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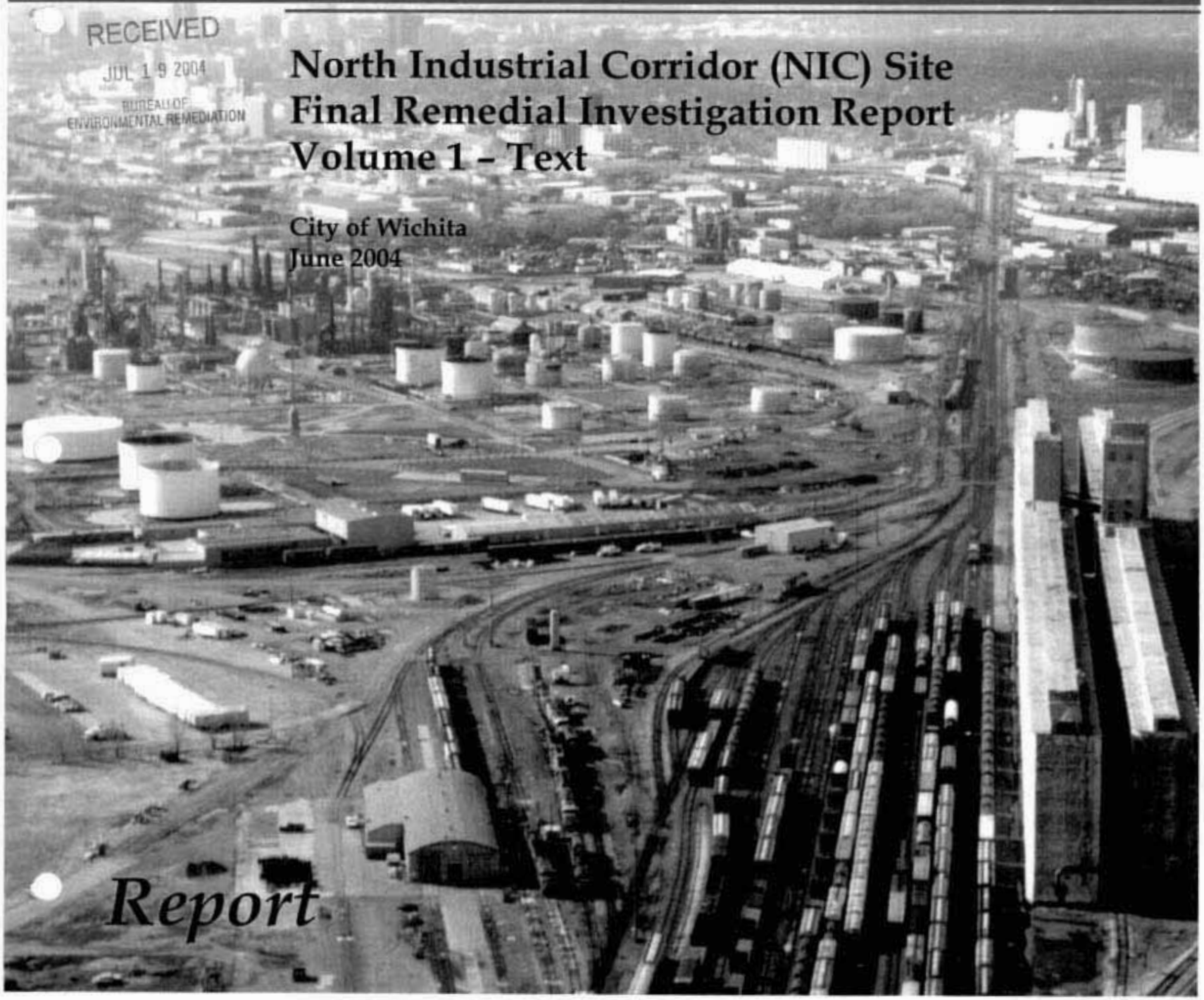
North Industrial Corridor (NIC) Site Final Remedial Investigation Report Volume 1 - Text

City of Wichita
June 2004



Report

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June 25, 2004

Kay Johnson
City of Wichita, Dept. of Environmental Health
1900 E. Ninth St.
Wichita, Kansas 67214

Subject: Responses to KDHE's June 27, 2003 Comment Letter on NIC Draft RI Report

Dear Ms. Johnson:

This letter provides responses to KDHE's June 27, 2003 Comment Letter on the NIC Site Draft Remedial Investigation (RI) Report. That letter supplemented KDHE's March 25, 2003 comments on Section 9 and Appendix L of the NIC Draft Remedial Investigation (RI) Report.

General NIC Comments:

KDHE General Comment 1:

The draft RI document does not present or discuss the correlation results between the three lithologic boring logs in type locations and the electrical conductivity (EC) logs. There is no geologic interpretation provided for the EC logs presented in Appendix E, and the WWC-5 water well record lithologic logs do not always appear to match the EC logs (e.g., NMW-31D, NMW-26, NMW-29). KDHE is aware that there were problems during the EC logging process with the probe rods going well beyond the estimated depth to bedrock, but there is no discussion of any problems encountered or how they were resolved. A subsection must be added that presents and evaluates the correlation results, including discussion of the accuracy and confidence level of the correlations and interpretation of the EC logs. Include detailed information: discuss whether there was sufficient recovery of lithologic samples to adequately correlate the EC logs; discuss the degree of resolution and accuracy of the EC logs; discuss whether the depth problem with the probe rods was resolved and, if so, how; discuss how depth to the base of the aquifer was decided for borings where the EC log was not definitive (e.g., NMW16 at 34 '); and any other issues that might affect geologic interpretation. An interpretation of the EC logs and, if necessary, an explanation of the interpretation should be provided. Include unit changes, the location of the water table, and the location of bedrock. There are a number of monitoring wells installed by CDM and listed in Appendix E-3, that do not have a boring log or an EC log presented in the draft RI. Examples of wells

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missing logs includes: NMW-42 through NMW-46, NMW-48, NWL-6, WNC-31, and WNC-32. Please provide logs for these wells or an explanation why there are no logs.

Response:
Discussion has been added to Section 3.2.2 regarding the correlation between the EC logs and the lithological logs at the locations where both types of logging were conducted. Discussion has also been added regarding the cases in which the probe rods penetrated beyond the estimated depth to bedrock. The interpretation of the EC-logs versus the lithological descriptions from lithological logging are provided in Appendix E-2. The missing EC logs have also been added to Appendix E-2.

KDHE General Comment 2:
The apparent decrease in contaminant concentrations between Phase I and Phase II of the RI investigation is encouraging; however, it is not clear whether the decrease reflects the actual trend of contaminant concentrations in the NIC site, or is a temporary artifact of infiltration or some other factor. There is insufficient data over time to evaluate concentration trends and determine if concentrations increase and decrease seasonally or are decreasing significantly over time. Additional sampling events are necessary for this evaluation in both source areas and down gradient areas of the plume(s). Since most of the data to identify sources has been collected by geoprobe, installation of monitoring wells in suspected source areas may be necessary to confirm source areas, to document contaminant trends over time, and to evaluate the need for additional investigation and remediation.

Response:
Comment noted. Additional investigations have been performed at the downgradient portion of the site, consistent with a work plan letter dated May 2, 2003, approved by KDHE in a letter dated June 25, 2003, and amended by a letter dated July 15, 2003. The results of that investigation will be submitted to KDHE in a letter report along with proposed downgradient monitoring locations. Proposed investigation activities at source areas will be submitted to KDHE in work plans to be prepared for the source areas (see responses to KDHE's March 25, 2003 letter).

KDHE General Comment 3:
The data presented in the draft RI does not establish whether the contaminant plumes are advancing, retreating, or in equilibrium. Current plume dynamics are a crucial aspect of contaminant fate and transport. Assessment of plume stability is critical to the evaluation of remedial options and should be discussed and documented with data. If the plume is advancing, the specific area(s) of expansion should be noted. If there is insufficient data to

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make this determination, additional data collection should be proposed. Section 8.3 of the draft RI states that Monitored Natural Attenuation (MNA) will be discussed in detail as a remedial strategy in the Feasibility Study; however, KDHE's MNA Policy requires that contaminant plumes be demonstrated to be stable or shrinking in order to consider MNA as part of the remedy. The policy goes on to state, "A set of four consecutive quarterly sampling episodes from the same monitoring wells is required at a minimum to begin to make such an evaluation. " The data presented in the draft RI currently does not meet this requirement; however, KDHE would entertain a proposal from the City to conduct the sampling necessary for considering MNA while source identification is pursued. Additional monitoring wells may be required at down gradient plume perimeters to evaluate plume stability.

KDHE's MNA policy also states that MNA is not acceptable where contamination is impacting or threatening surface water quality, and that the responsible party must either own or be able to exert legal control over the uses of contaminated property where MNA is to be considered. Based on these requirements, MNA would not be an appropriate remedy for the entire NIC site; however, MNA may be appropriate for portions of the site which meet the requirements.

Response:
Comment noted. Additional investigations have been performed at the downgradient portion of the site, consistent with a work plan letter dated May 2, 2003, approved by KDHE in a letter dated June 25, 2003, and amended by a letter dated July 15, 2003. These investigations are being conducted to establish whether the plumes are advancing, retreating, or in equilibrium.

The results of the downgradient investigation were submitted to KDHE in a letter report along with proposed downgradient monitoring locations on December 5, 2003. The report was revised based on KDHE comments and the final report was submitted to KDHE on April 9, 2004. A monitoring schedule was also proposed in that letter report.

Other aspects of MNA and its potential for application at the NIC Site will be evaluated during the Feasibility Study stage of the project.

KDHE General Comment 4:
The Baseline Risk Assessment (BLRA) is an integral part of the RI process and must be reviewed and approved prior to approval of the Final RI and initiation of the Feasibility Study (FS). KDHE received the draft BLRA on June 2, 2003 and is scheduled to meet with the

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City of Wichita and TAC representatives for initial discussion of the draft BLRA on July 2, 2003.

Response:
Comment noted. The draft BRA report was revised based on KDHE comments dated September 16, 2003. The revised report was submitted to KDHE on January 30, 2004. Results of the BRA have been incorporated into the conclusions of the RI.

KDHE General Comment 5:
Plates 5-4a and b and 5-5a and b are isoconcentration maps which illustrate contaminant distribution between Phase 1 and Phase 2; however, they do not differentiate shallow and deep contaminant concentrations. Since source areas are being identified primarily based on shallow contaminant concentrations, KDHE requests that shallow and deep isoconcentration maps be produced for both Phase 1 and Phase 2 data to adequately present the nature and extent of contaminant distribution in the NIC site. KDHE also suggests that a finer contour interval be used to help differentiate plumes and source areas and enhance the interpretive value of the figures. KDHE recommends that the shallow isoconcentration diagrams be plotted over the potential sources presented on Plate 9-1, to visually aid in identification of sources. The City/CDM may elect to prepare focused maps for portions of the larger site to enhance map definition.

Response:
Dot plots provided in Figures 5-3 through 5-12 of the draft RI Report provide separate depictions of shallow and deep contaminant concentrations in groundwater. Since contaminants tend to migrate from the shallow zone to the deep zone at a distance from a source area, the combined depiction of shallow and deep concentrations can better serve to provide a site-wide distribution of contamination. However, based on KDHE's request, both shallow and deep isoconcentration maps from Phase 1 and Phase 2 have been provided for TCE and *cis*-1,2-DCE. These plates (5-4a through 5-4d and 5-5a through 5-5d) replaced the previous plates presented in the draft RI.

KDHE General Comment 6:
Knowing the location and amount of current ground water pumping in the NIC site is critical to understanding localized ground water gradients and contaminant movement in the site. Historic ground water usage data may also be useful in interpreting contaminant plumes and sources. Appendix G-4 and Figure 4-1 present information about permitted pumping wells in the NIC site; however, there is no date associated with this information and there are indications that this data does not represent current site conditions. KDHE requests that

information in appendix G-4 be expanded to include the most recent well information as well as historic usage data. If possible, include the number of years a permit has been in existence, and the annual usage for each well for the last 5 years in order to establish usage patterns. This information can be obtained from the Kansas Division of Water Resources office. If possible, determine the pattern of pumping from the individual users (i.e., do they pump 8 hours five days a week, all day every day, or only certain times of the year). Wells that are currently pumping should be clearly shown on Plates 4-5 and 4-6. Future potentiometric surface maps should show all active pumping wells on them to aid interpretation of ground water flow patterns. There are several areas of the site displayed on Plates 4-5 and 4-6 where localized gradients are potentially depicted inaccurately because the influences of pumping wells were not taken into consideration (i.e., south end of the Coleman/Evcon facility, and the northeast corner of the NIC Site). The City/CDM may elect to measure water elevation from the pumping wells or add piezometers adjacent to these wells in order to evaluate their radii of influence.

Response:
The distribution of VOCs in groundwater is a result of the historical pumping activities along with the native groundwater flow and other features affecting contaminant fate and transport. The distribution of VOCs and potentiometric surface maps are sufficient to identify the nature and extent of contamination for the purpose of selecting an appropriate remedial alternative.

Potential future contaminant transport will be evaluated more thoroughly as part of the NIC site-wide FS. For the purposes of the RI, a new search of pumping wells in the NIC Site was conducted through the Kansas Bureau of Agriculture. These data represented water use records on file with the Bureau of Agriculture as of December 31, 2002. Both Figure 4-1 and the information provided in Appendix G-4 have been updated to reflect these current conditions.

The radius of influence of pumping wells within facilities under consent orders are more appropriately evaluated by the responsible parties at those facilities.

KDHE General Comment 7:
The analytical data for the NIC site is presented on a CD in Appendix I. The data on the CD is all contained in two huge scanned image files (3545 pages and 1729 pages, 181 and 113 megabytes, respectively) which makes it nearly impossible to find a specific analysis or the QA/QC associated with a specific analysis in a timely fashion. The data should be presented in a useable format. KDHE requests that the data on the CD be saved in group files based on

the Pace project number so that the sample data, QA/QC analyses, and chain-of-custody are all presented together in a manageable package or, alternatively, the data could be submitted in a searchable electronic format or on paper rather than a bulk image file. KDHE also requests a detailed index to assist in locating data on the CD.

Response:
The analytical data CD in Appendix I has been replaced with a CD that contains smaller electronic file sizes. Each laboratory project number is a separate electronic file. An index to the CD contents has been provided in Appendix I.

KDHE General Comment 8:
The draft RI is accurate in stating that petroleum hydrocarbon contamination associated with releases from storage tanks is under the jurisdiction of the KDHE Storage Tank Section; however, it is appropriate and necessary for CDM to identify storage tank sites in NIC and have a general idea of contaminant concentrations and the type of remediation, if any, being conducted at these sites. This information is important for several reasons: 1) it allows the City/CDM to determine if general areas with petroleum contamination are attributable to a known underground storage tank (UST) site, or originate from an unidentified source (UST or otherwise); 2) petroleum compounds can and do affect the fate of other contaminants in the NIC site; 3) petroleum releases could affect both source area and site-wide remedial systems by increasing the concentrations and types of contaminants (i.e., MTBE, EDB) the remedial system will encounter; and 4) remedial systems at UST sites could potentially influence ground water gradients and NIC remedial systems. Information about registered petroleum tanks and facilities where releases have been identified is available from the KDHE Storage Tanks Program through a Kansas Open Records Act Request.

Response:
The identification of leaking UST sites within the NIC site has been examined with respect to impacts on the site-wide distribution of VOCs in groundwater. The extent of contamination from UST sites is typically very limited when compared to the extent of CVOCs in groundwater. In addition, pump-and-treat remediation systems at leaking UST sites typically are not large enough to impact site-wide groundwater flow directions. The site-wide characterization, including potentiometric surface mapping and groundwater sampling are considered sufficient to characterize potential significant impacts from UST sites. A map depicting all leaking UST sites within the NIC Site based on regulatory database has been prepared and will be added to Section 8 of the Draft RI. Maps depicting BTEX and other petroleum hydrocarbons in groundwater were presented in Section 8 of the RI.

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KDHE General Comment 9:
KDHE has some general concerns about the degree to which source areas have been identified to date. Section 10.2 (Recommendations) indicates that source control measures (SCM) will be conducted on each source by the responsible party or the City of Wichita, in accordance with KDHE's SOW. However, for most of the source areas identified by the City/CDM there is a gap between the current level of information presented and the level of information necessary to move forward on a SCM.

Section 9 of the draft RI states that the focus of the source area identification was to identify the property or facility where the contamination originated, and goes on to state that in most cases the parties responsible for the release could not be determined within the scope of the RI. KDHE notes that the scope of the RI as defined by the Settlement Agreement includes source identification and development of individual source control plans. The approved RI work plan describes the approach for accomplishing this portion of the RI. The City will provide all appropriate data related to the source area to KDHE and request that KDHE invite the potentially responsible party (PRP) to develop and implement a Source Control Plan. If the PRP declines, KDHE will instruct the City to generate the source control plan. The work plan states that the RI will not be delayed for the *results* of the source control investigations. In order for this process to function, the City must include identification of the PRP in the information presented to KDHE along with sufficient evidence for KDHE to pursue an order with the PRP. For many potential sources discussed in the draft RI, the information presented is not adequate for KDHE to pursue an order. The draft RI indicates that for most source areas, the localized or facility-specific gradient direction is not well defined, and also states that for most source areas the data is insufficient to determine if source control remediation is necessary.

KDHE requests that the City/CDM supplement the source area subsections in Section 9 to include discussion of the specific actions taken to identify the PRP for each identified source area and include a summary of the resulting information. Additional investigation will be necessary to identify and confirm source locations. Comments specific to each potential source area discussed in Section 9 were submitted to the City/CDM in a letter dated March 28, 2003. If the City is unable to identify the source areas and PRPs adequately, KDHE will instruct the City to generate and implement the necessary source control plans.

Response:
Comment noted. Please refer to the letter responding to KDHE's March 25, 2003 comments on Section 9 of the draft RI Report. That letter included discussions regarding proposed schedule and sequence of source investigation activities and proposed modifications to

Section 9 of the RI Report. Modifications and discussion of proposed source investigation activities have been incorporated into Section 9 of the RI.

KDHE General Comment 10:
The recommendations presented in section 10.2 are very generalized and do not propose a method for addressing the current gap between identification of source areas and PRPs and implementing source control measures. A strategy for completing source and PRP identification should be proposed. One possible scenario would be to submit a detailed proposal for collecting additional data over the next year on plume mobility, contaminant concentrations over time, and source identification. To monitor plume mobility and contaminant time trends, the proposal should include installation of any necessary down gradient wells and a sampling schedule. For source identification, a combination of monitoring and research should be proposed. Since contaminant concentrations dropped significantly in many potential source areas between Phase 1 and Phase 2 sampling events, additional sampling by either a downgradient monitoring well or geoprobes may be necessary to determine if additional source control measures are warranted. Installation of source area monitoring wells would also help define local gradients more precisely in potential source areas, which the draft RI has cited as a deficiency. The proposal should also include, depending on the amount of existing information, additional research on property ownership and chemical usage, evaluation of adjacent properties, sewer lines, pumping wells, or other factors that could effect contaminant transport, and a proposal and schedule for additional data collection, where necessary.

Response:
Comment noted. Please refer to the letter responding to KDHE's March 25, 2003 comments on Section 9 of the draft RI Report. That letter includes discussions regarding proposed schedule and sequence of source investigation activities and proposed modifications to Section 9 of the RI Report. Modifications and discussion of proposed source investigation activities have been incorporated into Section 9 of the RI.

KDHE General Comment 11:
There are a number of tables, figures, and appendices referenced by the wrong number throughout the draft RI. KDHE has attempted to note incorrect references on a list of typographical errors for the City's use, but may not have caught all mistakes. Please review all such references for accuracy and correct as necessary.

Response:
Incorrect references to tables, figures, and appendices have been corrected.

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Specific NIC Comments:

KDHE Specific Comment 12:
Section 2, page 2-1. The NIC site boundary amendment was signed into effect on February 11, 2002. Please use the amended boundary for all pertinent text and figures in future submittals.

Response:
The amended site boundary has been depicted on the figures presented in the revised RI Report.

KDHE Specific Comment 13:
Section 3.1.3, page 3-4. Since water levels during the phase I field work were measured over two to four week periods and ground water elevations can change significantly in that time, KDHE considers the potentiometric surface maps generated from this data as generalized representations of ground water elevations.

Response:
Comment noted. The potentiometric surface maps are intended to be general representations of groundwater elevations. These groundwater elevation contours are considered sufficient to determine groundwater flow directions. As noted in Section 4 of the draft RI Report, groundwater flow directions in the vicinity of source areas with consent orders (including facilities with active pump-and-treat systems) should be assessed looking at site-specific potentiometric maps generated for these source areas and presented in Appendix G of the draft RI Report.

KDHE Specific Comment 14:
Section 3.2.6 Indoor and Outdoor Air Quality Sampling. Current indoor air (IA) sampling protocol suggests that winter sampling while furnaces are operating provides the worst case scenario assessment of potential vapor intrusion into homes. Also, it is now more common to perform sampling in areas representative of the living space rather than areas such as closets. No changes are required for this document; however, these comments should be noted for potential follow-up IA sampling in source areas. Revised scopes of work and work plans will be required for future IA sampling, if necessary.

Response:
Comment noted. Additional indoor air sampling will be proposed if any residences are identified in the immediate vicinity of source areas where VOC concentrations in shallow groundwater may be sufficiently high to pose a potential risk to indoor air.

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KDHE Specific Comment 15:
Table 3-3. This table presents the well construction details for the new wells; however, the well construction details for the existing wells are not presented in the RI. Please add a table or expand table 3-3 to include well construction summaries for all the wells sampled or used to measure water levels in the NIC site. Include pertinent references for this information in Section 3-4.

Response:
Table 3-3a has been added, which summarizes the well construction details from available data for other monitoring wells that were sampled or used for water level measurements during the RI. The data presented in this table were obtained from a variety of sources including: reports supplied by others, spreadsheets supplied by others, and a diligent search of records contained in CDM's files. Some of the concentration and water level data used in the RI were obtained from others and well construction details were not included with the information provided. Also, many of the records are not associated with a particular report; therefore, preparing a list of references for this information would be a time intensive effort that would not provide comparable value to the RI document. Existing Table 3-3 which provides well construction details for the new monitoring wells has been redesignated as Table 3-3b.

KDHE Specific Comment 16:
Section 4.3 and Appendix E. See general comment #1 above.

Response:
See response to KDHE General Comment 1.

KDHE Specific Comment 17:
Section 4.3.3, page 4-7 and Plate 4-3. This section states that Appendix E-1 contains the logs used in developing Plate 4-3; however, Appendix E-1 only contains 3 lithologic boring logs (for correlation with EC logs), and 6 borings logs from the sludge pits. Please include boring logs for all locations utilized by CDM to evaluate the geology of the NIC Site in the draft RI, or provide specific references to the pertinent boring logs in Section 4.4. The Bottom of Aquifer Data Table in Appendix E-3 contains information pertinent to developing Plate 4-3; however, it is not clear which points in this table were included on figure 4-3 and why certain points were included and others omitted (e.g., NMW 6). Please specify which points were used, and describe the rationale for selecting them. Much of the information presented in tabular form in Appendix E-3 is cryptic (i.e.,11' clay/bdrk, BF observation, Est. from Elev.) and is not discussed further in the text. Additional explanation and discussion in the text is

needed to explain the methods used in determining depth to bedrock and generating Plate 4-3.

Response:
Discussion has been added to Section 4.3.3 clarifying the methods used in generating Plate 4-3. Discussion has also been added regarding anomalous data points not used in generating isoelevation lines on Plate 4-3. The text has been revised to indicate that the map was generated using boring logs from Appendix E-1, EC logs in Appendix E-2, and lithological information derived from boring logs from others. Copies of boring logs from other parties used to generate Plate 4-3 are included in Appendix E-3b.

KDHE provided additional comments regarding the base of aquifer map in the transmittal "NIC Draft RI Typographical and Miscellaneous Errors", comment 26. Specifically, comment 26C includes a recommendation to review base of aquifer interpretations in the area of the Coastal- Derby refinery. Using data available from the source area data reviews and regional evidence of a rise in bottom-of-aquifer elevation toward the east, an intermediate clay layer in this area was interpreted as the bottom of aquifer. Based on a review of additional data, including available well data from the KGS WWC5 online water well database, Plate 4-3 includes a revised interpretation of the bottom of aquifer in this area. A WWC5 well data form that is believed to be Coastal Derby well MW-40 and data from the EC log for NMW-44 (which was previously believed to be anomalous) were the primary points used in the reinterpretation of this area. Other logs found on the WWC5 database support the interpretation that the intermediate clay layer is underlain by a sand layer, but these logs do not provide further information regarding the elevation of the basal clay unit or bedrock contact and were not included on Plate 4-3. Despite the additional data review, bottom of aquifer data for the area is still limited. However, any changes in the bottom of aquifer for the area do not appear to affect groundwater flow or regional contaminant transport.

KDHE Specific Comment 18:
Plate 4-3 and Plate 4-4. Data points on these figures should be labeled.

Response:
The station identifiers have been added to Plates 4-3 and 4.4.

KDHE Specific Comment 19:
Section 4.3.4, page 4-7. Please describe how saturated thicknesses were determined for Plate 4-4. This section states that the water levels measured during August 2001 were used to determine saturated thickness; however, some of the locations on Plate 4-4 (saturated

thickness map) appear to be 29th and Mead soil borings and could not have had water levels measured in 2001.

Response:
Discussion of how saturated thicknesses were determined has been added to Section 4. August 2001 water levels were estimated from potentiometric surface map contours at locations where wells were not measured in August 2001. Text has been added to clarify this point.

KDHE Specific Comment 20:
Section 4.3.7, page 4-9. The specific dates water elevations were measured for each figure should be stated in the text and on the pertinent figures/plates. Please add this information.

Response:
The dates that water levels were measured have been added to Section 4.3.7 and to the pertinent figures/plates.

KDHE Specific Comment 21:
Table 4-1a. This table contains a number of 3rd party wells that had water level measurements made only one or two days apart. Some of these measured elevations show significant variation between the two dates. Please explain and indicate which elevation was used for potentiometric surface maps.

Response:
Wells with significant change in water levels over a period of several days would be expected to be found only in the proximity of pumping wells (e.g. operating pump-and-treat systems). Since potentiometric surface maps have been provided for consent order facilities with operating pump-and-treat systems, the site-wide potentiometric surface maps provide a more generalized depiction of the groundwater surface in these areas. The specific water level elevation that was used for mapping can be determined from the potentiometric surface maps (the elevations are posted on the plates). Erroneous data included in Table 4-1a has been corrected.

KDHE Specific Comment 22:
Section 4.3.8, page 4-14. Section 4.3.9 states that the confluence of the Arkansas and Little Arkansas Rivers act as a hydraulic boundary in the Southwest portion of the site and therefore the public water supply wells in the vicinity have no effect on the site. Additional

discussion and/or data is necessary to support this statement. Please propose adequate data points in this area.

Response:
The text in question pertains to whether the public water supply (PWS) wells west of the Little Arkansas River affect groundwater in the NIC Site or visa versa. Since the potentiometric data indicate that groundwater currently flows from the Little Arkansas River into the NIC Site, impacts from the PWS wells to the NIC Site (or visa versa) currently appear unlikely. Since the Little Arkansas River is dammed upstream of the confluence with the Arkansas River, it is expected that the Little Arkansas River would be losing in the vicinity of the NIC Site. The potentiometric surface data are consistent with this conceptual model. An additional water level round has been conducted in the southern part of the site as part of the KDHE-approved downgradient investigation. The potentiometric surface map from that round is also consistent with the conceptual model of the Little Arkansas River being a losing stream (causing groundwater to flow away from the river) and thus currently a hydraulic barrier. The text in Section 4.3.9 has been revised to clarify this issue.

KDHE Specific Comment 23:
Section 5.1.1, page 5-2. The Surface Water Quality Standards (SWQS) Table (Table 7-8) referenced in this section does not include the numbers for total chlorinated ethylenes. Please add this information. Additional compounds may also need to be added to this table.

Response:
Table 7-8 has been modified to include Kansas Surface Water Quality Standards for total chlorinated ethylenes (ethenes).

KDHE Specific Comment 24:
Section 5.1.1.4, page 5-3. Discussion should be added to the text indicating that the SW-06 location is also downgradient from Novick Iron facility where elevated concentrations of lead have been detected in soil. Therefore the lead concentration in SW-06 is not necessarily due to turbidity and could potentially be attributable to activities within the site. Additional sampling will be required to evaluate the cause of the elevated lead.

Response:
Comment noted. Discussion has been added to the text regarding the location of SW-06 relative to the Novick Iron facility. The City is requesting that a certificate and release applicant (prospective purchaser of that property) perform baseline characterization of the Novick property including sampling of surface water downstream of the facility.

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KDHE Specific Comment 25:
Section 5.1.2.2, page 5-4 and 5-5. This section references Tier 2 non-residential soil pathway concentrations. The NIC site contains both residential and non-residential areas; therefore, initial discussions must include comparisons to both residential and non-residential pathways. The determination as to which exposure scenarios are appropriate will be determined later in the process. The Tier 2 residential soil pathway for benzo(a)pyrene (BAP) is 1200 µg/kg. Two sediment samples exceed this number.

Response:
Reference to the exceedance of the residential soil pathway concentration has been added to Section 5.1.2.2 along with the distance to the nearest residential area from the locations with the exceedances.

KDHE Specific Comment 26 A:
Section 5.3 Air Sampling Results - The detection limits for trichloroethene (TCE) in air samples were approved in the work plan; however, since approval of the work plan, analytical technology has improved and the cancer slope factor for TCE has been revised to be more conservative. General re-sampling will not be required; however, additional focused sampling with lower detection limits may be required as part of source control investigations.

Response:
Comment noted.

KDHE Specific Comment 26 B:
Section 5.3 Air Sampling Results - Two indoor air samples contain tetrachloroethene (PCE) above the Region 9 10-5 PRG of 6.7 µg/m3. These sample locations must be further evaluated. Please discuss PCE ground water analytical results in the vicinity of IA samples AQ-02 and AQ-03. Include discussion of the apparent PCE source area at Brenntag Southwest, Inc., and potential preferential migration routes. Re-sampling in the breathing space (i.e., not a closet) at these locations will be necessary.

Response:
Further discussion has been added to Section 5.3 regarding the PCE detections in air and PCE concentrations in groundwater. Figure 1, attached, depicts the locations of the air samples that contained PCE, results of PCE in shallow groundwater and the location of the Brenntag (Advance Chemicals) PCE source area. Based on the locations of the PCE detections in air relative to the locations of the PCE source area, a vadose zone preferential pathway transport mechanism does not appear plausible. KDHE stated in a recent conference that they could

collect air samples if potential indoor air risks were identified. Since the indoor air PCE detections do not appear to be potentially attributable to soil or groundwater contamination in the NIC Site by any reasonable transport mechanism, the City and CDM request that KDHE perform indoor air sampling at the locations AQ-02 and AQ-03 if KDHE considers such sampling to be necessary. Sampling was conducted in closet at location AQ-02 since it was the only available room that did not have windows, hence providing a more conservative sample.

KDHE Specific Comment 26 C:
Section 5.3 Air Sampling Results - There is no discussion or explanation of the "rejected" samples listed in Appendix D-9. Please discuss why certain samples were rejected and locations re-sampled.

Response:
Several Suma canisters had end pressure measurements which were at atmospheric conditions. Since the regulators allow atmospheric exchange (in and out) when at atmospheric conditions, these samples were considered rejected and not analyzed. Discussion regarding these rejected samples has been added to Section 5.3.

KDHE Specific Comment 27:
Section 5.4.1, *SVOCs* The table of maximum detected concentrations and the discussion of BAP equivalents in this section is extremely misleading because it fails to acknowledge that the analytical detection levels were significantly elevated above the residential and non-residential RSK pathway for most of the samples. Every sample would exceed the Tier 2 RSK pathway (from *Risk-based Standards for Kansas, RSK Manual-3rd Version*) if one half the detection limit were used in the BAP evaluation. The discussion should be revised to include detection levels and the resulting implications.

Response:
Discussion regarding elevated detection limits of SVOC compounds in sludge pit soil samples has been added to Section 5.4.1.

KDHE Specific Comment 28:
Section 5.4.2, *Metals.* This section states that the groundwater samples were unfiltered and the analytical results are for total metals. This is inaccurate. According to conversations with the field personnel at the time of the sampling, the sludge pit ground water samples for metals were filtered. Therefore, the analytical results indicate potential dissolved arsenic and lead contamination emanating from the sludge pits. This issue will require further

investigation. Revise this section and review all other sections for inaccurate statements concerning filtered vs. unfiltered samples.

Response:
The text in Section 5.4.2 has been corrected with respect to filtering of groundwater samples. Discussion in other sections has been reviewed for accuracy with respect to this issue.

The City is in the process of looking for responsible parties for the former refinery sites. The City would like future investigation activities associated with the former refinery sites to be the responsibility of such responsible parties.

KDHE Specific Comment 29:
Section 5.4.3. The summary statistics tables for the sludge pits (Table 5-7a and 5-7b) are misleading because the frequency of detection does not take into consideration the number of analyses where the detection limits were elevated due to dilution, or the number of analyses where the detection limits exceed the regulatory level (MCL or RSK concentration) for the compound. KDHE requests that the method of presentation of this information be re-evaluated. At a minimum, a column should be added to the tables that indicates the number of samples that were analyzed with elevated detection levels. Additional discussion must be added concerning the elevated detection levels and their effects on evaluating the nature and extent of contamination.

Response:
The purpose of the summary statistics tables was to identify what compounds are the most significant in terms of frequency of detection, average detected concentration, and maximum detected concentration. Elevated detection limits would not be expected to significantly affect this analysis since the most significant compounds are the ones which are detected and cause other compound detection limits to be elevated. Since elevated detection limits are a relative matter and a matter of degree, it is not practicable to assign a number of elevated detection limits to the tables. Instead, discussion has been added to Section 5.4.3 regarding the number of elevated detection limits and the effects on the evaluations.

KDHE Specific Comment 30 A:
Section 5.4.3.1, and 5.4.3.2. – The last paragraph of each of these sections states that the deepest interval at which free product was typically observed was at least 2 to 4 feet above the water table; however, 3 out of 6 of the boring logs do not support this statement. Two of the three boring logs for the former Golden Rule Refinery indicate that the sand was oil saturated at the interval where the water table occurred, and one of the three borings from the

former Barnsdall Refinery suggests petroleum saturated sludge at the water table. Please clarify and revise accordingly.

Response:
Section 5.4.3.1. has been revised to discuss the occurrence of free-phase hydrocarbons more clearly and specifically.

KDHE Specific Comment 30 B:
Section 5.4.3.1, and 5.4.3.2 – Analytical data suggests that metals are also a constituent of concern related to the sludge pit areas (for both soil and ground water), but they are not mentioned in these sections discussing the nature and extent of contamination. Please revise.

Response:
Discussion regarding nature and extent of metals has been added to this section.

KDHE Specific Comment 31:
Section 5.5.3. Geoprobe data associated with the sludge pits should not be excluded from the site-wide summary statistics tables for the NIC Site. There are source areas for fuel-related compounds in the NIC Site that are not eligible for the underground storage tank program. Therefore, fuel-related contaminants will be addressed as part of the NIC Site. Probes and wells targeting VOC source areas are included in the data set (i.e., GP-HCI-06); therefore, probes targeting fuel related source areas should also be included.

Response:
Since summary statistics are provided for the sludge pits, there is no need to include data from the sludge pits in the site-wide summary statistics. The sludge pits will be addressed separately from the remainder of the NIC site and are in a relatively small area within the NIC Site. Fuel-related compounds at locations other than the sludge pits are included in the site-wide summary statistics and are more representative of the actual site-wide occurrence of fuel-related compounds than if sludge pit data were included.

KDHE Specific Comment 32:
Tables 5-8 and 5-9a the titles of these two tables are misleading because they imply that all detected VOCs are presented on the tables. Please add a column listing all other VOC compounds detected in each sample.

CDM

Response:
A footnote has been added to Tables 5-8 and 5-9a to explain that Site VOCs are not all detected VOCs but are the most significant VOCs detected in groundwater based on the analysis presented in Section 5.5 of the draft RI Report. In addition, a column has been added to each table listing other detected compounds. Results of all VOCs are presented in tabular format in Appendix H.

KDHE Specific Comment 33 A:
Section 5.5.3.1 - The text and Table 5-10a indicate that the number of samples analyzed for VOCs by Method 8260 (short list) was 1351. Please clarify what this number represents. (i.e., if a location was sampled twice, is that 2 of the 1351? or were duplicates and blanks counted?). KDHE notes that, depending on the purpose of the statistics, it may be appropriate to evaluate frequency of detections per number of locations (FODL), rather than or in addition to frequency of detections per number of analyses (FODA). If the numbers presented in Tables 5-10a and b represent FODA, please add a column representing FODL.

Response:
Table 5-10a was presented to provide various criteria which identify the most significant VOCs found in groundwater. The frequency of detection presented in Table 5-10a is for all field samples (not including QA/QC samples such as blanks and duplicates). Since sampling locations typically had one or two samples, an analysis of the frequency of detections per number of location would not significantly affect the outcome of the analysis (for Geoprobe sampling locations, 86% had two sampling depths, 12% had one sampling depth, 2% had 3 sampling depths, and 1% had 4 sampling depths). In addition, since there is a fairly clear and distinctive break between the compounds selected for groundwater target compounds that were used for detailed nature and extent evaluations and the other detected VOCs, the additional analysis is not warranted.

KDHE Specific Comment 33 B:
Section 5.5.3.1 - There are a number of compounds that have Tier 2 RSK values, but do not have MCLs. For evaluation purposes, KDHE requests that the residential RSK value be added to tables 5-10a and b for these compounds. Some of these compounds include: 1,2,4-trimethlbenzene (1,2,4-TMB), 1,3,5-trimethlybenzene (1,3,5-TMB), n-propylbenzene, and napthalene.

Response:
Both residential and non-residential Tier 2 risk-based concentrations have been added to Table 5-10a.

CDM

KDHE Specific Comment 33 C:
Section 5.5.3.1 - KDHE does not recognize the benefit in creating a subset of ground water target compounds at this point in the process, since COPCs will be determined in the BLRA. By eliminating consideration of many of the compounds mentioned (trans-1,2 DCE, toluene, ethylbenzene, xylene, 1,3,5-TMB etc.) pertinent information on the nature and extent of contamination could be overlooked or minimized. For instance, information on several of the compounds above provides useful information on the nature and extent of petroleum-related impacts within NIC, even if concentrations don't exceed MCLs. This information may in turn be useful in identifying petroleum sources or in considerations of past and future contaminant degradation. This does not mean that isoconcentration maps have to be generated for every detected compound; however, analytical tables presented in the RI should contain all detected compounds, not a select sub-set of compounds.

Response:
The purpose of the selection of Site VOCs (groundwater target compounds) is not to eliminate other compounds from future consideration but to identify the most important compounds for detailed evaluations of the nature and extent of contamination. Clarification of the purpose of identifying groundwater target compounds has been added to the text in Section 5.5.3.1. Analytical tables are found in Appendix H which present all compounds. The inclusion of the tables presenting the Site VOCs only allow the reader to focus on the core issues at the site in evaluating the nature and extent of contamination. The NIC Site consists of a very large area and includes numerous detected compounds. It is neither appropriate, necessary, nor cost-effective to generate maps for every compound detected in the NIC site. The selection of the Site VOCs is a necessary component of the RI to identify which compounds should have maps and detailed discussions presented in the RI.

KDHE Specific Comment 34:
Section 5.5.3.2. Former Barnsdall and Golden Rule refining areas should be included in this discussion. Also, please present a table with geoprobe semi-volatile organic compounds (SVOC) and total petroleum hydrocarbons (TPH) data or include it on Tables 5-9b and 5-9d.

Response:
Results from the Barnsdall and Golden Rule refining areas were presented and discussed in Section 5.4. Results from areas outside of the Barnsdall and Golden Rule refining areas are presented in Section 5.5. Results for SVOCs and TPH in Geoprobe groundwater samples in these areas were presented in Tables 5-6b and 5-6d, respectively. Reference to Table 5-9b and Table 5-9d has been added to Section 5.4 for sampling results from monitoring wells located in the vicinity of the former sludge pit areas.

CDM

KDHE Specific Comment 35:
Table 5-10c. The geoprobe samples associated with the sludge pits should be included in this summary table. See comment 31 above. The explanations presented for exceedence of MCL by total and dissolved metals are conjecture only. Additional sampling may be required to demonstrate that these results are not representative of ground water. KDHE recommends redeveloping the wells and potentially utilizing a low flow purge technique to reduce the turbidity. These sections should also evaluate whether there are potential sources of metals in the vicinity of these wells or if there is any historic data (i.e., from the 29th and Mead investigation) that could help evaluate the situation. At a minimum, lead and arsenic should be considered target compounds that need further evaluation, either by the City or a PRP.

Response:
See response to KDHE Specific Comment 31. As discussed above in the response to KDHE Comment 28, the City is in the process of looking for responsible parties for the former refinery sites. The City would like future investigation activities associated with the former refinery sites to be conducted by such responsible parties.

KDHE Specific Comment 36:
Section 6.1.2 Laboratory Surrogates. This section indicates that some samples were not qualified because the recoveries were only slightly out of control limits, and others (in Phase II) were not qualified because of obvious matrix interference. Please define "slightly" as used by CDM in this context, and provide a table listing each surrogate outside of control limits and the control limits established by the lab for both phase I and II data. Clearly indicate which analyses were qualified and which were not.

Response:
Slightly is defined as less than 5% outside of the control limits. In most cases, the surrogate was recovered less than 2% outside of the control limits. Table 6-1a has been added to Section 6 listing all surrogate results outside of control limits, and which surrogate exceedances resulted in qualified results. All results qualified due to surrogate recoveries outside of control limits are presented in Table 6-1b.

KDHE Specific Comment 37:
Section 6.2.1, Travel Blanks. Please elaborate on which sample shipments and samples were not accompanied by travel blanks in the field.

CDM

Response:
During Phase 1 of the RI, some trip blank samples apparently had labels affixed and sampling times assigned at the end of the day rather than at the beginning of the day. The trip blank bottles were kept in sample coolers prior to labeling. As discussed in Section 6.2.1 of the draft RI, this procedure was corrected for Phase 2 of the RI. This procedure did not result in any impacts on data quality and the text in Section 6.2.1 has been revised to clarify this point.

KDHE Specific Comment 38:
Section 6.2.5 and Table 5-8. Please explain why a single sample has some but not all of its volatile organic analytes qualified with a JH for holding time violations (e.g., GPA18-2-37 and GPA27-2-33). Revise table as appropriate.

Response:
A single sample may have some but not all of its compounds qualified because the sample was originally analyzed at no dilution within holding times. Upon evaluation of the data by the lab, they discovered the sample needed to be analyzed at a secondary dilution for specific analytes. The secondary dilution analysis was performed outside of the holding time. The only compounds that were qualified in this case were the compounds reported using the secondary dilution. An example of this case is NIC-GPW-GP#55-01-20-110499. Table 5-8 has been checked and revised as appropriate.

KDHE Specific Comment 39:
Section 7. Please review KDHE's policy BER-RS-015 on Potential Applicable or Relevant and Appropriate Requirements (ARARS). Potential ARARS not listed in Section 7 include, but are not limited to: The Kansas Board of Technical Professions statute (K.A.R. 66-6-1 to 66-14-12) regarding professional services performed by a geologist, engineer or surveyor in the state of Kansas; the Drycleaner Environmental Response Act (K.A.R. 28-68-1 to 28-68-9), regarding drycleaner contaminant sources, and OSHA regulations regarding worker safety issues.

Response:
We have reviewed BER-RS-015 and have added the above potential ARARs to Section 7 of the RI.

KDHE Specific Comment 40:
Section 7 Tables. The chemical-specific tables presented in this section should, at a minimum, include all compounds detected in the NIC site. Please revise as necessary.

Response:
The appropriate tables in Section 7 have been revised to include, at a minimum, all compounds detected in the NIC Site for the specific media represented. Footnotes have been added to each applicable table to indicate the media included.

KDHE Specific Comment 41:
Section 7.5.5.1 Kansas Underground Storage Tank Rules. The Kansas Action Levels (KALs) are obsolete and should not be cited in this document. The values in the Risk-Based Standards for Kansas, RSK Manual have replaced the KALs and should be listed as State chemical-specific ARARs.

Response:
Reference to KALs has been removed from the RI Report. Discussion of Risk-Based Standards for Kansas, from the RSK Manual have been added to Section 7.5.5.1.

KDHE Specific Comment 42:
Section 7.5.5.3. Kansas Water Appropriations Act. This section states incorrectly that the Act is not applicable if ground water extraction occurs as a result of remediation. The Act is still applicable; however, the need for remediation will be taken into consideration when allocating ground water resources.

Response:
The text in question has been corrected.

KDHE Specific Comment 43:
Section 7.5.6 State Criteria To Be Considered. KDHE Tier 2 Risk-Based Standards- This section should cite the entire *Risk-Based Standards for Kansas RSK Manual* (RSK Manual), rather than just Tier 2. The Tier 2 standards must be used under direct KDHE oversight in conjunction with the guidance in the RSK Manual. The RSK Manual was revised and the 3rd version generated March 1, 2003. The 3rd version should be used for the NIC feasibility study.

Response:
Additional discussion has been added to Section 7.5.6 regarding the entire *Risk-Based Standards for Kansas RSK Manual*. The 3rd version will be used for the NIC feasibility study.

KDHE Specific Comment 44:
Table 7-6. The Region 9 PRGs were updated as of October 1, 2002. The most recent version should be used as the ARAR for future NIC documents/studies.

Response:
Comment noted.

KDHE Specific Comment 45:
Table 7-8. See comment 23 above.

Response:
Table 7-8 has been modified to include Kansas Surface Water Quality Standards for total chlorinated ethylenes (ethenes).

KDHE Specific Comment 46:
Table 7-9. Table 7-9 appears to be inconsistent with some of the text and tables in this section and seems extraneous. KDHE recommends removal of Table 7-9 from the RI.

Response:
Table 7-9 has been removed from the RI.

KDHE Specific Comment 47 A:
Section 8. Current plume dynamics are a crucial aspect of contaminant fate and transport. Please state whether the contaminant plume(s) is advancing, receding, or in equilibrium and, if it is advancing, please indicate the area(s) of expansion. KDHE is aware that the City intends to collect additional data in order to address this issue (See general comment 3 above).

Response:
See response to general comment 3. A statement has been added to Section 8 regarding the status of the contaminant plumes.

KDHE Specific Comment 47 B:
Table references are incorrect throughout this section. Please revise as appropriate.

Response:
Incorrect table references have been corrected.

KDHE Specific Comment 48:
Section 9.2 Contribution Assessment. KDHE does not necessarily concur with the concentration ranges used to define the designations of significant, moderate, and minor sources, but accepts the designations for discussion purposes. Please note that since focused

CDM

source investigations have not been performed at many suspected source areas, the existing data is not necessarily representative of concentrations at the source.

Response:
Comment noted.

CDM looks forward to moving ahead with the NIC site activities as outlined within this letter. We are available for any questions or comments related to these responses.

Very truly yours,

Susie Mead
Project Scientist
Camp Dresser & McKee Inc.

Monte R. Markley, P.G.
Associate
Camp Dresser & McKee Inc.

cc: Brian Fisher, WDEH
Doris Leslie, WDEH

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Section 1
Introduction

This document represents the Remedial Investigation Report for the North Industrial Corridor (NIC) Site (Figure 1-1) in Wichita, Kansas. Camp Dresser & McKee, Inc. (CDM) was retained by the City of Wichita (City) on January 3, 1997 to provide consulting services to assist the City in performing a Remedial Investigation and Feasibility Study (RI/FS) on the NIC Site (KDHE Case No. 95-E-0321) for the Kansas Department of Health and Environment (KDHE). The investigation of the NIC Site has been conducted under the November 14, 1995 *Settlement Agreement for Remedial Investigation and Feasibility Study for Certain Remedial Actions to be Determined Following Opportunity for Public Involvement* (Settlement Agreement) between the City and KDHE. The Settlement Agreement stipulates that the activities conducted under the Settlement Agreement be "in compliance with the current National Contingency Plan, 40 C.F.R. Part 300 and as may be amended, with oversight by KDHE."

1.1 Purpose

The purpose of this RI Report is to present the results and evaluations of the KDHE-approved investigations in order to comply with the Settlement Agreement. This RI Report will present an evaluation of the nature and extent of contamination at the NIC Site as a whole. Source areas or "hot spots" are identified and discussed to the extent possible with the data currently available. These source area identifications will be further investigated in accordance with KDHE's BER-RS-030 policy titled "Scope of Work for Operable Unit/Source Control Measures". These source area investigations will be conducted by the responsible party, the City, or KDHE depending upon access and timing.

This report is one of three documents that will comprise the RI/FS for the NIC Site. Each report is presented under separate cover. The second report will be the Baseline Risk Assessment (BRA) and will present the risk evaluation of the results of the RI field investigations. The third report will be the Area-Wide Feasibility Study and will "address area wide groundwater, soil, and/or surface contamination" as stipulated in paragraph 99 of the Settlement Agreement.

Additional reports providing the results of source area investigations conducted by the City (and others, provided their data are available) will be prepared subsequent to this RI Report. The data presented in source area investigation report(s) are a component of KDHE's Source Control Measures Policy (BER-RS-030) requirements. This policy requires the preparation of a report or reports, which presents the following components for each source area:

1.0 Historical Evaluation - presents the operational history of the facility(ies) and a description of each potential source area

2.0 Source Area Investigation - Similar to a facility-specific RI

3.0 Target Evaluation and Risk Assessment - similar to a facility-specific risk assessment

4.0 Identification of Source Control Corrective Action Alternatives - similar to a facility-specific feasibility study

Under KDHE's Source Control Measures Policy, each facility would have a site-specific RI/FS and risk assessment conducted. Therefore, to reduce significant redundancy and to comply with the stipulation in Paragraph 99 of the Settlement Agreement that an area wide FS be provided, the NIC RI, FS and BRA will focus on the area wide aspects of the NIC Site contamination.

1.1.1 Objectives of the RI

Paragraph 98 of the Settlement Agreement stipulates:

> A summary RI report must be prepared and submitted for KDHE approval providing a description of work to be undertaken by the City, with an index and brief description of all RI activity for the entire N.I.C. Site, including all RI activities undertaken by third parties under the scope of this Agreement, which may consist of a brief description of the RI activities of such third parties followed by an attachment of any available RI report prepared by such third parties.

Attachment 2 to the Settlement Agreement also identifies the following as the primary objectives for the Remedial Investigation.

- Adequately characterize significant contaminant source areas in order to determine remediation and cleanup goals.
- Characterize the extent of contamination to the degree necessary for evaluation of selected remedial alternatives.
- Characterize the fate and transport of the principle contaminants of concern.
- Identify target receptors of the detected contaminants and evaluate associated risks.
- Develop source control plans to address areas identified as "hot spots" or areas of high contamination.

As stated previously, the FS is to focus on the area wide groundwater, soil, and/or surface water contamination. As such, the FS objectives in Attachment 2 to the Settlement Agreement are as follows:

- Identify, evaluate, and screen technologies
- Develop, refine, and evaluate alternatives

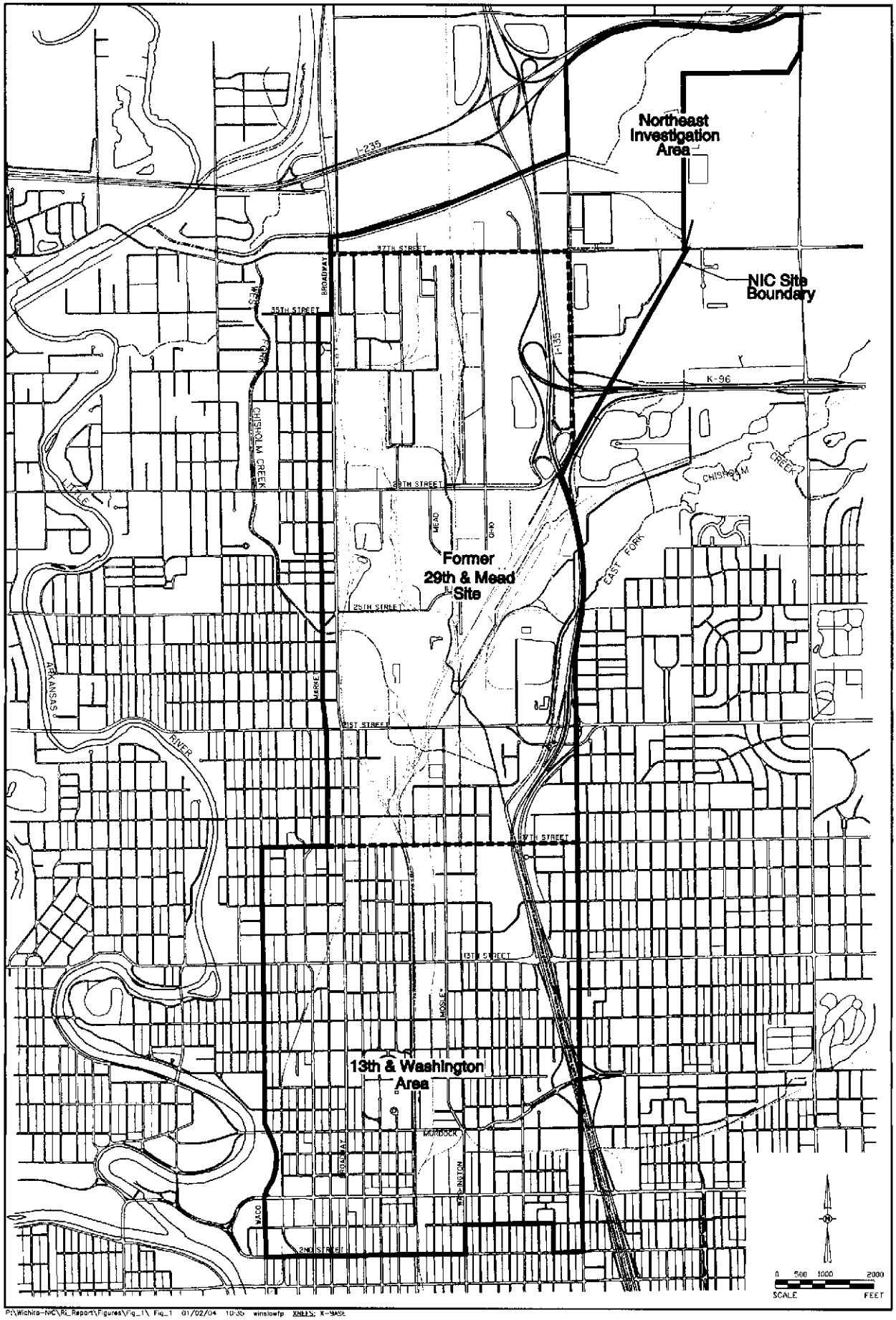

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Figure 1-1
North Industrial Corridor (NIC) Site
Site Map

CDM

Section 2
Site Background

This section presents a discussion of the NIC Site and its history. Section 2.1 provides a description of the NIC Site. The site history is presented in Section 2.2. Section 2.3 provides a brief review of significant facilities within the NIC Site conducting their own investigations under consent orders or agreements with either KDHE or the Environmental Protection Agency (EPA). Section 2.4 provides a brief review of other significant independent investigations conducted within the NIC Site. Section 2.5 presents the current site boundary finalized by KDHE on February 11, 2002 and discusses changes to the site boundary as originally established by KDHE in the Settlement Agreement signed in November 1995.

2.1 Site Description

The NIC Site is located in the north-central portion of the City of Wichita, Kansas. The Site primarily consists of approximately 4,011 acres of urban industrial, commercial, recreational, residential, and agricultural property. The Site was developed from agricultural land over the last century. Figure 2-1 shows the land use within the NIC Site. The land use within the Site is currently comprised as noted below.

Land Use	Acreage	Percent of Site
Agriculture	339	8.5 %
Parks	57	1.4 %
Schools	9	0.2 %
Hospitals	45	1.1 %
Residential	490	12.2 %
Vacant	149	3.7 %
Commercial/Industrial	2,922	72.8 %
TOTAL	4,011	100.0%

The residential properties are primarily located in the southeastern and southwestern portions of the Site, generally south of 17th Street. In addition to the residential areas noted on Figure 2-1, there is a small residential community consisting of approximately 14 properties located on the west side of Hydraulic and north of 37th Street, west and northwest of USD 259 property. The majority of the residential property within the NIC Site consists of low- to moderate-income single-family housing.

The agricultural areas are in the northern most portions of the Site and most of the land is located outside of the City limits. The commercial/industrial property is primarily located in the northern portion of the Site between the northern boundary

(north of 37th) and 19th Street, and along the Santa Fe/Washington corridor between 2nd and 19th.

2.2 Site History

With industrialization, environmental impacts to groundwater and soils at the Site have occurred. In 1983, a U.S. Environmental Protection Agency (EPA) investigation revealed the presence of volatile organic compounds (VOCs) in groundwater produced from two industrial wells in the area. Subsequent investigations throughout the 1980s and early 1990s revealed widespread VOC contamination in groundwater in the NIC Site.

The NIC Site can be divided into three main subsections: the Northeast Investigation Area, the 29th and Mead Site, and the 13th and Washington Site (see Figure 1-1). The 29th and Mead Site is a former National Priorities List (NPL) site and has been officially delisted. The former 29th and Mead Site is discussed further in Section 2.2.2. The 13th and Washington Site is adjacent to the southern extent of the 29th and Mead Site area and was investigated by KDHE after VOCs were detected in groundwater wells located on the St. Francis Hospital property (9th and Santa Fe area) in 1991. The former 13th and Washington Site is discussed further in Section 2.2.3.

The names of the 29th and Mead and the 13th and Washington sites were taken from street intersections near the center of the two sites. The Northeast Investigation Area is located north and northeast of the 29th and Mead Site. The degree of investigation previously conducted in the NIC's three subsections prior to the NIC RI varies. In general, the 29th and Mead Site area has been heavily investigated while the former 13th and Washington Site area has primarily been subjected to preliminary investigations. The Northeast Investigation Area is primarily comprised of five industrial facilities that are conducting their own groundwater investigations. Remedial actions are also being conducted at some of these facilities. A list of reports associated with investigations and/or remedial actions conducted by others at facilities or areas within the NIC Site is provided in Appendix A-1.

The three subareas of the NIC Site were discussed in the NIC Work Plan (CDM 1997) and are briefly discussed in the following subsections.

2.2.1 Northeast Investigation Area

The Northeast Investigation Area, located north and northeast of the main portion of the NIC Site includes four facilities that were identified in the NIC Settlement Agreement as being under Consent Orders with EPA and/or KDHE: the Coleman Northeast Plant, the former Unocal Chemicals Division Distribution Facility, Unified School District 259 Service Center, and Continental Tank Car Corporation. Each of these facilities is discussed in detail in section 2.3. Chemicals of concern (COCs) were identified as the volatile organic compounds (VOCs) tetrachloroethene (PCE), trichloroethene (TCE), *cis*-1,2-dichloroethene (*cis*-1,2-DCE), and vinyl chloride (VC).

TCE and PCE were the most prevalent contaminants present. The area consists of urban industrial, commercial, agricultural, and residential property.

North and adjacent to the Northeast Investigation Area and outside the NIC Site Boundary is the Phillips Pipeline Wichita Bulk Terminal Facility (PPL). Groundwater contamination at the PPL site is being addressed through the Voluntary Cleanup and Property Redevelopment Program (VCPRP) with KDHE and is further discussed in Section 2.3.17. The NIC Site boundary is discussed in Section 2.5.

2.2.2 29th and Mead Site

The 29th and Mead Site is south of the Northeast Investigation Area. The 29th and Mead Site was a National Priorities List (NPL) site that has been officially delisted. The area consists of approximately 1,440 acres comprised of urban industrial, commercial, recreational, and residential property that have been developed from agricultural land over the past 100 years.

In 1983, an EPA investigation of potential groundwater contamination revealed the presence of VOCs in water produced from two industrial wells in the area. Contaminants including TCE, carbon tetrachloride (CT), BTEX compounds (benzene, toluene, ethylbenzene, and xylene), methylene chloride (MC), VC, and 1,1,1-trichloroethane (1,1,1-TCA) were detected. U.S. Geological Survey (USGS) investigations conducted in 1984 and 1985 for the EPA provided additional information on the extent of groundwater contamination in the area.

In 1987, the Wichita North Industrial District Group (WNID Group), including the City of Wichita, was organized and initiated an investigation of possible groundwater contamination in the area. The WNID Group entered a Consent Agreement with KDHE on September 27, 1989 that provided for an RI/FS. The Consent Agreement was executed by each participant and the City agreed to become a participant in the Consent Agreement on September 12, 1989. The 29th and Mead Site was officially listed as a NPL Site in February 1990.

Fieldwork at the site was conducted from 1990 through 1992 and an RI Report was submitted to KDHE in late 1992 for review and approval. KDHE noted numerous data gaps in the report and issued a Notice of Disapproval dated July 16, 1993. Consent Orders were signed with four additional potential responsible parties (PRPs) based upon the data presented in the Draft RI. Data and maps from the 29th and Mead investigations are included in Appendix B-2.

In July 1994, the City of Wichita petitioned the EPA to remove the 29th and Mead Site from the NPL. The City made this request with the objective of negotiating a Settlement Agreement with KDHE. The terms of the Settlement Agreement would allow the City to restore economic viability by allowing property transactions and financing to occur, to restore the declining tax base in the area, and to facilitate the completion of RI/FS activities. On April 7, 1995, the EPA advised that it would

initiate deletion of the 29th and Mead Site from the NPL if the City carried out the response actions required in the Settlement Agreement for the NIC Site. The EPA published the notice of deletion of the 29th and Mead Site from the NPL Sites on April 29, 1996.

Over the past several years, a variety of actions have been taken to remediate contamination at individual facilities within the 29th and Mead Site area. Descriptions of remediation activities and investigations at individual facilities are presented in Sections 2.3 and 2.4.

Monitoring wells installed in the 29th and Mead Site area as part of the large-scale investigations performed on behalf of the Wichita North Industrial District PRP Group are indicated by the prefix "WND." These WND-series wells (locations WND-01 through WND-37) were installed between March 1991 and May 1992. Generally, these wells are installed in nested pairs to monitor the shallow and deep aquifer zones. Soil borings, soil samples, and Geoprobe groundwater samples collected as part of the 29th and Mead RI (GTI 1996) are signified in this report by the prefix "29M."

2.2.3 13th and Washington Site

The 13th and Washington Site, south of the former 29th and Mead site, was identified in May 1991 when VOC contamination was detected in a dewatering well used during a construction project at the St. Francis Regional Medical Center. Land use in the approximately 1,600-acre area includes industrial, commercial, recreational, and residential properties.

In May 1991, KDHE completed a Preliminary Assessment of the site utilizing Geoprobe sampling techniques. The Preliminary Assessment concluded that contamination from the 29th and Mead Site was migrating into the 13th and Washington Site, and that four potential source areas within the 13th and Washington Site were also impacting groundwater. COCs were identified as PCE, TCE, 1,1,1-TCA, 1,1-DCE, *trans*- and *cis*-1,2-dichloroethene (*trans*- and *cis*-1,2-DCE), 1,1-dichloroethane (1,1-DCA), and VC.

Additional investigation of the site was conducted by the City in 1993 through a negotiated Consent Agreement with KDHE (92-E-222) signed October 1992. These investigation activities consisted of the installation and sampling of monitoring wells. VOCs were detected in most of the eleven monitoring well clusters installed. VOCs detected at levels exceeding the federal drinking water standard maximum contaminant levels (MCLs) included PCE, TCE, *cis*-1,2-DCE, VC, 1,1,1-TCA, 1,1-DCE, and 1,1-DCA. The analytical results did not indicate the presence of free phase chlorinated solvents. High levels of petroleum contaminants were also detected at one location. The additional investigation indicated that contamination from the 29th and Mead site was migrating into the 13th and Washington site from the north as well as from four potential source areas within the 13th and Washington Site.

Monitoring wells installed in the 13th and Washington Site area in March and April 1993 as part of 29th and Mead Site downgradient investigations are indicated by the prefix "WND" (well locations WND-38 through WND-49). Generally these wells were installed in nested pairs to monitor the shallow and deep zones of the aquifer. Soil borings, soil samples, and Geoprobe groundwater samples installed and collected as part of the 13th and Washington Expanded Site Investigation (KDHE 1993) presented in this RI are signified by the prefix "13W." Maps and data related to the 13th and Washington investigation are provided in Appendix B-1.

2.2.4 City Actions

The KDHE and City of Wichita finalized the NIC Settlement Agreement on November 14, 1995. Among other items, the Settlement Agreement obligated the City:

- To conduct an RI/FS program
- "To create a Redevelopment of Central Business District Area (Tax increment finance area) pursuant to K.S.A. 12-1770, et seq., or as amended"
- Establish a Certificate and Release Program

The Settlement Agreement was facilitated by the following City actions:

- The NIC Site was designated as a "blighted area" on March 5, 1996, which was one of the steps necessary to establishing a Tax Increment Finance District.
- The North Industrial Corridor Redevelopment District, also known as the NIC Tax Increment Finance (TIF) District, was established on March 19, 1996, under City Ordinance 43-009.

On May 21, 1996 the City signed a participation agreement with a group of 26 representatives identified as the NIC Participants. The NIC Participation Agreement included:

- Provisions for limited funding of the NIC RI/FS from the Participants.
- The formation of the NIC Technical Advisory Committee.
- An agreement from the Participants to be part of the Remedial Design/Remedial Action (RD/RA) allocation process.

The NIC Participant Agreement was followed by a June 11, 1996 Agreement between the City and representatives of major lending institutions in the Wichita area. The purpose of this Agreement Regarding the North Industrial Corridor was to encourage lending institutions to resume business and private lending to applicants within the

NIC TIF District who have obtained Certificates of Release for Environmental Conditions from the City.

The "Certificate and Release for Environmental Conditions" program, was initiated on July 10, 1996 when the City sent out official notice of the program. Under the program, existing or potential new property owners within the NIC Site could obtain and fill out an application for Certificate and Release for Environmental Conditions. These applications are also referred to as liability release forms (LRFs). A list of applications reviewed by CDM is provided in Appendix A-2.

The City officially initiated the RI/FS program with the hiring of a consultant (CDM) on January 7, 1997.

Another major City action was the implementation of institutional controls. On June 25, 1996, the City passed a water well ordinance that provides the City with the power to restrict the installation of a water well for personal use within an area deemed by the City to be contaminated. The City Ordinance is Municipal Code of Ordinances, Title 7, Chapter 7.30, section 7.30.105. The specific language of the code is provided below.

> Section 7.30.105 Water wells in contaminated areas.
>
> (a) From and after the date of the ordinance codified in this section, no new water well shall be constructed and used for personal use if the health officer determines that such well is in a contaminated area.
>
> (b) Any existing water well shall cease to be used for personal use if the health officer determines that (1) the well is in a contaminated area, (2) public water is available to the water well user, and (3) the cessation of use of the water well for personal use is in the best interest of public health, safety and welfare. (Ord. No. 43-156 § 2)

2.3 Facilities Conducting Site Investigations Under Regulatory Oversight

This section presents data collected by parties other than CDM during site investigations at individual facilities within the NIC. The investigations are being conducted under agreements with either KDHE or EPA.

Currently, 14 major facilities in the NIC Site have agreements or orders with either KDHE or EPA to conduct their own investigations and/or remedial activities relating to potential or known environmental impacts to soil and groundwater as a result of past business operations. Additionally, four other significant investigations have been or are being conducted at locations just outside the NIC Site at locations that have a possibility of impacting the NIC Site. These investigations are known as 29th and Grove (named for the projected intersection of these two streets), Johns' Sludge

Pond (located just east of 29th and I-135), Phillips Pipeline Terminal facility (located northeast of Unocal), and 57th and Broadway.

Table 2-1 presents the facility and/or site name and location of each of the above facilities and the primary contaminants of concern associated with the facility. These facilities do not include sites such as service stations with leaking petroleum hydrocarbon underground storage tanks (USTs) that are under the jurisdiction of the Storage Tank Section of the KDHE Bureau of Environmental Remediation. As acknowledged in Section 164 of the Settlement Agreement between the City and KDHE, sites with leaking petroleum hydrocarbon USTs are to be addressed through the Underground Storage Tank Trust Fund program. Due to the degree of petroleum hydrocarbon contamination and business operations that may have included the use of chlorinated volatile organics, the Phillips Pipeline Terminal, the Coastal Refinery, and the Union Pacific Railroad Wichita Fueling Facility investigations have been included in Table 2-1. Investigation areas are shown on Figure 2-2. A list of the known reports associated with these facilities is provided in Appendix A-1.

This section summarizes ongoing investigations and remedial actions being conducted within the NIC by facilities under the jurisdiction of KDHE or EPA where sources or potential sources of VOC impacts to groundwater have been observed. Several of the following discussions were previously presented in CDM's February 2000 Phase 1/1A Technical Memorandum (Phase 1/1A TM) for the NIC Site. In the NIC Phase 1/1A TM, some facilities were referred to as Operable Units. The term "Operable Unit" may have distinct connotations and legal implications under CERCLA that may not necessarily apply to the facilities identified as such in the NIC Phase 1/1A TM. As a result, the term Operable Unit will not be used in this RI Report.

2.3.1 Continental Tank Car Corporation (CTC) Facility

The CTC facility, located at 1106 East 37th St. North as shown on Figure 2-2, is being investigated under KDHE Consent order 92-E-206 signed September 4, 1992 by CTC and KDHE. The CTC facility has also been operated as Impala Industries, Inc. and Great American Design, Inc. and has been used for light manufacturing and assembly operations. The facility comprises approximately 3.1 acres. CTC is operating under an Operable Unit Order for Interim Measures. The Order requires source control and delineation efforts be conducted by CTC. Additionally, CTC was to conduct semi-annual groundwater monitoring between 1998 and 2002.

VOCs detected at the site include PCE, TCE, *cis*-1,2-DCE, 1,1-DCE, 1,1-DCA, and 1,1,1-TCA according to CTC's Semi-annual Monitoring Report of July 1998 (Strata 1998). PCE, TCE, and 1,1,1-TCA, among other VOCs have been detected in the onsite surface and subsurface soils. In February 1994, downgradient monitoring well CTC-MW06S had detections of TCE and 1,1,1-TCA at 962 μg/L and 815 μg/L, respectively. Onsite monitoring well CTC-MW09S had a TCE concentration of 329 μg/L and 1,1,1-TCA was non-detect during the same sampling period. At least 14

monitoring wells representing 10 locations have been installed to date. Relevant maps and available data summary tables are presented in Appendix B-5.

Monitoring wells and Geoprobe groundwater samples collected as part of this facility's environmental activities presented in this RI are signified by the prefix "CTC."

2.3.2 Coleman North/Evcon (CN) Facility

The CN facility is located at 801 East 37th St. North (Evcon) and at 3050 North St. Francis (Recreational Vehicle Products). Environmental investigations and interim remedial activities have been conducted under a Consent Decree signed June 14, 1991 by Coleman (now New Coleman Holdings, Inc.), Evcon Industries, Inc. (Evcon) and EPA. However, neither company admits to any liability arising out of the transactions or occurrences alleged in the complaint prepared by EPA. Coleman, Recreational Vehicle Products, and Evcon entered into a Consent Decree with EPA on September 7, 1993 to conduct a RD/RA at the CN facility.

A significant portion of the site was used by Coleman to manufacture household furnace and air conditioning units. Currently, groundwater and soil remediation and semi-annual groundwater sampling is being conducted at the CN facility. VOCs detected at the site include PCE, TCE, 1,1-DCE, *cis*- and *trans*-1,2-DCE, VC, 1,1,1-TCA, and BTEX according to the CN Remedial Investigation, Revision IV of May 7, 1992 (GTI 1992). May 1990 TCE concentrations in the shallow groundwater were reported as great as 21,000 µg/L (CN-MW34). At least 74 monitoring wells have been installed at 43 locations in the immediate vicinity of the facility. Relevant maps and data summary tables are presented in Appendix B-3.

The CN remedial system consists of a recovery well in the south end of the site pumping approximately 90 gallons per minute (gpm). Recovered groundwater is pumped to a treatment system onsite. A soil vapor extraction (SVE) system and a second groundwater recovery system are operated in the north half of the facility.

Monitoring wells and Geoprobe groundwater samples collected as part of this facility's environmental activities presented in this RI are signified by the prefix "CN." This facility is depicted as "Coleman/Evcon" on Figure 2-2.

2.3.3 Coleman Northeast (CNE) Facility

The CNE facility, located at 3600 North Hydraulic Avenue as shown on Figure 2-2, is a manufacturing facility. Environmental investigation and interim remedial activities are being conducted under Consent Order 91-E-205 signed November 17, 1992 by Coleman and the KDHE Bureau of Environmental Remediation. The primary chlorinated VOCs detected at the site are TCE and *cis*-1,1-DCE, according to the Remedial System Performance Report of November 6, 1998.

In Geraghty & Miller's February 1997 report titled *Phase III Offsite Remedial Investigation - Coleman Northeast Plant - Wichita, Kansas,* PCE detected on the CNE facility was attributed to Unocal. Specifically, the last sentence in Section 6.2.2 of the report stated: "The origin of PERC in the northeastern portion of the site and beneath the Shipping Warehouse is unresolved but Coleman believes that available data indicates Unocal is the probable source of PERC in this area". In Woodward-Clyde Consultants' June 1996 report titled *Comprehensive Remedial Investigation Report - Former Unocal Chemicals Division Distribution Facility - Wichita, Kansas,* the PCE contamination on the Coleman NE facility was attributed to the CNE facility. Specifically, Section 8.1.2 states the following: "PCE detected in Coleman's property within the NE Plume extent is primarily associated with other source areas on Coleman's property. The greatest dissolved-phase fraction of PCE in the NE Plume emanates from the source areas on Coleman's property." The February 1997 Geraghty & Miller report also identified three chlorinated solvent areas (TCE) on the CNE facility. These three areas include two primary source areas identified as Site 1B and Site 3. Site 1B consists of two concentrated areas separated by a shipping road.

Two of the source areas are located in the central southeastern portion of the facility in the vicinity of CNE-MW07S. TCE and *cis*-1,2-DCE concentrations in monitoring well CNE-MW07S were reported as 4,900 µg/L and 540 µg/L, respectively, in August 1996. The third primary source area is located in the southwest portion of the plant building near monitoring well CNE-MW15S. TCE and *cis*-1,2-DCE concentrations in monitoring well CNE-MW15S were reported as 370 µg/L and 660 µg/L, respectively, in August 1996. Observation well CNE-OW1S is located immediately downgradient of the third primary source area next to Pumping Well 1 had a reported TCE concentration of 9,600 µg/L in a May 1995 sampling event.

The CNE facility has a total of 71 wells onsite and downgradient of the facility with gauged water levels. Thirty wells are paired wells (shallow and deep). One CNE well (CNE-NE-11S) is paired with a WND-series well (WND-11S). The current monitoring program consists of 63 monitoring wells gauged for water levels and 15 wells sampled for VOCs. Relevant maps and data summary tables are presented in Appendix B-4.

The CNE remedial system consists of three groundwater recovery wells producing approximately 95 gpm total. Wells PW-1, PW-2, and PW-3 have average extraction rates of 35 gpm, 15 gpm, and 45 gpm, respectively. Groundwater is treated by an air stripper and discharged to a drainage ditch under NPDES Permit No. KS-0091421. Between October 1995 through June 2001, a total of 267,550,600 gallons of groundwater were recovered with an estimated removal of 1,511 pounds of VOCs. The remediation system is operated by New Coleman Holdings, Inc. Vapor degreasing operations were halted in December 1995. This Interim Remedial Measure (IRM) system is still in operation. Water levels are measured monthly and quarterly

sampling is conducted at 15 selected monitoring wells to evaluate remedial system performance (AGM 1998).

Monitoring wells and Geoprobe groundwater samples collected as part of this facility's environmental activities presented in this RI are signified by the prefix "CNE."

2.3.4 Unified School District 259 (USD) Facility

The USD 259 School Service Center Complex is located at 3850 North Hydraulic Avenue (Figure 2-2). This facility was used to maintain school district equipment. Environmental impacts were observed by KDHE at the site in 1991 and a leaking UST that had contained a solvent consisting primarily of PCE was subsequently removed in 1992. Soil in the excavated tank pit had a PCE concentration of 31,000 μg/Kg in October 1992. PCE was detected in a Geoprobe groundwater sample collected immediately west of the PCE tank location (P-49W) at a depth of 22 feet. The PCE concentration was 240,000 μg/L. TCE was detected in the same sample at a concentration of 3,400 μg/L. Monitoring well USD-MW08, located just south of the excavated tank pit, was sampled in September 1995. PCE and TCE were the primary chlorinated VOCs detected in this well at concentrations of 2,400 μg/L and 1,700 μg/L, respectively.

An environmental investigation is being conducted under Consent Order 92-E-121 signed March 15, 1993 by USD and the KDHE Bureau of Environmental Remediation. While PCE and TCE are the primary chlorinated VOCs detected at this facility, petroleum hydrocarbon contamination is also present in groundwater on the USD property. Fuel-related compounds were detected in well MW-7R located in the eastern portion of the USD property south and west of the Phillips Pipeline Terminal (see Section 2.3.17). In addition, the fuel-related compound 1,2,4-trimethylbenzene was detected at 6.2 μg/L in well MW-8 in the middle of the USD property in January 1998, so the possibility of a petroleum hydrocarbon source on the USD property cannot be precluded at this time.

A total of 31 monitoring wells have been installed at the site at 26 locations. Six wells have been decommissioned. At present, there are 25 monitoring wells at 22 locations. Relevant maps and data summary tables are presented in Appendix B-14.

An RI was conducted at the site from 1993 to 1995 and a resulting Technical Memorandum (TM) submitted to KDHE in April 1997. A modified Phase 2 RI Work Plan was submitted to KDHE in June 1998 and subsequently approved. The modified Phase 2 RI Work Plan is being implemented and ongoing quarterly monitoring of the site began in July 1998.

Results of groundwater sampling conducted at USD in November 2000 and June 2001 are provided in Appendix B-14. These groundwater sampling results were from monitoring wells on the USD property and on the Pinsker Steel Inc. property, located

east of and adjacent to the USD property. These results appear to indicate that the USD property is impacted both by an onsite contamination source of chlorinated VOCs upgradient of MW-9 and by chlorinated VOCs migrating onto the southern part of the USD property from a contamination source to the east. The Unocal property is located east of the USD property and is discussed further in Section 2.3.6.

Approximately 90 cubic yards of impacted soils were removed from a tank basin at the USD 259 School Services Center in October of 1992 during systems closure. A subsequent IRM soil removal action was completed in April of 2000 at this site. Approximately 78 cubic yards exceeding the "clean limits" of 180 ug/Kg PCE established by the KDHE were removed during the 2000 IRM. USD reports that all remediation activities were observed and approved by the KDHE.

Monitoring wells and Geoprobe groundwater samples collected as part of this facility's environmental activities presented in this RI are signified by the prefix "USD."

2.3.5 Van Waters & Rogers (VWR) Facilities, 2041-2049 North Mosley and 3105 North Mead (VWRS and VWRN)

The Van Waters & Rogers (VWR) Company is now known as Vopac USA, Inc. (Vopac). VWR operated at two facilities within the NIC Site. The facilities are identified by CDM as VWRS (southern facility) and VWRN (northern facility). Vopac still conducts operations at the southern facility.

VWRS Facility

The southern facility is located at 2041-2049 North Mosley (Figure 2-2) and is being investigated under KDHE Consent Agreement 98-E-0096. The facility was used for repackaging of chemicals including TCE and 1,1,1-TCA since 1959 and was acquired by VWR from the McKesson Corporation in 1986. TCE was reportedly spilled at the site in 1984 and 1986 (prior to VWR's acquisition of the facility) (VWR 1994) and the site is undergoing an RI. A Draft RI dated March 29, 1999 has been generated and is under review by KDHE. A total of 18 monitoring wells were installed at 10 locations during the 1998 RI investigation.

The VWRS Draft RI concludes that there are no on-site contaminant sources at the facility; however, KDHE's October 2001 comments stated that "KDHE did not concur with this conclusion and requested additional data collection". An assessment of the data is presented in Section 9 of this RI.

As part of the Consent Agreement, groundwater monitoring is to be conducted on a quarterly basis. A site map and available data tables are presented in Appendix B-18. Monitoring wells and Geoprobe groundwater samples collected as part of this facility's environmental activities presented in this RI are signified by the prefix "VWRS."

VWRN Facility
A former facility, VWRN, was operated under the Van Waters & Rogers name at 3105 North Mead, located south-southwest of the Coleman North facility. A preliminary site investigation was conducted at the northern facility under KDHE Consent Order No. 00-E-155. Select figures and data tables from a report submitted to KDHE on February 5, 2001 are provided in Appendix B-19. The report was prepared by SECOR and is titled "*Preliminary Investigation Report - Former VW&R Mead Street Facility - Wichita, Kansas*". While some VOC contamination was detected in the groundwater during the investigation, the report states that "... TCE and associated VOCs in the groundwater is most likely a result of contaminant migration onto the Former Facility from sources located hydraulically upgradient, toward the adjacent EVCON facility/COU."

This facility is depicted on Figure 2-2 as "Former VW&R (North)".

2.3.6 Former Unocal Chemicals Division Distribution (UCL) Facility

The UCL facility is located at 2100 East 37th Street North as shown on Figure 2-2. An accidental release of 150 gallons of PCE in 1989 resulted in a Consent Order (Case No. 91-E-206) between Unocal and KDHE that became effective on March 23, 1992. Unocal implemented an Interim Response Action vapor extraction system on their property with a start-up date of November 22, 1989. The vapor extraction system is reportedly operational during summer months.

While Unocal points to 1989 as the time releases occurred at the facility, KDHE files contain documentation of a spill and fire in July 1984 at the Union Chemicals facility in Wichita, Kansas. The facility appears to be the Unocal facility. An August 9, 1984 Memorandum from Mr. Dale T. Stuckey to Mr. Larry Knoche states that a spill, explosion, and fire occurred in July 1984. The memorandum states that Mr. H. J. Koop, the Union Chemical's supervisor of Loss Prevention based out of Schaumburg, Illinois, informed KDHE that all solvents had been driven off in the fire and that no drums containing liquid were found in the warehouse by the investigation team. The memorandum indicates that a spill report was completed by a Mr. Ralph O'Connor with a hand-written Spill Report #1307 4 RO 0510.

The referenced spill report indicates that the spill/fire/release incident occurred on July 13, 1984 and includes sketches of the facility layout and chemical storage. The report indicates that 12 to 16 barrels of TCE were in the warehouse that was consumed in the fire. The tank farm was also illustrated as having unspecified "chlorinated solvents" in the portion of the tank farm containing Tanks 25 through 29, a tank battery oriented with its long axis north-south and located in the southwestern portion of the tank farm. The TCE drums were shown to be stored in the central portion of the north wall within the warehouse. The same report indicates that a dam was constructed across the bar ditch on the north side of 37th Street. The dam allowed for the containment of fire control water and runoff from a July 16 rain event

to be temporarily stored in an approximately 200 foot long section of the bar ditch. The report indicates that the runoff water from fire control on July 13th, 1984 was to be handled by the Hazardous Waste Section Bureau of Waste Management together with the disposition of remaining barrels and chemicals.

The follow-up document by Mr. Stuckey indicates that 14,000 gallons of water were recovered from the ditch into three Groendyke tanker transports and shipped to the Union Chemical facility in Kansas City with a planned disposal down the Kansas City sanitary sewer, contingent upon approval by the city. The files did not contain the analytical reports or confirmation of the final disposition of the ditch water.

Given that numerous compounds other than PCE are present in the groundwater at the facility (see below), the 1989 PCE spill release does not account for all of the observed groundwater contamination.

Unocal completed the first phase of a RI in 1993 with KDHE approving the Phase 1 Remedial Investigation Report on November 30, 1993. In June 1994, KDHE approved Unocal's plan to implement an additional IRM in order to hydraulically control migration of the plume and to remediate contaminated groundwater. The hydraulic controls consist of 12 groundwater extraction wells, 11 of which are located on the Coleman Northeast Plant to the south of Unocal. The system has reportedly been in continuous operation since its start-up in January 1995. At least 25 monitoring wells representing 23 locations have been installed during the Unocal investigations. In addition, two wells with PZ designations, four wells with TW designations, and 10 wells with a P designation have also been installed. In addition, Unocal excavated and disposed of contaminated soils as part of a KDHE approved IRM in December 2001.

Environmental investigations have indicated that VOCs in the groundwater are migrating to the CNE property to the south and onto the Pinsker Steel and USD properties to the west. The primary contaminants of concern are PCE, TCE, *cis*-1,2-DCE, and 1,1,1- TCA. However, extraction well R-1 located in the primary source area on the Unocal property had the following VOCs and semi-VOCs detected in March 1996.

March, 1996 Detections in Recovery Well R-01 at the Unocal Facility			
VOCs	**Detection (µg/L)**	**SVOCs**	**Detection (µg/L)**
Tetrachloroethene	24,000	Naphthalene	480
Trichloroethene	20,000	2-Methylphenol	29
Toluene	18,000	4-Methylphenol	29
Xylenes, total	14,000	2-Methylnaphthalene	25
1,1,1-Trichloroethane	5,700	Bis (2-ethylhexyl) phthalate	14 B
2-butanone	4,500	Phenol	1.7 J
cis-1,2-Dichloroethene	3,700		

March, 1996 Detections in Recovery Well R-01 at the Unocal Facility			
VOCs	**Detection (μg/L)**	**SVOCs**	**Detection (μg/L)**
Ethylbenzene	3,400	Notes:	
Acetone	1,100 J	J = estimated value, below the detection limit	
1,1-Dichloroethene	990	B = constituent detected in laboratory blanks	
Vinyl Chloride	710		
Methylene Chloride	180 JB		
1,1-Dichloroethane	120		
Benzene	31 J		
1,1,2-Trichloroethane	24 J		

The detections in R-01 as well as the adjacent monitoring well MW-06 indicate that compounds other than PCE have been released to the groundwater on the facility. The June 28, 1996 report prepared by Woodward-Clyde Consultants for Unocal Environmental Remediation Services titled "*Comprehensive Remedial Investigation Report - Former Unocal Chemicals Distribution Facility - Wichita, Kansas*" presented the above data. The report states "the elevated levels of chlorinated compounds in R-01 are considered to be the result of DNAPL [dense non-aqueous phase liquid] removal activities conducted for the blank sump of R-01 prior to groundwater sampling" and "are not considered to be representative of groundwater concentrations". Unocal reports that DNAPL has not been detected in well R-01 subsequent to the 1997 second semi-annual groundwater monitoring event.

Relevant maps and data summary tables are presented in Appendix B-13. Monitoring wells and Geoprobe groundwater samples collected as part of this facility's environmental activities presented in this RI are signified by the prefix "UCL."

2.3.7 Coastal-Derby Refinery (DRB) Facility

The Coastal-Derby Refinery facility is a largely closed refining operation. The facility, currently known as the Coastal Refining and Marketing facility and formerly known as the Derby Refinery, is located at 1100 East 21st St. North (Figure 2-2). The facility has been the site of a petrochemical manufacturing, production, and refining facility since the 1920s. KDHE notified the Derby Refining Company on October 20, 1980 that petroleum hydrocarbons had been found in the groundwater south of the refinery. KDHE requested that Derby Refining Company delineate the extent of contamination at the refinery and determine potential source areas. Remedial activities are being conducted under KDHE Compliance Order 86-E-145A. The refinery was acquired by the El Paso Corporation during the merger between the Coastal Corporation and the El Paso Corporation, which was completed in January 2001.

Petroleum product released periodically over the life of the refinery is currently recovered by 17 extraction wells, separated and pumped to a storage tank, and produced water is reinjected in 40 wells upgradient of the recovery field. Eight additional recovery wells, including two offsite recovery wells south of 21st St., were

to be installed in 1999. Their operational status is not known at this time. As many as 41 recovery wells have operated for some period of time within and downgradient of the DRB facility since 1985. Over the course of the remedial investigation and remedial action, approximately 100 monitoring wells have been installed on and downgradient of the DRB facility.

Quarterly monitoring is conducted at 11 monitoring wells and at canals adjacent to the refinery. To date, the focus of environmental investigations at the site has been petroleum hydrocarbons; however, some of the monitoring wells have periodically been analyzed for chlorinated VOCs and other analytical parameters. Relevant maps and analytical summary tables are provided in Appendix B-7. No sources of chlorinated solvent contamination at the DRB facility other than the fuel additive 1,2-dichloroethane (1,2-DCA) are indicated by available data.

Monitoring wells and Geoprobe groundwater samples collected as part of this facility's environmental activities presented in this RI are signified by the prefix "DRB."

2.3.8 Christopher Steel Inc. (CSI) Facility

The CSI facility at 1221 East Murdock (Figure 2-2) has conducted several investigations dealing with various contaminated areas within the facility. The investigations date back to 1989 when a 2,000-gallon gasoline underground storage tank (UST) was removed from the facility and KDHE observed that the tank had leaked and requested an investigation. A total of 10 monitoring wells have been installed between 1989 and 1995.

The facility was involved in manufacturing structural steel. Investigations and remedial activities have dealt mainly with total petroleum hydrocarbon contaminations, metals, and paints in soils and have been conducted under the Resource Conservation and Recovery Act (RCRA). A report generated under the RCRA program was completed in May 1996 by Dames & Moore and was titled "*Remedial Action Report - Christopher Steel - 1221 East Murdock Avenue - Wichita, Kansas. Geoprobe and Monitoring Well Investigations.*" The report documents the remediation actions performed at the facility. Approximately 227 tons of soil were removed from beneath an area with visible surficial soil staining noted by KDHE in an area referred to as the "Paint/Solvent Area". Approximately 911 tons of petroleum hydrocarbon stained and petroleum hydrocarbon impacted soils were excavated and removed during the Remedial Action. Approximately 79 tons of blast sand and paint-chip impacted soil were also removed. Approximately 30 drums of various materials were also removed. Three of the drums were identified in the report as "chlorinated solvent". Further clarification of the designation "chlorinated solvent" was not provided in the report.

Also noted in the 1996 report, several soil samples had detections of PCE. A soil sample collected at Building F, Pit 3 (lab sample 95-11-054-01) had detections of

22 μg/kg of PCE and 6 μg/kg of *cis*-1,2-DCE. The sample also had detections of methylene chloride (59 B μg/kg), acetone (39 B μg/kg), benzene (2 J μg/kg), toluene (4 J μg/kg), ethylbenzene (3 J μg/kg), and total xylenes (19 μg/kg). The "B" qualifiers indicate that the compounds were detected in laboratory blanks. The "J" qualifiers indicate that the value was estimated because the analyte was below the laboratory detection limit. PCE was also detected in a sample identified as a PSSA Stockpile at a concentration of 8.6 μg/kg and in a sample identified as Building F Excavation West at a concentration of 12.3 μg/kg. Building F is the Bridge Fabrication building located immediately south of the railroad tracks, east of Ohio Street, and north of Elm Street.

On March 10, 1997 a report prepared by Dames & Moore titled "*Report - Underground Storage Tank - January 1997 - Groundwater Sampling - Christopher Steel, Inc. 1221 East Murdock Avenue - Wichita, Kansas - KDHE Project #U208700145*" was submitted to KDHE. Groundwater was sampled from 10 monitoring wells in January 1997 and analyzed for VOCs. The groundwater sample from MW-2 had PCE detected at a concentration of 12 μg/L. PCE was not detected in any of the other nine monitoring wells. MW-2 is located immediately north of the Bridge Fabrication Building. In Appendix A of the report, a March 29, 1996 letter from KDHE to Dames & Moore states:

> "Based upon the results of the investigation, it appears that this site does not pose an immediate threat to health or environment, therefore, monitoring would be an acceptable course of action. It is requested that biannual sampling of monitoring wells MW-1 through MW-10 be conducted for a period of two years."

As of January 2002, no current investigations or activities were being conducted at this facility. Relevant maps and data summary tables are presented in Appendix B-6.

Monitoring wells and Geoprobe groundwater samples collected as part of this facility's environmental activities presented in this RI are signified by the prefix "CSI."

2.3.9 Former Safety-Kleen, Inc. (SK) /Former Hydrocarbon Recyclers, Inc. (HRI) Facility

The former Safety Kleen, Inc. facility, located at 2525 New York (Figure 2-2), has changed ownership and names several times since environmental investigation began at the facility and is currently owned by Clean Harbors Kansas, LLC. The property was occupied by Enmar Paint from the 1940s until 1979 when it became Reid Supply, Inc. After Reid Supply occupied the site, the facility was used as a collection, storage, and recycling point for liquid and solid hazardous waste material as well as bulk chemical repackaging and distribution. The facility was purchased by Hydrocarbon Recyclers, Inc. (HRI), a subsidiary of USPCI, in 1988.

In 1995, USPCI was purchased by Laidlaw Environmental Services who also purchased Safety-Kleen Corporation in 1998. Laidlaw changed the name of the

facility to Safety-Kleen in July 1998 and subsequently, Clean Harbors Kansas, LLC assumed ownership. Service Chemical Supply Company occupied the northeast part of the property in 1986 and conducted acid repackaging and distribution of industrial chemicals until moving their operations offsite in 1990.

In 1990, PRC Environmental Management, Inc. prepared a report that was submitted to EPA on September 7, 1990. The report was titled "*Draft Preliminary Assessment Report - RCRA Facility Assessment - Hydrocarbon Recyclers, Inc. - Wichita, Kansas*". The report presented the history of the facility including its extensive regulatory problems dating back to 1980. The facility operations were also documented. The facility processed chlorinated solvents and non-chlorinated solvents; paint and lacquer wastes; waste oils, greases, and waxes; flammable and corrosive wastes; and waste chlorinated solvents; and spent dry cleaning wastes. Groundwater impacts by chlorinated solvents including PCE (504 μg/L), TCE (6,260 μg/L), 1,1,1-TCA (4,755 μg/L), and carbon tetrachloride (CT) (635 μg/L) were documented. Toluene (190 μg/L) and xylenes (250 μg/L) were also detected in the onsite monitoring wells. Detection of these compounds in the onsite groundwater does not necessarily point to the facility as the source of the contamination. However, a 1992 sampling program conducted by PRC for EPA reported onsite heated headspace detections of 1,1,1-TCA (2,400 μg/kg), CT (14,700 μg/kg), TCE (15,300 μg/kg), PCE (36.3 μg/kg), toluene (321 μg/kg), ethylbenzene (486 μg/kg), and xylenes (2,290 μg/kg) in soil samples collected from depths between 0.5 and 3.5 feet. The soil sample location with the most significant detected chlorinated solvents was located north of the drum crusher facility east of Building D.

Safety Kleen (SK) is currently operating under EPA Identification No. KSD007246846. The following discussion is based on a written history provided by SK. The EPA conducted and documented a RCRA Facility Assessment (RFA) dated September 24, 1990, which identified the initial Solid Waste Management Units (SWMUs) and areas of concern. A RCRA Permit Application was submitted to the agencies by Laidlaw Environmental Services (Wichita), Inc. (currently Safety-Kleen) dated August 27, 1992. The Part I permit was dated March 29, 1995. The Part II permit was dated December 23, 1994, and summarizes the findings of the EPA RFA, and the related SWMUs and areas of concern. The Part II permit requires that a RCRA Field Investigation (RFI) Work Plan be generated, and identifies which SWMUs and AOCs should be investigated as part of the RFI, and which can be postponed until closure of the facility to avoid disruption to operations. The permit also outlines the minimum requirements of the RFI report. Safety-Kleen has been conducting its own site investigations since 1999. Investigation activities to date have consisted of soil and groundwater sampling via Geoprobe and monitoring wells.

The only known remediation activity to date was the excavation and disposal of the paint can burial pit. This area of concern was limited in extent and historical in nature. The pit originated from activities related to a paint manufacturer that previously operated on site. Currently, SK is conducting an RFI. Groundwater

monitoring is being conducted periodically in association with the RFI activities. Potential source areas will be identified in the RFI report, and subsequently, the need for remediation, if warranted, will be addressed. The report was scheduled to be completed in 2002.

Only two of the original five monitoring wells installed on the facility currently remain. The remaining two wells are fully penetrating screens in the alluvial aquifer (RSC-1 and HRI-3). Safety-Kleen has installed five well pairs on site (SK-1S&D through SK5S&D) and one single shallow well (SK-6S). Two single shallow wells (SK-10S and SK-11S) have been placed off-site and downgradient of the facility, between the site and Chisholm Creek. SK-11S is due east of the northeast corner of the Coastal-Derby refinery property. The shallow wells intersect the groundwater surface and penetrate the alluvial aquifer approximately 7 to 8 feet. The deep wells located onsite have 5-foot screens and are set just above the Wellington Shale, at the base of the alluvium. Wells on the Union Pacific Railroad (UPRR) property north of the facility (and upgradient) are being used to monitor upgradient groundwater quality. In addition, four new wells are awaiting installation on UPRR's property, pending an approved access agreement with the Railroad.

Nineteen wells are currently being monitored. However, a formal monitoring program has not yet been established for the site. The number of wells may vary depending on the RI/FS work progress.

Selected maps and analytical summary tables are presented in Appendix B-12. Monitoring wells installed and data collected as part of this facility's environmental activities presented in this RI are signified by the prefixes "HRI" and "SK".

2.3.10 Farmland (FLE) Elevator Facility

Farmland Industries, Inc. (FLE) signed KDHE Consent Order 99-E0210 in December 1999 for the facility located at 1050 East 25th Street North (Figure 2-2). The Consent Order required source control investigation and remediation activities at the FLE facility. Farmland has been identified by the City as a potential source of CT contamination. Work conducted under the Consent Order at the FLE facility includes limited soil and groundwater sampling and the installation of 6 monitoring wells at 4 locations. Review of the vadose zone soil sampling data include detections of CT (244 µg/kg) and chloroform (CFM) (282 µg/kg) with detections of TCE (68.8 µg/kg) and PCE (9.9 µg/kg). The maximum detection of CT in the groundwater during a February 2000 sampling event was 78.7 µg/L in well FLE-MW03S. Benzene was detected at a concentration of 9,200 µg/L in well FLE-MW01S during a May 2001 sampling event. According to KDHE, CT was detected in soils at the Farmland facility at concentrations up to 290 mg/kg during June 2001.

PCE and TCE have been detected in groundwater at locations upgradient of the Farmland Elevator and several sources of petroleum hydrocarbon contamination are present in the area. Known significant petroleum hydrocarbon source areas include

Union Pacific Railroad Wichita Fueling Facility and the Former Coastal Derby Refinery.

No active groundwater remediation is being conducted at this time. Farmland has reported the "... completion of interim removal and construction work, supervised by KDHE ..." which according to KDHE, involved removal of a septic tank and lateral field that were connected to a well at the elevator. No other information has been provided to the City or CDM.

Relevant and available maps and data summary tables are presented in Appendix B-8. Monitoring wells installed and data collected as part of this facility's environmental activities presented in this RI are signified by the prefix "FLE."

2.3.11 Western Uniform and Towel Service, Inc. (WU) Facility

The WU facility, located at 1707 North Mosley (Figure 2-2), provides commercial laundry services and is currently conducting an environmental investigation under an Interim Agreement with KDHE signed on March 7, 1997. A Draft Site Assessment Report was submitted to KDHE for comment in November 1997. KDHE approved the Draft Assessment Reports in November 1999 with comments. KDHE indicated that the data collected at the WU facility was acceptable; however, additional work may be required pending KDHE review of the NIC RI Report. Groundwater samples were collected via Geoprobe and monitoring wells installed during the site investigation. A total of 17 monitoring wells were installed at 9 locations during the site investigation. Low levels of PCE have been detected on the WU facility. Groundwater collected from a depth of 15 feet at Geoprobe locations WU-GP02 had PCE detected at 36 µg/L. The Geoprobe location was inside the north half of the main building. Low levels of PCE were also detected in the groundwater samples collected from some of the onsite monitoring wells (WU-MW06S, WU -MW07S, WU-MW08S, and WU-MW09S) with a maximum detection of 7.6 µg/L in WU-MW07S. TCE and *cis*-1,2-DCE were also detected in groundwater samples collected on the facility including upgradient groundwater samples. A further assessment of this facility is presented in Section 9 of this document.

Relevant maps and data summary tables are presented in Appendix B-20. Monitoring wells and Geoprobe groundwater samples collected as part of this facility's environmental activities presented in this RI are signified by the prefix "WU."

