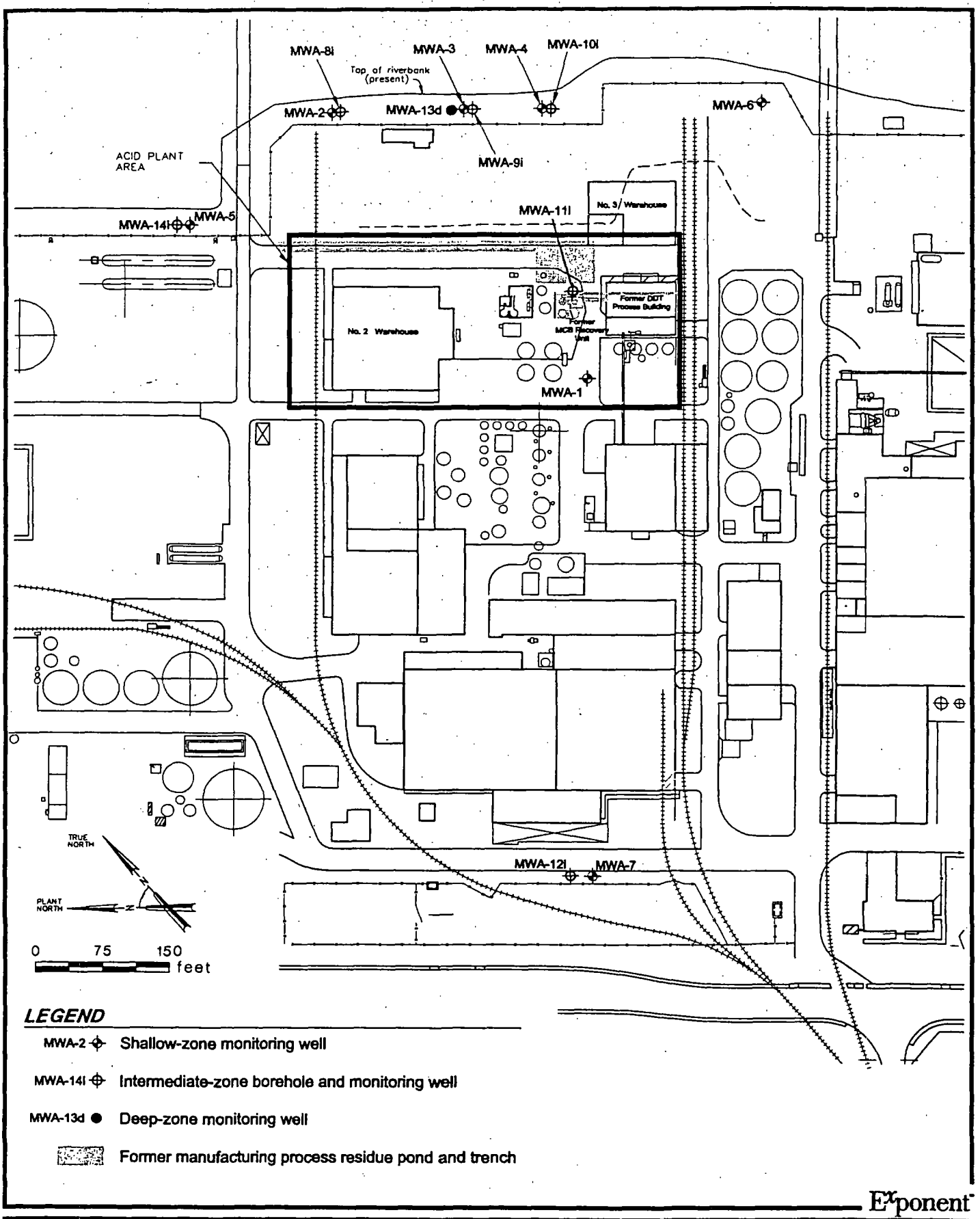


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Figure 3. Remedial investigation monitoring well locations.

CBA20301\RI wells.dwg 06/19/99 OR

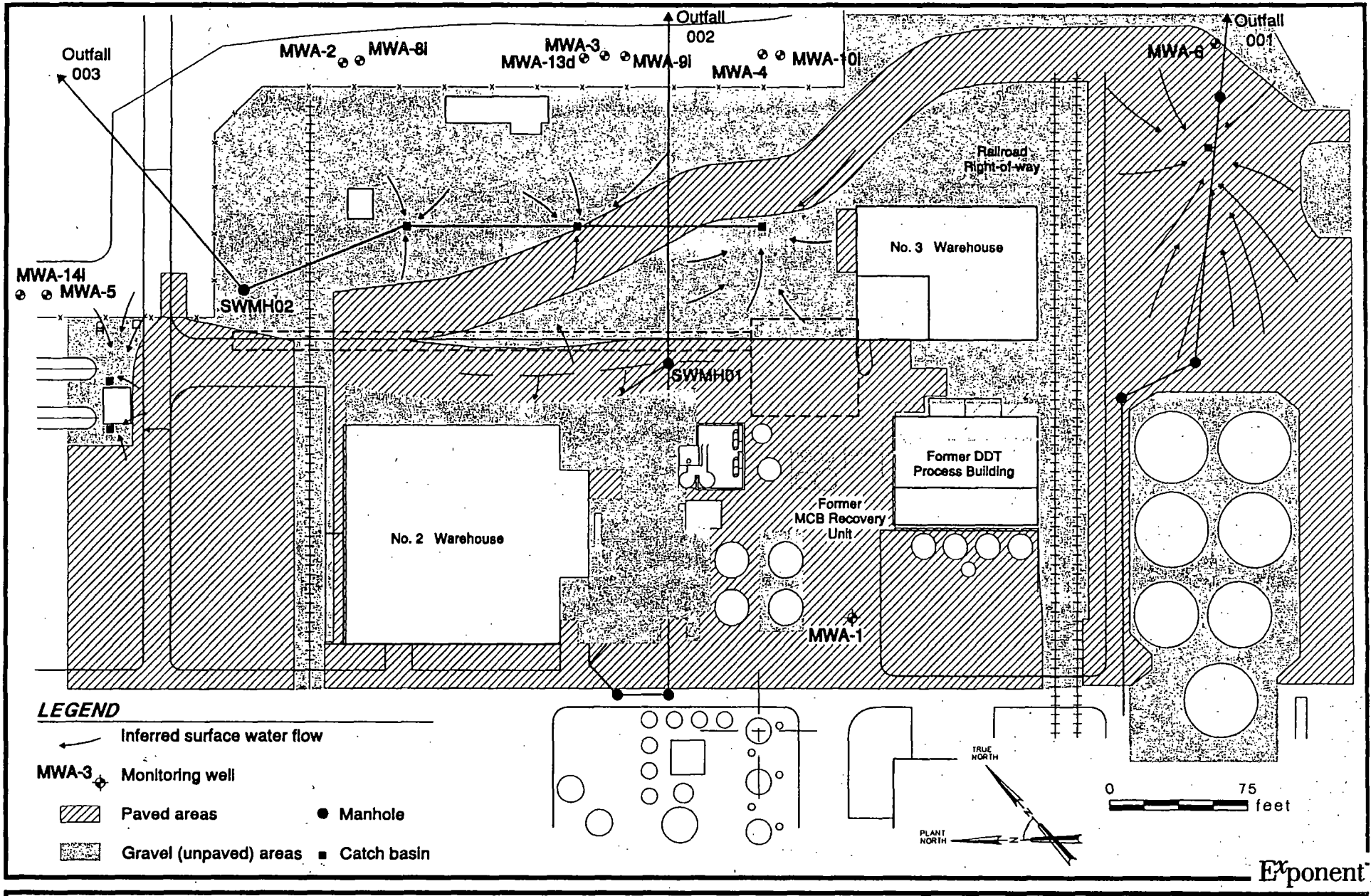

Figure 4. Paving and surface water drainage.

CBA20301\DRAIN.dwg 06/19/99 OR

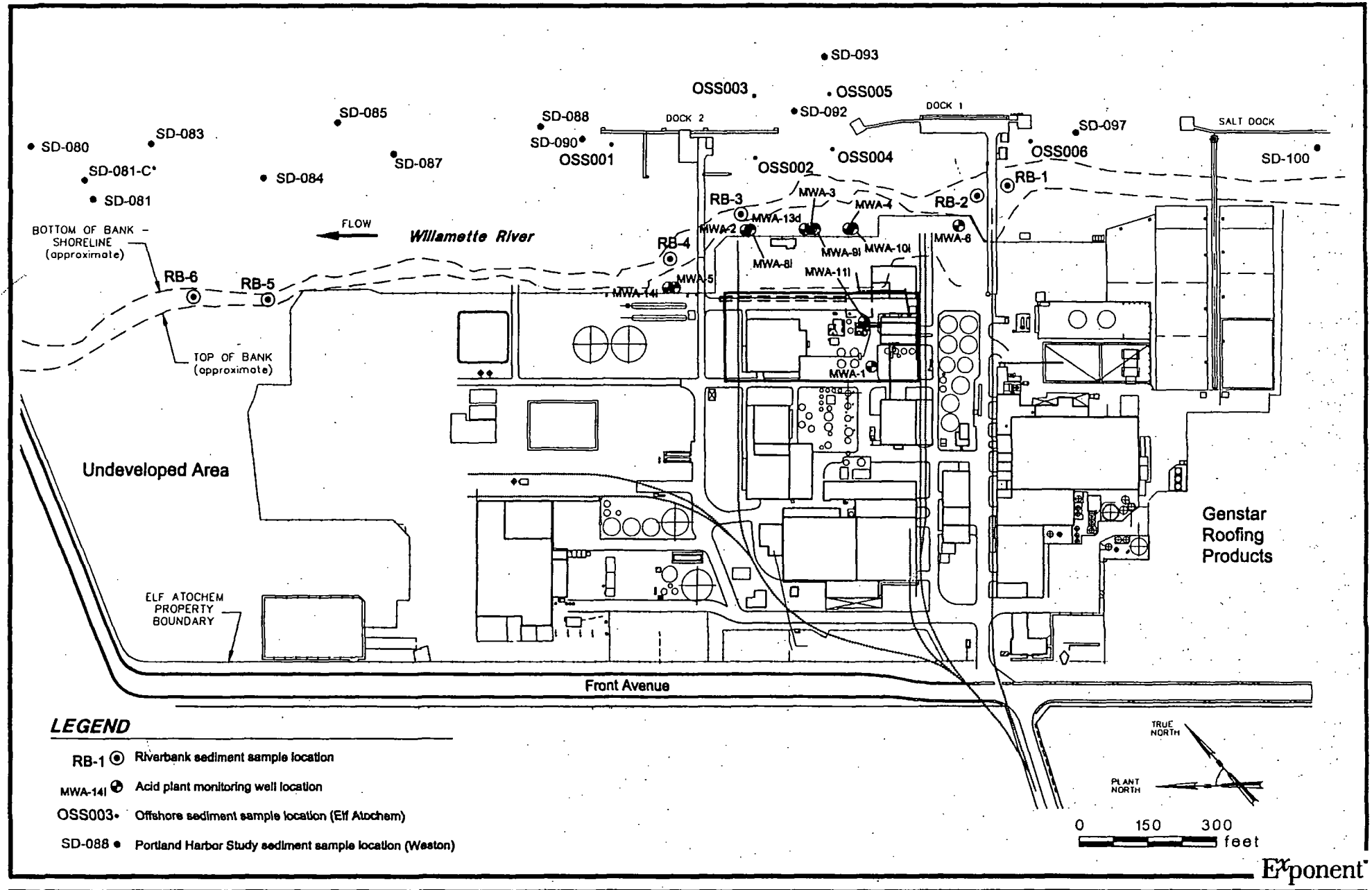

Figure 5. Sediment sample locations.

8600BA2.001.0303/SEDsamp locs.dwg 06/19/99 OR

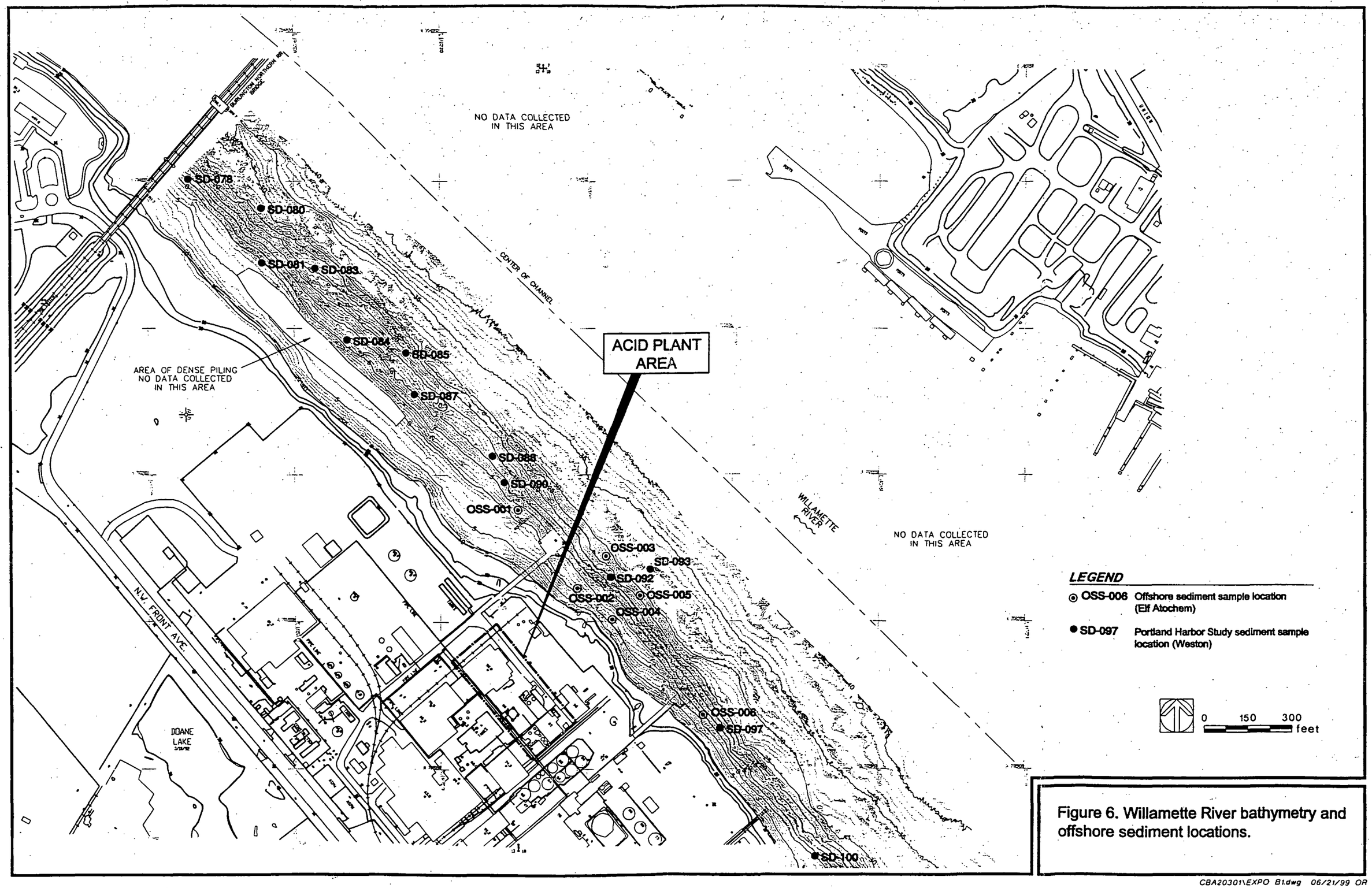

Figure 6. Willamette River bathymetry and offshore sediment locations.

CBA20301\EXPO B1.dwg 06/21/99 OR

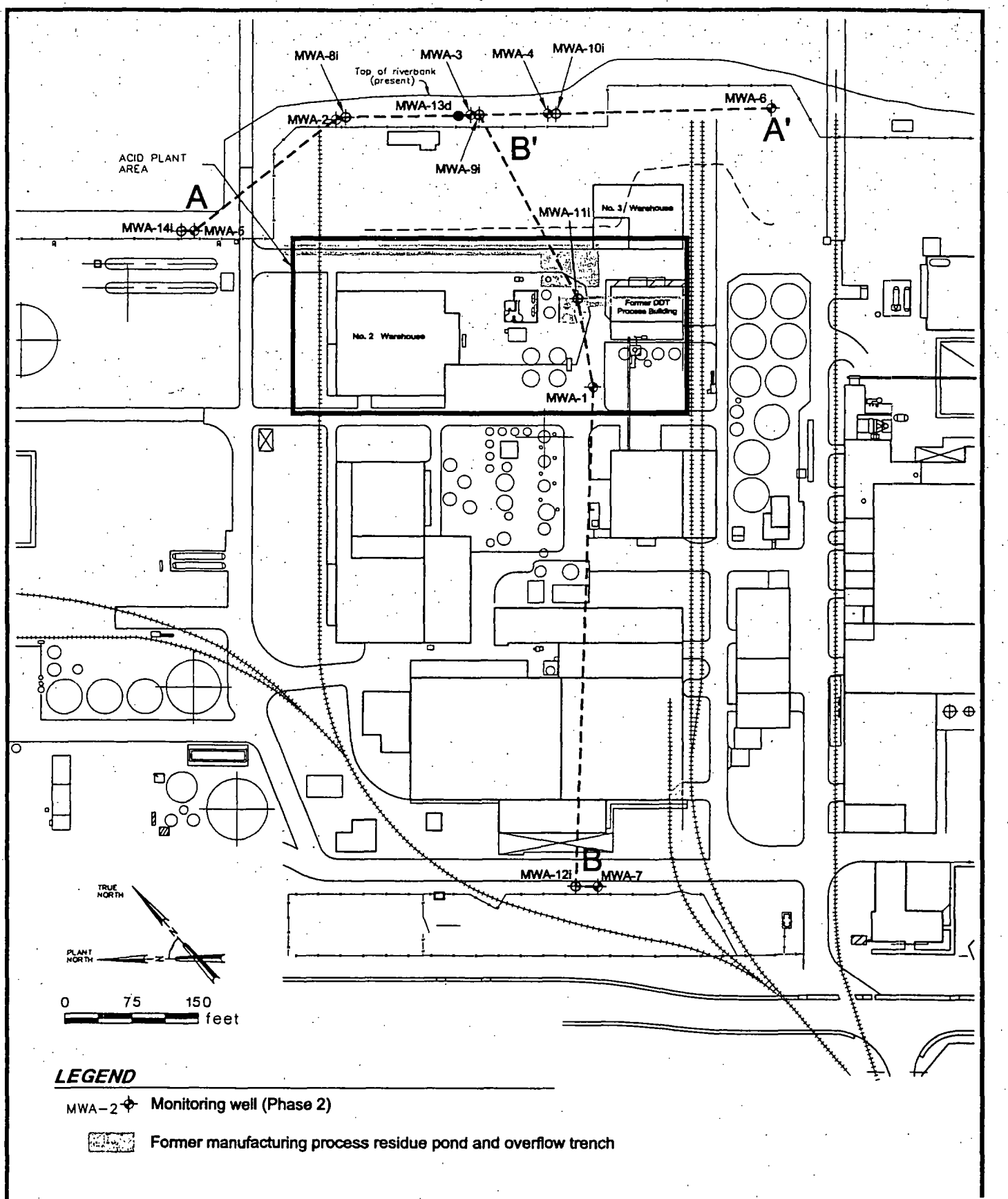

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Figure 7. Cross-section locations.

CBA20301\X-LOCS.dwg 06/19/99 OR

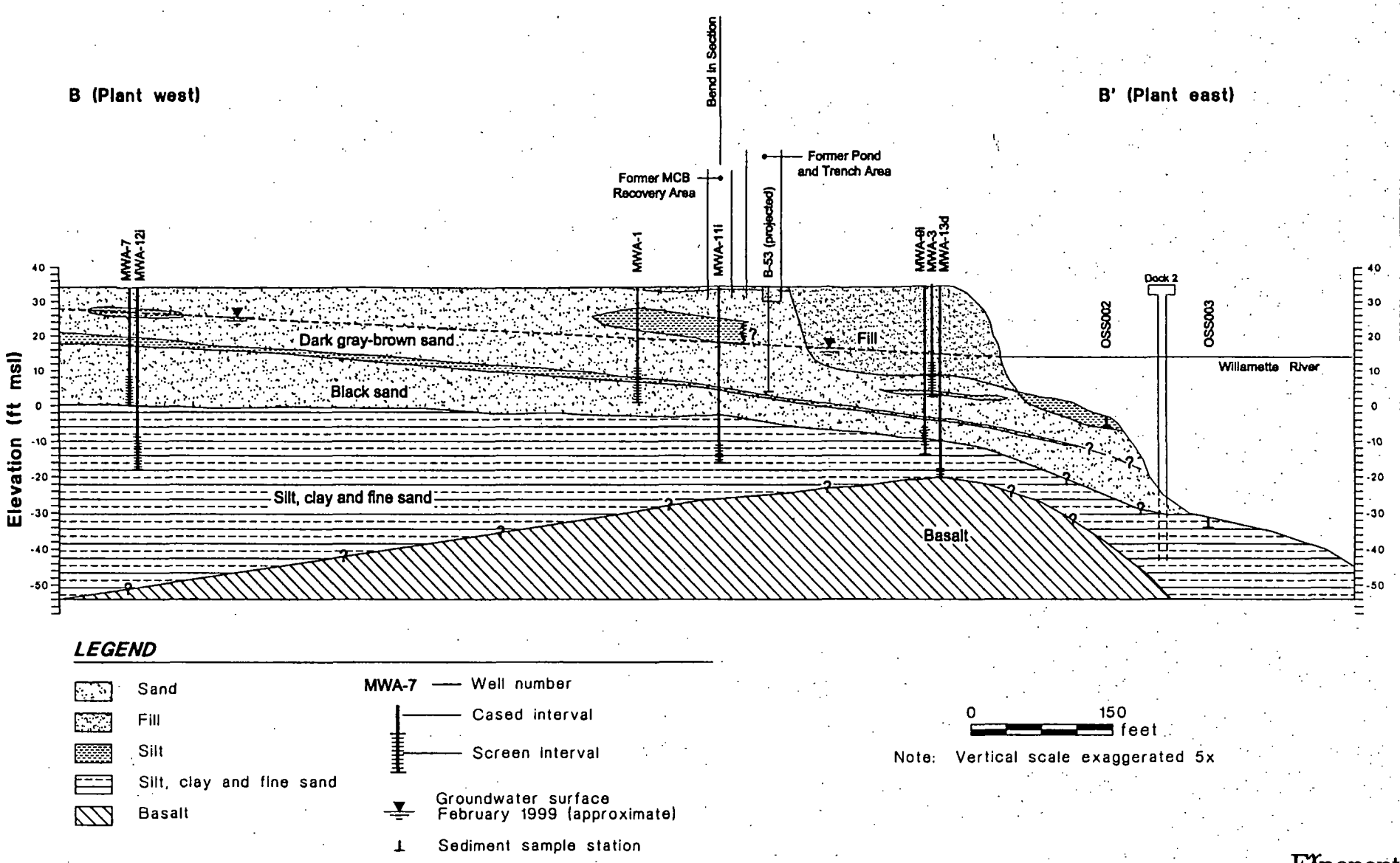

Figure 8. Plant west-east cross-section.

8601192.001.0612\SN-XSXN.dwg 06/21/99 OR

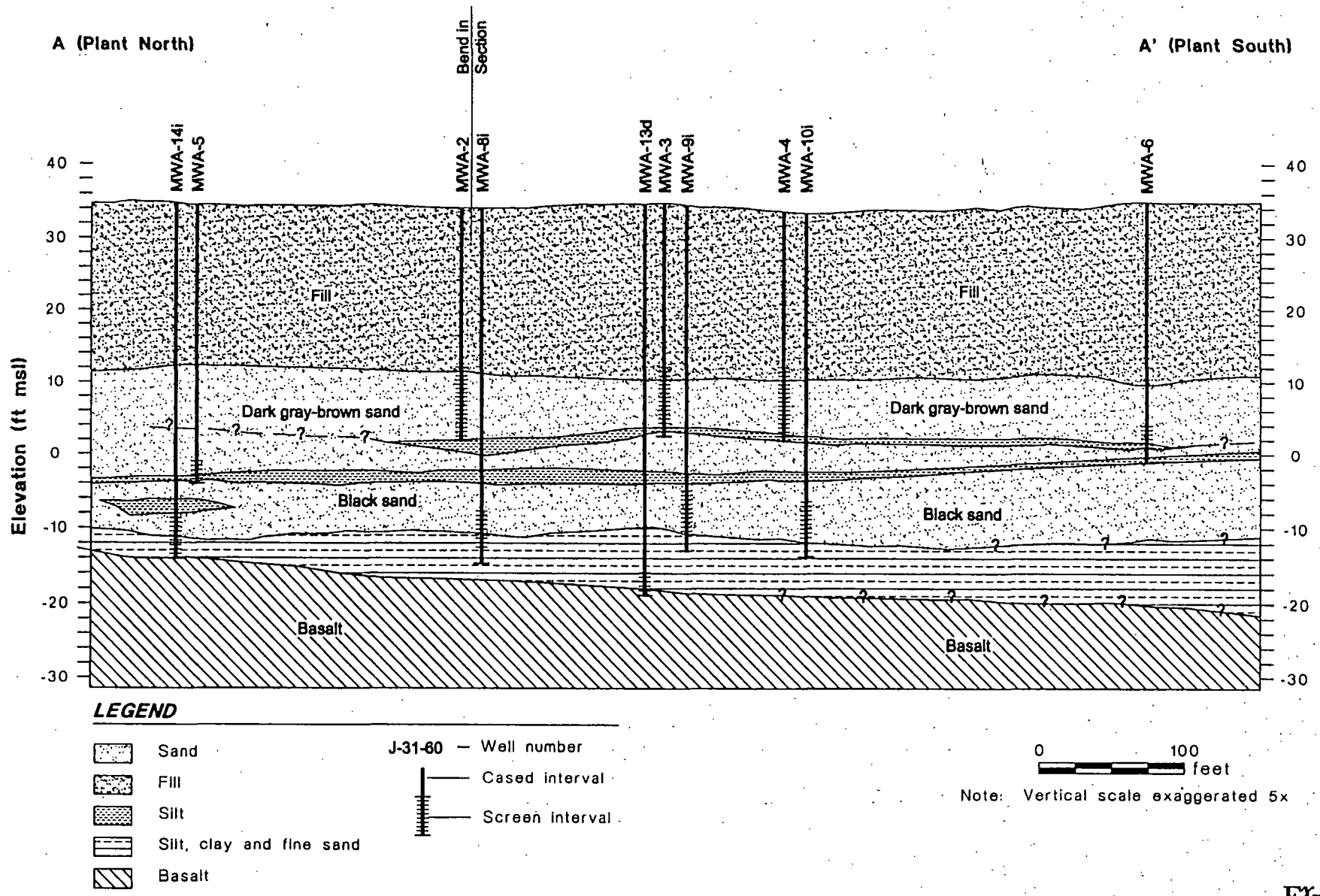

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Figure 9. Plant north-south cross-section.

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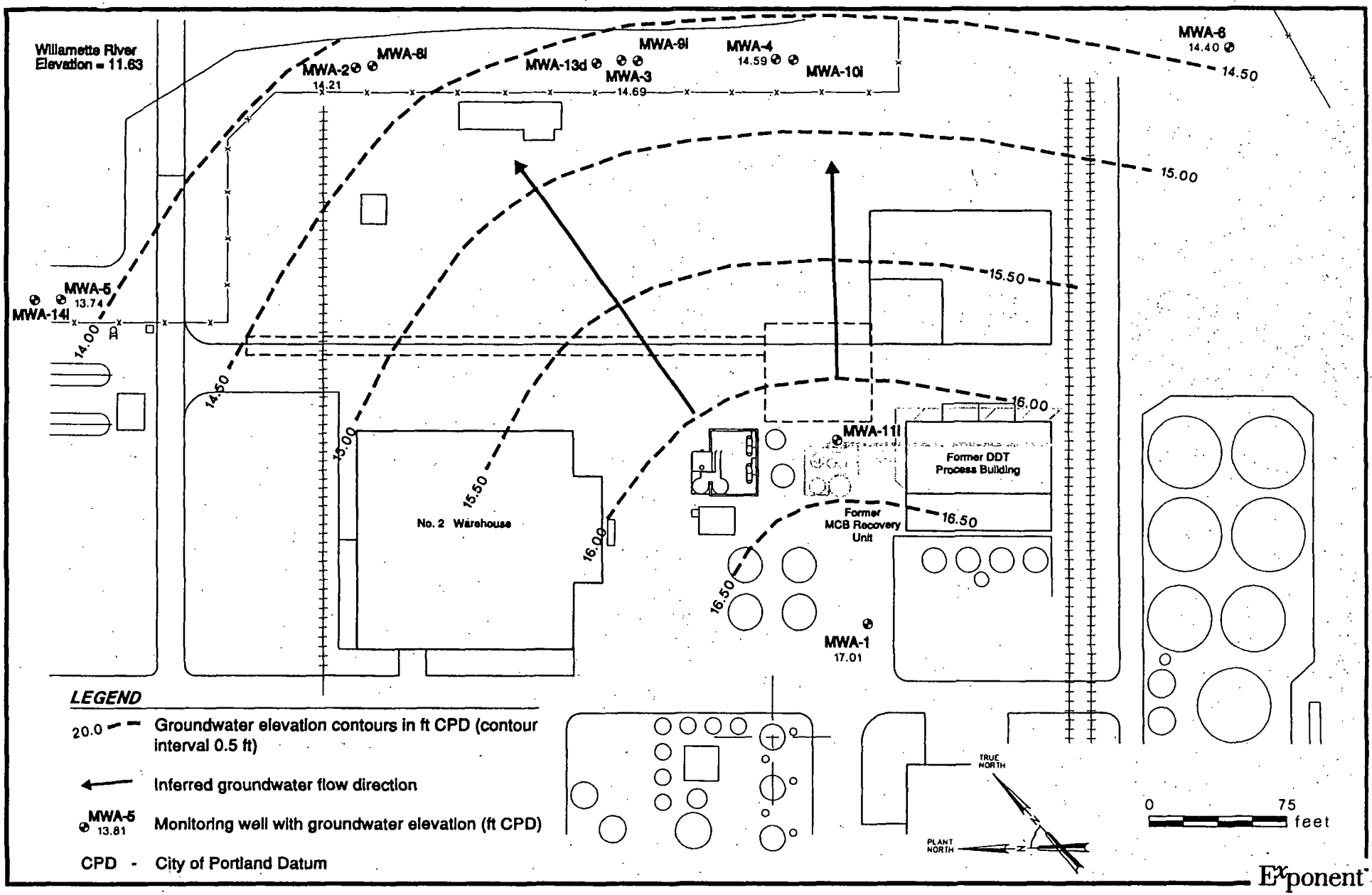

Figure 10. Shallow-zone groundwater elevations - February 1999.

CBA20301\S-ZONE.dwg 06/22/99 OR

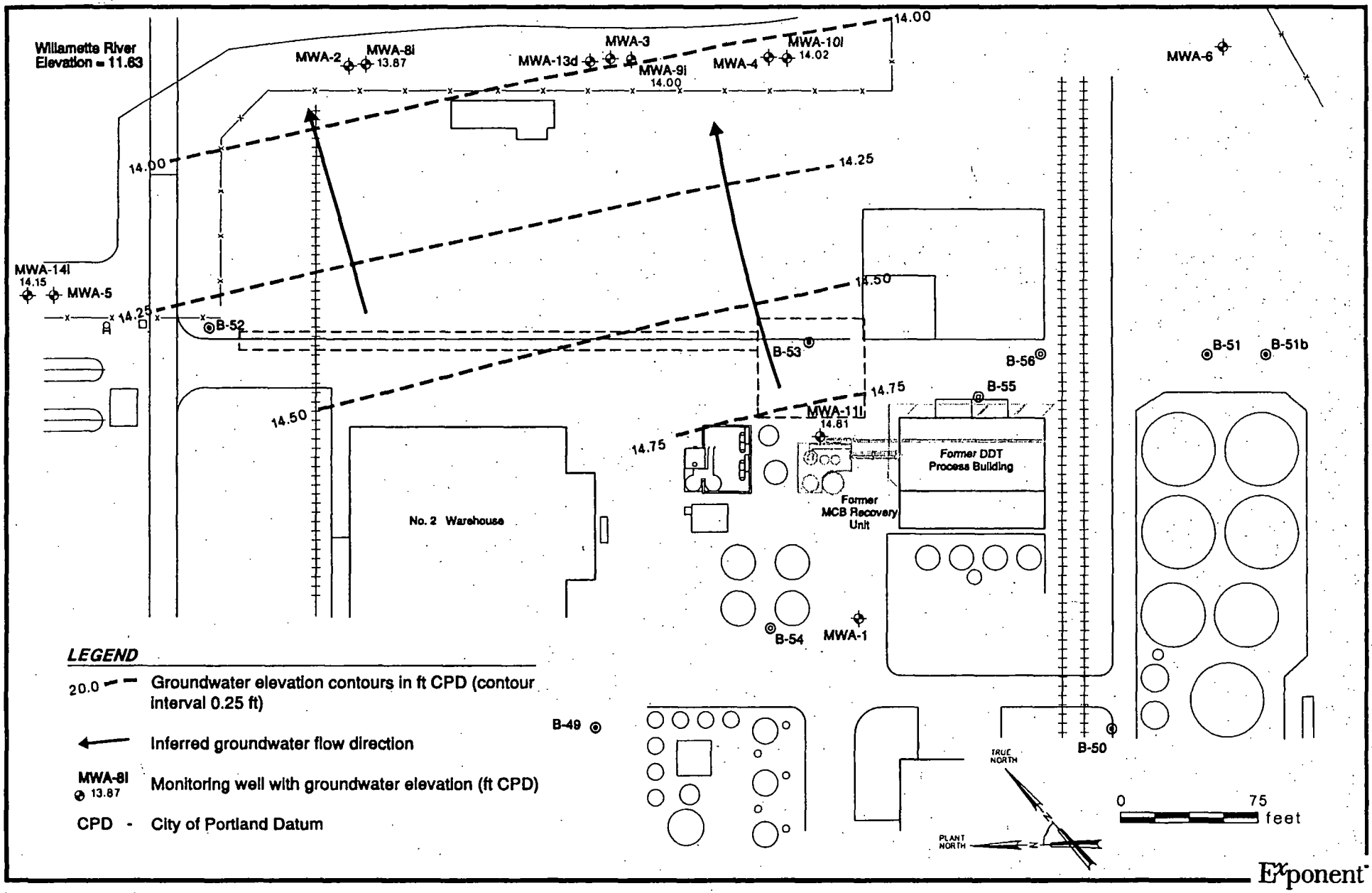

Figure 11. Intermediate-zone groundwater elevations - February 1999.

CBA20301\I-ZONE.dwg 06/22/99 OR

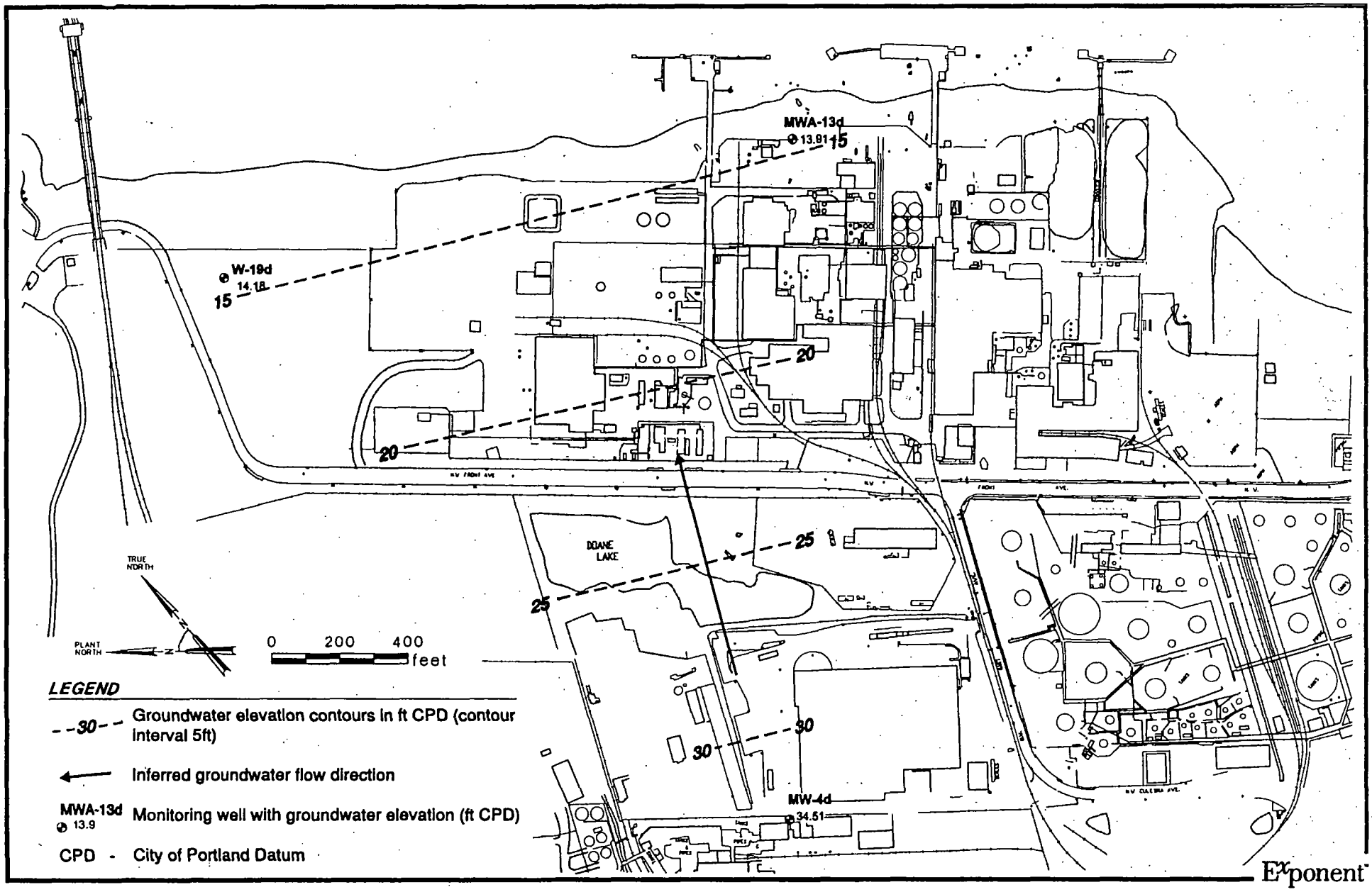

Figure 12. Deep-zone groundwater elevations - February 1999.

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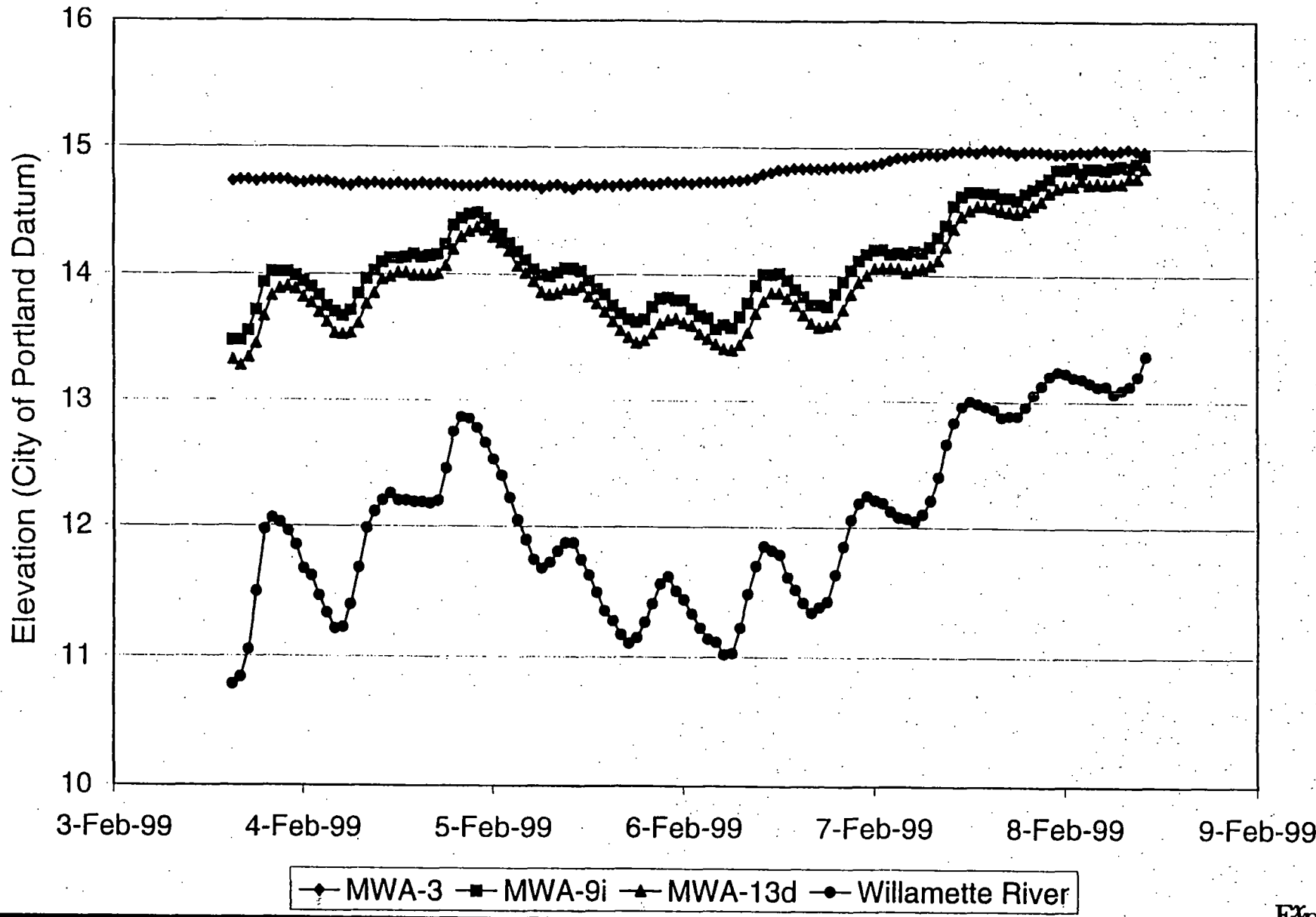

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Figure 13. Shallow-, intermediate-, and deep-zone groundwater hydrograph-February 1999.

CBA20301\LAN frame.dwg 06/8/99 OR

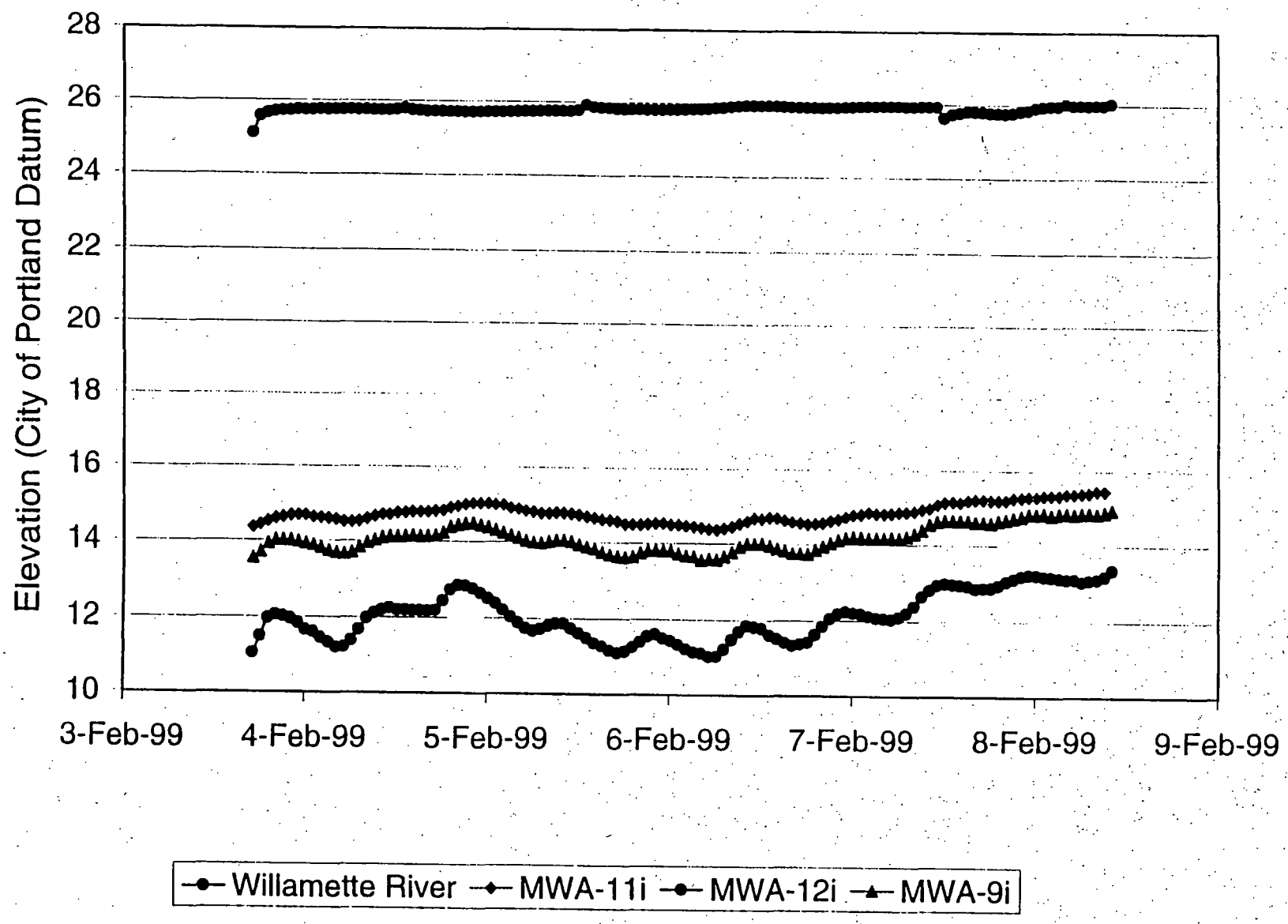

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Figure 14. Intermediate-zone groundwater hydrograph-February 1999.

CBA20301\LAN frame2.dwg 06/8/99 OR

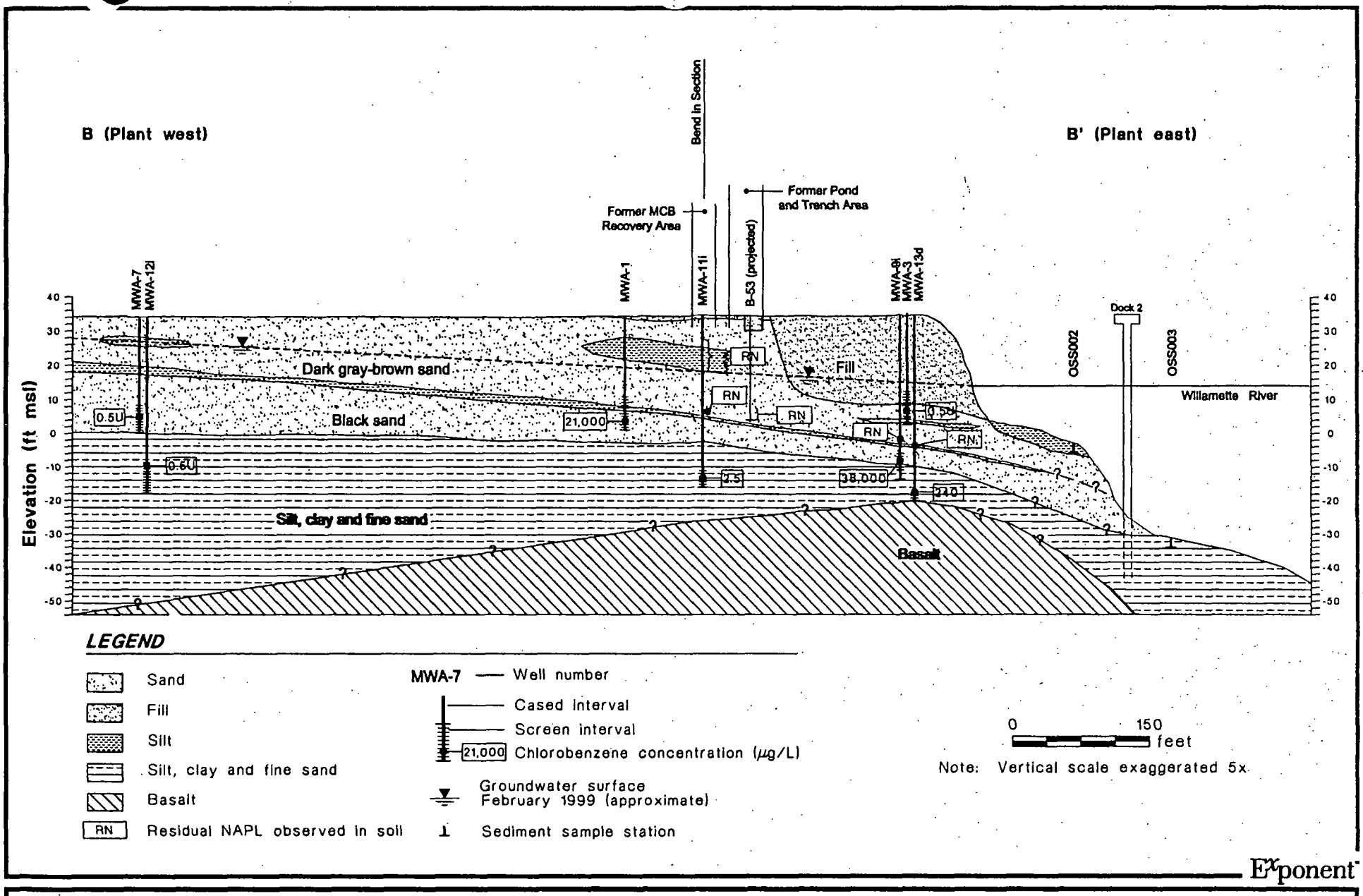

Figure 15. NAPL presence and chlorobenzene concentrations in plant west-east cross-section.

8601192.001.0612\SN-NAPL.dwg 06/21/99 OR

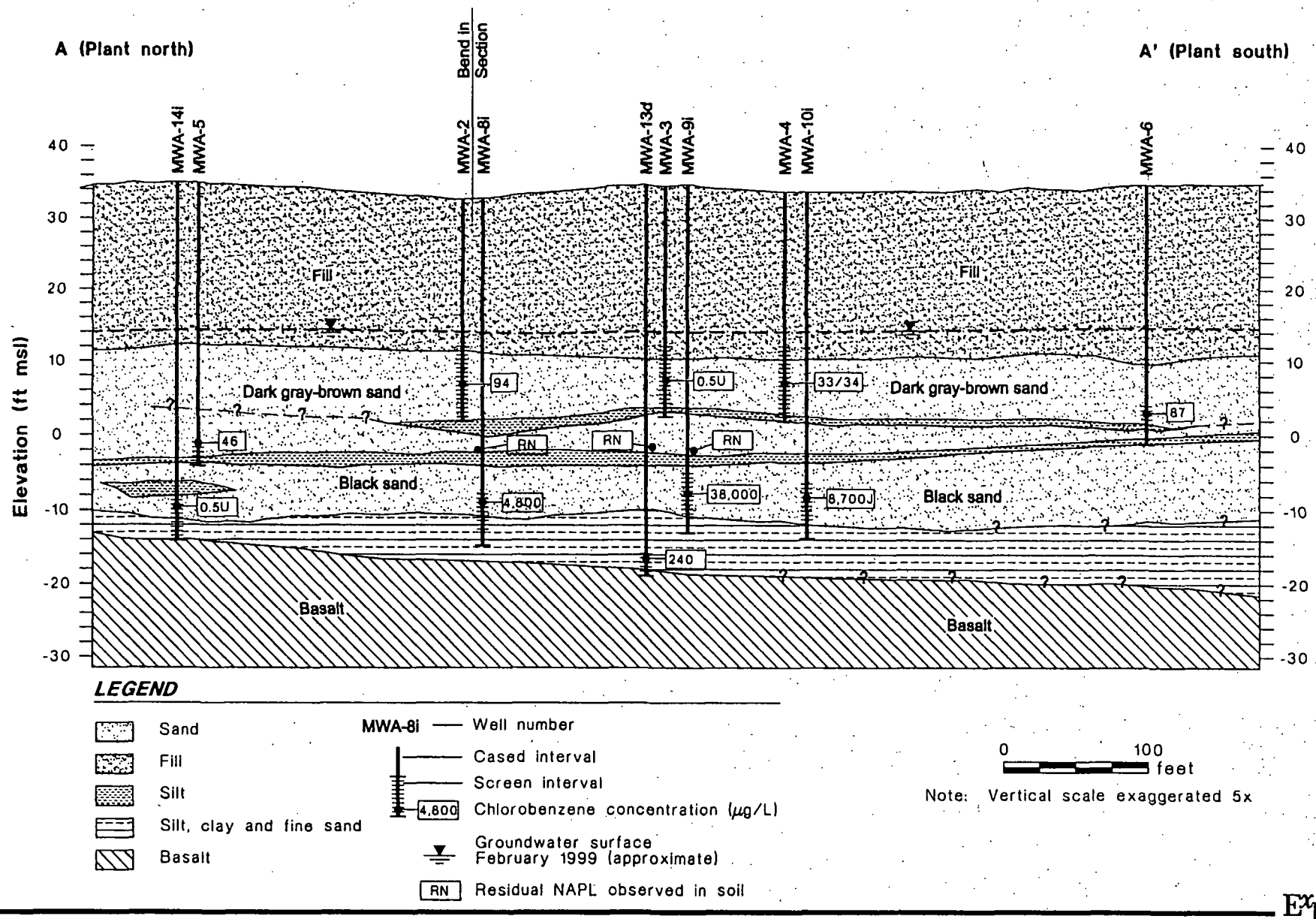

Figure 16. NAPL presence and chlorobenzene concentrations in plant north-south cross-section.

8601192.001.0612\NWSE-NAPL.dwg 06/21/99 OR

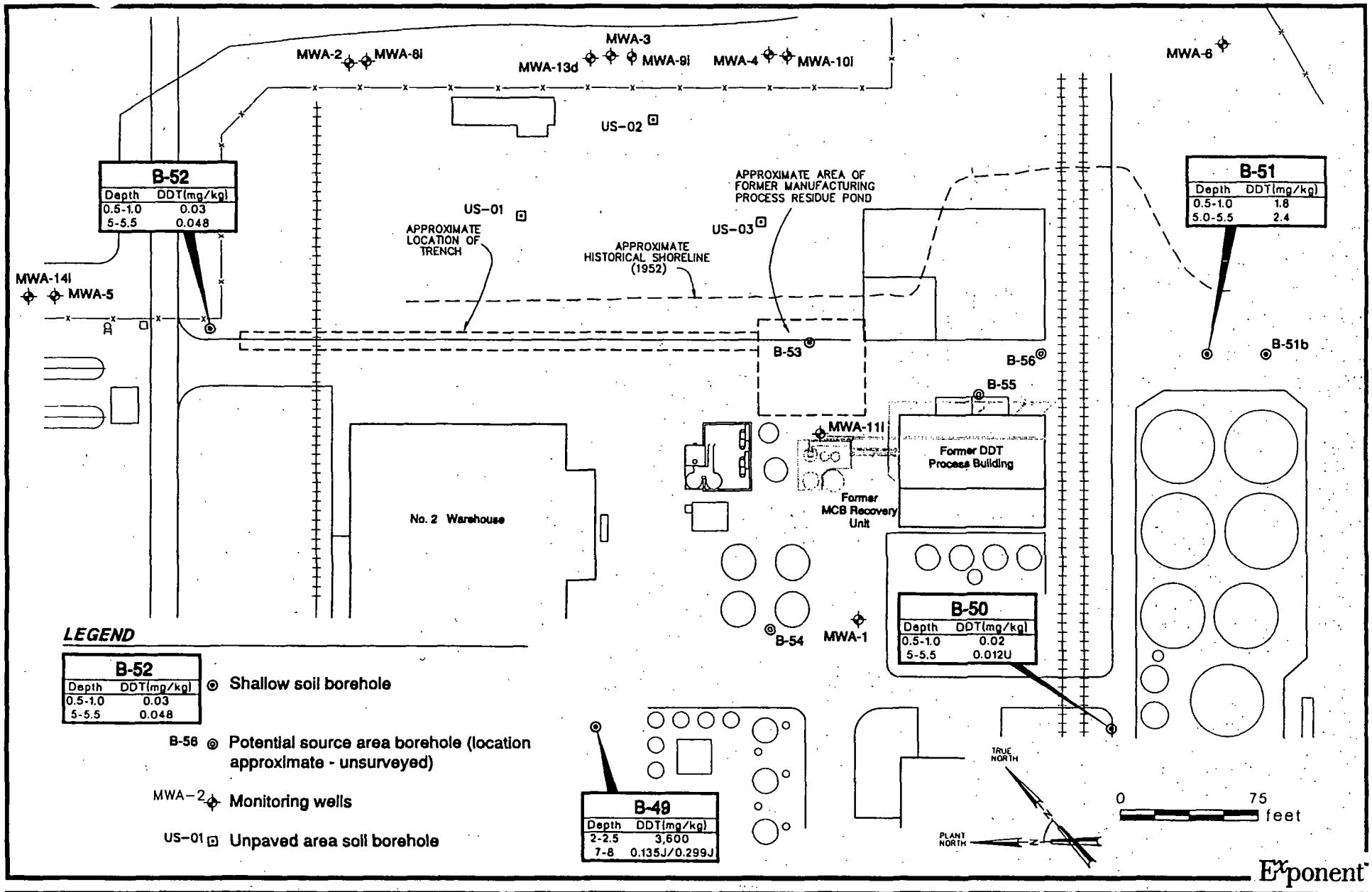

Figure 17. DDT concentrations in perimeter soils.

CBA20301\DDT perimeter.dwg 06/19/99 OR

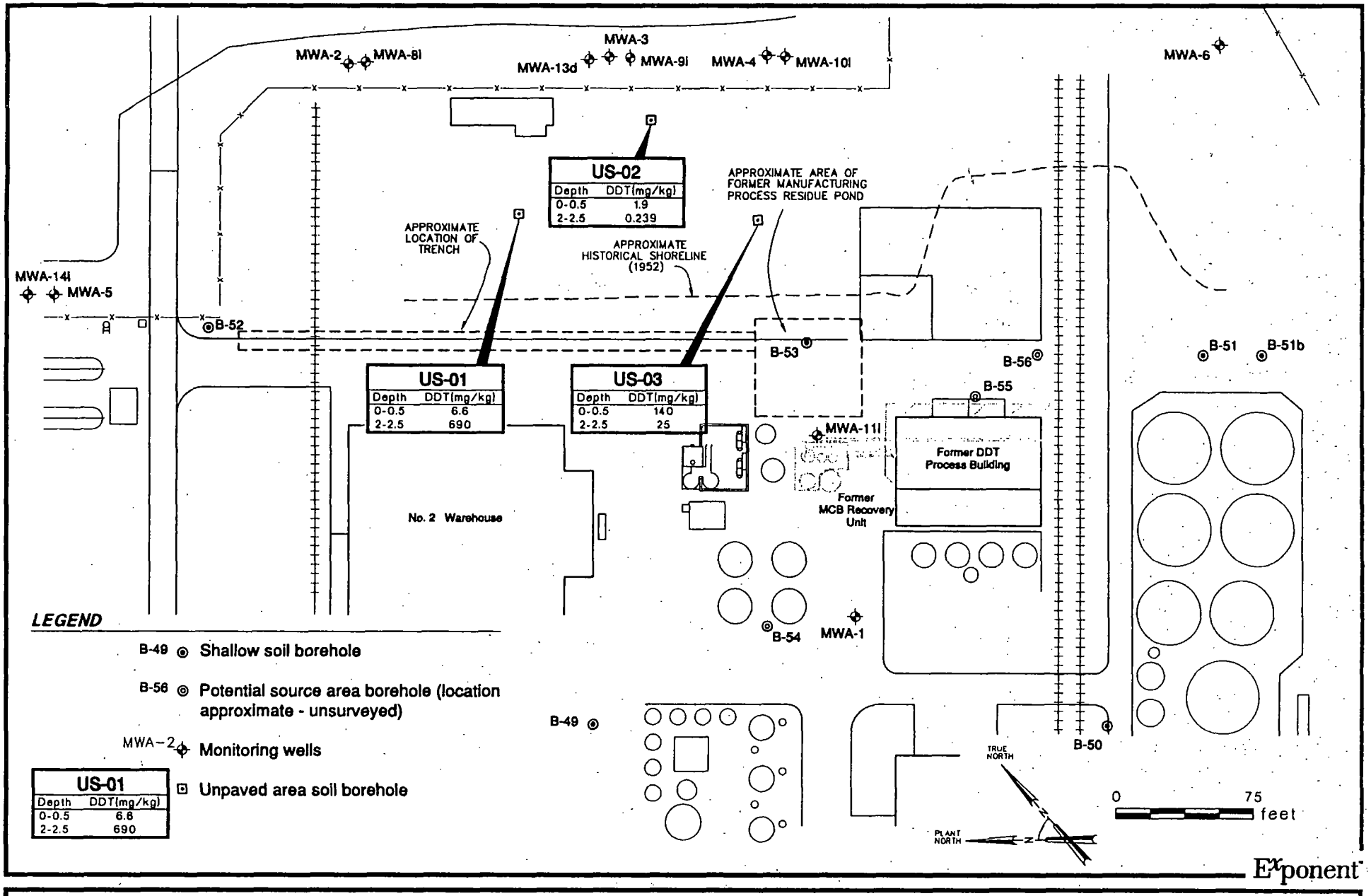

Figure 18. DDT concentrations in unpaved area soils.

CBA20301\DDT unpaved.dwg 06/19/99 OR

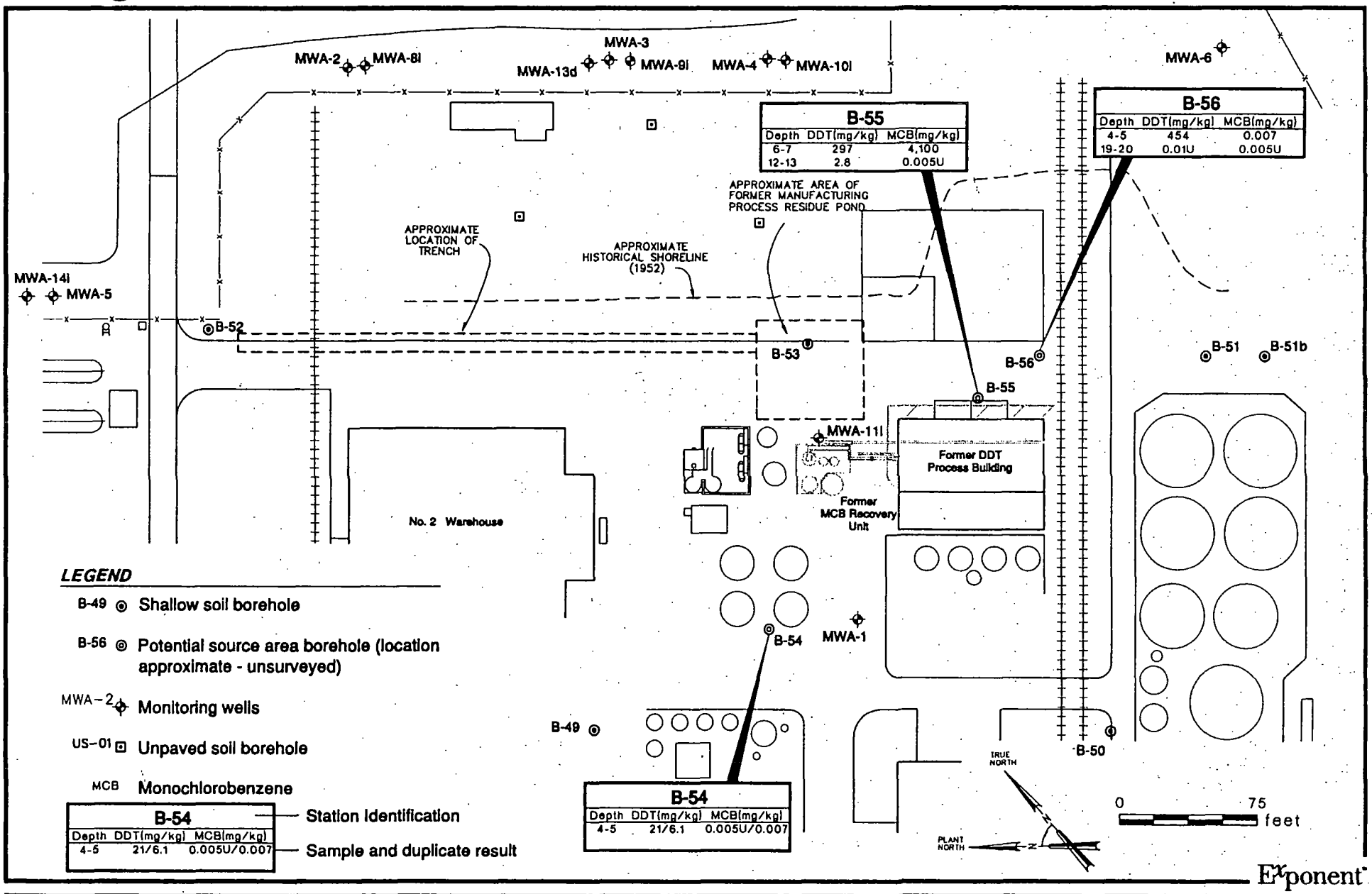

Figure 19. DDT and chlorobenzene concentrations in other potential source area soils.

CBA20301\DDT psas.dwg 06/21/99 OR

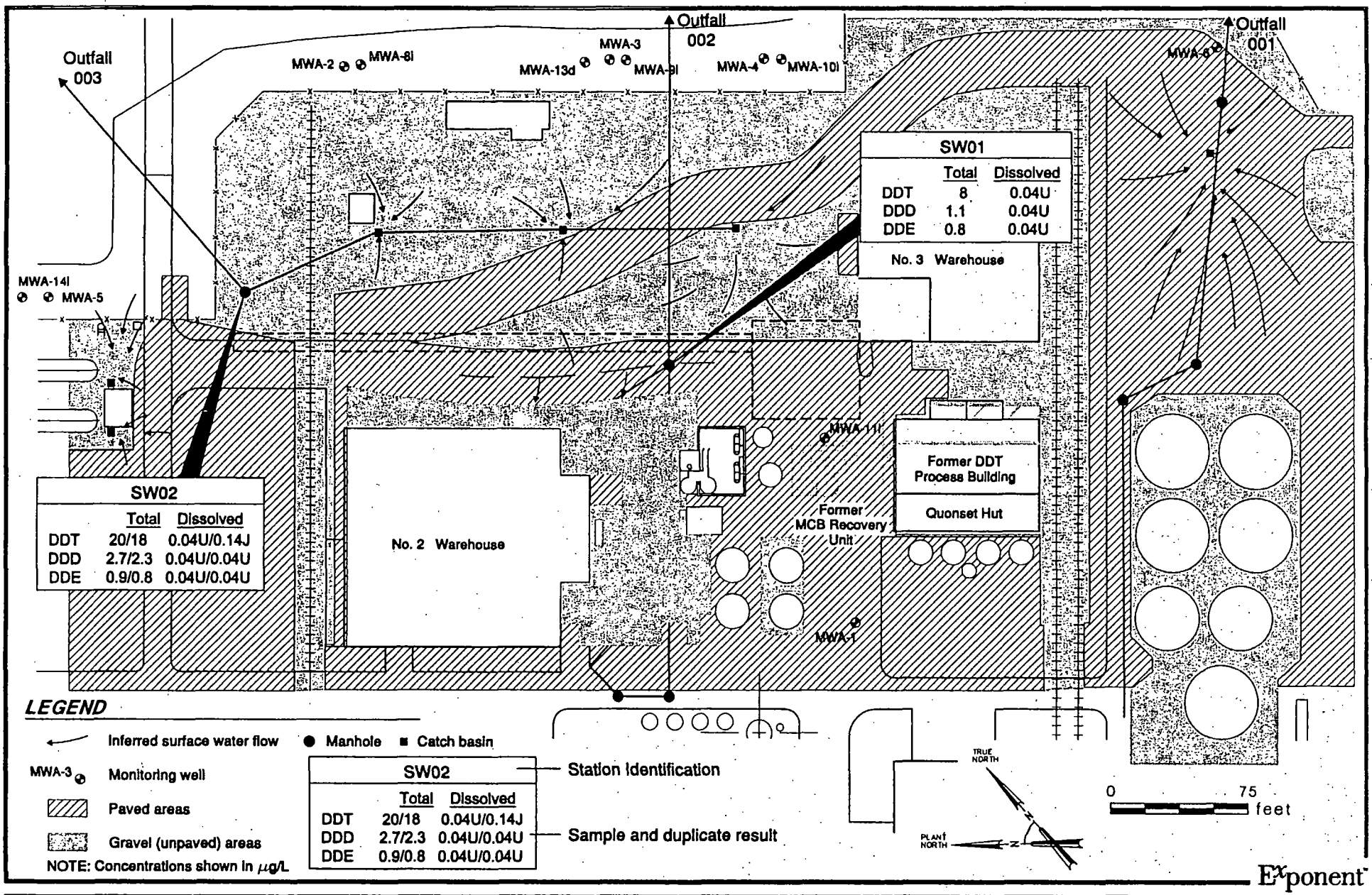

Figure 20. DDT, DDD, and DDE concentrations in storm water runoff.

8601192.001.0612\STORM.dwg 06/21/99 OR

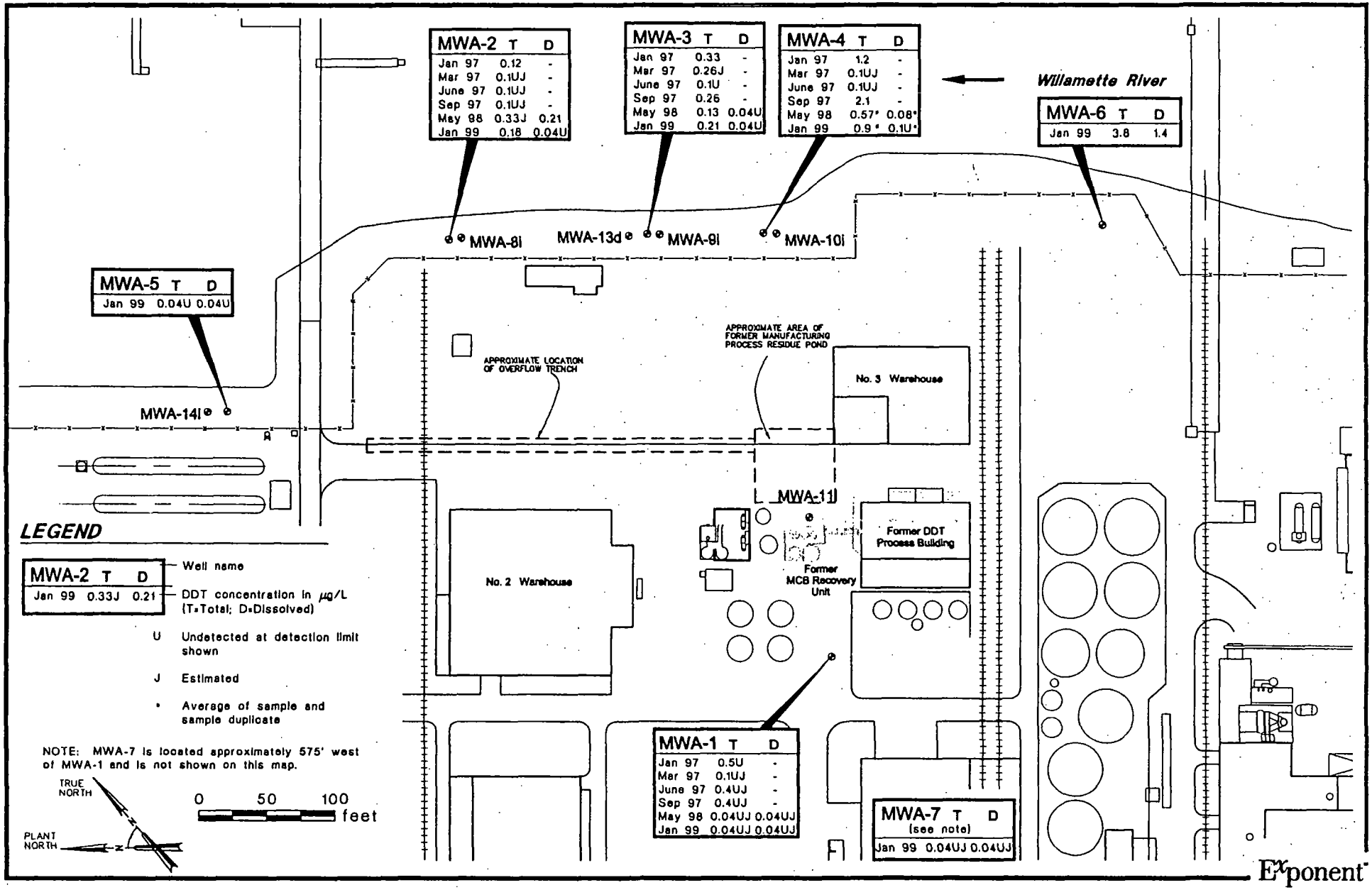

Figure 21. DDT concentrations in shallow groundwater.

CBA20201\S-DDT.dwg 06/19/99 OR

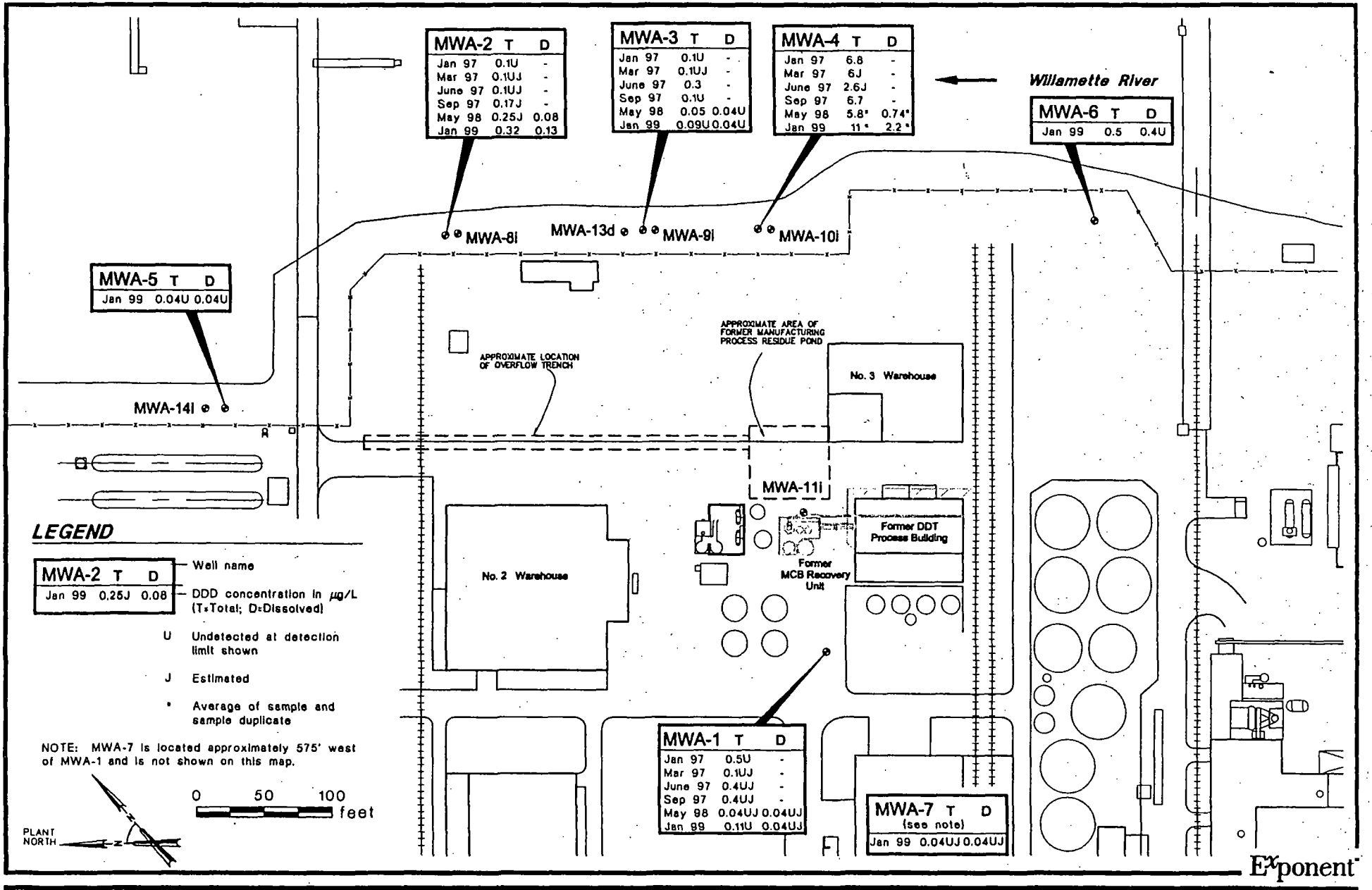

Figure 22. DDD concentrations in shallow groundwater.

CBA20201\S-DDD.dwg 06/19/99 OR

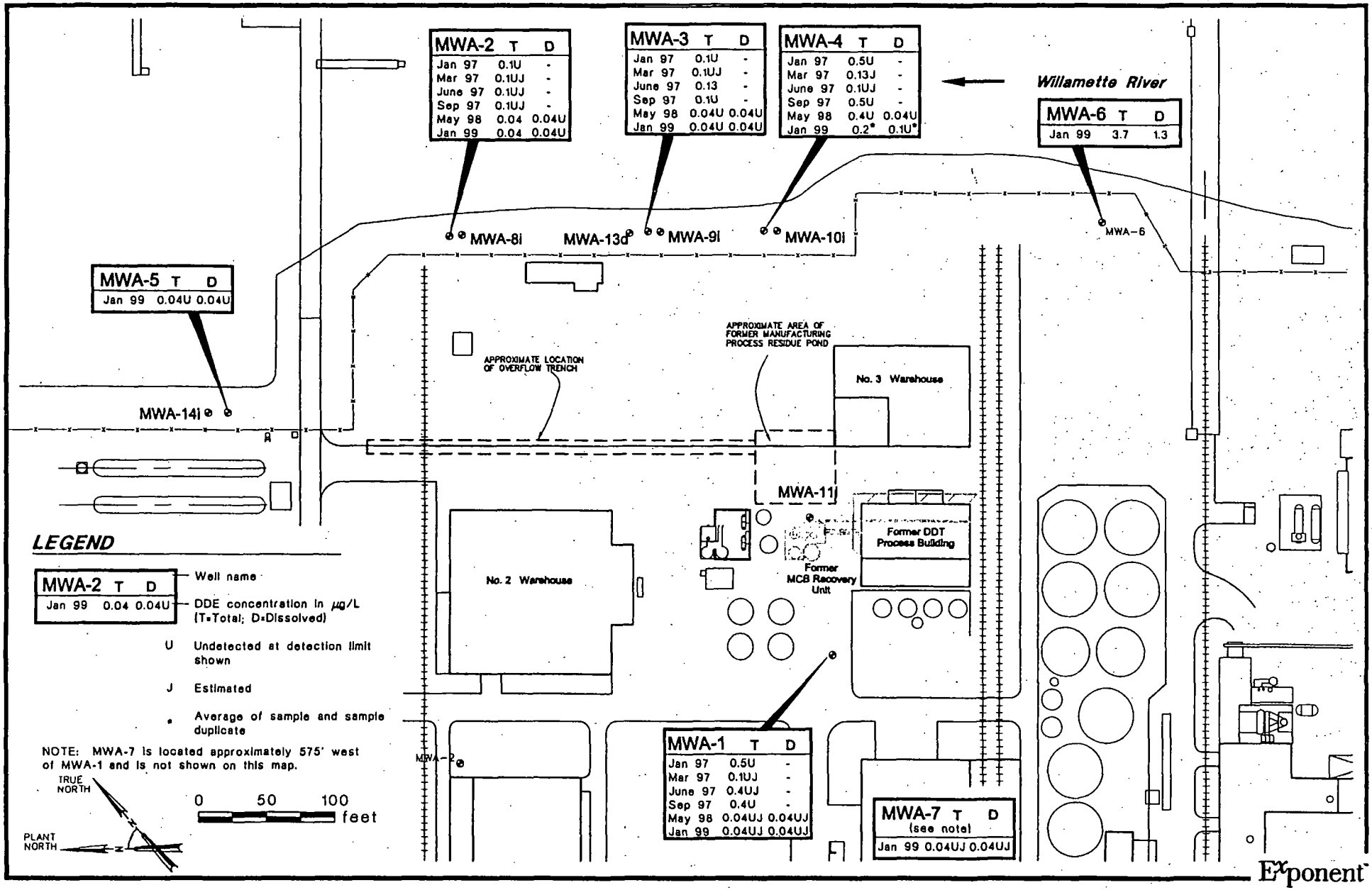

Figure 23. DDE concentrations in shallow groundwater.

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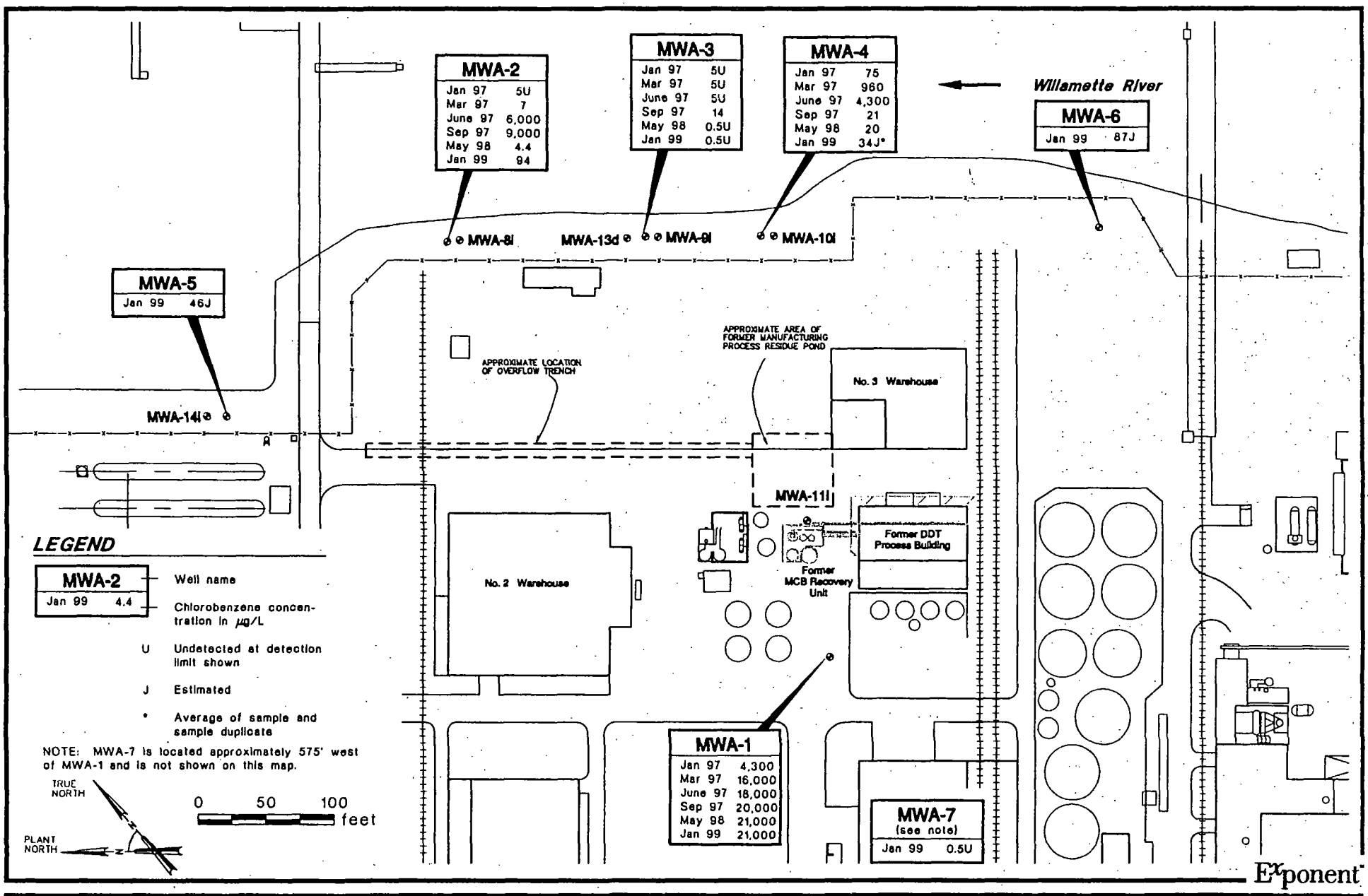

Figure 24. Chlorobenzene concentrations in shallow groundwater.

CBA20201\S-CHLBENZ.dwg 06/19/99 OR

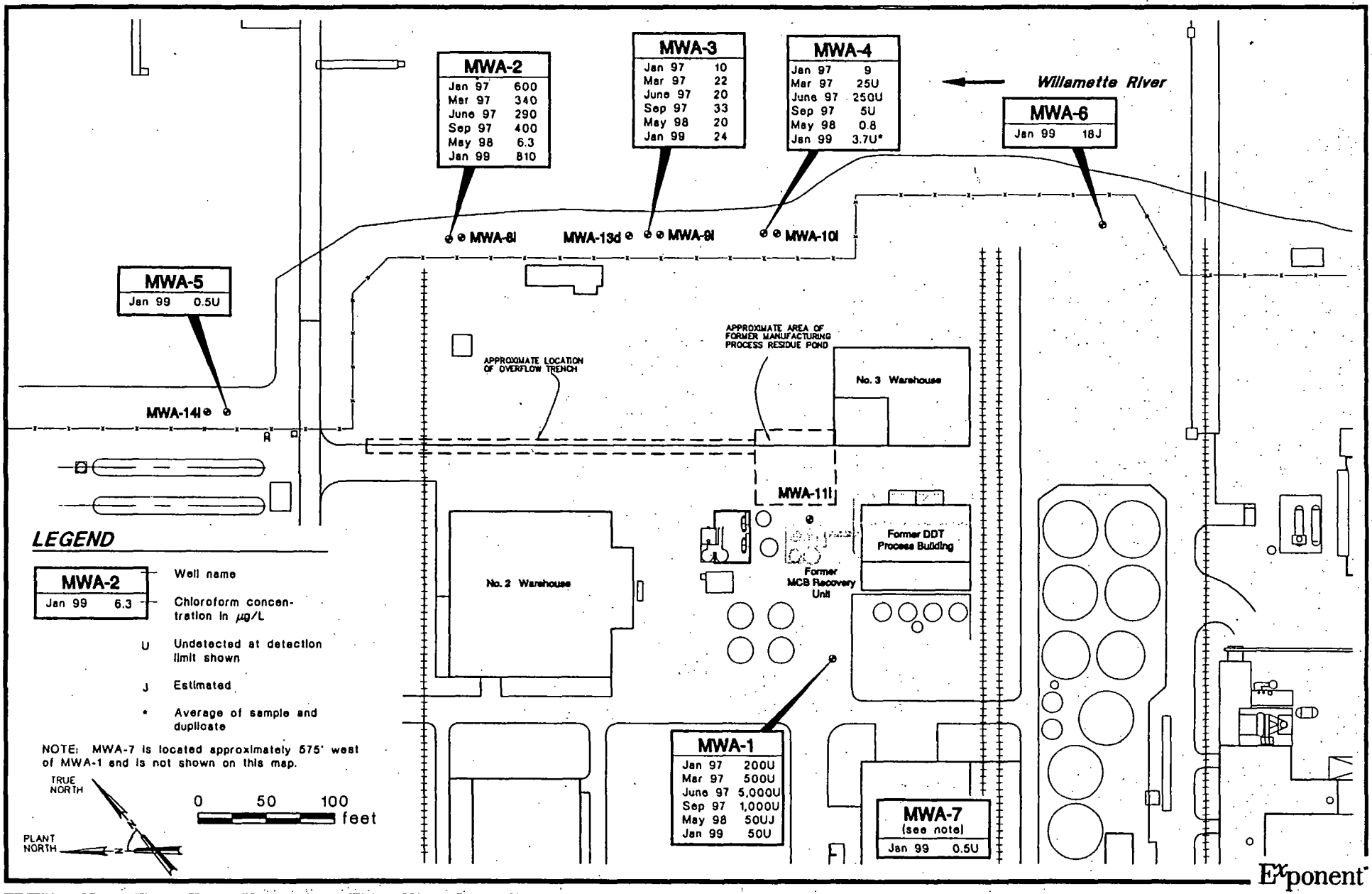

Figure 25. Chloroform concentrations in shallow groundwater.

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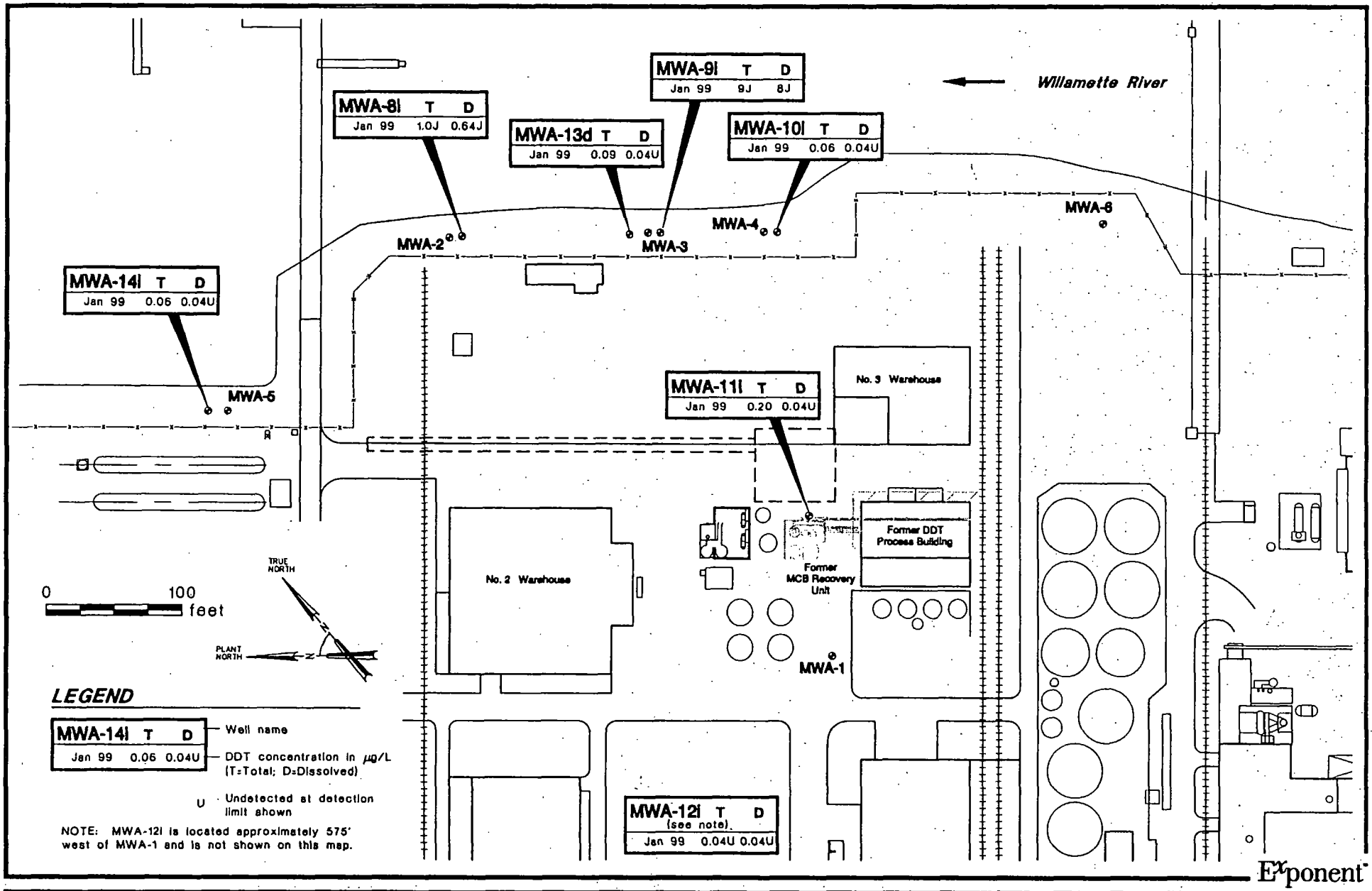

Figure 26. DDT concentrations in intermediate and deeper groundwater.

CBA20301\DDT-int.dwg 06/19/99 OR

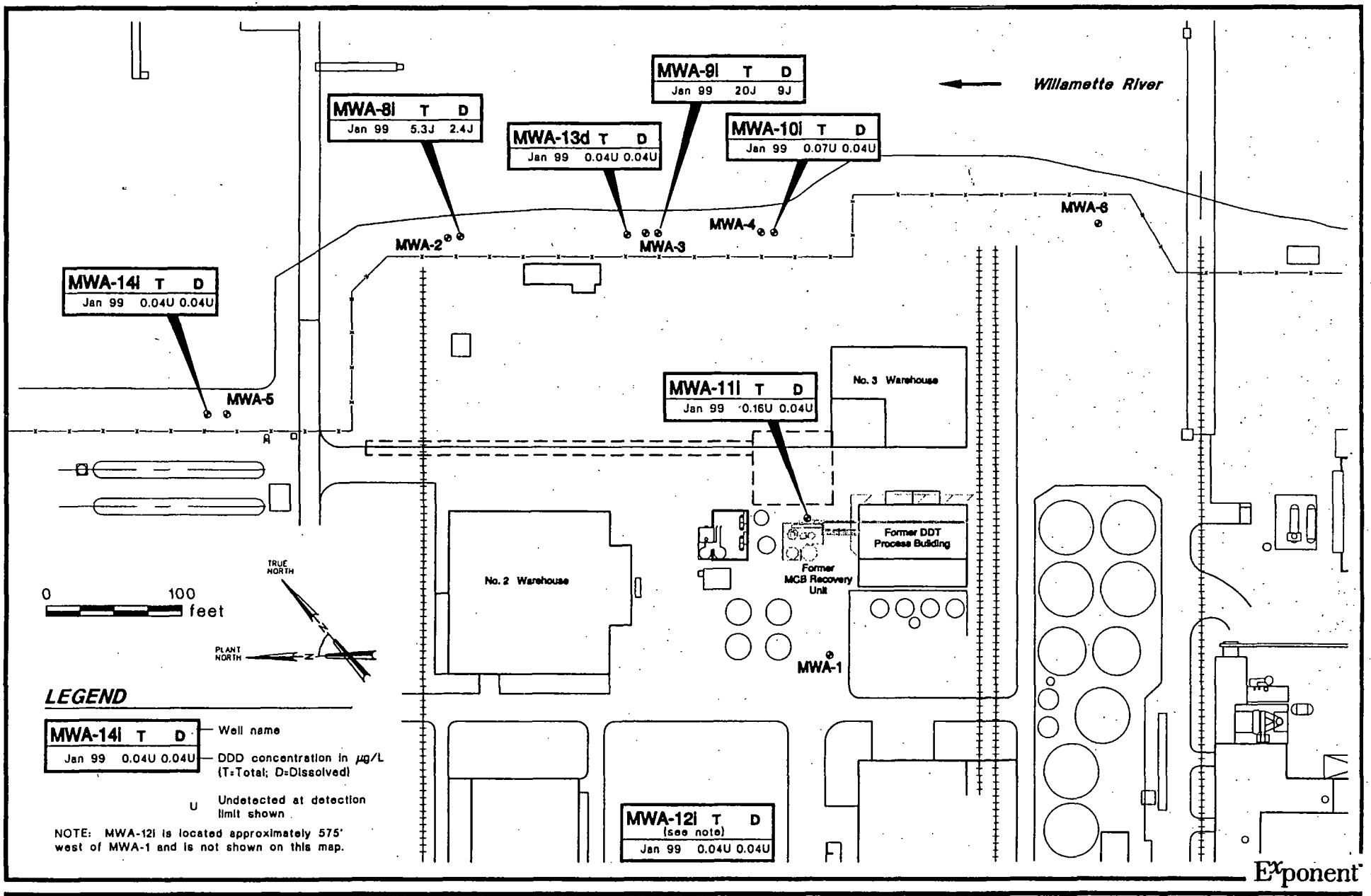

Figure 27. DDD concentrations in intermediate and deeper groundwater.

CBA20301\DDD-int.dwg 06/19/99 OR

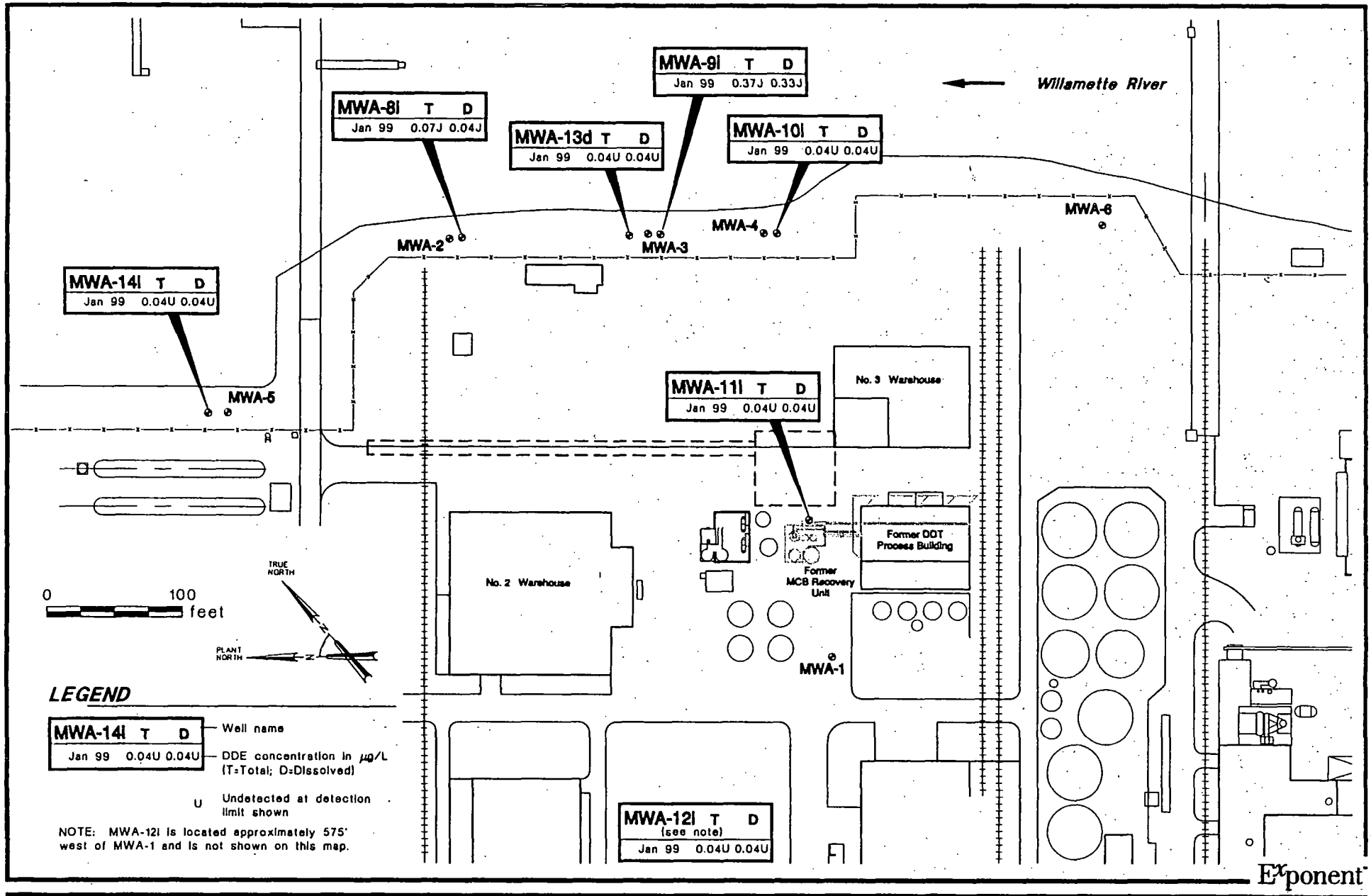

Figure 28. DDE concentrations in intermediate and deeper groundwater.

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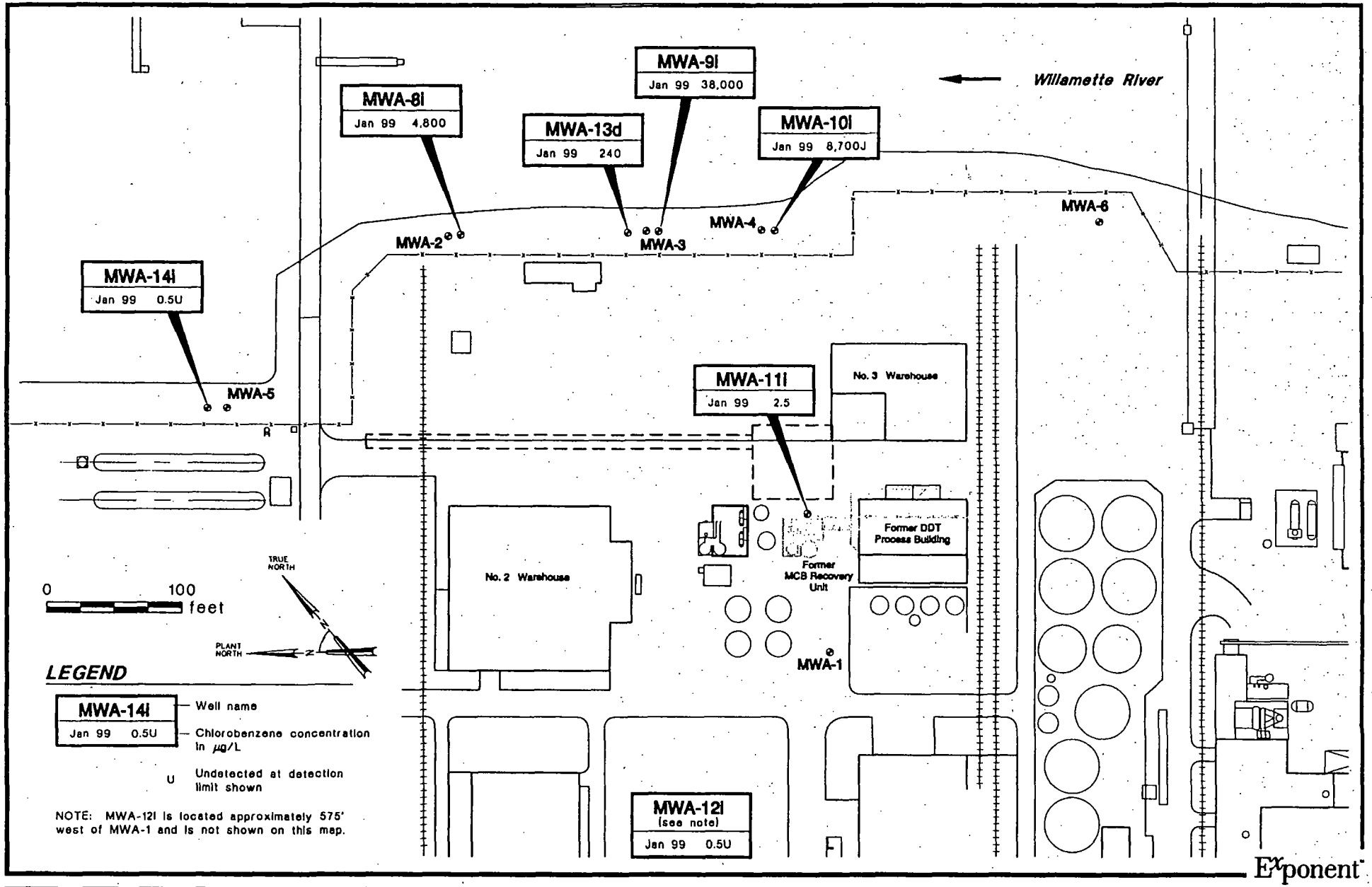

Figure 29. Chlorobenzene concentrations in intermediate and deeper groundwater.

