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Revised Ground-Water Monitoring Compliance Plan for the 300 Area Process Trenches

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September 1988

Prepared for the U.S. Department of Energy
under Contract DE-AC06-76RLO 1830

Pacific Northwest Laboratory
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PREFACE

The procedures and preliminary interpretations in this document reflect conditions in 1986 and are thus subject to change as a result of ongoing technical audits and reviews.

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INTRODUCTION

This document contains ground-water monitoring plans for process-water disposal trenches located on the Hanford Site, which is shown in Figure 1. These trenches, designated the 300 Area Process Trenches, have been used since 1973 for disposal of water that contains small quantities of both chemicals and radionuclides.

The ground-water monitoring plans contained herein represent revision and expansion of an effort initiated in June 1985. At that time, a facility-specific monitoring program was implemented at the 300 Area Process Trenches as part of a regulatory compliance effort for hazardous chemicals being conducted on the Hanford Site. This monitoring program was based on the ground-water monitoring requirements for interim-status facilities, which are those facilities that do not yet have final permits, but are authorized to continue interim operations while engaged in the permitting process. The applicable monitoring requirements are described in the Resource Conservation and Recovery Act (RCRA), 40 CFR 265.90 of the federal regulations [U.S. Environmental Protection Agency (USEPA) 1984], and in WAC 173-303-400 of Washington State's regulations (Washington State Department of Ecology 1986). The program implemented for the process trenches was designed to be an alternate program, which is required instead of the standard detection program when a facility is known or suspected to have contaminated the ground water in the uppermost aquifer. The plans for the program, contained in a document prepared by the U.S. Department of Energy (USDOE) in 1985, called for monthly sampling of 14 of the 37 existing monitoring wells at the 300 Area plus the installation and sampling of 2 new wells. This effort, called the RCRA Compliance Ground-Water Monitoring Project for the 300 Area, was implemented in June 1985 by the USDOE's Pacific Northwest Laboratory (PNL). This effort and the results obtained are described in subsequent chapters of this document. Much of the material in this document is patterned after the <u>Revised Ground-Water Monitoring Plan for the 183-H Solar Evaporation Basins</u> (USDOE 1986).

Results of the recent monitoring work have been used to produce the revised ground-water monitoring plans requested by the USEPA and the Washington

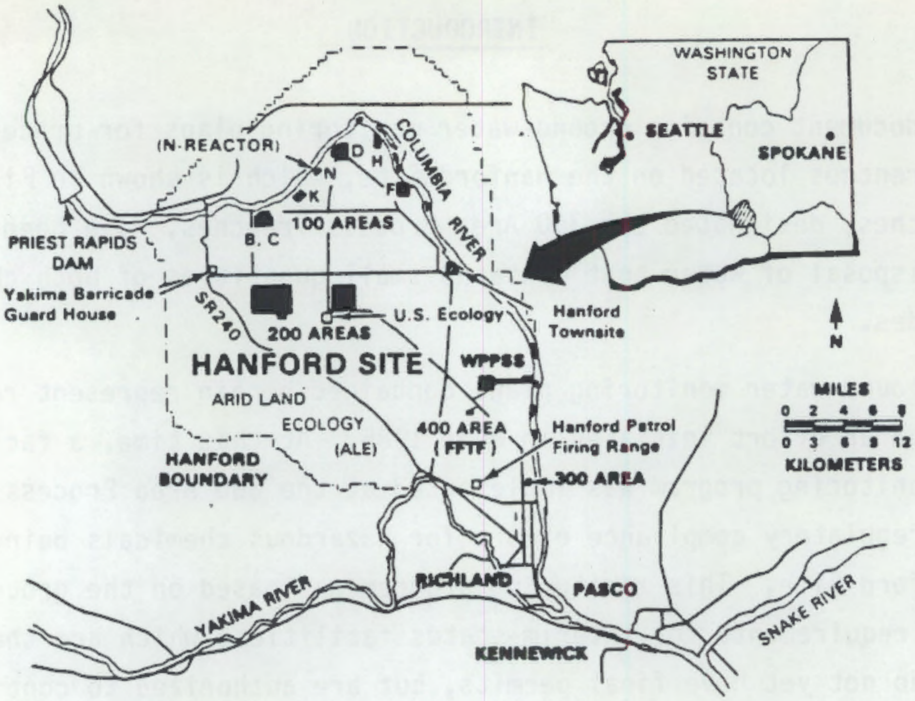

FIGURE 1. The Hanford Site

State Department of Ecology. The objective of these revised plans is to achieve compliance with the regulations mentioned above by: 1) collecting the additional site-specific hydrogeological information needed to more fully characterize the area and support decisions concerning the monitoring well network for the 300 Area, and 2) conducting an expanded sampling and analysis effort designed to determine the extent of contamination originating from the process trenches and the rate of movement of contaminants. As part of this effort, 17 new wells are planned.

The current 16-well sampling and analysis effort will be expanded as new wells are completed and added to the network. Basics of this effort, including procedures and quality control, were established and documented in the original program plans (USDOE 1985), but they have been updated for inclusion in the text and appendixes of this document.

BACKGROUND INFORMATION

Pertinent background information concerning the 300 Area Process Trenches and the surrounding area is given in the following sections. These sections contain information on the facility itself, the geology and hydrology of the 300 Area, and the results of past ground-water monitoring efforts.

FACILITY DESCRIPTION

The process trenches are located in the eastern part of the Hanford Site in the 300 Area (Figure 1) and are managed by the Westinghouse Hanford Company (WHC). The 300 Area encompasses approximately 720 acres and is bordered on the eastern side by the Columbia River. This area is the site of many ongoing research and operational programs, which are located inside the fenced security area. Figure 2 is a map of the area showing the main facilities and the existing monitoring wells. The process trenches are in the northeastern part of the 300 Area near the Columbia River. Retired burial grounds are located adjacent to the trenches and the inactive North Process Pond.

Starting in 1975, the process trenches were the main facility for disposal of most liquid wastes generated in the 300 Area. These liquid wastes contained hazardous constituents in low concentrations. Administrative controls to prevent disposal of dangerous wastes to the trenches were instituted by WHC on February 1, 1985. Before the use of administrative controls, a variety of chemical wastes was included in these process wastes, although no large quantities of any one of these chemicals were disposed. Estimated chemicals discharged to the process trenches are summarized in Table 1. The trenches continue to receive approximately 3.0×10^6 gallons of wastewater per day. This wastewater consists primarily of cooling water with small quantities of nonhazardous maintenance and process wastes.

The process trenches consist of two separate 1500-ft-long trenches excavated 12 ft into the subsurface and separated by an earthen berm. The trenches are excavated into glaciofluvial sands, gravels, and boulders. Figure 3 contains a schematic cross section showing the dimensions and relationship of the eastern trench to the water table. The plan view of the area and location of

TABLE 1. An Estimate of Chemicals Discharged to the 300-Area Process Trenches Prior to February 1, 1985

Intermittent Discharges <Grams	Intermittent Discharges <kgs	Later Discharges[a]	
Ammonium Bifluoride	Benzene	Copper	30 kg/mo[b]
Antimony	Carton Tetrachloride	Detergents	≤30 kg/mo[b]
Arsenic	Chromium	Ethylent Glycol	≤200 l/mo
Barium	Chlorinated Benzenes	Hydrofluoric Acid	100 kg/mo[b]
Cadmium	Degreasing Solvents	Nitrates	≤2000 kg/mo
Dioxane	Formaldehyde	Nitric Acid	≤300 l/mo
Dioxin[c]	Formic Acid	Sodium Hydroxide	≤300 l/mo
Hydrocyanic Acid	Hexachlorophene	Paint Solevents	≤100 l/mo
Pyridine	Kerosene	Photo Chemicals	≤700 l/mo[b]
Selenium & Compounds	Lead	Sodium Chloride	75 ton/yr
Thiourea	Methyl Ethyl Ketone	Uranium	20 kg/mo[b]
Misc. Laboratory Chemicals	Mercury	Perchloroethylene	450 l[d]
	Napthalene	Heating Oil	300 l[d]
	Nickel		
	Phenol		
	Silver		
	Sulfuric Acid		
	Tetrachloroethylene (Perchlorethylene)		
	Toluene		
	Tributylphosphate (Paraffin Hydrocarbon Solvents)		
	1,1,1-Trichloroethane (Methyl Chloroform)		
	Trichloroethylene		
	Xylene		

(a) These discharges were relatively continuous.
(b) The materials are still discharged.
(c) Included only because of the potential for Dioxin to exist as a trace impurity in Chlorinated Benzenes.
(d) Known spills.

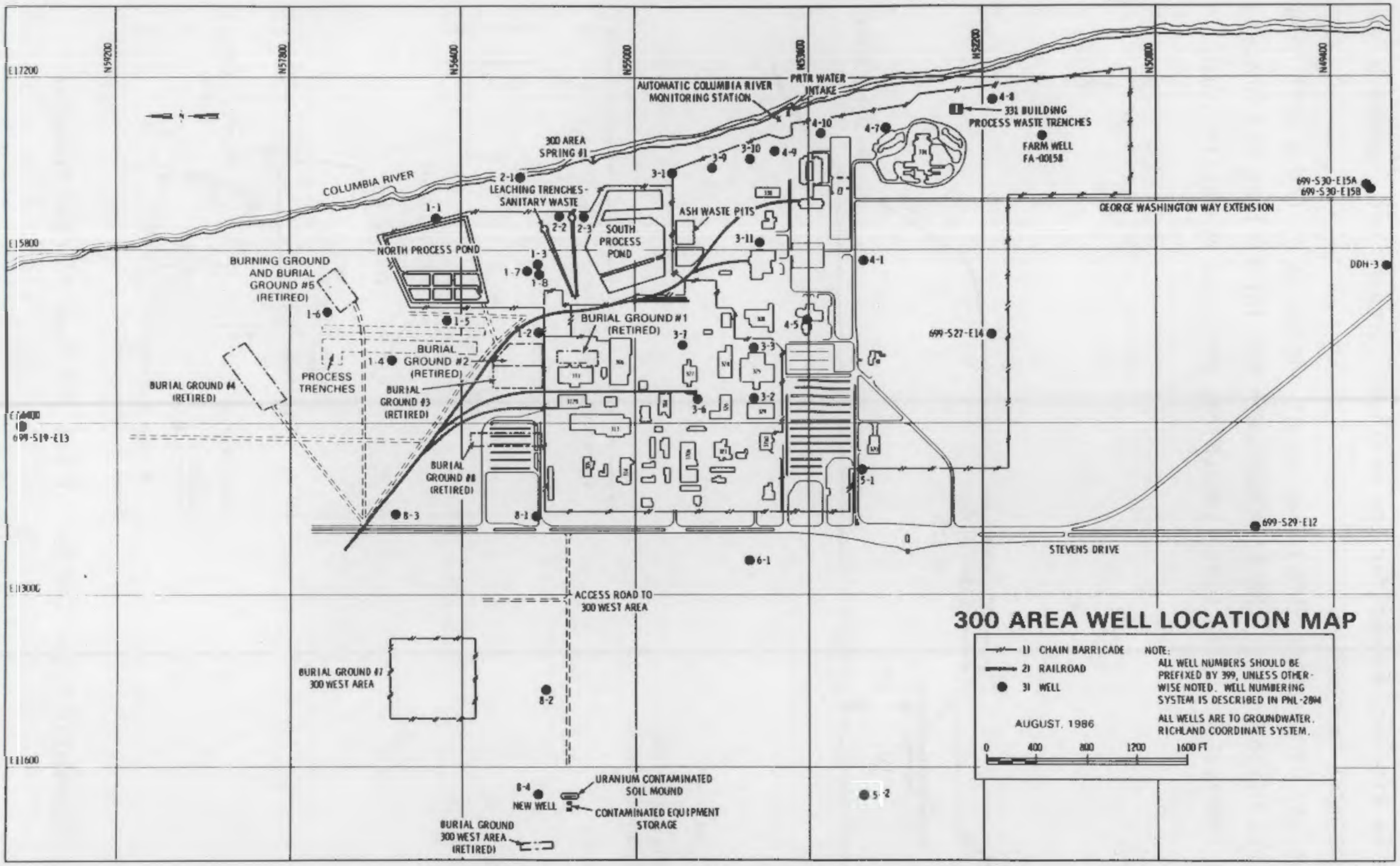

FIGURE 2. Map of 300 Area and Vicinity

the cross section is shown in Figure 3. The cross section through the western trenches would be similar, except for the enlarged northern end, caused by the presence of a natural depression.

United Nuclear Corporation (UNC) uses about one-third of the 3 million gal of water that are disposed into the trenches each day for cooling and rinse water for fuel fabrication. The other two-thirds are used by Westinghouse

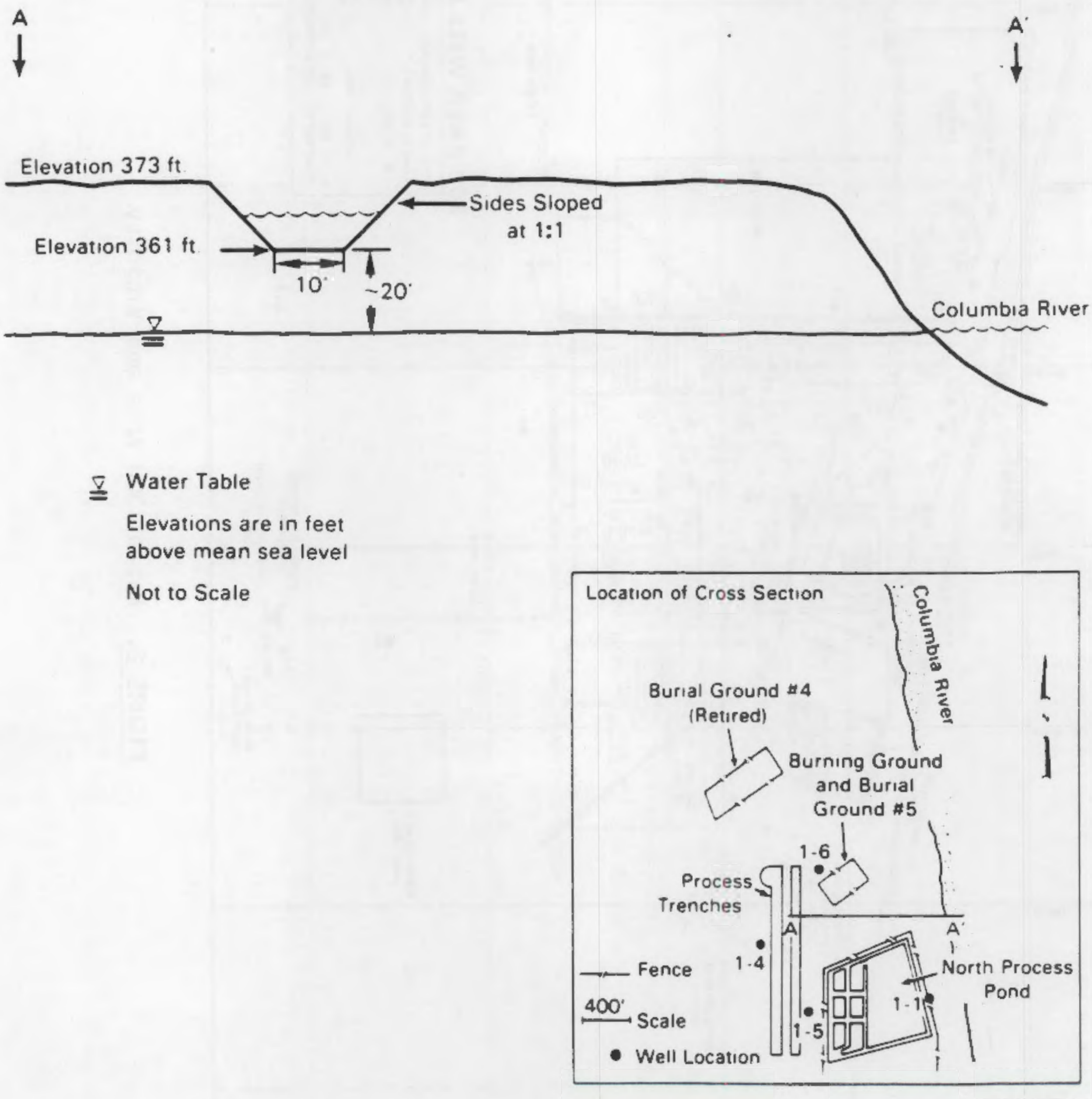

FIGURE 3. Schematic Cross Section of the 300 Area Process Trenches

Hanford Company (WHC) and PNL for a wide variety of operations. The east and west trenches are used alternately for periods of up to 8 mo.

GEOLOGY AND HYDROLOGY OF THE 300 AREA

Knowledge of the local geology and hydrology of the 300 Area has been gained mainly through installation of ground-water monitoring wells for the routine Hanford Ground-Water Monitoring Project conducted by PNL. Most of the wells in the 300 Area penetrate only the uppermost geologic formations, but two wells have been drilled into the top layers of the basalt bedrock. A brief review of the well log data and data interpretation by Lindberg and Bond (1979) forms the primary basis for interpretation of the local geology. Appendix A contains the geologic logs for the existing wells currently in the 300 Area monitoring network. Drilling logs for wells in the 300 Area are condensed into the geologic logs in Appendix A. The detailed drilling logs are not included because of bulk.

Geology

A generalized geologic column for the 300 Area in the vicinity of the process trenches is presented in Figure 4, and cross sections from Lindberg and Bond (1979) are shown in Figure 5. The location map for the cross sections is shown in Figure 6. The generalized geologic column in Figure 4 is based on a recent reinterpretation of geologic logs of wells near the process trenches. As shown in the geologic column and cross sections, three geologic formations have been identified during drilling operations conducted in this area. They are, in ascending order, the Columbia River Basalts, the Ringold Formation, and the glaciofluvial sediments (Pasco gravels and Touchet beds), which are informally known as the Hanford Formation. A description of the general nature of these formations, including some additional detail concerning their characteristics in the 300 Area, follows.

The Columbia River Basalts are of Miocene age and form the bedrock beneath the Hanford Site (including the 300 Area). The middle- to upper-Miocene subgroup is called the Yakima Basalt and is about 10.5 to 16.5 million years old (Myers and Price 1979). These flood basalts were extruded from fissure systems

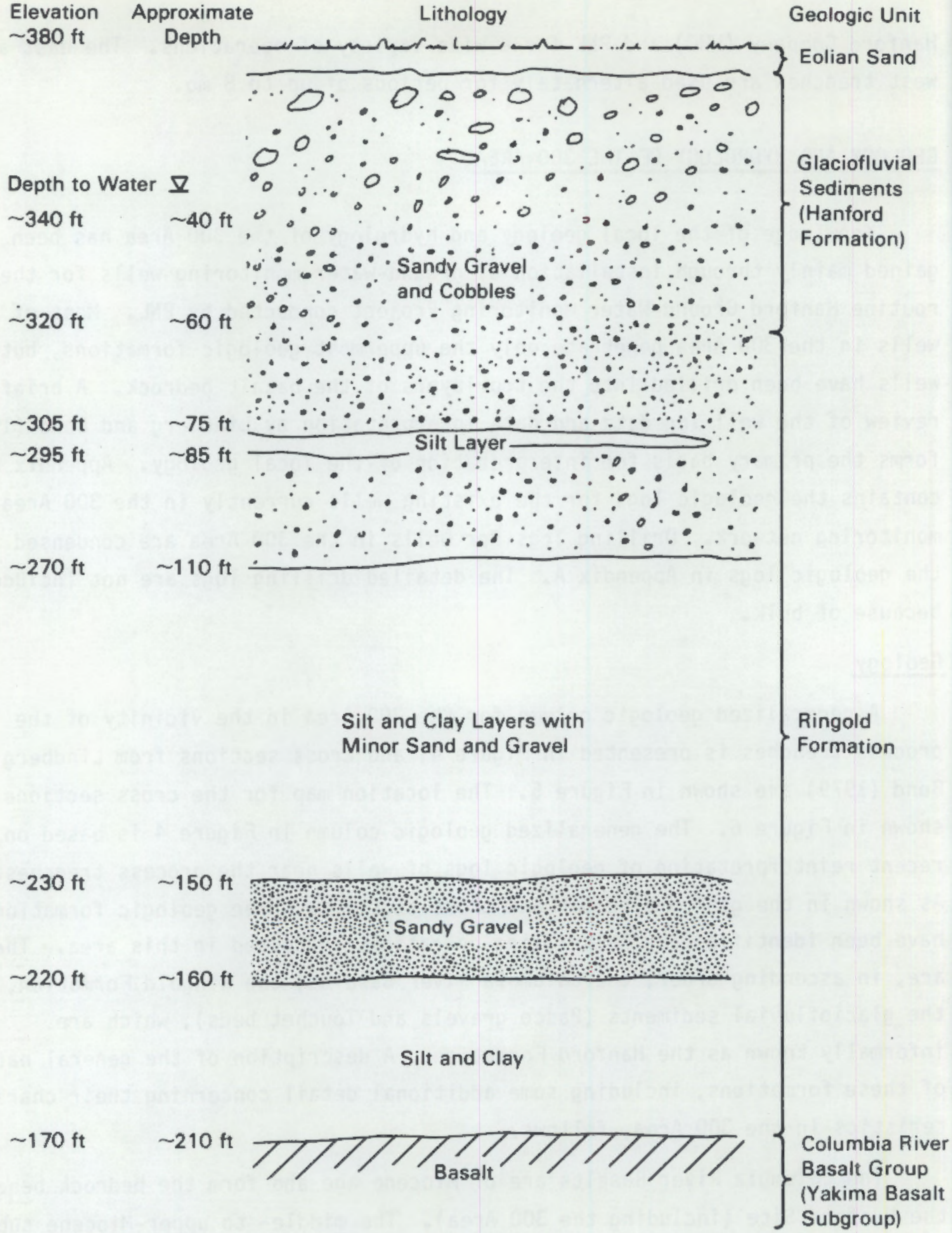

FIGURE 4. Generalized Geologic Column for the 300 Area Near the Process Trenches

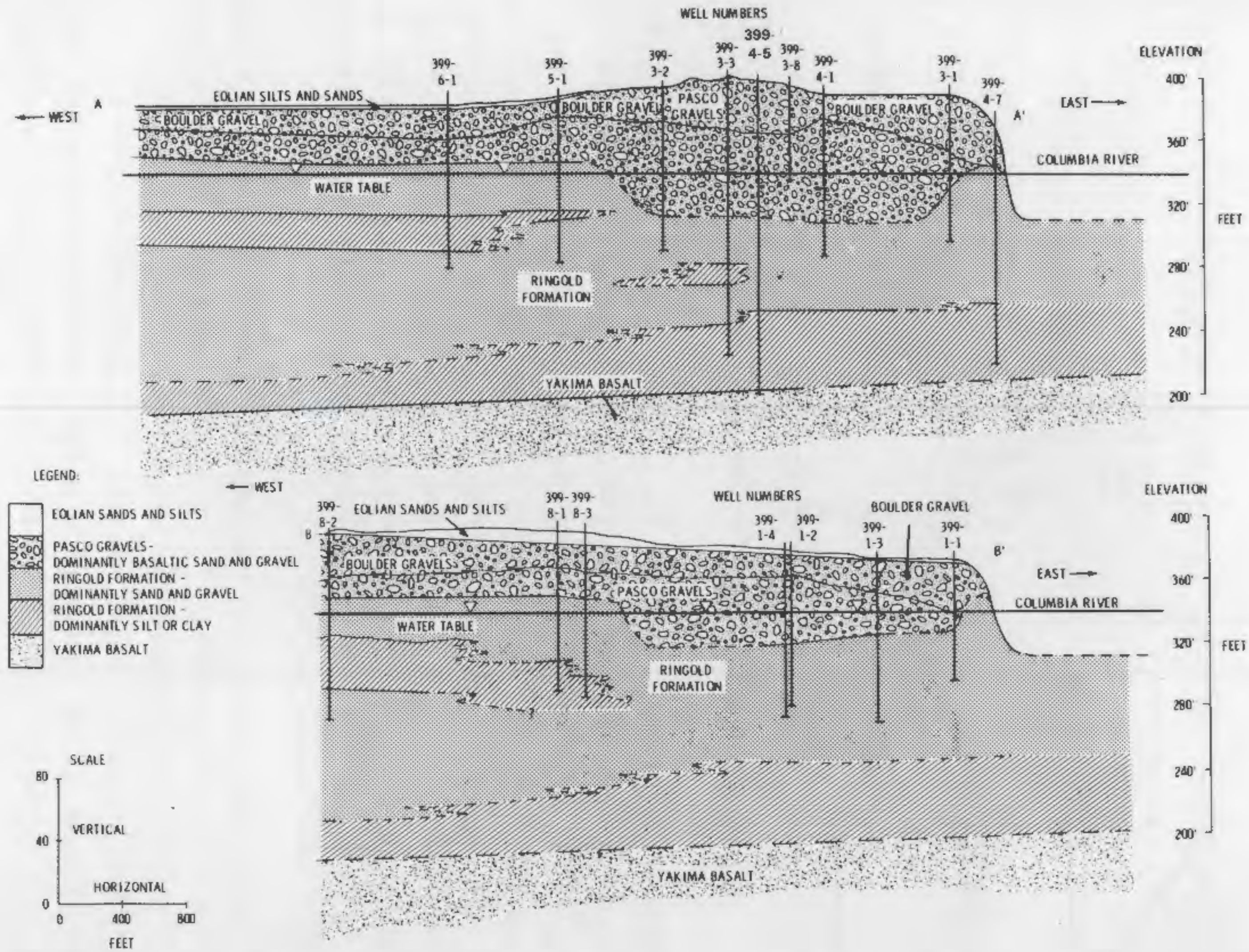

FIGURE 5. Geologic Cross Sections of the 300 Area (after Lindberg and Bond 1979)

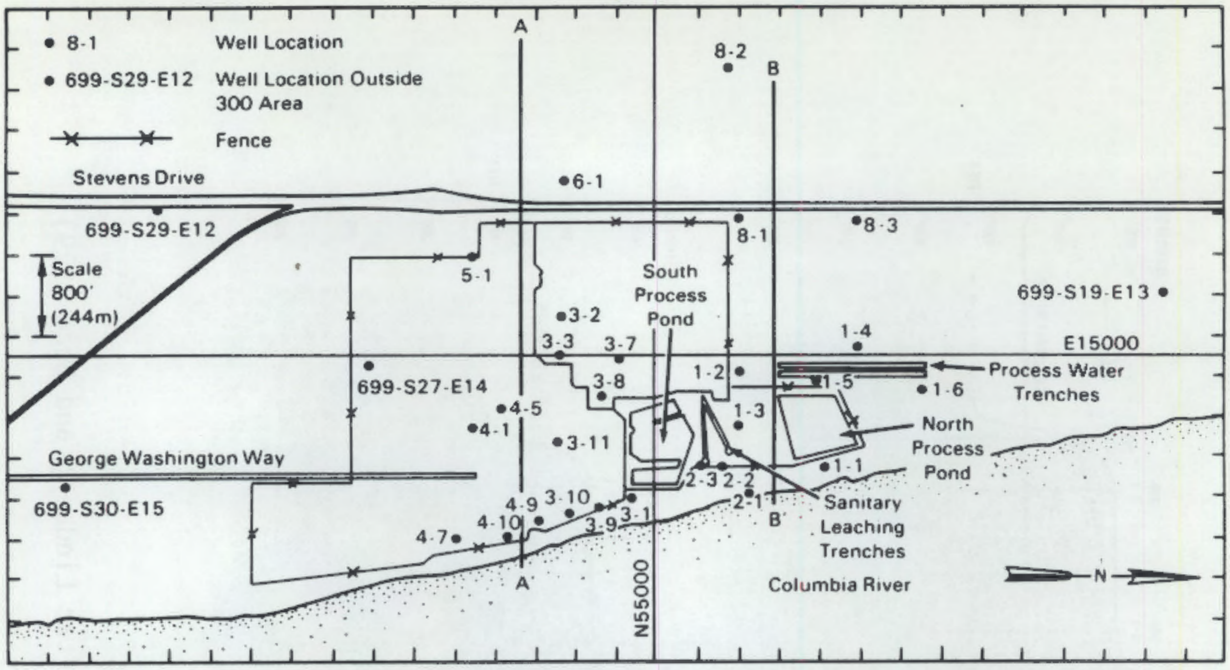

FIGURE 6. Location Map for Geologic Cross Sections

in the eastern and southern portions of the Columbia Plateau (Swanson et al. 1975). The individual flows comprising the formation range in thickness from about 10 to 150 ft, and they are sometimes separated by sedimentary interbeds. The basalts were originally flat-lying, broad synclinal structures but have been locally warped and folded, producing anticlinal ridges and valleys. The Pasco Syncline, shown in Figure 7, is a broad depression of basalt flows in the southeastern part of the Pasco Basin (Myers and Price 1979). The 300 Area is located in this syncline. At the 300 Area, the top of the basalts is at a depth of about 200 ft below land surface.

The Ringold Formation overlies the basalts. This formation is of Pliocene age (Gustafson 1978), approximately 3 to 5 million years old, and, with the exception of a weakly consolidated conglomerate member (Middle Ringold), it consists mainly of layered silts, clays, and fine sands deposited in a lacustrine environment. The conglomerate member was probably deposited in a high-energy, fluvial environment (Myers and Price 1979). Distinctive lithologic zones within this formation include: 1) blue and green silts and clays of the lower Ringold, and 2) a conglomerate consisting of well-rounded pebbles

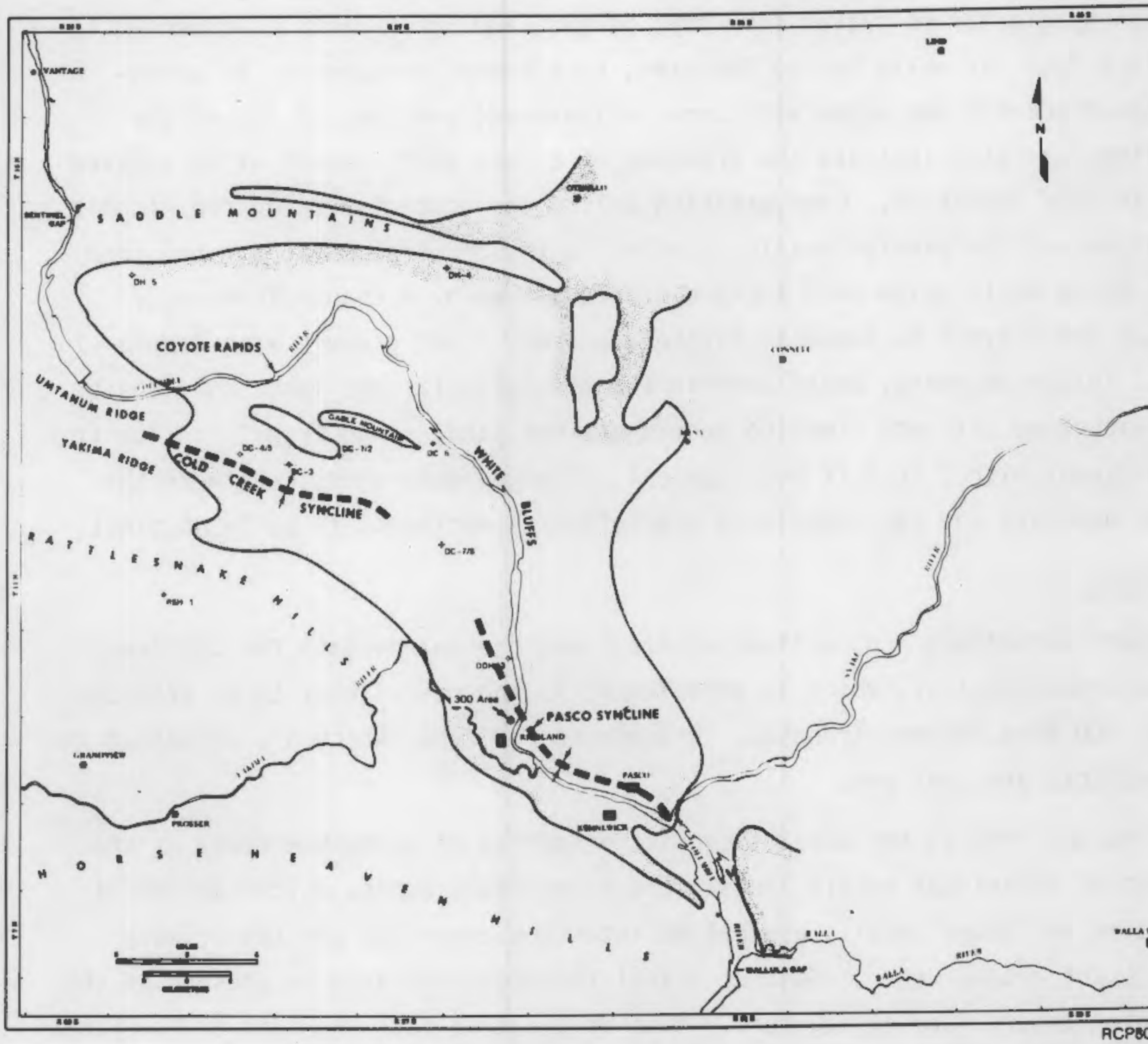

FIGURE 7. Pasco Syncline and Generalized Lateral Extent of the Ringold Formation (after Myers and Price 1979)

and cobbles, with medium to fine sand filling the interstitial spaces (Newcomb, Strand, and Frank 1972). According to the 300 Area geologic logs (Appendix A), the Ringold Formation consists of a series of sandy silt and clay layers in this area but typically has more than one permeable conglomerate or sand unit present. Some of the silt layers are continuous over much of the 300 Area. The thickness of the Ringold Formation in this area is about 120 ft.

Above the Ringold Formation lie the glaciofluvial sediments, which are coarse clastic deposits laid down by the ancestral Columbia River when it was swollen by glacial meltwater (Newcomb, Strand, and Frank 1972). According to drilling logs for wells in the 300 Area, this formation consists of unconsolidated gravels and sands with some boulders and cobbles. A few of the drilling logs also indicate the presence of a very small amount of intermixed silt in this formation. From existing wells, the contact between the Ringold Formation and the glaciofluvial sediments in the 300 Area is at a range from about 45 to 60 ft below land surface distinguished by a change from sandy cobbles and gravels to somewhat lighter-colored, finer gravels with layers of silt. Eolian deposits, which overlie the glaciofluvial sediments and consist of unsaturated silt and fine- to medium-grained sand, range from 1 to 13.5 ft in thickness with 2 to 6 ft most typical. The geologic contact between the eolian deposits and the underlying glaciofluvial sediments is quite distinct.

Hydrology

Both unconfined and confined aquifers are present beneath the 300 Area. The uppermost aquifer, which is unconfined, is the most likely to be affected by the 300 Area Process Trenches. Underlying aquifers, which are contained in the basalts, are confined.

The aquifers in the basalts consist primarily of permeable zones at the contact of individual basalt flows. These permeable zones, which consist of fractured vesicular basalt, are called interflow zones and are the primary conduits of ground water. Sand or gravel interbeds may also be present in the interflow zones, forming aquifers. Much of the area near the axis of the Pasco Syncline is considered to be a discharge area for the basalt aquifers; i.e., water flows upward from the uppermost basalt aquifers into the unconfined sedimentary aquifer (Gephart et al. 1979). For example, the water level in a basalt well near the 300 Area, 399-5-2, is less than 10 ft from ground surface, whereas the water levels in nearby wells screened in the unconfined aquifer are typically 40 to 45 ft below ground surface. Hence the potential for these confined aquifers to be contaminated by the process trenches is low because of two factors: 1) a 140-ft thick unit of silty, conglomerate interbeds in low-permeability clay and silt layers, which should behave as an aquitard separating the basalts from the unconfined aquifer; and 2) the piezometric surface for the basalt aquifer, tapped by well 399-5-2, is near the land surface. Because of the low potential for contamination of the confined aquifers, the discussion of hydrology that follows is primarily concerned with the unconfined aquifer.

In the 300 Area, the water table is in the glaciofluvial sediments, and the lower part of the aquifer, which is possibly partially confined, is in the Ringold Formation. The water table is at a depth of about 40 ft below land surface, and the Ringold Formation begins at a depth of 45 to 65 ft.

From the existing drilling logs, it is known that glaciofluvial sediments in the 300 Area consist of unsaturated sandy gravel with few cobbles and boulders in the upper half of the unit, and saturated sandy gravel with more cobbles and boulders in the lower half. The glaciofluvial sediments reported in the drilling logs range from 40 to 85 ft in thickness, but in most of the 300 Area the thickness only varies from 40 to 60 ft. An exceptionally thick area of glaciofluvial sediments is reported in the log of well 399-4-5. Beneath the process trenches, the saturated thickness varies from 10 to 25 ft. Similarly, the transmissivity of this unit, reported in previous aquifer tests, is consistently high ranging from 40,000 to 102,000 ft^2/day. Most of the transmissivity in the unconfined aquifer beneath the 300 Area is attributable to the glaciofluvial sediments; however, a substantial amount may be attributable to the Ringold Formation.

Ringold Formation sediments, which consist of layers of saturated silt, clay, sand, and gravel, are not well defined hydrogeologically in the existing drilling logs for wells in the 300 Area. The sand and gravel layers usually contain some silt, which probably reduces the transmissivity of the coarser sediment; however, there are no measured transmissivities or hydraulic conductivities in the formation. The formation is approximately 200 ft thick beneath the 300 Area and is underlain by the Columbia River Basalt Group.

The stratigraphy of the Ringold Formation near the process trenches, as determined from previous drilling, is shown in Figure 4. The upper portion of the Ringold Formation near the process trenches contains a thin, discontinuous silt layer about 0.5 to 10 ft thick. Limited hydraulic head data indicate that the upper sandy gravel layer (even below the silt lens) has good hydraulic interconnection with the glaciofluvial sediments. The lower Ringold sandy gravel is believed to be semiconfined beneath portions of the Hanford Site by layers of silt and clay that act as aquitards.

Natural recharge of the unconfined aquifer beneath the Hanford Site occurs at the northwest margin of the Pasco Basin, and most of the artificial recharge occurs at the 200 Areas, near the center of the site. Ground water flows from these recharge areas toward the 300 Area in a general southeasterly direction. In the southeast corner of the Hanford Site, ground-water recharge is mainly from the Yakima River. The 300 Area is located approximately at the point where these two ground-water sources meet. As a result, ground water enters the 300 Area from the northwest, west, and southwest (Lindberg and Bond 1979).

Water-level measurements collected on a monthly basis from a network of wells located in and around the 300 Area have been used to produce a series of recent water-table maps. Four maps, one for each quarter of the past year, are illustrated in Figures 8 through 11. The contour lines and arrows indicating flow direction are approximate. Further work is planned to better define the water table and dynamic interactions with the river.

Near the process trenches, ground water generally flows toward the river to the southeast and the east, as shown on a water-table map for November 1985 (Figure 8). Exact direction of ground-water flow at any given time is influenced by both natural and man-made influences. The natural influence consists of the level of water in the Columbia River. Lindberg and Bond (1979) documented that when the river stage rises during spring run-off, bank storage occurs and causes a reversed water-table gradient in the 300 Area, as is shown in the June 1986 water-table map in Figure 11. During these times, ground water tends to flow more to the southeast in a direction roughly subparallel to the river. When the river level drops, the natural gradient is restored, and ground water flows more directly to the east, in a direction almost perpendicular to the river.

The man-made influence on ground-water levels and flow direction in the 300 Area consists mainly of the process trenches, into which approximately 3.0×10^6 gal of wastewater per day are disposed. This large volume of wastewater percolates quickly to the ground water and creates a small ground-water

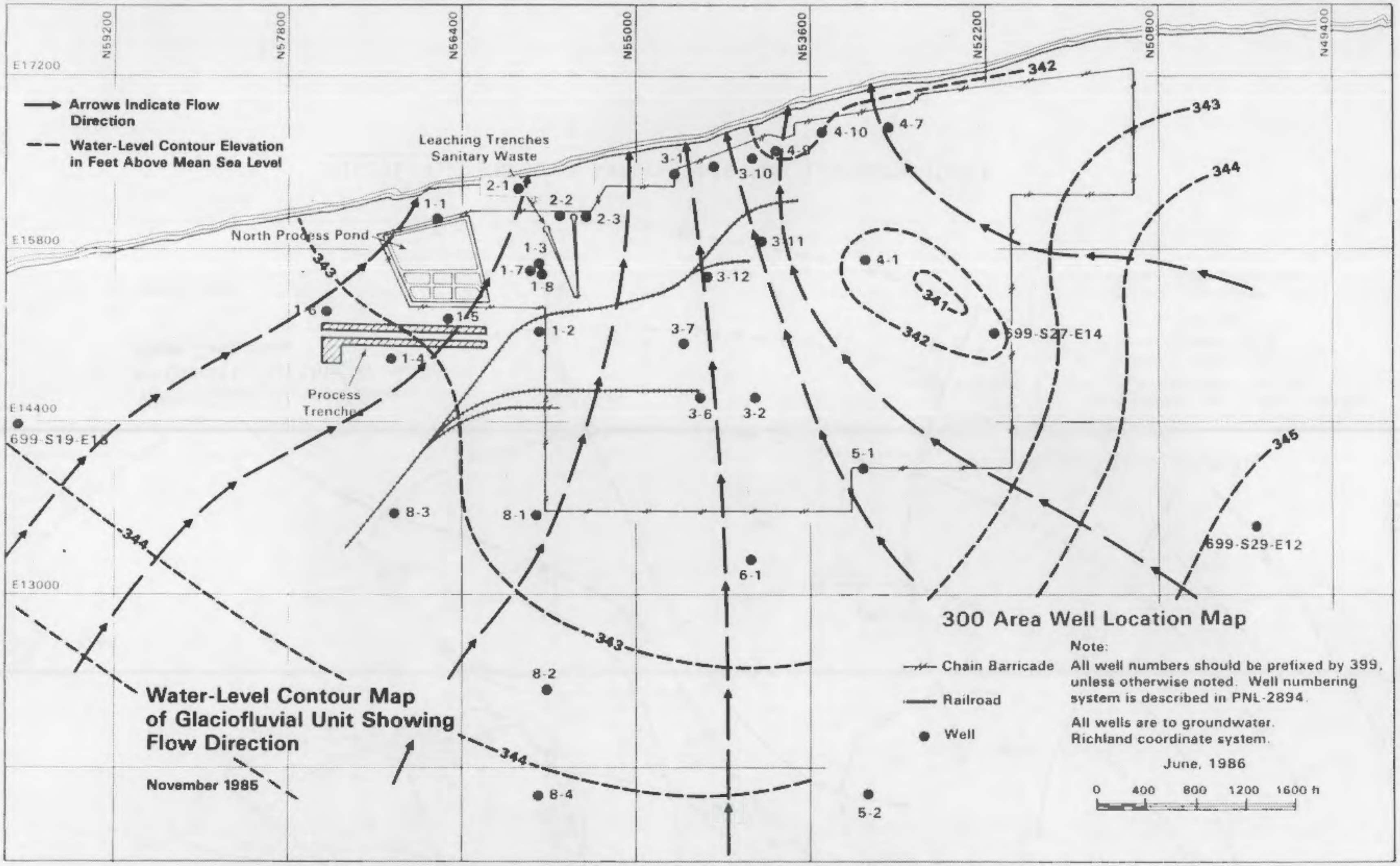

FIGURE 8. 300 Area Water-Table Map (November 1985)

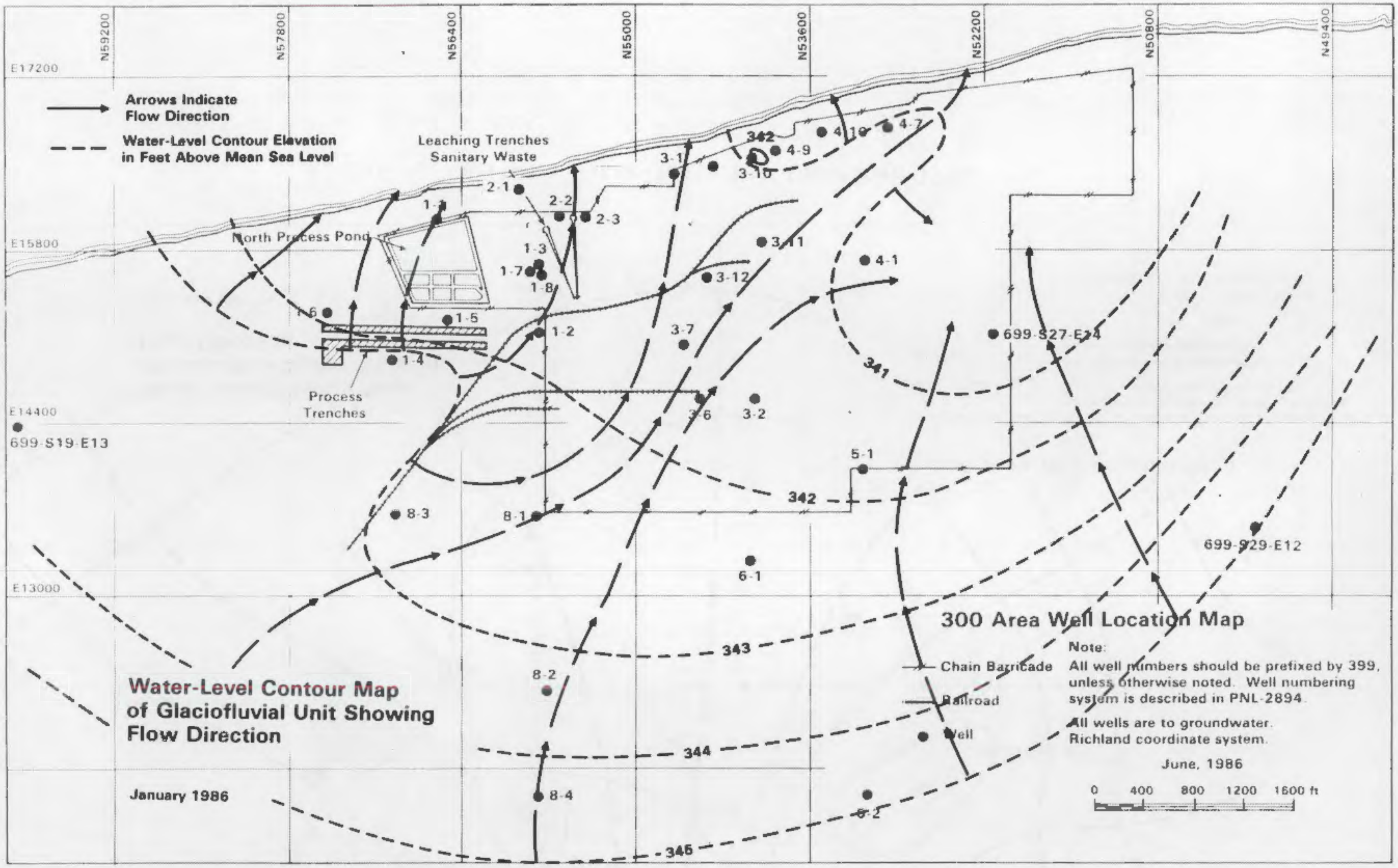

FIGURE 9. 300 Area Water-Table Map (January 1985)

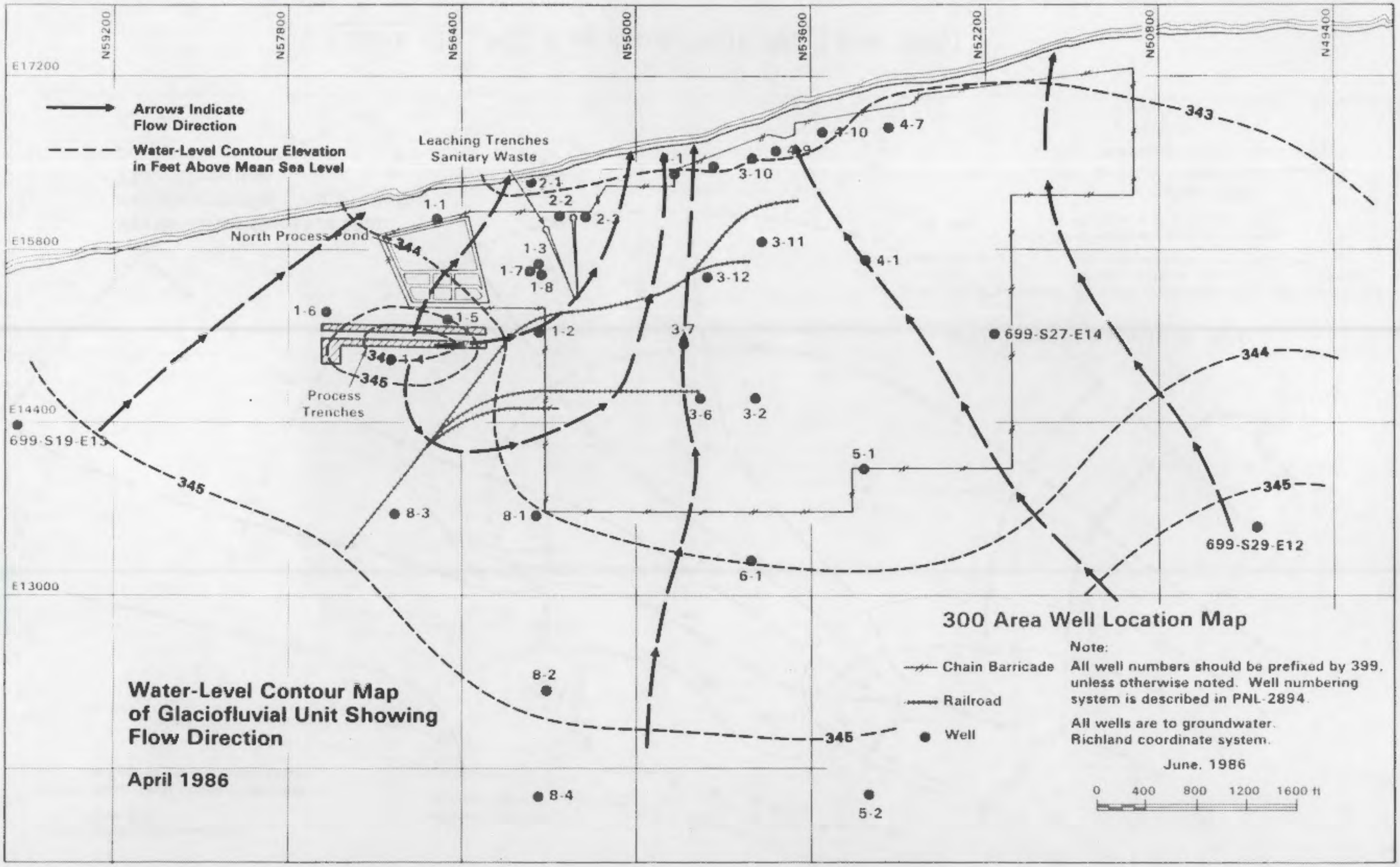

FIGURE 10. 300 Area Water-Table Map (April 1986)

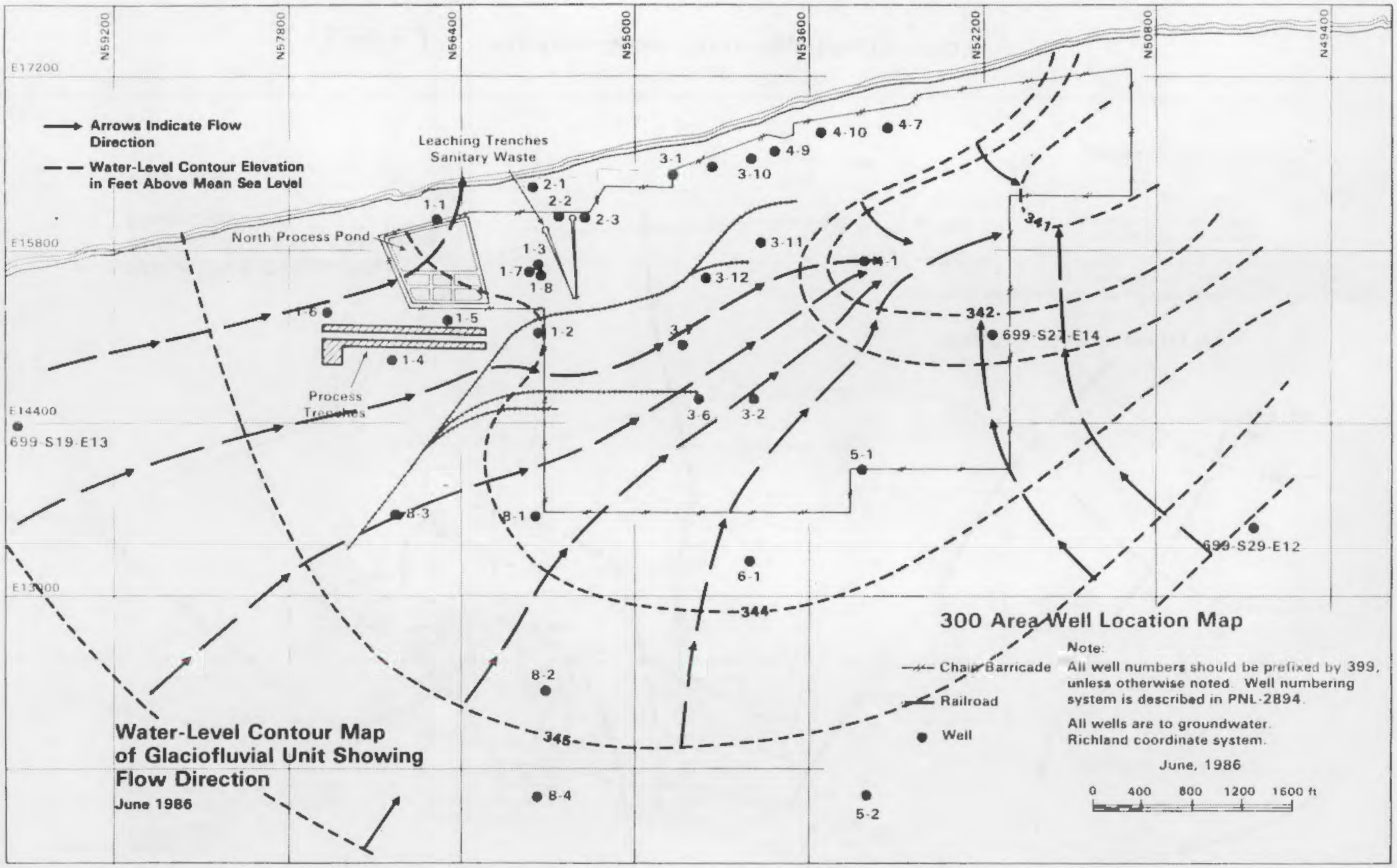

FIGURE 11. 300 Area Water-Table Map (June 1986)

mound in the water-table surface under the process trenches (Figure 9). This mound increases the water-table gradient and flow divergence.

The existing monitoring well network in the 300 Area consists of the following:

- Twenty-nine monitoring wells, which are screened in the glaciofluvial sediments; and some are screened in part of the upper portion of the Ringold Formation. Only half of these wells are currently in the hazardous waste monitoring network for the process trenches.
- Only one monitoring well that is screened exclusively in the Ringold Formation, but 25 borehole logs of monitoring wells having geologic data for at least the upper portion of the Ringold Formation.
- Two wells that penetrate the underlying basalt are in the vicinity of the 300 Area.

Some aquifer tests have been done in wells in the 300 Area, although none of the wells tested were pumped for more than 8 hrs. Calculated transmissivities based on recovery data from these tests range from 40,000 ft^2/day at well 399-8-2 to 102,000 ft^2/day at well 399-8-1. At well 399-1-4, transmissivity was calculated to be 65,400 ft^2/day.

HISTORICAL DATA OBTAINED UNDER THE HANFORD GROUND-WATER MONITORING PROJECT

Past ground-water monitoring efforts in the 300 Area have provided some useful historical information concerning the extent of radionuclide and chemical movement. In the late 1940s, a study of the hydrogeology and radionuclide movement beneath the 300 Area was conducted. Monitoring of water levels, ground-water temperatures, and radionuclide concentrations revealed that the ground-water system was being influenced by Columbia River fluctuations. Periods of high river stage were found to be causing a reversed gradient, resulting in the westward (or inland) movement of ground water containing radionuclides. The maximum detected westward penetration of the radionuclides was to wells 399-8-1 and 399-8-3 (Lindberg and Bond 1979). (Locations of these wells are shown on the map in Figure 12.) Although this past study provides information on the extent of radionuclide movement, the chemical constituents being analyzed for the current RCRA compliance monitoring project may behave differently in the ground water.

Additional knowledge concerning the possible extent of dangerous waste constituents in the ground water at the 300 Area has been provided by special ground-water monitoring that has been recently conducted, following two unplanned releases of perchloroethylene (PCE), a solvent used onsite, to the process trenches. Both of these releases resulted from accidental discharge of this solvent during equipment cleaning operations. Following each discharge incident, samples were collected from nearby monitoring wells to track the movement of the PCE in the ground water.

The first release occurred on November 4, 1982, when approximately 120 gal of PCE were accidentally released to the process trenches. Sampling of the ground water began 5 days after the release occurred. At first, samples were collected from wells closest to the trench. Later, as the PCE was transported away from the trenches, the sampling network was changed to track the plume's leading edge. Concentrations of the solvent in the ground water were monitored for 4 mo following the spill.

Results from sampling of the downgradient wells closest to the trench (399-1-5 and -1-2) are shown in Figure 13. The highest concentration of PCE (1840 ppb) was found in well 399-1-5, which is the closest downgradient well. Well 399-1-2 showed a lower peak concentration of 1050 µg/L about 5 days later. Results from well 399-1-3 (not shown in Figure 13) indicated a higher peak concentration than in well 399-1-2, but at 5 to 10 days later. This may be because well 399-1-3 is located further from the trench but more in line with the downgradient direction than well 399-1-2. Moving the sampling points to follow the movement of the solvent led to sampling of wells 399-2-1, -2-2, -3-1, -4-7, and -4-10 at various times during the 4 mo after the spill. Results of this sampling (not shown) indicated lower peak concentrations of PCE with increasing distance from the trenches in the downgradient direction. A few samples collected from wells 399-8-3 and 699-S27-E14 showed less than detectable concentrations of PCE.

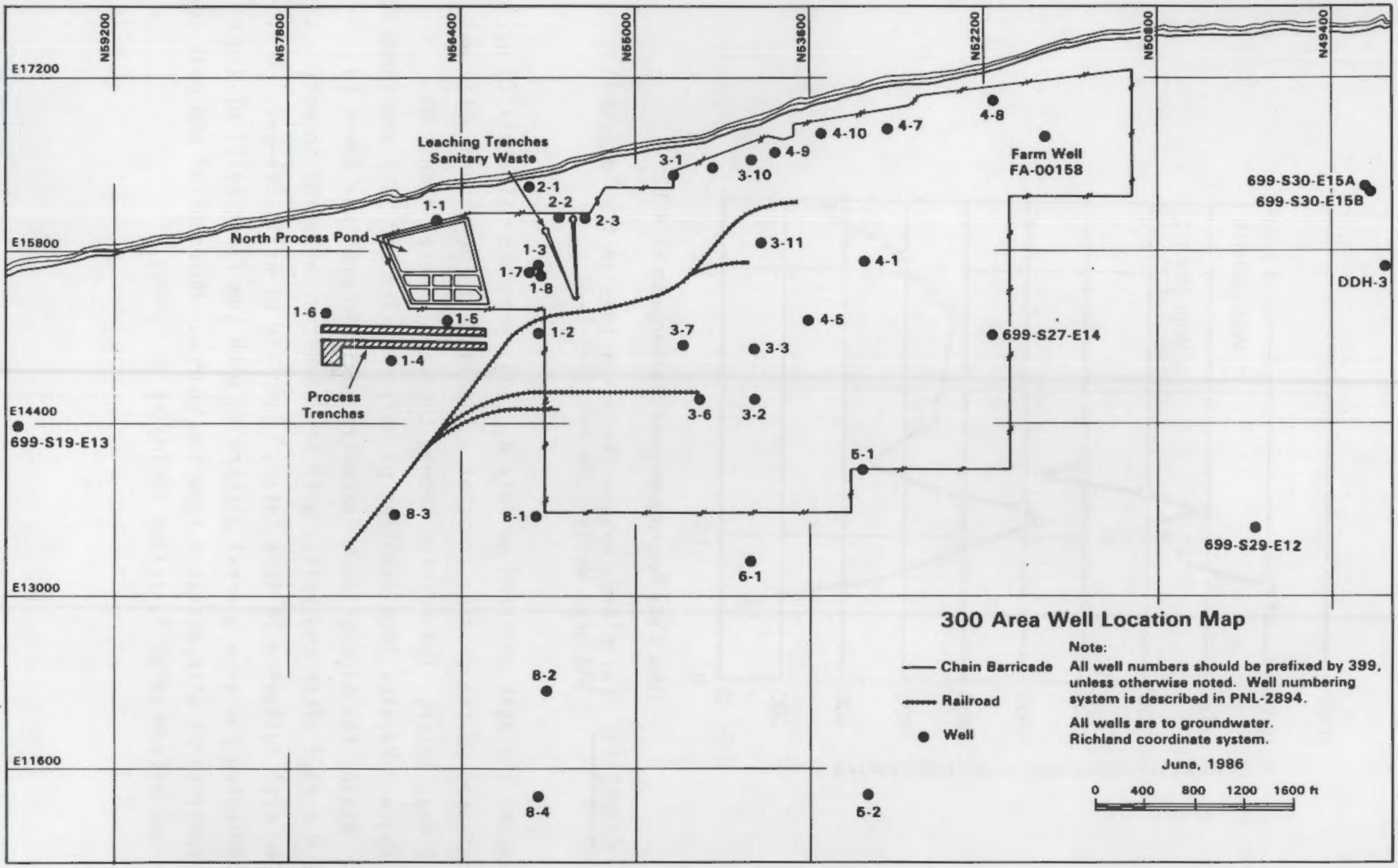

FIGURE 12. 300 Area Well-Location Map

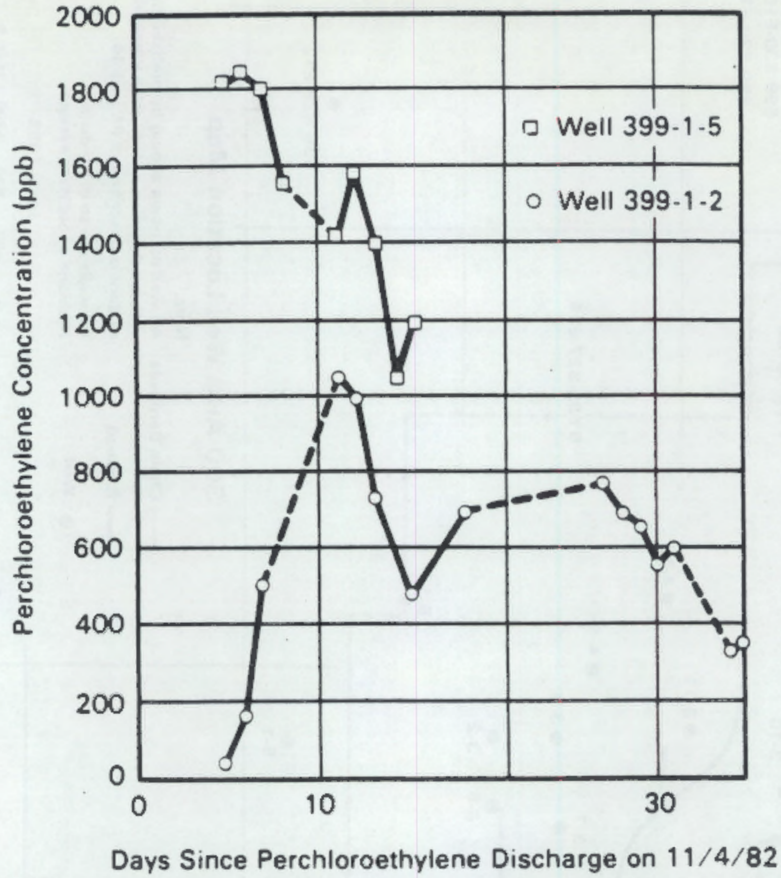

FIGURE 13. Perchloroethylene Concentrations in the Selected 300 Area Wells (399-1-5, 399-1-2)

The second incident occurred on July 6, 1984, when approximately 20 gal of PCE were released to the process trenches. Sampling of the ground water was initiated 4 days later. The results showed the same general trends as described above. Results from sampling of wells 399-1-5 and -1-3 are shown in Figure 14. Again, the highest peak concentration (690 ppb) was found in well 399-1-5 5 days after the spill, with the peak concentration in well 399-1-3 (240 ppb) following 16 days later. Sampling of wells 399-1-2, -2-1, and -2-2 indicated the same general pattern as with the first spill of diminishing concentrations with distance from the source. Movement of the peak concentration was estimated at 35 ft/day (Cline et al. 1985).

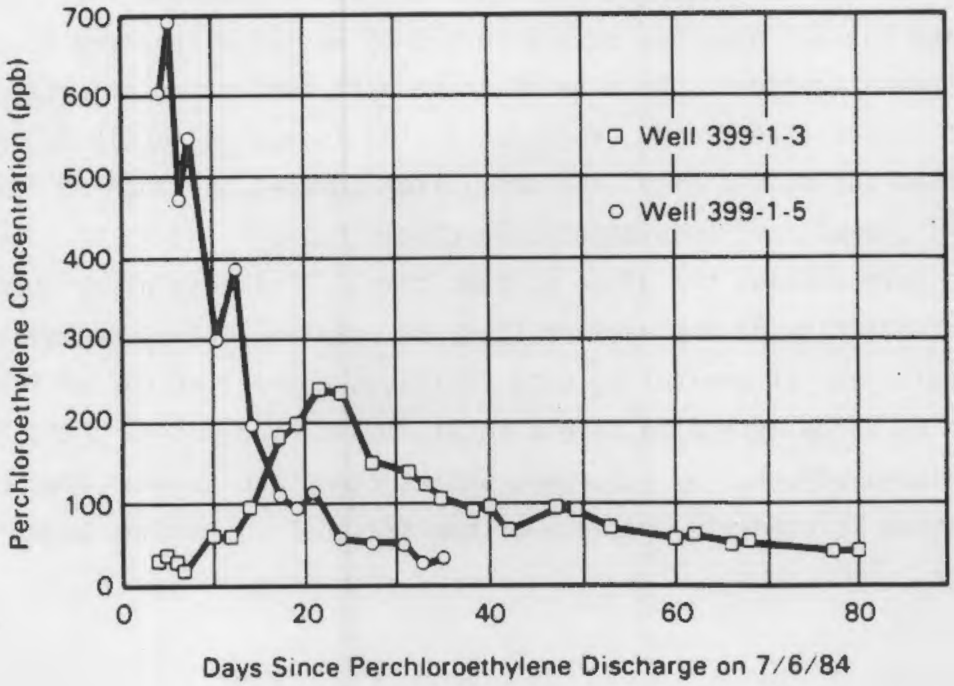

FIGURE 14. Perchloroethylene Concentrations in the Selected 300 Area Wells (399-1-3, 399-1-5)

During the two PCE spill incidents described above, samples were collected from a 300 Area spring and from the river. During the first incident, river samples were collected in the mainstream of river flow and at the 300 Area water intake. Samples were also collected from springs along the bank of the Columbia River. The maximum concentration of PCE found in the spring samples was 270 ppb; all of the river samples showed less than detectable concentrations. During the second incident, river samples were collected approximately 100 yd downstream from spring #1 (shown on the map in Figure 2) and about 10 yd offshore. These samples showed a maximum concentration of PCE of 18 ppb. Most of the samples were below 2 ppb. Samples from spring #1 showed a maximum of 80 ppb, with most below 5 ppb. Because of the difficulty in determining what effect diurnal changes in river level might have on spring and river samples, the results of sampling can be hard to interpret. However, this sampling did indicate that low levels of PCE had reached the spring and river sampling sites approximately 35 days after the spill occurred (Cline et al. 1985).

Results of the spill monitoring described above indicate that the ground water beneath the 300 Area has been affected by wastes discharged to the 300 Area Process Trenches. Because of these past monitoring efforts, the extent of the area affected by dangerous wastes is approximately defined. Samples collected during the first PCE spill from some wells (such as 399-8-3 and 699-S27-E14) showed less than detectable concentrations, so it is expected that these wells were outside the plume at that time. A similar plume boundary was indicated at the time of the earlier study of uranium leaks. An evaluation of the first full year of monitoring data indicates concentrations of PCE have declined to or below detection levels in all monitoring wells. Full description of the area affected by hazardous wastes cannot be accomplished until further evaluation is complete, because of the seasonal variations known to exist in this area.

INTERIM-STATUS WORK CONDUCTED TO DATE

In February 1985, the USDOE prepared plans for an interim-status ground-water monitoring program for the 300 Area Process Trenches. This new facility-specific effort was based on: 1) the ground-water monitoring requirements in 40 CFR 265.90 of the federal regulations (USEPA 1984) and in WAC 173-303-400 of Washington State's regulations (Washington State Department of Ecology 1986), and 2) the results of past monitoring conducted at the 300 Area. The program was designed to be an alternate ground-water monitoring program, which is required instead of the standard detection program when the facility being monitored is known or suspected to have contaminated the uppermost aquifer. This effort, named the RCRA Compliance Ground-Water Monitoring Project for the 300 Area Process Trenches, began in June 1985 and has continued to the present. The scope of this project and the results obtained are described in this and subsequent chapters.

SCOPE AND DESCRIPTION

Initial plans for the RCRA Compliance Ground-Water Monitoring Project were presented by the USDOE in a document entitled the Hazardous Waste Ground-Water Monitoring Plan (USDOE 1985). Implementation of these plans occurred in June 1985, when monthly sampling of a 16-well network was initiated.

Well Network

The 16-well network used for this project consists of 14 existing shallow wells in the 300 Area along with two new wells, one of them deep. Figure 15 shows the locations of these wells relative to the 300 Area Process Trenches and also the general direction of ground-water flow. Two of the wells in the network, 699-S19-E13 and 399-8-2, are considered to be upgradient of the process trenches.

Numerous ground-water monitoring wells have been drilled at the Hanford Site since the 1940s. Most of the older wells are constructed of carbon steel and have perforations rather than screens. However, the newer wells constructed at the site generally have stainless-steel screens, and some of them also have stainless-steel casings. Almost all of the wells (both old and

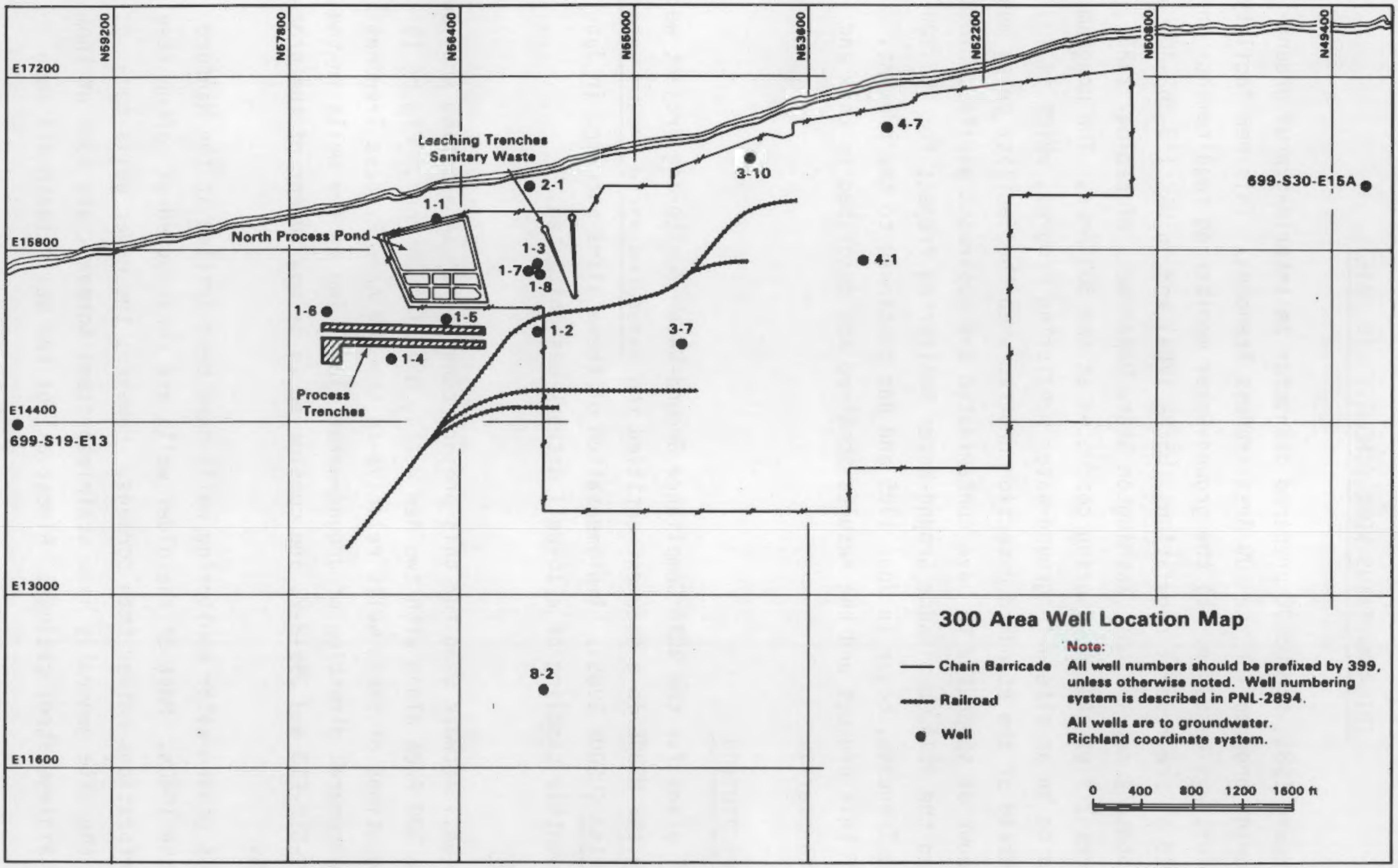

FIGURE 15. Location Map of Wells in Sampling Network

new) were constructed using a cable-tool rig, and most of them are either 6 or 8 in. in diameter. Through the years, care has been taken to regularly repair and maintain the monitoring wells so that they will continue to be useful sampling structures. The wells are swabbed or cleaned out periodically by a driller and are also checked for problems with a downhole television camera.

Some of the existing monitoring wells near the 300 Area Process Trenches are considered to be good sampling structures and are in the proper locations for monitoring the facility. Therefore, these wells have been used for the interim-status program, rather than installing a completely new network of wells specifically designed for this effort. In cases where existing wells are not properly completed or in the right locations, new wells have been installed. Recent work conducted on the Hanford Site under a special field investigation has shown that, at least within the limitations of this study (i.e., selected volatile organic chemicals, one field location), the different construction materials used in these wells did not, under field conditions, significantly affect the analytical results obtained for ground-water samples collected from them (Liikala et al. 1986).

Locations of the 16 wells currently in the network are shown in Figure 15. Monitoring well installation details and geologic logs for these wells are contained in Appendix A. Six of the wells have stainless-steel screens, and the other 10 have perforated casings. Most of the wells in the network are open at the top of the aquifer; therefore, well 399-1-8 (see Appendix A, Figure A.5) was drilled to the top of the first clay layer specifically to check for the possible presence of solvents or other dense materials in a deeper zone.

Figures A.1 through A.16 also show where the water table intersects the wells and the position of the pumps. For the interim-status program, each well has two pumps: 1) a submersible pump used for purging the well and for collection of samples to be analyzed for constituents that are not affected by air stripping, and 2) a Teflon® bladder pump used for collection of samples that

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will be analyzed for volatile organics. As shown, both of these pumps are hung near the top of the water column (except in the deep well, 399-1-8).

Fourteen of the 16 wells in the network have completion intervals that are roughly equivalent, although the length of water columns and open intervals varies. The remaining 2 wells are completed in a deeper interval. All 14 wells are open at the upper portion of the aquifer and are designed to accommodate some water-table fluctuations, which are known to occur in this area.

Sample Collection

Sampling of the wells has been conducted on a monthly basis during the last year because of their proximity to the river. This frequency, although greater than the quarterly frequency specified by the regulations, was deemed to be necessary for defining the seasonal variability expected to be present in the analytical data.

Special pumps and new procedures have been employed to help ensure that the samples collected are representative of the ground water. Each well has two dedicated pumps: 1) a submersible pump used for purging the well and for collection of samples to be analyzed for nonvolatile constituents such as anions and metals, and 2) a Teflon® bladder pump used for collecting samples to be analyzed for volatile, semi-volatile, and other organic chemicals. Additional information on the pump types, materials, and position in the wells is given in figures in Appendix A.

The samples are collected by trained Environmental Radiation Protection Technologists (RPTs) using documented PNL procedures. As required by the federal and state regulations, a water-level measurement is taken at each well before sampling. The well is then purged for a calculated period of time, based on removal of three borehole volumes. For added ensurance that the stagnant water has been removed from the well, the pH, specific conductance, and temperature are checked for stabilization via periodic measurements taken as the well is purged. All of these measurements are recorded in the field logbook, but only the final set of measurements taken just before sample collection are entered into the data base. Procedures for well purging, field measurements, and sample collection are contained in Appendix B.

Sample preservation techniques are used as appropriate to help ensure that the analytical results obtained by the laboratory have not been affected by alteration of the sample after collection. The preservation techniques currently used include pH control, chemical addition, and temperature control. The specific techniques applied for each of the analyses are discussed in another section of this chapter, entitled "Sample Analysis." Regarding the question of whether or not to filter the metals samples prior to acidification, a recommendation issued by the EPA in 1983 (USEPA 1983), indicating that the samples should not be filtered (thereby yielding "total recoverable" metals), has been followed on this effort to date. To provide data needed for geochemical modeling and to comply with more recent EPA guidance, plans are now being made to begin collecting two aliquots: one to be filtered and analyzed for dissolved metals, and one to be nonfiltered and analyzed for total recoverable metals.

Chain-of-custody procedures (Appendix B) are followed to ensure the integrity of the samples from time of collection through data reporting. These procedures provide specifications for labeling, sealing, and tracking the samples. Extensive documentation, including field logbooks and Chain-of-Custody forms, is maintained.

Water-Level Measurements

Additional water-level measurements, besides those taken prior to sampling, are obtained using written procedures (Appendix B) once every 2 wk from a network of selected wells located in and around the 300 Area. These regular measurements were initiated in February 1985. The 32 wells currently included in the network are listed below.

699-S19-E13	399-1-5	399-3-2	399-4-7
699-S27-E14	399-1-6	399-3-6	399-4-9
699-S29-E12	399-1-7	399-3-7	399-4-10
699-S30-E15A	399-1-8	399-3-9	399-5-1

399-1-1	399-2-1	399-3-10	399-8-1
399-1-2	399-2-2	399-3-11	399-8-2
399-1-3	399-2-3	399-3-12	399-8-3
399-1-4	399-3-1	399-4-1	399-8-4

The data obtained from this effort are entered into the data base and are used to draw water-table maps and determine ground-water flow directions. The measurements will also be used to support future modeling work.

Sample Analysis

A contract is in place with the United States Testing Company (UST) for the analysis of environmental samples collected on the Hanford Site, including those obtained under the ground-water monitoring program for the 300 Area. UST operates analytical laboratories in Richland, Washington, and in Hoboken, New Jersey. The Richland laboratory has, until recently, conducted primarily radiological analyses in support of Hanford Site needs, while the Hoboken facility has worked extensively with nonradiological analyses and has achieved the capabilities needed to participate in the EPA's Contract Laboratory Program dealing with analysis of samples from Superfund sites. In 1985, to support the interim-status monitoring programs initiated at the Hanford Site, UST used the expertise available at its Hoboken facility to bring state-of-the-art, nonradiological analytical methods to the Richland laboratory. During the laboratory's startup period in June and July 1985, a few analyses were not yet available at the Richland laboratory, and the samples requiring those analyses were shipped to Hoboken. However, full capabilities are now available at the Richland facility, allowing local analysis of the samples collected under the ground-water monitoring program for the 300 Area. The analyses conducted on the samples and the methods currently in use at the laboratory are discussed below.

Analytical Parameters

The standard list of analyses presently being conducted on the ground-water samples is given in Table 2. This list was compiled on the basis of: 1) instructions given in EPA guidance documents, i.e., Test Methods for Evaluating Solid Waste (SW-846); and 2) information provided by the facility

TABLE 2. Standard List of Analyses for the 300 Area Network

Constituent	Collection[a] and Preservation[b]	Method[c]	Detection Limit, ppb[d]
Barium			6
Cadmium			2
Chromium			10
Silver			10
Sodium			100
Nickel			10
Copper	P, HNO_3 to pH<2	SW-846, #6010	10
Aluminum			150
Manganese			5
Iron			50
Calcium			50
Zinc			5
Arsenic	P, HNO_3 to pH<2	SW-846, #7060	5
Mercury	P, HNO_3 to pH<2	SW-846, #7470	0.1
Selenium	P, HNO_3 to pH<2	SW-846, #7740	5
Lead	P, HNO_3 to pH<2	SW-846, #7421	5
Nitrate			500
Sulfate	P, None	70-IC[e,f]	500
Fluoride			500
Chloride			500
Cyanide	P, NaOH to pH>12	SW-846, #9010	10
Sulfide	P, zinc acetate + NaOH to pH>9	SW-846, #9030	1000
Radium	P, HNO_3 to pH<2	EPA Method #903.0	1 pCi/L

(a) P = plastic, G = glass.
(b) All samples will be cooled to 4°C upon collection.
(c) Constituents grouped together within brackets are analyzed by the same method.
(d) Detection limit units except where indicated.
(e) In-house analytical method.
(f) IC = ion chromatography.
(g) Analyzed quarterly on selected wells.
(h) From UST Procedure Manual, UST-RD-PM-9-80.
(i) Analyzed on quarterly basis only.
(j) MPN = most probable number.
(k) DAI = direct aqueous injection.

TABLE 2. (contd)

Constituent	Collection[a] and Preservation[b]	Method[c]	Detection Limit, ppb[d]
Gross Alpha	P, HNO_3 to pH<2	EPA Method 680/4-75-001	4 pCi/L
Gross Beta	P, HNO_3 to pH<2	EPA Method 680/4-75-001	8 pCi/L
Natural Uranium[g]	P, HNO_3 to pH<2	20-U-03[h]	4 pCi/L
Strontium-90[g]	P, HNO_3 to pH<2	20-Sr-02[h]	5 pCi/L
Gamma scan[g]	P, HNO_3 to pH<2	30-GS & 40-07[h]	20 pCi/L (Cs)
Total Organic Halogen	G, no headspace	SW-846, #9020	100
Total Organic Carbon	G, H_2SO_4 to pH<2	Std. Methods #505	1000
Ammonium ion	G, H_2SO_4 to pH<2	Std. Methods #417 A-E	50
Hydrazine	G, None	70-DAI[e,k]	3000
Endrin	G, None	SW-846, #8080[i]	1
Methoxychlor			1
Toxaphene			1
Lindane (4 isomers)			1
2,4-D	G, None	SW-846, #8150[i]	1
2,4,5-TP silvex			1

(a) P = plastic, G = glass.
(b) All samples will be cooled to 4°C upon collection.
(c) Constituents grouped together within brackets are analyzed by the same method.
(d) Detection limit units except where indicated.
(e) In-house analytical method.
(f) IC = ion chromatography.
(g) Analyzed quarterly on selected wells.
(h) From UST Procedure Manual, UST-RD-PM-9-80.
(i) Analyzed on quarterly basis only.
(j) MPN = most probable number.
(k) DAI = direct aqueous injection.

TABLE 2. (contd)

Constituent	Collection(a) and Preservation(b)	Method(c)	Detection Limit, ppb(d)
1,1,1-trichloroethane			10
Perchloroethylene	G, no headspace	SW-846, #8240	10
Chloroform			10
Methylene chloride			10
1,1,2-trichloroethane			10
1,1,2-trichloroethylene			10
Methylethyl ketone			10
Coliform bacteria	P, None	Std. Methods #908A	2.2 MPN(j)
Temperature	Field measurement	See Appendix 8	0.1°C
Specific conductance	Field measurement	See Appendix B	1 μmho
pH	Field measurement	See Appendix B	0.01 pH unit

(a) P = plastic, G = glass.
(b) All samples will be cooled to 4°C upon collection.
(c) Constituents grouped together within brackets are analyzed by the same method.
(d) Detection limit units except where indicated.
(e) In-house analytical method.
(f) IC = ion chromatography.
(g) Analyzed quarterly on selected wells.
(h) From UST Procedure Manual, UST-RD-PM-9-80.
(i) Analyzed on quarterly basis only.
(j) MPN = most probable number.
(k) DAI = direct aqueous injection.

manager concerning the composition of the wastes. According to an EPA guidance document regarding assessment-level programs (USEPA, undated draft), analyses must be conducted for the parameters in the Primary Drinking Water Standards and for the specific dangerous waste constituents known to have been discharged to the facility. This guidance was deemed applicable for the alternate ground-water monitoring program being conducted, and the list in Table 2 was compiled accordingly. Additional parameters, such as the contamination indicators, that are required for a detection-level program (but not necessarily for an alter-nate or assessment-level program) have been added to provide consistency with other interim-status programs. These additional parameters are, however, measured only once for each sample and are not replicated four times as they would be under a detection-level program.

On a less-frequent basis (currently quarterly), samples from two wells in the network are also being analyzed for some additional parameters, including the dangerous waste constituents in WAC 173-303-9905 (Washington State Department of Ecology 1986), hereafter referred to as the 9905 list. These extra analyses, described in Table 3 (with additional details in Appendix C), provide information needed for the permitting process and further ensure that potential contaminants are not being overlooked. The two wells chosen for the extra analyses include one upgradient well and one downgradient well.

In June 1986, at the end of the first year of sampling, a few changes were made to the lists of analyses. Tables 2 and 3 reflect these recent changes. The first change involved dropping from the monthly list three analyses for site-specific chemicals that have consistently been below the detection limit. These four analyses are: 1) ethylene glychol, 2) thiourea, 3) dioxin, and 4) acid/base/neutral compounds (ABNs). Samples from selected wells will still be analyzed for these chemicals as part of the extra analyses conducted on a quarterly basis. The second change involved decreasing the frequency of analysis for pesticides and herbicides from monthly to quarterly. Because these chemicals have been consistently below the detection limit, monthly analysis is not necessary and does not provide the extra information on seasonal variability being sought when using that frequency. Therefore, analyses for these chemicals have been cut back in frequency but still meet the regulatory requirement. The third change involved supplementing the radiological analyses conducted periodically on selected samples to include natural uranium, strontium-90, and a gamma scan. Information from these extra analyses is needed when screening levels for gross alpha and gross beta are exceeded.

Analytical Methods

A summary of the methods used for the standard list of analyses conducted monthly is given in Table 2. Where available, EPA methods described in SW-846 (USEPA 1982) are used. In instances where a method is not available in SW-846,

TABLE 3. Additional Analytical Parameters

Constituent	Collection[a] and Preservation[b]	Method[c]	Detection Limit, ppb[d]
Beryllium			5
Osmium	P, HNO_3 to pH<2	SW-846, #6010	300
Strontium			300
Antimony			100
Vanadium			5
Potassium			100
Thallium	P, HNO_3 to pH<2	SW-846, #7840	200
Thiourea			200
1-acetyl-2-thiourea			200
1-(o-chlorophenyl) thiourea	G, None	SW-846, #8330	200
Diethylstilbesterol		(modified)	200
Ethylenethiourea			200
1-naphthyl-2-thiourea			2D0
N-phenylthiourea			2D0
DDD			1
DDE			1
ODT			1
Heptachlor			1
Heptachlor epoxide	G, None	SW-846, #B180	1
Oieldrin			1
Aldrin			1
Chlordane			1
Endosulfan I			1
Endosulfan II			1
Chlorobenzilate			100
2,4,5-T	G, None	SW-846, #8150	1
Perchlorate	P, None	70-IC[e,f]	1000
Phosphate			1000

(a) P = plastic, G = glass.
(b) All samples will be cooled to 4°C upon collection.
(c) Constituents grouped together within brackets are analyzed by the same method.
(d) Detection limit units except where indicated.
(e) In-house analytical method.
(f) IC = ion chromatography.
(g) DAI = direct aqueous injection.
(h) Listed in Table C.1 of Appendix C.
(i) Listed in Table C.2 of Appendix C.
(j) GC/FID = gas chromatography/flame ionization detector.

TABLE 3. (contd)

Constituent	Collection[a] and Preservation[b]	Method[c]	Detection Limit, ppb[d]
Carbophenothion			2
Tetraethylpyrophosphate			100
Disolfoton	G, None	SW-846, #8140	2
Dimethoate			5
Methyl parathion			2
Parathion			2
Citrus red #2	G, None	AOAC #34.015B	1000
Paraldehyde			3000
Cyanogen bromide			3000
Cyanogen chloride			3000
Acrylamide			3000
Allyl alcohol			3000
Chloral			3000
Chloroacetaldehyde			3000
3-Chloropropionitrile			3000
Cyanogen			3000
Dichloropropanol			3000
Ethyl carbamate	G, None	DAI[e,g]	3000
Ethyl cyanide			3000
Ethylene oxide			3000
Fluoroacetic acid			3000
Glycidylaldehyde			3000
Isobutyl alcohol			3000
Methyl hydrazine			3000
n-propylamine			3000
2-propyn-1-ol			3000
1,1-Dimethyl hydrazine			3000
1,2-Dimethyl hydrazine			3000
Acetronitrile			3000

(a) P = plastic, G = glass.
(b) All samples will be cooled to 4°C upon collection.
(c) Constituents grouped together within brackets are analyzed by the same method.
(d) Oetection limit units except where indicated.
(e) In-house analytical method.
(f) IC = ion chromatography.
(g) DAI = direct aqueous injection.
(h) Listed in Table C.1 of Appendix C.
(i) Listed in Table C.2 of Appendix C.
(j) GC/FID = gas chromatography/flame ionization detector.

TABLE 3. (contd)

Constituent	Collection[a] and Preservation[b]	Method[c]	Detection Limit, ppb[d]
Tetrachloromethane			10
Xylene-o,p			10
Xylene-m	G, None	SW-846, #8240	10
Formaldehyde			500
Additional volatiles[h]			10
Hexachlorophene			10
Naphthalene			10
Phenol			10
Kerosene			10 ppm
Hexachlorobenzene			10
Pentachlorobenzene			10
1,2-Dichlorobenzene	G, None	SW-846, #8270	10
1,3-Dichlorobenzene			10
1,4-Dichlorobenzene			10
1,2,3-Trichlorobenzene			10
1,2,4-Trichlorobenzene			10
1,3,5-Trichlorobenzene			10
1,2,3,4-Tetrachlorobenzene			10
1,2,3,5-Tetrachlorobenzene			10
1,2,4,5-Tetrachlorobenzene			10
Additional semi-volatiles[i]			10
Ethylene glycol	G, None	GC/FID[e,j]	10 ppm

(a) P = plastic, G = glass.
(b) All samples will be cooled to 4°C upon collection.
(c) Constituents grouped together within brackets are analyzed by the same method.
(d) Detection limit units except where indicated.
(e) In-house analytical method.
(f) IC = ion chromatography.
(g) DAI = direct aqueous injection.
(h) Listed in Table C.1 of Appendix C.
(i) Listed in Table C.2 of Appendix C.
(j) GC/FID = gas chromatography/flame ionization detector.

another standard method from EPA or from Standard Methods for the Examination of Water and Wastewater (American Public Health Association 1985) is employed if possible. If no standard methods are available for a particular constituent, UST uses an in-house method approved by PNL. The written procedures followed by UST are documented in their methods manual, UST-RD-PM-9-80 (UST 1986). A brief description of the methods being used for each category of constituent is provided below, and additional detail concerning the protocols followed is contained in Appendix D.

- Metals are measured by either the Inductively Coupled Plasma (ICP) method, the Graphite Furnace Atomic Absorption (GFAA) method, or the Cold Vapor Atomic Absorption method.
- Inorganic anions are determined by ion chromatography (IC).
- Ammonium ion is determined by specific ion electrode.
- Volatile and semivolatile organic chemicals are determined by gas chromatography/mass spectrometry (GC/MS). Substances identified in samples by the GC/MS technique are verified by using a computerized library search system to compare the suspect mass spectra to the mass spectrum of a standard of the suspected substance.
- Pesticides and herbicides are measured by GC with an appropriate detector.
- Total Organic Carbon (TOC) is determined by the combustion-infrared method.
- Total Organic Halogens (TOX) are measured by carbon absorption and microcoulometric titration.
- Coliform count is determined by multiple tube fermentation.
- Gross alpha and gross beta are measured by evaporation of the sample and counting of the residue.
- Radium is measured by precipitation, weighing, and counting.
- Temperature, pH, and conductivity are determined in the field according to the instructions provided with the measuring instruments. The procedures used for these measurements are included with the sample collection methods in Appendix B.

Methods for the additional analytical parameters for this monitoring program are given in Table 3. As with the standard list of analyses in Table 2, approved standard methods from the EPA or the Association of Official Analytical Chemists (AOAC) are used.

Table E.1 of Appendix E contains the 9905 list of dangerous waste constituents and indicates the corresponding analytical methods. Table E.1 also contains cross-references to other tables (E.2 through E.10), which sort these constituents according to analytical method. Two categories of compounds on the 9905 list, contained in Tables E.9 and E.10, are not analyzed: 1) constituents that are unstable in water, and 2) constituents for which an adequate analytical method is unavailable.

Data Handling and Verification

Analytical data obtained from laboratory measurements at UST are entered into UST's computerized system and are subsequently transferred to a PNL computer via magnetic tape. Both organizations follow rigorous data handling and verification procedures, as described below, to ensure that errors are not made during entry or transfer.

UST's Data Handling Procedures

Relevant information concerning analysis of the samples is entered into logbooks that are maintained for each analytical procedure. This information may include calibration data, sample data, instrument conditions, matrix spike recoveries, standards preparation, etc. Other data needed to support sample results, such as chromatograms, charts, tables, etc., are labeled and stored in a secure area.

Sample data generated by the analysts at the UST Hazardous Substance Analysis Laboratory are entered into UST's main computer by a data handler. The data sheets provided by the analysts for this purpose must include:

- sample identification
- sample result in appropriate units
- extraction date (if any)
- analysis date
- dilutions (if any)

- matrix spike recoveries
- reagent blank results
- any other QC results.

A copy of the analysts' data sheets are also provided to the laboratory supervisor or director for review.

Sample data for radionuclides from the UST Radiochemistry Laboratory are derived from raw counting data and a computer program that converts the counts into concentration units. These results are checked by the director of the UST Radiochemistry Laboratory before being transmitted to PNL.

The data are entered using written procedures (UST 1986). Discrepancies and anomalies are resolved at this time. For all analyses except TOX, TOC, and radionuclides, all results below the contractual detection limits are entered as equal to the detection limit. For those stated exceptions, the actual results are entered into the computer. During data entry, an asterisk is automatically added by the computer to all results at or below the detection limit. These asterisks are replaced by the less-than (<) symbols when the file is entered into the PNL data base.

After all data for a sample set have been entered, an internal report is generated to verify that the data have been correctly entered. If corrections are needed, a second report is generated for verification. Finally, the data are copied onto a magnetic tape in the format specified by PNL. A hard copy summary report and data file listing are generated and delivered to PNL with the tape and copies of the analysts' data sheets. Deliveries of data to PNL are generally made once per week.

PNL's Data Handling Procedures

Analytical data received by PNL on magnetic tape from UST are immediately entered into the Hanford Ground-Water Data Base, according to procedures contained in the data base management guide and user's manual (Mitchell, Fruland, and Rieger 1986). This computerized data base, maintained on a DEC VAX,® is

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used to store analytical data, hydrographs, well-structure descriptions, and drilling logs for Hanford Site wells. Data collected in the field during sample collection, including several water-quality measurements, are entered manually. Once entered into the data base, the laboratory and field data can be accessed for manipulation and evaluation using various programs, and printed or plotted in a number of different formats.

Procedures for routine verification of the data files have been established. One of these procedures involves a test for outliers that is conducted during entry of the analytical data. This test involves checking each new data point for a particular well against the trend set by that well's recent history, using a program called ANATREND. Based on the established trend for a well, the program computes the predicted value for the next sampling date and sets an upper and lower limit of 2.09 standard deviations. Approximately 95% of the values are expected to fall within these limits, and a new data point is considered to be an outlier if it falls outside of these limits. A printout of suspected outliers is generated, and any apparent problems are then resolved as appropriate.

Other tests are conducted on the data file to ensure that each data field contains only permissible values. As the data are entered, the values in a data field (such as the well code field) are checked against a list of allowable values; the record is rejected if there is not a match and is later investigated to determine appropriate action.

Additional verification of the data files is accomplished by manually checking each result on the analysts' data sheets, received from the laboratory, against a hard-copy record generated upon loading the tape into the PNL data base. A special field in the data base, containing the initials of the person conducting the verification, is used to denote that a given data point has been checked. Discrepant data identified through this process are investigated with assistance from the laboratory. Following resolution, modifications are made to the data files as needed. This time-consuming process helps to ensure that the data contained in the data base have not been altered during transfer and entry.

Analytical Data Evaluation

On a continuing basis, the analytical data provided by UST are listed and statistically and graphically summarized to identify which constituents have been found in the ground water and to determine the range and average level of the constituents in each well. The graphs and tables in a later section of this chapter, entitled "Results," illustrate the data evaluation methods used during the past year. These evaluations are essential in developing an understanding of the temporal and spatial variation in constituent concentrations in the ground water of the 300 Area. Statistical methods are also used on a continuing basis to examine quality control data and thereby determine if the laboratory is performing satisfactorily or if modifications to the analytical procedures are needed.

Quality Assurance

Quality assurance (QA) for the 300 Area ground-water monitoring program is conducted in accordance with PNL's Quality Assurance Program. A QA plan describing the manner in which specific QA requirements are to be met has been prepared for this project, and a copy of the document is included in Appendix F.

Quality Control

A comprehensive quality control (QC) effort has been established for this project. The purpose of this effort is to determine and document the quality of the analytical results being produced by the laboratory and to institute corrective actions as needed. The QC effort has two main components: 1) routine internal checks performed by UST, and 2) external checks conducted by PNL to independently evaluate UST's performance. The scope of these efforts is described in the following sections.

UST's Internal QC Effort

The internal QC effort performed by UST includes general practices applicable to a wide range of analyses and also the specific procedures stipulated for particular analyses. The quality control and quality assurance programs at UST are documented in the Quality Control Manual (Hembree, Lardy, and Swoboda 1986) and the Quality Assurance Manual (Hembree and Lardy 1986). A summary of

UST's QC procedures and data is given in Hazardous Substance Analysis Quality Control Report for the Period June 17, 1985 through March 31, 1986 (Hembree and Rao 1986). Table D.1 in Appendix D contains a summary of the specific QC requirements pertaining to each analysis.

The general QC procedures used for all inorganic analyses are as follows:

- standard curve, daily
- verification of standard (to ±10%), every 10 samples
- blank, each extraction batch
- random matrix spike for 10% of the samples.

For all organic analyses, the following general QC requirements apply:

- 5-point curve, verified every 12 hr
- random matrix spike for 10% of the samples
- blank, each extraction batch
- internal standards and surrogates with each sample (for all analyses requiring these).

Data obtained from the matrix spikes, blanks, and surrogates are presented in control charts, which indicate whether or not a process is in statistical control.

External QC Effort

The external QC effort conducted by PNL to evaluate the laboratory's performance features interlaboratory comparisons as well as submission to UST of spiked samples, replicates, and blanks. The purpose and scope of each of these are discussed below.

Interlaboratory comparisons using field samples are conducted to determine if the results obtained by the primary laboratory, UST, are comparable to those obtained from other laboratories. The three following Hanford Site laboratories are used to check UST's results: 1) the Hanford Environmental Health Foundation (HEHF), 2) WHC, and 3) PNL. Comparisons are currently being conducted for anions, volatile organics, and metals. Each month, replicate samples from selected wells are delivered to the participating laboratories. Capabilities of these local laboratories vary, and sample distribution is conducted accordingly, as follows:

- anions: HEHF and WHC
- volatile organics: PNL
- metals: HEHF.

Spiked samples are submitted to UST to estimate the bias of analytical laboratory procedures and to determine when this bias exceeds control limits. Two types of spiked samples are being used: 1) blind, spiked samples prepared by PNL; and 2) spiked samples prepared under an established multilaboratory comparison program.

Blind, spiked samples containing metals, anions, herbicides, pesticides, and volatile organic compounds (halomethanes) have been submitted on a quarterly basis since January 1986. These samples were prepared by PNL using materials supplied by Environmental Resource Associates (ERA). Additional spiked samples prepared with materials supplied by the EPA were added in June 1986. Constituents included are ammonium ion, cyanide, acid/base/neutral (ABN) compounds, and a wider variety of pesticides and volatile organic compounds. The performance of various analyses will be monitored, including analyses for semi volatile organics (by direct injection), thiourea, phosphorus pesticides, ethylene glycol, sulfide, and perchlorate.

UST has also received and analyzed spiked samples submitted under the EPA-sponsored Water Pollution Laboratory Performance Evaluation Study WP016 and the Water Supply Lahoratory Performance Evaluation Study WS018.

Replicate analyses of field samples are conducted to establish how much variability might be expected in the laboratory measurements performed on nearly identical samples. In each of the first three samplings, replicate samples (three or four) were collected from several wells. These replicates received full analysis. Further replication has been postponed pending evaluation of the results obtained and subsequent planning for a routine replication effort. Submission of replicates to UST is scheduled to be resumed in late 1986. A set of wells exhibiting a range of concentrations has been selected for this effort.

Blanks are submitted to UST to determine whether environmental conditions encountered during collection and transportation of samples has affected the results obtained by analysis. One blank is submitted with each volatile organics sample. In addition, a blank for every analysis conducted is submitted each sampling period.

RESULTS

This section gives the results of the chemical constituent analyses for the 300 Area Process Trenches monitoring effort. Initial sampling began in June 1985, and the samples were taken at monthly intervals. Three or four field replicates were taken for selected subsets of wells and constituents for the first 3 mo. Also, most of the first 2 mo of data were analyzed at UST-Hoboken; the rest at UST-Richland. In October 1985, certain samples were split, with one split going to UST-Richland and one to UST-Hoboken to cross-validate results from the two laboratories. This report details sampling and chemical analysis completed through one full year of sampling data to late May of 1986.

Sampling Schedule

At the 300 Area Process Trenches the wells have been sampled according to the schedule given in Table 3. To agree with standard Hanford well designations, all wells in the 300 Area would normally have a 399- prefix except for the last two in Table 4, which would have a 699- prefix.

Constituent Lists

The short list of constituents (Table 5) is composed of the following subsets:

- indicators of ground-water contamination - 40 CFR 265, Subpart F, 92 (b)(3) (USEPA, 1984)

TABLE 4. Sampling Schedule for the 300 Area Process Trenches

Sample Period	Dates Sampled	Wells							
		1-1	1-2	1-3	1-4	1-5	1-6	1-7	1-8
1-Jun85	17 Jun-02 Jul	4S[a,b]	4S	S	S	L[c]	S	.[d]	.
2-Jul85	22 Jul-02 Aug	4S	4S	S	S	3L	S	S	.
3-Aug85	19 Aug-27 Aug	4S	4S	S	S	3L	S	S	.
4-Sep85	23 Sep-30 Sep	S	S	S	S	L	S	S	.
5-Oct85	23 Oct-01 Nov	xS[e]	xS	S	S	xS	S	S	S
6-NovDec85	21 Nov-11 Dec	S	S	S	S	S	S	S	S
7-Jan86	13 Jan-20 Jan	S	S	S	S	L	S	S	S
8-Feb86	12 Feb-21 Feb	S	S	S	S	S	S	S	S
9-Mar86	13 Mar-21 Mar	S	S	S	S	S	S	S	S
10-Apr86	17 Apr-23 Apr	S	S	S	S	L	S	S	S
11-May86	19 May-27 May	S	S	S	S	S	S	S	S

Sample Period	Dates Sampled	Wells							
		2-1	3-10	3-7	4-1	4-7	8-2	S19-E13	S30E15A
1-Jun85	17 Jun-02 Jul	S	4S	S	S	4S	S	L	S
2-Jul85	22 Jul-02 Aug	S	4S	S	S	4S	S	L	S
3-Aug85	19 Aug-27 Aug	S	4S	S	S	4S	S	L	S
4-Sep85	23 Sep-30 Sep	S	S	S	S	S	S	L	S
5-Oct85	23 Oct-01 Nov	S	xS	S	S	xS	S	S	S
6-NovDec85	21 Nov-11 Dec	S	S	S	S	S	S	S	S
7-Jan86	12 Jan-20 Jan	S	S	S	S	S	S	L	S
8-Feb86	12 Feb-21 Feb	S	S	S	S	S	S	S	S
9-Mar86	13 Mar-21 Mar	S	S	S	S	S	S	S	S
10-Apr86	17 Apr-23 Apr	S	S	S	S	S	S	L	S
11-May86	19 May-27 May	S	S	S	S	S	S	S	S

(a) Number indicates amount of replicate sampling.
(b) S = short list of constituents.
(c) L = long list of constituents (includes S and the 9905 requirements).
(d) . indicates wells were not completed at this time.
(e) x indicates subset of samples split and sent to UST-Hoboken and UST-Richland.

TABLE 5. Short List of Constituents

Indicators of Ground-Water Contamination

pH
Specific conductance
Total Organic Carbon (TOC)
Total Organic Halogen (TOX)

Ground-Water Quality Characteristics

x Chloride[a]
Iron
Manganese
x Phenols
x Sodium
x Sulfate

Site-Specific Constituents

Nickel
Copper
Antimony
Aluminum
Thiourea
Tetrachloromethane
Benzene
Dioxane
Methyl ethyl ketone
Pyridine

Interim Drinking Water Standards

Arsenic
Barium
Cadmium
Chromium
Lead
Mercury
x Selenium
Silver
x Fluoride
x Nitrate
Endrin
Lindane (a,b,g,d-BHC)
Methoxychlor
Toxaphene
2,4 D
2,4,5 TP Silvex
Radium
Gross Alpha
Gross Beta
Coliform Bacteria

TABLE 5. (contd)

Toluene	
1,1,1-trichloroethane	1,2,3,5-tetrachlorobenzene
1,1,2-trichloroethane	Cyanide
Trichloroethylene	Formaldehyde
Perchloroethylene	Sulfide
Xylene-o,p	Kerosene
Xylene-m	Ammonium ion
1,2-dichlorobenzene	Ethylene glycol
1,3-dichlorobenzene	Dioxin
1,4-dichlorobenzene	Hydrazine
Pentachlorobenzene	
1,2,4,5-tetrachlorobenzene	
1,2,4-trichlorobenzene	
Hexachlorophene	
Naphthalene	
1,2,3-trichlorobenzene	
1,3,5-trichlorobenzene	
1,2,3,4-tetrachlorobenzene	
Tag-Along Constituents	
Vanadium	Chlorobenzilate
Potassium	Phosphate
Chloroform	Strychnine
Methylene chloride	Maleic hydrizide
Hexachlorobenzene	Nicotinic acid
Hexachloropropene	

(a) Constituents marked with an "x" are also of site-specific interest.

- interim drinking water standards - Interim Primary Drinking Water Standards Act 1975
- ground-water quality characteristics - 40 CFR 265, Subpart F, 92 (b) (2) (USEPA 1984)
- site-specific constituents - Constituents specific to this site based on historical information
- tag-along constituents - Constituents that are analyzed because they are members of a group analysis that contains one of the constituents listed in Table 5.

A well sampled for the long list of constituents would include the short list in Table 5 plus constituents from WAC 173-303-9905 for which analytical methods were available, and any additional tag-along constituents that might occur. Occasionally, results were reported by the laboratory that were not specifically requested. These are listed with the 9905 data in all tables and graphs.

Constituents Detected

General guidelines used to prepare the data summaries presented here were taken from RCRA Ground-Water Monitoring Technical Enforcement Guidance Document (USEPA updated draft), "6.8--Procedures for Evaluating Assessment Monitoring Data."

The first summary, given in Table 6, presents a list of all the consituents sampled to date along with the following information:

- data base constituent code (3 letters) (CONCODE)
- data base abbreviated constituent name (7 letters or less) (CONNAME)
- analysis units: MPN = Most probable number (ANALUNIT)
  - pCi/L = picoCuries per Liter
  - µmho = micromhos
  - ppb = parts per billion

- laboratory's contractual detection limit (DETLIMIT)
- number of samples analyzed to date (SAMPLES)
- number of samples below detection limit (BELOWDL)
- indication (***) that ALL samples were below detection limits (ALLBELOW) (note that no further data summaries will be given for these)
- maximum permissible limit (. indicates no limit at present) (MAXLIMIT)
- regulating agency for maximum permissible limit (REGAGEN)

  EPA = Interim Primary Drinking Water Standards

  EPAP = proposed maximum contaminant levels
- full name for constituent (FULLNAME).

The main uses for Table 6 are to:

- summarize the scope of the sampling efforts at the 300 Area Process Trenches
- organize the data by specific subsets of constituents
- give a full description of the computerized information for each constituent
- easily identify those constituents that were never detected.

Review of Table 6 shows that the herbicides and pesticides on the Interim Primary Drinking Water Standards list were never reported above detection limit, nor were the phenols in the list of water quality characteristics. Many of the constituents in the site-specific list have yet to be detected after an extensive sampling effort, while almost none of the additional constituents sampled as part of the WAC 173-303-9905 list effort have been detected. Several other constituents have only been reported above detection limit sporadically. Among those constituents that are regularly reported as being above the detection limit are gross alpha, gross beta, barium, nitrate, sodium, iron, sulfate, chloride, copper, ammonium, vanadium, potassium, chloroform, and methylene chloride.

TABLE 6. Summary of Constituents Sampled to Date

---Constituent List=Contamination Indicators---

CONCODE	CONNAME	ANALUNIT	DETLIMIT	SAMPLES	BELOWDL	ALLBELOW	MAXLIMIT	REGAGEN	FULLNAME
191	CONDUCT	UMHO	.	173	0		.		Conductivity
199	PH		.	172	0		.		pH
C68	TOX	PPB	100	187	158		.		Total organic halogen
C69	TOC	PPB	1000	187	106		.		Total organic carbon

---Constituent List=Drinking Water Standards---

CONCODE	CONNAME	ANALUNIT	DETLIMIT	SAMPLES	BELOWDL	ALLBELOW	MAXLIMIT	REGAGEN	FULLNAME
109	COLIFRM	MPN	3	211	195		1	EPA	Coliform bacteria
111	BETA	PCI/L	8	210	4		50	EPA	Gross beta
181	RADIUM	PCI/L	1	210	196		5	EPA	Radium
212	LOALPHA	PCI/L	4	210	3		15	EPA	Gross alpha
A06	BARIUM	PPB	6	216	17		1000	EPA	Barium
A07	CADMIUM	PPB	2	216	201		10	EPA	Cadmium
A08	CHROMUM	PPB	10	216	200		50	EPA	Chromium
A10	SILVER	PPB	10	216	215		50	EPA	Silver
A20	ARSENIC	PPB	5	216	199		50	EPA	Arsenic
A21	MERCURY	PPB	.1	216	197		2	EPA	Mercury
A22	SELENUM	PPB	5	216	212		10	EPA	Selenium
A33	ENDRIN	PPB	1	216	216	***	.2	EPA	Endrin
A34	METHLOR	PPB	1	216	216	***	100	EPA	Methoxychlor
A35	TOXAENE	PPB	1	216	216	***	5	EPA	Toxaphene
A36	a-BHC	PPB	1	216	216	***	4	EPA	Alpha-BHC
A37	b-BHC	PPB	1	216	216	***	4	EPA	Beta-BHC
A38	g-BHC	PPB	1	216	216	***	4	EPA	Gamma-BHC
A39	d-BHC	PPB	1	216	216	***	4	EPA	Delta-BHC
A51	LEADGF	PPB	5	216	192		20	EPA	Lead (graphite furnace)
C72	NITRATE	PPB	500	211	0		45000	EPA	Nitrate
C74	FLUORID	PPB	500	211	133		1400	EPA	Fluoride
H13	2,4-D	PPB	1	214	214	***	100	EPA	2,4-D
H14	2,4,5TP	PPB	1	214	214	***	10	EPA	2,4,5-TP silvex

---Constituent List=Quality Characteristics---

CONCODE	CONNAME	ANALUNIT	DETLIMIT	SAMPLES	BELOWDL	ALLBELOW	MAXLIMIT	REGAGEN	FULLNAME
A11	SODIUM	PPB	100	216	0		.		Sodium
A17	MANGESE	PPB	5	216	182		.		Manganese
A19	IRON	PPB	50	216	68		.		Iron
C57	PHENOL	PPB	10	216	216	***	.		Phenol
C73	SULFATE	PPB	500	211	0		.		Sulfate
C75	CHLORID	PPB	500	211	0		.		Chloride

TABLE 6. (contd)

Constituent List=Site Specific

CONCODE	CONNAME	ANALUNIT	DETLIMIT	SAMPLES	BELOWDL	ALLBELOW	MAXLIMIT	REGAGEN	FULLNAME
A12	NICKEL	PPB	10	216	202		.		Nickel
A13	COPPER	PPB	10	216	130		1300	EPAP	Copper
A15	ANTIONY	PPB	100	216	216	***	.		Antimony
A16	ALUMNUM	PPB	150	216	169		.		Aluminum
A24	THIOURA	PPB	200	211	209		.		Thiourea
A61	TETRANE	PPB	10	216	216	***	5	EPAP	Tetrachloromethane
A62	BENZENE	PPB	10	216	216	***	5	EPAP	Benzene
A63	DIOXANE	PPB	500	216	216	***	.		Dioxane
A64	METHONE	PPB	10	216	215		.		Methyl ethyl ketone
A65	PYRIDIN	PPB	500	216	216	***	.		Pyridine
A66	TOLUENE	PPB	10	216	216	***	2000	EPAP	Toluene
A67	1,1,1-T	PPB	10	216	214		200	EPAP	1,1,1-trichloroethane
A68	1,1,2-T	PPB	10	216	214		.		1,1,2-trichloroethane
A69	TRICENE	PPB	10	216	212		5	EPAP	Trichloroethylene
A70	PERCENE	PPB	10	216	195		.		Perchloroethylene
A71	OPXYLE	PPB	10	216	216	***	440	EPAP	Xylene-o,p
B14	M-XYLE	PPB	10	216	216	***	440	EPAP	Xylene-m
B61	12-dben	PPB	10	216	216	***	.		1,2-dichlorobenzene
B62	13-dben	PPB	10	216	216	***	.		1,3-dichlorobenzene
B63	14-dben	PPB	10	216	216	***	.		1,4-dichlorobenzene
C26	PENTCHB	PPB	10	216	216	***	.		Pentachlorobenzene
C37	TETRCHB	PPB	10	216	216	***	.		1,2,4,5-tetrachlorobenzene
C43	TRICHLB	PPB	10	216	216	***	.		1,2,4-trichlorobenzene
C54	HEXACHL	PPB	10	216	216	***	.		Hexachlorophene
C55	NAPHTHA	PPB	10	216	216	***	.		Naphthalene
C56	123TRI	PPB	10	216	216	***	.		1,2,3-trichlorobenzene
C58	135TRI	PPB	10	216	216	***	.		1,3,5-trichlorobenzene
C59	1234TE	PPB	10	216	216	***	.		1,2,3,4-tetrachlorobenzene
C60	1235TE	PPB	10	216	216	***	.		1,2,3,5-tetrachlorobenzene
C70	CYANIDE	PPB	10	211	208		.		Cyanide
C71	FORMALN	PPB	500	216	216	***	.		Formalin
C78	SULFIDE	PPB	1000	211	206		.		Sulfide
C79	KEROSEN	PPB	10000	216	216	***	.		Kerosene
C80	AMMONIU	PPB	20	211	69		.		Ammonium ion
C81	ETHYGLY	PPB	10000	211	211	***	.		Ethylene glycol
C86	DIOXIN	PPB	.1	216	216	***	.		Dioxin

Constituent List=Tag-alongs

CONCODE	CONNAME	ANALUNIT	DETLIMIT	SAMPLES	BELOWDL	ALLBELOW	MAXLIMIT	REGAGEN	FULLNAME
A14	VANADUM	PPB	5	216	110		.		Vanadium
A18	POTASUM	PPB	100	216	3		.		Potassium
A80	CHLFORM	PPB	10	116	24		.		Chloroform
A93	METHYCH	PPB	10	66	14		.		Methylene chloride
B89	HEXCBEN	PPB	10	216	216	***	.		Hexachlorobenzene
C52	HEXAENE	PPB	10	154	154	***	.		Hexachloropropene
C62	CHLLATE	PPB	100	108	108	***	.		Chlorobenzilate
C76	PHOSPHA	PPB	1000	211	210		.		Phosphate
C91	STRYCHN	PPB	50	108	108	***	.		Strychnine
C92	MALHYDR	PPB	500	108	108	***	.		Maleic hydrizide
C93	NICOTIN	PPB	100	108	108	***	.		Nicotinic acid

TABLE 6. (contd)

---Constituent List=WAC 173-303-9905---

CONCODE	CONNAME	ANALUNIT	DETLIMIT	SAMPLES	BELOWDL	ALLBELOW	MAXLIMIT	REGAGEN	FULLNAME
A01	BERYLAM	PPB	5	16	16	***	.		Beryllium
A02	OSMIUM	PPB	300	16	16	***	.		Osmium
A03	STRONUM	PPB	300	16	16	***	.		Strontium
A04	ZINC	PPB	5	16	5		.		Zinc
A05	CALCIUM	PPB	50	16	0		.		Calcium
A23	THALIUM	PPB	10	16	15		.		Thallium
A25	ACETREA	PPB	200	16	16	***	.		1-acetyl-2-thiourea
A26	CHLOREA	PPB	200	16	16	***	.		1-(o-chlorophenyl) thiourea
A27	DIETROL	PPB	200	16	16	***	.		Diethylstilbesterol
A28	ETHYREA	PPB	200	16	16	***	.		Ethylenethiourea
A29	NAPHREA	PPB	200	16	16	***	.		1-naphthyl-2-thiourea
A32	PHENREA	PPB	200	16	16	***	.		N-phenylthiourea
A40	DDD	PPB	1	16	16	***	.		DDD
A41	DDE	PPB	1	16	16	***	.		DDE
A42	DDT	PPB	1	16	16	***	.		DDT
A43	HEPTLOR	PPB	1	16	16	***	0	EPAP	Heptachlor
A44	HEPTIDE	PPB	1	16	16	***	0	EPAP	Heptchlor epoxide
A46	DIELRIN	PPB	1	16	16	***	.		Dieldrin
A47	ALDRIN	PPB	1	16	16	***	.		Aldrin
A48	CHLDANE	PPB	1	16	16	***	0	EPAP	Chlordane
A49	ENDO1	PPB	1	16	16	***	.		Endosulfan I
A52	ENDO2	PPB	1	2	2	***	.		Endosulfan II
A72	ACROLIN	PPB	10	16	16	***	.		Acrolein
A73	ACRYILE	PPB	10	16	16	***	.		Acrylonitrile
A74	BISTHER	PPB	10	16	16	***	.		Bis(chloromethyl) ether
A75	BROMONE	PPB	10	16	16	***	.		Bromoacetone
A76	METHBRD	PPB	10	16	16	***	.		Methyl bromide
A77	CARBIDE	PPB	10	16	16	***	.		Carbon disulfide
A78	CHLBENZ	PPB	10	16	16	***	.		Chlorobenzene
A79	CHLTHER	PPB	10	16	16	***	.		2-chloroethyl vinyl ether
A81	METHCHL	PPB	10	16	16	***	.		Methyl chloride
A82	CHMTHER	PPB	10	16	16	***	.		Chloromethyl methyl ether
A83	CROTONA	PPB	10	16	16	***	.		Crotonaldehyde
A84	DIBRCHL	PPB	10	16	16	***	.		1,2-dibromo-3-chloropropane
A85	DIBRETH	PPB	10	16	16	***	.		1,2-dibromoethane
A86	DIBRMET	PPB	10	16	16	***	.		Dibromomethane
A87	DIBUTEN	PPB	10	16	16	***	.		1,4-dichloro-2-butene
A88	DICDIFM	PPB	10	16	16	***	.		Dichlorodifluoromethane
A89	1,1-DIC	PPB	10	16	16	***	.		1,1-dichloroethane
A90	1,2-DIC	PPB	10	16	16	***	5	EPAP	1,2-dichloroethane
A91	TRANDCE	PPB	10	16	16	***	70	EPAP	Trans-1,2-dichloroethene
A92	DICETHY	PPB	10	16	16	***	7	EPAP	1,1-dichloroethylene
A94	DICPANE	PPB	10	16	16	***	6	EPAP	1,2-dichloropropane
A95	DICPENE	PPB	10	16	16	***	.		1,3-dichloropropene
A96	NNDIEHY	PPB	10	16	16	***	.		N,N-diethylhydrazine
A97	1,1-DIM	PPB	3000	16	16	***	.		1,1-dimethylhydrazine
A98	1,2-DIM	PPB	3000	16	16	***	.		1,2-dimethylhydrazine
A99	HYDRSUL	PPB	10	16	16	***	.		Hydrogen sulfide
B01	IODOMET	PPB	10	16	16	***	.		Iodomethane
B02	METHACR	PPB	10	16	16	***	.		Methacrylonitrile

TABLE 6. (contd)

Constituent List=WAC 173-303-9905

CONCODE	CONNAME	ANALUNIT	DETLIMIT	SAMPLES	BELOWDL	ALLBELOW	MAXLIMIT	REGAGEN	FULLNAME
B03	METHTHI	PPB	10	16	16	***	.		Methanethiol
B04	PENTACH	PPB	10	16	16	***	.		Pentachloroethane
B05	1112-tc	PPB	10	16	16	***	.		1,1,1,2-tetrachlorethane
B06	1122-tc	PPB	10	16	16	***	.		1,1,2,2-tetrachlorethane
B08	BROMORM	PPB	10	16	16	***	.		Bromoform
B09	TRCMEOL	PPB	10	16	16	***	.		Trichloromethanethiol
B10	TRCMFLM	PPB	10	16	16	***	.		Trichloromonofluoromethane
B11	TRCPANE	PPB	10	16	16	***	.		Trichloropropane
B12	123-trp	PPB	10	16	16	***	.		1,2,3-trichloropropane
B13	VINYIDE	PPB	10	16	16	***	1	EPAP	Vinyl chloride
B15	DIETHY	PPB	10	16	16	***	.		Diethylarsine
B19	ACETILE	PPB	10	16	16	***	.		Acetonitrile
B20	ACETONE	PPB	10	16	16	***	.		Acetophenone
B21	WARFRIN	PPB	10	16	16	***	.		Warfarin
B22	ACEFENE	PPB	10	16	16	***	.		2-acetylaminofluorene
B23	AMINOYL	PPB	10	16	16	***	.		4-aminobyphenyl
B24	AMIISOX	PPB	10	16	16	***	.		5-(aminomethyl)-3-isoxazolol
B25	AMITROL	PPB	10	16	16	***	.		Amitrole
B26	ANILINE	PPB	10	16	16	***	.		Aniline
B27	ARAMITE	PPB	10	16	16	***	.		Aramite
B28	AURAMIN	PPB	10	16	16	***	.		Auramine
B29	BENZCAC	PPB	10	16	16	***	.		Benz[c]acridine
B30	BENZAAN	PPB	10	16	16	***	.		Benz[a]anthracene
B31	BENDICM	PPB	10	16	16	***	.		Benzene, dichloromethyl
B32	BENTHOL	PPB	10	16	16	***	.		Benzenethoil
B33	BENDINE	PPB	10	16	16	***	.		Benzidine
B34	BENZBFL	PPB	10	16	16	***	.		Benzo[b]fluoranthene
B35	BENZJFL	PPB	10	16	16	***	.		Benzo[j]fluoranthene
B36	PBENZQU	PPB	10	16	16	***	.		P benzoquinone
B37	BENZCHL	PPB	10	16	16	***	.		Benzyl chloride
B38	BIS2CHM	PPB	10	16	16	***	.		Bis(2-chloroethoxy) methane
B39	BIS2CHE	PPB	10	16	16	***	.		Bis(2-chloroethyl) ether
B40	BIS2EPH	PPB	10	20	16		.		Bis(2-ethylhexyl) phthalate
B41	BROPHEN	PPB	10	16	16	***	.		4-bromophenyl phenyl ether
B42	BUTBENP	PPB	10	16	16	***	.		Butyl benzyl phthalate
B43	BUTDINP	PPB	10	16	16	***	.		2-sec-butyl-4,6-dinitrophenol
B44	CHALETH	PPB	10	16	16	***	.		Chloroalkyl ethers
B45	CHLANIL	PPB	10	16	16	***	.		P-chloroaniline
B46	CHLCRES	PPB	10	16	16	***	.		P-chloro-m-cresol
B47	CHLEPOX	PPB	10	16	16	***	.		1-chloro-2,3-epoxypropane
B48	CHLNAPH	PPB	10	16	16	***	.		2-chloronaphthalene
B49	CHLPHEN	PPB	10	16	16	***	.		2-chlorophenol
B50	CHRYSEN	PPB	10	16	16	***	.		Chrysene
B51	CRESOLS	PPB	10	16	16	***	.		Cresols
B52	CYCHDIN	PPB	10	16	16	***	.		2-cyclohexyl-4,6-dinitrophenol
B53	DIBAHAC	PPB	10	16	16	***	.		Dibenz[a,h]acridine
B54	DIBAJAC	PPB	10	16	16	***	.		Dibenz[a,j]acridine
B55	DIBAHAN	PPB	10	16	16	***	.		Dibenz[a,h]anthracene
B56	DIBCGCA	PPB	10	16	16	***	.		7H-dibenzo[c,g]carbazole
B57	DIBAEPY	PPB	10	16	16	***	.		Dibenzo[a,e]pyrene

TABLE 6. (contd)

Constituent List=WAC 173-303-9905

CONCODE	CONNAME	ANALUNIT	DETLIMIT	SAMPLES	BELOWDL	ALLBELOW	MAXLIMIT	REGAGEN	FULLNAME
B58	DIBAHPY	PPB	10	16	16	***	.		Dibenzo[a,h]pyrene
B59	DIBAIPY	PPB	10	16	16	***	.		Dibenzo[a,i]pyrene
B60	DIBPHTH	PPB	10	16	16	***	.		Di-n-butyl phthalate
B64	DICHBEN	PPB	10	16	16	***	.		3,3'-dichlorobenzidine
B65	24-dchp	PPB	10	16	16	***	.		2,4-dichlorophenol
B66	26-dchp	PPB	10	16	16	***	.		2,6-dichlorophenol
B67	DIEPHTH	PPB	10	16	16	***	.		Diethyl phthalate
B68	DIHYSAF	PPB	10	16	16	***	.		Dihydrosafrole
B69	DIMETHB	PPB	10	16	16	***	.		3,3'-dimethoxybenzidine
B70	DIMEAMB	PPB	10	16	16	***	.		P-dimethylaminoazobenzene
B71	DIMBENZ	PPB	10	16	16	***	.		7,12-dimethylbenz[a]anthracene
B72	DIMEYLB	PPB	10	16	16	***	.		3,3'-dimethylbenzidine
B73	THIONOX	PPB	10	16	16	***	.		Thiofanox
B74	DIMPHAM	PPB	10	16	16	***	.		Alpha,alpha-dimethylphenethylamine
B75	DIMPHEN	PPB	10	16	16	***	.		2,4-dimethylphenol
B76	DIMPHTH	PPB	10	16	16	***	.		Dimethyl phthalate
B77	DINBENZ	PPB	10	16	16	***	.		Dinitrobenzene
B78	DINCRES	PPB	10	16	16	***	.		4,6-dinitro-o-cresol and salts
B79	DINPHEN	PPB	10	16	16	***	.		2,4-dinitrophenol
B80	24-dint	PPB	10	16	16	***	.		2,4-dinitrotoluene
B81	26-dint	PPB	10	16	16	***	.		2,6-dinitrotoluene
B82	DIOPHTH	PPB	10	16	16	***	.		Di-n-octyl phthalate
B83	DIPHAMI	PPB	10	16	16	***	.		Diphenylamine
B84	DIPHHYD	PPB	10	16	16	***	.		1,2-diphenylhydrazine
B85	DIPRNIT	PPB	10	16	16	***	.		Di-n-propylnitrosamine
B86	ETHMINE	PPB	10	16	16	***	.		Ethyleneimine
B87	ETHMETH	PPB	10	16	16	***	.		Ethyl methanesulfonate
B88	FLUORAN	PPB	10	16	16	***	.		Fluoranthene
B90	HEXCBUT	PPB	10	16	16	***	.		Hexachlorobutadiene
B91	HEXCCYC	PPB	10	16	16	***	.		Hexachlorocyclopentadiene
B92	HEXCETH	PPB	10	16	16	***	.		Hexachloroethane
B93	INDENOP	PPB	10	16	16	***	.		Indeno(1,2,3-cd)pyrene
B94	ISOSOLE	PPB	10	16	16	***	.		Isosafrole
B95	MALOILE	PPB	10	16	16	***	.		Malononitrile
B96	MELPHAL	PPB	10	16	16	***	.		Melphalan
B97	METHAPY	PPB	10	16	16	***	.		Methapyrilene
B98	METHNYL	PPB	10	16	16	***	.		Metholonyl
B99	METAZIR	PPB	10	16	16	***	.		2-methylaziridine
C01	METCHAN	PPB	10	16	16	***	.		3-methylcholanthrene
C02	METBISC	PPB	10	16	16	***	.		4,4'-methylenebis(2-chloroaniline)
C03	METACTO	PPB	10	16	16	***	.		2-methyllactonitrile
C04	METACRY	PPB	10	16	16	***	.		Methyl methacrylate
C05	METMSUL	PPB	10	16	16	***	.		Methyl methanesulfonate
C06	METPROP	PPB	10	16	16	***	.		2-methyl-2-(methylthio) propionaldehyde-o-
C07	METHIOU	PPB	10	16	16	***	.		Methylthiouracil
C08	NAPHQUI	PPB	10	16	16	***	.		1,4-naphthoquinone
C09	1-napha	PPB	10	16	16	***	.		1-naphthylamine
C10	2-napha	PPB	10	16	16	***	.		2-naphthylamine
C11	NITRANI	PPB	10	16	16	***	.		P-nitroaniline
C12	NITBENZ	PPB	10	16	16	***	.		Nitrobenzine

TABLE 6. (contd)

--Constituent List=WAC 173-303-9905--

CONCODE	CONNAME	ANALUNIT	DETLIMIT	SAMPLES	BELOWDL	ALLBELOW	MAXLIMIT	REGAGEN	FULLNAME
C13	NITPHEN	PPB	10	16	16	***	.		4-nitrophenol
C14	NNIBUTY	PPB	10	16	16	***	.		N-nitrosodi-n-butylamine
C15	NNIDIEA	PPB	10	16	16	***	.		N-nitrosodiethanolamine
C16	NNIDIEY	PPB	10	16	16	***	.		N-nitrosodiethylamine
C17	NNIDIME	PPB	10	16	16	***	.		N-nitrosodimethylamine
C18	NNIMETH	PPB	10	16	16	***	.		N-nitrosomethylethylamine
C19	NNIURET	PPB	10	16	16	***	.		N-nitroso-N-methylurethane
C20	NNIVINY	PPB	10	16	16	***	.		N-nitrosomethylvinylamine
C21	NNIMORP	PPB	10	16	16	***	.		N-nitrosomorpholine
C22	NNINICO	PPB	10	16	16	***	.		N-nitrosonornicotine
C23	NNIPIPE	PPB	10	16	16	***	.		N-nitrosopiperidine
C24	NITRPYR	PPB	10	16	16	***	.		Nitrosopyrrolidine
C25	NITRTOL	PPB	10	16	16	***	.		5-nitro-o-toluidine
C27	PENTCHN	PPB	10	16	16	***	.		Pentachloronitrobenzene
C28	PENTCHP	PPB	10	16	16	***	220	EPAP	Pentachlorophenol
C29	PHENTIN	PPB	10	16	16	***	220	EPAP	Phenacetin
C30	PHENINE	PPB	10	16	16	***	.		Phenylenediamine
C31	PHTHEST	PPB	10	16	16	***	.		Phthalic acid esters
C32	PICOLIN	PPB	10	16	16	***	.		2-picoline
C33	PRONIDE	PPB	10	16	16	***	.		Pronamide
C34	RESERPI	PPB	10	16	16	***	.		Reserpine
C35	RESORCI	PPB	10	16	16	***	.		Resorcinol
C36	SAFROL	PPB	10	16	16	***	.		Safrol
C39	TETRCHP	PPB	10	16	16	***	.		2,3,4,6-tetrachlorophenol
C40	THIURAM	PPB	10	16	16	***	.		Thiuram
C41	TOLUDIA	PPB	10	16	16	***	.		Toluenediamine
C42	OTOLHYD	PPB	10	16	16	***	.		O-toluidine hydrochloride
C44	245-trp	PPB	10	16	16	***	.		2,4,5-trichlorophenol
C45	246-trp	PPB	10	16	16	***	.		2,4,6-trichlorophenol
C46	TRIPHOS	PPB	10	16	16	***	.		O,O,O-triethyl phosphorothioate
C47	SYMTRIN	PPB	10	16	16	***	.		Sym-trinitrobenzene
C48	TRIPHOS	PPB	10	16	16	***	.		Tris(2,3-dibromopropyl) phosphate
C49	BENZOPY	PPB	10	16	16	***	.		Benzo[a]pyrene
C50	CHLNAPH	PPB	10	16	16	***	.		Chlornaphazine
C51	BIS2ETH	PPB	10	16	16	***	.		Bis(2-chloroisopropyl)ether
C53	HYDRAZI	PPB	3000	16	16	***	.		Hydrazine
C61	TETEPYR	PPB	2	16	16	***	.		Tetraethylpyrophosphate
C63	CARBPHT	PPB	2	16	16	***	.		Carbophenothion
C64	DISULFO	PPB	2	16	16	***	.		Disulfoton
C65	DIMETHO	PPB	5	16	16	***	.		Dimethoate
C66	METHPAR	PPB	2	16	16	***	.		Methyl parathion
C67	PARATHI	PPB	2	16	16	***	.		Parathion
C87	CITRUSR	PPB	1000	16	16	***	.		Citrus red
C88	CYANBRO	PPB	3000	16	16	***	.		Cyanogen bromide
C89	CYANCHL	PPB	3000	16	16	***	.		Cyanogen chloride
C90	PARALDE	PPB	3000	16	16	***	.		Paraldegyde
C94	ACRYIDE	PPB	3000	16	16	***	0	EPAP	Acrylamide
C95	ALLYLAL	PPB	3000	16	16	***	.		Allyl alcohol
C96	CHLORAL	PPB	3000	16	16	***	.		Chloral
C97	CHLACET	PPB	3000	16	16	***	.		Chloroacetaldehyde

TABLE 6. (contd)

-----Constituent List=WAC 173-303-9905-----

CONCODE	CONNAME	ANALUNIT	DETLIMIT	SAMPLES	BELOWDL	ALLBELOW	MAXLIMIT	REGAGEN	FULLNAME
C98	CHLPROP	PPB	3000	16	16	***	.		3-chloropropionitrile
C99	CYANOGN	PPB	3000	16	16	***	.		Cyanogen
H01	DICPROP	PPB	3000	16	16	***	.		Dichloropropanol
H03	ETHCARB	PPB	3000	16	16	***	.		Ethyl carbamate
H04	ETHCYAN	PPB	3000	16	16	***	.		Ethyl cyanide
H05	ETHOXID	PPB	3000	16	16	***	.		Ethylene oxide
H06	ETHMETH	PPB	3000	16	16	***	.		Ethyl methacrylate
H07	FLUOROA	PPB	3000	16	16	***	.		Fluoroacetic acid
H08	GLYCIDY	PPB	3000	16	16	***	.		Glycidylaldehyde
H09	ISOBUTY	PPB	3000	16	16	***	.		Isobutyl alcohol
H10	METZINE	PPB	3000	16	16	***	.		Methyl hydrazine
H11	PROPYLA	PPB	3000	16	16	***	.		N-propylamine
H12	PROPYNO	PPB	3000	16	16	***	.		2-propyn-1-ol
H15	2,4,5-T	PPB	1	14	14	***	.		2,4,5-T
I01	ACETONE	PPB	.	2	0		.		
I02	HEXANE	PPB	0	2	0		.		
I03	MECYPEN	PPB	0	1	0		.		
I04	MEBUPHT	PPB	0	1	0		.		
I28	TAF	PPB	0	2	0		.		
I63	BHT	PPB	.	1	0		.		
I99	UNKNOWN	PPB	0	4	0		.		

Constituent Concentrations

Table 7 presents the simplest data description for those constituents that had at least one value reported above detection limits for the 300 Area Process Trenches. The following information is included in Table 7:

- data base constituent code, constituent name, and analysis units (CONSTIT)
- number of samples analyzed to date (SAMPLES)
- laboratory detection limit (DETLIMIT)
- number of samples below detection limit (BELOWDL)
- maximum permissible limit (MAXLIMIT)
- simple arithmetic mean of all the values (MEAN)
- median, or ordered middle, of all the values (MEDIAN)
- standard deviation of all the values (STDDEV)
- coefficient of variation for all the values (100*STDDEV/MEAN) (COEFFVAR)
- minimum reported value (MINIMUM)
- maximum reported value (MAXIMUM).

The mean, standard deviation, and coefficient of variation statistics were calculated as though the values met the assumptions of simple random sampling. Estimation problems posed by replicates, below detection values, and spatial and temporal variability have not been addressed at this stage.

Two measures of central tendency have been provided to alert the reviewer that a few extreme values for a particular constituent may be making the mean larger than appropriate. The more discrepancy there is between the mean and the median, the more likely it is that one or a few extreme values are in the data and heavily influencing the estimate of the mean. This effect is evident for TOX, coliforms, mercury, iron, copper, and methylene chloride. The coefficient of variation, which is 100 times the ratio of the standard deviation to its mean, serves as a flag for constituents that have very different reported

TABLE 7. Analytical Data, June 1988-May 1986

--------------------Constituent List=Contamination Indicators--------------------

	CONSTIT		SAMPLES	DETLIMIT	BELOWDL	MAXLIMIT	MEAN	MEDIAN	STDDEV	COEFFVAR	MINIMUM	MAXIMUM
191	CONDUCT	UMHO	173	.	0	.	282	267	86.7	30.7	145	566
199	PH		172	.	0	.	7.03	7.1	0.646	9.2	3.9	8.3
C68	TOX	PPB	187	100	158	.	246	30.3	1010	410.0	2.3	9160
C69	TOC	PPB	187	1000	106	.	1100	933	938	85.0	1	8030

--------------------Constituent List=Drinking Water Standards--------------------

CONSTIT			SAMPLES	DETLIMIT	BELOWDL	MAXLIMIT	MEAN	MEDIAN	STDDEV	COEFFVAR	MINIMUM	MAXIMUM
109	COLIFRM	MPN	211	3	195	1	9.82	3	76.4	793.6	0	1100
111	BETA	PCI/L	210	8	4	50	14.7	12	9.16	62.4	0.719	68
181	RADIUM	PCI/L	210	1	198	5	0.0669	0.0452	0.129	192.4	-0.121	0.875
212	LOALPHA	PCI/L	210	4	3	15	15.6	13.9	11.5	73.8	1.31	57.1
A06	BARIUM	PPB	216	6	17	1000	40.6	33.5	54.4	134.0	6	719
A07	CADMIUM	PPB	216	2	201	10	2.13	2	0.618	29.0	2	7
A08	CHROMUM	PPB	216	10	200	50	11.7	10	17	145.5	10	257
A10	SILVER	PPB	216	10	215	50	10	10	0.612	6.1	10	19
A20	ARSENIC	PPB	216	5	199	50	5.25	5	1.55	29.5	5	23
A21	MERCURY	PPB	216	0.1	197	2	0.627	0.1	1.8	287.3	0.1	9.9
A22	SELENUM	PPB	216	5	212	10	5.14	5	1.08	21.1	5	17
A51	LEADGF	PPB	216	5	192	50	5.89	5	4.66	79.0	5	48
C72	NITRATE	PPB	211	500	0	45000	18900	19000	5770	30.5	2900	38000
C74	FLUORID	PPB	211	500	133	1400	576	500	176	30.5	500	1870

TABLE 7. (contd)

Constituent List=Quality Characteristics

CONSTIT		SAMPLES	DETLIMIT	BELOWDL	MAXLIMIT	MEAN	MEDIAN	STDDEV	COEFFVAR	MINIMUM	MAXIMUM
A11	SODIUM PPB	216	100	0	.	15300	14700	5100	33.4	1220	29800
A17	MANGESE PPB	216	5	182	.	8.57	5	25.6	298.5	5	387
A19	IRON PPB	218	50	86	.	256	81	1080	423.2	0	14900
C73	SULFATE PPB	211	500	0	.	21700	18200	9770	45.1	6700	53600
C75	CHLORID PPB	211	500	0	.	14400	11600	10800	75.4	860	72200

Constituent List=Site Specific

CONSTIT		SAMPLES	DETLIMIT	BELOWDL	MAXLIMIT	MEAN	MEDIAN	STDDEV	COEFFVAR	MINIMUM	MAXIMUM
A12	NICKEL PPB	216	10	202	.	11	10	6.98	63.1	10	95
A13	COPPER PPB	216	10	130	1300	22.2	10	39.5	178.0	10	516
A16	ALUMNUM PPB	216	150	169	.	221	150	486	219.6	150	7060
A24	THIOURA PPB	211	206	209	.	208	200	80.6	38.8	200	1090
A64	METHONE PPB	216	10	215	.	9.98	10	0.436	4.4	3.7	11
A67	1,1,1-T PPB	216	10	214	200	10.4	10	4.81	46.1	10	72
A68	1,1,2-T PPB	216	10	214	.	10.1	10	1	10.0	10	23
A69	TRICENE PPB	216	10	212	5	9.73	10	1.43	14.7	2.4	14
A70	PERCENE PPB	216	10	195	.	10.4	10	4.73	45.5	2	55
C70	CYANIDE PPB	211	10	208	.	10	10	0.314	3.1	10	14
C78	SULFIDE PPB	211	1000	206	.	1020	1000	167	16.4	1000	3000
C80	AMMONIU PPB	211	50	69	.	120	118	79.2	66.0	30	360

TABLE 7. (contd)

Constituent List=Tag-alongs

CONSTIT		SAMPLES	DETLIMIT	BELOWDL	MAXLIMIT	MEAN	MEDIAN	STDDEV	COEFFVAR	MINIMUM	MAXIMUM
A14	VANADUM PPB	216	5	110	.	8.05	5	5.45	67.7	5	36
A18	POTASUM PPB	216	100	3	.	3660	3530	1500	38.8	100	8610
A80	CHLFORM PPB	116	10	24	.	16.3	13	8.02	49.1	4.1	42
A93	METHYCH PPB	66	10	14	.	787	115	3380	428.9	3	27500
C76	PHOSPHA PPB	211	1000	210	.	1010	1000	154	15.3	1000	3240

Constituent List=WAC 173-303-9905

CONSTIT		SAMPLES	DETLIMIT	BELOWDL	MAXLIMIT	MEAN	MEDIAN	STDDEV	COEFFVAR	MINIMUM	MAXIMUM
A04	ZINC PPB	16	5	5	.	31.5	14	44.4	141.0	5	176
A05	CALCIUM PPB	16	50	0	.	31900	29500	12700	39.8	17900	51700
A23	THALIUM PPB	16	10	15	.	10	10	0	0.0	10	10
B40	BIS2EPH PPB	20	10	16	.	14.9	10	12.3	82.8	10	50
I01	ACETONE PPB	2	.	0	.	20	20	8.49	42.4	14	26
I02	HEXANE PPB	2	0	0	.	60	60	0	0.0	60	60
I03	MECYPEN PPB	1	0	0	.	16	16	.	.	16	16
I04	MEBUPHT PPB	1	0	0	.	9	9	.	.	9	9
I28	TAF PPB	2	0	0	.	61.5	61.5	41.7	67.8	32	91
I63	BHT PPB	1	.	0	.	3.2	3.2	.	.	3.2	3.2
I99	UNKNOWN PPB	4	0	0	.	17.8	13	11.7	65.9	10	35

values over the sampling conditions measured in the 300 Area Process Trenches monitoring network. This variability may be caused by a few discrepant values, seasonal or temporal cycles or changes, or the fact that different wells in the network will generally give a unique range of values. The minimum and maximum are used as a quick summary of the range of values that were reported over all sampling conditions. It can be seen that gross alpha and gross beta both exceeded their screening limit for Interim Primary Drinking Water Standards; however, subtraction of uranium would probably bring gross alpha to below the limit. Chromium, mercury, selenium, and fluoride were reported as being above Interim Primary Drinking Water Standards at least once.