2.3.12 Union Pacific Railroad Wichita Fueling Facility (UPRF)

The UPRF facility, located at 2645 N. New York Avenue (Figure 2-2), is a fueling and maintenance facility being investigated under the Storage Tank Section of the KDHE Bureau of Environmental Remediation for hydrocarbon releases resulting in free phase petroleum hydrocarbon contamination. Investigation activities at the car maintenance shop have been related to the release of petroleum hydrocarbons. A total of 18 shallow monitoring wells were installed during the UPRF petroleum hydrocarbon investigation. Only three of the shallow monitoring wells were sampled

and analyzed for chlorinated VOCs. No chlorinated VOCs were detected in the shallow monitoring wells. Free phase petroleum hydrocarbon contamination is still present at the facility. In a remedial design report dated April 12, 2002, UPRF's consultant proposed removal of free product using active skimmers in the impacted monitoring wells. Vapor recovery was also proposed to enhance the free product recovery process. CDM is not aware whether the remediation system was installed or is in operation. The site is currently monitored by KDHE.

At the direction of KDHE, the City installed three deep monitoring wells adjacent to three existing shallow monitoring wells. The well pairs were sampled for chlorinated VOCs during the RI. Results of the sampling are presented in Section 5.

Relevant maps and data summary tables are presented in Appendix B-15. Monitoring wells and Geoprobe groundwater samples collected as part of this facility's environmental activities presented in this RI are signified by the prefix "UPRF."

2.3.13 Via Christi Medical Center Facility (VCM)

The VCM Center, St. Francis Campus, located at 929 North St. Francis, occupies approximately nine square blocks in the vicinity of 9th and Emporia. This facility is depicted as "Via Christi" on Figure 2-2. The main portion of the facility is outlined by Topeka to the west, Santa Fe to the east, 10th Street to the north, and Murdock to the south. St. Francis Regional Medical Center entered into an agreement with KDHE (Case No. 92-E-139) dated March 1994 to perform a remedial site evaluation. Extensive field investigations have been conducted at the VCM facility between 1997 and 2000. The field investigations primarily consisted of groundwater and soil sampling via Geoprobe techniques. Prior to the investigation, periodic sampling was conducted at select wells at the facility. Currently, six monitoring wells exist at three locations in the vicinity of the VCM facility. The investigations determined that soils and groundwater have been impacted by low levels of 1,1,1-TCA and its degradation products and, possibly, some metals. The groundwater also appears to have been impacted by TCE; however, the TCE appears to be derived from upgradient sources. A more detailed evaluation of the VCM investigation results is provided in Section 9 of this document.

Relevant maps and data summary tables are presented in Appendix B-16. Monitoring wells and Geoprobe groundwater samples collected as part of this facility's environmental activities presented in this RI are signified by the prefix "VCM."

2.3.14 Johns' Refinery (JRF) Facility

The JRF facility was located at 915 E. 21st Street (Figure 2-2), at the southeast corner of Mosley and 21st. The facility recycled used motor oil and other waste oils from 1950 to 1970 (EPA FIT report). In November 1985, EPA conducted an emergency response and remedial action that resulted in the complete dismantling of the facility and removal of polychlorinated biphenyl (PCB) contaminated soils to a depth of several

feet. Excavated soils were replaced by clean fill covered by a clay cap. The area currently serves as a gravel parking lot for local businesses.

The EPA action did not consider or address the possibility of chlorinated solvent contamination. No further environmental investigations or remedial activities at this facility are known. Relevant maps and available data summary tables are provided in Appendix B-10. Additional discussions of this facility are provided in Section 9.

2.3.15 29th and Grove Facility (29G)

The 29th and Grove site is located to the east of the current NIC site boundary on Union Pacific Railroad (UPRR) tracks in the vicinity of the projected intersection of 29th Street and Grove Avenue (Figure 2-2). The site was originally identified in 1999 as a result of a KDHE investigation. KDHE negotiated an interim investigation agreement with UPRR to conduct a site investigation. The preliminary results of the UPRR investigation have identified significant soil and groundwater contamination. The primary contaminant is TCE and its degradation product *cis*-1,2-DCE. The groundwater contamination originates in the vicinity of a former loading ramp and appears to migrate south down Grove Avenue to at least 21st Street.

Geoprobes and monitoring wells associated with this site are signified by the prefix "29G".

2.3.16 Johns' Sludge Pond Facility (JSP)

Some of the material generated at Johns' Refinery (Section 2.3.14) was disposed at a location just east of the projected intersection of 29th and I-135. This site is just outside the current NIC Site boundaries. The Site has been investigated by the City of Wichita and is currently under EPA oversight as a Superfund Site with heavy metals and petroleum compounds as constituents of concern. The site is currently in long-term monitoring.

Chlorinated solvents may have been associated with the petroleum hydrocarbons but have not been identified in groundwater leaving the facility. Monitoring wells associated with the facility investigation are signified by the prefix "JSP". Selected information from the JSP facility is provided in Appendix B-21.

2.3.17 Phillips Pipeline Wichita Bulk Fuel Terminal Facility (PPL)

The PPL facility is located at 2400 E. 37th Street North (Figure 2-2), just northeast of Unocal and the NIC Site boundary. The PPL site is also outside of the current NIC site boundary discussed in Section 2.5. The facility is being investigated under KDHE supervision. The PPL facility is a bulk fuel storage facility that was originally constructed on agricultural land in the 1930s. The terminal currently receives aviation gasoline, unleaded gasoline, and distillates from Phillips Petroleum Company's refinery in Borger, Texas. Investigations conducted at the PPL facility have identified the primary contaminant of concern as petroleum hydrocarbons; however, lead and

1,2-dichloroethane (1,2-DCA) have also been identified as contaminants of concern. The chlorinated solvent 1,2-DCA has been identified in samples collected west of the PPL facility on USD 259 property. Geoprobes and monitoring wells associated with the facility investigation are signified by the prefix "PPL". Selected information from the PPL facility is provided in Appendix B-21.

2.3.18 57th and Broadway Site (57B)

This site is a NPL Site under the jurisdiction of EPA. The Site extends north and south of the identified intersection. Groundwater at the site has been impacted by chlorinated solvents, primarily TCE and its degradation products *cis*-1,2-DCE and vinyl chloride (VC). Groundwater contaminated by VC has been documented as far south as 46th Street North and Armstrong (approximately 0.8 miles west of Broadway. As delineated, the contamination has limited potential to impact the NIC site.

2.4 Investigations Conducted at Facilities within the NIC Site Not Under KDHE or EPA Oversight

Many businesses have conducted environmental investigations within the NIC Site independent of regulatory oversight. Table 2-2 presents a list of facilities that conducted or are conducting investigations independently of the NIC RI/FS program and are not currently under the oversight of either EPA or KDHE. Many of the facilities have changed owners and/or operations over time. Where applicable or known, previous operators at a facility have been provided in Table 2-2.

A list of reports associated with these facilities is provided in Appendix A-1. The reports and documents were observed in KDHE files or were provided to the City by the facility owner or prospective owner. Several reports consisted of limited Phase 1 and/or Phase 2 environmental site assessments conducted as part of a facility's or property's loan or purchase transaction activity. Data from these reports have been reviewed for this RI by CDM. The North Industrial Corridor Site Phase 1/1A Technical Memorandum dated February 2000 provided, where appropriate and available, the reports' site maps and groundwater analytical summary tables. Only reports that were available prior to February 1999 were included in the Phase 1/1A Technical Memorandum. Summary figures and data tables from the more significant investigations and reports have been included in Appendix B. The investigation areas are shown on Figure 2-3 and are summarized below.

2.4.1 Former Golden Rule Refinery (GRR) Facility

The former Golden Rule Refinery (GRR) was generally located north of 29th Street North and south of the projected right-of-way of 30th Street North, and between Broadway and Santa Fe as shown on Figure 2-3. The facility operated as a refinery prior to 1950, with refinery operations believed to have ceased during the late 1930s. At the close of the refinery, at least four sludge ponds were located on the western portion of the property. The former refinery property is now occupied by various

facilities including Wichita Brass and Aluminum (southwest quarter of the former refinery property) and Compressed Gases, Inc. (southeast quarter of the former refinery property). The remaining portions of the former refinery property are currently undeveloped.

The *Narrative Report for the Site Investigation of Wichita Brass and Aluminum* prepared by the United States Geological Survey (USGS) in 1985 states that between 1950 and 1973, the portion of the site currently occupied by Wichita Brass and Aluminum was used as a solvent reclamation facility. The solvent reclamation facility reportedly reclaimed paints, lacquers, and thinners using spent solvents from nearby industries. The USGS report stated that an estimated 1,300 drums of unprocessed paint and solvents were stored on the west edge of the property. Many of the drums were reported to be in poor condition and all drums were reportedly removed under the direction of the State of Kansas in 1981. In addition to the drums, the USGS report indicates that eight storage tanks of various sizes were located along the northern portion of the facility. A 1981 KDHE memorandum contains a sketch showing approximately 100 drums in this same location.

Several investigations have been conducted on the properties occupied by the former GRR beginning with the USGS investigations in 1984 and 1985. The investigations confirmed the presence of significant petroleum hydrocarbon contamination with the former refinery property. Eight monitoring wells were installed at seven locations on the GRR property. Minor chlorinated solvents were detected in the western half of the facility. However, an October 1984 sample of GRR-MW06 located just northwest of Emporia and 29th had the following chlorinated VOCs detected: TCE (1,935 μg/L), *cis*-1,2-DCE (38.3 μg/L), VC (6.9 μg/L),, 1,1,1-TCA (216 μg/L), 1,1-DCE (40.3 μg/L), and 1,1-DCA (3.1 μg/L). This well was sampled again in August 1986 and several chlorinated VOCs were again detected with the greatest concentration attributed to TCE (1,130 μg/L). This monitoring well location is approximately 200 feet east and 400 feet south of the eastern portion of an area identified by the USGS as a former reclamation equipment and tanks storage area. USGS soil samples and monitoring wells associated with this facility are signified with the prefix "GRR". Selected information from the GRR facility is provided in Appendix B-21.

Additional investigations were conducted at this facility during the RI. Additional discussions of this facility are presented in Section 5 (with respect to the sludge pit investigations) and Section 9.

2.4.2 Former Barnsdall Refinery (BRND) Facility

The former Barnsdall Refinery (BRND) was generally located between 25th Street North and 29th Street North and between Broadway and Mead as shown on Figure 2-3. The facility operated as a refinery between 1917 and 1955. The property is currently occupied by the Kansas Metals and Glickman, Inc. operations. Both are scrap metal operations. Numerous sludge pits were left behind when the facility shut down. An October 12, 1981 KDHE Memorandum by Dale T. Stuckey to the

Superfund Sites File provides a discussion on the history of some of the sludge pits located on the Barnsdall property. The memorandum notes that a large sludge pit, approximately one acre in size and located in the far northwest corner of the property was cleaned out around 1965. A contractor hired by Kansas Paint and Color, the interim property owner, reportedly pumped out the water and dumped the water at an unspecified location. The oil sludge was dredged out. The majority of the oil sludge was placed on an adjacent southeast tract of land, spread on the ground, and buried. According to Mike Carter of Wichita Brass and Aluminum, the excavated sludge was reportedly placed into a series of east-west trenches, mixed with dirt, and covered. Some of the oil sludge was also used to stabilize unspecified dirt county roads.

The 1981 KDHE Memorandum indicated that a second major pit located approximately 200 yards south, approximately one acre in size, was excavated in 1974. The pit and several associated smaller pits were apparently excavated prior to the construction of a car crusher to be operated by Kansas Metals, Inc. The memorandum indicates that a boomerang-shaped pit located southeast of the southern major pit appeared to have been excavated based upon an air photo review. The memorandum indicated that a second east-west pit, located just south of the northern major pit, was observed to apparently still exist during a September 23, 1981 site visit by Kent Rowe and Mr. Stuckey. A sludge pit was observed located in close proximity to an east-west fence line just southeast from the northern major pit. The pit contained several dead animal skeletons entrained in the surface. Mr. Stuckey reported that the surface could be walked over while sinking in slowly. A sample was collected and analyzed for metals. The specific gravity was measured at 1.658 g/ml. Detected metals and cyanide included: Free cyanide (51 mg/Kg), total cadmium (22 mg/Kg), total barium (113 mg/Kg), total chromium (600 mg/Kg), and total lead (2,400 mg/Kg).

Several investigations have been conducted on the properties occupied by the former BRND beginning with the U.S. Geological Survey (USGS) investigations in 1984 and 1985. Three monitoring wells were installed on the former BRND facility during the USGS investigation (BRND-MW12, BRND-MW13, and BRND-MW14). Samples collected in 1985 demonstrated concentrations of chlorinated solvents including methylene chloride (27 μg/L), 1,1-DCA (3.2 μg/L), vinyl chloride (410 μg/L), and TCE (91 μg/L).

Additionally, two shallow monitoring wells were installed as part of the 29th and Mead investigation (WND-05S, WND-16S). USGS soil samples and monitoring wells associated with this facility are signified with the prefix "BRND". Selected information from the BRND facility is provided in Appendix B-21.

Additional investigations were conducted at this facility during the RI. Additional discussions of this facility are presented in Section 5 (with respect to the sludge pit investigations) and Section 9.

2.4.3 Excel Facility (EXC)

The Excel facility is located southeast of 29th and Mead at 2901 N. Mead (Figure 2-3). The facility is a meat processing plant operated by Excel, a subsidiary of Cargill, Inc. The facility conducted its own investigation in 1991 on properties occupied by the Excel meat processing plant and the Cargill Elevator to the south. The investigation included the installation of 17 monitoring wells at 10 locations. Prior to the 1991 Excel investigation, two wells were installed during the 1985 USGS investigation (GRR-MW24 and GRR-MW25). Additionally, two wells were installed on the property during the 29th and Mead RI (WND-03S and WND-04S).

The 1991 Excel sampling demonstrated the presence of numerous VOCs in the groundwater including: acetone (120 μg/L), chloroform (9 J μg/L), TCE (5400 μg/L), 1,2-DCE (380 μg/L), 1,1,1-TCA (390 μg/L), 1,1-DCA (5 μg/L), and 1,1-DCE (350 μg/L). The groundwater contamination was attributed to upgradient contaminant sources. Subsequent sampling has been conducted during the NIC RI. Monitoring wells and soil borings associated with the 1991 Excel investigation at this facility are signified with the prefix "EXC". Selected information from the EXC facility is provided in Appendix B-21.

Additional investigations were conducted at this facility during the RI. Additional discussions of this facility are presented in Section 9.

2.4.4 Former VIM Trailer Facility (VIM)

The VIM facility is located at 2811 North Ohio Street (Figure 2-3). This facility was involved in manufacturing and refurbishing tanker trailers. Solvents were used to clean tankers prior to assembly or painting. A 12,000-gallon underground storage tank located on the western end of the property was used to contain spent solvent and rinsate generated during the tanker cleaning and painting operations. The tank was removed in 1993 and a hole was observed in the tank during its removal. VIM Trailer is no longer in business. Two wells (VIM-MW26 and VIM-MW27) were installed prior to June 1991 with five-foot screen intervals. The screen intervals represent the upper middle portion of the aquifer with the top of the screen intervals located at 23 and 22 feet below ground surface. The monitoring wells were sampled during 1991 and had TCE detections of 42 and 66 μg/L, respectively.

Groundwater and soil investigations conducted in 1995 and 1997 identified a variety of chlorinated solvents in the soils and groundwater. CDM has acquired summary tables of the 1995 sampling effort but has not been able to acquire the original report providing the groundwater results.

The 1995 sampling effort indicated that a soil sample collected adjacent to the former TCE storage tank had in-field laboratory detections of TCE (2,371 μg/kg), 1,2-DCE (659 μg/kg), and 1,1,1-TCA (3,086 μg/kg). Groundwater detections of TCE (172 μg/L), 1,2-DCE (402 μg/L), and 1,1,1-TCA (2,131 μg/L) were reported.

The results of a 1997 investigation were presented in a report prepared by Allied Environmental Consultants (AEC) for Chance Coach, Inc., the current property occupant. The January 16, 1998 report is titled *Chance Coach Inc. Site Environmental Evaluation - Report of Findings*. No groundwater samples were collected during this investigation. Sixteen borings were installed with a shallow (less than 4 feet) and deep (generally between 10 and 14 feet) soil sample collected at each location. Two soil boring locations were located immediately adjacent to the former spent solvent and rinsate storage tank. Soil samples collected during the 1997 investigation included the following chlorinated VOC detections: PCE (54,000 μg/kg), TCE (290,000 μg/kg), *cis*-1,2-DCE (85,000 μg/kg), vinyl chloride (1,400 μg/kg), and 1,1,1-TCA (1,900 μg/kg). Additionally, significant concentrations of benzene, toluene, ethylbenzene, and total xylenes (BTEX) were observed in the same soil samples (total BTEX 96,700 μg/kg).

Soil borings, groundwater sampling locations, and monitoring wells installed on this facility as part of this facility's environmental investigations are signified by the prefix "VIM." Relevant maps and data summary tables are provided in Appendix B-17. Additional investigations were conducted at this facility during the RI. Additional discussions of this facility are presented in Section 9.

2.4.5 DOW/Essex Facility (DOW)

The property located at 2808 N. Ohio (Figure 2-3) has been occupied by a series of companies since at least 1965. Former occupants include Keystone Chemical Co. in 1965, and Burgess Manufacturing in 1970 through 1985. The property appears to have been vacant since at least 1990. The property is currently owned by the Essex Chemical Corporation, which appears to be a subsidiary of The DOW Chemical Company. The KDHE files contained a July 6, 1988 letter from Calvin J. Benning (Essex Chemical Corporation) to Ronald Hammerschmidt (KDHE). The July 6, 1988 letter indicated that the Essex Chemical Corporation had acquired the property at 2808 N. Ohio as part of the acquisition of the business and assets of the Mortell Company. The letter states that five monitoring wells were installed on the property and provided the results of their sampling and analysis. Information on the well locations within the facility, or the well completion details were not provided in the letter in the KDHE files. The sampling date was not provided and the analytical results appear to have been transcribed from the original laboratory reports. TCE was detected in three of five monitoring well samples at concentrations up to 28 μg/L; however without well screened interval information and sampling dates, no conclusions can be drawn from these data.

A map of the facility and locations of seven monitoring wells was provided to the City upon the City's request. The map has markings that indicate it was part of a report prepared in 1989 for the Mortell Company/ESP by IT Corporation. A copy of this report has not been found by CDM nor produced by either Essex or DOW. Without further information as to the well completion details, an assessment of the

1980s analytical results cannot be completed. Access to the facility has not been granted by DOW at this time.

This facility is discussed in greater detail in Section 9. Selected information from the DOW facility is provided in Appendix B-21.

2.4.6 Novick Iron Facility (NOV)

The Novick Iron and Metal Salvage Company is located at 1007 East 21st Street and is generally bounded by the projection of Washington Avenue to the west, 21st Street to the north, the Middle Fork of Chisholm Creek to the east, and the West Fork of Chisholm Creek to the South (see Figure 2-3). The facility salvages scrap metal and batteries. The EPA conducted a site investigation in 1988 designed to determine whether polychlorinated biphenyl (PCB) contamination was present in the on-site soils as a result of alleged disposal of PCB-contaminated transformer oil around the property. The investigation also targeted lead and other metals. Six soil samples were collected from a depth of 0 to 6 inches. The investigation detected chromium (1,400 mg/kg), copper (430,000 mg/kg), lead (18,000 mg/kg), mercury (3.65 mg/kg), and zinc (5,700 mg/kg). PCB 1254 was detected at levels as great as 31 mg/kg. PCB 1260 was detected at levels as great as 13,000 mg/kg. For reference purposes, the KDHE Tier 2 Risk-Based Concentration (soil pathway) for PCBs is 9.5 mg/kg. The June 1988 sampling results were presented in a November 3, 1988 report for EPA Region VII by Ecology and Environment, Inc.

A November 4, 1988 letter from Ecology and Environment, Inc. to EPA provided the results of a draft hazard ranking score for the NOV facility. The letter included a recommendation that the facility be placed under RCRA jurisdiction and that the contaminants be removed.

The EPA files contain an August 4, 1989 letter from Terracon to Novick's attorneys Coburn, Croft, and Putzell. The letter indicates that 119 soil samples were collected in June 1989 and that select soil samples were analyzed for either heavy metals (chromium, cadmium, and lead) or PCBs. The EPA files contain no sampling results.

Region VII EPA files also contained records of a monitoring well installed after two diesel fuel underground storage tanks were removed in 1989. The well was installed in October 1990 adjacent to the tank excavation. The well was sampled for total petroleum hydrocarbons only, and had a 1 mg/L detected result.

No further information as to the disposition of this site with respect to metals and PCB contamination has been discovered in either KDHE or EPA files by CDM. Selected information from the NOV facility is provided in Appendix B-21. This site is discussed further in Section 9.

2.4.7 Kansas Plating Inc. (KPI) Facility

The KPI facility is located at 1110 N. Mosley (Figure 2-3). This facility is involved in industrial plating activities. TCE and 1,1,1-TCA groundwater contamination was identified in the area during KDHE's 13th and Washington 1993 Geoprobe investigation. KPI has conducted a series of groundwater and soil investigations between 1996 and 1999 in an effort to determine whether their facility contributed to the groundwater contamination observed by KDHE. Monitoring wells and Geoprobe locations and samples collected for the KPI Facility Investigation are signified by the prefix "KPI". Relevant maps and analytical summary tables are provided in Appendix B-11. This facility is discussed in greater detail in Section 9.

2.4.8 HCI Advance Chemical (HCI) Facility

The HCI facility is located at 1520 North Barwise (Figure 2-3). In November 2001, Advance Chemical, Inc. provided a draft work plan in electronic format to the City with additional investigatory work proposed. The draft work plan contained a description of the facility and its processes and provided the results of a February 2000 Geoprobe sampling investigation. The following is based upon the information provided in the draft work plan.

The facility is primarily used as a chemical storage and distribution facility with structures consisting of office space, warehouse, loading dock, and a warm room for storing chemicals that require temperatures of 50° F. The warehouse and warm room have cement floors and are constructed to contain spills. The north yard is unpaved and is used to receive and ship packaged chemicals from the warehouse and to store empty drums. The facility only accepts empty return drums from customers. The draft work plan states that no waste disposal or drum recycling is conducted on the site. The south yard is paved and has above ground tanks for storing acids, caustic, and bleach. Tank trucks containing chlorinated solvents are parked in the center of the south yard and their contents transferred to drums in the drumming area. The drums are stored in the southern portion of the facility until their shipment to customers or transfer to the warehouse for storage.

The investigation conducted by Advance Chemical resulted in the detection of PCE in the soils and groundwater at the facility. The Empty Drum Storage area in the northeast portion of the site had PCE detected in the soils (400 μg/kg) and shallow groundwater (15 μg/L). The shallow soils (2 foot depth) in the drum filling area in the southeastern portion of the facility had PCE, TCE, *cis*-1,2-DCE, and VC results of <5.9 μg/kg, 7.2 μg/kg, 2,631 μg/kg, and <5.9 μg/kg, respectively. The groundwater collected from a location just southeast of the drum filling area had PCE, TCE, *cis*-1,2-DCE, and VC results of 1,200 μg/L, 100 μg/L, 280 μg/L, and <25 μg/L, respectively.

Results of split samples collected by the City are presented in Section 5 of this RI. The data collected by HCI indicate that this facility is a source for at least PCE and will be discussed further in Section 9. To date, no permanent wells have been installed on the

facility. Locations of samples collected by Advance Chemical on this property will be signified by a "HCI" prefix. Applicable maps and tables are provided in Appendix B-9.

2.4.9 Miscellaneous Investigations

Numerous other investigations have also been conducted outside of this RI. Some investigations have been conducted as part of the City's Certificate and Release Program. Applications associated with this program and reviewed by CDM are identified in Appendix A-2. Many of these investigations were previously presented in Appendices of the Phase 1/1A Technical Memorandum for the North Industrial Corridor Site dated February 2000. Locations of the following facilities are shown on Figure 2-3.

2.4.9.1 Love Box, Inc. (LBC) Facility

The facility is located at 700 East 37th Street North and manufactures paper boxes. The facility conducted its own Geoprobe groundwater investigation in May 1999 and discovered low levels (below MCLs) of 1,1,1-TCA contamination and a minor PCE source area. The facility is discussed further in Section 9.

2.4.9.2 Compressed Gases, Inc. (CGI) Facility

Compressed Gases Inc. is located at 602 East 29th Street North and manufactures and distributes compressed gasses. The facility was investigated during the RI and plans to conduct its own investigation. The facility is a suspected 1,1,1-TCA source area. The facility is discussed further in Section 9.

2.4.9.3 Treatco / Former OHSE Meats (OHS) Facility

The Treatco facility is located northeast of 22nd and Broadway at 2300 North Broadway. The facility is not currently considered as a source of chlorinated VOCs. However, when the facility was operated by OHSE Meats and the Theis Foods Company, a non-contact cooling well operated on the facility with an extraction capacity of one million gallons per day (mgd). The groundwater extraction captured significant portions of contaminated groundwater located east and north of the well. Several monitoring wells have been installed on the property, mostly as part of a leaking UST investigation. Selected information from the OHS facility is provided in Appendix B-21.

2.4.9.4 National By-Products North (NBPN) Facility

The NBPN facility primarily recycles meat into dog food products. The facility is located on both sides of Mosley just south of 21st Street. The facility was originally investigated as part of a UST investigation with seven monitoring wells installed. This facility was further investigated as a source of TCE contamination during the RI. Selected information from the NBPN facility is provided in Appendix B-21. This facility is discussed further in Section 9 of this document.

2.4.9.5 Security Oil Corporation (SOC) Facility

The SOC facility is located northeast of 19th and Mosley at 2010 N. Mosley. The facility was originally investigated as part of a leaking UST investigation. A total of 14 shallow monitoring wells were installed during the UST investigation. The monitoring wells were sampled in November 1994 for chlorinated VOCs. The sampling event is important in that the presence of chlorinated VOCs is documented in the area as early as 1991. Selected information from the SOC facility is provided in Appendix B-21. This facility is discussed further in Section 9.

2.4.9.6 JR Custom Metals (JRCM) Facility

The JRCM manufacturing facility is located southwest of 19th and Mosley at 1957 N. Mosley. JRCM moved from this facility in 2000. The facility conducted its own investigation in February 1997 as part of its Certificate and Release application. The results document the degree of chlorinated VOC contamination in the area in 1997. Selected information from the JRCM facility is provided in Appendix B-21.

2.4.9.7 RC Allen (RCA) Facility

The RCA facility was formally identified as the Ritchie Corporation at the Allen's Concrete Facility and consists of the following three tracts of land:

- The block bounded by 17th, 18th, Washington and Wabash streets
- The block bounded by 17th, 18th, Mosley and Washington streets
- The southeast corner of the block bounded by 17th, 18th, Mead and Mosley streets

This facility had six temporary piezometers installed as part of an initial Phase 2 environmental site assessment in 1989. The piezometers were sampled and results document the presence of TCE at concentrations as great as 1,100 μg/L in a piezometer (RCA-P1) located west of the main facility (northwest of Mosley and 17th). The piezometer results also indicated an onsite source of petroleum hydrocarbon contamination. As a result, an additional seven temporary piezometers were installed to investigate the petroleum hydrocarbon contamination apparently associated with a UST on the site. The additional seven piezometers were sampled in June 1990. Chlorinated solvents were detected in most of the new piezometers as well, but they did not have TCE concentrations as great as those in RCA-P1. Selected information from the RCA facility is provided in Appendix B-21.

The results document the significant presence of TCE in the area as early as 1989.

2.4.9.8 Wendwood (WW) Facility

The Wendwood facility is located at 1804 and 1816 Wabash. The facility primarily constructs wood cabinets and other wood products. The facility conducted its own investigation in 1999 as part of its Certificate and Release Application. The investigation does not show the facility to be an active source of chlorinated VOC

contamination and documents the level of groundwater contamination in the area. Results of split samples collected by the City are presented in this RI.

2.4.9.9 Copeland International Trucks (CIT) Facility

The Copeland International Trucks, Inc. facility is located at 1770 N. Broadway (18th and Broadway). The firm performed truck maintenance at this location. The firm no longer operates at this location. The company conducted its own site investigation in 1999 as part of its Certificate and Release application. The sampling results indicated that the facility was a source of trace levels (approximately 5 μg/L) of PCE contamination. This facility is discussed further in Section 9 of this document.

2.4.9.10 Apex Engineering Facility (APX)

The APX facility is located at 1234 North Wellington. The facility is involved in the manufacture of aircraft structures. The facility was formerly occupied by BG Aerostructure, Inc. in 1995 and H&H Parts between 1961 and sometime between 1990 and 1995. During a review of KDHE files, several documents were found with regards to the 1234 North Wellington facility. Included in the documents was a laboratory report for rinse water from the metal finishing operation. The report indicated that the sample was collected and analyzed by KDHE in March 1991. The sample contained 1,1,1-TCA (365 μg/L), TCE (11.2 μg/L), trichloromethane (9.3 μg/L), dibromochloromethane (3.9 μg/L), dichloromethane (2.9 μg/L), and *cis*-1,2-DCE (1.0 μg/L).

Other KDHE file documents indicated that waste TCE was generated as early as July 1989 and waste 1,1,1-TCA was generated as early as 1990. The files contain a 1982 letter from KDHE to H&H Parts Co. that states that a June 3, 1980 RCRA inspection finds that the facility does not generate hazardous waste.

In a September 17, 1990 KDHE Memorandum from Tom Gross to Roger Carman, Mr. Gross provides the VOC results for three groundwater samples collected from three production wells on the H&H Parts Co. property. TCE was detected in APX-Well #1 (2.5 μg/L) and APX-Well#3 (16 μg/L). In the cover letter, Mr. Gross states, "Based on these results, it appears H & H may have contaminated the ground water. They have used trichloroethene in a vapor degreaser in past years."

The facility has been identified as a probable TCE source area. This facility was investigated during the RI and is discussed further in Section 9.

2.4.9.11 House Oil Corporation (HOC)

The House Oil Corporation facility is a leaking petroleum hydrocarbon UST site located at the southwest corner of 10th and Mosley. The lot is currently vacant. During the UST investigation, up to 16 monitoring wells and three groundwater recovery wells were installed. Additionally, a soil vapor extraction system was also installed and operated. The SVE system was in operation from February 1996 to sometime in 1998. The groundwater recovery wells operated at an extraction rate of

approximately 7 to 8 gpm. The period of operation for the recovery wells was approximately from March 1996 through December 1996. Groundwater recovery operations were ceased as a result of vandalism. The recovery wells were reported as abandoned in November 2000.

In addition to the petroleum hydrocarbon contamination, most of the monitoring wells were impacted by chlorinated VOC contamination. The contamination appeared to be derived from an off-site source. The monitoring and recovery wells were analyzed for some chlorinated VOCs between at least 1996 and 2000. The primary detected chlorinated VOC was TCE with a maximum detection of 233 μg/L in HOC-MW11 in October of 2000.

Monitoring wells and groundwater sampling locations for the HOC Facility Investigation are signified by the prefix "HOC".

2.4.9.12 Waco-Handi Wash Facility (WHW)

The Waco-Handi Wash Facility is a laundromat with an onsite dry-cleaning operation. The facility is located at 1008 N. Waco. The facility was identified during a Phase 2 environmental site assessment (ESA) conducted at a vacant lot immediately south and southeast of the WHW facility. The Phase 2 ESA detected PCE in a shallow groundwater sample downgradient from the WHW facility. The onsite laboratory indicated that the PCE concentration in the shallow groundwater sample was 202 μg/L. Additional sampling in the area was conducted by CDM during the RI. This facility is further discussed in Section 9 of this document.

2.5 NIC Site Boundary

Figure 1-1 depicts the current site boundary. The current site boundary was finalized by KDHE on February 11, 2002. The current site boundary incorporates two changes from the previous site boundary:

- Eliminate the overlap in boundaries between the Gilbert-Mosley Site and the NIC Site in the southern portion of the NIC Site
- Make the north site boundary consistent with the current City Limits

The original NIC Site Boundary was established by KDHE in the Settlement Agreement signed in November 1995. On August 13, 1996, KDHE amended the Gilbert and Mosley Site Boundary to include a Responsible Party identified during the Gilbert and Mosley Site RI/FS. The NIC Site southern boundary has been readjusted from the November 1995 boundary to eliminate the overlap with the Gilbert and Mosley Site, and the NIC Site northern boundary has been adjusted to remove property not within the limits of the City of Wichita. The current site boundary is described and depicted in Appendix C.

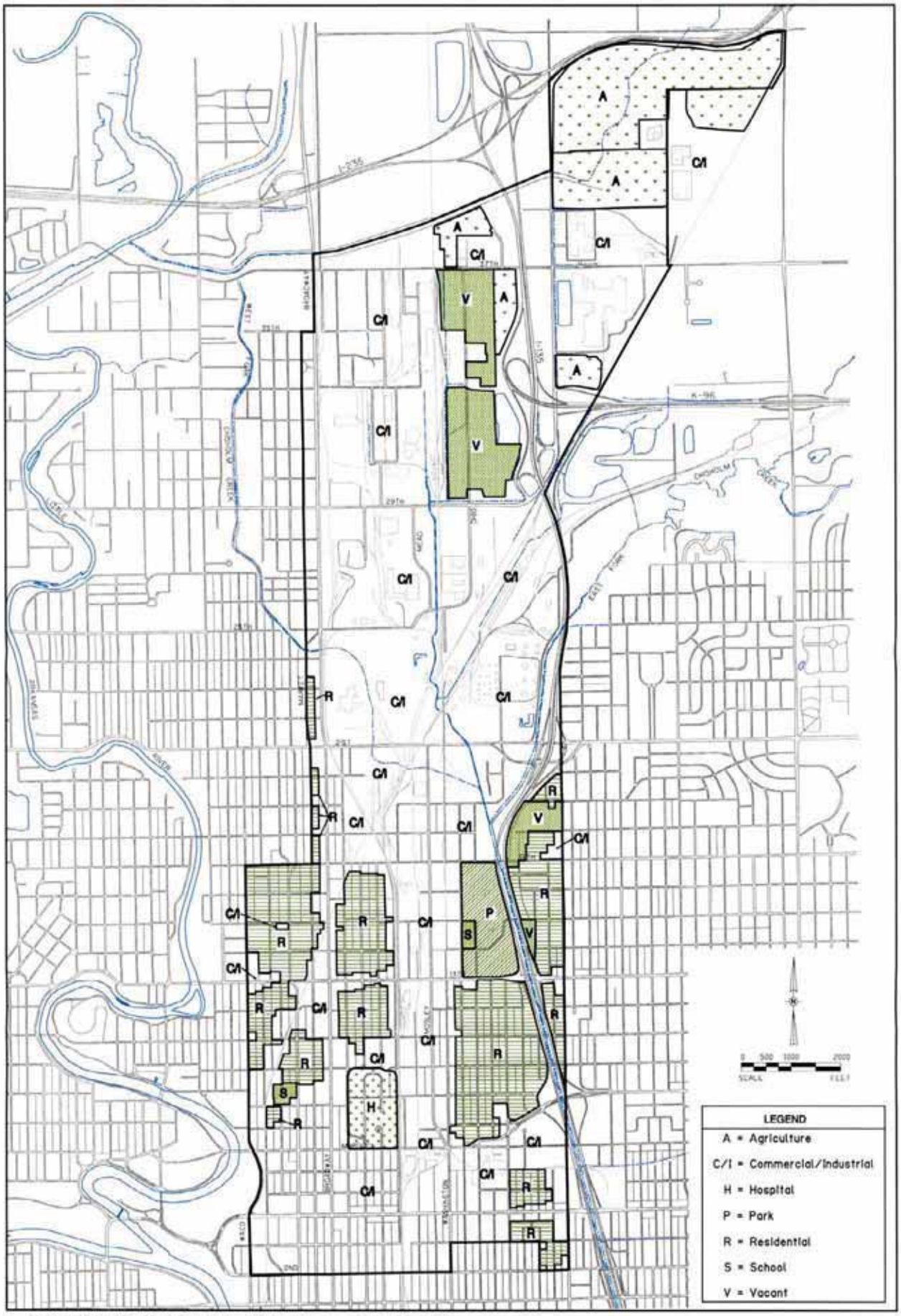

Figure 2-1
North Industrial Corridor (NIC) Site
Land Use Areas

CDM

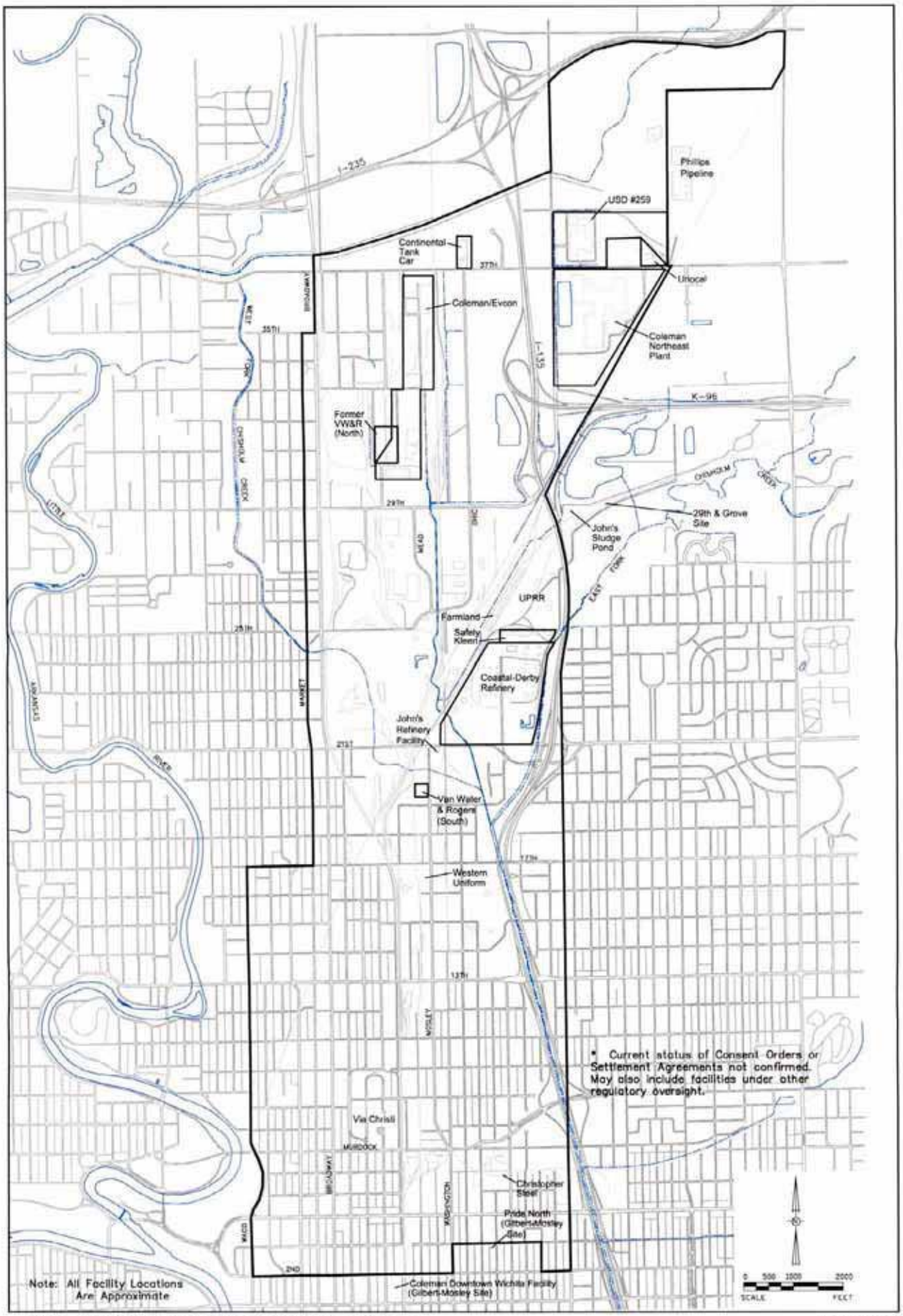

Figure 2-2
North Industrial Corridor (NIC) Site
Facilities with Consent Orders or Settlement Agreements*

CDM

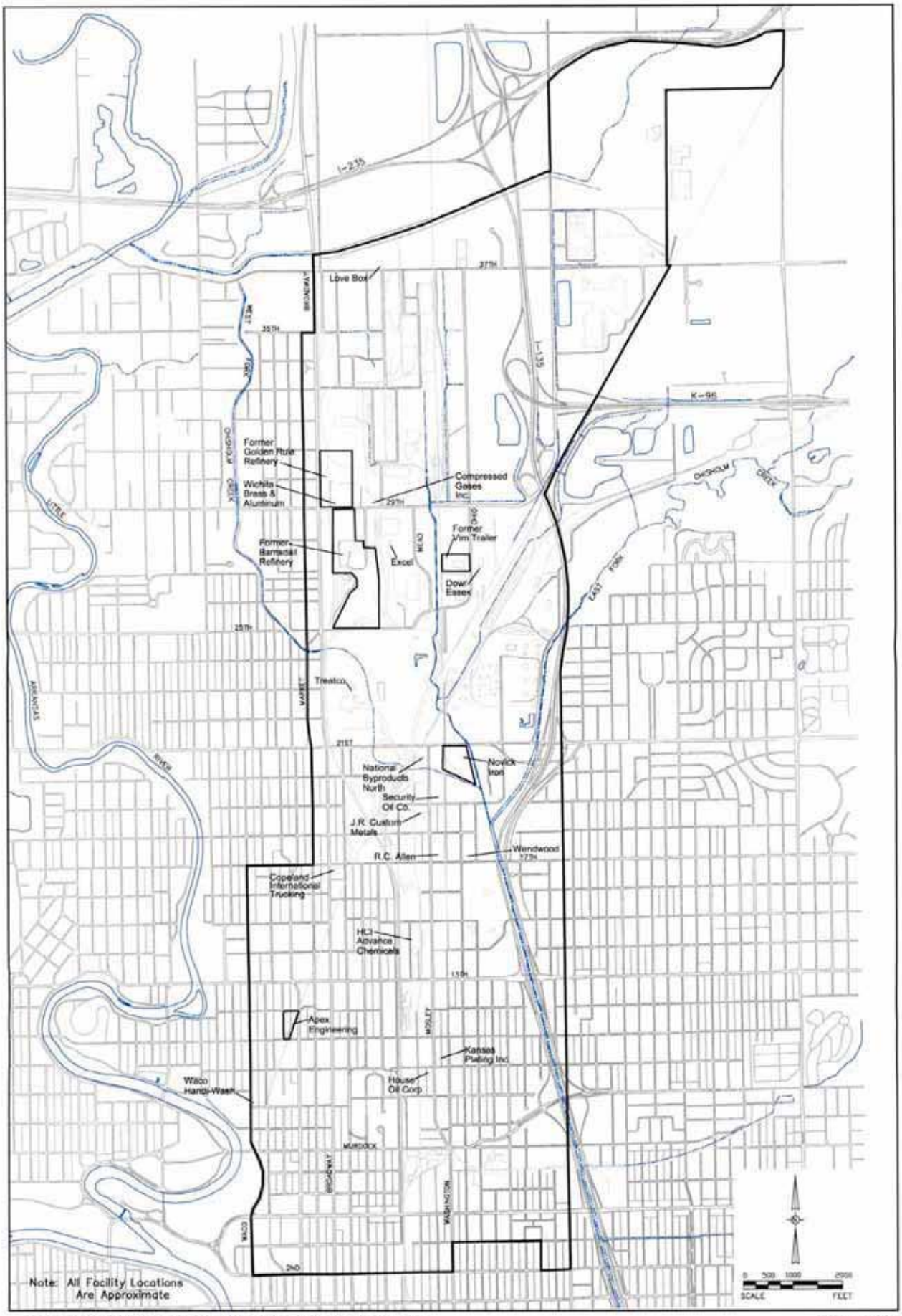

Figure 2-3
North Industrial Corridor (NIC) Site
Miscellaneous Investigations by Others

CDM

Table 2-1
North Industrial Corridor (NIC) Site
List of Facilities With Investigations Being Conducted Under Regulatory Agreements or Orders*

Facility Name	Site ID	Facility Address	Responsible Entity	Lead Regulatory Agency	Primary Contaminants[1]
Phillips Pipeline Wichita Bulk Terminal Facility	PPL	2400 E. 37th Street North	Phillips Pipeline Company	KDHE	Petroleum hydrocarbons; lead; 1,2-DCA
Continental Tank Car Corporation	CTC	1106 E. 37th Street North	Continental Tank Car Corporation	KDHE	TCE; TCA; petroleum hydrocarbons
Coleman North/Evcon Industries	CN	801 East 37th Street North and 3050 North St. Francis	New Coleman Holding Co., Inc.	EPA	TCE; TCA; petroleum hydrocarbons
Coleman Northeast	CNE	3600 N. Hydraulic Avenue	Coleman Co.	KDHE	TCE; petroleum hydrocarbons
Wichita Public Schools - USD 259 School Service Center Complex	USD	3850 N. Hydraulic Avenue	Wichita Public Schools - USD 259	KDHE	PCE; TCE; petroleum hydrocarbons
Van Waters & Rogers South	VWRS	2041 N. Mosley	Vopac USA, Inc.	KDHE	TCE
Van Waters & Rogers North	VWRN	3105 N. Mead	Vopac USA, Inc.	KDHE	Investigated for chlorinated solvents. No VOCs identified as COCs for this facility.
Unocal Chemicals Division Distribution Facility	UCL	2100 East 37th Street North	Unocal dba Union Oil Company of California	KDHE	PCE; TCE; TCA; petroleum hydrocarbons
Coastal Derby Refinery	DRB	1100 East 21st Street	El Paso Corporation	KDHE	Petroleum Hydrocarbons
Christopher Steel, Inc.	CSI	1221 East Murdock	Christopher Steel Inc.	KDHE	KDHE considered Primary COCs to be petroleum hydrocarbon and metals. Some PCE observed in soils and groundwater
Reid Supply/Hydrocarbon Recyclers/Laidlaw/Safety-Kleen	HRI	2525 New York Ave.	Safety-Kleen	KDHE	PCE; TCE; TCA; CT; petroleum hydrocarbons
Farmland Industries, Inc.	FML	1050 E. 25th St. N.	Farmland Industries, Inc.	KDHE	CT
Western Uniform & Towel Service	WU	1707 N. Mosley	Western Uniform & Towel Service	KDHE	PCE
Union Pacific Railroad Wichita Fueling Facility	UPRF	2645 New York Ave.	Union Pacific Railroad	KDHE	Petroleum Hydrocarbons
Via Christi Medical Center, St. Francis Campus	VCM	929 N. St. Francis	Via Christi Medical Center	KDHE	Arsenic and Lead in soils; TCA; chloroethane; methylene chloride; petroleum hydrocarbons
John's Refinery Facility	JRF	915 E. 21st St.		EPA	Petroleum hydrocarbons, PCBs, Lead

* Current Status of Consent Orders or Settlement Agreements are not confirmed.

[1] Primary Contaminants of Concern. Other chemicals, including degradation products, may also be present.

PCE = Tetrachloroethene
TCE = Trichloroethene
TCA = 1,1,1-Trichloroethane
CT = Carbon tetrachloride
1,2-DCA = 1,2-Dichloroethane

CDM

Table 2-2
North Industrial Corridor (NIC) Site
List of Facilities With Investigations Conducted Not Under Regulatory Oversight*

Facility Name	Site ID	Facility Address	Current Occupant	Purpose/Primary Focus of Investigation
Former Golden Rule Refinery	GRR	Northeast of Broadway and 29th Street	Golden Rule Currently occupied by Wichita Brass and Aluminum ; Dolese Brothers; Compressed Gases	Site characterization of soils and groundwater. Petroleum Hydrocarbons, metals, VOCs, and SVOCs.
Former Barnsdall Refinery	BRND	Southeast of Broadway and 29th	Currently occupied by Glickman; Inc. and Kansas Metals.	Site characterization of soils and groundwater. Petroleum Hydrocarbons, metals, VOCs, and SVOCs.
Excel Corporation	EXC	2901 N. Mead	Excel Corporation	Site investigation of soil and groundwater. VOCs.
Former VIM Trailer Facility	VIM	2811 N. Ohio	Currently occupied by Chance Coach	Site investigation of soil and groundwater. VOCs.
DOW/Essex Chemicals Facility	DOW	2808 N. Ohio	Currently vacant	Site investigation of groundwater. VOCs.
Novick Iron and Metal Facility	NOV	1007 E. 21st St. N.	Novick Iron and Metal Salvage Co.	Site investigation of soils. PCBs and lead.
Kansas Plating Facility	KPI	1110 N. Mosley	Kansas Plating, Inc.	Site investigation of soils and groundwater. VOCs and metals. Primarily a TCA investigation.
HCI Advance Chemical Facility	HCI	1520 N. Barwise	HCI Advance Chemical	Site investigation of soil and groundwater. VOCs.
Love Box Facility	LBC	700 East 37th St. N.	Love Box Corporation	Site investigation of groundwater. VOCs.
Compressed Gases Facility	CGI	602 E. 29th St. N.	Compressed Gases, Inc.	Planned investigation of groundwater. VOCs.
Treatco/Former OHSE Meats Facility	OHS	2300 N. Broadway	Treatco	Site investigation of groundwater. Petroleum Hydrocarbons. UST investigation. Minor chlorinated solvent investigation.
National By-Products North Facility	NBPN	721 E. 21st St. N.	National By-Products	Site investigation of soils and groundwater. Petroleum Hydrcarbons. UST investigation.

Table 2-2
North Industrial Corridor (NIC) Site
List of Facilities With Investigations Conducted Not Under Regulatory Oversight*

Facility Name	Site ID	Facility Address	Current Occupant	Purpose/Primary Focus of Investigation
Security Oil Facility	SOC	2010 N. Mosley	Security Oil Corporation	Site investigation of soil gas and groundwater. UST investigation. Some of the sampling included analysis for chlorinated VOCs. Groundwater extraction remediation.
J.R. Custom Metals Facility	JRCM	1957 N. Mosley	vacant	Site investigation of groundwater. VOCs.
RC Allen Facility	RCA	1820 N. Mosley	Allen's Concrete	Site investigation of groundwater. VOCs. UST investigation; however analyses were also conducted for chlorinated VOCs. UST remediation.
Wendwood Facility	WW	1804 and 1816 N. Wabash	Wendwood	Site investigation of groundwater as part of a Certificate and Release Application. VOCs.
Copeland International Trucks Facility	CIT	1770 N. Broadway	Copeland International Trucks, Inc.	Site investigation of groundwater as part of a Certificate and Release Application. VOCs.
Apex Engineering Facility	APX	1234 N. Wellington	Apex Engineering	Sampling of discharged process water from groundwater extraction wells. VOCs.
House Oil Corporation	HOC	Southwest of 10th and Mosley	Vacant	Sampling of groundwater. UST investigation. VOCs, BTEX and chlorinated VOCs. Groundwater extraction and soil vapor remediation.
Waco Handi-Wash	WHW	1008 N. Waco	Waco Handi-Wash	Groundwater investigation of parking lot south and southeast of Waco Handi-Wash facility. VOCs.

* Table only includes investigations discussed in Sections 2.4. A more complete list of investigations conducted within the NIC Site provided in Appendix A.

TCA = 1,1,1-Trichloroethane
PCBs = Polychlorinated biphenyls
UST = Undeground Storage Tank
VOCs = Volatile Organic Compounds
SVOCs = Semivolatile Organic Compounds
BTEX = Benzene, Toluene, Ethylbenzene, and Xylenes

CDM

Section 3
Study Area Field Investigation Methodology

This section presents the summary of the field investigations and sampling methodology of the Phase 1/1a and Phase 2 sampling programs of the NIC RI conducted by CDM. The purpose of the Phase 1/1a groundwater sampling was to delineate large-scale groundwater contaminant distributions throughout the Site and to identify active sources of groundwater contamination. After analysis of data collected during Phase 1/1a, potential source areas were identified and the Phase 2 Geoprobe groundwater sampling program was initiated in October 1999 to further define groundwater contaminant distributions and better identify source areas. Sampling conducted during these phases consisted of groundwater sampling utilizing Geoprobe technology, groundwater sampling of new and existing monitoring wells, surface water and sediment sampling, surface and subsurface soil sampling, indoor and outdoor air sampling, and sludge pit sampling. All Geoprobe sampling locations and monitoring wells sampled by CDM and other parties whose data are included in this RI are presented in Plate 3-1a and Plate 3-1b. Plate 3-2 depicts the Phase 2 water level measurement network. The locations of new monitoring wells installed during Phase 2 are shown on Figure 3-1. All surface water, sediment, and air sampling locations are depicted on Figure 3-2.

3.1 Phase 1/1a Sampling Program

The Phase 1/1a sampling program consisted of collecting groundwater samples and analyzing them for volatile organic compounds (VOCs). A description of sampling locations and their purpose is provided in the *NIC Phase 1/1a Technical Memorandum* (TM) (CDM 2000b). The combined Phase 1/1a sampling program consisted of the collection of baseline groundwater level measurements, collection of groundwater samples utilizing Geoprobe technologies, collection of groundwater samples from a suite of existing monitoring wells, and the collection of quality control samples. Geoprobe groundwater sampling during the Phase 1/1a activities was conducted according to their respective components of the *NIC Work Plan* (WP) (CDM 1997c). Field activities and sample analyses were conducted according to the *NIC Field Sampling Plan* (FSP) (CDM 1997a) and *Quality Assurance Project Plan* (QAPP) (CDM 1997b). All documents submitted were approved by KDHE.

Sample collection methodologies and analytical methods are discussed in the following subsections. A summary of the number of samples, number of sample locations, and types of analyses performed for Phase 1/1a is provided in Table 3-1. Available well construction details for existing wells that were sampled or used for water level measurements during Phase 1/1a are included in Table 3-3a.

3.1.1 Phase 1/1a Geoprobe Groundwater Sampling

The Phase 1 Geoprobe groundwater sampling was conducted in order to define the extent of groundwater contamination and determine whether selected facilities were

continuing sources of groundwater contamination. The Phase 1 Geoprobe sampling was conducted between December 1, 1997 and January 13, 1998. During this phase, 383 shallow or deep Geoprobe groundwater samples were obtained from 195 locations across the Site. Analysis of data collected during Phase 1 revealed data gaps and the need for increased coverage in various locations within the Site. Geoprobe sampling for the Phase 1a field investigation was conducted between May 27, 1998 and June 9, 1998 and consisted of the collection of 164 shallow or deep Geoprobe groundwater samples from 82 locations throughout the Site. Plate 3-1a and Plate 3-1b present the Phase 1/1a groundwater sampling locations.

3.1.1.1 Phase 1/1a Geoprobe Groundwater Sample Collection Methods

All Geoprobe groundwater samples were collected by the methods detailed in the KDHE-approved FSP. Geoprobe groundwater samples were collected by hydraulically advancing a 2-foot length of mill slotted steel screen to the selected sampling interval depth. The targeted sampling intervals were defined as within 10 feet of the water table for shallow aquifer samples and to within 10 feet above probe refusal for deep aquifer samples. Once the sample collection depth was achieved, disposable 3/8-inch polyethylene tubing was inserted into the probe rods to the middle of the slotted screen and attached to a vacuum pump at the surface. Groundwater was purged by vacuum until it cleared of significant fines and/or a minimum of one liter had been purged. Qualitative field parameters such as water levels, water clarity, flow rate, purge volume, and the presence of odor were observed and recorded prior to sample collection. Phase 1/1a Geoprobe field observations are included in Appendix D-1 and Appendix D-2, respectively.

After purging was complete, the tubing was then crimped during flow and removed from the probe rods. Groundwater samples were then collected from the bottom of the tubing. All samples were collected into three clear, 40 milliliters (mL), HCl-preserved volatile organic analysis (VOA) vials, labeled, and placed in a cooler containing ice.

3.1.1.2 Phase 1/1a Geoprobe Groundwater Sample Analysis

All Geoprobe groundwater samples were submitted under documented chain-of-custody procedures to Pace Analytical Services, Inc. (Pace) in Lenexa, Kansas. Pace is a KDHE certified laboratory. All groundwater samples were submitted and analyzed for VOCs by EPA Method 8260. Method 8260 was substituted for Method 8010. Pace Analytical modified Method 8260 to achieve the lower reporting limits of Method 8010. Method 8010 was originally required because the reporting limits for the compounds are lower. KDHE verbally approved this change and was notified in correspondence from CDM to KDHE dated December 4, 1997. Method 8260 is the analytical method used for all samples submitted and analyzed for VOCs throughout the NIC RI investigations unless otherwise stated. Further information regarding this variance to the WP is provided in Section 3.2.4 of the Phase 1/1a TM. All methodologies were described in the KDHE-approved FSP. All Phase 1/1a Geoprobe groundwater sample analytical results are presented in Appendix H-1.

3.1.2 Phase 1/1a Existing Monitoring Well Groundwater Sampling

The Phase 1/1a groundwater sampling of existing monitoring wells was conducted between December 1, 1997 and December 13, 1997. Groundwater samples were collected from 40 existing monitoring wells at 23 locations throughout the Site. These monitoring wells were sampled in order to evaluate the extent of contamination within the Site.

Upon review of all previously compiled data, it was determined that collection of additional groundwater data from existing monitoring wells would be beneficial to defining the extent of contamination. Therefore, additional existing monitoring wells were sampled to fill data gaps and to provide increased coverage at selected locations. These additional monitoring wells were sampled on June 15, 1998 and June 16, 1998 from 16 monitoring wells at 11 locations within the Site. A summary of the number of samples, sample locations, and types of analyses performed for the Phase 1/1a is provided in Table 3-1. All Phase 1/1a existing monitoring wells are depicted on Plate 3-1a and Plate 3-1b.

3.1.2.1 Phase 1/1a Existing Monitoring Well Groundwater Sample Collection Methods

Existing monitoring wells were sampled as described in Section 2.8.1 of the FSP. During the December 1997 sampling round, a submersible Keck pump was used to purge and sample the monitoring wells. During purging, the pump intake was lowered to the middle of the well's screened interval and a minimum of three casing volumes of groundwater was purged from the well while monitoring the pH, conductivity, temperature, dissolved oxygen, turbidity, and redox potential (Eh).

After a minimum of three well casing volumes had been removed and all field parameters had stabilized, the well was considered sufficiently purged. Field parameters are considered sufficiently stabilized when conductivity, temperature, dissolved oxygen, and turbidity readings are within +/- 10 percent of each other and pH readings are within one standard deviation (0.10 pH unit) of each other. For sample collection, the pump flow was restricted to approximately 100 mL/minute to minimize volatilization. The sample was then collected directly from the pump discharge line into three clear, 40 mL, HCl-preserved VOA vials.

Five of the existing monitoring wells were inaccessible to the support vehicle housing the submersible pump. These wells were purged utilizing disposable polyethylene bailers. The wells were purged by bailing groundwater from the middle of the well's screened interval until a total of three casing volumes had been removed and field parameters had stabilized. Groundwater samples were collected by pouring the sample from the top of the bailer using extreme care in order to minimize volatilization. Field parameters were recorded at all wells to determine if adequate purging had been conducted.

During the June 1998 monitoring well sampling, the wells were purged with a submersible pump lowered to the approximate middle of the well's screened interval using the same criteria as described above. The pump was removed prior to sampling and groundwater samples were collected by bailer from the same depth interval occupied by the pump. Upon collection, samples were then labeled and placed in a cooler containing ice. Field parameters are provided in Appendix D-6.

3.1.2.2 Phase 1/1a Existing Monitoring Well Groundwater Sample Analysis

All groundwater samples from existing monitoring wells were submitted under documented chain-of-custody to Pace and analyzed for VOCs by EPA Method 8260. All methodologies were described in the KDHE-approved FSP. Analytical results for all Phase 1/1a existing monitoring well groundwater samples are presented in Appendix H-2.

3.1.3 Phase 1/1a Water Level Measurements

Two rounds of water level measurements were collected during the Phase 1/1a activities. The first water level round was conducted between October 2, 1997 and October 30, 1997. The second water level round was conducted between April 29, 1998 and May 13, 1998.

Water level elevations from over 100 locations were compiled from the October 1997 water level data and used to construct a site-wide potentiometric surface map. Water level data from 171 wells were used to generate the April/May 1998 potentiometric surface map for the Site. The April/May 1998 round of water level measurements also included the gauging of 21 monitoring wells at five UST sites to determine localized groundwater flow directions within the Site.

On review of water level data from monitoring well clusters, most shallow and deep water level elevations were observed to be within 0.10-feet of each other. As a result of this minor difference between shallow and deep groundwater level elevations, the measurements from the shallow wells were used in construction of the potentiometric surface maps. The October 1997 and April/May 1998 potentiometric surface maps are provided in Appendix G-1.

3.2 Phase 2 Sampling Program

The Phase 2 sampling program consisted of the collection of groundwater level measurements, the collection of groundwater samples utilizing Geoprobe technologies, collection of groundwater samples from new and existing monitoring wells, collection of surface water and sediment samples, collection of surface and subsurface soil samples, collection of indoor and outdoor air samples, collection of surface and subsurface sludge pit samples, and the collection of quality control samples. The samples collected during the Phase 2 sampling event included the collection of groundwater samples and analyzing them for VOCs. Select groundwater samples were identified for analysis of additional analytical parameters to evaluate

the potential for monitored natural attenuation (MNA). All Phase 2 activities were conducted according to their respective components of the *NIC Final Work Plan Addendum* (FWPA) (CDM 2000a) submitted to and approved by KDHE, as well as the FSP and the QAPP also submitted to and approved by KDHE. Any changes to the sampling protocol were approved by the KDHE project manager via telephone prior to sampling.

Sample collection methodologies and analytical methods are discussed in the following subsections. A summary of the number of samples, the number of sample locations, and the types of analyses performed for all Phase 2 field activities is presented in Table 3-2. All groundwater sample locations are presented on Plate 3-1a and Plate 3-1b.

3.2.1 Phase 2 Geoprobe Groundwater Sampling

The Phase 2 Geoprobe groundwater sampling was conducted between October 15, 1999 and July 19, 2001. The NIC draft Work Plan was submitted to KDHE in May 1999. In October 1999, KDHE granted approval to begin the Phase 2 Geoprobe groundwater sampling investigation. The majority of the Geoprobe investigation was completed between October 15, 1999 and March 15, 2000 with miscellaneous Geoprobe sampling conducted between June 2000 and July 19, 2001 to address data gaps within the Site.

The City had proposed a total of 234 additional Geoprobe locations and the resampling of select Phase 1/1a Geoprobe locations. Subsequently, 544 Geoprobe groundwater samples were collected from 296 locations throughout the Site. These groundwater samples were collected from both shallow and deep groundwater sample depths. The Phase 2 Geoprobe groundwater sampling was conducted in order to further define the extent of the numerous chlorinated VOC source areas to identify specific properties and facilities as potential or confirmed sources of contamination.

Groundwater samples from the selected Phase 1/1a Geoprobe resample locations were collected only from the shallow aquifer. These locations were resampled in order to:

- Confirm the level of contamination previously observed
- Provide a comparative point of reference for the Phase 2 Geoprobe data

These resample locations were collected from an offset boring within five feet of the original Phase 1/1a locations at the same sample interval as the original location.

3.2.1.1 Phase 2 Geoprobe Groundwater Sample Collection Methods

All Geoprobe groundwater samples were collected by the methods detailed in Section 3.1.1.1 for Phase 1/1a Geoprobe groundwater sampling. Qualitative field parameters

such as water levels, water clarity, flow rate, purge volume, and the presence of odor were all observed and recorded prior to sample collection. The Phase 2 Geoprobe field observations are included in Appendix D-3.

During the Phase 2 Geoprobe investigation, KDHE requested the sample collection depths specified as "shallow" be targeted for collection from the upper 5 feet of the aquifer that would yield sufficient water for sampling utilizing Geoprobe sampling techniques. The samples were targeted for collection from the uppermost zone representative of where horizontal transport was to be reasonably expected, i.e., water from the uppermost part of the sandy portion of the aquifer, not silts and clays. Samples referred to as "deep" were collected from within 5 feet of the base of the aquifer.

3.2.1.2 Phase 2 Geoprobe Groundwater Sample Analysis

Since onsite analysis was not conducted, Phase 2 Geoprobe groundwater samples were collected in the following order:

- Confirmation Geoprobes – confirmation Geoprobe groundwater samples were collected to establish a baseline for comparison to previous analyses and to determine whether significant plume movement had occurred that might have required reevaluation of plume locations and/or source areas.

- Data Gaps - Geoprobe groundwater samples, which were primarily located in areas with data gaps, were the next series of samples collected. This approach allowed for data to be analyzed and identify sampling locations for modification while sampling personnel and subcontractors were still mobilized.

Geoprobe groundwater samples were submitted under documented chain-of-custody to Pace and analyzed for VOCs by EPA Method 8260. Phase 2 Geoprobe groundwater sample analytical results are discussed in Section 5.5.

3.2.1.3 Phase 2 Existing Monitoring Well Groundwater Sampling

As part of the Phase 2 investigation, 91 existing monitoring wells were sampled. These monitoring wells consisted of shallow monitoring wells, deep monitoring wells, and shallow and deep monitoring well clusters. These monitoring wells were sampled to further define the extent of the contaminated groundwater source areas as well as to further aid in identifying potential responsible parties.

3.2.1.4 Phase 2 Existing Monitoring Well Groundwater Sample Collection Methods

As noted in Section 5.2.2 of the TM, the monitoring well sampling methods were revised. The revisions were approved by KDHE to ensure data quality objectives were achieved. All groundwater samples were to be collected via sterile polyethylene bailer, regardless of the purge method utilized.

Small Diameter (1-inch) Monitoring Wells
All 1-inch diameter monitoring wells were to be purged utilizing a peristaltic pump where effective or by a check valve sampler where peristaltic pump purging was not effective. Purging was conducted by placing the end of the peristaltic tubing near the top of the water column and pumping one well casing volume from the well, then lowering the tubing to the middle of the screened interval for the remainder of the purging. After purging was complete, all samples were to be collected via mini-bailer. During the sampling of the 1-inch diameter wells, it was determined that sampling of the 1-inch wells via mini-bailers was not feasible. The bailers could not be effectively retrofitted with enough weight to overcome their cohesion to the inside of the 1-inch casing. The cohesion of the bailer to the well was caused by condensation on the inside of the well casing. On the occasions when the bailer did lower to the top of the water column, the bailer failed to drop to the middle of the screened interval for sampling. Therefore, the small diameter well-sampling methods were modified as discussed below.

The KDHE project manager was contacted by the CDM project manager via telephone on May 2, 2001 and May 3, 2001 and advised of the small diameter well sampling issues. The KDHE project manager indicated that CDM could sample the small diameter wells by purging with a peristaltic pump, crimping the tubing after purging was completed, and draining the water from the bottom of the crimped tubing into the VOA vials. This method was to be used only until the arrival of the check valves. The KDHE project manager stipulated after their arrival, the remaining small diameter wells were to be sampled utilizing the check valves.

Small diameter wells sampled on May 3 through May 8, 2001 and July 25 through July 27, 2001 were sampled via the purge, crimp, and drain method. Upon arrival of the check valves, the remaining small diameter wells were sampled for VOCs using the check valves on the end of the purge tubing and then filling the tubing by manually raising and lowering the tubing in the well until the tubing was filled. This was conducted until the appropriate purge volume had been achieved. At that point, the tubing was crimped, extracted, the sample collected from the top of the tubing. The VOA vials were then labeled and placed in a cooler full of ice under documented chain of custody procedures. Field parameters and sampling methods are provided in Appendices D-7 and D-8, respectively.

Two-inch Diameter Monitoring Wells
All 2-inch-diameter monitoring wells were to be purged using a submersible pump. Purging was conducted by placing the pump intake near the top of the water column and pumping one well casing volume from the well, then lowering the intake to the middle of the screened interval for the remainder of the purging and field parameter collection. After purging was complete, all samples were to be collected via bailer. For the 2-inch diameter wells being analyzed for MNA parameters, the purging methodology remained as described above. In order to better facilitate field sampling procedures, the purging method was modified for all other 2-inch diameter

monitoring wells on May 3, 2001, via telephone conversation with KDHE's project manager. A disposable polyethylene bailer was utilized for both purging and sampling. Field parameters were monitored during purging to assure stabilization had been achieved. Sampling was conducted by lowering the bailer to the middle of the screened interval and collecting the groundwater sample from that interval. The sample was collected from the top of the bailer using care to minimize volatilization. After collection of the sample, the VOA vials were labeled, and placed a cooler full of ice under chain-of-custody procedures. Field parameters are provided in Appendix D-7.

3.2.1.5 Phase 2 Existing Monitoring Well Groundwater Sample Analysis

All existing monitoring wells sampled were analyzed for VOCs by Method 8260. Select monitoring wells had been identified for the analysis of additional analytical parameters to evaluate if monitored natural attenuation (MNA) was occurring within the aquifer. In addition to the VOCs, the following MNA analyses were conducted on the selected monitoring wells:

- Methane/Ethane/Ethene by Microseeps SOP AM33Gx
- Total Kjedahl Nitrogen (TKN) by Method 351.1
- Dissolved Organic Carbon by SW-846 Method 9060
- Sulfate by Method 300.0
- Nitrite and Nitrate by Method 353.2
- Chloride by Method 300.0
- Total Dissolved Solids by Method 160.1
- Total Suspended Solids by Method 160.2
- Ammonia by Method 350.1
- Alkalinity by Method 310.1
- Ferrous Iron (Fe^{2+}) by Hach Method 8146
- Dissolved Oxygen (DO) by CHEMetrics Test Kits K-7501 or K-7512

The methodologies for the collection and analysis for DO and Ferrous Iron are provided below. The FWP and FSP approved by KDHE in November 1997 did not include the procedures for the collection and analyses of groundwater samples for Ferrous Iron and Dissolved Oxygen analyses utilizing Hach and Chemetrics field test kits, respectively. These methodologies were described in the KDHE-approved FWPA.

Ferrous Iron

The samples for Ferrous Iron were collected in a 60-mL plastic syringe with a Luer-lock valve device. The syringe was inserted through medical grade silicon tubing, which was installed in series with either the peristaltic or Kech pump discharge lines. The sample was collected during steady flow discharge and just prior to the completion of the well purging. The plunger of the syringe was drawn back to its full volume and any air bubbles were immediately purged. The valve was turned to the closed position, the needle removed, and rinsed with DI water. The needle was then

placed on the next syringe. The full syringe was immediately placed in a cooler for storage until transport to the field office. The syringe samples were transported to the field office after the sampling of each well cluster. The Ferrous iron samples were analyzed in the field office on the day of their collection.

Ferrous iron was analyzed in groundwater using Hach Method 8146 (1,10 phenanthroline method). The 1,10 phenanthroline indicator in the ferrous iron reagent of the ferrous iron Accuvac® ampoule reacts with ferrous iron in the sample to form an orange color in direct proportion to the iron concentration. Ferric iron does not react. Ferrous iron is measured on a Hach DR3000 spectrophotometer at a wavelength of 510 nanometers. The spectrophotometer must be zeroed prior to analysis. Zeroing was accomplished by placing approximately 10 mL of the field sample into a vial that accompanies the spectrophotometer and following the zeroing procedures in the instruction manual. Once the spectrophotometer was zeroed for the groundwater sample to be analyzed, approximately 40 mL of the groundwater sample was carefully placed into a small plastic cup to avoid oxidation. The water had to be of sufficient depth to allow the tip of the Accuvac® ampoule to remain submerged and draw the groundwater sample into the ampoule so that a reaction occurs. Fingerprints or dirt on the outside of the ampoule were removed with Kim-Wipes prior to the insertion of the ampoule into the spectrophotometer. The ferrous iron concentrations in the groundwater samples were displayed on the spectrophotometer in mg/L.

Dissolved Oxygen

Groundwater DO was measured in the field using either a Chemetrics field test Kit K-7501 (for DO concentrations less than 1 mg/L or K-7512 (for DO concentrations between 1 and 12 mg/L) at monitoring wells selected for MNA analysis. Which kit was utilized was dependent on the reading of the electronic DO meter prior to sample collection. The low level DO testing utilized the Rhodazine DTM method developed by Chemetrics. The moderate level DO testing utilized the Indigo Carmine Method ASTM D888-87. Both kits were required in the event of a reading of approximately 1 mg/L. The kits provided a check against the electronic DO meter used at all monitoring wells. The DO samples collected were measured immediately at the wellhead.

Both kits contained vacuum-sealed ampoules that had reagents that reacted to the dissolved oxygen. The color changes that occurred were directly proportional to the concentration of oxygen in the groundwater. The colored groundwater was visually compared to known standards (included with the kit) after mixing had occurred. For the less than 1 mg/L DO kit (K-7501), the color comparison was made within 30 seconds of mixing. For the 1 to 12 mg/L DO kit (K-7512), the color comparison had to be made no less than at least 2 minutes had transpired. The accuracy of the less than 1 mg/L test kit is approximately 0.15 mg/L. The precision of the DO measurement between 1 and 6 mg/L is 0.5 mg/L, and the precision of the DO measurement between 6 and 12 mg/L is 1 mg/L. The greatest precision was required

for values less than 1 mg/L in order to determine whether the tested groundwater environment was anaerobic or aerobic.

Groundwater was collected for DO analysis immediately before VOC sample collection. The discharge tube was fully submerged within a four-ounce container and the water was allowed to continuously overflow the top of the container. A vacuum-sealed ampoule from the appropriate sample kit was placed tip first into the sample container. The tip was pre-scored to break when pressure was applied to the upper end while the tip was pressed against the base of the container. After the ampoule filled, the contents of the ampoule were then inverted to allow proper mixing. The color comparison was then determined and the concentration reading recorded within the time frames discussed above.

Methane/Ethane/Ethene Analysis
Methane/Ethane/Ethene analyses were conducted by Microseeps, Inc. in Pittsburgh, Pennsylvania under Standard Operating Procedure AM33Gx.

All other groundwater samples from existing monitoring wells were submitted under documented chain-of-custody to Pace and analyzed for VOCs by EPA Method 8260. All methodologies were described in the KDHE-approved FWPA. Analytical results are discussed in Section 5.5.

3.2.2 Phase 2 Electrical Conductivity (EC) Logging

3.2.2.1 Electrical Conductance Logging Procedure

Prior to the installation of the new monitoring wells, EC logging was performed to determine the optimum screened interval for the wells. The EC logging was accomplished by hydraulically driving a conductance probe through the soil column to refusal or bedrock. The EC data were compared to lithologic data collected at three type locations in the Site. CDM had reviewed available borehole logs and field documentation for the WND series monitoring wells and found that they lacked sufficient detail to serve as type locations for EC logging. As a result, CDM conducted continuous lithologic sampling to bedrock at locations identified below. The drilling and sampling was conducted by standard hollow-stem auger techniques using split spoon samplers, 4-foot core barrels, or both, depending on site lithology. Cores were logged by an experienced CDM field geologist.

The locations were:

- At location NMW-01, 600 feet north of 37th Street on west side of Bridgeport Court
- At location NMW-31, northeast of the corner of 11th and Wabash
- At location NMW-47, on east side of North Washington Street approximately 1,250 feet south of East 26th Street

The EC logs generated at the three sites were considered standards and were used to interpret lithology based on EC results at each of the Phase 2 new monitoring well locations. Lithologic interpretations are annotated on the EC logs presented in Appendix E-2. Considering that the main goal of the EC investigation was to provide general data regarding lithological formation contacts, the annotated interpretations are generalized with respect to soil/rock classification. Possible secondary constituents within the soil formations (i.e. silt content within sand layers) were not differentiated.

3.2.2.2 Correlation of EC Logs with Type Borings and Existing Data

Three type boring locations (NMW-1, NMW-31, and NMW-47) were selected for the site. For each type boring locations, a Geoprobe soil boring was continuously sampled to allow for field observations of soil types and contact depths. An EC probe was then advanced adjacent to the soil boring. The general soil type and depth interval (i.e. clay, sand) for each type boring EC log was interpreted based on typical EC responses. The field observations and EC interpretations were then compared to establish guidelines for interpretation of EC logs to be advanced at non-type boring locations.

A comparison of type boring observations with corresponding EC logs is presented in Table 3-4. Although the WND logs lacked sufficient detail and/or depth to be used as type borings, a partial comparison between EC log WNC-5 and soil boring WND-5 is also included to provide a comparison of EC logs with existing information.

The difference between the observed depth of geologic formations in soil borings and on the EC logs is typically between 0 and 2 feet. Discrepancies greater than 2 feet generally were near the surface, or were questionable due to incomplete boring data (i.e. the sand/bottom of aquifer contact in NMW-47). The following general conditions were considered when determining site geology based on the type borings.

- The EC log responses are generally weaker for the first 4-5 feet of drilling.
- The typical conductivity of sands was 0 to 50 mS/m, with wet sands being slightly more conductive than dry sands.
- Conductivities greater than 50 mS/m were typically representative of cohesive soils (silts/clays) or shale.

The total depth of each boring registered on the EC log was compared to the actual probe depth at each location. The difference between the EC log readings and physical probe depth ranged from 0 to 0.5 percent.

EC log information in some borings may not be representative of actual site geology, either due to weak EC responses or subsurface bending/warping of the rod string. Based on the type boring correlation and a general comparison of EC log data to

existing data, these cases appear to be minimal. Comments regarding geoprobe depth discrepancies or weak EC readings are provided in Appendix E-3a.

3.2.3 New Monitoring Well and Water Level Well Installation, Groundwater Sampling, Groundwater Sampling Methods, and Sample Analysis

New Monitoring Well and Water Level Well Installation

The City proposed the installation of additional monitoring wells and water level wells as long-term groundwater observation points. The number of newly installed monitoring wells is as follows (the monitoring well prefix identification is included in parenthesis):

- Forty-one shallow and deep monitoring well clusters (NMW)
- Three deep monitoring wells offset to existing Union Pacific Railroad Facility shallow monitoring wells (NMW)
- Four deep monitoring wells offset to existing Coastal Refinery shallow monitoring wells (NMW)
- Three shallow replacement monitoring wells (WND)
- Nine deep monitoring wells offsetting existing shallow monitoring wells (WND)
- Five shallow and deep water level well clusters (NWL)
- Eight shallow water level wells (NWL)
- Eleven surface water level gauging points

The well locations are depicted on Figure 3-1.

The wells were installed utilizing Geoprobe technologies described in the KDHE-approved FSP. Shallow monitoring wells were constructed with 10-foot screens with approximately 2 to 3 feet of screen above the water table to allow for water table fluctuations. Approximate depth to water is 15 feet below ground surface (bgs) but can range from 10 to 20 feet bgs. Deep monitoring wells were generally constructed with 10-foot screened intervals. However, the deep well screen was reduced to approximately a 5-foot length in areas where a thin saturated zone would result in a screen interval overlap between shallow and deep monitoring well completions. KDHE's project manager was informed of proposed modifications to well screen lengths prior to installation.

The well casing was schedule-40 PVC with 1-inch outer diameter (OD) and 3/4-inch inner diameter (ID). The boring diameter was 2 ¼ inches. After probing to the targeted completion depth, the 1-inch OD PVC pipe with well screen and bottom cap

was lowered inside the steel probe rod. The well was left in place as the steel probe rods were slowly removed from the ground. Where hydrogeologic conditions permitted, sand was placed down the borehole opposite the screened interval to a height of 2 feet above the top of the well screen.

A 10-20 grade silica sand filter pack was poured into the space between the probe rod and the well casing while simultaneously retracting the probe rods from the ground. The filter pack was placed to approximately 2 feet above the top of the well screen and an annular seal of at least 2 feet of bentonite was placed above the sand pack. The remaining annular space was grouted with a neat cement-bentonite grout. The annulus above the filter pack was grouted using a Geoprobe Model GS-1000 grout machine capable of pumping grout slurries that meet KDHE well construction criteria (K.A.R. 28-30-2(k)). The grout was pumped via tremie pipe to approximately 1 foot bgs as the Geoprobe rods were slowly extracted.

Wells completed as flush-mounts had flush-mount wellhead completions encased in a water-resistant manhole. The manhole was enclosed in cement, which was domed or sloped away from the manhole cover to promote drainage. The casing of the monitoring well was sealed with an approved watertight, lockable monitoring well cap (Morrison 678XA or equivalent). Aboveground well completions had an industry-standard steel protective casing (stickup) installed over the well with a 2-foot by 2-foot concrete pad sloping away from the stickup. Depending upon the location, up to three cement-filled bollards were placed around the stickup well completion as additional protection.

Table 3-3b presents all new monitoring well and water level well completion data. Available well construction details for existing wells sampled or used for water level measurements during Phase 2 are included in Table 3-3a. The location of all new monitoring wells, water level wells, and electrical conductance locations are presented on Figure 3-1. Monitoring well development data for the new monitoring wells are included in Appendix D-4. The WWC-5 water well records filed with the KDHE Bureau of Water for the new monitoring wells are included in Appendix D-5.

New Monitoring Well Groundwater Sampling and Groundwater Sampling Methods
All new Phase 2 monitoring wells discussed in Section 3.2.2 were sampled utilizing the same groundwater sampling protocol and sampling methodology as used for the Phase 2 existing monitoring wells.

New Monitoring Well Groundwater Sample Analysis
As with the Phase 2 existing monitoring wells, all new Phase 2 groundwater monitoring well samples were submitted under documented chain-of-custody to Pace. Methane/Ethane/Ethene analysis was conducted by Microseeps, Inc. for the wells selected for MNA analysis. All methodologies were described in the KDHE-approved FSP and FWPA. Groundwater sample analytical results are discussed in Section 5.5.

3.2.4 Phase 2 Water Level Measurements

Two rounds of water level measurements were collected during the Phase 2 investigations. The first round of water levels was collected between March 19, 2001 and March 27, 2001 while the second round of water levels were collected between August 20, 2001 and August 23, 2001. UPRR wells were not gauged in March 2001 due to lack of property access. The August round of water levels included the UPRR and Coastal Derby facilities as well as four new water level wells installed in August 2001 to fill data gaps. Water levels were obtained from these wells prior to onset of the monitoring well sampling program. Plate 3-2 depicts the Phase 2 water level measurement network.

3.2.5 Surface Water and Sediment Sampling

Data from the surface water and sediment locations were evaluated to assess the impact of Site activities on the surface water bodies within the Site. Sixteen surface water and 12 sediment locations were scheduled to be sampled. Due to lack of flow at several of the surface water sampling locations, a total of nine surface water and 12 sediment samples were obtained on May 16, 2001. There was no flow present at surface water sample locations SW-01, SW-02, SW-03, SW-04, SW-05, SW-09, and SW-10 (these locations contained isolated pools of stagnant water or were found to be dry). Figure 3-2 depicts the locations of all surface water and sediment sampling locations within the Site.

Surface Water Sampling

Surface water samples were collected only after the collection of field parameters was complete. The field parameters collected were pH, Eh, temperature, conductivity, dissolved oxygen, and turbidity. Once the field parameters were collected and recorded, surface water samples were collected by submerging the appropriate laboratory-provided container below the surface of the water. Where the water was deep enough, the container was capped below the surface of the water to minimize volatilization. In the event the surface water location was not deep enough to submerge the containers for sample collection, a peristaltic pump was used to fill the containers. Sterile TYGON silicone tubing was threaded through the peristaltic pump and the surface water was collected in the appropriate containers from the pump discharge. The silicone tubing was then discarded. New silicone tubing was used each time this sampling method was employed. Upon collection, each container was labeled and placed in a cooler full of ice.

All surface water samples were submitted under documented chain-of-custody to Pace. All methodologies are described in the KDHE-approved FSP and FWPA. Section 5.1 provides the results of the analytical analyses conducted on each surface water sample collected. Surface water samples were analyzed for VOCs by Method 8260, SVOCs by Method 8270, pesticides/PCBs by Method 8081/8082, and/or total metals by Method 6010/7470, depending upon the specific analytical

requirements for each sampling location. The results and types of analyses performed for each surface water sample are summarized in Tables 5-1a through 5-1d.

Sediment Sampling
Sediment samples collected and submitted for VOCs were collected utilizing a clean, stainless steel trowel. The sample was collected from between two to four inches bgs. The sample was immediately placed in an appropriate laboratory supplied container, labeled, and placed in a cooler full of ice. Sediment samples collected for the other analyses were also collected with a clean, stainless steel trowel. These sediments were collected from the same location the VOC sample was collected from. Sediment was collected from at least two inches bgs and placed in a clean, stainless steel bowl. The sediments were then composited, placed in the appropriate laboratory-supplied containers, labeled, and placed in a cooler full of ice.

All sediment samples were submitted under documented chain-of-custody to Pace. All methodologies were described in the KDHE-approved FSP and FWPA. Figure 3-2 presents the surface water and sediment sampling locations. Section 5.1 provides the results of the analytical analyses conducted on each sediment sample collected. Sediment samples were analyzed for VOCs by Method 8260, SVOCs by Method 8270, pesticides/PCBs by Method 8081/8082, total metals by Method 6010/7471, and/or TPH by Method 8015M, depending upon the specific analytical requirements for each sampling location. The results and types of analyses performed for each sediment sample is summarized in Tables 5-2a through 5-2e.

3.2.6 Surface Soil and Subsurface Soil Sampling

With the exception of the investigations conducted at the former Golden Rule and Barnsdall Refineries (discussed further in Section 3.2.7), no source area surface or subsurface soil samples were collected.

Surface Soil Samples
Composite surface soil samples were collected on May 17, 2001 from three non-source areas in the Site for background soil data. These samples were to be used for comparison against future site-specific source area soil investigations. Each location was sampled for VOCs by Method 8260, SVOCs by Method 8270, pesticides/PCBs by Method 8081/8082, and total metals by Methods 6010/7471.

The portion of the sample to be analyzed for VOCs was collected from a central location at a depth of zero to six inches bgs, immediately placed in a laboratory-provided container, labeled, and placed in a cooler full of ice. Composite samples were collected from six locations which included the location sampled for VOCs. These six samples were collected using a clean, stainless steel trowel, placed in a clean stainless steel bowl, composited, placed in the appropriate laboratory supplied container, labeled, and packed in a cooler full or ice.

All surface soil samples were submitted under documented chain-of-custody to Pace. All methodologies were described in the KDHE-approved FSP and FWPA. Section 5.2 provides the results of the analytical analyses conducted on the surface soil samples collected.

Subsurface Soil Samples
Subsurface soil samples were collected for lithologic characterization and total organic carbon (TOC) analyses. With the exception of the sludge pit investigations, no other subsurface soil sampling was conducted with respect to contamination investigations. Lithologic information is provided in Section 5.2 as well as Appendix E-1 and Appendix E-2.

3.2.7 Indoor and Outdoor Air Quality Sampling

Nine indoor and two outdoor air quality sampling locations were sampled between August 23, 2001 and September 20, 2001. Table 3-5 summarizes the number of sample locations, number of samples, and the specific residences sampled. Figure 3-2 presents the indoor and outdoor sampling locations. One indoor and one outdoor air sample was collected from an elementary school while school was not in session. The identification of the specific residences/facility sampled was provided to KDHE at least three weeks prior to the sampling event. KDHE approved sampling at the requested residences/facility ten days prior to the onset of sampling.

The purpose of the indoor and outdoor air sampling was to identify potential impacts to residences overlying groundwater contaminant plumes under worst case conditions. To accomplish this, the air quality sampling was conducted in residences/facility overlying groundwater contaminant plumes with high concentrations of VOCs during the summer when barometric pressure was low. The sampling location in the residences was in the basement or in an inner room on the ground floor that has little activity and would therefore be representative of indoor air quality. The sampling location at the school was within a utility closet near the center of the building on the first floor.

SUMMA passivated stainless steel canisters were used to collect both the indoor and outdoor air samples. The pre-evacuated canisters were transported to the sample location. Each canister was fitted with a pressure gauge and the initial pressure was recorded along with the sample start times. All air sampling was conducted for no less than six hours. Upon completion of the air sampling, the canister valve was closed and a label was placed on the canister. The canister was then properly packaged and shipped to Pace Analytical Services, Inc. in Minneapolis, Minnesota for analysis of VOCs by Method TO-14. All methodologies were described in the KDHE-approved FSP and FWPA. All indoor and outdoor air sampling analytical results are discussed in Section 5-4.

3.2.8 Sludge Pit Investigations

The former Golden Rule and Barnsdall Refineries have been subject to investigations as early as the 1985 USGS investigations noted in Section 2 of the NIC Phase 1/1a TM. A limited surface soil, subsurface soil, and shallow groundwater sampling program was implemented at each facility to collect data for risk assessment purposes. Samples collected from the former Golden Rule Refinery Site are designated as GP10C and samples collected from the former Barnsdall Refinery Site are designated as GP10D. Aerial photos with the outlines of the former sludge pit locations and the Geoprobe sampling locations are provided in Figure 3-3 and Figure 3-4.

3.2.8.1 Sludge Pit Surface Soil Samples

The following paragraphs provide a discussion of the sludge pit surface soil samples, the sample collection methods, and the sample analyses for both the former Golden Rule Refinery site and the former Barnsdall Refinery site.

Former Golden Rule Refinery Site

A total of three surface soil samples were collected from the former Golden Rule Refinery Site between January 18, 2001 and January 20, 2001. One soil sample was collected from each of the three former sludge pits. These soil sample locations are depicted on Figure 3-3. Surface soil samples were collected and analyzed by Method 8260, Method 8270 (SVOCs), Methods 8081/8082 (pesticides/PCBs), Method 8015M (total petroleum hydrocarbons), and Method 6010/7471 (total metals). Three discreet samples were collected from sample locations spaced linearly 5 to 10 feet apart. These three samples were collected from the ground surface to a maximum depth of 6 inches using a clean, stainless steel trowel. The three discreet samples were placed in a clean, stainless steel bowl, composited, and placed in the appropriate laboratory-supplied container. The container was then labeled, packed in a cooler of ice, and submitted for analysis by Methods 8270, 8080, 8015M, and 6010/7471. The sample being analyzed for VOCs via Method 8260 was a discreet sample collected from only the center location. This sample was also collected with a clean, stainless steel trowel and placed immediately into a laboratory-supplied container taking care to minimize volatilization. The container was then labeled, packed in a cooler of ice, and submitted for analysis. All methodologies were described in the KDHE-approved FSP and FWPA. The only exception to the above sampling methodology was sample NIC-SSS-GP10C-03-0-0.5. The ground was frozen at this location and several attempts were made to collect 3 different samples for composition. However, this sample was collected as a discreet sample from one location. All surface soil samples were submitted under documented chain-of-custody to Pace for analysis. Analytical results are discussed in Section 5. 4.

Former Barnsdall Refinery Site

A total of five surface soil samples were collected at the former Barnsdall Refinery Site between January 18, 2001 and January 22, 2001. One soil sample was collected from each of the three former sludge pits. One surface soil sample was collected from a trench adjacent to sludge pit GP10D-03. This soil sample (NIC-SSS-GP10D-04) was

collected to characterize sludge that was observed along the seam of the cap material and the sludge pit. One surface soil sample was collected from a non-sludge pit location. This soil sample (NIC-SSS-GP10D-05-0-0.4) was collected to provide local background soil data. Figure 3-4 depicts the locations of the surface soil samples. All surface soil samples were collected, labeled, and packed in a cooler full of ice as discussed above for the former Golden Rule Refinery Site. All surface soil samples were submitted under documented chain-of-custody to Pace for analysis by Methods 8260, 8270, 8080, 8015M, and 6010/7471. Analytical results are discussed in Section 5.4.

3.2.8.2 Sludge Pit Subsurface Soil Samples

The primary purpose of the subsurface sludge pit sampling was to determine whether the sludge pits still contain petroleum hydrocarbon related materials, characterize remaining sludges, and determine whether the sludges are impacting the groundwater. A discussion of the sludge pit subsurface soil samples, the sample collection methods, and the sample analysis for both the former Golden Rule Refinery Site and the former Barnsdall Refinery Site is provided in the following paragraphs.

Former Golden Rule Refinery Site

A total of seven subsurface soil samples were collected from three borings located within the former Golden Rule Refinery Site on January 18, 2001 and January 19, 2001. Three of these subsurface soil samples were collected from boring GP10C-01, one was collected from boring GP10C-02, and three were collected from boring GP10C-03. Figure 3-3 depicts the three boring locations. All subsurface soil samples were collected and analyzed for Methods 8260, 8270, 8081/8082, 8015M, and 6010/7471 with the exception of sample NIC-SS-GP10C-03-14 which was collected and submitted for analysis via Methods 8270 and 8015M.

Subsurface soil sampling was conducted utilizing Geoprobe technologies to collect continuous soil samples from the surface to the top of the water table. Soil samples were collected from either a 4-foot sample interval depth or an interval with visually obvious petroleum hydrocarbon staining/product. The KDHE project manager on site approved utilizing visual inspection as a method of selecting sample collection intervals when there was obvious hydrocarbon staining or the presence of petroleum hydrocarbon free-product. Free-product or petroleum hydrocarbon stained soils were encountered at all sampling intervals in borings GP10C-01 and GP10C-03. When sufficient sample recovery was not achieved, the Geoprobe was advanced to the next interval. Due to insufficient sample recovery at GP10C-01-4 and GP10C-03-4.5, the Geoprobe was advanced to the next sampling interval in order to obtain sufficient sample volume to meet the analytical laboratory requirements for each sample. All soil samples were collected in 4-ounce laboratory supplied sample jars, labeled, and placed in a cooler of ice. Samples were submitted under documented chain-of-custody to Pace for analysis. With the exception of the noted KDHE-approved sampling modifications, all methodologies were described in the KDHE-approved

FSP and FWPA. The results of all subsurface soil samples collected are discussed in Section 5.4.

Former Barnsdall Refinery Site
A total of five subsurface soil samples were collected from three borings located within the former Barnsdall Refinery Site between January 18, 2001 and January 22, 2001. Two subsurface soil samples were collected from boring GP10D-01, one was collected from boring GP10D-02, and two were collected from boring GP10D-03. Figure 3-4 depicts the three boring locations. All subsurface soil samples submitted for analysis contained either petroleum hydrocarbon free-product, free-product saturated soil, petroleum hydrocarbon stained soil, or soil with petroleum hydrocarbon odor. Subsurface soil samples NIC-SS-GP10D-01-10 and NIC-SS-GP10D-02-10.5 were collected and analyzed by Methods 8260, 8270, 8081/8082, 8015M, and 6010/7471. The VOC sample NIC-SS-GP10D-01-10 was collected via Encore® sampler and analyzed by Method 5035. Sample NIC-SS-GP10D-01-15 was submitted for analysis via Method 8270, and 8015M. Soil sample NIC-SS-GP10D-03-8-10 was analyzed by Methods 8270, 8081/8082, 8015M-OA2, and total metals. Due to insufficient sample recovery, the Geoprobe was advanced to the next interval and sample NIC-SS-GP10D-03-10.5 was collected. The first portion of the sample collected was immediately placed in a laboratory-supplied container to minimize volatilization. The second portion was collected and also placed in a laboratory-supplied container. The samples were labeled, placed in a cooler of ice, and submitted under documented chain-of-custody to Pace for analysis by Methods 8260 and 8015-OA1.

Subsurface soil sampling was conducted as described for the former Golden Rule Refinery. With the exception of the noted KDHE-approved sampling modifications, all methodologies were described in the KDHE-approved FSP and FWPA. Analytical results for the subsurface soil samples are discussed in Section 5.4.

Lithologic descriptions were recorded by the onsite geologist at all Geoprobe subsurface soil sampling locations.

3.2.8.3 Sludge Pit Groundwater Samples

A discussion of the sludge pit groundwater samples, the groundwater sample collection methods, and the sample analysis for both the former Golden Rule Refinery Site and the former Barnsdall Refinery Site are provided in the following paragraphs.

Former Barnsdall Refinery Site
One groundwater sample was collected from each of the three former sludge pits within the former Barnsdall Refinery Site on January 18, 2001. Groundwater sample locations are presented on Figure 3-4. Groundwater samples were collected only after all surface and subsurface soil sampling had been completed. Groundwater samples were collected utilizing Geoprobe technologies. The Geoprobe was offset of approximately 2 to 3 feet from the original subsurface boring locations. Geoprobe

groundwater samples were collected by hydraulically advancing a 2-foot length of mill slotted steel screen to the selected sample collection interval. Upon reaching the sample collection interval, disposable 3/8-inch polyethylene tubing was inserted into the probe rods to the slotted screen and attached to a vacuum pump at the surface. Groundwater was drawn by vacuum until it cleared of significant fines and/or a minimum of one liter had been purged. The tubing was then pinched during flow and removed from the probe rods. Groundwater samples were then collected from the bottom of the tubing. All samples were collected into appropriate laboratory supplied containers, labeled, and placed in a cooler containing ice.

All groundwater samples were submitted under documented chain-of-custody to Pace and analyzed by Methods 8260, 8270, 8081/8082, 8015M, and 6010/7470. All methodologies were described in the KDHE-approved FSP and FWPA. Sludge pit groundwater analytical results are discussed in Section 5.4.

Former Golden Rule Refinery Site
One groundwater sample was collected from each of the three former sludge pits within the former Golden Rule Refinery Site between January 18, 2001 and January 22, 2001. Groundwater sample locations are presented on Figure 3-3. Groundwater samples were collected only after all surface and subsurface soil sampling had been completed. Groundwater samples were collected and analyzed by the same methods described for the former Barnsdall Refinery Site. All groundwater samples were submitted under documented chain-of-custody to Pace and analyzed by Methods 8260, 8270, 8081/8082, 8015M, and 6010/7470. All methodologies were described in the KDHE-approved FSP and FWPA. Sludge pit groundwater analytical results are discussed in Section 5.4.

3.3 Quality Control (QC) Field Samples

Field quality control (QC) sampling was conducted during both the Phase 1/1a and Phase 2 RI investigations. Field QC samples include field duplicate samples, decontamination rinsate blanks, travel blanks, and performance evaluation samples.

A summary of the Phase 1/1a and Phase 2 field QC samples is provided in Table 3-1 and Table 3-2, respectively, and is discussed in the following paragraphs. Field QC samples are further discussed in Section 6.2.

Phase 1
During the Phase 1/1a RI field investigations, a total of 32 field duplicates, 32 decontamination rinsate samples, 36 travel blanks, and 4 performance evaluation samples were collected.

Field duplicate samples were collected in the same manner as the collection of the original sample. The field duplicate is collected immediately after collection of the original sample. Decontamination rinsate blanks were collected from the rinsate water derived from decontamination of the sampling equipment. The travel blanks

are prepared at the laboratory with analyte-free water and are shipped to the field office with the sample bottles. Travel blanks are not opened in the field and are submitted only with samples being submitted and analyzed for VOCs. Performance evaluation samples are samples prepared independent of the laboratory with a known range of contaminant concentrations. The performance evaluation sample is shipped to the field office with the analytical results and is in turn, labeled, packed in a cooler of ice, and shipped to the laboratory as a regular sample for comparative analysis.

QC field samples were submitted under documented chain-of-custody to Pace for analysis. All methodologies are described in the KDHE-approved FSP and FWPA.

Phase 2
During the Phase 2 RI field investigations, a total of 35 field duplicates, 24 decontamination rinsate samples, 41 travel blanks, and 17 performance evaluation samples were collected.

Field duplicate samples, decontamination rinsate samples, travel blanks, and performance evaluation samples were all collected in the same manner as during the Phase 1/1a RI field investigations.

QC field samples were submitted under documented chain-of-custody to Pace for analysis. All methodologies are described in the KDHE-approved FSP and FWPA. All QC field samples were collected at the frequency described in the KDHE-approved FSP and FWPA.

3.4 References

Camp Dresser and McKee Inc. (CDM). 2004a (June 2004). *North Industrial Corridor (NIC) Site Remedial Investigation Report.*

CDM. 2004b (July 23, 2004). *Revised Work Plan for Investigation Activities at Suspect Source Areas in the NIC Site.*

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CDM. 1997c. *North Industrial Corridor Work Plan for RI/FS.*

CDM. 2000. *North Industrial Corridor Final Work Plan Addendum.*

Kansas Geological Survey. 2005. *Water Well Completion Records (WWC5) Database.* http://www.kgs.ku.edu/Magellan/WaterWell/.