CBA20301\CB-int.dwg 06/19/99 OR

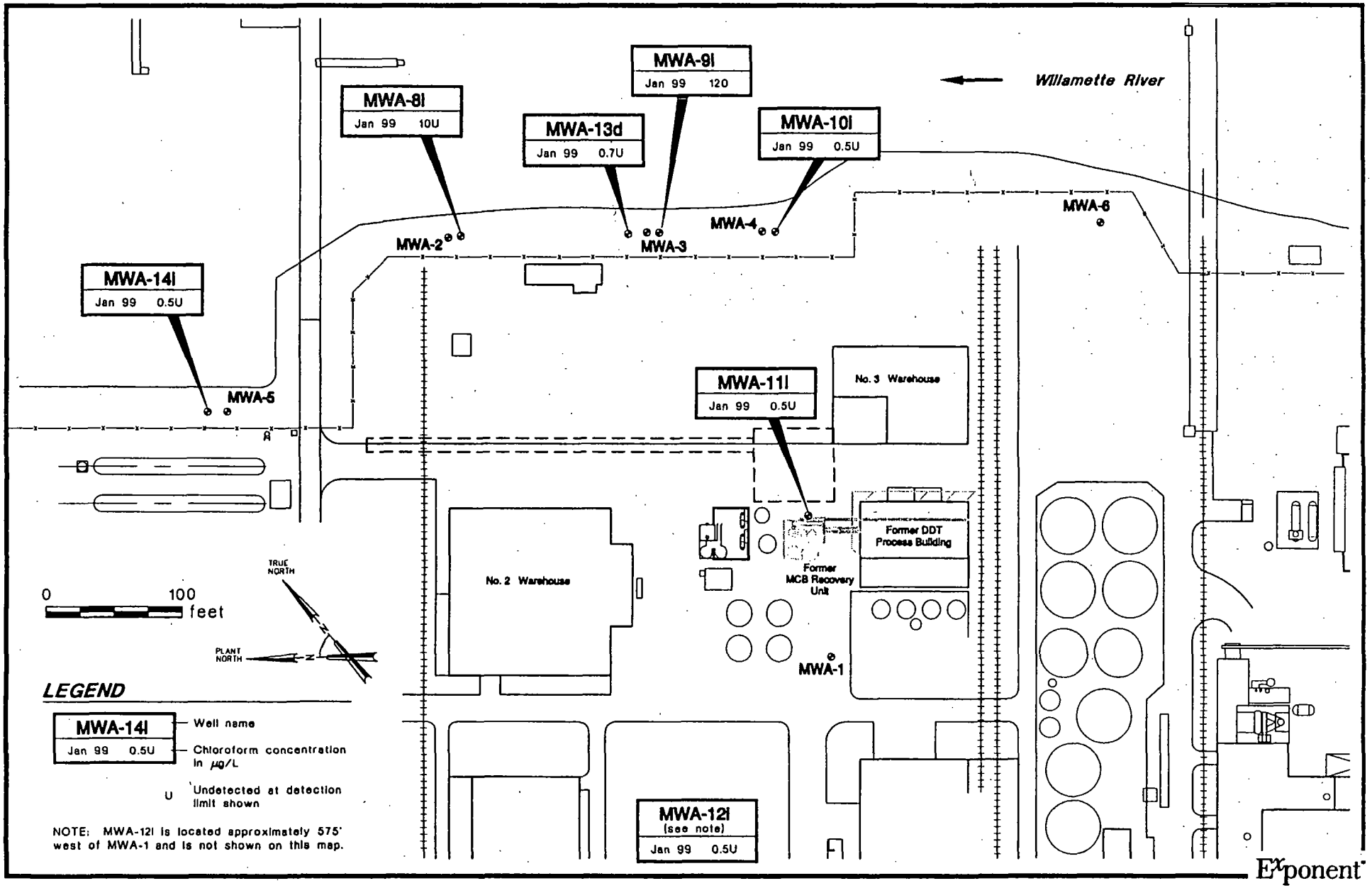

Figure 30. Chloroform concentrations in intermediate and deeper groundwater.

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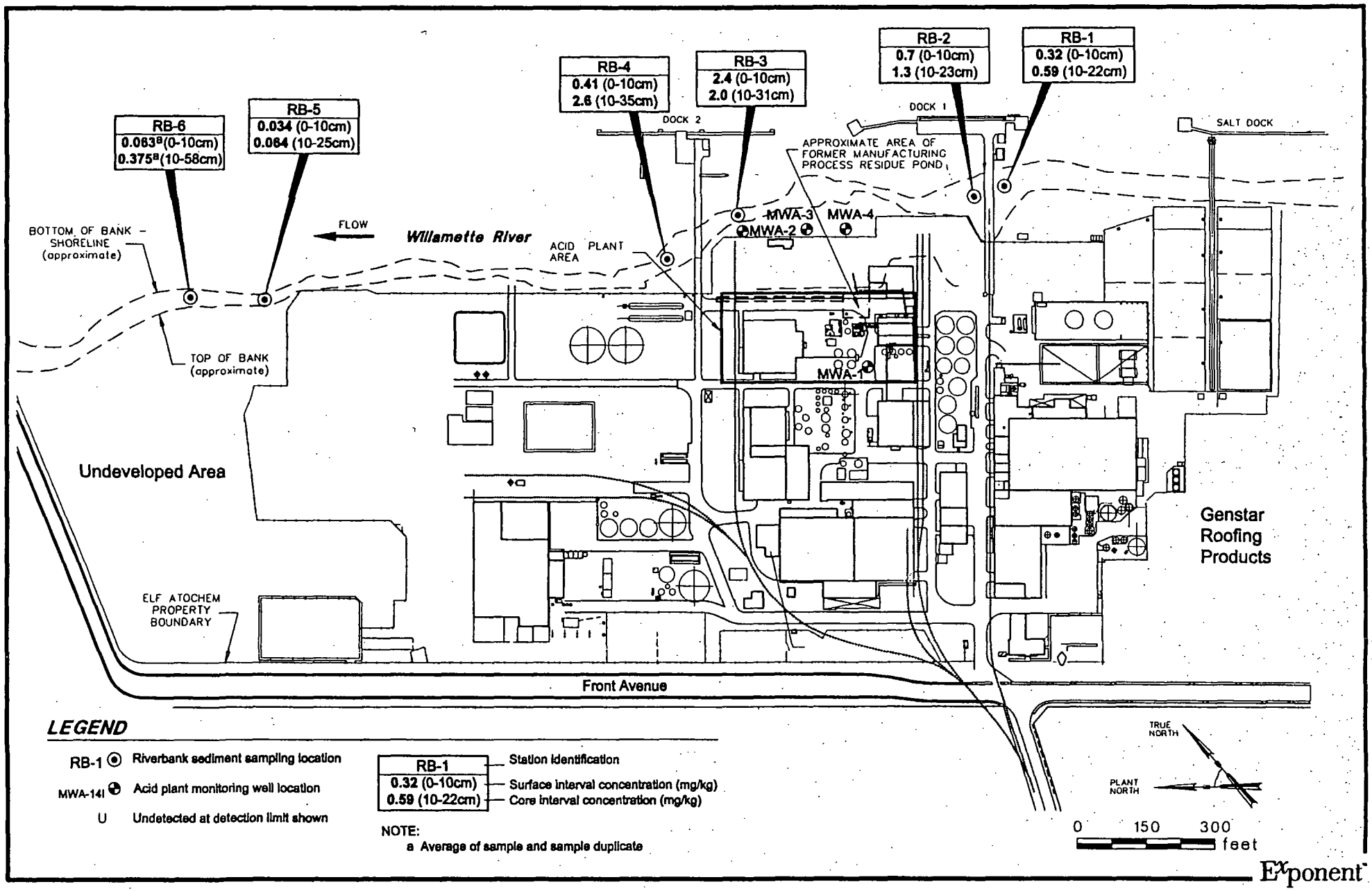

Figure 31. DDT concentrations in riverbank sediments.

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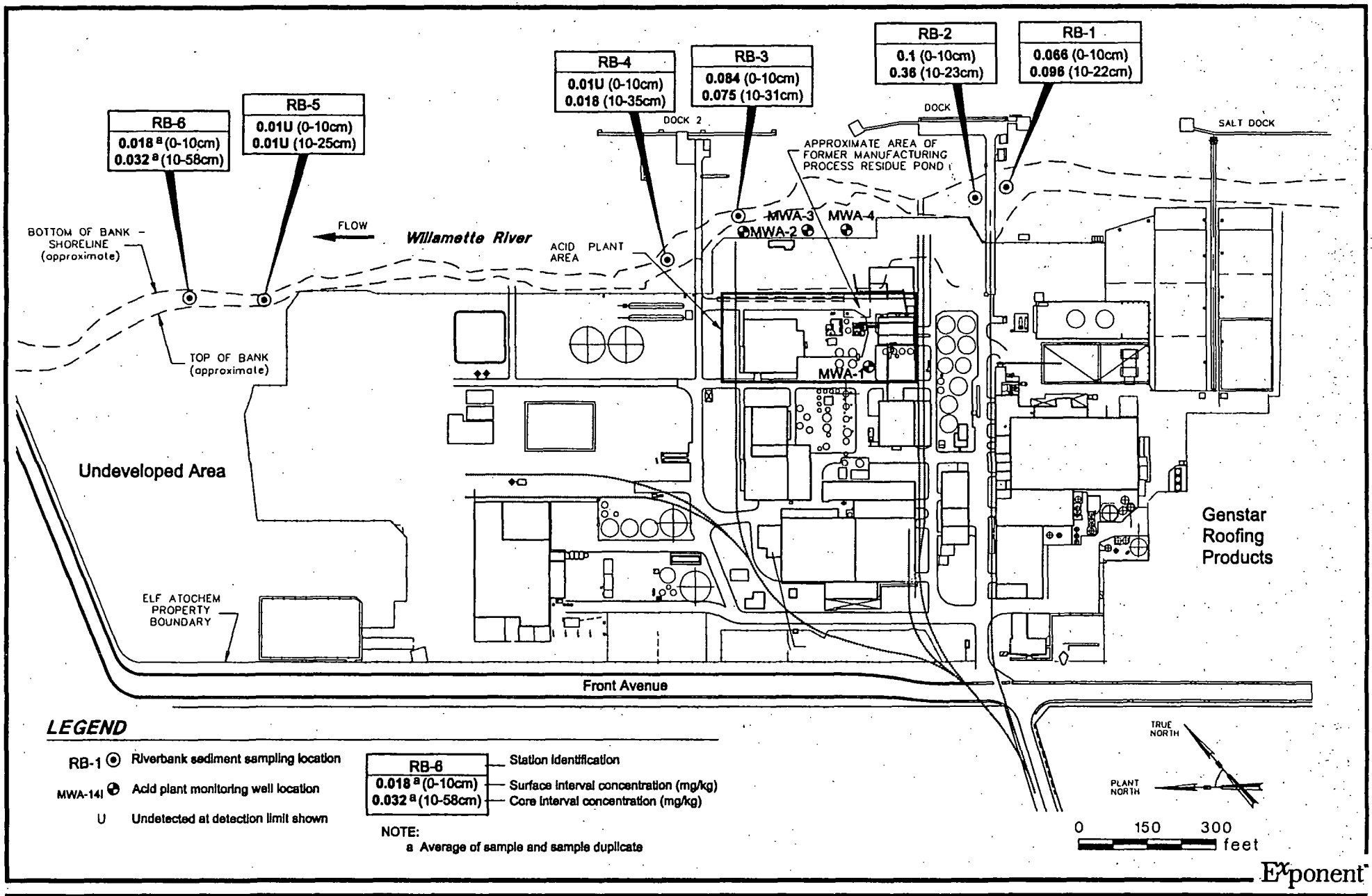

Figure 32. DDD concentrations in riverbank sediments.

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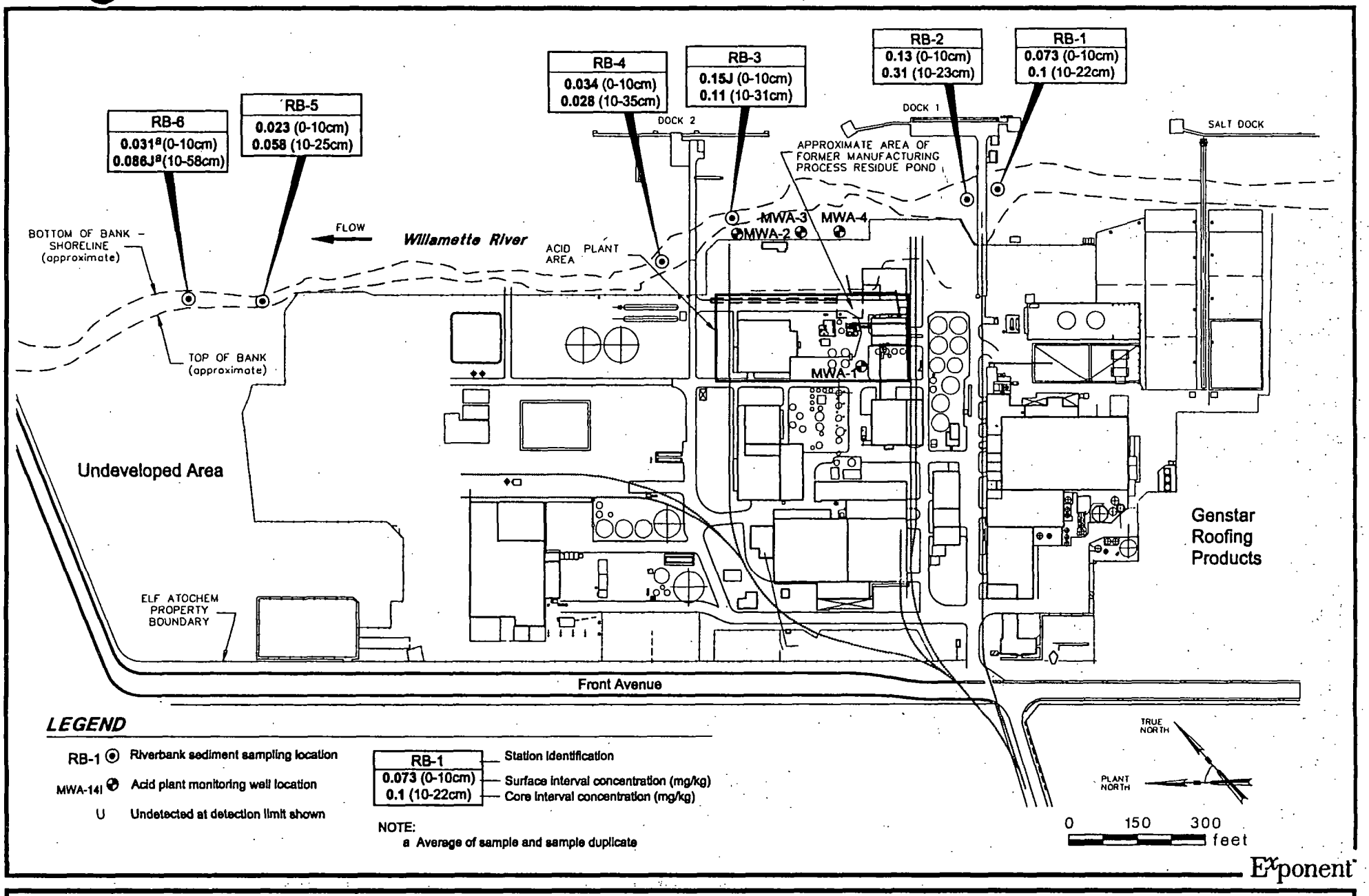

Figure 33. DDE concentrations in riverbank sediments.

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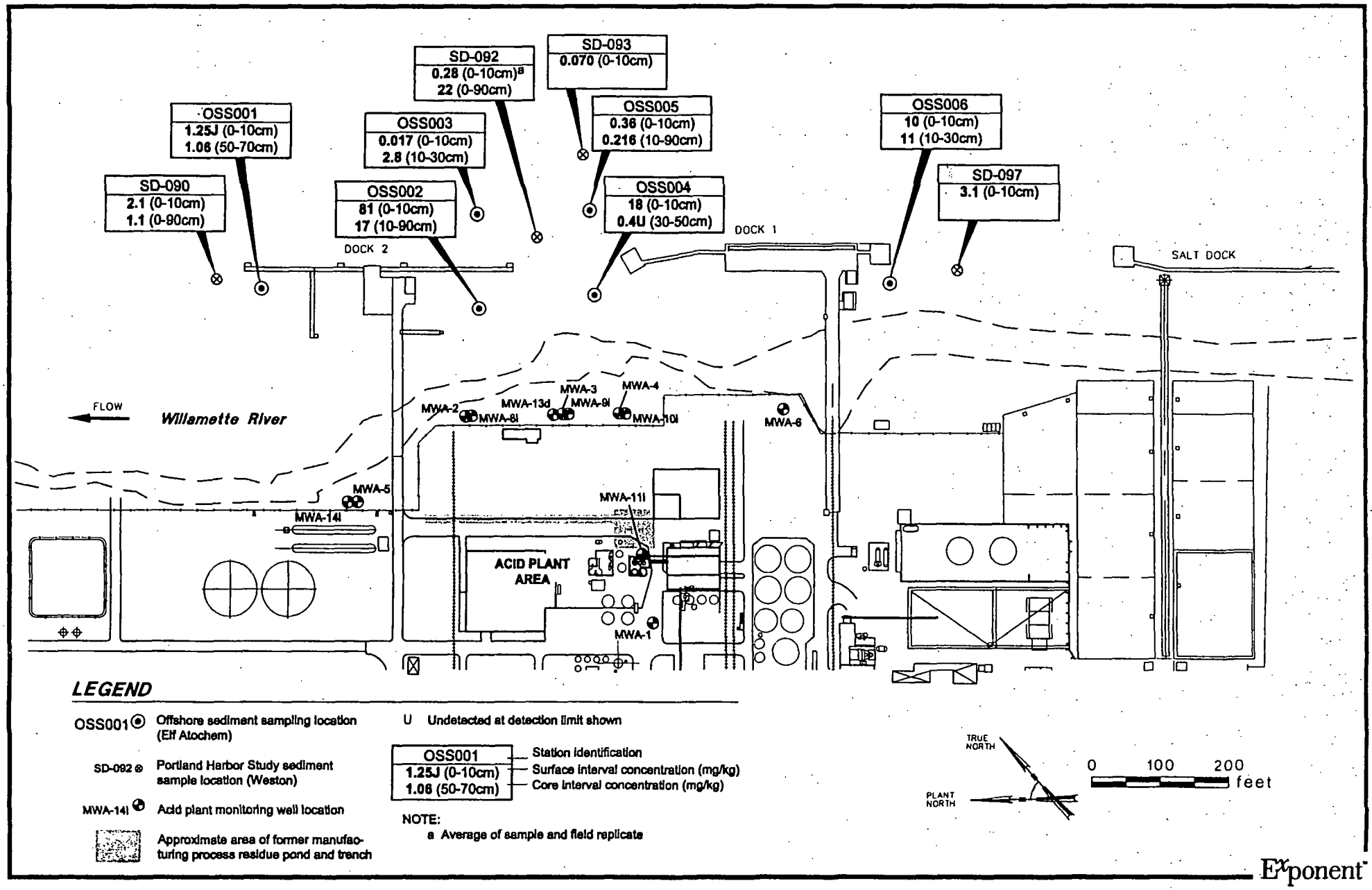


Figure 34. DDT concentrations in offshore sediments.

8601192.001.0612/OFFSED DDT.dwg 06/19/99 OR

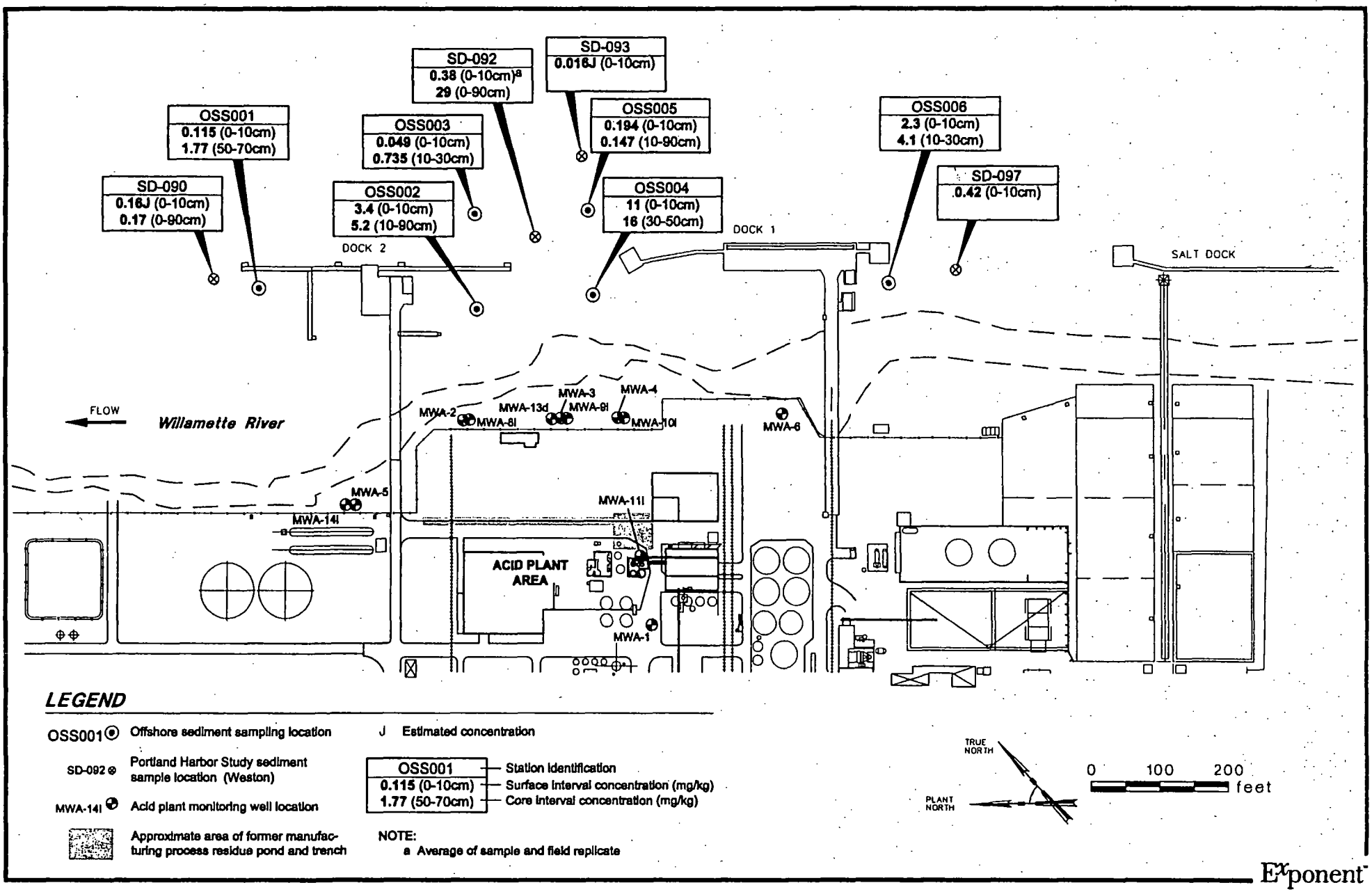


Figure 35. DDD concentrations in offshore sediments.

8601192.001.0612/OFFSED DDD.dwg 06/21/99 OR

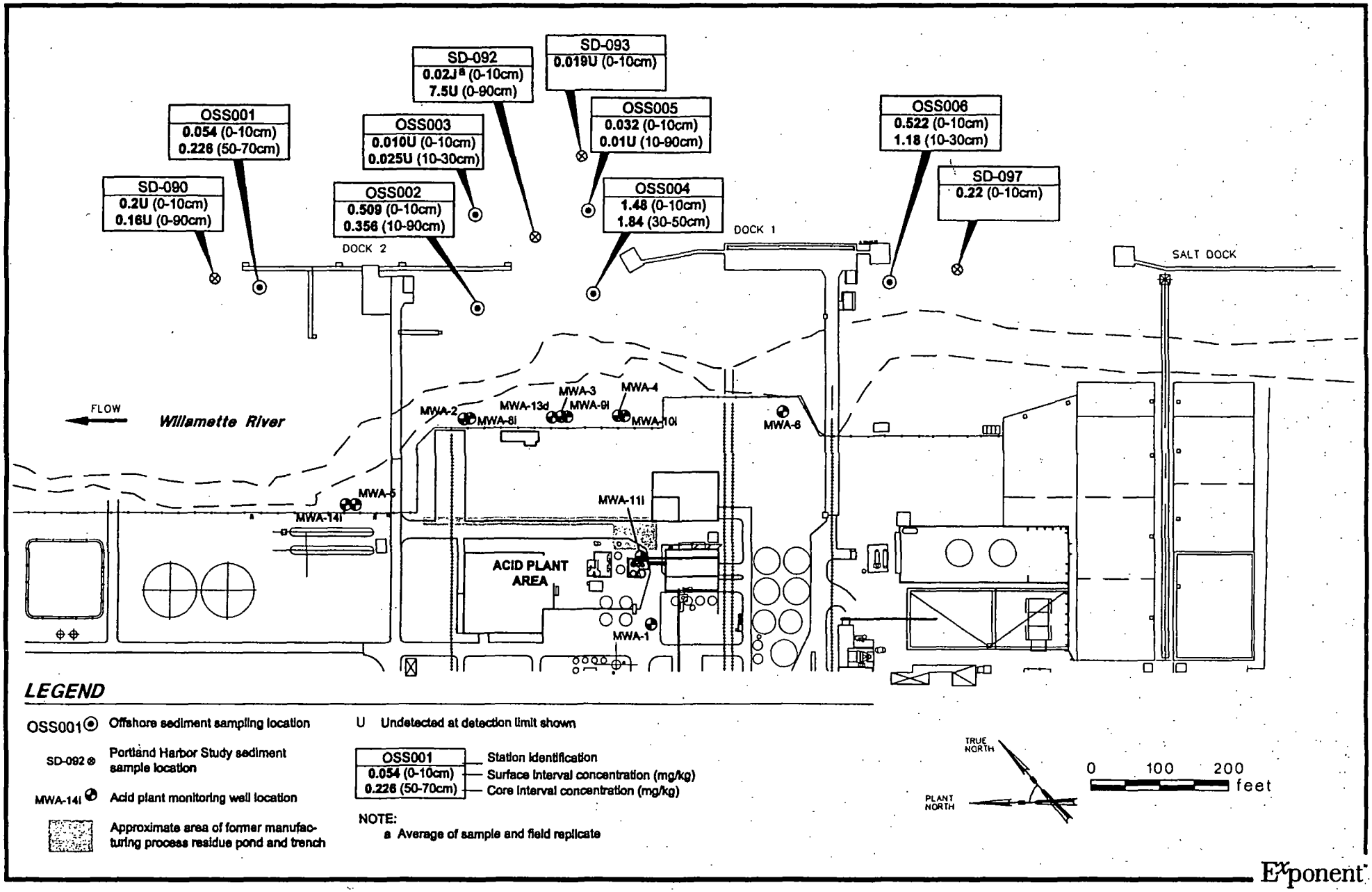


Figure 36. DDE concentrations in offshore sediments.

8601192.001.0612/OFFSED DDE.dwg 06/19/99 OR

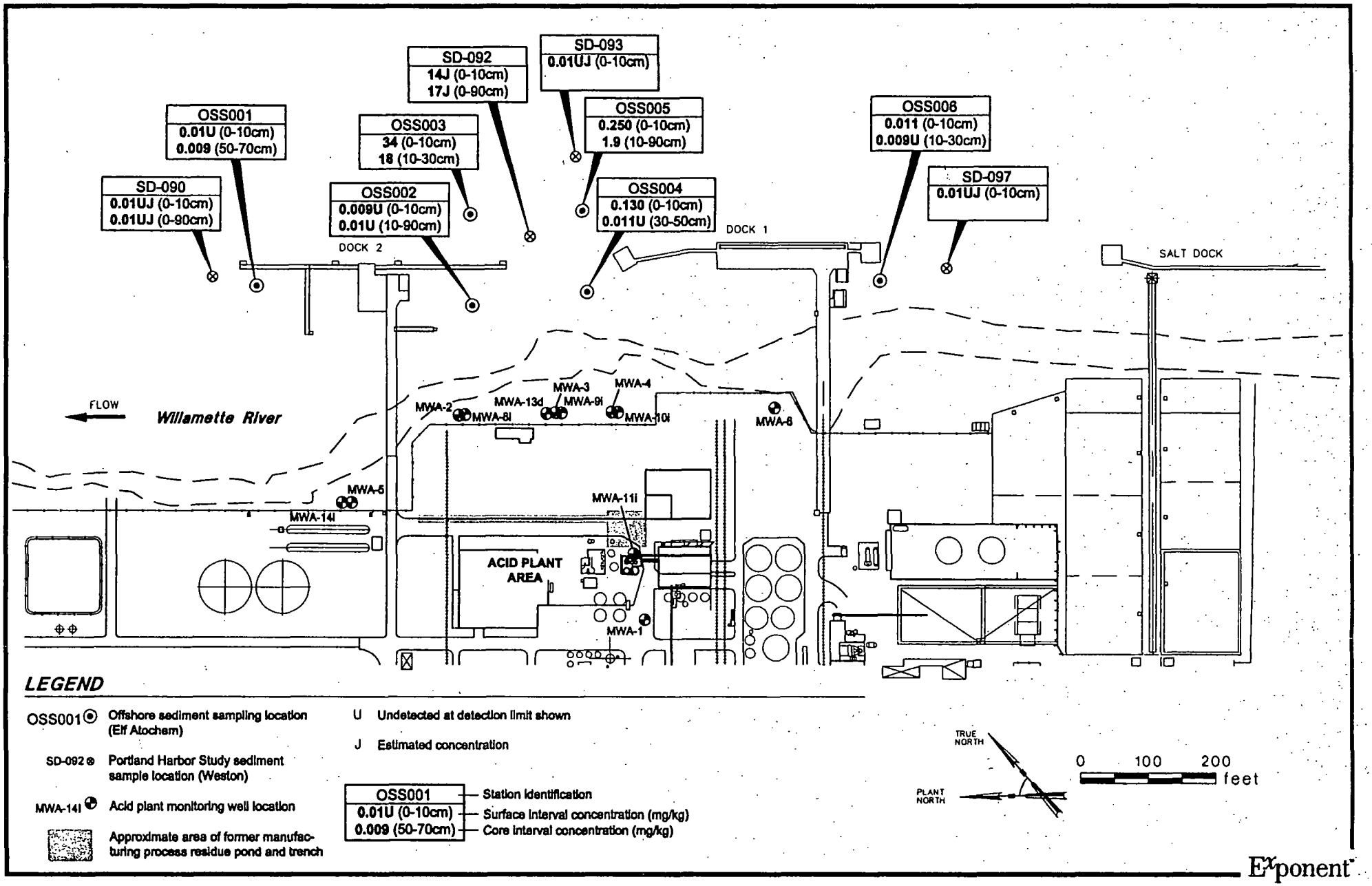


Figure 37. Chlorobenzene concentrations in offshore sediments.

8601192.001.0612/OFFSED CHL.dwg 06/21/99 OR

Tables

Table 1. Summary of well completion data

Well Number	Installation Date	Depth Drilled (ft)	Measuring Point Elevation[a] (ft)	Ground Surface Elevation[a] (ft)	Measuring Point Stickup (ft)	Well Depth from Measuring Point (ft)	Screen Length (ft)	Screen Slot Size[b] (in.)	Sump Length (ft)	Screened Interval Depth Below Surface (ft)		Screened Interval Elevation (ft)		Sandpack Interval Depth Below Surface (ft)		Sandpack Interval Elevation (ft)		Sandpack Thickness
										Bottom	Top	Bottom	Top	Bottom	Top	Bottom	Top	
Site Wells																		
MWA-1[c]	12/11/96	33.5	34.15	34.4	-0.26	33.4	10.0	0.010	0.5	33	23	1.4	11.4	33.5	21	0.9	13.4	12.5
MWA-2[c]	12/11/96	32.3	36.47	33.6	2.94	35.2	10.0	0.010	0.5	31.5	21.5	2	12	32	18.5	1.5	15	13.5
MWA-3[c]	12/11/96	32.1	37.46	34.4	3.16	34.8	10.0	0.010	0.5	30.7	20.7	3.6	13.6	32	18.2	2.3	16.1	13.8
MWA-4[c]	12/11/96	30.5	36.46	33.7	2.86	33.55	10.0	0.010	0.5	29.5	19.5	4.1	14.1	30	17.5	3.6	16.1	12.5
MWA-5	01/12/99	39.0	37.07	35.0	2.07	40.90	2.5	0.010	0.3	38.2	35.7	-3.2	-0.7	38.5	33.5	-3.5	1.5	5.0
MWA-6	01/13/99	36.0	34.27	34.8	-0.60	33.45	2.5	0.010	0.3	33.6	30.8	1.2	3.7	36.0	28.5	-1.2	6.3	7.5
MWA-7	01/12/99	33.0	34.29	34.2	-0.20	33.25	2.5	0.010	0.3	32.8	30.3	1.4	3.9	33.1	28.0	1.1	6.1	5.0
MWA-8i	11/12/98	47.3	36.10	33.8	2.28	50.08	5.0	0.010	0.3	47.0	42.0	-13.2	-8.2	47.3	39.8	-13.5	-6.0	7.5
MWA-9i	11/18/98	46.5	36.81	34.8	2.05	48.17	5.0	0.010	0.3	45.0	40.0	-10.2	-5.2	46.5	39.0	-11.7	-4.2	7.5
MWA-10i	11/24/98	45.6	35.90	33.7	2.20	48.10	5.0	0.010	0.3	45.3	40.3	-11.6	-6.6	45.6	38.2	-11.9	-4.5	7.4
MWA-11i	12/03/98	51.3	34.50	34.7	-0.26	51.52	5.0	0.010	0.3	51.0	46.0	-16.3	-11.3	51.3	44.0	-16.6	-9.3	7.3
MWA-12i	11/05/98	52.3	33.91	34.2	-0.45	51.90	10.0	0.010	0.3	52.0	42.0	-17.8	-7.8	52.3	40.0	-18.1	-5.8	12.3
MWA-13d	01/06/99	53.8	37.06	34.8	2.33	56.12	2.0	0.010	0.3	53.0	51.0	-18.2	-16.2	53.8	50.0	-19.0	-15.2	3.8
MWA-14i	12/18/98	49.4	37.39	35.0	2.51	52.20	5.0	0.010	0.3	49.1	44.1	-14.1	-9.1	49.4	42.6	-14.4	-7.6	6.8
Offsite Wells																		
MW-4s[d]	--	28.46	46.17	44.86	1.31	28.46	--	--	--	--	--	--	--	--	--	--	--	--
MW-4i[d]	--	44.0	46.28	44.90	1.38	44.0	--	--	--	--	--	--	--	--	--	--	--	--
MW-4d[d]	--	64.5	46.64	45.23	1.41	64.5	--	--	--	--	--	--	--	--	--	--	--	--
W-19s[e]	1990	25.0	33.84	32.21	1.63	26.03	5.0	--	--	25.0	20.0	7.21	12.21	--	--	--	--	--
W-19i[e]	1990	49.0	33.98	32.43	1.55	50.95	5.0	--	--	49.0	44.0	-16.57	-11.57	--	--	--	--	--
W-19d[e]	1990	67.56	33.75	32.06	1.69	68.75	5.0	--	--	68.0	63.0	-35.94	-30.94	--	--	--	--	--

Note: All site wells installed by Exponent unless otherwise noted
All site wells are made of 304 stainless steel and schedule 40 PVC pipe and have a 2-in. diameter inside the well casing
-- data not found or available

[a]Vertical survey data based on City of Portland Benchmark #2529 (to convert to NGVD 1929, subtract 1.375 ft).
[b] Stainless-steel wire-wrapped screen.
[c] Installed by CH2M Hill and Environmental West Explorations.
[d] Installed by Rhône-Poulenc.
[e] Installed by Geraghty & Miller.

Table 2. Groundwater elevation monitoring data

Monitoring Well:	MWA-1		MWA-2		MWA-3		MWA-4		MWA-5		MWA-6		MWA-7	
Well Casing Elevation[a]:	34.15		36.47		37.46		36.46		37.07		34.27		34.29	
	DTW	GWE	DTW	GWE	DTW	GWE	DTW	GWE	DTW	GWE	DTW	GWE	DTW	GWE
Measurement Date														
12/16/96	17.82	16.33	22.25	14.22	22.95	14.51	22.00	14.46	--	--	--	--	--	--
1/2/97	13.44	20.71	14.00	22.47	16.51	20.95	15.51	20.95	--	--	--	--	--	--
2/7/97	14.97	19.18	19.74	16.73	20.95	16.51	19.92	16.54	--	--	--	--	--	--
3/3/97	18.15	16.00	22.84	13.63	23.45	14.01	22.44	14.02	--	--	--	--	--	--
3/12/97	17.46	16.69	21.77	14.70	23.04	14.42	21.92	14.54	--	--	--	--	--	--
4/8/97	17.44	16.71	22.58	13.89	22.55	14.91	21.53	14.93	--	--	--	--	--	--
4/22/97	17.46	16.69	22.26	14.21	23.61	13.85	22.06	14.40	--	--	--	--	--	--
5/13/97	15.18	18.97	19.17	17.30	20.22	17.24	19.09	17.37	--	--	--	--	--	--
6/24/97	13.34	20.81	17.56	18.91	18.21	19.25	17.33	19.13	--	--	--	--	--	--
8/7/97	20.16	13.99	25.82	10.65	24.74	12.72	24.62	11.84	--	--	--	--	--	--
9/30/97	21.29	12.86	27.57	8.90	28.06	9.40	27.06	9.40	--	--	--	--	--	--
5/28/98	17.78	16.37	21.73	14.74	21.81	15.65	22.00	14.46	--	--	--	--	--	--
1/25/99	15.95	18.20	20.5	15.97	21.66	15.8	20.8	15.66	20.83	16.24	19.39	14.88	6.4	27.89
2/5/99	17.14	17.01	22.26	14.21	22.77	14.69	21.87	14.59	23.33	13.74	19.87	14.4	6.45	27.84

Table 2. (cont.)

Monitoring Well:	MWA-8i		MWA-9i		MWA-10i		MWA-11i		MWA-12i		MWA-13d		MWA-14i	
Well Casing Elevation[a]:	36.10		36.81		35.90		34.50		33.91		37.06		37.39	
	DTW	GWE	DTW	GWE	DTW	GWE	DTW	GWE	DTW	GWE	DTW	GWE	DTW	GWE
Measurement Date														
12/16/96	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1/2/97	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2/7/97	--	--	--	--	--	--	--	--	--	--	--	--	--	--
3/3/97	--	--	--	--	--	--	--	--	--	--	--	--	--	--
3/12/97	--	--	--	--	--	--	--	--	--	--	--	--	--	--
4/8/97	--	--	--	--	--	--	--	--	--	--	--	--	--	--
4/22/97	--	--	--	--	--	--	--	--	--	--	--	--	--	--
5/13/97	--	--	--	--	--	--	--	--	--	--	--	--	--	--
6/24/97	--	--	--	--	--	--	--	--	--	--	--	--	--	--
8/7/97	--	--	--	--	--	--	--	--	--	--	--	--	--	--
9/30/97	--	--	--	--	--	--	--	--	--	--	--	--	--	--
5/28/98	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1/25/99	20.15	15.95	21.2	15.61	19.91	15.99	17.71	16.79	8.68	25.23	14.8	22.26	21.07	16.32
2/5/99	22.23	13.87	22.81	14	21.88	14.02	19.69	14.81	8.4	25.51	23.15	13.91	23.24	14.15

Note: DTW - depth to water
GWE - groundwater elevation
NR - not recordable

[a] Well casing elevation in ft above City of Portland Datum.

Table 3. Soil physical parameters

Analyte	Units	Meas. Basis	SO0018 MWA-12i 11/04/98 11:10 48.00-50.00 ft	SO0033 MWA-8i 11/10/98 13:10 36.50-37.80 ft	SO0038 MWA-8i 11/11/98 11:15 48.00-49.00 ft	SO0045 MWA-9i 11/17/98 08:15 30.00-32.00 ft	SO0049 MWA-9i 11/17/98 10:30 38.00-40.00 ft	SO0062 MWA-10i 11/20/98 09:30 30.00-32.00 ft
Liquid limit	%	dry	41	38	NP	NP	43	39
Plastic limit	%	dry	22	31	NP	NP	31	30
Plasticity Index	%	dry	19	7	NP	NP	12	9
Percent moisture	%	dry	35	43	35	34	45	48
Bulk density (dry mass/wet volume)	lb/ft^3	dry	--	--	--	--	--	--
Hydraulic conductivity	ft/day	dry	--	--	--	--	--	--
Dry density	lb/ft^3	dry	--	--	--	--	--	--
Specific gravity	NA	dry	--	--	--	--	--	--
Soil class	NA	dry	CL	ML	SM	SM	ML	ML

Table 3. (cont.)

Analyte	Units	Meas. Basis	SO0065 MWA-10i 11/20/98 11:30 36.00-38.00 ft	SO0069 MWA-10i 11/23/98 11:30 44.00-46.00 ft	SO0070 MWA-10i 11/23/98 12:00 45.30-46.80 ft	SO0089 MWA-11i 12/02/98 15:30 39.00-40.25 ft	SO0126 MWA-13d 01/05/98 16:30 48.00-50.00 ft
Liquid limit	%	dry	42	37	31	41	38
Plastic limit	%	dry	31	26	25	24	39
Plasticity Index	%	dry	11	11	6	17	9
Percent moisture	%	dry	54	37	24.2	37.2	46.2
Bulk density (dry mass/wet volume)	lb/ft^3	dry	--	--	120	119	112
Hydraulic conductivity	ft/day	dry	--	--	0.0028	0.0007	0.0071
Dry density	lb/ft^3	dry	--	--	96.6	86.9	76.5
Specific gravity	NA	dry	--	--	2.7	2.7	2.7
Soil class	NA	dry	ML	ML	ML	CL	ML

Note: -- not analyzed
NP - not plastic

Table 4. Bouwer & Rice aquifer test analysis

				Parameters											Calculations	
				r_w	L_e	H	Lw	r_c	D/W	y_0	y_t	t	A	B	ln R_e/r_w	K
Well	Test No.	Test Date	Start Time	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(days)	(constant)	(constant)	(unitless)	(ft/day)
MWA-1	1	11-Feb-99	16:27:10	0.25	10.00	20.00	16.37	0.08	17.03	0.095	0.023	0.000210	2.5000	0.4900	2.791	6.5
MWA-3	1	11-Feb-99	13:28:20	0.25	10.00	20.00	12.25	0.08	22.55	1.000	0.088	0.000100	2.5000	0.4900	2.583	22
MWA-5	1	10-Feb-99	12:09:31	0.43	2.50	27.00	19.44	0.08	21.46	0.500	0.026	0.000174	1.6000	0.2500	1.462	34
MWA-6	1	12-Feb-99	8:48:03	0.43	2.50	27.00	13.53	0.08	19.92	1.200	0.780	0.030000	1.6000	0.2500	1.353	0.03
MWA-7	1	12-Feb-99	11:06:04	0.43	2.50	30.00	26.88	0.08	6.37	6.000	0.100	0.002292	1.6000	0.2500	1.603	5.9
MWA-8i	1	11-Feb-99	9:18:15	0.36	5.00	28.00	11.25	0.08	22.00	1.400	1.100	0.000210	2.7000	0.5000	1.535	1.9
MWA-9i	1	11-Feb-99	14:19:41	0.36	5.00	30.00	25.60	0.08	22.60	1.100	0.050	0.000280	2.7000	0.5000	1.845	21
MWA-10i	1	11-Feb-99	15:02:02	0.36	5.00	32.00	28.63	0.08	19.47	0.800	0.110	0.000280	2.7000	0.5000	1.902	28
MWA-11i	1	11-Feb-99	15:41:12	0.28	5.00	40.00	32.05	0.08	19.47	1.600	0.042	0.004170	2.2500	0.5000	2.230	1.9
MWA-12i	1	12-Feb-99	11:27:27	0.36	10.00	50.00	43.01	0.08	8.89	3.200	2.000	0.013890	2.4000	0.4800	2.722	0.04
MWA-13d	1	11-Feb-99	10:14:46	0.28	2.00	40.00	33.29	0.08	22.83	1.200	0.360	0.017360	1.8000	0.2400	1.713	0.3
MWA-14i	1	10-Feb-99	12:59:39	0.36	5.00	40.00	29.96	0.08	22.24	3.200	1.800	0.000280	2.7000	0.5000	1.778	4.1

Note: D/W - depth to water
H - aquifer saturated thickness
K - hydraulic conductivity
L_e - Length of screen
L_w - water column height in well
r_c - well casing radius
R_e - effective radial distance over which the head difference *y* is dissipated
r_w - well radius
t - total time
y_0 - head change at time 1; see Appendix B
y_t - head change at time 2; see Appendix B

Table [illegible]il sampling results, Elf Atochem Acid Plant Area

Analyte	Units	SO0024 MWA-8i 24-26	SO0032 MWA-8i 36-36.3	SO0034 MWA-8i 40-42	SO0059 MWA-10i 24-26	SO0067 MWA-10i 40-42	SO0070 MWA-10i 45.3-46.8	SO0074 MWA-11i 6-8
Sample No:		SO0024	SO0032	SO0034	SO0059	SO0067	SO0070	SO0074
Station ID:		MWA-8i	MWA-8i	MWA-8i	MWA-10i	MWA-10i	MWA-10i	MWA-11i
Depth Interval (ft.):		24-26	36-36.3	40-42	24-26	40-42	45.3-46.8	6-8
General Parameters								
Total organic carbon	%	**0.60** *J*	--	**0.15** *J*	**0.13** *J*	**0.060** *J*	0.050 *UJ*	--
Total solids (dry wt. as % of wet wt.)	%	--	**75.6**	--	--	--	**87.9**	**62.2**
Pesticides								
4,4′-DDD	mg/kg	--	**210**	--	--	--	--	**430**
4,4′-DDE	mg/kg	--	**59**	--	--	--	--	**23**
4,4′-DDT	mg/kg	--	**5,800**	--	--	--	--	**31,000**
Aldrin	mg/kg	--	10 *U*	--	--	--	--	7.8 *U*
α-Chlordane	mg/kg	--	10 *U*	--	--	--	--	7.8 *U*
α-Endosulfan (Endosulfan I)	mg/kg	--	10 *U*	--	--	--	--	7.8 *U*
α-Hexachlorocyclohexane	mg/kg	--	10 *U*	--	--	--	--	11 *U*
β-Endosulfan (Endosulfan II)	mg/kg	--	25 *U*	--	--	--	--	7.8 *U*
β-Hexachlorocyclohexane	mg/kg	--	10 *U*	--	--	--	--	7.8 *U*
δ-Hexachlorocyclohexane	mg/kg	--	10 *U*	--	--	--	--	7.8 *U*
Dieldrin	mg/kg	--	10 *U*	--	--	--	--	7.8 *U*
Endosulfan sulfate	mg/kg	--	10 *U*	--	--	--	--	7.8 *U*
Endrin	mg/kg	--	10 *U*	--	--	--	--	7.8 *U*
Endrin aldehyde	mg/kg	--	10 *U*	--	--	--	--	7.8 *U*
Endrin ketone	mg/kg	--	10 *U*	--	--	--	--	7.8 *U*
γ-Chlordane	mg/kg	--	10 *U*	--	--	--	--	7.8 *U*
γ-Hexachlorocyclohexane (lindane)	mg/kg	--	10 *U*	--	--	--	--	7.8 *U*
Heptachlor	mg/kg	--	10 *U*	--	--	--	--	7.8 *U*
Heptachlor epoxide	mg/kg	--	10 *U*	--	--	--	--	7.8 *U*
Methoxychlor	mg/kg	--	10 *U*	--	--	--	--	7.8 *U*
Toxaphene	mg/kg	--	250 *U*	--	--	--	--	160 *U*
SVOCs								
1,2-Dichlorobenzene	mg/kg	--	**1.50**	--	--	--	--	--
1,2,4-Trichlorobenzene	mg/kg	--	0.300 *U*	--	--	--	--	--
1,3-Dichlorobenzene	mg/kg	--	0.300 *U*	--	--	--	--	--
1,4-Dichlorobenzene	mg/kg	--	**4.00**	--	--	--	--	--
2-Chloronaphthalene	mg/kg	--	0.30 *U*	--	--	--	--	--
2-Chlorophenol	mg/kg	--	**0.30**	--	--	--	--	--
2-Methylnaphthalene	mg/kg	--	0.30 *U*	--	--	--	--	--

Table 5. (cont.)

Sample No:		SO0024	SO0032	SO0034	SO0059	SO0067	SO0070	SO0074
Station ID:		MWA-8i	MWA-8i	MWA-8i	MWA-10i	MWA-10i	MWA-10i	MWA-11i
Depth (ft.):	Units	24-26	36-36.3	40-42	24-26	40-42	45.3-46.8	6-8
2-Methylphenol	mg/kg	--	0.30 *U*	--	--	--	--	--
2-Nitroaniline	mg/kg	--	2.0 *U*	--	--	--	--	--
2-Nitrophenol	mg/kg	--	0.30 *U*	--	--	--	--	--
2,4-Dichlorophenol	mg/kg	--	0.30 *U*	--	--	--	--	--
2,4-Dimethylphenol	mg/kg	--	0.30 *U*	--	--	--	--	--
2,4-Dinitrophenol	mg/kg	--	2.0 *U*	--	--	--	--	--
2,4-Dinitrotoluene	mg/kg	--	0.30 *U*	--	--	--	--	--
2,4,5-Trichlorophenol	mg/kg	--	0.30 *U*	--	--	--	--	--
2,4,6-Trichlorophenol	mg/kg	--	0.30 *U*	--	--	--	--	--
2,6-Dinitrotoluene	mg/kg	--	0.30 *U*	--	--	--	--	--
Dibenz[a,h]anthracene	mg/kg	--	0.30 *UJ*	--	--	--	--	--
2-Methyl-4,6-dinitrophenol	mg/kg	--	2.0 *U*	--	--	--	--	--
Di-*n*-octyl phthalate	mg/kg	--	0.30 *UJ*	--	--	--	--	--
3- and 4-Methylphenol	mg/kg	--	0.30 *U*	--	--	--	--	--
3-Nitroaniline	mg/kg	--	2.0 *U*	--	--	--	--	--
3,3′-Dichlorobenzidine	mg/kg	--	20.0 *U*	--	--	--	--	--
4-Bromophenyl-phenyl ether	mg/kg	--	0.30 *U*	--	--	--	--	--
4-Chloro-3-methylphenol (PCMC)	mg/kg	--	0.30 *U*	--	--	--	--	--
4-Chloroaniline	mg/kg	--	0.30 *U*	--	--	--	--	--
4-Chlorophenyl-phenyl ether	mg/kg	--	0.30 *U*	--	--	--	--	--
4-Nitroaniline	mg/kg	--	2.0 *U*	--	--	--	--	--
4-Nitrophenol	mg/kg	--	2.0 *U*	--	--	--	--	--
Pentachlorophenol	mg/kg	--	2.0 *U*	--	--	--	--	--
Hexachlorobenzene	mg/kg	--	0.30 *U*	--	--	--	--	--
Hexachlorobutadiene	mg/kg	--	**1.40**	--	--	--	--	--
Hexachlorocyclopentadiene	mg/kg	--	0.30 *U*	--	--	--	--	--
Hexachloroethane (perchloroethane)	mg/kg	--	**44.0**	--	--	--	--	--
Acenaphthene	mg/kg	--	0.30 *U*	--	--	--	--	--
Acenaphthylene	mg/kg	--	0.30 *U*	--	--	--	--	--
Aniline	mg/kg	--	1.0 *UJ*	--	--	--	--	--
Anthracene	mg/kg	--	0.30 *U*	--	--	--	--	--
Bis[2-chloroethyl]ether	mg/kg	--	0.30 *U*	--	--	--	--	--
Bis[2-ethylhexyl]phthalate	mg/kg	--	3.0 *U*	--	--	--	--	--

Table [illegible] ont.)

Sample No:		SO0024	SO0032	SO0034	SO0059	SO0067	SO0070	SO0074
Station ID:		MWA-8i	MWA-8i	MWA-8i	MWA-10i	MWA-10i	MWA-10i	MWA-11i
Depth (ft.):	Units	24-26	36-36.3	40-42	24-26	40-42	45.3-46.8	6-8
Benz[a]anthracene	mg/kg	--	3.0 *U*	--	--	--	--	--
Benz[a]pyrene	mg/kg	--	0.30 *UJ*	--	--	--	--	--
Benzo[b]fluoranthene	mg/kg	--	0.30 *UJ*	--	--	--	--	--
Bis(2-chloroethoxy)methane	mg/kg	--	0.30 *U*	--	--	--	--	--
Bis(2-chloroisopropyl) ether	mg/kg	--	0.30 *U*	--	--	--	--	--
Benzoic acid	mg/kg	--	2.0 *U*	--	--	--	--	--
Benzyl alcohol	mg/kg	--	0.30 *UJ*	--	--	--	--	--
Benzo[ghi]perylene	mg/kg	--	0.30 *UJ*	--	--	--	--	--
Benzo[k]fluoranthene	mg/kg	--	0.30 *UJ*	--	--	--	--	--
Butylbenzyl phthalate	mg/kg	--	3.0 *U*	--	--	--	--	--
Chrysene	mg/kg	--	3.0 *U*	--	--	--	--	--
Diethyl phthalate	mg/kg	--	0.30 *U*	--	--	--	--	--
Dibenzofuran	mg/kg	--	0.30 *U*	--	--	--	--	--
Di-*n*-butyl phthalate	mg/kg	--	0.30 *U*	--	--	--	--	--
Dimethyl phthalate	mg/kg	--	0.30 *U*	--	--	--	--	--
Fluoranthene	mg/kg	--	0.30 *U*	--	--	--	--	--
Fluorene	mg/kg	--	0.30 *U*	--	--	--	--	--
Indeno[1,2,3-cd]pyrene	mg/kg	--	0.30 *UJ*	--	--	--	--	--
Isophorone	mg/kg	--	0.30 *U*	--	--	--	--	--
Naphthalene	mg/kg	--	0.300 *U*	--	--	--	--	--
Nitrobenzene	mg/kg	--	0.30 *UJ*	--	--	--	--	--
N-nitroso dimethylamine	mg/kg	--	2.0 *U*	--	--	--	--	--
N-nitroso-di-*n*-propylamine	mg/kg	--	0.30 *UJ*	--	--	--	--	--
N-nitrosodiphenylamine	mg/kg	--	0.30 *U*	--	--	--	--	--
Phenanthrene	mg/kg	--	0.30 *U*	--	--	--	--	--
Phenol	mg/kg	--	0.30 *U*	--	--	--	--	--
Pyrene	mg/kg	--	3.0 *U*	--	--	--	--	--
VOCs								
1,1,1,2-Tetrachloroethane	mg/kg	--	50.0 *U*	--	--	--	--	1.5 *U*
1,1,1-Trichloroethane	mg/kg	--	50.0 *U*	--	--	--	--	**3.6**
1,1,2,2-Tetrachloroethane	mg/kg	--	50.0 *U*	--	--	--	--	1.5 *U*
1,1,2-Trichloroethane	mg/kg	--	50.0 *U*	--	--	--	--	1.5 *U*
1,1-Dichloroethane	mg/kg	--	60.0 *U*	--	--	--	--	1.5 *U*

Table 5. (cont.)

Sample No:		SO0024	SO0032	SO0034	SO0059	SO0067	SO0070	SO0074
Station ID:		MWA-8i	MWA-8i	MWA-8i	MWA-10i	MWA-10i	MWA-10i	MWA-11i
Depth (ft.):	Units	24-26	36-36.3	40-42	24-26	40-42	45.3-46.8	6-8
1,1-Dichloroethene	mg/kg	--	50.0 *U*	--	--	--	--	1.5 *U*
1,1-Dichloropropene	mg/kg	--	50.0 *U*	--	--	--	--	1.5 *U*
1,2,3-Trichlorobenzene	mg/kg	--	200 *U*	--	--	--	--	6.0 *U*
1,2,3-Trichloropropane	mg/kg	--	50.0 *U*	--	--	--	--	1.5 *U*
1,2,4-Trichlorobenzene	mg/kg	--	200 *U*	--	--	--	--	6.0 *U*
1,2,4-Trimethylbenzene	mg/kg	--	200 *U*	--	--	--	--	6.0 *U*
1,2-Dibromo-3-chloropropane	mg/kg	--	200 *U*	--	--	--	--	6.0 *U*
1,2-Dichlorobenzene	mg/kg	--	50.0 *U*	--	--	--	--	**1.6**
1,2-Dichloroethane	mg/kg	--	50.0 *U*	--	--	--	--	1.5 *U*
1,2-Dichloropropane	mg/kg	--	50.0 *U*	--	--	--	--	1.5 *U*
1,3,5-Trimethylbenzene	mg/kg	--	200 *U*	--	--	--	--	6.0 *U*
1,3-Dichlorobenzene	mg/kg	--	50.0 *U*	--	--	--	--	1.5 *U*
1,3-Dichloropropane	mg/kg	--	50.0 *U*	--	--	--	--	1.5 *U*
1,4-Dichlorobenzene	mg/kg	--	50.0 *U*	--	--	--	--	**12.0**
2,2-Dichloropropane	mg/kg	--	60.0 *U*	--	--	--	--	1.5 *U*
2-Butanone (methyl ethyl ketone, MEK)	mg/kg	--	2,000 *UR*	--	--	--	--	60.0 *UR*
2-Chlorotoluene	mg/kg	--	200 *U*	--	--	--	--	6.0 *U*
2-Hexanone	mg/kg	--	2,000 *U*	--	--	--	--	60.0 *U*
4-Chlorotoluene	mg/kg	--	200 *U*	--	--	--	--	6.0 *U*
4-Isopropyltoluene	mg/kg	--	200 *U*	--	--	--	--	6.0 *U*
4-Methyl-2-pentanone (MIBK)	mg/kg	--	2,000 *UR*	--	--	--	--	60.0 *UR*
Acetone	mg/kg	--	2,000 *UR*	--	--	--	--	60.0 *UR*
Benzene	mg/kg	--	50.0 *U*	--	--	--	--	1.5 *U*
Bromobenzene	mg/kg	--	50.0 *U*	--	--	--	--	1.5 *U*
Bromochloromethane	mg/kg	--	50.0 *U*	--	--	--	--	1.5 *U*
Bromodichloromethane	mg/kg	--	50.0 *U*	--	--	--	--	1.5 *U*
Bromoform	mg/kg	--	50.0 *U*	--	--	--	--	1.5 *U*
Bromomethane	mg/kg	--	50.0 *U*	--	--	--	--	1.5 *U*
Carbon disulfide	mg/kg	--	50.0 *U*	--	--	--	--	1.5 *U*
Carbon tetrachloride	mg/kg	--	50.0 *U*	--	--	--	--	1.5 *U*
Chlorobenzene	mg/kg	--	**1,100**	--	--	--	--	**15,000 *J***
Chloroethane	mg/kg	--	50.0 *U*	--	--	--	--	1.5 *U*
Chloroform	mg/kg	--	50.0 *U*	--	--	--	--	1.5 *U*

Table [illegible] (cont.)

Sample No:		SO0024	SO0032	SO0034	SO0059	SO0067	SO0070	SO0074
Station ID:		MWA-8i	MWA-8i	MWA-8i	MWA-10i	MWA-10i	MWA-10i	MWA-11i
Depth (ft.):	Units	24-26	36-36.3	40-42	24-26	40-42	45.3-46.8	6-8
Chloromethane	mg/kg	--	50.0 *U*	--	--	--	--	1.5 *U*
cis-1,2-Dichloroethene	mg/kg	--	50.0 *U*	--	--	--	--	1.5 *U*
cis-1,3-Dichloropropene	mg/kg	--	50.0 *U*	--	--	--	--	1.5 *U*
Dibromochloromethane	mg/kg	--	50.0 *U*	--	--	--	--	1.5 *U*
Dibromomethane	mg/kg	--	50.0 *U*	--	--	--	--	1.5 *U*
Dichlorodifluoromethane	mg/kg	--	50.0 *U*	--	--	--	--	1.5 *U*
EDB-ethylene bromide	mg/kg	--	200 *U*	--	--	--	--	6.0 *U*
Ethylbenzene	mg/kg	--	50.0 *U*	--	--	--	--	1.5 *U*
Hexachlorobutadiene	mg/kg	--	200 *U*	--	--	--	--	6.0 *U*
Isopropylbenzene	mg/kg	--	200 *U*	--	--	--	--	6.0 *U*
Methylene chloride (dichloromethane)	mg/kg	--	100 *U*	--	--	--	--	3.0 *U*
Naphthalene	mg/kg	--	200 *U*	--	--	--	--	6.0 *U*
n-Butyl benzene	mg/kg	--	200 *UJ*	--	--	--	--	6.0 *U*
N-Propylbenzene	mg/kg	--	200 *U*	--	--	--	--	6.0 *U*
sec Butylbenzene	mg/kg	--	200 *U*	--	--	--	--	6.0 *U*
Styrene	mg/kg	--	50.0 *U*	--	--	--	--	1.5 *U*
tert Butylbenzene	mg/kg	--	200 *U*	--	--	--	--	6.0 *U*
Tetrachloroethene	mg/kg	--	50.0 *U*	--	--	--	--	1.5 *U*
Toluene	mg/kg	--	50.0 *U*	--	--	--	--	1.5 *U*
trans-1,2-Dichloroethene	mg/kg	--	60.0 *U*	--	--	--	--	1.5 *U*
trans-1,3-Dichloropropene	mg/kg	--	50.0 *U*	--	--	--	--	1.5 *U*
Trichloroethene	mg/kg	--	50.0 *U*	--	--	--	--	1.5 *U*
Trichlorofluoromethane	mg/kg	--	50.0 *U*	--	--	--	--	1.5 *U*
Vinyl chloride (CH_2--CHCl)	mg/kg	--	50.0 *U*	--	--	--	--	1.5 *U*
Xylene isomers (total)	mg/kg	--	50.0 *U*	--	--	--	--	1.5 *U*
m- & *p*-Xylenes	mg/kg	--	--	--	--	--	--	--
ortho-Xylene	mg/kg	--	--	--	--	--	--	--

Table 5. (cont.)

Sample No:		SO0083	SO0084	SO0151	SO0158	SO0169	SO0139
Station ID:		MWA-11i	MWA-11i	B-49	B-49	B-49 (DUP)	B-50
Depth Interval (ft.):	Units	26-28	28-30	2-2.5	7-8	7-8	.5-1
General Parameters							
Total organic carbon	%	--	--	--	--	--	--
Total solids (dry wt. as % of wet wt.)	%	**75.9**	**70.0**	**93.8**	**68.7**	**67.8**	**93.3**
Pesticides							
4,4´-DDD	mg/kg	**22**	**1.57**	**48**	0.015 *U*	0.012 *U*	0.01 *U*
4,4´-DDE	mg/kg	**2.4**	**0.084**	**44**	0.015 *U*	**0.011 *J***	0.01 *U*
4,4´-DDT	mg/kg	**230**	**2.72**	**3,600**	**0.135 *J***	**0.299 *J***	**0.02**
Aldrin	mg/kg	0.67 *U*	0.07 *U*	2 *U*	0.015 *U*	0.012 *U*	0.01 *U*
α-Chlordane	mg/kg	0.67 *U*	0.07 *U*	2 *U*	0.015 *U*	0.012 *U*	0.01 *U*
α-Endosulfan (Endosulfan I)	mg/kg	0.67 *U*	0.07 *U*	2 *U*	0.015 *U*	0.012 *U*	0.01 *U*
α-Hexachlorocyclohexane	mg/kg	0.67 *U*	0.4 *U*	2 *U*	0.015 *U*	0.012 *U*	0.01 *U*
β-Endosulfan (Endosulfan II)	mg/kg	0.74 *U*	0.092 *U*	2 *U*	0.015 *U*	0.012 *U*	0.01 *U*
β-Hexachlorocyclohexane	mg/kg	0.67 *U*	0.07 *U*	2 *U*	0.015 *U*	0.012 *U*	0.01 *U*
δ-Hexachlorocyclohexane	mg/kg	0.67 *U*	0.07 *U*	2 *U*	0.015 *U*	0.012 *U*	0.01 *U*
Dieldrin	mg/kg	0.67 *U*	0.07 *U*	2 *U*	0.015 *U*	0.012 *U*	0.01 *U*
Endosulfan sulfate	mg/kg	0.67 *U*	0.07 *U*	2 *U*	0.015 *U*	0.012 *U*	0.01 *U*
Endrin	mg/kg	0.67 *U*	0.07 *U*	2 *U*	0.015 *U*	0.012 *U*	0.01 *U*
Endrin aldehyde	mg/kg	0.67 *U*	0.07 *U*	2 *U*	0.015 *U*	0.012 *U*	0.01 *U*
Endrin ketone	mg/kg	0.67 *U*	0.07 *U*	2 *U*	0.015 *U*	0.012 *U*	0.01 *U*
γ-Chlordane	mg/kg	0.67 *U*	0.07 *U*	4.1 *U*	0.015 *U*	0.012 *U*	0.01 *U*
γ-Hexachlorocyclohexane (lindane)	mg/kg	0.67 *U*	0.07 *U*	2 *U*	0.015 *U*	0.012 *U*	0.01 *U*
Heptachlor	mg/kg	0.67 *U*	0.07 *U*	2 *U*	0.015 *U*	0.012 *U*	0.01 *U*
Heptachlor epoxide	mg/kg	0.67 *U*	0.07 *U*	2 *U*	0.015 *U*	0.012 *U*	0.01 *U*
Methoxychlor	mg/kg	0.67 *U*	0.07 *U*	4 *U*	0.02 *U*	0.02 *U*	0.02 *U*
Toxaphene	mg/kg	14 *U*	1.4 *U*	200 *U*	1 *U*	1 *U*	1 *U*
SVOCs							
1,2-Dichlorobenzene	mg/kg	--	--	--	--	--	--
1,2,4-Trichlorobenzene	mg/kg	--	--	--	--	--	--
1,3-Dichlorobenzene	mg/kg	--	--	--	--	--	--
1,4-Dichlorobenzene	mg/kg	--	--	--	--	--	--
2-Chloronaphthalene	mg/kg	--	--	--	--	--	--
2-Chlorophenol	mg/kg	--	--	--	--	--	--
2-Methylnaphthalene	mg/kg	--	--	--	--	--	--

Table (cont.)

Sample No:		SO0083	SO0084	SO0151	SO0158	SO0169	SO0139
Station ID:		MWA-11i	MWA-11i	B-49	B-49	B-49 (DUP)	B-50
Depth (ft.):	Units	26-28	28-30	2-2.5	7-8	7-8	.5-1
2-Methylphenol	mg/kg	--	--	--	--	--	--
2-Nitroaniline	mg/kg	--	--	--	--	--	--
2-Nitrophenol	mg/kg	--	--	--	--	--	--
2,4-Dichlorophenol	mg/kg	--	--	--	--	--	--
2,4-Dimethylphenol	mg/kg	--	--	--	--	--	--
2,4-Dinitrophenol	mg/kg	--	--	--	--	--	--
2,4-Dinitrotoluene	mg/kg	--	--	--	--	--	--
2,4,5-Trichlorophenol	mg/kg	--	--	--	--	--	--
2,4,6-Trichlorophenol	mg/kg	--	--	--	--	--	--
2,6-Dinitrotoluene	mg/kg	--	--	--	--	--	--
Dibenz[a,h]anthracene	mg/kg	--	--	--	--	--	--
2-Methyl-4,6-dinitrophenol	mg/kg	--	--	--	--	--	--
Di-*n*-octyl phthalate	mg/kg	--	--	--	--	--	--
3- and 4-Methylphenol	mg/kg	--	--	--	--	--	--
3-Nitroaniline	mg/kg	--	--	--	--	--	--
3,3'-Dichlorobenzidine	mg/kg	--	--	--	--	--	--
4-Bromophenyl-phenyl ether	mg/kg	--	--	--	--	--	--
4-Chloro-3-methylphenol (PCMC)	mg/kg	--	--	--	--	--	--
4-Chloroaniline	mg/kg	--	--	--	--	--	--
4-Chlorophenyl-phenyl ether	mg/kg	--	--	--	--	--	--
4-Nitroaniline	mg/kg	--	--	--	--	--	--
4-Nitrophenol	mg/kg	--	--	--	--	--	--
Pentachlorophenol	mg/kg	--	--	--	--	--	--
Hexachlorobenzene	mg/kg	--	--	--	--	--	--
Hexachlorobutadiene	mg/kg	--	--	--	--	--	--
Hexachlorocyclopentadiene	mg/kg	--	--	--	--	--	--
Hexachloroethane (perchloroethane)	mg/kg	--	--	--	--	--	--
Acenaphthene	mg/kg	--	--	--	--	--	--
Acenaphthylene	mg/kg	--	--	--	--	--	--
Aniline	mg/kg	--	--	--	--	--	--
Anthracene	mg/kg	--	--	--	--	--	--
Bis[2-chloroethyl]ether	mg/kg	--	--	--	--	--	--
Bis[2-ethylhexyl]phthalate	mg/kg	--	--	--	--	--	--

Table 5. (cont.)

Sample No:		SO0083	SO0084	SO0151	SO0158	SO0169	SO0139
Station ID:		MWA-11i	MWA-11i	B-49	B-49	B-49 (DUP)	B-50
Depth (ft.):	Units	26-28	28-30	2-2.5	7-8	7-8	.5-1
Benz[a]anthracene	mg/kg	--	--	--	--	--	--
Benz[a]pyrene	mg/kg	--	--	--	--	--	--
Benzo[b]fluoranthene	mg/kg	--	--	--	--	--	--
Bis(2-chloroethoxy)methane	mg/kg	--	--	--	--	--	--
Bis(2-chloroisopropyl) ether	mg/kg	--	--	--	--	--	--
Benzoic acid	mg/kg	--	--	--	--	--	--
Benzyl alcohol	mg/kg	--	--	--	--	--	--
Benzo[ghi]perylene	mg/kg	--	--	--	--	--	--
Benzo[k]fluoranthene	mg/kg	--	--	--	--	--	--
Butylbenzyl phthalate	mg/kg	--	--	--	--	--	--
Chrysene	mg/kg	--	--	--	--	--	--
Diethyl phthalate	mg/kg	--	--	--	--	--	--
Dibenzofuran	mg/kg	--	--	--	--	--	--
Di-*n*-butyl phthalate	mg/kg	--	--	--	--	--	--
Dimethyl phthalate	mg/kg	--	--	--	--	--	--
Fluoranthene	mg/kg	--	--	--	--	--	--
Fluorene	mg/kg	--	--	--	--	--	--
Indeno[1,2,3-cd]pyrene	mg/kg	--	--	--	--	--	--
Isophorone	mg/kg	--	--	--	--	--	--
Naphthalene	mg/kg	--	--	--	--	--	--
Nitrobenzene	mg/kg	--	--	--	--	--	--
N-nitroso dimethylamine	mg/kg	--	--	--	--	--	--
N-nitroso-di-*n*-propylamine	mg/kg	--	--	--	--	--	--
N-nitrosodiphenylamine	mg/kg	--	--	--	--	--	--
Phenanthrene	mg/kg	--	--	--	--	--	--
Phenol	mg/kg	--	--	--	--	--	--
Pyrene	mg/kg	--	--	--	--	--	--
VOCs							
1,1,1,2-Tetrachloroethane	mg/kg	1.0 *UJ*	0.050 *UJ*	0.0050 *U*	0.0050 *U*	0.0050 *U*	0.0050 *U*
1,1,1-Trichloroethane	mg/kg	1.0 *UJ*	0.050 *UJ*	0.0050 *U*	0.0050 *U*	0.0050 *U*	0.0050 *U*
1,1,2,2-Tetrachloroethane	mg/kg	1.0 *UJ*	0.050 *UJ*	0.0050 *U*	0.0050 *U*	0.0050 *U*	0.0050 *U*
1,1,2-Trichloroethane	mg/kg	1.0 *UJ*	0.050 *UJ*	0.0050 *U*	0.0050 *U*	0.0050 *U*	0.0050 *U*
1,1-Dichloroethane	mg/kg	1.0 *UJ*	0.050 *UJ*	0.0050 *U*	0.0050 *U*	0.0050 *U*	0.0050 *U*

Table (cont.)

Sample No:		SO0083	SO0084	SO0151	SO0158	SO0169	SO0139
Station ID:		MWA-11i	MWA-11i	B-49	B-49	B-49 (DUP)	B-50
Depth (ft.):	Units	26-28	28-30	2-2.5	7-8	7-8	.5-1
1,1-Dichloroethene	mg/kg	1.0 *UJ*	0.050 *UJ*	0.0050 *U*	0.0050 *U*	0.0050 *U*	0.0050 *U*
1,1-Dichloropropene	mg/kg	1.0 *UJ*	0.050 *UJ*	0.0050 *U*	0.0050 *U*	0.0050 *U*	0.0050 *U*
1,2,3-Trichlorobenzene	mg/kg	4.0 *UJ*	0.20 *UJ*	0.0200 *U*	0.0200 *U*	0.0200 *U*	0.0200 *U*
1,2,3-Trichloropropane	mg/kg	1.0 *UJ*	0.050 *UJ*	0.0050 *U*	0.0050 *U*	0.0050 *U*	0.0050 *U*
1,2,4-Trichlorobenzene	mg/kg	4.0 *UJ*	0.20 *UJ*	0.0200 *U*	0.0200 *U*	0.0200 *U*	0.0200 *U*
1,2,4-Trimethylbenzene	mg/kg	4.0 *UJ*	0.20 *UJ*	0.0200 *U*	0.0200 *U*	0.0200 *U*	0.0200 *U*
1,2-Dibromo-3-chloropropane	mg/kg	4.0 *UJ*	0.20 *UJ*	0.0200 *U*	0.0200 *U*	0.0200 *U*	0.0200 *U*
1,2-Dichlorobenzene	mg/kg	1.0 *UJ*	0.050 *UJ*	0.0050 *U*	0.0050 *U*	0.0050 *U*	0.0050 *U*
1,2-Dichloroethane	mg/kg	1.0 *UJ*	0.050 *UJ*	0.0050 *U*	0.0050 *U*	0.0050 *U*	0.0050 *U*
1,2-Dichloropropane	mg/kg	1.0 *UJ*	0.050 *UJ*	0.0050 *U*	0.0050 *U*	0.0050 *U*	0.0050 *U*
1,3,5-Trimethylbenzene	mg/kg	4.0 *UJ*	0.20 *UJ*	0.0200 *U*	0.0200 *U*	0.0200 *U*	0.0200 *U*
1,3-Dichlorobenzene	mg/kg	1.0 *UJ*	0.050 *UJ*	0.0050 *U*	0.0050 *U*	0.0050 *U*	0.0050 *U*
1,3-Dichloropropane	mg/kg	1.0 *UJ*	0.050 *UJ*	0.0050 *U*	0.0050 *U*	0.0050 *U*	0.0050 *U*
1,4-Dichlorobenzene	mg/kg	**5.2 *J***	**0.11 *J***	0.0050 *U*	0.0050 *U*	0.0050 *U*	0.0050 *U*
2,2-Dichloropropane	mg/kg	1.0 *U*	0.050 *U*	0.0050 *U*	0.0050 *U*	0.0050 *U*	0.0050 *U*
2-Butanone (methyl ethyl ketone, MEK)	mg/kg	40.0 *UR*	2.0 *UR*	0.0200 *UR*	0.0200 *UR*	0.0200 *UR*	0.0200 *UR*
2-Chlorotoluene	mg/kg	4.0 *UJ*	0.20 *UJ*	0.0200 *U*	0.0200 *U*	0.0200 *U*	0.0200 *U*
2-Hexanone	mg/kg	40.0 *UR*	2.0 *UR*	0.0200 *U*	0.0200 *U*	0.0200 *U*	0.0200 *U*
4-Chlorotoluene	mg/kg	4.0 *UJ*	0.20 *UJ*	0.0200 *U*	0.0200 *U*	0.0200 *U*	0.0200 *U*
4-Isopropyltoluene	mg/kg	4.0 *UJ*	0.20 *UJ*	0.0200 *U*	0.0200 *U*	0.0200 *U*	0.0200 *U*
4-Methyl-2-pentanone (MIBK)	mg/kg	40.0 *UR*	2.0 *UR*	0.0200 *UR*	0.0200 *UR*	0.0200 *UR*	0.0200 *UR*
Acetone	mg/kg	40.0 *UR*	2.0 *UR*	0.0500 *UR*	0.0500 *UR*	0.0500 *UR*	0.0500 *UR*
Benzene	mg/kg	1.0 *UJ*	0.050 *UJ*	0.0050 *U*	0.0050 *U*	0.0050 *U*	0.0050 *U*
Bromobenzene	mg/kg	1.0 *UJ*	0.050 *UJ*	0.0050 *U*	0.0050 *U*	0.0050 *U*	0.0050 *U*
Bromochloromethane	mg/kg	1.0 *UJ*	0.050 *UJ*	0.0050 *U*	0.0050 *U*	0.0050 *U*	0.0050 *U*
Bromodichloromethane	mg/kg	1.0 *UJ*	0.050 *UJ*	0.0050 *U*	0.0050 *U*	0.0050 *U*	0.0050 *U*
Bromoform	mg/kg	1.0 *UJ*	0.050 *UJ*	0.0050 *U*	0.0050 *U*	0.0050 *U*	0.0050 *U*
Bromomethane	mg/kg	1.0 *UJ*	0.050 *UJ*	0.0050 *U*	0.0050 *U*	0.0050 *U*	0.0050 *U*
Carbon disulfide	mg/kg	1.0 *UJ*	0.050 *UJ*	0.0050 *UJ*	0.0050 *UJ*	0.0050 *UJ*	0.0050 *U*
Carbon tetrachloride	mg/kg	1.0 *UJ*	0.050 *UJ*	0.0050 *U*	0.0050 *U*	0.0050 *U*	0.0050 *U*
Chlorobenzene	mg/kg	**880**	**39.0**	0.0050 *U*	0.0050 *U*	0.0050 *U*	0.0050 *U*
Chloroethane	mg/kg	1.0 *UJ*	0.050 *UJ*	0.0050 *U*	0.0050 *U*	0.0050 *U*	0.0050 *U*
Chloroform	mg/kg	1.0 *UJ*	0.050 *UJ*	0.0050 *U*	0.0050 *U*	0.0050 *U*	0.0050 *U*

Table 5. (cont.)

Sample No:		SO0083	SO0084	SO0151	SO0158	SO0169	SO0139
Station ID:		MWA-11i	MWA-11i	B-49	B-49	B-49 (DUP)	B-50
Depth (ft.):	Units	26-28	28-30	2-2.5	7-8	7-8	.5-1
Chloromethane	mg/kg	1.0 *UJ*	0.050 *UJ*	0.0050 *U*	0.0050 *U*	0.0050 *U*	0.0050 *U*
cis-1,2-Dichloroethene	mg/kg	1.0 *UJ*	0.050 *UJ*	0.0050 *U*	0.0050 *U*	0.0050 *U*	0.0050 *U*
cis-1,3-Dichloropropene	mg/kg	1.0 *UJ*	0.050 *UJ*	0.0050 *U*	0.0050 *U*	0.0050 *U*	0.0050 *U*
Dibromochloromethane	mg/kg	1.0 *UJ*	0.050 *UJ*	0.0050 *U*	0.0050 *U*	0.0050 *U*	0.0050 *U*
Dibromomethane	mg/kg	1.0 *UJ*	0.050 *UJ*	0.0050 *U*	0.0050 *U*	0.0050 *U*	0.0050 *U*
Dichlorodifluoromethane	mg/kg	1.0 *UJ*	0.050 *UJ*	0.0050 *U*	0.0050 *U*	0.0050 *U*	0.0050 *U*
EDB-ethylene bromide	mg/kg	4.0 *UJ*	0.20 *UJ*	0.0200 *U*	0.0200 *U*	0.0200 *U*	0.0200 *U*
Ethylbenzene	mg/kg	1.0 *UJ*	0.050 *UJ*	0.0050 *U*	0.0050 *U*	0.0050 *U*	0.0050 *U*
Hexachlorobutadiene	mg/kg	4.0 *UJ*	0.20 *UJ*	0.0200 *UJ*	0.0200 *UJ*	0.0200 *UJ*	0.0200 *U*
Isopropylbenzene	mg/kg	4.0 *UJ*	0.20 *UJ*	0.0200 *U*	0.0200 *U*	0.0200 *U*	0.0200 *U*
Methylene chloride (dichloromethane)	mg/kg	2.0 *UJ*	0.10 *UJ*	0.0100 *U*	0.0100 *U*	0.0100 *U*	0.0100 *U*
Naphthalene	mg/kg	4.0 *UJ*	0.20 *UJ*	0.0200 *U*	0.0200 *U*	0.0200 *U*	0.0200 *U*
n-Butyl benzene	mg/kg	4.0 *UJ*	0.20 *UJ*	0.0200 *U*	0.0200 *U*	0.0200 *U*	0.0200 *U*
N-Propylbenzene	mg/kg	4.0 *UJ*	0.20 *UJ*	0.0200 *U*	0.0200 *U*	0.0200 *U*	0.0200 *U*
sec Butylbenzene	mg/kg	4.0 *UJ*	0.20 *UJ*	0.0200 *U*	0.0200 *U*	0.0200 *U*	0.0200 *U*
Styrene	mg/kg	1.0 *UJ*	0.050 *UJ*	0.0050 *U*	0.0050 *U*	0.0050 *U*	0.0050 *U*
tert Butylbenzene	mg/kg	4.0 *UJ*	0.20 *UJ*	0.0200 *U*	0.0200 *U*	0.0200 *U*	0.0200 *U*
Tetrachloroethene	mg/kg	1.0 *UJ*	0.050 *UJ*	0.0050 *U*	0.0050 *U*	0.0050 *U*	0.0050 *U*
Toluene	mg/kg	1.0 *UJ*	0.050 *UJ*	0.0050 *U*	0.0050 *U*	0.0050 *U*	0.0050 *U*
trans-1,2-Dichloroethene	mg/kg	1.0 *UJ*	0.050 *UJ*	0.0050 *U*	0.0050 *U*	0.0050 *U*	0.0050 *U*
trans-1,3-Dichloropropene	mg/kg	1.0 *UJ*	0.050 *UJ*	0.0050 *U*	0.0050 *U*	0.0050 *U*	0.0050 *U*
Trichloroethene	mg/kg	1.0 *UJ*	0.050 *UJ*	0.0050 *U*	0.0050 *U*	0.0050 *U*	0.0050 *U*
Trichlorofluoromethane	mg/kg	1.0 *UJ*	0.050 *UJ*	0.0050 *U*	0.0050 *U*	0.0050 *U*	0.0050 *U*
Vinyl chloride (CH_2--CHCl)	mg/kg	1.0 *UJ*	0.050 *UJ*	0.0050 *U*	0.0050 *U*	0.0050 *U*	0.0050 *U*
Xylene isomers (total)	mg/kg	1.0 *UJ*	0.050 *UJ*	--	--	--	--
m- & *p*-Xylenes	µg/kg	--	--	0.0050 *U*	0.0050 *U*	0.0050 *U*	0.0050 *U*
ortho-Xylene	µg/kg	--	--	0.0050 *U*	0.0050 *U*	0.0050 *U*	0.0050 *U*

5. (cont.)

Sample No:		SO0145	SO0129	SO0135	SO0159	SO0165
Station ID:		B-50	B-51	B-51	B-52	B-52
Depth Interval (ft.):	Units	5-5.5	.5-1	5-5.5	.5-1	5-5.5
General Parameters						
Total organic carbon	%	--	--	--	--	--
Total solids (dry wt. as % of wet wt.)	%	**76.7**	**91.7**	**88.4**	**94.1**	**90.9**
Pesticides						
4,4'-DDD	mg/kg	0.012 *U*	0.01 *U*	**0.075**	0.01 *U*	0.01 *U*
4,4'-DDE	mg/kg	**0.018**	**0.197**	**0.423**	0.01 *U*	0.01 *U*
4,4'-DDT	mg/kg	0.012 *U*	**1.8**	**2.4**	**0.03**	**0.048**
Aldrin	mg/kg	0.012 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*
α-Chlordane	mg/kg	0.012 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*
α-Endosulfan (Endosulfan I)	mg/kg	0.012 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*
α-Hexachlorocyclohexane	mg/kg	0.012 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*
β-Endosulfan (Endosulfan II)	mg/kg	0.012 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*
β-Hexachlorocyclohexane	mg/kg	0.012 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*
δ-Hexachlorocyclohexane	mg/kg	0.012 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*
Dieldrin	mg/kg	0.012 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*
Endosulfan sulfate	mg/kg	0.012 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*
Endrin	mg/kg	0.012 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*
Endrin aldehyde	mg/kg	0.012 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*
Endrin ketone	mg/kg	0.012 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*
γ-Chlordane	mg/kg	0.012 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*
γ-Hexachlorocyclohexane (lindane)	mg/kg	0.012 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*
Heptachlor	mg/kg	0.012 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*
Heptachlor epoxide	mg/kg	0.012 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*
Methoxychlor	mg/kg	0.02 *U*	0.02 *U*	0.02 *U*	0.02 *U*	0.02 *U*
Toxaphene	mg/kg	1 *U*	1 *U*	1 *U*	1 *U*	1 *U*
SVOCs						
1,2-Dichlorobenzene	mg/kg	--	--	--	--	--
1,2,4-Trichlorobenzene	mg/kg	--	--	--	--	--
1,3-Dichlorobenzene	mg/kg	--	--	--	--	--
1,4-Dichlorobenzene	mg/kg	--	--	--	--	--
2-Chloronaphthalene	mg/kg	--	--	--	--	--
2-Chlorophenol	mg/kg	--	--	--	--	--
2-Methylnaphthalene	mg/kg	--	--	--	--	--

Table 5. (cont.)

Sample No:		SO0145	SO0129	SO0135	SO0159	SO0165
Station ID:		B-50	B-51	B-51	B-52	B-52
Depth (ft.):	Units	5-5.5	.5-1	5-5.5	.5-1	5-5.5
2-Methylphenol	mg/kg	--	--	--	--	--
2-Nitroaniline	mg/kg	--	--	--	--	--
2-Nitrophenol	mg/kg	--	--	--	--	--
2,4-Dichlorophenol	mg/kg	--	--	--	--	--
2,4-Dimethylphenol	mg/kg	--	--	--	--	--
2,4-Dinitrophenol	mg/kg	--	--	--	--	--
2,4-Dinitrotoluene	mg/kg	--	--	--	--	--
2,4,5-Trichlorophenol	mg/kg	--	--	--	--	--
2,4,6-Trichlorophenol	mg/kg	--	--	--	--	--
2,6-Dinitrotoluene	mg/kg	--	--	--	--	--
Dibenz[a,h]anthracene	mg/kg	--	--	--	--	--
2-Methyl-4,6-dinitrophenol	mg/kg	--	--	--	--	--
Di-*n*-octyl phthalate	mg/kg	--	--	--	--	--
3- and 4-Methylphenol	mg/kg	--	--	--	--	--
3-Nitroaniline	mg/kg	--	--	--	--	--
3,3'-Dichlorobenzidine	mg/kg	--	--	--	--	--
4-Bromophenyl-phenyl ether	mg/kg	--	--	--	--	--
4-Chloro-3-methylphenol (PCMC)	mg/kg	--	--	--	--	--
4-Chloroaniline	mg/kg	--	--	--	--	--
4-Chlorophenyl-phenyl ether	mg/kg	--	--	--	--	--
4-Nitroaniline	mg/kg	--	--	--	--	--
4-Nitrophenol	mg/kg	--	--	--	--	--
Pentachlorophenol	mg/kg	--	--	--	--	--
Hexachlorobenzene	mg/kg	--	--	--	--	--
Hexachlorobutadiene	mg/kg	--	--	--	--	--
Hexachlorocyclopentadiene	mg/kg	--	--	--	--	--
Hexachloroethane (perchloroethane)	mg/kg	--	--	--	--	--
Acenaphthene	mg/kg	--	--	--	--	--
Acenaphthylene	mg/kg	--	--	--	--	--
Aniline	mg/kg	--	--	--	--	--
Anthracene	mg/kg	--	--	--	--	--
Bis[2-chloroethyl]ether	mg/kg	--	--	--	--	--
Bis[2-ethylhexyl]phthalate	mg/kg	--	--	--	--	--

e 5. (cont.)

Sample No:		SO0145	SO0129	SO0135	SO0159	SO0165
Station ID:		B-50	B-51	B-51	B-52	B-52
Depth (ft.):	Units	5-5.5	.5-1	5-5.5	.5-1	5-5.5
Benz[a]anthracene	mg/kg	--	--	--	--	--
Benz[a]pyrene	mg/kg	--	--	--	--	--
Benzo[b]fluoranthene	mg/kg	--	--	--	--	--
Bis(2-chloroethoxy)methane	mg/kg	--	--	--	--	--
Bis(2-chloroisopropyl) ether	mg/kg	--	--	--	--	--
Benzoic acid	mg/kg	--	--	--	--	--
Benzyl alcohol	mg/kg	--	--	--	--	--
Benzo[ghi]perylene	mg/kg	--	--	--	--	--
Benzo[k]fluoranthene	mg/kg	--	--	--	--	--
Butylbenzyl phthalate	mg/kg	--	--	--	--	--
Chrysene	mg/kg	--	--	--	--	--
Diethyl phthalate	mg/kg	--	--	--	--	--
Dibenzofuran	mg/kg	--	--	--	--	--
Di-*n*-butyl phthalate	mg/kg	--	--	--	--	--
Dimethyl phthalate	mg/kg	--	--	--	--	--
Fluoranthene	mg/kg	--	--	--	--	--
Fluorene	mg/kg	--	--	--	--	--
Indeno[1,2,3-cd]pyrene	mg/kg	--	--	--	--	--
Isophorone	mg/kg	--	--	--	--	--
Naphthalene	mg/kg	--	--	--	--	--
Nitrobenzene	mg/kg	--	--	--	--	--
N-nitroso-dimethylamine	mg/kg	--	--	--	--	--
N-nitroso-di-*n*-propylamine	mg/kg	--	--	--	--	--
N-nitrosodiphenylamine	mg/kg	--	--	--	--	--
Phenanthrene	mg/kg	--	--	--	--	--
Phenol	mg/kg	--	--	--	--	--
Pyrene	mg/kg	--	--	--	--	--
VOCs						
1,1,1,2-Tetrachloroethane	mg/kg	0.0050 *U*	0.0050 *U*	0.0050 *U*	0.0050 *U*	0.0050 *U*
1,1,1-Trichloroethane	mg/kg	0.0050 *U*	0.0050 *U*	0.0050 *U*	0.0050 *U*	0.0050 *U*
1,1,2,2-Tetrachloroethane	mg/kg	0.0050 *U*	0.0050 *U*	0.0050 *U*	0.0050 *U*	0.0050 *U*
1,1,2-Trichloroethane	mg/kg	0.0050 *U*	0.0050 *U*	0.0050 *U*	0.0050 *U*	0.0050 *U*
1,1-Dichloroethane	mg/kg	0.0050 *U*	0.0050 *U*	0.0050 *U*	0.0050 *U*	0.0050 *U*

Table 5. (cont.)

Sample No:		SO0145	SO0129	SO0135	SO0159	SO0165
Station ID:		B-50	B-51	B-51	B-52	B-52
Depth (ft.):	Units	5-5.5	.5-1	5-5.5	.5-1	5-5.5
1,1-Dichloroethene	mg/kg	0.0050 *U*	0.0050 *U*	0.0050 *U*	0.0050 *U*	0.0050 *U*
1,1-Dichloropropene	mg/kg	0.0050 *U*	0.0050 *U*	0.0050 *U*	0.0050 *U*	0.0050 *U*
1,2,3-Trichlorobenzene	mg/kg	0.0200 *U*	0.0200 *U*	0.0200 *U*	0.0200 *U*	0.0200 *U*
1,2,3-Trichloropropane	mg/kg	0.0050 *U*	0.0050 *U*	0.0050 *U*	0.0050 *U*	0.0050 *U*
1,2,4-Trichlorobenzene	mg/kg	0.0200 *U*	0.0200 *U*	0.0200 *U*	0.0200 *U*	0.0200 *U*
1,2,4-Trimethylbenzene	mg/kg	0.0200 *U*	0.0200 *U*	0.0200 *U*	0.0200 *U*	0.0200 *U*
1,2-Dibromo-3-chloropropane	mg/kg	0.0200 *U*	0.0200 *U*	0.0200 *U*	0.0200 *U*	0.0200 *U*
1,2-Dichlorobenzene	mg/kg	0.0050 *U*	0.0050 *U*	0.0050 *U*	0.0050 *U*	0.0050 *U*
1,2-Dichloroethane	mg/kg	0.0050 *U*	0.0050 *U*	0.0050 *U*	0.0050 *U*	0.0050 *U*
1,2-Dichloropropane	mg/kg	0.0050 *U*	0.0050 *U*	0.0050 *U*	0.0050 *U*	0.0050 *U*
1,3,5-Trimethylbenzene	mg/kg	0.0200 *U*	0.0200 *U*	0.0200 *U*	0.0200 *U*	0.0200 *U*
1,3-Dichlorobenzene	mg/kg	0.0050 *U*	0.0050 *U*	0.0050 *U*	0.0050 *U*	0.0050 *U*
1,3-Dichloropropane	mg/kg	0.0050 *U*	0.0050 *U*	0.0050 *U*	0.0050 *U*	0.0050 *U*
1,4-Dichlorobenzene	mg/kg	0.0050 *U*	0.0050 *U*	0.0050 *U*	0.0050 *U*	0.0050 *U*
2,2-Dichloropropane	mg/kg	0.0050 *U*	0.0050 *U*	0.0050 *U*	0.0050 *U*	0.0050 *U*
2-Butanone (methyl ethyl ketone, MEK)	mg/kg	0.0200 *UR*	0.0200 *UR*	0.0200 *UR*	0.0200 *UR*	0.0200 *UR*
2-Chlorotoluene	mg/kg	0.0200 *U*	0.0200 *U*	0.0200 *U*	0.0200 *U*	0.0200 *U*
2-Hexanone	mg/kg	0.0200 *U*	0.0200 *U*	0.0200 *U*	0.0200 *U*	0.0200 *U*
4-Chlorotoluene	mg/kg	0.0200 *U*	0.0200 *U*	0.0200 *U*	0.0200 *U*	0.0200 *U*
4-Isopropyltoluene	mg/kg	0.0200 *U*	0.0200 *U*	0.0200 *U*	0.0200 *U*	0.0200 *U*
4-Methyl-2-pentanone (MIBK)	mg/kg	0.0200 *UR*	0.0200 *UR*	0.0200 *UR*	0.0200 *UR*	0.0200 *UR*
Acetone	mg/kg	0.0500 *UR*	0.0500 *UR*	0.0500 *UR*	0.0500 *UR*	0.0500 *UR*
Benzene	mg/kg	0.0050 *U*	0.0050 *U*	0.0050 *U*	0.0050 *U*	0.0050 *U*
Bromobenzene	mg/kg	0.0050 *U*	0.0050 *U*	0.0050 *U*	0.0050 *U*	0.0050 *U*
Bromochloromethane	mg/kg	0.0050 *U*	0.0050 *U*	0.0050 *U*	0.0050 *U*	0.0050 *U*
Bromodichloromethane	mg/kg	0.0050 *U*	0.0050 *U*	0.0050 *U*	0.0050 *U*	0.0050 *U*
Bromoform	mg/kg	0.0050 *U*	0.0050 *U*	0.0050 *U*	0.0050 *U*	0.0050 *U*
Bromomethane	mg/kg	0.0050 *U*	0.0050 *U*	0.0050 *U*	0.0050 *U*	0.0050 *U*
Carbon disulfide	mg/kg	0.0050 *UJ*	0.0050 *U*	0.0050 *U*	0.0050 *UJ*	0.0050 *UJ*
Carbon tetrachloride	mg/kg	0.0050 *U*	0.0050 *U*	0.0050 *U*	0.0050 *U*	0.0050 *U*
Chlorobenzene	mg/kg	0.0050 *U*	**0.0050**	0.0050 *U*	0.0050 *U*	0.0050 *U*
Chloroethane	mg/kg	0.0050 *U*	0.0050 *U*	0.0050 *U*	0.0050 *U*	0.0050 *U*
Chloroform	mg/kg	0.0050 *U*	0.0050 *U*	0.0050 *U*	0.0050 *U*	0.0050 *U*

e 5. (cont.)

Sample No:		SO0145	SO0129	SO0135	SO0159	SO0165
Station ID:		B-50	B-51	B-51	B-52	B-52
Depth (ft.):	Units	5-5.5	.5-1	5-5.5	.5-1	5-5.5
Chloromethane	mg/kg	0.0050 *U*	0.0050 *U*	0.0050 *U*	0.0050 *U*	0.0050 *U*
cis-1,2-Dichloroethene	mg/kg	0.0050 *U*	0.0050 *U*	0.0050 *U*	0.0050 *U*	0.0050 *U*
cis-1,3-Dichloropropene	mg/kg	0.0050 *U*	0.0050 *U*	0.0050 *U*	0.0050 *U*	0.0050 *U*
Dibromochloromethane	mg/kg	0.0050 *U*	0.0050 *U*	0.0050 *U*	0.0050 *U*	0.0050 *U*
Dibromomethane	mg/kg	0.0050 *U*	0.0050 *U*	0.0050 *U*	0.0050 *U*	0.0050 *U*
Dichlorodifluoromethane	mg/kg	0.0050 *U*	0.0050 *U*	0.0050 *U*	0.0050 *U*	0.0050 *U*
EDB-ethylene bromide	mg/kg	0.0200 *U*	0.0200 *U*	0.0200 *U*	0.0200 *U*	0.0200 *U*
Ethylbenzene	mg/kg	0.0050 *U*	0.0050 *U*	0.0050 *U*	0.0050 *U*	0.0050 *U*
Hexachlorobutadiene	mg/kg	0.0200 *UJ*	0.0200 *U*	0.0200 *U*	0.0200 *UJ*	0.0200 *UJ*
Isopropylbenzene	mg/kg	0.0200 *U*	0.0200 *U*	0.0200 *U*	0.0200 *U*	0.0200 *U*
Methylene chloride (dichloromethane)	mg/kg	0.0100 *U*	0.0100 *U*	0.0100 *U*	0.0100 *U*	0.0100 *U*
Naphthalene	mg/kg	0.0200 *U*	0.0200 *U*	0.0200 *U*	0.0200 *U*	0.0200 *U*
n-Butyl benzene	mg/kg	0.0200 *U*	0.0200 *U*	0.0200 *U*	0.0200 *U*	0.0200 *U*
N-Propylbenzene	mg/kg	0.0200 *U*	0.0200 *U*	0.0200 *U*	0.0200 *U*	0.0200 *U*
sec Butylbenzene	mg/kg	0.0200 *U*	0.0200 *U*	0.0200 *U*	0.0200 *U*	0.0200 *U*
Styrene	mg/kg	0.0050 *U*	0.0050 *U*	0.0050 *U*	0.0050 *U*	0.0050 *U*
tert Butylbenzene	mg/kg	0.0200 *U*	0.0200 *U*	0.0200 *U*	0.0200 *U*	0.0200 *U*
Tetrachloroethene	mg/kg	0.0050 *U*	0.0050 *U*	0.0050 *U*	0.0050 *U*	0.0050 *U*
Toluene	mg/kg	0.0050 *U*	0.0050 *U*	0.0050 *U*	0.0050 *U*	0.0050 *U*
trans-1,2-Dichloroethene	mg/kg	0.0050 *U*	0.0050 *U*	0.0050 *U*	0.0050 *U*	0.0050 *U*
trans-1,3-Dichloropropene	mg/kg	0.0050 *U*	0.0050 *U*	0.0050 *U*	0.0050 *U*	0.0050 *U*
Trichloroethene	mg/kg	0.0050 *U*	0.0050 *U*	0.0050 *U*	0.0050 *U*	0.0050 *U*
Trichlorofluoromethane	mg/kg	0.0050 *U*	0.0050 *U*	0.0050 *U*	0.0050 *U*	0.0050 *U*
Vinyl chloride (CH_2--CHCl)	mg/kg	0.0050 *U*	0.0050 *U*	0.0050 *U*	0.0050 *U*	0.0050 *U*
Xylene isomers (total)	mg/kg	--	--	--	--	--
m- & *p*-Xylenes	mg/kg	0.0050 *U*	0.0050 *U*	0.0050 *U*	0.0050 *U*	0.0050 *U*
ortho-Xylene	mg/kg	0.0050 *U*	0.0050 *U*	0.0050 *U*	0.0050 *U*	0.0050 *U*

Table 5. (cont.)

Sample No:		SO0254		SO0306	SO0311	SO0276	SO0281
Station ID:		B-53		B-54	B-54 (DUP)	B-55	B-55
Depth Interval (ft.):	Units	4.5-6 Total	4.5-6 SPLP Extraction[a]	4-5	4-5	6-7	12-13
General Parameters							
Total organic carbon	%	--	--	--	--	--	--
Total solids (dry wt. as % of wet wt.)	%	**80.9**	--	**78.6**	**81.7**	**68.1**	**86.6**
Pesticides							
4,4'-DDD	mg/kg	**80**	**0.007**	**0.26**	**0.7**	**36**	**0.289**
4,4'-DDE	mg/kg	**14**	0.0004 *U*	**1.3**	**0.096**	1 *U*	**0.021**
4,4'-DDT	mg/kg	**16,000**	**0.009**	**21**	**6.1**	**297**	**2.8**
Aldrin	mg/kg	12 *U*	0.0004 *UJ*	0.2 *U*	0.05 *U*	1 *U*	0.01 *U*
α-Chlordane	mg/kg	12 *U*	0.0004 *U*	0.2 *U*	0.05 *U*	1 *U*	0.01 *U*
α-Endosulfan (Endosulfan I)	mg/kg	12 *U*	0.0004 *U*	0.2 *U*	0.05 *U*	1 *U*	0.01 *U*
α-Hexachlorocyclohexane	mg/kg	12 *U*	0.087 *U*	0.2 *U*	0.05 *U*	**1.6**	**0.037**
β-Endosulfan (Endosulfan II)	mg/kg	12 *U*	0.012 *U*	0.2 *U*	0.05 *U*	1 *U*	0.01 *U*
β-Hexachlorocyclohexane	mg/kg	12 *U*	0.0004 *U*	0.2 *U*	0.05 *U*	1 *U*	0.01 *U*
δ-Hexachlorocyclohexane	mg/kg	12 *U*	0.0004 *U*	0.2 *U*	0.05 *U*	1 *U*	0.01 *U*
Dieldrin	mg/kg	12 *U*	0.0005 *U*	0.2 *U*	0.05 *U*	1 *U*	0.01 *U*
Endosulfan sulfate	mg/kg	12 *U*	0.0004 *U*	0.2 *U*	0.05 *U*	1 *U*	0.01 *U*
Endrin	mg/kg	12 *U*	0.0004 *U*	0.2 *U*	0.05 *U*	1 *U*	0.01 *U*
Endrin aldehyde	mg/kg	12 *U*	0.0004 *U*	0.2 *U*	0.05 *U*	1 *U*	0.01 *U*
Endrin ketone	mg/kg	12 *U*	0.0004 *U*	0.2 *U*	0.05 *U*	1 *U*	0.01 *U*
γ-Chlordane	mg/kg	12 *U*	0.0004 *U*	0.2 *U*	0.05 *U*	1 *U*	0.01 *U*
γ-Hexachlorocyclohexane (lindane)	mg/kg	12 *U*	0.0004 *U*	0.2 *U*	0.05 *U*	1 *U*	0.01 *U*
Heptachlor	mg/kg	12 *U*	0.0004 *U*	0.2 *U*	0.05 *U*	1 *U*	0.01 *U*
Heptachlor epoxide	mg/kg	12 *U*	0.0004 *U*	0.2 *U*	0.05 *U*	1 *U*	0.01 *U*
Methoxychlor	mg/kg	12 *U*	0.001 *U*	0.2 *U*	0.1 *U*	2 *U*	0.02 *U*
Toxaphene	mg/kg	600 *U*	0.01 *U*	20 *U*	5 *U*	30 *U*	1 *U*
SVOCs							
1,2-Dichlorobenzene	mg/kg	--	--	--	--	--	--
1,2,4-Trichlorobenzene	mg/kg	--	--	--	--	--	--
1,3-Dichlorobenzene	mg/kg	--	--	--	--	--	--
1,4-Dichlorobenzene	mg/kg	--	--	--	--	--	--
2-Chloronaphthalene	mg/kg	--	--	--	--	--	--
2-Chlorophenol	mg/kg	--	--	--	--	--	--
2-Methylnaphthalene	mg/kg	--	--	--	--	--	--

Table [illegible]ont.)

Sample No:		SO0254		SO0306	SO0311	SO0276	SO0281
Station ID:		B-53		B-54	B-54 (DUP)	B-55	B-55
Depth (ft.):	Units	4.5-6		4-5	4-5	6-7	12-13
		Total	SPLP Extraction[a]				
2-Methylphenol	mg/kg	--	--	--	--	--	--
2-Nitroaniline	mg/kg	--	--	--	--	--	--
2-Nitrophenol	mg/kg	--	--	--	--	--	--
2,4-Dichlorophenol	mg/kg	--	--	--	--	--	--
2,4-Dimethylphenol	mg/kg	--	--	--	--	--	--
2,4-Dinitrophenol	mg/kg	--	--	--	--	--	--
2,4-Dinitrotoluene	mg/kg	--	--	--	--	--	--
2,4,5-Trichlorophenol	mg/kg	--	--	--	--	--	--
2,4,6-Trichlorophenol	mg/kg	--	--	--	--	--	--
2,6-Dinitrotoluene	mg/kg	--	--	--	--	--	--
Dibenz[a,h]anthracene	mg/kg	--	--	--	--	--	--
2-Methyl-4,6-dinitrophenol	mg/kg	--	--	--	--	--	--
Di-*n*-octyl phthalate	mg/kg	--	--	--	--	--	--
3- and 4-Methylphenol	mg/kg	--	--	--	--	--	--
3-Nitroaniline	mg/kg	--	--	--	--	--	--
3,3´-Dichlorobenzidine	mg/kg	--	--	--	--	--	--
4-Bromophenyl-phenyl ether	mg/kg	--	--	--	--	--	--
4-Chloro-3-methylphenol (PCMC)	mg/kg	--	--	--	--	--	--
4-Chloroaniline	mg/kg	--	--	--	--	--	--
4-Chlorophenyl-phenyl ether	mg/kg	--	--	--	--	--	--
4-Nitroaniline	mg/kg	--	--	--	--	--	--
4-Nitrophenol	mg/kg	--	--	--	--	--	--
Pentachlorophenol	mg/kg	--	--	--	--	--	--
Hexachlorobenzene	mg/kg	--	--	--	--	--	--
Hexachlorobutadiene	mg/kg	--	--	--	--	--	--
Hexachlorocyclopentadiene	mg/kg	--	--	--	--	--	--
Hexachloroethane (perchloroethane)	mg/kg	--	--	--	--	--	--
Acenaphthene	mg/kg	--	--	--	--	--	--
Acenaphthylene	mg/kg	--	--	--	--	--	--
Aniline	mg/kg	--	--	--	--	--	--
Anthracene	mg/kg	--	--	--	--	--	--
Bis[2-chloroethyl]ether	mg/kg	--	--	--	--	--	--
Bis[2-ethylhexyl]phthalate	mg/kg	--	--	--	--	--	--

Table 5. (cont.)

