Boeing Plant 2
Seattle/Tukwila, Washington

Technical Memorandum: Development and Use of Background Values

Prepared for

The Boeing Company
Seattle, Washington

Prepared by

Environmental Partners, Inc.
FLOYD|SNIDER
Golder Associates Inc.

March 30, 2006

The Boeing Company
P.O. Box 3707
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BOEING

March 29, 2006
G-1241-WDE-083

Mr. Shawn Blocker
RCRA Corrective Action, AWT-121
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue
Seattle, Washington 98101

Subject: *Technical Memorandum: Development and Use of Background Values* Revised Report Submittal
Boeing Plant 2, WAD 00925 6819
RCRA Docket #1092-01-22-3008(h)

Dear Mr. ~~Blocker~~ Shawn:

Please find enclosed four (4) copies the subject document each with an attached CD of the report. Note that we have provided a copy of the report directly to Mr. Hideo Fujita and the Washington Department of Ecology.

We believed that we have addressed all of your comments received February 28, 2006, and have produced a stronger report as a result. We have attached a Response to Comments to facilitate review of the revised draft.

Background values for arsenic and copper changed very slightly based on the revisions. Comments on manganese, including the necessarily arbitrary selection of a truncated data set, resulted in an alternative approach for handling manganese, which we have reviewed in general terms with Mr. Bernie Zavala. This approach for manganese has been incorporated and represents new material.

We look forward to completion of this work to develop background values at Plant 2. Please contact me should you have any further questions or comments on this important subject.

Sincerely,

Will Ernst

Will Ernst
Project Coordinator
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Attachment & Enclosure

cc: Howard Orlean – EPA (by email w/o enclosure)
Hideo Fujita – Ecology (w/ CD copy)
Brad Helland – Ecology (by email w/o enclosure)

Response to EPA Comments of February 23, 2006 on Technical Memorandum: Development and Use of Background Values as incorporated in the March 30, 2006 revised document

Boeing Plant 2, Seattle/Tukwila, Washingtion
RCRA Docket No. 1092-01-22-3008(h).
EPA ID No. WAD 009256819

1. Page 3-2, Section 3.1

Boeing must provide analysis as to the impact of different cutoff points on the derivation of the 90th percentile of the background distribution. This will determine the sensitivity of the 90th percentile to background values in the document. Such an analysis is particularly appropriate for manganese, where the truncation was arbitrary.

> Analysis of the impact of different truncations on the derivation of the 90th percentile is provided in Section 3.1 and in Tables 3 and 4. Section 3.1 includes a description of how low points and possible secondary distributions were identified from histograms, and how a range of possible cutoff points was selected. An analysis was then conducted to allow a comparison of the 50th and 90th percentiles resulting from truncating the data sets at these points. The results are provided in Table 3, and the text in Section 3.1 includes a discussion of the sensitivity of the percentiles to various cutoff points. Based on this analysis and responses to rest of the comments, the proposed values for background for arsenic and copper have changed slightly, and the approach for handling the manganese data set has changed significantly. The manganese discussion is now contained in Section 3.2.

2. Page 3-2, Section 3.1, last sentence

It is unclear how the report writers arrived at this statement "The combined data set was thus truncated to remove samples that were assumed to have been impacted by human activities, and the remaining data became the background data set." The issue of the data set and how decided on what should be truncated is very important and needs to be developed and supported in much more detail.

> The sentence regarding truncation of data sets based on assumptions of impacts from human activities has been removed. While this concept still underlies the approach to determining background concentrations, the memorandum has been revised to include a quantitative approach to decisions regarding data set truncations.
>
> To further support truncation decisions beyond visual identification of secondary distributions, normal and lognormal probability plots were produced for each truncated data set of total arsenic, copper, and manganese. The R^2 values that resulted from this analysis, provided in Table 4, were consistent with the visually identified low points. Together, these methods support defensible truncation point selections.

3. Page 3-2 Section 3.2, Table 2

Table 2 has in bold the background values for the three metals in question. It is understood why the dissolved data set was chosen for all three metals. The EPA policy when sampling for metals is to use the total fraction. Total metal analysis will be the basis for future determination of ground water cleanup goals. The rationale for using total metals is to encourage the best efforts in well design, installation, well development and ground water sample collection methods.

Revise Table 2 to reflect the totals for the constituents by removing the bold from the dissolved arsenic, dissolved copper, and dissolved manganese value and bold the total values for these constituents in Table 2.

The memorandum has been revised to indicate that total metal analysis will be the basis for future comparisons to background concentrations for these metals. The specific rationale stated in USEPA's comment above has been added to the text in Section 3.1.4. The proposed values, expressed as total concentrations, are now listed in Section 3.1.5.

4. Page 3-2, Section 3.2

The issue of non-detects must be covered. EPA and Washington State Department of Ecology ("Ecology") guidance (EPA 2002, section 4.4, Ecology 1992) suggests that when non-detects comprise greater than 15% of the available data, that estimation of the mean and standard deviation are compromised.

Ecology (Ecology 1992, Ecology 2005) directs that a log normal distribution should be assumed unless a statistical test assessing how well the data fit in a lognormal distribution is rejected at a 0.05 level of significance. The issue of including non-detects may affect this analysis. Such testing has not been done and should be included in this analysis. EPA (EPA 2002 section 4.1, Ecology 2005) recommends that the Shapiro Wilk Test for normality is appropriate for sample sizes of 50 or less. Therefore, this test should be employed with the current data set. The test for log normality is done using a log transformed concentration data set.

Additionally whether or not the data fit a log-normal distribution should be evaluated graphically using a quantile/quantile plot where the X axis represents quantiles of the normal distribution. Again the data should be log transformed for this analysis. (EPA 2002; EPA 2000).

The issue of values below laboratory detection limits is addressed throughout Section 3.1.3, in Figures 6 and 7 and in Table 3. To assess the impact of non-detections, these values were removed from the datasets used to generate histograms for Figures 6 and 7. The revised text includes a discussion of the differences between distributions that include and exclude non-detections, especially with respect to how the estimates of background values are impacted. The figures include the normal statistics used for describing log-normal distributions.

Non-detections were also excluded from datasets used for normal and lognormal probability plots, including Figures 8, 9, and 10 and Table 4. The results of these probability plots confirm that the data fit lognormal distributions. These plots respond to the request for quantile/quantile plots to evaluate lognormal distributions graphically.

Because R^2 values indicate statistically significant goodness-of-fit for arsenic, copper, and manganese lognormal distributions, no further tests of normality were employed. The large sample sizes (approximately 200 to 900 samples per constituent) for all three metals precluded use of the Shapiro Wilk Test for normality, which is intended for sample sizes of 50 or less.

Although non-detections were excluded from probability plots, they were included in the data sets used to generate background values. This inclusion was intended to produce more accurate and protective background values. However, the reader can now quickly assess the impact of this decision from Table 3 and Figures 6 through 9.

5. Page 3-3, Section 3.2.2

Ecology's approach to establishing a background level (SEE WAC 173-409- 709 (3)) is somewhat more complicated than suggested by this report and requires an assessment of contaminant concentration distributions. Use of four times the 50th percentile or the 90th percentile is reserved for data that are log-normally distributed. Alternate criteria are provided for normally distributed data as well as other data distributions. The criterion stated in the report does not appear to be appropriate for manganese, which the report identifies as having a gamma distribution.

As discussed above and in the revised Section 3.1 text, the arsenic, copper, and manganese data were determined to be log-normally distributed. Refer to Figures 8, 9, 10, and Table 4. As a result of this finding, the approach to establishing background levels of using four times the 50th percentile or the 90th percentile is appropriate for arsenic and copper. A modified approach has been used for manganese as discussed in Section 3.2.

In reviewing WAC 173-340-709(3), we also reviewed WAC 173-340-720 (9)(e) where the use of background values for compliance monitoring is addressed. We had also simplified this section, and the text in Section 4.0 (old Section 3.2) has been modified to capture the full statistical complexity of using background for compliance. The section directly references MTCA regulations and associated guidance.

6. Figures 3 through 8

Explain figures in future drafts in more detail, especially what the authors intend to represent with them.

Histogram figures have been reproduced in the revised memorandum, and three additional probability plot figures (Figures 8, 9, and 10) have been added. The new figures include clearer labels along each axis for both histograms and probability plots. In addition, revised text in Section 3.1 explains what the figures are intended to indicate. Specifically, the text describes how the histograms illustrate data distribution, and how the probability plots test for normal and lognormal distributions.

Special Considerations for Manganese

USEPA's comments on the arbitrary nature of the selection of the truncation point for manganese resulted in a complete reconsideration of how manganese should be addressed. Dr. Floyd and Mr. Kunkel discussed Boeing's preliminary ideas on how to better address the redox-dependence of manganese concentrations with Mr. Zavala. Accordingly, the approach for manganese incorporated in Section 3.2 of this submittal represents new material and the original approach that was presented in the December 2005 Draft has been removed.

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1.0 Overview

This technical memorandum contains the results of a study on background concentrations in groundwater for arsenic, copper, and manganese in the vicinity of The Boeing Company's (Boeing's) Plant 2. The study is based on more than 1,000 groundwater samples collected in the Lower Duwamish Valley on properties abutting the east shore of the Lower Duwamish Waterway and located between Slips 4 and 6. The majority of the data come from the Plant 2 site, but additional data come from Jorgensen Forge, Isaacson, and Rhone Poulenc studies. This data set was compiled by the United States Environmental Protection Agency (USEPA) for this study. Samples were collected from monitoring wells between 1988 and the summer of 2005. Use of these background values in the Resource Conservation and Recovery Act (RCRA) Corrective Action process and objectives at Plant 2 are considered.

Screening levels for other Constituents of Concern (COC) metals in groundwater at Plant 2 have been established using risk-based criteria. Soil screening levels for metals are based on risk-based criteria and, as applicable, background levels drawn from values previously established by the Washington State Department of Ecology (Ecology) for the region (Ecology 1994).

This technical memorandum will be incorporated by reference into Volume II of the Corrective Measures Study (CMS), which will describe the development process and proposed target media cleanup levels (TMCLs) for the site.

1.1 BACKGROUND CONCENTRATIONS IN GROUNDWATER AT PLANT 2

Boeing Plant 2 is undergoing a RCRA corrective action under an Administrative Order on Consent (Order) issued by USEPA to Boeing under the authority of Section 3008(h) of RCRA of 1976, as amended [42 USC 6928(h)]. The Order [RCRA Docket Number 1092-01-22-3008(h)] became effective on January 18, 1994. The Order specifies activities necessary to correct actual or potential threats to human health and the environment resulting from the release or potential release of hazardous constituents from the Boeing Plant 2 facility located at 7755 East Marginal Way South, Seattle/Tukwila, Washington.

As part of the RCRA process, it is necessary to establish TMCLs for COCs in soil and groundwater. Groundwater at Plant 2 occurs in a non-potable aquifer (as discussed below) whose maximum beneficial use is discharge into the Lower Duwamish Waterway. At the point of discharge, groundwater at the site must meet the lowest of applicable surface water standards. For three metals—arsenic, copper, and manganese—background concentrations in groundwater at Plant 2 are believed to be greater than the lowest surface water standards. When this occurs at a site, both federal guidance and state law set the cleanup level at background rather than the standards.

1.2 NATURAL VERSUS ANTHROPOGENIC BACKGROUND

Metals, including the three in this study, are both hazardous substances and naturally-occurring elements in the environment. In order to make decisions about where a hazardous substance release has occurred and what is required to clean it up, it is often necessary to distinguish between concentrations that are due to a release and those considered "background" conditions.

Both Federal guidance and Washington State regulations recognize two different types of background: natural background and anthropogenic background (sometimes called area background). "Natural Background" is defined in Washington's Model Toxics Control Act (MTCA) regulations as:

> "…the concentration of hazardous substance consistently present in the environment that has not been influenced by localized human activities. For example, several metals and radionuclides naturally occur in the bedrock, sediments, and soils of Washington State due solely to the geologic processes that formed these materials and the concentration of these hazardous substances would be considered natural background." (WAC 173-340-200).

MTCA defines area background as "the concentrations of hazardous substances that are consistently present in the environment in the vicinity of a site which are the result of human activities unrelated to releases from that site." (WAC 173-340-200).

Although both MTCA and RCRA allow for the use of area background, the preference is for establishing and using natural background whenever possible. For this reason, the goal of this study was to develop background values that were as close as possible to natural background at the site. Hereafter the term background refers to natural background.

Ecology guidance also discusses key characteristics of background concentrations that should be recognized (Ecology 1992):

- Background data are variable and samples will typically represent a range of values that form a distribution of values, rather than a single value.
- The distribution of background values will vary from site to site, from media to media, and from constituent to constituent.

1.3 BACKGROUND CONCENTRATIONS IN SOILS AT PLANT 2

A summary of the regional and site soil geology is provided in Section 1.4. Several metals are present at background concentrations in soil that are greater than the most restrictive risk-based concentrations that could be applied. For those metals, background concentrations have been established at Puget Sound background soil concentrations as defined by Ecology in Natural Background Soil Metals Concentrations in Washington State (Ecology 1994). This decision was formalized by USEPA in 2005 (USEPA 2005). The metals that are covered in the Ecology study and their background value for soil in the Puget Sound regions are listed in Table 1.

Accordingly, these background soil values will be applied in the Corrective Action process at Plant 2.

1.4 GROUNDWATER AT PLANT 2

Plant 2 is located in the central portion of the Duwamish Valley adjacent to the tidally-influenced Duwamish Waterway (Figure 1). The Duwamish Valley is bounded to the east by Beacon Hill, rising to an elevation of 300 feet and separating the valley from the Lake Washington drainage basin. The western boundary of the Duwamish Valley is a topographic divide that separates the valley from the Puget Sound.

The historical Duwamish River was dredged and realigned to form the current channel of the Duwamish Waterway. This realignment was completed in 1918 and moved the river in the vicinity of Plant 2 from its former location at the present day King County International Airport to its current location to the west (Weston 1996). Industrial development of the area, beginning in the 1930s, resulted in pavement or buildings covering a large portion of Plant 2 and most of the Duwamish Valley.

The topographic divides that bound the Duwamish Valley to the west and east are composed of sedimentary bedrock of Tertiary age overlain by Quaternary glacial deposits. The Duwamish Valley consists of recent sediments underlain and bounded by older Quaternary glacial deposits and, locally, Tertiary bedrock. The near-surface sediments of the Duwamish Valley are set within the trough of the Duwamish estuary, carved by glacial ice and subsequently filled by river sediment. The lower boundary of that trough is reached sporadically by deep borings, particularly in the southern half of the study area. The pattern of those data indicate that the trough lies roughly 200 feet below the modern ground surface along the axis of the valley, generally becoming more shallow to the south and also towards the east and west valley walls. The boundary of these deposits is marked either by bedrock (where present to the south) or by very dense sediment that has been glacially overridden (Booth and Herman 1998).

Above this boundary, the geologic history of the area suggests that a sequence of estuarine deposits, typically fine sands and silts with shells, should be found and should progress up into a more complex interbedded river-dominated sequence of sand, silt, and gravel marking the advance of the sedimentary wedge fed by the Osceola Mudflow and later deposits. The mudflow itself would have been very thin and subaqueous along the Duwamish Valley when first deposited, so the chance of intersecting (and recognizing) that layer by drill cores is low. The upper part of the river-deposited sediment should and does show the classic signs of continued slow overbank deposition by fine sand and silt, colonization by marshland plants, and occasional erosion and refilling by coarser sediment associated with the main channel of the migrating Duwamish River (Booth and Herman 1998).

The most recent phase of the valley’s geologic history includes the dredging and straightening of the meandering Duwamish River to form the Duwamish Waterway and the subsequent filling of tideflats and floodplains. This work, completed between 1913 and 1917 by the U.S. Army Corps of Engineers Duwamish Waterway District, produced a new channel 4-1/2 miles in length and abandoned 12.5 miles of old river bed. The excavated waterway material was used to fill the old channel areas and the lowlands above flood levels. Subsequent filling for land development purposes has resulted in a surficial layer of fill over most of the lower Duwamish Valley. The heterogeneous nature of fill materials can locally affect both infiltration characteristics and groundwater flow where the water table is below these fill materials. Because much of the thicker fills that occur below the water table are dredged from the

Duwamish River, the silts and sands are difficult to distinguish from the native alluvium and have the same general hydrogeologic properties (Booth and Herman 1998).

Groundwater in C-level wells is distinctly more saline and electrically conductive than water in the A- and B-level wells. Field data indicate that groundwater becomes more conductive and more saline with depth. Groundwater in A-level wells generally exhibit conductivity values less than 500 microsiemens per centimeter (µS/cm). Conductivity values for most B-level wells range between 1,000 and 4,000 µS/cm while C-level wells range between 5,000 and 10,000 µS/cm. Wells closer to the Duwamish Waterway are generally more conductive due to influence from the saline groundwater prism beneath the Duwamish Waterway.

The presence of the saline water in the aquifer has been observed in several monitoring wells adjacent to the waterway and in deep wells, as indicated by very high specific conductance measurements and extremely elevated concentrations of dissolved sodium, chloride, bromide, and total dissolved solids (Weston 1996). However, saline groundwater has also been observed in deeper C-level monitoring wells at locations that are not immediately adjacent to the waterway. This saline water is similar in composition to seawater; however, concentrations of dissolved ions are substantially lower than seawater.

Isotope studies indicate that tritium was not detected in deeper C-level groundwater samples, but was detected in the upper A- and B-levels of the aquifer (Weston 1996). This study suggests that the saline groundwater in the C-level of the aquifer may be significantly older than the fresh groundwater found in the shallower A- and B-levels of the aquifer.

The apparent stratification of the aquifer is not likely due to the intrusion of saltwater from the Duwamish Waterway. If that were the case, the position of the saltwater/freshwater interface would be closer to the waterway. It is speculated that the saline groundwater found at depth away from the waterway is a remnant of connate water, which was marine water during glacial-era sedimentation and has remained stratified at depth due to limited mixing with shallower groundwater. Groundwater mixing may be limited by density differences between the deeper, more-saline water and the overlying freshwater and also by the one to three order of magnitude lower permeability of the C-level portion of the aquifer relative to the A- and B-levels.

Groundwater flow is also influenced by the presence of saline water that has intruded from the Duwamish Waterway. Following the initial dredging and realignment of the waterway in 1918, saline surface water extended back into the waterway and, driven by density differences, intruded downward below the waterway into the aquifer. As a result of this saline water intrusion, a saline groundwater prism has formed beneath the waterway. The presence of the saline groundwater prism in the aquifer has been observed in several monitoring wells adjacent to the waterway and in deep wells, as indicated by very high specific conductance measurements and extremely elevated concentrations of dissolved sodium, chloride, bromide, and total dissolved solids (Weston 1996). The saline groundwater prism affects the movement of groundwater in the vicinity of the waterway with the prism acting as a dense, stable mass that is in dynamic equilibrium with the surrounding, less-saline and, therefore, less dense groundwater. The less dense fresh groundwater that migrates toward the waterway is forced to move upward over the dense saline groundwater prism much as the fresh surface water in the Duwamish Waterway flows over the deeper saltwater tidal wedge found deeper in the waterway.

Limited mixing between the saline and fresh groundwater is expected along this interface due to density differences.

1.4.1 Geochemical Conditions and Setting

Both arsenic and manganese have complex solubility and leaching behavior as a function of the oxidation-reduction potential (ORP; redox) conditions of the groundwater (see for example, Chapters 7 and 10 in Aquatic Chemistry, Stumm and Morgan 1970; and Welch and Stollenwerk 2003). The redox conditions are in turn controlled by the presence (or absence) of dissolved oxygen and other sources or sinks of electrons. In well-oxygenated groundwater, arsenic and manganese are only poorly soluble; however, as the oxygen content and ORP of the water decreases, manganese, then arsenic, will begin to leach from the soil and dissolve in the groundwater.

To help apply these properties to Plant 2, consider the following common scenario: arsenic and manganese were never used on a site, but petroleum hydrocarbons were used and have been released to the soil and groundwater. Arsenic and manganese concentrations are at background levels in the soil (no release), but the site has elevated manganese and arsenic concentrations in groundwater. It is likely that the increased arsenic and manganese concentrations in groundwater came from the naturally-occurring concentrations in soil. Micro-organisms in the soil and groundwater biologically degraded the petroleum hydrocarbons and, in the process, consumed the available oxygen causing the groundwater to become anaerobic (i.e., without oxygen) and also lowered the ORP. The anaerobic groundwater then leached naturally-occurring manganese and arsenic from the soils. This process can result in a site where (1) soils are at background concentrations for metals, (2) no release of these metals occurred, but (3) groundwater concentrations are now greater than would be expected under naturally-occurring background conditions.

In the above example, a petroleum hydrocarbon release caused the groundwater redox to change, but such releases would only contribute to the many more widespread naturally-occurring processes that also cause oxygen to be consumed. For example, reduced or low oxygen conditions are common in wetlands, flood plains, alluvial aquifers and other places where degradation of naturally-occurring plant and animal materials is occurring in the subsurface. The Duwamish Valley has included each of these microenvironments throughout its history.

It is difficult today to determine what the natural background redox conditions would be within the Plant 2 aquifer and to what extent these conditions vary with distance from the waterway. As a starting point, this study assumes that anomalously high arsenic, copper, and manganese concentrations in the groundwater system are <u>not</u> naturally-occurring. For this reason, data with significantly elevated concentrations of arsenic, copper, or manganese have been excluded from the background data set (as discussed in Section 3.0) without regard to the cause of the elevation. As such, the background values derived in this study may underestimate true background conditions by excluding areas with elevated arsenic and manganese due to low, but naturally-occurring, dissolved oxygen and redox conditions. The study approach used has been determined to be is the most straightforward and conservative way to establish groundwater background values for arsenic, copper and manganese at Plant 2.

2.0 Study Design

Normally the study design for a background evaluation involves first establishing locations that have not been impacted by human activities and have very similar geochemical and hydrogeologic properties, and then collecting data of known and acceptable quality.

After careful consideration by USEPA, Ecology, and Boeing, it was established that there were no locations between the Duwamish Waterway and the eastern valley wall that could be unambiguously identified as un-impacted by human activities. Likewise, it was determined that the other available data set from the King County Groundwater Management Program, while representative of un-impacted aquifers, was representative of glacial aquifers and not of the specific geochemical conditions in the alluvial Lower Duwamish River Valley.

Instead, USEPA decided to combine a number of data sets for individual sites along the Duwamish Waterway between Slips 4 and 6, and look for individual locations and/or samples so as to isolate the likely background data distributions from within the larger data sets.

2.1 OBJECTIVES AND DATA QUALITY OBJECTIVES

The objective is to identify the distribution of naturally-occurring background concentrations within a larger data set of both potentially impacted and unimpacted samples, describe the distribution with enough confidence to be able to select both 50^{th} and 90^{th} percentiles and use these percentiles to describe the background concentrations for arsenic, copper, and manganese in groundwater.

A priori characteristics that were believed to be critical for success:

- At least 50 data points (values) in the data set used for background. Although guidance only requires the use of 20 points, the larger data set makes it easier to see the actual shape of the background distribution relative to data distributions that may indicate the effects of a release.
- An identifiable “break” in the data distribution that separated the background data set from the larger distribution of samples that may represent locations impacted by site releases.
- Comparable analytical methods and detection limits among data in the data set.
- No statistical “effects” caused by the number of non-detects in the data set. The effect of non-detects on the data set was evaluated for each data set, and is discussed below.

2.2 AVAILABLE DATA SETS

Three data sets covering four facilities (Figure 1) and both the A- and B-levels of the alluvial aquifer were available:

- Boeing Plant 2 database, which contains groundwater monitoring well data from 1988 through mid-2005. This database also includes groundwater samples collected by Boeing at the adjacent Jorgensen Forge facility, including their shoreline monitoring wells.
- Boeing Isaacson Site data from Monitoring Wells I-205 and I-206, as reported in Comprehensive Data Summary Report (Environmental Resources Management 2002), from 1988 through 2000.
- Former Rhone Poulenc Site data from groundwater performance monitoring events in December 2004, March and June 2005 (Geomatrix 2005).

Figure 2 shows the locations of the facilities and the groundwater monitoring wells that were used in this study. Section 3.0 describes whether specific results were considered in the background study.

The CD-ROM provided with this technical memorandum includes Excel files containing the available data and the locations of each monitoring well (Appendix A).

3.0 Analysis and Results

3.1 IDENTIFICATION OF BACKGROUND DISTRIBUTIONS

The three data sets described in Section 2.2 were combined into a single data set to be used to calculate background values for arsenic, copper, and manganese in groundwater at Plant 2. Table 2 shows the basic statistics of the combined data set.

The data were then plotted as histograms for analysis of the distributions of arsenic, copper, and manganese concentrations in groundwater. Both total and dissolved data are shown in Figure 3 for arsenic, Figure 4 for copper, and Figure 5 for manganese. The data are grouped into concentration intervals along the x-axis, and the frequency of results in each of these intervals is given by the y-axis. The concentration range of the intervals was kept relatively small at low concentrations to spread out the distribution for better visual resolution of the lower concentrations, while higher concentrations were grouped into larger concentration intervals.

To evaluate the effect of non-detections on the data distributions, non-detections were removed from the data set and a second group of histograms was plotted. Histograms with non-detects removed are shown in Figure 6 for arsenic and Figure 7 for copper. The effect on the distribution of concentrations of removing these values was to reduce the frequency of the lowest concentration interval. The effect of non-detections on the analysis of percentile values will be discussed in Section 3.1.3 below.

3.1.1 Type of Distribution Analysis

Normal and log-normal probability plots were produced for total arsenic, total copper, and total manganese to assess whether or not the data fit log-normal distributions. Values below laboratory detection limits were excluded from these plots because of the tendency of these values to distort the distribution. These graphical evaluations of concentration distributions are presented in Figures 8, 9, and 10 for total arsenic, total copper, and total manganese, respectively. The lognormal plots shown in Figures 8, 9, and 10 exhibit linearity indicating that the data sets fit a log-normal distribution. In addition, the linear regression statistics for the log-normal plots show a strong “goodness of fit” coefficient of 0.95 or better for all three constituents.

Although the data are log-normally distributed, it is still possible to see minor secondary distributions in the tail of the log-normal distributions. For example, in Figure 3, for total arsenic, there is a secondary distribution beginning at 13 μg/L and ending at 28 μg/L, and another higher concentration secondary distribution centered around 50 μg/L. The same distribution pattern is repeated in the dissolved fraction for arsenic (Figure 3). In Figure 4, showing total copper concentrations, there is a secondary distribution starting at approximately 18 μg/L and ending at 27 μg/L. There is an additional higher concentration secondary distribution centered between 100 and 200 μg/L.

No obvious secondary distributions exist in the total or dissolved manganese histograms shown in Figure 5 making data truncation difficult for manganese as discussed in Section 3.2.