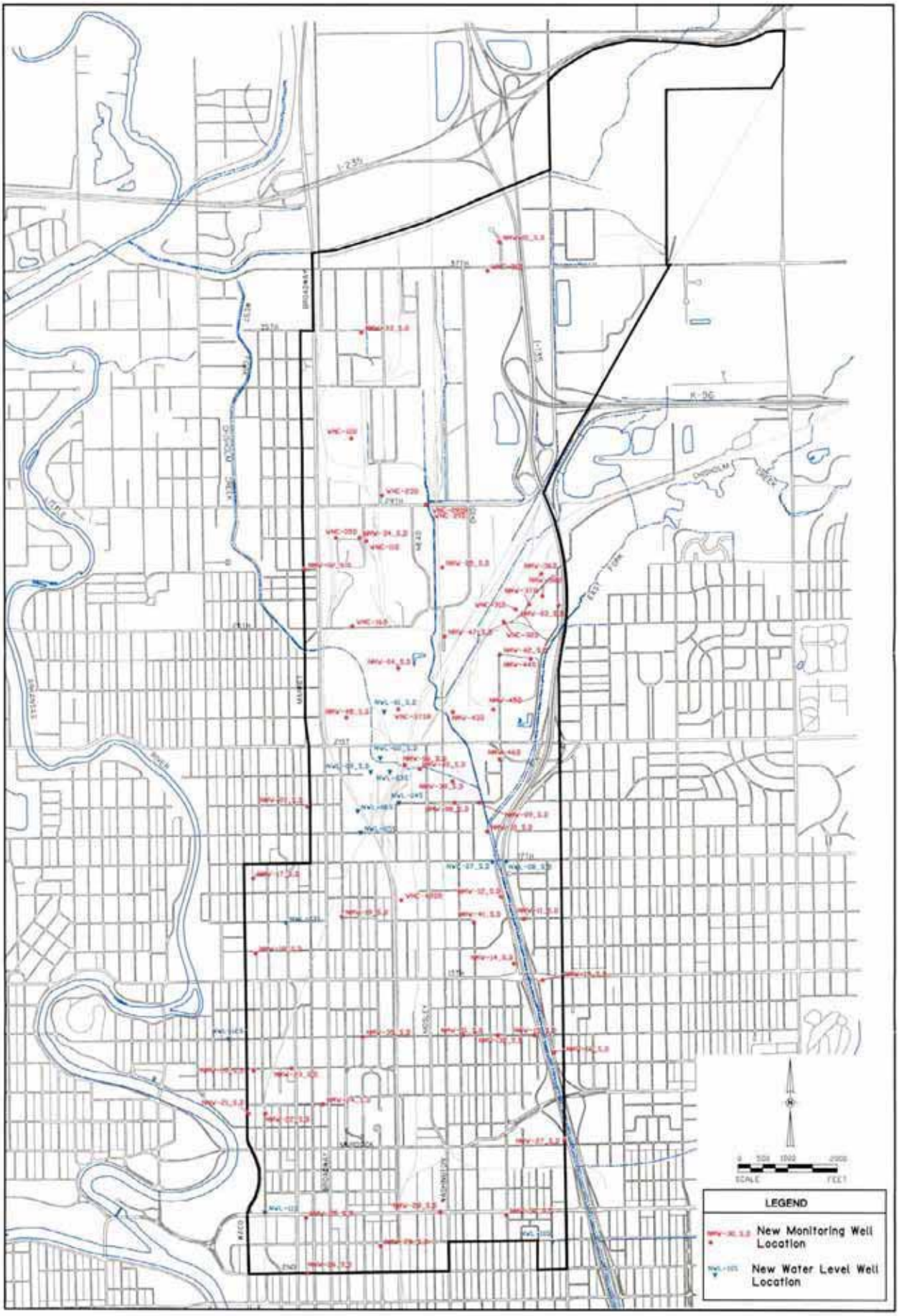


Figure 3-1
North Industrial Corridor (NIC) Site
Location of New Monitoring Wells

CDM

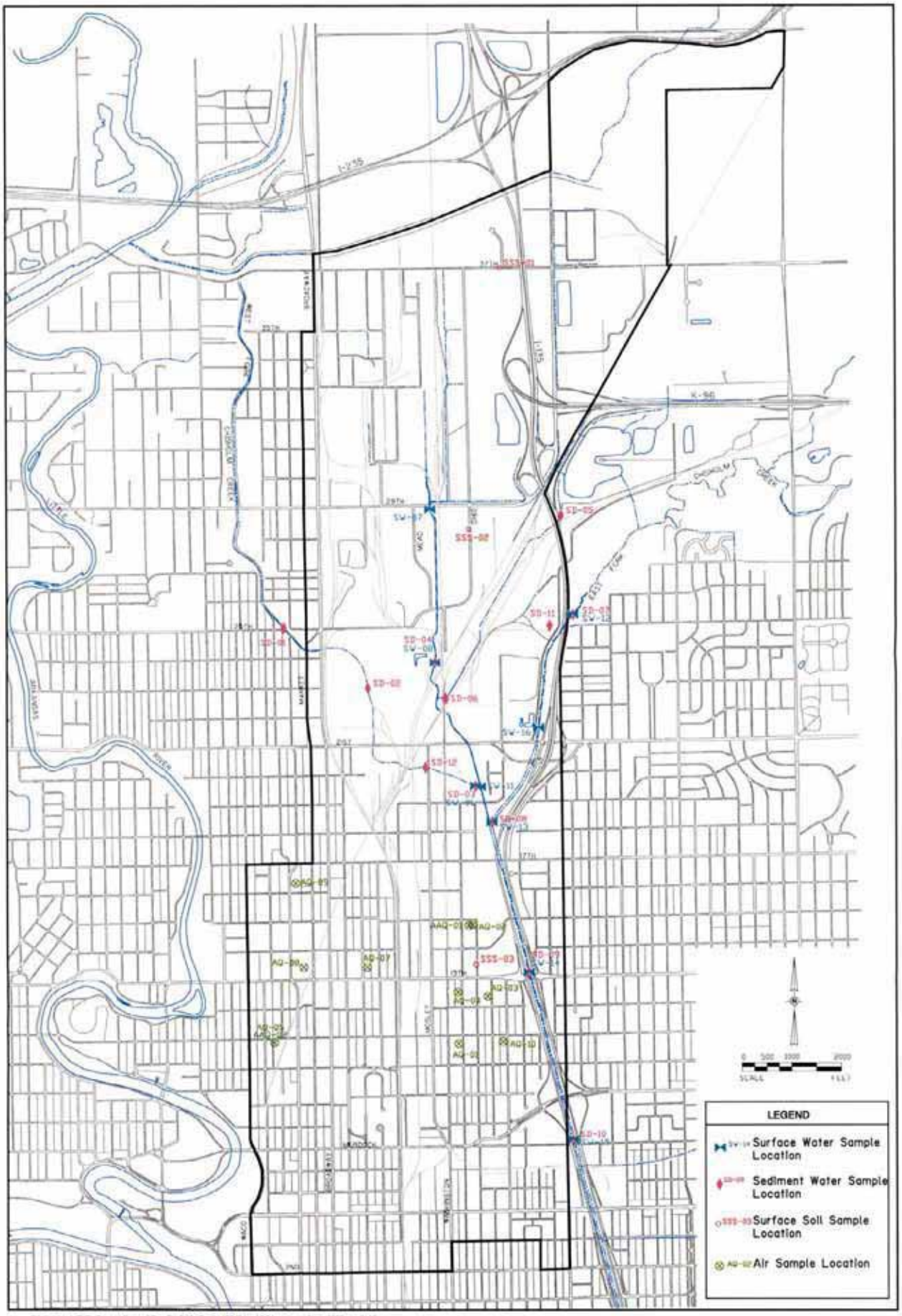
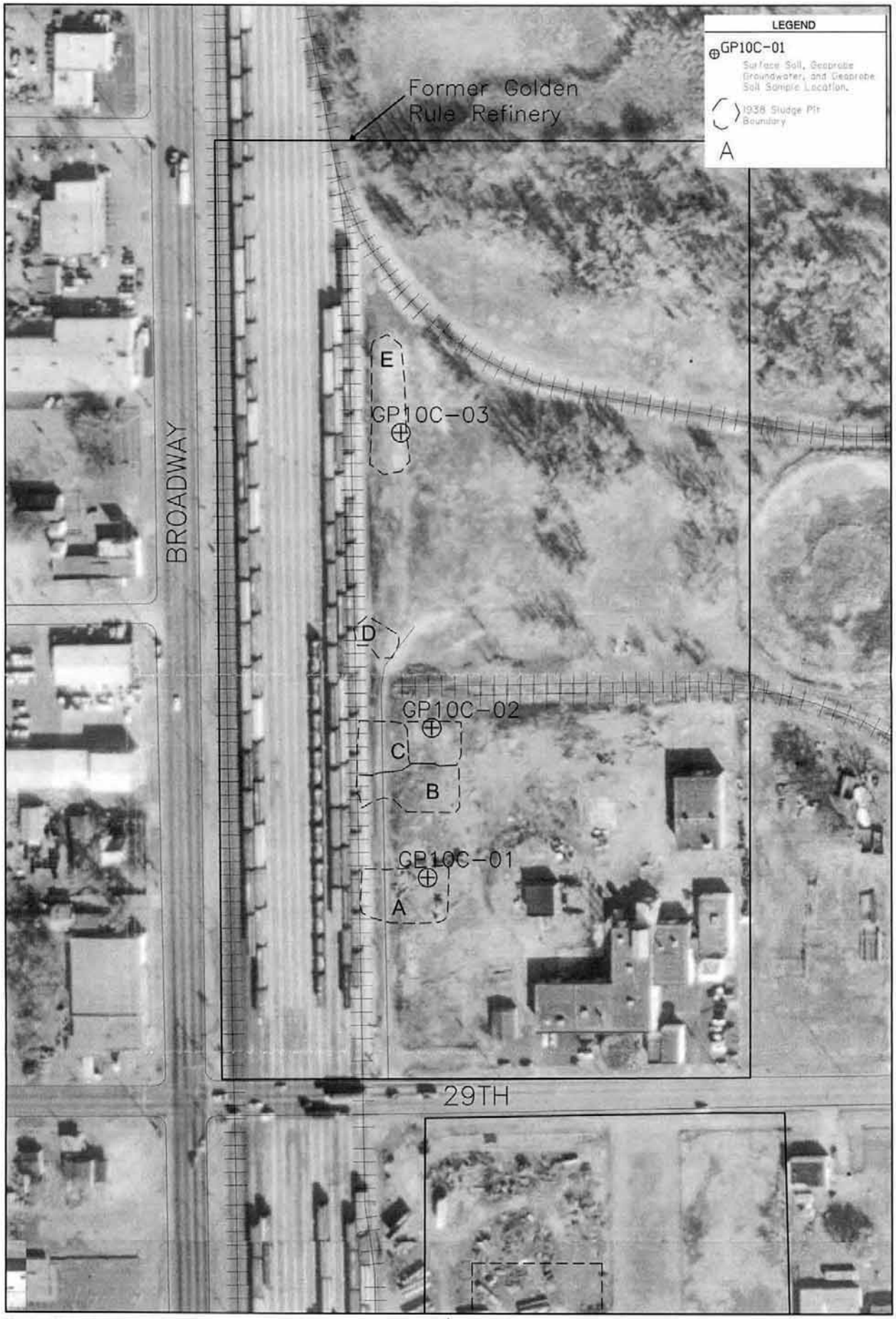


Figure 3-2
North Industrial Corridor (NIC) Site
Surface Water, Sediment, Surface Soil, and Air Sampling Locations

CDM



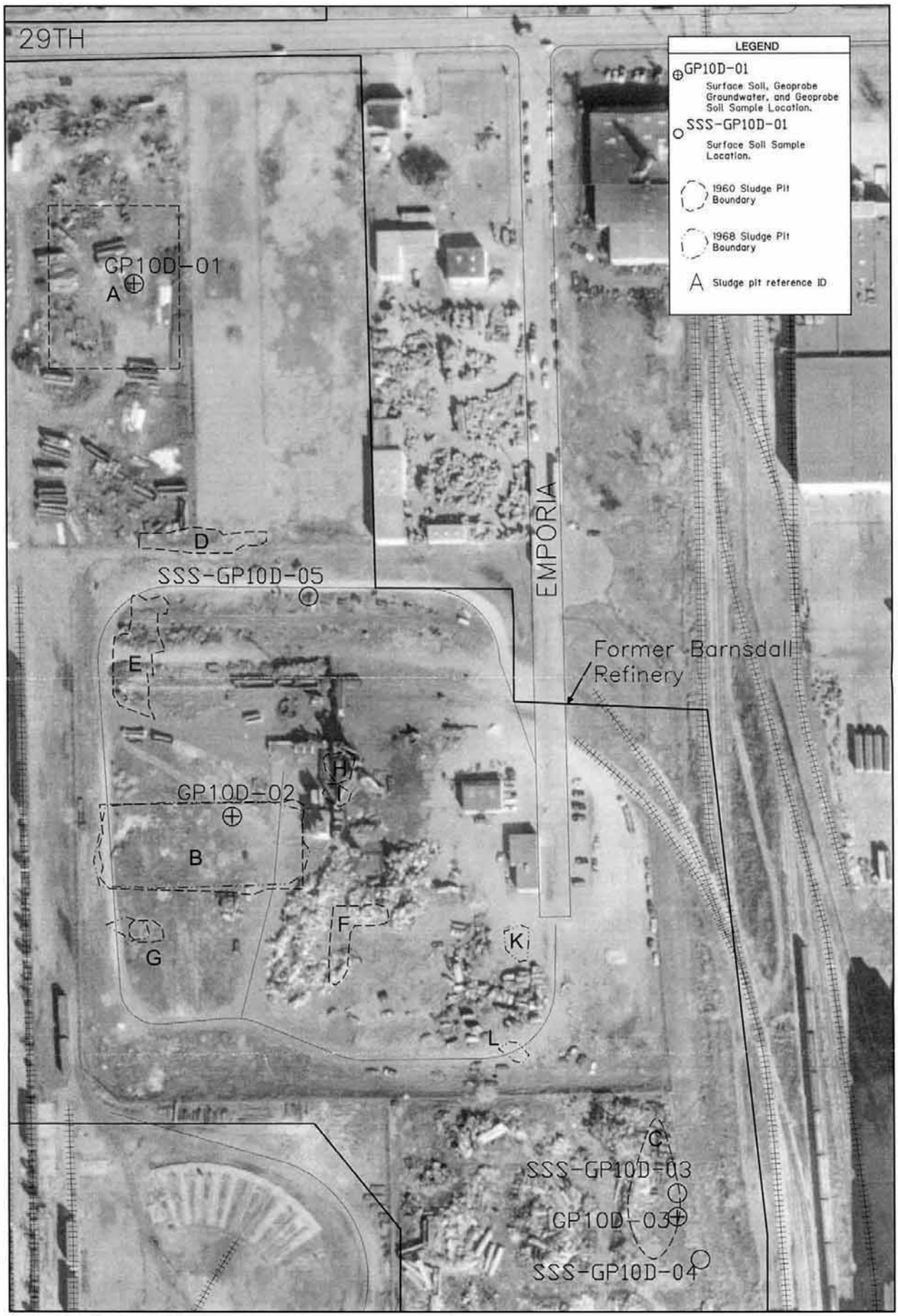
CDM

1" = 120'

60 0 120

N

Figure 3-3
North Industrial Corridor (NIC) Site
Former Golden Rule Refinery, Sludge Pit Sample Locations



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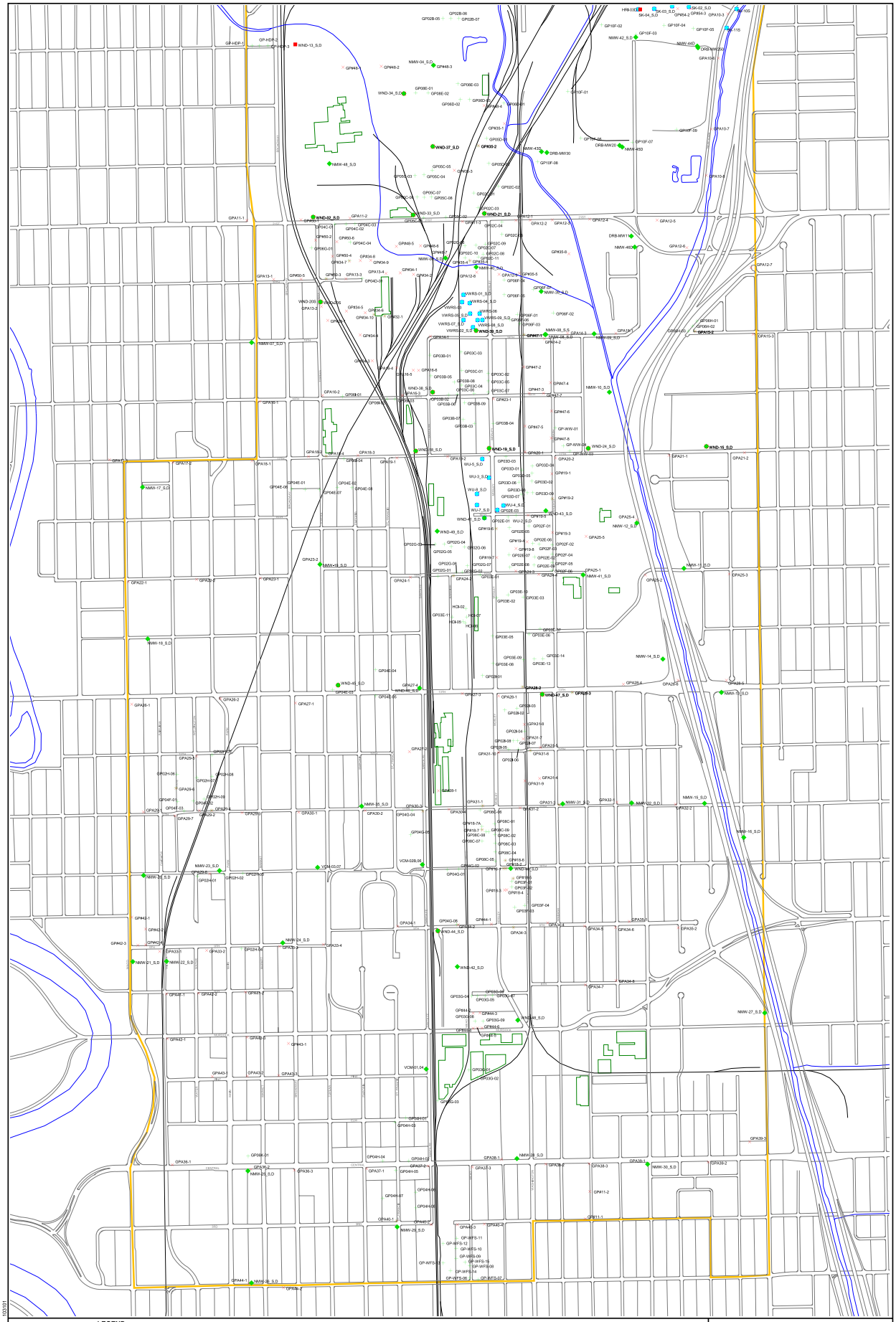
CDM

1" = 120'

60 0 120

N

Figure 3-4
North Industrial Corridor (NIC) Site
Former Barnsdall Refinery, Sludge Pit Sample Locations



LEGEND

- Phase 1 Monitoring Well
- Phase 2 Monitoring Well
- Phase 1 Geoprobe Location
- Phase 2 Geoprobe Location
- Phase 1 Other Well
- Phase 2 Other Well
- Site Boundary
- Railroad
- Water Body
- Road

N
W E
S

500 0 500 1000 1500 Feet

Scale: 1" = 500'

Plate 3-1B

RI (Phase 1 and 2) Groundwater Sampling Locations, South Area

North Industrial Corridor (NIC) Site, Wichita, Kansas

CDM

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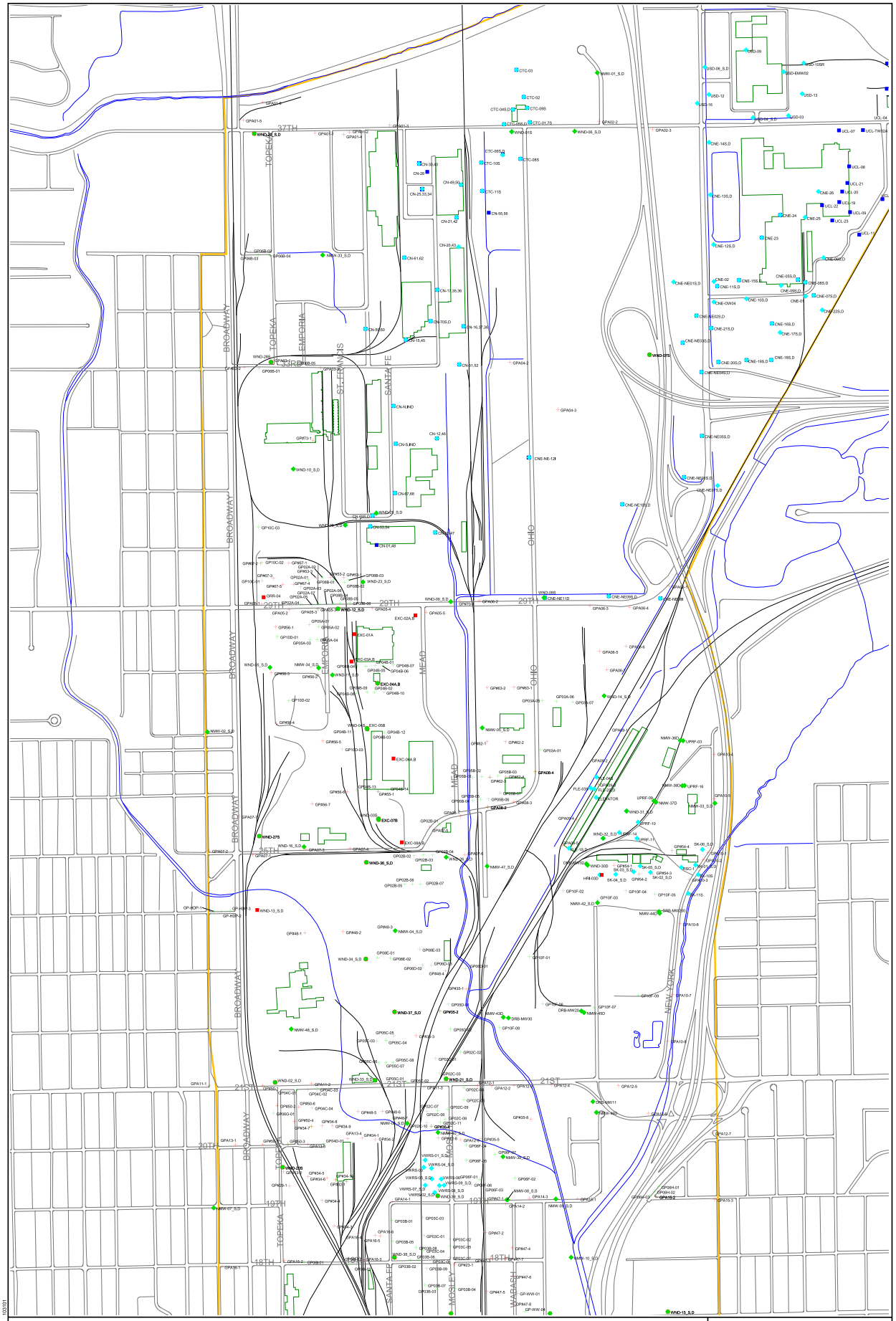

LEGEND

- Phase 1 Monitoring Well
- Phase 2 Monitoring Well
- Phase 1 Geoprobe Location
- Phase 2 Geoprobe Location
- Phase 1 Other Well
- Phase 2 Other Well
- Site Boundary
- Railroad
- Water Body
- Road

N
W E
S

500 0 500 1000 1500 Feet

Scale: 1" = 500'

Plate 3-1A

RI (Phase 1 and 2) Groundwater Sampling Locations, North Area

North Industrial Corridor (NIC) Site, Wichita, Kansas

CDM

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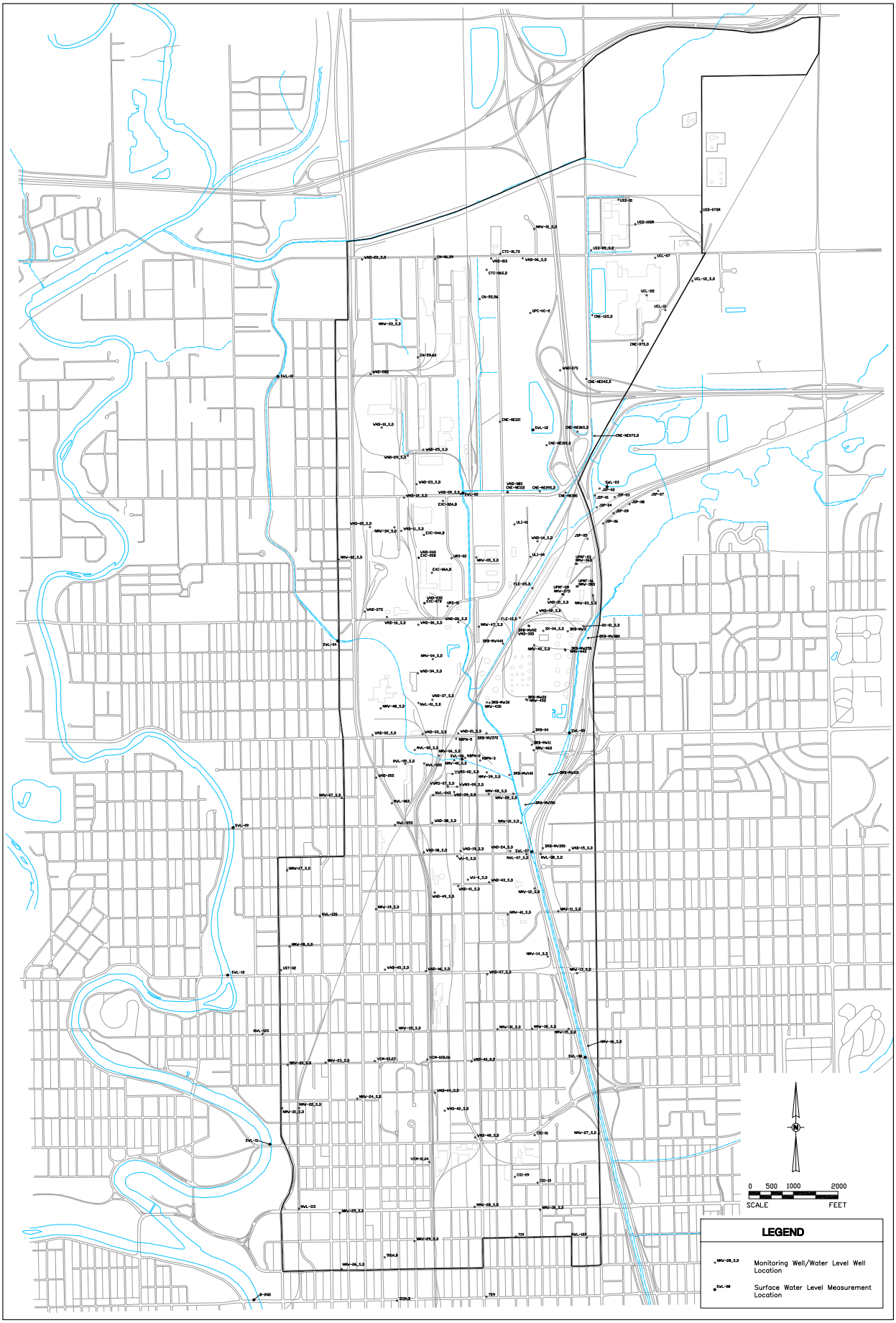

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Plate 3-2

North Industrial Corridor (NIC) Site

Phase 2 Water Level Measurement Network

CDM

Table 3-1
North Industrial Corridor (NIC) Site
Summary of Phase 1/1a Sampling Activities

Sample Location/ Sampling Activities	Number of Locations	Number of Samples	VOCs (8260)
Monitoring Wells			
Groundwater Sample	34	56	56
Duplicate Sample	---	3	3
Rinsate Sample	---	3	3
Travel Blank	---	4	4
Perform. Standard	---	4	4
Geoprobes			
Groundwater Sample	277	547	547
Duplicate Sample	---	29	29
Rinsate Sample	---	29	29
Travel Blank	---	32	32

VOCs = Volatile Organic Compounds
SVOCs = Semivolatile Organic Compounds
Pest = Pesticides
PCBs = Polychlorinated biphenyls
TAL = Toxic Analyte List
Diss. = Dissolved
TPH = Total Petroleum Hydrocarbons

Table 3-2
North Industrial Corridor (NIC) Site
Summary of Phase 2 Sampling Activities

Sample Location/ Sampling Activities	Number of Locations	Number of Samples	VOCs (TO-14)	VOCs (8260)	SVOCs (8270)	Pest/PCBs (8080)	Total TAL Metals	Diss. TAL Metals	TPH (OA1/OA2)
Monitoring Wells									
Groundwater Sample	109	206	---	190	16	14	15	15	13[a]
Duplicate Sample	---	10	---	10	1	1	1	1	---
Rinsate Sample	---	1	---	1	---	---	---	---	---
Travel Blank	---	10	---	10	---	---	---	---	---
Perform. Standard	---	5	---	5	---	---	---	---	---
Geoprobes									
Groundwater Sample	296	544	---	544	6	6	6	---	6
Duplicate Sample	---	22	---	22	1	1	1	---	1
Rinsate Sample	---	22	---	22	---	---	---	---	---
Travel Blank	---	30	---	30	---	---	---	---	---
Perform. Standard	---	11	---	11	---	---	---	---	---
Air									
Air	11	11	11	---	---	---	---	---	---
Duplicate Sample	1	1	1	---	---	---	---	---	---
Surface Water									
Surface water	9	9	---	9	8	6	7	---	---
Duplicate Sample	9	1	---	1	1	1	1	---	---
Travel Blank	9	1	---	1	---	---	---	---	---
Perform. Standard	9	1	---	1	---	---	---	---	---
Sediment									
Sediment	12	12	---	12	11	7	7	---	2
Duplicate Sample	---	1	---	1	1	---	---	---	1
Rinsate Sample	---	1	---	1	---	---	---	---	---
Soil									
Surface Soil	11	11	---	11	11	11	8	---	8
Subsurface Soil	18	35	---	6	6	6	6	---	6

VOCs = Volatile Organic Compounds
SVOCs = Semivolatile Organic Compounds
Pest = Pesticides
PCBs = Polychlorinated biphenyls
TAL = Toxic Analyte List
Diss. = Dissolved
TPH = Total Petroleum Hydrocarbons
[a] Includes 2 samples from EPA 8015 modified

Table 3-3a
North Industrial Corridor (NIC) Site
Existing Monitoring Well Construction Details

Station ID	Date Installed	Well Diam (in)	Total Depth (btoc)	Total Depth (bgs)	Depth Bottom of Screen	Depth Top of Screen	Screen Length	Sand Interval	Sand Thickness	Grout Interval	Completion Type	Stickup (ft)
CN-MW-01	7/27/1988	4	---	42.5	39	4	35	4-42.5	38.5	.5-4	Stickup	2
CN-MW-03	7/25/1988	4	---	41.5	39.8	7.8	32	6-41.5	35.5	3.5-6	Stickup	---
CN-MW-12	7/13/1989	4	---	46.5	46.5	31.5	15	30-46.5	16.5	28-30	Stickup	1.5
CN-MW-15	7/21/1989	4	---	45	45	30	15	28-45	17	26-28	Stickup	1.5
CN-MW-16	7/20/1989	4	---	45	45	30	15	28-45	17	26-28	Stickup	1.5
CN-MW-17	7/21/1989	4	---	48.5	48.5	33.5	15	32-48.5	16.5	30-32	Stickup	1.5
CN-MW-20	7/22/1989	4	---	47.5	47	31.5	15.5	30-47.5	17.5	28-30	Stickup	2.5
CN-MW-21	7/22/1989	4	---	45.5	45.5	30.5	15	28-45.5	17.5	26-28	---	---
CN-MW-25	7/17/1989	4	---	47	47	32	15	30-47	17	28-30	Stickup	1.5
CN-MW-30	7/19/1989	4	---	49	49	34	15	32-49	17	30-32	Stickup	1.5
CN-MW-34	---	---	23.55	22	22	12	10	---	---	---	---	---
CN-MW-36	---	---	23.6	22	22	12	10	---	---	---	---	---
CN-MW-38	8/1/1989	4	---	21	21	11	10	8.5-21	12.5	7.25-8.25	Stickup	1.5
CN-MW-40	12/13/1989	4	---	25	25	15	10	13-25	12	11-13	Stickup	---
CN-MW-42	12/27/1989	4	---	25	25	15	10	13-25	12	11-13	Stickup	---
CN-MW-43	12/16/1989	4	---	25	25	15	10	13-25	12	11-13	Stickup	---
CN-MW-45	12/16/1989	4	---	25	25	15	10	13-25	12	11-13	Stickup	---
CN-MW-46	12/14/1989	4	---	25	25	15	10	13-25	12	11-13	Stickup	---
CN-MW-47	12/18/1989	4	---	25	25	15	10	13-25	12	11-13	Stickup	---
CN-MW-48	12/15/1989	4	---	25	25	15	10	13-25	12	11-13	Stickup	---
CN-MW-49	12/27/1989	4	---	41	41	26	15	24-41	17	22-24	Flushmount	NA
CN-MW-50	12/27/1989	4	---	25	25	15	10	13-25	12	11-13	Flushmount	NA
CN-MW-51	12/13/1989	4	---	45	45	30	15	15-45	30	13-15	Stickup	---
CN-MW-52	12/14/1989	4	---	25	25	15	10	13-25	12	11-13	Stickup	---
CN-MW-53	12/18/1989	4	---	43	43	28	15	28-43	15	24-26	Flushmount	NA
CN-MW-54	12/18/1989	4	---	25	25	15	10	13-25	12	11-13	Flushmount	NA
CN-MW-55	4/4/1990	4	---	25	25	15	10	12-25	13	10-12	Stickup	---
CN-MW-56	4/4/1990	4	---	45	45	30	15	30-45	15	28-30	Stickup	---
CN-MW-59	4/5/1990	4	---	43	43	28	15	28-43	15	26-28	Stickup	---
CN-MW-60	4/5/1990	4	---	25	25	15	10	12-25	13	10-12	Stickup	---
CN-MW-61	4/9/1990	4	---	24	24	14	10	12-24	12	10-12	Stickup	---
CN-MW-62	4/6/1990	4	---	44.5	44.5	29.5	15	29.5-45	15.5	10-12	Stickup	---

Table 3-3a
North Industrial Corridor (NIC) Site
Existing Monitoring Well Construction Details

Station ID	Date Installed	Well Diam (in)	Total Depth (btoc)	Total Depth (bgs)	Depth Bottom of Screen	Depth Top of Screen	Screen Length	Sand Interval	Sand Thickness	Grout Interval	Completion Type	Stickup (ft)
CN-MW-67	12/19/1989	4	---	46.5	46.5	31.5	15	30-46.5	16.5	28-30	Flushmount	NA
CN-MW-68	12/19/1989	4	---	25	25	15	10	13-25	12	11-13	Flushmount	NA
CN-MW-69D	5/26/1992	2	---	41	41	31	10	26-41	15	0-26	Flushmount	NA
CN-MW-69S	5/26/1992	2	---	23	23	13	10	11-23	12	9-11	Flushmount	NA
CN-MW-70D	9/11/1992	2	---	44	44	34	10	30-44	14	0-30	Stickup	2
CN-MW-70S	9/11/1992	2	---	22	22	12	10	10-22	12	7.5-10	Stickup	2
CN-N.IND	8/29/1980	12	---	44	44	29	15	15-44	29	5-15	---	---
CN-RW-01	3/17/1988	10	---	44.7	44.7	4.7	40	2-44.7	42.7	1-2	Stickup	3
CN-RW-02	---	---	---	---	---	---	---	---	---	---	---	---
CN-S.IND	8/29/1980	12	---	44	44	29	15	15-44	29	5-15	---	---
CN-VEW-05D	6/19/1991	2	---	19	19	10	9	9.5-19	9.5	8-9.5	Flushmount	NA
CN-VEW-11D	6/21/1991	2	---	20	20	15	5	15-20	5	13-15	---	---
CN-VEW-13D	6/24/1991	2	---	19	19	14	5	13-19	6	4-13	---	---
CN-VEW-14D	6/21/1991	2	---	19.5	19.5	10.5	9	10-19.5	9.5	8.5-10	---	---
CN-VEW-18D	6/26/1991	2	---	19.5	19.5	14.5	5	13-19.5	6.5	11.5-13	---	---
CN-VEW-21D	6/27/1991	2	---	19.5	19.5	14.5	5	14-19.5	5.5	12.5-14	---	---
CN-VEW-22D	6/27/1991	2	---	19.5	19.5	14.5	5	14-19.5	5.5	12.5-14	---	---
CNE-MW-01	2/21/1990	2	---	36	36	16	10	14-36	22	12-14	Flushmount	NA
CNE-MW-02	2/19/1990	2	---	37	37	17	10	15-37	22	12-15	Flushmount	NA
CNE-MW-03	2/21/1990	2	---	39	39	14	10	12-39	27	10-12	Flushmount	NA
CNE-MW-04	1/30/1991	2	---	44	44	14	10	10.5-44	33.5	8.5-10.5	Flushmount	NA
CNE-MW-05	2/3/1991	2	---	32	32	27	10	26-32	18	23-26	Flushmount	NA
CNE-MW-06D	11/15/1992	2	---	38.5	37.5	27.5	10	18-38.5	20.5	14-18	Flushmount	NA
CNE-MW-06S	11/16/1992	2	---	25	25	14.5	10	12-35	23	9.5-12	Flushmount	NA
CNE-MW-07D	11/16/1992	2	---	37.5	37	27	10	24-37.5	13.5	14-24	Flushmount	NA
CNE-MW-07S	11/20/1992	2	---	23.5	23.5	13	10	9-23.5	14.5	5.5-9.0	Flushmount	NA
CNE-MW-08D	11/16/1992	2	---	39.2	38.75	28.75	10	24-40	16	18-24	Abandoned	---
CNE-MW-08S	11/20/1992	2	---	26.5	26.5	16	10	14-26.5	12.5	11-14	Abandoned	---
CNE-MW-09D	11/23/1992	2	---	39.5	39	29	10	26.5-39.5	13	22-26.5	Flushmount	NA
CNE-MW-09S	11/23/1992	2	---	28.5	28.5	18	10	14-28.5	14.5	10-14	Flushmount	NA
CNE-MW-10D	11/21/1992	2	---	41.7	41.25	31.25	10	24.6-45	20.5	1.5-24.5	Flushmount	NA
CNE-MW-10S	11/20/1992	2	---	29.5	29.5	19	10	15.9-29.5	13.6	12.6-15.9	Flushmount	NA

Table 3-3a
North Industrial Corridor (NIC) Site
Existing Monitoring Well Construction Details

Station ID	Date Installed	Well Diam (in)	Total Depth (btoc)	Total Depth (bgs)	Depth Bottom of Screen	Depth Top of Screen	Screen Length	Sand Interval	Sand Thickness	Grout Interval	Completion Type	Stickup (ft)
CNE-MW-11D	11/17/1992	2	---	38.16	37.5	27.5	10	24-38.16	15	20-23.75	Flushmount	NA
CNE-MW-11S	11/18/1992	2	---	24.41	25	13.65	10	10.7-24.5	13.8	7.5-10.7	Flushmount	NA
CNE-MW-12D	11/13/1992	2	---	42.37	32	42	10	23-45	22	18.5-23	Flushmount	NA
CNE-MW-12S	11/13/1992	2	---	25	25	14.5	10	12.25-25	12.75	9.23-12.25	Flushmount	NA
CNE-MW-13D	11/14/1992	2	---	42.25	42.25	32.25	10	28-45	17	24-28	Flushmount	NA
CNE-MW-13S	11/14/1992	2	---	28	28	17.5	10	15.5-28	12.5	13-15.5	Flushmount	NA
CNE-MW-14D	11/14/1992	2	---	34.5	34.5	24.5	10	19-39	20	14.5-19	Flushmount	NA
CNE-MW-14S	11/15/1992	2	---	24.7	24.7	12	10	14.2-24.7	10.5	9-12	Flushmount	NA
CNE-MW-15D	11/22/1992	2	---	38	38	28	10	24.5-45	20.5	13-24.5	Flushmount	NA
CNE-MW-15S	11/23/1992	2	---	27	27	17	10	17-27.5	10.5	11-14	Flushmount	NA
CNE-MW-16D	1/12/1994	2	---	38	38	28	10	24.4-39	14.6	2-24.4	Stick Up	---
CNE-MW-16S	1/12/1994	2	---	28.5	28.5	18.5	10	16-28.5	12.5	3-16	Stick Up	---
CNE-MW-17D	1/13/1994	2	---	38	38	27	10	24.3-38	13.7	1-24.3	Stick Up	---
CNE-MW-17S	1/14/1994	2	---	28	28	18	10	13-28	15	1-13	Stick Up	---
CNE-MW-18D	1/17/1994	2	---	39.5	39.5	29.5	10	27.8-40	12.2	2.5-27.8	Stick Up	---
CNE-MW-18S	1/18/1994	2	---	29	29	19	10	16-29.5	13.5	1-16	Stick Up	---
CNE-MW-19D	1/19/1994	2	---	37	37	27	10	25-37	12	1-25	Stick Up	---
CNE-MW-19S	1/20/1994	2	---	29	29	19	10	15.5-29.5	14	1-15.5	Stick Up	---
CNE-MW-20D	1/20/1994	2	---	37	37	25	10	22-37	19	2-22	Stick Up	---
CNE-MW-20S	1/21/1994	2	---	27	27	17	10	17-27	10	1-13	Stick Up	---
CNE-MW-21D	1/20/1994	2	---	36	36	26	10	23-36.5	24.5	2-23	Stick Up	---
CNE-MW-21S	1/20/1994	2	---	27	27	17	10	12-27.6	15.6	2-12	Stick Up	---
CNE-MW-22D	2/22/1995	2	---	39	38	28	10	25-39	14	3-25	Flushmount	NA
CNE-MW-22S	2/23/1995	2	---	27	26	16	10	13-27	14	3-13	Flushmount	NA
CNE-MW-23	7/7/1995	2	---	42	42	27	10	27-42	15	3-23.5	Flushmount	NA
CNE-MW-24	7/6/1995	2	---	33.5	33.5	23.5	10	23.5-33.5	10	3-17.2	Flushmount	NA
CNE-MW-25	7/5/1995	2	---	34	34	19	10	19-34	15	3-16.5	Flushmount	NA
CNE-MW-26	2/8/1996	2	---	26	26	16	10	16-26	10	10-13.5	Flushmount	NA
CNE-NE-01D	7/18/1995	2	---	36	35	25	10	21.5-35	13.5	3-21.5	Stick Up	---
CNE-NE-01S	7/19/1995	2	---	26.5	25	15	10	12.5-26.5	14	3-12.5	Stick Up	---
CNE-NE-02D	4/6/1995	2	---	39	38	28	10	23-38	15	3-23	Stick Up	---
CNE-NE-02S	4/7/1995	2	---	29	28	18	10	15.7-28	12.3	3-15.7	Stick Up	---

Table 3-3a
North Industrial Corridor (NIC) Site
Existing Monitoring Well Construction Details

Station ID	Date Installed	Well Diam (in)	Total Depth (btoc)	Total Depth (bgs)	Depth Bottom of Screen	Depth Top of Screen	Screen Length	Sand Interval	Sand Thickness	Grout Interval	Completion Type	Stickup (ft)
CNE-NE-03D	4/3/1995	2	---	37	36.5	26.5	10	23.5-37	13.5	3-23.5	Flushmount	NA
CNE-NE-03S	4/3/1995	2	---	27.5	27	17	10	14.5-27.5	13	3-14.5	Stick Up	---
CNE-NE-04D	2/23/1995	2	---	39	38	28	10	24-39	15	3-24	Flushmount	NA
CNE-NE-04S	2/27/1995	2	---	27	27	17	10	15-27	12	3-15	Flushmount	NA
CNE-NE-05D	2/25/1995	2	---	37	36.5	26.5	10	23-37	14	3-23	Flushmount	NA
CNE-NE-05S	3/1/1995	2	---	26	25.5	15.5	10	13.5-26	12.5	3-13.5	Flushmount	NA
CNE-NE-06D	3/6/1995	2	---	37	36	26	10	23-37	14	3-23	Flushmount	NA
CNE-NE-06S	3/8/1995	2	---	26	25	15	10	12-26	14	3-12	Flushmount	NA
CNE-NE-07D	3/3/1995	2	---	36.5	36	26	10	23-36.5	13.5	3-23	Flushmount	NA
CNE-NE-07S	3/395	2	---	26.5	26	16	10	16-26.5	10.5	3-14	Flushmount	NA
CNE-NE-08I	8/7/1996	2	---	42	37	22	15	17-42	25	3-17	Flushmount	NA
CNE-NE-09D	8/7/1996	2	---	42	40	30	10	24-42	18	3-24	Flushmount	NA
CNE-NE-09S	8/6/1996	2	---	27.5	17	27	10	14.5-27.5	13	3-14.5	Flushmount	NA
CNE-NE-10D	8/29/1996	2	---	38.5	38.5	28.5	10	23.5-38.5	15	2-23.5	Stickup	---
CNE-NE-10S	8/30/1996	2	---	27	25	15	10	11.5-27	15.5	2-11.5	Stickup	---
CNE-NE-11D	8/6/1996	2	---	41	40	30	10	25-41	16	3-25	Stickup	---
CNE-NE-12I	8/5/1996	2	---	42	36	21	15	17-42	25	3-17	Flushmount	NA
CNE-NE-OW-1D	1/14/1994	2	---	37	37	27	10	27-37.5	10.5	2-23	Flushmount	NA
CNE-NE-OW-2D	1/12/1994	2	---	36	36	26	10	21.9-36.5	14.6	1.5-21.9	Flushmount	NA
CNE-NE-OW-3D	1/18/1994	4-2	---	35.5	35.5	25.5	10	25.5-35.5	10	1.5-22.5	Flushmount	NA
CNE-OW-4	1/10/1994	2	---	28.75	28.75	18.75	10	13-29	16	3-13	Flushmount	NA
CSI-MW-01	---	2	---	17.5	17.5	7.5	10	5.5-17.5	12	3.5-5.5	Stickup	2.5
CSI-MW-07	12/19/1995	2	---	24	23	8	15	6-24	18	3-6	Stickup	2.5
CSI-MW-08	12/19/1995	2	---	24	23	8	15	6-24	18	3-6	Stickup	2.75
CSI-MW-09	12/20/1995	2	---	24	23	8	15	6-24	18	3-6	Stickup	2.5
CSI-MW-10	12/20/1995	2	---	24	23	8	15	6-24	18	3-6	Stickup	2.5
CTC-IND	---	---	---	47.75	47	29	18	---	---	---	Flushmount	NA
CTC-MW-01	8/24/1988	2	---	42	41	30	11	29-44	15	0-29	Stickup	---
CTC-MW-02	8/24/1988	2	---	44	44	30	14	23-44	21	0-23	Stickup	---
CTC-MW-03	8/25/1988	2	---	44	44	14	30	13-44	31	0-13	Stickup	---
CTC-MW-04D	4/23/1993	2	---	46	45.5	40.5	5	38-47	9	15-38	Stickup	---
CTC-MW-04S	4/23/1993	2	---	32	31.5	21.5	10	19-32	13	11-19	Stickup	---

Table 3-3a
North Industrial Corridor (NIC) Site
Existing Monitoring Well Construction Details

Station ID	Date Installed	Well Diam (in)	Total Depth (btoc)	Total Depth (bgs)	Depth Bottom of Screen	Depth Top of Screen	Screen Length	Sand Interval	Sand Thickness	Grout Interval	Completion Type	Stickup (ft)
CTC-MW-05D	4/22/1993	2	---	46	46	40	5	36-46	10	17-36	Flushmount	NA
CTC-MW-05S	4/23/1993	2	---	34	34	24	10	21-34	13	10-21	Flushmount	NA
CTC-MW-06D	2/4/1994	2	---	39.5	39	34	5	26-39.5	13.5	0-26	Stickup	---
CTC-MW-06S	2/3/1994	2	---	24.5	24	14	10	11-24	13	9-11	Stickup	---
CTC-MW-07S	2/3/1994	2	---	25	24.5	14.5	10	12-25	13	10-12	Stickup	---
CTC-MW-08S	2/4/1994	2	---	25	24.5	14.5	10	12-25	13	10-12	Stickup	---
CTC-MW-09S	2/5/1994	2	---	25.5	25	15	10	12.5-25.5	12.5	10.5-12.5	Flushmount	NA
CTC-MW-10S	2/4/1994	2	---	25.5	24.5	14.5	10	12-25.5	13.5	9.5-12	Stickup	---
CTC-MW-11S	2/4/1994	2	---	25	24.5	14.5	10	9.5-25	15	7-9.5	Stickup	---
DRB-08	---	---	---	---	21	10	11	---	---	---	---	---
DRB-MW-01	1/23/1984	4	---	19	19	11	8	8-19	11	0-8	Stickup	2
DRB-MW-02	1/23/1984	4	---	21	21	12	9	10-21	11	0-10	Stickup	2.5
DRB-MW-03	1/23/1984	4	---	20	20	11	9	9-20	11	0-9	Stickup	2
DRB-MW-04	---	---	---	---	22	13	9	---	---	---	---	---
DRB-MW-05	---	---	---	---	22	13	9	---	---	---	---	---
DRB-MW-06	---	---	---	---	19	10	9	---	---	---	---	---
DRB-MW-07	---	---	---	---	29.9	19.9	10	---	---	---	---	---
DRB-MW-08	---	---	---	---	28	18	10	---	---	---	---	---
DRB-MW-09	---	---	---	---	30.4	10.4	20	---	---	---	---	---
DRB-MW-10	---	---	---	---	26	6	20	---	---	---	---	---
DRB-MW-11	---	---	---	---	25	5	20	---	---	---	---	---
DRB-MW-110	---	---	---	---	30.5	10.5	20	---	---	---	---	---
DRB-MW-140	---	---	---	---	30.5	10.5	20	---	---	---	---	---
DRB-MW-150	---	---	---	---	30.5	10.5	20	---	---	---	---	---
DRB-MW-20	---	---	---	---	26	6	20	---	---	---	---	---
DRB-MW-250	8/20/1993	2	---	23	23	8	15	6-23	17	4-6	Stickup	2
DRB-MW-30	---	---	---	---	26	6	20	---	---	---	---	---
DRB-MW-350	---	---	---	---	30	15	15	---	---	---	---	---
DRB-MW-360	---	---	---	---	30	15	15	---	---	---	---	---
DRB-MW-370	---	---	---	---	29	14	15	---	---	---	---	---
DRB-MW-380	3/28/1995	2	---	29	29	9	20	8-29	21	---	---	---
DRB-MW-110	---	---	---	---	30.5	10.5	20	---	---	---	---	---

Table 3-3a
North Industrial Corridor (NIC) Site
Existing Monitoring Well Construction Details

Station ID	Date Installed	Well Diam (in)	Total Depth (btoc)	Total Depth (bgs)	Depth Bottom of Screen	Depth Top of Screen	Screen Length	Sand Interval	Sand Thickness	Grout Interval	Completion Type	Stickup (ft)
DRB-MW-120	---	---	---	---	30.5	10.5	20	---	---	---	---	---
DRB-MW-130	---	---	---	---	27	7	20	---	---	---	---	---
DRB-MW-140	---	---	---	---	30.5	10.5	20	---	---	---	---	---
DRB-MW-150	---	---	---	---	30.5	10.5	20	---	---	---	---	---
DRB-MW-190	---	---	---	---	29	14	15	---	---	---	---	---
DRB-MW-200	---	---	---	---	30	15	15	---	---	---	---	---
DRB-MW-210	---	---	---	---	29	14	15	---	---	---	---	---
DRB-MW-220	---	---	---	---	29	14	15	---	---	---	---	---
DRB-MW-230	---	---	---	---	27.5	12.5	15	---	---	---	---	---
DRB-MW-250	---	---	---	---	22.9	7.9	15	---	---	---	---	---
DRB-MW-260	---	---	---	---	27	17	20	---	---	---	---	---
DRB-MW-280	---	---	---	---	28.4	18.4	10	---	---	---	---	---
DRB-MW-290	---	---	---	---	30	15	15	---	---	---	---	---
DRB-MW-300	---	---	---	---	29.5	14.5	15	---	---	---	---	---
DRB-MW-320	---	---	---	---	29.5	14.5	15	---	---	---	---	---
DRB-MW-330	---	---	---	---	29.5	14.5	15	---	---	---	---	---
DRB-MW-340	---	---	---	---	26	16	10	---	---	---	---	---
DRB-MW-350	---	---	---	---	30	15	15	---	---	---	---	---
DRB-MW-360	---	---	---	---	30	15	15	---	---	---	---	---
DRB-MW-370	---	---	---	---	29	14	15	---	---	---	---	---
DRB-MW-380	---	---	---	---	29	9	20	---	---	---	---	---
DRB-MW-390	---	---	---	---	28	8	20	---	---	---	---	---
DRB-MW-400	---	---	---	---	30	10	20	---	---	---	---	---
DRB-MW-410	---	---	---	---	37	17	20	---	---	---	---	---
DRB-MW-420	---	---	---	---	28	8	20	---	---	---	---	---
DRB-MW-430	---	---	---	---	29	9	20	---	---	---	---	---
DRB-MW-440	---	---	---	---	28	8	20	---	---	---	---	---
DRB-MW-450	---	---	---	---	29	9	20	---	---	---	---	---
DRB-MW-460	---	---	---	---	28	8	20	---	---	---	---	---
DRB-MW-480	---	---	---	---	34.75	19.75	15	---	---	---	---	---
EXC-MW-01A	4/16/1991	2	---	24.41	23.81	13.81	10	11-24.41	13.41	8.5-11	Flushmount	NA
EXC-MW-02A	4/17/1991	2	---	20.26	19.66	9.66	10	8.1-20.26	12.16	6.1-8.1	Flushmount	NA

Table 3-3a
North Industrial Corridor (NIC) Site
Existing Monitoring Well Construction Details

Station ID	Date Installed	Well Diam (in)	Total Depth (btoc)	Total Depth (bgs)	Depth Bottom of Screen	Depth Top of Screen	Screen Length	Sand Interval	Sand Thickness	Grout Interval	Completion Type	Stickup (ft)
EXC-MW-02B	4/17/1991	2	---	46.5	42.91	37.91	5	13.51-46.01	32.5	1-13.51	Flushmount	NA
EXC-MW-03A	4/18/1991	2	---	22.5	21.44	11.44	10	7.44-22.04	14.6	6.94-7.44	Flushmount	NA
EXC-MW-03B	4/18/1991	2	---	43.5	42.68	37.68	5	11.08-43.28	32.2	2.08-11.08	Flushmount	NA
EXC-MW-04A	4/16/1991	2	---	23.48	22.88	12.88	10	10.48-23.48	13	7.28-10.48	Flushmount	NA
EXC-MW-04B	9/10/1991	2	---	49	47.23	42.23	5	16-49	33	1-16	Flushmount	NA
EXC-MW-05B	4/22/1991	2	---	48.3	47.7	42.7	5	35-48.3	13.3	1-35	Flushmount	NA
EXC-MW-06A	4/23/1991	2	---	18.41	17.81	7.81	10	6.91-18.41	11.5	4.91-6.91	Flushmount	NA
EXC-MW-06B	4/23/1991	2	---	44.33	43.73	38.73	5	33.9-44.33	10.43	1-33.9	Flushmount	NA
EXC-MW-07B	4/19/1991	2	---	42.73	42.13	37.13	5	32.73-42.73	10	1.33-32.73	Flushmount	NA
EXC-MW-08A	4/22/1991	2	---	18.65	18.05	8.05	10	6.05-18.65	12.6	5.55-6.05	Flushmount	NA
EXC-MW-08B	4/19/1991	2	---	47.3	46.7	41.7	5	35-47.3	12.3	1-35	Flushmount	NA
EXC-MW-09A	---	2	---	20.5	19.9	9.9	10	8.1-20.5	12.4	1-8.1	Flushmount	NA
EXC-MW-10A	---	2	---	19	18.4	8.4	10	6.5-19	12.5	1-6.5	Flushmount	NA
FLE-MW-01D	11/12/1999	2	---	42	42	32	10	28-42	14	26-28	Flushmount	NA
FLE-MW-01S	11/12/1999	2	---	25	25	15	10	12-25	13	9.5-12	Flushmount	NA
FLE-MW-02D	11/12/1999	2	---	45	41.5	31.5	10	21-45	24	20-21	Flushmount	NA
FLE-MW-02S	11/13/1999	2	---	24	24	14	10	11-24	13	9-11	Flushmount	NA
FLE-MW-03S	11/13/1999	2	---	24	24	14	10	11-24	13	6-11	Flushmount	NA
FLE-MW-04S	11/13/1999	2	---	25	24.5	14.5	10	12-25	13	7.5-12	Flushmount	NA
OHS-MW-01A	8/23/1994	2	---	22	21	11	10	10-22	12	8-10	Stickup	---
OHS-MW-02A	8/24/1994	2	---	20	20	10	10	9-20	11	7-9	Stickup	---
OHS-MW-03A	8/24/1994	2	---	20	19	9	10	8-19	11	6-8	Stickup	---
OHS-MW-04A	8/24/1994	2	---	20	20	10	10	9-20	11	7-9	Stickup	---
OHS-MW-05A	8/24/1994	2	---	20	18	8	10	6-20	14	2-6	Flushmount	NA
OHS-MW-06A	8/25/1994	2	---	20.5	20	10	10	9-20.5	11.5	7-9	Flushmount	NA
OHS-MW-07A	8/25/1994	2	---	20	19.5	9.5	10	8-20	12	6-8	Flushmount	NA
SK-MW-01D	10/23/2000	2	---	39	39	34	5	31.5-39	7.5	28-31.5	Flushmount	NA
SK-MW-01S	10/23/2000	2	---	27	27	12	15	9-27	18	6-9	Flushmount	NA
SK-MW-02D	10/24/2000	2	---	38	38	33	5	30-38	8	2-30	Flushmount	NA
SK-MW-02S	10/24/2000	2	---	26	26	11	15	8-26	18	2-8	Flushmount	NA
SK-MW-03D	10/24/2000	2	---	40	40	33	7	29-40	11	0-29	Flushmount	NA
SK-MW-03S	10/23/2000	2	---	25	25	10	15	7-25	18	3-7	Flushmount	NA

Table 3-3a
North Industrial Corridor (NIC) Site
Existing Monitoring Well Construction Details

Station ID	Date Installed	Well Diam (in)	Total Depth (btoc)	Total Depth (bgs)	Depth Bottom of Screen	Depth Top of Screen	Screen Length	Sand Interval	Sand Thickness	Grout Interval	Completion Type	Stickup (ft)
SK-MW-04S	10/23/2000	2	---	26	26	11	15	9-26	17	3-9	Flushmount	NA
SK-MW-05D	10/24/2000	2	---	37.5	37.5	32.5	5	29.5-37.5	8	0-29.5	Flushmount	NA
SK-MW-05S	10/24/2000	2	---	24	24	18	6	15-26	11	12-18	Flushmount	NA
SK-MW-06S	10/23/2000	2	---	27	27	12	15	10-27	17	4-10	Flushmount	NA
UCL-MW-01D	7/30/1991	2	---	29.5	29.2	24.5	4.7	23-29.5	6.5	20-23	Flushmount	NA
UCL-MW-01S	7/30/1991	2	---	20	19.6	15	4.6	13-20.5	7.5	11-13	Flushmount	NA
UCL-MW-02	7/31/1991	2	---	23	22.6	18	4.6	16-24	8	4-16	Flushmount	NA
UCL-MW-03	7/31/1991	2	---	20	19.6	15	4.6	13-21	8	11-13	Flushmount	NA
UCL-MW-04	3/5/1990	2	---	19.5	19.2	14.5	4.7	12.5-20	7.5	10-12.5	Flushmount	NA
UCL-MW-05	10/30/1992	4	---	27	25	5	20	4-27	23	2-4	Flushmount	NA
UCL-MW-06	10/30/1992	4	---	27.5	26	6	20	5-27.5	22.5	3-5	Flushmount	NA
UCL-MW-07	10/28/1992	2	---	30	27	7	20	6-30	24	4-6	Flushmount	NA
UCL-MW-08	10/28/1992	2	---	19.5	17.5	7.5	10	6.5-19.5	13	4.5-6.5	Flushmount	NA
UCL-MW-09	10/28/1992	2	---	35	33	13	20	12-35	23	9-12	Flushmount	NA
UCL-MW-10	10/31/1992	2	---	36	34.5	14.5	20	13.5-36	22.5	10.5-13.5	Flushmount	NA
UCL-MW-11	10/29/1992	2	---	28	26	6	20	5-28	23	2-5	Flushmount	NA
UCL-MW-12D	11/1/1992	2	---	45	43	33	10	32-45	13	13-32	Stickup	2.5
UCL-MW-12S	11/3/1992	2	---	21	19	9	10	7-21	14	4-7	Stickup	2.5
UCL-MW-13	11/3/1992	2	---	29.5	28	8	20	5.5-29.5	24	3.5-5.5	Flushmount	NA
UCL-MW-14	9/7/1994	2	---	27.8	25.1	11.3	13.8	7-27.8	20.8	4.5-7	Flushmount	NA
UCL-MW-15	9/7/1994	2	---	22.8	20	5	15	4-22.8	18.8	2-4	Flushmount	NA
UCL-MW-16	9/27/1994	2	---	62.7	59.8	50.3	9.5	48.5-62.7	14.2	45-48.5	Flushmount	NA
UCL-MW-17	9/21/1994	2	---	62.5	59.7	50.1	9.6	47.1-59.7	12.6	44-47.1	Flushmount	NA
UCL-MW-18	8/25/1994	2	---	21.4	18.6	4.1	14.5	3.4-21.4	18	1.7-3.4	Flushmount	NA
UCL-MW-19	6/29/1995	2	---	33.5	31	6	25	6-33.5	27.5	3-6	Flushmount	NA
UCL-MW-20	6/30/1995	2	---	24.5	21.4	6.4	15	4-24.5	20.5	1-4	Flushmount	NA
UCL-MW-21	6/29/1995	2	---	22.1	20	10	10	6.2-22.1	15.9	1.4-6.2	Flushmount	NA
UCL-MW-22	6/28/1995	2	---	24.4	23.5	8.5	15	6.3-24.4	18.1	4-6.3	Flushmount	NA
UCL-MW-23	6/28/1995	2	---	24.6	22	7	15	5-24.6	19.6	2-5	Flushmount	NA
UCL-R-01	9/20/1994	1	---	24.7	22.5	7.5	15	5-24.7	19.7	3-5	Flushmount	NA
UCL-R-02	9/27/1994	1	---	24.7	22.7	7.7	15	7-24.7	17.7	5-7	Flushmount	NA
UCL-R-03	9/22/1994	1	---	20.6	18.6	8.6	10	6.5-20.6	14.1	4.5-6.5	Flushmount	NA

Table 3-3a
North Industrial Corridor (NIC) Site
Existing Monitoring Well Construction Details

Station ID	Date Installed	Well Diam (in)	Total Depth (btoc)	Total Depth (bgs)	Depth Bottom of Screen	Depth Top of Screen	Screen Length	Sand Interval	Sand Thickness	Grout Interval	Completion Type	Stickup (ft)
UCL-R-04	9/21/1994	1	---	25.2	23.3	8.3	15	6.6-25.2	18.6	5-6.6	Flushmount	NA
UCL-R-05	9/15/1994	1	---	25.2	23.5	8.5	15	6.3-25.2	18.9	5-6.3	Flushmount	NA
UCL-R-06	9/14/1994	1	---	30.9	29	9	20	6.5-30.9	24.4	5-6.5	Flushmount	NA
UCL-R-07	9/11/1994	1	---	25	25	10	15	6-25	19	5-6	Flushmount	NA
UCL-R-08	9/11/1994	1	---	25.5	25.5	10.5	15	7-25.5	18.5	5-7	Flushmount	NA
UCL-R-09	9/10/1994	1	---	30.5	30.5	10.5	20	6.8-30.5	23.7	5.5-6.8	Flushmount	NA
UCL-R-10	9/12/1994	1	---	21.5	21.5	6.5	15	3.8-21.5	17.7	2.5-3.8	Flushmount	NA
UCL-R-11	9/14/1994	1	---	20.7	19.1	9.1	10	7-20.7	13.7	5-7	Flushmount	NA
UCL-R-12	9/20/1994	1	---	18.5	16.9	6.9	10	4-18.5	14.5	2-4	Flushmount	NA
UCL-TW-01	7/31/1991	2	---	26.7	26.2	21.9	4.3	19-27	8	1-19	Flushmount	NA
UCL-TW-02A	9/30/1994	2	---	23.2	19.9	10.3	9.6	8.2-24.2	16	6-8.2	Flushmount	NA
UCL-TW-03	8/1/1991	2	---	20	19.5	15.3	4.2	13-21	8	3-13	Flushmount	NA
UCL-TW-04	8/1/1991	2	---	17	16.5	12.25	4.25	10-17	7	3-10	Flushmount	NA
UPRF-MW-03	5/17/1994	---	---	25	24	14	10	12-25	13	10-12	Flushmount	NA
UPRF-MW-09	5/19/1994	---	---	25	24	14	10	12-25	13	10-12	Flushmount	NA
UPRF-MW-10	5/19/1994	---	---	25	23.5	13.5	10	12-25	13	9-12	Flushmount	NA
UPRF-MW-11	5/19/1994	---	---	25	24	14	10	11.5-25	13.5	9.5-11.5	Flushmount	NA
UPRF-MW-14	10/5/1994	---	---	24.6	24.6	14.6	10	13-24.6	11.6	11-13	Flushmount	NA
UPRF-MW-16	10/5/1994	---	---	25.3	25.3	15.3	10	13-25.3	12.3	11-13	Flushmount	NA
USD-MW-01	8/16/1995	2	---	29	27	6.5	21.5	4.5-29	24.5	2.5-4.5	Flushmount	NA
USD-MW-02D	8/17/1995	2	---	54.5	53.5	43	10.5	40-54.5	14.5	37-40	Flushmount	NA
USD-MW-02S	8/17/1995	2	---	22	22	7	15	4-22	18	2-4	Flushmount	NA
USD-MW-03	8/18/1995	2	---	28	28	5.5	22.5	2.5-28	25.5	0.5-2.5	Flushmount	NA
USD-MW-04D	8/18/1995	2	---	37	35	25	10	22-37	15	20-22	Flushmount	NA
USD-MW-04S	8/21/1995	2	---	23	23	8	15	6-23	17	4-6	Flushmount	NA
USD-MW-05D	8/21/1995	2	---	44	41.5	31.5	10	29-44	15	26-29	Flushmount	NA
USD-MW-05S	8/21/1995	2	---	24	24	9	15	7-24	17	4-7	Flushmount	NA
USD-MW-05SR	9/29/1998	2	---	29	29	24	5	21-29	8	19-21	Flushmount	NA
USD-MW-06D	8/22/1995	2	---	41	39	27	12	25-41	16	23-25	Flushmount	NA
USD-MW-06S	8/22/1995	2	---	22	22	7	15	5-22	17	3-5	Flushmount	NA
USD-MW-07D	8/23/1995	2	---	32	30	19	11	17-32	15	14-17	Flushmount	NA
USD-MW-07SR	9/29/1998	2	---	19.5	19	14	5	11-19.5	8.5	8-11	Flushmount	NA

Table 3-3a
North Industrial Corridor (NIC) Site
Existing Monitoring Well Construction Details

Station ID	Date Installed	Well Diam (in)	Total Depth (btoc)	Total Depth (bgs)	Depth Bottom of Screen	Depth Top of Screen	Screen Length	Sand Interval	Sand Thickness	Grout Interval	Completion Type	Stickup (ft)
USD-MW-08	8/24/1995	2	---	27	27	6	21	4-27	23	2-4	Flushmount	NA
USD-MW-09	8/24/1995	2	---	34	31.5	11.5	20	9-34	25	6-9	Flushmount	NA
USD-MW-10D	8/24/1995	2	---	37	35	25	10	23-37	14	21-23	Flushmount	NA
USD-MW-10SR	10/1/1998	2	---	19.5	17	12	5	9-17.5	8	5-9	Flushmount	NA
USD-MW-12	10/5/1998	---	---	---	---	---	---	---	---	---	---	---
USD-MW-13	2/3/1999	2	---	18.5	18.25	8.25	10	5.25-18.5	13.25	2.25-5.25	Flushmount	NA
USD-MW-16	2/6/1999	2	---	29	28.75	23.75	5	19.75-29	9.25	16.75-19.75	Flushmount	NA
VCM-MW-01	---	2	23.82	---	24	14	10	---	---	---	---	---
VCM-MW-02B	---	2	24	---	24	14	10	---	---	---	---	---
VCM-MW-03	---	2	24.02	---	24	14.4	9.6	---	---	---	---	---
VCM-MW-04	---	2	31	---	31	22	9	---	---	---	---	---
VCM-MW-06	---	2	38	---	38	28	10	---	---	---	---	---
VCM-MW-07	---	2	41	---	36	31	5	---	---	---	---	---
VWRS-MW-01D	6/11/1998	2	---	38.5	38.5	33.5	5	31.5-38.5	7	29.5-31.5	---	---
VWRS-MW-01S	6/10/1998	2	---	24	24	14	10	12-24	12	10-12	---	---
VWRS-MW-02D	6/6/1998	2	---	41	41	36	5	34-41	7	32-34	---	---
VWRS-MW-02S	6/6/1998	2	---	25	25	15	10	13-25	12	11-13	---	---
VWRS-MW-03	6/9/1998	2	---	19	19	18.25	1.75	16-19	3	14-16	---	---
VWRS-MW-04S	6/8/1998	2	---	19	19	9	10	7-19	12	5-7	---	---
VWRS-MW-04D	6/8/1998	2	---	36	36	31	5	29-36	7	27-29	---	---
VWRS-MW-05S	6/4/1998	2	---	20	20	10	10	8-20	12	6-8	---	---
VWRS-MW-05D	6/4/1998	2	---	35	35	30	5	28-35	7	26-28	---	---
VWRS-MW-06	6/3/1998	2	---	20	20	10	10	8-20	12	6-8	---	---
VWRS-MW-07D	6/5/1998	2	---	36.5	36.5	31.5	5	29.5-36.5	7	27.5-29.5	---	---
VWRS-MW-07S	6/9/1998	2	---	20.5	20.5	10.5	10	8.5-20.5	12	6.5-8.5	---	---
VWRS-MW-08D	6/2/1998	2	---	36.5	36.5	31.5	5	29.5-36.5	7	27.5-29.5	---	---
VWRS-MW-08S	6/2/1998	2	---	19	19	9	10	7-19	12	5-7	---	---
VWRS-MW-09S	6/3/1998	2	---	19	19	9	10	7-19	12	5-7	---	---
VWRS-MW-09D	10/1/1998	2	---	28	28	23	5	21-28	7	19-21	---	---
VWRS-MW-10D	10/1/1998	2	---	35	35	30	5	28-35	7	26-28	---	---
VWRS-MW-10S	10/1/1998	2	---	20	20	10	10	8-20	12	6-8	---	---
WND-01S	3/22/1991	2	---	27	26	16	10	14-27	13	11.5-14	Stickup	2

Table 3-3a
North Industrial Corridor (NIC) Site
Existing Monitoring Well Construction Details

Station ID	Date Installed	Well Diam (in)	Total Depth (btoc)	Total Depth (bgs)	Depth Bottom of Screen	Depth Top of Screen	Screen Length	Sand Interval	Sand Thickness	Grout Interval	Completion Type	Stickup (ft)
WND-02D	4/30/1992	2	---	43	43	33	10	28-43	15	--	Stickup	2
WND-02S	3/25/1991	2	---	25	24	14	10	13-25	12	11-13	Flushmount	NA
WND-03S	3/25/1991	2	---	25	22.5	13	9.5	12-25	13	10-12	Stickup	2
WND-04S	3/25/1991	2	---	22	22	12	10	10-22	12	7.5-10	Stickup	2
WND-05S	3/25/1991	2	---	22	22	12	10	10-22	12	8-10	Stickup	2
WND-06S	3/26/1991	2	---	26	26	16	10	14-26	12	11-14	Stickup	2
WND-07S	3/26/1991	2	---	24	24	14	10	12-24	12	9.5-12	Stickup	2
WND-08S	3/26/1991	2	---	22	22	12	10	10-22	12	7.5-10	Stickup	2
WND-09S	3/26/1991	2	---	22	22	12	10	10-22	12	7.5-10	Stickup	2
WND-10S	3/27/1991	2	---	20	20	10	10	8-20	12	5.5-8	Stickup	2
WND-11S	3/27/1991	2	---	21	21	11	10	9-21	12	6.5-9	Stickup	2
WND-12S	3/27/1991	2	---	22	21.5	11.5	10	9-22	13	6.5-9	Flushmount	NA
WND-13D	5/1/1992	2	---	39	39	29	10	25-39	14	--	Stickup	2
WND-13S	3/27/1991	2	---	22	22	12	10	9-22	13	6.5-9	Stickup	2
WND-14D	3/28/1991	2	---	47	46	36	10	32-47	15	14-32	Stickup	2
WND-14S	3/28/1991	2	---	22	22	12	10	10-22	12	7.5-10	Stickup	1
WND-15D	3/29/1991	2	---	32	32	21	11	19-32	13	14-19	Stickup	2
WND-15S	3/29/1991	2	---	22	22	12	10	10-22	12	8-10	Flushmount	NA
WND-16S	3/29/1991	2	---	22	21.5	11.5	10	10-22	12	7.5-10	Flushmount	NA
WND-18D	4/1/1991	2	---	46	45	34	11	32-46	14	15-32	Flushmount	NA
WND-18S	4/2/1991	2	---	25	25	15	10	13-25	12	10.5-13	Flushmount	NA
WND-19D	4/2/1991	2	---	35	35	25	10	23-35	12	15-23	Flushmount	NA
WND-19S	4/2/1991	2	---	22	22	12	10	10-22	12	7.5-10	Flushmount	NA
WND-20S	4/3/1991	2	---	24	24	14	10	12-24	12	9.5-12	Stickup	2
WND-21D	5/1/1992	2	---	37	37	27	10	25-37	12	--	Flushmount	NA
WND-21S	4/3/1991	2	---	22	22	12	10	10-22	12	7.5-10	Flushmount	NA
WND-22D	4/4/1991	2	---	44	44	34	10	30-44	14	15-30	Stickup	2
WND-22S	4/3/1991	2	---	22	22	12	10	10-22	12	7.5-10	Stickup	2
WND-23S	4/3/1991	2	---	21	21	11	10	9-21	12	6.5-9	Stickup	2
WND-24D	4/4/1991	2	---	32	32	22	10	20-32	12	14-20	Flushmount	NA
WND-24S	4/5/1991	2	---	22	22	12	10	10-22	12	7.5-10	Flushmount	NA
WND-25D	5/27/1992	2	---	43	43	33	10	28-43	15	0-28	---	---

Table 3-3a
North Industrial Corridor (NIC) Site
Existing Monitoring Well Construction Details

Station ID	Date Installed	Well Diam (in)	Total Depth (btoc)	Total Depth (bgs)	Depth Bottom of Screen	Depth Top of Screen	Screen Length	Sand Interval	Sand Thickness	Grout Interval	Completion Type	Stickup (ft)
WND-25S	4/5/1991	2	---	22	22	12	10	10-22	12	7.5-10	Stickup	2
WND-26D	4/16/1991	2	---	40	40	30	10	27-40	13	13-27	Stickup	2
WND-26S	4/15/1991	2	---	22.5	22.5	12	10.5	10-22.5	12.5	7.5-10	Stickup	2
WND-27S	5/9/1991	2	---	22	22	12	10	9-22	13	6.5-9	Stickup	2
WND-28S	5/9/1991	2	---	20	20	10	10	9-20	11	6.5-9	Stickup	2
WND-29D	8/11/1992	2	---	47	47	37	10	32-47	15	0-32	---	---
WND-29S	5/17/1991	2	---	24	23.5	13.5	10	11-24	13	8.5-11	Stickup	2
WND-30D	5/17/1991	2	---	37.5	37.5	26.5	11	25-37.5	12.5	15.5-25	Stickup	2
WND-31S	7/24/1991	2	---	24	24	14	10	12-24	12	9-12	Flushmount	NA
WND-32S	7/24/1991	2	---	24	24	14	10	12-24	12	9-12	Flushmount	NA
WND-33D	5/29/1992	2	---	40	40	30	10	25-40	15	--	Stickup	2
WND-33S	5/29/1992	2	---	25	25	15	10	13-25	12	11-13	Stickup	2
WND-34D	5/28/1992	2	---	42	42	32	10	28-42	14	--	Stickup	2
WND-34S	5/28/1992	2	---	25	25	15	10	13-25	12	11-13	Stickup	2
WND-36D	5/27/1992	2	---	43	43	33	10	28-43	15	--	Stickup	2
WND-36S	5/27/1992	2	---	25	25	15	10	13-25	12	11-13	Stickup	2
WND-38D	3/24/1993	2	---	40	40	25	15	23-40	17	22-23	Flushmount	NA
WND-38S	3/24/1993	2	---	18	18	8	10	7-18	11	6-7	Flushmount	NA
WND-39D	3/24/1993	2	---	39	39	24	15	22-39	17	21-22	Flushmount	NA
WND-39S	3/24/1993	2	---	18.5	18.5	8.5	10	7.5-18.5	11	5.5-7.5	Flushmount	NA
WND-40D	4/2/1993	2	---	32	32	17	15	15-32	17	14-15	Flushmount	NA
WND-40S	4/2/1993	2	---	18	18	8	10	7-18	11	6-7	Flushmount	NA
WND-41D	3/26/1993	2	---	35	35	20	15	17-35	18	16-17	Flushmount	NA
WND-41S	3/26/1993	2	---	18	18	8	10	7-18	11	5-7	---	---
WND-42D	3/26/1993	2	---	40	40	25	15	23-40	17	22-23	---	---
WND-42S	3/26/1993	2	---	20	20	10	10	8-20	12	7-8	---	---
WND-43D	3/26/1993	2	---	33	33	18	15	16-33	17	15-16	Flushmount	NA
WND-43S	3/26/1993	2	---	20	20	10	10	9-20	11	7-9	Flushmount	NA
WND-44D	3/26/1993	2	---	36	36	21	15	18-36	18	17-18	Flushmount	NA
WND-44S	3/26/1993	2	---	22	22	12	10	10-22	12	8-10	Flushmount	NA
WND-45D	3/30/1993	2	---	39	39	24	15	22-39	17	21-22	Flushmount	NA
WND-45S	3/30/1993	---	---	18	18	8	10	7-18	11	5-7	---	---

Table 3-3a
North Industrial Corridor (NIC) Site
Existing Monitoring Well Construction Details

Station ID	Date Installed	Well Diam (in)	Total Depth (btoc)	Total Depth (bgs)	Depth Bottom of Screen	Depth Top of Screen	Screen Length	Sand Interval	Sand Thickness	Grout Interval	Completion Type	Stickup (ft)
WND-46D	3/31/1993	2	---	41	41	26	15	23-41	18	22-23	---	---
WND-46S	3/31/1993	---	---	20	20	10	10	7.5-20	12.5	6-7.5	---	---
WND-47D	3/31/1993	2	---	33	33	18	15	17-33	16	16-17	Flushmount	NA
WND-47S	3/31/1993	2	---	19	19	9	10	7-19	12	6-7	---	---
WND-48D	4/2/1993	2	---	40	40	25	15	22-40	18	21-22	Flushmount	NA
WND-48S	4/2/1993	2	---	20	20	10	10	9-20	11	8-9	Flushmount	NA
WND-49D	4/2/1993	2	---	38	38	23	15	22-38	16	21-22	Flushmount	NA
WND-49S	4/2/1993	2	---	19	19	9	10	8-19	11	7-8	---	---
WU-MW-01	4/10/1990	2	---	23	23	13	10	11-23	12	0.5-11	Flushmount	NA
WU-MW-02D	9/13/1997	2	---	33.8	33	23.8	9.2	22-34	12	20-22	Flushmount	NA
WU-MW-02S	9/9/1997	2	---	17.4	16.8	7.5	9.3	6-17.4	11.4	4-6	Flushmount	NA
WU-MW-03D	9/13/1997	2	---	34.9	34.2	24.9	9.3	23-35	12	21-23	Flushmount	NA
WU-MW-03S	9/9/1997	2	---	17.6	17	7.8	9.2	6-17.6	11.6	4-6	Flushmount	NA
WU-MW-04D	9/13/1997	2	---	33.2	32.6	23	9.6	21-33.2	12.2	19-21	Flushmount	NA
WU-MW-04S	9/10/1997	2	---	18.2	17.6	8.3	9.3	7-18.2	11.2	5-7	Flushmount	NA
WU-MW-05D	9/12/1997	2	---	38.6	38.1	28.5	9.6	26-38.6	12.6	23-26	Flushmount	NA
WU-MW-05S	9/10/1997	2	---	18.2	17.6	8.3	9.3	7-18.2	11.2	5-7	Flushmount	NA
WU-MW-06D	9/14/1997	2	---	37.4	36.9	27.4	9.5	25-37.4	12.4	23-25	Flushmount	NA
WU-MW-06S	9/10/1997	2	---	18.4	17.9	8.3	9.6	7-18.4	11.4	5-7	Flushmount	NA
WU-MW-07D	9/13/1997	2	---	36.6	35.9	26.5	9.4	24-36.6	12.6	2.2-24	Flushmount	NA
WU-MW-07S	9/10/1997	2	---	18.4	17.9	8.3	9.6	7-18.4	11.4	5-7	Flushmount	NA
WU-MW-08D	9/12/1997	2	---	39.6	39.1	29.6	9.5	27-39.6	12.6	24-27	Flushmount	NA
WU-MW-08S	9/10/1997	2	---	18.5	17.9	8.6	9.3	7-18.5	11.5	5-7	Flushmount	NA
WU-MW-09D	9/12/1997	2	---	45	41.5	31.5	10	29-45	16	27-29	Flushmount	NA
WU-MW-09S	9/11/1997	2	---	18.4	17.9	8.4	9.5	7-18.4	11.4	5-7	Flushmount	NA

btoc = below top of casing --- = data not available
bgs = below ground surface NA = not applicable

Table 3-3b
North Industrial Corridor (NIC) Site
New Monitoring Well Completion Details

Well ID	Date of EC Log	EC Aquifer Base	Date of Well Installation	Completion DTW (feet bgs)	Geoprobe Refusal Depth (feet bgs)	Well Total Depth (feet bgs)	Well Base of Screen (feet bgs)	Well Top of Screen (feet bgs)	Screen Length (feet)	Sand (feet)	Grout (feet)	Well Complet. Type	Stickup +- (feet)	Well Completion Comments	Well Development Date
NMW-Series Monitoring Wells															
NMW-01S	12/19/00		01/22/01			27.8	27.5	15.3	12.2	13.5 - 27.8	0 - 13.5	Flush	-0.22		4/3/2001
NMW-01D	12/19/00	46.0	01/22/01	20.7	45.5	44.9	44.7	34.9	9.8	32.5 - 44.9	0 - 32.5	Flush	-0.23		4/3/2001
NMW-02S	12/20/00		01/22/01			20.9	20.6	10.8	9.8	9 - 20.9	0 - 9	Flush	-0.42		4/4/2001
NMW-02D	12/20/00	44.5	01/22/01	14.2	44.5	44.5	44.2	34.4	9.8	32.3 - 44.5	0 - 32.3	Flush	-0.23		4/4/2001
NMW-03S	12/20/00		01/22/01			23.8	23.5	13.7	9.8	11.8 - 23.8	0 - 11.75	Flush	-0.22		4/4/2001
NMW-03D	12/20/00	36.0	01/22/01	16.6	36.0	35.7	35.4	28.1	7.3	26.5 - 35.7	0 - 26.5	Flush	-0.35		4/4/2001
NMW-04S	02/07/01		03/14/01			19.3	19.0	9.2	9.8	7 - 19.0	0 - 7	Stickup	3.83		4/4/2001
NMW-04D	02/07/01	40.0	03/14/01	12.8	40.5	30.7	30.4	20.6	9.8	18.0 - 40.5	0 - 18.0	Stickup	3.75		4/4/2001
NMW-05S	02/06/01		02/13/01			20.4	20.2	10.3	9.9	7.6 - 20.5	1 - 7.6	Flush	-0.20		4/3/2001
NMW-05D	02/06/01	ND	02/13/01	13.6	45.0	43.5	43.3	33.5	9.8	30.5 - 43.5	1 - 30.5	Flush	-0.14		4/3/2001
NMW-06S	02/07/01		02/13/01			20.7	20.5	10.6	9.9	8.5 - 20.7	1 - 8.5	Stickup	3.74		4/3/2001
NMW-06D	02/07/01	38.0	02/13/01	14.0	38.5	38.1	37.9	28.1	9.8	26.0 - 38.1	1 - 26	Stickup	3.80		4/3/2001
NMW-07S	12/21/00		01/16/01			23.2	22.9	13.1	9.8	11 - 23.2	0 - 11	Flush	-0.27		3/27/2001
NMW-07D	12/21/00	44.5	01/16/01	17.2	44.5	45.0	44.7	37.4	7.3	35 - 45	0 - 35	Flush	-0.21		3/27/2001
NMW-08S	12/20/00		01/11/01			19.1	18.9	9.1	9.8	6.8 - 19.1	0 - 6.8	Flush	-0.26		4/2/2001
NMW-08D	12/20/00	32.5	01/11/01	12.5	33.0	32.7	32.5	22.7	9.8	21.0 - 32.7	0 - 21.0	Flush	-0.25		4/2/2001
NMW-09S	01/03/01		01/11/01			20.3	20.0	10.2	9.8	5 - 20.3	0 - 5	Flush	-0.25		4/2/2001
NMW-09D	01/03/01	31.5	01/11/01	12.4	33.0	31.6	31.3	21.5	9.8	19.5 - 31.6	0 - 19.5	Flush	-0.22		4/2/2001
NMW-10S	02/06/01		02/07/01			22.3	22.0	12.2	9.8	10 - 22.3	0 - 10	Flush	-0.27		4/2/2001
NMW-10D	02/06/01	38.0	02/07/01	15.4	34.5	33.8	33.5	23.7	9.8	21.5 - 33.8	0 - 21.5	Flush	-0.25		4/2/2001
NMW-11S	01/25/01		01/26/01			20.4	20.1	10.3	9.8	8 - 20.4	0 - 8	Flush	-0.15		4/2/2001
NMW-11D	01/25/01	29.5, 30.5	01/26/01	14.6	31.0	32.0	31.7	24.4	7.3	21 - 32	0 - 21	Flush	-0.43		4/2/2001
NMW-12S	12/21/00		01/16/01			18.3	18.0	10.7	7.3	8.5 - 18.3	0 - 8.5	Flush	-0.40		4/2/2001
NMW-12D	12/21/00	27.0	01/16/01	13.9	27.0	26.9	26.7	19.4	7.3	17.5 - 27	0 - 17.5	Flush	-0.19		4/2/2001
NMW-13S	12/21/00		01/16/01			20.0	19.7	9.9	9.8	8 - 20	0 - 8	Flush	-0.37		3/29/2001
NMW-13D	12/21/00	27.5	01/16/01	14.6	27.5	27.5	27.3	22.4	4.9	20 - 27.5	0 - 20	Flush	-0.28		3/29/2001
NMW-14S	12/21/00		01/10/01			17.1	16.8	7.0	9.8	5.0 - 17.0	0 - 5.0	Flush	-0.20		3/29/2001
NMW-14D	12/21/00	23.0	01/10/01	11.5	23.5	23.4	23.2	18.4	4.8	16.5 - 23.4	0 - 16.5	Flush	-0.25		3/29/2001
NMW-15S	12/21/00		01/09/01			20.2	19.9	10.1	9.8	7.5 - 20.2	0 - 7.5	Flush	-0.30		3/28/2001
NMW-15D	12/21/00	28.5	01/09/01	14.5	29.5	28.2	28.0	20.7	7.3	15.4 - 28.2	0 - 19.5	Flush	-0.17		3/28/2001
NMW-16S	12/21/00		01/16/01			20.0	19.7	9.9	9.8	8 - 20	0 - 8	Stickup	3.61		3/28/2001
NMW-16D	12/21/00	28.5	01/16/01	14.5	29.0	29.4	29.2	21.9	7.3	19 - 29.4	0 - 19	Stickup	3.76		3/28/2001
NMW-17S	01/03/01		01/11/01			24.9	24.6	14.8	9.8	12.7 - 24.9	0 - 12.7	Flush	-0.27		3/27/2001
NMW-17D	01/03/01	49.5	01/11/01	17.9	51.5	51.6	51.3	41.5	9.8	39 - 51.6	0 - 39	Flush	-0.35		3/27/2001
NMW-18S	01/03/01		01/10/01			22.0	21.7	11.9	9.8	8 - 22	0 - 8	Flush	-0.20		3/27/2001
NMW-18D	01/03/01	46.0	01/10/01	14.7	46.0	45.8	45.5	35.7	9.8	30 - 45.8	0 - 30	Flush	-0.28		3/27/2001
NMW-19S	01/03/01		01/11/01			20.9	20.6	10.8	9.8	9 - 20.9	0 - 9	Flush	-0.20		3/30/2001
NMW-19D	01/03/01	43.5	01/11/01	14.0	42.0	41.3	41.1	31.3	9.8	29.5 - 41.3	0 - 29.5	Flush	-0.30		3/30/2001
NMW-20S	01/03/01		01/11/01			23.2	22.9	13.1	9.8	9.0 - 23.2	0 - 9.0	Flush	-0.30		3/29/2001
NMW-20D	01/03/01	42.0	01/11/01	16.2	42.0	41.5	41.3	31.5	9.8	29 - 41.5	0 - 29	Flush	-0.18		3/29/2001
NMW-21S	01/03/01		01/23/01			22.9	22.6	12.8	9.8	10.5 - 23.0	0 - 10.5	Flush	-0.25		3/29/2001
NMW-21D	01/03/01	41.5	01/09/01	16.8	42.0	41.6	41.3	31.5	9.8	29.8 - 41.6	0 - 29.8	Flush	-0.24		3/29/2001

Table 3-3b
North Industrial Corridor (NIC) Site
New Monitoring Well Completion Details

Well ID	Date of EC Log	EC Aquifer Base	Date of Well Installation	Completion DTW (feet bgs)	Geoprobe Refusal Depth (feet bgs)	Well Total Depth (feet bgs)	Well Base of Screen (feet bgs)	Well Top of Screen (feet bgs)	Screen Length (feet)	Sand (feet)	Grout (feet)	Well Complet. Type	Stickup +- (feet)	Well Completion Comments	Well Development Date
NMW-22S	01/03/01		01/09/01			23.1	22.8	13.0	9.8	10.1 - 22.8	0 - 10.1	Flush	-0.30		3/29/2001
NMW-22D	01/03/01	40.0	01/09/01	15.3	40.0	40.2	39.9	30.1	9.8	27.5 - 40.2	0 - 27.5	Flush	-0.20		3/29/2001
NMW-23S	01/03/01		01/12/01			22.3	22.1	12.3	9.8	10 - 22.3	0 - 10	Flush	-0.20		3/29/2001
NMW-23D	01/03/01	40.5	01/11/01	14.3	41.0	39.9	39.6	29.8	9.8	23 - 39.9	0 - 23	Flush	-0.23		3/29/2001
NMW-24S	01/03/01		01/12/01			22.5	22.2	12.4	9.8	10 - 22.5	0 - 10	Flush	-0.34		3/27/2001
NMW-24D	01/03/01	36.5	01/12/01	14.3	37.0	35.8	35.5	25.7	9.8	24.7 - 35.8	0 - 24.7	Flush	-0.20		3/27/2001
NMW-25S	01/17/01		01/24/01			23.3	23.0	13.2	9.8	11 - 23.3	0 - 11	Flush	-0.27		3/30/2001
NMW-25D	01/17/01	40.0	01/24/01	15.7	40.0	39.9	39.6	29.8	9.8	28 - 39.9	0 - 28	Flush	-0.28		3/30/2001
NMW-26S	01/17/01		01/24/01			20.4	20.2	10.4	9.8	9 - 20.4	0 - 9	Flush	-0.30		3/30/2001
NMW-26D	01/17/01	32.5	01/24/01	15.9	32.5	32.3	32.0	22.2	9.8	20.5 - 32.3	0 - 20.5	Flush	-0.36		3/30/2001
NMW-27S	01/04/01		01/23/01			20.9	20.7	10.9	9.8	9 - 20.9	0 - 9	Flush	-0.25		3/30/2001
NMW-27D	01/04/01	ND	01/23/01	15.3	25.5	25.1	24.8	22.4	2.4	19 - 25.1	0 - 19	Flush	-0.22		3/30/2001
NMW-28S	01/04/01		01/10/01			22.1	21.8	12.0	9.8	10.0 - 22.1	0 - 10.0	Flush	-0.36		3/30/2001
NMW-28D	01/04/01	38.0	01/10/01	13.0	38.5	38.7	38.4	28.6	9.8	26.0 - 38.7	0 - 26.0	Flush	-0.20		3/30/2001
NMW-29S	01/04/01		01/23/01			22.2	21.9	12.1	9.8	10.0 - 22.2	0 - 10	Flush	-0.28		3/30/2001
NMW-29D	01/04/01	31.2	01/23/01	15.8	36.5	36.7	36.4	26.6	9.8	24 - 36.7	0 - 24	Flush	-0.38		3/30/2001
NMW-30S	01/04/01		01/08/01			18.7	18.4	8.6	9.8	3 - 18.7	0 - 3	Flush	-0.20		3/30/2001
NMW-30D	01/04/01	26.5	01/08/01	13.5	27.5	26.8	26.5	19.2	7.3	17.8 - 27	0 - 17.8	Flush	-0.30		3/30/2001
NMW-31S	12/19/00		01/08/01			20.1	18.7	8.8	9.9	6.8 - 18.7	0 - 6.8	Flush	-0.15		3/29/2001
NMW-31D	12/19/00	29.5	01/08/01	12.8	30.0	29.6	29.4	22.1	7.3	19 - 29.4	0 - 19	Flush	-0.25		3/29/2001
NMW-32S	01/03/01		01/09/01			20.0	19.7	9.9	9.8	7.2 - 20	0 - 7.2	Flush	-0.35		3/29/2001
NMW-32D	01/03/01	29.5	01/09/01	14.0	30.0	29.4	29.1	21.8	7.3	19.5 - 29.4	0 - 19.5	Flush	-0.20		3/29/2001
NMW-33S	01/04/01		01/10/01			22.7	22.4	12.6	9.8	9.8 - 22.7	0 - 9.8	Stickup	3.45		3/28/2001
NMW-33D	01/04/01	49.5	01/10/01	13.0	48.0	43.4	43.2	33.4	9.8	31 - 43.4	0 - 31	Stickup	3.50		3/28/2001
NMW-34S	01/25/01		02/06/01			20.0	19.7	9.9	9.8	8 - 20	0 - 8	Flush	-0.40		4/4/2001
NMW-34D	01/25/01	47.0	02/06/01	13.0	47.5	44.6	44.3	34.5	9.8	32 - 44.6	0 - 32	Flush	-0.30		4/4/2001
NMW-35S	01/03/01		01/09/01			20.0	19.7	9.9	9.8	7.0 - 20	0 - 7.0	Flush	-0.25		3/29/2001
NMW-35D	01/03/01	37.0	01/09/01	12.7	40.0	39.8	39.5	29.7	9.8	27.5 - 39.8	0 - 27.5	Flush	-0.23		3/29/2001
NMW-36D	06/20/01	37.5	07/06/01	16.5	38.0	37.6	37.4	30.1	7.3	27.9 - 37.6	1 - 27.9	Flush	-0.10	Nested w/ UPRF-03	7/27/2001
NMW-37D	07/03/01	38.0	07/03/01	ND	37.5	37.6	37.4	32.4	5.0	29.3 - 37.6	1 - 29.3	Flush	0.00	Nested w/ UPRF-09	7/27/2001
NMW-38D	06/20/01	40.0	07/06/01	ND	40.0	39.9	39.7	32.4	7.3	29.0 - 39.94	1 - 29.0	Flush	-0.15	Nested w/ UPRF-16	7/27/2001
NMW-39S	01/17/01		01/23/01			20.0	19.7	9.9	9.8	8 - 20	0 - 8	Flush	-0.32		4/2/2001
NMW-39D	01/17/01	36.0	01/23/01	13.3	36.5	36.5	36.2	26.4	9.8	24.5 - 36.5	0 - 24.5	Flush	-0.25		4/2/2001
NMW-40S	01/26/01		02/05/01			20.0	19.7	9.9	9.8	8 - 19.97	0 - 8	Stickup	3.94		4/3/2001
NMW-40D	01/26/01	57.0	02/05/01	13.3	38.5	37.3	37.0	27.2	9.8	25 - 37.3	0 - 25	Stickup	3.94		4/3/2001
NMW-41S	12/21/00		01/12/01			22.0	21.7	11.9	9.8	10 - 22	0 - 10	Flush	-0.30		4/2/2001
NMW-41D	12/21/00	33.0	01/12/01	12.5	33.5	33.4	33.1	23.3	9.8	21 - 34.4	0 - 21	Flush	-0.26		4/2/2001
NMW-42S	06/20/01		07/05/01	12.4		19.0	18.9	9.1	9.8	7.3 - 19.02	1 - 7.3	Stickup	3.00	Coastal-Derby	7/26/2001
NMW-42D	06/20/01	35.0	07/05/01	12.3	35.0	34.7	34.5	24.7	9.8	22.7 - 34.67	1 - 22.7	Stickup	3.30	Coastal-Derby	7/26/2001
NMW-43D	06/20/01	39.0	07/05/01	ND	39.0	38.8	38.5	28.7	9.8	26.5 - 38.77	1 - 26.5	Stickup	3.70	Nested w/ DRB-MW-30	7/25/2001
NMW-44D	07/02/01	38.0	07/05/01	ND	37.5	37.7	37.4	27.6	9.8	25.0 - 37.65	1 - 25.0	Stickup	3.40	Nested w/ DRB-MW-250	7/26/2001
NMW-45D	06/20/01	32.0	07/05/01	ND	32.0	32.1	31.9	27.0	4.9	24.9 - 32.12	1 - 24.9	Stickup	3.51	Nested w/ DRB-MW-20	7/26/2001
NMW-46D	06/20/01	34.0	07/06/01	ND	34.0	34.1	33.9	24.1	9.8	21.9 - 34.13	1 - 21.9	Flush	-0.30	Nested w/ DRB-MW-11	7/25/2001

Table 3-3b
North Industrial Corridor (NIC) Site
New Monitoring Well Completion Details

Well ID	Date of EC Log	EC Aquifer Base	Date of Well Installation	Completion DTW (feet bgs)	Geoprobe Refusal Depth (feet bgs)	Well Total Depth (feet bgs)	Well Base of Screen (feet bgs)	Well Top of Screen (feet bgs)	Screen Length (feet)	Sand (feet)	Grout (feet)	Well Complet. Type	Stickup +- (feet)	Well Completion Comments	Well Development Date
NMW-47S	12/19/00		01/12/01			20.3	20.0	10.2	9.8	7.8 - 20.3	0 - 7.8	Flush	-0.20		4/4/2001
NMW-47D	12/19/00	38.0	01/12/01	10.5	38.5	38.4	38.1	28.3	9.8	26.0 - 38.4	0 - 26.0	Flush	-0.23		4/4/2001
NMW-48S	06/20/01		07/06/01			20.2	20.0	10.2	9.8	3.9 - 20.21	1 - 3.9	Flush	-0.40		7/27/2001
NMW-48D	06/20/01	42.5	07/06/01	13.0	42.5	41.8	41.7	31.9	9.8	29.7 - 41.84	1 - 29.7	Flush	-0.35		7/27/2001
WNC-Series Monitoring Wells															
WNC-05D	01/25/01	65.5	02/07/01	12.1	46.0	45.9	45.6	35.8	9.8	34.0 - 45.9	0 - 34	Stickup	3.55	Nested w/ WND-5S	4/4/2001
WNC-06D	01/04/01	44.5	01/10/01	16.4	45.0	43.9	43.6	33.8	9.8	31.0 - 43.9	0 - 31	Flush	3.30	Nested w/ WND-6S	4/5/2001
WNC-09S	01/04/01		01/12/01			20.3	20.0	10.2	9.8	8.0 - 20.3	0 - 8.0	Flush	-0.30		3/28/2001
WNC-09D	01/04/01	43.0	01/12/01	12.6	43.0	42.5	42.2	32.4	9.8	30.1 - 42.5	0 - 30.1	Flush	-0.30		3/28/2001
WNC-10D	01/25/01	ND	02/05/01	13.5	46.0	46.5	46.2	36.4	9.8	34.0 - 46.5	0 - 34.0	Flush	-0.30	Nested w/ WND-10S	4/5/2001
WNC-11D	01/25/01	44.0	01/26/01	12.3	44.0	43.7	43.4	33.6	9.8	32 - 43.7	0 - 32	Flush	-0.24	Nested w/ WND-11S	3/28/2001
WNC-16D	01/04/01	47.5	01/23/01	13.1		45.3	45.0	35.2	9.8	32.5 - 45.3	0 - 32.5	Flush	-0.24	Nested w/ WND-16S	4/5/2001
WNC-23D	01/17/01	49.0	01/23/01	12.0	45.0	44.8	44.5	34.7	9.8	31.0 - 44.8	0 - 31.0	Stickup	3.55	Nested w/ WND-23S	3/28/2001
WNC-31D	07/03/01	39.5	07/03/01	ND	38.0	38.3	38.1	28.4	9.7	26.0 - 38.3	1 - 26.0	Flush	-0.30	UPRR	7/27/2001
WNC-32D	07/02/01	40.5	07/06/01	17.7	40.0	39.7	39.5	29.6	9.9	27.2 - 39.7	1 - 27.2	Flush	-0.15	UPRR	7/27/2001
WNC-35S	--	--	--	--	--	--	--	--	--	--	--	--	--	No Access on Treatco	--
WNC-37SR	02/07/01	39.0	02/12/01	13.1	ND	20.0	19.7	9.9	9.8	8 - 20	0 - 18	Stickup	3.58	Replacement for WND-37S	4/5/2001
WNC-49SR	02/08/01	40.0	03/14/01		ND	20.0	19.7	9.9	9.8	7.5 - 20.0	0 - 7.5	Flush	-0.23	Replacement for WND-49S	4/5/2001
NWL-Series Water Level Wells															
NWL-01S	02/07/01		02/12/01			21.3	21.0	11.2	9.8	6 - 21.3	0 - 6	Flush	-0.10		4/3/2001
NWL-01D	02/07/01	43.5	02/12/01	14.5	43.0	42.4	42.1	32.3	9.8	30.5 - 42.4	0 - 30.5	Flush	-0.10		4/3/2001
NWL-02S	02/08/01		02/12/01			20.3	20.0	10.2	9.8	8 - 20.3	0 - 8	Flush	-0.13		4/3/2001
NWL-02D	02/08/01	39.0	02/12/01	13.6	36.5	39.6	39.3	29.5	9.8	27 - 39.6	0 - 27	Flush	-0.12		4/3/2001
NWL-03S	02/08/01	42.0	02/12/01	14.6	ND	21.3	21.0	11.2	9.8	9 - 21.3	0 - 9	Flush	-0.20		4/3/2001
NWL-04S	12/20/00	37.0	01/12/01	9.6	ND	21.0	20.7	10.9	9.8	9 - 21	0 - 9	Flush	-0.24	DTW prechecked with Geoprobe rod to 18'	4/3/2001
NWL-05S	12/20/00	46.0	01/12/01	15.4	ND	23.0	22.8	13.0	9.8	11 - 23	0 - 11	Flush	-0.30		4/3/2001
NWL-06S	07/02/01	45.0	07/05/01	ND	ND	20.7	20.5	10.7	9.8	8.4 - 20.68	1 - 8.4	Stickup	3.40	Purina	--
NWL-07S	12/20/00		01/10/01			23.9	23.6	13.8	9.8	12 - 23.9	0 - 12	Flush	-0.20		4/2/2001
NWL-07D	12/20/00	34.0	01/10/01	14.6	34.0	33.4	33.2	28.3	4.9	27.0 - 33.4	0 - 27.0	Flush	-0.20		4/2/2001
NWL-08S	12/20/00		01/16/01			22.0	21.7	11.9	9.8	10 - 22	0 - 10	Flush	-0.20		4/2/2001
NWL-08D	12/20/00	33.0	01/16/01	16.3	33.5	33.3	33.1	28.2	4.9	26 - 33.3	0 - 26	Flush	-0.13		4/2/2001
NWL-09S	01/17/01		01/23/01			21.2	21.0	11.2	9.8	11 - 21.2	0 - 11	Flush	-0.23		4/3/2001
NWL-09D	01/17/01	43.0	01/23/01	13.5	43.0	42.9	42.6	32.8	9.8	31 - 42.9	0 - 31	Flush	-0.19		4/3/2001
NWL-10S	NC	NC	08/06/01	13.6	ND	NR	NR	NR	10.0	8.4 - TD	0.2 - 8.4	Flush	-0.37		NA
NWL-11S	NC	NC	08/06/01	15.3	ND	22.1	21.8	12.0	9.8	9.6 - 22.1	0.4 - 9.6	Flush	-0.30		NA
NWL-12S	NC	NC	08/06/01	13.4	ND	22.9	22.6	12.8	9.8	10.5 - 22.9	0.5 - 10.5	Flush	-0.33		NA
NWL-13S	NC	NC	08/06/01	13.9	ND	21.0	20.7	10.9	9.8	8.6 - 21.0	0.5 - 8.6	Flush	-0.40		NA

bgs = below ground surface
NC = EC Logging not conducted.
ND = Not determined.
NR = Not recorded.
DTW - Depth to water.