Sample No:		SO0254		SO0306	SO0311	SO0276	SO0281
Station ID:		B-53		B-54	B-54 (DUP)	B-55	B-55
Depth (ft.):	Units	4.5-6 Total	4.5-6 SPLP Extraction[a]	4-5	4-5	6-7	12-13
Benz[a]anthracene	mg/kg	--	--	--	--	--	--
Benz[a]pyrene	mg/kg	--	--	--	--	--	--
Benzo[b]fluoranthene	mg/kg	--	--	--	--	--	--
Bis(2-chloroethoxy)methane	mg/kg	--	--	--	--	--	--
Bis(2-chloroisopropyl) ether	mg/kg	--	--	--	--	--	--
Benzoic acid	mg/kg	--	--	--	--	--	--
Benzyl alcohol	mg/kg	--	--	--	--	--	--
Benzo[ghi]perylene	mg/kg	--	--	--	--	--	--
Benzo[k]fluoranthene	mg/kg	--	--	--	--	--	--
Butylbenzyl phthalate	mg/kg	--	--	--	--	--	--
Chrysene	mg/kg	--	--	--	--	--	--
Diethyl phthalate	mg/kg	--	--	--	--	--	--
Dibenzofuran	mg/kg	--	--	--	--	--	--
Di-*n*-butyl phthalate	mg/kg	--	--	--	--	--	--
Dimethyl phthalate	mg/kg	--	--	--	--	--	--
Fluoranthene	mg/kg	--	--	--	--	--	--
Fluorene	mg/kg	--	--	--	--	--	--
Indeno[1,2,3-cd]pyrene	mg/kg	--	--	--	--	--	--
Isophorone	mg/kg	--	--	--	--	--	--
Naphthalene	mg/kg	--	--	--	--	--	--
Nitrobenzene	mg/kg	--	--	--	--	--	--
N-nitroso dimethylamine	mg/kg	--	--	--	--	--	--
N-nitroso-di-*n*-propylamine	mg/kg	--	--	--	--	--	--
N-nitrosodiphenylamine	mg/kg	--	--	--	--	--	--
Phenanthrene	mg/kg	--	--	--	--	--	--
Phenol	mg/kg	--	--	--	--	--	--
Pyrene	mg/kg	--	--	--	--	--	--
VOCs							
1,1,1,2-Tetrachloroethane	mg/kg	0.0050 *U*	0.50 *U*	0.0050 *U*	0.0050 *U*	5.0 *U*	0.0050 *U*
1,1,1-Trichloroethane	mg/kg	0.0050 *U*	0.50 *U*	0.0050 *U*	0.0050 *U*	5.0 *U*	0.0050 *U*
1,1,2,2-Tetrachloroethane	mg/kg	0.0050 *U*	0.50 *U*	0.0050 *U*	0.0050 *U*	5.0 *U*	0.0050 *U*
1,1,2-Trichloroethane	mg/kg	0.0050 *U*	0.50 *U*	0.0050 *U*	0.0050 *U*	5.0 *U*	0.0050 *U*
1,1-Dichloroethane	mg/kg	0.0050 *U*	0.50 *U*	0.0050 *U*	0.0050 *U*	5.0 *U*	0.0050 *U*

Table [illegible]nt.)

Sample No:		SO0254		SO0306	SO0311	SO0276	SO0281
Station ID:		B-53		B-54	B-54 (DUP)	B-55	B-55
Depth (ft.):	Units	4.5-6		4-5	4-5	6-7	12-13
		Total	SPLP Extraction[a]				
1,1-Dichloroethene	mg/kg	0.0050 *U*	0.50 *U*	0.0050 *U*	0.0050 *U*	5.0 *U*	0.0050 *U*
1,1-Dichloropropene	mg/kg	0.0050 *U*	0.50 *U*	0.0050 *U*	0.0050 *U*	5.0 *U*	0.0050 *U*
1,2,3-Trichlorobenzene	mg/kg	0.0200 *U*	2.0 *U*	0.0200 *U*	0.0200 *U*	20.0 *U*	0.0200 *U*
1,2,3-Trichloropropane	mg/kg	0.0050 *U*	0.50 *U*	0.0050 *U*	0.0050 *U*	5.0 *U*	0.0050 *U*
1,2,4-Trichlorobenzene	mg/kg	0.0200 *U*	2.0 *U*	0.0200 *U*	0.0200 *U*	20.0 *U*	0.0200 *U*
1,2,4-Trimethylbenzene	mg/kg	0.0200 *U*	2.0 *U*	0.0200 *U*	0.0200 *U*	20.0 *U*	0.0200 *U*
1,2-Dibromo-3-chloropropane	mg/kg	0.0200 *U*	2.0 *U*	0.0200 *U*	0.0200 *U*	20.0 *U*	0.0200 *U*
1,2-Dichlorobenzene	mg/kg	0.0240	0.50 *U*	0.0050 *U*	0.0050 *U*	8.0	0.0050 *U*
1,2-Dichloroethane	mg/kg	0.0050 *U*	0.50 *U*	0.0050 *U*	0.0050 *U*	5.0 *U*	0.0050 *U*
1,2-Dichloropropane	mg/kg	0.0050 *U*	0.50 *U*	0.0050 *U*	0.0050 *U*	5.0 *U*	0.0050 *U*
1,3,5-Trimethylbenzene	mg/kg	0.0200 *U*	2.0 *U*	0.0200 *U*	0.0200 *U*	20.0 *U*	0.0200 *U*
1,3-Dichlorobenzene	mg/kg	0.0050 *U*	0.50 *U*	0.0050 *U*	0.0050 *U*	5.0 *U*	0.0050 *U*
1,3-Dichloropropane	mg/kg	0.0050 *U*	0.50 *U*	0.0050 *U*	0.0050 *U*	5.0 *U*	0.0050 *U*
1,4-Dichlorobenzene	mg/kg	0.0050 *U*	0.50 *U*	0.0050 *U*	0.0050 *U*	51.0	0.0050 *U*
2,2-Dichloropropane	mg/kg	0.0050 *U*	0.50 *U*	0.0050 *U*	0.0050 *U*	5.0 *U*	0.0050 *U*
2-Butanone (methyl ethyl ketone, MEK)	mg/kg	0.0200 *UR*	20 *UR*	0.0200 *UR*	0.0200 *UR*	200 *UR*	0.0200 *UR*
2-Chlorotoluene	mg/kg	0.0200 *U*	2.0 *U*	0.0200 *U*	0.0200 *U*	20.0 *U*	0.0200 *U*
2-Hexanone	mg/kg	0.0200 *U*	20.0 *U*	0.0200 *U*	0.0200 *U*	200 *U*	0.0200 *U*
4-Chlorotoluene	mg/kg	0.0200 *U*	2.0 *U*	0.0200 *U*	0.0200 *U*	20.0 *U*	0.0200 *U*
4-Isopropyltoluene	mg/kg	0.0200 *U*	2.0 *U*	0.0200 *U*	0.0200 *U*	20.0 *U*	0.0200 *U*
4-Methyl-2-pentanone (MIBK)	mg/kg	0.0200 *UR*	20.0 *UR*	0.0200 *U*	0.0200 *U*	200 *UR*	0.0200 *U*
Acetone	mg/kg	0.0500 *UR*	20.0 *UR*	0.0500 *UR*	0.0500 *UR*	200 *UR*	0.0500 *UR*
Benzene	mg/kg	0.0050 *U*	0.50 *U*	0.0050 *U*	0.0050 *U*	5.0 *U*	0.0050 *U*
Bromobenzene	mg/kg	0.0050 *U*	0.50 *U*	0.0050 *U*	0.0050 *U*	20.0 *U*	0.0050 *U*
Bromochloromethane	mg/kg	0.0050 *U*	0.50 *U*	0.0050 *U*	0.0050 *U*	5.0 *U*	0.0050 *U*
Bromodichloromethane	mg/kg	0.0050 *U*	0.50 *U*	0.0050 *U*	0.0050 *U*	5.0 *U*	0.0050 *U*
Bromoform	mg/kg	0.0050 *U*	0.50 *U*	0.0050 *U*	0.0050 *U*	5.0 *U*	0.0050 *U*
Bromomethane	mg/kg	0.0050 *U*	0.50 *U*	0.0050 *U*	0.0050 *U*	5.0 *U*	0.0050 *U*
Carbon disulfide	mg/kg	0.0050 *UJ*	0.50 *U*	0.0050 *UJ*	0.0050 *UJ*	5.0 *U*	0.0050 *UJ*
Carbon tetrachloride	mg/kg	0.0050 *U*	0.50 *U*	0.0050 *U*	0.0050 *U*	5.0 *U*	0.0050 *U*
Chlorobenzene	mg/kg	**1.40**	**44**	0.0050 *U*	**0.0070**	**4,100**	0.0050 *U*
Chloroethane	mg/kg	0.0050 *U*	**1.9 *J***	0.0050 *U*	0.0050 *U*	5.0 *U*	0.0050 *U*
Chloroform	mg/kg	**0.0620**	--	0.0050 *U*	0.0050 *U*	5.0 *U*	0.0050 *U*

Table 5. (cont.)

Sample No:		SO0254		SO0306	SO0311	SO0276	SO0281
Station ID:		B-53		B-54	B-54 (DUP)	B-55	B-55
Depth (ft.):	Units	4.5-6 Total	4.5-6 SPLP Extraction[a]	4-5	4-5	6-7	12-13
Chloromethane	mg/kg	0.0050 *U*	0.50 *U*	0.0050 *U*	0.0050 *U*	5.0 *U*	0.0050 *U*
cis-1,2-Dichloroethene	mg/kg	0.0050 *U*	0.50 *U*	0.0050 *U*	0.0050 *U*	5.0 *U*	0.0050 *U*
cis-1,3-Dichloropropene	mg/kg	0.0050 *U*	0.50 *U*	0.0050 *U*	0.0050 *U*	5.0 *U*	0.0050 *U*
Dibromochloromethane	mg/kg	0.0050 *U*	0.50 *U*	0.0050 *U*	0.0050 *U*	5.0 *U*	0.0050 *U*
Dibromomethane	mg/kg	0.0050 *U*	0.50 *U*	0.0050 *U*	0.0050 *U*	5.0 *U*	0.0050 *U*
Dichlorodifluoromethane	mg/kg	0.0050 *U*	0.50 *U*	0.0050 *UJ*	0.0050 *UJ*	5.0 *U*	0.0050 *U*
EDB-ethylene bromide	mg/kg	0.0200 *U*	2.0 *U*	0.0200 *U*	0.0200 *U*	20.0 *U*	0.0200 *U*
Ethylbenzene	mg/kg	0.0050 *U*	0.50 *U*	0.0050 *U*	0.0050 *U*	5.0 *U*	0.0050 *U*
Hexachlorobutadiene	mg/kg	0.0200 *UJ*	2.0 *U*	0.0200 *UJ*	0.0200 *UJ*	20.0 *U*	0.0200 *U*
Isopropylbenzene	mg/kg	0.0200 *U*	2.0 *U*	0.0200 *U*	0.0200 *U*	20.0 *U*	0.0200 *U*
Methylene chloride (dichloromethane)	mg/kg	0.0100 *U*	5.0 *U*	0.0100 *U*	0.0100 *U*	10.0 *U*	0.0100 *U*
Naphthalene	mg/kg	0.0200 *U*	2.0 *U*	0.0200 *U*	0.0200 *U*	20.0 *U*	0.0200 *U*
n-Butyl benzene	mg/kg	0.0200 *U*	2.0 *U*	0.0200 *U*	0.0200 *U*	20.0 *U*	0.0200 *U*
N-Propylbenzene	mg/kg	0.0200 *U*	2.0 *U*	0.0200 *U*	0.0200 *U*	20.0 *U*	0.0200 *U*
sec Butylbenzene	mg/kg	0.0200 *U*	2.0 *U*	0.0200 *U*	0.0200 *U*	20.0 *U*	0.0200 *U*
Styrene	mg/kg	0.0050 *U*	0.50 *U*	0.0050 *U*	0.0050 *U*	5.0 *U*	0.0050 *U*
tert Butylbenzene	mg/kg	0.0200 *U*	2.0 *U*	0.0200 *U*	0.0200 *U*	20.0 *U*	0.0200 *U*
Tetrachloroethene	mg/kg	0.0050 *U*	**3.9 *J***	0.0050 *U*	0.0050 *U*	**14.0**	0.0050 *U*
Toluene	mg/kg	0.0050 *U*	0.50 *U*	0.0050 *U*	0.0050 *U*	5.0 *U*	0.0050 *U*
trans-1,2-Dichloroethene	mg/kg	0.0050 *U*	0.50 *U*	0.0050 *U*	0.0050 *U*	5.0 *U*	0.0050 *U*
trans-1,3-Dichloropropene	mg/kg	0.0050 *U*	0.50 *U*	0.0050 *U*	0.0050 *U*	5.0 *U*	0.0050 *U*
Trichloroethene	mg/kg	**0.0830**	0.50 *U*	0.0050 *U*	0.0050 *U*	5.0 *U*	0.0050 *U*
Trichlorofluoromethane	mg/kg	0.0050 *U*	0.50 *U*	0.0050 *U*	0.0050 *U*	5.0 *U*	0.0050 *U*
Vinyl chloride (CH_2--CHCl)	mg/kg	0.0050 *U*	0.50 *U*	0.0050 *U*	0.0050 *U*	5.0 *U*	0.0050 *U*
Xylene isomers (total)	mg/kg	--	--	--	--	--	--
m- & *p*-Xylenes	mg/kg	0.0050 *U*	0.50 *U*	0.0050 *U*	0.0050 *U*	5.0 *U*	0.0050 *U*
ortho-Xylene	mg/kg	0.0050 *U*	0.50 *U*	0.0050 *U*	0.0050 *U*	5.0 *U*	0.0050 *U*

Table 5 (Cont.)

Sample No:		SO0289	SO0300	SO0174	SO0176	SO0178	SO0180	SO0182	SO0184
Station ID:		B-56	B-56	US-01	US-01	US-02	US-02	US-03	US-03
Depth Interval (ft.):	Units	4-5	19-20	0-.5	2-2.5	0-.5	2-2.5	0-.5	2-2.5
General Parameters									
Total organic carbon	%	--	--	--	--	--	--	--	--
Total solids (dry wt. as % of wet wt.)	%	**78.5**	**80.9**	**94.8**	**80.6**	**81.7**	**84.5**	**93.8**	**85.7**
Pesticides									
4,4'-DDD	mg/kg	**4.9**	0.01 *U*	**0.42**	**38**	**0.113**	0.01 *U*	**9**	**1.1**
4,4'-DDE	mg/kg	**3.2**	0.01 *U*	**0.89**	**53**	**0.151**	**0.012**	**6.6**	**3.2**
4,4'-DDT	mg/kg	**454**	0.01 *U*	**6.6**	**690**	**1.9**	**0.239**	**140**	**25**
Aldrin	mg/kg	0.2 *U*	0.01 *U*	0.1 *U*	12 *U*	0.01 *U*	0.01 *U*	1.1 *U*	1 *U*
α-Chlordane	mg/kg	0.2 *U*	0.01 *U*	0.1 *U*	12 *U*	0.01 *U*	0.01 *U*	1.1 *U*	1 *U*
α-Endosulfan (Endosulfan I)	mg/kg	0.2 *U*	0.01 *U*	0.1 *U*	12 *U*	0.01 *U*	0.01 *U*	1.1 *U*	1 *U*
α-Hexachlorocyclohexane	mg/kg	0.2 *U*	0.01 *U*	0.1 *U*	12 *U*	0.01 *U*	0.01 *U*	1.1 *U*	1 *U*
β-Endosulfan (Endosulfan II)	mg/kg	0.2 *U*	0.01 *U*	0.1 *U*	12 *U*	0.01 *U*	0.01 *U*	1.1 *U*	1 *U*
β-Hexachlorocyclohexane	mg/kg	0.2 *U*	0.01 *U*	0.1 *U*	12 *U*	0.01 *U*	0.01 *U*	1.1 *U*	1 *U*
δ-Hexachlorocyclohexane	mg/kg	0.2 *U*	0.01 *U*	0.1 *U*	12 *U*	0.01 *U*	0.01 *U*	1.1 *U*	1 *U*
Dieldrin	mg/kg	0.2 *U*	0.01 *U*	0.1 *U*	12 *U*	0.01 *U*	0.01 *U*	1.1 *U*	1 *U*
Endosulfan sulfate	mg/kg	0.2 *U*	0.01 *U*	0.1 *U*	12 *U*	0.01 *U*	0.01 *U*	1.1 *U*	1 *U*
Endrin	mg/kg	0.2 *U*	0.01 *U*	0.1 *U*	12 *U*	0.01 *U*	0.01 *U*	1.1 *U*	1 *U*
Endrin aldehyde	mg/kg	0.2 *U*	0.01 *U*	0.1 *U*	12 *U*	0.01 *U*	0.01 *U*	1.1 *U*	1 *U*
Endrin ketone	mg/kg	0.2 *U*	0.01 *U*	0.1 *U*	12 *U*	0.01 *U*	0.01 *U*	1.1 *U*	1 *U*
γ-Chlordane	mg/kg	0.2 *U*	0.01 *U*	0.1 *U*	12 *U*	0.01 *U*	0.01 *U*	1.1 *U*	1 *U*
γ-Hexachlorocyclohexane (lindane)	mg/kg	0.2 *U*	0.01 *U*	0.1 *U*	12 *U*	0.01 *U*	0.01 *U*	1.1 *U*	1 *U*
Heptachlor	mg/kg	0.2 *U*	0.01 *U*	0.1 *U*	12 *U*	0.01 *U*	0.01 *U*	1.1 *U*	1 *U*
Heptachlor epoxide	mg/kg	0.2 *U*	0.01 *U*	0.1 *U*	12 *U*	0.01 *U*	0.01 *U*	1.1 *U*	1 *U*
Methoxychlor	mg/kg	0.2 *U*	0.01 *U*	0.2 *U*	20 *U*	0.02 *U*	0.02 *U*	2 *U*	2 *U*
Toxaphene	mg/kg	20 *U*	1 *U*	10 *U*	1000 *U*	1 *U*	1 *U*	100 *U*	100 *U*
SVOCs									
1,2-Dichlorobenzene	mg/kg	--	--	--	--	--	--	--	--
1,2,4-Trichlorobenzene	mg/kg	--	--	--	--	--	--	--	--
1,3-Dichlorobenzene	mg/kg	--	--	--	--	--	--	--	--
1,4-Dichlorobenzene	mg/kg	--	--	--	--	--	--	--	--
2-Chloronaphthalene	mg/kg	--	--	--	--	--	--	--	--
2-Chlorophenol	mg/kg	--	--	--	--	--	--	--	--
2-Methylnaphthalene	mg/kg	--	--	--	--	--	--	--	--

Table 5. (cont.)

Sample No:		SO0289	SO0300	SO0174	SO0176	SO0178	SO0180	SO0182	SO0184
Station ID:		B-56	B-56	US-01	US-01	US-02	US-02	US-03	US-03
Depth (ft.):	Units	4-5	19-20	0-.5	2-2.5	0-.5	2-2.5	0-.5	2-2.5
2-Methylphenol	mg/kg	--	--	--	--	--	--	--	--
2-Nitroaniline	mg/kg	--	--	--	--	--	--	--	--
2-Nitrophenol	mg/kg	--	--	--	--	--	--	--	--
2,4-Dichlorophenol	mg/kg	--	--	--	--	--	--	--	--
2,4-Dimethylphenol	mg/kg	--	--	--	--	--	--	--	--
2,4-Dinitrophenol	mg/kg	--	--	--	--	--	--	--	--
2,4-Dinitrotoluene	mg/kg	--	--	--	--	--	--	--	--
2,4,5-Trichlorophenol	mg/kg	--	--	--	--	--	--	--	--
2,4,6-Trichlorophenol	mg/kg	--	--	--	--	--	--	--	--
2,6-Dinitrotoluene	mg/kg	--	--	--	--	--	--	--	--
Dibenz[a,h]anthracene	mg/kg	--	--	--	--	--	--	--	--
2-Methyl-4,6-dinitrophenol	mg/kg	--	--	--	--	--	--	--	--
Di-*n*-octyl phthalate	mg/kg	--	--	--	--	--	--	--	--
3- and 4-Methylphenol	mg/kg	--	--	--	--	--	--	--	--
3-Nitroaniline	mg/kg	--	--	--	--	--	--	--	--
3,3´-Dichlorobenzidine	mg/kg	--	--	--	--	--	--	--	--
4-Bromophenyl-phenyl ether	mg/kg	--	--	--	--	--	--	--	--
4-Chloro-3-methylphenol (PCMC)	mg/kg	--	--	--	--	--	--	--	--
4-Chloroaniline	mg/kg	--	--	--	--	--	--	--	--
4-Chlorophenyl-phenyl ether	mg/kg	--	--	--	--	--	--	--	--
4-Nitroaniline	mg/kg	--	--	--	--	--	--	--	--
4-Nitrophenol	mg/kg	--	--	--	--	--	--	--	--
Pentachlorophenol	mg/kg	--	--	--	--	--	--	--	--
Hexachlorobenzene	mg/kg	--	--	--	--	--	--	--	--
Hexachlorobutadiene	mg/kg	--	--	--	--	--	--	--	--
Hexachlorocyclopentadiene	mg/kg	--	--	--	--	--	--	--	--
Hexachloroethane (perchloroethane)	mg/kg	--	--	--	--	--	--	--	--
Acenaphthene	mg/kg	--	--	--	--	--	--	--	--
Acenaphthylene	mg/kg	--	--	--	--	--	--	--	--
Aniline	mg/kg	--	--	--	--	--	--	--	--
Anthracene	mg/kg	--	--	--	--	--	--	--	--
Bis[2-chloroethyl]ether	mg/kg	--	--	--	--	--	--	--	--
Bis[2-ethylhexyl]phthalate	mg/kg	--	--	--	--	--	--	--	--

Table 5 (Cont.)

Sample No:		SO0289	SO0300	SO0174	SO0176	SO0178	SO0180	SO0182	SO0184
Station ID:		B-56	B-56	US-01	US-01	US-02	US-02	US-03	US-03
Depth (ft.):	Units	4-5	19-20	0-.5	2-2.5	0-.5	2-2.5	0-.5	2-2.5
Benz[a]anthracene	mg/kg	--	--	--	--	--	--	--	--
Benz[a]pyrene	mg/kg	--	--	--	--	--	--	--	--
Benzo[b]fluoranthene	mg/kg	--	--	--	--	--	--	--	--
Bis(2-chloroethoxy)methane	mg/kg	--	--	--	--	--	--	--	--
Bis(2-chloroisopropyl) ether	mg/kg	--	--	--	--	--	--	--	--
Benzoic acid	mg/kg	--	--	--	--	--	--	--	--
Benzyl alcohol	mg/kg	--	--	--	--	--	--	--	--
Benzo[ghi]perylene	mg/kg	--	--	--	--	--	--	--	--
Benzo[k]fluoranthene	mg/kg	--	--	--	--	--	--	--	--
Butylbenzyl phthalate	mg/kg	--	--	--	--	--	--	--	--
Chrysene	mg/kg	--	--	--	--	--	--	--	--
Diethyl phthalate	mg/kg	--	--	--	--	--	--	--	--
Dibenzofuran	mg/kg	--	--	--	--	--	--	--	--
Di-*n*-butyl phthalate	mg/kg	--	--	--	--	--	--	--	--
Dimethyl phthalate	mg/kg	--	--	--	--	--	--	--	--
Fluoranthene	mg/kg	--	--	--	--	--	--	--	--
Fluorene	mg/kg	--	--	--	--	--	--	--	--
Indeno[1,2,3-cd]pyrene	mg/kg	--	--	--	--	--	--	--	--
Isophorone	mg/kg	--	--	--	--	--	--	--	--
Naphthalene	mg/kg	--	--	--	--	--	--	--	--
Nitrobenzene	mg/kg	--	--	--	--	--	--	--	--
N-nitroso dimethylamine	mg/kg	--	--	--	--	--	--	--	--
N-nitroso-di-*n*-propylamine	mg/kg	--	--	--	--	--	--	--	--
N-nitrosodiphenylamine	mg/kg	--	--	--	--	--	--	--	--
Phenanthrene	mg/kg	--	--	--	--	--	--	--	--
Phenol	mg/kg	--	--	--	--	--	--	--	--
Pyrene	mg/kg	--	--	--	--	--	--	--	--
VOCs									
1,1,1,2-Tetrachloroethane	mg/kg	0.0050 *U*	0.0050 *U*	--	--	--	--	--	--
1,1,1-Trichloroethane	mg/kg	0.0050 *U*	0.0050 *U*	--	--	--	--	--	--
1,1,2,2-Tetrachloroethane	mg/kg	0.0050 *U*	0.0050 *U*	--	--	--	--	--	--
1,1,2-Trichloroethane	mg/kg	0.0050 *U*	0.0050 *U*	--	--	--	--	--	--
1,1-Dichloroethane	mg/kg	0.0050 *U*	0.0050 *U*	--	--	--	--	--	--

Table 5. (cont.)

Sample No:		SO0289	SO0300	SO0174	SO0176	SO0178	SO0180	SO0182	SO0184
Station ID:		B-56	B-56	US-01	US-01	US-02	US-02	US-03	US-03
Depth (ft.):	Units	4-5	19-20	0-.5	2-2.5	0-.5	2-2.5	0-.5	2-2.5
1,1-Dichloroethene	mg/kg	0.0050 *U*	0.0050 *U*	--	--	--	--	--	--
1,1-Dichloropropene	mg/kg	0.0050 *U*	0.0050 *U*	--	--	--	--	--	--
1,2,3-Trichlorobenzene	mg/kg	0.0200 *U*	0.0200 *U*	--	--	--	--	--	--
1,2,3-Trichloropropane	mg/kg	0.0050 *U*	0.0050 *U*	--	--	--	--	--	--
1,2,4-Trichlorobenzene	mg/kg	0.0200 *U*	0.0200 *U*	--	--	--	--	--	--
1,2,4-Trimethylbenzene	mg/kg	0.0200 *U*	0.0200 *U*	--	--	--	--	--	--
1,2-Dibromo-3-chloropropane	mg/kg	0.0200 *U*	0.0200 *U*	--	--	--	--	--	--
1,2-Dichlorobenzene	mg/kg	0.0050 *U*	0.0050 *U*	--	--	--	--	--	--
1,2-Dichloroethane	mg/kg	0.0050 *U*	0.0050 *U*	--	--	--	--	--	--
1,2-Dichloropropane	mg/kg	0.0050 *U*	0.0050 *U*	--	--	--	--	--	--
1,3,5-Trimethylbenzene	mg/kg	0.0200 *U*	0.0200 *U*	--	--	--	--	--	--
1,3-Dichlorobenzene	mg/kg	0.0050 *U*	0.0050 *U*	--	--	--	--	--	--
1,3-Dichloropropane	mg/kg	0.0050 *U*	0.0050 *U*	--	--	--	--	--	--
1,4-Dichlorobenzene	mg/kg	0.0050 *U*	0.0050 *U*	--	--	--	--	--	--
2,2-Dichloropropane	mg/kg	0.0050 *U*	0.0050 *U*	--	--	--	--	--	--
2-Butanone (methyl ethyl ketone, MEK)	mg/kg	0.0200 *UR*	0.0200 *UR*	--	--	--	--	--	--
2-Chlorotoluene	mg/kg	0.0200 *U*	0.0200 *U*	--	--	--	--	--	--
2-Hexanone	mg/kg	0.0200 *U*	0.0200 *U*	--	--	--	--	--	--
4-Chlorotoluene	mg/kg	0.0200 *U*	0.0200 *U*	--	--	--	--	--	--
4-Isopropyltoluene	mg/kg	0.0200 *U*	0.0200 *U*	--	--	--	--	--	--
4-Methyl-2-pentanone (MIBK)	mg/kg	0.0200 *U*	0.0200 *U*	--	--	--	--	--	--
Acetone	mg/kg	0.0500 *UR*	0.0500 *UR*	--	--	--	--	--	--
Benzene	mg/kg	0.0050 *U*	0.0050 *U*	--	--	--	--	--	--
Bromobenzene	mg/kg	0.0050 *U*	0.0050 *U*	--	--	--	--	--	--
Bromochloromethane	mg/kg	0.0050 *U*	0.0050 *U*	--	--	--	--	--	--
Bromodichloromethane	mg/kg	0.0050 *U*	0.0050 *U*	--	--	--	--	--	--
Bromoform	mg/kg	0.0050 *U*	0.0050 *U*	--	--	--	--	--	--
Bromomethane	mg/kg	0.0050 *U*	0.0050 *U*	--	--	--	--	--	--
Carbon disulfide	mg/kg	0.0050 *UJ*	0.0050 *UJ*	--	--	--	--	--	--
Carbon tetrachloride	mg/kg	0.0050 *U*	0.0050 *U*	--	--	--	--	--	--
Chlorobenzene	mg/kg	**0.0070**	0.0050 *U*	--	--	--	--	--	--
Chloroethane	mg/kg	0.0050 *U*	0.0050 *U*	--	--	--	--	--	--
Chloroform	mg/kg	0.0050 *U*	0.0050 *U*	--	--	--	--	--	--

Table 5. [illegible]t.)

Sample No:		SO0289	SO0300	SO0174	SO0176	SO0178	SO0180	SO0182	SO0184
Station ID:		B-56	B-56	US-01	US-01	US-02	US-02	US-03	US-03
Depth (ft.):	Units	4-5	19-20	0-.5	2-2.5	0-.5	2-2.5	0-.5	2-2.5
Chloromethane	mg/kg	0.0050 *U*	0.0050 *U*	--	--	--	--	--	--
cis-1,2-Dichloroethene	mg/kg	0.0050 *U*	0.0050 *U*	--	--	--	--	--	--
cis-1,3-Dichloropropene	mg/kg	0.0050 *U*	0.0050 *U*	--	--	--	--	--	--
Dibromochloromethane	mg/kg	0.0050 *U*	0.0050 *U*	--	--	--	--	--	--
Dibromomethane	mg/kg	0.0050 *U*	0.0050 *U*	--	--	--	--	--	--
Dichlorodifluoromethane	mg/kg	0.0050 *U*	0.0050 *U*	--	--	--	--	--	--
EDB-ethylene bromide	mg/kg	0.0200 *U*	0.0200 *U*	--	--	--	--	--	--
Ethylbenzene	mg/kg	0.0050 *U*	0.0050 *U*	--	--	--	--	--	--
Hexachlorobutadiene	mg/kg	0.0200 *U*	0.0200 *U*	--	--	--	--	--	--
Isopropylbenzene	mg/kg	0.0200 *U*	0.0200 *U*	--	--	--	--	--	--
Methylene chloride (dichloromethane)	mg/kg	0.0100 *U*	0.0100 *U*	--	--	--	--	--	--
Naphthalene	mg/kg	0.0200 *U*	0.0200 *U*	--	--	--	--	--	--
n-Butyl benzene	mg/kg	0.0200 *U*	0.0200 *U*	--	--	--	--	--	--
N-Propylbenzene	mg/kg	0.0200 *U*	0.0200 *U*	--	--	--	--	--	--
sec Butylbenzene	mg/kg	0.0200 *U*	0.0200 *U*	--	--	--	--	--	--
Styrene	mg/kg	0.0050 *U*	0.0050 *U*	--	--	--	--	--	--
tert Butylbenzene	mg/kg	0.0200 *U*	0.0200 *U*	--	--	--	--	--	--
Tetrachloroethene	mg/kg	0.0050 *U*	0.0050 *U*	--	--	--	--	--	--
Toluene	mg/kg	0.0050 *U*	0.0050 *U*	--	--	--	--	--	--
trans-1,2-Dichloroethene	mg/kg	0.0050 *U*	0.0050 *U*	--	--	--	--	--	--
trans-1,3-Dichloropropene	mg/kg	0.0050 *U*	0.0050 *U*	--	--	--	--	--	--
Trichloroethene	mg/kg	0.0050 *U*	0.0050 *U*	--	--	--	--	--	--
Trichlorofluoromethane	mg/kg	0.0050 *U*	0.0050 *U*	--	--	--	--	--	--
Vinyl chloride (CH_2--CHCl)	mg/kg	0.0050 *U*	0.0050 *U*	--	--	--	--	--	--
Xylene isomers (total)	mg/kg	--	--	--	--	--	--	--	--
m- & *p*-Xylenes	mg/kg	0.0050 *U*	0.0050 *U*	--	--	--	--	--	--
ortho-Xylene	mg/kg	0.0050 *U*	0.0050 *U*	--	--	--	--	--	--

Note: Detected constituents in **bold**
-- not available?
SVOC - semivolatile organic compound
VOC - volatile organic compound

U - undetected at detection limit shown
J - estimated
R - rejected

[a] SPLP extraction results are reported in µg/L.

Table 6. Results of SPLP extraction test, former manufacturing process residue pond (Borehole B-53, Sample SO0254, Depth 4.5-6 ft)

Analyte	Total Soil Concentration mg/kg	SPLP Leachate µg/L
1,2-Dichlorobenzene	0.024	0.5 *U*
4,4´-DDD (TDE)	80	7
4,4´-DDE	14	0.4 *U*
4,4´-DDT	16,000	9
Chlorobenzene	1.4	44
Chloroethane	0.005 *U*	1.9
Chloroform	0.062	1.7
Methylene chloride	0.010 *U*	5
Tetrachloroethene	0.005 *U*	3.9
Trichloroethene	0.083	0.5 *U*

Note: SPLP - synthetic precipitation leaching procedure
U - undetected at detection limit shown

Table 7. Analytical results from groundwater grab stations

Analyte	GWGX10 B-55 02/19/99 (µg/L)	GWG011 B-56 02/19/99 (µg/L)
Volatile Organic Compounds		
1,1-Dichloroethane	62.0 *U*	0.50 *U*
1,1-Dichloroethene	62.0 *U*	0.50 *U*
1,1-Dichloropropene	62.0 *U*	0.50 *U*
1,1,1-Trichloroethane	**94.0**	**6.3**
1,1,1,2-Tetrachloroethane	62.0 *U*	0.50 *U*
1,1,2-Trichloroethane	62.0 *U*	0.50 *U*
1,1,2,2-Tetrachloroethane	62.0 *U*	0.50 *U*
EDB-Ethylene bromide	250 *U*	2.0 *U*
1,2-Dichlorobenzene	62.0 *U*	0.50 *U*
1,2-Dichloroethane	62.0 *U*	0.50 *U*
1,2-Dichloropropane	62.0 *U*	0.50 *U*
1,2,3-Trichlorobenzene	250 *U*	2.0 *U*
1,2,3-Trichloropropane	62.0 *U*	0.50 *U*
1,2,4-Trichlorobenzene	250 *U*	2.0 *U*
1,2,4-Trimethylbenzene	250 *U*	2.0 *U*
1,2-Dibromo-3-chloropropane	250 *U*	2.0 *U*
1,3-Dichlorobenzene	62.0 *U*	0.50 *U*
1,3-Dichloropropane	62.0 *U*	0.50 *U*
1,3,5-Trimethylbenzene	250 *U*	2.0 *U*
1,4-Dichlorobenzene	62.0 *U*	**0.80**
2-Butanone (methyl ethyl ketone, MEK)	2,500 *UR*	20.0 *UR*
2-Chlorotoluene	250 *U*	2.0 *U*
2-Hexanone	2,500 *U*	20.0 *U*
2,2-Dichloropropane	62.0 *U*	0.50 *U*
Dibromochloromethane	62.0 *U*	0.50 *U*
Dibromomethane	62.0 *U*	0.50 *U*
Dichlorodifluoromethane	62.0 *U*	0.50 *U*
Bromodichloromethane	62.0 *U*	0.50 *U*
Trichloroethene	62.0 *U*	0.50 *U*
Trichlorofluoromethane	62.0 *U*	0.50 *U*
4-Chlorotoluene	250 *U*	2.0 *U*
4-Methyl-2-pentanone (MIBK)	2,500 *UR*	20.0 *UR*
Tetrachloroethene	62.0 *U*	**9.7**
4-Isopropyltoluene	250 *U*	2.0 *U*
Hexachlorobutadiene	250 *U*	2.0 *U*
Acetone	2,500 *UR*	20.0 *UR*
Benzene	62.0 *U*	0.50 *U*
Bromobenzene	250 *U*	2.0 *U*
Bromochloromethane	62.0 *U*	0.50 *U*
Bromomethane	62.0 *U*	0.50 *U*
Bromoform	62.0 *U*	0.50 *U*
cis-1,2-Dichloroethene	62.0 *U*	0.50 *U*
cis-1,3-Dichloropropene	62.0 *U*	0.50 *U*

Table 7. (cont.)

Analyte	GWGX10 B-55 02/19/99 (µg/L)	GWG011 B-56 02/19/99 (µg/L)
Carbon tetrachloride	62.0 *U*	0.50 *U*
Chloroform	**240**	**9.7**
Chlorobenzene	**27,000**	**120**
Chloroethane	62.0 *U*	0.50 *U*
Chloromethane	62.0 *U*	0.50 *U*
Carbon disulfide	62.0 *U*	0.50 *U*
Ethylbenzene	62.0 *U*	0.50 *U*
Isopropylbenzene	250 *U*	2.0 *U*
Methylene chloride (dichloromethane)	120 *U*	1.0 *U*
m- & *p*-Xylenes	62.0 *U*	0.50 *U*
n-Butyl benzene	250 *U*	2.0 *U*
N-Propylbenzene	250 *U*	2.0 *U*
Naphthalene	250 *U*	2.0 *U*
ortho-Xylene	62.0 *U*	0.50 *U*
Styrene	62.0 *U*	0.50 *U*
Sec butylbenzene	250 *U*	2.0 *U*
trans-1,2-dichloroethene	62.0 *U*	0.50 *U*
trans-1,3-Dichloropropene	62.0 *U*	0.50 *U*
Toluene	62.0 *U*	0.50 *U*
Tert Butylbenzene	250 *U*	2.0 *UJ*
Vinyl chloride (CH2--CHCl)	62.0 *U*	0.50 *U*
Hydrocarbon Scan		
Diesel fuel	100 *U*	100 *U*
Heavy fuel oil	250 *U*	250 *U*
Gasoline	100 *U*	100 *U*
Jet fuel as Jet A	100 *U*	100 *U*
Jet fuel as JP-4	100 *U*	100 *U*
Kerosene	100 *U*	100 *U*
Lube oil	250 *U*	250 *U*
Mineral spirits	100 *U*	100 *U*
Naphtha & sp naphthas	100 *U*	100 *U*
Non-PHC as diesel	**1,260**	**388**
PHC as Diesel	250 *U*	250 *U*

Note: Detected constituents in **bold**
U - undetected at detection limit shown
J - estimated

Table 8. Summary of field parameters measured in surface water

Station ID	Date	Temperature (°C)	pH	Specific Conductance (μS/cm)	Dissolved Oxygen (mg/L)	Eh (mV)	Turbidity (NTU)
SW01	1/22/98	12.2	6.64	121	7.7	--	--
SW02	1/22/98	7.5	6.45	29	8.89	--	--

Note: -- meter failure/malfunction; not recorded
NTU - Nephelometric turbidity units

Table 9. January 1999 storm water sampling results, Elf Atochem Acid Plant Area

Sample No.:	SW019901		SW019902		SW019903	
Station ID:	SWMH01		SWMH02		SWMH02 (DUP)	
Analyte	Dissolved (µg/L)	Total (µg/L)	Dissolved (µg/L)	Total (µg/L)	Dissolved (µg/L)	Total (µg/L)
4,4´-DDD	0.040 *U*	**1.1**	0.040 *U*	**2.7**	0.040 *U*	**2.3**
4,4´-DDE	0.040 *U*	**0.80**	0.040 *U*	**0.90**	0.040 *U*	**0.80**
4,4´-DDT	0.040 *U*	**8.0**	0.040 *U*	**20.0**	**0.14 *J***	**18.0**
Aldrin	0.040 *U*	0.040 *U*	0.040 *U*	0.040 *U*	0.040 *U*	0.040 *U*
α-Chlordane	0.040 *U*	0.040 *U*	0.040 *U*	0.040 *U*	0.040 *U*	0.040 *U*
α-Endosulfan (Endosulfan I)	0.040 *U*	0.040 *U*	0.040 *U*	0.040 *U*	0.040 *U*	0.040 *U*
α-Hexachlorocyclohexane	0.040 *U*	0.040 *U*	0.040 *U*	0.040 *U*	0.040 *U*	0.040 *U*
β-Endosulfan (Endosulfan II)	0.040 *U*	0.040 *U*	0.040 *U*	0.040 *U*	0.040 *U*	0.040 *U*
β-Hexachlorocyclohexane	0.040 *U*	0.040 *U*	0.040 *U*	0.040 *U*	0.040 *U*	0.040 *U*
δ-Hexachlorocyclohexane	0.040 *U*	0.040 *U*	0.040 *U*	0.040 *U*	0.040 *U*	0.040 *U*
Dieldrin	0.040 *U*	0.040 *U*	0.040 *U*	0.080 *U*	0.040 *U*	0.080 *U*
Endosulfan sulfate	0.040 *U*	0.040 *U*	0.040 *U*	0.040 *U*	0.040 *U*	0.040 *U*
Endrin	0.040 *U*	0.040 *U*	0.040 *U*	0.040 *U*	0.040 *U*	0.040 *U*
Endrin aldehyde	0.040 *U*	0.040 *U*	0.040 *U*	0.040 *U*	0.040 *U*	0.040 *U*
Endrin ketone	0.040 *U*	0.040 *U*	0.040 *U*	0.040 *U*	0.040 *U*	0.040 *U*
γ-Chlordane	0.040 *U*	0.040 *U*	0.040 *U*	0.040 *U*	0.040 *U*	0.040 *U*
γ-Hexachlorocyclohexane (lindane)	0.040 *U*	0.040 *U*	0.040 *U*	0.040 *U*	0.040 *U*	0.040 *U*
Heptachlor	0.040 *U*	0.040 *U*	0.040 *U*	0.040 *U*	0.040 *U*	0.040 *U*
Heptachlor epoxide	0.040 *U*	0.040 *U*	0.040 *U*	0.040 *U*	0.040 *U*	0.040 *U*
Methoxychlor	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*
Toxaphene	1.0 *U*	1.0 *U*	1.0 *U*	1.0 *U*	1.0 *U*	1.0 *U*

Note: Detected constituents in **bold**

J - estimated

U - undetected at detection limit shown

Table 10. Summary of field parameters measured in groundwater

Well ID	Date	Temperature (°C)	pH	Specific Conductance (μS/cm)	Dissolved Oxygen (mg/L)	Eh (mV)	Turbidity (NTU)
MWA-1	1/2/97	18.7	11.30	11,190	--	--	--
	3/12/97	18.6	11.18	9,600	--	--	--
	6/24/97	18.7	11.22	9,460	--	--	0.24
	9/30/97	18.7	11.21	7,140	--	--	0.32
	5/28/98	16.6	11.07	8,540	--	-449.4	--
	1/29/99	16.8	11.10	6,280	0.05	-461	1.1
MWA-2	1/2/97	18.6	6.36	253	--	--	12
	3/12/97	18.5	6.35	267	--	--	4.4
	6/24/97	18.7	5.93	3,700	--	--	3.1
	9/30/97	19.0	5.42	3,480	--	--	18
	5/28/98	16.9	6.66	139	14.83	16.4	29
	1/27/99	15.5	6.28	374	0.22	30	0.72
MWA-3	1/2/97	15.9	7.24	529	--	--	70
	3/12/97	14.0	7.37	617	--	--	10
	6/24/97	15.8	7.55	950	--	--	2.4
	9/30/97	22.0	6.03	100.7	--	--	5
	5/28/98	15.8	6.76	94	15.33	91.3	-3
	1/27/99	13.7	6.93	707	0.28	152	1.05
MWA-4	1/2/97	16.8	6.96	1,268	--	--	1.4
	3/12/97	16.9	6.79	1,501	--	--	3.5
	6/24/97	18	6.61	1,539	--	--	3.5
	9/30/97	19.7	7.19	338.9	--	--	8.3
	5/28/98	14.1	6.87	617	14.84	-98.7	124
	1/28/99	14.7	6.97	858	0	-97	1.08
MWA-5	1/2/97	--	--	--	--	--	--
	3/12/97	--	--	--	--	--	--
	6/24/97	--	--	--	--	--	--
	9/30/97	--	--	--	--	--	--
	5/28/98	--	--	--	--	--	--
	1/27/99	14.7	6.41	4,380	0.17	-104	0.02
MWA-6	1/2/97	--	--	--	--	--	--
	3/12/97	--	--	--	--	--	--
	6/24/97	--	--	--	--	--	--
	9/30/97	--	--	--	--	--	--
	5/28/98	--	--	--	--	--	--
	1/26/99	8.9	8.90	3,940	9.45	117	22
MWA-7	1/2/97	--	--	--	--	--	--
	3/12/97	--	--	--	--	--	--
	6/24/97	--	--	--	--	--	--
	9/30/97	--	--	--	--	--	--
	5/28/98	--	--	--	--	--	--
	1/26/99	13.8	6.74	2,450	0	-139	0.41

Table 10. (cont.)

Well ID	Date	Temperature (°C)	pH	Specific Conductance (μS/cm)	Dissolved Oxygen (mg/L)	Eh (mV)	Turbidity (NTU)
MWA-8i	1/2/97	--	--	--	--	--	--
	3/12/97	--	--	--	--	--	--
	6/24/97	--	--	--	--	--	--
	9/30/97	--	--	--	--	--	--
	5/28/98	--	--	--	--	--	--
	1/27/99	15.1	6.8	9,420	0.05	-199	9.57
MWA-9i	1/2/97	--	--	--	--	--	--
	3/12/97	--	--	--	--	--	--
	6/24/97	--	--	--	--	--	--
	9/30/97	--	--	--	--	--	--
	5/28/98	--	--	--	--	--	--
	1/28/99	14.8	6.66	13,210	0	-89	1.13
MWA-10i	1/2/97	--	--	--	--	--	--
	3/12/97	--	--	--	--	--	--
	6/24/97	--	--	--	--	--	--
	9/30/97	--	--	--	--	--	--
	5/28/98	--	--	--	--	--	--
	1/28/99	14.2	6.84	4,790	0	-135	0.24
MWA-11i	1/2/97	--	--	--	--	--	--
	3/12/97	--	--	--	--	--	--
	6/24/97	--	--	--	--	--	--
	9/30/97	--	--	--	--	--	--
	5/28/98	--	--	--	--	--	--
	1/29/99	17.2	6.66	2,460	0.24	-142	4.25
MWA-12i	1/2/97	--	--	--	--	--	--
	3/12/97	--	--	--	--	--	--
	6/24/97	--	--	--	--	--	--
	9/30/97	--	--	--	--	--	--
	5/28/98	--	--	--	--	--	--
	1/26/99	14.0	7.18	1,052	0	-140	0.71
MWA-13d	1/2/97	--	--	--	--	--	--
	3/12/97	--	--	--	--	--	--
	6/24/97	--	--	--	--	--	--
	9/30/97	--	--	--	--	--	--
	5/28/98	--	--	--	--	--	--
	1/28/99	13.6	6.61	10,720	0	-5	2.24
MWA-14i	1/2/97	--	--	--	--	--	--
	3/12/97	--	--	--	--	--	--
	6/24/97	--	--	--	--	--	--
	9/30/97	--	--	--	--	--	--
	5/28/98	--	--	--	--	--	--
	1/27/99	14.6	7.1	8,300	0.17	-138	1,640

Note: -- meter failure/malfunction; not recorded

NTU - Nephelometric turbidity units

Table 11. ary 1999 groundwater sampling results, Elf Atochem Plant Area

Analyte	Sample No: / Station ID:	GW019915 MWA-1	GW019907 MWA-2	GW019908 MWA-3	GW019912 MWA-4	GW019913 MWA-4 (DUP)	GW019905 MWA-5	GW019901 MWA-6
General Parameters								
Calcium	mg/L	**10.50**	**23.4**	**96.6**	**102**	**101**	**140**	**13.3**
Iron	mg/L	**13.30**	**0.044**	**0.078**	**8.14**	**8.06**	**24.3**	**92.2**
Magnesium	mg/L	**0.16**	**7.14**	**13.1**	**29.8**	**29.5**	**48.5**	**11.5**
Potassium	mg/L	2 *U*	2 *U*	2 *U*	**3.5**	**3.7**	**9.4**	**4.1**
Sodium	mg/L	**1,860**	**49.3**	**40.8**	**29.5**	**29.1**	**771**	**606**
Bicarbonate	mg/L	2.0 *U*	**100**	**321**	**350**	**348**	**469**	**424**
Carbonate	mg/L	**1,660**	2.0 *U*	2.0 *U*	2.0 *U*	2.0 *U*	2.0 *U*	**39.0**
Sulfate	mg/L	**110**	**19.3**	**12.3**	**24.8**	**25.4**	**31.9** *J*	**220** *J*
Total alkalinity	mg/L	**2,530**	**100**	**321**	**350**	**348**	**469**	**463**
Total chloride	mg/L	**710**	**41.1**	**39.8**	**68.1**	**70.1**	**1,130**	**412**
Total NO_2-N (nitrite nitrogen)	mg/L	1.0 *U*	0.20 *U*	0.20 *U*	0.50 *U*	0.50 *U*	5.0 *U*	2.0 *U*
Total NO_3-N (nitrate nitrogen)	mg/L	**1.4**	**0.30**	**0.80**	**0.30**	**0.30**	1.0 *U*	0.50 *U*
Total Pesticides								
4,4′-DDD	µg/L	0.11 *U*	**0.32**	0.090 *U*	**11.0**	**11.0**	0.040 *U*	**0.50**
4,4′-DDE	µg/L	0.040 *UJ*	**0.040**	0.040 *U*	1.0 *U*	**0.20**	0.040 *U*	**3.7**
4,4′-DDT	µg/L	0.040 *UJ*	**0.18**	**0.21**	1.0 *U*	**0.80**	0.040 *U*	**3.8**
Aldrin	µg/L	0.040 *UJ*	0.040 *U*	0.040 *U*	1.0 *U*	0.10 *U*	0.040 *U*	0.40 *U*
α-Chlordane	µg/L	0.040 *UJ*	0.040 *U*	0.040 *U*	1.0 *U*	0.10 *U*	0.040 *U*	0.40 *U*
α-Endosulfan (Endosulfan I)	µg/L	0.040 *UJ*	0.040 *U*	0.040 *U*	1.0 *U*	0.10 *U*	0.040 *U*	0.40 *U*
α-Hexachlorocyclohexane	µg/L	0.040 *UJ*	0.040 *U*	0.040 *U*	1.0 *U*	0.40 *U*	0.040 *U*	0.40 *U*
β-Endosulfan (Endosulfan II)	µg/L	0.040 *UJ*	0.090 *U*	0.040 *U*	1.0 *U*	0.40 *U*	0.040 *U*	0.40 *U*
β-Hexachlorocyclohexane	µg/L	0.040 *UJ*	0.040 *U*	0.040 *U*	1.0 *U*	0.10 *U*	0.040 *U*	0.40 *U*
δ-Hexachlorocyclohexane	µg/L	0.040 *UJ*	0.040 *U*	0.040 *U*	1.0 *U*	0.10 *U*	0.040 *U*	0.40 *U*
Dieldrin	µg/L	0.040 *UJ*	0.040 *U*	0.040 *U*	1.0 *U*	0.10 *U*	0.040 *U*	**0.80**
Endosulfan sulfate	µg/L	0.040 *UJ*	0.040 *U*	0.040 *U*	1.0 *U*	0.10 *U*	0.040 *U*	0.40 *U*
Endrin	µg/L	0.040 *UJ*	0.040 *U*	0.040 *U*	1.0 *U*	0.10 *U*	0.040 *U*	0.40 *U*
Endrin aldehyde	µg/L	0.040 *UJ*	0.040 *U*	0.040 *U*	1.0 *U*	0.10 *U*	0.040 *U*	0.40 *U*
Endrin ketone	µg/L	0.040 *UJ*	0.040 *U*	0.040 *U*	1.0 *U*	0.10 *U*	0.040 *U*	0.40 *U*
γ-Chlordane	µg/L	0.040 *UJ*	0.040 *U*	0.040 *U*	1.0 *U*	0.10 *U*	0.040 *U*	0.40 *U*
γ-Hexachlorocyclohexane (lindane)	µg/L	0.14 *UJ*	0.040 *U*	**0.070**	1.0 *U*	0.10 *U*	0.040 *U*	0.40 *U*
Heptachlor	µg/L	0.040 *UJ*	0.040 *U*	0.040 *U*	1.0 *U*	0.10 *U*	0.040 *U*	0.40 *U*
Heptachlor epoxide	µg/L	0.040 *UJ*	0.040 *U*	0.040 *U*	1.0 *U*	0.10 *U*	0.040 *U*	0.40 *U*
Methoxychlor	µg/L	0.10 *UJ*	0.10 *U*	0.10 *U*	1.0 *U*	0.10 *U*	0.10 *U*	1.0 *U*
Toxaphene	µg/L	1.0 *UJ*	1.0 *U*	1.0 *U*	5.0 *U*	10.0 *U*	1.0 *U*	10.0 *U*

Table 11. (cont.)

	Sample No:	GW019915	GW019907	GW019908	GW019912	GW019913	GW019905	GW019901
	Station ID:	MWA-1	MWA-2	MWA-3	MWA-4	MWA-4 (DUP)	MWA-5	MWA-6
Dissolved Pesticides								
4,4´-DDD	µg/L	0.040 *UJ*	**0.13**	0.040 *U*	**2.2**	**2.1**	0.040 *U*	0.40 *U*
4,4´-DDE	µg/L	0.040 *UJ*	0.040 *U*	0.040 *U*	0.10 *U*	0.10 *U*	0.040 *U*	**1.3**
4,4´-DDT	µg/L	0.040 *UJ*	0.040 *U*	0.040 *U*	0.10 *U*	0.10 *U*	0.040 *U*	**1.4**
Aldrin	µg/L	0.040 *UJ*	0.040 *U*	0.040 *U*	0.10 *U*	0.10 *U*	0.040 *U*	0.40 *U*
α-Chlordane	µg/L	0.040 *UJ*	0.040 *U*	0.040 *U*	0.10 *U*	0.10 *U*	0.040 *U*	0.40 *U*
α-Endosulfan (Endosulfan I)	µg/L	0.040 *UJ*	0.040 *U*	0.040 *U*	0.10 *U*	0.10 *U*	0.040 *U*	0.40 *U*
α-Hexachlorocyclohexane	µg/L	0.040 *UJ*	0.040 *U*	0.040 *U*	0.30 *U*	0.30 *U*	0.040 *U*	0.40 *U*
β-Endosulfan (Endosulfan II)	µg/L	0.040 *UJ*	0.070 *U*	0.040 *U*	0.30 *U*	0.30 *U*	0.040 *U*	0.40 *U*
β-Hexachlorocyclohexane	µg/L	0.040 *UJ*	0.040 *U*	0.040 *U*	0.10 *U*	0.10 *U*	0.040 *U*	0.40 *U*
γ-Hexachlorocyclohexane	µg/L	0.040 *UJ*	0.040 *U*	0.040 *U*	0.10 *U*	0.10 *U*	0.040 *U*	0.40 *U*
Dieldrin	µg/L	0.040 *UJ*	0.040 *U*	0.040 *U*	0.10 *U*	0.10 *U*	0.040 *U*	**0.60**
Endosulfan sulfate	µg/L	0.040 *UJ*	0.040 *U*	0.040 *U*	0.10 *U*	0.10 *U*	0.040 *U*	0.40 *U*
Endrin	µg/L	0.040 *UJ*	0.040 *U*	0.040 *U*	0.10 *U*	0.10 *U*	0.040 *U*	0.40 *U*
Endrin aldehyde	µg/L	0.040 *UJ*	0.040 *U*	0.040 *U*	0.10 *U*	0.10 *U*	0.040 *U*	0.40 *U*
Endrin ketone	µg/L	0.040 *UJ*	0.040 *U*	0.040 *U*	0.10 *U*	0.10 *U*	0.040 *U*	0.40 *U*
γ-Chlordane	µg/L	0.040 *UJ*	0.040 *U*	0.040 *U*	0.10 *U*	0.10 *U*	0.040 *U*	0.40 *U*
γ-Hexachlorocyclohexane (lindane)	µg/L	0.090 *UJ*	0.060 *U*	**0.050**	0.20 *U*	0.10 *U*	0.040 *U*	0.40 *U*
Heptachlor	µg/L	0.040 *UJ*	0.040 *U*	0.060 *U*	0.20 *U*	0.10 *U*	0.040 *U*	0.40 *U*
Heptachlor epoxide	µg/L	0.040 *UJ*	0.040 *U*	0.040 *U*	0.10 *U*	0.10 *U*	0.040 *U*	0.40 *U*
Methoxychlor	µg/L	0.10 *UJ*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	1.0 *U*
Toxaphene	µg/L	1.0 *UJ*	1.0 *U*	1.0 *U*	10.0 *U*	10.0 *U*	1.0 *U*	10.0 *U*
VOCs								
1,1-Dichloroethane	µg/L	50.0 *U*	1.0 *U*	**0.60**	0.50 *U*	0.50 *UJ*	**5.7**	2.0 *UJ*
1,1-Dichloroethene	µg/L	50.0 *U*	1.0 *U*	0.50 *U*	0.50 *U*	0.50 *UJ*	**7.3**	2.0 *UJ*
1,1-Dichloropropene	µg/L	50.0 *U*	1.0 *U*	0.50 *U*	0.50 *U*	0.50 *UJ*	0.50 *U*	2.0 *UJ*
1,1,1-Trichloroethane	µg/L	50.0 *U*	1.0 *U*	**0.90**	0.50 *U*	0.50 *UJ*	0.50 *U*	2.0 *UJ*
1,1,1,2-Tetrachloroethane	µg/L	50.0 *U*	1.0 *U*	0.50 *U*	0.50 *U*	0.50 *UJ*	0.50 *U*	2.0 *UJ*
1,1,2-Trichloroethane	µg/L	50.0 *U*	1.0 *U*	0.50 *U*	0.50 *U*	0.50 *UJ*	0.50 *U*	2.0 *UJ*
1,1,2,2-Tetrachloroethane	µg/L	50.0 *U*	1.0 *U*	0.50 *U*	0.50 *U*	0.50 *UJ*	0.50 *U*	2.0 *UJ*
EDB-Ethylene bromide	µg/L	200 *U*	4.0 *U*	2.0 *U*	2.0 *U*	2.0 *UJ*	2.0 *U*	10.0 *UJ*
1,2-Dichlorobenzene	µg/L	50.0 *U*	1.0 *U*	0.50 *U*	0.50 *U*	0.50 *UJ*	0.50 *U*	2.0 *UJ*
1,2-Dichloroethane	µg/L	50.0 *U*	1.0 *U*	0.50 *U*	0.50 *U*	0.50 *UJ*	0.50 *U*	2.0 *UJ*
1,2-Dichloropropane	µg/L	50.0 *U*	1.0 *U*	0.50 *U*	0.50 *U*	0.50 *UJ*	0.50 *U*	2.0 *UJ*
1,2,3-Trichlorobenzene	µg/L	200 *U*	4.0 *U*	2.0 *U*	2.0 *U*	2.0 *UJ*	2.0 *U*	10.0 *UJ*

Table 11. [illegible])

	Sample No:	GW019915	GW019907	GW019908	GW019912	GW019913	GW019905	GW019901
	Station ID:	MWA-1	MWA-2	MWA-3	MWA-4	MWA-4 (DUP)	MWA-5	MWA-6
1,2,3-Trichloropropane	µg/L	50.0 *U*	1.0 *U*	0.50 *U*	0.50 *U*	0.50 *UJ*	0.50 *U*	2.0 *UJ*
1,2,4-Trichlorobenzene	µg/L	200 *U*	4.0 *U*	2.0 *U*	2.0 *U*	2.0 *UJ*	2.0 *U*	10.0 *UJ*
1,2,4-Trimethylbenzene	µg/L	200 *U*	4.0 *U*	2.0 *U*	2.0 *U*	2.0 *UJ*	2.0 *U*	10.0 *UJ*
1,2-Dibromo-3-chloropropane	µg/L	200 *U*	4.0 *UJ*	2.0 *UJ*	2.0 *U*	2.0 *UJ*	2.0 *U*	10.0 *UJ*
1,3-Dichlorobenzene	µg/L	50.0 *U*	1.0 *U*	0.50 *U*	0.50 *U*	0.50 *UJ*	0.50 *U*	2.0 *UJ*
1,3-Dichloropropane	µg/L	50.0 *U*	1.0 *U*	0.50 *U*	0.50 *U*	0.50 *UJ*	0.50 *U*	2.0 *UJ*
1,3,5-Trimethylbenzene	µg/L	200 *U*	4.0 *U*	2.0 *U*	2.0 *U*	2.0 *UJ*	2.0 *U*	10.0 *UJ*
1,4-Dichlorobenzene	µg/L	50.0 *U*	1.0 *U*	0.50 *U*	**0.60**	**0.60 *J***	0.50 *U*	2.0 *UJ*
2-Butanone (methyl ethyl ketone, MEK)	µg/L	2,000 *UR*	40.0 *UR*	20.0 *UR*	20.0 *UR*	20.0 *UR*	20.0 *UR*	100 *UR*
2-Chlorotoluene	µg/L	200 *U*	4.0 *U*	2.0 *U*	2.0 *U*	2.0 *UJ*	2.0 *U*	10.0 *UJ*
2-Hexanone	µg/L	2,000 *U*	40.0 *U*	20.0 *U*	20.0 *U*	20.0 *UJ*	20.0 *U*	100 *UJ*
2,2-Dichloropropane	µg/L	50.0 *U*	1.0 *U*	0.50 *U*	0.50 *U*	0.50 *UJ*	0.50 *U*	2.0 *UJ*
Dibromochloromethane	µg/L	50.0 *U*	1.0 *U*	0.50 *U*	0.50 *U*	0.50 *UJ*	0.50 *U*	2.0 *UJ*
Dibromomethane	µg/L	50.0 *U*	1.0 *U*	0.50 *U*	0.50 *U*	0.50 *UJ*	0.50 *U*	2.0 *UJ*
Dichlorodifluoromethane	µg/L	50.0 *UJ*	1.0 *U*	0.50 *U*	0.50 *U*	0.50 *UJ*	0.50 *UJ*	2.0 *UJ*
Bromodichloromethane	µg/L	50.0 *U*	**5.0**	0.50 *U*	0.50 *U*	0.50 *UJ*	0.50 *U*	2.0 *UJ*
Trichloroethene	µg/L	50.0 *U*	**11.0**	**3.5**	**2.1**	**2.2 *J***	0.50 *U*	**14.0 *J***
Trichlorofluoromethane	µg/L	50.0 *U*	1.0 *U*	**0.70**	0.50 *U*	0.50 *UJ*	0.50 *U*	2.0 *UJ*
4-Chlorotoluene	µg/L	200 *U*	4.0 *U*	2.0 *U*	2.0 *U*	2.0 *UJ*	2.0 *U*	10.0 *UJ*
4-Methyl-2-pentanone (MIBK)	µg/L	2,000 *UR*	40.0 *UR*	20.0 *UR*	20.0 *UR*	20.0 *UR*	20.0 *UR*	100 *UR*
Tetrachloroethene	µg/L	50.0 *U*	**60.0**	**18.0**	**3.5**	**3.6 *J***	0.50 *U*	**1,000**
4-Isopropyltoluene	µg/L	200 *U*	4.0 *U*	2.0 *U*	2.0 *U*	2.0 *UJ*	2.0 *U*	10.0 *UJ*
Acetone	µg/L	2,000 *UR*	40.0 *UR*	20.0 *UR*	20.0 *UR*	20.0 *UR*	20.0 *UR*	**20.0 *J***
Benzene	µg/L	50.0 *U*	1.0 *U*	0.50 *U*	0.50 *U*	0.50 *UJ*	0.50 *U*	2.0 *UJ*
Bromobenzene	µg/L	200 *U*	4.0 *U*	2.0 *U*	2.0 *U*	2.0 *UJ*	2.0 *U*	10.0 *UJ*
Bromochloromethane	µg/L	50.0 *U*	1.0 *U*	0.50 *U*	0.50 *U*	0.50 *UJ*	0.50 *U*	2.0 *UJ*
Bromoform	µg/L	50.0 *U*	1.0 *U*	0.50 *U*	0.50 *U*	0.50 *UJ*	0.50 *U*	2.0 *UJ*
Bromomethane	µg/L	50.0 *U*	1.0 *UJ*	0.50 *UJ*	0.50 *U*	0.50 *UJ*	0.50 *U*	2.0 *UJ*
Carbon disulfide	µg/L	50.0 *U*	1.0 *U*	0.50 *U*	0.50 *U*	0.50 *UJ*	0.50 *U*	2.0 *UJ*
Carbon tetrachloride	µg/L	50.0 *U*	**130**	**0.50**	0.50 *U*	0.50 *UJ*	0.50 *U*	2.0 *UJ*
Chlorobenzene	µg/L	**21,000**	**94.0**	0.50 *U*	**33.0**	**34.0 *J***	**46.0 *J***	**87.0 *J***
Chloroethane	µg/L	50.0 *U*	1.0 *U*	0.50 *U*	0.50 *U*	0.50 *UJ*	**6.0**	2.0 *UJ*
Chloroform	µg/L	50.0 *U*	**810**	**24.0**	3.8 *U*	3.6 *U*	0.50 *U*	**18.0 *J***
Chloromethane	µg/L	50.0 *U*	1.0 *U*	0.50 *U*	0.50 *U*	0.50 *UJ*	0.50 *U*	2.0 *UJ*

Table 11. (cont.)

	Sample No:	GW019915	GW019907	GW019908	GW019912	GW019913	GW019905	GW019901
	Station ID:	MWA-1	MWA-2	MWA-3	MWA-4	MWA-4 (DUP)	MWA-5	MWA-6
cis-1,2-Dichloroethene	µg/L	50.0 *U*	**7.0**	**0.60**	**1.2**	**1.2** *J*	0.50 *U*	**8.0** *J*
cis-1,3-Dichloropropene	µg/L	50.0 *U*	1.0 *U*	0.50 *U*	0.50 *U*	0.50 *UJ*	0.50 *U*	2.0 *UJ*
Ethylbenzene	µg/L	50.0 *U*	1.0 *U*	0.50 *U*	0.50 *U*	0.50 *UJ*	0.50 *U*	2.0 *UJ*
Hexachlorobutadiene	µg/L	200 *U*	4.0 *U*	2.0 *U*	2.0 *U*	2.0 *UJ*	2.0 *U*	**27.0** *J*
Isopropylbenzene	µg/L	200 *U*	4.0 *U*	2.0 *U*	2.0 *U*	2.0 *UJ*	2.0 *U*	10.0 *UJ*
m- & *p*-Xylenes	µg/L	50.0 *U*	1.0 *U*	0.50 *U*	0.50 *U*	0.50 *UJ*	0.50 *U*	2.0 *UJ*
Methylene chloride (dichloromethane)	µg/L	100 *U*	**4.0**	1.0 *U*	1.0 *U*	1.0 *UJ*	1.0 *U*	5.0 *UJ*
Naphthalene	µg/L	200 *U*	4.0 *U*	2.0 *U*	2.0 *U*	2.0 *UJ*	2.0 *U*	10.0 *UJ*
n-Butyl benzene	µg/L	200 *U*	4.0 *U*	2.0 *U*	2.0 *U*	2.0 *UJ*	2.0 *U*	10.0 *UJ*
N-Propylbenzene	µg/L	200 *U*	4.0 *U*	2.0 *U*	2.0 *U*	2.0 *UJ*	2.0 *U*	10.0 *UJ*
ortho-Xylene	µg/L	50.0 *U*	1.0 *U*	0.50 *U*	0.50 *U*	0.50 *UJ*	0.50 *U*	2.0 *UJ*
sec Butylbenzene	µg/L	200 *U*	4.0 *U*	2.0 *U*	2.0 *U*	2.0 *UJ*	2.0 *U*	10.0 *UJ*
Styrene	µg/L	50.0 *U*	1.0 *U*	0.50 *U*	0.50 *U*	0.50 *UJ*	0.50 *U*	2.0 *UJ*
tert Butylbenzene	µg/L	200 *U*	4.0 *U*	2.0 *U*	2.0 *U*	2.0 *UJ*	2.0 *U*	10.0 *UJ*
Toluene	µg/L	50.0 *U*	1.0 *U*	0.50 *U*	0.50 *U*	0.50 *UJ*	0.50 *U*	**3.0** *J*
trans-1,2-dichloroethene	µg/L	50.0 *U*	1.0 *U*	0.50 *U*	0.50 *U*	0.50 *UJ*	0.50 *U*	2.0 *UJ*
trans-1,3-Dichloropropene	µg/L	50.0 *U*	1.0 *U*	0.50 *U*	0.50 *U*	0.50 *UJ*	0.50 *U*	2.0 *UJ*
Vinyl chloride (CH2--CHCl)	µg/L	50.0 *U*	1.0 *U*	0.50 *U*	0.50 *U*	0.50 *UJ*	0.50 *U*	**10** *J*
SVOCs								
1,2-Dichlorobenzene	µg/L	**5.0**	0.10 *U*	0.10 *U*	**0.10**	**0.10**	0.10 *U*	0.10 *U*
1,2,4-Trichlorobenzene	µg/L	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *UJ*	0.10 *UJ*
1,3-Dichlorobenzene	µg/L	**0.30**	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*
1,4-Dichlorobenzene	µg/L	**10.0**	0.10 *U*	0.10 *U*	**0.30**	**0.30**	0.10 *UJ*	0.10 *UJ*
2-Chloronaphthalene	µg/L	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*
2-Chlorophenol	µg/L	**39.0**	**1.6**	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*	**0.50**
2-Methylnaphthalene	µg/L	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*
2-Methylphenol	µg/L	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*
2-Nitroaniline	µg/L	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*
2-Nitrophenol	µg/L	0.50 *UR*	0.50 *UR*	0.50 *UR*	0.50 *UR*	0.50 *UR*	0.50 *UR*	0.50 *UR*
2,4-Dichlorophenol	µg/L	**2.1**	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*
2,4-Dimethylphenol	µg/L	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*
2,4-Dinitrophenol	µg/L	5.0 *UJ*	5.0 *UJ*	5.0 *UJ*	5.0 *UJ*	5.0 *UJ*	5.0 *UJ*	5.0 *UJ*
2,4-Dinitrotoluene	µg/L	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *UJ*	0.10 *UJ*
2,4,5-Trichlorophenol	µg/L	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*

Table 11. (cont.)

	Sample No:	GW019915	GW019907	GW019908	GW019912	GW019913	GW019905	GW019901
	Station ID:	MWA-1	MWA-2	MWA-3	MWA-4	MWA-4 (DUP)	MWA-5	MWA-6
2,4,6-Trichlorophenol	µg/L	**2.1**	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*
2,6-Dinitrotoluene	µg/L	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*
Dibenz[a,h]anthracene	µg/L	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*
2-Methyl-4,6-dinitrophenol	µg/L	1.0 *U*	1.0 *U*	1.0 *U*	1.0 *U*	1.0 *U*	1.0 *U*	1.0 *U*
Di-*n*-octyl phthalate	µg/L	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*
3- and 4-Chlorophenol	µg/L	**67.0**	0.50 *U*	0.50 *U*	0.50 *U*	**0.50**	**0.50**	0.50 *U*
3- and 4-Methylphenol	µg/L	**4.5**	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*
3-Nitroaniline	µg/L	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*
3,3′-Dichlorobenzidine	µg/L	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*
4-Bromophenyl-phenyl ether	µg/L	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*
4-Chloro-3-methylphenol (PCMC)	µg/L	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*
4-Chloroaniline	µg/L	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*
4-Chlorophenyl-phenyl ether	µg/L	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*
4-Nitroaniline	µg/L	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*
4-Nitrophenol	µg/L	1.0 *U*	1.0 *U*	1.0 *U*	1.0 *U*	1.0 *U*	1.0 *U*	1.0 *U*
Pentachlorophenol	µg/L	**1.3 *J***	0.50 *UJ*	0.50 *UJ*	0.50 *UJ*	0.50 *UJ*	0.50 *U*	**18.0**
Hexachlorobenzene	µg/L	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	**0.10**
Hexachlorobutadiene	µg/L	0.10 *U*	**0.30**	**0.30**	0.10 *U*	0.10 *U*	0.10 *U*	**29.0**
Hexachlorocyclopentadiene	µg/L	1.0 *U*	1.0 *U*	1.0 *U*	1.0 *U*	1.0 *U*	1.0 *U*	1.0 *U*
Hexachloroethane (perchloroethane)	µg/L	0.10 *U*	**4.0**	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	**15.0**
Acenaphthene	µg/L	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*
Acenaphthylene	µg/L	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*
Anthracene	µg/L	0.10 *U*	0.10 *U*	0.10 *U*	**0.20**	**0.20**	0.10 *U*	0.10 *U*
Bis[2-chloroethyl]ether	µg/L	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*
Bis[2-ethylhexyl]phthalate	µg/L	2.0 *U*	2.0 *U*	2.0 *U*	2.0 *U*	2.0 *U*	3.0 *U*	2.0 *U*
Benzo[a]anthracene	µg/L	0.10 *U*	0.10 *U*	0.10 *U*	**0.10**	**0.10**	0.10 *U*	0.10 *U*
Benzo[a]pyrene	µg/L	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*
Benzo[b]fluoranthene	µg/L	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*
Bis(2-chloroethoxy)methane	µg/L	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*
Bis(2-chloroisopropyl) ether	µg/L	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*
Benzoic acid	µg/L	**25.0 *J***	5.0 *UR*	5.0 *UR*	5.0 *UR*	5.0 *UR*	5.0 *UR*	5.0 *UR*
Benzyl alcohol	µg/L	1.0 *U*	1.0 *U*	1.0 *U*	1.0 *U*	1.0 *U*	1.0 *U*	1.0 *U*
Benzo[ghi]perylene	µg/L	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*
Benzo[k]fluoranthene	µg/L	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*

Table 11. (cont.)

	Sample No:	GW019915	GW019907	GW019908	GW019912	GW019913	GW019905	GW019901
	Station ID:	MWA-1	MWA-2	MWA-3	MWA-4	MWA-4 (DUP)	MWA-5	MWA-6
Butylbenzyl phthalate	µg/L	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	**0.10**
Carbazole	µg/L	0.10 *U*	0.10 *U*	0.10 *U*	**0.30**	**0.30**	0.10 *U*	**0.10**
Chrysene	µg/L	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	**0.10**
Diethyl phthalate	µg/L	0.10 *U*	0.10 *U*	0.10 *U*	**0.10**	**0.10**	0.10 *U*	**0.10**
Dibenzofuran	µg/L	0.10 *U*	0.10 *U*	0.10 *U*	**0.50**	**0.50**	0.10 *U*	0.10 *U*
Di-*n*-butyl phthalate	µg/L	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*
Dimethyl phthalate	µg/L	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*
Fluoranthene	µg/L	0.10 *U*	0.10 *U*	0.10 *U*	**1.5**	**1.4**	0.10 *U*	**0.50**
Fluorene	µg/L	0.10 *U*	0.10 *U*	0.10 *U*	**0.30**	**0.30**	0.10 *U*	0.10 *U*
Indeno[1,2,3-cd]pyrene	µg/L	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*
Isophorone	µg/L	**0.60**	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*
Naphthalene	µg/L	**1.2**	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	**0.10**
Nitrobenzene	µg/L	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*
N-nitroso-di-*n*-propylamine	µg/L	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*
N-nitrosodiphenylamine	µg/L	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*
Phenanthrene	µg/L	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	**0.10**	0.10 *U*
Phenol	µg/L	**13.0**	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*
Pyrene	µg/L	0.10 *U*	0.10 *U*	0.10 *U*	**0.70**	**0.70**	**0.10**	**0.40**

Table 11. [illegible])

	Sample No:	GW019903	GW019906	GW019909	GW019911	GW019916	GW019902	GW019910
	Station ID:	MWA-7	MWA-8i	MWA-9i	MWA-10i	MWA-11i	MWA-12i	MWA-13d
General Parameters								
Calcium	mg/L	**78.7**	**140**	**218**	**107**	**227**	**136**	**114**
Iron	mg/L	**66.2**	**18.6**	**22**	**11**	**23.4**	**9.99**	**0.502**
Magnesium	mg/L	**28.9**	**47.1**	**43.4**	**70.1**	**89.7**	**50.8**	**32**
Potassium	mg/L	**5**	**10.1**	**27.1**	**13.4**	**5.6**	**5.6**	**47.9**
Sodium	mg/L	**431**	**2,210**	**2,860**	**947**	**90.2**	**22.6**	**2,380**
Bicarbonate	mg/L	**372**	**738**	**666**	**564**	**332**	**620**	**607**
Carbonate	mg/L	2.0 *U*	2.0 *U*	2.0 *U*	2.0 *U*	2.0 *U*	2.0 *U*	2.0 *U*
Sulfate	mg/L	**491 *J***	**313**	**950**	**237**	**9.5**	**2.6 *J***	**274**
Total alkalinity	mg/L	**372**	**738**	**666**	**564**	**332**	**620**	**607**
Total chloride	mg/L	**303**	**2,660**	**3,250**	**1,160**	**612**	**6.0**	**3,100**
Total NO_2-N (nitrite nitrogen)	mg/L	0.50 *U*	10.0 *U*	10.0 *U*	5.0 *U*	2.0 *U*	0.20 *U*	10.0 *U*
Total NO_3-N (nitrate nitrogen)	mg/L	0.50 *U*	5.0 *U*	5.0 *U*	**0.60**	**0.30**	0.20 *U*	5.0 *U*
Total Pesticides								
4,4′-DDD	µg/L	0.040 *UJ*	**5.3 *J***	**20.0 *J***	0.070 *U*	0.16 *U*	0.040 *U*	0.040 *U*
4,4′-DDE	µg/L	0.040 *UJ*	**0.070 *J***	**0.37 *J***	0.040 *U*	0.040 *U*	0.040 *U*	0.040 *U*
4,4′-DDT	µg/L	0.040 *UJ*	**1.0 *J***	**9.0 *J***	**0.060**	**0.20**	0.040 *U*	**0.090**
Aldrin	µg/L	0.040 *UJ*	0.040 *UJ*	0.040 *UJ*	0.040 *U*	0.040 *U*	0.040 *U*	0.040 *U*
α-Chlordane	µg/L	0.040 *UJ*	0.040 *UJ*	0.17 *UJ*	0.040 *U*	0.040 *U*	0.040 *U*	0.040 *U*
α-Endosulfan (Endosulfan I)	µg/L	0.040 *UJ*	0.040 *UJ*	0.040 *UJ*	0.040 *U*	0.040 *U*	0.040 *U*	0.040 *U*
α-Hexachlorocyclohexane	µg/L	0.040 *UJ*	0.040 *UJ*	0.040 *UJ*	0.040 *U*	0.040 *U*	0.040 *U*	0.040 *U*
β-Endosulfan (Endosulfan II)	µg/L	0.040 *UJ*	0.15 *UJ*	0.50 *UJ*	0.040 *U*	0.040 *U*	0.040 *U*	0.040 *U*
β-Hexachlorocyclohexane	µg/L	0.040 *UJ*	0.040 *UJ*	0.10 *UJ*	0.040 *U*	0.040 *U*	0.040 *U*	0.040 *U*
γ-Hexachlorocyclohexane	µg/L	0.040 *UJ*	0.040 *UJ*	0.040 *UJ*	0.040 *U*	0.040 *U*	0.040 *U*	0.040 *U*
Dieldrin	µg/L	0.040 *UJ*	0.040 *UJ*	0.050 *UJ*	0.040 *U*	0.040 *U*	0.040 *U*	0.040 *U*
Endosulfan sulfate	µg/L	0.040 *UJ*	0.040 *UJ*	0.50 *UJ*	0.040 *U*	0.040 *U*	0.040 *U*	0.040 *U*
Endrin	µg/L	0.040 *UJ*	0.040 *UJ*	0.040 *UJ*	0.040 *U*	0.040 *U*	0.040 *U*	0.040 *U*
Endrin aldehyde	µg/L	0.040 *UJ*	0.040 *UJ*	0.50 *UJ*	0.040 *U*	0.040 *U*	0.040 *U*	0.040 *U*
Endrin Ketone	µg/L	0.040 *UJ*	0.040 *UJ*	0.50 *UJ*	0.040 *U*	0.040 *U*	0.040 *U*	0.040 *U*
γ-Chlordane	µg/L	0.040 *UJ*	0.040 *UJ*	0.040 *UJ*	0.040 *U*	0.040 *U*	0.040 *U*	0.040 *U*
γ-Hexachlorocyclohexane (lindane)	µg/L	0.040 *UJ*	0.040 *UJ*	0.040 *UJ*	0.040 *U*	0.040 *U*	0.040 *U*	0.040 *U*
Heptachlor	µg/L	0.040 *UJ*	0.040 *UJ*	0.040 *UJ*	0.040 *U*	0.040 *U*	0.040 *U*	0.040 *U*
Heptachlor epoxide	µg/L	0.040 *UJ*	0.040 *UJ*	0.090 *UJ*	0.040 *U*	0.040 *U*	0.040 *U*	0.040 *U*
Methoxychlor	µg/L	0.10 *UJ*	0.10 *UJ*	0.50 *UJ*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*
Toxaphene	µg/L	1.0 *UJ*	1.0 *UJ*	1.0 *UJ*	1.0 *U*	1.0 *U*	1.0 *U*	1.0 *U*

Table 11. (cont.)

	Sample No:	GW019903	GW019906	GW019909	GW019911	GW019916	GW019902	GW019910
	Station ID:	MWA-7	MWA-8i	MWA-9i	MWA-10i	MWA-11i	MWA-12i	MWA-13d
Dissolved Pesticides								
4,4'-DDD	µg/L	0.040 *UJ*	**2.4 *J***	**9.0 *J***	0.040 *U*	0.040 *U*	0.040 *U*	0.040 *U*
4,4'-DDE	µg/L	0.040 *UJ*	**0.040 *J***	**0.33 *J***	0.040 *U*	0.040 *U*	0.040 *U*	0.040 *U*
4,4'-DDT	µg/L	0.040 *UJ*	**0.64 *J***	**8.0 *J***	0.040 *U*	0.040 *U*	0.040 *U*	0.040 *U*
Aldrin	µg/L	0.040 *UJ*	0.040 *UJ*	0.040 *UJ*	0.040 *U*	0.040 *U*	0.040 *U*	0.040 *U*
α-Chlordane	µg/L	0.040 *UJ*	0.040 *UJ*	0.10 *UJ*	0.040 *U*	0.040 *U*	0.040 *U*	0.040 *U*
α-Endosulfan (Endosulfan I)	µg/L	0.040 *UJ*	**0.040 *J***	0.040 *UJ*	0.040 *U*	0.040 *U*	0.040 *U*	0.040 *U*
α-Hexachlorocyclohexane	µg/L	0.040 *UJ*	0.040 *UJ*	0.040 *UJ*	0.040 *U*	0.040 *U*	0.040 *U*	0.040 *U*
β-Endosulfan (Endosulfan II)	µg/L	0.040 *UJ*	0.080 *UJ*	0.20 *UJ*	0.040 *U*	0.040 *U*	0.040 *U*	0.040 *U*
β-Hexachlorocyclohexane	µg/L	0.040 *UJ*	0.040 *UJ*	0.040 *UJ*	0.040 *U*	0.040 *U*	0.040 *U*	0.040 *U*
γ-Hexachlorocyclohexane	µg/L	0.040 *UJ*	0.040 *UJ*	0.040 *UJ*	0.040 *U*	0.040 *U*	0.040 *U*	0.040 *U*
Dieldrin	µg/L	0.040 *UJ*	0.040 *UJ*	0.050 *UJ*	0.040 *U*	0.040 *U*	0.040 *U*	0.040 *U*
Endosulfan sulfate	µg/L	0.040 *UJ*	0.040 *UJ*	0.50 *UJ*	0.040 *U*	0.040 *U*	0.040 *U*	0.040 *U*
Endrin	µg/L	0.040 *UJ*	0.040 *UJ*	0.040 *UJ*	0.040 *U*	0.040 *U*	0.040 *U*	0.040 *U*
Endrin aldehyde	µg/L	0.040 *UJ*	0.040 *UJ*	0.50 *UJ*	0.040 *U*	0.040 *U*	0.040 *U*	0.040 *U*
Endrin ketone	µg/L	0.040 *UJ*	0.040 *UJ*	0.040 *UJ*	0.040 *U*	0.040 *U*	0.040 *U*	0.040 *U*
γ-Chlordane	µg/L	0.040 *UJ*	0.040 *UJ*	0.040 *UJ*	0.040 *U*	0.040 *U*	0.040 *U*	0.040 *U*
γ-Hexachlorocyclohexane (lindane)	µg/L	0.040 *UJ*	0.040 *UJ*	0.040 *UJ*	0.040 *U*	0.040 *U*	0.040 *U*	0.040 *U*
Heptachlor	µg/L	0.040 *UJ*	0.040 *UJ*	0.040 *UJ*	0.040 *U*	0.040 *U*	0.040 *U*	0.040 *U*
Heptachlor epoxide	µg/L	0.040 *UJ*	0.040 *UJ*	0.040 *UJ*	0.040 *U*	0.040 *U*	0.040 *U*	0.040 *U*
Methoxychlor	µg/L	0.10 *UJ*	0.10 *UJ*	0.10 *UJ*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*
Toxaphene	µg/L	1.0 *UJ*	1.0 *UJ*	1.0 *UJ*	1.0 *U*	1.0 *U*	1.0 *U*	1.0 *U*
VOCs								
1,1-Dichloroethane	µg/L	0.50 *U*	10.0 *U*	50.0 *U*	**3.2 *J***	0.50 *U*	0.50 *U*	**0.60**
1,1-Dichloroethene	µg/L	0.50 *U*	10.0 *U*	50.0 *U*	**0.80 *J***	0.50 *U*	0.50 *U*	0.50 *U*
1,1-Dichloropropene	µg/L	0.50 *U*	10.0 *U*	50.0 *U*	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*
1,1,1-Trichloroethane	µg/L	0.50 *U*	10.0 *U*	50.0 *U*	**1.1 *J***	0.50 *U*	0.50 *U*	0.50 *U*
1,1,1,2-Tetrachloroethane	µg/L	0.50 *U*	10.0 *U*	50.0 *U*	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*
1,1,2-Trichloroethane	µg/L	0.50 *U*	10.0 *U*	50.0 *U*	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*
1,1,2,2-Tetrachloroethane	µg/L	0.50 *U*	10.0 *U*	50.0 *U*	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*
EDB-Ethylene bromide	µg/L	2.0 *U*	40.0 *U*	200 *U*	2.0 *U*	2.0 *U*	2.0 *U*	2.0 *U*
1,2-Dichlorobenzene	µg/L	0.50 *U*	10.0 *U*	50.0 *U*	**2.2 *J***	0.50 *U*	0.50 *U*	0.50 *U*
1,2-Dichloroethane	µg/L	0.50 *U*	10.0 *U*	50.0 *U*	**0.60 *J***	0.50 *U*	0.50 *U*	0.50 *U*
1,2-Dichloropropane	µg/L	0.50 *U*	10.0 *U*	50.0 *U*	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*
1,2,3-Trichlorobenzene	µg/L	2.0 *U*	40.0 *U*	200 *U*	2.0 *U*	2.0 *U*	2.0 *U*	2.0 *U*

Table 11 (Cont.)

	Sample No:	GW019903	GW019906	GW019909	GW019911	GW019916	GW019902	GW019910
	Station ID:	MWA-7	MWA-8i	MWA-9i	MWA-10i	MWA-11i	MWA-12i	MWA-13d
1,2,3-Trichloropropane	µg/L	0.50 *U*	10.0 *U*	50.0 *U*	0.50 *UJ*	0.50 *U*	0.50 *U*	0.50 *U*
1,2,4-Trichlorobenzene	µg/L	2.0 *U*	40.0 *U*	200 *U*	2.0 *U*	2.0 *U*	2.0 *U*	2.0 *U*
1,2,4-Trimethylbenzene	µg/L	2.0 *U*	40.0 *U*	200 *U*	2.0 *U*	2.0 *U*	2.0 *U*	2.0 *U*
1,2-Dibromo-3-chloropropane	µg/L	2.0 *U*	40.0 *UJ*	200 *UJ*	2.0 *U*	2.0 *U*	2.0 *U*	2.0 *UJ*
1,3-Dichlorobenzene	µg/L	0.50 *U*	10.0 *U*	50.0 *U*	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*
1,3-Dichloropropane	µg/L	0.50 *U*	10.0 *U*	50.0 *U*	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*
1,3,5-Trimethylbenzene	µg/L	2.0 *U*	40.0 *U*	200 *U*	2.0 *U*	2.0 *U*	2.0 *U*	2.0 *U*
1,4-Dichlorobenzene	µg/L	0.50 *U*	10.0 *U*	50.0 *U*	**3.7 *J***	0.50 *U*	0.50 *U*	0.50 *U*
2-Butanone (methyl ethyl ketone, MEK)	µg/L	20.0 *UR*	400 *UR*	2,000 *UR*	20.0 *UR*	20.0 *UR*	20.0 *UR*	20.0 *UR*
2-Chlorotoluene	µg/L	2.0 *U*	40.0 *U*	200 *U*	2.0 *U*	2.0 *U*	2.0 *U*	2.0 *U*
2-Hexanone	µg/L	20.0 *U*	400 *U*	2,000 *U*	20.0 *U*	20.0 *U*	20.0 *U*	20.0 *U*
2,2-Dichloropropane	µg/L	0.50 *U*	10.0 *U*	50.0 *U*	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*
Dibromochloromethane	µg/L	0.50 *U*	10.0 *U*	50.0 *U*	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*
Dibromomethane	µg/L	0.50 *U*	10.0 *U*	50.0 *U*	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*
Dichlorodifluoromethane	µg/L	0.50 *U*	10.0 *U*	50.0 *U*	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*
Bromodichloromethane	µg/L	0.50 *U*	10.0 *U*	50.0 *U*	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*
Trichloroethene	µg/L	0.50 *U*	**10.0**	50.0 *U*	**0.90 *J***	0.50 *U*	0.50 *U*	0.50 *U*
Trichlorofluoromethane	µg/L	0.50 *U*	10.0 *U*	50.0 *U*	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*
4-Chlorotoluene	µg/L	2.0 *U*	40.0 *U*	200 *U*	2.0 *U*	2.0 *U*	2.0 *U*	2.0 *U*
4-Methyl-2-pentanone (MIBK)	µg/L	20.0 *UR*	400 *UR*	2,000 *UR*	20.0 *UR*	20.0 *UR*	20.0 *UR*	20.0 *UR*
Tetrachloroethene	µg/L	0.50 *U*	**15.0**	50.0 *U*	**1.0 *J***	0.50 *U*	**0.60**	0.50 *U*
4-Isopropyltoluene	µg/L	2.0 *U*	40.0 *U*	200 *U*	2.0 *U*	2.0 *U*	2.0 *U*	2.0 *U*
Acetone	µg/L	20.0 *UR*	400 *UR*	2,000 *UR*	20.0 *UR*	20.0 *UR*	20.0 *UR*	20.0 *UR*
Benzene	µg/L	0.50 *U*	10.0 *U*	50.0 *U*	**1.5 *J***	0.50 *U*	0.50 *U*	**1.7**
Bromobenzene	µg/L	2.0 *U*	40.0 *U*	200 *U*	2.0 *U*	2.0 *U*	2.0 *U*	2.0 *U*
Bromochloromethane	µg/L	0.50 *U*	10.0 *U*	50.0 *U*	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*
Bromoform	µg/L	0.50 *U*	10.0 *U*	50.0 *U*	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*
Bromomethane	µg/L	0.50 *U*	10.0 *UJ*	50.0 *UJ*	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *UJ*
Carbon disulfide	µg/L	0.50 *U*	10.0 *U*	50.0 *U*	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*
Carbon tetrachloride	µg/L	0.50 *U*	10.0 *U*	50.0 *U*	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*
Chlorobenzene	µg/L	0.50 *U*	**4,800**	**38,000**	**8,700 *J***	**2.5**	0.50 *U*	**240**
Chloroethane	µg/L	0.50 *U*	10.0 *U*	50.0 *U*	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*
Chloroform	µg/L	0.50 *U*	10.0 *U*	**120**	0.50 *U*	0.50 *U*	0.50 *U*	0.70 *U*
Chloromethane	µg/L	0.50 *U*	10.0 *U*	50.0 *U*	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*

Table 11. (cont.)

Sample No: / Station ID:		GW019903 MWA-7	GW019906 MWA-8i	GW019909 MWA-9i	GW019911 MWA-10i	GW019916 MWA-11i	GW019902 MWA-12i	GW019910 MWA-13d
cis-1,2-Dichloroethene	µg/L	0.50 *U*	10.0 *U*	50.0 *U*	**0.90 *J***	0.50 *U*	0.50 *U*	0.50 *U*
cis-1,3-Dichloropropene	µg/L	0.50 *U*	10.0 *U*	50.0 *U*	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*
Ethylbenzene	µg/L	0.50 *U*	10.0 *U*	50.0 *U*	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*
Hexachlorobutadiene	µg/L	2.0 *U*	40.0 *U*	200 *U*	2.0 *U*	2.0 *U*	2.0 *U*	2.0 *U*
Isopropylbenzene	µg/L	2.0 *U*	40.0 *U*	200 *U*	2.0 *U*	2.0 *U*	2.0 *U*	2.0 *U*
m- & *p*-Xylenes	µg/L	0.50 *U*	10.0 *U*	50.0 *U*	0.60 *J*	0.50 *U*	0.50 *U*	0.50 *U*
Methylene chloride (dichloromethane)	µg/L	1.0 *U*	20.0 *U*	100 *U*	1.0 *U*	1.0 *U*	1.0 *U*	1.0 *U*
Naphthalene	µg/L	2.0 *U*	40.0 *U*	200 *U*	2.0 *U*	2.0 *U*	2.0 *U*	2.0 *U*
n-Butyl benzene	µg/L	2.0 *U*	40.0 *U*	200 *U*	2.0 *U*	2.0 *U*	2.0 *U*	2.0 *U*
N-Propylbenzene	µg/L	2.0 *U*	40.0 *U*	200 *U*	2.0 *U*	2.0 *U*	2.0 *U*	2.0 *U*
ortho-Xylene	µg/L	0.50 *U*	10.0 *U*	50.0 *U*	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*
sec Butylbenzene	µg/L	2.0 *U*	40.0 *U*	200 *U*	2.0 *U*	2.0 *U*	2.0 *U*	2.0 *U*
Styrene	µg/L	0.50 *U*	10.0 *U*	50.0 *U*	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*
tert Butylbenzene	µg/L	2.0 *U*	40.0 *U*	200 *U*	2.0 *U*	2.0 *U*	2.0 *U*	2.0 *U*
Toluene	µg/L	0.50 *U*	10.0 *U*	50.0 *U*	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*
trans-1,2-dichloroethene	µg/L	0.50 *U*	10.0 *U*	50.0 *U*	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*
trans-1,3-Dichloropropene	µg/L	0.50 *U*	10.0 *U*	50.0 *U*	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*
Vinyl chloride (CH2--CHCl)	µg/L	0.50 *U*	10.0 *U*	50.0 *U*	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*
SVOCs								
1,2-Dichlorobenzene	µg/L	0.10 *U*	**0.50**	**4.8**	**1.2**	0.10 *U*	0.10 *U*	0.10 *U*
1,2,4-Trichlorobenzene	µg/L	0.10 *UJ*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *UJ*	0.10 *UJ*	0.10 *U*
1,3-Dichlorobenzene	µg/L	0.10 *U*	0.10 *U*	**0.10**	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*
1,4-Dichlorobenzene	µg/L	0.10 *UJ*	**0.30**	**8.0**	**2.2**	0.10 *U*	0.10 *UJ*	0.10 *U*
2-Chloronaphthalene	µg/L	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*
2-Chlorophenol	µg/L	0.50 *U*	**24.0**	**77.0**	**21.0**	0.50 *U*	0.50 *U*	**0.70**
2-Methylnaphthalene	µg/L	0.10 *U*	0.10 *U*	**0.20**	0.10 *U*	0.10 *UJ*	0.10 *U*	0.10 *U*
2-Methylphenol	µg/L	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*
2-Nitroaniline	µg/L	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*
2-Nitrophenol	µg/L	0.50 *UR*	0.50 *UR*	0.50 *UR*	0.50 *UR*	0.50 *UR*	0.50 *UR*	0.50 *UR*
2,4-Dichlorophenol	µg/L	0.50 *U*	0.50 *U*	**3.3**	0.50 *U*	0.50 *UJ*	0.50 *U*	0.50 *U*
2,4-Dimethylphenol	µg/L	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *UJ*	0.50 *U*	0.50 *U*
2,4-Dinitrophenol	µg/L	5.0 *UJ*	5.0 *UJ*	5.0 *UJ*	5.0 *UJ*	5.0 *UJ*	5.0 *UJ*	5.0 *UJ*
2,4-Dinitrotoluene	µg/L	0.10 *UJ*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *UJ*	0.10 *U*
2,4,5-Trichlorophenol	µg/L	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*

Table 11. [illegible])

	Sample No:	GW019903	GW019906	GW019909	GW019911	GW019916	GW019902	GW019910
	Station ID:	MWA-7	MWA-8i	MWA-9i	MWA-10i	MWA-11i	MWA-12i	MWA-13d
2,4,6-Trichlorophenol	µg/L	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*
2,6-Dinitrotoluene	µg/L	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*
Dibenz[a,h]anthracene	µg/L	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*
2-Methyl-4,6-dinitrophenol	µg/L	1.0 *U*	1.0 *U*	1.0 *U*	1.0 *U*	1.0 *U*	1.0 *U*	1.0 *U*
Di-*n*-octyl phthalate	µg/L	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*
3- and 4-Chlorophenol	µg/L	0.50 *U*	**42.0**	**110**	**52.0**	0.50 *U*	0.50 *U*	**0.50**
3- and 4-Methylphenol	µg/L	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*
3-Nitroaniline	µg/L	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*
3,3′-Dichlorobenzidine	µg/L	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*
4-Bromophenyl-phenyl ether	µg/L	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*
4-Chloro-3-methylphenol (PCMC)	µg/L	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *UJ*	0.50 *U*	0.50 *U*
4-Chloroaniline	µg/L	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *UJ*	0.50 *U*	0.50 *U*
4-Chlorophenyl-phenyl ether	µg/L	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*
4-Nitroaniline	µg/L	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*
4-Nitrophenol	µg/L	1.0 *U*	1.0 *U*	1.0 *U*	1.0 *U*	1.0 *U*	1.0 *U*	1.0 *U*
Pentachlorophenol	µg/L	0.50 *U*	0.50 *UJ*	0.50 *UJ*	0.50 *UJ*	0.50 *UJ*	0.50 *U*	0.50 *U*
Hexachlorobenzene	µg/L	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*
Hexachlorobutadiene	µg/L	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *UJ*	0.10 *U*	0.10 *U*
Hexachlorocyclopentadiene	µg/L	1.0 *U*	1.0 *U*	1.0 *U*	1.0 *U*	1.0 *U*	1.0 *U*	1.0 *U*
Hexachloroethane (perchloroethane)	µg/L	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*
Acenaphthene	µg/L	0.10 *U*	**0.20**	**0.40**	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*
Acenaphthylene	µg/L	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*
Anthracene	µg/L	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*
Bis[2-chloroethyl]ether	µg/L	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*
Bis[2-ethylhexyl]phthalate	µg/L	2.0 *U*	2.0 *U*	2.0 *U*	2.0 *U*	2.0 *U*	2.0 *U*	2.0 *U*
Benzo[a]anthracene	µg/L	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*
Benzo[a]pyrene	µg/L	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*
Benzo[b]fluoranthene	µg/L	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*
Bis(2-chloroethoxy)methane	µg/L	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *UJ*	0.10 *U*	0.10 *U*
Bis(2-chloroisopropyl) ether	µg/L	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*
Benzoic acid	µg/L	5.0 *UR*	5.0 *UR*	**12.0 *J***	5.0 *UR*	5.0 *UR*	5.0 *UR*	5.0 *UR*
Benzyl alcohol	µg/L	1.0 *U*	1.0 *U*	1.0 *U*	1.0 *U*	1.0 *U*	1.0 *U*	1.0 *U*
Benzo[ghi]perylene	µg/L	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*
Benzo[k]fluoranthene	µg/L	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*

Table 11. (cont.)

	Sample No:	GW019903	GW019906	GW019909	GW019911	GW019916	GW019902	GW019910
	Station ID:	MWA-7	MWA-8i	MWA-9i	MWA-10i	MWA-11i	MWA-12i	MWA-13d
Butylbenzyl phthalate	µg/L	**0.20**	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*
Carbazole	µg/L	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*
Chrysene	µg/L	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*
Diethyl phthalate	µg/L	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*
Dibenzofuran	µg/L	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*
Di-*n*-butyl phthalate	µg/L	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*
Dimethyl phthalate	µg/L	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*
Fluoranthene	µg/L	0.10 *U*	0.10 *U*	**0.30**	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*
Fluorene	µg/L	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*
Indeno[1,2,3-cd]pyrene	µg/L	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*
Isophorone	µg/L	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *UJ*	0.10 *U*	0.10 *U*
Naphthalene	µg/L	0.10 *U*	**0.70**	**2.1**	**0.30**	0.10 *UJ*	0.10 *U*	0.10 *U*
Nitrobenzene	µg/L	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*
N-nitroso-di-*n*-propylamine	µg/L	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*
N-nitrosodiphenylamine	µg/L	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*
Phenanthrene	µg/L	0.10 *U*	0.10 *U*	**0.40**	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*
Phenol	µg/L	0.50 *U*	0.50 *U*	**10.0**	**0.60**	0.50 *U*	0.50 *U*	0.50 *U*
Pyrene	µg/L	0.10 *U*	**0.30**	**0.50**	0.10 *U*	0.10 *U*	0.10 *U*	0.10 *U*

Table 11. (cont.)

	Sample No: / Station ID:	GW019904 MWA-14i	GW019914 Rinsate
General Parameters			
Calcium	mg/L	**20**	**0.121**
Iron	mg/L	**2.53**	0.02 *U*
Magnesium	mg/L	**4.72**	**0.015**
Potassium	mg/L	**10.5**	2 *U*
Sodium	mg/L	**2,010**	0.1 *U*
Bicarbonate	mg/L	**604**	2.0 *U*
Carbonate	mg/L	2.0 *U*	2.0 *U*
Sulfate	mg/L	**181 *J***	0.20 *U*
Total alkalinity	mg/L	**604**	2.0 *U*
Total chloride	mg/L	**2,310**	**0.20**
Total NO_2-N (nitrite nitrogen)	mg/L	5.0 *U*	0.20 *U*
Total NO_3-N (nitrate nitrogen)	mg/L	2.0 *U*	0.20 *U*
Total Pesticides			
4,4'-DDD	µg/L	0.040 *U*	**0.060**
4,4'-DDE	µg/L	0.040 *U*	0.040 *U*
4,4'-DDT	µg/L	**0.060**	0.040 *U*
Aldrin	µg/L	0.040 *U*	0.040 *U*
α-Chlordane	µg/L	0.040 *U*	0.040 *U*
α-Endosulfan (Endosulfan I)	µg/L	0.040 *U*	0.040 *U*
α-Hexachlorocyclohexane	µg/L	0.040 *U*	0.040 *U*
β-Endosulfan (Endosulfan II)	µg/L	0.040 *U*	0.040 *U*
β-Hexachlorocyclohexane	µg/L	0.040 *U*	0.040 *U*
γ-Hexachlorocyclohexane	µg/L	0.040 *U*	0.040 *U*
Dieldrin	µg/L	0.040 *U*	0.040 *U*
Endosulfan sulfate	µg/L	0.040 *U*	0.040 *U*
Endrin	µg/L	0.040 *U*	0.040 *U*
Endrin aldehyde	µg/L	0.040 *U*	0.040 *U*
Endrin Ketone	µg/L	0.040 *U*	0.040 *U*
γ-Chlordane	µg/L	0.040 *U*	0.040 *U*
γ-Hexachlorocyclohexane (lindane)	µg/L	0.040 *U*	0.040 *U*
Heptachlor	µg/L	0.040 *U*	0.040 *U*
Heptachlor epoxide	µg/L	0.040 *U*	0.040 *U*
Methoxychlor	µg/L	0.10 *U*	0.10 *U*
Toxaphene	µg/L	1.0 *U*	1.0 *U*

Table 11. (cont.)