Further summaries of the data classified by individual wells and by wells and sampling date are included in Appendix G as are listings of the raw data collected during the past year for those constituents with at least one value reported as above detection limit.

Table 8 presents well ranking information for "major constituents," which have been defined as those constituents that have been reported above detection limits for at least half of the wells in the 300 Area Process Trenches monitoring network. For each constituent, each well is given a rank, from a 1 for the lowest concentration up to a 16 for the highest concentration. The resulting rankings are given for each constituent, added up for the constituents in each constituent list, and finally summed for all the major constituents. There are three tables, one each for ranking the maximum, the mean, and the median. These tables are useful for quickly summarizing the relative contamination at various wells in the network. For example, one conclusion that seems apparent for those wells near the process trenches is that well 399-1-5 regularly appears to be the most contaminated, with wells 399-1-2, -1-3, and -1-7 having some of the higher contamination levels and wells 1-4 and 1-6 having some of the lower levels of contamination on this basis. These tables are only quick overall summaries and should be used judiciously in making any judgments. As an extreme example, well 399-1-8 is one of the cleanest wells overall based on both the maximums and means, but has the lowest overall water quality based on median concentrations.

TABLE 8. Analytical Data, June 1986-May 1986

Constituent	1-1	1-2	1-3	1-4	1-5	1-6	1-7	1-8	2-1	3-10	3-7	4-1	4-7	8-2	S19-E13	S30E15A
Ranked Statistic=MAXIMUM Constituent List=Contamination Indicators																
191 CONDUCT UMHO	3	4	11	2	6	1	12	8	7	5	9	10	13	14	15	16
199 PH	3.5	5	6	3.5	8.5	2	8.5	14	1	8.5	8.5	13	15.5	11.5	15.5	11.5
C68 TOX PPB	6	8	2	10	13	11	12	14	9	5	1	4	3	7	16	15
C69 TOC PPB	10	11	13	7	16	4	14	12	15	5	2	8	1	3	9	6
Sub-total	22.5	28	32	22.5	43.5	18	46.5	48	32	23.5	20.5	35	32.5	35.5	55.5	48.5
Ranked Statistic=MAXIMUM Constituent List=Drinking Water Standards																
109 COLIFRM MPN	12.5	4	4	16	9	4	4	4	14	9	4	12.5	4	15	9	11
111 BETA PCI/L	4	7	14	1	11	9	13	5	8	10	12	6	15	2	3	16
181 RADIUM PCI/L	13	16	5	14	15	1	2	9	3	6	4	11	7	12	8	10
212 LOALPHA PCI/L	11	5	14	4	12	10	15	7	9	13	8	6	16	1	3	2
A06 BARIUM PPB	12	16	6	1	15	3	10	2	7	13	9	11	14	4	5	8
A07 CADMIUM PPB	8	8	3	12.5	15	8	14	3	11	8	12.5	3	3	8	3	16
A08 CHROMUM PPB	6.5	4	12	8.5	4	16	13	4	4	15	4	11	14	4	4	10
A20 ARSENIC PPB	15	11.5	13	3.5	10	14	3.5	3.5	3.5	3.5	16	9	7	11.5	8	3.5
A51 LEADGF PPB	4.5	12	16	4.5	9	4.5	4.5	4.5	4.5	15	4.5	14	4.5	13	11	10
C72 NITRATE PPB	8	16	10.5	10.5	12	9	14	3	15	13	8	1	7	5	4	2
C74 FLUORID PPB	13	12	8	6	16	1	10	7	4	14	9	5	15	2	3	11
Sub-total	107.5	111.5	105.5	81.5	128	79.5	103	52	83	119.5	91	89.5	106.5	77.5	61	99.5
Ranked Statistic=MAXIMUM Constituent List=Quality Characteristics																
A11 SODIUM PPB	2	15	11	1	8.5	5	10	16	4	3	13	7	12	8.5	14	6
A17 MANGESE PPB	5	10.5	10.5	5	5	15	2	14	13	8.5	8.5	16	12	2	2	7
A19 IRON PPB	6	3	5	7	14	12	8	1	15	10	13	16	4	9	11	2
C73 SULFATE PPB	5	9	6	2	7.5	7.5	4	1	13	10	14	12	15	11	16	3
C75 CHLORID PPB	8	11	15	7	16	3	14	13	12	6	5	4	9	2	10	1
Sub-total	26	48.5	47.5	22	51	42.5	38	45	57	37.5	53.5	55	52	32.5	53	19
Ranked Statistic=MAXIMUM Constituent List=Site Specific																
A12 NICKEL PPB	9	9	4	4	15	16	4	4	4	12	9	13	14	11	4	4
A13 COPPER PPB	11	10	12.5	15	16	14	12.5	9	5	3	3	8	7	1	6	3
A16 ALUMNUM PPB	6	13	14	3.5	15	2	8.5	1	3.5	11	12	16	7	5	10	8.5
A70 PERCENE PPB	4.5	10.5	12	4.5	14	4.5	15	4.5	13	9	16	10.5	4.5	4.5	4.5	4.5
C80 AMMONIU PPB	9.5	14	4	4	15.5	2	7.5	4	11	13	9.5	7.5	15.5	6	1	12
Sub-total	40	56.5	46.5	31	75.5	38.5	47.5	22.5	36.5	48	49.5	55	48	27.5	25.5	32
Ranked Statistic=MAXIMUM Constituent List=Tag-alongs																
A14 VANADUM PPB	12	14	4	2	7.5	6	4	1	4	7.5	15	13	10	11	16	9
A18 POTASUM PPB	2.5	8	5	1	6	4	2.5	10	7	9	14	11	12	13	15	16
A80 CHLFORM PPB	12	8.5	14	10.5	10.5	13	7	3	6	1	8.5	4	2	.	5	.
A93 METHYCH PPB	5	8	2	11	13	10	14	12	6	4	1	9	3	7	16	15
Sub-total	31.5	38.5	25	24.5	37	33	27.5	26	23	21.5	38.5	37	27	31	52	40
Total	227.5	283	256.5	181.5	335	211.5	262.5	193.5	231.5	250	253	271.5	266	204	247	239

TABLE 8. (contd)

---------------------------Ranked Statistic=MEAN   Constituent List=Contamination Indicators---------------------------

Constituent	1-1	1-2	1-3	1-4	1-5	1-6	1-7	1-8	2-1	3-10	3-7	4-1	4-7	8-2	S19-E13	S30E15A
191 CONDUCT UMHO	3	4	8	2	5	1	9	12	6	7	10	11	13	14	15	16
199 PH	7	8	5	4	6	2	11	15	1	3	10	12	13	14	16	9
C86 TOX PPB	6	7	3	10	12	13	11	14	9	4	1	5	2	8	15	16
C69 TOC PPB	6	9	13.5	13.5	16	7	15	10	12	2	4	5	1	3	8	11
Sub-total	22	28	29.5	29.5	39	23	46	51	28	16	25	33	29	39	54	52

---------------------------Ranked Statistic=MEAN   Constituent List=Drinking Water Standards---------------------------

Constituent	1-1	1-2	1-3	1-4	1-5	1-6	1-7	1-8	2-1	3-10	3-7	4-1	4-7	8-2	S19-E13	S30E15A
109 COLIFRM MPN	12	5	5	16	1	5	5	5	14	9	5	13	5	15	10	11
111 BETA PCI/L	4	6	16	3	12	2	15	9	10	11	7	8	14	1	5	13
181 RADIUM PCI/L	15	10	3	13	16	2	1	9	4	8	5	12	6	14	11	7
212 LOALPHA PCI/L	13	5	16	4	10	8	15	11	7	12	6	9	14	1	3	2
A06 BARIUM PPB	12	16	3	1	9	2	5	4	14	11	7	8	13	6	10	15
A07 CADMIUM PPB	10	6.5	3	12.5	14	8.5	15	3	11	6.5	12.5	3	3	8.5	3	16
A08 CHROMUM PPB	4.5	4.5	13.5	9	4.5	16	15	4.5	4.5	12	4.5	13.5	11	4.5	4.5	10
A20 ARSENIC PPB	15	10	12	3.5	11	14	3.5	3.5	3.5	3.5	16	8.5	7	13	8.5	3.5
A51 LEADGF PPB	4.5	14	15	4.5	9	4.5	4.5	4.5	4.5	16	4.5	13	4.5	12	10	11
C72 NITRATE PPB	11.5	11.5	15	10	5	9	14	2.5	16	13	4	1	6	8	7	2.5
C74 FLUORID PPB	13	12	9	6	16	1	10	11	3	14	8	5	15	2	4	7
Sub-total	114.5	100.5	110.5	82.5	107.5	72	103	67	91.5	116	79.5	94	98.5	85	76	98

---------------------------Ranked Statistic=MEAN   Constituent List=Quality Characteristics---------------------------

Constituent	1-1	1-2	1-3	1-4	1-5	1-6	1-7	1-8	2-1	3-10	3-7	4-1	4-7	8-2	S19-E13	S30E15A
A11 SODIUM PPB	3	6	11	2	7	1	10	16	5	4	12	9	14	13	15	8
A17 MANGESE PPB	4	7	10.5	6	5	13	2	15	14	9	10.5	16	12	2	2	8
A19 IRON PPB	9	6.5	5	10	14	11	4	1	15	12	13	16	3	8	6.5	2
C73 SULFATE PPB	7	9	6	2	3	4	5	1	10	11	14	12	15	13	16	8
C75 CHLORID PPB	6	7	15	3	13	2	16	14	12	8	9	5	10	4	11	1
Sub-total	29	35.5	47.5	23	42	31	37	47	56	44	58.5	58	54	40	50.5	27

---------------------------Ranked Statistic=MEAN   Constituent List=Site Specific---------------------------

Constituent	1-1	1-2	1-3	1-4	1-5	1-6	1-7	1-8	2-1	3-10	3-7	4-1	4-7	8-2	S19-E13	S30E15A
A12 NICKEL PPB	8.5	8.5	4	4	15	16	4	4	4	12	10	14	13	11	4	4
A13 COPPER PPB	9	10	13	15	16	14	12	11	7	2	4	8	6	1	5	3
A16 ALUMNUM PPB	6	14	15	3	13	2	7	1	4	11	10	16	9	5	12	8
A70 PERCENE PPB	9.5	5	2	3	14	4	15	9.5	13	9.5	16	6	9.5	1	9.5	9.5
C80 AMMONIU PPB	13	14	5	6	12	2	4	1	9	15.5	10	8	15.5	7	3	11
Sub-total	46	51.5	39	31	70	38	42	26.5	37	50	50	52	53	25	33.5	35.5

---------------------------Ranked Statistic=MEAN   Constituent List=Tag-alongs---------------------------

Constituent	1-1	1-2	1-3	1-4	1-5	1-6	1-7	1-8	2-1	3-10	3-7	4-1	4-7	8-2	S19-E13	S30E15A
A14 VANADUM PPB	12	15	5	4	7	6	3	1	2	8	10.5	13	10.5	14	16	9
A18 POTASUM PPB	3	8	6	1	5	2	4	13	7	9	11	10	12	14	15	16
A80 CHLFORM PPB	14	9	12	10	13	11	7	2	6	1	8	4	3	.	5	.
A93 METHYCH PPB	6	7	3	15	4	12	10	13	9	5	1	8	2	11	16	14
Sub-total	35	39	26	30	29	31	24	29	24	23	30.5	35	27.5	39	52	39
Total	246.5	254.5	252.5	196	287.5	195	252	220.5	236.5	249	243.5	272	262	228	266	251.5

TABLE 8. (contd)

Ranked Statistic=MEDIAN   Constituent List=Contamination Indicators

Constituent			1-1	1-2	1-3	1-4	1-5	1-6	1-7	1-8	2-1	3-10	3-7	4-1	4-7	8-2	S19-E13	S30E15A
191	CONDUCT	UMHO	3	5	7	2	4	1	9	10	6	8	11	12	13	14	15	16
199	PH		7	10	4.5	3	4.5	2	8.5	15	1	6	13.5	11.5	11.5	13.5	16	8.5
C68	TOX	PPB	12	11	10	14	16	13	15	4	9	5	8	7	6	3	1	2
C69	TOC	PPB	5	6	10	16	14.5	9	14.5	7	11	3	4	1	2	8	12	13
Sub-total			27	32	31.5	35	39	25	47	36	27	22	36.5	31.5	32.5	38.5	44	39.5

Ranked Statistic=MEDIAN   Constituent List=Drinking Water Standards

Constituent			1-1	1-2	1-3	1-4	1-5	1-6	1-7	1-8	2-1	3-10	3-7	4-1	4-7	8-2	S19-E13	S30E15A
109	COLIFRM	MPN	8	8	8	8	8	8	8	8	16	8	8	8	8	8	8	8
111	BETA	PCI/L	3	8	15	6	13	2	16	10	11	12	5	9	14	1	7	4
181	RADIUM	PCI/L	16	5	2	3	15	4	1	9	6	11	14	10	7	12	13	8
212	LOALPHA	PCI/L	13	7	16	6	4	8	14	11	9	12	5	10	15	1	3	2
A06	BARIUM	PPB	9.5	3	6	1.5	4	1.5	5	7.5	15	13	9.5	7.5	12	11	14	16
A07	CADMIUM	PPB	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5
A08	CHROMUM	PPB	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5
A20	ARSENIC	PPB	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5
A51	LEADGF	PPB	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5
C72	NITRATE	PPB	11.5	9	15	14	6	11.5	13	2	16	10	4	1	5	8	7	3
C74	FLUORID	PPB	13	6	6	6	16	6	14	15	6	6	6	6	12	6	6	6
Sub-total			108	80	102	78.5	100	75	105	96.5	113	106	85.5	85.5	107	81	92	81

Ranked Statistic=MEDIAN   Constituent List=Quality Characteristics

Constituent			1-1	1-2	1-3	1-4	1-5	1-6	1-7	1-8	2-1	3-10	3-7	4-1	4-7	8-2	S19-E13	S30E15A
A11	SODIUM	PPB	4	5	11	2	6	1	12.5	16	7	3	10	9	14	12.5	15	8
A17	MANGESE	PPB	8	8	8	8	8	8	8	16	8	8	8	8	8	8	8	8
A19	IRON	PPB	8	10	5	13	14	2	3	6	11	16	12	15	7	9	4	1
C73	SULFATE	PPB	7	10.5	6	3	2	4.5	4.5	1	9	10.5	14	12	15	13	16	8
C75	CHLORID	PPB	6	7	15	3	10	2	16	14	13	8	9	5	11	4	12	1
Sub-total			33	40.5	45	29	40	17.5	44	53	48	45.5	53	49	55	46.5	55	26

Ranked Statistic=MEDIAN   Constituent List=Site Specific

Constituent			1-1	1-2	1-3	1-4	1-5	1-6	1-7	1-8	2-1	3-10	3-7	4-1	4-7	8-2	S19-E13	S30E15A
A12	NICKEL	PPB	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5
A13	COPPER	PPB	10	9	15.5	13	11	13	13	15.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
A16	ALUMNUM	PPB	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5
A70	PERCENE	PPB	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5
C80	AMMONIU	PPB	12	14	5	11	13	4	1	9.5	3	16	6	9.5	15	8	2	7
Sub-total			47.5	48.5	46	49.5	49.5	42.5	39.5	50.5	33	46	36	39.5	45	38	32	37

Ranked Statistic=MEDIAN   Constituent List=Tag-alongs

Constituent			1-1	1-2	1-3	1-4	1-5	1-6	1-7	1-8	2-1	3-10	3-7	4-1	4-7	8-2	S19-E13	S30E15A
A14	VANADUM	PPB	5.5	12	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	11	13.5	13.5	15	16	5.5
A18	POTASUM	PPB	2	7	6	1	5	3	4	13	9	8	11	12	10	14	15	16
A80	CHLFORM	PPB	14	12	9.5	7.5	13	11	7.5	3	9.5	1	5	4	2	.	6	.
A93	METHYCH	PPB	10	8	5	16	2	14	6	15	12	7	3	9	4	11	1	13
Sub-total			31.5	39	26	30	25.5	33.5	23	36.5	36	21.5	30	38.5	29.5	40	38	34.5
Total			247	240	250.5	222	254	193.5	258.5	272.5	257	241	241	244	269	244	261	218

Graphs of the Data

The data collected over the first year of sampling at the 300 Area Process Trenches monitoring network are graphically presented in Appendix H. These plots present time lines for each well, with the well denoted on the graph by an abbreviation of its name. To minimize overplotting, the wells have been split into two groups. The first group consists of those wells most immediately adjacent to the process trenches, (i.e., wells 399-1-1 to 399-1-8). The second group consists of the remaining wells, which are more distant.

General Observations

Review of the raw data, summary tables, and plots of the data lead to several general observations. For the most part, these are particular phenomena that show behavior of one or more wells that appear to be different from most of the other wells in the network and are therefore worthy of special comment.

The first observation relates to the general response of the network to what is apparently a sudden input of contaminants to the process trenches. As one example, a plot of copper concentrations (page H.27) shows a peak in early January. This peak is highest in well 399-1-5 and appears almost simultaneously, but to a lesser extent in wells 399-1-4 and 399-1-6. This suggests a local mounding that disperses the copper radially from the trenches. Also, wells 399-1-2, -1-3, -1-7, and -1-8 show slower and smaller peaking effects indicating a downgradient dispersion. Note that wells 399-1-3, -1-7, and -1-8 are a cluster, and depth of the much lower results for 399-1-8 suggest that it is not as affected by this small perturbation, possibly because of its lower completion. In addition, the copper has yet to noticeably appear at any other wells in the general downgradient direction. A similar and equally minor perturbation at almost the same time for chloride (page H.25) gives a slightly different interpretation as the chloride apparently did not reach wells 399-1-4 and 399-1-6 but does show signs of possibly having reached well 399-2-1. The possibility for another such pulse appears in the fluoride data (page H.20).

The second general observation relates to the apparently different water chemistry exhibited by well 399-1-8 when compared to the other wells near the process trenches. For example, well 399-1-8 has markedly different constituent concentrations for sodium, potassium, sulfate, manganese, and nitrate. This, along with the observations made in the preceding paragraph, indicate that the open interval for well 399-1-8 is sampling a different aquifer layer.

Another interesting phenomenon is the behavior of wells 399-1-3, 399-1-7, and -4-7 for gross alpha (page H.10) and gross beta (page H.8). The levels of both of these constituents appear to be elevated in these two wells relative to the other wells in the vicinity indicating that the process trenches are not the source. Also, gross beta seems to be on a downward trend while gross alpha seems to be increasing.

A trend is also apparent in the chloroform data (page H.40). The chloroform concentrations in nearly all of the wells have shown a marked decrease with time and are now close to the detection limit of 10 ppb.

Certain constituents, such as potassium (page H.39), sodium (page H.21), and conductivity (page H.3), are lower in the wells nearest the trenches than in wells further away. This is apparently due to the difference in the quality of the ground water and the discharged process water, which is essentially river water.

QC Program Results

The scope of the QC effort was described in a previous section of this chapter. The results obtained in UST's internal QC effort, as well as the results obtained for interlaboratory comparisons and spiked samples, are described in the following sections.

Performance Evaluation

Results of both internal and external QC efforts indicate that the analytical data being provided by the laboratory are acceptable and can be used for determining impacts of the 300 Area Process Trenches on the environment. As with any analytical program, some problems have been encountered; however, the overall effect of these problems is thought to have been small and is not expected to cause significant problems with data evaluation and interpretation.

Results of UST's Internal QC Effort

As mentioned previously, matrix spikes, blanks, and surrogates are used by UST to provide information on the quality of the analytical work. This information may then be used to determine if changes should be made to the analytical methods. Control charts that show data for these QC samples are given by UST in their QC report (Hembree and Rao 1986). A summary of this information follows.

Blanks. Blank samples prepared with deionized water and the appropriate reagents for each analysis are used to ensure that glassware and reagents are not contaminated with the analytes of interest. Control charts for the blanks show generally good results (less than detection limit). Some high scattered values for TOC blanks were found in a period when reagent water was stored in plastic jugs. However, reagent water is not added to the samples, so the analytical results should not have been affected. High blank concentrations for sodium obtained in early months appear to have been caused by sodium leaching from the beakers. Sample concentrations are typically 10,000 to 25,000 ppb, compared to the highest blank of 552 ppb. Hence, the sample data should not be affected significantly.

Matrix Spikes. Matrix spikes are prepared by adding known amounts of constituents to field samples. Recoveries obtained with matrix spikes are used to estimate overall constituent recovery. In general, the matrix spike recoveries reported by UST are acceptable. There are some cases, as described below, in which matrix spike recoveries fall outside the normal acceptance range.

The scatter in recoveries is sometimes large, when the concentration of the analyte is high. This situation occurs in analyses of sodium, potassium, calcium, nitrate, and sulfate.

In the anion analysis, the fluoride recoveries have sometimes been troublesome. Dilution, required because of high concentrations of other ions, has led to large errors. Additionally, fluoride by ion chromatography is subject to interferences by the presence of organics. Chloride recoveries are sometimes excessively high when the nitrate concentration is high because the chloride peak gets lost in the nitrate tail. A couple of phosphate spikes have been out of range, possibly caused by the matrix.

Low recoveries of osmium and antimony have been noted and are being investigated by UST.

Matrix spike recoveries for a few volatile organic compounds, ABNs, and herbicides have been high for various reasons. The analytical results have not been affected because the concentrations of analytes in the samples were less than the detection limit.

TOX and TOC recoveries were found to be above limits in 3 out of 40 analyses and 6 out of 40 analyses, respectively. No definable reason has been provided by UST.

Surrogate Recovery. A surrogate is a compound, similar in behavior to the analyte of interest, added to the sample before analysis to monitor the efficiency of extraction. Some intermittent baseline shift in analysis for volatile organic chemicals has occurred but has not affected results because there were no peaks in those samples. Scatter was observed initially in the surrogate recovery data for ABNs, but the data became more consistent when a continuous extractor was used in place of a separatory funnel.

Radioactivity. Spike data (radiochemical yield) for alpha and beta analyses are acceptable. The analysis for total radium shows a bias on the high side, by approximately 20%. UST has taken corrective action, as described in a later section.

Interlaboratory Comparisons Conducted Using Field Samples

As described previously, interlaboratory comparisons have been routinely conducted using replicate field samples. Comparisons conducted for selected constituents, including anions, metals, and volatile organics, have shown that UST's results are generally comparable to those obtained from other laboratories. Details of the evaluations conducted are provided below according to constituent type.

Anions. Interlaboratory comparisons have been conducted for five anions: fluoride, chloride, nitrate, phosphate, and sulfate. The best results for use in interlaboratory comparisons have been provided by chloride, nitrate, and sulfate, because the values for fluoride and phosphate in the replicate sample sets used for this effort have usually been below the detection limits for one or more of the participating laboratories.

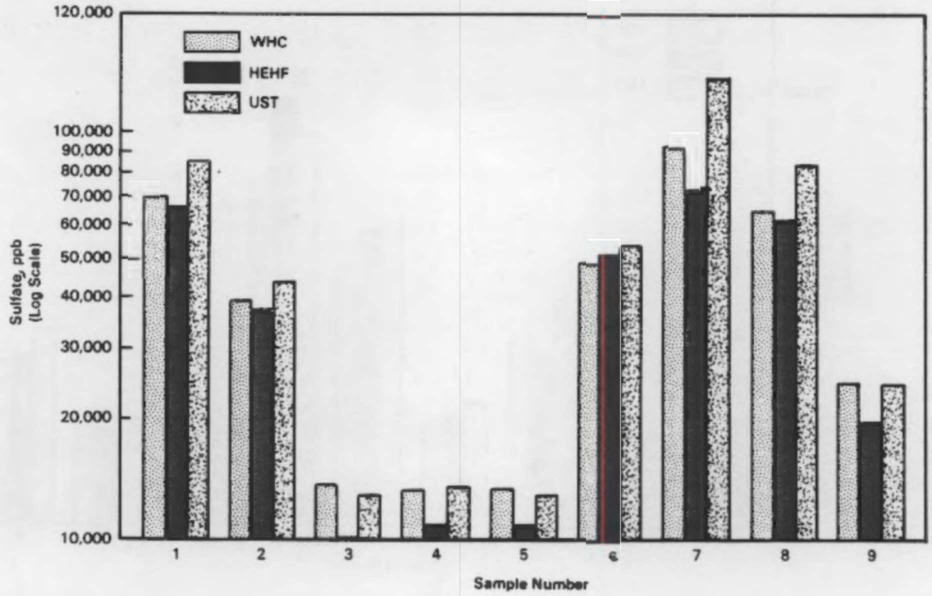
Evaluation of the data received from the three participating laboratories indicates that agreement is good, although in some cases the data have shown statistically significant differences. The results for one set of comparisons conducted for chloride, nitrate, and sulfate are shown in Figures 16 through 18, respectively. Additional information concerning these comparisons, including the data tables for each sample set and results of evaluation with EPA performance limits, are contained in Appendix I.

Metals. Interlaboratory comparisons have been conducted for six metals: barium, cadmium, chromium, copper, lead, and sodium. Cadmium and lead in the replicate sample sets used for this effort have almost always been below the detection limit for both of the participating laboratories, making comparisons for those constituents less informative. Data for chromium are more suitable for comparison, and one set of results from February 1986 is presented in Figure 19.

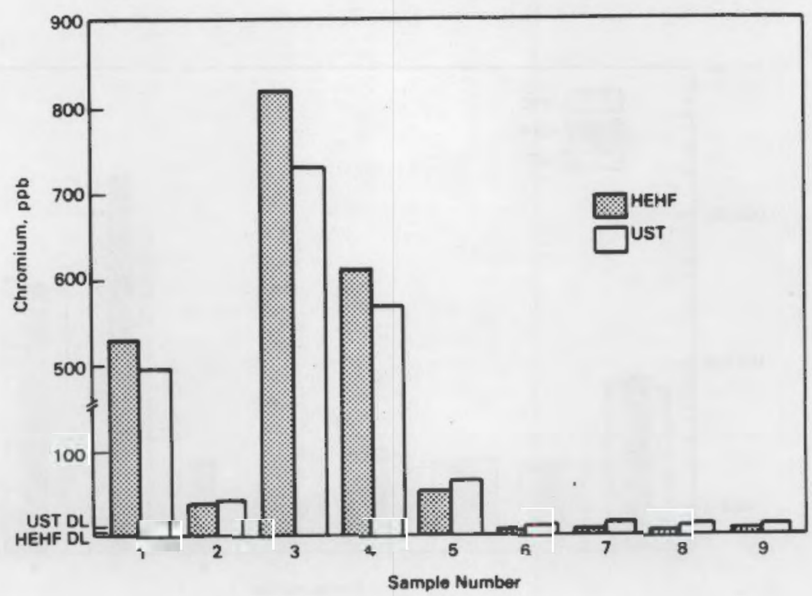
The two participating laboratories have shown generally good agreement for all of the metals except barium. The reason for the disparity in the barium results is currently being investigated, but is believed to result from matrix interference or a difference in the analytical methods used; the ICP method used by UST is thought to be less likely to run into interference problems than atomic absorption spectroscopy used by HEHF. Additional information on the comparisons for metals is included in Appendix I.

Volatile Organic Chemicals

Interlaboratory comparisons have been conducted for three volatile organic chemicals: 1,1,1-trichloroethane, chloroform, and perchloroethylene. Results for trichloroethane and perchloroethylene in the replicate sample sets used for this effort have nearly always been below UST's detection limit of 10 ppb; therefore, the most informative comparisons are those conducted for chloroform.



<u>FIGURE 18.</u> Interlaboratory Comparison Results for Sulfate



<u>FIGURE 19.</u> Interlaboratory Comparison Results for Chromium, February 1986

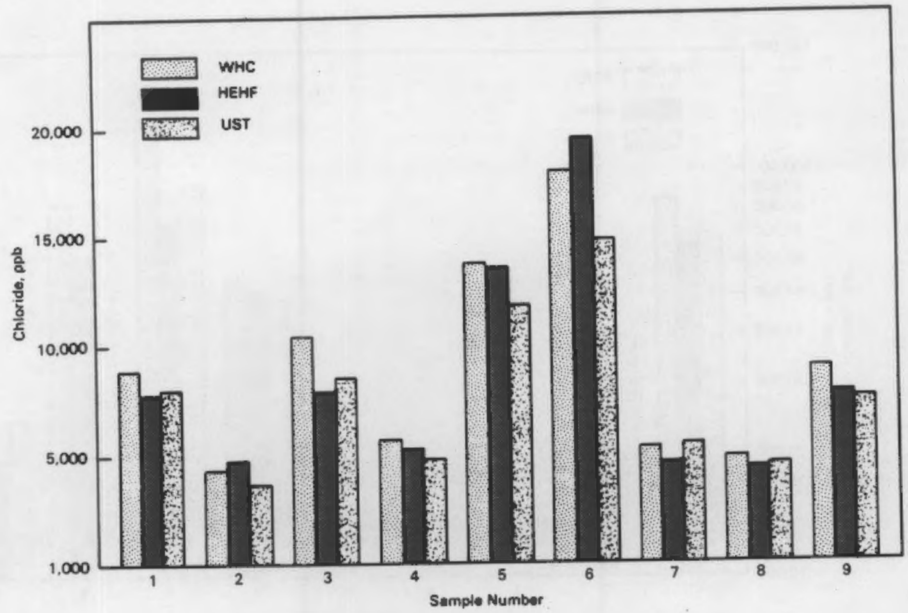


FIGURE 16. Interlaboratory Comparison Results for Chloride

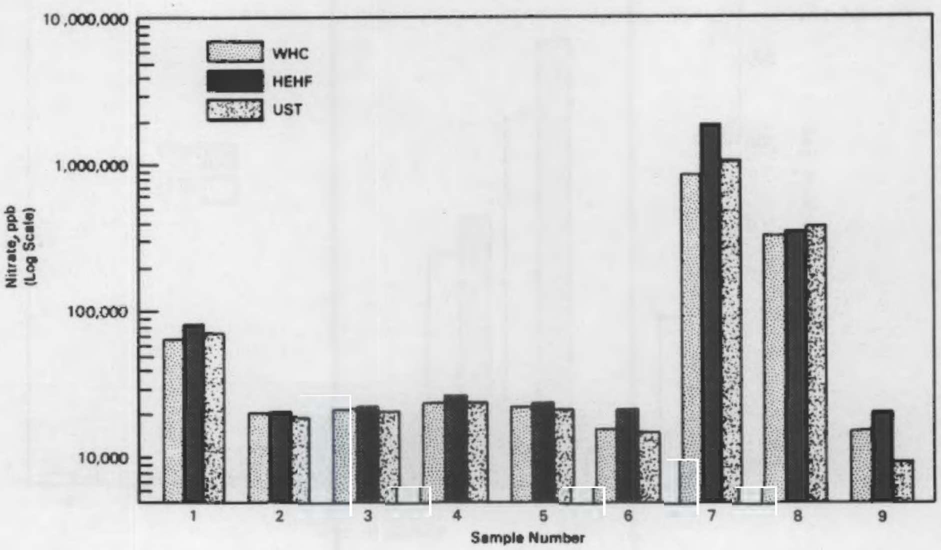


FIGURE 17. Interlaboratory Comparison Results for Nitrate

The results obtained for chloroform by the two participating laboratories have generally shown good agreement, particularly in more recent months. In the first set of replicate samples analyzed for volatiles (collected in November/December 1985), the results from the PNL laboratory were generally 20 to 50% higher than the results from the UST laboratory. Agreement between the laboratories has improved considerably with time, as indicated by the data tables and EPA performance limits in Appendix I. The data for one set of chloroform comparisons (conducted with data from February 1986) are shown in Figure 20. The differences between the PNL and UST results for all samples in this set were within acceptable limits (defined as two standard deviations based on EPA Performance Evaluation Study regressions).

<u>Spiked Samples Prepared by PNL</u>

In general, UST did an excellent job of identifying and quantifying components of the first quarterly submission of spiked samples. The performance on the analysis of ions was the main apparent weakness. On receiving the results from the first submittal of spiked samples, UST changed the dilution procedure for anion analyses.

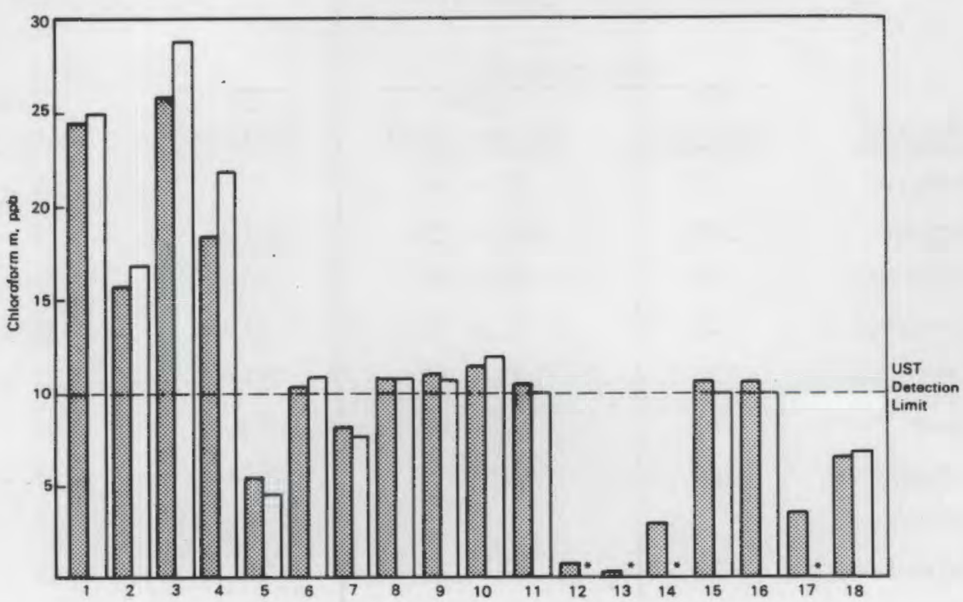


FIGURE 20. Interlaboratory Comparison Results for Chloroform, February 1986

The results from UST, grouped by constituent type, are compared with a target range in the following tables. The target ranges are based on EPA Performance Evaluation Studies. Results that are outside the target range are flagged with an asterisk (*) and discussed below.

Metals. The results of the January and April 1986 analyses for metals are shown in Table 9. The January analyses were within range, except for silver, which is the most likely metal to plate out. A call to ERA, the sample vendor, indicated that addition of acid preservative would be desirable for metal samples. UST indicated that it would acidify the remaining sample material and run the test again. However, it is not known at what point in the sample preparation the silver may have been lost.

Results of the second set of quarterly spiked samples were not as good, with 7 out of 10 metals analyses outside the target range. The results for the three metals analyzed by GFAA (i.e, arsenic, selenium, and lead), were all outside limits, with one constituent above and two below the target range. The

TABLE 9. Analytical Results of Spiked Samples Containing Metals, January and April 1986

	January 1986		April 1986	
Metals	UST Analysis	Target Range (ppb)	UST Analysis	Target Range (ppb)
Arsenic	42	36 - 56	67*	99 - 125
Barium	228	210 - 250	307	273 - 333
Cadmium	30	20 - 34	23	22 - 28
Chromium	45	31 - 53	47*	37 - 45
Iron	134	123 - 151	317*	219 - 267
Lead	71	62 - 90	73.2*	55 - 69
Manganese	125	111 - 151	158*	121 - 147
Mercury	1.0	1.0 - 1.5	6.15*	3.9 - 4.9
Selenium	23	17 - 33	28.7*	46 - 56
Silver	13*	78 - 106	25	22 - 30

* This result is outside of the target range.

results for four out of seven of the metals analyzed by ICP were above the target range. UST has been contacted concerning the apparent problem and is investigating the situation.

Ions. The results of anion analyses conducted on the spiked samples for January, which were analyzed by both UST and WHC, are shown in Table 10. Although the spiked samples were prepared primarily to check UST's performance, leftover aliquots were submitted to WHC. Information on WHC's performance on analysis of spiked samples was of interest because of participation of that laboratory in the interlaboratory comparisons.

For the January sample set, UST's results for fluoride and sulfate were out of the target range. When UST was questioned about the results for these constituents, the lab sheets were examined, and the analysis values were revised, based on a previous dilution. Still, neither of these analyses reflect the optimum dilution. The dilution procedure has since been modified. The anion analyses by WHC were within the target range in all cases.

April data for the ion analyses are shown in Table 11. The analyses provided by UST for sulfate were acceptable, but the values for fluoride and nitrate were slightly high. The April data from WHC were all within the target range.

TABLE 10. Analytical Results of Spiked Samples Containing Anions, January 1986.

Ions	UST Analysis	WHC Analysis	Target Range
Fluoride	3,357*(a)	3,500	3,400 - 4,200
Nitrate	17,900	17,600	15,900 - 20,400
Chloride	500	100	---(b)
Sulfate	53,760*(a)	51,000	42,000 - 52,000
Phosphate	1,000	200	---(b)

* This result is outside of the target range.

(a) Revised value, taken from a previous dilution (ten times more concentrated than that from which the original reported values were taken). Original reported values: 3030 ppb fluoride and 41,800 ppb sulfate.

(b) Target range not provided by the sample vendor.

TABLE 11. Analytical Results of Spiked Samples Containing Anions, April 1986.

Ions	UST Analysis	WHC Analysis	Target Range
Fluoride	2,020*	1,420	1,400 - 2,000
Nitrate	20,600*	18,800	17,300 - 19,900
Chloride	500	<300	---(a)
Sulfate	64,300	60,300	53,000 - 73,000
Phosphate	1,000	<500	---(a)

* This result is outside of the target range.
(a) Target range not provided by the vendor.

Pesticides and Herbicides. Tables 12 and 13 show that the pesticides and herbicides analyzed were within the target range in all cases. However, because the results for 2,4-D and 2,4,5-TP Silvex in the January analysis were below the UST contractual detection limits, the results were reported by telephone to PNL, and do not appear in the data base. Concentrations of endrin and lindane found in the April sample are also below the contractual detection limits, thus are not in the data base.

Volatile Organic Compounds. The results of analysis (by UST and PNL) of the halomethane sample submitted in January are shown in Table 14. All results obtained for the January samples were satisfactory. The PNL laboratory did not provide results for three of the constituents because of a lack of standards. These standards have now been ordered.

The UST result for bromoform is not contained in the data base, because it was below the UST detection limit.

The results of the April analysis, shown in Table 15, indicate concentrations somewhat below the target range. However, this is likely because of problems encountered during preparation of the spiked samples; i.e., a septum was perforated when solution was injected into the vial. This procedure will not be used in the future.

TABLE 12. Analytical Results of Spiked Samples Containing Pesticides and Herbicides, January 1986.

Pesticides	UST Analysis	Target Range
2,4-D	0.26[a]	0.19 - 1.0
2,4,5-TP silvex	0.85[a]	0.45 - 2.5
Toxaphene	5.2	3.1 - 8.5

(a) Result below detection level; not reported in data base.

TABLE 13. Analytical Results of Spiked Samples Containing Pesticides and Herbicides, April 1986.

Pesticides	UST Analysis	Target Range
Endrin	0.49[a]	0.24 - 0.88
Methoxychlor	2.35	1.7 - 4.5
Lindane	0.65[a]	0.48 - 0.96

(a) Result below detection level; not reported in data base.

TABLE 14. Analytical Results of Spiked Samples Containing Volatile Organic Compounds (Halomethanes), January 1986.

Volatile Organics	UST Analysis	PNL Analysis	Target Range
Chloroform	16	17.6	11 - 23
Bromodichloromethane	9.6	---[a]	5.8 - 13
Chlorodibromomethane	5.3	---[a]	2.0 - 8.0
Bromoform	10	---[a]	1.6 - 3.4

(a) PNL did not analyze for this compound because the GC/EC unit was not set up for it. To solve this problem, standards have been ordered.

TABLE 15. Analytical Results of Spiked Samples Containing Volatile Organic Compounds (Halomethanes), April 1986.

Volatile Organics	UST Analysis	PNL Analysis	Target Range[a]
Chloroform	9.9*	7.33	11 - 21
Bromodichloromethane	22*	---[b]	23 - 46
Chlorodibromomethane	8.3*	---[b]	10 - 17.5
Bromoform	20	---[b]	17.5 - 35

* This result is outside of the target range.

(a) Problems were encountered with capping this batch; the top was perforated, very likely causing loss of volatiles.

(b) PNL did not analyze for this compound because the GC/EC unit was not set up for it. To solve this problem, standards have been ordered.

Spiked Samples Submitted Under EPA-Sponsored Studies

At the request of PNL, UST has participated in EPA Performance Evaluation Studies. The results from the first of these studies, designated Water Pollution Performance Evaluation Study Number 16 (WP016), have been received. UST was commended on its excellent performance. Comments concerning specific results are provided below, and the performance data are contained in Appendix I.

UST's results for all of the following were acceptable: metals, nutrients and demands, polychlorinated biphenyls, volatile halocarbons, volatile aromatics, total cyanide, and nonfilterable residue. All of the minerals analyses were also acceptable, with the exception of fluoride, for which UST's values were high. The results for one of the two fluoride samples were outside of acceptable limits, and those for the other were within warning limits.

All of UST's pesticide results were acceptable, although the value for DDD was on the upper bound of acceptance. A warning flag was set for this analysis. In addition, the oil and grease analyses (which are not included on the list of analyses for the field samples from the 300 Area) were flagged; one of the two analyses performed was unacceptable, and the results for the other were within warning limits.

The outlying values are currently being investigated by UST. The use of a different analytical method for fluoride, i.e, specific ion electrode instead of ion chromatography, has been suggested as a possible solution to the problems encountered in this analysis.

UST also participated in an EPA interlaboratory comparison program that involved analysis of spiked samples for alpha and beta activity in water. UST's results for the alpha analyses seemed to be biased on the high side compared with the other participating laboratories. UST's beta results were all within expected limits.

Factors Potentially Affecting the Data

As the sampling and analysis effort has progressed during the last year, minor problems have arisen that could potentially affect the quality of the data. Although these problems should be considered when evaluating the analytical data, they are not expected to significantly affect interpretations regarding impact to the environment. A discussion of the problems and the corrective actions taken is presented in the following sections.

Contamination of the Bladder Pumps

The manufacturer of the bladder pumps used for this effort notified PNL in September 1985 that some of the pumps may have been contaminated with low levels of three organic chemicals: 1,1,1-trichloroethane, perchloroethylene, and methylene chloride. Investigations conducted by the manufacturer indicated that small concentrations of these chemicals were present in a Teflon® lubricant that had been used sporadically in assembling the pumps. The contaminated pumps were found to yield concentrations of these chemicals up to several hundred parts per billion, although a decline in concentrations was noted to occur after purging. According to the manufacturer, in most cases the contaminated pumps could be easily identified, because the three chemicals were found to be present in a certain ratio. The manufacturer indicated that replacement of any suspect pumps would solve the problem, because investigations had shown that the contamination was contained within the pumps and that the wells should not have been affected.

Examination of the data collected from the 300 Area wells had shown low concentrations of these chemicals, and therefore the pumps in wells 399-1-1, -1-2, -1-3, -1-5, -1-6, -1-7, -2-1, and -3-7 were removed and replaced with clean pumps.

Preservation of Samples to be Analyzed for Metals

As noted previously, samples to be analyzed for metals were acidified on collection without being filtered. While most of the samples appeared to have low particulate levels, the samples may have been altered to an unknown degree via leaching of metals by the acid from any particulates that may have been present. Thus, the reported concentrations for the metals may not accurately reflect the dissolved portion, which is more readily available for transport and environmental uptake. Future analysis of both filtered and nonfiltered samples (for dissolved and total recoverable metals, respectively) should prevent this type of problem.

Alterations to Analytical Methods

Implementation at UST of the analytical work for this project resulted in minor problems with a few of the analyses. The problems and the corrective actions taken are described below.

Ammonium Ion. An error in preparation of the standard solution led to incorrect reporting of data; the reported results were all low by a factor of ten. The data were corrected and resubmitted to PNL in February 1986. A second problem arose with this analysis when it became evident that a change in November 1985 to a higher grade of sulfuric acid used as a preservative had resulted in a marked decline in the ammonium concentrations being detected. Low concentrations of ammonium ion are usually present in sulfuric acid, but a lower grade of acid may be expected to have more ammonium than a higher grade. To determine if the change in acid may have affected the results obtained for the field samples, blank samples were spiked with both grades of acid and were then analyzed for ammonium. Recent evaluation of the resulting data has shown that the lower grade of acid probably contributed additional ammonium to the field samples, but the exact amount of the difference would be difficult to quantify. The affected data will accordingly be flagged with an explanatory comment.

Gross Beta. The gross beta analysis recommended by EPA is slightly different than the method traditionally used by UST, and this difference led to incorrect calculation of some of the gross beta results. The EPA method requires use of an absorber for alpha radiation and conversion of net counts to disintegrations per minute with Cs-137 efficiencies. UST had used the absorber but had erroneously converted the net counts of the gross beta analyses to disintegrations per minute with the Sr-Y-90 efficiencies (traditionally used by UST) rather than the Cs-137 efficiencies. The results were recalculated and resubmitted to PNL in December 1985; they were generally about 30% higher than the previously-reported results.

Lead. Investigation of some lead results obtained during the first few months of sampling showed that the ICP method in use at that time was not as sensitive for the low levels of lead being detected as the GFAA method would be. Increased sensitivity was judged to be desirable, and because the ICP analyses produced some false high positives, the GFAA method for lead analyses was applied beginning in November 1985. All lead samples measured by ICP prior to this change were reanalyzed by GFAA.

Antimony. The calibration standard was found to be too low by a factor of five. One result was affected and has subsequently been corrected.

Mercury. The instructions used for preparation of the mercury standards were incorrect. A small number of results were found to be affected and have subsequently been corrected.

Osmium. The osmium standards appear to be unstable, and UST is concerned that the field samples may behave similarly. UST has initiated tests to investigate and solve the problem.

Silver. Matrix spike recoveries for silver have been on the low side. Investigation by UST has shown that this is not caused by a matrix effect but rather by the quantity of hydrochloric acid (HCL) in the sample digestion. With increased HCL used during sample preparation, recoveries have improved considerably. However, a bias is still present, so the investigation is continuing. Sample results are not likely to be affected, because the amount of HCL normally used is adequate for the low levels of silver present in the samples.

Radium. The analysis for radium has shown a bias on the high side. UST is presently checking the calibration efficiency curve and current spike solution, with the belief that the problem results from a biased calibration efficiency curve. A new calibration curve was prepared and put into service in April 1986. Radium has been detected in only a few samples, so the effect on the total data set is expected to be small.

Presence of Methylene Chloride in Blanks and Field Samples

Methylene chloride has been detected in a number of the blank samples sent for analysis. This chemical is ubiquitous in laboratories and, as a result, it frequently causes a sample contamination problem that can be difficult to solve. Nonetheless, attempts were made to track down and eliminate the source of this chemical in the blanks. It was finally discovered that methylene chloride had been employed in the precleaning process for the container used by PNL to obtain and store the deionized water needed to prepare the blanks. Containers cleaned in this way are no longer used for this purpose.

Concentrations of methylene chloride have also recently been detected in some of the field samples. However, the pattern does not appear to indicate a ground-water contamination problem, because the concentrations are frequently much higher in the upgradient and far-field wells than in the wells closest to the facility. Furthermore, the concentrations of methylene chloride have risen and fallen dramatically from month to month, rather than showing the gradual changes usually exhibited as a result of plume movement or hydrologic phenomena. The possibility of bottle contamination is currently being investigated.

Potential Laboratory Differences

During the first 2 mo of sampling (June and July 1985), a number of the analyses were performed at the Hoboken, New Jersey, location of UST pending final preparation of these new capabilities at the Richland laboratory. The analyses performed at Hoboken included metals, pesticides, herbicides, volatile organics, and semi-volatile organics. The majority of these analyses revealed less-than-detectable concentrations, and similar results were reported by the Richland laboratory in subsequent months. However, some of the constituents, particularly the metals, were present in measurable concentrations, allowing some limited comparisons of the results obtained by the two laboratories.

Examination of the data for certain metals, i.e., barium, cadmium, copper, manganese, vanadium, and aluminum, reveals that the results from the first 2 mo appear to be relatively high compared to results from subsequent months. Two possibilities exist: 1) the values measured by Hoboken during the first 2 mo correctly reflect a temporally variable ground-water condition, or 2) some aspect of the analysis was different between the Hoboken and Richland laboratories.

Regarding the first possibility, seasonal changes in the hydrology could potentially affect the measured concentrations to the degree observed. The data from a similar period in 1986 have not yet all been received and evaluated to determine whether a similar pattern was exhibited this year. Confirmation of such a seasonal trend could take several years.

Concerning the second possibility, an identifiable difference between the two laboratories would be difficult to substantiate because of a number of potential complicating factors. As mentioned previously, the samples were acidified without filtration. If particulates were present, agitation of the samples during transport across the country could have dissolved additional materials. Also, the ICP analysis used for these samples is subject to spectral differences that can cause some variation in measurement.

To investigate the potential for differences between the laboratories, paired samples were collected from a number of wells in October 1985, and one sample from each pair was delivered to each of the two laboratories. Analyses were conducted for the list of constituents done by Hoboken in the first 2 months. As expected, most of the results from both laboratories were less than the detection limit with the exception of metals. For many of the same metals mentioned previously, the Hoboken and Richland results were different. In cases where at least one of the samples in a pair was above the detection limit, the Hoboken laboratory almost always reported higher results than the

Richland laboratory. This pattern was most notable for zinc, barium, vanadium, aluminum, manganese, iron, and arsenic. In addition, the Hoboken laboratory had higher matrix spike recoveries for a number of the metals than the Richland laboratory. Quantification of the difference between the two laboratories, either with the original values or with the paired samples collected in October, is not possible because of the limited number of results.

UST has confirmed that the same analytical methods and detection limits were used at both laboratories. A review of the internal laboratory quality control data derived from blanks and matrix spikes reveals that both laboratories were performing adequately. Without conclusive evidence to support the suspicion of a problem with the data for the first 2 mo, these data have been treated as viable data for this report. However, the considerations discussed above should be kept in mind as these data are evaluated.

PLANNED EXPANSION OF THE GROUND-WATER MONITORING PROGRAM

The existing ground-water monitoring program for the 300 Area Process Trenches is now being revised and expanded to meet the requirements of 40 CFR 265.90 of the federal regulations (USEPA 1984) and in WAC 173-303-400 of the state regulations (Washington State Department of Ecology 1986). Complying with these regulations is being accomplished by: 1) collecting additional site-specific information, as needed to more fully characterize the hydrogeology of the area and support decisions concerning the monitoring well network for the process trenches; and 2) conducting an expanded sampling and analysis effort designed to determine the probable pathways and rate of movement of contaminants originating from the trenches.

To more fully characterize the hydrogeology of the 300 Area near the process trenches, the following specific areas of interest will be addressed:

- the influence of the Columbia River on the ground-water system
- development of a better understanding of the hydrogeology of the Ringold and glaciofluvial units in the area of the process trenches and their relationship to large-scale paleohydrogeologic and geomorphologic features
- determining the validity of unusually thick glaciofluvial deposits near well 399-4-5
- determining the variation of hydraulic potential with depth in the aquifer in the vicinity of the process trenches and the North Process Pond
- determining the range of transmissivity values for the glaciofluvial sediments and Ringold Formation
- determining storativity and effective porosity of glaciofluvial sediments
- determining the direction and extent of contamination (by species or group) in sediments near the process trenches

- determining the range of dispersion characteristics of the underlying sediments that can be used for modeling contaminant transport in the vicinity of the process trenches.

The planned scope of work, schedule of implementation, and reports to be produced are discussed in the following sections.

PLANNED APPROACH

To meet project objectives, the approach includes: a compilation and evaluation of existing data; installation of new monitoring wells; collection and analysis of geologic, water quality, and hydrologic data; data interpretation; statistical analysis; flow and transport modeling; and reporting. These activities form the basis of the planned effort, which will be conducted in phases. Information obtained as the work progresses may be used to alter plans for subsequent phases. Therefore, although tentative plans for the entire effort are described herein, some alterations, particularly in well sampling frequency, can be expected and will be negotiated as they arise.

Evaluation of Existing Data

The current understanding of the 300 Area hydrogeology will be refined by reviewing existing hydrologic and geologic data and developing contour maps, isopachs, and cross sections for geologic and hydrostratigraphic layers. The development of maps of recent water chemistry, geologic, and hydraulic potential data will assist in developing a better understanding of the hydrogeology. This information will be summarized in a Phase 1 report and will represent an integration of current knowledge of the 300 Area.

Installation of New Monitoring Wells

The new well installations will consist of single wells and well clusters. The placement and design of the wells planned for the drilling phase are described in the following section.

Three well clusters and eight single wells will be installed during the drilling phase. Single-well and cluster locations are shown on Figures 21 and 22, and the purpose and need for each of these installations is provided below.

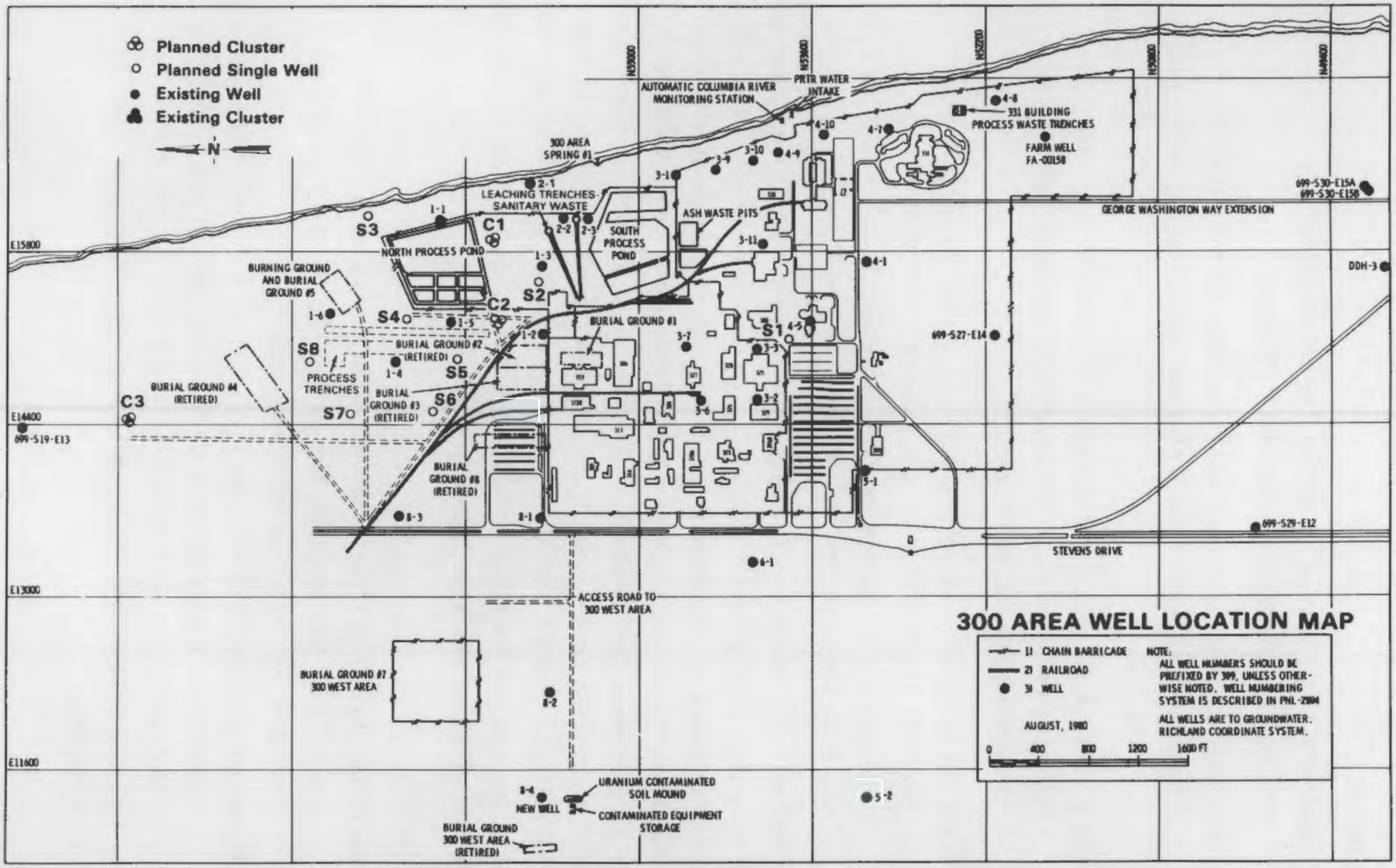


FIGURE 21. Location Map for Planned Monitoring Wells in the 300 Area

- Single Wells:
  - Single well S1 is needed to define the thickness of the glaciofluvial deposits near Well 399-4-5.
  - Single well S2 will be a deep well screened in the Ringold Formation to create a well cluster with existing Wells 1-3, 1-7, and 1-8.
  - Single well S3 is needed for geologic characterization and for defining the downgradient extent of hazardous constituent influence close to the river.
  - Single wells S4, S5, S6, S7, and S8 are needed to gather data required to characterize the geology underlying the trenches and to determine flow direction (i.e., mounding) close to the trenches at the point of compliance.

Except for Well S2, these single wells will be completed in the upper portion of the saturated glaciofluvial sediments (uppermost aquifer). The primary purpose for installation of these wells is horizontal expansion of the sampling network to enable better delineation of flow patterns, but these wells will also be used to gain more hydrogeologic and water chemistry data. Therefore, each well will be drilled to the top of the Ringold Formation to verify the depth of this geologic contact and will then be plugged or otherwise modified so that it can be used for sampling only the glaciofluvial portion of the aquifer. The design of these wells is shown in Figure 23.

- Well Clusters:
  - The first cluster (C1) will be installed in the area downgradient of the trenches but influenced by river stage, as indicated by recent water-level data.
  - The second cluster (C2) will be installed in a location that is immediately downgradient from the trenches at the point of compliance. It will form a triangle with C1 and the S2 clusters to enable determination of flow direction near the trenches.

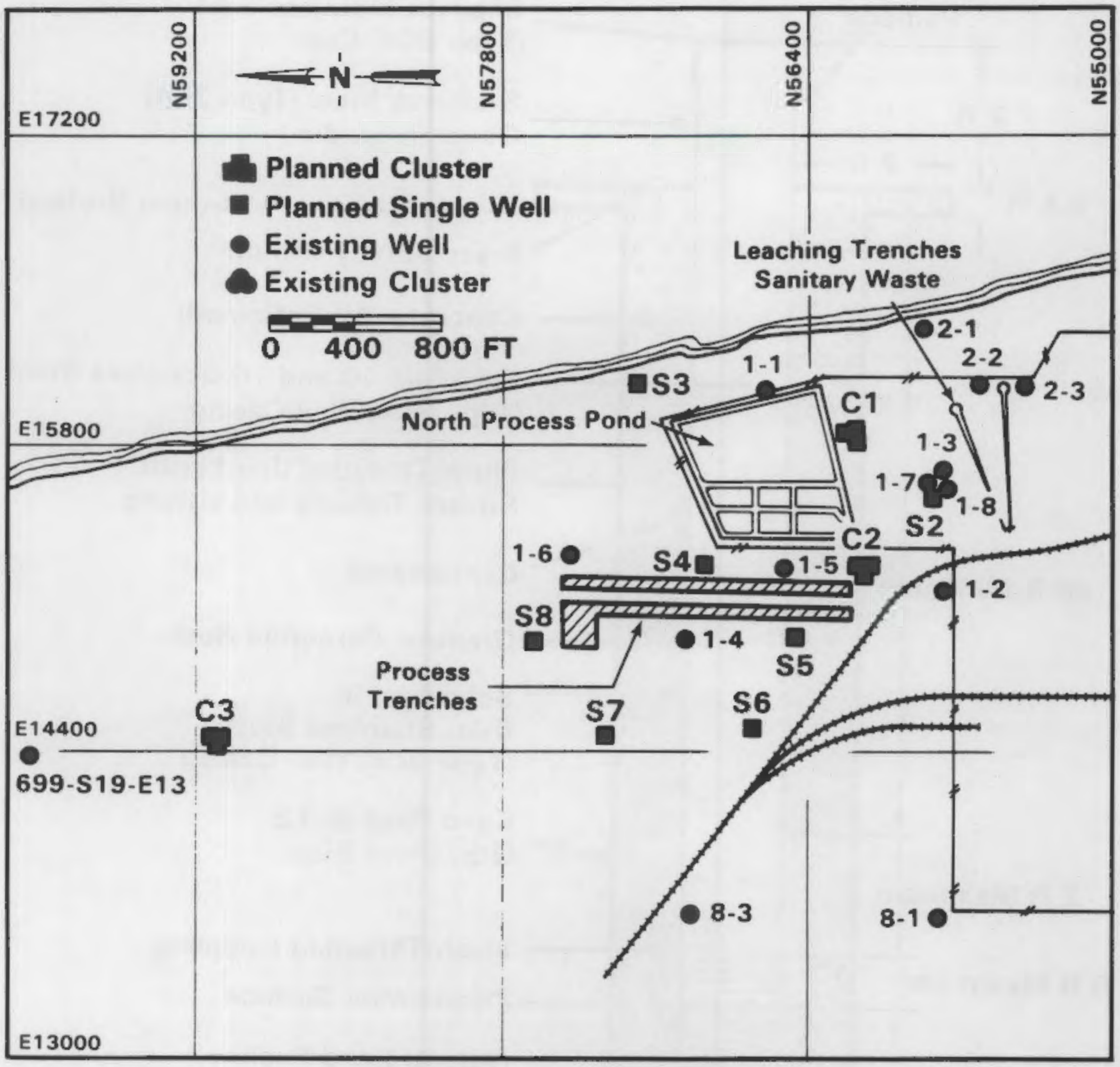


FIGURE 22. Location Map of Planned Single Monitoring Wells and Clusters near the Process Trenches

- The third cluster (C3) will be installed upgradient of the trenches to allow collection of potentiometric data needed to construct flow nets and to determine vertical flow components.

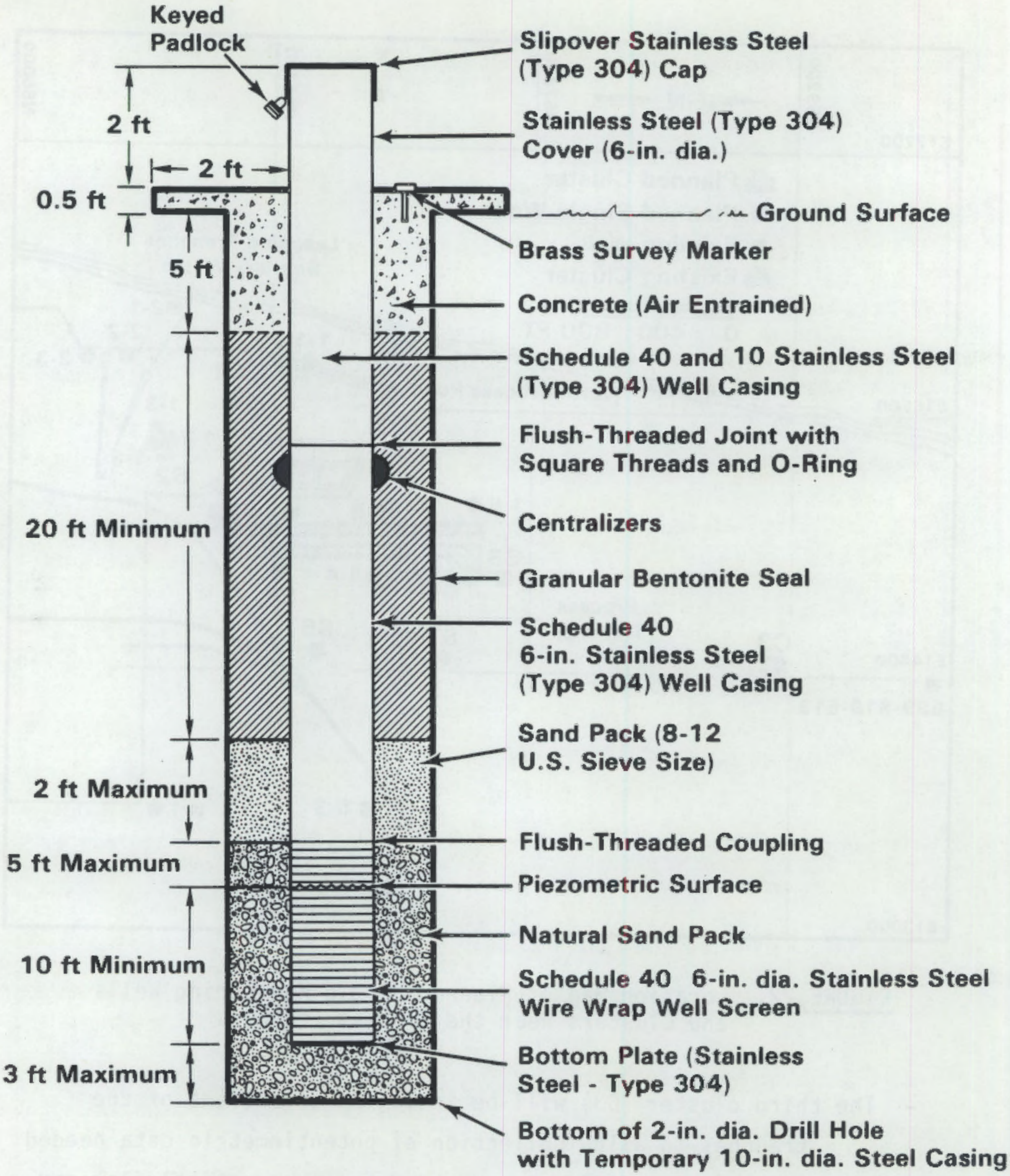


FIGURE 23. Planned Design for Shallow Wells Completed in the Glaciofluvial Sands and Gravels

These well clusters will be used to determine vertical gradients, assist with hydrogeologic characterization, and enable hydrologic testing determination of flow direction of different permeable layers within the Ringold Formation. Each cluster will consist of three wells, spaced about 25 ft apart in a triangular arrangement. A tentative schematic drawing of a well cluster is shown in Figure 24. The shallow well would be completed at the top of the unconfined aquifer, with an approximately 15- to 25-ft screen, extending a few feet above the water table to allow for fluctuations (Figure 23). The total depth of this well is projected to be about 60 ft. The intermediate-depth well would be drilled to the top of silts and clays of the Ringold Formation (at a depth of about 110 ft) and will be completed in the zone just above the clays (Figures 24 and 25). The screen for the intermediate depth well will be about 20 ft in length. The deep well in each cluster will be drilled into the Ringold Formation to a total depth of approximately 160 ft. The screen length for this deep well will be 10 ft (Figure 24) opposite a sand or gravel layer. The planned screen lengths and completion intervals may be modified during drilling to fit the conditions encountered.

Well Construction Details

The new wells will be installed by a drilling contractor with one or more cable tool rigs, as needed to meet the established schedule. The driller will be required to provide proof of qualifications and experience and will be supervised during drilling by a PNL geologist.

Because these wells will be used for gathering water-quality data, care will be taken to ensure that the wells are properly installed and that contamination is not introduced during drilling. Accordingly, all equipment, casings and screens will be steam-cleaned prior to use and kept off the ground. Any drilling additives or lubricants needed will be carefully selected to avoid contamination. Following completion, all new wells will be fully developed to help ensure that subsequent samples collected from them will be representative of the water in the aquifer.

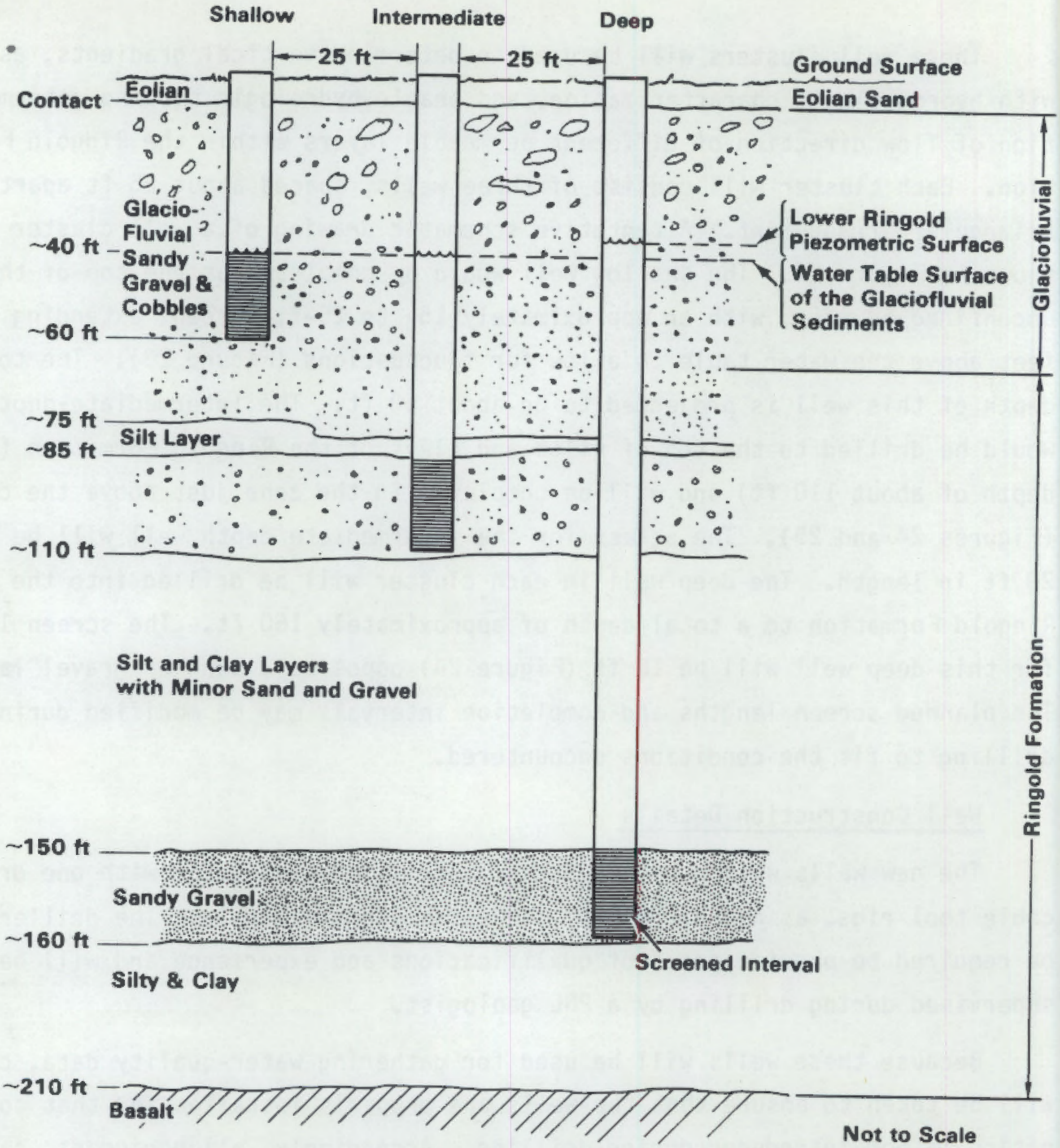


FIGURE 24. Schematic of Planned Monitoring Well Cluster

The wells will be constructed using flush-coupled, 6-in.-diameter, stainless-steel (Type 304) casing and screens. The casings will consist of Schedule 10 pipe with Schedule 40 couplings. During drilling, 10- or 12-in.-diameter temporary carbon-steel casings will be used to keep the borehole open. For the

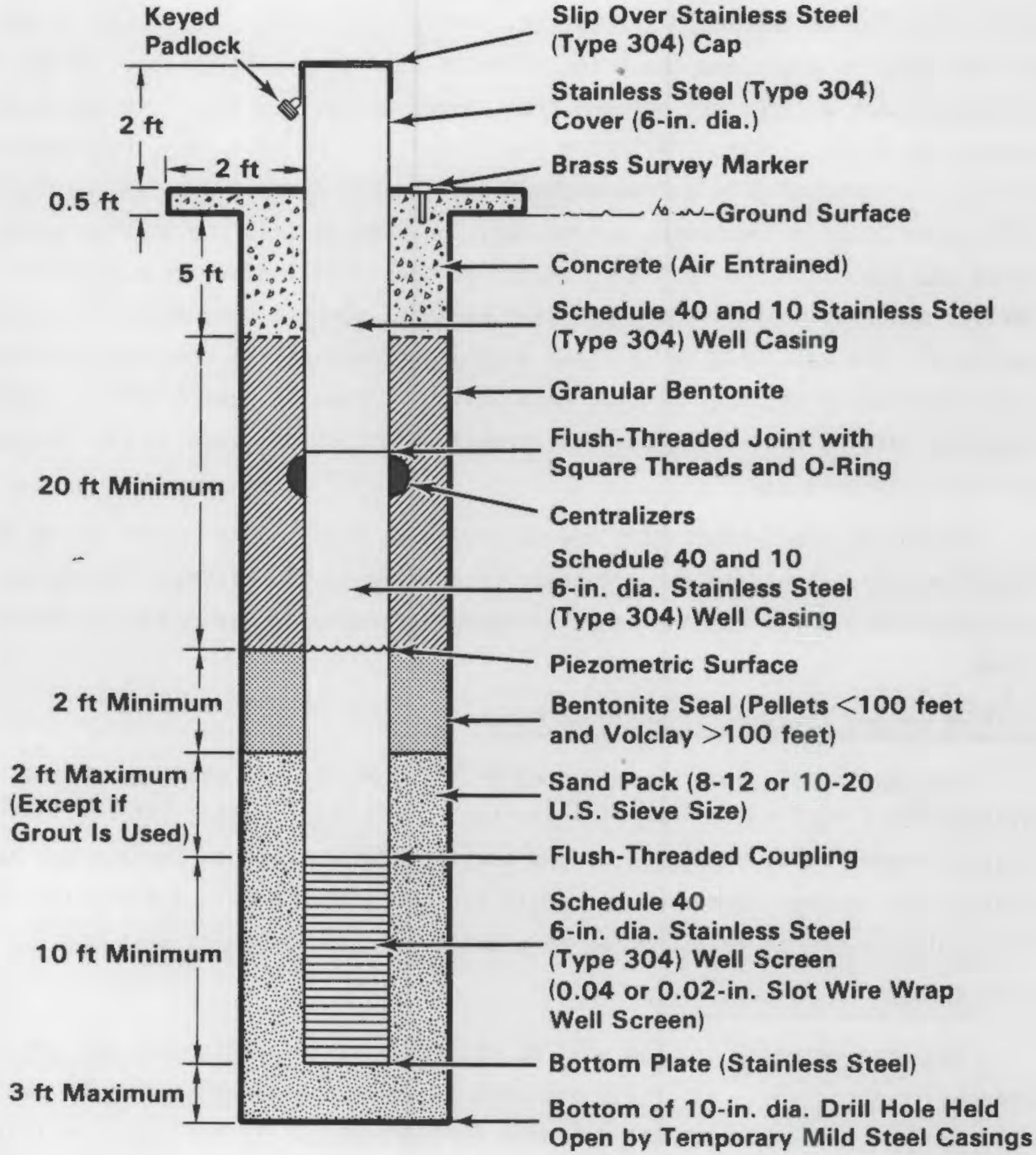


FIGURE 25. Planned Design for Intermediate and Deep Wells Completed in the Ringold Formation

shallow wells (except for S4, S5, S8, and C2), a 10-in. stainless-steel screen will be set for testing purposes when the well has reached the completion depth, and the temporary casing will be pulled back to expose the screen. The well will then be developed and tested. Following testing, the 10-in screen will be left in place and the 6-in. assembly will be placed inside. An artificial sand pack will be set between the screens and will extend 2 ft above the top of the 6-in. screen. Following emplacement of the sand pack, the temporary casing will gradually be pulled back as the annular space is sealed. A minimum 2-ft-thick layer of bentonite pellets will be used to seal the annular space above the sand pack. A seal of granular bentonite will fill the remaining annular space up to 5 ft below the land surface, where a concrete seal will be emplaced. The well will be finished with a concrete pad, a removable locking cap, and protective steel posts. Each well will then be redeveloped as needed. Complete details concerning the well construction are provided in the Statement of Work (Appendix J).

Following completion, each new well will be surveyed to obtain the plant location coordinates and the elevation of the top of the casing. The wells will then be given permanent names assigned according to Hanford Site conventions.

Collection and Analysis of Geologic Data

Geologists will be present during drilling of the new wells to conduct hydrogeologic testing and characterization. They will collect information needed to more fully characterize the local conditions and to improve the conceptual and predictive numerical models for the site. A full description of the geologic work to be conducted is provided in the following sections.

Geologic Core Analysis

Geologic material samples will be collected at 5-ft intervals and at changes in lithology. Materials encountered above the water table will be described as hand specimens in geologic field records. Typical descriptions will include estimated grain size, color, and mineralogy of major particles. A dual sample will be collected, with one specimen submitted for laboratory analysis and another specimen retained for archiving. The following laboratory tests will be conducted at selected horizons: 1) grain size distribution based on sieve analysis, 2) moisture content, 3) hydraulic conductivity, 4) soil moisture retention characteristics, 5) quantitative calcium carbonate, 6) bulk porosity, and 7) petrographic description of mineral content. Total organic carbon analysis will also be conducted in zones where organic fluids may be present.

Geophysical Well Logging

All of the new wells will be logged with geophysical probes following completion. The suite of logs to be made will include information from neutron-epithermal-neutron, gamma-gamma, and natural gamma probes. These logs give an indication of the properties of the materials around the borehole, and they provide a relatively objective and continuous record of the materials penetrated. Therefore, they are a useful supplement to the sample descriptions provided by geologists. The types of information that will be obtained from the geophysical logging effort are briefly described below.

Each of the three geophysical probe types named above gives different information concerning the subsurface geology. The neutron-epithermal-neutron probe has a neutron source and a detector; the neutrons emitted interact with hydrogen in the water contained in the pore spaces of the sediments. The log produced gives an indication of the saturated porosity of the material below the water table or of the moisture content of the material above the water-table. The gamma-gamma probe contains a source of gamma radiation and a detector; the gamma photons emitted are scattered and absorbed by the materials through which they pass, and the resulting log gives an indication of the bulk density of these materials. The natural gamma probe contains only a detector, and it measures the natural radiation emitted by the sediments; the log produced gives an indication of the clay content, or, where the ground water contains radionuclides, the level of contamination (Keys and MacCary 1976). Logs from both the new and old wells will be used to provide information for the characterization effort.

Collection and Analysis of Water-Quality Data

The routine monthly sampling effort already in progress will be continued and then expanded as new wells are completed and added to the network. The existing effort has been discussed in detail in a previous chapter; therefore, only a summary is provided here. Some eventual changes to the current routine, such as a reduction in sampling frequency from monthly to quarterly (or to some other appropriate frequency), are to be expected and will be negotiated as they arise.

The new wells planned for installation will be developed immediately following completion and will be equipped with sampling devices within 90 days. Ground-water samples will be collected from the new and existing wells according to the established procedures in use (Appendix B). Water-level measurements will be taken before sampling, and the wells will be purged according to the borehole volume removal procedure. It is expected that a dedicated purging and sampling device will be installed in each of the new wells, although a final decision concerning the device to be used has not yet been made. Operational problems have been encountered with the bladder pumps currently in use, and therefore other options besides the present dual-pump system (consisting of a submersible pump and a bladder pump) are being considered. If possible, it would be desirable to replace the dual-pump system with a single pump capable of: 1) purging a 6-in. well in a relatively short time period, and 2) providing samples that are representative of the ground water and have not been altered by the sampling device. A newly-developed piston pump, which may provide this type of service, is currently being investigated.

Nondedicated sampling devices (i.e., Teflon® bailers) may be used for sampling prior to procurement and installation of the dedicated pumps. If bailers are used, they will be cleaned after each use to prevent cross contamination.

The appropriate preservation practices for each analysis will be followed. These practices, summarized in Table 2 and 3, are those currently in use for the existing sampling effort, with one exception involving the metals analysis. In accordance with recent EPA guidance, samples to be analyzed for metals will be split into two aliquots: one to be filtered and analyzed for dissolved metals, and one to be nonfiltered and analyzed for total recoverable metals. Samples presently being collected are analyzed only for total recoverable metals, according to recommendations in earlier guidance documents (USEPA 1983).

The samples will be sealed and transported to the laboratory using the established chain-of-custody procedures (Appendix B). The analyses to be conducted are those currently being run on samples collected under the existing effort, as described in a previous chapter and listed in Table 2 and 3. Also, the QA/QC procedures presently in use will be continued.

In addition to the routine monitoring, provisions are being made to provide an emergency response technical team for any future spills in the 300 Area Process Trenches. The team consists of individuals with expertise in hydrogeology, geochemistry, ground-water monitoring, and hazardous waste. These team members will be available to respond technically to any future spills or ground-water contamination problems at the process trenches.

Collection and Analysis of Hydrologic Data

Hydrologic data that will be collected and analyzed as a part of this task include: soil moisture and hydraulic conductivities from laboratory testing of sediments, water-level measurements, aquifer-test data, and Columbia River water elevations.

Laboratory Testing of Sediments

Samples of unsaturated sediments (above the water table) will be collected with a drive barrel if possible. These samples will be sealed in waterproof containers at the drill site and submitted for laboratory analysis of in situ soil moisture. In most wells, coarse material and boulders are expected to prevent collection of samples for soil moisture analysis. However, this should not result in a significant loss of data, because the moisture content of coarse material above the water table is usually quite low.

Saturated materials at selected horizons below the water table will be collected with a split spoon device and submitted for permeameter tests to determine laboratory values of vertical and horizontal hydraulic conductivity. Laboratory testing gives an approximation of the in situ hydraulic conductivity.

Water-Level Data

Collection of water-level measurements will continue at the site during and following well drilling. The new wells will be surveyed following construction to establish the elevation of a permanently marked measurement point. The measurement point will serve as the single reference point for all water-level measurements. Horizontal and vertical hydraulic gradients will be established by collecting water-level measurements from all wells at the site. These measurements will indicate the potential for fluid movement and the general direction of flow. Hydraulic gradients are influenced by the river level and can be expected to change on a daily basis so Columbia Riverstage measurements will be made simultaneously with the water-level measurements.

Aquifer Testing

Aquifer tests will be conducted on most, if not all, of the new wells to be installed and on one existing well. These tests will provide crucial information on aquifer properties and support estimates of the rate and extent of contaminant movement. The objectives, strategy, and evaluation techniques for these tests are described below.

The purpose of aquifer testing is to determine the large-scale hydraulic characteristics of in situ geologic materials. These tests define site hydrology more accurately than single-point laboratory analyses such as permeameter tests. A carefully designed field testing program characterizes the site to the maximum extent possible with the available wells. This allows the conceptual and predictive numerical models to become more detailed and thus more accurate. Observation wells will be used as additional data sources whenever possible. Electronic pressure transducers and automatic data loggers will be used where feasible during testing. Steel tape and calibrated electric tape measurements will be used to verify transducer calibration.

Each geologic formation beneath the 300 Area requires a separate testing program based on generalized aquifer characteristics, location of the well in relation to the contaminant plume, and the probable influence of the Columbia River. The test plan for each geologic formation is given below.

The Hanford Formation may require a pumping rate of up to 750 gpm to adequately stress the aquifer. The drawdown in these wells may be slight, and the influence of the Columbia River must be accounted for in the data analysis. The river is expected to act as a recharge boundary in the aquifer tests, the time of influence depending on distance of the well from the river. The wells will be pumped until this hydraulic boundary is reached or steady-state conditions are obtained. The recovery period will be equal to the pumping period or until initial conditions are re-established. The drawdown in observation wells at a distance from the pumping well may be indiscernible. This factor will limit the number of usable observation wells to those near the pumping well. Well clusters that are completed at various depths will be monitored during the testing to determine vertical hydraulic conductivity.

Because of stratigraphic layering of different sediments, the Ringold Formation is expected to have a greater degree of variability in hydrologic properties than the Hanford Formation. During drilling, as each well reaches the planned depth of completion, bailing tests will be conducted to qualitatively test formation permeability and provide a rough estimate of the pumping rate for the aquifer test. Aquifer testing will be conducted at discharge rates producing moderate drawdown so that the test period is appropriately long. Observation wells will be used whenever possible, although the range of pumping influence may be fairly small and may therefore restrict the observation wells to those nearest the pumping well. Wells at the same location completed in other units will be monitored to determine vertical hydraulic conductivity.

Aquifer testing data will be interpreted in an iterative process of analyzing the formation parameters and predicting aquifer response. The data from each test will undergo Theis and Cooper/Jacob analysis (Lohman, 1979) to determine approximate formation parameters. These values will be compared with nearby values for the same unit.

The estimated values of transmissivity and storativity will then be input to the numerical model for analysis of the effects of the Columbia River on aquifer test results. These effects will be removed from the data and the data re-analyzed with the Theis or Cooper/Jacob methods (Lohman, 1979). The analysis will start with wells adjacent to the river and progressively update the site transmissivity values toward the more distant wells. The iterative process of revising the spatial distribution of transmissivity and analyzing aquifer response will continue until the aquifer parameters converge or the site is described to the extent possible. Aquifer testing may also include existing wells on a selective basis. The decision to test existing wells will be based on the knowledge of site properties and the quality of data obtained from tests at the wells installed during drilling.

Monitoring of the Columbia River.

As indicated above, the water levels in the river influence ground-water levels. The Columbia River will be monitored for water-level elevation with two proposed river gages to be located in the river adjacent to the 300 Area. Short-term variations at the site will be observed in the period before and during aquifer testing. A previous analysis of the site (Lindberg and Bond 1979) indicated that the Columbia River can influence the shape of the water table in much of the 300 Area. These effects will be most notable close to the river and in highly transmissive units.

Hydrologic and Water Quality Interpretation

The primary purpose of performing this task is to summarize characterization of the hydrogeology of the 300 Area, that is, to work toward developing a conceptual model fo the unconfined aquifer to improve validation of computer models to meet regularly guide-lines. A secondary purpose is to assess the potential of the process trenches for contributing to contamination of the ground water. Accomplishing these goals will require the qualitative interpretation of geologic and hydrologic data and subsequent integration into a conceptual model. In conjunction with this effort is a statistical evaluation of the reliability and integrity of existing and new data.

Qualitative Evaluation

Qualitative evaluation will include determination and correlation of hydrostratigraphic units to evaluate potential pathways for contaminants, and determination of ground-water flow rate and direction. Adequate interpretation of the data will require examination of large-scale stratigraphic features formed by fluvial geomorphic processes (i.e., large river channels and floods). A paleogeomorphic study is currently being done as an ongoing program for the Hanford Site. In this subtask, efforts will focus on the 300 Area, but will contribute to the Hanford Site study.

The work will involve development of a geomorphic map of major depositional features of the unconfined aquifer near the 300 Area. The purpose is to identify individual areas of the unconfined aquifer that may have near-uniform stratigraphic characteristics. This uniformity will then be extended to ground-water hydraulic parameters (e.g., hydraulic conductivity). Well log data will be used to verify the stratigraphic cross sections.

Borehole data will be examined for possible correlations between the various types of data. These data include driller's and/or geologic logs, sediment size distributions, measured conductivities, moisture retention data, and aquifer test data. Using correlations between hydraulic conductivities and sediment sizes, a more detailed extrapolation of the conductivities into areas where only sediment size data is available will be explored. Similar correlations will be investigated between aquifer tests, geophysical logs, moisture retention data, and others. These correlations will then be applied to previously identified geomorphic features for analysis of the hydrogeologic properties of selected features.

The results from this subtask will provide a more accurate interpretation of the hydrogeologic data base in support of the saturated and unsaturated zone ground-water model development. The work will determine possible ground-water pathways and ranges of hydraulic conductivities in areas of the Hanford Site where well data is scarce by extending the known information into these areas. The results will provide insight into the reasons for drastic differences in hydraulic conductivity and assist in refining the contour maps of the ground-water system.

Statistical Evaluation

Statistical evaluation involves many activities for ground-water compliance. These activities will include:

- Exploratory data analyses to illustrate graphically the ground-water constituent data and their variation over time and space. Included in this subtask will be plots of data to evaluate the presence of time trends and cycles; to assess differences in average concentrations between upgradient and downgradient wells; to evaluate the relationship between river water level, ground-water level, and constituent concentrations; to look for ground-water-contaminant plumes; and to assess the degree of redundancy of information between wells in the network.

- Summary statistics to statistically analyze the data and obtain summary statistics such as means, standard deviations, geometric means, minimums, maximums, and ranges of data for appropriate time-space groupings of data.

- Statistical analyses based on information obtained in the two items above and on consulations with hydrogeologists, geologists, modelers, and management. These analyses will be selected and conducted as needed to better understand how and why ground-water constituent concentrations change over time and space. The analyses could include:

  - estimating the magnitude of trends or cycles in ground-water constituent concentrations

  - if feasible, applying geostatistical techniques to estimate objectively the uncertainty in some hydrogeologic and water-chemistry parameters

  - conducting correlation and regression analyses to evaluate whether some wells are providing redundant information and whether some constituents can be eliminated from the analysis list

  - conducting statistical analyses to evaluate analytical laboratory performance (QA, QC)

  - evaluating data to help determine the number and frequency of replicate analyses that are needed to meet specified performance criteria.

Method of Determining Rate and Extent of Contaminant Movement

At sites where contaminants are known to have entered the ground water, as with the 3D0 Area Process Trenches, the regulations specified in 40 CFR 265.93 (d) (4) (USEPA 1984) require that the rate and extent of contaminant movement be determined. The methods to be applied to the trenches for determining the rate and extent of contaminant movement are described in the following section on ground-water flow and transport modeling.

Planned Ground-Water Flow and Transport Modeling

Ground-water flow and contaminant transport modeling will be applied in the vicinity of the 300 Area Process Trenches to support the monitoring effort. The specific objectives of modeling will be to: 1) evaluate data collected for characterization of the hydrogeology, and 2) assist with determining the rate and extent of contaminant movement. The model will also provide a mechanism for storing and integrating the information gathered on the geology and hydrology beneath the process trenches.

The information gained through calibration of the ground-water flow and contaminant transport models for the 300 Area by Lindberg and Bond (1979) will provide a useful starting point for our modeling effort. The information gained during characterization of the geology and hydrology will be used to supplement and improve on information from the previous study.

The modeling steps will include: review of previous work and data collected during hydrogeologic investigation and ground-water monitoring at the process trenches, establishing a conceptual model of ground-water flow and contaminant movement, developing and calibrating a numerical model, and applying the model to test our understanding of the hydrologic system. The existing ground-water flow model for the Hanford Site will be applied to provide boundary conditions for a more detailed model of the ground-water flow system beneath the 300 Area. The region considered in the 300 Area model will be similar to that considered by Lindberg and Bond (1979) with greater detail in the vicinity of the process trenches.

Lindberg and Bond (1979) conducted a 2-yr monitoring, analysis, and modeling program for ground water beneath the 300 Area. The major objective of the study was to gain a thorough understanding of ground-water flow and the location, extent, and movement of ground-water contamination in the 300 Area.

The model of ground-water flow beneath the 300 Area developed by Lindberg and Bond (1979) was based on the Variable Thickness Transient (VTT) code. The model was calibrated to existing data on hydraulic head and estimates of transmissivity and compared to measured water levels with time. The model demonstrated that the 300 Area ground-water system is influenced by changes in elevation of the Columbia River (controlled by Priest Rapids Dam upstream and McNary Dam downstream) and the large quantities of process wastewater discharged to the process trenches. The model was also applied to predict flow paths and travel times from locations in the 300 Area to the Columbia River.

A model for contaminant transport based on the Multicomponent Mass Transfer (MMT) code was developed, calibrated, and used to predict movement of contaminants for a test case. The model was used to predict the concentrations of radionuclides arriving at the Columbia River with time.

The first step in modeling ground-water flow and contaminant movement beneath the process trenches will be to review previous modeling by Lindberg and Bond (1979). The data collected in the hydrogeologic investigation for the process trenches will be reviewed and combined with information from Lindberg and Bond (1979) to develop a conceptual model for ground-water flow and contaminant transport. The data to be reviewed for developing the conceptual model include drilling and testing data, monitoring data, information on liquid discharges to 300 Area facilities, water-level maps, and geometry of the river shoreline for establishing boundary conditions.

Data files and notes from the ground-water flow and contaminant transport models developed by Lindberg and Bond (1979) will be reviewed and prepared for input to the model that will be developed under this task. The distribution of transmissivity resulting from calibration of the ground-water flow model by Lindberg and Bond (1979) will be adapted for the ground-water flow model for the current effort. Improvements to the data will be incorporated into the model as they are generated in the hydrogeologic investigation of the area surrounding the process trenches.

Development of the model for the area around the process trenches will parallel the data collection activities in the hydrogeologic investigation. In addition to the data that will be generated by the hydrogeologic investigation, data on the quantity of discharge with time to the process trenches and other facilities within the 300 Area will have to be collected and prepared for modeling. Accurate measurements of these discharges are required for establishing the ground-water flow model of the 300 Area.

A conceptual model is a representation or picture of a physical system, subject to the simplifying assumptions necessary for characterization. The conceptual model of ground-water flow and contaminant transport beneath the 300 Area and the process trenches will be based on previous information from Lindberg and Bond (1979) as well as data collected during hydrogeologic characterization. Data that will be considered in formulating the conceptual model will include: geologic logs from wells, parameters estimated from aquifer testing, hydraulic-head measurements with depth and over time, river-stage data, and liquid discharges to the ground. These data will be reviewed to determine whether the model should be two- or three-dimensional, and whether transient or steady-state conditions should be simulated.

The ground-water flow model of the 300 Area will be based on the conceptual model. The model will be based on the Coupled Fluid, Energy and Solute Transport (CFEST) code (Gupta et al. 1982). The finite-element grid for the model will be constructed to reflect boundary conditions, the estimated distribution of hydraulic properties, the location and shape of discharge facilities, and the greater detail required near the process trenches. The model will be developed in two or three dimensions, depending on the data collected during hydrogeologic characterization. The submodel will be calibrated with the estimates of transmissivity determined from aquifer testing. The predicted hydraulic heads will be compared with measured hydraulic heads and the transmissivities adjusted to calibrate the flow model.

Following calibration of the ground-water flow model, the transport model will be established and applied to simulate one or both of the unplanned releases of perchloroethylene to the trenches, which occurred on November 1982 and July 1984. The data from ground-water samples taken over time to track movement of the spills will be evaluated for geochemistry prior to application in the transport model. By simulating these spills, estimates of the longitudinal and transverse dispersivities may be obtained. The model will also be used to determine the effects of the contaminant distribution along the length of the trench.

The model will be applied to simulate ground-water flow and contaminant transport in the vicinity of the process trenches. The predicted distribution of hydraulic head will be compared to the measured distribution over time to determine how well the model is performing and obtain a measure of the level of understanding that exists for the ground-water flow system near the process trenches. A similar comparison will be made for contaminant data that are available to determine how well the transport model is performing.

Once a correct understanding of the flow system has been demonstrated and the model is performing satisfactorily, the model will be applied to prediction of ground-water flow beneath the process trenches and the 300 Area. Information from application of the transport model to simulating the perchloroethylene spill will be applied to predicting transport of other contaminants. Improvements to the design of the monitoring system, interpretation of aquifer test data, and design of other field tests will benefit from the ground-water flow and contaminant transport modeling. Modeling the extent of contamination and the rate of contaminant movement will assist with determining if any additional monitoring wells beyond those already planned are needed. River-level measurements, discharges to the process trenches, and transmissivities estimated by aquifer testing will be used with the model to remove their influence for interpreting the aquifer test data.

SCHEDULE OF IMPLEMENTATION

A schedule for accomplishing the planned work has been established. Milestones are as follows:

- submittal of this revised compliance plan on September 29, 1986
- completion of drilling the new well network phase (17 wells) on December 31, 1986.

A bid package for installation of the additional wells was issued on August 26, 1986. Drilling is expected to begin by the middle to latter part of September.

REPORTS TO BE PRODUCED

Anticipated products of the planned effort will include periodic progress reports and hydrogeologic characterization reports. The progress reports will be produced on a quarterly basis and will include a description of the work completed and data obtained during the reporting period. Although some interpretation will be contained in these progress reports, much greater detail of this type will be included in the hydrogeologic characterization reports.

A report referred to as the Phase 1 report will be an integration of current knowledge of the hydrogeology of the 300 Area. Interim and final hydrogeologic characterization reports will be produced at the end of the drilling and modeling, respectively. These reports are expected to contain the following:

- narrative descriptions of the local geologic units and ground-water flow system
- geologic cross sections
- water-table maps and flow nets
- geologic, drilling, and geophysical logs
- results of the various laboratory and field tests to be conducted
- results of any modeling work conducted
- recommendations concerning future drilling and/or sampling.

Following completion of the planned drilling and characterization effort, future reports will focus primarily on the results of the expanded sampling and analysis program.

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APPENDIX A

GEOLOGIC LOGS

APPENDIX A

GEOLOGIC LOGS

Well construction diagrams, geologic logs, and placement of sampling pumps are shown in Figures A.1 through A.16.

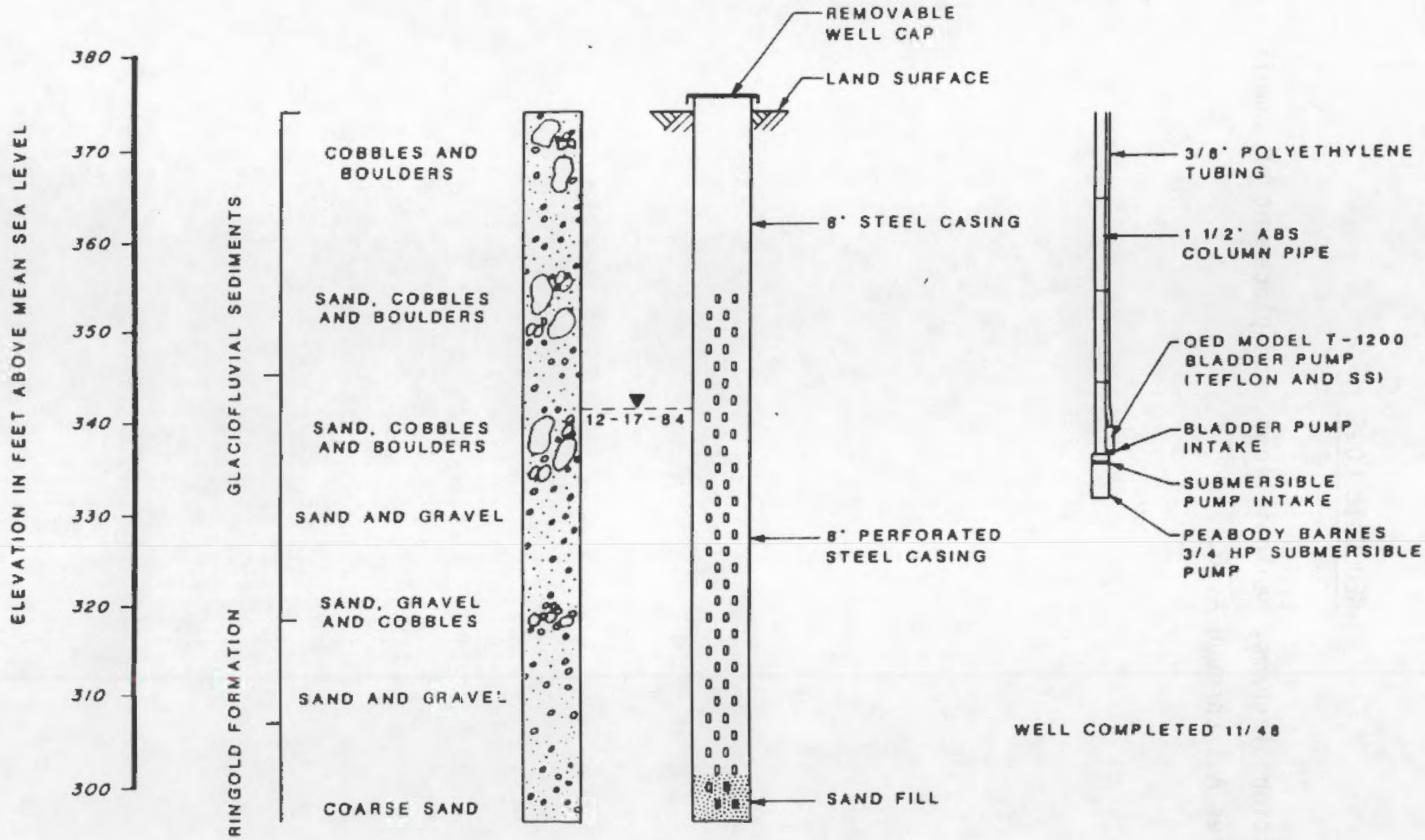

FIGURE A.1. Structural Diagram and Geologic Log for 399-1-1

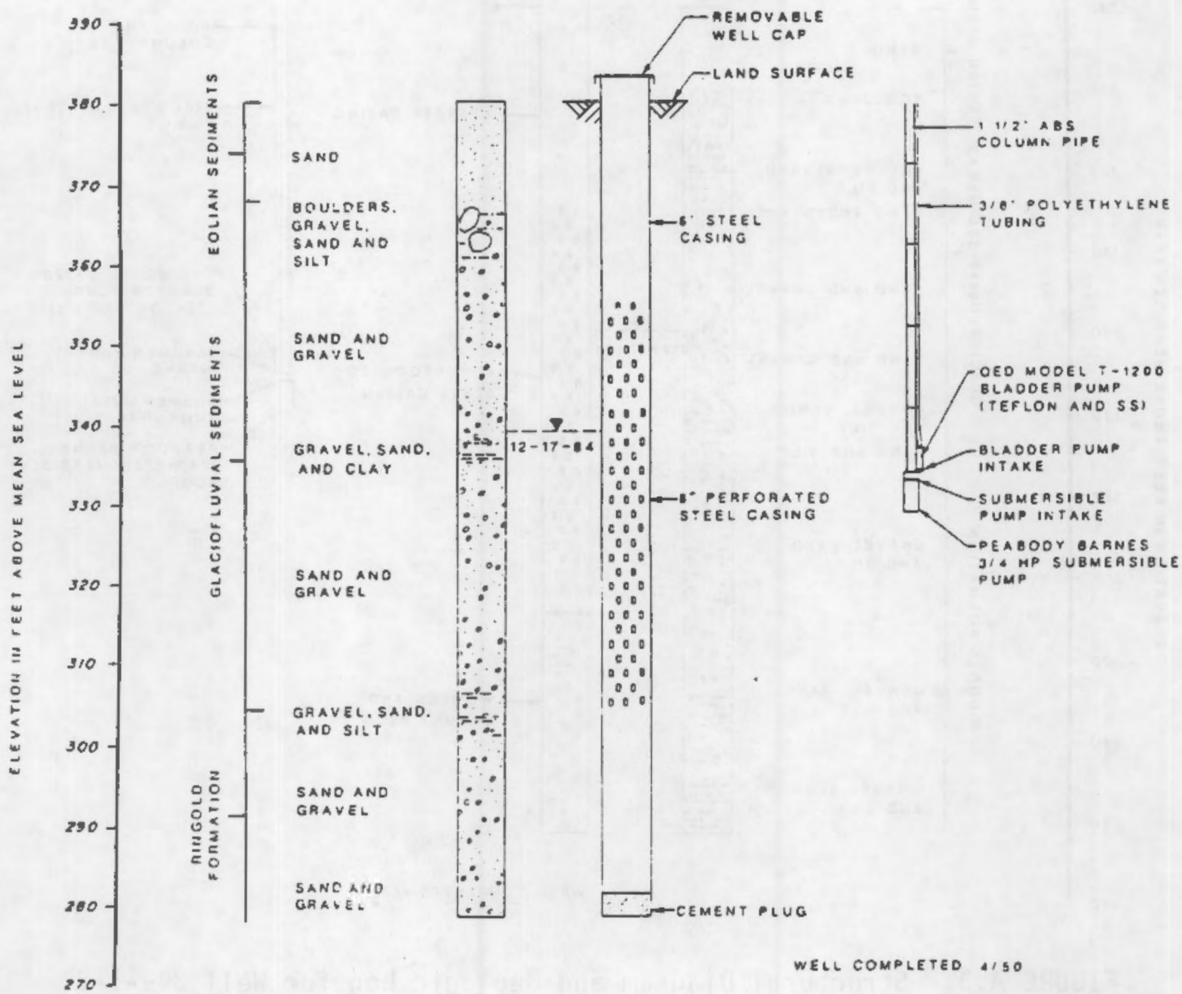

FIGURE A.2. Structural Diagram and Geologic Log for Well 399-1-2

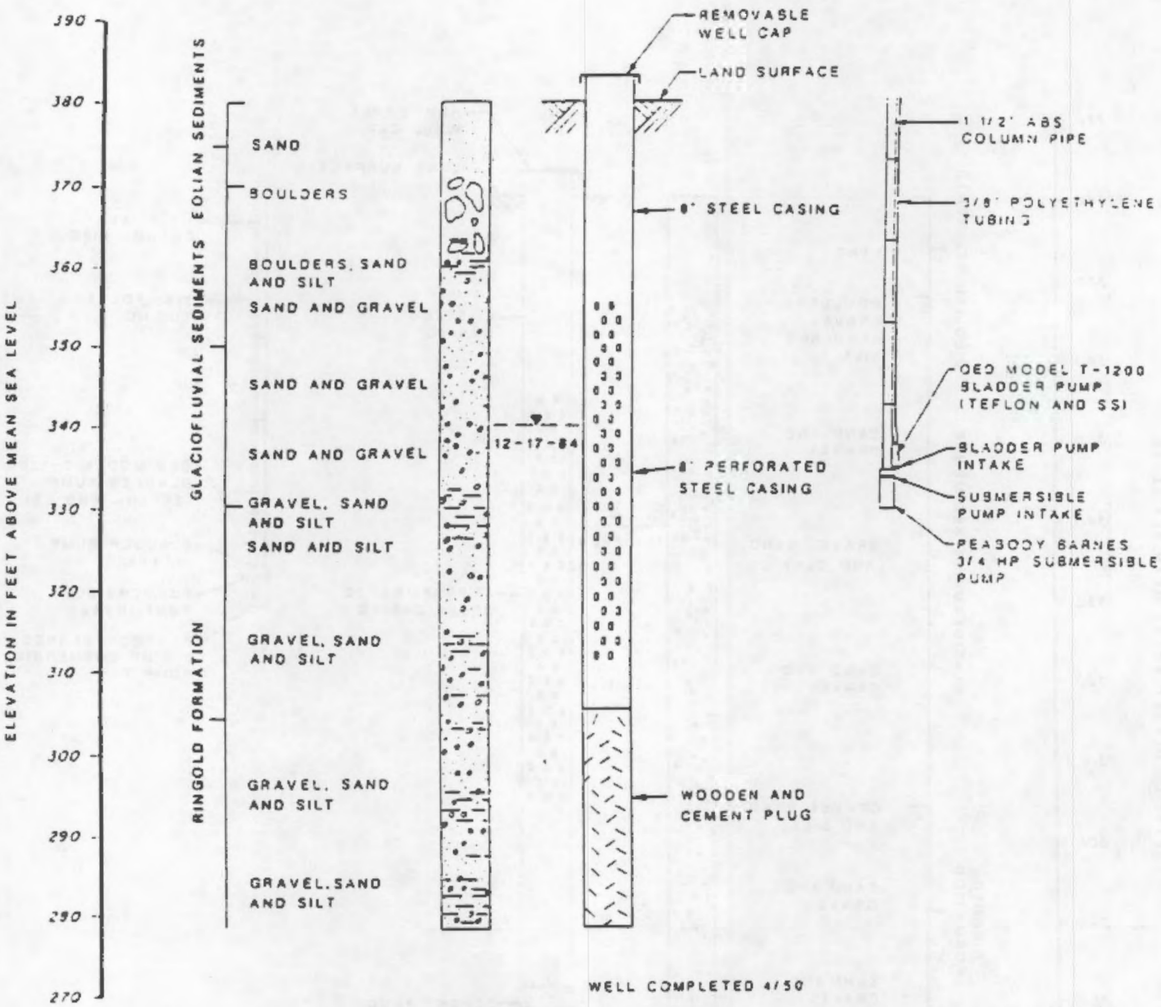

FIGURE A.3. Structural Diagram and Geologic Log for Well 399-1-3

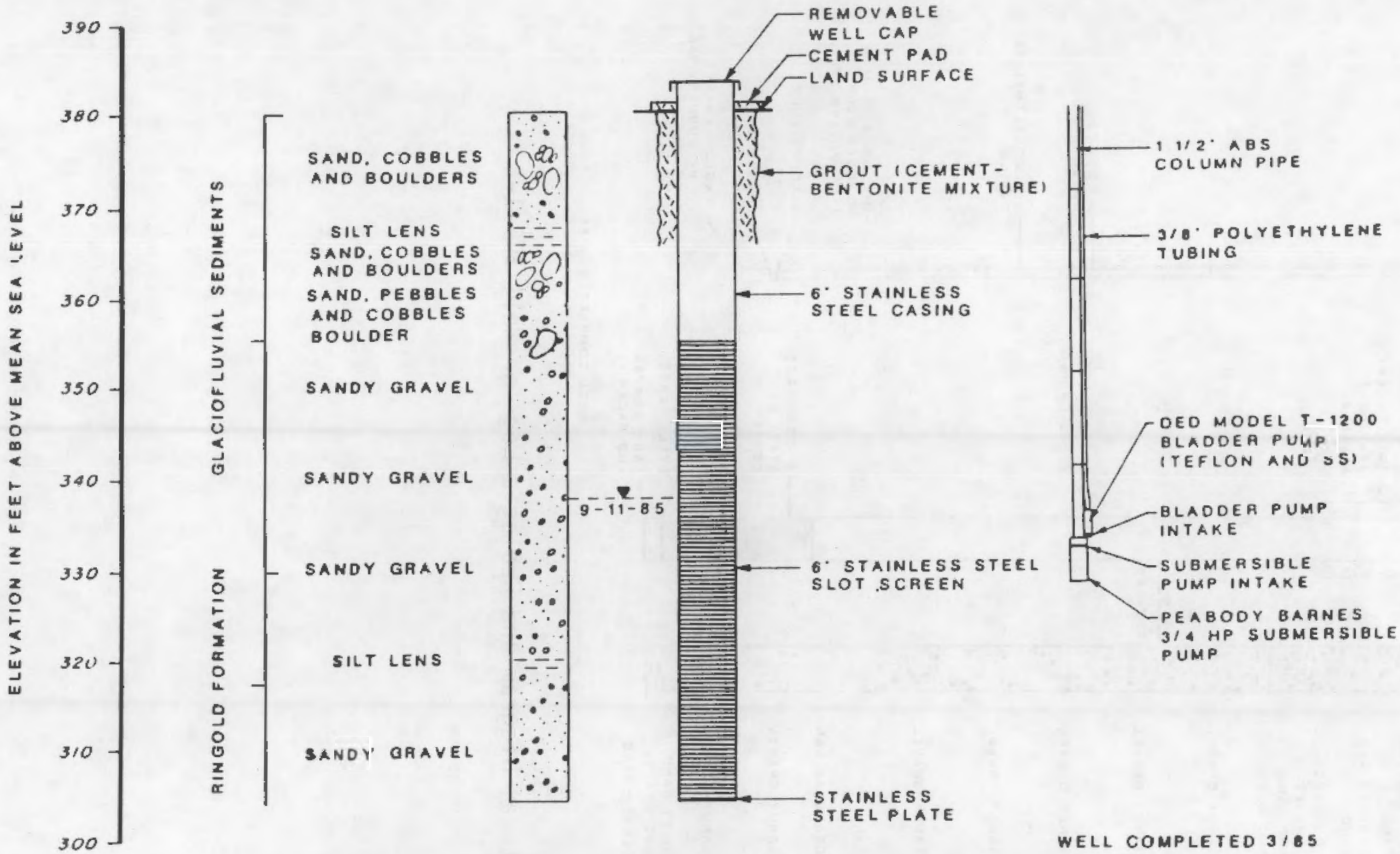

FIGURE A.4. Structural Diagram and Geologic Log for Well 399-1-7

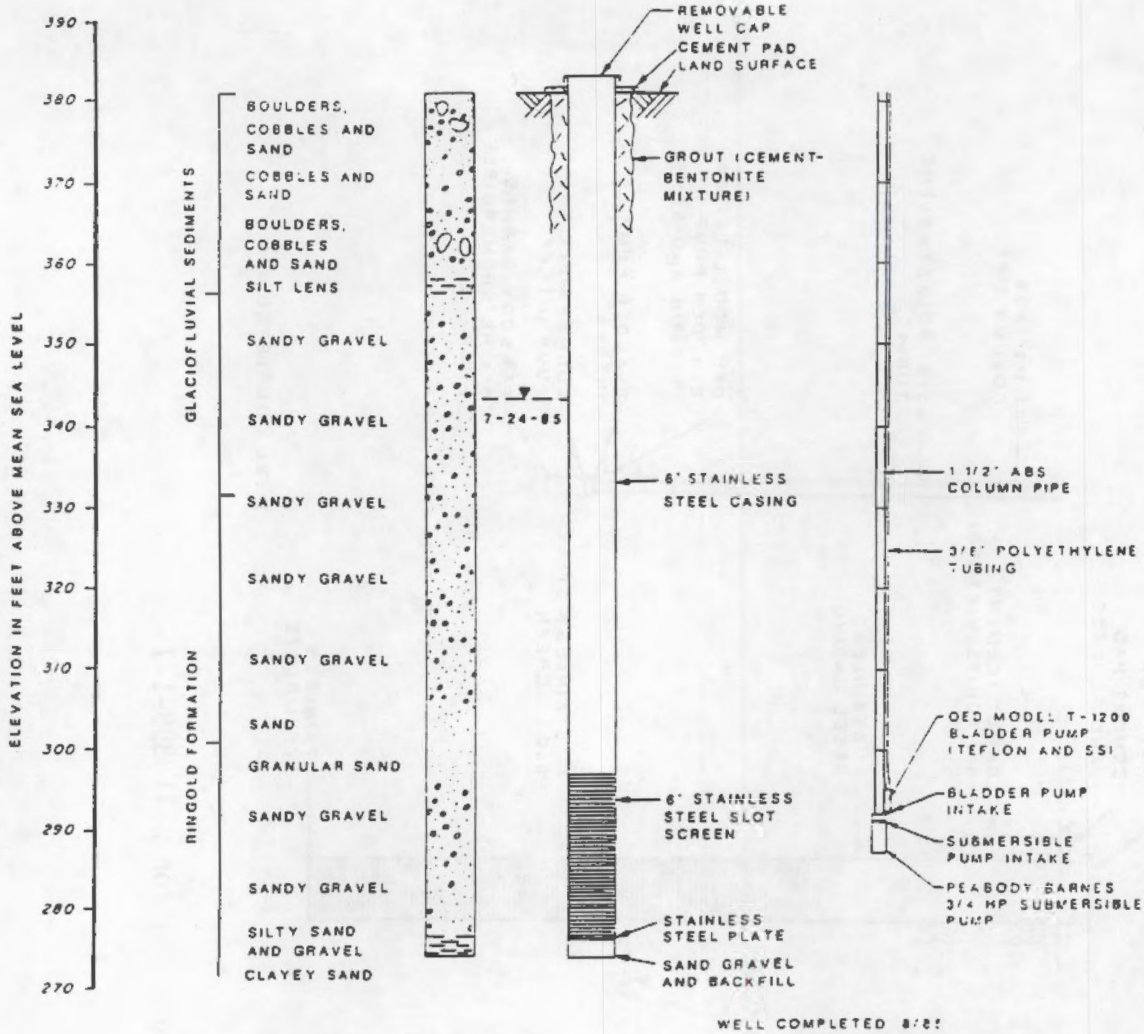

FIGURE A.5. Structural Diagram and Geologic Log for Well 399-1-8

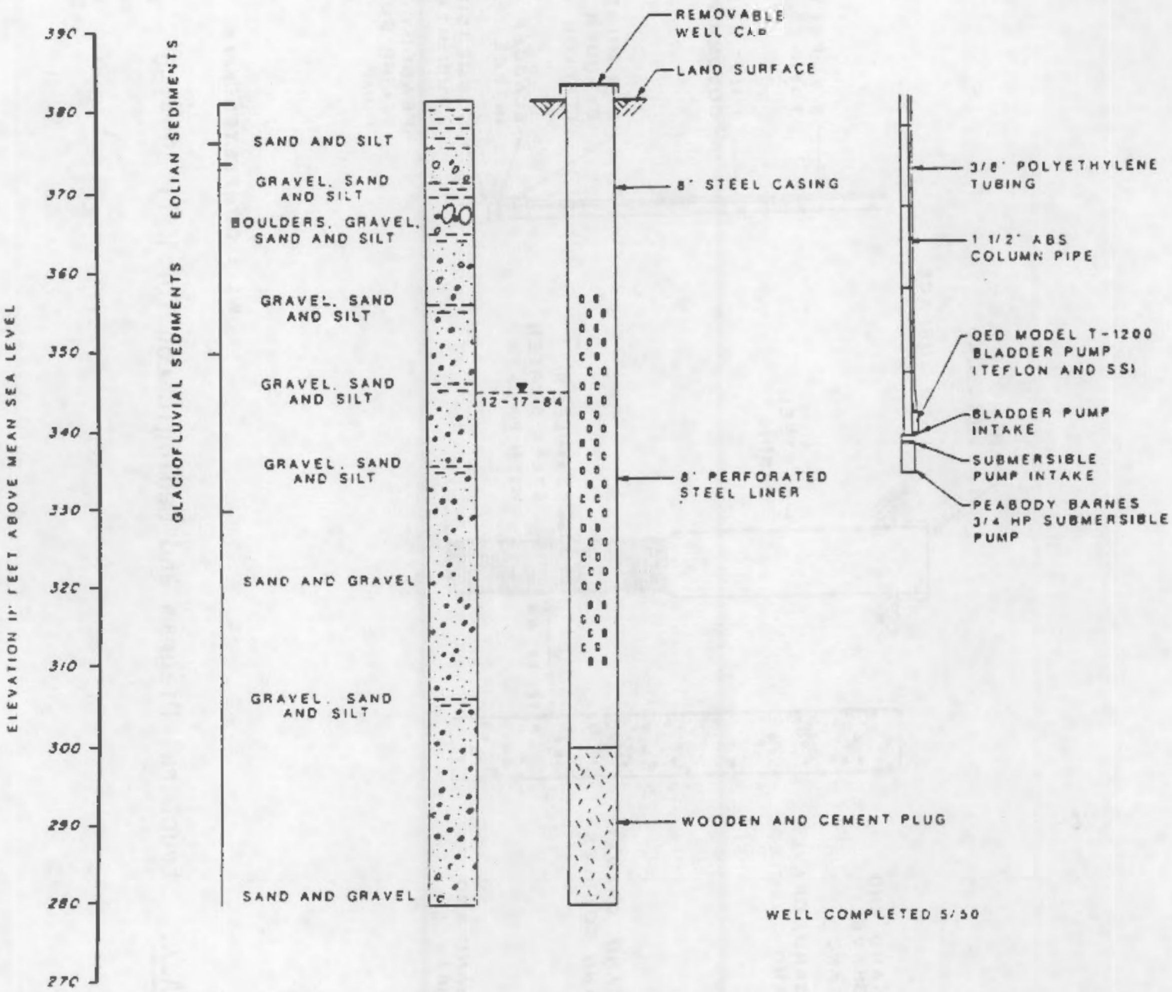

FIGURE A.6. Structural Diagram and Geologic Log for Well 399-1-4

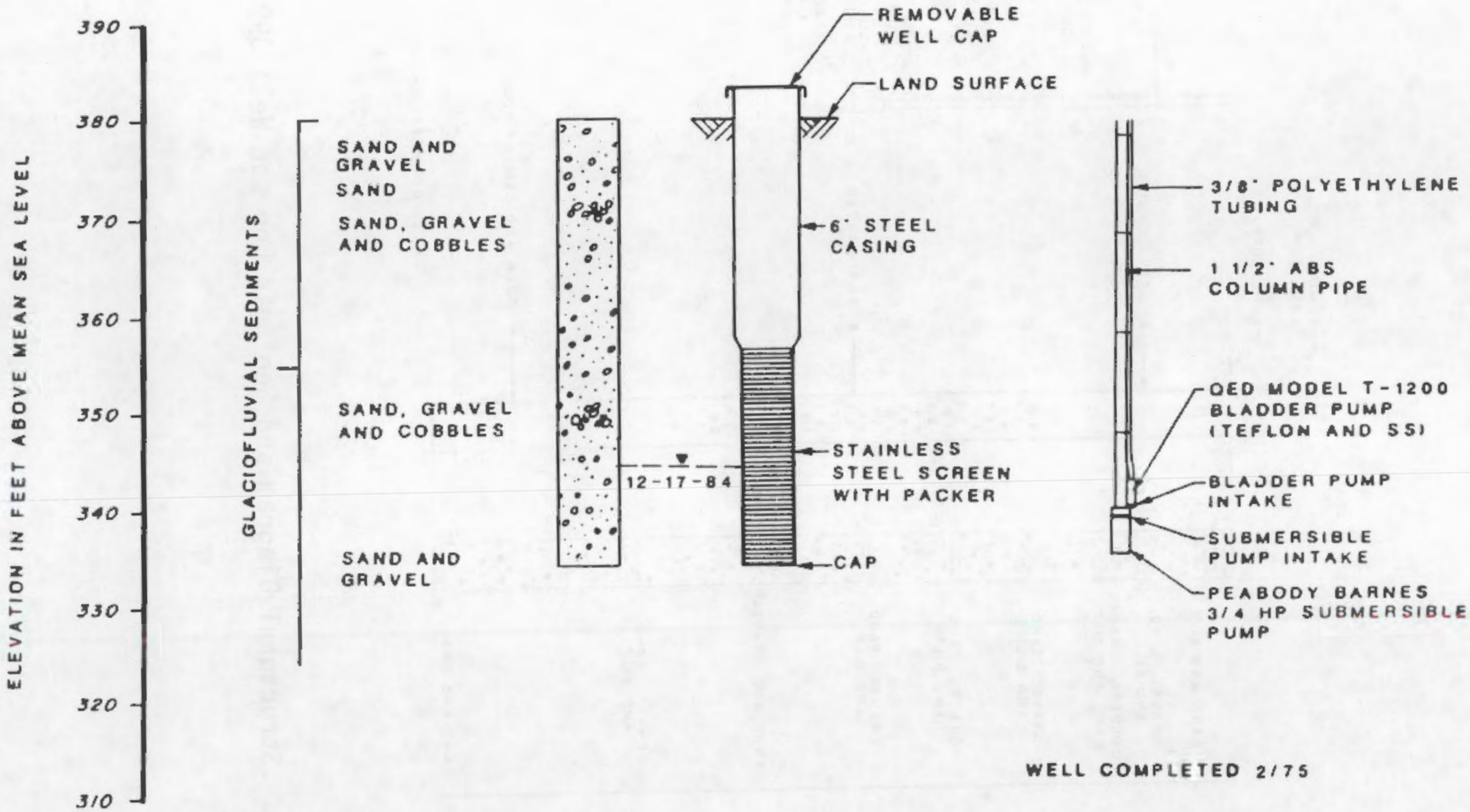

FIGURE A.7. Structural Diagram and Geologic Log for Well 399-1-5

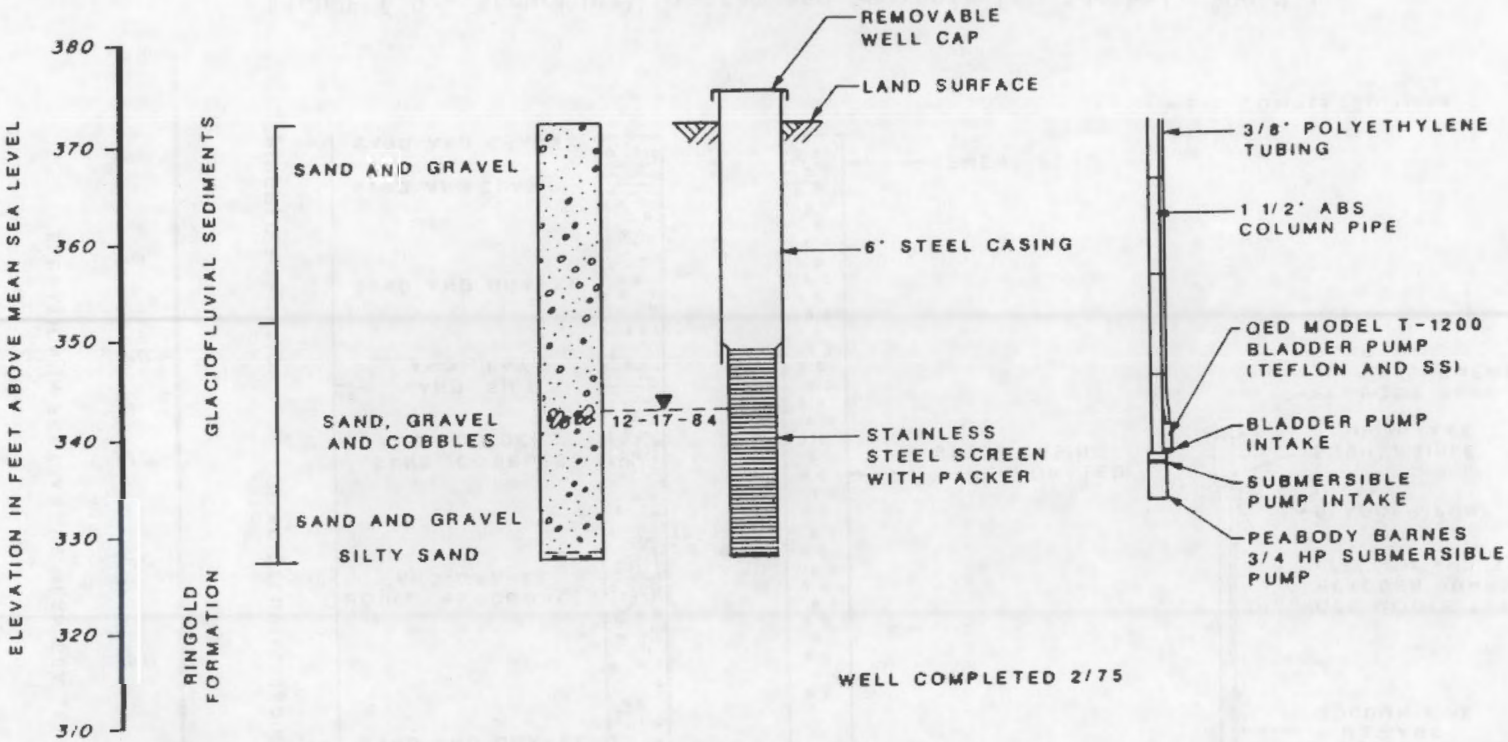

FIGURE A.8. Structural Diagram and Geologic Log for Well 399-1-6

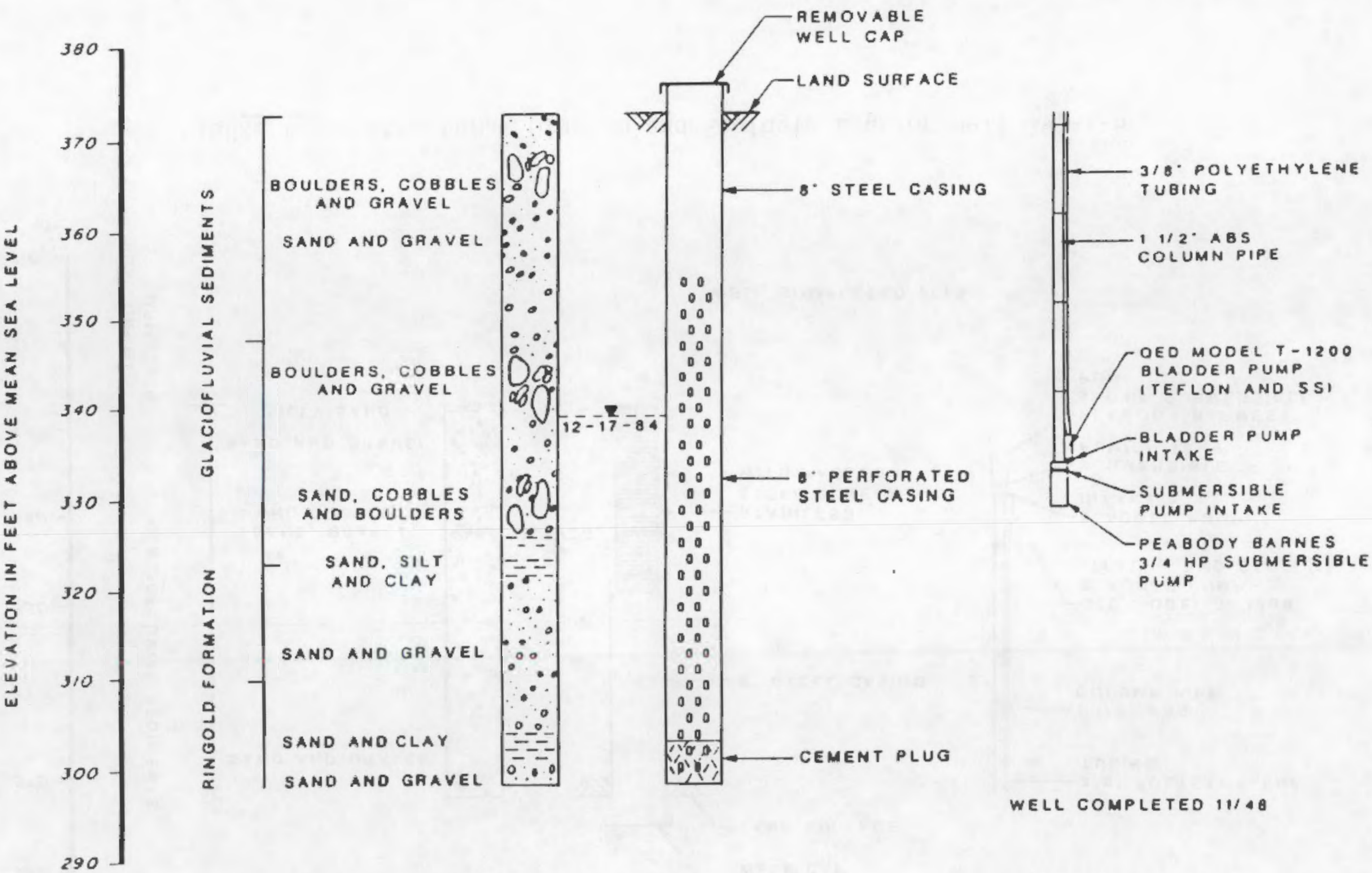

FIGURE A.9. Structural Diagram and Geologic Log for Well 399-2-1

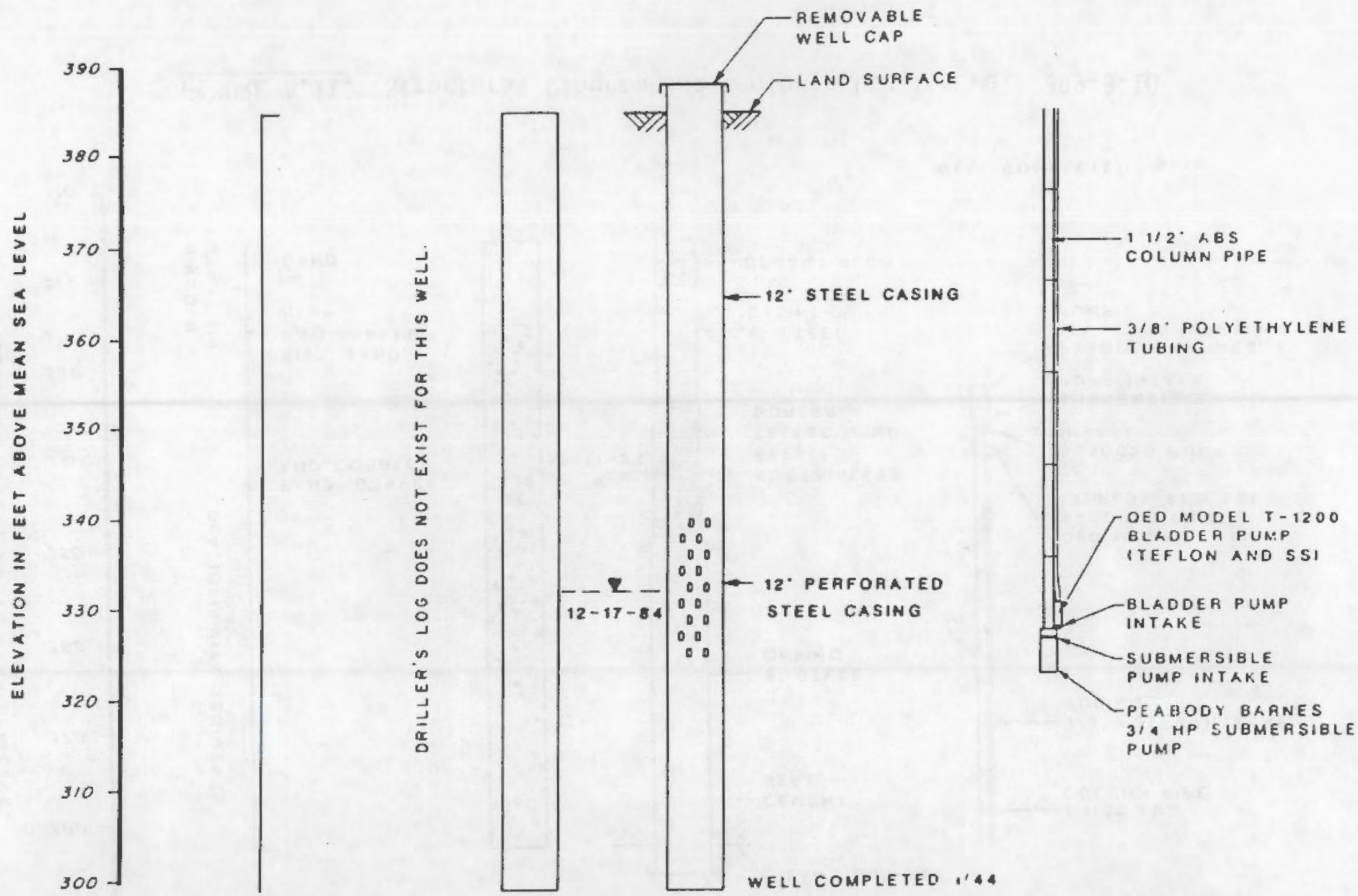

FIGURE A.10 Structural Diagram and Geologic Log for Well 399-3-7

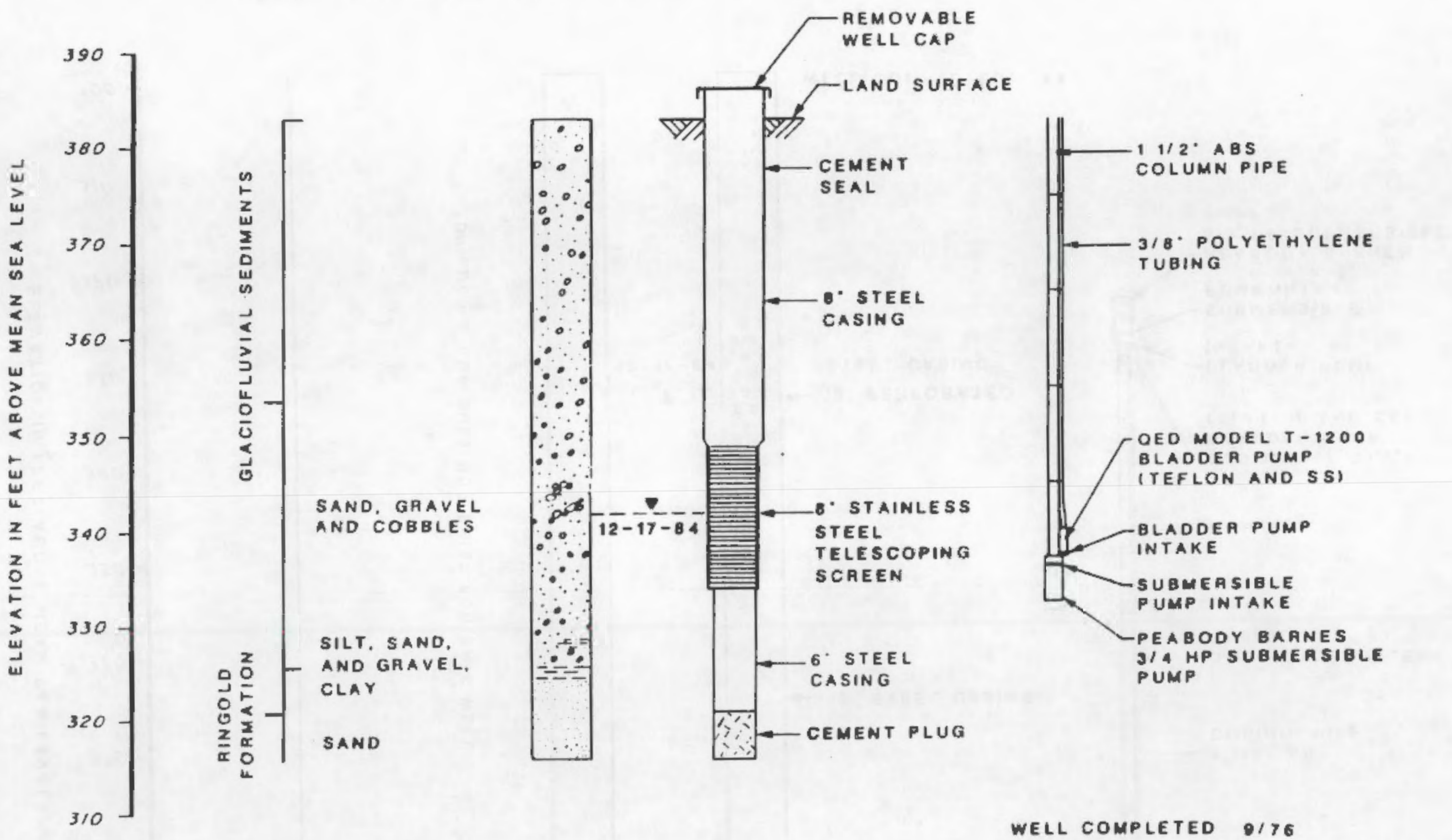

FIGURE A.11. Structural Diagram and Geologic Log for Well 399-3-10

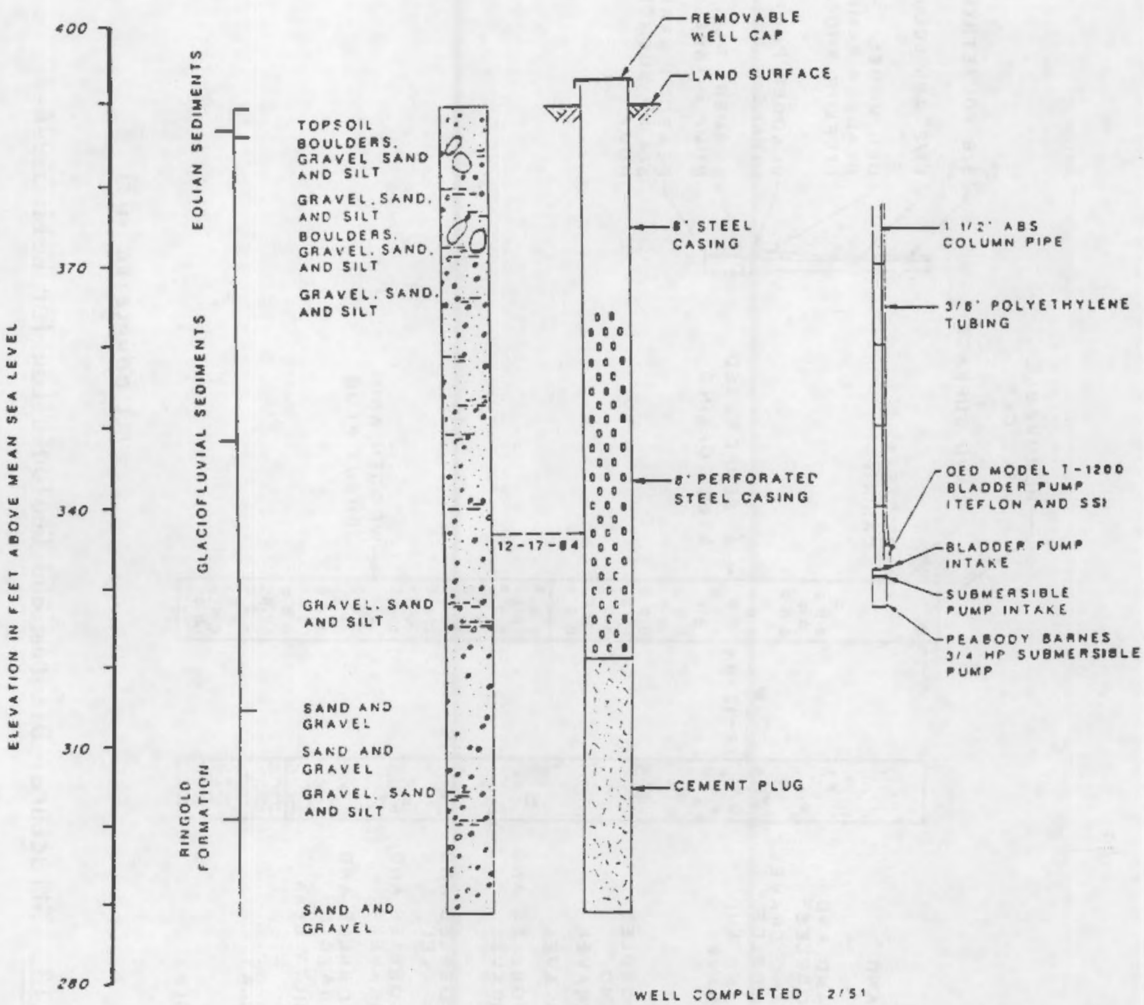

FIGURE A.12. Structural Diagram and Geologic Log for Well 399-4-1

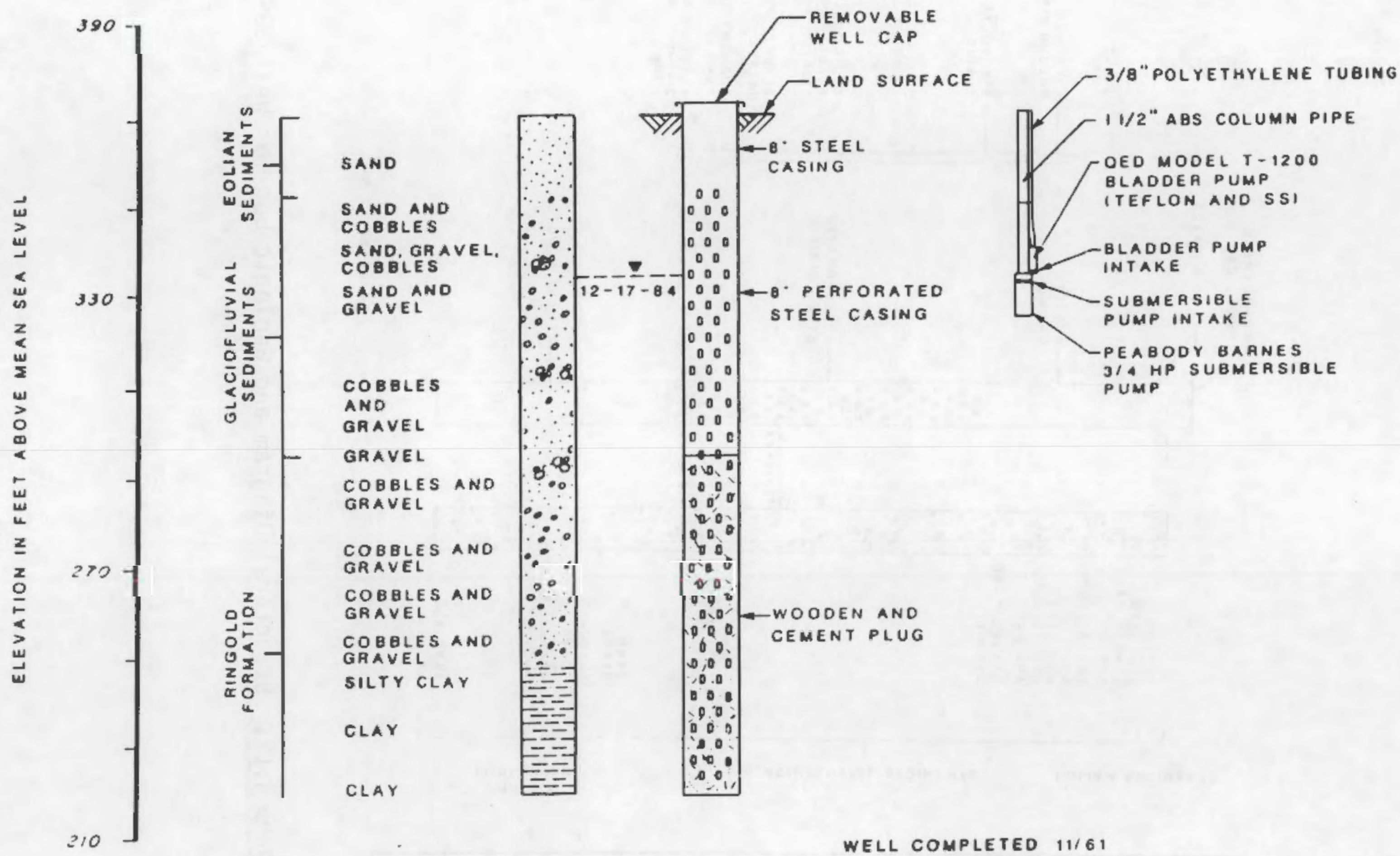

FIGURE A.13. Structural Diagram and Geologic Log for Well 399-4-7

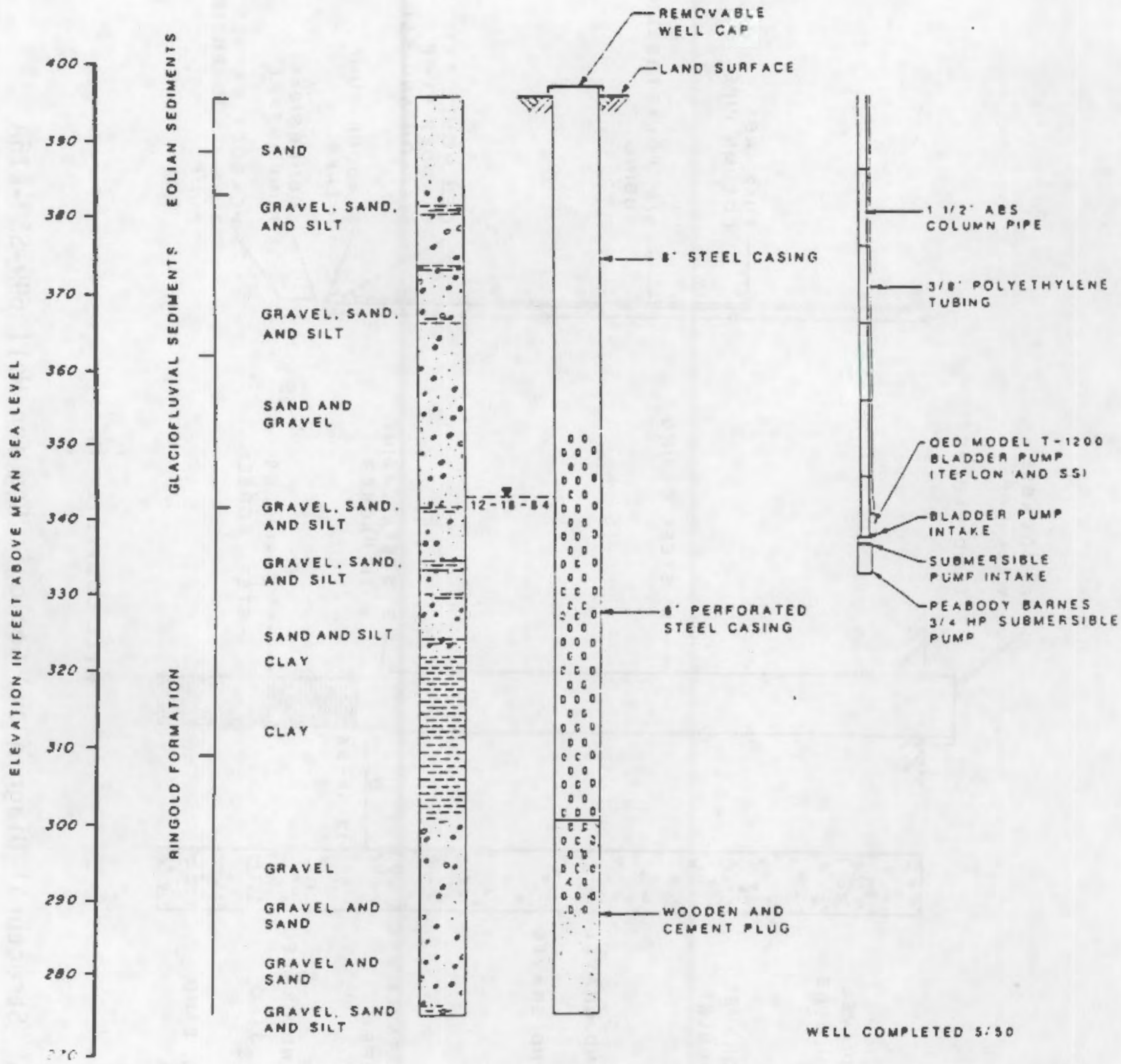

FIGURE A.14. Structural Diagram and Geologic Log for Well 399-8-2

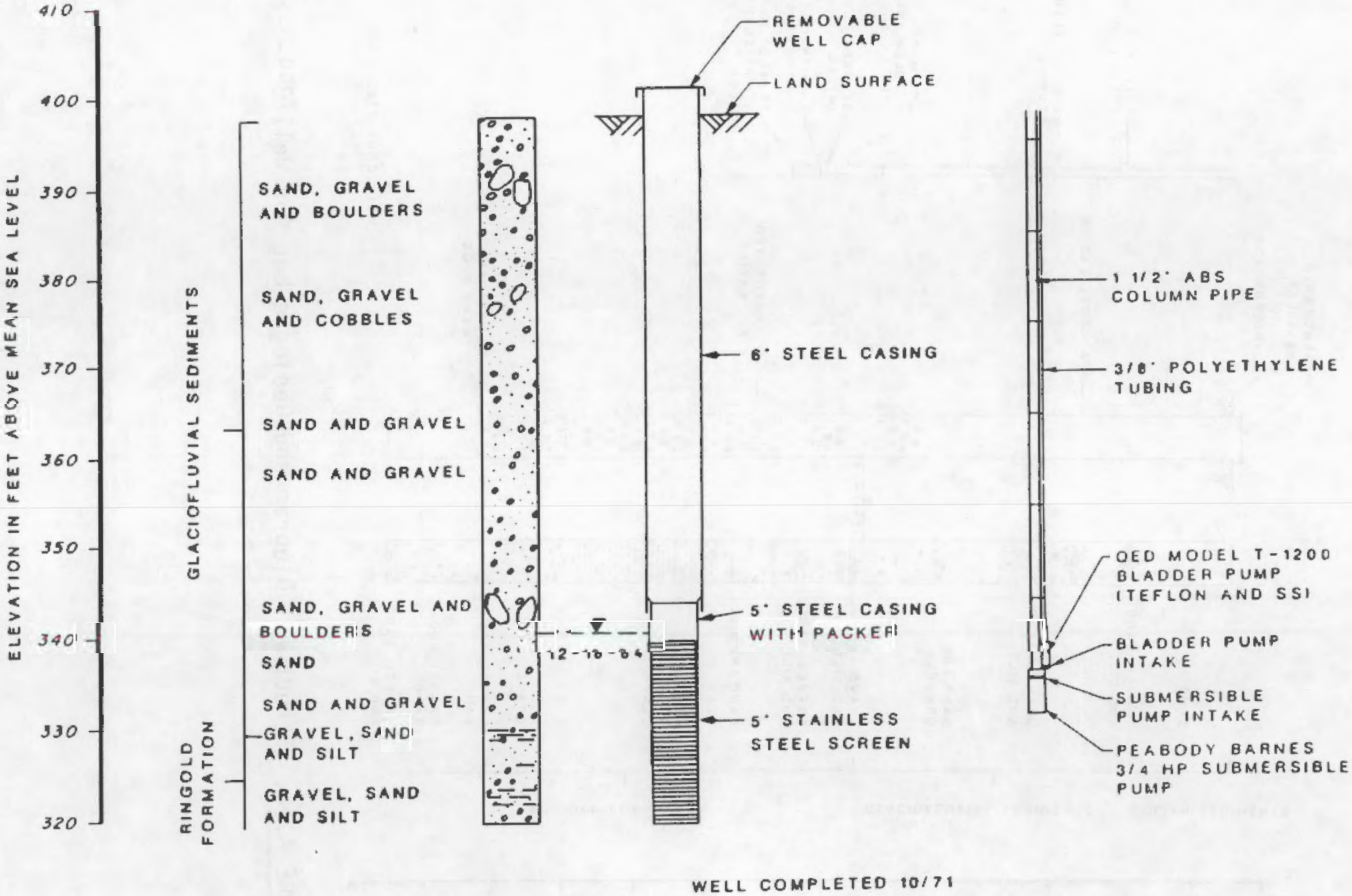

FIGURE A.15. Structural Diagram and Geologic Log for Well 699-S30-E15A

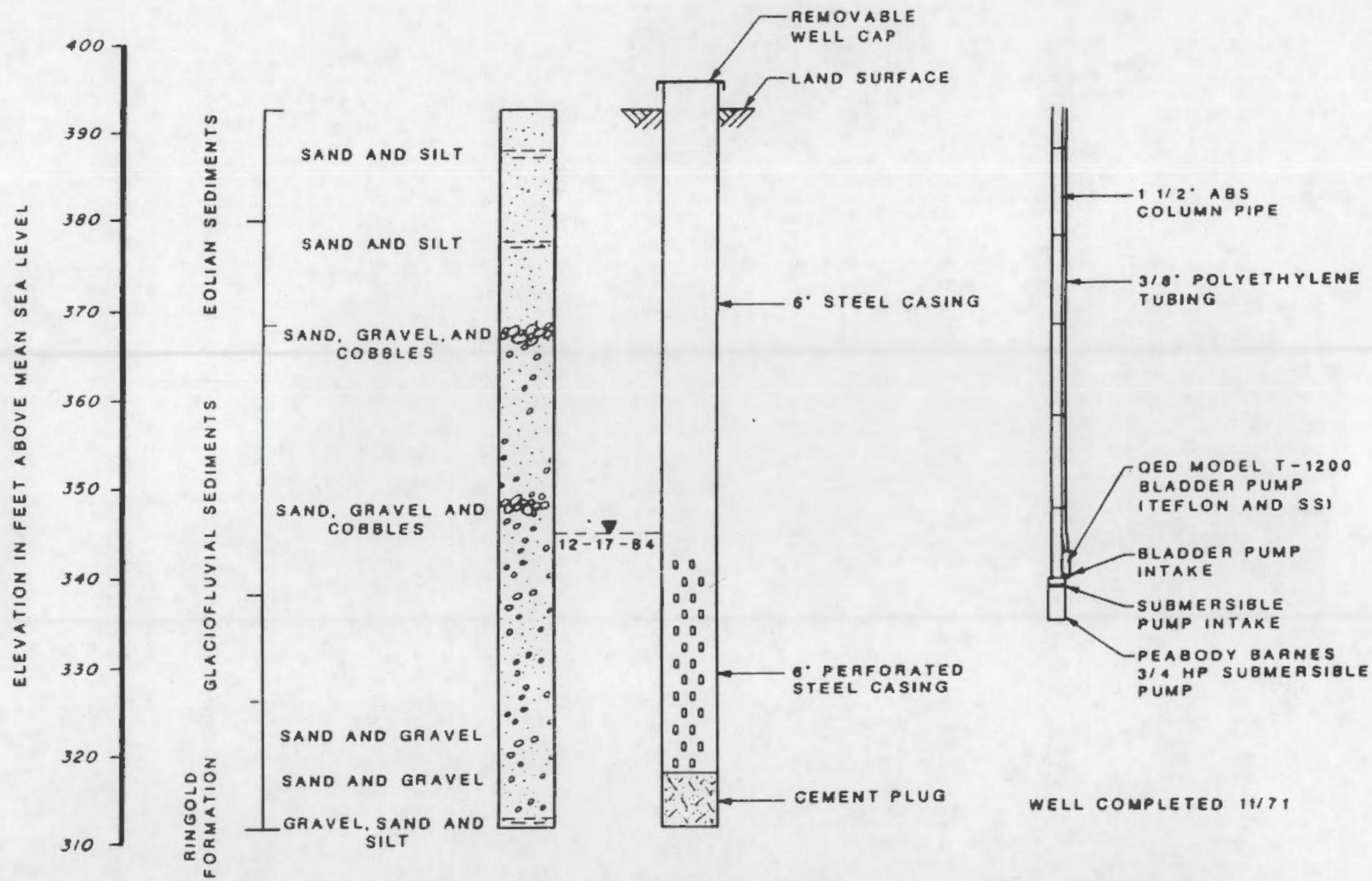

FIGURE A.16. Structural Diagram and Geologic Log for Well 699-S19-E13

APPENDIX B

PROCEDURES FOR SAMPLE COLLECTION, CHAIN-OF-CUSTODY, AND FIELD MEASUREMENTS

APPENDIX B

PROCEDURES FOR SAMPLE COLLECTION, CHAIN-OF-CUSTODY, AND FIELD MEASUREMENTS

This appendix gives procedures used in the RCRA Compliance Monitoring Project for sample collection, chain-of-custody, and field measurements. These procedures have been extracted from PNL's Environmental Monitoring Procedures manual (Earth Sciences Department, 1986).