Sand = Added filter pack sand and natural formation sands
Grout = Portland /bentonite grout pumped in place via tremie.
Flush = Flush mount completion well (with manhole vault).
Stickup = Stickup completion well (with steel protective cover).

CDM

Table 3-4
Northern Industrial Corridor (NIC) Site
Type Boring Correlation
for EC Logging

Type Location	Formation	EC Log Conductivity (mS/m)	Observed Depth in Soil Boring (ft.)	Interpreted Depth from EC Log (ft.)	Difference (ft.)*	Comments
NMW-1	Dry Clay	40	0-1	0-2	-1	
	Moist Sandy Clay	20	1-5	2-6	-1	EC response typical for dry to moist sand
	Moist Clay	>200	5-17	6-17	0	
	Moist/Mottled Clay	150-200	17-24.5	17-23	-1.5	
	Wet Sand	20	23-48	23-46	2	
	Bedrock (Shale)	100-150	48	46	2	BL notes estimated contact w/ shale, could be 46-48'
NMW-31	Moist clay	40-80	0-6	0-7	-1	
	Moist Silty Sand	0	7-10	7-11.5	-1.5	Noted as moist silty/clayey sands on BL
	Moist Sand	10-30	10-16	11.5-15	1	
	Wet Sand	30	16-21	15-19	2	
	Wet Clay	80	21-21.5	19-20	1.5	
	Wet Sand	30	21.5-33	20-29	4	No BL recovery 22.5-33'- BR depth estimated
	Bedrock or Clay	90-130	----	29-32	---	
	Bedrock	120-160	33	32	1	
NMW-47	Dry Clay	30	0-4.5	0-2	2.5	
	Dry Sand	<5	4.5-5.5	2-3	2.5	
	Alt. Sand/Clay	50-140	5-8	3-8	0	
	Moist Clay	200+	7.5-10	8-10	0	
	Moist/Mottled Clay	70	10-12	10-13	-1	
	Wet Sand	30	12-38	13-38	0	
	Bedrock	100-150	38	38	0	
WNC-5/WND-5**	Silty Clay	80-120	0-5	0-7	-2	
	Silty Sand	0-30	5-23	7-64	N/A	End of WND-5 soil boring @ 23'.
	Bedrock	150	N/A	64	N/A	

Notes:
EC Log depths correlated to initial interpreation, based on typical EC log responses.
*= Difference between bottom of formation contact depth noted for boring log from corresponding formation depth noted on EC log
**= Not used as a type boring- inlcuded only for reference
BL= Boring Log
CL= Clay
SP= Poorly Graded Sand
SW= Well Graded Sand
BR= Bedrock

Table 3-5
North Industrial Corridor (NIC) Site
Air Sampling Locations

Sample Location	Address	Canister Serial Number	Date Sampled	Start Time	End Time	Duration (hours:min)	Start Pressure (inches Hg)	End Pressure (psi)	Lab End Pressure (inches Hg)	CDM Comments
AAQ-01	1539 N. Ohio	200	08/24/01	8:45	16:07	7:22	17	1	3.0	Sample Analyzed
AAQ-02	1142 N. Main	006	08/24/01	9:04	16:24	7:20	21	3	1.0	Sample Analyzed
AQ-01	1155 N. Wabash	152	09/19/01	9:48	16:24	6:36	27	7.5	7.0	Sample Analyzed
AQ-02	1539 N. Ohio	144	08/24/01	8:35	16:01	7:26	16.5	1	3.75	Sample Analyzed
AQ-02 DUP		212	08/24/01	8:39	16:02	7:23	17	3	1.5	Sample Analyzed
AQ-03	1319 N. Indiana	177	08/23/01	9:21	15:51	6:30	22	2*	8.75	Sample Analyzed
AQ-04	1319 N. Wabash	178	09/19/01	9:25	16:16	6:51	26	3	3.5	Sample Analyzed
AQ-05	1142 N. Main	164	08/24/01	9:11	16:28	7:17	17	3	0	Rejected - Not Analyzed
AQ-05		102	09/18/01	9:27	16:34	7:07	26	2	2.0	Sample Analyzed
AQ-06	1354 N. Topeka	105	08/23/01	8:55	16:10	7:15	20	5	0.25	Rejected - Not Analyzed
AQ-07	1420 N. Emporia	244	08/23/01	8:31	15:39	7:08	21	3.5	0	Rejected - Not Analyzed
AQ-07		65	09/18/01	9:08	16:25	7:17	26.5	8	7.0	Sample Analyzed
AQ-08	1435 Otis	132	08/23/01	8:11	15:24	7:13	20	2	0.25	Rejected - Not Analyzed
AQ-08		132	09/18/01	8:53	16:11	7:18	23.5	23.5*	ND	Rejected - Not Analyzed
AQ-08		311	09/20/01	10:22	17:23	7:01	27.5	0	1.0	Sample Analyzed
AQ-09	1716 Park Place	153	08/23/01	10:07	17:01	6:54	21	3	2.0	Sample Analyzed
AQ-10	1143 Cleveland	065	08/23/01	9:44	16:45	7:01	19	5	0.05	Rejected - Not Analyzed
AQ-10		164	09/18/01	9:37	16:43	7:06	25.5	2	2.0	Sample Analyzed

*=Result in inches Hg
ND=Not determined

Section 4
Physical Characteristics of the Study Area

This section presents both the regional and local physical characteristics of the study area. Included in this section are discussions of the regional setting and the site characteristics. The regional setting discussion consists of the physiographic setting and climatic data, regional surface water features, and the regional geologic and hydrogeologic settings. The site characteristics will describe surface features, surface water hydrology, site geology, and site hydrogeology.

4.1 Regional Setting

Information in this section relates to Sedgwick County and the City of Wichita as a whole. Specific information regarding the Site is discussed in Section 4.2. Data concerning climate, physiographic setting, surface water features, hydrogeologic setting, and public water supply are summarized below.

4.1.1 Physiographic Setting

The City of Wichita lies at the western edge of the Central Lowland physiographic province. The Wichita area is drained by the Arkansas and Little Arkansas Rivers and their tributaries. The Little Arkansas River is located to the west of the Site and is depicted in Figure 1-1. The Little Arkansas River joins the Arkansas River just west of the southwest corner of the Site. Chisholm Creek, Chisholm Creek's tributaries, and several ponds within and along the eastern boundary are the only surface water bodies located within and around the Site.

4.1.2 Climate

The climate of the area is subhumid, continental, and is subject to large variations in temperature. The average annual temperature in Wichita between 1888 and 2000 was 55.9°F (13.3°C). The average monthly temperatures range from 29.8°F (-1.2°C) in January to 80.6°F (27.0°C) in July. The average growing season in Wichita is usually more than 190 days.

Moisture-laden air from the Gulf of Mexico is the primary source of precipitation in the area. The average annual rainfall in Wichita between 1971 and 2001 was 29.9 inches. Average monthly precipitation varies from 0.81 inches in January to 4.46 inches in June.

The average annual wind speeds for Wichita are among the greatest in the United States, exceeding 12 miles per hour. The predominant direction is from the south, except for the winter season when the predominant direction is from the north. The evapotranspiration for the area ranges from 25 to 30 inches per year, with a maximum rate of groundwater loss estimated at 3.5 inches per year. The latter generally occurs only where groundwater is within 10 feet of the land surface. Transpiration is the major component of evapotranspiration during the growing season, but it is negligible during the nongrowing season.

4.1.3 Regional Surface Water Features

The major surface water features in Sedgwick County are the Arkansas River, Little Arkansas River, Ninnescah River, and Cheney Reservoir. The rivers generally flow to the south and southeast. The Little Arkansas River joins the Arkansas River just northwest of downtown Wichita, west of the southwest corner of the Site. The Ninnescah River flows into the Arkansas River near the town of Whitman, Kansas, approximately 25 miles south of Wichita. The Cheney Reservoir is a drinking water supply reservoir located approximately 24 miles west of downtown Wichita. Cheney Reservoir is located on the North Fork Ninnescah River in northwest Sedgwick County and has a storage capacity of 566,300 acre-feet of water. Numerous creeks and intermittent streams flow into area rivers.

4.1.4 Regional Geologic and Hydrogeologic Setting

The regional geologic and hydrogeologic settings are discussed in detail below. The regional hydrogeology is primarily summarized from *Water Resources of Sedgwick County, Kansas* (Bevans 1989). The local hydrogeology is derived from all Phase 1/1a and Phase 2 field investigation activities, observations, and from investigations performed by others at facilities within the Site. Geologic cross-sections and potentiometric surface maps generated by other facilities utilized in assessing the local hydrogeologic setting are presented in Appendix E-5 and Appendix G-2, respectively.

4.1.4.1 Regional Geologic Setting

The geology of the Wichita area consists of sedimentary rock overlain by alluvial, colluvial, and loess sediments. Two Permian formations comprise the bedrock in the area. The oldest formation is the Wellington Formation, which consists of primarily gray and blue shale, but locally also includes small thin beds of maroon shale, impure limestone, gypsum, and anhydrite. A thick bed of salt known as the Hutchinson Member of the Wellington Formation is present in the subsurface in some areas. In the vicinity of the Arkansas River valley, the Hutchinson Salt Member occurs near the surface. Its highly erodable and soluble nature is the primary reason for the large north-south trending depressional area in the Sedgwick County area, and was a controlling factor in the resultant thick Pliocene and Pleistocene deposits and the location of the Arkansas River (Lane and Miller 1965). The Wellington Formation in Sedgwick County dips gently toward the west at about 10 feet per mile, and ranges in thickness from a minimum of 80 feet in the eastern portion of the county to approximately 550 feet along the western edge of the county (Lane and Miller 1965).

The Ninnescah Shale overlies the Wellington Formation and occurs at or near the surface in the western one-third of the county. This formation consists of brownish-red silty shale and siltstone, with thin beds of grayish green shale, dolomite, and fine-grained sandstone (Bevans 1989). It outcrops only to the west of Wichita, and is not present within the Site.

Unconsolidated deposits of Pliocene and Quaternary (Pleistocene through Holocene) Ages are widely distributed over the bedrock in most of the county. The following discussion is summarized from both Bevans (1989) and Lane and Miller (1965). Undifferentiated Pliocene and lower Pleistocene deposits ranging in composition from clay to coarse gravel are as much as 160 feet thick and occur in the basal part of the Arkansas River valley fill north of Wichita. Lower Pleistocene deposits occur in the basal Arkansas River valley south of Wichita at thicknesses as great as 70 feet. Quaternary terrace deposits consisting primarily of sand and gravel occur over Permian bedrock and/or undifferentiated Pliocene and lower Pleistocene deposits along the western side of the Arkansas River valley at thicknesses as great as 75 feet. Quaternary loess deposits as thick as 75 feet occur over bedrock and lower Pleistocene deposits in most of the upland areas. Upper Pleistocene and Holocene alluvial and terrace deposits occur in thicknesses as great as 60 feet in the Arkansas River valley over Permian bedrock, and/or undifferentiated Pliocene and lower Pleistocene deposits. The total thickness of the unconsolidated deposits ranges from near zero to 80 feet in upland areas to as much as 250 feet in the Arkansas River alluvium areas.

4.1.4.2 Regional Hydrogeologic Setting

A triangular area between the cities of Hutchinson, Newton, and Wichita contains unconsolidated deposits of Pliocene and Quaternary clay, silt, and gravel known as the Equus Beds aquifer. The Wichita groundwater well field, located approximately 20 miles northwest of Wichita, is one of the primary sources of potable water for the City of Wichita. The shallow alluvial aquifer in Wichita and within the boundaries of the Site is used for irrigation, household gardening, and industrial applications.

Wells that are completed through the entire thickness of the unconsolidated deposits in the Arkansas River valley fill may yield as much as 2,000 gallons per minute (gpm) (Lane and Miller 1965). Shallower wells completed in only the Quaternary terrace deposits may yield 500 to 1,000 gpm. The terrace deposits along the Ninnescah River valley tend to be thinner and less permeable than those in the Arkansas River valley.

The Wellington Formation is also a source of groundwater but primarily in the areas east and west of the Arkansas River valley, i.e., east and west of Wichita. In areas not underlain by the Arkansas River valley alluvial aquifer, the Wellington Formation may yield a large quantity of groundwater from solution cavities where the Hutchinson Salt Member has been dissolved by fresh water. This part of the formation has been referred to as the Wellington Aquifer but tends to consist of very saline water (Bevans 1989).

Wells completed in the shale of the Wellington Formation generally yield less than 10 gpm (Bevans 1989). However, greater yields can be obtained where the weathered surface of the formation is saturated. Wells completed in solution channels in the gypsum or anhydrite of the Wellington Formation can yield as much as 350 gpm (Lane and Miller 1965).

Regionally, groundwater in Sedgwick county flows to the southeast. In general, the groundwater surface mirrors the topography but is more subdued.

4.2 Site Characteristics

This section presents the physical characteristics of the Site including surface features, surface water hydrology, geology, and hydrogeology.

4.2.1 Surface Features

The Site is generally flat. The surface dips gently to the west and southwest. A topographic high is present east of Chisholm Creek (U. S. Geological Survey, Valley Center/Wichita East Quadrangle 7.5 Minute topographic maps). This topographic high is located outside the eastern boundary of the Site and intersects the northeast corner of the Site. This topographic high is due to the presence of the alluvial valley wall. The alluvial valley wall also represents the eastern limit of significant sand deposits.

4.2.2 Surface Water Hydrology

The Little Arkansas River is located between approximately 200 and 6,500 feet outside the western boundary of the Site and flows to the south in the area. The branches of Chisholm Creek in the immediate vicinity of the NIC Site include the main fork, the East Fork, the Middle Fork, the West Fork, and an unnamed middle drainage. The main fork of Chisholm Creek is located near the eastern boundary of the Site. The confluences of the East and West Forks of Chisholm Creek and an unnamed middle drainage are located between 18th Street and 20th Street and between Ohio Street and I-135.

The Middle Fork of Chisholm Creek defines a portion of the northern boundary of the NIC Site. As depicted on Figure 1-1, the Middle Fork currently flows into the Little Arkansas River. Formerly, this drainage flowed via the unnamed middle drainage into Chisholm Creek. Therefore, the unnamed middle drainage can be referred to as the former lower reach of the Middle Fork.

No major bodies of water exist in the NIC Site; however, several small surface water bodies exist in and around the Site. A large pond is located along the eastern boundary of the Site just south of K-96 highway in Grove Park (hereafter referred to as Grove Pond). Two other ponds exist within the Site. One pond is located along the western boundary of Coleman's property (hereafter referred to as Coleman Pond) in front of their main office building, south of 37th Street. The other pond is located southwest of the I-135 and K-96 interchange. The pond is utilized by Cornejo Construction Company (hereafter referred to as Cornejo pond) and is currently in the process of being backfilled with construction debris. All surface water bodies existing in and around the Site are depicted on Figure 1-1.

4.3 Geology and Hydrogeology

The geology of the Site is based upon CDM's data collection and observations during all Phase 1/1a and Phase 2 RI field investigations, as well as investigations performed by others at facilities in the Site. Local geology, geological cross-sections, electrical conductance (EC) logging, grain size analyses, and total organic content (TOC) sampling and results are discussed in the following subsections.

This section will discuss the local hydrogeology of the Site. These subsections include the hydrostratigraphic units, a discussion of the bottom of the aquifer and the saturated thickness of the aquifer, groundwater flow, groundwater/surface water interactions, and aquifer stresses within the Site.

In order to evaluate the local geology within the Site, CDM reviewed over 300 lithologic logs from the Site. Selected logs were used to compile six geologic cross-sections, a bottom of aquifer map, and a saturated thickness map that represents the subsurface conditions at the Site.

Upon review of all available lithologic data from boring logs and driller's logs supplied by facilities located within the Site, as well as CDMs lithologic logs and EC logs, a conceptual geologic model has been developed. The conceptual geologic model for the Site is presented below.

The basal geologic unit of the Site is the Wellington Shale. This bedrock slopes gently to the west. Locally, the Wellington Shale is overlain by clays that represent the weathered portions of the bedrock. The bedrock and weathered clays are overlain by alluvium from the Arkansas River. These alluvial deposits are characterized by fining-upward sequences of sands and gravels that include intermediate and locally discontinuous clay lenses within the Site. These alluvial deposits are overlain by sandy to silty clays throughout much of the Site. The sandy to silty clays comprise the surficial units across the Site.

4.3.1 Geological Cross-Sections

Upon review of all available lithologic data (Appendix E-1), EC log data (Appendix E-2), grain size analyses (Appendix E-6), a bottom of aquifer map, saturated thickness map (Appendix E-3), and six geologic cross-sections were generated to depict the geology and hydrogeology discussed in Section 4.3. Plate 4-1 presents a geological cross-section location map depicting the locations of the six cross-sections within the Site as well as the lithological characterization locations. Plate 4-2 presents the six cross-sectional representations of the lithology of the Site. These cross-sections also include the depth to water encountered at each of these locations. Appendix E-4 presents the data used to generate cross-section maps. For reference purposes, Appendix E-5 presents geologic cross-sections generated by others at facilities within the Site.

4.3.2 Hydrostratigraphic Units

During the geologic investigation, four discreet hydrostratigraphic units were differentiated within the subsurface materials underlying the Site. The characterization for each hydrostratigraphic unit was based on the physical characteristics and hydrogeologic properties of the subsurface materials. Following is a discussion of each individual hydrostratigraphic unit. These hydrostratigraphic units are depicted on Plate 4-2.

Hydrostratigraphic Unit 1

The uppermost lithologic unit is comprised primarily of clays that are locally sandy or silty. These clays are of relatively low permeability. Saturation of the base of this unit occurs locally. Saturation also occurs in the upper clay units within an area restricted to the upland terrace deposits in the northeast corner of the Site. These clays range in colors and are black, brown, gray, and green. Unit 1 is encountered throughout the site and is typically capped by asphalt, concrete, and/or fill. This clay layer thins near the lower southwestern corner of the Site. Unit 1 ranges from 0 to approximately 20 feet with an average of approximately 8 to 10 feet in thickness.

Hydrostratigraphic Unit 2

Unit 2 consists of fine to coarse-grained sands, fining-upwards, which can be locally silty. Generally, Unit 2 is saturated throughout the Site. This unit is generally continuous throughout the Site with the exception of the northeast corner where the sands thin to the east and become laterally discontinuous. The thickness of these sands across the Site range from approximately 10 to 45 feet thick with an average of approximately 28 to 30 feet thick. Clay lenses are also present locally within the Site. These lenses can range from silty to sandy with minor gravel and are generally less than six feet in thickness. There appears to be no significant correlation of these clay lenses between boreholes, which is an indication they are laterally discontinuous horizons of lower permeability throughout this hydrostratigraphic unit.

Hydrostratigraphic Unit 3

Unit 3 is comprised of stiff, moist, low permeability clays that represent the weathered bedrock surface. These clays can be locally sandy or silty and range in color from olive greens to medium and dark grays. This clay unit ranges from less than 0.5 feet to approximately 10 feet in thickness and averages approximately 5 feet thick. Unit 3 is laterally discontinuous throughout the Site.

Hydrostratigraphic Unit 4

This unit consists of competent shale bedrock (Wellington Shale) and is the basal geologic unit considered in this investigation. Unit 4 is composed of medium to dark gray claystones and shales and is the basal aquitard for the overlying alluvial sediments. Olive-green shale was observed locally in the weathered portions of the bedrock. Thin beds of gypsum were also encountered locally within this unit. The bedrock within the Site was encountered at depths ranging from 0.5 to approximately 45 feet below ground surface and averages about 40 feet bgs.

4.3.3 Bottom of Aquifer

Data from approximately 200 lithologic borehole logs that reached the top of clay or the competent bedrock was compiled to produce a map representing the bottom of the aquifer. The bottom of the aquifer was designated as either top of bedrock or the top of the low permeable clay overlying the bedrock surface. The bottom of aquifer map is depicted on Plate 4-3.

A variety of sources were used to interpret the aquifer bottom at the site, including boring logs, downhole electrical conductivity (EC) logs, and lithological information derived from other reports. Boring logs from CDM investigations are included in Appendix E-1. EC logs from CDM investigations are included in Appendix E-2. A summary of data used to interpret bottom of aquifer depths for the site is included in Appendix E-3a. Boring logs from other sources that were used in the bottom of aquifer determination are included in Appendix E-3b. Lithological information from other reports, including cross-sections and bedrock surface maps, is included in Appendix E-5. Lithological information from other reports, including cross-sections and bedrock surface maps, is included in Appendix E-5. For borings where the top of the weathered clay layer overlying the bedrock (rather than the bedrock surface) was designated as the aquifer bottom, the thickness of clay overlying the bedrock is noted.

The purpose of Plate 4-3 is to provide a general representation of the aquifer bottom. Numerous localized anomalies with respect to the relief of the bottom of aquifer exist, due to variability in the clay formation and erosional features on the bedrock surface. Some of these anomalies are too localized to accurately represent on a map of the entire NIC site. Therefore, borings that represent local anomalies were not included on Plate 4-3. Some borings were also omitted in areas where large groupings of soil borings exist (i.e the UCL source area), in order to preserve the legibility of data points shown on the map. Omission of these borings does not affect representation of the bottom of aquifer, because the data from the omitted borings was redundant with respect to nearby data.

The bottom of aquifer/bedrock surface slopes to the west and southwest with a high in the northeast corner of the Site. The bottom of aquifer elevations vary significantly, ranging from and elevation of 1260.9 in the southeast corner to upwards of 1343.5 feet in the northeast corner. The overall general trend in elevation of the bottom of the aquifer is a gentle slope from the east toward the west. There are several erosional features present on the bedrock surface. These erosional features originate from the topographic high east of the Site boundary and trend east to west across the Site. The average change in elevation of the erosional bedrock features is approximately six to ten feet. Due to the minimal relief of the bedrock erosional features, they do not appear to have altered the course of contaminant plume migration.

4.3.4 Saturated Thickness

The saturated thickness of the alluvial aquifer varies throughout the Site from less than 0.5 feet in the northeast corner to 36.5 feet along the western boundary. The

overall saturated thickness throughout the Site averages approximately 22 to 25 feet thick. The saturated thickness was calculated for the purposes of this RI by subtracting groundwater elevation (calculated from water levels collected during the August 2001 water level round) from the elevation of the bottom of aquifer. The August 2001 water levels are included in Table 4-1b. Groundwater elevations were estimated using the potentiometric surface contours shown on Plate 4-6 for data points where depth-to-water was not directly measured in August 2001. A summary of data used to interpret saturated thickness for the site is included in Appendix E-3a.

The saturated thickness mirrors the ridge feature present on the bedrock surface in the northeast corner of the Site. The saturated thickness in the northeast corner increases to the west with an overall trend of thicker saturated units from the east to the west across the Site. Thicker saturated units are also present in areas of erosional lows in the bedrock surface. The saturated thickness map is depicted in Plate 4-4.

4.3.5 Grain Size Analysis

Grain size analyses were previously conducted within the Site by Groundwater Technology, Inc. (GTI) and SECOR International, Inc. (SECOR). In 1990, GTI conducted grain size analyses of the shallow and deep aquifer below the 29th and Mead site. In 1998, SECOR conducted grain size analyses for Van Waters & Rogers at the Mosley Avenue facility.

The grain size analyses performed by GTI and SECOR are consistent with observations made by CDM during all Phase 1/1a and Phase 2 RI field investigations and are consistent with the overall geologic interpretation of the Site. There is considerable local variability in grain size throughout the Site. As discussed in Section 4.3.2, the sediments form a generally fining upward sequence, with coarse sands at the base of the alluvial aquifer grading to silt and clay at the ground surface. The GTI and SECOR grain size analyses are consistent with observed fining upward sequences. Appendix E-6 presents the grain size analyses conducted by GTI and SECOR.

4.3.6 Total Organic Content (TOC) Sampling and Results

CDM conducted TOC analyses on both groundwater and soil samples collected from the Site. Soil samples from the shallow and deep wells at 11 locations throughout the Site were analyzed. Soil samples were collected at depths ranging from 4 to 38.5 feet bgs. TOC concentrations range from below detection limit (1,000 miligrams per kilogram (mg/kg) to 26,000 mg/kg at NMW-31. Some samples that contain TOC concentrations below the 1,000 mg/kg detection limit were reanalyzed at a later date to achieve a lower detection limit (< 100 mg/kg). The following samples were reanalyzed with this lower detection limit:

- NMW-31 (6 to 7.4 feet and 21 to 21.5 feet)
- NWL-04 (24 to 26 feet and 34 to 36 feet)

- NWL-07 (20 to 22 feet)
- NMW-22 (6 to 8 feet and 36 to 38 feet)
- NMW-35 (24 to 26 feet and 33 to 35 feet)
- NMW-19 (16 to 18 feet)
- NMW-24 (22 to 24 feet)

The results from the TOC analysis for soil samples indicate that the aquifer sand contains TOC less than 1,000 mg/kg with an arithmetic mean value of 272 mg/kg. The silt and clay layers contain elevated TOC concentrations, generally above 5,000 mg/kg. Results of TOC in the subsurface soil samples are presented in Section 5.2 and discussed in Section 8.3.

SECOR also conducted TOC analyses along with their study on grain size analyses included in Appendix E-6. TOC analyses were conducted on a total of 9 soil samples collected within the 29th and Mead site. The results of the SECOR analysis revealed non-detectable levels of TOC in 7 of the soils sampled. However, TOC was detected in 2 soil samples from depths between 9 to 10 feet below ground surface (bgs) at 619 mg/kg and between 13 to 14 feet bgs at 531 mg/kg.

4.3.7 Groundwater Flow

Water level elevations and groundwater flow directions have remained fairly consistent within the Site since the Phase 1/1a investigations were conducted. Phase 1 and 2 water level measurements, groundwater flow directions, water level time trends, horizontal and vertical gradients, and hydraulic conductivity are discussed below:

Phase 1 Water Level Measurements

Table 4-1a presents the water level elevations obtained during the Phase 1/1a investigations. Site-wide water level measurements were collected twice during the Phase 1/1a investigations, in October 1997 and April/May 1998. Potentiometric surface maps for the October 1997 and April/May 1998 water level rounds are included in Appendix G-1. The water level contours on the Phase 1 potentiometric surface maps should be considered approximate because 1) significantly fewer wells were gauged than during the Phase 2 water level rounds, 2) water level elevations from others may have utilized different survey datums, and 3) water level measurements took place over an extended period of time relative to the Phase 2 water level rounds.

The October 1997 water level round included measurements between October 2 and October 30, 1997. Most measurements were made by CDM between October 6 and October 8, 1997. Measurements were also taken from Unocal (UCL) on October 2, 1997, and from Coastal Derby (DRB) on October 30, 1997.

The April/May 1998 water level round included water level measurements between April 21 and May 13, 1998. Most measurements were taken by CDM between April 30 and May 2, 1998. Measurements were also taken from DRB on April 21, 1998, from Unocal on April 29, 1998, from Coleman North (CN) between May 4 and May 6, 1998, and Coleman Northeast (CNE) on May 13, 1998. Not all measurements taken by others are depicted on the potentiometric surface maps found in Appendix G-1. For reference purposes, potentiometric surface maps from other facilities within the Site are included in Appendix G-2.

During the Phase 1/1a investigations, water level elevations increased from approximately two feet near the northern boundary of the Site to approximately 0.70 feet near the southern boundary of the Site between October 1997 and April/May 1998. Water level elevation increases over the same time period were generally less in the middle of the Site (less than 0.5 feet). Water level elevations within the Northeast Investigation Area increased from between 1.5 feet to 2.25 feet between October 1997 and April/May 1998. The water level elevation increases between Fall 1997 and Spring 1998 are consistent with increased precipitation in the Spring.

Phase 2 Water Level Measurements

Table 4-1b presents the water level elevations obtained during the Phase 2 investigations. During the Phase 2 investigations, water level measurements were collected in March and August 2001. In March 2001, water levels were measured by CDM between March 19 and March 21, 2001 and at DRB between March 25, and March 27, 2001. In August, water levels were measured by CDM between August 20 and August 23, 2001.

Measurements of free product in monitoring wells during Phase 2, and the corrected potentiometric elevations (based on the depth to water, product thickness, and product density) are provided in Table 4-1c. Surface water level measurements taken from surveyed staff gauges and bridge measuring points are provided in Table 4-1d. Survey data for the Site are included in Appendix F.

Potentiometric surface maps for the March 2001 and August 2001 water level rounds are presented in Plates 4-5 and 4-6, respectively. Water level measurement stations are depicted on Plate 3-2. Subsequent to the Phase 1/1a investigations, several new water level wells and monitoring wells were installed. These additional water level and monitoring wells provide additional detail for Site-wide water level measurement rounds. Therefore, the August 2001 water level measurements and potentiometric surface map are the most current and detailed potentiometric data for the Site.

Based on the August 2001 water levels and potentiometric surface map, the overall groundwater flow direction in the Site is toward the south. With the exception of the northeast corner, groundwater generally flows south to southwest in the upper portion of the Site. The groundwater flow direction in the northeast corner of the Site

is nearly due west to southwest. Near the middle of the Site, the flow direction is south to southeast. Groundwater flows south to southeast in the southern portion of the Site with nearly due east flow in the very southeastern portion of the Site near Chisholm Creek at the eastern Site boundary. This appears to be a result of groundwater/surface water interactions, which are discussed in detail in Section 4.3.8. Groundwater also flows to the southwest within localized areas of the southwestern portion of the Site.

With the exception of the northeast corner, groundwater occurs at approximately 15 feet bgs. Groundwater occurs at depths of less than 10 feet bgs within the northeast corner of the Site, where groundwater occurs in upland terrace deposits (as opposed to the alluvial sand aquifer underlying the majority of the Site).

Between March and August 2001, water level elevations decreased across the Site from approximately three feet in the northern portion of the Site to approximately 0.5 feet in the southern portion of the Site. Water level elevations in the middle of the Site decreased from approximately 0.5 feet to 1.0 feet. The water level elevations in the Northeast Investigation Area decreased approximately four feet between the March and August 2001 water level measurements.

The four water level measurement rounds during Phase 1 and 2 investigations indicate a general seasonal decrease in overall water level elevations from the spring to the fall and a general seasonal increase from fall to spring.

Horizontal Gradients
Groundwater gradients have also remained relatively constant since the Phase 1/1a investigations. Upon evaluation of the August 2001 potentiometric surface map, two predominant gradients exist within the Site. The predominant gradient across the Site is 0.001 feet/feet (ft/ft) with a change in the gradient between 33rd Street and 37th Street. The gradient between 33rd Street and 37th Street changes to 0.0008 ft/ft and resumes a gradient of 0.001 ft/ft to the south of 33rd Street. Due to rapid changes in elevation and low permeability soils within the northeast portion of the Site, the horizontal gradient is 0.023 ft/ft in this area.

Vertical Gradients
Nested well water level differences are presented in Appendix G-5. These nested well elevation differences correspond directly to vertical gradients. The vertical gradient is calculated by dividing the nested well water level elevation difference by the distance between the middle of the shallow well screen and the middle of the deep well screen. A positive difference between the wells indicates a downward gradient whereas a negative difference between the wells indicates an upward gradient.

The August 2001 water levels were utilized to evaluate the vertical gradients of the nested well pairs. The difference in the nested well water level elevations for the majority of the Site is less than 0.1 feet. Differences less that 0.1 feet are considered insignificant and are not representative vertical gradients. Exceptions exist with some

of the nested well pairs within the Site. Several of the monitoring well clusters in the vicinity of the UPRR yard have nested well differences greater than 0.1 feet. These wells are UPRF-MW-03/NMW-36D, UPRF-MW-09/NMW-37D, UPRF-MW 16/NMW-38D, DRB-MW-250/NMW-44D, SK-01S/D, and DRB-MW-02/WND-30D. Upon review of the EC logs and boring logs for these wells, the deep monitoring wells were completed below an intermediate clay zone present in the area. This clay zone is locally continuous and acts as a semi-confining unit that divides the aquifer into two separate zones. The nested well differences for these wells range from –0.14 feet to -0.92 feet with an average difference of –0.55 feet and result in calculated vertical gradients for these 6 wells ranging from -0.010 ft/ft to -0.067 ft/ft with an average vertical gradient of –0.042 ft/ft.

Monitoring well cluster NWL-07S/D, located at 19th Street and Market Street, also has a vertical gradient (-0.02 ft/ft). A clay lens is present locally, which divides the aquifer into upper and lower aquifer zones in the area. This well pair is located in close proximity to Chisholm Creek. As discussed in section 4.3.8, Chisholm Creek is a gaining stream. Because Chisholm Creek is a gaining stream, groundwater from the upper portion of the aquifer is discharging into Chisholm Creek. This discharge of the shallow groundwater into Chisholm Creek results in a reduction in head pressure in NWL-07S. Well NWL-07D is screened below the confining clay unit, therefore, maintains its' head pressure resulting in an upward gradient.

With the exceptions noted above, site nested well differences appear to be negligible. The distribution of nested well differences across the Site was examined and no areal trends were apparent.

Hydraulic Conductivity

The hydraulic conductivity of the saturated sand aquifer beneath the Site varies from 135 feet/day to 435 feet/day, with the exception of the northeast corner of the Site. Groundwater Associates, Inc. performed a pumping test in 1987 on OHSE production wells near 22nd Street North and Broadway. The result of that test was 185 ft/day. HWS performed an aquifer test at Hydrocarbon Recyclers in 1990 near 25th Street North and New York. The hydraulic conductivity in that area was 135 ft/day. Two pumping tests were performed at the Coleman North Facility by GTI in 1992. The first test was conducted on the upper portion of the aquifer and was measured at 225 ft/day and the second test was conducted on the entire aquifer and was measured at 435 ft/day. In 1993, GTI performed a pumping test at the Coleman Downtown Wichita Facility with results that measured 380 ft/day. TerraTech performed a pumping test at House Oil Company in the vicinity of 10th Street and Mosley Street in 1994. The results of that pumping test were 167 ft/day.

The hydraulic conductivities of saturated materials in the upland terrace deposits of the Northeast Investigation Area are considerably lower than the hydraulic conductivities encountered throughout the remainder of the NIC Site where groundwater occurs predominantly in alluvial sands. Hydraulic conductivities in the

Northeast Investigation Area range from 0.049 ft/day to 38.6 ft/day. Woodward-Clyde Consultants performed slug tests on two wells at the Unocal facility in 1991, which resulted in hydraulic conductivity values of 0.049 ft/day and 0.783 ft/day. Maude Environmental Inc. conducted a pumping test on one of these wells in 1993. The test results ranged from 2.43 ft/day to 7.39 ft/day. A pumping test conducted by Smith Environmental Technologies Corp. at the Unocal facility in 1996 (utilizing three separate methods) determined the hydraulic conductivity ranged from 0.21 ft/day to 38.6 ft/day.

Specific information regarding these pumping tests is located in Appendix G-3.

4.3.8 Groundwater/Surface Water Interactions

Surface water bodies within the Site are discussed in section 4.2.2. Following is a discussion of the various surface water bodies and their respective interactions with the groundwater in the area.

A losing stream is defined as a stream that is higher than the local water table. Any water present in these creeks would subsequently infiltrate into the groundwater. Inversely, a gaining stream receives base flow from groundwater. Groundwater discharging into a gaining stream would potentially transmit chemicals of concern to that water body.

Chisholm Creek

As discussed in Section 4.2.2, the branches of Chisholm Creek in the immediate vicinity of the NIC Site include the main fork, the East Fork, the Middle Fork, the West Fork, and an unnamed middle drainage (former lower reach of the Middle Fork). The current Middle Fork defines a portion of the northern NIC Site boundary and flows into the Little Arkansas River. The Middle Fork is not expected to be affected by groundwater in the NIC Site.

The East Fork and West Fork merge to form the main fork of Chisholm Creek north of 18th Street between Ohio Street and I-135. The unnamed middle drainage enters the West Fork of Chisholm Creek immediately north of 19th Street between Ohio and Indiana Streets. These locations are presented in Figure 1-1.

The West Fork of Chisholm Creek is a losing stream, as evidenced by the elevation of the channel relative to groundwater. Surface water level elevations in the West Fork were above the water table in March 2001. In August 2001, the West Fork was dry and the channel base elevation was above the water table.

The unnamed middle drainage of Chisholm Creek is at least in part a losing stream. Station SWL-02 is located on the unnamed middle drainage at 29th Street. This station had surface water level elevations above the water table in both March and August 2001. Unlike the West Fork, which had dried up in summer months, the unnamed middle drainage had surface water flow in August 2001. The water in the

middle drainage in August 2001 may be attributable to industrial discharges. Since water was present in the West Fork of Chisholm Creek immediately upstream of the confluence with the unnamed middle drainage in August 2001, it is possible that the lower reach of the West Fork and unnamed middle drainage may be gaining stretches, depending on seasonal changes in groundwater elevations.

The main fork of Chisholm Creek is a gaining stream. This is evidenced by water level equipotential lines forming a "V" that points upstream and surface water level elevations that are equal to or slightly below the surrounding water table. Based on the potentiometric surface, it appears that the east Fork of Chisholm Creek is also a gaining stream. Therefore, the main fork, the East Fork, and portions of the lower reaches of the West Fork and unnamed middle drainage have the potential to be impacted by contaminated groundwater. Surface water sampling results from Chisholm Creek are discussed in Section 5.1.

Grove Pond
Grove Pond is an approximately 39-acre pond located along the eastern boundary of the Site just south of K-96 highway (Figure 1-1). This pond was constructed with a clay liner and therefore may have minimal groundwater/surface water interactions. Any groundwater/surface water interactions present would be due to leakage from the pond. Upon review of the potentiometric surface maps, groundwater/surface water interactions related to Grove Pond appear to be minimal.

Coleman Pond
Coleman Pond is an approximately 7-acre pond located north of K-96 and east of I-135 (Figure 1-1). Any groundwater/surface water interactions with the Coleman Pond appear to be minimal based on review of the potentiometric surface. This assessment is further supported by the lithology of the underlying material. The lithologies present in the area are predominantly low permeability clays.

Cornejo Pond
Cornejo Pond is located southwest of I-135 and K-96 (Figure 1-1). This pond is being utilized by Cornejo Construction Company. Cornejo is currently in the process of backfilling this pond with construction debris material. As of the completion of the Phase 2 RI field investigations, the pond was nearly completely backfilled.

Prior to the backfilling, the Cornejo Pond may have affected groundwater flow via two scenarios:

- During low precipitation and high evaporation periods, low surface water levels could cause groundwater to flow into the pond.
- During and after precipitation events, the pond could be a groundwater recharge point, causing groundwater to flow away from the pond.

Both of these scenarios could have resulted in changing local groundwater flow directions. Altered groundwater flow directions would have also affected contaminant transport. The past effects of the Cornejo Pond on groundwater flow and contaminant transport are not readily assessed since this feature is no longer present. Based on the March 2001 potentiometric surface map, effects on groundwater from this pond to not appear to be significant.

Arkansas River
The confluence of the Arkansas River and the Little Arkansas River is located outside the southwestern boundary of the Site (Figure 1-1). For this reason, the Arkansas River and the Little Arkansas Rivers were not a focus of the NIC RI investigations. However, the Arkansas River and Little Arkansas River confluence may have minor influences on the groundwater elevations and flow directions within the southwest corner of the Site. These minor effects may not be reflected in the interpretation of the southwest-most portions of the potentiometric surface maps near the southwestern Site boundary.

4.3.9 Aquifer Stresses

More than 80 wells exist in the Site and within one mile of the Site boundaries that have pumping permits issued by the Water Resources Division of the State Board of Agriculture with specified groundwater allocations. A table summarizing all permitted pumping wells in and adjacent to the Site and their allotted annual discharge is presented in Appendix G-4. Data in this table were based on water use records on file with the Bureau of Agriculture as of December 31, 2002. For identification purposes, the pumping wells were labeled by correspondent and assigned a sequential number (e.g. COASTAL-1). The annual potential discharge of these wells has been converted to a gallons-per-minute rate assuming that the full allotment is pumped based on 24-hour pumping at a constant rate. The wells permitted for pumping include groundwater extraction wells, park irrigation wells, and industrial supply wells. Locations of these permitted pumping wells are shown on Figure 4-1.

A public water supply (PWS) well exists on the west side of the Little Arkansas River, north of the Arkansas River and west of the southwest boundary of the Site. Impacts from the PWS wells to the NIC Site (or visa versa) currently appear unlikely since potentiometric data indicate that groundwater flows from the Little Arkansas River into the NIC Site. It is expected that the Little Arkansas River would be losing in the vicinity of the NIC Site, since it is dammed upstream of the confluence with the Arkansas River. The potentiometric surface maps presented in Section 4.3.7 are consistent with the Little Arkansas River being a losing stream and groundwater flowing toward the NIC Site.

4.4 Text References

Bevans, H.E. 1989. *Water Resources of Sedgwick County, Kansas.* U.S. Geological Survey, Water Resources Investigations. Report 88-4225.

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U.S. Department of the Interior, Geological Survey. 1960. *Valley Center Quadrangle 7.5 Minute Series Topographic Map.* State of Kansas.

U.S. Department of the Interior, Geological Survey. 1961. *Wichita East Quadrangle 7.5 Minute Series Topographic Map.* State of Kansas.

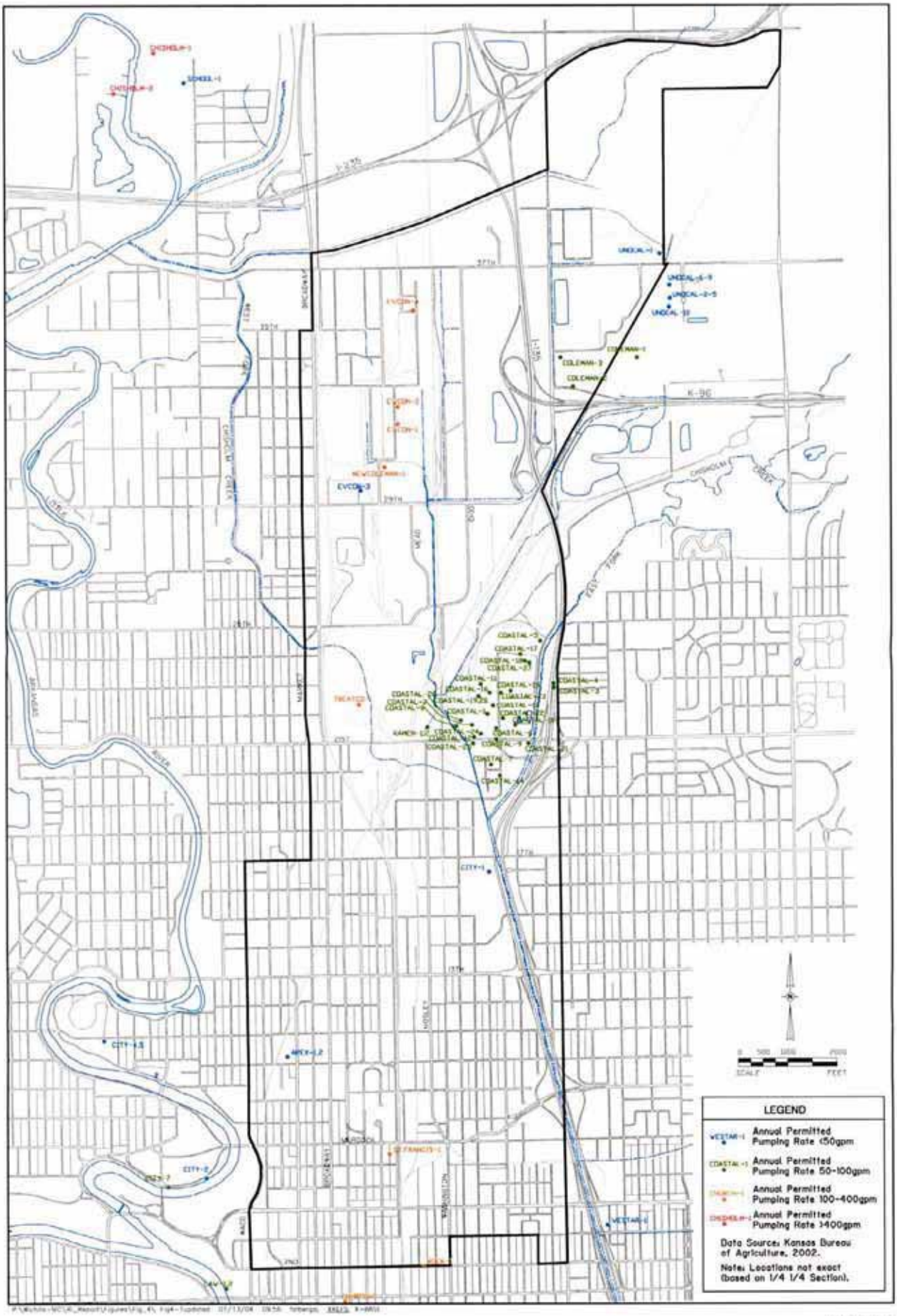

Figure 4-1
North Industrial Corridor (NIC) Site
Location of Permitted Pumping Wells

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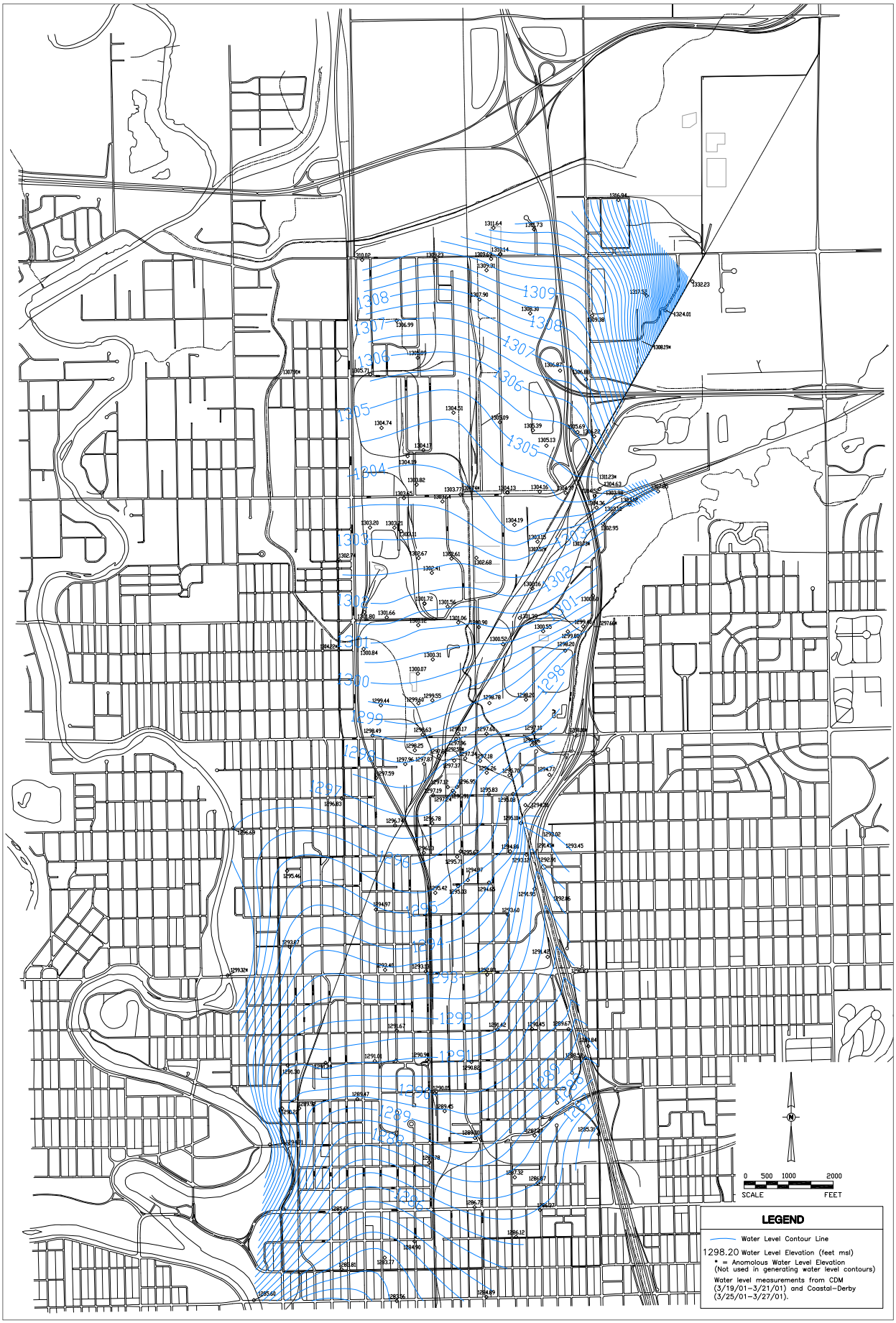

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Plate 4-5
North Industrial Corridor (NIC) Site
Potentiometric Surface Map, March 2001

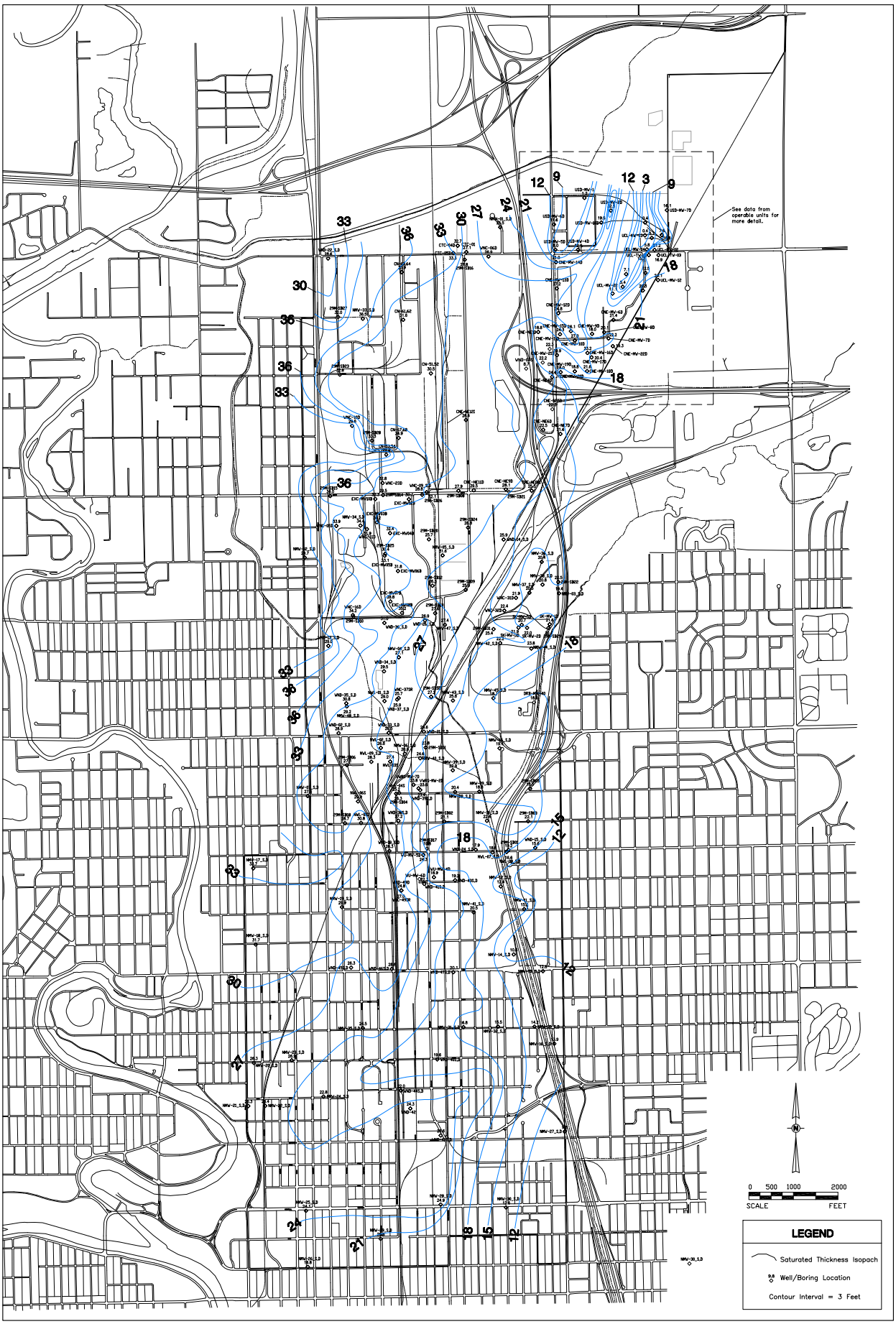

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Plate 4-4
North Industrial Corridor (NIC) Site
Saturated Thickness Map

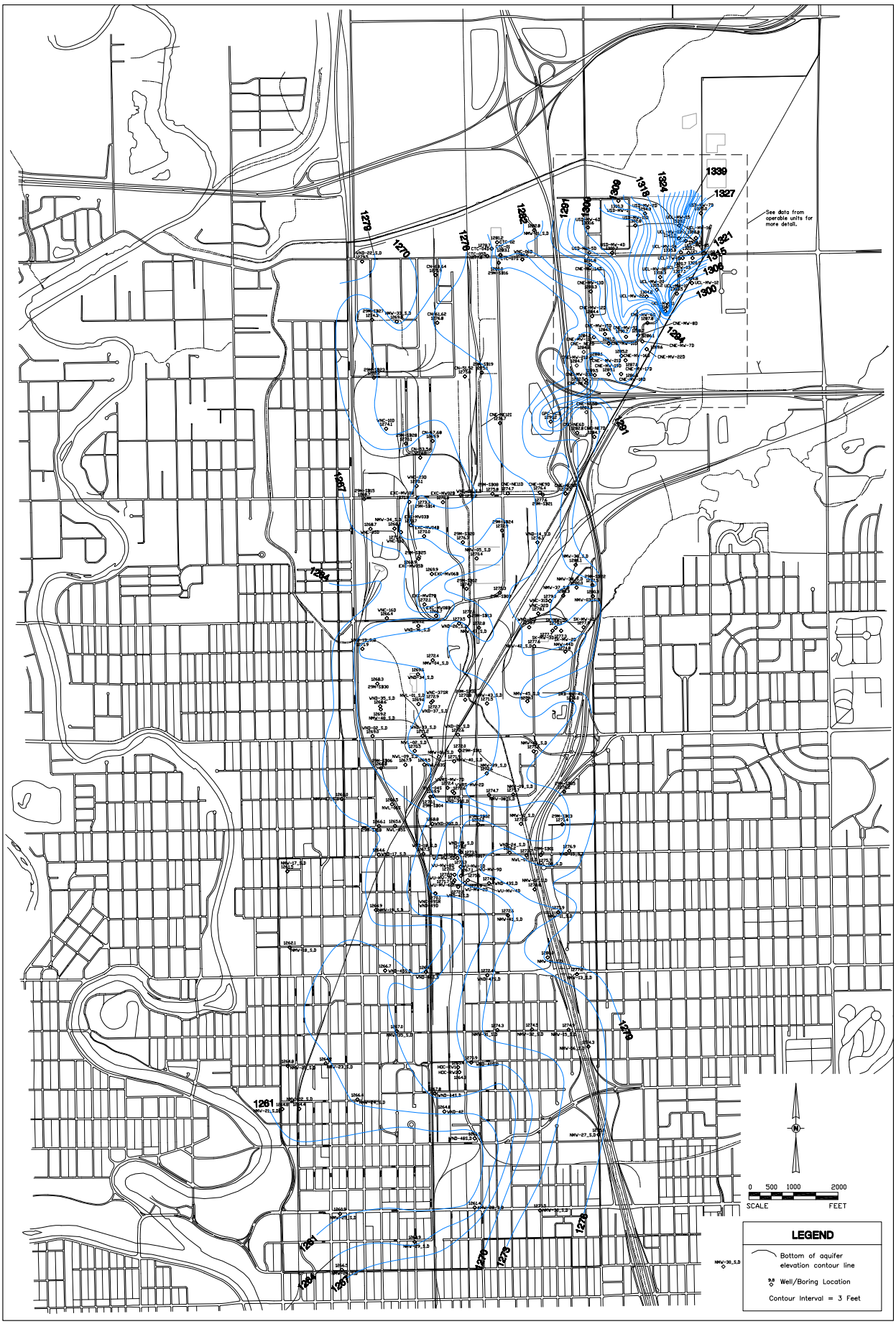

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Plate 4-3
North Industrial Corridor (NIC) Site
Base of Aquifer Surface Map

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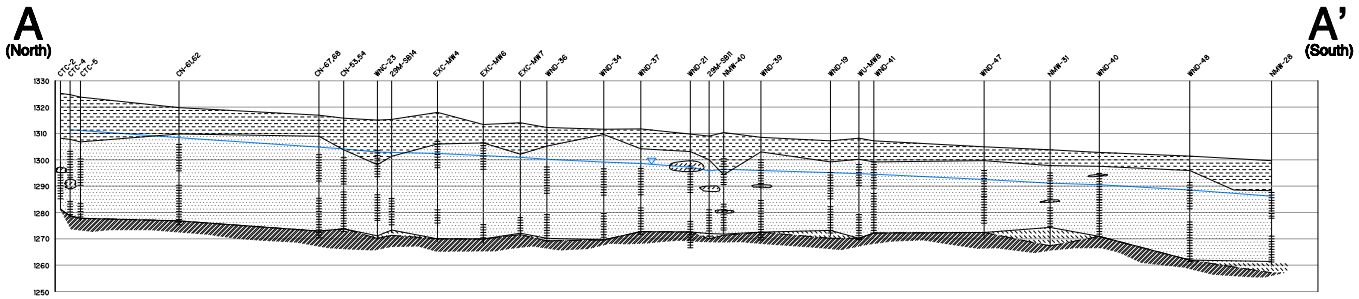

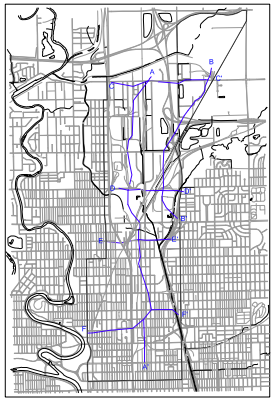

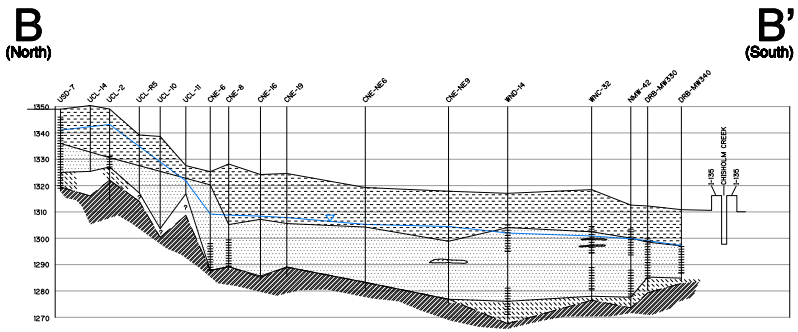

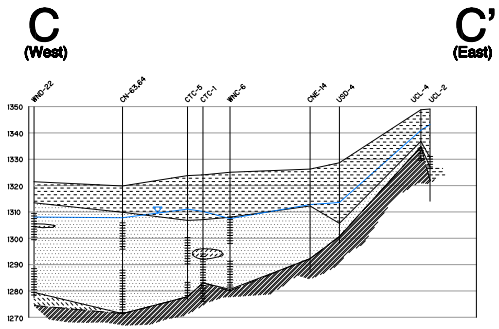

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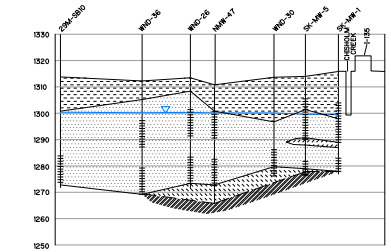
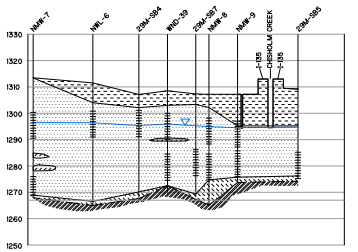
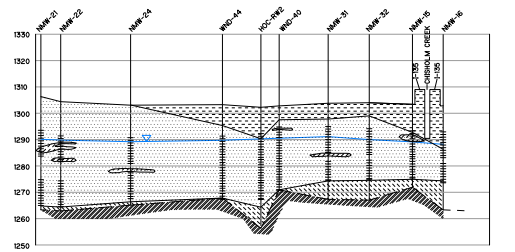
VERTICAL SCALE 1" = 20' 10 0 20







LEGEND

LITHOLOGIES

- Clay - Locally Sandy or Silty Hydrostratigraphic Unit 1
- Sand - Fine to Coarse Grained, Locally Silty Hydrostratigraphic Unit 2
- Clay - Locally Sandy or Silty and Laterally Discontinuous (Contained within Hydrostratigraphic Unit 2)
- Clay - Locally Sandy or Silty Hydrostratigraphic Unit 3
- Bedrock - Wellington Shale, Weathered to Competent, Blue-Gray Color Hydrostratigraphic Unit 4

WELL SCREENED INTERVALS

- Shallow Well Screened Interval
- Deep Well Screened Interval
- Top of Groundwater Surface

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Plate 4-2
North Industrial Corridor (NIC) Site
Hydrogeological Cross Sections A-A' - F-F'

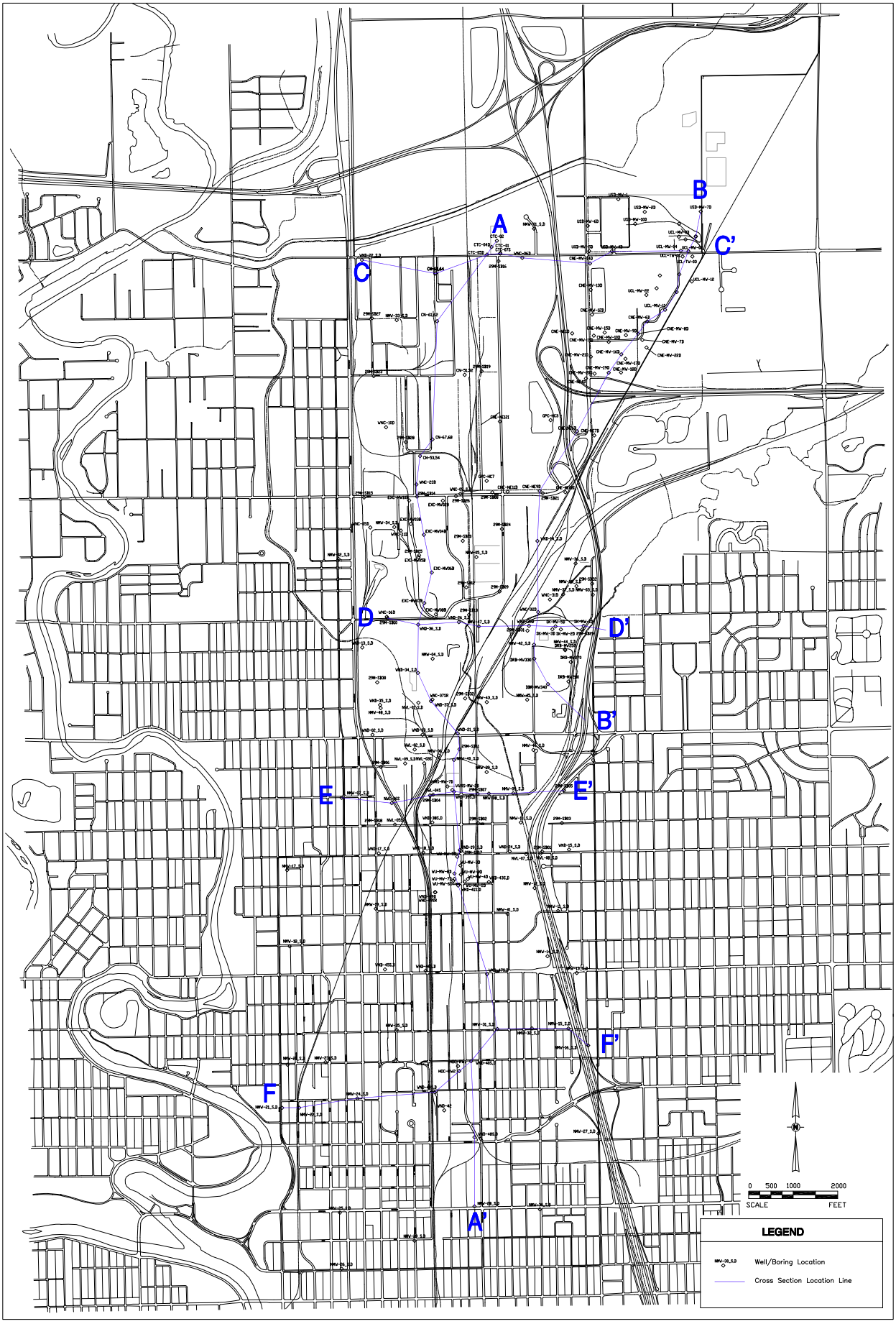

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Plate 4-1
North Industrial Corridor (NIC) Site
Location of Hydrogeological Cross Sections and Lithological Characterization Locations

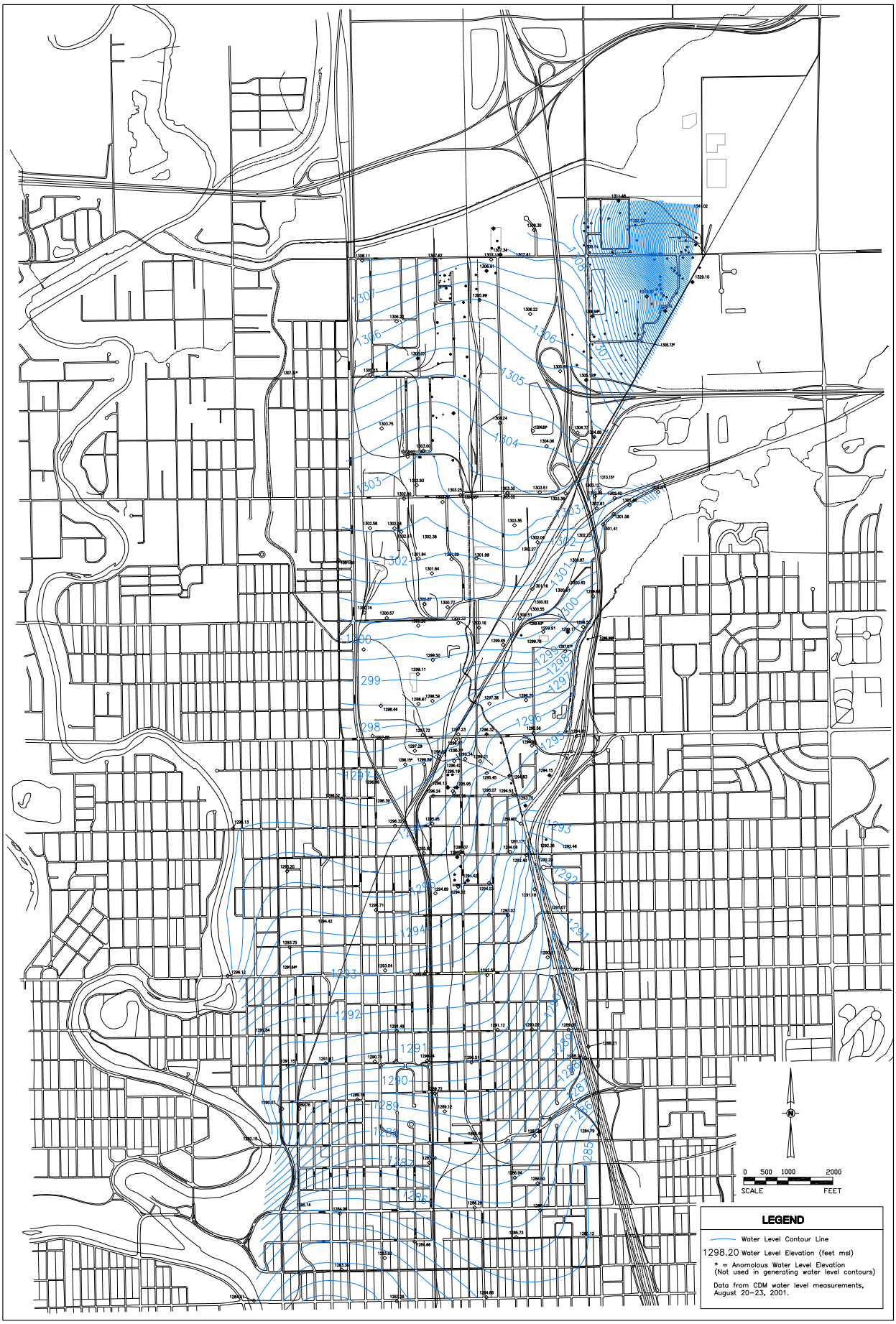

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Plate 4-6
North Industrial Corridor (NIC) Site
Potentiometric Surface Map, August 2001

Table 4-1a
North Industrial Corridor (NIC) Site
Phase 1 Water Level Measurements (Jan 1997-June 1998)

Well ID	Nested Well Depth Zone	Date	Measuring Point Elevation* (feet msl)	Depth to Water (feet bmp)	Water Level Elevation (feet msl)	Comments
BRND-MW-12	S	10/6/1997		14.28		
CN-MW-01	F	10/7/1997	1318.32	15.02	1303.30	
CN-MW-01	F	5/4/1998	1318.32	14.52	1303.80	
CN-MW-02	F	10/7/1997	1316.57	13.25	1303.32	
CN-MW-02	F	5/4/1998	1316.57	12.75	1303.82	
CN-MW-03	F	10/7/1997	1316.72	12.77	1303.95	
CN-MW-03	F	5/4/1998	1316.72	12.35	1304.37	
CN-MW-04	D	10/7/1997	1318.41	13.71	1304.70	
CN-MW-04	D	5/4/1998	1318.41	13.43	1304.98	
CN-MW-05	D	10/7/1997	1318.19	13.42	1304.77	
CN-MW-05	D	5/4/1998	1318.19	13.13	1305.06	
CN-MW-06	D	10/7/1997	1322.98	15.40	1307.58	
CN-MW-06	D	5/4/1998	1322.98	14.04	1308.94	
CN-MW-07	D	10/7/1997	1323.17	15.61	1307.56	
CN-MW-07	D	5/4/1998	1323.17	14.14	1309.03	
CN-MW-08	F	10/7/1997	1322.12	16.81	1305.31	
CN-MW-08	F	5/4/1998	1322.12	15.62	1306.50	
CN-MW-09	F	10/7/1997	1319.49	13.87	1305.62	
CN-MW-09	F	5/4/1998	1319.49	12.80	1306.69	
CN-MW-10	D	10/7/1997	1321.25	14.93	1306.32	
CN-MW-10	D	5/4/1998	1321.25	13.62	1307.63	
CN-MW-11	D	10/7/1997	1321.11	14.78	1306.33	
CN-MW-11	D	5/4/1998	1321.11	13.28	1307.83	
CN-MW-12	D	10/7/1997	1318.60	14.37	1304.23	
CN-MW-12	D	5/4/1998	1318.60	13.91	1304.69	
CN-MW-13	D	10/7/1997	1317.45	13.70	1303.75	
CN-MW-13	D	5/4/1998	1317.45	12.97	1304.48	
CN-MW-14	D	10/7/1997	1318.70	15.87	1302.83	
CN-MW-14	D	5/4/1998	1318.70	14.44	1304.26	
CN-MW-15	D	10/7/1997	1320.34	15.24	1305.10	
CN-MW-15	D	5/4/1998	1320.34	14.79	1305.55	
CN-MW-16	D	10/7/1997	1321.27	15.98	1305.29	
CN-MW-16	D	5/4/1998	1321.27	15.31	1305.96	
CN-MW-17	D	10/7/1997	1321.09	15.70	1305.39	
CN-MW-17	D	5/4/1998	1321.09	14.88	1306.21	
CN-MW-18	D	10/7/1997	1319.77	14.27	1305.50	
CN-MW-18	D	5/4/1998	1319.77	13.56	1306.21	
CN-MW-19	D	10/7/1997	1321.06	15.63	1305.43	
CN-MW-19	D	5/4/1998	1321.06	14.56	1306.50	
CN-MW-20	D	10/7/1997	1321.34	15.61	1305.73	
CN-MW-20	D	5/4/1998	1321.34	14.42	1306.92	
CN-MW-21	D	10/7/1997	1320.11	14.41	1305.70	
CN-MW-21	D	5/4/1998	1320.11	13.03	1307.08	

Table 4-1a
North Industrial Corridor (NIC) Site
Phase 1 Water Level Measurements (Jan 1997-June 1998)

Well ID	Nested Well Depth Zone	Date	Measuring Point Elevation* (feet msl)	Depth to Water (feet bmp)	Water Level Elevation (feet msl)	Comments
CN-MW-22	D	10/7/1997	1321.58	16.18	1305.40	
CN-MW-22	D	5/4/1998	1321.58	15.06	1306.52	
CN-MW-23	D	10/7/1997	1320.66	15.42	1305.24	
CN-MW-23	D	5/4/1998	1320.66	14.10	1306.56	
CN-MW-24	D	10/7/1997	1321.47	15.52	1305.95	
CN-MW-24	D	5/4/1998	1321.47	14.27	1307.20	
CN-MW-25	D	10/7/1997	1321.83	16.06	1305.77	
CN-MW-25	D	5/4/1998	1321.83	14.73	1307.10	
CN-MW-26	D	10/7/1997	1321.25	14.97	1306.28	
CN-MW-26	D	5/4/1998	1321.25	13.64	1307.61	
CN-MW-27	D	10/7/1997	1321.55	15.31	1306.24	
CN-MW-27	D	5/4/1998	1321.55	13.93	1307.62	
CN-MW-28	D	10/7/1997	1320.34	14.23	1306.11	
CN-MW-28	D	5/4/1998	1320.34	12.77	1307.57	
CN-MW-29	D	10/7/1997	1321.41	14.92	1306.49	
CN-MW-29	D	5/4/1998	1321.41	13.56	1307.85	
CN-MW-30	D	10/7/1997	1322.95	16.60	1306.35	
CN-MW-30	D	5/4/1998	1322.95	15.19	1307.76	
CN-MW-31	D	10/7/1997	1321.85	15.45	1306.40	
CN-MW-31	D	5/4/1998	1321.85	13.94	1307.92	
CN-MW-32	D	10/7/1997	1322.90	16.15	1306.75	
CN-MW-32	D	5/4/1998	1322.90	14.47	1308.43	
CN-MW-33	I	10/7/1997	1321.66	15.65	1306.01	
CN-MW-33	I	5/4/1998	1321.66	14.26	1307.40	
CN-MW-34	S	10/7/1997	1321.63	15.61	1306.02	
CN-MW-34	S	5/4/1998	1321.63	14.24	1307.39	
CN-MW-35	I	10/7/1997	1320.89	15.48	1305.41	
CN-MW-35	I	5/4/1998	1320.89	14.66	1306.23	
CN-MW-36	S	10/7/1997	1321.05	15.63	1305.42	
CN-MW-36	S	5/4/1998	1321.05	14.84	1306.21	
CN-MW-37	I	10/7/1997	1320.82	15.53	1305.29	
CN-MW-37	I	5/4/1998	1320.82	14.88	1305.94	
CN-MW-38	S	10/7/1997	1320.93	15.66	1305.27	
CN-MW-38	S	5/4/1998	1320.93	15.00	1305.93	
CN-MW-39	S	10/7/1997	1322.83	15.26	1307.57	
CN-MW-39	S	5/4/1998	1322.83	13.90	1308.93	
CN-MW-40	S	10/7/1997	1322.96	16.84	1306.12	
CN-MW-40	S	5/4/1998	1322.96	15.41	1307.55	
CN-MW-41	S	10/7/1997	1321.15	15.11	1306.04	
CN-MW-41	S	5/4/1998	1321.15	13.82	1307.33	
CN-MW-42	S	10/7/1997	1320.06	14.01	1306.05	
CN-MW-42	S	5/4/1998	1320.06	12.70	1307.36	

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North Industrial Corridor (NIC) Site
Phase 1 Water Level Measurements (Jan 1997-June 1998)

Well ID	Nested Well Depth Zone	Date	Measuring Point Elevation* (feet msl)	Depth to Water (feet bmp)	Water Level Elevation (feet msl)	Comments
CN-MW-43	S	10/7/1997	1321.18	15.45	1305.73	
CN-MW-43	S	5/4/1998	1321.18	14.27	1306.91	
CN-MW-44	S	10/7/1997	1318.70	13.29	1305.41	
CN-MW-44	S	5/4/1998	1318.70	12.58	1306.12	
CN-MW-45	S	10/7/1997	1320.54	15.60	1304.94	
CN-MW-45	S	5/4/1998	1320.54	15.15	1305.39	
CN-MW-46	S	10/7/1997	1317.70	13.48	1304.22	
CN-MW-46	S	5/4/1998	1317.70	13.10	1304.60	
CN-MW-47	S	10/7/1997	1316.13	12.35	1303.78	
CN-MW-47	S	5/4/1998	1316.13	11.93	1304.20	
CN-MW-48	S	10/7/1997	1317.36	14.07	1303.29	
CN-MW-48	S	5/4/1998	1317.36	13.56	1303.80	
CN-MW-49	D	5/4/1998	1320.61	12.79	1307.82	
CN-MW-50	S	10/7/1997	1320.58	14.30	1306.28	
CN-MW-50	S	5/4/1998	1320.58	12.76	1307.82	
CN-MW-51	D	10/7/1997	1319.27	14.20	1305.07	
CN-MW-51	D	5/4/1998	1319.27	13.68	1305.59	
CN-MW-52	S	10/7/1997	1319.06	14.08	1304.98	
CN-MW-52	S	5/4/1998	1319.06	13.55	1305.51	
CN-MW-53	D	10/7/1997	1316.26	14.15	1302.11	
CN-MW-53	D	5/4/1998	1316.26	13.64	1302.62	
CN-MW-54	S	10/7/1997	1316.16	13.20	1302.96	
CN-MW-54	S	5/4/1998	1316.16	12.65	1303.51	
CN-MW-55	S	10/7/1997	1320.59	14.43	1306.16	
CN-MW-55	S	5/4/1998	1320.59	13.01	1307.58	
CN-MW-56	D	10/7/1997	1321.28	15.05	1306.23	
CN-MW-56	D	5/4/1998	1321.28	13.61	1307.67	
CN-MW-59	D	10/7/1997	1319.34	14.70	1305.17	
CN-MW-59	D	5/4/1998	1319.34	13.63	1305.71	
CN-MW-60	S	10/7/1997	1319.34	14.15	1305.19	
CN-MW-60	S	5/4/1998	1319.34	13.77	1306.43	
CN-MW-61	S	10/7/1997	1320.20	14.61	1305.59	
CN-MW-61	S	5/4/1998	1320.20	13.37	1306.43	
CN-MW-62	D	10/7/1997	1319.80	14.20	1305.60	
CN-MW-62	D	5/4/1998	1319.80	12.39	1307.97	
CN-MW-63	D	10/7/1997	1320.36	13.67	1306.69	
CN-MW-63	D	5/4/1998	1320.35	12.26	1308.09	
CN-MW-64	S	10/7/1997	1320.35	13.44	1306.91	
CN-MW-64	S	5/4/1998	1320.35	13.14	1304.20	
CN-MW-67	D	10/7/1997	1317.34	13.79	1303.55	
CN-MW-67	D	5/4/1998	1317.34	13.14	1304.16	
CN-MW-68	S	10/7/1997	1314.14	13.77	1303.53	
CN-MW-68	S	5/4/1998	1314.14	10.44	1303.70	

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North Industrial Corridor (NIC) Site
Phase 1 Water Level Measurements (Jan 1997-June 1998)

Well ID	Nested Well Depth Zone	Date	Measuring Point Elevation* (feet msl)	Depth to Water (feet bmp)	Water Level Elevation (feet msl)	Comments
CN-MW-69D	D	10/7/1997	1314.14	11.01	1303.13	
CN-MW-69D	D	5/4/1998	1314.14	10.43	1303.78	
CN-MW-69S	S	10/7/1997	1320.97	11.00	1303.21	
CN-MW-69S	S	5/4/1998	1320.97	15.12	1305.85	
CN-MW-70D	D	10/7/1997	1320.85	15.75	1305.22	
CN-MW-70D	D	5/4/1998	1320.85	15.04	1305.81	
CN-MW-70S	S	10/7/1997	1320.85	15.64	1305.21	
CN-MW-70S	S	5/4/1998	1320.85	20.81	1301.72	
CNE-MW-01		10/6/1997	1325.70	18.62	1307.08	
CNE-MW-01		5/13/1998	1325.70	17.59	1308.11	
CNE-MW-02		10/7/1997	1322.80	16.22	1306.58	
CNE-MW-02		5/13/1998	1322.80	14.86	1307.94	
CNE-MW-03		5/13/1998	1321.77	13.90	1307.87	
CNE-MW-04		10/7/1997	1326.06	17.23	1308.83	
CNE-MW-05		10/6/1997	1331.50	24.11	1307.39	
CNE-MW-05		5/13/1998	1331.50	22.93	1308.57	
CNE-MW-06D	D	10/6/1997	1324.43	17.05	1307.38	
CNE-MW-06D	D	5/13/1998	1324.43	15.85	1308.58	
CNE-MW-06S	S	10/6/1997	1324.32	16.91	1307.41	
CNE-MW-06S	S	5/13/1998	1324.32	15.71	1308.61	
CNE-MW-07D	D	10/6/1997	1323.15	15.98	1307.17	
CNE-MW-07D	D	5/1/1998	1323.15	13.48	1309.67	
CNE-MW-07D	D	5/13/1998	1323.15	14.89	1308.26	
CNE-MW-07S	S	10/6/1997	1322.92	15.77	1307.15	
CNE-MW-07S	S	5/1/1998	1322.92	13.27	1309.65	
CNE-MW-07S	S	5/13/1998	1322.92	14.69	1308.23	
CNE-MW-08D	D	10/6/1997	1327.35	20.12	1307.23	
CNE-MW-08D	D	5/13/1998	1327.35	19.09	1308.26	
CNE-MW-08S	S	10/6/1997	1327.33	20.34	1306.99	
CNE-MW-08S	S	5/13/1998	1327.33	19.37	1307.96	
CNE-MW-09D	D	10/6/1997	1329.26	22.23	1307.03	
CNE-MW-09D	D	5/13/1998	1329.26	21.08	1308.18	
CNE-MW-09S	S	10/6/1997	1329.17	22.20	1306.97	
CNE-MW-09S	S	5/13/1998	1329.17	21.15	1308.02	
CNE-MW-10D	D	10/7/1997	1322.98	16.22	1306.76	
CNE-MW-10D	D	5/13/1998	1322.98	15.03	1307.95	
CNE-MW-10S	S	10/7/1997	1323.03	16.35	1306.68	
CNE-MW-10S	S	5/13/1998	1323.03	15.14	1307.89	
CNE-MW-11D	D	10/7/1997	1322.29	15.58	1306.71	
CNE-MW-11D	D	5/13/1998	1322.29	14.30	1307.99	
CNE-MW-11S	S	10/7/1997	1322.23	15.48	1306.75	
CNE-MW-11S	S	5/13/1998	1322.23	14.17	1308.06	

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North Industrial Corridor (NIC) Site
Phase 1 Water Level Measurements (Jan 1997-June 1998)

Well ID	Nested Well Depth Zone	Date	Measuring Point Elevation* (feet msl)	Depth to Water (feet bmp)	Water Level Elevation (feet msl)	Comments
CNE-MW-12D	D	10/7/1997	1323.27	15.99	1307.28	
CNE-MW-12D	D	5/1/1998	1323.27	13.93	1309.34	
CNE-MW-12D	D	5/13/1998	1323.27	14.45	1308.82	
CNE-MW-12S	S	10/7/1997	1323.12	15.89	1307.23	
CNE-MW-12S	S	5/1/1998	1323.12	13.73	1309.39	
CNE-MW-12S	S	5/13/1998	1323.12	14.26	1308.86	
CNE-MW-13D	D	10/7/1997	1324.75	16.64	1308.11	
CNE-MW-13D	D	5/13/1998	1324.75	14.82	1309.93	
CNE-MW-13S	S	10/7/1997	1326.64	16.56	1310.08	
CNE-MW-13S	S	5/13/1998	1326.64	14.73	1311.91	
CNE-MW-14D	D	10/7/1997	1325.35	15.29	1310.06	
CNE-MW-14D	D	5/1/1998	1325.35	13.05	1312.30	
CNE-MW-14D	D	5/13/1998	1325.35	13.12	1312.23	
CNE-MW-14S	S	10/7/1997	1325.44	15.63	1309.81	
CNE-MW-14S	S	5/1/1998	1325.44	12.76	1312.68	
CNE-MW-14S	S	5/13/1998	1325.44	13.20	1312.24	
CNE-MW-15D	D	10/7/1997	1322.78	15.82	1306.96	
CNE-MW-15D	D	5/13/1998	1322.78	14.46	1308.32	
CNE-MW-15S	S	10/7/1997	1322.52	15.54	1306.98	
CNE-MW-15S	S	5/13/1998	1322.52	14.09	1308.43	
CNE-MW-16D	D	10/6/1997	1323.28	16.51	1306.77	
CNE-MW-16D	D	5/13/1998	1323.28	15.51	1307.77	
CNE-MW-16S	S	10/6/1997	1323.41	16.66	1306.75	
CNE-MW-16S	S	5/13/1998	1323.41	15.68	1307.73	
CNE-MW-17D	D	10/6/1997	1323.97	17.19	1306.78	
CNE-MW-17D	D	5/13/1998	1323.97	16.28	1307.69	
CNE-MW-17S	S	10/6/1997	1324.20	17.39	1306.81	
CNE-MW-17S	S	5/13/1998	1324.20	16.46	1307.74	
CNE-MW-18D	D	10/6/1997	1324.24	17.46	1306.78	
CNE-MW-18D	D	5/13/1998	1324.24	16.59	1307.65	
CNE-MW-18S	S	10/6/1997	1324.21	17.42	1306.79	
CNE-MW-18S	S	5/13/1998	1324.21	16.58	1307.63	
CNE-MW-19D	D	10/6/1997	1323.70	17.11	1306.59	
CNE-MW-19D	D	5/13/1998	1323.70	16.37	1307.33	
CNE-MW-19S	S	10/6/1997	1323.79	17.19	1306.60	
CNE-MW-19S	S	5/13/1998	1323.79	16.41	1307.38	
CNE-MW-20D	D	10/6/1997	1323.63	17.45	1306.18	
CNE-MW-20D	D	5/13/1998	1323.63	16.70	1306.93	
CNE-MW-20S	S	10/6/1997	1323.71	17.54	1306.17	
CNE-MW-20S	S	5/13/1998	1323.71	16.76	1306.95	
CNE-MW-21D	D	10/6/1997	1323.68	17.17	1306.51	
CNE-MW-21D	D	5/13/1998	1323.68	16.30	1307.38	

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North Industrial Corridor (NIC) Site
Phase 1 Water Level Measurements (Jan 1997-June 1998)

Well ID	Nested Well Depth Zone	Date	Measuring Point Elevation* (feet msl)	Depth to Water (feet bmp)	Water Level Elevation (feet msl)	Comments
CNE-MW-21S	S	10/6/1997	1323.66	17.15	1306.51	
CNE-MW-21S	S	5/13/1998	1323.66	16.28	1307.38	
CNE-MW-22D	D	10/6/1997	1323.22	16.02	1307.20	
CNE-MW-22D	D	5/13/1998	1323.22	14.87	1308.35	
CNE-MW-22S	S	10/6/1997	1323.15	15.93	1307.22	
CNE-MW-22S	S	5/13/1998	1323.15	14.77	1308.38	
CNE-MW-23		10/7/1997	1331.01	22.72	1308.29	
CNE-MW-23		5/13/1998	1331.01	21.04	1309.97	
CNE-MW-24		10/7/1997	1331.10	21.11	1309.99	
CNE-MW-24		5/13/1998	1331.10	19.58	1311.52	
CNE-MW-25		10/7/1997	1327.62	17.28	1310.34	
CNE-MW-25		5/13/1998	1327.62	15.34	1312.28	
CNE-MW-26		10/7/1997	1331.68	15.55	1316.13	
CNE-NE-01D	D	10/7/1997	1323.27	16.39	1306.88	
CNE-NE-01S	S	10/7/1997	1323.47	16.62	1306.85	
CNE-NE-02D	D	10/7/1997	1321.41	14.90	1306.51	
CNE-NE-02S	S	10/7/1997	1321.54	14.98	1306.56	
CNE-NE-03D	D	10/7/1997	1321.37	14.97	1306.40	
CNE-NE-03S	S	10/7/1997	1321.40	15.01	1306.39	
CNE-NE-04D	D	10/7/1997	1320.55	14.13	1306.42	
CNE-NE-04D	D	5/1/1998	1320.55	13.21	1307.34	
CNE-NE-04S	S	10/7/1997	1320.35	13.90	1306.45	
CNE-NE-04S	S	5/1/1998	1320.35	13.02	1307.33	
CNE-NE-05D	D	10/7/1997	1319.06	12.92	1306.14	
CNE-NE-05S	S	10/7/1997	1319.05	12.82	1306.23	
CNE-NE-06D	D	10/7/1997	1318.76	13.28	1305.48	
CNE-NE-06S	S	10/7/1997	1318.66	12.76	1305.90	
CNE-NE-07D	D	10/7/1997	1320.14	14.22	1305.92	
CNE-NE-07S	S	10/7/1997	1320.05	14.21	1305.84	
CNE-NE-08I		10/7/1997	1319.72	15.74	1303.98	
CNE-NE-09D	D	10/7/1997	1316.61	12.79	1303.82	
CNE-NE-09S	S	10/7/1997	1316.79	12.94	1303.85	
CNE-NE-10D	D	10/7/1997	1318.57	13.94	1304.63	
CNE-NE-10S	S	10/7/1997	1318.43	13.81	1304.62	
CNE-NE-11D	D	10/7/1997	1314.99	11.37	1303.62	
CNE-NE-12I		10/7/1997	1318.17	13.66	1304.51	
CNE-NE-12I		10/7/1997	1318.17	13.66	1304.51	
CNE-OW-1D	D	10/6/1997	1321.53	15.59	1305.94	
CNE-OW-2D	D	10/6/1997	1320.78	14.53	1306.25	
CNE-OW-3D	D	10/6/1997	1320.90	14.45	1306.45	
CNE-OW-4		10/6/1997	1321.27	14.99	1306.28	
CSI-MW-01		5/1/1998		15.14		
CSI-MW-07		5/1/1998		15.36		

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Phase 1 Water Level Measurements (Jan 1997-June 1998)

Well ID	Nested Well Depth Zone	Date	Measuring Point Elevation* (feet msl)	Depth to Water (feet bmp)	Water Level Elevation (feet msl)	Comments
CSI-MW-08		5/1/1998		14.57		
CSI-MW-09		5/1/1998		14.92		
CSI-MW-10		5/1/1998		15.56		
CTC-MW-01		4/30/1998	1326.51	16.53	1309.98	
CTC-MW-03		4/30/1998	1327.01	15.67	1311.34	
CTC-MW-04D	D	4/30/1998	1326.44	16.14	1310.30	
CTC-MW-04S	S	4/30/1998	1326.81	16.29	1310.52	
CTC-MW-05D	D	10/8/1997	1323.28	15.57	1307.71	
CTC-MW-05D	D	4/30/1998	1323.28	13.32	1309.96	
CTC-MW-05S	S	10/8/1997	1323.32	15.67	1307.65	
CTC-MW-05S	S	4/30/1998	1323.32	13.41	1309.91	
CTC-MW-07S	S	10/8/1997	1325.62	17.83	1307.79	
CTC-MW-07S	S	4/30/1998	1325.62	15.47	1310.15	
DA-MW-04		5/1/1998	1326.14	11.20	1314.94	
DA-MW-05		5/1/1998	1328.30	12.33	1315.97	
DA-MW-09		5/1/1998	1326.33	11.20	1315.13	
DRB-02A		4/21/1998			1295.48	
DRB-04		4/21/1998			1295.19	
DRB-06	S	4/21/1998			1294.93	
DRB-08	S	4/21/1998			1300.18	
DRB-11	S	4/21/1998			1299.38	
DRB-11A		10/30/1997	1307.60	12.69	1294.91	
DRB-13		4/21/1998			1296.74	
DRB-13A		10/30/1997	1312.11	16.62	1295.49	
DRB-13A		4/21/1998	1312.11	15.37	1296.74	
DRB-15		4/21/1998			1297.51	
DRB-150	F	10/30/1997	1311.54	18.15	1293.39	
DRB-16		4/21/1998			1295.14	
DRB-17		4/21/1998			1295.96	
DRB-18		4/21/1998			1296.62	
DRB-19		4/21/1998			1295.92	
DRB-19stbd	D	4/21/1998			1292.39	
DRB-21		4/21/1998			1295.66	
DRB-21stbd	D	4/21/1998			1293.82	
DRB-23		4/21/1998			1297.26	
DRB-24		4/21/1998			1297.08	
DRB-25		4/21/1998			1296.43	
DRB-27		4/21/1998			1295.67	
DRB-28		4/21/1998			1295.10	
DRB-29		4/21/1998			1297.35	
DRB-29S	S	4/21/1998	1308.70	11.35	1297.35	
DRB-32		4/21/1998			1296.00	
DRB-32A		4/21/1998	1310.32	14.32	1296.00	

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North Industrial Corridor (NIC) Site
Phase 1 Water Level Measurements (Jan 1997-June 1998)

Well ID	Nested Well Depth Zone	Date	Measuring Point Elevation* (feet msl)	Depth to Water (feet bmp)	Water Level Elevation (feet msl)	Comments
DRB-33		4/21/1998			1296.36	
DRB-33A		4/21/1998	1310.77	14.41	1296.36	
DRB-34	S	4/21/1998			1299.29	
DRB-35		4/21/1998			1300.72	
DRB-36		4/21/1998			1296.59	
DRB-36A		4/21/1998			1297.56	
DRB-37		4/21/1998			1297.83	
DRB-40		4/21/1998			1295.38	
DRB-42		4/21/1998			1296.49	
DRB-42A		4/21/1998			1296.80	
DRB-43		4/21/1998			1297.64	
DRB-44		4/21/1998			1295.70	
DRB-46		4/21/1998			1301.39	
DRB-A		4/21/1998			1295.14	
DRB-B		4/21/1998			1295.20	
DRB-C		4/21/1998			1295.06	
DRB-D	D	4/21/1998			1295.18	
DRB-E		4/21/1998			1297.52	
DRB-I		4/21/1998			1297.07	
DRB-J		4/21/1998			1295.68	
DRB-MW-01	S	10/30/1997	1312.01	12.37	1299.64	
DRB-MW-01	S	4/21/1998	1312.01	9.63	1302.38	
DRB-MW-02	S	10/30/1997	1313.50	11.76	1301.74	
DRB-MW-02	S	4/21/1998	1313.50	13.94	1299.56	
DRB-MW-02	S	5/1/1998	1313.50	13.95	1299.55	
DRB-MW-02	S	4/21/1998			1299.56	
DRB-MW-03	S	4/21/1998			1300.59	
DRB-MW-03	S	10/30/1997	1314.86	14.28	1300.58	
DRB-MW-03	S	4/21/1998	1314.86	14.27	1300.59	
DRB-MW-04		4/21/1998	1311.15	16.82	1294.33	
DRB-MW-05	S	4/21/1998	1311.21	17.30	1293.91	
DRB-MW-06	S	4/21/1998	1307.42	13.00	1294.42	
DRB-MW-07	S/I	4/21/1998	1311.10	16.47	1294.63	
DRB-MW-08	S/I	4/21/1998	1312.37	17.68	1294.69	
DRB-MW-09	F	4/21/1998	1309.34	15.19	1294.15	
DRB-MW-10	S/I	10/30/1997	1307.70	13.39	1294.31	
DRB-MW-10	S/I	4/21/1998	1307.70	13.10	1294.60	
DRB-MW-11	S	4/21/1998	1307.19	12.49	1294.70	
DRB-MW-12		10/30/1997	1309.00	14.93	1294.07	
DRB-MW-12		4/21/1998	1309.00	14.78	1294.22	
DRB-MW-13		4/21/1998	1304.96	10.84	1294.12	
DRB-MW-20	S	4/21/1998			1296.88	
DRB-MW-30	S	4/21/1998			1298.49	