The higher concentration secondary distributions associated with both the total arsenic and total copper histograms likely do not represent background concentrations and can be truncated from the data set with a reasonable degree of confidence. However, the lower concentration secondary distributions associated with the total arsenic and total copper histograms likely contain both natural background data and data affected by human activities. Distinguishing between these two types of data is difficult because there is likely overlap in natural background concentrations and concentrations affected by human activities. The process for selecting the truncation point (separating natural background data from data impacted by human activities) is presented in the following section.

3.1.2 Truncation Points

Truncation points were selected in the data sets to separate the primary log-normal distribution from secondary distributions observed in the histograms (Figures 3, 4, and 5). For example, in the total copper data set, a secondary distribution defined by concentrations above 27 μg/L and with a peak of concentrations between 100 and 200 μg/L was assumed to not represent background and therefore the total copper data set was truncated at 28 μg/L. However, the lower concentration secondary distribution for copper begins at 18 μg/L and extends to 26 μg/L and it is not possible to distinguish if concentrations between 18 and 27 μg/L were part of the background data. Therefore, a sensitivity analysis was performed on the copper data to determine what effect truncation of the data between 13 and 27 μg/L would have on the 50th and 90th percentiles of the background data set.

In the total arsenic data set, the secondary distribution above 28 μg/L and centered on 50 μg/L is believed to not represent background values. However, similar to copper, a lower concentration secondary distribution for arsenic begins at 13 μg/L and extends to 28 μg/L. Arsenic concentrations in this 13 to 28 μg/L range may be due to variability in natural background or from impact due to human activities. Therefore a range of truncation points from 13 to 28 μg/L was used for the arsenic sensitivity analysis to determine what effect the truncation of the data between 13 and 28 μg/L would have on the 50th and 90th percentiles of the background data set.

Both the arsenic and copper truncated data sets were checked to confirm that they were still log-normally distributed following truncation.

This data truncation approach does not work for manganese and an alternative approach for manganese will be discussed below in Section 3.2.

3.1.3 Effect of Non-detects on the Distributions

The full data sets for these metals include greater than 15 percent non-detected concentrations. For this reason, a sensitivity analysis was also performed to evaluate the effect of non-detects on the data. In data sets where the majority of low concentrations (concentrations below the 50th percentile) are non-detects, removing the samples from the data set can result in an immediate and marked impact on the 50th percentile. The effect on the 50th percentile for these data sets, while measurable was less than the allowed field and lab variability in the Quality Assurance Project Plan; and therefore is not significant.

Figure 6 shows the arsenic distribution with and without the non-detects and presents the distribution statistics. Figure 7 presents the same information for copper. Note that in both cases, there are more than 500 detected concentrations and that the 50th percentiles shift by less than 1 μg/L when the non-detects are removed.

Table 3 also presents the results for the 50th and 90th percentiles where all non-detected samples are removed from the data. This table shows that the choice of truncation point is also insensitive to the inclusion or exclusion of non-detects.

Because the removal of non-detects had a measurable effect on the 50th and 90th percentiles, background values will be proposed based on data sets with non-detects included which yields a more conservative estimation of background.

3.1.4 Total Versus Dissolved

Very few differences were found to exist between total and dissolved concentrations for arsenic and copper. For groundwater compliance at Plant 2, only the total fraction will be used to monitor for compliance. The USEPA policy when sampling for metals is to use the total fraction to encourage best practices in well design, installation and development, and groundwater sample collection.

3.1.5 Proposed Background Values

In setting background values for log-normally distributed data, MTCA considers both four times the 50th percentile and the 90th percentile and generally selects the lower of the two. Because a reliable truncation point cannot be determined from the data sets (see Section 3.1.2) results of the sensitivity analysis were used to help select the proposed background concentrations for arsenic and copper.

As expected the 90th percentile is more sensitive to changes in the truncation point and varies from 6.0 to 12 μg/L for arsenic and 6.4 to 9.8 µg/L for copper over the range of likely truncation values used in the sensitivity analysis (Table 3). The resulting range of 90th percentile values was unacceptably large, especially given the unknown nature of where to truncate the data sets. Therefore, the 90th percentile was not used to determine background. Four times the 50th percentile was determined to be a much more robust statistic and based on the sensitivity analysis results does not change over the range of potential truncation points.

This results in the following proposed background values for total arsenic and total copper in Plant 2 groundwater:

- The most robust value for total arsenic in the sensitivity analysis is 8.0 μg/L, and is based on four times the 50th percentile.
- The most robust value for copper in the sensitivity analysis is 8.0 μg/L, and is also based on four times the 50th percentile.

To evaluate whether specific truncation points impacted the quality of the log-normal distributions, normal and log-normal distributions were plotted for truncated data sets of total arsenic, total copper, and total manganese. Values below laboratory detection limits were again excluded from these plots. The resulting R^2 results are presented in Table 4. For total arsenic R^2 values ranged from 0.98 to 0.99 throughout the sensitivity analysis, with the best fits associated with 90th percentile values of arsenic between 7.0 and 9.0 μg/L.

For copper, this same analysis again indicates that the truncated data set remains log-normally distributed with no obvious preference for a truncation point in the range.

3.2 SPECIAL CONSIDERATIONS FOR MANGANESE

Histogram plots of the manganese concentrations do not exhibit a secondary distribution. This is likely due to the combination of the following effects: (1) there are no releases of manganese to soils at Plant 2 and manganese is not a soil COC and (2) manganese naturally occurs in area soils at 0.1 percent (1,146 ppm), and (3) manganese is readily leached from soil under the reduced oxygen conditions in Plant 2 groundwater. At Plant 2, both natural processes (organic-rich alluvial soils scattered throughout the valley) and the release of COCs that consume oxygen (such as petroleum hydrocarbons) are likely causing decreased oxygen concentrations in the groundwater. Therefore, the manganese distribution shown in Figure 5 is likely a continuous distribution of manganese concentrations ranging from naturally occurring aerobic conditions through naturally occurring low oxygen conditions through low redox conditions caused by released organics. There is no apparent break point between those conditions. Interestingly, arsenic contamination in groundwater is also controlled by the redox-driven dissolution of natural arsenic from the formation, rather than releases of arsenic to soil at Plant 2. However, significantly more oxygen needs to be depleted in groundwater before arsenic begins to dissolve. These more stringent redox conditions are likely why secondary distributions are visible in arsenic concentrations.

To develop a background value for manganese the complete data set could be used. It is log-normally distributed, and would result in a background value of 2,400 μg/L. This value may be high because the data set contains manganese values from areas of the site where there is known contamination and low redox conditions that would favor the leaching of manganese. For this reason, other approaches were considered for truncating the manganese distribution.

Figure 11 shows the relationship between total manganese and total arsenic for those samples where both analytes were measured. It is important to note that arsenic concentrations above 28 μg/L were truncated from the arsenic background data set provided by USEPA because they were believed to be associated with redox conditions related to the release of organics. Figure 12 looks more carefully at these samples, and notes that for these samples arsenic and manganese are moderately correlated, and that all the wells are in areas where known releases of organics have occurred, specifically the majority are in the South Yard area of Plant 2. This area has low-levels of organic contamination and reduced oxygen concentrations in groundwater. Boeing proposes to exclude manganese concentrations from wells in this area of the site from the manganese background data set.

Figure 13 looks further at manganese concentrations in areas where arsenic concentrations are not elevated, and finds that there are still a number of manganese concentrations that are above 2,000 μg/L. Figure 13 also shows a second tight cluster of data points between non-detect and 2,000 μg/L, which can be seen clearly in the histogram in Figure 3. Many of the high manganese-low arsenic samples are from the 2-10 and 2-66 Sheetpiles, which is not surprising given the following: redox conditions at the sheetpile are very low favoring rapid, strong degradation of TCE to vinyl chloride; these very low redox conditions also favor the continued leaching of manganese, but can result in the precipitation of arsenic as its sulfide, resulting in high manganese concentrations and low arsenic concentrations. Boeing proposes to exclude manganese concentrations from wells in and adjacent to the sheetpiles from the data set, along with wells in OA-18 and OA-5 for these same reasons.

At the other end of the manganese curve, many of the lowest manganese concentrations on site are from shoreline wells where the tidal efficiencies help to create a more oxygen rich environment that rarely exists at locations farther from the waterway.

Because of the extreme sensitivity of manganese to redox conditions and the variety of natural and man-made effects (tidal changes, organic-rich alluvial materials, releases of COCs), using a fixed background value or even a background distribution for manganese is problematic. Therefore, Boeing proposes the following approach that incorporates the concept of trend plots often used to monitor manganese at RCRA landfills (where this same problem occurs with sensitivity of manganese to redox conditions):

- Manganese would not be used to define a groundwater cleanup area in the absence of other COCs. Currently, in areas where manganese concentrations are above 2,000 μg/L there are already other known groundwater COCs, so those areas would be captured by the other COCs so those areas of manganese occurrence would be addressed through remedies for other COCs.
- In groundwater cleanup areas (defined by other COCs) where manganese concentrations exceed 2,000 μg/L, manganese would be treated as a COC and monitored, and tracked using trend charts such as those used at RCRA landfills. Also, any remedy that could make manganese concentrations rise during the active phase of the remedy (for example, the enhanced reductive degradation of TCE) would include details on how to track the potential initial rise and later decrease in manganese concentrations.
- In groundwater cleanup areas (defined by other COCs) where manganese concentrations are below 2,000 μg/L, manganese concentrations would still be monitored throughout the active phase of the remediation, if the remediation involved making the redox potential of groundwater lower, to monitor the effect of potential geochemical changes on manganese concentrations.
- In those compliance wells where manganese would be monitored and tracked, it would only be tracked until concentrations dropped below an appropriate risk-based value for surface water. This value has not yet been developed at Plant 2. However, for comparison the risk-based concentrations for manganese in groundwater used for drinking water is 2,200 μg/L according to MTCA Method B calculations.

4.0 Use of Background Values

Different approaches exist for evaluating the background distributions described above.

For log-normally distributed contaminants, MTCA takes the approach of using the minimum of four times the 50th percentile or the 90th percentile. The 1992 guidance document (Ecology 1992) presented statistical arguments for why this is a protective approach for setting background. Ecology then uses this value with the following compliance scheme taken from WAC 173-340-720(9):

- Compliance with groundwater cleanup levels shall be determined for each groundwater monitoring well or station that is part of the compliance monitoring network.
- For cleanup levels based on short-term or acute toxic effects, the 95 percent upper confidence interval of the mean concentration shall be used. The upper confidence level (UCL) of the mean shall be calculated using verified assumptions about the shape of the distribution (normal, lognormal, etc.).
- For cleanup levels based on chronic or carcinogenic threats, the true mean concentration shall be used to evaluate compliance with groundwater cleanup levels.
- All data analysis methods used must meet the following requirements:
  - ∗ No single sample concentration shall be greater than two times the groundwater cleanup level. Higher exceedances to control false positive error rates at 5 percent are appropriate when the cleanup level is based on background concentrations. Technical Attachment 2 to Figure 12 in Ecology's Statistical Guidance for Ecology Site Managers contains the approach that is proposed for use at Plant 2 (Ecology 1992).
  - ∗ Less than 10 percent of the sample concentrations shall exceed the groundwater cleanup level during a representative sampling period. Higher exceedances to control false positive error rates at 5 percent are appropriate when the cleanup level is based on background concentrations. Technical Attachment 1 to Figure 12 in Ecology's Statistical Guidance for Ecology Site Managers contains the approach that is proposed for use at Plant 2 (Ecology 1992).

For total arsenic, the background value will be 8.0 μg/L for total copper, the background value will also be 8.0 μg/L. For total manganese, the "background" approach will acknowledge the strong effect of groundwater redox on manganese, and use the approach specified in Section 3.2. The approach to be used for assessing site measurements in comparison to background will be discussed further in Volume II of the CMS.

5.0 References

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Tables

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Table 1
Background Concentrations for Selected Metals in Soils in Puget Sound

Metals	Puget Sound Soil Background Concentrations (mg/kg dry weight)
Aluminum	32,581
Arsenic	7.30
Beryllium	0.6
Cadmium	0.8
Chromium	48.2
Copper	36.4
Iron	36,128
Mercury	0.07
Manganese	1,146
Nickel	38.2
Lead	16.8
Zinc	85.1

Table 2
Basic Characteristics of the Complete Data Set

Units of μg/L	Dissolved Arsenic	Total Arsenic	Dissolved Copper	Total Copper	Dissolved Manganese	Total Manganese
Number of Samples	716	891	663	894	231	201
Maximum	2,000	2,270	130	1,000	6,500	6,340
Minimum	0.066	0.20	0.50	0.50	1.00	1.00
Mean	76.7	13.4	5.63	13.1	979	1,067
50^{th} Percentile	2.9	2.1	2.0	2.0	500	610
90^{th} Percentile	45	17	10	24	2,400	3,000
95^{th} Percentile	120	24	27	63	4,000	4,000

Table 3
Sensitivity of Background Calculation to Truncation Point Selection

Analyte	Truncation Point (µg/L)	Detections and Non-detections				Detections Only			
		n	Percentile			n	Percentile		
			50th (µg/L)	4 times 50th (µg/L)	90th (µg/L)		50th (µg/L)	4 times 50th (µg/L)	90th (µg/L)
Total Arsenic	All data	891	2.1	8.4	17	734	3.0	12	18
	≤28	851	2.0	8.0	12	698	2.7	11	15
	≤21	834	2.0	8.0	10	681	2.4	9.6	12
	≤19	819	2.0	8.0	9.0	666	2.3	9.2	10
	≤17	803	2.0	8.0	7.6	650	2.2	8.8	8.0
	≤15	783	2.0	8.0	7.0	630	2.1	8.4	7.0
	≤13	771	2.0	8.0	6.0	618	2.0	8.0	6.9
Dissolved Arsenic	All data	716	2.9	12	45	556	3.3	13	39
	≤28	630	2.0	8.0	11	492	2.9	12	15
	≤21	613	2.0	8.0	9.6	475	2.6	10	11
	≤19	608	2.0	8.0	9	470	2.6	10	10
	≤17	593	2.0	8.0	7.4	456	2.5	10	9.0
	≤15	578	2.0	8.0	6.7	441	2.3	9.2	7.2
	≤13	573	2.0	8.0	6.2	437	2.2	8.8	7.0
Total Copper	All data	894	2.0	8.0	24	598	3.2	13	40
	≤27	815	2.0	8.0	9.8	521	3.0	12	13
	≤21	797	2.0	8.0	8.0	503	3.0	12	11
	≤19	790	2.0	8.0	7.64	496	3.0	12	10
	≤18	789	2.0	8.0	7.3	495	3.0	12	9.8
	≤17	789	2.0	8.0	7.28	495	3.0	12	9.8
	≤15	783	2.0	8.0	7.0	489	3.0	12	9.0
	≤13	767	2.0	8.0	6.4	473	2.8	11	7.9
Dissolved Copper	All data	663	2.0	8.0	10	397	2.9	12	21
	≤27	630	2.0	8.0	7.0	364	2.4	9.6	9.0
	≤23	624	2.0	8.0	6.0	358	2.4	9.6	8.8
	≤21	623	2.0	8.0	6.0	357	2.4	9.6	8.28
	≤19	619	2.0	8.0	6.0	353	2.3	9.2	8.0
	≤17	615	2.0	8.0	6.0	349	2.3	9.2	7.7
	≤15	614	2.0	8.0	6.0	348	2.3	9.2	7.4
	≤13	610	2.0	8.0	5.81	344	2.3	9.2	7.0

Analyte	Truncation Point (µg/L)	Detections and Non-detections				Detections Only			
		n	Percentile			n	Percentile		
			50th (µg/L)	4 times 50th (µg/L)	90th (µg/L)		50th (µg/L)	4 times 50th (µg/L)	90th (µg/L)
Total Manganese	All data	201	610	2,400	3,000	191	650	2,600	3,000
	≤3500	184	510	2,000	1,900	174	570	2,300	1,900
	≤2800	179	490	2,000	1,700	169	540	2,200	1,800
	≤2300	172	450	1,800	1,400	162	500	2,000	1,400
	≤2000	168	430	1,700	1,300	158	480	1,900	1,400
	≤1600	157	370	1,500	1,100	147	420	1,700	1,100
	≤1200	144	330	1,300	900	134	360	1,400	930
	≤500	91	200	800	400	81	240	960	410
Dissolved Manganese	All data	231	500	2,000	2,400	221	530	2,100	2,700
	≤3500	214	430	1,700	1,900	204	460	1,800	1,900
	≤2800	209	380	1,500	1,600	199	450	1,800	1,700
	≤2300	204	370	1,500	1,400	194	430	1,700	1,500
	≤1600	187	320	1,300	1,100	177	340	1,400	1,100
	≤1200	171	260	1,000	890	161	300	1,200	900
	≤500	116	140	560	380	106	160	640	390

Table 4
Goodness-of-Fit for Normal and Lognormal Distributions (Detections Only)

Analyte	Truncation Point (µg/L)	n	Normal Distribution R^2	Lognormal Distribution R^2
Total Arsenic	All data	734	0.06	0.96
	≤28	698	0.73	0.98
	≤21	681	0.74	0.98
	≤19	666	0.75	0.99
	≤17	650	0.78	0.99
	≤15	630	0.82	0.99
	≤13	618	0.85	0.98
Total Copper	All data	598	0.46	0.95
	≤27	521	0.73	0.98
	≤21	503	0.77	0.98
	≤19	496	0.79	0.98
	≤17	495	0.80	0.98
	≤15	489	0.80	0.98
	≤13	473	0.83	0.98
Total Manganese	All data	191	0.76	0.95
	≤3500	174	0.85	0.92
	≤2800	169	0.88	0.91
	≤2300	162	0.90	0.90
	≤2000	158	0.91	0.90
	≤1600	147	0.93	0.88
	≤1200	134	0.95	0.87
	≤500	81	0.95	0.84

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Figures

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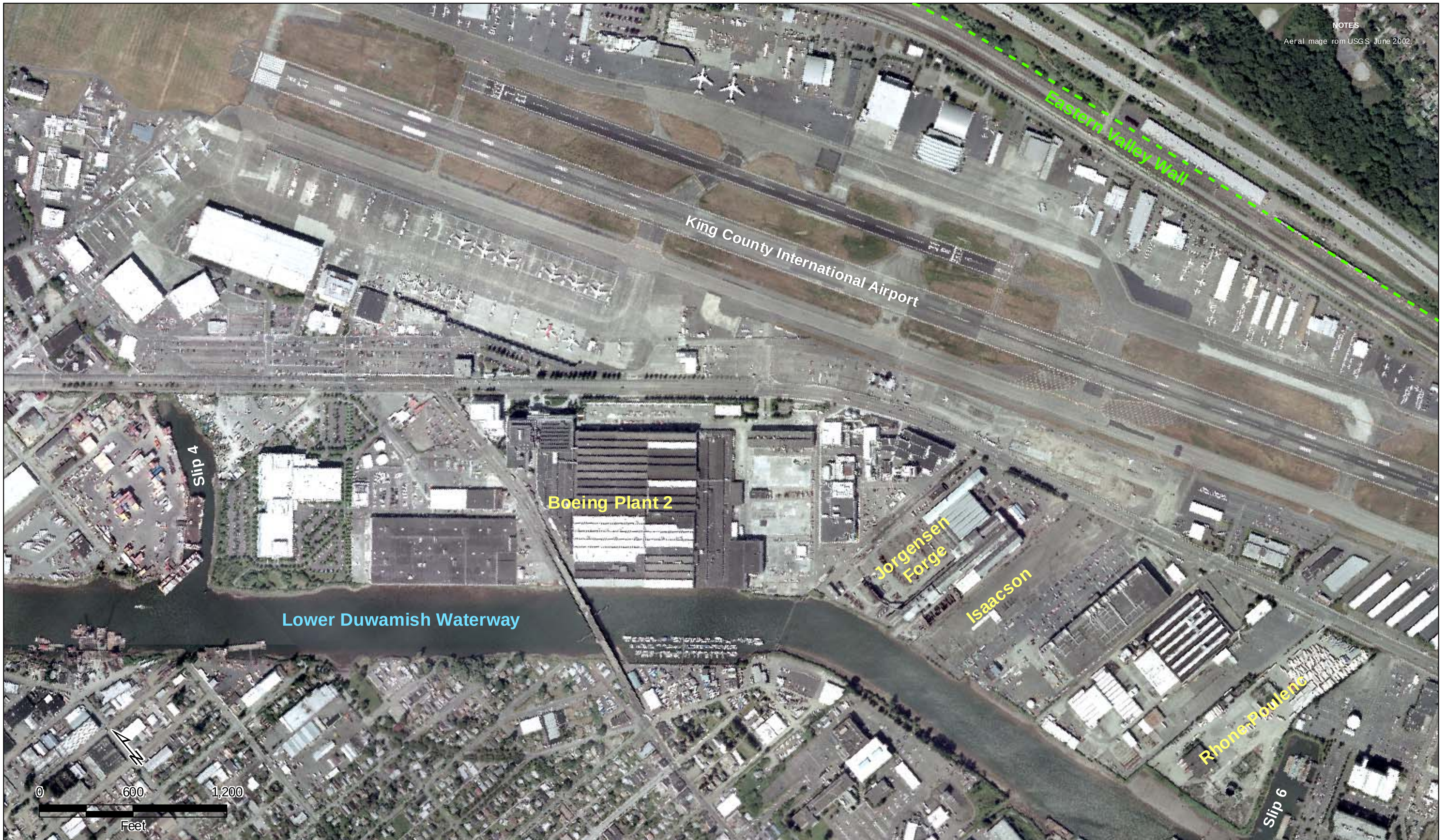

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Figure 1
Site Overview

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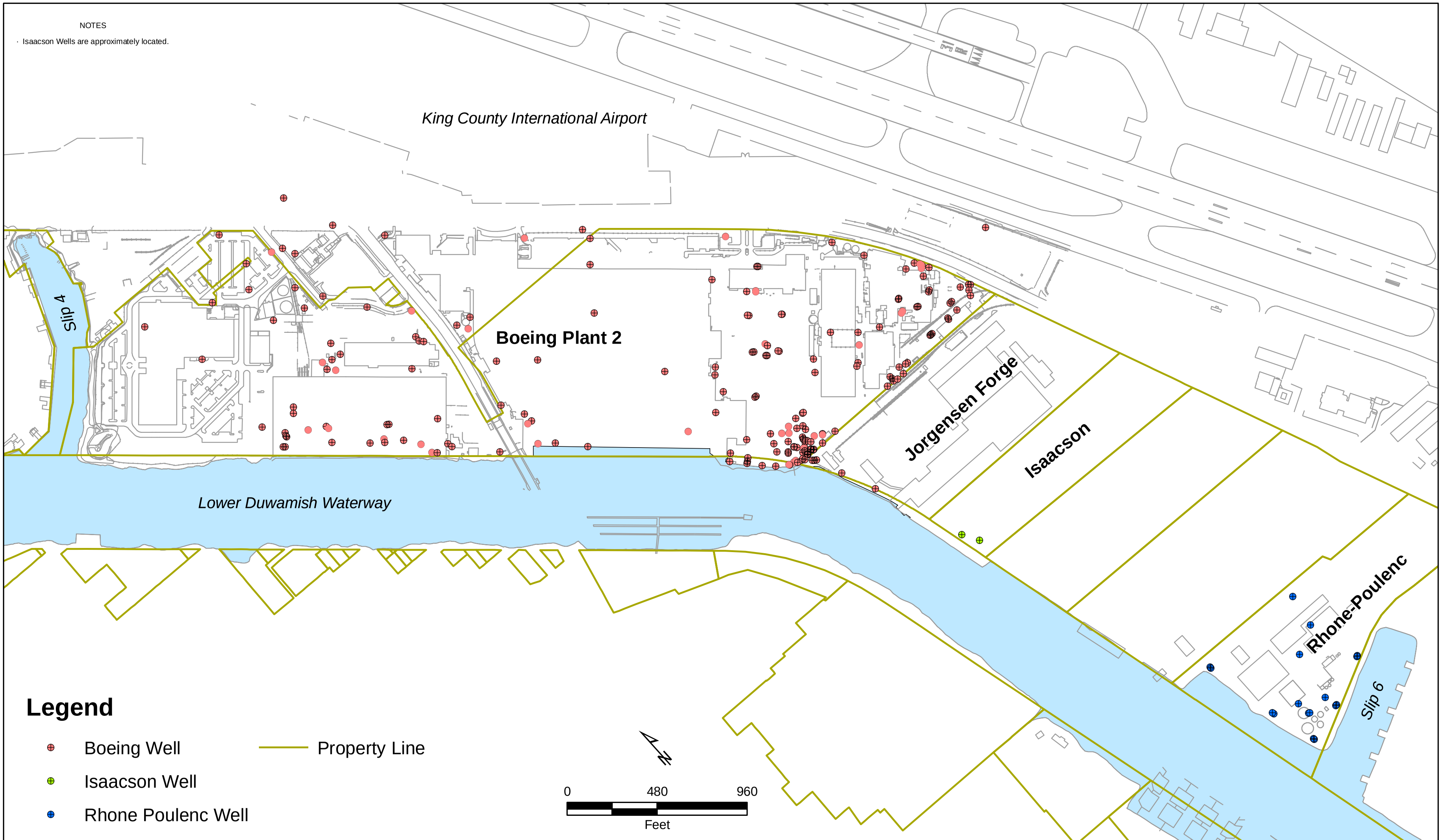

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Figure 2
All Monitoring Wells Considered for
Background Metals Analysis