13.0 HAZARDOUS MATERIALS SAMPLING

Introduction

Environmental monitoring for a wide variety of hazardous chemicals has recently been implemented at the Hanford Site. Samples to be analyzed for these materials must, in many cases, receive special treatment. Accordingly, new procedures that are specifically designed to preserve the integrity of these samples have been developed.

The procedures to be used during collection and transportation of the samples are contained in this section. All aspects of sampling, including pump operation, borehole purging, and field measurements (water level, pH, specific conductivity, and temperature) are described. The chain-of-custody procedures used to track and protect the samples are also included.

13.1 WATER-LEVEL MEASUREMENT PROCEDURE

Introduction

Water-level measurements are taken each time a well is sampled, before it is purged. These measurements are taken as depth-to-water from the top of the well casing. They must be subtracted from the surveyed elevation of the casing given in Hanford Wells to obtain the elevation of the water table. The water-table elevations obtained for all wells in the sampling network during a particular sampling episode can be used to produce a contour map showing the ground-water surface at the time that the measurements were made. These contour maps can be used to help characterize the ground-water flow system and to ensure that the sampling network is adequate.

Graduated steel measuring tapes are more accurate than electrical tapes and so should be used for official measurements. However, an electrical tape can be used to determine the approximate depth to water.

Equipment

The following equipment will be needed:

- steel measuring tape with attached weight
- blue carpenter's chalk
- a copy of Hanford Wells (PNL-5397)
- electrical tape
- engineer's measuring tape
- field record forms.

Graduated Steel Tape Method

Chalk the 1-ft section of steel tape below the zero reading point.

Find the elevation of the measuring point and the estimated water level in Hanford Wells, or use an electric tape to find the approximate depth to water.

Lower the steel tape from the well's measuring point (marked with paint on the top of the casing) to the estimated water level. Note the amount of tape that is in the well by reading the tape at the measuring point. This value is referred to as the "hold point."

Remove the steel tape and check the wetted portion below the zero reading point.

NOTE: If the chalked portion is not wet, repeat the procedure, but allow more of the tape to go down the well (i.e., use a greater hold point).

Add the unwetted length of the chalked portion of the tape to the hold point value to obtain the depth-to-water measurement.

If the chalked portion is not wet, repeat until the water level is marked on the chalked portion of the tape.

Repeat the procedure until two steel tape measurements agree within ±0.05 ft.

Record the depth-to-water measurements, time of measurements, measuring device, and the name of the person taking the measurements on the field record form.

<u>Electric Tape Method</u>

Lower the electric tape from the measuring point into the borehole until the buzzer and the light indicate contact with the water.

Mark the electric tape at the measuring point and identify the nearest graduation on the electric tape.

If the water level is deeper than the nearest graduation marked on the tape, add the difference to the depth identified to obtain the true depth to water.

If the water level is shallower than the nearest graduation marked on the tape, subtract the difference from the depth identified to obtain the true depth to water.

Record the depth-to-water measurements, time of measurements, measuring device, and the name of the person taking the measurements on the field record form.

NOTE: This measurement should be used only as an approximate depth to water, because the electric tape is less reliable than the steel tape.

13.2 HAZARDOUS MATERIALS SAMPLE COLLECTION PROCEDURES

Introduction

These procedures are intended for use in collecting ground-water samples that will be analyzed for hazardous chemicals.

Equipment

The following equipment may be needed in the field during sampling:

- truck-mounted air compressor and generator
- bladder-pump controller box
- bladder-pump hoses (set of 2)
- extra discharge line for bladder pump
- extra discharge line for submersible pump
- Teflon bailer
- pH and conductivity meter
- digital thermometer
- steel measuring tape
- blue chalk
- electrical tape
- engineer's measuring tape
- a copy of Hanford Wells (PNL-5397)
- stopwatch or watch with second hand
- bucket or jug (for measuring flow rate)
- distilled water
- ziplock bags
- ice chests with ice
- plastic gloves
- aprons
- towels
- indelible marker
- extra sample labels
- sample seals
- a copy of all relevant procedures
- sample containers with caps and liners (including extras)
- field record forms
- chain-of-custody forms
- sample-analysis request forms.

Sampling Precautions

Do not smoke, eat, or handle any objects not necessary for sampling while performing sampling procedures.

Do not sample downwind of any potential sources of volatile organics such as car exhausts or open fuel tanks. These could contaminate the sample. If any such sources are unavoidable, make a note of them on the field record forms.

Leave caps on the sample containers until just before filling.

Avoid handling the Teflon bottle cap liners. Do not use any liner that falls out of the cap and onto the ground.

Wear gloves when taking samples and when handling containers, especially those with added preservative.

<u>Sample Collection Using Submersible Pump</u>

Take water-level measurements according to the water level measurement procedure.

Check to see that the hose bibb for the submersible pump is open.

CAUTION: Be sure the power switch to the 230-V outlets is turned off!

Plug the power cord into one of the 230-V outlets on the generator on the truck and into the outlet at the well head.

Start the electric generator.

Turn the power switch on to begin pumping process. Be sure not to handle energized power cords. If the pump does not work properly, as indicated by a lack of air flow out the discharge hose or by failure of the generator to "lug" down, turn the switch off immediately. After waiting a few seconds, turn the switch on and off several times rapidly, finally pausing in the ON position to determine if the pump has started to function properly.

After the water begins to flow from the outlet, pump the well for the length of time indicated in Table 13.1 (or for an adjusted pumping time, as explained in Table 13.1), and until pH, temperature, and specific conductivity stabilize. If the well being sampled is not listed in the table, pump for a minimum of 15 minutes and check for stabilization of the pH, temperature, and specific conductivity.

NOTE: Some wells pump down after a period of time. If the well pumps dry while purging, it does not generally mean that a sample cannot be collected. A sample can still be obtained by following these steps:

1. Turn off the submersible pump when the well pumps dry.

2. Wait for the well to recharge. This should be about 15 minutes, but may take as long as 30 minutes.

3. Measure the depth to water using the electrical tape. Make sure that the water level is above the pump intake.

4. Turn the submersible pump back on. Collect the samples that are designated for collection with the submersible pump.

Table 13.1. Calculated Pumping Times

Well Number	Calculated Time (min)
(199) H3-1	24
H4-3	5*
H4-4	4*
H4-5	8*
H4-6	5*
(399) 1-1	30
1-2	42
1-3	25
1-4	34
1-5	4*
1-6	6*
1-7	17
1-8	29
2-1	32
3-7	60
3-10	18
4-1	35
4-7	35
8-2	33
(699) S30-E15A	9*
S19-E13	12*

* All wells will be pumped a minimum of 15 minutes, even if the calculated time is less.

NOTE: These pumping times are based on voiding three bore-volumes of water from the well at a pumping rate of 10 gpm. To calculate an adjusted pumping time based on a field measurement of flow rate:

1. Divide the size of the container (in gal) by the number of seconds it took to fill. Multiply by 60 to get the new pumping rate (per minute).

2. Multiply the calculated time given in Table 13.1 by 10 and then divide by the new pumping rate to get the new pumping time.

Measure the pH, temperature, and specific conductivity of the discharged water at least three times during purging, according to the standard procedures for measuring pH and conductivity. The pH will be considered stable when two consecutive measurements agree within 0.2 pH units. Temperature will be considered stable when two consecutive measurements agree within 0.2°C. Conductivity will be considered stable when two consecutive measurements agree within 10 μmhos. If pH, temperature, and conductivity do not stabilize within the calculated purging time, contact the technical supervisor before collecting samples.

Enter time, date, and your initials on all sample labels.

Record information on field record form as it becomes available. The information that must be recorded on the field record forms is described in Section 13.3 (Chain-of-Custody Procedures).

Check the labels on the sample containers to determine which ones can be filled using the submersible pump. (A blue line on the right side of the sample label indicates that the submersible pump should not be used to fill that particular container.)

Fill the appropriate sample containers as described under "General Sample Collection Procedure."

Attach a sample seal to each container and place it in a cooler or ice chest.

<u>Sample Collection Using Bladder Pump</u>

If the well has a dedicated bladder pump, turn on the air compressor and use the procedure described below. If the well does not have a bladder pump, use the procedures given for the Teflon bailer to collect the remaining samples.

Attach the compressor to the bladder-pump pressure inlet on the face of the controller panel, using the female portion of the coupling supplied.

Connect either end of the controller's red air hose to the pump supply on the right side of the control panel. Connect the other end of the controller air hose to the quick-connect nipple located in the well cap assembly.

Attach the appropriately labeled extension line to the bladder-pump discharge line.

Five to fifteen pumping cycles are required to purge the air from the bladder pump and tubing. Full water flow from the sample supply tube should then begin. After water flows from the outlet tube, run the bladder pump for at least five minutes before taking samples.

To reduce the water-flow rate during sample collection, turn the throttle control on the left side of the control panel in the counterclockwise direction. To increase the flow rate, turn the throttle control clockwise.

To optimize pumping efficiency for a specific well depth, refer to the pump manufacturer's operating instructions.

<u>Sample Collection Using Teflon Bailer</u>

Unclasp the metal bailer from the winch line and replace it with the Teflon bailer.

Disengage the winch clutch and <u>slowly</u> lower the bailer into the water.

Engage the winch clutch when the bailer strikes the water surface.

Allow about 30 seconds for the sample tube to fill.

Turn on the electric winch and <u>slowly</u> raise the Teflon bailer to the surface.

Lower and rinse the bailer twice before collecting a sample.

Unscrew the cap of the sample container, being careful not to touch the lip of the bottle or the inside of the Teflon liner. Avoid touching the mouth of the Teflon bailer.

Unclasp the Teflon bailer.

Pour the water from the bailer into the sample container <u>slowly</u> to prevent trapping any air bubbles. Avoid splashing or agitating the water while the sample container is being filled.

<u>General Sample Collection Procedure</u>

Unscrew the cap from the sample container, being careful not to touch the lip of the bottle or the inside of the Teflon liner. Also avoid touching the mouth of the discharge line.

Fill the sample bottle slowly by placing the outlet tube against the inner side of the sample bottle to prevent trapping any air bubbles. Avoid splashing or agitating the water while the bottle is being filled.

NOTE: For those bottles requiring no headspace, the bottle should be filled completely so that a meniscus forms. Cap the bottle immediately, turn it upside down, tap it a few times and check for air bubbles in the sample. If a bubble exists, discard the sample and repeat the sampling procedures until an air-free sample is obtained. There is an exception to this if the bottle to be filled contains a preservative, in which case only one attempt will be made to obtain an air-free sample.

As each container is filled, attach a sample seal to it and place it in a cooler or ice chest.

Survey the sample container with a GM instrument. If the count is greater than 200 c/m, record it on the field record form and use Radiation Work Procedure 318-EE-1. Contact the EM Supervisor for instructions concerning where the sample is to be taken.

Turn off the air compressor.

Turn the power switch off and then turn the generator off. Unplug the power cord.

Complete the chain-of-custody and sample-analysis request forms.

Deliver the sample to the appropriate laboratory for analysis as soon as possible, following chain-of-custody procedures. If it cannot be delivered to the lab the same day, store the sample in a refrigerator located inside a locked building or within a secured area. The refrigerator must maintain a constant temperature of 4°C (39°F). Leave the cooler to be used when the samples are delivered.

<u>Teflon Bailer Cleaning Procedure</u>

Wash the inside and the outside of the bailer with a mild mixture of dish soap and water.

Rinse the bailer twice with tap water.

Store the bailer in a sealable plastic bag between uses.

13.3 CHAIN-OF-CUSTOOY PROCEDURES

Introduction

To ensure the integrity of the samples from the time of collection through data reporting, the history of the custody of each sample will be documented according to these procedures. A sample is considered to be under a person's custody if it is in any of the following states: 1) in his physical possession; 2) in his view after he has taken possession; 3) secured by him so that no one can tamper with the sample; or 4) secured by him in an area which is restricted to authorized personnel. Anyone having custody of samples must comply with the procedures described below.

Delivery Procedures

Sample Labels

Fill out and affix gummed paper labels to the sample containers prior to or at the time of sample collection. The label to be used is shown in Exhibit 13.1. The well number noted on the label identifies the well location where the sample was collected.

Sample Seals

Attach gummed paper seals to the samples immediately upon sample collection, before the samples leave your custody. Attach the seal in such a way that the sample cannot be opened without breaking the seal.

Field Record Form

Record (in black ink) all pertinent information about each sample collected on a field record form and insert into a logbook. It will be a bound book with consecutively numbered pages. An example field record form is shown in Exhibit 13.2.

Chain-of-Custody Form

A chain-of-custody form will accompany all samples from the time they are collected until they are disposed of after analysis and reporting. A single form will be used for as many samples as possible. The form to be used is shown in Exhibit 13.3. Each person who handles the sample and signs the form will return a copy of the form to the company contact whose name appears on the top line.

Sample-Analysis Request Form

UST requires that a sample-analysis request form accompany all samples delivered to the lab. The form to be used is shown in Exhibit 13.4. The field portion of the form will be completed by the sample collector; the laboratory portion will be completed by laboratory personnel.

You will normally deliver samples directly to the laboratory on the day of collection. If they cannot be delivered on the day of collection, you must store them in a refrigerator in a locked building. (No shipping of the samples will be necessary, due to the lab's proximity to the site.) All samples will be accompanied by a chain-of-custody form and a sample-analysis request form. Deliver samples only to authorized laboratory personnel.

Laboratory Acceptance Procedures

The chain-of-custody does not end at the laboratory door, and therefore the laboratory must ensure the continuity of its record by following these procedures:

Receiving Department

Remove the sample cooler from the delivery vehicle and bring it into the receiving area.

Check the sample cooler for any obvious damage.

Sign the chain-of-custody and sample-analysis request forms.

If you transfer custody of the cooler to one or more intermediates before it is delivered to the Sample Custodian, the chain-of-custody form must reflect every change of custody.

(sample number) - company code	(list of analyses)
(well number)	
(bottle preparation)	
SAMPLE SIZE: ____________	LAB: ____________
DATE/TIME: ____________	
COLLECTOR: ____________	

Exhibit 13.1. Sample Label

Battelle
Pacific Northwest Laboratories

FIELD RECORD

Well Number ______________________ Date ______________________

Pumping Time: Precalculated ______________

New ______________

Submersible (Time On) ______________

Bladder (Time On) ______________

CALCULATIONS

SAMPLES COLLECTED

SAMPLE NO.	VOLUME	PUMP	COLLECTOR

FIELD MEASUREMENTS

WATER LEVEL

Held			
Wet			
Level below T.C.			

(E - tape = ______________)

Time							
pH							
Temp							
Cond							

FIELD OBSERVATIONS ______________________

Data Recorded By ______________ Data Checked By ______________

Chain-Of-Custody Form No. ______________ Laboratory Record Book No. ______________

Page No. ______________

BC-1500-113 (5-88)

Exhibit 13.2. Field Record Form

Battelle
Pacific Northwest Laboratories
P.O. Box 999
Richland, Washington 99352

CHAIN OF CUSTODY

Company Contact: ______________________ Telephone: ______________

Samples Collected by: ______________________ Date: ____________ Time: __________

Sample Location: ____

Ice Chest No.: ______________________ Field Logbook Page No.: __________

Remarks: ____

____

Method of Shipment: ____

Sample Identification

______________________ ______________________

______________________ ______________________

______________________ ______________________

______________________ ______________________

______________________ ______________________

______________________ ______________________

______________________ ______________________

______________________ ______________________

______________________ ______________________

______________________ ______________________

______________________ ______________________

______________________ ______________________

CHAIN OF POSSESSION

Relinquished by:	Received by:	Date/Time:
______________	______________	______________
Relinquished by:	Received by:	Date/Time:
______________	______________	______________
Relinquished by:	Received by:	Date/Time:
______________	______________	______________
Relinquished by:	Received by:	Date/Time
______________	______________	______________

BC-1200-345 (7-85)

EXHIBIT 13.3. Chain-of-Custody Form

EXAMPLE

SAMPLE ANALYSIS REQUEST

Pacific Northwest Laboratory
P O Box 999
Richland WA 99352

United States Testing Company, Inc.
2800 George Washington Way
Richland WA 99352

Collector ______________________

Date /Time Sampled ______________________

Company Contact ______________________

Received by ______________________

Title ______________________

Date ____________ Time ____________

	1	2	3	4	5	6	7	8	9	10	11	12	13
CHAIN OF CUSTODY NO. ____________													
SAMPLE ID ____________													
UST SAMPLE ID ____________													
COMMENTS													

	CODE	CONSTITUENT	1	2	3	4	5	6	7	8	9	10	11	12	13
1	725	ICP METALS 6010													
2	726	ICP METALS 6010 ENHANCED													
3	A20	ARSENIC													
4	A21	MERCURY													
5	A22	SELENIUM													
6	A23	THALLIUM													
7	A24	THIOUREA 8330													
8	727	METHOD 8330 ENHANCED													
9	A31	LEAD BY GFAA													
10	739	PCB													
11	728	PESTICIDES 8080													
12	729	PESTICIDES 8080 ENHANCED													
13	730	VOA METHOD 8240													
14	731	VOA METHOD 8240 ENHANCED													
15	732	A/B/N 8270													
16	733	A/B/N 8270 ENHANCED													
17	734	PESTICIDES METHOD 8140													
18	C68	TOX													
19	C69	TOC													
20	C70	CYANIDE													
21	735	NITRATE, SULPHATE,.... (IC)													
22	C77	PERCHLORATE													
23	C78	SULFIDE													
24	C80	AMMONIUM ION													
25	C81	ETHYLENE GLYCOL													
26	109	COLIFORM BACTERIA													
27	181	RADIUM													
28	112	ALPHA													
29	111	BETA													
30	C86	DIOXIN													
31	C87	CITRUS RED #2													
32	191	CONDUCTIVITY													
33	199	pH													
34	736	DIRECT AQUEOUS INJECTION													
35	738	HERBICIDE 2,4-D, 2,4,5-TP SILVEX													
36	737	HERBICIDE 8150 ENHANCED													

DR2:(7,9|66

EXHIBIT 13.4. Sample-Analysis Request Form

Sample Custodian

When the sample cooler is delivered to you (or your designated alternate), sign the chain-of-custody form. Then return one copy to the sender and retain the remaining copies. The sample cooler is now your responsibility (or that of your designated alternate). You must now log the samples in.

Examine the sample coolers. On the sample log-in form (Exhibit 13.5), record

- presence/absence of custody seal(s) on the samples
- condition of custody seal(s).

Open the sample coolers, examine the sample documents, and record on the sample log-in form whether chain-of-custody form(s) are present.

Remove sample containers and record on sample log-in form:

- condition of samples (intact, broken, leaking, etc.)
- presence/absence of sample labels and sample seals
- any discrepancy with chain-of-custody form(s).

If discrepancies are found, contact the sender for clarification.

Once all samples have been properly logged in, send a copy of the sample log-in form to the company contact named on the chain-of-custody form.

Use an internal numbering system for identification of all samples.

Assign internal numbers to the samples and record the numbers on the sample log-in form alongside the corresponding sample number assigned by the collector.

Place the properly labeled sample containers in the secure storage area.

Sample

UST-RD SAMPLE LOG-IN FORM

DATE:

TIME:

COOLER ID :
CLIENT SAMPLE ID:
UST-RD ID :
NUMBER OF BOTTLES IN COOLER :
IS CHAIN OF CUSTODY FORM PRESENT? :
CHAIN OF CUSTODY NUMBER :
IS SAMPLE ANALYSIS REQUEST FORM PRESENT? :

* IS THE CUSTODY SEAL ON THE COOLER INTACT? :

* ARE THE CUSTODY SEALS ON THE BOTTLES INTACT? :

* DO THE SAMPLE LABELS AGREE WITH THE CHAIN OF CUSTODY SHEET? :

* DO THE SAMPLE LABELS AGREE WITH THE SAMPLE ANALYSIS REQUEST SHEET? :

---

* IF ANSWER IS 'NO', PLEASE EXPLAIN BELOW IN DETAIL.

SAMPLES LOGGED IN BY: ______________________________

REVIEWED BY SAMPLE CUSTODIAN: ______________________
Govind Rao

Exhibit 13.5. Sample Log-In Form

13.4 TEMPERATURE MEASUREMENT PROCEDURE

Introduction

Temperature measurements are taken during and after purging of the well, just prior to sample collection. Measurements taken during purging are used to help ensure that the well bore has been sufficiently evacuated, as indicated by stabilization of the temperature. (The pH and conductivity are measured at the same time for the same reason.) The temperature is considered stable when two consecutive measurements agree within 0.2°C. The final temperature measurement is taken just prior to sampling and is recorded as an analytical value for the sample. The digital thermometers are regularly checked against a standard thermometer for accuracy.

Equipment

The following equipment will be needed:

- digital thermometer
- field record forms.

Temperature Measurement Procedure

Turn on the digital thermometer. Make sure that the switch is positioned so that the measurements will be in degrees centigrade.

Place the probe into the stream of water being discharged from the pump.

The temperature is indicated by a flashing display, which will normally fluctuate for a few seconds. Wait until fluctuation ceases (i.e., until the same temperature is indicated on three consecutive flashes), and then record the temperature on the field record form.

13.5 CONDUCTIVITY CALIBRATION AND MEASUREMENT PROCEDURES

Introduction

Conductivity measurements are taken during and after purging of the well, just prior to sample collection. Measurements taken during purging are used to help ensure that the well bore has been sufficiently evacuated, as indicated by stabilization of the conductivity. (The pH and temperature are measured at the same time for the same reason.) Conductivity is considered stable when two consecutive measurements agree within 10 μmhos. The final conductivity measurement is taken just prior to sampling and is recorded as an analytical value for the sample. The conductivity meter should be calibrated once a day, before it is taken to the field to begin sampling.

Equipment

The following equipment will be needed:

- conductivity meter
- distilled or deionized water
- small screwdriver
- standard solution
- field record forms.

Conductivity Calibration Procedure

Internal Standard

Empty the sample cup on the meter. Rinse it out with distilled or deionized water. Dry the cup thoroughly.

Turn the range switch to TEST.

Press the OPERATE button.

Use the small screwdriver to adjust the CALIBRATE until the meter or display reads 8.

NOTE: This is to be done as a rough calibration or battery check.

Standard Solution

Empty the sample cup. Rinse it out with distilled or deionized water.

Fill the cup with standard solution.

Turn the MODE switch to conductivity.

Turn the RANGE selector switch to the correct range for the standard solution.

Press the OPERATE button.

Use the small screwdriver to adjust the CALIBRATE until the meter or display reads the solution value.

NOTE: Do not return the conductivity standard solution to the container. Always discard it.

<u>Conductivity Measurement Procedure</u>

Check that the conductivity meter is properly calibrated by using the internal standard.

Remove the cap from the sample cup.

Rinse the cup with the water to be tested and dump it several times. Then fill the cup with the sample.

Turn the conductivity RANGE switch to the correct range.

	Range in µmhos
X1.	0 - 10
X10.	0 - 100
X100.	0 - 1,000
X1,000.	0 - 10,000

Turn the MODE switch to CONDUCTIVITY.

Press the OPERATE button on the side of the meter.

Read the conductivity on the digital display to the nearest µmho and record on field record form. Multiply the meter reading times the scale factor to obtain the correct placement of the decimal point.

After taking the reading, dump the sample and refill the cup with distilled water.

Replace the cap.

13.6 pH CALIBRATION ANO MEASUREMENT PROCEDURE

Introduction

Measurements of the pH are taken during and after purging of the well, just prior to sample collection. Measurements taken during purging are used to help ensure that the well bore has been sufficiently evacuated, as indicated by stabilization of the pH. (Conductivity and temperature are measured at the same time for the same reason.) The pH is considered stable when two consecutive measurements agree within 0.2 pH units. The final pH measurement is taken just prior to sampling and is recorded as an analytical value for the sample. The pH instrument should be calibrated once a day, before it is taken to the field for sampling.

Equipment

The following equipment will be needed:

- pH meter
- distilled or deionized water
- small screwdriver
- buffer solutions
- field record forms.

pH Calibration Procedure

Wash the meter's sample cup with distilled water.

Fill the cup with 4.0 buffer solution.

Turn the MOOE switch to pH.

Press the OPERATE button. Use the small screwdriver to adjust the ZERO to make the display read 4.00 pH on the upper meter scale or on the digital display.

Oiscard the buffer solution. Wash the cup twice with distilled or deionized water.

Fill the cup with 10.00 buffer solution.

Adjust the SLOPE to make the display read 10.00 pH.

Rinse the cup again and refill it with 4.0 pH buffer solution. Recheck the 4.0 pH value and adjust the ZERO if necessary.

Single Buffer Calibration.

After the SLOPE is calibrated the first time each day, it may be left alone for subsequent calibration. Recheck the slope as desired.

Calibrate with a buffer solution that is close to the range of interest. If the process pH is from 6.0 to 9.0, use a 7.0 buffer solution for single-point calibration.

With the buffer solution in the cup, recalibrate only the STD to make the display read the desired value.

NOTE: Do not return buffer solutions to their containers. Always discard them.

pH Measurement Procedure

Ensure that the pH instrument is properly calibrated.

Remove the cap from the sample cup.

Rinse the cup with the water to be tested several times. Then fill the cup with the sample.

Turn the MODE selector switch to pH.

Press the OPERATE button on the side of the meter.

Read the pH on the upper meter scale or on the digital display to the nearest tenth of a unit. Record the value on the field record form.

Dump the sample and refill the cup with distilled water.

Replace the cap.

APPENDIX C

ADDITIONAL VOLATILE AND SEMIVOLATILE COMPOUNDS

APPENDIX C

ADDITIONAL VOLATILE AND SEMIVOLATILE COMPOUNDS

This appendix is an extension of Table 3 and includes two lists of additional organic compounds from the 9905 list of compounds for which UST analyzes samples. The lists are presented in tables entitled Additional Volatile Organics (Table C.1) and Additional Semivolatile Organics (Table C.2).

TABLE C.1. Additional Volatile Organics

acrolein	N,N-diethylhydrazine
acrylonitrile	hydrogen sulfide
bis(chloromethyl) ether	iodomethane
bromoacetone	methacrylonitrile
methyl bromide	methanethiol
carbon disulfide	pentachloroethane
chlorobenzene	1,1,1,2-tetrachlorethane
2-chloroethyl vinyl ether	1,1,2,2-tetrachlorethane
methyl chloride	bromoform
chloromethyl methyl ether	trichloromethanethiol
crotonaldehyde	trichloromonofluoromethane
1,2-dibromo-3-chloropropane	trichloropropane
1,2-dibromoethane	1,2,3-trichloropropane
dibromomethane	vinyl chloride
1,4-dichloro-2-butene	diethylarsine
dichlorodifluoromethane	methyl methacrylate
1,1-dichloroethane	ethyl methacrylate
1,2-dichloroethane	benzene
trans-1,2-dichloroethene	dioxane
1,1-dichloroethylene	pyridine
1,2-dichloropropane	toluene
1,3-dichloropropene	

TABLE C.2. Additional Semivolatile Organics

acetophenone
warfarin
2-acetylaminofluorene
4-aminobyphenyl
5-(aminomethyl)-3-isoxazolol
amitrole
aniline
aramite
auramine
benz[c]acridine
benz[a]anthracene
benzene, dicbloromethyl
benezenethiol
benzidine
benzo[b]fluoranthene
benzo[j]fluoranthene
p benzoquinone
benzyl chloride
bis(2-chloroethoxy) methane
bis(2-chloroethyl) ether
bis(2-ethylhexyl) phthalate
4-bromophenyl phenyl ether
butyl benzyl phthalate
2-sec-butyl-4,6-dinitrophenol
chloroalkyl ethers
p-chloroaniline
p-chloro-m-cresol
1-chloro-2,3-epoxypropane
2-chloronaphthalene
2-chlorophenol
chrysene
cresols
2-cyclohexyl-4,6-dinitrophenol
dibenz[a,h]acridine
dibenz[a,j]acridine
dibenz[a,h]anthracene
7H-dibenzo[c,g]carbazole
dibenzo[a,e]pyrene
dibenzo[a,h]pyrene
dibenzo[a,i]pyrene
di-n-butyl phthalate
maleic hydrazide
nicotinic acid
strychnine
3,3'-dichlorobenzidine
2,4-dichlorophenol
2,6-dichlorophenol
2,6-dichlorophenol
diethyl phthalate
dihydrosafrole
3,3'-dimethoxybenzidine
p-dimethylaminoazobenzene
7,12-dimethylbenz[a]anthracene
3,3'-dimethylbenzidine
thiofanox
alpha,alpha-dimethylphenethylamine
2,4-dimethylphenol
dimethyl phthalate
dinitrobenzene
4,6-dinitro-o-cresol and salts
2,4-dinitrophenol
2,4-dinitrotoluene
2,6-dinitrotoluene
di-n-octyl phthalate
diphenylamine
1,2-diphenylhydrazine
di-n-propylnitrosamine
ethyleneimine
ethyl methanesulfonate
fluoranthene
hexachlorobutadiene
hexachlorocyclopentadiene
hexachloroethane
indeno(1,2,3-cd)pyrene
isosafrole
malononitrile
melphalan
methapyrilene
metholonyl
2-methylaziridine
3-methylcholanthrene
4,4'-methylenebis(2-chloroaniline)
2-methyllaconitrile
methyl methanesulfonate
2-methyl-2-(methyltbio) propional-dehyde-o-(methylcarbonyl)oxime
methylthiouracil
1,4-naphthoquinone
1-naphthylamine
2-naphthylamine
p-nitroaniline
nitrobenzine
4-nitrophenol
N-nitrosodi-n-butylamine

TABLE C.2. Additional Semivolatile Organics (cont)

N-nitrosodiethanolamine
N-nitrosodiethylamine
N-nitrosodimethylamine
N-nitrosomethylethylamine
N-nitroso-N-methylurethane
N-nitrosomethylvinylamine
N-nitrosomorpholine
N-nitrosonornicotine
N-nitrosopiperidine
nitrosopyrrolidine
5-nitro-o-toluidine
pentachloronitrobenzene
pentachlorophenol
phenacetin
phenylenediamine
phthalic acid esters
2-picoline
pronamide
reserpine
resorcinol
safrol
2,3,4,6-tetrachlorophenol
thiuram
toluenediamine
o-toluidine hydrochloride
2,4,5-trichlorophenol
2,4,6-trichlorophenol
O,O,O-triethyl phosphorothioate
sym-trinitrobenzene
tris(2,3-dibromopropyl) phosphate
benzo[a]pyrene
chlornaphazine
bis(2-chloroisopropyl)ether
hexacloropropene

APPENDIX D

ANALYTICAL METHODS AND QUALITY CONTROL PROCEDURES

APPENDIX D

ANALYTICAL METHODS AND QUALITY CONTROL PROCEDURES

This appendix presents a brief description of each chemical and radiochemical analysis that is performed on samples in accordance with the compliance effort. Following this description, Table D.1 summarizes the quality control procedures that are part of each analytical procedure.

Temperature, pH, and Conductivity are determined in the field according to field instrument instructions.

Coliform Count is determined by multiple tube fermentation.

Most Metals are measured by either the Inductively Coupled Plasma (ICP) method or the Graphite Furnace Atomic Absorption (GFAA) method. In either case, the sample is first acid-digested. In the ICP method, the digest is then nebulized, with the resultant aerosol being transported to the plasma torch where excitation occurs. The atomic emission is then measured by an optical spectroscopic technique. In the GFAA method, the digest is dried, ashed, and atomized in a graphite tube furnace. The constituent concentration is proportional to the absorption of hollow-cathode radiation during atomization.

Mercury is measured by the Cold-Vapor Atomic Absorption technique. The mercury is reduced to the elemental state and aerated from solution in a closed system. The mercury vapor passes through a cell positioned in the light path of an atomic absorption spectrophotometer. Absorbance is measured as a function of mercury concentration.

Inorganic Anions are determined by ion chromatography. After it is injected into the ion chromatograph, the sample is pumped through three different ion exchange columns to convert the anions in the sample to their corresponding acids. The separated anions in their acid form are measured using an electrical-conductivity cell.

Volatile and Semi-volatile Organic Chemicals are determined by Gas Chromatography/Mass Spectrometry (GC/MS). Volatile organic chemicals are introduced to the mass spectrometer by the purge-and-trap method, in which the volatile components are converted from an aqueous phase to a vapor phase, trapped on a sorbent column, and then desorbed onto a gas chromatographic column. This column is heated to elute the components, which are then detected by the mass spectrometer. Semivolatile organic chemicals are extracted using the continuous liquid-liquid extraction method. After it is placed in the continuous extraction apparatus, the sample is extracted for 16 hours with the appropriate solvent. The extract is then collected, dried, and concentrated. The extract is eluted from a gas chromatographic fused-silica capillary column, and the eluted components are then detected by the mass spectrometer.

Certain Organic Constituents are analyzed by direct aqueous injection, which requires no preparatory steps before the samples are injected into the gas chromatograph and detected by the mass spectrometer. Substances identified in samples by GC/MS techniques are verified by comparing the suspect mass spectra to the mass spectrum of a standard of the suspected substance. A computerized mass-spectrometry library search system is used that is capable of providing a forward comparison using the standard spectra contained in the Environmental Protection Agency/National Institute of Health mass spectral data base.

Pesticides and Herbicides are measured by gas chromatography with an appropriate detector. Extractions are performed as necessary. Positive concentrations are verified by reanalysis of the extract using a confirmation gas chromatography column or by GC/MS.

Total Organic Halogens are measured after the sample is passed through a column containing activated carbon. The column is washed to remove trapped inorganic halides, and the carbon is then analyzed to convert the adsorbed organohalides to a titratable species that can be measured by a microcoulometric detector.

Total Organic Carbon is determined by the combustion-infrared method. The sample is sparged with hydrochloric acid to remove inorganic carbon. The homogenized sample is vaporized with an oxidative catalyst, thereby converting the organic carbon to CO_2. The CO_2 is measured by means of a nondispersive infrared analyzer.

Ammonium Ion is measured with a specific ion electrode.

Total Alpha-Emitting Radionuclide measurements are made after the samples are evaporated and the salts and solids are dissolved in nitric acid and extracted from the acid by the diethyl ether method. Each sample is then evaporated, dried on a counting dish, and measured by the ZnS scintillation counter. The chemical yield is about 83%.

Total Beta-Emitting Radionuclides are measured after each sample has been evaporated onto a 1-in. counting dish. The residue is then counted with a gas-flow proportional counter.

Gamma-Emitting Radionuclide data are obtained by analyzing 500 mL samples in a 0.47-L polyethylene bottles. An NaI or a Lithium Drifted Germanium [Ge(Li)] detector are used to count the samples. The standards are traceable to the National Bureau of Standards. The gamma-emitting radionuclides of primary interest are ^{137}Cs and ^{60}Co. Other gamma-emitting radionuclides may be measured as necessary.

Radium is collected from the water samples by coprecipitation. The precipitate is then dried, weighed, and alpha-counted.

Uranium (natural) is determined with fluorometric techniques following purification by hexone extraction.

Strontium-90 is precipitated with fuming nitric acid, scavenged with barium chromate, precipitated as a carbonate, and counted on a planchet using a gas-flow proportional counter. The yttrium-90 decay product is separated and counted after 15 days.

Constituent or Group	Analysis Method	QC Procedures
Ethylene Glycol	Direct Aqueous Injection GC with Flame Ionization Detector	-Calibration curve daily -Mid-range standard every 10th sample (±10% of curve) -Fortified sample after every 10th sample (estimate matrix effects) -Standard and fortified sample at end of run
Phosphorus Pesticides	GC with Flame Photometric Detector (FPD) with Phosphorus Filter	-Standard (prepared once per week) for 5-point calibration curve -Mid-range standard every 10th sample to verify (±10%) -Matrix spike after every 10th sample
Herbicides	GC/Electron Capture Detector (ECD)	-3-point calibration curve daily -Mid-range standard after every 10th sample (±10%) -Verification standard at end of batch -Matrix spikes after every 10 samples (no surrogate)
Organochlorine Pesticides	GC/ECD	-Dibutylchlorendate (DBC) surrogate -Reagent blank with every extraction batch -Matrix spike after every 10th sample -Calibration curve for each compound -Mid-range standard after every 10th sample (±10%) -Calibration checked with mid-range standards prior to beginning a run
Acid/Base/Neutral (ABN) Semi-Volatile Organic Analysis	GC/MS with Capillary Column (Method 8270)	-MS tuning verified every 12-hour shift -Initial 5-point calibration for each analyte -Calibration - verification checked every 12-hour shift (±20%) -Six surrogate compounds added, recoveries checked -Matrix spikes
Volatile Organic Analysis	GC/MS Purge and Trap (Method 8240)	-MS tuning verified every 12-hour shift -5-point calibration for each analyte -Calibratinn verified each 12-hour shift (±20%) -System blanks run before standards -Reagent blank with each batch -Minimum three surrogate compounds, recovery monitored -Matrix spike recoveries monitored
Anions	IC	-7-point calibration curve (3-point for perchlorate) -Mid-range standard to verify internal calibration (±10%) -Mid-range standard, blank (deionized water) and matrix spike after every 10th sample. Sample with values over highest calibration standard are diluted and reanalyzed

Constituent or Group	Analysis Method	QC Procedures
Metals (As, Se, Pb, Tl)	GFAA	-Calibration curve -Blanks, standard, samples in duplicate (average reported) (rerun in case of large variation) -Spike every 10th sample -Standard compared with calibration/ new calibration curve if necessary -Standard every 10 samples to check recovery and operating conditions
Citrus Red #2	Spectrophotometer	-5-point calibration curve -Matrix spikes every 10th sample -Samples exceeding calibration standards are diluted and reanalyzed -Standard and blank are verified at end of run and/or after 15 samples
Ammonium Ion	Specific Ion Electrode (Standard Method 417E)	-Electrode slope determined -Calibration standards, blank plus 7-point curve -Matrix spike after very 10th sample -Blank and standard for verification after 10th sample (or beginning and end of smaller run) -Samples above highest standard are diluted
Sulfide	Titration (SW-846 Method 9030)	-Calibration by blank and three standards -Matrix spike after every 10th sample -Every 10th sample or end of run, analyze blank and verification standard
Thiourea	High Performance Liquid Chromatography (HPLC)	-5-point calibration curve, verified every 8 hr and/or at conclusion of run (must be within 10%) -After routine analysis, every 10th matrix spike -Dilution, in case concentration is over highest calibration
Cyanide	UV/VIS Spectrophotometer, Colorimetric Method (after distillation)	-Absorbance wavelength determined by scan of prepared blanks and standards, repeated for each batch of coloring reagent -Fresh standards run daily, 4-point calibration -Blank and matrix spike every 10 samples
TOC	TOC Analyzer with Infrared Analyzer (Standard Method 505)	-5-point calibration curve plus blank, each batch -Matrix spike after every 10th sample -Calibration is verified with blank and standard, which must be within ±10% of initial calibration, after each run -If a sample falls above the highest calibration standard, it is diluted and reanalyzed

Constituent or Group	Analysis Method	QC Procedures
Mercury	Cold Vapor Atomic Absorption (Method 7470)	-Calibration, blank and four standards prepared for each batch -Duplicate and matrix spike every 10 samples -One verification standard for every 10 samples -Quality control sample from outside source at least every other batch
TOX	Carbon Absorption, Microcoulometric Titration (Method 9020)	-Calibration involves: -Two titration cell standards (to ±5%) -Nitrate wash blanks (method blanks) -Instrument calibration standards after eight pyrolysis determinations and after cleaning or reconditioning -Every sample run in duplicate -Matrix spike on 10% of sample, percent recovery determination -Outside standard analyzed weekly
Metals	ICP Spectrograph (Method 6010)	-Calibration involves: -Warm-up, configuration, calibration procedure, flush system with blank between each sample -Dilute samples if above high standard -One reagent blank with each batch -Duplicate samples for 10% -Matrix spike on 10% of samples -Check standardization by analyzing quality control standards, 10% of samples (to within (±10%) -Calibration blanks, 10% -Run standard after batch (check drift)
Coliform Bacteria	Presumptive Test, Confirmation Test	-Reagents are routinely analyzed for contamination -Media are autoclaved and analyzed with every batch -Every 10th sample is analyzed in duplicate
Radioactivity:		
Radium	Precipitate, Weigh, Count	-Blank and spike samples
Alpha Direct (AD)	Evaporate, Count	-Blank and spike samples
Beta Direct (BD)	Evaporate, Count	-Blank and spike samples

APPENDIX E

DANGEROUS WASTE CONSTITUENTS LIST BY CATEGORY

APPENDIX E

DANGEROUS WASTE CONSTITUENTS LIST BY CATEGORY

Table E.1 presents the Dangerous Waste Constituents List from WAC 173-303-9905 (9905 list). The table gives a number to each of 375 constituents, lists the method of analysis, and gives a cross-reference to one of nine tables, which lists the constituents by category.

Categories included in the following tables are Volatile Organics (E.2), Semi-Volatile Organic (E.3), Organics by GC/MS Direct Injection (E.4), Constituents That Require Analysis for Metal Species (E.5), Pesticides and Herbicides (E.6), Compounds to be Analyzed by Class (E.7), Miscellaneous Organics and Inorganics (E.8), Constituents Unstable in Water (E.9), and Constituents for Which Adequate Analysis is Unavailable (E.10).

TABLE E.1. Dangerous Waste Constituents List

	Constituent	Method[(a)]	Table
1	Acetonitrile	GC/MS, Dir. Inj.	E.4
2	Acetophenone	SW-846, 8270	E.3
3	Warfarin	SW-846, 8270	E.3
4	2-Acetylaminofluorene	SW-846, 8270	E.3
5	Acetyl chloride	Unstable	E.9
6	1-Acetyl-2-thiourea	SW-846, 8330	E.8
7	Acrolein	SW-846, 8240	E.2
8	Acrylamide	GC/MS, Dir. Inj.	E.4
9	Acrylonitrile	SW-846, 8240	E.2
10	Aflatoxins	Unavailable	E.10
11	Aldrin	SW-846, 8080	E.6
12	Allyl alcohol	GC/MS, Dir. Inj.	E.4
13	Aluminum phosphide	Unstable	E.9
14	4-Aminobiphenyl	SW-846, 8270	E.3
15	Mitomycin C	Unavailable	E.10
16	5-(Aminomethyl)-3-isoxazolol	SW-846, 8270	E.3
17	Amitrole	SW-846, 8270	E.3
18	Aniline	SW-846, 8270	E.3
19	Antimony and compounds	SW-846, 6010	E.5
20	Aramite	SW-846, 8270	E.3
21	Arsenic and compounds	SW-846, 7060	E.5
22	Arsenic acid	SW-846, 7060	E.5
23	Arsenic pentoxide	SW-846, 7060	E.5
24	Arsenic trioxide	SW-846, 7060	E.5
25	Auramine	SW-846, 8270	E.3
26	Azaserine	Unavailable	E.10
27	Barium and compounds	SW-846, 6010	E.5
28	Barium cyanide	SW-846, 6010	E.5
29	Benz(c)acridine	SW-846, 8270	E.3
30	Benz(a)anthracene	SW-846, 8270	E.3
31	Benzene	SW-846, 8240	E.2
32	Benzenearsonic acid	Unavailable	E.10
33	Benzene, dichloromethyl	SW-846, 8270	E.3
34	Benzenethiol	SW-846, 8270	E.3
35	Benzidine	SW-846, 8270	E.3
36	Benzo(b)fluoranthene	SW-846, 8270	E.3
37	Benzo(j)fluoranthene	SW-846, 8270	E.3
38	Benzo(a)pyrene	SW-846, 8270	E.3
39	p Benzoquinone	SW-846, 8270	E.3
40	Benzotrichloride	Unstable	E.9
41	Benzyl chloride	SW-846, 8270	E.3
42	Beryllium and compounds	SW-846, 6010	E.5
43	Bis(2-chloroethoxy)methane	SW-846, 8270	E.3
44	Bis(2-chloroethyl) ether	SW-846, 8270	E.3
45	Chlornaphazine	SW-846, 8270	E.3
46	Bis(2-chloroisopropyl) ether	SW-846, 8270	E.3

TABLE E.1. (contd)

	Constituent	Method(a)	Table
47	Bis(chloromethyl) ether	SW-846, 8240	E.2
48	Bis(2-ethylhexyl) phthalate	SW-846, 8270	E.3
49	Bromoacetone	SW-846, 8240	E.2
50	Methyl bromide	SW-846, 8240	E.2
51	4-Bromophenyl phenyl ether	SW-846, 8270	E.3
52	Brucine	Unavailable	E.10
53	2-Butanone peroxide	Unstable	E.9
54	Butyl benzyl phthalate	SW-846, 8270	E.3
55	2-sec-Butyl-4,6-dinitrophenol	SW-846, 8270	E.3
56	Cadmium and compounds	SW-846, 6010	E.5
57	Calcium chromate	SW-846, 6010	E.5
58	Calcium cyanide	SW-846, 9010	E.8
59	Carbon disulfide	SW-846, 8240	E.2
60	Carbon oxyfluoride	Unstable	E.9
61	Chloral	GC/MS, Dir. Inj.	E.4
62	Chlorambucil	Unavailable	E.10
63	Chlordane	SW-846, 8080	E.6
64	Chlorinated benzenes	SW-846, 8270	E.3
65	Chlorinated ethane	SW-846, 9020	E.7
66	Chlorinated fluorocarbons	SW-846, 9020	E.7
67	Chlorinated naphthalene	SW-846, 9020	E.7
68	Chlorinated phenol	SW-846, 9020	E.7
69	Chloroacetaldehyde	GC/MS, Dir. Inj.	E.4
70	Chloroalkyl ethers	SW-846, 8270	E.3
71	P-Chloroaniline	SW-846, 8270	E.3
72	Chlorobenzene	SW-846, 8240	E.2
73	Chlorobenzilate	SW-846, 8080	E.6
74	p-Chloro-m-cresol	SW-846, 8270	E.3
75	1-Chloro-2,3-epoxypropane	SW-846, 8270	E.3
76	2-Chloroethyl vinyl ether	SW-846, 8240	E.2
77	Chloroform	SW-846, 8240	E.2
78	Methyl chloride	SW-846, 8240	E.2
79	Chloromethyl methyl ether	SW-846, 8240	E.2
80	2-Chloronaphthalene	SW-846, 8270	E.3
81	2-Chlorophenol	SW-846, 8270	E.3
82	1-(o-Chlorophenyl)thiourea	SW-846, 8330	E.8
83	3-Chloropropionitrile	GC/MS, Dir. Inj.	E.4
84	Chromium and compounds	SW-846, 6010	E.5
85	Chrysene	SW-846, 8270	E.3
86	Citrus red No. 2	AOAC - 34.015 B	E.8
87	Coal tars	SM-505	E.7
88	Copper cyanide	SW-846, 6010	E.5
89	Creosote	SM-505	E.7
90	Cresols	SW-846, 8270	E.3
91	Crotonaldehyde	SW-846, 8240	E.2
92	Cyanides	SW-846, 9010	E.8

TABLE E.1. (contd)

	Constituent	Method[a]	Table
93	Cyanogen	GC/MS, Dir. Inj.	E.4
94	Cyanogen bromide	GC/MS, Dir. Inj.	E.4
95	Cyanogen chloride	GC/MS, Dir. Inj.	E.4
96	Cycasin	Unavailable	E.10
97	2-Cyclohexyl-4,6-dinitrophenol	SW-846, 8270	E.3
98	Cyclophosphamide	Unavailable	E.10
99	Daunomycin	Unavailable	E.10
100	DDD	SW-846, 8080	E.6
101	DDE	SW-846, 8080	E.6
102	DDT	SW-846, 8080	E.6
103	Diallate	Unavailable	E.10
104	Dibenz(a,h)acridine	SW-846, 8270	E.3
105	Dibenz(a,j)acridine	SW-846, 8270	E.3
106	Dibenz(a,h)anthracene	SW-846, 8270	E.3
107	7H-Dibenzo(c,g)carbazole	SW-846, 8270	E.3
108	Dibenzo(a,e)pyrene	SW-846, 8270	E.3
109	Dibenzo(a,h)pyrene	SW-846, 8270	E.3
110	Dibenzo(a,i)pyrene	SW-846, 8270	E.3
111	1,2-Dibromo-3-chloropropane	SW-846, 8240	E.2
112	1,2-Dibromoethane	SW-846, 8240	E.2
113	Dibromomethane	SW-846, 8240	E.2
114	Di-n-butyl phthalate	SW-846, 8270	E.3
115	Benzene, 1,2-dichloro	SW-846, 8270	E.3
116	Benzene, 1,3-dichloro	SW-846, 8270	E.3
117	Benzene, 1,4-dichloro	SW-846, 8270	E.3
118	Dichlorobenzene	SW-846, 9020	E.7
119	3,3'-Dichlorobenzidine	SW-846, 8270	E.3
120	1,4-Dichloro-2-butene	SW-846, 8240	E.2
121	Dichlorodifluoromethane	SW-846, 8240	E.2
122	1,1-Dichloroethane	SW-846, 8240	E.2
123	1,2-Dichloroethane	SW-846, 8240	E.2
124	trans-1,2-Dichloroethene	SW-846, 8240	E.2
125	Dichloroethylene	SW-846, 9020	E.7
126	1,1-Dichloroethylene	SW-846, 8240	E.2
127	Methylene chloride	SW-846, 8240	E.2
128	2,4-Dichlorophenol	SW-846, 8270	E.3
129	2,6-Dichlorophenol	SW-846, 8270	E.3
130	2,4-D	SW-846, 8150	E.6
131	Dichlorophenylarsine	Unavailable	E.10
132	Dichloropropane	SW-846, 9020	E.7
133	1,2-Dichloropropane	SW-846, 8240	E.2
134	Dichloropropanol	GC/MS, Dir. Inj.	E.4
135	Dichloropropene	SW-846, 9020	E.7
136	1,3-Dichloropropene	SW-846, 8240	E.2
137	Dieldrin	SW-846, 8080	E.6
138	1,2:3,4-Diepoxybutane	Unavailable	E.10

TABLE E.1. (contd)

	Constituent	Method(a)	Table
139	Diethylarsine	SW-846, 8240	E.2
140	N,N-Diethylhydrazine	SW-846, 8240	E.2
141	Carbophenothion	SW-846, 8140	E.6
142	O,O-Diethylphosphoric acid, O-p-nitrophenyl ester	Unavailable	E.9
143	Diethyl phthalate	SW-846, 8270	E.3
144	Thionazin	Unavailable	E.10
145	Diethylstilbesterol	SW-846, 8330	E.8
146	Dihydrosafrole	SW-846, 8270	E.3
147	3,4-Dihydroxy-alpha-(methylamino)methyl benzyl alchol	Unavailable	E.10
148	Diisopropylfluorophosphate	Unstable	E.9
149	Dimethoate	SW-846, 8140	E.6
150	3,3'-Dimethoxybenzidine	SW-846, 8270	E.3
151	p-Dimethylaminoazobenzene	SW-846, 8270	E.3
152	7,12-Dimethylbenz(a)anthracene	SW-846, 8270	E.3
153	3,3'Dimethylbenzidine	SW-846, 8270	E.3
154	Dimethylcarbamoyl chloride	Unstable	E.9
155	1,1-Dimethylhydrazine	GC/MS, Dir. Inj.	E.4
156	1,2-Dimethylhydrazine	GC/MS, Dir. Inj.	E.4
157	Thiofanox	SW-846, 8270	E.3
158	alpha,alpha-Dimethylphenethylamine	SW-846, 8270	E.3
159	2,4-Dimethylphenol	SW-846, 8270	E.3
160	Dimethyl phthalate	SW-846, 8270	E.3
161	Dimethyl sulfate	Unstable	E.9
162	Dinitrobenzene	SW-846, 8270	E.3
163	4,6-Dinitro-o-cresol and salts	SW-846, 8270	E.3
164	2,4-Dinitrophenol	SW-846, 8270	E.3
165	2,4-Dinitrotoluene	SW-846, 8270	E.3
166	2,6-Dinitrotoluene	SW-846, 8270	E.3
167	Di-n-octyl phthalate	SW-846, 8270	E.3
168	1,4-Dioxane	SW-846, 8240	E.2
169	Diphenylamine	SW-846, 8270	E.3
170	1,2-Diphenylhydrazine	SW-846, 8270	E.3
171	Di-n-propylnitrosamine	SW-846, 8270	E.3
172	Disulfoton	SW-846, 8140	E.6
173	2,4-Dithiobiuret	Unavailable	E.10
174	Endosulfan	SW-846, 8080	E.6
175	Endrin	SW-846, 8080	E.6
176	Ethyl carbamate	GC/MS, Dir. Inj.	E.4
177	Ethyl cyanide	GC/MS, Dir. Inj.	E.4
178	Ethylenebisdithiocarbamic acid	Unavailable	E.10
179	Ethyleneimine	SW-846, 8270	E.3
180	Ethylene oxide	GC/MS, Dir. Inj.	E.4
181	Ethylenethiourea	SW-846, 8330	E.8
182	Ethylmethacrylate	SW-846, 8240	E.2

TABLE E.1. (contd)

	Constituent	Method(a)	Table
183	Ethyl methanesulfonate	SW-846, 8270	E.3
184	Fluoranthene	SW-846, 8270	E.3
185	Fluorine	Unstable	E.9
186	2-Fluoroacetamide	Unavailable	E.10
187	Fluoroacetic acid	GC/MS, Dir. Inj.	E.4
188	Formaldehyde	SW-846, 8240	E.2
189	Formic acid	Unavailable	E.10
190	Glycidylaldehyde	GC/MS, Dir. Inj.	E.4
191	Halomethane	SW-846, 9020	E.7
192	Heptachlor	SW-846, 8080	E.6
193	Heptachlor epoxide	SW-846, 8080	E.6
194	Hexachlorobenzene	SW-846, 8270	E.3
195	Hexachlorobutadiene	SW-846, 8270	E.3
196	Lindane and isomers	SW-846, 8080	E.6
197	Hexachlorocylopentadiene	SW-846, 8270	E.3
198	Hexachloroethane	SW-846, 8270	E.3
199	Hexachlorohexahydro-endo,endo-dimethanonaphthalene	Unavailable	E.10
200	Hexachlorophene	SW-846, 8270	E.3
201	Hexachloropropene	SW-846, 8270	E.3
202	Hexaethyl tetraphosphate	Unavailable	E.10
203	Hydrazine	GC/MS, Dir. Inj.	E.4
204	Hydrocyanic acid	SW-846, 9010	E.8
205	Hydrofluoric acid	Unstable	E.9
206	Hydrogen sulfide	SW-846, 8240	E.2
207	Hydroxydimethylarsine oxide	Unavailable	E.10
208	Indeno(1,2,3-cd)pyrene	SW-846, 8270	E.3
209	Iodomethane	SW-846, 8240	E.2
210	Iron Dextran	Unavailable	E.10
211	Methyl isocyanate	Unstable	E.9
212	Isobutyl alcohol	GC/MS, Dir. Inj.	E.4
213	Isosafrole	SW-846, 8270	E.3
214	Kepone	Unavailable	E.10
215	Lasiocarpine	Unavailable	E.10
216	Lead and compounds	SW-846, 6010	E.5
217	Lead acetate	SW-846, 6010	E.5
218	Lead phosphate	SW-846, 6010	E.5
219	Lead subacetate	Unavailable	E.10
220	Maleic anhydride	Unstable	E.9
221	Maleic hydrazide	SW-846, 8270	E.3
222	Malononitrile	SW-846, 8270	E.3
223	Melphalan	SW-846, 8270	E.3
224	Mercury Fulminate	Unavailable	E.10
225	Mercury and compounds	SW-846, 7470	E.5
226	Methacrylonitrile	SW-846, 8240	E.2
227	Methanethiol	SW-846, 8240	E.2

TABLE E.1. (contd)

	Constituent	Method[(a)]	Table
228	Methapyrilene	SW-846, 8270	E.3
229	Metholonyl	SW-846, 8270	E.3
230	Methoxychlor	SW-846, 8080	E.6
231	2-Methylaziridine	SW-846, 8270	E.3
232	3-Methylcholanthrene	SW-846, 8270	E.3
233	Methyl chlorocarbonate	Unstable	E.9
234	4,4'-Methylenebis(2-chloroaniline)	SW-846, 8270	E.3
235	Methyl ethyl ketone	SW-846, 8240	E.2
236	Methyl hydrazine	GC/MS, Dir. Inj.	E.4
237	2-Methyllactonitrile	SW-846, 8270	E.3
238	Methyl methacrylate	SW-846, 8240	E.2
239	Methyl methanesulfonate	SW-846, 8270	E.3
240	2-Methyl-2-(methylthio)propionaldehyde -o-(methylcarbonyl) oxime	SW-846, 8270	E.3
241	N-Methyl-N'-nitro-N-nitrosoguanidine	Unavailable	E.10
242	Methyl parathion	SW-846, 8140	E.6
243	Methylthiouracil	SW-846, 8270	E.3
244	Mustard gas	Unavailable	E.10
245	Naphthalene	SW-846, 8270	E.3
246	1,4-Naphthoquinone	SW-846, 8270	E.3
247	1-Naphthylamine	SW-846, 8270	E.3
248	2-Naphthylamine	SW-846, 8270	E.3
249	1-Naphthyl-2-thiourea	SW-846, 8330	E.8
250	Nickel and compounds	SW-846, 6010	E.5
251	Nickel carbonyl	Unavailable	E.10
252	Nickel cyanide	SW-846, 6010	E.5
253	Nicotine and salts	SW-846, 8270	E.3
254	Nitric oxide	Unavailable	E.10
255	p-Nitroaniline	SW-846, 8270	E.3
256	Nitrobenzine	SW-846, 8270	E.3
257	Nitrogen dioxide	Unstable	E.9
258	Nitrogen mustard and hydrochloride salt	Unavailable	E.10
259	Nitrogen mustard N-Oxide and hydrochloride salt	Unavailable	E.10
260	Nitroglycerine	Unavailable	E.10
261	4-Nitrophenol	SW-846, 8270	E.3
262	4-Nitroquinoline-1-oxide	Unavailable	E.10
263	Nitrosamine	SM-417	E.7
264	N-Nitrosodi-n-butylamine	SW-846, 8270	E.3
265	N-Nitrosodiethanolamine	SW-846, 8270	E.3
266	N-Nitrosodiethylamine	SW-846, 8270	E.3
267	N-Nitrosodimethylamine	SW-846, 8270	E.3
268	N-Nitroso-N-ethylurea	Unavailable	E.10
269	N-Nitrosomethylethylamine	SW-846, 8270	E.3
270	N-Nitroso-N-methylurea	Unavailable	E.10

TABLE E.1. (contd)

	Constituent	Method[a]	Table
271	N-Nitroso-N-methylurethane	SW-846, 8270	E.3
272	N-Nitrosomethylvinylamine	SW-846, 8270	E.3
273	N-Nitrosomorpholine	SW-846, 8270	E.3
274	N-Nitrosonornicotine	SW-846, 8270	E.3
275	N-Nitrosopiperidine	SW-846, 8270	E.3
276	Nitrosopyrrolidine	SW-846, 8270	E.3
277	N-Nitrososacrosine	Unavailable	E.10
278	5-Nitro-o-toluidine	SW-846, 8270	E.3
279	Octamethylpyprophosphoramide	Unavailable	E.10
280	Osmium tetroxide	SW-846, 6010	E.5
281	Endothol	Unavailable	E.10
282	Paraldehyde	GC/MS, Dir. Inj.	E.4
283	Parathion	SW-846, 8140	E.6
284	Pentachlorobenzene	SW-846, 8270	E.3
285	Pentachloroethane	SW-846, 8240	E.2
286	Pentachloronitrobenzene	SW-846, 8270	E.3
287	Pentachlorophenol	SW-846, 8270	E.3
288	Phenacetin	SW-846, 8270	E.3
289	Phenol	SW-846, 8270	E.3
290	Phenylenediamine	SW-846, 8270	E.3
291	Phenylmercury acetate	Unavailable	E.10
292	N-Phenylthiourea	SW-846, 8330	E.8
293	Phosgene	Unstable	E.9
294	Phosphine	Unavailable	E.10
295	Phorate	Unstable	E.9
296	Famphur	Unstable	E.9
297	Phthalic acid esters	SW-846, 8270	E.3
298	Phthalic anhydride	Unstable	E.9
299	2-Picoline	SW-846, 8270	E.3
300	Polychlorinated biphenyl	SW-846, 8080	E.6
301	Potassium cyanide	SW-846, 9010	E.8
302	Potassium silver cyanide	SW-846, 6010	E.5
303	Pronamide	SW-846, 8270	E.3
304	1,3-Propanesultone	Unavailable	E.10
305	n-Propylamine	GC/MS, Dir. Inj.	E.4
306	Propylthiouracil	Unavailable	E.10
307	2-Propyn-1-ol	GC/MS, Dir. Inj.	E.4
308	Pyridine	SW-846, 8240	E.2
309	Reserpine	SW-846, 8270	E.3
310	Resorcinol	SW-846, 8270	E.3
311	Saccharin and salts	Unavailable	E.10
312	Safrol	SW-846, 8270	E.3
313	Selenious acid	SW-846, 7740	E.5
314	Selenium and compounds	SW-846, 7740	E.5
315	Selenium sulfide	SW-846, 7740	E.5
316	Selenourea	Unavailable	E.10

TABLE E.1. (contd)

Constituent		Method[(a)]	Table
317	Silver and compounds	SW-846, 6010	E.5
318	Silver cyanide	SW-846, 6010	E.5
319	Sodium cyanide	SW-846, 9010	E.8
320	Streptozotocin	Unavailable	E.10
321	Strontium sulfide	SW-846, 6010	E.5
322	Strychnine and salts	SW-846, 8270	E.3
323	1,2,4,5-Tetrachlorobenzene	SW-846, 8270	E.3
324	TCDD	EPA #613	E.10
325	Tetrachloroethane	SW-846, 8240	E.2
326	1,1,1,2-Tetrachlorethane	SW-846, 8240	E.2
327	1,1,2,2-Tetrachlorethane	SW-846, 8240	E.2
328	Tetrachlorethylene	SW-846, 8240	E.2
329	Tetrachloromethane	SW-846, 8240	E.2
330	2,3,4,6-Tetrachlorophenol	SW-846, 8270	E.3
331	Tetraethyldithiopyrophosphate	Unstable	E.9
332	Tetraethyl lead	Unavailable	E.10
333	Tetraethylpyrophosphate	SW-846, 8140	E.6
334	Tetranitromethane	Unavailable	E.10
335	Thallium and compounds	SW-846, 7840	E.5
336	Thallic oxide	SW-846, 7840	E.5
337	Thallium (1) acetate	SW-846, 7840	E.5
338	Thallium (1) carbonate	SW-846, 7840	E.5
339	Thallium (1) chloride	SW-846, 7840	E.5
340	Thallium (1) nitrate	SW-846, 7840	E.5
341	Thallium selenite	SW-846, 7840	E.5
342	Thallium (1) sulfate	SW-846, 7840	E.5
343	Thioacetamide	Unavailable	E.10
344	Thiosemicarbazide	Unavailable	E.10
345	Thiourea	SW-846, 8330	E.8
346	Thiuram	SW-846, 8270	E.3
347	Toluene	SW-846, 8240	E.2
348	Toluenediamine	SW-846, 8270	E.3
349	o-Toluidine hydrochloride	SW-846, 8270	E.3
350	Tolulene diisocyanate	Unstable	E.9
351	Toxaphene	SW-846, 8080	E.6
352	Bromoform	SW-846, 8240	E.2
353	1,2,4-Trichlorobenzene	SW-846, 8270	E.3
354	1,1,1-Trichloroethane	SW-846, 8240	E.2
355	1,1,2-Trichloroethane	SW-846, 8240	E.2
356	Trichloroethene	SW-846, 8240	E.2
357	Trichloromethanethiol	SW-846, 8240	E.2
358	Trichloromonofluoromethane	SW-846, 8240	E.2
359	2,4,5-Trichlorophenol	SW-846, 8270	E.3
360	2,4,6-Trichlorophenol	SW-846, 8270	E.3
361	2,4,5-T	SW-846, 8150	E.6
362	2,4,5-TP (Silvex)	SW-846, 8150	E.6

TABLE E.1. (contd)

	Constituent	Method(a)	Table
363	Trichloropropane	SW-846, 8240	E.2
364	1,2,3-Trichloropropane	SW-846, 8240	E.2
365	O,O,O-Triethyl phosphorothioate	SW-846, 8270	E.3
366	sym-Trinitrobenzene	SW-846, 8270	E.3
367	Tris(1-aziridinyl) phosphine sulfide	Unstable	E.9
368	Tris(2,3-dibromopropyl) phosphate	SW-846, 8270	E.3
369	Trypan blue	Unavailable	E.10
370	Uracil mustard	Unavailable	E.10
371	Vanadic acid, ammonium salt	SW-846, 6010	E.5
372	Vanadium pentoxide	SW-846, 6010	E.5
373	Vinyl chloride	SW-846, 8240	E.2
374	Zinc cyanide	SW-846, 6010	E.5
375	Zinc phosphide	SW-846, 6010	E.5

(a) SW-846: Environmental Protection Agency (EPA). 1982. Test Methods for Evaluating Solid Waste - Chemical/Physical Methods, SW-846. EPA, Washington. D.C.

SM: American Public Health Association (APHA). 1985. Standard Methods for the Examination of Water and Wastewater. APHA, Washington, D.C.

AOAC: Journal of the Association of Official Analytical Chemists.

TABLE E.2. Volatile Organics

7 Acrolein
9 Acrylonitrile
31 Benzene
47 Bis(chloromethyl)ether
49 Bromoacetone
50 Methyl bromide
59 Carbon disulfide
72 Chlorobenzene
76 2-Chloroethyl vinyl ether
77 Chloroform
78 Methyl chloride
79 Chloromethyl methyl ether
91 Crotonaldehyde
111 1,2-Dibromo-3-chloropropane
112 1,2-Dibromoethane
113 Dibromomethane
120 1,4-Dichloro-2-butene
121 Dichlorodifluoromethane
122 1,1-Dichloroethane
123 1,2-Dichloroethane
124 trans-1,2-Dichloroethene
126 1,1-Dichloroethylene
127 Methylene chloride
Trichloromonofluoromethane
133 1,2-Dichloropropane
136 1,3-Dichloropropene
139 Diethylarsine
140 N,N-Diethylhydrazine

168 Dioxane
182 Ethylmethacrylate
188 Formaldehyde
206 Hydrogen sulfide
209 Iodomethane
226 Methacrylonitrile
227 Methanethiol
235 Methyl ethyl ketone
238 Methyl methacrylate
285 Pentachloroethane
308 Pyridine
325 Tetrachloroethane
326 1,1,1,2-Tetrachlorethane
327 1,1,2,2-Tetrachlorethane
328 Tetrachlorethylene
329 Tetrachloromethane
347 Toluene
352 Bromoform
354 1,1,1-Trichloroethane
355 1,1,2-Trichloroethane
356 Trichloroethane
357 Trichloromethanethiol
358

363 Trichloropropane
364 1,2,3-Trichloropropane
373 Vinyl chloride

TABLE E.3. Semivolatile Organics

2 Acetophenone
3 Warfarin
4 2-Acetylaminofluorene
14 4-Aminobyphenyl
16 5-(Aminomethyl)-3-ioxazolol
17 Amitrole
18 Aniline
20 Aramite
25 Auramine
29 Benz[c]acridine
30 Benz[a]anthracene
33 Benzene, dichloromethyl
34 Benzenethoil
35 Benzidine
36 Benzo[b]fluoranthene
37 Benzo[j]fluoranthene
38 Benzo[a]pyene
39 p Benzoquinone
41 Benzyl chloride
43 Bis(2-chloroethoxy)methane
44 Bis(2-chloroethyl) ether
45 Chlornaphazine
46 Bis(2-chloroisopropyl)ether
48 Bis(2-ethylhexyl) phthalate
51 4-Bromophenyl phenyl ether
54 Butyl benzyl phthalate
55 2-sec-Butyl-4,6-dinitrophenol
64 Chlorinated benzenes
70 Chloroalkyl ethers
71 p-chloroaniline
74 p-Chloro-m-cresol
75 1-Chloro-2,3-epoxypropane
80 2-Chloronaphthalene
81 2-Chlorophenol
85 Chrysene
90 Cresols
97 2-Cyclohexyl-4,6-dinitrophenol
104 Dibenz[a,h]acridine
105 Dibenz[a,j] acridine
106 Dibenz[a,h]anthracene
107 7H-Dibenzo[c,g]carbazole
108 Dibenzo[a,e]pyrene
109 Dibenzo[a,h]pyrene
110 Dibenzo[a,e]pyrene
114 Di-n-butyl phthalate
115 1,2-Dichlorobenzene
116 1,3-Dichlorobenzene
117 1,4-Dichlorobenzene
119 3,3'-Dichlorobenzidine
128 2,4-Dichlorophenol
129 2,6-Dichlorophenol
143 Diethyl phthalate
146 Dihydrosafrole
150 3,3'-Dimethoxybenzidine
151 p-Dimethylaminoazobenzene
152 7,12-Dimethylbenz[a]anthracene
153 3,3'-Dimethylbenzidine
157 Thiofanox
158 Alpha,alpha-Dimethlphenethylamine
159 2,4-Dimethylphenol
160 Dimethyl phthalate
162 Dinitrobenzene
163 4,6-Dinitro-o-cresol and salts
164 2,4-Dinitrophenol
165 2,4-Dinitrotoluene
166 2,6-Dinitrotoluene
167 Di-n-octyl phthalate
169 Diphenylamine
170 1,2-Diphenylhydrazine
171 Di-n-propylnitrosamine
179 Ehtyleneimine
183 Ethyl methanesulfonate
184 Fluoranthene
194 Hexachlorobenzene
195 Hexachlorobutadiene
197 Hexachlorocyclopentadiene
198 Hexachloroethane
200 Hexachlorophene
201 Hexachloropropene
203 Hydrazine
208 Indeno(1,2,3-cd)pyrene
213 Isosafrole
221 Maleic hydrazide
222 Malononitrile
223 Melphalan
228 Methapyrilene
229 Metholonyl
231 2-Methylaziridine
232 3-Methylcholanthrene
234 4,4'-Methylenebis(2-chloroaniline)
237 2-Methyllactonitrile
239 Methyl methanesulfonate
240 2-Methyl-2-(methylthio) propionaldehyde-o-(methylcarbonyl)oxime
243 Methylthiouracil

TABLE E.3. (contd)

245	Naphthalene
246	1,4-Naphthoquinone
247	1-Naphthylamine
248	2-Naphthylamine
253	Nicotine and salts
255	p-Nitroaniline
256	Nitrobenzine
261	4-Nitrophenol
264	N-Nitrosodi-n-butylamine
265	N-Nitrosodiethanolamine
266	N-Nitrosodiethylamine
267	N-Nitrosodimethylamine
269	N-Nitrosomethylethylamine
271	N-Nitroso-N-methylurethane
272	N-Nitrosomethylvinylamine
273	N-Nitrosomorpholine
274	N-Nitrosonornicotine
275	N-Nitrosopiperidine
276	Nitrosopyrrolidine
278	5-Nitro-o-toluidine
284	Pentachlorobenzene
286	Pentachloronitrobenzene
287	Pentachlorophenol
288	Phenacetin
289	Phenol
290	Phenylenediamine
297	Phthalic acid esters
299	2-Picoline
303	Pronamide
309	Reserpine
310	Resorcinol
312	Safrol
322	Strychnine and salts
323	1,2,4,5-Tetrachlorobenzene
330	2,3,4,6-Tetrachlorophenol
346	Thiuram
348	Toluenediamine
349	o-Toluidine hydrochloride
353	1,2,4-Trichlorobenzene
359	2,4,5-Trichlorophenol
360	2,4,6-Trichlorophenol
365	O,O,O-Triethyl phosphorothioate
366	sym-Trinitrobenzene
368	Tris(2,3-dibromopropyl) phosphate

TABLE E.4. Organics by GC/MS Direct Injection

1	Acetonitrile	176	Ethyl carbamate
8	Acrylamide	177	Ethyl cyanide
12	Allyl alcohol	180	Ethylene oxide
61	Chloral	187	Fluoroacetic acid
69	Chloroacetaldehyde	190	Glycidylaldehyde
83	3-Chloropropionitrile	203	Hydrazine
93	Cyanogen	212	Isobutyl alcohol
94	Cyanogen bromide	236	Methyl hydrazine
95	Cyanogen chloride	282	Paraldehyde
134	Dichloropropanol	305	n-Propylamine
155	1,1-Dimethyl hydrazine	307	2-Propyn-1-ol
156	1,2-Dimethyl hydrazine		

TABLE E.5. Constituents that Only Require Analysis for Metal Species

19	Antimony, NOS	302	Potassium silver cyanide
21	Arsenic and compounds, NOS	313	Selenious acid
22	Arsenic acid	314	Selenium and compounds, NOS
23	Arsenic pentoxide	315	Selenium sulfide
24	Arsenic trioxide	317	Silver and compounds, NOS
27	Barium and compounds	318	Silver cyanide
28	Barium cyanide	321	Strontium sulfide
42	Beryllium and compounds, NOS	335	Thallium and compounds, NOS
56	Cadmium and compounds, NOS	336	Thallic oxide
57	Calcium chromate	337	Thallium acetate
84	Chromium and compounds, NOS	338	Thallium carbonate
88	Copper cyanide	339	Thallium chloride
216	Lead and compounds, NOS	340	Thallium nitrate
217	Lead acetate	341	Thallium selenite
218	Lead phosphate	342	Thallium sulfate
225	Mercury and compounds, NOS	371	Vanadic acid, ammonium salt
250	Nickel and compounds, NOS	372	Vanadium pentoxide
252	Nickel cyanide	374	Zinc cyanide
280	Osmium tetroxide	375	Zinc phosphate

TABLE E.6. Pesticides/Herbicides

11 Aldrin	175 Endrin
63 Chlordane	192 Heptachlor
73 Chlorobenzilate	193 Heptachlor epoxide
100 DDD	196 Lindane and isomers
101 DDE	230 Methoxychlor
102 DDT	242 Methyl parathion
130 2,4-D	283 Parathion
137 Dieldrin	300 Polychlorinated biphenyl
141 Carbophenothion	333 Tetraethylpyrophosphate
149 Dimethoate	351 Toxaphene
172 Disulfoton	361 2,4,5-T
174 Endosulfan	362 2,4,5-TP Silvex

TABLE E.7. Compounds To Be Analyzed By Class

TOX:

65 Chlorinated ethane
66 Chlorinated fluorocarbons
67 Chlorinated naphthalene
68 Chlorinated phenol
118 Dichlorobenzene
125 Dichloroehtylene
132 Dichloropropane
135 Dichloropropene
191 Halomethane

TOC:

87 Coal tars
89 Creosote

Ammonium:

263 Nitrosamine

TABLE E.8. Miscellaneous Organics and Inorganics

86	Citrus red No. 2	345	Thiourea
92	Cyanide	6	1-Acetyl-2-thiourea
58	Calcium cyanide	82	1-(o-Chlorophenyl)thiourea
204	Hydrocyanic acid	145	Diethylstilbesterol
301	Potassium cyanide	181	Ethylenethiourea
319	Sodium cyanide	249	1-Naphthyl-2-thiourea
292	N-Phenylthiourea		

TABLE E.9. Constituents Unstable in Water

5	Acetyl chloride	211	Methyl isocyanate
13	Aluminum phosphide	220	Maleic anhydride
40	Benzotrichloride	233	Methyl chlorocarbonate
53	2-butanone peroxide	257	Nitrogen dioxide
60	Carbon oxyfluoride	293	Phosgene
142	O,O Diethylphosphoric acid, O-p-nitrophenyl ester	295	Phorate
		296	Famphur
148	Diisopropylfluorophosphate	298	Phthalic anhydride
154	Dimethylcarbamoyl chloride	331	Tetraethyldithiopyrophosphate
161	Dimethyl sulfate	350	Toluene diisocyanate
185	Fluorine	367	Tris (1-aziridinyl) phosphine sulfide
205	Hydrofluoric acid		

TABLE E.10. Constituents For Which Adequate Analysis Is Unavailable

10	Aflatoxins
15	Mitomycin C
26	Azaserine
32	Benzenearsonic acid
52	Brucine
62	Chlorambucil
96	Cycasin
98	Cyclophosphamide
99	Daunomycin
103	Diallate
131	Dichlorophenylarsine
138	1,2:3,4 Diepoxybutane
144	Thionazin
147	3,4-dihydroxy-alpha-(methylamino) methyl benzyl alcohol
173	2,4-dithiobiuret
178	Ethylenebisdithiocarbamic acid
186	2-fluoroacetamide
189	Formic acid
199	Hexachlorohyxahydro-endo, endo-dimethanonaphthalene
202	Hexaethyl tetraphosphate
207	Hydrosydimethylarsine oxide
214	Kepone
210	Iron dextran
215	Lasiocarpine
219	Lead subacetate
224	Mercury fulminate
241	N-methyl-N'-nitro-N-nitrosoguanidine
244	Mustard gas
251	Nickel carbonyl
254	Nitric oxide
258	Nitrogen mustard - HCl salt
259	Nitrogen mustard N-oxide and HCl salt
260	Nitroglycerin
262	4-nitroquinoline
268	N-Nitroso-N-ethylurea
270	N-Nitroso-N-methylurea
277	N-nitrososacrosine
279	Octamethylpyrophosphoramide
281	Endothol
291	Phenylmercury acetate
294	Phosphine
304	1,3-propanesultone
306	Propylthiouracil
311	Saccharin and salts
316	Selenourea
320	Streptozotocin
332	Tetraethyl lead
334	Tetranitromethane
343	Thioacetamide
344	Thiosemicarbazide
369	Trypan blue
370	Uracil mustard

APPENDIX F

QUALITY ASSURANCE PLAN

APPENDIX F

QUALITY ASSURANCE PLAN

This appendix presents the text of the Quality Assurance Plan used for the RCRA Compliance Project. The Plan is uesed to identify specific elements of the QA Program that are applicable to the project.

The QA Plan includes information on: project organization, the QA Program; design control and method review; procurement; instructions, procedures, and drawings; document control; identification and control of items; performance of inspections and tests; control of measuring and test equipment; status of inspection, test, and operating conditions; nonconformance and corrective actions; and QA records and audits.

Battelle
Pacific Northwest Laboratories

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Issue Date July 31, 1986
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QA PLAN [X] Project [ ] Service Activity

[X] 1830

[ ] 1831

Project/Service Activity: Hazardous Materials Monitoring Project/RCRA Compliance Ground-Water Monitoring Project

Sponsor: DOE, Westinghouse Hanford Company, UNC Nuclear Industries

Authorized By (DOC. No.): Project Number 11329, 11249, 11665

QA Requirement Specification:

(Specify) DOE-RL Order 5700.1A, Quality Assurance, as interpreted by PNL-MA-65 with additions and further clarifications to more fully meet sponsor requirements. Geophysical logging shall be conducted in accordance with QA Plan ED-54.

The Sections or selected paragraphs of PNL-MA-65 (as identified by section of paragraph number) designated in this QA Plan are applicable to this Project/Service Activity. Additional information is also provided when useful to provide clarification of the selected requirement.

Approvals:

DATE APPROVED	SIGNATURE
7-24-86	SIGNATURE (QUALITY ENGINEER) D. R. Dahl DR Dahl
7/25/86	SIGNATURE (Q.E. MANAGER) D. E. Ryder D E Ryder
7-24-86	SIGNATURE (PROJECT/ACTIVITY MANAGER) L. S. Prater/R. Schalla Leigh S. Prater/Ron Schalla
7/23/86	SIGNATURE (LINE MANAGER) (a) P. E. Bramson RK Woodruff for (D7HWK)
Date Approved 7/31/86	Signature (UNC) L.W. Vance

Distribution: (Project QA Files, QAO, and others as appropriate)

See Distribution, page 19

(a) Department or Section Manager as designated by Department Policy or the Project Plan Document.

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Project: Hazardous Materials Monitoring Project/RCRA Compliance Ground-Water Monitoring Project

QA PLAN INDEX

	Applies	W/C[a]	REV[b]
1.1 Organization	●	●	
1.1.1 QAO Organization	●	O	
1.1.2 QAO Responsibilities	●	O	
2.1 QA Program	●	●	
2.1.1 Applicability	●	●	1
2.1.2 QA Plans	●	O	
2.1.3 Personnel Qualifications and Training	●	●	1
2.1.4 QA Program Review	●	O	
2.2 QA Planning	●	●	
2.2.1 Project QA Plan	●	O	
2.2.2 Activity QA Plan	O	O	
2.2.3 Revision	●	O	
2.2.4 Close-Out	●	O	
2.3 Job Quality Plan—applies to work performed by Facilities Engineering Section and Major Projects and Planning Organizations		O	
2.3.1 Requirements		O	
2.3.2 Preparation and Approval		O	
2.3.3 Revisions		O	
2.3.4 Records		O	
3.1 Design Control and Method Review	O	O	
3.1.1 Design Planning	O	O	
3.1.2 Project Approach and Method	●	●	1
3.1.3 Design and Engineering Control	O	O	
3.1.3.1 Design Document Control	O	O	
3.1.3.1(3) Non-Official Engineering Drawings	●	O	1
3.1.3.2 Design Criteria	O	O	
3.1.3.3 Oesign Configuration Control	O	O	
3.1.3.4 Engineering Hold Points	O	O	
3.1.3.5 Modifications	O	O	
3.1.4 Calculation (Data) verification	O	O	
3.1.5 Interface Controls	O	O	
3.1.6 Design Review and Verification	O	O	
3.1.6.1 Design Data on OED	O	O	
3.1.6.2 Engineering Work in Support of Design	O	O	
3.1.6.3 Formal Design Review	O	O	
3.1.6.4 Development Testing	O	O	
3.1.7 Revisions	●	O	
4.1 Procurement—Applies if a purchase requisition is processed (procurement or subcontract)		●	
4.1.1 Procurement/Subcontract Document Preparation and Approval		●	
4.1.2 Source Inspection Activities		●	1
4.1.3 Supplier/Subcontractor Selection		O	
4.1.4 Procurement Document Close-Out		O	
5.1 Instructions, Procedures, and Drawings	●	●	1
5.1.1 Ident. & Content	●	O	
5.1.2 Transmit of QA Req.	●	O	
5.1.3 Compliance	●	O	

(a)W/C—With clarification presented in this QA Plan
(b)REV—Indicates revision number in which changes were made

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Project: Hazardous Materials Monitoring Project/RCRA Compliance Ground-Water Monitoring Project

QA PLAN INDEX (cont'd)

	Applies	W/C	REV
6.1 Document Control	●	●	
6.1.1 Control of Select Documents	●	●	
6.1.2 Revisions	●	●	
7.1 Identification and Control of Items	●	●	
7.1.1 Identification and Control	●	O	
7.1.2 Traceability	●	O	
8.1 Control of Special Processes	O	O	
8.1.1 Process Controls	O	O	
8.1.2 Process Selection	O	O	
9.1 Performance of Inspections and Tests	●	●	1
9.1.1 Receiving Inspection	●	O	
9.1.2 Other Inspections (Nonreceiving)	●	O	
9.1.3 Content of ITI	●	O	
9.1.4 Records, Tagging and Noncomformances	●	O	
10.1 Control of Measuring and Test Equipment	●	●	
10.1.1 Basic Responsiblities	●	O	
10.1.2 Performance Checks	●	O	
10.1.3 Calibration of M&TE	●	O	
10.1.4 Calibration Discrepancy	●	O	
10.1.5 New Equipment	●	O	
10.1.6 Records	●	O	
11.1 Handling, Storage and Shipping	●	O	
11.1.1 General Guidance	●	O	
11.1.2 Special Instructions	●	O	
12.1 Status of Inspection, Test & Operating Condition	●	●	
12.1.1 Status Indication Authorities	●	O	
12.1.2 Status Indication Requirements	●	O	
13.1 Nonconformance & Corrective Action	●	●	
13.1.1 Occurrences	●	O	
13.1.2 Control of Nonconforming Item	●	O	
13.1.3 Corrective Action	●	O	
14.1 QA Records	●	●	1
14.1.1 General Guidance	●	O	
14.1.2 QA Record Requirement	●	O	
14.1.3 Laboratory Record Books	●	●	
15.1 Audits — Applies when a project or activity is selected as part of the base for a QA audit.		●	
Additions	●	●	1 See Parts 1, 3, 6 and 10 of this QA Plan

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1. ORGANIZATION

1.1. The relationship of the Quality Assurance Department (QAO) to other Battelle components is described in Section 1.1 of PNL-MA-65. PNL-MA-65 identifies the responsibilities of the QAD Manager, Manager of Quality Engineering, Quality Engineer, Lead Quality Assurance Auditor, and the Manager of Quality Control.

In addition:

1. The organizational structure of the HMMP and the RCRA Compliance Ground-Water Monitoring project is shown in Attachment A. As shown in the diagram, both projects fall under the supervision of the Manager for Hanford Environmental Programs. The relationship between the projects and the QAD is also shown. Analytical laboratories include the primary testing laboratory, (currently U.S. Testing) and various other laboratories used to provide quality control checks. The QC laboratories currently include facilities of PNL, HEHF and Westinghouse Hanford Company, and may include in the future an independent offsite laboratory.

2. The PNL Project Manager shall act as interface among project sponsors (UNC Nuclear Industries, Westinghouse Hanford Company, and DOE-RL) and PNL regarding technical matters. The PNL Manager for Hanford Environmental and Occupational Health Programs shall act as interface for formal communications and matters regarding commitments. Status reports will be provided on a periodic basis according to agreements between PNL and the sponsors.

3. The Project Manager is responsible for implementing this QA Plan.

4. The responsibility of the Project Quality Control Task Leader is to coordinate quality control samples, screen results of QC sample analysis, and maintain records concerning laboratory performance.

2. QA PROGRAM

2.1. This QA Plan applies to the monitoring, sampling, chemical analyses, evaluation, and modeling activities for the HMMP and RCRA Compliance projects at the Hanford Site.

2.1.1. This document is intended to apply to work being conducted by PNL under two projects: the Hazardous Materials Monitoring Project (HMMP) and the RCRA Compliance Ground-Water Monitoring Project. Unless otherwise stated, all parts of this plan shall apply to both projects.

The HMMP, which is supported by the Department of Energy, - involves monitoring for hazardous chemicals throughout the Hanford Site. The RCRA Compliance Project, supported by Westinghouse Hanford Company, and UNC Nuclear Industries involves ground-water monitoring for hazardous chemicals at the 300 Area Process Trenches and the 183-H Solar Evaporation Basins.

2.1.3. The Project Manager shall provide for the training of project personnel on the contents of this QA Plan and supporting procedures as necessary. This training shall be planned, performed, and documented as per PNL Administrative Procedure PAP-201, Rev. 1, which includes the following requirements:

a. A resume of each contributor to the projects shall be in the project files.
b. The Project Manager shall define training needs and methods.
c. Training assignment, schedule, plan, and attendance shall be documented.
d. Training records shall be retained by the Management Systems Department, Procedures and Training Coordination Section.

2.2 Revision (2.2.3). The Project Manager shall notify the Quality Engineer of changes in project scope so that a revision to this QA Plan can be prepared and issued as needed.

3. DESIGN CONTROL AND METHOD REVIEW

3.1.2 Project approach and method of investigation for HMMP is described in the Project Plan for Hazardous Materials Monitoring Project for FY 1986, dated 10-01-85. The approach and method for the RCRA Compliance Project is documented in Hazardous Waste Ground-Water Monitoring Plan (July 1985).[a] Project plans and changes in scope shall be discussed with or reviewed by the project sponsors. Such changes shall be documented in the project files. The project plan shall be approved by the Project Manager and Section Manager.

(a) New compliance plans for each area are scheduled to be issued by August 1986.

In addition:

1. Data Base Development

   A computer data base management system shall be used to store and retrieve field and laboratory data. Procedures for processing data into the RCRA data base shall be documented in the Hanford Ground-Water Data Base Management Guide and User's Manual. Before this manual is published, the procedures shall be controlled in accordance with Section 6.1. The Data-Handling Task Leader shall assure that the data base user's manual is current.

   Computer software used to generate project data bases (i.e., software used to transfer data to the Hanford ground-water data base) has been verified. Changes to computer software shall be verified and documented.

2. Field Records

   Radiation Protection Technologists (RPTs) shall fill out completely sign and date all required sampling records (e.g., forms and field logbook), noting any conditions that could affect interpretation of results.

   Information in the field logbook shall be reviewed, initialed and dated, including any changes by the Environmental Monitoring Supervisor or the Sample Collection Task Leader.

   Changes to the field logbook or to other sample collection records (e.g., Chain-of-Custody forms) will be initialled by the person making the change.

3. Well Network Modification: Field Design Changes

   Field design changes of drilling configuration/specifications shall be at the discretion of the PNL geologist and shall be controlled in accordance with Procedure P-4,Change Control. All field changes and concurrence communications shall be documented in the PNL geologists's field notebook and kept as a permanent project record. Any design changes shall be reflected in the as-built drawings.

4. Data Base Records Verification and Security

   Data from the primary analytical laboratory shall be transferred to the data base using procedures documented in the Hanford Ground-Water Data Base Management Guide and User's Manual.

- Data on computer tapes, disks, and other memory devices shall be labeled with project name, title, and directory listing.

- Master copies of computer data on tapes, disks, and other memory devices shall be stored in a secure manner that will protect them from tampering and/or damage.

- Field data shall be entered into the data base by an assignee of the Data-Handling Task Leader and independently checked for accuracy and completeness and initialed by another assignee. Designation of assignees shall be documented.

- The Data-Handling Task Leader shall assure the security of the data by limiting access to the system as necessary. Individuals working with the data base shall change passwords at least annually.

- The Data Evaluation Task Leader shall review the data listing from the primary laboratory concurrently with transfer of data into the data base. Any suspect data will be checked with the primary laboratory and questions resolved and documented in project records.

- All data rejected by the data base shall be listed in the printout sent to the Data Evaluation Task Leader, whose responsibility it shall be to review the list and resolve with the primary laboratory questions concerning the data. Resolution of rejected data shall be documented in project files.

5. Data Base Contents and Use

- Each computer run reported or used for reporting information in project reports shall have a copy of the output stored as a project record. The record shall include date, data source, program listing, and software identification.

- Data and detection limits shall be reported in the data base. The magnitude of the uncertainty (bias) in each type of analysis may be estimated by the analysis of blanks and standard samples.
- The magnitude of the precision of each type of analysis shall be estimated by the analysis of replicates.

- The analysis of data shall be documented and traceable from the primary source to reported results, including all assumptions, interpretation, and calculations.

- Data from interlab comparisons should be included in the data base, and noted as such.

- Computerized data files shall contain pertinent field and lab notations that may affect the interpretation of the results.

- Data that are suspect (out of range as determined using control charts or other checks and statistical analysis) shall be flagged as such in order to caution users of such data. Suspect data will be brought to the attention of the laboratory by the Data Evaluation Task Leader for possible corrective action. Resolution of suspect data shall be documented in project records and traceable to the reviewer, data base, and date.

6. System Maintained Software and Support Software

System maintained software is software that is installed and maintained at the computer system level rather than at the user level (e.g., commercial software such as LOTUS 1-2-3, RS/1, or DISSPLA).

Support software is 1) Software that may be easily and exactly verified, and that performs a simple function such as, change in data format or plotting of data, or 2) A stream of commands or sequence of streams of commands executed to utilize system maintained software (the system maintained software generates reportable results).

When an application of such software is to be reported to a sponsor, the following control of application runs is required.

- Code documentation shall be located in files of (or available to) the user. A description of the configuration of hardware shall be included as a project record. Support and system-maintained software shall be identified by version number and date.

- Record of application runs, program and results, including a listing of the application (referenced to the application program) shall be maintained in project files and identify date, program, user, data and results document.

The user, or his designee, shall review, initial and date application runs to confirm that results are reasonable.

7. The Coupled Fluid, Energy, and Solute Transport (CFEST) Software Development/Modifications

The acquired Coupled Fluid, Energy, and Solute Transport (CFEST) code, developed under another PNL program for license-related application, will be calibrated to model ground-water flow and tritium transport in the unconfined aquifer at Hanford. The code is to be enhanced to simulate the movement of hazardous chemical constituents in ground water.

Computer software design, development and application shall be documented by the Model Enhancement Task Leader. This documentation, as a minimum, shall address the following:

- Software design/development
- Testing and verification of software and modifications
- Configuration control of software versions
- Storage of software master copies.

Computer Software Control

A code package for computer software design and development shall be maintained that includes the following documentation:

- A description of the problem to be solved or the purpose of the code
- A description of the computer language and operating system to which the code is adapted
- Input requirements
- Variables used
- Description of numerical methods and mathematical models
- A record of the programming progress, problems, and changes made
- User instructions
- Record of computer implementation of the mathematical models
- Explanation of assumptions, parameters, limitations and theory of the model
- Code listing.

Computer software developed and subsequent modifications shall be tested and verified by comparison with results from hand calculations.

For codes developed or modified under this project, verification procedures or test plans, controlled in accordance with Section 6.1, shall be prepared identifying the test cases to be run, the input data to be used, the acceptance criteria, and the expected results. The record of verification tests shall be made a part of the code package and maintained in project files. Acquired codes, such as CFEST, shall be reviewed by the Model Enhancements Task Leader for adequacy with the project, as well as adequate documentation (i.e., user's guide/instructions, verification/tests and results). This review shall be documented and retained as a project record.

7. Technical/Management Review

A review team (see organization chart, Attachment A) shall be employed to provide technical and management review of documents.

Prior to release or issue, reports, studies, and analyses shall be reviewed by member(s) of the review team not directly responsible for the work being reviewed. In this review, reviewers shall, as applicable, assess the adequacy of the data and equations used, duplicate calculations to check the accuracy of the calculations being reviewed, and assess the appropriateness of assumptions being made. The comments shall be documented by written response to the author and shall be resolved by the author. All records of technical/management review shall be stored in project files.

4. PROCUREMENT

4.1. This section shall apply to all items and services that are procured via purchase requisition and purchase order or contract documents. If receiving inspection is required (as specified in PNL-MA-65, Section 4.1.1.4.), then the applicable parts of Sections 9.1 (Inspection and Test) and 12.1 (Inspection, Test, and Operating Status) shall apply.

4.1.1 Subcontractors responsible for the analysis of samples shall be required to:

- Implement the use of written procedures.
- Control the handling of samples by Chain-of-Custody procedure.
- Control the handling of data records.
- Review and verify result prior to submittal to PNL, documented by signature of lab supervisor.
- The primary analytical laboratory shall implement a documented training program that shall assure that personnel have been trained in laboratory procedures and operation of equipment as necessary.
- Implement a documented Quality Assurance System.
- Provide Quality Assurance surveillance and audits for the Quality Assurance System.

Subcontracted analytical laboratories shall implement a system for control of measurement and test equipment (i.e., calibration) and have issued written procedures for routine analyses, a copy of which shall be kept at the lab and shall be available upon request.

The primary laboratory (currently UST) shall participate in the interlaboratory comparison program as provided by the Environmental Protection Agency (EPA) and Environmental Measurements Laboratory (EML) where practicable. Performance in these programs shall be reported to the Quality Control Task Manager as they are available.

Analytical laboratories shall maintain an internal quality control program to include the use of spiked, blank, and duplicate samples and NBS traceable standards, results of which shall be available to PNL for inspection and appraisal.

PNL shall conduct a routine quality control program that includes sending blind, spiked, blank and duplicate samples to UST. Also, PNL shall periodically send replicate field samples to UST and at least two other laboratories to see how well the laboratories agree. The Quality Control Program shall be documented, including method, results and reviews.

Evaluation of subcontractor-supplied data is addressed in Section 3, Addition 4 (Data Base Records Verification and Security), Bullet #5.

4.1.2 The Statement of Work (SOW) for subcontractors responsible for well drilling shall require subcontractors:

- Follow the requirements set forth in the Subcontract Statement of Work including method of drilling, steam cleaning of equipment, storage of construction materials, tool lubricants, drilling additives, drill cutting and water disposal, and documentation of each of the above.

- Inspections by PNL personnel are required in the Statement of Work. All inspections shall be performed by designated and qualified personnel, documented, and maintained as a record.

- Keep a drilling log which shall be available to the PNL geologist. (Instructions on the format and content of the log shall be included in the SOW.) The drilling log shall be maintained as a record.

Purchase Requisitions (PRs) shall be reviewed by an individual familiar with technical specifications of items ordered, and shall be documented by signature/date prior to line manager or other reviews.

All procurement documents shall be reviewed by a Quality Assurance Representative prior to issue to verify that the applicable QA requirements have been included. The subcontractor's written procedures for the above-mentioned activities shall be reviewed by the Project Manager and Quality Assurance Representative.

Subcontractors with extensive QA requirements shall be approved by PNL Quality Control.

5. INSTRUCTIONS, PROCEDURES, AND DRAWINGS

5.1 Procedures that have been identified for these projects include, but are not limited to the following:

- Ground-Water Sampling (radiological and chemical), covered in PNL-MA-580, including the following procedures:
  - Water Level Measurement
  - Conductivity Calibration and Measurement
  - pH Calibration and Measurement
  - Chain-of-Custody
  - Temperature Measurement
  - Sampling of River Water, Sediment, and Vegetation (as required)
- Sample Analysis[a]
- Sample Disposal, Procedure P-1
- Data Handling and Verification,[b] Procedure P-2
- Statistical Analysis of Data,[b] Procedure P-3
- Indoctrination and Training (PAP-201 Rev. 1; see exceptions noted in 2.1.3)
- Software Design, Development and Application(including verification procedures/test instructions)[b]
- Geophysical well logging (QA Plan ED-54)
- Data Base Management[b,c]
- Magnetic Media Control[c]
- Change Control (well drilling), Procedure P-4

(a) Listed in Compliance Plan.
(b) Procedure under development.
(c) This will be included in Hanford Ground-Water Data Base Management Guide and User's Manual when published.

Procedures for collection of drilling samples, including both sediment and liquid sampling (including Chain-of-Custody for core samples) shall be developed and maintained as a project record.

A checklist shall be developed and implemented for Title III Inspection of new wells (see Section 9, Performance of Inspections and Tests).

6. DOCUMENT CONTROL

6.1. This section shall be applied to the procedures identified in 5.1, and any other documents identified in the future as requiring control. Additional information is provided in the following statement.

6.1.1 Controlled documents shall be reviewed by designated, authorized personnel and approved for the use by the Project Manager or designated alternate. Approval shall be indicated by signature and date on the document.

The Quality Engineer shall review all controlled documents prior to issue to help assure that the applicable QA Program requirements have been adequately met.

6.1.2 Revisions to established procedures shall receive the same controls applied to the original documents.

In addition:

The Project Manager or designated staff shall be assigned (in writing) the responsibility of distribution for all controlled documents.

7. IDENTIFICATION AND CONTROL OF ITEMS

7.1 Sample labeling and identification is covered in the Chain-of-Custody procedure, as noted in Section 5.1.

9. PERFORMANCE OF INSPECTIONS AND TESTS

9.1 PNL-MA-65 addresses receiving and other inspection, inspection/test instruction (ITI), and records, tagging, and nonconformance and shall apply to purchased items, test equipment, samples, project data and computer items.

Title III Inspection of new wells shall be performed by independent, qualified personnel in accordance with the checklist referenced in 5.1 of this plan. The completed checklist shall be retained as a project record.

10. CONTROL OF MEASURING AND TEST EQUIPMENT

10.1 Control of measuring and test equipment used shall be in accordance with this section of PNL-MA-65.

In addition:

1. It is the responsibility of the Environmental Monitoring Supervisor or Sample Collection Task Leader to ensure that appropriate project files and records are maintained for all equipment used by the RPTs.

2. Calibration records for pH/Conductivity meters labeled "user to calibrate" shall be documented in the project files. Calibration shall be in accordance with pH/Conductivity calibration procedures referenced in Section 5.1 of this QA Plan.

3. Counting equipment for radiological analyses shall be calibrated to Level 1 as specified in PNL-MA-65, Section 10.1.

11. HANDLING, STORAGE, AND SHIPPING

11.1 Procedures for Chain-of-Custody handling and transporting samples are documented in the Sampling Procedures, as noted in Section 5.1.

Procedures for disposing of samples are noted in Section 5.1 of this QA Plan.

12. STATUS OF INSPECTION, TEST & OPERATING CONDITION

12.1 PNL-MA-65 addresses status indication authorities ("lock and tag" procedures) and status indication requirements (tags) which shall apply to test and sample acquisition equipment.

13. NONCONFORMANCE & CORRECTIVE ACTION

13.1 PNL-MA-65 defines nonconformance and gives a method for implementing corrective action.

14. QA RECORDS

14.1 The Project Manager or designated alternate shall assure that a project records file is maintained that contains or references the location of the QA records (as noted). Project records shall be retained according to the PNL Records Management Manual (PNL-MA-68). These records shall include, but are not limited to, the following documents:

Records (Record Copy) which are kept by other organizations within Battelle include the following:

Technical reports (numbered) (Technical Information)
Monthly, Quarterly reports (Non-Project) (Department manager)
Cost Runs (Finance)
Subcontracts (Legal and Contracts)
Procurement Documents (Legal and Contracts)
Resumes (Personnel)
Project Training records (QA, Management Systems)
QA Plan (QA)
QA Audits (QA)
Nonconformance and Corrective Action Reports (QA)

Project records shall include, but are not limited to, the following documents:

Project Proposal, Planning documents
Project Authorization and Directives
Project Monthly, Quarterly and Annual reports
Unpublished Manuscripts
Correspondence influencing direction of the project

Data Collection Procedures (PNL-MA-580)
Project Procedures identified in Section 5.1

Laboratory Analysis Methods
    Laboratory analysis requests
    Procedural changes/communications

Computer Code Documentation identified in Section 3

Basic Data
    Hard copy from alternate labs
    Raw data on tape
    Data Base (magnetic media)
    Calibration records
    Logbooks

Data Reduction
    Including data summary, statistical and quality control
    Records traceable to Data Base

Laboratory Record Books (numbered)
Other notebooks, logbooks
Drawings
Well inspection documentation
Reviews
Records Plan/Index (ref., MG 4.3)

Records Retention:

- Retention periods for project records (record copy only) are specified by DOE Order 1342.2.
- Nonrecord copy retention is determined by the file custodian and project manager.
- Retention times and disposition are documented in the Records Inventory and Disposition Schedule for the RCRA Ground-Water Monitoring and Hazardous Materials Monitoring Project.
- Laboratory Record Books shall be returned to the Technical Library upon completion of the project for storage indefinitely.

Records Maintenance/Storage:

Records shall be maintained in project files and subfiles. Records maintenance shall be the responsibility of those custodians listed in the Master File Index and Task/Subtask File Indexes. While in the project file state, records shall be protected from damage or loss in order to avoid potential delays or additional costs of replacement.

Records Transmittal/Disposition:

Reproducible copies of all project records with retention times of 15 years or longer shall be transmitted to the Battelle or Federal Records Center annually, after two years of records have been generated. A record of this transmittal listing all records transferred and uniquely identifying them shall be documented and retained by the Project Manager.

Prior to this transmittal, the QA representative and Project Manager or designee shall check a sample of the turnover package to verify that sponsor requirements have been met and that the records are legible and complete.

14.1.3 Laboratory Record Books

Laboratory Record Books shall be controlled in accordance with Section 14.1.3 of PNL-MA-65.

Laboratory Record Books shall be used for documenting the following activities:

- Sample Collection Notes, including field measurements, conditions, and operational checks.

15. AUDITS

15.1 Annual audits shall be performed by the PNL QA Systems and Audits Section to determine conformance with QA requirements.

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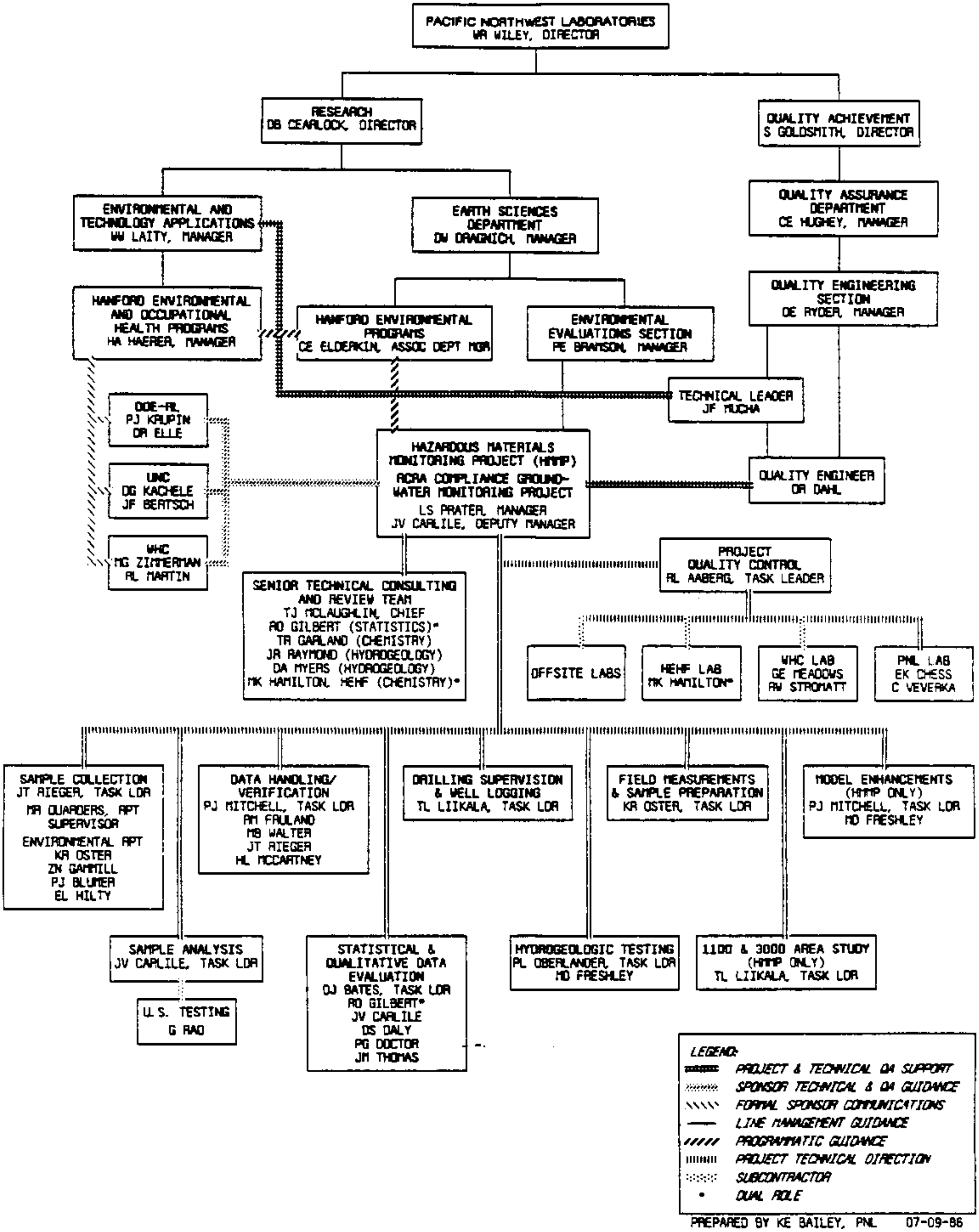
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DUAL ROLE
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APPENDIX G

DATA LISTINGS AND SUMMARIES

APPENDIX G

DATA LISTINGS AND SUMMARIES

Appendix G contains the summaries and raw data listings for the chemical constituent data collected between June 1985 and May 1986 at the 300 Area Processes Trench monitoring network for those constituents with at least one reported value above the detection limit.

Table G.1 gives the following summary inforamtion for each constituent measured. The data are summarized foe each well and ordered on their mean values. Definitions of the terms used in this table follow:

WELLNAME = Well name
SAMPLES = Number of samples analyzed to date
DETLIMIT = Laboratory detection limits
8ELOWDL = Number of samples below detection limits
ALLBELOW = All samples were below detection limits
MAXLIMIT = Maximum permissible limit
MEAN = Simple arithemetic mean of all the values
MEDIAN = Median, or ordered middle, of all the values
STDDEV = Standard deviation of all the values
COEFFVAR = Coefficient of variation for all the values (100*STDDEV.MEAN)
STDDEV = Standard deviation of all the values
MINIMUM = Minimum report value
MAXIMUM = Maximum report value

Note: The mean, standard deviation, and coefficient of variation statistics were calculated as though the values met the assumptions of simple random sampling. Estimation problems posed by replicates, below-detection values, and temporal variability in the data have not been addressed.

Table G.2 presents basically the same information as Table G.1 except that it is further broken down to date of sample and is restricted to only replicate sampling data to avoid unnecessary repetition of information already contained in Table G.1.

Raw data are presented in Table G.3 for those constituents that had at least one value above the detection limit. Each reported value is marked as being below the detection limit (<) where appropriate. In most cases the value reported will be the detection limit itself, but if an actual value below the detection limit is reported by the laboratory, that value is used in presentation and all subsequent data summaries. For radioactive elements, a detection limit is given, but the actual analytical value is reported and stated as below detection only if it is less than its associated counting error. Also, the column labeled "Rep" indicates field replicates taken in addition to the normal sample, with the "S" marking those replicate samples collected during October that were used for cross-comparison of the UST Hoboken and Richland laboratories. The column labeled "Lab" is empty if the analysis was done at UST-Richland and contains an "H" if the analysis was done at UST-Hoboken. Finally, an "M" in the column labeled "Concentration" indicates a missing data point.