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North Industrial Corridor (NIC) Site
Phase 1 Water Level Measurements (Jan 1997-June 1998)

Well ID	Nested Well Depth Zone	Date	Measuring Point Elevation* (feet msl)	Depth to Water (feet bmp)	Water Level Elevation (feet msl)	Comments
DRB-MW-40	F	4/21/1998			1296.50	
DRB-MW-50		4/21/1998			1294.83	
DRB-MW-60		4/21/1998			1295.86	
DRB-MW-70		4/21/1998			1294.54	
DRB-MW-80		4/21/1998			1294.17	
DRB-MW-90		4/21/1998			1295.26	
DRB-MW-100		4/21/1998			1295.71	
DRB-MW-110		4/21/1998			1293.34	
DRB-MW-120	F	4/21/1998			1292.74	
DRB-MW-130	S/I	4/21/1998			1293.41	
DRB-MW-140		4/21/1998			1294.27	
DRB-MW-150		4/21/1998			1293.02	
DRB-MW-170		4/21/1998			1297.77	
DRB-MW-180		4/21/1998			1295.58	
DRB-MW-190		4/21/1998			1294.07	
DRB-MW-200		4/21/1998			1295.69	
DRB-MW-210		4/21/1998			1293.84	
DRB-MW-220		4/21/1998			1293.75	
DRB-MW-230		4/21/1998			1293.95	
DRB-MW-250	D	4/21/1998			1299.95	
DRB-MW-260		4/21/1998			1301.06	
DRB-MW-270		4/21/1998			1292.33	
DRB-MW-280		4/21/1998			1294.99	
DRB-MW-290		4/21/1998			1299.54	
DRB-MW-300		4/21/1998			1298.37	
DRB-MW-320		4/21/1998			1295.27	
DRB-MW-330		4/21/1998			1299.66	
DRB-MW-340		4/21/1998			1297.64	
DRB-MW-350		4/21/1998			1292.73	
DRB-MW-360	F	4/21/1998			1295.74	
DRB-MW-370		4/21/1998			1297.08	
DRB-MW-380		4/21/1998			1297.58	
DRB-MW-390	S/I	4/21/1998			1294.59	
DRB-MW-400		4/21/1998			1294.90	
DRB-MW-410		4/21/1998			1299.72	
DRB-MW-420	S/I	4/21/1998			1300.50	
DRB-MW-430	S/I	4/21/1998			1300.98	
DRB-MW-440		4/21/1998			1300.88	
DRB-MW-450	S/I	4/21/1998			1300.12	
DRB-MW-460		4/21/1998			1299.72	
DRB-MW-480	F	4/21/1998			1300.95	
DRB-RGBD	D	4/21/1998			1295.73	
DRB-T-1		4/21/1998			1294.57	

Table 4-1a
North Industrial Corridor (NIC) Site
Phase 1 Water Level Measurements (Jan 1997-June 1998)

Well ID	Nested Well Depth Zone	Date	Measuring Point Elevation* (feet msl)	Depth to Water (feet bmp)	Water Level Elevation (feet msl)	Comments
DRB-T-3		4/21/1998			1294.05	
DRB-T-4		4/21/1998			1294.22	
DRB-T-5		4/21/1998			1294.74	
DRB-T-6		4/21/1998			1294.41	
DRB-T-7		4/21/1998			1294.15	
DRB-T-8		4/21/1998			1293.96	
EXC-MW-02A	S	4/30/1998	1314.04	10.59	1303.45	
EXC-MW-02B	D	4/30/1998	1314.26	10.82	1303.44	
EXC-MW-03A	S	4/30/1998	1315.87	12.71	1303.16	
EXC-MW-03B	D	4/30/1998	1315.79	12.66	1303.13	
EXC-MW-04A	S	4/30/1998	1316.71	13.76	1302.95	
EXC-MW-04B	D	4/30/1998	1317.06	14.07	1302.99	
EXC-MW-06A	S	4/30/1998	1312.44	10.33	1302.11	
EXC-MW-06B	D	4/30/1998	1312.38	10.23	1302.15	
EXC-MW-07B	D	4/30/1998	1313.14	11.61	1301.53	
EXC-MW-08A	S	4/30/1998	1311.62	10.48	1301.14	
EXC-MW-08B	D	4/30/1998	1311.73	10.54	1301.19	
EXC-MW-09A	S	4/30/1998	1313.40	10.92	1302.48	
EXC-MW-10A	S	4/30/1998	1314.83	11.40	1303.43	
LBC-02		5/1/1998	1335.40	14.43	1320.97	
LBC-05		5/1/1998	1332.46	13.02	1319.44	
LBC-06		5/1/1998	1330.83	12.00	1318.83	
LBC-08		5/1/1998	1331.96	12.84	1319.12	
NBPN-MW-02		5/1/1998		12.69		
NBPN-MW-05		5/1/1998		12.66		
NBPN-MW-09		5/1/1998		12.71		
OHS-EMW-01		2/27/1997		17.07		
OHS-EMW-02		2/27/1997		19.19		
OHS-MW-01A		2/27/1997		18.37		
OHS-MW-02A		2/27/1997		16.87		
OHS-MW-03A		2/27/1997		16.15		
OHS-MW-04A		2/27/1997		14.41		
OHS-MW-05A		2/27/1997		12.93		
OHS-MW-06A		2/27/1997		15.35		
OHS-MW-07A		2/27/1997		16.56		
QM-MW-01		4/30/1998		12.32		
QM-MW-03		4/30/1998		10.12		
QM-MW-06		4/30/1998		13.22		
QT-MW-02		4/29/1998	1326.00	16.37	1309.63	
QT-MW-03		4/29/1998	1321.45	14.16	1307.29	
QT-MW-04		4/29/1998	1321.72	14.24	1307.48	
QT-MW-06		4/29/1998	1320.13	13.97	1306.16	
QT-MW-07		4/29/1998	1320.97	13.96	1307.01	

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North Industrial Corridor (NIC) Site
Phase 1 Water Level Measurements (Jan 1997-June 1998)

Well ID	Nested Well Depth Zone	Date	Measuring Point Elevation* (feet msl)	Depth to Water (feet bmp)	Water Level Elevation (feet msl)	Comments
QT-MW-08		4/29/1998	1319.23	13.12	1306.11	
RM-MW-01		4/30/1998		11.56		
RM-MW-04		4/30/1998		10.65		
RM-MW-05		4/30/1998		10.36		
RM-MW-07		4/30/1998		11.73		
SYP-401S	S	4/30/1998		11.60		
SYP-402S	S	5/1/1998		13.69		
UCL-MW-01D	D	9/25/1997	1347.64	5.75	1341.89	
UCL-MW-01D	D	10/2/1997	1347.64	6.30	1341.34	
UCL-MW-01S	S	9/25/1997	1347.44	6.26	1341.18	
UCL-MW-01S	S	10/2/1997	1347.44	6.45	1340.99	
UCL-MW-02	F	9/25/1997	1348.21	8.90	1339.31	
UCL-MW-02	F	10/2/1997	1348.21	9.25	1338.96	
UCL-MW-02	F	10/8/1997	1348.21	9.54	1338.67	
UCL-MW-02	F	4/29/1998	1348.21	5.59	1342.62	
UCL-MW-03	F	9/25/1997	1345.51	4.38	1341.13	
UCL-MW-03	F	10/2/1997	1345.51	4.42	1341.09	
UCL-MW-03	F	10/8/1997	1345.51	4.45	1341.06	
UCL-MW-03	F	4/29/1998	1345.51	2.24	1343.27	
UCL-MW-04	F	9/25/1997	1347.85	7.18	1340.67	
UCL-MW-04	F	10/2/1997	1347.85	7.88	1339.97	
UCL-MW-04	F	4/29/1998	1347.95	7.51	1340.44	
UCL-MW-05	F	9/25/1997	1348.18	7.36	1340.82	
UCL-MW-05	F	10/2/1997	1348.18	7.59	1340.59	
UCL-MW-05	F	4/29/1998	1348.18	3.88	1344.30	
UCL-MW-06	F	10/8/1997	1349.04	9.28	1339.76	
UCL-MW-06	F	4/29/1998	1349.04	5.70	1343.34	
UCL-MW-07		9/25/1997	1339.44	4.70	1334.74	
UCL-MW-07		10/2/1997	1339.44	5.49	1333.95	
UCL-MW-08	F	9/25/1997	1327.71	3.20	1324.51	
UCL-MW-08	F	10/2/1997	1327.71	3.42	1324.29	
UCL-MW-08	F	4/29/1998	1327.71	2.90	1324.81	
UCL-MW-09	F	9/25/1997	1330.62	11.61	1319.01	
UCL-MW-09	F	10/2/1997	1330.62	10.31	1320.31	
UCL-MW-09	F	4/29/1998	1330.62	8.02	1322.60	
UCL-MW-10	F	9/25/1997	1337.83	12.84	1324.99	
UCL-MW-10	F	10/2/1997	1337.83	12.32	1325.51	
UCL-MW-10	F	4/29/1998	1337.93	8.61	1329.32	
UCL-MW-11		9/25/1997	1325.59	4.32	1321.27	
UCL-MW-11		10/2/1997	1325.59	4.54	1321.05	
UCL-MW-11		4/29/1998	1325.80			Well Temporarily
UCL-MW-12D	D	9/25/1997	1347.79	17.40	1330.39	
UCL-MW-12D	D	10/2/1997	1347.79	17.49	1330.30	

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North Industrial Corridor (NIC) Site
Phase 1 Water Level Measurements (Jan 1997-June 1998)

Well ID	Nested Well Depth Zone	Date	Measuring Point Elevation* (feet msl)	Depth to Water (feet bmp)	Water Level Elevation (feet msl)	Comments
UCL-MW-12S	S	9/25/1997	1347.83	17.29	1330.54	
UCL-MW-12S	S	10/2/1997	1347.83	17.40	1330.43	
UCL-MW-12S	S	4/29/1998	1347.83	12.96	1334.87	
UCL-MW-13	F	9/25/1997	1347.21	11.78	1335.43	
UCL-MW-13	F	10/2/1997	1347.21	12.05	1335.16	
UCL-MW-14	F	9/25/1997	1349.51	7.07	1342.44	
UCL-MW-14	F	10/2/1997	1349.51	7.45	1342.06	
UCL-MW-15	F	9/25/1997	1344.81	5.82	1338.99	
UCL-MW-15	F	10/2/1997	1344.81	5.82	1338.99	
UCL-MW-16	F	9/25/1997	1349.55	16.99	1332.56	
UCL-MW-16	F	10/2/1997	1349.55	33.80	1315.75	
UCL-MW-17	F	9/25/1997	1348.65	13.32	1335.33	
UCL-MW-17	F	10/2/1997	1348.65	25.82	1322.83	
UCL-MW-18	F	4/29/1998	1330.54	9.13	1321.41	
UCL-MW-19	F	9/25/1997	1331.26	14.20	1317.06	
UCL-MW-19	F	10/2/1997	1331.26	12.76	1318.50	
UCL-MW-19	F	4/29/1998	1331.26	11.11	1320.15	
UCL-MW-20	F	9/25/1997	1331.34	14.07	1317.27	
UCL-MW-20	F	10/2/1997	1331.34	12.90	1318.44	
UCL-MW-20	F	4/29/1998	1331.34	11.27	1320.07	
UCL-MW-21	F	9/25/1997	1331.45	13.47	1317.98	
UCL-MW-21	F	10/2/1997	1331.45	12.66	1318.79	
UCL-MW-22		9/25/1997	1327.23	11.66	1315.57	
UCL-MW-22		10/2/1997	1327.23	11.32	1315.91	
UCL-MW-22		4/29/1998	1327.23	9.75	1317.48	
UCL-MW-23	F	9/25/1997	1326.81	6.18	1320.63	
UCL-MW-23	F	10/2/1997	1326.81	8.85	1317.96	
UCL-TW-01	F	9/25/1997	1346.25	10.40	1335.85	
UCL-TW-01	F	10/2/1997	1346.25	10.38	1335.87	
UCL-TW-02A	F	9/25/1997	1343.87	7.43	1336.44	
UCL-TW-02A	F	10/2/1997	1343.87	12.41	1331.46	
UCL-TW-03	F	9/25/1997	1346.96	9.95	1337.01	
UCL-TW-03	F	10/2/1997	1346.96	9.69	1337.27	
UCL-TW-04	F	4/29/1998	1335.99	2.00	1333.99	
ULI-MW-02		4/29/1997		11.90		
ULI-MW-02		7/6/1997		10.80		
ULI-MW-03		7/6/1997		11.50		
ULI-MW-04		4/29/1997		12.90		
URS-MW-01		10/8/1997	1312.95	12.95	1300.00	
URS-MW-01	S	4/30/1998	1312.95	11.64	1301.31	
URS-MW-02		4/30/1998		11.07		
URS-MW-03	S	10/8/1997	1313.13	11.30	1301.83	
URS-MW-03	S	4/30/1998	1313.13	11.10	1302.03	

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North Industrial Corridor (NIC) Site
Phase 1 Water Level Measurements (Jan 1997-June 1998)

Well ID	Nested Well Depth Zone	Date	Measuring Point Elevation* (feet msl)	Depth to Water (feet bmp)	Water Level Elevation (feet msl)	Comments
USD-MW-02D	D	10/8/1997	1334.61	11.49	1323.12	
USD-MW-02D	D	4/30/1998	1334.61	8.15	1326.46	
USD-MW-02S	S	4/30/1998	1334.53	8.15	1326.38	
USD-MW-04D	D	10/8/1997	1327.97	17.53	1310.44	
USD-MW-04D	D	4/30/1998	1327.97	14.75	1313.22	
USD-MW-04S	S	10/8/1997	1327.87	17.43	1310.44	
USD-MW-04S	S	4/30/1998	1327.87	14.58	1313.29	
USD-MW-05D	D	10/8/1997	1327.47	18.49	1308.98	
USD-MW-05D	D	4/30/1998	1327.47	15.27	1312.20	
USD-MW-05S	S	10/8/1997	1327.46	17.79	1309.67	
USD-MW-05S	S	4/30/1998	1327.46	15.03	1312.43	
USD-MW-06D	D	10/8/1997	1330.89	22.03	1308.86	
USD-MW-06D	D	4/30/1998	1330.89	19.12	1311.77	
USD-MW-06S	S	4/30/1998	1330.78	18.23	1312.55	
VCM-MW-01	S	1/23/1997		14.00		
VCM-MW-01	S	4/2/1997		14.00		
VCM-MW-02B	S	1/23/1997		14.00		
VCM-MW-02B	S	4/2/1997		14.00		
VCM-MW-03	S	1/23/1997		14.35		
VCM-MW-03	S	4/2/1997		14.35		
VCM-MW-04	D	1/23/1997		22.00		
VCM-MW-04	D	4/2/1997		22.00		
VCM-MW-06	D	1/23/1997		28.00		
VCM-MW-06	D	4/2/1997		28.00		
VCM-MW-07	D	1/23/1997		31.00		
VCM-MW-07	D	4/2/1997		31.00		
WND-01S	S	10/6/1997	1325.96	18.65	1307.31	
WND-01S	S	4/30/1998	1325.96	16.41	1309.55	
WND-02D	D	10/6/1997	1311.30	13.34	1297.96	
WND-02D	D	5/1/1998	1311.30	12.73	1298.57	
WND-02S	S	5/1/1998	1311.19	12.91	1298.28	
WND-03S	S	10/6/1997	1315.71	14.70	1301.01	
WND-03S	S	4/30/1998	1315.71	14.27	1301.44	
WND-04S	S	4/30/1998	1318.70	15.83	1302.87	
WND-06S	S	10/6/1997	1326.65	19.43	1307.22	
WND-06S	S	4/30/1998	1326.65	17.00	1309.65	
WND-07S	S	5/1/1998	1320.73	14.03	1306.70	
WND-08S	S	10/7/1997	1318.19	14.20	1303.99	
WND-08S	S	5/2/1998	1318.19	13.87	1304.32	
WND-09S	S	10/6/1997	1317.26	13.90	1303.36	

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North Industrial Corridor (NIC) Site
Phase 1 Water Level Measurements (Jan 1997-June 1998)

Well ID	Nested Well Depth Zone	Date	Measuring Point Elevation* (feet msl)	Depth to Water (feet bmp)	Water Level Elevation (feet msl)	Comments
WND-10S	S	10/6/1997	1317.95	13.94	1304.01	
WND-10S	S	10/7/1997	1317.95	13.86	1304.09	
WND-10S	S	4/30/1998	1317.95	13.34	1304.61	
WND-10S	S	5/4/1998	1317.95	14.23	1303.86	
WND-11S	S	10/6/1997	1316.29	13.36	1302.93	
WND-11S	S	4/30/1998	1316.29	13.09	1303.20	
WND-12D	D	10/6/1997	1315.04	12.09	1302.95	
WND-12D	D	4/30/1998	1315.04	11.65	1303.39	
WND-12S	S	4/30/1998	1314.83	11.54	1303.29	
WND-13D	D	10/7/1997	1312.42	12.86	1299.56	
WND-13D	D	5/1/1998	1312.42	11.92	1300.50	
WND-13S	S	10/7/1997	1312.63	13.07	1299.56	
WND-13S	S	5/1/1998	1312.63	12.10	1300.53	
WND-14D	D	10/6/1997	1317.15	14.21	1302.94	
WND-14D	D	10/7/1997	1317.15	14.25	1302.90	
WND-14D	D	5/2/1998	1317.15	13.82	1303.33	
WND-14S	S	10/6/1997	1317.23	14.31	1302.92	
WND-14S	S	10/7/1997	1317.23	14.36	1302.87	
WND-14S	S	5/2/1998	1317.23	13.89	1303.34	
WND-15D	D	10/7/1997	1305.96	13.56	1292.40	
WND-15D	D	5/1/1998	1305.96	12.80	1293.16	
WND-15S	S	10/7/1997	1306.32	13.94	1292.38	
WND-15S	S	5/1/1998	1306.32	13.18	1293.14	
WND-18D	D	10/7/1997	1310.65	14.90	1295.75	
WND-18D	D	5/1/1998	1310.65	14.69	1295.96	
WND-18S	S	10/7/1997	1310.72	15.00	1295.72	
WND-18S	S	5/1/1998	1310.72	14.59	1296.13	
WND-19D	D	10/7/1997	1306.62	11.41	1295.21	
WND-19D	D	5/1/1998	1306.62	11.07	1295.55	
WND-19S	S	10/7/1997	1306.59	11.35	1295.24	
WND-19S	S	5/1/1998	1306.59	11.04	1295.55	
WND-20S	S	10/7/1997	1313.58	16.61	1296.97	
WND-20S	S	5/1/1998	1313.58	16.23	1297.35	
WND-21D	D	10/7/1997	1309.53	11.22	1298.31	
WND-21D	D	5/1/1998	1309.53	11.08	1298.45	
WND-21S	S	10/7/1997	1309.57	11.67	1297.90	
WND-21S	S	5/1/1998	1309.57	11.04	1298.53	
WND-22D	D	10/6/1997	1323.01	14.95	1308.06	
WND-22D	D	4/30/1998	1323.01	13.68	1309.33	
WND-22S	S	10/6/1997	1322.74	14.46	1308.28	
WND-22S	S	4/30/1998	1322.74	12.62	1310.12	
WND-23S	S	10/6/1997	1316.97	13.73	1303.24	
WND-23S	S	4/30/1998	1316.97	13.35	1303.62	

Table 4-1a
North Industrial Corridor (NIC) Site
Phase 1 Water Level Measurements (Jan 1997-June 1998)

Well ID	Nested Well Depth Zone	Date	Measuring Point Elevation* (feet msl)	Depth to Water (feet bmp)	Water Level Elevation (feet msl)	Comments
WND-24D	D	10/7/1997	1306.68	12.43	1294.25	
WND-24D	D	5/1/1998	1306.68	12.02	1294.66	
WND-24S	S	10/7/1997	1306.68	12.46	1294.22	
WND-24S	S	5/1/1998	1306.68	12.06	1294.62	
WND-25D	D	10/6/1997	1318.12	14.72	1303.40	
WND-25D	D	10/7/1997	1318.12	14.84	1303.28	
WND-25D	D	4/30/1998	1318.12	14.28	1303.84	
WND-25D	D	5/4/1998	1318.12	15.50	1303.80	
WND-25S	S	10/6/1997	1318.09	14.70	1303.39	
WND-25S	S	10/7/1997	1318.09	14.79	1303.30	
WND-25S	S	4/30/1998	1318.09	14.24	1303.85	
WND-25S	S	5/4/1998	1318.09	15.11	1303.90	
WND-26D	D	10/6/1997	1314.84	14.45	1300.39	
WND-26D	D	4/30/1998	1314.84	14.02	1300.82	
WND-26S	S	10/6/1997	1314.94	14.35	1300.59	
WND-26S	S	4/30/1998	1314.94	14.11	1300.83	
WND-27S	S	5/1/1998	1314.57	12.54	1302.03	
WND-28S	S	10/6/1997	1320.37	14.91	1305.46	
WND-28S	S	4/30/1998	1320.37	14.42	1305.95	
WND-29D	D	10/7/1997	1319.30	16.10	1303.20	
WND-29D	D	4/30/1998	1319.30	15.49	1303.81	
WND-29S	S	10/7/1997	1319.01	15.70	1303.31	
WND-29S	S	4/30/1998	1319.01	15.05	1303.96	
WND-30D	D	5/1/1998	1313.19	13.65	1299.54	
WND-31S	S	10/7/1997	1317.26	15.52	1301.74	
WND-32S	S	10/7/1997	1317.68	16.08	1301.60	
WND-33D	D	10/6/1997	1310.19	12.33	1297.86	
WND-33D	D	5/7/1998	1310.19	11.80	1298.39	
WND-33S	S	10/6/1997	1310.22	12.34	1297.88	
WND-33S	S	5/7/1998	1310.22	11.80	1298.42	
WND-34D	D	10/6/1997	1313.98	14.48	1299.50	
WND-34D	D	5/1/1998	1313.98	13.92	1300.06	
WND-34S	S	10/6/1997	1313.92	14.44	1299.48	
WND-34S	S	5/1/1998	1313.92	13.86	1300.06	
WND-35D	D	5/7/1998	1314.91	15.66	1299.25	
WND-36D	D	10/6/1997	1314.22	13.51	1300.71	
WND-36D	D	5/1/1998	1314.22	13.06	1301.16	
WND-36S	S	10/6/1997	1314.30	13.60	1300.70	
WND-36S	S	5/1/1998	1314.30	13.13	1301.17	
WND-37DR	D	5/1/1998		14.92		
WND-38D	D	10/7/1997	1307.68	11.36	1296.32	
WND-38D	D	5/4/1998	1307.68	10.85	1296.83	

Table 4-1a
North Industrial Corridor (NIC) Site
Phase 1 Water Level Measurements (Jan 1997-June 1998)

Well ID	Nested Well Depth Zone	Date	Measuring Point Elevation* (feet msl)	Depth to Water (feet bmp)	Water Level Elevation (feet msl)	Comments
WND-38S	S	10/7/1997	1307.52	11.20	1296.32	
WND-38S	S	5/4/1998	1307.52	10.72	1296.80	
WND-39D	D	10/7/1997	1308.45	12.04	1296.41	
WND-39D	D	5/1/1998	1308.45	11.36	1297.09	
WND-39S	S	10/7/1997	1308.69	12.08	1296.61	
WND-39S	S	5/1/1998	1308.69	11.38	1297.31	
WND-40D	D	10/7/1997	1302.48	12.06	1290.42	
WND-40D	D	5/1/1998	1302.48	11.41	1291.07	
WND-40S	S	10/7/1997	1302.62	12.23	1290.39	
WND-40S	S	5/1/1998	1302.62	11.55	1291.07	
WND-41D	D	10/6/1997	1307.05	12.03	1295.02	
WND-41D	D	5/1/1998	1307.05	11.82	1295.23	
WND-41S	S	10/6/1997	1307.05	12.10	1294.95	
WND-41S	S	5/1/1998	1307.05	11.91	1295.14	
WND-42D	D	10/7/1997	1303.81	14.97	1288.84	
WND-42D	D	5/1/1998	1303.81	14.26	1289.55	
WND-42S	S	10/7/1997	1303.65	14.83	1288.82	
WND-42S	S	5/1/1998	1303.65	14.13	1289.52	
WND-43D	D	10/7/1997	1307.49	13.15	1294.34	
WND-43D	D	5/1/1998	1307.49	12.84	1294.65	
WND-43S	S	10/7/1997	1307.48	13.20	1294.28	
WND-43S	S	5/1/1998	1307.48	12.90	1294.58	
WND-44D	D	10/7/1997	1303.63	14.04	1289.59	
WND-44D	D	5/1/1998	1303.63	13.35	1290.28	
WND-44S	S	10/7/1997	1303.38	13.80	1289.58	
WND-44S	S	5/1/1998	1303.38	13.12	1290.26	
WND-45D	D	10/7/1997	1305.49	12.35	1293.14	
WND-45D	D	5/1/1998	1305.49	11.86	1293.63	
WND-45S	S	10/7/1997	1305.79	12.60	1293.19	
WND-45S	S	5/1/1998	1305.79	12.12	1293.67	
WND-46D	D	10/7/1997	1304.93	11.97	1292.96	
WND-46D	D	5/1/1998	1304.93	11.52	1293.41	
WND-46S	S	10/7/1997	1305.08	12.07	1293.01	
WND-46S	S	5/1/1998	1305.08	11.62	1293.46	
WND-47D	D	10/7/1997	1304.78	12.27	1292.51	
WND-47D	D	5/1/1998	1304.78	11.76	1293.02	
WND-47S	S	10/7/1997	1304.95	12.10	1292.85	
WND-47S	S	5/1/1998	1304.95	11.94	1293.01	
WND-48D	D	10/7/1997	1301.21	13.07	1288.14	
CN-RW-01		10/7/1997	1322.53	21.83	1300.70	
CN-RW-01		5/4/1998	1322.53	13.45	1306.59	
CN-RW-02		5/4/1998	1320.28	12.64	1307.64	

Table 4-1a
North Industrial Corridor (NIC) Site
Phase 1 Water Level Measurements (Jan 1997-June 1998)

Well ID	Nested Well Depth Zone	Date	Measuring Point Elevation* (feet msl)	Depth to Water (feet bmp)	Water Level Elevation (feet msl)	Comments
CN-VEW-05D	D	10/7/1997	1320.04	14.52	1305.52	
CN-VEW-05D	D	5/4/1998	1320.04	12.26	1307.74	
CN-VEW-11D	D	10/7/1997	1320.28	14.17	1306.11	
CN-VEW-11D	D	5/4/1998	1320.28	13.01	1307.28	
CN-VEW-13D	D	5/4/1998	1320.05	13.44	1306.61	
CN-VEW-14D	D	10/7/1997	1320.29	14.41	1305.88	
CN-VEW-14D	D	5/4/1998	1320.16	13.60	1306.56	
CN-VEW-18D	D	10/7/1997	1320.05	14.58	1305.47	
CN-VEW-18D	D	5/4/1998	1319.93	13.49	1306.44	
CN-VEW-21D	D	5/4/1998	1317.95	13.23	1304.72	
CN-VEW-22D	D	10/7/1997	1319.93	14.45	1305.48	
CN-VEW-22D	D	5/4/1998	1318.12	14.22	1303.90	
DRB-RW-01		4/21/1998			1295.54	
DRB-RW-02		4/21/1998			1295.78	
DRB-RW-04		4/21/1998			1295.19	
DRB-RW-05		4/21/1998			1295.35	
DRB-RW-06		4/21/1998			1295.83	
DRB-RW-07	S	4/21/1998			1295.84	
DRB-RW-08		4/21/1998			1293.84	
DRB-RW-09		4/21/1998			1294.15	
DRB-RW-10		4/21/1998			1294.58	
DRB-RW-11		4/21/1998			1293.83	
DRB-RW-12		4/21/1998			1294.28	
DRB-RW-13		4/21/1998			1295.26	
DRB-RW-14		4/21/1998			1294.32	
DRB-RW-15		4/21/1998			1295.31	
DRB-RW-16		4/21/1998			1292.84	
DRB-RW-17		4/21/1998			1290.96	
DRB-RW-18	S/I	4/21/1998			1293.66	
DRB-RW-19	S/I	4/21/1998			1295.32	
DRB-RW-20	S/I	4/21/1998			1292.64	
DRB-RW-21		4/21/1998			1289.71	
DRB-RW-22	S/I	4/21/1998			1290.01	
DRB-RW-23	S/I	4/21/1998			1292.04	
DRB-RW-24	S/I	4/21/1998			1295.21	
DRB-RW-25	S/I	4/21/1998			1292.32	
DRB-RW-26	S/I	4/21/1998			1292.76	
DRB-RW-27	S/I	4/21/1998			1292.96	
DRB-RW-28	S/I	4/21/1998			1293.54	
DRB-RW-29	F	4/21/1998			1292.15	
DRB-RW-30		4/21/1998			1290.96	
DRB-RW-31		4/21/1998			1292.15	
DRB-RW-32		4/21/1998			1300.71	

Table 4-1a
North Industrial Corridor (NIC) Site
Phase 1 Water Level Measurements (Jan 1997-June 1998)

Well ID	Nested Well Depth Zone	Date	Measuring Point Elevation* (feet msl)	Depth to Water (feet bmp)	Water Level Elevation (feet msl)	Comments
UCL-PZ-01	F	4/29/1998	1333.50	3.06	1330.44	
UCL-PZ-02	F	4/29/1998	1328.60	6.35	1322.25	
UCL-R-01	F	9/25/1997	1350.29	13.80	1336.49	
UCL-R-01	F	10/2/1997	1350.29	10.05	1340.24	
UCL-R-02	F	9/25/1997	1335.87	21.32	1314.55	
UCL-R-02	F	10/2/1997	1335.87	3.70	1332.17	
UCL-R-02	F	4/29/1998	1335.87	21.60	1314.27	Pumping
UCL-R-03	F	9/25/1997	1335.57	18.46	1317.11	
UCL-R-03	F	10/2/1997	1335.57	4.88	1330.69	
UCL-R-03	F	4/29/1998	1335.57	15.60	1319.97	Pumping
UCL-R-04	F	9/25/1997	1336.95	17.46	1319.49	
UCL-R-04	F	10/2/1997	1336.95	5.89	1331.06	
UCL-R-04	F	4/29/1998	1336.95	15.50	1321.45	Pumping
UCL-R-05	F	9/25/1997	1338.32	17.78	1320.54	
UCL-R-05	F	10/2/1997	1338.32	9.25	1329.07	
UCL-R-05	F	4/29/1998	1338.32	19.60	1318.72	Pumping
UCL-R-06	F	9/25/1997	1344.84	22.55	1322.29	
UCL-R-06	F	10/2/1997	1344.84	15.70	1329.14	
UCL-R-06	F	4/29/1998	1344.84	16.30	1328.54	Pumping
UCL-R-07	F	9/25/1997	1330.72	16.72	1314.00	
UCL-R-07	F	10/2/1997	1330.72	10.28	1320.44	
UCL-R-07	F	4/29/1998	1330.72	9.30	1321.42	Pumping
UCL-R-08	F	9/25/1997	1326.90	13.64	1313.26	
UCL-R-08	F	10/2/1997	1326.90	5.88	1321.02	
UCL-R-08	F	4/29/1998	1326.90	15.30	1311.60	Pumping
UCL-R-09	F	9/25/1997	1327.52	18.80	1308.72	
UCL-R-09	F	10/2/1997	1327.52	5.10	1322.42	
UCL-R-09	F	4/29/1998	1327.52	3.25	1324.27	Pumping
UCL-R-10	F	9/25/1997	1331.36	19.42	1311.94	
UCL-R-10	F	10/2/1997	1331.36	11.28	1320.08	
UCL-R-10	F	4/29/1998	1331.36	16.25	1315.11	Pumping
UCL-R-11	F	9/25/1997	1331.59	16.95	1314.64	
UCL-R-11	F	10/2/1997	1331.59	10.45	1321.14	
UCL-R-11	F	4/29/1998	1331.59	16.25	1315.34	Pumping
UCL-R-12	F	9/25/1997	1330.27	16.82	1313.45	
UCL-R-12	F	10/2/1997	1330.27	8.85	1321.42	
UCL-R-12	F	4/29/1998	1330.27	11.55	1318.72	Pumping
ULI-HP-01		4/15/1997		13.00		
ULI-HP-02		4/15/1997		13.00		
ULI-HP-03		4/15/1997		13.00		
WND-48D	D	5/1/1998	1301.21	12.38	1288.83	
WND-48S	S	10/7/1997	1300.98	12.90	1288.08	
WND-48S	S	5/1/1998	1300.98	12.19	1288.79	

Table 4-1a
North Industrial Corridor (NIC) Site
Phase 1 Water Level Measurements (Jan 1997-June 1998)

Well ID	Nested Well Depth Zone	Date	Measuring Point Elevation* (feet msl)	Depth to Water (feet bmp)	Water Level Elevation (feet msl)	Comments
WND-49D	D	10/7/1997	1308.15	12.08	1296.07	
WND-49D	D	5/1/1998	1308.15	12.67	1295.48	
WR-MW-04		4/30/1998	1322.91	10.70	1312.21	
WR-MW-05		4/30/1998	1321.97	10.25	1311.72	
WR-MW-09		4/30/1998	1326.93	12.63	1314.30	
WR-MW-10		4/30/1998	1323.03	10.91	1312.12	

Note: Table includes measurements taken by CDM (October 1997 and April/May 1998) and measurements taken by others between January 1997 and June 1998.
msl = Mean Sea Level Elevation
bmp = Below measuring point
* = The Phase 1 Measuring Point Elevation utilized any existing well measuring point elevation survey data. Surveys may not have all utilized the same datum, and benchmark variability may be present. Surveyed measuring point elevations not available for all wells.
Pumping = Reading taken during pumping, measured water level is lower than ambient (nonpumping) condition

Table 4-1b
North Industrial Corridor (NIC) Site
Phase 2 Water Level Measurements (Mar 2001-Aug 2001)

Well ID	Nested Well Depth Zone	Date	Measuring Point Elevation* (feet msl)	Depth to Water (feet bmp)	Water Level Elevation (feet msl)	Comments
313A	D	8/22/2001	1299.96	16.68	1283.28	AKA MW-113D
313B	S	3/21/2001	1299.82	16.26	1283.56	AKA MW-113S
313B	S	8/22/2001	1299.82			Well inaccessible
501B	S	3/21/2001	1301.26	17.49	1283.77	
501B	S	8/22/2001	1301.26	17.44	1283.82	
719	S	3/21/2001	1297.44	11.32	1286.12	
719	S	8/22/2001	1297.44	11.71	1285.73	
729	S	3/21/2001	1296.73	11.84	1284.89	
729	S	8/22/2001	1296.73	12.07	1284.66	
CN-MW-06	D	3/20/2001	1323.54	14.37	1309.17	
CN-MW-06	D	8/21/2001	1323.54	16.01	1307.53	
CN-MW-12	D	3/20/2001	1319.15	14.62	1304.53	
CN-MW-12	D	8/21/2001	1319.15			Destroyed by facility construction
CN-MW-39	S	3/20/2001	1323.48	14.25	1309.23	
CN-MW-39	S	8/21/2001	1323.48	15.86	1307.62	
CN-MW-46	S	3/20/2001	1318.36	13.85	1304.51	
CN-MW-46	S	8/21/2001	1318.36			Destroyed by facility construction
CN-MW-55	S	3/20/2001	1321.19	13.29	1307.90	
CN-MW-55	S	8/21/2001	1321.19	15.20	1305.99	
CN-MW-56	D	3/20/2001	1321.76	13.88	1307.88	
CN-MW-56	D	8/21/2001	1321.76	15.79	1305.97	
CN-MW-59	D	3/20/2001	1320.44	14.55	1305.89	
CN-MW-59	D	8/21/2001	1320.44	15.38	1305.06	
CN-MW-60	S	3/20/2001	1319.90	14.01	1305.89	
CN-MW-60	S	8/21/2001	1319.90	14.83	1305.07	
CNE-MW-07D	D	3/20/2001	1323.45	15.21	1308.24	
CNE-MW-07D	D	8/20/2001	1323.45	17.69	1305.76	
CNE-MW-07S	S	3/20/2001	1323.21	15.02	1308.19	
CNE-MW-07S	S	8/20/2001	1323.21	17.48	1305.73	
CNE-MW-12D	D	3/20/2001	1323.67	14.39	1309.28	
CNE-MW-12D	D	8/20/2001	1323.67	17.11	1306.56	
CNE-MW-12S	S	3/20/2001	1323.49	14.11	1309.38	
CNE-MW-12S	S	8/20/2001	1323.49	16.95	1306.54	
CNE-NE-04D	D	3/20/2001	1320.78	13.92	1306.86	
CNE-NE-04D	D	8/20/2001	1320.78	15.61	1305.17	
CNE-NE-04S	S	3/20/2001	1320.60	13.72	1306.88	
CNE-NE-04S	S	8/20/2001	1320.60	15.42	1305.18	
CNE-NE-06D	D	3/20/2001	1319.11	13.79	1305.32	
CNE-NE-06D	D	8/20/2001	1319.11	14.63	1304.48	
CNE-NE-06S	S	3/20/2001	1318.88	13.19	1305.69	
CNE-NE-06S	S	8/20/2001	1318.88	14.15	1304.73	
CNE-NE-07D	D	3/20/2001	1320.75	14.42	1306.33	
CNE-NE-07D	D	8/20/2001	1320.75	15.83	1304.92	
CNE-NE-07S	S	3/20/2001	1320.66	14.44	1306.22	
CNE-NE-07S	S	8/20/2001	1320.66	15.78	1304.88	
CNE-NE-08I		3/19/2001	1320.48	15.71	1304.77	
CNE-NE-08I		8/20/2001	1320.48	17.12	1303.36	
CNE-NE-09D	D	3/20/2001	1317.43	12.90	1304.53	
CNE-NE-09D	D	8/21/2001	1317.43	14.00	1303.43	
CNE-NE-09S	S	3/20/2001	1317.66	13.50	1304.16	
CNE-NE-09S	S	8/21/2001	1317.66	14.15	1303.51	

Table 4-1b
North Industrial Corridor (NIC) Site
Phase 2 Water Level Measurements (Mar 2001-Aug 2001)

Well ID	Nested Well Depth Zone	Date	Measuring Point Elevation* (feet msl)	Depth to Water (feet bmp)	Water Level Elevation (feet msl)	Comments
CNE-NE-10D	D	3/20/2001	1319.37	14.23	1305.14	
CNE-NE-10D	D	8/21/2001	1319.37	15.26	1304.11	
CNE-NE-10S	S	3/20/2001	1319.21	14.08	1305.13	
CNE-NE-10S	S	8/21/2001	1319.21	15.15	1304.06	
CNE-NE-11D	D	3/20/2001	1315.74	11.56	1304.18	
CNE-NE-11D	D	8/20/2001	1315.74	12.44	1303.30	
CNE-NE-12I		3/20/2001	1318.92	13.83	1305.09	
CNE-NE-12I		3/20/2001	1318.92	13.83	1305.09	
CNE-NE-12I		8/21/2001	1318.92	14.68	1304.24	
CNE-NE-12I		8/21/2001	1318.92	14.68	1304.24	
CSI-MW-01		3/20/2001	1304.00	16.23	1287.77	
CSI-MW-01		8/21/2001	1304.00	16.64	1287.36	
CSI-MW-09		3/20/2001	1302.63	15.31	1287.32	
CSI-MW-09		8/21/2001	1302.63	15.69	1286.94	
CSI-MW-10		3/20/2001	1302.08	15.21	1286.87	
CSI-MW-10		8/21/2001	1302.08	15.58	1286.50	
CTC-MW-01	D	3/19/2001	1327.13	16.94	1310.19	
CTC-MW-01	D	8/21/2001	1327.13			
CTC-MW-02		8/21/2001	1324.96			Destroyed
CTC-MW-03		3/19/2001	1327.68	16.04	1311.64	
CTC-MW-03		8/21/2001	1327.68			
CTC-MW-06D	D	3/19/2001	1324.61	15.34	1309.27	
CTC-MW-06D	D	8/21/2001	1324.61	17.84	1306.77	
CTC-MW-06S	S	3/19/2001	1324.61	15.30	1309.31	
CTC-MW-06S	S	8/21/2001	1324.61	17.80	1306.81	
CTC-MW-07S	S	3/19/2001	1326.12	15.98	1310.14	
CTC-MW-07S	S	8/21/2001	1326.12	18.78	1307.34	
DRB-04		3/25/2001	1313.95	17.10	1298.31	Product Present
DRB-04		8/21/2001	1313.95	18.87	1295.08	Product Present
DRB-MW-02	S	8/21/2001	1313.50	13.90	1299.60	
DRB-MW-03	S	3/27/2001	1315.40	15.60	1299.80	
DRB-MW-03	S	8/21/2001	1315.40	16.23	1299.17	
DRB-MW-11	S	3/25/2001	1307.85	12.75	1295.75	Product Present
DRB-MW-11	S	8/21/2001	1307.85	13.78	1294.07	Product Present
DRB-MW-110		3/27/2001	1311.70	16.93	1294.77	
DRB-MW-110		8/21/2001	1311.70	17.55	1294.15	
DRB-MW-140		3/25/2001	1312.61	17.01	1295.68	Product Present
DRB-MW-140		8/21/2001	1312.61	18.13	1294.48	Product Present
DRB-MW-150		3/27/2001	1312.12	17.82	1294.30	
DRB-MW-150		8/21/2001	1312.12	18.37	1293.75	
DRB-MW-20	S	3/25/2001	1312.39	14.20	1298.20	Product Present
DRB-MW-20	S	8/21/2001	1312.39	16.52	1295.87	Product Present
DRB-MW-250	D	3/27/2001	1314.20	16.00	1298.20	
DRB-MW-250	D	8/21/2001	1314.20	16.33	1297.87	
DRB-MW-30	S	3/27/2001	1312.72	13.94	1298.78	
DRB-MW-30	S	8/21/2001	1312.72	15.34	1297.38	
DRB-MW-350		3/27/2001	1306.40	13.38	1293.02	
DRB-MW-350		8/21/2001	1306.40	14.04	1292.36	
DRB-MW-370		3/27/2001	1311.64	14.04	1297.60	
DRB-MW-370		8/21/2001	1311.64	15.32	1296.32	
DRB-MW-380		3/27/2001	1312.46	14.80	1297.66	
DRB-MW-380		8/21/2001	1312.46	15.50	1296.96	

Table 4-1b
North Industrial Corridor (NIC) Site
Phase 2 Water Level Measurements (Mar 2001-Aug 2001)

Well ID	Nested Well Depth Zone	Date	Measuring Point Elevation* (feet msl)	Depth to Water (feet bmp)	Water Level Elevation (feet msl)	Comments
DRB-MW-440		3/27/2001	1312.97	12.45	1300.52	
DRB-MW-440		8/21/2001	1312.97	13.32	1299.65	
EXC-MW-02A	S	3/19/2001	1314.74	11.10	1303.64	
EXC-MW-02A	S	8/22/2001	1314.74	11.85	1302.89	
EXC-MW-02B	D	3/19/2001	1315.00	11.31	1303.69	
EXC-MW-02B	D	8/22/2001	1315.00	12.08	1302.92	
EXC-MW-04A	S	8/22/2001	1317.39	15.01	1302.38	
EXC-MW-04B	D	8/22/2001	1317.75	15.34	1302.41	
EXC-MW-05B	D	3/19/2001	1316.36	13.69	1302.67	
EXC-MW-05B	D	8/22/2001	1316.36	14.43	1301.93	
EXC-MW-06A	S	3/19/2001	1313.17	10.76	1302.41	
EXC-MW-06A	S	8/22/2001	1313.17	11.53	1301.64	
EXC-MW-06B	D	3/19/2001	1313.12	10.70	1302.42	
EXC-MW-06B	D	8/22/2001	1313.12	11.46	1301.66	
EXC-MW-07B	D	3/19/2001	1313.81	12.06	1301.75	
EXC-MW-07B	D	8/22/2001	1313.81	12.91	1300.90	
FLE-MW-01D	D	3/20/2001	1318.19	16.78	1301.41	
FLE-MW-01D	D	8/20/2001	1318.19	17.65	1300.54	
FLE-MW-01S	S	3/20/2001	1318.05	16.66	1301.39	
FLE-MW-01S	S	8/20/2001	1318.05	17.54	1300.51	
FLE-MW-02D	D	3/20/2001	1318.16	16.00	1302.16	
FLE-MW-02D	D	8/20/2001	1318.16	16.99	1301.17	
FLE-MW-02S	S	3/20/2001	1318.13	15.97	1302.16	
FLE-MW-02S	S	8/20/2001	1318.13	16.97	1301.16	
GPC-HC-02		3/20/2001	1322.71	14.41	1308.30	
GPC-HC-02		8/20/2001	1322.71	16.49	1306.22	
GPC-HC-03		8/20/2001				Replaced with SWL-12
JSP-MW-01		3/19/2001	1324.25	19.73	1304.52	
JSP-MW-01		8/20/2001	1324.25	21.26	1302.99	
JSP-MW-02		3/19/2001	1322.05	17.42	1304.63	
JSP-MW-02		8/20/2001	1322.05	18.93	1303.12	
JSP-MW-03		3/19/2001	1329.34	25.36	1303.98	
JSP-MW-03		8/20/2001	1329.34	26.94	1302.40	
JSP-MW-04		3/19/2001	1324.21	19.85	1304.36	
JSP-MW-04		8/20/2001	1324.21	21.40	1302.81	
JSP-MW-05		3/19/2001	1321.95	18.22	1303.73	
JSP-MW-05		8/20/2001	1321.95	19.73	1302.22	
JSP-MW-06		3/19/2001	1321.54	18.59	1302.95	
JSP-MW-06		8/20/2001	1321.54	20.13	1301.41	
JSP-MW-07		3/19/2001	1327.60	19.75	1307.85	
JSP-MW-07		8/20/2001	1327.60	23.39	1304.21	
JSP-MW-08		3/19/2001	1324.26	21.14	1303.12	
JSP-MW-08		8/20/2001	1324.26	22.78	1301.48	
JSP-MW-09		3/19/2001	1320.08	16.96	1303.12	
JSP-MW-09		8/20/2001	1320.08	18.52	1301.56	
NBPN-MW-02		3/19/2001	1310.00	12.66	1297.34	
NBPN-MW-02		3/19/2001	1310.00	12.66	1297.34	
NBPN-MW-02		8/20/2001	1310.00	13.66	1296.34	
NBPN-MW-02		8/20/2001	1310.00	13.66	1296.34	
NBPN-MW-03		3/19/2001	1311.62	14.44	1297.18	
NBPN-MW-03		8/20/2001	1311.62	15.41	1296.21	Root material in well

Table 4-1b
North Industrial Corridor (NIC) Site
Phase 2 Water Level Measurements (Mar 2001-Aug 2001)

Well ID	Nested Well Depth Zone	Date	Measuring Point Elevation* (feet msl)	Depth to Water (feet bmp)	Water Level Elevation (feet msl)	Comments
NBPN-MW-05		3/19/2001	1310.65	12.69	1297.96	
NBPN-MW-05		8/20/2001	1310.65	13.68	1296.97	
NBPN-MW-06		8/20/2001				Well Buried, missing
NMW-01D	D	3/20/2001	1328.72	16.97	1311.75	
NMW-01D	D	8/20/2001	1328.72	20.43	1308.29	
NMW-01S	S	3/20/2001	1328.75	17.02	1311.73	
NMW-01S	S	8/20/2001	1328.75	20.45	1308.30	
NMW-02D	D	3/19/2001	1315.77	13.09	1302.68	
NMW-02D	D	8/20/2001	1315.77	13.70	1302.07	
NMW-02S	S	3/19/2001	1315.65	12.91	1302.74	
NMW-02S	S	8/20/2001	1315.65	13.85	1301.80	
NMW-03D	D	3/19/2001	1315.88	14.62	1301.26	
NMW-03D	D	8/20/2001	1315.88	15.53	1300.35	
NMW-03S	S	3/19/2001	1315.98	15.38	1300.60	
NMW-03S	S	8/20/2001	1315.98	16.30	1299.68	
NMW-04D	D	3/19/2001	1316.14	15.85	1300.29	
NMW-04D	D	8/22/2001	1316.14	16.65	1299.49	
NMW-04S	S	3/19/2001	1316.30	15.99	1300.31	
NMW-04S	S	8/22/2001	1316.30	16.80	1299.50	
NMW-05D	D	3/19/2001	1316.21	13.55	1302.66	
NMW-05D	D	8/20/2001	1316.21	14.22	1301.99	
NMW-05S	S	3/19/2001	1316.08	13.40	1302.68	
NMW-05S	S	8/20/2001	1316.08	14.09	1301.99	
NMW-06D	D	3/19/2001	1314.92	17.11	1297.81	
NMW-06D	D	8/21/2001	1314.92	18.13	1296.79	
NMW-06S	S	3/19/2001	1314.82	17.00	1297.82	
NMW-06S	S	8/21/2001	1314.82	18.00	1296.82	
NMW-07D	D	3/19/2001	1313.33	16.45	1296.88	
NMW-07D	D	8/21/2001	1313.33	16.77	1296.56	
NMW-07S	S	3/19/2001	1313.18	16.35	1296.83	
NMW-07S	S	8/21/2001	1313.18	16.66	1296.52	
NMW-08D	D	3/19/2001	1306.90	11.02	1295.88	
NMW-08D	D	8/21/2001	1306.90	11.78	1295.12	
NMW-08S	S	3/19/2001	1306.90	11.07	1295.83	
NMW-08S	S	8/21/2001	1306.90	11.83	1295.07	
NMW-09D	D	3/19/2001	1306.87	11.77	1295.10	
NMW-09D	D	8/21/2001	1306.87	12.32	1294.55	
NMW-09S	S	3/19/2001	1306.89	11.81	1295.08	
NMW-09S	S	8/21/2001	1306.89	12.36	1294.53	
NMW-10D	D	8/21/2001	1309.71	15.13	1294.58	
NMW-10S	S	3/19/2001	1309.63	14.53	1295.10	
NMW-10S	S	8/21/2001	1309.63	15.03	1294.60	
NMW-11D	D	3/19/2001	1305.58	13.75	1291.83	
NMW-11D	D	8/20/2001	1305.58	14.60	1290.98	
NMW-11S	S	3/19/2001	1306.24	14.18	1292.06	
NMW-11S	S	8/20/2001	1306.24	15.17	1291.07	
NMW-12D	D	3/19/2001	1305.08	13.14	1291.94	
NMW-12D	D	8/20/2001	1305.08	13.90	1291.18	
NMW-12S	S	3/19/2001	1304.83	12.88	1291.95	
NMW-12S	S	8/20/2001	1304.83	13.65	1291.18	

Table 4-1b
North Industrial Corridor (NIC) Site
Phase 2 Water Level Measurements (Mar 2001-Aug 2001)

Well ID	Nested Well Depth Zone	Date	Measuring Point Elevation* (feet msl)	Depth to Water (feet bmp)	Water Level Elevation (feet msl)	Comments
NMW-13D	D	3/20/2001	1304.55	13.67	1290.88	
NMW-13D	D	8/20/2001	1304.55	14.49	1290.06	
NMW-13S	S	3/20/2001	1304.34	13.51	1290.83	
NMW-13S	S	8/20/2001	1304.34	14.30	1290.04	
NMW-14D	D	3/20/2001	1302.89	11.48	1291.41	
NMW-14D	D	8/20/2001	1302.89	12.28	1290.61	
NMW-14S	S	3/20/2001	1302.78	11.36	1291.42	
NMW-14S	S	8/20/2001	1302.78	12.17	1290.61	
NMW-15D	D	3/20/2001	1303.53	13.83	1289.70	
NMW-15D	D	8/20/2001	1303.53	14.42	1289.11	
NMW-15S	S	3/20/2001	1303.40	13.73	1289.67	
NMW-15S	S	8/20/2001	1303.40	14.32	1289.08	
NMW-16D	D	3/20/2001	1306.28	17.44	1288.84	
NMW-16D	D	8/20/2001	1306.28	18.10	1288.18	
NMW-16S	S	3/20/2001	1306.19	17.35	1288.84	
NMW-16S	S	8/20/2001	1306.19	17.98	1288.21	
NMW-17D	D	3/19/2001	1312.55	17.06	1295.49	
NMW-17D	D	8/20/2001	1312.55	17.37	1295.18	
NMW-17S	S	3/19/2001	1312.63	17.17	1295.46	
NMW-17S	S	8/20/2001	1312.63	17.43	1295.20	
NMW-18D	D	3/19/2001	1307.89	13.99	1293.90	
NMW-18D	D	8/20/2001	1307.89	14.08	1293.81	
NMW-18S	S	3/19/2001	1307.78	13.91	1293.87	
NMW-18S	S	8/20/2001	1307.78	14.03	1293.75	
NMW-19D	D	3/19/2001	1308.10	13.15	1294.95	
NMW-19D	D	8/20/2001	1308.10	13.43	1294.67	
NMW-19S	S	3/19/2001	1308.13	13.16	1294.97	
NMW-19S	S	8/20/2001	1308.13	13.42	1294.71	
NMW-20D	D	3/20/2001	1306.48	15.38	1291.10	
NMW-20D	D	8/20/2001	1306.48	15.54	1290.94	
NMW-20S	S	3/20/2001	1306.65	15.35	1291.30	
NMW-20S	S	8/20/2001	1306.65	15.50	1291.15	
NMW-21D	D	3/20/2001	1306.10	15.88	1290.22	
NMW-21D	D	8/20/2001	1306.10	16.08	1290.02	
NMW-21S	S	3/20/2001	1306.03	15.81	1290.22	
NMW-21S	S	8/20/2001	1306.03	15.96	1290.07	
NMW-22D	D	3/20/2001	1304.53	14.57	1289.96	
NMW-22D	D	8/20/2001	1304.53	14.74	1289.79	
NMW-22S	S	3/20/2001	1304.40	14.48	1289.92	
NMW-22S	S	8/20/2001	1304.40	14.64	1289.76	
NMW-23D	D	3/20/2001	1304.77	13.53	1291.24	
NMW-23D	D	8/20/2001	1304.77	13.66	1291.11	
NMW-23S	S	3/20/2001	1304.68	13.48	1291.20	
NMW-23S	S	8/20/2001	1304.68	13.57	1291.11	
NMW-24D	D	3/21/2001	1303.79	13.70	1290.09	
NMW-24D	D	8/20/2001	1303.79	13.99	1289.80	
NMW-24S	S	3/21/2001	1303.06	13.59	1289.47	
NMW-24S	S	8/20/2001	1303.06	13.88	1289.18	
NMW-25D	D	3/20/2001	1300.65	15.00	1285.65	
NMW-25D	D	8/20/2001	1300.65	15.65	1285.00	
NMW-25S	S	3/20/2001	1300.66	15.05	1285.61	
NMW-25S	S	8/20/2001	1300.66	15.68	1284.98	

Table 4-1b
North Industrial Corridor (NIC) Site
Phase 2 Water Level Measurements (Mar 2001-Aug 2001)

Well ID	Nested Well Depth Zone	Date	Measuring Point Elevation* (feet msl)	Depth to Water (feet bmp)	Water Level Elevation (feet msl)	Comments
NMW-26D	D	3/20/2001	1298.76	14.94	1283.82	
NMW-26D	D	8/20/2001	1298.76	15.50	1283.26	
NMW-26S	S	3/20/2001	1298.71	14.90	1283.81	
NMW-26S	S	8/20/2001	1298.71	15.35	1283.36	
NMW-27D	D	3/20/2001	1299.85	14.52	1285.33	
NMW-27D	D	8/20/2001	1299.85	15.04	1284.81	
NMW-27S	S	3/20/2001	1299.89	14.58	1285.31	
NMW-27S	S	8/20/2001	1299.89	15.10	1284.79	
NMW-28D	D	3/20/2001	1299.33	12.61	1286.72	
NMW-28D	D	8/20/2001	1299.33	13.05	1286.28	
NMW-28S	S	3/20/2001	1299.25	12.53	1286.72	
NMW-28S	S	8/20/2001	1299.25	12.96	1286.29	
NMW-29D	D	3/20/2001	1300.00	15.10	1284.90	
NMW-29D	D	8/20/2001	1300.00	15.34	1284.66	
NMW-29S	S	3/20/2001	1300.13	15.23	1284.90	
NMW-29S	S	8/20/2001	1300.13	15.47	1284.66	
NMW-30D	D	3/20/2001	1299.62	13.20	1286.42	
NMW-30D	D	8/20/2001	1299.62	13.48	1286.14	
NMW-30S	S	3/20/2001	1299.73	13.36	1286.37	
NMW-30S	S	8/20/2001	1299.73	13.62	1286.11	
NMW-31D	D	3/20/2001	1303.55	12.12	1291.43	
NMW-31D	D	8/20/2001	1303.55	12.43	1291.12	
NMW-31S	S	3/20/2001	1303.69	12.27	1291.42	
NMW-31S	S	8/20/2001	1303.69	12.57	1291.12	
NMW-32D	D	3/20/2001	1303.78	13.38	1290.40	
NMW-32D	D	8/20/2001	1303.78	13.87	1289.91	
NMW-32S	S	3/20/2001	1303.61	13.16	1290.45	
NMW-32S	S	8/20/2001	1303.61	13.59	1290.02	
NMW-33D	D	3/20/2001	1322.59	15.63	1306.96	
NMW-33D	D	8/20/2001	1322.59	16.43	1306.16	
NMW-33S	S	3/20/2001	1322.43	15.44	1306.99	
NMW-33S	S	8/20/2001	1322.43	16.21	1306.22	
NMW-34D	D	3/19/2001	1314.59	11.45	1303.14	
NMW-34D	D	8/20/2001	1314.59	12.09	1302.50	
NMW-34S	S	3/19/2001	1314.69	11.48	1303.21	
NMW-34S	S	8/20/2001	1314.69	12.15	1302.54	
NMW-35D	D	3/20/2001	1303.73	12.05	1291.68	
NMW-35D	D	8/20/2001	1303.73	12.33	1291.40	
NMW-35S	S	3/20/2001	1303.74	12.07	1291.67	
NMW-35S	S	8/20/2001	1303.74	12.25	1291.49	
NMW-36D	D	8/20/2001	1318.44	16.98	1301.46	
NMW-37D	D	8/20/2001	1318.15	17.40	1300.75	
NMW-38D	D	8/20/2001	1319.83	19.05	1300.78	
NMW-39D	D	3/19/2001	1308.25	11.98	1296.27	
NMW-39D	D	8/21/2001	1308.25	12.80	1295.45	
NMW-39S	S	3/19/2001	1308.19	11.93	1296.26	
NMW-39S	S	8/21/2001	1308.19	12.74	1295.45	
NMW-40D	D	3/19/2001	1313.86	16.46	1297.40	
NMW-40D	D	8/21/2001	1313.86	17.39	1296.47	
NMW-40S	S	3/19/2001	1313.97	16.60	1297.37	
NMW-40S	S	8/21/2001	1313.97	17.55	1296.42	

Table 4-1b
North Industrial Corridor (NIC) Site
Phase 2 Water Level Measurements (Mar 2001-Aug 2001)

Well ID	Nested Well Depth Zone	Date	Measuring Point Elevation* (feet msl)	Depth to Water (feet bmp)	Water Level Elevation (feet msl)	Comments
NMW-41D	D	3/20/2001	1305.27	11.67	1293.60	
NMW-41D	D	8/20/2001	1305.27	12.22	1293.05	
NMW-41S	S	3/20/2001	1305.13	11.53	1293.60	
NMW-41S	S	8/20/2001	1305.13	12.10	1293.03	
NMW-42D	D	8/21/2001	1315.79	16.02	1299.77	
NMW-42S	S	8/21/2001	1315.68	15.90	1299.78	
NMW-43D	D	8/21/2001	1314.24	16.90	1297.34	
NMW-44D	D	8/21/2001	1315.81	17.22	1298.59	
NMW-45D	D	8/21/2001	1319.07	17.38	1301.69	
NMW-46D	D	8/21/2001	1309.30	14.32	1294.98	
NMW-47D	D	3/19/2001	1310.54	9.70	1300.84	
NMW-47D	D	8/21/2001	1310.54	10.39	1300.15	
NMW-47S	S	3/19/2001	1310.59	9.69	1300.90	
NMW-47S	S	8/21/2001	1310.59	10.43	1300.16	
NMW-48D	D	8/20/2001	1311.51	13.06	1298.45	
NMW-48S	S	8/20/2001	1311.29	12.85	1298.44	
NWL-01D	D	3/19/2001	1313.01	13.45	1299.56	
NWL-01D	D	8/20/2001	1313.01	14.40	1298.61	
NWL-01S	S	3/19/2001	1313.10	13.50	1299.60	
NWL-01S	S	8/20/2001	1313.10	14.49	1298.61	
NWL-02D	D	3/19/2001	1309.35	11.09	1298.26	
NWL-02D	D	8/21/2001	1309.35	12.02	1297.33	
NWL-02S	S	3/19/2001	1309.32	11.07	1298.25	
NWL-02S	S	8/21/2001	1309.32	12.03	1297.29	
NWL-03S	S	3/19/2001	1311.28	13.41	1297.87	
NWL-03S	S	8/21/2001	1311.28	14.39	1296.89	
NWL-04S	S	3/19/2001	1306.63	9.44	1297.19	
NWL-04S	S	8/21/2001	1306.63	10.39	1296.24	
NWL-05S	S	3/19/2001	1311.20	14.46	1296.74	
NWL-05S	S	8/21/2001	1311.20	14.88	1296.32	
NWL-06S		8/22/2001	1314.82	18.43	1296.39	
NWL-07D	D	3/19/2001	1307.24	13.88	1293.36	
NWL-07D	D	8/20/2001	1307.24	14.45	1292.79	
NWL-07S	S	3/19/2001	1307.48	14.36	1293.12	
NWL-07S	S	8/20/2001	1307.48	15.00	1292.48	
NWL-08D	D	3/19/2001	1308.48	15.61	1292.87	
NWL-08D	D	8/20/2001	1308.48	16.23	1292.25	
NWL-08S	S	3/19/2001	1308.47	15.56	1292.91	
NWL-08S	S	8/20/2001	1308.47	16.18	1292.29	
NWL-09D	D	3/19/2001	1310.59	12.67	1297.92	
NWL-09D	D	8/21/2001	1310.59	14.40	1296.19	
NWL-09S	S	3/19/2001	1310.60	12.64	1297.96	
NWL-09S	S	8/21/2001	1310.60	14.45	1296.15	
NWL-10S		8/21/2001	1298.72	13.60	1285.12	
NWL-11S		8/23/2001	1300.17	15.03	1285.14	
NWL-12S		8/21/2001	1304.98	13.14	1291.84	
NWL-13S		8/21/2001	1308.30	13.88	1294.42	
SK-MW-01D	D	3/21/2001	1315.61	15.40	1300.20	
SK-MW-01D	D	8/20/2001	1315.61	16.13	1299.48	
SK-MW-01S	S	3/21/2001	1315.43	16.03	1299.40	
SK-MW-01S	S	8/20/2001	1315.43	16.87	1298.56	

Table 4-1b
North Industrial Corridor (NIC) Site
Phase 2 Water Level Measurements (Mar 2001-Aug 2001)

Well ID	Nested Well Depth Zone	Date	Measuring Point Elevation* (feet msl)	Depth to Water (feet bmp)	Water Level Elevation (feet msl)	Comments
SK-MW-04S	S	3/21/2001	1312.80	12.25	1300.55	
SK-MW-04S	S	8/20/2001	1312.80	12.89	1299.91	
UCL-MW-07		8/20/2001	1339.96	8.26	1331.70	
UCL-MW-11		3/20/2001	1327.30	3.29	1324.01	
UCL-MW-11		8/20/2001	1327.30	5.56	1321.74	
UCL-MW-12D	D	3/20/2001	1348.39	16.95	1331.44	
UCL-MW-12D	D	8/20/2001	1348.39	19.53	1328.86	
UCL-MW-12S	S	3/20/2001	1348.49	16.26	1332.23	
UCL-MW-12S	S	8/20/2001	1348.49	19.39	1329.10	
UCL-MW-22		3/20/2001	1327.81	10.29	1317.52	
UCL-MW-22		8/20/2001	1327.81	11.94	1315.87	
ULI-MW-01		3/20/2001	1315.40	11.21	1304.19	
ULI-MW-01		8/21/2001	1315.40	12.05	1303.35	
ULI-MW-04		3/20/2001	1317.02	13.50		
ULI-MW-04		3/20/2001	1316.79	13.50	1303.29	
ULI-MW-04		8/21/2001	1316.79	14.52	1302.27	
UPRF-MW-03		8/20/2001	1318.07	17.20	1300.87	
UPRF-MW-09		8/20/2001	1317.83	17.22	1300.61	
UPRF-MW-16		8/20/2001	1319.90	19.50	1300.40	
URS-MW-01		3/19/2001	1313.66	12.10	1301.56	
URS-MW-01		8/21/2001	1313.66	12.89	1300.77	
URS-MW-02		3/19/2001	1314.13	11.52	1302.61	
URS-MW-02		8/21/2001	1314.13	12.24	1301.89	Roots in Well
USD-MW-01		3/19/2001	1332.92	15.98	1316.94	
USD-MW-01		8/21/2001	1332.92	21.44	1311.48	
USD-MW-05D	D	8/21/2001	1327.80	18.58	1309.22	
USD-MW-05SR	S	8/21/2001	1327.96	18.82	1309.14	
USD-MW-07D		8/21/2001				Destroyed
USD-MW-07SR	S	8/21/2001	1348.70	7.68	1341.02	
USD-MW-10D		8/21/2001				Destroyed
USD-MW-10SR	S	8/21/2001	1330.68	8.35	1322.33	
UST-02		8/21/2001	1306.56	14.92	1291.64	
VCM-MW-01	S	3/20/2001	1303.09	15.31	1287.78	
VCM-MW-01	S	8/21/2001	1303.09	15.79	1287.30	
VCM-MW-02B	S	3/20/2001	1306.44	15.54	1290.90	
VCM-MW-02B	S	8/21/2001	1306.44	15.80	1290.64	
VCM-MW-03	S	3/20/2001	1304.63	13.62	1291.01	
VCM-MW-03	S	8/21/2001	1304.63	13.89	1290.74	
VCM-MW-04	D	3/20/2001	1303.12	15.34	1287.78	
VCM-MW-04	D	8/21/2001	1303.12	15.77	1287.35	
VCM-MW-06	D	3/20/2001	1307.00	16.08	1290.92	
VCM-MW-06	D	8/21/2001	1307.00	16.32	1290.68	
VCM-MW-07	D	3/20/2001	1304.66	13.61	1291.05	
VCM-MW-07	D	8/21/2001	1304.66	13.87	1290.79	
VWRS-MW-02D	D	3/19/2001	1313.42	16.17	1297.25	
VWRS-MW-02D	D	8/22/2001	1313.42	17.24	1296.18	
VWRS-MW-02S	S	3/19/2001	1313.33	16.09	1297.24	
VWRS-MW-02S	S	8/22/2001	1313.33	17.14	1296.19	

Table 4-1b
North Industrial Corridor (NIC) Site
Phase 2 Water Level Measurements (Mar 2001-Aug 2001)

Well ID	Nested Well Depth Zone	Date	Measuring Point Elevation* (feet msl)	Depth to Water (feet bmp)	Water Level Elevation (feet msl)	Comments
VWRS-MW-07D	D	3/19/2001	1309.52	12.34	1297.18	
VWRS-MW-07D	D	8/22/2001	1309.52	13.39	1296.13	
VWRS-MW-07S	S	3/19/2001	1309.54	12.42	1297.12	
VWRS-MW-07S	S	8/22/2001	1309.54			Well covered by drums, couldn't measure
VWRS-MW-09D	D	3/19/2001	1309.38	12.36	1297.02	
VWRS-MW-09D	D	8/22/2001	1309.38	13.37	1296.01	
VWRS-MW-09S	S	3/19/2001	1309.20	12.25	1296.95	
VWRS-MW-09S	S	8/22/2001	1309.20	13.25	1295.95	
WNC-05D	D	3/19/2001	1318.20	15.00	1303.20	
WNC-05D	D	8/20/2001	1318.20	15.61	1302.59	
WNC-06D	D	8/20/2001	1328.12	20.62	1307.50	
WNC-09D	D	3/19/2001	1315.16	11.31	1303.85	
WNC-09D	D	8/20/2001	1315.16	11.85	1303.31	
WNC-09SR	S	3/19/2001	1315.14	11.37	1303.77	
WNC-09SR	S	8/20/2001	1315.14	11.89	1303.25	
WNC-10D	D	3/20/2001	1316.81	12.18	1304.63	
WNC-10D	D	8/20/2001	1316.81	13.06	1303.75	
WNC-11D	D	3/19/2001	1314.36	11.30	1303.06	
WNC-11D	D	8/20/2001	1314.36	11.88	1302.48	
WNC-16D	D	3/19/2001	1313.61	11.95	1301.66	
WNC-16D	D	8/21/2001	1313.61	13.04	1300.57	
WNC-23D	D	3/19/2001	1318.61	14.82	1303.79	
WNC-23D	D	8/20/2001	1318.61	15.70	1302.91	
WNC-31D	D	8/20/2001	1318.31	17.42	1300.89	
WNC-32D	D	8/20/2001	1318.82	18.32	1300.50	
WNC-37SR	S	3/19/2001	1315.18	15.63	1299.55	
WNC-37SR	S	8/20/2001	1315.18	16.59	1298.59	
WNC-49SR	S	3/19/2001	1308.22	12.80	1295.42	
WNC-49SR	S	8/20/2001	1308.22	13.33	1294.89	
WND-01S	S	3/19/2001	1326.57	16.88	1309.69	
WND-01S	S	8/21/2001	1326.57	19.46	1307.11	
WND-02D	D	3/19/2001	1311.66	13.21	1298.45	
WND-02D	D	8/20/2001	1311.66	13.85	1297.81	
WND-02S	S	3/19/2001	1311.53	13.04	1298.49	
WND-02S	S	8/20/2001	1311.53	13.65	1297.88	
WND-03S	S	3/19/2001	1316.50	14.78	1301.72	
WND-03S	S	8/22/2001	1316.50	15.63	1300.87	
WND-04S	S	3/19/2001	1319.04	16.35	1302.69	
WND-04S	S	8/22/2001	1319.04	17.10	1301.94	
WND-05S	S	3/19/2001	1317.74	14.54	1303.20	
WND-05S	S	8/20/2001	1317.74	15.16	1302.58	
WND-06S	S	8/20/2001	1327.75	20.34	1307.41	
WND-07S	S	3/19/2001	1321.37	14.50	1306.87	
WND-07S	S	8/21/2001	1321.37	15.89	1305.48	
WND-08S	S	3/20/2001	1315.72	11.59	1304.13	
WND-08S	S	8/20/2001	1315.72	12.40	1303.32	
WND-09S	S	8/20/2001	1317.26			Destroyed
WND-10S	S	3/20/2001	1318.58	13.84	1304.74	
WND-10S	S	8/20/2001	1318.58			Tree roots, no water
WND-11S	S	3/19/2001	1316.77	13.66	1303.11	
WND-11S	S	8/20/2001	1316.77	14.30	1302.47	

Table 4-1b
North Industrial Corridor (NIC) Site
Phase 2 Water Level Measurements (Mar 2001-Aug 2001)

Well ID	Nested Well Depth Zone	Date	Measuring Point Elevation* (feet msl)	Depth to Water (feet bmp)	Water Level Elevation (feet msl)	Comments
WND-12D	D	3/19/2001	1315.84	12.21	1303.63	
WND-12D	D	8/20/2001	1315.84	12.84	1303.00	
WND-12S	S	3/19/2001	1315.76	12.11	1303.65	
WND-12S	S	8/20/2001	1315.76	12.96	1302.80	
WND-13D	D	8/20/2001	1313.36			No access/Vandalized
WND-13S	S	3/19/2001	1313.55	12.71	1300.84	
WND-13S	S	8/20/2001	1313.55			No access
WND-14D	D	3/20/2001	1317.53	14.45	1303.08	
WND-14D	D	8/20/2001	1317.53	15.49	1302.04	
WND-14S	S	3/20/2001	1317.70	14.55	1303.15	
WND-14S	S	8/20/2001	1317.70	15.66	1302.04	
WND-15D	D	3/21/2001	1306.41	12.95	1293.46	
WND-15D	D	8/20/2001	1306.41	13.90	1292.51	
WND-15S	S	3/21/2001	1306.76	13.31	1293.45	
WND-15S	S	8/20/2001	1306.76	14.28	1292.48	
WND-16S	S	3/19/2001	1313.47	14.90	1301.19	Product present
WND-16S	S	8/21/2001	1313.47	15.18	1298.29	Product present
WND-17D	D	8/21/2001				Destroyed
WND-17S	S	8/21/2001				Destroyed
WND-18D	D	3/19/2001	1310.90	14.71	1296.19	
WND-18D	D	8/20/2001	1310.90	15.26	1295.64	
WND-18S	S	3/19/2001	1310.95	14.82	1296.13	
WND-18S	S	8/20/2001	1310.95	15.35	1295.60	
WND-19D	D	3/19/2001	1306.76	11.09	1295.67	
WND-19D	D	8/20/2001	1306.76	11.70	1295.06	
WND-19S	S	3/19/2001	1306.73	11.06	1295.67	
WND-19S	S	8/20/2001	1306.73	11.66	1295.07	
WND-20S	S	3/20/2001	1314.05	16.46	1297.59	
WND-20S	S	8/21/2001	1314.05	17.09	1296.96	
WND-21D	D	3/19/2001	1309.33	11.20	1298.13	
WND-21D	D	8/20/2001	1309.33	12.12	1297.21	
WND-21S	S	3/19/2001	1309.31	11.14	1298.17	
WND-21S	S	8/20/2001	1309.31	12.08	1297.23	
WND-22D	D	3/20/2001	1323.58	14.12	1309.46	
WND-22D	D	8/20/2001	1323.58	15.76	1307.82	
WND-22S	S	3/20/2001	1323.36	13.34	1310.02	
WND-22S	S	8/20/2001	1323.36	15.25	1308.11	
WND-23S	S	3/19/2001	1317.73	13.91	1303.82	
WND-23S	S	8/20/2001	1317.73	14.80	1302.93	
WND-24D	D	3/19/2001	1306.77	11.95	1294.82	
WND-24D	D	8/20/2001	1306.77	12.68	1294.09	
WND-24S	S	3/19/2001	1306.88	12.08	1294.80	
WND-24S	S	8/20/2001	1306.88	12.80	1294.08	
WND-25D	D	3/21/2001	1318.75	14.58	1304.17	
WND-25D	D	8/20/2001	1318.75	15.77	1302.98	
WND-25S	S	8/20/2001	1318.73	15.73	1303.00	
WND-26D	D	3/19/2001	1315.53	14.48	1301.05	
WND-26D	D	8/21/2001	1315.53	15.19	1300.34	
WND-26S	S	3/19/2001	1315.61	14.55	1301.06	
WND-26S	S	8/21/2001	1315.61	15.28	1300.33	

Table 4-1b
North Industrial Corridor (NIC) Site
Phase 2 Water Level Measurements (Mar 2001-Aug 2001)

Well ID	Nested Well Depth Zone	Date	Measuring Point Elevation* (feet msl)	Depth to Water (feet bmp)	Water Level Elevation (feet msl)	Comments
WND-27S	S	3/19/2001	1315.01	13.21	1301.80	
WND-27S	S	8/21/2001	1315.01	14.27	1300.74	
WND-28S	S	3/20/2001	1320.72	15.01	1305.71	
WND-28S	S	8/20/2001	1320.72	15.57	1305.15	
WND-29D	D	3/20/2001	1320.04	15.89	1304.15	
WND-29D	D	8/20/2001	1320.04	17.05	1302.99	
WND-29S	S	3/20/2001	1319.64	15.45	1304.19	
WND-29S	S	8/20/2001	1319.64	16.62	1303.02	
WND-30D	D	8/21/2001	1315.70	15.58	1300.12	
WND-31S	S	8/20/2001	1317.26	16.97	1300.29	
WND-32S	S	8/20/2001	1317.68	17.70	1299.98	
WND-33D	D	3/19/2001	1310.65	11.94	1298.71	
WND-33D	D	8/20/2001	1310.65	12.84	1297.81	
WND-33S	S	3/19/2001	1310.58	11.95	1298.63	
WND-33S	S	8/20/2001	1310.58	12.86	1297.72	
WND-34D	D	3/19/2001	1314.40	14.31	1300.09	
WND-34D	D	8/21/2001	1314.40	15.25	1299.15	
WND-34S	S	3/19/2001	1314.34	14.27	1300.07	
WND-34S	S	8/21/2001	1314.34	15.23	1299.11	
WND-35D	D	3/19/2001	1315.35	15.91	1299.44	
WND-35D	D	8/21/2001				No access
WND-35S	S	8/21/2001				Destroyed; No access
WND-36D	D	3/19/2001	1314.69	13.55	1301.14	
WND-36D	D	8/21/2001	1314.69	14.41	1300.28	
WND-36S	S	3/19/2001	1314.75	13.63	1301.12	
WND-36S	S	8/21/2001	1314.75	14.49	1300.26	
WND-37DR	D	3/19/2001	1314.75	15.17	1299.58	
WND-37DR	D	8/20/2001	1314.75	16.14	1298.61	
WND-38D	D	3/21/2001	1307.62	10.90	1296.72	
WND-38D	D	8/21/2001	1307.62	11.72	1295.90	
WND-38S	S	3/21/2001	1307.48	10.70	1296.78	
WND-38S	S	8/21/2001	1307.48	11.53	1295.95	
WND-39D	D	3/19/2001	1308.29	11.40	1296.89	
WND-39D	D	8/21/2001	1308.29	12.35	1295.94	
WND-39S	S	3/19/2001	1308.31	11.40	1296.91	
WND-39S	S	8/21/2001	1308.31	12.35	1295.96	
WND-40D	D	3/20/2001	1302.38	11.68	1290.70	
WND-40D	D	8/20/2001	1302.38	11.97	1290.41	
WND-40S	S	3/20/2001	1302.64	11.82	1290.82	
WND-40S	S	8/20/2001	1302.64	12.13	1290.51	
WND-41D	D	3/19/2001	1306.94	11.88	1295.06	
WND-41D	D	8/20/2001	1306.94	12.36	1294.58	
WND-41S	S	3/19/2001	1306.97	11.94	1295.03	
WND-41S	S	8/20/2001	1306.97	12.45	1294.52	
WND-42D	D	3/20/2001	1303.79	14.32	1289.47	
WND-42D	D	8/20/2001	1303.79	14.65	1289.14	
WND-42S	S	3/20/2001	1303.64	14.19	1289.45	
WND-42S	S	8/20/2001	1303.64	14.52	1289.12	
WND-43D	D	3/19/2001	1307.40	12.83	1294.57	
WND-43D	D	8/20/2001	1307.40	13.45	1293.95	
WND-43S	S	3/19/2001	1307.54	12.89	1294.65	
WND-43S	S	8/20/2001	1307.54	13.51	1294.03	

Table 4-1b
North Industrial Corridor (NIC) Site
Phase 2 Water Level Measurements (Mar 2001-Aug 2001)

Well ID	Nested Well Depth Zone	Date	Measuring Point Elevation* (feet msl)	Depth to Water (feet bmp)	Water Level Elevation (feet msl)	Comments
WND-44D	D	3/20/2001	1303.52	13.49	1290.03	
WND-44D	D	8/20/2001	1303.52	13.78	1289.74	
WND-44S	S	3/20/2001	1303.27	13.22	1290.05	
WND-44S	S	8/20/2001	1303.27	13.55	1289.72	
WND-45D	D	3/21/2001	1305.54	12.01	1293.53	
WND-45D	D	8/20/2001	1305.54	12.36	1293.18	
WND-45S	S	3/21/2001	1305.66	12.26	1293.40	
WND-45S	S	8/20/2001	1305.66	12.62	1293.04	
WND-46D	D	3/19/2001	1304.87	11.75	1293.12	
WND-46D	D	8/20/2001	1304.87	12.02	1292.85	
WND-46S	S	3/19/2001	1304.98	11.85	1293.13	
WND-46S	S	8/20/2001	1304.98	12.14	1292.84	
WND-47D	D	3/19/2001	1304.63	12.02	1292.61	
WND-47D	D	8/20/2001	1304.63	12.34	1292.29	
WND-47S	S	3/19/2001	1304.81	11.98	1292.83	
WND-47S	S	8/20/2001	1304.81	12.30	1292.51	
WND-48D	D	3/20/2001	1301.21	12.19	1289.02	
WND-48D	D	8/20/2001	1301.21	12.72	1288.49	
WND-48S	S	3/20/2001	1301.01	12.01	1289.00	
WND-48S	S	8/20/2001	1301.01	12.53	1288.48	
WND-49D	D	3/19/2001	1308.14	12.72	1295.42	
WND-49D	D	8/20/2001	1308.14	13.23	1294.91	
WND-49S	S	8/20/2001				Destroyed
WU-MW-04D	D	3/20/2001	1307.36	12.30	1295.06	
WU-MW-04D	D	8/21/2001	1307.36	12.88	1294.48	
WU-MW-04S	S	3/20/2001	1307.23	12.26	1294.97	
WU-MW-04S	S	8/21/2001	1307.23	12.81	1294.42	
WU-MW-05D	D	3/20/2001	1307.65	11.96	1295.69	
WU-MW-05D	D	8/21/2001	1307.65	12.59	1295.06	
WU-MW-05S	S	3/20/2001	1307.38	11.67	1295.71	
WU-MW-05S	S	8/21/2001	1307.38	12.30	1295.08	

Note: Table includes measurements taken by CDM (March 2001and August 2001) and measurements taken by Coastal-Derby in March 2001.
msl = Mean Sea Level Elevation
bmp = Below measuring point
* = The Phase 2 Measuring Point Elevation utilized surveyed measuring point elevations in NAVD 1983 and using a a site-wide survey control loop.

Table 4-1c
North Industrial Corridor (NIC) Site
Phase 2 Product Level Measurements (Mar 2001-Aug 2001)

Well ID	Nested Well Depth Zone	Date	Measuring Point Elevation* (feet msl)	Depth to Water (feet bmp)	Water Level Elevation (feet msl)	Depth to Product (feet bmp)	Product Thickness (feet)	Product Density	Adjusted Product Thickness (feet)	Potentiometric Elevation (feet msl)
DRB-04	S	3/25/2001	1313.95	17.10	1296.85	15.20	1.90	0.77	1.46	1298.31
DRB-04	S	8/21/2001	1313.95	18.87	1295.08	18.25	0.62	0.77	0.48	1295.56
DRB-MW-11	S	3/25/2001	1307.85	12.75	1295.10	11.90	0.85	0.77	0.65	1295.75
DRB-MW-11	S	8/21/2001	1307.85	13.78	1294.07	12.60	1.18	0.77	0.91	1294.98
DRB-MW-140	S	3/25/2001	1312.61	17.01	1295.60	16.90	0.11	0.77	0.08	1295.68
DRB-MW-140	S	8/21/2001	1312.61	18.13	1294.48	17.68	0.45	0.77	0.35	1294.83
DRB-MW-20	S	3/25/2001	1312.39	14.20	1298.19	14.19	0.01	0.77	0.01	1298.20
DRB-MW-20	S	8/21/2001	1312.39	16.52	1295.87	15.33	1.19	0.77	0.92	1296.79
WND-16S	S	3/19/2001	1313.47	14.90	1298.57	11.50	3.40	0.90	3.06	1301.63
WND-16S	S	8/21/2001	1313.47	15.18	1298.29	12.66	2.52	0.90	2.27	1300.56

NOTE: Only wells with measureable product thickness are included.
msl = Mean Sea Level Elevation
bmp = Below measuring point
* = The Phase 2 Measuring Point Elevation utilized surveyed measuring point elevations in NAVD 1983 and using a a site-wide survey control loop.
Adjusted Product Thicknes = Product thickness times the product density.
Potentiometric Elevation = Water level elevation plus the adjusted product thickness.
Product Density of DRB wells provided by Coastal-Derby.
Product Density of WND-16S estimated assuming no vertical gradient and water level elevation in well WNC-16D.

Table 4-1d
North Industrial Corridor (NIC) Site
Phase 2 Surface Water Level Measurements (Mar 2001-Aug 2001)

Station ID	Date	Measuring Point Elevation (feet msl)	Depth to Water (feet bmp)	Water Level Elevation (feet msl)	Comments
B-2ND	3/19/2001	1304.20	18.60	1285.60	
B-2ND	8/22/2001	1304.20	19.69	1284.51	
SWL-01	3/19/2001	1322.76	14.85	1307.91	
SWL-01	8/20/2001	1322.76	--	<1307.31	Dry > 15.45; AKA 33rd street bridge
SWL-02	3/19/2001	1316.39	11.64	1304.75	
SWL-02	8/19/2001	1316.39	11.44	1304.95	TD = 12.1, minnows
SWL-03	3/19/2001	1313.10	1.87	1311.23	DTW = 3.34-1.47 (Gauge)
SWL-03	8/19/2001	1313.10	3.39	1309.71	DTW = 3.34--0.05 (Estimated Below Gauge)
SWL-04	3/19/2001	1315.82	11.60	1304.22	
SWL-04	8/19/2001	1315.82	--	<1304.47	Dry > 11.35
SWL-05	3/19/2001	1316.85	18.85**	1298.00**	
SWL-05	8/21/2001	1316.85	22.24	1294.61	
SWL-06	3/19/2001	1314.84*	22.25	1292.59*	
SWL-06	8/21/2001	1314.84*	--	<1295.71*	Dry > 19.13
SWL-07	3/19/2001	1309.71	18.26	1291.45	
SWL-07	8/21/2001	1309.71	18.54	1291.17	
SWL-08	3/19/2001	1306.43	17.85	1288.58	
SWL-08	8/21/2001	1306.43	18.22	1288.21	
SWL-09	3/19/2001	1316.63	16.53	1300.10	
SWL-09	8/21/2001	1316.63	20.50	1296.13	
SWL-10	3/19/2001	1312.37	13.05	1299.32	
SWL-10	8/21/2001	1312.37	16.25	1296.12	
SWL-11	3/19/2001	1310.16	15.45	1294.71	
SWL-11	8/21/2001	1310.16	18.01	1292.15	
SWL-12	3/20/2001	1307.93	2.54	1305.39	DTW = 3.34-0.80 (Gauge)
SWL-12	8/20/2001	1307.93	3.33	<1304.60	Dry - DTW > 3.34-0.01 (Gauge)

*Measuring point believed to be incorrect since a water level elevation significantly below the local water table results; This survey measuring point will be re-evaluated.
** Depth to water measurement believed to be incorrect.

CDM

Section 5
Chemical Characteristics of the Site

This section presents sampling results from investigation activities conducted during the RI. Results from various sampling activities are presented in the following subsections:

- Section 5.1 – Surface Water and Sediment Sampling Results
- Section 5.2 – Surface and Subsurface Soil Sampling Results
- Section 5.3 – Air Sampling Results
- Section 5.4 – Sludge Pit Soil and Groundwater Sampling Results
- Section 5.5 – Groundwater Sampling Results

The nature and extent of contamination is discussed below with respect to each sampling media. The relationships of contamination in each of the sampling media to the other sampling media are further discussed in Section 8, Contaminant Fate and Transport.

For each of the following sections, laboratory analytical data are presented in summary tables found at the end of the section (Tables 5-1 through 5-9) and in Appendix H. Laboratory analytical data reports are presented in Appendix I.

5.1 Surface Water and Sediment Sampling Results

Surface water and sediment sampling results are discussed in the following subsections.

5.1.1 Surface Water Sampling Results

Surface water sampling methods were discussed in Section 3.2 and sampling locations were presented on Figure 3-2. As previously discussed in Section 3, several proposed surface water sampling locations were dry, therefore no samples were collected at those locations.

Sampling results for VOCs, SVOCs, Pesticides/PCBs, and total metals in surface water samples are presented in the following subsections. Surface water sampling results are discussed with respect to Safe Drinking Water Act Maximum Contaminant Levels (MCLs) and Kansas Surface Water Quality Standards (KAR 28-16-28e). As discussed in Section 7.5.5.2, three segments of Chisholm Creek tributaries in the NIC Site have designated use classifications. The East and West Forks have been designated with beneficial use classifications including aquatic life use, contact recreational use, domestic water supply use, food procurement use, groundwater recharge, industrial water supply use, and irrigation use. The main fork does not have these beneficial use classifications. Therefore, the Surface Water Quality Standards presented in Table 7-8 apply only to the East and West Forks of Chisholm

Creek, and not to the main fork. The designated use of the unnamed middle drainage has not been classified by the State of Kansas.

5.1.1.1 VOCs in Surface Water Samples

Analytical results for VOCs in surface water samples are presented in Table 5-1a. Detected VOCs in surface water samples are depicted on Figure 5-1a. VOCs detected in surface water include the following:

- Tetrachloroethene (PCE)
- Trichloroethene (TCE)
- *cis*-1,2-Dichloroethene (*cis*-1,2-DCE)
- Vinyl chloride (VC)
- 1,1,1-Trichloroethane (TCA)
- 1,1-Dichloroethane (1,1-DCA)
- 1,1-Dichloroethene (1,1-DCE)
- Benzene (BEN)
- Toluene (TOL)

VOCs were detected in 8 of 9 surface water samples collected from the east, west, and main forks of Chisholm Creek and from the unnamed middle drainage. No VOCs were detected at location SW-07, on the upper reach of the unnamed middle drainage at 29th street. The West Fork of Chisholm Creek was dry (no flowing water) except at location SW-06, immediately upstream of the confluence with the middle fork.

Sample location SW-12 is located in the East Fork of Chisholm Creek, immediately east and upstream of the NIC Site boundary. Detections of VOCs in sample SW-12 are not attributable to groundwater contamination in the NIC Site.

Fuel-Related VOCs

Fuel-related VOCs (BEN and/or TOL) were detected in four samples (SW-06, SW-11, SW-14, and SW-16) collected at locations south and southeast of the Coastal-Derby Refinery. Toluene was detected at 1.3 μg/L at location SW-14 on the main fork of Chisholm Creek at 13th Street, but was not detected (< 1 μg/L) downstream at location SW-15 on the main fork of Chisholm Creek at Murdock Street. None of the detected fuel-related VOCs exceeded applicable Kansas Surface Water Quality Standards (KAR 28-16-28e). Concentrations of fuel-related VOCs decreased to below detection limits in the main fork of Chisholm Creek before leaving the Site.

Chlorinated VOCs

Chlorinated VOCs were detected in the main fork of Chisholm Creek and in all three tributary forks. MCLs were exceeded in three samples. TCE was detected at 10 μg/L in sample SW-12, in excess of the MCL of 5 μg/L. VC was detected in samples SW-06 and SW-14 at 33 μg/L and 4.3 μg/L, respectively, in excess of the MCL of 2 μg/L.

At sample location SW-15 on the main fork of Chisholm Creek at Murdock Street, no VOCs were detected above MCLs. Concentrations of chlorinated VOCs decreased to below MCL concentrations in the main fork of Chisholm Creek before leaving the Site.

Applicable Kansas Surface Water Quality Standards were exceeded in two samples collected from the East Fork of Chisholm Creek (SW-12 and SW-16) and one sample collected from the West Fork of Chisholm Creek (SW-06). The food procurement water use standard for cis-1,2-DCE (1.85 µg/L) was exceeded at sample locations SW-06, SW-12, and SW-16 (30 µg/L, 3.5 µg/L, and 11 µg/L, respectively). The domestic water supply use standard for VC (2 µg/L) was exceeded in the sample from location SW-06 (33 µg/L). The domestic water supply use standard values are the same as MCLs.

5.1.1.2 SVOCs in Surface Water Samples

Analytical results for SVOCs in surface water samples are presented in Table 5-1b. No SVOCs were detected in any of the eight surface water samples collected from the Chisholm Creek tributaries. Analytical detection limits are reported in Table 5-1b.

5.1.1.3 Pesticides/PCBs in Surface Water Samples

Analytical results for pesticides/PCBs in surface water samples are presented in Table 5-1c. With the exception of one pesticide detection in one surface water sample, no pesticides or PCBs were detected in the six surface water samples collected from Chisholm Creek tributaries. Technical chlordane was detected at 0.21 µg/L in the sample from location SW-08. Technical chlordane is a combination of alpha and gamma isomers of chlordane plus selected chromatogram peaks that are not part of EPA Method 8081 reported analytes. The detected concentration of technical chlordane (0.21 µg/L) is less than the chlordane MCL of 2 µg/L.

5.1.1.4 Total Metals in Surface Water Samples

Analytical results for total (unfiltered) metals in seven collected surface water samples are presented in Table 5-1d. Of the 23 anions and metals analyzed, 13 have promulgated MCLs. Two samples had metal detections above MCLs. Lead was detected in sample SW-06 at 42 µg/L, above the EPA action level of 15 µg/L. Sample SW-06 also had elevated total aluminum and iron concentrations and turbidity an order of magnitude higher than the other surface water sample locations (80 NTUs compared with 3 to 12 NTUs at other locations). Therefore, the detection of lead above the MCL in sample SW-06 probably results from digestion of the suspended solids during the analysis of the sample.

Thallium was detected in sample SW-16 at 5.56 µg/L, above the MCL of 2 µg/L. The source of this thallium detection is unknown. No other metals were detected in surface water samples at concentrations exceeding their respective MCLs.

5.1.2 Sediment Sampling Results

Sediment sampling methods were discussed in Section 3.2 and sampling locations were depicted on Figure 3-2. Sediment sampling results for VOCs, SVOCs, Pesticides/PCBs, TPH, and metals are presented in Tables 5-2a through 5-2e, respectively.

5.1.2.1 VOCs in Sediment Samples

Sampling results for VOCs in sediment samples are presented in Table 5-2a. With the exception of five detections of methylene chloride, VOCs were below detection limit (< 5 μg/kg) in the 12 collected sediment samples. The methylene chloride detections ranged from 5.3 μg/kg to 8.6 μg/kg. All of the methylene chloride detections have been "UB" qualified, meaning that methylene chloride was also detected in the laboratory method blank and is therefore a laboratory artifact.

5.1.2.2 SVOCs in Sediment Samples

Sampling results for SVOCs in sediment samples are presented in Table 5-2b. SVOCs were detected in 6 of 11 sediment samples. The detected SVOCs were in sediments from the west and middle forks of Chisholm Creek and from a drainage ditch immediately north of Safety Kleen (location SD-11). No SVOCs were detected in sediment samples from the east or main forks of Chisholm Creek

The detected SVOCs are primarily polynuclear aromatic hydrocarbons (PAHs). Of the PAH compounds, the seven compounds with higher molecular weight are suspected carcinogens. Benzo(a)Pyrene (BAP) has the highest suspect carcinogenic potency of these seven compounds. In order to evaluate the carcinogenic toxicity of PAHs in sediment samples, (BAP) Equivalents can be used to normalize these carcinogenic PAH species relative to the toxicity of BAP. To calculate BAP Equivalents, carcinogenic PAH compound concentrations are multiplied by an EPA BAP equivalency factor. The sum of the BAP equivalents from a given sample thereby gives a single PAH concentration to evaluate the relative carcinogenic effects of PAHs in sediment. BAP equivalent calculations are provided in Appendix H-4.

Figure 5-1b presents the sum of BAP equivalents in sediment samples. Results below analytical detection limits (non-detect values) were not included in calculating these sums. Analytical detection limits for SVOCs are reported in Table 5-2b. Five of 11 sediment samples had BAP equivalents above analytical detection limits. The sum of BAP equivalents ranges from 32 μg/kg to 1699 μg/kg. For reference purposes, the KDHE Tier 2 Risk-Based Concentration for BAP is 2600 μg/kg (non-residential soil pathway) and 16,000 μg/kg (non-residential soil to groundwater pathway). The sums of BAP equivalent concentrations in sediment samples are substantially lower than the non-residential KDHE Tier 2 concentrations for BAP.

The KDHE Tier 2 Risk-Based Concentration for BAP (residential soil pathway) is 1,200 μg/kg. BAP equivalent concentrations in sediment samples exceeded the residential soil pathway concentration at two locations (SD-02 at 1,699 μg/kg and SD-03 at 1378 μg/kg). These sampling locations are 1,199 feet and 1,306 feet, respectively, from the nearest residential areas, and both have significant impediments to access from these residential areas (Treatco for SD-02 and I-135 for SD-03).

KDHE has indicated that Tier 2 Risk-Based Concentrations will not be used in the Baseline Risk Assessment for the NIC Site due to potential synergistic effects. Within this RI, Tier 2 Risk-Based Concentrations are discussed for reference purposes only.

These Risk-Based Concentrations are referenced to allow assessment of the relative importance of analytical detections in sediment and soil samples.

Only one sample location, SD-01, had no BAP equivalents detected but had other SVOC detections. Analytical detection limits for SVOCs are reported in Table 5-2b. Location SD-01 is located west of and upstream of the Site boundary. Pyrene, fluoranthene, and bis(2-ethylhexyl)phthalate were detected at 390 µg/kg, 400 µg/kg, and 410 µg/kg, respectively in the sediment sample from location SD-01. The KDHE Tier 2 Risk-Based Concentrations for these compounds are as follows:

- Pyrene - 140,000 µg/kg (non-residential soil and soil to groundwater pathways)
- Fluoranthene - 220,000 µg/kg (non-residential soil and soil to groundwater pathways)
- Bis(2-ethylhexyl)phthalate - 1,400,000 µg/kg (non-residential soil) and 51,000,000 µg/kg (non-residential soil to groundwater pathway).

5.1.2.3 Pesticides/PCBs in Sediment Samples

Pesticide/PCB sampling results in sediment samples are presented in Table 5-2c. Pesticides were detected in 2 of 7 sediment samples and PCBs were detected in 1 of 7 sediment samples. Alpha-chlordane, gamma-chlordane, and technical chlordane were all detected in sediment samples SD-01 and SD-03. SD-01 is located on the west fork of Chisholm Creek west of the Site boundary and SW-03 is located on the west fork of Chisholm Creek just west of the confluence with the middle fork. Concentrations of the chlordane compounds ranged from 28 µg/kg to 410 µg/kg. The KDHE Tier 2 Risk-Based Concentrations for chlordane are 55,000 µg/kg (non-residential soil pathway) and 48,000 µg/kg (non-residential soil to groundwater pathway).

PCB-1260 was detected in the sediment sample from location SW-03 at a concentration of 650 µg/kg. For reference purposes, the KDHE Tier 2 Risk-Based Concentrations for PCBs are 9,500 µg/kg (non-residential soil pathway) and 53,000 µg/kg (non-residential soil to groundwater pathway).

5.1.2.4 TPH in Sediment Samples

Sampling results for TPH in sediment samples are presented in Table 5-2d. TPH in the motor oil range was detected in 2 of 2 samples from locations SD-11 and SD-12 at concentrations of 5,800 mg/kg and 410 mg/kg, respectively. TPH in the gasoline range was detected in the sample duplicate from location SD-11 at 20 mg/kg and sample SD-12 at 5 mg/kg. Sample SD-11 was collected from the drainage ditch located immediately north of Safety Kleen and sample SD-12 was collected from the west fork of Chisholm Creek near Mosley Street.

5.1.2.5 Metals in Sediment Samples

Sampling results for metals in sediment samples are presented in Table 5-2e. Of 23 metals analyzed for, 15 have KDHE Tier 2 Risk-Based Concentrations. A summary of maximum detections of metals in sediment samples and Tier 2 Risk-Based Concentrations (non-residential soil pathway), and Western U.S. background range and mean values for metals in surface soils are tabulated below. The Western U.S. background range and mean values are from *Element Concentrations in Soils and Other Surficial Materials of the Conterminous United States*, U.S.G.S. Professional Paper 1270, 1984.