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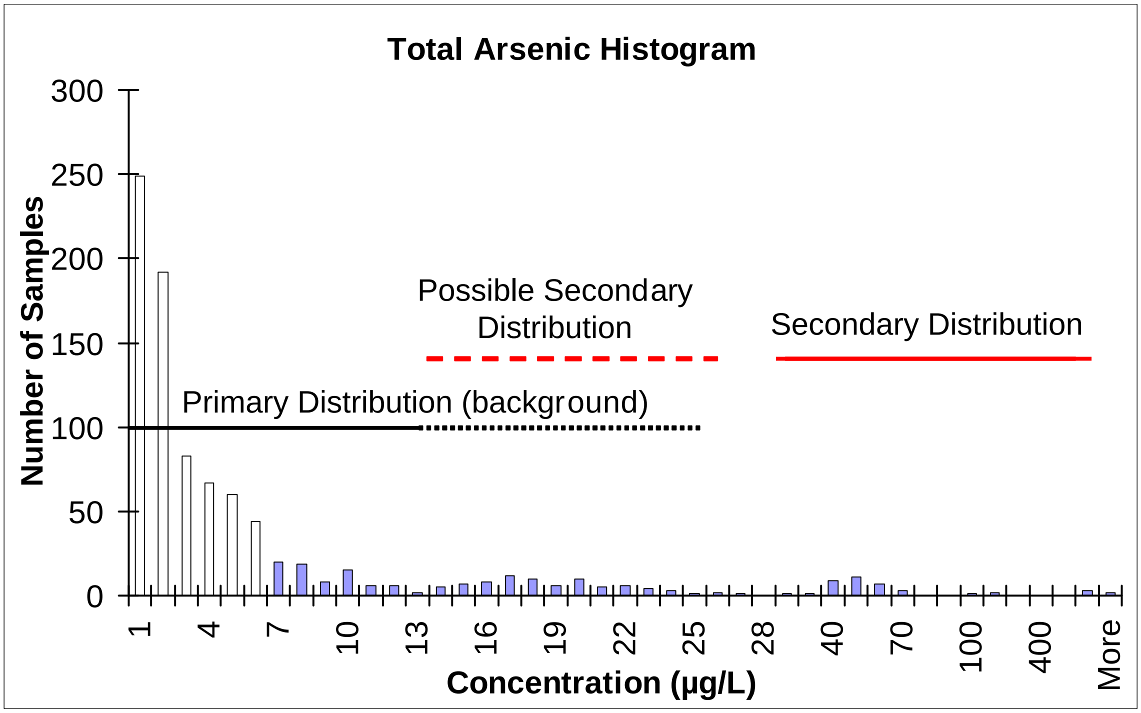
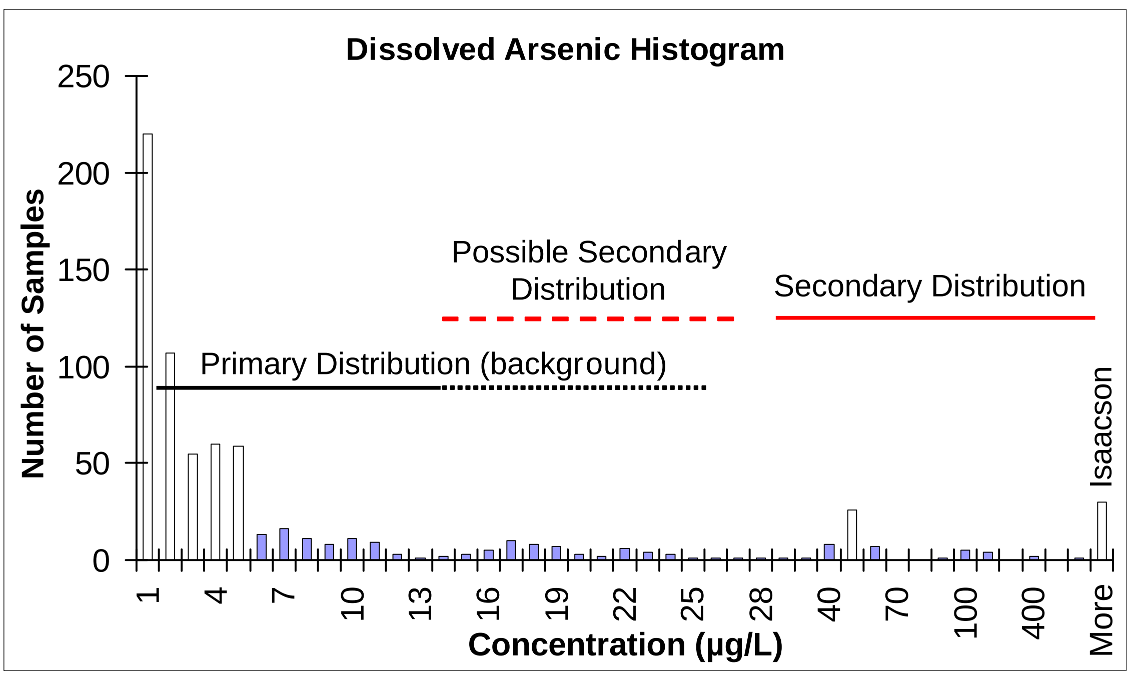
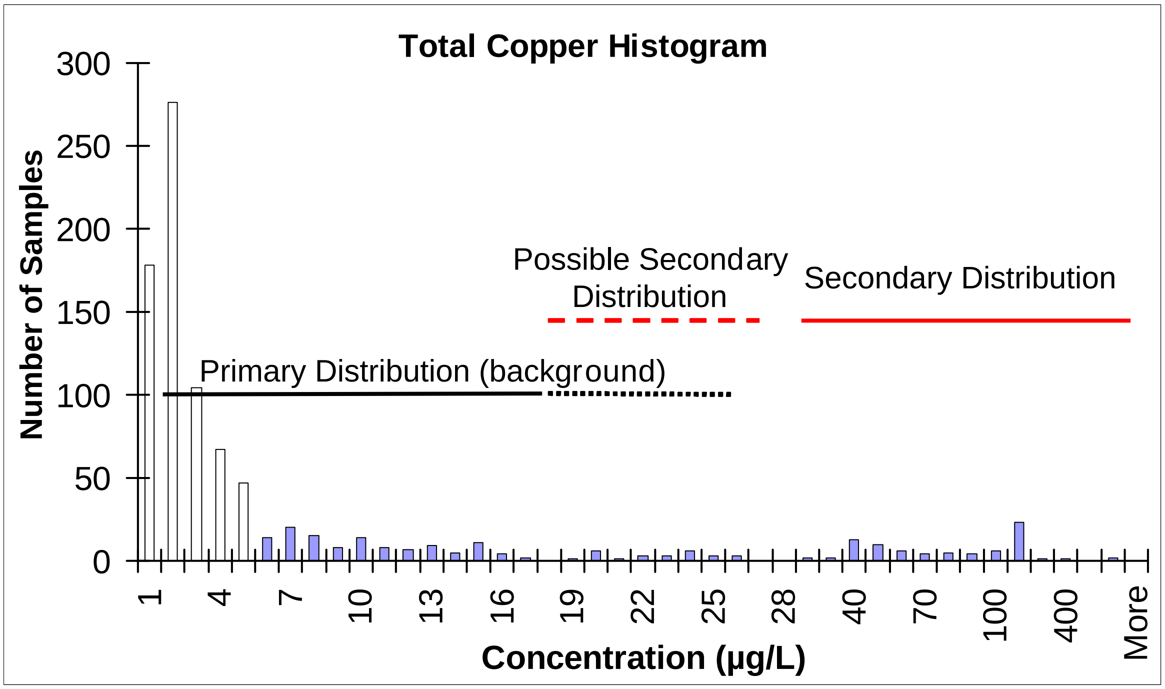




BOEING	**Technical Memorandum: Development and Use of Background Values** **Boeing Plant 2** **Seattle/Tukwila, Washington**	Figure 3 Total and Dissolved Arsenic Distributions (all data)



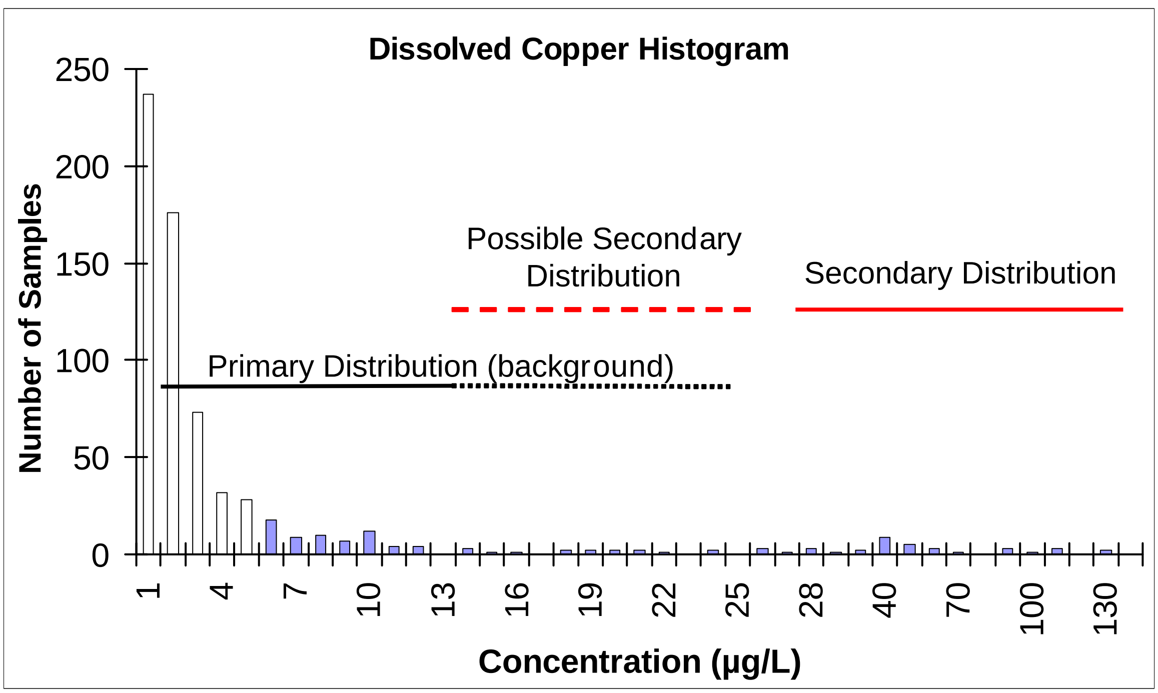
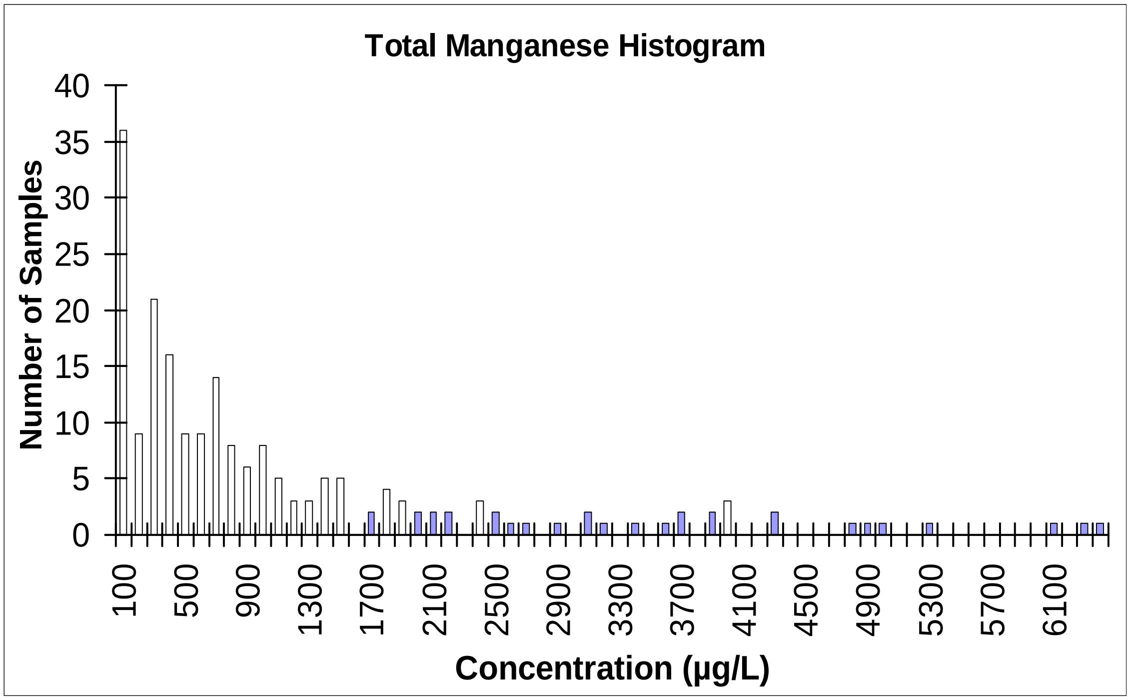
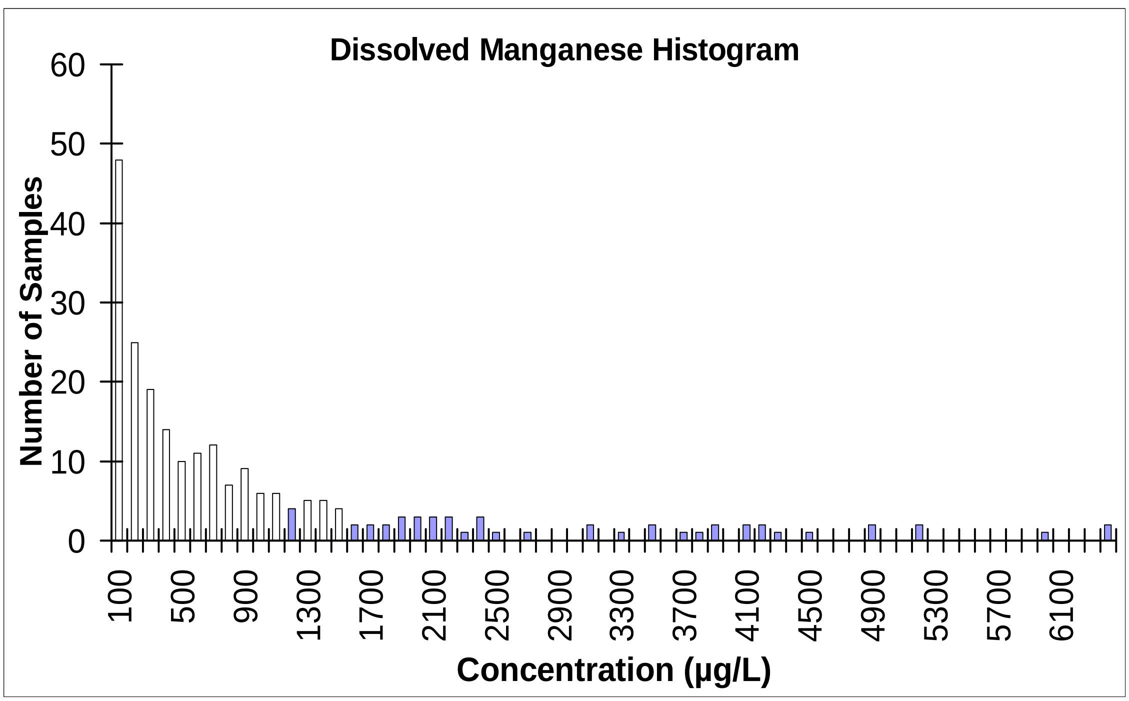


Figure 4
Total and Dissolved Copper Distributions
(all data)





BOEING	**Technical Memorandum: Development and Use of Background Values** **Boeing Plant 2** **Seattle/Tukwila, Washington**	Figure 5 Total and Dissolved Manganese Distributions (all data)

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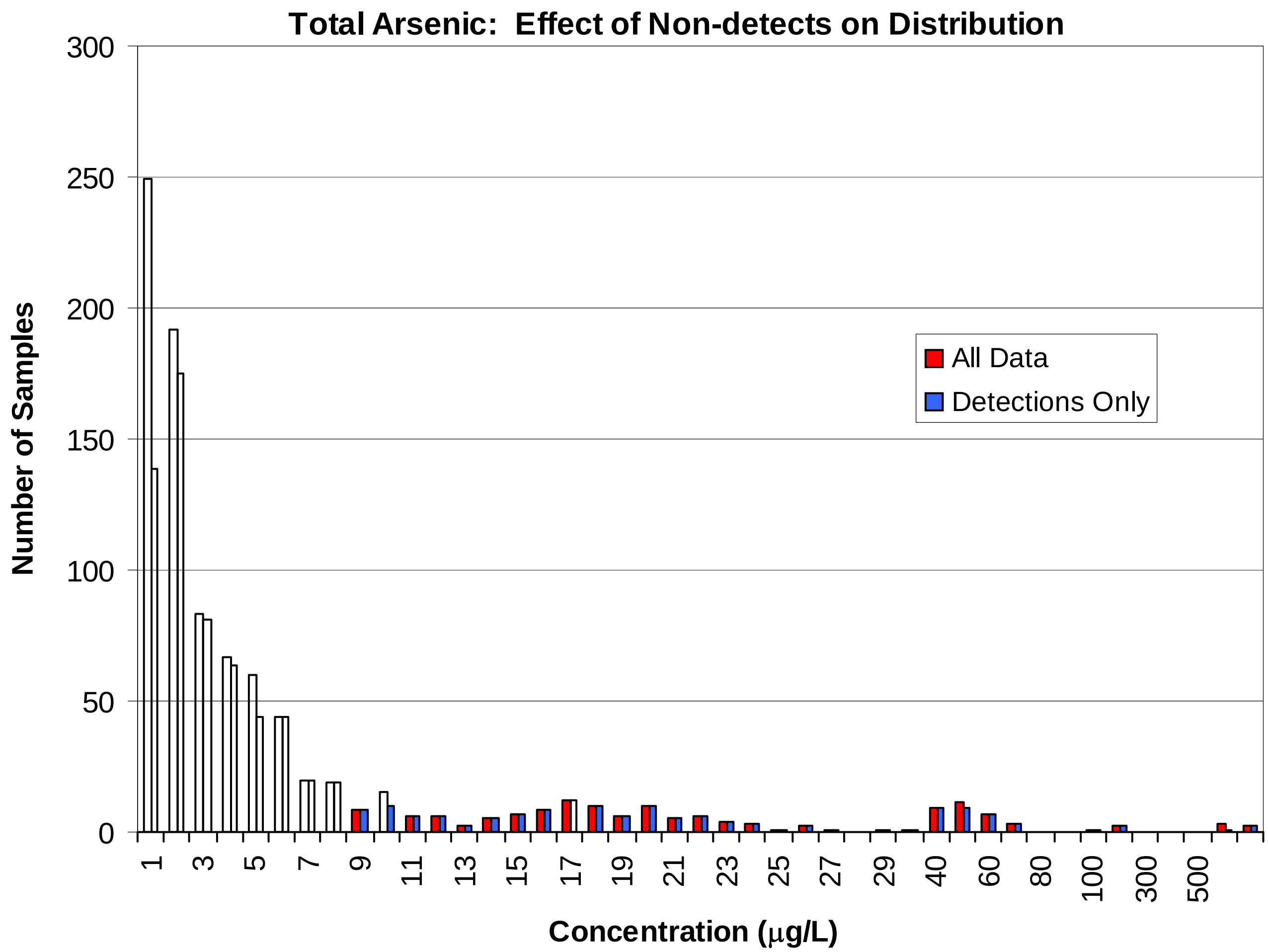

Distribution Statistics	All Data	Detections Only
Number of points	891	734
50th Percentile	2.1	3.0
4 times 50th Percentile	8.4	12
90th Percentile	17	18
95th Percentile	24	26
90% UCL	18	18
95% UCL	19	19

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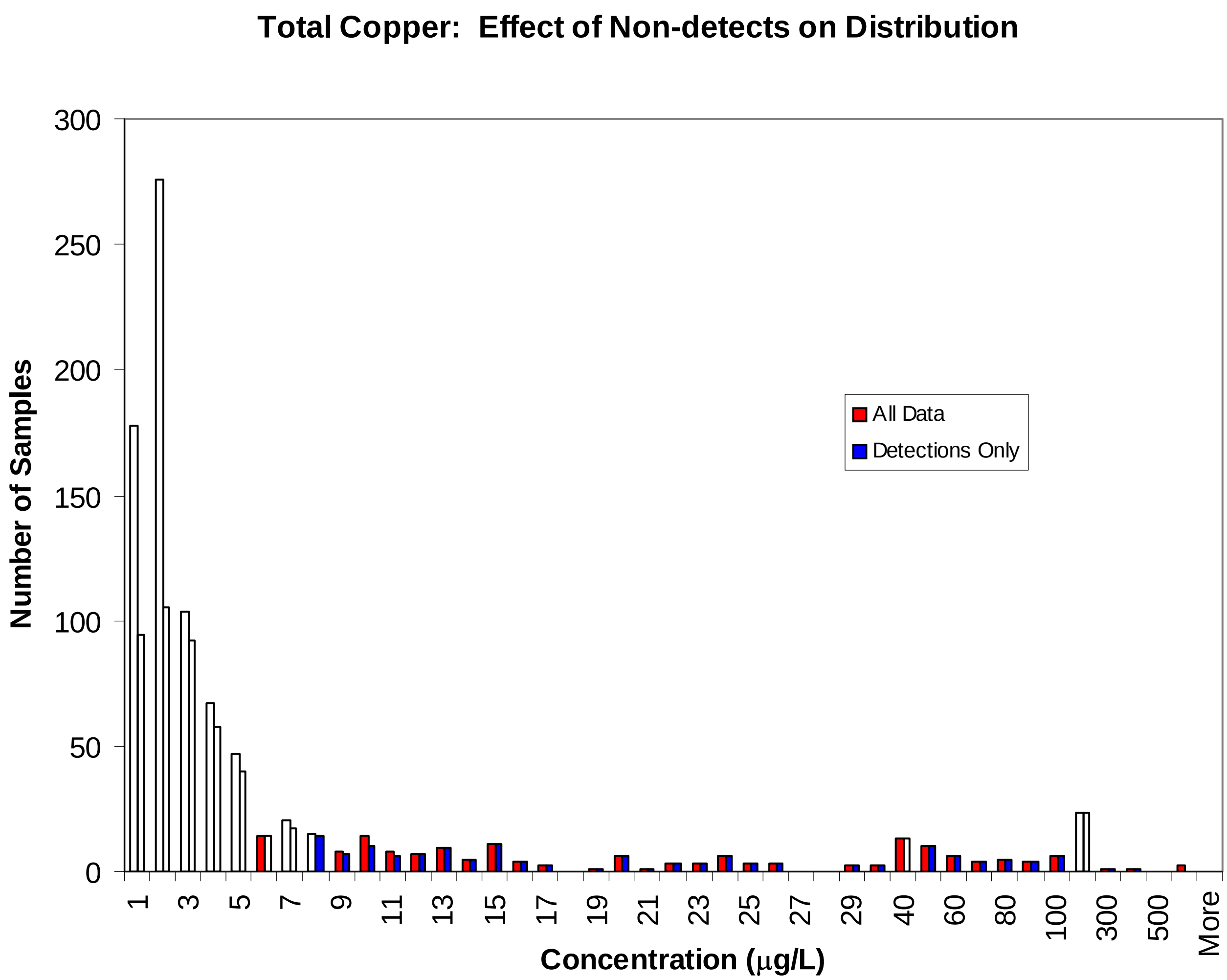
Figure 6
Total Arsenic: Effect of Non-detects on Distributions

Total Copper: Effect of Non-detects on Distribution



Distribution Statistics	All Data	Detections Only
Number of points	894	598
50th Percentile	2.0	3.2
4 times 50th Percentile	8.0	13
90th Percentile	24	39
95th Percentile	63	93
90% UCL	15	17
95% UCL	16	18

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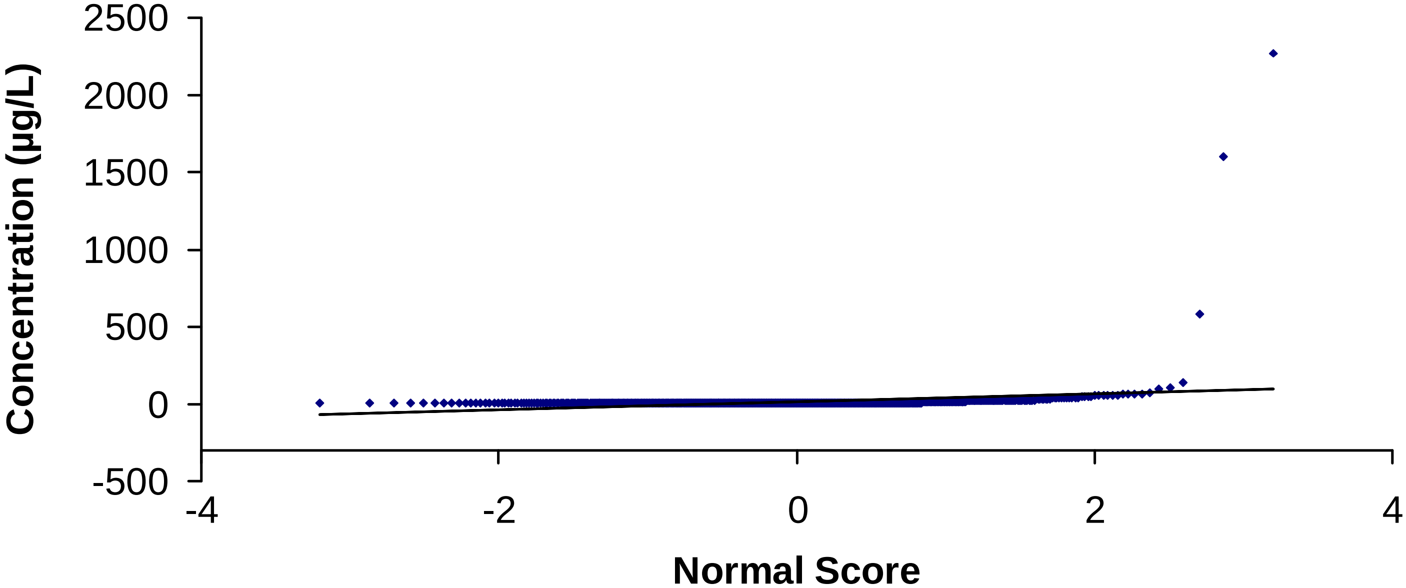
Figure 7
Total Copper: Effect of Non-detects on Distributions

Normal Probability Plot
Total Arsenic (Detections Only)



Log Normal Probability Plot
Total Arsenic (Detections Only)