TABLE G.1 Summarized by Constituent-Well, sorted by Mean

--------------------Constituent List=Contamination Indicators Constituent Code, Name, Units=191 CONDUCT UMHO--------------------

WELLNAME	SAMPLES	DETLIMIT	BELOWDL	ALLBELOW	MAXLIMIT	MEAN	MEDIAN	STDDEV	COEFFVAR	MINIMUM	MAXIMUM
399-1-6	11	.	0		.	180	173	21.7	12.1	145	213
399-1-4	12	.	0		.	181	176	24.7	13.6	152	217
399-1-1	11	.	0		.	202	204	20	9.9	166	230
399-1-2	11	.	0		.	228	227	18.5	8.1	204	254
399-1-5	11	.	0		.	235	209	58.5	24.9	172	325
399-2-1	12	.	0		.	252	248	40	15.8	202	339
399-3-10	11	.	0		.	262	265	23.8	9.1	213	298
399-1-3	11	.	0		.	264	252	47.5	18.0	210	368
399-1-7	10	.	0		.	285	276	61.4	21.5	202	376
399-3-7	11	.	0		.	300	310	37.3	12.5	236	347
399-4-1	11	.	0		.	307	322	28.7	9.3	280	348
399-1-8	7	.	0		.	309	308	29.1	9.4	262	342
399-4-7	11	.	0		.	319	330	46	14.4	238	393
399-8-2	11	.	0		.	338	337	28	8.3	304	402
699-S19-E13	11	.	0		.	394	385	30.1	7.6	348	441
699-S30E15A	11	.	0		.	498	492	53.6	10.8	420	586

------------------------Constituent List=Contamination Indicators Constituent Code, Name, Units=199 PH------------------------

WELLNAME	SAMPLES	DETLIMIT	BELOWDL	ALLBELOW	MAXLIMIT	MEAN	MEDIAN	STDDEV	COEFFVAR	MINIMUM	MAXIMUM
399-2-1	12	.	0		.	6.43	6.35	0.494	7.7	5.4	7
399-1-6	11	.	0		.	6.52	6.55	0.505	7.7	5.4	7.2
399-3-10	11	.	0		.	6.67	7	1.02	15.2	3.9	7.8
399-1-4	11	.	0		.	6.71	6.73	0.513	7.6	5.9	7.4
399-1-3	11	.	0		.	6.76	6.8	0.72	10.6	5.3	7.7
399-1-5	11	.	0		.	6.86	6.8	0.495	7.2	6.1	7.8
399-1-1	11	.	0		.	6.94	7.1	0.488	7.0	5.8	7.4
399-1-2	11	.	0		.	7.03	7.2	0.51	7.3	6.2	7.6
699-S30E15A	11	.	0		.	7.15	7.15	0.538	7.5	6.1	7.9
399-3-7	11	.	0		.	7.22	7.4	0.61	8.4	6	7.8
399-1-7	10	.	0		.	7.23	7.15	0.446	6.2	6.6	7.8
399-4-1	11	.	0		.	7.33	7.3	0.471	6.4	6.3	8.1
399-4-7	11	.	0		.	7.34	7.3	0.532	7.2	6.4	8.3
399-8-2	11	.	0		.	7.4	7.4	0.294	4.0	6.9	7.9
399-1-8	7	.	0		.	7.6	7.45	0.452	5.9	7.2	8.2
699-S19-E13	11	.	0		.	7.66	7.9	0.52	6.8	6.7	8.3

TABLE G.1 Summarized by Constituent-Well, sorted by Mean

---------------------Constituent List=Contamination Indicators Constituent Code, Name, Units=C68 TOX PPB---------------------

WELLNAME	SAMPLES	DETLIMIT	BELOWDL	ALLBELOW	MAXLIMIT	MEAN	MEDIAN	STDDEV	COEFFVAR	MINIMUM	MAXIMUM
399-3-7	10	100	10	***	.	29	25.5	16.7	57.5	12.3	61.2
399-4-7	16	100	15		.	37.3	22.3	63.3	169.5	9.5	272
399-1-3	10	100	9		.	44.3	35.7	28.1	63.4	25.2	119
399-3-10	16	100	14		.	53.9	18.1	97.7	181.1	10.9	392
399-4-1	10	100	8		.	67.1	24	87.9	131.0	19.5	290
399-1-1	16	100	13		.	94.4	37.1	134	142.4	17	421
399-1-2	16	100	14		.	110	36.1	236	213.5	19.1	948
399-8-2	10	100	7		.	118	11.1	208	176.2	6.95	580
399-2-1	10	100	8		.	193	31.2	345	178.5	16.8	1030
399-1-4	10	100	8		.	231	42.3	479	207.4	28.4	1550
399-1-7	10	100	8		.	296	60.5	679	229.4	28.5	2210
399-1-5	15	100	13		.	337	63.5	722	214.0	28	2310
399-1-6	10	100	7		.	361	42.1	592	164.1	22.4	1620
399-1-8	7	100	6		.	435	12.6	1100	254.1	7.05	2940
699-S19-E13	11	100	10		.	840	7.5	2760	328.4	2.3	9160
699-S30E15A	10	100	8		.	1060	9.22	2820	265.0	3.8	8970

---------------------Constituent List=Contamination Indicators Constituent Code, Name, Units=C69 TOC PPB---------------------

WELLNAME	SAMPLES	DETLIMIT	BELOWDL	ALLBELOW	MAXLIMIT	MEAN	MEDIAN	STDDEV	COEFFVAR	MINIMUM	MAXIMUM
399-4-7	16	1000	14		.	614	663	320	52.1	1	1070
399-3-10	16	1000	13		.	725	693	290	40.0	309	1370
399-8-2	10	1000	7		.	801	945	431	53.9	125	1300
399-3-7	10	1000	7		.	848	806	293	34.6	439	1280
399-4-1	10	1000	8		.	867	638	683	78.7	350	2690
399-1-1	16	1000	10		.	946	871	773	81.8	110	3140
399-1-6	10	1000	5		.	982	989	304	30.9	380	1340
699-S19-E13	11	1000	5		.	1030	1070	711	69.2	160	2790
399-1-2	16	1000	11		.	1100	895	677	61.5	430	3340
399-1-8	7	1000	4		.	1200	930	1220	102.0	302	3850
699-S30E15A	10	1000	0		.	1320	1190	264	20.0	1000	1760
399-2-1	10	1000	5		.	1360	1010	1480	108.4	460	5460
399-1-3	10	1000	5		.	1370	1000	1080	78.7	547	4320
399-1-4	10	1000	2		.	1370	1290	544	39.6	580	2190
399-1-7	10	1000	4		.	1540	1250	1290	83.9	330	4670
399-1-5	16	1000	6		.	1850	1250	1950	105.5	550	8030

RCRA Compliance Ground-Water Monitoring Data
300 Area Process Trenches, June 1985 thru May 1986

15:26 MONDAY, AUGUST 25, 1986

TABLE G.1 Summarized by Constituent-Well, sorted by Mean

---------------------Constituent List=Drinking Water Standards   Constituent Code, Name, Units=109 COLIFRM MPN---------------------

WELLNAME	SAMPLES	DETLIMIT	BELOWDL	ALLBELOW	MAXLIMIT	MEAN	MEDIAN	STDDEV	COEFFVAR	MINIMUM	MAXIMUM
399-1-5	15	3	14		1	2.87	3	0.834	29.1	0	4
399-1-2	20	3	20	***	1	3	3	0	0.0	3	3
399-1-3	11	3	11	***	1	3	3	0	0.0	3	3
399-1-6	11	3	11	***	1	3	3	0	0.0	3	3
399-1-7	10	3	10	***	1	3	3	0	0.0	3	3
399-1-8	7	3	7	***	1	3	3	0	0.0	3	3
399-3-7	11	3	11	***	1	3	3	0	0.0	3	3
399-4-7	20	3	20	***	1	3	3	0	0.0	3	3
399-3-10	20	3	19		1	3.05	3	0.224	7.3	3	4
699-S19-E13	11	3	10		1	3.09	3	0.302	9.8	3	4
699-S30E15A	11	3	10		1	3.55	3	1.81	51.0	3	9
399-1-1	20	3	19		1	4	3	4.47	111.8	3	23
399-4-1	11	3	9		1	5.91	3	6.71	113.6	3	23
399-2-1	11	3	4		1	11.1	4	13.1	118.2	3	43
399-8-2	11	3	10		1	16.4	3	44.3	270.9	3	150
399-1-4	11	3	10		1	103	3	331	322.0	3	1100

--------------------Constituent List=Drinking Water Standards   Constituent Code, Name, Units=111 BETA   PCI/L--------------------

WELLNAME	SAMPLES	DETLIMIT	BELOWDL	ALLBELOW	MAXLIMIT	MEAN	MEDIAN	STDDEV	COEFFVAR	MINIMUM	MAXIMUM
399-8-2	11	8	2		50	7.94	8.27	3.32	41.8	0.719	12.3
399-1-6	10	8	0		50	8.88	8.5	4.46	50.1	2.5	19.9
399-1-4	11	8	0		50	9.31	10.2	1.86	20.0	5.95	12
399-1-1	20	8	1		50	10	9.6	2.88	28.7	3.9	16
699-S19-E13	11	8	0		50	10.1	10.8	2.75	27.4	3.32	12.9
399-1-2	20	8	1		50	11.5	11.3	3.64	31.7	3.37	18.5
399-3-7	11	8	0		50	12.1	10.1	5.33	44.2	7.49	26.3
399-4-1	11	8	0		50	12.2	12	3.02	24.7	7.24	18.2
399-1-8	7	8	0		50	13.9	13	2.58	18.5	10.7	16.9
399-2-1	11	8	0		50	14.2	13.9	2.84	19.9	9.62	18.8
399-3-10	20	8	0		50	14.3	14.2	5.09	35.7	3.8	21.6
399-1-5	15	8	0		50	15.3	15.8	2.98	19.5	10.1	22.8
699-S30E15A	11	8	0		50	15.5	9.91	17.6	113.3	6.25	68
399-4-7	20	8	0		50	22.4	22.9	11.5	51.6	7.5	60.6
399-1-7	10	8	0		50	28.6	26.6	9.63	33.7	15	47.3
399-1-3	11	8	0		50	29.5	26.1	12.1	41.0	17.8	53.4

RCRA Compliance Ground-Water Monitoring Data
300 Area Process Trenches, June 1985 thru May 1986

15:26 MONDAY, AUGUST 25, 1986

TABLE G.1 Summarized by Constituent-Well, sorted by Mean

--------------------Constituent List=Drinking Water Standards Constituent Code, Name, Units=181 RADIUM PCI/L--------------------

WELLNAME	SAMPLES	DETLIMIT	BELOWDL	ALLBELOW	MAXLIMIT	MEAN	MEDIAN	STDDEV	COEFFVAR	MINIMUM	MAXIMUM
399-1-7	10	1	10	***	5	0.0184	.00174	0.0499	271.2	-0.0645	0.118
399-1-6	10	1	10	***	5	0.0208	0.0218	0.0291	139.8	-0.0287	0.0859
399-1-3	11	1	11	***	5	0.0215	0.0152	0.0769	357.3	-0.0594	0.183
399-2-1	11	1	11	***	5	0.0365	0.0282	0.0513	140.8	-0.0358	0.124
399-3-7	11	1	11	***	5	0.0421	0.0592	0.0586	139.0	-0.0538	0.126
399-4-7	20	1	19		5	0.0466	0.0442	0.0821	176.4	-0.0732	0.235
699-S30E15A	11	1	10		5	0.0563	0.0461	0.116	206.2	-0.101	0.358
399-3-10	20	1	19		5	0.0637	0.0574	0.0767	120.4	-0.11	0.2
399-1-8	7	1	7	***	5	0.065	0.0513	0.13	200.4	-0.121	0.311
399-1-2	20	1	18		5	0.0655	0.0273	0.206	314.5	-0.108	0.875
699-S19-E13	11	1	10		5	0.076	0.059	0.0653	112.4	0	0.294
399-4-1	11	1	10		5	0.0812	0.0552	0.152	187.3	-0.11	0.368
399-1-4	11	1	10		5	0.0866	0.0189	0.229	264.5	-0.109	0.718
399-8-2	11	1	9		5	0.0885	0.0585	0.136	154.2	-0.1	0.375
399-1-1	20	1	19		5	0.119	0.0903	0.124	104.0	-0.0501	0.484
399-1-5	15	1	14		5	0.128	0.0821	0.189	147.8	-0.0405	0.757

--------------------Constituent List=Drinking Water Standards Constituent Code, Name, Units=212 LOALPHA PCI/L--------------------

WELLNAME	SAMPLES	DETLIMIT	BELOWDL	ALLBELOW	MAXLIMIT	MEAN	MEDIAN	STDDEV	COEFFVAR	MINIMUM	MAXIMUM
399-8-2	11	4	1		15	2.48	2.53	0.655	26.4	1.37	3.56
699-S30E15A	11	4	2		15	3.15	3.37	1.2	36.1	1.55	5.6
699-S19-E13	11	4	0		15	5.07	5.15	1.49	29.3	3.11	7.44
399-1-4	11	4	0		15	9.55	9.62	4.08	42.7	4.18	15.9
399-1-2	20	4	0		15	10.5	9.72	4.41	42.0	4.24	17.1
399-3-7	11	4	0		15	11	9.5	5.14	46.7	5.63	20.9
399-2-1	11	4	0		15	11.4	10.7	5.42	47.4	4.66	24.2
399-1-6	10	4	0		15	11.8	10.4	5.37	45.5	5.69	24.5
399-4-1	11	4	0		15	12.5	13.9	5.8	46.4	1.31	18.9
399-1-5	15	4	0		15	13	7.96	9.53	73.2	2.44	31.7
399-1-8	7	4	0		15	14.2	14.2	3.91	27.6	9.13	19.6
399-3-10	20	4	0		15	17.6	16	6.2	34.9	6.74	32.2
399-1-1	20	4	0		15	18.7	17.2	4.53	24.2	12.2	26.9
399-4-7	20	4	0		15	30	30.5	13.3	44.5	2.16	57.1
399-1-7	10	4	0		15	32.3	30.4	11.1	34.3	20.1	50.2
399-1-3	11	4	0		15	34.8	34.3	9.95	28.6	19.6	46

TABLE G.1 Summarized by Constituent-Well, sorted by Mean

--------------------Constituent List=Drinking Water Standards Constituent Code, Name, Units=A06 BARIUM PPB--------------------

WELLNAME	SAMPLES	DETLIMIT	BELOWDL	ALLBELOW	MAXLIMIT	MEAN	MEDIAN	STDDEV	COEFFVAR	MINIMUM	MAXIMUM
399-1-4	11	6	1		1000	17.4	18	4.18	24.1	6	21
399-1-6	11	6	1		1000	18.7	18	6.63	35.4	6	35
399-1-3	11	6	1		1000	26.7	28	12	44.8	6	54
399-1-8	7	6	0		1000	32.1	32	1.21	3.8	31	34
399-1-7	10	6	0		1000	32.4	28	24.7	76.2	15	101
399-8-2	11	6	1		1000	35.5	38	9.92	27.9	6	42
399-3-7	11	6	1		1000	36	34	17.4	48.2	6	78
399-4-1	11	6	2		1000	36.5	32	31.2	85.6	6	124
399-1-5	16	6	0		1000	37.5	22.5	52.8	140.9	7	233
699-S19-E13	11	6	1		1000	41.3	44	11.9	28.8	6	50
399-3-10	21	6	4		1000	43.7	42	35.7	81.7	6	183
399-1-1	21	6	0		1000	43.8	34	27.6	62.9	27	145
399-4-7	21	6	3		1000	44.9	41	40.8	91.0	6	212
399-2-1	11	6	1		1000	47.5	49	16.2	34.1	6	68
699-S30E15A	11	6	1		1000	60.6	65	18.9	31.2	6	77
399-1-2	21	6	0		1000	62.4	22	152	243.1	15	719

--------------------Constituent List=Drinking Water Standards Constituent Code, Name, Units=A07 CADMIUM PPB--------------------

WELLNAME	SAMPLES	DETLIMIT	BELOWDL	ALLBELOW	MAXLIMIT	MEAN	MEDIAN	STDDEV	COEFFVAR	MINIMUM	MAXIMUM
399-1-3	11	2	10		10	2	2	0	0.0	2	2
399-1-8	7	2	7	***	10	2	2	0	0.0	2	2
399-4-1	11	2	11	***	10	2	2	0	0.0	2	2
399-4-7	21	2	21	***	10	2	2	0	0.0	2	2
699-S19-E13	11	2	11	***	10	2	2	0	0.0	2	2
399-1-2	21	2	20		10	2.05	2	0.218	10.7	2	3
399-3-10	21	2	19		10	2.05	2	0.218	10.7	2	3
399-1-6	11	2	10		10	2.09	2	0.302	14.4	2	3
399-8-2	11	2	10		10	2.09	2	0.302	14.4	2	3
399-1-1	21	2	19		10	2.1	2	0.301	14.4	2	3
399-2-1	11	2	10		10	2.18	2	0.603	27.6	2	4
399-1-4	11	2	10		10	2.27	2	0.905	39.8	2	5
399-3-7	11	2	10		10	2.27	2	0.905	39.8	2	5
399-1-5	16	2	14		10	2.31	2	1.15	49.8	2	6.6
399-1-7	10	2	9		10	2.33	2	1.04	44.6	2	5.3
699-S30E15A	11	2	10		10	2.45	2	1.51	61.4	2	7

TABLE G.1 Summarized by Constituent-Well, sorted by Mean

---------------------Constituent List=Drinking Water Standards Constituent Code, Name, Units=A08 CHROMUM PPB---------------------

WELLNAME	SAMPLES	DETLIMIT	BELOWDL	ALLBELOW	MAXLIMIT	MEAN	MEDIAN	STDDEV	COEFFVAR	MINIMUM	MAXIMUM
399-1-1	21	10	20		50	10	10	0.218	2.2	10	11
399-1-2	21	10	21	***	50	10	10	0	0.0	10	10
399-1-5	16	10	16	***	50	10	10	0	0.0	10	10
399-1-8	7	10	7	***	50	10	10	0	0.0	10	10
399-2-1	11	10	11	***	50	10	10	0	0.0	10	10
399-3-7	11	10	11	***	50	10	10	0	0.0	10	10
399-8-2	11	10	11	***	50	10	10	0	0.0	10	10
699-S19-E13	11	10	11	***	50	10	10	0	0.0	10	10
399-1-4	11	10	10		50	10.1	10	0.302	3.0	10	11
699-S30E15A	11	10	9		50	10.9	10	2.21	20.3	10	17
399-4-7	21	10	19		50	11	10	3.95	35.9	10	28
399-3-10	21	10	19		50	11.3	10	6.11	53.9	10	38
399-1-3	11	10	9		50	11.6	10	4.27	36.7	10	24
399-4-1	11	10	9		50	11.6	10	4.06	34.9	10	23
399-1-7	10	10	7		50	12.1	10	4.7	38.9	10	26
399-1-6	11	10	10		50	32.5	10	74.5	229.5	10	257

---------------------Constituent List=Drinking Water Standards Constituent Code, Name, Units=A10 SILVER PPB---------------------

WELLNAME	SAMPLES	DETLIMIT	BELOWDL	ALLBELOW	MAXLIMIT	MEAN	MEDIAN	STDDEV	COEFFVAR	MINIMUM	MAXIMUM
399-1-1	21	10	21	***	50	10	10	0	0.0	10	10
399-1-3	11	10	11	***	50	10	10	0	0.0	10	10
399-1-4	11	10	11	***	50	10	10	0	0.0	10	10
399-1-5	16	10	16	***	50	10	10	0	0.0	10	10
399-1-6	11	10	11	***	50	10	10	0	0.0	10	10
399-1-7	10	10	10	***	50	10	10	0	0.0	10	10
399-1-8	7	10	7	***	50	10	10	0	0.0	10	10
399-2-1	11	10	11	***	50	10	10	0	0.0	10	10
399-3-10	21	10	21	***	50	10	10	0	0.0	10	10
399-3-7	11	10	11	***	50	10	10	0	0.0	10	10
399-4-1	11	10	11	***	50	10	10	0	0.0	10	10
399-4-7	21	10	21	***	50	10	10	0	0.0	10	10
399-8-2	11	10	11	***	50	10	10	0	0.0	10	10
699-S19-E13	11	10	11	***	50	10	10	0	0.0	10	10
699-S30E15A	11	10	11	***	50	10	10	0	0.0	10	10
399-1-2	21	10	20		50	10.4	10	1.98	18.8	10	19

TABLE G.1 Summarized by Constituent-Well, sorted by Mean

---------------------Constituent List=Drinking Water Standards Constituent Code, Name, Units=A20 ARSENIC PPB--------------------

WELLNAME	SAMPLES	DETLIMIT	BELOWDL	ALLBELOW	MAXLIMIT	MEAN	MEDIAN	STDDEV	COEFFVAR	MINIMUM	MAXIMUM
399-1-4	11	5	10		50	5	5	0	0.0	5	5
399-1-7	10	5	10	***	50	5	5	0	0.0	5	5
399-1-8	7	5	7	***	50	5	5	0	0.0	5	5
399-2-1	11	5	10		50	5	5	0	0.0	5	5
399-3-10	21	5	21	***	50	5	5	0	0.0	5	5
699-S30E15A	11	5	11	***	50	5	5	0	0.0	5	5
399-4-7	21	5	19		50	5.05	5	0.181	3.6	5	5.8
399-4-1	11	5	10		50	5.09	5	0.308	6.0	5	6.02
699-S19-E13	11	5	10		50	5.09	5	0.302	5.9	5	6
399-1-2	21	5	20		50	5.1	5	0.436	8.6	5	7
399-1-5	16	5	15		50	5.11	5	0.425	8.3	5	6.7
399-1-3	11	5	10		50	5.23	5	0.76	14.5	5	7.52
399-8-2	11	5	9		50	5.28	5	0.632	12.0	5	7
399-1-6	11	5	10		50	5.38	5	1.21	22.5	5	9
399-1-1	21	5	17		50	5.97	5	2.72	45.6	5	17
399-3-7	11	5	10		50	6.64	5	5.43	81.8	5	23

---------------------Constituent List=Drinking Water Standards Constituent Code, Name, Units=A21 MERCURY PPB--------------------

WELLNAME	SAMPLES	DETLIMIT	BELOWDL	ALLBELOW	MAXLIMIT	MEAN	MEDIAN	STDDEV	COEFFVAR	MINIMUM	MAXIMUM
399-1-1	21	0.1	21	***	2	0.1	0.1	0	0.0	0.1	0.1
399-1-4	11	0.1	11	***	2	0.1	0.1	0	0.0	0.1	0.1
399-1-6	11	0.1	11	***	2	0.1	0.1	0	0.0	0.1	0.1
399-1-8	7	0.1	7	***	2	0.1	0.1	0	0.0	0.1	0.1
399-2-1	11	0.1	11	***	2	0.1	0.1	0	0.0	0.1	0.1
399-3-7	11	0.1	11	***	2	0.1	0.1	0	0.0	0.1	0.1
399-4-1	11	0.1	11	***	2	0.1	0.1	0	0.0	0.1	0.1
399-8-2	11	0.1	11	***	2	0.1	0.1	0	0.0	0.1	0.1
699-S19-E13	11	0.1	11	***	2	0.1	0.1	0	0.0	0.1	0.1
399-1-3	11	0.1	10		2	0.618	0.1	1.72	278.0	0.1	5.8
399-1-7	10	0.1	9		2	0.63	0.1	1.68	266.0	0.1	5.4
699-S30E15A	11	0.1	10		2	0.727	0.1	2.08	288.1	0.1	7
399-1-2	21	0.1	17		2	1.08	0.1	2.09	194.0	0.1	6.2
399-3-10	21	0.1	16		2	1.33	0.1	2.65	199.1	0.1	8.2
399-1-5	16	0.1	13		2	1.38	0.1	2.82	204.9	0.1	8.9
399-4-7	21	0.1	17		2	1.49	0.1	3.04	203.6	0.1	9.9

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TABLE G.1 Summarized by Constituent-Well, sorted by Mean

--------------------Constituent List=Drinking Water Standards Constituent Code, Name, Units=A22 SELENUM PPB--------------------

WELLNAME	SAMPLES	DETLIMIT	BELOWDL	ALLBELOW	MAXLIMIT	MEAN	MEDIAN	STDDEV	COEFFVAR	MINIMUM	MAXIMUM
399-1-1	21	5	21	***	10	5	5	0	0.0	5	5
399-1-2	21	5	21	***	10	5	5	0	0.0	5	5
399-1-3	11	5	11	***	10	5	5	0	0.0	5	5
399-1-4	11	5	11	***	10	5	5	0	0.0	5	5
399-1-5	16	5	16	***	10	5	5	0	0.0	5	5
399-1-6	11	5	11	***	10	5	5	0	0.0	5	5
399-1-7	10	5	10	***	10	5	5	0	0.0	5	5
399-1-8	7	5	7	***	10	5	5	0	0.0	5	5
399-2-1	11	5	11	***	10	5	5	0	0.0	5	5
399-3-10	21	5	21	***	10	5	5	0	0.0	5	5
399-4-7	21	5	21	***	10	5	5	0	0.0	5	5
699-S30E15A	11	5	11	***	10	5	5	0	0.0	5	5
399-3-7	11	5	10		10	5.35	5	1.18	22.0	5	8.9
399-8-2	11	5	10		10	5.64	5	2.11	37.4	5	12
699-S19-E13	11	5	10		10	5.64	5	2.11	37.4	5	12
399-4-1	11	5	10		10	6.09	5	3.62	59.4	5	17

--------------------Constituent List=Drinking Water Standards Constituent Code, Name, Units=A51 LEADGF PPB--------------------

WELLNAME	SAMPLES	DETLIMIT	BELOWDL	ALLBELOW	MAXLIMIT	MEAN	MEDIAN	STDDEV	COEFFVAR	MINIMUM	MAXIMUM
399-1-1	21	5	21	***	50	5	5	0	0.0	5	5
399-1-4	11	5	11	***	50	5	5	0	0.0	5	5
399-1-6	11	5	11	***	50	5	5	0	0.0	5	5
399-1-7	10	5	10	***	50	5	5	0	0.0	5	5
399-1-8	7	5	7	***	50	5	5	0	0.0	5	5
399-2-1	11	5	11	***	50	5	5	0	0.0	5	5
399-3-7	11	5	11	***	50	5	5	0	0.0	5	5
399-4-7	21	5	20		50	5	5	0	0.0	5	5
399-1-5	16	5	15		50	5.05	5	0.2	4.0	5	5.8
699-S19-E13	11	5	9		50	5.28	5	0.712	13.5	5	7.31
699-S30E15A	11	5	8		50	5.41	5	0.806	14.9	5	7.2
399-8-2	11	5	8		50	5.95	5	2.69	45.1	5	14
399-4-1	11	5	9		50	6.12	5	3.27	53.4	5	15.9
399-1-2	21	5	16		50	6.5	5	2.92	44.9	5	13.2
399-1-3	11	5	10		50	8.91	5	13	145.5	5	48
399-3-10	21	5	15		50	9.16	5	10.5	114.2	5	40

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TABLE G.1 Summarized by Constituent-Well, sorted by Mean

---------------------Constituent List=Drinking Water Standards Constituent Code, Name, Units=C72 NITRATE PPB--------------------

WELLNAME	SAMPLES	DETLIMIT	BELOWDL	ALLBELOW	MAXLIMIT	MEAN	MEDIAN	STDDEV	COEFFVAR	MINIMUM	MAXIMUM
399-4-1	11	500	0		45000	11300	11500	1570	13.9	8700	13400
399-1-8	7	500	0		45000	12500	11900	2680	21.4	9840	17600
699-S30E15A	11	500	0		45000	12500	12600	2030	16.2	9650	16200
399-3-7	11	500	0		45000	14000	13000	4900	34.9	10100	27400
399-1-5	15	500	0		45000	17200	17500	8570	49.9	2900	29500
399-4-7	20	500	0		45000	17600	17200	3120	17.8	13600	28000
699-S19-E13	11	500	0		45000	18600	18800	1520	8.2	18100	20800
399-8-2	11	500	0		45000	19000	19400	1850	9.7	16000	21600
399-1-6	11	500	0		45000	20000	21800	6790	33.9	3600	27900
399-1-4	11	500	0		45000	20800	29100	7680	37.3	4000	29200
399-1-1	20	500	0		45000	21100	21800	2840	13.5	16000	25800
399-1-2	20	500	0		45000	21100	20400	5310	25.2	15400	38000
399-3-10	20	500	0		45000	21200	20900	3280	15.4	18400	30200
399-1-7	10	500	0		45000	22400	22000	5320	23.8	15500	31000
399-1-3	11	500	0		45000	22900	23800	4710	20.6	14200	29200
399-2-1	11	500	0		45000	24600	24400	4770	19.4	16100	32600

---------------------Constituent List=Drinking Water Standards Constituent Code, Name, Units=C74 FLUORID PPB--------------------

WELLNAME	SAMPLES	DETLIMIT	BELOWDL	ALLBELOW	MAXLIMIT	MEAN	MEDIAN	STDDEV	COEFFVAR	MINIMUM	MAXIMUM
399-1-6	11	500	9		1400	500	500	0	0.0	500	500
399-8-2	11	500	10		1400	505	500	15.7	3.1	500	552
399-2-1	11	500	10		1400	509	500	30.2	5.9	500	600
699-S19-E13	11	500	9		1400	510	500	28.1	5.5	500	593
399-4-1	11	500	8		1400	521	500	44.2	8.5	500	630
399-1-4	11	500	8		1400	527	500	58	11.0	500	677
699-S30E15A	11	500	8		1400	531	500	99.1	18.6	500	830
399-3-7	11	500	9		1400	532	500	90.2	17.0	500	800
399-1-3	11	500	5		1400	554	500	80.3	14.5	500	750
399-1-7	10	500	5		1400	558	511	101	18.2	500	810
399-1-8	7	500	1		1400	570	540	78.2	13.7	500	687
399-1-2	20	500	14		1400	582	500	163	27.9	500	970
399-1-1	20	500	10		1400	598	503	149	25.0	500	980
399-3-10	20	500	14		1400	605	500	196	32.4	500	1110
399-4-7	20	500	10		1400	633	501	204	32.3	500	1240
399-1-5	15	500	3		1400	803	813	416	51.7	500	1870

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TABLE G.1 Summarized by Constituent-Well, sorted by Mean

---------------------Constituent List=Quality Characteristics Constituent Code, Name, Units=A11 SODIUM PPB---------------------

WELLNAME	SAMPLES	DETLIMIT	BELOWDL	ALLBELOW	MAXLIMIT	MEAN	MEDIAN	STDDEV	COEFFVAR	MINIMUM	MAXIMUM
399-1-6	11	100	0		.	7890	7760	3200	40.5	1390	15500
399-1-4	11	100	0		.	8780	8580	937	10.7	7870	10400
399-1-1	21	100	0		.	11300	11800	2610	23.1	1220	13600
399-3-10	21	100	0		.	12000	11700	931	7.7	10800	14500
399-2-1	11	100	0		.	12500	13500	3240	25.9	3890	15000
399-1-2	21	100	0		.	13300	12200	4010	30.1	10000	29700
399-1-5	18	100	0		.	13900	12700	2630	19.0	11200	19700
699-S30E15A	11	100	0		.	15200	14800	1570	10.3	13400	18700
399-4-1	11	100	0		.	16900	16900	1040	6.2	15300	19400
399-1-7	10	100	0		.	17700	18800	2580	14.6	14200	20500
399-1-3	11	100	0		.	17900	18700	2570	14.3	13400	21500
399-3-7	11	100	0		.	18300	18500	3790	20.7	11100	24000
399-8-2	11	100	0		.	18400	18800	889	4.8	16600	19700
399-4-7	21	100	0		.	19200	18900	1930	10.0	15800	22900
699-S19-E13	11	100	0		.	23300	22700	1750	7.5	20900	26300
399-1-8	7	100	0		.	28000	27800	1370	4.9	26700	29800

---------------------Constituent List=Quality Characteristics Constituent Code, Name, Units=A17 MANGESE PPB---------------------

WELLNAME	SAMPLES	DETLIMIT	BELOWDL	ALLBELOW	MAXLIMIT	MEAN	MEDIAN	STDDEV	COEFFVAR	MINIMUM	MAXIMUM
399-1-7	10	5	10	***	.	5	5	0	0.0	5	5
399-8-2	11	5	11	***	.	5	5	0	0.0	5	5
699-S19-E13	11	5	11	***	.	5	5	0	0.0	5	5
399-1-1	21	5	19		.	5.05	5	0.218	4.3	5	6
399-1-5	16	5	14		.	5.06	5	0.25	4.9	5	6
399-1-4	11	5	10		.	5.09	5	0.302	5.9	5	6
399-1-2	21	5	19		.	5.33	5	1.32	24.7	5	11
699-S30E15A	11	5	10		.	5.36	5	1.21	22.5	5	9
399-3-10	21	5	15		.	5.48	5	1.17	21.3	5	10
399-1-3	11	5	10		.	5.55	5	1.81	32.6	5	11
399-3-7	11	5	9		.	5.55	5	1.51	27.2	5	10
399-4-7	21	5	18		.	6.05	5	2.92	48.3	5	18
399-1-6	11	5	10		.	9	5	13.3	147.4	5	49
399-2-1	11	5	8		.	9.18	5	10.5	114.6	5	39
399-1-8	7	5	0		.	34.6	36	5.26	15.2	28	40
399-4-1	11	5	8		.	42.9	5	109	253.1	5	367

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TABLE G.1 Summarized by Constituent-Well, sorted by Mean

---------------------Constituent List=Quality Characteristics Constituent Code, Name, Units=A19 IRON PPB---------------------

WELLNAME	SAMPLES	DETLIMIT	BELOWDL	ALLBELOW	MAXLIMIT	MEAN	MEDIAN	STDDEV	COEFFVAR	MINIMUM	MAXIMUM
399-1-8	7	50	1		.	66.7	64	12.2	18.3	50	85
699-S30E15A	11	50	8		.	75.5	50	54.7	72.4	50	218
399-4-7	21	50	8		.	97.3	86	77	79.1	0	312
399-1-7	10	50	5		.	108	53	140	129.9	50	501
399-1-3	11	50	4		.	110	63	102	92.1	50	375
399-1-2	21	50	8		.	120	92	79.7	66.6	50	308
699-S19-E13	11	50	5		.	120	61	175	145.8	50	640
399-8-2	11	50	5		.	126	80	149	118.3	50	557
399-1-1	21	50	3		.	132	77	113	85.3	50	396
399-1-4	11	50	3		.	137	110	106	77.9	50	403
399-1-6	11	50	4		.	203	52	330	162.8	50	970
399-3-10	21	50	0		.	259	206	143	55.2	115	638
399-3-7	11	50	3		.	263	103	401	152.2	50	1420
399-1-5	16	50	6		.	269	139	457	169.8	50	1910
399-2-1	11	50	2		.	549	97	1450	265.1	50	4930
399-4-1	11	50	1		.	1750	192	4410	252.6	50	14900

---------------------Constituent List=Quality Characteristics Constituent Code, Name, Units=C73 SULFATE PPB---------------------

WELLNAME	SAMPLES	DETLIMIT	BELOWDL	ALLBELOW	MAXLIMIT	MEAN	MEDIAN	STDDEV	COEFFVAR	MINIMUM	MAXIMUM
399-1-8	7	500	0		.	8610	7990	1860	21.6	6700	12400
399-1-4	11	500	0		.	14600	14300	2280	15.6	11400	18100
399-1-5	15	500	0		.	14900	13900	2100	14.0	12500	19500
399-1-6	11	500	0		.	15200	15000	2300	15.1	12200	19500
399-1-7	10	500	0		.	15400	15000	2280	14.8	12200	18800
399-1-3	11	500	0		.	15700	15400	2210	14.1	11700	19000
399-1-1	20	500	0		.	16000	16500	2080	13.0	11800	18900
699-S30E15A	11	500	0		.	16800	16700	1230	7.3	14900	18200
399-1-2	20	500	0		.	19100	19000	3060	16.1	14700	24000
399-2-1	11	500	0		.	19200	17000	6510	33.9	13700	35600
399-3-10	20	500	0		.	19500	19000	2940	15.0	15900	27700
399-4-1	11	500	0		.	25800	26800	5600	21.7	13200	32700
399-8-2	11	500	0		.	28300	29000	2360	8.3	25000	31200
399-3-7	11	500	0		.	30500	29400	5640	18.5	19800	38300
399-4-7	20	500	0		.	33700	33400	5030	14.9	27100	47000
699-S19-E13	11	500	0		.	49200	49000	3220	6.5	44000	53600

TABLE G.1 Summarized by Constituent-Well, sorted by Mean

---------------------Constituent List=Quality Characteristics Constituent Code, Name, Units=C75 CHLORID PPB---------------------

WELLNAME	SAMPLES	DETLIMIT	BELOWDL	ALLBELOW	MAXLIMIT	MEAN	MEDIAN	STDDEV	COEFFVAR	MINIMUM	MAXIMUM
699-S30E15A	11	500	0		.	4660	4600	919	19.7	3570	6360
399-1-6	11	500	0		.	7520	6960	1380	18.3	5860	10200
399-1-4	11	500	0		.	8760	8000	2840	32.4	4880	15200
399-8-2	11	500	0		.	9230	9460	641	7.0	8000	10000
399-4-1	11	500	0		.	9920	10400	1610	16.2	7580	11900
399-1-1	20	500	0		.	10600	10600	2610	24.7	5950	15500
399-1-2	20	500	0		.	11400	11000	4390	38.4	860	22900
399-3-10	20	500	0		.	11600	11100	1860	16.2	8160	15100
399-3-7	11	500	0		.	12100	12000	1740	14.4	9450	14700
399-4-7	20	500	0		.	12900	13300	1660	12.9	10100	15800
699-S19-E13	11	500	0		.	15700	15200	1600	10.2	12600	18800
399-2-1	11	500	0		.	18300	18000	6040	32.9	11500	28700
399-1-5	15	500	0		.	23200	19000	21200	91.3	5210	72200
399-1-8	7	500	0		.	25500	19800	9270	36.4	15900	38500
399-1-3	11	500	0		.	30100	21800	18400	61.1	12200	64300
399-1-7	10	500	0		.	30300	23700	17400	57.5	13300	57400

--------------------------Constituent List=Site Specific Constituent Code, Name, Units=A12 NICKEL PPB--------------------------

WELLNAME	SAMPLES	DETLIMIT	BELOWDL	ALLBELOW	MAXLIMIT	MEAN	MEDIAN	STDDEV	COEFFVAR	MINIMUM	MAXIMUM
399-1-3	11	10	10		.	10	10	0	0.0	10	10
399-1-4	11	10	11	***	.	10	10	0	0.0	10	10
399-1-7	10	10	10	***	.	10	10	0	0.0	10	10
399-1-8	7	10	7	***	.	10	10	0	0.0	10	10
399-2-1	11	10	11	***	.	10	10	0	0.0	10	10
699-S19-E13	11	10	11	***	.	10	10	0	0.0	10	10
699-S30E15A	11	10	11	***	.	10	10	0	0.0	10	10
399-1-1	21	10	20		.	10.2	10	0.873	8.6	10	14
399-1-2	21	10	20		.	10.2	10	0.873	8.6	10	14
399-3-7	11	10	10		.	10.4	10	1.21	11.6	10	14
399-8-2	11	10	10		.	10.6	10	2.11	19.8	10	17
399-3-10	21	10	18		.	10.9	10	2.86	26.2	10	22
399-4-7	21	10	20		.	11.4	10	6.55	57.3	10	40
399-4-1	11	10	10		.	12.3	10	7.54	61.4	10	35
399-1-5	16	10	13		.	12.8	10	9.99	78.0	10	50
399-1-6	11	10	10		.	17.7	10	25.6	144.6	10	95

RCRA Compliance Ground-Water Monitoring Data
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TABLE G.1 Summarized by Constituent-Well, sorted by Mean

--------------------------Constituent List=Site Specific Constituent Code, Name, Units=A13 COPPER PPB--------------------------

WELLNAME	SAMPLES	DETLIMIT	BELOWDL	ALLBELOW	MAXLIMIT	MEAN	MEDIAN	STDDEV	COEFFVAR	MINIMUM	MAXIMUM
399-8-2	11	10	11	***	1300	10	10	0	0.0	10	10
399-3-10	21	10	20		1300	10.1	10	0.655	6.5	10	13
699-S30E15A	11	10	9		1300	10.3	10	0.905	8.8	10	13
399-3-7	11	10	8		1300	10.4	10	0.924	8.9	10	13
699-S19-E13	11	10	10		1300	10.7	10	2.41	22.5	10	18
399-4-7	21	10	18		1300	10.8	10	3.28	30.3	10	25
399-2-1	11	10	6		1300	12.1	10	2.59	21.4	10	16
399-4-1	11	10	10		1300	12.7	10	9.05	71.1	10	40
399-1-1	21	10	8		1300	20	18	15	75.1	10	63
399-1-2	21	10	9		1300	21.1	13	16.2	76.6	10	62
399-1-8	7	10	2		1300	24.9	28	13.7	54.9	10	42
399-1-7	10	10	4		1300	32.7	23	25.7	78.5	10	72
399-1-3	11	10	2		1300	33	28	21.8	66.1	10	72
399-1-6	11	10	3		1300	36.9	23	34.9	94.4	10	98
399-1-4	11	10	4		1300	39.5	23	35.1	88.8	10	102
399-1-5	16	10	6		1300	66.4	20.5	125	188.7	10	516

--------------------------Constituent List=Site Specific Constituent Code, Name, Units=A16 ALUMNUM PPB--------------------------

WELLNAME	SAMPLES	DETLIMIT	BELOWDL	ALLBELOW	MAXLIMIT	MEAN	MEDIAN	STDDEV	COEFFVAR	MINIMUM	MAXIMUM
399-1-8	7	150	7	***	.	150	150	0	0.0	150	150
399-1-6	11	150	10		.	158	150	25.6	16.2	150	235
399-1-4	11	150	10		.	159	150	28.9	18.2	150	246
399-2-1	11	150	9		.	160	150	28.8	18.1	150	246
399-8-2	11	150	9		.	163	150	41.5	25.5	150	288
399-1-1	21	150	17		.	167	150	42.7	25.6	150	317
399-1-7	10	150	9		.	175	150	77.5	44.4	150	395
699-S30E15A	11	150	9		.	178	150	74.2	41.8	150	395
399-4-7	21	150	14		.	181	150	63	34.8	150	347
399-3-7	11	150	10		.	188	150	125	66.5	150	564
399-3-10	21	150	12		.	197	150	86.2	43.9	150	495
699-S19-E13	11	150	9		.	198	150	111	56.0	150	462
399-1-5	16	150	14		.	218	150	265	121.3	150	1210
399-1-2	21	150	13		.	219	150	129	58.9	150	573
399-1-3	11	150	10		.	242	150	305	125.9	150	1160
399-4-1	11	150	7		.	872	150	2070	237.1	150	7060

TABLE G.1 Summarized by Constituent-Well, sorted by Mean

------------------------Constituent List=Site Specific Constituent Code, Name, Units=A24 THIOURA PPB------------------------

WELLNAME	SAMPLES	DETLIMIT	BELOWDL	ALLBELOW	MAXLIMIT	MEAN	MEDIAN	STDDEV	COEFFVAR	MINIMUM	MAXIMUM
399-1-1	20	200	20	***	.	200	200	0	0.0	200	200
399-1-3	11	200	11	***	.	200	200	0	0.0	200	200
399-1-4	11	200	11	***	.	200	200	0	0.0	200	200
399-1-5	15	200	15	***	.	200	200	0	0.0	200	200
399-1-7	10	200	10	***	.	200	200	0	0.0	200	200
399-1-8	7	200	7	***	.	200	200	0	0.0	200	200
399-2-1	11	200	11	***	.	200	200	0	0.0	200	200
399-3-10	20	200	20	***	.	200	200	0	0.0	200	200
399-3-7	11	200	11	***	.	200	200	0	0.0	200	200
399-4-1	11	200	11	***	.	200	200	0	0.0	200	200
399-4-7	20	200	20	***	.	200	200	0	0.0	200	200
399-8-2	11	200	11	***	.	200	200	0	0.0	200	200
699-S19-E13	11	200	11	***	.	200	200	0	0.0	200	200
699-S30E15A	11	200	11	***	.	200	200	0	0.0	200	200
399-1-2	20	200	19		.	238	200	171	71.9	200	966
399-1-6	11	200	10		.	281	200	268	95.5	200	1090

------------------------Constituent List=Site Specific Constituent Code, Name, Units=A64 METHONE PPB------------------------

WELLNAME	SAMPLES	DETLIMIT	BELOWDL	ALLBELOW	MAXLIMIT	MEAN	MEDIAN	STDDEV	COEFFVAR	MINIMUM	MAXIMUM
399-3-7	11	10	11	***	.	9.43	10	1.9	20.1	3.7	10
399-1-1	21	10	21	***	.	10	10	0	0.0	10	10
399-1-2	21	10	21	***	.	10	10	0	0.0	10	10
399-1-3	11	10	11	***	.	10	10	0	0.0	10	10
399-1-4	11	10	11	***	.	10	10	0	0.0	10	10
399-1-5	16	10	16	***	.	10	10	0	0.0	10	10
399-1-6	11	10	11	***	.	10	10	0	0.0	10	10
399-1-7	10	10	10	***	.	10	10	0	0.0	10	10
399-1-8	7	10	7	***	.	10	10	0	0.0	10	10
399-2-1	11	10	11	***	.	10	10	0	0.0	10	10
399-3-10	21	10	21	***	.	10	10	0	0.0	10	10
399-4-1	11	10	11	***	.	10	10	0	0.0	10	10
399-4-7	21	10	21	***	.	10	10	0	0.0	10	10
399-8-2	11	10	11	***	.	10	10	0	0.0	10	10
699-S19-E13	11	10	11	***	.	10	10	0	0.0	10	10
699-S30E15A	11	10	10		.	10.1	10	0.316	3.1	10	11

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TABLE G.1 Summarized by Constituent-Well, sorted by Mean

-------------------------Constituent List=Site Specific Constituent Code, Name, Units=A67 1,1,1-T PPB-------------------------

WELLNAME	SAMPLES	DETLIMIT	BELOWDL	ALLBELOW	MAXLIMIT	MEAN	MEDIAN	STDDEV	COEFFVAR	MINIMUM	MAXIMUM
399-1-1	21	10	21	***	200	10	10	0	0.0	10	10
399-1-2	21	10	21	***	200	10	10	0	0.0	10	10
399-1-3	11	10	11	***	200	10	10	0	0.0	10	10
399-1-4	11	10	11	***	200	10	10	0	0.0	10	10
399-1-5	16	10	16	***	200	10	10	0	0.0	10	10
399-1-6	11	10	11	***	200	10	10	0	0.0	10	10
399-1-7	10	10	10	***	200	10	10	0	0.0	10	10
399-1-8	7	10	7	***	200	10	10	0	0.0	10	10
399-2-1	11	10	11	***	200	10	10	0	0.0	10	10
399-3-10	21	10	21	***	200	10	10	0	0.0	10	10
399-4-1	11	10	11	***	200	10	10	0	0.0	10	10
399-4-7	21	10	21	***	200	10	10	0	0.0	10	10
399-8-2	11	10	11	***	200	10	10	0	0.0	10	10
699-S19-E13	11	10	11	***	200	10	10	0	0.0	10	10
699-S30E15A	11	10	11	***	200	10	10	0	0.0	10	10
399-3-7	11	10	9		200	18.7	10	20.4	108.9	10	72

-------------------------Constituent List=Site Specific Constituent Code, Name, Units=A68 1,1,2-T PPB-------------------------

WELLNAME	SAMPLES	DETLIMIT	BELOWDL	ALLBELOW	MAXLIMIT	MEAN	MEDIAN	STDDEV	COEFFVAR	MINIMUM	MAXIMUM
399-1-1	21	10	21	***	.	10	10	0	0.0	10	10
399-1-2	21	10	21	***	.	10	10	0	0.0	10	10
399-1-3	11	10	11	***	.	10	10	0	0.0	10	10
399-1-4	11	10	11	***	.	10	10	0	0.0	10	10
399-1-5	16	10	16	***	.	10	10	0	0.0	10	10
399-1-6	11	10	11	***	.	10	10	0	0.0	10	10
399-1-7	10	10	10	***	.	10	10	0	0.0	10	10
399-1-8	7	10	7	***	.	10	10	0	0.0	10	10
399-2-1	11	10	11	***	.	10	10	0	0.0	10	10
399-3-10	21	10	21	***	.	10	10	0	0.0	10	10
399-3-7	11	10	11	***	.	10	10	0	0.0	10	10
399-4-7	21	10	21	***	.	10	10	0	0.0	10	10
399-8-2	11	10	11	***	.	10	10	0	0.0	10	10
699-S19-E13	11	10	11	***	.	10	10	0	0.0	10	10
699-S30E15A	11	10	11	***	.	10	10	0	0.0	10	10
399-4-1	11	10	9		.	11.8	10	4.26	36.1	10	23

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TABLE G.1 Summarized by Constituent-Well, sorted by Mean

-------------------------Constituent List=Site Specific Constituent Code, Name, Units=A69 TRICENE PPB-------------------------

WELLNAME	SAMPLES	DETLIMIT	BELOWDL	ALLBELOW	MAXLIMIT	MEAN	MEDIAN	STDDEV	COEFFVAR	MINIMUM	MAXIMUM
399-2-1	11	10	11	***	5	8.24	10	3.04	36.9	3	10
399-1-7	10	10	10	***	5	8.61	10	2.95	34.2	2.4	10
399-1-3	11	10	11	***	5	8.75	10	2.79	31.9	3	10
399-3-7	11	10	11	***	5	9.37	10	2.08	22.2	3.1	10
399-4-7	21	10	21	***	5	9.46	10	1.66	17.5	4	10
399-1-1	21	10	21	***	5	10	10	0	0.0	10	10
399-1-2	21	10	21	***	5	10	10	0	0.0	10	10
399-1-4	11	10	11	***	5	10	10	0	0.0	10	10
399-1-5	16	10	16	***	5	10	10	0	0.0	10	10
399-1-6	11	10	11	***	5	10	10	0	0.0	10	10
399-1-8	7	10	7	***	5	10	10	0	0.0	10	10
399-3-10	21	10	21	***	5	10	10	0	0.0	10	10
399-8-2	11	10	11	***	5	10	10	0	0.0	10	10
699-S19-E13	11	10	11	***	5	10	10	0	0.0	10	10
699-S30E15A	11	10	11	***	5	10	10	0	0.0	10	10
399-4-1	11	10	7		5	10.6	10	1.43	13.5	9	14

-------------------------Constituent List=Site Specific Constituent Code, Name, Units=A70 PERCENE PPB-------------------------

WELLNAME	SAMPLES	DETLIMIT	BELOWDL	ALLBELOW	MAXLIMIT	MEAN	MEDIAN	STDDEV	COEFFVAR	MINIMUM	MAXIMUM
399-8-2	11	10	11	***	.	8.37	10	2.81	33.6	3.1	10
399-1-3	11	10	7		.	8.58	10	3.5	40.8	2.8	14
399-1-4	11	10	11	***	.	8.73	10	2.87	32.8	2	10
399-1-6	11	10	11	***	.	9.36	10	2.11	22.5	3	10
399-1-2	21	10	19		.	9.54	10	2.42	25.3	2.3	13
399-4-1	11	10	10		.	9.55	10	2.66	27.9	2	13
399-1-1	21	10	21	***	.	10	10	0	0.0	10	10
399-1-8	7	10	7	***	.	10	10	0	0.0	10	10
399-3-10	21	10	20		.	10	10	0.218	2.2	10	11
399-4-7	21	10	21	***	.	10	10	0	0.0	10	10
699-S19-E13	11	10	11	***	.	10	10	0	0.0	10	10
699-S30E15A	11	10	11	***	.	10	10	0	0.0	10	10
399-2-1	11	10	10		.	10.7	10	2.41	22.5	10	18
399-1-5	16	10	10		.	11.9	10	4.1	34.4	2.6	19
399-1-7	10	10	7		.	14.5	10	11.5	79.3	2.3	39
399-3-7	11	10	8		.	16.4	10	14.2	86.5	10	55

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TABLE G.1 Summarized by Constituent-Well, sorted by Mean

-------------------------Constituent List=Site Specific Constituent Code, Name, Units=C70 CYANIDE PPB-------------------------

WELLNAME	SAMPLES	DETLIMIT	BELOWDL	ALLBELOW	MAXLIMIT	MEAN	MEDIAN	STDDEV	COEFFVAR	MINIMUM	MAXIMUM
399-1-2	20	10	20	***	.	10	10	0	0.0	10	10
399-1-3	11	10	11	***	.	10	10	0	0.0	10	10
399-1-4	11	10	11	***	.	10	10	0	0.0	10	10
399-1-5	15	10	15	***	.	10	10	0	0.0	10	10
399-1-6	11	10	11	***	.	10	10	0	0.0	10	10
399-1-7	10	10	10	***	.	10	10	0	0.0	10	10
399-1-8	7	10	7	***	.	10	10	0	0.0	10	10
399-2-1	11	10	11	***	.	10	10	0	0.0	10	10
399-4-1	11	10	11	***	.	10	10	0	0.0	10	10
399-4-7	20	10	20	***	.	10	10	0	0.0	10	10
399-8-2	11	10	11	***	.	10	10	0	0.0	10	10
699-S19-E13	11	10	11	***	.	10	10	0	0.0	10	10
699-S30E15A	11	10	11	***	.	10	10	0	0.0	10	10
399-1-1	20	10	19		.	10.1	10	0.224	2.2	10	11
399-3-10	20	10	19		.	10.1	10	0.447	4.4	10	12
399-3-7	11	10	10		.	10.4	10	1.21	11.6	10	14

-------------------------Constituent List=Site Specific Constituent Code, Name, Units=C78 SULFIDE PPB-------------------------

WELLNAME	SAMPLES	DETLIMIT	BELOWDL	ALLBELOW	MAXLIMIT	MEAN	MEDIAN	STDDEV	COEFFVAR	MINIMUM	MAXIMUM
399-1-1	20	1000	20	***	.	1000	1000	0	0.0	1000	1000
399-1-3	11	1000	11	***	.	1000	1000	0	0.0	1000	1000
399-1-5	15	1000	15	***	.	1000	1000	0	0.0	1000	1000
399-1-6	11	1000	11	***	.	1000	1000	0	0.0	1000	1000
399-1-8	7	1000	7	***	.	1000	1000	0	0.0	1000	1000
399-2-1	11	1000	11	***	.	1000	1000	0	0.0	1000	1000
399-3-10	20	1000	20	***	.	1000	1000	0	0.0	1000	1000
399-4-1	11	1000	11	***	.	1000	1000	0	0.0	1000	1000
399-4-7	20	1000	20	***	.	1000	1000	0	0.0	1000	1000
699-S19-E13	11	1000	11	***	.	1000	1000	0	0.0	1000	1000
699-S30E15A	11	1000	11	***	.	1000	1000	0	0.0	1000	1000
399-1-4	11	1000	10		.	1010	1000	30.2	3.0	1000	1100
399-1-7	10	1000	9		.	1010	1000	31.6	3.1	1000	1100
399-3-7	11	1000	10		.	1010	1000	30.2	3.0	1000	1100
399-1-2	20	1000	19		.	1100	1000	447	40.7	1000	3000
399-8-2	11	1000	10		.	1130	1000	418	37.0	1000	2380

TABLE G.1 Summarized by Constituent-Well, sorted by Mean

--------------------------Constituent List=Site Specific Constituent Code, Name, Units=C80 AMMONIU PPB--------------------------

WELLNAME	SAMPLES	DETLIMIT	BELOWDL	ALLBELOW	MAXLIMIT	MEAN	MEDIAN	STDDEV	COEFFVAR	MINIMUM	MAXIMUM
399-1-8	7	50	1		.	80.7	69	44.7	55.4	50	180
399-1-6	11	50	4		.	87.8	54.8	50.9	57.9	46	170
699-S19-E13	11	50	5		.	88.1	50.8	54.7	62.1	30	165
399-1-7	10	50	6		.	95.3	60	71.2	74.7	30	240
399-1-3	11	50	4		.	96.4	58	54.5	56.5	47	180
399-1-4	11	50	4		.	97.3	74	61	62.7	30	180
399-8-2	11	50	4		.	98.8	62.8	56.4	57.1	46	190
399-4-1	11	50	4		.	101	69	66.2	65.8	30	240
399-2-1	11	50	5		.	102	53	75.2	74.0	30	280
399-3-7	11	50	3		.	103	60.8	72.7	70.4	30	270
699-S30E15A	11	50	5		.	112	61.8	83.1	74.5	30	290
399-1-5	15	50	5		.	133	135	95.6	71.9	30	360
399-1-1	20	50	5		.	137	131	74.6	54.5	47	270
399-1-2	20	50	6		.	143	140	89.9	62.7	30	330
399-3-10	20	50	4		.	162	178	90.2	55.6	30	310
399-4-7	20	50	4		.	162	170	98.4	60.7	30	360

--------------------------Constituent List=Tag-alongs Constituent Code, Name, Units=A14 VANADUM PPB--------------------------

WELLNAME	SAMPLES	DETLIMIT	BELOWDL	ALLBELOW	MAXLIMIT	MEAN	MEDIAN	STDDEV	COEFFVAR	MINIMUM	MAXIMUM
399-1-8	7	5	7	***	.	5	5	0	0.0	5	5
399-2-1	11	5	9		.	5.45	5	1.51	27.8	5	10
399-1-7	10	5	8		.	5.5	5	1.58	28.7	5	10
399-1-4	11	5	8		.	5.55	5	1.29	23.3	5	9
399-1-3	11	5	8		.	5.71	5	1.65	28.9	5	10
399-1-6	11	5	10		.	5.82	5	2.71	46.6	5	14
399-1-5	16	5	8		.	6.76	5	2.91	43.0	5	16
399-3-10	21	5	15		.	6.83	5	3.49	51.1	5	15
699-S30E15A	11	5	6		.	7.45	5	4.76	63.9	5	17
399-3-7	11	5	2		.	8.91	6	8.44	94.8	5	34
399-4-7	21	5	5		.	8.91	8	4.66	52.3	5	19
399-1-1	21	5	11		.	9.35	5	6.38	68.2	5	26
399-4-1	11	5	2		.	9.73	8	6.75	69.4	5	29
399-8-2	11	5	2		.	9.82	10	5.58	56.9	5	23
399-1-2	21	5	8		.	10.7	7	7.63	71.7	5	30
699-S19-E13	11	5	1		.	13.4	12	8.38	62.7	5	36

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TABLE G.1 Summarized by Constituent-Well, sorted by Mean

----------------------------Constituent List=Tag-alongs Constituent Code, Name, Units=A18 POTASUM PPB----------------------------

WELLNAME	SAMPLES	DETLIMIT	BELOWDL	ALLBELOW	MAXLIMIT	MEAN	MEDIAN	STDDEV	COEFFVAR	MINIMUM	MAXIMUM
399-1-4	11	100	1		.	2070	2100	720	34.9	100	2790
399-1-6	11	100	0		.	2490	2560	439	17.6	2080	3550
399-1-1	21	100	0		.	2580	2460	330	12.8	1960	3340
399-1-7	10	100	0		.	2830	2770	333	11.8	2390	3340
399-1-5	16	100	0		.	2850	2890	605	21.3	1870	3680
399-1-3	11	100	0		.	2940	2910	419	14.3	2370	3650
399-2-1	11	100	1		.	3180	3550	1060	33.5	100	3800
399-1-2	21	100	0		.	3330	3270	517	15.5	2370	4180
399-3-10	21	100	0		.	3630	3460	552	15.2	2860	4530
399-4-1	11	100	1		.	4390	4670	1540	35.0	100	6100
399-3-7	11	100	0		.	4700	4610	936	19.9	3350	6820
399-4-7	21	100	0		.	4850	4440	769	15.9	3860	6310
399-1-8	7	100	0		.	4990	4950	360	7.2	4680	5740
399-8-2	11	100	0		.	5320	5270	508	9.6	4520	6550
699-S19-E13	11	100	0		.	6500	6380	760	11.7	5770	8060
699-S30E15A	11	100	0		.	6920	6610	806	11.7	5870	8810

----------------------------Constituent List=Tag-alongs Constituent Code, Name, Units=A80 CHLFORM PPB----------------------------

WELLNAME	SAMPLES	DETLIMIT	BELOWDL	ALLBELOW	MAXLIMIT	MEAN	MEDIAN	STDDEV	COEFFVAR	MINIMUM	MAXIMUM
399-3-10	1	10	1	***	.	5.3	5.3	.	.	5.3	5.3
399-1-8	3	10	2		.	6.1	6.8	1.57	25.8	4.3	7.2
399-4-7	2	10	2	***	.	6.5	6.5	0	0.0	6.5	6.5
399-4-1	2	10	2	***	.	7.1	7.1	1.27	17.9	6.2	8
699-S19-E13	7	10	6		.	10.3	10	0.756	7.3	10	12
399-2-1	7	10	3		.	11.7	13	3.52	30.2	7.8	17
399-1-7	8	10	2		.	12.5	12	4.08	32.6	9	22
399-3-7	3	10	2		.	13.1	8.8	12.2	92.8	4.1	27
399-1-2	20	10	1		.	16.3	15.5	4.41	27.1	9.6	27
399-1-4	10	10	0		.	17.2	12	8.61	50.1	10	32
399-1-6	8	10	1		.	17.5	13.5	10.1	57.5	7.3	36
399-1-3	10	10	0		.	18	13	9.92	55.1	10	42
399-1-5	15	10	0		.	18.9	20	6.42	33.9	10	32
399-1-1	20	10	2		.	22.5	25.5	8.71	38.8	6.9	33

TABLE G.1 Summarized by Constituent-Well, sorted by Mean

---------------------------Constituent List=Tag-alongs Constituent Code, Name, Units=A93 METHYCH PPB---------------------------

WELLNAME	SAMPLES	DETLIMIT	BELOWDL	ALLBELOW	MAXLIMIT	MEAN	MEDIAN	STDDEV	COEFFVAR	MINIMUM	MAXIMUM
399-3-7	2	10	0		.	56.5	56.5	61.5	108.9	13	100
399-4-7	3	10	0		.	143	78	146	102.4	40	310
399-1-3	2	10	1		.	144	144	192	133.0	8.6	280
399-1-5	12	10	6		.	244	10.5	547	223.6	10	1600
399-3-10	3	10	0		.	280	240	164	58.5	140	460
399-1-1	6	10	1		.	306	370	252	82.5	3	630
399-1-2	4	10	0		.	358	270	362	101.0	33	860
399-4-1	3	10	0		.	463	350	451	97.3	80	960
399-2-1	3	10	0		.	485	690	409	84.3	14	750
399-1-7	4	10	0		.	527	221	765	145.1	17	1650
399-8-2	3	10	0		.	543	470	248	45.7	340	820
399-1-6	5	10	0		.	578	740	530	91.6	18	1150
399-1-8	2	10	0		.	815	815	969	118.9	130	1500
699-S30E15A	4	10	0		.	876	735	982	112.1	35	2000
399-1-4	2	10	0		.	920	920	679	73.8	440	1400
699-S19-E13	8	10	6		.	3450	10	9720	281.3	10	27500

---------------------------Constituent List=Tag-alongs Constituent Code, Name, Units=C76 PHOSPHA PPB---------------------------

WELLNAME	SAMPLES	DETLIMIT	BELOWDL	ALLBELOW	MAXLIMIT	MEAN	MEDIAN	STDDEV	COEFFVAR	MINIMUM	MAXIMUM
399-1-1	20	1000	20	***	.	1000	1000	0	0.0	1000	1000
399-1-2	20	1000	20	***	.	1000	1000	0	0.0	1000	1000
399-1-4	11	1000	11	***	.	1000	1000	0	0.0	1000	1000
399-1-5	15	1000	15	***	.	1000	1000	0	0.0	1000	1000
399-1-6	11	1000	11	***	.	1000	1000	0	0.0	1000	1000
399-1-7	10	1000	10	***	.	1000	1000	0	0.0	1000	1000
399-1-8	7	1000	7	***	.	1000	1000	0	0.0	1000	1000
399-2-1	11	1000	11	***	.	1000	1000	0	0.0	1000	1000
399-3-10	20	1000	20	***	.	1000	1000	0	0.0	1000	1000
399-3-7	11	1000	11	***	.	1000	1000	0	0.0	1000	1000
399-4-1	11	1000	11	***	.	1000	1000	0	0.0	1000	1000
399-4-7	20	1000	20	***	.	1000	1000	0	0.0	1000	1000
399-8-2	11	1000	11	***	.	1000	1000	0	0.0	1000	1000
699-S19-E13	11	1000	11	***	.	1000	1000	0	0.0	1000	1000
699-S30E15A	11	1000	11	***	.	1000	1000	0	0.0	1000	1000
399-1-3	11	1000	10		.	1200	1000	675	56.1	1000	3240

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TABLE G.1 Summarized by Constituent-Well, sorted by Mean

------------------------Constituent List=WAC 173-303-9905 Constituent Code, Name, Units=AD4 ZINC PPB------------------------

WELLNAME	SAMPLES	DETLIMIT	BELOWDL	ALLBELOW	MAXLIMIT	MEAN	MEDIAN	STDDEV	COEFFVAR	MINIMUM	MAXIMUM
699-S19-E13	6	5	2		.	21.5	14.5	19.8	92.2	5	51
399-1-5	10	5	3		.	37.5	14	54.4	145.1	5	178

------------------------Constituent List=WAC 173-303-9905 Constituent Code, Name, Units=AD5 CALCIUM PPB------------------------

WELLNAME	SAMPLES	DETLIMIT	BELOWDL	ALLBELOW	MAXLIMIT	MEAN	MEDIAN	STDDEV	COEFFVAR	MINIMUM	MAXIMUM
399-1-5	10	50	0		.	23000	20500	5170	22.5	17900	31900
699-S19-E13	6	50	0		.	46900	45800	2870	6.1	44300	51700

------------------------Constituent List=WAC 173-303-9905 Constituent Code, Name, Units=A23 THALIUM PPB------------------------

WELLNAME	SAMPLES	DETLIMIT	BELOWDL	ALLBELOW	MAXLIMIT	MEAN	MEDIAN	STDDEV	COEFFVAR	MINIMUM	MAXIMUM
399-1-5	10	10	10	***	.	10	10	0	0.0	10	10
699-S19-E13	6	10	5		.	10	10	0	0.0	10	10

------------------------Constituent List=WAC 173-303-9905 Constituent Code, Name, Units=B40 BIS2EPH PPB------------------------

WELLNAME	SAMPLES	DETLIMIT	BELOWDL	ALLBELOW	MAXLIMIT	MEAN	MEDIAN	STDDEV	COEFFVAR	MINIMUM	MAXIMUM
399-1-5	10	10	10	***	.	10	10	0	0.0	10	10
699-S19-E13	6	10	6	***	.	10	10	0	0.0	10	10
399-3-10	2	10	0		.	34	34	22.6	66.6	18	50
399-1-2	2	10	0		.	34.8	34.8	21.6	62.1	19.5	50

------------------------Constituent List=WAC 173-303-9905 Constituent Code, Name, Units=I01 ACETONE PPB------------------------

WELLNAME	SAMPLES	DETLIMIT	BELOWDL	ALLBELOW	MAXLIMIT	MEAN	MEDIAN	STDDEV	COEFFVAR	MINIMUM	MAXIMUM
399-1-5	1	.	0		.	14	14	.	.	14	14
399-3-10	1	.	0		.	26	26	.	.	26	26

TABLE G.1 Summarized by Constituent-Well, sorted by Mean

Constituent List=WAC 173-303-9905 Constituent Code, Name, Units=I02 HEXANE PPB

WELLNAME	SAMPLES	DETLIMIT	BELOWDL	ALLBELOW	MAXLIMIT	MEAN	MEDIAN	STDDEV	COEFFVAR	MINIMUM	MAXIMUM
399-1-2	1	0	0		.	60	60	.	.	60	60
399-4-7	1	0	0		.	60	60	.	.	60	60

Constituent List=WAC 173-303-9905 Constituent Code, Name, Units=I03 MECYPEN PPB

WELLNAME	SAMPLES	DETLIMIT	BELOWDL	ALLBELOW	MAXLIMIT	MEAN	MEDIAN	STDDEV	COEFFVAR	MINIMUM	MAXIMUM
399-4-7	1	0	0		.	16	16	.	.	16	16

Constituent List=WAC 173-303-9905 Constituent Code, Name, Units=I04 MEBUPHT PPB

WELLNAME	SAMPLES	DETLIMIT	BELOWDL	ALLBELOW	MAXLIMIT	MEAN	MEDIAN	STDDEV	COEFFVAR	MINIMUM	MAXIMUM
399-4-7	1	0	0		.	9	9	.	.	9	9

Constituent List=WAC 173-303-9905 Constituent Code, Name, Units=I28 TAF PPB

WELLNAME	SAMPLES	DETLIMIT	BELOWDL	ALLBELOW	MAXLIMIT	MEAN	MEDIAN	STDDEV	COEFFVAR	MINIMUM	MAXIMUM
399-2-1	1	0	0		.	32	32	.	.	32	32
699-S30E15A	1	0	0		.	91	91	.	.	91	91

Constituent List=WAC 173-303-9905 Constituent Code, Name, Units=I63 BHT PPB

WELLNAME	SAMPLES	DETLIMIT	BELOWDL	ALLBELOW	MAXLIMIT	MEAN	MEDIAN	STDDEV	COEFFVAR	MINIMUM	MAXIMUM
399-1-8	1	.	0		.	3.2	3.2	.	.	3.2	3.2

Constituent List=WAC 173-303-9905 Constituent Code, Name, Units=I99 UNKNOWN PPB

WELLNAME	SAMPLES	DETLIMIT	BELOWDL	ALLBELOW	MAXLIMIT	MEAN	MEDIAN	STDDEV	COEFFVAR	MINIMUM	MAXIMUM
399-1-5	3	0	0		.	12	11	2.65	22.0	10	15
399-1-2	1	0	0		.	35	35	.	.	35	35

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TABLE G.2 Summarized by Constituent-Well-Collection Date
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--------------------Constituent List=Contamination Indicators Constituent Code, Name, Units=C88 TOX PPB--------------------

WELLNAME	COLLDATE	SAMPLES	DETLIMIT	BELOWDL	MAXLIMIT	MEAN	MEDIAN	STDDEV	COEFFVAR	MINIMUM	MAXIMUM
399-1-1	24JUL85	4	100	4	.	42.2	42.6	4.72	11.2	36.6	46.8
399-1-1	20AUG85	4	100	4	.	37.2	37	1.09	2.9	36	38.6
399-1-2	29JUL85	4	100	4	.	41.5	41.9	4.31	10.4	35.9	46.2
399-1-2	21AUG85	4	100	4	.	35.9	36	1.09	3.0	34.4	37
399-1-5	31JUL85	3	100	3	.	84.9	85	19	22.4	71.5	98.4
399-1-5	21AUG85	3	100	3	.	62.5	60.2	4.46	7.1	59.8	67.6
399-3-10	30JUL85	4	100	4	.	24.2	23.1	4.17	17.2	20.5	30.2
399-3-10	22AUG85	4	100	4	.	16.7	16.4	1.31	7.9	15.6	18.6
399-4-7	30JUL85	4	100	4	.	22.1	22.4	2.69	12.2	18.5	24.9
399-4-7	22AUG85	4	100	4	.	22.7	22.8	2.78	12.2	19.2	26

--------------------Constituent List=Contamination Indicators Constituent Code, Name, Units=C89 TOC PPB--------------------

WELLNAME	COLLDATE	SAMPLES	DETLIMIT	BELOWDL	MAXLIMIT	MEAN	MEDIAN	STDDEV	COEFFVAR	MINIMUM	MAXIMUM
399-1-1	24JUL85	4	1000	1	.	1110	1160	165	14.9	880	1230
399-1-1	20AUG85	4	1000	4	.	250	270	101	40.4	110	350
399-1-2	29JUL85	4	1000	4	.	910	895	48.3	5.3	870	980
399-1-2	21AUG85	4	1000	4	.	683	705	215	31.5	430	890
399-1-5	31JUL85	3	1000	0	.	2410	1650	1840	76.4	1070	4510
399-1-5	21AUG85	3	1000	3	.	780	830	210	26.9	550	960
399-3-10	30JUL85	4	1000	4	.	735	720	228	31.0	510	990
399-3-10	22AUG85	4	1000	4	.	473	450	100	21.3	380	610
399-4-7	30JUL85	4	1000	3	.	728	715	295	40.5	410	1070
399-4-7	22AUG85	4	1000	4	.	398	370	203	51.0	190	660

--------------------Constituent List=Drinking Water Standards Constituent Code, Name, Units=109 COLIFRM MPN--------------------

WELLNAME	COLLDATE	SAMPLES	DETLIMIT	BELOWDL	MAXLIMIT	MEAN	MEDIAN	STDDEV	COEFFVAR	MINIMUM	MAXIMUM
399-1-1	25JUN85	4	3	4	1	3	3	0	0.0	3	3
399-1-1	24JUL85	4	3	4	1	3	3	0	0.0	3	3
399-1-1	20AUG85	4	3	4	1	3	3	0	0.0	3	3
399-1-2	20JUN85	4	3	4	1	3	3	0	0.0	3	3
399-1-2	29JUL85	4	3	4	1	3	3	0	0.0	3	3
399-1-2	21AUG85	4	3	4	1	3	3	0	0.0	3	3
399-1-5	31JUL85	3	3	3	1	3	3	0	0.0	3	3
399-1-5	21AUG85	3	3	3	1	2	3	1.73	86.6	0	3
399-3-10	01JUL85	4	3	4	1	3	3	0	0.0	3	3
399-3-10	30JUL85	4	3	4	1	3	3	0	0.0	3	3
399-3-10	22AUG85	4	3	4	1	3	3	0	0.0	3	3
399-4-7	01JUL85	4	3	4	1	3	3	0	0.0	3	3
399-4-7	30JUL85	4	3	4	1	3	3	0	0.0	3	3
399-4-7	22AUG85	4	3	4	1	3	3	0	0.0	3	3

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TABLE G.2 Summarized by Constituent-Well-Collection Date
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--------------------Constituent List=Drinking Water Standards Constituent Code, Name, Units=111 BETA PCI/L--------------------

WELLNAME	COLLDATE	SAMPLES	DETLIMIT	BELOWDL	MAXLIMIT	MEAN	MEDIAN	STDDEV	COEFFVAR	MINIMUM	MAXIMUM
399-1-1	25JUN85	4	8	0	50	9.53	9.44	0.887	9.3	8.56	10.7
399-1-1	24JUL85	4	8	0	50	10.6	9.07	3.61	33.9	8.35	16
399-1-1	20AUG85	4	8	0	50	9.21	9.5	2.75	29.9	5.62	12.2
399-1-2	20JUN85	4	8	0	50	10	10.3	1.78	17.8	7.78	11.7
399-1-2	29JUL85	4	8	0	50	16.4	16.3	1.89	11.5	14.5	18.5
399-1-2	21AUG85	4	8	0	50	9.43	8.91	1.36	14.4	8.47	11.4
399-1-5	31JUL85	3	8	0	50	15.2	15.8	1.07	7.0	14	15.9
399-1-5	21AUG85	3	8	0	50	16.5	16.6	0.755	4.6	15.7	17.2
399-3-10	01JUL85	4	8	0	50	18.8	19.1	1.75	9.8	16.5	20.5
399-3-10	30JUL85	4	8	0	50	16.1	15.7	2.78	17.3	13.5	19.5
399-3-10	22AUG85	4	8	0	50	11.5	11	1.28	11.2	10.4	13.3
399-4-7	01JUL85	4	8	0	50	27.6	27.3	2.11	7.6	25.6	30.2
399-4-7	30JUL85	4	8	0	50	23.3	23.3	3.41	14.6	20	26.6
399-4-7	22AUG85	4	8	0	50	29.7	23.2	22	73.8	12.1	60.6

--------------------Constituent List=Drinking Water Standards Constituent Code, Name, Units=181 RADIUM PCI/L--------------------

WELLNAME	COLLDATE	SAMPLES	DETLIMIT	BELOWDL	MAXLIMIT	MEAN	MEDIAN	STDDEV	COEFFVAR	MINIMUM	MAXIMUM
399-1-1	25JUN85	4	1	3	5	0.273	0.258	0.161	59.2	0.0925	0.484
399-1-1	24JUL85	4	1	4	5	0.0687	0.0568	0.0671	97.6	0	0.161
399-1-1	20AUG85	4	1	4	5	0.0653	0.051	0.0735	112.6	0	0.159
399-1-2	20JUN85	4	1	3	5	0.197	0.01	0.456	232.0	-0.108	0.875
399-1-2	29JUL85	4	1	4	5	-0.0178	-0.0299	0.0595	-335.3	-0.0699	0.0588
399-1-2	21AUG85	4	1	4	5	0.0552	0.0547	0.117	212.3	-0.0559	0.167
399-1-5	31JUL85	3	1	3	5	0.0371	0.033	0.0547	147.6	-0.0155	0.0937
399-1-5	21AUG85	3	1	3	5	0.109	0.127	0.0831	76.5	0.0179	0.181
399-3-10	01JUL85	4	1	4	5	0.0685	0.0485	0.0606	88.4	0.0221	0.155
399-3-10	30JUL85	4	1	4	5	0.085	0.0743	0.0569	66.9	0.0293	0.162
399-3-10	22AUG85	4	1	4	5	0.0676	0.0903	0.13	192.4	-0.11	0.2
399-4-7	01JUL85	4	1	4	5	0.0643	0.0473	0.0596	92.8	0.0124	0.15
399-4-7	30JUL85	4	1	4	5	0.0363	0.0548	0.0785	216.4	-0.0732	0.105
399-4-7	22AUG85	4	1	4	5	0.077	0.0645	0.128	166.5	-0.036	0.235

--------------------Constituent List=Drinking Water Standards Constituent Code, Name, Units=212 LOALPHA PCI/L--------------------

WELLNAME	COLLDATE	SAMPLES	DETLIMIT	BELOWDL	MAXLIMIT	MEAN	MEDIAN	STDDEV	COEFFVAR	MINIMUM	MAXIMUM
399-1-1	25JUN85	4	4	0	15	19.5	20.1	3.58	18.4	15.1	22.6
399-1-1	24JUL85	4	4	D	15	17.6	18	1.96	11.2	15.1	19.2
399-1-1	20AUG85	4	4	0	15	14.3	14.1	1.94	13.6	12.2	16.9
399-1-2	20JUN85	4	4	0	15	15.6	15.8	1.59	10.2	13.7	17.1
399-1-2	29JUL85	4	4	0	15	7.6	7.57	1.97	26.0	5.59	9.66
399-1-2	21AUG85	4	4	0	15	5.93	5.73	1.6	27.0	4.24	8.01
399-1-5	31JUL85	3	4	0	15	5.19	4.75	1.25	24.1	4.22	6.6
399-1-5	21AUG85	3	4	0	15	6.24	7.96	3.3	52.8	2.44	8.33
399-3-10	01JUL85	4	4	0	15	12.6	12.2	5.96	47.4	6.74	19.1
399-3-10	30JUL85	4	4	0	15	14.2	14.2	1.39	9.6	12.4	15.8
399-3-10	22AUG85	4	4	0	15	17.4	16.9	3.52	20.3	13.9	21 6
399-4-7	01JUL85	4	4	0	15	18.1	19	5.42	30.0	10.7	23.6
399-4-7	30JUL85	4	4	0	15	30.4	31.2	24.8	61.4	2.16	57.1
399-4-7	22AUG85	4	4	0	15	27.1	26.8	6.53	24.1	20.7	34.2

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TABLE G.2 Summarized by Constituent-Well-Collection Date
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--------------------Constituent List=Drinking Water Standards Constituent Code, Name, Units=A06 BARIUM PPB--------------------

WELLNAME	COLLDATE	SAMPLES	DETLIMIT	BELOWDL	MAXLIMIT	MEAN	MEDIAN	STDDEV	COEFFVAR	MINIMUM	MAXIMUM
399-1-1	25JUN85	4	6	0	1000	38	38	5.89	15.5	32	44
399-1-1	24JUL85	4	6	0	1000	85.8	81.5	45.2	52.7	35	145
399-1-1	20AUG85	4	6	0	1000	28.3	28.5	0.957	3.4	27	29
399-1-2	20JUN85	4	6	0	1000	203	38	345	170.2	15	719
399-1-2	29JUL85	4	6	0	1000	35.3	37	5.19	14.7	28	39
399-1-2	21AUG85	4	6	0	1000	20.3	20.5	0.957	4.7	19	21
399-1-5	31JUL85	3	6	0	1000	99.7	42	116	116.2	24	233
399-1-5	21AUG85	3	6	0	1000	32	32	1	3.1	31	33
399-3-10	01JUL85	4	6	4	1000	6	6	0	0.0	6	6
399-3-10	30JUL85	4	6	0	1000	79.5	46.5	69.1	86.9	42	183
399-3-10	22AUG85	4	6	0	1000	39.5	39.5	0.577	1.5	39	40
399-4-7	01JUL85	4	6	3	1000	57.5	6	103	179.1	6	212
399-4-7	30JUL85	4	6	0	1000	51.5	50.5	5.57	10.8	46	59
399-4-7	22AUG85	4	6	0	1000	41.5	42	1	2.4	40	42

--------------------Constituent List=Drinking Water Standards Constituent Code, Name, Units=A07 CADMIUM PPB--------------------

WELLNAME	COLLDATE	SAMPLES	DETLIMIT	BELOWDL	MAXLIMIT	MEAN	MEDIAN	STDDEV	COEFFVAR	MINIMUM	MAXIMUM
399-1-1	25JUN85	4	2	3	10	2.25	2	0.5	22.2	2	3
399-1-1	24JUL85	4	2	4	10	2	2	0	0.0	2	2
399-1-1	20AUG85	4	2	3	10	2.25	2	0.5	22.2	2	3
399-1-2	20JUN85	4	2	4	10	2	2	0	0.0	2	2
399-1-2	29JUL85	4	2	4	10	2	2	0	0.0	2	2
399-1-2	21AUG85	4	2	3	10	2.25	2	0.5	22.2	2	3
399-1-5	31JUL85	3	2	1	10	3.63	2.3	2.57	70.8	2	6.6
399-1-5	21AUG85	3	2	3	10	2	2	0	0.0	2	2
399-3-10	01JUL85	4	2	4	10	2	2	0	0.0	2	2
399-3-10	30JUL85	4	2	4	10	2	2	0	0.0	2	2
399-3-10	22AUG85	4	2	2	10	2.25	2	0.5	22.2	2	3
399-4-7	01JUL85	4	2	4	10	2	2	0	0.0	2	2
399-4-7	30JUL85	4	2	4	10	2	2	0	0.0	2	2
399-4-7	22AUG85	4	2	4	10	2	2	0	0.0	2	2

--------------------Constituent List=Drinking Water Standards Constituent Code, Name, Units=A08 CHROMUM PPB--------------------

WELLNAME	COLLDATE	SAMPLES	DETLIMIT	BELOWDL	MAXLIMIT	MEAN	MEDIAN	STDDEV	COEFFVAR	MINIMUM	MAXIMUM
399-1-1	25JUN85	4	10	4	50	10	10	0	0.0	10	10
399-1-1	24JUL85	4	10	4	50	10	10	0	0.0	10	10
399-1-1	20AUG85	4	10	3	50	10.3	10	0.5	4.9	10	11
399-1-2	20JUN85	4	10	4	50	10	10	0	0.0	10	10
399-1-2	29JUL85	4	10	4	50	10	10	0	0.0	10	10
399-1-2	21AUG85	4	10	4	50	10	10	0	0.0	10	10
399-1-5	31JUL85	3	10	3	50	10	10	0	0.0	10	10
399-1-5	21AUG85	3	10	3	50	10	10	0	0.0	10	10
399-3-10	01JUL85	4	10	3	50	10	10	0	0.0	10	10
399-3-10	30JUL85	4	10	3	50	17	10	14	82.4	10	38
399-3-10	22AUG85	4	10	4	50	10	10	0	0.0	10	10
399-4-7	01JUL85	4	10	3	50	14.5	10	9	62.1	10	28
399-4-7	30JUL85	4	10	4	50	10	10	0	0.0	10	10
399-4-7	22AUG85	4	10	3	50	10.8	10	1.5	14.0	10	13

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TABLE G.2 Summarized by Constituent-Well-Collection Date
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--------------------Constituent List=Drinking Water Standards Constituent Code, Name, Units=A10 SILVER PPB--------------------

WELLNAME	COLLDATE	SAMPLES	DETLIMIT	BELOWDL	MAXLIMIT	MEAN	MEDIAN	STDDEV	COEFFVAR	MINIMUM	MAXIMUM
399-1-1	25JUN85	4	10	4	50	10	10	0	0.0	10	10
399-1-1	24JUL85	4	10	4	50	10	10	0	0.0	10	10
399-1-1	20AUG85	4	10	4	50	10	10	0	0.0	10	10
399-1-2	20JUN85	4	10	4	50	10	10	0	0.0	10	10
399-1-2	29JUL85	4	10	3	50	12.3	10	4.5	36.7	10	19
399-1-2	21AUG85	4	10	4	50	10	10	0	0.0	10	10
399-1-5	31JUL85	3	10	3	50	10	10	0	0.0	10	10
399-1-5	21AUG85	3	10	3	50	10	10	0	0.0	10	10
399-3-10	01JUL85	4	10	4	50	10	10	0	0.0	10	10
399-3-10	30JUL85	4	10	4	50	10	10	0	0.0	10	10
399-3-10	22AUG85	4	10	4	50	10	10	0	0.0	10	10
399-4-7	01JUL85	4	10	4	50	10	10	0	0.0	10	10
399-4-7	30JUL85	4	10	4	50	10	10	0	0.0	10	10
399-4-7	22AUG85	4	10	4	50	10	10	0	0.0	10	10

--------------------Constituent List=Drinking Water Standards Constituent Code, Name, Units=A20 ARSENIC PPB--------------------

WELLNAME	COLLDATE	SAMPLES	DETLIMIT	BELOWDL	MAXLIMIT	MEAN	MEDIAN	STDDEV	COEFFVAR	MINIMUM	MAXIMUM
399-1-1	25JUN85	4	5	0	50	10.1	8.15	4.65	46.2	7	17
399-1-1	24JUL85	4	5	4	50	5	5	0	0.0	5	5
399-1-1	20AUG85	4	5	4	50	5	5	0	0.0	5	5
399-1-2	20JUN85	4	5	4	50	5	5	0	0.0	5	5
399-1-2	29JUL85	4	5	4	50	5	5	0	0.0	5	5
399-1-2	21AUG85	4	5	4	50	5	5	0	0.0	5	5
399-1-5	31JUL85	3	5	3	50	5	5	0	0.0	5	5
399-1-5	21AUG85	3	5	3	50	5	5	0	0.0	5	5
399-3-10	01JUL85	4	5	4	50	5	5	0	0.0	5	5
399-3-10	30JUL85	4	5	4	50	5	5	0	0.0	5	5
399-3-10	22AUG85	4	5	4	50	5	5	0	0.0	5	5
399-4-7	01JUL85	4	5	4	50	5	5	0	0.0	5	5
399-4-7	30JUL85	4	5	3	50	5.2	5	0.4	7.7	5	5.8
399-4-7	22AUG85	4	5	3	50	5.07	5	0.135	2.7	5	5.27

--------------------Constituent List=Drinking Water Standards Constituent Code, Name, Units=A21 MERCURY PPB--------------------

WELLNAME	COLLDATE	SAMPLES	DETLIMIT	BELOWDL	MAXLIMIT	MEAN	MEDIAN	STDDEV	COEFFVAR	MINIMUM	MAXIMUM
399-1-1	25JUN85	4	0.1	4	2	0.1	0.1	0	0.0	0.1	0.1
399-1-1	24JUL85	4	0.1	4	2	0.1	0.1	0	0.0	0.1	0.1
399-1-1	20AUG85	4	0.1	4	2	0.1	0.1	0	0.0	0.1	0.1
399-1-2	20JUN85	4	0.1	4	2	0.1	0.1	0	0.0	0.1	0.1
399-1-2	29JUL85	4	0.1	0	2	5.23	5.2	0.842	16.1	4.3	6.2
399-1-2	21AUG85	4	0.1	4	2	0.1	0.1	0	0.0	0.1	0.1
399-1-5	31JUL85	3	0.1	0	2	6.9	6.3	1.78	25.8	5.5	8.9
399-1-5	21AUG85	3	0.1	3	2	0.1	0.1	0	0.0	0.1	0.1
399-3-10	01JUL85	4	0.1	4	2	0.1	0.1	0	0.0	0.1	0.1
399-3-10	30JUL85	4	0.1	0	2	6.53	6.6	1.57	24.1	4.7	8.2
399-3-10	22AUG85	4	0.1	3	2	0.145	0.1	0.09	62.1	0.1	0.28
399-4-7	01JUL85	4	0.1	4	2	0.1	0.1	0	0.0	0.1	0.1
399-4-7	30JUL85	4	0.1	0	2	7.4	7.25	2	27.0	5.2	9.9
399-4-7	22AUG85	4	0.1	4	2	0.1	0.1	0	0.0	0.1	0.1

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--------------------Constituent List=Drinking Water Standards Constituent Code, Name, Units=A22 SELENUM PPB--------------------

WELLNAME	COLLDATE	SAMPLES	DETLIMIT	BELOWDL	MAXLIMIT	MEAN	MEDIAN	STDDEV	COEFFVAR	MINIMUM	MAXIMUM
399-1-1	25JUN85	4	5	4	10	5	5	0	0.0	5	5
399-1-1	24JUL85	4	5	4	10	5	5	0	0.0	5	5
399-1-1	20AUG85	4	5	4	10	5	5	0	0.0	5	5
399-1-2	20JUN85	4	5	4	10	5	5	0	0.0	5	5
399-1-2	29JUL85	4	5	4	10	5	5	0	0.0	5	5
399-1-2	21AUG85	4	5	4	10	5	5	0	0.0	5	5
399-1-5	31JUL85	3	5	3	10	5	5	0	0.0	5	5
399-1-5	21AUG85	3	5	3	10	5	5	0	0.0	5	5
399-3-10	01JUL85	4	5	4	10	5	5	0	0.0	5	5
399-3-10	30JUL85	4	5	4	10	5	5	0	0.0	5	5
399-3-10	22AUG85	4	5	4	10	5	5	0	0.0	5	5
399-4-7	01JUL85	4	5	4	10	5	5	0	0.0	5	5
399-4-7	30JUL85	4	5	4	10	5	5	0	0.0	5	5
399-4-7	22AUG85	4	5	4	10	5	5	0	0.0	5	5

--------------------Constituent List=Drinking Water Standards Constituent Code, Name, Units=A51 LEADGF PPB--------------------

WELLNAME	COLLDATE	SAMPLES	DETLIMIT	BELOWDL	MAXLIMIT	MEAN	MEDIAN	STDDEV	COEFFVAR	MINIMUM	MAXIMUM
399-1-1	25JUN85	4	5	4	50	5	5	0	0.0	5	5
399-1-1	24JUL85	4	5	4	50	5	5	0	0.0	5	5
399-1-1	20AUG85	4	5	4	50	5	5	0	0.0	5	5
399-1-2	20JUN85	4	5	4	50	5	5	0	0.0	5	5
399-1-2	29JUL85	4	5	0	50	12.3	12	0.64	5.2	11.8	13.2
399-1-2	21AUG85	4	5	3	50	5.61	5	1.22	21.7	5	7.44
399-1-5	31JUL85	3	5	2	50	5.27	5	0.462	8.8	5	5.8
399-1-5	21AUG85	3	5	3	50	5	5	0	0.0	5	5
399-3-10	01JUL85	4	5	1	50	26.5	30.5	15.3	57.7	5	40
399-3-10	30JUL85	4	5	1	50	5.35	5.1	0.574	10.7	5	6.2
399-3-10	22AUG85	4	5	4	50	5	5	0	0.0	5	5
399-4-7	01JUL85	4	5	4	50	5	5	0	0.0	5	5
399-4-7	30JUL85	4	5	3	50	5	5	0	0.0	5	5
399-4-7	22AUG85	4	5	4	50	5	5	0	0.0	5	5

--------------------Constituent List=Drinking Water Standards Constituent Code, Name, Units=C72 NITRATE PPB--------------------

WELLNAME	COLLDATE	SAMPLES	DETLIMIT	BELOWDL	MAXLIMIT	MEAN	MEDIAN	STDDEV	COEFFVAR	MINIMUM	MAXIMUM
399-1-1	25JUN85	4	500	0	45000	22500	22500	408	1.8	22000	23000
399-1-1	24JUL85	4	500	0	45000	20600	20800	1610	7.8	18400	22300
399-1-1	20AUG85	4	500	0	45000	17100	16400	1700	9.9	16000	19800
399-1-2	20JUN85	4	500	0	45000	25300	21500	8540	33.8	20000	38000
399-1-2	29JUL85	4	500	0	45000	17900	17900	568	3.2	17300	18500
399-1-2	21AUG85	4	500	0	45000	16900	17200	1060	6.3	15400	17700
399-1-5	31JUL85	3	500	0	45000	14600	14700	458	3.1	14100	15000
399-1-5	21AUG85	3	500	0	45000	3330	3400	404	12.1	2900	3700
399-3-10	01JUL85	4	500	0	45000	22400	22700	933	4.2	21000	23100
399-3-10	30JUL85	4	500	0	45000	20400	20500	829	4.1	19400	21300
399-3-10	22AUG85	4	500	0	45000	20500	19900	2050	10.0	18900	23400
399-4-7	01JUL85	4	500	0	45000	19900	20100	806	4.0	18800	20700
399-4-7	30JUL85	4	500	0	45000	16100	15900	988	6.2	15100	17400
399-4-7	22AUG85	4	500	0	45000	17400	17700	1480	8.5	15500	18700

TABLE G.2 Summarized by Constituent-Well-Collection Date
Replicate Data Only

--------------------Constituent List=Drinking Water Standards Constituent Code, Name, Units=C74 FLUORID PPB--------------------

WELLNAME	COLLDATE	SAMPLES	DETLIMIT	BELOWDL	MAXLIMIT	MEAN	MEDIAN	STDDEV	COEFFVAR	MINIMUM	MAXIMUM
399-1-1	25JUN85	4	500	4	1400	500	500	0	0.0	500	500
399-1-1	24JUL85	4	500	0	1400	860	850	96.3	11.2	760	980
399-1-1	20AUG85	4	500	0	1400	615	590	50	8.1	590	690
399-1-2	20JUN85	4	500	4	1400	500	500	0	0.0	500	500
399-1-2	29JUL85	4	500	0	1400	895	880	54.5	6.1	850	970
399-1-2	21AUG85	4	500	4	1400	500	500	0	0.0	500	500
399-1-5	31JUL85	3	500	0	1400	1260	1260	45.1	3.6	1220	1310
399-1-5	21AUG85	3	500	0	1400	1080	740	683	63.1	640	1870
399-3-10	01JUL85	4	500	4	1400	500	500	0	0.0	500	500
399-3-10	30JUL85	4	500	0	1400	975	950	97.5	10.0	890	1110
399-3-10	22AUG85	4	500	4	1400	500	500	0	0.0	500	500
399-4-7	01JUL85	4	500	4	1400	500	500	0	0.0	500	500
399-4-7	30JUL85	4	500	0	1400	990	930	170	17.2	860	1240
399-4-7	22AUG85	4	500	1	1400	610	630	78.7	12.9	500	680

--------------------Constituent List=Quality Characteristics Constituent Code, Name, Units=A11 SODIUM PPB--------------------

WELLNAME	COLLDATE	SAMPLES	DETLIMIT	BELOWDL	MAXLIMIT	MEAN	MEDIAN	STDDEV	COEFFVAR	MINIMUM	MAXIMUM
399-1-1	25JUN85	4	100	0	.	13400	13400	252	1.9	13000	13600
399-1-1	24JUL85	4	100	0	.	9960	12800	5830	58.5	1220	13100
399-1-1	20AUG85	4	100	0	.	11200	11300	245	2.2	10900	11400
399-1-2	20JUN85	4	100	0	.	14100	13800	1070	7.6	13200	15500
399-1-2	29JUL85	4	100	0	.	18200	14900	7750	42.7	13100	29700
399-1-2	21AUG85	4	100	0	.	11200	11300	222	2.0	10900	11400
399-1-5	31JUL85	3	100	0	.	12300	12700	964	7.8	11200	13000
399-1-5	21AUG85	3	100	0	.	12600	12600	100	0.8	12500	12700
399-3-10	01JUL85	4	100	0	.	13700	13500	619	4.5	13100	14500
399-3-10	30JUL85	4	100	0	.	11600	11700	419	3.6	11000	12000
399-3-10	22AUG85	4	100	0	.	11300	11400	311	2.8	10800	11500
399-4-7	01JUL85	4	100	0	.	21000	21400	1890	9.0	18400	22900
399-4-7	30JUL85	4	100	0	.	21100	20900	858	4.1	20300	22300
399-4-7	22AUG85	4	100	0	.	18600	18800	574	3.1	17800	19100

--------------------Constituent List=Quality Characteristics Constituent Code, Name, Units=A17 MANGESE PPB--------------------

WELLNAME	COLLDATE	SAMPLES	DETLIMIT	BELOWDL	MAXLIMIT	MEAN	MEDIAN	STDDEV	COEFFVAR	MINIMUM	MAXIMUM
399-1-1	25JUN85	4	5	4	.	5	5	0	0.0	5	5
399-1-1	24JUL85	4	5	4	.	5	5	0	0.0	5	5
399-1-1	20AUG85	4	5	3	.	5.25	5	0.5	9.5	5	6
399-1-2	20JUN85	4	5	4	.	5	5	0	0.0	5	5
399-1-2	29JUL85	4	5	4	.	5	5	0	0.0	5	5
399-1-2	21AUG85	4	5	4	.	5	5	0	0.0	5	5
399-1-5	31JUL85	3	5	3	.	5	5	0	0.0	5	5
399-1-5	21AUG85	3	5	1	.	5.33	5	0.577	10.8	5	6
399-3-10	01JUL85	4	5	4	.	5	5	0	0.0	5	5
399-3-10	30JUL85	4	5	4	.	5	5	0	0.0	5	5
399-3-10	22AUG85	4	5	0	.	5.75	6	0.5	8.7	5	6
399-4-7	01JUL85	4	5	4	.	5	5	0	0.0	5	5
399-4-7	30JUL85	4	5	4	.	5	5	0	0.0	5	5
399-4-7	22AUG85	4	5	4	.	5	5	0	0.0	5	5

TABLE G.2 Summarized by Constituent-Well-Collection Date
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---------------------Constituent List=Quality Characteristics Constituent Code, Name, Units=A19 IRON PPB---------------------

WELLNAME	COLLDATE	SAMPLES	DETLIMIT	BELOWDL	MAXLIMIT	MEAN	MEDIAN	STDDEV	COEFFVAR	MINIMUM	MAXIMUM
399-1-1	25JUN85	4	50	0	.	222	218	114	51.7	97	353
399-1-1	24JUL85	4	50	1	.	59.3	57	9.88	16.7	50	73
399-1-1	20AUG85	4	50	1	.	55.8	56	4.79	8.6	50	61
399-1-2	20JUN85	4	50	0	.	193	170	78.3	40.6	126	308
399-1-2	29JUL85	4	50	0	.	178	200	61.3	34.4	92	222
399-1-2	21AUG85	4	50	3	.	50	50	0	0.0	50	50
399-1-5	31JUL85	3	50	0	.	752	194	1000	133.5	151	1910
399-1-5	21AUG85	3	50	0	.	327	281	92.1	28.2	267	433
399-3-10	01JUL85	4	50	0	.	348	315	114	32.8	250	513
399-3-10	30JUL85	4	50	0	.	347	337	115	33.0	233	461
399-3-10	22AUG85	4	50	0	.	183	182	19.8	10.8	161	206
399-4-7	01JUL85	4	50	2	.	80	58	49.9	62.4	50	154
399-4-7	30JUL85	4	50	0	.	179	173	65	36.4	106	263
399-4-7	22AUG85	4	50	2	.	60	57	12.5	20.9	50	76

---------------------Constituent List=Quality Characteristics Constituent Code, Name, Units=C73 SULFATE PPB---------------------

WELLNAME	COLLDATE	SAMPLES	DETLIMIT	BELOWDL	MAXLIMIT	MEAN	MEDIAN	STDDEV	COEFFVAR	MINIMUM	MAXIMUM
399-1-1	25JUN85	4	500	0	.	17900	18000	629	3.5	17000	18500
399-1-1	24JUL85	4	500	0	.	17500	17600	1240	7.1	15900	18900
399-1-1	20AUG85	4	500	0	.	15400	14700	1580	10.3	14600	17800
399-1-2	20JUN85	4	500	0	.	23500	23500	408	1.7	23000	24000
399-1-2	29JUL85	4	500	0	.	20600	20500	675	3.3	20000	21300
399-1-2	21AUG85	4	500	0	.	18100	18400	1170	6.5	16500	19200
399-1-5	31JUL85	3	500	0	.	13300	13400	404	3.0	12900	13700
399-1-5	21AUG85	3	500	0	.	15200	15600	1370	9.0	13700	16400
399-3-10	01JUL85	4	500	0	.	18900	18900	695	3.7	18200	19600
399-3-10	30JUL85	4	500	0	.	18600	18600	624	3.4	17800	19200
399-3-10	22AUG85	4	500	0	.	20200	19800	1540	7.6	19000	22300
399-4-7	01JUL85	4	500	0	.	29400	28000	3440	11.7	27100	34500
399-4-7	30JUL85	4	500	0	.	30600	30200	1870	6.1	28800	33100
399-4-7	22AUG85	4	500	0	.	35700	36500	3310	9.3	31400	38600

---------------------Constituent List=Quality Characteristics Constituent Code, Name, Units=C75 CHLORID PPB---------------------

WELLNAME	COLLDATE	SAMPLES	DETLIMIT	BELOWDL	MAXLIMIT	MEAN	MEDIAN	STDDEV	COEFFVAR	MINIMUM	MAXIMUM
399-1-1	25JUN85	4	500	0	.	8280	8300	263	3.2	8000	8500
399-1-1	24JUL85	4	500	0	.	10900	11000	922	8.4	9800	12000
399-1-1	20AUG85	4	500	0	.	13000	12600	1220	9.4	12100	14800
399-1-2	20JUN85	4	500	0	.	6720	8500	3910	58.2	880	9000
399-1-2	29JUL85	4	500	0	.	10900	10900	386	3.8	10500	11300
399-1-2	21AUG85	4	500	0	.	11000	11300	900	8.2	9700	11700
399-1-5	31JUL85	3	500	0	.	6470	6500	153	2.4	6300	6600
399-1-5	21AUG85	3	500	0	.	47100	47200	3400	7.2	43600	50400
399-3-10	01JUL85	4	500	0	.	13300	13500	1190	8.9	11900	14400
399-3-10	30JUL85	4	500	0	.	11100	11100	500	4.5	10400	11600
399-3-10	22AUG85	4	500	0	.	10800	10500	1090	10.1	10000	12300
399-4-7	01JUL85	4	500	0	.	13800	13800	171	1.2	13600	14000
399-4-7	30JUL85	4	500	0	.	12300	12200	744	6.0	11600	13300
399-4-7	22AUG85	4	500	0	.	14600	14900	1350	9.2	12900	15800

TABLE G.2 Summarized by Constituent-Well-Collection Date
Replicate Data Only

---------------------------Constituent List=Site Specific Constituent Code, Name, Units=A12 NICKEL PPB---------------------------

WELLNAME	COLLDATE	SAMPLES	DETLIMIT	BELOWDL	MAXLIMIT	MEAN	MEDIAN	STDDEV	COEFFVAR	MINIMUM	MAXIMUM
399-1-1	25JUN85	4	10	4	.	10	10	0	0.0	10	10
399-1-1	24JUL85	4	10	4	.	10	10	0	0.0	10	10
399-1-1	20AUG85	4	10	4	.	10	10	0	0.0	10	10
399-1-2	20JUN85	4	10	4	.	10	10	0	0.0	10	10
399-1-2	29JUL85	4	10	4	.	10	10	0	0.0	10	10
399-1-2	21AUG85	4	10	4	.	10	10	0	0.0	10	10
399-1-5	31JUL85	3	10	2	.	10	10	0	0.0	10	10
399-1-5	21AUG85	3	10	2	.	23.3	10	23.1	99.0	10	50
399-3-10	01JUL85	4	10	4	.	10	10	0	0.0	10	10
399-3-10	30JUL85	4	10	3	.	11.5	10	3	26.1	10	16
399-3-10	22AUG85	4	10	3	.	10.3	10	0.5	4.9	10	11
399-4-7	01JUL85	4	10	4	.	10	10	0	0.0	10	10
399-4-7	30JUL85	4	10	4	.	10	10	0	0.0	10	10
399-4-7	22AUG85	4	10	3	.	17.5	10	15	85.7	10	40

---------------------------Constituent List=Site Specific Constituent Code, Name, Units=A13 COPPER PPB---------------------------

WELLNAME	COLLDATE	SAMPLES	DETLIMIT	BELOWDL	MAXLIMIT	MEAN	MEDIAN	STDDEV	COEFFVAR	MINIMUM	MAXIMUM
399-1-1	25JUN85	4	10	0	1300	20.8	21	0.5	2.4	20	21
399-1-1	24JUL85	4	10	4	1300	10	10	0	0.0	10	10
399-1-1	20AUG85	4	10	0	1300	15	15	5.23	34.9	10	20
399-1-2	20JUN85	4	10	1	1300	12.5	11.5	3.32	26.5	10	17
399-1-2	29JUL85	4	10	1	1300	22	19	12.7	57.9	10	40
399-1-2	21AUG85	4	10	4	1300	10	10	0	0.0	10	10
399-1-5	31JUL85	3	10	0	1300	187	32	285	152.9	12	516
399-1-5	21AUG85	3	10	3	1300	10	10	0	0.0	10	10
399-3-10	01JUL85	4	10	4	1300	10	10	0	0.0	10	10
399-3-10	30JUL85	4	10	3	1300	10.8	10	1.5	14.0	10	13
399-3-10	22AUG85	4	10	4	1300	10	10	0	0.0	10	10
399-4-7	01JUL85	4	10	4	1300	10	10	0	0.0	10	10
399-4-7	30JUL85	4	10	1	1300	14.3	11	7.23	50.7	10	25
399-4-7	22AUG85	4	10	4	1300	10	10	0	0.0	10	10

---------------------------Constituent List=Site Specific Constituent Code, Name, Units=A16 ALUMNUM PPB---------------------------

WELLNAME	COLLDATE	SAMPLES	DETLIMIT	BELOWDL	MAXLIMIT	MEAN	MEDIAN	STDDEV	COEFFVAR	MINIMUM	MAXIMUM
399-1-1	25JUN85	4	150	0	.	240	233	58.1	24.2	179	317
399-1-1	24JUL85	4	150	4	.	150	150	0	0.0	150	150
399-1-1	20AUG85	4	150	4	.	150	150	0	0.0	150	150
399-1-2	20JUN85	4	150	1	.	246	253	79.1	32.2	150	328
399-1-2	29JUL85	4	150	0	.	391	408	212	54.2	175	573
399-1-2	21AUG85	4	150	4	.	150	150	0	0.0	150	150
399-1-5	31JUL85	3	150	2	.	503	150	612	121.6	150	1210
399-1-5	21AUG85	3	150	3	.	150	150	0	0.0	150	150
399-3-10	01JUL85	4	150	0	.	303	275	149	49.0	168	495
399-3-10	30JUL85	4	150	0	.	236	243	36	15.2	192	268
399-3-10	22AUG85	4	150	4	.	150	150	0	0.0	150	150
399-4-7	01JUL85	4	150	0	.	292	317	72.8	24.9	188	347
399-4-7	30JUL85	4	150	1	.	171	168	20.9	12.2	150	198
399-4-7	22AUG85	4	150	4	.	150	150	0	0.0	150	150

RCRA Compliance Ground-Water Monitoring Data
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TABLE G.2 Summarized by Constituent-Well-Collection Date
Replicate Data Only

Constituent List=Site Specific Constituent Code, Name, Units=A24 THIOURA PPB

WELLNAME	COLLDATE	SAMPLES	DETLIMIT	BELOWDL	MAXLIMIT	MEAN	MEDIAN	STDDEV	COEFFVAR	MINIMUM	MAXIMUM
399-1-1	25JUN85	4	200	4	.	200	200	0	0.0	200	200
399-1-1	24JUL85	4	200	4	.	200	200	0	0.0	200	200
399-1-1	20AUG85	4	200	4	.	200	200	0	0.0	200	200
399-1-2	20JUN85	4	200	4	.	200	200	0	0.0	200	200
399-1-2	29JUL85	4	200	4	.	200	200	0	0.0	200	200
399-1-2	21AUG85	4	200	3	.	392	200	383	97.8	200	966
399-1-5	31JUL85	3	200	3	.	200	200	0	0.0	200	200
399-1-5	21AUG85	3	200	3	.	200	200	0	0.0	200	200
399-3-10	01JUL85	4	200	4	.	200	200	0	0.0	200	200
399-3-10	30JUL85	4	200	4	.	200	200	0	0.0	200	200
399-3-10	22AUG85	4	200	4	.	200	200	0	0.0	200	200
399-4-7	01JUL85	4	200	4	.	200	200	0	0.0	200	200
399-4-7	30JUL85	4	200	4	.	200	200	0	0.0	200	200
399-4-7	22AUG85	4	200	4	.	200	200	0	0.0	200	200

Constituent List=Site Specific Constituent Code, Name, Units=A64 METHONE PPB

WELLNAME	COLLDATE	SAMPLES	DETLIMIT	BELOWDL	MAXLIMIT	MEAN	MEDIAN	STDDEV	COEFFVAR	MINIMUM	MAXIMUM
399-1-1	25JUN85	4	10	4	.	10	10	0	0.0	10	10
399-1-1	24JUL85	4	10	4	.	10	10	0	0.0	10	10
399-1-1	20AUG85	4	10	4	.	10	10	0	0.0	10	10
399-1-2	20JUN85	4	10	4	.	10	10	0	0.0	10	10
399-1-2	29JUL85	4	10	4	.	10	10	0	0.0	10	10
399-1-2	21AUG85	4	10	4	.	10	10	0	0.0	10	10
399-1-5	31JUL85	3	10	3	.	10	10	0	0.0	10	10
399-1-5	21AUG85	3	10	3	.	10	10	0	0.0	10	10
399-3-10	01JUL85	4	10	4	.	10	10	0	0.0	10	10
399-3-10	30JUL85	4	10	4	.	10	10	0	0.0	10	10
399-3-10	22AUG85	4	10	4	.	10	10	0	0.0	10	10
399-4-7	01JUL85	4	10	4	.	10	10	0	0.0	10	10
399-4-7	30JUL85	4	10	4	.	10	10	0	0.0	10	10
399-4-7	22AUG85	4	10	4	.	10	10	0	0.0	10	10

Constituent List=Site Specific Constituent Code, Name, Units=A67 1,1,1-T PPB

WELLNAME	COLLDATE	SAMPLES	DETLIMIT	BELOWDL	MAXLIMIT	MEAN	MEDIAN	STDDEV	COEFFVAR	MINIMUM	MAXIMUM
399-1-1	25JUN85	4	10	4	200	10	10	0	0.0	10	10
399-1-1	24JUL85	4	10	4	200	10	10	0	0.0	10	10
399-1-1	20AUG85	4	10	4	200	10	10	0	0.0	10	10
399-1-2	20JUN85	4	10	4	200	10	10	0	0.0	10	10
399-1-2	29JUL85	4	10	4	200	10	10	0	0.0	10	10
399-1-2	21AUG85	4	10	4	200	10	10	0	0.0	10	10
399-1-5	31JUL85	3	10	3	200	10	10	0	0.0	10	10
399-1-5	21AUG85	3	10	3	200	10	10	0	0.0	10	10
399-3-10	01JUL85	4	10	4	200	10	10	0	0.0	10	10
399-3-10	30JUL85	4	10	4	200	10	10	0	0.0	10	10
399-3-10	22AUG85	4	10	4	200	10	10	0	0.0	10	10
399-4-7	01JUL85	4	10	4	200	10	10	0	0.0	10	10
399-4-7	30JUL85	4	10	4	200	10	10	0	0.0	10	10
399-4-7	22AUG85	4	10	4	200	10	10	0	0.0	10	10

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TABLE G.2 Summarized by Constituent-Well-Collection Date
Replicate Data Only

-------------------------Constituent List=Site Specific Constituent Code, Name, Units=A68 1,1,2-T PPB-------------------------

WELLNAME	COLLDATE	SAMPLES	DETLIMIT	BELOWDL	MAXLIMIT	MEAN	MEDIAN	STDDEV	COEFFVAR	MINIMUM	MAXIMUM
399-1-1	25JUN85	4	10	4	.	10	10	0	0.0	10	10
399-1-1	24JUL85	4	10	4	.	10	10	0	0.0	10	10
399-1-1	20AUG85	4	10	4	.	10	10	0	0.0	10	10
399-1-2	20JUN85	4	10	4	.	10	10	0	0.0	10	10
399-1-2	29JUL85	4	10	4	.	10	10	0	0.0	10	10
399-1-2	21AUG85	4	10	4	.	10	10	0	0.0	10	10
399-1-5	31JUL85	3	10	3	.	10	10	0	0.0	10	10
399-1-5	21AUG85	3	10	3	.	10	10	0	0.0	10	10
399-3-10	01JUL85	4	10	4	.	10	10	0	0.0	10	10
399-3-10	30JUL85	4	10	4	.	10	10	0	0.0	10	10
399-3-10	22AUG85	4	10	4	.	10	10	0	0.0	10	10
399-4-7	01JUL85	4	10	4	.	10	10	0	0.0	10	10
399-4-7	30JUL85	4	10	4	.	10	10	0	0.0	10	10
399-4-7	22AUG85	4	10	4	.	10	10	0	0.0	10	10

-------------------------Constituent List=Site Specific Constituent Code, Name, Units=A69 TRICENE PPB-------------------------

WELLNAME	COLLDATE	SAMPLES	DETLIMIT	BELOWDL	MAXLIMIT	MEAN	MEDIAN	STDDEV	COEFFVAR	MINIMUM	MAXIMUM
399-1-1	25JUN85	4	10	4	5	10	10	0	0.0	10	10
399-1-1	24JUL85	4	10	4	5	10	10	0	0.0	10	10
399-1-1	20AUG85	4	10	4	5	10	10	0	0.0	10	10
399-1-2	20JUN85	4	10	4	5	10	10	0	0.0	10	10
399-1-2	29JUL85	4	10	4	5	10	10	0	0.0	10	10
399-1-2	21AUG85	4	10	4	5	10	10	0	0.0	10	10
399-1-5	31JUL85	3	10	3	5	10	10	0	0.0	10	10
399-1-5	21AUG85	3	10	3	5	10	10	0	0.0	10	10
399-3-10	01JUL85	4	10	4	5	10	10	0	0.0	10	10
399-3-10	30JUL85	4	10	4	5	10	10	0	0.0	10	10
399-3-10	22AUG85	4	10	4	5	10	10	0	0.0	10	10
399-4-7	01JUL85	4	10	4	5	10	10	0	0.0	10	10
399-4-7	30JUL85	4	10	4	5	10	10	0	0.0	10	10
399-4-7	22AUG85	4	10	4	5	10	10	0	0.0	10	10

-------------------------Constituent List=Site Specific Constituent Code, Name, Units=A70 PERCENE PPB-------------------------

WELLNAME	COLLDATE	SAMPLES	DETLIMIT	BELOWDL	MAXLIMIT	MEAN	MEDIAN	STDDEV	COEFFVAR	MINIMUM	MAXIMUM
399-1-1	25JUN85	4	10	4	.	10	10	0	0.0	10	10
399-1-1	24JUL85	4	10	4	.	10	10	0	0.0	10	10
399-1-1	20AUG85	4	10	4	.	10	10	0	0.0	10	10
399-1-2	20JUN85	4	10	2	.	11.3	11	1.5	13.3	10	13
399-1-2	29JUL85	4	10	4	.	10	10	0	0.0	10	10
399-1-2	21AUG85	4	10	4	.	10	10	0	0.0	10	10
399-1-5	31JUL85	3	10	0	.	17.7	17	1.15	6.5	17	19
399-1-5	21AUG85	3	10	0	.	15	15	1	6.7	14	16
399-3-10	01JUL85	4	10	4	.	10	10	0	0.0	10	10
399-3-10	30JUL85	4	10	3	.	10.3	10	0.5	4.9	10	11
399-3-10	22AUG85	4	10	4	.	10	10	0	0.0	10	10
399-4-7	01JUL85	4	10	4	.	10	10	0	0.0	10	10
399-4-7	30JUL85	4	10	4	.	10	10	0	0.0	10	10
399-4-7	22AUG85	4	10	4	.	10	10	0	0.0	10	10

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TABLE G.2 Summarized by Constituent-Well-Collection Date
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-------------------------Constituent List=Site Specific Constituent Code, Name, Units=C70 CYANIDE PPB-------------------------

WELLNAME	COLLDATE	SAMPLES	DETLIMIT	BELOWDL	MAXLIMIT	MEAN	MEDIAN	STDDEV	COEFFVAR	MINIMUM	MAXIMUM
399-1-1	25JUN85	4	10	4	.	10	10	0	0.0	10	10
399-1-1	24JUL85	4	10	4	.	10	10	0	0.0	10	10
399-1-1	20AUG85	4	10	3	.	10.3	10	0.5	4.9	10	11
399-1-2	20JUN85	4	10	4	.	10	10	0	0.0	10	10
399-1-2	29JUL85	4	10	4	.	10	10	0	0.0	10	10
399-1-2	21AUG85	4	10	4	.	10	10	0	0.0	10	10
399-1-5	31JUL85	3	10	3	.	10	10	0	0.0	10	10
399-1-5	21AUG85	3	10	3	.	10	10	0	0.0	10	10
399-3-10	01JUL85	4	10	4	.	10	10	0	0.0	10	10
399-3-10	30JUL85	4	10	4	.	10	10	0	0.0	10	10
399-3-10	22AUG85	4	10	3	.	10.5	10	1	9.5	10	12
399-4-7	01JUL85	4	10	4	.	10	10	0	0.0	10	10
399-4-7	30JUL85	4	10	4	.	10	10	0	0.0	10	10
399-4-7	22AUG85	4	10	4	.	10	10	0	0.0	10	10

-------------------------Constituent List=Site Specific Constituent Code, Name, Units=C78 SULFIDE PPB-------------------------

WELLNAME	COLLDATE	SAMPLES	DETLIMIT	BELOWDL	MAXLIMIT	MEAN	MEDIAN	STDDEV	COEFFVAR	MINIMUM	MAXIMUM
399-1-1	25JUN85	4	1000	4	.	1000	1000	0	0.0	1000	1000
399-1-1	24JUL85	4	1000	4	.	1000	1000	0	0.0	1000	1000
399-1-1	20AUG85	4	1000	4	.	1000	1000	0	0.0	1000	1000
399-1-2	20JUN85	4	1000	3	.	1500	1000	1000	66.7	1000	3000
399-1-2	29JUL85	4	1000	4	.	1000	1000	0	0.0	1000	1000
399-1-2	21AUG85	4	1000	4	.	1000	1000	0	0.0	1000	1000
399-1-5	31JUL85	3	1000	3	.	1000	1000	0	0.0	1000	1000
399-1-5	21AUG85	3	1000	3	.	1000	1000	0	0.0	1000	1000
399-3-10	01JUL85	4	1000	4	.	1000	1000	0	0.0	1000	1000
399-3-10	30JUL85	4	1000	4	.	1000	1000	0	0.0	1000	1000
399-3-10	22AUG85	4	1000	4	.	1000	1000	0	0.0	1000	1000
399-4-7	01JUL85	4	1000	4	.	1000	1000	0	0.0	1000	1000
399-4-7	30JUL85	4	1000	4	.	1000	1000	0	0.0	1000	1000
399-4-7	22AUG85	4	1000	4	.	1000	1000	0	0.0	1000	1000

-------------------------Constituent List=Site Specific Constituent Code, Name, Units=C80 AMMONIU PPB-------------------------

WELLNAME	COLLDATE	SAMPLES	DETLIMIT	BELOWDL	MAXLIMIT	MEAN	MEDIAN	STDDEV	COEFFVAR	MINIMUM	MAXIMUM
399-1-1	25JUN85	4	50	0	.	148	150	35.2	23.9	110	180
399-1-1	24JUL85	4	50	0	.	253	250	12.6	5.0	240	270
399-1-1	20AUG85	4	50	0	.	131	131	7.54	5.7	124	140
399-1-2	20JUN85	4	50	0	.	138	145	18.9	13.8	110	150
399-1-2	29JUL85	4	50	0	.	295	285	23.8	8.1	280	330
399-1-2	21AUG85	4	50	0	.	141	143	4.79	3.4	135	145
399-1-5	31JUL85	3	50	0	.	267	230	81.4	30.5	210	360
399-1-5	21AUG85	3	50	0	.	130	135	8.66	6.7	120	135
399-3-10	01JUL85	4	50	0	.	223	220	22.2	10.0	200	250
399-3-10	30JUL85	4	50	0	.	273	295	55.6	20.4	190	310
399-3-10	22AUG85	4	50	0	.	166	178	24.3	14.6	130	180
399-4-7	01JUL85	4	50	0	.	185	180	17.3	9.4	170	210
399-4-7	30JUL85	4	50	0	.	316	318	38.2	12.1	270	360
399-4-7	22AUG85	4	50	0	.	174	173	4.79	2.8	170	180

TABLE G.2 Summarized by Constituent-Well-Collection Date
Replicate Data Only

-----Constituent List=Tag-alongs Constituent Code, Name, Units=A14 VANADUM PPB-----

WELLNAME	COLLDATE	SAMPLES	DETLIMIT	BELOWDL	MAXLIMIT	MEAN	MEDIAN	STDDEV	COEFFVAR	MINIMUM	MAXIMUM
399-1-1	25JUN85	4	5	0	.	20.8	20	3.86	18.6	17	26
399-1-1	24JUL85	4	5	0	.	11.2	11	1.53	13.6	9.9	13
399-1-1	20AUG85	4	5	3	.	5	5	0	0.0	5	5
399-1-2	20JUN85	4	5	0	.	21.8	21.5	8.96	41.2	14	30
399-1-2	29JUL85	4	5	0	.	13.4	14.5	3.45	25.7	8.7	16
399-1-2	21AUG85	4	5	1	.	6.25	6.5	0.957	15.3	5	7
399-1-5	31JUL85	3	5	0	.	8.8	7.4	2.78	31.6	7	12
399-1-5	21AUG85	3	5	0	.	7	8	1.73	24.7	5	8
399-3-10	01JUL85	4	5	4	.	5	5	0	0.0	5	5
399-3-10	30JUL85	4	5	0	.	12.1	12.5	1.98	16.3	9.4	14
399-3-10	22AUG85	4	5	3	.	5	5	0	0.0	5	5
399-4-7	01JUL85	4	5	3	.	8.25	5	6.5	78.8	5	18
399-4-7	30JUL85	4	5	0	.	13.3	14.5	2.82	21.3	9.1	15
399-4-7	22AUG85	4	5	0	.	9.5	9.5	0.577	6.1	9	10

-----Constituent List=Tag-alongs Constituent Code, Name, Units=A18 POTASUM PPB-----

WELLNAME	COLLDATE	SAMPLES	DETLIMIT	BELOWDL	MAXLIMIT	MEAN	MEDIAN	STDDEV	COEFFVAR	MINIMUM	MAXIMUM
399-1-1	25JUN85	4	100	0	.	2960	2880	259	8.7	2760	3340
399-1-1	24JUL85	4	100	0	.	2810	2780	112	4.0	2710	2970
399-1-1	20AUG85	4	100	0	.	2380	2410	105	4.4	2240	2480
399-1-2	20JUN85	4	100	0	.	3710	3780	135	3.6	3510	3790
399-1-2	29JUL85	4	100	0	.	3990	4010	228	5.7	3750	4180
399-1-2	21AUG85	4	100	0	.	2800	2800	61.8	2.2	2730	2880
399-1-5	31JUL85	3	100	0	.	3380	3310	98.7	2.9	3290	3470
399-1-5	21AUG85	3	100	0	.	3510	3470	150	4.3	3390	3680
399-3-10	01JUL85	4	100	0	.	4410	4390	83.7	1.9	4340	4530
399-3-10	30JUL85	4	100	0	.	4020	4080	110	2.7	3860	4110
399-3-10	22AUG85	4	100	0	.	3170	3190	62.4	2.0	3090	3230
399-4-7	01JUL85	4	100	0	.	5780	5810	492	8.5	5120	6310
399-4-7	30JUL85	4	100	0	.	5580	5610	229	4.1	5300	5810
399-4-7	22AUG85	4	100	0	.	4340	4380	107	2.5	4180	4420

-----Constituent List=Tag-alongs Constituent Code, Name, Units=A80 CHLFORM PPB-----

WELLNAME	COLLDATE	SAMPLES	DETLIMIT	BELOWDL	MAXLIMIT	MEAN	MEDIAN	STDDEV	COEFFVAR	MINIMUM	MAXIMUM
399-1-1	25JUN85	4	10	0	.	28.5	29	1.91	6.7	26	30
399-1-1	24JUL85	4	10	0	.	30.5	31	1.91	6.3	28	32
399-1-1	20AUG85	4	10	0	.	27.3	26	4.03	14.8	24	33
399-1-2	20JUN85	4	10	0	.	15.5	15	1	6.5	15	17
399-1-2	29JUL85	4	10	0	.	19.8	19.5	5.74	29.0	13	27
399-1-2	21AUG85	4	10	0	.	18.5	19	1.91	10.4	16	20
399-1-5	31JUL85	3	10	0	.	26.7	27	5.51	20.7	21	32
399-1-5	21AUG85	3	10	0	.	22	22	0	0.0	22	22

TABLE G.2 Summarized by Constituent-Well-Collection Date
Replicate Data Only

Constituent List=Tag-alongs Constituent Code, Name, Units=A93 METHYCH PPB

WELLNAME	COLLDATE	SAMPLES	DETLIMIT	BELOWDL	MAXLIMIT	MEAN	MEDIAN	STDDEV	COEFFVAR	MINIMUM	MAXIMUM
399-1-5	31JUL85	3	10	0	.	20.7	19	10.6	51.3	11	32
399-1-5	21AUG85	3	10	3	.	10	10	0	0.0	10	10

Constituent List=Tag-alongs Constituent Code, Name, Units=C76 PHOSPHA PPB

WELLNAME	COLLDATE	SAMPLES	DETLIMIT	BELOWDL	MAXLIMIT	MEAN	MEDIAN	STDDEV	COEFFVAR	MINIMUM	MAXIMUM
399-1-1	25JUN85	4	1000	4	.	1000	1000	0	0.0	1000	1000
399-1-1	24JUL85	4	1000	4	.	1000	1000	0	0.0	1000	1000
399-1-1	20AUG85	4	1000	4	.	1000	1000	0	0.0	1000	1000
399-1-2	20JUN85	4	1000	4	.	1000	1000	0	0.0	1000	1000
399-1-2	29JUL85	4	1000	4	.	1000	1000	0	0.0	1000	1000
399-1-2	21AUG85	4	1000	4	.	1000	1000	0	0.0	1000	1000
399-1-5	31JUL85	3	1000	3	.	1000	1000	0	0.0	1000	1000
399-1-5	21AUG85	3	1000	3	.	1000	1000	0	0.0	1000	1000
399-3-10	01JUL85	4	1000	4	.	1000	1000	0	0.0	1000	1000
399-3-10	30JUL85	4	1000	4	.	1000	1000	0	0.0	1000	1000
399-3-10	22AUG85	4	1000	4	.	1000	1000	0	0.0	1000	1000
399-4-7	01JUL85	4	1000	4	.	1000	1000	0	0.0	1000	1000
399-4-7	30JUL85	4	1000	4	.	1000	1000	0	0.0	1000	1000
399-4-7	22AUG85	4	1000	4	.	1000	1000	0	0.0	1000	1000

Constituent List=WAC 173-303-9905 Constituent Code, Name, Units=A04 ZINC PPB

WELLNAME	COLLDATE	SAMPLES	DETLIMIT	BELOWDL	MAXLIMIT	MEAN	MEDIAN	STDDEV	COEFFVAR	MINIMUM	MAXIMUM
399-1-5	31JUL85	3	5	0	.	97.7	79	72.8	74.6	36	178
399-1-5	21AUG85	3	5	1	.	17.3	16	13.1	75.3	5	31

Constituent List=WAC 173-303-9905 Constituent Code, Name, Units=A05 CALCIUM PPB

WELLNAME	COLLDATE	SAMPLES	DETLIMIT	BELOWDL	MAXLIMIT	MEAN	MEDIAN	STDDEV	COEFFVAR	MINIMUM	MAXIMUM
399-1-5	31JUL85	3	50	0	.	18900	19100	917	4.8	17900	19700
399-1-5	21AUG85	3	50	0	.	30300	30000	1520	5.0	28900	31900

Constituent List=WAC 173-303-9905 Constituent Code, Name, Units=A23 THALIUM PPB

WELLNAME	COLLDATE	SAMPLES	DETLIMIT	BELOWDL	MAXLIMIT	MEAN	MEDIAN	STDDEV	COEFFVAR	MINIMUM	MAXIMUM
399-1-5	31JUL85	3	10	3	.	10	10	0	0.0	10	10
399-1-5	21AUG85	3	10	3	.	10	10	0	0.0	10	10

TABLE Q.2 Summarized by Constituent-Well-Collection Date
Replicate Data Only

------------Constituent List=WAC 173-303-9905 Constituent Code, Name, Units=B40 BIS2EPH PPB------------

WELLNAME	COLLDATE	SAMPLES	DETLIMIT	BELOWDL	MAXLIMIT	MEAN	MEDIAN	STDDEV	COEFFVAR	MINIMUM	MAXIMUM
399-1-5	31JUL85	3	10	3	.	10	10	0	0.0	10	10
399-1-5	21AUG85	3	10	3	.	10	10	0	0.0	10	10
399-3-10	22AUG85	2	10	0	.	34	34	22.6	66.6	18	50

------------Constituent List=WAC 173-303-9905 Constituent Code, Name, Units=I99 UNKNOWN PPB------------

WELLNAME	COLLDATE	SAMPLES	DETLIMIT	BELOWDL	MAXLIMIT	MEAN	MEDIAN	STDDEV	COEFFVAR	MINIMUM	MAXIMUM
399-1-5	31JUL85	3	0	0	.	12	11	2.65	22.0	10	15

RCRA Compliance Ground-Water Monitoring Data
300 Area Process Trenches, June 1985 thru May 1986

TABLE G.3 Raw Data

Constituent List = Contamination Indicators   Constituent = 191   CONDUCT UMHO

Well	Date	Rep	Lab	Concentration
399-1-1	25JUN85			205
	24JUL85			197
	20AUG85			230
	27SEP85			228
	01NOV85			181
	10DEC85			M
	13JAN86			210
	14FEB86			202
	19MAR86			166
	23APR86			213
	23MAY86			188
399-1-2	20JUN85			234
	29JUL85			220
	21AUG85			241
	27SEP85			204
	24OCT85			214
	06DEC85			M
	14JAN86			254
	13FEB86			252
	19MAR86			207
	23APR86			238
	27MAY86			212
399-1-3	02JUL85			234
	02AUG85			232
	23AUG85			210
	26SEP85			230
	24OCT85			254
	26NOV85			246
	14JAN86			335
	18FEB86			368
	17MAR86			266
	21APR86			277
	20MAY86			252
399-1-4	18JUN85			177
	22JUL85			152
	23JUL85			152
	19AUG85			M
	24SEP85			194
	30OCT85			175
	11DEC85			M
	15JAN86			214
	12FEB86			217
	17MAR86			157
	23APR86			202
	23MAY86			168
399-1-5	20JUN85			209
	31JUL85			172
	21AUG85			322
	27SEP85			229
	29OCT85			208
	11DEC85			325
	15JAN86			238
	12FEB86			315
	17MAR86			182
399-1-5	22APR86			198
	23MAY86			168
399-1-6	18JUN85			169
	22JUL85			177
	19AUG85			M
	24SEP85			167
	23OCT85			191
	04DEC85			191
	15JAN86			211
	12FEB86			213
	14MAR86			145
	21APR86			163
	23MAY86			169
399-1-7	02AUG85			233
	23AUG85			202
	26SEP85			232
	25OCT85			280
	10DEC85			M
	14JAN86			345
	14FEB86			358
	18MAR86			376
	21APR86			276
	20MAY86			265
399-1-8	29OCT85			309
	10DEC85			M
	14JAN86			342
	18FEB86			338
	18MAR86			295
	21APR86			282
	20MAY86			307
399-2-1	17JUN85			254
	23JUL85			210
	20AUG85			258
	23SEP85			217
	30OCT85			231
	06DEC85			202
	20JAN86			300
	21FEB86			339
	18MAR86			289
	20MAR86			234
	22APR86			251
	27MAY86			244
399-3-10	01JUL85			251
	30JUL85			241
	22AUG85			270
	30SEP85			268
	23OCT85			265
	21NOV85			247
	16JAN86			298
	19FEB86			288
	14MAR86			213
	17APR86			257
	22MAY86			281
399-3-7	26JUN85			347
	24JUL85			335
	20AUG85			M
	25SEP85			269
	28OCT85			336
	25NOV85			303
	17JAN86			258
	19FEB86			318
	14MAR86			236
	17APR86			280
	19MAY86			316
399-4-1	02JUL85			326
	23JUL85			322
	23AUG85			325
	24SEP85			330
	28OCT85			307
	06DEC85			275
	17JAN86			280
	18FEB86			348
	13MAR86			279
	18APR86			260
	22MAY86			326
399-4-7	01JUL85			331
	30JUL85			330
	22AUG85			393
	25SEP85			378
	25OCT85			324
	21NOV85			271
	16JAN86			336
	20FEB86			284
	13MAR86			238
	18APR86			286
	22MAY86			340
399-8-2	18JUN85			324
	22JUL85			336
	19AUG85			M
	25SEP85			353
	23OCT85			337
	05DEC85			326
	20JAN86			402
	20FEB86			M
	20MAR86			304
	18APR86			316
	20MAY86			343
699-S19-E13	25JUN85			414
	22JUL85			368
	19AUG85			M
	24SEP85			378
	30OCT85			378
	11DEC85			M
	15JAN86			420
	21FEB86			441
	20MAR86			348
	22APR86			418
699-S19-E13	27MAY86			385
699-S30E16A	02JUL85			548
	29JUL85			482
	27AUG85			566
	26SEP85			466
	24OCT85			483
	11DEC85			M
	20JAN86			559
	20FEB86			421
	19MAR86			420
	22APR86			601
	22MAY86			637

RCRA Compliance Ground-Water Monitoring Data
300 Area Process Trenches, June 1985 thru May 1986

TABLE G.3 Raw Data

Constituent List = Contamination Indicators Constituent = 199 PH

Well	Date	Rep	Lab	Concentration
399-1-1	25JUN85			7.00
	24JUL85			7.20
	20AUG85			7.40
	27SEP85			7.40
	01NOV85			6.60
	10DEC85			M
	13JAN86			5.80
	14FEB86			7.20
	19MAR86			6.50
	23APR86			6.90
	23MAY86			7.20
399-1-2	20JUN85			6.50
	29JUL85			7.30
	21AUG85			7.10
	27SEP85			7.10
	24OCT85			6.20
	06DEC85			M
	14JAN86			7.60
	13FEB86			7.40
	19MAR86			6.30
	23APR86			7.30
	27MAY86			7.50
399-1-3	02JUL85			7.30
	02AUG85			7.20
	23AUG85			6.60
	26SEP85			6.60
	24OCT85			6.00
	25NOV85			5.30
	14JAN86			7.50
	18FEB86			7.20
	17MAR86			6.20
	21APR86			6.80
	20MAY86			7.70
399-1-4	18JUN85			6.73
	23JUL85			6.10
	19AUG85			M
	24SEP85			5.90
	30OCT85			7.10
	11DEC85			M
	15JAN86			6.40
	12FEB86			7.40
	17MAR86			6.70
	23APR86			6.80
	23MAY86			7.30
399-1-5	20JUN85			6.60
	31JUL85			7.00
	21AUG85			6.30
	27SEP85			7.00
	29OCT85			6.60
	11DEC85			7.10
	15JAN86			6.70
	12FEB86			6.10
	17MAR86			6.80
	22APR86			7.60
399-1-5	23MAY86			7.50
399-1-6	18JUN85			6.59
	22JUL85			6.40
	19AUG85			M
	24SEP85			5.40
	23OCT85			6.90
	04DEC85			7.20
	15JAN86			6.50
	12FEB86			6.60
	14MAR86			6.50
	21APR86			6.10
	23MAY86			7.00
399-1-7	02AUG85			M
	23AUG85			6.60
	26SEP85			6.70
	25OCT85			7.10
	10DEC85			M
	14JAN86			7.60
	14FEB86			7.60
	18MAR86			7.20
	21APR86			7.10
	20MAY86			7.70
399-1-8	29OCT85			7.60
	10DEC85			M
	14JAN86			8.10
	18FEB86			7.20
	18MAR86			7.20
	21APR86			7.30
	20MAY86			8.20
399-2-1	17JUN85			6.30
	23JUL85			6.10
	20AUG85			6.70
	23SEP85			5.40
	30OCT85			7.00
	05DEC85			6.40
	20JAN86			6.30
	21FEB86			7.00
	18MAR86			5.90
	20MAR86			6.30
	22APR86			7.00
	27MAY86			6.80
399-3-10	01JUL85			6.70
	30JUL85			6.90
	22AUG85			6.10
	30SEP85			7.10
	23OCT85			7.00
	21NOV85			3.90
	16JAN86			6.50
	19FEB86			7.10
	14MAR86			7.00
	17APR86			7.30
	22MAY86			7.80
399-3-7	25JUN85			7.20
399-3-7	24JUL85			7.10
	20AUG85			7.50
	25SEP85			7.10
	28OCT85			7.60
	25NOV85			6.20
	17JAN86			6.00
	19FEB86			7.70
	14MAR86			7.40
	17APR86			7.80
	19MAY86			7.60
399-4-1	02JUL85			7.30
	23JUL85			7.40
	23AUG85			7.00
	24SEP85			7.20
	28OCT85			7.50
	06DEC85			7.50
	17JAN86			6.30
	18FEB86			7.30
	13MAR86			7.90
	18APR86			7.10
	22MAY86			8.10
399-4-7	01JUL85			7.30
	30JUL85			7.50
	22AUG85			7.20
	25SEP85			7.90
	25OCT85			6.60
	21NOV85			7.70
	16JAN86			6.40
	20FEB86			7.20
	13MAR86			6.90
	18APR86			7.50
	22MAY86			8.30
399-6-2	18JUN85			7.40
	22JUL85			7.40
	19AUG85			M
	25SEP85			7.60
	23OCT85			7.20
	05DEC85			7.50
	20JAN86			6.90
	20FEB86			7.70
	20MAR86			7.30
	18APR86			7.10
	20MAY86			7.90
699-S19-E13	25JUN85			7.90
	22JUL85			7.30
	19AUG85			M
	24SEP85			6.70
	30OCT85			7.90
	11DEC85			M
	15JAN86			7.20
	21FEB86			8.30
	20MAR86			7.50
	22APR86			8.20
	27MAY86			7.90
699-S30E15A	02JUL85			7.50
	29JUL85			7.00
	27AUG85			7.40
	26SEP85			6.10
	24OCT85			6.50
	11DEC85			M
	20JAN86			7.10
	20FEB86			7.10
	19MAR86			7.20
	22APR86			7.70
	22MAY86			7.90

RCRA Compliance Ground-Water Monitoring Data
300 Area Process Trenches, June 1985 thru May 1986

TABLE G.3 Raw Data

Constituent List = Contamination Indicators   Constituent = C68 TOX   PPB

Well	Date	Rep	Lab	Concentration
399-1-1	24JUL85		<	45.3
	24JUL85	1	<	40.0
	24JUL85	2	<	38.8
	24JUL85	3	<	48.8
	20AUG85		<	38.8
	20AUG85	1	<	37.3
	20AUG85	2	<	38.0
	20AUG85	3	<	38.8
	27SEP85		<	37.0
	01NOV85			421
	10DEC85			269
	13JAN86		<	20.8
	14FEB86		<	20.0
	19MAR86		<	17.0
	23APR86			385
	23MAY86		<	23.5
399-1-2	29JUL85		<	46.2
	29JUL85	1	<	42.9
	29JUL85	2	<	40.9
	29JUL85	3	<	35.9
	21AUG85		<	37.0
	21AUG85	1	<	38.2
	21AUG85	2	<	35.8
	21AUG85	3	<	34.4
	27SEP85		<	57.3
	24OCT85		<	27.9
	06DEC85			332
	14JAN86		<	19.1
	13FEB86		<	19.8
	19MAR86		<	23.4
	23APR86			948
	27MAY86		<	28.7
399-1-3	02AUG85		<	49.4
	23AUG85		<	48.8
	26SEP85		<	47.5
	24OCT85		<	42.4
	26NOV85			119
	14JAN86		<	28.9
	18FEB86		<	25.2
	17MAR86		<	27.7
	21APR86		<	27.9
	20MAY86		<	28.3
399-1-4	23JUL85		<	67.9
	19AUG85		<	51.2
	24SEP85		<	47.1
	30OCT85		<	37.4
	11DEC85			428
	15JAN86		<	28.4
	12FEB86		<	29.2
	17MAR86		<	33.7
	23APR86			1,550
	23MAY86		<	37.8
399-1-5	20JUN85		<	71.9
	31JUL85		<	98.4
399-1-5	31JUL85	1		M
	31JUL85	2	<	71.5
	21AUG85		<	59.8
	21AUG85	1	<	60.2
	21AUG85	2	<	67.8
	27SEP85			2,310
	29OCT85		<	38.4
	11DEC85			1,730
	15JAN86		<	48.9
	12FEB86		<	28.0
	17MAR86		<	37.4
	22APR86		<	39.4
	23MAY86		<	68.8
399-1-6	22JUL85		<	49.9
	19AUG85		<	43.7
	24SEP85		<	40.4
	23OCT85		<	28.7
	04DEC85			1,620
	15JAN86		<	25.2
	12FEB86		<	22.4
	14MAR86			489
	21APR86			1,260
	23MAY86		<	35.5
399-1-7	02AUG85		<	70.4
	23AUG85		<	78.6
	26SEP85		<	59.0
	25OCT85		<	62.0
	10DEC85		<	33.5
	14JAN86		<	27.1
	14FEB86		<	28.5
	18MAR86			335
	21APR86			2,210
	20MAY86		<	68.8
399-1-8	29OCT85		<	10.1
	10DEC85			2,940
	14JAN86		<	12.8
	18FEB86		<	12.2
	18MAR86		<	45.8
	21APR86		<	18.1
	20MAY86		<	7.06
399-2-1	23JUL85		<	32.1
	20AUG85		<	32.8
	23SEP85		<	30.3
	30OCT85		<	29.1
	05DEC85			1,030
	20JAN86		<	25.8
	21FEB86		<	18.8
	21MAR86		<	98.9
	22APR86			607
	27MAY86		<	30.4
399-3-10	30JUL85		<	23.4
	30JUL85	1	<	20.5
	30JUL85	2	<	30.2
399-3-10	30JUL85	3	<	22.8
	22AUG85		<	16.1
	22AUG85	1	<	18.8
	22AUG85	2	<	16.6
	22AUG85	3	<	15.8
	30SEP85		<	17.5
	23OCT85		<	15.8
	21NOV85			392
	16JAN86		<	14.8
	19FEB86		<	10.9
	14MAR86		<	68.7
	17APR86			164
	22MAY86		<	17.5
399-3-7	24JUL85		<	12.3
	20AUG85		<	54.4
	25SEP85		<	22.4
	28OCT85		<	27.8
	25NOV85		<	32.9
	17JAN86		<	24.8
	19FEB86		<	14.8
	14MAR86		<	61.2
	17APR86		<	28.3
	19MAY86		<	13.2
399-4-1	23JUL85		<	30.6
	23AUG85		<	23.7
	24SEP85		<	24.2
	28OCT85		<	23.3
	06DEC85			290
	17JAN86		<	21.4
	18FEB86		<	21.2
	13MAR86			147
	18APR86		<	70.2
	22MAY86		<	19.6
399-4-7	30JUL85		<	24.9
	30JUL85	1	<	21.9
	30JUL85	2	<	18.5
	30JUL85	3	<	23.0
	22AUG85		<	28.0
	22AUG85	1	<	19.2
	22AUG85	2	<	22.8
	22AUG85	3	<	22.8
	25SEP85		<	12.1
	25OCT85		<	18.8
	21NOV85			272
	16JAN86		<	13.8
	20FEB86		<	9.60
	13MAR86		<	30.5
	18APR86		<	49.8
	22MAY86		<	14.0
399-8-2	22JUL85		<	10.4
	19AUG85		<	9.00
	25SEP85		<	19.7
	23OCT85		<	11.9
	05DEC85			100
399-8-2	20JAN86		<	8.50
	20FEB86		<	8.20
	20MAR86			580
	18APR86			425
	20MAY86		<	8.95
699-S19-E13	25JUN85		<	3.80
	22JUL85		<	9.15
	19AUG85		<	10.9
	24SEP85		<	18.0
	30OCT85		<	2.85
	11DEC85		<	20.0
	15JAN86		<	7.40
	21FEB86		<	2.95
	20MAR86			9,160
	22APR86		<	2.30
	27MAY86		<	7.50
699-S30E15A	29JUL85		<	61.5
	27AUG85		<	10.5
	26SEP85		<	5.85
	24OCT85		<	7.95
	11DEC85			8,970
	20JAN86		<	6.80
	20FEB86		<	5.20
	19MAR86		<	34.2
	22APR86			1,530
	22MAY86		<	3.80

RCRA Compliance Ground-Water Monitoring Data
300 Area Process Trenches, June 1985 thru May 1986

TABLE G.3 Raw Data

Constituent List = Contamination Indicators   Constituent = C69 TOC   PPB

Well	Date	Rep	Lab	Concentration
399-1-1	24JUL85			1,230
	24JUL85	1	<	880
	24JUL85	2		1,230
	24JUL85	3		1,090
	20AUG85		<	260
	20AUG85	1	<	280
	20AUG85	2	<	350
	20AUG85	3	<	110
	27SEP85		<	660
	01NOV85			1,890
	10DEC85			1,520
	13JAN86		<	254
	14FEB86		<	862
	19MAR86		<	889
	23APR86			3,140
	23MAY86		<	486
399-1-2	29JUL85		<	890
	29JUL85	1	<	900
	29JUL85	2	<	980
	29JUL85	3	<	870
	21AUG85		<	580
	21AUG85	1	<	430
	21AUG85	2	<	890
	21AUG85	3	<	830
	27SEP85		<	978
	24OCT85			1,470
	06DEC85			1,310
	14JAN86		<	604
	13FEB86			1,100
	19MAR86			1,660
	23APR86			3,340
	27MAY86		<	579
399-1-3	02AUG85			1,010
	23AUG85			1,330
	26SEP85		<	994
	24OCT85		<	826
	26NOV85			1,570
	14JAN86		<	547
	18FEB86		<	989
	17MAR86			1,200
	21APR86			4,320
	20MAY86		<	877
399-1-4	23JUL85			1,400
	19AUG85		<	680
	24SEP85			1,310
	30OCT85			2,150
	11DEC85			1,840
	15JAN86			1,270
	12FEB86			1,170
	17MAR86			2,190
	23APR86			1,070
	23MAY86		<	746
399-1-5	20JUN85			1,250
	31JUL85			4,510
399-1-5	31JUL85	1		1,070
	31JUL85	2		1,650
	21AUG85		<	960
	21AUG85	1	<	550
	21AUG85	2	<	830
	27SEP85		<	816
	29OCT85		<	933
	11DEC85			1,830
	15JAN86			1,410
	12FEB86			1,270
	17MAR86			1,830
	22APR86			8,030
	23MAY86		<	811
399-1-6	22JUL85			1,280
	19AUG85		<	380
	24SEP85			1,340
	23OCT85		<	958
	04DEC85		<	886
	15JAN86			1,260
	12FEB86			1,020
	14MAR86			1,200
	21APR86		<	695
	23MAY86		<	802
399-1-7	02AUG85		<	330
	23AUG85		<	950
	26SEP85			1,230
	25OCT85		<	818
	10DEC85			2,800
	14JAN86		<	539
	14FEB86			1,940
	18MAR86			1,260
	21APR86			4,870
	20MAY86			1,420
399-1-8	29OCT85			3,650
	10DEC85			1,050
	14JAN86		<	302
	18FEB86			1,270
	18MAR86		<	930
	21APR86		<	687
	20MAY86		<	309
399-2-1	23JUL85			1,280
	20AUG85		<	460
	23SEP85		<	582
	30OCT85			1,140
	05DEC85		<	803
	20JAN86		<	872
	21FEB86			1,220
	21MAR86			1,340
	22APR86			5,460
	27MAY86		<	467
399-3-10	30JUL85		<	990
	30JUL85	1	<	860
	30JUL85	2	<	510
399-3-10	30JUL85	3	<	580
	22AUG85		<	610
	22AUG85	1	<	380
	22AUG85	2	<	420
	22AUG85	3	<	480
	30SEP85			1,100
	23OCT85		<	719
	21NOV85		<	803
	16JAN86			1,000
	19FEB86		<	667
	14MAR86		<	807
	17APR86			1,370
	22MAY86		<	309
399-3-7	24JUL85		<	770
	20AUG85		<	610
	25SEP85		<	498
	28OCT85			1,180
	25NOV85			1,280
	17JAN86		<	899
	19FEB86		<	804
	14MAR86		<	807
	17APR86			1,190
	19MAY86		<	439
399-4-1	23JUL85		<	600
	23AUG85		<	770
	24SEP85		<	350
	28OCT85		<	473
	06DEC85		<	877
	17JAN86		<	621
	18FEB86			1,180
	13MAR86		<	655
	18APR86			2,690
	22MAY86		<	456
399-4-7	30JUL85		<	410
	30JUL85	1		1,070
	30JUL85	2	<	860
	30JUL85	3	<	570
	22AUG85		<	190
	22AUG85	1	<	300
	22AUG85	2	<	660
	22AUG85	3	<	440
	25SEP85		<	1.00
	25OCT85			1,070
	21NOV85		<	902
	16JAN86		<	687
	20FEB86		<	745
	13MAR86		<	665
	18APR86		<	955
	22MAY86		<	291
399-8-2	22JUL85		<	980
	19AUG85		<	450
	25SEP85		<	304
	23OCT85			1,300
	05DEC85		<	125
399-8-2	20JAN86		<	980
	20FEB86			1,270
	20MAR86		<	909
	18APR86			1,230
	20MAY86		<	458
699-S19-E13	25JUN85		<	430
	22JUL85		<	940
	19AUG85		<	160
	24SEP85			1,160
	30OCT85			1,460
	11DEC85		<	814
	15JAN86			1,070
	21FEB86			1,110
	20MAR86			1,100
	22APR86			2,790
	27MAY86		<	272
699-S30E15A	29JUL85			1,760
	27AUG85			1,650
	26SEP85			1,370
	24OCT85			1,610
	11DEC85			1,180
	20JAN86			1,190
	20FEB86			1,180
	19MAR86			1,170
	22APR86			1,000
	22MAY86			1,080

RCRA Compliance Ground-Water Monitoring Data
300 Area Process Trenches, June 1985 thru May 1986

TABLE G.3 Raw Data

Constituent List = Drinking Water Standards   Constituent = 109 COLIFRM MPN

Well	Date	Rep	Lab	Concentration
399-1-1	25JUN85		<	3.00
	25JUN85	1	<	3.00
	25JUN85	2	<	3.00
	25JUN85	3	<	3.00
	24JUL85		<	3.00
	24JUL85	1	<	3.00
	24JUL85	2	<	3.00
	24JUL85	3	<	3.00
	20AUG85		<	3.00
	20AUG85	1	<	3.00
	20AUG85	2	<	3.00
	20AUG85	3	<	3.00
	27SEP85		<	3.00
	01NOV85		<	3.00
	10DEC85		<	3.00
	13JAN86		<	3.00
	14FEB86		<	3.00
	19MAR86		<	3.00
	23APR86			23.0
	23MAY86		<	3.00
399-1-2	20JUN85		<	3.00
	20JUN85	1	<	3.00
	20JUN85	2	<	3.00
	20JUN85	3	<	3.00
	29JUL85		<	3.00
	29JUL85	1	<	3.00
	29JUL85	2	<	3.00
	29JUL85	3	<	3.00
	21AUG85		<	3.00
	21AUG85	1	<	3.00
	21AUG85	2	<	3.00
	21AUG85	3	<	3.00
	27SEP85		<	3.00
	24OCT85		<	3.00
	06DEC85		<	3.00
	14JAN86		<	3.00
	13FEB86		<	3.00
	19MAR86		<	3.00
	23APR86		<	3.00
	27MAY86		<	3.00
399-1-3	02JUL85		<	3.00
	02AUG85		<	3.00
	23AUG85		<	3.00
	26SEP85		<	3.00
	24OCT85		<	3.00
	25NOV85		<	3.00
	14JAN86		<	3.00
	18FEB86		<	3.00
	17MAR86		<	3.00
	21APR86		<	3.00
	20MAY86		<	3.00
399-1-4	18JUN85		<	3.00
	23JUL85			1,100
	19AUG85		<	3.00
	24SEP85		<	3.00
	30OCT85		<	3.00
	11DEC85		<	3.00
	15JAN86		<	3.00
	12FEB86		<	3.00
	17MAR86		<	3.00
	23APR86		<	3.00
	23MAY86		<	3.00
399-1-5	20JUN85		<	3.00
	31JUL85		<	3.00
	31JUL85	1	<	3.00
	31JUL85	2	<	3.00
	21AUG85		<	3.00
	21AUG85	1	<	0.000
	21AUG85	2	<	3.00
	27SEP85		<	3.00
	29OCT85			4.00
	11DEC85		<	3.00
	15JAN86		<	3.00
	12FEB86		<	3.00
	17MAR86		<	3.00
	22APR86		<	3.00
	23MAY86		<	3.00
399-1-6	18JUN85		<	3.00
	22JUL85		<	3.00
	19AUG85		<	3.00
	24SEP85		<	3.00
	23OCT85		<	3.00
	04DEC85		<	3.00
	15JAN86		<	3.00
	12FEB86		<	3.00
	14MAR86		<	3.00
	21APR86		<	3.00
	23MAY86		<	3.00
399-1-7	02AUG85		<	3.00
	23AUG85		<	3.00
	26SEP85		<	3.00
	25OCT85		<	3.00
	10DEC85		<	3.00
	14JAN86		<	3.00
	14FEB86		<	3.00
	18MAR86		<	3.00
	21APR86		<	3.00
	20MAY86		<	3.00
399-1-8	29OCT85		<	3.00
	10DEC85		<	3.00
	14JAN86		<	3.00
	18FEB86		<	3.00
	18MAR86		<	3.00
	21APR86		<	3.00
	20MAY86		<	3.00
399-2-1	17JUN85		<	3.00
	23JUL85			23.0
	20AUG85			4.00
	23SEP85			4.00
	30OCT85			4.00
	05DEC85		<	3.00
	20JAN86		<	3.00
	21FEB86			9.00
	18MAR86		<	3.00
	22APR86			23.0
	27MAY86			43.0
399-3-10	01JUL85		<	3.00
	01JUL85	1	<	3.00
	01JUL85	2	<	3.00
	01JUL85	3	<	3.00
	30JUL85		<	3.00
	30JUL85	1	<	3.00
	30JUL85	2	<	3.00
	30JUL85	3	<	3.00
	22AUG85		<	3.00
	22AUG85	1	<	3.00
	22AUG85	2	<	3.00
	22AUG85	3	<	3.00
	30SEP85		<	3.00
	23OCT85		<	3.00
	21NOV85		<	3.00
	16JAN86		<	3.00
	19FEB86		<	3.00
	14MAR86		<	3.00
	17APR86			4.00
	22MAY86		<	3.00
399-3-7	25JUN85		<	3.00
	24JUL85		<	3.00
	20AUG85		<	3.00
	25SEP85		<	3.00
	28OCT85		<	3.00
	25NOV85		<	3.00
	17JAN86		<	3.00
	19FEB86		<	3.00
	14MAR86		<	3.00
	17APR86		<	3.00
	19MAY86		<	3.00
399-4-1	02JUL85		<	3.00
	23JUL85			23.0
	23AUG85		<	3.00
	24SEP85		<	3.00
	28OCT85		<	3.00
	06DEC85		<	3.00
	17JAN86		<	3.00
	18FEB86		<	3.00
	13MAR86		<	3.00
	18APR86			15.0
	22MAY86		<	3.00
399-4-7	01JUL85		<	3.00
	01JUL85	1	<	3.00
	01JUL85	2	<	3.00
	01JUL85	3	<	3.00
	30JUL85		<	3.00
	30JUL85	1	<	3.00
	30JUL85	2	<	3.00
	30JUL85	3	<	3.00
	22AUG85			M
	22AUG85	1	<	3.00
	22AUG85	2	<	3.00
	22AUG85	3	<	3.00
	25SEP85		<	3.00
	25OCT85		<	3.00
	21NOV85		<	3.00
	16JAN86		<	3.00
	20FEB86		<	3.00
	13MAR86		<	3.00
	18APR86		<	3.00
	22MAY86		<	3.00
399-8-2	18JUN85		<	3.00
	22JUL85			160
	19AUG85		<	3.00
	25SEP85		<	3.00
	23OCT85		<	3.00
	05DEC85		<	3.00
	20JAN86		<	3.00
	20FEB86		<	3.00
	20MAR86		<	3.00
	18APR86		<	3.00
	20MAY86		<	3.00
699-S19-E13	25JUN85		<	3.00
	22JUL85		<	3.00
	19AUG85		<	3.00
	24SEP85		<	3.00
	30OCT85		<	3.00
	11DEC85		<	3.00
	15JAN86		<	3.00
	21FEB86			4.00
	20MAR86		<	3.00
	22APR86		<	3.00
	27MAY86		<	3.00
699-S30E16A	02JUL85		<	3.00
	29JUL85		<	3.00
	27AUG85		<	3.00
	26SEP85		<	3.00
	24OCT85		<	3.00
	11DEC85		<	3.00
	20JAN86			9.00
	20FEB86		<	3.00
	19MAR86		<	3.00
	22APR86		<	3.00
	22MAY86		<	3.00