	Sample No:	GW019904	GW019914
	Station ID:	MWA-14i	Rinsate
Dissolved Pesticides			
4,4′-DDD	µg/L	0.040 *U*	0.040 *U*
4,4′-DDE	µg/L	0.040 *U*	0.040 *U*
4,4′-DDT	µg/L	0.040 *U*	0.040 *U*
Aldrin	µg/L	0.040 *U*	0.040 *U*
α-Chlordane	µg/L	0.040 *U*	0.040 *U*
α-Endosulfan (Endosulfan I)	µg/L	0.040 *U*	0.040 *U*
α-Hexachlorocyclohexane	µg/L	0.040 *U*	0.040 *U*
β-Endosulfan (Endosulfan II)	µg/L	0.040 *U*	0.040 *U*
β-Hexachlorocyclohexane	µg/L	0.040 *U*	0.040 *U*
γ-Hexachlorocyclohexane	µg/L	0.040 *U*	0.040 *U*
Dieldrin	µg/L	0.040 *U*	0.040 *U*
Endosulfan sulfate	µg/L	0.040 *U*	0.040 *U*
Endrin	µg/L	0.040 *U*	0.040 *U*
Endrin aldehyde	µg/L	0.040 *U*	0.040 *U*
Endrin ketone	µg/L	0.040 *U*	0.040 *U*
γ-Chlordane	µg/L	0.040 *U*	0.040 *U*
γ-Hexachlorocyclohexane (lindane)	µg/L	0.040 *U*	0.040 *U*
Heptachlor	µg/L	0.040 *U*	0.040 *U*
Heptachlor epoxide	µg/L	0.040 *U*	0.040 *U*
Methoxychlor	µg/L	0.10 *U*	0.10 *U*
Toxaphene	µg/L	1.0 *U*	1.0 *U*
VOCs			
1,1-Dichloroethane	µg/L	**3.0**	0.50 *UJ*
1,1-Dichloroethene	µg/L	**3.1**	0.50 *UJ*
1,1-Dichloropropene	µg/L	0.50 *U*	0.50 *UJ*
1,1,1-Trichloroethane	µg/L	0.50 *U*	0.50 *UJ*
1,1,1,2-Tetrachloroethane	µg/L	0.50 *U*	0.50 *UJ*
1,1,2-Trichloroethane	µg/L	0.50 *U*	0.50 *UJ*
1,1,2,2-Tetrachloroethane	µg/L	0.50 *U*	0.50 *UJ*
EDB-Ethylene bromide	µg/L	2.0 *U*	2.0 *UJ*
1,2-Dichlorobenzene	µg/L	0.50 *U*	0.50 *UJ*
1,2-Dichloroethane	µg/L	0.50 *U*	0.50 *UJ*
1,2-Dichloropropane	µg/L	0.50 *U*	0.50 *UJ*
1,2,3-Trichlorobenzene	µg/L	2.0 *U*	2.0 *UJ*

Table 11. (cont.)

	Sample No:	GW019904	GW019914
	Station ID:	MWA-14i	Rinsate
1,2,3-Trichloropropane	µg/L	0.50 *U*	0.50 *UJ*
1,2,4-Trichlorobenzene	µg/L	2.0 *U*	2.0 *UJ*
1,2,4-Trimethylbenzene	µg/L	2.0 *U*	2.0 *UJ*
1,2-Dibromo-3-chloropropane	µg/L	2.0 *U*	2.0 *UJ*
1,3-Dichlorobenzene	µg/L	0.50 *U*	0.50 *UJ*
1,3-Dichloropropane	µg/L	0.50 *U*	0.50 *UJ*
1,3,5-Trimethylbenzene	µg/L	2.0 *U*	2.0 *UJ*
1,4-Dichlorobenzene	µg/L	0.50 *U*	0.50 *UJ*
2-Butanone (methyl ethyl ketone, MEK)	µg/L	20.0 *UR*	20.0 *UR*
2-Chlorotoluene	µg/L	2.0 *U*	2.0 *UJ*
2-Hexanone	µg/L	20.0 *U*	20.0 *UJ*
2,2-Dichloropropane	µg/L	0.50 *U*	0.50 *UJ*
Dibromochloromethane	µg/L	0.50 *U*	0.50 *UJ*
Dibromomethane	µg/L	0.50 *U*	0.50 *UJ*
Dichlorodifluoromethane	µg/L	0.50 *UJ*	0.50 *UJ*
Bromodichloromethane	µg/L	0.50 *U*	0.50 *UJ*
Trichloroethene	µg/L	0.50 *U*	0.50 *UJ*
Trichlorofluoromethane	µg/L	0.50 *U*	0.50 *UJ*
4-Chlorotoluene	µg/L	2.0 *U*	2.0 *UJ*
4-Methyl-2-pentanone (MIBK)	µg/L	20.0 *UR*	20.0 *UR*
Tetrachloroethene	µg/L	0.50 *U*	0.50 *UJ*
4-Isopropyltoluene	µg/L	2.0 *U*	2.0 *UJ*
Acetone	µg/L	20.0 *UR*	20.0 *UR*
Benzene	µg/L	0.50 *U*	0.50 *UJ*
Bromobenzene	µg/L	2.0 *U*	2.0 *UJ*
Bromochloromethane	µg/L	0.50 *U*	0.50 *UJ*
Bromoform	µg/L	0.50 *U*	0.50 *UJ*
Bromomethane	µg/L	0.50 *U*	0.50 *UJ*
Carbon disulfide	µg/L	0.50 *U*	0.50 *UJ*
Carbon tetrachloride	µg/L	0.50 *U*	0.50 *UJ*
Chlorobenzene	µg/L	0.50 *U*	0.50 *UJ*
Chloroethane	µg/L	0.50 *U*	0.50 *UJ*
Chloroform	µg/L	0.50 *U*	**2.0 *J***
Chloromethane	µg/L	0.50 *U*	0.50 *UJ*

Table 11. (cont.)

	Sample No: / Station ID:	GW019904 MWA-14i	GW019914 Rinsate
cis-1,2-Dichloroethene	µg/L	**1.2**	0.50 *UJ*
cis-1,3-Dichloropropene	µg/L	0.50 *U*	0.50 *UJ*
Ethylbenzene	µg/L	0.50 *U*	0.50 *UJ*
Hexachlorobutadiene	µg/L	2.0 *U*	2.0 *UJ*
Isopropylbenzene	µg/L	2.0 *U*	2.0 *UJ*
m- & *p*-Xylenes	µg/L	0.50 *U*	0.50 *UJ*
Methylene chloride (dichloromethane)	µg/L	1.0 *U*	1.0 *UJ*
Naphthalene	µg/L	2.0 *U*	2.0 *UJ*
n-Butyl benzene	µg/L	2.0 *U*	2.0 *UJ*
N-Propylbenzene	µg/L	2.0 *U*	2.0 *UJ*
ortho-Xylene	µg/L	0.50 *U*	0.50 *UJ*
sec Butylbenzene	µg/L	2.0 *U*	2.0 *UJ*
Styrene	µg/L	0.50 *U*	0.50 *UJ*
tert Butylbenzene	µg/L	2.0 *U*	2.0 *UJ*
Toluene	µg/L	0.50 *U*	0.50 *UJ*
trans-1,2-dichloroethene	µg/L	0.50 *U*	0.50 *UJ*
trans-1,3-Dichloropropene	µg/L	0.50 *U*	0.50 *UJ*
Vinyl chloride (CH2--CHCl)	µg/L	0.50 *U*	0.50 *UJ*
SVOCs			
1,2-Dichlorobenzene	µg/L	0.10 *U*	0.10 *U*
1,2,4-Trichlorobenzene	µg/L	0.10 *UJ*	0.10 *U*
1,3-Dichlorobenzene	µg/L	0.10 *U*	0.10 *U*
1,4-Dichlorobenzene	µg/L	0.10 *UJ*	0.10 *U*
2-Chloronaphthalene	µg/L	0.10 *U*	0.10 *U*
2-Chlorophenol	µg/L	0.50 *U*	0.50 *U*
2-Methylnaphthalene	µg/L	0.10 *U*	0.10 *U*
2-Methylphenol	µg/L	0.50 *U*	0.50 *U*
2-Nitroaniline	µg/L	0.10 *U*	0.10 *U*
2-Nitrophenol	µg/L	0.50 *UR*	0.50 *UR*
2,4-Dichlorophenol	µg/L	0.50 *U*	0.50 *U*
2,4-Dimethylphenol	µg/L	0.50 *U*	0.50 *U*
2,4-Dinitrophenol	µg/L	5.0 *UJ*	5.0 *UJ*
2,4-Dinitrotoluene	µg/L	0.10 *UJ*	0.10 *U*
2,4,5-Trichlorophenol	µg/L	0.50 *U*	0.50 *U*

Table 11. (cont.)

	Sample No:	GW019904	GW019914
	Station ID:	MWA-14i	Rinsate
2,4,6-Trichlorophenol	µg/L	0.50 *U*	0.50 *U*
2,6-Dinitrotoluene	µg/L	0.10 *U*	0.10 *U*
Dibenz[a,h]anthracene	µg/L	0.10 *U*	0.10 *U*
2-Methyl-4,6-dinitrophenol-	µg/L	1.0 *U*	1.0 *U*
Di-*n*-octyl phthalate	µg/L	0.10 *U*	0.10 *U*
3- and 4-Chlorophenol	µg/L	0.50 *U*	0.50 *U*
3- and 4-Methylphenol	µg/L	0.50 *U*	0.50 *U*
3-Nitroaniline	µg/L	0.50 *U*	0.50 *U*
3,3′-Dichlorobenzidine	µg/L	0.10 *U*	0.10 *U*
4-Bromophenyl-phenyl ether	µg/L	0.10 *U*	0.10 *U*
4-Chloro-3-methylphenol (PCMC)	µg/L	0.50 *U*	0.50 *U*
4-Chloroaniline	µg/L	0.50 *U*	0.50 *U*
4-Chlorophenyl-phenyl ether	µg/L	0.10 *U*	0.10 *U*
4-Nitroaniline	µg/L	0.50 *U*	0.50 *U*
4-Nitrophenol	µg/L	1.0 *U*	1.0 *U*
Pentachlorophenol	µg/L	0.50 *U*	0.50 *UJ*
Hexachlorobenzene	µg/L	0.10 *U*	0.10 *U*
Hexachlorobutadiene	µg/L	0.10 *U*	0.10 *U*
Hexachlorocyclopentadiene	µg/L	1.0 *U*	1.0 *U*
Hexachloroethane (perchloroethane)	µg/L	0.10 *U*	0.10 *U*
Acenaphthene	µg/L	0.10 *U*	0.10 *U*
Acenaphthylene	µg/L	0.10 *U*	0.10 *U*
Anthracene	µg/L	0.10 *U*	0.10 *U*
Bis[2-chloroethyl]ether	µg/L	0.10 *U*	0.10 *U*
Bis[2-ethylhexyl]phthalate	µg/L	2.0 *U*	**11.0**
Benzo[a]anthracene	µg/L	0.10 *U*	0.10 *U*
Benzo[a]pyrene	µg/L	0.10 *U*	0.10 *U*
Benzo[b]fluoranthene	µg/L	0.10 *U*	0.10 *U*
Bis(2-chloroethoxy)methane	µg/L	0.10 *U*	0.10 *U*
Bis(2-chloroisopropyl) ether	µg/L	0.10 *U*	0.10 *U*
Benzoic acid	µg/L	5.0 *UR*	5.0 *UR*
Benzyl alcohol	µg/L	1.0 *U*	1.0 *U*
Benzo[ghi]perylene	µg/L	0.10 *U*	0.10 *U*
Benzo[k]fluoranthene	µg/L	0.10 *U*	0.10 *U*

Table 11. (cont.)

	Sample No:	GW019904	GW019914
	Station ID:	MWA-14i	Rinsate
Butylbenzyl phthalate	µg/L	0.10 *U*	0.10 *U*
Carbazole	µg/L	0.10 *U*	0.10 *U*
Chrysene	µg/L	0.10 *U*	0.10 *U*
Diethyl phthalate	µg/L	0.10 *U*	**0.60**
Dibenzofuran	µg/L	0.10 *U*	0.10 *U*
Di-*n*-butyl phthalate	µg/L	0.10 *U*	**0.10**
Dimethyl phthalate	µg/L	0.10 *U*	0.10 *U*
Fluoranthene	µg/L	0.10 *U*	0.10 *U*
Fluorene	µg/L	0.10 *U*	0.10 *U*
Indeno[1,2,3-cd]pyrene	µg/L	0.10 *U*	0.10 *U*
Isophorone	µg/L	0.10 *U*	0.10 *U*
Naphthalene	µg/L	0.10 *U*	0.10 *U*
Nitrobenzene	µg/L	0.10 *U*	0.10 *U*
N-nitroso-di-*n*-propylamine	µg/L	0.10 *U*	0.10 *U*
N-nitrosodiphenylamine	µg/L	0.10 *U*	0.10 *U*
Phenanthrene	µg/L	0.10 *U*	0.10 *U*
Phenol	µg/L	0.50 *U*	0.50 *U*
Pyrene	µg/L	0.10 *U*	0.10 *U*

Note: Detected constituents in **bold**

J - estimated

R - rejected

U - undetected at detection limit shown

Table 1 verbank sediment sampling results, Elf Atochem Acic t Area

Analyte	Sample No.: / Station ID: / Depth (cm): / Sample Date:	SD1001 / RB-1 / 0-10 / 11/23/98	SD1002 / RB-2 / 10-22 / 11/23/98	SD1003 / RB-2 / 0-10 / 11/23/98	SD1004 / RB-2 / 10-23 / 11/23/98	SD1005 / RB-3 / 0-10 / 11/24/98	SD1006 / RB-3 / 10-31 / 11/24/98	SD1007 / RB-4 / 0-10 / 11/24/98
General Parameters								
Total solids (dry wt. as % of wet wt.)	%	**92.4**	**94.4**	**92.7**	**92.6**	**89.2**	**78.4**	**87.1**
Total organic carbon	%	**0.09**	0.050 *U*	**0.11**	**0.11**	**0.080**	**0.77**	**0.060**
Total Pesticides								
4,4'-DDD	mg/kg	**0.066**	**0.096**	**0.1**	**0.36**	**0.084** *J*	**0.075**	0.01 *U*
4,4'-DDE	mg/kg	**0.073**	**0.1**	**0.13**	**0.31**	**0.15** *J*	**0.11**	**0.034**
4,4'-DDT	mg/kg	**0.32**	**0.59**	**0.7**	**1.3**	**2.4** *J*	**2.0**	**0.41**
Aldrin	mg/kg	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*
α-Chlordane	mg/kg	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*
alpha α-Endosulfan (Endosulfan I)	mg/kg	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*
α-Hexachlorocyclohexane	mg/kg	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*
zeta β-Endosulfan (Endosulfan II)	mg/kg	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*
β-Hexachlorocyclohexane	mg/kg	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*
δ-Hexachlorocyclohexane	mg/kg	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*
Dieldrin	mg/kg	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*
Endosulfan sulfate	mg/kg	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*
Endrin	mg/kg	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*
Endrin aldehyde	mg/kg	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*
Endrin ketone	mg/kg	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*
γ-Chlordane	mg/kg	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*
γ-Hexachlorocyclohexane (lindane)	mg/kg	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*
Heptachlor	mg/kg	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*
Heptachlor epoxide	mg/kg	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*
Methoxychlor	mg/kg	0.02 *U*	0.02 *U*	0.02 *U*	0.02 *U*	0.02 *U*	0.02 *U*	0.02 *U*
Toxaphene	mg/kg	0.3 *U*	0.3 *U*	0.3 *U*	0.3 *U*	0.3 *U*	0.3 *U*	0.3 *U*
SVOCs								
1,2-Dichlorobenzene	mg/kg	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*
1,2,4-Trichlorobenzene	mg/kg	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*
1,3-Dichlorobenzene	mg/kg	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*
1,4-Dichlorobenzene	mg/kg	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*
2-Chloronaphthalene	mg/kg	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*
2-Chlorophenol	mg/kg	0.05 *U*	0.05 *U*	0.05 *U*	0.05 *U*	0.05 *U*	0.05 *U*	0.05 *U*
2-Methylnaphthalene	mg/kg	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*
2-Methylphenol	mg/kg	0.1 *U*	0.1 *U*	0.1 *U*	0.1 *U*	0.1 *U*	0.1 *U*	0.1 *U*

Table 12. (cont.)

Analyte	Sample No.: / Station ID: / Depth (cm): / Sample Date:	SD1001 RB-1 0-10 11/23/98	SD1002 RB-2 10-22 11/23/98	SD1003 RB-2 0-10 11/23/98	SD1004 RB-2 10-23 11/23/98	SD1005 RB-3 0-10 11/24/98	SD1006 RB-3 10-31 11/24/98	SD1007 RB-4 0-10 11/24/98
2-Nitroaniline	mg/kg	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*
2-Nitrophenol	mg/kg	0.04 *UR*	0.04 *UR*	0.04 *UR*	0.04 *UR*	0.04 *UR*	0.04 *UR*	0.04 *UR*
2,4-Dichlorophenol	mg/kg	0.1 *U*	0.1 *U*	0.1 *U*	0.1 *U*	0.1 *U*	0.1 *U*	0.1 *U*
2,4-Dimethylphenol	mg/kg	0.2 *U*	0.2 *U*	0.2 *U*	0.2 *UJ*	0.2 *UJ*	0.2 *UJ*	0.2 *UJ*
2,4-Dinitrophenol	mg/kg	0.3 *UR*	0.3 *UR*	0.3 *UR*	0.3 *UR*	0.3 *UR*	0.3 *UR*	0.3 *UR*
2,4-Dinitrotoluene	mg/kg	0.02 *U*	0.02 *U*	0.02 *U*	0.02 *U*	0.02 *U*	0.02 *U*	0.02 *U*
2,4,5-Trichlorophenol	mg/kg	0.04 *U*	0.04 *U*	0.04 *U*	0.04 *U*	0.04 *U*	0.04 *U*	0.04 *U*
2,4,6-Trichlorophenol	mg/kg	0.03 *U*	0.03 *U*	0.03 *U*	0.03 *U*	0.03 *U*	0.03 *U*	0.03 *U*
2,6-Dinitrotoluene	mg/kg	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*
Dibenz[a,h]anthracene	mg/kg	0.005 *U*	**0.006 *J***	**0.005 *J***	**0.0115 *J***	0.005 *U*	0.005 *U*	0.005 *U*
2-Methyl-4,6-dinitrophenol	mg/kg	0.1 *U*	0.1 *U*	0.1 *U*	0.1 *U*	0.1 *U*	0.1 *U*	0.1 *U*
Di-*n*-octyl phthalate	mg/kg	0.01 *UJ*	0.01 *UJ*	0.01 *UJ*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*
3-Nitroaniline	mg/kg	0.2 *U*	0.2 *U*	0.2 *U*	0.2 *U*	0.2 *U*	0.2 *U*	0.2 *U*
3,3'-Dichlorobenzidine	mg/kg	0.04 *UJ*	0.04 *UJ*	0.04 *UJ*	0.04 *U*	0.04 *U*	0.04 *U*	0.04 *U*
4-Bromophenyl-phenyl ether	mg/kg	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*
4-Chloro-3-methylphenol (PCMC)	mg/kg	0.05 *U*	0.05 *U*	0.05 *U*	0.05 *U*	0.05 *U*	0.05 *U*	0.05 *U*
4-Chloroaniline	mg/kg	0.05 *UJ*	0.05 *UJ*	0.05 *UJ*	0.05 *U*	0.05 *U*	0.05 *U*	0.05 *U*
4-Chlorophenol (parachlorophenol)	mg/kg	0.05 *U*	0.05 *U*	0.05 *U*	0.05 *U*	0.05 *U*	0.05 *U*	0.05 *U*
4-Chlorophenyl-phenyl ether	mg/kg	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*
4-Methylphenol	mg/kg	0.2 *U*	0.2 *U*	0.2 *U*	0.2 *U*	0.2 *U*	0.2 *U*	0.2 *U*
4-Nitroaniline	mg/kg	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*
4-Nitrophenol	mg/kg	0.1 *U*	0.1 *U*	0.1 *U*	0.1 *U*	0.1 *U*	0.1 *U*	0.1 *U*
Pentachlorophenol	mg/kg	0.3 *UR*	0.3 *UR*	0.3 *UR*	0.3 *UR*	0.3 *UR*	0.3 *UR*	0.3 *UR*
Hexachlorobenzene	mg/kg	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*
Hexachlorobutadiene	mg/kg	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*
Hexachlorocyclopentadiene	mg/kg	0.2 *UR*	0.2 *UR*	0.2 *UR*	0.2 *UR*	0.2 *UR*	0.2 *UR*	0.2 *UR*
Hexachloroethane (perchloroethane)	mg/kg	0.04 *U*	0.04 *U*	0.04 *U*	0.04 *U*	0.04 *U*	0.04 *U*	0.04 *U*
Acenaphthene	mg/kg	0.01 *U*	0.01 *U*	0.01 *U*	**0.0125 *J***	0.01 *U*	0.01 *U*	0.01 *U*
Acenaphthylene	mg/kg	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*
Anthracene	mg/kg	0.005 *U*	0.005 *U*	0.005 *U*	**0.011 *J***	0.005 *U*	0.005 *U*	0.005 *U*
Bis[2-chloroethyl]ether	mg/kg	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*
Bis[2-ethylhexyl]phthalate	mg/kg	**0.155 *J***	**0.28 *J***	**0.275 *J***	**0.41 *J***	0.02 *U*	**0.426 *J***	0.02 *U*
Benzo[a]anthracene	mg/kg	**0.0105**	**0.0305 *J***	**0.0195 *J***	**0.07 *J***	**0.011**	0.01 *U*	0.01 *U*
Benzo[a[illegible]ene	mg/kg	**0.015**	**0.0495**	**0.0255 *J***	**0.083 *J***	**0.014**	0.01 *U*	[illegible]1 *U*

Table 1 (Cont.)

Analyte	Sample No.: / Station ID: / Depth (cm): / Sample Date:	SD1001 RB-1 0-10 11/23/98	SD1002 RB-2 10-22 11/23/98	SD1003 RB-2 0-10 11/23/98	SD1004 RB-2 10-23 11/23/98	SD1005 RB-3 0-10 11/24/98	SD1006 RB-3 10-31 11/24/98	SD1007 RB-4 0-10 11/24/98
Benzo[b]fluoranthene	mg/kg	**0.03 J**	**0.058 J**	**0.0415 J**	**0.095 J**	**0.0225 J**	**0.017 J**	0.01 U
Bis(2-chloroethoxy)methane	mg/kg	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Bis(2-chloroisopropyl) ether	mg/kg	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Benzoic acid	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
Benzyl alcohol	mg/kg	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
Benzo[ghi]perylene	mg/kg	**0.0165 J**	**0.0515 J**	**0.0275 J**	**0.05 J**	**0.0135 J**	**0.01 J**	**0.0065 J**
Benzo[k]fluoranthene	mg/kg	**0.0205**	**0.0485 J**	**0.026 J**	**0.07 J**	**0.016**	**0.011 J**	0.01 U
Butylbenzyl phthalate	mg/kg	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Carbazole	mg/kg	0.01 U	0.01 U	0.01 U	0.0165 J	0.01 U	0.01 U	0.01 U
Chrysene	mg/kg	**0.0175**	**0.0475 J**	**0.0375 J**	**0.081 J**	**0.016 J**	**0.012 J**	0.01 U
Diethyl phthalate	mg/kg	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Dibenzofuran	mg/kg	0.005 U	0.005 U	0.005 U	**0.007 J**	0.005 U	0.005 U	0.005 U
Di-*n*-butyl phthalate	mg/kg	0.01 U	0.01 U	0.028 U	0.01 U	0.01 U	0.01 U	0.01 U
Dimethyl phthalate	mg/kg	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Fluoranthene	mg/kg	**0.0125 J**	**0.0625 J**	**0.036 J**	**0.172 J**	**0.0115 J**	**0.0135 J**	0.01 U
Fluorene	mg/kg	0.01 U	0.01 U	0.01 U	**0.0105 J**	0.01 U	0.01 U	0.01 U
Indeno[1,2,3-cd]pyrene	mg/kg	**0.0215 J**	**0.0585 J**	**0.027 J**	**0.069 J**	**0.018 J**	**0.012 J**	**0.007 J**
Isophorone	mg/kg	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Naphthalene	mg/kg	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
Nitrobenzene	mg/kg	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
N-nitroso-di-n-propylamine	mg/kg	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
N-nitrosodiphenylamine	mg/kg	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Phenanthrene	mg/kg	0.01 U	0.01 U	**0.011 J**	**0.097 J**	0.01 U	0.01 U	0.01 U
Phenol	mg/kg	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
Pyrene	mg/kg	**0.012**	**0.084 J**	**0.043 J**	**0.142 J**	**0.011 J**	**0.013 J**	0.01 U
VOCs								
1,1-Dichloroethane	mg/kg	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
1,1-Dichloroethene	mg/kg	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
1,1-Dichloropropene	mg/kg	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
1,1,1-Trichloroethane	mg/kg	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
1,1,1,2-Tetrachloroethane	mg/kg	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
1,1,2-Trichloroethane	mg/kg	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
1,1,2,2-Tetrachloroethane	mg/kg	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
EDB-Ethylene bromide	mg/kg	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U

Table 12. (cont.)

Analyte	Sample No.: / Station ID: / Depth (cm): / Sample Date:	SD1001 / RB-1 / 0-10 / 11/23/98	SD1002 / RB-2 / 10-22 / 11/23/98	SD1003 / RB-2 / 0-10 / 11/23/98	SD1004 / RB-2 / 10-23 / 11/23/98	SD1005 / RB-3 / 0-10 / 11/24/98	SD1006 / RB-3 / 10-31 / 11/24/98	SD1007 / RB-4 / 0-10 / 11/24/98
1,2-Dichlorobenzene	mg/kg	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*
1,2-Dichloroethane	mg/kg	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*
1,2-Dichloropropane	mg/kg	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*
1,2,3-Trichlorobenzene	mg/kg	0.02 *U*	0.02 *U*	0.02 *U*	0.02 *U*	0.02 *U*	0.02 *U*	0.02 *U*
1,2,3-Trichloropropane	mg/kg	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*
1,2,4-Trichlorobenzene	mg/kg	0.02 *U*	0.02 *U*	0.02 *U*	0.02 *U*	0.02 *U*	0.02 *U*	0.02 *U*
1,2,4-Trimethylbenzene	mg/kg	0.02 *U*	0.02 *U*	0.02 *U*	0.02 *U*	0.02 *U*	0.02 *U*	0.02 *U*
1,2-Dibromo-3-chloropropane	mg/kg	0.02 *U*	0.02 *U*	0.02 *U*	0.02 *U*	0.02 *U*	0.02 *U*	0.02 *U*
1,3-Dichlorobenzene	mg/kg	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*
1,3-Dichloropropane	mg/kg	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*
1,3,5-Trimethylbenzene	mg/kg	0.02 *U*	0.02 *U*	0.02 *U*	0.02 *U*	0.02 *U*	0.02 *U*	0.02 *U*
1,4-Dichlorobenzene	mg/kg	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*
ReJ 2-Butanone (methyl ethyl ketone, MEK)	mg/kg	0.02 *UR*	0.02 *UR*	0.02 *UR*	0.02 *UR*	0.02 *UR*	0.02 *UR*	0.02 *UR*
2-Chlorotoluene	mg/kg	0.02 *U*	0.02 *U*	0.02 *U*	0.02 *U*	0.02 *U*	0.02 *U*	0.02 *U*
2-Hexanone	mg/kg	0.02 *U*	0.02 *U*	0.02 *U*	0.02 *U*	0.02 *U*	0.02 *U*	0.02 *U*
2,2-Dichloropropane	mg/kg	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*
4-Chlorotoluene	mg/kg	0.02 *U*	0.02 *U*	0.02 *U*	0.02 *U*	0.02 *U*	0.02 *U*	0.02 *U*
4-Isopropyltoluene	mg/kg	0.02 *U*	0.02 *U*	0.02 *U*	0.02 *U*	0.02 *U*	0.02 *U*	0.02 *U*
ReJ 4-Methyl-2-pentanone (MIBK)	mg/kg	0.02 *UR*	0.02 *UR*	0.02 *UR*	0.02 *UR*	0.02 *UR*	0.02 *UR*	0.02 *UR*
ReJ Acetone	mg/kg	0.05 *UR*	0.05 *UR*	0.05 *UR*	0.05 *UR*	0.05 *UR*	0.05 *UR*	0.05 *UR*
Benzene	mg/kg	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*
Bromobenzene	mg/kg	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*
Bromochloromethane	mg/kg	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*
Bromodichloromethane	mg/kg	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*
Bromoform	mg/kg	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*
Bromomethane	mg/kg	0.005 *UJ*	0.005 *UJ*	0.005 *UJ*	0.005 *UJ*	0.005 *UJ*	0.005 *UJ*	0.005 *UJ*
Carbon disulfide	mg/kg	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*
Carbon tetrachloride	mg/kg	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*
Chlorobenzene	mg/kg	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*
Chloroethane	mg/kg	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*
Chloroform	mg/kg	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*
Chloromethane	mg/kg	0.005 *UJ*	0.005 *UJ*	0.005 *UJ*	0.005 *UJ*	0.005 *UJ*	0.005 *UJ*	0.005 *UJ*
cis-1,2-Dichloroethene	mg/kg	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*
cis-1,3-Dichloropropene	mg/kg	0.005 *U*	0.005	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*

Table 1 (Cont.)

Analyte	Sample No.: / Station ID: / Depth (cm): / Sample Date:	SD1001 / RB-1 / 0-10 / 11/23/98	SD1002 / RB-2 / 10-22 / 11/23/98	SD1003 / RB-2 / 0-10 / 11/23/98	SD1004 / RB-2 / 10-23 / 11/23/98	SD1005 / RB-3 / 0-10 / 11/24/98	SD1006 / RB-3 / 10-31 / 11/24/98	SD1007 / RB-4 / 0-10 / 11/24/98
Dibromochloromethane	mg/kg	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*
Dibromomethane	mg/kg	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*
Dichlorodifluoromethane	mg/kg	0.005 *UJ*	0.005 *UJ*	0.005 *UJ*	0.005 *UJ*	0.005 *UJ*	0.005 *UJ*	0.005 *UJ*
Ethylbenzene	mg/kg	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*
Hexachlorobutadiene	mg/kg	0.02 *U*	0.02 *U*	0.02 *U*	0.02 *U*	0.02 *U*	0.02 *U*	0.02 *U*
Isopropylbenzene	mg/kg	0.02 *U*	0.02 *U*	0.02 *U*	0.02 *U*	0.02 *U*	0.02 *U*	0.02 *U*
m- & *p*-Xylenes	mg/kg	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*
Methylene chloride (dichloromethane)	mg/kg	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*
Naphthalene	mg/kg	0.02 *UJ*	0.02 *UJ*	0.02 *UJ*	0.02 *UJ*	0.02 *UJ*	0.02 *UJ*	0.02 *UJ*
n-Butyl benzene	mg/kg	0.02 *U*	0.02 *U*	0.02 *U*	0.02 *U*	0.02 *U*	0.02 *U*	0.02 *U*
N-Propylbenzene	mg/kg	0.02 *U*	0.02 *U*	0.02 *U*	0.02 *U*	0.02 *U*	0.02 *U*	0.02 *U*
ortho-Xylene	mg/kg	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*
sec Butylbenzene	mg/kg	0.02 *U*	0.02 *U*	0.02 *U*	0.02 *U*	0.02 *U*	0.02 *U*	0.02 *U*
Styrene	mg/kg	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*
tert Butylbenzene	mg/kg	0.02 *U*	0.02 *U*	0.02 *U*	0.02 *U*	0.02 *U*	0.02 *U*	0.02 *U*
Tetrachloroethene	mg/kg	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	**0.008**	0.005 *U*
Toluene	mg/kg	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*
trans-1,2-dichloroethene	mg/kg	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*
trans-1,3-Dichloropropene	mg/kg	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*
Trichloroethene	mg/kg	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*
Trichlorofluoromethane	mg/kg	0.005 *UJ*	0.005 *UJ*	0.005 *UJ*	0.005 *UJ*	0.005 *UJ*	0.005 *UJ*	0.005 *UJ*
Vinyl chloride (CH2--CHCl)	mg/kg	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*
Particle Size								
Particles < 0.063 mm (sieve #230)	%	0.17	0.10	0.14	0.14	0.77	3.7	1.1
Particles < 0.105 mm (sieve #140)	%	13	9.5	7.0	2.4	11.2	5.5	13.2
Particles < 0.250 mm (sieve #60)	%	302	68.5	59.8	43.2	70.0	54.3	69.8
Particles < 0.42 mm (sieve #40)	%	14	19.6	26.6	37.5	10.4	12.3	10.8
Particles < 0.84 mm (sieve #20)	%	0.58	1.1	3.0	9.8	1.7	0.68	0.42
Percent clay	%	0.033	0.050	0.090	0.12	0.25	5.0	0.24
Percent gravel	%	0.25	0.26	1.3	5.3	4.4	2.6	1.6
Percent silt	%	0.050	0.080	0.020	0.12	0.68	15.7	1.0

Table 12. (cont.)

Analyte	Sample No.: / Station ID: / Depth (cm): / Sample Date:	SD1008 / RB-4 / 10-35 / 11/24/98	SD1009 / RB-5 / 0-10 / 11/24/98	SD1010 / RB-5 / 10-25 / 11/24/98	SD1011 / RB-6 / 0-10 / 11/24/98	SD1013 / RB-6 (DUP) / 0-10 / 11/24/98	SD1012 / RB-6 / 10-58 / 11/24/98	SD1014 / RB-6 (DUP) / 10-58 / 11/24/98
General Parameters								
Total solids (dry wt. as % of wet wt.)	%	**91.6**	**91.0**	**91.1**	**92.3**	**90.2**	**74.4**	**71.1**
Total organic carbon	%	**0.080**	**0.060**	0.050 *U*	**0.13**	**0.11**	**0.68**	**0.99**
Total Pesticides								
4,4'-DDD	mg/kg	**0.018**	0.01 *U*	0.01 *U*	**0.026 *J***	0.01 *U*	**0.028**	**0.035**
4,4'-DDE	mg/kg	**0.028**	**0.023**	**0.058**	**0.011 *J***	**0.05 *J***	**0.071**	**0.1**
4,4'-DDT	mg/kg	**2.6**	**0.034**	**0.064**	**0.064**	**0.062**	**0.36**	**0.39**
Aldrin	mg/kg	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*
α-Chlordane	mg/kg	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*
α-Endosulfan (Endosulfan I)	mg/kg	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*
α-Hexachlorocyclohexane	mg/kg	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*
β-Endosulfan (Endosulfan II)	mg/kg	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*
β-Hexachlorocyclohexane	mg/kg	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*
δ-Hexachlorocyclohexane	mg/kg	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*
Dieldrin	mg/kg	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*
Endosulfan sulfate	mg/kg	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*
Endrin	mg/kg	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*
Endrin aldehyde	mg/kg	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*
Endrin ketone	mg/kg	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*
γ-Chlordane	mg/kg	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*
γ-Hexachlorocyclohexane (lindane)	mg/kg	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*
Heptachlor	mg/kg	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*
Heptachlor epoxide	mg/kg	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*
Methoxychlor	mg/kg	0.02 *U*	0.02 *U*	0.02 *U*	0.02 *U*	0.02 *U*	0.02 *U*	0.02 *U*
Toxaphene	mg/kg	0.3 *U*	0.3 *U*	0.3 *U*	0.3 *U*	0.3 *U*	0.3 *U*	0.3 *U*
SVOCs								
1,2-Dichlorobenzene	mg/kg	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*
1,2,4-Trichlorobenzene	mg/kg	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*
1,3-Dichlorobenzene	mg/kg	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*
1,4-Dichlorobenzene	mg/kg	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*
2-Chloronaphthalene	mg/kg	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*
2-Chlorophenol	mg/kg	0.05 *U*	0.05 *U*	0.05 *U*	0.05 *U*	0.05 *U*	0.05 *U*	0.05 *U*
2-Methylnaphthalene	mg/kg	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	**0.008**
2-Meth[illegible]henol	mg/kg	0.1 *U*	0.[illegible]	0.1 *U*	0.1 *U*	0.1 *U*	0.1 *U*	[illegible]1 *U*

Table 1 (Cont.)

Analyte	Sample No.: / Station ID: / Depth (cm): / Sample Date:	SD1008 RB-4 10-35 11/24/98	SD1009 RB-5 0-10 11/24/98	SD1010 RB-5 10-25 11/24/98	SD1011 RB-6 0-10 11/24/98	SD1013 RB-6 (DUP) 0-10 11/24/98	SD1012 RB-6 10-58 11/24/98	SD1014 RB-6 (DUP) 10-58 11/24/98
2-Nitroaniline	mg/kg	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*
Rej 2-Nitrophenol	mg/kg	0.04 *UR*	0.04 *UR*	0.04 *UR*	0.04 *UR*	0.04 *UR*	0.04 *UR*	0.04 *UR*
2,4-Dichlorophenol	mg/kg	0.1 *U*	0.1 *U*	0.1 *U*	0.1 *U*	0.1 *U*	0.1 *U*	0.1 *U*
2,4-Dimethylphenol	mg/kg	0.2 *UJ*	0.2 *UJ*	0.2 *UJ*	0.2 *UJ*	0.2 *UJ*	0.2 *UJ*	0.2 *UJ*
2,4-Dinitrophenol	mg/kg	0.3 *UR*	0.3 *UR*	0.3 *UR*	0.3 *UR*	0.3 *UR*	0.3 *UR*	0.3 *UR*
2,4-Dinitrotoluene	mg/kg	0.02 *U*	0.02 *U*	0.02 *U*	0.02 *U*	0.02 *U*	0.02 *U*	0.02 *U*
2,4,5-Trichlorophenol	mg/kg	0.04 *U*	0.04 *U*	0.04 *U*	0.04 *U*	0.04 *U*	0.04 *U*	0.04 *U*
2,4,6-Trichlorophenol	mg/kg	0.03 *U*	0.03 *U*	0.03 *U*	0.03 *U*	0.03 *U*	0.03 *U*	0.03 *U*
2,6-Dinitrotoluene	mg/kg	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*
Dibenz[a,h]anthracene	mg/kg	0.005 *U*	0.005 *U*	0.005 *U*	**0.006 *J***	0.005 *U*	**0.009 *J***	**0.017 *J***
2-Methyl-4,6-dinitrophenol	mg/kg	0.1 *U*	0.1 *U*	0.1 *U*	0.1 *U*	0.1 *U*	0.1 *U*	0.1 *U*
Di-*n*-octyl phthalate	mg/kg	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*
3-Nitroaniline	mg/kg	0.2 *U*	0.2 *U*	0.2 *U*	0.2 *U*	0.2 *U*	0.2 *U*	0.2 *U*
3,3'-Dichlorobenzidine	mg/kg	0.04 *U*	0.04 *U*	0.04 *U*	0.04 *U*	0.04 *U*	0.04 *U*	0.04 *U*
4-Bromophenyl-phenyl ether	mg/kg	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*
4-Chloro-3-methylphenol (PCMC)	mg/kg	0.05 *U*	0.05 *U*	0.05 *U*	0.05 *U*	0.05 *U*	0.05 *U*	0.05 *U*
4-Chloroaniline	mg/kg	0.05 *U*	0.05 *U*	0.05 *U*	0.05 *U*	0.05 *U*	0.05 *U*	0.05 *U*
4-Chlorophenol (parachlorophenol)	mg/kg	0.05 *U*	0.05 *U*	0.05 *U*	0.05 *U*	0.05 *U*	0.05 *U*	0.05 *U*
4-Chlorophenyl-phenyl ether	mg/kg	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*
4-Methylphenol	mg/kg	0.2 *U*	0.2 *U*	0.2 *U*	0.2 *U*	0.2 *U*	0.2 *U*	0.2 *U*
4-Nitroaniline	mg/kg	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*
4-Nitrophenol	mg/kg	0.1 *U*	0.1 *U*	0.1 *U*	0.1 *U*	0.1 *U*	0.1 *U*	0.1 *U*
Rej. Pentachlorophenol	mg/kg	0.3 *UR*	0.3 *UR*	0.3 *UR*	0.3 *UR*	0.3 *UR*	0.3 *UR*	0.3 *UR*
Hexachlorobenzene	mg/kg	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*
Hexachlorobutadiene	mg/kg	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*
Rej. Hexachlorocyclopentadiene	mg/kg	0.2 *UR*	0.2 *UR*	0.2 *UR*	0.2 *UR*	0.2 *UR*	0.2 *UR*	0.2 *UR*
Hexachloroethane (perchloroethane)	mg/kg	0.04 *U*	0.04 *U*	0.04 *U*	0.04 *U*	0.04 *U*	0.04 *U*	0.04 *U*
Acenaphthene	mg/kg	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	**0.0255 *J***
Acenaphthylene	mg/kg	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	**0.0225 *J***
Anthracene	mg/kg	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	**0.006 *J***	**0.024 *J***
Bis[2-chloroethyl]ether	mg/kg	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*
Bis[2-ethylhexyl]phthalate	mg/kg	0.02 *U*	0.02 *U*	0.02 *U*	**0.07 *J***	0.02 *U*	**0.045 *J***	0.04 *U*
Benzo[a]anthracene	mg/kg	**0.0145**	**0.012 *J***	0.01 *U*	**0.0125 *J***	0.01 *U*	**0.05 *J***	**0.111 *J***
Benzo[a]pyrene	mg/kg	**0.013**	**0.0125 *J***	0.01 *U*	**0.0285 *J***	0.01 *U*	**0.065 *J***	**0.176 *J***

Table 12. (cont.)

Analyte	Sample No.: / Station ID: / Depth (cm): / Sample Date:	SD1008 RB-4 10-35 11/24/98	SD1009 RB-5 0-10 11/24/98	SD1010 RB-5 10-25 11/24/98	SD1011 RB-6 0-10 11/24/98	SD1013 RB-6 (DUP) 0-10 11/24/98	SD1012 RB-6 10-58 11/24/98	SD1014 RB-6 (DUP) 10-58 11/24/98
Benzo[b]fluoranthene	mg/kg	**0.0145**	**0.0125 J**	0.01 *U*	**0.0265 J**	**0.011**	**0.059 J**	**0.157 J**
Bis(2-chloroethoxy)methane	mg/kg	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*
Bis(2-chloroisopropyl) ether	mg/kg	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*
Benzoic acid	mg/kg	0.25 *U*	0.25 *U*	0.25 *U*	0.25 *U*	0.25 *U*	0.25 *U*	0.25 *U*
Benzyl alcohol	mg/kg	0.05 *U*	0.05 *U*	0.05 *U*	0.05 *U*	0.05 *U*	0.05 *U*	0.05 *U*
Benzo[ghi]perylene	mg/kg	**0.0095**	**0.0115 J**	**0.007 J**	**0.0335 J**	**0.0085 J**	**0.069 J**	**0.204 J**
Benzo[k]fluoranthene	mg/kg	**0.013**	**0.0125 J**	0.01 *U*	0.024 *J*	0.01 *U*	0.0505 *J*	0.127 *J*
Butylbenzyl phthalate	mg/kg	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*
Carbazole	mg/kg	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	**0.014**
Chrysene	mg/kg	**0.018**	**0.0125 J**	0.01 *U*	**0.017 J**	0.01 *U*	**0.065 J**	**0.161 J**
Diethyl phthalate	mg/kg	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*
Dibenzofuran	mg/kg	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	**0.0075**
Di-*n*-butyl phthalate	mg/kg	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*
Dimethyl phthalate	mg/kg	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*
Fluoranthene	mg/kg	**0.019**	**0.015 J**	0.01 *U*	**0.0115**	**0.012**	**0.087 J**	**0.295 J**
Fluorene	mg/kg	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.017
Indeno[1,2,3-cd]pyrene	mg/kg	**0.0115 J**	**0.014 J**	**0.007 J**	**0.041 J**	**0.0095 J**	**0.0755 J**	**0.205 J**
Isophorone	mg/kg	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*
Naphthalene	mg/kg	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	**0.005 J**	**0.0275 J**
Nitrobenzene	mg/kg	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*
N-nitroso-di-n-propylamine	mg/kg	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*
N-nitrosodiphenylamine	mg/kg	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*
Phenanthrene	mg/kg	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	**0.0235 J**	**0.166 J**
Phenol	mg/kg	0.05 *U*	0.05 *U*	0.05 *U*	0.05 *U*	0.05 *U*	0.05 *U*	0.05 *U*
Pyrene	mg/kg	**0.0235**	**0.016 J**	0.01 *U*	**0.0125 J**	**0.012**	**0.107 J**	**0.36 J**
VOCs								
1,1-Dichloroethane	mg/kg	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*
1,1-Dichloroethene	mg/kg	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*
1,1-Dichloropropene	mg/kg	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*
1,1,1-Trichloroethane	mg/kg	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*
1,1,1,2-Tetrachloroethane	mg/kg	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*
1,1,2-Trichloroethane	mg/kg	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*
1,1,2,2-Tetrachloroethane	mg/kg	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*
EDB-E[illegible]ne bromide	mg/kg	0.02 *U*	0.02[illegible]	0.02 *U*	0.02 *U*	0.02 *U*	0.02 *U*	[illegible] *U*

Table ' ont.)

Analyte	Sample No.: / Station ID: / Depth (cm): / Sample Date:	SD1008 RB-4 10-35 11/24/98	SD1009 RB-5 0-10 11/24/98	SD1010 RB-5 10-25 11/24/98	SD1011 RB-6 0-10 11/24/98	SD1013 RB-6 (DUP) 0-10 11/24/98	SD1012 RB-6 10-58 11/24/98	SD1014 RB-6 (DUP) 10-58 11/24/98
1,2-Dichlorobenzene	mg/kg	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*
1,2-Dichloroethane	mg/kg	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*
1,2-Dichloropropane	mg/kg	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*
1,2,3-Trichlorobenzene	mg/kg	0.02 *U*	0.02 *U*	0.02 *U*	0.02 *U*	0.02 *U*	0.02 *U*	0.02 *U*
1,2,3-Trichloropropane	mg/kg	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*
1,2,4-Trichlorobenzene	mg/kg	0.02 *U*	0.02 *U*	0.02 *U*	0.02 *U*	0.02 *U*	0.02 *U*	0.02 *U*
1,2,4-Trimethylbenzene	mg/kg	0.02 *U*	0.02 *U*	0.02 *U*	0.02 *U*	0.02 *U*	0.02 *U*	0.02 *U*
1,2-Dibromo-3-chloropropane	mg/kg	0.02 *U*	0.02 *U*	0.02 *U*	0.02 *U*	0.02 *U*	0.02 *U*	0.02 *U*
1,3-Dichlorobenzene	mg/kg	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*
1,3-Dichloropropane	mg/kg	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*
1,3,5-Trimethylbenzene	mg/kg	0.02 *U*	0.02 *U*	0.02 *U*	0.02 *U*	0.02 *U*	0.02 *U*	0.02 *U*
1,4-Dichlorobenzene	mg/kg	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*
Rej 2-Butanone (methyl ethyl ketone, MEK)	mg/kg	0.02 *UR*	0.02 *UR*	0.02 *UR*	0.02 *UR*	0.02 *UR*	0.02 *UR*	0.02 *UR*
2-Chlorotoluene	mg/kg	0.02 *U*	0.02 *U*	0.02 *U*	0.02 *U*	0.02 *U*	0.02 *U*	0.02 *U*
2-Hexanone	mg/kg	0.02 *U*	0.02 *U*	0.02 *U*	0.02 *U*	0.02 *U*	0.02 *U*	0.02 *U*
2,2-Dichloropropane	mg/kg	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*
4-Chlorotoluene	mg/kg	0.02 *U*	0.02 *U*	0.02 *U*	0.02 *U*	0.02 *U*	0.02 *U*	0.02 *U*
4-Isopropyltoluene	mg/kg	0.02 *U*	0.02 *U*	0.02 *U*	0.02 *U*	0.02 *U*	0.02 *U*	0.02 *U*
Rej 4-Methyl-2-pentanone (MIBK)	mg/kg	0.02 *UR*	0.02 *UR*	0.02 *UR*	0.02 *UR*	0.02 *UR*	0.02 *UR*	0.02 *UR*
Rej Acetone	mg/kg	0.05 *UR*	0.05 *UR*	0.05 *UR*	0.05 *UR*	0.05 *UR*	0.05 *UR*	0.05 *UR*
Benzene	mg/kg	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*
Bromobenzene	mg/kg	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*
Bromochloromethane	mg/kg	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*
Bromodichloromethane	mg/kg	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*
Bromoform	mg/kg	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*
Bromomethane	mg/kg	0.005 *UJ*	0.005 *UJ*	0.005 *UJ*	0.005 *UJ*	0.005 *UJ*	0.005 *UJ*	0.005 *UJ*
Carbon disulfide	mg/kg	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*
Carbon tetrachloride	mg/kg	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*
Chlorobenzene	mg/kg	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*
Chloroethane	mg/kg	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*
Chloroform	mg/kg	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*
Chloromethane	mg/kg	0.005 *UJ*	0.005 *UJ*	0.005 *UJ*	0.005 *UJ*	0.005 *UJ*	0.005 *UJ*	0.005 *UJ*
cis-1,2-Dichloroethene	mg/kg	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*
cis-1,3-Dichloropropene	mg/kg	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*

Table 12. (cont.)

Analyte	Sample No.: / Station ID: / Depth (cm): / Sample Date:	SD1008 RB-4 10-35 11/24/98	SD1009 RB-5 0-10 11/24/98	SD1010 RB-5 10-25 11/24/98	SD1011 RB-6 0-10 11/24/98	SD1013 RB-6 (DUP) 0-10 11/24/98	SD1012 RB-6 10-58 11/24/98	SD1014 RB-6 (DUP) 10-58 11/24/98
Dibromochloromethane	mg/kg	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*
Dibromomethane	mg/kg	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*
Dichlorodifluoromethane	mg/kg	0.005 *UJ*	0.005 *UJ*	0.005 *UJ*	0.005 *UJ*	0.005 *UJ*	0.005 *UJ*	0.005 *UJ*
Ethylbenzene	mg/kg	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*
Hexachlorobutadiene	mg/kg	0.02 *U*	0.02 *U*	0.02 *U*	0.02 *U*	0.02 *U*	0.02 *U*	0.02 *U*
Isopropylbenzene	mg/kg	0.02 *U*	0.02 *U*	0.02 *U*	0.02 *U*	0.02 *U*	0.02 *U*	0.02 *U*
m- & *p*-Xylenes	mg/kg	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*
Methylene chloride (dichloromethane)	mg/kg	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*	0.01 *U*
Naphthalene	mg/kg	0.02 *UJ*	0.02 *UJ*	0.02 *UJ*	0.02 *UJ*	0.02 *UJ*	0.02 *UJ*	0.02 *UJ*
n-Butyl benzene	mg/kg	0.02 *U*	0.02 *U*	0.02 *U*	0.02 *U*	0.02 *U*	0.02 *U*	0.02 *U*
N-Propylbenzene	mg/kg	0.02 *U*	0.02 *U*	0.02 *U*	0.02 *U*	0.02 *U*	0.02 *U*	0.02 *U*
ortho-Xylene	mg/kg	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*
sec Butylbenzene	mg/kg	0.02 *U*	0.02 *U*	0.02 *U*	0.02 *U*	0.02 *U*	0.02 *U*	0.02 *U*
Styrene	mg/kg	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*
tert Butylbenzene	mg/kg	0.02 *U*	0.02 *U*	0.02 *U*	0.02 *U*	0.02 *U*	0.02 *U*	0.02 *U*
Tetrachloroethene	mg/kg	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*
Toluene	mg/kg	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*
trans-1,2-dichloroethene	mg/kg	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*
trans-1,3-Dichloropropene	mg/kg	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*
Trichloroethene	mg/kg	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*
Trichlorofluoromethane	mg/kg	0.005 *UJ*	0.005 *UJ*	0.005 *UJ*	0.005 *UJ*	0.005 *UJ*	0.005 *UJ*	0.005 *UJ*
Vinyl chloride (CH2--CHCl)	mg/kg	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*	0.005 *U*
Particle Size								
Particles < 0.063 mm (sieve #230)	%	0.68	0.21	0.16	1.1	0.15	5.9	4.4
Particles < 0.105 mm (sieve #140)	%	9.7	10.2	4.3	14.0	7.5	15.3	12.4
Particles < 0.250 mm (sieve #60)	%	61.3	73.0	74.7	72.3	72.5	32.9	33.3
Particles < 0.42 mm (sieve #40)	%	10.7	15.0	15.8	6.8	17.9	11.3	15.6
Particles < 0.84 mm (sieve #20)	%	0.65	0.37	0.68	1.1	0.23	1.6	1.9
Percent clay	%	0.38	0.18	0.090	0.14	0.34	5.5	5.9
Percent gravel	%	14.9	0.12	2.7	3.7	0.070	2.0	0.49
Percent silt	%	1.3	0.48	0.42	0.58	0.62	24.5	25.6

Note: Detected constituents in **bold**
J - estimated
R - rejected
U - undetected at detection limit shown

Table ' ffshore sediment sampling results, Elf Atochem Acid t Area

Analyte	Sample No.: / Station ID: / Depth (cm): / Sample Date:	SD0001 / OSS-001 / 0-10 / 1/19/99	SD0004 / OSS-001 / 50-70 / 1/19/99	SD0006 / OSS-002 / 0-10 / 1/19/99	SD0008 / OSS-002 / 30-50 / 1/19/99	SDC001 / OSS-002 / 10-90 / 1/19/99	SD0021 / OSS-003 / 0-10 / 1/20/99	SD0022 / OSS-003 / 10-30 / 1/20/99
General Parameters								
Total solids (dry wt. as % of wet wt.)	%	**52.6**	**53.3**	**53.6**	**51.2**	**56.0**	**48.0**	**67.8**
Total organic carbon	%	**1.7**	**1.4**	**1.6**	--	**1.7**	**2.1**	**0.76**
Total Pesticides								
4,4'-DDD	mg/kg	**0.115**	**1.77**	**3.4**	--	**5.2**	**0.049**	**0.735**
4,4'-DDE	mg/kg	**0.054**	**0.226**	**0.509**	--	**0.356**	0.01 *U*	0.025 *U*
4,4'-DDT	mg/kg	**1.25 *J***	**1.06**	**81**	--	**17**	**0.017**	**2.8**
Aldrin	mg/kg	0.04 *U*	0.05 *U*	0.05 *U*	--	0.061 *U*	0.01 *U*	0.025 *U*
α-Chlordane	mg/kg	0.04 *U*	0.04 *U*	0.04 *U*	--	0.04 *U*	0.01 *U*	0.025 *U*
α-Endosulfan (Endosulfan I)	mg/kg	0.04 *U*	0.04 *U*	0.04 *U*	--	0.04 *U*	0.01 *U*	0.025 *U*
α-Hexachlorocyclohexane	mg/kg	0.04 *U*	0.04 *U*	0.04 *U*	--	0.04 *U*	0.01 *U*	0.025 *U*
β-Endosulfan (Endosulfan II)	mg/kg	0.04 *U*	0.04 *U*	0.04 *U*	--	0.04 *U*	0.01 *U*	0.025 *U*
β-Hexachlorocyclohexane	mg/kg	0.04 *U*	0.04 *U*	0.04 *U*	--	0.04 *U*	0.01 *U*	0.025 *U*
δ-Hexachlorocyclohexane	mg/kg	0.04 *U*	0.04 *U*	0.04 *U*	--	0.04 *U*	0.01 *U*	0.025 *U*
Dieldrin	mg/kg	0.04 *U*	0.04 *U*	0.2 *U*	--	0.048 *U*	0.01 *U*	0.025 *U*
Endosulfan sulfate	mg/kg	0.04 *U*	0.04 *U*	0.04 *U*	--	0.04 *U*	0.01 *U*	0.025 *U*
Endrin	mg/kg	0.04 *U*	0.04 *U*	0.04 *U*	--	0.04 *U*	0.01 *U*	0.025 *U*
Endrin aldehyde	mg/kg	0.04 *U*	0.04 *U*	0.04 *U*	--	0.04 *U*	0.01 *U*	0.025 *U*
Endrin ketone	mg/kg	0.04 *U*	0.04 *U*	0.04 *U*	--	0.04 *U*	0.01 *U*	0.025 *U*
γ-Chlordane — Gamma Chlordane	mg/kg	0.04 *U*	0.04 *U*	0.04 *U*	--	0.04 *U*	0.01 *U*	0.025 *U*
γ-Hexachlorocyclohexane (lindane)	mg/kg	0.04 *U*	**0.0459**	0.04 *U*	--	0.04 *U*	0.01 *U*	0.025 *U*
Heptachlor ← Tech Grade?	mg/kg	0.04 *U*	0.04 *U*	0.04 *U*	--	0.04 *U*	0.01 *U*	0.025 *U*
Heptachlor epoxide	mg/kg	0.04 *U*	0.04 *U*	0.067 *U*	--	0.047 *U*	0.01 *U*	0.025 *U*
Methoxychlor	mg/kg	0.04 *U*	0.04 *U*	0.04 *U*	--	0.04 *U*	0.02 *U*	0.05 *U*
Toxaphene	mg/kg	5 *U*	5 *U*	5 *U*	--	5 *U*	0.3 *U*	0.75 *U*
SVOCs								
1,2-Dichlorobenzene	mg/kg	0.01 *U*	0.01 *U*	0.01 *U*	--	0.01 *U*	0.01 *U*	**0.011**
1,2,4-Trichlorobenzene	mg/kg	0.01 *U*	**0.041**	**0.01**	--	**0.04**	0.01 *U*	**0.012**
1,3-Dichlorobenzene	mg/kg	0.01 *U*	**0.01**	0.01 *U*	--	0.01 *U*	0.01 *U*	0.01 *U*
1,4-Dichlorobenzene	mg/kg	0.01 *U*	0.01 *U*	0.01 *U*	--	0.01 *U*	0.01 *U*	**0.018**
2-Chloronaphthalene	mg/kg	0.005 *U*	0.005 *U*	0.005 *U*	--	0.005 *U*	0.005 *U*	0.005 *U*
2-Chlorophenol	mg/kg	0.05 *U*	0.05 *U*	0.05 *U*	--	0.05 *UJ*	0.05 *UJ*	**0.051**
2-Methylnaphthalene	mg/kg	0.005 *U*	**0.015**	0.005 *U*	--	**0.02**	0.005 *U*	**0.015**
2-Methylphenol	mg/kg	0.1 *U*	0.1 *U*	0.1 *U*	--	0.1 *UJ*	0.1 *UJ*	0.1 *U*

Table 13. (cont.)

Analyte	Sample No.: / Station ID: / Depth (cm): / Sample Date:	SD0001 / OSS-001 / 0-10 / 1/19/99	SD0004 / OSS-001 / 50-70 / 1/19/99	SD0006 / OSS-002 / 0-10 / 1/19/99	SD0008 / OSS-002 / 30-50 / 1/19/99	SDC001 / OSS-002 / 10-90 / 1/19/99	SD0021 / OSS-003 / 0-10 / 1/20/99	SD0022 / OSS-003 / 10-30 / 1/20/99
2-Nitroaniline	mg/kg	0.01 *U*	0.01 *U*	0.01 *U*	--	0.01 *U*	0.01 *U*	0.01 *U*
Rej 2-Nitrophenol	mg/kg	0.04 *UR*	0.04 *UR*	0.04 *UR*	--	0.04 *UR*	0.04 *UR*	0.04 *UR*
2,4-Dichlorophenol	mg/kg	0.1 *U*	0.1 *U*	0.1 *U*	--	0.1 *UJ*	0.1 *UJ*	0.1 *U*
2,4-Dimethylphenol	mg/kg	0.2 *U*	0.2 *U*	0.2 *U*	--	0.2 *UJ*	0.2 *UJ*	0.2 *U*
2,4-Dinitrophenol	mg/kg	0.3 *UR*	0.3 *UR*	0.3 *UR*	--	0.3 *UJ*	0.3 *UJ*	0.3 *UR*
2,4-Dinitrotoluene	mg/kg	0.02 *U*	0.02 *U*	0.02 *U*	--	0.02 *U*	0.02 *U*	0.02 *U*
2,4,5-Trichlorophenol	mg/kg	0.04 *U*	0.04 *U*	0.04 *U*	--	0.04 *UJ*	0.04 *UJ*	0.04 *U*
2,4,6-Trichlorophenol	mg/kg	0.03 *U*	0.03 *U*	0.03 *U*	--	0.03 *UJ*	0.03 *UJ*	0.03 *U*
2,6-Dinitrotoluene	mg/kg	0.01 *U*	0.01 *U*	0.01 *U*	--	0.01 *U*	0.01 *U*	0.01 *U*
Dibenz[a,h]anthracene	mg/kg	**0.016**	**0.1**	**0.049**	--	**0.11 *J***	**0.008 *J***	**0.036**
2-Methyl-4,6-dinitrophenol	mg/kg	0.1 *U*	0.1 *U*	0.1 *U*	--	0.1 *UJ*	0.1 *UJ*	0.1 *U*
Di-*n*-octyl phthalate	mg/kg	0.01 *U*	0.01 *U*	0.01 *U*	--	0.01 *U*	0.01 *U*	0.01 *U*
3- and 4-Chlorophenol	mg/kg	0.05 *U*	0.05 *U*	0.05 *U*	--	0.05 *UJ*	**0.081 *J***	**0.086**
3- and 4-Methylphenol	mg/kg	0.2 *U*	0.2 *U*	0.2 *U*	--	0.2 *UJ*	0.2 *UJ*	0.2 *U*
3-Nitroaniline	mg/kg	0.2 *U*	0.2 *U*	0.2 *U*	--	0.2 *U*	0.2 *U*	0.2 *U*
3,3'-Dichlorobenzidine	mg/kg	0.04 *U*	0.04 *U*	0.04 *U*	--	0.04 *U*	0.04 *U*	0.04 *U*
4-Bromophenyl-phenyl ether	mg/kg	0.01 *U*	0.01 *U*	0.01 *U*	--	0.01 *U*	0.01 *U*	0.01 *U*
4-Chloro-3-methylphenol (PCMC)	mg/kg	0.05 *U*	0.05 *U*	0.05 *U*	--	0.05 *UJ*	0.05 *UJ*	0.05 *U*
4-Chloroaniline	mg/kg	0.05 *U*	0.05 *U*	0.05 *U*	--	0.05 *U*	0.05 *U*	0.05 *U*
4-Chlorophenyl-phenyl ether	mg/kg	0.01 *U*	0.01 *U*	0.01 *U*	--	0.01 *U*	0.01 *U*	0.01 *U*
4-Nitroaniline	mg/kg	0.01 *U*	0.01 *U*	0.01 *U*	--	0.01 *U*	0.01 *U*	0.01 *U*
4-Nitrophenol	mg/kg	0.1 *UR*	0.1 *UR*	0.1 *UR*	--	0.1 *UJ*	0.1 *UJ*	0.1 *UR*
Pentachlorophenol	mg/kg	0.3 *U*	**0.099**	0.3 *U*	--	0.3 *U*	0.3 *U*	0.3 *U*
Hexachlorobenzene	mg/kg	0.01 *U*	**0.061**	0.01 *U*	--	**0.025**	0.01 *U*	0.01 *U*
Hexachlorobutadiene	mg/kg	0.01 *U*	**0.057**	0.01 *U*	--	**0.019**	0.01 *U*	0.01 *U*
Hexachlorocyclopentadiene	mg/kg	0.2 *U*	0.2 *U*	0.2 *U*	--	0.2 *U*	0.2 *U*	0.2 *U*
Hexachloroethane (perchloroethane)	mg/kg	0.04 *U*	**0.16**	**0.049**	--	**0.095**	0.04 *U*	0.04 *U*
Acenaphthene	mg/kg	**0.11**	**0.071**	0.01 *U*	--	**0.019**	**0.055**	**0.1**
Acenaphthylene	mg/kg	0.01 *U*	**0.018**	0.01 *U*	--	0.01 *U*	0.01 *U*	**0.02**
Anthracene	mg/kg	**0.04**	**0.15**	**0.021**	--	**0.1**	**0.016**	**0.082**
Bis[2-chloroethyl]ether	mg/kg	0.01 *U*	0.01 *U*	0.01 *U*	--	0.01 *U*	0.01 *U*	0.01 *U*
Bis[2-ethylhexyl]phthalate	mg/kg	**0.13**	**0.44**	**0.43**	--	**0.32**	0.02 *U*	**0.14**
Benzo[a]anthracene	mg/kg	**0.19**	**0.6**	**0.18**	--	**0.51**	**0.042**	**0.33**
Benzo[illegible]rene	mg/kg	**0.1**	**0.4**	**0.17**	--	**0.38**	**0.043**	**0.[illegible]3**

Table 1 (cont.)

Analyte	Sample No.: / Station ID: / Depth (cm): / Sample Date:	SD0001 / OSS-001 / 0-10 / 1/19/99	SD0004 / OSS-001 / 50-70 / 1/19/99	SD0006 / OSS-002 / 0-10 / 1/19/99	SD0008 / OSS-002 / 30-50 / 1/19/99	SDC001 / OSS-002 / 10-90 / 1/19/99	SD0021 / OSS-003 / 0-10 / 1/20/99	SD0022 / OSS-003 / 10-30 / 1/20/99
Benzo[b]fluoranthene	mg/kg	**0.14**	**0.67**	**0.3**	--	**0.66**	**0.045**	**0.23**
Bis(2-chloroethoxy)methane	mg/kg	0.01 *U*	0.01 *U*	0.01 *U*	--	0.01 *U*	0.01 *U*	0.01 *U*
Bis(2-chloroisopropyl) ether	mg/kg	0.01 *U*	0.01 *U*	0.01 *U*	--	0.01 *U*	0.01 *U*	0.01 *U*
Benzoic acid	mg/kg	0.25 *U*	0.25 *U*	0.25 *U*	--	0.25 *UR*	0.25 *UR*	0.25 *U*
Benzyl alcohol	mg/kg	0.05 *U*	0.05 *U*	0.05 *U*	--	0.05 *U*	0.05 *U*	0.05 *U*
Benzo[ghi]perylene	mg/kg	**0.042**	**0.2**	**0.12**	--	**0.27**	**0.031**	**0.12**
Benzo[k]fluoranthene	mg/kg	**0.096**	**0.44**	**0.18**	--	**0.51**	**0.035**	**0.17**
Butylbenzyl phthalate	mg/kg	0.01 *U*	**0.01**	0.01 *U*	--	0.01 *U*	0.01 *U*	0.01 *U*
Carbazole	mg/kg	**0.024**	**0.057**	**0.013**	--	**0.022**	0.01 *U*	**0.022**
Chrysene	mg/kg	**0.24**	**0.93**	**0.24**	--	**0.89**	**0.059**	**0.34**
Diethyl phthalate	mg/kg	0.01 *U*	0.01 *U*	0.01 *U*	--	0.01 *U*	0.01 *U*	0.01 *U*
Dibenzofuran	mg/kg	**0.047**	**0.015**	0.005 *U*	--	**0.01**	0.005 *U*	**0.015**
Di-*n*-butyl phthalate	mg/kg	**0.012**	0.01 *U*	**0.052**	--	**0.02**	0.01 *U*	0.01 *U*
Dimethyl phthalate	mg/kg	0.01 *U*	0.01 *U*	0.01 *U*	--	0.01 *U*	0.01 *U*	0.01 *U*
Fluoranthene	mg/kg	**0.65**	**1.6**	**0.26**	--	**0.73**	**0.12**	**0.44**
Fluorene	mg/kg	**0.083**	**0.061**	**0.01**	--	**0.027**	**0.021**	**0.055**
Indeno[1,2,3-cd]pyrene	mg/kg	**0.091**	**0.37**	**0.24**	--	**0.41**	**0.037**	**0.2**
Isophorone	mg/kg	0.01 *U*	0.01 *U*	0.01 *U*	--	0.01 *U*	0.01 *U*	0.01 *U*
Naphthalene	mg/kg	**0.015**	**0.018**	0.005 *U*	--	**0.009**	**0.007**	**0.035**
Nitrobenzene	mg/kg	0.01 *U*	0.01 *U*	0.01 *U*	--	0.01 *U*	0.01 *U*	0.01 *U*
N-nitroso-di-*n*-propylamine	mg/kg	0.01 *U*	0.01 *U*	0.01 *U*	--	0.01 *U*	0.01 *U*	0.01 *U*
N-nitrosodiphenylamine	mg/kg	0.01 *U*	0.01 *U*	0.01 *U*	--	0.01 *U*	0.01 *U*	0.01 *U*
Phenanthrene	mg/kg	**0.28**	**0.31**	**0.077**	--	**0.26**	**0.033**	**0.1**
Phenol	mg/kg	0.05 *U*	0.05 *U*	0.05 *U*	--	0.05 *U*	0.05 *U*	0.05 *U*
Pyrene	mg/kg	**0.47**	**1.2**	**0.21**	--	**0.59**	**0.11**	**0.63 *J***
VOCs								
1,1-Dichloroethane	mg/kg	0.01 *U*	0.009 *U*	0.009 *U*	0.01 *U*	--	0.01 *U*	0.05 *U*
1,1-Dichloroethene	mg/kg	0.01 *U*	0.009 *U*	0.009 *U*	0.01 *U*	--	0.01 *U*	0.05 *U*
1,1-Dichloropropene	mg/kg	0.01 *U*	0.009 *U*	0.009 *U*	0.01 *U*	--	0.01 *U*	0.05 *U*
1,1,1-Trichloroethane	mg/kg	0.01 *U*	0.009 *U*	0.009 *U*	0.01 *U*	--	0.01 *U*	0.05 *U*
1,1,1,2-Tetrachloroethane	mg/kg	0.01 *U*	0.009 *U*	0.009 *U*	0.01 *U*	--	0.01 *U*	0.05 *U*
1,1,2-Trichloroethane	mg/kg	0.01 *U*	0.009 *U*	0.009 *U*	0.01 *U*	--	0.01 *U*	0.05 *U*
1,1,2,2-Tetrachloroethane	mg/kg	0.01 *U*	0.009 *U*	0.009 *U*	0.01 *U*	--	0.01 *U*	0.05 *U*
EDB-Ethylene bromide	mg/kg	0.039 *U*	0.037 *U*	0.037 *U*	0.039 *U*	--	0.042 *U*	0.2 *U*

Table 13. (cont.)

Analyte	Sample No.: / Station ID: / Depth (cm): / Sample Date:	SD0001 / OSS-001 / 0-10 / 1/19/99	SD0004 / OSS-001 / 50-70 / 1/19/99	SD0006 / OSS-002 / 0-10 / 1/19/99	SD0008 / OSS-002 / 30-50 / 1/19/99	SDC001 / OSS-002 / 10-90 / 1/19/99	SD0021 / OSS-003 / 0-10 / 1/20/99	SD0022 / OSS-003 / 10-30 / 1/20/99
1,2-Dichlorobenzene	mg/kg	0.01 *U*	0.009 *U*	0.009 *U*	0.01 *U*	--	0.01 *U*	0.05 *U*
1,2-Dichloroethane	mg/kg	0.01 *U*	0.009 *U*	0.009 *U*	0.01 *U*	--	0.01 *U*	0.05 *U*
1,2-Dichloropropane	mg/kg	0.01 *U*	0.009 *U*	0.009 *U*	0.01 *U*	--	0.01 *U*	0.05 *U*
1,2,3-Trichlorobenzene	mg/kg	0.039 *U*	0.037 *U*	0.037 *U*	0.039 *U*	--	0.042 *U*	0.2 *U*
1,2,3-Trichloropropane	mg/kg	0.01 *U*	0.009 *U*	0.009 *U*	0.01 *U*	--	0.01 *U*	0.05 *U*
1,2,4-Trichlorobenzene	mg/kg	0.039 *U*	0.037 *U*	0.037 *U*	0.039 *U*	--	0.042 *U*	0.2 *U*
1,2,4-Trimethylbenzene	mg/kg	0.039 *U*	0.037 *U*	0.037 *U*	0.039 *U*	--	0.042 *U*	0.2 *U*
1,2-Dibromo-3-chloropropane	mg/kg	0.039 *U*	0.037 *U*	0.037 *U*	0.039 *U*	--	0.042 *U*	0.2 *U*
1,3-Dichlorobenzene	mg/kg	0.01 *U*	0.009 *U*	0.009 *U*	0.01 *U*	--	0.01 *U*	0.05 *U*
1,3-Dichloropropane	mg/kg	0.01 *U*	0.009 *U*	0.009 *U*	0.01 *U*	--	0.01 *U*	0.05 *U*
1,3,5-Trimethylbenzene	mg/kg	0.039 *U*	0.037 *U*	0.037 *U*	0.039 *U*	--	0.042 *U*	0.2 *U*
1,4-Dichlorobenzene	mg/kg	0.01 *U*	0.009 *U*	0.009 *U*	0.01 *U*	--	0.01 *U*	0.05 *U*
ReJ 2-Butanone (methyl ethyl ketone, MEK)	mg/kg	0.039 *UR*	0.037 *UR*	0.037 *UR*	0.039 *UR*	--	0.042 *UR*	0.2 *UR*
2-Chlorotoluene	mg/kg	0.039 *U*	0.037 *U*	0.037 *U*	0.039 *U*	--	0.042 *U*	0.2 *U*
2-Hexanone	mg/kg	0.039 *U*	0.037 *U*	0.037 *U*	0.039 *U*	--	0.042 *U*	0.2 *U*
2,2-Dichloropropane	mg/kg	0.01 *U*	0.009 *U*	0.009 *U*	0.01 *U*	--	0.01 *U*	0.05 *U*
Dibromochloromethane	mg/kg	0.01 *U*	0.009 *U*	0.009 *U*	0.01 *U*	--	0.01 *U*	0.05 *U*
Dibromomethane	mg/kg	0.01 *U*	0.009 *U*	0.009 *U*	0.01 *U*	--	0.01 *U*	0.05 *U*
Dichlorodifluoromethane	mg/kg	0.01 *U*	0.009 *U*	0.009 *U*	0.01 *U*	--	0.01 *U*	0.05 *U*
Bromodichloromethane	mg/kg	0.01 *U*	0.009 *U*	0.009 *U*	0.01 *U*	--	0.01 *U*	0.05 *U*
Trichloroethene	mg/kg	0.01 *U*	0.009 *U*	0.009 *U*	0.01 *U*	--	0.01 *U*	0.05 *U*
Trichlorofluoromethane	mg/kg	0.01 *U*	0.009 *U*	0.009 *U*	0.01 *U*	--	0.01 *U*	0.05 *U*
4-Chlorotoluene	mg/kg	0.039 *U*	0.037 *U*	0.037 *U*	0.039 *U*	--	0.042 *U*	0.2 *U*
ReJ. 4-Methyl-2-pentanone (MIBK)	mg/kg	0.039 *UR*	0.037 *UR*	0.037 *UR*	0.039 *UR*	--	0.042 *UR*	0.2 *UR*
Tetrachloroethene	mg/kg	0.01 *U*	0.009 *U*	0.009 *U*	0.01 *U*	--	0.01 *U*	0.05 *U*
4-Isopropyltoluene	mg/kg	0.039 *U*	0.037 *U*	0.037 *U*	0.039 *U*	--	0.042 *U*	0.2 *U*
ReJ. Acetone	mg/kg	0.097 *UR*	0.094 *UR*	0.093 *UR*	0.098 *UR*	--	0.1 *UR*	0.5 *UR*
Benzene	mg/kg	0.01 *U*	0.009 *U*	0.009 *U*	0.01 *U*	--	0.01 *U*	0.05 *U*
Bromobenzene	mg/kg	0.01 *U*	0.009 *U*	0.009 *U*	0.01 *U*	--	0.01 *U*	0.05 *U*
Bromochloromethane	mg/kg	0.01 *U*	0.009 *U*	0.009 *U*	0.01 *U*	--	0.01 *U*	0.05 *U*
Bromoform	mg/kg	0.01 *U*	0.009 *U*	0.009 *U*	0.01 *U*	--	0.01 *U*	0.05 *U*
Bromomethane	mg/kg	0.01 *U*	0.009 *U*	0.009 *U*	0.01 *U*	--	0.01 *U*	0.05 *U*
Carbon disulfide	mg/kg	0.01 *UJ*	0.009 *U*	0.009 *U*	0.01 *U*	--	0.01 *UJ*	0.05 *U*
Carbon tetrachloride	mg/kg	0.01 *U*	0.009 *U*	0.009 *U*	0.01 *U*	--	0.01 *U*	0.05 *U*

Table (cont.)

Analyte	Sample No.: / Station ID: / Depth (cm): / Sample Date:	SD0001 / OSS-001 / 0-10 / 1/19/99	SD0004 / OSS-001 / 50-70 / 1/19/99	SD0006 / OSS-002 / 0-10 / 1/19/99	SD0008 / OSS-002 / 30-50 / 1/19/99	SDC001 / OSS-002 / 10-90 / 1/19/99	SD0021 / OSS-003 / 0-10 / 1/20/99	SD0022 / OSS-003 / 10-30 / 1/20/99
Chlorobenzene	mg/kg	0.01 *U*	0.009 *U*	0.009 *U*	0.01 *U*	--	**34**	**18**
Chloroethane	mg/kg	0.01 *U*	0.009 *U*	0.009 *U*	0.01 *U*	--	0.01 *U*	0.05 *U*
Chloroform	mg/kg	0.01 *U*	0.009 *U*	0.009 *U*	0.01 *U*	--	0.01 *U*	0.05 *U*
Chloromethane	mg/kg	0.01 *U*	0.009 *U*	0.009 *U*	0.01 *U*	--	0.01 *U*	0.05 *U*
cis-1,2-Dichloroethene	mg/kg	0.01 *U*	0.009 *U*	0.009 *U*	0.01 *U*	--	0.01 *U*	0.05 *U*
cis-1,3-Dichloropropene	mg/kg	0.01 *U*	0.009 *U*	0.009 *U*	0.01 *U*	--	0.01 *U*	0.05 *U*
Ethylbenzene	mg/kg	0.01 *U*	0.009 *U*	0.009 *U*	0.01 *U*	--	0.01 *U*	0.05 *U*
Hexachlorobutadiene	mg/kg	0.039 *UJ*	0.037 *U*	0.037 *U*	0.039 *U*	--	0.042 *UJ*	0.2 *U*
Isopropylbenzene	mg/kg	0.039 *U*	0.037 *U*	0.037 *U*	0.039 *U*	--	0.042 *U*	0.2 *U*
m- & *p*-Xylenes	mg/kg	0.01 *U*	0.009 *U*	0.009 *U*	0.01 *U*	--	0.01 *U*	0.05 *U*
Methylene chloride (dichloromethane)	mg/kg	0.019 *U*	0.019 *U*	0.019 *U*	0.02 *U*	--	0.021 *U*	0.1 *U*
Naphthalene	mg/kg	0.039 *U*	0.037 *U*	0.037 *U*	0.039 *U*	--	0.042 *U*	0.2 *U*
n-Butyl benzene	mg/kg	0.039 *U*	0.037 *U*	0.037 *U*	0.039 *U*	--	0.042 *U*	0.2 *U*
N-Propylbenzene = Propylbenzene?	mg/kg	0.039 *U*	0.037 *U*	0.037 *U*	0.039 *U*	--	0.042 *U*	0.2 *U*
ortho-Xylene	mg/kg	0.01 *U*	0.009 *U*	0.009 *U*	0.01 *U*	--	0.01 *U*	0.05 *U*
sec Butylbenzene	mg/kg	0.039 *UJ*	0.037 *U*	0.037 *U*	0.039 *U*	--	0.042 *UJ*	0.2 *U*
Styrene	mg/kg	0.01 *U*	0.009 *U*	0.009 *U*	0.01 *U*	--	0.01 *U*	0.05 *U*
Toluene	mg/kg	0.01 *U*	0.009 *U*	0.009 *U*	0.01 *U*	--	0.01 *U*	0.05 *U*
trans-1,2-dichloroethene	mg/kg	0.01 *U*	0.009 *U*	0.009 *U*	0.01 *U*	--	0.01 *U*	0.05 *U*
trans-1,3-Dichloropropene	mg/kg	0.01 *U*	0.009 *U*	0.009 *U*	0.01 *U*	--	0.01 *U*	0.05 *U*
tert Butylbenzene	mg/kg	0.039 *U*	0.037 *U*	0.037 *U*	0.039 *U*	--	0.042 *U*	0.2 *U*
Vinyl chloride (CH2--CHCl)	mg/kg	0.01 *U*	0.009 *U*	0.009 *U*	0.01 *U*	--	0.01 *U*	0.05 *U*
Particle Size								
Particles < 0.063 mm (sieve #230)	%	**16.7**	**22.1**	**16.7**	--	**14.1**	**10.7**	**25.7**
Particles < 0.105 mm (sieve #140)	%	**3.2**	**3.4**	**3.0**	--	**3.1**	**4.9**	**24.0**
Particles < 0.250 mm (sieve #60)	%	**0.86**	**1.2**	**1.4**	--	**1.1**	**4.3**	**8.8**
Particles < 0.42 mm (sieve #40)	%	**0.49**	**0.57**	**0.61**	--	**0.29**	**0.45**	**0.58**
Particles < 0.84 mm (sieve #20)	%	**0.67**	**0.39**	**0.68**	--	**0.26**	**0.33**	**0.39**
Percent clay	%	**11.1**	**8.9**	**6.4**	--	**10.2**	**12.7**	**6.5**
Percent gravel	%	**0.010**	**3.6**	**0.91**	--	**0.46**	**1.9**	**0.23**
Percent silt	%	**63.4**	**57.4**	**65.1**	--	**68.7**	**62.5**	**35.4**

Table 13. (cont.)

Analyte	Sample No.: / Station ID: / Depth (cm): / Sample Date:	SD0011 / OSS-004 / 0-10 / 1/19/99	SD0013 / OSS-004 / 30-50 / 1/19/99	SD0024 / OSS-005 / 0-10 / 1/20/99	SD0026 / OSS-005 / 30-50 / 1/20/99	SDC002 / OSS-005 / 10-90 / 1/20/99	SD0016 / OSS-006 / 0-10 / 1/19/99	SD0017 / OSS-006 / 10-30 / 1/19/99
General Parameters								
Total solids (dry wt. as % of wet wt.)	%	**56.9**	**44.7**	**45.3**	**47.8**	**49.2**	**53.5**	**56.5**
Total organic carbon	%	**2.3**	**2.2**	**2.4**	--	**2.7**	**1.8**	**1.3**
Total Pesticides								
4,4'-DDD	mg/kg	**11**	**16**	**0.194**	--	**0.147**	**2.3**	**4.1**
4,4'-DDE	mg/kg	**1.48**	**1.84**	**0.032**	--	0.01 *U*	**0.522**	**1.18**
4,4'-DDT	mg/kg	**18**	0.4 *U*	**0.36**	--	**0.216**	**10**	**11**
Aldrin	mg/kg	0.07 *U*	3.6 *U*	0.01 *U*	--	0.01 *U*	0.04 *U*	0.04 *U*
α-Chlordane Alpha-C	mg/kg	0.11 *U*	0.4 *U*	0.01 *U*	--	0.01 *U*	0.04 *U*	0.04 *U*
α-Endosulfan (Endosulfan I)	mg/kg	0.04 *U*	0.4 *U*	0.01 *U*	--	0.01 *U*	0.04 *U*	0.04 *U*
α-Hexachlorocyclohexane	mg/kg	0.04 *U*	0.4 *U*	0.01 *U*	--	0.01 *U*	0.04 *U*	0.04 *U*
β-Endosulfan (Endosulfan II) Beta-E	mg/kg	0.04 *U*	0.4 *U*	0.01 *U*	--	0.01 *U*	0.04 *U*	0.04 *U*
β-Hexachlorocyclohexane	mg/kg	0.04 *U*	0.4 *U*	0.01 *U*	--	0.01 *U*	0.04 *U*	0.04 *U*
δ-Hexachlorocyclohexane	mg/kg	0.052 *U*	0.4 *U*	0.01 *U*	--	0.01 *U*	0.04 *U*	0.04 *U*
Dieldrin	mg/kg	0.235 *U*	0.4 *U*	0.01 *U*	--	0.01 *U*	0.04 *U*	0.04 *U*
Endosulfan sulfate	mg/kg	0.04 *U*	0.4 *U*	0.01 *U*	--	0.01 *U*	0.04 *U*	0.04 *U*
Endrin	mg/kg	0.04 *U*	0.4 *U*	0.01 *U*	--	0.01 *U*	0.04 *U*	0.04 *U*
Endrin aldehyde	mg/kg	**0.215**	0.4 *U*	0.01 *U*	--	0.01 *U*	0.04 *U*	0.04 *U*
Endrin ketone	mg/kg	0.04 *U*	0.4 *U*	0.01 *U*	--	0.01 *U*	0.04 *U*	0.04 *U*
γ-Chlordane Gamma-Chlordane	mg/kg	0.04 *U*	0.4 *U*	0.01 *U*	--	0.01 *U*	0.04 *U*	0.04 *U*
γ-Hexachlorocyclohexane (lindane)	mg/kg	0.04 *U*	0.4 *U*	0.01 *U*	--	0.01 *U*	0.04 *U*	0.04 *U*
Heptachlor	mg/kg	0.04 *U*	0.4 *U*	0.01 *U*	--	0.01 *U*	0.04 *U*	0.04 *U*
Heptachlor epoxide	mg/kg	0.36 *U*	0.4 *U*	0.01 *U*	--	0.01 *U*	0.04 *U*	0.04 *U*
Methoxychlor	mg/kg	0.09 *U*	0.4 *U*	0.02 *U*	--	0.02 *U*	0.04 *U*	0.04 *U*
Toxaphene	mg/kg	5 *U*	50 *U*	0.3 *U*	--	0.3 *U*	5 *U*	5 *U*
SVOCs								
1,2-Dichlorobenzene	mg/kg	**0.016**	0.01 *U*	0.01 *U*	--	0.01 *U*	0.01 *U*	0.01 *U*
1,2,4-Trichlorobenzene	mg/kg	**0.19**	**0.53**	0.01 *U*	--	0.01 *U*	0.01 *U*	0.01 *U*
1,3-Dichlorobenzene	mg/kg	**0.031**	**0.015**	0.01 *U*	--	0.01 *U*	0.01 *U*	0.01 *U*
1,4-Dichlorobenzene	mg/kg	**0.023**	0.01 *U*	0.01 *U*	--	0.01 *U*	0.01 *U*	0.01 *U*
2-Chloronaphthalene	mg/kg	0.005 *U*	0.005 *U*	0.005 *U*	--	0.005 *U*	0.005 *U*	0.005 *U*
2-Chlorophenol	mg/kg	0.05 *U*	0.05 *U*	0.05 *UJ*	--	0.05 *U*	0.05 *U*	0.05 *U*
2-Methylnaphthalene	mg/kg	**0.025**	**0.25**	**0.006**	--	**0.018**	**0.006**	**0.018**
2-Methyl[illegible]nol	mg/kg	0.1 *U*	0.1 [illegible]	0.1 *UJ*	--	0.1 *U*	0.1 *U*	[illegible]1 *U*

Table 1: [illegible]ont.)

Analyte	Sample No.: / Station ID: / Depth (cm): / Sample Date:	SD0011 OSS-004 0-10 1/19/99	SD0013 OSS-004 30-50 1/19/99	SD0024 OSS-005 0-10 1/20/99	SD0026 OSS-005 30-50 1/20/99	SDC002 OSS-005 10-90 1/20/99	SD0016 OSS-006 0-10 1/19/99	SD0017 OSS-006 10-30 1/19/99
2-Nitroaniline	mg/kg	0.01 *U*	0.01 *U*	0.01 *U*	--	0.01 *U*	0.01 *U*	0.01 *U*
REJ 2-Nitrophenol	mg/kg	0.04 *UR*	0.04 *UR*	0.04 *UR*	--	0.04 *UR*	0.04 *UR*	0.04 *UR*
2,4-Dichlorophenol	mg/kg	0.1 *U*	0.1 *U*	0.1 *UJ*	--	0.1 *U*	0.1 *U*	0.1 *U*
2,4-Dimethylphenol	mg/kg	0.2 *U*	0.2 *U*	0.2 *UJ*	--	0.2 *U*	0.2 *U*	0.2 *U*
2,4-Dinitrophenol	mg/kg	0.3 *UR*	0.3 *UJ*	0.3 *UJ*	--	**0.018 *J***	0.3 *UJ*	0.3 *UJ*
2,4-Dinitrotoluene	mg/kg	0.02 *U*	0.02 *U*	0.02 *U*	--	0.02 *U*	0.02 *U*	0.02 *U*
2,4,5-Trichlorophenol	mg/kg	0.04 *U*	**0.073**	0.04 *UJ*	--	0.04 *U*	0.04 *U*	0.04 *U*
2,4,6-Trichlorophenol	mg/kg	0.03 *U*	**0.057**	0.03 *UJ*	--	0.03 *U*	0.03 *U*	0.03 *U*
2,6-Dinitrotoluene	mg/kg	0.01 *U*	0.01 *U*	0.01 *U*	--	0.01 *U*	0.01 *U*	0.01 *U*
Dibenz[a,h]anthracene	mg/kg	**1.7**	**1.8 *J***	**0.043 *J***	--	**0.019 *J***	**0.031 *J***	**0.032 *J***
2-Methyl-4,6-dinitrophenol	mg/kg	0.1 *U*	0.1 *UJ*	0.1 *UJ*	--	0.1 *UJ*	0.1 *UJ*	0.1 *UJ*
Di-*n*-octyl phthalate	mg/kg	0.01 *U*	0.01 *U*	0.01 *U*	--	0.01 *U*	0.01 *U*	0.01 *U*
3- and 4-Chlorophenol	mg/kg	**0.012**	**0.19**	0.05 *UJ*	--	0.05 *U*	0.05 *U*	0.05 *U*
3- and 4-Methylphenol	mg/kg	0.2 *U*	0.2 *U*	0.2 *UJ*	--	0.2 *U*	0.2 *U*	0.2 *U*
3-Nitroaniline	mg/kg	0.2 *U*	0.2 *U*	0.2 *U*	--	0.2 *U*	0.2 *U*	0.2 *U*
3,3'-Dichlorobenzidine	mg/kg	0.04 *U*	0.04 *U*	0.04 *U*	--	0.04 *U*	0.04 *U*	0.04 *U*
4-Bromophenyl-phenyl ether	mg/kg	0.01 *U*	0.01 *U*	0.01 *U*	--	0.01 *U*	0.01 *U*	0.01 *U*
4-Chloro-3-methylphenol (PCMC)	mg/kg	0.05 *U*	0.05 *U*	0.05 *UJ*	--	0.05 *U*	0.05 *U*	0.05 *U*
4-Chloroaniline	mg/kg	0.05 *U*	0.05 *U*	0.05 *U*	--	0.05 *U*	0.05 *U*	0.05 *U*
4-Chlorophenyl-phenyl ether	mg/kg	0.01 *U*	0.01 *U*	0.01 *U*	--	0.01 *U*	0.01 *U*	0.01 *U*
4-Nitroaniline	mg/kg	0.01 *U*	0.01 *U*	0.01 *U*	--	0.01 *U*	0.01 *U*	0.01 *U*
4-Nitrophenol	mg/kg	0.1 *UR*	0.1 *U*	0.1 *UJ*	--	0.1 *U*	0.1 *U*	0.1 *U*
Pentachlorophenol	mg/kg	**0.68**	**0.34**	0.3 *U*	--	0.3 *U*	0.3 *U*	0.3 *U*
Hexachlorobenzene	mg/kg	**0.34**	**14**	0.01 *U*	--	0.01 *U*	0.01 *U*	0.01 *U*
Hexachlorobutadiene	mg/kg	**0.2**	**26**	0.01 *U*	--	0.01 *U*	0.01 *U*	0.01 *U*
Hexachlorocyclopentadiene	mg/kg	**0.072**	**0.42**	0.2 *U*	--	0.2 *U*	0.2 *U*	0.2 *U*
Hexachloroethane (perchloroethane)	mg/kg	**1.6**	**0.12**	0.04 *U*	--	0.04 *U*	0.04 *U*	0.04 *U*
Acenaphthene	mg/kg	**0.12**	**0.23**	**0.013**	--	**0.043**	**0.014**	**0.027**
Acenaphthylene	mg/kg	**0.044**	**0.033**	0.01 *U*	--	0.01 *U*	0.01 *U*	**0.011**
Anthracene	mg/kg	**0.55**	**0.87**	**0.034**	--	**0.047**	**0.039**	**0.048**
Bis[2-chloroethyl]ether	mg/kg	0.01 *U*	0.01 *U*	0.01 *U*	--	0.01 *U*	0.01 *U*	0.01 *U*
Bis[2-ethylhexyl]phthalate	mg/kg	**0.49**	**1.3**	**0.28**	--	**1.1**	**1.8**	**4.2**
Benzo[a]anthracene	mg/kg	**9.2**	**13**	**0.21**	--	**0.12**	**0.17**	**0.17**
Benzo[a]pyrene	mg/kg	**5.9**	**9.6**	**0.26**	--	**0.11**	**0.17**	**0.18**

Table 13. (cont.)

Analyte	Sample No.: / Station ID: / Depth (cm): / Sample Date:	SD0011 / OSS-004 / 0-10 / 1/19/99	SD0013 / OSS-004 / 30-50 / 1/19/99	SD0024 / OSS-005 / 0-10 / 1/20/99	SD0026 / OSS-005 / 30-50 / 1/20/99	SDC002 / OSS-005 / 10-90 / 1/20/99	SD0016 / OSS-006 / 0-10 / 1/19/99	SD0017 / OSS-006 / 10-30 / 1/19/99
Benzo[b]fluoranthene	mg/kg	**11**	**9.7**	**0.25**	--	**0.11**	**0.26**	**0.2**
Bis(2-chloroethoxy)methane	mg/kg	0.01 *U*	0.01 *U*	0.01 *U*	--	0.01 *U*	0.01 *U*	0.01 *U*
Bis(2-chloroisopropyl) ether	mg/kg	0.01 *U*	0.01 *U*	0.01 *U*	--	0.01 *U*	0.01 *U*	0.01 *U*
Benzoic acid	mg/kg	0.25 *U*	0.25 *UR*	0.25 *UR*	--	0.25 *UR*	0.25 *UR*	0.25 *UR*
Benzyl alcohol	mg/kg	0.05 *U*	0.05 *U*	0.05 *U*	--	0.05 *U*	0.05 *U*	0.05 *U*
Benzo[ghi]perylene	mg/kg	**3.1** *J*	**4.3**	**0.15**	--	**0.089**	**0.13**	**0.14**
Benzo[k]fluoranthene	mg/kg	**8.3** *J*	**16**	**0.2**	--	**0.082**	**0.15**	**0.15**
Butylbenzyl phthalate	mg/kg	0.01 *U*	0.01 *U*	**0.017**	--	**0.013**	**0.015**	**0.042**
Carbazole	mg/kg	**0.26**	**0.5**	0.01 *U*	--	0.01 *U*	**0.022**	**0.018**
Chrysene	mg/kg	**9.5**	**16**	**0.26**	--	**0.16**	**0.27**	**0.25**
Diethyl phthalate	mg/kg	0.01 *U*	0.01 *U*	0.01 *U*	--	0.01 *U*	0.01 *U*	0.01 *U*
Dibenzofuran	mg/kg	**0.076**	**0.36**	**0.006**	--	0.005 *U*	**0.008**	**0.016**
Di-*n*-butyl phthalate	mg/kg	**0.11**	0.01 *U*	**0.015**	--	**0.012**	**0.64**	**1.5**
Dimethyl phthalate	mg/kg	**0.025**	0.01 *U*	0.01 *U*	--	0.01 *U*	0.01 *U*	0.01 *U*
Fluoranthene	mg/kg	**9.1**	**23**	**0.27**	--	**0.31**	**0.36**	**0.34**
Fluorene	mg/kg	**0.2**	**0.57**	**0.017**	--	**0.042**	**0.019**	**0.035**
Indeno[1,2,3-cd]pyrene	mg/kg	**4.7** *J*	**7**	**0.2**	--	**0.097**	**0.16**	**0.17**
Isophorone	mg/kg	0.01 *U*	**0.043**	0.01 *U*	--	0.01 *U*	0.01 *U*	0.01 *U*
Naphthalene	mg/kg	**0.032**	**0.077**	**0.012**	--	**0.02**	**0.01**	**0.028**
Nitrobenzene	mg/kg	0.01 *U*	0.01 *U*	0.01 *U*	--	0.01 *U*	0.01 *U*	0.01 *U*
N-nitroso-di-*n*-propylamine	mg/kg	0.01 *U*	0.01 *U*	0.01 *U*	--	0.01 *U*	0.01 *U*	0.01 *U*
N-nitrosodiphenylamine	mg/kg	0.01 *U*	0.01 *U*	0.01 *U*	--	0.01 *U*	0.01 *U*	0.01 *U*
Phenanthrene	mg/kg	**1.3**	**15**	**0.095**	--	**0.21**	**0.13**	**0.15**
Phenol	mg/kg	0.05 *U*	0.05 *U*	0.05 *U*	--	0.05 *U*	0.05 *U*	0.05 *U*
Pyrene	mg/kg	**7.2**	**18**	**0.28**	--	**0.3**	**0.34**	**0.35**
VOCs								
1,1-Dichloroethane	mg/kg	0.009 *U*	0.011 *U*	0.011 *U*	0.011 *U*	--	0.009 *U*	0.009 *U*
1,1-Dichloroethene	mg/kg	0.009 *U*	0.011 *U*	0.011 *U*	0.011 *U*	--	0.009 *U*	0.009 *U*
1,1-Dichloropropene	mg/kg	0.009 *U*	0.011 *U*	0.011 *U*	0.011 *U*	--	0.009 *U*	0.009 *U*
1,1,1-Trichloroethane	mg/kg	0.009 *U*	0.011 *U*	0.011 *U*	0.011 *U*	--	0.009 *U*	0.009 *U*
1,1,1,2-Tetrachloroethane	mg/kg	0.009 *U*	0.011 *U*	0.011 *U*	0.011 *U*	--	0.009 *U*	0.009 *U*
1,1,2-Trichloroethane	mg/kg	0.009 *U*	0.011 *U*	0.011 *U*	0.011 *U*	--	0.009 *U*	0.009 *U*
1,1,2,2-Tetrachloroethane	mg/kg	0.009 *U*	0.011 *U*	0.011 *U*	0.011 *U*	--	0.009 *U*	0.009 *U*
EDB-Eth[illegible]e bromide	mg/kg	0.035 *U*	0.045	0.044 *U*	0.043 *U*	--	0.037 *U*	[illegible] *U*

Table 1[illegible]nt.)

Analyte	Sample No.: / Station ID: / Depth (cm): / Sample Date:		SD0011	SD0013	SD0024	SD0026	SDC002	SD0016	SD0017
	Station ID:		OSS-004	OSS-004	OSS-005	OSS-005	OSS-005	OSS-006	OSS-006
	Depth (cm):		0-10	30-50	0-10	30-50	10-90	0-10	10-30
	Sample Date:		1/19/99	1/19/99	1/20/99	1/20/99	1/20/99	1/19/99	1/19/99
1,2-Dichlorobenzene		mg/kg	0.009 *U*	0.011 *U*	0.011 *U*	0.011 *U*	--	0.009 *U*	0.009 *U*
1,2-Dichloroethane		mg/kg	0.009 *U*	0.011 *U*	0.011 *U*	0.011 *U*	--	0.009 *U*	0.009 *U*
1,2-Dichloropropane		mg/kg	0.009 *U*	0.011 *U*	0.011 *U*	0.011 *U*	--	0.009 *U*	0.009 *U*
1,2,3-Trichlorobenzene		mg/kg	0.035 *U*	0.045 *U*	0.044 *U*	0.043 *U*	--	0.037 *U*	0.035 *U*
1,2,3-Trichloropropane		mg/kg	0.009 *U*	0.011 *U*	0.011 *U*	0.011 *U*	--	0.009 *U*	0.009 *U*
1,2,4-Trichlorobenzene		mg/kg	0.035 *U*	0.045 *U*	0.044 *U*	0.043 *U*	--	0.037 *U*	0.035 *U*
1,2,4-Trimethylbenzene		mg/kg	0.035 *U*	0.045 *U*	0.044 *U*	0.043 *U*	--	0.037 *U*	0.035 *U*
1,2-Dibromo-3-chloropropane		mg/kg	0.035 *U*	0.045 *U*	0.044 *U*	0.043 *U*	--	0.037 *U*	0.035 *U*
1,3-Dichlorobenzene		mg/kg	0.009 *U*	0.011 *U*	0.011 *U*	0.011 *U*	--	0.009 *U*	0.009 *U*
1,3-Dichloropropane		mg/kg	0.009 *U*	0.011 *U*	0.011 *U*	0.011 *U*	--	0.009 *U*	0.009 *U*
1,3,5-Trimethylbenzene		mg/kg	0.035 *U*	0.045 *U*	0.044 *U*	0.043 *U*	--	0.037 *U*	0.035 *U*
1,4-Dichlorobenzene		mg/kg	0.009 *U*	0.011 *U*	0.011 *U*	0.011 *U*	--	0.009 *U*	0.009 *U*
Rej 2-Butanone (methyl ethyl ketone, MEK)		mg/kg	0.035 *UR*	0.045 *UR*	0.044 *UR*	0.043 *UR*	--	0.037 *UR*	0.035 *UR*
2-Chlorotoluene		mg/kg	0.035 *U*	0.045 *U*	0.044 *U*	0.043 *U*	--	0.037 *U*	0.035 *U*
2-Hexanone		mg/kg	0.035 *U*	0.045 *U*	0.044 *U*	0.043 *U*	--	0.037 *U*	0.035 *U*
2,2-Dichloropropane		mg/kg	0.009 *U*	0.011 *U*	0.011 *U*	0.011 *U*	--	0.009 *U*	0.009 *U*
Dibromochloromethane		mg/kg	0.009 *U*	0.011 *U*	0.011 *U*	0.011 *U*	--	0.009 *U*	0.009 *U*
Dibromomethane Methylene bromide		mg/kg	0.009 *U*	0.011 *U*	0.011 *U*	0.011 *U*	--	0.009 *U*	0.009 *U*
Dichlorodifluoromethane		mg/kg	0.009 *U*	0.011 *U*	0.011 *U*	0.011 *U*	--	0.009 *U*	0.009 *U*
Bromodichloromethane		mg/kg	0.009 *U*	0.011 *U*	0.011 *U*	0.011 *U*	--	0.009 *U*	0.009 *U*
Trichloroethene		mg/kg	0.009 *U*	0.011 *U*	0.011 *U*	0.011 *U*	--	0.009 *U*	0.009 *U*
Trichlorofluoromethane		mg/kg	0.009 *U*	0.011 *U*	0.011 *U*	0.011 *U*	--	0.009 *U*	0.009 *U*
4-Chlorotoluene		mg/kg	0.035 *U*	0.045 *U*	0.044 *U*	0.043 *U*	--	0.037 *U*	0.035 *U*
Rej 4-Methyl-2-pentanone (MIBK)		mg/kg	0.035 *UR*	0.045 *UR*	0.044 *UR*	0.043 *UR*	--	0.037 *UR*	0.035 *UR*
Tetrachloroethene		mg/kg	0.009 *U*	0.011 *U*	0.011 *U*	0.011 *U*	--	0.009 *U*	0.009 *U*
4-Isopropyltoluene		mg/kg	0.035 *U*	0.045 *U*	0.044 *U*	0.043 *U*	--	0.037 *U*	0.035 *U*
Rej Acetone		mg/kg	0.088 *UR*	0.11 *UR*	0.11 *UR*	0.11 *UR*	--	0.14 *J*	0.088 *UR*
Benzene		mg/kg	0.009 *U*	0.011 *U*	0.011 *U*	0.011 *U*	--	0.009 *U*	0.009 *U*
Bromobenzene		mg/kg	0.009 *U*	0.011 *U*	0.011 *U*	0.011 *U*	--	0.009 *U*	0.009 *U*
Bromochloromethane		mg/kg	0.009 *U*	0.011 *U*	0.011 *U*	0.011 *U*	--	0.009 *U*	0.009 *U*
Bromoform		mg/kg	0.009 *U*	0.011 *U*	0.011 *U*	0.011 *U*	--	0.009 *U*	0.009 *U*
Bromomethane		mg/kg	0.009 *U*	0.011 *U*	0.011 *U*	0.011 *U*	--	0.009 *U*	0.009 *U*
Carbon disulfide		mg/kg	0.009 *UJ*	0.011 *U*	0.011 *U*	0.011 *U*	--	0.009 *UJ*	0.009 *U*
Carbon tetrachloride		mg/kg	0.009 *U*	0.011 *U*	0.011 *U*	0.011 *U*	--	0.009 *U*	0.009 *U*

Table 13. (cont.)