Metal	Maximum Detected Concentration (mg/kg)	Tier 2 Concentration (Non-residential soil pathway) (mg/kg)	Western U.S. Background Range (mg/kg)	Western U.S. Background Mean (mg/kg)
Antimony	1.28	820	<1 – 2.6	0.47
Arsenic	2.57	38	<0.10 – 97	5.5
Barium	211	140,000	70 – 5,000	580
Beryllium	0.406	4,100	<1 – 15	0.68
Cadmium	1.29	1,000	--	--
Chromium	13.6	4,000	3 – 2,000	41
Copper	49.6	76,000	2 – 300	21
Lead	180	1,000	<10 – 700	17
Manganese	261	95,000	30 – 5,000	380
Mercury	<0.15	20	<0.01 – 4.6	0.046
Nickel	10.2	41,000	<5 – 700	15
Selenium	<1	10,000	<0.1 – 4.3	0.23
Silver	<0.7	10,000	--	--
Vanadium	14.9	14,000	7 – 500	70
Zinc	215	610,000	10 – 2,100	55

Except for arsenic, all of the metals have no established Tier 2 soil-to-groundwater pathway concentrations. Arsenic has a Tier 2 non-residential soil-to-groundwater pathway concentration of 29 mg/kg. All of the maximum concentrations of metals in sediment samples are significantly lower than the Tier 2 Risk-Based Concentrations.

All of the metals concentrations in sediment samples were within the range of concentrations found in background surface soils in the Western U.S. Four of 13 metals (antimony, copper, lead, and zinc) had maximum concentrations in sediments that exceeded the mean value for background surface soils in the Western

U.S. Two metals (cadmium and silver) were not included in the U.S.G.S tabulation of background soil concentrations.

5.2 Surface and Subsurface Soil Sampling Results

Surface soil and subsurface soil sampling results are discussed in the following subsections. Surface and subsurface soil samples were also collected as part of sludge pit investigations. Results from sludge pit soil sampling are presented separately in Section 5.4.

5.2.1 Surface Soil Sampling Results

Surface soil sampling methods were discussed in Section 3.2 and sampling locations were presented on Figure 3-2. Results of VOCs, SVOCs, and metals in surface soil samples are presented in Tables 5-3a through 5-3c, respectively.

VOCs in Surface Soil Samples
VOCs were below analytical detection limits (< 5 μg/kg) in the three surface soil samples analyzed by EPA Method 8260.

SVOCs in Surface Soil Samples
With the exception of fluoranthene in one sample, no SVOCs were detected in the three surface soil samples analyzed by EPA Method 8270. Analytical detection limits are reported in Table 5-3b. Fluoranthene was detected in sample SSS-02 at a concentration of 330 μg/kg (at the detection limit). The KDHE Risk-Based Concentration for fluoranthene is 220,000 μg/kg (non-residential soil and soil to groundwater pathways).

Metals in Surface Soil Samples
Sampling results for metals in surface soil samples are presented in Table 5-3c. Of 23 metals analyzed for, 15 have KDHE Tier 2 Risk-Based Concentrations. A summary of maximum detections of metals in surface soil samples, Tier 2 Risk-Based Concentrations (non-residential soil pathway), and Western U.S. background range and mean values for metals in surface soils are tabulated below. The Western U.S. background range and mean values are from *Element Concentrations in Soils and Other Surficial Materials of the Conterminous United States*, U.S.G.S. Professional Paper 1270, 1984.

Metal	Maximum Detected Concentration (mg/kg)	Tier 2 Concentration (Non-residential soil pathway) (mg/kg)	Western U.S. Background Range (mg/kg)	Western U.S. Background Mean (mg/kg)
Antimony	3.28	820	<1 – 2.6	0.47
Arsenic	5.26	38	<0.10 – 97	5.5
Barium	189	140,000	70 – 5,000	580

Metal	Maximum Detected Concentration (mg/kg)	Tier 2 Concentration (Non-residential soil pathway) (mg/kg)	Western U.S. Background Range (mg/kg)	Western U.S. Background Mean (mg/kg)
Beryllium	0.522	4,100	<1 – 15	0.68
Cadmium	14.9	1,000	--	--
Chromium	127	4,000	3 – 2,000	41
Copper	60.1	76,000	2 – 300	21
Lead	171	1,000	<10 – 700	17
Manganese	346	95,000	30 – 5,000	380
Mercury	0.916	20	<0.01 – 4.6	0.046
Nickel	26.3	41,000	<5 – 700	15
Selenium	<0.9	10,000	<0.1 – 4.3	0.23
Silver	6.88	10,000	--	--
Vanadium	18.3	14,000	7 – 500	70
Zinc	282	610,000	10 – 2,100	55

All of the maximum concentrations of metals in surface soil samples are significantly lower than the Tier 2 Risk-based concentrations.

With the exception of antimony, all of the metals concentrations in surface soil samples were within the range of concentrations found in background surface soils in the Western U.S. Antimony exceeded the background range in one surface soil sample (SSS-03C at 3.28 mg/kg). Seven of 13 metals (antimony, chromium, copper, lead, mercury, nickel, and zinc) had a maximum concentration in surface soils that exceeded the mean value for background surface soils in the Western U.S. Two metals (cadmium and silver) were not included in the U.S.G.S tabulation of background soil concentrations.

5.2.2 Subsurface Soil Sampling Results

Subsurface soil sampling methods were discussed in Section 3.2. Subsurface soil samples collected in the sludge pits are discussed in Section 5.4. Subsurface soil samples collected elsewhere were analyzed solely for total organic carbon (TOC). Results of TOC in subsurface soil samples are presented in Table 5-3d. TOC results are discussed in Section 4.3 and Section 8.3.

5.3 Air Sampling Results

Air sampling methods were discussed in Section 3.2 and sampling locations are depicted on Figure 3-2. Two ambient air samples and 9 indoor air samples were analyzed for VOCs by EPA Method TO-14. Sampling results for VOCs in air samples are presented in Table 5-4. Air sampling field forms are provided in Appendix D-9.

Some of the air sample results were rejected because pressure readings taken at the end of sampling indicated problems with air regulators. Canisters with end pressure readings indicating atmospheric conditions were rejected due to possible atmospheric exchange (into and out of the canister). Results from these samples are not included in Table 5-4 or in the following summary table. However, the sampling forms for these samples are included in Appendix D-9.

The number of detections and maximum concentrations of detected VOCs in air samples are summarized as follows:

Compounds	Ambient Air Number of Detects/ Samples	Ambient Air Maximum Concentration ($\mu g/m^3$)	Indoor Air Number of Detects/ Samples	Indoor Air Maximum Concentration ($\mu g/m^3$)
1,2,4-Trichlorobenzene	0/2	ND	2/9	2.41
1,2,4-Trimethylbenzene	0/2	ND	3/9	7.5
1,4-Dichlorobenzene	0/2	<2.69	6/9	7963
Benzene	2/2	1.13	9/9	7.8
Carbon tetrachloride	1/2	0.61	2/9	0.83
Chloroform	1/2	0.69	5/9	2.42
Dichlorodifluoromethane	1/2	4.78	0/9	<4.68
Ethylbenzene	0/2	<2.73	5/9	10.6
Tetrachloroethene	0/2	<4.91	2/9	15.21
Styrene	0/2	<2.55	1/9	4.24
Toluene	2/2	3.83	9/9	42.16
m,p-Xylenes	0/2	<2.6	7/9	32.68
o-Xylenes	0/2	<2.47	5/9	13.25

Five VOCs were detected in ambient air samples and 13 VOCs were detected in indoor air samples. The air samples were collected in residence basements and in a school at locations above groundwater containing elevated concentrations of TCE, *cis*-1,2-DCE , and VC. Since none of these compounds were detected in air samples (less than analytical detection limits of 2 to 4 $\mu g/m^3$), the detected VOCs in air samples are unrelated to VOCs in groundwater at the NIC site.

The majority of the detected VOCs are commonly associated with fuels such as gasoline. None of the air sampling locations were in areas of known fuel contamination in groundwater. The elevated detection of 1,4-Dichlorobenzene (1,4-DCB) at 7,963 $\mu g/m^3$ was in a basement that contained dry-cleaned clothing

wrapped in plastic. There was a strong odor of mothballs in the room at the time of sampling. 1,4-DCB is a common ingredient in mothballs.

Two air samples had PCE detections at concentrations exceeding the EPA Region IX PRG of 6.7 μg/m³. These locations were AQ-02 (9.68 μg/m³) and AQ-03 (15.21 μg/m³). Shallow groundwater in the vicinity of these air sampling locations contained PCE at concentrations less than 2 μg/L, therefore these PCE detections do not appear to be attributable to groundwater at the sampling locations. Vapor-phase PCE may be migrating through the vadose zone or utility corridors from PCE-contaminated groundwater and/or PCE sources in other areas. These source areas could not be defined with data compiled during the Phase 1 and 2 RI investigations. The nearest PCE source area, Brenntag Southwest Inc./HCI Advance Chemicals (see Section 9.3.8) is located approximately 1400 feet southwest of sample location AQ-02 and approximately 2000 feet northwest of location AQ-03. PCE detections in indoor air samples are commonly attributable to dry cleaned clothing and may be the source for these detections. KDHE has indicated that additional air sampling will be required at the structures in question.

5.4 Sludge Pit Sampling Results

Sludge pit sampling methods were discussed in Section 3.2. Sample locations were presented on Figures 3-3 and 3-4 for the former Golden Rule Refinery and Barnsdall Refinery, respectively. Sludge pit sampling included surface soil sampling and Geoprobe groundwater and subsurface soil sampling. Sludge pit soil sampling results are presented in Section 5.4.1 and sludge pit groundwater sampling results are presented in Section 5.4.2. The nature and extent of contamination in the sludge pits is discussed in Section 5.4.3.

5.4.1 Sludge Pit Soil Sampling Results

Results for VOCs, SVOCs, Pesticides/PCBs, TPH, and metals in soil/sludge samples are presented in Tables 5-5a through 5-5e.

VOCs in Sludge Pit Soil Samples

VOC detections in sludge pit soil samples included detections of BTEX compounds, methylene chloride, and trichlorofluoromethane. The number of detections and maximum detected concentrations of detected VOCs are summarized as follows:

Compound	Number of Detects/Samples	Maximum Detected Concentration (μg/kg)
Toluene	3/14	1,400
Ethylbenzene	3/14	5,400
M,p-Xylenes	5/14	19,000
o-Xylenes	3/14	2,900

Compound	Number of Detects/Samples	Maximum Detected Concentration (µg/kg)
Methylene chloride	1/14	5.5
Trichlorofluoromethane	1/14	7.2

SVOCs in Sludge Pit Soil Samples

SVOCs were detected in 14 of 18 samples analyzed by EPA Method 8270. Detected compounds were primarily PAHs and fuel-related SVOCs. Results of SVOCs in sludge pit soil samples are presented in Table 5-5b. Number of detections and maximum concentrations of SVOCs detected in sludge pit soil samples are summarized as follows:

Compound	Number of Detects/Samples	Maximum Detected Concentration (µg/kg)
2-Methylnaphthalene	6/18	25,000
Anthracene	2/18	3,300
Benzo(a)anthracene	3/18	1,400
Benzo(a)pyrene	1/18	1,800
Benzo(b)flouranthene	1/18	3,000
Benzo(g,h,I)perylene	1/18	2,100
Benzo(k)flouranthene	1/18	970
Bis(2-Ethylhexyl)phthalate	3/18	35,000
Butylbenzylphthalate	2/18	7,500
Chrysene	7/18	4,500
Fluoranthene	1/18	2,100
Fluorene	1/18	390
Indeno(1,2,3-cd)pyrene	1/18	1,300
Naphthalene	3/18	7,100
Phenanthrene	11/18	16,000
Pyrene	9/18	13,000

Table 5-5b includes analytical detection limits for compounds that were not detected. A total of 4 sludge pit soil samples had no SVOCs detected. The detection limit in these 4 samples ranged from 400 µg/kg to 19,000 µg/kg. Detection limits in the 14 soil samples with 1 or more detected SVOCs ranged from 410 µg/kg to 22,000 µg/kg. The elevated detection limits are likely due to matrix interference caused by high

contaminant concentrations. Therefore, these elevated detection limits likely cause a low bias for the number of detects presented above.

As discussed in Section 5.1.2.2, in order to evaluate the distribution of PAHs in sediment samples, BAP Equivalents can be used to normalize various PAHs to a total PAH concentration that reflects the toxicity of the individual PAH compounds. To calculate BAP Equivalents, carcinogenic PAH compound concentrations are multiplied by an EPA BAP equivalency factor. The sum of the BAP equivalents from a given sample thereby gives a single PAH concentration to evaluate. BAP equivalent calculations are provided in Appendix H-4.

The sum of BAP equivalents are depicted along with TPH and PCB results in Figures 5-2a and 5-2b for the former Golden Rule and Barnsdall Refineries, respectively. The sum of BAP equivalents ranged from below detection limits (see Table 5-5b for individual PAH compound detection limits) to 4,884 μg/kg at location GP10C-02 at 0.5 feet depth. BAP equivalents were detected in 7 of 12 sludge pit soil samples analyzed for SVOCs. The second highest sum of BAP equivalents was 45 μg/kg at location GP10C-02 at 5 feet depth (several orders of magnitude less than the maximum sum of BAP equivalents).

PAH compounds with non-detect results were not considered when calculating BAP equivalents at the site. Due to high number of non-detect results for sludge pit samples, omission of these compounds likely results in underestimation of toxicity risk for the sludge pit areas. Conversely, including the non-detect compounds in PAH equivalent estimates by assigning a value of either half or all of the detection limit would likely result in an unrepresentative overestimation of risk at the site.

Efforts to further quantify the actual levels of PAH contamination in areas with a high frequency of detection limits would be difficult because the expected matrix interference during laboratory analysis will either require dilution of the sample (resulting in elevated detection limits) or analysis of an undiluted sample (which will likely result in high concentrations of VOCs not being quantified).

The existing data are sufficient to assume that current PAH levels in sludge pit samples constitute a risk. CDM expects that remediation soils of sludge pit areas will be required, based on both PAH levels and other contaminants. Following remediation of soils with high PAH levels, residual PAH contamination and any associated risk can be better quantified and more accurately assessed.

Pesticides/PCBs in Sludge Pit Soil Samples

Analytical results for pesticides and PCBs in sludge pit soil samples are presented in Table 5-5c. No pesticides were detected in sludge pit soil samples. Analytical detection limits for pesticides in sludge pit soil samples are reported in Table 5-5c. PCBs were detected in 9 of 14 sludge pit soil samples analyzed for PCBs. Of the seven PCB Arochlors analyzed, two PCB Arochlors were detected. PCB-1248 was detected in 5 samples (maximum concentration of 7,800 μg/kg), and PCB-1260 was detected in 8 samples (maximum concentration of 3,300 μg/kg). PCB-1248 and PCB-1260 results

are depicted on Figures 5-2a and 5-2b for the former Golden Rule Refinery and Barnsdall Refinery, respectively.

TPH in Sludge Pit Soil Samples

TPH sampling results are presented in Table 5-5d. TPH was detected in 16 of 18 sludge pit soil samples analyzed for TPH. TPH in the diesel range was detected in 12 samples (maximum concentration of 85,000 mg/kg), and TPH in the motor oil range was detected in 4 samples (maximum concentration of 5,200 mg/kg). Free-phase petroleum hydrocarbons were commonly visible in subsurface soils collected in the sludge pits.

Metals in Sludge Pit Soil Samples

Results of metals in sludge pit soil samples are presented in Table 5-5e. Of 23 metals analyzed for, 15 have KDHE Tier 2 Risk-Based Concentrations. A summary of maximum detections of metals in sludge pit soil samples and Tier 2 Risk-Based Concentrations (non-residential soil pathway), and Western U.S. background range and mean values for metals in surface soils are tabulated below. The Western U.S. background range and mean values are from *Element Concentrations in Soils and Other Surficial Materials of the Conterminous United States*, U.S.G.S. Professional Paper 1270, 1984.

Metal	Maximum Detected Concentration (mg/kg)	Tier 2 Concentration (Non-residential soil pathway) (mg/kg)	Western U.S. Background Range (mg/kg)	Western U.S. Background Mean (mg/kg)
Antimony	21.7	820	<1 – 2.6	0.47
Arsenic	7.85	38	<0.10 – 97	5.5
Barium	812	140,000	70 – 5,000	580
Beryllium	0.713	4,100	<1 – 15	0.68
Cadmium	12.2	1,000	--	--
Chromium	93.7	4,000	3 – 2,000	41
Copper	2,570	76,000	2 – 300	21
Lead	1,590	1,000	<10 – 700	17
Manganese	660	95,000	30 – 5,000	380
Mercury	1.84	20	<0.01 – 4.6	0.046
Nickel	187	41,000	<5 – 700	15
Selenium	9.22	10,000	<0.1 – 4.3	0.23
Silver	2.96	10,000	--	--
Vanadium	30.2	14,000	7 – 500	70
Zinc	4,970	610,000	10 – 2,100	55

Except for arsenic, all of the metals have no established Tier 2 soil-to-groundwater pathway concentrations. Arsenic has a Tier 2 non-residential soil-to-groundwater pathway concentration of 29 mg/kg.

With the exception of lead, all of the maximum concentrations of metals in sludge pit soil samples are significantly lower than the Tier 2 Risk-Based Concentrations. Three of 14 sludge pit soil samples analyzed for metals had lead concentrations exceeding the Tier 2 Risk-Based Non-residential Concentration of 1000 mg/kg. The maximum lead concentration of 1,590 mg/kg was from sample location GP10D-03 at a depth of 8-10 feet.

Five of 13 metals (antimony, copper, lead, selenium, and zinc) had concentrations in sludge pit soil samples that exceeded the range of concentrations found in background surface soils in the Western U.S. The number of samples and range of concentrations of metals in sludge pit soil samples with concentrations greater than the Western U.S. background ranges are summarized as follows:

- Antimony – Three samples (5.93 – 21.7 mg/kg), background range (<1 – 2.6 mg/kg)
- Copper – Two samples (477 – 2,570 mg/kg), background range (2 – 300 mg/kg)
- Lead – Four samples (973 – 1,590 mg/kg), background range (<10 – 700 mg/kg)
- Selenium – Three samples (4.44 – 9.22 mg/kg), background range (<0.1 – 4.3 mg/kg)
- Zinc – Two samples (3,040 – 4,970 mg/kg), background range (10 – 2,100 mg/kg)

Twelve of 13 metals (all except vanadium) had concentrations in sludge pit soil samples that exceeded the mean value for background surface soils in the Western U.S. Two metals (cadmium and silver) were not included in the U.S.G.S tabulation of background soil concentrations.

5.4.2 Sludge Pit Groundwater Sampling Results

Sludge pit groundwater sampling results for VOCs, SVOCs, Pesticides/PCBs, TPH, and metals are presented in Tables 5-6a through 5-6e, and are discussed below.

VOCs in Sludge Pit Groundwater Samples

VOCs were detected in 5 of 6 sludge pit groundwater samples analyzed by EPA Method 8260. The number of detections and maximum concentration of detected VOCs are summarized as follows:

Compound	Number of Detects/Samples	Maximum Detected Concentration (µg/L)
1,1-Dichloroethane	1/6	1.8

Compound	Number of Detects/Samples	Maximum Detected Concentration (µg/L)
Chloroethane	2/6	12
Vinyl chloride	1/6	1.4
Benzene	5/6	17
Toluene	3/6	3.5
Ethylbenzene	2/6	5.9
m,p-Xylenes	2/6	8.2
o-Xylene	3/6	5.8

Of the detected VOCs, only benzene exceeded its MCL. The MCL for benzene of 5 µg/L was exceeded in 4 of 6 groundwater samples with a maximum concentration of 17 µg/L.

SVOCs in Sludge Pit Groundwater Samples
Analytical results of SVOCs in sludge pit groundwater samples are presented in Table 5-6b. SVOCs were detected in 2 of 6 groundwater samples analyzed for SVOCs by EPA Method 8270. Detected SVOCs included the following:

- 2-Methylnaphthalene (2 detections, maximum concentration of 150 µg/L)
- Chrysene (1 detection, concentration of 11 µg/L)
- Naphthalene (1 detection, concentration of 150 µg/L)
- Phenanthrene (1 detection, concentration of 33 µg/L)
- Pyrene (1 detection, concentration of 21 µg/L).

Pesticides/PCBs in Sludge Pit Groundwater Samples
Analytical results of Pesticides/PCBs in sludge pit groundwater samples are presented in Table 5-6c. No pesticides or PCBs were detected in any of the 6 sludge pit groundwater samples. Analytical detection limits for pesticides and PCBs in sludge pit groundwater samples are reported in Table 5-6c.

TPH in Sludge Pit Groundwater Samples
Results of TPH in sludge pit groundwater samples are presented in Table 5-6d. TPH in the diesel range was detected in 4 of 6 groundwater samples. Detected concentrations ranged from 1.2 mg/L to 1,200 mg/L.

Metals in Sludge Pit Groundwater Samples
Analytical results of total metals in sludge pit groundwater samples are presented in Table 5-6e. Of the 23 anions/metals analyzed, 13 have promulgated MCLs. Of these 13 metals, two metals were detected at concentrations above their MCLs in the filtered samples (dissolved metals). Two detections of arsenic exceeded the MCL of 10 µg/L (70.8 µg/L at GP10D-02 and 82.2 µg/L at GP10D-03), and two detections of lead

exceeded the EPA action level of 15 µg/L (19.3 µg/L at GP10C-02 and 25.8 µg/L at GP10D-02).

Additional data are needed to determine whether metals contamination extends beyond the immediate vicinity of the sludge pits. Additional investigations conducted in these areas should include analysis of groundwater samples for lead and arsenic (total and dissolved) using monitoring wells with non-native filter packs that have been developed to minimize turbidity.

5.4.3 Nature and Extent of Contamination in Sludge Pit Areas

Sampling results for sludge pit soils and groundwater were discussed above in Sections 5.4.1 and 5.4.2, respectively. Summary statistics for detected VOCs, SVOCs, Pesticides/PCBs, TPH, and metals for sludge pit soils and groundwater are presented in Tables 5-7a and 5-7b, respectively. These tables present the frequency of detection (FOD), the minimum, average (arithmetic mean), and maximum concentrations of detected parameters, and the location of the maximum reported concentration. The average is provided for reference purposes and is not meant to represent a statistically valid expression of central tendency. Site concentrations are expected to be closer to log-normally distributed than normally distributed, hence the average is expected to be significantly higher than the true central tendency of the data. No statistical analysis of data distribution was conducted as part of this RI. The average value presented was calculated from analytical detections only (results below analytical detection limits were not included in the calculation).

As discussed in Section 5.4.1, elevated detection limits likely result in a low bias for the FOD of SVOCs in soil samples. However, the FOD analysis is still appropriate to identify which compounds are the most prevalent in soils. Numerous detection limits for SVOCs in sludge pit soil samples were higher than their respective Tier 2 risk-based concentrations. Therefore, the degree of SVOC contamination in soil samples may be underestimated. Any future investigations conducted at the sludge pits should attempt to achieve lower detection limits.

In addition to the Geoprobe groundwater samples collected in the sludge pit areas, several monitoring wells are located in the vicinity of the former refineries. These monitoring wells include GRR-04, NMW-34S&D, WND-05S&D, WND-11S&D, WND-12S&D, WND-16S&D, WND-27S, and WND-29S&D. Sampling results for these monitoring wells are presented in Tables 5-9a through 5-9e. Of these monitoring wells, all were sampled for VOCs, and selected wells were sampled for TPH and/or SVOCs. Figures depicting results for BTEX, and TPH and fuel-related hydrocarbons in groundwater are presented in Section 8 (Figures 8-6 and 8-7, respectively). Figure 8-6 indicates the presence of BTEX in groundwater beneath the former refineries, and extending to the south to the vicinity of approximately 23rd Street. Monitoring well locations that appear to have groundwater impacted by operations at the former Golden Rule and Barnsdall refineries include WND-03, WND-05, WND-12, WND-16, WND-27, WND-34, and WND-36.

The following subsections provide discussion of analytical results specific to the sludge pit areas within the Former Golden Rule Refinery and Barnsdall Refinery.

5.4.3.1 Former Golden Rule Refinery

The former Golden Rule Refinery is located north of 29th Street and east of Broadway. Surface soil and subsurface soil samples were collected at three locations within former sludge pits on the former refinery property.

Petroleum Hydrocarbon-Related Contamination

Sampling results for TPH, sum of BAP equivalents, PCB-1248, and PCB-1260 in sludge pit soil samples at the former Golden Rule Refinery are depicted on Figure 5-2a.

All three sludge pits that were sampled within the former refinery area were impacted by these constituents. The detected constituents are all associated with free-phase hydrocarbons (product) impacting the soils at these sludge pit locations. Product within the soil pore space was observed during soil sampling. Product saturated soils were encountered at depths of 3 to 6 feet and extended to or below the water table. The following are observations regarding free-phase hydrocarbons in samples submitted for laboratory analysis:

Sample Location	Sample Depth (feet)	Soil Observation
GP10C-01	4	Product
GP10C-01	4-13	Product
GP10C-01	14-17	Hydrocarbon stained
GP10C-02	5	Product
GP10C-03	4.5	Product
GP10C-03	9.5	Product
GP10C-03	14	Hydrocarbon stained

As described in the KDHE-approved Work Plan Addendum, soil borings were completed to observe saturated conditions. The total depths of borings GP10C-01, GP10C-02, and GP10C-03 were 17 feet, 15.5 feet, and 16 feet respectively. Boring logs with additional observations are provided in Appendix E-1.

Metals

No metals were detected in soil samples at the Former Golden Rule Refinery at concentrations exceeding Tier 2 risk-based concentration (non-residential pathway). One filtered groundwater sample contained lead at a concentration exceeding the MCL of 15 µg/L (19.3 µg/L at location GP10C-02). Additional groundwater sampling may be necessary to determine whether lead in groundwater is a widespread concern at the Former Golden Rule Refinery.

5.4.3.2 Former Barnsdall Refinery

The former Barnsdall Refinery is located south of 29th Street and east of Broadway. Surface soil samples were collected at five locations and subsurface soil samples were collected at three locations within former sludge pits on the former refinery property.

Petroleum Hydrocarbon-Related Contamination
Sampling results for TPH, sum of BAP equivalents, PCB-1248, and PCB-1260 in sludge pit soil samples at the former Barnsdall Refinery are depicted on Figure 5-2b.

All three sludge pits that were sampled within the former refinery area were impacted by these constituents. The detected constituents are all associated with free-phase hydrocarbons (product) impacting the soils at these sludge pit locations. Product within the soil pore space was observed during soil sampling at location GP10D-03 at a depth of 8 to 11.5 feet. The following are observations regarding free-phase hydrocarbons in samples submitted for laboratory analysis:

Sample Location	Sample Depth (feet)	Soil Observation
GP10D-01	10	Hydrocarbon stained
GP10D-01	15	Petroleum odor
GP10D-02	10.5	Petroleum odor
GP10D-03	8-10	Product
GP10D-03	10.5	Product

As described in the KDHE-approved Work Plan Addendum, soil borings were completed to observe saturated conditions. The total depths of borings GP10D-01, GP10D-02, and GP10D-03 were all 16 feet. Boring logs with additional observations are provided in Appendix E-1.

Metals
Three soil samples at two locations at the Former Barnsdall Refinery contained lead at concentrations exceeding Tier 2 risk-based concentration (non-residential pathway) of 1,000 mg/kg. These lead detections only slightly exceeded the Tier 2 risk-based concentration (the maximum lead detection was 1,590 mg/kg).

One filtered groundwater sample contained lead at a concentration exceeding the MCL of 15 µg/L (25.8 µg/L at location GP10C-02). Two filtered groundwater samples contained arsenic at concentrations exceeding the MCL of 10 µg/L (70.8 µg/L at location GP10D-02 and 82.2 µg/L at location GP10D-03). As discussed in Section 5.4.2, it is uncertain whether the metal detections are associated with suspended solids or groundwater. Additional groundwater sampling may be necessary to determine whether lead and arsenic in groundwater are a concern at the Former Barnsdall Refinery.

5.5 Groundwater Investigation Analytical Results

This section presents the results of groundwater investigation activities throughout the NIC Site with the exception of the sludge pit investigations discussed in Section 5.4. Geoprobe groundwater sampling results are discussed in Section 5.5.1 and monitoring well sampling results are discussed in Section 5.5.2. Summary statistics and selection of groundwater target compounds are presented in Section 5.5.3, and the nature and extent of contamination is discussed in Section 5.5.4. The nature and extent discussion includes the areal and vertical extent of contamination and concentration time trends.

5.5.1 Geoprobe Groundwater Sampling Results

Geoprobe groundwater sampling methods were discussed in Sections 3.1 and 3.2. Geoprobe sample locations for Phase 1 and Phase 2 are depicted on Plates 3-1a and 3-1b. The Geoprobe investigation periods are summarized as follows:

- Phase 1 – December 1997-June 1998
- Phase 2 – October 1999-July 2001

Phase 1 Geoprobe sampling activities were largely conducted in December 1997 through January 1998. Additional Geoprobe groundwater sampling was also conducted in May through June 1998 (Phase 1A sampling).

The majority of the Phase 2 Geoprobe sampling was conducted in October 1999 through January 2000. Subsequent sampling activities conducted between January 2000 and July 2001 included:

- Sampling at facilities where access had been delayed
- Sampling activities conducted by the City of Wichita in response to certificate-of-release applications
- Sampling conducted by other parties where the City/CDM collected sample splits

Geoprobe groundwater samples were all analyzed for VOCs by EPA Method 8260. Method 8260 was modified with a 25 mL purge volume in order to have low analytical detection limits (1 μg/L).

Phase 1 and 2 Geoprobe groundwater sampling results are presented in Table 5-8 and Table H-1 in Appendix H (all analyzed compounds). Laboratory analytical data reports are presented in Appendix I. Results are further discussed in Section 5.5.3, Statistical Evaluation, and Section 5.5.4, Nature and Extent of Contamination.

5.5.2 Monitoring Well Sampling Results

Monitoring well groundwater sampling methods were discussed in Sections 3.1 and 3.2. Monitoring well sample locations for Phase 1 and Phase 2 are depicted on Plates 3-1a and 3-1b. The monitoring well sampling periods are summarized as follows:

- Phase 1 - December 1997-June 1998
- Phase 2 - May 2001-July 2001

Phase 1 monitoring well sampling activities included sampling of 35 wells in December 1997 and sampling of 13 wells in June 1998. Monitoring wells sampled during Phase 1 were analyzed for VOCs by EPA Method 8260 (modified for low detection limits).

Phase 2 monitoring well sampling included sampling of 166 wells in May 2001, and sampling of an additional 24 monitoring wells in July 2001 at locations where access was delayed.

All monitoring well samples were analyzed for VOCs by EPA Method 8260 (modified for low detection limits). VOC analytical results for Phase 1 and Phase 2 monitoring well samples are presented in Table H-2 in Appendix H. Laboratory analytical data reports are presented in Appendix I. Selected monitoring wells were also analyzed for the following:

- Extended List VOCs by EPA Method 8260 (see Table 5-9a and Table H-3 in Appendix H)
- SVOCs by EPA Method 8270 (Table 5-9b)
- Pesticides/PCBs by EPA Method 8080 (Table 5-9c)
- TPH by Methods OA1/OA2 (Table 5-9d)
- Total and Dissolved Metals (Table 5-9e)
- General Water Quality Parameters (Table 5-9f)
- Inorganic Field Parameters (Table 5-9g)

Analytical results are further discussed in Section 5.5.3, Statistical Evaluation, and Section 5.5.4, Nature and Extent of Contamination. General water quality parameters and inorganic field parameters are also discussed in Section 8.3, Monitored Natural Attenuation Assessment.

5.5.3 Statistical Evaluation

Statistical analyses for VOCs, SVOCs, TPH, and total and dissolved metals in groundwater are presented in Tables 5-10a through 5-10c. The following statistical parameters were calculated for constituents analyzed in groundwater samples:

- Number of detects
- Number of samples
- Frequency of detection (FOD)
- Minimum detected concentration
- Average (arithmetic mean) detected concentration
- Maximum detected concentration

The average is provided for reference purposes and is not meant to represent a statistically valid expression of central tendency. Site concentrations are expected to

be closer to log-normally distributed than normally distributed, hence the average is expected to be significantly higher than the true central tendency of the data. No statistical analysis of data distribution was conducted as part of this RI. The average value presented was calculated from analytical detections only (results below analytical detection limits were not included in the calculation).

In addition to the above statistical parameters, Tables 5-10a through 5-10c include the MCL and the location of the maximum reported concentration. Discussions of the statistical evaluations of VOCs, SVOCs, TPH, and metals are presented below in Sections 5.5.3.1 through 5.5.3.3.

Tables 5-10a though 5-10c do not include Geoprobe samples collected at the sludge pits (GP-10C and GP-10D series sample locations). Since the contamination in the sludge pits is a localized issue within the NIC Site and potentially includes different contaminants of concern, and in order to maintain the focus on site-wide contamination issues, Geoprobe data within the sludge pits have been excluded from the Site-wide summary statistics. Sludge pit summary statistics were previously discussed in Section 5.4. However, sample locations exist that appear to be impacted by the sludge pit area within the summary statistics data set (e.g. WND-05S is immediately downgradient of the GP-10D sludge pit area and is impacted by fuel-related compounds).

5.5.3.1 VOCs in Groundwater

Summary statistics for VOCs in groundwater samples are presented in Table 5-10a. The number of samples in Table 5-10a is 1351 for samples analyzed for VOCs by EPA Method 8260 (short list) and 45 for samples analyzed for VOCs by EPA Method 8260 (extended list).

Selection of Groundwater Target Compounds

In order to perform a more focused evaluation of the nature and extent of contamination in groundwater, "groundwater target compounds" were selected. This evaluation is not to be confused with the selection of Site Compounds of Potential Concern (COPCs) during the Baseline Risk Assessment (BRA). The COPCs identified during the BRA are those compounds that have potential to present unacceptable risks. The groundwater target compounds are compounds that are the most significant in terms of concentration and number of detections in groundwater. These compounds have been selected in order to focus evaluations on the nature and extent of contamination (e.g. selection of compounds for preparation of dot plots and/or isoconcentration maps).

The groundwater target compounds also include the compounds that represent the greatest extent of contamination within the Site or provide additional understanding regarding the nature and extent of contamination. Groundwater target compounds were selected based on the following criteria:

- Frequency of detection
- Exceedance of MCL
- Extent of contamination
- Importance in source identification (see Section 9)
- Importance as an anaerobic biodegradation daughter product (see Section 8)

The groundwater target compounds are summarized in Table 5-11, along with the basis for their selection. These compounds include chlorinated ethenes (PCE, TCE, *cis*-1,2-DCE, VC, and 1-1,DCE), chlorinated ethanes (TCA and 1,1-DCA), chlorinated methanes (CT and CFM), and benzene. The selected groundwater target compounds are intended to include the compounds with the greatest extent of contamination as well as those that have significant MCL exceedances.

All but one of the selected groundwater target compounds had FODs greater than 5 percent. Some compounds that had FODs greater than 5 percent but were not included as groundwater target compounds include the following:

- *trans*-1,2-DCE (None of the 1,351 samples exceeded the MCL of 100 μg/L)
- Methylene chloride (Only 3 of 1,351 samples exceeded the MCL of 5 μg/L. The maximum concentration of 9.7 μg/L only slightly exceeded the MCL)
- Toluene (Only 1 of 1,351 samples exceeded the MCL of 1000 μg/L)
- Ethylbenzene (Only 1 of 1,351 samples exceeded the MCL of 700 μg/L)
- Xylenes (Only 1 of 1,351 samples exceeded the MCL of 10,000 μg/L)

The MCL exceedances of toluene, ethylbenzene, and xylenes all occurred at the same location, Geoprobe GPA12-6 at a depth of 20 feet. This location is immediately downgradient of the Coastal-Derby Refinery.

Other detected compounds may be present on a more localized basis. In some cases, EPA Method 8260 extended list constituents result in a FOD that is potentially biased high since several sample locations analyzed for extended list VOCs were targeted in known-fuel impacted areas. The extended list constituents with FODs greater than 5 percent include the following fuel-related compounds: 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, isopropylbenzene, n-butylbenzene, n-propylbenzene, p-isopropyl toluene, sec-butylbenzene, and tert-butylbenzene. None of the above fuel-related compounds have promulgated MCLs.

5.5.3.2 SVOCs and TPH in Groundwater

Summary statistics for SVOCs and TPH in groundwater samples are presented in Table 5-10b. The compounds 1,2-dichlorobenzene, 1,4-dichlorobenzene, and 1,3-dichlorobenzene were analyzed both by EPA Methods 8260 and 8270. Hence, the number of samples analyzed was 1368. Naphthalene and 1,2,4-trichlorobenzene were

analyzed by both EPA Method 8260 extended list and by EPA Method 8270, hence 62 samples were analyzed.

Five SVOC compounds had FODs greater than 5 percent. Of these 5 compounds, 4 had only one detection out of 17 samples, and all 4 were detected in the same sample (well WND-16S). Well WND-16S is located downgradient of the sludge pit area. None of the 4 compounds (2-methylnaphthalene, acenaphthene, fluorene, and phenanthrene) have promulgated MCLs.

The fifth compound, naphthalene, was detected in 19 of 62 samples. Naphthalene does not have a promulgated MCL. Naphthalene was detected in the sample from well WND-16S at a concentration of 790 µg/L. Of the remaining 18 samples with detected naphthalene, the maximum concentration was 44 µg/L. The naphthalene detections were largely from sample locations in the vicinity of the Coastal-Derby Refinery and Union Pacific Railyard.

TPH was detected in 2 of 13 samples, WND-05S and WND-16S. As previously discussed, both WND-05S and WND-16S are downgradient of sludge pit areas. Based on the available data, TPH appears to be a potential groundwater issue only in the vicinity of the sludge pit areas.

5.5.3.3 Total and Dissolved Metals

Summary statistics for total and dissolved metals in groundwater samples are presented in Table 5-10c. Of the 23 anions/metals analyzed, 13 have promulgated MCLs. Of these 13 metals, 8 metals were detected at concentrations above their respective MCLs in unfiltered samples (total metals) and 2 metals were detected at concentrations above their respective MCLs in filtered samples (dissolved metals).

Total Metals MCL Exceedances

All of the total metals MCL exceedances were in samples collected from four monitoring wells: WND-45D (As, Ba, Be, Cr, Pb, Tl, and V), WND-02S (As, Cd, Pb, Tl, and V), WND-05S (Pb, and V), and NMW-09D (As).

Wells WND-45D, WND-02S, and WND-05S all had elevated turbidity (greater than 999 NTUs) and elevated total aluminum concentrations. Total aluminum concentrations in these samples were several orders of magnitude higher than other well samples, and all dissolved aluminum was below detection limits. Therefore, the total metals detections in wells WND-45D, WND-02S, WND-05S are due to elevated suspended solids (turbidity) and are not representative of groundwater.

Dissolved Metals MCL Exceedances

The dissolved metals exceedances were in samples collected from two wells for lead (WND-02S and NMW-31S), two wells for arsenic (WND-02S and NMW-09D) and two wells for thallium (NMW-29S and WND-06S). The sources of dissolved metals in these wells are not apparent. However, these detections appear to be localized occurrences, and do not appear to have significant bearing on the NIC site as a whole.

5.5.4 Nature and Extent of Contamination

As discussed in Section 8, many of the groundwater target compounds are biodegradation daughter products of other groundwater target compounds. *cis*-1,2-DCE and VC are daughter products of PCE and TCE; 1,1-DCA and 1,1-DCE are daughter products of TCA, and CFM is a daughter product of CT. In addition, VC is a daughter product of 1,1-DCE and 1,1-DCE may be a minor biodegradation daughter product of TCE. Hence, the parent compounds and their primary daughter products are grouped below in discussions regarding the nature and extent of contamination.

5.5.4.1 Determination of Shallow and Deep Groundwater Zones

The nature and extent of contaminants was considered for both shallow and deep groundwater zones. Data from numerous investigations were used in determining the nature and extent of contamination, and the screened interval of shallow monitoring wells relative to deep wells varies between these investigations. Therefore, generalized criteria are needed for designation of shallow and deep groundwater zones at the site. Geoprobe sampling locations are the most numerous and widespread throughout the site and therefore an analysis of geoprobe sampling depths was used as the basis of these standardized criteria. Based on analysis of geoprobe sampling depths, a large grouping of geoprobe samples were collected at depths shallower than 21 feet bgs, and a second large grouping of samples were collected at depths deeper than 25 feet bgs. Therefore, the following general criteria were used:

- **Shallow groundwater-** samples collected from geoprobes or monitoring wells where the bottom of the sampling depth interval was shallower than 21 feet bgs. The shallow groundwater zone extends from the water table to a depth of 6 to 9 feet below the water table in most instances, which is a typical depth range for a shallow water table observation well with 10 feet of screen.

- **Deep groundwater-** Geoprobe samples and monitoring wells where the top of the sampling depth interval was deeper than 25 feet bgs. The deep groundwater zone is typically representative of the bottom 10 to 20 feet groundwater within the aquifer.

Using this classification, most data points within the site are adequately represented. However, data from a few areas would be misrepresented or excluded if this classification was used exclusively. Therefore, the following exceptions were made for groundwater zone classification:

- **Northeast area-** Ground surface and potentiometric surface elevations are significantly higher northeast of the I-135/K-96 interchange compared to the rest of the site. The aquifer thickness also decreases in this area. The approximate ground surface elevation at the gradient change is 1,323 feet MSL. Therefore, the default depth criteria for wells northeast of the interchange were modified relative to this elevation. Wells with the bottom of the screened interval shallower than 1,303 feet MSL were classified as shallow

groundwater wells, and wells with the top of the screened interval deeper than 1,297 feet MSL were classified as deep groundwater wells. This classification affects some of the CNE wells and all of the USD and UCL wells.

- **CNE "S" wells**- Most of the CNE and CNE-NE wells with a "D" suffix fall within the deep groundwater classification using either the default depth criteria or the modified depth criteria for the northeast area. Due to minimal spacing between screened intervals for the CNE nested well pairs, most of the CNE and CNE-NE wells with a "S" suffix were slightly too deep to be classified as shallow groundwater wells using these criteria. However, omitting the "S" wells would result in a large data gap in the northeast area. In addition, there is sufficient overlap of the screened interval of the CNE "S" series wells compared to the default criteria to be representative of shallow groundwater quality. Therefore, the CNE and CNE-NE "S" wells were included on the shallow groundwater isoconcentration maps.

- **CN Wells**- Similar to the CNE "S" wells, the screened interval of the shallower wells within some CN nested well pairs do not correspond to the shallow groundwater zone. However, omitting these wells would not be appropriate, because potential source areas would not be shown on the map. Therefore, these shallower wells were included as shallow groundwater sampling points.

- **CTC Wells**- Similar to the CNE and CN shallow wells, the screened interval for most of the "S"-suffix CTC wells are close enough to the default interval for shallow groundwater to be representative monitoring points for the shallow groundwater zone. Therefore, with the exception of CTC-MW-4S and CTC-MW-5S, these wells were designated as shallow groundwater sampling points. CTC MW-4S and CTC-MW-5S are screened significantly deeper than the other "S" wells and were therefore excluded.

- **USD 259 wells**- Due to incomplete information on well elevations, and the limited amount of contaminant data available for USD wells, all USD wells were included on the shallow groundwater isoconcentration maps in order to provide the most complete information regarding the extent of groundwater contamination in the USD area.

5.5.4.2 PCE, TCE, *cis*-1,2-DCE, and VC

Dot plots for PCE, TCE, *cis*-1,2-DCE, and VC in shallow and deep groundwater are presented in Figures 5-3a and b through Figures 5-6a and b, respectively. These dot plots present results using separate symbols for data collected during Phase 1 (1997-1998) and Phase 2 (1999-2001) of the RI. Concentration ranges are depicted via dot size and dot color as indicated on the legend of each figure. Results below analytical detection limits (non-detect values) are posted on the dot plots using the detection limit value. Actual concentrations of TCE, *cis*-1,2-DCE, and VC for Phase 1 and Phase 2 are shown on Plates 5-3a and 5-3b.

TCE and cis-1,2-DCE in Groundwater

The extent of contamination of TCE and *cis*-1,2-DCE in groundwater is significantly greater than the other groundwater target compounds. With some relatively minor exceptions, the extent of TCE and *cis*-1,2-DCE contamination in the NIC Site encompasses the areas impacted by the other groundwater target compounds. Figures 5-4a and b and 5-5a and b are dot plots depicting TCE and *cis*-1,2-DCE in shallow and deep groundwater for both Phase 1 and 2 sampling results.

TCE and *cis*-1,2-DCE isoconcentration maps were generated separately for Phase 1 and Phase 2 sampling results, and for each groundwater depth zone. Isoconcentration maps of Phase 1 results for TCE in shallow groundwater and TCE in deep groundwater are presented as Plates 5-4a and 5-4b, respectively. Isoconcentration maps of Phase 2 results for TCE in shallow groundwater and TCE in deep groundwater are presented as Plates 5-4c and 5-4d, respectively. Isoconcentration maps of Phase 1 results for *cis*-1,2-DCE in shallow groundwater and *cis*-1,2-DCE in deep groundwater are presented as Plates 5-5a and 5-5b, respectively. Isoconcentration maps of Phase 2 results for *cis*-1,2-DCE in shallow groundwater and *cis*-1,2-DCE in deep groundwater are presented as Plates 5-5c and 5-5d, respectively.

Dashed contours on the isoconcentration maps indicate areas of uncertainty caused by insufficient geologic control. Significant areas of uncertainty are as follows:

- **CNE area, Phase 2 TCE plume**- Fewer sampling points were available for the CNE plume during Phase 2 sampling. Therefore, some of the Phase 2 TCE contours (Plates 5-4c and 5-4d) are inferred, based on the available data compared to Phase 1 data. The data gaps in this area are not significant in terms of evaluating overall contaminant trends in the northern portion of the site. The *cis*-1,2-DCE plume in this areas is more limited in extent than the TCE plume, and is better defined by the available data.

- **DRB area**- Limited data are available for the DRB area, especially for the shallow groundwater zone. Shallow groundwater contours in this area are inferred because of the limited groundwater quality data, and insufficient information regarding active groundwater remediation at the site.

- **Southeast Portion of Site, Phase 2 sampling**- Less monitoring points were sampled during Phase 2 sampling in the southeast portion of the site (south of 11th Street and east of Washington Avenue) compared to Phase 1 sampling. However, additional groundwater samples were collected in this area during the 2003 downgradient monitoring investigation (refer to Section 5.5.4.6). The 2003 data shows an expansion of the contaminant plume in this area between the Phase 1 sampling event and the 2003 downgradient sampling. Based on this expansion of the plume, the Phase 2 contours in this area are conservatively inferred as being equal to the Phase 1 contours.

The isoconcentration maps show that the area of TCE in groundwater can be divided into four general areas as follows:

- A western lobe, north of 29th Street
- An eastern lobe, north of 29th Street
- The main plume, south of 29th Street (where the eastern and western lobes merge)
- A smaller plume in the southwest corner of the Site, south of 13th Street

In the northern portion of the site, the highest concentrations of TCE are in the shallow groundwater, but the areas of higher concentration within the contaminant plume tend to be more localized than in the deep groundwater plume. The highest concentrations of TCE observed in deep groundwater are generally lower than the highest concentrations observed in shallow groundwater, but the extent of higher TCE concentrations is more widespread. With the exception of localized areas, TCE concentrations in deep groundwater are higher than in shallow groundwater in the central and southern portions of the site. Based on the general patterns of TCE in groundwater, TCE seems to move from the shallow to the deep part of the aquifer as it migrates away from source areas.

The extent of *cis*-1,2-DCE in groundwater is similar to TCE, however, concentrations of *cis*-1,2-DCE in groundwater are generally significantly less than TCE. Peak concentrations of *cis*-1,2-DCE are higher in shallow groundwater, while the extent of elevated *cis*-1,2-DCE concentrations is more widespread in deep water than in shallow water. Unlike the pattern noted for the TCE plume, *cis*-1,2-DCE concentrations in most areas of the site were lower in deep water than shallow water during the Phase 1 and Phase 2 sampling events. However, *cis*-1,2-DCE concentrations were higher in deep groundwater samples compared to shallow groundwater during downgradient monitoring in 2003 (refer to Section 5.5.4.6). The cause of this increase is likely attributable to increasing TCE trends in deep groundwater in this area.

TCE and cis-1,2-DCE Time Trends

The isoconcentration maps presented as Plates 5-4a through d and Plates 5-5a through d allow a comparison of the extent of contamination between Phase 1 and Phase 2. Isoconcentration maps from the 29th and Mead investigation are provided in Appendix B-2. The pre-RI isoconcentration maps were based on a significantly lower number of sample locations and isoconcentration lines around elevated concentrations were not connected with isoconcentration lines surrounding other elevated concentrations (elevated concentration areas were depicted as disconnected). Therefore, comparison of pre-RI and RI areas impacted by TCE and *cis*-1,2-DCE via isoconcentration maps is of limited utility in evaluating time trends.

Sampling results for Site groundwater target compounds at Geoprobe locations sampled both in 1998 and in 1999 are presented in Table 5-12a. Sampling results for Site compounds in monitoring wells sampled both in 1997-1998 and in 2001 are presented in Table 5-12b. Concentration time-trend plots for selected WND-series wells located throughout the NIC Site are provided in Appendix J.

The WND-series wells were sampled both during pre-RI investigations as well as during the NIC RI sampling events. Concentration time trends in different portions of the Site based on the time trend plots are summarized as follows:

- In the northern portion of the Site (north of 29th Street) TCE concentrations tended to show decreasing trends, whereas *cis*-1,2-DCE concentrations remained relatively constant. The extent of *cis*-1,2-DCE concentrations in deep groundwater expanded from Phase 1 to Phase 2 monitoring.

- TCE concentrations in deep groundwater generally decreased from Phase 1 sampling to Phase 2 sampling. *Cis*-1,2-DCE concentration changes in this area were variable in shallow groundwater but appear to be decreasing with respect to time in deep groundwater. In the central portion of the Site (between 19th Street and 29th Street) some locations exhibited increases in TCE concentration in the shallow aquifer with time. TCE concentrations in the central portion of the site are generally higher in deep groundwater than shallow water in this central portion of the site. The increase in TCE concentrations in the deep aquifer is likely caused by a combination of downward movement of contamination from source areas in the central portion of the site combined with downgradient movement of contaminant plumes in the northern portion of the site.

- In the southern portion of the Site (south of 13th Street), TCE concentrations in shallow groundwater increased in some areas with respect to time and decreased in others. TCE in deep groundwater increased or was variable with respect to time between Phase 1 and Phase 2 groundwater monitoring, with fewer areas of decreasing contamination when compared to shallow groundwater. *Cis*-1,2-DCE concentrations generally decreased slightly in shallow and deep groundwater between Phase 1 and Phase 2 monitoring. Based on more recent data, TCE and *cis*-1,2-DCE near the downgradient edge of the plume is increasing (refer to Section 5.5.4.6). The recent increase in cis-1,2-DCE seems to be caused by continuing degradation of TCE to cis-1,2-DCE.

Potential mechanisms contributing to concentration decreases north of 13th Street include effects of source control at the Coleman Northeast (CNE), Coleman North (CN), and Coastal Derby (DRB) facilities, biodegradation (See Section 8), downgradient movement of contaminant mass in groundwater, and other potential factors. The lack of concentration decreases in the southern portion of the Site may be in part attributable to less anaerobic biodegradation taking place than at areas further north. As discussed in Section 8, the portion of the Site with conditions consistent with more significant biodegradation is the area roughly between 17th and 25th Streets.

PCE in Groundwater

PCE in groundwater at the Site is significantly less widespread than TCE and *cis*-1,2-DCE. PCE concentrations greater than 20 µg/L are limited to ~~four~~ relatively discrete areas within the Site, whereas concentrations between 5 and 20 µg/L are more widespread (see Figures 5-3a and 5-3b). PCE concentrations exceeding 100

µg/L were found in groundwater in the vicinity of the HCI/Advance Chemicals facility (to 1,300 µg/L at location GP-HCI-6 during Phase 2 of the RI), the Safety Kleen facility (to 230 µg/L in well SK-MW-5S during Phase 2 of the RI), the Coleman Northeast facility (to 780 µg/L in well CNE-MW-24 during Phase 1 of the RI and to 640 µg/L in well CNE-MW-26 during Phase 2 of the RI), the USD-259 facility (to 286 µg/L in well USD-MW-9 during Phase 2 of the RI), and the Unocal facility (to 2,000 µg/L in well UCL-MW-20 during Phase 1 of the RI). PCE source areas are discussed in Section 9. As discussed in Section 8.2, PCE degrades under anaerobic conditions to TCE.

VC in Groundwater

VC is found in groundwater throughout the site; however, elevated concentrations (> 20 µg/L) are primarily found in the central portion of the Site, between 17th and 25th streets and in the northeast investigation area (see Figures 5-6a and 5-6b). The highest VC concentration during the RI time period was 1,200 µg/L in well UCL-R-4 at the Unocal facility in April 1997.

As discussed in Section 8.3, VC is found in areas in which organic carbon is present in groundwater (e.g. fuel compounds in groundwater). This indicates that VC is present as a degradation product at elevated concentrations only where degradation is enhanced by organic carbon sources.

5.5.4.3 TCA, 1,1-DCA, and 1,1-DCE

Dot plots for TCA, 1,1-DCA, and 1,1-DCE in shallow and deep groundwater are presented in Figures 5-7a and b through Figures 5-9a and b, respectively.

TCA has a fairly limited extent in groundwater within the NIC Site. TCA concentrations exceeding the MCL of 200 µg/L were found in shallow groundwater during Phase 1 of the RI in the vicinity of the Coleman North facility (to 870 µg/L in well CN-MW-38) and the Unocal facility (to 840 µg/L in well UCL-R-1), and during Phase 2 of the RI, downgradient of the Continental Tank Car facility (520 µg/L at well CTC-MW-6S). Since 2000, TCA concentrations have been below the MCL in all wells at the Coleman North facility.

Although TCA has a fairly limited extent, the biodegradation daughter products 1,1-DCA and 1,1-DCE (see discussion on biodegradation in Section 8.2), are present in groundwater beneath a relatively large portion of the NIC Site. The limited extent and relatively low concentrations of TCA in groundwater suggest that TCA degrades relatively quickly to daughter products in the NIC Site. Sources of TCA in groundwater are discussed in Section 9.

Highest concentrations of both 1,1-DCA and 1,1-DCE are generally between 17th and 29th Streets in the western half of the Site and in the northeast investigation area. The highest 1,1-DCA concentration during the RI was 1,000 µg/L in well UCL-R-11 at the Unocal facility. The highest 1,1-DCE concentration was 460 µg/L in well CN-MW-38 in the vicinity of the Coleman North facility during Phase 1 of the RI.

In the central and southern parts of the site, the concentrations of 1,1-DCA and 1,1-DCE are generally significantly higher in deep groundwater samples than in shallow groundwater samples.

5.5.4.4 CT and CFM

As discussed in Section 8.2, CFM is a degradation product of CT. CFM is also commonly present in public water supplies at relatively low concentrations as a result of chlorination. Dot plots for CT and CFM in shallow and deep groundwater are presented in Figures 5-10a and b and Figures 5-11a and b, respectively. CT and CFM both have limited extent in the NIC Site. During Phase 1, CT in shallow groundwater samples at two locations in the vicinity of the Cargill Elevator near Mead and 11th Streets exceeded 100 µg/L (480 µg/L at location GPA30-4 and 150 µg/L at location GP#28-1). Sources of CT in groundwater are discussed in Section 9. During Phase 2, the maximum CT detection was 48 µg/L in the vicinity of the Farmland Elevator facility in well FLE-MW-2S. The decrease in maximum concentrations between the two phases cannot be attributed to a general groundwater concentration decrease, since samples were generally collected at different locations during Phases 1 and 2.

The distribution of CFM in groundwater is similar to CT. The maximum detection during Phase 1 was 300 µg/L at location GPA30-4 the vicinity of the Cargill Elevator near Mead and 11th Street and the maximum concentration during Phase 2 was 65 µg/L in the vicinity of the Farmland Elevator facility in well FLE-MW-2S.

5.5.4.5 Benzene

Dot plots for Benzene in shallow and deep groundwater are presented in Figures 5-12a and b, respectively. Elevated concentrations of benzene in groundwater are largely found in the central portion of the site, between 19th and 26th streets, and in particular in the vicinity of the Coastal-Derby Refinery. The maximum benzene concentration during Phase 1 was 19,000 µg/L at location GPA12-6, south of the Coastal Derby Refinery, and the maximum benzene concentration during Phase 2 was 9,200 µg/L in well FLE-MW-1S in the vicinity of the Farmland Elevator. Sources of benzene in groundwater are discussed in Section 9.

As discussed above in Section 5.5.4.2 and in Section 8.3, benzene and other fuel-related compounds play an important role in the biodegradation of the chlorinated VOC compounds. Biodegradation mechanisms are discussed in Section 8.2, and Site data related to biodegradation are discussed in Section 8.3, Monitored Natural Attenuation Assessment.

5.5.4.6 Downgradient Groundwater Sampling

A downgradient groundwater investigation was conducted in July and August of 2003. Groundwater samples were taken from 40 Geoprobe sampling clusters and six groundwater well clusters as part of the RI. Comparing the data from Phase 1 and 2 of the RI investigation to the data collected in 2003, the plume of groundwater contamination appears to be expanding into previously uncontaminated areas.

Based on the 2003 data, concentrations of both TCE and *cis*-1,2-DCE are generally increasing in both shallow and deep groundwater. The increasing TCE concentrations are consistent with the general increasing trend noted for the southern portion of the site from the Phase 1 to the Phase 2 sampling events. The increase in cis-1,2-DCE concentrations was accompanied by an increase in the ratio of *cis*-1,2-DCE to TCE in groundwater. The increased ratio of *cis*-1,2-DCE to TCE in groundwater was attributed to reductive chlorination of TCE to *cis*-1,2-DCE. Further discussion of these contaminant trends is provided in the downgradient investigation report. Further discussion of potential reductive dechlorination at the site is included in Section 8 of this report.

Details regarding the downgradient investigation were presented under separate cover, in a letter report finalized on April 9, 2004. Additional downgradient monitoring was proposed in this report. The additional monitoring data will be used to confirm contaminant transport trends and further evaluate MNA processes at the site.

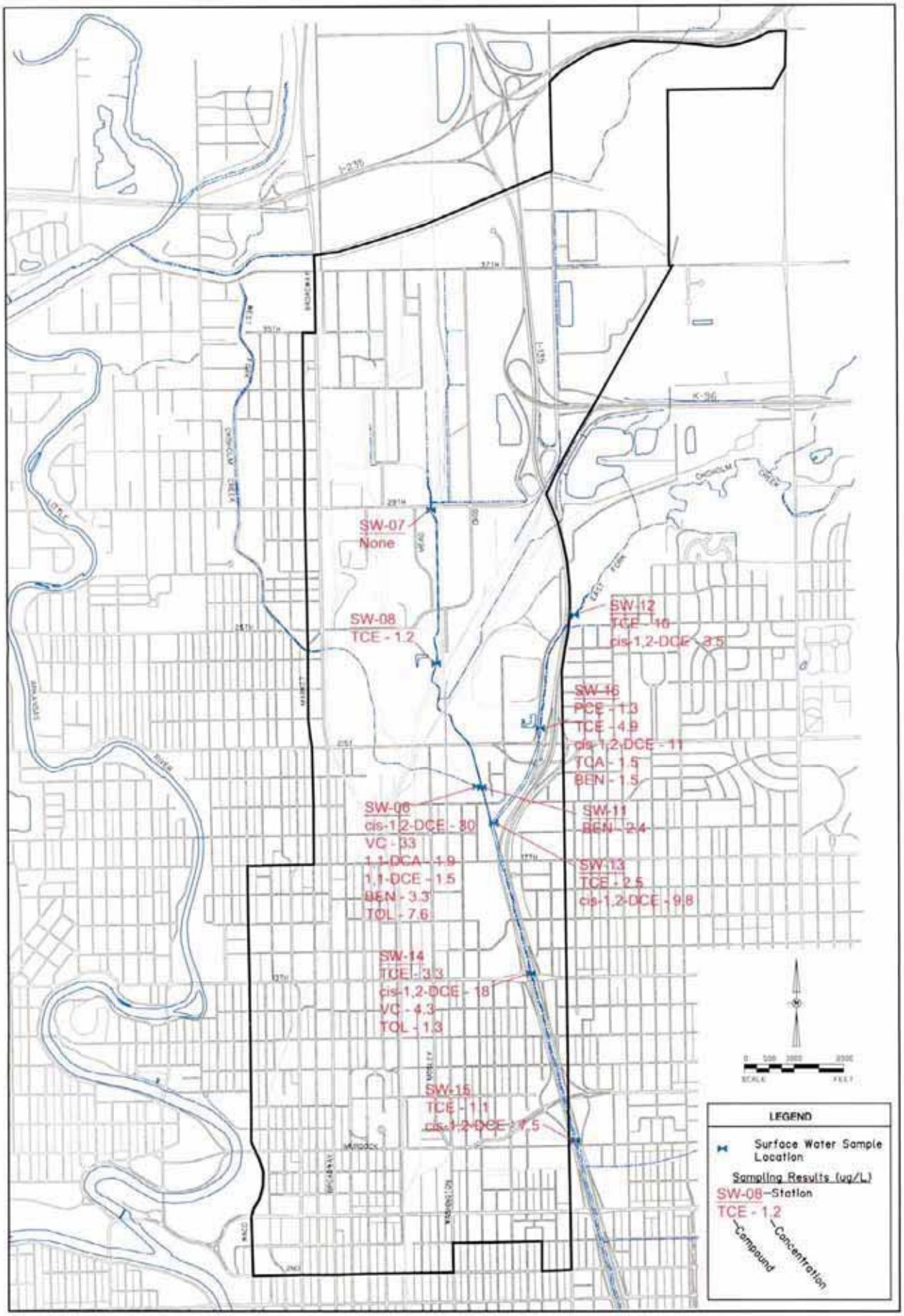
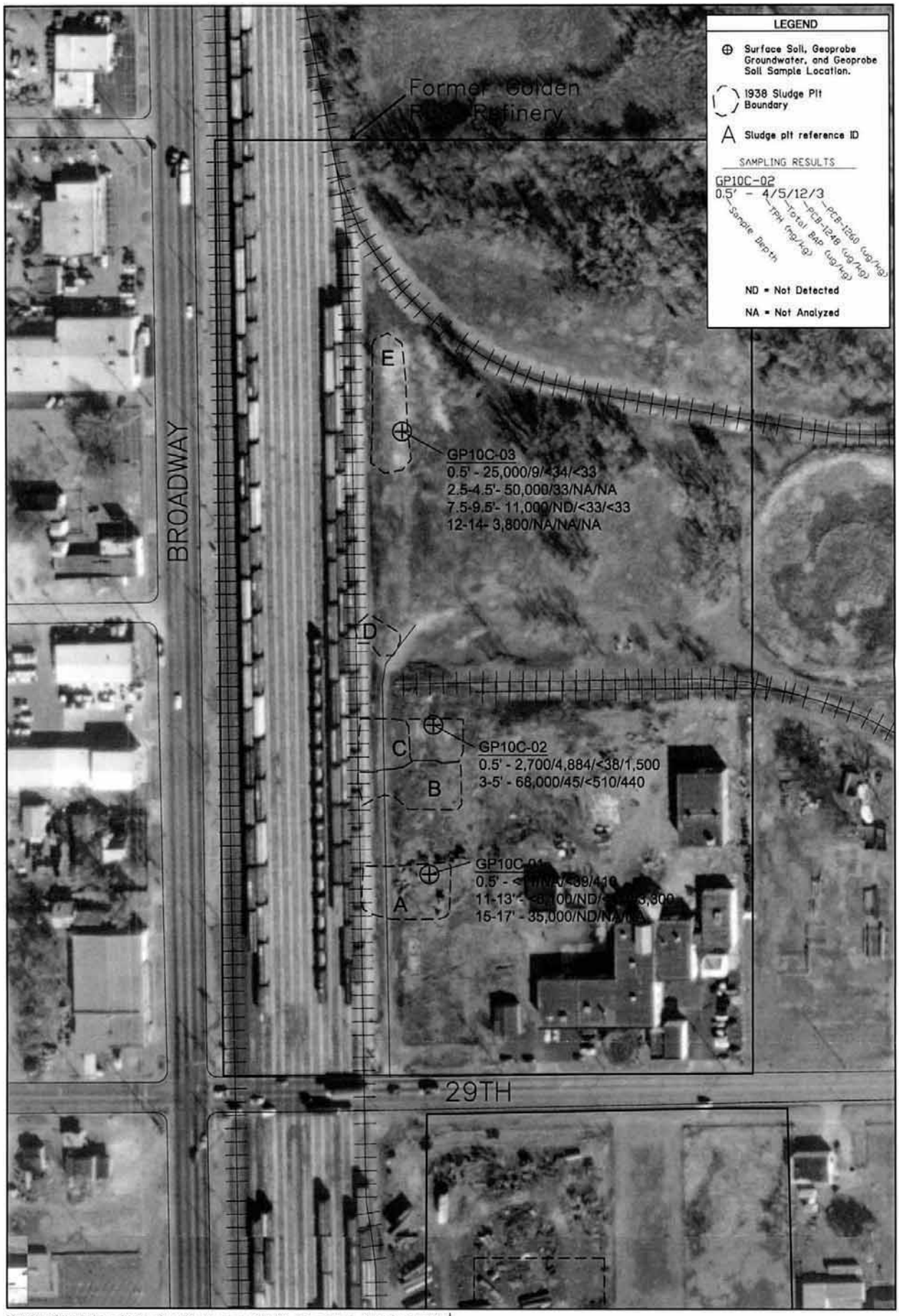


Figure 5-1a
North Industrial Corridor (NIC) Site
VOC Detections in Surface Water Samples

CDM



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CDM

1" = 120'

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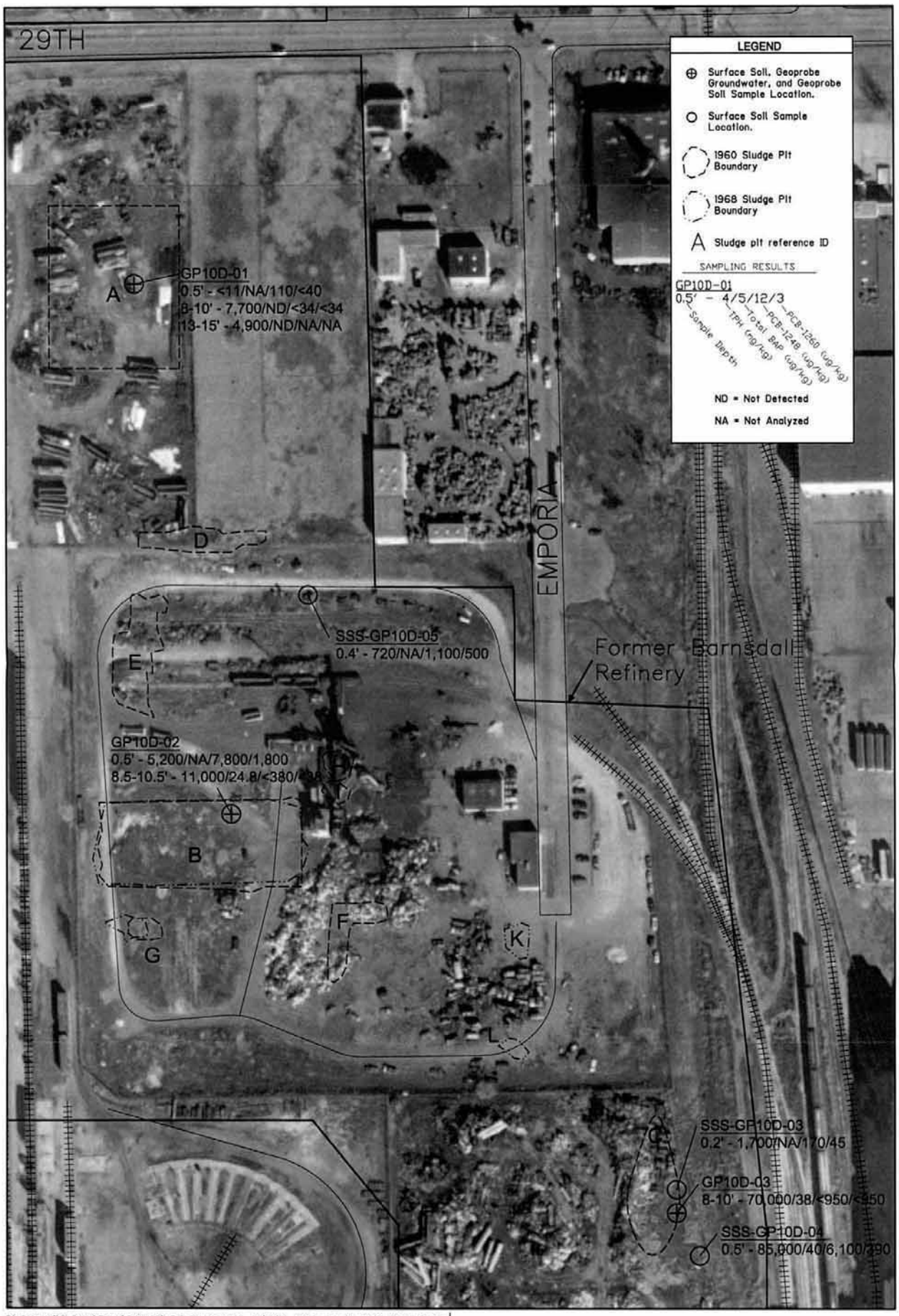
Figure 5-2a
North Industrial Corridor (NIC) Site
Former Golden Rule Refinery, Sludge Pit Sampling Results



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1" = 120'

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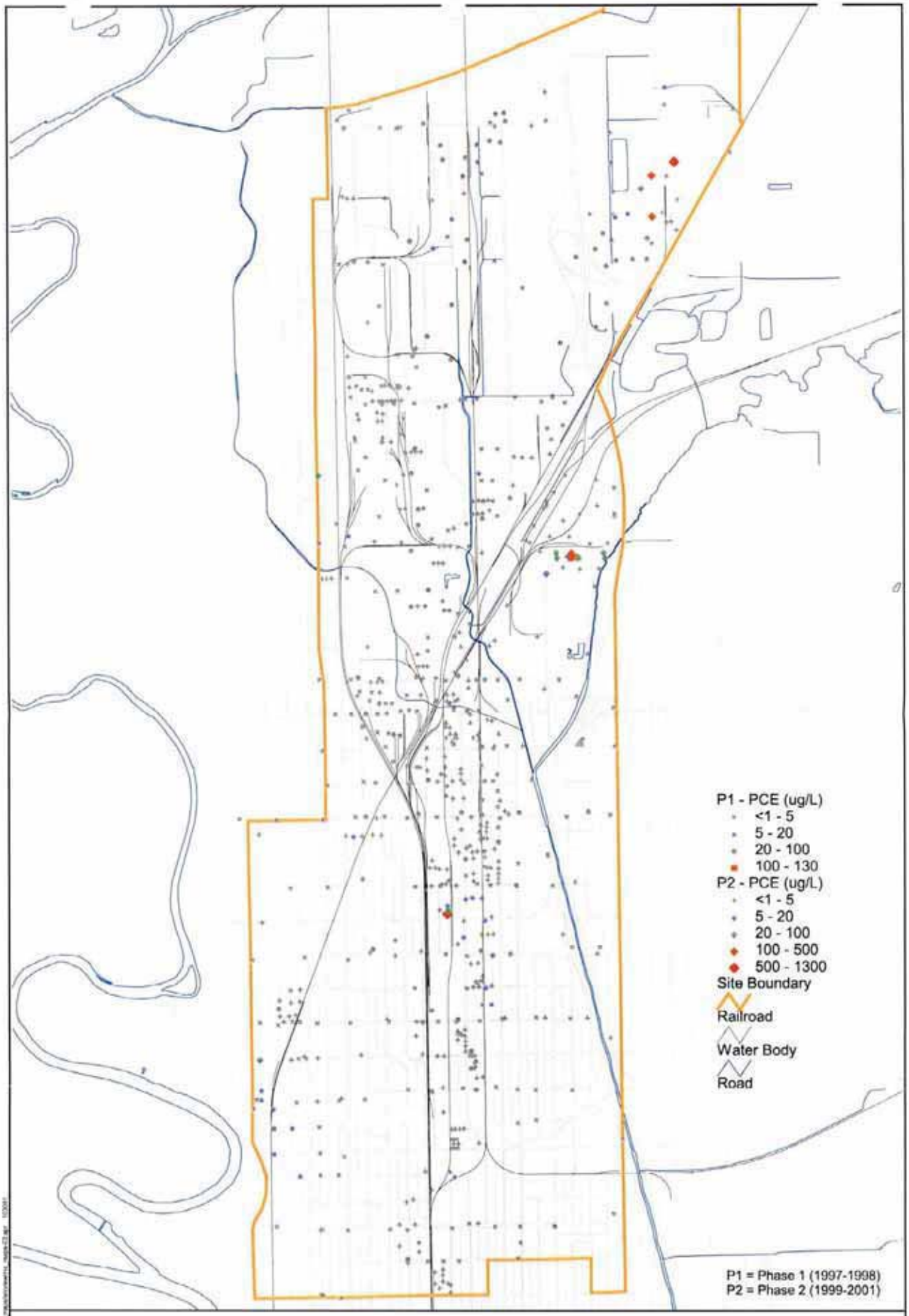
Figure 5-2b
North Industrial Corridor (NIC) Site
Former Barnsdall Refinery, Sludge Pit Sampling Results



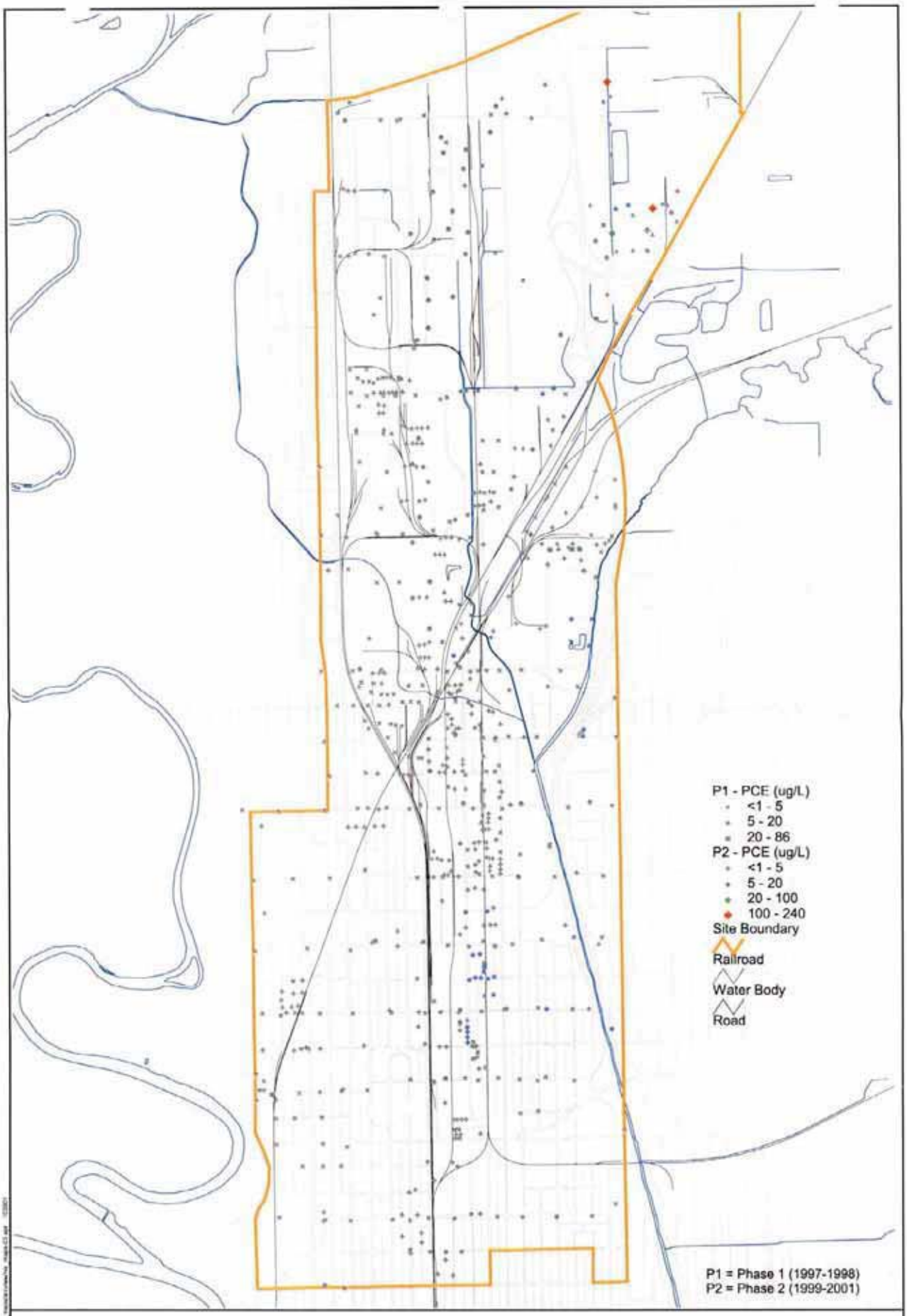
850 0 850 Feet

Scale: 1" = 1700'

Figure 5-3a

PCE in Shallow Groundwater
North Industrial Corridor (NIC) Site, Wichita, Kansas

CDM



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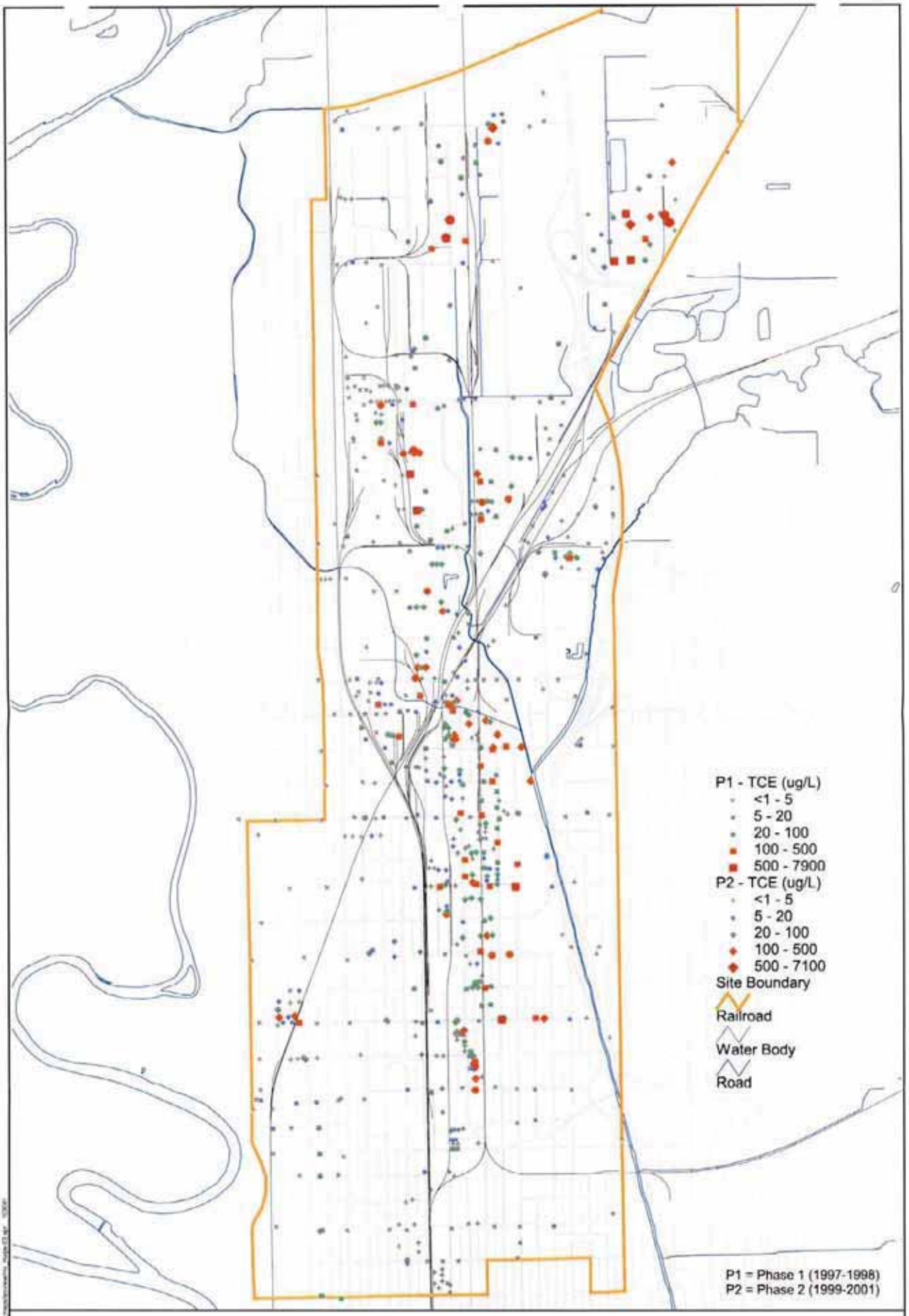
Scale: 1" = 1700'

CDM

Figure 5-3b

PCE in Deep Groundwater

North Industrial Corridor (NIC) Site, Wichita, Kansas



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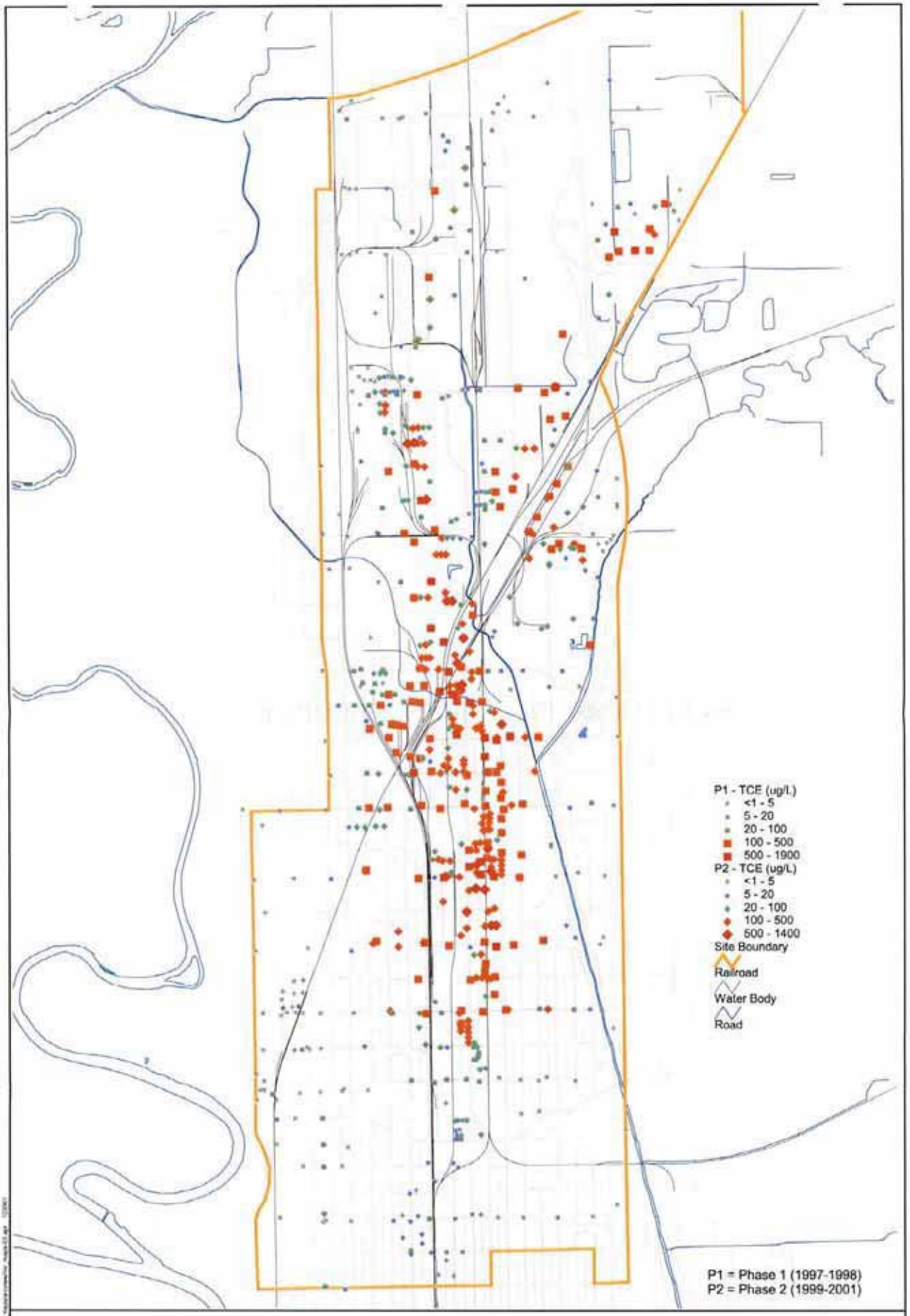
Scale: 1" = 1700'

Figure 5-4a

TCE in Shallow Groundwater
North Industrial Corridor (NIC) Site, Wichita, Kansas

CDM



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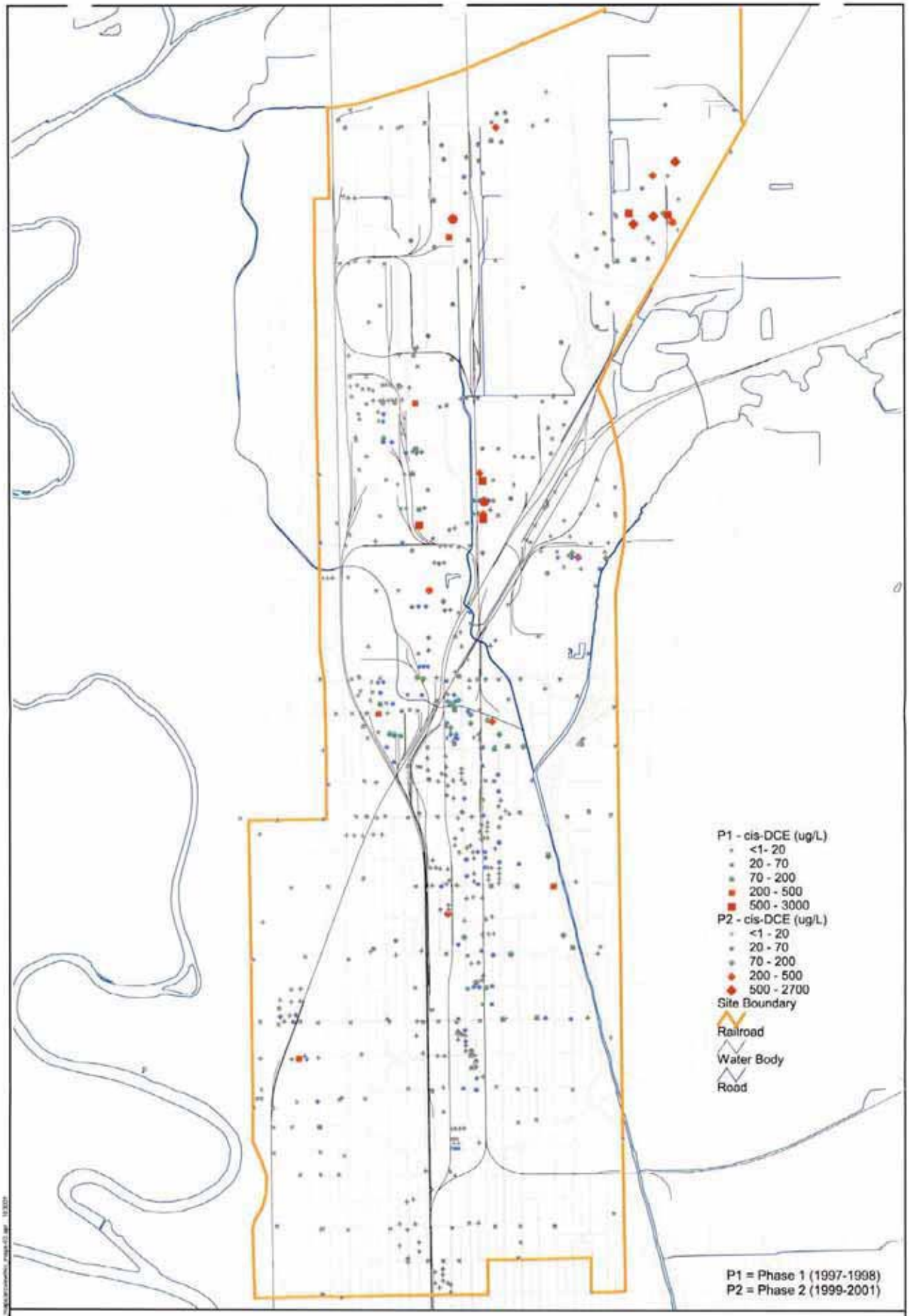
Scale: 1" = 1700'

CDM

Figure 5-4b

TCE in Deep Groundwater

North Industrial Corridor (NIC) Site, Wichita, Kansas



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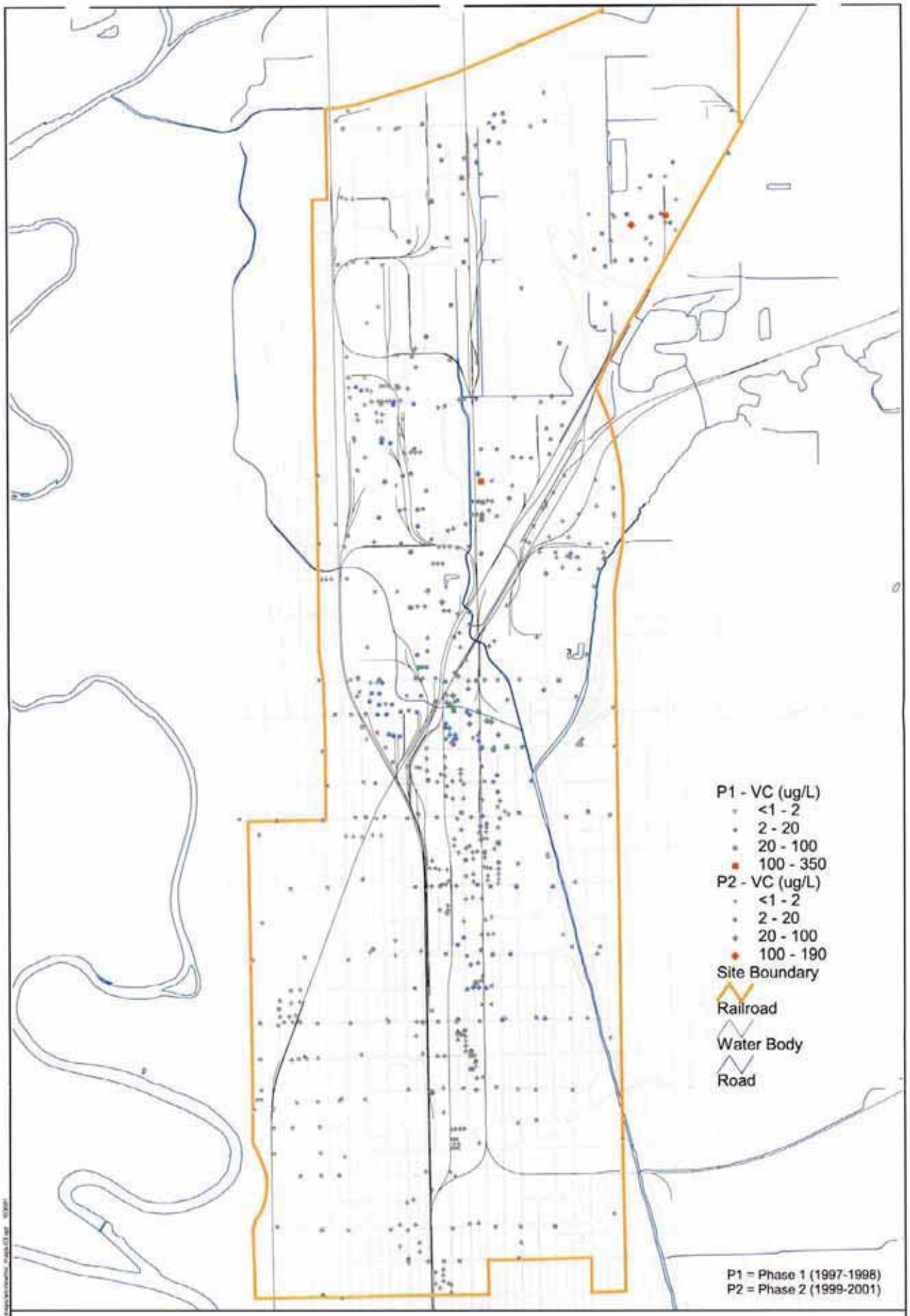
Scale: 1" = 1700'

CDM

Figure 5-5a

cis-1,2-DCE in Shallow Groundwater
North Industrial Corridor (NIC) Site, Wichita, Kansas



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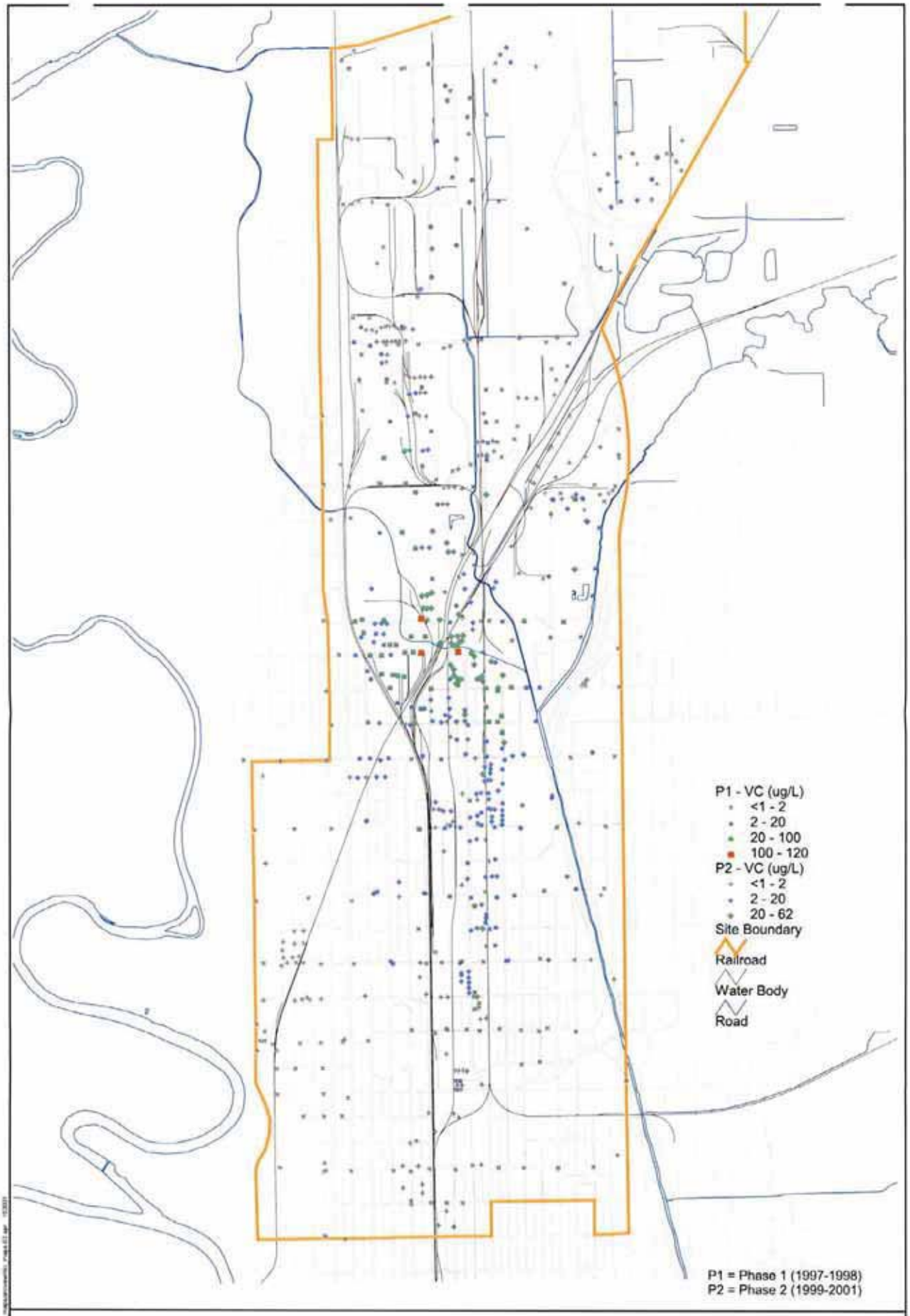
Scale: 1" = 1700'

Figure 5-6a

VC in Shallow Groundwater

North Industrial Corridor (NIC) Site, Wichita, Kansas

CDM



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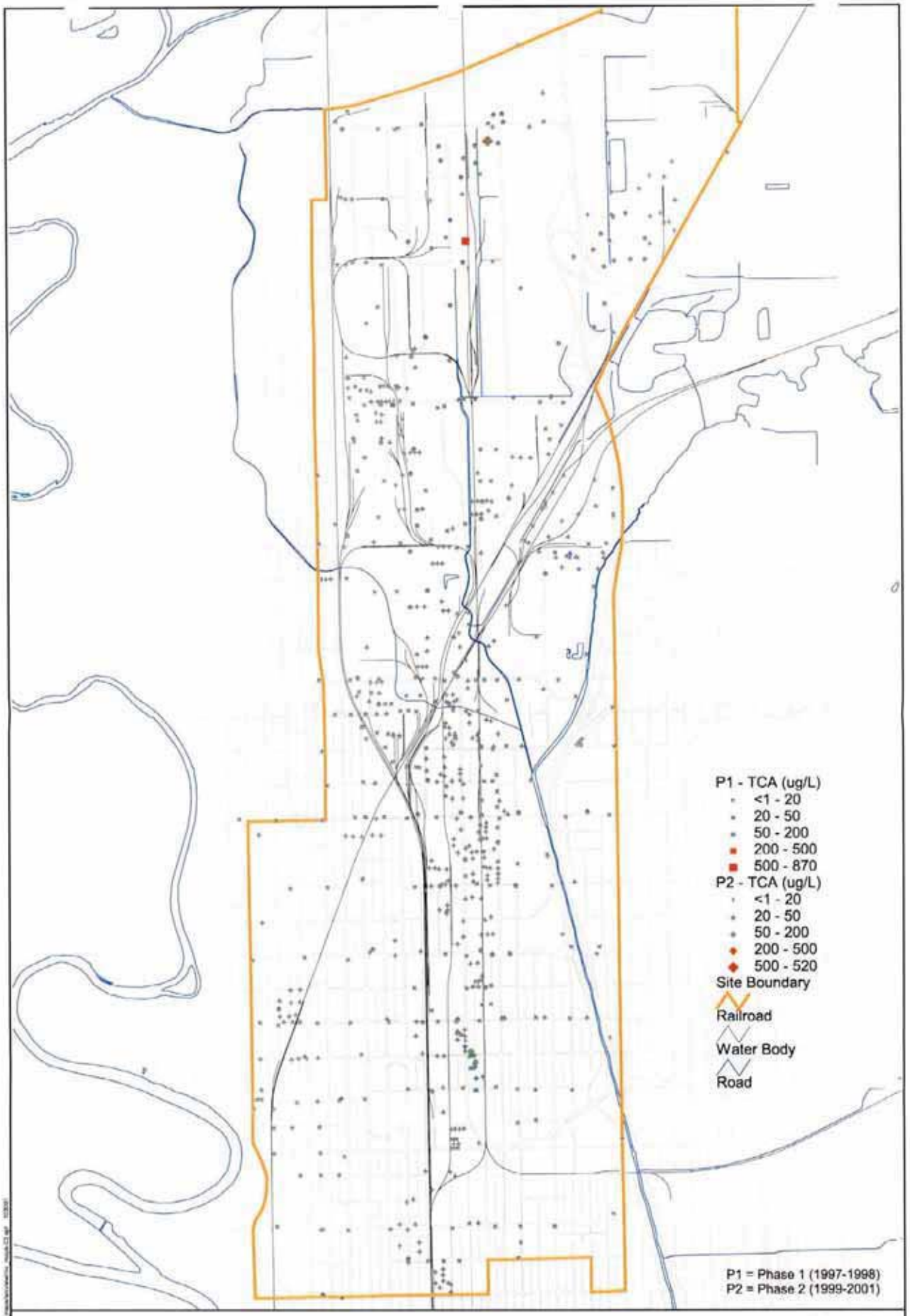
Scale: 1" = 1700'