RCRA Compliance Ground-Water Monitoring Data
300 Area Process Trenches, June 1985 thru May 1986

TABLE G.3 Raw Data

Constituent List = Drinking Water Standards Constituent = 111 BETA PCI/L

Well	Date	Rep	Lab	Concentration
399-1-1	25JUN85			9.68
	25JUN85	1		9.31
	25JUN85	2		8.56
	25JUN85	3		10.7
	24JUL85			9.24
	24JUL85	1		16.0
	24JUL85	2		8.35
	24JUL85	3		8.89
	20AUG85			8.90
	20AUG85	1		12.2
	20AUG85	2		5.62
	20AUG85	3		10.1
	27SEP85			14.3
	01NOV85			11.7
	10DEC85			14.4
	13JAN86		<	3.90
	14FEB86			11.0
	19MAR86			7.14
	23APR86			11.2
	23MAY86			9.64
399-1-2	20JUN85			7.78
	20JUN85	1		9.47
	20JUN85	2		11.7
	20JUN85	3		11.2
	29JUL85			17.5
	29JUL85	1		14.5
	29JUL85	2		15.2
	29JUL85	3		18.5
	21AUG85			11.4
	21AUG85	1		8.60
	21AUG85	2		9.23
	21AUG85	3		8.47
	27SEP85			10.9
	24OCT85			11.7
	06DEC85			12.5
	14JAN86		<	3.37
	13FEB86			12.8
	19MAR86			16.3
	23APR86			8.84
	27MAY86			9.78
399-1-3	02JUL85			28.9
	02AUG85			63.4
	23AUG85			47.7
	26SEP85			39.9
	24OCT85			25.1
	26NOV85			21.2
	14JAN86			18.8
	18FEB86			23.1
	17MAR86			22.3
	21APR86			17.8
	20MAY86			25.8
399-1-4	18JUN85			8.76
	23JUL85			10.2
	19AUG85			10.4
	24SEP85			12.0
399-1-4	30OCT85			10.3
	11DEC85			8.43
	15JAN86			5.95
	12FEB86			10.3
	17MAR86			7.89
	23APR86			9.64
	23MAY86			10.5
399-1-5	20JUN85			11.7
	31JUL85			14.0
	31JUL85	1		15.8
	31JUL85	2		15.9
	21AUG85			17.2
	21AUG85	1		15.7
	21AUG85	2		16.6
	27SEP85			17.0
	29OCT85			10.1
	11DEC85			16.2
	15JAN86			22.8
	12FEB86			16.7
	17MAR86			13.6
	22APR86			14.3
	23MAY86			12.0
399-1-6	18JUN85			7.26
	22JUL85			19.9
	19AUG85			6.17
	24SEP85			9.08
	23OCT85			2.50
	04DEC85			9.60
	12FEB86			9.82
	14MAR86			9.59
	21APR86			7.00
	23MAY86			7.92
399-1-7	02AUG85			47.3
	23AUG85			31.7
	26SEP85			34.5
	26OCT85			38.4
	10DEC85			21.8
	14JAN86			28.4
	14FEB86			23.7
	18MAR86			24.9
	21APR86			19.9
	20MAY86			15.0
399-1-8	29OCT85			16.9
	10DEC85			12.9
	14JAN86			13.0
	18FEB86			16.2
	18MAR86			16.4
	21APR86			11.2
	20MAY86			10.7
399-2-1	17JUN85			15.2
	23JUL85			18.8
	20AUG85			13.9
	23SEP85			16.2
399-2-1	30OCT85			14.8
	05DEC85			11.1
	20JAN86			13.8
	21FEB86			11.4
	18MAR86			18.1
	22APR86			9.62
	27MAY86			13.7
399-3-10	01JUL85			18.4
	01JUL85	1		16.5
	01JUL85	2		20.5
	01JUL85	3		19.7
	30JUL85			13.5
	30JUL85	1		14.2
	30JUL85	2		19.5
	30JUL85	3		17.2
	22AUG85			10.4
	22AUG85	1		13.3
	22AUG85	2		10.9
	22AUG85	3		11.2
	30SEP85			15.5
	23OCT85			8.80
	21NOV85			19.9
	16JAN86			4.11
	19FEB86			14.2
	14MAR86			21.6
	17APR86			10.3
	22MAY86			10.7
399-3-7	25JUN85			10.8
	24JUL85			8.66
	20AUG85			7.49
	26SEP85			15.7
	28OCT85			9.31
	25NOV85			14.4
	17JAN86			26.3
	19FEB86			10.1
	14MAR86			6.90
	17APR86			9.67
	19MAY86			11.4
399-4-1	02JUL85			13.1
	23JUL85			15.9
	23AUG85			18.2
	24SEP85			12.4
	28OCT85			10.8
	06DEC85			7.24
	17JAN86			13.9
	18FEB86			10.9
	13MAR86			9.73
	18APR86			10.6
	22MAY86			12.0
399-4-7	01JUL85			30.2
	01JUL85	1		25.6
	01JUL85	2		28.4
	01JUL85	3		26.2
	30JUL85			20.7
399-4-7	30JUL85	1		26.6
	30JUL85	2		25.8
	30JUL85	3		20.0
	22AUG85			16.2
	22AUG85	1		60.6
	22AUG85	2		30.1
	22AUG85	3		12.1
	25SEP85			25.0
	25OCT85			18.9
	21NOV85			26.2
	16JAN86			15.5
	20FEB86			10.4
	13MAR86			7.50
	18APR86			10.8
	22MAY86			11.0
399-8-2	18JUN85			8.27
	22JUL85			12.3
	19AUG85			8.71
	25SEP85			8.31
	23OCT85		<	0.719
	05DEC85			6.15
	20JAN86		<	4.39
	20FEB86			10.2
	20MAR86			8.23
	18APR86			7.96
	20MAY86			12.1
699-S19-E13	25JUN85			8.01
	22JUL85			3.32
	19AUG85			10.8
	24SEP85			12.1
	30OCT85			11.9
	11DEC85			8.98
	15JAN86			8.59
	21FEB86			11.6
	20MAR86			12.9
	22APR86			12.1
	27MAY86			10.3
699-S30E15A	02JUL85			68.0
	29JUL85			13.7
	27AUG85			6.84
	25SEP85			13.5
	24OCT85			8.22
	11DEC85			9.83
	20JAN86			9.24
	20FEB86			11.7
	19MAR86			9.91
	22APR86			8.25
	22MAY86			11.2

RCRA Compliance Ground-Water Monitoring Data
300 Area Process Trenches, June 1985 thru May 1986

TABLE G.3 Raw Data

Constituent List = Drinking Water Standards   Constituent = 181 RADIUM PCI/L

Well	Date	Rep	Lab	Concentration
399-1-1	25JUN85		<	0.093
	25JUN85	1	<	0.275
	25JUN85	2	<	0.240
	25JUN85	3		0.464
	24JUL85		<	0.161
	24JUL85	1	<	0.058
	24JUL85	2	<	0.000
	24JUL85	3	<	0.056
	20AUG85		<	0.000
	20AUG85	1	<	0.014
	20AUG85	2	<	0.088
	20AUG85	3	<	0.159
	27SEP85		<	0.130
	01NOV85		<	-0.050
	10DEC85		<	0.075
	13JAN86		<	0.193
	14FEB86		<	0.214
	19MAR86		<	0.158
	23APR86		<	0.002
	23MAY86		<	0.035
399-1-2	20JUN85			0.875
	20JUN85	1	<	-0.024
	20JUN85	2	<	-0.108
	20JUN85	3	<	0.044
	29JUL85		<	-0.060
	29JUL85	1	<	0.059
	29JUL85	2	<	0.000
	29JUL85	3	<	-0.070
	21AUG85		<	-0.036
	21AUG85	1	<	0.145
	21AUG85	2	<	0.167
	21AUG85	3	<	-0.056
	27SEP85		<	-0.055
	24OCT85		<	-0.018
	06DEC85		<	0.023
	14JAN86		<	0.067
	13FEB86		<	0.135
	19MAR86		<	0.032
	23APR86		<	0.056
	27MAY86			0.132
399-1-3	02JUL85		<	0.018
	02AUG85		<	0.015
	23AUG85		<	-0.044
	26SEP85		<	-0.059
	24OCT85		<	0.163
	25NOV85		<	-0.041
	14JAN86		<	0.105
	16FEB86		<	0.089
	17MAR86		<	-0.034
	21APR86		<	-0.041
	20MAY86		<	0.066
399-1-4	18JUN85			0.718
	23JUL85		<	0.019
	19AUG85		<	0.014
	24SEP85		<	0.044
399-1-4	30OCT85		<	0.263
	11DEC85		<	-0.109
	15JAN86		<	-0.069
	12FEB86		<	0.000
	17MAR86		<	0.046
	23APR86		<	-0.013
	23MAY86		<	0.039
399-1-5	20JUN85		<	0.151
	31JUL85		<	0.094
	31JUL85	1	<	0.033
	31JUL85	2	<	-0.016
	21AUG85		<	0.127
	21AUG85	1	<	0.018
	21AUG85	2	<	0.181
	27SEP85		<	-0.041
	29OCT85		<	0.228
	11DEC85			0.757
	15JAN86		<	0.138
	12FEB86		<	0.074
	17MAR86		<	0.062
	22APR86		<	0.081
	23MAY86		<	0.012
399-1-6	18JUN85		<	0.021
	22JUL85		<	0.019
	19AUG85		<	-0.029
	24SEP85		<	0.000
	23OCT85		<	0.086
	04DEC85		<	0.032
	12FEB86		<	0.023
	14MAR86		<	0.029
	21APR86		<	0.022
	23MAY86		<	0.005
399-1-7	02AUG85		<	-0.018
	23AUG85		<	0.045
	26SEP85		<	0.000
	26OCT85		<	0.044
	10DEC85		<	0.000
	14JAN86		<	0.059
	14FEB86		<	-0.065
	18MAR86		<	0.118
	21APR86		<	-0.005
	20MAY86		<	0.003
399-1-8	29OCT85		<	0.030
	10DEC85		<	0.009
	14JAN86		<	0.311
	16FEB86		<	-0.121
	18MAR86		<	0.113
	21APR86		<	0.051
	20MAY86		<	0.082
399-2-1	17JUN85		<	0.124
	23JUL85		<	0.035
	20AUG85		<	0.028
	23SEP85		<	-0.036
399-2-1	30OCT85		<	0.120
	05DEC85		<	0.059
	20JAN86		<	-0.018
	21FEB86		<	0.011
	18MAR86		<	0.012
	22APR86		<	0.061
	27MAY86		<	0.004
399-3-10	01JUL85		<	0.032
	01JUL85	1	<	0.022
	01JUL85	2	<	0.085
	01JUL85	3	<	0.155
	30JUL85		<	0.182
	30JUL85	1	<	0.029
	30JUL85	2	<	0.089
	30JUL85	3	<	0.060
	22AUG85		<	0.200
	22AUG85	1	<	0.109
	22AUG85	2	<	0.072
	22AUG85	3	<	-0.110
	30SEP85		<	-0.064
	23OCT85		<	0.026
	21NOV85			0.163
	16JAN86		<	0.055
	19FEB86		<	0.134
	14MAR86		<	0.053
	17APR86		<	0.000
	22MAY86		<	0.022
399-3-7	25JUN85		<	0.021
	24JUL85		<	0.081
	20AUG85		<	0.069
	25SEP85		<	0.040
	28OCT85		<	-0.053
	25NOV85		<	0.059
	17JAN86		<	0.126
	19FEB86		<	0.000
	14MAR86		<	0.096
	17APR86		<	0.079
	19MAY86		<	-0.054
399-4-1	02JUL85		<	0.138
	23JUL85		<	0.055
	23AUG85		<	-0.110
	24SEP85		<	0.055
	28OCT85		<	0.168
	06DEC85		<	-0.043
	17JAN86		<	-0.088
	18FEB86		<	0.277
	13MAR86			0.368
	18APR86		<	0.122
	22MAY86		<	-0.047
399-4-7	01JUL85		<	0.150
	01JUL85	1	<	0.042
	01JUL85	2	<	0.012
	01JUL85	3	<	0.053
	30JUL85		<	0.105
399-4-7	30JUL85	1	<	0.046
	30JUL85	2	<	0.063
	30JUL85	3	<	-0.073
	22AUG85		<	-0.018
	22AUG85	1	<	0.235
	22AUG85	2	<	0.127
	22AUG85	3	<	-0.036
	25SEP85		<	-0.023
	25OCT85		<	-0.072
	21NOV85			0.164
	16JAN86		<	0.017
	20FEB86		<	0.124
	13MAR86		<	-0.037
	18APR86		<	0.047
	22MAY86		<	0.015
399-8-2	18JUN85		<	0.059
	22JUL85			0.300
	19AUG85		<	0.069
	25SEP85		<	0.098
	23OCT85		<	0.025
	05DEC85		<	-0.011
	20JAN86			0.375
	20FEB86		<	0.110
	20MAR86		<	-0.100
	16APR86		<	0.037
	20MAY86		<	0.014
699-S19-E13	25JUN85		<	0.160
	22JUL85		<	0.065
	19AUG85		<	0.083
	24SEP85		<	0.000
	30OCT85		<	0.000
	11DEC85		<	0.076
	15JAN86		<	0.052
	21FEB86			0.294
	20MAR86		<	0.016
	22APR86		<	0.031
	27MAY86		<	0.059
699-S30E15A	02JUL85		<	-0.019
	29JUL85		<	0.078
	27AUG85		<	0.046
	25SEP85		<	0.041
	24OCT85		<	0.102
	11DEC85		<	0.046
	20JAN86			0.358
	20FEB86		<	-0.101
	19MAR86		<	0.067
	22APR86		<	-0.045
	22MAY86		<	0.048

RCRA Compliance Ground-Water Monitoring Data
300 Area Process Trenches, June 1985 thru May 1986

TABLE G.3 Raw Data

Constituent List = Drinking Water Standards   Constituent = 212 LOALPHA PCI/L

Well	Date	Rep	Lab	Concentration
399-1-1	25JUN85			22.6
	25JUN85	1		18.0
	25JUN85	2		22.2
	25JUN85	3		15.1
	24JUL85			19.1
	24JUL85	1		19.2
	24JUL85	2		15.1
	24JUL85	3		16.9
	20AUG85			12.2
	20AUG85	1		13.9
	20AUG85	2		14.3
	20AUG85	3		16.9
	27SEP85			17.2
	01NOV85			18.1
	10DEC85			26.8
	13JAN86			17.1
	14FEB86			26.6
	19MAR86			14.9
	23APR86			26.9
	23MAY86			23.6
399-1-2	20JUN85			17.1
	20JUN85	1		16.7
	20JUN85	2		13.7
	20JUN85	3		14.9
	29JUL85			9.66
	29JUL85	1		5.59
	29JUL85	2		6.27
	29JUL85	3		8.87
	21AUG85			6.17
	21AUG85	1		5.28
	21AUG85	2		4.24
	21AUG85	3		8.01
	27SEP85			9.77
	24OCT85			4.76
	06DEC85			11.5
	14JAN86			15.7
	13FEB86			8.81
	19MAR86			16.4
	23APR86			14.9
	27MAY86			12.0
399-1-3	02JUL85			34.3
	02AUG85			23.2
	23AUG85			23.7
	26SEP85			29.3
	24OCT85			19.6
	25NOV85			46.2
	14JAN86			37.8
	18FEB86			48.0
	17MAR86			43.3
	21APR86			43.9
	20MAY86			33.4
399-1-4	18JUN85			11.2
	23JUL85			4.18
	19AUG85			5.99
	24SEP85			4.48
399-1-4	30OCT85			6.46
	11DEC85			12.2
	15JAN86			9.62
	12FEB86			15.9
	17MAR86			15.3
	23APR86			11.7
	23MAY86			8.06
399-1-5	20JUN85			7.73
	31JUL85			4.22
	31JUL85	1		4.75
	31JUL85	2		6.60
	21AUG85			2.44
	21AUG85	1		7.96
	21AUG85	2		8.33
	27SEP85			7.04
	29OCT85			6.00
	11DEC85			17.3
	15JAN86			31.7
	12FEB86			21.7
	17MAR86			27.6
	22APR86			24.9
	23MAY86			16.9
399-1-6	18JUN85			14.0
	22JUL85			24.5
	19AUG85			9.29
	24SEP85			5.69
	23OCT85			9.55
	04DEC85			13.5
	12FEB86			14.6
	14MAR86			8.15
	21APR86			7.39
	23MAY86			11.3
399-1-7	02AUG85			23.1
	23AUG85			20.1
	26SEP85			22.8
	25OCT85			20.5
	10DEC85			28.4
	14JAN86			44.5
	14FEB86			39.1
	18MAR86			42.5
	21APR86			50.2
	20MAY86			82.4
399-1-8	29OCT85			10.7
	10DEC85			11.5
	14JAN86			16.3
	18FEB86			17.8
	18MAR86			14.2
	21APR86			19.6
	20MAY86			9.13
399-2-1	17JUN85			17.4
	23JUL85			24.2
	20AUG85			6.20
	23SEP85			10.1
399-2-1	30OCT85			8.59
	05DEC85			10.9
	20JAN86			4.88
	21FEB86			7.97
	18MAR86			12.8
	22APR86			10.7
	27MAY86			12.0
399-3-10	01JUL85			16.1
	01JUL85	1		6.74
	01JUL85	2		19.1
	01JUL85	3		8.37
	30JUL85			14.3
	30JUL85	1		12.4
	30JUL85	2		14.1
	30JUL85	3		15.8
	22AUG85			18.8
	22AUG85	1		13.9
	22AUG85	2		21.6
	22AUG85	3		15.1
	30SEP85			24.7
	23OCT85			23.2
	21NOV85			32.2
	16JAN86			24.3
	19FEB86			19.2
	14MAR86			26.2
	17APR86			14.3
	22MAY86			15.3
399-3-7	26JUN85			8.17
	24JUL85			6.86
	20AUG85			5.81
	26SEP85			19.2
	28OCT85			8.25
	25NOV85			20.9
	17JAN86			9.50
	19FEB86			11.1
	14MAR86			5.63
	17APR86			11.9
	19MAY86			13.7
399-4-1	02JUL85			1.31
	23JUL85			2.04
	23AUG85			11.4
	24SEP85			13.9
	28OCT85			12.6
	06DEC85			12.4
	17JAN86			15.9
	18FEB86			18.9
	13MAR86			15.5
	18APR86			15.9
	22MAY86			17.5
399-4-7	01JUL85			18.1
	01JUL85	1		19.9
	01JUL85	2		23.6
	01JUL85	3		10.7
	30JUL85			57.1
399-4-7	30JUL85	1		44.0
	30JUL85	2		2.16
	30JUL85	3		18.4
	22AUG85			22.5
	22AUG85	1		34.2
	22AUG85	2		31.0
	22AUG85	3		20.7
	26SEP85			40.4
	25OCT85			39.7
	21NOV85			39.7
	16JAN86			42.7
	20FEB86			46.2
	13MAR86			90.9
	18APR86			27.6
	22MAY86			30.1
399-8-2	18JUN85			2.88
	22JUL85			3.11
	19AUG85			1.37
	25SEP85			2.85
	29OCT85			2.53
	05DEC85		<	1.69
	20JAN86			1.98
	20FEB86			2.94
	20MAR86			3.58
	16APR86			2.27
	20MAY86			2.43
699-S19-E13	25JUN85			7.44
	22JUL85			5.15
	19AUG85			3.53
	24SEP85			6.47
	30OCT85			3.92
	11DEC85			3.23
	15JAN86			6.16
	21FEB86			3.11
	20MAR86			5.27
	22APR86			4.91
	27MAY86			6.60
699-S30E15A	02JUL85			2.96
	29JUL85			3.79
	27AUG85			2.69
	26SEP85			5.60
	24OCT85			3.37
	11DEC85			3.52
	20JAN86		<	1.76
	20FEB86			4.16
	19MAR86		<	1.55
	22APR86			1.76
	22MAY86			3.51

RCRA Compliance Ground-Water Monitoring Data
300 Area Process Trenches, June 1985 thru May 1986

TABLE G.3 Raw Data

Constituent List = Drinking Water Standards Constituent = A08 BARIUM PPB

Well	Date	Rep	Lab		Concentration
399-1-1	25JUN85		H		42.0
	25JUN85	1	H		32.0
	25JUN85	2	H		34.0
	25JUN85	3	H		44.0
	24JUL85		H		83.0
	24JUL85	1	H		145
	24JUL85	2	H		35.0
	24JUL85	3	H		80.0
	20AUG85				27.0
	20AUG85	1			28.0
	20AUG85	2			29.0
	20AUG85	3			29.0
	27SEP85				33.0
	01NOV85				34.0
	01NOV85	S	H		42.0
	10DEC85				31.0
	13JAN86				36.0
	14FEB86				32.0
	19MAR86				38.0
	23APR86				33.0
	23MAY86				35.0
399-1-2	20JUN85		H		30.0
	20JUN85	1	H		719
	20JUN85	2	H		46.0
	20JUN85	3	H		15.0
	29JUL85		H		28.0
	29JUL85	1	H		35.0
	29JUL85	2	H		39.0
	29JUL85	3	H		39.0
	21AUG85				20.0
	21AUG85	1			19.0
	21AUG85	2			21.0
	21AUG85	3			21.0
	27SEP85				19.0
	24OCT85				22.0
	24OCT85	S	H		104
	06DEC85				22.0
	14JAN86				27.0
	13FEB86				22.0
	19MAR86				24.0
	23APR86				17.0
	27MAY86				21.0
399-1-3	02JUL85		H	<	6.00
	02AUG85		H		54.0
	23AUG85				14.0
	26SEP85				26.0
	24OCT85				28.0
	25NOV85				29.0
	14JAN86				32.0
	18FEB86				30.0
	17MAR86				30.0
	21APR86				24.0
	20MAY86				21.0
399-1-4	18JUN85		H		20.0
	23JUL85		H	<	6.00
399-1-4	19AUG85				16.0
	24SEP85				20.0
	30OCT85				21.0
	11DEC85				21.0
	15JAN86				18.0
	12FEB86				16.0
	17MAR86				17.0
	23APR86				18.0
	23MAY86				18.0
399-1-5	20JUN85		H		7.00
	31JUL85		H		24.0
	31JUL85	1	H		42.0
	31JUL85	2	H		233
	21AUG85				31.0
	21AUG85	1			32.0
	21AUG85	2			33.0
	27SEP85				23.0
	29OCT85				20.0
	29OCT85	S	H		21.0
	11DEC85				37.0
	15JAN86				18.0
	12FEB86				22.0
	17MAR86				19.0
	22APR86				17.0
	23MAY86				21.0
399-1-6	18JUN85		H		35.0
	22JUL85		H	<	6.00
	19AUG85				16.0
	24SEP85				20.0
	23OCT85				20.0
	04DEC85				18.0
	15JAN86				18.0
	12FEB86				18.0
	14MAR86				19.0
	21APR86				18.0
	23MAY86				18.0
399-1-7	02AUG85		H		101
	23AUG85				15.0
	26SEP85				19.0
	25OCT85				26.0
	10DEC85				26.0
	14JAN86				33.0
	14FEB86				30.0
	18MAR86				29.0
	21APR86				23.0
	20MAY86				22.0
399-1-8	29OCT85				31.0
	10DEC85				31.0
	14JAN86				34.0
	18FEB86				33.0
	18MAR86				33.0
	21APR86				31.0
	20MAY86				32.0
399-2-1	17JUN85		H		66.0
399-2-1	23JUL85		H	<	6.00
	20AUG85				43.0
	23SEP85				44.0
	30OCT85				46.0
	05DEC85				40.0
	20JAN86				52.0
	21FEB86				63.0
	18MAR86				58.0
	22APR86				49.0
	27MAY86				52.0
399-3-10	01JUL85		H	<	6.00
	01JUL85	1	H	<	6.00
	01JUL85	2	H	<	6.00
	01JUL85	3	H	<	6.00
	30JUL85		H		43.0
	30JUL85	1	H		50.0
	30JUL85	2	H		183
	30JUL85	3	H		42.0
	22AUG85				40.0
	22AUG85	1			39.0
	22AUG85	2			40.0
	22AUG85	3			39.0
	30SEP85				41.0
	23OCT85				44.0
	23OCT85	S	H		46.0
	21NOV85				47.0
	16JAN86				42.0
	19FEB86				40.0
	14MAR86				58.0
	17APR86				51.0
	22MAY86				51.0
399-3-7	25JUN85		H		50.0
	24JUL85		H	<	6.00
	20AUG85				36.0
	26SEP85				78.0
	28OCT85				37.0
	25NOV85				35.0
	17JAN86				30.0
	19FEB86				29.0
	14MAR86				31.0
	17APR86				30.0
	19MAY86				34.0
399-4-1	02JUL85		H	<	6.00
	23JUL85		H	<	6.00
	23AUG85				30.0
	24SEP85				33.0
	28OCT85				34.0
	06DEC85				29.0
	17JAN86				32.0
	18FEB86				32.0
	13MAR86				124
	18APR86				43.0
	22MAY86				32.0
399-4-7	01JUL85		H	<	6.00
399-4-7	01JUL85	1	H	<	6.00
	01JUL85	2	H	<	6.00
	01JUL85	3	H		212
	30JUL85		H		52.0
	30JUL85	1	H		59.0
	30JUL85	2	H		49.0
	30JUL85	3	H		46.0
	22AUG85				42.0
	22AUG85	1			40.0
	22AUG85	2			42.0
	22AUG85	3			42.0
	25SEP85				38.0
	25OCT85				41.0
	25OCT85	S	H		43.0
	21NOV85				41.0
	16JAN86				38.0
	20FEB86				36.0
	13MAR86				34.0
	18APR86				33.0
	22MAY86				36.0
399-8-2	18JUN85		H		42.0
	22JUL85		H	<	6.00
	19AUG85				36.0
	25SEP85				38.0
	23OCT85				38.0
	05DEC85				37.0
	20JAN86				39.0
	20FEB86				36.0
	20MAR86				40.0
	18APR86				38.0
	20MAY86				39.0
699-S19-E13	25JUN85		H		50.0
	22JUL85		H	<	6.00
	19AUG85				43.0
	24SEP85				45.0
	30OCT85				47.0
	11DEC85				44.0
	15JAN86				43.0
	21FEB86				43.0
	20MAR86				44.0
	22APR86				43.0
	27MAY86				46.0
699-S30E15A	02JUL85		H	<	6.00
	29JUL85		H		77.0
	27AUG85				67.0
	26SEP85				74.0
	24OCT85				64.0
	11DEC85				66.0
	20JAN86				62.0
	20FEB86				57.0
	19MAR86				64.0
	22APR86				65.0
	22MAY86				65.0

RCRA Compliance Ground-Water Monitoring Data
300 Area Process Trenches, June 1985 thru May 1986

TABLE G.3 Raw Data

Constituent List = Drinking Water Standards   Constituent = A07 CADMIUM PPB

Well	Date	Rep	Lab	Concentration
399-1-1	25JUN85		H	< 2.00
	25JUN85	1	H	3.00
	25JUN85	2	H	< 2.00
	25JUN85	3	H	< 2.00
	24JUL85		H	< 2.00
	24JUL85	1	H	< 2.00
	24JUL85	2	H	< 2.00
	24JUL85	3	H	< 2.00
	20AUG85			3.00
	20AUG85	1		< 2.00
	20AUG85	2		< 2.00
	20AUG85	3		< 2.00
	27SEP85			< 2.00
	01NOV85			< 2.00
	01NOV85	S	H	< 2.00
	10DEC85			< 2.00
	13JAN86			< 2.00
	14FEB86			< 2.00
	19MAR86			< 2.00
	23APR86			< 2.00
	23MAY86			< 2.00
399-1-2	20JUN85		H	< 2.00
	20JUN85	1	H	< 2.00
	20JUN85	2	H	< 2.00
	20JUN85	3	H	< 2.00
	29JUL85		H	< 2.00
	29JUL85	1	H	< 2.00
	29JUL85	2	H	< 2.00
	29JUL85	3	H	< 2.00
	21AUG85			< 2.00
	21AUG85	1		< 2.00
	21AUG85	2		< 2.00
	21AUG85	3		3.00
	27SEP85			< 2.00
	24OCT85			< 2.00
	24OCT85	S	H	< 2.00
	06DEC85			< 2.00
	14JAN86			< 2.00
	13FEB86			< 2.00
	19MAR86			< 2.00
	23APR86			< 2.00
	27MAY86			< 2.00
399-1-3	02JUL85		H	< 2.00
	02AUG85		H	< 2.00
	23AUG85			< 2.00
	28SEP85			2.00
	24OCT85			< 2.00
	25NOV85			< 2.00
	14JAN86			< 2.00
	18FEB86			< 2.00
	17MAR86			< 2.00
	21APR86			< 2.00
	20MAY86			< 2.00
399-1-4	18JUN85		H	< 2.00
	23JUL85		H	< 2.00
399-1-4	19AUG85			5.00
	24SEP85			< 2.00
	30OCT85			< 2.00
	11DEC85			< 2.00
	15JAN86			< 2.00
	12FEB86			< 2.00
	17MAR86			< 2.00
	23APR86			< 2.00
	23MAY86			< 2.00
399-1-5	20JUN85		H	< 2.00
	31JUL85		H	2.30
	31JUL85	1	H	< 2.00
	31JUL85	2	H	6.60
	21AUG85			< 2.00
	21AUG85	1		< 2.00
	21AUG85	2		< 2.00
	27SEP85			< 2.00
	29OCT85			< 2.00
	29OCT85	S	H	< 2.00
	11DEC85			< 2.00
	15JAN86			< 2.00
	12FEB86			< 2.00
	17MAR86			< 2.00
	22APR86			< 2.00
	23MAY86			< 2.00
399-1-6	18JUN85		H	< 2.00
	22JUL85		H	< 2.00
	19AUG85			3.00
	24SEP85			< 2.00
	23OCT85			< 2.00
	04DEC85			< 2.00
	15JAN86			< 2.00
	12FEB86			< 2.00
	14MAR86			< 2.00
	21APR86			< 2.00
	23MAY86			< 2.00
399-1-7	02AUG85		H	5.30
	23AUG85			< 2.00
	28SEP85			< 2.00
	25OCT85			< 2.00
	10DEC85			< 2.00
	14JAN86			< 2.00
	14FEB86			< 2.00
	18MAR86			< 2.00
	21APR86			< 2.00
	20MAY86			< 2.00
399-1-8	29OCT85			< 2.00
	10DEC85			< 2.00
	14JAN86			< 2.00
	18FEB86			< 2.00
	18MAR86			< 2.00
	21APR86			< 2.00
	20MAY86			< 2.00
399-2-1	17JUN85		H	< 2.00
399-2-1	23JUL85		H	< 2.00
	20AUG85			4.00
	23SEP85			< 2.00
	30OCT85			< 2.00
	05DEC85			< 2.00
	20JAN86			< 2.00
	21FEB86			< 2.00
	18MAR86			< 2.00
	22APR86			< 2.00
	27MAY86			< 2.00
399-3-10	01JUL85		H	< 2.00
	01JUL85	1	H	< 2.00
	01JUL85	2	H	< 2.00
	01JUL85	3	H	< 2.00
	30JUL85		H	< 2.00
	30JUL85	1	H	< 2.00
	30JUL85	2	H	< 2.00
	30JUL85	3	H	< 2.00
	22AUG85			3.00
	22AUG85	1		< 2.00
	22AUG85	2		2.00
	22AUG85	3		< 2.00
	30SEP85			< 2.00
	23OCT85			< 2.00
	23OCT85	S	H	< 2.00
	21NOV85			< 2.00
	16JAN86			< 2.00
	19FEB86			< 2.00
	14MAR86			< 2.00
	17APR86			< 2.00
	22MAY86			< 2.00
399-3-7	26JUN85		H	< 2.00
	24JUL85		H	< 2.00
	20AUG85			5.00
	25SEP85			< 2.00
	28OCT85			< 2.00
	25NOV85			< 2.00
	17JAN86			< 2.00
	19FEB86			< 2.00
	14MAR86			< 2.00
	17APR86			< 2.00
	19MAY86			< 2.00
399-4-1	02JUL85		H	< 2.00
	23JUL85		H	< 2.00
	23AUG85			< 2.00
	24SEP85			< 2.00
	28OCT85			< 2.00
	06DEC85			< 2.00
	17JAN86			< 2.00
	18FEB86			< 2.00
	13MAR86			< 2.00
	16APR86			< 2.00
	22MAY86			< 2.00
399-4-7	01JUL85		H	< 2.00
399-4-7	01JUL85	1	H	< 2.00
	01JUL85	2	H	< 2.00
	01JUL85	3	H	< 2.00
	30JUL85		H	< 2.00
	30JUL85	1	H	< 2.00
	30JUL85	2	H	< 2.00
	30JUL85	3	H	< 2.00
	22AUG85			< 2.00
	22AUG85	1		< 2.00
	22AUG85	2		< 2.00
	22AUG85	3		< 2.00
	25SEP85			< 2.00
	25OCT85			< 2.00
	25OCT85	S	H	< 2.00
	21NOV85			< 2.00
	16JAN86			< 2.00
	20FEB86			< 2.00
	13MAR86			< 2.00
	18APR86			< 2.00
	22MAY86			< 2.00
399-8-2	18JUN85		H	< 2.00
	22JUL85		H	< 2.00
	19AUG85			3.00
	26SEP85			< 2.00
	23OCT85			< 2.00
	05DEC85			< 2.00
	20JAN86			< 2.00
	20FEB86			< 2.00
	20MAR86			< 2.00
	18APR86			< 2.00
	20MAY86			< 2.00
699-S19-E13	25JUN85		H	< 2.00
	22JUL85		H	< 2.00
	19AUG85			< 2.00
	24SEP85			< 2.00
	30OCT85			< 2.00
	11DEC85			< 2.00
	15JAN86			< 2.00
	21FEB86			< 2.00
	20MAR86			< 2.00
	22APR86			< 2.00
	27MAY86			< 2.00
699-S30E15A	02JUL85		H	< 2.00
	29JUL85		H	< 2.00
	27AUG85			< 2.00
	28SEP85			7.00
	24OCT85			< 2.00
	11DEC85			< 2.00
	20JAN86			< 2.00
	20FEB86			< 2.00
	19MAR86			< 2.00
	22APR86			< 2.00
	22MAY86			< 2.00

RCRA Compliance Ground-Water Monitoring Data
300 Area Process Trenches, June 1985 thru May 1986

TABLE G.3 Raw Data

Constituent List = Drinking Water Standards   Constituent = A08 CHROMUM PPB

Well	Date	Rep	Lab	Concentration
399-1-1	25JUN85		H	< 10.0
	25JUN85	1	H	< 10.0
	25JUN85	2	H	< 10.0
	25JUN85	3	H	< 10.0
	24JUL85		H	< 10.0
	24JUL85	1	H	< 10.0
	24JUL85	2	H	< 10.0
	24JUL85	3	H	< 10.0
	20AUG85			11.0
	20AUG85	1		< 10.0
	20AUG85	2		< 10.0
	20AUG85	3		< 10.0
	27SEP85			< 10.0
	01NOV85			< 10.0
	01NOV85	S	H	< 10.0
	10DEC85			< 10.0
	13JAN86			< 10.0
	14FEB86			< 10.0
	19MAR86			< 10.0
	23APR86			< 10.0
	23MAY86			< 10.0
399-1-2	20JUN85		H	< 10.0
	20JUN85	1	H	< 10.0
	20JUN85	2	H	< 10.0
	20JUN85	3	H	< 10.0
	29JUL85		H	< 10.0
	29JUL85	1	H	< 10.0
	29JUL85	2	H	< 10.0
	29JUL85	3	H	< 10.0
	21AUG85			< 10.0
	21AUG85	1		< 10.0
	21AUG85	2		< 10.0
	21AUG85	3		< 10.0
	27SEP85			< 10.0
	24OCT85			< 10.0
	24OCT85	S	H	< 10.0
	06DEC85			< 10.0
	14JAN86			< 10.0
	13FEB86			< 10.0
	19MAR86			< 10.0
	23APR86			< 10.0
	27MAY86			< 10.0
399-1-3	02JUL85		H	< 10.0
	02AUG85		H	< 10.0
	23AUG85			14.0
	26SEP85			24.0
	24OCT85			< 10.0
	25NOV85			< 10.0
	14JAN86			< 10.0
	18FEB86			< 10.0
	17MAR86			< 10.0
	21APR86			< 10.0
	20MAY86			< 10.0
399-1-4	18JUN85		H	< 10.0
	23JUL85		H	< 10.0
399-1-4	19AUG85			< 10.0
	24SEP85			11.0
	30OCT85			< 10.0
	11DEC85			< 10.0
	15JAN86			< 10.0
	12FEB86			< 10.0
	17MAR86			< 10.0
	23APR86			< 10.0
	23MAY86			< 10.0
399-1-5	20JUN85		H	< 10.0
	31JUL85		H	< 10.0
	31JUL85	1	H	< 10.0
	31JUL85	2	H	< 10.0
	21AUG85			< 10.0
	21AUG85	1		< 10.0
	21AUG85	2		< 10.0
	27SEP85			< 10.0
	29OCT85			< 10.0
	29OCT85	S	H	< 10.0
	11DEC85			< 10.0
	15JAN86			< 10.0
	12FEB86			< 10.0
	17MAR86			< 10.0
	22APR86			< 10.0
	23MAY86			< 10.0
399-1-6	18JUN85		H	< 10.0
	22JUL85		H	257
	19AUG85			< 10.0
	24SEP85			< 10.0
	23OCT85			< 10.0
	04DEC85			< 10.0
	15JAN86			< 10.0
	12FEB86			< 10.0
	14MAR86			< 10.0
	21APR86			< 10.0
	23MAY86			< 10.0
399-1-7	02AUG85		H	26.0
	23AUG85			13.0
	26SEP85			13.0
	25OCT85			< 10.0
	10DEC85			< 10.0
	14JAN86			< 10.0
	14FEB86			< 10.0
	18MAR86			< 10.0
	21APR86			< 10.0
	20MAY86			< 10.0
399-1-8	29OCT85			< 10.0
	10DEC85			< 10.0
	14JAN86			< 10.0
	18FEB86			< 10.0
	18MAR86			< 10.0
	21APR86			< 10.0
	20MAY86			< 10.0
399-2-1	17JUN85		H	< 10.0
399-2-1	23JUL85		H	< 10.0
	20AUG85			< 10.0
	23SEP85			< 10.0
	30OCT85			< 10.0
	05DEC85			< 10.0
	20JAN86			< 10.0
	21FEB86			< 10.0
	18MAR86			< 10.0
	22APR86			< 10.0
	27MAY86			< 10.0
399-3-10	01JUL85		H	< 10.0
	01JUL85	1	H	< 10.0
	01JUL85	2	H	10.0
	01JUL85	3	H	< 10.0
	30JUL85		H	38.0
	30JUL85	1	H	< 10.0
	30JUL85	2	H	< 10.0
	30JUL85	3	H	< 10.0
	22AUG85			< 10.0
	22AUG85	1		< 10.0
	22AUG85	2		< 10.0
	22AUG85	3		< 10.0
	30SEP85			< 10.0
	23OCT85			< 10.0
	23OCT85	S	H	< 10.0
	21NOV85			< 10.0
	16JAN86			< 10.0
	19FEB86			< 10.0
	14MAR86			< 10.0
	17APR86			< 10.0
	22MAY86			< 10.0
399-3-7	25JUN85		H	< 10.0
	24JUL85		H	< 10.0
	20AUG85			< 10.0
	26SEP85			< 10.0
	28OCT85			< 10.0
	25NOV85			< 10.0
	17JAN86			< 10.0
	19FEB86			< 10.0
	14MAR86			< 10.0
	17APR86			< 10.0
	19MAY86			< 10.0
399-4-1	02JUL85		H	< 10.0
	23JUL85		H	< 10.0
	23AUG85			15.0
	24SEP85			< 10.0
	28OCT85			< 10.0
	06DEC85			< 10.0
	17JAN86			< 10.0
	18FEB86			< 10.0
	13MAR86			23.0
	16APR86			< 10.0
	22MAY86			< 10.0
399-4-7	01JUL85		H	< 10.0
399-4-7	01JUL85	1	H	< 10.0
	01JUL85	2	H	28.0
	01JUL85	3	H	< 10.0
	30JUL85		H	< 10.0
	30JUL85	1	H	< 10.0
	30JUL85	2	H	< 10.0
	30JUL85	3	H	< 10.0
	22AUG85			< 10.0
	22AUG85	1		13.0
	22AUG85	2		< 10.0
	22AUG85	3		< 10.0
	25SEP85			< 10.0
	25OCT85			< 10.0
	25OCT85	S	H	< 10.0
	21NOV85			< 10.0
	16JAN86			< 10.0
	20FEB86			< 10.0
	13MAR86			< 10.0
	18APR86			< 10.0
	22MAY86			< 10.0
399-8-2	18JUN85		H	< 10.0
	22JUL85		H	< 10.0
	19AUG85			< 10.0
	25SEP85			< 10.0
	23OCT85			< 10.0
	06DEC85			< 10.0
	20JAN86			< 10.0
	20FEB86			< 10.0
	20MAR86			< 10.0
	18APR86			< 10.0
	20MAY86			< 10.0
699-S19-E13	25JUN85		H	< 10.0
	22JUL85		H	< 10.0
	19AUG85			< 10.0
	24SEP85			< 10.0
	30OCT85			< 10.0
	11DEC85			< 10.0
	15JAN86			< 10.0
	21FEB86			< 10.0
	20MAR86			< 10.0
	22APR86			< 10.0
	27MAY86			< 10.0
699-S30E15A	02JUL85		H	< 10.0
	29JUL85		H	< 10.0
	27AUG85			< 10.0
	26SEP85			17.0
	24OCT85			< 10.0
	11DEC85			< 10.0
	20JAN86			13.0
	20FEB86			< 10.0
	19MAR86			< 10.0
	22APR86			< 10.0
	22MAY86			< 10.0

RCRA Compliance Ground-Water Monitoring Data
300 Area Process Trenches, June 1985 thru May 1986

TABLE G.3 Raw Data

Constituent List = Drinking Water Standards   Constituent = A10 SILVER PPB

Well	Date	Rep	Lab	Concentration
399-1-1	25JUN85		H	< 10.0
	25JUN85	1	H	< 10.0
	25JUN85	2	H	< 10.0
	25JUN85	3	H	< 10.0
	24JUL85		H	< 10.0
	24JUL85	1	H	< 10.0
	24JUL85	2	H	< 10.0
	24JUL85	3	H	< 10.0
	20AUG85			< 10.0
	20AUG85	1		< 10.0
	20AUG85	2		< 10.0
	20AUG85	3		< 10.0
	27SEP85			< 10.0
	01NOV85			< 10.0
	01NOV85	S	H	< 10.0
	10DEC85			< 10.0
	13JAN86			< 10.0
	14FEB86			< 10.0
	19MAR86			< 10.0
	23APR86			< 10.0
	23MAY86			< 10.0
399-1-2	20JUN85		H	< 10.0
	20JUN85	1	H	< 10.0
	20JUN85	2	H	< 10.0
	20JUN85	3	H	< 10.0
	29JUL85		H	19.0
	29JUL85	1	H	< 10.0
	29JUL85	2	H	< 10.0
	29JUL85	3	H	< 10.0
	21AUG85			< 10.0
	21AUG85	1		< 10.0
	21AUG85	2		< 10.0
	21AUG85	3		< 10.0
	27SEP85			< 10.0
	24OCT85			< 10.0
	24OCT85	S	H	< 10.0
	06DEC85			< 10.0
	14JAN86			< 10.0
	13FEB86			< 10.0
	19MAR86			< 10.0
	23APR86			< 10.0
	27MAY86			< 10.0
399-1-3	02JUL85		H	< 10.0
	02AUG85		H	< 10.0
	23AUG85			< 10.0
	26SEP85			< 10.0
	24OCT85			< 10.0
	25NOV85			< 10.0
	14JAN86			< 10.0
	18FEB86			< 10.0
	17MAR86			< 10.0
	21APR86			< 10.0
	20MAY86			< 10.0
399-1-4	18JUN85		H	< 10.0
	23JUL85		H	< 10.0
399-1-4	19AUG85			< 10.0
	24SEP85			< 10.0
	30OCT85			< 10.0
	11DEC85			< 10.0
	15JAN86			< 10.0
	12FEB86			< 10.0
	17MAR86			< 10.0
	23APR86			< 10.0
	23MAY86			< 10.0
399-1-5	20JUN85		H	< 10.0
	31JUL85		H	< 10.0
	31JUL85	1	H	< 10.0
	31JUL85	2	H	< 10.0
	21AUG85			< 10.0
	21AUG85	1		< 10.0
	21AUG85	2		< 10.0
	27SEP85			< 10.0
	29OCT85			< 10.0
	29OCT85	S	H	< 10.0
	11DEC85			< 10.0
	15JAN86			< 10.0
	12FEB86			< 10.0
	17MAR86			< 10.0
	22APR86			< 10.0
	23MAY86			< 10.0
399-1-6	18JUN85		H	< 10.0
	22JUL85		H	< 10.0
	19AUG85			< 10.0
	24SEP85			< 10.0
	23OCT85			< 10.0
	04DEC85			< 10.0
	15JAN86			< 10.0
	12FEB86			< 10.0
	14MAR86			< 10.0
	21APR86			< 10.0
	23MAY86			< 10.0
399-1-7	02AUG85		H	< 10.0
	23AUG85			< 10.0
	26SEP85			< 10.0
	25OCT85			< 10.0
	10DEC85			< 10.0
	14JAN86			< 10.0
	14FEB86			< 10.0
	18MAR86			< 10.0
	21APR86			< 10.0
	20MAY86			< 10.0
399-1-8	29OCT85			< 10.0
	10DEC85			< 10.0
	14JAN86			< 10.0
	18FEB86			< 10.0
	18MAR86			< 10.0
	21APR86			< 10.0
	20MAY86			< 10.0
399-2-1	17JUN85		H	< 10.0
399-2-1	23JUL85		H	< 10.0
	20AUG85			< 10.0
	23SEP85			< 10.0
	30OCT85			< 10.0
	06DEC85			< 10.0
	20JAN86			< 10.0
	21FEB86			< 10.0
	18MAR86			< 10.0
	22APR86			< 10.0
	27MAY86			< 10.0
399-3-10	01JUL85		H	< 10.0
	01JUL85	1	H	< 10.0
	01JUL85	2	H	< 10.0
	01JUL85	3	H	< 10.0
	30JUL85		H	< 10.0
	30JUL85	1	H	< 10.0
	30JUL85	2	H	< 10.0
	30JUL85	3	H	< 10.0
	22AUG85			< 10.0
	22AUG85	1		< 10.0
	22AUG85	2		< 10.0
	22AUG85	3		< 10.0
	30SEP85			< 10.0
	23OCT85			< 10.0
	23OCT85	S	H	< 10.0
	21NOV85			< 10.0
	16JAN86			< 10.0
	19FEB86			< 10.0
	14MAR86			< 10.0
	17APR86			< 10.0
	22MAY86			< 10.0
399-3-7	25JUN85		H	< 10.0
	24JUL85		H	< 10.0
	20AUG85			< 10.0
	25SEP85			< 10.0
	28OCT85			< 10.0
	25NOV85			< 10.0
	17JAN86			< 10.0
	19FEB86			< 10.0
	14MAR86			< 10.0
	17APR86			< 10.0
	19MAY86			< 10.0
399-4-1	02JUL85		H	< 10.0
	23JUL85		H	< 10.0
	23AUG85			< 10.0
	24SEP85			< 10.0
	28OCT85			< 10.0
	06DEC85			< 10.0
	17JAN86			< 10.0
	18FEB86			< 10.0
	13MAR86			< 10.0
	18APR86			< 10.0
	22MAY86			< 10.0
399-4-7	01JUL85		H	< 10.0
399-4-7	01JUL85	1	H	< 10.0
	01JUL85	2	H	< 10.0
	01JUL85	3	H	< 10.0
	30JUL85		H	< 10.0
	30JUL85	1	H	< 10.0
	30JUL85	2	H	< 10.0
	30JUL85	3	H	< 10.0
	22AUG85			< 10.0
	22AUG85	1		< 10.0
	22AUG85	2		< 10.0
	22AUG85	3		< 10.0
	25SEP85			< 10.0
	25OCT85			< 10.0
	25OCT85	S	H	< 10.0
	21NOV85			< 10.0
	16JAN86			< 10.0
	20FEB86			< 10.0
	13MAR86			< 10.0
	18APR86			< 10.0
	22MAY86			< 10.0
399-8-2	18JUN85		H	< 10.0
	22JUL85		H	< 10.0
	19AUG85			< 10.0
	25SEP85			< 10.0
	23OCT85			< 10.0
	05DEC85			< 10.0
	20JAN86			< 10.0
	20FEB86			< 10.0
	20MAR86			< 10.0
	18APR86			< 10.0
	20MAY86			< 10.0
699-S19-E13	25JUN85		H	< 10.0
	22JUL85		H	< 10.0
	19AUG85			< 10.0
	24SEP85			< 10.0
	30OCT85			< 10.0
	11DEC85			< 10.0
	15JAN86			< 10.0
	21FEB86			< 10.0
	20MAR86			< 10.0
	22APR86			< 10.0
	27MAY86			< 10.0
699-S30E15A	02JUL85		H	< 10.0
	29JUL85		H	< 10.0
	27AUG85			< 10.0
	26SEP85			< 10.0
	24OCT85			< 10.0
	11DEC85			< 10.0
	20JAN86			< 10.0
	20FEB86			< 10.0
	19MAR86			< 10.0
	22APR86			< 10.0
	22MAY86			< 10.0

RCRA Compliance Ground-Water Monitoring Data
300 Area Process Trenches, June 1985 thru May 1986

TABLE G.3 Raw Data

Constituent List = Drinking Water Standards Constituent = A20 ARSENIC PPB

Well	Date	Rep	Lab	Concentration
399-1-1	25JUN85		H	8.00
	25JUN85	1	H	17.0
	25JUN85	2	H	7.00
	25JUN85	3	H	8.30
	24JUL85		H	< 5.00
	24JUL85	1	H	< 5.00
	24JUL85	2	H	< 5.00
	24JUL85	3	H	< 5.00
	20AUG85			< 5.00
	20AUG85	1		< 5.00
	20AUG85	2		< 5.00
	20AUG85	3		< 5.00
	27SEP85			< 5.00
	01NOV85			< 5.00
	01NOV85	S	H	< 5.00
	10DEC85			< 5.00
	13JAN86			< 5.00
	14FEB86			< 5.00
	19MAR86			< 5.00
	23APR86			< 5.00
	23MAY86			< 5.00
399-1-2	20JUN85		H	< 5.00
	20JUN85	1	H	< 5.00
	20JUN85	2	H	< 5.00
	20JUN85	3	H	< 5.00
	29JUL85		H	< 5.00
	29JUL85	1	H	< 5.00
	29JUL85	2	H	< 5.00
	29JUL85	3	H	< 5.00
	21AUG85			< 5.00
	21AUG85	1		< 5.00
	21AUG85	2		< 5.00
	21AUG85	3		< 5.00
	27SEP85			< 5.00
	24OCT85			< 5.00
	24OCT85	S	H	7.00
	06DEC85			< 5.00
	14JAN86			< 5.00
	13FEB86			< 5.00
	19MAR86			< 5.00
	23APR86			< 5.00
	27MAY86			< 5.00
399-1-3	02JUL85		H	< 5.00
	02AUG85		H	< 5.00
	23AUG85			7.52
	26SEP85			< 5.00
	24OCT85			< 5.00
	25NOV85			< 5.00
	14JAN86			< 5.00
	18FEB86			< 5.00
	17MAR86			< 5.00
	21APR86			< 5.00
	20MAY86			< 5.00
399-1-4	18JUN85		H	5.00
	23JUL85		H	< 5.00
399-1-4	19AUG85			< 5.00
	24SEP85			< 5.00
	30OCT85			< 5.00
	11DEC85			< 5.00
	15JAN86			< 5.00
	12FEB86			< 5.00
	17MAR86			< 5.00
	23APR86			< 5.00
	23MAY86			< 5.00
399-1-5	20JUN85		H	< 5.00
	31JUL85		H	< 5.00
	31JUL85	1	H	< 5.00
	31JUL85	2	H	< 5.00
	21AUG85			< 5.00
	21AUG85	1		< 5.00
	21AUG85	2		< 5.00
	27SEP85			< 5.00
	29OCT85			< 5.00
	29OCT85	S	H	8.70
	11DEC85			< 5.00
	15JAN86			< 5.00
	12FEB86			< 5.00
	17MAR86			< 5.00
	22APR86			< 5.00
	23MAY86			< 5.00
399-1-6	18JUN85		H	9.00
	22JUL85		H	< 5.00
	19AUG85			< 5.00
	24SEP85			< 5.00
	23OCT85			< 5.00
	04DEC85			< 5.00
	15JAN86			< 5.00
	12FEB86			< 5.00
	14MAR86			< 5.00
	21APR86			< 5.00
	23MAY86			< 5.00
399-1-7	02AUG85		H	< 5.00
	23AUG85			< 5.00
	26SEP85			< 5.00
	25OCT85			< 5.00
	10DEC85			< 5.00
	14JAN86			< 5.00
	14FEB86			< 5.00
	18MAR86			< 5.00
	21APR86			< 5.00
	20MAY86			< 5.00
399-1-8	29OCT85			< 5.00
	10DEC85			< 5.00
	14JAN86			< 5.00
	18FEB86			< 5.00
	18MAR86			< 5.00
	21APR86			< 5.00
	20MAY86			< 5.00
399-2-1	17JUN85		H	5.00
399-2-1	23JUL85		H	< 5.00
	20AUG85			< 5.00
	23SEP85			< 5.00
	30OCT85			< 5.00
	05DEC85			< 5.00
	20JAN86			< 5.00
	21FEB86			< 5.00
	18MAR86			< 5.00
	22APR86			< 5.00
	27MAY86			< 5.00
399-3-10	01JUL85		H	< 5.00
	01JUL85	1	H	< 5.00
	01JUL85	2	H	< 5.00
	01JUL85	3	H	< 5.00
	30JUL85		H	< 5.00
	30JUL85	1	H	< 5.00
	30JUL85	2	H	< 5.00
	30JUL85	3	H	< 5.00
	22AUG85			< 5.00
	22AUG85	1		< 5.00
	22AUG85	2		< 5.00
	22AUG85	3		< 5.00
	30SEP85			< 5.00
	23OCT85			< 5.00
	23OCT85	S	H	< 5.00
	21NOV85			< 5.00
	16JAN86			< 5.00
	19FEB86			< 5.00
	14MAR86			< 5.00
	17APR86			< 5.00
	22MAY86			< 5.00
399-3-7	25JUN85		H	23.0
	24JUL85		H	< 5.00
	20AUG85			< 5.00
	25SEP85			< 5.00
	28OCT85			< 5.00
	25NOV85			< 5.00
	17JAN86			< 5.00
	19FEB86			< 5.00
	14MAR86			< 5.00
	17APR86			< 5.00
	19MAY86			< 5.00
399-4-1	02JUL85		H	< 5.00
	23JUL85		H	< 5.00
	23AUG85			6.02
	24SEP85			< 5.00
	28OCT85			< 5.00
	06DEC85			< 5.00
	17JAN86			< 5.00
	18FEB86			< 5.00
	13MAR86			< 5.00
	18APR86			< 5.00
	22MAY86			< 5.00
399-4-7	01JUL85		H	< 5.00
399-4-7	01JUL85	1	H	< 5.00
	01JUL85	2	H	< 5.00
	01JUL85	3	H	< 5.00
	30JUL85		H	< 5.00
	30JUL85	1	H	< 5.00
	30JUL85	2	H	5.80
	30JUL85	3	H	< 5.00
	22AUG85			< 5.00
	22AUG85	1		< 5.00
	22AUG85	2		6.27
	22AUG85	3		< 5.00
	25SEP85			< 5.00
	25OCT85			< 5.00
	25OCT85	S	H	< 5.00
	21NOV85			< 5.00
	16JAN86			< 5.00
	20FEB86			< 5.00
	13MAR86			< 5.00
	18APR86			< 5.00
	22MAY86			< 5.00
399-8-2	18JUN85		H	7.00
	22JUL85		H	< 5.00
	19AUG85			< 5.00
	25SEP85			< 5.00
	23OCT85			< 5.00
	05DEC85			5.86
	20JAN86			< 5.00
	20FEB86			< 5.00
	20MAR86			< 5.00
	18APR86			< 5.00
	20MAY86			< 5.00
699-S19-E13	25JUN85		H	6.00
	22JUL85		H	< 5.00
	19AUG85			< 5.00
	24SEP85			< 5.00
	30OCT85			< 5.00
	11DEC85			< 5.00
	15JAN86			< 5.00
	21FEB86			< 5.00
	20MAR86			< 5.00
	22APR86			< 5.00
	27MAY86			< 5.00
699-S30E15A	02JUL85		H	< 5.00
	29JUL85		H	< 5.00
	27AUG85			< 5.00
	26SEP85			< 5.00
	24OCT85			< 5.00
	11DEC85			< 5.00
	20JAN86			< 5.00
	20FEB86			< 5.00
	19MAR86			< 5.00
	22APR86			< 5.00
	22MAY86			< 5.00

RCRA Compliance Ground-Water Monitoring Data
300 Area Process Trenches, June 1985 thru May 1986

TABLE G.3 Raw Data

Constituent List = Drinking Water Standards   Constituent = A21 MERCURY PPB

Well	Date	Rep	Lab	Concentration
399-1-1	25JUN85		H	< 0.100
	25JUN85	1	H	< 0.100
	25JUN85	2	H	< 0.100
	25JUN85	3	H	< 0.100
	24JUL85		H	< 0.100
	24JUL85	1	H	< 0.100
	24JUL85	2	H	< 0.100
	24JUL85	3	H	< 0.100
	20AUG85			< 0.100
	20AUG85	1		< 0.100
	20AUG85	2		< 0.100
	20AUG85	3		< 0.100
	27SEP85			< 0.100
	01NOV85			< 0.100
	01NOV85	S	H	< 0.100
	10DEC85			< 0.100
	13JAN86			< 0.100
	14FEB86			< 0.100
	19MAR86			< 0.100
	23APR86			< 0.100
	23MAY86			< 0.100
399-1-2	20JUN85		H	< 0.100
	20JUN85	1	H	< 0.100
	20JUN85	2	H	< 0.100
	20JUN85	3	H	< 0.100
	29JUL85		H	4.80
	29JUL85	1	H	6.20
	29JUL85	2	H	4.30
	29JUL85	3	H	5.60
	21AUG85			< 0.100
	21AUG85	1		< 0.100
	21AUG85	2		< 0.100
	21AUG85	3		< 0.100
	27SEP85			< 0.100
	24OCT85			< 0.100
	24OCT85	S	H	< 0.100
	06DEC85			< 0.100
	14JAN86			< 0.100
	13FEB86			< 0.100
	19MAR86			< 0.100
	23APR86			< 0.100
	27MAY86			< 0.100
399-1-3	02JUL85		H	< 0.100
	02AUG85		H	5.80
	23AUG85			< 0.100
	26SEP85			< 0.100
	24OCT85			< 0.100
	25NOV85			< 0.100
	14JAN86			< 0.100
	18FEB86			< 0.100
	17MAR86			< 0.100
	21APR86			< 0.100
	20MAY86			< 0.100
399-1-4	18JUN85		H	< 0.100
	23JUL85		H	< 0.100
399-1-4	19AUG85			< 0.100
	24SEP85			< 0.100
	30OCT85			< 0.100
	11DEC85			< 0.100
	15JAN86			< 0.100
	12FEB86			< 0.100
	17MAR86			< 0.100
	23APR86			< 0.100
	23MAY86			< 0.100
399-1-5	20JUN85		H	< 0.100
	31JUL85		H	8.90
	31JUL85	1	H	6.30
	31JUL85	2	H	5.50
	21AUG85			< 0.100
	21AUG85	1		< 0.100
	21AUG85	2		< 0.100
	27SEP85			< 0.100
	29OCT85			< 0.100
	29OCT85	S	H	< 0.100
	11DEC85			< 0.100
	15JAN86			< 0.100
	12FEB86			< 0.100
	17MAR86			< 0.100
	22APR86			< 0.100
	23MAY86			< 0.100
399-1-6	18JUN85		H	< 0.100
	22JUL85		H	< 0.100
	19AUG85			< 0.100
	24SEP85			< 0.100
	23OCT85			< 0.100
	04DEC85			< 0.100
	15JAN86			< 0.100
	12FEB86			< 0.100
	14MAR86			< 0.100
	21APR86			< 0.100
	23MAY86			< 0.100
399-1-7	02AUG85		H	5.40
	23AUG85			< 0.100
	26SEP85			< 0.100
	25OCT85			< 0.100
	10DEC85			< 0.100
	14JAN86			< 0.100
	14FEB86			< 0.100
	18MAR86			< 0.100
	21APR86			< 0.100
	20MAY86			< 0.100
399-1-8	29OCT85			< 0.100
	10DEC85			< 0.100
	14JAN86			< 0.100
	18FEB86			< 0.100
	18MAR86			< 0.100
	21APR86			< 0.100
	20MAY86			< 0.100
399-2-1	17JUN85		H	< 0.100
399-2-1	23JUL85		H	< 0.100
	20AUG85			< 0.100
	23SEP85			< 0.100
	30OCT85			< 0.100
	05DEC85			< 0.100
	20JAN86			< 0.100
	21FEB86			< 0.100
	18MAR86			< 0.100
	22APR86			< 0.100
	27MAY86			< 0.100
399-3-10	01JUL85		H	< 0.100
	01JUL85	1	H	< 0.100
	01JUL85	2	H	< 0.100
	01JUL85	3	H	< 0.100
	30JUL85		H	5.80
	30JUL85	1	H	8.20
	30JUL85	2	H	4.70
	30JUL85	3	H	7.40
	22AUG85			< 0.100
	22AUG85	1		0.280
	22AUG85	2		< 0.100
	22AUG85	3		< 0.100
	30SEP85			< 0.100
	23OCT85			< 0.100
	23OCT85	S	H	< 0.100
	21NOV85			< 0.100
	16JAN86			< 0.100
	19FEB86			< 0.100
	14MAR86			< 0.100
	17APR86			< 0.100
	22MAY86			< 0.100
399-3-7	25JUN85		H	< 0.100
	24JUL85		H	< 0.100
	20AUG85			< 0.100
	25SEP85			< 0.100
	28OCT85			< 0.100
	25NOV85			< 0.100
	17JAN86			< 0.100
	19FEB86			< 0.100
	14MAR86			< 0.100
	17APR86			< 0.100
	19MAY86			< 0.100
399-4-1	02JUL85		H	< 0.100
	23JUL85		H	< 0.100
	23AUG85			< 0.100
	24SEP85			< 0.100
	28OCT85			< 0.100
	06DEC85			< 0.100
	17JAN86			< 0.100
	18FEB86			< 0.100
	13MAR86			< 0.100
	18APR86			< 0.100
	22MAY86			< 0.100
399-4-7	01JUL85		H	< 0.100
399-4-7	01JUL85	1	H	< 0.100
	01JUL85	2	H	< 0.100
	01JUL85	3	H	< 0.100
	30JUL85		H	7.90
	30JUL85	1	H	9.90
	30JUL85	2	H	6.60
	30JUL85	3	H	5.20
	22AUG85			< 0.100
	22AUG85	1		< 0.100
	22AUG85	2		< 0.100
	22AUG85	3		< 0.100
	25SEP85			< 0.100
	25OCT85			< 0.100
	25OCT85	S	H	< 0.100
	21NOV85			< 0.100
	16JAN86			< 0.100
	20FEB86			< 0.100
	13MAR86			< 0.100
	18APR86			< 0.100
	22MAY86			< 0.100
399-6-2	18JUN85		H	< 0.100
	22JUL85		H	< 0.100
	19AUG85			< 0.100
	25SEP85			< 0.100
	23OCT85			< 0.100
	05DEC85			< 0.100
	20JAN86			< 0.100
	20FEB86			< 0.100
	20MAR86			< 0.100
	18APR86			< 0.100
	20MAY86			< 0.100
699-S19-E13	25JUN85		H	< 0.100
	22JUL85		H	< 0.100
	19AUG85			< 0.100
	24SEP85			< 0.100
	30OCT85			< 0.100
	11DEC85			< 0.100
	15JAN86			< 0.100
	21FEB86			< 0.100
	20MAR86			< 0.100
	22APR86			< 0.100
	27MAY86			< 0.100
699-S30E15A	02JUL85		H	< 0.100
	29JUL85		H	7.00
	27AUG85			< 0.100
	26SEP85			< 0.100
	24OCT85			< 0.100
	11DEC85			< 0.100
	20JAN86			< 0.100
	20FEB86			< 0.100
	19MAR86			< 0.100
	22APR86			< 0.100
	22MAY86			< 0.100

RCRA Compliance Ground-Water Monitoring Data
300 Area Process Trenches, June 1985 thru May 1986

TABLE G.3 Raw Data

Constituent List = Drinking Water Standards   Constituent = A22 SELENUM PPB

Well	Date	Rep	Lab	Concentration
399-1-1	25JUN85		H	< 5.00
	25JUN85	1	H	< 5.00
	25JUN85	2	H	< 5.00
	25JUN85	3	H	< 5.00
	24JUL85		H	< 5.00
	24JUL85	1	H	< 5.00
	24JUL85	2	H	< 5.00
	24JUL85	3	H	< 5.00
	20AUG85			< 5.00
	20AUG85	1		< 5.00
	20AUG85	2		< 5.00
	20AUG85	3		< 5.00
	27SEP85			< 5.00
	01NOV85			< 5.00
	01NOV85	S	H	< 5.00
	10DEC85			< 5.00
	13JAN86			< 5.00
	14FEB86			< 5.00
	19MAR86			< 5.00
	23APR86			< 5.00
	23MAY86			< 5.00
399-1-2	20JUN85		H	< 5.00
	20JUN85	1	H	< 5.00
	20JUN85	2	H	< 5.00
	20JUN85	3	H	< 5.00
	29JUL85		H	< 5.00
	29JUL85	1	H	< 5.00
	29JUL85	2	H	< 5.00
	29JUL85	3	H	< 5.00
	21AUG85			< 5.00
	21AUG85	1		< 5.00
	21AUG85	2		< 5.00
	21AUG85	3		< 5.00
	27SEP85			< 5.00
	24OCT85			< 5.00
	24OCT85	S	H	< 5.00
	06DEC85			< 5.00
	14JAN86			< 5.00
	13FEB86			< 5.00
	19MAR86			< 5.00
	23APR86			< 5.00
	27MAY86			< 5.00
399-1-3	02JUL85		H	< 5.00
	02AUG85		H	< 5.00
	23AUG85			< 5.00
	26SEP85			< 5.00
	24OCT85			< 5.00
	25NOV85			< 5.00
	14JAN86			< 5.00
	18FEB86			< 5.00
	17MAR86			< 5.00
	21APR86			< 5.00
	20MAY86			< 5.00
399-1-4	18JUN85		H	< 5.00
	23JUL85		H	< 5.00
399-1-4	19AUG85			< 5.00
	24SEP85			< 5.00
	30OCT85			< 5.00
	11DEC85			< 5.00
	15JAN86			< 5.00
	12FEB86			< 5.00
	17MAR86			< 5.00
	23APR86			< 5.00
	23MAY86			< 5.00
399-1-5	20JUN85		H	< 5.00
	31JUL85		H	< 5.00
	31JUL85	1	H	< 5.00
	31JUL85	2	H	< 5.00
	21AUG85			< 5.00
	21AUG85	1		< 5.00
	21AUG85	2		< 5.00
	27SEP85			< 5.00
	29OCT85			< 5.00
	29OCT85	S	H	< 5.00
	11DEC85			< 5.00
	15JAN86			< 5.00
	12FEB86			< 5.00
	17MAR86			< 5.00
	22APR86			< 5.00
	23MAY86			< 5.00
399-1-6	18JUN85		H	< 5.00
	22JUL85		H	< 5.00
	19AUG85			< 5.00
	24SEP85			< 5.00
	23OCT85			< 5.00
	04DEC85			< 5.00
	16JAN86			< 5.00
	12FEB86			< 5.00
	14MAR86			< 5.00
	21APR86			< 5.00
	23MAY86			< 5.00
399-1-7	02AUG85		H	< 5.00
	23AUG85			< 5.00
	26SEP85			< 5.00
	25OCT85			< 5.00
	10DEC85			< 5.00
	14JAN86			< 5.00
	14FEB86			< 5.00
	18MAR86			< 5.00
	21APR86			< 5.00
	20MAY86			< 5.00
399-1-8	29OCT85			< 5.00
	10DEC85			< 5.00
	14JAN86			< 5.00
	18FEB86			< 5.00
	18MAR86			< 5.00
	21APR86			< 5.00
	20MAY86			< 5.00
399-2-1	17JUN85		H	< 5.00
399-2-1	23JUL85		H	< 5.00
	20AUG85			< 5.00
	23SEP85			< 5.00
	30OCT85			< 5.00
	05DEC85			< 5.00
	20JAN86			< 5.00
	21FEB86			< 5.00
	18MAR86			< 5.00
	22APR86			< 5.00
	27MAY86			< 5.00
399-3-10	01JUL85		H	< 5.00
	01JUL85	1	H	< 5.00
	01JUL85	2	H	< 5.00
	01JUL85	3	H	< 5.00
	30JUL85		H	< 5.00
	30JUL85	1	H	< 5.00
	30JUL85	2	H	< 5.00
	30JUL85	3	H	< 5.00
	22AUG85			< 5.00
	22AUG85	1		< 5.00
	22AUG85	2		< 5.00
	22AUG85	3		< 5.00
	30SEP85			< 5.00
	23OCT85			< 5.00
	23OCT85	S	H	< 5.00
	21NOV85			< 5.00
	16JAN86			< 5.00
	19FEB86			< 5.00
	14MAR86			< 5.00
	17APR86			< 5.00
	22MAY86			< 5.00
399-3-7	25JUN85		H	< 5.00
	24JUL85		H	8.90
	20AUG85			< 5.00
	25SEP85			< 5.00
	28OCT85			< 5.00
	26NOV85			< 5.00
	17JAN86			< 5.00
	19FEB86			< 5.00
	14MAR86			< 5.00
	17APR86			< 5.00
	19MAY86			< 5.00
399-4-1	02JUL85		H	< 5.00
	23JUL85		H	17.0
	23AUG85			< 5.00
	24SEP85			< 5.00
	28OCT85			< 5.00
	06DEC85			< 5.00
	17JAN86			< 5.00
	18FEB86			< 5.00
	13MAR86			< 5.00
	18APR86			< 5.00
	22MAY86			< 5.00
399-4-7	01JUL85		H	< 5.00
399-4-7	01JUL85	1	H	< 5.00
	01JUL85	2	H	< 5.00
	01JUL85	3	H	< 5.00
	30JUL85		H	< 5.00
	30JUL85	1	H	< 5.00
	30JUL85	2	H	< 5.00
	30JUL85	3	H	< 5.00
	22AUG85			< 5.00
	22AUG85	1		< 5.00
	22AUG85	2		< 5.00
	22AUG85	3		< 5.00
	25SEP85			< 5.00
	25OCT85			< 5.00
	25OCT85	S	H	< 5.00
	21NOV85			< 5.00
	16JAN86			< 5.00
	20FEB86			< 5.00
	13MAR86			< 5.00
	18APR86			< 5.00
	22MAY86			< 5.00
399-8-2	18JUN85		H	< 5.00
	22JUL85		H	12.0
	19AUG85			< 5.00
	25SEP85			< 5.00
	23OCT85			< 5.00
	05DEC85			< 5.00
	20JAN86			< 5.00
	20FEB86			< 5.00
	20MAR86			< 5.00
	18APR86			< 5.00
	20MAY86			< 5.00
699-S19-E13	25JUN85		H	< 5.00
	22JUL85		H	12.0
	19AUG85			< 5.00
	24SEP85			< 5.00
	30OCT85			< 5.00
	11DEC85			< 5.00
	15JAN86			< 5.00
	21FEB86			< 5.00
	20MAR86			< 5.00
	22APR86			< 5.00
	27MAY86			< 5.00
699-S30E15A	02JUL85		H	< 5.00
	29JUL85		H	< 5.00
	27AUG85			< 5.00
	26SEP85			< 5.00
	24OCT85			< 5.00
	11DEC85			< 5.00
	20JAN86			< 5.00
	20FEB86			< 5.00
	19MAR86			< 5.00
	22APR86			< 5.00
	22MAY86			< 5.00

RCRA Compliance Ground-Water Monitoring Data
300 Area Process Trenches, June 1985 thru May 1986

TABLE G.3 Raw Data

Constituent List = Drinking Water Standards Constituent = A51 LEADGF PPB

Well	Date	Rep	Lab		Concentration
399-1-1	25JUN85			<	5.00
	25JUN85	1		<	5.00
	25JUN85	2		<	5.00
	25JUN85	3		<	5.00
	24JUL85			<	5.00
	24JUL85	1		<	5.00
	24JUL85	2		<	5.00
	24JUL85	3		<	5.00
	20AUG85			<	5.00
	20AUG85	1		<	5.00
	20AUG85	2		<	5.00
	20AUG85	3		<	5.00
	27SEP85			<	5.00
	01NOV85			<	5.00
	01NOV85	S	H	<	5.00
	10DEC85			<	5.00
	13JAN86			<	5.00
	14FEB86			<	5.00
	19MAR86			<	5.00
	23APR86			<	5.00
	23MAY86			<	5.00
399-1-2	20JUN85			<	5.00
	20JUN85	1		<	5.00
	20JUN85	2		<	5.00
	20JUN85	3		<	5.00
	29JUL85				12.0
	29JUL85	1			12.0
	29JUL85	2			11.8
	29JUL85	3			13.2
	21AUG85			<	5.00
	21AUG85	1			7.44
	21AUG85	2		<	5.00
	21AUG85	3		<	5.00
	27SEP85			<	5.00
	24OCT85			<	5.00
	24OCT85	S	H	<	5.00
	06DEC85			<	5.00
	14JAN86			<	5.00
	13FEB86			<	5.00
	19MAR86			<	5.00
	23APR86			<	5.00
	27MAY86			<	5.00
399-1-3	02JUL85				48.0
	02AUG85			<	5.00
	23AUG85			<	5.00
	26SEP85			<	5.00
	24OCT85			<	5.00
	25NOV85			<	5.00
	14JAN86			<	5.00
	18FEB86			<	5.00
	17MAR86			<	5.00
	21APR86			<	5.00
	20MAY86			<	5.00
399-1-4	18JUN85			<	5.00
	23JUL85			<	5.00
399-1-4	19AUG85			<	5.00
	24SEP85			<	5.00
	30OCT85			<	5.00
	11DEC85			<	5.00
	15JAN86			<	5.00
	12FEB86			<	5.00
	17MAR86			<	5.00
	23APR86			<	5.00
	23MAY86			<	5.00
399-1-5	20JUN85			<	5.00
	31JUL85			<	5.00
	31JUL85	1			5.80
	31JUL85	2		<	5.00
	21AUG85			<	5.00
	21AUG85	1		<	5.00
	21AUG85	2		<	5.00
	27SEP85			<	5.00
	29OCT85			<	5.00
	29OCT85	S	H	<	5.00
	11DEC85			<	5.00
	15JAN86			<	5.00
	12FEB86			<	5.00
	17MAR86			<	5.00
	22APR86			<	5.00
	23MAY86			<	5.00
399-1-6	18JUN85			<	5.00
	22JUL85			<	5.00
	19AUG85			<	5.00
	24SEP85			<	5.00
	23OCT85			<	5.00
	04DEC85			<	5.00
	15JAN86			<	5.00
	12FEB86			<	5.00
	14MAR86			<	5.00
	21APR86			<	5.00
	23MAY86			<	5.00
399-1-7	02AUG85			<	5.00
	23AUG85			<	5.00
	26SEP85			<	5.00
	25OCT85			<	5.00
	10DEC85			<	5.00
	14JAN86			<	5.00
	14FEB86			<	5.00
	18MAR86			<	5.00
	21APR86			<	5.00
	20MAY86			<	5.00
399-1-8	29OCT85			<	5.00
	10DEC85			<	5.00
	14JAN86			<	5.00
	18FEB86			<	5.00
	18MAR86			<	5.00
	21APR86			<	5.00
	20MAY86			<	5.00
399-2-1	17JUN85			<	5.00
399-2-1	23JUL85			<	5.00
	20AUG85			<	5.00
	23SEP85			<	5.00
	30OCT85			<	5.00
	05DEC85			<	5.00
	20JAN86			<	5.00
	21FEB86			<	5.00
	18MAR86			<	5.00
	22APR86			<	5.00
	27MAY86			<	5.00
399-3-10	01JUL85			<	5.00
	01JUL85	1			34.0
	01JUL85	2			27.0
	01JUL85	3			40.0
	30JUL85			<	5.00
	30JUL85	1			5.00
	30JUL85	2			5.20
	30JUL85	3			6.20
	22AUG85			<	5.00
	22AUG85	1		<	5.00
	22AUG85	2		<	5.00
	22AUG85	3		<	5.00
	30SEP85			<	5.00
	23OCT85			<	5.00
	23OCT85	S	H	<	5.00
	21NOV85			<	5.00
	16JAN86			<	5.00
	19FEB86			<	5.00
	14MAR86			<	5.00
	17APR86			<	5.00
	22MAY86			<	5.00
399-3-7	25JUN85			<	5.00
	24JUL85			<	5.00
	20AUG85			<	5.00
	25SEP85			<	5.00
	28OCT85			<	5.00
	26NOV85			<	5.00
	17JAN86			<	5.00
	19FEB86			<	5.00
	14MAR86			<	5.00
	17APR86			<	5.00
	19MAY86			<	5.00
399-4-1	02JUL85			<	5.00
	23JUL85			<	5.00
	23AUG85			<	5.00
	24SEP85				6.43
	28OCT85			<	5.00
	06DEC85			<	5.00
	17JAN86			<	5.00
	18FEB86			<	5.00
	13MAR86				15.9
	18APR86			<	5.00
	22MAY86			<	5.00
399-4-7	01JUL85			<	5.00
399-4-7	01JUL85	1		<	5.00
	01JUL85	2		<	5.00
	01JUL85	3		<	5.00
	30JUL85			<	5.00
	30JUL85	1			5.00
	30JUL85	2		<	5.00
	30JUL85	3		<	5.00
	22AUG85			<	5.00
	22AUG85	1		<	5.00
	22AUG85	2		<	5.00
	22AUG85	3		<	5.00
	25SEP85			<	5.00
	25OCT85			<	5.00
	25OCT85	S	H	<	5.00
	21NOV85			<	5.00
	16JAN86			<	5.00
	20FEB86			<	5.00
	13MAR86			<	5.00
	18APR86			<	5.00
	22MAY86			<	5.00
399-8-2	18JUN85				14.0
	22JUL85				5.90
	19AUG85			<	5.00
	25SEP85			<	5.00
	23OCT85			<	5.00
	05DEC85			<	5.00
	20JAN86			<	5.00
	20FEB86			<	5.00
	20MAR86			<	5.00
	18APR86				5.59
	20MAY86			<	5.00
699-S19-E13	25JUN85			<	5.00
	22JUL85			<	5.00
	19AUG85			<	5.00
	24SEP85				7.91
	30OCT85			<	5.00
	11DEC85			<	5.00
	15JAN86			<	5.00
	21FEB86			<	5.00
	20MAR86			<	5.00
	22APR86			<	5.00
	27MAY86				5.78
699-S30E15A	02JUL85				6.80
	29JUL85				5.50
	27AUG85			<	5.00
	26SEP85			<	5.00
	24OCT85				7.20
	11DEC85			<	5.00
	20JAN86			<	5.00
	20FEB86			<	5.00
	19MAR86			<	5.00
	22APR86			<	5.00
	22MAY86			<	5.00

RCRA Compliance Ground-Water Monitoring Data
300 Area Process Trenches, June 1985 thru May 1986

TABLE G.3 Raw Data

Constituent List = Drinking Water Standards   Constituent = C72 NITRATE PPB

Well	Date	Rep	Lab	Concentration
399-1-1	25JUN85			22,000
	25JUN85	1		22,500
	25JUN85	2		22,500
	25JUN85	3		23,000
	24JUL85			20,800
	24JUL85	1		20,800
	24JUL85	2		18,400
	24JUL85	3		22,300
	20AUG85			19,600
	20AUG85	1		18,500
	20AUG85	2		16,200
	20AUG85	3		18,000
	27SEP85			19,300
	01NOV85			21,500
	10DEC85			22,200
	13JAN86			24,200
	14FEB86			19,000
	19MAR86			25,800
	23APR86			23,900
	23MAY86			24,900
399-1-2	20JUN85			22,000
	20JUN85	1		36,000
	20JUN85	2		20,000
	20JUN85	3		21,000
	29JUL85			17,500
	29JUL85	1		18,200
	29JUL85	2		17,300
	29JUL85	3		18,500
	21AUG85			17,700
	21AUG85	1		16,600
	21AUG85	2		15,400
	21AUG85	3		17,600
	27SEP85			15,900
	24OCT85			20,700
	06DEC85			22,000
	14JAN86			22,100
	13FEB86			21,300
	19MAR86			28,600
	23APR86			27,000
	27MAY86			24,500
399-1-3	02JUL85			20,400
	02AUG85			17,400
	23AUG85			14,200
	26SEP85			23,800
	24OCT85			18,800
	25NOV85			26,500
	14JAN86			25,900
	18FEB86			22,800
	17MAR86			28,000
	21APR86			29,200
	20MAY86			24,900
399-1-4	18JUN85			18,000
	23JUL85			8,500
	19AUG85			4,000
	24SEP85			29,200
399-1-4	30OCT85			25,300
	11DEC85			22,100
	15JAN86			23,100
	12FEB86			22,700
	17MAR86			23,900
	23APR86			26,200
	23MAY86			23,700
399-1-5	20JUN85			17,500
	31JUL85			15,000
	31JUL85	1		14,700
	31JUL85	2		14,100
	21AUG85			3,700
	21AUG85	1		3,400
	21AUG85	2		2,900
	27SEP85			23,900
	29OCT85			26,800
	11DEC85			22,900
	15JAN86			21,500
	12FEB86			22,300
	17MAR86			24,800
	22APR86			14,500
	23MAY86			29,500
399-1-6	18JUN85			18,000
	22JUL85			14,100
	19AUG85			3,600
	24SEP85			21,600
	23OCT85			21,800
	04DEC85			22,400
	15JAN86			22,500
	12FEB86			17,400
	14MAR86			23,600
	21APR86			27,900
	23MAY86			27,300
399-1-7	02AUG85			17,500
	23AUG85			16,400
	26SEP85			15,500
	25OCT85			19,700
	10DEC85			23,300
	14JAN86			25,900
	14FEB86			20,600
	18MAR86			31,000
	21APR86			29,000
	20MAY86			24,900
399-1-8	29OCT85			10,900
	10DEC85			10,400
	14JAN86			13,000
	18FEB86			11,900
	18MAR86			14,100
	21APR86			17,600
	20MAY86			9,840
399-2-1	17JUN85			23,000
	23JUL85			23,600
	20AUG85			18,900
399-2-1	23SEP85			16,100
	30OCT85			22,300
	05DEC85			24,400
	20JAN86			25,700
	21FEB86			32,600
	18MAR86			29,300
	22APR86			24,600
	27MAY86			29,800
399-3-10	01JUL85			22,500
	01JUL85	1		21,000
	01JUL85	2		22,800
	01JUL85	3		23,100
	30JUL85			19,400
	30JUL85	1		21,300
	30JUL85	2		20,100
	30JUL85	3		20,800
	22AUG85			23,400
	22AUG85	1		19,200
	22AUG85	2		18,900
	22AUG85	3		20,600
	30SEP85			16,400
	23OCT85			16,400
	21NOV85			18,600
	16JAN86			19,400
	19FEB86			21,200
	14MAR86			30,200
	17APR86			27,600
	22MAY86			21,500
399-3-7	25JUN85			13,000
	24JUL85			13,700
	20AUG85			11,600
	25SEP85			27,400
	28OCT85			10,800
	25NOV85			13,900
	17JAN86			10,100
	19FEB86			10,700
	14MAR86			11,900
	17APR86			14,300
	19MAY86			17,400
399-4-1	02JUL85			12,500
	23JUL85			11,500
	23AUG85			13,400
	24SEP85			11,300
	28OCT85			9,420
	06DEC85			9,470
	17JAN86			8,700
	18FEB86			11,900
	13MAR86			13,000
	18APR86			10,400
	22MAY86			12,300
399-4-7	01JUL85			20,200
	01JUL85	1		20,000
	01JUL85	2		18,800
	01JUL85	3		20,700
399-4-7	30JUL85			17,400
	30JUL85	1		15,800
	30JUL85	2		16,100
	30JUL85	3		15,100
	22AUG85			15,500
	22AUG85	1		18,700
	22AUG85	2		18,400
	22AUG85	3		16,900
	25SEP85			16,200
	25OCT85			15,200
	21NOV85			13,800
	16JAN86			13,800
	20FEB86			13,700
	13MAR86			18,100
	18APR86			26,000
	22MAY86			21,700
399-8-2	18JUN85			18,000
	22JUL85			21,600
	19AUG85			18,500
	26SEP85			19,200
	23OCT85			18,200
	05DEC85			20,800
	20JAN86			17,300
	20FEB86			19,400
	20MAR86			20,000
	18APR86			19,700
	20MAY86			20,800
699-S19-E13	25JUN85			16,500
	22JUL85			20,500
	19AUG85			17,600
	24SEP85			18,800
	30OCT85			16,100
	11DEC85			18,800
	15JAN86			18,700
	21FEB86			17,800
	20MAR86			20,600
	22APR86			20,100
	27MAY86			19,600
699-S30E15A	02JUL85			15,200
	29JUL85			16,200
	27AUG85			12,800
	26SEP85			13,500
	24OCT85			11,000
	11DEC85			10,900
	20JAN86			9,650
	20FEB86			10,500
	19MAR86			11,400
	22APR86			12,600
	22MAY86			13,400

RCRA Compliance Ground-Water Monitoring Data
300 Area Process Trenches, June 1985 thru May 1986

TABLE G.3 Raw Data

Constituent List = Drinking Water Standards   Constituent = C74 FLUORID PPB

Well	Date	Rep	Lab	Concentration
399-1-1	25JUN85		<	500
	25JUN85	1	<	500
	25JUN85	2	<	500
	25JUN85	3	<	500
	24JUL85			610
	24JUL85	1		690
	24JUL85	2		760
	24JUL85	3		980
	20AUG85			690
	20AUG85	1		590
	20AUG85	2		590
	20AUG85	3		590
	27SEP85		<	500
	01NOV85		<	500
	16DEC85			506
	13JAN86		<	500
	14FEB86		<	500
	19MAR86			513
	23APR86		<	500
	23MAY86		<	500
399-1-2	20JUN85		<	500
	20JUN85	1	<	500
	20JUN85	2	<	500
	20JUN85	3	<	500
	29JUL85			850
	29JUL85	1		900
	29JUL85	2		860
	29JUL85	3		970
	21AUG85		<	500
	21AUG85	1	<	500
	21AUG85	2	<	500
	21AUG85	3	<	500
	27SEP85		<	500
	24OCT85		<	500
	06DEC85		<	500
	14JAN86		<	500
	13FEB86			557
	19MAR86			502
	23APR86		<	500
	27MAY86		<	500
399-1-3	02JUL85			600
	02AUG85			640
	23AUG85			750
	26SEP85			555
	24OCT85		<	500
	25NOV85		<	500
	14JAN86		<	500
	10FEB86			584
	17MAR86			568
	21APR86		<	500
	20MAY86		<	500
399-1-4	18JUN85		<	500
	23JUL85			800
	19AUG85		<	500
	24SEP85		<	500
399-1-4	30OCT85		<	500
	11DEC85		<	500
	15JAN86		<	500
	12FEB86		<	500
	17MAR86			522
	23APR86			677
	23MAY86		<	500
399-1-5	20JUN85			520
	31JUL85			1,220
	31JUL85	1		1,310
	31JUL85	2		1,260
	21AUG85			1,870
	21AUG85	1		740
	21AUG85	2		640
	27SEP85			509
	29OCT85		<	500
	11DEC85		<	500
	15JAN86			533
	12FEB86			581
	17MAR86			748
	22APR86			613
	23MAY86		<	500
399-1-6	18JUN85			500
	22JUL85			500
	19AUG85		<	500
	24SEP85		<	500
	23OCT85		<	500
	04DEC85		<	500
	15JAN86		<	500
	12FEB86		<	500
	14MAR86		<	500
	21APR86		<	500
	23MAY86		<	500
399-1-7	02AUG85			660
	23AUG85			810
	26SEP85			539
	25OCT85		<	500
	10DEC85			621
	14JAN86		<	500
	14FEB86		<	500
	18MAR86			554
	21APR86		<	500
	20MAY86		<	500
399-1-8	29OCT85			540
	10DEC85			581
	14JAN86		<	500
	18FEB86			687
	18MAR86			667
	21APR86			517
	20MAY86			500
399-2-1	17JUN85		<	500
	23JUL85			600
	20AUG85		<	500
399-2-1	23SEP85		<	500
	30OCT85		<	500
	05DEC85		<	500
	20JAN86		<	500
	21FEB86		<	500
	18MAR86		<	500
	22APR86		<	500
	27MAY86		<	500
399-3-10	01JUL85		<	500
	01JUL85	1	<	500
	01JUL85	2	<	500
	01JUL85	3	<	500
	30JUL85			890
	30JUL85	1		1,110
	30JUL85	2		920
	30JUL85	3		980
	22AUG85		<	500
	22AUG85	1	<	500
	22AUG85	2	<	500
	22AUG85	3	<	500
	30SEP85		<	500
	23OCT85		<	500
	21NOV85		<	500
	16JAN86		<	500
	19FEB86			593
	14MAR86			611
	17APR86		<	500
	22MAY86		<	500
399-3-7	25JUN85		<	500
	24JUL85			800
	20AUG85		<	500
	25SEP85		<	500
	28OCT85		<	500
	25NOV85		<	500
	17JAN86		<	500
	19FEB86			551
	14MAR86		<	500
	17APR86		<	500
	19MAY86		<	500
399-4-1	02JUL85		<	500
	23JUL85		<	500
	23AUG85			630
	24SEP85		<	500
	28OCT85		<	500
	06DEC85		<	500
	17JAN86		<	500
	18FEB86			585
	13MAR86			513
	18APR86		<	500
	22MAY86		<	500
399-4-7	01JUL85		<	500
	01JUL85	1	<	500
	01JUL85	2	<	500
	01JUL85	3	<	500
399-4-7	30JUL85			920
	30JUL85	1		1,240
	30JUL85	2		940
	30JUL85	3		860
	22AUG85		<	500
	22AUG85	1		680
	22AUG85	2		650
	22AUG85	3		610
	25SEP85		<	500
	25OCT85		<	500
	21NOV85		<	500
	18JAN86			502
	20FEB86			617
	13MAR86			647
	18APR86		<	500
	22MAY86		<	500
399-8-2	18JUN85		<	500
	22JUL85		<	500
	19AUG85		<	500
	25SEP85		<	500
	23OCT85		<	500
	05DEC85		<	500
	20JAN86		<	500
	20FEB86		<	500
	20MAR86			552
	18APR86		<	500
	20MAY86		<	500
699-S19-E13	25JUN85		<	500
	22JUL85		<	500
	19AUG85		<	500
	24SEP85		<	500
	30OCT85		<	500
	11DEC85		<	500
	15JAN86			521
	21FEB86		<	500
	20MAR86			593
	22APR86		<	500
	27MAY86		<	500
699-S30E15A	02JUL85		<	500
	29JUL85			830
	27AUG85		<	500
	26SEP85		<	500
	24OCT85		<	500
	11DEC85		<	500
	20JAN86		<	500
	20FEB86			505
	19MAR86			511
	22APR86		<	500
	22MAY86		<	500

RCRA Compliance Ground-Water Monitoring Data
300 Area Process Trenches, June 1985 thru May 1986

TABLE G.3 Raw Data

Constituent List = Quality Characteristics   Constituent = All SODIUM PPB

Well	Date	Rep	Lab	Concentration
399-1-1	26JUN85		H	13,400
	26JUN85	1	H	13,400
	25JUN85	2	H	13,000
	25JUN85	3	H	13,600
	24JUL85		H	13,100
	24JUL85	1	H	12,700
	24JUL85	2	H	1,220
	24JUL85	3	H	12,800
	20AUG85			10,900
	20AUG85	1		11,100
	20AUG85	2		11,400
	20AUG85	3		11,400
	27SEP85			12,000
	01NOV85			11,800
	01NOV85	S	H	12,900
	10DEC85			9,980
	13JAN86			12,000
	14FEB86			10,000
	19MAR86			10,300
	23APR86			10,200
	23MAY86			10,300
399-1-2	20JUN85		H	13,300
	20JUN85	1	H	13,200
	20JUN85	2	H	15,500
	20JUN85	3	H	14,300
	29JUL85		H	29,700
	29JUL85	1	H	13,100
	29JUL85	2	H	14,900
	29JUL85	3	H	14,900
	21AUG85			11,400
	21AUG85	1		10,900
	21AUG85	2		11,300
	21AUG85	3		11,300
	27SEP85			11,800
	24OCT85			12,100
	24OCT85	S	H	12,100
	06DEC85			12,300
	14JAN86			12,500
	13FEB86			11,400
	19MAR86			12,200
	23APR86			10,000
	27MAY86			11,700
399-1-3	02JUL85		H	21,500
	02AUG85		H	19,800
	23AUG85			13,400
	26SEP85			14,600
	24OCT85			16,800
	26NOV85			15,600
	14JAN86			17,600
	18FEB86			18,700
	17MAR86			19,400
	21APR86			20,400
	20MAY86			19,700
399-1-4	18JUN85		H	7,870
	23JUL85		H	10,400
399-1-4	19AUG85			7,900
	24SEP85			7,970
	30OCT85			8,290
	11DEC85			8,580
	15JAN86			8,090
	12FEB86			8,630
	17MAR86			8,670
	23APR86			10,300
	23MAY86			9,870
399-1-5	20JUN85		H	14,400
	31JUL85		H	13,000
	31JUL85	1	H	11,200
	31JUL85	2	H	12,700
	21AUG85			12,600
	21AUG85	1		12,500
	21AUG85	2		12,700
	27SEP85			12,100
	29OCT85			12,300
	29OCT85	S	H	11,600
	11DEC85			17,300
	15JAN86			18,600
	12FEB86			19,700
	17MAR86			16,100
	22APR86			13,200
	23MAY86			11,800
399-1-6	18JUN85		H	8,260
	22JUL85		H	15,500
	19AUG85			1,390
	24SEP85			7,220
	23OCT85			7,580
	04DEC85			7,050
	15JAN86			7,760
	12FEB86			7,400
	14MAR86			8,020
	21APR86			8,400
	23MAY86			8,230
399-1-7	02AUG85		H	19,700
	23AUG85			14,400
	26SEP85			14,200
	25OCT85			15,600
	10DEC85			15,200
	14JAN86			18,400
	14FEB86			20,500
	18MAR86			19,900
	21APR86			19,200
	20MAY86			20,300
399-1-8	29OCT85			26,700
	10DEC85			26,800
	14JAN86			28,500
	18FEB86			27,800
	18MAR86			29,800
	21APR86			26,800
	20MAY86			29,800
399-2-1	17JUN85		H	15,000
399-2-1	23JUL85		H	10,400
	20AUG85			3,890
	23SEP85			13,500
	30OCT85			14,700
	05DEC85			11,200
	20JAN86			12,700
	21FEB86			14,700
	18MAR86			13,700
	22APR86			13,100
	27MAY86			15,000
399-3-10	01JUL85		H	13,700
	01JUL85	1	H	13,100
	01JUL85	2	H	14,500
	01JUL85	3	H	13,300
	30JUL85		H	11,700
	30JUL85	1	H	12,000
	30JUL85	2	H	11,600
	30JUL85	3	H	11,000
	22AUG85			10,800
	22AUG85	1		11,300
	22AUG85	2		11,500
	22AUG85	3		11,400
	30SEP85			12,100
	23OCT85			12,600
	23OCT85	S	H	12,200
	21NOV85			11,800
	16JAN86			11,800
	19FEB86			11,500
	14MAR86			11,800
	17APR86			11,500
	22MAY86			11,400
399-3-7	26JUN85		H	24,000
	24JUL85		H	23,400
	20AUG85			19,800
	25SEP85			11,100
	28OCT85			20,600
	25NOV85			20,200
	17JAN86			15,800
	19FEB86			15,400
	14MAR86			18,100
	17APR86			16,600
	19MAY86			18,500
399-4-1	02JUL85		H	19,400
	23JUL85		H	15,300
	23AUG85			17,200
	24SEP85			16,300
	28OCT85			17,500
	06DEC85			15,900
	17JAN86			16,900
	18FEB86			17,000
	13MAR86			16,900
	18APR86			16,600
	22MAY86			16,600
399-4-7	01JUL85		H	21,300
399-4-7	01JUL85	1	H	22,900
	01JUL85	2	H	21,500
	01JUL85	3	H	18,400
	30JUL85		H	20,900
	30JUL85	1	H	20,300
	30JUL85	2	H	20,800
	30JUL85	3	H	22,300
	22AUG85			18,900
	22AUG85	1		17,800
	22AUG85	2		18,700
	22AUG85	3		19,100
	25SEP85			18,300
	25OCT85			19,100
	25OCT85	S	H	19,700
	21NOV85			18,500
	16JAN86			18,400
	20FEB86			17,200
	13MAR86			15,800
	18APR86			15,900
	22MAY86			17,500
399-8-2	18JUN85		H	17,300
	22JUL85		H	19,700
	19AUG85			18,700
	25SEP85			18,800
	23OCT85			19,000
	05DEC85			17,600
	20JAN86			19,000
	20FEB86			18,900
	20MAR86			16,600
	18APR86			18,200
	20MAY86			18,800
699-S19-E13	26JUN85		H	22,800
	22JUL85		H	24,800
	19AUG85			22,500
	24SEP85			22,700
	30OCT85			25,000
	11DEC85			21,100
	16JAN86			26,300
	21FEB86			20,900
	20MAR86			22,100
	22APR86			25,000
	27MAY86			22,700
699-S30E15A	02JUL85		H	18,700
	29JUL85		H	17,500
	27AUG85			15,500
	26SEP85			14,700
	24OCT85			14,900
	11DEC85			14,800
	20JAN86			13,600
	20FEB86			13,400
	19MAR86			14,300
	22APR86			15,200
	22MAY86			14,600

RCRA Compliance Ground-Water Monitoring Data
300 Area Process Trenches, June 1985 thru May 1986

TABLE G.3 Raw Data

Constituent List = Quality Characteristics   Constituent = A17 MANGESE PPB

Well	Date	Rep	Lab	Concentration
399-1-1	25JUN85		H	< 5.00
	25JUN85	1	H	< 5.00
	25JUN85	2	H	< 5.00
	25JUN85	3	H	< 5.00
	24JUL85		H	< 5.00
	24JUL85	1	H	< 5.00
	24JUL85	2	H	< 5.00
	24JUL85	3	H	< 5.00
	20AUG85			< 5.00
	20AUG85	1		< 5.00
	20AUG85	2		< 5.00
	20AUG85	3		6.00
	27SEP85			< 5.00
	01NOV85			< 5.00
	01NOV85	S	H	< 5.00
	10DEC85			< 5.00
	13JAN86			< 5.00
	14FEB86			5.00
	19MAR86			< 5.00
	23APR86			< 5.00
	23MAY86			< 5.00
399-1-2	20JUN85		H	< 5.00
	20JUN85	1	H	< 5.00
	20JUN85	2	H	< 5.00
	20JUN85	3	H	< 5.00
	29JUL85		H	< 5.00
	29JUL85	1	H	< 5.00
	29JUL85	2	H	< 5.00
	29JUL85	3	H	< 5.00
	21AUG85			< 5.00
	21AUG85	1		< 5.00
	21AUG85	2		< 5.00
	21AUG85	3		< 5.00
	27SEP85			< 5.00
	24OCT85			6.00
	24OCT85	S	H	11.0
	06DEC85			< 5.00
	14JAN86			< 5.00
	13FEB86			< 5.00
	19MAR86			< 5.00
	23APR86			< 5.00
	27MAY86			< 5.00
399-1-3	02JUL85		H	< 5.00
	02AUG85		H	< 5.00
	23AUG85			< 5.00
	26SEP85			11.0
	24OCT85			< 5.00
	25NOV85			< 5.00
	14JAN86			< 5.00
	18FEB86			< 5.00
	17MAR86			< 5.00
	21APR86			< 5.00
	20MAY86			< 5.00
399-1-4	18JUN85		H	< 5.00
	23JUL85		H	< 5.00
399-1-4	19AUG85			< 5.00
	24SEP85			6.00
	30OCT85			< 5.00
	11DEC85			< 5.00
	15JAN86			< 5.00
	12FEB86			< 5.00
	17MAR86			< 5.00
	23APR86			< 5.00
	23MAY86			< 5.00
399-1-5	20JUN85		H	< 5.00
	31JUL85		H	< 5.00
	31JUL85	1	H	< 5.00
	31JUL85	2	H	< 5.00
	21AUG85			6.00
	21AUG85	1		5.00
	21AUG85	2		< 5.00
	27SEP85			< 5.00
	29OCT85			< 5.00
	29OCT85	S	H	< 5.00
	11DEC85			< 5.00
	15JAN86			< 5.00
	12FEB86			< 5.00
	17MAR86			< 5.00
	22APR86			< 5.00
	23MAY86			< 5.00
399-1-6	18JUN85		H	< 5.00
	22JUL85		H	49.0
	19AUG85			< 5.00
	24SEP85			< 5.00
	23OCT85			< 5.00
	04DEC85			< 5.00
	15JAN86			< 5.00
	12FEB86			< 5.00
	14MAR86			< 5.00
	21APR86			< 5.00
	23MAY86			< 5.00
399-1-7	02AUG85		H	< 5.00
	23AUG85			< 5.00
	26SEP85			< 5.00
	25OCT85			< 5.00
	10DEC85			< 5.00
	14JAN86			< 5.00
	14FEB86			< 5.00
	18MAR86			< 5.00
	21APR86			< 5.00
	20MAY86			< 5.00
399-1-8	29OCT85			40.0
	10DEC85			38.0
	14JAN86			38.0
	18FEB86			28.0
	18MAR86			40.0
	21APR86			28.0
	20MAY86			32.0
399-2-1	17JUN85		H	39.0
399-2-1	23JUL85		H	< 5.00
	20AUG85			< 5.00
	23SEP85			17.0
	30OCT85			5.00
	05DEC85			< 5.00
	20JAN86			< 5.00
	21FEB86			< 5.00
	18MAR86			< 5.00
	22APR86			< 5.00
	27MAY86			< 5.00
399-3-10	01JUL85		H	< 5.00
	01JUL85	1	H	< 5.00
	01JUL85	2	H	< 5.00
	01JUL85	3	H	< 5.00
	30JUL85		H	< 5.00
	30JUL85	1	H	< 5.00
	30JUL85	2	H	< 5.00
	30JUL85	3	H	< 5.00
	22AUG85			6.00
	22AUG85	1		6.00
	22AUG85	2		6.00
	22AUG85	3		5.00
	30SEP85			< 5.00
	23OCT85			< 5.00
	23OCT85	S	H	10.0
	21NOV85			< 5.00
	16JAN86			< 5.00
	19FEB86			< 5.00
	14MAR86			7.00
	17APR86			< 5.00
	22MAY86			< 5.00
399-3-7	25JUN85		H	< 5.00
	24JUL85		H	< 5.00
	20AUG85			< 5.00
	26SEP85			< 5.00
	28OCT85			6.00
	25NOV85			< 5.00
	17JAN86			< 5.00
	19FEB86			10.0
	14MAR86			< 5.00
	17APR86			< 5.00
	19MAY86			< 5.00
399-4-1	02JUL85		H	< 5.00
	23JUL85		H	< 5.00
	23AUG85			< 5.00
	24SEP85			8.00
	28OCT85			< 5.00
	06DEC85			< 5.00
	17JAN86			< 5.00
	18FEB86			< 5.00
	13MAR86			367
	18APR86			57.0
	22MAY86			< 5.00
399-4-7	01JUL85		H	< 5.00
399-4-7	01JUL85	1	H	< 5.00
	01JUL85	2	H	< 5.00
	01JUL85	3	H	< 5.00
	30JUL85		H	< 5.00
	30JUL85	1	H	< 5.00
	30JUL85	2	H	< 5.00
	30JUL85	3	H	< 5.00
	22AUG85			< 5.00
	22AUG85	1		< 5.00
	22AUG85	2		< 5.00
	22AUG85	3		< 5.00
	26SEP85			< 5.00
	25OCT85			< 5.00
	25OCT85	S	H	13.0
	21NOV85			< 5.00
	16JAN86			< 5.00
	20FEB86			< 5.00
	13MAR86			16.0
	18APR86			< 5.00
	22MAY86			8.00
399-8-2	18JUN85		H	< 5.00
	22JUL85		H	< 5.00
	19AUG85			< 5.00
	25SEP85			< 5.00
	23OCT85			< 5.00
	05DEC85			< 5.00
	20JAN86			< 5.00
	20FEB86			< 5.00
	20MAR86			< 5.00
	18APR86			< 5.00
	20MAY86			< 5.00
699-S19-E13	25JUN85		H	< 5.00
	22JUL85		H	< 5.00
	19AUG85			< 5.00
	24SEP85			< 5.00
	30OCT85			< 5.00
	11DEC85			< 5.00
	15JAN86			< 5.00
	21FEB86			< 5.00
	20MAR86			< 5.00
	22APR86			< 5.00
	27MAY86			< 5.00
699-S30E15A	02JUL85		H	< 5.00
	29JUL85		H	< 5.00
	27AUG85			< 5.00
	26SEP85			9.00
	24OCT85			< 5.00
	11DEC85			< 5.00
	20JAN86			< 5.00
	20FEB86			< 5.00
	19MAR86			< 5.00
	22APR86			< 5.00
	22MAY86			< 5.00

RCRA Compliance Ground-Water Monitoring Data
300 Area Process Trenches, June 1985 thru May 1986

TABLE G.3 Raw Data

Constituent List = Quality Characteristics Constituent = A19 IRON PPB

Well	Date	Rep	Lab	Concentration
399-1-1	25JUN85		H	353
	25JUN85	1	H	161
	25JUN85	2	H	97.0
	25JUN85	3	H	275
	24JUL85		H	59.0
	24JUL85	1	H	55.0
	24JUL85	2	H	< 50.0
	24JUL85	3	H	73.0
	20AUG85			54.0
	20AUG85	1		58.0
	20AUG85	2		< 50.0
	20AUG85	3		61.0
	27SEP85			77.0
	01NOV85			78.0
	01NOV85	S	H	90.0
	10DEC85			260
	13JAN86			115
	14FEB86			311
	19MAR86			56.0
	23APR86			398
	23MAY86			< 50.0
399-1-2	20JUN85		H	126
	20JUN85	1	H	166
	20JUN85	2	H	173
	20JUN85	3	H	306
	29JUL85		H	92.0
	29JUL85	1	H	177
	29JUL85	2	H	222
	29JUL85	3	H	222
	21AUG85			< 50.0
	21AUG85	1		< 50.0
	21AUG85	2		50.0
	21AUG85	3		< 50.0
	27SEP85			< 50.0
	24OCT85			168
	24OCT85	S	H	234
	06DEC85			< 50.0
	14JAN86			64.0
	13FEB86			< 50.0
	19MAR86			112
	23APR86			< 50.0
	27MAY86			< 50.0
399-1-3	02JUL85		H	91.0
	02AUG85		H	375
	23AUG85			67.0
	26SEP85			160
	24OCT85			203
	25NOV85			63.0
	14JAN86			< 50.0
	18FEB86			< 50.0
	17MAR86			< 50.0
	21APR86			55.0
	20MAY86			< 50.0
399-1-4	18JUN85		H	403
	23JUL85		H	176
399-1-4	19AUG85			97.0
	24SEP85			179
	30OCT85			110
	11DEC85			221
	15JAN86			< 50.0
	12FEB86			112
	17MAR86			< 50.0
	23APR86			< 50.0
	23MAY86			56.0
399-1-5	20JUN85		H	431
	31JUL85		H	194
	31JUL85	1	H	151
	31JUL85	2	H	1,910
	21AUG85			433
	21AUG85	1		267
	21AUG85	2		281
	27SEP85			< 50.0
	29OCT85			< 50.0
	29OCT85	S	H	158
	11DEC85			127
	15JAN86			< 50.0
	12FEB86			< 50.0
	17MAR86			< 50.0
	22APR86			< 50.0
	23MAY86			53.0
399-1-6	18JUN85		H	758
	22JUL85		H	970
	19AUG85			62.0
	24SEP85			63.0
	23OCT85			< 50.0
	04DEC85			75.0
	15JAN86			< 50.0
	12FEB86			< 50.0
	14MAR86			52.0
	21APR86			52.0
	23MAY86			< 50.0
399-1-7	02AUG85		H	501
	23AUG85			56.0
	26SEP85			125
	25OCT85			< 50.0
	10DEC85			81.0
	14JAN86			66.0
	14FEB86			< 50.0
	18MAR86			< 50.0
	21APR86			< 50.0
	20MAY86			< 50.0
399-1-8	29OCT85			68.0
	10DEC85			58.0
	14JAN86			85.0
	18FEB86			62.0
	18MAR86			80.0
	21APR86			64.0
	20MAY86			< 50.0
399-2-1	17JUN85		H	4,930
399-2-1	23JUL85		H	176
	20AUG85			124
	23SEP85			232
	30OCT85			97.0
	05DEC85			< 50.0
	20JAN86			61.0
	21FEB86			152
	18MAR86			91.0
	22APR86			< 50.0
	27MAY86			71.0
399-3-10	01JUL85		H	321
	01JUL85	1	H	308
	01JUL85	2	H	513
	01JUL85	3	H	250
	30JUL85		H	401
	30JUL85	1	H	233
	30JUL85	2	H	273
	30JUL85	3	H	481
	22AUG85			206
	22AUG85	1		173
	22AUG85	2		191
	22AUG85	3		161
	30SEP85			132
	23OCT85			159
	23OCT85	S	H	279
	21NOV85			115
	16JAN86			203
	19FEB86			117
	14MAR86			638
	17APR86			125
	22MAY86			156
399-3-7	25JUN85		H	290
	24JUL85		H	103
	20AUG85			380
	25SEP85			110
	28OCT85			282
	25NOV85			< 50.0
	17JAN86			< 50.0
	19FEB86			1,420
	14MAR86			91.0
	17APR86			70.0
	19MAY86			< 50.0
399-4-1	02JUL85		H	641
	23JUL85		H	271
	23AUG85			66.0
	24SEP85			367
	28OCT85			192
	06DEC85			148
	17JAN86			< 50.0
	18FEB86			117
	13MAR86			14,900
	18APR86			2,390
	22MAY86			81.0
399-4-7	01JUL85		H	< 50.0
399-4-7	01JUL85	1	H	< 50.0
	01JUL85	2	H	154
	01JUL85	3	H	66.0
	30JUL85		H	162
	30JUL85	1	H	183
	30JUL85	2	H	263
	30JUL85	3	H	106
	22AUG85			< 50.0
	22AUG85	1		76.0
	22AUG85	2		64.0
	22AUG85	3		< 50.0
	25SEP85			< 50.0
	25OCT85			< 50.0
	25OCT85	S	H	85.0
	21NOV85			89.0
	16JAN86			< 0.000
	20FEB86			61.0
	13MAR86			312
	18APR86			< 50.0
	22MAY86			83.0
399-8-2	18JUN85		H	657
	22JUL85		H	177
	19AUG85			108
	25SEP85			< 50.0
	23OCT85			108
	05DEC85			101
	20JAN86			< 50.0
	20FEB86			< 50.0
	20MAR86			80.0
	18APR86			< 50.0
	20MAY86			< 50.0
699-S19-E13	25JUN85		H	640
	22JUL85		H	150
	19AUG85			83.0
	24SEP85			< 50.0
	30OCT85			73.0
	11DEC85			< 50.0
	15JAN86			< 50.0
	21FEB86			61.0
	20MAR86			63.0
	22APR86			< 50.0
	27MAY86			< 50.0
699-S30E15A	02JUL85		H	216
	29JUL85		H	142
	27AUG85			< 50.0
	26SEP85			< 50.0
	24OCT85			< 50.0
	11DEC85			71.0
	20JAN86			< 50.0
	20FEB86			< 50.0
	19MAR86			< 50.0
	22APR86			< 50.0
	22MAY86			< 50.0

RCRA Compliance Ground-Water Monitoring Data
300 Area Process Trenches, June 1985 thru May 1988

TABLE G.3 Raw Data

Constituent List = Quality Characteristics   Constituent = C73 SULFATE PPB

Well	Date	Rep	Lab	Concentration
399-1-1	25JUN85			17,000
	25JUN85	1		18,000
	25JUN85	2		18,000
	25JUN85	3		18,500
	24JUL85			17,400
	24JUL85	1		17,800
	24JUL85	2		15,900
	24JUL85	3		18,900
	20AUG85			17,800
	20AUG85	1		14,600
	20AUG85	2		14,700
	20AUG85	3		14,600
	27SEP85			14,000
	01NOV85			13,500
	10DEC85			13,200
	13JAN86			14,100
	14FEB86			11,600
	19MAR86			15,300
	23APR86			17,200
	23MAY86			17,700
399-1-2	20JUN85			24,000
	20JUN85	1		23,500
	20JUN85	2		23,500
	20JUN85	3		23,000
	29JUL85			20,000
	29JUL85	1		21,000
	29JUL85	2		20,000
	29JUL85	3		21,300
	21AUG85			18,700
	21AUG85	1		18,000
	21AUG85	2		18,500
	21AUG85	3		19,200
	27SEP85			14,800
	24OCT85			14,700
	06DEC85			18,200
	14JAN86			20,000
	13FEB86			15,000
	19MAR86			15,000
	23APR86			18,200
	27MAY86			18,500
399-1-3	02JUL85			18,400
	02AUG85			15,900
	23AUG85			15,400
	26SEP85			15,400
	24OCT85			11,700
	25NOV85			14,100
	14JAN86			14,200
	18FEB86			15,000
	17MAR86			15,200
	21APR86			19,000
	20MAY86			18,700
399-1-4	18JUN85			17,000
	23JUL85			13,700
	19AUG85			11,400
	24SEP85			13,700
399-1-4	30OCT85			14,300
	11DEC85			14,400
	15JAN86			12,100
	12FEB86			12,700
	17MAR86			15,300
	23APR86			18,000
	23MAY86			18,100
399-1-5	20JUN85			19,500
	31JUL85			13,700
	31JUL85	1		13,400
	31JUL85	2		12,900
	21AUG85			16,400
	21AUG85	1		15,500
	21AUG85	2		13,700
	27SEP85			14,900
	29OCT85			13,600
	11DEC85			13,500
	15JAN86			13,900
	12FEB86			12,500
	17MAR86			14,900
	22APR86			18,200
	23MAY86			17,600
399-1-6	18JUN85			17,000
	22JUL85			13,900
	19AUG85			12,600
	24SEP85			15,000
	23OCT85			14,200
	04DEC85			16,100
	15JAN86			13,300
	12FEB86			12,200
	14MAR86			15,600
	21APR86			19,500
	23MAY86			18,000
399-1-7	02AUG85			15,600
	23AUG85			17,100
	26SEP85			13,800
	25OCT85			12,200
	10DEC85			14,300
	14JAN86			14,200
	14FEB86			13,300
	18MAR86			16,300
	21APR86			18,800
	20MAY86			18,800
399-1-8	29OCT85			7,440
	10DEC85			6,700
	14JAN86			9,120
	18FEB86			8,840
	18MAR86			7,990
	21APR86			12,400
	20MAY86			7,610
399-2-1	17JUN85			17,000
	23JUL85			18,200
	20AUG85			16,200
399-2-1	23SEP85			14,300
	30OCT85			13,700
	05DEC85			15,800
	20JAN86			15,300
	21FEB86			35,600
	18MAR86			26,800
	22APR86			18,500
	27MAY86			19,500
399-3-10	01JUL85			18,200
	01JUL85	1		18,300
	01JUL85	2		19,500
	01JUL85	3		19,400
	30JUL85			17,800
	30JUL85	1		19,200
	30JUL85	2		18,300
	30JUL85	3		18,900
	22AUG85			22,300
	22AUG85	1		19,000
	22AUG85	2		19,100
	22AUG85	3		20,400
	30SEP85			17,200
	23OCT85			16,900
	21NOV85			18,100
	16JAN86			16,600
	19FEB86			15,900
	14MAR86			25,400
	17APR86			27,700
	22MAY86			22,600
399-3-7	25JUN85			36,000
	24JUL85			38,300
	20AUG85			35,000
	25SEP85			19,800
	28OCT85			29,600
	25NOV85			36,700
	17JAN86			23,800
	19FEB86			29,400
	14MAR86			26,700
	17APR86			26,900
	19MAY86			29,300
399-4-1	02JUL85			32,300
	23JUL85			13,200
	23AUG85			32,700
	24SEP85			24,100
	28OCT85			24,100
	06DEC85			23,600
	17JAN86			20,700
	18FEB86			26,800
	13MAR86			29,900
	18APR86			27,500
	22MAY86			26,600
399-4-7	01JUL85			27,100
	01JUL85	1		28,100
	01JUL85	2		27,800
	01JUL85	3		34,500
399-4-7	30JUL85			33,100
	30JUL85	1		29,800
	30JUL85	2		30,700
	30JUL85	3		28,800
	22AUG85			31,400
	22AUG85	1		38,600
	22AUG85	2		38,000
	22AUG85	3		34,900
	25SEP85			47,000
	26OCT85			36,800
	21NOV85			41,500
	16JAN86			30,200
	20FEB86			31,300
	13MAR86			34,600
	18APR86			35,700
	22MAY86			33,700
399-8-2	18JUN85			25,000
	22JUL85			31,200
	19AUG85			27,200
	25SEP85			29,400
	23OCT85			25,000
	05DEC85			30,900
	20JAN86			25,300
	20FEB86			28,300
	20MAR86			29,000
	18APR86			30,600
	20MAY86			29,600
699-S19-E13	25JUN85			44,000
	22JUL85			49,000
	19AUG85			49,100
	24SEP85			51,700
	30OCT85			53,000
	11DEC85			48,100
	15JAN86			46,000
	21FEB86			46,300
	20MAR86			63,000
	22APR86			63,600
	27MAY86			47,700
699-S30E15A	02JUL85			18,000
	29JUL85			18,100
	27AUG85			15,100
	26SEP85			16,700
	24OCT85			15,500
	11DEC85			16,600
	20JAN86			14,900
	20FEB86			16,300
	19MAR86			17,400
	22APR86			16,200
	22MAY86			17,900

RCRA Compliance Ground-Water Monitoring Data
300 Area Process Trenches, June 1985 thru May 1986

TABLE G.3 Raw Data

Constituent List = Quality Characteristics   Constituent = C75 CHLORID PPB

Well	Date	Rep	Lab	Concentration
399-1-1	25JUN85			8,000
	25JUN85	1		8,100
	25JUN85	2		8,500
	25JUN85	3		8,500
	24JUL85			10,700
	24JUL85	1		11,200
	24JUL85	2		9,800
	24JUL85	3		12,000
	20AUG85			14,800
	20AUG85	1		12,800
	20AUG85	2		12,500
	20AUG85	3		12,100
	27SEP85			15,500
	01NOV85			8,320
	10DEC85			5,950
	13JAN86			11,000
	14FEB86			7,140
	19MAR86			9,820
	23APR86			10,500
	23MAY86			14,300
399-1-2	20JUN85			8,500
	20JUN85	1		9,000
	20JUN85	2		8,500
	20JUN85	3		860
	29JUL85			10,600
	29JUL85	1		11,100
	29JUL85	2		10,500
	29JUL85	3		11,300
	21AUG85			11,700
	21AUG85	1		11,000
	21AUG85	2		9,700
	21AUG85	3		11,500
	27SEP85			11,000
	24OCT85			11,800
	06DEC85			19,000
	14JAN86			9,460
	13FEB86			14,400
	19MAR86			22,900
	23APR86			16,000
	27MAY86			9,580
399-1-3	02JUL85			14,900
	02AUG85			12,900
	23AUG85			12,200
	26SEP85			13,800
	24OCT85			28,400
	25NOV85			39,700
	14JAN86			47,300
	18FEB86			64,300
	17MAR86			53,800
	21APR86			21,600
	20MAY86			21,800
399-1-4	18JUN85			8,000
	23JUL85			11,800
	19AUG85			6,400
	24SEP85			8,330
399-1-4	30OCT85			4,880
	11DEC85			15,200
	15JAN86			10,700
	12FEB86			7,280
	17MAR86			7,450
	23APR86			8,410
	23MAY86			7,890
399-1-5	20JUN85			8,000
	31JUL85			8,600
	31JUL85	1		8,500
	31JUL85	2		8,300
	21AUG85			50,400
	21AUG85	1		47,200
	21AUG85	2		43,600
	27SEP85			13,000
	29OCT85			5,210
	11DEC85			72,200
	15JAN86			18,800
	12FEB86			35,900
	17MAR86			18,900
	22APR86			9,200
	23MAY86			8,170
399-1-6	18JUN85			7,000
	22JUL85			10,200
	19AUG85			8,600
	24SEP85			6,960
	23OCT85			6,380
	04DEC85			6,690
	15JAN86			8,240
	12FEB86			6,820
	14MAR86			9,410
	21APR86			5,880
	23MAY86			8,560
399-1-7	02AUG85			13,800
	23AUG85			14,200
	26SEP85			13,600
	25OCT85			26,100
	10DEC85			33,300
	14JAN86			49,200
	14FEB86			64,800
	18MAR86			57,400
	21APR86			21,200
	20MAY86			20,000
399-1-8	29OCT85			18,600
	10DEC85			19,800
	14JAN86			38,500
	18FEB86			36,500
	18MAR86			29,700
	21APR86			19,300
	20MAY86			15,900
399-2-1	17JUN85			26,000
	23JUL85			14,000
	20AUG85			12,200
399-2-1	23SEP85			11,500
	30OCT85			11,700
	05DEC85			15,100
	20JAN86			22,200
	21FEB86			23,400
	18MAR86			28,700
	22APR86			19,000
	27MAY86			18,000
399-3-10	01JUL85			12,800
	01JUL85	1		11,900
	01JUL85	2		14,400
	01JUL85	3		14,200
	30JUL85			10,400
	30JUL85	1		11,800
	30JUL85	2		11,000
	30JUL85	3		11,200
	22AUG85			12,300
	22AUG85	1		10,000
	22AUG85	2		10,000
	22AUG85	3		11,000
	30SEP85			9,060
	23OCT85			8,160
	21NOV85			9,220
	16JAN86			11,000
	19FEB86			13,800
	14MAR86			11,900
	17APR86			10,500
	22MAY86			16,100
399-3-7	25JUN85			12,000
	24JUL85			14,100
	20AUG85			13,200
	26SEP85			9,710
	28OCT85			12,300
	25NOV85			13,900
	17JAN86			9,450
	19FEB86			11,600
	14MAR86			11,500
	17APR86			10,800
	19MAY86			14,700
399-4-1	02JUL85			11,900
	23JUL85			10,800
	23AUG85			11,500
	24SEP85			9,340
	28OCT85			7,790
	06DEC85			7,580
	17JAN86			7,640
	18FEB86			10,400
	13MAR86			10,800
	18APR86			9,520
	22MAY86			11,600
399-4-7	01JUL85			13,800
	01JUL85	1		14,000
	01JUL85	2		13,700
	01JUL85	3		13,800
399-4-7	30JUL85			13,300
	30JUL85	1		11,900
	30JUL85	2		12,400
	30JUL85	3		11,600
	22AUG85			12,900
	22AUG85	1		16,800
	22AUG85	2		16,600
	22AUG85	3		14,200
	25SEP85			14,100
	25OCT85			13,200
	21NOV85			12,400
	16JAN86			10,200
	20FEB86			11,100
	13MAR86			10,100
	18APR86			10,200
	22MAY86			14,000
399-8-2	18JUN85			8,000
	22JUL85			9,300
	19AUG85			9,800
	26SEP85			9,050
	23OCT85			8,170
	05DEC85			10,000
	20JAN86			8,940
	20FEB86			9,590
	20MAR86			9,840
	18APR86			9,480
	20MAY86			9,510
699-S19-E13	25JUN85			12,600
	22JUL85			18,800
	19AUG85			16,100
	24SEP85			16,500
	30OCT85			14,800
	11DEC85			16,000
	15JAN86			14,900
	21FEB86			15,200
	20MAR86			16,500
	22APR86			17,000
	27MAY86			16,600
699-S30E15A	02JUL85			4,700
	29JUL85			4,600
	27AUG85			3,730
	26SEP85			6,360
	24OCT85			3,760
	11DEC85			3,940
	20JAN86			3,570
	20FEB86			5,280
	19MAR86			4,500
	22APR86			4,910
	22MAY86			5,960

RCRA Compliance Ground-Water Monitoring Data
300 Area Process Trenches, June 1985 thru May 1986

TABLE G.3 Raw Data

Constituent List = Site Specific   Constituent = A12 NICKEL PPB

Well	Date	Rep	Lab		Concentration
399-1-1	25JUN85		H	<	10.0
	25JUN85	1	H	<	10.0
	25JUN85	2	H	<	10.0
	25JUN85	3	H	<	10.0
	24JUL85		H	<	10.0
	24JUL85	1	H	<	10.0
	24JUL85	2	H	<	10.0
	24JUL85	3	H	<	10.0
	20AUG85			<	10.0
	20AUG85	1		<	10.0
	20AUG85	2		<	10.0
	20AUG85	3		<	10.0
	27SEP85				14.0
	01NOV85			<	10.0
	01NOV85	S	H	<	10.0
	10DEC85			<	10.0
	13JAN86			<	10.0
	14FEB86			<	10.0
	19MAR86			<	10.0
	23APR86			<	10.0
	23MAY86			<	10.0
399-1-2	20JUN85		H	<	10.0
	20JUN85	1	H	<	10.0
	20JUN85	2	H	<	10.0
	20JUN85	3	H	<	10.0
	29JUL85		H	<	10.0
	29JUL85	1	H	<	10.0
	29JUL85	2	H	<	10.0
	29JUL85	3	H	<	10.0
	21AUG85			<	10.0
	21AUG85	1		<	10.0
	21AUG85	2		<	10.0
	21AUG85	3		<	10.0
	27SEP85				14.0
	24OCT85			<	10.0
	24OCT85	S	H	<	10.0
	06DEC85			<	10.0
	14JAN86			<	10.0
	13FEB86			<	10.0
	19MAR86			<	10.0
	23APR86			<	10.0
	27MAY86			<	10.0
399-1-3	02JUL85		H	<	10.0
	02AUG85		H		10.0
	23AUG85			<	10.0
	26SEP85			<	10.0
	24OCT85			<	10.0
	25NOV85			<	10.0
	14JAN86			<	10.0
	18FEB86			<	10.0
	17MAR86			<	10.0
	21APR86			<	10.0
	20MAY86			<	10.0
399-1-4	18JUN85		H	<	10.0
	23JUL85		H	<	10.0
399-1-4	19AUG85			<	10.0
	24SEP85			<	10.0
	30OCT85			<	10.0
	11DEC85			<	10.0
	15JAN86			<	10.0
	12FEB86			<	10.0
	17MAR86			<	10.0
	23APR86			<	10.0
	23MAY86			<	10.0
399-1-5	20JUN85		H	<	10.0
	31JUL85		H		10.0
	31JUL85	1	H	<	10.0
	31JUL85	2	H	<	10.0
	21AUG85			<	10.0
	21AUG85	1			50.0
	21AUG85	2		<	10.0
	27SEP85				15.0
	29OCT85			<	10.0
	29OCT85	S	H	<	10.0
	11DEC85			<	10.0
	15JAN86			<	10.0
	12FEB86			<	10.0
	17MAR86			<	10.0
	22APR86			<	10.0
	23MAY86			<	10.0
399-1-6	18JUN85		H	<	10.0
	22JUL85		H		95.0
	19AUG85			<	10.0
	24SEP85			<	10.0
	23OCT85			<	10.0
	04DEC85			<	10.0
	15JAN86			<	10.0
	12FEB86			<	10.0
	14MAR86			<	10.0
	21APR86			<	10.0
	23MAY86			<	10.0
399-1-7	02AUG85		H	<	10.0
	23AUG85			<	10.0
	26SEP85			<	10.0
	25OCT85			<	10.0
	10DEC85			<	10.0
	14JAN86			<	10.0
	14FEB86			<	10.0
	18MAR86			<	10.0
	21APR86			<	10.0
	20MAY86			<	10.0
399-1-8	29OCT85			<	10.0
	10DEC85			<	10.0
	14JAN86			<	10.0
	18FEB86			<	10.0
	18MAR86			<	10.0
	21APR86			<	10.0
	20MAY86			<	10.0
399-2-1	17JUN85		H	<	10.0
399-2-1	23JUL85		H	<	10.0
	20AUG85			<	10.0
	23SEP85			<	10.0
	30OCT85			<	10.0
	05DEC85			<	10.0
	20JAN86			<	10.0
	21FEB86			<	10.0
	18MAR86			<	10.0
	22APR86			<	10.0
	27MAY86			<	10.0
399-3-10	01JUL85		H	<	10.0
	01JUL85	1	H	<	10.0
	01JUL85	2	H	<	10.0
	01JUL85	3	H	<	10.0
	30JUL85		H		18.0
	30JUL85	1	H	<	10.0
	30JUL85	2	H	<	10.0
	30JUL85	3	H	<	10.0
	22AUG85				11.0
	22AUG85	1		<	10.0
	22AUG85	2		<	10.0
	22AUG85	3		<	10.0
	30SEP85				22.0
	23OCT85			<	10.0
	23OCT85	S	H	<	10.0
	21NOV85			<	10.0
	16JAN86			<	10.0
	19FEB86			<	10.0
	14MAR86			<	10.0
	17APR86			<	10.0
	22MAY86			<	10.0
399-3-7	25JUN85		H	<	10.0
	24JUL85		H	<	10.0
	20AUG85			<	10.0
	25SEP85				14.0
	28OCT85			<	10.0
	25NOV85			<	10.0
	17JAN86			<	10.0
	19FEB86			<	10.0
	14MAR86			<	10.0
	17APR86			<	10.0
	19MAY86			<	10.0
399-4-1	02JUL85		H	<	10.0
	23JUL85		H	<	10.0
	23AUG85			<	10.0
	24SEP85			<	10.0
	28OCT85			<	10.0
	06DEC85			<	10.0
	17JAN86			<	10.0
	18FEB86			<	10.0
	13MAR86				35.0
	18APR86			<	10.0
	22MAY86			<	10.0
399-4-7	01JUL85		H	<	10.0
399-4-7	01JUL85	1	H	<	10.0
	01JUL85	2	H	<	10.0
	01JUL85	3	H	<	10.0
	30JUL85		H	<	10.0
	30JUL85	1	H	<	10.0
	30JUL85	2	H	<	10.0
	30JUL85	3	H	<	10.0
	22AUG85			<	10.0
	22AUG85	1			40.0
	22AUG85	2		<	10.0
	22AUG85	3		<	10.0
	25SEP85			<	10.0
	26OCT85			<	10.0
	26OCT85	S	H	<	10.0
	21NOV85			<	10.0
	16JAN86			<	10.0
	20FEB86			<	10.0
	13MAR86			<	10.0
	18APR86			<	10.0
	22MAY86			<	10.0
399-8-2	18JUN85		H	<	10.0
	22JUL85		H	<	10.0
	19AUG85			<	10.0
	25SEP85				17.0
	23OCT85			<	10.0
	05DEC85			<	10.0
	20JAN86			<	10.0
	20FEB86			<	10.0
	20MAR86			<	10.0
	18APR86			<	10.0
	20MAY86			<	10.0
699-S19-E13	25JUN85		H	<	10.0
	22JUL85		H	<	10.0
	19AUG85			<	10.0
	24SEP85			<	10.0
	30OCT85			<	10.0
	11DEC85			<	10.0
	15JAN86			<	10.0
	21FEB86			<	10.0
	20MAR86			<	10.0
	22APR86			<	10.0
	27MAY86			<	10.0
699-S30E15A	02JUL85		H	<	10.0
	29JUL85		H	<	10.0
	27AUG85			<	10.0
	26SEP85			<	10.0
	24OCT85			<	10.0
	11DEC85			<	10.0
	20JAN86			<	10.0
	20FEB86			<	10.0
	19MAR86			<	10.0
	22APR86			<	10.0
	22MAY86			<	10.0

RCRA Compliance Ground-Water Monitoring Data
300 Area Process Trenches, June 1985 thru May 1986

TABLE G.3 Raw Data

Constituent List = Site Specific Constituent = A13 COPPER PPB

Well	Date	Rep	Lab	Concentration
399-1-1	25JUN85		H	20.0
	25JUN85	1	H	21.0
	25JUN85	2	H	21.0
	25JUN85	3	H	21.0
	24JUL85		H	< 10.0
	24JUL85	1	H	< 10.0
	24JUL85	2	H	< 10.0
	24JUL85	3	H	< 10.0
	20AUG85			10.0
	20AUG85	1		11.0
	20AUG85	2		20.0
	20AUG85	3		19.0
	27SEP85			< 10.0
	01NOV85			< 10.0
	01NOV85	S	H	< 10.0
	10DEC85			< 10.0
	13JAN86			31.0
	14FEB86			59.0
	19MAR86			63.0
	23APR86			26.0
	23MAY86			18.0
399-1-2	20JUN85		H	13.0
	20JUN85	1	H	10.0
	20JUN85	2	H	17.0
	20JUN85	3	H	< 10.0
	29JUL85		H	< 10.0
	29JUL85	1	H	40.0
	29JUL85	2	H	19.0
	29JUL85	3	H	19.0
	21AUG85			< 10.0
	21AUG85	1		< 10.0
	21AUG85	2		< 10.0
	21AUG85	3		< 10.0
	27SEP85			< 10.0
	24OCT85			< 10.0
	24OCT85	S	H	< 10.0
	06DEC85			33.0
	14JAN86			43.0
	13FEB86			66.0
	19MAR86			62.0
	23APR86			24.0
	27MAY86			17.0
399-1-3	02JUL85		H	26.0
	02AUG85		H	27.0
	23AUG85			< 10.0
	26SEP85			15.0
	24OCT85			< 10.0
	25NOV85			10.0
	14JAN86			53.0
	18FEB86			61.0
	17MAR86			72.0
	21APR86			42.0
	20MAY86			35.0
399-1-4	18JUN85		H	23.0
	23JUL85		H	< 10.0
399-1-4	19AUG85			< 10.0
	24SEP85			< 10.0
	30OCT85			< 10.0
	11DEC85			73.0
	15JAN86			102
	12FEB86			91.0
	17MAR86			58.0
	23APR86			23.0
	23MAY86			24.0
399-1-5	20JUN85		H	43.0
	31JUL85		H	12.0
	31JUL85	1	H	32.0
	31JUL85	2	H	516
	21AUG85			< 10.0
	21AUG85	1		< 10.0
	21AUG85	2		< 10.0
	27SEP85			< 10.0
	29OCT85			< 10.0
	29OCT85	S	H	< 10.0
	11DEC85			67.0
	15JAN86			124
	12FEB86			107
	17MAR86			60.0
	22APR86			15.0
	23MAY86			26.0
399-1-6	18JUN85		H	25.0
	22JUL85		H	27.0
	19AUG85			< 10.0
	24SEP85			< 10.0
	23OCT85			< 10.0
	04DEC85			14.0
	15JAN86			98.0
	12FEB86			98.0
	14MAR86			72.0
	21APR86			23.0
	23MAY86			19.0
399-1-7	02AUG85		H	17.0
	23AUG85			< 10.0
	26SEP85			< 10.0
	25OCT85			< 10.0
	10DEC85			< 10.0
	14JAN86			57.0
	14FEB86			70.0
	18MAR86			72.0
	21APR86			42.0
	20MAY86			29.0
399-1-8	29OCT85			< 10.0
	10DEC85			< 10.0
	14JAN86			30.0
	18FEB86			42.0
	18MAR86			40.0
	21APR86			28.0
	20MAY86			14.0
399-2-1	17JUN85		H	16.0
399-2-1	23JUL85		H	< 10.0
	20AUG85			< 10.0
	23SEP85			< 10.0
	30OCT85			< 10.0
	05DEC85			< 10.0
	20JAN86			15.0
	21FEB86			13.0
	18MAR86			16.0
	22APR86			13.0
	27MAY86			< 10.0
399-3-10	01JUL85		H	< 10.0
	01JUL85	1	H	< 10.0
	01JUL85	2	H	< 10.0
	01JUL85	3	H	< 10.0
	30JUL85		H	< 10.0
	30JUL85	1	H	< 10.0
	30JUL85	2	H	< 10.0
	30JUL85	3	H	13.0
	22AUG85			< 10.0
	22AUG85	1		< 10.0
	22AUG85	2		< 10.0
	22AUG85	3		< 10.0
	30SEP85			< 10.0
	23OCT85			< 10.0
	23OCT85	S	H	< 10.0
	21NOV85			< 10.0
	16JAN86			< 10.0
	19FEB86			< 10.0
	14MAR86			< 10.0
	17APR86			< 10.0
	22MAY86			< 10.0
399-3-7	25JUN85		H	11.0
	24JUL85		H	< 10.0
	20AUG85			< 10.0
	25SEP85			< 10.0
	28OCT85			< 10.0
	25NOV85			< 10.0
	17JAN86			< 10.0
	19FEB86			< 10.0
	14MAR86			< 10.0
	17APR86			13.0
	19MAY86			10.0
399-4-1	02JUL85		H	< 10.0
	23JUL85		H	< 10.0
	23AUG85			< 10.0
	24SEP85			< 10.0
	28OCT85			< 10.0
	06DEC85			< 10.0
	17JAN86			< 10.0
	18FEB86			< 10.0
	13MAR86			40.0
	16APR86			< 10.0
	22MAY86			< 10.0
399-4-7	01JUL85		H	< 10.0
399-4-7	01JUL85	1	H	< 10.0
	01JUL85	2	H	< 10.0
	01JUL85	3	H	< 10.0
	30JUL85		H	< 10.0
	30JUL85	1	H	12.0
	30JUL85	2	H	25.0
	30JUL85	3	H	10.0
	22AUG85			< 10.0
	22AUG85	1		< 10.0
	22AUG85	2		< 10.0
	22AUG85	3		< 10.0
	25SEP85			< 10.0
	25OCT85			< 10.0
	25OCT85	S	H	< 10.0
	21NOV85			< 10.0
	16JAN86			< 10.0
	20FEB86			< 10.0
	13MAR86			< 10.0
	16APR86			< 10.0
	22MAY86			< 10.0
399-8-2	18JUN85		H	< 10.0
	22JUL85		H	< 10.0
	19AUG85			< 10.0
	25SEP85			< 10.0
	23OCT85			< 10.0
	05DEC85			< 10.0
	20JAN86			< 10.0
	20FEB86			< 10.0
	20MAR86			< 10.0
	16APR86			< 10.0
	20MAY86			< 10.0
699-S19-E13	25JUN85		H	18.0
	22JUL85		H	< 10.0
	19AUG85			< 10.0
	24SEP85			< 10.0
	30OCT85			< 10.0
	11DEC85			< 10.0
	15JAN86			< 10.0
	21FEB86			< 10.0
	20MAR86			< 10.0
	22APR86			< 10.0
	27MAY86			< 10.0
699-S30E15A	02JUL85		H	< 10.0
	29JUL85		H	10.0
	27AUG85			< 10.0
	26SEP85			13.0
	24OCT85			< 10.0
	11DEC85			< 10.0
	20JAN86			< 10.0
	20FEB86			< 10.0
	19MAR86			< 10.0
	22APR86			< 10.0
	22MAY86			< 10.0

G.63

RCRA Compliance Ground-Water Monitoring Data
300 Area Process Trenches, June 1985 thru May 1986