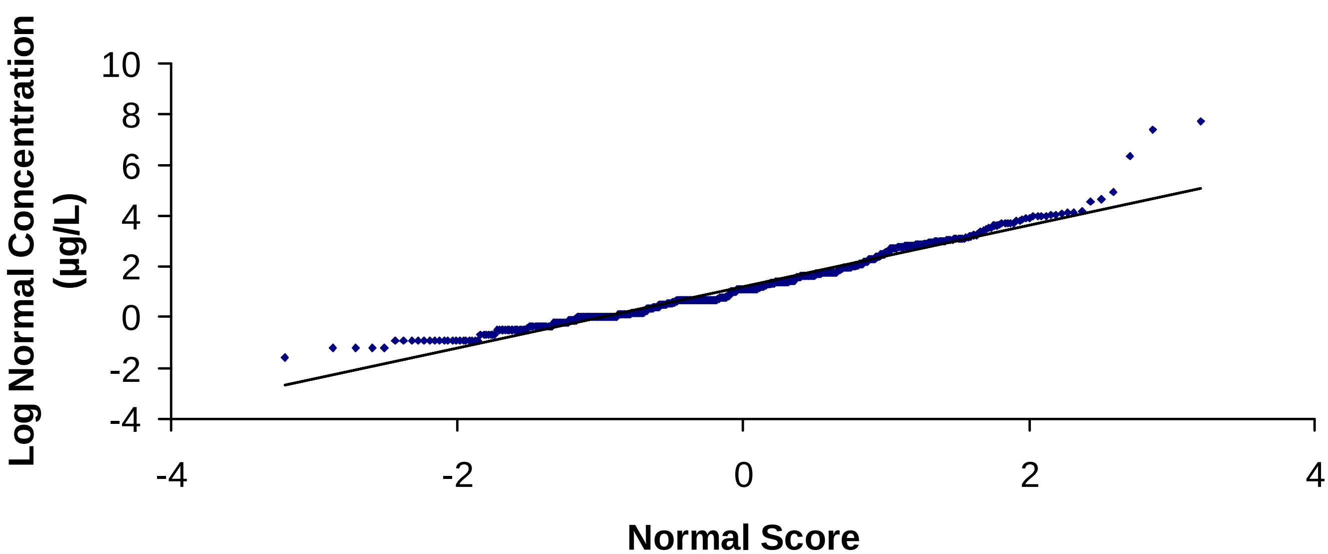


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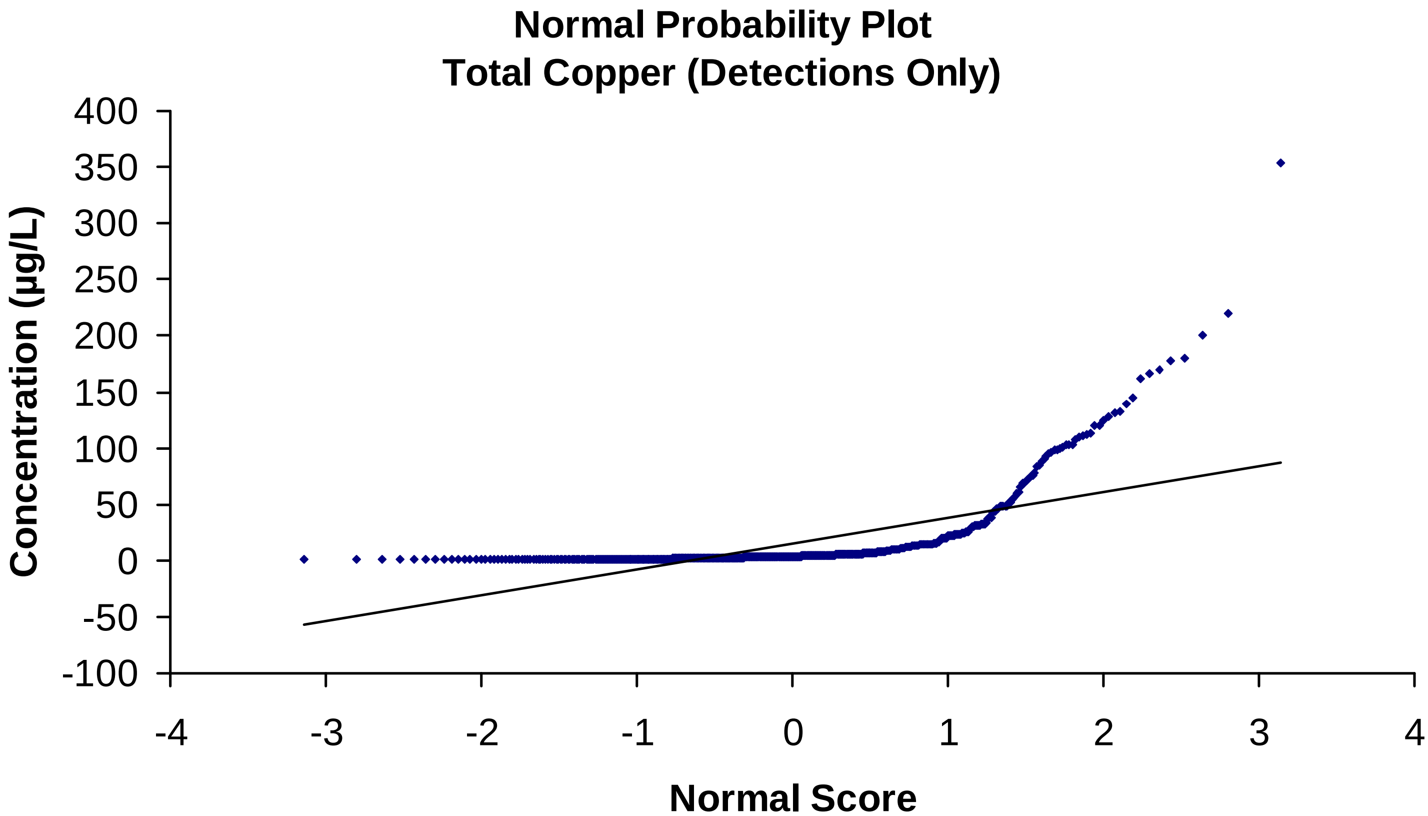
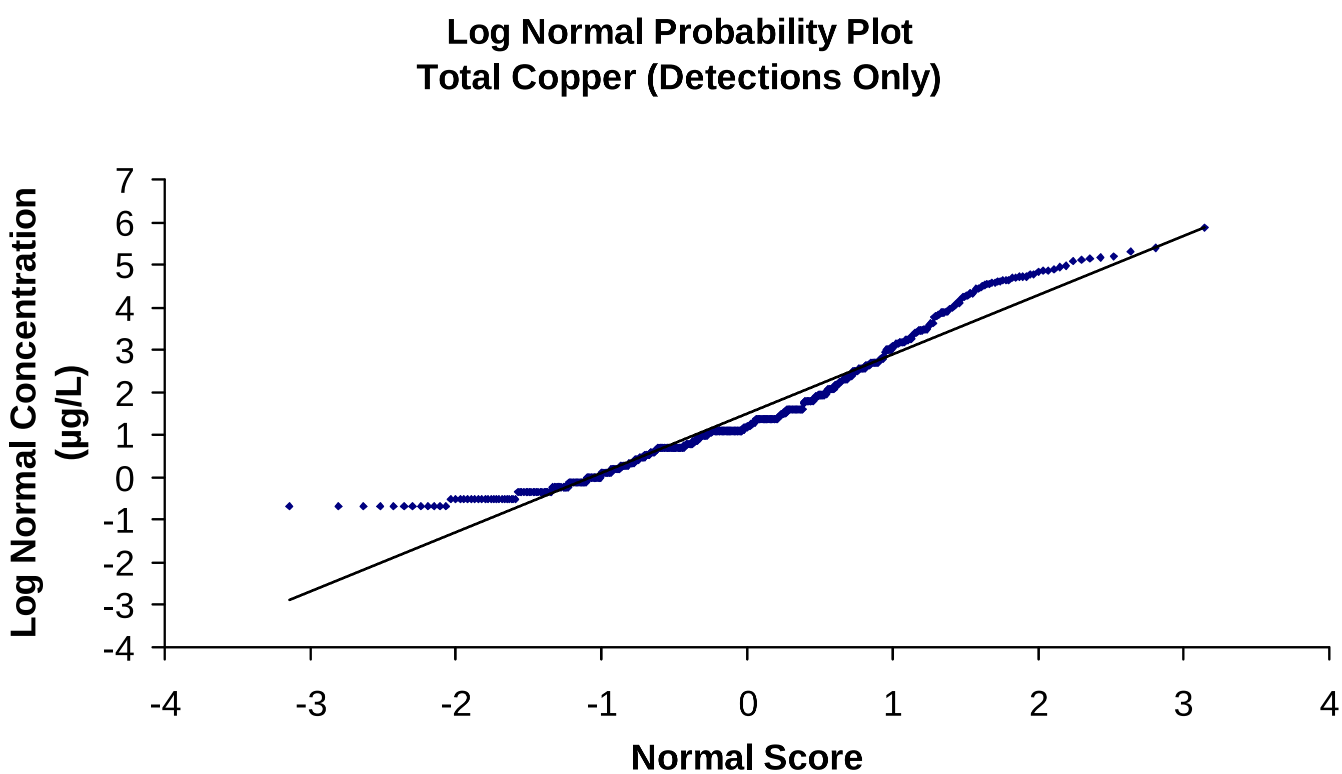
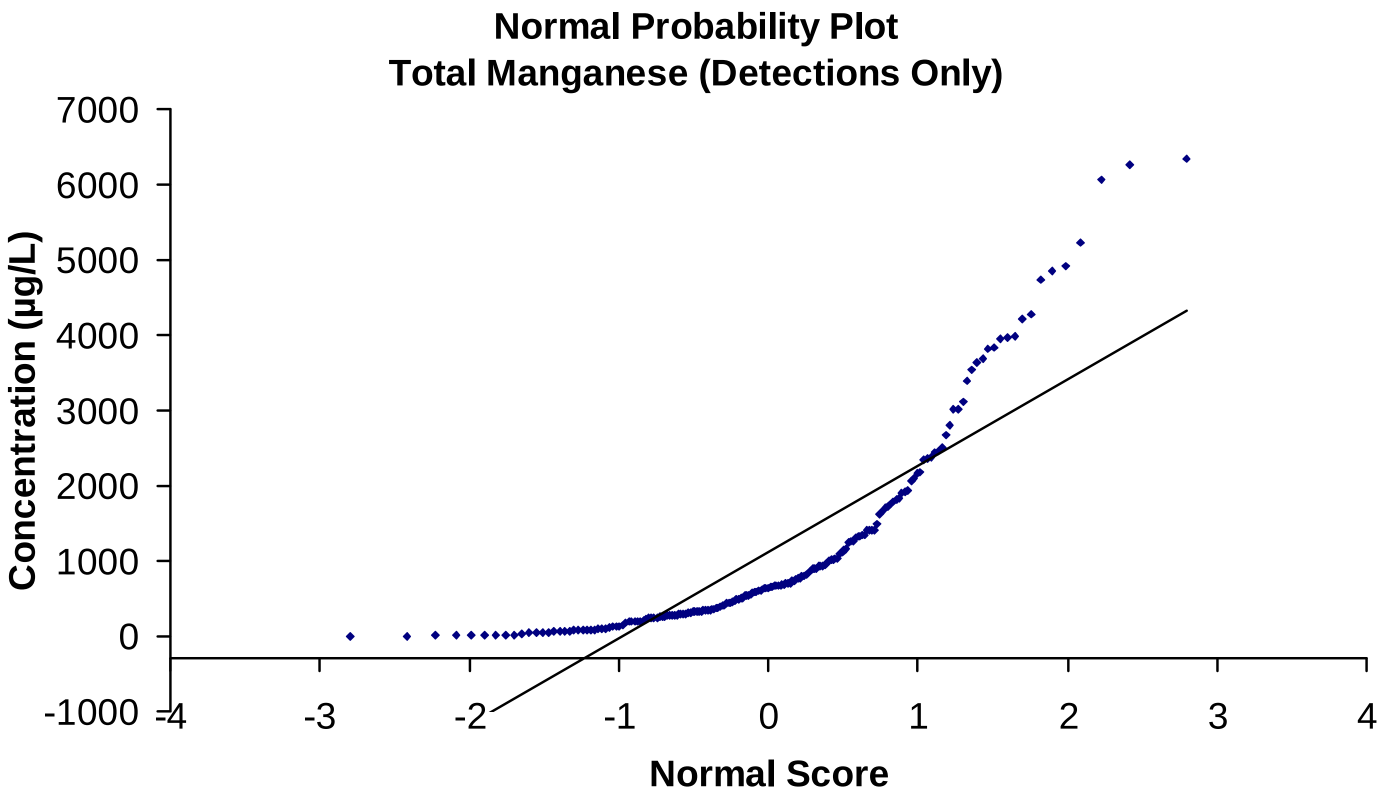
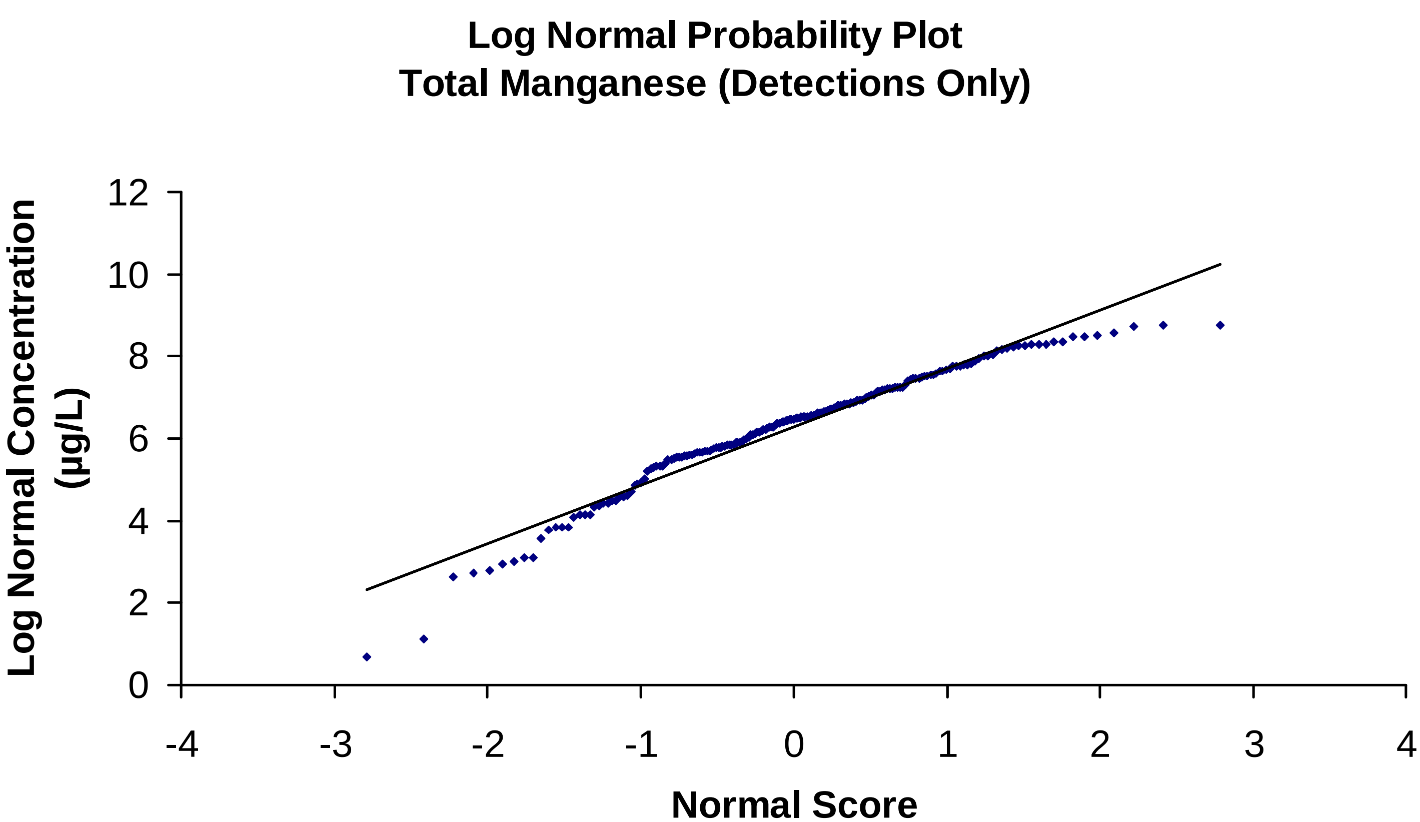
Figure 8
Total Arsenic Probability Plots



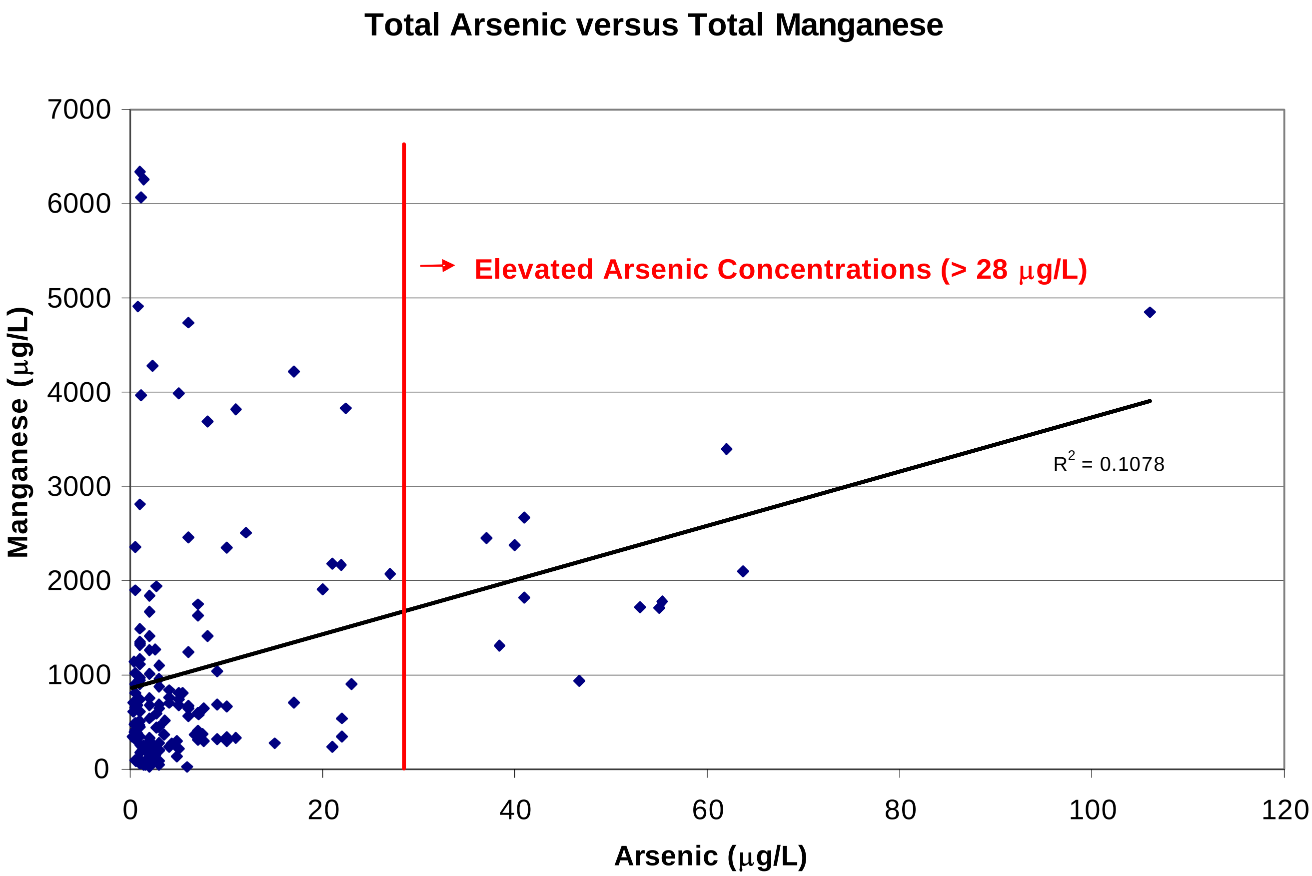


BOEING	**Technical Memorandum: Development and Use of Background Values Boeing Plant 2 Seattle/Tukwila, Washington**	Figure 9 Total Copper Probability Plots

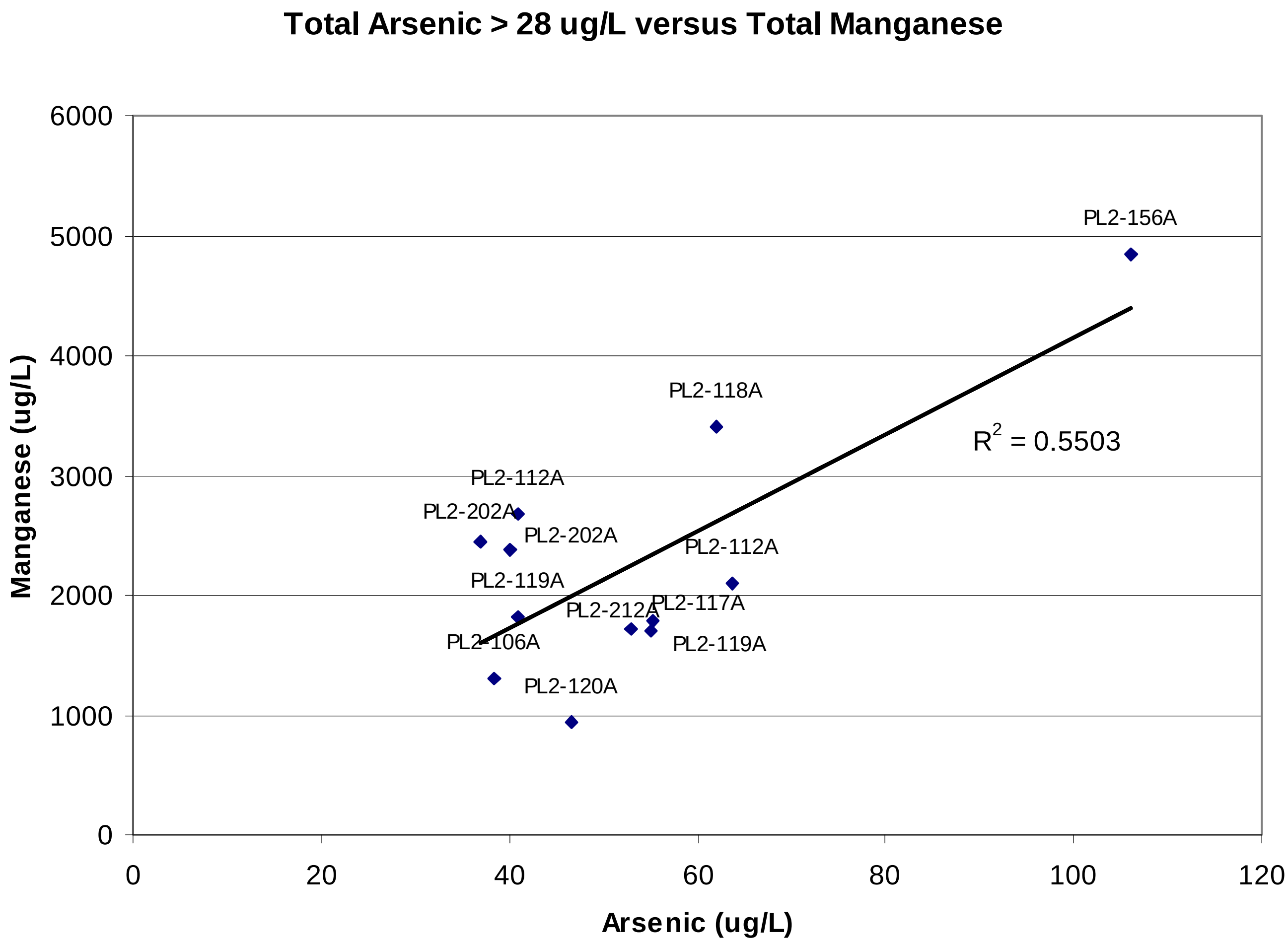




BOEING	**Technical Memorandum: Development and Use of Background Values Boeing Plant 2 Seattle/Tukwila, Washington**	Figure 10 Total Manganese Probability Plots



BOEING	**Technical Memorandum: Development and Use of Background Values Boeing Plant 2 Seattle/Tukwila, Washington**	Figure 11 Relationship between Total Manganese and Total Arsenic



Wells with Elevated Arsenic	Location	Dates Sampled
PL2-106A	South Yard, Plant 2	2005
PL2-112A	South Yard, Plant 2	1995, 2005
PL2-117A	South Yard, Plant 2	2005
PL2-118A	South Yard, Plant 2	1994
PL2-119A	South Yard, Plant 2	1994, 1995
PL2-120A	South Yard, Plant 2	2005
PL2-156A	South Yard, Plant 2	2005
PL2-202A	2-10 Area, Plant 2	1995, 1995
PL2-212A	2-10 Area, Plant 2	1992

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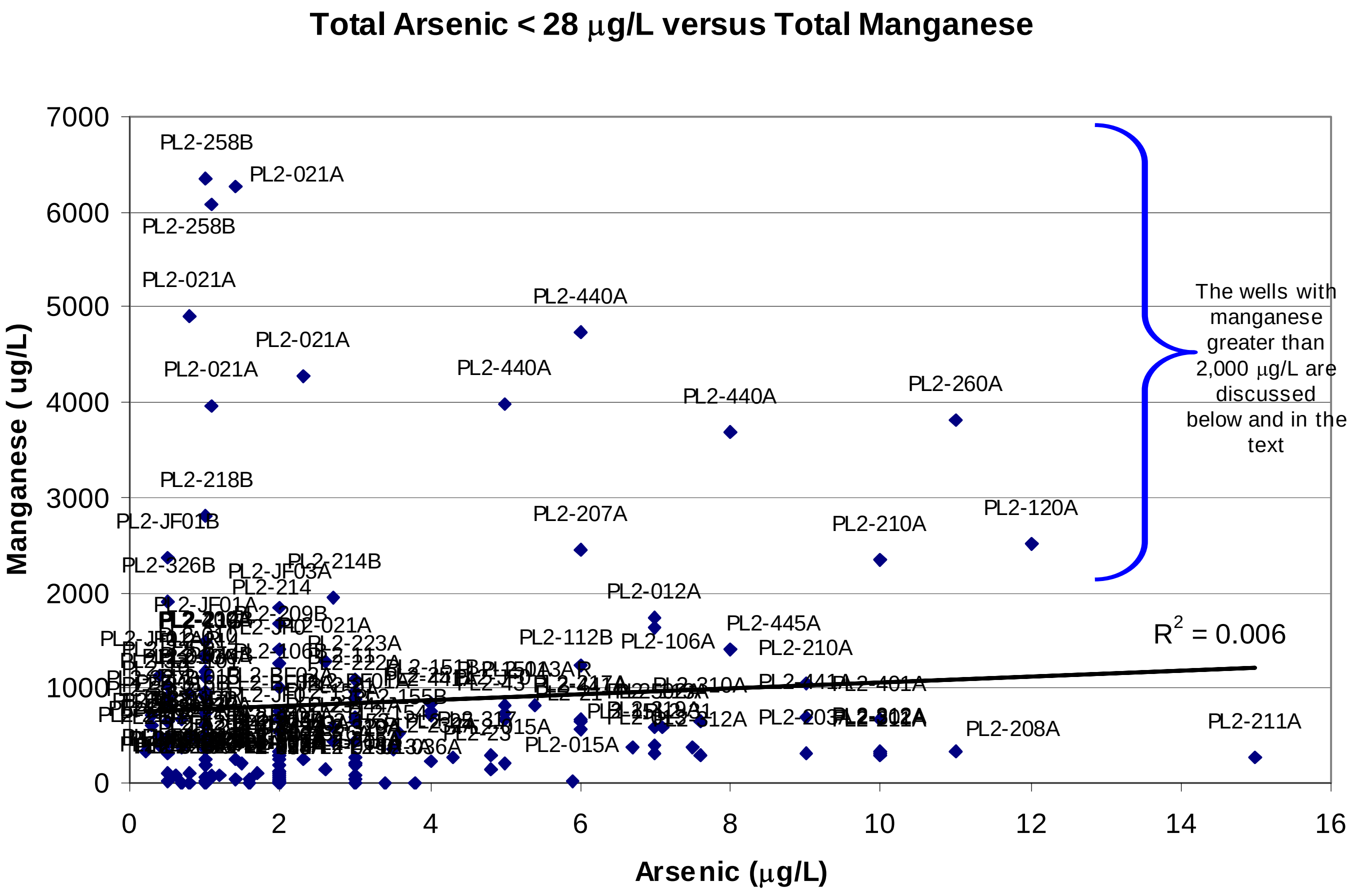
Technical Memorandum: Development and Use of Background Values Boeing Plant 2 Seattle/Tukwila, Washington

Figure 12
Samples Analyzed for Manganese and Arsenic with Elevated Arsenic Concentrations



Labels are only legible for manganese concentrations greater than 2,000 µg/L. Samples below 2,000 µg/L are too closely clustered for readable labels.