Analyte	Sample No.: / Station ID: / Depth (cm): / Sample Date:	SD0011 / OSS-004 / 0-10 / 1/19/99	SD0013 / OSS-004 / 30-50 / 1/19/99	SD0024 / OSS-005 / 0-10 / 1/20/99	SD0026 / OSS-005 / 30-50 / 1/20/99	SDC002 / OSS-005 / 10-90 / 1/20/99	SD0016 / OSS-006 / 0-10 / 1/19/99	SD0017 / OSS-006 / 10-30 / 1/19/99
Chlorobenzene	mg/kg	**0.13**	0.011 *U*	**0.25**	**1.9**	--	**0.011**	0.009 *U*
Chloroethane	mg/kg	0.009 *U*	0.011 *U*	0.011 *U*	0.011 *U*	--	0.009 *U*	0.009 *U*
Chloroform	mg/kg	0.009 *U*	0.011 *U*	0.011 *U*	0.011 *U*	--	0.009 *U*	0.009 *U*
Chloromethane	mg/kg	0.009 *U*	0.011 *U*	0.011 *U*	0.011 *U*	--	0.009 *U*	0.009 *U*
cis-1,2-Dichloroethene	mg/kg	0.009 *U*	0.011 *U*	0.011 *U*	0.011 *U*	--	0.009 *U*	0.009 *U*
cis-1,3-Dichloropropene	mg/kg	0.009 *U*	0.011 *U*	0.011 *U*	0.011 *U*	--	0.009 *U*	0.009 *U*
Ethylbenzene	mg/kg	0.009 *U*	0.011 *U*	0.011 *U*	0.011 *U*	--	0.009 *U*	0.009 *U*
Hexachlorobutadiene	mg/kg	0.035 *UJ*	0.045 *U*	0.044 *U*	0.043 *U*	--	0.037 *UJ*	0.035 *U*
Isopropylbenzene	mg/kg	0.035 *U*	0.045 *U*	0.044 *U*	0.043 *U*	--	0.037 *U*	0.035 *U*
m- & *p*-Xylenes	mg/kg	0.009 *U*	0.011 *U*	0.011 *U*	0.011 *U*	--	0.009 *U*	0.009 *U*
Methylene chloride (dichloromethane)	mg/kg	0.018 *U*	0.022 *U*	0.022 *U*	0.021 *U*	--	0.019 *U*	0.018 *U*
Naphthalene	mg/kg	0.035 *U*	0.045 *U*	0.044 *U*	0.043 *U*	--	0.037 *U*	0.035 *U*
n-Butyl benzene	mg/kg	0.035 *U*	0.045 *U*	0.044 *U*	0.043 *U*	--	0.037 *U*	0.035 *U*
N-Propylbenzene	mg/kg	0.035 *U*	0.045 *U*	0.044 *U*	0.043 *U*	--	0.037 *U*	0.035 *U*
ortho-Xylene	mg/kg	0.009 *U*	0.011 *U*	0.011 *U*	0.011 *U*	--	0.009 *U*	0.009 *U*
sec Butylbenzene	mg/kg	0.035 *UJ*	0.045 *U*	0.044 *U*	0.043 *U*	--	0.037 *UJ*	0.035 *U*
Styrene	mg/kg	0.009 *U*	0.011 *U*	0.011 *U*	0.011 *U*	--	0.009 *U*	0.009 *U*
Toluene	mg/kg	0.009 *U*	**0.021**	0.011 *U*	0.011 *U*	--	0.009 *U*	0.009 *U*
trans-1,2-dichloroethene	mg/kg	0.009 *U*	0.011 *U*	0.011 *U*	0.011 *U*	--	0.009 *U*	0.009 *U*
trans-1,3-Dichloropropene	mg/kg	0.009 *U*	0.011 *U*	0.011 *U*	0.011 *U*	--	0.009 *U*	0.009 *U*
tert Butylbenzene	mg/kg	0.035 *U*	0.045 *U*	0.044 *U*	0.043 *U*	--	0.037 *U*	0.035 *U*
Vinyl chloride (CH2--CHCl)	mg/kg	0.009 *U*	0.011 *U*	0.011 *U*	0.011 *U*	--	0.009 *U*	0.009 *U*
Particle Size ~~Chem found, but values not in database~~								
Particles < 0.063 mm (sieve #230)	%	**10.2**	**5.1**	**11.4**	--	**7.0**	**13.1**	**19.0**
Particles < 0.105 mm (sieve #140)	%	**10.5**	**4.2**	**3.1**	--	**1.7**	**33.4**	**32.5**
Particles < 0.250 mm (sieve #60)	%	**8.7**	**5.1**	**1.3**	--	**1.3**	**12.6**	**9.9**
Particles < 0.42 mm (sieve #40)	%	**2.3**	**2.4**	**0.44**	--	**0.39**	**0.75**	**0.52**
Particles < 0.84 mm (sieve #20)	%	**2.1**	**1.5**	**0.23**	--	**0.19**	**0.57**	**0.37**
Percent clay	%	**4.8**	**5.5**	**13.2**	--	**15.2**	**5.3**	**4.9**
Percent gravel	%	**13.3**	**5.2**	**0.040**	--	**0.0** *U*	**1.2**	**0.34**
Percent silt	%	**35.9**	**69.2**	**70.0**	--	**73.1**	**32.3**	**31.5**

Note: Detected constituents in **bold**
U - undetected at detection limit shown
J - estimated
R - rejected

Appendix A

Borehole Logs and Monitoring Well Construction Diagrams

Project No: 8601192.001.0621

Project: Acid Plant RI

Client: Elf Atochem

Location: Portland, OR

Borehole : US-01

Ground surface: Coarse sand

Geologist: Jeffrey S. Paul

DEPTH (Feet)	SAMPLE NUMBER	OVM (ppm)	% RECOVERY	BLOW COUNT	INTERVAL	GROUP SYMBOL	LITHOLOGIC DESCRIPTION	WELL CONSTRUCTION DETAIL (not applicable)
0	SO0174	0				GW	Silty, sandy GRAVEL, black (5Y2.5/1) to dark gray (5Y4/1), slightly moist, no odor.	
1	SO0175	24.9					Same as above w/ pale yellow clay nodules and black fiberous material.	
2	SO0176	46.6				SM	Fine to medium silty SAND, brown (7.5YR4/2), slightly moist, no odor.	
3	SO0177	0						
4							Total depth 4.0' BGS	
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								

Drilled By: Cascade Drilling

Drill Method: Geoprobe

Drill Date: 4 January 1999

Well Casing Elevation: NA

Ground Surface Elevation: 33.89'

Borehole Diameter: 1.5"

Datum: City of Portland Datum - 1929

Sheet: 1 of 1

Project No: 8601192.001.0621

Project: Acid Plant RI

Client: Elf Atochem

Location: Portland, OR

Borehole : US-02

Ground surface: Coarse sand

Geologist: Jeffrey W. Paul

DEPTH (Feet)	SAMPLE NUMBER	OVM (ppm)	% RECOVERY	BLOW COUNT	INTERVAL	GROUP SYMBOL	LITHOLOGIC DESCRIPTION	WELL CONSTRUCTION DETAIL (not applicable)
0	SO0178	0				GW	Silty, sandy GRAVEL, dark gray-brown (7YR3/2), slightly moist.	
1	SO0179	0						
2	SO0180	0					Same as above	
3	SO0181	0						
4							Total depth 4.0' BGS	
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								

Drilled By: Cascade Drilling

Drill Method: Geoprobe

Drill Date: 4 January 1999

Well Casing Elevation: NA

Ground Surface Elevation: 33.81'

Borehole Diameter: 1.5"

Datum: City of Portland Datum - 1929

Sheet: 1 of 1

Project No: 8601192.001.0621

Project: Acid Plant RI

Client: Elf Atochem

Location: Portland, OR

Borehole : US-03

Ground surface: Gravel

Geologist: Jeffrey S. Paul

DEPTH (Feet)	SAMPLE NUMBER	OVM (ppm)	% RECOVERY	BLOW COUNT	INTERVAL	GROUP SYMBOL	LITHOLOGIC DESCRIPTION	WELL CONSTRUCTION DETAIL (not applicable)
0	SO0182	0				GW	Silty, fine to medium, sandy GRAVEL w/ trace crystalline material, slightly moist.	
1	SO0183	0						
2	SO0184	0						
3	SO0185	0						
4							Total depth 4.0' BGS	
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								

Drilled By: Cascade Drilling

Drill Method: Geoprobe

Drill Date: 4 January 1999

Well Casing Elevation: NA

Ground Surface Elevation: 33.63'

Borehole Diameter: 1.5"

Datum: City of Portland Datum - 1929

Sheet: 1 of 1

Project No: 8601192.001.0621

Project: Acid Plant RI

Client: Elf Atochem

Location: Portland, OR

Borehole : B-49

Ground surface: Gravel

Geologist: Jeffrey S. Paul

DEPTH (Feet)	SAMPLE NUMBER	OVM (ppm)	% RECOVERY	BLOW COUNT	INTERVAL	GROUP SYMBOL	LITHOLOGIC DESCRIPTION	WELL CONSTRUCTION DETAIL (not applicable)
0						GW	Silty, sandy GRAVEL.	
	SO0149	0				SM	Fine to medium, silty SAND, grayish brown (10YR5/2), slightly moist, no odor.	
1	SO0150	0						
2	SO0151	0						
3	SO0152	0				ML	SILT, light gray (10YR7/2).	
						SM	Fine to medium, silty SAND, grayish brown (10YR5/2) slightly moist, no odor.	
4	SO0153	0				ML	Grading to micaceous SILT, grayish-brown (10YR5/2) wet, no odor.	
	SO0154	0						
5	SO0155	0						
	SO0156	43.3						
6	SO0157	0						
7	SO0158	0						
8							Total depth 8' BGS	
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								

Drilled By: Cascade Drilling

Drill Method: Geoprobe

Drill Date: 4 January 1999

Well Casing Elevation: NA

Ground Surface Elevation: 34.64'

Borehole Diameter: 1.5"

Datum: City of Portland Datum - 1929

Sheet: 1 of 1

Project No: 8601192.001.0621

Project: Acid Plant RI

Client: Elf Atochem

Location: Portland, OR

Borehole : B-50

Ground surface: Asphalt

Geologist: Jeffrey S. Paul

DEPTH (Feet)	SAMPLE NUMBER	OVM (ppm)	% RECOVERY	BLOW COUNT	INTERVAL	GROUP SYMBOL	LITHOLOGIC DESCRIPTION	WELL CONSTRUCTION DETAIL (not applicable)
0						GW	Silty, sandy GRAVEL, dark gray-brown (10YR 3/2) slightly moist.	
	SO0139	3.1						
1	SO0140	4				SM	Silty SAND, dark gray-brown (10YR3/2), slightly moist, no odor.	
2	SO0141	0				SP	Fine to medium SAND, dark gray-brown (10YR3/2), no odor.	
3	SO0142	1.1						
4						ML	Grading to micaceous SILT, dark gray-brown (10YR3/2), wet, no odor.	
	SO0143	3.1				SM	Silty SAND, dark gray-brown (10YR 3/2), wet, no odor.	
	SO0144	22.2						
5	SO0145	3.4						
	SO0146	43						
6	SO0147	3.1				ML	SILT, dark gray (2.5Y 4/1), wet, no odor, grading to very dark gray-brown (10YR4/3), wet, no odor.	
7	SO0148	0						
8							Total depth 8.0' BGS	
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								

Drilled By: Cascade Drilling

Drill Method: Geoprobe

Drill Date: 4 January 1999

Well Casing Elevation: NA

Ground Surface Elevation: 34.52'

Borehole Diameter: 1.5"

Datum: City of Portland Datum - 1929

Sheet: 1 of 1

Project No: 8601192.001.0621

Project: Acid Plant RI

Client: Elf Atochem

Location: Portland, OR

Borehole : B-51

Ground surface: Asphalt

Geologist: Jeffrey S. Paul

DEPTH (Feet)	SAMPLE NUMBER	OVM (ppm)	% RECOVERY	BLOW COUNT	INTERVAL	GROUP SYMBOL	LITHOLOGIC DESCRIPTION	WELL CONSTRUCTION DETAIL (not applicable)
0						SP	Fine to medium SAND w/ trace silt (~ 1-2%) and gravel, very dark gray-brown (10YR3/2), moist, no odor.	
1	SO0129	NM						
	SO0130	NM				ML	SILT lens (1/4" thick).	
2	SO0131	NM				SP	Fine to medium SAND w/ trace silt (~ 1-2%), very dark gray-brown (10YR3/2), slightly moist, no odor.	
3	SO0132	NM						
4	SO0133	0						
	SO0134	0						
5	SO0135	2.2						
	SO0136	3.1						
6	SO0137	2.2						
7	SO0138	13						
8							Total depth 8.0' BGS	
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								

Drilled By: Cascade Drilling

Drill Method: Geoprobe

Drill Date: 4 January 1999

Well Casing Elevation: NA

Ground Surface Elevation: 35.56'

Borehole Diameter: 1.5"

Datum: City of Portland Datum - 1929

Sheet: 1 of 1

Project No: 8601192.001.0621	**Borehole :** B-51b
Project: Acid Plant RI	
Client: Elf Atochem	**Ground surface:** Asphalt
Location: Portland, OR	**Geologist:** Jeffrey S. Paul

DEPTH (Feet)	SAMPLE NUMBER	OVM (ppm)	% RECOVERY	BLOW COUNT	INTERVAL	GROUP SYMBOL	LITHOLOGIC DESCRIPTION	WELL CONSTRUCTION DETAIL
0	SO0171	0				SP	Fine to medium SAND w/ trace silt (~ 1-2%) and gravel, very dark gray-brown (10YR3/2), moist, no odor.	
	SO0172	0						
1	SO0173	0						
2							Total depth 2.0' BGS	
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								

Drilled By: Cascade Drilling	**Well Casing Elevation:** NA	**Datum:** City of Portland Datum - 1929
Drill Method: Geoprobe	**Ground Surface Elevation:** 35.81'	
Drill Date: 4 January 1999	**Borehole Diameter:** 1.5"	**Sheet:** 1 of 1

Project No: 8601192.001.0621

Project: Acid Plant RI

Client: Elf Atochem

Location: Portland, OR

Borehole : B-52

Ground surface: Gravel

Geologist: Jeffrey S. Paul

DEPTH (Feet)	SAMPLE NUMBER	OVM (ppm)	% RECOVERY	BLOW COUNT	INTERVAL	GROUP SYMBOL	LITHOLOGIC DESCRIPTION	WELL CONSTRUCTION DETAIL (not applicable)
0								
1	SO0159	0				SP	Fine to medium SAND w/ trace silt (~ 1-2%), dark gray -brown (10YR4/2), slightly moist, no odor.	
	SO0160	0						
2	SO0161	0						
3	SO0162	0						
4	SO0163	0						
	SO0164	0						
5	SO0165	0						
	SO0166	0						
6	SO0167	0						
7	SO0168	6.7						
8							Total depth 8' BGS	
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								

Drilled By: Cascade Drilling

Drill Method: Geoprobe

Drill Date: 4 January 1999

Well Casing Elevation: NA

Ground Surface Elevation: 34.13'

Borehole Diameter: 1.5"

Datum: City of Portland Datum - 1929

Sheet: 1 of 1

Project No: 8601192.001.0621

Project: Acid Plant RI

Client: Elf Atochem

Location: Portland, OR

Borehole : B-53

Ground surface: Asphalt

Geologist: Jeffrey S. Paul

DEPTH (Feet)	SAMPLE NUMBER	OVM (ppm)	% RECOVERY	BLOW COUNT	INTERVAL	GROUP SYMBOL	LITHOLOGIC DESCRIPTION	WELL CONSTRUCTION DETAIL (not applicable)
0						GW	Gravel fill	
1								
2	SO0252	84	95%	7 7 4				
3						ML	SILT, black w/ trace pink sands, dry, strong odor. White friable crystalline material and pink banding at 4.5', dry grading to moist.	
4	SO0253	1597	50%	4 4 3				
5	SO0254	14	80%	4 6 5		SW	Fine to coarse SAND, pinkish white (2.5Y8/2), slightly moist, strong odor.	
6								
7	SO0255	4	100%	5 5 6				
8	SO0256	8.6	100%	4 5 6			Trace gravel (~ 2%), well-rounded, slight odor.	
9								
10	SO0257	2.2	100%	6 7 8				
11	SO0258	2.2	100%	7 8 10			With thin black bands (staining), slightly moist, slight odor.	
12								
13	SO0259	1.3	100%	10 14 15				
14	SO0260	1.3	100%	9 11 15				
15								
16	SO0261	10.4	100%	10 11 15			Trace silt (~ 5%), color change to dark red-gray (2.5YR3/1), moist.	
17	SO0262	1.3	100%	5 15 12			Color change to reddish gray (2.5YR6/1), moist.	
18							Silt horizons, color change to dark red-gray (2.5YR3/1), slightly moist, slight odor.	
19	SO0263	1.2	100%	5 12 16				
20	SO0264	1.3	100%	5 7 16				

Drilled By: Cascade Drilling

Drill Method: Hollow Stem Auger

Drill Date: 13 January 1999

Well Casing Elevation: NA

Ground Surface Elevation: 34.10'

Borehole Diameter: 10-1/4"

Datum: City of Portland Datum - 1929

Sheet: 1 of 2

Project No: 8601192.001.0621

Project: Acid Plant RI

Client: Elf Atochem

Location: Portland, OR

Borehole: B-53

Ground surface: Asphalt

Geologist: Jeffrey S. Paul

DEPTH (Feet)	SAMPLE NUMBER	OVM (ppm)	% RECOVERY	BLOW COUNT	INTERVAL	GROUP SYMBOL	LITHOLOGIC DESCRIPTION	WELL CONSTRUCTION DETAIL (not applicable)
20								
21						SW	Fine to coarse SAND, reddish gray (2.5YR6/1), wet, slight odor	
22	SO0265	4	100%	8 12 11				
23	SO0266	1.3	100%	5 12 14				
24							As above with gravel, slight color change to, reddish gray (2.5YR5/1)	
25	SO0267	3.1	100%	7 8 12				
26	SO0268	1592	100%	12 20 22				
27							Residual NAPL visible from 27-30' BGS.	
28	SO0269	1405	100%	12 20 25				
29	SO0270	1132	100%	16 18 22				
30							Total depth 30.0' BGS	
31								
32								
33								
34								
35								
36								
37								
38								
39								
40								

Drilled By: Cascade Drilling

Drill Method: Hollow Stem Auger

Drill Date: 13 January 1999

Well Casing Elevation: NA

Ground Surface Elevation: 34.10"

Borehole Diameter: 10-1/4"

Datum: City of Portland Datum - 1929

Sheet: 2 of 2

Project No: 8601192.001.0621

Project: Acid Plant RI

Client: Elf Atochem

Location: Portland, OR

Borehole : B-54

Ground surface: Gravel

Geologist: Jeffrey S. Paul

DEPTH (Feet)	SAMPLE NUMBER	OVM (ppm)	% RECOVERY	BLOW COUNT	INTERVAL	GROUP SYMBOL	LITHOLOGIC DESCRIPTION	WELL CONSTRUCTION DETAIL (not applicable)
0	SO0302	5.3	20%			GM	Silty GRAVEL, dark gray-brown (10YR 4/2) moist, no odor.	
1	SO0303	3.6	20%					
2	SO0304	2.3	20%					
3	SO0305	2.6	50%			SM	Silty fine SAND, brown (10YR 4/3), moist, no odor.	
4	SO0306	18.3	100%					
5	SO0307	3.9	100%				Grading finer with depth, moist to wet, no odor.	
6	SO0308	3.9	100%			ML/CL	Clayey SILT, dark gray (2.5 Y 4/1) slightly plastic, wet, no odor.	
7	SO0309	5.3	100%					
8	SO0310	10.3	100%					
9	SO0311	3.9	100%					
10							Total depth 10' BGS	
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								

Drilled By: Cascade Drilling

Drill Method: Geoprobe

Drill Date: 19 February 1999

Well Casing Elevation: NA

Ground Surface Elevation: Not measured

Borehole Diameter: 1.5"

Datum: City of Portland Datum - 1929

Sheet: 1 of 1

Project No: 8601192.001.0621

Project: Acid Plant RI

Client: Elf Atochem

Location: Portland, OR

Borehole : B-55

Ground surface: Coarse gravel

Geologist: Jeffrey S. Paul

DEPTH (Feet)	SAMPLE NUMBER	OVM (ppm)	% RECOVERY	BLOW COUNT	INTERVAL	GROUP SYMBOL	LITHOLOGIC DESCRIPTION	WELL CONSTRUCTION DETAIL (not applicable)
0						GW	GRAVEL fill.	
1	SO0271	3.9	50%			SM	Silty SAND gray (10 YR 5/1) wet, no odor.	
2	SO0272	5.3	100%					
3	SO0273	2.6	80%					
4	SO0274	2.6	100%					
5	SO0275	2.6	100%				As above w/ color change to pale yellow (2.5 Y 8/2) slight odor.	
6	SO0276	2.6	100%			ML	Fine, sandy SILT, pale yellow (2.5 Y 8/2), wet, slight odor.	
7	SO0277	2.6	100%				changing to grayish brown (2.5 Y 5/2), wet, slight odor.	
8	SO0278	2.6	100%					
9	SO0279	2.6	100%				As above w/ trace wood debris, color change to dark gray-brown (2.5 Y 4/2), moist, no odor.	
10	SO0280	2.6	100%					
11	–	–	0%			SP	Fine to medium SAND w/ trace silt, dark brown (7.5 YR 3/3) w/ rust red stained organics, moist, no odor.	
12	SO0281	3.9	100%					
13	SO0282	3.9	100%					
14	SO0283	2.6	100%					
15								
16								
17								
18								
19	SO0284	89.9	100%				Groundwater encountered @ approx. 20' BGS	
20								

Drilled By: Cascade Drilling

Drill Method: Geoprobe

Drill Date: 19 February 1999

Well Casing Elevation: NA

Ground Surface Elevation: Not measured

Borehole Diameter: 1.5"

Datum: City of Portland Datum - 1929

Project No: 8601192.001.0621	**Borehole:** B-55
Project: Acid Plant RI	
Client: Elf Atochem	**Ground surface:** Coarse gravel
Location: Portland, OR	**Geologist:** Jeffrey S. Paul

DEPTH (Feet)	SAMPLE NUMBER	OVM (ppm)	% RECOVERY	BLOW COUNT	INTERVAL	GROUP SYMBOL		LITHOLOGIC DESCRIPTION	WELL CONSTRUCTION DETAIL (not applicable)
20							SP	Fine to medium SAND w/ trace silt, dark brown (7.5 YR 3/3) with rust red stained organics, wet, no odor.	
21									
22									
23									
24	SO0285	9.3	100%		X				
25								Total depth 25.0' BGS	
26									
27									
28									
29									
30									
31									
32									
33									
34									
35									
36									
37									
38									
39									
40									

Drilled By: Cascade Drilling	**Well Casing Elevation:** NA	**Datum:** City of Portland Datum - 1929
Drill Method: Geoprobe	**Ground Surface Elevation:** Not measured	
Drill Date: 19 February 1999	**Borehole Diameter:** 1.5"	**Sheet:** 2 of 2

Project No: 8601192.001.0632

Project: Acid Plant RI

Client: Elf Atochem

Location: Portland, OR

Borehole : B-56

Ground surface: Coarse gravel

Geologist: Jeffrey S. Paul

DEPTH (Feet)	SAMPLE NUMBER	OVM (ppm)	% RECOVERY	BLOW COUNT	INTERVAL	GROUP SYMBOL	LITHOLOGIC DESCRIPTION	WELL CONSTRUCTION DETAIL (not applicable)
0						GW	Gravel fill.	
1	SO0286	0.0	50%			ML	Sandy SILT w/ trace gravel, very dark brown (10 YR, 4/2) moist, no odor.	
2	SO0287	0.0	50%					
3	SO0288	7.9	50%					
4	SO0289	3.9	50%					
5	SO0290	132	50%					
6	SO0291	1427	50%			SP	Fine to medium SAND w/ trace silt, dark brown (7.5 YR 3/3), moist, moderate odor.	
7	SO0292	261	80%					
8	SO0293	63.9	75%					
9	SO0294	98.9	100%					
10	SO0295	11.9	100%					
11	SO0296	6.6	100%					
12	SO0297	6.6	100%					
13	SO0298	221	100%					
14						ML	SILT w/ trace gravel.	
	SO0299	90.6	100%			SP	Fine to medium SAND w/ trace silt, dark brown (7.5 YR 3/3), moist, slight odor.	
15								
16								
17								
18								
19	SO0300	89.9	100%					
20							Groundwater encountered @ approx. 20' BGS.	

Drilled By: Cascade Drilling

Drill Method: Geoprobe

Drill Date: 19 February 1999

Well Casing Elevation: NA

Ground Surface Elevation: Not measured

Borehole Diameter: 1.5"

Datum: City of Portland Datum - 1929

Sheet: 1 of 2

Project No: 8601192.001.0632

Project: Acid Plant RI

Client: Elf Atochem

Location: Portland, OR

Borehole: B-56

Ground surface: Coarse gravel

Geologist: Jeffrey S. Paul

DEPTH (Feet)	SAMPLE NUMBER	OVM (ppm)	% RECOVERY	BLOW COUNT	INTERVAL	GROUP SYMBOL		LITHOLOGIC DESCRIPTION	WELL CONSTRUCTION DETAIL (not applicable)
20									
21							SP	Fine to medium SAND w/ trace silt, dark brown (7.5 YR 3/3), wet, slight odor.	
22									
23									
24	SO0301	202	100%		X				
25								Total depth 25.0' BGS	
26									
27									
28									
29									
30									
31									
32									
33									
34									
35									
36									
37									
38									
39									
40									

Drilled By: Cascade Drilling

Drill Method: Geoprobe

Drill Date: 19 February 1999

Well Casing Elevation: NA

Ground Surface Elevation: Not measured

Borehole Diameter: 1.5"

Datum: City of Portland Datum - 1929

Sheet: 2 of 2

Project No: 8601192.001.0622

Project: Acid Plant RI

Client: Elf Atochem

Location: Portland, OR

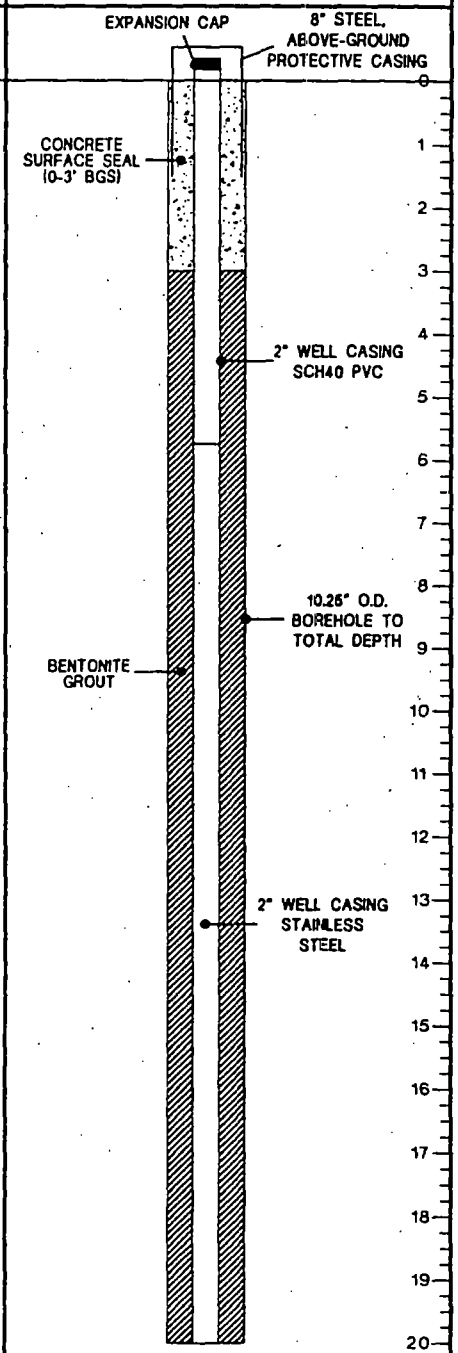
Monitoring well: MWA-5

Ground surface: Grass

Geologist: Jeffrey S. Paul

DEPTH (Feet)	SAMPLE NUMBER	OVM (ppm)	% RECOVERY	BLOW COUNT	INTERVAL	GROUP SYMBOL	LITHOLOGIC DESCRIPTION
0–1							
2–3	SO0206	0	80%	2 4 5		SW	Fine to coarse SAND, very dark gray-brown (10YR3/2). Slightly moist, loose, no odor.
4–5	SO0207	0	80%	7 9 5			
5–6	SO0208	0	100%	5 5 5			
7–8	SO0210	0	100%	5 4 4			
8–9	SO0211	0	100%	5 5 4			
10–11	SO0212	0	100%	3 4 4			
12–13	SO0213	0	100%	6 6 7			
13–14	SO0214	0	100%	5 5 7			
15–16	SO0215	0	100%	5 5 6			
16–17	SO0216	0	100%	6 8 8			Color change to brown (10YR 5/3).
18–19	SO0217	0	100%	8 8 9			
19–20	SO0218	0	100%	9 12 12			

WELL CONSTRUCTION DETAIL



Drilled By: Cascade Drilling

Drill Method: Hollow Stem Auger

Drill Date: 12 January 1999

Well Casing Elevation: 37.07'

Ground Surface Elevation: 34.96'

Borehole Diameter: See construction detail

Datum: City of Portland Datum - 1929

Sheet: 1 of 2

Project No: 8601192.001.0622

Project: Acid Plant RI

Client: Elf Atochem

Location: Portland, OR

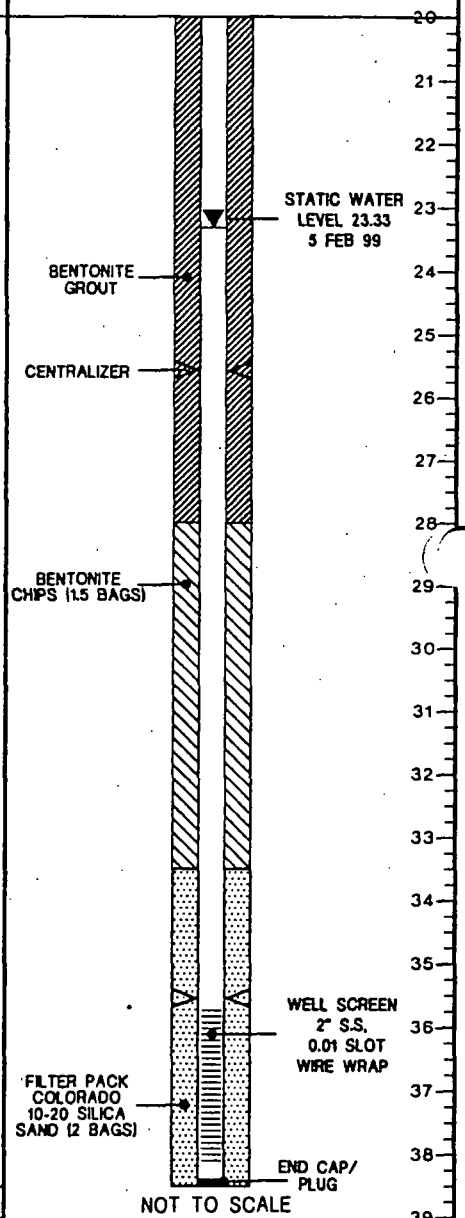
Monitoring well: MWA-5

Ground surface: Grass

Geologist: Jeffrey S. Paul

DEPTH (Feet)	SAMPLE NUMBER	OVM (ppm)	% RECOVERY	BLOW COUNT	INTERVAL	GROUP SYMBOL	LITHOLOGIC DESCRIPTION
20–21	SO0219	0	100%	7 11 11		SW	Fine to coarse SAND, very dark gray-brown, (10YR3/2), slightly moist, no odor.
22–23	SO0220	0	100%	8 8 9			
23–24	SO0221	0	100%	7 8 9			
25–26	SO0222	0	100%	7 9 10			
26–27	SO0223	0	100%	50 for 6"			Same as above w/ trace SILT (~2%).
28–29	SO0224	2.2	100%	10 11 15			
29–30	SO0225	0	100%	13 25 33			Wood debris @ 30' Color change to black (N2.5/0), wet.
31–32	SO0226	0	100%	11 20 23			Color change to very dark gray-brown, (2.5Y3/1).
32–33	SO0227	0	100%	10 14 22			
34–35	SO0228	0	100%	12 13 14			
35–36	SO0229	0	100%	8 11 16			
37–38	SO0230	0	100%				Occasional wood debris.
38–39	SO0231	0	100%			ML	SILT, black (2.5Y 2.5/1) moist, no odor.
39–40							Total depth 39.0'

WELL CONSTRUCTION DETAIL



Drilled By: Cascade Drilling

Drill Method: Hollow Stem Auger

Drill Date: 12 January 1999

Well Casing Elevation: 37.07'

Ground Surface Elevation: 34.96'

Borehole Diameter: See construction detail

Datum: City of Portland Datum - 1929

Sheet: 2 of 2

Project No: 8601192.001.0622

Project: Acid Plant RI

Client: Elf Atochem

Location: Portland, OR

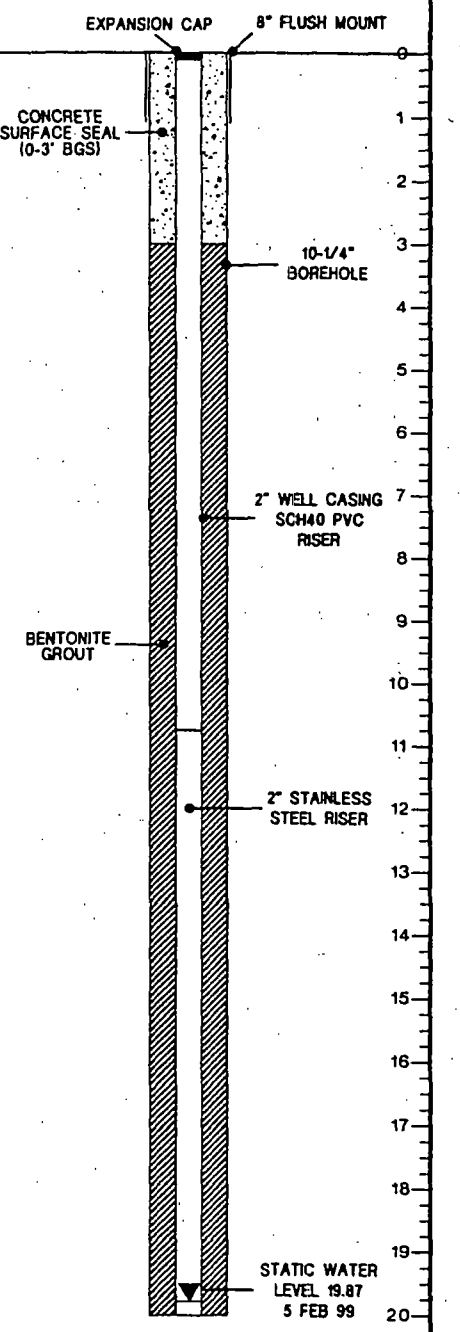
Monitoring well: MWA-6

Ground surface: Asphalt

Geologist: Jeffrey S. Paul

DEPTH (Feet)	SAMPLE NUMBER	OVM (ppm)	% RECOVERY	BLOW COUNT	INTERVAL	GROUP SYMBOL	LITHOLOGIC DESCRIPTION
3–4	SO0232	0	50%	10 10 9		SW	Fine to coarse SAND, dark gray-brown (10 YR 4/2), slightly moist, no odor, very loose (fill).
5–6	SO0233	0	80%	6 3 3			Trace fine gravel ~2%.
7–8	SO0234	0	90%	5 3 2			Increasing silt, moist, loose.
8–9	SO0235	2.2	100%	2 2 2			Same as above w/o silt.
10–11	SO0236	0	100%	2 2 2			
11–12	SO0237	0	50%	11 7 9			Same as above, w/o gravel.
13–14	SO0238	3.1	100%	4 5 15			
						GW	GRAVEL - slag
14–15	SO0239	0	100%	5 5 9		SW/ GW	Fine to coarse SAND and GRAVEL w/ slag (~30%), dark gray-brown (10 YR 4/2), slightly moist, no odor (fill).
16	–	6.7	0%	10 10 9			Cuttings indicate gravel.
17	–	0	0%	10 10 10			Cuttings indicate gravel.
19	SO0240	0	100%	4 5 6		ML/ CL	Slightly clayey SILT w/ trace very fine sands and trace construction debris, (brick and wood), dark gray (5 YR 4/1), slightly plastic, moist (fill).

WELL CONSTRUCTION DETAIL



Drilled By: Cascade Drilling

Drill Method: Hollow Stem Auger

Drill Date: 13 January 1999

Well Casing Elevation: 34.27'

Ground Surface Elevation: 34.78'

Borehole Diameter: See construction detail

Datum: City of Portland Datum - 1929

Sheet: 1 of 2

Project No: 8601192.001.0622

Project: Acid Plant RI

Client: Elf Atochem

Location: Portland, OR

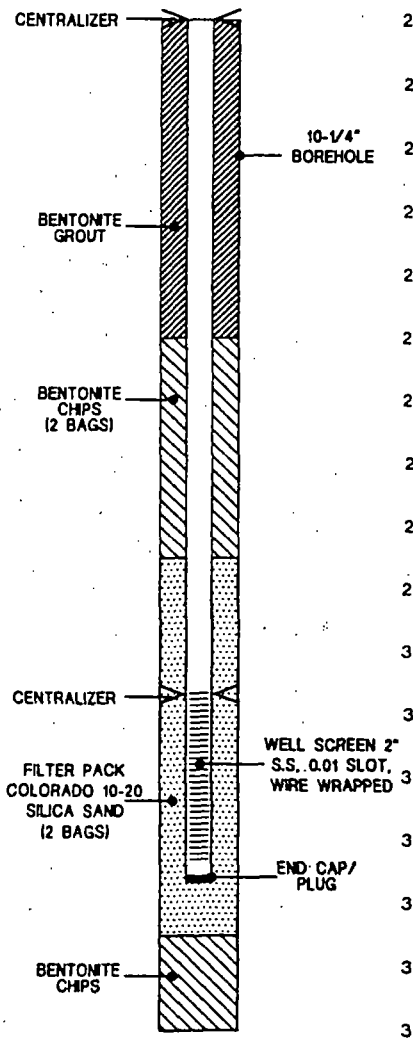
Monitoring well: MWA-6

Ground surface: Asphalt

Geologist: Jeffrey S. Paul

DEPTH (Feet)	SAMPLE NUMBER	OVM (ppm)	% RECOVERY	BLOW COUNT	INTERVAL	GROUP SYMBOL	LITHOLOGIC DESCRIPTION
20–21	SO0241	0	10%	4 4 2		ML/CL	Slightly clayey SILT w/ construction debris, dark gray (5Y 4/1) grading to silty clay, moderately plastic w/ some carbonized wood, wet to moist, no odor (fill).
21–22	SO0242	0	100%	3 4 5			
22–23	SO0243	0	100%	7 8 9			Trace brick fragments and color change to yellow-brown (10 YR 4/4) with rust red mottling.
23–24	SO0244	2.2	30%	7 9 10			Irregular zones of dark gray (5Y4/1) and yellow-brown (10YR 4/4).
24–25	SO0245	0	25%	50 for 6"		SW	Fine to coarse SAND, dark gray-brown (10YR4/2), wet, no odor.
25–26	SO0246	0	100%	10 11 15			Grading coarser w/ depth
26–27						ML	SILT with (~ 2" thick beds).
27–28	SO0247	0	100%	13 25 33		SW	Fine to coarse SAND w/ trace silt (~ 2-3%) and gravel (~ 2%), dark gray-brown (10YR4/2), wet, no odor.
28–29	SO0248	0	100%	11 20 23			as above, no gravel.
29–30	SO0249	0	100%	10 14 22			Grading finer w/ depth w/ trace silt.
30–31							Thin silt lens @ 30'
31–32	SO0250	0	100%	12 13 14			as above, w/ trace fine to medium gravel (2-4%), dark gray-brown (10YR4/2), wet, no odor.
32–33	SO0251	0	100%	8 11 16			
33–34						ML	SILT, dark gray-brown (2.5Y4/2)
34–35						SP	Fine to medium SAND (volcanic) black (N2.5/0)
35–36							Total depth @ 36.0' BGS
36–37							
37–38							
38–39							
39–40							

WELL CONSTRUCTION DETAIL



NOT TO SCALE

Drilled By: Cascade Drilling

Drill Method: Hollow Stem Auger

Drill Date: 13 January 1999

Well Casing Elevation: 34.27'

Ground Surface Elevation: 34.78'

Borehole Diameter: See construction detail

Datum: City of Portland Datum - 1929

Sheet: 2 of 2

Project No: 8601192.001.0622

Project: Acid Plant RI

Client: Elf Atochem

Location: Portland, OR

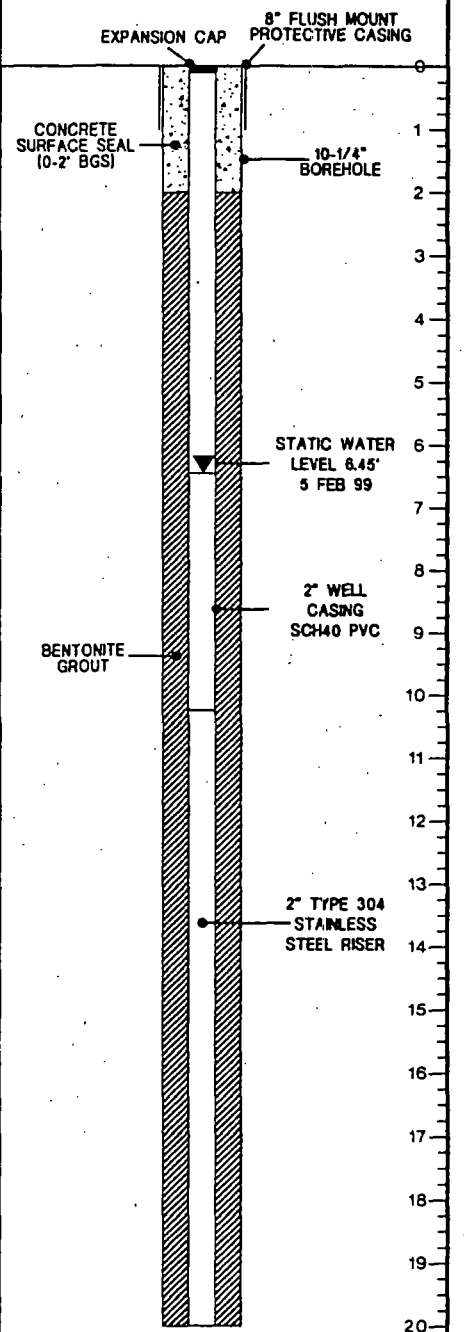
Monitoring well: MWA-7

Ground surface: Gravel

Geologist: Jeffrey S. Paul

DEPTH (Feet)	SAMPLE NUMBER	OVM (ppm)	% RECOVERY	BLOW COUNT	INTERVAL	GROUP SYMBOL	LITHOLOGIC DESCRIPTION
0						GW	GRAVEL (fill).
1							
2							
3						SM	Silty, fine to medium SAND, dark gray-brown (10YR4/2), wet, no odor.
4	SO0186	0	80%	4 5 6			
5	SO0187	0	90%	3 34 4			
6							
7	SO0188	0	90%	2 2 2		ML	Fine, sandy micaceous SILT, dark gray-brown (2.5Y4/2), wet, no odor.
8	SO0189	0	100%	1 1 1			
9							
10	SO0190	0	100%	1 1 1		SM	Silty, fine to medium SAND, dark gray-brown (10YR4/2), wet, no odor.
11	SO0191	0	100%	5 7 8			
12							
13	SO0192	0	100%	6 8 10			Color change to dark gray (5Y4/1)
14	SO0193	0	100%	4 3 2			
15						ML	SILT, dark gray (5Y4/1), wet, no odor.
16	SO0194	0	100%	5 6 12		SP	Fine to medium SAND (volcanic), black (N2.5/0), wet, no odor.
17	SO0195	0	100%	5 6 7			
18							
19	SO0196	0	100%	4 6 8			
20							

WELL CONSTRUCTION DETAIL



Drilled By: Cascade Drilling

Drill Method: Hollow Stem Auger

Drill Date: 12 January 1999

Well Casing Elevation: 34.29'

Ground Surface Elevation: 34.21'

Borehole Diameter: See construction detail

Datum: City of Portland Datum - 1929

Sheet: 1 of 2

Project No: 8601192.001.0623

Project: Acid Plant RI

Client: Elf Atochem

Location: Portland, OR

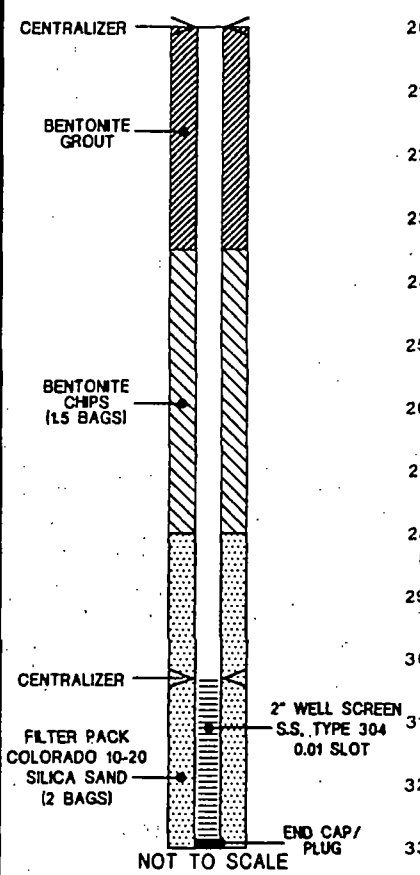
Monitoring well: MWA-7

Ground surface: Gravel

Geologist: Jeffrey S. Paul

DEPTH (Feet)	SAMPLE NUMBER	OVM (ppm)	% RECOVERY	BLOW COUNT	INTERVAL	GROUP SYMBOL	LITHOLOGIC DESCRIPTION
20–21	SO0197	0	100%	6 10 17		SP	Fine to medium SAND (volcanic), black (N2.5/0), wet.
21–22	SO0198	0	100%	7 9 13			
22–23	SO0199	0	50%	5 13 16			
23–24	SO0200	0	100%	10 13 17		SM	Silty fine to medium SAND (volcanic), black (5Y2.5/1), moist, no odor.
24–25						ML	SILT lens.
25–26	SO0201	0	100%	4 11 12		SP	Fine to medium SAND (volcanic), black (N2.5/0), moist, no odor.
26–27	SO0202	0	100%	4 9 14			
27–28	SO0203	0	100%	8 9 10			
28–29						ML	SILT lens.
29–30	SO0204	0	100%	8 7 6		SM	Slightly silty, fine to medium SAND (volcanic), black (N2.5/0), wet, no odor.
30–31	SO0205	0	100%	8 6 12			
31–32						ML	SILT to fine, sandy SILT, very dark gray-brown (10YR3/2), moist to wet, no odor.
32–33							Total depth 33' BGS

WELL CONSTRUCTION DETAIL



Drilled By: Cascade Drilling

Drill Method: Hollow Stem Auger

Drill Date: 12 January 1999

Well Casing Elevation: 34.29'

Ground Surface Elevation: 34.21'

Borehole Diameter: See construction detail

Datum: City of Portland Datum - 1929

Sheet: 2 of 2

Project No: 8601192.001.0623

Project: Acid Plant RI

Client: Elf Atochem

Location: Portland, OR

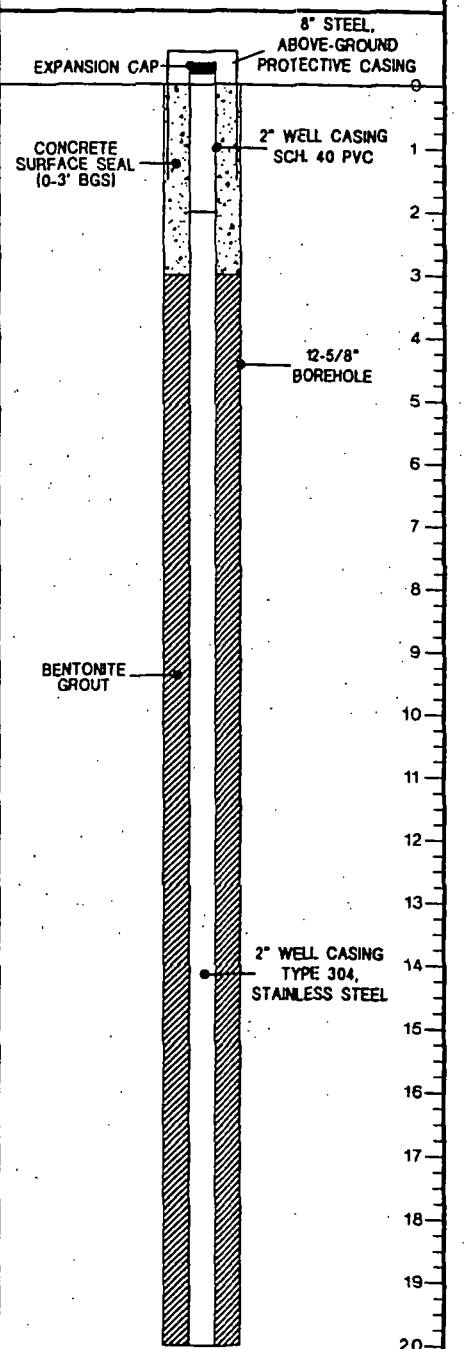
Monitoring Well: MWA-8i

Ground surface: Native vegetation, grasses and weeds w/ coarse sand

Geologist: Jeffrey S. Paul

DEPTH (Feet)	SAMPLE NUMBER	OVM (ppm)	% RECOVERY	BLOW COUNT	INTERVAL	GROUP SYMBOL	LITHOLOGIC DESCRIPTION
0–4						SM	Cuttings indicate silty sands
4–5						ML/GM	
5–7	SO0020	0	50%	12 7 6 6			Gravelly SILT w/ fine to coarse gravel (~ 30 to 50%) and trace carbonized organics (~ 5 %), brown (10YR4/3) w/ rust red mottling, moist, (Fill).
7–12	SO0021	0	60%	4 7 7 10			
12–17	SO0022	0	0%	6 4 8 35			Cuttings indicate silty basalt gravel.
17–20							

WELL CONSTRUCTION DETAIL



Drilled By: Tacoma Pump & Drilling

Drill Method: Cable Tool

Drill Date: 9 - 11 January 1999

Well Casing Elevation: 36.10'

Ground Surface Elevation: 33.79'

Borehole Diameter: See construction detail

Datum: City of Portland Datum - 1929

Sheet: 1 of 3

Project No: 8601192.001.0623

Project: Acid Plant RI

Client: Elf Atochem

Location: Portland, OR

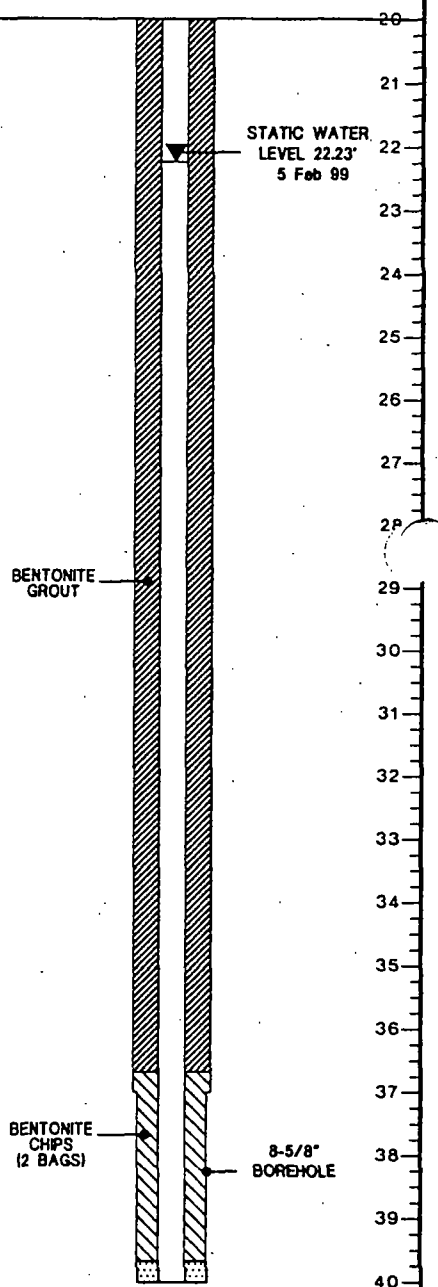
Monitoring Well: MWA-8i

Ground surface: Native vegetation, grasses and weeds w/ coarse sand

Geologist: Jeffrey S. Paul

DEPTH (Feet)	SAMPLE NUMBER	OVM (ppm)	% RECOVERY	BLOW COUNT	INTERVAL	GROUP SYMBOL	LITHOLOGIC DESCRIPTION
20–22	SO0022	1.1	50%	8 4 4 6		GM/ ML	Silty, clayey, sandy, GRAVEL to gravelly, sandy, clayey SILT, trace brick debris, very dark gray-brown (2.5Y3/2), moderate plasticity, moist (Fill).
22–26	SO0023	0	75%	40 40 40 40		SP	Fine to medium SAND, very dark gray-brown (2.5Y3/2), moist.
24–26	SO0024	1.1	100%	25 35 30 30			
26						SM	Silty SAND, black (2.5Y2.5/1), moist.
26–30	SO0025	1.1	75%	20 20 25 30		SP	Fine to medium SAND, very dark gray-brown (2.5Y3/2).
28–30	SO0026	3.4	100%	13 20 26 30			
30						ML	SILT lens w/ carbonized organic material.
30–32	SO0027	43	70%	7 8 10 13		SP	Fine to medium SAND, very dark gray-brown (2.5Y 3/2), moist.
31						SM	Slightly silty, fine SAND, black (2.5Y2.5/1)
31						ML	
32						SM	SILT w/ trace organics, black to dark gray (2.5Y4/1)
32–33	SO0028	–	100%	6 7 8 13		ML	Slightly silty, fine SAND, black (2.5Y2.5/1), wet, sheen.
33–34	SO0029	8.9	100%				Fine sandy SILT to SILT, black (2.5Y 2.5/1), moist.
34–35	SO0030	115	100%	16 32		SP	Slightly silty, fine to medium SAND, very dark gray (2.5Y3/1), wet.
35–36	SO0031	–	100%				Residual NAPL observed (36 -36.3')
36–37	SO0032	–	100%			ML/ CL	Clayey SILT, very dark gray (2.5Y3/1) stiff, slightly plastic, moist.
37–38	SO0033	–	100%				
38–40	–	–	0%			SP	No recovery, cuttings indicate silty, fine SAND, black (2.5YR 2.5/0).

WELL CONSTRUCTION DETAIL



Drilled By: Tacoma Pump & Drilling

Drill Method: Cable Tool

Drill Date: 9 - 11 January 1999

Well Casing Elevation: 36.10'

Ground Surface Elevation: 33.79'

Borehole Diameter: See construction detail

Datum: City of Portland Datum - 1929

Sheet: 2 of 3

Project No: 8601192.001.0623

Project: Acid Plant RI

Client: Elf Atochem

Location: Portland, OR

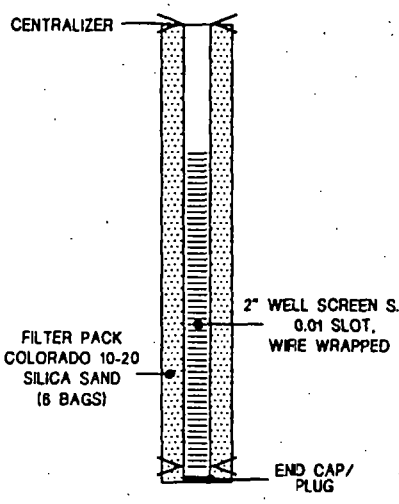
Monitoring Well: MWA-8i

Ground surface: Native vegetation, grasses and weeds w/ coarse sand

Geologist: Jeffrey S. Paul

DEPTH (Feet)	SAMPLE NUMBER	OVM (ppm)	% RECOVERY	BLOW COUNT	INTERVAL	GROUP SYMBOL	LITHOLOGIC DESCRIPTION
40							
41	SO0034	5.2	100%	1 3 8 9		SP	Slightly silty, fine to medium SAND, volcanic, black (2.5YR 2.5/0), wet.
42							
43	SO0035	26	75%	4 5 10 14			
44							
45	SO0036	5	100%			ML	SILT, brown (10YR4/3), moist to wet.
						SM	Silty, fine SAND, brown (10YR4/3)
46							
47	SO0037	0	100%	6 3 8 10		ML	SILT grading to clayey SILT, brown (10YR4/3), wet, slightly plastic.
48							
49	SO0038	0	50%	3 50/3"			Trace angular basalt gravel (~ 10%).
							Total depth 49.0' BGS
50							
51							
52							
53							
54							
55							
56							
57							
58							
59							
60							

WELL CONSTRUCTION DETAIL



Drilled By: Tacoma Pump & Drilling

Drill Method: Cable Tool

Drill Date: 9 - 11 January 1999

Well Casing Elevation: 36.10'

Ground Surface Elevation: 33.79'

Borehole Diameter: See construction detail

Datum: City of Portland Datum - 1929

Sheet: 3 of 3

Project No: 8601192.001.0623

Project: Acid Plant RI

Client: Elf Atochem

Location: Portland, OR

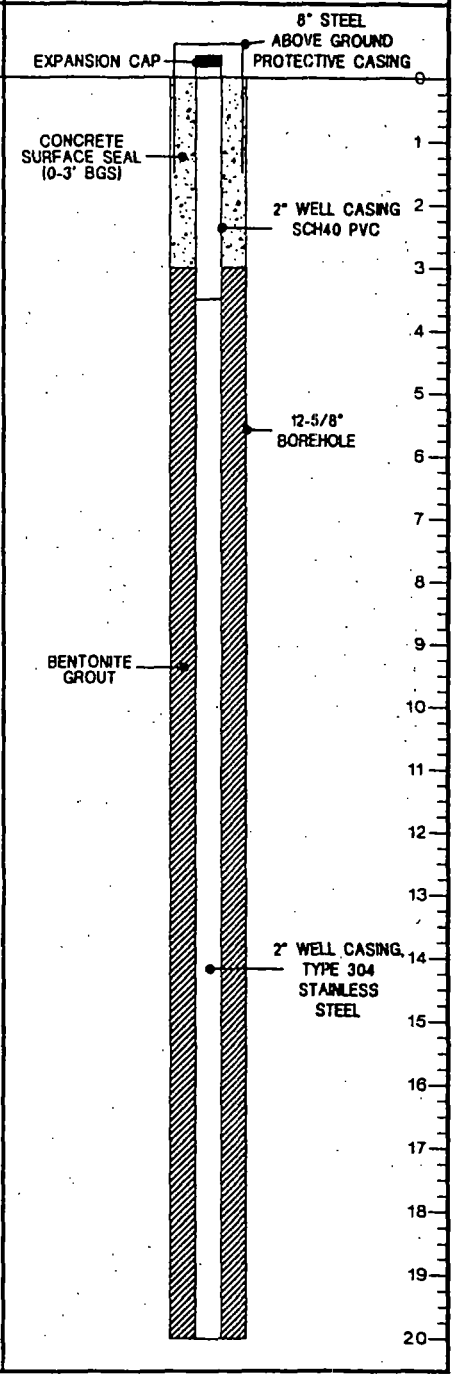
Monitoring Well: MWA-9i

Ground surface: Native vegetation, grasses and weeds

Geologist: Jeffrey S. Paul

DEPTH (Feet)	SAMPLE NUMBER	OVM (ppm)	% RECOVERY	BLOW COUNT	INTERVAL	GROUP SYMBOL	LITHOLOGIC DESCRIPTION
5–7		0	20%	6 5 4 4	X	ML/GM	Sandy gravelly SILT to silty GRAVEL, brown (10YR4/3), moist, (fill).
10–12		0	10%	5 5 7 7	X		
15–17	SO0039	0	25%	4 4 8 6	X		

WELL CONSTRUCTION DETAIL



Drilled By: Tacoma Pump & Drilling

Drill Method: Cable tool

Drill Date: 13 - 17 November 1998

Well Casing Elevation: 36.81'

Ground Surface Elevation: 34.76'

Borehole Diameter: See construction detail

Datum: City of Portland Datum - 1929

Sheet: 1 of 3

Project No: 8601192.001.0623

Project: Acid Plant RI

Client: Elf Atochem

Location: Portland, OR

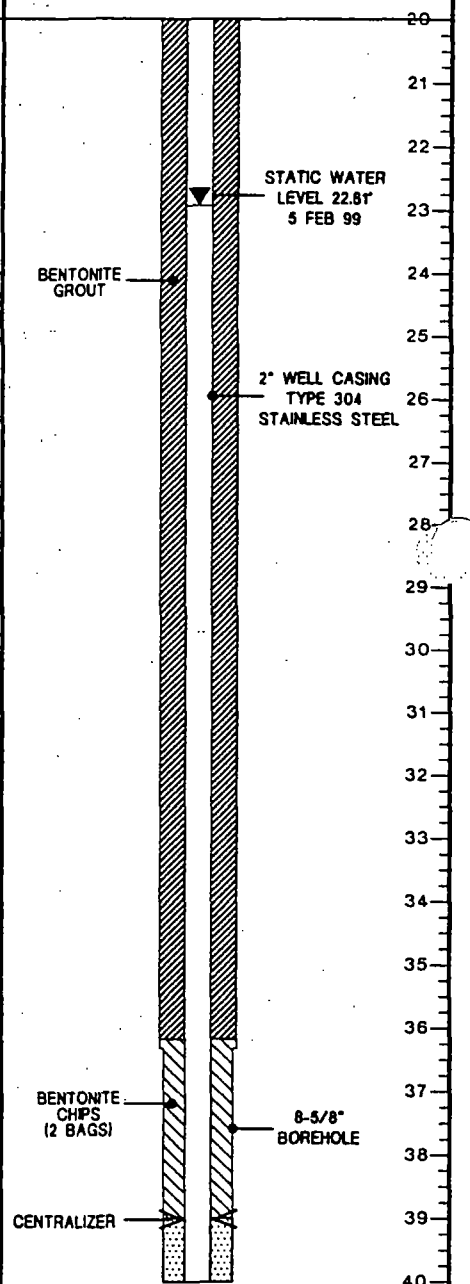
Monitoring Well: MWA-9i

Ground surface: Native vegetation, grasses and weeds

Geologist: Jeffrey S. Paul

DEPTH (Feet)	SAMPLE NUMBER	OVM (ppm)	% RECOVERY	BLOW COUNT	INTERVAL	GROUP SYMBOL	LITHOLOGIC DESCRIPTION
20–22	SO0040	0	25%	4 4 4 4		ML/GM	Silty GRAVEL to gravelly SILT w/ basalt gravel (>3") (fill).
22–24	SO0041	0	10%	8 20 30 35			
24–26	SO0042	0	15%	75 75 0		AS	Very hard, black and yellowish-green asphalt-like material w/ wire, nails, asphalt like odor (fill).
						SP	Fine to medium SAND, slightly silty w/ trace coarse sand (~ 10%) very dark brown (10YR2/2), moist
26–28	SO0043	0	25%	20 20 25 30			
28–30	SO0044	0	50%	20 32 25 36			
30–32	SO0045	3.5	100%	5 8 13 15		SM	Silty fine SAND, very dark gray (2.5Y 3/1), moist to wet.
						ML	SILT, very dark gray (10YR3/1), moist.
						SM	Silty, fine to medium SAND, pale yellow (2.5Y8/2), no odor.
32–34	SO0046	13.0	100%	6 9 10 12			Becoming less silty with depth.
34–36	SO0047	32.8	25%	20 30 30 35		SP	Slightly silty, fine to medium SAND, dark brown (2.5Y4/2) w/ trace organic material (wood) (~ 2%), wet.
36–38	SO0048	1260	80%	10 15 17 25			As above, color change to reddish-brown (5Y5/3), strong odor.
						ML	SILT, pale yellow (2.5Y8/2) and dark gray-brown (2.5Y4/2), moist.
38–40	SO0049	430	100%			SP	Fine to medium SAND, volcanic, black (N2.5/0), trace silt (~ 2-5%), wet, no sheen.

WELL CONSTRUCTION DETAIL



Drilled By: Tacoma Pump & Drilling

Drill Method: Cable tool

Drill Date: 13 - 17 November 1998

Well Casing Elevation: 36.81'

Ground Surface Elevation: 34.76'

Borehole Diameter: See construction detail

Datum: City of Portland Datum - 1929

Sheet: 2 of 3

Project No: 8601192.001.0623

Project: Acid Plant RI

Client: Elf Atochem

Location: Portland, OR

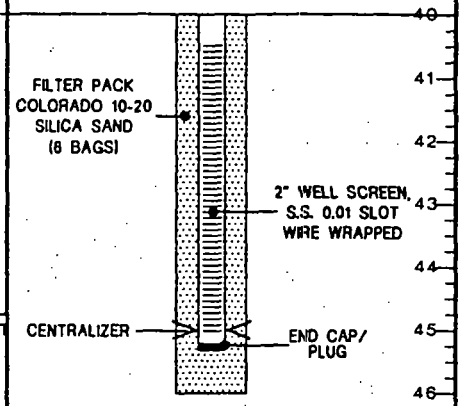
Monitoring Well: MWA-9i

Ground surface: Native grass and weeds

Geologist: Jeffrey S. Paul

DEPTH (Feet)	SAMPLE NUMBER	OVM (ppm)	% RECOVERY	BLOW COUNT	INTERVAL	GROUP SYMBOL	LITHOLOGIC DESCRIPTION
40							
41	SO0051	224	100%	7 5 5 5		SP	Fine to medium SAND, volcanic, black (N2.5/0), trace silt.
42							
43	SO0052	350	100%	3 5 5 7			Heaving sand
44							
45	SO0053	429	100%	3 8 8 10		ML/ CL	SILT grading to clayey SILT, dark gray-brown (2.5Y4/2), moist.
46							
47	SO0054	99.6	100%	4 6 7 10			
48							Total depth 48.0' BGS
49							
50							
51							
52							
53							
54							
55							
56							
57							
58							
59							
60							

WELL CONSTRUCTION DETAIL



NOT TO SCALE

Drilled By: Tacoma Pump & Drilling

Drill Method: Cable tool

Drill Date: 13 - 17 November 1998

Well Casing Elevation: 36.81'

Ground Surface Elevation: 34.76'

Borehole Diameter: See construction detail

Datum: City of Portland Datum - 1929

Sheet: 3 of 3

Project No: 8601192.001.0623

Project: Acid Plant RI

Client: Elf Atochem

Location: Portland, OR

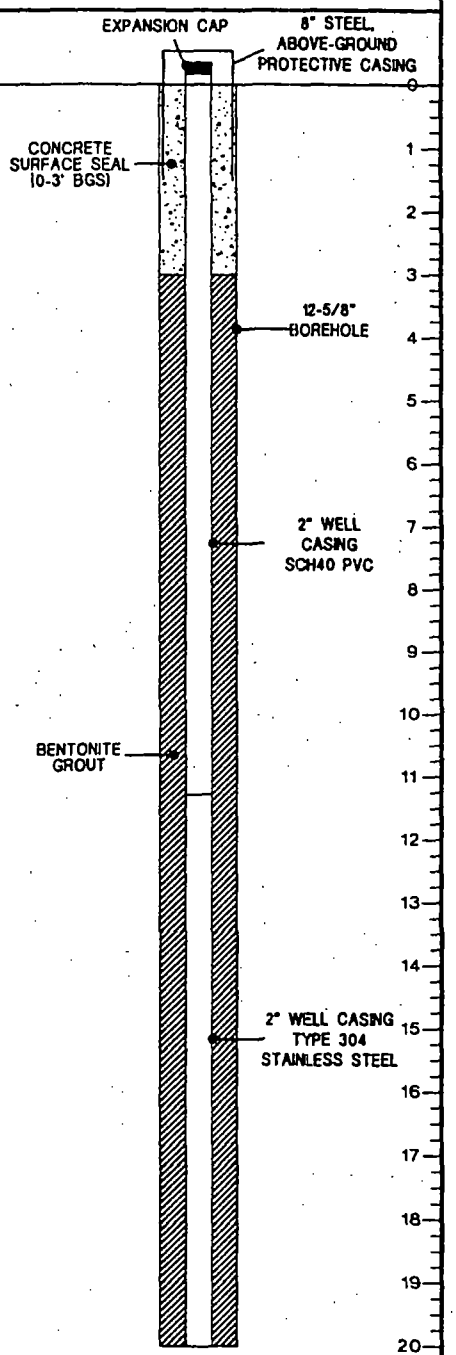
Monitoring Well: MWA-10i

Ground surface: Native grass and weeds

Geologist: Jeffrey S. Paul

DEPTH (Feet)	SAMPLE NUMBER	OVM (ppm)	% RECOVERY	BLOW COUNT	INTERVAL	GROUP SYMBOL	LITHOLOGIC DESCRIPTION
5–7	SO0055	0	50%	5 3 3 3	X	ML	Very fine, sandy SILT, very dark gray (5Y3/1), w/ trace gravel (~ 5%), up to 2", slightly plastic, moist.
10–12	SO0056	0	70%	1 2 2 2	X		As above, increasing gravel fraction (~ 5-10%).
15–17	SO0057	0	50%	3 4 5 4	X		As above, trace root fragments

WELL CONSTRUCTION DETAIL



Drilled By: Tacoma Pump & Drilling

Drill Method: Cable tool

Drill Date: 19 - 23 November 1998

Well Casing Elevation: 35.90'

Ground Surface Elevation: 33.71'

Borehole Diameter: See construction detail

Datum: City of Portland Datum - 1929

Sheet: 1 of 3

Project No: 8601192.001.0623

Project: Acid Plant RI

Client: Elf Atochem

Location: Portland, OR

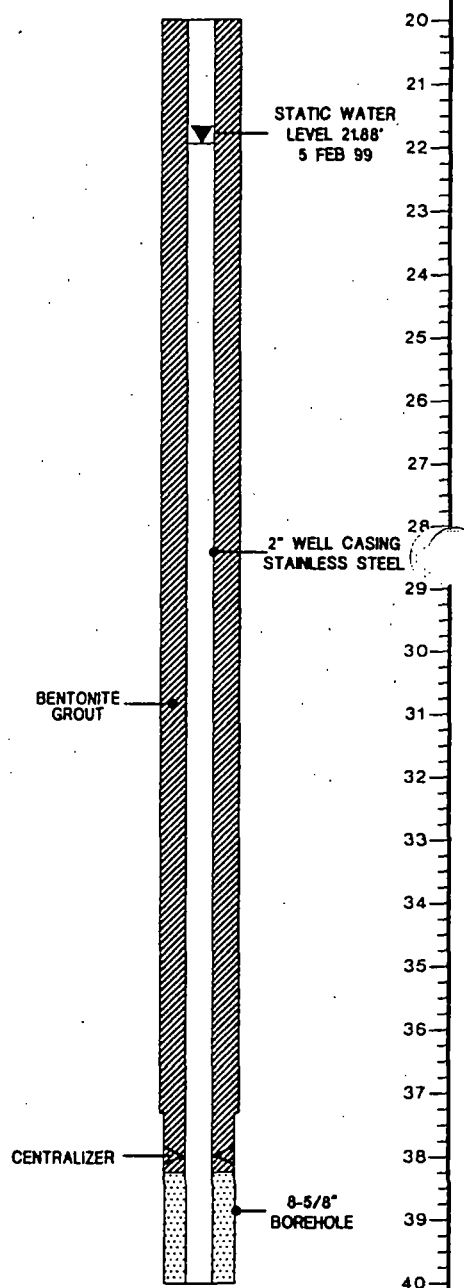
Monitoring Well: MWA-10i

Ground surface: Native grass and weeds

Geologist: Jeffrey S. Paul

DEPTH (Feet)	SAMPLE NUMBER	OVM (ppm)	% RECOVERY	BLOW COUNT	INTERVAL	GROUP SYMBOL	LITHOLOGIC DESCRIPTION
20–22	SO0058	0	25%	6 6 6 9		ML/GM	Silty, sandy GRAVEL (< 3"), brown (10YR4/3), moist, no odor.
22–23	–	0	0%	20 20 20 50-1"		SP	Fine to medium SAND w/ trace silt (~ 2-5%), dark gray (2.5Y4/1) grading to dark gray-brown (2.5Y4/2), moist, no odor.
24–25	SO0059	0	100%	30 20 20 25			
26–27	SO0060	0	50%	15 15 20 22			Color change to gray (2.5Y6/1) w/ silt lenses at 26.75' and 27.4'
27–28						SM	Silty, fine to medium SAND, dark gray (2.5Y4/1) w/ pale yellow sand grains, wet, no odor.
28–29	SO0061	22	75%	15 10 7 15			SILT lenses (1/4") at 29' and 29.6'
30–31	SO0062	85	100%	16 18 22 30		ML	SILT, dark gray (2.5Y4/1) to pale yellow (2.5Y8/4)
31–32						SM	Silty, fine to medium SAND, dark gray (2.5Y4/1) to pale yellow (2.5Y8/4), wet
32–33	SO0063	73	75%	10 12 13 17			
34–35	SO0064	–	100%	10 13 16 14			
36–37	SO0065	–	100%	5 11 15 20		ML	SILT, very dark gray (5Y3/1)
37–38						SP	Fine to medium SAND, volcanic, black (5Y2.5/1), wet w/ trace wood.
38–39	SO0066	4.7	100%	4 6 9 15			Silty sand lens from 39.2' - 39.5'.

WELL CONSTRUCTION DETAIL



Drilled By: Tacoma Pump & Drilling

Drill Method: Cable tool

Drill Date: 19 - 23 November 1998

Well Casing Elevation: 35.90'

Ground Surface Elevation: 33.71'

Borehole Diameter: See construction detail

Datum: City of Portland Datum - 1929

Sheet: 2 of 3

Project No: 8601192.001.0623

Project: Acid Plant RI

Client: Elf Atochem

Location: Portland, OR

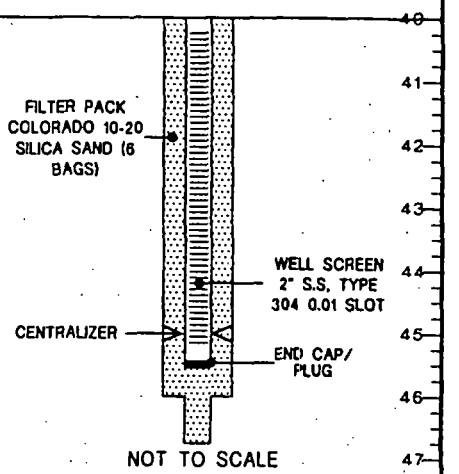
Monitoring Well: MWA-10i

Ground surface: Native grass and weeds

Geologist: Jeffrey S. Paul

DEPTH (Feet)	SAMPLE NUMBER	OVM (ppm)	% RECOVERY	BLOW COUNT	INTERVAL	GROUP SYMBOL	LITHOLOGIC DESCRIPTION
40							
41	SO0067	21.5	100%	3 6 10 35		SP	Fine to medium SAND, volcanic, black (5Y2.5/1) wet
42							As above, trace organic matter
43	SO0068		100%	6 10 11 20			
44							
45	SO0069		100%	7 15 20 30			
46	SO0070		100%			ML/CL	Clayey SILT, olive gray (5Y4/2), slightly plastic, moist
47							Total depth 46.8' BGS
48							
49							
50							
51							
52							
53							
54							
55							
56							
57							
58							
59							
60							

WELL CONSTRUCTION DETAIL



Drilled By: Tacoma Pump & Drilling

Drill Method: Cable tool

Drill Date: 19 - 23 November 1998

Well Casing Elevation: 35.90'

Ground Surface Elevation: 33.71'

Borehole Diameter: See construction detail

Datum: City of Portland Datum - 1929

Sheet: 3 of 3

Project No: 8601192.001.0623

Project: Acid Plant RI

Client: Elf Atochem

Location: Portland, OR

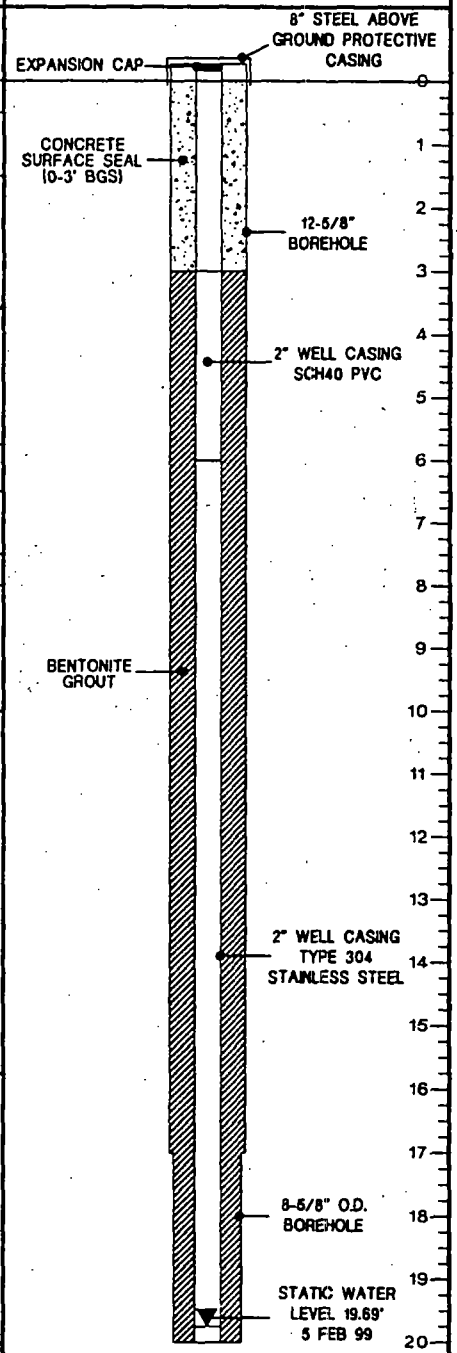
Monitoring Well: MWA-11i

Ground surface: Asphalt

Geologist: Jeffrey S. Paul

DEPTH (Feet)	SAMPLE NUMBER	OVM (ppm)	% RECOVERY	BLOW COUNT	INTERVAL	GROUP SYMBOL	LITHOLOGIC DESCRIPTION
0							Asphalt
1	SO0071	0	60%	6 40 25		SP	Fine to medium SAND, dark brown (7.5 YR 3/2), moist.
2						SP/GW	Fine to medium SAND w/ trace concrete/ basalt debris, dark gray (10YR4/1), moist.
3	SO0072	6.5	60%	18 18 18 23			As above, w/ gravel ~ 30%, dark gray-brown (2.5R4/1), moist, crystalline substance (~1" thick) w/ pinkish hue.
4						SP	Very fine to fine SAND w/ trace silt, gray (10YR6/1), moist, stiff.
5	SO0073	1071	50%				As above, w/ occasional gravel, light gray (10YR7/1) w/ pinkish hue.
6						ML	SILT, pale yellow (2.5Y8/3).
7	SO0074	1973	80%	16 15 17 20		SP	Very fine SAND w/ trace silt, gray (10YR6/1) w/ pinkish hue, moist.
8						ML	SILT, pale yellow (2.5Y8/3).
9			0%				
10						SM/ML	Very fine silty SAND and SILT, alternating beds (~ 1-2"), dark gray-brown (2.5Y4/2) and light brown-gray (2.5Y6/2), moist.
11	SO0075	0	80%	7 10 15 7			
12							
13	SO0076	1892	100%	7 7 7 15			
14							
15	SO0077	2251	60%	4 4 4 4			Color change to pale yellow (2.5Y8/3).
16						SP	Fine to coarse SAND, very dark gray-brown, (2.5Y8/3), moist.
17	SO0078	826	100%	7 10 12 8			
18							
19	SO0079	621	100%	10 12 15 7			
20							

WELL CONSTRUCTION DETAIL



Drilled By: Tacoma Pump & Drilling

Drill Method: Cable tool

Drill Date: 30 November - 3 December 1998

Well Casing Elevation: 34.50'

Ground Surface Elevation: 34.70'

Hole Size: See construction detail

Datum: City of Portland Datum -1929

Sheet: 1 of 3

Project No: 8601192.001.0623

Project: Acid Plant RI

Client: Elf Atochem

Location: Portland, OR

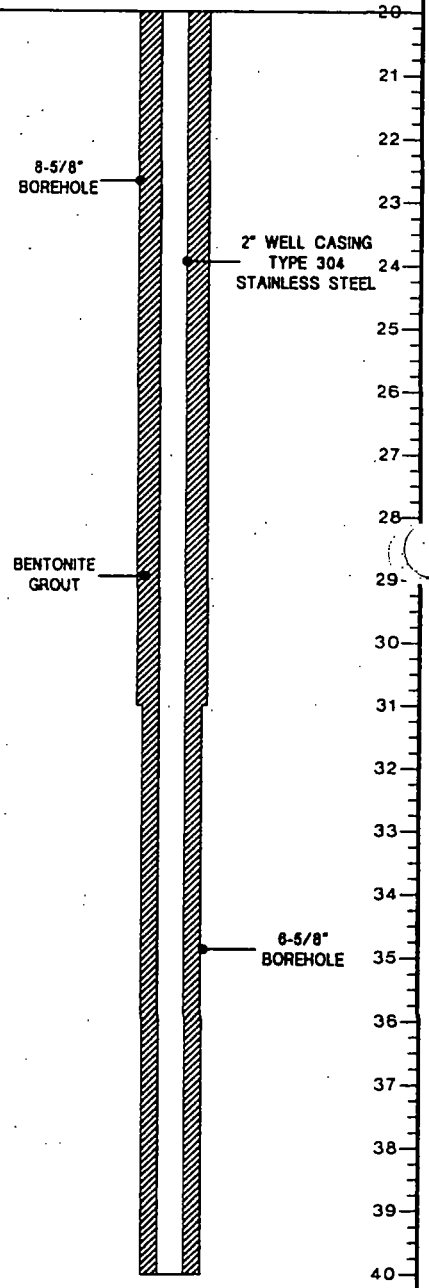
Monitoring Well: MWA-11i

Ground surface: Asphalt

Geologist: Jeffrey S. Paul

DEPTH (Feet)	SAMPLE NUMBER	OVM (ppm)	% RECOVERY	BLOW COUNT	INTERVAL	GROUP SYMBOL	LITHOLOGIC DESCRIPTION
20							
21	SO0080	472	100%	6 15 14 13		SP	Fine to coarse SAND, very dark gray-brown (2.5Y 8/3), moist.
22							
23	SO0081	530	100%	5 7 10 18			
24							Color change to gray (2.5 Y 5/1) w/ trace silt, wet.
25	SO0082	787	100%	5 13 18 35			
26							
27	SO0083	28	100%	4 8 12 20			Color change to light yellow-brown, silt (~10%).
28							
29	SO0084	--	100%	12 20 25 25			Grading coarser w/ depth w/ carbonized organics. Grading to silt.
30						ML	SILT, black (5Y2.5/1), wet, no odor.
31	SO0085	0	100%	5 10 15 25			
32						SP	Fine to medium SAND, volcanic, black (N2.5/0).
						ML	Silt lens.
						SP	Fine to medium SAND, volcanic, black (N2.5/0), wet, wood fragments.
33	SO0086	15.2	100%	15 15 15 20			
34							
35	SO0087	23	100%	12 15 17 30			As above, w/ basalt gravel.
36						GW	Sandy GRAVEL, (basalt clasts) fine to coarse, black (N2.5/0), wet.
37	SO0088	0	100%	8 12 8 12		ML	SILT, olive brown (2.5Y 4/3), moist, stiff, slightly plastic.
38	SO0089	0	100%	18 15			
39							Color change to olive brown (2.5Y 4/4).
40							

WELL CONSTRUCTION DETAIL



Drilled By: Tacoma Pump & Drilling

Drill Method: Cable tool

Drill Date: 30 November - 3 December 1998

Well Casing Elevation: 34.50'

Ground Surface Elevation: 34.70'

Hole Size: See construction detail

Datum: City of Portland Datum - 1929

Sheet: 2 of 3

Project No: 8601192.001.0623

Project: Acid Plant RI

Client: Elf Atochem

Location: Portland, OR

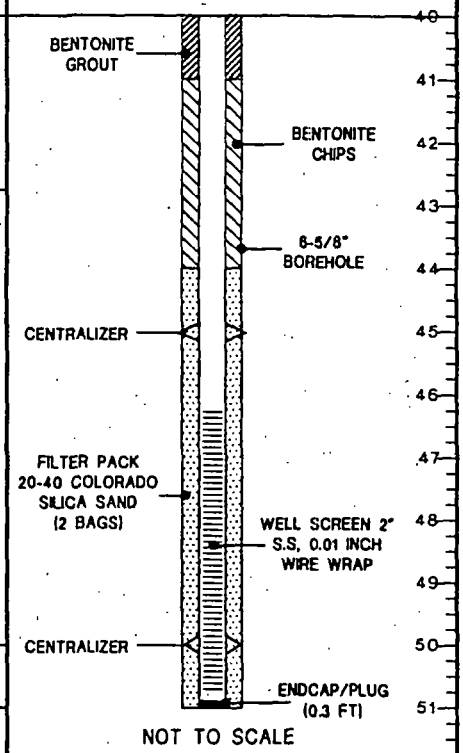
Monitoring Well: MWA-11i

Ground surface: Asphalt

Geologist: Jeffrey S. Paul

DEPTH (Feet)	SAMPLE NUMBER	OVM (ppm)	% RECOVERY	BLOW COUNT	INTERVAL	GROUP SYMBOL	LITHOLOGIC DESCRIPTION
40–41	SO0089	0	15%			ML	Clayey SILT, olive brown (2.5 Y 4/4), moist.
41–42	SO0090	0	100%	4 4 4 4			
42–43						ML/SM	Fine, sandy, micaceous SILT, olive brown (5 Y 5/3), wet, soft.
43–44	SO0091	0	100%	6 6 12 20			
44–45							
45–46	SO0092	0	100%	4 7 10 12			
46–47							
47–48	SO0093	0	100%	5 10 15 20			
48–49							
49–50							
50–51	SO0094	0	100%	11 12 15 20		ML	SILT, dark green-gray (5G 3/1), moist, stiff.
51–52						ML/SM	Fine, sandy, micaceous SILT, olive brown (5 Y 5/3), wet, soft.
52							Total depth 51.0' bgs
53–60							

WELL CONSTRUCTION DETAIL



Drilled By: Tacoma Pump & Drilling

Drill Method: Cable tool

Drill Date: 30 November - 3 December 1998

Well Casing Elevation: 34.50'

Ground Surface Elevation: 34.70'

Hole Size: See construction detail

Datum: City of Portland Datum - 1929

Sheet: 3 of 3

Project No: 8601192.001.0623

Project: Acid Plant RI

Client: Elf Atochem

Location: Portland, OR

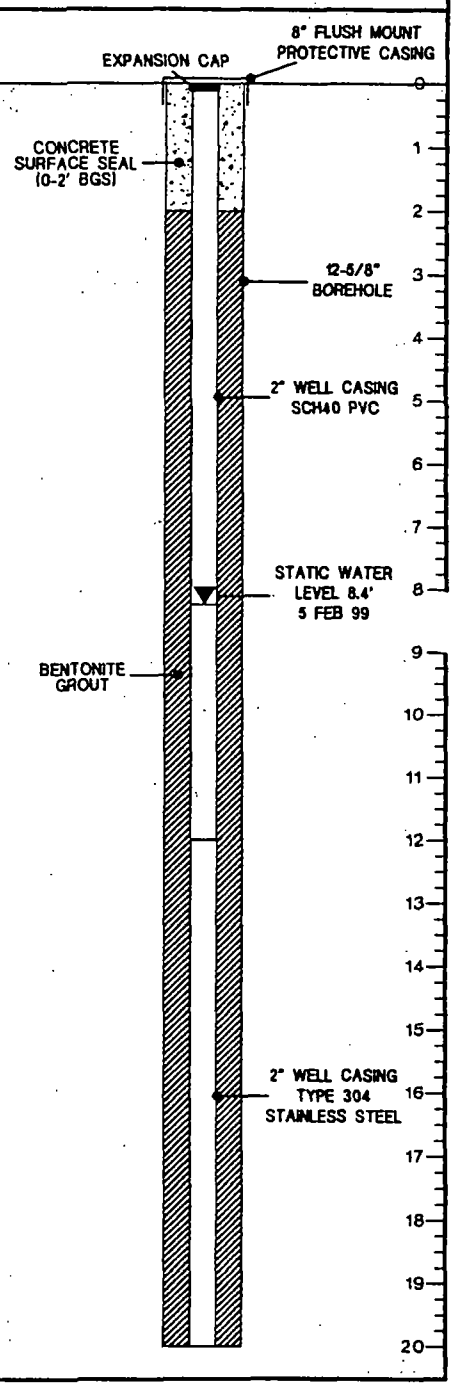
Monitoring Well: MWA-12i

Ground surface: Gravel

Geologist: Jeffrey S. Paul

DEPTH (Feet)	SAMPLE NUMBER	OVM (ppm)	% RECOVERY	BLOW COUNT	INTERVAL	GROUP SYMBOL	LITHOLOGIC DESCRIPTION
0						GW	Gravel (Fill).
5–7	SO0001	0	25%	5 5 2 2		SP	Slightly silty SAND, fine to medium, dark gray-brown (10YR4/2), moist.
10–12	SO0002	0	50%	6 8 5 5			As above, w/ trace (5%) basalt gravel.
13							Color change in cuttings.
15–17	SO0003	0	50%	4 5 7 9		SP	Fine SAND w/ trace silt ~ 2%, black (N2.5/0), moist.

WELL CONSTRUCTION DETAIL



Drilled By: Tacoma Pump & Drilling

Drill Method: Cable tool

Drill Date: 4 January 1999

Well Casing Elevation: 33.91'

Ground Surface Elevation: 34.22'

Borehole Diameter: See construction detail

Datum: City of Portland Datum - 1929

Sheet: 1 of 3

Project No: 8601192.001.0623

Project: Acid Plant RI

Client: Elf Atochem

Location: Portland, OR

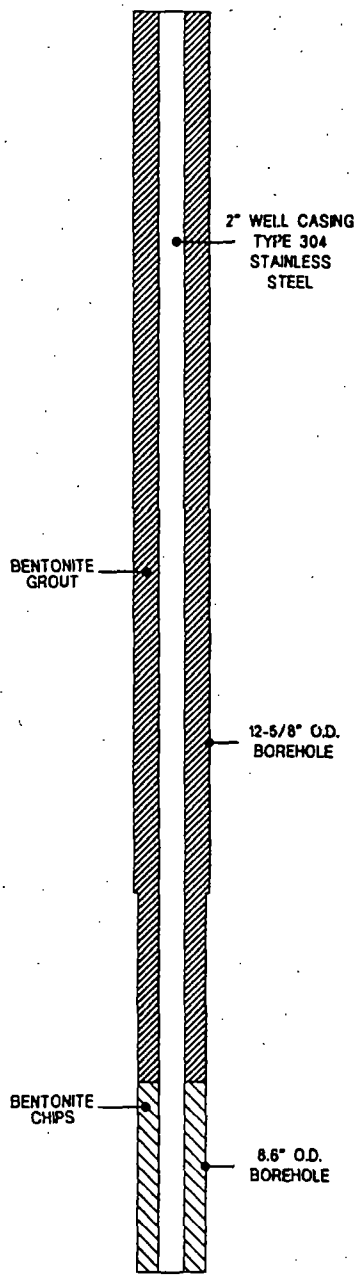
Monitoring Well: MWA-12i

Ground surface: Gravel

Geologist: Jeffrey S. Paul

DEPTH (Feet)	SAMPLE NUMBER	OVM (ppm)	% RECOVERY	BLOW COUNT	INTERVAL	GROUP SYMBOL	LITHOLOGIC DESCRIPTION
20–22	SO0004	0	75%	5 5 15 25		SP/SM	Fine SAND w/ trace silt (~2%) and intermittent organic silt lenses, black (N2.5/0) wet.
22–23						ML	silt lens
23–24	SO0005	0	100%	11 10 15 18		SP	Fine SAND w/ trace silt, black (N2.5/0) wet.
24–25	SO0006	0	100%	5 8 12 14		SM	Silty fine SAND very dark gray-brown (10YR3/2), wet, stiff.
25–28	SO0007	0	100%	7 7 8 12		SP	Fine SAND w/ trace silt (~2%), black (N2.5/0) wet.
28–29	SO0008	0	100%	7 9 9 12		ML	SILT, black (5Y,2.5/1) moist, stiff
29–30						SM	Silty fine SAND, black (N2.5/0) wet
30–32	SO0009	0	100%	9 9 12 16			
32–33	SO0110	0	100%	4 6 6 7		ML	SILT w/ angular, chert gravel (<1/4"), very dark gray (5Y,3/1) moist, stiff
33–35	SO0111	0	100%	10 12 12 17		SM	Silty fine SAND, black (N2.5/0), wet.
35–37	SO0112	0	100%	4 4 4 6		ML	SILT w/ trace organic material, very dark gray (5Y 3/1), moist, stiff.
37–38						SP	Silty fine SAND lens, black (N2.5/0).
38–40	SO0113	0	100%	10 8		ML	SILT w/ trace organic material, very dark gray (5Y 3/1), moist, stiff.

WELL CONSTRUCTION DETAIL



Drilled By: Tacoma Pump & Drilling

Drill Method: Cable tool

Drill Date: 4 January 1999

Well Casing Elevation: 33.91'

Ground Surface Elevation: 34.22'

Borehole Diameter: See construction detail

Datum: City of Portland Datum - 1929

Sheet: 2 of 3

Project No: 8601192.001.0623

Project: Acid Plant RI

Client: Elf Atochem

Location: Portland, OR

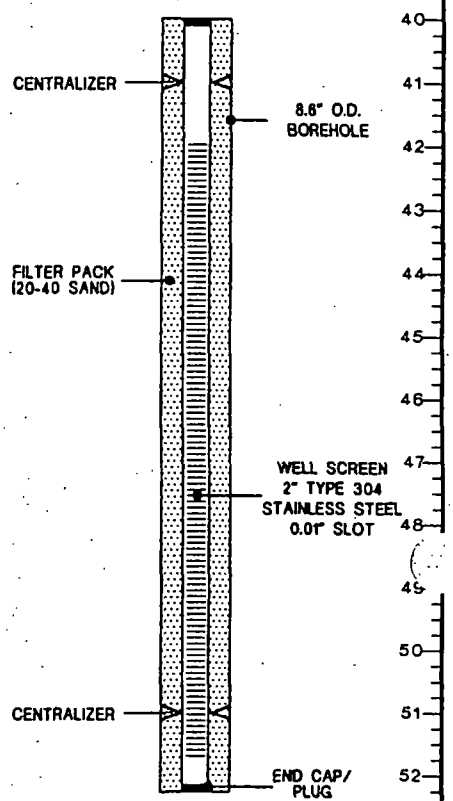
Monitoring Well: MWA-12i

Ground surface: Gravel

Geologist: Jeffrey S. Paul

DEPTH (Feet)	SAMPLE NUMBER	OVM (ppm)	% RECOVERY	BLOW COUNT	INTERVAL	GROUP SYMBOL	LITHOLOGIC DESCRIPTION
40–41	SO0014	0	100%	4 5 7 11		ML/CL	Clayey SILT to silty clay w/ trace organics (2%), very dark gray (5Y 3/1), moist, stiff.
41–42						ML	SILT, very dark gray (5Y, 3/1) moist, stiff.
43	SO0015	0	100%	3 4 8 12			
44–45	SO0016	0	100%	3 3 7 7			
46							Color change to very dark, gray brown (2.5Y 3/2).
47	SO0017	0	100%	3 4 5 7		CL/ML	Silty CLAY, dark green-gray (5G Y3/1), abundant root fragments, moderately plastic, stiff, wet.
49	SO0018	0	100%	6 8 10 12			Color change to dark green-gray (5G Y4/1).
51	SO0019	0	100%	4 6 11 13			Silty fine sand lens (~1/8"), very dark gray (5Y3/1) at 50.25'. Clayey SILT, olive brown w/ rust red mottling (2.5Y, 4/3), moist, slightly plastic.
52							Total depth @ 52' BGS

WELL CONSTRUCTION DETAIL



Drilled By: Tacoma Pump & Drilling

Drill Method: Cable tool

Drill Date: 4 January 1999

Well Casing Elevation: 33.91'

Ground Surface Elevation: 34.22'

Borehole Diameter: See construction detail

Datum: City of Portland Datum - 1929

Sheet: 3 of 3

Project No: 8601192.001.0623

Project: Acid Plant RI

Client: Elf Atochem

Location: Portland, OR

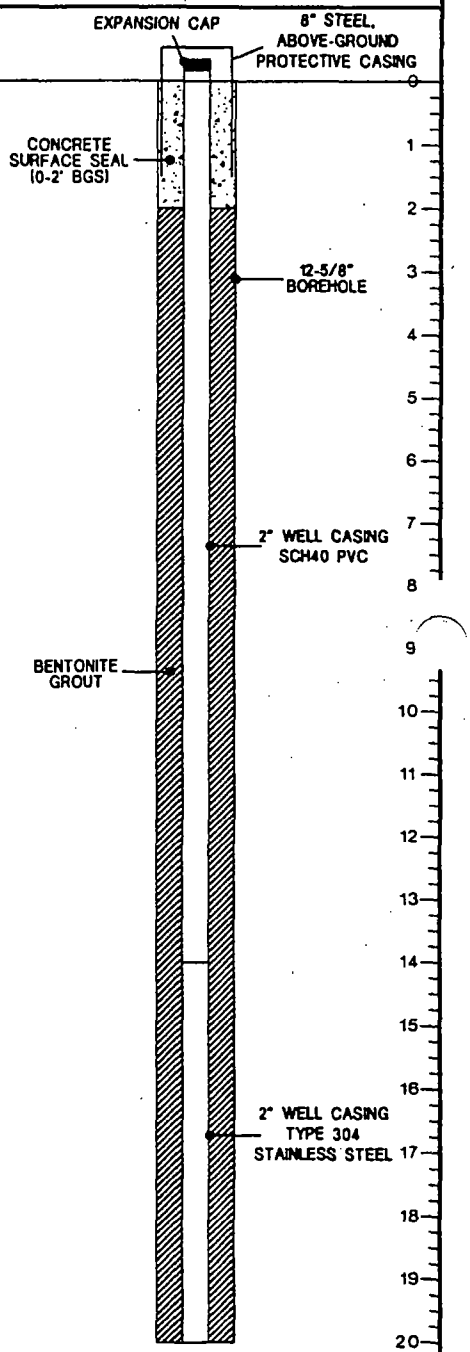
Monitoring Well: MWA-13d

Ground surface: Native vegetation

Geologist: Jeffrey S. Paul

DEPTH (Feet)	SAMPLE NUMBER	OVM (ppm)	% RECOVERY	BLOW COUNT	INTERVAL	GROUP SYMBOL	LITHOLOGIC DESCRIPTION
5–7	SO0113	0	10%	5 5 3 3		ML/GM	Sandy, gravelly, clayey, SILT brown (7.5 YR 4/3) (Fill).
10–12	SO0114	0	10%	3 2 1 1		GM	Grading to silty, sandy, GRAVEL (Fill).
15–17	SO0115	0	5%	11 12 12 17		GM	As above, coarse gravel (>3").

WELL CONSTRUCTION DETAIL



Drilled By: Tacoma Pump & Drilling

Drill Method: Cable tool

Drill Date: 4 - 6 January 1999

Well Casing Elevation: 37.06'

Ground Surface Elevation: 34.750'

Hole Size: See construction detail

Datum: City of Portland Datum

Sheet: 1 of 3

Project No: 8601192.001.0623

Project: Acid Plant RI

Client: Elf Atochem

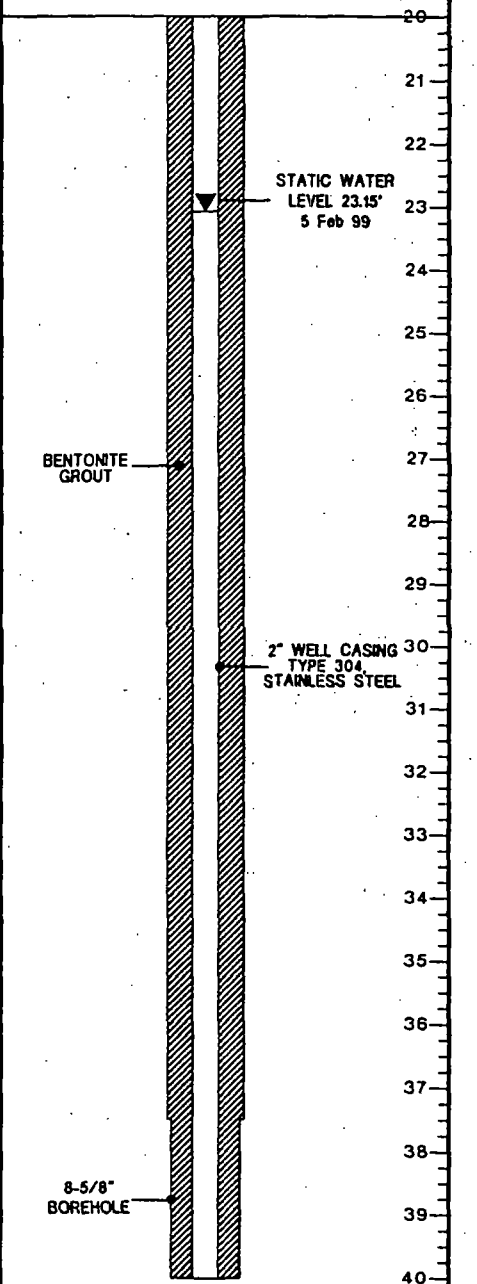
Location: Portland, OR

Monitoring Well: MWA-13d

Ground surface: Native vegetation

Geologist: Jeffrey S. Paul

DEPTH (Feet)	SAMPLE NUMBER	OVM (ppm)	% RECOVERY	BLOW COUNT	INTERVAL	GROUP SYMBOL	LITHOLOGIC DESCRIPTION
20–22	SO0116	0	20%	8 12 8 12		ML/GM	Silty, sandy GRAVEL, brown (7.5YR 4/3).
23–27	SO0117	0	25%	25 33 40 50/1"		SP	Fine to medium SAND, trace silt (~2-5%), dark gray (2.5 Y 4/1).
30–31	SO0118	2.2	80%	4 5 12 12		ML	SILT, dark gray brown (10 YR 3/2).
31–32						SP	Fine to medium SAND, very dark gray (10 YR 3/1).
32–33	SO0119	70	80%	5 13 22 30		SM	Fine to medium SAND with abundant pale yellow (5Y 8/2) silt nodules, moderate odor.
33–34							Silt lens at 34'
34–35	SO0120	306	100%	5 12 12 40			Grading to fine to medium SAND, very dark gray (10 YR 3/1) moderate odor. Silt lens at 35'
36–37	SO0121	677	100%	4 4 7 13			Slight pinkish hue, strong odor, residual NAPL observed at 36.5' to 37'.
37–38		0				ML	SILT, very dark gray (10 YR 3/1), stiff, no odor.
38–40	SO0123	112		3 5 9 15		SP	Fine to medium SAND, black (N 2.5/0) volcanic with native organic material (~ 20%) wet.