CDM

Figure 5-6b

VC in Deep Groundwater
North Industrial Corridor (NIC) Site, Wichita, Kansas



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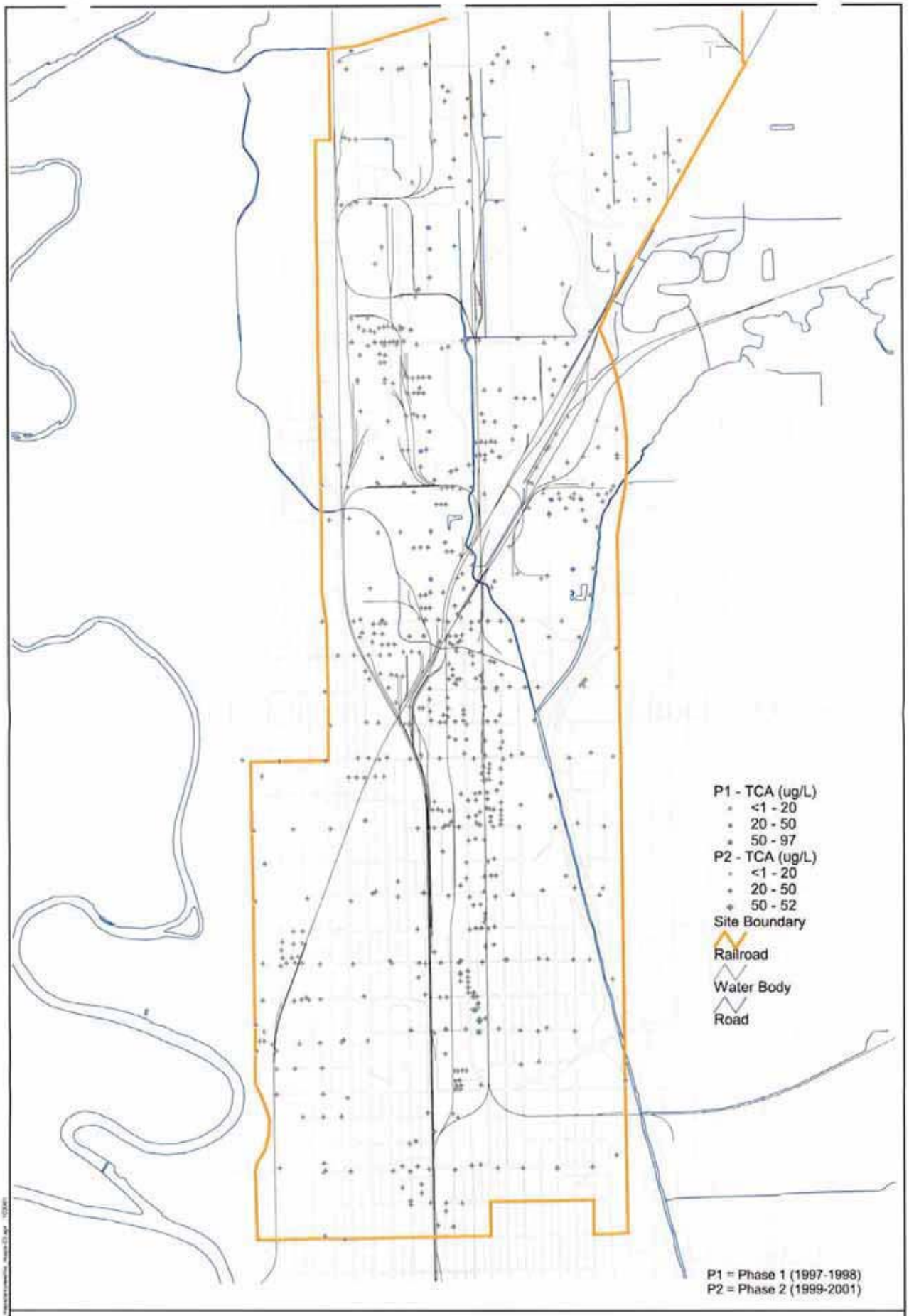
Scale: 1" = 1700'

Figure 5-7a

TCA in Shallow Groundwater

North Industrial Corridor (NIC) Site, Wichita, Kansas

CDM



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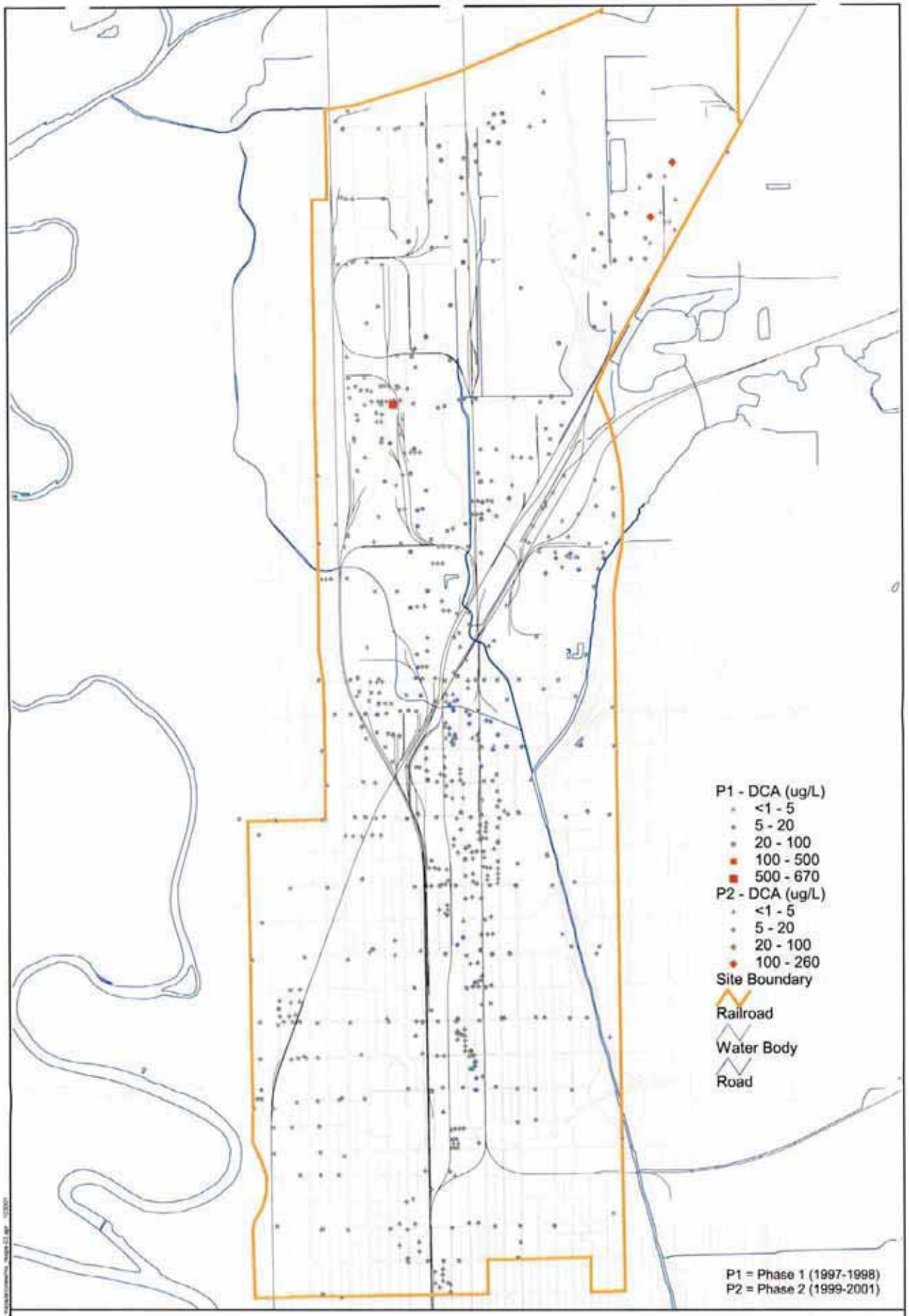
Scale: 1" = 1700'

CDM

Figure 5-7b

TCA in Deep Groundwater
North Industrial Corridor (NIC) Site, Wichita, Kansas



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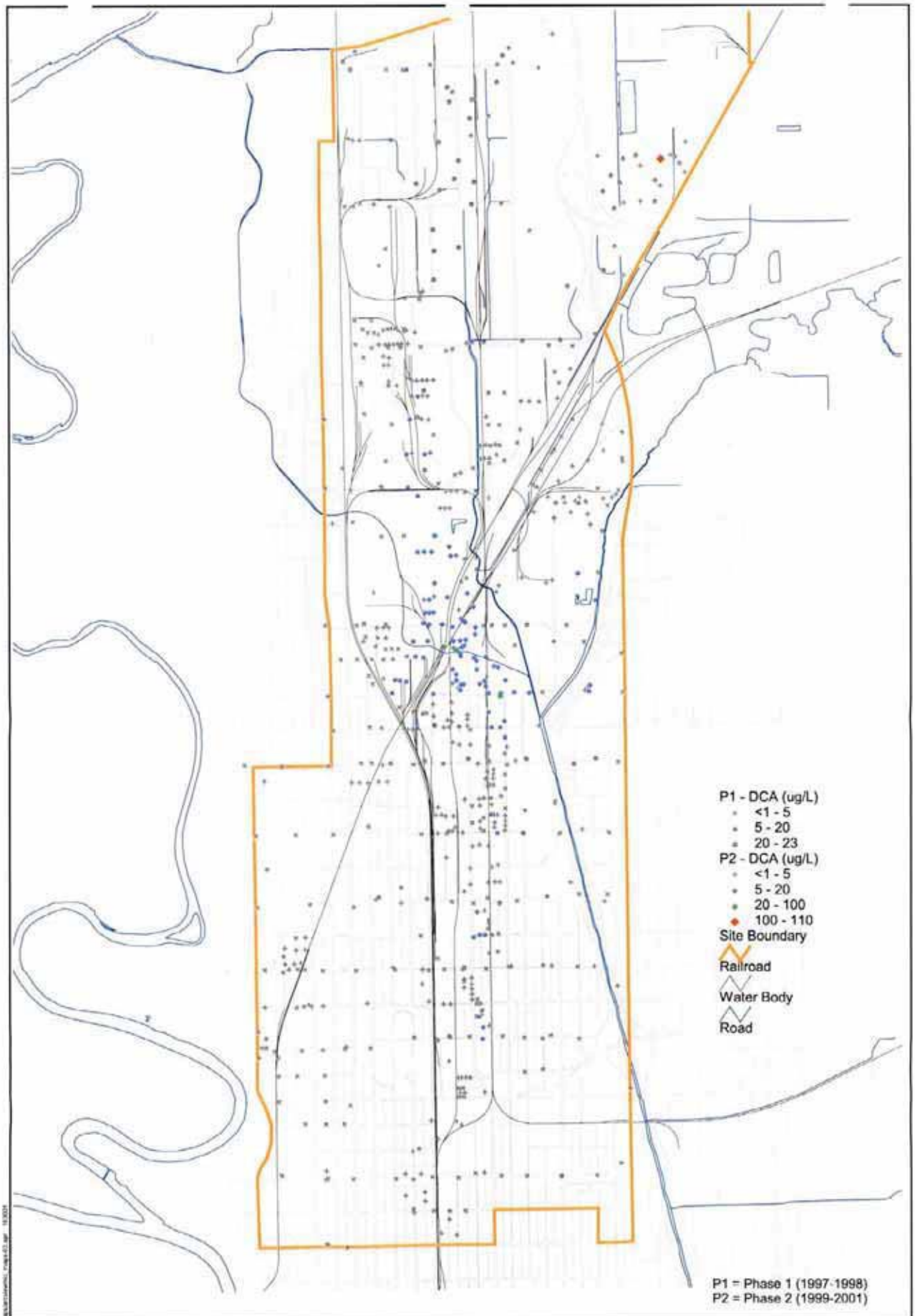
Scale: 1" = 1700'

Figure 5-8a

1,1-DCA In Shallow Groundwater
North Industrial Corridor (NIC) Site, Wichita, Kansas

CDM



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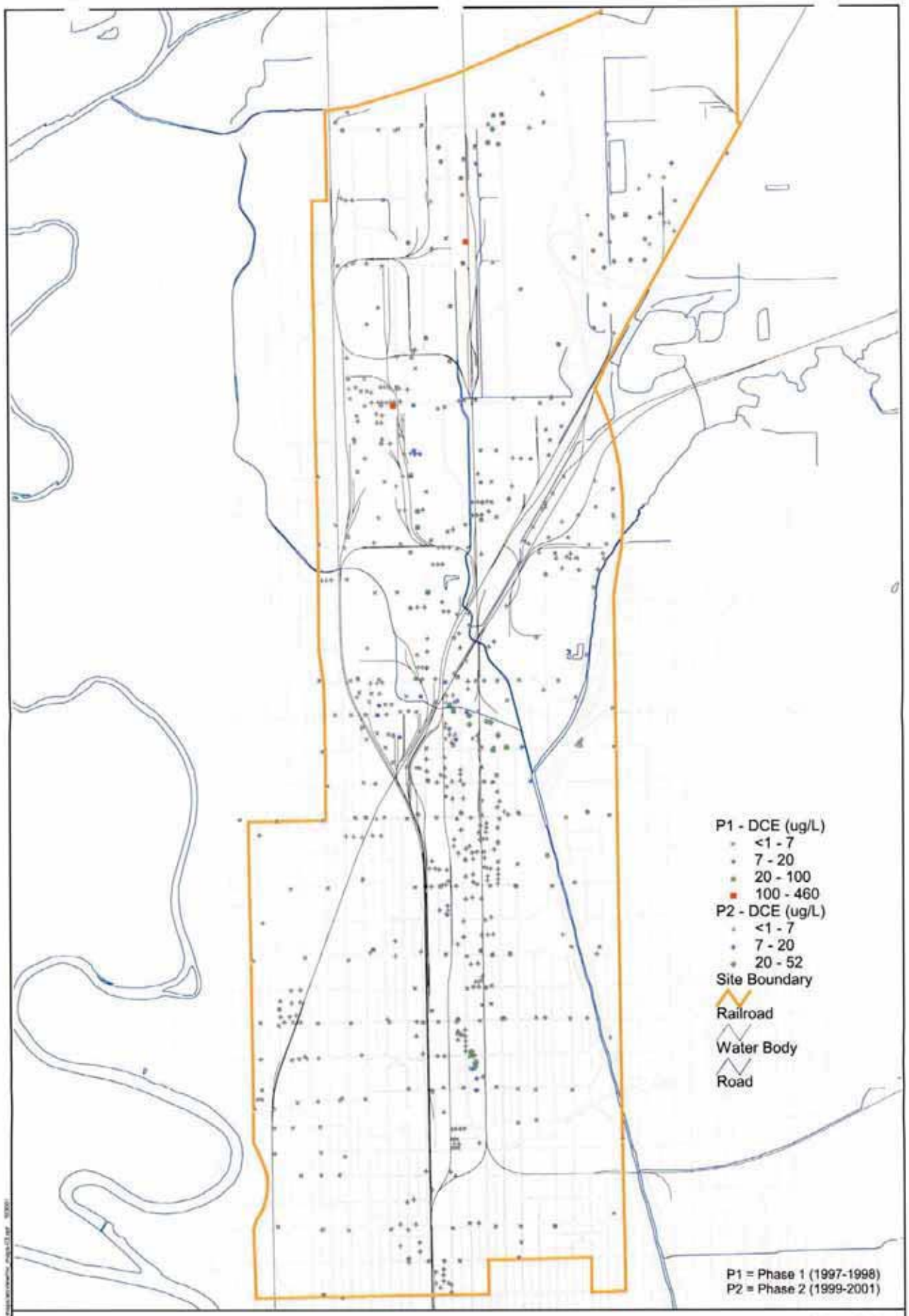
Scale: 1" = 1700'

CDM

Figure 5-8b

DCA in Deep Groundwater
North Industrial Corridor (NIC) Site, Wichita, Kansas



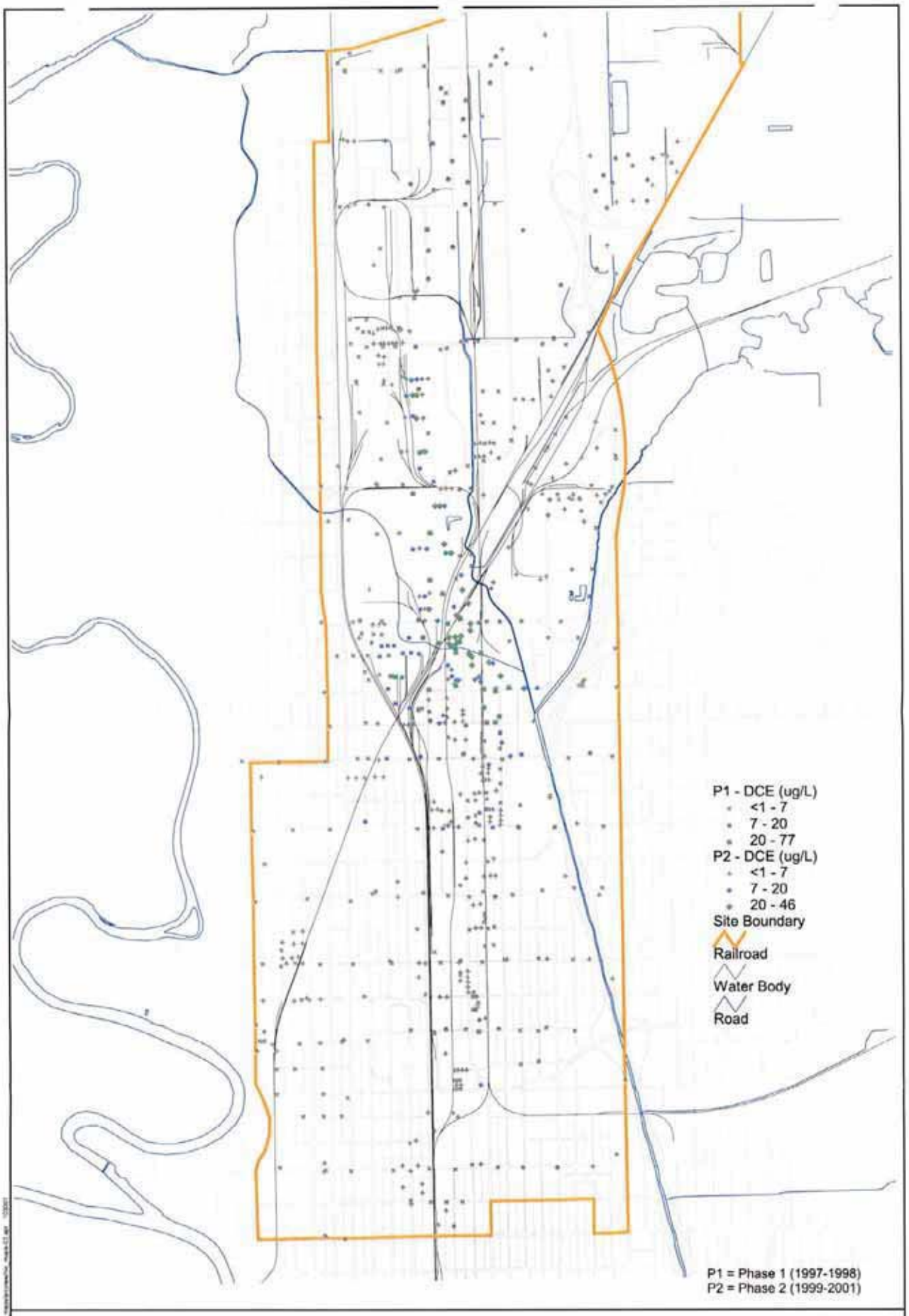
850 0 850 Feet

Scale: 1" = 1700'

CDM

Figure 5-9a

1,1-DCE in Shallow Groundwater
North Industrial Corridor (NIC) Site, Wichita, Kansas



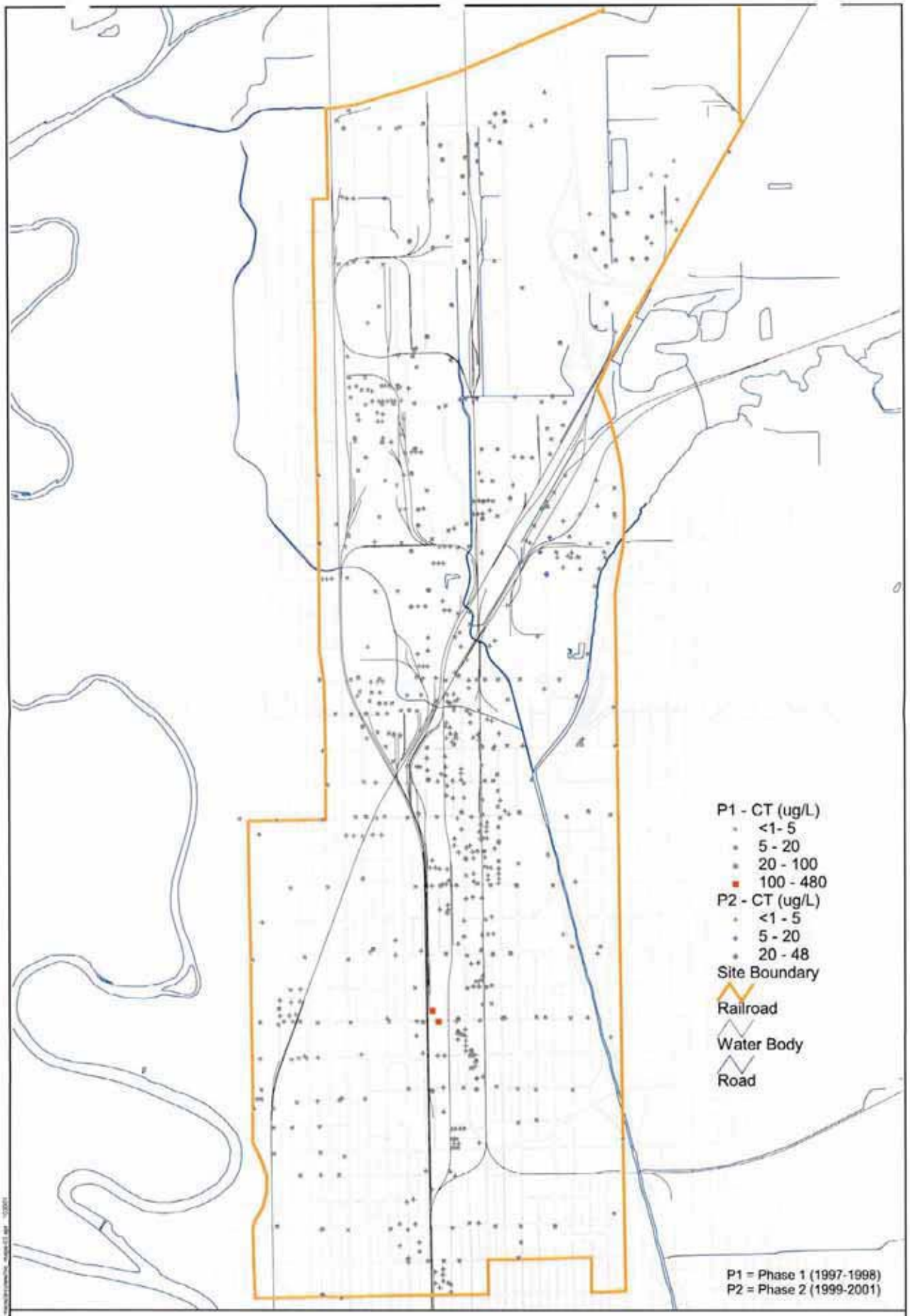
850 0 850 Feet

Scale: 1" = 1700'

CDM

Figure 5-9b

1,1-DCE in Deep Groundwater
North Industrial Corridor (NIC) Site, Wichita, Kansas



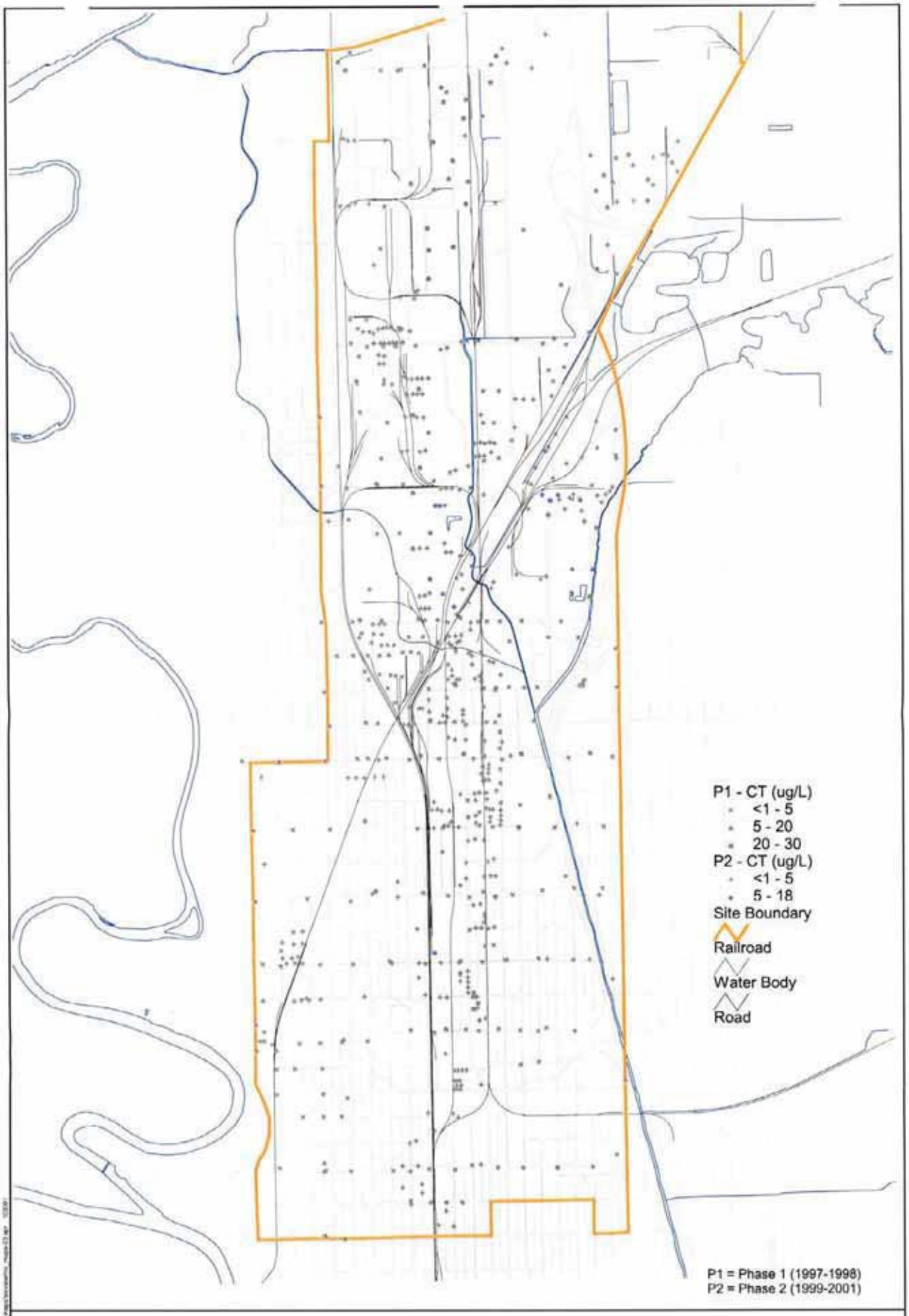
850 0 850 Feet

Scale: 1" = 1700'

Figure 5-10a

CT in Shallow Groundwater
North Industrial Corridor (NIC) Site, Wichita, Kansas

CDM



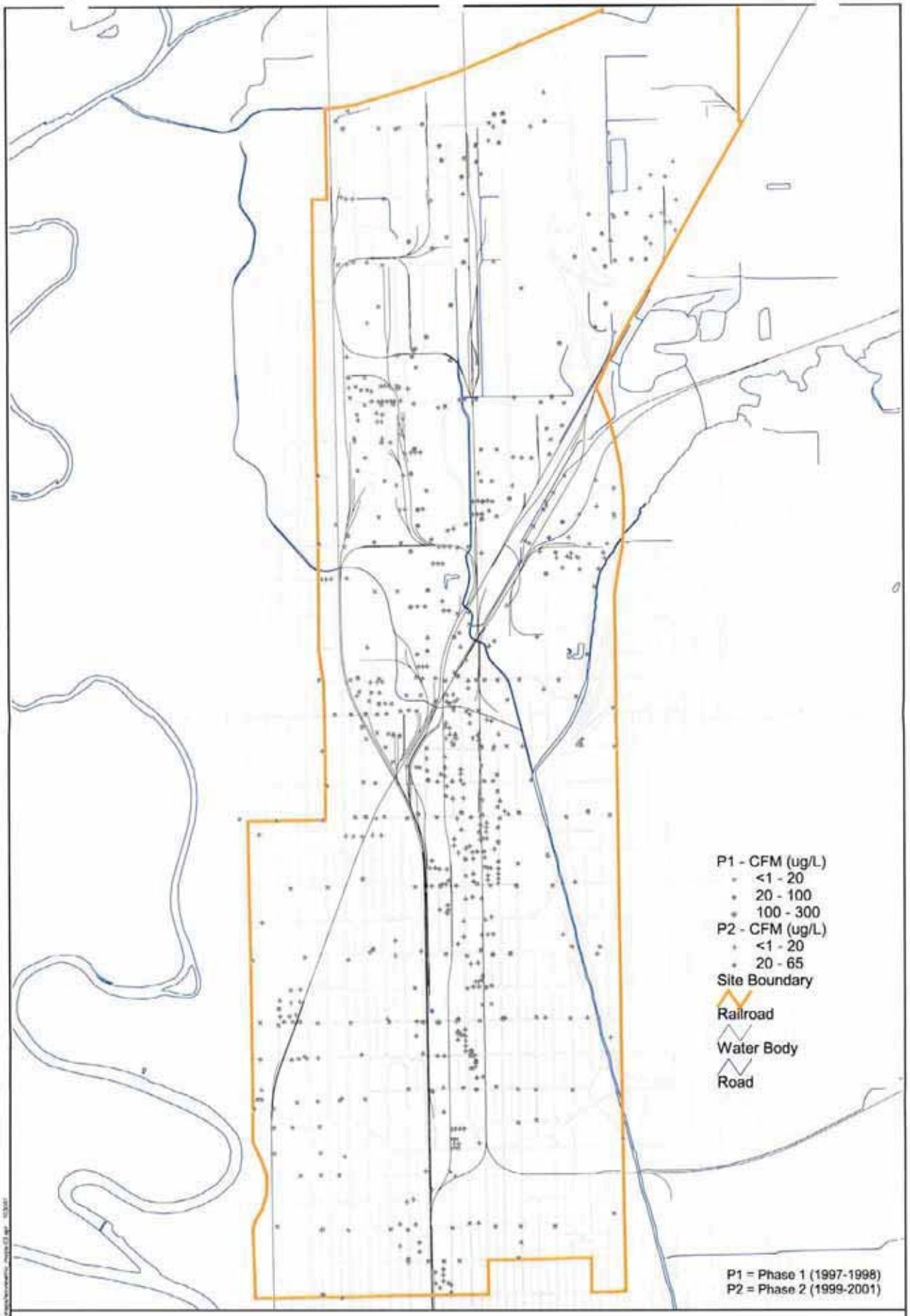
850 0 850 Feet

Scale: 1" = 1700'

CDM

Figure 5-10b

CT in Deep Groundwater
North Industrial Corridor (NIC) Site, Wichita, Kansas



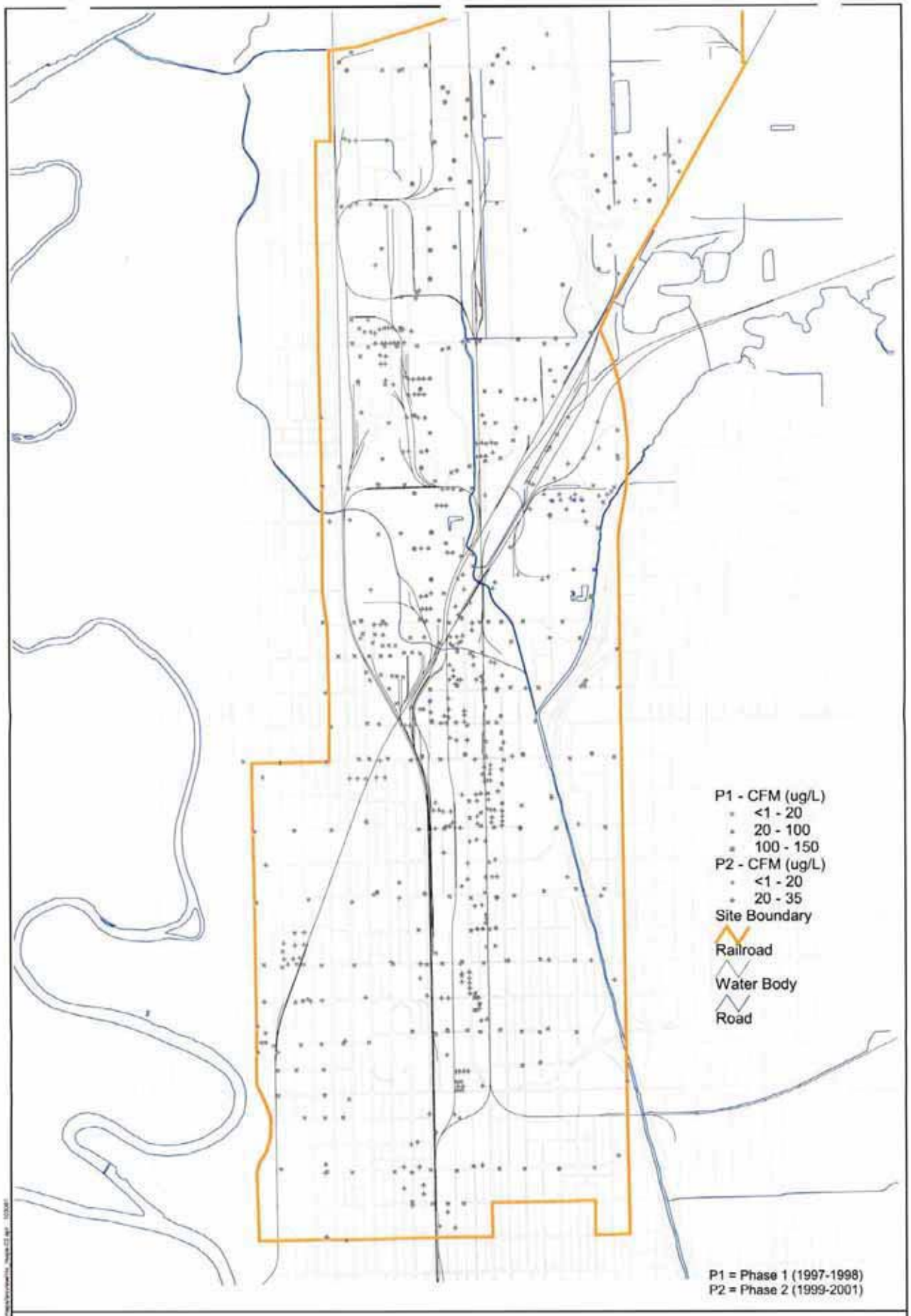
850 0 850 Feet

Scale: 1" = 1700'

CDM

Figure 5-11a

CFM in Shallow Groundwater
North Industrial Corridor (NIC) Site, Wichita, Kansas



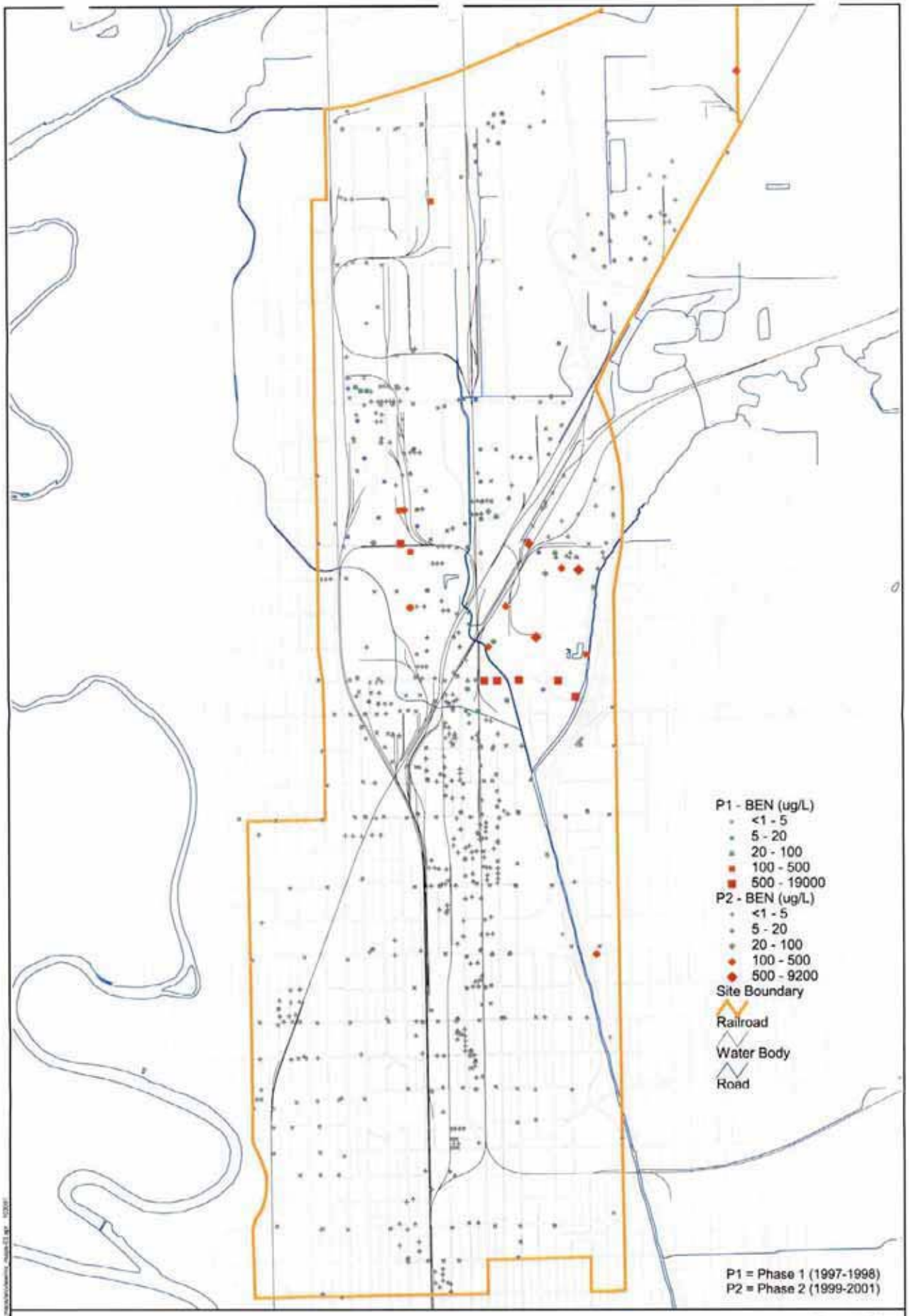
850 0 850 Feet

Scale: 1" = 1700'

CDM

Figure 5-11b

CFM in Deep Groundwater
North Industrial Corridor (NIC) Site, Wichita, Kansas



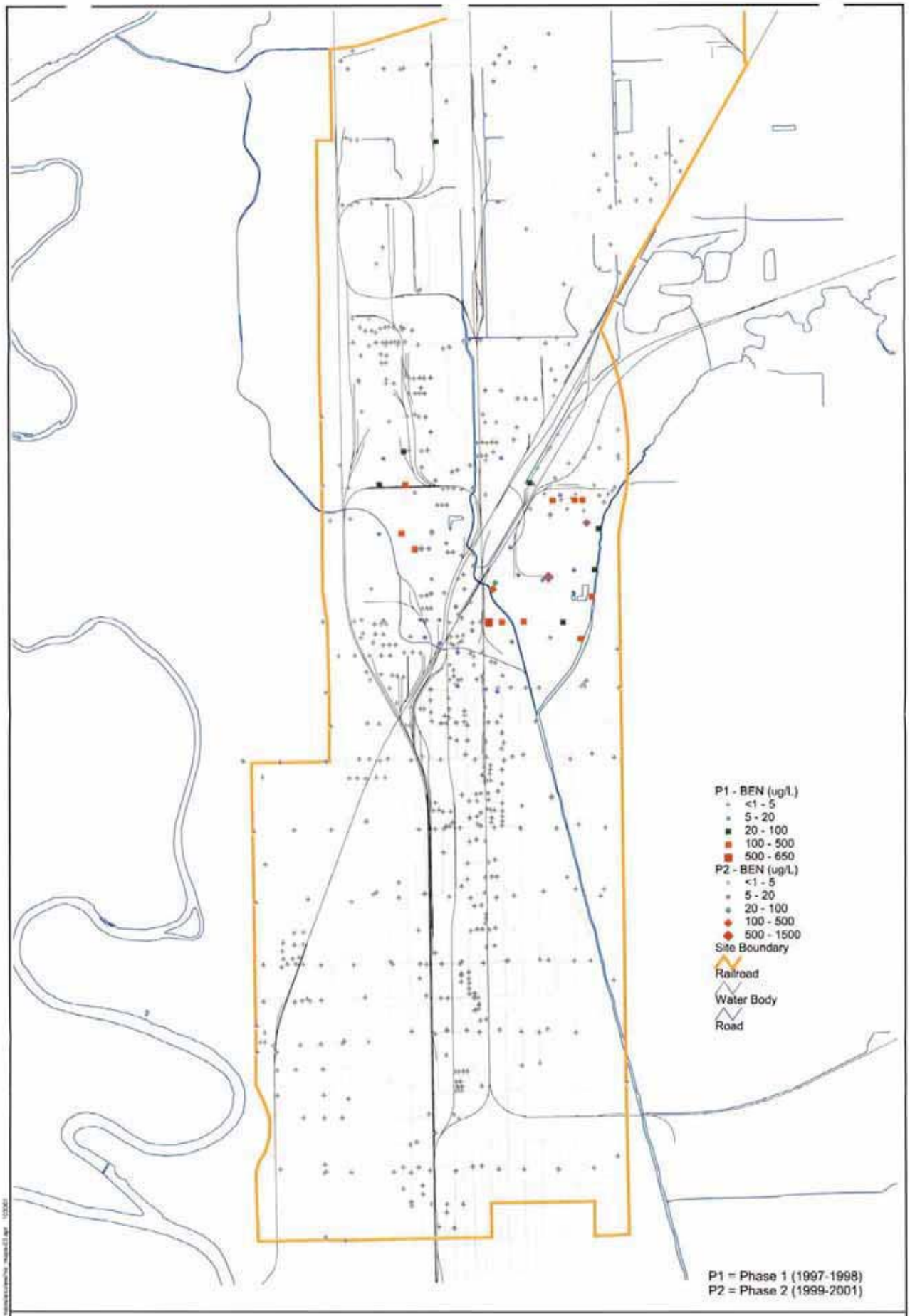
850 0 850 Feet

Scale: 1" = 1700'

CDM

Figure 5-12a

Benzene in Shallow Groundwater
North Industrial Corridor (NIC) Site, Wichita, Kansas



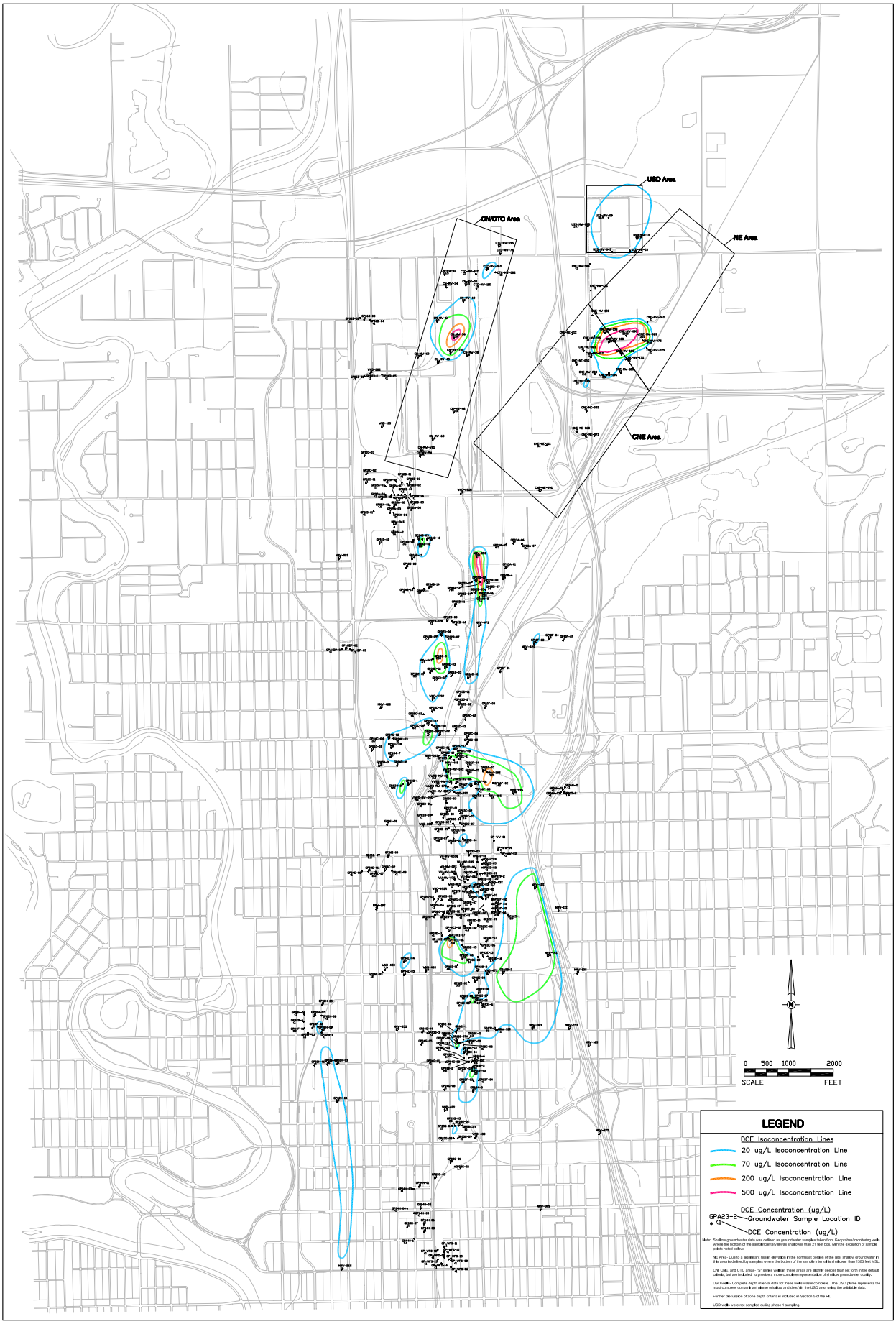
850 0 850 Feet

Scale: 1" = 1700'

CDM

Figure 5-12b

Benzene in Deep Groundwater
North Industrial Corridor (NIC) Site, Wichita, Kansas



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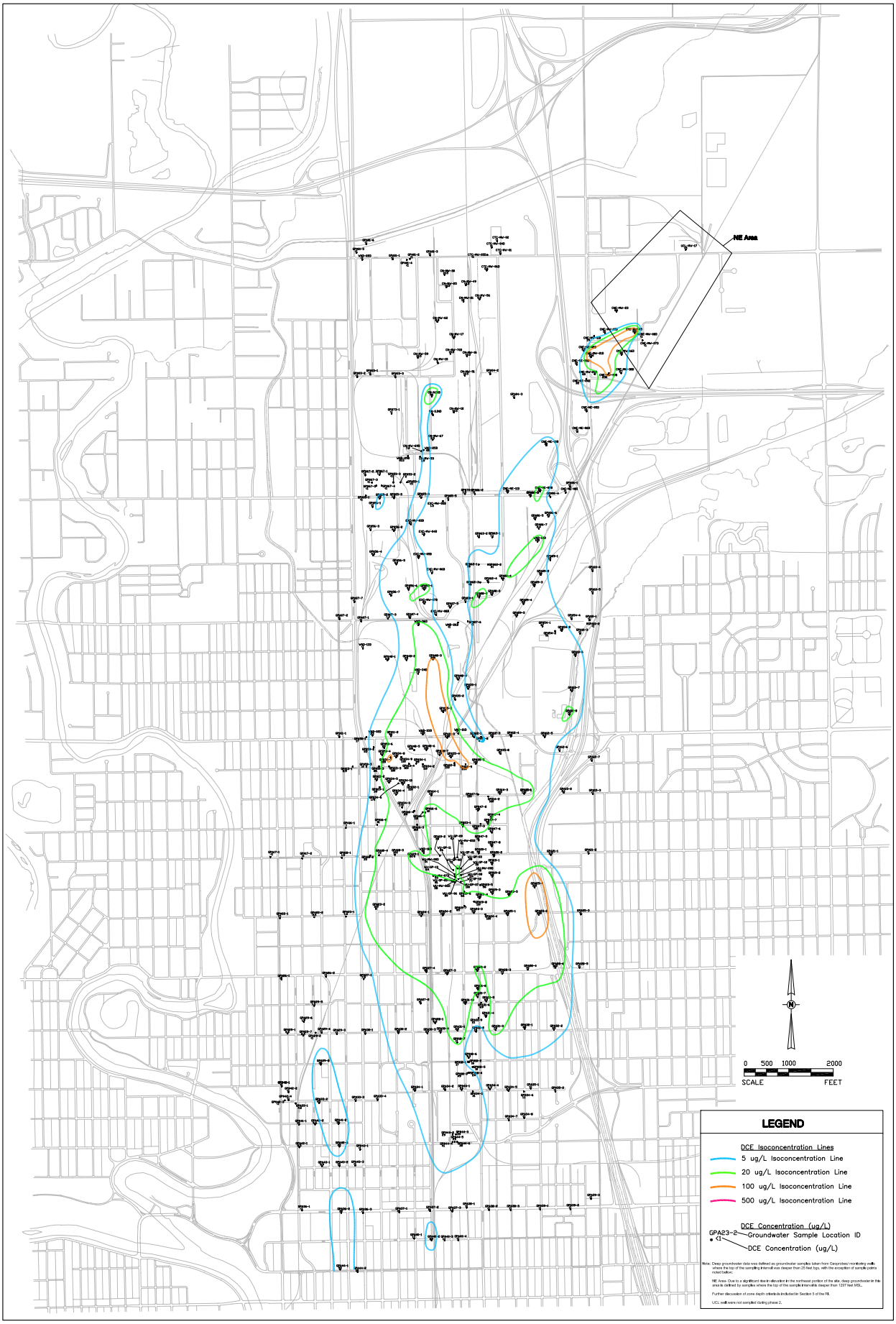
CDM

Plate 5-5c
North Industrial Corridor (NIC) Site
cis-1,2 DCE in Shallow Groundwater Isoconcentration Map, Phase 2



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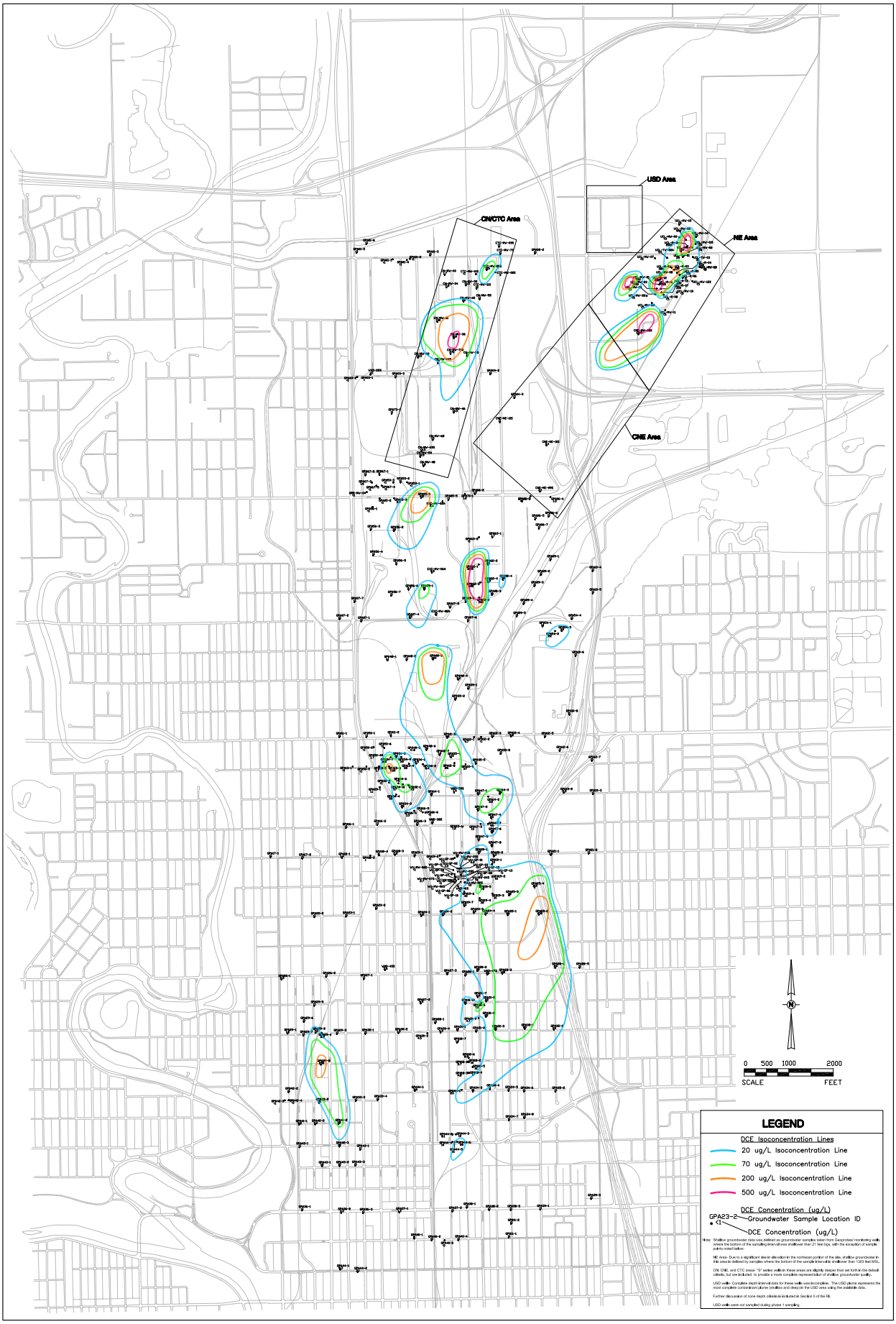
CDM

Plate 5-5b
North Industrial Corridor (NIC) Site
cis-1,2 DCE in Deep Groundwater Isoconcentration Map, Phase 1



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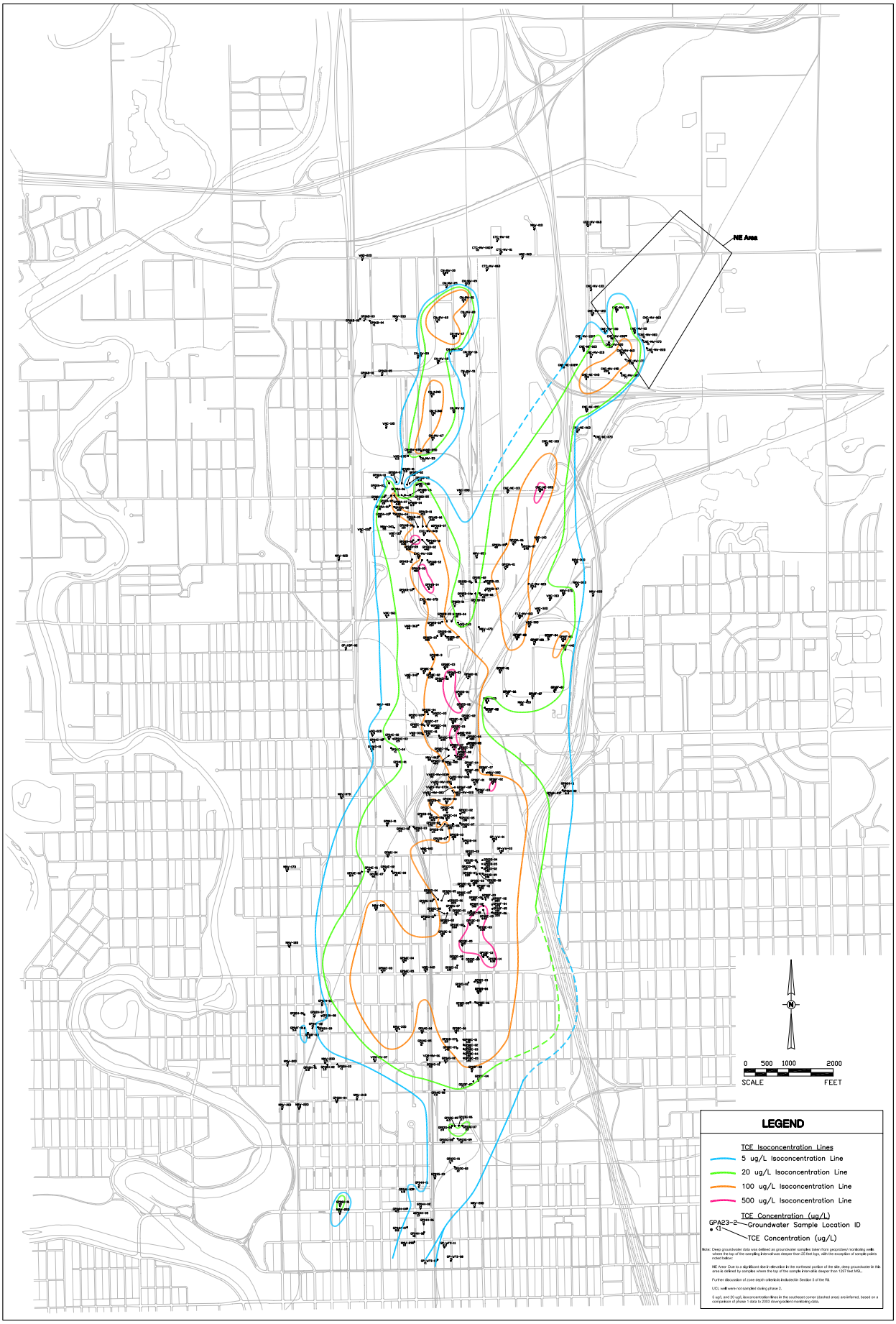
CDM

Plate 5-5a
North Industrial Corridor (NIC) Site
cis-1,2 DCE in Shallow Groundwater Isoconcentration Map, Phase 1



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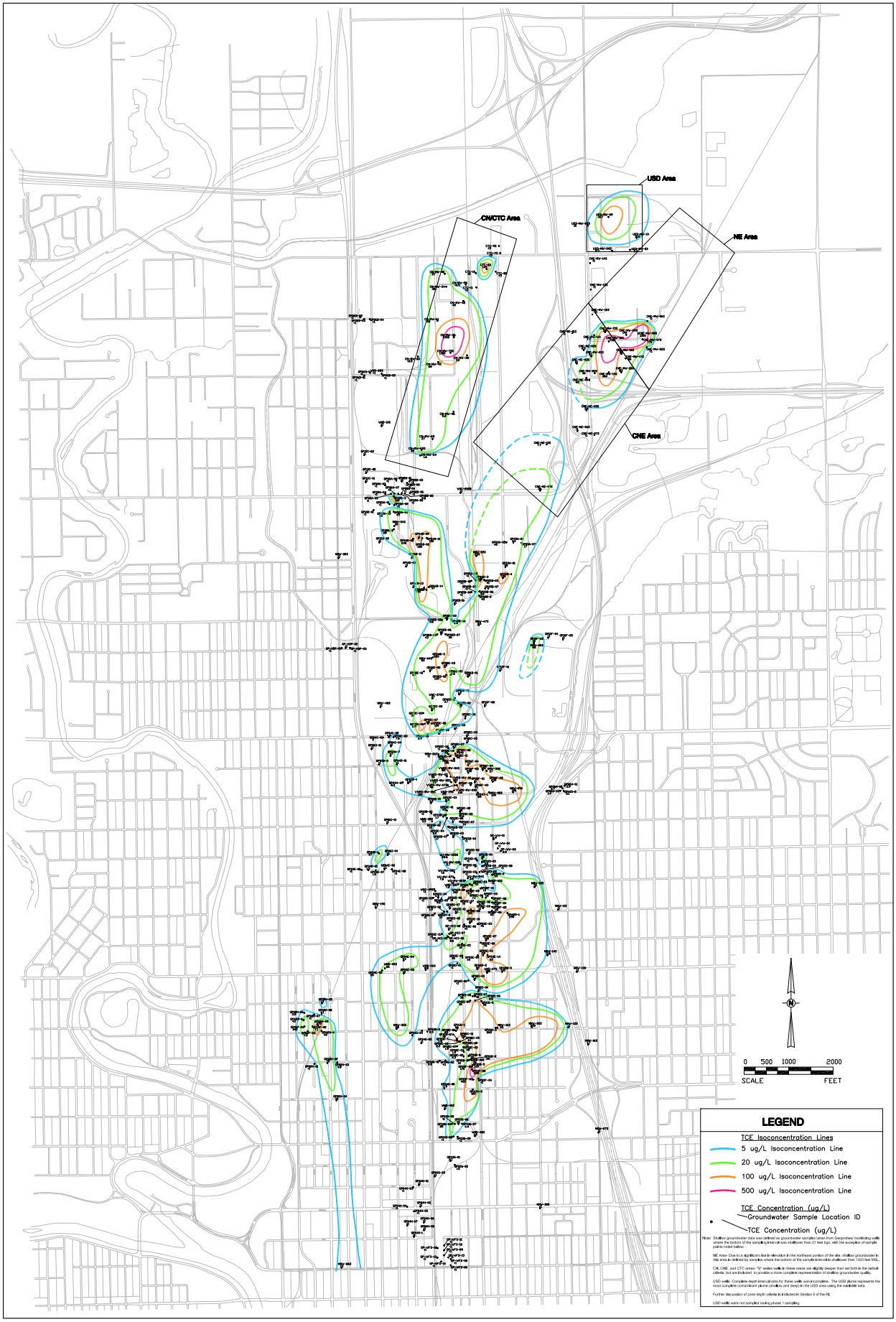
CDM

Plate 5-4d
North Industrial Corridor (NIC) Site
TCE in Deep Groundwater Isoconcentration Map, Phase 2



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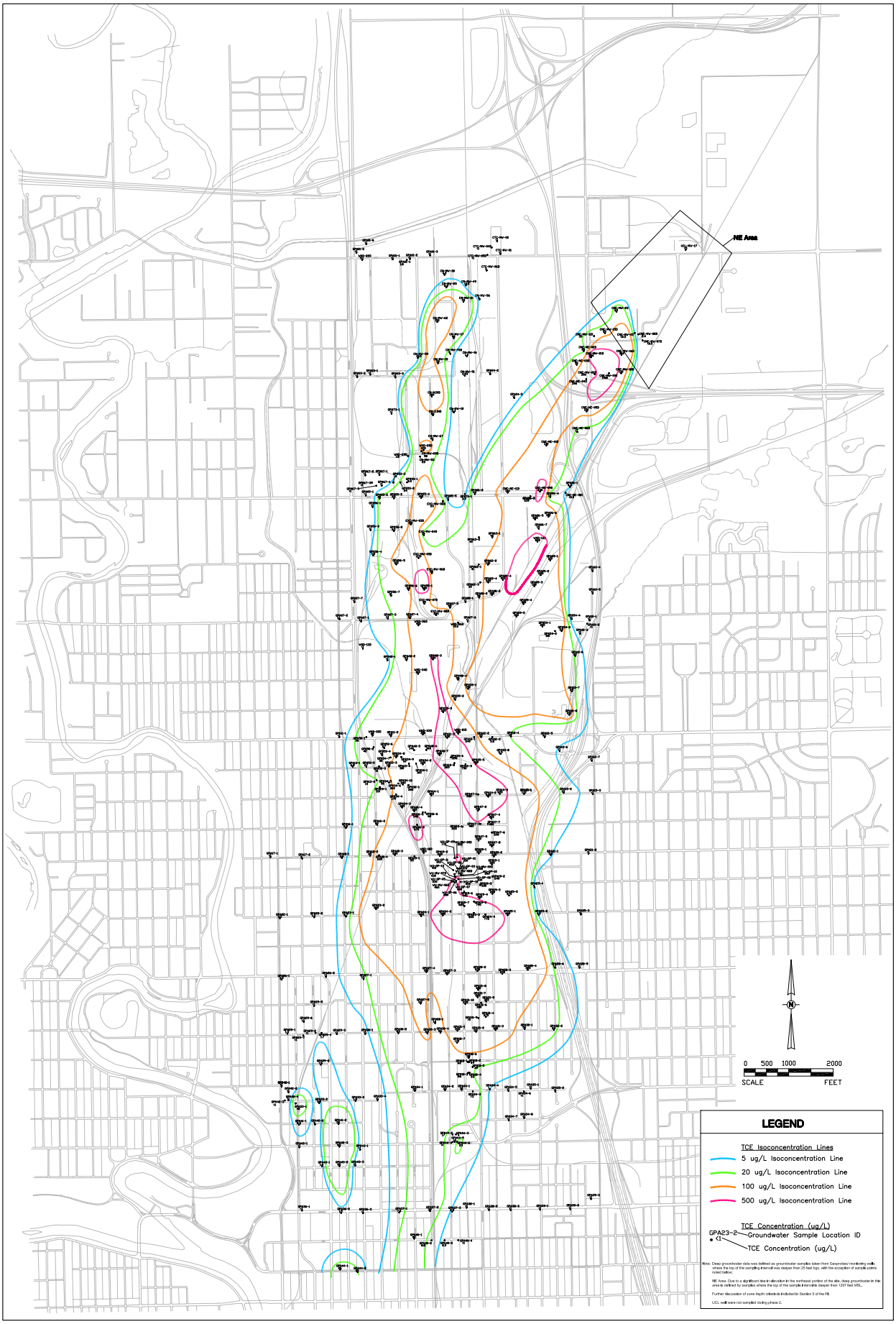
CDM

Plate 5-4c
North Industrial Corridor (NIC) Site
TCE in Shallow Groundwater Isoconcentration Map, Phase 2



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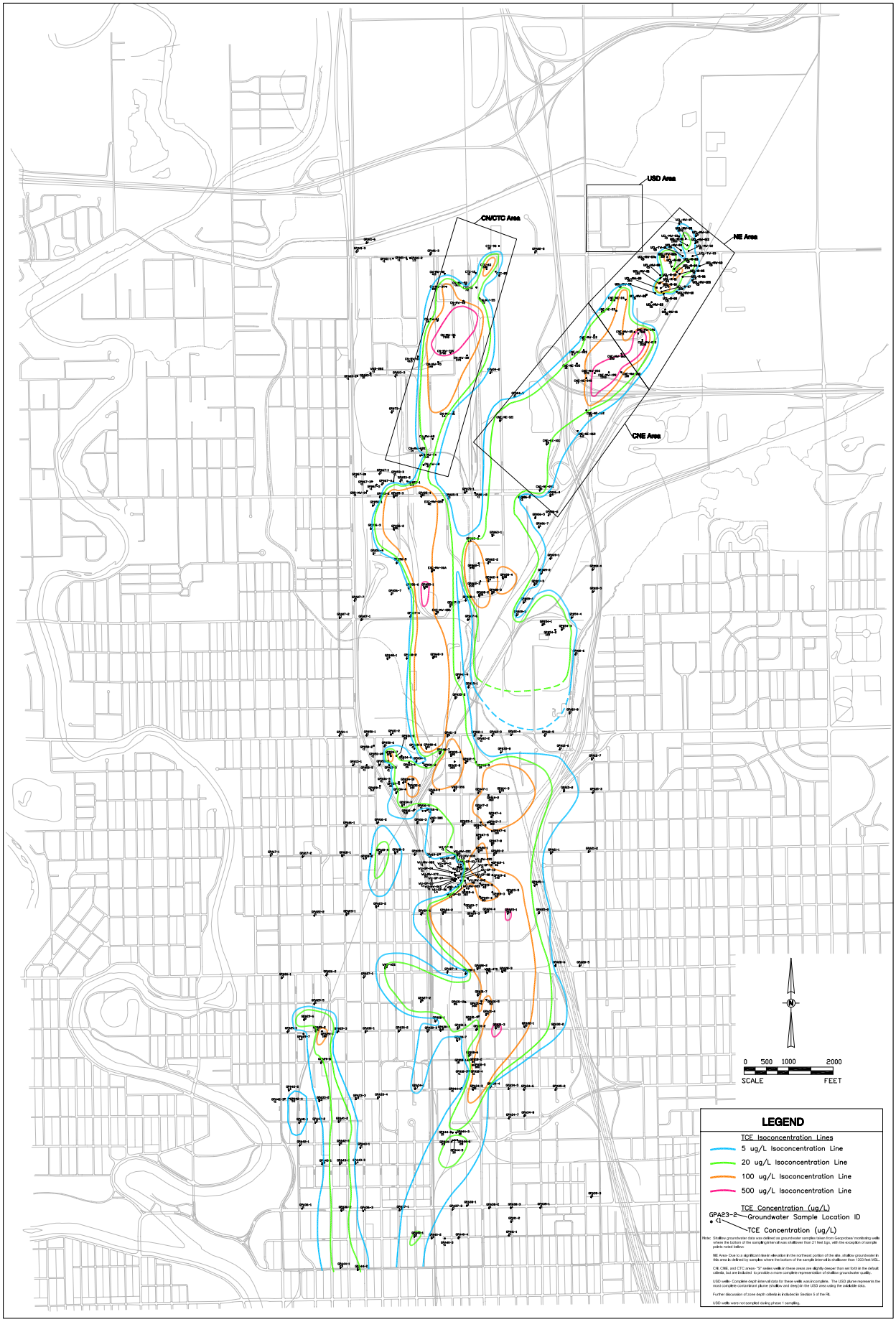
CDM

Plate 5-4b
North Industrial Corridor (NIC) Site
TCE in Deep Groundwater Isoconcentration Map, Phase 1



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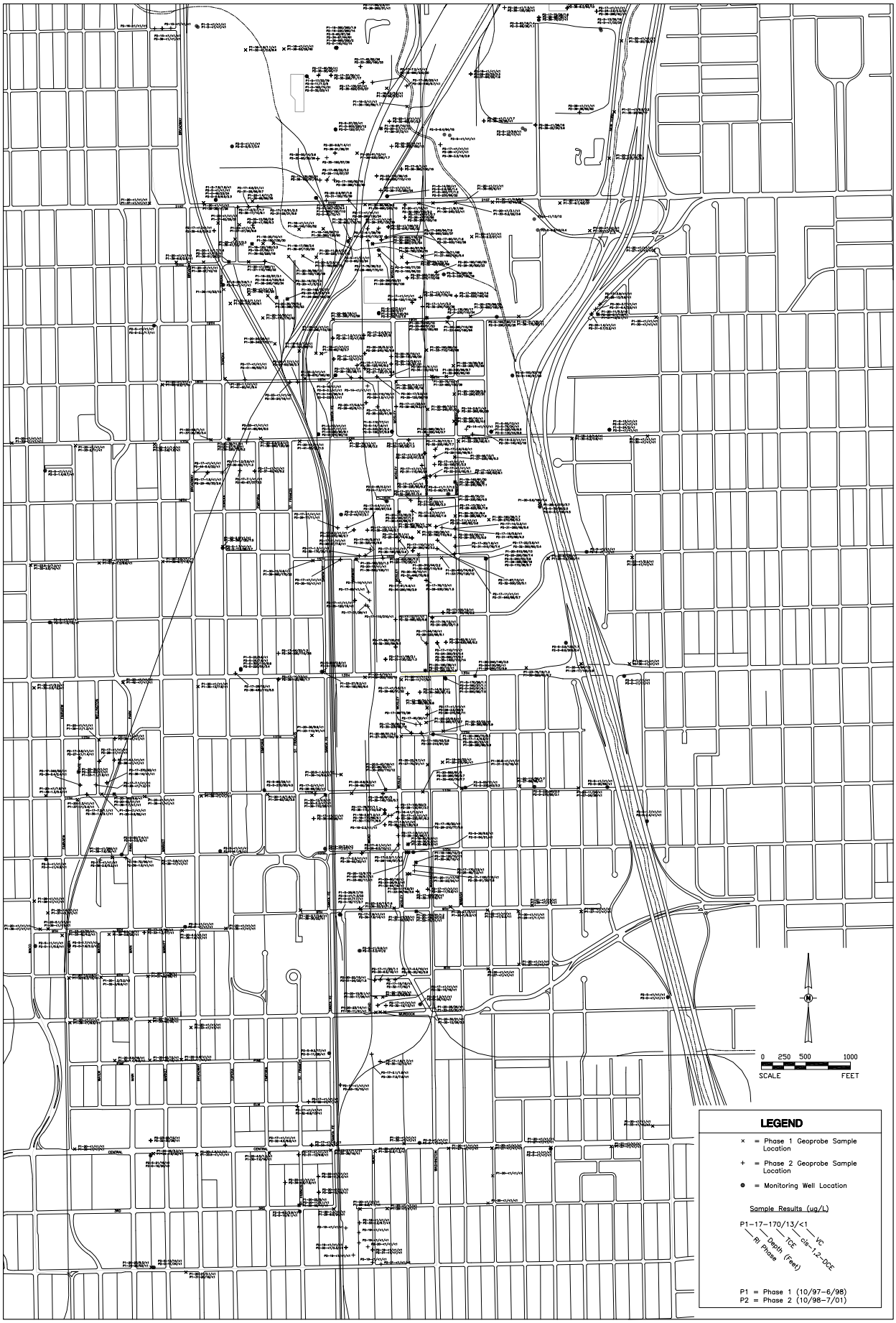
CDM

Plate 5-4a
North Industrial Corridor (NIC) Site
TCE in Shallow Groundwater Isoconcentration Map, Phase 1



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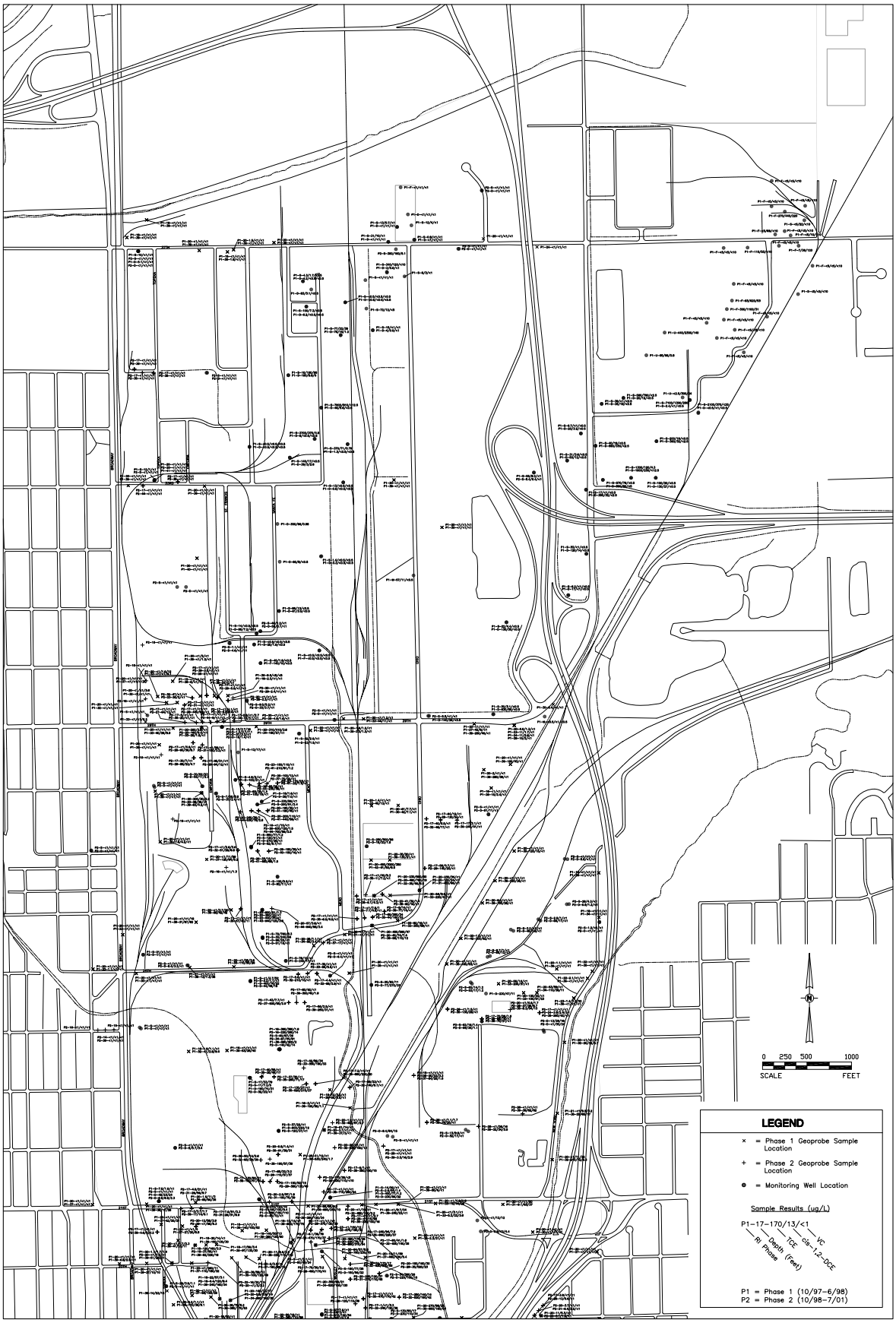
CDM

Plate 5-3b
North Industrial Corridor (NIC) Site
TCE, cis-1,2-DCE, and VC in Groundwater, South Area



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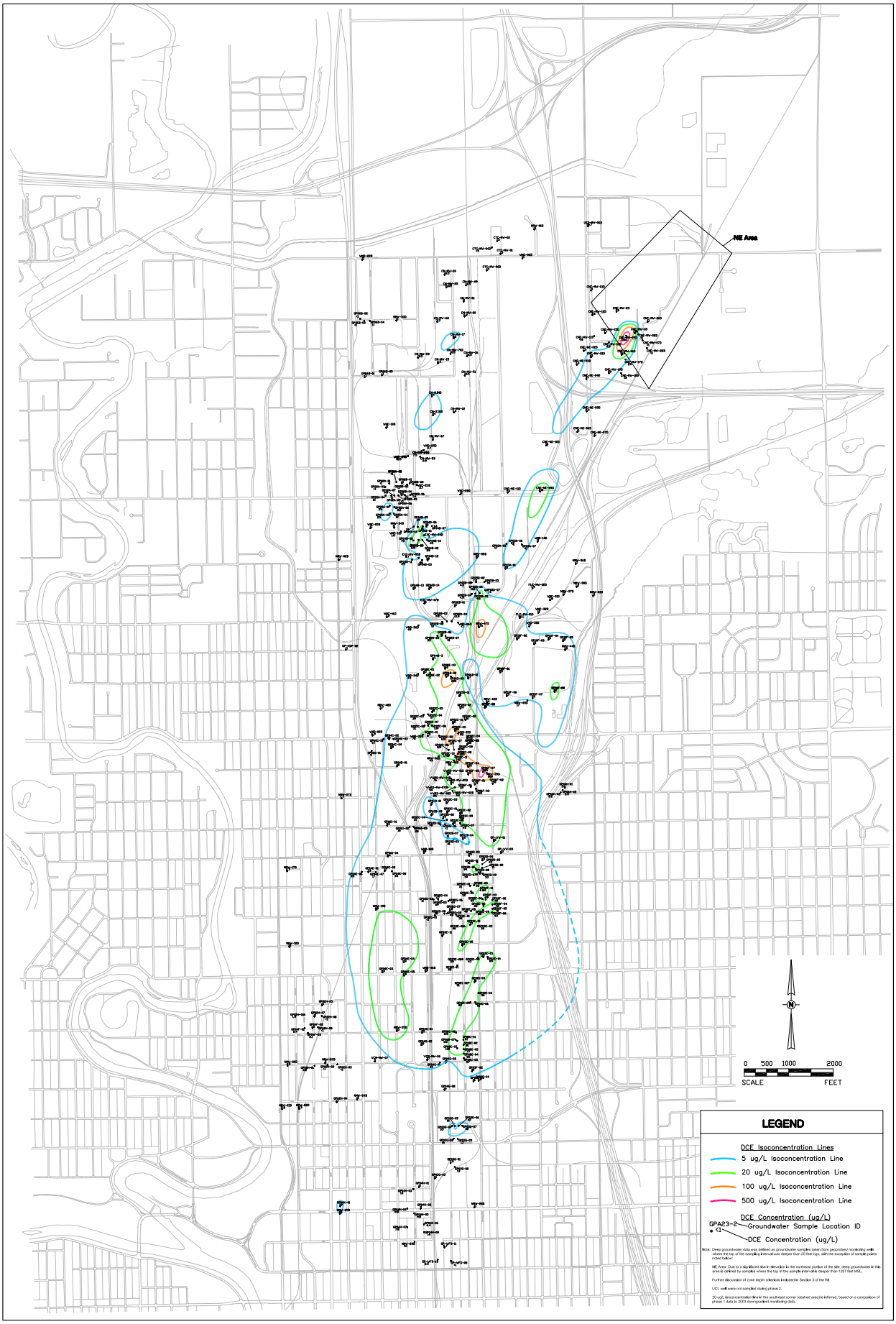
CDM

Plate 5-3a
North Industrial Corridor (NIC) Site
TCE, cis-1,2-DCE, and VC in Groundwater, North Area



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CDM

Plate 5-5d
North Industrial Corridor (NIC) Site
cis-1,2 DCE in Deep Groundwater Isoconcentration Map, Phase 2

Table 5-1a
North Industrial Corridor (NIC) Site
Surface Water Analytical Results, VOCs by EPA Method 8260

Station			SW-06	SW-07	SW-08	SW-11	SW-12	SW-13	SW-13	SW-14	SW-15	SW-16
Sample Date (Phase 2)			5/16/01	5/16/01	5/16/01	5/16/01	5/16/01	5/16/01	5/16/01	5/16/01	5/16/01	5/16/01
QC Sample Flag									DUP			
Compound	Abbrev	Units										
1,1,1-Trichloroethane	TCA	mg/L	<1.0 JH	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	**1.5**
1,1,2,2-Tetrachloroethane	1122PCA	mg/L	<1.0 JH	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,2-Trichloroethane	112TCA	mg/L	<1.0 JH	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1-Dichloroethane	11DCA	mg/L	**1.9 JH**	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1-Dichloroethene	11DCE	mg/L	**1.5 JH**	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-Dichlorobenzene	12DCB	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-Dichloroethane	12DCA	mg/L	<1.0 JH	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-Dichloropropane	12DCP	mg/L	<1.0 JH	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,3-Dichlorobenzene	13DCB	mg/L	<1.0 JH	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,4-Dichlorobenzene	14DCB	mg/L	<1.0 JH	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Benzene	BEN	mg/L	**3.3 JH**	<1.0	<1.0	**2.4**	<1.0	<1.0	<1.0	<1.0	<1.0	**1.5**
Bromodichloromethane	BDCM	mg/L	<1.0 JH	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Bromoform	BFM	mg/L	<1.0 JH	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Bromomethane	BM	mg/L	<1.0 JH	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	**1.3**
Carbon tetrachloride	CT	mg/L	<1.0 JH	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Chlorobenzene	CBN	mg/L	<1.0 JH	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Chloroethane	CLE	mg/L	<1.0 JH	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Chloroform	CFM	mg/L	<1.0 JH	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Chloromethane	CM	mg/L	<1.0 JH	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
cis-1,2-Dichloroethene	C12DCE	mg/L	**30 JH**	<1.0	<1.0	<1.0	**3.5**	**9.8**	**10**	**18**	**7.5**	**11**
cis-1,3-Dichloropropene	C13DCP	mg/L	<1.0 JH	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Dibromochloromethane	DBCM	mg/L	<1.0 JH	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Ethylbenzene	EBN	mg/L	<1.0 JH	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
m,p-Xylene	XYLMP	mg/L	<1.3 JH	<1.3	<1.3	<1.3	<1.3	<1.3	<1.3	<1.3	<1.3	<1.3
Methylene chloride	MECL	mg/L	<1.0 JH	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
o-Xylene	XYLO	mg/L	<1.1 JH	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1
Tetrachloroethene	PCE	mg/L	<1.0 JH	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	**1.3**
Toluene	TOL	mg/L	**7.6 JH**	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.3	<1.0	<1.0

Table 5-1a
North Industrial Corridor (NIC) Site
Surface Water Analytical Results, VOCs by EPA Method 8260

Station			SW-06	SW-07	SW-08	SW-11	SW-12	SW-13	SW-13	SW-14	SW-15	SW-16
Sample Date (Phase 2)			5/16/01	5/16/01	5/16/01	5/16/01	5/16/01	5/16/01	5/16/01	5/16/01	5/16/01	5/16/01
QC Sample Flag									DUP			
Compound	Abbrev	Units										
trans-1,2-Dichloroethene	T12DCE	mg/L	**2.6 JH**	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
trans-1,3-Dichloropropene	T13DCP	mg/L	<1.0 JH	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Trichloroethene	TCE	mg/L	<1.0 JH	<1.0	**1.2**	<1.0	**10**	**2.5**	**2.8**	**3.3**	**1.1**	**4.9**
Trichlorofluoromethane	TCFM	mg/L	<1.0 JH	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Vinyl chloride	VC	mg/L	**33 JH**	<1.0	<1.0	<1.0	<1.0	<1.0	**1.0**	**4.3**	<1.0	<1.0

Bold text indicates results above analytical detection limits.
VOCs = Volatile Organic Compounds
DUP = Field duplicate sample.
JH = Estimated due to laboratory holding time exceedance.

Table 5-1b
North Industrial Corridor (NIC) Site
Surface Water Analytical Results, SVOCs by EPA Method 8270

Station		SW-06	SW-07	SW-08	SW-11	SW-12	SW-13	SW-13	SW-15	SW-16
Sample Date (Phase 2)		5/16/01	5/16/01	5/16/01	5/16/01	5/16/01	5/16/01	5/16/01	5/16/01	5/16/01
QC Sample Flag								DUP		
Compound	Units									
1,2,4-Trichlorobenzene	µg/L	<120	<10	<11	<10	<11	<11	<10	<10	<10
1,2-Dichlorobenzene	µg/L	<120	<10	<11	<10	<11	<11	<10	<10	<10
1,3-Dichlorobenzene	µg/L	<120 JH	<10	<11	<10	<11	<11	<10	<10	<10
1,4-Dichlorobenzene	µg/L	<120 JH	<10	<11	<10	<11	<11	<10	<10	<10
2,4,5-Trichlorophenol	µg/L	<580	<51	<53	<52	<53	<53	<51	<52	<50
2,4,6-Trichlorophenol	µg/L	<120	<10	<11	<10	<11	<11	<10	<10	<10
2,4-Dichlorophenol	µg/L	<120	<10	<11	<10	<11	<11	<10	<10	<10
2,4-Dimethylphenol	µg/L	<120	<10	<11	<10	<11	<11	<10	<10	<10
2,4-Dinitrophenol	µg/L	<580	<51	<53	<52	<53	<53	<51	<52	<50
2,4-Dinitrotoluene	µg/L	<120	<10	<11	<10	<11	<11	<10	<10	<10
2,6-Dinitrotoluene	µg/L	<120	<10	<11	<10	<11	<11	<10	<10	<10
2-Chloronaphthalene	µg/L	<120	<10	<11	<10	<11	<11	<10	<10	<10
2-Chlorophenol	µg/L	<120	<10	<11	<10	<11	<11	<10	<10	<10
2-Methylnaphthalene	µg/L	<120	<10	<11	<10	<11	<11	<10	<10	<10
2-Methylphenol	µg/L	<120	<10	<11	<10	<11	<11	<10	<10	<10
2-Nitroaniline	µg/L	<580	<51	<53	<52	<53	<53	<51	<52	<50
2-Nitrophenol	µg/L	<120	<10	<11	<10	<11	<11	<10	<10	<10
3,3'-Dichlorobenzidine	µg/L	<230	<20	<21	<21	<21	<21	<20	<21	<20
3-Nitroaniline	µg/L	<580	<51	<53	<52	<53	<53	<51	<52	<50
4,6-Dinitro-2-methylphenol	µg/L	<580	<51	<53	<52	<53	<53	<51	<52	<50
4-Bromophenylphenyl ether	µg/L	<120	<10	<11	<10	<11	<11	<10	<10	<10
4-Chloro-3-methylphenol	µg/L	<230	<20	<21	<21	<21	<21	<20	<21	<20
4-Chloroaniline	µg/L	<230	<20	<21	<21	<21	<21	<20	<21	<20
4-Chlorophenylphenyl ether	µg/L	<120	<10	<11	<10	<11	<11	<10	<10	<10
4-Methylphenol	µg/L	<120	<10	<11	<10	<11	<11	<10	<10	<10
4-Nitroaniline	µg/L	<580	<51	<53	<52	<53	<53	<51	<52	<50
4-Nitrophenol	µg/L	<580	<51	<53	<52	<53	<53	<51	<52	<50
Acenaphthene	µg/L	<120	<10	<11	<10	<11	<11	<10	<10	<10
Acenaphthylene	µg/L	<120	<10	<11	<10	<11	<11	<10	<10	<10
Anthracene	µg/L	<120	<10	<11	<10	<11	<11	<10	<10	<10
Benzo(a)anthracene	µg/L	<120	<10	<11	<10	<11	<11	<10	<10	<10
Benzo(a)pyrene	µg/L	<120	<10	<11	<10	<11	<11	<10	<10	<10
Benzo(b)fluoranthene	µg/L	<120	<10	<11	<10	<11	<11	<10	<10	<10
Benzo(g,h,i)perylene	µg/L	<120	<10	<11	<10	<11	<11	<10	<10	<10
Benzo(k)fluoranthene	µg/L	<120	<10	<11	<10	<11	<11	<10	<10	<10
Benzoic acid	µg/L	<580	<51	<53	<52	<53	<53	<51	<52	<50
Benzyl alcohol	µg/L	<230	<20	<21	<21	<21	<21	<20	<21	<20
bis(2-Chloroethoxy)methane	µg/L	<120	<10	<11	<10	<11	<11	<10	<10	<10
bis(2-Chloroethyl) ether	µg/L	<120	<10	<11	<10	<11	<11	<10	<10	<10
bis(2-Chloroisopropyl) ether	µg/L	<120	<10	<11	<10	<11	<11	<10	<10	<10
bis(2-Ethylhexyl)phthalate	µg/L	<120	<10	<11	<10	<11	<11	<10	<10	<10
Butylbenzylphthalate	µg/L	<120	<10	<11	<10	<11	<11	<10	<10	<10
Chrysene	µg/L	<120	<10	<11	<10	<11	<11	<10	<10	<10
Di-n-butylphthalate	µg/L	<120	<10	<11	<10	<11	<11	<10	<10	<10
Di-n-octylphthalate	µg/L	<120	<10	<11	<10	<11	<11	<10	<10	<10
Dibenz(a,h)anthracene	µg/L	<120	<10	<11	<10	<11	<11	<10	<10	<10
Dibenzofuran	µg/L	<120	<10	<11	<10	<11	<11	<10	<10	<10
Diethylphthalate	µg/L	<120	<10	<11	<10	<11	<11	<10	<10	<10
Dimethylphthalate	µg/L	<120	<10	<11	<10	<11	<11	<10	<10	<10
Fluoranthene	µg/L	<120	<10	<11	<10	<11	<11	<10	<10	<10
Fluorene	µg/L	<120	<10	<11	<10	<11	<11	<10	<10	<10

Table 5-1b
North Industrial Corridor (NIC) Site
Surface Water Analytical Results, SVOCs by EPA Method 8270

Station		SW-06	SW-07	SW-08	SW-11	SW-12	SW-13	SW-13	SW-15	SW-16
Sample Date (Phase 2)		5/16/01	5/16/01	5/16/01	5/16/01	5/16/01	5/16/01	5/16/01	5/16/01	5/16/01
QC Sample Flag								DUP		
Compound	Units									
Hexachloro-1,3-butadiene	µg/L	<120	<10	<11	<10	<11	<11	<10	<10	<10
Hexachlorobenzene	µg/L	<120	<10	<11	<10	<11	<11	<10	<10	<10
Hexachlorocyclopentadiene	µg/L	<120	<10	<11	<10	<11	<11	<10	<10	<10
Hexachloroethane	µg/L	<120	<10	<11	<10	<11	<11	<10	<10	<10
Indeno(1,2,3-cd)pyrene	µg/L	<120	<10	<11	<10	<11	<11	<10	<10	<10
Isophorone	µg/L	<120	<10	<11	<10	<11	<11	<10	<10	<10
N-Nitroso-di-n-propylamine	µg/L	<120	<10	<11	<10	<11	<11	<10	<10	<10
N-Nitrosodiphenylamine	µg/L	<120	<10	<11	<10	<11	<11	<10	<10	<10
Naphthalene	µg/L	<120	<10	<11	<10	<11	<11	<10	<10	<10
Nitrobenzene	µg/L	<120	<10	<11	<10	<11	<11	<10	<10	<10
Pentachlorophenol	µg/L	<580	<51	<53	<52	<53	<53	<51	<52	<50
Phenanthrene	µg/L	<120	<10	<11	<10	<11	<11	<10	<10	<10
Phenol	µg/L	<120	<10	<11	<10	<11	<11	<10	<10	<10
Pyrene	µg/L	<120	<10	<11	<10	<11	<11	<10	<10	<10

SVOCs = Semivolatile Organic Compounds
DUP = Field Duplicate Sample
JH = Estimated due to laboratory holding time exceedance.

Table 5-1c
North Industrial Corridor (NIC) Site
Surface Water Analytical Results, Pesticides/PCBs by EPA Method 8080

Station		SW-06	SW-07	SW-08	SW-12	SW-13	SW-13	SW-15
Sample Date (Phase 2)		5/16/01	5/16/01	5/16/01	5/16/01	5/16/01	5/16/01	5/16/01
QC Sample Flag							DUP	
Compound	Units							
4,4'-DDD	µg/L	<0.12	<0.11	<0.12	<0.11	<0.11	<0.11	<0.11
4,4'-DDE	µg/L	<0.043	<0.040	<0.042	<0.041	<0.040	<0.041	<0.040
4,4'-DDT	µg/L	<0.13	<0.12	<0.13	<0.12	<0.12	<0.12	<0.12
Aldrin	µg/L	<0.043	<0.040	<0.042	<0.041	<0.040	<0.041	<0.040
alpha-BHC	µg/L	<0.032	<0.030	<0.032	<0.031	<0.030	<0.031	<0.030
alpha-Chlordane	µg/L	<0.054	<0.050	<0.053	<0.052	<0.050	<0.051	<0.050
beta-BHC	µg/L	<0.065	<0.060	<0.063	<0.062	<0.060	<0.061	<0.060
Chlordane (Technical)	µg/L	<0.15	<0.14	**0.21**	<0.14	<0.14	<0.14	<0.14
delta-BHC	µg/L	<0.097	<0.090	<0.095	<0.093	<0.090	<0.092	<0.090
Dieldrin	µg/L	<0.022	<0.020	<0.021	<0.021	<0.020	<0.020	<0.020
Endosulfan I	µg/L	<0.15	<0.14	<0.15	<0.14	<0.14	<0.14	<0.14
Endosulfan II	µg/L	<0.043	<0.040	<0.042	<0.041	<0.040	<0.041	<0.040
Endosulfan sulfate	µg/L	<0.71	<0.66	<0.69	<0.68	<0.66	<0.67	<0.66
Endrin	µg/L	<0.065	<0.060	<0.063	<0.062	<0.060	<0.061	<0.060
Endrin aldehyde	µg/L	<0.25	<0.23	<0.24	<0.24	<0.23	<0.23	<0.23
Endrin ketone	µg/L	<0.11	<0.10	<0.11	<0.10	<0.10	<0.10	<0.10
gamma-BHC	µg/L	<0.043	<0.040	<0.042	<0.041	<0.040	<0.041	<0.040
gamma-Chlordane	µg/L	<0.054	<0.050	<0.053	<0.052	<0.050	<0.051	<0.050
Heptachlor	µg/L	<0.032	<0.030	<0.032	<0.031	<0.030	<0.031	<0.030
Heptachlor epoxide	µg/L	<0.11	<0.10	<0.11	<0.10	<0.10	<0.10	<0.10
Methoxychlor	µg/L	<1.9	<1.8	<1.9	<1.8	<1.8	<1.8	<1.8
Toxaphene	µg/L	<2.6	<2.4	<2.5	<2.5	<2.4	<2.4	<2.4
PCB-1016	µg/L	<1.1	<1.0	<1.1	<1.0	<1.0	<1.1	<1.0
PCB-1221	µg/L	<1.1	<1.0	<1.1	<1.0	<1.0	<1.1	<1.0
PCB-1232	µg/L	<1.1	<1.0	<1.1	<1.0	<1.0	<1.1	<1.0
PCB-1242	µg/L	<1.1	<1.0	<1.1	<1.0	<1.0	<1.1	<1.0
PCB-1248	µg/L	<1.1	<1.0	<1.1	<1.0	<1.0	<1.1	<1.0
PCB-1254	µg/L	<1.1	<1.0	<1.1	<1.0	<1.0	<1.1	<1.0
PCB-1260	µg/L	<1.1	<1.0	<1.1	<1.0	<1.0	<1.1	<1.0

Bold text indicates results above analytical detection limits.
DUP = Field duplicate sample.

Table 5-1d
North Industrial Corridor (NIC) Site
Surface Water Analytical Results, Total Metals

Station		SW-06	SW-07	SW-08	SW-12	SW-13	SW-15	SW-16
Sample Date (Phase 2)		5/16/01	5/16/01	5/16/01	5/16/01	5/16/01	5/16/01	5/16/01
Compound	Units							
(Total Metals)								
Aluminum	µg/L	**2210**	**108**	<75.0	<75.0	<75.0	<75.0	**103**
Antimony	µg/L	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0
Arsenic	µg/L	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00
Barium	µg/L	**84.2**	**20.5**	<4.00	<4.00	<4.00	<4.00	**47.3**
Beryllium	µg/L	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
Cadmium	µg/L	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00
Calcium	µg/L	**23200**	**21900**	<100	**671**	<100	<100	**48500**
Chromium	µg/L	<7.00	<7.00	<7.00	<7.00	<7.00	<7.00	<7.00
Cobalt	µg/L	<7.00	<7.00	<7.00	<7.00	<7.00	<7.00	<7.00
Copper	µg/L	**21.3**	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0
Iron	µg/L	**4920**	**123**	<40.0	<40.0	<40.0	<40.0	**192**
Lead	µg/L	**42**	<5.00	<5.00	<5.00	<5.00	<5.00	**5.01**
Magnesium	µg/L	**4440**	**7830**	<50.0	**1520**	<50.0	<50.0	**23100**
Manganese	µg/L	**217**	<7.00	<7.00	<7.00	<7.00	<7.00	**109**
Mercury	µg/L	**0.63**	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200
Nickel	µg/L	<30.0	<30.0	<30.0	<30.0	<30.0	<30.0	<30.0
Potassium	µg/L	**1190**	<1000	<1000	<1000	<1000	<1000	**1390**
Selenium	µg/L	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0
Silver	µg/L	<7.00	<7.00	<7.00	<7.00	<7.00	<7.00	<7.00
Sodium	µg/L	**12800**	**14800**	<150	**1160**	<150	<150	**23500**
Thallium	µg/L	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	**5.56**
Vanadium	µg/L	<12.0	<12.0	<12.0	<12.0	<12.0	<12.0	<12.0
Zinc	µg/L	**111**	<100	<100	<100	<100	<100	<100

Bold text indicates results above analytical detection limits.