Wells with Manganese > 2,000	Location	Dates Sampled
PL2-258B	2-10 Sheetpile, Plant 2	1995, 2005
PL2-021A	2-66 Sheetpile, Plant 2	2005
PL2-156A	South Yard, Plant 2	2004, 2005
PL2-440A	OA-18, Plant 2	1994, 1995
PL2-260A	2-10 Area, Plant 2	1994, 1995
PL2-116A	South Yard, Plant 2	2005
PL2-155A	South Yard, Plant 2	2001, 2005
PL2-118A	South Yard, Plant 2	1994
PL2-218B	2-10 Area, Plant 2	1992
PL2-112A	South Yard, Plant 2	1995, 2005
PL2-120A	South Yard, Plant 2	1994
PL2-207A	2-10 Area, Plant 2	1992
PL2-202A	2-10 Area, Plant 2	1992, 1995
PL2-JF01B	Jorgensen Forge	2005
PL2-210A	2-10 Area, Plant 2	1992
PL2-154A	South Yard, Plant 2	2005
PL2-101A	South Yard, Plant 2	1995

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Figure 13
Samples Analyzed for Manganese and Arsenic with Arsenic Concentrations Less Than 28 µg/L

Boeing Plant 2
Seattle/Tukwila, Washington

Technical Memorandum: Development and Use of Background Values

Appendix A
All Data and Monitoring Well Locations
CD-ROM

March 30, 2006

Well ID	Zone	Northing	Easting
Boeing Wells			
BOC-MW-01	GW Zone A	198425	1274774
BOC-MW-02	GW Zone A	198447	1274522
BOC-MW-03	GW Zone A	198513	1274491
BOC-MW-04	GW Zone A	198178	1274481
DDC2-66-1D	GW Zone A	195878	1275886
DDC2-66-2D	GW Zone A	195846	1275827
PL2-001A	GW Zone A	195909	1275879
PL2-002A	GW Zone A	196003	1275965
PL2-003A	GW Zone A	195845	1275729
PL2-004A	GW Zone A	195871	1275930
PL2-005A	GW Zone A	195851	1275971
PL2-006A	GW Zone A	195814	1275936
PL2-007A	GW Zone A	195818	1275881
PL2-007AR	GW Zone A	195819	1275875
PL2-008A	GW Zone A	195820	1275796
PL2-009A	GW Zone A	195897	1275765
PL2-010A	GW Zone A	195845	1275840
PL2-011A	GW Zone A	195943	1275807
PL2-012A	GW Zone A	195984	1275743
PL2-013A	GW Zone A	195888	1275671
PL2-013AR	GW Zone A	195941	1275725
PL2-014A	GW Zone A	195939	1275618
PL2-015A	GW Zone A	196002	1275567
PL2-015AR	GW Zone A	196022	1275589
PL2-016A	GW Zone A	195861	1275896
PL2-017A	GW Zone A	195887	1275820
PL2-018A	GW Zone A	195964	1275887
PL2-019A	GW Zone A	195972	1275840
PL2-020A	GW Zone A	196035	1275765
PL2-021A	GW Zone A	195883	1275877
PL2-022A	GW Zone A	196007	1275920
PL2-023A	GW Zone A	196000	1275863
PL2-024A	GW Zone A	195997	1275811
PL2-025A	GW Zone A	195952	1275921
PL2-026A	GW Zone A	196096	1275650
PL2-027A	GW Zone A	195816	1276030
PL2-029A	GW Zone A	195847	1275727
PL2-030A	GW Zone A	195840	1275756
PL2-031A	GW Zone A	195840	1275768
PL2-032A	GW Zone A	195928	1275919
PL2-034A	GW Zone A	195820	1275837
PL2-035A	GW Zone A	195831	1275846
PL2-036A	GW Zone A	196073	1275503
PL2-036AR	GW Zone A	196103	1275536
PL2-039A	GW Zone A	196316	1275623
PL2-101A	GW Zone A	195895	1277063
PL2-102A	GW Zone A	196159	1276965
PL2-103A	GW Zone A	196410	1276772
PL2-104A	GW Zone A	196051	1276726

Well ID	Zone	Northing	Easting
PL2-105A	GW Zone A	195914	1276953
PL2-106A	GW Zone A	195856	1276761
PL2-106AR	GW Zone A	195857	1276754
PL2-107A	GW Zone A	196201	1276941
PL2-108A	GW Zone A	196130	1276986
PL2-109A	GW Zone A	196039	1276907
PL2-110A	GW Zone A	195829	1276561
PL2-111A	GW Zone A	195871	1277050
PL2-112A	GW Zone A	195807	1276440
PL2-113A	GW Zone A	195835	1276441
PL2-114A	GW Zone A	195842	1276511
PL2-115A	GW Zone A	195800	1276505
PL2-116A	GW Zone A	195806	1276398
PL2-117A	GW Zone A	195800	1276464
PL2-118A	GW Zone A	196206	1276890
PL2-119A	GW Zone A	196116	1276933
PL2-120A	GW Zone A	196070	1276577
PL2-151A	GW Zone A	195913	1277089
PL2-152A	GW Zone A	196167	1276965
PL2-153A	GW Zone A	196115	1276756
PL2-154A	GW Zone A	196014	1276804
PL2-155A	GW Zone A	195862	1276881
PL2-156A	GW Zone A	195862	1276945
PL2-201A	GW Zone A	198312	1274400
PL2-202A	GW Zone A	198198	1274365
PL2-203A	GW Zone A	198260	1274199
PL2-204A	GW Zone A	197804	1274780
PL2-205A	GW Zone A	197687	1274704
PL2-206A	GW Zone A	197573	1274576
PL2-207A	GW Zone A	197895	1274290
PL2-208A	GW Zone A	197148	1274449
PL2-209A	GW Zone A	197435	1274287
PL2-210A	GW Zone A	197651	1274030
PL2-211A	GW Zone A	197876	1273773
PL2-212A	GW Zone A	197844	1273968
PL2-213B	GW Zone A	197319	1274288
PL2-214A	GW Zone A	197379	1274204
PL2-216A	GW Zone A	197428	1274144
PL2-217A	GW Zone A	197701	1273945
PL2-218A	GW Zone A	197772	1273844
PL2-222A	GW Zone A	197886	1274343
PL2-223A	GW Zone A	197874	1274236
PL2-224A	GW Zone A	198536	1274435
PL2-225A	GW Zone A	198468	1274213
PL2-226A	GW Zone A	198581	1274292
PL2-227A	GW Zone A	197122	1274457
PL2-228A	GW Zone A	198359	1273777
PL2-229A	GW Zone A	198546	1274020
PL2-230A	GW Zone A	197170	1274356
PL2-231A	GW Zone A	197150	1274376
PL2-232A	GW Zone A	197242	1274342
PL2-233A	GW Zone A	196930	1274628

Well ID	Zone	Northing	Easting
PL2-234A	GW Zone A	198693	1273666
PL2-235A	GW Zone A	197283	1274498
PL2-240A	GW Zone A	197634	1274033
PL2-241A	GW Zone A	197839	1274269
PL2-242A	GW Zone A	197917	1274244
PL2-243A	GW Zone A	197963	1274345
PL2-245A	GW Zone A	197750	1273837
PL2-250A	GW Zone A	197658	1274704
PL2-251A	GW Zone A	197638	1274719
PL2-258A	GW Zone A	197722	1273786
PL2-260A	GW Zone A	197978	1274617
PL2-270A	GW Zone A	198792	1274289
PL2-271A	GW Zone A	197566	1273995
PL2-301A	GW Zone A	196125	1276472
PL2-302A	GW Zone A	196073	1276432
PL2-303A	GW Zone A	196223	1276364
PL2-304A	GW Zone A	195997	1276347
PL2-305A	GW Zone A	196005	1276364
PL2-310A	GW Zone A	196468	1275755
PL2-311A	GW Zone A	196498	1275783
PL2-312A	GW Zone A	196857	1276081
PL2-314A	GW Zone A	196685	1276176
PL2-315A	GW Zone A	196409	1276064
PL2-316A	GW Zone A	196655	1276216
PL2-317A	GW Zone A	196121	1276160
PL2-317AR	GW Zone A	196179	1276201
PL2-319A	GW Zone A	196979	1276290
PL2-320A	GW Zone A	196575	1276690
PL2-325A	GW Zone A	196235	1275841
PL2-326A	GW Zone A	196747	1276306
PL2-327A	GW Zone A	196581	1276102
PL2-328A	GW Zone A	196468	1276236
PL2-329A	GW Zone A	196419	1275991
PL2-330A	GW Zone A	196358	1276031
PL2-331A	GW Zone A	196333	1276093
PL2-332A	GW Zone A	196370	1275727
PL2-401A	GW Zone A	197159	1275105
PL2-410A	GW Zone A	196661	1275567
PL2-420A	GW Zone A	196637	1274994
PL2-425A	GW Zone A	196339	1275446
PL2-430A	GW Zone A	196940	1274862
PL2-435A	GW Zone A	197143	1275496
PL2-440A	GW Zone A	197454	1275746
PL2-441A	GW Zone A	197690	1275487
PL2-443A	GW Zone A	196827	1274808
PL2-444A	GW Zone A	196767	1274878
PL2-445A	GW Zone A	197350	1275654
PL2-446A	GW Zone A	196943	1274838
PL2-447A	GW Zone A	196993	1274860
PL2-502A	GW Zone A	197111	1274798
PL2-503A	GW Zone A	197532	1274941
PL2-504A	GW Zone A	197570	1274991

Well ID	Zone	Northing	Easting
PL2-505A	GW Zone A	197585	1274908
PL2-507A	GW Zone A	198200	1274944
PL2-BF01A	GW Zone A	196086	1277353
PL2-BF02A	GW Zone A	198707	1274676
PL2-BF03A	GW Zone A	197515	1275748
PL2-JF01A	GW Zone A	195768	1275854
PL2-JF01AR	GW Zone A	195781	1275837
PL2-JF02A	GW Zone A	195625	1275906
PL2-JF03A	GW Zone A	195444	1275983
PP-3A-I	GW Zone A	195862	1275851
PL2-002B	GW Zone B	196004	1275970
PL2-005B	GW Zone B	195847	1275968
PL2-008B	GW Zone B	195822	1275802
PL2-009B	GW Zone B	195902	1275770
PL2-015B	GW Zone B	196008	1275574
PL2-021B	GW Zone B	195878	1275872
PL2-043B	GW Zone B	195826	1275769
PL2-044B	GW Zone B	195811	1275808
PL2-101B	GW Zone B	195940	1277039
PL2-102B	GW Zone B	196154	1276951
PL2-104B	GW Zone B	196048	1276713
PL2-105B	GW Zone B	195913	1276941
PL2-106B	GW Zone B	195857	1276748
PL2-109B	GW Zone B	196034	1276896
PL2-110B	GW Zone B	195830	1276548
PL2-112B	GW Zone B	195819	1276443
PL2-151B	GW Zone B	195920	1277081
PL2-152B	GW Zone B	196176	1276962
PL2-153B	GW Zone B	196112	1276751
PL2-154B	GW Zone B	196017	1276798
PL2-155B	GW Zone B	195855	1276878
PL2-209B	GW Zone B	197440	1274278
PL2-212B	GW Zone B	197820	1273946
PL2-214B	GW Zone B	197394	1274215
PL2-218B	GW Zone B	197757	1273835
PL2-258B	GW Zone B	197716	1273795
PL2-315B	GW Zone B	196397	1276066
PL2-316B	GW Zone B	196650	1276213
PL2-325B	GW Zone B	196237	1275833
PL2-326B	GW Zone B	196743	1276312
PL2-327B	GW Zone B	196588	1276096
PL2-328B	GW Zone B	196471	1276233
PL2-329B	GW Zone B	196424	1275985
PL2-330B	GW Zone B	196363	1276025
PL2-331B	GW Zone B	196337	1276089
PL2-501B	GW Zone B	197300	1274937
PL2-JF01B	GW Zone B	195774	1275844
PP-1B-I	GW Zone B	195897	1275876
PP-1B-O	GW Zone B	195899	1275874
PP-2B-I	GW Zone B	195824	1275838
PP-2B-O	GW Zone B	195822	1275840
PP-3B-I	GW Zone B	195861	1275844

Well ID	Zone	Northing	Easting
PP-4B-I	GW Zone B	195831	1275868
PP-4B-O	GW Zone B	195828	1275870
PP-5B-I	GW Zone B	195899	1275811
PP-5B-O	GW Zone B	195901	1275810
Rhone-Poulenc			
B1A	GW Zone A	193527	1277253
DM-5	GW Zone A	193352	1277221
DM-8	GW Zone A	193131	1276760
EX-3	GW Zone A	193275	1277073
MW-17	GW Zone A	193082	1276894
MW-27	GW Zone A	193009	1276900
MW-28	GW Zone A	193006	1276906
MW-29	GW Zone A	193012	1277020
MW-38	GW Zone A	193543	1276673
MW-39	GW Zone B	193535	1276674
MW-40	GW Zone B	192884	1276829
MW-41	GW Zone A	192891	1276828
MW-42	GW Zone A	193140	1276757
MW-43	GW Zone A	192943	1277040
MW-44	GW Zone B	192942	1277033
MW-45	GW Zone B	193063	1277298
MW-46	GW Zone A	193061	1277293
Isaacson[1]			
I-205	GW Zone A	194869	1276212
I-206	GW Zone A	194953	1276163

[1] Coordinates for Isaacson wells are approximate.

Well ID	Date	Zone	Arsenic Dissolved ug/L	Arsenic Total ug/L	Copper Dissolved ug/L	Copper Total ug/L	Manganese Dissolved ug/L	Manganese Total ug/L
Boeing Wells								
BOC-MW-01	6/1/1998	GW Zone A	7.27		1.82			
BOC-MW-01	8/14/1997	GW Zone A	6	6	3	8		
BOC-MW-01	10/16/1997	GW Zone A	7	7	1 U	2		
BOC-MW-02	6/1/1998	GW Zone A	3.31		1.83			
BOC-MW-02	8/14/1997	GW Zone A	5 U	5 U	10 U	10 U		
BOC-MW-02	10/16/1997	GW Zone A	5	6	10 U	10 U		
BOC-MW-03	6/1/1998	GW Zone A	3.43		3.97			
BOC-MW-03	8/14/1997	GW Zone A	5 U	5 U	10 U	10 U		
BOC-MW-03	10/16/1997	GW Zone A	5 U	5 U	10 U	10 U		
BOC-MW-04	6/1/1998	GW Zone A	1 U		4.28			
BOC-MW-04	10/25/2000	GW Zone A	1 U		4			
BOC-MW-04	8/14/1997	GW Zone A	5 U	34	3	120		
BOC-MW-04	10/16/1997	GW Zone A	5 U	5 U	1	3		
DDC2-66-1D	12/18/2003	GW Zone A					1380 J	1410 J
DDC2-66-1D	9/29/2004	GW Zone A					3670	
DDC2-66-1D	9/29/2004	GW Zone A						3540
DDC2-66-1D	2/3/2005	GW Zone A					3090	3120
DDC2-66-1D	5/3/2005	GW Zone A					3460	3950
DDC2-66-1D	7/28/2005	GW Zone A					5150	5230
DDC2-66-2D	12/19/2003	GW Zone A					252	256
DDC2-66-2D	9/29/2004	GW Zone A					647	617
DDC2-66-2D	2/3/2005	GW Zone A					3080	3010
DDC2-66-2D	5/3/2005	GW Zone A					1160	1030
DDC2-66-2D	7/28/2005	GW Zone A					1440	1410
PL2-001A	12/13/1991	GW Zone A	50 U		2 U			
PL2-001A	8/10/1992	GW Zone A	1 U		2 U			
PL2-002A	12/10/1991	GW Zone A	50 U		4			
PL2-002A	8/10/1992	GW Zone A	3		8			
PL2-002A	8/13/2002	GW Zone A	1.5	1.5	6	5		
PL2-002B	12/10/1991	GW Zone B	50 U		2			
PL2-002B	8/10/1992	GW Zone B	5 U		2 U			
PL2-002B	8/13/2002	GW Zone B	1	1.2	1.3	2		
PL2-003A	12/4/1991	GW Zone A	50 U		21			
PL2-003A	8/5/1992	GW Zone A	5 U		21			
PL2-004A	12/11/1991	GW Zone A	50 U		2 U			
PL2-004A	8/6/1992	GW Zone A	5		2 U			
PL2-005A	12/10/1991	GW Zone A	50 U		6			
PL2-005A	8/6/1992	GW Zone A	43		2 U			
PL2-005B	12/10/1991	GW Zone B	50 U		2 U			
PL2-005B	8/6/1992	GW Zone B	1 U		2			
PL2-006A	12/11/1991	GW Zone A	50 U		2 U			
PL2-006A	8/6/1992	GW Zone A	3		2 U			
PL2-006A	8/14/2002	GW Zone A	3.4	3.4	0.6	0.8		
PL2-007A	12/10/1991	GW Zone A	50 U		28			
PL2-007A	8/6/1992	GW Zone A	1 U		6			
PL2-007A	12/19/2003	GW Zone A		0.7		6.9		
PL2-007A	9/27/2004	GW Zone A		1.4		4.1		
PL2-007A	2/4/2005	GW Zone A		1.4		2.9		
PL2-007A	2/13/1991	GW Zone A		50 U		15		
PL2-007AR	5/5/2005	GW Zone A		1.5		3.5		
PL2-007AR	8/1/2005	GW Zone A		0.8		4.2		
PL2-008A	12/4/1991	GW Zone A	50 U		7			
PL2-008A	8/4/1992	GW Zone A	1 U		6			
PL2-008A	12/22/2003	GW Zone A		5.5				
PL2-008A	12/22/2003	GW Zone A				14.1		
PL2-008B	8/4/1992	GW Zone B	1 U		2 U			
PL2-008B	12/22/2003	GW Zone B		1.1		2		
PL2-008B	9/28/2004	GW Zone B		1.2		0.7 U		
PL2-008B	2/2/2005	GW Zone B		1.1		0.8		
PL2-008B	5/5/2005	GW Zone B		1		5.8		
PL2-008B	8/1/2005	GW Zone B		1.1		2.3		
PL2-008B	8/18/1995	GW Zone B		2		2 U	126	133
PL2-009A	12/5/1991	GW Zone A	50 U		9			
PL2-009A	8/5/1992	GW Zone A	23		2 U			
PL2-009B	12/5/1991	GW Zone B	50 U		2 U			
PL2-009B	8/5/1992	GW Zone B	1 U		2 U			
PL2-010A	12/11/1991	GW Zone A	50 U		6			
PL2-010A	8/6/1992	GW Zone A	5		4			
PL2-010A	12/19/2003	GW Zone A		0.6		4.7	76	83
PL2-010A	9/29/2004	GW Zone A		0.5 U		2.7	11	20
PL2-010A	2/2/2005	GW Zone A		0.5 U		4	315	316
PL2-010A	5/5/2005	GW Zone A		0.8		55.8	1030	936
PL2-010A	7/27/2005	GW Zone A		1 J		84.7 J	1290	1170
PL2-011A	12/12/1991	GW Zone A	50 U		2			
PL2-011A	8/3/1992	GW Zone A	11		3			
PL2-012A	12/6/1991	GW Zone A	50 U		10			
PL2-012A	8/3/1992	GW Zone A	2		2			
PL2-012A	3/23/1995	GW Zone A	3	7	2	2 U	573	1630
PL2-013A	12/4/1991	GW Zone A	50 U		14			
PL2-013A	8/5/1992	GW Zone A	2		27			
PL2-013A	4/23/2001	GW Zone A	14.5	13.4	110	108		
PL2-013A	7/24/2001	GW Zone A	2 U	1	30	29		

Well ID	Date	Zone	Arsenic		Copper		Manganese	
			Dissolved	Total	Dissolved	Total	Dissolved	Total
			ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
PL2-013A	10/26/2001	GW Zone A	10	9	104	101		
PL2-013A	1/22/2002	GW Zone A	16.9	16.8	96.4	103		
PL2-013A	6/18/2003	GW Zone A	2.1	2.1	29	32		
PL2-013A	9/2/2003	GW Zone A	3	4	59	60		
PL2-013A	12/9/2003	GW Zone A		1.9		19.6		
PL2-013A	12/9/2003	GW Zone A	1.5		18.3			
PL2-013A	2/2/2004	GW Zone A	1.8	2.2	36.5	44.3		
PL2-013A	5/9/2004	GW Zone A	2.2	2.2	16	17		
PL2-013A	10/31/2004	GW Zone A	3	2.9	28	30		
PL2-013A	2/1/2005	GW Zone A	6.2	2.2	21.9	28.4		
PL2-013A	5/3/2005	GW Zone A	2	2.4	20	24		
PL2-013A	8/2/2005	GW Zone A	3.2	3.4	30	49	1 U	1 U
PL2-013A	3/23/1995	GW Zone A	1	2	7	10	3	3
PL2-013A	8/10/1995	GW Zone A		7		71		309
PL2-013A	11/20/1995	GW Zone A		32		200		
PL2-013A	2/28/1996	GW Zone A		1 U		48		
PL2-013A	5/22/1996	GW Zone A		2		24		
PL2-013A	8/19/1996	GW Zone A		22		98		
PL2-013A	11/20/1996	GW Zone A		3		11		
PL2-013A	8/2/2004	GW Zone A	2	2	28	34		
PL2-013AR	4/23/2001	GW Zone A	1.5	1.3	1.7	1.8 UB		
PL2-013AR	7/24/2001	GW Zone A	1.8	1.6	1.1	1.4		
PL2-013AR	10/26/2001	GW Zone A	0.6	0.6	1.6	1.6		
PL2-013AR	1/22/2002	GW Zone A	0.9	1	1.5	1.3		
PL2-013AR	6/18/2003	GW Zone A	3.3	13	1.7	2.9		
PL2-013AR	9/2/2003	GW Zone A	4.6	5.7	1.1	1.7		
PL2-013AR	12/9/2003	GW Zone A	4.4	4.8	1.6	1.7		
PL2-013AR	2/2/2004	GW Zone A	4	5.1	1.3	1.8		
PL2-013AR	5/9/2004	GW Zone A	4.7	5.2	0.6	1.9		
PL2-013AR	10/31/2004	GW Zone A	5	6.2	0.8	1.7 U		
PL2-013AR	2/1/2005	GW Zone A	6.3	7.4	0.8	1.2		
PL2-013AR	5/3/2005	GW Zone A	4.7	8.2	0.9	2.9		
PL2-013AR	8/2/2005	GW Zone A	5.2	5.4	1 U			808
PL2-013AR	8/2/2005	GW Zone A				1.2 U	862	
PL2-013AR	8/2/2004	GW Zone A	5.3	5.6	0.8	1		
PL2-014A	12/3/1991	GW Zone A	50 U		10			
PL2-014A	8/3/1992	GW Zone A	4		6			
PL2-014A	9/29/1994	GW Zone A	1	2	2 U	2 U	1 U	1 U
PL2-015A	12/3/1991	GW Zone A	50 U		11			
PL2-015A	8/3/1992	GW Zone A	5		6			
PL2-015A	4/23/2001	GW Zone A	4	5	12	11 UB		
PL2-015A	7/23/2001	GW Zone A	3	3	6	12		
PL2-015A	11/8/2001	GW Zone A	15.9	4.9	4.5	7.1		
PL2-015A	1/22/2002	GW Zone A	2.5	2.2	4.5	6.3		
PL2-015A	6/17/2003	GW Zone A	2.3	3	5	10		
PL2-015A	9/2/2003	GW Zone A	3	4	8	15		
PL2-015A	12/9/2003	GW Zone A	2.6	3.5	5.8	9.6		
PL2-015A	2/2/2004	GW Zone A		4.8		12		
PL2-015A	2/2/2004	GW Zone A	3.7		5.9			
PL2-015A	5/9/2004	GW Zone A	2.8	4.3	4.6	9.5		
PL2-015A	10/31/2004	GW Zone A	4	4.6	5	8		
PL2-015A	2/2/2005	GW Zone A	2.3	3.7	3.8	8.8		
PL2-015A	5/3/2005	GW Zone A	3.1	3.6	5	4		
PL2-015A	8/2/2005	GW Zone A	3.7	5.9	8	15	1 U	22
PL2-015A	3/23/1995	GW Zone A	2	3	3	4	1 U	1 U
PL2-015A	8/10/1995	GW Zone A		5 U		20		219
PL2-015A	11/20/1995	GW Zone A		7				
PL2-015A	11/20/1995	GW Zone A				6		
PL2-015A	3/1/1996	GW Zone A		6		13		
PL2-015A	5/20/1996	GW Zone A		2		5		
PL2-015A	8/19/1996	GW Zone A		3		3		
PL2-015A	11/20/1996	GW Zone A		5		5		
PL2-015A	8/3/2004	GW Zone A	3	5	7	14		
PL2-015AR	4/23/2001	GW Zone A	1.1	1.3	7.7	3.8 UB		
PL2-015AR	7/23/2001	GW Zone A	0.8	1	2	2.2		
PL2-015AR	11/8/2001	GW Zone A	1	1.2	2.6	2.9		
PL2-015AR	1/22/2002	GW Zone A	0.7	1.2	2.1	2.7		
PL2-015AR	6/17/2003	GW Zone A	0.5 U	0.5 U	2.8	3		
PL2-015AR	9/2/2003	GW Zone A	0.5 U	0.9	3.2	4.9		
PL2-015AR	12/9/2003	GW Zone A	1.1	1.3	3.5	4.3		
PL2-015AR	2/2/2004	GW Zone A	0.5 U	0.5 U	2.7	3.6		
PL2-015AR	5/9/2004	GW Zone A	0.5 U	0.5 U	2.9	3.4		
PL2-015AR	10/31/2004	GW Zone A	0.9	0.9	2.4	3.1		
PL2-015AR	2/2/2005	GW Zone A	1.2		3.5	4.4		
PL2-015AR	2/2/2005	GW Zone A		0.8				
PL2-015AR	5/3/2005	GW Zone A	1	1.1	3	3.2		
PL2-015AR	8/2/2005	GW Zone A	0.5	0.8	3.1 U	3.8 U	1 U	1 U
PL2-015AR	8/3/2004	GW Zone A	0.5 U	0.5 U	2.8 U	4.4		
PL2-015B	4/23/2001	GW Zone B	1 UJ	1 UJ	4	4 UB		
PL2-015B	7/23/2001	GW Zone B	1 U	1 U	1 U	1 U		
PL2-015B	11/8/2001	GW Zone B	4	1.7	1.4	2		
PL2-015B	1/22/2002	GW Zone B	5 U	5 U	5 U	5 U		
PL2-015B	6/17/2003	GW Zone B	2.8	1	1 U	1 U		
PL2-015B	9/2/2003	GW Zone B	1 U	2	3	3		
PL2-015B	12/9/2003	GW Zone B	2 U	2 U	2 U	3		