Drilled By: Tacoma Pump & Drilling

Drill Method: Cable tool

Drill Date: 4 - 6 January 1999

Well Casing Elevation: 37.06'

Ground Surface Elevation: 34.750'

Hole Size: See construction detail

Datum: City of Portland Datum

Sheet: 2 of 3

Project No: 8601192.001.0623

Project: Acid Plant RI

Client: Elf Atochem

Location: Portland, OR

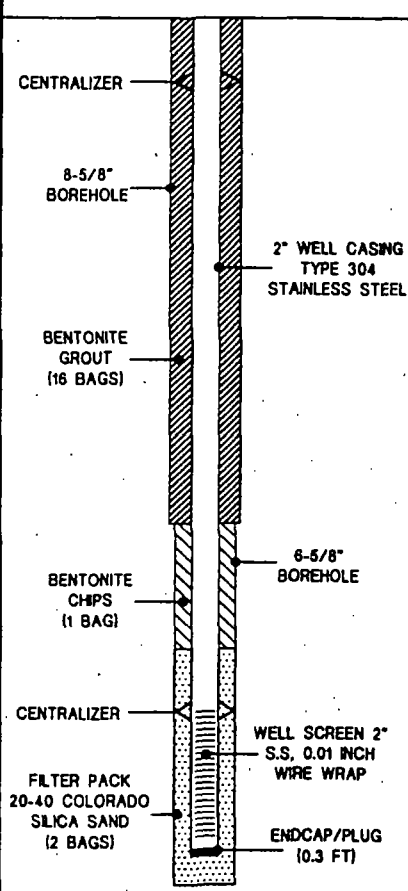
Monitoring Well: MWA-13d

Ground surface: Native vegetation

Geologist: Jeffrey S. Paul

DEPTH (Feet)	SAMPLE NUMBER	OVM (ppm)	% RECOVERY	BLOW COUNT	INTERVAL	GROUP SYMBOL	LITHOLOGIC DESCRIPTION
40–43						SP	Fine to medium SAND, black (N2.5/0), volcanic, with native organic material.
43–44	SO0124	106 / 32.8	100%	7 6 8 12			As above, no organic material.
44–45						SM/ML	Silty, fine SAND, grading to fine sandy, SILT, dark-brown (2.5Y 4/2) wet.
45–48						ML	SILT, dark, gray-brown (2.5Y 4/2) wet.
46–47	SO0125	15.1	100%	3 8 12 16			
48–49	SO0126	NM	100%	NA			
50–52	SO0127	0	80%	10 12 12 15		ML/SM	Fine, sandy SILT dark gray-brown (2.5 4/2) w/ rust red mottling, wet, grading to slightly silty, very fine SAND.
52–53	SO0128			15 50/4"			
53						RX	Basalt, black
54							Total depth 53.8'

WELL CONSTRUCTION DETAIL



Drilled By: Tacoma Pump & Drilling

Drill Method: Cable tool

Drill Date: 4 - 6 January 1999

Well Casing Elevation: 37.06'

Ground Surface Elevation: 34.750'

Hole Size: See construction detail

Datum: City of Portland Datum

Sheet: 3 of 3

Project No: 8601192.001.0623

Project: Acid Plant RI

Client: Elf Atochem

Location: Portland, OR

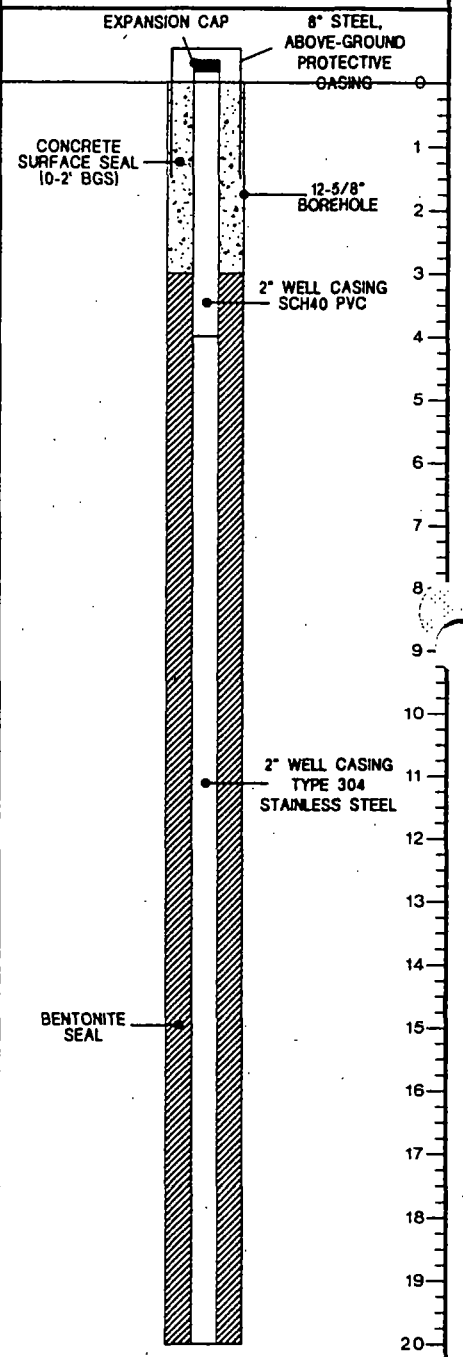
Monitoring Well: MWA-14i

Ground surface: Native vegetation

Geologist: Jeffrey S. Paul

DEPTH (Feet)	SAMPLE NUMBER	OVM (ppm)	% RECOVERY	BLOW COUNT	INTERVAL	GROUP SYMBOL	LITHOLOGIC DESCRIPTION
0–4							Cuttings indicate fine to medium SAND w/ trace silt
5–7	SO0095	0	50%	4 5 7 9	X	SW	Fine to coarse SAND, trace silt (~ 2-5%), very dark gray-brown (10YR 3/2), moist, no odor, (fill).
10–12	SO0096	0	100%	5 10 12 14	X		
15–17	SO0097	0	50%	7 15 50 for 4"	X		

WELL CONSTRUCTION DETAIL



Drilled By: Tacoma Pump & Drilling

Drill Method: Cable tool

Drill Date: 15-17 December 1998

Well Casing Elevation: 37.39'

Ground Surface Elevation: 35.01'

Borehole Diameter: See construction detail

Datum: City of Portland Datum - 1929

Sheet: 1 of 3

Project No: 8601192.001.0623

Project: Acid Plant RI

Client: Elf Atochem

Location: Portland, OR

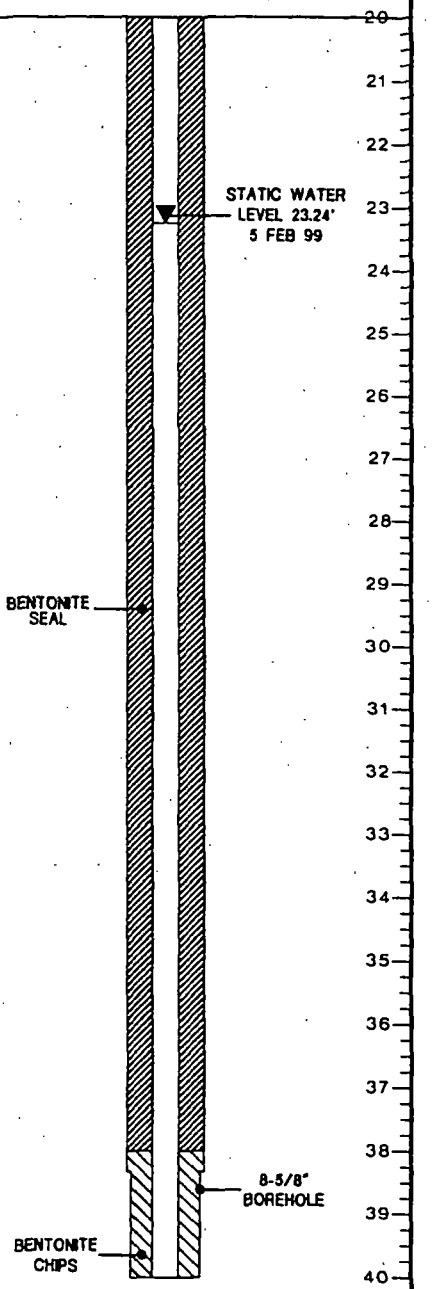
Monitoring Well: MWA-14i

Ground surface: Native vegetation

Geologist: Jeffrey S. Paul

DEPTH (Feet)	SAMPLE NUMBER	OVM (ppm)	% RECOVERY	BLOW COUNT	INTERVAL	GROUP SYMBOL	LITHOLOGIC DESCRIPTION
20–21	SO0098	0	100%	4 8 20 50/3"		SW	Fine to coarse SAND w/ trace silt, very dark gray-brown (10YR 3/2), moist, no odor, (fill).
22–23	SO0099	0	100%	3 5 7 9			
24–25	SO0100	0	80%	3 9 12 24			
26–27	SO0101	0	100%	3 5 8 15			
28–29	SO0102	0	100%	5 10 23 50			Sample showing laminar structure w/ trace wood fragments.
30–31	SO0103	0	100%	5 4 18 25			As above with trace root fragments.
32–33	SO0104	0	100%	12 15 28 40		SP	Fine to medium SAND, volcanic, black (2.5N/0), wet.
34–35	SO0105	0	50%	10 12 17 20			As above, w/ trace wood fragments.
36–37	SO0106	0	100%	18 22 24 25			As above, no wood fragments.
38–39	SO0107	0	100%	7 12 14 20		ML	SILT, very dark gray (5Y, 3/1).
							Fine to medium SAND, volcanic, black (2.5N /0) wet.

WELL CONSTRUCTION DETAIL



Drilled By: Tacoma Pump & Drilling

Drill Method: Cable tool

Drill Date: 15-17 December 1998

Well Casing Elevation: 37.39'

Ground Surface Elevation: 35.01'

Borehole Diameter: See construction detail

Datum: City of Portland Datum - 1929

Sheet: 2 of 3

Project No: 8601192.001.0623

Project: Acid Plant RI

Client: Elf Atochem

Location: Portland, OR

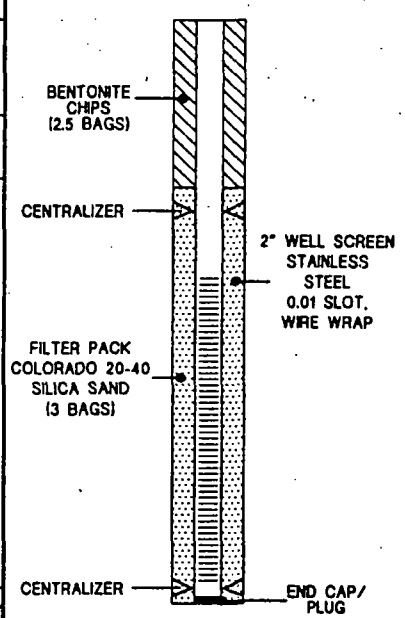
Monitoring Well: MWA-14i

Ground surface: Native vegetation

Geologist: Jeffrey S. Paul

DEPTH (Feet)	SAMPLE NUMBER	OVM (ppm)	% RECOVERY	BLOW COUNT	INTERVAL	GROUP SYMBOL	LITHOLOGIC DESCRIPTION
40–41	SO0108	0	100%	10 12 13 16		SP	Fine to medium SAND, volcanic, black (2.5N/0).
41–42						ML	SILT, dark green-gray (5G, 3/1), moist.
42–43	SO0109	0	100%			SM	Silty, fine, micaceous SAND, dark green-gray (5GY, 4/1) wet
44–45	SO0110	0	100%	3 3 3 5			
45–46						ML	SILT, dark gray-brown (2.5Y, 4/2) w/ rust red mottling, moist.
46–47	SO0111	0	100%	2 2 4 10			
47–48						SM	Very fine, silty SAND, dark gray-brown (2.5Y4/2) wet
48–49	SO0112	0	100%	3 2 50 for 3"			
49							Basalt, vesicular basalt fragments.
							Total depth @ 49.25' BGS

WELL CONSTRUCTION DETAIL



NOT TO SCALE

Drilled By: Tacoma Pump & Drilling

Drill Method: Cable tool

Drill Date: 15-17 December 1998

Well Casing Elevation: 37.39'

Ground Surface Elevation: 35.01'

Borehole Diameter: See construction detail

Datum: City of Portland Datum - 1929

Sheet: 3 of 3

Appendix B

Aquifer Test Data

-- AQUIFER TEST DATA ---
or Unconfined or Confined Aquifers at Steady State
Full or Partial Penetration

Project: 8601192.001 0625
Well No.: **MWA-1**

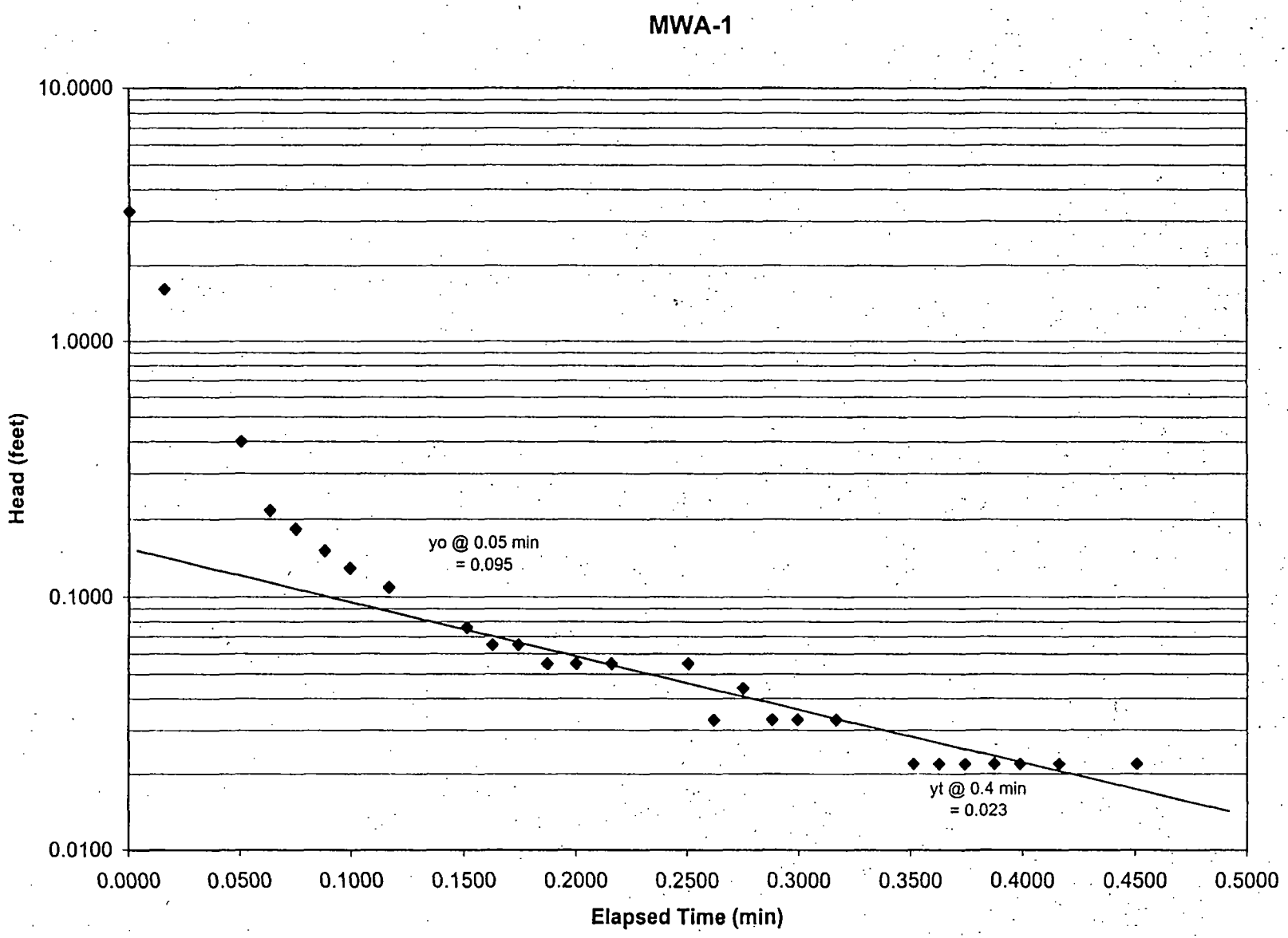
Initial DTW (bgs) @ time < 0:	17.03	(feet)
Depth to top of sandpack:	21.0	(feet)
Depth to top of screen:	23.0	(feet)
H = Initial head @ time < 0:	0.01	(feet)
H(0) = Maximum head (@ t ~ 0):	3.28	(feet)
D = Length of well screen:	10.0	(feet)
L = Length of saturated sandpack:	12.5	(feet)
rc = Radius of well casing:	1.0	(inches)
re = Radius of borehole:	3.0	(inches)
d = Length watertable to bottom of well:	16.4	(feet)
Length watertable to bottom of sandpack:	16.4	(feet)
b = Aquifer saturated thickness: (est.)	16.4	(feet)
Partial Penetration (Y/N):	Y	

Test Start Date >>>:	11-Feb-99
Test Start Time >>>:	16:27:10
Test Type >>>>>>	Bail #1
Initial head at T<0 >>	12.8100

Slug Length	10	(feet)
Slug Diameter	1.25	(inches)
Slug Volume Removed	0.534	(gallons)
Slug Height in Well	3.2800	(feet)

DATE (day value)	TIME (day)	Transducer Reading (ft)	Reading Date	Reading Time (hh:mm:ss)	Elapsed Time (min)	Head T > 0 (ft)	COMMENTS
36202.686	0.685527	1.28E+01	11-Feb-99	16:27:10	0.0000	3.2810	Slug Out
36202.686	0.685538	1.45E+01	11-Feb-99	16:27:10	0.0158	1.6140	
36202.686	0.685562	1.57E+01	11-Feb-99	16:27:13	0.0504	0.4010	
36202.686	0.685571	1.59E+01	11-Feb-99	16:27:13	0.0634	0.2170	
36202.686	0.685579	1.59E+01	11-Feb-99	16:27:14	0.0749	0.1840	
36202.686	0.685588	1.59E+01	11-Feb-99	16:27:15	0.0878	0.1520	
36202.686	0.685596	1.60E+01	11-Feb-99	16:27:15	0.0994	0.1300	
36202.686	0.685608	1.60E+01	11-Feb-99	16:27:17	0.1166	0.1090	
36202.686	0.685632	1.60E+01	11-Feb-99	16:27:19	0.1512	0.0760	
36202.686	0.68564	1.60E+01	11-Feb-99	16:27:19	0.1627	0.0650	
36202.686	0.685648	1.60E+01	11-Feb-99	16:27:20	0.1742	0.0650	
36202.686	0.685657	1.60E+01	11-Feb-99	16:27:21	0.1872	0.0550	
36202.686	0.685666	1.60E+01	11-Feb-99	16:27:22	0.2002	0.0550	
36202.686	0.685677	1.60E+01	11-Feb-99	16:27:22	0.2160	0.0550	
36202.686	0.685701	1.60E+01	11-Feb-99	16:27:25	0.2506	0.0550	
36202.686	0.685709	1.61E+01	11-Feb-99	16:27:25	0.2621	0.0330	
36202.686	0.685718	1.60E+01	11-Feb-99	16:27:26	0.2750	0.0440	
36202.686	0.685727	1.61E+01	11-Feb-99	16:27:27	0.2880	0.0330	
36202.686	0.685735	1.61E+01	11-Feb-99	16:27:28	0.2995	0.0330	
36202.686	0.685747	1.61E+01	11-Feb-99	16:27:29	0.3168	0.0330	
36202.686	0.685771	1.61E+01	11-Feb-99	16:27:31	0.3514	0.0220	
36202.686	0.685779	1.61E+01	11-Feb-99	16:27:31	0.3629	0.0220	
36202.686	0.685787	1.61E+01	11-Feb-99	16:27:32	0.3744	0.0220	
36202.686	0.685796	1.61E+01	11-Feb-99	16:27:33	0.3874	0.0220	
36202.686	0.685804	1.61E+01	11-Feb-99	16:27:33	0.3989	0.0220	
36202.686	0.685816	1.61E+01	11-Feb-99	16:27:35	0.4162	0.0220	
36202.686	0.68584	1.61E+01	11-Feb-99	16:27:37	0.4507	0.0220	
36202.686	0.685848	1.61E+01	11-Feb-99	16:27:37	0.4622	0.0110	

36202.686	0.685856	1.61E+01	11-Feb-99	16:27:38	0.4738	0.0110	
36202.686	0.685866	1.61E+01	11-Feb-99	16:27:39	0.4882	0.0220	
36202.686	0.685874	1.61E+01	11-Feb-99	16:27:40	0.4997	0.0110	Recovered


MWA-1
10.0000
1.0000
0.1000
0.0100
Head (feet)
yo @ 0.05 min
= 0.095
yt @ 0.4 min
= 0.023
0.0000
0.0500
0.1000
0.1500
0.2000
0.2500
0.3000
0.3500
0.4000
0.4500
0.5000
Elapsed Time (min)

AQUIFER TEST DATA ---
or Unconfined or Confined Aquifers at Steady State
Full or Partial Penetration

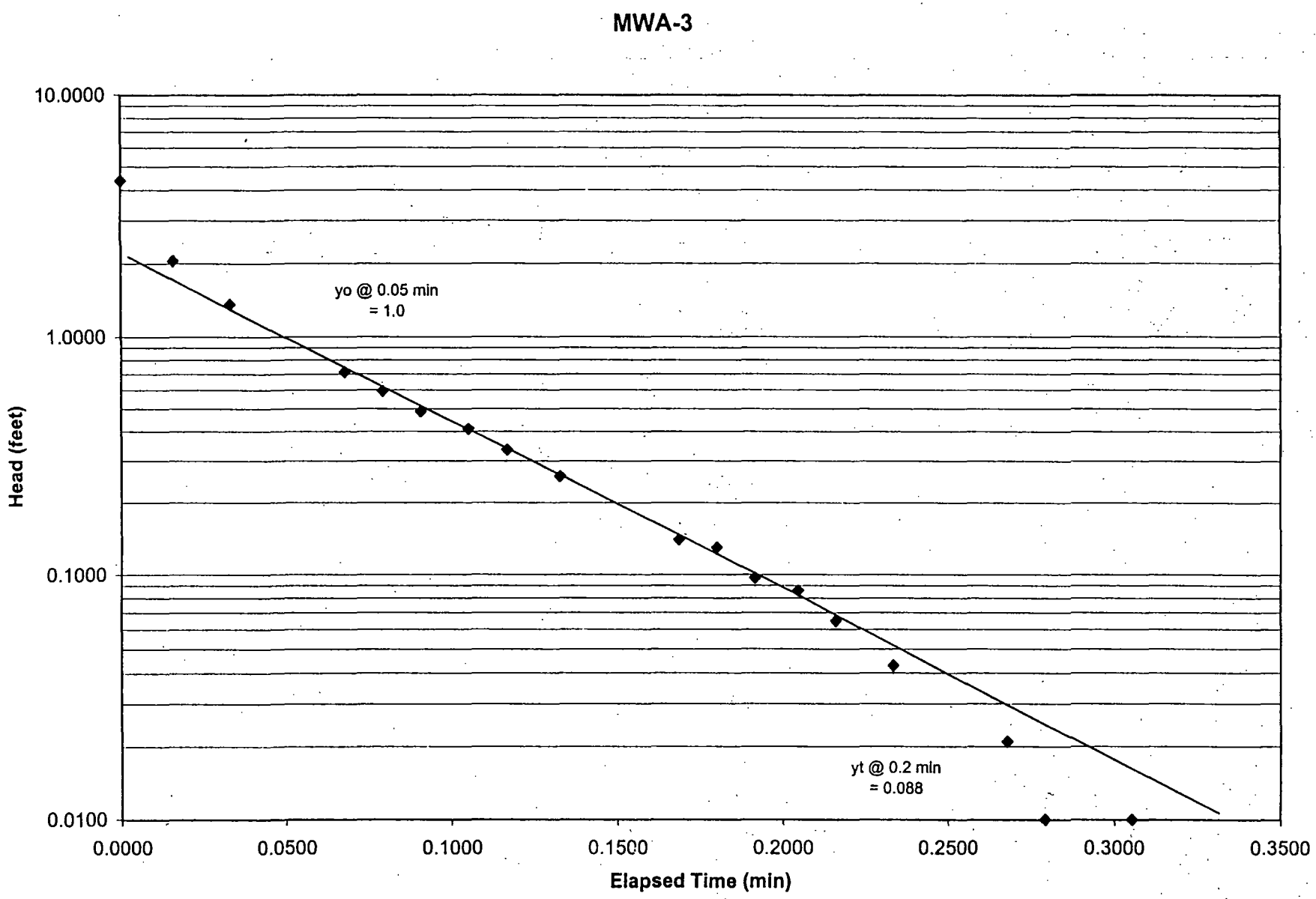
Project: 8601192.001 0625
Well No.: **MWA-3**

Initial DTW (bgs) @ time < 0:	22.55	(feet)
Depth to top of sandpack:	18.2	(feet)
Depth to top of screen:	20.7	(feet)
H = Initial head @ time < 0:	0.01	(feet)
H(0) = Maximum head (@ t ~ 0):	4.37	(feet)
D = Length of well screen:	10.0	(feet)
L = Length of saturated sandpack:	12.3	(feet)
rc = Radius of well casing:	1.0	(inches)
re = Radius of borehole:	3.0	(inches)
d = Length watertable to bottom of well:	12.3	(feet)
Length watertable to bottom of sandpack:	12.3	(feet)
b = Aquifer saturated thickness: (est.)	12.3	(feet)
Partial Penetration (Y/N):	Y	

Test Start Date >>>:	11-Feb-99
Test Start Time >>>:	13:28:20
Test Type >>>>>>	Bail #1
Initial head at T<0 >>	7.6338

Slug Length	10	(feet)
Slug Diameter	1.25	(inches)
Slug Volume Removed	0.712	(gallons)
Slug Height in Well	4.3700	(feet)

DATE (day value)	TIME (day)	Transducer Reading (ft)	Reading Date	Reading Time (hh:mm:ss)	Elapsed Time (min)	Head T > 0 (ft)	COMMENTS
36202.561	0.561337	7.63E+00	11-Feb-99	13:28:20	0.0000	4.3742	Slug Out
36202.561	0.561348	9.95E+00	11-Feb-99	13:28:20	0.0158	2.0570	
36202.561	0.56136	1.06E+01	11-Feb-99	13:28:22	0.0331	1.3640	
36202.561	0.561384	1.13E+01	11-Feb-99	13:28:24	0.0677	0.7140	
36202.561	0.561392	1.14E+01	11-Feb-99	13:28:24	0.0792	0.5950	
36202.561	0.5614	1.15E+01	11-Feb-99	13:28:25	0.0907	0.4870	
36202.561	0.56141	1.16E+01	11-Feb-99	13:28:26	0.1051	0.4110	
36202.561	0.561418	1.17E+01	11-Feb-99	13:28:27	0.1166	0.3350	
36202.561	0.561429	1.17E+01	11-Feb-99	13:28:27	0.1325	0.2590	
36202.561	0.561454	1.19E+01	11-Feb-99	13:28:30	0.1685	0.1400	
36202.561	0.561462	1.19E+01	11-Feb-99	13:28:30	0.1800	0.1300	
36202.561	0.56147	1.19E+01	11-Feb-99	13:28:31	0.1915	0.0970	
36202.561	0.561479	1.19E+01	11-Feb-99	13:28:32	0.2045	0.0860	
36202.561	0.561487	1.19E+01	11-Feb-99	13:28:32	0.2160	0.0650	
36202.561	0.561499	1.20E+01	11-Feb-99	13:28:34	0.2333	0.0430	
36202.562	0.561523	1.20E+01	11-Feb-99	13:28:36	0.2678	0.0210	
36202.562	0.561531	1.20E+01	11-Feb-99	13:28:36	0.2794	0.0100	
36202.562	0.561539	1.20E+01	11-Feb-99	13:28:37	0.2909	0.0000	
36202.562	0.561549	1.20E+01	11-Feb-99	13:28:38	0.3053	0.0100	recovered


MWA-3
10.0000
1.0000
0.1000
0.0100
Head (feet)
yo @ 0.05 min
= 1.0
yt @ 0.2 min
= 0.088
0.0000
0.0500
0.1000
0.1500
0.2000
0.2500
0.3000
0.3500
Elapsed Time (min)

- AQUIFER TEST DATA ---
For Unconfined or Confined Aquifers at Steady State
Full or Partial Penetration

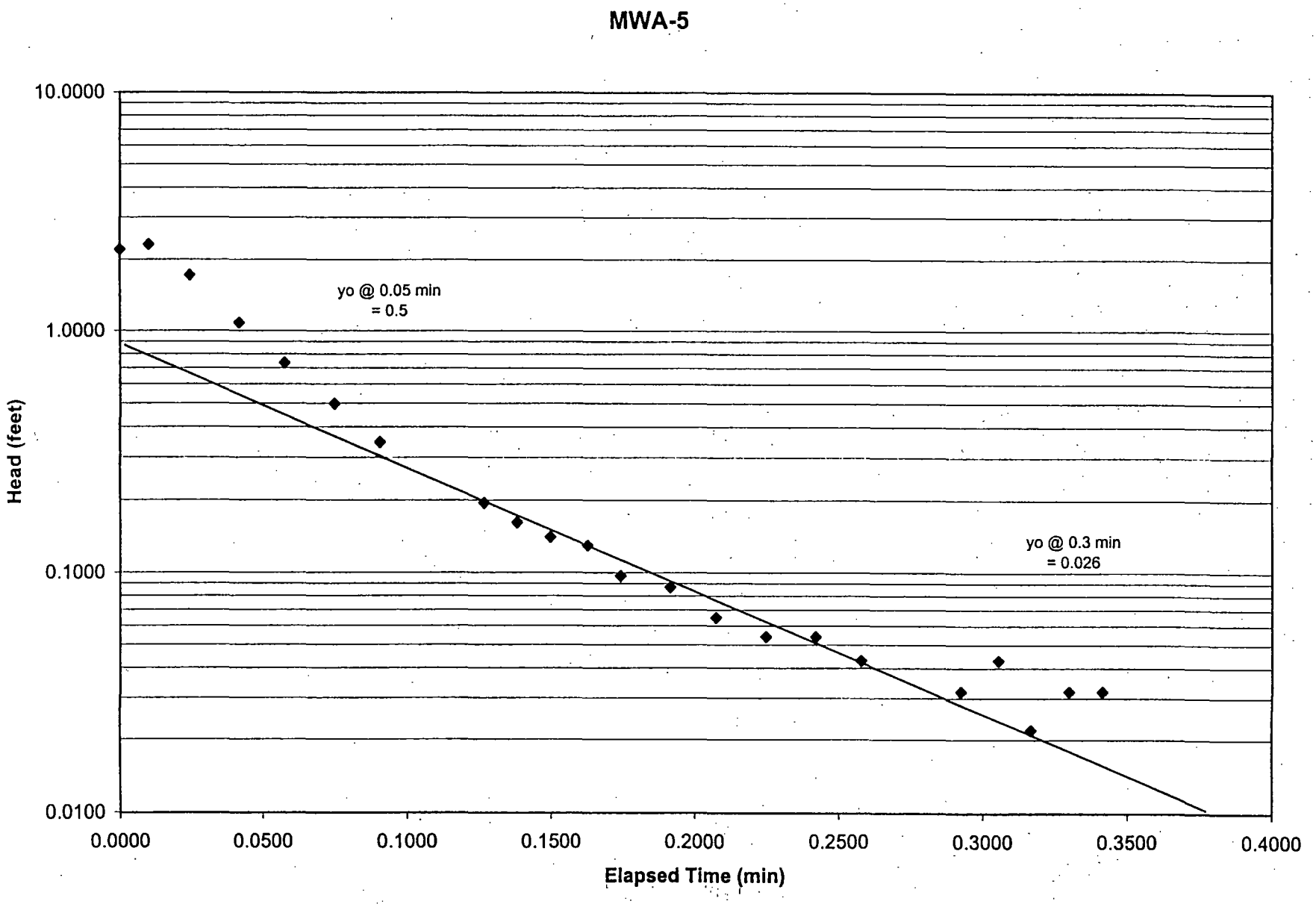
Project: 8601192.001 0625
Well No.: **MWA-5**

Initial DTW (bgs) @ time < 0:	21.46	(feet)
Depth to top of sandpack:	33.5	(feet)
Depth to top of screen:	35.7	(feet)
H = Initial head @ time < 0:	0.03	(feet)
H(0) = Maximum head (@ t ~ 0):	2.21	(feet)
D = Length of well screen:	2.5	(feet)
L = Length of saturated sandpack:	5.0	(feet)
rc = Radius of well casing:	1.0	(inches)
re = Radius of borehole:	3.0	(inches)
d = Length watertable to bottom of well:	19.4	(feet)
Length watertable to bottom of sandpack:	19.4	(feet)
b = Aquifer saturated thickness: (est.)	19.4	(feet)
Partial Penetration (Y/N):	Y	

Test Start Date >>>:	10-Feb-99
Test Start Time >>>:	12:09:31
Test Type >>>>>>	Bail #1
Initial head at T<0 >>	15.9930

Slug Length	10	(feet)
Slug Diameter	1.25	(inches)
Slug Volume Removed	0.360	(gallons)
Slug Height in Well	2.2100	(feet)

DATE (day value)	TIME (day)	Transducer Reading (ft)	Reading Date	Reading Time (hh:mm:ss)	Elapsed Time (min)	Head T > 0 (ft)	COMMENTS
6201.507	0.506609	1.60E+01	10-Feb-99	12:09:31	0.0000	2.2090	Slug Out
36201.507	0.506616	1.59E+01	10-Feb-99	12:09:32	0.0101	2.3170	
36201.507	0.506626	1.65E+01	10-Feb-99	12:09:32	0.0245	1.7220	
36201.507	0.506638	1.71E+01	10-Feb-99	12:09:34	0.0418	1.0830	
36201.507	0.506649	1.75E+01	10-Feb-99	12:09:34	0.0576	0.7360	
36201.507	0.506661	1.77E+01	10-Feb-99	12:09:36	0.0749	0.4980	
36201.507	0.506672	1.79E+01	10-Feb-99	12:09:36	0.0907	0.3460	
36201.507	0.506697	1.80E+01	10-Feb-99	12:09:39	0.1267	0.1950	
36201.507	0.506705	1.80E+01	10-Feb-99	12:09:39	0.1382	0.1620	
36201.507	0.506713	1.81E+01	10-Feb-99	12:09:40	0.1498	0.1410	
36201.507	0.506722	1.81E+01	10-Feb-99	12:09:41	0.1627	0.1300	
36201.507	0.50673	1.81E+01	10-Feb-99	12:09:41	0.1742	0.0970	
36201.507	0.506742	1.81E+01	10-Feb-99	12:09:43	0.1915	0.0870	
36201.507	0.506753	1.81E+01	10-Feb-99	12:09:43	0.2074	0.0650	
36201.507	0.506765	1.81E+01	10-Feb-99	12:09:44	0.2246	0.0540	
36201.507	0.506777	1.81E+01	10-Feb-99	12:09:46	0.2419	0.0540	
36201.507	0.506788	1.82E+01	10-Feb-99	12:09:46	0.2578	0.0430	
36201.507	0.506812	1.82E+01	10-Feb-99	12:09:49	0.2923	0.0320	
36201.507	0.506821	1.82E+01	10-Feb-99	12:09:49	0.3053	0.0430	
36201.507	0.506829	1.82E+01	10-Feb-99	12:09:50	0.3168	0.0220	
36201.507	0.506838	1.82E+01	10-Feb-99	12:09:51	0.3298	0.0320	
36201.507	0.506846	1.82E+01	10-Feb-99	12:09:51	0.3413	0.0320	recovered


MWA-5
10.0000
1.0000
0.1000
0.0100
Head (feet)
yo @ 0.05 min
= 0.5
yo @ 0.3 min
= 0.026
0.0000
0.0500
0.1000
0.1500
0.2000
0.2500
0.3000
0.3500
0.4000
Elapsed Time (min)

- AQUIFER TEST DATA ---
r Unconfined or Confined Aquifers at Steady State
Full or Partial Penetration

Project: 8601192.001 0625
Well No.: **MWA-6**

Initial DTW (bgs) @ time < 0:	19.92	(feet)
Depth to top of sandpack:	28.6	(feet)
Depth to top of screen:	30.8	(feet)
H = Initial head @ time < 0:	0.6610	(feet)
H(0) = Maximum head (@ t ~ 0):	1.3430	(feet)
D = Length of well screen:	2.5	(feet)
L = Length of saturated sandpack:	7.5	(feet)
rc = Radius of well casing:	1.0	(inches)
re = Radius of borehole:	3.0	(inches)
d = Length watertable to bottom of well:	13.5	(feet)
Length watertable to bottom of sandpack:	13.5	(feet)
b = Aquifer saturated thickness: (est.)	13.5	(feet)
Partial Penetration (Y/N):	Y	

Test Start Date >>>:	12-Feb-99
Test Start Time >>>:	8:48:03
Test Type >>>>>>	Bail #1
Initial head at T<0 >>	0.0000

Slug Length	10	(feet)
Slug Diameter	1.25	(inches)
Slug Volume Removed	0.219	(gallons)
Slug Height in Well	1.343	(feet)

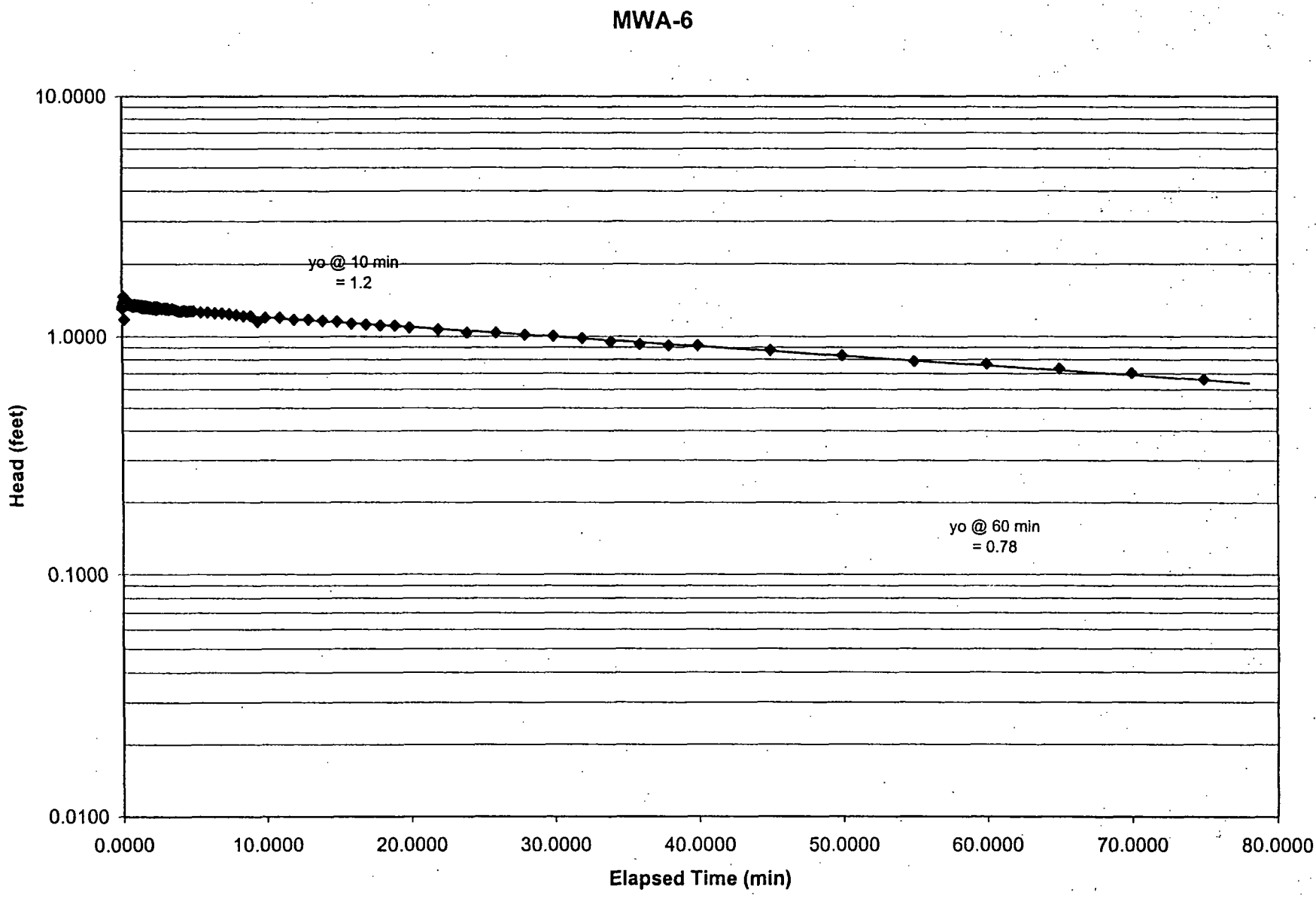
DATE (day value)	TIME (day)	Transducer Reading (ft)	Reading Date	Reading Time (hh:mm:ss)	Elapsed Time (min)	Head T > 0 (ft)	COMMENTS
36203.367	0.366696	1.38E+01	12-Feb-99	8:48:03	0.0000	1.3430	Slug Out
36203.367	0.366707	1.38E+01	12-Feb-99	8:48:03	0.0158	1.3100	
36203.367	0.366731	1.39E+01	12-Feb-99	8:48:06	0.0504	1.3860	
36203.367	0.36674	1.38E+01	12-Feb-99	8:48:06	0.0634	1.3210	
36203.367	0.366748	1.39E+01	12-Feb-99	8:48:07	0.0749	1.4730	
36203.367	0.366757	1.38E+01	12-Feb-99	8:48:08	0.0878	1.3540	
36203.367	0.366765	1.38E+01	12-Feb-99	8:48:08	0.0994	1.3750	
36203.367	0.366777	1.39E+01	12-Feb-99	8:48:10	0.1166	1.3860	
36203.367	0.366801	1.37E+01	12-Feb-99	8:48:12	0.1512	1.1800	
36203.367	0.366809	1.39E+01	12-Feb-99	8:48:12	0.1627	1.4510	
36203.367	0.366817	1.39E+01	12-Feb-99	8:48:13	0.1742	1.4290	
36203.367	0.366826	1.38E+01	12-Feb-99	8:48:14	0.1872	1.3640	
36203.367	0.366834	1.38E+01	12-Feb-99	8:48:14	0.1987	1.3750	
36203.367	0.366846	1.39E+01	12-Feb-99	8:48:15	0.2160	1.4290	
36203.367	0.366858	1.38E+01	12-Feb-99	8:48:17	0.2333	1.3430	
36203.367	0.366869	1.38E+01	12-Feb-99	8:48:17	0.2491	1.3750	
36203.367	0.366881	1.39E+01	12-Feb-99	8:48:19	0.2664	1.3970	
36203.367	0.366892	1.38E+01	12-Feb-99	8:48:19	0.2822	1.3750	
36203.367	0.366917	1.38E+01	12-Feb-99	8:48:22	0.3182	1.3640	
36203.367	0.366925	1.39E+01	12-Feb-99	8:48:22	0.3298	1.3860	
36203.367	0.366933	1.38E+01	12-Feb-99	8:48:23	0.3413	1.3750	
36203.367	0.366942	1.38E+01	12-Feb-99	8:48:24	0.3542	1.3640	
36203.367	0.36695	1.38E+01	12-Feb-99	8:48:24	0.3658	1.3750	
36203.367	0.366962	1.38E+01	12-Feb-99	8:48:26	0.3830	1.3640	
36203.367	0.366973	1.39E+01	12-Feb-99	8:48:26	0.3989	1.3970	
36203.367	0.366985	1.38E+01	12-Feb-99	8:48:28	0.4162	1.3640	
36203.367	0.366997	1.38E+01	12-Feb-99	8:48:29	0.4334	1.3750	
36203.367	0.367008	1.38E+01	12-Feb-99	8:48:29	0.4493	1.3640	

36203.367	0.367032	1.38E+01	12-Feb-99	8:48:32	0.4838	1.3640
36203.367	0.367041	1.38E+01	12-Feb-99	8:48:32	0.4968	1.3640
36203.367	0.367049	1.38E+01	12-Feb-99	8:48:33	0.5083	1.3750
36203.367	0.367058	1.38E+01	12-Feb-99	8:48:34	0.5213	1.3640
36203.367	0.367066	1.38E+01	12-Feb-99	8:48:35	0.5328	1.3540
36203.367	0.367078	1.38E+01	12-Feb-99	8:48:36	0.5501	1.3750
36203.367	0.367089	1.38E+01	12-Feb-99	8:48:36	0.5659	1.3640
36203.367	0.367101	1.38E+01	12-Feb-99	8:48:38	0.5832	1.3640
36203.367	0.367112	1.38E+01	12-Feb-99	8:48:38	0.5990	1.3540
36203.367	0.367124	1.38E+01	12-Feb-99	8:48:40	0.6163	1.3640
36203.367	0.367148	1.38E+01	12-Feb-99	8:48:42	0.6509	1.3540
36203.367	0.367156	1.38E+01	12-Feb-99	8:48:42	0.6624	1.3430
36203.367	0.367164	1.38E+01	12-Feb-99	8:48:43	0.6739	1.3540
36203.367	0.367174	1.38E+01	12-Feb-99	8:48:44	0.6883	1.3640
36203.367	0.367182	1.38E+01	12-Feb-99	8:48:45	0.6998	1.3540
36203.367	0.367193	1.38E+01	12-Feb-99	8:48:45	0.7157	1.3540
36203.367	0.367205	1.38E+01	12-Feb-99	8:48:47	0.7330	1.3430
36203.367	0.367216	1.38E+01	12-Feb-99	8:48:47	0.7488	1.3430
36203.367	0.367228	1.38E+01	12-Feb-99	8:48:48	0.7661	1.3540
36203.367	0.36724	1.38E+01	12-Feb-99	8:48:50	0.7834	1.3540
36203.367	0.367264	1.38E+01	12-Feb-99	8:48:52	0.8179	1.3430
36203.367	0.367272	1.38E+01	12-Feb-99	8:48:52	0.8294	1.3540
36203.367	0.36728	1.38E+01	12-Feb-99	8:48:53	0.8410	1.3540
36203.367	0.367289	1.38E+01	12-Feb-99	8:48:54	0.8539	1.3430
36203.367	0.367297	1.38E+01	12-Feb-99	8:48:54	0.8654	1.3640
36203.367	0.367309	1.38E+01	12-Feb-99	8:48:55	0.8827	1.3540
36203.367	0.367321	1.38E+01	12-Feb-99	8:48:57	0.9000	1.3540
36203.367	0.367332	1.38E+01	12-Feb-99	8:48:57	0.9158	1.3430
36203.367	0.367344	1.38E+01	12-Feb-99	8:48:59	0.9331	1.3540
36203.367	0.367355	1.38E+01	12-Feb-99	8:48:59	0.9490	1.3540
36203.367	0.367367	1.38E+01	12-Feb-99	8:49:01	0.9662	1.3540
36203.367	0.367378	1.38E+01	12-Feb-99	8:49:01	0.9821	1.3540
36203.367	0.36739	1.38E+01	12-Feb-99	8:49:02	0.9994	1.3540
36203.367	0.367402	1.38E+01	12-Feb-99	8:49:04	1.0166	1.3430
36203.367	0.367413	1.38E+01	12-Feb-99	8:49:04	1.0325	1.3430
36203.367	0.367425	1.38E+01	12-Feb-99	8:49:06	1.0498	1.3430
36203.367	0.367436	1.38E+01	12-Feb-99	8:49:06	1.0656	1.3540
36203.367	0.367448	1.38E+01	12-Feb-99	8:49:08	1.0829	1.3430
36203.367	0.367472	1.38E+01	12-Feb-99	8:49:10	1.1174	1.3430
36203.367	0.36748	1.38E+01	12-Feb-99	8:49:10	1.1290	1.3430
36203.367	0.367488	1.38E+01	12-Feb-99	8:49:11	1.1405	1.3430
36203.367	0.367498	1.38E+01	12-Feb-99	8:49:12	1.1549	1.3430
36203.368	0.367506	1.38E+01	12-Feb-99	8:49:13	1.1664	1.3540
36203.368	0.367517	1.38E+01	12-Feb-99	8:49:13	1.1822	1.3430
36203.368	0.367529	1.38E+01	12-Feb-99	8:49:15	1.1995	1.3430
36203.368	0.367541	1.38E+01	12-Feb-99	8:49:16	1.2168	1.3320
36203.368	0.367552	1.38E+01	12-Feb-99	8:49:16	1.2326	1.3430
36203.368	0.367564	1.38E+01	12-Feb-99	8:49:18	1.2499	1.3430
36203.368	0.367588	1.38E+01	12-Feb-99	8:49:20	1.2845	1.3430
36203.368	0.367596	1.38E+01	12-Feb-99	8:49:20	1.2960	1.3320
36203.368	0.367604	1.38E+01	12-Feb-99	8:49:21	1.3075	1.3320
36203.368	0.367613	1.38E+01	12-Feb-99	8:49:22	1.3205	1.3540
36203.368	0.367622	1.38E+01	12-Feb-99	8:49:23	1.3334	1.3320
36203.368	0.367633	1.38E+01	12-Feb-99	8:49:23	1.3493	1.3430
36203.368	0.367645	1.38E+01	12-Feb-99	8:49:25	1.3666	1.3210

36203.368	0.367656	1.38E+01	12-Feb-99	8:49:25	1.3824	1.3320
36203.368	0.367668	1.38E+01	12-Feb-99	8:49:27	1.3997	1.3320
36203.368	0.367679	1.38E+01	12-Feb-99	8:49:27	1.4155	1.3320
36203.368	0.367704	1.38E+01	12-Feb-99	8:49:30	1.4515	1.3320
36203.368	0.367712	1.38E+01	12-Feb-99	8:49:30	1.4630	1.3320
36203.368	0.36772	1.38E+01	12-Feb-99	8:49:31	1.4746	1.3320
36203.368	0.367729	1.38E+01	12-Feb-99	8:49:32	1.4875	1.3320
36203.368	0.367737	1.38E+01	12-Feb-99	8:49:32	1.4990	1.3320
36203.368	0.367749	1.38E+01	12-Feb-99	8:49:34	1.5163	1.3210
36203.368	0.36776	1.38E+01	12-Feb-99	8:49:34	1.5322	1.3430
36203.368	0.367772	1.38E+01	12-Feb-99	8:49:36	1.5494	1.3320
36203.368	0.367784	1.38E+01	12-Feb-99	8:49:37	1.5667	1.3320
36203.368	0.367795	1.38E+01	12-Feb-99	8:49:37	1.5826	1.3320
36203.368	0.367807	1.38E+01	12-Feb-99	8:49:39	1.5998	1.3320
36203.368	0.367818	1.38E+01	12-Feb-99	8:49:39	1.6157	1.3320
36203.368	0.36783	1.38E+01	12-Feb-99	8:49:41	1.6330	1.3320
36203.368	0.367841	1.38E+01	12-Feb-99	8:49:41	1.6488	1.3430
36203.368	0.367866	1.38E+01	12-Feb-99	8:49:44	1.6848	1.3210
36203.368	0.367874	1.38E+01	12-Feb-99	8:49:44	1.6963	1.3320
36203.368	0.367882	1.38E+01	12-Feb-99	8:49:45	1.7078	1.3210
36203.368	0.367891	1.38E+01	12-Feb-99	8:49:46	1.7208	1.3210
36203.368	0.367899	1.38E+01	12-Feb-99	8:49:46	1.7323	1.3320
36203.368	0.367911	1.38E+01	12-Feb-99	8:49:48	1.7496	1.3430
36203.368	0.367922	1.38E+01	12-Feb-99	8:49:48	1.7654	1.3320
36203.368	0.367934	1.38E+01	12-Feb-99	8:49:49	1.7827	1.3320
36203.368	0.367946	1.38E+01	12-Feb-99	8:49:51	1.8000	1.3210
36203.368	0.367957	1.38E+01	12-Feb-99	8:49:51	1.8158	1.3210
36203.368	0.367969	1.38E+01	12-Feb-99	8:49:53	1.8331	1.3320
36203.368	0.36798	1.38E+01	12-Feb-99	8:49:53	1.8490	1.3320
36203.368	0.367992	1.38E+01	12-Feb-99	8:49:55	1.8662	1.3320
36203.368	0.368003	1.38E+01	12-Feb-99	8:49:55	1.8821	1.3320
36203.368	0.368028	1.38E+01	12-Feb-99	8:49:58	1.9181	1.3320
36203.368	0.368036	1.38E+01	12-Feb-99	8:49:58	1.9296	1.3100
36203.368	0.368044	1.38E+01	12-Feb-99	8:49:59	1.9411	1.3210
36203.368	0.368053	1.38E+01	12-Feb-99	8:50:00	1.9541	1.3210
36203.368	0.368061	1.38E+01	12-Feb-99	8:50:00	1.9656	1.3210
36203.368	0.368073	1.38E+01	12-Feb-99	8:50:02	1.9829	1.3210
36203.368	0.368097	1.38E+01	12-Feb-99	8:50:04	2.0174	1.3210
36203.368	0.368105	1.38E+01	12-Feb-99	8:50:04	2.0290	1.3210
36203.368	0.368113	1.38E+01	12-Feb-99	8:50:05	2.0405	1.3210
36203.368	0.368123	1.38E+01	12-Feb-99	8:50:06	2.0549	1.3210
36203.368	0.368131	1.38E+01	12-Feb-99	8:50:07	2.0664	1.3210
36203.368	0.368142	1.38E+01	12-Feb-99	8:50:07	2.0822	1.3210
36203.368	0.368154	1.38E+01	12-Feb-99	8:50:09	2.0995	1.3100
36203.368	0.368166	1.38E+01	12-Feb-99	8:50:10	2.1168	1.3210
36203.368	0.368177	1.38E+01	12-Feb-99	8:50:10	2.1326	1.3210
36203.368	0.368189	1.38E+01	12-Feb-99	8:50:12	2.1499	1.3100
36203.368	0.368213	1.38E+01	12-Feb-99	8:50:14	2.1845	1.3320
36203.368	0.368221	1.38E+01	12-Feb-99	8:50:14	2.1960	1.3210
36203.368	0.368229	1.38E+01	12-Feb-99	8:50:15	2.2075	1.3100
36203.368	0.368238	1.38E+01	12-Feb-99	8:50:16	2.2205	1.3100
36203.368	0.368247	1.38E+01	12-Feb-99	8:50:17	2.2334	1.3320
36203.368	0.368258	1.38E+01	12-Feb-99	8:50:17	2.2493	1.3100
36203.368	0.368282	1.38E+01	12-Feb-99	8:50:20	2.2838	1.3100
36203.368	0.368291	1.38E+01	12-Feb-99	8:50:20	2.2968	1.3100

36203.368	0.368299	1.38E+01	12-Feb-99	8:50:21	2.3083	1.3210
36203.368	0.368308	1.38E+01	12-Feb-99	8:50:22	2.3213	1.3100
36203.368	0.368316	1.38E+01	12-Feb-99	8:50:23	2.3328	1.2990
36203.368	0.368328	1.38E+01	12-Feb-99	8:50:24	2.3501	1.3100
36203.368	0.368339	1.38E+01	12-Feb-99	8:50:24	2.3659	1.3210
36203.368	0.368351	1.38E+01	12-Feb-99	8:50:26	2.3832	1.2990
36203.368	0.368362	1.38E+01	12-Feb-99	8:50:26	2.3990	1.3320
36203.368	0.368374	1.38E+01	12-Feb-99	8:50:28	2.4163	1.3320
36203.368	0.368399	1.38E+01	12-Feb-99	8:50:30	2.4523	1.3320
36203.368	0.368444	1.38E+01	12-Feb-99	8:50:34	2.5171	1.3100
36203.369	0.368502	1.38E+01	12-Feb-99	8:50:39	2.6006	1.3210
36203.369	0.36856	1.38E+01	12-Feb-99	8:50:44	2.6842	1.3100
36203.369	0.368618	1.38E+01	12-Feb-99	8:50:49	2.7677	1.3100
36203.369	0.368676	1.38E+01	12-Feb-99	8:50:54	2.8512	1.3100
36203.369	0.368734	1.38E+01	12-Feb-99	8:50:59	2.9347	1.3210
36203.369	0.368792	1.38E+01	12-Feb-99	8:51:04	3.0182	1.2990
36203.369	0.36885	1.38E+01	12-Feb-99	8:51:09	3.1018	1.3210
36203.369	0.368907	1.38E+01	12-Feb-99	8:51:14	3.1838	1.2990
36203.369	0.368966	1.38E+01	12-Feb-99	8:51:19	3.2688	1.2990
36203.369	0.369081	1.38E+01	12-Feb-99	8:51:29	3.4344	1.3100
36203.369	0.369197	1.38E+01	12-Feb-99	8:51:39	3.6014	1.2990
36203.369	0.369312	1.38E+01	12-Feb-99	8:51:49	3.7670	1.2890
36203.369	0.369428	1.38E+01	12-Feb-99	8:51:59	3.9341	1.2780
36203.37	0.369544	1.38E+01	12-Feb-99	8:52:09	4.1011	1.2780
36203.37	0.36966	1.38E+01	12-Feb-99	8:52:19	4.2682	1.2890
36203.37	0.369775	1.38E+01	12-Feb-99	8:52:29	4.4338	1.2780
36203.37	0.369891	1.38E+01	12-Feb-99	8:52:39	4.6008	1.2780
36203.37	0.370007	1.38E+01	12-Feb-99	8:52:49	4.7678	1.2780
36203.37	0.370124	1.38E+01	12-Feb-99	8:52:59	4.9363	1.2780
36203.37	0.37047	1.37E+01	12-Feb-99	8:53:29	5.4346	1.2670
36203.371	0.370817	1.37E+01	12-Feb-99	8:53:59	5.9342	1.2670
36203.371	0.371164	1.37E+01	12-Feb-99	8:54:29	6.4339	1.2560
36203.372	0.371512	1.37E+01	12-Feb-99	8:54:59	6.9350	1.2560
36203.372	0.371859	1.37E+01	12-Feb-99	8:55:29	7.4347	1.2450
36203.372	0.372206	1.37E+01	12-Feb-99	8:55:59	7.9344	1.2340
36203.373	0.372553	1.37E+01	12-Feb-99	8:56:29	8.4341	1.2240
36203.373	0.3729	1.37E+01	12-Feb-99	8:56:59	8.9338	1.2240
36203.373	0.373248	1.36E+01	12-Feb-99	8:57:29	9.4349	1.1590
36203.374	0.373596	1.37E+01	12-Feb-99	8:57:59	9.9360	1.2020
36203.374	0.374289	1.37E+01	12-Feb-99	8:58:59	10.9339	1.2020
36203.375	0.374984	1.37E+01	12-Feb-99	8:59:59	11.9347	1.1800
36203.376	0.375678	1.37E+01	12-Feb-99	9:00:59	12.9341	1.1800
36203.376	0.376373	1.36E+01	12-Feb-99	9:01:59	13.9349	1.1690
36203.377	0.377067	1.36E+01	12-Feb-99	9:02:59	14.9342	1.1590
36203.378	0.377762	1.36E+01	12-Feb-99	9:03:59	15.9350	1.1370
36203.378	0.378456	1.36E+01	12-Feb-99	9:04:59	16.9344	1.1260
36203.379	0.37915	1.36E+01	12-Feb-99	9:05:59	17.9338	1.1150
36203.38	0.379845	1.36E+01	12-Feb-99	9:06:59	18.9346	1.1150
36203.381	0.380541	1.36E+01	12-Feb-99	9:07:59	19.9368	1.0940
36203.382	0.381928	1.35E+01	12-Feb-99	9:09:59	21.9341	1.0720
36203.383	0.383317	1.35E+01	12-Feb-99	9:11:59	23.9342	1.0400
36203.385	0.384706	1.35E+01	12-Feb-99	9:13:59	25.9344	1.0400
36203.386	0.386095	1.35E+01	12-Feb-99	9:15:59	27.9346	1.0180
36203.387	0.387484	1.35E+01	12-Feb-99	9:17:59	29.9347	1.0070
36203.389	0.388873	1.35E+01	12-Feb-99	9:19:59	31.9349	0.9850

36203.39	0.390262	1.34E+01	12-Feb-99	9:21:59	33.9350	0.9530	
36203.392	0.39165	1.34E+01	12-Feb-99	9:23:59	35.9338	0.9310	
36203.393	0.393039	1.34E+01	12-Feb-99	9:25:59	37.9339	0.9200	
36203.394	0.394429	1.34E+01	12-Feb-99	9:27:59	39.9355	0.9200	
36203.398	0.3979	1.34E+01	12-Feb-99	9:32:59	44.9338	0.8770	
36203.401	0.401373	1.33E+01	12-Feb-99	9:37:59	49.9349	0.8340	
36203.405	0.404845	1.33E+01	12-Feb-99	9:42:59	54.9346	0.7900	
36203.408	0.408317	1.32E+01	12-Feb-99	9:47:59	59.9342	0.7690	
36203.412	0.411789	1.32E+01	12-Feb-99	9:52:59	64.9339	0.7360	
36203.415	0.415262	1.32E+01	12-Feb-99	9:57:59	69.9350	0.7040	
36203.419	0.418734	1.31E+01	12-Feb-99	10:02:59	74.9347	0.6610	recovered


MWA-6
10.0000
1.0000
0.1000
0.0100
Head (feet)
yo @ 10 min
= 1.2
yo @ 60 min
= 0.78
0.0000
10.0000
20.0000
30.0000
40.0000
50.0000
60.0000
70.0000
80.0000
Elapsed Time (min)

AQUIFER TEST DATA ---
.or Unconfined or Confined Aquifers at Steady State
Full or Partial Penetration

Project: 8601192.001 0625
Well No.: **MWA-7**

Initial DTW (bgs) @ time < 0:	6.37	(feet)
Depth to top of sandpack:	28.0	(feet)
Depth to top of screen:	30.3	(feet)
H = Initial head @ time < 0:	0.04	(feet)
H(0) = Maximum head (@ t ~ 0):	6.18	(feet)
D = Length of well screen:	2.5	(feet)
L = Length of saturated sandpack:	5.0	(feet)
rc = Radius of well casing:	1.0	(inches)
re = Radius of borehole:	3.0	(inches)
d = Length watertable to bottom of well:	26.9	(feet)
Length watertable to bottom of sandpack:	26.9	(feet)
b = Aquifer saturated thickness: (est.)	26.9	(feet)
Partial Penetration (Y/N):	Y	

Test Start Date >>>:	12-Feb-99
Test Start Time >>>:	11:06:04
Test Type >>>>>>	Bail #1
Initial head at T<0 >>	8.8570

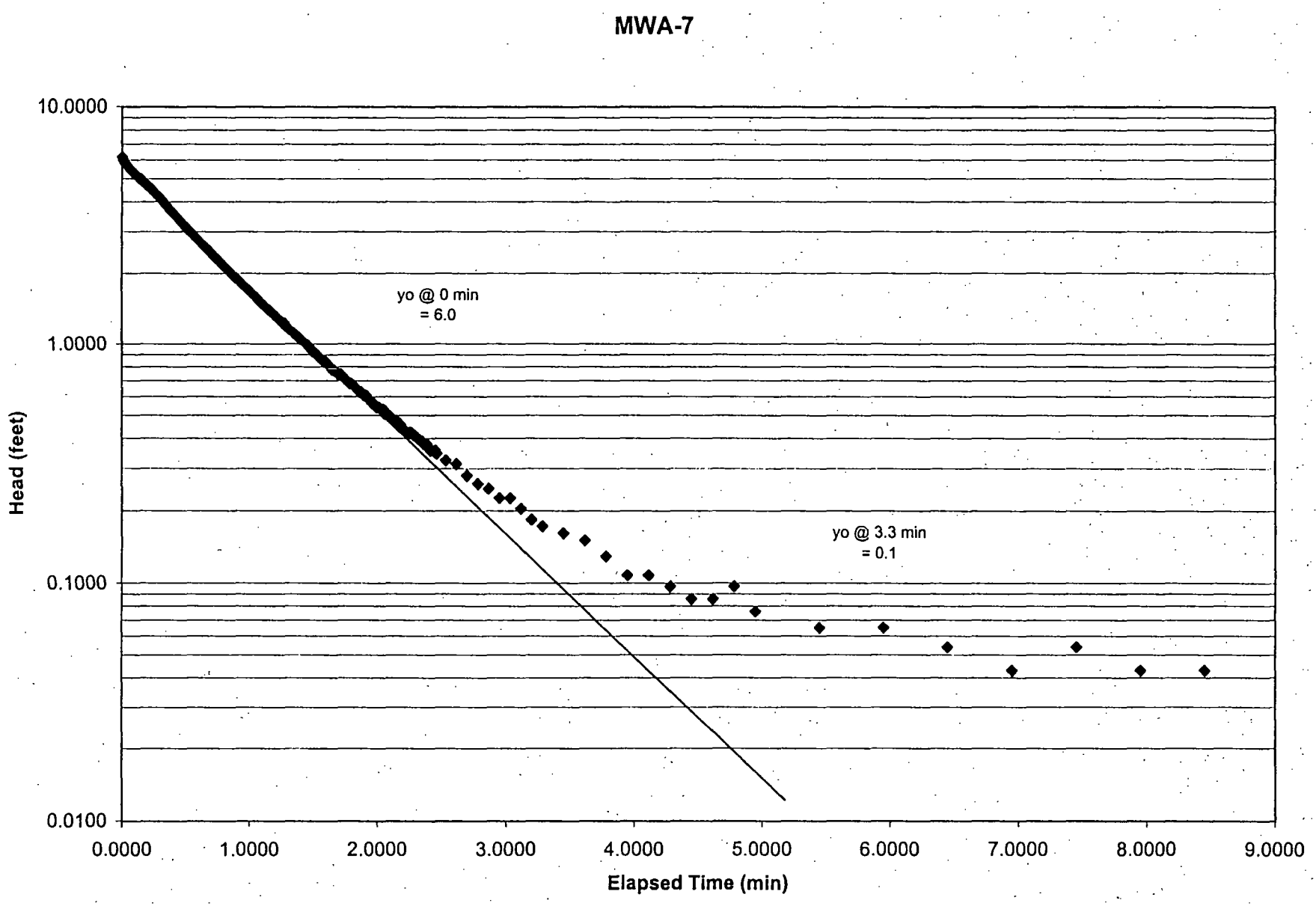
Slug Length	10	(feet)
Slug Diameter	1.25	(inches)
Slug Volume Removed	0.436	(gallons)
Slug Height in Well	2.670	(feet)

DATE (day value)	TIME (day)	Transducer Reading (ft)	Reading Date	Reading Time (hh:mm:ss)	Elapsed Time (min)	Head T > 0 (ft)	COMMENTS
36203.463	0.462541	8.86E+00	12-Feb-99	11:06:04	0.0000	6.1826	Slug Out
36203.463	0.462549	9.07E+00	12-Feb-99	11:06:04	0.0115	5.9660	
36203.463	0.462558	9.23E+00	12-Feb-99	11:06:05	0.0245	5.8144	
36203.463	0.462566	9.32E+00	12-Feb-99	11:06:06	0.0360	5.7170	
36203.463	0.462588	9.58E+00	12-Feb-99	11:06:08	0.0677	5.4571	
36203.463	0.462597	9.67E+00	12-Feb-99	11:06:08	0.0806	5.3705	
36203.463	0.462605	9.75E+00	12-Feb-99	11:06:09	0.0922	5.2947	
36203.463	0.462613	9.81E+00	12-Feb-99	11:06:10	0.1037	5.2297	
36203.463	0.462624	9.91E+00	12-Feb-99	11:06:11	0.1195	5.1323	
36203.463	0.462633	9.98E+00	12-Feb-99	11:06:11	0.1325	5.0565	
36203.463	0.462645	1.01E+01	12-Feb-99	11:06:13	0.1498	4.9700	
36203.463	0.462669	1.03E+01	12-Feb-99	11:06:15	0.1843	4.7640	
36203.463	0.462677	1.03E+01	12-Feb-99	11:06:15	0.1958	4.7210	
36203.463	0.462685	1.04E+01	12-Feb-99	11:06:16	0.2074	4.6450	
36203.463	0.462694	1.05E+01	12-Feb-99	11:06:17	0.2203	4.5800	
36203.463	0.462703	1.05E+01	12-Feb-99	11:06:18	0.2333	4.5260	
36203.463	0.462714	1.06E+01	12-Feb-99	11:06:18	0.2491	4.4180	
36203.463	0.462738	1.08E+01	12-Feb-99	11:06:21	0.2837	4.2230	
36203.463	0.462747	1.09E+01	12-Feb-99	11:06:21	0.2966	4.1580	
36203.463	0.462755	1.09E+01	12-Feb-99	11:06:22	0.3082	4.0930	
36203.463	0.462764	1.10E+01	12-Feb-99	11:06:23	0.3211	4.0170	
36203.463	0.462772	1.11E+01	12-Feb-99	11:06:24	0.3326	3.9520	
36203.463	0.462784	1.12E+01	12-Feb-99	11:06:25	0.3499	3.8650	
36203.463	0.462808	1.14E+01	12-Feb-99	11:06:27	0.3845	3.6810	
36203.463	0.462816	1.14E+01	12-Feb-99	11:06:27	0.3960	3.6270	
36203.463	0.462824	1.15E+01	12-Feb-99	11:06:28	0.4075	3.5840	
36203.463	0.462833	1.15E+01	12-Feb-99	11:06:29	0.4205	3.5190	
36203.463	0.462841	1.16E+01	12-Feb-99	11:06:29	0.4320	3.4650	

36203.463	0.462853	1.17E+01	12-Feb-99	11:06:30	0.4493	3.3890
36203.463	0.462865	1.17E+01	12-Feb-99	11:06:32	0.4666	3.3130
36203.463	0.462876	1.18E+01	12-Feb-99	11:06:32	0.4824	3.2370
36203.463	0.462888	1.19E+01	12-Feb-99	11:06:34	0.4997	3.1720
36203.463	0.462899	1.19E+01	12-Feb-99	11:06:34	0.5155	3.1070
36203.463	0.462924	1.21E+01	12-Feb-99	11:06:37	0.5515	2.9670
36203.463	0.462932	1.21E+01	12-Feb-99	11:06:37	0.5630	2.9340
36203.463	0.46294	1.21E+01	12-Feb-99	11:06:38	0.5746	2.8910
36203.463	0.462949	1.22E+01	12-Feb-99	11:06:39	0.5875	2.8370
36203.463	0.462957	1.22E+01	12-Feb-99	11:06:39	0.5990	2.7930
36203.463	0.462969	1.23E+01	12-Feb-99	11:06:41	0.6163	2.7280
36203.463	0.462993	1.24E+01	12-Feb-99	11:06:43	0.6509	2.6090
36203.463	0.463001	1.25E+01	12-Feb-99	11:06:43	0.6624	2.5770
36203.463	0.463009	1.25E+01	12-Feb-99	11:06:44	0.6739	2.5340
36203.463	0.463019	1.25E+01	12-Feb-99	11:06:45	0.6883	2.5010
36203.463	0.463027	1.26E+01	12-Feb-99	11:06:46	0.6998	2.4580
36203.463	0.463038	1.26E+01	12-Feb-99	11:06:46	0.7157	2.4040
36203.463	0.463062	1.27E+01	12-Feb-99	11:06:49	0.7502	2.3060
36203.463	0.463071	1.28E+01	12-Feb-99	11:06:49	0.7632	2.2630
36203.463	0.463079	1.28E+01	12-Feb-99	11:06:50	0.7747	2.2410
36203.463	0.463088	1.28E+01	12-Feb-99	11:06:51	0.7877	2.1980
36203.463	0.463096	1.29E+01	12-Feb-99	11:06:51	0.7992	2.1650
36203.463	0.463108	1.29E+01	12-Feb-99	11:06:53	0.8165	2.1220
36203.463	0.463132	1.30E+01	12-Feb-99	11:06:55	0.8510	2.0350
36203.463	0.46314	1.30E+01	12-Feb-99	11:06:55	0.8626	2.0030
36203.463	0.463148	1.31E+01	12-Feb-99	11:06:56	0.8741	1.9810
36203.463	0.463157	1.31E+01	12-Feb-99	11:06:57	0.8870	1.9380
36203.463	0.463166	1.31E+01	12-Feb-99	11:06:58	0.9000	1.9160
36203.463	0.463177	1.32E+01	12-Feb-99	11:06:58	0.9158	1.8840
36203.463	0.463201	1.32E+01	12-Feb-99	11:07:01	0.9504	1.7970
36203.463	0.463209	1.33E+01	12-Feb-99	11:07:01	0.9619	1.7650
36203.463	0.463218	1.33E+01	12-Feb-99	11:07:02	0.9749	1.7430
36203.463	0.463227	1.33E+01	12-Feb-99	11:07:03	0.9878	1.7210
36203.463	0.463235	1.33E+01	12-Feb-99	11:07:04	0.9994	1.7000
36203.463	0.463247	1.34E+01	12-Feb-99	11:07:05	1.0166	1.6560
36203.463	0.463271	1.34E+01	12-Feb-99	11:07:07	1.0512	1.5910
36203.463	0.463279	1.35E+01	12-Feb-99	11:07:07	1.0627	1.5700
36203.463	0.463287	1.35E+01	12-Feb-99	11:07:08	1.0742	1.5370
36203.463	0.463296	1.35E+01	12-Feb-99	11:07:09	1.0872	1.5160
36203.463	0.463304	1.35E+01	12-Feb-99	11:07:09	1.0987	1.4940
36203.463	0.463316	1.36E+01	12-Feb-99	11:07:11	1.1160	1.4720
36203.463	0.46334	1.36E+01	12-Feb-99	11:07:13	1.1506	1.4070
36203.463	0.463348	1.36E+01	12-Feb-99	11:07:13	1.1621	1.3970
36203.463	0.463356	1.37E+01	12-Feb-99	11:07:14	1.1736	1.3750
36203.463	0.463366	1.37E+01	12-Feb-99	11:07:15	1.1880	1.3530
36203.463	0.463374	1.37E+01	12-Feb-99	11:07:16	1.1995	1.3320
36203.463	0.463385	1.37E+01	12-Feb-99	11:07:16	1.2154	1.3100
36203.463	0.46341	1.38E+01	12-Feb-99	11:07:19	1.2514	1.2560
36203.463	0.463418	1.38E+01	12-Feb-99	11:07:19	1.2629	1.2340
36203.463	0.463426	1.38E+01	12-Feb-99	11:07:20	1.2744	1.2340
36203.463	0.463435	1.38E+01	12-Feb-99	11:07:21	1.2874	1.2020
36203.463	0.463443	1.39E+01	12-Feb-99	11:07:21	1.2989	1.1800
36203.463	0.463455	1.39E+01	12-Feb-99	11:07:23	1.3162	1.1580
36203.463	0.463479	1.39E+01	12-Feb-99	11:07:25	1.3507	1.1150
36203.463	0.463487	1.39E+01	12-Feb-99	11:07:25	1.3622	1.1040

36203.463	0.463495	1.40E+01	12-Feb-99	11:07:26	1.3738	1.0830
36203.464	0.463505	1.40E+01	12-Feb-99	11:07:27	1.3882	1.0720
36203.464	0.463513	1.40E+01	12-Feb-99	11:07:28	1.3997	1.0500
36203.464	0.463524	1.40E+01	12-Feb-99	11:07:28	1.4155	1.0390
36203.464	0.463549	1.40E+01	12-Feb-99	11:07:31	1.4515	0.9960
36203.464	0.463557	1.41E+01	12-Feb-99	11:07:31	1.4630	0.9850
36203.464	0.463565	1.41E+01	12-Feb-99	11:07:32	1.4746	0.9630
36203.464	0.463574	1.41E+01	12-Feb-99	11:07:33	1.4875	0.9530
36203.464	0.463582	1.41E+01	12-Feb-99	11:07:33	1.4990	0.9310
36203.464	0.463594	1.41E+01	12-Feb-99	11:07:35	1.5163	0.9200
36203.464	0.463618	1.42E+01	12-Feb-99	11:07:37	1.5509	0.8770
36203.464	0.463626	1.42E+01	12-Feb-99	11:07:37	1.5624	0.8660
36203.464	0.463634	1.42E+01	12-Feb-99	11:07:38	1.5739	0.8550
36203.464	0.463644	1.42E+01	12-Feb-99	11:07:39	1.5883	0.8440
36203.464	0.463652	1.42E+01	12-Feb-99	11:07:40	1.5998	0.8440
36203.464	0.463663	1.42E+01	12-Feb-99	11:07:40	1.6157	0.8230
36203.464	0.463688	1.43E+01	12-Feb-99	11:07:43	1.6517	0.7790
36203.464	0.463696	1.43E+01	12-Feb-99	11:07:43	1.6632	0.7790
36203.464	0.463704	1.43E+01	12-Feb-99	11:07:44	1.6747	0.7690
36203.464	0.463713	1.43E+01	12-Feb-99	11:07:45	1.6877	0.7580
36203.464	0.463721	1.43E+01	12-Feb-99	11:07:45	1.6992	0.7470
36203.464	0.463733	1.43E+01	12-Feb-99	11:07:47	1.7165	0.7470
36203.464	0.463757	1.43E+01	12-Feb-99	11:07:49	1.7510	0.7140
36203.464	0.463765	1.43E+01	12-Feb-99	11:07:49	1.7626	0.7040
36203.464	0.463773	1.43E+01	12-Feb-99	11:07:50	1.7741	0.6930
36203.464	0.463782	1.44E+01	12-Feb-99	11:07:51	1.7870	0.6820
36203.464	0.463791	1.44E+01	12-Feb-99	11:07:52	1.8000	0.6820
6203.464	0.463802	1.44E+01	12-Feb-99	11:07:52	1.8158	0.6710
36203.464	0.463826	1.44E+01	12-Feb-99	11:07:55	1.8504	0.6390
36203.464	0.463834	1.44E+01	12-Feb-99	11:07:55	1.8619	0.6280
36203.464	0.463843	1.44E+01	12-Feb-99	11:07:56	1.8749	0.6280
36203.464	0.463852	1.44E+01	12-Feb-99	11:07:57	1.8878	0.6170
36203.464	0.46386	1.44E+01	12-Feb-99	11:07:58	1.8994	0.6060
36203.464	0.463872	1.44E+01	12-Feb-99	11:07:59	1.9166	0.6060
36203.464	0.463896	1.45E+01	12-Feb-99	11:08:01	1.9512	0.5740
36203.464	0.463904	1.45E+01	12-Feb-99	11:08:01	1.9627	0.5630
36203.464	0.463912	1.45E+01	12-Feb-99	11:08:02	1.9742	0.5630
36203.464	0.463921	1.45E+01	12-Feb-99	11:08:03	1.9872	0.5520
36203.464	0.463929	1.45E+01	12-Feb-99	11:08:03	1.9987	0.5410
36203.464	0.463941	1.45E+01	12-Feb-99	11:08:05	2.0160	0.5410
36203.464	0.463965	1.45E+01	12-Feb-99	11:08:07	2.0506	0.5300
36203.464	0.463973	1.45E+01	12-Feb-99	11:08:07	2.0621	0.5090
36203.464	0.463981	1.45E+01	12-Feb-99	11:08:08	2.0736	0.5090
36203.464	0.463991	1.45E+01	12-Feb-99	11:08:09	2.0880	0.4980
36203.464	0.463999	1.45E+01	12-Feb-99	11:08:10	2.0995	0.4980
36203.464	0.46401	1.46E+01	12-Feb-99	11:08:10	2.1154	0.4870
36203.464	0.464035	1.46E+01	12-Feb-99	11:08:13	2.1514	0.4760
36203.464	0.464043	1.46E+01	12-Feb-99	11:08:13	2.1629	0.4650
36203.464	0.464051	1.46E+01	12-Feb-99	11:08:14	2.1744	0.4650
36203.464	0.46406	1.46E+01	12-Feb-99	11:08:15	2.1874	0.4550
36203.464	0.464068	1.46E+01	12-Feb-99	11:08:15	2.1989	0.4440
36203.464	0.46408	1.46E+01	12-Feb-99	11:08:17	2.2162	0.4330
36203.464	0.464104	1.46E+01	12-Feb-99	11:08:19	2.2507	0.4220
6203.464	0.464112	1.46E+01	12-Feb-99	11:08:19	2.2622	0.4220
6203.464	0.46412	1.46E+01	12-Feb-99	11:08:20	2.2738	0.4220

36203.464	0.46413	1.46E+01	12-Feb-99	11:08:21	2.2882	0.4110	
36203.464	0.464138	1.46E+01	12-Feb-99	11:08:22	2.2997	0.4110	
36203.464	0.464149	1.46E+01	12-Feb-99	11:08:22	2.3155	0.4000	
36203.464	0.464174	1.47E+01	12-Feb-99	11:08:25	2.3515	0.3900	
36203.464	0.464182	1.47E+01	12-Feb-99	11:08:25	2.3630	0.3790	
36203.464	0.46419	1.47E+01	12-Feb-99	11:08:26	2.3746	0.3790	
36203.464	0.464199	1.47E+01	12-Feb-99	11:08:27	2.3875	0.3790	
36203.464	0.464207	1.47E+01	12-Feb-99	11:08:27	2.3990	0.3680	
36203.464	0.464219	1.47E+01	12-Feb-99	11:08:29	2.4163	0.3570	
36203.464	0.464243	1.47E+01	12-Feb-99	11:08:31	2.4509	0.3570	
36203.464	0.464252	1.47E+01	12-Feb-99	11:08:31	2.4638	0.3460	
36203.464	0.464301	1.47E+01	12-Feb-99	11:08:36	2.5344	0.3250	
36203.464	0.464359	1.47E+01	12-Feb-99	11:08:41	2.6179	0.3140	
36203.464	0.464417	1.48E+01	12-Feb-99	11:08:46	2.7014	0.2810	
36203.464	0.464475	1.48E+01	12-Feb-99	11:08:51	2.7850	0.2600	
36203.465	0.464532	1.48E+01	12-Feb-99	11:08:56	2.8670	0.2490	
36203.465	0.46459	1.48E+01	12-Feb-99	11:09:01	2.9506	0.2270	
36203.465	0.464648	1.48E+01	12-Feb-99	11:09:06	3.0341	0.2270	
36203.465	0.464706	1.48E+01	12-Feb-99	11:09:11	3.1176	0.2050	
36203.465	0.464764	1.49E+01	12-Feb-99	11:09:16	3.2011	0.1840	
36203.465	0.464823	1.49E+01	12-Feb-99	11:09:21	3.2861	0.1730	
36203.465	0.464937	1.49E+01	12-Feb-99	11:09:31	3.4502	0.1620	
36203.465	0.465053	1.49E+01	12-Feb-99	11:09:41	3.6173	0.1510	
36203.465	0.465169	1.49E+01	12-Feb-99	11:09:51	3.7843	0.1300	
36203.465	0.465285	1.49E+01	12-Feb-99	11:10:01	3.9514	0.1080	
36203.465	0.4654	1.49E+01	12-Feb-99	11:10:11	4.1170	0.1080	
36203.466	0.465516	1.49E+01	12-Feb-99	11:10:21	4.2840	0.0970	
36203.466	0.465632	1.50E+01	12-Feb-99	11:10:31	4.4510	0.0860	
36203.466	0.465748	1.50E+01	12-Feb-99	11:10:41	4.6181	0.0860	
36203.466	0.465863	1.49E+01	12-Feb-99	11:10:51	4.7837	0.0970	
36203.466	0.46598	1.50E+01	12-Feb-99	11:11:01	4.9522	0.0760	
36203.466	0.466326	1.50E+01	12-Feb-99	11:11:31	5.4504	0.0650	
36203.467	0.466674	1.50E+01	12-Feb-99	11:12:01	5.9515	0.0650	
36203.467	0.467021	1.50E+01	12-Feb-99	11:12:31	6.4512	0.0540	
36203.467	0.467368	1.50E+01	12-Feb-99	11:13:01	6.9509	0.0430	
36203.468	0.467715	1.50E+01	12-Feb-99	11:13:31	7.4506	0.0540	
36203.468	0.468063	1.50E+01	12-Feb-99	11:14:01	7.9517	0.0430	
36203.468	0.46841	1.50E+01	12-Feb-99	11:14:31	8.4514	0.0430	recovered


MWA-7
10.0000
1.0000
0.1000
0.0100
Head (feet)
yo @ 0 min
= 6.0
yo @ 3.3 min
= 0.1
0.0000
1.0000
2.0000
3.0000
4.0000
5.0000
6.0000
7.0000
8.0000
9.0000
Elapsed Time (min)

- AQUIFER TEST DATA ---
or Unconfined or Confined Aquifers at Steady State
Full or Partial Penetration

Project: 8601192.001 0625
Well No.: **MWA-8i**

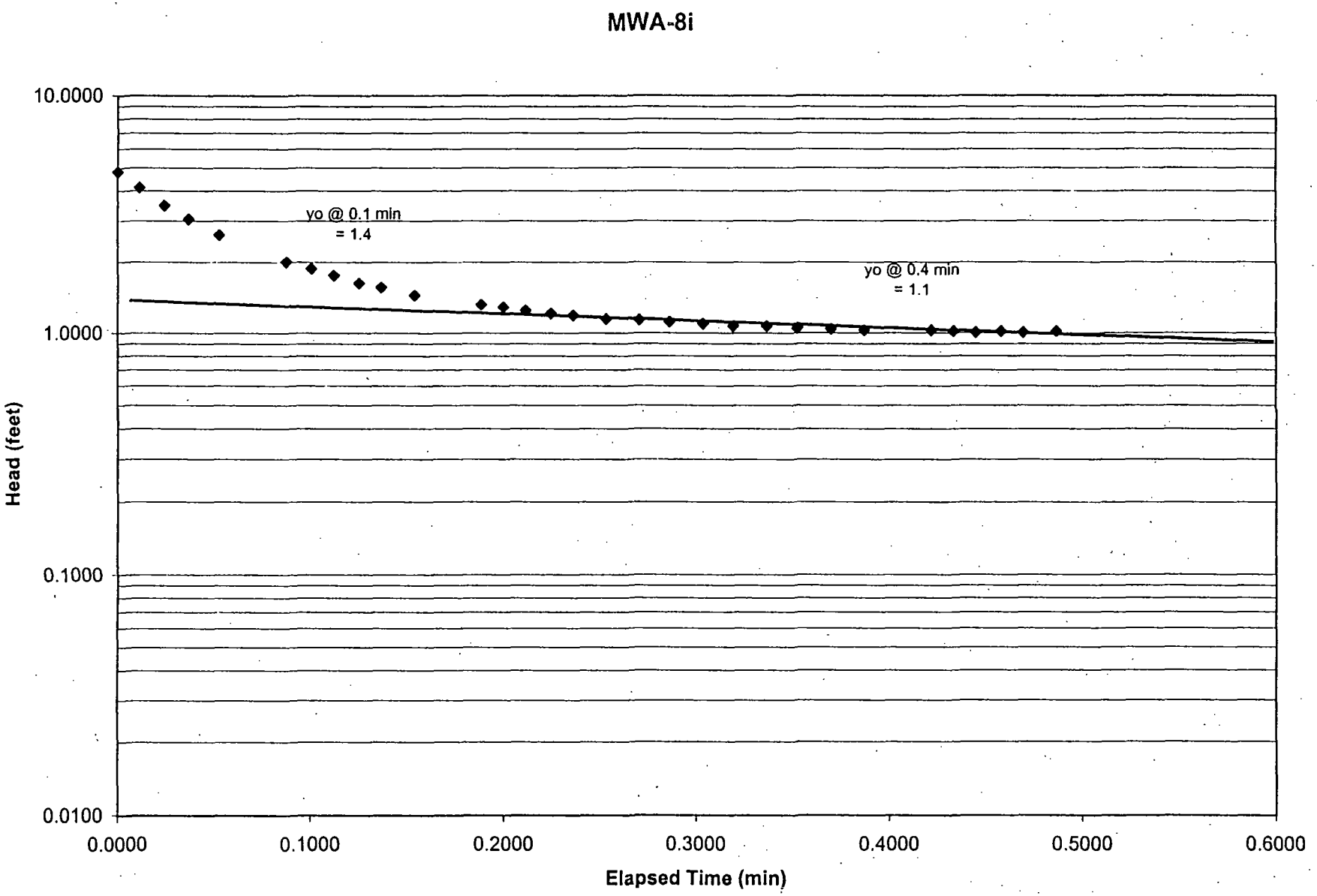
Initial DTW (bgs) @ time < 0:	22.00	(feet)
Depth to top of sandpack:	39.8	(feet)
Depth to top of screen:	42.0	(feet)
H = Initial head @ time < 0:	1.02	(feet)
H(0) = Maximum head (@ t = 0):	4.82	(feet)
D = Length of well screen:	5.0	(feet)
L = Length of saturated sandpack:	7.5	(feet)
rc = Radius of well casing:	1.0	(inches)
re = Radius of borehole:	3.0	(inches)
d = Length watertable to bottom of well:	28.1	(feet)
Length watertable to bottom of sandpack:	28.1	(feet)
b = Aquifer saturated thickness: (est.)	28.1	(feet)
Partial Penetration (Y/N):	Y	

Test Start Date >>>:	11-Feb-99
Test Start Time >>>:	9:18:15
Test Type >>>>>>	Bail #1
Initial head at T<0 >>	14.2280

Slug Length	10	(feet)
Slug Diameter	1.25	(inches)
Slug Volume Removed	0.619	(gallons)
Slug Height in Well	3.800	(feet)

DATE (day value)	TIME (day)	Transducer Reading (ft)	Reading Date	Reading Time (hh:mm:ss)	Elapsed Time (min)	Head T > 0 (ft)	COMMENTS
36202.388	0.387677	1.42E+01	11-Feb-99	9:18:15	0.0000	4.8190	Slug Out
36202.388	0.387685	1.49E+01	11-Feb-99	9:18:16	0.0115	4.1370	
36202.388	0.387694	1.56E+01	11-Feb-99	9:18:17	0.0245	3.4760	
36202.388	0.387703	1.60E+01	11-Feb-99	9:18:18	0.0374	3.0540	
36202.388	0.387714	1.64E+01	11-Feb-99	9:18:18	0.0533	2.6210	
36202.388	0.387738	1.70E+01	11-Feb-99	9:18:21	0.0878	2.0140	
36202.388	0.387747	1.72E+01	11-Feb-99	9:18:21	0.1008	1.8840	
36202.388	0.387755	1.73E+01	11-Feb-99	9:18:22	0.1123	1.7650	
36202.388	0.387764	1.74E+01	11-Feb-99	9:18:23	0.1253	1.6350	
36202.388	0.387772	1.75E+01	11-Feb-99	9:18:24	0.1368	1.5700	
36202.388	0.387784	1.76E+01	11-Feb-99	9:18:25	0.1541	1.4510	
36202.388	0.387808	1.77E+01	11-Feb-99	9:18:27	0.1886	1.3210	
36202.388	0.387816	1.78E+01	11-Feb-99	9:18:27	0.2002	1.2890	
36202.388	0.387824	1.78E+01	11-Feb-99	9:18:28	0.2117	1.2460	
36202.388	0.387833	1.78E+01	11-Feb-99	9:18:29	0.2246	1.2130	
36202.388	0.387841	1.79E+01	11-Feb-99	9:18:29	0.2362	1.1910	
36202.388	0.387853	1.79E+01	11-Feb-99	9:18:30	0.2534	1.1480	
36202.388	0.387865	1.79E+01	11-Feb-99	9:18:32	0.2707	1.1370	
36202.388	0.387876	1.79E+01	11-Feb-99	9:18:32	0.2866	1.1160	
36202.388	0.387888	1.80E+01	11-Feb-99	9:18:34	0.3038	1.0940	
36202.388	0.387899	1.80E+01	11-Feb-99	9:18:34	0.3197	1.0720	
36202.388	0.387911	1.80E+01	11-Feb-99	9:18:36	0.3370	1.0720	
36202.388	0.387922	1.80E+01	11-Feb-99	9:18:36	0.3528	1.0510	
36202.388	0.387934	1.80E+01	11-Feb-99	9:18:37	0.3701	1.0400	
36202.388	0.387946	1.80E+01	11-Feb-99	9:18:39	0.3874	1.0290	
36202.388	0.38797	1.80E+01	11-Feb-99	9:18:41	0.4219	1.0290	
36202.388	0.387978	1.80E+01	11-Feb-99	9:18:41	0.4334	1.0180	
36202.388	0.387986	1.80E+01	11-Feb-99	9:18:42	0.4450	1.0070	

36202.388	0.387995	1.80E+01	11-Feb-99	9:18:43	0.4579	1.0180	
36202.388	0.388003	1.80E+01	11-Feb-99	9:18:43	0.4694	1.0070	
36202.388	0.388015	1.80E+01	11-Feb-99	9:18:44	0.4867	1.0180	recovered


MWA-8i
10.0000
1.0000
0.1000
0.0100
Head (feet)
yo @ 0.1 min
= 1.4
yo @ 0.4 min
= 1.1
0.0000
0.1000
0.2000
0.3000
0.4000
0.5000
0.6000
Elapsed Time (min)

- AQUIFER TEST DATA ---
or Unconfined or Confined Aquifers at Steady State
Full or Partial Penetration

Project: 8601192.001 0625
Well No.: **MWA-9i**

Initial DTW (bgs) @ time < 0:	22.60	(feet)
Depth to top of sandpack:	39.0	(feet)
Depth to top of screen:	40.0	(feet)
H = Initial head @ time < 0:	0.00	(feet)
H(0) = Maximum head (@ t ~ 0):	4.18	(feet)
D = Length of well screen:	5.0	(feet)
L = Length of saturated sandpack:	7.5	(feet)
rc = Radius of well casing:	1.0	(inches)
re = Radius of borehole:	3.0	(inches)
d = Length watertable to bottom of well:	25.6	(feet)
Length watertable to bottom of sandpack:	25.6	(feet)
b = Aquifer saturated thickness: (est.)	25.6	(feet)
Partial Penetration (Y/N):	Y	

Test Start Date >>>:	11-Feb-99
Test Start Time >>>:	14:19:41
Test Type >>>>>>	Bail #1
Initial head at T<0 >>	12.0950

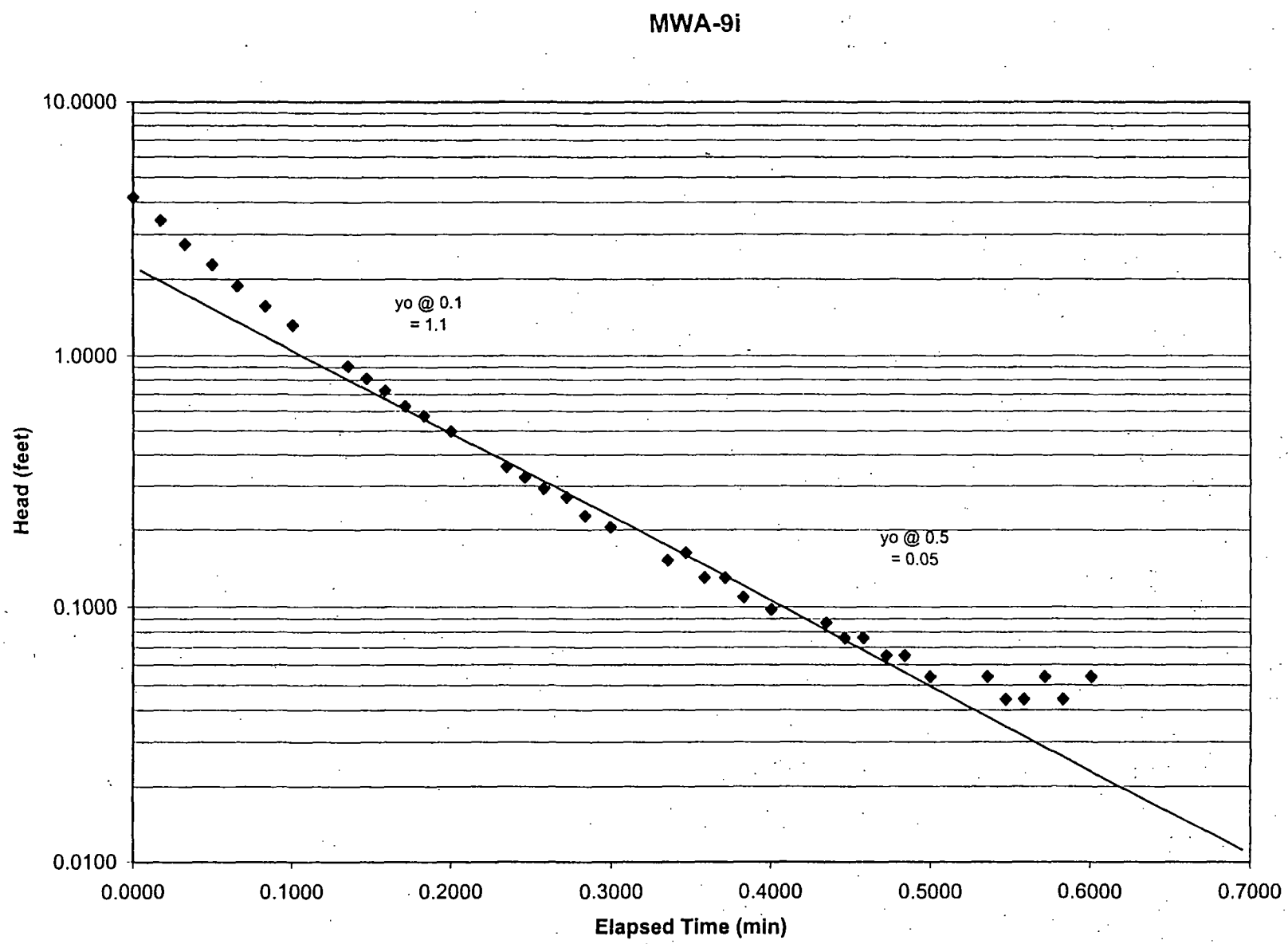
Slug Length	10	(feet)
Slug Diameter	1.25	(inches)
Slug Volume Removed	0.681	(gallons)
Slug Height in Well	4.180	(feet)

DATE (day value)	TIME (day)	Transducer Reading (ft)	Reading Date	Reading Time (hh:mm:ss)	Elapsed Time (min)	Head T > 0 (ft)	COMMENTS
6202.597	0.597008	1.21E+01	11-Feb-99	14:19:41	0.0000	4.1800	Slug Out
36202.597	0.59702	1.29E+01	11-Feb-99	14:19:43	0.0173	3.4000	
36202.597	0.597031	1.35E+01	11-Feb-99	14:19:43	0.0331	2.7510	
36202.597	0.597043	1.40E+01	11-Feb-99	14:19:45	0.0504	2.2850	
36202.597	0.597054	1.44E+01	11-Feb-99	14:19:45	0.0662	1.8840	
36202.597	0.597066	1.47E+01	11-Feb-99	14:19:47	0.0835	1.5700	
36202.597	0.597078	1.50E+01	11-Feb-99	14:19:48	0.1008	1.3210	
36202.597	0.597102	1.54E+01	11-Feb-99	14:19:50	0.1354	0.9100	
36202.597	0.59711	1.55E+01	11-Feb-99	14:19:50	0.1469	0.8120	
36202.597	0.597118	1.55E+01	11-Feb-99	14:19:51	0.1584	0.7260	
36202.597	0.597127	1.56E+01	11-Feb-99	14:19:52	0.1714	0.6280	
36202.597	0.597135	1.57E+01	11-Feb-99	14:19:52	0.1829	0.5740	
36202.597	0.597147	1.58E+01	11-Feb-99	14:19:54	0.2002	0.4980	
36202.597	0.597171	1.59E+01	11-Feb-99	14:19:56	0.2347	0.3580	
36202.597	0.597179	1.60E+01	11-Feb-99	14:19:56	0.2462	0.3250	
36202.597	0.597187	1.60E+01	11-Feb-99	14:19:57	0.2578	0.2930	
36202.597	0.597197	1.60E+01	11-Feb-99	14:19:58	0.2722	0.2710	
36202.597	0.597205	1.60E+01	11-Feb-99	14:19:59	0.2837	0.2280	
36202.597	0.597216	1.61E+01	11-Feb-99	14:19:59	0.2995	0.2060	
36202.597	0.597241	1.61E+01	11-Feb-99	14:20:02	0.3355	0.1520	
36202.597	0.597249	1.61E+01	11-Feb-99	14:20:02	0.3470	0.1630	
36202.597	0.597257	1.61E+01	11-Feb-99	14:20:03	0.3586	0.1300	
36202.597	0.597266	1.61E+01	11-Feb-99	14:20:04	0.3715	0.1300	
36202.597	0.597274	1.62E+01	11-Feb-99	14:20:04	0.3830	0.1090	
36202.597	0.597286	1.62E+01	11-Feb-99	14:20:06	0.4003	0.0980	
36202.597	0.59731	1.62E+01	11-Feb-99	14:20:08	0.4349	0.0870	
202.597	0.597318	1.62E+01	11-Feb-99	14:20:08	0.4464	0.0760	
36202.597	0.597326	1.62E+01	11-Feb-99	14:20:09	0.4579	0.0760	

36202.597	0.597336	1.62E+01	11-Feb-99	14:20:10	0.4723	0.0650
36202.597	0.597344	1.62E+01	11-Feb-99	14:20:11	0.4838	0.0650
36202.597	0.597355	1.62E+01	11-Feb-99	14:20:11	0.4997	0.0540
36202.597	0.59738	1.62E+01	11-Feb-99	14:20:14	0.5357	0.0540
36202.597	0.597388	1.62E+01	11-Feb-99	14:20:14	0.5472	0.0440
36202.597	0.597396	1.62E+01	11-Feb-99	14:20:15	0.5587	0.0440
36202.597	0.597405	1.62E+01	11-Feb-99	14:20:16	0.5717	0.0540
36202.597	0.597413	1.62E+01	11-Feb-99	14:20:16	0.5832	0.0440
36202.597	0.597425	1.62E+01	11-Feb-99	14:20:18	0.6005	0.0540
36202.597	0.597449	1.62E+01	11-Feb-99	14:20:20	0.6350	0.0330
36202.597	0.597457	1.62E+01	11-Feb-99	14:20:20	0.6466	0.0330
36202.597	0.597465	1.62E+01	11-Feb-99	14:20:21	0.6581	0.0440
36202.597	0.597475	1.62E+01	11-Feb-99	14:20:22	0.6725	0.0330
36202.597	0.597483	1.63E+01	11-Feb-99	14:20:23	0.6840	0.0220
36202.597	0.597494	1.63E+01	11-Feb-99	14:20:23	0.6998	0.0220
36202.598	0.597519	1.63E+01	11-Feb-99	14:20:26	0.7358	0.0220
36202.598	0.597527	1.62E+01	11-Feb-99	14:20:26	0.7474	0.0330
36202.598	0.597535	1.62E+01	11-Feb-99	14:20:27	0.7589	0.0330
36202.598	0.597544	1.63E+01	11-Feb-99	14:20:28	0.7718	0.0220
36202.598	0.597552	1.63E+01	11-Feb-99	14:20:28	0.7834	0.0220
36202.598	0.597564	1.63E+01	11-Feb-99	14:20:30	0.8006	0.0220
36202.598	0.597588	1.63E+01	11-Feb-99	14:20:32	0.8352	0.0220
36202.598	0.597596	1.62E+01	11-Feb-99	14:20:32	0.8467	0.0330
36202.598	0.597604	1.63E+01	11-Feb-99	14:20:33	0.8582	0.0220
36202.598	0.597613	1.62E+01	11-Feb-99	14:20:34	0.8712	0.0330
36202.598	0.597622	1.63E+01	11-Feb-99	14:20:35	0.8842	0.0220
36202.598	0.597633	1.62E+01	11-Feb-99	14:20:35	0.9000	0.0330
36202.598	0.597657	1.63E+01	11-Feb-99	14:20:38	0.9346	0.0220
36202.598	0.597666	1.63E+01	11-Feb-99	14:20:38	0.9475	0.0220
36202.598	0.597674	1.63E+01	11-Feb-99	14:20:39	0.9590	0.0220
36202.598	0.597683	1.63E+01	11-Feb-99	14:20:40	0.9720	0.0220
36202.598	0.597691	1.63E+01	11-Feb-99	14:20:41	0.9835	0.0220
36202.598	0.597703	1.63E+01	11-Feb-99	14:20:42	1.0008	0.0220
36202.598	0.597727	1.63E+01	11-Feb-99	14:20:44	1.0354	0.0220
36202.598	0.597735	1.63E+01	11-Feb-99	14:20:44	1.0469	0.0220
36202.598	0.597743	1.63E+01	11-Feb-99	14:20:45	1.0584	0.0220
36202.598	0.597752	1.63E+01	11-Feb-99	14:20:46	1.0714	0.0220
36202.598	0.59776	1.63E+01	11-Feb-99	14:20:46	1.0829	0.0220
36202.598	0.597772	1.63E+01	11-Feb-99	14:20:48	1.1002	0.0220
36202.598	0.597784	1.63E+01	11-Feb-99	14:20:49	1.1174	0.0220
36202.598	0.597795	1.63E+01	11-Feb-99	14:20:49	1.1333	0.0110
36202.598	0.597807	1.63E+01	11-Feb-99	14:20:51	1.1506	0.0220
36202.598	0.597818	1.63E+01	11-Feb-99	14:20:51	1.1664	0.0110
36202.598	0.597843	1.63E+01	11-Feb-99	14:20:54	1.2024	0.0110
36202.598	0.597851	1.63E+01	11-Feb-99	14:20:54	1.2139	0.0110
36202.598	0.597859	1.63E+01	11-Feb-99	14:20:55	1.2254	0.0220
36202.598	0.597868	1.63E+01	11-Feb-99	14:20:56	1.2384	0.0220
36202.598	0.597876	1.63E+01	11-Feb-99	14:20:56	1.2499	0.0220
36202.598	0.597888	1.63E+01	11-Feb-99	14:20:58	1.2672	0.0220
36202.598	0.597912	1.63E+01	11-Feb-99	14:21:00	1.3018	0.0220
36202.598	0.59792	1.63E+01	11-Feb-99	14:21:00	1.3133	0.0220
36202.598	0.597928	1.63E+01	11-Feb-99	14:21:01	1.3248	0.0110
36202.598	0.597937	1.63E+01	11-Feb-99	14:21:02	1.3378	0.0110
36202.598	0.597946	1.63E+01	11-Feb-99	14:21:03	1.3507	0.0220
36202.598	0.597957	1.63E+01	11-Feb-99	14:21:03	1.3666	0.0110