TABLE G.3 Raw Data

Constituent List = Site Specific   Constituent = A16 ALUMINUM PPB

Well	Date	Rep	Lab	Concentration
399-1-1	26JUN85		H	246
	26JUN85	1	H	179
	25JUN85	2	H	219
	25JUN85	3	H	317
	24JUL85		H	< 150
	24JUL85	1	H	< 150
	24JUL85	2	H	< 150
	24JUL85	3	H	< 150
	20AUG85			< 150
	20AUG85	1		< 150
	20AUG85	2		< 150
	20AUG85	3		< 150
	27SEP85			< 150
	01NOV85			< 150
	01NOV85	S	H	< 150
	10DEC85			< 150
	13JAN86			< 150
	14FEB86			< 150
	19MAR86			< 150
	23APR86			< 150
	23MAY86			< 150
399-1-2	20JUN85		H	326
	20JUN85	1	H	292
	20JUN85	2	H	< 150
	20JUN85	3	H	214
	29JUL85		H	175
	29JUL85	1	H	243
	29JUL85	2	H	573
	29JUL85	3	H	573
	21AUG85			< 150
	21AUG85	1		< 150
	21AUG85	2		< 150
	21AUG85	3		< 150
	27SEP85			< 150
	24OCT85			< 150
	24OCT85	S	H	252
	06DEC85			< 150
	14JAN86			< 150
	13FEB86			< 150
	19MAR86			< 150
	23APR86			< 150
	27MAY86			< 150
399-1-3	02JUL85		H	< 150
	02AUG85		H	1,160
	23AUG85			< 150
	26SEP85			< 150
	24OCT85			< 150
	25NOV85			< 150
	14JAN86			< 150
	18FEB86			< 150
	17MAR86			< 150
	21APR86			< 150
	20MAY86			< 150
399-1-4	18JUN85		H	< 150
	23JUL85		H	246
	19AUG85			< 150
	24SEP85			< 150
	30OCT85			< 150
	11DEC85			< 150
	15JAN86			< 150
	12FEB86			< 150
	17MAR86			< 150
	23APR86			< 150
	23MAY86			< 150
399-1-5	20JUN85		H	< 150
	31JUL85		H	< 150
	31JUL85	1	H	< 150
	31JUL85	2	H	1,210
	21AUG85			< 150
	21AUG85	1		< 150
	21AUG85	2		< 150
	27SEP85			< 150
	29OCT85			< 150
	29OCT85	S	H	181
	11DEC85			< 150
	15JAN86			< 150
	12FEB86			< 150
	17MAR86			< 150
	22APR86			< 150
	23MAY86			< 150
399-1-6	18JUN85		H	< 150
	22JUL85		H	235
	19AUG85			< 150
	24SEP85			< 150
	23OCT85			< 150
	04DEC85			< 150
	15JAN86			< 150
	12FEB86			< 150
	14MAR86			< 150
	21APR86			< 150
	23MAY86			< 150
399-1-7	02AUG85		H	396
	23AUG85			< 150
	26SEP85			< 150
	25OCT85			< 150
	10DEC85			< 150
	14JAN86			< 150
	14FEB86			< 150
	18MAR86			< 150
	21APR86			< 150
	20MAY86			< 150
399-1-8	29OCT85			< 150
	10DEC85			< 150
	14JAN86			< 150
	18FEB86			< 150
	18MAR86			< 150
	21APR86			< 150
	20MAY86			< 150
399-2-1	17JUN85		H	159
	23JUL85		H	246
	20AUG85			< 150
	23SEP85			< 150
	30OCT85			< 150
	05DEC85			< 150
	20JAN86			< 150
	21FEB86			< 150
	18MAR86			< 150
	22APR86			< 150
	27MAY86			< 150
399-3-10	01JUL85		H	495
	01JUL85	1	H	344
	01JUL85	2	H	168
	01JUL85	3	H	206
	30JUL85		H	222
	30JUL85	1	H	192
	30JUL85	2	H	268
	30JUL85	3	H	263
	22AUG85			< 150
	22AUG85	1		< 150
	22AUG85	2		< 150
	22AUG85	3		< 150
	30SEP85			< 150
	23OCT85			< 150
	23OCT85	S	H	169
	21NOV85			< 150
	16JAN86			< 150
	19FEB86			< 150
	14MAR86			< 150
	17APR86			< 150
	22MAY86			< 150
399-3-7	25JUN85		H	584
	24JUL85		H	< 150
	20AUG85			< 150
	25SEP85			< 150
	28OCT85			< 150
	25NOV85			< 150
	17JAN86			< 150
	19FEB86			< 150
	14MAR86			< 150
	17APR86			< 150
	19MAY86			< 150
399-4-1	02JUL85		H	270
	23JUL85		H	229
	23AUG85			< 150
	24SEP85			< 150
	28OCT85			< 150
	06DEC85			< 150
	17JAN86			< 150
	18FEB86			< 150
	13MAR86			7,060
	18APR86			981
	22MAY86			< 150
399-4-7	01JUL85		H	298
	01JUL85	1	H	347
	01JUL85	2	H	337
	01JUL85	3	H	188
	30JUL85		H	176
	30JUL85	1	H	160
	30JUL85	2	H	198
	30JUL85	3	H	< 150
	22AUG85			< 150
	22AUG85	1		< 150
	22AUG85	2		< 150
	22AUG85	3		< 150
	26SEP85			< 150
	25OCT85			< 150
	25OCT85	S	H	< 150
	21NOV85			< 150
	16JAN86			< 150
	20FEB86			< 150
	13MAR86			< 150
	18APR86			< 150
	22MAY86			< 150
399-8-2	18JUN85		H	154
	22JUL85		H	288
	19AUG85			< 150
	26SEP85			< 150
	23OCT85			< 150
	06DEC85			< 150
	20JAN86			< 150
	20FEB86			< 150
	20MAR86			< 150
	18APR86			< 150
	20MAY86			< 150
699-S19-E13	25JUN85		H	482
	22JUL85		H	345
	19AUG85			< 150
	24SEP85			< 150
	30OCT85			< 150
	11DEC85			< 150
	15JAN86			< 150
	21FEB86			< 150
	20MAR86			< 150
	22APR86			< 150
	27MAY86			< 150
699-S30E15A	02JUL85		H	395
	29JUL85		H	209
	27AUG85			< 150
	26SEP85			< 150
	24OCT85			< 150
	11DEC85			< 150
	20JAN86			< 150
	20FEB86			< 150
	19MAR86			< 150
	22APR86			< 150
	22MAY86			< 150

RCRA Compliance Ground-Water Monitoring Data
300 Area Process Trenches, June 1985 thru May 1986

TABLE G.3 Raw Data

Constituent List = Site Specific Constituent = A24 THIOURA PPB

Well	Date	Rep	Lab	Concentration
399-1-1	25JUN85			< 200
	25JUN85	1		< 200
	25JUN85	2		< 200
	25JUN85	3		< 200
	24JUL85			< 200
	24JUL85	1		< 200
	24JUL85	2		< 200
	24JUL85	3		< 200
	20AUG85			< 200
	20AUG85	1		< 200
	20AUG85	2		< 200
	20AUG85	3		< 200
	27SEP85			< 200
	01NOV85			< 200
	10DEC85			< 200
	13JAN86			< 200
	14FEB86			< 200
	19MAR86			< 200
	23APR86			< 200
	23MAY86			< 200
399-1-2	20JUN85			< 200
	20JUN85	1		< 200
	20JUN85	2		< 200
	20JUN85	3		< 200
	29JUL85			< 200
	29JUL85	1		< 200
	29JUL85	2		< 200
	29JUL85	3		< 200
	21AUG85			988
	21AUG85	1		< 200
	21AUG85	2		< 200
	21AUG85	3		< 200
	27SEP85			< 200
	24OCT85			< 200
	06DEC85			< 200
	14JAN86			< 200
	13FEB86			< 200
	19MAR86			< 200
	23APR86			< 200
	27MAY86			< 200
399-1-3	02JUL85			< 200
	02AUG85			< 200
	23AUG85			< 200
	26SEP85			< 200
	24OCT85			< 200
	25NOV85			< 200
	14JAN86			< 200
	18FEB86			< 200
	17MAR86			< 200
	21APR86			< 200
	20MAY86			< 200
399-1-4	18JUN85			< 200
	23JUL85			< 200
	19AUG85			< 200
	24SEP85			< 200
399-1-4	30OCT85			< 200
	11DEC85			< 200
	15JAN86			< 200
	12FEB86			< 200
	17MAR86			< 200
	23APR86			< 200
	23MAY86			< 200
399-1-5	20JUN85			< 200
	31JUL85			< 200
	31JUL85	1		< 200
	31JUL85	2		< 200
	21AUG85			< 200
	21AUG85	1		< 200
	21AUG85	2		< 200
	27SEP85			< 200
	29OCT85			< 200
	11DEC85			< 200
	15JAN86			< 200
	12FEB86			< 200
	17MAR86			< 200
	22APR86			< 200
	23MAY86			< 200
399-1-6	18JUN85			< 200
	22JUL85			< 200
	19AUG85			1,090
	24SEP85			< 200
	23OCT85			< 200
	04DEC85			< 200
	15JAN86			< 200
	12FEB86			< 200
	14MAR86			< 200
	21APR86			< 200
	23MAY86			< 200
399-1-7	02AUG85			< 200
	23AUG85			< 200
	26SEP85			< 200
	25OCT85			< 200
	10DEC85			< 200
	14JAN86			< 200
	14FEB86			< 200
	18MAR86			< 200
	21APR86			< 200
	20MAY86			< 200
399-1-8	29OCT85			< 200
	10DEC85			< 200
	14JAN86			< 200
	18FEB86			< 200
	18MAR86			< 200
	21APR86			< 200
	20MAY86			< 200
399-2-1	17JUN85			< 200
	23JUL85			< 200
	20AUG85			< 200
399-2-1	23SEP85			< 200
	30OCT85			< 200
	05DEC85			< 200
	20JAN86			< 200
	21FEB86			< 200
	18MAR86			< 200
	22APR86			< 200
	27MAY86			< 200
399-3-10	01JUL85			< 200
	01JUL85	1		< 200
	01JUL85	2		< 200
	01JUL85	3		< 200
	30JUL85			< 200
	30JUL85	1		< 200
	30JUL85	2		< 200
	30JUL85	3		< 200
	22AUG85			< 200
	22AUG85	1		< 200
	22AUG85	2		< 200
	22AUG85	3		< 200
	30SEP85			< 200
	23OCT85			< 200
	21NOV85			< 200
	16JAN86			< 200
	19FEB86			< 200
	14MAR86			< 200
	17APR86			< 200
	22MAY86			< 200
399-3-7	25JUN85			< 200
	24JUL85			< 200
	20AUG85			< 200
	25SEP85			< 200
	28OCT85			< 200
	25NOV85			< 200
	17JAN86			< 200
	19FEB86			< 200
	14MAR86			< 200
	17APR86			< 200
	19MAY86			< 200
399-4-1	02JUL85			< 200
	23JUL85			< 200
	23AUG85			< 200
	24SEP85			< 200
	28OCT85			< 200
	06DEC85			< 200
	17JAN86			< 200
	18FEB86			< 200
	13MAR86			< 200
	18APR86			< 200
	22MAY86			< 200
399-4-7	01JUL85			< 200
	01JUL85	1		< 200
	01JUL85	2		< 200
	01JUL85	3		< 200
399-4-7	30JUL85			< 200
	30JUL85	1		< 200
	30JUL85	2		< 200
	30JUL85	3		< 200
	22AUG85			< 200
	22AUG85	1		< 200
	22AUG85	2		< 200
	22AUG85	3		< 200
	25SEP85			< 200
	25OCT85			< 200
	21NOV85			< 200
	16JAN86			< 200
	20FEB86			< 200
	13MAR86			< 200
	18APR86			< 200
	22MAY86			< 200
399-8-2	18JUN85			< 200
	22JUL85			< 200
	19AUG85			< 200
	25SEP85			< 200
	23OCT85			< 200
	05DEC85			< 200
	20JAN86			< 200
	20FEB86			< 200
	20MAR86			< 200
	16APR86			< 200
	20MAY86			< 200
699-S19-E13	25JUN85			< 200
	22JUL85			< 200
	19AUG85			< 200
	24SEP85			< 200
	30OCT85			< 200
	11DEC85			< 200
	15JAN86			< 200
	21FEB86			< 200
	20MAR86			< 200
	22APR86			< 200
	27MAY86			< 200
699-S30E15A	02JUL85			< 200
	29JUL85			< 200
	27AUG85			< 200
	26SEP85			< 200
	24OCT85			< 200
	11DEC85			< 200
	20JAN86			< 200
	20FEB86			< 200
	19MAR86			< 200
	22APR86			< 200
	22MAY86			< 200

RCRA Compliance Ground-Water Monitoring Data
300 Area Process Trenches, June 1985 thru May 1986

TABLE G.3 Raw Data

Constituent List = Site Specific   Constituent = A84 METHONE PPB

Well	Date	Rep	Lab	Concentration
399-1-1	25JUN85		H	< 10.0
	25JUN85	1	H	< 10.0
	25JUN85	2	H	< 10.0
	25JUN85	3	H	< 10.0
	24JUL85		H	< 10.0
	24JUL85	1	H	< 10.0
	24JUL85	2	H	< 10.0
	24JUL85	3	H	< 10.0
	20AUG85			< 10.0
	20AUG85	1		< 10.0
	20AUG85	2		< 10.0
	20AUG85	3		< 10.0
	27SEP85			< 10.0
	01NOV85			< 10.0
	01NOV85	S	H	< 10.0
	10DEC85			< 10.0
	13JAN86			< 10.0
	14FEB86			< 10.0
	19MAR86			< 10.0
	23APR86			< 10.0
	23MAY86			< 10.0
399-1-2	20JUN85		H	< 10.0
	20JUN85	1	H	< 10.0
	20JUN85	2	H	< 10.0
	20JUN85	3	H	< 10.0
	29JUL85		H	< 10.0
	29JUL85	1	H	< 10.0
	29JUL85	2	H	< 10.0
	29JUL85	3	H	< 10.0
	21AUG85			< 10.0
	21AUG85	1		< 10.0
	21AUG85	2		< 10.0
	21AUG85	3		< 10.0
	27SEP85			< 10.0
	24OCT85			< 10.0
	24OCT85	S	H	< 10.0
	06DEC85			< 10.0
	14JAN86			< 10.0
	13FEB86			< 10.0
	19MAR86			< 10.0
	23APR86			< 10.0
	27MAY86			< 10.0
399-1-3	02JUL85		H	< 10.0
	02AUG85		H	< 10.0
	23AUG85			< 10.0
	26SEP85			< 10.0
	24OCT85			< 10.0
	25NOV85			< 10.0
	14JAN86			< 10.0
	18FEB86			< 10.0
	17MAR86			< 10.0
	21APR86			< 10.0
	20MAY86			< 10.0
399-1-4	18JUN85		H	< 10.0
	23JUL85		H	< 10.0
	19AUG85			< 10.0
	24SEP85			< 10.0
	30OCT85			< 10.0
	11DEC85			< 10.0
	15JAN86			< 10.0
	12FEB86			< 10.0
	17MAR86			< 10.0
	23APR86			< 10.0
	23MAY86			< 10.0
399-1-5	20JUN85		H	< 10.0
	31JUL85		H	< 10.0
	31JUL85	1	H	< 10.0
	31JUL85	2	H	< 10.0
	21AUG85			< 10.0
	21AUG85	1		< 10.0
	21AUG85	2		< 10.0
	27SEP85			< 10.0
	29OCT85			< 10.0
	29OCT85	S	H	< 10.0
	11DEC85			< 10.0
	15JAN86			< 10.0
	12FEB86			< 10.0
	17MAR86			< 10.0
	22APR86			< 10.0
	23MAY86			< 10.0
399-1-6	18JUN85		H	< 10.0
	22JUL85		H	< 10.0
	19AUG85			< 10.0
	24SEP85			< 10.0
	23OCT85			< 10.0
	04DEC85			< 10.0
	15JAN86			< 10.0
	12FEB86			< 10.0
	14MAR86			< 10.0
	21APR86			< 10.0
	23MAY86			< 10.0
399-1-7	02AUG85		H	< 10.0
	23AUG85			< 10.0
	26SEP85			< 10.0
	25OCT85			< 10.0
	10DEC85			< 10.0
	14JAN86			< 10.0
	14FEB86			< 10.0
	18MAR86			< 10.0
	21APR86			< 10.0
	20MAY86			< 10.0
399-1-8	29OCT85			< 10.0
	10DEC85			< 10.0
	14JAN86			< 10.0
	18FEB86			< 10.0
	18MAR86			< 10.0
	21APR86			< 10.0
	20MAY86			< 10.0
399-2-1	17JUN85		H	< 10.0
	23JUL85		H	< 10.0
	20AUG85			< 10.0
	23SEP85			< 10.0
	30OCT85			< 10.0
	05DEC85			< 10.0
	20JAN86			< 10.0
	21FEB86			< 10.0
	21MAR86			< 10.0
	22APR86			< 10.0
	27MAY86			< 10.0
399-3-10	01JUL85		H	< 10.0
	01JUL85	1	H	< 10.0
	01JUL85	2	H	< 10.0
	01JUL85	3	H	< 10.0
	30JUL85		H	< 10.0
	30JUL85	1	H	< 10.0
	30JUL85	2	H	< 10.0
	30JUL85	3	H	< 10.0
	22AUG85			< 10.0
	22AUG85	1		< 10.0
	22AUG85	2		< 10.0
	22AUG85	3		< 10.0
	30SEP85			< 10.0
	23OCT85			< 10.0
	23OCT85	S	H	< 10.0
	21NOV85			< 10.0
	16JAN86			< 10.0
	19FEB86			< 10.0
	14MAR86			< 10.0
	17APR86			< 10.0
	22MAY86			< 10.0
399-3-7	25JUN85		H	< 10.0
	24JUL85		H	< 10.0
	20AUG85			< 10.0
	25SEP85			< 10.0
	28OCT85			< 10.0
	25NOV85			< 10.0
	17JAN86			< 10.0
	19FEB86			< 10.0
	14MAR86			< 3.70
	17APR86			< 10.0
	19MAY86			< 10.0
399-4-1	02JUL85		H	< 10.0
	23JUL85		H	< 10.0
	23AUG85			< 10.0
	24SEP85			< 10.0
	28OCT85			< 10.0
	06DEC85			< 10.0
	17JAN86			< 10.0
	18FEB86			< 10.0
	13MAR86			< 10.0
	18APR86			< 10.0
	22MAY86			< 10.0
399-4-7	01JUL85		H	< 10.0
	01JUL85	1	H	< 10.0
	01JUL85	2	H	< 10.0
	01JUL85	3	H	< 10.0
	30JUL85		H	< 10.0
	30JUL85	1	H	< 10.0
	30JUL85	2	H	< 10.0
	30JUL85	3	H	< 10.0
	22AUG85			< 10.0
	22AUG85	1		< 10.0
	22AUG85	2		< 10.0
	22AUG85	3		< 10.0
	25SEP85			< 10.0
	25OCT85			< 10.0
	25OCT85	S	H	< 10.0
	21NOV85			< 10.0
	16JAN86			< 10.0
	20FEB86			< 10.0
	13MAR86			< 10.0
	18APR86			< 10.0
	22MAY86			< 10.0
399-8-2	18JUN85		H	< 10.0
	22JUL85		H	< 10.0
	19AUG85			< 10.0
	25SEP85			< 10.0
	23OCT85			< 10.0
	05DEC85			< 10.0
	20JAN86			< 10.0
	20FEB86			< 10.0
	20MAR86			< 10.0
	18APR86			< 10.0
	20MAY86			< 10.0
699-S19-E13	25JUN85		H	< 10.0
	22JUL85		H	< 10.0
	19AUG85			< 10.0
	24SEP85			< 10.0
	30OCT85			< 10.0
	11DEC85			< 10.0
	15JAN86			< 10.0
	21FEB86			< 10.0
	20MAR86			< 10.0
	22APR86			< 10.0
	27MAY86			< 10.0
699-S30E15A	02JUL85		H	M
	29JUL85		H	< 10.0
	27AUG85			< 10.0
	26SEP85			< 10.0
	24OCT85			< 10.0
	11DEC85			< 10.0
	20JAN86			11.0
	20FEB86			< 10.0
	19MAR86			< 10.0
	22APR86			< 10.0
	22MAY86			< 10.0

RCRA Compliance Ground-Water Monitoring Data
300 Area Process Trenches, June 1985 thru May 1988

TABLE G.3 Raw Data

Constituent List = Site Specific

Constituent = A87 1,1,1-T PPB

Well	Date	Rep	Lab		Concentration
399-1-1	25JUN85		H	<	10.0
	25JUN85	1	H	<	10.0
	25JUN85	2	H	<	10.0
	25JUN85	3	H	<	10.0
	24JUL85		H	<	10.0
	24JUL85	1	H	<	10.0
	24JUL85	2	H	<	10.0
	24JUL85	3	H	<	10.0
	20AUG85			<	10.0
	20AUG85	1		<	10.0
	20AUG85	2		<	10.0
	20AUG85	3		<	10.0
	27SEP85			<	10.0
	01NOV85			<	10.0
	01NOV85	S	H	<	10.0
	10DEC85			<	10.0
	13JAN86			<	10.0
	14FEB86			<	10.0
	19MAR86			<	10.0
	23APR86			<	10.0
	23MAY86			<	10.0
399-1-2	20JUN85		H	<	10.0
	20JUN85	1	H	<	10.0
	20JUN85	2	H	<	10.0
	20JUN85	3	H	<	10.0
	29JUL85		H	<	10.0
	29JUL85	1	H	<	10.0
	29JUL85	2	H	<	10.0
	29JUL85	3	H	<	10.0
	21AUG85			<	10.0
	21AUG85	1		<	10.0
	21AUG85	2		<	10.0
	21AUG85	3		<	10.0
	27SEP85			<	10.0
	24OCT85			<	10.0
	24OCT85	S	H	<	10.0
	06DEC85			<	10.0
	14JAN86			<	10.0
	13FEB86			<	10.0
	19MAR86			<	10.0
	23APR86			<	10.0
	27MAY86			<	10.0
399-1-3	02JUL85		H	<	10.0
	02AUG85		H	<	10.0
	23AUG85			<	10.0
	26SEP85			<	10.0
	24OCT85			<	10.0
	25NOV85			<	10.0
	14JAN86			<	10.0
	18FEB86			<	10.0
	17MAR86			<	10.0
	21APR86			<	10.0
	20MAY86			<	10.0
399-1-4	18JUN85		H	<	10.0
	23JUL85		H	<	10.0
	19AUG85			<	10.0
	24SEP85			<	10.0
	30OCT85			<	10.0
	11DEC85			<	10.0
	15JAN86			<	10.0
	12FEB86			<	10.0
	17MAR86			<	10.0
	23APR86			<	10.0
	23MAY86			<	10.0
399-1-5	20JUN85		H	<	10.0
	31JUL85		H	<	10.0
	31JUL85	1	H	<	10.0
	31JUL85	2	H	<	10.0
	21AUG85			<	10.0
	21AUG85	1		<	10.0
	21AUG85	2		<	10.0
	27SEP85			<	10.0
	29OCT85			<	10.0
	29OCT85	S	H	<	10.0
	11DEC85			<	10.0
	15JAN86			<	10.0
	12FEB86			<	10.0
	17MAR86			<	10.0
	22APR86			<	10.0
	23MAY86			<	10.0
399-1-6	18JUN85		H	<	10.0
	22JUL85		H	<	10.0
	19AUG85			<	10.0
	24SEP85			<	10.0
	23OCT85			<	10.0
	04DEC85			<	10.0
	15JAN86			<	10.0
	12FEB86			<	10.0
	14MAR86			<	10.0
	21APR86			<	10.0
	23MAY86			<	10.0
399-1-7	02AUG85		H	<	10.0
	23AUG85			<	10.0
	26SEP85			<	10.0
	25OCT85			<	10.0
	10DEC85			<	10.0
	14JAN86			<	10.0
	14FEB86			<	10.0
	18MAR86			<	10.0
	21APR86			<	10.0
	20MAY86			<	10.0
399-1-8	29OCT85			<	10.0
	10DEC85			<	10.0
	14JAN86			<	10.0
	18FEB86			<	10.0
	18MAR86			<	10.0
	21APR86			<	10.0
	20MAY86			<	10.0
399-2-1	17JUN85		H	<	10.0
	23JUL85		H	<	10.0
	20AUG85			<	10.0
	23SEP85			<	10.0
	30OCT85			<	10.0
	05DEC85			<	10.0
	20JAN86			<	10.0
	21FEB86			<	10.0
	21MAR86			<	10.0
	22APR86			<	10.0
	27MAY86			<	10.0
399-3-10	01JUL85		H	<	10.0
	01JUL85	1	H	<	10.0
	01JUL85	2	H	<	10.0
	01JUL85	3	H	<	10.0
	30JUL85		H	<	10.0
	30JUL85	1	H	<	10.0
	30JUL85	2	H	<	10.0
	30JUL85	3	H	<	10.0
	22AUG85			<	10.0
	22AUG85	1		<	10.0
	22AUG85	2		<	10.0
	22AUG85	3		<	10.0
	30SEP85			<	10.0
	23OCT85			<	10.0
	23OCT85	S	H	<	10.0
	21NOV85			<	10.0
	16JAN86			<	10.0
	19FEB86			<	10.0
	14MAR86			<	10.0
	17APR86			<	10.0
	22MAY86			<	10.0
399-3-7	26JUN85		H		44.0
	24JUL85		H		72.0
	20AUG85			<	10.0
	25SEP85			<	10.0
	28OCT85			<	10.0
	25NOV85			<	10.0
	17JAN86			<	10.0
	19FEB86			<	10.0
	14MAR86			<	10.0
	17APR86			<	10.0
	19MAY86			<	10.0
399-4-1	02JUL85		H	<	10.0
	23JUL85		H	<	10.0
	23AUG85			<	10.0
	24SEP85			<	10.0
	28OCT85			<	10.0
	06DEC85			<	10.0
	17JAN86			<	10.0
	18FEB86			<	10.0
	13MAR86			<	10.0
	18APR86			<	10.0
	22MAY86			<	10.0
399-4-7	01JUL85		H	<	10.0
	01JUL85	1	H	<	10.0
	01JUL85	2	H	<	10.0
	01JUL85	3	H	<	10.0
	30JUL85		H	<	10.0
	30JUL85	1	H	<	10.0
	30JUL85	2	H	<	10.0
	30JUL85	3	H	<	10.0
	22AUG85			<	10.0
	22AUG85	1		<	10.0
	22AUG85	2		<	10.0
	22AUG85	3		<	10.0
	25SEP85			<	10.0
	25OCT85			<	10.0
	25OCT85	S	H	<	10.0
	21NOV85			<	10.0
	16JAN86			<	10.0
	20FEB86			<	10.0
	13MAR86			<	10.0
	18APR86			<	10.0
	22MAY86			<	10.0
399-8-2	18JUN85		H	<	10.0
	22JUL85		H	<	10.0
	19AUG85			<	10.0
	25SEP85			<	10.0
	23OCT85			<	10.0
	05DEC85			<	10.0
	20JAN86			<	10.0
	20FEB86			<	10.0
	20MAR86			<	10.0
	18APR86			<	10.0
	20MAY86			<	10.0
699-S19-E13	25JUN85		H	<	10.0
	22JUL85		H	<	10.0
	19AUG85			<	10.0
	24SEP85			<	10.0
	30OCT85			<	10.0
	11DEC85			<	10.0
	15JAN86			<	10.0
	21FEB86			<	10.0
	20MAR86			<	10.0
	22APR86			<	10.0
	27MAY86			<	10.0
699-S30E15A	02JUL85		H		M
	29JUL85		H	<	10.0
	27AUG85			<	10.0
	26SEP85			<	10.0
	24OCT85			<	10.0
	11DEC85			<	10.0
	20JAN86			<	10.0
	20FEB86			<	10.0
	19MAR86			<	10.0
	22APR86			<	10.0
	22MAY86			<	10.0

RCRA Compliance Ground-Water Monitoring Data
300 Area Process Trenches, June 1985 thru May 1986

TABLE G.3 Raw Data

Constituent List = Site Specific   Constituent = A68 1,1,2-T PPB

Well	Date	Rep	Lab	Concentration
399-1-1	25JUN85		H	< 10.0
	25JUN85	1	H	< 10.0
	25JUN85	2	H	< 10.0
	25JUN85	3	H	< 10.0
	24JUL85		H	< 10.0
	24JUL85	1	H	< 10.0
	24JUL85	2	H	< 10.0
	24JUL85	3	H	< 10.0
	20AUG85			< 10.0
	20AUG85	1		< 10.0
	20AUG85	2		< 10.0
	20AUG85	3		< 10.0
	27SEP85			< 10.0
	01NOV85			< 10.0
	01NOV85	S	H	< 10.0
	10DEC85			< 10.0
	13JAN86			< 10.0
	14FEB86			< 10.0
	19MAR86			< 10.0
	23APR86			< 10.0
	23MAY86			< 10.0
399-1-2	20JUN85		H	< 10.0
	20JUN85	1	H	< 10.0
	20JUN85	2	H	< 10.0
	20JUN85	3	H	< 10.0
	29JUL85		H	< 10.0
	29JUL85	1	H	< 10.0
	29JUL85	2	H	< 10.0
	29JUL85	3	H	< 10.0
	21AUG85			< 10.0
	21AUG85	1		< 10.0
	21AUG85	2		< 10.0
	21AUG85	3		< 10.0
	27SEP85			< 10.0
	24OCT85			< 10.0
	24OCT85	S	H	< 10.0
	06DEC85			< 10.0
	14JAN86			< 10.0
	13FEB86			< 10.0
	19MAR86			< 10.0
	23APR86			< 10.0
	27MAY86			< 10.0
399-1-3	02JUL85		H	< 10.0
	02AUG85		H	< 10.0
	23AUG85			< 10.0
	26SEP85			< 10.0
	24OCT85			< 10.0
	25NOV85			< 10.0
	14JAN86			< 10.0
	16FEB86			< 10.0
	17MAR86			< 10.0
	21APR86			< 10.0
	20MAY86			< 10.0
399-1-4	18JUN85		H	< 10.0
	23JUL85		H	< 10.0
	19AUG85			< 10.0
	24SEP85			< 10.0
	30OCT85			< 10.0
	11DEC85			< 10.0
	15JAN86			< 10.0
	12FEB86			< 10.0
	17MAR86			< 10.0
	23APR86			< 10.0
	23MAY86			< 10.0
399-1-5	20JUN85		H	< 10.0
	31JUL85		H	< 10.0
	31JUL85	1	H	< 10.0
	31JUL85	2	H	< 10.0
	21AUG85			< 10.0
	21AUG85	1		< 10.0
	21AUG85	2		< 10.0
	27SEP85			< 10.0
	29OCT85			< 10.0
	29OCT85	S	H	< 10.0
	11DEC85			< 10.0
	15JAN86			< 10.0
	12FEB86			< 10.0
	17MAR86			< 10.0
	22APR86			< 10.0
	23MAY86			< 10.0
399-1-6	18JUN85		H	< 10.0
	22JUL85		H	< 10.0
	19AUG85			< 10.0
	24SEP85			< 10.0
	23OCT85			< 10.0
	04DEC85			< 10.0
	15JAN86			< 10.0
	12FEB86			< 10.0
	14MAR86			< 10.0
	21APR86			< 10.0
	23MAY86			< 10.0
399-1-7	02AUG85		H	< 10.0
	23AUG85			< 10.0
	26SEP85			< 10.0
	25OCT85			< 10.0
	10DEC85			< 10.0
	14JAN86			< 10.0
	14FEB86			< 10.0
	18MAR86			< 10.0
	21APR86			< 10.0
	20MAY86			< 10.0
399-1-8	29OCT85			< 10.0
	10DEC85			< 10.0
	14JAN86			< 10.0
	18FEB86			< 10.0
	18MAR86			< 10.0
	21APR86			< 10.0
	20MAY86			< 10.0
399-2-1	17JUN85		H	< 10.0
	23JUL85		H	< 10.0
	20AUG85			< 10.0
	23SEP85			< 10.0
	30OCT85			< 10.0
	05DEC85			< 10.0
	20JAN86			< 10.0
	21FEB86			< 10.0
	21MAR86			< 10.0
	22APR86			< 10.0
	27MAY86			< 10.0
399-3-10	01JUL85		H	< 10.0
	01JUL85	1	H	< 10.0
	01JUL85	2	H	< 10.0
	01JUL85	3	H	< 10.0
	30JUL85		H	< 10.0
	30JUL85	1	H	< 10.0
	30JUL85	2	H	< 10.0
	30JUL85	3	H	< 10.0
	22AUG85			< 10.0
	22AUG85	1		< 10.0
	22AUG85	2		< 10.0
	22AUG85	3		< 10.0
	30SEP85			< 10.0
	23OCT85			< 10.0
	23OCT85	S	H	< 10.0
	21NOV85			< 10.0
	16JAN86			< 10.0
	19FEB86			< 10.0
	14MAR86			< 10.0
	17APR86			< 10.0
	22MAY86			< 10.0
399-3-7	25JUN85		H	< 10.0
	24JUL85		H	< 10.0
	20AUG85			< 10.0
	25SEP85			< 10.0
	28OCT85			< 10.0
	25NOV85			< 10.0
	17JAN86			< 10.0
	19FEB86			< 10.0
	14MAR86			< 10.0
	17APR86			< 10.0
	19MAY86			< 10.0
399-4-1	02JUL85		H	< 10.0
	23JUL85		H	< 10.0
	23AUG85			< 10.0
	24SEP85			23.0
	28OCT85			17.0
	06DEC85			< 10.0
	17JAN86			< 10.0
	18FEB86			< 10.0
	13MAR86			< 10.0
	18APR86			< 10.0
	22MAY86			< 10.0
399-4-7	01JUL85		H	< 10.0
	01JUL85	1	H	< 10.0
	01JUL85	2	H	< 10.0
	01JUL85	3	H	< 10.0
	30JUL85		H	< 10.0
	30JUL85	1	H	< 10.0
	30JUL85	2	H	< 10.0
	30JUL85	3	H	< 10.0
	22AUG85			< 10.0
	22AUG85	1		< 10.0
	22AUG85	2		< 10.0
	22AUG85	3		< 10.0
	25SEP85			< 10.0
	25OCT85			< 10.0
	25OCT85	S	H	< 10.0
	21NOV85			< 10.0
	16JAN86			< 10.0
	20FEB86			< 10.0
	13MAR86			< 10.0
	18APR86			< 10.0
	22MAY86			< 10.0
399-8-2	18JUN85		H	< 10.0
	22JUL85		H	< 10.0
	19AUG85			< 10.0
	25SEP85			< 10.0
	23OCT85			< 10.0
	05DEC85			< 10.0
	20JAN86			< 10.0
	20FEB86			< 10.0
	20MAR86			< 10.0
	18APR86			< 10.0
	20MAY86			< 10.0
699-S19-E13	25JUN85		H	< 10.0
	22JUL85		H	< 10.0
	19AUG85			< 10.0
	24SEP85			< 10.0
	30OCT85			< 10.0
	11DEC85			< 10.0
	15JAN86			< 10.0
	21FEB86			< 10.0
	20MAR86			< 10.0
	22APR86			< 10.0
	27MAY86			< 10.0
699-S30E15A	02JUL85		H	M
	29JUL85		H	< 10.0
	27AUG85			< 10.0
	26SEP85			< 10.0
	24OCT85			< 10.0
	11DEC85			< 10.0
	20JAN86			< 10.0
	20FEB86			< 10.0
	19MAR86			< 10.0
	22APR86			< 10.0
	22MAY86			< 10.0

RCRA Compliance Ground-Water Monitoring Data
300 Area Process Trenches, June 1985 thru May 1986

TABLE G.3 Raw Data

Constituent List = Site Specific Constituent = A89 TRICENE PPB

Well	Date	Rep	Lab		Concentration
399-1-1	25JUN85		H	<	10.0
	25JUN85	1	H	<	10.0
	25JUN85	2	H	<	10.0
	25JUN85	3	H	<	10.0
	24JUL85		H	<	10.0
	24JUL85	1	H	<	10.0
	24JUL85	2	H	<	10.0
	24JUL85	3	H	<	10.0
	20AUG85			<	10.0
	20AUG85	1		<	10.0
	20AUG85	2		<	10.0
	20AUG85	3		<	10.0
	27SEP85			<	10.0
	01NOV85			<	10.0
	01NOV85	S	H	<	10.0
	10DEC85			<	10.0
	13JAN86			<	10.0
	14FEB86			<	10.0
	19MAR86			<	10.0
	23APR86			<	10.0
	23MAY86			<	10.0
399-1-2	20JUN85		H	<	10.0
	20JUN85	1	H	<	10.0
	20JUN85	2	H	<	10.0
	20JUN85	3	H	<	10.0
	29JUL85		H	<	10.0
	29JUL85	1	H	<	10.0
	29JUL85	2	H	<	10.0
	29JUL85	3	H	<	10.0
	21AUG85			<	10.0
	21AUG85	1		<	10.0
	21AUG85	2		<	10.0
	21AUG85	3		<	10.0
	27SEP85			<	10.0
	24OCT85			<	10.0
	24OCT85	S	H	<	10.0
	06DEC85			<	10.0
	14JAN86			<	10.0
	13FEB86			<	10.0
	19MAR86			<	10.0
	23APR86			<	10.0
	27MAY86			<	10.0
399-1-3	02JUL85		H	<	10.0
	02AUG85		H	<	10.0
	23AUG85			<	10.0
	26SEP85			<	10.0
	24OCT85			<	10.0
	25NOV85			<	10.0
	14JAN86			<	10.0
	18FEB86			<	3.00
	17MAR86			<	10.0
	21APR86			<	3.20
	20MAY86			<	10.0
399-1-4	18JUN85		H	<	10.0
	23JUL85		H	<	10.0
399-1-4	19AUG85			<	10.0
	24SEP85			<	10.0
	30OCT85			<	10.0
	11DEC85			<	10.0
	15JAN86			<	10.0
	12FEB86			<	10.0
	17MAR86			<	10.0
	23APR86			<	10.0
	23MAY86			<	10.0
399-1-5	20JUN85		H	<	10.0
	31JUL85		H	<	10.0
	31JUL85	1	H	<	10.0
	31JUL85	2	H	<	10.0
	21AUG85			<	10.0
	21AUG85	1		<	10.0
	21AUG85	2		<	10.0
	27SEP85			<	10.0
	29OCT85			<	10.0
	29OCT85	S	H	<	10.0
	11DEC85			<	10.0
	15JAN86			<	10.0
	12FEB86			<	10.0
	17MAR86			<	10.0
	22APR86			<	10.0
	23MAY86			<	10.0
399-1-6	18JUN85		H	<	10.0
	22JUL85		H	<	10.0
	19AUG85			<	10.0
	24SEP85			<	10.0
	23OCT85			<	10.0
	04DEC85			<	10.0
	15JAN86			<	10.0
	12FEB86			<	10.0
	14MAR86			<	10.0
	21APR86			<	10.0
	23MAY86			<	10.0
399-1-7	02AUG85		H	<	10.0
	23AUG85			<	10.0
	26SEP85			<	10.0
	25OCT85			<	10.0
	10DEC85			<	10.0
	14JAN86			<	10.0
	14FEB86			<	3.70
	18MAR86			<	2.40
	21APR86			<	10.0
	20MAY86			<	10.0
399-1-8	29OCT85			<	10.0
	10DEC85			<	10.0
	14JAN86			<	10.0
	18FEB86			<	10.0
	18MAR86			<	10.0
	21APR86			<	10.0
	20MAY86			<	10.0
399-2-1	17JUN85		H	<	10.0
399-2-1	23JUL85		H	<	10.0
	20AUG85			<	10.0
	23SEP85			<	10.0
	30OCT85			<	10.0
	05DEC85			<	10.0
	20JAN86			<	10.0
	21FEB86			<	3.00
	21MAR86			<	4.40
	22APR86			<	3.20
	27MAY86			<	10.0
399-3-10	01JUL85		H	<	10.0
	01JUL85	1	H	<	10.0
	01JUL85	2	H	<	10.0
	01JUL85	3	H	<	10.0
	30JUL85		H	<	10.0
	30JUL85	1	H	<	10.0
	30JUL85	2	H	<	10.0
	30JUL85	3	H	<	10.0
	22AUG85			<	10.0
	22AUG85	1		<	10.0
	22AUG85	2		<	10.0
	22AUG85	3		<	10.0
	30SEP85			<	10.0
	23OCT85			<	10.0
	23OCT85	S	H	<	10.0
	21NOV85			<	10.0
	16JAN86			<	10.0
	19FEB86			<	10.0
	14MAR86			<	10.0
	17APR86			<	10.0
	22MAY86			<	10.0
399-3-7	25JUN85		H	<	10.0
	24JUL85		H	<	10.0
	20AUG85			<	10.0
	25SEP85			<	10.0
	28OCT85			<	10.0
	25NOV85			<	10.0
	17JAN86			<	10.0
	19FEB86			<	10.0
	14MAR86			<	10.0
	17APR86			<	3.10
	19MAY86			<	10.0
399-4-1	02JUL85		H		12.0
	23JUL85		H	<	10.0
	23AUG85			<	10.0
	24SEP85			<	10.0
	28OCT85			<	10.0
	06DEC85				14.0
	17JAN86				12.0
	18FEB86			<	10.0
	13MAR86			<	9.00
	18APR86				10.0
	22MAY86			<	10.0
399-4-7	01JUL85		H	<	10.0
399-4-7	01JUL85	1	H	<	10.0
	01JUL85	2	H	<	10.0
	01JUL85	3	H	<	10.0
	30JUL85		H	<	10.0
	30JUL85	1	H	<	10.0
	30JUL85	2	H	<	10.0
	30JUL85	3	H	<	10.0
	22AUG85			<	10.0
	22AUG85	1		<	10.0
	22AUG85	2		<	10.0
	22AUG85	3		<	10.0
	25SEP85			<	10.0
	25OCT85			<	10.0
	25OCT85	S	H	<	10.0
	21NOV85			<	10.0
	16JAN86			<	10.0
	20FEB86			<	10.0
	13MAR86			<	4.00
	18APR86			<	5.00
	22MAY86			<	10.0
399-8-2	18JUN85		H	<	10.0
	22JUL85		H	<	10.0
	19AUG85			<	10.0
	25SEP85			<	10.0
	23OCT85			<	10.0
	05DEC85			<	10.0
	20JAN86			<	10.0
	20FEB86			<	10.0
	20MAR86			<	10.0
	18APR86			<	10.0
	20MAY86			<	10.0
699-S19-E13	25JUN85		H	<	10.0
	22JUL85		H	<	10.0
	19AUG85			<	10.0
	24SEP85			<	10.0
	30OCT85			<	10.0
	11DEC85			<	10.0
	15JAN86			<	10.0
	21FEB86			<	10.0
	20MAR86			<	10.0
	22APR86			<	10.0
	27MAY86			<	10.0
699-S30E15A	02JUL85		H		M
	29JUL85		H	<	10.0
	27AUG85			<	10.0
	26SEP85			<	10.0
	24OCT85			<	10.0
	11DEC85			<	10.0
	20JAN86			<	10.0
	20FEB86			<	10.0
	19MAR86			<	10.0
	22APR86			<	10.0
	22MAY86			<	10.0

TABLE G.3 Raw Data

Constituent List = Site Specific   Constituent = A70 PERCENE PPB

Well	Date	Rep	Lab	Concentration
399-1-1	25JUN85		H	< 10.0
	25JUN85	1	H	< 10.0
	25JUN85	2	H	< 10.0
	25JUN85	3	H	< 10.0
	24JUL85		H	< 10.0
	24JUL85	1	H	< 10.0
	24JUL85	2	H	< 10.0
	24JUL85	3	H	< 10.0
	20AUG85			< 10.0
	20AUG85	1		< 10.0
	20AUG85	2		< 10.0
	20AUG85	3		< 10.0
	27SEP85			< 10.0
	01NOV85			< 10.0
	01NOV85	S	H	< 10.0
	10DEC85			< 10.0
	13JAN86			< 10.0
	14FEB86			< 10.0
	19MAR86			< 10.0
	23APR86			< 10.0
	23MAY86			< 10.0
399-1-2	20JUN85		H	< 10.0
	20JUN85	1	H	< 10.0
	20JUN85	2	H	13.0
	20JUN85	3	H	12.0
	29JUL85		H	< 10.0
	29JUL85	1	H	< 10.0
	29JUL85	2	H	< 10.0
	29JUL85	3	H	< 10.0
	21AUG85			< 10.0
	21AUG85	1		< 10.0
	21AUG85	2		< 10.0
	21AUG85	3		< 10.0
	27SEP85			< 10.0
	24OCT85			< 10.0
	24OCT85	S	H	< 10.0
	06DEC85			< 10.0
	14JAN86			< 10.0
	13FEB86			< 3.00
	19MAR86			< 2.30
	23APR86			< 10.0
	27MAY86			< 10.0
399-1-3	02JUL85		H	< 10.0
	02AUG85		H	10.0
	23AUG85			10.0
	26SEP85			14.0
	24OCT85			10.0
	25NOV85			< 10.0
	14JAN86			< 10.0
	18FEB86			< 4.10
	17MAR86			< 2.80
	21APR86			< 3.50
	20MAY86			< 10.0
399-1-4	18JUN85		H	< 10.0
	23JUL85		H	< 10.0
399-1-4	19AUG85			< 10.0
	24SEP85			< 10.0
	30OCT85			< 10.0
	11DEC85			< 10.0
	15JAN86			< 10.0
	12FEB86			< 4.00
	17MAR86			< 2.00
	23APR86			< 10.0
	23MAY86			< 10.0
399-1-5	20JUN85		H	< 10.0
	31JUL85		H	17.0
	31JUL85	1	H	19.0
	31JUL85	2	H	17.0
	21AUG85			15.0
	21AUG85	1		14.0
	21AUG85	2		16.0
	27SEP85			< 10.0
	29OCT85			< 10.0
	29OCT85	S	H	< 10.0
	11DEC85			< 10.0
	15JAN86			< 10.0
	12FEB86			< 2.60
	17MAR86			< 10.0
	22APR86			< 10.0
	23MAY86			< 10.0
399-1-6	18JUN85		H	< 10.0
	22JUL85		H	< 10.0
	19AUG85			< 10.0
	24SEP85			< 10.0
	23OCT85			< 10.0
	04DEC85			< 10.0
	15JAN86			< 10.0
	12FEB86			< 3.00
	14MAR86			< 10.0
	21APR86			< 10.0
	23MAY86			< 10.0
399-1-7	02AUG85		H	24.0
	23AUG85			39.0
	26SEP85			26.0
	25OCT85			< 10.0
	10DEC85			< 10.0
	14JAN86			< 10.0
	14FEB86			< 3.70
	18MAR86			< 2.30
	21APR86			< 10.0
	20MAY86			< 10.0
399-1-8	29OCT85			< 10.0
	10DEC85			< 10.0
	14JAN86			< 10.0
	18FEB86			< 10.0
	18MAR86			< 10.0
	21APR86			< 10.0
	20MAY86			< 10.0
399-2-1	17JUN85		H	< 10.0
399-2-1	23JUL85		H	< 10.0
	20AUG85			18.0
	23SEP85			< 10.0
	30OCT85			< 10.0
	05DEC85			< 10.0
	20JAN86			< 10.0
	21FEB86			< 10.0
	21MAR86			< 10.0
	22APR86			< 10.0
	27MAY86			< 10.0
399-3-10	01JUL85		H	< 10.0
	01JUL85	1	H	< 10.0
	01JUL85	2	H	< 10.0
	01JUL85	3	H	< 10.0
	30JUL85		H	< 10.0
	30JUL85	1	H	< 10.0
	30JUL85	2	H	11.0
	30JUL85	3	H	< 10.0
	22AUG85			< 10.0
	22AUG85	1		< 10.0
	22AUG85	2		< 10.0
	22AUG85	3		< 10.0
	30SEP85			< 10.0
	23OCT85			< 10.0
	23OCT85	S	H	< 10.0
	21NOV85			< 10.0
	16JAN86			< 10.0
	19FEB86			< 10.0
	14MAR86			< 10.0
	17APR86			< 10.0
	22MAY86			< 10.0
399-3-7	25JUN85		H	30.0
	24JUL85		H	55.0
	20AUG85			15.0
	26SEP85			< 10.0
	28OCT85			< 10.0
	25NOV85			< 10.0
	17JAN86			< 10.0
	19FEB86			< 10.0
	14MAR86			< 10.0
	17APR86			< 10.0
	19MAY86			< 10.0
399-4-1	02JUL85		H	< 10.0
	23JUL85		H	13.0
	23AUG85			< 10.0
	24SEP85			< 10.0
	28OCT85			< 10.0
	06DEC85			< 10.0
	17JAN86			< 10.0
	18FEB86			< 10.0
	13MAR86			< 2.00
	18APR86			< 10.0
	22MAY86			< 10.0
399-4-7	01JUL85		H	< 10.0
399-4-7	01JUL85	1	H	< 10.0
	01JUL85	2	H	< 10.0
	01JUL85	3	H	< 10.0
	30JUL85		H	< 10.0
	30JUL85	1	H	< 10.0
	30JUL85	2	H	< 10.0
	30JUL85	3	H	< 10.0
	22AUG85			< 10.0
	22AUG85	1		< 10.0
	22AUG85	2		< 10.0
	22AUG85	3		< 10.0
	26SEP85			< 10.0
	25OCT85			< 10.0
	25OCT85	S	H	< 10.0
	21NOV85			< 10.0
	16JAN86			< 10.0
	20FEB86			< 10.0
	13MAR86			< 10.0
	18APR86			< 10.0
	22MAY86			< 10.0
399-8-2	18JUN85		H	< 10.0
	22JUL85		H	< 10.0
	19AUG85			< 10.0
	26SEP85			< 10.0
	23OCT85			< 10.0
	05DEC85			< 10.0
	20JAN86			< 10.0
	20FEB86			< 3.10
	20MAR86			< 4.40
	18APR86			< 4.60
	20MAY86			< 10.0
699-S19-E13	25JUN85		H	< 10.0
	22JUL85		H	< 10.0
	19AUG85			< 10.0
	24SEP85			< 10.0
	30OCT85			< 10.0
	11DEC85			< 10.0
	15JAN86			< 10.0
	21FEB86			< 10.0
	20MAR86			< 10.0
	22APR86			< 10.0
	27MAY86			< 10.0
699-S30E15A	02JUL85		H	M
	29JUL85		H	< 10.0
	27AUG85			< 10.0
	26SEP85			< 10.0
	24OCT85			< 10.0
	11DEC85			< 10.0
	20JAN86			< 10.0
	20FEB86			< 10.0
	19MAR86			< 10.0
	22APR86			< 10.0
	22MAY86			< 10.0

RCRA Compliance Ground-Water Monitoring Data
300 Area Process Trenches, June 1985 thru May 1986

TABLE G.3 Raw Data

Constituent List = Site Specific   Constituent = C70 CYANIDE PPB

Well	Date	Rep	Lab	Concentration
399-1-1	25JUN85		<	10.0
	25JUN85	1	<	10.0
	25JUN85	2	<	10.0
	25JUN85	3	<	10.0
	24JUL85		<	10.0
	24JUL85	1	<	10.0
	24JUL85	2	<	10.0
	24JUL85	3	<	10.0
	20AUG85			11.0
	20AUG85	1	<	10.0
	20AUG85	2	<	10.0
	20AUG85	3	<	10.0
	27SEP85		<	10.0
	01NOV85		<	10.0
	10DEC85		<	10.0
	13JAN86		<	10.0
	14FEB86		<	10.0
	19MAR86		<	10.0
	23APR86		<	10.0
	23MAY86		<	10.0
399-1-2	20JUN85		<	10.0
	20JUN85	1	<	10.0
	20JUN85	2	<	10.0
	20JUN85	3	<	10.0
	29JUL85		<	10.0
	29JUL85	1	<	10.0
	29JUL85	2	<	10.0
	29JUL85	3	<	10.0
	21AUG85		<	10.0
	21AUG85	1	<	10.0
	21AUG85	2	<	10.0
	21AUG85	3	<	10.0
	27SEP85		<	10.0
	24OCT85		<	10.0
	06DEC85		<	10.0
	14JAN86		<	10.0
	13FEB86		<	10.0
	19MAR86		<	10.0
	23APR86		<	10.0
	27MAY86		<	10.0
399-1-3	02JUL85		<	10.0
	02AUG85		<	10.0
	23AUG85		<	10.0
	26SEP85		<	10.0
	24OCT85		<	10.0
	25NOV85		<	10.0
	14JAN86		<	10.0
	18FEB86		<	10.0
	17MAR86		<	10.0
	21APR86		<	10.0
	20MAY86		<	10.0
399-1-4	18JUN85		<	10.0
	23JUL85		<	10.0
	19AUG85		<	10.0
	24SEP85		<	10.0
399-1-4	30OCT85		<	10.0
	11DEC85		<	10.0
	15JAN86		<	10.0
	12FEB86		<	10.0
	17MAR86		<	10.0
	23APR86		<	10.0
	23MAY86		<	10.0
399-1-5	20JUN85		<	10.0
	31JUL85		<	10.0
	31JUL85	1	<	10.0
	31JUL85	2	<	10.0
	21AUG85		<	10.0
	21AUG85	1	<	10.0
	21AUG85	2	<	10.0
	27SEP85		<	10.0
	29OCT85		<	10.0
	11DEC85		<	10.0
	15JAN86		<	10.0
	12FEB86		<	10.0
	17MAR86		<	10.0
	22APR86		<	10.0
	23MAY86		<	10.0
399-1-6	18JUN85		<	10.0
	22JUL85		<	10.0
	19AUG85		<	10.0
	24SEP85		<	10.0
	23OCT85		<	10.0
	04DEC85		<	10.0
	15JAN86		<	10.0
	12FEB86		<	10.0
	14MAR86		<	10.0
	21APR86		<	10.0
	23MAY86		<	10.0
399-1-7	02AUG85		<	10.0
	23AUG85		<	10.0
	26SEP85		<	10.0
	25OCT85		<	10.0
	10DEC85		<	10.0
	14JAN86		<	10.0
	14FEB86		<	10.0
	18MAR86		<	10.0
	21APR86		<	10.0
	20MAY86		<	10.0
399-1-8	29OCT85		<	10.0
	10DEC85		<	10.0
	14JAN86		<	10.0
	18FEB86		<	10.0
	18MAR86		<	10.0
	21APR86		<	10.0
	20MAY86		<	10.0
399-2-1	17JUN85		<	10.0
	23JUL85		<	10.0
	20AUG85		<	10.0
399-2-1	23SEP85		<	10.0
	30OCT85		<	10.0
	05DEC85		<	10.0
	20JAN86		<	10.0
	21FEB86		<	10.0
	18MAR86		<	10.0
	22APR86		<	10.0
	27MAY86		<	10.0
399-3-10	01JUL85		<	10.0
	01JUL85	1	<	10.0
	01JUL85	2	<	10.0
	01JUL85	3	<	10.0
	30JUL85		<	10.0
	30JUL85	1	<	10.0
	30JUL85	2	<	10.0
	30JUL85	3	<	10.0
	22AUG85		<	10.0
	22AUG85	1	<	10.0
	22AUG85	2		12.0
	22AUG85	3	<	10.0
	30SEP85		<	10.0
	23OCT85		<	10.0
	21NOV85		<	10.0
	16JAN86		<	10.0
	19FEB86		<	10.0
	14MAR86		<	10.0
	17APR86		<	10.0
	22MAY86		<	10.0
399-3-7	25JUN85			14.0
	24JUL85		<	10.0
	20AUG85		<	10.0
	25SEP85		<	10.0
	28OCT85		<	10.0
	25NOV85		<	10.0
	17JAN86		<	10.0
	19FEB86		<	10.0
	14MAR86		<	10.0
	17APR86		<	10.0
	19MAY86		<	10.0
399-4-1	02JUL85		<	10.0
	23JUL85		<	10.0
	23AUG85		<	10.0
	24SEP85		<	10.0
	28OCT85		<	10.0
	06DEC85		<	10.0
	17JAN86		<	10.0
	18FEB86		<	10.0
	13MAR86		<	10.0
	16APR86		<	10.0
	22MAY86		<	10.0
399-4-7	01JUL85		<	10.0
	01JUL85	1	<	10.0
	01JUL85	2	<	10.0
	01JUL85	3	<	10.0
399-4-7	30JUL85		<	10.0
	30JUL85	1	<	10.0
	30JUL85	2	<	10.0
	30JUL85	3	<	10.0
	22AUG85		<	10.0
	22AUG85	1	<	10.0
	22AUG85	2	<	10.0
	22AUG85	3	<	10.0
	25SEP85		<	10.0
	25OCT85		<	10.0
	21NOV85		<	10.0
	16JAN86		<	10.0
	20FEB86		<	10.0
	13MAR86		<	10.0
	18APR86		<	10.0
	22MAY86		<	10.0
399-8-2	18JUN85		<	10.0
	22JUL85		<	10.0
	19AUG85		<	10.0
	25SEP85		<	10.0
	23OCT85		<	10.0
	05DEC85		<	10.0
	20JAN86		<	10.0
	20FEB86		<	10.0
	20MAR86		<	10.0
	18APR86		<	10.0
	20MAY86		<	10.0
699-S19-E13	25JUN85		<	10.0
	22JUL85		<	10.0
	19AUG85		<	10.0
	24SEP85		<	10.0
	30OCT85		<	10.0
	11DEC85		<	10.0
	15JAN86		<	10.0
	21FEB86		<	10.0
	20MAR86		<	10.0
	22APR86		<	10.0
	27MAY86		<	10.0
699-S30E15A	02JUL85		<	10.0
	29JUL85		<	10.0
	27AUG85		<	10.0
	26SEP85		<	10.0
	24OCT85		<	10.0
	11DEC85		<	10.0
	20JAN86		<	10.0
	20FEB86		<	10.0
	19MAR86		<	10.0
	22APR86		<	10.0
	22MAY86		<	10.0

RCRA Compliance Ground-Water Monitoring Data
300 Area Process Trenches, June 1985 thru May 1986

TABLE G.3 Raw Data

Constituent List = Site Specific   Constituent = C78 SULFIDE PPB

Well	Date	Rep	Lab	Concentration
399-1-1	25JUN85			< 1,000
	25JUN85	1		< 1,000
	25JUN85	2		< 1,000
	25JUN85	3		< 1,000
	24JUL85			< 1,000
	24JUL85	1		< 1,000
	24JUL85	2		< 1,000
	24JUL85	3		< 1,000
	20AUG85			< 1,000
	20AUG85	1		< 1,000
	20AUG85	2		< 1,000
	20AUG85	3		< 1,000
	27SEP85			< 1,000
	01NOV85			< 1,000
	10DEC85			< 1,000
	13JAN86			< 1,000
	14FEB86			< 1,000
	19MAR86			< 1,000
	23APR86			< 1,000
	23MAY86			< 1,000
399-1-2	20JUN85			3,000
	20JUN85	1		< 1,000
	20JUN85	2		< 1,000
	20JUN85	3		< 1,000
	29JUL85			< 1,000
	29JUL85	1		< 1,000
	29JUL85	2		< 1,000
	29JUL85	3		< 1,000
	21AUG85			< 1,000
	21AUG85	1		< 1,000
	21AUG85	2		< 1,000
	21AUG85	3		< 1,000
	27SEP85			< 1,000
	24OCT85			< 1,000
	06DEC85			< 1,000
	14JAN86			< 1,000
	13FEB86			< 1,000
	19MAR86			< 1,000
	23APR86			< 1,000
	27MAY86			< 1,000
399-1-3	02JUL85			< 1,000
	02AUG85			< 1,000
	23AUG85			< 1,000
	26SEP85			< 1,000
	24OCT85			< 1,000
	26NOV85			< 1,000
	14JAN86			< 1,000
	18FEB86			< 1,000
	17MAR86			< 1,000
	21APR86			< 1,000
	20MAY86			< 1,000
399-1-4	18JUN85			< 1,000
	23JUL85			< 1,000
	19AUG85			< 1,000
	24SEP85			< 1,000
399-1-4	30OCT85			< 1,000
	11DEC85			< 1,000
	15JAN86			< 1,000
	12FEB86			1,100
	17MAR86			< 1,000
	23APR86			< 1,000
	23MAY86			< 1,000
399-1-5	20JUN85			< 1,000
	31JUL85			< 1,000
	31JUL85	1		< 1,000
	31JUL85	2		< 1,000
	21AUG85			< 1,000
	21AUG85	1		< 1,000
	21AUG85	2		< 1,000
	27SEP85			< 1,000
	29OCT85			< 1,000
	11DEC85			< 1,000
	15JAN86			< 1,000
	12FEB86			< 1,000
	17MAR86			< 1,000
	22APR86			< 1,000
	23MAY86			< 1,000
399-1-6	18JUN85			< 1,000
	22JUL85			< 1,000
	19AUG85			< 1,000
	24SEP85			< 1,000
	23OCT85			< 1,000
	04DEC85			< 1,000
	15JAN86			< 1,000
	12FEB86			< 1,000
	14MAR86			< 1,000
	21APR86			< 1,000
	23MAY86			< 1,000
399-1-7	02AUG85			< 1,000
	23AUG85			< 1,000
	26SEP85			< 1,000
	25OCT85			< 1,000
	10DEC85			< 1,000
	14JAN86			< 1,000
	14FEB86			1,100
	18MAR86			< 1,000
	21APR86			< 1,000
	20MAY86			< 1,000
399-1-8	29OCT85			< 1,000
	10DEC85			< 1,000
	14JAN86			< 1,000
	18FEB86			< 1,000
	18MAR86			< 1,000
	21APR86			< 1,000
	20MAY86			< 1,000
399-2-1	17JUN85			< 1,000
	23JUL85			< 1,000
	20AUG85			< 1,000
399-2-1	23SEP85			< 1,000
	30OCT85			< 1,000
	05DEC85			< 1,000
	20JAN86			< 1,000
	21FEB86			< 1,000
	18MAR86			< 1,000
	22APR86			< 1,000
	27MAY86			< 1,000
399-3-10	01JUL85			< 1,000
	01JUL85	1		< 1,000
	01JUL85	2		< 1,000
	01JUL85	3		< 1,000
	30JUL85			< 1,000
	30JUL85	1		< 1,000
	30JUL85	2		< 1,000
	30JUL85	3		< 1,000
	22AUG85			< 1,000
	22AUG85	1		< 1,000
	22AUG85	2		< 1,000
	22AUG85	3		< 1,000
	30SEP85			< 1,000
	23OCT85			< 1,000
	21NOV85			< 1,000
	16JAN86			< 1,000
	19FEB86			< 1,000
	14MAR86			< 1,000
	17APR86			< 1,000
	22MAY86			< 1,000
399-3-7	25JUN85			< 1,000
	24JUL85			< 1,000
	20AUG85			< 1,000
	25SEP85			< 1,000
	28OCT85			< 1,000
	25NOV85			< 1,000
	17JAN86			< 1,000
	19FEB86			1,100
	14MAR86			< 1,000
	17APR86			< 1,000
	19MAY86			< 1,000
399-4-1	02JUL85			< 1,000
	23JUL85			< 1,000
	23AUG85			< 1,000
	24SEP85			< 1,000
	28OCT85			< 1,000
	06DEC85			< 1,000
	17JAN86			< 1,000
	18FEB86			< 1,000
	13MAR86			< 1,000
	18APR86			< 1,000
	22MAY86			< 1,000
399-4-7	01JUL85			< 1,000
	01JUL85	1		< 1,000
	01JUL85	2		< 1,000
	01JUL85	3		< 1,000
399-4-7	30JUL85			< 1,000
	30JUL85	1		< 1,000
	30JUL85	2		< 1,000
	30JUL85	3		< 1,000
	22AUG85			< 1,000
	22AUG85	1		< 1,000
	22AUG85	2		< 1,000
	22AUG85	3		< 1,000
	25SEP85			< 1,000
	25OCT85			< 1,000
	21NOV85			< 1,000
	16JAN86			< 1,000
	20FEB86			< 1,000
	13MAR86			< 1,000
	18APR86			< 1,000
	22MAY86			< 1,000
399-8-2	18JUN85			< 1,000
	22JUL85			< 1,000
	19AUG85			< 1,000
	25SEP85			< 1,000
	23OCT85			< 1,000
	05DEC85			< 1,000
	20JAN86			< 1,000
	20FEB86			< 1,000
	20MAR86			< 1,000
	18APR86			< 1,000
	20MAY86			2,380
699-S19-E13	25JUN85			< 1,000
	22JUL85			< 1,000
	19AUG85			< 1,000
	24SEP85			< 1,000
	30OCT85			< 1,000
	11DEC85			< 1,000
	15JAN86			< 1,000
	21FEB86			< 1,000
	20MAR86			< 1,000
	22APR86			< 1,000
	27MAY86			< 1,000
699-S30E15A	02JUL85			< 1,000
	29JUL85			< 1,000
	27AUG85			< 1,000
	26SEP85			< 1,000
	24OCT85			< 1,000
	11DEC85			< 1,000
	20JAN86			< 1,000
	20FEB86			< 1,000
	19MAR86			< 1,000
	22APR86			< 1,000
	22MAY86			< 1,000

RCRA Compliance Ground-Water Monitoring Data
300 Area Process Trenches, June 1985 thru May 1986

TABLE G.3 Raw Data

Constituent List = Site Specific

Constituent = C80 AMMONIU PPB

Well	Date	Rep	Lab	Concentration
399-1-1	26JUN85			125
	25JUN85	1		160
	25JUN85	2		110
	25JUN85	3		175
	24JUL85			270
	24JUL85	1		240
	24JUL85	2		250
	24JUL85	3		250
	20AUG85			128
	20AUG85	1		124
	20AUG85	2		140
	20AUG85	3		135
	27SEP85			148
	01NOV85			170
	10DEC85		<	48.0
	13JAN86		<	47.0
	14FEB86			60.8
	19MAR86		<	50.0
	23APR86		<	50.0
	23MAY86		<	50.0
399-1-2	20JUN85			140
	20JUN85	1		150
	20JUN85	2		150
	20JUN85	3		110
	29JUL85			330
	29JUL85	1		290
	29JUL85	2		280
	29JUL85	3		280
	21AUG85			140
	21AUG85	1		135
	21AUG85	2		145
	21AUG85	3		145
	27SEP85			130
	24OCT85			170
	06DEC85		<	30.0
	14JAN86		<	45.0
	13FEB86		<	48.8
	19MAR86		<	50.0
	23APR86		<	50.0
	27MAY86		<	50.0
399-1-3	02JUL85			175
	02AUG85			180
	23AUG85			120
	26SEP85			138
	24OCT85			140
	25NOV85			56.0
	14JAN86		<	47.0
	16FEB86		<	48.3
	17MAR86		<	50.0
	21APR86			56.0
	20MAY86		<	50.0
399-1-4	18JUN85			175
	23JUL85			180
	19AUG85			170
	24SEP85			110
399-1-4	30OCT85			150
	11DEC85		<	30.0
	15JAN86		<	30.0
	12FEB86			51.8
	17MAR86		<	50.0
	23APR86			74.0
	23MAY86		<	50.0
399-1-5	20JUN85			240
	31JUL85			360
	31JUL85	1		230
	31JUL85	2		210
	21AUG85			135
	21AUG85	1		120
	21AUG85	2		135
	27SEP85			145
	29OCT85			160
	11DEC85		<	30.0
	15JAN86		<	30.0
	12FEB86			60.8
	17MAR86		<	50.0
	22APR86		<	50.0
	23MAY86		<	50.0
399-1-6	18JUN85			170
	22JUL85			165
	19AUG85			160
	24SEP85			110
	23OCT85			88.0
	04DEC85			52.0
	15JAN86		<	46.0
	12FEB86			54.8
	14MAR86		<	50.0
	21APR86		<	50.0
	23MAY86		<	50.0
399-1-7	02AUG85			240
	23AUG85			110
	26SEP85			160
	25OCT85			168
	10DEC85		<	45.0
	14JAN86		<	30.0
	14FEB86		<	49.6
	18MAR86		<	50.0
	21APR86		<	50.0
	20MAY86		<	50.0
399-1-8	29OCT85			160
	10DEC85			73.0
	14JAN86			69.0
	18FEB86			72.8
	18MAR86		<	50.0
	21APR86			66.0
	20MAY86			53.9
399-2-1	17JUN85			160
	23JUL85			280
	20AUG85			130
399-2-1	23SEP85			118
	30OCT85			148
	05DEC85			53.0
	20JAN86		<	30.0
	21FEB86		<	50.0
	18MAR86		<	50.0
	22APR86		<	50.0
	27MAY86		<	50.0
399-3-10	01JUL85			200
	01JUL85	1		230
	01JUL85	2		250
	01JUL85	3		210
	30JUL85			290
	30JUL85	1		310
	30JUL85	2		300
	30JUL85	3		190
	22AUG85			130
	22AUG85	1		180
	22AUG85	2		180
	22AUG85	3		175
	30SEP85			124
	23OCT85			170
	21NOV85			50.0
	16JAN86		<	30.0
	19FEB86		<	47.8
	14MAR86		<	50.0
	17APR86			68.0
	22MAY86		<	50.0
399-3-7	25JUN85			175
	24JUL85			270
	20AUG85			124
	25SEP85			120
	28OCT85			145
	25NOV85			51.0
	17JAN86		<	30.0
	19FEB86			60.8
	14MAR86		<	50.0
	17APR86			80.0
	19MAY86		<	50.0
399-4-1	02JUL85			240
	23JUL85			178
	23AUG85			124
	24SEP85			110
	28OCT85			148
	06DEC85		<	30.0
	17JAN86		<	47.0
	18FEB86			60.8
	13MAR86		<	50.0
	16APR86			89.0
	22MAY86		<	50.0
399-4-7	01JUL85			210
	01JUL85	1		170
	01JUL85	2		160
	01JUL85	3		160
399-4-7	30JUL85			305
	30JUL85	1		270
	30JUL85	2		330
	30JUL85	3		360
	22AUG85			175
	22AUG85	1		170
	22AUG85	2		170
	22AUG85	3		180
	25SEP85			112
	25OCT85			140
	21NOV85		<	42.5
	16JAN86		<	30.0
	20FEB86			60.8
	13MAR86		<	50.0
	18APR86			58.0
	22MAY86		<	50.0
399-8-2	18JUN85			140
	22JUL85			170
	19AUG85			155
	25SEP85			118
	23OCT85			190
	05DEC85		<	47.0
	20JAN86		<	46.0
	20FEB86			62.8
	20MAR86		<	50.0
	18APR86			58.0
	20MAY86		<	50.0
699-S19-E13	25JUN85			130
	22JUL85			165
	19AUG85			155
	24SEP85			98.0
	30OCT85			160
	11DEC85		<	30.0
	15JAN86		<	30.0
	21FEB86			60.8
	20MAR86		<	50.0
	22APR86		<	50.0
	27MAY86		<	50.0
699-S30E15A	02JUL85			205
	29JUL85			290
	27AUG85			155
	26SEP85			140
	24OCT85			148
	11DEC85		<	48.0
	20JAN86		<	30.0
	20FEB86			61.8
	19MAR86		<	50.0
	22APR86		<	50.0
	22MAY86		<	50.0

RCRA Compliance Ground-Water Monitoring Data
300 Area Process Trenches, June 1985 thru May 1986

TABLE G.3 Raw Data

Constituent List = Tag-alongs Constituent = A14 VANADUM PPB

Well	Date	Rep	Lab		Concentration
399-1-1	25JUN85		H		19.0
	25JUN85	1	H		17.0
	25JUN85	2	H		21.0
	25JUN85	3	H		26.0
	24JUL85		H		12.0
	24JUL85	1	H		13.0
	24JUL85	2	H		9.90
	24JUL85	3	H		10.0
	20AUG85			<	5.00
	20AUG85	1		<	5.00
	20AUG85	2			5.00
	20AUG85	3		<	5.00
	27SEP85			<	5.00
	01NOV85			<	5.00
	01NOV85	S	H		8.50
	10DEC85			<	5.00
	13JAN86			<	5.00
	14FEB86			<	5.00
	19MAR86			<	5.00
	23APR86			<	5.00
	23MAY86			<	5.00
399-1-2	20JUN85		H		29.0
	20JUN85	1	H		30.0
	20JUN85	2	H		14.0
	20JUN85	3	H		14.0
	29JUL85		H		8.70
	29JUL85	1	H		13.0
	29JUL85	2	H		18.0
	29JUL85	3	H		18.0
	21AUG85				7.00
	21AUG85	1			7.00
	21AUG85	2			8.00
	21AUG85	3		<	5.00
	27SEP85			<	5.00
	24OCT85				8.00
	24OCT85	S	H		17.0
	06DEC85			<	5.00
	14JAN86			<	5.00
	13FEB86			<	5.00
	19MAR86			<	5.00
	23APR86			<	5.00
	27MAY86			<	5.00
399-1-3	02JUL85		H	<	5.00
	02AUG85		H		7.80
	23AUG85			<	5.00
	26SEP85				10.0
	24OCT85			<	5.00
	25NOV85				5.00
	14JAN86			<	5.00
	18FEB86			<	5.00
	17MAR86			<	5.00
	21APR86			<	5.00
	20MAY86			<	5.00
399-1-4	18JUN85		H		9.00
	23JUL85		H	<	5.00
	19AUG85				7.00
	24SEP85				5.00
	30OCT85			<	5.00
	11DEC85			<	5.00
	15JAN86			<	5.00
	12FEB86			<	5.00
	17MAR86			<	5.00
	23APR86			<	5.00
	23MAY86			<	5.00
399-1-5	20JUN85		H	<	5.00
	31JUL85		H		7.00
	31JUL85	1	H		7.40
	31JUL85	2	H		12.0
	21AUG85				5.00
	21AUG85	1			6.00
	21AUG85	2			8.00
	27SEP85			<	5.00
	29OCT85			<	5.00
	29OCT85	S	H		15.0
	11DEC85			<	5.00
	15JAN86			<	5.00
	12FEB86			<	5.00
	17MAR86			<	5.00
	22APR86			<	5.00
	23MAY86				6.00
399-1-6	18JUN85		H		14.0
	22JUL85		H	<	5.00
	19AUG85			<	5.00
	24SEP85			<	5.00
	23OCT85			<	5.00
	04DEC85			<	5.00
	15JAN86			<	5.00
	12FEB86			<	5.00
	14MAR86			<	5.00
	21APR86			<	5.00
	23MAY86			<	5.00
399-1-7	02AUG85		H		10.0
	23AUG85			<	5.00
	26SEP85				5.00
	25OCT85			<	5.00
	10DEC85			<	5.00
	14JAN86			<	5.00
	14FEB86			<	5.00
	18MAR86			<	5.00
	21APR86			<	5.00
	20MAY86			<	5.00
399-1-8	29OCT85			<	5.00
	10DEC85			<	5.00
	14JAN86			<	5.00
	18FEB86			<	5.00
	18MAR86			<	5.00
	21APR86			<	5.00
	20MAY86			<	5.00
399-2-1	17JUN85		H		10.0
	23JUL85		H	<	5.00
	20AUG85			<	5.00
	23SEP85				5.00
	30OCT85			<	5.00
	05DEC85			<	5.00
	20JAN86			<	5.00
	21FEB86			<	5.00
	18MAR86			<	5.00
	22APR86			<	5.00
	27MAY86			<	5.00
399-3-10	01JUL85		H	<	5.00
	01JUL85	1	H	<	5.00
	01JUL85	2	H	<	5.00
	01JUL85	3	H	<	5.00
	30JUL85		H		9.40
	30JUL85	1	H		12.0
	30JUL85	2	H		13.0
	30JUL85	3	H		14.0
	22AUG85			<	5.00
	22AUG85	1		<	5.00
	22AUG85	2		<	5.00
	22AUG85	3			5.00
	30SEP85			<	5.00
	23OCT85			<	5.00
	23OCT85	S	H		15.0
	21NOV85			<	5.00
	16JAN86			<	5.00
	19FEB86			<	5.00
	14MAR86			<	5.00
	17APR86			<	5.00
	22MAY86			<	5.00
399-3-7	26JUN85		H		34.0
	24JUL85		H	<	5.00
	20AUG85				7.00
	25SEP85				5.00
	28OCT85				9.00
	25NOV85				6.00
	17JAN86				6.00
	19FEB86			<	5.00
	14MAR86				8.00
	17APR86				5.00
	19MAY86				8.00
399-4-1	02JUL85		H	<	5.00
	23JUL85		H	<	5.00
	23AUG85				10.0
	24SEP85				12.0
	28OCT85				9.00
	06DEC85				8.00
	17JAN86				8.00
	18FEB86				5.00
	13MAR86				29.0
	18APR86				8.00
	22MAY86				8.00
399-4-7	01JUL85		H	<	5.00
	01JUL85	1	H	<	5.00
	01JUL85	2	H	<	5.00
	01JUL85	3	H		18.0
	30JUL85		H		14.0
	30JUL85	1	H		15.0
	30JUL85	2	H		15.0
	30JUL85	3	H		9.10
	22AUG85				10.0
	22AUG85	1			9.00
	22AUG85	2			10.0
	22AUG85	3			9.00
	25SEP85				8.00
	25OCT85				5.00
	25OCT85	S	H		19.0
	21NOV85				6.00
	16JAN86				5.00
	20FEB86			<	5.00
	13MAR86				5.00
	18APR86			<	5.00
	22MAY86				5.00
399-8-2	18JUN85		H		23.0
	22JUL85		H	<	5.00
	19AUG85				13.0
	25SEP85				14.0
	23OCT85				11.0
	05DEC85				10.0
	20JAN86			<	5.00
	20FEB86				5.00
	20MAR86				5.00
	18APR86				6.00
	20MAY86				11.0
699-S19-E13	25JUN85		H		38.0
	22JUL85		H	<	5.00
	19AUG85				19.0
	24SEP85				12.0
	30OCT85				12.0
	11DEC85				10.0
	15JAN86				12.0
	21FEB86				8.00
	20MAR86				7.00
	22APR86				12.0
	27MAY86				14.0
699-S30E15A	02JUL85		H	<	5.00
	29JUL85		H		17.0
	27AUG85			<	5.00
	26SEP85				17.0
	24OCT85				5.00
	11DEC85			<	5.00
	20JAN86			<	5.00
	20FEB86			<	5.00
	19MAR86			<	5.00
	22APR86				6.00
	22MAY86				7.00

RCRA Compliance Ground-Water Monitoring Data
300 Area Process Trenches, June 1985 thru May 1986

TABLE G.3 Raw Data

Constituent List = Tag-alongs   Constituent = A18 POTASUM PPB

Well	Date	Rep	Lab	Concentration
399-1-1	25JUN85		H	2,910
	25JUN85	1	H	2,760
	25JUN85	2	H	2,640
	25JUN85	3	H	3,340
	24JUL85		H	2,970
	24JUL85	1	H	2,790
	24JUL85	2	H	2,710
	24JUL85	3	H	2,770
	20AUG85			2,240
	20AUG85	1		2,370
	20AUG85	2		2,480
	20AUG85	3		2,440
	27SEP85			2,250
	01NOV85			2,480
	01NOV85	S	H	3,040
	10DEC85			1,980
	13JAN86			2,550
	14FEB86			2,390
	19MAR86			2,380
	23APR86			2,270
	23MAY86			2,270
399-1-2	20JUN85		H	3,780
	20JUN85	1	H	3,790
	20JUN85	2	H	3,770
	20JUN85	3	H	3,510
	29JUL85		H	3,750
	29JUL85	1	H	3,830
	29JUL85	2	H	4,160
	29JUL85	3	H	4,180
	21AUG85			2,880
	21AUG85	1		2,730
	21AUG85	2		2,790
	21AUG85	3		2,810
	27SEP85			2,910
	24OCT85			3,260
	24OCT85	S	H	3,750
	06DEC85			2,950
	14JAN86			3,420
	13FEB86			3,270
	19MAR86			3,090
	23APR86			2,370
	27MAY86			2,670
399-1-3	02JUL85		H	3,280
	02AUG85		H	3,650
	23AUG85			2,440
	26SEP85			3,010
	24OCT85			3,420
	25NOV85			3,190
	14JAN86			2,910
	18FEB86			2,860
	17MAR86			2,810
	21APR86			2,560
	20MAY86			2,370
399-1-4	18JUN85		H	2,230
	23JUL85		H	< 100
399-1-4	19AUG85			2,640
	24SEP85			2,690
	30OCT85			2,790
	11DEC85			2,180
	15JAN86			2,090
	12FEB86			1,950
	17MAR86			1,900
	23APR86			2,060
	23MAY86			2,100
399-1-5	20JUN85		H	3,210
	31JUL85		H	3,290
	31JUL85	1	H	3,310
	31JUL85	2	H	3,470
	21AUG85			3,680
	21AUG85	1		3,390
	21AUG85	2		3,470
	27SEP85			2,800
	29OCT85			2,790
	29OCT85	S	H	2,970
	11DEC85			2,760
	15JAN86			1,870
	12FEB86			2,220
	17MAR86			1,980
	22APR86			1,940
	23MAY86			2,360
399-1-6	18JUN85		H	2,810
	22JUL85		H	3,550
	19AUG85			2,650
	24SEP85			2,620
	23OCT85			2,560
	04DEC85			2,100
	15JAN86			2,740
	12FEB86			2,160
	14MAR86			2,180
	21APR86			2,080
	23MAY86			2,100
399-1-7	02AUG85		H	3,340
	23AUG85			2,560
	26SEP85			2,820
	25OCT85			3,210
	10DEC85			2,720
	14JAN86			3,100
	14FEB86			3,070
	18MAR86			2,670
	21APR86			2,390
	20MAY86			2,430
399-1-8	29OCT85			5,740
	10DEC85			4,790
	14JAN86			4,950
	18FEB86			4,860
	18MAR86			5,030
	21APR86			4,720
	20MAY86			5,050
399-2-1	17JUN85		H	3,670
399-2-1	23JUL85		H	< 100
	20AUG85			3,560
	23SEP85			3,550
	30OCT85			3,780
	05DEC85			2,890
	20JAN86			3,570
	21FEB86			3,800
	18MAR86			3,490
	22APR86			3,360
	27MAY86			3,420
399-3-10	01JUL85		H	4,530
	01JUL85	1	H	4,400
	01JUL85	2	H	4,370
	01JUL85	3	H	4,340
	30JUL85		H	3,860
	30JUL85	1	H	4,060
	30JUL85	2	H	4,110
	30JUL85	3	H	4,050
	22AUG85			3,090
	22AUG85	1		3,160
	22AUG85	2		3,230
	22AUG85	3		3,210
	30SEP85			3,310
	23OCT85			3,710
	23OCT85	S	H	4,090
	21NOV85			3,220
	16JAN86			3,460
	19FEB86			3,230
	14MAR86			3,000
	17APR86			2,860
	22MAY86			2,940
399-3-7	25JUN85		H	6,820
	24JUL85		H	5,210
	20AUG85			5,150
	25SEP85			3,350
	28OCT85			5,280
	25NOV85			4,940
	17JAN86			4,140
	19FEB86			3,620
	14MAR86			4,150
	17APR86			4,270
	19MAY86			4,610
399-4-1	02JUL85		H	5,600
	23JUL85		H	< 100
	23AUG85			4,670
	24SEP85			4,550
	28OCT85			4,970
	06DEC85			3,950
	17JAN86			4,670
	18FEB86			4,540
	13MAR86			6,100
	18APR86			4,710
	22MAY86			4,390
399-4-7	01JUL85		H	5,730
399-4-7	01JUL85	1	H	6,310
	01JUL85	2	H	5,880
	01JUL85	3	H	5,120
	30JUL85		H	5,810
	30JUL85	1	H	5,300
	30JUL85	2	H	5,500
	30JUL85	3	H	5,720
	22AUG85			4,360
	22AUG85	1		4,180
	22AUG85	2		4,420
	22AUG85	3		4,370
	26SEP85			4,440
	25OCT85			4,650
	25OCT85	S	H	5,480
	21NOV85			4,280
	16JAN86			4,370
	20FEB86			3,970
	13MAR86			3,860
	18APR86			3,900
	22MAY86			4,090
399-6-2	18JUN85		H	5,240
	22JUL85		H	6,550
	19AUG85			5,460
	26SEP85			5,350
	23OCT85			5,340
	05DEC85			4,520
	20JAN86			5,620
	20FEB86			5,250
	20MAR86			4,730
	18APR86			5,270
	20MAY86			5,260
699-S19-E13	25JUN85		H	7,390
	22JUL85		H	8,060
	19AUG85			6,390
	24SEP85			6,440
	30OCT85			7,330
	11DEC85			5,770
	15JAN86			6,020
	21FEB86			5,830
	20MAR86			5,910
	22APR86			5,980
	27MAY86			6,380
699-S30E15A	02JUL85		H	8,210
	29JUL85		H	8,610
	27AUG85			6,990
	26SEP85			6,940
	24OCT85			6,940
	11DEC85			6,490
	20JAN86			6,430
	20FEB86			5,870
	19MAR86			6,470
	22APR86			6,610
	22MAY86			6,530

RCRA Compliance Ground-Water Monitoring Data
300 Area Process Trenches, June 1985 thru May 1986

TABLE G.3 Raw Data

Constituent List = Tag-alongs   Constituent = A80 CHLFORM PPB

Well	Date	Rep	Lab	Concentration
399-1-1	26JUN85		H	30.0
	26JUN85	1	H	30.0
	25JUN85	2	H	28.0
	26JUN85	3	H	28.0
	24JUL85		H	28.0
	24JUL85	1	H	32.0
	24JUL85	2	H	30.0
	24JUL85	3	H	32.0
	20AUG85			33.0
	20AUG85	1		24.0
	20AUG85	2		27.0
	20AUG85	3		25.0
	27SEP85			23.0
	01NOV85			17.0
	10DEC85			13.0
	13JAN86			11.0
	14FEB86			11.0
	19MAR86			< 9.10
	23APR86			< 8.90
	23MAY86			11.0
399-1-2	20JUN85		H	15.0
	20JUN85	1	H	15.0
	20JUN85	2	H	15.0
	20JUN85	3	H	17.0
	29JUL85		H	27.0
	29JUL85	1	H	20.0
	29JUL85	2	H	13.0
	29JUL85	3	H	19.0
	21AUG85			18.0
	21AUG85	1		20.0
	21AUG85	2		20.0
	21AUG85	3		18.0
	27SEP85			23.0
	24OCT85			18.0
	06DEC85			12.0
	14JAN86			12.0
	13FEB86			11.0
	19MAR86			< 9.60
	23APR86			12.0
	27MAY86			13.0
399-1-3	02JUL85		H	42.0
	23AUG85			25.0
	26SEP85			23.0
	24OCT85			19.0
	25NOV85			12.0
	14JAN86			13.0
	18FEB86			12.0
	17MAR86			10.0
	21APR86			11.0
	20MAY86			13.0
399-1-4	18JUN85		H	30.0
	23JUL85		H	32.0
	24SEP85			25.0
	30OCT85			18.0
	11DEC85			11.0
399-1-4	15JAN86			11.0
	12FEB86			10.0
	17MAR86			11.0
	23APR86			11.0
	23MAY86			13.0
399-1-5	20JUN85		H	25.0
	31JUL85		H	21.0
	31JUL85	1	H	27.0
	31JUL85	2	H	32.0
	21AUG85			22.0
	21AUG85	1		22.0
	21AUG85	2		22.0
	27SEP85			20.0
	29OCT85			17.0
	11DEC85			11.0
	15JAN86			14.0
	12FEB86			10.0
	17MAR86			12.0
	22APR86			12.0
	23MAY86			17.0
399-1-6	18JUN85		H	38.0
	19AUG85			25.0
	24SEP85			21.0
	23OCT85			14.0
	12FEB86			10.0
	14MAR86			< 7.30
	21APR86			12.0
	23MAY86			13.0
399-1-7	26SEP85			22.0
	25OCT85			13.0
	10DEC85			12.0
	14JAN86			12.0
	14FEB86			11.0
	18MAR86			< 9.00
	21APR86			< 9.20
	20MAY86			12.0
399-1-8	18FEB86			6.80
	18MAR86			< 4.30
	21APR86			< 7.20
399-2-1	17JUN85		H	13.0
	23JUL85		H	17.0
	20AUG85			13.0
	23SEP85			14.0
	21FEB86			< 7.80
	21MAR86			< 7.90
	22APR86			< 8.90
399-3-10	14MAR86			< 5.30
399-3-7	20AUG85			27.0
	14MAR86			< 4.10
	17APR86			< 8.30
399-4-1	13MAR86			< 8.20
399-4-1	18APR86			< 8.00
399-4-7	13MAR86			< 6.50
	18APR86			< 6.50
699-S19-E13	25JUN85		H	< 10.0
	22JUL85		H	< 10.0
	19AUG85			< 10.0
	24SEP85			< 10.0
	30OCT85			12.0
	15JAN86			< 10.0
	22APR86			< 10.0

Well	Date	Rep	Lab	Concentration

RCRA Compliance Ground-Water Monitoring Data
300 Area Process Trenches, June 1985 thru May 1986

TABLE G.3 Raw Data

Constituent List = Tag-alongs Constituent = A93 METHYCH PPB

Well	Date	Rep	Lab	Concentration
399-1-1	25JUN85		H	13.0
	01NOV85			430
	01NOV85	S	H	630
	10DEC85			310
	19MAR86			< 3.00
	23APR86			450
399-1-2	20JUN85	1	H	170
	06DEC85			370
	19MAR86			33.0
	23APR86			660
399-1-3	25NOV85			280
	17MAR86			< 8.60
399-1-4	11DEC85			440
	23APR86			1,400
399-1-5	20JUN85		H	< 10.0
	31JUL85		H	32.0
	31JUL85	1	H	19.0
	31JUL85	2	H	11.0
	21AUG85			< 10.0
	21AUG85	1		< 10.0
	21AUG85	2		< 10.0
	27SEP85			1,600
	11DEC85			1,200
	15JAN86			< 10.0
	17MAR86			11.0
	22APR86			< 10.0
399-1-6	18JUN85		H	18.0
	19AUG85			20.0
	04DEC85			1,150
	14MAR86			740
	21APR86			960
399-1-7	02AUG85		H	17.0
	25OCT85			71.0
	18MAR86			970
	21APR86			1,650
399-1-8	10DEC85			1,500
	18MAR86			130
399-2-1	05DEC85			750
	21MAR86			14.0
	22APR86			690
399-3-10	21NOV85			460
	14MAR86			140
	17APR86			240
399-3-7	25NOV85			13.0
	14MAR86			100
399-4-1	06DEC85			960
	13MAR86			350
399-4-1	18APR86			60.0
399-4-7	21NOV85			310
	13MAR86			40.0
	18APR86			76.0
399-8-2	05DEC85			340
	20MAR86			820
	18APR86			470
699-S19-E13	25JUN85		H	< 10.0
	22JUL85		H	< 10.0
	19AUG85			< 10.0
	24SEP85			< 10.0
	11DEC85			70.0
	15JAN86			< 10.0
	20MAR86			27,500
	22APR86			< 10.0
699-S30E15A	11DEC85			2,000
	19MAR86			35.0
	22APR86			1,400
	22MAY86			70.0

RCRA Compliance Ground-Water Monitoring Data
300 Area Process Trenches, June 1985 thru May 1986

TABLE G.3 Raw Data

Constituent List = Tag-alongs   Constituent = C76 PHOSPHA PPB

Well	Date	Rep	Lab	Concentration
399-1-1	25JUN85			< 1,000
	25JUN85	1		< 1,000
	25JUN85	2		< 1,000
	25JUN85	3		< 1,000
	24JUL85			< 1,000
	24JUL85	1		< 1,000
	24JUL85	2		< 1,000
	24JUL85	3		< 1,000
	20AUG85			< 1,000
	20AUG85	1		< 1,000
	20AUG85	2		< 1,000
	20AUG85	3		< 1,000
	27SEP85			< 1,000
	01NOV85			< 1,000
	10DEC85			< 1,000
	13JAN86			< 1,000
	14FEB86			< 1,000
	19MAR86			< 1,000
	23APR86			< 1,000
	23MAY86			< 1,000
399-1-2	20JUN85			< 1,000
	20JUN85	1		< 1,000
	20JUN85	2		< 1,000
	20JUN85	3		< 1,000
	29JUL85			< 1,000
	29JUL85	1		< 1,000
	29JUL85	2		< 1,000
	29JUL85	3		< 1,000
	21AUG85			< 1,000
	21AUG85	1		< 1,000
	21AUG85	2		< 1,000
	21AUG85	3		< 1,000
	27SEP85			< 1,000
	24OCT85			< 1,000
	06DEC85			< 1,000
	14JAN86			< 1,000
	13FEB86			< 1,000
	19MAR86			< 1,000
	23APR86			< 1,000
	27MAY86			< 1,000
399-1-3	02JUL85			< 1,000
	02AUG85			< 1,000
	23AUG85			< 1,000
	26SEP85			3,240
	24OCT85			< 1,000
	25NOV85			< 1,000
	14JAN86			< 1,000
	18FEB86			< 1,000
	17MAR86			< 1,000
	21APR86			< 1,000
	20MAY86			< 1,000
399-1-4	18JUN85			< 1,000
	23JUL85			< 1,000
	19AUG85			< 1,000
	24SEP85			< 1,000
399-1-4	30OCT85			< 1,000
	11DEC85			< 1,000
	15JAN86			< 1,000
	12FEB86			< 1,000
	17MAR86			< 1,000
	23APR86			< 1,000
	23MAY86			< 1,000
399-1-5	20JUN85			< 1,000
	31JUL85			< 1,000
	31JUL85	1		< 1,000
	31JUL85	2		< 1,000
	21AUG85			< 1,000
	21AUG85	1		< 1,000
	21AUG85	2		< 1,000
	27SEP85			< 1,000
	29OCT85			< 1,000
	11DEC85			< 1,000
	15JAN86			< 1,000
	12FEB86			< 1,000
	17MAR86			< 1,000
	22APR86			< 1,000
	23MAY86			< 1,000
399-1-6	18JUN85			< 1,000
	22JUL85			< 1,000
	19AUG85			< 1,000
	24SEP85			< 1,000
	23OCT85			< 1,000
	04DEC85			< 1,000
	15JAN86			< 1,000
	12FEB86			< 1,000
	14MAR86			< 1,000
	21APR86			< 1,000
	23MAY86			< 1,000
399-1-7	02AUG85			< 1,000
	23AUG85			< 1,000
	26SEP85			< 1,000
	25OCT85			< 1,000
	10DEC85			< 1,000
	14JAN86			< 1,000
	14FEB86			< 1,000
	18MAR86			< 1,000
	21APR86			< 1,000
	20MAY86			< 1,000
399-1-8	29OCT85			< 1,000
	10DEC85			< 1,000
	14JAN86			< 1,000
	18FEB86			< 1,000
	18MAR86			< 1,000
	21APR86			< 1,000
	20MAY86			< 1,000
399-2-1	17JUN85			< 1,000
	23JUL85			< 1,000
	20AUG85			< 1,000
399-2-1	23SEP85			< 1,000
	30OCT85			< 1,000
	05DEC85			< 1,000
	20JAN86			< 1,000
	21FEB86			< 1,000
	18MAR86			< 1,000
	22APR86			< 1,000
	27MAY86			< 1,000
399-3-10	01JUL85			< 1,000
	01JUL85	1		< 1,000
	01JUL85	2		< 1,000
	01JUL85	3		< 1,000
	30JUL85			< 1,000
	30JUL85	1		< 1,000
	30JUL85	2		< 1,000
	30JUL85	3		< 1,000
	22AUG85			< 1,000
	22AUG85	1		< 1,000
	22AUG85	2		< 1,000
	22AUG85	3		< 1,000
	30SEP85			< 1,000
	23OCT85			< 1,000
	21NOV85			< 1,000
	16JAN86			< 1,000
	19FEB86			< 1,000
	14MAR86			< 1,000
	17APR86			< 1,000
	22MAY86			< 1,000
399-3-7	25JUN85			< 1,000
	24JUL85			< 1,000
	20AUG85			< 1,000
	25SEP85			< 1,000
	28OCT85			< 1,000
	25NOV85			< 1,000
	17JAN86			< 1,000
	19FEB86			< 1,000
	14MAR86			< 1,000
	17APR86			< 1,000
	19MAY86			< 1,000
399-4-1	02JUL85			< 1,000
	23JUL85			< 1,000
	23AUG85			< 1,000
	24SEP85			< 1,000
	28OCT85			< 1,000
	06DEC85			< 1,000
	17JAN86			< 1,000
	18FEB86			< 1,000
	13MAR86			< 1,000
	16APR86			< 1,000
	22MAY86			< 1,000
399-4-7	01JUL85			< 1,000
	01JUL85	1		< 1,000
	01JUL85	2		< 1,000
	01JUL85	3		< 1,000
399-4-7	30JUL85			< 1,000
	30JUL85	1		< 1,000
	30JUL85	2		< 1,000
	30JUL85	3		< 1,000
	22AUG85			< 1,000
	22AUG85	1		< 1,000
	22AUG85	2		< 1,000
	22AUG85	3		< 1,000
	25SEP85			< 1,000
	25OCT85			< 1,000
	21NOV85			< 1,000
	16JAN86			< 1,000
	20FEB86			< 1,000
	13MAR86			< 1,000
	18APR86			< 1,000
	22MAY86			< 1,000
399-8-2	18JUN85			< 1,000
	22JUL85			< 1,000
	19AUG85			< 1,000
	25SEP85			< 1,000
	23OCT85			< 1,000
	05DEC85			< 1,000
	20JAN86			< 1,000
	20FEB86			< 1,000
	20MAR86			< 1,000
	18APR86			< 1,000
	20MAY86			< 1,000
699-S19-E13	25JUN85			< 1,000
	22JUL85			< 1,000
	19AUG85			< 1,000
	24SEP85			< 1,000
	30OCT85			< 1,000
	11DEC85			< 1,000
	15JAN86			< 1,000
	21FEB86			< 1,000
	20MAR86			< 1,000
	22APR86			< 1,000
	27MAY86			< 1,000
699-S30E15A	02JUL85			< 1,000
	29JUL85			< 1,000
	27AUG85			< 1,000
	26SEP85			< 1,000
	24OCT85			< 1,000
	11DEC85			< 1,000
	20JAN86			< 1,000
	20FEB86			< 1,000
	19MAR86			< 1,000
	22APR86			< 1,000
	22MAY86			< 1,000

RCRA Compliance Ground-Water Monitoring Data
300 Area Process Trenches, June 1985 thru May 1988

TABLE G.3 Raw Data

Constituent List = WAC 173-303-9905 Constituent = A04 ZINC PPB

Well	Date	Rep	Lab	Concentration
399-1-5	20JUN85		H	8.00
	31JUL85		H	38.0
	31JUL85	1	H	79.0
	31JUL85	2	H	178
	21AUG85			16.0
	21AUG85	1		31.0
	21AUG85	2	<	5.00
	27SEP85		<	5.00
	15JAN88			12.0
	22APR88		<	5.00
699-S19-E13	25JUN85		H	23.0
	22JUL85		H	51.0
	19AUG85			39.0
	24SEP85			6.00
	15JAN88		<	5.00
	22APR88		<	5.00

RCRA Compliance Ground-Water Monitoring Data
300 Area Process Trenches, June 1985 thru May 1986

TABLE G.3 Raw Data

Constituent List = WAC 173-303-9905 Constituent = A05 CALCIUM PPB

Well	Date	Rep	Lab	Concentration
399-1-5	20JUN85		H	21,400
	31JUL85		H	17,900
	31JUL85	1	H	19,100
	31JUL85	2	H	19,700
	21AUG85			31,900
	21AUG85	1		28,900
	21AUG85	2		30,000
	27SEP85			20,800
	15JAN86			19,900
	22APR86			20,100
699-S19-E13	25JUN85		H	45,600
	22JUL85		H	49,000
	19AUG85			44,300
	24SEP85			44,800
	15JAN86			45,900
	22APR86			51,700

RCRA Compliance Ground-Water Monitoring Data
300 Area Process Trenches, June 1985 thru May 1986

TABLE G.3 Raw Data

Constituent List = WAC 173-303-9905 Constituent = A23 THALIUM PPB

Well	Date	Rep	Lab		Concentration
399-1-5	20JUN85		H	<	10.0
	31JUL85		H	<	10.0
	31JUL85	1	H	<	10.0
	31JUL85	2	H	<	10.0
	21AUG85			<	10.0
	21AUG85	1		<	10.0
	21AUG85	2		<	10.0
	27SEP85			<	10.0
	15JAN86			<	10.0
	22APR86			<	10.0
699-S19-E13	26JUN85		H		10.0
	22JUL85		H	<	10.0
	19AUG85			<	10.0
	24SEP85			<	10.0
	15JAN86			<	10.0
	22APR86			<	10.0

RCRA Compliance Ground-Water Monitoring Data
300 Area Process Trenches, June 1985 thru May 1986

TABLE G.3 Raw Data

Constituent List = WAC 173-303-9905 Constituent = B40 BIS2EPH PPB

Well	Date	Rep	Lab		Concentration
399-1-2	21AUG85	3			50.0
	27MAY86				19.5
399-1-5	20JUN85		H	<	10.0
	31JUL85		H	<	10.0
	31JUL85	1	H	<	10.0
	31JUL85	2	H	<	10.0
	21AUG85			<	10.0
	21AUG85	1		<	10.0
	21AUG85	2		<	10.0
	27SEP85			<	10.0
	16JAN86			<	10.0
	22APR86			<	10.0
399-3-10	22AUG85				50.0
	22AUG85	2			18.0
699-S19-E13	25JUN85		H	<	10.0
	22JUL85		H	<	10.0
	19AUG85			<	10.0
	24SEP85			<	10.0
	15JAN86			<	10.0
	22APR86			<	10.0

RCRA Compliance Ground-Water Monitoring Data
300 Area Process Trenches, June 1985 thru May 1986

TABLE G.3 Raw Data

Constituent List = WAC 173-303-9905 Constituent = I01 ACETONE PPB

Well	Date	Rep	Lab	Concentration	Well	Date	Rep	Lab	Concentration	Well	Date	Rep	Lab	Concentration	Well	Date	Rep	Lab	Concentration
399-1-5	31JUL85	1		14.0															
399-3-10	30JUL85	1		26.0															

RCRA Compliance Ground-Water Monitoring Data
300 Area Process Trenches, June 1985 thru May 1986

TABLE G.3 Raw Data

Constituent List = WAC 173-303-9905 Constituent = I02 HEXANE PPB

Well	Date	Rep	Lab	Concentration
399-1-2	29JUL85			60.0
399-4-7	30JUL85	3		60.0

RCRA Compliance Ground-Water Monitoring Data
300 Area Process Trenches, June 1985 thru May 1988

TABLE G.3 Raw Data

Constituent List = WAC 173-303-9905 Constituent = I03 MECYPEN PPB

Well	Date	Rep	Lab	Concentration	Well	Date	Rep	Lab	Concentration	Well	Date	Rep	Lab	Concentration	Well	Date	Rep	Lab	Concentration
399-4-7	30JUL85	3		16.0															

RCRA Compliance Ground-Water Monitoring Data
300 Area Process Trenches, June 1985 thru May 1986

TABLE G.3 Raw Data

Constituent List = WAC 173-303-9905 Constituent = I04 MEBUPHT PPB

Well	Date	Rep	Lab	Concentration	Well	Date	Rep	Lab	Concentration	Well	Date	Rep	Lab	Concentration	Well	Date	Rep	Lab	Concentration
399-4-7	01JUL85	2		9.00															

RCRA Compliance Ground-Water Monitoring Data
300 Area Process Trenches, June 1985 thru May 1986

TABLE G.3 Raw Data

Constituent List = WAC 173-303-9905 Constituent = I28 TAF PPB

Well	Date	Rep	Lab	Concentration	Well	Date	Rep	Lab	Concentration	Well	Date	Rep	Lab	Concentration	Well	Date	Rep	Lab	Concentration
399-2-1	20JAN86			32.0															
699-S30E15A	20JAN86			91.0															

RCRA Compliance Ground-Water Monitoring Data
300 Area Process Trenches, June 1985 thru May 1986

TABLE G.3 Raw Data

Constituent List = WAC 173-303-9905 Constituent = I63 BHT PPB

Well	Date	Rep	Lab	Concentration	Well	Date	Rep	Lab	Concentration	Well	Date	Rep	Lab	Concentration	Well	Date	Rep	Lab	Concentration
399-1-8	18FEB86			3.20															

RCRA Compliance Ground-Water Monitoring Data
300 Area Process Trenches, June 1985 thru May 1986

TABLE G.3 Raw Data

Constituent List = WAC 173-303-9905 Constituent = I99 UNKNOWN PPB

Well	Date	Rep	Lab	Concentration
399-1-2	29JUL85	2		35.0
399-1-5	31JUL85			15.0
	31JUL85	1		11.0
	31JUL85	2		10.0

APPENDIX H

GRAPHS OF ANALYTICAL DATA

APPENDIX H

GRAPHS OF ANALYTICAL DATA

Appendix H contains graphical presentations for the chemical constituent data collected between June 1985 and May 1986 at the 300 Area Process Trench monitoring network. All replicate data have been averaged before plotting the results.

The graphs present time lines for each well, with the well denoted on the graph by an abbreviation of its designation. To minimize overplotting, the wells have been split into two groups. The first group consists of those wells most immediately adjacent to the process trenches (i.e., 1-1 to 1-8). The second group consists of the remaining wells, which are more distant.

For plotting purposes the wells will be identified by the following abbreviations and unique line style with in each plot.

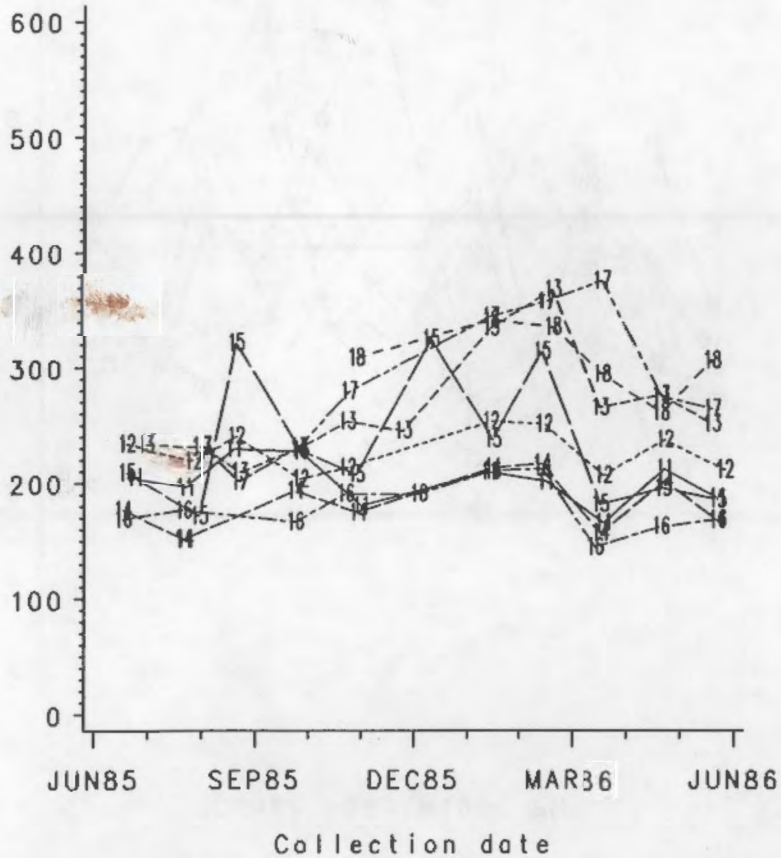
Plot 1	Well	1-1	1-2	1-3	1-4	1-5	1-6	1-7	1-8
	Abbreviation	11	12	13	14	15	16	17	18
Plot	Well	2-1	3-10	3-7	4-1	4-7	8-2	S19-E13	S30E15A
	Abbreviation	21	310	37	41	47	82	S19	S30

The plots are given in the same constituent ordering as all of the data tables and summaries. The following constiuents have not been plotted because they were not sampled at more than a few wells or appeared very seldom in the analysis results.

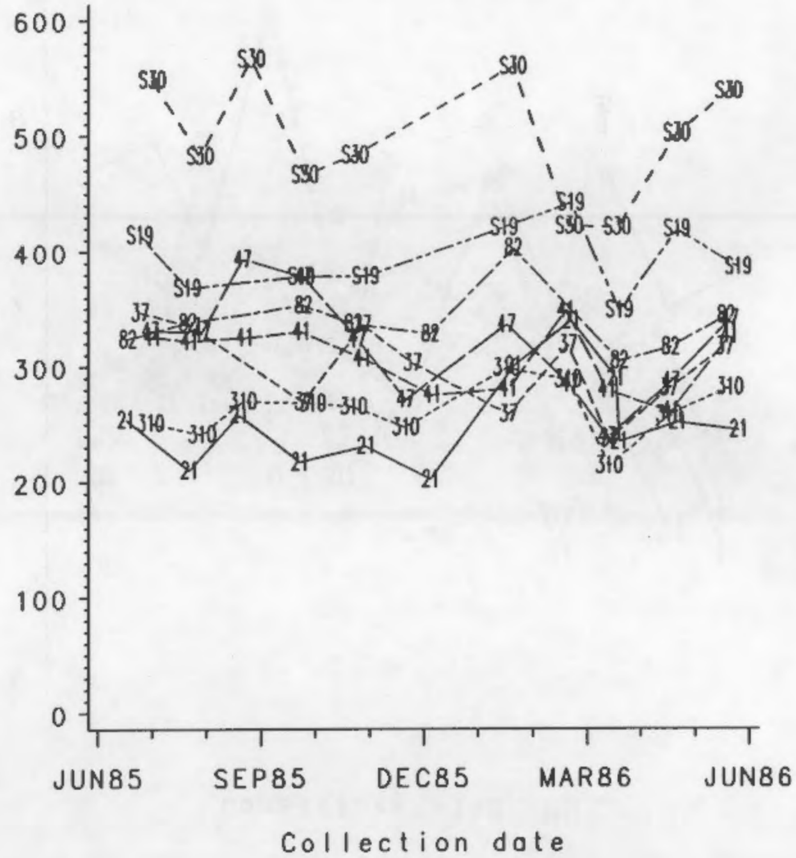
A04 - Zinc	I01 - Acetone
A05 - Calcium	I02 - Hexane
A23 - Thallium	I03 - MECYPEN
B40 - BIS2EPH	I04 - MEBUPHT
	I28 - TAF
	I63 - BUT
	I99 - Unknown

RCRA Compliance Ground-Water Monitoring Project
300 Area Process Trenches, June 1985 thru May 1986

Constituent=191 CONDUCT UMHO



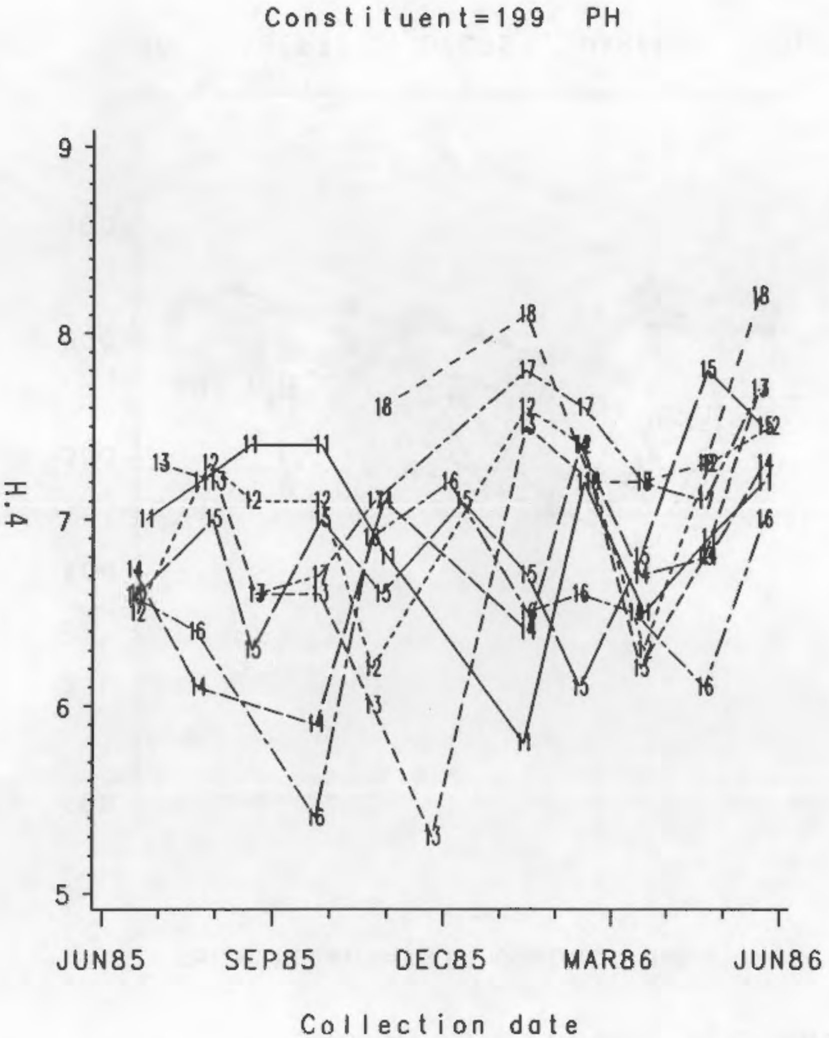
Constituent=191 CONDUCT UMHO

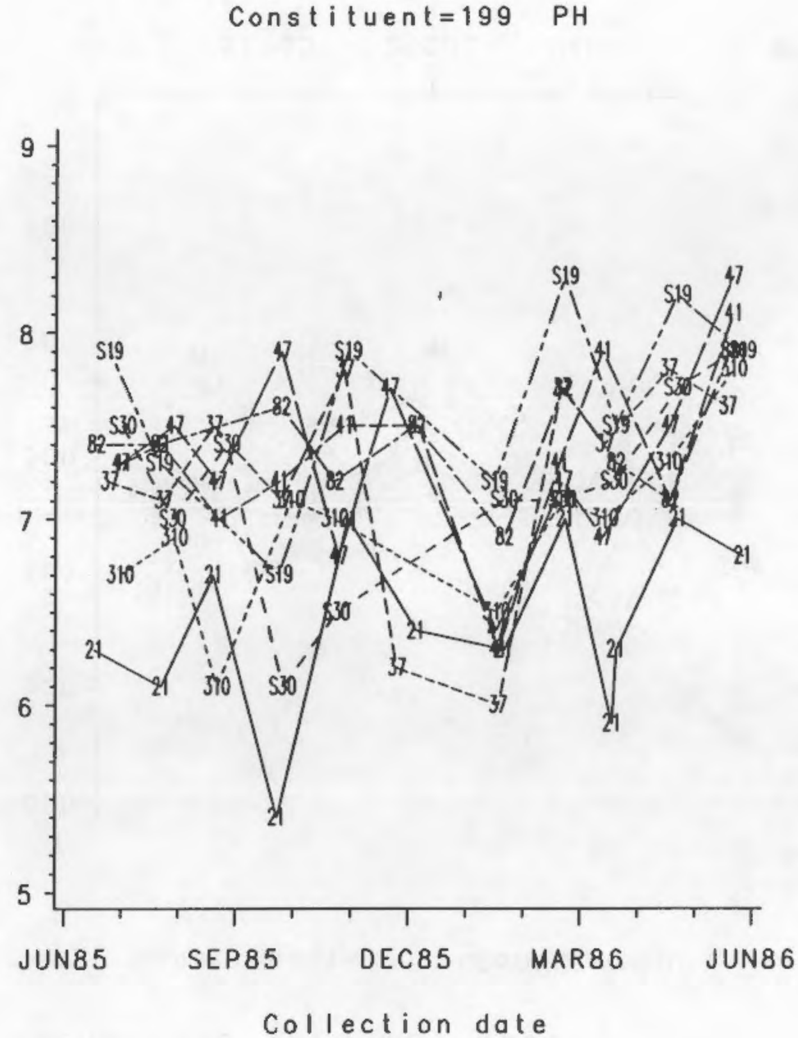


Solid Horizontal Line represents Detection Limit

H.3

RCRA Compliance Ground-Water Monitoring Project
300 Area Process Trenches, June 1985 thru May 1986

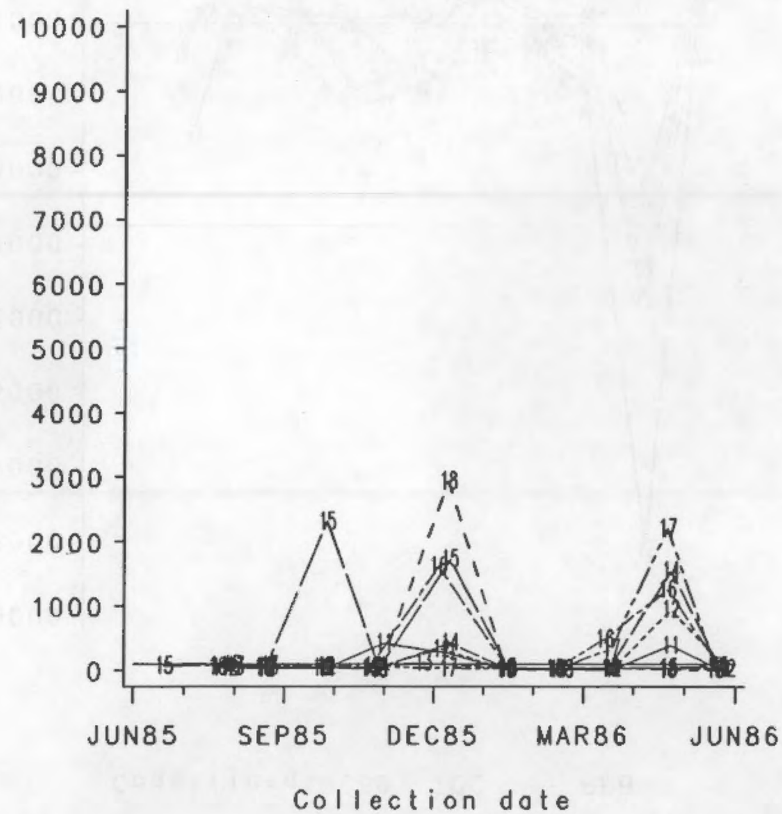




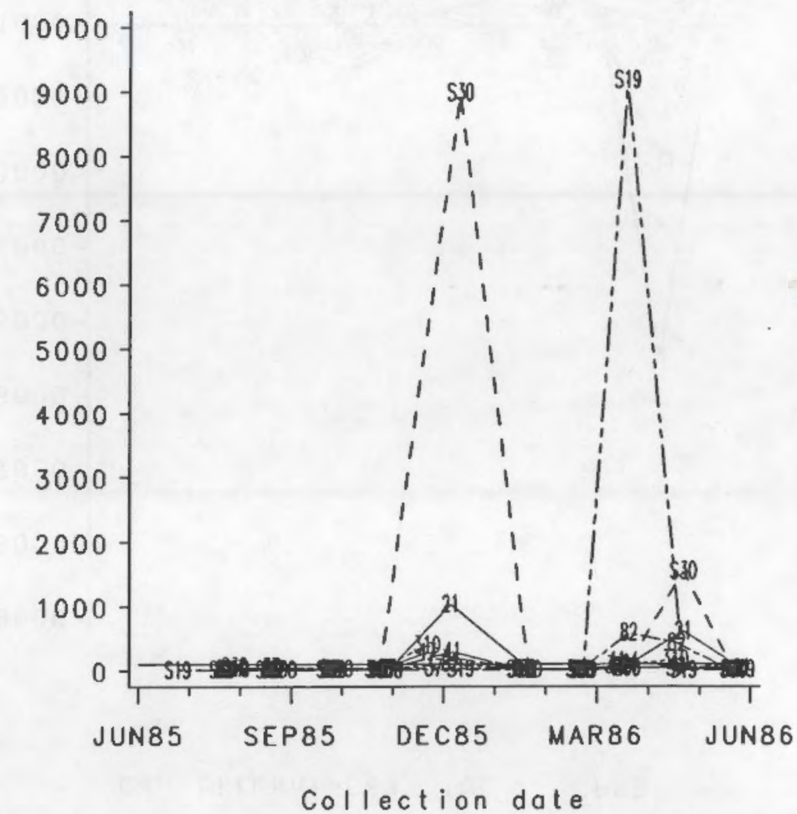
Solid Horizontal Line represents Detection Limit

RCRA Compliance Ground-Water Monitoring Project
300 Area Process Trenches, June 1985 thru May 1986

Constituent=C68 TOX PPB

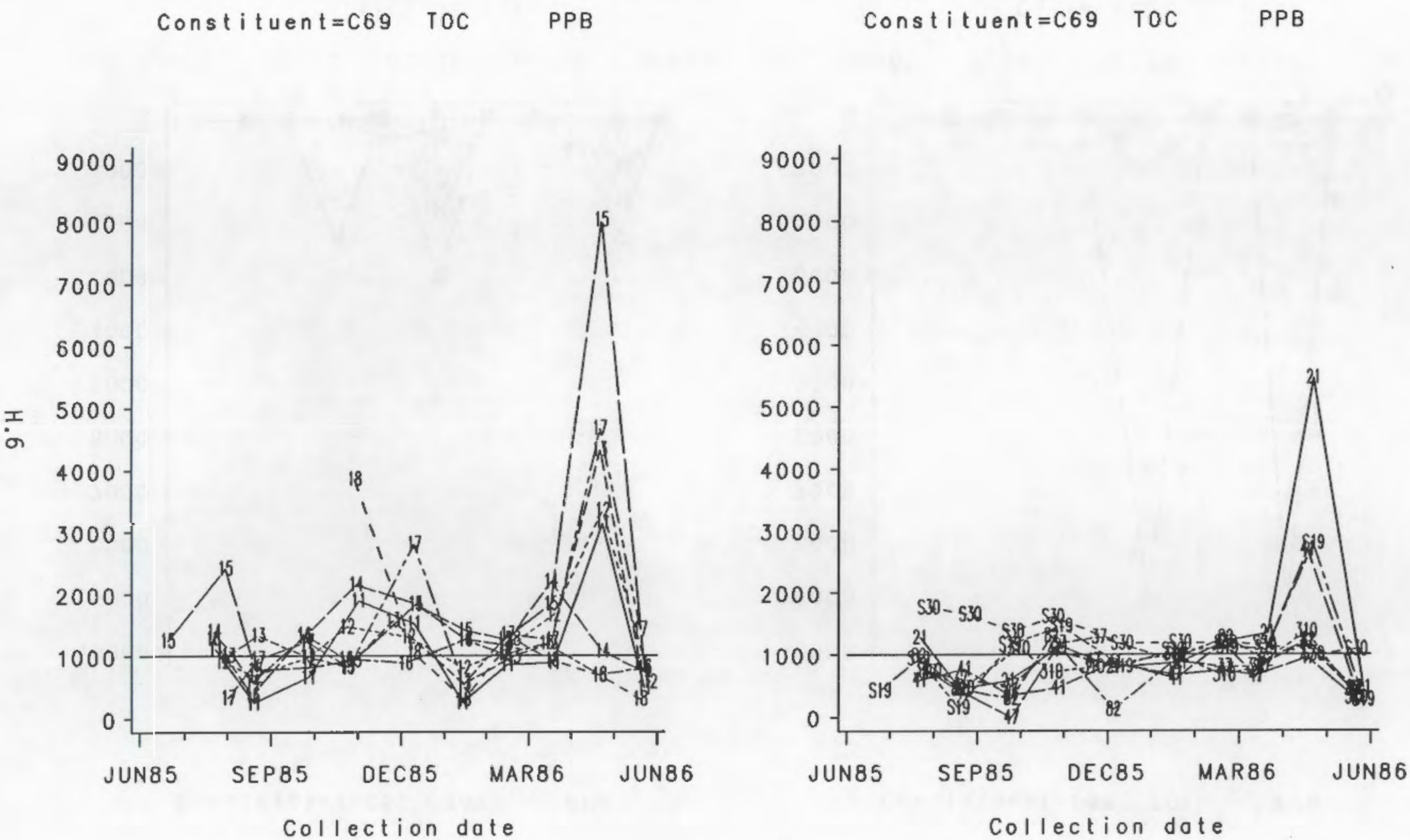


Constituent=C68 TOX PPB



Solid Horizontal Line represents Detection Limit

RCRA Compliance Ground-Water Monitoring Project
300 Area Process Trenches, June 1985 thru May 1986

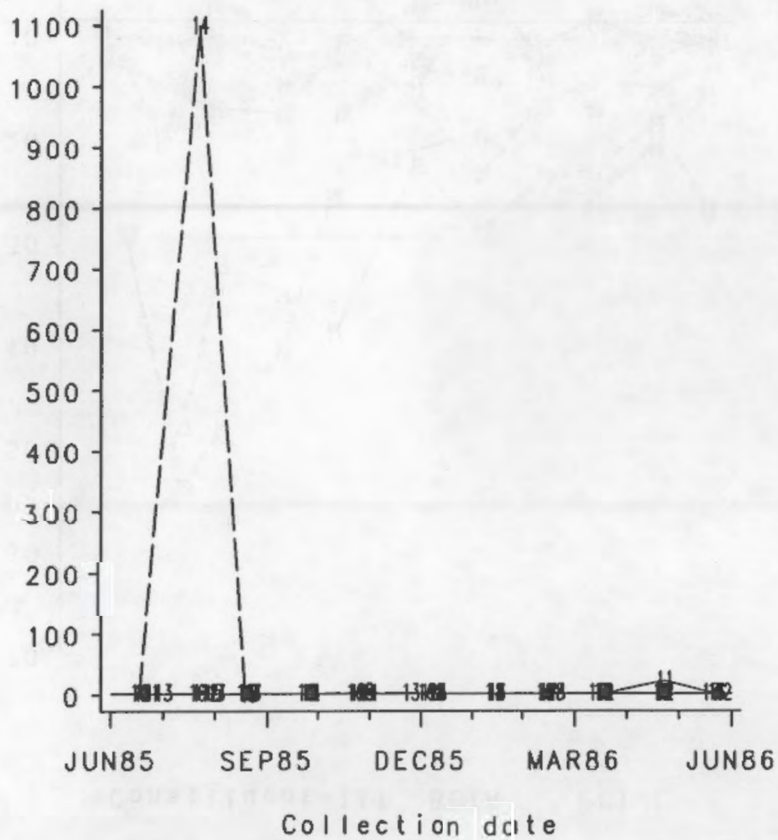


Solid Horizontal Line represents Detection Limit

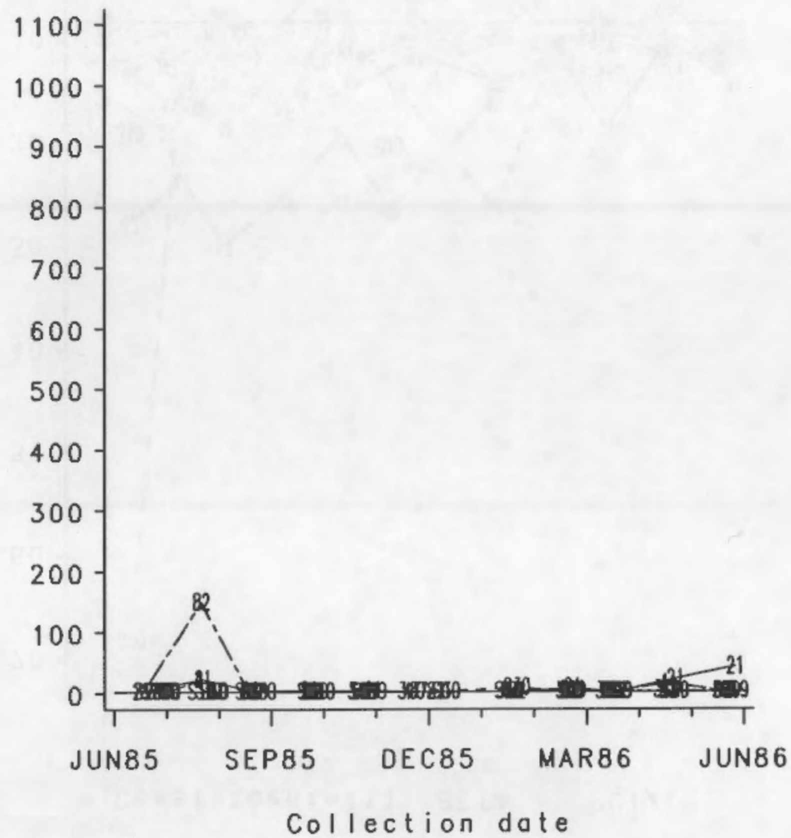
RCRA Compliance Ground-Water Monitoring Project
300 Area Process Trenches, June 1985 thru May 1986

H.7

Constituent=109 COLIFRM MPN



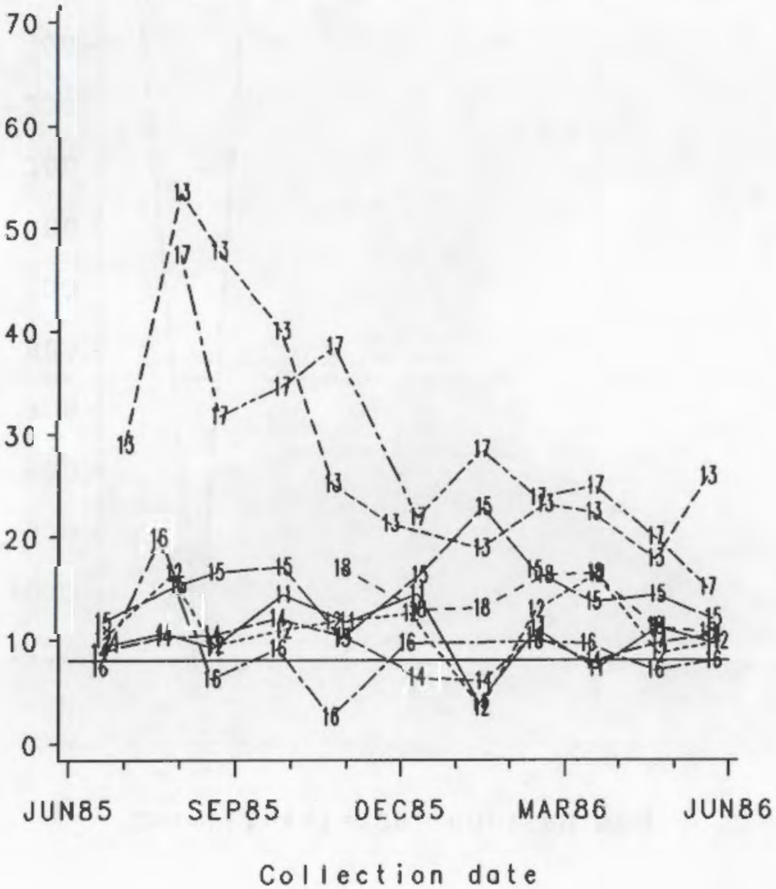
Constituent=109 COLIFRM MPN



Solid Horizontal Line represents Detection Limit

RCRA Compliance Ground-Water Monitoring Project
300 Area Process Trenches, June 1985 thru May 1986

Constituent=111 BETA PCI/L



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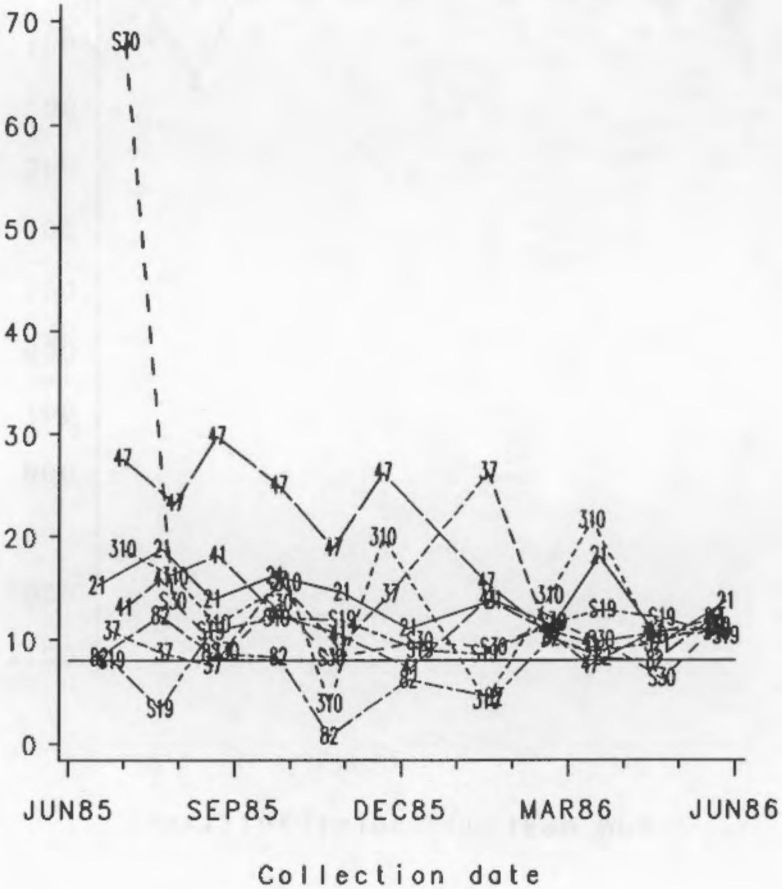
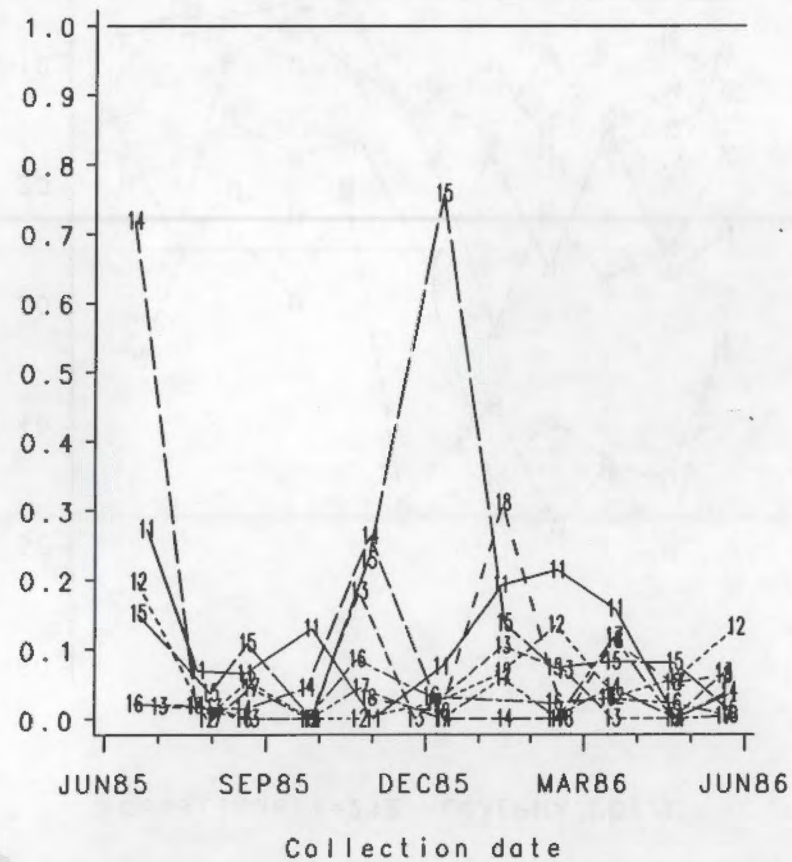


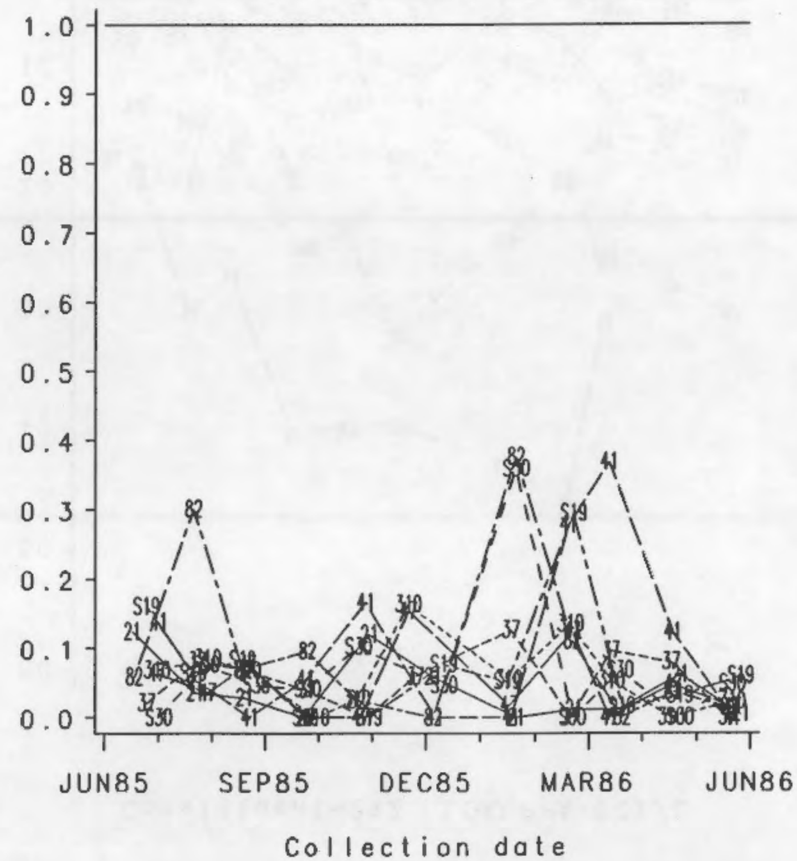
Solid Horizontal Line represents Detection Limit

RCRA Compliance Ground-Water Monitoring Project
300 Area Process Trenches, June 1985 thru May 1986

Constituent=181 RADIUM PCI/L



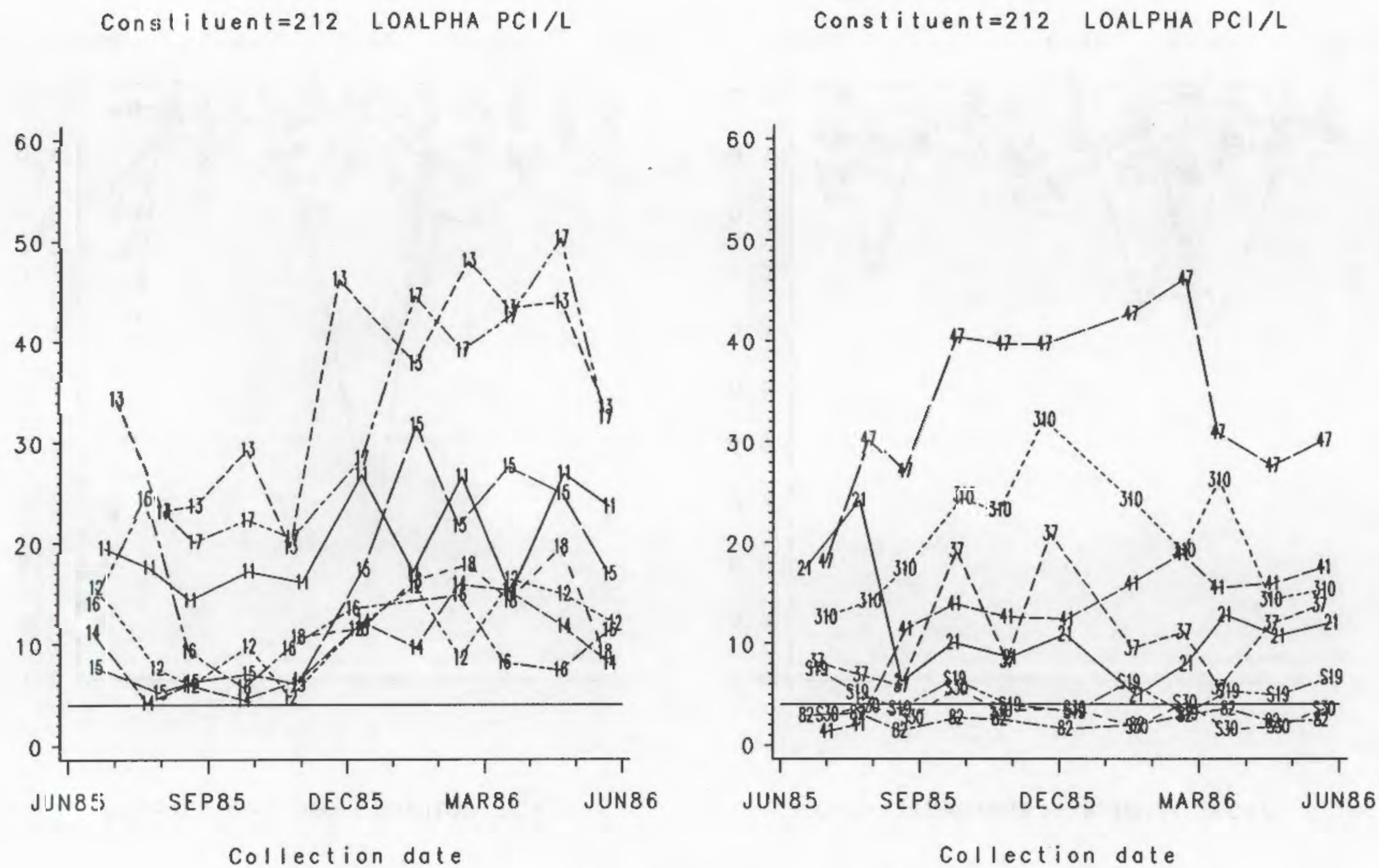
Constituent=181 RADIUM PCI/L



Solid Horizontal Line represents Detection Limit

RCRA Compliance Ground-Water Monitoring Project
300 Area Process Trenches, June 1985 thru May 1986