Well ID	Date	Zone	Arsenic Dissolved ug/L	Arsenic Total ug/L	Copper Dissolved ug/L	Copper Total ug/L	Manganese Dissolved ug/L	Manganese Total ug/L
PL2-015B	2/2/2004	GW Zone B	1 U	1 U	1	2		
PL2-015B	5/9/2004	GW Zone B	2 U	2 U	2 U	2 U		
PL2-015B	10/31/2004	GW Zone B	5	5	2 U	2 U		
PL2-015B	2/2/2005	GW Zone B	5	7	1.5 U	2 U		
PL2-015B	5/3/2005	GW Zone B	4	5	2 U	3		
PL2-015B	8/2/2005	GW Zone B	1 U	1 U	1 U	4 U	792	741
PL2-015B	8/15/1995	GW Zone B		1 U		2 U	618	614
PL2-015B	11/20/1995	GW Zone B		4 UB		23		
PL2-015B	3/1/1996	GW Zone B		1 U		2 U		
PL2-015B	5/22/1996	GW Zone B		1 U		2 U		
PL2-015B	8/19/1996	GW Zone B		1 U		4		
PL2-015B	11/20/1996	GW Zone B		1 U		2 U		
PL2-015B	8/3/2004	GW Zone B	3	3	3	4		
PL2-016A	12/13/1991	GW Zone A	50 U		2 U			
PL2-016A	8/6/1992	GW Zone A	1 U		2 U			
PL2-017A	12/12/1991	GW Zone A	50 U		2 U			
PL2-017A	8/10/1992	GW Zone A	2					
PL2-017A	8/10/1992	GW Zone A			7			
PL2-017A	12/17/2003	GW Zone A		0.4		2.2		
PL2-017A	9/28/2004	GW Zone A		0.7		0.8 U		
PL2-017A	2/1/2005	GW Zone A		0.6		3		
PL2-017A	5/4/2005	GW Zone A		0.7		0.9		
PL2-017A	7/27/2005	GW Zone A		1 U		2 U		
PL2-018A	4/14/1992	GW Zone A		1000 U		1000 U		
PL2-019A	4/14/1992	GW Zone A		1000 U		1000 U		
PL2-020A	12/12/1991	GW Zone A	50 U		3			
PL2-020A	8/11/1992	GW Zone A	1 U		2 U			
PL2-021A	8/6/1992	GW Zone A	1 U	5 U	2 U	2 U		
PL2-021A	12/18/2003	GW Zone A					1210 J	
PL2-021A	12/18/2003	GW Zone A		2.6		4		1270 J
PL2-021A	9/29/2004	GW Zone A		1.1		68.7	4050	3970
PL2-021A	2/4/2005	GW Zone A		2.3		120	4440	4280
PL2-021A	5/4/2005	GW Zone A		0.8		112	5110	4910
PL2-021A	7/28/2005	GW Zone A		1.4			6500	6260
PL2-021A	7/28/2005	GW Zone A				162 J		
PL2-021B	8/6/1992	GW Zone B	5 U	5 U	2 U	3		
PL2-021B	12/18/2003	GW Zone B		1.4		2	237 J	253 J
PL2-021B	9/29/2004	GW Zone B		0.5 U		0.7	87	96
PL2-021B	2/3/2005	GW Zone B		0.8		0.6	129	
PL2-021B	2/3/2005	GW Zone B						46
PL2-021B	5/4/2005	GW Zone B		1.1		0.6	72	63
PL2-021B	7/28/2005	GW Zone B		0.6		0.6 U	93	90
PL2-022A	8/11/1992	GW Zone A	12		2 U			
PL2-023A	8/10/1992	GW Zone A	1 U		4			
PL2-024A	8/11/1992	GW Zone A	1 U		2 U			
PL2-025A	8/10/1992	GW Zone A	1 U		2 U			
PL2-026A	8/11/1992	GW Zone A			2 U			
PL2-026A	8/11/1992	GW Zone A	29					
PL2-027A	8/14/2002	GW Zone A	0.5 U	1.2				
PL2-027A	8/14/2002	GW Zone A			2.4	2.7		
PL2-027A	12/21/1993	GW Zone A		17		166		
PL2-029A	3/23/1995	GW Zone A	5 U	2	9	6	1 U	1 U
PL2-030A	4/23/2001	GW Zone A	1	0.6	5	2.7 UB		
PL2-030A	7/24/2001	GW Zone A		1.5				
PL2-030A	7/24/2001	GW Zone A	1.6		0.8	1		
PL2-030A	10/26/2001	GW Zone A	2 U		2 U	2 U		
PL2-030A	10/26/2001	GW Zone A		2				
PL2-030A	1/21/2002	GW Zone A	1.8	1.5	0.5 U	1.1		
PL2-030A	6/17/2003	GW Zone A	2	2	0.7	1		
PL2-030A	9/2/2003	GW Zone A	3.3	3	3	3		
PL2-030A	12/8/2003	GW Zone A	0.7	0.7	0.6	1		
PL2-030A	12/22/2003	GW Zone A		1 U		1 U		
PL2-030A	2/2/2004	GW Zone A	0.5 U	1.2	0.8	1.1		
PL2-030A	5/9/2004	GW Zone A	1	1.1	0.8	0.5 U		
PL2-030A	9/28/2004	GW Zone A		3		2 U		
PL2-030A	10/31/2004	GW Zone A	2.6	1	0.6	0.7		
PL2-030A	2/1/2005	GW Zone A	0.5 U	1.1	0.5 U	0.7		
PL2-030A	5/3/2005	GW Zone A	0.905	1.02	1 U	1		
PL2-030A	8/1/2005	GW Zone A	1.1	1	1.8	2	15	14
PL2-030A	8/2/2004	GW Zone A	0.8	3.4	0.8	2.1		
PL2-031A	12/22/2003	GW Zone A		7.5		0.8		
PL2-031A	9/28/2004	GW Zone A		5.8		0.6 U		
PL2-031A	2/2/2005	GW Zone A		1.8		0.8		
PL2-031A	5/5/2005	GW Zone A		3.9		0.8		
PL2-031A	8/1/2005	GW Zone A		4.2		0.6		
PL2-032A	12/22/2003	GW Zone A		1.9				
PL2-032A	12/22/2003	GW Zone A				0.7		
PL2-032A	9/30/2004	GW Zone A		2.7		0.5 U		
PL2-032A	2/2/2005	GW Zone A		2.1		0.5 U		
PL2-032A	5/4/2005	GW Zone A		1.8		0.5 U		
PL2-032A	7/28/2005	GW Zone A		2.3		0.5 U		
PL2-034A	12/19/2003	GW Zone A		1.7		2.2		
PL2-034A	9/30/2004	GW Zone A		4.3		0.9		
PL2-034A	2/4/2005	GW Zone A		3.1		0.7		
PL2-034A	5/5/2005	GW Zone A		3.9		1.6		

Well ID	Date	Zone	Arsenic Dissolved ug/L	Arsenic Total ug/L	Copper Dissolved ug/L	Copper Total ug/L	Manganese Dissolved ug/L	Manganese Total ug/L
PL2-034A	8/1/2005	GW Zone A		2		0.9		
PL2-035A	12/19/2003	GW Zone A		1.1		0.7		
PL2-035A	9/28/2004	GW Zone A		1.6		0.7 U		
PL2-035A	2/1/2005	GW Zone A		1.2		0.5 U		
PL2-035A	5/5/2005	GW Zone A		1.2		0.5 U		
PL2-035A	8/1/2005	GW Zone A		0.6		0.5		
PL2-036A	4/24/2001	GW Zone A	1.6	2.1	3.4	6.4 UB		
PL2-036A	7/24/2001	GW Zone A	2 U	2 U	5	5		
PL2-036A	10/23/2001	GW Zone A	4	3	2 U	2 U		
PL2-036A	1/22/2002	GW Zone A	2.3	2.3	2.4	2.3		
PL2-036A	6/17/2003	GW Zone A	2.8	2.8	4	4		
PL2-036A	9/3/2003	GW Zone A	3	3	5	7		
PL2-036A	12/9/2003	GW Zone A	4	4.2	2.6	3.2		
PL2-036A	2/3/2004	GW Zone A	4.9	5.7	2.9	3.7		
PL2-036A	5/9/2004	GW Zone A	2	3.2	3	3		
PL2-036A	10/31/2004	GW Zone A	3.4	3.6	3	3		
PL2-036A	2/2/2005	GW Zone A	4	2.2	2 U	2		
PL2-036A	5/3/2005	GW Zone A	3.6	4.2	3	9		
PL2-036A	8/2/2005	GW Zone A	3.9	3.8	6 U	7 U	1 U	1 U
PL2-036A	8/15/1995	GW Zone A		2		2 U		1 U
PL2-036A	11/20/1995	GW Zone A		3 UB		2 U		
PL2-036A	2/29/1996	GW Zone A		5		11		
PL2-036A	5/23/1996	GW Zone A		5		7		
PL2-036A	8/19/1996	GW Zone A		5 U		3		
PL2-036A	11/20/1996	GW Zone A		3		2 U		
PL2-036A	8/3/2004	GW Zone A	3	3	6	7		
PL2-036AR	4/25/2001	GW Zone A	1.5	1.2	1	1.8 B		
PL2-036AR	7/24/2001	GW Zone A	0.9	1	0.7	0.9		
PL2-036AR	10/26/2001	GW Zone A	1.9	1.7	0.8	1		
PL2-036AR	1/22/2002	GW Zone A	1.6	1.8	0.9	1		
PL2-036AR	6/17/2003	GW Zone A	0.6	1.2	1.9	2		
PL2-036AR	9/3/2003	GW Zone A	0.6	1	2.5	2.7		
PL2-036AR	12/9/2003	GW Zone A	1.2	1.1	2.6	2.7		
PL2-036AR	2/3/2004	GW Zone A	0.5	1	2.2	3.1		
PL2-036AR	5/9/2004	GW Zone A	0.9	1.2	2.7	3.5		
PL2-036AR	10/31/2004	GW Zone A	1.7	1.4	2.9	3.3 U		
PL2-036AR	2/2/2005	GW Zone A	0.9	1.1	2.5 U	2.5		
PL2-036AR	5/3/2005	GW Zone A	1.2	1.7	2.3	2.9		
PL2-036AR	8/2/2005	GW Zone A	0.9	1	2.5 U	3.5 U	1 U	1 U
PL2-036AR	8/3/2004	GW Zone A	0.5 U	1.2	2.4 U	2.4		
PL2-039A	8/9/1995	GW Zone A		1 U		13	187	179
PL2-043B	4/24/2001	GW Zone B	2 UJ	15	7	93		
PL2-043B	7/24/2001	GW Zone B	2 U	5	2 U	33		
PL2-043B	10/23/2001	GW Zone B	4	5	2 U	4		
PL2-043B	1/21/2002	GW Zone B	5	6	5 U	5 U		
PL2-043B	6/17/2003	GW Zone B	2 U	2 U	2 U	4		
PL2-043B	9/2/2003	GW Zone B	1	1 U	2	4		
PL2-043B	12/8/2003	GW Zone B	1 U	1 U	2	8		
PL2-043B	12/22/2003	GW Zone B		2 U		4		
PL2-043B	2/2/2004	GW Zone B	1 U	1.7	3	6		
PL2-043B	5/10/2004	GW Zone B	2 U	3	3	6		
PL2-043B	9/28/2004	GW Zone B		1 U		15		
PL2-043B	10/31/2004	GW Zone B	4 U	4 U	2 U	4		
PL2-043B	2/1/2005	GW Zone B	5 U	4	3	5		
PL2-043B	5/3/2005	GW Zone B	3	3	2 U	3		
PL2-043B	8/1/2005	GW Zone B	1 U	2 U	4	4	218	243
PL2-043B	8/2/2004	GW Zone B	2.1	2.4	2	4		
PL2-044B	6/19/2003	GW Zone B	1.2	4.2	2	25		
PL2-044B	12/11/2003	GW Zone B	1.7	7.7	2	49		
PL2-044B	12/22/2003	GW Zone B		1.9		4		
PL2-044B	5/10/2004	GW Zone B	2 U	2 U	3	5		
PL2-044B	9/28/2004	GW Zone B		2		3 U		
PL2-044B	10/31/2004	GW Zone B	4 U	4 U	2 U	5		
PL2-044B	2/1/2005	GW Zone B	9		3	8		
PL2-044B	5/3/2005	GW Zone B	0.066 B	0.633	2 U	5		
PL2-044B	8/1/2005	GW Zone B	1 U	1 U	3	6	883	972
PL2-101A	3/24/1995	GW Zone A	24	27	2 U	2 U	2060	2070
PL2-101A	5/4/1988	GW Zone A			2 U	8		
PL2-101A	7/15/1992	GW Zone A	37		2 U			
PL2-101A	7/15/1992	GW Zone A	38		2 U			
PL2-101B	3/24/1995	GW Zone B	1 U	1 U	2 U	2 U	895	899
PL2-101B	7/15/1992	GW Zone B	1 U		2 U			
PL2-102A	3/24/1995	GW Zone A	2	2	18	20	10	15
PL2-102A	5/4/1988	GW Zone A			39	110		
PL2-102A	7/17/1992	GW Zone A	1		15			
PL2-102B	7/17/1992	GW Zone B	1 U		2 U			
PL2-103A	5/4/1988	GW Zone A			2 U	2 U		
PL2-104A	5/4/1988	GW Zone A			2 U	2 U		
PL2-104A	7/16/1992	GW Zone A	1 U		2 U			
PL2-104B	7/16/1992	GW Zone B	1 U		2 U			
PL2-105A	5/4/1988	GW Zone A			2 U	61		
PL2-105A	7/16/1992	GW Zone A	11		2			
PL2-105B	7/16/1992	GW Zone B	5 U		2 U			
PL2-106A	8/4/2000	GW Zone A	54.3		1.4			
PL2-106A	1/22/2001	GW Zone A	59.4		0.5		4130	

Well ID	Date	Zone	Arsenic		Copper		Manganese	
			Dissolved	Total	Dissolved	Total	Dissolved	Total
			ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
PL2-106A	3/24/1995	GW Zone A	5	7	2 U	2 U	1770	1750
PL2-106A	11/21/1995	GW Zone A		60		2 U		
PL2-106A	3/4/1996	GW Zone A		17				
PL2-106A	3/4/1996	GW Zone A				2		
PL2-106A	8/22/1996	GW Zone A		26		3		
PL2-106A	5/4/1988	GW Zone A			2 U	20		
PL2-106A	7/15/1992	GW Zone A	39		2 U			
PL2-106A	3/14/2005	GW Zone A		38.4		1.7		1310
PL2-106A	3/14/2005	GW Zone A	35.1		1.2		1440	
PL2-106AR	8/20/2002	GW Zone A	58.4	57.8	0.8	0.8		
PL2-106B	3/28/1995	GW Zone B	1	2	2 U	2 U	999	1010
PL2-106B	7/15/1992	GW Zone B	5 U		2 U			
PL2-106B	3/14/2005	GW Zone B		0.5		0.5		812
PL2-106B	3/14/2005	GW Zone B	0.6		0.5 U		1010	
PL2-107A	7/17/1992	GW Zone A	1 U		3			
PL2-108A	7/17/1992	GW Zone A	1 U		2 U			
PL2-109A	7/16/1992	GW Zone A	3		2			
PL2-109B	7/16/1992	GW Zone B	5 U		2 U			
PL2-110A	8/16/1995	GW Zone A		3		2 U		957
PL2-110A	11/14/1995	GW Zone A		1 UB		2 U		
PL2-110A	2/29/1996	GW Zone A		2		2 U		
PL2-110A	8/27/1996	GW Zone A		4		2 U		
PL2-110A	7/15/1992	GW Zone A	1 U		2 U			
PL2-110B	7/15/1992	GW Zone B	5 U		2 U			
PL2-111A	12/22/1993	GW Zone A		16				
PL2-111A	12/22/1993	GW Zone A				32		
PL2-112A	8/15/2002	GW Zone A	21.5	22.3	0.6	0.6		
PL2-112A	3/31/1995	GW Zone A	41	41	2 U	2 U	2680	2670
PL2-112A	1/18/1989	GW Zone A	10.9		1 U			
PL2-112A	3/16/2005	GW Zone A		63.7		2.9 U		2100
PL2-112A	3/16/2005	GW Zone A	59.1				2170	
PL2-112A	3/16/2005	GW Zone A			0.5 U			
PL2-112B	8/15/2002	GW Zone B	0.7	0.5 U	0.7	1.6		
PL2-112B	8/25/1995	GW Zone B		6		2 U	1290	1240
PL2-112B	3/16/2005	GW Zone B		0.8		8.4 U		496
PL2-112B	3/16/2005	GW Zone B	0.7		0.5 U		540	
PL2-113A	8/20/2002	GW Zone A	8.3	9.9	0.7	1.6		
PL2-113A	1/18/1989	GW Zone A	12.8		3.5			
PL2-113A	3/16/2005	GW Zone A		7.1		1.8 U		580
PL2-113A	3/16/2005	GW Zone A	8.9		0.5 U		612	
PL2-114A	1/18/1989	GW Zone A	7.2		1 U			
PL2-115A	8/20/2002	GW Zone A	0.4	0.5	1	1.1		
PL2-115A	3/15/2005	GW Zone A		0.8		4.3		96
PL2-115A	3/15/2005	GW Zone A	0.2 U		1.3		90	
PL2-116A	8/20/2002	GW Zone A	18.9	19.7	0.7	0.9		
PL2-116A	3/16/2005	GW Zone A		22.4		0.5 U		3830
PL2-116A	3/16/2005	GW Zone A	22.2		0.5 U		4200	
PL2-117A	8/16/2002	GW Zone A	4.8	6	0.7	4.5		
PL2-117A	1/18/1989	GW Zone A	6.8		1.5			
PL2-117A	3/16/2005	GW Zone A		55.3		52.4		1780
PL2-117A	3/16/2005	GW Zone A	40.3		0.5 U		1520	
PL2-118A	9/23/1994	GW Zone A	54	62	2 U	17	3420	3400
PL2-119A	8/4/1995	GW Zone A		55		2 U		1710
PL2-119A	11/14/1995	GW Zone A		58		6		
PL2-119A	3/4/1996	GW Zone A		49		3		
PL2-119A	8/23/1996	GW Zone A		50		4		
PL2-119A	9/26/1994	GW Zone A	39	41	2 U	9	1690	1820
PL2-120A	3/10/2005	GW Zone A		46.7		3		937
PL2-120A	3/10/2005	GW Zone A	3.8		0.6		893	
PL2-120A	9/26/1994	GW Zone A	10	12	2 U	20	2420	2510
PL2-151A	8/3/2000	GW Zone A	11.6		0.8			
PL2-151A	1/23/2001	GW Zone A	3.7		0.5		579	
PL2-151A	3/11/2005	GW Zone A		5		1 U		811
PL2-151A	3/11/2005	GW Zone A	4.5		1		854	
PL2-151B	8/2/2000	GW Zone B	5		0.5 U			
PL2-151B	1/23/2001	GW Zone B	3.2		0.5 U		775	
PL2-151B	3/11/2005	GW Zone B		4		1 U		839
PL2-151B	3/11/2005	GW Zone B	4.4		0.5 U		849	
PL2-152A	8/3/2000	GW Zone A	2.5		5.7			
PL2-152A	1/24/2001	GW Zone A	1.1 UB		1.6		296	
PL2-152A	3/15/2005	GW Zone A		0.4		2		475
PL2-152A	3/15/2005	GW Zone A	0.4		0.7		495	
PL2-152B	8/3/2000	GW Zone B	2.3		0.5 U			
PL2-152B	1/24/2001	GW Zone B	3.3		0.5 U		446	
PL2-152B	3/15/2005	GW Zone B		6.7		0.5 U		367
PL2-152B	3/15/2005	GW Zone B	6.8		0.5 U		389	
PL2-153A	1/25/2001	GW Zone A	3.7		0.9		845	
PL2-153A	3/9/2005	GW Zone A		2.7		4.2		587
PL2-153A	3/9/2005	GW Zone A	2.4		0.7		594	
PL2-153B	1/24/2001	GW Zone B	4		1 U		1050	
PL2-153B	3/9/2005	GW Zone B		3		1 U		279
PL2-153B	3/9/2005	GW Zone B	3		1 U		273	
PL2-154A	1/25/2001	GW Zone A	13.7		0.6		2360	
PL2-154A	3/10/2005	GW Zone A		21.9		2.8		2170
PL2-154A	3/10/2005	GW Zone A	21.3		0.5 U		2070	

Well ID	Date	Zone	Arsenic		Copper		Manganese	
			Dissolved	Total	Dissolved	Total	Dissolved	Total
			ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
PL2-154B	1/25/2001	GW Zone B	2		0.5 U		590	
PL2-154B	3/10/2005	GW Zone B		3.5		0.5 U		366
PL2-154B	3/10/2005	GW Zone B	3.2		0.5 U		374	
PL2-155A	8/4/2000	GW Zone A	83.6		0.5 U			
PL2-155A	1/22/2001	GW Zone A	93.7		0.6		3210	3010
PL2-155A	3/14/2005	GW Zone A						3640
PL2-155A	3/14/2005	GW Zone A		95.1		0.5 U		
PL2-155A	3/14/2005	GW Zone A	97.9		1		3810	
PL2-155B	8/4/2000	GW Zone B	2.4		0.5 U			
PL2-155B	1/23/2001	GW Zone B	2.6		0.5 U		578	
PL2-155B	3/14/2005	GW Zone B		3.6		0.5 U		516
PL2-155B	3/14/2005	GW Zone B	3.3		0.5 U		530	
PL2-156A	8/4/2000	GW Zone A	93.7		0.6			
PL2-156A	1/23/2001	GW Zone A	99.3		0.5 U			
PL2-156A	1/23/2001	GW Zone A					3850	
PL2-156A	3/11/2005	GW Zone A				1 U		
PL2-156A	3/11/2005	GW Zone A	99.8				4890	
PL2-156A	3/11/2005	GW Zone A		106				4850
PL2-156A	3/11/2005	GW Zone A			0.5 U			
PL2-201A	8/7/2002	GW Zone A	4.6	4.8	10.9	12		
PL2-201A	8/11/1995	GW Zone A		2		12	68	63
PL2-201A	2/25/1992	GW Zone A		2		2 U		
PL2-202A	8/7/2002	GW Zone A	40.5	40.1	1.3	1.4		
PL2-202A	3/15/1995	GW Zone A	39	40	2	4	2340	2380
PL2-202A	8/14/1995	GW Zone A		37		2 U	2390	2450
PL2-202A	11/14/1995	GW Zone A		38		3		
PL2-202A	2/29/1996	GW Zone A		55		2 U		
PL2-202A	8/20/1996	GW Zone A		38		20		
PL2-202A	2/25/1992	GW Zone A		44		5 UB		
PL2-202A	8/24/1992	GW Zone A		21		33		2180
PL2-203A	8/9/2002	GW Zone A	7.4	6.7	4.2	3.2		
PL2-203A	2/26/1992	GW Zone A		34		100 B		
PL2-203A	9/26/1994	GW Zone A	9	9	3	5	333	320
PL2-204A	8/21/2002	GW Zone A		5.4	0.7			
PL2-204A	8/21/2002	GW Zone A	4.7			0.9		
PL2-204A	2/26/1992	GW Zone A		5		4 UB		
PL2-205A	2/26/1992	GW Zone A		5 U		8 UB		
PL2-206A	8/13/2002	GW Zone A	0.6	0.6	1	1.2		
PL2-206A	2/28/1992	GW Zone A		4		6		
PL2-207A	8/6/2002	GW Zone A	6	6.1	2.2	0.9		
PL2-207A	2/26/1992	GW Zone A		3		5 B		
PL2-207A	8/21/1992	GW Zone A		6		103		2460
PL2-208A	3/18/1992	GW Zone A		1		7 UB		
PL2-208A	9/29/1994	GW Zone A	2	3	3	4	31	47
PL2-208A	8/20/1992	GW Zone A		11		21 J		333
PL2-209A	2/28/1992	GW Zone A		6		2 U		
PL2-209A	8/20/1992	GW Zone A		1		113		1340
PL2-209B	8/11/1995	GW Zone B					1400	
PL2-209B	8/19/1992	GW Zone B		2 U		2 U		1410
PL2-210A	8/7/1995	GW Zone A		9		2 U		1040
PL2-210A	3/5/1992	GW Zone A		5		2 U		
PL2-210A	8/20/1992	GW Zone A		10 U		353		2350
PL2-211A	8/9/2002	GW Zone A	19.1	19.4	1.7	3.3		
PL2-211A	2/25/1992	GW Zone A				2 U		
PL2-211A	2/25/1992	GW Zone A		11				
PL2-211A	9/26/1994	GW Zone A	10	10	2	2 U	297	295
PL2-211A	8/26/1992	GW Zone A		15		13		274
PL2-212A	3/5/1992	GW Zone A		19		15		
PL2-212A	8/20/1992	GW Zone A		53		220		1720
PL2-212B	8/16/1995	GW Zone B					968	
PL2-212B	8/18/1992	GW Zone B		1 U		7		1330
PL2-213B	8/19/1992	GW Zone A		6		10		565
PL2-214A	4/25/2001	GW Zone A	0.4	0.4		6.6		
PL2-214A	4/25/2001	GW Zone A			2.4			
PL2-214A	7/25/2001	GW Zone A	0.6	0.6	0.5 U	0.5 U		
PL2-214A	11/5/2001	GW Zone A	0.5	0.6	0.5 U	0.5 U		
PL2-214A	1/23/2002	GW Zone A	1	1 J	0.5 U	0.5 U		
PL2-214A	6/19/2003	GW Zone A	0.3	0.4	0.5	0.6		
PL2-214A	9/3/2003	GW Zone A	0.8	2.2	0.5 U	0.8		
PL2-214A	12/10/2003	GW Zone A	0.7	6.5	0.5 U	1.5		
PL2-214A	2/3/2004	GW Zone A	0.3	0.4	0.5 U	0.6		
PL2-214A	5/11/2004	GW Zone A	0.5	0.9	0.5 U	0.5 U		
PL2-214A	11/2/2004	GW Zone A		0.5	0.5 U	0.5 U		
PL2-214A	11/2/2004	GW Zone A	15.7					
PL2-214A	1/31/2005	GW Zone A	0.5 U	0.7	0.5 U	0.6		
PL2-214A	5/4/2005	GW Zone A	0.3	0.7	0.5 U	0.5 U		
PL2-214A	8/4/2005	GW Zone A	0.2 U	0.2	0.5 U	1 U	372	342
PL2-214A	8/7/1995	GW Zone A		2		2 U		285
PL2-214A	11/16/1995	GW Zone A		20		3		
PL2-214A	2/27/1996	GW Zone A		1 U		2 U		
PL2-214A	5/21/1996	GW Zone A		1		2 U		
PL2-214A	8/21/1996	GW Zone A		2		2 U		
PL2-214A	11/18/1996	GW Zone A		3		2 U		
PL2-214A	8/4/2004	GW Zone A	0.3	0.4	0.5 U	0.6		
PL2-214A	8/18/1992	GW Zone A		2		11		1670