36202.598	0.597981	1.63E+01	11-Feb-99	14:21:06	1.4011	0.0110
36202.598	0.59799	1.63E+01	11-Feb-99	14:21:06	1.4141	0.0110
36202.598	0.597998	1.63E+01	11-Feb-99	14:21:07	1.4256	0.0110
36202.598	0.598007	1.63E+01	11-Feb-99	14:21:08	1.4386	0.0110
36202.598	0.598015	1.63E+01	11-Feb-99	14:21:08	1.4501	0.0110
36202.598	0.598027	1.63E+01	11-Feb-99	14:21:10	1.4674	0.0220
36202.598	0.598051	1.63E+01	11-Feb-99	14:21:12	1.5019	0.0110
36202.598	0.598059	1.63E+01	11-Feb-99	14:21:12	1.5134	0.0220
36202.598	0.598067	1.63E+01	11-Feb-99	14:21:13	1.5250	0.0220
36202.598	0.598076	1.63E+01	11-Feb-99	14:21:14	1.5379	0.0110
36202.598	0.598084	1.63E+01	11-Feb-99	14:21:14	1.5494	0.0110
36202.598	0.598096	1.63E+01	11-Feb-99	14:21:15	1.5667	0.0220
36202.598	0.598108	1.63E+01	11-Feb-99	14:21:17	1.5840	0.0220
36202.598	0.598119	1.63E+01	11-Feb-99	14:21:17	1.5998	0.0110
36202.598	0.598131	1.63E+01	11-Feb-99	14:21:19	1.6171	0.0110
36202.598	0.598142	1.63E+01	11-Feb-99	14:21:19	1.6330	0.0110
36202.598	0.598167	1.63E+01	11-Feb-99	14:21:22	1.6690	0.0110
36202.598	0.598175	1.63E+01	11-Feb-99	14:21:22	1.6805	0.0220
36202.598	0.598183	1.63E+01	11-Feb-99	14:21:23	1.6920	0.0220
36202.598	0.598192	1.63E+01	11-Feb-99	14:21:24	1.7050	0.0110
36202.598	0.5982	1.63E+01	11-Feb-99	14:21:24	1.7165	0.0220
36202.598	0.598212	1.63E+01	11-Feb-99	14:21:26	1.7338	0.0110
36202.598	0.598236	1.63E+01	11-Feb-99	14:21:28	1.7683	0.0220
36202.598	0.598244	1.63E+01	11-Feb-99	14:21:28	1.7798	0.0220
36202.598	0.598252	1.63E+01	11-Feb-99	14:21:29	1.7914	0.0220
36202.598	0.598262	1.63E+01	11-Feb-99	14:21:30	1.8058	0.0220
36202.598	0.59827	1.63E+01	11-Feb-99	14:21:31	1.8173	0.0220
36202.598	0.598281	1.63E+01	11-Feb-99	14:21:31	1.8331	0.0220
36202.598	0.598293	1.63E+01	11-Feb-99	14:21:33	1.8504	0.0220
36202.598	0.598304	1.63E+01	11-Feb-99	14:21:33	1.8662	0.0110
36202.598	0.598316	1.63E+01	11-Feb-99	14:21:35	1.8835	0.0110
36202.598	0.598328	1.63E+01	11-Feb-99	14:21:36	1.9008	0.0110
36202.598	0.598352	1.63E+01	11-Feb-99	14:21:38	1.9354	0.0110
36202.598	0.59836	1.63E+01	11-Feb-99	14:21:38	1.9469	0.0220
36202.598	0.598368	1.63E+01	11-Feb-99	14:21:39	1.9584	0.0110
36202.598	0.598377	1.63E+01	11-Feb-99	14:21:40	1.9714	0.0110
36202.598	0.598385	1.63E+01	11-Feb-99	14:21:40	1.9829	0.0110
36202.598	0.598397	1.63E+01	11-Feb-99	14:21:42	2.0002	0.0110
36202.598	0.598421	1.63E+01	11-Feb-99	14:21:44	2.0347	0.0110
36202.598	0.598429	1.63E+01	11-Feb-99	14:21:44	2.0462	0.0220
36202.598	0.598437	1.63E+01	11-Feb-99	14:21:45	2.0578	0.0110
36202.598	0.598447	1.63E+01	11-Feb-99	14:21:46	2.0722	0.0110
36202.598	0.598455	1.63E+01	11-Feb-99	14:21:47	2.0837	0.0110
36202.598	0.598466	1.63E+01	11-Feb-99	14:21:47	2.0995	0.0110
36202.598	0.598491	1.63E+01	11-Feb-99	14:21:50	2.1355	0.0110
36202.598	0.598499	1.63E+01	11-Feb-99	14:21:50	2.1470	0.0110
36202.599	0.598507	1.63E+01	11-Feb-99	14:21:51	2.1586	0.0110
36202.599	0.598516	1.63E+01	11-Feb-99	14:21:52	2.1715	0.0220
36202.599	0.598524	1.63E+01	11-Feb-99	14:21:52	2.1830	0.0220
36202.599	0.598536	1.63E+01	11-Feb-99	14:21:54	2.2003	0.0220
36202.599	0.59856	1.63E+01	11-Feb-99	14:21:56	2.2349	0.0110
36202.599	0.598568	1.63E+01	11-Feb-99	14:21:56	2.2464	0.0110
36202.599	0.598576	1.63E+01	11-Feb-99	14:21:57	2.2579	0.0110
36202.599	0.598586	1.63E+01	11-Feb-99	14:21:58	2.2723	0.0220
36202.599	0.598594	1.63E+01	11-Feb-99	14:21:59	2.2838	0.0110

36202.599	0.598605	1.63E+01	11-Feb-99	14:21:59	2.2997	0.0220
36202.599	0.598617	1.63E+01	11-Feb-99	14:22:01	2.3170	0.0110
36202.599	0.598628	1.63E+01	11-Feb-99	14:22:01	2.3328	0.0110
36202.599	0.59864	1.63E+01	11-Feb-99	14:22:02	2.3501	0.0110
36202.599	0.598652	1.63E+01	11-Feb-99	14:22:04	2.3674	0.0110
36202.599	0.598676	1.63E+01	11-Feb-99	14:22:06	2.4019	0.0220
36202.599	0.598684	1.63E+01	11-Feb-99	14:22:06	2.4134	0.0110
36202.599	0.598692	1.63E+01	11-Feb-99	14:22:07	2.4250	0.0110
36202.599	0.598701	1.63E+01	11-Feb-99	14:22:08	2.4379	0.0220
36202.599	0.598709	1.63E+01	11-Feb-99	14:22:08	2.4494	0.0110
36202.599	0.598722	1.63E+01	11-Feb-99	14:22:10	2.4682	0.0110
36202.599	0.59878	1.63E+01	11-Feb-99	14:22:15	2.5517	0.0110
36202.599	0.598838	1.63E+01	11-Feb-99	14:22:20	2.6352	0.0220
36202.599	0.598896	1.63E+01	11-Feb-99	14:22:25	2.7187	0.0220
36202.599	0.598954	1.63E+01	11-Feb-99	14:22:30	2.8022	0.0110
36202.599	0.599012	1.63E+01	11-Feb-99	14:22:35	2.8858	0.0110
36202.599	0.599069	1.63E+01	11-Feb-99	14:22:40	2.9678	0.0000
36202.599	0.599127	1.63E+01	11-Feb-99	14:22:45	3.0514	0.0220
36202.599	0.599185	1.63E+01	11-Feb-99	14:22:50	3.1349	0.0220
36202.599	0.599243	1.63E+01	11-Feb-99	14:22:55	3.2184	0.0220
36202.599	0.599302	1.63E+01	11-Feb-99	14:23:00	3.3034	0.0220
36202.599	0.599417	1.63E+01	11-Feb-99	14:23:10	3.4690	0.0110
36202.6	0.599532	1.63E+01	11-Feb-99	14:23:20	3.6346	0.0220
36202.6	0.599648	1.63E+01	11-Feb-99	14:23:30	3.8016	0.0220
36202.6	0.600169	1.63E+01	11-Feb-99	14:24:15	4.5518	0.0110
36202.6	0.600192	1.63E+01	11-Feb-99	14:24:17	4.5850	0.0110
36202.6	0.6002	1.63E+01	11-Feb-99	14:24:17	4.5965	0.0110
36202.6	0.600208	1.63E+01	11-Feb-99	14:24:18	4.6080	0.0110
36202.6	0.600219	1.63E+01	11-Feb-99	14:24:19	4.6238	0.0000 recovered


MWA-9i
10.0000
1.0000
0.1000
0.0100
Head (feet)
yo @ 0.1
= 1.1
yo @ 0.5
= 0.05
0.0000
0.1000
0.2000
0.3000
0.4000
0.5000
0.6000
0.7000
Elapsed Time (min)

AQUIFER TEST DATA ---
Unconfined or Confined Aquifers at Steady State
Full or Partial Penetration

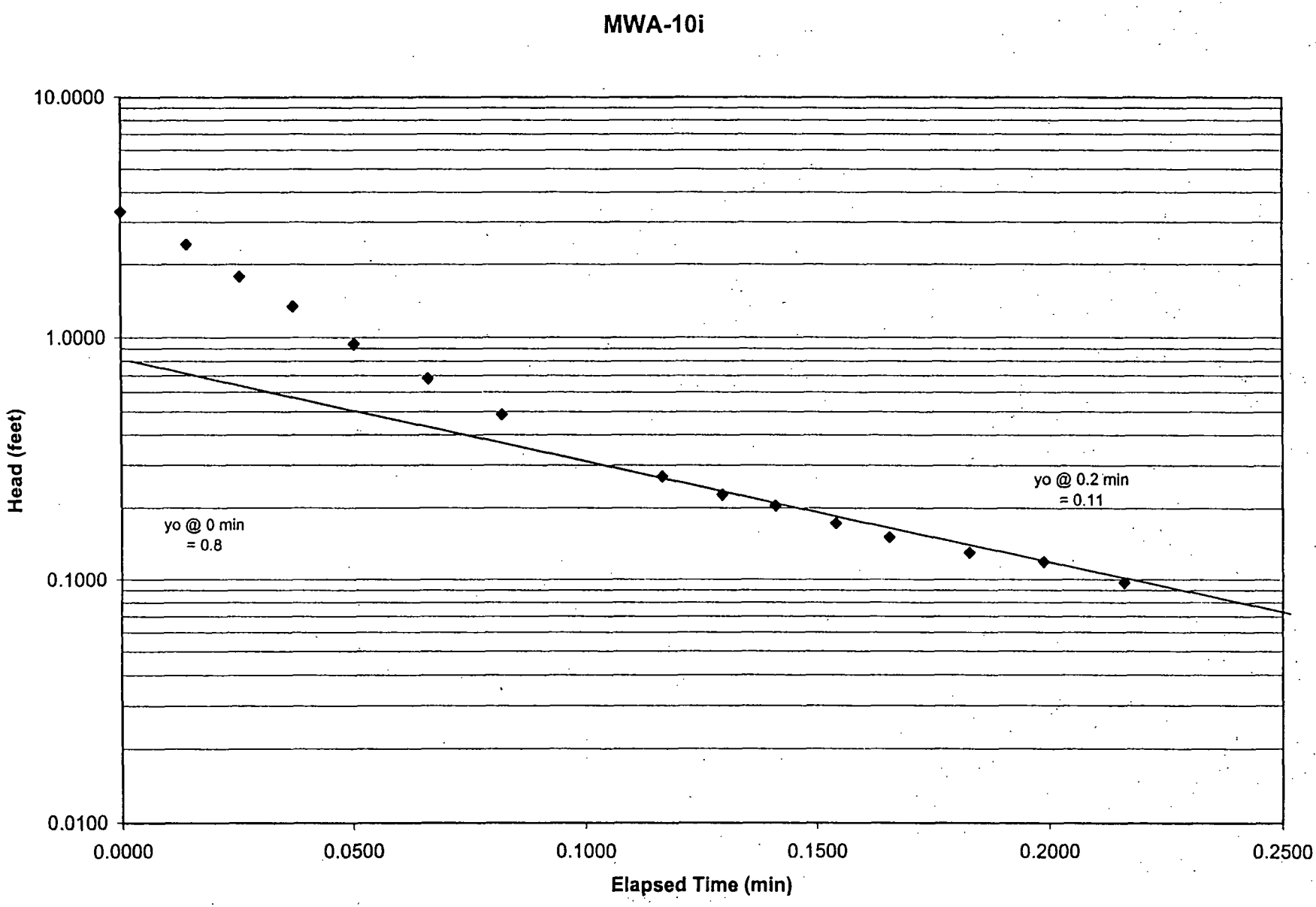
Project: 8601192.001 0625
Well No.: MWA-10i

Initial DTW (bgs) @ time < 0:	19.47	(feet)
Depth to top of sandpack:	38.2	(feet)
Depth to top of screen:	40.3	(feet)
H = Initial head @ time < 0:	0.10	(feet)
H(0) = Maximum head (@ t ~ 0):	3.32	(feet)
D = Length of well screen:	5.0	(feet)
L = Length of saturated sandpack:	7.4	(feet)
rc = Radius of well casing:	1.0	(inches)
re = Radius of borehole:	3.0	(inches)
d = Length watertable to bottom of well:	28.6	(feet)
Length watertable to bottom of sandpack:	28.6	(feet)
b = Aquifer saturated thickness: (est.)	28.6	(feet)
Partial Penetration (Y/N):	Y	

Test Start Date >>>:	11-Feb-99
Test Start Time >>>:	15:41:12
Test Type >>>>>>	Bail #1
Initial head at T<0 >>	12.8420

Slug Length	10	(feet)
Slug Diameter	1.25	(inches)
Slug Volume Removed	0.525	(gallons)
Slug Height in Well	3.220	(feet)

DATE (day value)	TIME (day)	Transducer Reading (ft)	Reading Date	Reading Time (hh:mm:ss)	Elapsed Time (min)	Head T > 0 (ft)	COMMENTS
36202.626	0.626407	1.28E+01	11-Feb-99	15:02:02	0.0000	3.3240	Slug Out
36202.626	0.626417	1.37E+01	11-Feb-99	15:02:02	0.0144	2.4250	
36202.626	0.626425	1.44E+01	11-Feb-99	15:02:03	0.0259	1.7860	
36202.626	0.626433	1.48E+01	11-Feb-99	15:02:04	0.0374	1.3420	
36202.626	0.626442	1.52E+01	11-Feb-99	15:02:05	0.0504	0.9420	
36202.626	0.626453	1.55E+01	11-Feb-99	15:02:06	0.0662	0.6820	
36202.626	0.626464	1.57E+01	11-Feb-99	15:02:06	0.0821	0.4870	
36202.626	0.626488	1.59E+01	11-Feb-99	15:02:09	0.1166	0.2700	
36202.626	0.626497	1.59E+01	11-Feb-99	15:02:09	0.1296	0.2270	
36202.627	0.626505	1.60E+01	11-Feb-99	15:02:10	0.1411	0.2050	
36202.627	0.626514	1.60E+01	11-Feb-99	15:02:11	0.1541	0.1730	
36202.627	0.626522	1.60E+01	11-Feb-99	15:02:12	0.1656	0.1510	
36202.627	0.626534	1.60E+01	11-Feb-99	15:02:13	0.1829	0.1300	
36202.627	0.626545	1.60E+01	11-Feb-99	15:02:13	0.1987	0.1190	
36202.627	0.626557	1.61E+01	11-Feb-99	15:02:15	0.2160	0.0970	recovered


MWA-10i
10.0000
1.0000
0.1000
0.0100
Head (feet)
yo @ 0 min
= 0.8
yo @ 0.2 min
= 0.11
0.0000
0.0500
0.1000
0.1500
0.2000
0.2500
Elapsed Time (min)

- AQUIFER TEST DATA ---
.or Unconfined or Confined Aquifers at Steady State
Full or Partial Penetration

Project: 8601192.001 0625
Well No.: **MWA-11i**

Initial DTW (bgs) @ time < 0:	19.47	(feet)
Depth to top of sandpack:	44.0	(feet)
Depth to top of screen:	46.0	(feet)
H = Initial head @ time < 0:	0.01	(feet)
H(0) = Maximum head (@ t ~ 0):	3.00	(feet)
D = Length of well screen:	5.0	(feet)
L = Length of saturated sandpack:	7.3	(feet)
rc = Radius of well casing:	1.0	(inches)
re = Radius of borehole:	3.0	(inches)
d = Length watertable to bottom of well:	32.1	(feet)
Length watertable to bottom of sandpack:	32.1	(feet)
b = Aquifer saturated thickness: (est.)	32.1	(feet)
Partial Penetration (Y/N):	Y	

Test Start Date >>>:	11-Feb-99
Test Start Time >>>:	15:41:12
Test Type >>>>>>	Bail #1
Initial head at T<0 >>	0.0000

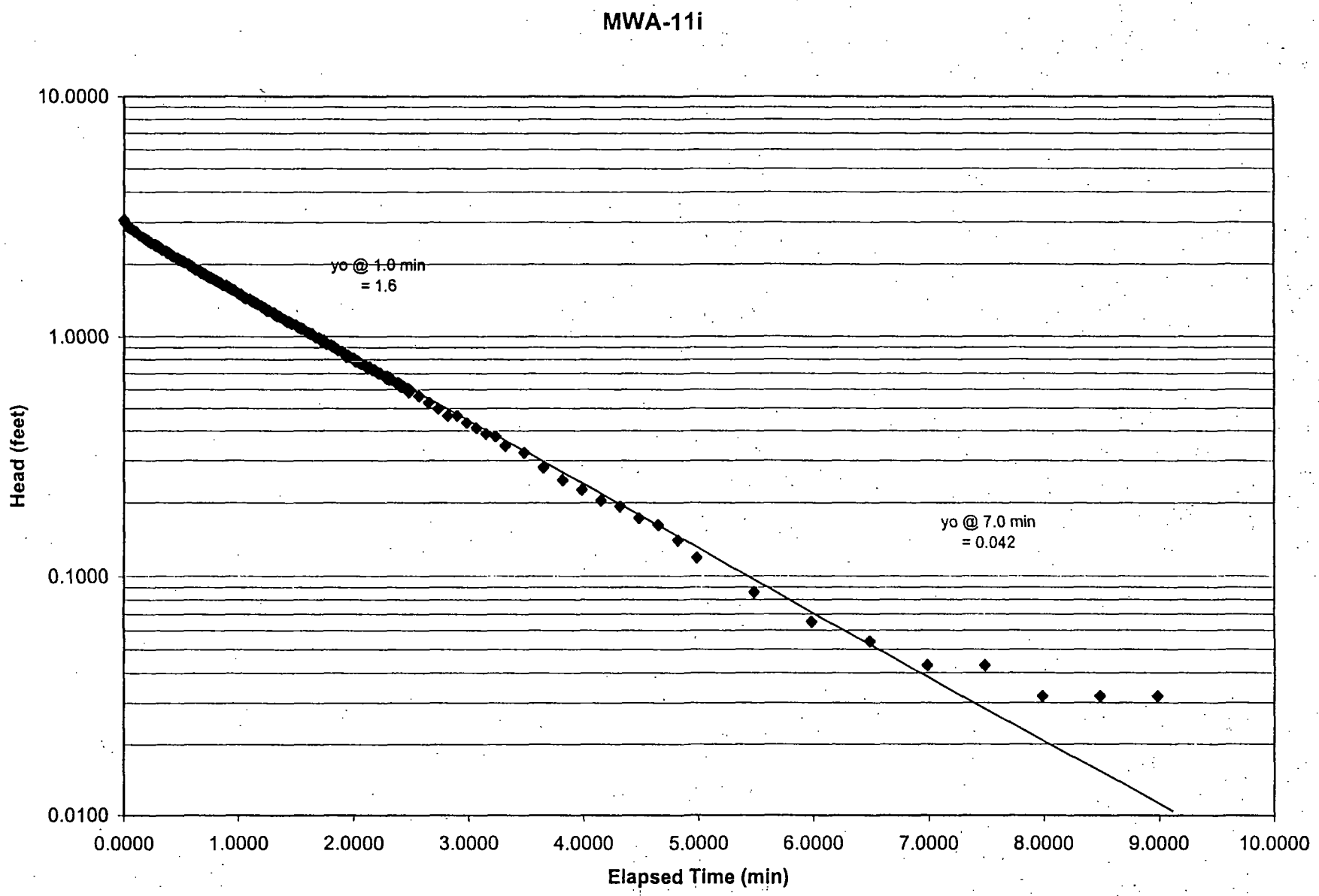
Slug Length	10	(feet)
Slug Diameter	1.25	(inches)
Slug Volume Removed	0.489	(gallons)
Slug Height in Well	3.000	(feet)

DATE (day value)	TIME (day)	Transducer Reading (ft)	Reading Date	Reading Time (hh:mm:ss)	Elapsed Time (min)	Head T > 0 (ft)	COMMENTS
36202.654	0.653606	1.13E+01	11-Feb-99	15:41:12	0.0000	2.9990	Slug Out
36202.654	0.653615	1.14E+01	11-Feb-99	15:41:12	0.0130	2.9340	
36202.654	0.653623	1.14E+01	11-Feb-99	15:41:13	0.0245	2.9120	
36202.654	0.653632	1.15E+01	11-Feb-99	15:41:14	0.0374	2.8690	
36202.654	0.65364	1.15E+01	11-Feb-99	15:41:14	0.0490	2.8470	
36202.654	0.653652	1.15E+01	11-Feb-99	15:41:16	0.0662	2.7930	
36202.654	0.653676	1.16E+01	11-Feb-99	15:41:18	0.1008	2.7170	
36202.654	0.653684	1.16E+01	11-Feb-99	15:41:18	0.1123	2.7280	
36202.654	0.653692	1.17E+01	11-Feb-99	15:41:19	0.1238	2.6850	
36202.654	0.653701	1.17E+01	11-Feb-99	15:41:20	0.1368	2.6850	
36202.654	0.653709	1.17E+01	11-Feb-99	15:41:20	0.1483	2.6310	
36202.654	0.653721	1.17E+01	11-Feb-99	15:41:21	0.1656	2.5980	
36202.654	0.653733	1.18E+01	11-Feb-99	15:41:23	0.1829	2.5660	
36202.654	0.653744	1.18E+01	11-Feb-99	15:41:23	0.1987	2.5330	
36202.654	0.653756	1.18E+01	11-Feb-99	15:41:25	0.2160	2.5010	
36202.654	0.653767	1.19E+01	11-Feb-99	15:41:25	0.2318	2.4790	
36202.654	0.653792	1.19E+01	11-Feb-99	15:41:28	0.2678	2.4250	
36202.654	0.6538	1.19E+01	11-Feb-99	15:41:28	0.2794	2.3930	
36202.654	0.653808	1.20E+01	11-Feb-99	15:41:29	0.2909	2.3820	
36202.654	0.653817	1.20E+01	11-Feb-99	15:41:30	0.3038	2.3490	
36202.654	0.653825	1.20E+01	11-Feb-99	15:41:30	0.3154	2.3380	
36202.654	0.653837	1.20E+01	11-Feb-99	15:41:32	0.3326	2.3060	
36202.654	0.653861	1.21E+01	11-Feb-99	15:41:34	0.3672	2.2630	
36202.654	0.653869	1.21E+01	11-Feb-99	15:41:34	0.3787	2.2410	
36202.654	0.653877	1.21E+01	11-Feb-99	15:41:35	0.3902	2.2300	
36202.654	0.653887	1.21E+01	11-Feb-99	15:41:36	0.4046	2.2190	
36202.654	0.653895	1.21E+01	11-Feb-99	15:41:37	0.4162	2.1980	
36202.654	0.653906	1.22E+01	11-Feb-99	15:41:37	0.4320	2.1650	

36202.654	0.653931	1.22E+01	11-Feb-99	15:41:40	0.4680	2.1110
36202.654	0.653939	1.22E+01	11-Feb-99	15:41:40	0.4795	2.1110
36202.654	0.653947	1.23E+01	11-Feb-99	15:41:41	0.4910	2.0790
36202.654	0.653956	1.23E+01	11-Feb-99	15:41:42	0.5040	2.0790
36202.654	0.653964	1.23E+01	11-Feb-99	15:41:42	0.5155	2.0460
36202.654	0.653976	1.23E+01	11-Feb-99	15:41:44	0.5328	2.0350
36202.654	0.653987	1.23E+01	11-Feb-99	15:41:44	0.5486	2.0140
36202.654	0.653999	1.23E+01	11-Feb-99	15:41:46	0.5659	1.9920
36202.654	0.65401	1.24E+01	11-Feb-99	15:41:46	0.5818	1.9590
36202.654	0.654022	1.24E+01	11-Feb-99	15:41:48	0.5990	1.9380
36202.654	0.654034	1.24E+01	11-Feb-99	15:41:49	0.6163	1.9270
36202.654	0.654045	1.24E+01	11-Feb-99	15:41:49	0.6322	1.9050
36202.654	0.654057	1.24E+01	11-Feb-99	15:41:51	0.6494	1.8940
36202.654	0.654068	1.25E+01	11-Feb-99	15:41:51	0.6653	1.8620
36202.654	0.65408	1.25E+01	11-Feb-99	15:41:53	0.6826	1.8400
36202.654	0.654091	1.25E+01	11-Feb-99	15:41:53	0.6984	1.8190
36202.654	0.654103	1.25E+01	11-Feb-99	15:41:54	0.7157	1.7970
36202.654	0.654115	1.26E+01	11-Feb-99	15:41:56	0.7330	1.7860
36202.654	0.654139	1.26E+01	11-Feb-99	15:41:58	0.7675	1.7430
36202.654	0.654147	1.26E+01	11-Feb-99	15:41:58	0.7790	1.7320
36202.654	0.654155	1.26E+01	11-Feb-99	15:41:59	0.7906	1.7210
36202.654	0.654164	1.26E+01	11-Feb-99	15:42:00	0.8035	1.7100
36202.654	0.654172	1.26E+01	11-Feb-99	15:42:00	0.8150	1.7000
36202.654	0.654184	1.27E+01	11-Feb-99	15:42:01	0.8323	1.6670
36202.654	0.654208	1.27E+01	11-Feb-99	15:42:04	0.8669	1.6350
36202.654	0.654216	1.27E+01	11-Feb-99	15:42:04	0.8784	1.6240
36202.654	0.654225	1.27E+01	11-Feb-99	15:42:05	0.8914	1.6130
36202.654	0.654234	1.27E+01	11-Feb-99	15:42:06	0.9043	1.6020
36202.654	0.654242	1.27E+01	11-Feb-99	15:42:07	0.9158	1.5910
36202.654	0.654253	1.28E+01	11-Feb-99	15:42:07	0.9317	1.5590
36202.654	0.654278	1.28E+01	11-Feb-99	15:42:10	0.9677	1.5370
36202.654	0.654286	1.28E+01	11-Feb-99	15:42:10	0.9792	1.5260
36202.654	0.654294	1.28E+01	11-Feb-99	15:42:11	0.9907	1.5150
36202.654	0.654303	1.28E+01	11-Feb-99	15:42:12	1.0037	1.4940
36202.654	0.654311	1.29E+01	11-Feb-99	15:42:12	1.0152	1.4830
36202.654	0.654323	1.29E+01	11-Feb-99	15:42:14	1.0325	1.4720
36202.654	0.654334	1.29E+01	11-Feb-99	15:42:14	1.0483	1.4510
36202.654	0.654346	1.29E+01	11-Feb-99	15:42:15	1.0656	1.4400
36202.654	0.654358	1.29E+01	11-Feb-99	15:42:17	1.0829	1.4180
36202.654	0.654369	1.29E+01	11-Feb-99	15:42:17	1.0987	1.4070
36202.654	0.654394	1.30E+01	11-Feb-99	15:42:20	1.1347	1.3750
36202.654	0.654402	1.30E+01	11-Feb-99	15:42:20	1.1462	1.3640
36202.654	0.65441	1.30E+01	11-Feb-99	15:42:21	1.1578	1.3640
36202.654	0.654419	1.30E+01	11-Feb-99	15:42:22	1.1707	1.3420
36202.654	0.654427	1.30E+01	11-Feb-99	15:42:22	1.1822	1.3420
36202.654	0.654439	1.30E+01	11-Feb-99	15:42:24	1.1995	1.3210
36202.654	0.65445	1.30E+01	11-Feb-99	15:42:24	1.2154	1.3100
36202.654	0.654462	1.30E+01	11-Feb-99	15:42:26	1.2326	1.2990
36202.654	0.654473	1.31E+01	11-Feb-99	15:42:26	1.2485	1.2770
36202.654	0.654485	1.31E+01	11-Feb-99	15:42:28	1.2658	1.2560
36202.655	0.654509	1.31E+01	11-Feb-99	15:42:30	1.3003	1.2340
36202.655	0.654517	1.31E+01	11-Feb-99	15:42:30	1.3118	1.2230
36202.655	0.654525	1.31E+01	11-Feb-99	15:42:31	1.3234	1.2230
36202.655	0.654535	1.31E+01	11-Feb-99	15:42:32	1.3378	1.2010
36202.655	0.654543	1.31E+01	11-Feb-99	15:42:33	1.3493	1.2010

36202.655	0.654554	1.31E+01	11-Feb-99	15:42:33	1.3651	1.2010
36202.655	0.654579	1.32E+01	11-Feb-99	15:42:36	1.4011	1.1580
36202.655	0.654587	1.32E+01	11-Feb-99	15:42:36	1.4126	1.1580
36202.655	0.654595	1.32E+01	11-Feb-99	15:42:37	1.4242	1.1470
36202.655	0.654604	1.32E+01	11-Feb-99	15:42:38	1.4371	1.1260
36202.655	0.654612	1.32E+01	11-Feb-99	15:42:38	1.4486	1.1260
36202.655	0.654624	1.32E+01	11-Feb-99	15:42:40	1.4659	1.1150
36202.655	0.654648	1.33E+01	11-Feb-99	15:42:42	1.5005	1.0820
36202.655	0.654656	1.33E+01	11-Feb-99	15:42:42	1.5120	1.0820
36202.655	0.654664	1.33E+01	11-Feb-99	15:42:43	1.5235	1.0720
36202.655	0.654674	1.33E+01	11-Feb-99	15:42:44	1.5379	1.0610
36202.655	0.654682	1.33E+01	11-Feb-99	15:42:45	1.5494	1.0500
36202.655	0.654693	1.33E+01	11-Feb-99	15:42:45	1.5653	1.0390
36202.655	0.654705	1.33E+01	11-Feb-99	15:42:47	1.5826	1.0280
36202.655	0.654716	1.33E+01	11-Feb-99	15:42:47	1.5984	1.0170
36202.655	0.654728	1.33E+01	11-Feb-99	15:42:48	1.6157	1.0070
36202.655	0.65474	1.33E+01	11-Feb-99	15:42:50	1.6330	1.0070
36202.655	0.654764	1.34E+01	11-Feb-99	15:42:52	1.6675	0.9630
36202.655	0.654772	1.34E+01	11-Feb-99	15:42:52	1.6790	0.9740
36202.655	0.65478	1.34E+01	11-Feb-99	15:42:53	1.6906	0.9630
36202.655	0.654789	1.34E+01	11-Feb-99	15:42:54	1.7035	0.9420
36202.655	0.654797	1.34E+01	11-Feb-99	15:42:54	1.7150	0.9520
36202.655	0.654809	1.34E+01	11-Feb-99	15:42:55	1.7323	0.9310
36202.655	0.654821	1.34E+01	11-Feb-99	15:42:57	1.7496	0.9310
36202.655	0.654832	1.34E+01	11-Feb-99	15:42:57	1.7654	0.9090
36202.655	0.654844	1.34E+01	11-Feb-99	15:42:59	1.7827	0.9090
36202.655	0.654855	1.34E+01	11-Feb-99	15:42:59	1.7986	0.8870
36202.655	0.65488	1.35E+01	11-Feb-99	15:43:02	1.8346	0.8550
36202.655	0.654888	1.35E+01	11-Feb-99	15:43:02	1.8461	0.8550
36202.655	0.654896	1.35E+01	11-Feb-99	15:43:03	1.8576	0.8440
36202.655	0.654905	1.35E+01	11-Feb-99	15:43:04	1.8706	0.8440
36202.655	0.654913	1.35E+01	11-Feb-99	15:43:04	1.8821	0.8330
36202.655	0.654925	1.35E+01	11-Feb-99	15:43:06	1.8994	0.8220
36202.655	0.654949	1.35E+01	11-Feb-99	15:43:08	1.9339	0.8120
36202.655	0.654957	1.35E+01	11-Feb-99	15:43:08	1.9454	0.8120
36202.655	0.654965	1.35E+01	11-Feb-99	15:43:09	1.9570	0.8220
36202.655	0.654975	1.35E+01	11-Feb-99	15:43:10	1.9714	0.7900
36202.655	0.654983	1.35E+01	11-Feb-99	15:43:11	1.9829	0.7900
36202.655	0.654994	1.36E+01	11-Feb-99	15:43:11	1.9987	0.7790
36202.655	0.655019	1.36E+01	11-Feb-99	15:43:14	2.0347	0.7680
36202.655	0.655027	1.36E+01	11-Feb-99	15:43:14	2.0462	0.7580
36202.655	0.655035	1.36E+01	11-Feb-99	15:43:15	2.0578	0.7580
36202.655	0.655044	1.36E+01	11-Feb-99	15:43:16	2.0707	0.7470
36202.655	0.655052	1.36E+01	11-Feb-99	15:43:16	2.0822	0.7470
36202.655	0.655064	1.36E+01	11-Feb-99	15:43:18	2.0995	0.7360
36202.655	0.655088	1.36E+01	11-Feb-99	15:43:20	2.1341	0.7140
36202.655	0.655096	1.36E+01	11-Feb-99	15:43:20	2.1456	0.7250
36202.655	0.655104	1.36E+01	11-Feb-99	15:43:21	2.1571	0.7030
36202.655	0.655113	1.37E+01	11-Feb-99	15:43:22	2.1701	0.6820
36202.655	0.655122	1.37E+01	11-Feb-99	15:43:23	2.1830	0.6820
36202.655	0.655133	1.37E+01	11-Feb-99	15:43:23	2.1989	0.6820
36202.655	0.655157	1.37E+01	11-Feb-99	15:43:26	2.2334	0.6710
36202.655	0.655166	1.37E+01	11-Feb-99	15:43:26	2.2464	0.6710
36202.655	0.655174	1.37E+01	11-Feb-99	15:43:27	2.2579	0.6600
36202.655	0.655183	1.37E+01	11-Feb-99	15:43:28	2.2709	0.6490

36202.655	0.655191	1.37E+01	11-Feb-99	15:43:29	2.2824	0.6490	
36202.655	0.655203	1.37E+01	11-Feb-99	15:43:30	2.2997	0.6380	
36202.655	0.655227	1.37E+01	11-Feb-99	15:43:32	2.3342	0.6280	
36202.655	0.655235	1.37E+01	11-Feb-99	15:43:32	2.3458	0.6060	
36202.655	0.655243	1.37E+01	11-Feb-99	15:43:33	2.3573	0.6170	
36202.655	0.655252	1.37E+01	11-Feb-99	15:43:34	2.3702	0.6060	
36202.655	0.65526	1.37E+01	11-Feb-99	15:43:34	2.3818	0.6170	
36202.655	0.655272	1.37E+01	11-Feb-99	15:43:36	2.3990	0.6060	
36202.655	0.655296	1.38E+01	11-Feb-99	15:43:38	2.4336	0.5840	
36202.655	0.655304	1.38E+01	11-Feb-99	15:43:38	2.4451	0.5840	
36202.655	0.655314	1.38E+01	11-Feb-99	15:43:39	2.4595	0.5730	
36202.655	0.655366	1.38E+01	11-Feb-99	15:43:44	2.5344	0.5410	
36202.655	0.655424	1.38E+01	11-Feb-99	15:43:49	2.6179	0.5190	
36202.655	0.655481	1.38E+01	11-Feb-99	15:43:54	2.7000	0.4980	
36202.656	0.655539	1.39E+01	11-Feb-99	15:43:59	2.7835	0.4650	
36202.656	0.655597	1.39E+01	11-Feb-99	15:44:04	2.8670	0.4220	
36202.656	0.655655	1.39E+01	11-Feb-99	15:44:09	2.9506	0.4220	
36202.656	0.655713	1.39E+01	11-Feb-99	15:44:14	3.0341	0.3890	
36202.656	0.655771	1.40E+01	11-Feb-99	15:44:19	3.1176	0.3680	
36202.656	0.655829	1.40E+01	11-Feb-99	15:44:24	3.2011	0.3460	
36202.656	0.655888	1.40E+01	11-Feb-99	15:44:29	3.2861	0.3240	
36202.656	0.656002	1.40E+01	11-Feb-99	15:44:39	3.4502	0.2920	
36202.656	0.656118	1.41E+01	11-Feb-99	15:44:49	3.6173	0.2590	
36202.656	0.656234	1.41E+01	11-Feb-99	15:44:59	3.7843	0.2380	
36202.656	0.65635	1.41E+01	11-Feb-99	15:45:09	3.9514	0.2050	
36202.656	0.656465	1.42E+01	11-Feb-99	15:45:19	4.1170	0.1620	
36202.657	0.656581	1.42E+01	11-Feb-99	15:45:29	4.2840	0.1620	
36202.657	0.656697	1.42E+01	11-Feb-99	15:45:39	4.4510	0.1510	
36202.657	0.656813	1.42E+01	11-Feb-99	15:45:49	4.6181	0.1190	
36202.657	0.656928	1.42E+01	11-Feb-99	15:45:59	4.7837	0.1190	
36202.657	0.657045	1.42E+01	11-Feb-99	15:46:09	4.9522	0.0970	
36202.657	0.657391	1.43E+01	11-Feb-99	15:46:39	5.4504	0.0750	
36202.658	0.657738	1.43E+01	11-Feb-99	15:47:09	5.9501	0.0650	
36202.658	0.658086	1.43E+01	11-Feb-99	15:47:39	6.4512	0.0430	
36202.658	0.658433	1.43E+01	11-Feb-99	15:48:09	6.9509	0.0320	
36202.659	0.65878	1.43E+01	11-Feb-99	15:48:39	7.4506	0.0320	
36202.659	0.659127	1.43E+01	11-Feb-99	15:49:09	7.9502	0.0320	
36202.659	0.659456	1.43E+01	11-Feb-99	15:49:37	8.4240	0.0210	
36202.659	0.659473	1.43E+01	11-Feb-99	15:49:38	8.4485	0.0210	
36202.659	0.659485	1.43E+01	11-Feb-99	15:49:40	8.4658	0.0100	
36202.659	0.659497	1.43E+01	11-Feb-99	15:49:41	8.4830	0.0210	
36202.66	0.659521	1.43E+01	11-Feb-99	15:49:43	8.5176	0.0100	End of Test


MWA-11i
10.0000
1.0000
0.1000
0.0100
Head (feet)
yo @ 1.0 min
= 1.6
yo @ 7.0 min
= 0.042
0.0000
1.0000
2.0000
3.0000
4.0000
5.0000
6.0000
7.0000
8.0000
9.0000
10.0000
Elapsed Time (min)

- AQUIFER TEST DATA ---
or Unconfined or Confined Aquifers at Steady State
Full or Partial Penetration

Project: 8601192.001 0625
Well No.: **MWA-12i**

Initial DTW (bgs) @ time < 0:	8.89	(feet)
Depth to top of sandpack:	40.0	(feet)
Depth to top of screen:	42.0	(feet)
H = Initial head @ time < 0:	1.59	(feet)
H(0) = Maximum head (@ t ~ 0):	5.62	(feet)
D = Length of well screen:	10.0	(feet)
L = Length of saturated sandpack:	12.3	(feet)
rc = Radius of well casing:	1.0	(inches)
re = Radius of borehole:	3.0	(inches)
d = Length watertable to bottom of well:	43.0	(feet)
Length watertable to bottom of sandpack:	43.0	(feet)
b = Aquifer saturated thickness: (est.)	43.0	(feet)
Partial Penetration (Y/N):	Y	

Test Start Date >>>:	12-Feb-99
Test Start Time >>>:	11:27:27
Test Type >>>>>>	Bail #1
Initial head at T<0 >>	21.5800

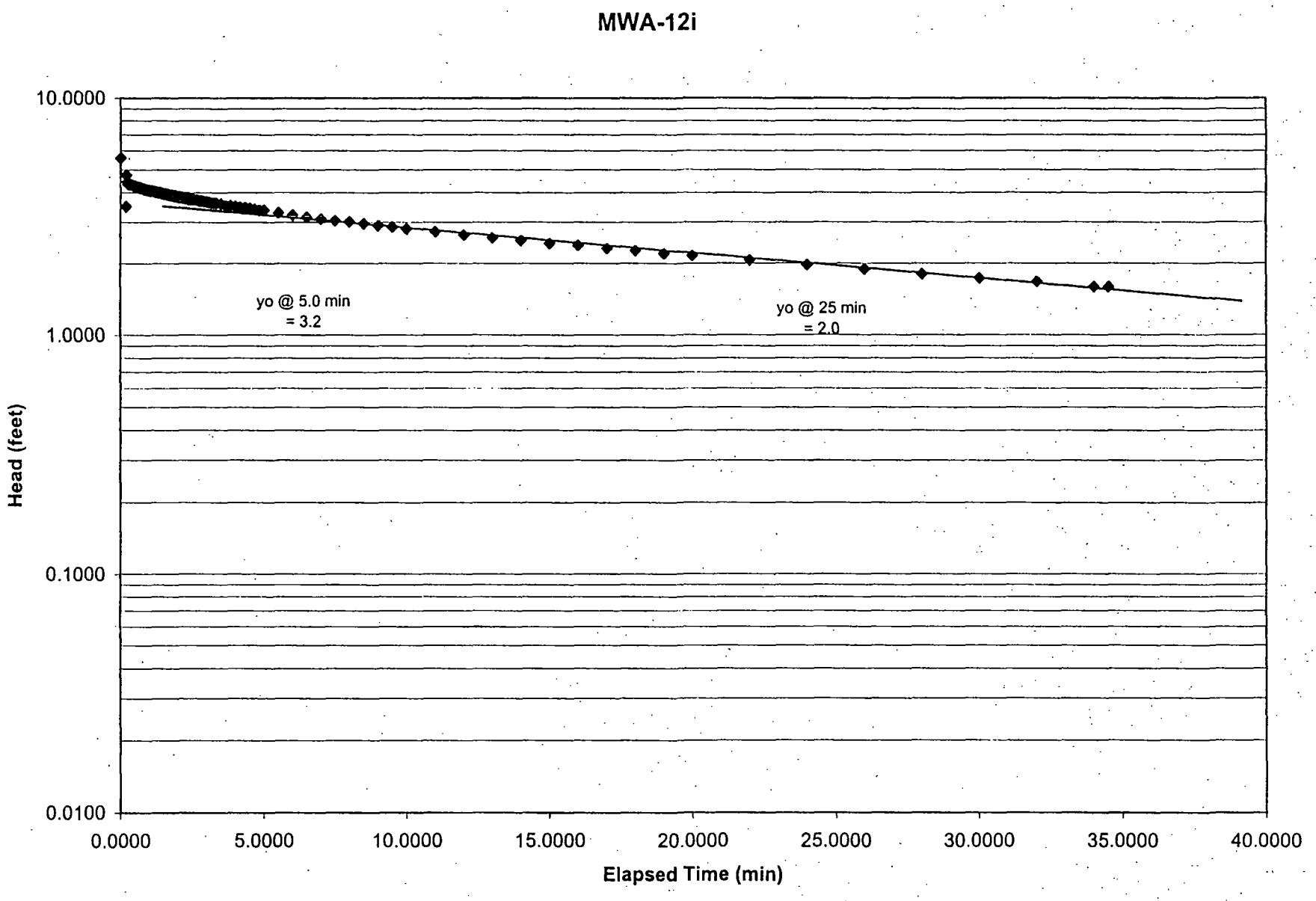
Slug Length	10	(feet)
Slug Diameter	1.25	(inches)
Slug Volume Removed	0.535	(gallons)
Slug Height in Well	0.657	(feet)

DATE (day value)	TIME (day)	Transducer Reading (ft)	Reading Date	Reading Time (hh:mm:ss)	Elapsed Time (min)	Head T > 0 (ft)	COMMENTS
36203.477	0.477394	2.16E+01	12-Feb-99	11:27:27	0.0000	5.6190	Slug In
36203.477	0.477402	1.95E+01	12-Feb-99	11:27:28	0.1944	3.5080	
36203.477	0.477413	2.07E+01	12-Feb-99	11:27:28	0.2102	4.7530	
36203.477	0.477438	2.04E+01	12-Feb-99	11:27:31	0.2462	4.4390	
36203.477	0.477446	2.04E+01	12-Feb-99	11:27:31	0.2578	4.4280	
36203.477	0.477454	2.03E+01	12-Feb-99	11:27:32	0.2693	4.3530	
36203.477	0.477463	2.03E+01	12-Feb-99	11:27:33	0.2822	4.3850	
36203.477	0.477471	2.03E+01	12-Feb-99	11:27:33	0.2938	4.3740	
36203.477	0.477483	2.03E+01	12-Feb-99	11:27:35	0.3110	4.3630	
36203.478	0.477507	2.03E+01	12-Feb-99	11:27:37	0.3456	4.3420	
36203.478	0.477515	2.03E+01	12-Feb-99	11:27:37	0.3571	4.3420	
36203.478	0.477523	2.03E+01	12-Feb-99	11:27:38	0.3686	4.3310	
36203.478	0.477532	2.03E+01	12-Feb-99	11:27:39	0.3816	4.3200	
36203.478	0.477541	2.03E+01	12-Feb-99	11:27:40	0.3946	4.3200	
36203.478	0.477552	2.03E+01	12-Feb-99	11:27:40	0.4104	4.3090	
36203.478	0.477564	2.03E+01	12-Feb-99	11:27:42	0.4277	4.2980	
36203.478	0.477575	2.03E+01	12-Feb-99	11:27:42	0.4435	4.3090	
36203.478	0.477587	2.02E+01	12-Feb-99	11:27:44	0.4608	4.2880	
36203.478	0.477598	2.02E+01	12-Feb-99	11:27:44	0.4766	4.2880	
36203.478	0.47761	2.02E+01	12-Feb-99	11:27:46	0.4939	4.2770	
36203.478	0.477622	2.02E+01	12-Feb-99	11:27:47	0.5112	4.2660	
36203.478	0.477633	2.02E+01	12-Feb-99	11:27:47	0.5270	4.2770	
36203.478	0.477645	2.02E+01	12-Feb-99	11:27:49	0.5443	4.2550	
36203.478	0.477656	2.02E+01	12-Feb-99	11:27:49	0.5602	4.2440	
36203.478	0.477668	2.02E+01	12-Feb-99	11:27:51	0.5774	4.2440	
36203.478	0.477679	2.02E+01	12-Feb-99	11:27:51	0.5933	4.2440	
36203.478	0.477691	2.02E+01	12-Feb-99	11:27:53	0.6106	4.2230	
36203.478	0.477703	2.02E+01	12-Feb-99	11:27:54	0.6278	4.2230	

36203.478	0.477714	2.02E+01	12-Feb-99	11:27:54	0.6437	4.2230
36203.478	0.477726	2.02E+01	12-Feb-99	11:27:56	0.6610	4.2010
36203.478	0.477737	2.02E+01	12-Feb-99	11:27:56	0.6768	4.2010
36203.478	0.477749	2.02E+01	12-Feb-99	11:27:58	0.6941	4.2120
36203.478	0.47776	2.02E+01	12-Feb-99	11:27:58	0.7099	4.2010
36203.478	0.477772	2.02E+01	12-Feb-99	11:28:00	0.7272	4.1900
36203.478	0.477784	2.01E+01	12-Feb-99	11:28:01	0.7445	4.1790
36203.478	0.477808	2.01E+01	12-Feb-99	11:28:03	0.7790	4.1790
36203.478	0.477816	2.01E+01	12-Feb-99	11:28:03	0.7906	4.1680
36203.478	0.477824	2.01E+01	12-Feb-99	11:28:04	0.8021	4.1680
36203.478	0.477833	2.01E+01	12-Feb-99	11:28:05	0.8150	4.1470
36203.478	0.477841	2.01E+01	12-Feb-99	11:28:05	0.8266	4.1580
36203.478	0.477853	2.01E+01	12-Feb-99	11:28:06	0.8438	4.1470
36203.478	0.477865	2.01E+01	12-Feb-99	11:28:08	0.8611	4.1470
36203.478	0.477876	2.01E+01	12-Feb-99	11:28:08	0.8770	4.1360
36203.478	0.477888	2.01E+01	12-Feb-99	11:28:10	0.8942	4.1360
36203.478	0.477899	2.01E+01	12-Feb-99	11:28:10	0.9101	4.1140
36203.478	0.477924	2.01E+01	12-Feb-99	11:28:13	0.9461	4.1140
36203.478	0.477932	2.01E+01	12-Feb-99	11:28:13	0.9576	4.1140
36203.478	0.47794	2.01E+01	12-Feb-99	11:28:14	0.9691	4.1040
36203.478	0.477949	2.01E+01	12-Feb-99	11:28:15	0.9821	4.1140
36203.478	0.477957	2.01E+01	12-Feb-99	11:28:15	0.9936	4.1140
36203.478	0.477969	2.01E+01	12-Feb-99	11:28:17	1.0109	4.0930
36203.478	0.477993	2.01E+01	12-Feb-99	11:28:19	1.0454	4.0930
36203.478	0.478001	2.01E+01	12-Feb-99	11:28:19	1.0570	4.0930
36203.478	0.478009	2.01E+01	12-Feb-99	11:28:20	1.0685	4.0930
36203.478	0.478019	2.00E+01	12-Feb-99	11:28:21	1.0829	4.0820
36203.478	0.478027	2.00E+01	12-Feb-99	11:28:22	1.0944	4.0820
36203.478	0.478038	2.00E+01	12-Feb-99	11:28:22	1.1102	4.0710
36203.478	0.47805	2.00E+01	12-Feb-99	11:28:24	1.1275	4.0710
36203.478	0.478061	2.00E+01	12-Feb-99	11:28:24	1.1434	4.0600
36203.478	0.478073	2.00E+01	12-Feb-99	11:28:26	1.1606	4.0600
36203.478	0.478084	2.00E+01	12-Feb-99	11:28:26	1.1765	4.0600
36203.478	0.478109	2.00E+01	12-Feb-99	11:28:29	1.2125	4.0490
36203.478	0.478117	2.00E+01	12-Feb-99	11:28:29	1.2240	4.0390
36203.478	0.478125	2.00E+01	12-Feb-99	11:28:30	1.2355	4.0390
36203.478	0.478134	2.00E+01	12-Feb-99	11:28:31	1.2485	4.0390
36203.478	0.478142	2.00E+01	12-Feb-99	11:28:31	1.2600	4.0280
36203.478	0.478154	2.00E+01	12-Feb-99	11:28:33	1.2773	4.0280
36203.478	0.478166	2.00E+01	12-Feb-99	11:28:34	1.2946	4.0280
36203.478	0.478177	2.00E+01	12-Feb-99	11:28:34	1.3104	4.0170
36203.478	0.478189	2.00E+01	12-Feb-99	11:28:36	1.3277	4.0170
36203.478	0.4782	2.00E+01	12-Feb-99	11:28:36	1.3435	4.0060
36203.478	0.478225	2.00E+01	12-Feb-99	11:28:39	1.3795	4.0060
36203.478	0.478233	2.00E+01	12-Feb-99	11:28:39	1.3910	4.0060
36203.478	0.478241	2.00E+01	12-Feb-99	11:28:40	1.4026	3.9950
36203.478	0.47825	2.00E+01	12-Feb-99	11:28:41	1.4155	3.9950
36203.478	0.478258	2.00E+01	12-Feb-99	11:28:41	1.4270	3.9950
36203.478	0.47827	1.99E+01	12-Feb-99	11:28:43	1.4443	3.9840
36203.478	0.478294	1.99E+01	12-Feb-99	11:28:45	1.4789	3.9740
36203.478	0.478302	1.99E+01	12-Feb-99	11:28:45	1.4904	3.9740
36203.478	0.47831	1.99E+01	12-Feb-99	11:28:46	1.5019	3.9630
36203.478	0.478319	1.99E+01	12-Feb-99	11:28:47	1.5149	3.9740
36203.478	0.478328	1.99E+01	12-Feb-99	11:28:48	1.5278	3.9630
36203.478	0.478339	1.99E+01	12-Feb-99	11:28:48	1.5437	3.9520

36203.478	0.478363	1.99E+01	12-Feb-99	11:28:51	1.5782	3.9520
36203.478	0.478372	1.99E+01	12-Feb-99	11:28:51	1.5912	3.9520
36203.478	0.47838	1.99E+01	12-Feb-99	11:28:52	1.6027	3.9410
36203.478	0.478389	1.99E+01	12-Feb-99	11:28:53	1.6157	3.9410
36203.478	0.478397	1.99E+01	12-Feb-99	11:28:54	1.6272	3.9410
36203.478	0.478409	1.99E+01	12-Feb-99	11:28:55	1.6445	3.9410
36203.478	0.47842	1.99E+01	12-Feb-99	11:28:55	1.6603	3.9300
36203.478	0.478432	1.99E+01	12-Feb-99	11:28:57	1.6776	3.9300
36203.478	0.478443	1.99E+01	12-Feb-99	11:28:57	1.6934	3.9300
36203.478	0.478455	1.99E+01	12-Feb-99	11:28:59	1.7107	3.9190
36203.478	0.478466	1.99E+01	12-Feb-99	11:28:59	1.7266	3.9190
36203.478	0.478478	1.99E+01	12-Feb-99	11:29:00	1.7438	3.9190
36203.478	0.47849	1.99E+01	12-Feb-99	11:29:02	1.7611	3.9090
36203.479	0.478501	1.99E+01	12-Feb-99	11:29:02	1.7770	3.9090
36203.479	0.478525	1.99E+01	12-Feb-99	11:29:05	1.8115	3.8980
36203.479	0.478534	1.99E+01	12-Feb-99	11:29:05	1.8245	3.8980
36203.479	0.478542	1.99E+01	12-Feb-99	11:29:06	1.8360	3.8980
36203.479	0.478551	1.99E+01	12-Feb-99	11:29:07	1.8490	3.8980
36203.479	0.478559	1.98E+01	12-Feb-99	11:29:07	1.8605	3.8870
36203.479	0.478571	1.98E+01	12-Feb-99	11:29:09	1.8778	3.8760
36203.479	0.478595	1.98E+01	12-Feb-99	11:29:11	1.9123	3.8760
36203.479	0.478603	1.98E+01	12-Feb-99	11:29:11	1.9238	3.8760
36203.479	0.478611	1.98E+01	12-Feb-99	11:29:12	1.9354	3.8870
36203.479	0.47862	1.98E+01	12-Feb-99	11:29:13	1.9483	3.8650
36203.479	0.478628	1.98E+01	12-Feb-99	11:29:13	1.9598	3.8650
36203.479	0.47864	1.98E+01	12-Feb-99	11:29:14	1.9771	3.8540
36203.479	0.478664	1.98E+01	12-Feb-99	11:29:17	2.0117	3.8540
36203.479	0.478672	1.98E+01	12-Feb-99	11:29:17	2.0232	3.8540
36203.479	0.478681	1.98E+01	12-Feb-99	11:29:18	2.0362	3.8330
36203.479	0.47869	1.98E+01	12-Feb-99	11:29:19	2.0491	3.8440
36203.479	0.478698	1.98E+01	12-Feb-99	11:29:20	2.0606	3.8440
36203.479	0.478709	1.98E+01	12-Feb-99	11:29:20	2.0765	3.8330
36203.479	0.478734	1.98E+01	12-Feb-99	11:29:23	2.1125	3.8330
36203.479	0.478742	1.98E+01	12-Feb-99	11:29:23	2.1240	3.8330
36203.479	0.47875	1.98E+01	12-Feb-99	11:29:24	2.1355	3.8440
36203.479	0.478759	1.98E+01	12-Feb-99	11:29:25	2.1485	3.8220
36203.479	0.478767	1.98E+01	12-Feb-99	11:29:25	2.1600	3.8330
36203.479	0.478779	1.98E+01	12-Feb-99	11:29:27	2.1773	3.8110
36203.479	0.478803	1.98E+01	12-Feb-99	11:29:29	2.2118	3.8110
36203.479	0.478811	1.98E+01	12-Feb-99	11:29:29	2.2234	3.8110
36203.479	0.478819	1.98E+01	12-Feb-99	11:29:30	2.2349	3.8000
36203.479	0.478829	1.98E+01	12-Feb-99	11:29:31	2.2493	3.8110
36203.479	0.478837	1.98E+01	12-Feb-99	11:29:32	2.2608	3.8000
36203.479	0.478848	1.98E+01	12-Feb-99	11:29:32	2.2766	3.8110
36203.479	0.47886	1.98E+01	12-Feb-99	11:29:34	2.2939	3.7900
36203.479	0.478872	1.98E+01	12-Feb-99	11:29:35	2.3112	3.8000
36203.479	0.478883	1.98E+01	12-Feb-99	11:29:35	2.3270	3.7900
36203.479	0.478895	1.97E+01	12-Feb-99	11:29:37	2.3443	3.7790
36203.479	0.478906	1.97E+01	12-Feb-99	11:29:37	2.3602	3.7790
36203.479	0.478918	1.98E+01	12-Feb-99	11:29:39	2.3774	3.8220
36203.479	0.478929	1.97E+01	12-Feb-99	11:29:39	2.3933	3.7460
36203.479	0.478941	1.97E+01	12-Feb-99	11:29:41	2.4106	3.7790
36203.479	0.478965	1.97E+01	12-Feb-99	11:29:43	2.4451	3.7680
36203.479	0.478973	1.97E+01	12-Feb-99	11:29:43	2.4566	3.7680
36203.479	0.478981	1.97E+01	12-Feb-99	11:29:44	2.4682	3.7790

36203.479	0.478991	1.97E+01	12-Feb-99	11:29:45	2.4826	3.7570	
36203.479	0.478999	1.97E+01	12-Feb-99	11:29:46	2.4941	3.7570	
36203.479	0.479012	1.97E+01	12-Feb-99	11:29:47	2.5128	3.7680	
36203.479	0.479069	1.97E+01	12-Feb-99	11:29:52	2.5949	3.7350	
36203.479	0.479127	1.97E+01	12-Feb-99	11:29:57	2.6784	3.7250	
36203.479	0.479185	1.97E+01	12-Feb-99	11:30:02	2.7619	3.7030	
36203.479	0.479243	1.97E+01	12-Feb-99	11:30:07	2.8454	3.6920	
36203.479	0.479301	1.96E+01	12-Feb-99	11:30:12	2.9290	3.6810	
36203.479	0.479359	1.96E+01	12-Feb-99	11:30:17	3.0125	3.6700	
36203.479	0.479417	1.96E+01	12-Feb-99	11:30:22	3.0960	3.6490	
36203.479	0.479475	1.96E+01	12-Feb-99	11:30:27	3.1795	3.6270	
36203.48	0.479532	1.96E+01	12-Feb-99	11:30:32	3.2616	3.6270	
36203.48	0.479591	1.96E+01	12-Feb-99	11:30:37	3.3466	3.6160	
36203.48	0.479706	1.96E+01	12-Feb-99	11:30:47	3.5122	3.5950	
36203.48	0.479822	1.95E+01	12-Feb-99	11:30:57	3.6792	3.5300	
36203.48	0.479937	1.95E+01	12-Feb-99	11:31:07	3.8448	3.5300	
36203.48	0.480053	1.95E+01	12-Feb-99	11:31:17	4.0118	3.5080	
36203.48	0.480169	1.94E+01	12-Feb-99	11:31:27	4.1789	3.4860	
36203.48	0.480285	1.94E+01	12-Feb-99	11:31:37	4.3459	3.4650	
36203.48	0.4804	1.94E+01	12-Feb-99	11:31:47	4.5115	3.4430	
36203.481	0.480516	1.94E+01	12-Feb-99	11:31:57	4.6786	3.4110	
36203.481	0.480632	1.93E+01	12-Feb-99	11:32:07	4.8456	3.3780	
36203.481	0.480749	1.93E+01	12-Feb-99	11:32:17	5.0141	3.3780	
36203.481	0.481095	1.93E+01	12-Feb-99	11:32:47	5.5123	3.3020	
36203.481	0.481442	1.92E+01	12-Feb-99	11:33:17	6.0120	3.2260	
36203.482	0.481789	1.91E+01	12-Feb-99	11:33:47	6.5117	3.1610	
36203.482	0.482137	1.91E+01	12-Feb-99	11:34:17	7.0128	3.1070	
36203.482	0.482484	1.90E+01	12-Feb-99	11:34:47	7.5125	3.0530	
36203.483	0.482831	1.90E+01	12-Feb-99	11:35:17	8.0122	3.0210	
36203.483	0.483178	1.89E+01	12-Feb-99	11:35:47	8.5118	2.9670	
36203.484	0.483525	1.89E+01	12-Feb-99	11:36:17	9.0115	2.9120	
36203.484	0.483873	1.88E+01	12-Feb-99	11:36:47	9.5126	2.8690	
36203.484	0.484221	1.88E+01	12-Feb-99	11:37:17	10.0138	2.8150	
36203.485	0.484914	1.87E+01	12-Feb-99	11:38:17	11.0117	2.7390	
36203.486	0.485609	1.86E+01	12-Feb-99	11:39:17	12.0125	2.6530	
36203.486	0.486303	1.85E+01	12-Feb-99	11:40:17	13.0118	2.5770	
36203.487	0.486998	1.85E+01	12-Feb-99	11:41:17	14.0126	2.5120	
36203.488	0.487692	1.84E+01	12-Feb-99	11:42:17	15.0120	2.4360	
36203.488	0.488387	1.84E+01	12-Feb-99	11:43:17	16.0128	2.3930	
36203.489	0.489081	1.83E+01	12-Feb-99	11:44:17	17.0122	2.3280	
36203.49	0.489775	1.82E+01	12-Feb-99	11:45:17	18.0115	2.2740	
36203.49	0.49047	1.82E+01	12-Feb-99	11:46:17	19.0123	2.2090	
36203.491	0.491166	1.81E+01	12-Feb-99	11:47:17	20.0146	2.1650	
36203.493	0.492553	1.80E+01	12-Feb-99	11:49:17	22.0118	2.0680	
36203.494	0.493942	1.79E+01	12-Feb-99	11:51:17	24.0120	1.9810	
36203.495	0.495331	1.79E+01	12-Feb-99	11:53:17	26.0122	1.8950	
36203.497	0.49672	1.78E+01	12-Feb-99	11:55:17	28.0123	1.8080	
36203.498	0.498109	1.77E+01	12-Feb-99	11:57:17	30.0125	1.7320	
36203.499	0.499498	1.76E+01	12-Feb-99	11:59:17	32.0126	1.6780	
36203.501	0.500887	1.76E+01	12-Feb-99	12:01:17	34.0128	1.5910	
36203.501	0.501241	1.76E+01	12-Feb-99	12:01:47	34.5226	1.5910	recovery


MWA-12i
10.0000
1.0000
0.1000
0.0100
Head (feet)
yo @ 5.0 min
= 3.2
yo @ 25 min
= 2.0
0.0000
5.0000
10.0000
15.0000
20.0000
25.0000
30.0000
35.0000
40.0000
Elapsed Time (min)

AQUIFER TEST DATA ---
.r Unconfined or Confined Aquifers at Steady State
Full or Partial Penetration

Project: 8601192.001 0625
Well No.: **MWA-13d**

Initial DTW (bgs) @ time < 0:	22.83	(feet)
Depth to top of sandpack:	50.0	(feet)
Depth to top of screen:	51.0	(feet)
H = Initial head @ time < 0:	0.20	(feet)
H(0) = Maximum head (@ t ~ 0):	1.77	(feet)
D = Length of well screen:	2.0	(feet)
L = Length of saturated sandpack:	3.8	(feet)
rc = Radius of well casing:	1.0	(inches)
re = Radius of borehole:	3.0	(inches)
d = Length watertable to bottom of well:	31.0	(feet)
Length watertable to bottom of sandpack:	31.0	(feet)
b = Aquifer saturated thickness: (est.)	31.0	(feet)
Partial Penetration (Y/N):	Y	

Test Start Date >>>:	11-Feb-99
Test Start Time >>>:	10:14:46
Test Type >>>>>>	Bail #1
Initial head at T<0 >>	11.7920

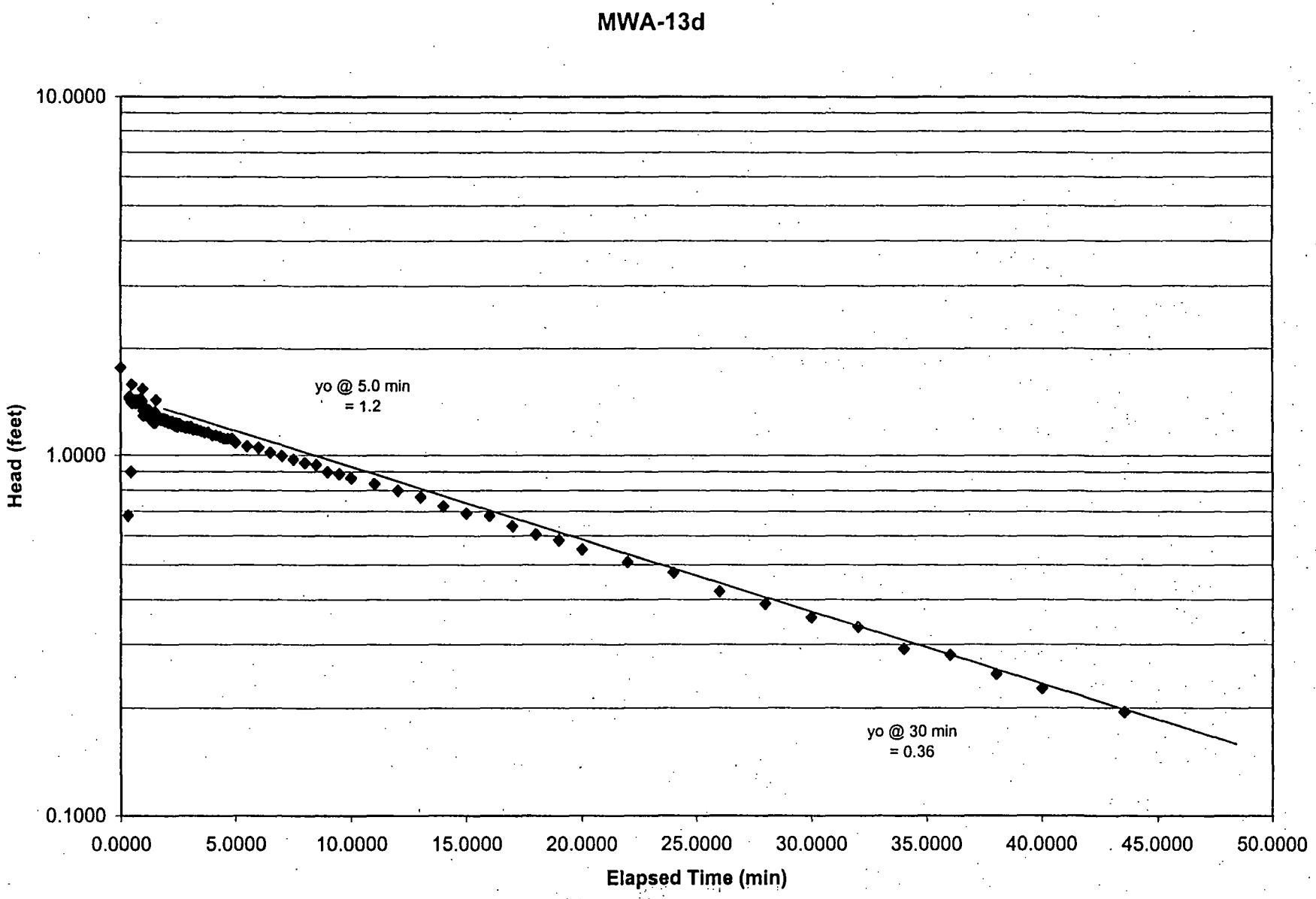
Slug Length	10	(feet)
Slug Diameter	1.25	(inches)
Slug Volume Removed	0.256	(gallons)
Slug Height in Well	1.570	(feet)

DATE (day value)	TIME (day)	Transducer Reading (ft)	Reading Date	Reading Time (hh:mm:ss)	Elapsed Time (min)	Head T > 0 (ft)	COMMENTS
;202.427	0.426916	1.18E+01	11-Feb-99	10:14:46	0.0000	1.7650	Slug in
36202.427	0.426927	1.07E+01	11-Feb-99	10:14:46	0.3254	0.6820	
36202.427	0.426951	1.15E+01	11-Feb-99	10:14:49	0.3600	1.4510	
36202.427	0.426959	1.15E+01	11-Feb-99	10:14:49	0.3715	1.4400	
36202.427	0.426968	1.15E+01	11-Feb-99	10:14:50	0.3845	1.4620	
36202.427	0.426977	1.15E+01	11-Feb-99	10:14:51	0.3974	1.4620	
36202.427	0.426985	1.15E+01	11-Feb-99	10:14:52	0.4090	1.4400	
36202.427	0.426997	1.15E+01	11-Feb-99	10:14:53	0.4262	1.4290	
36202.427	0.427021	1.09E+01	11-Feb-99	10:14:55	0.4608	0.8990	
36202.427	0.427029	1.14E+01	11-Feb-99	10:14:55	0.4723	1.4080	
36202.427	0.427037	1.16E+01	11-Feb-99	10:14:56	0.4838	1.5810	
36202.427	0.427046	1.14E+01	11-Feb-99	10:14:57	0.4968	1.3970	
36202.427	0.427054	1.15E+01	11-Feb-99	10:14:57	0.5083	1.4290	
36202.427	0.427066	1.15E+01	11-Feb-99	10:14:59	0.5256	1.4290	
36202.427	0.42709	1.14E+01	11-Feb-99	10:15:01	0.5602	1.4180	
36202.427	0.427098	1.15E+01	11-Feb-99	10:15:01	0.5717	1.4290	
36202.427	0.427106	1.15E+01	11-Feb-99	10:15:02	0.5832	1.4290	
36202.427	0.427116	1.14E+01	11-Feb-99	10:15:03	0.5976	1.4180	
36202.427	0.427124	1.14E+01	11-Feb-99	10:15:04	0.6091	1.4180	
36202.427	0.427135	1.15E+01	11-Feb-99	10:15:04	0.6250	1.4290	
36202.427	0.42716	1.14E+01	11-Feb-99	10:15:07	0.6610	1.3970	
36202.427	0.427168	1.15E+01	11-Feb-99	10:15:07	0.6725	1.4290	
36202.427	0.427176	1.15E+01	11-Feb-99	10:15:08	0.6840	1.4290	
36202.427	0.427185	1.15E+01	11-Feb-99	10:15:09	0.6970	1.4290	
36202.427	0.427193	1.14E+01	11-Feb-99	10:15:09	0.7085	1.4180	
36202.427	0.427205	1.14E+01	11-Feb-99	10:15:11	0.7258	1.4180	
202.427	0.427216	1.14E+01	11-Feb-99	10:15:11	0.7416	1.4180	
36202.427	0.427228	1.14E+01	11-Feb-99	10:15:12	0.7589	1.4180	

36202.427	0.42724	1.14E+01	11-Feb-99	10:15:14	0.7762	1.4180
36202.427	0.427251	1.14E+01	11-Feb-99	10:15:14	0.7920	1.4180
36202.427	0.427275	1.14E+01	11-Feb-99	10:15:17	0.8266	1.4180
36202.427	0.427284	1.15E+01	11-Feb-99	10:15:17	0.8395	1.4290
36202.427	0.427292	1.15E+01	11-Feb-99	10:15:18	0.8510	1.4400
36202.427	0.427301	1.14E+01	11-Feb-99	10:15:19	0.8640	1.4180
36202.427	0.427309	1.15E+01	11-Feb-99	10:15:19	0.8755	1.4400
36202.427	0.427321	1.14E+01	11-Feb-99	10:15:21	0.8928	1.4080
36202.427	0.427332	1.14E+01	11-Feb-99	10:15:21	0.9086	1.4180
36202.427	0.427344	1.14E+01	11-Feb-99	10:15:23	0.9259	1.4180
36202.427	0.427355	1.14E+01	11-Feb-99	10:15:23	0.9418	1.4180
36202.427	0.427367	1.16E+01	11-Feb-99	10:15:25	0.9590	1.5370
36202.427	0.427391	1.14E+01	11-Feb-99	10:15:27	0.9936	1.3320
36202.427	0.427399	1.13E+01	11-Feb-99	10:15:27	1.0051	1.2880
36202.427	0.427407	1.14E+01	11-Feb-99	10:15:28	1.0166	1.3530
36202.427	0.427417	1.14E+01	11-Feb-99	10:15:29	1.0310	1.3530
36202.427	0.427425	1.14E+01	11-Feb-99	10:15:30	1.0426	1.3640
36202.427	0.427436	1.14E+01	11-Feb-99	10:15:30	1.0584	1.3430
36202.427	0.427448	1.14E+01	11-Feb-99	10:15:32	1.0757	1.3430
36202.427	0.427459	1.14E+01	11-Feb-99	10:15:32	1.0915	1.3530
36202.427	0.427471	1.14E+01	11-Feb-99	10:15:33	1.1088	1.3530
36202.427	0.427483	1.13E+01	11-Feb-99	10:15:35	1.1261	1.2990
36202.428	0.427507	1.13E+01	11-Feb-99	10:15:37	1.1606	1.3100
36202.428	0.427515	1.13E+01	11-Feb-99	10:15:37	1.1722	1.3210
36202.428	0.427523	1.13E+01	11-Feb-99	10:15:38	1.1837	1.3100
36202.428	0.427532	1.13E+01	11-Feb-99	10:15:39	1.1966	1.2990
36202.428	0.427541	1.13E+01	11-Feb-99	10:15:40	1.2096	1.3100
36202.428	0.427552	1.13E+01	11-Feb-99	10:15:40	1.2254	1.3100
36202.428	0.427564	1.14E+01	11-Feb-99	10:15:42	1.2427	1.3430
36202.428	0.427575	1.13E+01	11-Feb-99	10:15:42	1.2586	1.2880
36202.428	0.427587	1.13E+01	11-Feb-99	10:15:44	1.2758	1.2880
36202.428	0.427598	1.13E+01	11-Feb-99	10:15:44	1.2917	1.2670
36202.428	0.427623	1.13E+01	11-Feb-99	10:15:47	1.3277	1.2670
36202.428	0.427631	1.13E+01	11-Feb-99	10:15:47	1.3392	1.2780
36202.428	0.427639	1.13E+01	11-Feb-99	10:15:48	1.3507	1.2560
36202.428	0.427648	1.13E+01	11-Feb-99	10:15:49	1.3637	1.2780
36202.428	0.427656	1.13E+01	11-Feb-99	10:15:49	1.3752	1.2560
36202.428	0.427668	1.13E+01	11-Feb-99	10:15:51	1.3925	1.2560
36202.428	0.427692	1.13E+01	11-Feb-99	10:15:53	1.4270	1.2450
36202.428	0.4277	1.13E+01	11-Feb-99	10:15:53	1.4386	1.2340
36202.428	0.427708	1.13E+01	11-Feb-99	10:15:54	1.4501	1.2560
36202.428	0.427718	1.13E+01	11-Feb-99	10:15:55	1.4645	1.2450
36202.428	0.427726	1.13E+01	11-Feb-99	10:15:56	1.4760	1.2450
36202.428	0.427737	1.13E+01	11-Feb-99	10:15:56	1.4918	1.2450
36202.428	0.427749	1.13E+01	11-Feb-99	10:15:58	1.5091	1.3210
36202.428	0.42776	1.13E+01	11-Feb-99	10:15:58	1.5250	1.2340
36202.428	0.427772	1.15E+01	11-Feb-99	10:16:00	1.5422	1.4290
36202.428	0.427784	1.13E+01	11-Feb-99	10:16:01	1.5595	1.2670
36202.428	0.427808	1.13E+01	11-Feb-99	10:16:03	1.5941	1.2780
36202.428	0.427816	1.13E+01	11-Feb-99	10:16:03	1.6056	1.2880
36202.428	0.427824	1.13E+01	11-Feb-99	10:16:04	1.6171	1.2780
36202.428	0.427833	1.13E+01	11-Feb-99	10:16:05	1.6301	1.2780
36202.428	0.427841	1.13E+01	11-Feb-99	10:16:05	1.6416	1.2670
36202.428	0.427853	1.13E+01	11-Feb-99	10:16:06	1.6589	1.2780
36202.428	0.427877	1.13E+01	11-Feb-99	10:16:09	1.6934	1.2670

6202.428	0.427885	1.13E+01	11-Feb-99	10:16:09	1.7050	1.2780
36202.428	0.427894	1.13E+01	11-Feb-99	10:16:10	1.7179	1.2670
36202.428	0.427903	1.13E+01	11-Feb-99	10:16:11	1.7309	1.2670
36202.428	0.427911	1.13E+01	11-Feb-99	10:16:12	1.7424	1.2670
36202.428	0.427922	1.13E+01	11-Feb-99	10:16:12	1.7582	1.2670
36202.428	0.427934	1.13E+01	11-Feb-99	10:16:13	1.7755	1.2560
36202.428	0.427946	1.13E+01	11-Feb-99	10:16:15	1.7928	1.2560
36202.428	0.427957	1.13E+01	11-Feb-99	10:16:15	1.8086	1.2670
36202.428	0.427969	1.13E+01	11-Feb-99	10:16:17	1.8259	1.2560
36202.428	0.427993	1.13E+01	11-Feb-99	10:16:19	1.8605	1.2560
36202.428	0.428001	1.13E+01	11-Feb-99	10:16:19	1.8720	1.2560
36202.428	0.428009	1.13E+01	11-Feb-99	10:16:20	1.8835	1.2670
36202.428	0.428019	1.13E+01	11-Feb-99	10:16:21	1.8979	1.2560
36202.428	0.428027	1.13E+01	11-Feb-99	10:16:22	1.9094	1.2560
36202.428	0.428038	1.13E+01	11-Feb-99	10:16:22	1.9253	1.2450
36202.428	0.42805	1.13E+01	11-Feb-99	10:16:24	1.9426	1.2560
36202.428	0.428061	1.13E+01	11-Feb-99	10:16:24	1.9584	1.2560
36202.428	0.428073	1.13E+01	11-Feb-99	10:16:26	1.9757	1.2560
36202.428	0.428084	1.13E+01	11-Feb-99	10:16:26	1.9915	1.2560
36202.428	0.428109	1.13E+01	11-Feb-99	10:16:29	2.0275	1.2450
36202.428	0.428117	1.13E+01	11-Feb-99	10:16:29	2.0390	1.2560
36202.428	0.428125	1.13E+01	11-Feb-99	10:16:30	2.0506	1.2450
36202.428	0.428134	1.13E+01	11-Feb-99	10:16:31	2.0635	1.2450
36202.428	0.428142	1.13E+01	11-Feb-99	10:16:31	2.0750	1.2450
36202.428	0.428154	1.13E+01	11-Feb-99	10:16:33	2.0923	1.2340
36202.428	0.428178	1.13E+01	11-Feb-99	10:16:35	2.1269	1.2450
36202.428	0.428186	1.13E+01	11-Feb-99	10:16:35	2.1384	1.2450
6202.428	0.428194	1.13E+01	11-Feb-99	10:16:36	2.1499	1.2340
36202.428	0.428204	1.13E+01	11-Feb-99	10:16:37	2.1643	1.2340
36202.428	0.428212	1.13E+01	11-Feb-99	10:16:38	2.1758	1.2340
36202.428	0.428223	1.13E+01	11-Feb-99	10:16:38	2.1917	1.2340
36202.428	0.428248	1.13E+01	11-Feb-99	10:16:41	2.2277	1.2340
36202.428	0.428256	1.13E+01	11-Feb-99	10:16:41	2.2392	1.2450
36202.428	0.428264	1.13E+01	11-Feb-99	10:16:42	2.2507	1.2450
36202.428	0.428273	1.13E+01	11-Feb-99	10:16:43	2.2637	1.2450
36202.428	0.428281	1.13E+01	11-Feb-99	10:16:43	2.2752	1.2230
36202.428	0.428293	1.13E+01	11-Feb-99	10:16:45	2.2925	1.2340
36202.428	0.428317	1.13E+01	11-Feb-99	10:16:47	2.3270	1.2340
36202.428	0.428325	1.13E+01	11-Feb-99	10:16:47	2.3386	1.2340
36202.428	0.428333	1.13E+01	11-Feb-99	10:16:48	2.3501	1.2230
36202.428	0.428343	1.13E+01	11-Feb-99	10:16:49	2.3645	1.2230
36202.428	0.428351	1.12E+01	11-Feb-99	10:16:50	2.3760	1.2130
36202.428	0.428362	1.13E+01	11-Feb-99	10:16:50	2.3918	1.2230
36202.428	0.428387	1.12E+01	11-Feb-99	10:16:53	2.4278	1.2130
36202.428	0.428395	1.13E+01	11-Feb-99	10:16:53	2.4394	1.2230
36202.428	0.428403	1.12E+01	11-Feb-99	10:16:54	2.4509	1.2130
36202.428	0.428412	1.13E+01	11-Feb-99	10:16:55	2.4638	1.2340
36202.428	0.42842	1.12E+01	11-Feb-99	10:16:55	2.4754	1.2130
36202.428	0.428432	1.12E+01	11-Feb-99	10:16:57	2.4926	1.2020
36202.428	0.428457	1.13E+01	11-Feb-99	10:16:59	2.5286	1.2230
36202.429	0.428502	1.13E+01	11-Feb-99	10:17:03	2.5934	1.2230
36202.429	0.42856	1.12E+01	11-Feb-99	10:17:08	2.6770	1.2020
36202.429	0.428618	1.12E+01	11-Feb-99	10:17:13	2.7605	1.2020
6202.429	0.428676	1.12E+01	11-Feb-99	10:17:18	2.8440	1.1910
36202.429	0.428734	1.12E+01	11-Feb-99	10:17:23	2.9275	1.2020

36202.429	0.428792	1.12E+01	11-Feb-99	10:17:28	3.0110	1.1910	
36202.429	0.42885	1.12E+01	11-Feb-99	10:17:33	3.0946	1.2020	
36202.429	0.428907	1.12E+01	11-Feb-99	10:17:38	3.1766	1.1800	
36202.429	0.428965	1.12E+01	11-Feb-99	10:17:43	3.2602	1.1800	
36202.429	0.429024	1.12E+01	11-Feb-99	10:17:48	3.3451	1.1800	
36202.429	0.429139	1.12E+01	11-Feb-99	10:17:58	3.5107	1.1690	
36202.429	0.429255	1.12E+01	11-Feb-99	10:18:08	3.6778	1.1580	
36202.429	0.42937	1.12E+01	11-Feb-99	10:18:18	3.8434	1.1580	
36202.429	0.429486	1.12E+01	11-Feb-99	10:18:28	4.0104	1.1370	
36202.43	0.429602	1.12E+01	11-Feb-99	10:18:38	4.1774	1.1370	
36202.43	0.429718	1.12E+01	11-Feb-99	10:18:48	4.3445	1.1260	
36202.43	0.429833	1.11E+01	11-Feb-99	10:18:58	4.5101	1.1150	
36202.43	0.429949	1.11E+01	11-Feb-99	10:19:08	4.6771	1.1150	
36202.43	0.430065	1.11E+01	11-Feb-99	10:19:18	4.8442	1.1150	
36202.43	0.430182	1.11E+01	11-Feb-99	10:19:28	5.0126	1.0830	
36202.431	0.430528	1.11E+01	11-Feb-99	10:19:58	5.5109	1.0610	
36202.431	0.430875	1.11E+01	11-Feb-99	10:20:28	6.0106	1.0500	
36202.431	0.431222	1.10E+01	11-Feb-99	10:20:58	6.5102	1.0180	
36202.432	0.431569	1.10E+01	11-Feb-99	10:21:28	7.0099	0.9960	
36202.432	0.431917	1.10E+01	11-Feb-99	10:21:58	7.5110	0.9740	
36202.432	0.432264	1.10E+01	11-Feb-99	10:22:28	8.0107	0.9530	
36202.433	0.432611	1.10E+01	11-Feb-99	10:22:58	8.5104	0.9420	
36202.433	0.432958	1.09E+01	11-Feb-99	10:23:28	9.0101	0.8990	
36202.433	0.433306	1.09E+01	11-Feb-99	10:23:58	9.5112	0.8880	
36202.434	0.433654	1.09E+01	11-Feb-99	10:24:28	10.0123	0.8660	
36202.434	0.434347	1.09E+01	11-Feb-99	10:25:28	11.0102	0.8340	
36202.435	0.435042	1.08E+01	11-Feb-99	10:26:28	12.0110	0.8010	
36202.436	0.435736	1.08E+01	11-Feb-99	10:27:28	13.0104	0.7690	
36202.436	0.436431	1.08E+01	11-Feb-99	10:28:28	14.0112	0.7250	
36202.437	0.437125	1.07E+01	11-Feb-99	10:29:28	15.0106	0.6930	
36202.438	0.437819	1.07E+01	11-Feb-99	10:30:28	16.0099	0.6820	
36202.439	0.438514	1.07E+01	11-Feb-99	10:31:28	17.0107	0.6390	
36202.439	0.439208	1.06E+01	11-Feb-99	10:32:28	18.0101	0.6060	
36202.44	0.439903	1.06E+01	11-Feb-99	10:33:28	19.0109	0.5850	
36202.441	0.440598	1.06E+01	11-Feb-99	10:34:28	20.0117	0.5520	
36202.442	0.441986	1.05E+01	11-Feb-99	10:36:28	22.0104	0.5090	
36202.443	0.443375	1.05E+01	11-Feb-99	10:38:28	24.0106	0.4760	
36202.445	0.444764	1.04E+01	11-Feb-99	10:40:28	26.0107	0.4220	
36202.446	0.446153	1.04E+01	11-Feb-99	10:42:28	28.0109	0.3900	
36202.448	0.447542	1.04E+01	11-Feb-99	10:44:28	30.0110	0.3570	
36202.449	0.448931	1.04E+01	11-Feb-99	10:46:28	32.0112	0.3360	
36202.45	0.450319	1.03E+01	11-Feb-99	10:48:28	34.0099	0.2920	
36202.452	0.451708	1.03E+01	11-Feb-99	10:50:28	36.0101	0.2810	
36202.453	0.453097	1.03E+01	11-Feb-99	10:52:28	38.0102	0.2490	
36202.454	0.454487	1.03E+01	11-Feb-99	10:54:28	40.0118	0.2270	
36202.457	0.456955	1.02E+01	11-Feb-99	10:58:01	43.5658	0.1950	
36202.457	0.456973	1.02E+01	11-Feb-99	10:58:02	43.5917	0.1950	recovered


MWA-13d
10.0000
1.0000
0.1000
Head (feet)
yo @ 5.0 min
= 1.2
yo @ 30 min
= 0.36
0.0000
5.0000
10.0000
15.0000
20.0000
25.0000
30.0000
35.0000
40.0000
45.0000
50.0000
Elapsed Time (min)

AQUIFER TEST DATA ---
or Unconfined or Confined Aquifers at Steady State
Full or Partial Penetration

Project: 8601192.001 0625
Well No.: **MWA-14i**

Initial DTW (bgs) @ time < 0:	22.24	(feet)
Depth to top of sandpack:	42.6	(feet)
Depth to top of screen:	44.1	(feet)
H = Initial head @ time < 0:	0.00	(feet)
H(0) = Maximum head (@ t ~ 0):	3.64	(feet)
D = Length of well screen:	5.0	(feet)
L = Length of saturated sandpack:	6.8	(feet)
rc = Radius of well casing:	1.0	(inches)
re = Radius of borehole:	3.0	(inches)
d = Length watertable to bottom of well:	30.0	(feet)
Length watertable to bottom of sandpack:	30.0	(feet)
b = Aquifer saturated thickness: (est.)	30.0	(feet)
Partial Penetration (Y/N):	Y	

Test Start Date >>>:	10-Feb-99
Test Start Time >>>:	12:59:39
Test Type >>>>>>	Bail #1
Initial head at T<0 >>	12.4090

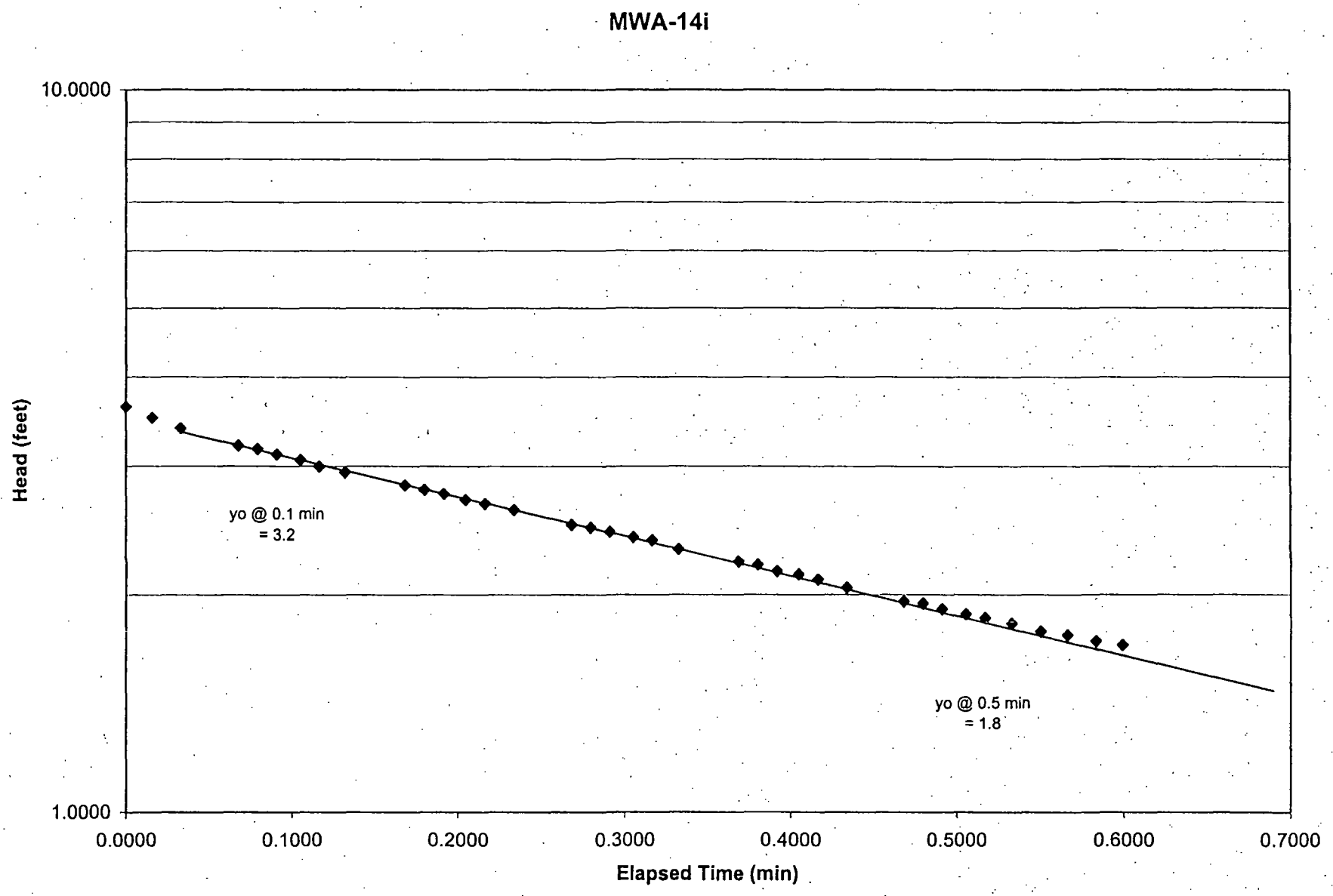
Slug Length	10	(feet)
Slug Diameter	1.25	(inches)
Slug Volume Removed	0.593	(gallons)
Slug Height in Well	3.640	(feet)

DATE (day value)	TIME (day)	Transducer Reading (ft)	Reading Date	Reading Time (hh:mm:ss)	Elapsed Time (min)	Head T > 0 (ft)	COMMENTS
36201.541	0.541418	1.24E+01	10-Feb-99	12:59:39	0.0000	3.6380	Slug Out
36201.541	0.541429	1.25E+01	10-Feb-99	12:59:39	0.0158	3.5080	
36201.541	0.541441	1.27E+01	10-Feb-99	12:59:41	0.0331	3.3890	
36201.541	0.541465	1.28E+01	10-Feb-99	12:59:43	0.0677	3.2050	
36201.541	0.541473	1.29E+01	10-Feb-99	12:59:43	0.0792	3.1720	
36201.541	0.541481	1.29E+01	10-Feb-99	12:59:44	0.0907	3.1180	
36201.541	0.541491	1.30E+01	10-Feb-99	12:59:45	0.1051	3.0640	
36201.541	0.541499	1.30E+01	10-Feb-99	12:59:46	0.1166	2.9990	
36201.542	0.54151	1.31E+01	10-Feb-99	12:59:46	0.1325	2.9450	
36201.542	0.541535	1.32E+01	10-Feb-99	12:59:49	0.1685	2.8260	
36201.542	0.541543	1.33E+01	10-Feb-99	12:59:49	0.1800	2.7830	
36201.542	0.541551	1.33E+01	10-Feb-99	12:59:50	0.1915	2.7500	
36201.542	0.54156	1.34E+01	10-Feb-99	12:59:51	0.2045	2.6960	
36201.542	0.541568	1.34E+01	10-Feb-99	12:59:51	0.2160	2.6630	
36201.542	0.54158	1.34E+01	10-Feb-99	12:59:53	0.2333	2.6090	
36201.542	0.541604	1.36E+01	10-Feb-99	12:59:55	0.2678	2.4900	
36201.542	0.541612	1.36E+01	10-Feb-99	12:59:55	0.2794	2.4690	
36201.542	0.54162	1.36E+01	10-Feb-99	12:59:56	0.2909	2.4360	
36201.542	0.54163	1.37E+01	10-Feb-99	12:59:57	0.3053	2.3930	
36201.542	0.541638	1.37E+01	10-Feb-99	12:59:58	0.3168	2.3710	
36201.542	0.541649	1.37E+01	10-Feb-99	12:59:58	0.3326	2.3060	
36201.542	0.541674	1.38E+01	10-Feb-99	13:00:01	0.3686	2.2190	
36201.542	0.541682	1.38E+01	10-Feb-99	13:00:01	0.3802	2.1980	
36201.542	0.54169	1.39E+01	10-Feb-99	13:00:02	0.3917	2.1550	
36201.542	0.541699	1.39E+01	10-Feb-99	13:00:03	0.4046	2.1330	
36201.542	0.541707	1.39E+01	10-Feb-99	13:00:03	0.4162	2.1000	
36201.542	0.541719	1.40E+01	10-Feb-99	13:00:05	0.4334	2.0460	
36201.542	0.541743	1.41E+01	10-Feb-99	13:00:07	0.4680	1.9600	

36201.542	0.541751	1.41E+01	10-Feb-99	13:00:07	0.4795	1.9490
36201.542	0.541759	1.41E+01	10-Feb-99	13:00:08	0.4910	1.9160
36201.542	0.541769	1.42E+01	10-Feb-99	13:00:09	0.5054	1.8840
36201.542	0.541777	1.42E+01	10-Feb-99	13:00:10	0.5170	1.8620
36201.542	0.541788	1.42E+01	10-Feb-99	13:00:10	0.5328	1.8300
36201.542	0.5418	1.43E+01	10-Feb-99	13:00:12	0.5501	1.7860
36201.542	0.541811	1.43E+01	10-Feb-99	13:00:12	0.5659	1.7650
36201.542	0.541823	1.43E+01	10-Feb-99	13:00:14	0.5832	1.7320
36201.542	0.541834	1.43E+01	10-Feb-99	13:00:14	0.5990	1.7110
36201.542	0.541859	1.44E+01	10-Feb-99	13:00:17	0.6350	1.6130
36201.542	0.541867	1.44E+01	10-Feb-99	13:00:17	0.6466	1.6130
36201.542	0.541875	1.45E+01	10-Feb-99	13:00:18	0.6581	1.5810
36201.542	0.541884	1.45E+01	10-Feb-99	13:00:19	0.6710	1.5590
36201.542	0.541892	1.45E+01	10-Feb-99	13:00:19	0.6826	1.5370
36201.542	0.541904	1.45E+01	10-Feb-99	13:00:21	0.6998	1.5050
36201.542	0.541916	1.46E+01	10-Feb-99	13:00:22	0.7171	1.4940
36201.542	0.541927	1.46E+01	10-Feb-99	13:00:22	0.7330	1.4510
36201.542	0.541939	1.46E+01	10-Feb-99	13:00:24	0.7502	1.4400
36201.542	0.54195	1.47E+01	10-Feb-99	13:00:24	0.7661	1.3970
36201.542	0.541975	1.47E+01	10-Feb-99	13:00:27	0.8021	1.3420
36201.542	0.541983	1.47E+01	10-Feb-99	13:00:27	0.8136	1.3420
36201.542	0.541991	1.47E+01	10-Feb-99	13:00:28	0.8251	1.3100
36201.542	0.542	1.47E+01	10-Feb-99	13:00:29	0.8381	1.2990
36201.542	0.542008	1.48E+01	10-Feb-99	13:00:29	0.8496	1.2880
36201.542	0.54202	1.48E+01	10-Feb-99	13:00:31	0.8669	1.2450
36201.542	0.542044	1.48E+01	10-Feb-99	13:00:33	0.9014	1.2120
36201.542	0.542052	1.49E+01	10-Feb-99	13:00:33	0.9130	1.1910
36201.542	0.542059	1.49E+01	10-Feb-99	13:00:34	0.9230	1.1690
36201.542	0.542069	1.49E+01	10-Feb-99	13:00:35	0.9374	1.1580
36201.542	0.542076	1.49E+01	10-Feb-99	13:00:35	0.9475	1.1470
36201.542	0.542089	1.49E+01	10-Feb-99	13:00:36	0.9662	1.1260
36201.542	0.542101	1.50E+01	10-Feb-99	13:00:38	0.9835	1.0930
36201.542	0.542112	1.50E+01	10-Feb-99	13:00:38	0.9994	1.0830
36201.542	0.542124	1.50E+01	10-Feb-99	13:00:40	1.0166	1.0500
36201.542	0.542135	1.50E+01	10-Feb-99	13:00:40	1.0325	1.0390
36201.542	0.54216	1.51E+01	10-Feb-99	13:00:43	1.0685	0.9960
36201.542	0.542168	1.51E+01	10-Feb-99	13:00:43	1.0800	0.9960
36201.542	0.542175	1.51E+01	10-Feb-99	13:00:44	1.0901	0.9740
36201.542	0.542185	1.51E+01	10-Feb-99	13:00:45	1.1045	0.9630
36201.542	0.542192	1.51E+01	10-Feb-99	13:00:45	1.1146	0.9420
36201.542	0.542205	1.51E+01	10-Feb-99	13:00:47	1.1333	0.9310
36201.542	0.542216	1.51E+01	10-Feb-99	13:00:47	1.1491	0.9200
36201.542	0.542228	1.51E+01	10-Feb-99	13:00:48	1.1664	0.8980
36201.542	0.54224	1.52E+01	10-Feb-99	13:00:50	1.1837	0.8880
36201.542	0.542251	1.52E+01	10-Feb-99	13:00:50	1.1995	0.8770
36201.542	0.542275	1.52E+01	10-Feb-99	13:00:53	1.2341	0.8330
36201.542	0.542284	1.52E+01	10-Feb-99	13:00:53	1.2470	0.8230
36201.542	0.542291	1.52E+01	10-Feb-99	13:00:54	1.2571	0.8120
36201.542	0.542301	1.53E+01	10-Feb-99	13:00:55	1.2715	0.7900
36201.542	0.542309	1.52E+01	10-Feb-99	13:00:55	1.2830	0.8010
36201.542	0.542321	1.53E+01	10-Feb-99	13:00:57	1.3003	0.7790
36201.542	0.542332	1.53E+01	10-Feb-99	13:00:57	1.3162	0.7580
36201.542	0.542344	1.53E+01	10-Feb-99	13:00:59	1.3334	0.7580
36201.542	0.542355	1.53E+01	10-Feb-99	13:00:59	1.3493	0.7360
36201.542	0.542367	1.53E+01	10-Feb-99	13:01:01	1.3666	0.7250

36201.542	0.542391	1.53E+01	10-Feb-99	13:01:03	1.4011	0.7040
36201.542	0.542399	1.54E+01	10-Feb-99	13:01:03	1.4126	0.6930
36201.542	0.542407	1.54E+01	10-Feb-99	13:01:04	1.4242	0.6820
36201.542	0.542417	1.54E+01	10-Feb-99	13:01:05	1.4386	0.6600
36201.542	0.542425	1.54E+01	10-Feb-99	13:01:06	1.4501	0.6600
36201.542	0.542436	1.54E+01	10-Feb-99	13:01:06	1.4659	0.6490
36201.542	0.542448	1.54E+01	10-Feb-99	13:01:08	1.4832	0.6390
36201.542	0.542459	1.54E+01	10-Feb-99	13:01:08	1.4990	0.6280
36201.542	0.542471	1.54E+01	10-Feb-99	13:01:09	1.5163	0.6170
36201.542	0.542483	1.54E+01	10-Feb-99	13:01:11	1.5336	0.6170
36201.543	0.542507	1.55E+01	10-Feb-99	13:01:13	1.5682	0.5840
36201.543	0.542515	1.55E+01	10-Feb-99	13:01:13	1.5797	0.5840
36201.543	0.542523	1.55E+01	10-Feb-99	13:01:14	1.5912	0.5740
36201.543	0.542532	1.55E+01	10-Feb-99	13:01:15	1.6042	0.5630
36201.543	0.542541	1.55E+01	10-Feb-99	13:01:16	1.6171	0.5520
36201.543	0.542552	1.55E+01	10-Feb-99	13:01:16	1.6330	0.5410
36201.543	0.542576	1.55E+01	10-Feb-99	13:01:19	1.6675	0.5190
36201.543	0.542584	1.55E+01	10-Feb-99	13:01:19	1.6790	0.5090
36201.543	0.542593	1.55E+01	10-Feb-99	13:01:20	1.6920	0.5090
36201.543	0.542602	1.55E+01	10-Feb-99	13:01:21	1.7050	0.4980
36201.543	0.54261	1.55E+01	10-Feb-99	13:01:22	1.7165	0.5090
36201.543	0.542622	1.55E+01	10-Feb-99	13:01:23	1.7338	0.4980
36201.543	0.542646	1.56E+01	10-Feb-99	13:01:25	1.7683	0.4870
36201.543	0.542654	1.56E+01	10-Feb-99	13:01:25	1.7798	0.4540
36201.543	0.542662	1.56E+01	10-Feb-99	13:01:26	1.7914	0.4540
36201.543	0.542671	1.56E+01	10-Feb-99	13:01:27	1.8043	0.4440
36201.543	0.542679	1.56E+01	10-Feb-99	13:01:27	1.8158	0.4440
36201.543	0.542691	1.56E+01	10-Feb-99	13:01:29	1.8331	0.4440
36201.543	0.542703	1.56E+01	10-Feb-99	13:01:30	1.8504	0.4330
36201.543	0.542714	1.56E+01	10-Feb-99	13:01:30	1.8662	0.4330
36201.543	0.542726	1.56E+01	10-Feb-99	13:01:32	1.8835	0.4110
36201.543	0.542737	1.56E+01	10-Feb-99	13:01:32	1.8994	0.4000
36201.543	0.542762	1.56E+01	10-Feb-99	13:01:35	1.9354	0.4000
36201.543	0.54277	1.56E+01	10-Feb-99	13:01:35	1.9469	0.4000
36201.543	0.542778	1.57E+01	10-Feb-99	13:01:36	1.9584	0.3900
36201.543	0.542787	1.57E+01	10-Feb-99	13:01:37	1.9714	0.3900
36201.543	0.542795	1.57E+01	10-Feb-99	13:01:37	1.9829	0.3900
36201.543	0.542807	1.57E+01	10-Feb-99	13:01:39	2.0002	0.3680
36201.543	0.542818	1.57E+01	10-Feb-99	13:01:39	2.0160	0.3570
36201.543	0.54283	1.57E+01	10-Feb-99	13:01:41	2.0333	0.3570
36201.543	0.542841	1.57E+01	10-Feb-99	13:01:41	2.0491	0.3570
36201.543	0.542853	1.57E+01	10-Feb-99	13:01:42	2.0664	0.3460
36201.543	0.542865	1.57E+01	10-Feb-99	13:01:44	2.0837	0.3460
36201.543	0.542876	1.57E+01	10-Feb-99	13:01:44	2.0995	0.3460
36201.543	0.542888	1.57E+01	10-Feb-99	13:01:46	2.1168	0.3350
36201.543	0.542899	1.57E+01	10-Feb-99	13:01:46	2.1326	0.3250
36201.543	0.542924	1.57E+01	10-Feb-99	13:01:49	2.1686	0.3140
36201.543	0.542932	1.57E+01	10-Feb-99	13:01:49	2.1802	0.3140
36201.543	0.54294	1.57E+01	10-Feb-99	13:01:50	2.1917	0.3140
36201.543	0.542949	1.57E+01	10-Feb-99	13:01:51	2.2046	0.3030
36201.543	0.542957	1.57E+01	10-Feb-99	13:01:51	2.2162	0.3030
36201.543	0.542969	1.57E+01	10-Feb-99	13:01:53	2.2334	0.3030
36201.543	0.542993	1.58E+01	10-Feb-99	13:01:55	2.2680	0.2700
36201.543	0.543001	1.58E+01	10-Feb-99	13:01:55	2.2795	0.2810
36201.543	0.543009	1.58E+01	10-Feb-99	13:01:56	2.2910	0.2810

36201.543	0.543019	1.58E+01	10-Feb-99	13:01:57	2.3054	0.2700
36201.543	0.543027	1.58E+01	10-Feb-99	13:01:58	2.3170	0.2700
36201.543	0.543038	1.58E+01	10-Feb-99	13:01:58	2.3328	0.2810
36201.543	0.543062	1.58E+01	10-Feb-99	13:02:01	2.3674	0.2700
36201.543	0.543071	1.58E+01	10-Feb-99	13:02:01	2.3803	0.2600
36201.543	0.543079	1.58E+01	10-Feb-99	13:02:02	2.3918	0.2600
36201.543	0.543088	1.58E+01	10-Feb-99	13:02:03	2.4048	0.2380
36201.543	0.543096	1.58E+01	10-Feb-99	13:02:03	2.4163	0.2490
36201.543	0.543108	1.58E+01	10-Feb-99	13:02:05	2.4336	0.2380
36201.543	0.543132	1.58E+01	10-Feb-99	13:02:07	2.4682	0.2270
36201.543	0.543141	1.58E+01	10-Feb-99	13:02:07	2.4811	0.2270
36201.543	0.54319	1.58E+01	10-Feb-99	13:02:12	2.5517	0.2160
36201.543	0.543248	1.59E+01	10-Feb-99	13:02:17	2.6352	0.1950
36201.543	0.543306	1.59E+01	10-Feb-99	13:02:22	2.7187	0.1840
36201.543	0.543363	1.59E+01	10-Feb-99	13:02:27	2.8008	0.1840
36201.543	0.543421	1.59E+01	10-Feb-99	13:02:32	2.8843	0.1620
36201.543	0.543479	1.59E+01	10-Feb-99	13:02:37	2.9678	0.1510
36201.544	0.543537	1.59E+01	10-Feb-99	13:02:42	3.0514	0.1300
36201.544	0.543595	1.59E+01	10-Feb-99	13:02:47	3.1349	0.1300
36201.544	0.543653	1.59E+01	10-Feb-99	13:02:52	3.2184	0.1080
36201.544	0.543712	1.59E+01	10-Feb-99	13:02:57	3.3034	0.1080
36201.544	0.543826	1.60E+01	10-Feb-99	13:03:07	3.4675	0.0860
36201.544	0.543942	1.60E+01	10-Feb-99	13:03:17	3.6346	0.0860
36201.544	0.544058	1.60E+01	10-Feb-99	13:03:27	3.8016	0.0650
36201.544	0.544174	1.60E+01	10-Feb-99	13:03:37	3.9686	0.0540
36201.544	0.544289	1.60E+01	10-Feb-99	13:03:47	4.1342	0.0540
36201.544	0.544405	1.60E+01	10-Feb-99	13:03:57	4.3013	0.0430
36201.545	0.544521	1.60E+01	10-Feb-99	13:04:07	4.4683	0.0430
36201.545	0.544637	1.60E+01	10-Feb-99	13:04:17	4.6354	0.0540
36201.545	0.544752	1.60E+01	10-Feb-99	13:04:27	4.8010	0.0320
36201.545	0.544869	1.60E+01	10-Feb-99	13:04:37	4.9694	0.0210
36201.545	0.545215	1.60E+01	10-Feb-99	13:05:07	5.4677	0.0000
36201.546	0.545563	1.60E+01	10-Feb-99	13:05:37	5.9688	0.0110
36201.546	0.54591	1.60E+01	10-Feb-99	13:06:07	6.4685	0.0110
36201.546	0.546257	1.60E+01	10-Feb-99	13:06:37	6.9682	0.0210
36201.547	0.546604	1.60E+01	10-Feb-99	13:07:07	7.4678	0.0110
36201.547	0.546951	1.60E+01	10-Feb-99	13:07:37	7.9675	0.0000
36201.547	0.547299	1.60E+01	10-Feb-99	13:08:07	8.4686	0.0110
36201.548	0.547646	1.60E+01	10-Feb-99	13:08:37	8.9683	0.0110
36201.548	0.547993	1.60E+01	10-Feb-99	13:09:07	9.4680	0.0110
36201.548	0.548341	1.60E+01	10-Feb-99	13:09:37	9.9691	0.0110
36201.549	0.549035	1.60E+01	10-Feb-99	13:10:37	10.9685	0.0110
36201.55	0.549729	1.60E+01	10-Feb-99	13:11:37	11.9678	0.0110
36201.551	0.550561	1.60E+01	10-Feb-99	13:12:48	13.1659	0.0110
36201.551	0.550573	1.60E+01	10-Feb-99	13:12:50	13.1832	0.0000
36201.551	0.550597	1.60E+01	10-Feb-99	13:12:52	13.2178	0.0000
36201.551	0.550605	1.60E+01	10-Feb-99	13:12:52	13.2293	0.0210
36201.551	0.550613	1.60E+01	10-Feb-99	13:12:53	13.2408	0.0110
36201.551	0.550623	1.60E+01	10-Feb-99	13:12:54	13.2552	0.0110
36201.551	0.550631	1.60E+01	10-Feb-99	13:12:55	13.2667	0.0000 recovered


MWA-14i
10.0000
1.0000
Head (feet)
yo @ 0.1 min
= 3.2
yo @ 0.5 min
= 1.8
0.0000
0.1000
0.2000
0.3000
0.4000
0.5000
0.6000
0.7000
Elapsed Time (min)

Appendix C

Quality Assurance Review

Setting the Standards for Innovative
Environmental Solutions

QUALITY ASSURANCE REVIEW OF THE SOIL SAMPLES COLLECTED BETWEEN NOVEMBER 9, 1998, AND JANUARY 13, 1999, FOR THE RI/FS AT THE ELF ATOCHEM FACILITY IN PORTLAND, OREGON

May 21, 1999

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Section 1 Quality Assurance Review

A. Organic Data

The organic analyses of 27 soil samples and four aqueous samples (including quality control [QC] samples), collected for the RI/FS at the Elf Atochem facility in Portland, Oregon, between November 10, 1998, and January 13, 1999, were performed by Columbia Analytical Services of Kelso, Washington. These samples were analyzed for volatile organic compounds by "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846, 3rd Edition" (SW-846) Method 8260B, Synthetic Precipitation Leaching Procedure (SPLP) volatile organic compounds by SW-846 Method 8260B, semivolatile organic compounds by SW-846 Method 8270C/SIM, organochlorine pesticide compounds by SW-846 Method 8081A, and SPLP organochlorine pesticide compounds by SW-846 Method 8081A, as specified on Table 1.