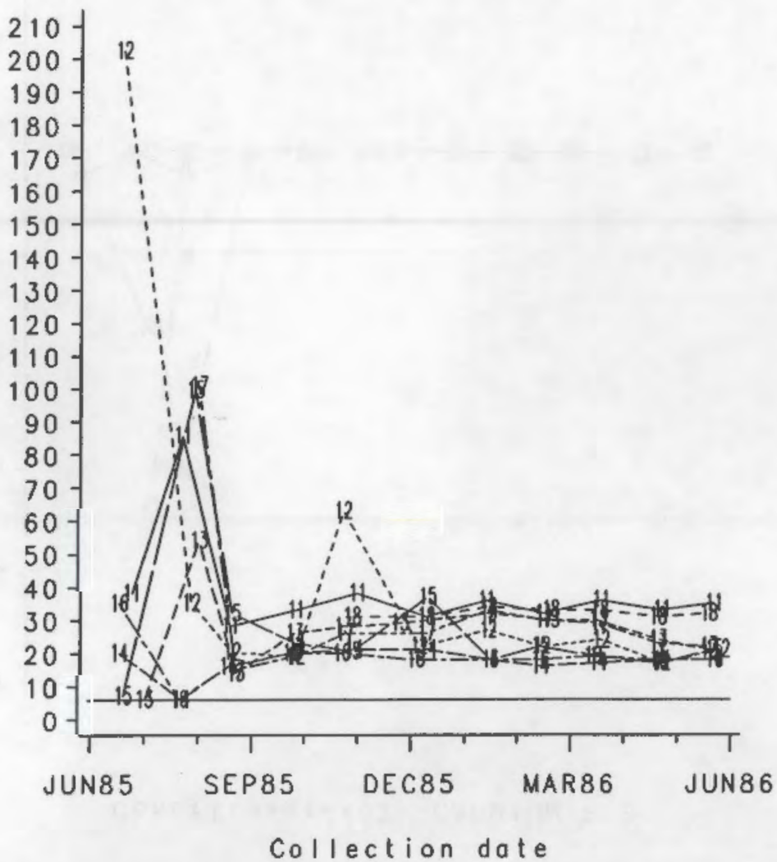
H.10



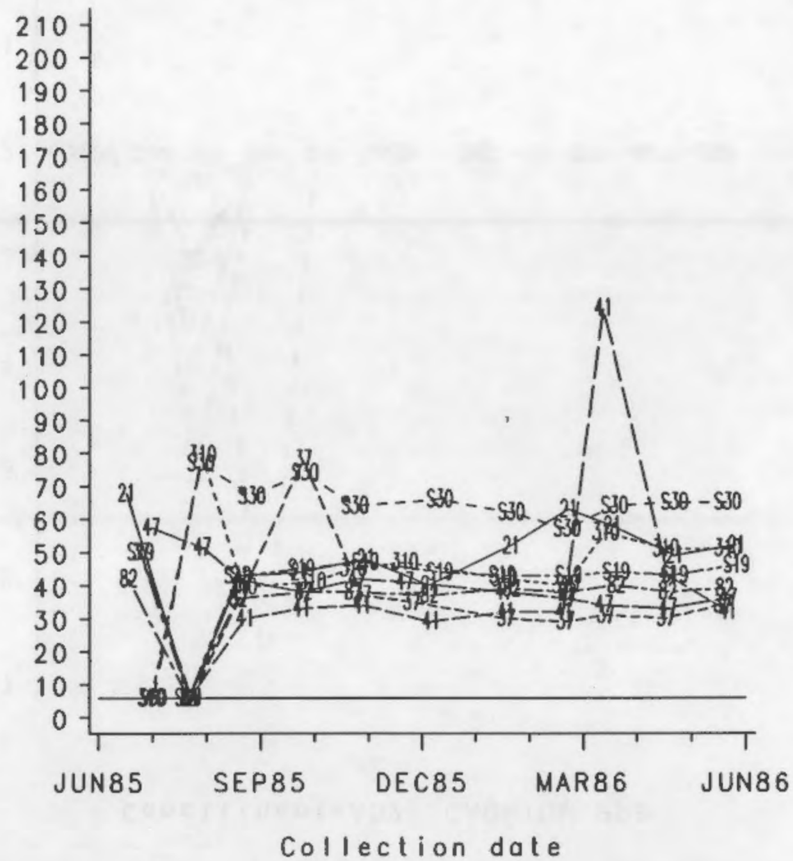
Solid Horizontal Line represents Detection Limit

RCRA Compliance Ground-Water Monitoring Project
300 Area Process Trenches, June 1985 thru May 1986

Constituent=A06 BARIUM PPB

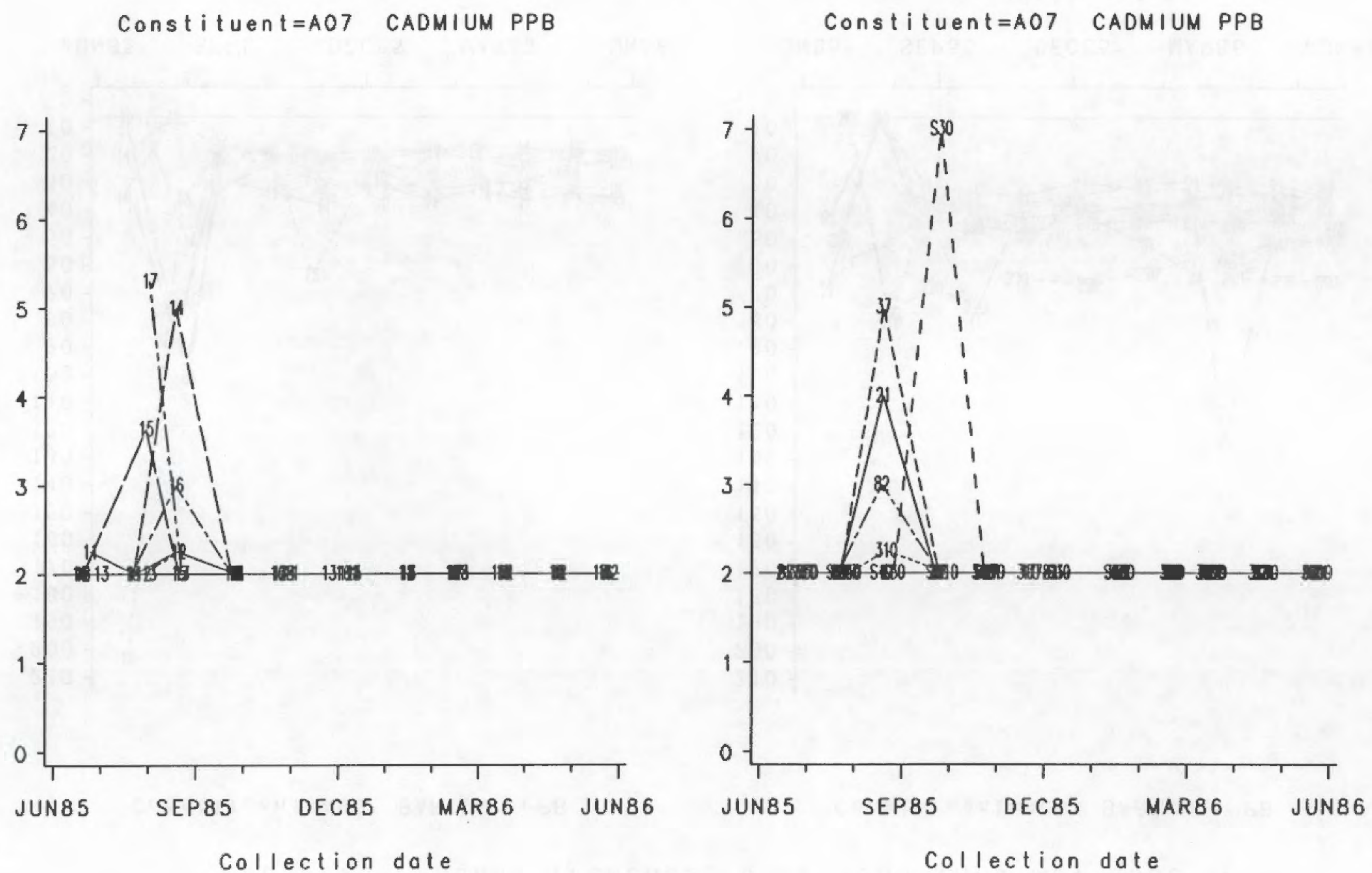


Constituent=A06 BARIUM PPB



Solid Horizontal Line represents Detection Limit

RCRA Compliance Ground-Water Monitoring Project
300 Area Process Trenches, June 1985 thru May 1986

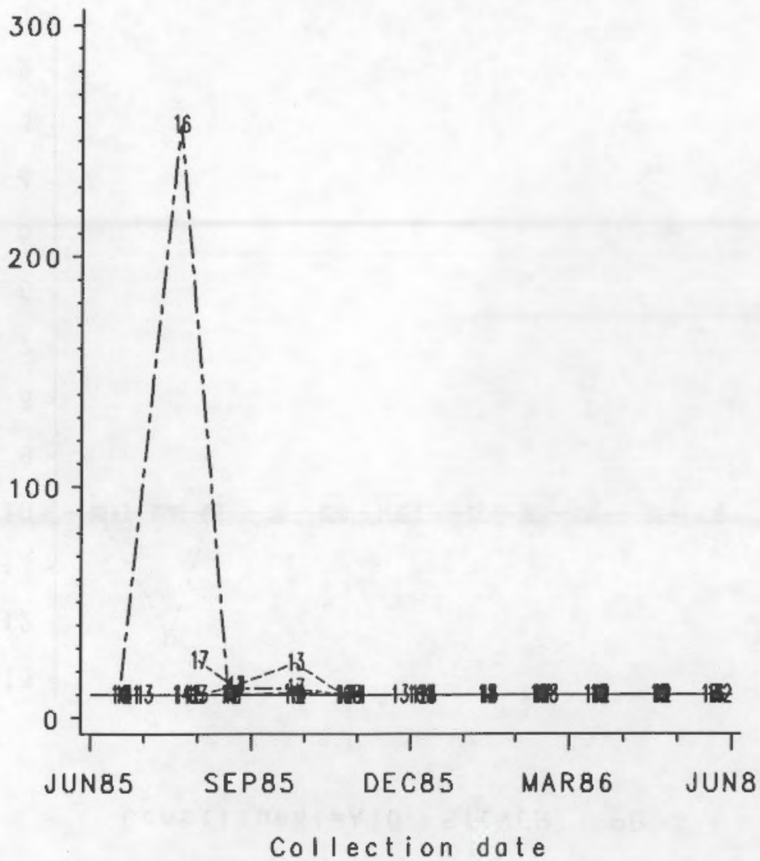


Solid Horizontal Line represents Detection Limit

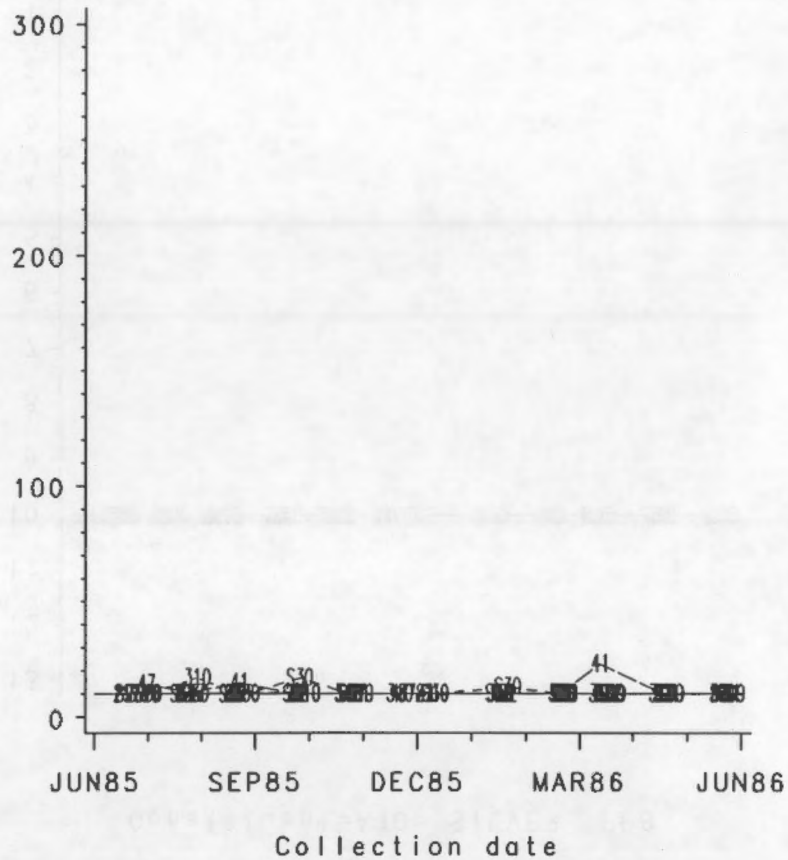
H.12

RCRA Compliance Ground-Water Monitoring Project
300 Area Process Trenches, June 1985 thru May 1986

Constituent=A08 CHROMUM PPB

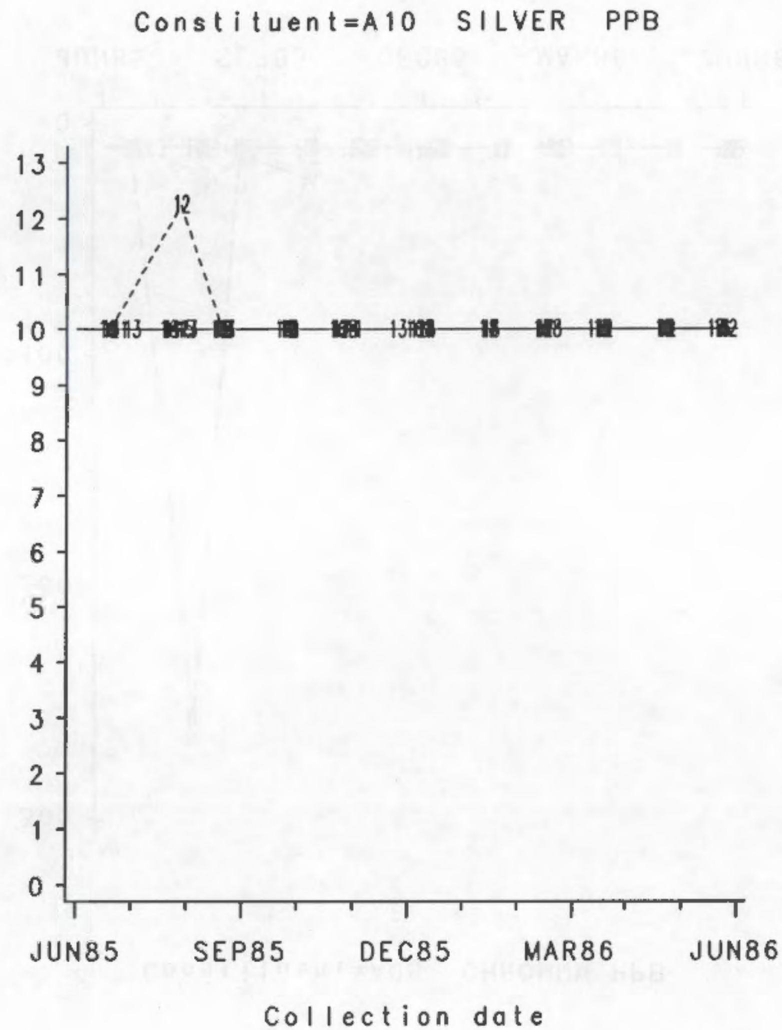


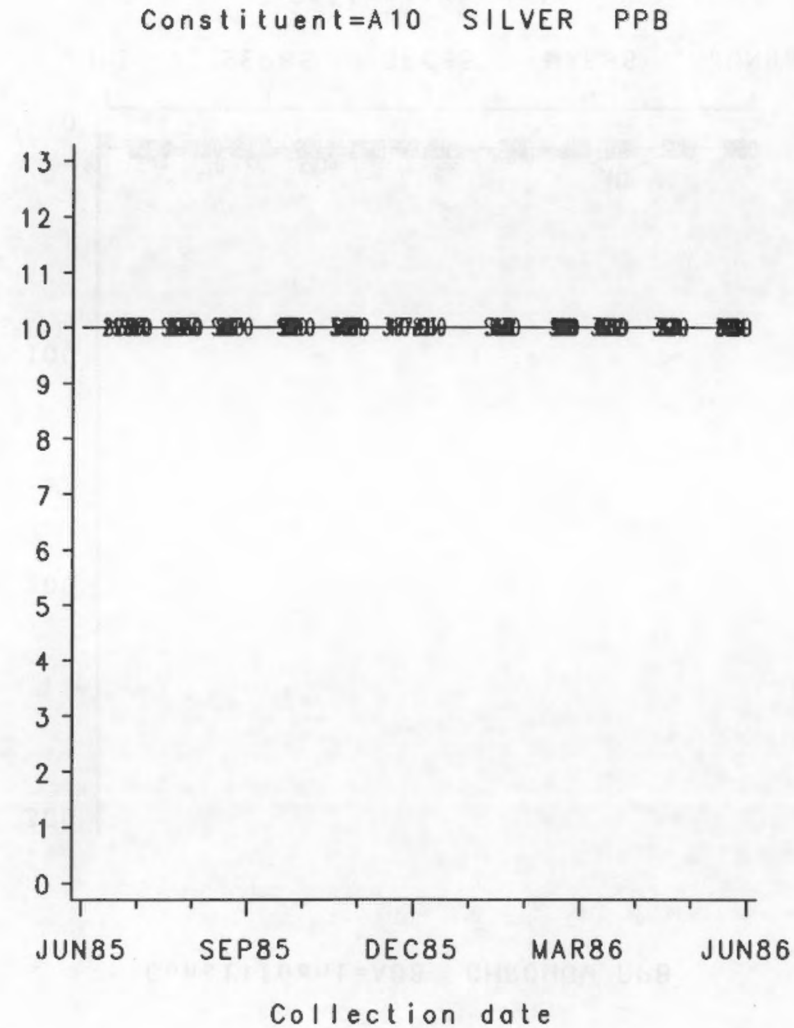
Constituent=A08 CHROMUM PPB



Solid Horizontal Line represents Detection Limit

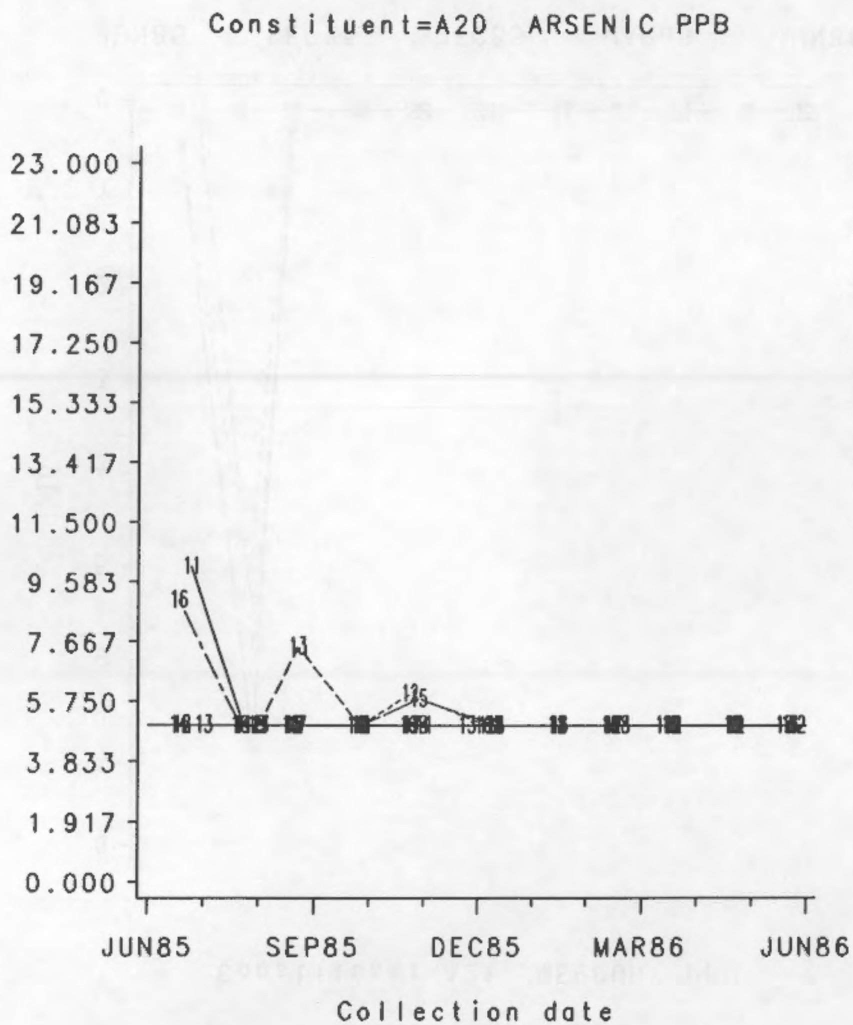
RCRA Compliance Ground-Water Monitoring Project
300 Area Process Trenches, June 1985 thru May 1986

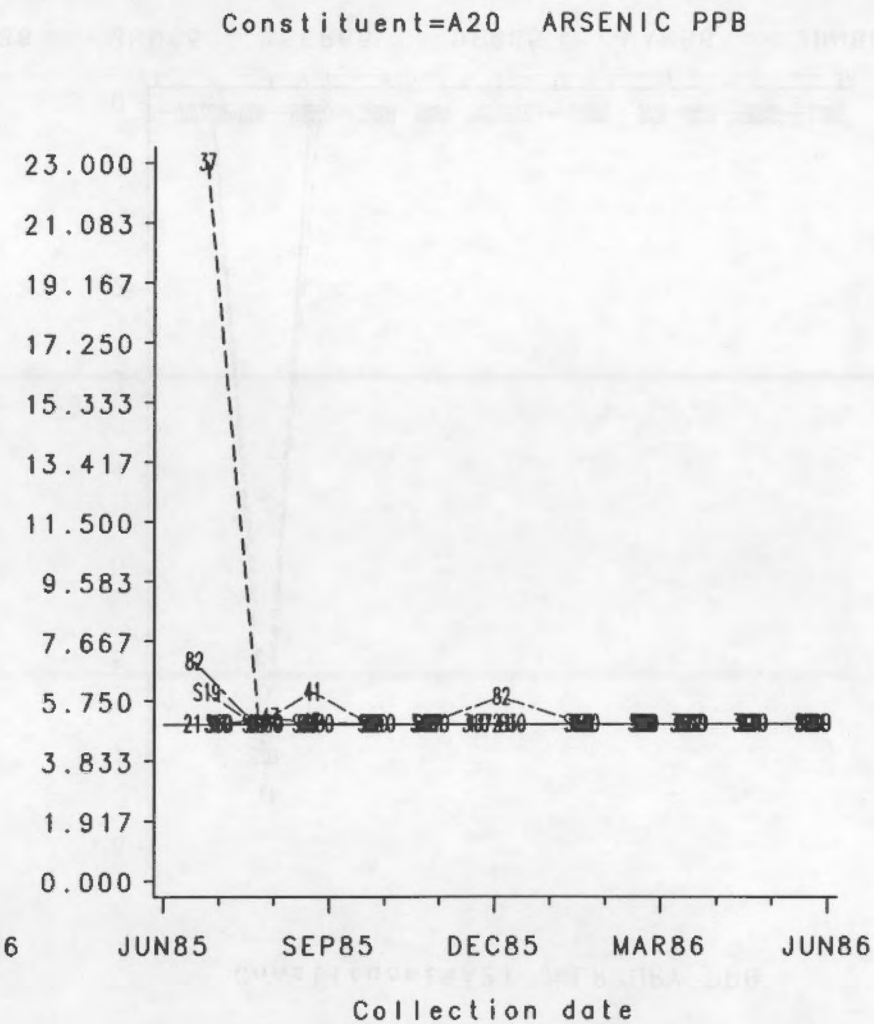




Solid Horizontal Line represents Detection Limit

RCRA Compliance Ground-Water Monitoring Project
300 Area Process Trenches, June 1985 thru May 1986

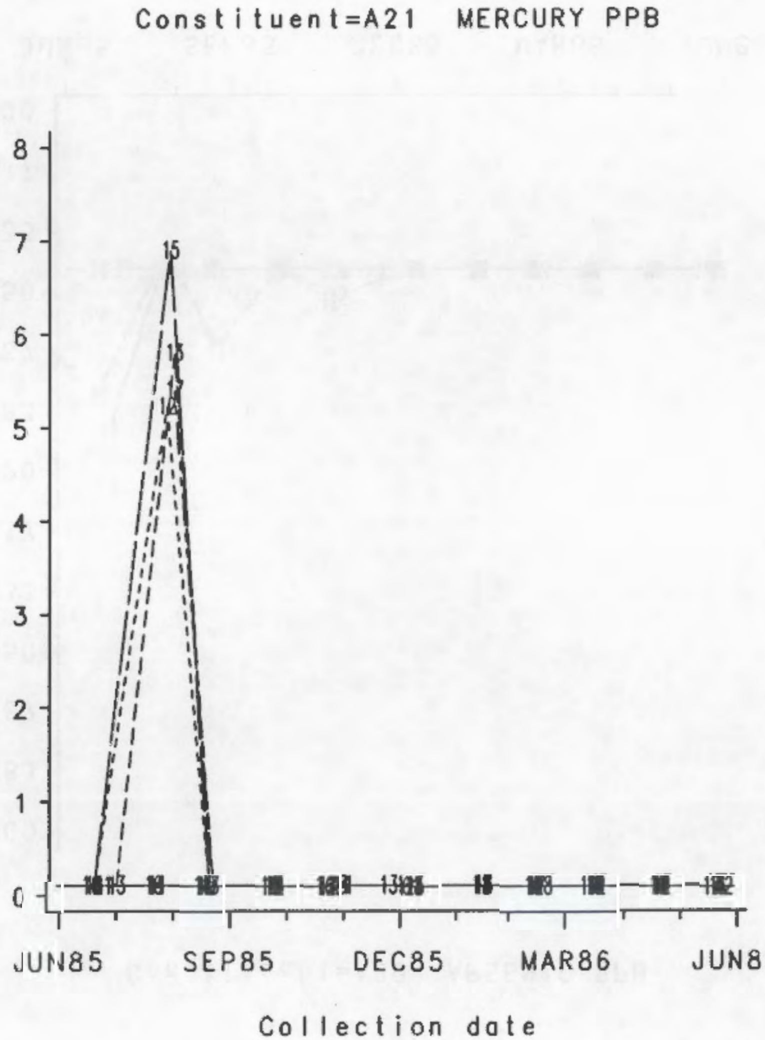


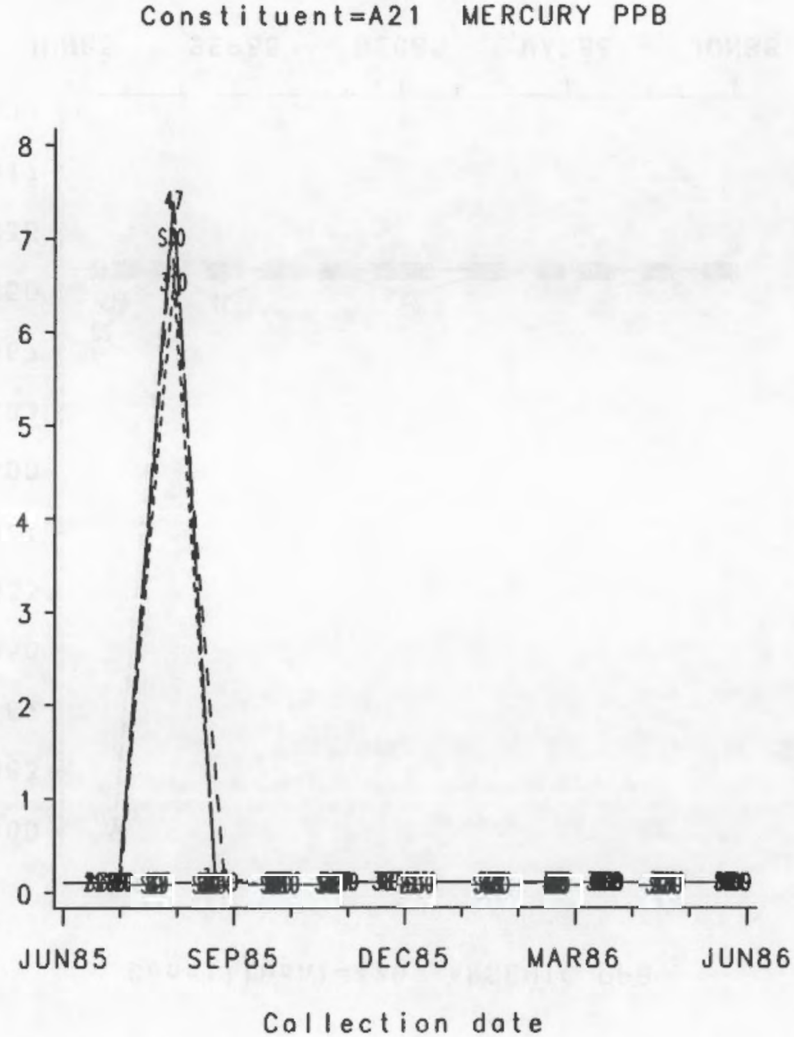


Solid Horizontal Line represents Detection Limit

H.15

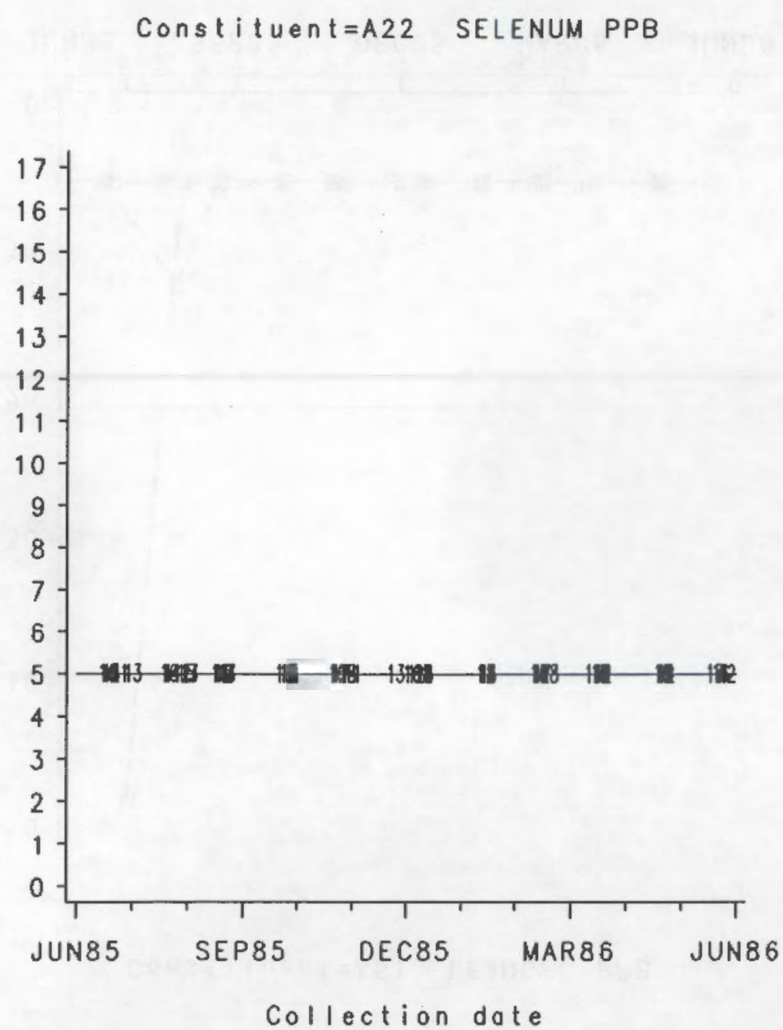
RCRA Compliance Ground-Water Monitoring Project
300 Area Process Trenches, June 1985 thru May 1986

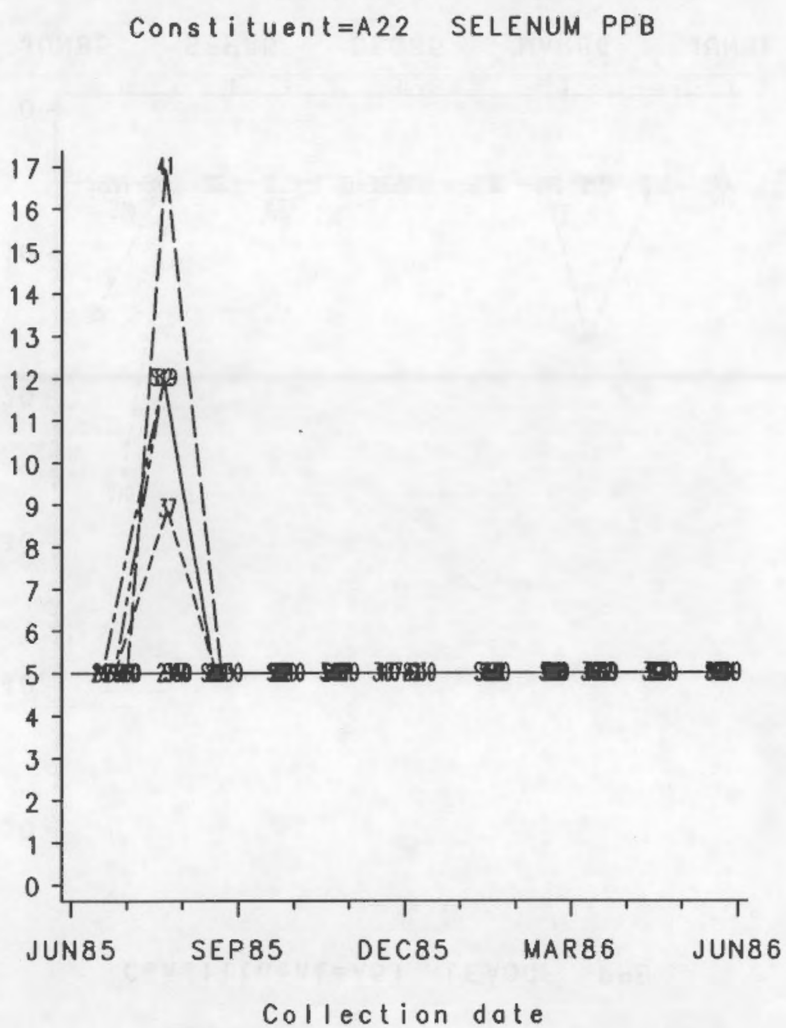




Solid Horizontal Line represents Detection Limit

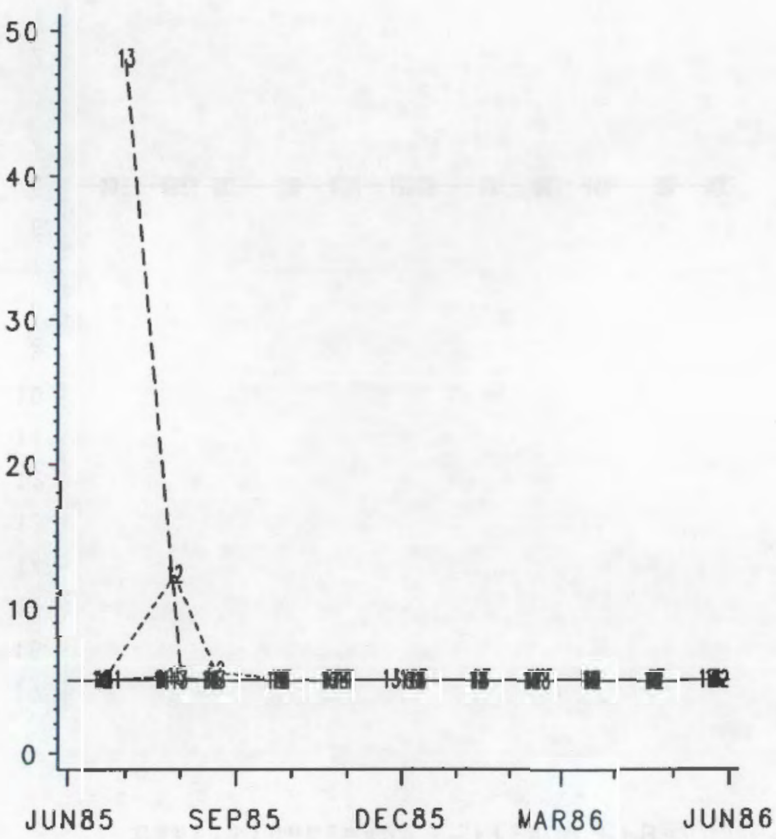
RCRA Compliance Ground-Water Monitoring Project
300 Area Process Trenches, June 1985 thru May 1986

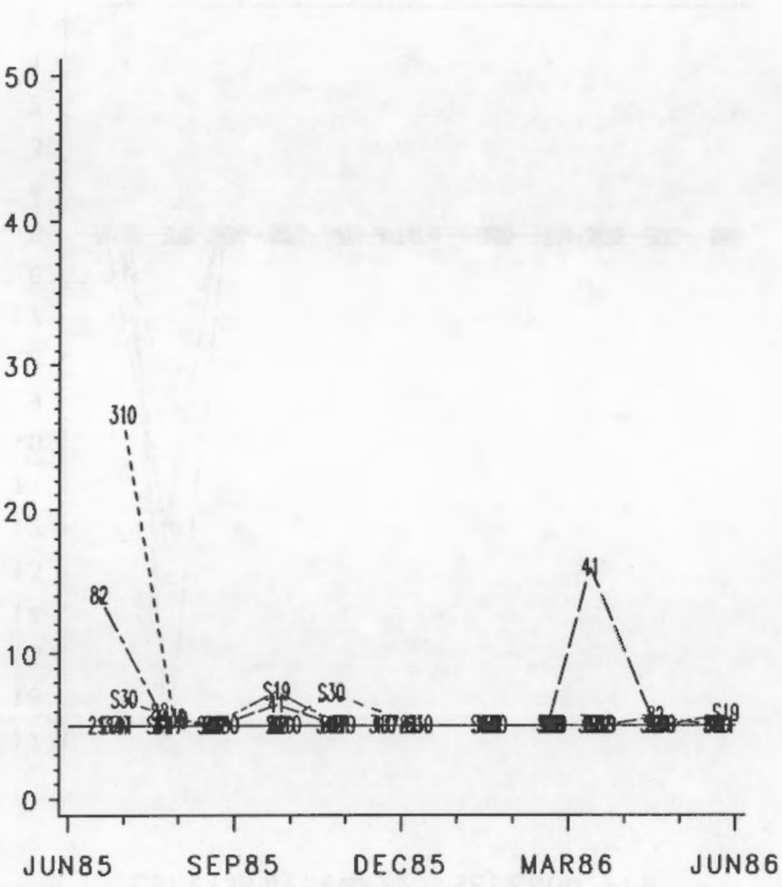




Solid Horizontal Line represents Detection Limit

RCRA Compliance Ground-Water Monitoring Project
300 Area Process Trenches, June 1985 thru May 1986

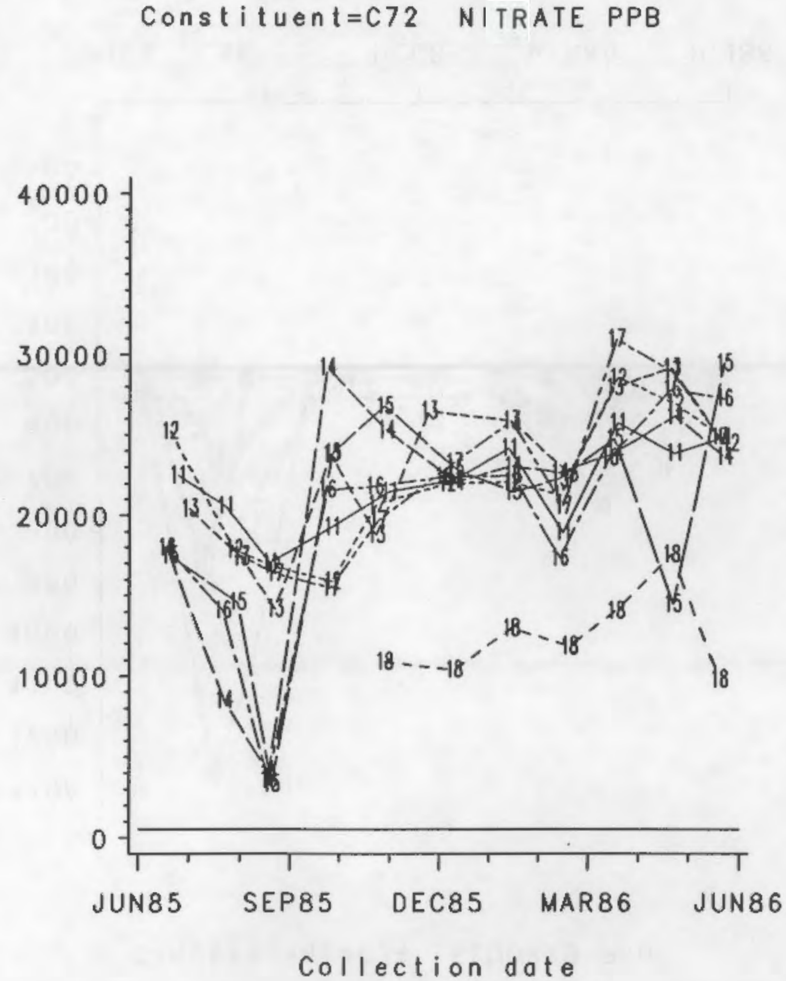


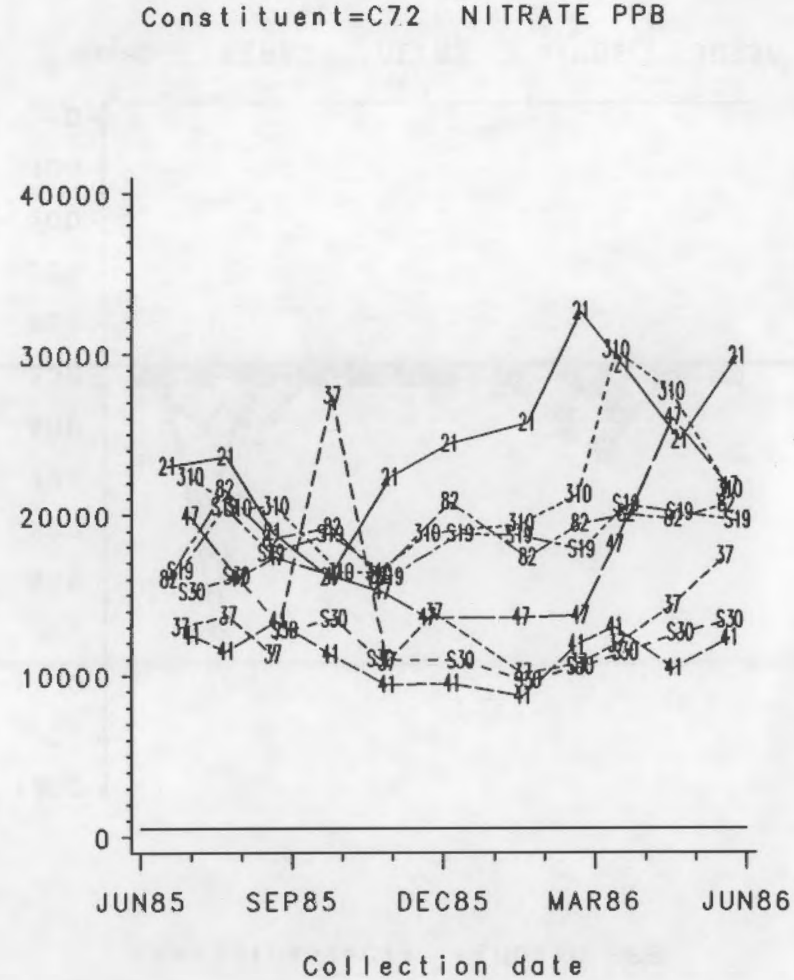


Solid Horizontal Line represents Detection Limit

H.18

RCRA Compliance Ground-Water Monitoring Project
300 Area Process Trenches, June 1985 thru May 1986



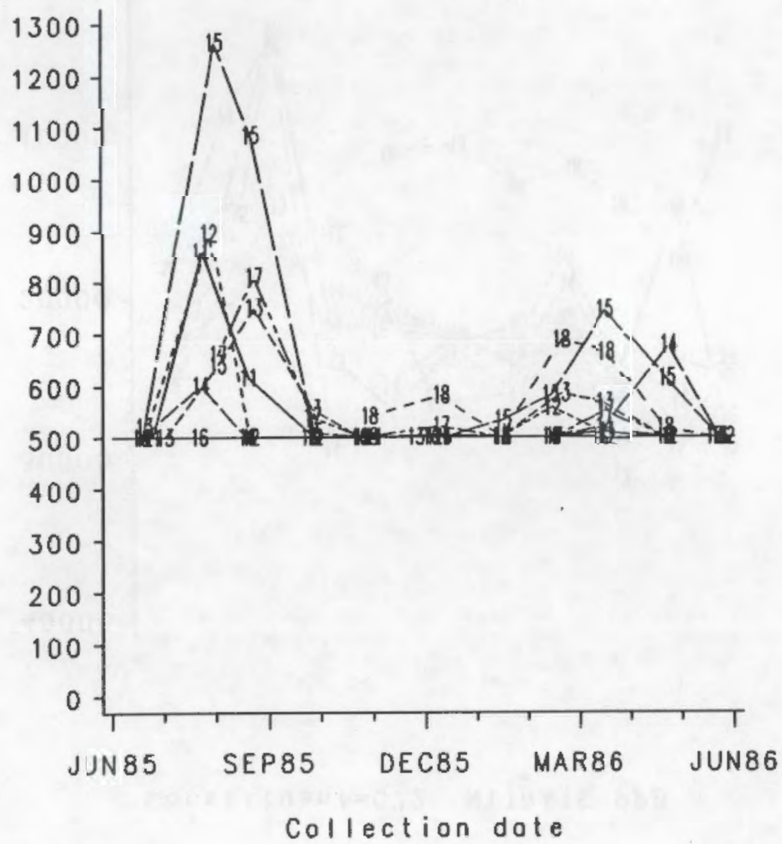


Solid Horizontal Line represents Detection Limit

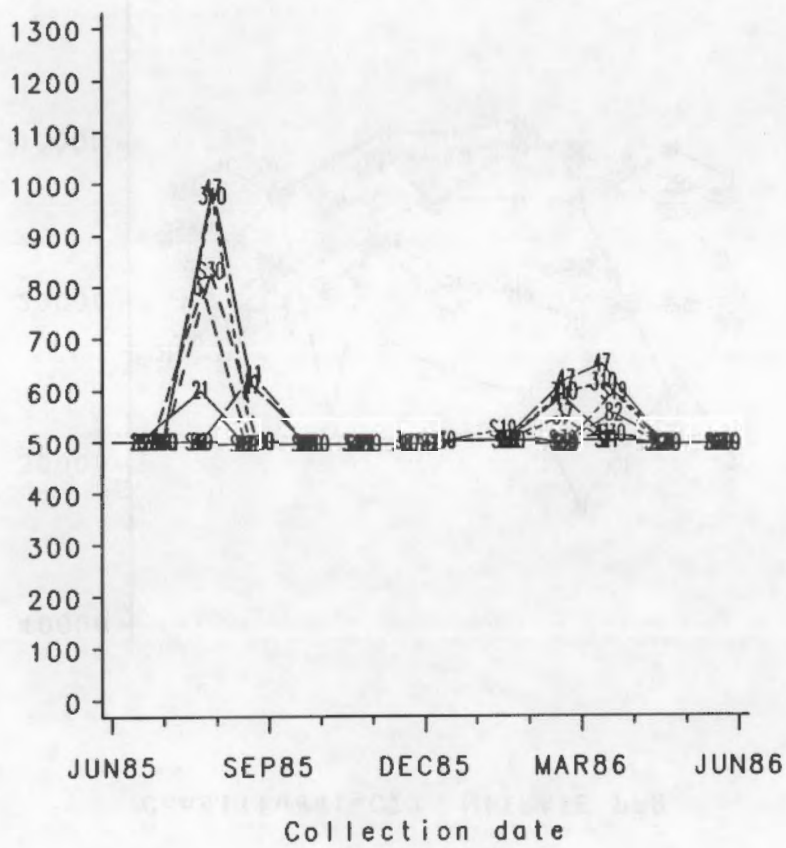
H.19

RCRA Compliance Ground-Water Monitoring Project
300 Area Process Trenches, June 1985 thru May 1986

Constituent=C74 FLUORID PPB



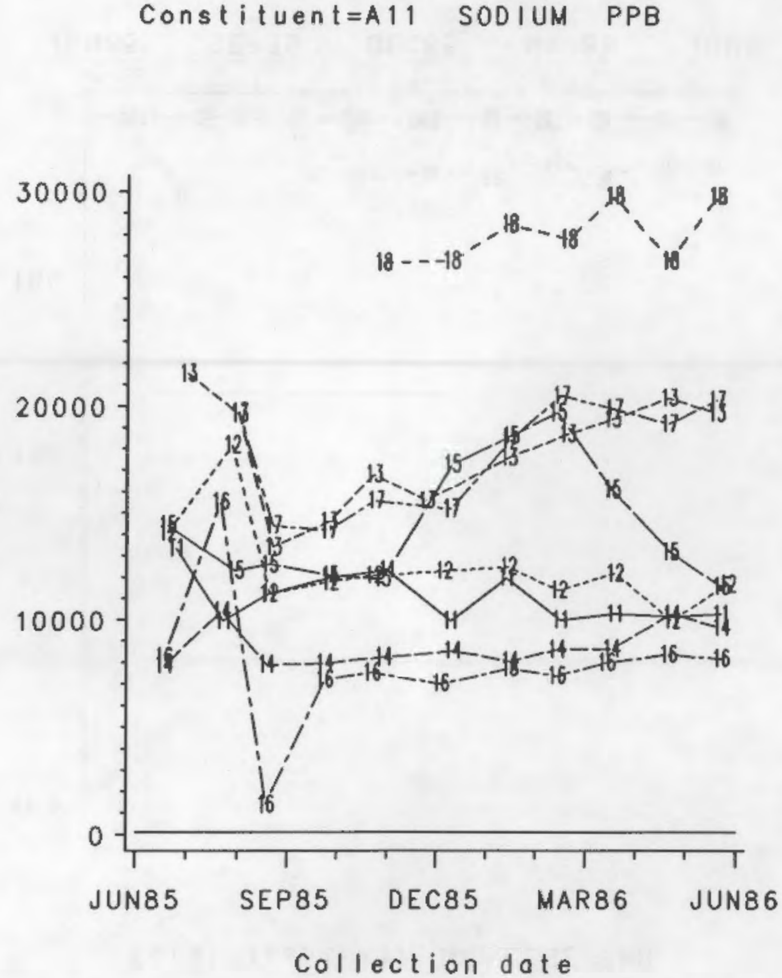
Constituent=C74 FLUORID PPB

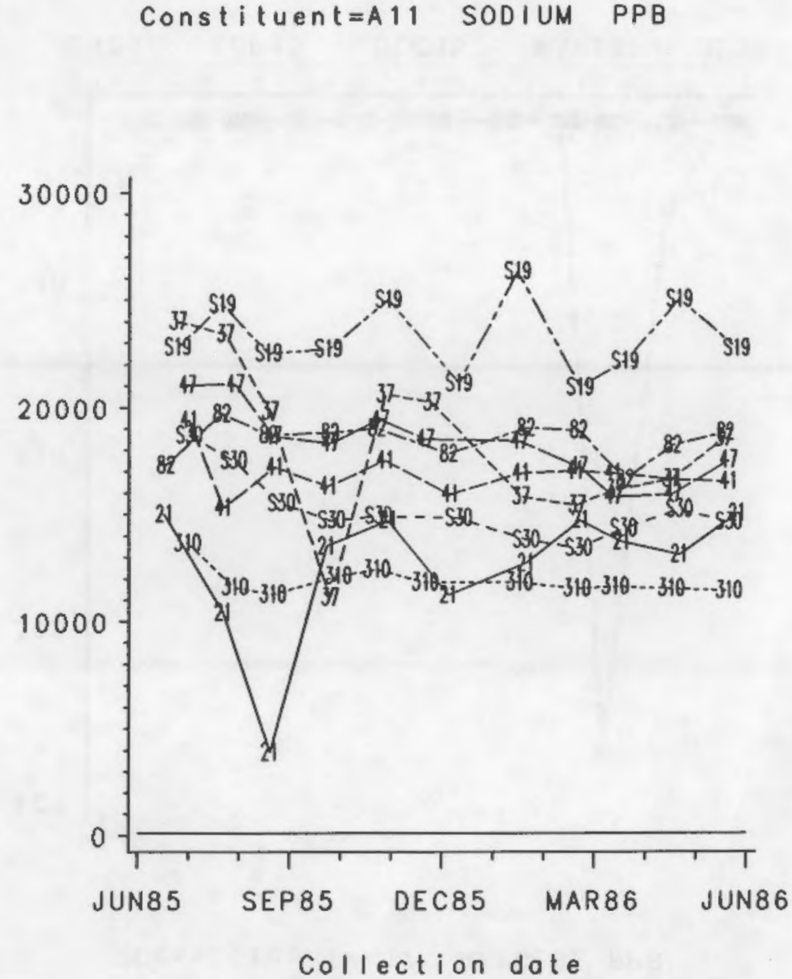


Solid Horizontal Line represents Detection Limit

H.20

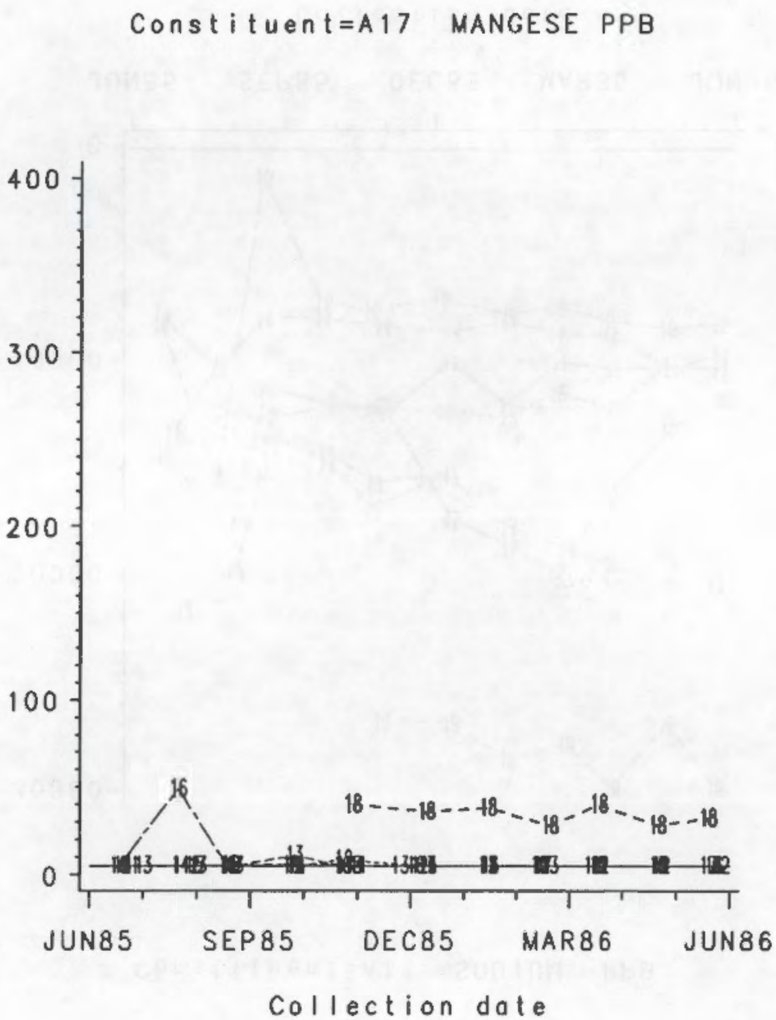
RCRA Compliance Ground-Water Monitoring Project
300 Area Process Trenches, June 1985 thru May 1986

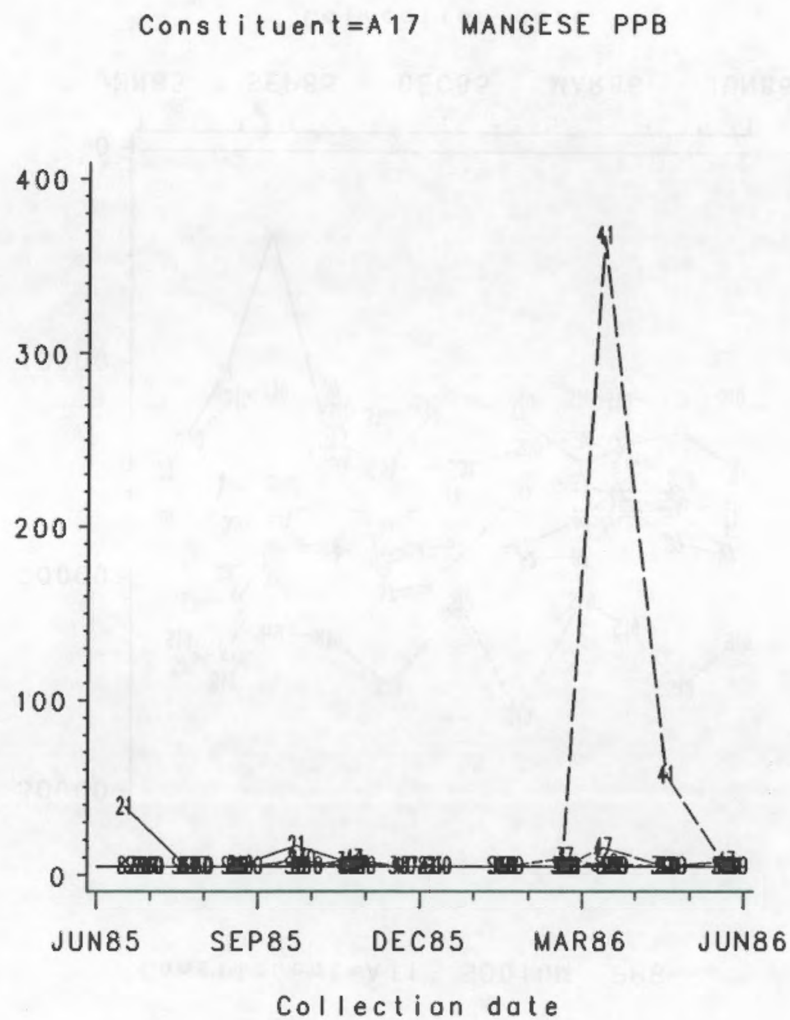




Solid Horizontal Line represents Detection Limit

RCRA Compliance Ground-Water Monitoring Project
300 Area Process Trenches, June 1985 thru May 1986

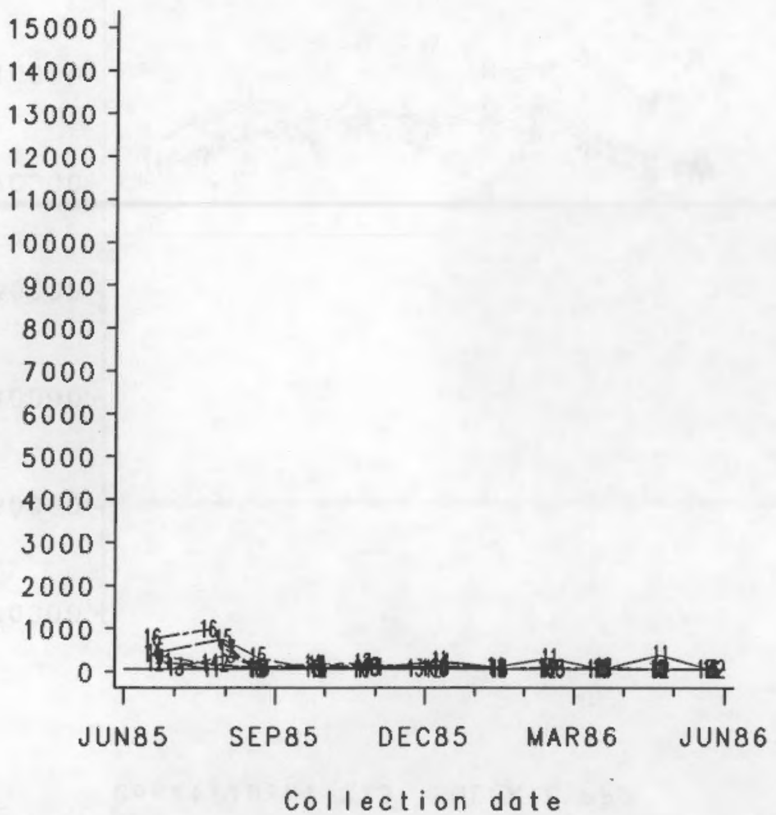




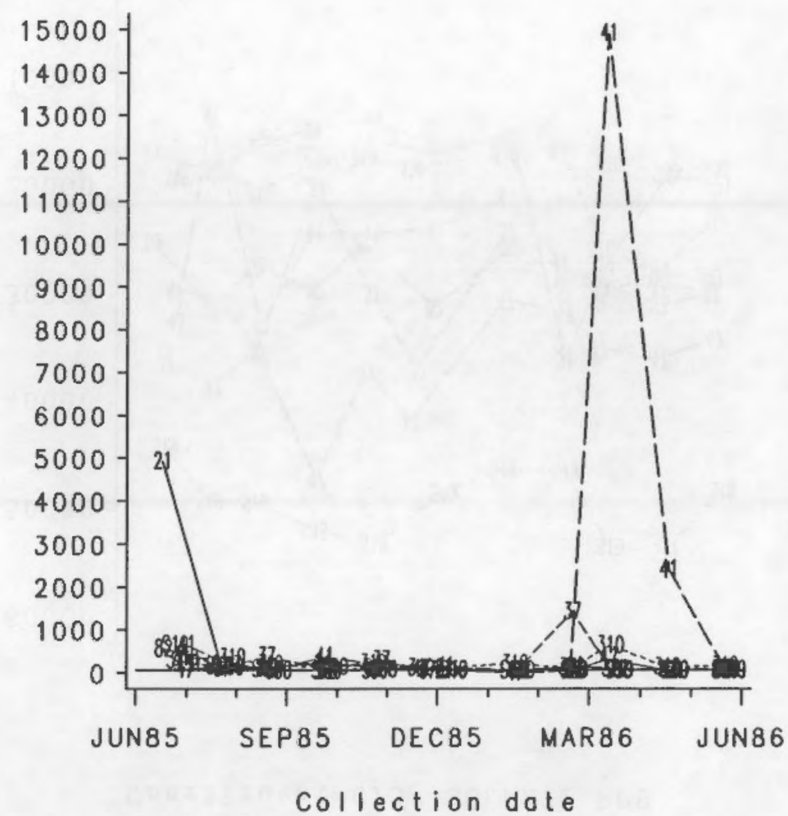
Solid Horizontal Line represents Detection Limit

RCRA Compliance Ground-Water Monitoring Project
300 Area Process Trenches, June 1985 thru May 1986

Constituent=A19 IRON PPB

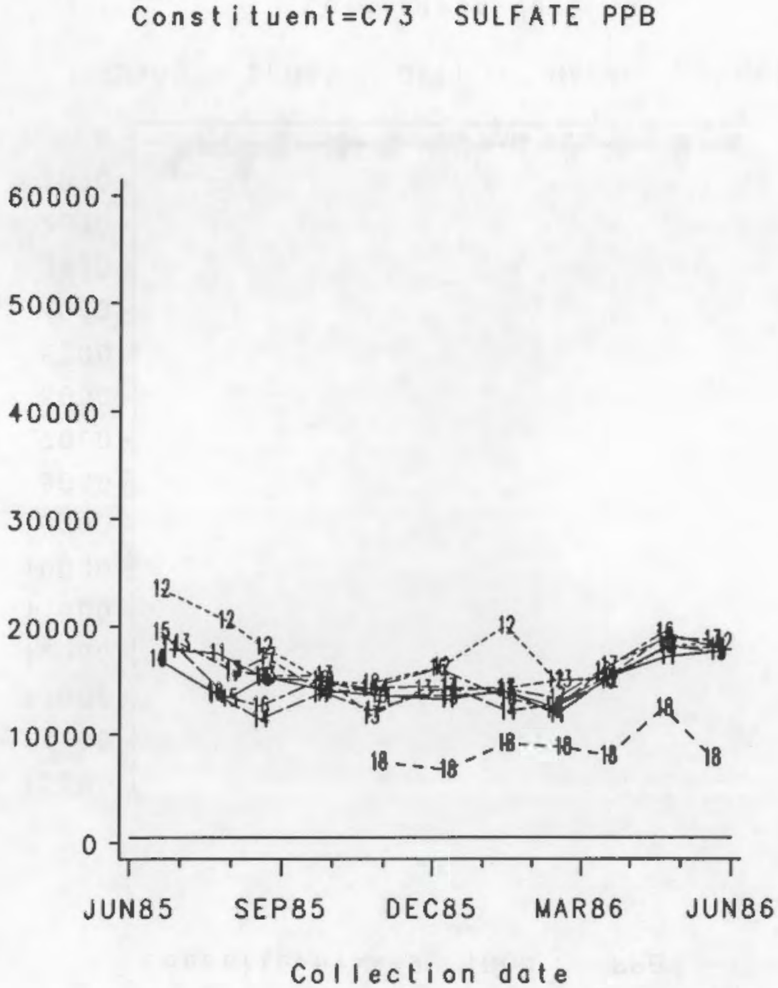


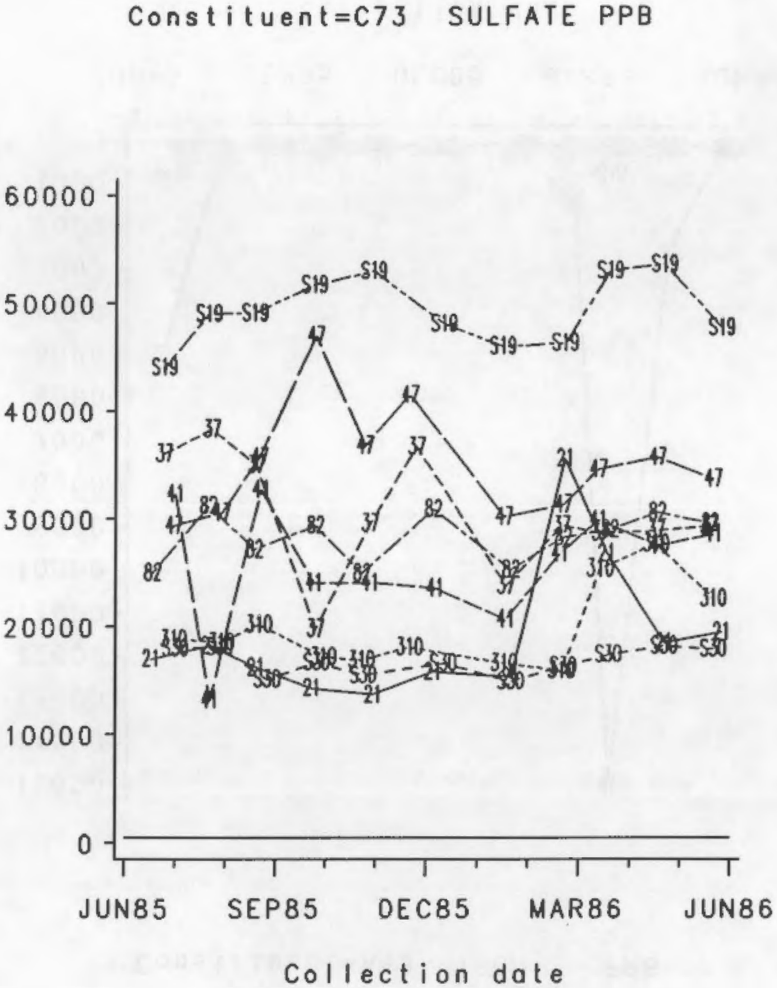
Constituent=A19 IRON PPB



Solid Horizontal Line represents Detection Limit

RCRA Compliance Ground-Water Monitoring Project
300 Area Process Trenches, June 1985 thru May 1986

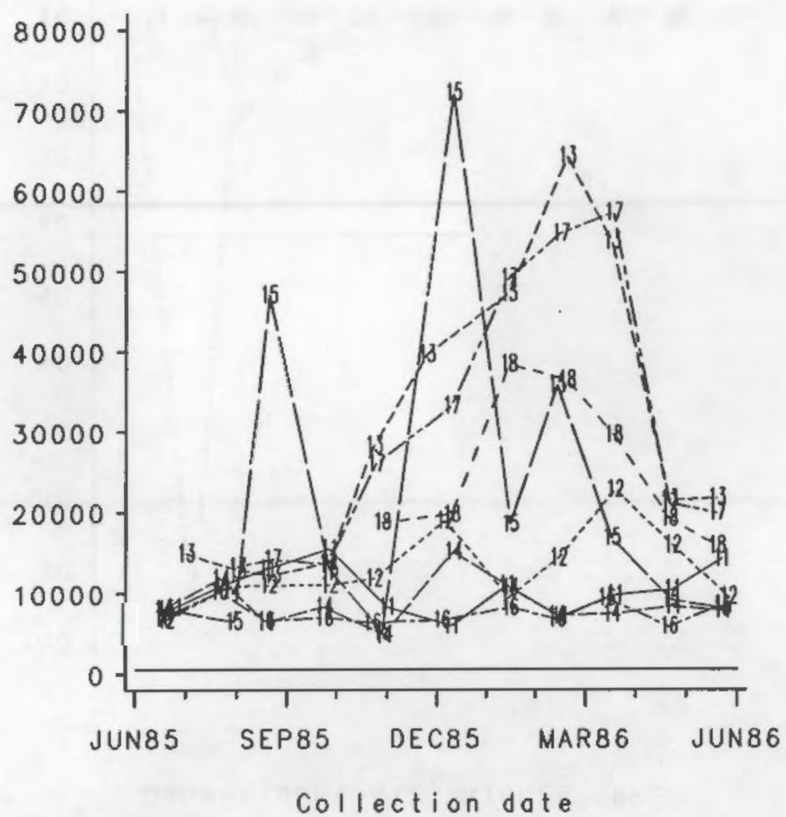




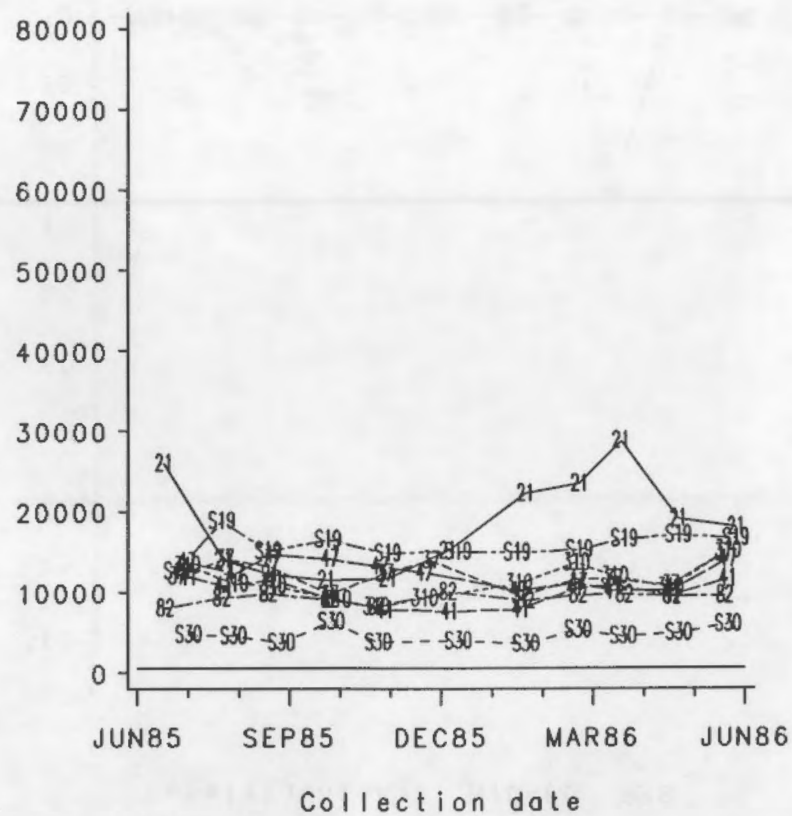
Solid Horizontal Line represents Detection Limit

RCRA Compliance Ground-Water Monitoring Project
300 Area Process Trenches, June 1985 thru May 1986

Constituent=C75 CHLORID PPB



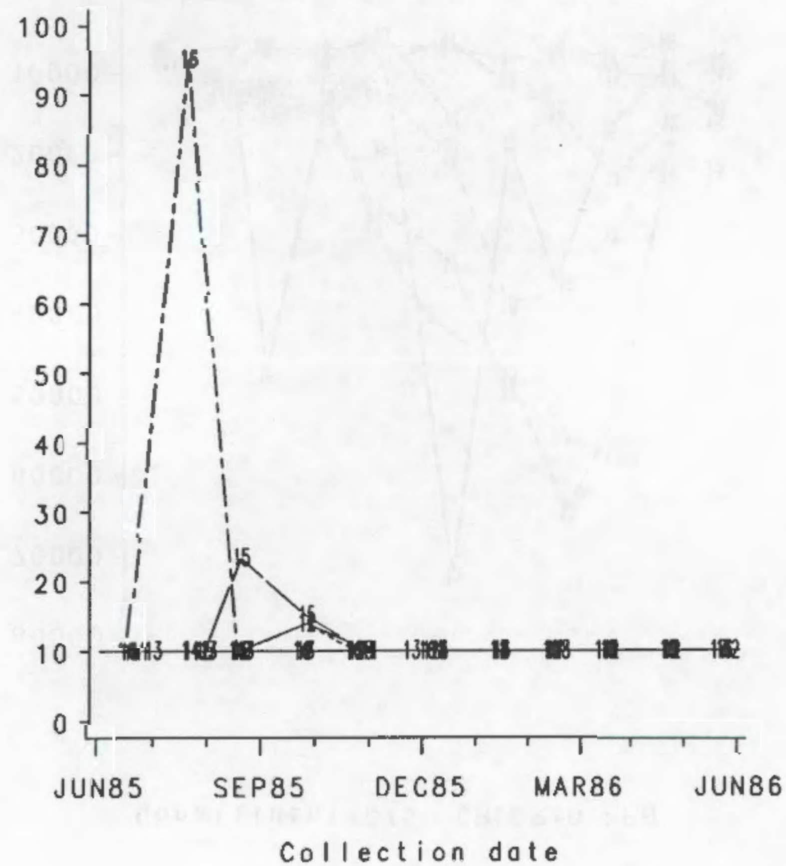
Constituent=C75 CHLORID PPB



Solid Horizontal Line represents Detection Limit

RCRA Compliance Ground-Water Monitoring Project
300 Area Process Trenches, June 1985 thru May 1986

Constituent=A12 NICKEL PPB



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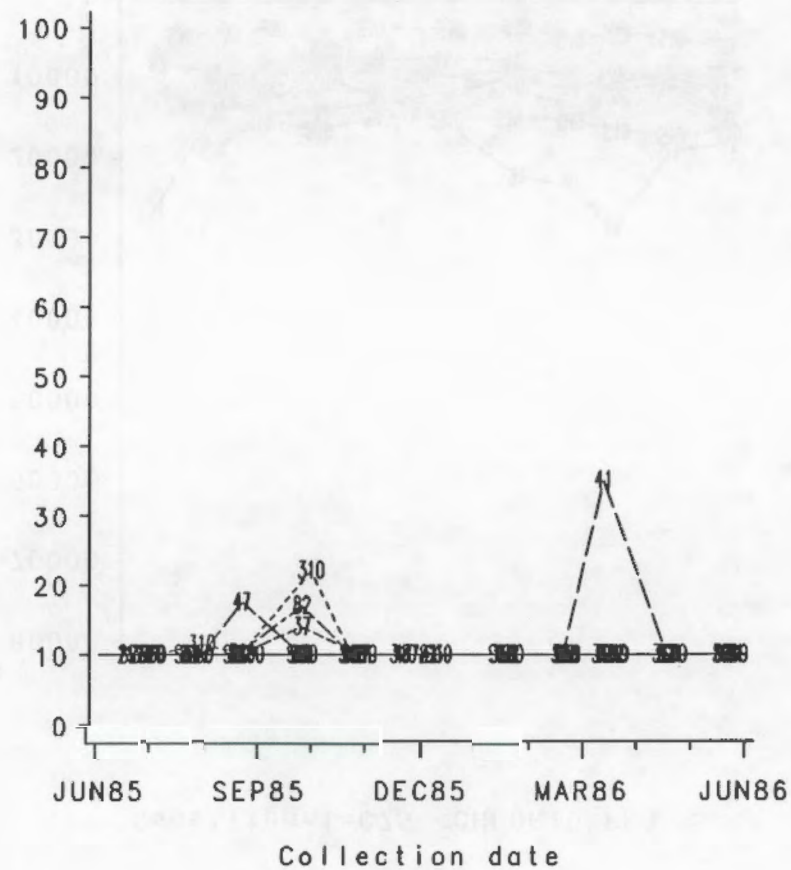
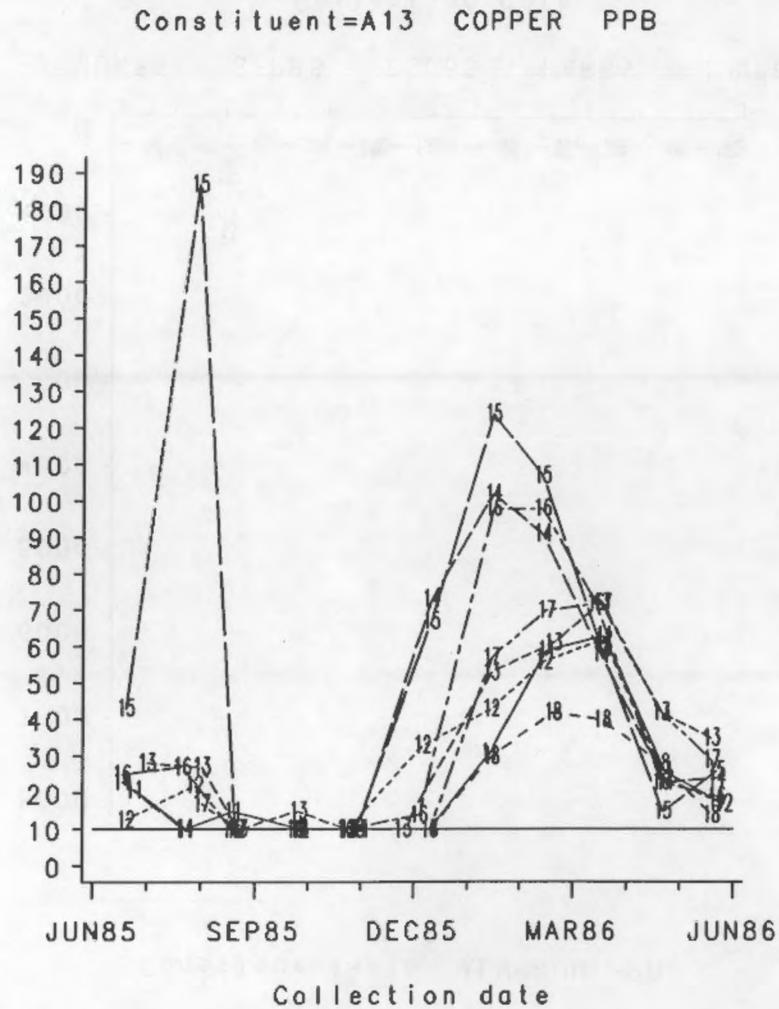
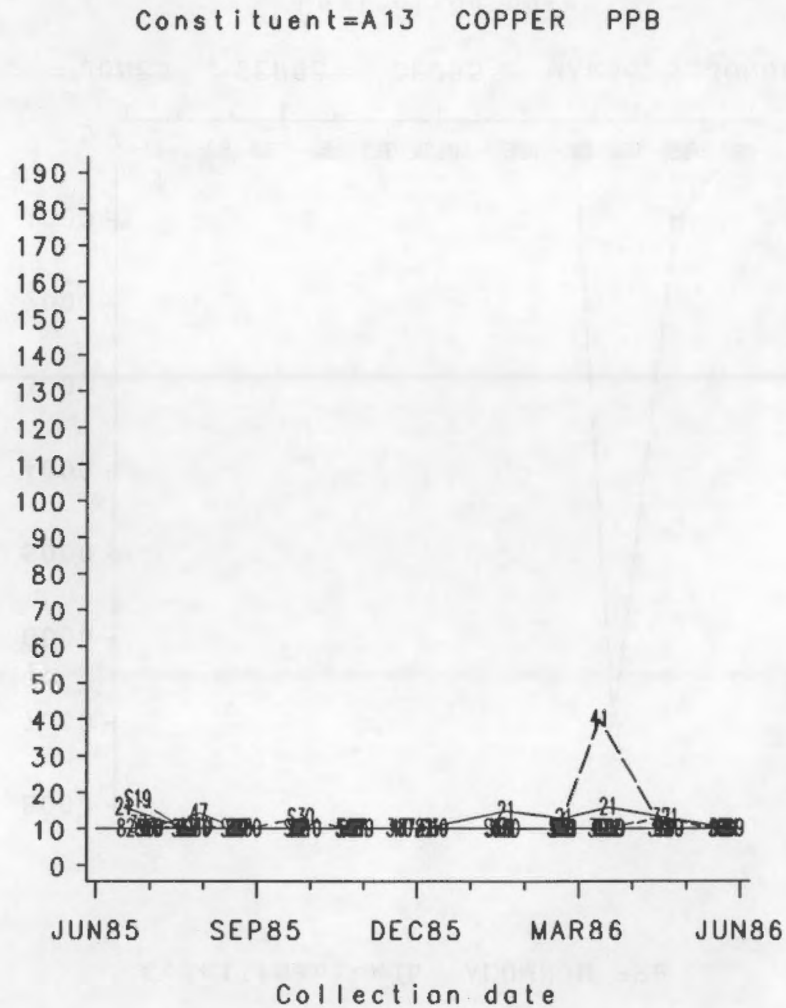


Solid Horizontal Line represents Detection Limit

RCRA Compliance Ground-Water Monitoring Project
300 Area Process Trenches, June 1985 thru May 1986

H.27

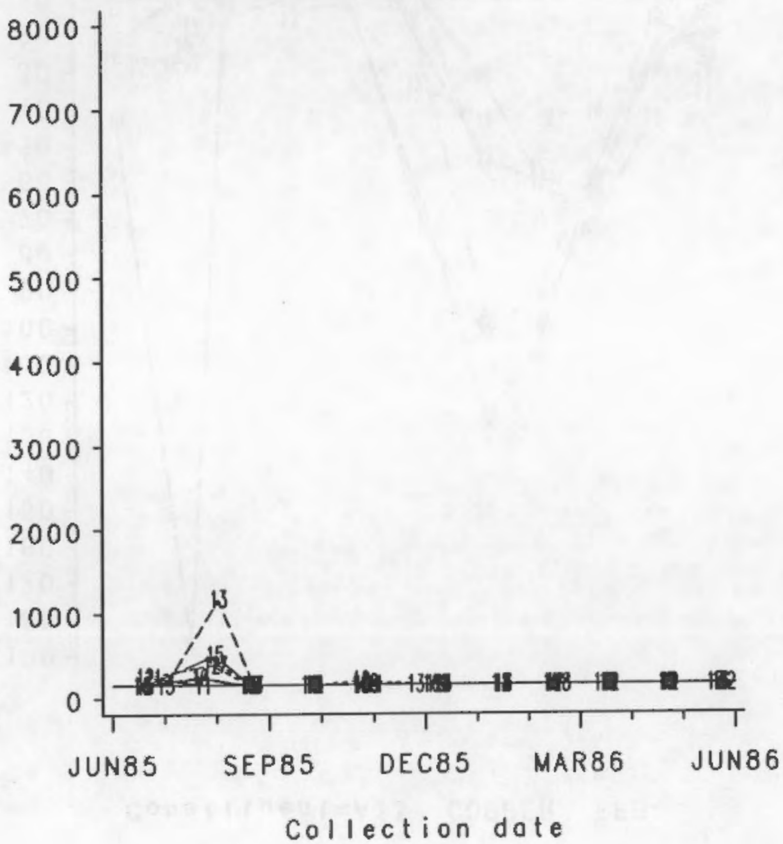




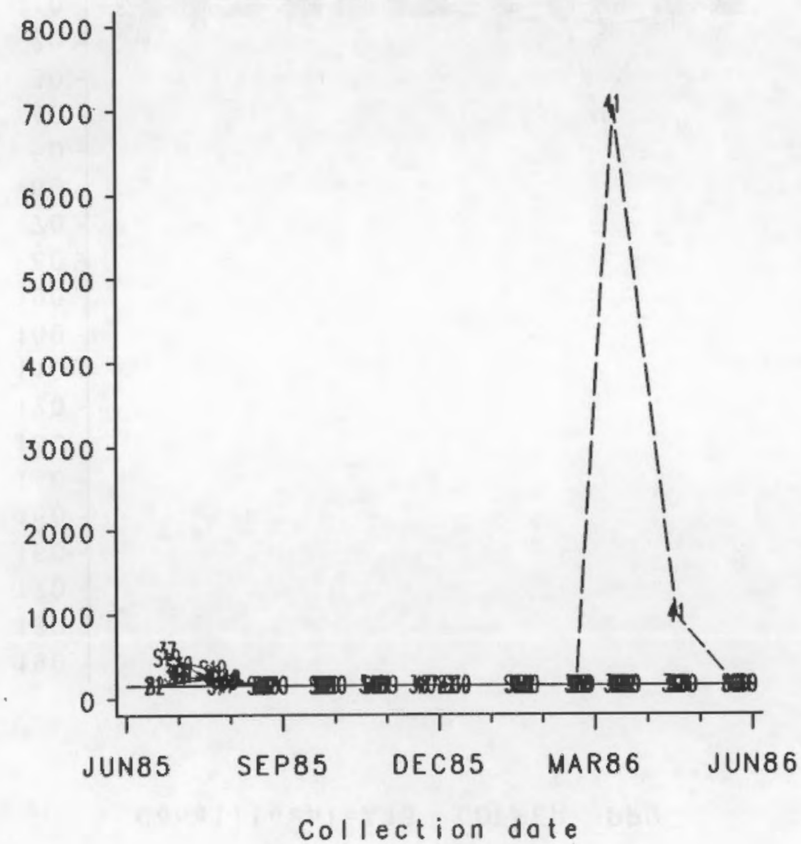
Solid Horizontal Line represents Detection Limit

RCRA Compliance Ground-Water Monitoring Project
300 Area Process Trenches, June 1985 thru May 1986

Constituent=A16 ALUMNUM PPB

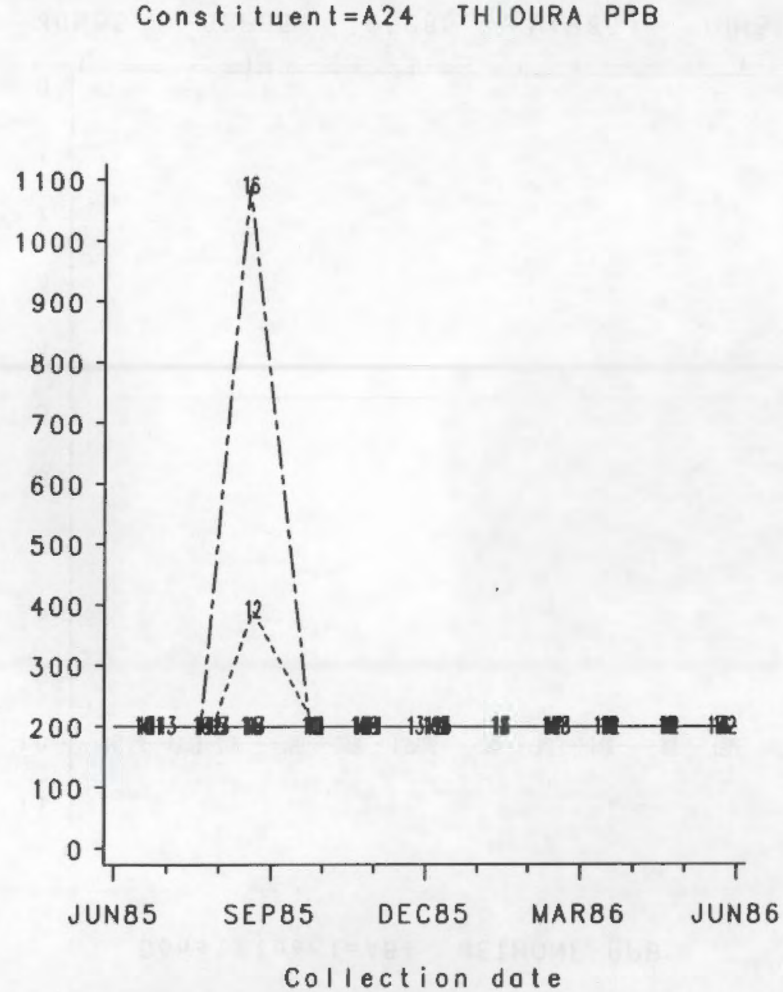


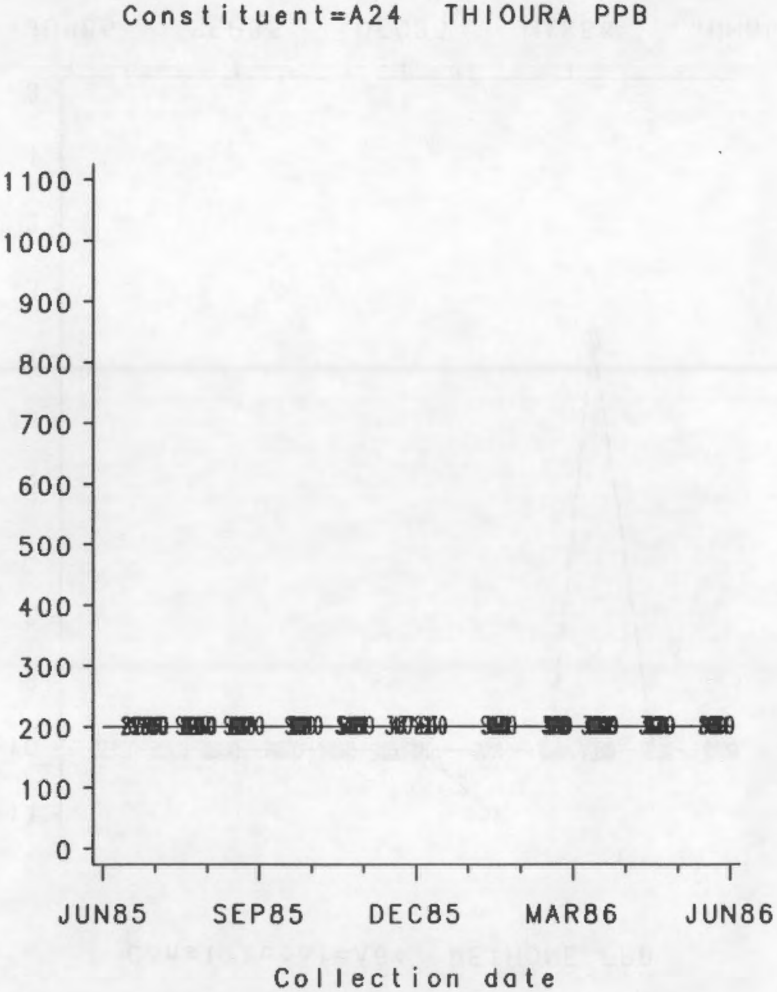
Constituent=A16 ALUMNUM PPB



Solid Horizontal Line represents Detection Limit

RCRA Compliance Ground-Water Monitoring Project
300 Area Process Trenches, June 1985 thru May 1986

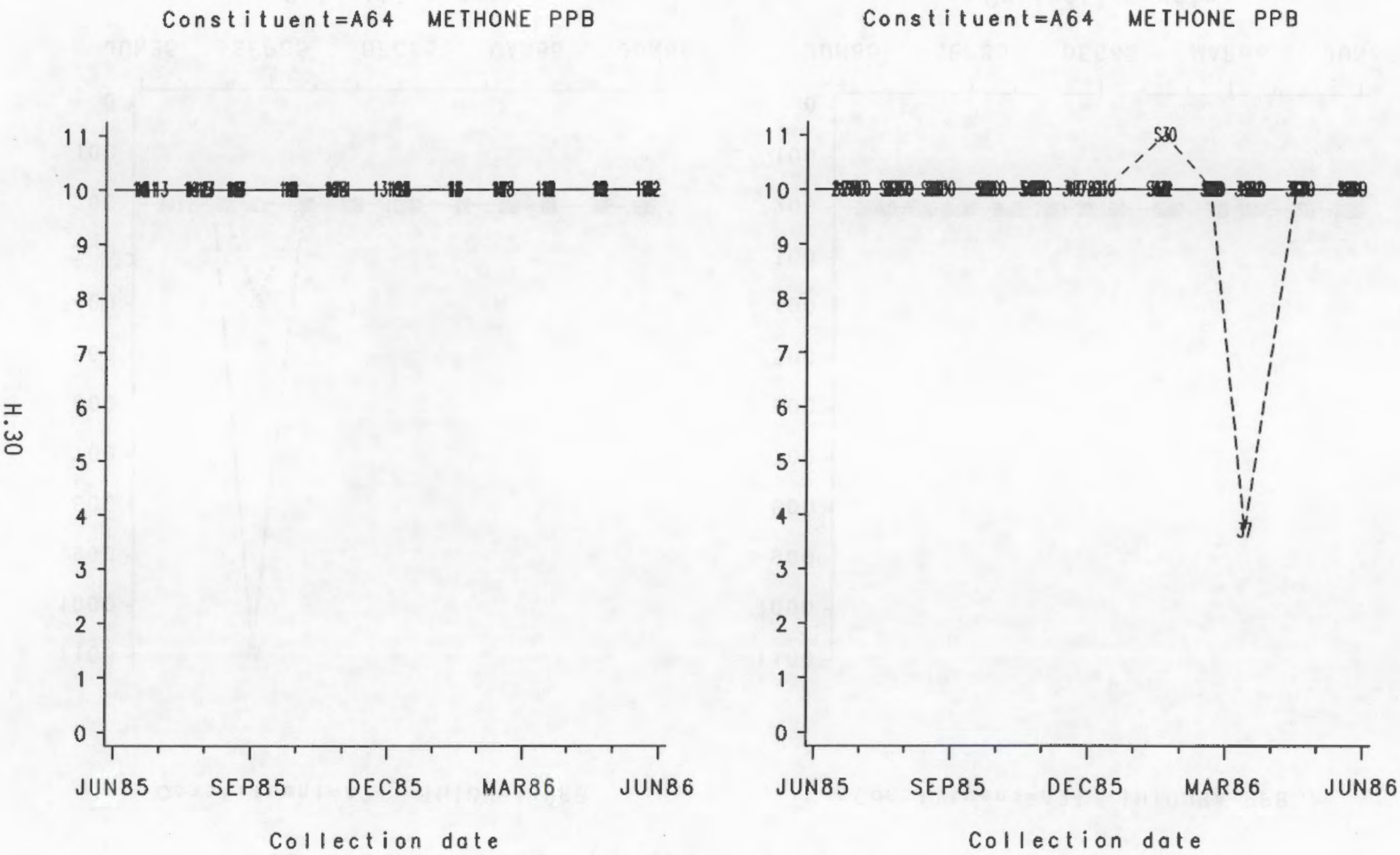




Solid Horizontal Line represents Detection Limit

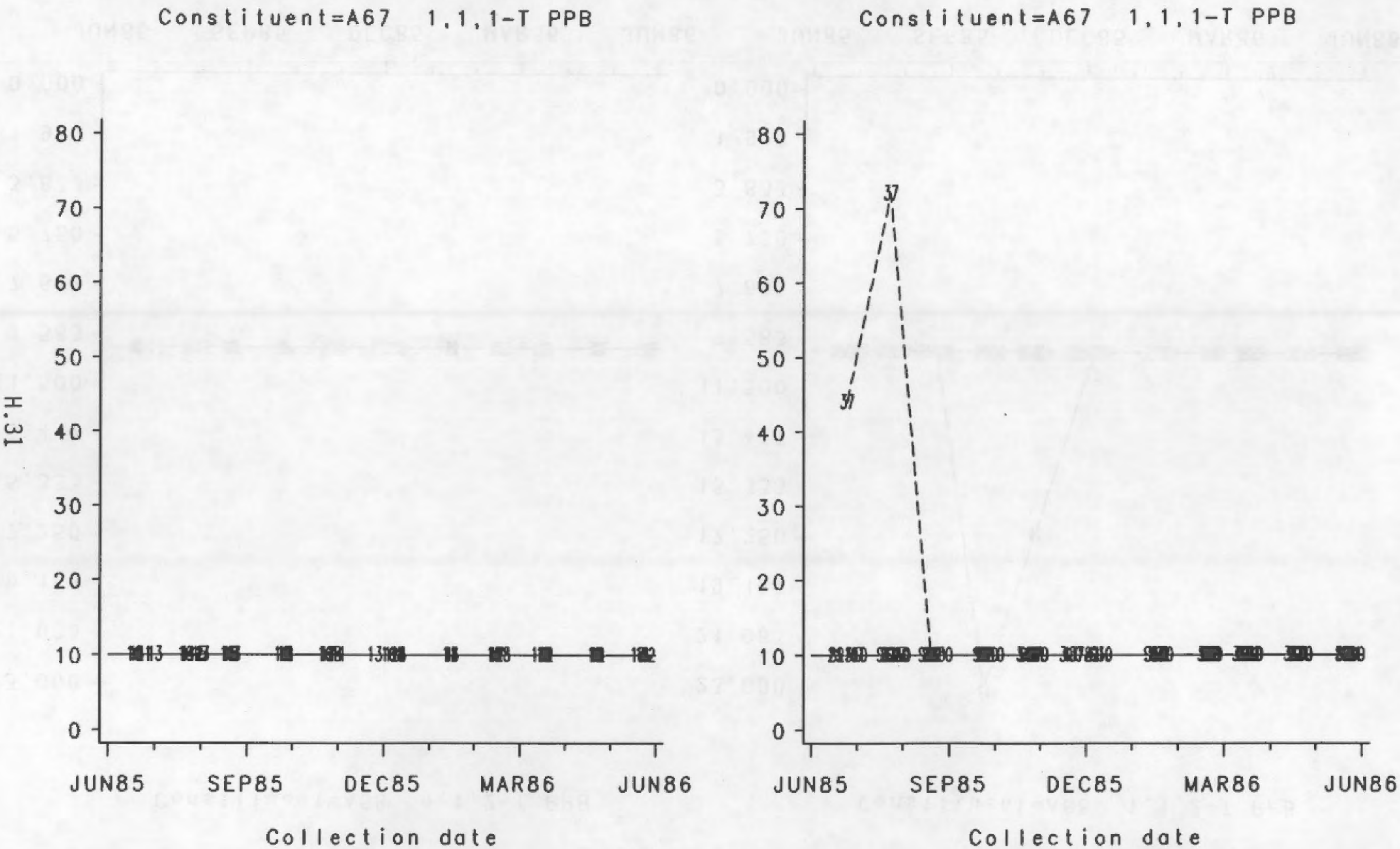
H.29

RCRA Compliance Ground-Water Monitoring Project
300 Area Process Trenches, June 1985 thru May 1986



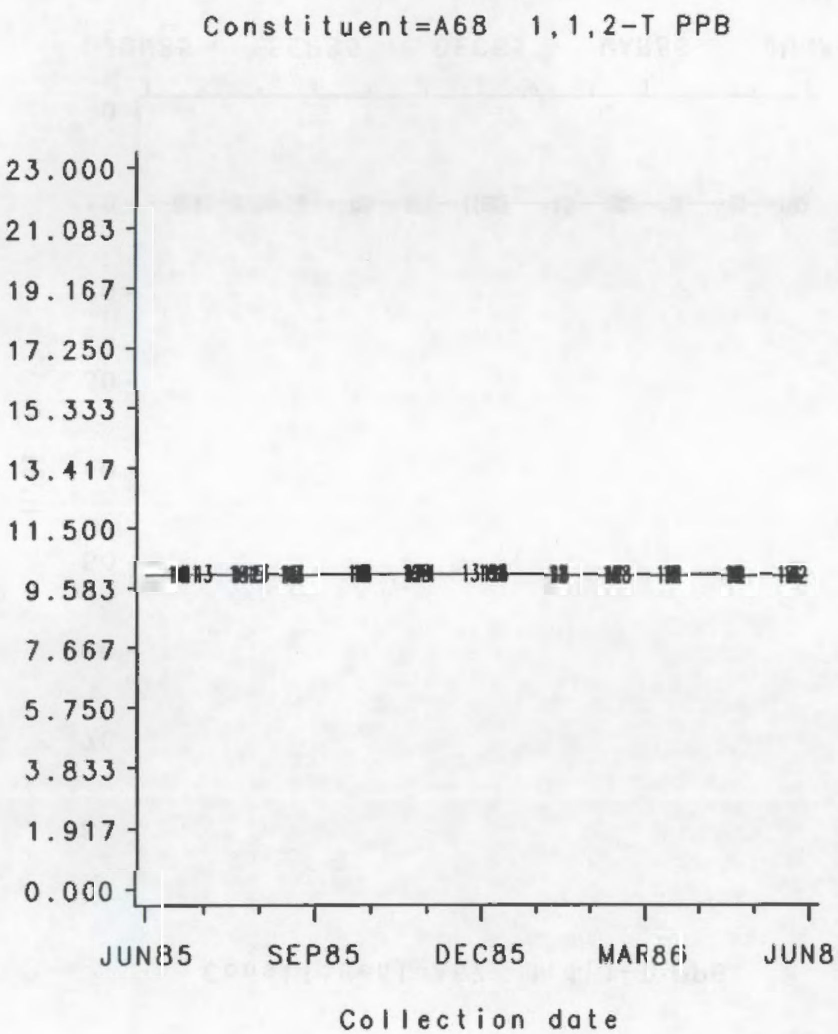
Solid Horizontal Line represents Detection Limit

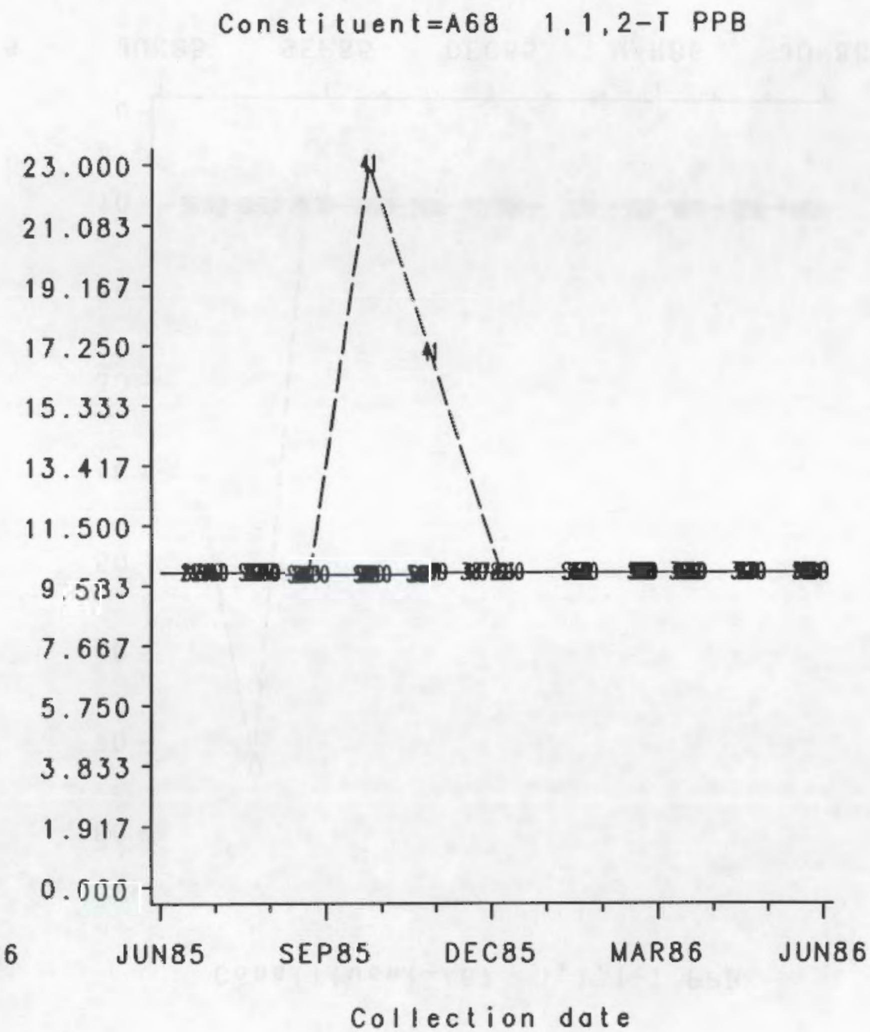
RCRA Compliance Ground-Water Monitoring Project
300 Area Process Trenches, June 1985 thru May 1986



Solid Horizontal Line represents Detection Limit

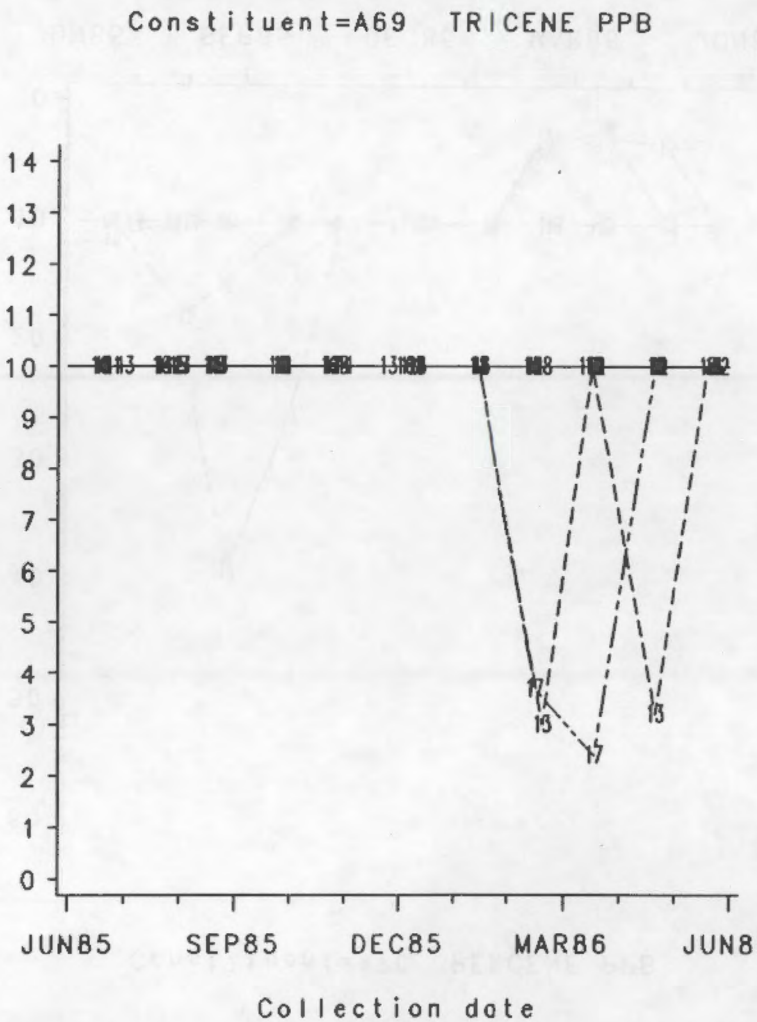
RCRA Compliance Ground-Water Monitoring Project
300 Area Process Trenches, June 1985 thru May 1986

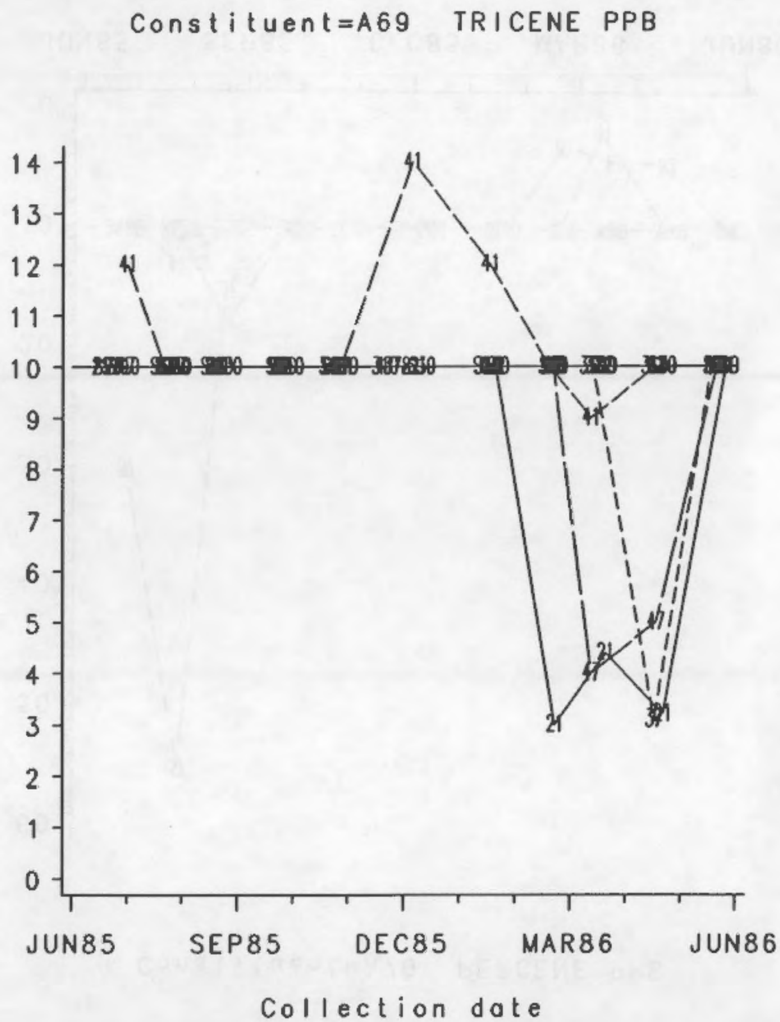




Solid Horizontal Line represents Detection Limit

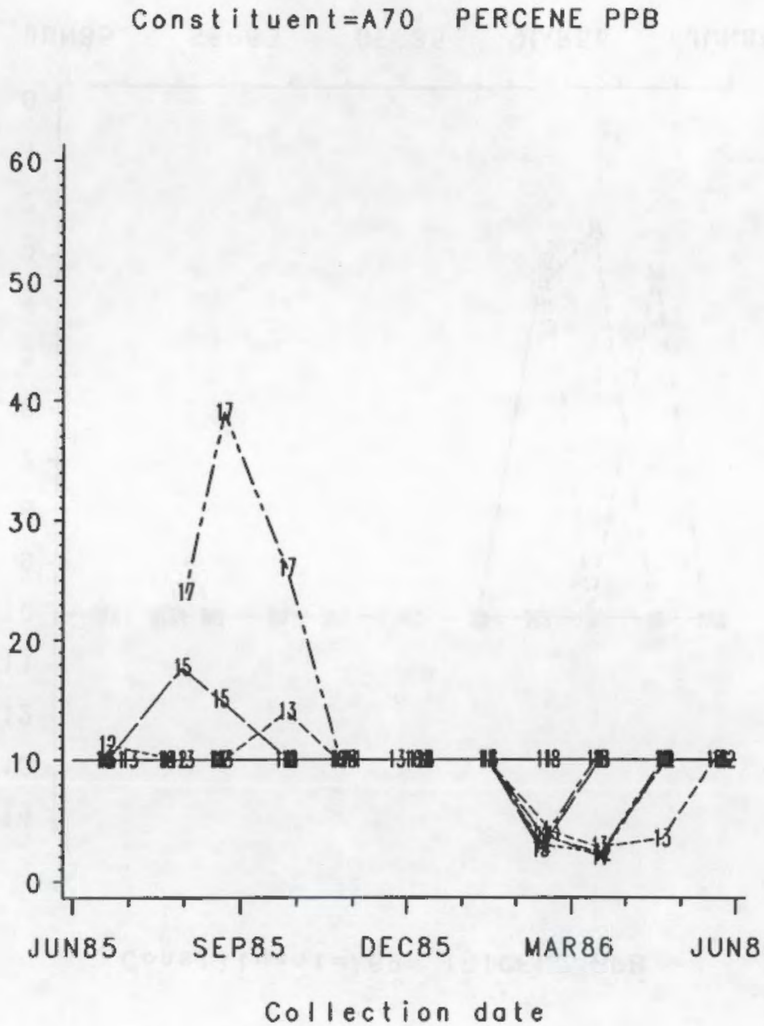
RCRA Compliance Ground-Water Monitoring Project
300 Area Process Trenches, June 1985 thru May 1986

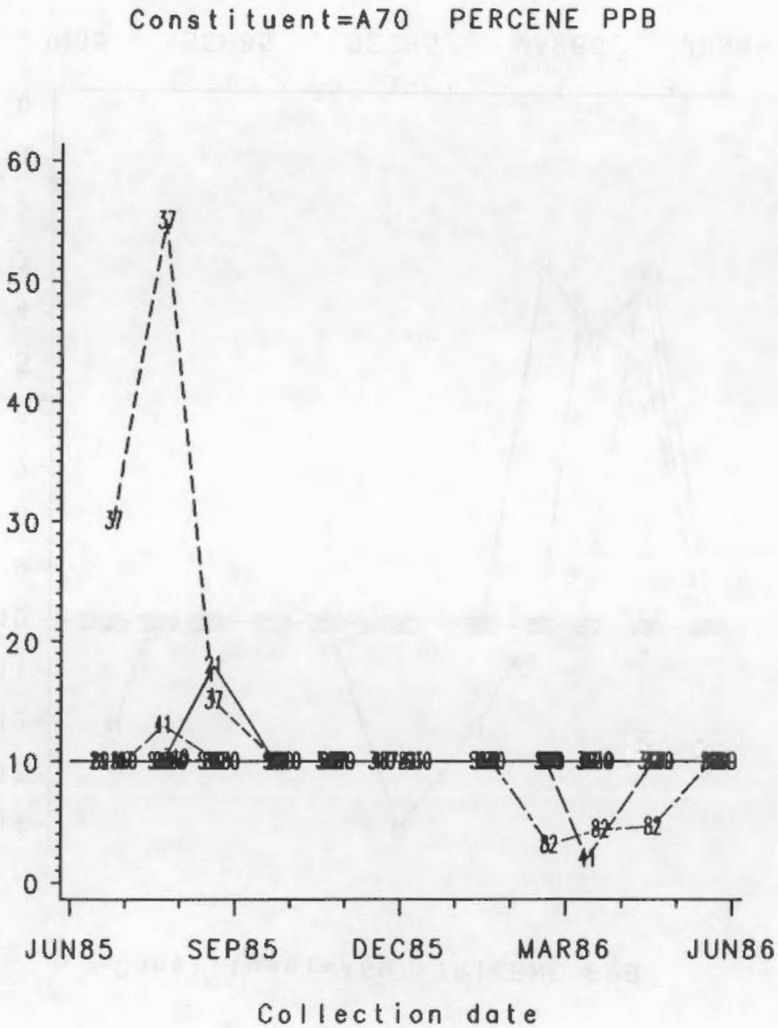




Solid Horizontal Line represents Detection Limit

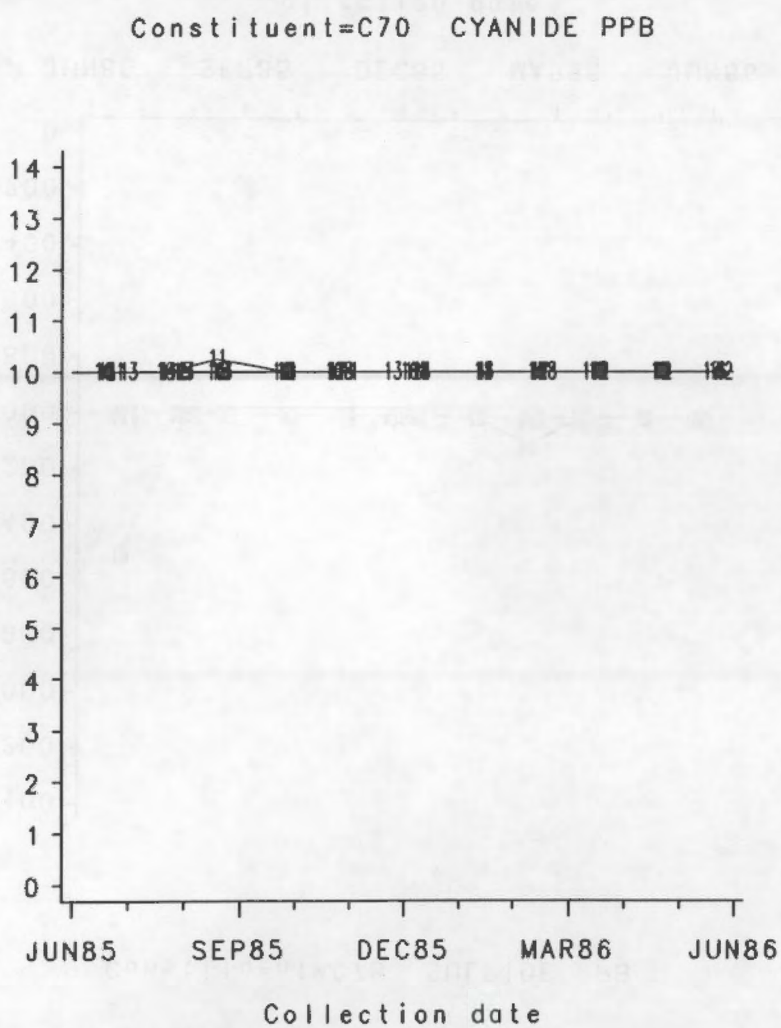
RCRA Compliance Ground-Water Monitoring Project
300 Area Process Trenches, June 1985 thru May 1986

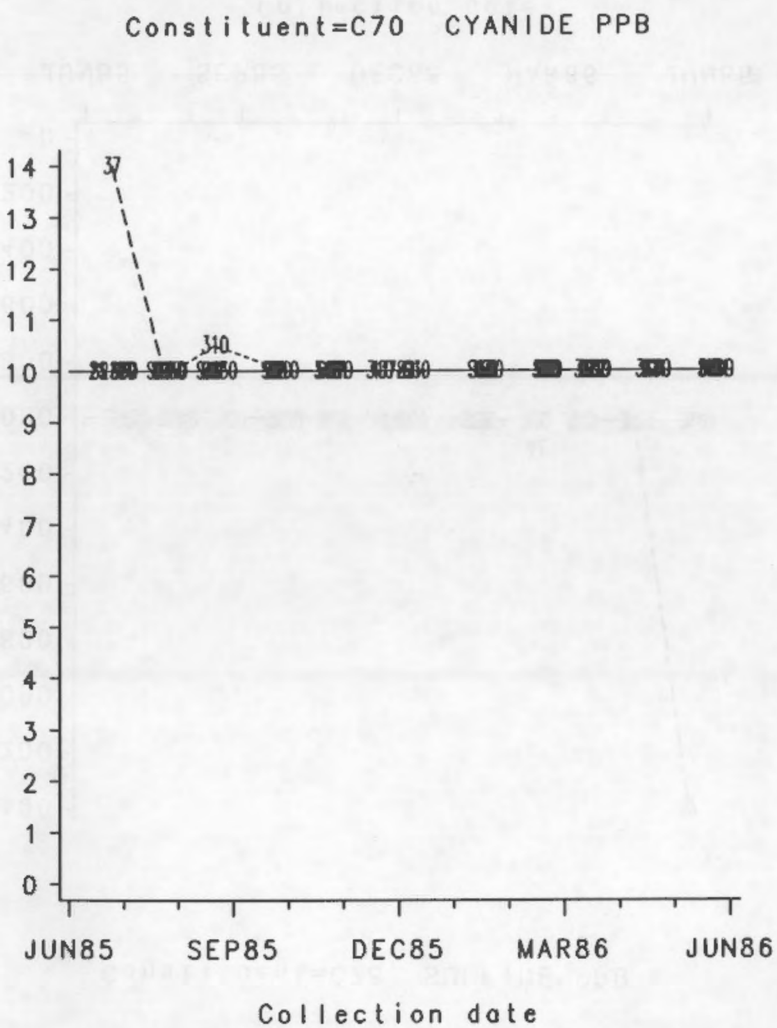




Solid Horizontal Line represents Detection Limit

RCRA Compliance Ground-Water Monitoring Project
300 Area Process Trenches, June 1985 thru May 1986

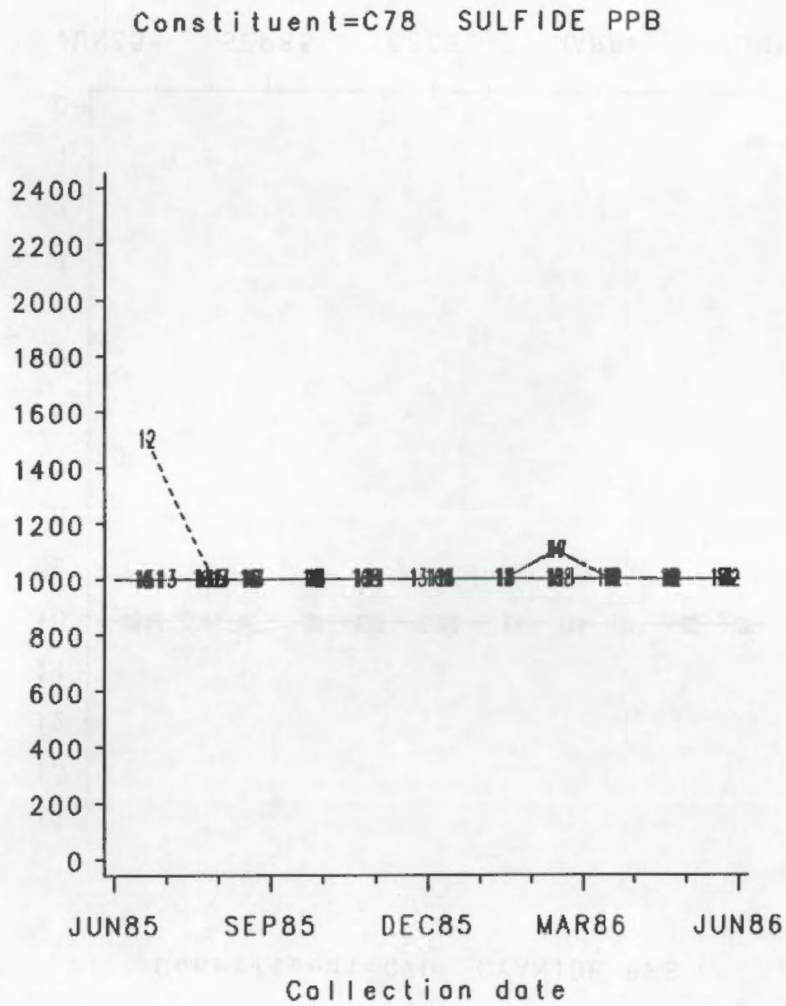


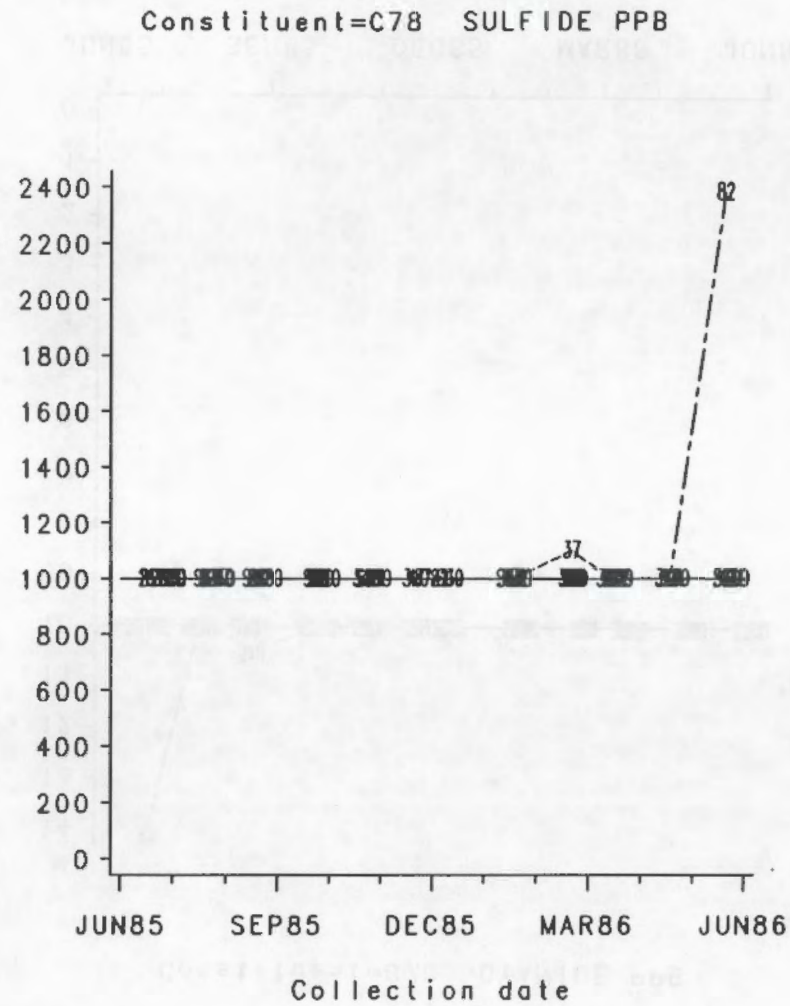


Solid Horizontal Line represents Detection Limit

H.35

RCRA Compliance Ground-Water Monitoring Project
300 Area Process Trenches, June 1985 thru May 1986

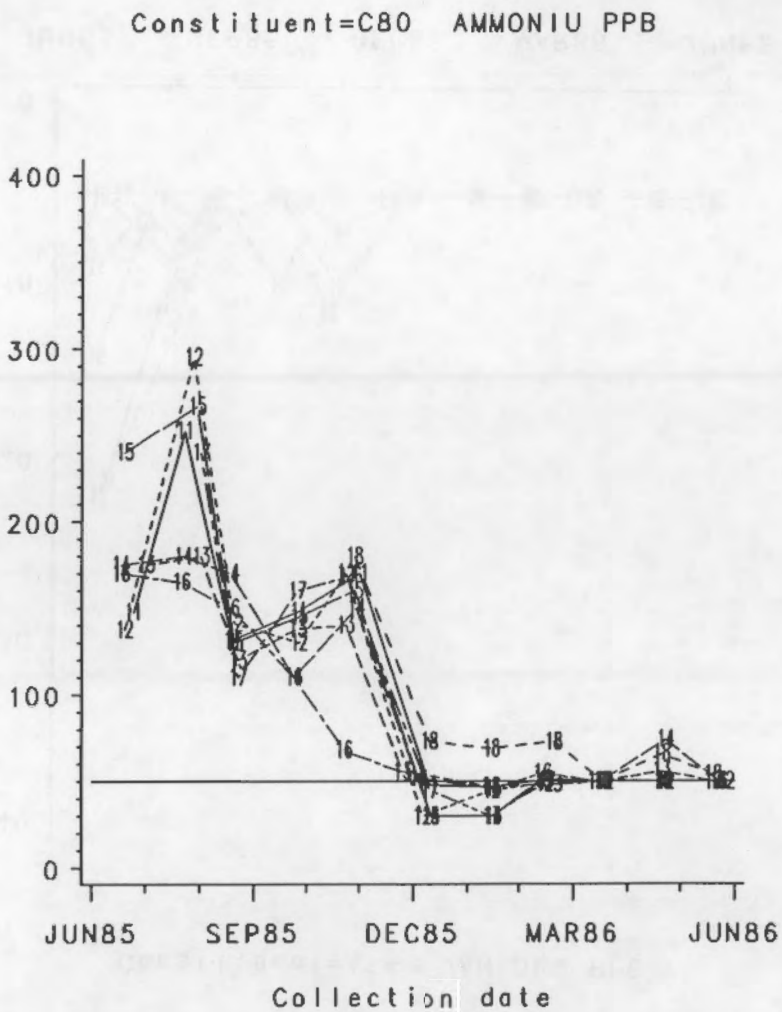


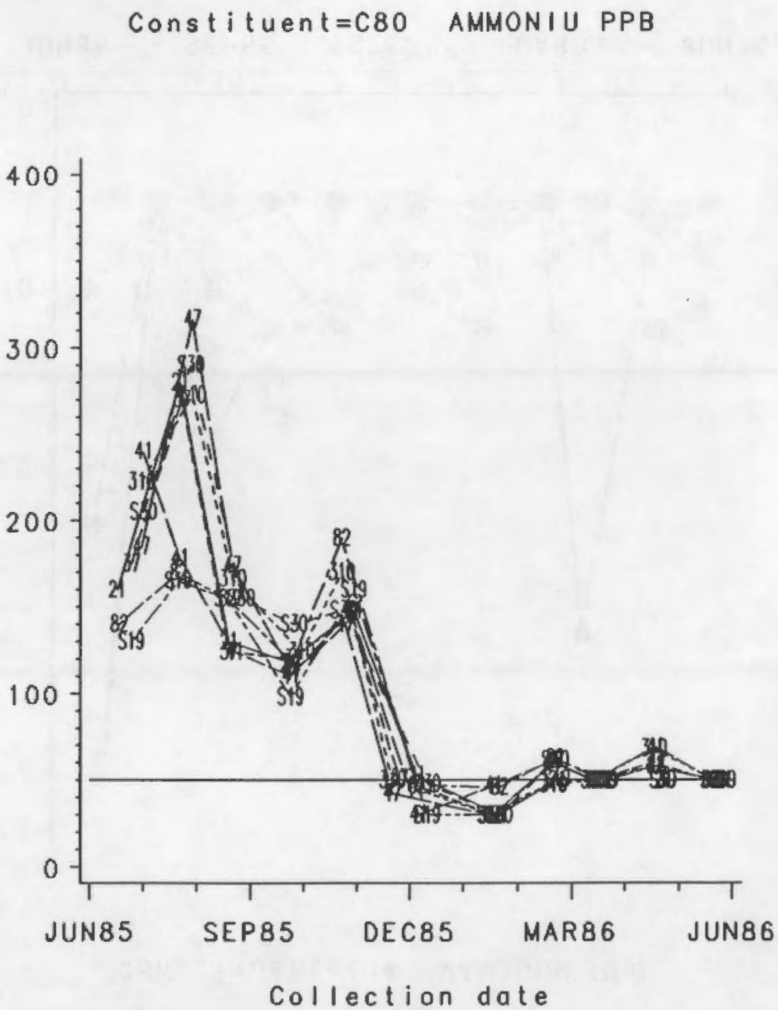


H.36

Solid Horizontal Line represents Detection Limit

RCRA Compliance Ground-Water Monitoring Project
300 Area Process Trenches, June 1985 thru May 1986



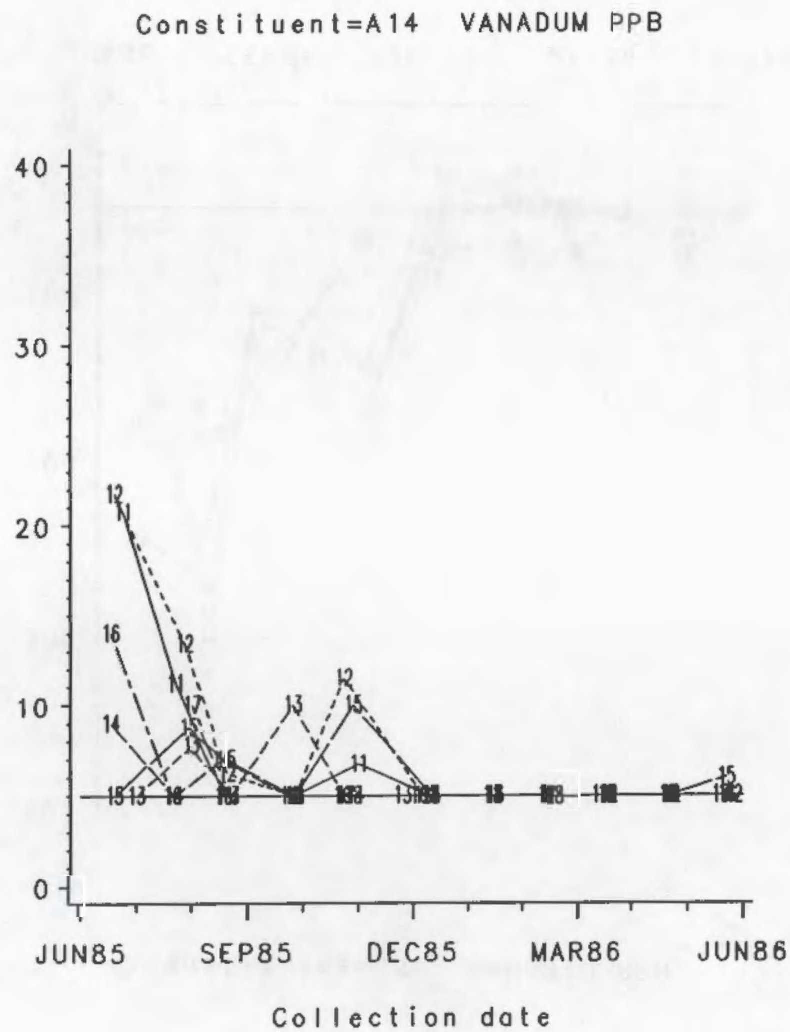


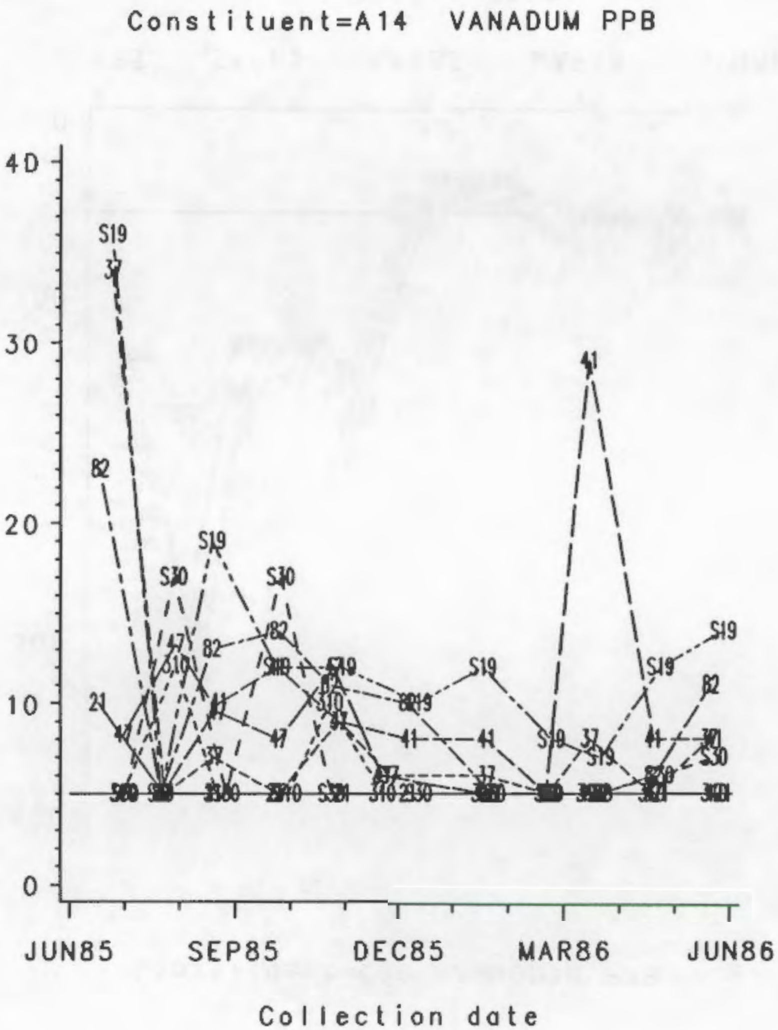
Solid Horizontal Line represents Detection Limit

H.37

RCRA Compliance Ground-Water Monitoring Project
300 Area Process Trenches, June 1985 thru May 1986

H.38

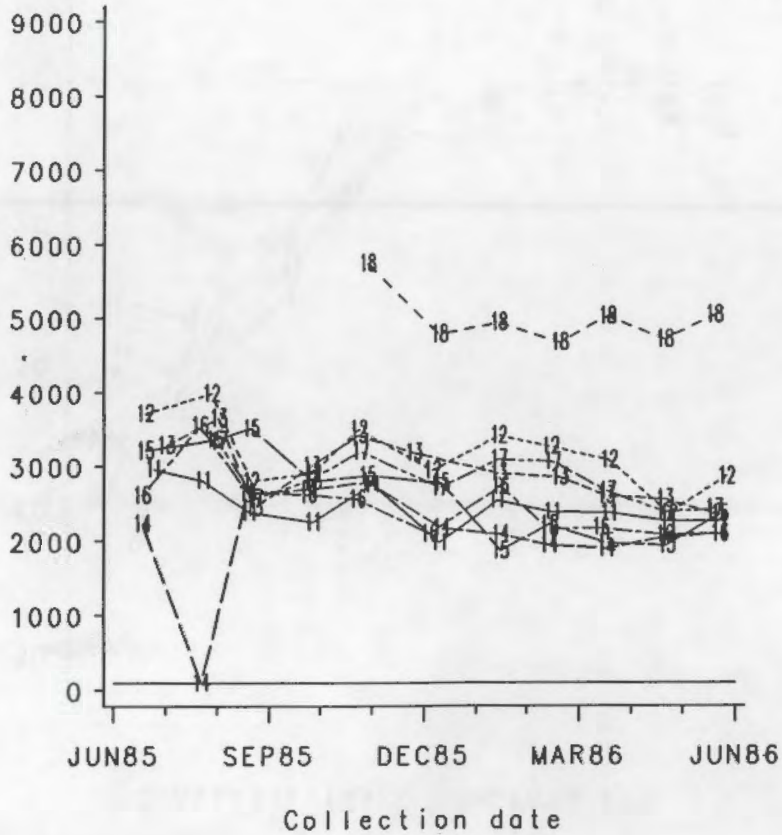




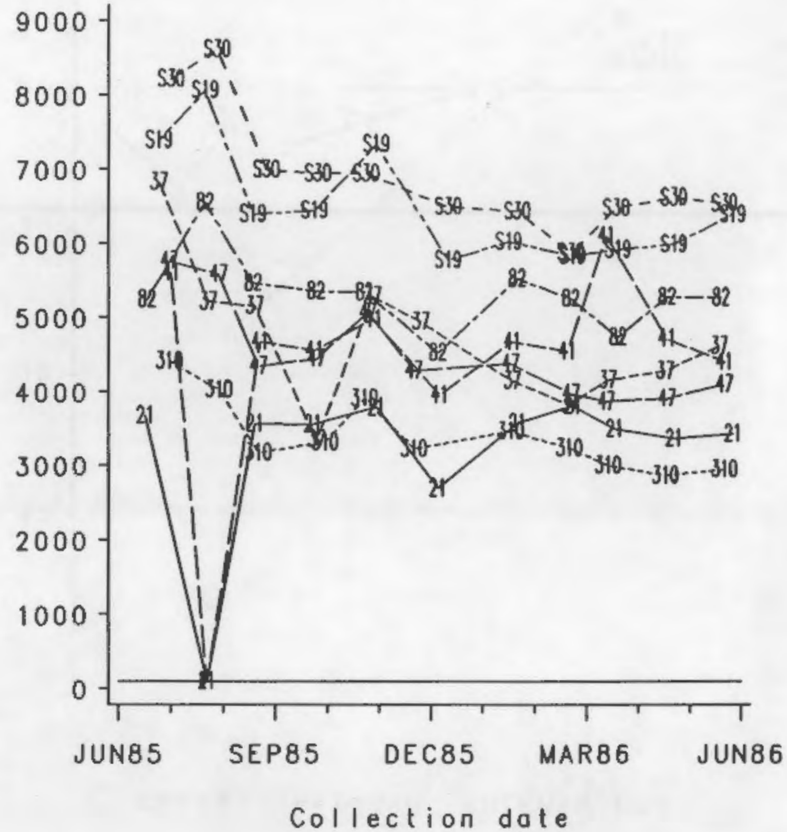
Solid Horizontal Line represents Detection Limit

RCRA Compliance Ground-Water Monitoring Project
300 Area Process Trenches, June 1985 thru May 1986

Constituent=A18 POTASUM PPB

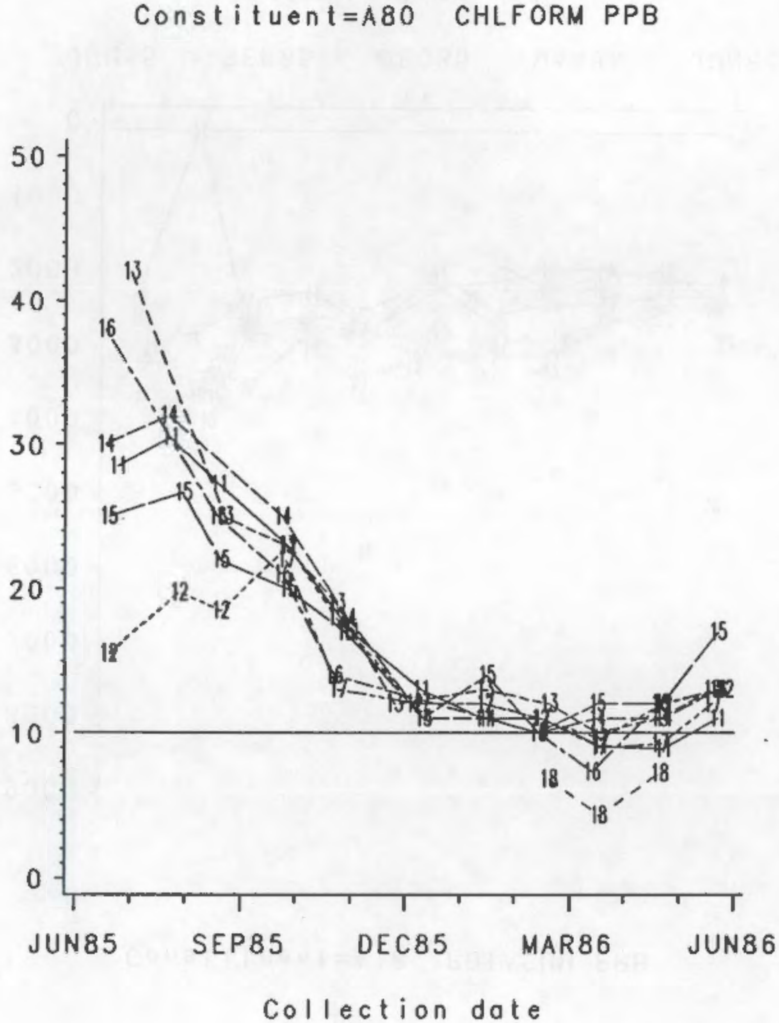


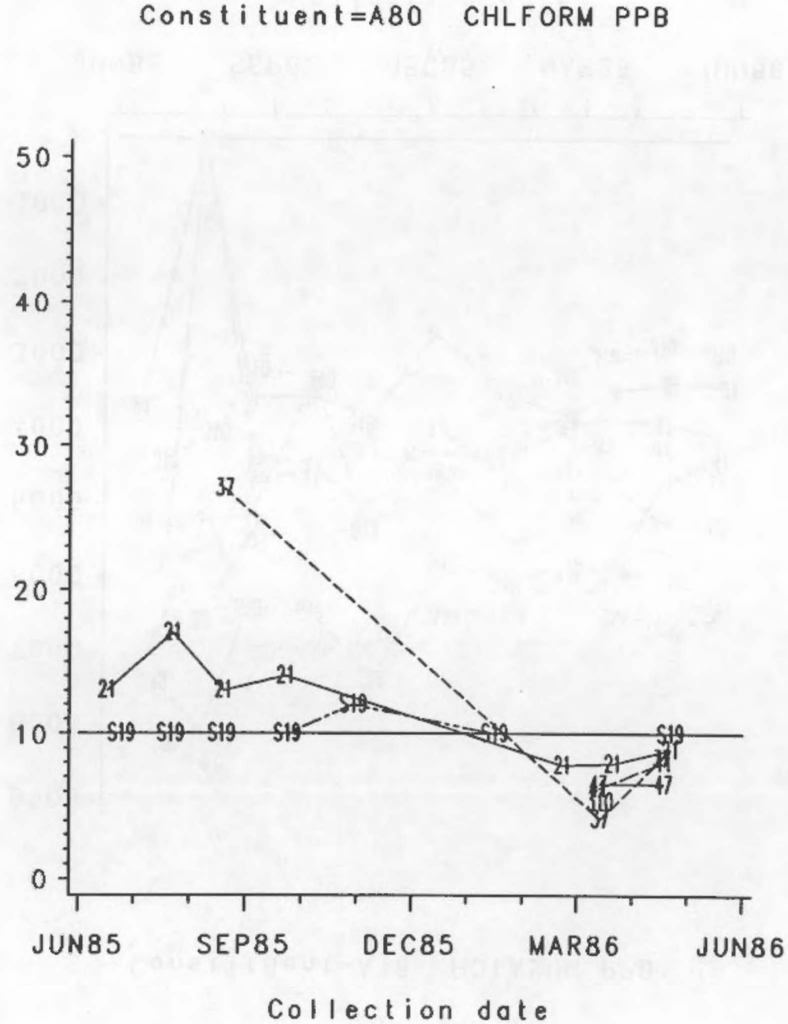
Constituent=A18 POTASUM PPB



Solid Horizontal Line represents Detection Limit

RCRA Compliance Ground-Water Monitoring Project
300 Area Process Trenches, June 1985 thru May 1986

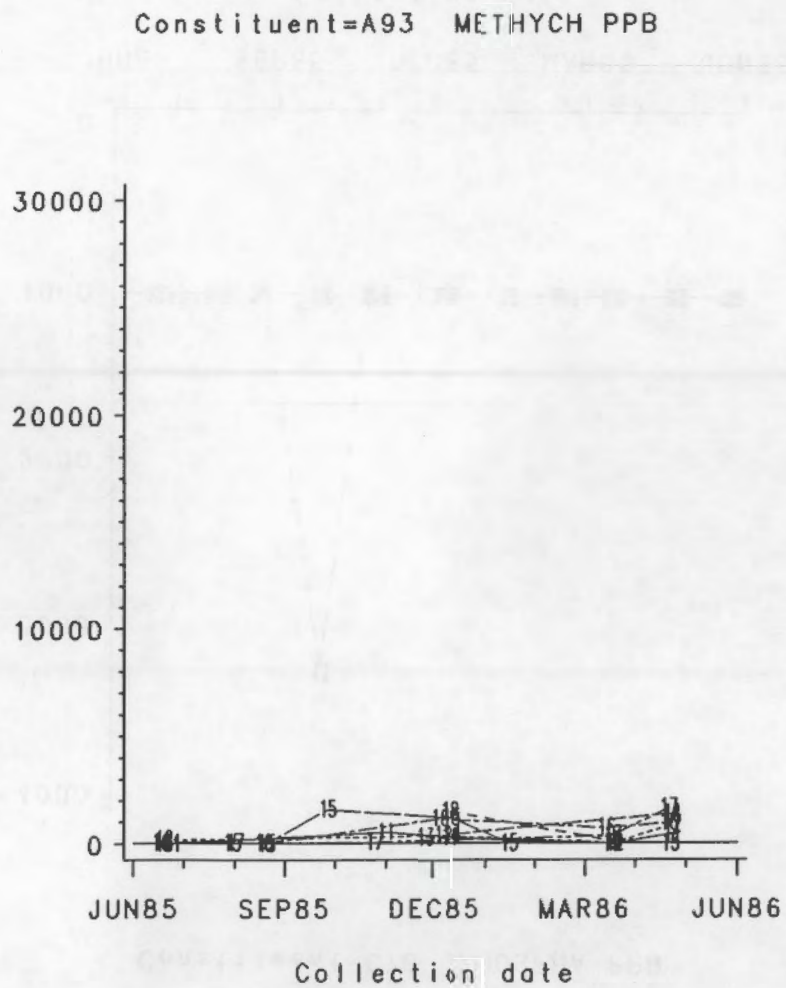


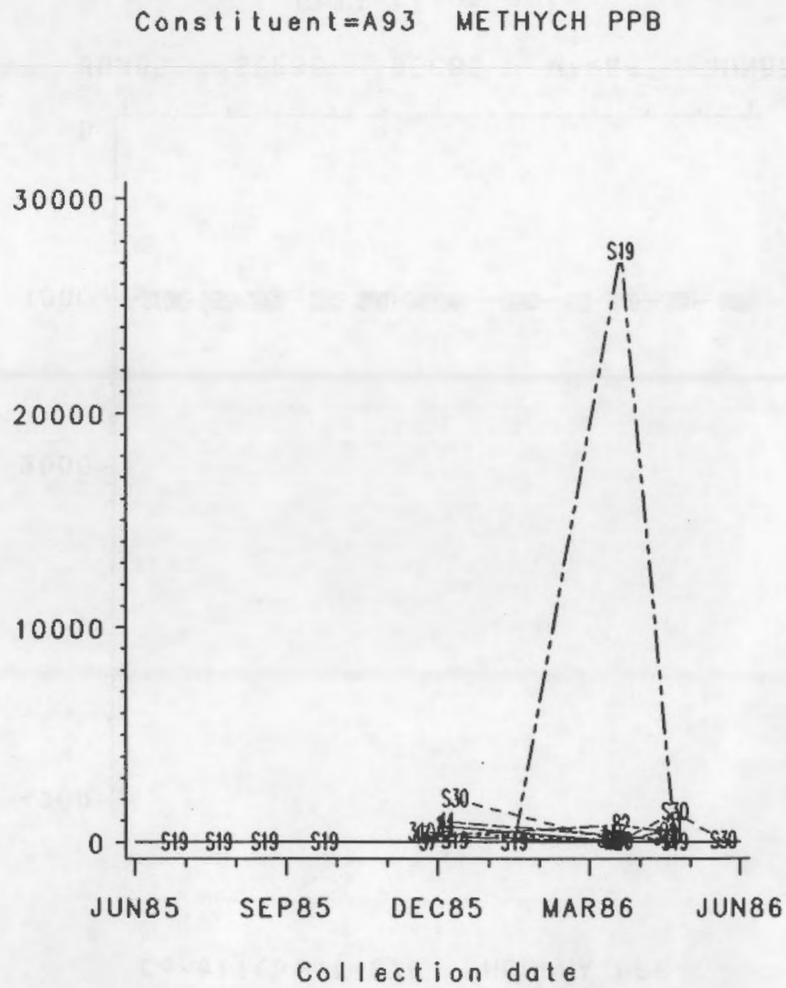


Solid Horizontal Line represents Detection Limit

H.40

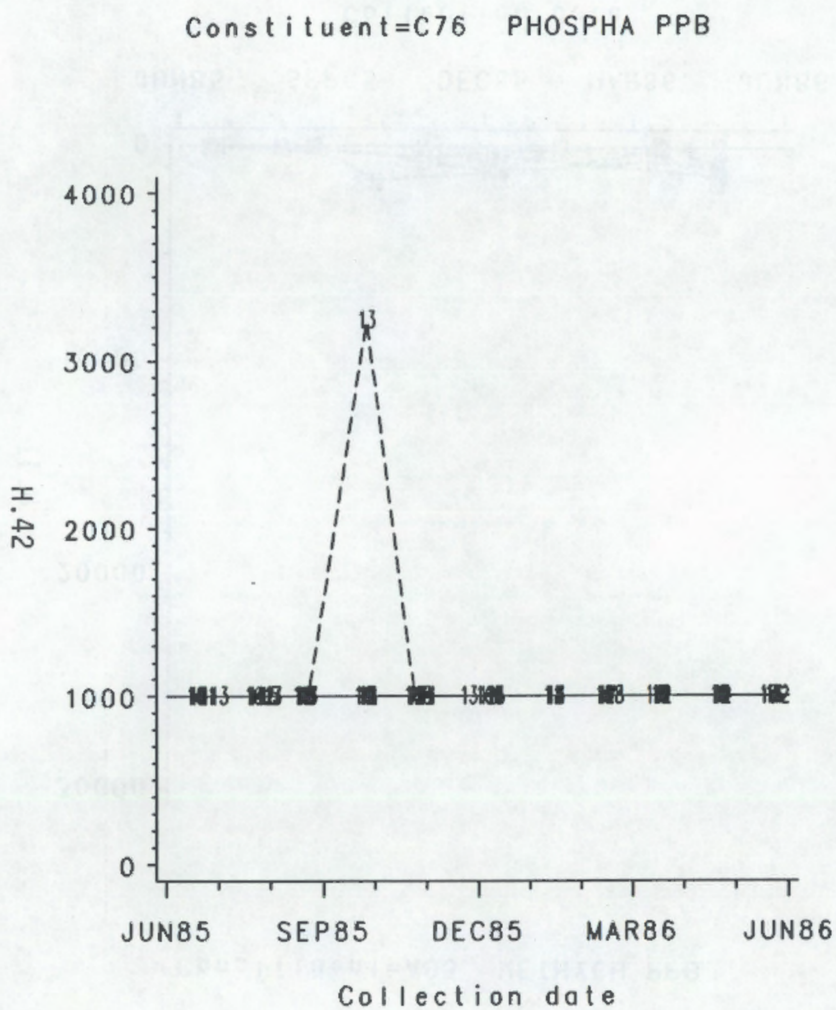
RCRA Compliance Ground-Water Monitoring Project
300 Area Process Trenches, June 1985 thru May 1986

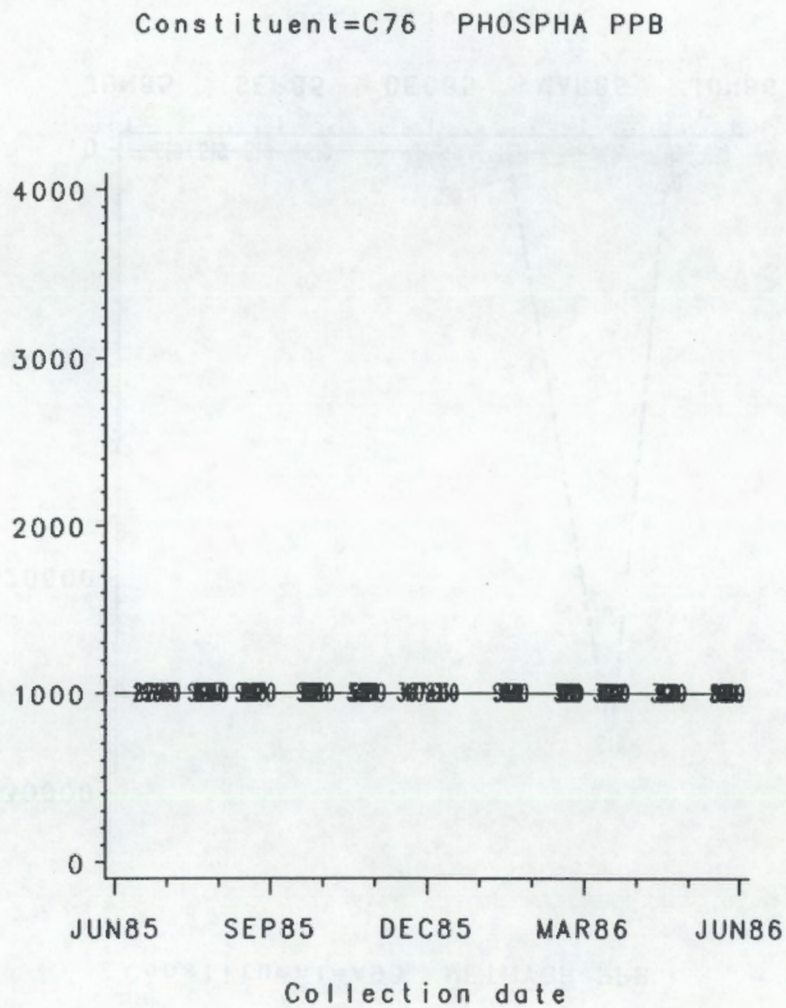




Solid Horizontal Line represents Detection Limit

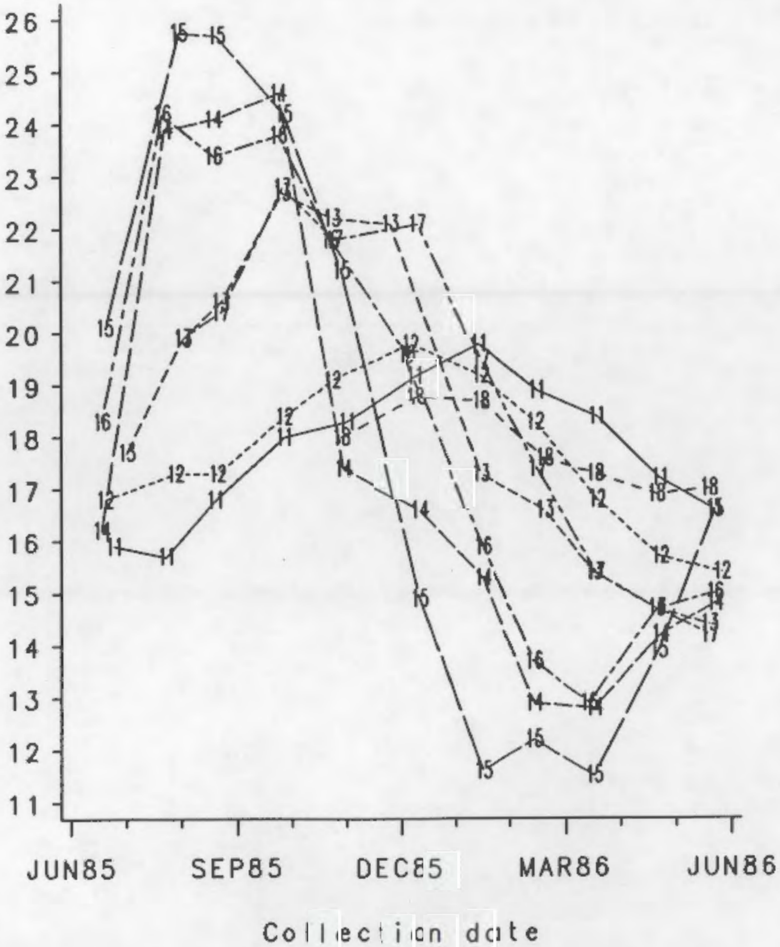
RCRA Compliance Ground-Water Monitoring Project
300 Area Process Trenches, June 1985 thru May 1986

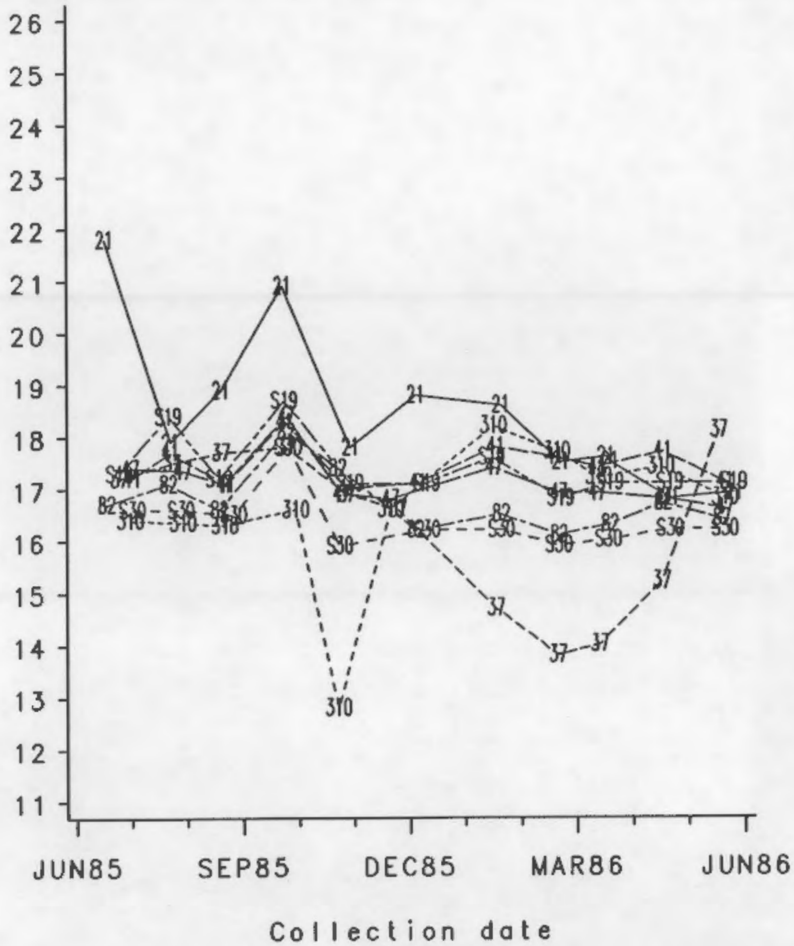




Solid Horizontal Line represents Detection Limit

RCRA Compliance Ground-Water Monitoring Project
300 Area Process Trenches, June 1985 thru May 1986
Water Temperature (C)





APPENDIX I

ADDITIONAL QUALITY CONTROL INFORMATION

APPENDIX I

ADDITIONAL QUALITY CONTROL INFORMATION

This appendix contains results of interlaboratory comparisons conducted with data from the RCRA Compliance Ground-Water Monitoring Project. These results are presented in three sections: results of comparison of anions (October 1985 through May 1986), metals (February through May 1986), and three selected volatile organic compounds (November/December 1985 through May 1986). Each section includes an introduction that names the laboratories involved in the comparison, describes the tables, and gives the regression formulas used to compare differences in analysis values determined by the laboratories.