Well ID	Date	Zone	Arsenic Dissolved ug/L	Arsenic Total ug/L	Copper Dissolved ug/L	Copper Total ug/L	Manganese Dissolved ug/L	Manganese Total ug/L
PL2-214B	4/25/2001	GW Zone B	3	4	2 UJ	2 UJ		
PL2-214B	7/25/2001	GW Zone B	2 U	2 U	2 U	2 U		
PL2-214B	11/5/2001	GW Zone B	3	4	1.4	2 U		
PL2-214B	1/23/2002	GW Zone B	5 U	2 UJ	5 U	5 U		
PL2-214B	6/19/2003	GW Zone B	1	1 U	2	2 U		
PL2-214B	9/3/2003	GW Zone B	2	2	2 U	3		
PL2-214B	12/10/2003	GW Zone B	1 U	1	2 U	2 U		
PL2-214B	2/3/2004	GW Zone B	1 U	1 U	2 U	2 U		
PL2-214B	5/11/2004	GW Zone B	2	2	2 U	2 U		
PL2-214B	11/2/2004	GW Zone B	2	2	2 U	2 U		
PL2-214B	1/31/2005	GW Zone B	2 U	2	3	3		
PL2-214B	5/4/2005	GW Zone B	2	2	3 U	3 U		
PL2-214B	8/4/2005	GW Zone B	2.9	2.7	5	5	1970	1940
PL2-214B	8/16/1995	GW Zone B		1 U		2 U	1050	1110
PL2-214B	11/16/1995	GW Zone B		10 U		2 U		
PL2-214B	2/27/1996	GW Zone B		1 U		2 U		
PL2-214B	5/22/1996	GW Zone B		1 U		2 U		
PL2-214B	8/21/1996	GW Zone B		1 U		2 U		
PL2-214B	11/19/1996	GW Zone B		5 U		2 U		
PL2-214B	8/4/2004	GW Zone B	1 U	2	3 U	3 U		
PL2-214B	8/18/1992	GW Zone B		1 U		4		1350
PL2-216A	8/19/1992	GW Zone A		3		6		644
PL2-217A	8/19/1992	GW Zone A		6		7		670
PL2-218A	9/30/1994	GW Zone A			5	4	131	251
PL2-218A	9/30/1994	GW Zone A	3	3				
PL2-218A	8/14/1992	GW Zone A		1		5 UJ		348
PL2-218B	8/18/1992	GW Zone B		1 U		15		2810
PL2-222A	8/6/2002	GW Zone A	7.9	7.8	1.2	1.3		
PL2-222A	8/24/1992	GW Zone A		3		48		874
PL2-223A	8/7/2002	GW Zone A	6.6	7	0.6	0.7		
PL2-223A	8/24/1992	GW Zone A		3		23		1100
PL2-224A	11/30/1990	GW Zone A		67		96		
PL2-224A	1/22/1991	GW Zone A		11		78		
PL2-225A	11/30/1990	GW Zone A		41		180		
PL2-225A	1/22/1991	GW Zone A		24		128		
PL2-226A	11/30/1990	GW Zone A		29		98		
PL2-226A	1/22/1991	GW Zone A		31		178		
PL2-227A	4/26/2001	GW Zone A	1.4	2.2	4.2	6.7		
PL2-227A	7/23/2001	GW Zone A	1.7	1.8	2.3	2.7		
PL2-227A	11/5/2001	GW Zone A	1.7	1.6	2.3	2.4		
PL2-227A	1/23/2002	GW Zone A	1.4	1.4 J	3	3.1		
PL2-227A	6/18/2003	GW Zone A	1.4	1.6	2.8	3.3		
PL2-227A	9/3/2003	GW Zone A	1.4	1.6	2.4	3.3		
PL2-227A	12/11/2003	GW Zone A	1.6	1.6	2.2	2.7		
PL2-227A	2/3/2004	GW Zone A	1.5	1.6	4.1	3.2		
PL2-227A	5/12/2004	GW Zone A	1.4	1.5	1.9	2.5		
PL2-227A	11/2/2004	GW Zone A	0.3	2.2	0.5 U	3.6		
PL2-227A	1/31/2005	GW Zone A		1.7				
PL2-227A	1/31/2005	GW Zone A	1.8		2.4	3		
PL2-227A	5/4/2005	GW Zone A	1.2	1.5	2	3.5		
PL2-227A	8/3/2005	GW Zone A	1.7	1.6	2.7	2.4	1 U	1 U
PL2-227A	8/4/2004	GW Zone A	1.6	1.5	2.5	2.2		
PL2-227A	2/13/1993	GW Zone A		19				
PL2-227A	9/29/1994	GW Zone A	2	2	5	3	7	22
PL2-228A	5/8/1990	GW Zone A		1 U		2 U		
PL2-229A	5/8/1990	GW Zone A		14		24		
PL2-230A	12/20/1993	GW Zone A		2		2		
PL2-231A	12/20/1993	GW Zone A		2		2 U		
PL2-232A	5/17/2001	GW Zone A	3.6	3.2	0.5 U	0.6		
PL2-232A	7/24/2001	GW Zone A	3.1	2.8	0.6	0.9		
PL2-232A	11/5/2001	GW Zone A	3.8	3.5	0.5 U	0.5 U		
PL2-232A	1/23/2002	GW Zone A	3.9	3.8 J	0.5 U	0.5 U		
PL2-232A	6/18/2003	GW Zone A	3.5	3.6	0.5 U	0.7		
PL2-232A	9/3/2003	GW Zone A	3.4	3.4	0.5 U	0.6		
PL2-232A	12/10/2003	GW Zone A			0.5 U	0.5		
PL2-232A	12/10/2003	GW Zone A	3.7	3.8				
PL2-232A	2/3/2004	GW Zone A	3.4	3.6	0.5 U	0.8		
PL2-232A	5/11/2004	GW Zone A	3.5	3.4	0.5 U	0.5 U		
PL2-232A	11/2/2004	GW Zone A	3.4	3.6	0.5 U	0.5 U		
PL2-232A	1/31/2005	GW Zone A	3.9	3.5	0.5 U	0.5 U		
PL2-232A	5/4/2005	GW Zone A	3.4	3.4	0.5 U	0.5 U		
PL2-232A	8/3/2005	GW Zone A	2.8	2.7	0.5 U	0.6	441	440
PL2-232A	8/15/1995	GW Zone A		4		3		237
PL2-232A	11/17/1995	GW Zone A		5		2 U		
PL2-232A	2/28/1996	GW Zone A		6		2 U		
PL2-232A	5/22/1996	GW Zone A		2		2 U		
PL2-232A	8/22/1996	GW Zone A		3		2 U		
PL2-232A	11/19/1996	GW Zone A		3		2 U		
PL2-232A	8/4/2004	GW Zone A	3.3	3.2	0.5 U	0.5 U		
PL2-232A	12/20/1993	GW Zone A		9		5		
PL2-233A	4/25/2001	GW Zone A	4.9	4.9	2.3	2.2 B		
PL2-233A	7/23/2001	GW Zone A	4.7	6	1.4	2.3		
PL2-233A	11/5/2001	GW Zone A	5	7.6	2.3	6.1		
PL2-233A	1/22/2002	GW Zone A	6.6	9	3.7	6.3		
PL2-233A	6/18/2003	GW Zone A	5.3	5.6	0.5 U	1.9		

Well ID	Date	Zone	Arsenic		Copper		Manganese	
			Dissolved	Total	Dissolved	Total	Dissolved	Total
			ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
PL2-233A	9/3/2003	GW Zone A	3	4	2	5		
PL2-233A	12/9/2003	GW Zone A	4.1	5.9	0.7	3.6		
PL2-233A	2/3/2004	GW Zone A	2.7	3.4	1	2.1		
PL2-233A	5/12/2004	GW Zone A	2.9	4.3	0.5 U	1.4		
PL2-233A	11/1/2004	GW Zone A	5.6	11.7	1	9.5		
PL2-233A	1/31/2005	GW Zone A	2.9	3.7	1.2	2.5		
PL2-233A	5/4/2005	GW Zone A	2.6	21.7	0.8	25.9		
PL2-233A	8/2/2005	GW Zone A	2	4.8	1.6 U	4.3 U	137	137
PL2-233A	8/15/1995	GW Zone A		2		2 U	1 U	1 U
PL2-233A	11/14/1995	GW Zone A				2		
PL2-233A	11/14/1995	GW Zone A		3 UB				
PL2-233A	2/28/1996	GW Zone A		15		14		
PL2-233A	5/20/1996	GW Zone A		2		2		
PL2-233A	8/20/1996	GW Zone A		8		3		
PL2-233A	11/20/1996	GW Zone A		10		2 U		
PL2-233A	8/3/2004	GW Zone A	2.5	3.9	1.6 U	2.6 U		
PL2-234A	5/8/1990	GW Zone A				103		
PL2-234A	5/8/1990	GW Zone A		30				
PL2-235A	9/6/2002	GW Zone A	4.3	4.2	0.7	1.1		
PL2-240A	8/14/1995	GW Zone A		23		2 U		903
PL2-240A	11/17/1995	GW Zone A		9		3		
PL2-240A	2/27/1996	GW Zone A		14		2 U		
PL2-240A	5/20/1996	GW Zone A		19		2 U		
PL2-240A	8/21/1996	GW Zone A		15		2 U		
PL2-240A	11/18/1996	GW Zone A		15		2 U		
PL2-240A	12/15/1993	GW Zone A		15		2 U		
PL2-241A	8/6/2002	GW Zone A	0.5	0.6	0.5	0.6		
PL2-242A	8/9/2002	GW Zone A	0.9	1.2	7.2	7.2		
PL2-243A	8/6/2002	GW Zone A	10.5	11.2	1.1	1.4		
PL2-245A	9/3/2003	GW Zone A	18	16	0.5 U	0.7		
PL2-250A	8/17/1995	GW Zone A		4		2 U		763
PL2-250A	12/17/1993	GW Zone A		15		88		
PL2-251A	12/17/1993	GW Zone A		11		26		
PL2-258A	4/24/2001	GW Zone A	7.4	7.8	0.5 U	1.8 UB		
PL2-258A	7/26/2001	GW Zone A	7		0.6			
PL2-258A	7/26/2001	GW Zone A		6.8		1.1		
PL2-258A	10/23/2001	GW Zone A	6	5.5	0.5 U	0.5 U		
PL2-258A	1/24/2002	GW Zone A	7	6.4 J	0.5 U	0.5 U		
PL2-258A	6/19/2003	GW Zone A	4.4	4.4	0.5 U	0.6		
PL2-258A	9/3/2003	GW Zone A	5	5.6	0.5 U	0.5 U		
PL2-258A	12/10/2003	GW Zone A	4.4	4.7	0.5 U	0.5		
PL2-258A	2/4/2004	GW Zone A	9.3 J	5.2	0.7	0.7		
PL2-258A	5/11/2004	GW Zone A	5.6	5.3	0.5 U	0.5 U		
PL2-258A	11/2/2004	GW Zone A	5.3	5.2	0.5 U	0.5 U		
PL2-258A	1/31/2005	GW Zone A	4.1	3.8	0.5 U	0.5 U		
PL2-258A	5/4/2005	GW Zone A	3.5	3.5	0.5 U	0.7		
PL2-258A	8/4/2005	GW Zone A	4.2	4.3	0.5 U	0.7 U	246	272
PL2-258A	8/11/1995	GW Zone A		2		3		289
PL2-258A	11/15/1995	GW Zone A		10 U		2 U		
PL2-258A	2/28/1996	GW Zone A		6		2 U		
PL2-258A	5/20/1996	GW Zone A		8		2 U		
PL2-258A	8/20/1996	GW Zone A		6		2 U		
PL2-258A	11/18/1996	GW Zone A		6		2 U		
PL2-258A	8/4/2004	GW Zone A	4.4	4.3	0.5 U	0.5 U		
PL2-258B	4/25/2001	GW Zone B	4	2 UJ	6	6		
PL2-258B	7/26/2001	GW Zone B	2 U	2 U	4	5		
PL2-258B	10/23/2001	GW Zone B	8	2 U	4	4		
PL2-258B	1/24/2002	GW Zone B	5 U	2 UJ	5 U	5 U		
PL2-258B	6/19/2003	GW Zone B	2 U	1 U	4	4		
PL2-258B	9/3/2003	GW Zone B	1	1	4	5		
PL2-258B	12/10/2003	GW Zone B	1 U	1 U	3	3		
PL2-258B	2/4/2004	GW Zone B	1 U	1 U	3	4		
PL2-258B	5/11/2004	GW Zone B	2	1	3	3		
PL2-258B	11/2/2004	GW Zone B	1	1	4	4		
PL2-258B	1/31/2005	GW Zone B	5	2	5	4		
PL2-258B	5/4/2005	GW Zone B	2	2	4 U	3 U		
PL2-258B	8/4/2005	GW Zone B	1	1.1	4 U	5	5920	6070
PL2-258B	8/15/1995	GW Zone B		1 U		2 U	6480	6340
PL2-258B	11/15/1995	GW Zone B		10 U		2 U		
PL2-258B	2/28/1996	GW Zone B		2 U		2 U		
PL2-258B	5/20/1996	GW Zone B		1 U		2 U		
PL2-258B	8/20/1996	GW Zone B		5 U		2 U		
PL2-258B	11/18/1996	GW Zone B		2 U		2 U		
PL2-258B	8/4/2004	GW Zone B	1	1	4 U	3 U		
PL2-260A	8/9/2002	GW Zone A	15.5	15.7	0.6	0.7		
PL2-260A	3/15/1995	GW Zone A	17	17	2 U	2 U	4260	4220
PL2-260A	9/23/1994	GW Zone A	11	11	2 U	2 U	3780	3820
PL2-270A	8/21/2002	GW Zone A	0.5	0.6	2.7	2.8		
PL2-270A	3/27/1995	GW Zone A	1 U	1	2	2 U	18	19
PL2-270A	8/9/1995	GW Zone A		1 U		2 U		16
PL2-270A	11/13/1995	GW Zone A		1		2 U		
PL2-270A	3/1/1996	GW Zone A		1 U		2 U		
PL2-270A	8/20/1996	GW Zone A		2		7		
PL2-270A	9/21/1994	GW Zone A	1	1 U	3	2 U	64	64
PL2-271A	4/25/2001	GW Zone A	23.2	22.1	0.9	6.8		

Well ID	Date	Zone	Arsenic Dissolved ug/L	Arsenic Total ug/L	Copper Dissolved ug/L	Copper Total ug/L	Manganese Dissolved ug/L	Manganese Total ug/L
PL2-271A	7/26/2001	GW Zone A	21.5	18.3	0.5 U	1		
PL2-271A	11/5/2001	GW Zone A	19.3	17.3	0.5 U	0.5 U		
PL2-271A	1/23/2002	GW Zone A	18	17.1 J	0.5 U	0.6		
PL2-271A	6/19/2003	GW Zone A	18.4	17.8	0.5	0.6		
PL2-271A	9/3/2003	GW Zone A	15.4	15.7	0.5 U	0.5		
PL2-271A	12/10/2003	GW Zone A	16.9	17.1	0.5 U	1		
PL2-271A	2/4/2004	GW Zone A	33.8	16.7	0.8	0.8		
PL2-271A	5/11/2004	GW Zone A	16.7	17.5	0.5 U	1.1		
PL2-271A	11/2/2004	GW Zone A	16.3	16.5	0.5 U	0.5		
PL2-271A	1/31/2005	GW Zone A	17.6	16.2	0.5 U	0.5 U		
PL2-271A	5/4/2005	GW Zone A	16.8	17.4	0.5 U	0.6		
PL2-271A	8/4/2005	GW Zone A	16.8	17	0.5 U	1.1 U	679	704
PL2-271A	8/4/2004	GW Zone A	16.6	17	0.5 U	1.3		
PL2-301A	7/7/1992	GW Zone A	3					
PL2-301A	7/7/1992	GW Zone A			5			
PL2-302A	7/7/1992	GW Zone A	8		8			
PL2-302A	9/27/1994	GW Zone A	6	10	4	2 U	243	324
PL2-303A	7/7/1992	GW Zone A	2		8			
PL2-304A	7/7/1992	GW Zone A	2		2 U			
PL2-305A	7/7/1992	GW Zone A	4		6			
PL2-310A	8/16/2005	GW Zone A	6.8	7.6	0.5 U	0.5 U	646	643
PL2-311A	8/16/2005	GW Zone A	7.6				317	
PL2-311A	8/16/2005	GW Zone A		7.5	0.5 U	0.5 U		373
PL2-312A	8/17/2005	GW Zone A	7.4	7.6	2.8	4	333	297
PL2-312A	8/22/2002	GW Zone A	6.5	6.4	3.1	3.8		
PL2-312A	9/27/1994	GW Zone A	7	10	3	4	340	341
PL2-314A	8/24/2005	GW Zone A	1	0.9	7.7	8	494	467
PL2-314A	8/12/2002	GW Zone A	1.7	2	9.6	11.2		
PL2-314A	12/21/1993	GW Zone A		6		9		
PL2-315A	8/18/2005	GW Zone A	1.6	1.6	9.2	9.5	23	44
PL2-315A	8/14/2002	GW Zone A	1.7	1.7	10.6	10.9		
PL2-315A	12/21/1993	GW Zone A		2		8		
PL2-315A	9/27/1994	GW Zone A	2	3	12	10	89	90
PL2-315B	8/18/2005	GW Zone B	0.5 U	0.5 U	0.5 U	0.5	727	654
PL2-315B	8/14/2002	GW Zone B	0.4	0.5 U	0.6	1.2		
PL2-316A	8/24/2005	GW Zone A	1.5	1.7	6.3	7.1	76	101
PL2-316A	8/12/2002	GW Zone A		1.2	6			
PL2-316A	8/12/2002	GW Zone A	1.4			6.8		
PL2-316B	8/24/2005	GW Zone B	0.9	0.7	0.5 U	0.5 U	667	680
PL2-316B	8/15/2002	GW Zone B	0.6	0.5 U	0.6	1.2		
PL2-317A	12/17/1993	GW Zone A		10		111		
PL2-317AR	8/17/2005	GW Zone A	4	4.8	1.9	2.2	256	300
PL2-317AR	8/27/2002	GW Zone A	1.9	2.2	1.9	3		
PL2-319A	8/25/2005	GW Zone A	1.5	1.5	1.2	2.7	218	204
PL2-319A	3/27/1995	GW Zone A	3	3	2 U	2 U	203	203
PL2-319A	8/16/1995	GW Zone A		3		2 U		199
PL2-319A	11/13/1995	GW Zone A		3		2 U		
PL2-319A	2/29/1996	GW Zone A		1		2 U		
PL2-319A	8/22/1996	GW Zone A		3		3		
PL2-319A	9/22/1994	GW Zone A	7	7	2 U	2	452	408
PL2-320A	3/24/1995	GW Zone A				3		
PL2-320A	3/24/1995	GW Zone A	2	2	3		117	110
PL2-320A	8/16/1995	GW Zone A		2		2 U		128
PL2-320A	11/13/1995	GW Zone A		4		2 U		
PL2-320A	2/29/1996	GW Zone A		3		2 U		
PL2-320A	8/26/1996	GW Zone A		2		2 U		
PL2-320A	9/23/1994	GW Zone A	3	3	2	2 U	199	203
PL2-325A	8/17/2005	GW Zone A	0.7	0.7	8.7	6.4	2	2
PL2-325B	8/17/2005	GW Zone B	0.5 U	0.5 U	0.5 U	0.5 U	1160	1020
PL2-325B	8/24/1995	GW Zone B					1120	
PL2-326A	8/17/2005	GW Zone A	2	2.6	13.8	14.6	141	150
PL2-326A	9/6/2002	GW Zone A	9.6	9.9	2.8	3.2		
PL2-326B	8/17/2005	GW Zone B	0.5 U	0.5 U	0.5 U	0.5 U	1880	1900
PL2-326B	9/6/2002	GW Zone B	0.5	0.6	0.8	1.4		
PL2-327A	8/18/2005	GW Zone A	0.5 U	0.7		13.6		379
PL2-327A	8/18/2005	GW Zone A			13.2		369	
PL2-327A	9/3/2002	GW Zone A	1.3	1.5	10.1	12.2		
PL2-327B	8/18/2005	GW Zone B	0.2	0.3	0.5 U	0.5 U	708	707
PL2-327B	9/3/2002	GW Zone B	0.3	0.3	0.5	0.7		
PL2-328A	8/24/2005	GW Zone A	1.2	1.4	4.6	5	45	46
PL2-328A	9/5/2002	GW Zone A	1	1.1	4.8	4.6		
PL2-328B	8/24/2005	GW Zone B	0.4		0.5 U	0.5 U		999
PL2-328B	8/24/2005	GW Zone B		0.4			981	
PL2-328B	9/5/2002	GW Zone B	0.5	0.5 U	0.5	2.8		
PL2-329A	8/25/2005	GW Zone A	0.8	1.1	4.4	4.5	79	84
PL2-329A	9/4/2002	GW Zone A	0.8	0.9	4.3	4.4		
PL2-329B	8/25/2005	GW Zone B	0.5 U	0.5 U	0.5 U	0.5 U	416	416
PL2-329B	9/4/2002	GW Zone B	0.4	0.8	0.5	3.3		
PL2-330A	8/25/2005	GW Zone A	1.1	1.2	7.2	7.6	74	79
PL2-330A	9/5/2002	GW Zone A	1.3	1.4	9.4	9		
PL2-330B	8/25/2005	GW Zone B	0.2	0.3	0.6	0.5 U	602	607
PL2-330B	9/5/2002	GW Zone B	0.3	0.4		1.3		
PL2-330B	9/5/2002	GW Zone B			0.7			
PL2-331A	8/25/2005	GW Zone A	0.6	0.7	0.5 U	0.5 U		
PL2-331A	8/25/2005	GW Zone A					794	774