The findings in this report are based upon a review of sample holding time, sample receipt condition, blank analysis results, surrogate recovery, laboratory control sample/duplicate laboratory control sample (LCS/DLCS) recovery and precision, matrix spike/duplicate matrix spike (MS/DMS) recovery and precision, gas chromatogram/mass spectral (GC/MS) tuning and system performance, GC instrument performance checks, initial and continuing calibrations, internal standard performance, and field duplicate precision.

Overall, the organic data quality appears to be good. However, a few issues were identified during the performance of the quality assurance (QA) review. The data reviewer has included copies of all relevant raw data, QC forms, and other documentation needed to support any changes made to the data packages in the Organic Data Support Documentation (Section 3) of this report. (The following items may not necessarily affect data usability. Usability is addressed in the Organic Data Qualifiers section.)

SDG K9807812

Correctable Deficiency

- The laboratory did not report the "Date Analyzed" for the diluted analysis of sample SO0032 on the Analytical Report form for the semivolatile fraction. According to the Analytical Runlogs and the raw data, the diluted analysis of sample SO0032 was performed on 11/24/98. The data reviewer has manually corrected the Analytical Report provided in the Organic Data Support Documentation (Section 3).

Noncorrectable Deficiency

- As noted in the Case Narrative for the volatile fraction, the initial analysis of sample SO0032 was performed 35 minutes outside the allowable 12-hour tune window (SW-846 Method 8260B, Section 8.2.3). The laboratory reanalyzed the sample 7 days beyond the required holding time of 14 days from collection to analysis specified in the project QAPP (Table 4-1). It is the reviewer's opinion that the data quality for sample SO0032 was not compromised by analyzing the sample 35 minutes outside the 12-hour tune window and, therefore, the data have not been qualified. However, the result observed for chlorobenzene in the reanalysis of sample SO0032 (560 mg/Kg) was significantly lower than the result observed in the initial analysis (1100 mg/Kg). Therefore, it appears that the second analysis of this sample is very unreliable and the data reviewer has qualified the data for the reanalysis as such. The impact on data quality is addressed in the Organic Data Qualifiers section.

Comments

1. According to the Analytical Reports and the Case Narrative for the volatile and pesticide fractions, the laboratory raised the Method Reporting Limits (MRLs) for sample SO0032 due to either matrix interferences or the sample being analyzed at a dilution.

2. As noted in the Case Narrative for the pesticide fraction, the recoveries for the surrogate compounds in sample SO0032 were not reported due to the large dilutions required for sample analysis. Therefore, the data reviewer did not use the surrogate recoveries for sample SO0032 for data evaluation.

3. The laboratory did not reference the semivolatile analysis of sample SO0032 in the Case Narrative.

Organic Data Qualifiers

- The reported positive result for chlorobenzene in sample SO0032RE is unusable and has been flagged "R" on the data tables. In addition, the reporting limits for volatile compounds in sample SO0032RE are unusable; consequently, the "not-detected" results have been flagged "R" on the data tables. Sample SO0032RE was analyzed 7 days beyond the required holding time of 14 days from collection to analysis. In addition, the result observed for chlorobenzene in sample SO0032RE was significantly lower than the result observed in the initial analysis of this sample. Therefore, the analysis of sample SO0032RE appears highly unreliable.

- The analyses for the compounds in the following samples are unusable; consequently, the "not-detected" results have been flagged "R" on the data tables. Very low relative response factors (RRF<0.05) were observed for these compounds in the associated initial and/or continuing calibration standards.

Compounds	Fraction	Sample(s) With Unusable Analyses ("R")
acetone, 2-butanone, and 4-methyl-2-pentanone	volatile	SO0032
acetone, 2-butanone, 4-methyl-2-pentanone, 2-hexanone, and 1,2-dibromo-3-chloropropane	volatile	SO0032RE

- The reporting limits for the compounds in the following samples should be considered biased low; consequently, the "not-detected" results have been flagged "UJ" on the data tables. High percent drifts (%D>25%), coupled with increases in instrument sensitivity, were observed for these compounds in the associated continuing calibration standards. Although the compounds have been qualified according to protocol, these high percent drifts represent increases in instrument sensitivity. Therefore, the reporting limits may be valid as reported.

Compounds	Fraction	Sample With Biased Low Reporting Limits ("UJ")
n-butylbenzene	volatile	SO0032
aniline, benzyl alcohol, *N*-nitroso-di-*n*-propylamine, and nitrobenzene	semivolatile	SO0032

- The reporting limits for the semivolatile compounds quantitated using the internal standard perylene-d_{12} in sample SO0032 should be considered biased low; consequently, the "not-detected" results have been flagged "UJ" on the data tables. Low area counts (<50% the area of the internal standard in the associated continuing calibration standard) were obtained for the internal standard perylene-d_{12} in the semivolatile analysis of sample SO0032.

SDG K9808430

Correctable Deficiency

- The laboratory did not provide internal standard summaries for all samples analyzed for the volatile fraction. The data reviewer used the raw data to verify that the internal standards were acceptable for these sample analyses. A copy of the raw data is included in the Organic Data Support Documentation (Section 3).

Noncorrectable Deficiency

- In the volatile fraction, samples SO0083 and SO0084 were analyzed for all volatile compounds, except chlorobenzene, 2 days beyond the required holding time of 14 days from collection to analysis specified in the project QAPP (Table 4-1). In addition, sample SO0074 was analyzed for chlorobenzene 8 days beyond the required holding time of 14 days from collection to analysis specified in the project QAPP (Table 4-1). The impact on data quality is addressed in the Organic Data Qualifiers section.

Comments

1. According to the Analytical Reports for the pesticide fraction, the laboratory raised the MRLs for several samples due to matrix interferences or samples being analyzed at dilutions.

2. As noted in the Case Narrative for the pesticide fraction, 4,4′-DDT was detected at a significant level in the method blank. However, there is no impact on data quality because the results for 4,4′-DDT in all samples are greater than the data qualification limit of five-times the blank level.

3. As noted in the Case Narrative, the laboratory did not perform MS/DMS analyses because site history indicated that high dilutions would be required for sample analyses.

4. As noted in the Case Narrative for the pesticide fraction, the recoveries for the surrogate compounds in sample SO0074 were not reported due to the large dilutions required for sample analysis. Therefore, the data reviewer did not use the surrogate recoveries for sample SO0074 for data evaluation.

5. The laboratory did not provide pH information for the aqueous sample TRIPBLANK2 in the data package provided. The data reviewer assumed that the sample TRIPBLANK2 was properly preserved to a pH less than 2 for the volatile fraction.

Organic Data Qualifiers

- The analyses for the compounds in the following samples are unusable; consequently, the "not-detected" results have been flagged "R" on the data tables. Very low relative response factors (RRF<0.05) were observed for these compounds in the associated initial and/or continuing calibration standards.

Compounds	Fraction	Sample(s) With Unusable Analyses ("R")
acetone, 2-butanone, and 4-methyl-2-pentanone	volatile	SO0074
acetone, 2-butanone, 4-methyl-2-pentanone, and 2-hexanone	volatile	SO0083 and SO0084
acetone, 2-butanone, 4-methyl-2-pentanone, 2-hexanone, and 1,2-dibromo-3-chloropropane	volatile	TRIPBLANK2

- The reporting limits for volatile compounds in samples SO0083 and SO0084 should be considered biased low; consequently, the "not-detected" results have been flagged "UJ" (unless previously flagged "R") on the data tables. In addition, the reported positive results for volatile compounds, except chlorobenzene, in samples SO0083 and SO0084 and for chlorobenzene in sample SO0074 should be considered estimated and have been flagged "J" on the data tables. Samples SO0083 and SO0084 were analyzed for all volatile compounds, except chlorobenzene, 2 days beyond the required holding time of 14 days from collection to analysis; sample SO0074 was analyzed for chlorobenzene 8 days beyond the required holding time of 14 days from collection to analysis.

- The reporting limits for the compounds in the following samples should be considered biased low; consequently, the "not-detected" results have been flagged "UJ" on the data tables. High percent drifts (%D>25%), coupled with decreases in instrument sensitivity, were observed for these compounds in the associated continuing calibration standards.

Compound	Fraction	Sample(s) With Biased Low Reporting Limits ("UJ")
bromomethane	volatile	SO0083 and SO0084
1,2,3-trichloropropane	volatile	TRIPBLANK2

SDG K9900223

Correctable Deficiency

- The laboratory did not provide an internal standard summary for the volatile analysis of sample SO0170. The data reviewer used the raw data to verify that the internal standards were acceptable for this sample analysis. A copy of the raw data is included in the Organic Data Support Documentation (Section 3).

Noncorrectable Deficiency

- In the pesticide fraction, sample SO0170 was extracted 1 day beyond the required holding time of 7 days from collection to extraction specified in the project QAPP (Table 4-1). The impact on data quality is addressed in the Organic Data Qualifiers section.

Comments

1. According to the Analytical Reports and the Case Narrative for the pesticide fraction, the laboratory raised the Method Reporting Limits (MRLs) for several samples due to matrix interferences, samples being analyzed at dilutions, or low percent solids.

2. The laboratory did not initially provide summary forms for the pesticide continuing calibrations performed on 1/31/98 at 06:45 and 07:22 on instrument GC13 in the data package provided. In addition, the laboratory did not initially provide a summary form for the pesticide performance evaluation standard (PEM) analyzed on 1/31/98 at 06:07 on instrument GC13. Upon request, the laboratory provided the missing deliverables which are included in the Project Correspondence (Section 6).

3. The laboratory did not provide pH information for the aqueous sample SO0170 in the data package provided. The data reviewer assumed that sample SO0170 was properly preserved to a pH less than 2 for the volatile fraction.

4. As noted in the Case Narrative for the pesticide fraction, the recoveries for the surrogate compounds in samples SO0151, SO0176, SO0182, and SO0184 were not reported due to the large dilutions required for sample analysis. Therefore, the data reviewer did not use the surrogate recoveries for these samples for data evaluation.

Organic Data Qualifiers

- The analyses for the compounds in the following samples are unusable; consequently, the "not-detected" results have been flagged "R" on the data tables. Very low relative response factors (RRF<0.05) were observed for these compounds in the associated initial and/or continuing calibration standards.

Compounds	Fraction	Samples With Unusable Analyses ("R")
acetone, 2-butanone, and 4-methyl-2-pentanone	volatile	All samples

- The reporting limits for pesticide compounds in sample SO0170 should be considered biased low; consequently, the "not-detected" results have been flagged "UJ" on the data tables. In addition, the reported positive results for pesticide compounds in sample SO0170 should be considered estimated and have been flagged "J" on the data tables. Sample SO0170 was extracted 1 day beyond the required holding time of 7 days from collection to extraction.

- The reporting limits for the compounds in the following samples should be considered biased low; consequently, the "not-detected" results have been flagged "UJ" on the data tables. High percent drifts (%D>25%), coupled with decreases in instrument sensitivity, were observed for these compounds in the associated continuing calibration standards.

Compounds	Fraction	Samples With Biased Low Reporting Limits ("UJ")
carbon disulfide and hexachlorobutadiene	volatile	SO0145, SO0151, SO0158, SO0159, SO0165, and SO0169

- One field duplicate pair (sample SO0158 and its field duplicate, sample SO0169) was submitted to the laboratory for volatile and pesticide analyses. Acceptable precision and sample representativeness were demonstrated by the correlation observed between the results in the volatile and pesticide fractions of this field duplicate pair with the exception of 4,4'-DDT. The reported positive results for 4,4'-DDT in samples SO0158 and SO0169 should be considered estimated and have been flagged "J" on the data tables. Poor precision (RPD>40%) was observed between the results for 4,4'-DDT in this field duplicate pair. A complete comparison of all reported positive results is included in the Organic Data Support Documentation (Section 3).

- As per reporting conventions, the result for 4,4'-DDE in sample SO0169, reported at a concentration less than the MRL, should be considered estimated and has been flagged "J" on the data tables.

SDG K9900253

Correctable Deficiencies

1. The laboratory did not provide an internal standard summary for the original and diluted SPLP volatile analyses of sample SO0254. The data reviewer used the raw data to verify that the internal standards were acceptable for these sample analyses. A copy of the raw data is included in the Organic Data Support Documentation (Section 3).

2. In the pesticide fraction, the laboratory incorrectly reported the Lab Identifier and the Client Sample ID for the analysis of sample SO0254 on 1/29/99 at 3:27 on the Analytical Runlog. The laboratory corrected the Lab Identifier on the associated Analytical Sequence form but did not correct the Client sample ID. The data reviewer has manually corrected the Analytical Runlog provided in the Organic Data Support Documentation (Section 3).

Comments

1. The laboratory did not initially provide summary forms for the pesticide continuing calibrations performed on 1/31/98 at 06:45 and 07:22 on instrument GC13 in the data package provided. In addition, the laboratory did not initially provide a summary form for the pesticide performance evaluation standard (PEM) analyzed on 1/31/98 at 06:07 on instrument GC13. Upon request, the laboratory provided the missing deliverables which are included in the Project Correspondence (Section 6).

2. As noted in the Case Narrative for the SPLP volatile fraction, the recovery for the surrogate compound dibromofluoromethane in sample SO0254 was outside the QC limits. However, the laboratory did not reanalyze the sample due to insufficient sample volume. The impact on data quality is addressed in the Organic Data Qualifiers section.

3. As noted in the Case Narrative, the laboratory did not calculate the recovery of chlorobenzene in the MS/DMS due to the high level of this compound in the original unspiked sample. In addition, the laboratory did not calculate the recoveries of endrin and 4,4'-DDT in the MS/DMS due to the high level of 4,4'-DDT in the original unspiked sample.

4. As noted in the Case Narrative for the pesticide fraction, the recoveries for surrogate compounds in sample SO0254 were not reported due to the large dilutions required for sample analysis. Therefore, the data reviewer did not use the surrogate recoveries for sample SO0254 for data evaluation.

5. According to the Analytical Reports for the volatile and pesticide fractions, the laboratory raised the MRLs for several samples due to matrix interferences or samples being analyzed at dilutions.

Organic Data Qualifiers

- Due to the presence of SPLP methylene chloride in an associated laboratory blank, the reported positive result for SPLP methylene chloride in sample SO0254 should be considered "not-detected" and has been flagged "U" on the data tables.

- The analyses for the compounds in the following samples are unusable; consequently, the "not-detected" results have been flagged "R" on the data tables. Very low relative response factors (RRF<0.05) were observed for these compounds in the associated initial and/or continuing calibration standards.

Compounds	Fraction	Sample With Unusable Analyses ("R")
acetone, 2-butanone, and 4-methyl-2-pentanone	volatile	SO0254
SPLP acetone, SPLP 2-butanone, and SPLP 4-methyl-2-pentanone	SPLP volatile	SO0254

- The reported positive results for SPLP volatile compounds in sample SO0254 should be considered estimated and have been flagged "J" (unless previously flagged "U") on the data tables. A high recovery (%R>QC limit) was observed for the surrogate compound dibromofluoromethane in the SPLP volatile analysis of sample SO0254.

- The reporting limits for the compounds in the following samples should be considered biased low; consequently, the "not-detected" results have been flagged "UJ" on the data tables. High percent drifts (%D>25%), coupled with decreases in instrument sensitivity, were observed for these compounds in the associated continuing calibration standards.

Compounds	Fraction	Sample With Biased Low Reporting Limits ("UJ")
carbon disulfide and hexachlorobutadiene	volatile	SO0254

- The reporting limits for SPLP heptachlor and SPLP aldrin in sample SO0254 should be considered biased low; consequently, the "not-detected" results have been flagged "UJ" on the data tables. Low recoveries (10%≤%R<50%) were observed for these compounds in the associated DLCS analysis.

A complete support documentation for this organic QA review is presented in Section 3 of this report. The cover sheet for this section is a checklist of all QA procedures required by the protocol and examined in this data review.

B. Wet Chemistry Analyses

The wet chemistry analyses of seven soil samples (including QC samples) collected for the RI/FS at the Elf Atochem facility in Portland, Oregon, between November 9 and November 23, 1998, were performed by Columbia Analytical Services of Kelso, Washington. These samples were analyzed for total organic carbon (TOC) by "American Society for Testing and Materials" (ASTM) Method D4129-82 (modified), as specified on Table 1.

The findings in this report are based upon a review of holding times, sample receipt condition, blank analysis results, matrix spike (MS) recoveries, laboratory control sample (LCS) recoveries, laboratory duplicate precision, initial instrument calibration, and continuing calibration checks.

Overall, the wet chemistry data quality appears to be good. However, a few issues were identified during the performance of the QA review. The data reviewer has included copies of all relevant raw data, QC forms, and other documentation needed to support any changes made to the data packages in the Wet Chemistry Data Support Documentation (Section 4) of this report. (The following items may not necessarily affect data usability. Usability is addressed in the Wet Chemistry Data Qualifiers section.)

SDG K9808798

Correctable Deficiency

- The laboratory incorrectly reported the average and relative percent difference (RPD) for the Duplicate Analysis on the QA/QC Report. The data reviewer has manually corrected the QA/QC Report provided in the Wet Chemistry Data Support Documentation (Section 4). There is no impact on data quality; the corrected RPD is within the data usability limits.

Noncorrectable Deficiency

- The temperature of the coolers upon receipt at the laboratory was 14.6°C. According to the project QAPP (Table 4-1), samples collected for TOC analysis are required to be stored at a temperature of 4°C. The impact on data quality due to this deficiency is addressed in the Wet Chemistry Data Qualifiers section.

Wet Chemistry Data Qualifier

- The reporting limit for TOC in sample SO0070 should be considered biased low; consequently, the "not-detected" result has been flagged "UJ" on the data tables. In addition, the reported positive results for TOC in all samples, except sample SO0070, should be considered estimated and have been flagged "J" on the data tables. A high temperature (>10°C) was observed for the cooler associated with these samples upon receipt at the laboratory.

A complete support documentation for this wet chemistry QA review is presented in Section 4 of this report. The cover sheet for this section is a checklist of all QA procedures required by the protocol and examined in this data review.

C. Conclusions

Overall, the data quality appears to be good. A portion of the organic results was qualified due to exceeded holding times, blank contamination, calibration issues, high surrogate recoveries, low laboratory control sample recoveries, low internal standard area count, field duplicate imprecision, and quantitation below the MRL. In addition, all TOC results were qualified due to a high cooler temperature upon receipt at the laboratory. Overall, the analytical data are acceptable for use, provided the data users understand the qualifications and limitations of data use specified in the QA review. The Project Case Narratives and Chain-of-Custody Records are presented in Section 5 of this report. Project Correspondence is presented in Section 6 of this report.

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QUALITY ASSURANCE REVIEW OF THE SEDIMENT SAMPLES COLLECTED ON NOVEMBER 23 AND 24, 1998, AND JANUARY 19 AND 20, 1999, FOR THE RI/FS AT THE ELF ATOCHEM FACILITY IN PORTLAND, OREGON

May 27, 1999

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Section 1 Quality Assurance Review

A. Organic Data

The organic analyses of 58 sediment samples and four aqueous samples (including quality control [QC] samples), collected for the RI/FS at the Elf Atochem facility in Portland, Oregon, on November 23 and 24, 1998, and January 19 and 20, 1999, were performed by Columbia Analytical Services of Kelso, Washington. These samples were analyzed for volatile organic compounds by "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846, 3rd Edition" (SW-846) Method 8260B, semivolatile organic compounds by SW-846 Method 8270C/SIM, and organochlorine pesticide compounds by SW-846 Method 8081A, as specified on Table 1.

The findings in this report are based upon a review of sample holding time, sample receipt condition, blank analysis results, surrogate recovery, laboratory control sample/duplicate laboratory control sample (LCS/DLCS) recovery and precision, matrix spike/duplicate matrix spike (MS/DMS) recovery and precision, gas chromatogram/mass spectral (GC/MS) tuning and system performance, GC instrument performance checks, initial and continuing calibrations, internal standard performance, and field duplicate precision.

Overall, the organic data quality appears to be good. However, a few issues were identified during the performance of the quality assurance (QA) review. The data reviewer has included copies of all relevant raw data, QC forms, and other documentation needed to support any changes made to the data packages in the Organic Data Support Documentation (Section 3) of this report. (The following items may not necessarily affect data usability. Usability is addressed in the Organic Data Qualifiers section.)

SDG K9808124

Correctable Deficiencies

1. The laboratory incorrectly stated in the Case Narrative and on the Analytical Reports that all project samples were analyzed for 4-chlorophenol outside of the required holding time of 40 days from extraction to analysis. According to the extraction logs, only sample SW0001 was analyzed for 4-chlorophenol outside of the required holding time (see the associated Noncorrectable Deficiency).

2. The laboratory incorrectly indicated in the Case Narrative for the semivolatile fraction that the method blank KWG9804186-3 was associated with the water samples. According to the

associated extraction log, method blank KWG9804115-3 was associated with the water samples. In addition, the laboratory incorrectly indicated that only di-*n*-butylphthalate and bis(2-ethylhexyl)phthalate were detected at low levels in this method blank. According to the associated raw data, diethylphthalate was also detected at a low level in this method blank.

Noncorrectable Deficiencies

1. As noted in the Case Narrative for the semivolatile fraction, low surrogate recoveries were observed for the method blank, LCS, and DMS associated with the initial analysis of the sediment project samples. In addition, low recoveries were observed for several spike compounds in the DMS and LCS. It seems likely that the method blank, LCS, and DMS may have "gone dry" during the extract concentration step of the sample preparation procedure, which lead to the loss of the these spike and surrogate compounds. It appears that this problem did not occur with the sediment project samples and MS sample because all samples exhibited acceptable surrogate recoveries and the MS sample exhibited acceptable surrogate and spike recoveries. Therefore, the data reviewer has not qualified the sediment sample data based on the results of the LCS and DMS. Due to the aforementioned QC problems, the laboratory reextracted all sediment samples 27 and 28 days beyond the required holding time of 14 days from collection to extraction specified in the project QAPP (Table 4-1). The impact on data quality is addressed in the Organic Data Qualifiers section.

2. Sample SW0001 was analyzed for 4-chlorophenol 6 days beyond the required holding time of 40 days from extraction to analysis specified in the project QAPP (Table 4-1). The impact on data quality is addressed in the Organic Data Qualifiers section.

Comments

1. As noted in the Case Narrative for the volatile fraction, the recovery for the surrogate compound dibromofluoromethane in the MS sample SW0001MS was outside the control limits. The laboratory did not reanalyze the MS due to insufficient sample volume. There is no impact on data quality; all matrix spike compounds were within control limits.

2. As noted in the Case Narrative for the pesticide fraction, the recovery for the surrogate compound decachlorobiphenyl in sample SD1005 was outside the control limits. The laboratory did not reanalyze the sample because the chromatogram showed matrix

interference that prevented accurate quantitation of this surrogate compound. The impact on data quality is addressed in the Organic Data Qualifiers section.

3. As noted in the Case Narrative for the pesticide fraction, the laboratory did not calculate the recovery of 4,4'-DDT in the MS/DMS due to the high level of 4,4'-DDT in the original unspiked sample.

Organic Data Qualifiers

- Due to the presence of di-*n*-butylphthalate, bis(2-ethylhexyl)phthalate, and 1,2,4-trichlorobenzene in associated laboratory blanks, the reported positive results for these compounds in the following samples should be considered "not-detected" and have been flagged "U" on the data tables.

Compound	Fraction	Samples With Results Qualified as "Not-Detected" ("U")
di-*n*-butylphthalate	semivolatile	SD1001, SD1003, and SD1003RE
bis(2-ethylhexyl)phthalate	semivolatile	SD1005, SD1006, SD1007, SD1008, SD1014, and SD1014RE
1,2,4-trichlorobenzene	semivolatile	SD1012 and SD1014

- Although there is no direct reason to question the reported positive results for the compound in the following samples, this compound is a very common laboratory contaminant. In addition, some of the results represent low-level, on-column detections. Accordingly, extreme caution should be exercised if these results are to be used in a decision-making process, such as risk assessment.

Compound	Fraction	Samples With Results to be Used With Caution
bis(2-ethylhexyl)phthalate	semivolatile	SD1001, SD1001RE, SD1002, SD1002RE, SD1003, SD1003RE, SD1004, SD1004RE, SD1006, SD1011, and SD1012RE

- The analyses for the compounds in the following samples are unusable; consequently, the "not-detected" results have been flagged "R" on the data tables. Very low relative response factors (RRF<0.05) were observed for these compounds in the associated initial and/or continuing calibration standards.

Compounds	Fraction	Samples With Unusable Analyses ("R")
acetone, 2-butanone, and 4-methyl-2-pentanone	volatile	All sediment samples
acetone, 2-butanone, 4-methyl-2-pentanone, 2-hexanone, and 1,2-dibromo-3-chloropropane	volatile	SW0001 and TRIPBLANK3
2-nitrophenol, 2,4-dinitrophenol, pentachlorophenol, and hexachlorocyclopentadiene	semivolatile	All samples

- The reporting limit for 4-chlorophenol in sample SW0001 should be considered biased low; consequently, the "not-detected" result has been flagged "UJ" on the data tables. Sample SW0001 was analyzed for 4-chlorophenol 6 days beyond the required holding time of 40 days from extraction to analysis.

- The reported positive results for semivolatile compounds in samples SD1001RE through SD1014RE should be considered estimated and have been flagged "J" (unless previously flagged "U") on the data tables. In addition, the reporting limits for semivolatile compounds in samples SD1001RE through SD1014RE should be considered biased low; consequently, the "not-detected" results have been flagged "UJ" (unless previously flagged "R") on the data tables. These reanalyzed samples were extracted for semivolatile compounds 27 and 28 days beyond the required holding time of 14 days from collection to extraction.

- The reporting limits for the compounds in the following samples should be considered biased low; consequently, the "not-detected" results have been flagged "UJ" on the data tables. High percent drifts (%D>25%), coupled with decreases in instrument sensitivity, were observed for these compounds in the associated continuing calibration standards.

Compound(s)	Fraction	Samples With Biased Low Reporting Limits ("UJ")
dichlorodifluoromethane, chloromethane, bromomethane, and trichlorofluoromethane	volatile	All sediment samples
1,2,3-trichloropropane	volatile	SW0001 and TRIPBLANK3

- The reporting limits for the compounds in the following samples should be considered biased low; consequently, the "not-detected" results have been flagged "UJ" on the data tables. High percent drifts (%D > 25%), coupled with increases in instrument sensitivity, were observed for these compounds in the associated continuing calibration standards. Although the compounds have been qualified according to protocol, these high percent drifts represent increases in instrument sensitivity. Therefore, the reporting limits may be valid as reported.

Compound(s)	Fraction	Samples With Biased Low Reporting Limits ("UJ")
naphthalene	volatile	All sediment samples
4-chloroaniline, 3,3'-dichlorobenzidine, and di-*n*-octylphthalate	semivolatile	SW0001, SD1001, SD1002, and SD1003
2,4-dimethylphenol	semivolatile	SD1004, SD1005, SD1006, SD1007, SD1008, SD1009, SD1010, SD1011, SD1012, SD1013, and SD1014
2,4-dimethylphenol, 3,3'-dichlorobenzidine, and di-*n*-butylphthalate	semivolatile	SD1001RE through SD1014RE

- The reported positive results for pesticide compounds in sample SD1005 should be considered estimated and have been flagged "J" on the data tables. A high recovery (%R > QC limit) was observed for the surrogate compound decachlorobiphenyl in the pesticide analysis of sample SD1005.

- The reported positive result for pyrene in sample SD1002RE should be considered estimated and has been flagged "J" on the data tables. A high recovery (%R > 150%) was observed for pyrene in the associated DMS sample analysis.

- The reporting limits for 1,4-dichlorobenzene and 1,2,4-trichlorobenzene in samples SD1001RE through SD1014RE should be considered biased low; consequently, the "not-detected" results have been flagged "UJ" on the data tables. Low recoveries (%R < 50%) were observed for 1,4-dichlorobenzene and 1,2,4-trichlorobenzene in the associated LCS analysis.

- Two field duplicate pairs (sample SD1011 and its field duplicate, sample SD1013 and sample SD1012 and its field duplicate, sample SD1014) were submitted to the laboratory for organic analyses. Acceptable precision and sample representativeness were demonstrated by the correlation observed between the results in the organic fractions of these field duplicate pairs with the exception of the compounds in the following samples. The reported positive results for the compounds in the following samples should be considered estimated and have been flagged "J" (unless previously flagged "U") on the data tables. Poor precision (RPD or RSD > 40% or a difference > 2× minimum reporting limit [MRL]) was observed between the results for these compounds in the field duplicate pairs. A complete comparison between all reported positive results is included in the Organic Data Support Documentation (Section 3).

Compounds	Fraction	Samples With Estimated Positive Results ("J")
4,4'-DDE and 4,4'-DDD	pesticide	SD1011 and SD1013
bis(2-ethylhexyl)phthalate, benzo(a)pyrene, indeno(1,2,3-cd)pyrene, and benzo(g,h,i)perylene	semivolatile	SD1011 and SD1013
fluoranthene, pyrene, benz(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, indeno(1,2,3-cd)pyrene, benzo(g,h,i)perylene, phenanthrene, anthracene, naphthalene, acenaphthylene, and acenaphthene	semivolatile	SD1012 and SD1014

SDG K9900402

Correctable Deficiencies

1. The Case Narrative for the pesticide fraction states that the laboratory did not calculate the recoveries of 4,4'-DDT in the MS/DMS because the concentration of 4,4'-DDT in the original unspiked sample was significantly higher than the added spike concentrations. However, the concentration of 4,4'-DDT in the unspiked sample (1248 µg/kg) is actually less than the added spike concentrations (1560 µg/kg and 1700 µg/kg). Therefore, the data reviewer has used the MS/DMS recoveries of 4,4'-DDT to evaluate the sample data. The impact on data quality is addressed in the Organic Data Qualifiers section.

2. The laboratory did not provide an internal standard summary for the diluted volatile analysis of sample SD0022. In addition, the laboratory did not provide internal standard summaries for the semivolatile fraction. The data reviewer used the raw data to verify that the internal standards were acceptable for all sample analyses. A copy of the raw data is included in the Organic Data Support Documentation (Section 3).

3. In the semivolatile fraction, the laboratory did not provide continuing calibration summaries for the continuing calibration standards analyzed on 2/18/99 at 23:53 and on 2/16/99 at 18:09. The data reviewer used the raw data to verify that these continuing calibrations were acceptable. A copy of the raw data is included in the Organic Data Support Documentation (Section 3).

Noncorrectable Deficiency

- The temperature of several of the coolers and temperature blanks upon receipt at the laboratory were below 1°C. According to the project QAPP (Table 4-1), samples collected for organic analyses are required to be preserved at a temperature of 4°C. Because none of the samples was received in frozen or broken containers, the data reviewer believes that there is no impact on data quality due to this deficiency.

Comments

1. According to the Case Narrative and the Analytical Reports for the volatile and pesticide fractions, the laboratory raised the MRLs for several samples due to low percent solids, matrix interferences, or samples being analyzed at dilutions.

2. As noted in the Case Narrative for the pesticide fraction, the laboratory did not report the recovery for the surrogate compound tetrachloro-*m*-xylene in sample SD0013 because matrix interferences prevented adequate resolution of the surrogate. The data reviewer has not used the results of this surrogate for data evaluation because this sample was analyzed at a dilution.

3. As noted in the Case Narrative for the volatile fraction, the recovery of 1,1-dichloroethene in the MS sample was above the QC limits. There is no impact on data quality because the recovery is within data usability limits.

4. As noted in the Case Narrative for the semivolatile fraction, the recovery of pyrene in the MS sample was above the QC limits. The impact on data quality is addressed in the Organic Data Qualifiers section.

5. As noted in the Case Narrative for the volatile fraction, the laboratory did not calculate the recovery of chlorobenzene in the MS/DMS due to the high level of this compound in the original unspiked sample.

6. As noted in the Case Narrative for the semivolatile fraction, the acid surrogate recoveries in several samples were outside the QC limits. The laboratory reextracted and reanalyzed the samples with similar results. The impact on data quality is addressed in the Organic Data Qualifiers section.

Organic Data Qualifiers

- Although there is no direct reason to question the reported positive results for the compounds in the following samples, these compounds are very common laboratory and/or field contaminants. In addition, some of the results represent low-level, on-column detections. Accordingly, extreme caution should be exercised if these results are to be used in a decision-making process, such as risk assessment.

Compound	Fraction	Sample(s) With Results to be Used With Caution
acetone	volatile	SD0016
di-*n*-butylphthalate	semivolatile	All samples except SD0004, SD0013, SD0021, and SD0022
bis(2-ethylhexyl)phthalate	semivolatile	All samples except SD0021
butylbenzylphthalate	semivolatile	SD0004, SD0016, SD0017, SD0024, and SDC002
dimethylphthalate	semivolatile	SD0011

- The analyses for the compounds in the following samples are unusable; consequently, the "not-detected" results have been flagged "R" on the data tables. In addition, the reported positive result for acetone in sample SD0016 should be considered estimated and has been flagged "J" on the data tables. Very low relative response factors (RRF<0.05) were observed for these compounds in the associated initial and/or continuing calibration standards.

Compounds	Fraction	Samples With Unusable Analyses ("R")
acetone, 2-butanone, and 4-methyl-2-pentanone	volatile	All samples
2-nitrophenol, 2,4-dinitrophenol, and 4-nitrophenol	semivolatile	SD0001, SD0004, SD0006, SD00011, SD0022
2-nitrophenol and benzoic acid	semivolatile	SD0013, SD0016, SD0017, SD0021, SD0024, SDC001, and SDC002

- The reporting limits for the compounds in the following samples should be considered biased low; consequently, the "not-detected" results have been flagged "UJ" on the data tables. In addition, the reported positive results for the compounds in the following samples should be considered estimated and have been flagged "J" on the data tables. High percent drifts (%D>25%), coupled with decreases in instrument sensitivity, were observed for these compounds in the associated continuing calibration standards.

Compounds	Fraction	Sample(s) With Biased Low Reporting Limits ("UJ") or Estimated Results ("J")
carbon disulfide, *sec*-butylbenzene, and hexachlorobutadiene	volatile	SD0001, SD0011, SD0016, and SD0021
2,4-dinitrophenol, 2-methyl-4,6-dinitrophenol, and dibenz(a,h)anthracene	semivolatile	SD0013, SD0016, SD0017, SD0021, SD0024, SDC001, and SDC002
benzo(k)fluoranthene and benzo(g,h,i)perylene	semivolatile	SD0011

- The reported positive result for indeno(1,2,3-cd)pyrene in sample SD0011 should be considered estimated and has been flagged "J" on the data tables. A high percent drift (%D > 25%), coupled with an increase in instrument sensitivity, was observed for indeno(1,2,3-cd)pyrene in the associated continuing calibration standard.

- The reporting limits for acid semivolatile compounds in samples SD0021, SD0024, and SDC001 should be considered biased low; consequently, the "not-detected" results have been flagged "UJ" (unless previously flagged "R") on the data tables. In addition, the reported positive results for acid semivolatile compounds in samples SD0021, SD0024, and SDC001 should be considered estimated and have been flagged "J" on the data tables. Low recoveries (%R < QC limits) were observed for two of the acid surrogate compounds in the semivolatile analyses of these samples.

- The reported positive result for 4,4'-DDT in sample SD0001 should be considered estimated and has been flagged "J" on the data tables. A very low recovery (%R < 10%) was observed for 4,4'-DDT in the associated DMS sample analysis. In addition, poor precision (RPD > 50%) was observed between the results for 4,4'-DDT in the associated MS and DMS sample analyses.

- The reported positive result for pyrene in sample SD0022 should be considered estimated and has been flagged "J" on the data tables. A high recovery (%R > 150%) was observed for pyrene in the associated MS sample analysis.

A complete support documentation for this organic QA review is presented in Section 3 of this report. The cover sheet for this section is a checklist of all QA procedures required by the protocol and examined in this data review.

B. Wet Chemistry Analyses

The wet chemistry analyses of 33 sediment samples (including QC samples) and one aqueous sample collected for the RI/FS at the Elf Atochem facility in Portland, Oregon, on November 23 and 24, 1998 and January 19 and 20, 1999, were performed by Columbia Analytical Services of Kelso, Washington. These samples were analyzed for total organic carbon (TOC) by "American Society for Testing and Materials " (ASTM) Method D4129-82, modified, as specified on Table 1.

The findings in this report are based upon a review of holding times, sample receipt condition, blank analysis results, matrix spike recoveries, laboratory control sample recoveries, laboratory duplicate precision, initial and continuing calibration checks, and field duplicate precision.

Overall, the wet chemistry data quality appears to be good. However, one issue was identified during the performance of the quality assurance (QA) review. The data reviewer has included copies of all relevant raw data, QC forms, and other documentation needed to support any changes made to the data packages in the Wet Chemistry Data Support Documentation (Section 4) of this report. (The following items may not necessarily affect data usability. Usability is addressed in the Wet Chemistry Data Qualifiers section.)

SDG K9808124

Comment

- Two field duplicate pairs (sample SD1011 and its field duplicate, sample SD1013 and sample SD1012 and its field duplicate, sample SD1014) were submitted to the laboratory for TOC analyses. Acceptable precision and sample representativeness were demonstrated by the correlation observed between the results for TOC in these field duplicate pairs. A complete comparison between all reported positive results is included in the Wet Chemistry Data Support Documentation (Section 4).

SDG K9900402

Noncorrectable Deficiency

- The temperatures of several of the coolers and temperature blanks upon receipt at the laboratory were below 1°C. According to the project QAPP (Table 4-1), samples collected for TOC analysis are required to be preserved at a temperature of 4°C. Because none of the samples was received in frozen or broken containers, the data reviewer believes that there is no impact on data quality due to this deficiency.

A complete support documentation for this wet chemistry QA review is presented in Section 4 of this report. The cover sheet for this section is a checklist of all QA procedures required by the protocol and examined in this data review.

C. Conclusions

Overall, the data quality appears to be good. A portion of the organic results was qualified due to exceeded holding times, blank contamination, calibration issues, poor surrogate recoveries, low laboratory control sample recoveries, poor matrix spike sample recoveries and precision, and field duplicate imprecision. The total organic carbon data did not warrant qualification. Overall, the analytical data are acceptable for use, provided the data users understand the qualifications and limitations of data use specified in the QA review. The Project Case Narratives and Chain-of-Custody Records are presented in Section 5 of this report. Project Correspondence is presented in Section 6 of this report.

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QUALITY ASSURANCE REVIEW OF THE SURFACE WATER SAMPLES COLLECTED ON JANUARY 22, 1999, FOR THE RI/FS AT THE ELF ATOCHEM FACILITY IN PORTLAND, OREGON

May 12, 1999

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Section 1 Quality Assurance Review

A. Organic Data

The organic analyses of four aqueous samples, collected for the RI/FS at the Elf Atochem facility in Portland, Oregon, on January 22, 1999, were performed by Columbia Analytical Services of Kelso, Washington. These samples were analyzed for filtered and unfiltered organochlorine pesticide compounds by SW-846 Method 8081A, as specified on Table 1.

The findings in this report are based upon a review of sample holding time, sample receipt condition, blank analysis results, surrogate recovery, laboratory control sample/duplicate laboratory control sample (LCS/DLCS) recovery and precision, GC instrument performance checks, initial and continuing calibrations, and field duplicate precision.

Overall, the organic data quality appears to be good. However, a few issues were identified during the performance of the quality assurance (QA) review. The data reviewer has included copies of all relevant raw data, QC forms, and other documentation needed to support any changes made to the data packages in the Organic Data Support Documentation (Section 3) of this report. (The following items may not necessarily affect data usability. Usability is addressed in the Organic Data Qualifiers section.)

Noncorrectable Deficiency

- The temperature of the cooler upon receipt at the laboratory was 18.2°C and the temperature of the associated temperature blank was 17.7°C. According to the project QAPP (Table 4-1), samples collected for pesticide analyses are to be preserved at a temperature of 4°C. However, the data reviewer does not consider the data to have been impacted by the elevated temperatures due to the stability and chemical properties (i.e., vapor pressure, boiling point, etc.) of the pesticide compounds.

Comments

1. As noted in the Case Narrative, the laboratory did not perform MS/DMS analyses due to insufficient sample volume.

2. According to the Analytical Reports, the laboratory raised the minimum reporting limits (MRLs) for several compounds in several samples due to matrix interferences or the sample being analyzed at a dilution.

Organic Data Qualifier

- One field duplicate pair (sample SW019902 and its field duplicate, sample SW019903) was submitted to the laboratory for the filtered and unfiltered pesticide analyses. Acceptable precision and sample representativeness were demonstrated by the correlation observed between the results for pesticide compounds with the exception of filtered 4,4'-DDT. The reported positive result for filtered 4,4'-DDT in sample SW019903 should be considered estimated and has been flagged "J" on the data tables. Poor precision (a difference greater than the MRL) was observed between the results for this compound in the field duplicate pair. A complete comparison of all reported positive results is included in the Organic Data Support Documentation (Section 3).

A complete support documentation for this organic QA review is presented in Section 3 of this report. The cover sheet for this section is a checklist of all QA procedures required by the protocol and examined in this data review.

B. Conclusions

Overall, the data quality appears to be good. A portion of the organic results was qualified due to field duplicate imprecision. Overall, the analytical data are acceptable for use, provided the data users understand the qualifications and limitations of data use specified in the QA review. The Project Case Narratives and Chain-of-Custody Records are presented in Section 4 of this report.

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QUALITY ASSURANCE REVIEW OF THE GROUNDWATER SAMPLES COLLECTED ON JANUARY 26, 27, 28, AND 29, 1999 FOR THE RI/FS AT THE ELF ATOCHEM FACILITY IN PORTLAND, OREGON

May 21, 1999

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Section 1 Quality Assurance Review

A. Organic Data

The organic analyses of 22 aqueous samples (including quality control [QC] samples), collected for the RI/FS at the Elf Atochem facility in Portland, Oregon, on January 26, 27, 28, and 29, 1999, were performed by Columbia Analytical Services of Kelso, Washington. These samples were analyzed for volatile organic compounds by "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846, 3rd Edition" (SW-846) Method 8260B, semivolatile organic compounds by SW-846 Method 8270C/SIM, unfiltered organochlorine pesticide compounds by SW-846 Method 8081A, and filtered organochlorine pesticide compounds by SW-846 Method 8081A, as specified on Table 1.

The findings in this report are based upon a review of sample holding time, sample receipt condition, blank analysis results, surrogate recovery, laboratory control sample/duplicate laboratory control sample (LCS/DLCS) recovery and precision, matrix spike/duplicate matrix spike (MS/DMS) recovery and precision, gas chromatogram/mass spectral (GC/MS) tuning and system performance, GC instrument performance checks, initial and continuing calibrations, internal standard performance, and field duplicate precision.

Overall, the organic data quality appears to be good. However, a few issues were identified during the performance of the quality assurance (QA) review. The data reviewer has included copies of all relevant raw data, QC forms, and other documentation needed to support any changes made to the data packages in the Organic Data Support Documentation (Section 3) of this report. (The following items may not necessarily affect data usability. Usability is addressed in the Organic Data Qualifiers section.)

SDG K9900502

Correctable Deficiencies

1. The laboratory did not provide internal standard summaries for several of the samples analyzed for the volatile and semivolatile fractions. The data reviewer used the raw data to verify that the internal standards were acceptable for these sample analyses. A copy of the raw data is included in the Organic Data Support Documentation (Section 3).

2. The laboratory incorrectly stated in the Case Narrative for the semivolatile fraction that three surrogate recoveries in the analysis of sample GW019902 were outside the QC limits. According to the Surrogate Recovery Summary, two surrogate recoveries were unacceptable in the analysis of sample GW019902. The data reviewer has manually corrected the Case Narrative provided in the Project Case Narratives and Chain-of-Custody Records (Section 5).

Noncorrectable Deficiency

- In the volatile fraction, sample GW019901 was analyzed for all volatile compounds, except tetrachloroethene, 2 days beyond the required holding time of 14 days from collection to analysis specified in the project QAPP (Table 4-1). In addition, sample GW019905 was analyzed for chlorobenzene 2 days beyond the required holding time of 14 days from collection to analysis specified in the project QAPP (Table 4-1). The impact on data quality is addressed in the Organic Data Qualifiers section.

Comments

1. As noted in the Case Narrative for the pesticide and semivolatile fractions, the laboratory did not perform MS/DMS analyses due to insufficient sample volume.

2. As noted in the Case Narrative for the pesticide fraction, the filtered and unfiltered aliquots for sample GW019901 were switched upon log-in at the laboratory. The laboratory discovered the error after comparing the analytical results of the two aliquots and after visually examining the two aliquots. The laboratory appropriately switched the laboratory identifications for these samples so that the correct results are reported for each aliquot.

3. According to the Case Narrative and the Analytical Reports for the pesticide fraction, the laboratory raised the MRLs for samples GW019901 (filtered) and GW019901 (unfiltered) due to matrix interferences and the samples being analyzed at dilutions. In addition, the pesticide surrogate recoveries in samples GW019901 (filtered) and GW019901 (unfiltered) were not reported due to the large dilutions required for sample analysis. Therefore, the data reviewer did not use the surrogate recoveries for samples GW019901 (filtered) and GW019901 (unfiltered) for data evaluation.

4. According to the Case Narrative and the Analytical Reports for the volatile fraction, the laboratory raised the MRLs for sample GW019901 due to the sample being analyzed at a dilution.

5. In the semivolatile fraction, one acid surrogate recovery and one base/neutral surrogate recovery in the analysis of sample GW019902 were outside the QC limits. As noted in the Case Narrative, the laboratory did not reextract and reanalyze the sample due to insufficient sample volume. There is no impact on data quality because at least two acid or two base/neutral surrogate recoveries must be unacceptable to warrant data qualification.

6. As noted in the Case Narrative for the pesticide fraction, the recoveries of the surrogate compound decachlorobiphenyl in samples GW019903 (filtered) and GW019903 (unfiltered)

were outside the QC limits. Because the filtered and unfiltered analyses showed similar results for this surrogate, the laboratory did not reextract and reanalyze the samples. The impact on data quality is addressed in the Organic Data Qualifiers section.

7. The laboratory did not provide pH information for all of the samples in the data package provided. The data reviewer assumed that all samples were properly preserved to a pH less than 2 for the volatile fraction.

Organic Data Qualifiers

- Due to the presence of di-*n*-butylphthalate and bis(2-ethylhexyl)phthalate in an associated reagent blank, the reported positive results for these compounds in the following samples should be considered "not-detected" and have been flagged "U" on the data tables.

Compound	Fraction	Samples With Results Qualified as "Not-Detected" ("U")
di-*n*-butylphthalate	semivolatile	GW019901
bis(2-ethylhexyl)phthalate	semivolatile	GW019905

- Although there is no direct reason to question the reported positive results for the compounds in the following samples, these compounds are very common laboratory and/or field contaminants. In addition, some of the results represent low-level, on-column detections. Accordingly, extreme caution should be exercised if these results are to be used in a decision-making process, such as risk assessment.

Compound	Fraction	Samples With Results to be Used With Caution
acetone	volatile	GW019901
butylbenzylphthalate	semivolatile	GW019901 and GW019903
diethylphthalate	semivolatile	GW019901

- The analyses for the compounds in the following samples are unusable; consequently, the "not-detected" results have been flagged "R" on the data tables. In addition, the reported positive result for acetone in sample GW019901 should be considered estimated and has been flagged "J" on the data tables. Very low relative response factors (RRF<0.05) were observed for these compounds in the associated initial and/or continuing calibration standards.

Compounds	Fraction	Samples With Unusable Analyses ("R")
acetone, 2-butanone, and 4-methyl-2-pentanone	volatile	All samples
2-nitrophenol and benzoic acid	semivolatile	All samples

- The reporting limits for volatile compounds in sample GW019901 should be considered biased low; consequently, the "not-detected" results have been flagged "UJ" (unless previously flagged "R") on the data tables. In addition, the reported positive results for volatile compounds, except tetrachloroethene, in sample GW019901 and for chlorobenzene in sample GW019905 should be considered estimated and have been flagged "J" on the data tables. Sample GW019901 was analyzed for all volatile compounds, except tetrachloroethene, 2 days beyond the required holding time of 14 days from collection to analysis and sample GW019905 was analyzed for chlorobenzene two days beyond the required holding time of 14 days from collection to analysis.

- The reporting limits for filtered and unfiltered pesticide compounds in sample GW019903 should be considered biased low; consequently, the "not-detected" results have been flagged "UJ" on the data tables. Low recoveries (%R<QC limit) were observed for the surrogate compound decachlorobiphenyl in the filtered and unfiltered pesticide analyses of sample GW019903.

- The reporting limits for the compounds in the following samples should be considered biased low; consequently, the "not-detected" results have been flagged "UJ" on the data tables. High percent drifts (%D>25%), coupled with decreases in instrument sensitivity, were observed for these compounds in the associated continuing calibration standards.

Compound	Fraction	Samples With Biased Low Reporting Limits ("UJ")
dichlorodifluoromethane	volatile	GW019904 and GW019905
2,4-dinitrophenol	semivolatile	All samples

- The reporting limits for the semivolatile compounds 1,4-dichlorobenzene, 1,2,4-trichlorobenzene, and 2,4-dinitrotoluene in all samples should be considered biased low; consequently, the "not-detected" results have been flagged "UJ" on the data tables. Low recoveries (%R<50%) were observed for these compounds in the associated LCS and DLCS analyses.

SDG K9900533

Correctable Deficiencies

1. The laboratory did not provide internal standard summaries for all of the samples analyzed for the volatile and semivolatile fractions. The data reviewer used the raw data to verify that the internal standards were acceptable for these sample analyses. A copy of the raw data is included in the Organic Data Support Documentation (Section 3).

2. In the semivolatile fraction, the laboratory did not provide a continuing calibration summary for the continuing calibration standard analyzed on 2/18/99 at 22:58 and associated with the analysis of sample GW019909 for benzoic acid. The data reviewer used the raw data to verify that this continuing calibration was acceptable. A copy of the raw data is included in the Organic Data Support Documentation (Section 3).

3. The laboratory stated in the Case Narrative for the volatile fraction that the recovery of chlorobenzene in the MS/DMS was not calculated because the high level of this compound in the original unspiked sample prevented accurate evaluation of the spike recoveries. However, the recoveries for chlorobenzene in the MS/DMS were acceptable (80% and 100%) and, therefore, should have been reported by the laboratory.

Comments

1. As noted in the Case Narrative for the pesticide and semivolatile fractions, the laboratory did not perform MS/DMS analyses due to insufficient sample volume.

2. According to the Case Narrative and the Analytical Reports for the volatile fraction, the laboratory raised the MRLs for samples GW019906, GW109907, and GW019909 due to matrix interferences or the samples being analyzed at a dilution.

3. As noted in the Case Narrative for the volatile fraction, the recovery of the surrogate compound 4-bromofluorobenzene in sample GW019909 was outside the QC limits. The high level of chlorobenzene present in the sample resulted in a higher than normal area for the internal standard chlorobenzene-d_5 and ultimately resulted in the low 4-bromofluorobenzene result. The data reviewer has not qualified the data based on this low surrogate recovery. In addition, the high internal standard area observed for chlorobenzene-d_5 was within the QC limits and, therefore, also did not lead to qualification of sample data.

5. The recoveries for pentachlorophenol were outside the QC limits in the LCS/DLCS analyses for the semivolatile fraction. The laboratory did not reextract and reanalyze the samples due

to insufficient sample volume. The impact on data quality is addressed in the Organic Data Qualifiers section.

6. As noted in the Case Narrative for the pesticide fraction, the recoveries of the surrogate compound decachlorobiphenyl in samples GW019906 (filtered and unfiltered) and GW019909 (filtered and unfiltered) were outside the QC limits. Because the filtered and unfiltered analyses of these samples showed similar results for this surrogate, the laboratory did not reextract and reanalyze the samples. The impact on data quality is addressed in the Organic Data Qualifiers section.

7. In the semivolatile fraction, the recovery of the surrogate compound *p*-terphenyl-d_{14} in sample GW019915 was outside the QC limits. As noted in the Case Narrative, the laboratory did not reextract and reanalyze the sample due to insufficient sample volume. There is no impact on data quality because at least two acid or two base/neutral surrogate recoveries must be unacceptable to warrant data qualification.

Organic Data Qualifiers

- Due to the presence of chloroform and unfiltered 4,4'-DDD in an associated reagent blank, the reported positive result for chloroform in sample GW019910 and for unfiltered 4,4'-DDD in sample GW019908 should be considered "not-detected" and have been flagged "U" on the data tables.

- The analyses for the compounds in the following samples are unusable; consequently, the "not-detected" results have been flagged "R" on the data tables. In addition, the reported positive result for benzoic acid in sample GW019909 should be considered estimated and has been flagged "J" on the data tables. Very low relative response factors (RRF<0.05) were observed for these compounds in the associated initial and/or continuing calibration standards.

Compounds	Fraction	Samples With Unusable Analyses ("R")
acetone, 2-butanone, and 4-methyl-2-pentanone	volatile	All samples
2-nitrophenol and benzoic acid	semivolatile	All samples

- The reporting limits for filtered and unfiltered pesticide compounds in samples GW019906 and GW019909 should be considered biased low; consequently, the "not-detected" results have been flagged "UJ" on the data tables. In addition, the reported positive results for

filtered and unfiltered pesticide compounds in samples GW019906 and GW019909 should be considered estimated and have been flagged "J" on the data tables. Low recoveries (%R<QC limit) were observed for the surrogate compound decachlorobiphenyl in the filtered and unfiltered pesticide analyses of these samples.

- The reporting limits for the compounds in the following samples should be considered biased low; consequently, the "not-detected" results have been flagged "UJ" on the data tables. High percent drifts (%D>25%), coupled with decreases in instrument sensitivity, were observed for these compounds in the associated continuing calibration standards.

Compound	Fraction	Samples With Biased Low Reporting Limits ("UJ")
bromomethane and 1,2-dibromo-3-chloropropane	volatile	All samples
2,4-dinitrophenol	semivolatile	All samples

- The reporting limits for the semivolatile compounds 1,4-dichlorobenzene, 1,2,4-trichlorobenzene, 2,4-dinitrotoluene, and pentachlorophenol in all samples should be considered biased low; consequently, the "not-detected" results have been flagged "UJ" on the data tables. In addition, the reported positive results for 1,4-dichlorobenzene in samples GW019906 and GW019909 should be considered estimated and have been flagged "J" on the data tables. Low recoveries (%R<50%) were observed for these compounds in the associated LCS and DLCS analyses.

SDG K9900573

Correctable Deficiencies

1. The laboratory did not provide an internal standard summary for the volatile analysis of sample GW019913 and for the chlorobenzene analysis of sample GW019915. In addition, the laboratory did not provide internal standard summaries for the semivolatile analyses of all samples. The data reviewer used the raw data to verify that the internal standards were acceptable for these sample analyses. A copy of the raw data is included in the Organic Data Support Documentation (Section 3).

2. In the semivolatile fraction, the laboratory did not provide a continuing calibration summary for the continuing calibration standard analyzed on 2/18/99 at 22:58 and associated with the analysis of sample GW019915 for benzoic acid. In addition, the laboratory did not provide the raw data for this continuing calibration standard or its associated DFTPP tune. The data

reviewer obtained a copy of the aforementioned raw data from the data package provided for SDG K9900533 and was able to use the raw data to verify that this continuing calibration was acceptable. A copy of the raw data is included in the Organic Data Support Documentation (Section 3).

Noncorrectable Deficiency

- As noted in the Case Narrative for the volatile fraction, the recovery of the surrogate compound toluene-d_8 in the initial analysis of sample GW019913 was outside the QC limits. The laboratory reanalyzed the sample 2 days beyond the required holding time of 14 days from collection to analysis specified in the project QAPP (Table 4-1). The laboratory reported the data from the reanalysis. The impact on data quality due to this deficiency is addressed in the Organic Data Qualifiers section.

Comments

1. As noted in the Case Narrative for the pesticide and semivolatile fractions, the laboratory did not perform MS/DMS analyses due to insufficient sample volume.

2. According to the Case Narrative and the Analytical Reports for the pesticide fraction, the laboratory raised the MRLs for samples GW019912 (filtered), GW019912 (unfiltered), and GW019913 (filtered) due to matrix interferences and the samples being analyzed at dilutions. In addition, the pesticide surrogate recoveries in samples GW019912 (unfiltered) were not reported due to the large dilutions required for sample analysis. Therefore, the data reviewer did not use the surrogate recoveries for sample GW019912 (unfiltered) for data evaluation.

3. According to the Case Narrative and the Analytical Reports for the volatile fraction, the laboratory raised the MRLs for sample GW019915 due to matrix interferences or the sample being analyzed at a dilution.

4. As noted in the Case Narrative for the pesticide fraction, the recoveries of the surrogate compound decachlorobiphenyl in samples GW019915 (filtered) and GW019915 (unfiltered) were outside the QC limits. Because the filtered and unfiltered analyses showed similar results for this surrogate, the laboratory did not reextract and reanalyze the samples. The impact on data quality is addressed in the Organic Data Qualifiers section.

5. As noted in the Case Narrative for the volatile fraction, the recoveries of the surrogate compound 4-bromofluorobenzene in samples GW019911, GW019911MS, and

GW019911DMS were outside the QC limits. The high level of chlorobenzene present in the samples resulted in a higher than normal area for the internal standard chlorobenzene-d_5 and ultimately resulted in the low 4-bromofluorobenzene results. The data reviewer has not qualified the data based on this low surrogate recoveries. In addition, the high internal standard areas observed for chlorobenzene-d_5 were within the QC limits and therefore, also did not lead to qualification of sample data.

6. As noted in the Case Narrative for the volatile fraction, the recovery of the surrogate compound toluene-d_8 in sample GW019914 was outside the QC limits. The recovery of the surrogate compound dibromofluoromethane was outside the QC limits in the reanalysis of the sample. The laboratory reported the results of the initial analysis.

7. As noted in the Case Narrative, the laboratory did not calculate the recovery of chlorobenzene in the MS/DMS due to the high level of this compound in the original unspiked sample.

8. The recoveries for pentachlorophenol were outside the QC limits in the LCS/DLCS analyses for the semivolatile fraction. The laboratory did not reextract and reanalyze the samples due to insufficient sample volume. The impact on data quality is addressed in the Organic Data Qualifiers section.

9. The laboratory did not provide pH information for several of the samples in the data package provided. The data reviewer assumed that all samples were properly preserved to a pH less than 2 for the volatile fraction.

Organic Data Qualifiers

- Due to the presence of chloroform, di-*n*-butylphthalate, and unfiltered 4,4′-DDD in an associated reagent blank, the reported positive results for these compounds in the following samples should be considered "not-detected" and have been flagged "U" on the data tables.

Compound	Fraction	Samples With Results Qualified as "Not-Detected" ("U")
chloroform	volatile	GW019912 and GW019913
di-*n*-butylphthalate	semivolatile	GW019915
unfiltered 4,4′-DDD	pesticide	GW019911, GW019915, and GW019916

- Although there is no direct reason to question the reported positive results for diethylphthalate in samples GW019912, GW019913, and GW019914, this compound is a very common laboratory contaminant. In addition, the results represent low-level, on-column detections. Accordingly, extreme caution should be exercised if these results are to be used in a decision-making process, such as risk assessment.

- The analyses for the compounds in the following samples are unusable; consequently, the "not-detected" results have been flagged "R" on the data tables. In addition, the reported positive result for benzoic acid in sample GW019915 should be considered estimated and has been flagged "J" on the data tables. Very low relative response factors (RRF<0.05) were observed for these compounds in the associated initial and/or continuing calibration standards.

Compounds	Fraction	Samples With Unusable Analyses ("R")
acetone, 2-butanone, and 4-methyl-2-pentanone	volatile	All samples
benzoic acid and 2-nitrophenol	semivolatile	All samples

- The reporting limits for volatile compounds in sample GW019913 should be considered biased low; consequently, the "not-detected" results have been flagged "UJ" (unless previously flagged "R") on the data tables. In addition, the reported positive results for volatile compounds in sample GW019913 should be considered estimated and have been flagged "J" (unless previously flagged "U") on the data tables. Sample GW019913 was analyzed for volatile compounds 2 days beyond the required holding time of 14 days from collection to analysis.

- The reporting limits for volatile compounds in sample GW019914 should be considered biased low; consequently, the "not-detected" results have been flagged "UJ" (unless previously flagged "R") on the data tables. In addition, the reported positive results for volatile compounds in samples GW019914 and GW019911 should be considered estimated and have been flagged "J" on the data tables. A low recovery (%R<QC limit) was observed for the surrogate compound toluene-d_8 in the volatile analysis of sample GW019914 and a high recovery (%R>QC limit) was observed for the surrogate compound 4-bromofluorobenzene in the volatile analysis of sample GW019911.

- The reporting limits for filtered and unfiltered pesticide compounds in sample GW019915 should be considered biased low; consequently, the "not-detected" results have been flagged "UJ" on the data tables. In addition, the reported positive results for filtered and unfiltered pesticide compounds in sample GW019915 should be considered estimated and have been

flagged "J" (unless previously flagged "U") on the data tables. Low recoveries (%R<QC limit) were observed for the surrogate compound decachlorobiphenyl in the filtered and unfiltered pesticide analyses of this sample.

- The reporting limits for the compounds in the following samples should be considered biased low; consequently, the "not-detected" results have been flagged "UJ" on the data tables. High percent drifts (%D>25%), coupled with decreases in instrument sensitivity, were observed for these compounds in the associated continuing calibration standards.

Compound	Fraction	Samples With Biased Low Reporting Limits ("UJ")
1,2,3-trichloropropane	volatile	GW019911
dichlorodifluoromethane	volatile	GW019915
bromomethane	volatile	GW019913
2,4-dinitrophenol	semivolatile	All samples

- The reporting limits for the semivolatile compounds quantitated using the internal standard naphthalene-d_8 in sample GW019916 should be considered biased low; consequently, the "not-detected" results have been flagged "UJ" (unless previously flagged "R") on the data tables. Low area counts (<50% of the area of the internal standard in the associated continuing calibration standard) were obtained for the internal standard naphthalene-d_8 in the semivolatile analysis of sample GW019916.

- The reporting limits for the semivolatile compounds 1,4-dichlorobenzene, 1,2,4-trichlorobenzene, 2,4-dinitrotoluene, and pentachlorophenol in all samples should be considered biased low; consequently, the "not-detected" results have been flagged "UJ" on the data tables. In addition, the reported positive results for the semivolatile compounds 1,4-dichlorobenzene, 1,2,4-trichlorobenzene, 2,4-dinitrotoluene, and pentachlorophenol in all samples should be considered estimated and have been flagged "J" on the data tables. Low recoveries (%R<50%) were observed for these compounds in the associated LCS and DLCS analyses.

- One field duplicate pair (sample GW019912 and its field duplicate, sample GW019913) was submitted to the laboratory for the organic analyses. Acceptable precision and sample representativeness were demonstrated by the correlation observed between the results in all organic fractions. A complete comparison of all reported positive results is included in the Organic Data Support Documentation (Section 3).

A complete support documentation for this organic QA review is presented in Section 3 of this report. The cover sheet for this section is a checklist of all QA procedures required by the protocol and examined in this data review.

B. Inorganic and Wet Chemistry Analyses

The inorganic and wet chemistry analyses of 25 aqueous samples (including QC samples) collected for the RI/FS at the Elf Atochem facility in Portland, Oregon, on January 26, 27, 28, and 29, 1999, were performed by Columbia Analytical Services of Kelso, Washington. These samples were analyzed for calcium, iron, magnesium, potassium, and sodium by SW-846 Method 6010B; total alkalinity as $CaCO_3$ by US EPA Method 310.1; bicarbonate as $CaCO_3$ and carbonate as $CaCO_3$ by "Standard Methods for Examination of Water and Wastewater" (SM) 2320B; chloride, nitrate as nitrogen, nitrite as nitrogen, and sulfate by US EPA Method 300.0, as specified on Table 1.

The findings in this report are based upon a review of holding times, sample receipt condition, blank analysis results, matrix spike (MS) recoveries, laboratory control sample (LCS) recoveries, laboratory duplicate precision, continuing calibration checks, and field duplicate precision.

Overall, the inorganic and wet chemistry data quality appears to be good. However, a few issues were identified during the performance of the quality assurance (QA) review. The data reviewer has included copies of all relevant raw data, QC forms, and other documentation needed to support any changes made to the data packages in the Inorganic and Wet Chemistry Data Support Documentation (Section 4) of this report. (The following items may not necessarily affect data usability. Usability is addressed in the Inorganic and Wet Chemistry Data Qualifiers section.)

SDG K9900502

Correctable Deficiency

- The laboratory did not provide a summary form for the serial dilution analysis in the metals fraction. The data reviewer used the raw data to verify that the serial dilution was acceptable. A copy of the raw data is included in the Inorganic and Wet Chemistry Data Support Documentation (Section 4).

Comments

1. As noted in the Case Narrative, the laboratory did not calculate the recovery of iron in the MS because the high level of iron in the original unspiked sample prevented accurate evaluation of the spike recovery.

2. According to the Analytical Reports for the wet chemistry fraction, the laboratory raised the MRLs for nitrate as nitrogen and nitrite as nitrogen in several samples due to matrix interferences and the samples being analyzed at dilutions.

Inorganic and Wet Chemistry Data Qualifier

- The reported positive results for sulfate in all samples should be considered estimated and have been flagged "J" on the data tables. A high recovery (%R>110%) was observed for sulfate in the associated MS sample analysis.

SDG K9900533

Correctable Deficiency

- The laboratory did not provide a summary form for the serial dilution analysis in the metals fraction. The data reviewer used the raw data to verify that the serial dilution was acceptable. A copy of the raw data is included in the Inorganic and Wet Chemistry Data Support Documentation (Section 4).

Comments

1. As noted in the Case Narrative, the laboratory did not calculate the recovery of iron in the MS because the high level of iron in the original unspiked sample prevented accurate evaluation of the spike recovery.

2. According to the Analytical Reports for the wet chemistry fraction, the laboratory raised the MRLs for nitrite as nitrogen in several samples due to matrix interferences and the samples being analyzed at dilutions.

SDG K9900573

Correctable Deficiency

- The laboratory did not provide a summary form for the serial dilution analysis in the metals fraction. The data reviewer used the raw data to verify that the serial dilution was acceptable. A copy of the raw data is included in the Inorganic and Wet Chemistry Data Support Documentation (Section 4).

Comments

1. As noted in the Case Narrative, the laboratory did not calculate the recovery of iron in the MS because the high level of iron in the original unspiked sample prevented accurate evaluation of the spike recovery.

2. According to the Analytical Reports for the wet chemistry fraction, the laboratory raised the MRLs for nitrate as nitrogen and nitrite as nitrogen in several samples due to matrix interferences and the samples being analyzed at dilutions.

Inorganic and Wet Chemistry Data Qualifiers

- The reporting limits for nitrate as nitrogen and sulfate in all samples should be considered biased low; consequently, the "not-detected" results have been flagged "UJ" on the data tables. In addition, the reported positive results for nitrate as nitrogen and sulfate in all samples should be considered estimated and have been flagged "J" on the data tables. Low recoveries (%R<90%) were observed for these analytes in the associated MS sample analysis.

- One field duplicate pair (sample GW019912 and its field duplicate, sample GW019913) was submitted to the laboratory for the inorganic and wet chemistry analyses. Acceptable precision and sample representativeness were demonstrated by the correlation observed between the results in the inorganic and wet chemistry fractions. A complete comparison of all reported positive results is included in the Inorganic and Wet Chemistry Data Support Documentation (Section 4).

A complete support documentation for this inorganic and wet chemistry QA review is presented in Section 4 of this report. The cover sheet for this section is a checklist of all QA procedures required by the protocol and examined in this data review.

C. Conclusions

Overall, the data quality appears to be good. A portion of the organic results was qualified due to exceeded holding times, blank contamination, calibration issues, poor surrogate recoveries, low laboratory control sample recoveries, and low internal standard areas. In addition, a portion of the wet chemistry results was qualified due to poor matrix spike sample recoveries. Overall, the analytical data are acceptable for use, provided the data users understand the qualifications and limitations of data use specified in the QA review. The Project Case Narratives and Chain-of-Custody Records are presented in Section 5 of this report. Project Correspondence is presented in Section 6 of this report.

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Setting the Standards for Innovative
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QUALITY ASSURANCE REVIEW OF THE SUPPLEMENTAL SOURCE INVESTIGATION SAMPLES COLLECTED ON FEBRUARY 19, 1999, FOR THE RI/FS AT THE ELF ATOCHEM FACILITY IN PORTLAND, OREGON

May 12, 1999

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Section 1 Quality Assurance Review

A. Organic Data

The organic analyses of eight soil samples and eight aqueous samples (including quality control [QC] samples), collected for the RI/FS at the Elf Atochem facility in Portland, Oregon, on February 19, 1999, were performed by Columbia Analytical Services of Kelso, Washington. These samples were analyzed for volatile organic compounds by "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846, 3rd Edition" (SW-846) Method 8260B, semivolatile petroleum products by SW-846 Method 8015B, and organochlorine pesticide compounds by SW-846 Method 8081A, as specified on Table 1.

The findings in this report are based upon a review of sample holding time, sample condition upon receipt, blank analysis results, surrogate recovery, laboratory control sample/duplicate laboratory control sample (LCS/DLCS) recovery and precision, matrix spike/duplicate matrix spike (MS/DMS) recovery and precision, gas chromatogram/mass spectral (GC/MS) tuning and system performance, GC instrument performance checks, initial and continuing calibrations, internal standard performance, and field duplicate precision.

Overall, the organic data quality appears to be good. However, a few issues were identified during the performance of the quality assurance (QA) review. The data reviewer has included copies of all relevant raw data, QC forms, and other documentation needed to support any changes made to the data packages in the Organic Data Support Documentation (Section 3) of this report. (The following items may not necessarily affect data usability. Usability is addressed in the Organic Data Qualifiers section.)

Noncorrectable Deficiency

- The temperature of one of the coolers upon receipt at the laboratory was below 1°C. According to the project QAPP (Table 4-1), samples collected for organic analyses are required to be preserved at a temperature of 4°C. The data reviewer believes that there is no impact on data quality due to this deficiency because none of the samples was received in frozen or broken containers.

Comments

1. As noted in the Case Narrative for the pesticide fraction, the surrogate recoveries for sample SO0276 were not reported due to the large dilutions required for sample analysis.

Therefore, the data reviewer did not use the surrogate recoveries for sample SO0276 for data evaluation.

2. As noted in the Case Narrative for the pesticide fraction, the laboratory did not calculate the recovery of 4,4'-DDT in the MS/DMS due to the high level of 4,4'-DDT in the original unspiked sample. Specifically, the concentrations of 4,4'-DDT in the MS and DMS samples exceeded the calibration range of the instrument.

3. As noted in the Case Narrative for the volatile fraction, the recovery for the surrogate compound toluene-d_8 in the MS sample SO0281MS was outside the control limits. There is no impact on data quality; all matrix spike compounds were within control limits.

4. The laboratory chose a reagent blank sample, SO0313, on which to perform the volatile and pesticide MS/DMS analyses in association with the aqueous samples. The laboratory should have chosen a non-reagent blank sample to perform these QC analyses because a reagent blank would not be expected to exhibit matrix interferences.

5. According to the Analytical Reports for the volatile and pesticide fractions, the laboratory raised the minimum reporting limits (MRLs) for several samples due to matrix interferences or samples being analyzed at dilutions.

Organic Data Qualifiers

- The analyses for the compounds in the following samples are unusable; consequently, the "not-detected" results have been flagged "R" on the data tables. Very low relative response factors (RRF < 0.05) were observed for these compounds in the associated initial and/or continuing calibration standards.

Compounds	Fraction	Samples With Unusable Analyses ("R")
acetone and 2-butanone	volatile	SO0281, SO0289, SO0300, SO0306, and SO0311
acetone, 2-butanone, and 4-methyl-2-pentanone	volatile	SO0276, GWGX10, GWG011, SO0313, and TRIPBLANK4

- The reporting limits for the compounds in the following samples should be considered biased low; consequently, the "not-detected" results have been flagged "UJ" on the data

tables. High percent drifts (%D>25%), coupled with decreases in instrument sensitivity, were observed for these compounds in the associated continuing calibration standards.

Compound	Fraction	Samples With Biased Low Reporting Limits ("UJ")
carbon disulfide	volatile	SO0281, SO0289, SO0306, SO0311, and SO0300

The reporting limits for the compounds in the following samples should be considered biased low; consequently, the "not-detected" results have been flagged "UJ" on the data tables. High percent drifts (%D>25%), coupled with increases in instrument sensitivity, were observed for these compounds in the associated continuing calibration standards. Although the compounds have been qualified according to protocol, these high percent drifts represent increases in instrument sensitivity. Therefore, the reporting limits may be valid as reported.

Compound(s)	Fraction	Samples With Biased Low Reporting Limits ("UJ")
dichlorodifluoromethane and hexachlorobutadiene	volatile	SO0306 and SO0311
tert-butylbenzene	volatile	GWG011, SO0313, and TRIPBLANK4

A complete support documentation for this organic QA review is presented in Section 3 of this report. The cover sheet for this section is a checklist of all QA procedures required by the protocol and examined in this data review.

C. Conclusions

Overall, the data quality appears to be good. A portion of the organic results was qualified due calibration issues. Overall, the analytical data are acceptable for use, provided the data users understand the qualifications and limitations of data use specified in the QA review. The Project Case Narratives and Chain-of-Custody Records are presented in Section 4 of this report.

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Appendix D

May 1998 Groundwater Analytical Results

Table D-1. May 1998 groundwater sampling results, Elf Atochem Acid Plant Area

	Sample No:	GW059806	GW059801	GW059802	GW059803	GW059804	GW059805
	Station ID:	MWA-1	MWA-2	MWA-3	MWA-4	MWA-4 (DUP)	Rinsate
General Parameters							
Calcium	mg/L	**10.8**	**8.16**	**15.7**	**76.4**	**72.9**	**0.944**
Iron	mg/L	**13**	**0.541**	**0.091** *J*	**14.7**	**14**	**0.027**
Magnesium	mg/L	**0.176**	**2.82**	**1.77**	**28.1**	**26.2**	**0.022**
Potassium	mg/L	2 *U*	2 *U*	2 *U*	**3.1**	**3.4**	2 *U*
Sodium	mg/L	**2,050**	**24.3**	**5.31**	**15.5**	**14.5**	0.1 *U*
Bicarbonate alkalinity	mg/L	2 *U*	**56**	**47**	**269**	**269**	2 *U*
Carbonate alkalinity	mg/L	**1,860**	2 *U*	2 *U*	2 *U*	2 *U*	2 *U*
Total alkalinity	mg/L	**2,850**	**56**	**47**	**269**	**269**	2 *U*
Total chloride	mg/L	**959**	**10.4**	**5**	**57.5**	**56.1**	0.2 *U*
Total NO_3-N (nitrate nitrogen)	mg/L	**3.2**	0.2 *U*	**0.3**	0.2 *U*	0.2 *U*	0.2 *U*
Total NO_2-N (nitrite nitrogen)	mg/L	25 *U*	0.2 *U*	0.2 *U*	1 *U*	1 *U*	0.2 *U*
Sulfate	mg/L	**126**	**5.1**	**0.7**	**2.1**	**2.1**	0.2 *U*
Total organic carbon	mg/L	**349**	**2.8** *J*	**0.5** *J*	**15.7**	**16**	**0.9**
Total Pesticides							
α-Hexachlorocyclohexane	µg/L	0.04 *UJ*	**0.05** *J*	0.04 *U*	0.4 *U*	0.4 *U*	0.04 *U*
β-Hexachlorocyclohexane	µg/L	**0.28** *J*	0.08 *UJ*	0.04 *U*	0.4 *U*	0.4 *U*	0.04 *U*
δ-Hexachlorocyclohexane	µg/L	0.04 *UJ*	0.04 *UJ*	0.04 *U*	0.4 *U*	0.4 *U*	0.04 *U*
γ-Hexachlorocyclohexane (lindane)	µg/L	0.04 *UJ*	0.04 *UJ*	0.04 *U*	0.4 *U*	0.4 *U*	0.04 *U*
Aldrin	µg/L	0.04 *UJ*	0.04 *UJ*	0.04 *U*	0.4 *U*	0.4 *U*	0.04 *U*
α-Chlordane	µg/L	0.04 *UJ*	0.04 *UJ*	0.04 *U*	0.4 *U*	0.4 *U*	0.04 *U*
γ-Chlordane	µg/L	0.04 *UJ*	0.04 *UJ*	0.04 *U*	0.4 *U*	0.4 *U*	0.04 *U*
Dieldrin	µg/L	0.04 *UJ*	0.04 *UJ*	0.04 *U*	0.4 *U*	0.4 *U*	0.04 *U*
α-Endosulfan (Endosulfan I)	µg/L	0.04 *UJ*	0.04 *UJ*	0.04 *U*	0.4 *U*	0.4 *U*	0.04 *U*
β-Endosulfan (Endosulfan II)	µg/L	0.04 *UJ*	0.04 *UJ*	0.04 *U*	0.4 *U*	0.4 *U*	0.04 *U*
Endosulfan sulfate	µg/L	0.04 *UJ*	0.04 *UJ*	0.04 *U*	0.4 *U*	0.4 *U*	0.04 *U*
Endrin	µg/L	0.04 *UJ*	0.04 *UJ*	0.04 *U*	0.4 *U*	0.4 *U*	0.04 *U*
Endrin aldehyde	µg/L	0.04 *UJ*	0.04 *UJ*	0.04 *U*	0.4 *U*	0.4 *U*	0.04 *U*
Endrin ketone	µg/L	0.04 *UJ*	0.1 *UJ*	0.04 *U*	0.4 *U*	0.4 *U*	0.04 *U*
Heptachlor epoxide	µg/L	0.04 *UJ*	0.04 *UJ*	0.04 *U*	0.4 *U*	0.4 *U*	0.04 *U*
Heptachlor	µg/L	0.04 *UJ*	0.04 *UJ*	0.04 *U*	0.4 *U*	0.4 *U*	0.04 *U*
Methoxychlor	µg/L	0.1 *UJ*	0.1 *UJ*	0.1 *U*	1 *U*	1 *U*	0.1 *U*

Table D-1. (cont.)

	Sample No:	GW059806	GW059801	GW059802	GW059803	GW059804	GW059805
	Station ID:	MWA-1	MWA-2	MWA-3	MWA-4	MWA-4 (DUP)	Rinsate
4,4'-DDD (TDE)	µg/L	0.04 *UJ*	**0.25** *J*	**0.05** *J*	**6.5**	**5.1**	**0.04**
4,4'-DDE	µg/L	0.04 *UJ*	0.04 *UJ*	0.04 *U*	0.4 *U*	0.4 *U*	0.04 *U*
4,4'-DDT	µg/L	0.04 *UJ*	**0.33** *J*	**0.13**	**0.62**	**0.51**	0.04 *U*
Toxaphene	µg/L	1 *UJ*	1 *UJ*	1 *U*	10 *U*	10 *U*	1 *U*
Dissolved Pesticides							
α-Hexachlorocyclohexane	µg/L	0.04 *UJ*	**0.04**	0.04 *U*	0.04 *U*	0.04 *U*	0.04 *U*
β-Hexachlorocyclohexane	µg/L	0.04 *UJ*	0.2 *U*	0.04 *U*	**0.06**	**0.05**	0.04 *U*
δ-Hexachlorocyclohexane	µg/L	0.04 *UJ*	0.04 *U*	0.04 *U*	0.04 *U*	0.04 *U*	0.04 *U*
γ-Hexachlorocyclohexane (lindane)	µg/L	0.04 *UJ*	0.04 *U*	0.04 *U*	0.07 *U*	0.07 *U*	0.04 *U*
Aldrin	µg/L	0.04 *UJ*	0.04 *U*	0.04 *U*	0.04 *U*	0.04 *U*	0.04 *U*
α-Chlordane	µg/L	0.04 *UJ*	0.04 *U*	0.04 *U*	0.04 *U*	0.04 *U*	0.04 *U*
γ-Chlordane	µg/L	0.04 *UJ*	0.04 *U*	0.04 *U*	0.04 *U*	0.04 *U*	0.04 *U*
Dieldrin	µg/L	0.04 *UJ*	0.04 *U*	0.04 *U*	0.04 *U*	0.04 *U*	0.04 *U*
α-Endosulfan (Endosulfan I)	µg/L	0.04 *UJ*	0.04 *U*	0.04 *U*	0.04 *U*	0.04 *U*	0.04 *U*
β-Endosulfan (Endosulfan II)	µg/L	0.04 *UJ*	0.04 *U*	0.04 *U*	0.04 *U*	0.04 *U*	0.04 *U*
Endosulfan sulfate	µg/L	0.04 *UJ*	0.04 *U*	0.04 *U*	0.04 *U*	0.04 *U*	0.04 *U*
Endrin	µg/L	0.04 *UJ*	0.04 *U*	0.04 *U*	0.04 *U*	0.04 *U*	0.04 *U*
Endrin aldehyde	µg/L	0.04 *UJ*	0.04 *U*	0.04 *U*	0.04 *U*	0.04 *U*	0.04 *U*
Endrin ketone	µg/L	0.04 *UJ*	0.1 *U*	0.04 *U*	0.04 *U*	0.04 *U*	0.04 *U*
Heptachlor epoxide	µg/L	0.04 *UJ*	0.04 *U*	0.04 *U*	0.04 *U*	0.04 *U*	0.04 *U*
Heptachlor	µg/L	0.04 *UJ*	0.04 *U*	0.04 *U*	0.04 *U*	0.04 *U*	0.04 *U*
Methoxychlor	µg/L	0.1 *UJ*	0.1 *U*	0.1 *U*	0.1 *U*	0.1 *U*	0.1 *U*
4,4'-DDD (TDE)	µg/L	0.04 *UJ*	**0.08**	0.04 *U*	**0.58**	**0.89**	0.04 *U*
4,4'-DDE	µg/L	0.04 *UJ*	0.04 *U*	0.04 *U*	0.04 *U*	0.04 *U*	0.04 *U*
4,4'-DDT	µg/L	0.04 *UJ*	**0.21**	0.04 *U*	**0.08**	**0.07**	0.04 *U*
Toxaphene	µg/L	1 *UJ*	1 *U*	1 *U*	1 *U*	1 *U*	1 *U*
SVOCs							
2-Chloronaphthalene	µg/L	10 *U*	10 *U*	10 *U*	10 *U*	10 *U*	10 *U*
2-Chlorophenol	µg/L	**78**	10 *U*	10 *U*	10 *U*	10 *U*	10 *U*
2-Methylnaphthalene	µg/L	10 *U*	10 *U*	10 *U*	10 *U*	10 *U*	10 *U*
2-Methylphenol	µg/L	10 *U*	10 *U*	10 *U*	10 *U*	10 *U*	10 *U*
2-Nitroaniline	µg/L	25 *U*	25 *U*	25 *U*	25 *U*	25 *U*	25 *U*
2-Nitrophenol	µg/L	10 *U*	10 *U*	10 *U*	10 *U*	10 *U*	10 *U*

Table D-1. (cont.)

	Sample No:	GW059806	GW059801	GW059802	GW059803	GW059804	GW059805
	Station ID:	MWA-1	MWA-2	MWA-3	MWA-4	MWA-4 (DUP)	Rinsate
2,4-Dichlorophenol	µg/L	10 *U*	10 *U*	10 *U*	10 *U*	10 *U*	10 *U*
2,4-Dimethylphenol	µg/L	10 *U*	10 *U*	10 *U*	10 *U*	10 *U*	10 *U*
2,4-Dinitrophenol	µg/L	25 *U*	25 *U*	25 *U*	25 *U*	25 *U*	25 *U*
2,4-Dinitrotoluene	µg/L	10 *U*	10 *U*	10 *U*	10 *U*	10 *U*	10 *U*
2,4,5-Trichlorophenol	µg/L	10 *U*	10 *U*	10 *U*	10 *U*	10 *U*	10 *U*
2,4,6-Trichlorophenol	µg/L	10 *U*	10 *U*	10 *U*	10 *U*	10 *U*	10 *U*
2,6-Dinitrotoluene	µg/L	10 *U*	10 *U*	10 *U*	10 *U*	10 *U*	10 *U*
Dibenz[a,h]anthracene	µg/L	10 *U*	10 *U*	10 *U*	10 *U*	10 *U*	10 *U*
2-Methyl-4,6-dinitrophenol	µg/L	25 *U*	25 *U*	25 *U*	25 *U*	25 *U*	25 *U*
Di-*n*-octyl phthalate	µg/L	10 *U*	10 *U*	10 *U*	10 *U*	10 *U*	10 *U*
3- and 4-Chlorophenol	µg/L	**80**	10 *U*	10 *U*	10 *U*	10 *U*	10 *U*
3- and 4-Methylphenol	µg/L	**16**	10 *U*	10 *U*	10 *U*	10 *U*	10 *U*
3-Nitroaniline	µg/L	25 *U*	25 *U*	25 *U*	25 *U*	25 *U*	25 *U*
3,3′-Dichlorobenzidine	µg/L	25 *U*	25 *U*	25 *U*	25 *U*	25 *U*	25 *U*
4-Bromophenyl-phenyl ether	µg/L	10 *U*	10 *U*	10 *U*	10 *U*	10 *U*	10 *U*
4-Chloro-3-methylphenol (PCMC)	µg/L	10 *U*	10 *U*	10 *U*	10 *U*	10 *U*	10 *U*
4-Chloroaniline	µg/L	10 *U*	10 *U*	10 *U*	10 *U*	10 *U*	10 *U*
4-Chlorophenyl-phenyl ether	µg/L	10 *U*	10 *U*	10 *U*	10 *U*	10 *U*	10 *U*
4-Nitroaniline	µg/L	25 *U*	25 *U*	25 *U*	25 *U*	25 *U*	25 *U*
4-Nitrophenol	µg/L	25 *U*	25 *U*	25 *U*	25 *U*	25 *U*	25 *U*
Pentachlorophenol	µg/L	25 *U*	25 *U*	25 *U*	25 *U*	25 *U*	25 *U*
Hexachlorobenzene	µg/L	10 *U*	10 *U*	10 *U*	10 *U*	10 *U*	10 *U*
Hexachlorocyclopentadiene	µg/L	10 *U*	10 *U*	10 *U*	10 *U*	10 *U*	10 *U*
Hexachloroethane (perchloroethane)	µg/L	10 *U*	10 *U*	10 *U*	10 *U*	10 *U*	10 *U*
Acenaphthene	µg/L	10 *U*	10 *U*	10 *U*	10 *U*	10 *U*	10 *U*
Acenaphthylene	µg/L	10 *U*	10 *U*	10 *U*	10 *U*	10 *U*	10 *U*
Aniline	µg/L	25 *UJ*	25 *UJ*	25 *UJ*	25 *UJ*	25 *UJ*	25 *UJ*
Anthracene	µg/L	10 *U*	10 *U*	10 *U*	10 *U*	10 *U*	10 *U*
Bis[2-chloroethyl]ether	µg/L	10 *U*	10 *U*	10 *U*	10 *U*	10 *U*	10 *U*
Bis[2-ethylhexyl]phthalate	µg/L	10 *U*	10 *U*	10 *U*	10 *U*	10 *U*	10 *U*
Benz[a]anthracene	µg/L	10 *U*	10 *U*	10 *U*	10 *U*	10 *U*	10 *U*
Benz[a]pyrene	µg/L	10 *U*	10 *U*	10 *U*	10 *U*	10 *U*	10 *U*
Benzo[b]fluoranthene	µg/L	10 *U*	10 *U*	10 *U*	10 *U*	10 *U*	10 *U*

Table D-1. (cont.)

	Sample No:	GW059806	GW059801	GW059802	GW059803	GW059804	GW059805
	Station ID:	MWA-1	MWA-2	MWA-3	MWA-4	MWA-4 (DUP)	Rinsate
Bis(2-chloroethoxy)methane	µg/L	10 *U*	10 *U*	10 *U*	10 *U*	10 *U*	10 *U*
Bis(2-chloroisopropyl) ether	µg/L	10 *U*	10 *U*	10 *U*	10 *U*	10 *U*	10 *U*
Benzoic acid	µg/L	25 *U*	25 *U*	25 *U*	25 *U*	25 *U*	25 *U*
Benzyl alcohol	µg/L	10 *U*	10 *U*	10 *U*	10 *U*	10 *U*	10 *U*
Benzo[ghi]perylene	µg/L	10 *U*	10 *U*	10 *U*	10 *U*	10 *U*	10 *U*
Benzo[k]fluoranthene	µg/L	10 *U*	10 *U*	10 *U*	10 *U*	10 *U*	10 *U*
Butylbenzyl phthalate	µg/L	10 *U*	10 *U*	10 *U*	10 *U*	10 *U*	10 *U*
Chrysene	µg/L	10 *U*	10 *U*	10 *U*	10 *U*	10 *U*	10 *U*
Diethyl phthalate	µg/L	10 *U*	10 *U*	10 *U*	10 *U*	10 *U*	10 *U*
Dibenzofuran	µg/L	10 *U*	10 *U*	10 *U*	10 *U*	10 *U*	10 *U*
Di-n-butyl phthalate	µg/L	10 *U*	10 *U*	10 *U*	10 *U*	10 *U*	10 *U*
Dimethyl phthalate	µg/L	10 *U*	10 *U*	10 *U*	10 *U*	10 *U*	10 *U*
Fluoranthene	µg/L	10 *U*	10 *U*	10 *U*	10 *U*	10 *U*	10 *U*
Fluorene	µg/L	10 *U*	10 *U*	10 *U*	10 *U*	10 *U*	10 *U*
Indeno[1,2,3-cd]pyrene	µg/L	10 *U*	10 *U*	10 *U*	10 *U*	10 *U*	10 *U*
Isophorone	µg/L	10 *U*	10 *U*	10 *U*	10 *U*	10 *U*	10 *U*
Nitrobenzene	µg/L	10 *U*	10 *U*	10 *U*	10 *U*	10 *U*	10 *U*
N-nitrosodimethylamine	µg/L	25 *U*	25 *U*	25 *U*	25 *U*	25 *U*	25 *U*
N-nitroso-di-*n*-propylamine	µg/L	10 *U*	10 *U*	10 *U*	10 *U*	10 *U*	10 *U*
N-nitrosodiphenylamine	µg/L	10 *U*	10 *U*	10 *U*	10 *U*	10 *U*	10 *U*
Phenanthrene	µg/L	10 *U*	10 *U*	10 *U*	10 *U*	10 *U*	10 *U*
Phenol	µg/L	**75**	10 *U*	10 *U*	10 *U*	10 *U*	10 *U*
Pyrene	µg/L	10 *U*	10 *U*	10 *U*	10 *U*	10 *U*	10 *U*
VOCs							
1,1-Dichloroethane	µg/L	50 *UJ*	0.5 *U*	0.5 *U*	0.5 *U*	0.5 *U*	0.5 *U*
1,1-Dichloroethene	µg/L	50 *UJ*	0.5 *U*	0.5 *U*	0.5 *U*	0.5 *U*	0.5 *U*
1,1-Dichloropropene	µg/L	50 *UJ*	0.5 *U*	0.5 *U*	0.5 *U*	0.5 *U*	0.5 *U*
1,1,1-Trichloroethane	µg/L	50 *UJ*	0.5 *U*	0.5 *U*	0.5 *U*	0.5 *U*	0.5 *U*
1,1,1,2-Tetrachloroethane	µg/L	50 *UJ*	0.5 *U*	0.5 *U*	0.5 *U*	0.5 *U*	0.5 *U*
1,1,2-Trichloroethane	µg/L	50 *UJ*	0.5 *U*	0.5 *U*	0.5 *U*	0.5 *U*	0.5 *U*
1,1,2,2-Tetrachloroethane	µg/L	50 *UJ*	0.5 *U*	0.5 *U*	0.5 *U*	0.5 *U*	0.5 *U*
EDB-Ethylene bromide	µg/L	200 *UJ*	2 *U*	2 *U*	2 *U*	2 *U*	2 *U*
1,2-Dichloroethane	µg/L	50 *UJ*	0.5 *U*	0.5 *U*	0.5 *U*	0.5 *U*	0.5 *U*

Table D-1. (cont.)

	Sample No:	GW059806	GW059801	GW059802	GW059803	GW059804	GW059805
	Station ID:	MWA-1	MWA-2	MWA-3	MWA-4	MWA-4 (DUP)	Rinsate
1,2-Dichloropropane	µg/L	50 *UJ*	0.5 *U*	0.5 *U*	0.5 *U*	0.5 *U*	0.5 *U*
1,2-Dichlorobenzene	µg/L	50 *UJ*	0.5 *U*	0.5 *U*	0.5 *U*	0.5 *U*	0.5 *U*
1,2,3-Trichlorobenzene	µg/L	200 *UJ*	2 *U*	2 *U*	2 *U*	2 *U*	2 *U*
1,2,4-Trichlorobenzene	µg/L	200 *UJ*	2 *U*	2 *U*	2 *U*	2 *U*	2 *U*
1,2,4-Trimethylbenzene	µg/L	200 *UJ*	2 *U*	2 *U*	2 *U*	2 *U*	2 *U*
1,3-Dichlorobenzene	µg/L	50 *UJ*	0.5 *U*	0.5 *U*	0.5 *U*	0.5 *U*	0.5 *U*
1,3,5-Trimethylbenzene	µg/L	200 *UJ*	2 *U*	2 *U*	2 *U*	2 *U*	2 *U*
1,4-Dichlorobenzene	µg/L	50 *UJ*	0.5 *U*	0.5 *U*	0.5 *U*	0.5 *U*	0.5 *U*
2-Chlorotoluene	µg/L	200 *UJ*	2 *U*	2 *U*	2 *U*	2 *U*	2 *U*
1,2,3-Trichloropropane	µg/L	50 *UJ*	0.5 *U*	0.5 *U*	0.5 *U*	0.5 *U*	0.5 *U*
1,2-Dibromo-3-chloropropane	µg/L	200 *UJ*	2 *U*	2 *U*	2 *U*	2 *U*	2 *U*
1,3-Dichloropropane	µg/L	50 *UJ*	0.5 *U*	0.5 *U*	0.5 *U*	0.5 *U*	0.5 *U*
2-Butanone (methyl ethyl ketone, MEK)	µg/L	2,000 *UJ*	20 *U*	20 *U*	20 *U*	20 *U*	20 *U*
2-Hexanone	µg/L	2,000 *UJ*	20 *U*	20 *U*	20 *U*	20 *U*	20 *U*
2,2-Dichloropropane	µg/L	50 *UJ*	0.5 *U*	0.5 *U*	0.5 *U*	0.5 *U*	0.5 *U*
Dibromochloromethane	µg/L	50 *UJ*	0.5 *U*	0.5 *U*	0.5 *U*	0.5 *U*	0.5 *U*
Dibromomethane	µg/L	50 *UJ*	0.5 *U*	0.5 *U*	0.5 *U*	0.5 *U*	0.5 *U*
Dichlorodifluoromethane	µg/L	50 *UJ*	0.5 *U*	0.5 *U*	0.5 *U*	0.5 *U*	**100**
Bromodichloromethane	µg/L	50 *UJ*	0.5 *U*	**0.7**	0.5 *U*	0.5 *U*	0.5 *U*
Trichloroethene	µg/L	50 *UJ*	**3.4**	**0.5**	**1**	**1**	0.5 *U*
Trichlorofluoromethane	µg/L	50 *UJ*	0.5 *U*	**0.6**	0.5 *U*	0.5 *U*	0.5 *U*
4-Methyl-2-pentanone (MIBK)	µg/L	2,000 *UJ*	20 *U*	20 *U*	20 *U*	20 *U*	20 *U*
4-Chlorotoluene	µg/L	200 *UJ*	2 *U*	2 *U*	2 *U*	2 *U*	2 *U*
4-Isopropyltoluene	µg/L	200 *UJ*	2 *U*	2 *U*	2 *U*	2 *U*	2 *U*
Tetrachloroethene (PCE)	µg/L	50 *UJ*	**15**	**3.6**	**2**	**2.2**	0.5 *U*
Hexachlorobutadiene	µg/L	200 *UJ*	2 *U*	2 *U*	2 *U*	2 *U*	2 *U*
Acetone	µg/L	2,000 *UJ*	20 *UJ*	20 *UJ*	20 *UJ*	20 *UJ*	20 *UJ*
Benzene	µg/L	50 *UJ*	0.5 *U*	0.5 *U*	0.5 *U*	0.5 *U*	0.5 *U*
Bromobenzene	µg/L	50 *UJ*	0.5 *U*	0.5 *U*	0.5 *U*	0.5 *U*	0.5 *U*
Bromochloromethane	µg/L	50 *UJ*	0.5 *U*	0.5 *U*	0.5 *U*	0.5 *U*	0.5 *U*
Bromomethane	µg/L	50 *UJ*	0.5 *U*	0.5 *U*	0.5 *U*	0.5 *U*	0.5 *U*
Bromoform	µg/L	50 *UJ*	0.5 *U*	0.5 *U*	0.5 *U*	0.5 *U*	0.5 *U*
cis-1,2-Dichloroethene	µg/L	50 *UJ*	**3.5**	0.5 *U*	**1.1**	**1.1**	0.5 *U*

Table D-1. (cont.)

Sample No:		GW059806	GW059801	GW059802	GW059803	GW059804	GW059805
Station ID:		MWA-1	MWA-2	MWA-3	MWA-4	MWA-4 (DUP)	Rinsate
cis-1,3-Dichloropropene	µg/L	50 *UJ*	0.5 *U*	0.5 *U*	0.5 *U*	0.5 *U*	0.5 *U*
Carbon tetrachloride	µg/L	50 *UJ*	**0.7**	0.5 *U*	0.5 *U*	0.5 *U*	0.5 *U*
Chloroform	µg/L	50 *UJ*	**6.3**	**20**	**0.8**	**0.7**	0.5 *U*
Chlorobenzene	µg/L	**21,000**	**4.4**	0.5 *U*	**19**	**20**	0.5 *U*
Chloroethane	µg/L	50 *UJ*	0.5 *U*	0.5 *U*	0.5 *U*	0.5 *U*	0.5 *U*
Chloromethane	µg/L	50 *UJ*	0.5 *U*	0.5 *U*	0.5 *U*	0.5 *U*	0.5 *U*
Carbon disulfide	µg/L	50 *UJ*	0.5 *U*	0.5 *U*	0.5 *U*	0.5 *U*	0.5 *U*
Ethylbenzene	µg/L	50 *UJ*	0.5 *U*	0.5 *U*	0.5 *U*	0.5 *U*	0.5 *U*
Isopropylbenzene	µg/L	200 *UJ*	2 *U*	2 *U*	2 *U*	2 *U*	2 *U*
Methylene chloride (dichloromethane)	µg/L	100 *UJ*	1 *UJ*	1 *UJ*	1 *UJ*	1 *UJ*	**6**
n-Butyl benzene	µg/L	200 *UJ*	2 *U*	2 *U*	2 *U*	2 *U*	2 *U*
N-Propylbenzene	µg/L	200 *UJ*	2 *U*	2 *U*	2 *U*	2 *U*	2 *U*
Naphthalene	µg/L	200 *UJ*	2 *U*	2 *U*	2 *U*	2 *U*	2 *U*
sec Butylbenzene	µg/L	200 *UJ*	2 *U*	2 *U*	2 *U*	2 *U*	2 *U*
Styrene	µg/L	50 *UJ*	0.5 *U*	0.5 *U*	0.5 *U*	0.5 *U*	0.5 *U*
trans-1,2-dichloroethene	µg/L	50 *UJ*	0.5 *U*	0.5 *U*	0.5 *U*	0.5 *U*	0.5 *U*
trans-1,3-Dichloropropene	µg/L	50 *UJ*	0.5 *U*	0.5 *U*	0.5 *U*	0.5 *U*	0.5 *U*
Toluene	µg/L	50 *UJ*	0.5 *UJ*	0.5 *UJ*	0.5 *UJ*	0.5 *UJ*	**1.5**
tert Butylbenzene	µg/L	200 *UJ*	2 *U*	2 *U*	2 *U*	2 *U*	2 *U*
Vinyl chloride (CH2--CHCl)	µg/L	50 *UJ*	0.5 *U*	0.5 *U*	0.5 *U*	0.5 *U*	0.5 *U*
Xylene isomers (total)	µg/L	50 *UJ*	0.5 *U*	0.5 *U*	0.5 *U*	0.5 *U*	0.5 *U*

Note: Detected constituents in **bold**

SVOC - semivolatile organic compound

VOC - volatile organic compound

J - estimated concentration

U - undetected at detection limit shown