This appendix also contains results of EPA's performance evaluation for Water Pollution Study Number WP016, the first such study in which UST participated. These results are presented in a copy of the evaluation form received from EPA.

ANALYSIS RESULTS FOR THE RCRA COMPLIANCE GROUND-WATER MONITORING PROJECT
ANALYSIS OF ANIONS BY WESTINGHOUSE HANFORD COMPANY (WHC), HANFORD ENVIRONMENTAL HEALTH FOUNDATION (HEHF), AND UNITED STATES TESTING COMPANY (UST)

The following tables show anion data from interlaboratory comparison from WHC, HEHF, and UST.

The comments column notes laboratory differences that may be significant. Differences greater than two standard deviations from the UST value, based on regression formulas from Environmenal Protection Agency (EPA) Performance Evaluation studies[a], are noted. Differences of 10% or greater are noted for concentrations that are outside the range of values to which the regression formulas apply. Other outlying values are also noted.

The number in parentheses in the comments column after the notation ">2s" is the magnitude of two standard deviations, according to the EPA regression formulas. This value is given to put relative differences into perspective. The "2s" criterion for significant differences may be slightly stringent because there is no "true value" involved. If one laboratory is on the high side of the "true concentration", and another is on the low side, the separation between two valid values could be ≅4s.

The comment "dilution" indicates the UST analysis was based on a dilution that was not optimal. A more appropriate dilution would bring the results closer to the values reported by the other laboratories. This problem has been addressed by the laboratory and in the future, optimum dilutions will be used to assess anion concentration.

Regression formulas are as follows:

Fluoride	$s = 0.0296T + 0.0184$	Range: 0.12 - 2.6 mg/ℓ
Chloride	$s = 0.0269T + 0.745$	Range: 14.6 - 235 mg/ℓ

(a) Personal communication from Paul W. Britton, Staff Statistician, Quality Assurance Branch, Environmental Monitoring and Support Laboraty (USEPA), Cincinnati, OH 45268, FTS 684-7325. Documents dated 10/84, received 3/30/86. "Estimation of Acceptance Limits for Drinking Water Laboratory Performance Evaluation" and "Estimation of Acceptance Limits for Water Pollution Laboratory Performance Evaluation."

Nitrate (as N)	$s = 0.025T + 0.0209$	Range:	0.15 - 9.1 mg/ℓ
(as Nitrate)			0.66 - 40.3 mg/ℓ
Phosphate	$s = 0.0348T + 0.0046$	Range:	0.018 - 3.69 mg/ℓ
Sulfate	$s = 0.0469T + 0.774$	Range:	6.31 - 98.3 mg/ℓ

Where T is the true concentration, in mg/ℓ.

In the tables, the following definitions apply:

WHC = Lab results from Westinghouse Hanford Company

HEHF = Lab results from Hanford Environmental Health Foundation

UST = Lab results from United States Testing Company.

TABLE I.1. Results of Anion Analysis (October 1985)

Well Code	Well Name	Fluoride (ppb) WHC	HEHF	UST	Comments
1873	199-H4-5	160	70	<500	All OK
1877	199-H4-3	220*	290	<500	
1878	199-H4-4	360	280	<500	
1890	199-H3-1	250	150	<500	
4402	399-2-1	430	430	<500	
4403	399-1-1	460	430	<500	
4407	399-1-4	440	420	<500	
4410	399-4-1	310	270	<500	
4802	699-S19-E13	300	250	<500	
0899	0899	<10	<100	<500	

* The amount of F by specific electrode is 0.22 ppm. An organic peak very close to F (superimposed) broadens the peak, so spike recovery appears very low.

Well Code	Well Name	Chloride (ppb) WHC	HEHF	UST	Comments
1873	199-H4-5	4,400	4,970	3,580	
1877	199-H4-3	5,100	4,510	5,160	
1878	199-H4-4	4,900	4,300	4,540	
1890	199-H3-1	8,900	7,700	7,760	
4402	399-2-1	13,600	13,300	11,700	
4403	399-1-1	10,200	7,800	8,320	
4407	399-1-4	5,500	5,100	4,880	
4410	399-4-1	8,900	7,850	7,790	
4802	699-S19-E13	17,900	18,500	14,800	>2s (1770 ppb)
0899	0899	10	<500	<500	

TABLE I.1. Results of Anion Analysis (October 1985) (cont)

Well Code	Well Name	Nitrate (ppb) WHC	HEHF	UST	Comments
1873	199-H4-5	20,200	21,300	19,300	
1877	199-H4-3	890,000	1,960,000	1,040,000	
1878	199-H4-4	330,000	362,000	392,000	
1890	199-H3-1	67,000	83,800	72,500	
4402	399-2-1	23,400	25,900	22,300	
4403	399-1-1	22,600	23,100	21,500	
4407	399-1-4	25,400	28,500	25,300	
4410	399-4-1	10,600	12,200	9,420	>2s (655 ppb)
4802	699-S19-E13	17,600	22,500	16,100	>2s (990 ppb)
0899	0899	300	420	<500	

Well Code	Well Name	Phosphate (ppb) WHC	HEHF	UST	Comments
1873	199-H4-5	<500	<500	<1,000	All OK
1877	199-H4-3	<500	<500	<1,000	
1878	199-H4-4	<500	<500	<1,000	
1890	199-H3-1	<500	<500	<1,000	
4402	399-2-1	<500	<650	<1,000	
4403	399-1-1	<500	<500	<1,000	
4407	399-1-4	<500	<500	<1,000	
4410	399-4-1	<500	<500	<1,000	
4802	699-S19-E13	<500	<500	<1,000	
0899	0899	<500	<500	<1,000	

TABLE I.1. Results of Anion Analysis (October 1985) (cont)

Well Code	Well Name	Sulfate (ppb) WHC	Sulfate (ppb) HEHF	Sulfate (ppb) UST	Comments
1873	199-H4-5	39,000	37,500	43,900	
1877	199-H4-3	92,000	74,000	110,000	
1878	199-H4-4	65,000	62,000	83,900	>2s (9420 ppb)
1890	199-H3-1	70,000	67,000	86,200	>2s (9630 ppb)
4402	399-2-1	14,300	11,000	13,700	
4403	399-1-1	14,400	10,000	13,500	
4407	399-1-4	14,000	11,100	14,300	
4410	399-4-1	24,200	19,400	24,100	
4802	699-S19-E13	48,000	50,500	53,000	
0899	0899	<100	<400	<500	

TABLE I.2. Results of Anion Analysis (November/December 1985)

Well Code	Well Name	Fluoride (ppb) WHC	HEHF	UST	Comments
1873	199-H4-5	160	140	<500	All OK
1877	199-H4-3	70	360	<500	
1878	199-H4-4	180	160	<500	
1890	199-H3-1	260	230	<500	
4402	399-2-1	410	410	<500	
4403	399-1-1	450	440	<500	
4407	399-1-4	400	390	<500	
4410	399-4-1	320	320	<500	
4802	699-S19-E13	300	290	<500	
0899	0899	<2	<100	<500	

Well Code	Well Name	Chloride (ppb) WHC	HEHF	UST	Comments
1873	199-H4-5	4,200	4,100	3,550	All OK
1877	199-H4-3	5,000	6,800	5,490	
1878	199-H4-4	3,400	3,300	2,920	
1890	199-H3-1	9,800	8,600	8,360	
4402	399-2-1	14,800	15,000	15,100	
4403	399-1-1	6,700	6,500	5,950	
4407	399-1-4	17,000	17,200	15,200	
4410	399-4-1	8,400	7,800	7,580	
4802	699-S19-E13	16,600	15,400	15,000	
0899	0899	11	<500	<500	

TABLE I.2. Results of Anion Analysis (November/December 1985) (cont)

Well Code	Well Name	Nitrate (ppb) WHC	HEHF	UST	Comments
1873	199-H4-5	20,000	22,000	19,600	
1877	199-H4-3	896,000	990,000	816,000	
1878	199-H4-4	23,200	25,000	23,300	
1890	199-H3-1	61,200	66,000	47,100	30% difference
4402	399-2-1	23,200	24,000	24,400	
4403	399-1-1	23,200	24,000	22,200	
4407	399-1-4	21,700	23,000	22,100	
4410	399-4-1	10,000	10,800	9,470	
4802	699-S19-E13	18,800	20,000	18,800	
0899	0899	<8	<200	<500	

Well Code	Well Name	Phosphate (ppb) WHC	HEHF	UST	Comments
1873	199-H4-5	<500	<500	<1,000	All OK
1877	199-H4-3	---	<500	<1,000	
1878	199-H4-4	<500	<500	<1,000	
1890	199-H3-1	<500	<500	<1,000	
4402	399-2-1	600	520	<1,000	
4403	399-1-1	<500	<500	<1,000	
4407	399-1-4	<500	<500	<1,000	
4410	399-4-1	<500	<500	<1,000	
4802	699-S19-E13	<500	<500	<1,000	
0899	0899	<100	<500	<1,000	

TABLE I.2. Results of Anion Analysis (November/December 1985) (cont)

Well Code	Well Name	Sulfate (ppb) WHC	HEHF	UST	Comments
1873	199-H4-5	37,200	37,000	37,300	
1877	199-H4-3	87,500	88,000	97,900	
1878	199-H4-4	30,600	31,000	28,900	
1890	199-H3-1	64,500	70,000	52,600	>2s (6480 ppb)
4402	399-2-1	14,200	14,500	15,800	
4403	399-1-1	13,800	14,100	13,200	
4407	399-1-4	14,000	14,300	14,400	
4410	399-4-1	23,800	24,000	23,600	
4802	699-S19-E13	91,500	47,000	48,100	WHC high
0899	0899	≅5	<1,000	<500	

TABLE I.3. Results of Anion Analysis (January 1986)

Well Code	Well Name	Fluoride (ppb) WHC	HEHF	UST	Comments
1874	199-H4-6	250	200	<500	All OK
1877	199-H4-3	180*	<500	1,330	
1878	199-H4-4	400	340	567	
1890	199-H3-1	280	210	531	
4402	399-2-1	330	290	<500	
4403	399-1-1	460	430	<500	
4407	399-1-4	410	390	<500	
4410	399-4-1	330	300	<500	
4802	699-S19-E13	310	260	521	
0899	0899	<2	<100	<500	

* F electrode/Organic interference

Well Code	Well Name	Chloride (ppb) WHC	HEHF	UST	Comments
1874	199-H4-6	7,200	6,800	6,930	All OK
1877	199-H4-3	5,700	6,800	6,990	
1878	199-H4-4	4,500	4,800	3,710	
1890	199-H3-1	9,500	9,500	9,090	
4402	399-2-1	25,000	24,900	22,200	
4403	399-1-1	11,100	10,500	11,000	
4407	399-1-4	11,300	12,100	10,700	
4410	399-4-1	9,500	9,000	7,840	
4802	699-S19-E13	17,100	15,600	14,900	
0899	0899	<5	<50	<500	

TABLE I.3. Results of Anion Analysis (January 1986) (cont)

Well Code	Well Name	Nitrate (ppb) WHC	HEHF	UST	Comments
1874	199-H4-6	26,000	27,400	27,100	
1877	199-H4-3	1,430,000	1,400,000	2,830,000	high (dilution)
1878	199-H4-4	235,000	248,000	225,000	
1890	199-H3-1	61,000	63,100	52,400	18% lower
4402	399-2-1	27,000	28,200	25,700	
4403	399-1-1	25,000	25,700	24,200	
4407	399-1-4	24,000	25,400	23,100	
4410	399-4-1	11,000	11,500	8,700	>2s (620 ppb)
4802	699-S19-E13	18,700	19,400	18,700	
0899	0899	<10	<200	<215	

Well Code	Well Name	Phosphate (ppb) WHC	HEHF	UST	Comments
1874	199-H4-6	<200	<500	<1,000	All OK
1877	199-H4-3	<200	<500	<1,000	
1878	199-H4-4	<200	<500	<1,000	
1890	199-H3-1	<200	<500	<1,000	
4402	399-2-1	680	540	<1,000	
4403	399-1-1	<200	<500	<1,000	
4407	399-1-4	<200	<500	<1,000	
4410	399-4-1	<200	<500	<1,000	
4802	699-S19-E13	<200	<500	<1,000	
0899	0899	<50	<500	<1,000	

TABLE I.3. Results of Anion Analysis (January 1986) (cont)

Well Code	Well Name	Sulfate (ppb) WHC	HEHF	UST	Comments
1874	199-H4-6	59,000	60,000	50,200	>2s (6260 ppb)
1877	199-H4-3	160,000	124,000	122,000	
1878	199-H4-4	60,000	62,000	60,200	
1890	199-H3-1	73,000	74,000	58,700	>2s
4402	399-2-1	13,400	16,400	15,300	
4403	399-1-1	13,500	14,600	14,100	
4407	399-1-4	13,300	14,200	12,100	
4410	399-4-1	25,000	26,300	20,700	>2s (3490 ppb)
4802	699-S19-E13	46,000	48,000	45,000	
0899	0899	<10	<1,000	<500	

TABLE I.4. Results of Anion Analysis (February 1986)

Well Code	Well Name	Fluoride (ppb) WHC	HEHF	UST	Comments
1873	199-H4-5	165	<100	<500	All OK
1877	199-H4-3	---*	≅300	1,510	
1878	199-H4-4	374	---	695	
1890	199-H3-1	260	190	702	
4402	399-2-1	310	260	<500	
4403	399-1-1	411	410	<500	
4407	399-1-4	423	420	<500	
4410	399-4-1	296	250	582	
4802	699-S19-E13	285	240	500	
0899	0899	<10	<100	<500	

* F electrode/Large interfering organic anion peak

Well Code	Well Name	Chloride (ppb) WHC	HEHF	UST	Comments
1873	199-H4-5	4,100	9,400	<4,240	HEHF high
1877	199-H4-3	5,390	5,800	6,620	
1878	199-H4-4	4,520	---	4,520	
1890	199-H3-1	9,570	9,400	8,880	
4402	399-2-1	24,300	25,000	23,400	
4403	399-1-1	10,400	10,800	7,140	46% low
4407	399-1-4	7,360	10,200	7,280	HEHF high
4410	399-4-1	10,100	11,200	10,400	
4802	699-S19-E13	16,100	16,300	15,200	
0899	0899	<20	<500	<500	

TABLE I.4. Results of Anion Analysis (February 1986) (cont)

Well Code	Well Name	Nitrate (ppb) WHC	HEHF	UST	Comments
1873	199-H4-5	21,000	22,000	21,600	
1877	199-H4-3	1,180,000	1,570,000	1,000,000	18% difference
1878	199-H4-4	233,000	---	259,000	10% difference
1890	199-H3-1	60,000	65,000	71,600	
4402	399-2-1	32,400	36,000	32,600	
4403	399-1-1	20,900	23,000	19,000	>2s (1680 ppb)
4407	399-1-4	24,700	30,000	22,700	>2s (1320 ppb)
4410	399-4-1	11,400	12,100	11,900	
4802	699-S19-E13	17,900	19,400	17,800	
0899	0899	1,680	1,460	<500	high for blank

Well Code	Well Name	Phosphate (ppb) WHC	HEHF	UST	Comments
1873	199-H4-5	<500	<500	<1,000	All OK
1877	199-H4-3	<500	<500	<1,000	
1878	199-H4-4	<500	---	<1,000	
1890	199-H3-1	<500	<500	<1,000	
4402	399-2-1	370	<500	<1,000	
4403	399-1-1	<500	<500	<1,000	
4407	399-1-4	<500	<500	<1,000	
4410	399-4-1	<500	<500	<1,000	
4802	699-S19-E13	<500	<500	<1,000	
0899	0899	<200	<500	<1,000	

TABLE I.4. Results of Anion Analysis (February 1986) (cont)

Well Code	Well Name	Sulfate (ppb) WHC	HEHF	UST	Comments
1873	199-H4-5	37,000	37,000	39,400	All OK
1877	199-H4-3	100,000	104,000	113,000	
1878	199-H4-4	54,200	---	59,700	
1890	199-H3-1	70,700	73,000	76,300	
4402	399-2-1	36,400	37,000	35,600	
4403	399-1-1	13,400	14,300	11,800	
4407	399-1-4	13,600	14,300	12,700	
4410	399-4-1	25,800	27,000	26,800	
4802	699-S19-E13	46,400	44,000	46,300	
0899	0899	<50	<1,000	<500	

TABLE I.5. Results of Anion Analysis (March 1986)

Well Code	Well Name	Fluoride (ppb) WHC	HEHF	UST	Comments
1873	199-H4-5	180	<100	<500	All OK
1874	199-H4-6	260	110	507	
1877	199-H4-3	200*	1,200	1,960	
1878	199-H4-4	390	300	658	
1890	199-H3-1	280	130	652	
4402	399-2-1	360	290	<500	
4403	399-1-1	430	400	513	
4407	399-1-4	460	490	522	
4410	399-4-1	300	270	513	
4802	699-S19-E13	310	210	593	
0899	0899	<5	<100	<500	

* F electrode/IC masked by organic anion.

Well Code	Well Name	Chloride (ppb) WHC	HEHF	UST	Comments
1873	199-H4-5	4,040	5,100	4,270	All OK
1874	199-H4-6	9,300	10,000	8,980	
1877	199-H4-3	6,040	7,600	8,730	
1878	199-H4-4	4,480	6,000	4,760	
1890	199-H3-1	9,600	9,500	9,460	
4402	399-2-1	25,400	31,100	28,700	
4403	399-1-1	9,580	12,700	9,820	
4407	399-1-4	7,170	9,500	7,450	
4410	399-4-1	10,100	10,000	10,800	
4802	699-S19-E13	16,100	16,500	16,500	
0899	0899	<10	<500	<500	

TABLE I.5. Results of Anion Analysis (March 1986) (cont)

Well Code	Well Name	Nitrate (ppb) WHC	HEHF	UST	Comments
1873	199-H4-5	21,200	22,000	22,300	
1874	199-H4-6	26,000	31,500	31,100	
1877	199-H4-3	1,650,000	1,690,000	1,940,000	13 % different
1878	199-H4-4	164,000	175,000	200,000	13 % different
1890	199-H3-1	63,000	64,000	74,200	14 % different
4402	399-2-1	25,100	27,000	29,300	>2s (1640 ppb)
4403	399-1-1	23,400	26,000	25,800	
4407	399-1-4	22,100	23,000	23,900	
4410	399-4-1	11,400	12,700	13,000	
4802	699-S19-E13	18,600	19,000	20,600	>2s (1220 ppb)
0899	0899	690	610	<500	

Well Code	Well Name	Phosphate (ppb) WHC	HEHF	UST	Comments
1873	199-H4-5	<500	<500	<1,000	All OK
1874	199-H4-6	<500	<500	<1,000	
1877	199-H4-3	<300	<500	<1,000	
1878	199-H4-4	<500	<500	<1,000	
1890	199-H3-1	<500	<500	<1,000	
4402	399-2-1	<400	<500	<1,000	
4403	399-1-1	<500	<500	<1,000	
4407	399-1-4	<500	<500	<1,000	
4410	399-4-1	<500	<500	<1,000	
4802	699-S19-E13	<500	<500	<1,000	
0899	0899	<500	<500	<1,000	

TABLE I.5. Results of Anion Analysis (March 1986) (cont)

Well Code	Well Name	Sulfate (ppb) WHC	Sulfate (ppb) HEHF	Sulfate (ppb) UST	Comments
1873	199-H4-5	37,900	36,000	39,500	
1874	199-H4-6	59,800	74,000	76,500	WHC low
1877	199-H4-3	136,000	145,000	153,000	
1878	199-H4-4	48,900	52,000	60,800	>2s (7250 ppb)
1890	199-H3-1	72,200	71,000	82,600	>2s (9300 ppb)
4402	399-2-1	22,800	24,000	26,800	
4403	399-1-1	14,200	14,900	15,300	
4407	399-1-4	14,600	15,500	15,300	
4410	399-4-1	26,200	27,000	29,900	
4802	699-S19-E13	47,700	46,000	53,000	
0899	0899	<50	<1,000	<500	

TABLE I.6. Results of Anion Analysis (April 1986)

Well Code	Well Name	Fluoride (ppb) WHC	HEHF	UST	Comments
1873	199-H4-5	170	<100	<500	
1877	199-H4-3	*	<100	<500	
1878	199-H4-4	170	<100	<500	
1890	199-H3-1	250	190	<500	
4402	399-2-1	380	320	<500	
4403	399-1-1	410	370	<500	
4407	399-1-4	520	490	677	>2s (77 ppb)
4410	399-4-1	310	260	<500	
4802	699-S19-E13	320	230	<500	
0899	0899	<5	<100	<500	

* F electrode/Large interfering organic anion peak

Well Code	Well Name	Chloride (ppb) WHC	HEHF	UST	Comments
1873	199-H4-5	4,040	3,800	3,930	
1877	199-H4-3	5,950	6,600	9,870	>2s (2020 ppb)
1878	199-H4-4	3,190	3,400	3,490	
1890	199-H3-1	9,910	9,000	9,040	
4402	399-2-1	19,500	16,500	19,000	
4403	399-1-1	11,000	11,600	10,500	
4407	399-1-4	7,740	7,200	8,410	
4410	399-4-1	9,720	9,000	9,520	
4802	699-S19-E13	15,900	14,400	17,000	
0899	0899	<7	<500		

TABLE I.6. Results of Anion Analysis (April 1986) (cont)

Well Code	Well Name	Nitrate (ppb) WHC	HEHF	UST	Comments
1873	199-H4-5	20,600	22,000	22,400	
1877	199-H4-3	1,590,000	1,830,000	1,590,000	12%
1878	199-H4-4	37,800	43,000	38,700	
1890	199-H3-1	60,500	63,000	54,100	
4402	399-2-1	23,200	23,000	24,600	
4403	399-1-1	21,800	24,000	23,900	
4407	399-1-4	25,500	27,000	26,200	
4410	399-4-1	11,200	11,600	10,400	>2s (710 ppb)
4802	699-S19-E13			20,100	
0899	0899	<30	<200	<500	

Well Code	Well Name	Phosphate (ppb) WHC	HEHF	UST	Comments
1873	199-H4-5	<500	<500	<1,000	All OK
1877	199-H4-3	<500	<500	<1,000	
1878	199-H4-4	<500	---	<1,000	
1890	199-H3-1	<500	<500	<1,000	
4402	399-2-1	<500	<500	<1,000	
4403	399-1-1	<500	<500	<1,000	
4407	399-1-4	<500	<500	<1,000	
4410	399-4-1	<500	<500	<1,000	
4802	699-S19-E13	<500	<500	<1,000	
0899	0899	<200	<500	<1,000	

TABLE I.6. Results of Anion Analysis (April 1986) (cont)

Well Code	Well Name	Sulfate (ppb) WHC	HEHF	UST	Comments
1873	199-H4-5	38,400	37,000	38,000	
1877	199-H4-3	129,000	136,000	328,000	>2s
1878	199-H4-4	32,800	34,000	33,100	
1890	199-H3-1	69,500	70,000	65,800	
4402	399-2-1	17,200	16,300	18,500	
4403	399-1-1	15,600	15,700	17,200	
4407	399-1-4	17,500	17,400	18,400	
4410	399-4-1	26,100	26,000	27,500	
4802	699-S19-E13	23,900	47,000	53,600	
0899	0899	<30		<500	

TABLE I.7. Results of Anion Analysis (May 1986)

Well Code	Well Name	Fluoride (ppb) WHC	HEHF	UST	Comments
1873	199-H4-5	170	<100	<500	All OK
1877	199-H4-3	*	<100	<500	
1878	199-H4-4	220	110	<500	
1890	199-H3-1	300	230	<500	
4402	399-2-1	380	370	<500	
4403	399-1-1	420	390	<500	
4407	399-1-4	520	540	<500	
4410	399-4-1	300	310	<500	
4802	699-S19-E13	310	280	<500	
0899	0899	<4	<100	<500	

* Interference of F

Well Code	Well Name	Chloride (ppb) WHC	HEHF	UST	Comments
1873	199-H4-5	4,230	4,100	4,160	
1877	199-H4-3	6,330	8,600	8,960	
1878	199-H4-4	4,330	4,900	4,440	
1890	199-H3-1	8,530	8,500	8,700	
4402	399-2-1	18,500	19,600	18,000	
4403	399-1-1	12,700	13,000	14,300	
4407	399-1-4	7,260	7,500	7,890	
4410	399-4-1	11,300	11,200	11,600	
4802	699-S19-E13	16,500	18,200	16,600	
0899	0899	6	<500	<500	

TABLE I.7. Results of Anion Analysis (May 1986) (cont)

Well Code	Well Name	Nitrate (ppb) WHC	HEHF	UST	Comments
1873	199-H4-5	25,300	25,000	26,000	
1877	199-H4-3	2,080,000	2,080,000	2,890,000	28% higher
1878	1-H4-4	135,000	143,000	125,000	
1890	199-H3-1	54,400	52,000	52,900	
4402	399-2-1	29,300	30,000	29,800	
4403	399-1-1	24,000	24,000	24,900	
4407	399-1-4	23,000	23,000	23,700	
4410	399-4-1	12,400	12,600	12,300	
4802	699-S19-E13	18,800	20,000	19,600	
0899	0899	<30		<500	

Well Code	Well Name	Phosphate (ppb) WHC	HEHF	UST	Comments
1873	199-H4-5	<300	<500	<1,000	All OK
1877	199-H4-3	<600	<500	<1,000	
187B	199-H4-4	<300	<500	<1,000	
1890	199-H3-1	<300	<500	<1,000	
4402	399-2-1	370	<500	<1,000	
4403	399-1-1	<300	<500	<1,000	
4407	399-1-4	<300	<500	<1,000	
4410	399-4-1	<300	<500	<1,000	
4802	699-S19-E13	<300	<500	<1,000	
0899	0899	<200	<500	<1,000	

TABLE I.7. Results of Anion Analysis (May 1986) (cont)

Well Code	Well Name	Sulfate (ppb) WHC	HEHF	UST	Comments
1873	199-H4-5	42,400	44,000	42,500	UST OK
1877	199-H4-3	158,000	190,000	222,000	
1878	199-H4-4	23,600	47,000	47,400	WHC low
1890	199-H3-1	58,500	61,000	58,300	
4402	399-2-1	19,300	20,000	19,500	
4403	399-1-1	17,600	27,000	17,700	HEHF high
4407	399-1-4	18,000	18,000	18,100	
4410	399-4-1	27,600	28,000	28,600	
4802	699-S19-E13	48,500	46,500	47,700	
0899	0899	49	<1,000	<500	

ANALYSIS RESULTS FOR THE RCRA COMPLIANCE GROUND-WATER MONITORING PROJECT
METALS ANALYSIS BY UST AND HEHF

Results of analyses of metals in ground-water samples are compared, based on EPA Performance Evaluations. Values that differ by more than two standard deviations (using the EPA regression formulas) are noted in the comments column. For values outside the range in which the regression formulas apply, a percentage difference is given.

Regression formulas are as follows:

Barium	$s = 0.0679\ T + 10.7$	Range: 56 - 981 ppb
Cadmium	$s = 0.0660\ T + 0.315$	Range: 1.3 - 325 ppb
Chromium	$s = 0.0938\ T + 0.795$	Range: 5.1 - 1130 ppb
Copper	$s = 0.0449\ T + 1.71$	Range: 5.2 - 892 ppb
Lead	$s = 0.0724\ T + 1.16$	Range: 11.7 - 1570 ppb
Sodium	$s = 0.0516\ T + 0.102$	Range: 1.1 - 68.5 ppm

Where T is the true concentration of the constituent.

Note that the range for sodium is in units of ppm, where those for the other metals are in ppb.

The results of analyses for barium have been inconsistent between the laboratories. Analyses of spiked QC samples from both laboratories have been acceptable, indicating that matrix interference is causing the discrepancies. The analysis method used by UST, ICP (EPA method 6010), is thought to be less likely to run into difficulty with interferences than AA spectroscopy, the analysis method used by HEHF. It is suspected that matrix interference could be causing the result reported by HEHF to be high.

(a) Personal communication from Paul W. Britton, Staff Statistician, Quality Assurance Branch, Environmental Monitoring and Support Laboratory (USEPA), Cincinnati, OH 47268, FTS 684-7325. Documents dated 10/84, received 3/30/86. "Estimation of Acceptance Limits for Drinking Water Laboratory Performance Evaluation" and "Estimation of Acceptance Limits for Water Pollution Laboratory Performance Evaluation."

TABLE I.8. Results of Metals Analysis (February 1986)

Well Code	Well Name	Barium (ppb) HEHF	Barium (ppb) UST	Comments
1873	199-H4-5	190	41	At 100 ppb, 2s = 35.8 ppb
1874	199-H4-6	290	37	ALL analyses, except
1877	199-H4-3	340	97	<detection limit,
1878	199-H4-4	140	41	differ by more than
1890	199-H3-1	320	51	this amount[a].
4402	399-2-1	160	63	
4568	399-4-7	170	36	
4806	399-1-5	100	22	
4837	399-1-6	<100	18	
0899	0899Q	<100	<6	

(a) Analyses by UST are assumed to be accurate.

Well Code	Well Name	Cadmium (ppb) HEHF	Cadmium (ppb) UST	Comments
1873	199-H4-5	<0.5	<2	All OK
1874	199-H4-6	<0.5	<2	
1877	199-H4-3	<0.5	<2	
1878	199-H4-4	<0.5	<2	
1890	199-H3-1	<0.5	<2	
4402	399-2-1	<0.5	<2	
4568	399-4-7	<0.5	<2	
4806	399-1-5	<0.5	<2	
4837	399-1-6	<0.5	<2	
0899	0899Q	<0.5	<2	

TABLE I.8. Results of Metals Analysis (February 1986) (cont)

Well Code	Well Name	Chromium (ppb) HEHF	Chromium (ppb) UST	Comments
1873	199-H4-5	530	492	All OK
1874	199-H4-6	39	40	
1877	199-H4-3	820	733	
1878	199-H4-4	610	571	
1890	199-H3-1	50	62	
4402	399-2-1	<5	<10	
4568	399-4-7	<5	<10	
4806	399-1-5	<5	<10	
4837	399-1-6	<5	<10	
0899	0899Q	<5	<10	

Well Code	Well Name	Copper (ppb) HEHF	Copper (ppb) UST	Comments
1873	199-H4-5	<50	<10	All OK
1874	199-H4-6	<50	<10	
1877	199-H4-3	60	53	
1878	199-H4-4	<50	<10	
1890	199-H3-1	<50	<10	
4402	399-2-1	<50	<13	
4568	399-4-7	<50	<10	
4806	399-1-5	100	107	
4837	399-1-6	100	98	
0899	0899Q	<50	<10	

TABLE I.8. Results of Metals Analysis (February 1986) (cont)

Well Code	Well Name	Lead (ppb)		Comments
		HEHF	UST	
1873	199-H4-5	14	<5	2s (based on HEHF) =
1874	199-H4-6	<5	<5	4.3 ppb
1877	199-H4-3	<5	<5	
1878	199-H4-4	<5	<5	
1890	199-H3-1	<5	<5	
4402	399-2-1	<5	<5	
4568	399-4-7	<5	<5	
4806	399-1-5	<5	<5	
4837	399-1-6	<5	<5	
0899	0899Q	<5	<5	

Well Code	Well Name	Sodium (ppm)		Comments
		HEHF	UST	
1873	199-H4-5	9,300	8,630	
1874	199-H4-6	20,600	22,300	
1877	199-H4-3	470,000	355,000	>30% difference
1878	199-H4-4	190,000	115,000	>40%
1890	199-H3-1	28,300	21,000	>2s (2370 ppb)
4402	399-2-1	17,700	14,700	>2s (1720 ppb)
4568	399-4-7	19,800	17,200	>2s (1980 ppb)
4806	399-1-5	19,800	19,700	
4837	399-1-6	7,800	7,400	
0899	0899Q	250	218	

TABLE I.9. Results of Metals Analysis (March 1986)

Well Code	Well Name	Barium (ppb) HEHF	UST	Comments
1873	199-H4-5	210	42	
1874	199-H4-6	260	40	
1877	199-H4-3	650	181	
1878	199-H4-4	130	32	
1890	199-H3-1	300	50	
4402	399-2-1	160	58	
4568	399-4-7	120	34	
4806	399-1-5	<100	19	
4837	399-1-6	120	19	
0899	0899Q	<100	<6	All >2s[a]

(a) Analyses by UST are assumed to be accurate.

Well Code	Well Name	Cadmium (ppb) HEHF	UST	Comments
1873	199-H4-5	<0.5	<2	All OK
1874	199-H4-6	<0.5	<2	
1877	199-H4-3	<0.5	<2	
1878	199-H4-4	<0.5	<2	
1890	199-H3-1	<0.5	<2	
4402	399-2-1	<0.5	<2	
4568	399-4-7	<0.5	<2	
4806	399-1-5	<0.5	<2	
4837	399-1-6	<0.5	<2	
0899	0899Q	<0.5	<2	

TABLE I.9. Results of Metals Analysis (March 1986) (cont)

Well Code	Well Name	Chromium (ppb) HEHF	Chromium (ppb) UST	Comments
1873	199-H4-5	525	469	All OK
1874	199-H4-6	50	41	
1877	199-H4-3	995	860	
1878	199-H4-4	383	361	
1890	199-H3-1	68	62	
4402	399-2-1	<5	<10	
4568	399-4-7	<5	<10	
4806	399-1-5	<5	<10	
4837	399-1-6	7	<10	
0899	0899Q	<5	<10	

Well Code	Well Name	Lead (ppb) HEHF	Lead (ppb) UST	Comments
1873	199-H4-5	<5	<5	
1874	199-H4-6	<5	<5	
1877	199-H4-3	<5	<5	
1878	199-H4-4	<5	<5	
1890	199-H3-1	<5	<5	
4402	399-2-1	<5	<5	
4568	399-4-7	<5	<5	
4806	399-1-5	<5	<5	
4837	399-1-6	<5	<5	
0899	0899Q	<5	<5	

TABLE I.9. Results of Metals Analysis (March 1986) (cont)

Well Code	Well Name	Sodium (ppm) HEHF	Sodium (ppm) UST	Comments
1873	199-H4-5	8,600	8,730	All OK
1874	199-H4-6	21,000	22,500	
1877	199-H4-3	520,000	568,000	
1878	199-H4-4	103,000	101,000	
1890	199-H3-1	21,000	20,800	
4402	399-2-1	13,100	13,700	
4568	399-4-7	16,000	15,800	
4806	399-1-5	16,100	16,100	
4837	399-1-6	7,200	8,020	
0899	0899Q	<500	476	

TABLE I.10. Results of Metals Analysis (April 1986)

Well Code	Well Name	Barium (ppb) HEHF	UST	Comments
1873	199-H4-5	210	43	
1874	199-H4-6	280	40	
1877	199-H4-3	580	170	
1878	199-H4-4	150	31	
1890	199-H3-1	370	46	
4402	399-2-1	160	49	
4568	399-4-7	180	33	
4806	399-1-5	110	17	
4837	399-1-6	110	18	
0899	0899Q	<100	<6	All >2s[a]

(a) Analyses by UST are assumed to be accurate.

Well Code	Well Name	Cadmium (ppb) HEHF	UST	Comments
1873	199-H4-5	<0.5	<2	All OK
1874	199-H4-6	<0.5	<2	
1877	199-H4-3	<0.5	<2	
1878	199-H4-4	<0.5	<2	
1890	199-H3-1	<0.5	<2	
4402	399-2-1	<0.5	<2	
4568	399-4-7	<0.5	<2	
4806	399-1-5	<0.5	<2	
4837	399-1-6	<0.5	<2	
0899	0899Q	<0.5	<2	

TABLE I.10. Results of Metals Analysis (April 1986) (cont)

Well Code	Well Name	Chromium (ppb) HEHF	Chromium (ppb) UST	Comments
1B73	199-H4-5	460	465	All OK
1874	199-H4-6	49	49	
1877	199-H4-3	840	B32	
1878	199-H4-4	126	115	
1890	199-H3-1	51	47	
4402	399-2-1	<5	<10	
4568	399-4-7	<5	<10	
4806	399-1-5	<5	<10	
4837	399-1-6	<5	<10	
0899	0899Q	<5	<10	

Well Code	Well Name	Copper (ppb) HEHF	Copper (ppb) UST	Comments
1873	199-H4-5	<50	<10	All OK
1874	199-H4-6	<50	<10	
1877	199-H4-3	<50	48	
1878	199-H4-4	<50	<10	
1890	199-H3-1	<50	<10	
4402	399-2-1	<50	13	
4568	399-4-7	<50	<10	
4806	399-1-5	<50	15	
4837	399-1-6	<50	23	
0899	0899Q	<50	<10	

TABLE I.10. Results of Metals Analysis (April 1986) (cont)

Well Code	Well Name	Lead (ppb) HEHF	Lead (ppb) UST	Comments
1873	199-H4-5	<5	<5	All OK
1874	199-H4-6	<5	<5	
1877	199-H4-3	<5	<5	
1878	199-H4-4	<5	<5	
1890	199-H3-1	<5	<5	
4402	399-2-1	<5	<5	
4568	399-4-7	<5	<5	
4806	399-1-5	<5	<5	
4837	399-1-6	<5	<5	
0899	0899Q	<50	<10	

Well Code	Well Name	Sodium (ppm) HEHF	Sodium (ppm) UST	Comments
1873	199-H4-5	8,300	8,550	All OK
1874	199-H4-6	20,700	20,700	
1877	199-H4-3	500,000	542,000	
1878	199-H4-4	19,900	20,900	
1890	199-H3-1	20,900	19,500	
4402	399-2-1	11,700	13,100	
4568	399-4-7	15,600	15,900	
4806	399-1-5	12,500	13,200	
4837	399-1-6	7,900	8,400	
0899	0899Q	<500	237	

TABLE I.11. Results of Metals Analysis (May 1986)

Well Code	Well Name	Barium (ppb)		Comments
		HEHF	UST	
1B73	199-H4-5	220	48	
1874	199-H4-6	220	39	
1877	199-H4-3	820	248	
1878	199-H4-4	210	48	
1890	199-H3-1	230	44	
4402	399-2-1	140	52	
4568	399-4-7	150	36	
4806	399-1-5	110	21	
4837	399-1-6	140	18	
0899	0899Q	<100	<6	All >2s[a]

(a) Analyses by UST are assumed to be accurate.

Well Code	Well Name	Cadmium (ppb)		Comments
		HEHF	UST	
1873	199-H4-5	<5	<2	
1874	199-H4-6	<5	<2	
1877	199-H4-3	<5	<2	
1878	199-H4-4	<5	<2	
1890	199-H3-1	<5	<2	
4402	399-2-1	<5	<2	
4568	399-4-7	<5	<2	
4806	399-1-5	<5	<2	
4837	399-1-6	<5	<2	
0899	0899Q	28	49	>2s (7.1 ppb)

TABLE I.11. Results of Metals Analysis (May 1986) (cont)

Well Code	Well Name	Chromium (ppb) HEHF	UST	Comments
1873	199-H4-5	421	452	All OK
1874	199-H4-6	43	44	
1877	199-H4-3	980	916	
1878	199-H4-4	299	291	
1890	199-H3-1	40	40	
4402	399-2-1	<5	<10	
4568	399-4-7	<5	<10	
4806	399-1-5	<5	<10	
4837	399-1-6	<5	<10	
0899	0899Q	<5	<10	

Well Code	Well Name	Copper (ppb) HEHF	UST	Comments
1873	199-H4-5	<50	<10	All OK
1874	199-H4-6	<50	<10	
1877	199-H4-3	<50	46	
1878	199-H4-4	<50	<10	
1890	199-H3-1	<50	<10	
4402	399-2-1	<50	<10	
4568	399-4-7	<50	<10	
4806	399-1-5	<50	26	
4837	399-1-6	<50	19	
0899	0899Q	<50	<10	

TABLE I.11. Results of Metals Analysis (May 1986) (cont)

Well Code	Well Name	Lead (ppb) HEHF	Lead (ppb) UST	Comments
1873	199-H4-5	<5	5	All OK
1874	199-H4-6	<5	<5	
1877	199-H4-3	<5	<5	
1878	199-H4-4	<5	<5	
1890	199-H3-1	<5	<5	
4402	399-2-1	<5	<5	
4568	399-4-7	<5	<5	
4806	399-1-5	<5	<5	
4837	399-1-6	<5	<5	
0899	0899Q	<5	<5	

Well Code	Well Name	Sodium (ppm) HEHF	Sodium (ppm) UST	Comments
1873	199-H4-5	10,000	9,300	
1874	199-H4-6	21,300	20,000	
1877	199-H4-3	560,000	638,000	12% difference
1878	199-H4-4	46,000	48,000	
1890	199-H3-1	19,000	19,200	
4402	399-2-1	15,300	15,000	
4568	399-4-7	17,500	17,500	
4806	399-1-5	11,600	11,600	
4837	399-1-6	8,700	8,230	
0899	0899Q	<500	271	

ANALYSIS RESULTS FOR THE RCRA COMPLIANCE GROUND-WATER MONITORING PROJECT
ANALYSIS OF VOLATILE ORGANIC COMPOUNDS BY PNL AND UST

Analyses of three volatile organic compounds in ground-water samples were performed by PNL and UST. These results are compared based on EPA Performance Evaluations[a]. Values that differ by more than two standard deviations using the EPA regression formulas are noted in the comments column.

Regression formulas are as follows:

1,1,1-Trichloroethane	$s = 0.130T + 0.337$	Range: 1.6 to 49.7 ppb
Chloroform	$s = 0.102T + 0.198$	Range: 5.9 to 102 ppb
Perchloroethylene	$s = 0.127T + 0.326$	Range: 6.0 to 92 ppb

Where T is the true concentration of the constituent (in ppb). Since T is not known, the value from UST is used to estimate the magnitude of s, the standard deviation.

(a) Personal communication from Paul W. Britton, Staff Statistician, Quality Assurance Branch, Environmental Monitoring and Support Laboratory (USEPA), Cincinnati, OH 45268, FTS 684-7325. Documents dated 10/84, received 3/30/86. "Estimation of Acceptance Limits for Drinking Water Laboratory Performance Evaluation" and "Estimation of Acceptance Limits for Water Pollution Laboratory Performance Evalution."

TABLE I.12. Organic Analyses from PNL and UST Labs (November/December 1985)

Well Code	Well Name	1,1,1-Trichloroethane PNL	UST	Comments
1873	199-H4-5	0.28	<10	
1874	199-H4-6	2.26 ± 0.08	<10	
1877	199-H4-3	0.49	<10	
1878	199-H4-4	0.51	<10	
1890	199-H3-1	0.84	<10	
4400	399-T-1	0.87	<10	
4402	399-2-1	1.29	<10	
4403	399-1-1	1.21	<10	
4404	399-1-2	0.84	<10	
4406	399-1-3	----	<10	
4407	399-1-4	0.57	<10	
4408	399-8-2	17.87 ± 0.34	<10	>2s (3.0 ppb)
4410	399-4-1	0.87	<10	
4802	699-S19-E13	0.70	<10	
4804	699-S30-E15A	2.74 ± 0.12	<10	
4806	399-1-5	0.55	<10	
4837	399-1-6	0.63	<10	
4839	399-3-7	----	<10	
4896	399-T-2	0.38	<10	
0899	0899(B)	0.09	<10	

TABLE I.12. Organic Analyses from PNL and UST Labs (November/December 1985) (cont)

Well Code	Well Name	Chloroform (ppb) PNL	UST	Comments
1873	199-H4-5	33.06	24	>2s (5.3 ppb)
1874	199-H4-6	32.65 ± 0.97	19	>2s (4.3 ppb)
1877	199-H4-3	35.88	26	>2s (5.7 ppb)
1878	199-H4-4	8.68	----	
1890	199-H3-1	6.92	----	
4400	399-T-1	16.42	12	>2s (2.8 ppb)
4402	399-2-1	15.11	----	
4403	399-1-1	18.38	13	>2s (3.0 ppb)
4404	399-1-2	17.41	12	>2s (2.8 ppb)
4406	399-1-3	----	12	
4407	399-1-4	13.62	11	
4408	399-8-2	1.07 ± 0.13	----	
4410	399-4-1	9.83	----	
4802	699-S19-E13	0.09	----	
4804	699-S30-E15A	3.59 ± 0.20	----	
4806	399-1-5	12.92	11	
4837	399-1-6	13.39	----	
4896	399-T-2	9.27	----	
0899	0899(B)	7.79	----	

TABLE I.12. Organic Analyses from PNL and UST Labs (November/December 1985) (cont)

Well Code	Well Name	Perchloroethylene PNL	UST	Comments
1873	199-H4-5	0.75	<10	
1874	199-H4-6	10.96 ± 0.04	<10	
1877	199-H4-3	3.36	<10	
1878	199-H4-4	3.06	<10	
1890	199-H3-1	3.33	<10	
4400	399-T-1	8.58	<10	
4402	399-2-1	6.14	<10	
4403	399-1-1	4.14	<10	
4404	399-1-2	6.18	<10	
4406	399-1-3	----	<10	
4407	399-1-4	6.27	<10	
4408	399-8-2	13.65 ± 0.19	<10	
4410	399-4-1	7.67	<10	
4802	699-S19-E13	2.59	<10	
4804	699-S30-E15A	2.77 ± 0.05	<10	
4806	399-1-5	4.96	<10	
4837	399-1-6	4.12	<10	
4839	399-3-7	----	<10	
4896	399-T-2	3.91	<10	
0899	0899(B)	0.06	<10	

TABLE I.13. Organic Analyses from PNL and UST (January 1986)

Well Code	Well Name	1,1,1-Trichloroethane PNL	1,1,1-Trichloroethane UST	Comments
1B73	199-H4-5	0.06 ± 0.02	14	>2s (4.3 ppb)
1877	199-H4-3	1.12	11	>2s (3.5 ppb)
1B78	199-H4-4	1.41 ± 0.06	<10	
1890	199-H3-1	0.35	22	>2s (6.4 ppb)
4400	399-T-1	0.42	<10	
4402	399-2-1	0.78	<10	
4403	399-1-1	0.51	<10	
4404	399-1-2	0.54	<10	
4407	399-1-4	0.63	<10	
4408	399-8-2	10.62*	<10	
4410**	399-4-1	0.79	<10	
4802	699-S19-E13	0.68	<10	
4804	699-S30-E15A	0.17	<10	
4806	399-1-5	0.38	<10	
4837	399-1-6	0.42 ± 0.02	<10	
4896	399-T-2	0.15	<10	
0899	0899(B)	0.05,0.07[(a)]	<10	

* Slight shift of 1,1,1-TCE retention time in 4408. Impurities could be present.

** In most samples higher concentrations of trichloroethene than 1,1,1-TCE is observed but in 4410 much higher concentrations of trichloroethene are present.

TABLE I.13. Organic Analyses from PNL and UST Labs (January 1986) (cont)

Well Code	Well Name	Chloroform (ppb) PNL	UST	Comments
1873	199-H4-5	28.39 ± 1.46	27	All OK
1877	199-H4-3	28.66	31	
1878	199-H4-4	25.82 ± 0.02	22	
1890	199-H3-1	5.87	<10	
4400	399-T-1	11.92	12	
4402	399-2-1	10.43	----	
4403	399-1-1	12.51	11	
4404	399-1-2	9.6	12	
4407	399-1-4	10.59	11	
4408	399-8-2	0.68	----	
4410	399-4-1	6.17	----	
4802	699-S19-E13	2.26	<10	
4804	699-S30-E15A	3.01	----	
4806	399-1-5	10.90	14	
4837	399-1-6	9.90 ± 0.25	----	
4896	399-T-2	4.86	----	
0899	0899(B)	8.55,7.55[a]	11	

TABLE I.13. Organic Analyses from PNL and UST Labs (January 1986) (cont)

Well Code	Well Name	Perchloroethylene PNL	UST	Comments
1873	199-H4-5	0.03 ± 0.0	<10	All OK
1877	199-H4-3	4.81	<10	
1878	199-H4-4	5.26 ± 0.19	<10	
1890	199-H3-1	1.74	<10	
4400	399-T-1	7.66	<10	
4402	399-2-1	4.32	<10	
4403	399-1-1	3.25	<10	
4404	399-1-2	4.17	<10	
4407	399-1-4	4.55	<10	
4408	399-8-2	6.64	<10	
4410	399-4-1	6.14	<10	
4802	699-S19-E13	3.11	<10	
4804	699-S30-E15A	0.26	<10	
4806	399-1-5	1.94	<10	
4837	399-1-6	2.27 ± 0.11	<10	
4896	399-T-2	1.77	<10	
0899	0899(B)	0.03	<10	

TABLE I.14. Organic Analyses from PNL and UST Labs (February 1986)

Well Code	Well Name	1,1,1-Trichloroethane PNL	UST	Comments
1873	199-H4-5	0.02	<10	All OK
1874	199-H4-6	0.42 ± 0.01	<10	
1877	199-H4-3	0.81 ± 0.02	<10	
1878	199-H4-4	0.82	<10	
1890	199-H3-1	0.73	<10	
4400	399-T-1	1.26	<10	
4402	399-2-1	0.59	<10	
4403	399-1-1	1.60	<10	
4404	399-1-2	1.34	<10	
4406	399-1-3	1.06	<10	
4407	399-1-4	1.33	<10	
4408	399-8-2	<9.5 (≅2.5)*	<10	
4410	399-4-1	----	<10	
4802	699-S19-E13	<0.72 (≅0.2)*	<10	
4804	699-S30-E15A	0.20	<10	
4806	399-1-5	1.10 ± 0.27	<10	
4837	399-1-6	1.38	<10	
4839	399-3-7	0.17	<10	
4896	399-T-2	0.65	<10	
0899	0899(B)	0.30	<10	

TABLE I.14. Organic Analyses from PNL and UST Labs (February 1986) (cont)

Well Code	Well Name	Chloroform (ppb) PNL	UST	Comments
1873	199-H4-5	24.54	25	All OK
1874	199-H4-6	15.91 ± 0.01	17	
1877	199-H4-3	25.96 ± 0.58	29	
1878	199-H4-4	18.61	22	
1890	199-H3-1	5.47	<4.6	
4400	399-T-1	10.31	11	
4402	399-2-1	8.13	<7.8	
4403	399-1-1	11.03	11	
4404	399-1-2	11.25	11	
4406	399-1-3	11.54	12	
4407	399-1-4	10.42	10	
4408	399-8-2	0.85		
4410	399-4-1	----		
4802	699-S19-E13	0.31		
4804	699-S30-E15A	2.97		
4806	399-1-5	10.64 ± 0.22	10	
4837	399-1-6	10.78	10	
4839	399-3-7	3.45		
4896	399-T-2	6.70	6.8	
0899	0899(B)	1.01		

TABLE I.14. Organic Analyses from PNL and UST Labs (February 1986) (cont)

Well Code	Well Name	Perchloroethylene PNL	Perchloroethylene UST	Comments
1873	199-H4-5	0.03	<10	All OK
1874	199-H4-6	2.33 ± 0.05	<2.5	
1877	199-H4-3	3.00 ± 0.12	<2.2	
1878	199-H4-4	3.08	<3.9	
1890	199-H3-1	0.66	<10	
4400	399-T-1	2.96	<3.7	
4402	399-2-1	2.29	<10	
4403	399-1-1	1.98	<10	
4404	399-1-2	2.22	<3	
4406	399-1-3	4.08	<4.1	
4407	399-1-4	2.74	<4	
4408	399-8-2	3.98	<3.1	
4410	399-4-1	----	<10	
4802	699-S19-E13	2.40	<10	
4804	699-S30-E15A	0.26	<10	
4806	399-1-5	2.32 ± 0.07	<2.6	
4837	399-1-6	2.18	<3	
4839	399-3-7	0.81	<10	
4896	399-T-2	1.31	<10	
0899	0899(B)	0.13	<10	

* Values in parenthesis (1,1,1-TCE) are estimated concentration of carbon tetrachloride. 1,1,1,-TCE and CCl_4 are poorly resolved and when CCl_4 is present in samples, determination of 1,1,1- TCE is difficult.

TABLE I.15. Organic Analyses from PNL and UST Labs (March 1986)

Well Code	Well Name	1,1,1-Trichloroethane PNL	1,1,1-Trichloroethane UST	Comments
1873	199-H4-5	0.02	<10	All OK
1874	199-H4-6	0.47 ± 0.01	<10	
1877	199-H4-3	7.50 ± 0.27	<5.9	
1878	199-H4-4	1.12	<10	
1890	199-H3-1	0.85	<10	
4400	399-T-1	---- ***	<10	
4402	399-2-1	0.84 *	<10	
4403	399-1-1	1.06	<10	
4404	399-1-2	0.89	<10	
4406	399-1-3	0.84	<10	
4407	399-1-4	0.83 ± 0.03	<10	
4408	399-8-2	<7.89 (≅2.0)**	<10	
4410	399-4-1	<0.39 (≅0.2) *,**	<10	
4802	699-S19-E13	<0.58 (≅0.2)**	<10	
4804	699-S30-E15A	0.15	<10	
4806	399-1-5	0.86	<10	
4837	399-1-6	0.57	<10	
4839	399-3-7	0.32	<10	
4896	399-T-2	---- ***	<10	
0899	0899(B)	0.24	<10	

TABLE I.15. Organic Analyses from PNL and UST Labs (March 1986) (cont)

Well Code	Well Name	Chloroform (ppb) PNL	Chloroform (ppb) UST	Comments
1873	199-H4-5	22.24	27	All OK
1874	199-H4-6	13.56 ± 0.02	14	
1877	199-H4-3	23.65 ± 1.67	23	
1878	199-H4-4	15.07	16	
1890	199-H3-1	3.33	<2.9	
4400	399-T-1	---- ***	<9	
4402	399-2-1	8.19	<7.9	
4403	399-1-1	9.54	<9.1	
4404	399-1-2	9.12	<9.6	
4406	399-1-3	9.41	10	
4407	399-1-4	10.17 ± 0.17	11	
4408	399-8-2	0.73	----	
4410	399-4-1	6.26	<6.2	
4802	699-S19-E13	0.91	----	
4804	699-S30-E15A	2.34	----	
4806	399-1-5	10.94	12	
4837	399-1-6	7.43	<7.3	
4839	399-3-7	4.35	<4.1	
4896	399-T-2	---- ***	<4.3	
0899	0899(B)	0.76	----	

TABLE I.15. Organic Analyses from PNL and UST Labs (March 1986) (cont)

Well Code	Well Name	Perchloroethylene PNL	Perchloroethylene UST	Comments
1873	199-H4-5	0.02	<10	All OK
1874	199-H4-6	2.23 ± 0.05	<10	
1877	199-H4-3	5.45 ± 0.23	<4.8	
1878	199-H4-4	3.31	<2.8	
1890	199-H3-1	0.82	<10	
4400	399-T-1	---- ***	<2.3	
4402	399-2-1	2.34	<10	
4403	399-1-1	2.07	<10	
4404	399-1-2	2.48	<2.3	
4406	399-1-3	3.42	<2.8	
4407	399-1-4	2.57 ± 0.08	<2	
4408	399-8-2	4.25	<4.4	
4410	399-4-1	2.13	<2	
4802	699-S19-E13	1.71	<10	
4804	699-S30-E15A	0.25	<10	
4806	399-1-5	1.95	<10	
4837	399-1-6	1.86	<10	
4839	399-3-7	1.26	<10	
4896	399-T-2	---- ***	<10	
0899	0899(B)	0.12	<10	

* Sample 4402 has ≅5 ppb and 4410 has ≅7 ppb trichloroethylene.
** Carbon tetrachloride (estimated concentration given in parenthesis) causes poor analysis of 1,1,1-TCE.
*** Samples 4400 and 4896 broken before arrival at PNL laboratory.

TABLE I.16. Organic Analyses from PNL and UST Labs (April 1986)

Well Code	Well Name	1,1,1-Trichloroethane PNL	1,1,1-Trichloroethane UST	Comments
1873	199-H4-5	14.81 ± 0.90	<10	All OK
1874	199-H4-6	16.32*	14	
1877	199-H4-3	18.52 ± 0.32	24.4	
1878	199-H4-4	0.92	<10	
1890	199-H3-1	2.92	<10	
4400	399-T-1	1.03	<10	
4402	399-2-1	0.46	<10	
4403	399-1-1	0.75	<10	
4404	399-1-2	1.32	<10	
4406	399-1-3	1.17	<10	
4407	399-1-4	1.25 ± 0.00	<10	
4408	399-8-2	<6.61 (≅2.0)**	<10	
4410	399-4-1	---- **	<10	
4802	699-S19-E13	0.46	<10	
4804	699-S30-E15A	---- **	<10	
4806	399-1-5	0.44	<10	
4837	399-1-6	0.47	<10	
4839	399-3-7	0.54	<10	
4896	399-T-2	---- **	<10	
0899	0899(B)	0.13	<10	

TABLE I.16. Organic Analyses from PNL and UST Labs (April 1986) (cont)

Well Code	Well Name	Chloroform (ppb) PNL	UST	Comments
1873	199-H4-5	26.39 ± 1.82	27	
1874	199-H4-6	18.22*	15	
1877	199-H4-3	12.70 ± 0.64	27.1	>2s (5.9 ppb)
1878	199-H4-4	6.92	----	
1890	199-H3-1	3.62	<10	
4400	399-T-1	8.95	<9.2	
4402	399-2-1	9.12	<8.9	
4403	399-1-1	9.52	<8.9	
4404	399-1-2	11.60	12	
4406	399-1-3	9.94	11	
4407	399-1-4	11.41 ± 0.17	11	
4408	399-8-2	0.72	----	
4410	399-4-1	---- **	<8	
4802	699-S19-E13	0.07	<10	
4804	699-S30-E15A	---- **	----	
4806	399-1-5	11.74	12	
4837	399-1-6	11.49	12	
4839	399-3-7	7.62	<8.3	
4896	399-T-2	---- **	<7.2	
0899	0899(B)	0.36	<10	

* Observed broken cap, possible poor seal on 1874.
** 4410, 4804, and 4896 broken before arrival to PNL laboratory.

TABLE I.16. Organic Analyses from PNL and UST Labs (April 1986) (cont)

Well Code	Well Name	Perchloroethylene PNL	Perchloroethylene UST	Comments
1873	199-H4-5	9.66 ± 0.42	<10	All OK
1874	199-H4-6	14.94 *	15	
1877	199-H4-3	12.32 ± 0.15	11.4	
1878	199-H4-4	2.98	<10	
1890	199-H3-1	1.61	<10	
4400	399-T-1	1.80	<10	
4402	399-2-1	1.75	<10	
4403	399-1-1	1.89	<10	
4404	399-1-2	2.73	<10	
4406	399-1-3	3.03	<3.5	
4407	399-1-4	3.36 ± 0.11	<10	
4408	399-8-2	4.26	<4.6	
4410	399-4-1	---- **	<10	
4802	699-S19-E13	2.47	<10	
4804	699-S30-E15A	---- **	<10	
4806	399-1-5	1.71	<10	
4837	399-1-6	1.74	<10	
4839	399-3-7	1.58	<10	
4896	399-T-2	---- **	<10	
0899	0899(B)	0.07	<10	

* Observed broken cap, possible poor seal on 1874.
** 4410, 4804, and 4896 broken before arrival to PNL laboratory.

TABLE I.17. Organic Analyses from PNL and UST Labs (May 1986)

Well Code	Well Name	1,1,1-Trichloroethane PNL	UST	Comments
1873	199-H4-5	0.27 ± 0.01	<10	All OK
1874	199-H4-6	0.24	<10	
1877	199-H4-3	0.56	<10	
1878	199-H4-4	0.41	<10	
1890	199-H3-1	5.80 ± 0.14	<10	
4400	399-1-7	3.24	<10	
4402	399-2-1	1.14	<10	
4403	399-1-1	2.21	<10	
4404	399-1-2	2.82	<10	
4406	399-1-3	3.55	<10	
4407	399-1-4	2.24	<10	
4408	399-8-2	<3.0 *	<10	
4410	399-4-1	≅0.2 *	<10	
4802	699-S19-E13	0.49	<10	
4804	699-S30-E15A	0.27	<10	
4806	399-1-5	9.23	<10	
4837	399-1-6	1.69 ± 0.20	<10	
4839	399-3-7	0.54	<10	
4896	399-1-8	7.80	<10	
0899	0899	0.09	<10	

* 1,1,1 TCE results are approximate because carbon tetrachloride is present in these well locations.

TABLE I.17. Organic Analyses from PNL and UST Labs (May 1986) (cont)

Well Code	Well Name	Chloroform (ppb) PNL	Chloroform (ppb) UST	Comments
1873	199-H4-5	20.97 ± 0.82	29	>2s (6.3 ppb)
1874	199-H4-6	11.18	14	
1877	199-H4-3	18.13	32	>2s (6.9 ppb)
1878	199-H4-4	11.65	14	
1890	199-H3-1	7.75 ± 0.19	----	
4400	399-1-7	12.47	12	
4402	399-2-1	6.9	----	
4403	399-1-1	10.74	11	
4404	399-1-2	12.74	13	
4406	399-1-3	14.48	13	
4407	399-1-4	14.51	13	
4408	399-8-2	0.97	----	
4410	399-4-1	8.46	----	
4802	699-S19-E13	0.30	----	
4804	699-S30-E15A	2.38	----	
4806	399-1-5	17.97	17	
4837	399-1-6	14.14 ± 0.45	13	
4839	399-3-7	6.45	----	
4896	399-1-8	6.95	----	
0899	0899	0.32	----	

TABLE I.17. Organic Analyses from PNL and UST Labs (May 1986) (cont)

Well Code	Well Name	Perchloroethylene PNL	UST	Comments
1873	199-H4-5	1.27	<10	All OK
1874	199-H4-6	1.46	<10	
1877	199-H4-3	2.29	<10	
1878	199-H4-4	2.01	<10	
1890	199-H3-1	2.15 ± 0.06	<10	
4400	399-1-7	3.27	<10	
4402	399-2-1	2.57	<10	
4403	399-1-1	2.71	<10	
4404	399-1-2	3.12	<10	
4406	399-1-3	3.85	<10	
4407	399-1-4	3.61	<10	
4408	399-8-2	4.14	<10	
4410	399-4-1	2.74	<10	
4802	699-S19-E13	3.22	<10	
4804	699-S30-E15A	1.15	<10	
4806	399-1-5	2.56	<10	
4837	399-1-6	2.59	<10	
4839	399-3-7	2.61	<10	
4896	399-1-8	2.00	<10	
0899	0899	0.82	<10	

TABLE I.18. Organic Analyses from PNL and UST Labs (June 1986)

Well Code	Well Name	1,1,1-Trichloroethane PNL	1,1,1-Trichloroethane UST	Comments
1873	199-H4-5	0.78 ± 0.04	<10	All OK
1874	199-H4-6	1.76	<10	
1877	199-H4-3	1.10	<10	
1878	199-H4-4	0.56	<10	
1890	199-H3-1	3.27 ± 0.10	<10	
4400	399-1-7	1.22	<10	
4402	399-2-1	1.90	<10	
4403	399-1-1	1.36	<10	
4404	399-1-2	1.36	<10	
4406	399-1-3	1.07	<10	
4407	399-1-4	1.21	<10	
4408	399-8-2	<3 *	<10	
4410	399-4-1	<1	<10	
4802	699-S19-E13	0.75	<10	
4804	699-S30-E15A	0.99	<10	
4806	399-1-5	0.88	<10	
4837	399-1-6	0.98	<10	
4839	399-3-7	1.34	<10	
4896	399-1-8	0.54 ± 0.03	<10	
0899	0899Q	0.08	<10	

TABLE I.18. Organic Analyses from PNL and UST Labs (June 1986) (cont)

Well Code	Well Name	Chloroform (ppb) PNL	UST	Comments
1873	199-H4-5	23.29 ± 0.84	22	All OK
1874	199-H4-6	13.50	12	
1877	199-H4-3	28.34	25	
1878	199-H4-4	19.44	17	
1890	199-H3-1	10.66 ± 0.22	----	
4400	399-1-7	21.74	19	
4402	399-2-1	11.53	11	
4403	399-1-1	16.56	17.9	
4404	399-1-2	19.31	18	
4406	399-1-3	20.05	18	
4407	399-1-4	20.5	19	
4408	399-8-2	0.93	----	
4410	399-4-1	5.64	----	
4802	699-S19-E13	0.20	----	
4804	699-S30=E15A	4.18	----	
4806	399-1-5	18.04	18	
4837	399-1-6	17.87	18	
4839	399-3-7	5.73	----	
4896	399-1-8	10.53 ± 0.09	----	

TABLE I.18. Organic Analyses from PNL and UST Labs (June 1986) (cont)

Well Code	Well Name	Perchloroethylene PNL	Perchloroethylene UST	Comments
1873	199-H4-5	1.91 ± 0.20	<10	All OK
1874	199-H4-6	2.48	<10	
1877	199-H4-3	2.86	<10	
1878	199-H4-4	2.52	<10	
1890	199-H3-1	2.14 ± 0.16	<10	
4400	399-1-7	3.40	<10	
4402	399-2-1	3.79	<10	
4403	399-1-1	3.08	<10	
4404	399-1-2	3.12	<10	
4406	399-1-3	3.14	<10	
4407	399-1-4	2.69	<10	
4408	399-8-2	3.84	<10	
4410	399-4-1	2.59	<10	
4802	699-S19-E13	2.34	<10	
4804	699-S30-E15A	1.41	<10	
4806	399-1-5	2.15	<10	
4837	399-1-6	2.09	<10	
4839	399-3-7	1.78	<10	
4896	399-1-8	1.56 ± 0.10	<10	
0899	0899Q	0.96	<10	

WATER POLLUTION STUDY RESULTS

PERFORMANCE EVALUATION REPORT DATE: 06/03/86

WATER POLLUTION STUDY NUMBER WP016

LABORATORY: WA023

PARAMETERS	SAMPLE NUMBER	REPORT VALUE	TRUE VALUE*	ACCEPTANCE LIMITS	WARNING LIMITS	PERFORMANCE EVALUATION
TRACE METALS IN MICROGRAMS PER LITER:						
ALUMINUM	1	1972	2129	1780.-2430.	1860.-2350.	ACCEPTABLE
	2	676	700	557.- 850.	594.- 813.	ACCEPTABLE
ARSENIC	1	312	342	244.- 419.	266.- 397.	ACCEPTABLE
	2	160	191	131.- 244.	145.- 230.	ACCEPTABLE
BERYLLIUM	1	272	291	246.- 326.	256.- 316.	ACCEPTABLE
	2	626	661	564.- 749.	588.- 725.	ACCEPTABLE
CADMIUM	1	286	307	269.- 348.	279.- 338.	ACCEPTABLE
	2	114	119.3	105.- 134.	108.- 131.	ACCEPTABLE
COBALT	1	892	953	783.-1090.	822.-1050.	ACCEPTABLE
	2	200	210	176.- 244.	184.- 235.	ACCEPTABLE
CHROMIUM	1	269	274	213.- 331.	227.- 316.	ACCEPTABLE
	2	689	688	534.- 826.	571.- 790.	ACCEPTABLE
COPPER	1	358	380	332.- 422.	344.- 411.	ACCEPTABLE
	2	710	749	651.- 830.	679.- 809.	ACCEPTABLE
IRON	1	1233	1311	1120.-1480.	1170.-1440.	ACCEPTABLE
	2	608	633	530.- 722.	561.- 699.	ACCEPTABLE
MERCURY	1	48.8	50.0	34.4- 65.9	38.3- 61.9	ACCEPTABLE
	2	15.9	15.0	10.1- 20.7	11.4- 19.4	ACCEPTABLE
MANGANESE	1	505	510	448.- 564.	463.- 550.	ACCEPTABLE
	2	145	150	129.- 169.	134.- 164.	ACCEPTABLE
NICKEL	1	514	532	460.- 605.	479.- 587.	ACCEPTABLE
	2	897	911	791.-1030.	821.-1000.	ACCEPTABLE
LEAD	1	102	118.8	89.0- 146.	98.1- 139.	ACCEPTABLE
	2	755	851	706.- 984.	740.- 949.	ACCEPTABLE

* BASED UPON THEORETICAL CALCULATIONS, OR A REFERENCE VALUE WHEN NECESSARY.

PERFORMANCE EVALUATION REPORT DATE: 06/03/86

WATER POLLUTION STUDY NUMBER WP016

LABORATORY: MA023

PARAMETERS	SAMPLE NUMBER	REPORT VALUE	TRUE VALUE*	ACCEPTANCE LIMITS	WARNING LIMITS	PERFORMANCE EVALUATION
TRACE METALS IN MICROGRAMS PER LITER:						
SELENIUM	1	47.9	54.9	32.6- 66.9	36.9- 62.6	ACCEPTABLE
	2	65.4	90.0	54.1- 109.	61.1- 102.	ACCEPTABLE
VANADIUM	1	1652	1660	1370.-1930.	1440.-1860.	ACCEPTABLE
	2	656	650	511.- 778.	545.- 744.	ACCEPTABLE
ZINC	1	350	383	333.- 429.	345.- 417.	ACCEPTABLE
	2	850	893	782.- 994.	809.- 967.	ACCEPTABLE
ANTIMONY	3	58.5	64.8	41.8- 92.9	48.3- 86.5	ACCEPTABLE
	4	68.8	75.6	52.7- 106.	59.5- 99.7	ACCEPTABLE
SILVER	3	2.60	2.60	1.50- 3.62	1.76- 3.35	ACCEPTABLE
	4	18.0	18.2	13.9- 23.2	15.1- 22.0	ACCEPTABLE
THALLIUM	3	24.5	20.0	14.6- 26.8	16.1- 25.2	ACCEPTABLE
	4	66.4	60.0	38.5- 84.0	44.3- 78.2	ACCEPTABLE
MOLYBDENUM	3	11.0	11.6	4.25- 18.6	6.11- 16.8	ACCEPTABLE
	4	57.5	58.1	36.1- 79.0	42.2- 72.9	ACCEPTABLE
STRONTIUM	3	11.4	11.8	8.60- 15.4	9.61- 14.4	ACCEPTABLE
	4	34.5	33.8	25.6- 42.2	28.1- 39.8	ACCEPTABLE
TITANIUM	3	50.0	55.8	32.7- 79.5	39.3- 72.9	ACCEPTABLE
	4	114	125.6	90.0- 166.	101.- 155.	ACCEPTABLE
MINERALS IN MILLIGRAMS PER LITER: (EXCEPT AS NOTED)						
PH-UNITS	3	6.64	6.70	6.54- 6.83	6.58- 6.80	ACCEPTABLE
	4	4.42	4.50	4.38- 4.59	4.41- 4.56	ACCEPTABLE
SPEC. COND.	1	510	568	516.- 637.	531.- 622.	NOT ACCEPTABLE
(UMHOS/CM AT 25 C)	2	124	135	125.- 153.	129.- 150.	NOT ACCEPTABLE

* BASED UPON THEORETICAL CALCULATIONS, OR A REFERENCE VALUE WHEN NECESSARY.

PERFORMANCE EVALUATION REPORT DATE: 06/03/96

WATER POLLUTION STUDY NUMBER WP016

LABORATORY: WA023

PARAMETERS	SAMPLE NUMBER	REPORT VALUE	TRUE VALUE*	ACCEPTANCE LIMITS	WARNING LIMITS	PERFORMANCE EVALUATION
MINERALS IN MILLIGRAMS PER LITER (EXCEPT AS NOTED)						
TOTAL HARDNESS	1	161	160	153.- 188.	157.- 177.	ACCEPTABLE
(AS CACO3)	2	25.2	26.1	21.9- 30.1	22.9- 29.0	ACCEPTABLE
CALCIUM	1	34.61	36.0	31.0- 40.4	32.1- 39.2	ACCEPTABLE
	2	9.45	9.80	8.20- 11.3	8.59- 10.9	ACCEPTABLE
MAGNESIUM	1	18.04	19.0	15.8- 21.8	16.5- 21.0	ACCEPTABLE
	2	0.378	0.400	.289- .497	.315- .471	ACCEPTABLE
SODIUM	1	23.40	25.1	21.9- 28.7	22.7- 27.8	ACCEPTABLE
	2	9.27	9.90	8.29- 11.5	8.69- 11.1	ACCEPTABLE
POTASSIUM	1	22.40	25.0	20.0- 28.7	21.1- 27.6	ACCEPTABLE
	2	7.12	8.00	6.34- 9.39	6.72- 9.00	ACCEPTABLE
CHLORIDE	1	116	119	109.- 128.	111.- 126.	ACCEPTABLE
	2	18.8	18.5	15.4- 21.5	16.1- 20.8	ACCEPTABLE
FLUORIDE	1	1.53	1.30	1.08- 1.49	1.13- 1.44	NOT ACCEPTABLE
	2	0.474	0.397	.319- .449	.341- .468	CHECK FOR ERROR
SULFATE	1	54.0	55.0	43.7- 65.3	46.4- 62.6	ACCEPTABLE
	2	18.6	18.0	13.9- 21.6	14.9- 20.6	ACCEPTABLE
NUTRIENTS IN MILLIGRAMS PER LITER:						
AMMONIA-NITROGEN	1	4.36	4.60	3.68- 5.49	3.90- 5.28	ACCEPTABLE
	2	6.69	7.22	5.87- 8.55	6.19- 8.23	ACCEPTABLE
NITRATE-NITROGEN	1	2.68	2.50	2.05- 2.95	2.16- 2.84	ACCEPTABLE
	2	1.48	1.50	1.19- 1.79	1.26- 1.72	ACCEPTABLE
ORTHOPHOSPHATE	1	1.39	1.31	1.09- 1.51	1.14- 1.46	ACCEPTABLE
	2	3.25	3.21	2.74- 3.66	2.85- 3.55	ACCEPTABLE

* BASED UPON THEORETICAL CALCULATIONS, OR A REFERENCE VALUE WHEN NECESSARY.

PERFORMANCE EVALUATION REPORT DATE: 06/03/86

WATER POLLUTION STUDY NUMBER WP016

LABORATORY: WA023

PARAMETERS	SAMPLE NUMBER	REPORT VALUE	TRUE VALUE*	ACCEPTANCE LIMITS	WARNING LIMITS	PERFORMANCE EVALUATION
DEMANDS IN MILLIGRAMS PER LITER:						
TOC	1	32.2	38.6	28.9- 47.7	31.4- 45.3	ACCEPTABLE
	2	23.1	26.7	19.9- 33.3	21.6- 31.5	ACCEPTABLE
PCB'S IN MICROGRAMS PER LITER:						
PCB-AROCLOR 1232	1	4.02	4.98	2.23- 6.43	2.77- 5.90	ACCEPTABLE
PCB-AROCLOR 1248	2	1.98	2.39	1.15- 3.17	1.41- 2.92	ACCEPTABLE
PESTICIDES IN MICROGRAMS PER LITER:						
ALDRIN	1	0.113	0.161	.0403- .220	.0632- .197	ACCEPTABLE
	2	0.428	0.626	.175- .817	.257- .735	ACCEPTABLE
DIELDRIN	1	0.130	0.136	.0645- .198	.0815- .181	ACCEPTABLE
	2	0.536	0.484	.261- .658	.311- .608	ACCEPTABLE
DDD	1	0.227	0.240	.107- .351	.138- .320	ACCEPTABLE
	2	0.901	0.666	.335- .901	.407- .829	CHECK FOR ERROR
DDE	1	0.152	0.128	.0641- .214	.0832- .195	ACCEPTABLE
	2	0.408	0.369	.181- .525	.225- .481	ACCEPTABLE
DDT	1	0.259	0.319	.134- .456	.174- .415	ACCEPTABLE
	2	0.877	0.957	.498- 1.39	.610- 1.28	ACCEPTABLE
HEPTACHLOR	1	0.123	0.127	.0361- .194	.0562- .174	ACCEPTABLE
	2	0.446	0.476	.224- .645	.277- .592	ACCEPTABLE
HEPTACHLOR EPOXIDE	1	0.075	0.075	.0396- .111	.0487- .102	ACCEPTABLE
	2	0.341	0.360	.196- .484	.233- .448	ACCEPTABLE

* BASED UPON THEORETICAL CALCULATIONS, OR A REFERENCE VALUE WHEN NECESSARY.

PERFORMANCE EVALUATION REPORT DATE: 06/03/86

WATER POLLUTION STUDY NUMBER WP016

LABORATORY: WA023

PARAMETERS	SAMPLE NUMBER	REPORT VALUE	TRUE VALUE*	ACCEPTANCE LIMITS	WARNING LIMITS	PERFORMANCE EVALUATION
PESTICIDES IN MICROGRAMS PER LITER:						
CHLORDANE	3	1.16	1.57	.689- 2.19	.880- 2.00	ACCEPTABLE
	4	4.58	5.89	2.62- 7.70	3.26- 7.06	ACCEPTABLE
VOLATILE HALOCARBONS IN MICROGRAMS PER LITER:						
1,2 DICHLOROETHANE	1	29.4	25.0	17.7- 32.0	19.6- 30.9	ACCEPTABLE
	2	89.0	77.3	46.6- 108.	54.2- 100.	ACCEPTABLE
CHLOROFORM	1	7.00	6.04	3.27- 8.55	3.95- 7.87	ACCEPTABLE
	2	93.0	84.5	57.1- 110.	63.8- 103.	ACCEPTABLE
1,1,1 TRICHLOROETHANE	1	16.2	14.8	10.2- 20.7	11.5- 19.4	ACCEPTABLE
	2	46.1	44.3	28.0- 62.5	32.3- 58.2	ACCEPTABLE
TRICHLOROETHENE	1	22.1	22.5	14.0- 30.0	16.0- 27.9	ACCEPTABLE
	2	97.4	100.2	58.8- 137.	68.5- 127.	ACCEPTABLE
CARBONTETRACHLORIDE	1	17.5	18.5	11.1- 26.0	13.0- 24.1	ACCEPTABLE
	2	52.9	52.9	33.0- 76.2	38.4- 70.8	ACCEPTABLE
TETRACHLOROETHENE	1	14.8	16.9	10.6- 22.5	12.1- 21.0	ACCEPTABLE
	2	71.3	84.7	51.3- 109.	58.5- 102.	ACCEPTABLE
BROMODICHLOROMETHANE	1	16.2	15.6	10.8- 21.2	12.1- 19.8	ACCEPTABLE
	2	72.3	65.7	44.4- 92.9	50.5- 86.8	ACCEPTABLE
DIBROMOCHLOROMETHANE	1	19.3	19.1	11.5- 28.9	13.7- 26.7	ACCEPTABLE
	2	107	95.6	64.7- 142.	74.4- 132.	ACCEPTABLE
BROMOFORM	1	48.2	50.6	26.1- 75.1	34.0- 69.2	ACCEPTABLE
	2	31.9	30.4	14.5- 49.0	18.8- 44.7	ACCEPTABLE
METHYLENE CHLORIDE	1	24.5	20.5	10.8- 30.0	13.2- 27.6	ACCEPTABLE
	2	73.4	63.8	30.6- 93.0	38.4- 85.2	ACCEPTABLE

* BASED UPON THEORETICAL CALCULATIONS, OR A REFERENCE VALUE WHEN NECESSARY.

PERFORMANCE EVALUATION REPORT DATE: 06/03/86

WATER POLLUTION STUDY NUMBER WP016

LABORATORY: WA023

PARAMETERS	SAMPLE NUMBER	REPORT VALUE	TRUE VALUE*	ACCEPTANCE LIMITS	WARNING LIMITS	PERFORMANCE EVALUATION
VOLATILE HALOCARBONS IN MICROGRAMS PER LITER:						
CHLOROBENZENE	1	25.9	29.4	20.2- 38.1	22.5- 35.8	ACCEPTABLE
	2	57.9	67.6	46.1- 91.6	51.8- 85.9	ACCEPTABLE
VOLATILE AROMATICS IN MICROGRAMS PER LITER:						
BENZENE	1	85.9	83.0	46.5- 119.	55.6- 110.	ACCEPTABLE
	2	26.6	25.9	17.3- 34.7	19.5- 32.4	ACCEPTABLE
ETHYLBENZENE	1	56.1	62.9	39.8- 85.2	45.7- 79.3	ACCEPTABLE
	2	12.7	15.7	9.72- 21.7	11.3- 20.1	ACCEPTABLE
TOLUENE	1	74.7	78.2	50.2- 106.	57.4- 98.4	ACCEPTABLE
	2	7.70	7.82	5.21- 10.8	5.91- 10.1	ACCEPTABLE
MISCELLANEOUS PARAMETERS:						
TOTAL CYANIDE	1	0.783	1.05	.609- 1.36	.706- 1.27	ACCEPTABLE
(IN MG/L)	2	0.522	0.600	.343- .807	.401- .748	ACCEPTABLE
NON-FILTERABLE RESIDUE	1	31.0	35.6	26.6- 37.5	28.0- 36.1	ACCEPTABLE
(IN MG/L)	2	56.7	65.2	50.8- 69.2	53.1- 66.9	ACCEPTABLE
OIL AND GREASE	1	7.35	16.0	7.40- 22.1	9.24- 20.3	NOT ACCEPTABLE
(IN MG/L)	2	5.40	11.0	3.58- 16.5	5.46- 14.9	CHECK FOR ERROR

* BASED UPON THEORETICAL CALCULATIONS, OR A REFERENCE VALUE WHEN NECESSARY.

APPENDIX J

STATEMENT OF WORK: WELL DRILLING SPECIFICATIONS, 300 AREA PROCESS TRENCHES

APPENDIX J

STATEMENT OF WORK: WELL DRILLING SPECIFICATIONS, 300 AREA PROCESS TRENCHES

The Statement of Work document presented in this appendix contains drilling specifications for wells to be drilled for this project. The Statement of Work covers general requirements, quality assurance, preparations, construction materials, hydrologic testing, and description of work.

PNL-SOW.300PT

STATEMENT OF WORK

WELL ORILLING SPECIFICATIONS

300 AREA PROCESS TRENCHES

August 4, 1986

STATEMENT OF WORK

WELL DRILLING SPECIFICATIONS 300 AREA PROCESS TRENCHES

August 4, 1986

1.0 GENERAL

1.1 Scope of Work

The purpose of this contract is to furnish all labor, equipment, and some of the materials necessary to drill, install, develop, and test at least 17 monitoring wells. Currently, 17 wells are planned (three clusters of three wells each, 7 single shallow wells and one single deep well). These wells are being drilled as part of the Revised Ground-Water Monitoring Plan for the 300 Area Process Trenches. These wells will provide additional hydrogeologic data, help determine the extent of low-level ground-water contamination, and help determine the rate of movement of trace levels of hazardous chemical wastes within the ground water.

The effort and materials required for this work include, but are not necessarily limited to:

1. Drilling, sampling, and installing approximately one deep monitoring well and seven shallow monitoring wells;

2. Drilling, sampling, and installing three monitoring well clusters, each consisting of one shallow, one intermediate and one deep monitoring well;

3. Hauling and placing grout, bentonite (slurry and/or pellets), and sand pack;

4. Hauling and installing Schedule 40 stainless casing, caps, wire wrap screens, temporary steel casings, protective steel casing;

5. Furnishing and using bailers, pumps, and surge blocks to develop monitoring wells;

6. Furnishing and using high discharge submersible pumps for aquifer tests; and

7. All other related items indicated in the figures, specified herein, or needed for a complete and proper installation in accordance with the intent of the specifications.

1.2 Work Location

All drilling sites are located in the 300 Area or immediate vicinity within the Hanford Site in the State of Washington, approximately 6 road miles north of Richland. Each well site is clearly marked and labeled in the field with a stake painted flourescent orange. Figure 1 is a map of the 300 Area showing existing wells and proposed new well locations. Figure 2 which covers a portion of the 300 Area in Figure 1, shows that the locations of all the proposed new wells except S1 surround the Process Trenches and the North Process Pond. Access to the drilling locations within the area shown in Figure 2 is primarily by gravel covered or unimproved dirt roads.

1.3 Construction Schedule

Drilling for this contract shall be conducted in a single phase. Work will consist of constructing 17 wells; seven single shallow wells (S1 and S3 through S8, Figures 1 and 2), one single deep well (S2, Figure 1) and three well clusters (C1 through C3, Figure 2). Each cluster will consist of one shallow (approximately 60 feet deep), one intermediate (approximately 110 feet deep), and one deep well (approximately 160 feet deep), approximately 25 feet apart from one another. Construction of the wells will commence August 18, 1986 and be completed on or before December 15, 1986.

1.4 Working Hours

Work will be performed on a five-day work week schedule, Monday-Friday, between the hours of 8:00 a.m. and 4:30 p.m. The work will be done on consecutive working days over the period of the contract. Days not included in this schedule are those holidays observed by PNL staff. Scheduled holidays for the contract period are: September 1 and November 27-28, 1986. Exceptions may be made in the work schedule if mutually agreed upon by the Contractor and PNL.

In the event that special tests (i.e., geophysical logging) must be performed during drilling operations, standby time will be paid. Standby time will be held to a minimum and is estimated to be 40 hours during the period of this contract. The PNL geologist and driller will both sign and date the drilling log for approved standby time.

Downtime not specifically ordered by PNL will not be considered as standby time and no compensation will be made.

1.5 Equipment Required

The Contractor is required to furnish the labor and equipment necessary to drill, install, develop, and test these wells as specified in sections 4, 5, and 6 of this contract, and as shown in the contract figures. These wells shall be drilled by the cable tool method using drive barrel and/or hard tools.

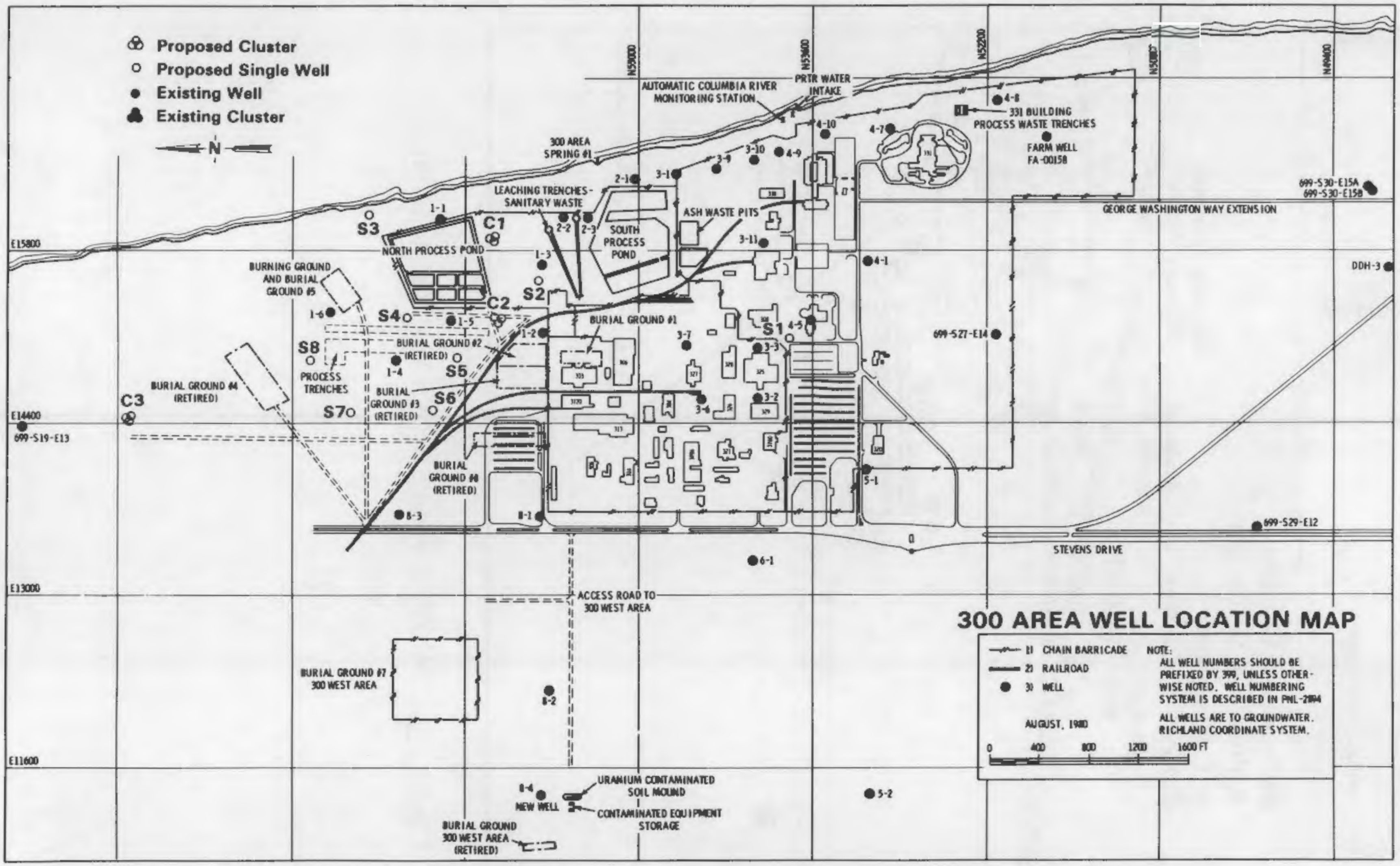


FIGURE J.1. 300 Area Well Location Map

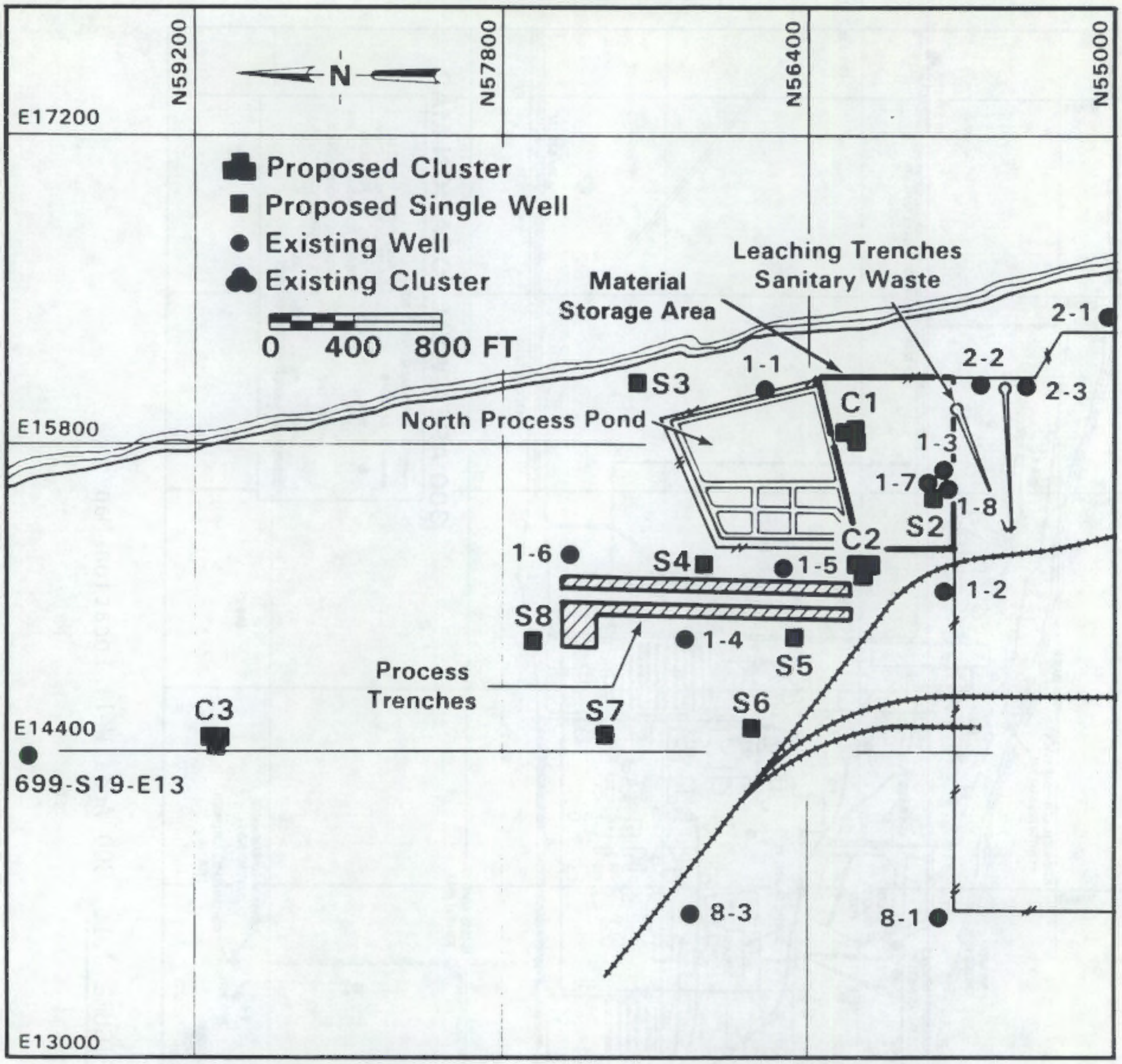


FIGURE J.2. 300 Area Process Trench Well Location Map

Tools for pulling temporary casing shall include hydraulic jacks. At least two cable tool rigs shall be in continuous use during the performance of this work.

1.6 Materials Required

The contractor is not required to furnish all well construction materials necessary to drill, install, develop, and test these wells. Materials provided by PNL will be stored in the 300 Area (see Figure 2). They are specified in sections 4, 5, and 6 of this contract, and are shown in the contract figures. Water used during the drilling operations shall be obtained from the 300 Area Fire Station.

1.7 Contract Figures

The contract figures are not to scale and do not attempt to show exact details of well construction. Exact measurements such as completion depths, amount of materials used, joints, spacing, etc. shall be determined in the field by PNL.

1.8 As-Built Diagrams

As-built diagrams for each well will be maintained by the PNL geologist as the well is being drilled. Each diagram will be an accurate record showing well construction and completion. The contractor shall readily provide all information necessary to complete these diagrams.

1.9 Drilling Logs

The contractor shall keep a daily log of operations performed on each well. The log will be accurate and legible with entries made in continuous chronological order. The log shall contain the following: geologist, date, driller, rig number, well number, depth at beginning of shift, shift, depth at completion of shift, JAJ contract number, total casing (temporary and permanent), drill method, wet/dry sample, lithologic description, time drilling comments, and all other pertinent information for the completion of these wells. The log shall be complete, signed and dated by the driller and PNL geologist at the end of each day. The log shall be available to the PNL geologist upon request and after completion of each well. Drilling logs will be furnished by PNL. Figure 3 is an example of the drilling log.

1.10 Site Geology

The contractor should anticipate drilling in unconsolidated to consolidated materials, consisting of clay, silt, sand, gravel, cobbles, and boulders. These materials were deposited in former river channels and may be cemented, forming hardened layers of variable thickness. Low levels of radiological and

DRILL LOG	By	Rig	Well Number	Computer Number	Project or Work Order No.
	Date		Depth To		Subcontract No.

Total Casing	Depth	Drill Method	Wet/Dry Sample	LITHOLOGIC DESCRIPTION % Each Grain Size, Color, Roundness, Caliche, Etc.	Time	Drilling Comments

REMARKS:

D - Drive Barrel H - Hard Tool L - Large M - Medium S - Small VC - Very Coarse C - Coarse F - Fine VF - Very Fine ____ Standing Water A 6000 021 (5 85)

FIGURE J.3. Example Drilling Log

chemical contamination may be encountered during drilling. PNL will provide routine monitoring of the drill cuttings and fluids penetrated in each borehole.

2.0 QUALITY ASSURANCE

2.1 Qualifications of Drillers

All drillers shall be licensed in the State of Washington and have a minimum of five years cable tool drilling experience using both drive barrel and hard tools. In addition, each driller shall have experience in radiological and/or hazardous waste drilling and monitoring well construction. The contractor shall provide a complete list of drillers and helpers involved and enter those present in the drilling log.

2.2 Compliance with Specifications

All wells shall be constructed and completed in accordance with Chapter 173-160 WAC, "Minimum Standards for Construction and Maintenance of Water Wells", and the specifications contained herein. In the event of a conflict, the technical specifications contained herein will be followed. Any changes or modifications made to these specifications must be approved by the PNL geologist.

As required during and after construction of each well, the contractor shall use the materials provided for construction and installation of the monitoring wells and as specified for this work.

In the event that other materials are installed which are not acceptable to PNL, the contractor may be required to remove or replace those unacceptable items, with material meeting the specified requirements. In such case, the contractor shall repair all damage caused in the removal and replacement at no additional cost to PNL.

2.3 Well Site Inspections

The PNL geologist shall be present at all times and will perform the Title III inspection and any other duties necessary to ensure the proper installation of the monitoring wells in strict accordance with all specifications contained in this contract.

2.4 Well Abandonment

If in the judgement of the PNL geologist, the well should be abandoned for whatever reason, the contractor will be instructed in writing, to abandon and backfill the hole with volclay grout or an equal approved, in advance, by PNL. If well abandonment is deemed necessary as a result of contractor negligence, the contractor shall be held responsible for all replacement costs.

3.0 PREPARATIONS

3.1 General

The reliability of ground-water samples analyzed for hazardous chemical wastes are known to be affected by drilling methods and equipment used. Therefore, the following precautions must be taken before and during drilling operations:

A. Drilling Method

Drilling shall be done by the cable tool method. Drive barrel will be used where possible above the water table. Hard tools shall be used thereafter.

B. Steam Cleaning

Drill rig and peripheral equipment (i.e., drill tools, cables, etc.) shall be steam cleaned before coming on site. No detergents shall be used with the steam. In addition, the contractor shall steam clean the drill rig and all equipment including the backpulled 10-in. and 12-in. casings, between wells (on site). The contractor shall provide and maintain the steam cleaning equipment. The PNL geologist will inspect the drilling rigs for cleanliness when they enter the 300 Area and at the start of construction of each monitoring well.

C. Storage of Construction Materials

The contractor shall use all means necessary to protect well construction materials before, during, and after installation. All materials shall be kept off the ground on pallets, stands, racks, or sawhorses. Materials provided by PNL will be stored in the fenced area designated in Figure 2. The materials will have been factory cleaned and sealed for shipment. Therefore, field cleaning of materials provided by PNL will not be necessary. During vehicle transport from the on-site storage area, all materials shall be enclosed in the containers in which they were shipped.

D. Tool Lubricants

The contractor shall use only inorganic lubricants approved by PNL for assembling tool strings.

E. Drilling Additives

With the exception of water, no drilling additives will be allowed. Any water used during drilling operations shall be obtained from the 300 Area Fire Station.

F. Drill Cutting and Water Disposal

Drill cuttings from the saturated and unsaturated zones shall be disposed of by spreading and leveling in the vicinity of the well bore. Water pumped from the wells during development shall be disposed of in the vicinity of the well bore. Water pumped from the wells during aquifer testing shall be discharged a minimum of 1000 ft away from the well bore and other wells in the vicinity. In the event contaminated materials and/or water are encountered, disposal shall be performed in accordance with PNL Industrial Health and Safety Requirements.

4.0 CONSTRUCTION MATERIALS

4.1 General

Materials necessary to complete the monitoring wells in all cases shall include, but not necessarily be limited to the items listed in this section. All of the items listed in this section will be provided by PNL and stored in the designated storage yard.

4.2 Carbon Steel Casing and Drive Shoe (12-in.)

Initially, carbon steel casing and drive shoe shall be new, 12-in. nominal diameter material, free from pits or breaks. The pipe shall be Schedule 40, meeting ASTM specification A53 Grade B. The individual 20 foot segments of 12-in. carbon steel casing shall have straight beveled cuts made by the contractor before they are welded together. The lengths of steel pipe provided shall be nominal 20 foot sections. The external trailing edge of the drive shoe shall be filled with multiple pass welds to taper the shoe thereby minimizing drag during pullback.

4.3 Carbon Steel Casing and Drive Shoe (10-in.)

Initially, carbon steel casing and drive shoe shall be new, 10-in. nominal diameter material, free from pits or breaks. The pipe shall be Schedule 40, meeting ASTM specification A53 Grade B. The individual 20 ft segments of 10-in. carbon steel casing shall have straight beveled cuts made by the contractor before they are welded together.

4.4 Stainless Steel Screen (10-in. telescope size)

Stainless steel screen will be new, 10-in. telescope size, Type 304 stainless steel. The screens shall be of the continuous slot, wire-wound design with flat stainless steel plates welded to the bottom. The slot size will be 0.040 in. The screens will have been factory cleaned and separately wrapped in protective polyethylene for shipment. Packers shall not be used.

4.5 Stainless Steel Screen (6-in.)

Stainless steel screen provided by PNL shall be new, 6-in. nominal diameter, Type 304 stainless steel. The screens shall be of the continuous slot, wire-wound design with flat stainless steel plates factory welded to the bottom of each screened interval. The end fittings shall be double entry stub ACME flush screw threads. The screen slot size shall provide a minimum of 16% open area with 0.040 inch slot openings and 11% with 0.020 inch slot openings.

Screens will have been cleaned in the following manner prior to packaging:

A. Immerse for 5 minutes in static bath of Troy 2108 acid mix (phosphoric acid).

B. Pressure rinse/wash with a prescribed mixture of Troy 2702 detergent and cool water.

C. Rinse with warm water.

D. Allow to air dry.

Screen will have been individually and separately wrapped in 4-mil. protective polyethylene prior to shipment. The well screen shall be manufactured by Johnson Division, UOP, St. Paul, Minnesota, or an equal approved, in advance, by PNL.

4.6 Centralizers

Centralizers shall be 304 stainless steel stave-type centralizers.

4.7 Stainless Steel Casing (6-in.)

Stainless steel casing shall be new, 6-in. nominal diameter, Type 304 stainless steel. The pipe shall be Schedule 10, meeting ASTM specification A312 or A778. The individual segments of stainless steel casing shall be flush coupled the same as the well screen with Schedule 40 couplings. Casing will have been steam cleaned and allowed to air dry prior to sealing and packaging at the factory.

4.8 Artificial Sand Pack

Artificial sand packs provided by PNL will consist of kiln dried quartz (silica) sand, 8-12 and 10-20 U.S. sieve size, rounded and spherical grains with a uniformity coefficient of less than 1.4 and 1.5 respectively.

4.9 Bentonite Pellet Seal

Bentonite pellet seals shall be composed of commercially available pellets that have a dry bulk density of at least 80 lb/ft^3 and are 0.25 in. in diameter.

4.10 Bentonite Slurry Seal

Bentonite slurry seals shall be a mixture of bentonite and water, with a Marsh Funnel viscosity of 120 seconds or greater.

4.11 Granular Bentonite Seal

Granular bentonite seals shall be composed of coarse granular bentonite crumbles, 8-20 mesh.

4.12 Concrete Seal and Pad

Each well shall be sealed from land surface to a minimum depth of 3 ft and a maximum depth of 5 ft with concrete. In addition, a 4-ft by 4-ft, 4-in. thick concrete pad shall be placed at the surface around the permanent well casing. The contractor shall provide and use wooden forms. The sack crete provided will be enriched with 2 lbs. of Portland cement which is also provided. The maximum slump of the concrete shall be 6 inches. PNL will supply a brass survey marker to be visibly placed in each concrete pad prior to initial setting.

4.13 Well Cap

Each well shall have a locking, removable, stainless steel cap designed to slipover the permanent stainless steel casing and to provide adequate clearance for the dedicated sampling pump hardware.

4.14 Protective Steel Posts

Four protective steel posts shall be set vertically in concrete in the ground around each well forming the four corners of a square. Each post will be 4 ft from the well. The posts shall be 4-in. nominal diameter and 6 ft in length, with 4 ft extending above ground.

4.15 Safety Paint

Protective posts shall be painted safety yellow upon completion of the well and installation of the protective posts.

5.0 HYDROLOGIC TESTING

5.1 Water Level Measurements

Once the water table has been reached, water level measurements will be made in each well at the start of each shift by the PNL geologist. PNL will supply all equipment for measuring water levels.

5.2 Ground-Water Samples

Once the water table has been reached, ground-water samples may be collected from various wells by PNL. PNL will supply all necessary ground-water sampling equipment.

5.3 Well Development

Each well will be developed by bailing, jetting, pumping, and/or other acceptable techniques as approved by PNL. At a minimum, each well shall be developed until it is cleared of sand and other fine grained material, as determined by the PNL geologist.

5.4 Aquifer Testing

Aquifer testing will be performed on 13 new wells and one existing 8" diameter well. These tests may include but are not limited to: bailer, slug, step drawdown, 8-hr pumping, and 8-hr recovery tests. The contractor shall supply, install, and operate all aquifer testing equipment, which will include the following: pump, power source, flowmeter valves, and discharge line. Flow meters shall be new with factory certification of calibration and accuracy. The submersible or turbine pump for pumping the shallow 10-inch diameter wells with temporary casing shall be capable of producing a yield of up to 750 gpm. The submersible pump for pumping the intermediate and deep 6-inch diameter wells shall be capable of producing up to 350 gpm. A minimum of 1000 ft of discharge line will be required. PNL will supply equipment and personnel necessary for data collection.

6.0 DESCRIPTION OF WORK

6.1 Single Shallow Wells

All single shallow wells shall be completed in the Glaciofluvial sands and gravels. Initially, each of these wells will be drilled to the top of the sands and gravels of the Ringold Formation with 10-in. diameter carbon steel casing and drive shoe. As the wells are being drilled, samples of the materials penetrated will be collected at 5-ft intervals and at changes in lithology by the PNL geologist. Sample jars will be provided by PNL.

A straightness test will then be performed on each well. Each well must pass a 20-ft section of 8-in. diameter pipe over the entire depth. The 10-in. casing will then be backfilled with sandpack to the bottom of completion interval, which will be determined by the PNL geologist as each well is being drilled.

A 10-ft section of 10-in. (telescope size) stainless steel screen shall then be installed at the bottom of each shallow well except for wells S4, S5, S8 and the shallow C2 well. The 10-in. casing shall then be pulled back, forming a natural pack around the exposed 10-ft section of screen.

Each well will then be developed. A test pump will be installed and an aquifer test performed. Upon completion of the aquifer test and removal of the test pump, each well will be completed by installing a 10- to 25-ft section of 6-in. (pipe size) stainless steel screen inside the 10-in. screen. Wells S4, S5, S8 and shallow C2 will not be tested for aquifer performance, but completed with 10 to 25 feet of 6-in. stainless steel screen inside the 10-in. casing.

For all shallow wells, the top of each 6-in. well screen shall be threaded to 6-in. diameter stainless steel casing. The stainless steel casing shall extend from the top of each well screen to 2 ft above the land surface.

An artificial sand pack will then be placed between the 6-in. and 10-in. screens, extending upward to a maximum of 5 ft above the top of each 6-in. screen. A granular bentonite seal shall extend from the top of the sand pack to 3 to 5 ft below land surface. The PNL geologist may elect to add a 1 to 5 foot layer of bentonite pellets in between the granular bentonite and sandpack. Placement of sand pack and seal shall be accomplished without a tremmie pipe as the 10-in. casing is being removed.

The remaining annular space between the 6-in. and 10-in. casings shall be sealed with concrete as the 10-in. casing is removed completely from the borehole. The surface of each well will then be sealed with a concrete pad.

A locking, removable stainless steel cap will then be placed on each well. Four protective steel posts will be concreted in the ground around each well and painted safety yellow using paint brushes.

Each well will then be redeveloped as needed. Upon completion, the borehole will be inspected by PNL with the Downhole Television System to ensure that the wells have been constructed according to specification. Figure 4 is a diagram showing the construction and completion of the single shallow wells.

6.2 Single Deep Well

Well S-2 will be constructed to complete an existing well cluster and will be constructed in the same manner as deep cluster wells described in section 6.3C.

6.3 Cluster Wells

A. General

Each cluster will consist of three wells, one shallow, one intermediate, and one deep well. The wells will be constructed 25 ft apart from one another as shown in Figure 5. The shallow cluster wells will be completed in the Glaciofluvial sands and gravels, in the same manner as each of the single shallow wells. Shallow wells C1 and C3 will require an aquifer test and therefore, will need 10 inch telescoping screen. Shallow well C2 will not be tested and will not require a telescoping screen. The intermediate cluster wells will be completed within the uppermost sand and gravel layer of the Ringold Formation. The deep cluster wells will be completed within the next permeable sand and/or gravel layer in the Ringold formation.

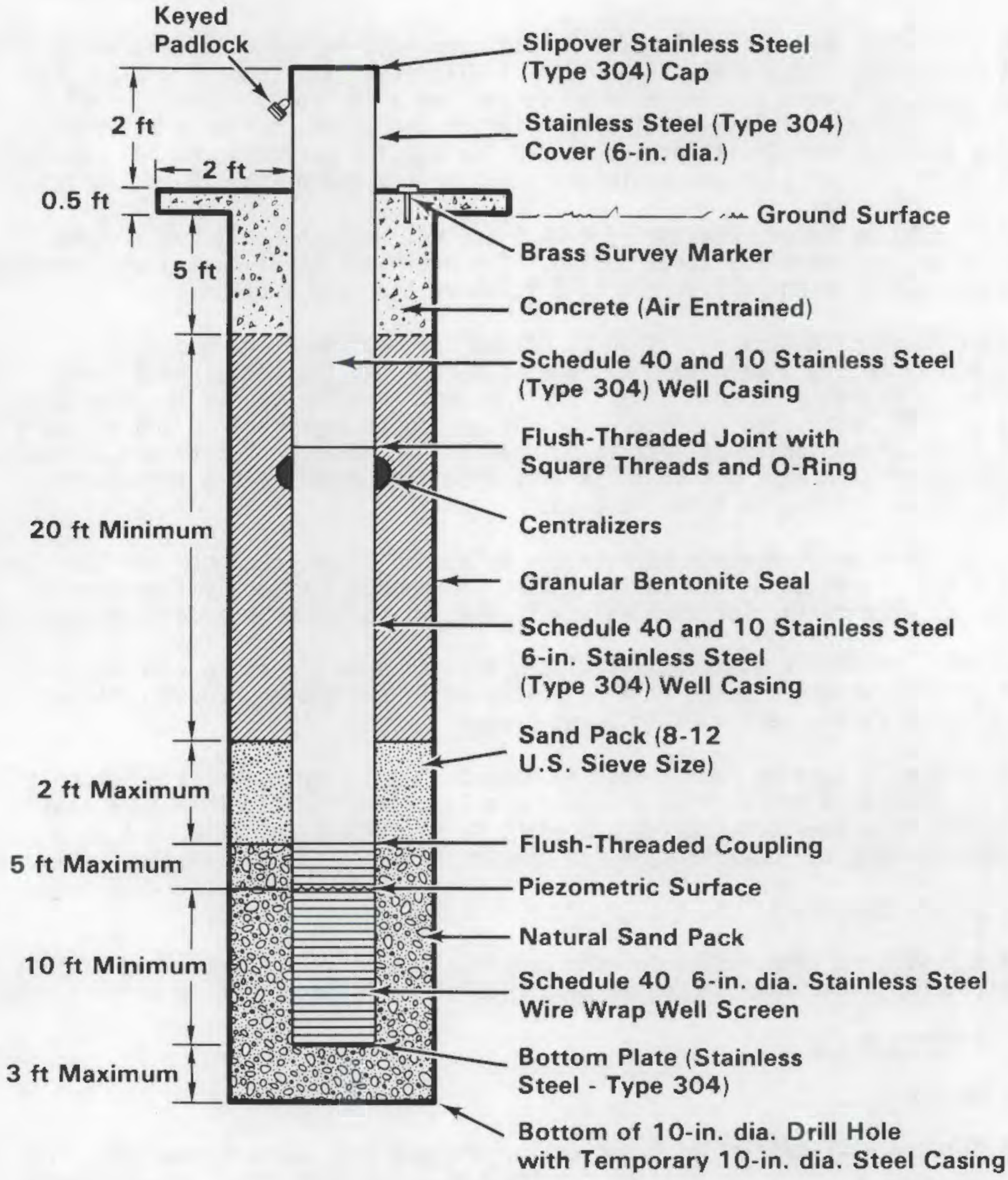


FIGURE J.4. Construction of Monitoring Wells Screened in the Glaciofluvial Sands and Gravels

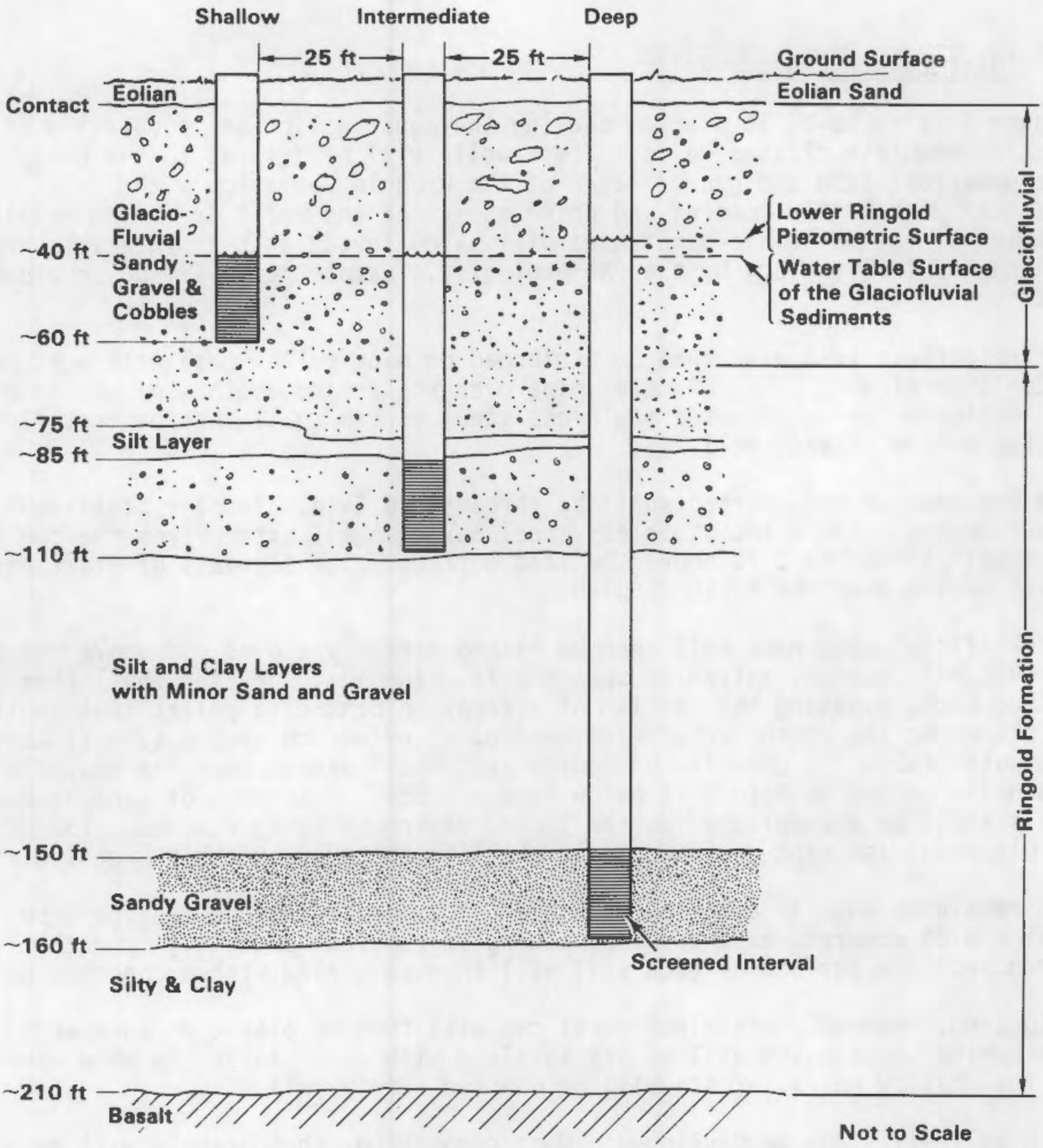


FIGURE J.5. Cross Sectional View of Well Cluster and Completion

B. Intermediate Cluster Wells

Figure 6 is an as-built diagram showing the construction and completion of the intermediate cluster wells. These wells will be drilled to the base of the uppermost sand and gravel layer of the Ringold Formation with 10-in. diameter carbon steel casing and drive shoe. As the wells are being drilled, samples of the materials penetrated will be collected at 5-ft intervals and at changes in lithology by the PNL geologist. Sample jars will be provided by PNL.

A straightness test will then be performed on each well. Each well must pass a 20-ft section of 8-in. diameter pipe over the entire depth. A 10- to 25-ft section of 6-in. diameter stainless steel screen shall then be installed at the bottom of each well.

The top of each well screen shall be threaded to 6-in. diameter stainless steel casing. The 6-in. stainless steel casing shall extend from the top of each well screen to 2 ft above the land surface. The segments of stainless steel casing shall be flush coupled.

An artificial sand pack will then be placed directly around and above the top of each well screen, extending upward 2 ft. The 10-in. casing shall then be pulled back, exposing the section of screen. A bentonite pellet seal shall be placed on top of the artificial sand pack, extending upward to 5 ft above the water table. A granular bentonite seal shall extend from the top of the bentonite pellet to 3 to 5 ft below land surface. Placement of sand pack and seals shall be accomplished as the 10-in. casing is being removed. The method of placement for sand pack and seals shall be approved by the PNL geologist.

The remaining annular space between the 6-in. and 10-in. casings shall be sealed with concrete as the 10-in. casing is removed completely from the borehole. The surface of each well will then be sealed with a concrete pad.

A locking, removable stainless steel cap will then be placed on each well. Four protective steel posts will be set in place with concrete in the same manner as the shallow wells. Posts will be painted safety yellow.

Each well will then be developed. Upon completion, the borehole will be inspected by PNL personnel with the Downhole Television System to ensure that the wells have been constructed according to specification.

Aquifer tests may then be performed on all of the intermediate cluster wells, as determined by the PNL geologist.

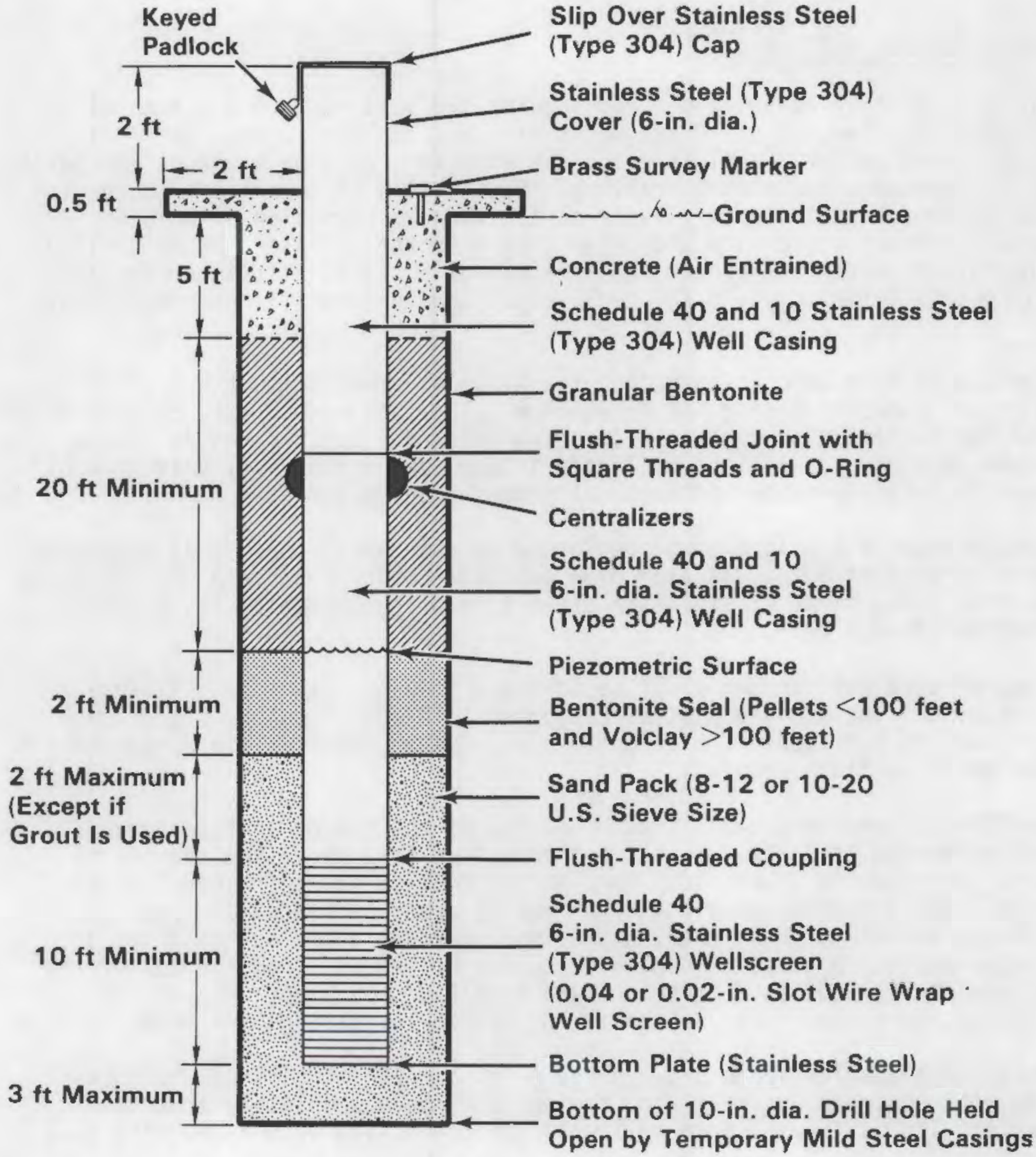


FIGURE J.6. Construction of Monitoring Wells Screened in the Ringold Formation

C. Deep Cluster Wells

Figure 6 is also an as-built diagram showing the construction and completion of the deep cluster wells. These wells will be completed within the next permeable sand and/or gravel layer of the Ringold clays, with actual completion depth to be determined during drilling. Each well will be drilled to the top of the uppermost silt and clay layer of the Ringold Formation with 12-in. diameter carbon steel casing and drive shoe. As the wells are being drilled, samples of the materials penetrated will be collected at 5-ft intervals and at changes in lithology by a PNL geologist. Sample jars will be provided by PNL.

The well will then be continued into the Ringold Formation to the total depth with 10-in. diameter casing and drive shoe. The total depth will be determined by the PNL geologist as each well is being drilled. Split spoon or shelby tube sediment samples will be collected in any low permeability unit thought to be significantly retarding vertical ground-water movement.

A straightness test will then be performed on each well. Each well must pass a 20-ft section of 8-in. diameter pipe over the entire depth. A minimum 10-ft section of 6-in. diameter stainless steel screen shall then be installed at the bottom of each well.

The top of each well screen shall be threaded to 6-in. diameter stainless steel casing. The stainless steel casing shall extend from the top of each well screen to 2 ft above the land surface. The segments of stainless steel casing shall be flush coupled.

An artificial sand pack shall then be placed at the bottom of the screen, extending upward at least 2 ft but not more than 5 ft above the top of the screen. A bentonite slurry seal composed of Volclay grout (rather than the pellets used in the intermediate depth wells) shall be placed by tremmie on top of the artificial sand pack, extending upward to a maximum of 5 ft above the water table. A granular bentonite seal shall extend from the top of the bentonite slurry seal to 5 ft below land surface. Placement of sand pack and seals shall be accomplished as the 10-in. and 12-in. casings are being removed.

The remaining annular space between the 6-in. and 12-in. casings shall be sealed with concrete as the 12-in. casing is removed completely from the borehole. The surface of each well will then be sealed with a concrete pad.

A locking, removable stainless steel cap will then be placed on each well. Four protective steel posts will be set in place with concrete in the same manner as the shallow wells. Posts will be painted safety yellow.

Each well will then be developed. Upon completion, the borehole will be inspected by PNL personnel with the Downhole Television System to ensure that the wells have been constructed according to specification.

Aquifer tests may then be performed on all of the deep cluster wells, as determined by the PNL geologist.

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