Well ID	Date	Zone	Arsenic Dissolved ug/L	Arsenic Total ug/L	Copper Dissolved ug/L	Copper Total ug/L	Manganese Dissolved ug/L	Manganese Total ug/L
PL2-331A	9/3/2002	GW Zone A	3.4	2.7	0.8	8.8		
PL2-331B	8/25/2005	GW Zone B	0.5 U	0.5 U	0.5 U	0.5 U	493	488
PL2-331B	9/4/2002	GW Zone B	0.5 U	0.2 U	0.5 U	2.7		
PL2-332A	8/17/2005	GW Zone A	0.5	0.5	5.6	5.7	880	906
PL2-401A	8/27/2002	GW Zone A	6.2	7.6	1.6	1.9		
PL2-401A	9/27/1994	GW Zone A	10	10	5	5	614	663
PL2-410A	8/26/2002	GW Zone A	15.4	15.9	0.8	1.5		
PL2-410A	9/27/1994	GW Zone A	18	21	2 U	16	197	239
PL2-420A	4/24/2001	GW Zone A	0.5 U	0.5 U	1	0.6 UB		
PL2-420A	7/23/2001	GW Zone A	0.5 U	0.5 U	0.5 U	0.5 U		
PL2-420A	10/23/2001	GW Zone A	0.6	0.6	0.5 U	0.5 U		
PL2-420A	1/23/2002	GW Zone A	0.5 U	0.5 UJ	0.5 U	0.5 U		
PL2-420A	6/18/2003	GW Zone A	0.3	0.4	0.6	0.7		
PL2-420A	12/11/2003	GW Zone A	0.5 U	0.5 U	0.5 U	0.5		
PL2-420A	11/1/2004	GW Zone A	0.6	0.5 U	0.5 U	0.5 U		
PL2-420A	2/2/2005	GW Zone A	0.6	0.7	0.5 U	0.5 U		
PL2-420A	3/14/1995	GW Zone A	1 U	1 U	2 U	2 U	264	258
PL2-420A	9/27/1994	GW Zone A	1			2 U	453	
PL2-420A	9/27/1994	GW Zone A		1	2 U			448
PL2-425A	4/26/2001	GW Zone A	19	16.8	0.6	1.8 B		
PL2-425A	7/23/2001	GW Zone A	21.8	20	0.5 U	0.8		
PL2-425A	11/8/2001	GW Zone A	27.3	23.3	0.5 U	0.6		
PL2-425A	1/23/2002	GW Zone A	21	18.7 J	0.5 U	0.5		
PL2-425A	8/30/2002	GW Zone A	21.8	21.2	0.5	1.2		
PL2-425A	6/18/2003	GW Zone A	22	20.2	0.6	0.9		
PL2-425A	12/11/2003	GW Zone A	18.6	17.7	0.5 U	0.5		
PL2-425A	2/3/2004	GW Zone A	18.6	16.6	0.5	0.6		
PL2-425A	5/12/2004	GW Zone A	15	13.9	0.5 U	0.5 U		
PL2-425A	11/2/2004	GW Zone A	1.7	15.4	2.1	0.5 U		
PL2-425A	2/2/2005	GW Zone A	22.2	19.1	0.5 U	0.5 U		
PL2-425A	5/5/2005	GW Zone A	16.6	15.6	0.5 U	0.6		
PL2-425A	8/3/2005	GW Zone A		25	0.5 U	0.5 U		
PL2-425A	8/3/2005	GW Zone A	25.5				506	534
PL2-425A	8/2/1995	GW Zone A		22		3		345
PL2-425A	11/16/1995	GW Zone A		20		2 U		
PL2-425A	2/27/1996	GW Zone A		19		2 U		
PL2-425A	5/22/1996	GW Zone A		24		5		
PL2-425A	8/26/1996	GW Zone A		20		8		
PL2-425A	11/19/1996	GW Zone A		16		4 UB		
PL2-425A	8/4/2004	GW Zone A	18	17.4	0.5 U	0.5 U		
PL2-425A	12/20/1993	GW Zone A		17		2 U		
PL2-425A	9/27/1994	GW Zone A	20	22	2 U	24	441	539
PL2-430A	8/26/2002	GW Zone A	130	137	0.7	1.1		
PL2-430A	3/14/1995	GW Zone A	2	1 U	2	2 U	939	941
PL2-430A	12/16/1993	GW Zone A		1 U		2 U		
PL2-430A	9/27/1994	GW Zone A	1 U	1 U	2 U	2 U	1320	1320
PL2-435A	8/28/2002	GW Zone A	4.2	4.8	0.8	2.2		
PL2-435A	9/26/1994	GW Zone A	5	5	2 U	5	684	680
PL2-440A	8/28/2002	GW Zone A	1.2	1.4	35.9	36.8		
PL2-440A	3/27/1995	GW Zone A	8	6	47	46	4830	4740
PL2-440A	8/4/1995	GW Zone A		8		32		3690
PL2-440A	9/22/1994	GW Zone A	5 U	5 U	34	33	4020	3990
PL2-441A	8/22/2002	GW Zone A	3.6	3.2	0.5 U	0.5		
PL2-441A	3/27/1995	GW Zone A	4	4	2 U	2	681	703
PL2-441A	8/2/1995	GW Zone A		6		2 U		647
PL2-441A	11/13/1995	GW Zone A		6		2 U		
PL2-441A	3/5/1996	GW Zone A		1		2 U		
PL2-441A	8/22/1996	GW Zone A		5		4		
PL2-441A	9/22/1994	GW Zone A	9	9	2 U	2 U	738	687
PL2-443A	4/24/2001	GW Zone A	4.4	5	3.3	2.4 UB		
PL2-443A	7/23/2001	GW Zone A	3.8	4.7	1.6	1.8		
PL2-443A	11/8/2001	GW Zone A	5.4	7.2	0.6	1.5		
PL2-443A	1/23/2002	GW Zone A	0.5 U	0.6 J	1.8	2		
PL2-443A	6/18/2003	GW Zone A	2.6	6.9	2.3	2.5		
PL2-443A	9/2/2003	GW Zone A	2.4	1.8	0.8	1.4		
PL2-443A	12/11/2003	GW Zone A	2.6	2.7	0.6	1		
PL2-443A	2/3/2004	GW Zone A	0.5	0.8	1.3	1.6		
PL2-443A	5/12/2004	GW Zone A	1.4	2	0.8	1.2		
PL2-443A	11/1/2004	GW Zone A	2.7	3.1	0.6	0.9		
PL2-443A	2/2/2005	GW Zone A	1.9	1.9	0.7 U	0.9 U		
PL2-443A	5/5/2005	GW Zone A	1.8	2	0.8	1.5		
PL2-443A	8/3/2005	GW Zone A	2.3	2.3	0.9	1.3	238	261
PL2-443A	3/30/1995	GW Zone A	2	2	3	3	330	325
PL2-443A	8/2/1995	GW Zone A		2		6		193
PL2-443A	11/21/1995	GW Zone A		1				
PL2-443A	11/21/1995	GW Zone A				5		
PL2-443A	2/27/1996	GW Zone A		1 U		4		
PL2-443A	5/21/1996	GW Zone A		1		5		
PL2-443A	8/21/1996	GW Zone A		1		7		
PL2-443A	11/19/1996	GW Zone A		1		2 U		
PL2-443A	8/3/2004	GW Zone A	0.5	1.2	1.3 U	1.9 U		
PL2-444A	8/15/1995	GW Zone A		3		2 U	459	450
PL2-444A	11/15/1995	GW Zone A		10 U		2 U		
PL2-444A	3/5/1996	GW Zone A				33 J		
PL2-444A	3/5/1996	GW Zone A		2				

Well ID	Date	Zone	Arsenic Dissolved ug/L	Arsenic Total ug/L	Copper Dissolved ug/L	Copper Total ug/L	Manganese Dissolved ug/L	Manganese Total ug/L
PL2-444A	5/22/1996	GW Zone A		4		2 U		
PL2-444A	8/21/1996	GW Zone A		2		3		
PL2-444A	11/19/1996	GW Zone A		3		2 U		
PL2-445A	8/30/2002	GW Zone A	4.7	5.7	0.5 U	1.9		
PL2-445A	8/10/1995	GW Zone A		8		3		1410
PL2-445A	11/14/1995	GW Zone A		12		2 U		
PL2-445A	2/28/1996	GW Zone A		7		2 U		
PL2-445A	8/23/1996	GW Zone A		6		2		
PL2-446A	8/29/2002	GW Zone A	5	5.2	0.6	2		
PL2-447A	8/30/2002	GW Zone A	4.9	5	0.6	1.2		
PL2-501B	8/4/1995	GW Zone B					967	
PL2-502A	8/26/2002	GW Zone A	3.4	3.4	2	2.2		
PL2-502A	8/15/1995	GW Zone A		7		2		594
PL2-502A	3/17/1994	GW Zone A		50 U		22		
PL2-503A	8/13/2002	GW Zone A	2.9	3.4	7.7	10.3		
PL2-504A	8/13/2002	GW Zone A	7.8	7.8	11.1	15.7		
PL2-505A	8/21/2002	GW Zone A	1.3	1.5	2	2.6		
PL2-505A	9/28/1994	GW Zone A	2	2	2 U	38	257	286
PL2-507A	8/22/2002	GW Zone A	1	1.2	2.7	2.6		
PL2-507A	3/27/1995	GW Zone A	1 U	1 U	4	3	58	60
PL2-507A	8/16/1995	GW Zone A		2		3		76
PL2-507A	11/13/1995	GW Zone A		1		2		
PL2-507A	2/29/1996	GW Zone A		1		2 U		
PL2-507A	8/22/1996	GW Zone A		44		25		
PL2-507A	9/21/1994	GW Zone A	2	2	6	4	34	35
PL2-BF01A	8/27/2002	GW Zone A	0.2 U	0.2 U	9.7	1.2		
PL2-BF01A	3/27/1995	GW Zone A	1	2	2	2 U	358	331
PL2-BF01A	8/2/1995	GW Zone A		3		2 U		686
PL2-BF01A	11/13/1995	GW Zone A		2		2 U		
PL2-BF01A	3/5/1996	GW Zone A		1 U		2 U		
PL2-BF01A	8/22/1996	GW Zone A		1 U		2		
PL2-BF01A	9/22/1994	GW Zone A	18	20	2 U	2 U	1930	1910
PL2-BF02A	8/27/2002	GW Zone A	9.4	10	3.7	4		
PL2-BF02A	3/30/1995	GW Zone A	1	2	2 U	2 U	664	680
PL2-BF02A	8/9/1995	GW Zone A		2		13		754
PL2-BF02A	11/14/1995	GW Zone A		5 UB		10		
PL2-BF02A	3/5/1996	GW Zone A		2		2		
PL2-BF02A	8/22/1996	GW Zone A		5		15		
PL2-BF03A	8/29/2002	GW Zone A	2.6	2.7	1	1.4		
PL2-JF01A	3/10/1995	GW Zone A	1	1	2 U	2 U	1460	1490
PL2-JF01A	9/27/1995	GW Zone A		2		2 U		1260
PL2-JF01A	11/17/1995	GW Zone A		1 U		2 U		
PL2-JF01A	3/1/1996	GW Zone A		1		2		
PL2-JF01A	5/23/1996	GW Zone A		2		2 U		
PL2-JF01A	8/26/1996	GW Zone A		1 U		2 U		
PL2-JF01A	11/21/1996	GW Zone A		1 U		2 U		
PL2-JF01AR	5/17/2001	GW Zone A	0.5 U	0.5 U	0.5 U	2		
PL2-JF01AR	7/25/2001	GW Zone A	0.5 U	0.7	0.5 U	0.5 U		
PL2-JF01AR	10/24/2001	GW Zone A		0.8	0.5	0.6		
PL2-JF01AR	10/24/2001	GW Zone A	0.5 U					
PL2-JF01AR	1/21/2002	GW Zone A	0.7	0.6	0.5	0.5 U		
PL2-JF01AR	6/16/2003	GW Zone A	0.4	0.5 U	0.5	0.5 U		
PL2-JF01AR	9/2/2003	GW Zone A	0.4	0.4	0.9	0.9		
PL2-JF01AR	12/8/2003	GW Zone A	0.3	0.4	0.5 U	0.7		
PL2-JF01AR	12/19/2003	GW Zone A		0.3		0.6		
PL2-JF01AR	2/2/2004	GW Zone A	0.5 U	0.4	0.5	1		
PL2-JF01AR	5/10/2004	GW Zone A	0.4	0.4	0.5 U	0.5 U		
PL2-JF01AR	9/27/2004	GW Zone A		0.5		0.5 U		
PL2-JF01AR	11/1/2004	GW Zone A	0.8			0.7 U		
PL2-JF01AR	11/1/2004	GW Zone A		0.5 U	0.5 U			
PL2-JF01AR	2/1/2005	GW Zone A	0.5 U	0.4	0.5 U	0.5		
PL2-JF01AR	5/2/2005	GW Zone A	0.5 U	0.5 U	0.5 U	1.7		
PL2-JF01AR	8/1/2005	GW Zone A	0.5	0.4	0.5 U	1.4 U	1110	1140
PL2-JF01AR	8/2/2004	GW Zone A	0.4	0.4	0.5 U	0.5 U		
PL2-JF01B	4/26/2001	GW Zone B	1	1	1.1	2.5 B		
PL2-JF01B	7/25/2001	GW Zone B	1 U	1 U	1	3		
PL2-JF01B	10/24/2001	GW Zone B	2 U	2.9	1.2	1.5		
PL2-JF01B	1/21/2002	GW Zone B	1	2	1	1		
PL2-JF01B	6/16/2003	GW Zone B	0.5 U	0.5 U	0.8	1.8		
PL2-JF01B	9/2/2003	GW Zone B	3.5	2.2	1.5	1.7		
PL2-JF01B	12/8/2003	GW Zone B	1 U	1 U	1 U	1 U		
PL2-JF01B	12/19/2003	GW Zone B		1.6		3		
PL2-JF01B	2/2/2004	GW Zone B	0.5 U	1	1.7	4.4		
PL2-JF01B	5/10/2004	GW Zone B	1 U	1 U	1 U	2		
PL2-JF01B	9/27/2004	GW Zone B		1.1		1.2		
PL2-JF01B	11/1/2004	GW Zone B	2.4	2.2	2	2		
PL2-JF01B	2/1/2005	GW Zone B	1 U	1 U	2	2		
PL2-JF01B	5/2/2005	GW Zone B	2	2.2	2	2		
PL2-JF01B	8/1/2005	GW Zone B	0.6	0.5	1.3 U	1.7 U	2180	2360
PL2-JF01B	3/31/1995	GW Zone B	1	1 U	2 U	2 U	511	508
PL2-JF01B	9/27/1995	GW Zone B		2		2 U	531	540
PL2-JF01B	11/17/1995	GW Zone B		1 U		2 U		
PL2-JF01B	3/1/1996	GW Zone B		1 U		2 U		
PL2-JF01B	5/23/1996	GW Zone B		1		2 U		
PL2-JF01B	8/26/1996	GW Zone B		1 U		2 U		

Well ID	Date	Zone	Arsenic		Copper		Manganese	
			Dissolved	Total	Dissolved	Total	Dissolved	Total
			ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
PL2-JF01B	11/21/1996	GW Zone B		1 U		2 U		
PL2-JF01B	8/2/2004	GW Zone B	1.3	0.7	1.4 U	2 U		
PL2-JF02A	4/26/2001	GW Zone A	0.4	0.7	0.6	4.6 B		
PL2-JF02A	7/25/2001	GW Zone A	0.7	0.9	0.5 U	0.7		
PL2-JF02A	10/24/2001	GW Zone A	0.5 U	0.5 U	0.5 U	0.5 U		
PL2-JF02A	1/21/2002	GW Zone A	3.9	3.8	1.5	1.7		
PL2-JF02A	6/16/2003	GW Zone A	0.5	0.5 U	1	0.9		
PL2-JF02A	9/2/2003	GW Zone A	0.8	0.5 U	0.8	1.1		
PL2-JF02A	12/8/2003	GW Zone A	0.8	1	0.6	0.9		
PL2-JF02A	2/2/2004	GW Zone A	0.8	1.4	0.7	1.2		
PL2-JF02A	5/10/2004	GW Zone A	0.6	1.1	0.5 U	1.3		
PL2-JF02A	11/1/2004	GW Zone A	0.4	1.3	0.5 U	1 U		
PL2-JF02A	2/1/2005	GW Zone A	0.3	1.1	0.5 U	1.1		
PL2-JF02A	5/2/2005	GW Zone A	0.3	0.8	0.5 U	1.8		
PL2-JF02A	8/1/2005	GW Zone A	0.4	0.4	0.5 U	2	370	397
PL2-JF02A	9/27/1995	GW Zone A		5		2 U	765	743
PL2-JF02A	11/17/1995	GW Zone A		2		2 U		
PL2-JF02A	3/1/1996	GW Zone A		4		2 U		
PL2-JF02A	5/23/1996	GW Zone A		4		2 U		
PL2-JF02A	8/26/1996	GW Zone A		4		2 U		
PL2-JF02A	11/21/1996	GW Zone A		2		2 U		
PL2-JF02A	8/2/2004	GW Zone A	1	1.1	0.7	1.6		
PL2-JF03A	4/26/2001	GW Zone A	0.4	0.4	2.9	2.2 B		
PL2-JF03A	7/25/2001	GW Zone A	0.6	0.6	0.5 U	0.7		
PL2-JF03A	10/24/2001	GW Zone A	0.6	0.7	0.5 U	0.5 U		
PL2-JF03A	1/21/2002	GW Zone A	0.8	0.8	0.6	1		
PL2-JF03A	6/16/2003	GW Zone A	1	1.1	0.5 U	1.3		
PL2-JF03A	12/8/2003	GW Zone A	0.4	0.4	0.5 U	2.1		
PL2-JF03A	11/1/2004	GW Zone A	0.5	0.5	0.6 U	2.1		
PL2-JF03A	5/2/2005	GW Zone A	0.4	0.7	0.5 U	7.1		
PL2-JF03A	9/28/1995	GW Zone A		2		2 U	1890	1840
PL2-JF03A	11/17/1995	GW Zone A		2		2 U		
PL2-JF03A	3/1/1996	GW Zone A		1 U		2 U		
PL2-JF03A	5/23/1996	GW Zone A		1		8		
PL2-JF03A	8/26/1996	GW Zone A		1		7		
PL2-JF03A	11/21/1996	GW Zone A		1 U		2 U		
PP-1B-I	12/18/2003	GW Zone B		1.6		3		
PP-1B-I	9/30/2004	GW Zone B		2		2		
PP-1B-I	2/2/2005	GW Zone B		2.2		1 U		
PP-1B-I	5/4/2005	GW Zone B		4		3		
PP-1B-I	7/28/2005	GW Zone B		1.6		1.2 U		
PP-1B-O	12/18/2003	GW Zone B		1.7		2		
PP-1B-O	9/30/2004	GW Zone B		2		3		
PP-1B-O	2/2/2005	GW Zone B		2				
PP-1B-O	2/2/2005	GW Zone B				2		
PP-1B-O	5/4/2005	GW Zone B		2.1		2		
PP-1B-O	7/28/2005	GW Zone B		1.7		2 U		
PP-2B-I	12/19/2003	GW Zone B		0.8		10		
PP-2B-I	9/30/2004	GW Zone B		0.5 U		0.8		
PP-2B-I	2/2/2005	GW Zone B		0.5 U		3.4		
PP-2B-I	5/5/2005	GW Zone B		0.7		2		
PP-2B-I	8/1/2005	GW Zone B				1.3		
PP-2B-I	8/1/2005	GW Zone B		0.5 U				
PP-2B-O	12/19/2003	GW Zone B		1		6 J		
PP-2B-O	9/30/2004	GW Zone B		0.5 U		1.7		
PP-2B-O	2/2/2005	GW Zone B		0.5 U		0.9		
PP-2B-O	5/5/2005	GW Zone B		1		0.7		
PP-2B-O	8/1/2005	GW Zone B		0.5 U		0.7 J		
PP-3A-I	12/17/2003	GW Zone A				1.6		
PP-3A-I	9/29/2004	GW Zone A		0.9		0.7		
PP-3A-I	2/1/2005	GW Zone A		3		1.1		
PP-3A-I	5/3/2005	GW Zone A		4.2		1.1		
PP-3A-I	7/27/2005	GW Zone A		3.9		0.9 U		
PP-3B-I	12/17/2003	GW Zone B		1		3		
PP-3B-I	9/29/2004	GW Zone B		2		2		
PP-3B-I	2/1/2005	GW Zone B		2.8		2		
PP-3B-I	5/3/2005	GW Zone B		2.1		2		
PP-3B-I	7/27/2005	GW Zone B		1.6		3 U		
PP-4B-I	12/18/2003	GW Zone B		1.2		13		
PP-4B-I	9/30/2004	GW Zone B		0.5 U		0.6		
PP-4B-I	2/1/2005	GW Zone B		0.7		1.5		
PP-4B-I	5/3/2005	GW Zone B				0.8		
PP-4B-I	5/3/2005	GW Zone B		1.5				
PP-4B-I	8/1/2005	GW Zone B		0.5 U		0.9		
PP-4B-O	12/18/2003	GW Zone B		1.2		12		
PP-4B-O	9/30/2004	GW Zone B		0.5 U		4		
PP-4B-O	2/1/2005	GW Zone B		0.6		4.7		
PP-4B-O	5/3/2005	GW Zone B		2.4		2.3		
PP-4B-O	8/1/2005	GW Zone B		0.5 U		1.3		
PP-5B-I	12/17/2003	GW Zone B		1 U		4		
PP-5B-I	9/28/2004	GW Zone B		2.4		3 U		
PP-5B-I	2/1/2005	GW Zone B		2		4		
PP-5B-I	5/4/2005	GW Zone B		2		3		
PP-5B-I	7/27/2005	GW Zone B		1.2		3 U		
PP-5B-O	12/18/2003	GW Zone B		0.8		3		

Well ID	Date	Zone	Arsenic		Copper		Manganese	
			Dissolved	Total	Dissolved	Total	Dissolved	Total
			ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
PP-5B-O	9/28/2004	GW Zone B		2		11 U		
PP-5B-O	2/1/2005	GW Zone B		2.2		3.2		
PP-5B-O	5/4/2005	GW Zone B		1.3		3		
PP-5B-O	7/27/2005	GW Zone B		0.9		4 U		
Isaacson Wells								
I-205	1/1/1988	GW Zone A	30					
I-205	9/12/1991	GW Zone A	129					
I-205	9/19/1991	GW Zone A	36					
I-205	9/26/1991	GW Zone A	23					
I-205	10/3/1991	GW Zone A	126					
I-205	4/16/1992	GW Zone A	2					
I-205	4/23/1992	GW Zone A	2					
I-205	4/30/1992	GW Zone A	7					
I-205	5/7/1992	GW Zone A	1 U					
I-205	9/24/1992	GW Zone A	57					
I-205	10/1/1992	GW Zone A	2					
I-205	10/8/1992	GW Zone A	1					
I-205	10/15/1992	GW Zone A	9					
I-205	4/8/1993	GW Zone A	24					
I-205	4/15/1993	GW Zone A	46					
I-205	4/22/1993	GW Zone A	25					
I-205	4/29/1993	GW Zone A	56					
I-205	10/15/1993	GW Zone A	11					
I-205	10/22/1993	GW Zone A	11					
I-205	10/29/1993	GW Zone A	19					
I-205	11/5/1993	GW Zone A	310					
I-205	4/14/1994	GW Zone A	1 U					
I-205	4/21/1994	GW Zone A	1					
I-205	4/28/1994	GW Zone A	7					
I-205	5/5/1994	GW Zone A	1					
I-205	12/28/1995	GW Zone A	640	580				
I-205	4/19/1996	GW Zone A	320	26				
I-205	12/1/1999	GW Zone A	10					
I-205	8/24/2000	GW Zone A	27					
I-205	10/25/2000	GW Zone A	112					
I-206	1/1/1988	GW Zone A	1700					
I-206	9/12/1991	GW Zone A	1470					
I-206	9/19/1991	GW Zone A	1790					
I-206	9/26/1991	GW Zone A	1580					
I-206	10/3/1991	GW Zone A	1610					
I-206	4/16/1992	GW Zone A	1610					
I-206	4/23/1992	GW Zone A	1770					
I-206	4/30/1992	GW Zone A	1670					
I-206	5/7/1992	GW Zone A	1600					
I-206	9/24/1992	GW Zone A	1680 J					
I-206	10/1/1992	GW Zone A	1580					
I-206	10/8/1992	GW Zone A	1550					
I-206	10/15/1992	GW Zone A	1700					
I-206	4/8/1993	GW Zone A	1710					
I-206	4/15/1993	GW Zone A	1580					
I-206	4/22/1993	GW Zone A	1510					
I-206	4/29/1993	GW Zone A	1700					
I-206	10/15/1993	GW Zone A	1680					
I-206	10/22/1993	GW Zone A	1590					
I-206	10/29/1993	GW Zone A	1810					
I-206	11/5/1993	GW Zone A	1510					
I-206	4/14/1994	GW Zone A	1360					
I-206	4/21/1994	GW Zone A	1480					
I-206	4/28/1994	GW Zone A	1370					
I-206	5/5/1994	GW Zone A	1430					
I-206	12/28/1995	GW Zone A	2000	1600				
I-206	4/19/1996	GW Zone A	1800	2270				
I-206	12/1/1999	GW Zone A	1600					
I-206	8/24/2000	GW Zone A	1100					
I-206	10/25/2000	GW Zone A	1350					
Rhone-Poulenc Wells								
B1A	3/16/2005	GW Zone A	1 U	1 U	2 U	2 U	382	
B1A	6/16/2005	GW Zone A	1 U	1 U	2 U	2 U	250	
B1A	12/17/2004	GW Zone A	1 U	2 U	2 U	9	507	
DM-5	3/16/2005	GW Zone A	18	18	24	25	154	
DM-5	6/15/2005	GW Zone A	19	20	20	26	147	
DM-5	12/16/2004	GW Zone A	21	21	26	23	176	
DM-8	3/15/2005	GW Zone A	4	4	3	15	1380	
DM-8	6/16/2005	GW Zone A	2	3	2	13	1430	
DM-8	12/16/2004	GW Zone A	2	4	4	13	2140	
EX-3	3/17/2005	GW Zone A	2 J-	4 J-	3	5	859	
EX-3	6/16/2005	GW Zone A	2	1 U	2 U	3	1070	
EX-3	12/17/2004	GW Zone A	1	3	2 U	5	1240	
MW-17	3/17/2005	GW Zone A	18 J-	14 J-	24	30	1600	
MW-17	6/16/2005	GW Zone A	12	13	18	24	1400	
MW-17	12/17/2004	GW Zone A	17	18	26	31	1980	
MW-27	3/17/2005	GW Zone A	14 J-	21 J-	50	58	167	
MW-27	6/15/2005	GW Zone A	9	10	2 U	84	17	
MW-27	12/15/2004	GW Zone A	15	1 U	38	48	161	
MW-28	3/17/2005	GW Zone A	6 J-	4 J-	68 J	90	253 J	

Well ID	Date	Zone	Arsenic		Copper		Manganese	
			Dissolved	Total	Dissolved	Total	Dissolved	Total
			ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
MW-28	3/17/2005	GW Zone A	4 J-	5 J-	38 J	95	167 J	
MW-28	6/15/2005	GW Zone A	1	4	52 J	69	178 J	
MW-28	6/15/2005	GW Zone A	1	3	26 J	72	118 J	
MW-28	12/16/2004	GW Zone A	1 U	1	55 J	75	223 J	
MW-28	12/16/2004	GW Zone A	1 U	2	83 J	76	302 J	
MW-29	1/21/2005	GW Zone A	10	11	2 U	2 U	2240	
MW-29	3/15/2005	GW Zone A	11	12	2 U	2 U	2050	
MW-29	6/14/2005	GW Zone A	10	12	2 U	3	1810	
MW-38	3/15/2005	GW Zone A	6	4	9	12	902	
MW-38	6/14/2005	GW Zone A	3	4	2 U	6	1060	
MW-38	12/15/2004	GW Zone A	9	8	12	14	614	
MW-41	3/16/2005	GW Zone A	5	6	19 J	51	47	
MW-41	3/16/2005	GW Zone A	5	5	43 J	54	63	
MW-41	6/16/2005	GW Zone A	4	5 U	83	132	71	
MW-41	6/16/2005	GW Zone A	2	6	85	139	71	
MW-41	12/16/2004	GW Zone A	1 U	6	40	32	60	
MW-41	12/16/2004	GW Zone A	1 U	6	37	38	65	
MW-42	3/15/2005	GW Zone A	1	1	9	15	106	
MW-42	6/16/2005	GW Zone A	2	2	9	22	92	
MW-42	12/16/2004	GW Zone A	1	2	10	16	128	
MW-43	3/16/2005	GW Zone A	10 U	7	41	43	12	
MW-43	6/14/2005	GW Zone A	4	3	42	44	10	
MW-43	12/17/2004	GW Zone A	3	8	40	46	12	
MW-46	3/17/2005	GW Zone A		1 J-	2 U	4	1620	
MW-46	6/15/2005	GW Zone A	1 U	1 U	2 U	2 U	1240	
MW-46	12/17/2004	GW Zone A	1 U	1 U	2 U	2 U	1780	
MW-39	3/15/2005	GW Zone B	1	1	9	13	70	
MW-39	6/14/2005	GW Zone B	1	2	7	11	62	
MW-39	12/15/2004	GW Zone B	1 U	1	10	14	77	
MW-40	3/16/2005	GW Zone B	5 U	5 U	4	66	146	
MW-40	6/16/2005	GW Zone B	1	1 U	4	16	118	
MW-40	12/16/2004	GW Zone B	1 U	1 U	5	22	195	
MW-44	3/16/2005	GW Zone B	2	4	122	124	275	
MW-44	6/14/2005	GW Zone B	2	6	102	131	196	
MW-44	12/17/2004	GW Zone B	11	20	130	170	263	
MW-45	3/17/2005	GW Zone B	1 J-	2 J-	7	24	146	
MW-45	6/15/2005	GW Zone B	1 U	2	7	19	107	
MW-45	12/17/2004	GW Zone B	1 U	4	2	145	70	