Table 5-2a
North Industrial Corridor (NIC) Site
Sediment Sample Analytical Results, VOCs by EPA Method 8260

Station			SD-01	SD-02	SD-03	SD-04	SD-05	SD-06	SD-07	SD-08	SD-09	SD-10	SD-11	SD-11	SD-12
Sample Date			5/15/01	5/15/01	5/16/01	5/16/01	5/16/01	5/16/01	5/16/01	5/16/01	5/16/01	5/16/01	5/16/01	5/16/01	5/15/01
QC Sample Flag														DUP	
Compound	Abbrev	Units													
1,1,1-Trichloroethane	TCA	µg/kg	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
1,1,2,2-Tetrachloroethane	1122PCA	µg/kg	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
1,1,2-Trichloroethane	112TCA	µg/kg	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
1,1-Dichloroethane	11DCA	µg/kg	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
1,1-Dichloroethene	11DCE	µg/kg	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
1,2-Dichlorobenzene	12DCB	µg/kg	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
1,2-Dichloroethane	12DCA	µg/kg	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
1,2-Dichloropropane	12DCP	µg/kg	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
1,3-Dichlorobenzene	13DCB	µg/kg	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
1,4-Dichlorobenzene	14DCB	µg/kg	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Benzene	BEN	µg/kg	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Bromodichloromethane	BDCM	µg/kg	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Bromoform	BFM	µg/kg	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Bromomethane	BM	µg/kg	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Carbon tetrachloride	CT	µg/kg	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Chlorobenzene	CBN	µg/kg	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Chloroethane	CLE	µg/kg	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Chloroform	CFM	µg/kg	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Chloromethane	CM	µg/kg	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
cis-1,2-Dichloroethene	C12DCE	µg/kg	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
cis-1,3-Dichloropropene	C13DCP	µg/kg	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Dibromochloromethane	DBCM	µg/kg	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Ethylbenzene	EBN	µg/kg	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
m,p-Xylene	XYLMP	µg/kg	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Methylene chloride	MECL	µg/kg	<5.0	**6 UB**	<5.0	**5.3 UB**	**6 UB**	<5.0	<5.0	**6.2 UB**	<5.0	**8.6 UB**	<5.0	<5.0	<5.0
o-Xylene	XYLO	µg/kg	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Tetrachloroethene	PCE	µg/kg	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Toluene	TOL	µg/kg	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
trans-1,2-Dichloroethene	T12DCE	µg/kg	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
trans-1,3-Dichloropropene	T13DCP	µg/kg	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Trichloroethene	TCE	µg/kg	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Trichlorofluoromethane	TCFM	µg/kg	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Vinyl chloride	VC	µg/kg	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0

Bold text indicates results above analytical detection limits.
VOCs = Volatile Organic Compounds
DUP = Field duplicate sample.
UB = Not detected; contained in method blank.

CDM

Table 5-2b
North Industrial Corridor (NIC) Site
Sediment Sample Analytical Results, SVOCs by EPA Method 8270

Station		SD-01	SD-02	SD-03	SD-04	SD-05	SD-06	SD-07	SD-08	SD-10	SD-11	SD-11	SD-12
Sample Date		5/15/01	5/15/01	5/16/01	5/16/01	5/16/01	5/16/01	5/16/01	5/16/01	5/16/01	5/16/01	5/16/01	5/15/01
QC Sample Flag												DUP	
Compound	Units												
1,2,4-Trichlorobenzene	µg/kg	<330	<660	<660	<330	<330	<330	<330	<330	<330	<3300	<3300	<330
1,2-Dichlorobenzene	µg/kg	<330	<660	<660	<330	<330	<330	<330	<330	<330	<3300	<3300	<330
1,3-Dichlorobenzene	µg/kg	<330	<660	<660	<330	<330	<330	<330	<330	<330	<3300	<3300	<330
1,4-Dichlorobenzene	µg/kg	<330	<660	<660	<330	<330	<330	<330	<330	<330	<3300	<3300	<330
2,4,5-Trichlorophenol	µg/kg	<330	<660	<660	<330	<330	<330	<330	<330	<330	<3300	<3300	<330
2,4,6-Trichlorophenol	µg/kg	<330	<660	<660	<330	<330	<330	<330	<330	<330	<3300	<3300	<330
2,4-Dichlorophenol	µg/kg	<330	<660	<660	<330	<330	<330	<330	<330	<330	<3300	<3300	<330
2,4-Dimethylphenol	µg/kg	<330	<660	<660	<330	<330	<330	<330	<330	<330	<3300	<3300	<330
2,4-Dinitrophenol	µg/kg	<1600	<3200	<3200	<1600	<1600	<1600	<1600	<1600	<1600	<16000	<16000	<1600
2,4-Dinitrotoluene	µg/kg	<330	<660	<660	<330	<330	<330	<330	<330	<330	<3300	<3300	<330
2,6-Dinitrotoluene	µg/kg	<330	<660	<660	<330	<330	<330	<330	<330	<330	<3300	<3300	<330
2-Chloronaphthalene	µg/kg	<330	<660	<660	<330	<330	<330	<330	<330	<330	<3300	<3300	<330
2-Chlorophenol	µg/kg	<330	<660	<660	<330	<330	<330	<330	<330	<330	<3300	<3300	<330
2-Methylnaphthalene	µg/kg	<330	<660	<660	<330	<330	<330	<330	<330	<330	**2200 J**	**1600 J**	<330
2-Methylphenol	µg/kg	<330	<660	<660	<330	<330	<330	<330	<330	<330	<3300	<3300	<330
2-Nitroaniline	µg/kg	<1600	<3200	<3200	<1600	<1600	<1600	<1600	<1600	<1600	<16000	<16000	<1600
2-Nitrophenol	µg/kg	<330	<660	<660	<330	<330	<330	<330	<330	<330	<3300	<3300	<330
3,3'-Dichlorobenzidine	µg/kg	<660	<1300	<1300	<660	<660	<660	<660	<660	<660	<6600	<6600	<660
3-Nitroaniline	µg/kg	<1600	<3200	<3200	<1600	<1600	<1600	<1600	<1600	<1600	<16000	<16000	<1600
4,6-Dinitro-2-methylphenol	µg/kg	<1600	<3200	<3200	<1600	<1600	<1600	<1600	<1600	<1600	<16000	<16000	<1600
4-Bromophenylphenyl ether	µg/kg	<330	<660	<660	<330	<330	<330	<330	<330	<330	<3300	<3300	<330
4-Chloro-3-methylphenol	µg/kg	<660	<1300	<1300	<660	<660	<660	<660	<660	<660	<6600	<6600	<660
4-Chloroaniline	µg/kg	<660	<1300	<1300	<660	<660	<660	<660	<660	<660	<6600	<6600	<660
4-Chlorophenylphenyl ether	µg/kg	<330	<660	<660	<330	<330	<330	<330	<330	<330	<3300	<3300	<330
4-Methylphenol	µg/kg	<330	<660	<660	<330	<330	<330	<330	<330	<330	<3300	<3300	<330
4-Nitroaniline	µg/kg	<1600	<3200	<3200	<1600	<1600	<1600	<1600	<1600	<1600	<16000	<16000	<1600
4-Nitrophenol	µg/kg	<1600	<3200	<3200	<1600	<1600	<1600	<1600	<1600	<1600	<16000	<16000	<1600
Acenaphthene	µg/kg	<330	<660	<660	<330	<330	<330	<330	<330	<330	<3300	<3300	<330
Acenaphthylene	µg/kg	<330	<660	<660	<330	<330	<330	<330	<330	<330	<3300	<3300	<330
Anthracene	µg/kg	<330	<660	<660	<330	<330	<330	<330	<330	<330	<3300	<3300	<330
Benzo(a)anthracene	µg/kg	<330	**720**	**510 J**	<330	<330	<330	<330	<330	<330	<3300	<3300	<330
Benzo(a)pyrene	µg/kg	<330	**710**	**550 J**	<330	<330	**380**	<330	<330	<330	<3300	<3300	<330
Benzo(b)fluoranthene	µg/kg	<330	**960**	**790**	<330	<330	**660**	<330	<330	<330	<3300	<3300	**340**
Benzo(g,h,i)perylene	µg/kg	<330	**510 J**	**980**	<330	<330	**870**	<330	<330	<330	**1600 J**	**1600 J**	<330
Benzo(k)fluoranthene	µg/kg	<330	**360 J**	**360 J**	<330	<330	<330	<330	<330	<330	<3300	<3300	<330

Table 5-2b
North Industrial Corridor (NIC) Site
Sediment Sample Analytical Results, SVOCs by EPA Method 8270

Station		SD-01	SD-02	SD-03	SD-04	SD-05	SD-06	SD-07	SD-08	SD-10	SD-11	SD-11	SD-12
Sample Date		5/15/01	5/15/01	5/16/01	5/16/01	5/16/01	5/16/01	5/16/01	5/16/01	5/16/01	5/16/01	5/16/01	5/15/01
QC Sample Flag												DUP	
Compound	Units												
Benzoic acid	µg/kg	<1600	<3200	<3200	<1600	<1600	<1600	<1600	<1600	<1600	<16000	<16000	<1600
Benzyl alcohol	µg/kg	<660	<1300	<1300	<660	<660	<660	<660	<660	<660	<6600	<6600	<660
bis(2-Chloroethoxy)methane	µg/kg	<330	<660	<660	<330	<330	<330	<330	<330	<330	<3300	<3300	<330
bis(2-Chloroethyl) ether	µg/kg	<330	<660	<660	<330	<330	<330	<330	<330	<330	<3300	<3300	<330
bis(2-Chloroisopropyl) ether	µg/kg	<330	<660	<660	<330	<330	<330	<330	<330	<330	<3300	<3300	<330
bis(2-Ethylhexyl)phthalate	µg/kg	**410**	<660	**750**	<330	<330	<330	<330	<330	<330	<3300	<3300	**540**
Butylbenzylphthalate	µg/kg	<330	<660	<660	<330	<330	<330	<330	<330	<330	<3300	<3300	<330
Chrysene	µg/kg	<330	**830**	**1500**	<330	<330	530	<330	<330	<330	**1600 J**	**1700 J**	<330
Di-n-butylphthalate	µg/kg	<330	<660	<660	<330	<330	<330	<330	<330	<330	<3300	<3300	<330
Di-n-octylphthalate	µg/kg	<330	<660	<660	<330	<330	<330	<330	<330	<330	<3300	<3300	<330
Dibenz(a,h)anthracene	µg/kg	<330	<660	<660	<330	<330	<330	<330	<330	<330	<3300	<3300	<330
Dibenzofuran	µg/kg	<330	<660	<660	<330	<330	<330	<330	<330	<330	<3300	<3300	<330
Diethylphthalate	µg/kg	<330	<660	<660	<330	<330	<330	<330	<330	<330	<3300	<3300	<330
Dimethylphthalate	µg/kg	<330	<660	<660	<330	<330	<330	<330	<330	<330	<3300	<3300	<330
Fluoranthene	µg/kg	**400**	**1300**	**1100**	<330	<330	<330	<330	<330	<330	<3300	<3300	**440**
Fluorene	µg/kg	<330	<660	<660	<330	<330	<330	<330	<330	<330	<3300	<3300	<330
Hexachloro-1,3-butadiene	µg/kg	<330	<660	<660	<330	<330	<330	<330	<330	<330	<3300	<3300	<330
Hexachlorobenzene	µg/kg	<330	<660	<660	<330	<330	<330	<330	<330	<330	<3300	<3300	<330
Hexachlorocyclopentadiene	µg/kg	<330	<660	<660	<330	<330	<330	<330	<330	<330	<3300	<3300	<330
Hexachloroethane	µg/kg	<330	<660	<660	<330	<330	<330	<330	<330	<330	<3300	<3300	<330
Indeno(1,2,3-cd)pyrene	µg/kg	<330	**490 J**	**430 J**	<330	<330	<330	<330	<330	<330	<3300	<3300	<330
Isophorone	µg/kg	<330	<660	<660	<330	<330	<330	<330	<330	<330	<3300	<3300	<330
N-Nitroso-di-n-propylamine	µg/kg	<330	<660	<660	<330	<330	<330	<330	<330	<330	<3300	<3300	<330
N-Nitrosodiphenylamine	µg/kg	<330	<660	<660	<330	<330	<330	<330	<330	<330	<3300	<3300	<330
Naphthalene	µg/kg	<330	<660	<660	<330	<330	<330	<330	<330	<330	<3300	<3300	<330
Nitrobenzene	µg/kg	<330	<660	<660	<330	<330	<330	<330	<330	<330	<3300	<3300	<330
Pentachlorophenol	µg/kg	<1600	<3200	<3200	<1600	<1600	<1600	<1600	<1600	<1600	<16000	<16000	<1600
Phenanthrene	µg/kg	<330	**770**	**530 J**	<330	<330	<330	<330	<330	<330	<3300	<3300	<330
Phenol	µg/kg	<330	<660	<660	<330	<330	<330	<330	<330	<330	<3300	<3300	<330
Pyrene	µg/kg	**390**	**1400**	**1100**	<330	<330	**480**	<330	<330	<330	<3300	<3300	**430**

Bold text indicates results above analytical detection limits.
SVOCs = Semivolatile Organic Compounds
DUP = Field duplicate sample
J = Result estimated, value measured between the reporting limit and the detection limit

Table 5-2c
North Industrial Corridor (NIC) Site
Sediment Sample Analytical Results, Pesticides/PCBs by EPA Method 8270

Station		SD-01	SD-02	SD-03	SD-04	SD-07	SD-08	SD-10
Sample Date		5/15/01	5/15/01	5/16/01	5/16/01	5/16/01	5/16/01	5/16/01
Compound	Units							
4,4'-DDD	µg/kg	<34	<34	<33	<34	<34	<34	<33
4,4'-DDE	µg/kg	<13	<13	<13	<13	<13	<13	<13
4,4'-DDT	µg/kg	<40	<40	<39	<40	<40	<40	<39
Aldrin	µg/kg	<13	<13	<13	<13	<13	<13	<13
alpha-BHC	µg/kg	<9.9	<9.9	<9.8	<9.9	<9.9	<9.9	<9.9
alpha-Chlordane	µg/kg	**52**	<17	**31**	<17	<17	<17	<17
beta-BHC	µg/kg	<20	<20	<20	<20	<20	<20	<20
Chlordane (Technical)	µg/kg	**410**	<46	**310**	<46	<46	<46	<46
delta-BHC	µg/kg	<30	<30	<30	<30	<30	<30	<30
Dieldrin	µg/kg	<6.6	<6.6	<6.6	<6.6	<6.6	<6.6	<6.6
Endosulfan I	µg/kg	<46	<46	<46	<46	<46	<46	<46
Endosulfan II	µg/kg	<13	<13	<13	<13	<13	<13	<13
Endosulfan sulfate	µg/kg	<220	<220	<220	<220	<220	<220	<220
Endrin	µg/kg	<20	<20	<20	<20	<20	<20	<20
Endrin aldehyde	µg/kg	<76	<76	<76	<76	<76	<76	<76
Endrin ketone	µg/kg	<33	<33	<33	<33	<33	<33	<33
gamma-BHC	µg/kg	<13	<13	<13	<13	<13	<13	<13
gamma-Chlordane	µg/kg	**32**	<17	**28**	<17	<17	<17	<17
Heptachlor	µg/kg	<9.9	<9.9	<9.8	<9.9	<9.9	<9.9	<9.9
Heptachlor epoxide	µg/kg	<33	<33	<33	<33	<33	<33	<33
Methoxychlor	µg/kg	<580	<580	<580	<580	<580	<580	<580
Toxaphene	µg/kg	<790	<790	<790	<790	<790	<790	<790
PCB-1016	µg/kg	<33	<33	<330	<33	<33	<33	<33
PCB-1221	µg/kg	<33	<33	<330	<33	<33	<33	<33
PCB-1232	µg/kg	<33	<33	<330	<33	<33	<33	<33
PCB-1242	µg/kg	<33	<33	<330	<33	<33	<33	<33
PCB-1248	µg/kg	<33	<33	<330	<33	<33	<33	<33
PCB-1254	µg/kg	<33	<33	<330	<33	<33	<33	<33
PCB-1260	µg/kg	<33	<33	**650**	<33	<33	<33	<33

Bold text indicates results above analytical detection limits.

Table 5-2d
North Industrial Corridor (NIC) Site
Sediment Sample Analytical Results, Total Petroleum Hydrocarbons (TPH)

Station			**SD-11**	**SD-11**	**SD-12**
Sample Date			**5/16/01**	**5/16/01**	**5/15/01**
QC Sample Flag				**DUP**	
Compound	**Units**	**Analytical Method**			
TPH as Diesel	mg/kg	OA2	<49	<50	<9.9
TPH as Gasoline	mg/kg	OA1	<4.9	**20**	**5**
Fuel Oil	mg/kg	OA2	<49	<50	<9.9
Jet Fuel	mg/kg	OA2	<49	<50	<9.9
Kerosene	mg/kg	OA2	<49	<50	<9.9
Mineral Spirits	mg/kg	OA2	<49	<50	<9.9
Motor Oil	mg/kg	OA2	**5800**	**5500**	**410**

Bold text indicates results above analytical detection limits.
DUP = Field duplicate sample.

Table 5-2e
North Industrial Corridor (NIC) Site
Sediment Sample Analytical Results, Metals

Station			SD-01	SD-02	SD-03	SD-04	SD-07	SD-08	SD-10
Sample Date			5/15/01	5/15/01	5/16/01	5/16/01	5/16/01	5/16/01	5/16/01
Compound	Units	EPA Method							
Aluminum	mg/kg	EPA 6010	**7410**	**6340**	**3130**	**575**	**1820**	**972**	**731**
Antimony	mg/kg	EPA 6010	<0.943	<0.962	**1.28**	<0.962	<0.990	<0.952	<0.952
Arsenic	mg/kg	EPA 6010	**0.934**	**2.57**	**1.42**	<0.481	**1.9**	**1.08**	<0.476
Barium	mg/kg	EPA 6010	**86.5**	**128**	**71.8**	**22.3**	**211**	**117**	**13**
Beryllium	mg/kg	EPA 6010	**0.333**	**0.406**	**0.156**	<0.0962	**0.109**	<0.0952	<0.0952
Cadmium	mg/kg	EPA 6010	**0.62**	**0.842**	**1.29**	<0.481	<0.495	<0.476	<0.476
Calcium	mg/kg	EPA 6010	**9430**	**6890**	**21700**	**2610**	**12600**	**9000**	**2710**
Chromium	mg/kg	EPA 6010	**8.44**	**13.6**	**10**	**1.37**	**2.49**	**1.97**	**1.61**
Cobalt	mg/kg	EPA 6010	**3.56**	**4.33**	**2.3**	**1.55**	**2.38**	**1.7**	**1.12**
Copper	mg/kg	EPA 6010	**13.4**	**29.9**	**49.6**	**3.45**	**2.04**	**1.53**	**2.9**
Iron	mg/kg	EPA 6010	**7510**	**10100**	**7660**	**1970**	**2950**	**2810**	**1760**
Lead	mg/kg	EPA 6010	**43.9**	**180**	**92.9**	**5.85**	**3.55**	**6.16**	**9.73**
Magnesium	mg/kg	EPA 6010	**1880**	**2220**	**1580**	**236**	**2560**	**1190**	**496**
Manganese	mg/kg	EPA 6010	**121**	**182**	**144**	**44.1**	**261**	**149**	**29.8**
Mercury	mg/kg	EPA 7471	<0.154	<0.154	<0.154	<0.154	<0.154	<0.154	<0.154
Nickel	mg/kg	EPA 6010	**7.99**	**10.2**	**7.23**	<2.88	**3.96**	<2.86	<2.86
Potassium	mg/kg	EPA 6010	**1080**	**1300**	**605**	**97.9**	**461**	**262**	**186**
Selenium	mg/kg	EPA 6010	<0.943	<0.962	<0.971	<0.962	<0.990	<0.952	<0.952
Silver	mg/kg	EPA 6010	<0.660	<0.673	<0.680	<0.673	<0.693	<0.667	<0.667
Sodium	mg/kg	EPA 6010	**59.1**	**83.5**	**134**	**15.9**	**33.4**	**22.8**	**24.5**
Thallium	mg/kg	EPA 6010	<1.51	<1.54	<1.55	<1.54	<1.58	<1.52	<1.52
Vanadium	mg/kg	EPA 6010	**14.2**	**14.9**	**7.91**	**3.17**	**5.42**	**5.59**	**2.58**
Zinc	mg/kg	EPA 6010	**121**	**205**	**215**	**17.6**	**8.38**	**15**	**21.4**

Bold text indicates results above analytical detection limits.

Table 5-3a
North Industrial Corridor (NIC) Site
Surface Soil Sample Analytical Results, VOCs by EPA Method 8260

		Station	SSS-01	SSS-02	SSS-03C
		Sample Date	5/17/01	5/17/01	5/17/01
Investigation	**Compound**	**units**			
PH2B	1,1,1-Trichloroethane	µg/kg	<5.0	<5.0	<5.0
PH2B	1,1,2,2-Tetrachloroethane	µg/kg	<5.0	<5.0	<5.0
PH2B	1,1,2-Trichloroethane	µg/kg	<5.0	<5.0	<5.0
PH2B	1,1-Dichloroethane	µg/kg	<5.0	<5.0	<5.0
PH2B	1,1-Dichloroethene	µg/kg	<5.0	<5.0	<5.0
PH2B	1,2-Dichlorobenzene	µg/kg	<5.0	<5.0	<5.0
PH2B	1,2-Dichloroethane	µg/kg	<5.0	<5.0	<5.0
PH2B	1,2-Dichloropropane	µg/kg	<5.0	<5.0	<5.0
PH2B	1,3-Dichlorobenzene	µg/kg	<5.0	<5.0	<5.0
PH2B	1,4-Dichlorobenzene	µg/kg	<5.0	<5.0	<5.0
PH2B	Benzene	µg/kg	<5.0	<5.0	<5.0
PH2B	Bromodichloromethane	µg/kg	<5.0	<5.0	<5.0
PH2B	Bromoform	µg/kg	<5.0	<5.0	<5.0
PH2B	Bromomethane	µg/kg	<5.0	<5.0	<5.0
PH2B	Carbon tetrachloride	µg/kg	<5.0	<5.0	<5.0
PH2B	Chlorobenzene	µg/kg	<5.0	<5.0	<5.0
PH2B	Chloroethane	µg/kg	<5.0	<5.0	<5.0
PH2B	Chloroform	µg/kg	<5.0	<5.0	<5.0
PH2B	Chloromethane	µg/kg	<5.0	<5.0	<5.0
PH2B	cis-1,2-Dichloroethene	µg/kg	<5.0	<5.0	<5.0
PH2B	cis-1,3-Dichloropropene	µg/kg	<5.0	<5.0	<5.0
PH2B	Dibromochloromethane	µg/kg	<5.0	<5.0	<5.0
PH2B	Ethylbenzene	µg/kg	<5.0	<5.0	<5.0
PH2B	m,p-Xylene	µg/kg	<5.0	<5.0	<5.0
PH2B	Methylene chloride	µg/kg	<5.0	<5.0	<5.0
PH2B	o-Xylene	µg/kg	<5.0	<5.0	<5.0
PH2B	Tetrachloroethene	µg/kg	<5.0	<5.0	<5.0
PH2B	Toluene	µg/kg	<5.0	<5.0	<5.0
PH2B	trans-1,2-Dichloroethene	µg/kg	<5.0	<5.0	<5.0
PH2B	trans-1,3-Dichloropropene	µg/kg	<5.0	<5.0	<5.0
PH2B	Trichloroethene	µg/kg	<5.0	<5.0	<5.0
PH2B	Trichlorofluoromethane	µg/kg	<5.0	<5.0	<5.0
PH2B	Vinyl chloride	µg/kg	<5.0	<5.0	<5.0

Table 5-3b
North Industrial Corridor (NIC) Site
Surface Soil Sample Analytical Results, SVOCs by EPA Method 8270

		Station	SSS-01	SSS-02	SSS-03C
		Sample date	5/17/01	5/17/01	5/17/01
Investigation	Compound	units			
PH2B	1,2,4-Trichlorobenzene	µg/kg	<330	<330	<330
PH2B	1,2-Dichlorobenzene	µg/kg	<330	<330	<330
PH2B	1,3-Dichlorobenzene	µg/kg	<330	<330	<330
PH2B	1,4-Dichlorobenzene	µg/kg	<330	<330	<330
PH2B	2,4,5-Trichlorophenol	µg/kg	<330	<330	<330
PH2B	2,4,6-Trichlorophenol	µg/kg	<330	<330	<330
PH2B	2,4-Dichlorophenol	µg/kg	<330	<330	<330
PH2B	2,4-Dimethylphenol	µg/kg	<330	<330	<330
PH2B	2,4-Dinitrophenol	µg/kg	<1600	<1600	<1600
PH2B	2,4-Dinitrotoluene	µg/kg	<330	<330	<330
PH2B	2,6-Dinitrotoluene	µg/kg	<330	<330	<330
PH2B	2-Chloronaphthalene	µg/kg	<330	<330	<330
PH2B	2-Chlorophenol	µg/kg	<330	<330	<330
PH2B	2-Methylnaphthalene	µg/kg	<330	<330	<330
PH2B	2-Methylphenol	µg/kg	<330	<330	<330
PH2B	2-Nitroaniline	µg/kg	<1600	<1600	<1600
PH2B	2-Nitrophenol	µg/kg	<330	<330	<330
PH2B	3,3'-Dichlorobenzidine	µg/kg	<660	<660	<660
PH2B	3-Nitroaniline	µg/kg	<1600	<1600	<1600
PH2B	4,6-Dinitro-2-methylphenol	µg/kg	<1600	<1600	<1600
PH2B	4-Bromophenylphenyl ether	µg/kg	<330	<330	<330
PH2B	4-Chloro-3-methylphenol	µg/kg	<660	<660	<660
PH2B	4-Chloroaniline	µg/kg	<660	<660	<660
PH2B	4-Chlorophenylphenyl ether	µg/kg	<330	<330	<330
PH2B	4-Methylphenol	µg/kg	<330	<330	<330
PH2B	4-Nitroaniline	µg/kg	<1600	<1600	<1600
PH2B	4-Nitrophenol	µg/kg	<1600	<1600	<1600
PH2B	Acenaphthene	µg/kg	<330	<330	<330
PH2B	Acenaphthylene	µg/kg	<330	<330	<330
PH2B	Anthracene	µg/kg	<330	<330	<330
PH2B	Benzo(a)anthracene	µg/kg	<330	<330	<330
PH2B	Benzo(a)pyrene	µg/kg	<330	<330	<330
PH2B	Benzo(b)fluoranthene	µg/kg	<330	<330	<330
PH2B	Benzo(g,h,i)perylene	µg/kg	<330	<330	<330
PH2B	Benzo(k)fluoranthene	µg/kg	<330	<330	<330
PH2B	Benzoic acid	µg/kg	<1600	<1600	<1600
PH2B	Benzyl alcohol	µg/kg	<660	<660	<660
PH2B	bis(2-Chloroethoxy)methane	µg/kg	<330	<330	<330
PH2B	bis(2-Chloroethyl) ether	µg/kg	<330	<330	<330
PH2B	bis(2-Chloroisopropyl) ether	µg/kg	<330	<330	<330
PH2B	bis(2-Ethylhexyl)phthalate	µg/kg	<330	<330	<330
PH2B	Butylbenzylphthalate	µg/kg	<330	<330	<330

Table 5-3b
North Industrial Corridor (NIC) Site
Surface Soil Sample Analytical Results, SVOCs by EPA Method 8270

		Station	SSS-01	SSS-02	SSS-03C
		Sample date	5/17/01	5/17/01	5/17/01
Investigation	**Compound**	**units**			
PH2B	Chrysene	µg/kg	<330	<330	<330
PH2B	Di-n-butylphthalate	µg/kg	<330	<330	<330
PH2B	Di-n-octylphthalate	µg/kg	<330	<330	<330
PH2B	Dibenz(a,h)anthracene	µg/kg	<330	<330	<330
PH2B	Dibenzofuran	µg/kg	<330	<330	<330
PH2B	Diethylphthalate	µg/kg	<330	<330	<330
PH2B	Dimethylphthalate	µg/kg	<330	<330	<330
PH2B	Fluoranthene	µg/kg	<330	**330**	<330
PH2B	Fluorene	µg/kg	<330	<330	<330
PH2B	Hexachloro-1,3-butadiene	µg/kg	<330	<330	<330
PH2B	Hexachlorobenzene	µg/kg	<330	<330	<330
PH2B	Hexachlorocyclopentadiene	µg/kg	<330	<330	<330
PH2B	Hexachloroethane	µg/kg	<330	<330	<330
PH2B	Indeno(1,2,3-cd)pyrene	µg/kg	<330	<330	<330
PH2B	Isophorone	µg/kg	<330	<330	<330
PH2B	N-Nitroso-di-n-propylamine	µg/kg	<330	<330	<330
PH2B	N-Nitrosodiphenylamine	µg/kg	<330	<330	<330
PH2B	Naphthalene	µg/kg	<330	<330	<330
PH2B	Nitrobenzene	µg/kg	<330	<330	<330
PH2B	Pentachlorophenol	µg/kg	<1600	<1600	<1600
PH2B	Phenanthrene	µg/kg	<330	<330	<330
PH2B	Phenol	µg/kg	<330	<330	<330
PH2B	Pyrene	µg/kg	<330	<330	<330

Bold text indicates results above analytical detection limits.

Table 5-3c
North Industrial Corridor (NIC) Site
Surface Soil Sample Analytical Results, Metals

		Station	SSS-01	SSS-02	SSS-03C
		Sample date	5/17/01	5/17/01	5/17/01
Investigation	Compound	Units			
PH2B	Aluminum	mg/kg	6850	8150	6610
PH2B	Antimony	mg/kg	<0.917	<0.943	3.28
PH2B	Arsenic	mg/kg	1.88	2.27	5.26
PH2B	Barium	mg/kg	93.2	106	189
PH2B	Beryllium	mg/kg	0.41	0.436	0.522
PH2B	Cadmium	mg/kg	<0.459	<0.472	14.9
PH2B	Calcium	mg/kg	45400	6500	7380
PH2B	Chromium	mg/kg	8.53	8.98	127
PH2B	Cobalt	mg/kg	3.95	6.89	4.81
PH2B	Copper	mg/kg	11.6	10.5	60.1
PH2B	Iron	mg/kg	10600	9410	11600
PH2B	Lead	mg/kg	32	25.1	171
PH2B	Magnesium	mg/kg	7700	2010	1840
PH2B	Manganese	mg/kg	346	293	240
PH2B	Mercury	mg/kg	<0.154	<0.154	0.916
PH2B	Nickel	mg/kg	9.43	9.47	26.3
PH2B	Potassium	mg/kg	1430	1550	1560
PH2B	Selenium	mg/kg	<0.917	<0.943	<0.926
PH2B	Silver	mg/kg	<0.642	<0.660	6.88
PH2B	Sodium	mg/kg	104	36.8	68.9
PH2B	Thallium	mg/kg	<1.47	<1.51	<1.48
PH2B	Vanadium	mg/kg	15.5	18.3	18.1
PH2B	Zinc	mg/kg	64.3	51.2	282

Table 5-3d
North Industrial Corridor (NIC) Site
Subsurface Soil Sample Analytical Results, Total Organic Carbon (TOC)

Station	Sample Depth (feet)	Lithology	Sample Date	Total Organic Carbon	Units
NMW-01S	5-7	Clay w/ sand	12/12/2000	**11000**	mg/kg
NMW-01S	12-15	Silty sandy clay	12/12/2000	**7300**	mg/kg
NMW-01S	20-22	Silty sandy clay	12/12/2000	**6700**	mg/kg
NMW-01S	24-26	Sand	1/4/2001	**280***	mg/kg
NMW-01D	30-32	Sand	12/12/2000	<1100	mg/kg
NMW-01D	34-36	Sand	1/4/01	**290***	mg/kg
NMW-03S	4-6	Clayey silt	1/4/01	**16000**	mg/kg
NMW-03D	24-26	Clay	1/4/01	**7600**	mg/kg
NMW-03D	34-36	Sand w/ clay	1/4/01	**3600**	mg/kg
NMW-19S	16-18	Sand	1/8/01	**280***	mg/kg
NMW-19D	23-25	Sand	1/8/01	<1000	mg/kg
NMW-22S	6-8	Sand	1/5/01	<1000	mg/kg
NMW-22S	15-17	Sand**	1/5/01	**5500**	mg/kg
NMW-22D	22-24	Clay w/ sand	1/5/01	**3500**	mg/kg
NMW-22D	36-38	Sand	1/5/01	**380***	mg/kg
NMW-22D	38-40	Sand w/ silt	1/5/01	<1000	mg/kg
NMW-24D	22-24	Sand	1/8/01	**280***	mg/kg
NMW-24D	25-27	Sand	1/8/01	**280***	mg/kg
NMW-29	34-36	Sand	1/4/2001	**190***	mg/kg
NMW-31S	5-6	Sandy silty clay	12/11/00	**5600**	mg/kg
NMW-31S	6-7.4	Silty sand	12/11/00	<1200	mg/kg
NMW-31S	15-17	Sand	12/11/00	**3900**	mg/kg
NMW-31S	21-21.5	Silty sandy clay	12/11/00	<1200	mg/kg
NMW-31S	21.5-22.5	Sand	12/11/00	**26000**	mg/kg
NMW-35S	6-8	Sandy silt	1/8/01	**19000**	mg/kg
NMW-35S	16-18	Silty sand***	1/8/01	**5500**	mg/kg
NMW-35D	24-26	Sand	1/8/01	<1000	mg/kg
NMW-35D	33-35	Sand	1/8/01	**190***	mg/kg
NMW-47S	6-8	Silty sandy clay	12/11/00	**5500**	mg/kg
NMW-47S	15-18	Sand	12/11/00	**3800**	mg/kg
NMW-47D	30-30.5	Sand	12/12/00	**1400**	mg/kg
NMW-47D	38-38.5	Silty clay	12/12/00	**9400**	mg/kg
NWL-04S	6-8	Clay w/ sand	1/5/01	**2500**	mg/kg
NWL-04S	13-15	Sand	1/5/01	<1000	mg/kg
NWL-04S	24-26	Sand	1/5/01	**280***	mg/kg
NWL-04S	34-36	Sand	1/5/01	**270***	mg/kg
NWL-07D	10-12	Silt w/ clay	1/5/01	**5600**	mg/kg
NWL-07D	20-22	Sand	1/5/01	<1000	mg/kg
NWL-07D	25-27	Clay	1/5/01	**24000**	mg/kg

Bold text indicates results above analytical detection limits.
* = Samples were initially < 1000 mg/kg and reanalyzed on 12/06/01 with a lower detection limit of 100 mg/kg
** = EC suggested presence of clay or silt.
*** = Lithology estimated from EC. No sample availabe for lithological description.

Table 5-4
North Industrial Corridor (NIC) Site
Air Sample Analytical Results, VOCs by EPA Method TO-14

Compound	Units	AAQ-01 08/24/01	AAQ-02 08/24/01	AQ-01 09/18/01	AQ-02 08/24/01	AQ-02 08/24/01 DUP	AQ-03 08/23/01	AQ-04 09/18/01	AQ-05 09/18/01	AQ-07 09/18/01	AQ-08 09/18/01	AQ-09 08/23/01	AQ-10 09/18/01
1,1,1-Trichloroethane	µg/m³	< 3.54	< 3.26	< 4.1	< 3.65	< 3.38	< 4.43	< 3.6	< 3.38	< 4.1	< 3.26	< 3.38	< 3.38
1,1,2,2-Tetrachloroethane	µg/m³	< 3.92	< 3.64	< 4.62	< 4.05	< 3.78	< 4.97	< 3.99	< 3.78	< 4.62	< 3.64	< 3.78	< 3.78
1,1,2-Trichloroethane	µg/m³	< 3.6	< 3.38	< 4.21	< 3.71	< 3.43	< 4.54	< 3.65	< 3.49	< 4.21	< 3.38	< 3.49	< 3.49
1,1,2-Trichlorotrifluoroethane	µg/m³	< 6.07	< 5.68	< 7.16	< 6.31	< 5.84	< 7.71	< 6.23	< 5.92	< 7.16	< 5.68	< 5.92	< 5.92
1,1-Dichloroethane	µg/m³	< 2.92	< 2.72	< 3.42	< 3.01	< 2.8	< 3.67	< 2.97	< 2.84	< 3.42	< 2.72	< 2.84	< 2.84
1,1-Dichloroethene	µg/m³	< 2.86	< 2.66	< 3.35	< 2.95	< 2.74	< 3.59	< 2.91	< 2.78	< 3.35	< 2.66	< 2.78	< 2.78
1,2,4-Trichlorobenzene	µg/m³	< 2.33	< 2.18	< 2.71	**2.26**	< 2.26	< 2.94	< 2.41	< 2.26	< 2.71	< 2.18	**2.41**	< 2.26
1,2,4-Trimethylbenzene	µg/m³	< 3.55	< 3.3	**7.5**	< 3.65	< 3.4	< 4.45	< 3.59	< 3.45	**6.0**	**5.0**	< 3.45	< 3.45
1,2-Dibromoethane	µg/m³	< 5.01	< 4.62	< 5.79	< 5.17	< 4.77	< 6.26	< 5.09	< 4.77	< 5.79	< 4.62	< 4.77	< 4.77
1,2-Dichlorobenzene	µg/m³	< 4.34	< 4.04	< 5.08	< 4.47	< 4.16	< 5.45	< 4.41	< 4.22	< 5.08	< 4.04	< 4.22	< 4.22
1,2-Dichloroethane	µg/m³	< 2.43	< 2.26	< 2.84	< 2.51	< 2.31	< 3.05	< 2.47	< 2.35	< 2.84	< 2.26	< 2.35	< 2.35
1,2-Dichloropropane	µg/m³	< 2.58	< 2.4	< 3.01	< 2.68	< 2.44	< 3.24	< 2.63	< 2.49	< 3.01	< 2.4	< 2.49	< 2.49
1,3,5-Trimethylbenzene	µg/m³	< 3.55	< 3.3	< 4.14	< 3.65	< 3.4	< 4.45	< 3.59	< 3.45	< 4.14	< 3.3	< 3.45	< 3.45
1,3-Dichlorobenzene	µg/m³	< 2.69	< 2.51	< 3.18	< 2.81	< 2.57	< 3.43	< 2.75	< 2.63	< 3.18	< 2.51	< 2.63	< 2.63
1,4-Dichlorobenzene	µg/m³	< 2.69	< 2.51	**2.26 J**	< 2.81	< 2.57	< 3.43	**5.08**	**7962.5**	**6.06**	**14.7**	< 2.63	**0.98 J**
Benzene	µg/m³	**1 J**	**1.13 J**	**5.2**	**0.97 J**	**0.94 J**	**2.37 J**	**2.92**	**7.8**	**2.47**	**1.3 J**	**1.23 J**	**3.57**
Bromomethane	µg/m³	< 6.16	< 5.75	< 7.16	< 6.33	< 5.83	< 7.75	< 6.33	< 6	< 7.16	< 5.75	< 6	< 6
Carbon tetrachloride	µg/m³	**0.61 J**	< 3.72	< 4.68	**0.6 J**	**0.6 J**	< 5	< 4.04	< 3.85	< 4.68	< 3.72	**0.83 J**	< 3.85
Chlorobenzene	µg/m³	< 2.91	< 2.73	< 3.43	< 3.01	< 2.77	< 3.67	< 2.96	< 2.82	< 3.43	< 2.73	< 2.82	< 2.82
Chloroethane	µg/m³	< 2	< 1.86	< 2.32	< 2.05	< 1.89	< 2.51	< 2.05	< 1.95	< 2.32	< 1.86	< 1.95	< 1.95
Chloroform	µg/m³	**0.69 J**	< 3.27	**1.33 J**	**1.19 J**	**0.94 J**	< 4.41	< 3.57	**2.42 J**	< 4.11	**0.84 J**	**0.59 J**	< 3.42
Chloromethane	µg/m³	< 1.5	< 1.4	< 1.76	< 1.55	< 1.44	**2.01**	< 1.53	< 1.46	< 1.76	< 1.4	< 1.46	< 1.46
cis-1,2-Dichloroethene	µg/m³	< 2.86	< 2.66	< 3.35	< 2.95	< 2.74	< 3.59	< 2.91	< 2.78	< 3.35	< 2.66	< 2.78	< 2.78
cis-1,3-Dichloropropene	µg/m³	< 3.28	< 3.05	< 3.83	< 3.37	< 3.14	< 4.11	< 3.33	< 3.19	< 3.83	< 3.05	< 3.19	< 3.19
Dichlorodifluoromethane	µg/m³	**4.78**	< 3.47	< 4.33	< 3.83	< 3.52	< 4.68	< 3.83	< 3.63	< 4.33	< 3.47	< 3.63	< 3.63
Dichlorotetrafluoroethane	µg/m³	< 5.98	< 5.62	< 7.05	< 6.19	< 5.7	< 7.83	< 6.12	< 5.84	< 7.05	< 5.62	< 5.84	< 5.84
Ethylbenzene	µg/m³	< 2.73	< 2.56	**5.74**	**3.22**	**3.18**	< 3.44	< 2.78	**3.62**	**10.6**	< 2.56	< 2.65	**16.78**
Hexachloro-1,3-butadiene	µg/m³	< 2.06	< 1.95	< 2.39	< 2.17	< 1.95	< 2.61	< 2.17	< 2.06	< 2.39	< 1.95	< 2.06	< 2.06
m,p-Xylene	µg/m³	< 2.6	< 2.42	**15.9**	**11.04**	**11.04**	< 3.26	**11.04**	**9.71**	**32.68**	< 2.42	**8.39**	**53**
Methylene chloride	µg/m³	< 2.62	< 2.44	< 3.04	< 2.69	< 2.47	< 3.29	< 2.69	< 2.54	< 3.04	< 2.44	< 2.54	< 2.54
o-Xylene	µg/m³	< 2.47	< 2.29	**4.85**	**3.13**	**3.09**	< 3.13	< 2.51	**3.26**	**8.83**	< 2.29	< 2.38	**13.25**

Table 5-4
North Industrial Corridor (NIC) Site
Air Sample Analytical Results, VOCs by EPA Method TO-14

Compound	Units	AAQ-01 08/24/01	AAQ-02 08/24/01	AQ-01 09/18/01	AQ-02 08/24/01	AQ-02 08/24/01 DUP	AQ-03 08/23/01	AQ-04 09/18/01	AQ-05 09/18/01	AQ-07 09/18/01	AQ-08 09/18/01	AQ-09 08/23/01	AQ-10 09/18/01
Styrene	$\mu g/m^3$	< 2.55	< 2.38	< 2.99	< 2.64	< 2.42	< 3.2	< 2.59	**4.24**	< 2.99	< 2.38	< 2.46	< 2.46
Tetrachloroethene	$\mu g/m^3$	< 4.91	< 4.56	< 5.74	**9.68**	< 4.7	**15.21**	< 4.98	< 4.77	< 5.74	< 4.56	< 4.77	< 4.77
Toluene	$\mu g/m^3$	**2.79**	**3.83**	**42.16**	**9.96**	**6.9**	**6.9**	**11.5**	**21.85**	**18.39**	**8.05**	**13.8**	**7.66**
trans-1,3-Dichloropropene	$\mu g/m^3$	< 3.42	< 3.19	< 3.97	< 3.51	< 3.23	< 4.3	< 3.51	< 3.33	< 3.97	< 3.19	< 3.33	< 3.33
Trichloroethene	$\mu g/m^3$	< 3.32	< 3.11	< 3.87	< 3.43	< 3.16	< 4.14	< 3.38	< 3.22	< 3.87	< 3.11	< 3.22	< 3.22
Trichlorofluoromethane	$\mu g/m^3$	< 4.39	< 4.1	< 5.13	< 4.56	< 4.16	< 5.53	< 4.5	< 4.22	< 5.13	< 4.1	< 4.22	< 4.22
Vinyl chloride	$\mu g/m^3$	< 1.94	< 1.81	< 2.25	< 1.99	< 1.83	< 2.44	< 1.99	< 1.89	< 2.25	< 1.81	< 1.89	< 1.89

Bold text indicates results above analytical detection limits.
DUP = Field Duplicate

Table 5-5a
North Industrial Corridor (NIC) Site
Sludge Pit Soil Sample Analytical Results, VOCs by EPA Method 8260

Station	GP10C-01	GP10C-01	GP10C-02	GP10C-02	GP10C-03	GP10C-03	GP10D-01	GP10D-01	GP10D-02	GP10D-02	GP10D-03	GP10D-03	GP10D-04	GP10D-05
Sample Depth in Feet	**0.5**	**2-4**	**0.5**	**3-5**	**0.5**	**7.5-9.5**	**0.5**	**8-10**	**0.5**	**8.5-10.5**	**0.2**	**8.5-10.5**	**0.5**	**0.4**
Sample date	**1/18/01**	**1/18/01**	**1/18/01**	**1/19/01**	**1/20/01**	**1/19/01**	**1/19/01**	**1/19/01**	**1/18/01**	**1/18/01**	**1/22/01**	**1/22/01**	**1/22/01**	**1/22/01**
Compound	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
1,1,1-Trichloroethane	<6.1	<910	<5.8	<980	<660	<26	<6.1	<700	<6.2	<6.0	<5.0	<620	<620	<5.0
1,1,2,2-Tetrachloroethane	<6.1	<910	<5.8	<980	<660	<26	<6.1	<700	<6.2	<6.0	<5.0	<620	<620	<5.0
1,1,2-Trichloroethane	<6.1	<910	<5.8	<980	<660	<26	<6.1	<700	<6.2	<6.0	<5.0	<620	<620	<5.0
1,1-Dichloroethane	<6.1	<910	<5.8	<980	<660	<26	<6.1	<700	<6.2	<6.0	<5.0	<620	<620	<5.0
1,1-Dichloroethene	<6.1	<910	<5.8	<980	<660	<26	<6.1	<700	<6.2	<6.0	<5.0	<620	<620	<5.0
1,2-Dichlorobenzene	<6.1	<910	<5.8	<980	<660	<26	<6.1	<700	<6.2	<6.0	<5.0	<620	<620	<5.0
1,2-Dichloroethane	<6.1	<910	<5.8	<980	<660	<26	<6.1	<700	<6.2	<6.0	<5.0	<620	<620	<5.0
1,2-Dichloropropane	<6.1	<910	<5.8	<980	<660	<26	<6.1	<700	<6.2	<6.0	<5.0	<620	<620	<5.0
1,3-Dichlorobenzene	<6.1	<910	<5.8	<980	<660	<26	<6.1	<700	<6.2	<6.0	<5.0	<620	<620	<5.0
1,4-Dichlorobenzene	<6.1	<910	<5.8	<980	<660	<26	<6.1	<700	<6.2	<6.0	<5.0	<620	<620	<5.0
Benzene	<6.1	<910	<5.8	<980	<660	<26	<6.1	<700	<6.2	<6.0	<5.0	<620	<620	<5.0
Bromodichloromethane	<6.1	<910	<5.8	<980	<660	<26	<6.1	<700	<6.2	<6.0	<5.0	<620	<620	<5.0
Bromoform	<6.1	<910	<5.8	<980	<660	<26	<6.1	<700	<6.2	<6.0	<5.0	<620	<620	<5.0
Bromomethane	<6.1	<910	<5.8	<980	<660	<26	<6.1	<700	<6.2	<6.0	<5.0	<620	<620	<5.0
Carbon tetrachloride	<6.1	<910	<5.8	<980	<660	<26	<6.1	<700	<6.2	<6.0	<5.0	<620	<620	<5.0
Chlorobenzene	<6.1	<910	<5.8	<980	<660	<26	<6.1	<700	<6.2	<6.0	<5.0	<620	<620	<5.0
Chloroethane	<6.1	<910	<5.8	<980	<660	<26	<6.1	<700	<6.2	<6.0	<5.0	<620	<620	<5.0
Chloroform	<6.1	<910	<5.8	<980	<660	<26	<6.1	<700	<6.2	<6.0	<5.0	<620	<620	<5.0
Chloromethane	<6.1	<910	<5.8	<980	<660	<26	<6.1	<700	<6.2	<6.0	<5.0	<620	<620	<5.0
cis-1,2-Dichloroethene	<6.1	<910	<5.8	<980	<660	<26	<6.1	<700	<6.2	<6.0	<5.0	<620	<620	<5.0
cis-1,3-Dichloropropene	<6.1	<910	<5.8	<980	<660	<26	<6.1	<700	<6.2	<6.0	<5.0	<620	<620	<5.0
Dibromochloromethane	<6.1	<910	<5.8	<980	<660	<26	<6.1	<700	<6.2	<6.0	<5.0	<620	<620	<5.0
Ethylbenzene	<6.1	<910	<5.8	**5400**	<660	<26	<6.1	**1400**	<6.2	**24**	<5.0	<620	<620	<5.0
m,p-Xylene	<6.1	<910	<5.8	**19000**	<660	**63**	<6.1	**920**	<6.2	**23**	**13 UB**	**1100**	<620	<5.0
Methylene chloride	<6.1	<910	<5.8	<980	<660	<26	<6.1	<700	<6.2	<6.0	**5.5**	<620	<620	**5.6 UB**
o-Xylene	<6.1	<910	<5.8	**2900**	<660	<26	<6.1	<700	<6.2	**26**	<5.0	**640**	<620	<5.0
Tetrachloroethene	<6.1	<910	<5.8	<980	<660	<26	<6.1	<700	<6.2	<6.0	<5.0	<620	<620	<5.0
Toluene	<6.1	<910	<5.8	**1400**	<660	<26	<6.1	<700	<6.2	**17**	**8.3**	<620	<620	<5.0
trans-1,2-Dichloroethene	<6.1	<910	<5.8	<980	<660	<26	<6.1	<700	<6.2	<6.0	<5.0	<620	<620	<5.0
trans-1,3-Dichloropropene	<6.1	<910	<5.8	<980	<660	<26	<6.1	<700	<6.2	<6.0	<5.0	<620	<620	<5.0
Trichloroethene	<6.1	<910	<5.8	<980	<660	<26	<6.1	<700	<6.2	<6.0	<5.0	<620	<620	<5.0
Trichlorofluoromethane	<6.1	<910	<5.8	<980	<660	<26	<6.1	<700	**7.2**	<6.0	<5.0	<620	<620	<5.0
Vinyl chloride	<6.1	<910	<5.8	<980	<660	<26	<6.1	<700	<6.2	<6.0	<5.0	<620	<620	<5.0

Bold text indicates results above analytical detection limits.
UB = Not detected; contained in method blank.

CDM

Table 5-5b
North Industrial Corridor (NIC) Site
Sludge Pit Soil Sample Analytical Results, SVOCs by EPA Method 8270

Station	GP10C-01	GP10C-01	GP10C-01	GP10C-02	GP10C-02	GP10C-03	GP10C-03	GP10C-03	GP10C-03	GP10D-01	GP10D-01	GP10D-01	GP10D-02	GP10D-02	GP10D-03	GP10D-03	GP10D-04	GP10D-05
Sample Depth in Feet	**0.5**	**11-13**	**15-17**	**0.5**	**3-5**	**0.5**	**2.5-4.5**	**7.5-9.5**	**12-14**	**0.5**	**8-10**	**13-15**	**0.5**	**8.5-10.5**	**0.2**	**8-10**	**0.5**	**0.4**
Sample date	**1/18/01**	**1/18/01**	**1/18/01**	**1/18/01**	**1/19/01**	**1/20/01**	**1/19/01**	**1/19/01**	**1/19/01**	**1/19/01**	**1/19/01**	**1/19/01**	**1/18/01**	**1/18/01**	**1/22/01**	**1/22/01**	**1/22/01**	**1/22/01**
Compound	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
1,2,4-Trichlorobenzene	<400	<410	<3800	<3800	<5200	<1400	<4500	<3400	<3800	<400	<3400	<3700	<4100	<380	<3300	<3300	<6600	<3300
1,2-Dichlorobenzene	<400	<410	<3800	<3800	<5200	<1400	<4500	<3400	<3800	<400	<3400	<3700	<4100	<380	<3300	<3300	<6600	<3300
1,3-Dichlorobenzene	<400	<410	<3800	<3800	<5200	<1400	<4500	<3400	<3800	<400	<3400	<3700	<4100	<380	<3300	<3300	<6600	<3300
1,4-Dichlorobenzene	<400	<410	<3800	<3800	<5200	<1400	<4500	<3400	<3800	<400	<3400	<3700	<4100	<380	<3300	<3300	<6600	<3300
2,4,5-Trichlorophenol	<400	<410	<3800	<3800	<5200	<1400	<4500	<3400	<3800	<400	<3400	<3700	<4100	<380	<3300	<3300	<6600	<3300
2,4,6-Trichlorophenol	<400	<410	<3800	<3800	<5200	<1400	<4500	<3400	<3800	<400	<3400	<3700	<4100	<380	<3300	<3300	<6600	<3300
2,4-Dichlorophenol	<400	<410	<3800	<3800	<5200	<1400	<4500	<3400	<3800	<400	<3400	<3700	<4100	<380	<3300	<3300	<6600	<3300
2,4-Dimethylphenol	<400	<410	<3800	<3800	<5200	<1400	<4500	<3400	<3800	<400	<3400	<3700	<4100	<380	<3300	<3300	<6600	<3300
2,4-Dinitrophenol	<1900	<2000	<18000	<18000	<25000	<6700	<22000	<16000	<19000	<1900	<16000	<18000	<20000	<1800	<16000	<16000	<32000	<16000
2,4-Dinitrotoluene	<400	<410	<3800	<3800	<5200	<1400	<4500	<3400	<3800	<400	<3400	<3700	<4100	<380	<3300	<3300	<6600	<3300
2,6-Dinitrotoluene	<400	<410	<3800	<3800	<5200	<1400	<4500	<3400	<3800	<400	<3400	<3700	<4100	<380	<3300	<3300	<6600	<3300
2-Chloronaphthalene	<400	<410	<3800	<3800	<5200	<1400	<4500	<3400	<3800	<400	<3400	<3700	<4100	<380	<3300	<3300	<6600	<3300
2-Chlorophenol	<400	<410	<3800	<3800	<5200	<1400	<4500	<3400	<3800	<400	<3400	<3700	<4100	<380	<3300	<3300	<6600	<3300
2-Methylnaphthalene	<400	<410	**3100**	<3800	**7900**	<1400	<4500	<3400	<3800	<400	**14000**	**5800**	<4100	**1500**	<3300	<3300	**25000**	<3300
2-Methylphenol	<400	<410	<3800	<3800	<5200	<1400	<4500	<3400	<3800	<400	<3400	<3700	<4100	<380	<3300	<3300	<6600	<3300
2-Nitroaniline	<1900	<2000	<18000	<18000	<25000	<6700	<22000	<16000	<19000	<1900	<16000	<18000	<20000	<1800	<16000	<16000	<32000	<16000
2-Nitrophenol	<400	<410	<3800	<3800	<5200	<1400	<4500	<3400	<3800	<400	<3400	<3700	<4100	<380	<3300	<3300	<6600	<3300
3,3'-Dichlorobenzidine	<800	<830	<7600	<7600	<10000	<2800	<9000	<6700	<7700	<800	<6800	<7400	<8200	<760	<6600	<6600	<13000	<6600
3-Nitroaniline	<1900	<2000	<18000	<18000	<25000	<6700	<22000	<16000	<19000	<1900	<16000	<18000	<20000	<1800	<16000	<16000	<32000	<16000
4,6-Dinitro-2-methylphenol	<1900	<2000	<18000	<18000	<25000	<6700	<22000	<16000	<19000	<1900	<16000	<18000	<20000	<1800	<16000	<16000	<32000	<16000
4-Bromophenylphenyl ether	<400	<410	<3800	<3800	<5200	<1400	<4500	<3400	<3800	<400	<3400	<3700	<4100	<380	<3300	<3300	<6600	<3300
4-Chloro-3-methylphenol	<800	<830	<7600	<7600	<10000	<2800	<9000	<6700	<7700	<800	<6800	<7400	<8200	<760	<6600	<6600	<13000	<6600
4-Chloroaniline	<800	<830	<7600	<7600	<10000	<2800	<9000	<6700	<7700	<800	<6800	<7400	<8200	<760	<6600	<6600	<13000	<6600
4-Chlorophenylphenyl ether	<400	<410	<3800	<3800	<5200	<1400	<4500	<3400	<3800	<400	<3400	<3700	<4100	<380	<3300	<3300	<6600	<3300
4-Methylphenol	<400	<410	<3800	<3800	<5200	<1400	<4500	<3400	<3800	<400	<3400	<3700	<4100	<380	<3300	<3300	<6600	<3300
4-Nitroaniline	<1900	<2000	<18000	<18000	<25000	<6700	<22000	<16000	<19000	<1900	<16000	<18000	<20000	<1800	<16000	<16000	<32000	<16000
4-Nitrophenol	<1900	<2000	<18000	<18000	<25000	<6700	<22000	<16000	<19000	<1900	<16000	<18000	<20000	<1800	<16000	<16000	<32000	<16000
Acenaphthene	<400	<410	<3800	<3800	<5200	<1400	<4500	<3400	<3800	<400	<3400	<3700	<4100	<380	<3300	<3300	<6600	<3300
Acenaphthylene	<400	<410	<3800	<3800	<5200	<1400	<4500	<3400	<3800	<400	<3400	<3700	<4100	<380	<3300	<3300	<6600	<3300
Anthracene	<400	<410	<3800	<3800	**2800 J**	<1400	<4500	<3400	<3800	<400	<3400	<3700	<4100	<380	<3300	<3300	**3300 J**	<3300
Benzo(a)anthracene	<400	<410	<3800	**1800**	<5200	<1400	<4500	<3400	<3800	<400	<3400	<3700	<4100	**380**	<3300	**1400 J**	<6600	<3300
Benzo(a)pyrene	<400	<410	<3800	**1600**	<5200	<1400	<4500	<3400	<3800	<400	<3400	<3700	<4100	<380	<3300	<3300	<6600	<3300
Benzo(b)fluoranthene	<400	<410	<3800	**3000**	<5200	<1400	<4500	<3400	<3800	<400	<3400	<3700	<4100	<380	<3300	<3300	<6600	<3300
Benzo(g,h,i)perylene	<400	<410	<3800	**2100**	<5200	<1400	<4500	<3400	<3800	<400	<3400	<3700	<4100	<380	<3300	<3300	<6600	<3300
Benzo(k)fluoranthene	<400	<410	<3800	**970**	<5200	<1400	<4500	<3400	<3800	<400	<3400	<3700	<4100	<380	<3300	<3300	<6600	<3300
Benzoic acid	<1900	<2000	<18000	<18000	<25000	<6700	<22000	<16000	<19000	<1900	<16000	<18000	<20000	<1800	<16000	<16000	<32000	<16000
Benzyl alcohol	<800	<830	<7600	<7600	<10000	<2800	<9000	<6700	<7700	<800	<6800	<7400	<8200	<760	<6600	<6600	<13000	<6600
bis(2-Chloroethoxy)methane	<400	<410	<3800	<3800	<5200	<1400	<4500	<3400	<3800	<400	<3400	<3700	<4100	<380	<3300	<3300	<6600	<3300
bis(2-Chloroethyl) ether	<400	<410	<3800	<3800	<5200	<1400	<4500	<3400	<3800	<400	<3400	<3700	<4100	<380	<3300	<3300	<6600	<3300
bis(2-Chloroisopropyl) ether	<400	<410	<3800	<3800	<5200	<1400	<4500	<3400	<3800	<400	<3400	<3700	<4100	<380	<3300	<3300	<6600	<3300
bis(2-Ethylhexyl)phthalate	<400	<410	<3800	<3800	<5200	<1400	<4500	<3400	<3800	<400	<3400	<3700	**35000 J**	<380	<3300	**2400 J**	<6600	**1800 J**
Butylbenzylphthalate	<400	<410	<3800	<3800	<5200	<1400	<4500	<3400	<3800	<400	<3400	<3700	**7500**	<380	<3300	<3300	<6600	**3900**
Chrysene	<400	<410	<3800	**2200**	**4500 J**	**900**	**3300 J**	<3400	<3800	<400	<3400	<3700	<4100	**860**	<3300	**2400 J**	**4000 J**	<3300
Di-n-butylphthalate	<400	<410	<3800	<3800	<5200	<1400	<4500	<3400	<3800	<400	<3400	<3700	<4100	<380	<3300	<3300	<6600	<3300
Di-n-octylphthalate	<400	<410	<3800	<3800	<5200	<1400	<4500	<3400	<3800	<400	<3400	<3700	<4100	<380	<3300	<3300	<6600	<3300

Table 5-5b
North Industrial Corridor (NIC) Site
Sludge Pit Soil Sample Analytical Results, SVOCs by EPA Method 8270

Station	GP10C-01	GP10C-01	GP10C-01	GP10C-02	GP10C-02	GP10C-03	GP10C-03	GP10C-03	GP10C-03	GP10D-01	GP10D-01	GP10D-01	GP10D-02	GP10D-02	GP10D-03	GP10D-03	GP10D-04	GP10D-05
Sample Depth in Feet	**0.5**	**11-13**	**15-17**	**0.5**	**3-5**	**0.5**	**2.5-4.5**	**7.5-9.5**	**12-14**	**0.5**	**8-10**	**13-15**	**0.5**	**8.5-10.5**	**0.2**	**8-10**	**0.5**	**0.4**
Sample date	**1/18/01**	**1/18/01**	**1/18/01**	**1/18/01**	**1/19/01**	**1/20/01**	**1/19/01**	**1/19/01**	**1/19/01**	**1/19/01**	**1/19/01**	**1/19/01**	**1/18/01**	**1/18/01**	**1/22/01**	**1/22/01**	**1/22/01**	**1/22/01**
Compound	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
Dibenz(a,h)anthracene	<400	<410	<3800	<3800	<5200	<1400	<4500	<3400	<3800	<400	<3400	<3700	<4100	<380	<3300	<3300	<6600	<3300
Dibenzofuran	<400	<410	<3800	<3800	<5200	<1400	<4500	<3400	<3800	<400	<3400	<3700	<4100	<380	<3300	<3300	<6600	<3300
Diethylphthalate	<400	<410	<3800	<3800	<5200	<1400	<4500	<3400	<3800	<400	<3400	<3700	<4100	<380	<3300	<3300	<6600	<3300
Dimethylphthalate	<400	<410	<3800	<3800	<5200	<1400	<4500	<3400	<3800	<400	<3400	<3700	<4100	<380	<3300	<3300	<6600	<3300
Fluoranthene	<400	<410	<3800	**2100**	<5200	<1400	<4500	<3400	<3800	<400	<3400	<3700	<4100	<380	<3300	<3300	<6600	<3300
Fluorene	<400	<410	<3800	<3800	<5200	<1400	<4500	<3400	<3800	<400	<3400	<3700	<4100	**390**	<3300	<3300	<6600	<3300
Hexachloro-1,3-butadiene	<400	<410	<3800	<3800	<5200	<1400	<4500	<3400	<3800	<400	<3400	<3700	<4100	<380	<3300	<3300	<6600	<3300
Hexachlorobenzene	<400	<410	<3800	<3800	<5200	<1400	<4500	<3400	<3800	<400	<3400	<3700	<4100	<380	<3300	<3300	<6600	<3300
Hexachlorocyclopentadiene	<400	<410	<3800	<3800	<5200	<1400	<4500	<3400	<3800	<400	<3400	<3700	<4100	<380	<3300	<3300	<6600	<3300
Hexachloroethane	<400	<410	<3800	<3800	<5200	<1400	<4500	<3400	<3800	<400	<3400	<3700	<4100	<380	<3300	<3300	<6600	<3300
Indeno(1,2,3-cd)pyrene	<400	<410	<3800	**1300**	<5200	<1400	<4500	<3400	<3800	<400	<3400	<3700	<4100	<380	<3300	<3300	<6600	<3300
Isophorone	<400	<410	<3800	<3800	<5200	<1400	<4500	<3400	<3800	<400	<3400	<3700	<4100	<380	<3300	<3300	<6600	<3300
N-Nitroso-di-n-propylamine	<400	<410	<3800	<3800	<5200	<1400	<4500	<3400	<3800	<400	<3400	<3700	<4100	<380	<3300	<3300	<6600	<3300
N-Nitrosodiphenylamine	<400	<410	<3800	<3800	<5200	<1400	<4500	<3400	<3800	<400	<3400	<3700	<4100	<380	<3300	<3300	<6600	<3300
Naphthalene	<400	<410	<3800	<3800	<5200	<1400	<4500	<3400	<3800	<400	**5100**	**1700 J**	<4100	<380	<3300	<3300	**7100**	<3300
Nitrobenzene	<400	<410	<3800	<3800	<5200	<1400	<4500	<3400	<3800	<400	<3400	<3700	<4100	<380	<3300	<3300	<6600	<3300
Pentachlorophenol	<1900	<2000	<18000	<18000	<25000	<6700	<22000	<16000	<19000	<1900	<16000	<18000	<20000	<1800	<16000	<16000	<32000	<16000
Phenanthrene	<400	**1100**	**5000**	<3800	**14000**	**1800**	**11000**	**6200**	<3800	<400	**3500**	**1600 J**	<4100	**2100**	<3300	**2900 J**	**16000**	<3300
Phenol	<400	<410	<3800	<3800	<5200	<1400	<4500	<3400	<3800	<400	<3400	<3700	<4100	<380	<3300	<3300	<6600	<3300
Pyrene	<400	**520**	<3800	**3200**	**10000**	**1600**	**4200 J**	**1900 J**	<3800	<400	<3400	<3700	<4100	**1300**	<3300	**1700 J**	**13000**	<3300

Bold text indicates results above analytical detection limits.
J = Result estimated, value measured between the reporting limit and the detection limit

Table 5-5c
North Industrial Corridor (NIC) Site
Sludge Pit Soil Sample Analytical Results, Pesticides/PCBs by EPA Method 8080

Station	GP10C-01	GP10C-01	GP10C-02	GP10C-03	GP10C-02	GP10C-03	GP10D-01	GP10D-01	GP10D-02	GP10D-02	GP10D-03	GP10D-03	GP10D-04	GP10D-05
Sample Depth in Feet	**0.5**	**11-13**	**0.5**	**0.5**	**3-5**	**7.5-9.5**	**0.5**	**8-10**	**0.5**	**8.5-10.5**	**0.2**	**8-10**	**0.5**	**0.4**
Sample date	**1/18/01**	**1/18/01**	**1/18/01**	**1/20/01**	**1/19/01**	**1/19/01**	**1/19/01**	**1/19/01**	**1/18/01**	**1/18/01**	**1/22/01**	**1/22/01**	**1/22/01**	**1/22/01**
Compound	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
4,4'-DDD	<4.0	<42	<3.9	<35.	<52	<33	<4.1	<340	<4.2	<390	<3.3	<97	<910	<3.3
4,4'-DDE	<1.6	<17	<1.5	<14	<20	<13	<1.6	<130	<1.6	<150	<1.3	<38	<360	<1.3
4,4'-DDT	<4.7	<50	<4.6	<41	<61	<39	<4.8	<400	<4.9	<450	<3.9	<110	<1100	<3.9
Aldrin	<1.6	<17	<1.5	<14	<20	<13	<1.6	<130	<1.6	<150	<1.3	<38	<360	<1.3
alpha-BHC	<1.2	<12	<1.1	<10	<15	<9.9	<1.2	<100	<1.2	<110	<0.98	<29	<270	<0.97
alpha-Chlordane	<2.0	<21	<2.0	<18	<26.	<17	<2.1	<170	<2.1	<200	<1.7	<49	<460	<1.7
beta-BHC	<2.4	<25	<2.3	<21	<31	<20	<2.4	<200	<2.4	<230	<2.0	<57	<540	<1.9
Chlordane (Technical)	<5.5	<58	<5.3	<48	<72	<46	<5.6	<470	<5.7	<530	<4.6	<130	<1200	<4.5
delta-BHC	<3.5	<37	<3.4	<31	<46	<30	<3.6	<300	<3.7	<340	<2.9	<86.	<800	<2.9
Dieldrin	<0.78	<8.3	<0.76	<6.9	<10	<6.6	<0.80	<67	<0.82	<76	<0.65	<19	<180	<0.65
Endosulfan I	<5.5	<58	<5.3	<48	<72	<46	<5.6	<470	<5.7	<530	<4.6	<130	<1200	<4.5
Endosulfan II	<1.6	<17	<1.5	<14	<20	<13	<1.6	<130	<1.6	<150	<1.3	<38	<360	<1.3
Endosulfan sulfate	<26.	<270	<25	<230	<340	<220	<26.	<2200	<27	<2500	<22	<630	<5900	<21
Endrin	<2.4	<25	<2.3	<21	<31	<20	<2.4	<200	<2.4	<230	<2.0	<57	<540	<1.9
Endrin aldehyde	<9.0	<95	<8.8	<79	<120	<76	<9.2	<770	<9.4	<870	<7.5	<220	<2100	<7.4
Endrin ketone	<3.9	<41	<3.8	<34	<51	<33	<4.0	<340	<4.1	<380	<3.3	<95	<890	<3.2
gamma-BHC	<1.6	<17	<1.5	<14	<20	<13	<1.6	<130	<1.6	<150	<1.3	<38	<360	<1.3
gamma-Chlordane	<2.0	<21	<2.0	<18	<26.	<17	<2.1	<170	<2.1	<200	<1.7	<49	<460	<1.7
Heptachlor	<1.2	<12	<1.1	<10	<15	<9.9	<1.2	<100	<1.2	<110	<0.98	<29	<270	<0.97
Heptachlor epoxide	<3.9	<41	<3.8	<34	<51	<33	<4.0	<340	<4.1	<380	<3.3	<95	<890	<3.2
Methoxychlor	<69	<730	<67	<600	<900	<580	<70	<5900	<72	<6700	<58	<1700	<16000	<57
Toxaphene	<94	<990	<91	<820	<1200	<790	<96	<8000	<98	<9100	<78	<2300	<21000	<78
PCB-1016	<39	<410	<38	<34	<510	<33	<40	<34	<41	<380	<33	<950	<890	<32
PCB-1221	<39	<410	<38	<34	<510	<33	<40	<34	<41	<380	<33	<950	<890	<32
PCB-1232	<39	<410	<38	<34	<510	<33	<40	<34	<41	<380	<33	<950	<890	<32
PCB-1242	<39	<410	<38	<34	<510	<33	<40	<34	<41	<380	<33	<950	<890	<32
PCB-1248	<39	<410	<38	<34	<510	<33	**110**	<34	**7800**	<380	**170**	<950	**6100**	**1100**
PCB-1254	<39	<410	<38	<34	<51	<33	<40	<34	<41	<38	<33	<950	<890	<32
PCB-1260	**410**	**3300**	**1500**	<34	**440**	<33	<40	<34	**1800**	<38	45	<950	**390 J**	**500**

Bold text indicates results above analytical detection limits.
J = Result estimated, value mesured between the reporting limit and the detection limit

Table 5-5d
North Industrial Corridor (NIC) Site
Sludge Pit Soil Sample Analytical Results, Total Petroleum Hydrocarbons (TPH)

Station	GP10C-01	GP10C-01	GP10C-01	GP10C-01	GP10C-02	GP10C-02	GP10C-03	GP10C-03	GP10C-03	GP10C-03
Sample Depth in Feet	**0.5**	**2-4**	**11-13**	**15-17**	**0.5**	**3-5**	**0.5**	**2.5-4.5**	**7.5-9.5**	**12-14**
Sample date	**1/18/01**	**1/18/01**	**1/18/01**	**1/18/01**	**1/18/01**	**1/19/01**	**1/20/01**	**1/19/01**	**1/19/01**	**1/19/01**
Compound	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Fuel Oil	<11	--	<60	<100	<10	<1400	<92	<650	<89	<51
Jet Fuel	<11	--	<60	<100	<10	<1400	<92	<650	<89	<51
Kerosene	<11	--	<60	<100	<10	<1400	<92	<650	<89	<51
Mineral Spirits	<11	--	<60	<100	<10	<1400	<92	<650	<89	<51
Motor Oil	<11	--	<60	<100	**2700**	<1400	<92	<650	<89	<51
TPH as Diesel	<11	--	**6100**	**35000**	<10	**68000**	**25000**	**50000**	**11000**	**3800**
TPH as Gasoline	<6.1	**50**	--	**530**	<5.7	**870**	**48**	--	**14**	**21**

Station	GP10D-01	GP10D-01	GP10D-01	GP10D-02	GP10D-02	GP10D-03	GP10D-03	GP10D-04	GP10D-05
Sample Depth in Feet	**0.5**	**8-10**	**13-15**	**0.5**	**8.5-10.5**	**0.2**	**8-10**	**0.5**	**0.4**
Sample date	**1/19/01**	**1/19/01**	**1/19/01**	**1/18/01**	**1/18/01**	**1/22/01**	**1/22/01**	**1/22/01**	**1/22/01**
Compound	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Fuel Oil	<11	<45	<48	<52	<100	<8.6	<950	<2300	<9.1
Jet Fuel	<11	<45	<48	<52	<100	<8.6	<950	<2300	<9.1
Kerosene	<11	<45	<48	<52	<100	<8.6	<950	<2300	<9.1
Mineral Spirits	<11	<45	<48	<52	<100	<8.6	<950	<2300	<9.1
Motor Oil	<11	<45	<48	**5200**	<100	**1700**	<950	<2300	**720**
TPH as Diesel	<11	**7700**	**4900**	<52	**11000**	<8.6	**70000**	**85000**	<9.1
TPH as Gasoline	<6	**790**	**230**	<6.2	**88**	<5	**340**	**370**	<5

Bold text indicates results above analytical detection limits.

Table 5-5e
North Industrial Corridor (NIC) Site
Sludge Pit Soil Sample Analytical Results, Metals

Station	GP10C-01	GP10C-01	GP10C-02	GP10C-02	GP10C-03	GP10C-03	GP10D-01	GP10D-01	GP10D-02	GP10D-02	GP10D-03	GP10D-03	GP10D-04	GP10D-05
Sample Depth in Feet	0.5	11-13	0.5	3-5	0.5	7.5-9.5	0.5	8-10	0.5	8.5-10.5	0.2	8-10	0.5	0.4
Sample date	1/18/01	1/18/01	1/18/01	1/19/01	1/20/01	1/19/01	1/19/01	1/19/01	1/18/01	1/18/01	1/22/01	1/22/01	1/22/01	1/22/01
Compound	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Aluminum	**15800**	**5280**	**6870**	**12500**	**3280**	**982**	**12600**	**1180**	**52800**	**10800**	**4990**	**8440**	**352**	**8070**
Antimony	<1.15	**5.93**	<1.15	<1.48	<0.991	<1.00	<1.14	<0.998	**15.7**	<1.15	**1.51**	**21.7**	<0.971	**1.75**
Arsenic	**3.14**	**3.53**	**3.76**	<0.740	<0.495	<0.501	**3.12**	<0.499	**3.43**	**1.85**	**1.97**	**7.85**	**0.982**	**3.21**
Barium	**130**	**232**	**115**	**102**	**57.9**	**17.2**	**157**	**19.9**	**786**	**93.2**	**86.8**	**812**	**6.71**	**261**
Beryllium	**0.675**	**0.182**	**0.328**	**0.599**	**0.207**	<0.100	**0.713**	<0.0998	**0.317**	**0.432**	**0.441**	**0.293**	<0.0971	**0.462**
Cadmium	**0.845**	**1.82**	**1.74**	<0.740	<0.495	<0.501	**1.07**	<0.499	**15.3**	<0.575	**10.1**	**12.2**	<0.485	**5.3**
Calcium	**52700**	**12300**	**86300**	**5920**	**11800**	**649**	**17200**	**535**	**40600**	**3450**	**30400**	**22800**	**11800**	**12200**
Chromium	**20.9**	**19.7**	**28.7**	**13.6**	**4.02**	**1.38**	**14.8**	**1.71**	**93.7**	**10.1**	**11.4**	**89.6**	**1.9**	**22.8**
Cobalt	**6.26**	**4.85**	**4.14**	**6.86**	**2.54**	**1.2**	**7.69**	**1.33**	**11**	**4.97**	**4.03**	**13.9**	<0.680	**6.45**
Copper	**18.6**	**47.7**	**31.5**	**18.5**	**6.41**	**1.8**	**27**	**2.42**	**2570**	**170**	**93.9**	**477**	**22**	**75.8**
Iron	**15000**	**19600**	**13900**	**18800**	**4730**	**2240**	**15800**	**3120**	**35300**	**11500**	**9910**	**52900**	**1710**	**19100**
Lead	**38.2**	**685**	**210**	**973**	**14.7**	**3.43**	**54.1**	**2.48**	**1170**	**1380**	**195**	**1590**	**110**	**304**
Magnesium	**11300**	**1820**	**34600**	**3170**	**1150**	**332**	**3890**	**394**	**6320**	**2760**	**4870**	**2670**	**167**	**2410**
Manganese	**277**	**353**	**366**	**157**	**126**	**81.1**	**409**	**48.5**	**660**	**130**	**178**	**527**	**18.9**	**225**
Mercury	<0.188	<0.193	**0.391**	<0.241	<0.162	<0.157	<0.187	<0.158	**1.84**	<0.177	**0.322**	**0.289**	<0.154	**0.354**
Nickel	**15.4**	**8.9**	**11**	**14.3**	**5.2**	<3.01	**16.7**	<2.99	**187**	**10.6**	**16.9**	**146**	<2.91	**64.1**
Potassium	**3590**	**937**	**1600**	**2030**	**684**	**187**	**2580**	**214**	**1580**	**1690**	**1390**	**1220**	<97.1	**1330**
Selenium	<0.575	**4.44**	<0.577	**2.87**	**0.5**	<0.501	**2.24**	<0.499	**6.24**	**1.1**	<0.495	**9.22**	**1.56**	**3.13**
Silver	<0.805	**1.36**	<0.808	<1.04	<0.694	<0.702	<0.801	<0.698	**2.96**	<0.805	<0.693	**1.23**	<0.680	<0.648
Sodium	**202**	**230**	**208**	**425**	**137**	**167**	**90.6**	**259**	**511**	**171**	**525**	**1410**	**3250**	**202**
Thallium	<1.84	<1.88	<1.85	<2.37	<1.59	<1.60	<1.83	<1.60	**3.53**	<1.84	<1.58	**2.18**	<1.55	<1.48
Vanadium	**28.3**	**10.9**	**18**	**27.4**	**10.4**	**4.2**	**30.2**	**5.97**	**23.9**	**24.4**	**16**	**17.1**	**5.03**	**21.2**
Zinc	**85.7**	**836**	**165**	**44.3**	**25.8**	**10.5**	**155**	**8.71**	**4970**	**34.3**	**1790**	**3040**	**61.3**	**701**

Bold text indicates results above analytical detection limits.

CDM

Table 5-6a
North Industrial Corridor (NIC) Site
Sludge Pit Groundwater Sample Analytical Results, VOCs by EPA Method 8260

Station	GP10C-01	GP10C-02	GP10C-03	GP10D-01	GP10D-02	GP10D-03
Groundwater Depth Zone / Sample Depth in Feet	S/18	S/18	S/16	S/16	S/16	S/18
Sample date	01/18/01	01/18/01	01/18/01	01/19/01	01/18/01	01/22/01
Compound	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)
1,1,1-Trichloroethane	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,2,2-Tetrachloroethane	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,2-Trichloroethane	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1-Dichloroethane	**1.8**	<1.0	<1.0	<1.0	<1.0	<1.0
1,1-Dichloroethene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-Dichlorobenzene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-Dichloroethane	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-Dichloropropane	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,3-Dichlorobenzene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,4-Dichlorobenzene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Benzene	**17**	**11**	<1.0	**8.7**	**13**	**3**
Bromodichloromethane	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Bromoform	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Bromomethane	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Carbon tetrachloride	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Chlorobenzene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Chloroethane	**12**	**2.1**	<1.0	<1.0	<1.0	<1.0
Chloroform	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Chloromethane	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
cis-1,2-Dichloroethene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
cis-1,3-Dichloropropene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Dibromochloromethane	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Ethylbenzene	<1.0	**2.4**	<1.0	**5.9**	<1.0	<1.0
m,p-Xylene	<1.3	**7.4**	<1.3	**8.2**	<1.3	<1.3
Methylene chloride	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
o-Xylene	<1.1	**2.4**	<1.1	**5.8**	**1.8**	<1.1
Tetrachloroethene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Toluene	<1.0	**1.4**	<1.0	**3.5**	<1.0	**2.7**
trans-1,2-Dichloroethene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
trans-1,3-Dichloropropene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Trichloroethene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Trichlorofluoromethane	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Vinyl chloride	<1.0	<1.0	<1.0	<1.0	<1.0	**1.4**

Bold text indicates results above analytical detection limits.

Table 5-6b
North Industrial Corridor (NIC) Site
Sludge Pit Groundwater Sample Analytical Results, SVOCs by EPA Method 8270

Station	GP10C-01	GP10C-02	GP10C-03	GP10D-01	GP10D-02	GP10D-03
Groundwater Depth Zone / Sample Depth in Feet	S/18	S/18	S/16	S/16	S/16	S/18
Sample date	01/18/01	01/18/01	01/18/01	01/19/01	01/18/01	01/22/01
Compound	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)
1,2,4-Trichlorobenzene	<11	<110	<12	<110	<11	<11
1,2-Dichlorobenzene	<11	<110	<12	<110	<11	<11
1,3-Dichlorobenzene	<11	<110	<12	<110	<11	<11
1,4-Dichlorobenzene	<11	<110	<12	<110	<11	<11
2,4,5-Trichlorophenol	<53	<570	<58	<540	<53	<57
2,4,6-Trichlorophenol	<11	<110	<12	<110	<11	<11
2,4-Dichlorophenol	<11	<110	<12	<110	<11	<11
2,4-Dimethylphenol	<11	<110	<12	<110	<11	<11
2,4-Dinitrophenol	<53	<570	<58	<540	<53	<57
2,4-Dinitrotoluene	<11	<110	<12	<110	<11	<11
2,6-Dinitrotoluene	<11	<110	<12	<110	<11	<11
2-Chloronaphthalene	<11	<110	<12	<110	<11	<11
2-Chlorophenol	<11	<110	<12	<110	<11	<11
2-Methylnaphthalene	**26**	<110	<12	**150**	<11	<11
2-Methylphenol	<11	<110	<12	<110	<11	<11
2-Nitroaniline	<53	<570	<58	<540	<53	<57
2-Nitrophenol	<11	<110	<12	<110	<11	<11
3,3'-Dichlorobenzidine	<21	<230	<23	<220	<21	<23
3-Nitroaniline	<53	<570	<58	<540	<53	<57
4,6-Dinitro-2-methylphenol	<53	<570	<58	<540	<53	<57
4-Bromophenylphenyl ether	<11	<110	<12	<110	<11	<11
4-Chloro-3-methylphenol	<21	<230	<23	<220	<21	<23
4-Chloroaniline	<21	<230	<23	<220	<21	<23
4-Chlorophenylphenyl ether	<11	<110	<12	<110	<11	<11
4-Methylphenol	<11	<110	<12	<110	<11	<11
4-Nitroaniline	<53	<570	<58	<540	<53	<57
4-Nitrophenol	<53	<570	<58	<540	<53	<57
Acenaphthene	<11	<110	<12	<110	<11	<11
Acenaphthylene	<11	<110	<12	<110	<11	<11
Anthracene	<11	<110	<12	<110	<11	<11
Benzo(a)anthracene	<11	<110	<12	<110	<11	<11
Benzo(a)pyrene	<11	<110	<12	<110	<11	<11
Benzo(b)fluoranthene	<11	<110	<12	<110	<11	<11
Benzo(g,h,i)perylene	<11	<110	<12	<110	<11	<11
Benzo(k)fluoranthene	<11	<110	<12	<110	<11	<11
Benzoic acid	<53	<570	<58	<540	<53	<57
Benzyl alcohol	<21	<230	<23	<220	<21	<23

Table 5-6b
North Industrial Corridor (NIC) Site
Sludge Pit Groundwater Sample Analytical Results, SVOCs by EPA Method 8270

Station	GP10C-01	GP10C-02	GP10C-03	GP10D-01	GP10D-02	GP10D-03
Groundwater Depth Zone / Sample Depth in Feet	S/18	S/18	S/16	S/16	S/16	S/18
Sample date	01/18/01	01/18/01	01/18/01	01/19/01	01/18/01	01/22/01
Compound	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)
bis(2-Chloroethoxy)methane	<11	<110	<12	<110	<11	<11
bis(2-Chloroethyl) ether	<11	<110	<12	<110	<11	<11
bis(2-Chloroisopropyl) ether	<11	<110	<12	<110	<11	<11
bis(2-Ethylhexyl)phthalate	<11	<110	<12	<110	<11	<11
Butylbenzylphthalate	<11	<110	<12	<110	<11	<11
Chrysene	**11**	<110	<12	<110	<11	<11
Di-n-butylphthalate	<11	<110	<12	<110	<11	<11
Di-n-octylphthalate	<11	<110	<12	<110	<11	<11
Dibenz(a,h)anthracene	<11	<110	<12	<110	<11	<11
Dibenzofuran	<11	<110	<12	<110	<11	<11
Diethylphthalate	<11	<110	<12	<110	<11	<11
Dimethylphthalate	<11	<110	<12	<110	<11	<11
Fluoranthene	<11	<110	<12	<110	<11	<11
Fluorene	<11	<110	<12	<110	<11	<11
Hexachloro-1,3-butadiene	<11	<110	<12	<110	<11	<11
Hexachlorobenzene	<11	<110	<12	<110	<11	<11
Hexachlorocyclopentadiene	<11	<110	<12	<110	<11	<11
Hexachloroethane	<11	<110	<12	<110	<11	<11
Indeno(1,2,3-cd)pyrene	<11	<110	<12	<110	<11	<11
Isophorone	<11	<110	<12	<110	<11	<11
N-Nitroso-di-n-propylamine	<11	<110	<12	<110	<11	<11
N-Nitrosodiphenylamine	<11	<110	<12	<110	<11	<11
Naphthalene	<11	<110	<12	**150**	<11	<11
Nitrobenzene	<11	<110	<12	<110	<11	<11
Pentachlorophenol	<53	<570	<58	<540	<53	<57
Phenanthrene	**33**	<110	<12	<110	<11	<11
Phenol	<11	<110	<12	<110	<11	<11
Pyrene	**21**	<110	<12	<110	<11	<11

Bold text indicates results above analytical detection limits.

Table 5-6c
North Industrial Corridor (NIC) Site
Sludge Pit Groundwater Sample Analytical Results, Pesticides/PCBs by EPA Method 8080

Station	GP10C-01	GP10C-02	GP10C-03	GP10D-01	GP10D-02	GP10D-03
Groundwater Depth Zone / Sample Depth in Feet	S/18	S/18	S/16	S/16	S/16	S/18
Sample date	01/18/01	01/18/01	01/18/01	01/19/01	01/18/01	01/22/01
Compound	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)
4,4'-DDD	<0.12	<1.1	<0.12	<0.12	<0.12	<0.12
4,4'-DDE	<0.043	<0.40	<0.044	<0.043	<0.043	<0.045
4,4'-DDT	<0.13	<1.2	<0.13	<0.13	<0.13	<0.14
Aldrin	<0.043	<0.40	<0.044	<0.043	<0.043	<0.045
alpha-BHC	<0.033	<0.30	<0.033	<0.032	<0.032	<0.034
alpha-Chlordane	<0.054	<0.50	<0.055	<0.054	<0.054	<0.057
beta-BHC	<0.065	<0.60	<0.066	<0.065	<0.065	<0.068
Chlordane (Technical)	<0.15	<1.4	<0.15	<0.15	<0.15	<0.16
delta-BHC	<0.098	<0.90	<0.099	<0.097	<0.097	<0.10
Dieldrin	<0.022	<0.20	<0.022	<0.022	<0.022	<0.023
Endosulfan I	<0.15	<1.4	<0.15	<0.15	<0.15	<0.16
Endosulfan II	<0.043	<0.40	<0.044	<0.043	<0.043	<0.045
Endosulfan sulfate	<0.72	<6.6	<0.73	<0.71	<0.71	<0.75
Endrin	<0.065	<0.60	<0.066	<0.065	<0.065	<0.068
Endrin aldehyde	<0.25	<2.3	<0.25	<0.25	<0.25	<0.26
Endrin ketone	<0.11	<1.0	<0.11	<0.11	<0.11	<0.11
gamma-BHC	<0.043	<0.40	<0.044	<0.043	<0.043	<0.045
gamma-Chlordane	<0.054	<0.50	<0.055	<0.054	<0.054	<0.057
Heptachlor	<0.033	<0.30	<0.033	<0.032	<0.032	<0.034
Heptachlor epoxide	<0.11	<1.0	<0.11	<0.11	<0.11	<0.11
Methoxychlor	<1.9	<18	<1.9	<1.9	<1.9	<2.0
Toxaphene	<2.6	<24	<2.6	<2.6	<2.6	<2.7
PCB-1016	<1.1	<10	<1.1	<1.1	<1.1	<1.1
PCB-1221	<1.1	<10	<1.1	<1.1	<1.1	<1.1
PCB-1232	<1.1	<10	<1.1	<1.1	<1.1	<1.1
PCB-1242	<1.1	<10	<1.1	<1.1	<1.1	<1.1
PCB-1248	<1.1	<10	<1.1	<1.1	<1.1	<1.1
PCB-1254	<1.1	<10	<1.1	<1.1	<1.1	<1.1
PCB-1260	<1.1	<10	<1.1	<1.1	<1.1	<1.1

Table 5-6d
North Industrial Corridor (NIC) Site
Sludge Pit Groundwater Sample Analytical Results, Total Petroleum Hydrocarbons (TPH)

Station	GP10C-01	GP10C-02	GP10C-03	GP10D-01	GP10D-02	GP10D-03
Groundwater Depth Zone / Sample Depth in Feet	S/18	S/18	S/16	S/16	S/16	S/18
Sample date	01/18/01	01/18/01	01/18/01	01/19/01	01/18/01	01/22/01
Compound	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)
Fuel Oil	<0.40	<20	<0.40	<0.40	<0.40	<0.40
Jet Fuel	<0.40	<20	<0.40	<0.40	<0.40	<0.40
Kerosene	<0.40	<20	<0.40	<0.40	<0.40	<0.40
Mineral Spirits	<0.40	<20	<0.40	<0.40	<0.40	<0.40
Motor Oil	<0.40	<20	<0.40	<0.40	<0.40	<0.40
TPH as Diesel	**15**	**1200**	<0.40	**3.0**	**1.2**	<0.40
TPH as Gasoline	**0.567**	**4.08**	<0.50	**0.849**	**<0.50**	<0.50

Bold text indicates results above analytical detection limits.

Table 5-6e
North Industrial Corridor (NIC) Site
Sludge Pit Groundwater Sample Analytical Results, Dissolved Metals

Station	GP10C-01	GP10C-02	GP10C-03	GP10D-01	GP10D-02	GP10D-03
Groundwater Depth Zone / Sample Depth in Feet	S/18	S/18	S/16	S/16	S/16	S/18
Sample date	01/18/01	01/18/01	01/18/01	01/19/01	01/18/01	01/22/01
Compound	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)
Aluminum	<75.0	**519**	<75.0	<75.0	**4190**	<75.0
Antimony	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0
Arsenic	<5.00	<5.00	**9.94**	<5.00	**70.8**	**82.2**
Barium	**1620**	**992**	**1070**	**767**	**1300**	**493**
Beryllium	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
Cadmium	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00
Calcium	**119000**	**150000**	**136000**	**81000**	**150000**	**120000**
Chromium	<7.00	<7.00	<7.00	<7.00	<7.00	<7.00
Cobalt	<7.00	<7.00	<7.00	<7.00	<7.00	<7.00
Copper	<10.0	<10.0	<10.0	<10.0	**13.1**	<10.0
Iron	**36700**	**16900**	**5190**	**13000**	**65800**	**21700**
Lead	**7.15**	**19.3**	**<5.00**	**6.21**	**25.8**	**7.03**
Magnesium	**53600**	**94000**	**31700**	**26100**	**51200**	**31400**
Manganese	**1240**	**3770**	**2640**	**3370**	**651**	**5560**
Mercury	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200
Nickel	<30.0	<30.0	<30.0	<30.0	<30.0	<30.0
Potassium	**16400**	**9670**	**8310**	**2180**	**4430**	**2870**
Selenium	<10.0	<10.0	<10.0	<10.0	<10.0	<5.00
Silver	**7.81**	<7.00	<7.00	<7.00	**8.73**	<7.00
Sodium	**88600**	**34200**	**63400**	**82900**	**117000**	**69300**
Thallium	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00
Vanadium	<12.0	<12.0	<12.0	<12.0	<12.0	<12.0
Zinc	**153**	**288**	**147**	**128**	**192**	<100

Bold text indicates results above analytical detection limits.

Table 5-7a
North Industrial Corridor (NIC) Site
Summary Statistics, Detected VOCs, SVOCs, TPH, Pesticides/PCBs, and Metals in Sludge Pit Soil Samples

Analytical Method	Compound	Abbrev	Units	Detects/ Samples	FOD	Minimum Detected Concentration	Average Detected Concentration	Maximum Detected Concentration
VOCs - 8021								
EPA 8021	Toluene	TOL	ug/kg	6 / 19	31.6%	58	810	2500
EPA 8021	Ethylbenzene	EBN	ug/kg	9 / 19	47.4%	95	1641	7700
EPA 8021	Xylene (Total)	XYLT	ug/kg	11 / 19	57.9%	160	4470	26000
VOCs - 8260								
EPA 8260	Ethylbenzene	EBN	ug/kg	4 / 16	25.0%	24	1712	5400
EPA 8260	m,p-Xylene	XYL-MP	ug/kg	8 / 16	50.0%	13	2651	19000
EPA 8260	Methylene chloride	MECL	ug/kg	2 / 16	12.5%	5.5	5.6	5.6
EPA 8260	o-Xylene	XYL-O	ug/kg	4 / 16	25.0%	26	898	2900
EPA 8260	Toluene	TOL	ug/kg	4 / 16	25.0%	8.3	361	1400
EPA 8260	Trichlorofluoromethane	TCFM	ug/kg	1 / 16	6.3%	7.2	7.2	7.2
TPH								
OA2	Motor Oil	TPH-MOIL	mg/kg	4 / 20	20.0%	720	2580	5200
OA2	TPH as Diesel	TPH-DIESEL	mg/kg	14 / 20	70.0%	3800	28536	85000
SVOCs								
EPA 8270	Anthracene	ANTH	ug/kg	2 / 20	10.0%	2800	3050	3300
EPA 8270	Benzo(a)anthracene	BAA	ug/kg	4 / 20	20.0%	380	990	1800
EPA 8270	Benzo(a)pyrene	BAP	ug/kg	1 / 20	5.0%	1800	1800	1800
EPA 8270	Benzo(b)fluoranthene	BBF	ug/kg	1 / 20	5.0%	3000	3000	3000
EPA 8270	Benzo(g,h,i)perylene	BGP	ug/kg	1 / 20	5.0%	2100	2100	2100
EPA 8270	Benzo(k)fluoranthene	BKF	ug/kg	1 / 20	5.0%	970	970	970
EPA 8270	Chrysene	CHRY	ug/kg	8 / 20	40.0%	860	2378	4500
EPA 8270	Fluoranthene	FLOUR	ug/kg	1 / 20	5.0%	2100	2100	2100
EPA 8270	Fluorene	FLUORENE	ug/kg	2 / 20	10.0%	390	390	390
EPA 8270	Indeno(1,2,3-cd)pyrene	IP	ug/kg	1 / 20	5.0%	1300	1300	1300
EPA 8270	Naphthalene	NAP	ug/kg	3 / 20	15.0%	1700	4633	7100
EPA 8270	Phenanthrene	PHEN	ug/kg	13 / 20	65.0%	1100	5654	16000

Table 5-7a
North Industrial Corridor (NIC) Site
Summary Statistics, Detected VOCs, SVOCs, TPH, Pesticides/PCBs, and Metals in Sludge Pit Soil Samples

Analytical Method	Compound	Abbrev	Units	Detects/ Samples	FOD	Minimum Detected Concentration	Average Detected Concentration	Maximum Detected Concentration
EPA 8270	Pyrene	PYR	ug/kg	11 / 20	55.0%	520	3693	13000
EPA 8270	2-Methylnaphthalene	2MN	ug/kg	7 / 20	35.0%	1500	8400	25000
EPA 8270	bis(2-Ethylhexyl)phthalate	BIS2EHP	ug/kg	3 / 20	15.0%	1800	13067	35000
EPA 8270	Butylbenzylphthalate	BBP	ug/kg	2 / 20	10.0%	3900	5700	7500
Pesticides/PCBs								
EPA 8082	PCB-1248	PCB-1248	ug/kg	5 / 16	31.3%	110	3056	7800
EPA 8082	PCB-1260	PCB-1260	ug/kg	8 / 16	50.0%	45	1048	3300
Metals								
EPA 6010	Aluminum	AL	mg/kg	16 / 16	100.0%	352	9733	52800
EPA 6010	Antimony	SB	mg/kg	5 / 16	31.3%	1.51	9.3	21.7
EPA 6010	Arsenic	AS	mg/kg	11 / 16	68.8%	0.982	3.2	7.85
EPA 6010	Barium	BA	mg/kg	16 / 16	100.0%	6.71	187	812
EPA 6010	Beryllium	BE	mg/kg	12 / 16	75.0%	0.182	0.42	0.713
EPA 6010	Cadmium	CD	mg/kg	8 / 16	50.0%	0.845	6.0	15.3
EPA 6010	Calcium	CA	mg/kg	16 / 16	100.0%	535	19547	86300
EPA 6010	Chromium	CR	mg/kg	16 / 16	100.0%	1.38	22	93.7
EPA 6010	Cobalt	CO	mg/kg	15 / 16	93.8%	1.2	5.4	13.9
EPA 6010	Copper	CU	mg/kg	16 / 16	100.0%	1.8	233	2570
EPA 6010	Iron	FE	mg/kg	16 / 16	100.0%	1710	14834	52900
EPA 6010	Lead	PB	mg/kg	16 / 16	100.0%	2.48	507	1590
EPA 6010	Magnesium	MG	mg/kg	16 / 16	100.0%	167	4934	34600
EPA 6010	Manganese	MN	mg/kg	16 / 16	100.0%	18.9	235	660
EPA 6010	Nickel	NI	mg/kg	12 / 16	75.0%	5.2	42	187
EPA 6010	Potassium	K	mg/kg	15 / 16	93.8%	187	1394	3590
EPA 6010	Selenium	SE	mg/kg	10 / 16	62.5%	0.5	3.2	9.22
EPA 6010	Silver	AG	mg/kg	3 / 16	18.8%	1.23	1.9	2.96
EPA 6010	Sodium	NA	mg/kg	16 / 16	100.0%	90.6	508	3250

Table 5-7a
North Industrial Corridor (NIC) Site
Summary Statistics, Detected VOCs, SVOCs, TPH, Pesticides/PCBs, and Metals in Sludge Pit Soil Samples

Analytical Method	Compound	Abbrev	Units	Detects/ Samples	FOD	Minimum Detected Concentration	Average Detected Concentration	Maximum Detected Concentration
EPA 6010	Thallium	Tl	mg/kg	2 / 16	12.5%	2.18	2.9	3.53
EPA 6010	Vanadium	V	mg/kg	16 / 16	100.0%	4.2	17	30.2
EPA 6010	Zinc	ZN	mg/kg	16 / 16	100.0%	8.71	748	4970
EPA 7471	Mercury	HG	mg/kg	5 / 16	31.3%	0.289	0.6	1.84

NOTE: Only detected analytes presented.
MCL = Safe Drinking Water Act Maximum Contaminant Level in Drinking Water.
FOD = Frequency of Detection.

Table 5-7b
North Industrial Corridor (NIC) Site
Summary Statistics, Detected VOCs, SVOCs, TPH, and Metals in Sludge Pit Groundwater Samples

Analytical Method	Compound	MCL	Units	Detects/ Samples	FOD	Minimum Detected Concentration	Average Detected Concentration	Maximum Detected Concentration	Location of Maximum Reported Concentration
VOCs - 8260									
EPA 8260	1,1-Dichloroethane	--	µg/l	1 / 6	17%	1.8	1.8	1.8	GP10C-01
EPA 8260	Benzene	5	µg/l	5 / 6	83%	2.8	11	17	GP10C-01
EPA 8260	Chloroethane	--	µg/l	2 / 6	33%	2.1	7.1	12	GP10C-01
EPA 8260	Ethylbenzene	700	µg/l	2 / 6	33%	2.4	4.2	5.9	GP10D-01
EPA 8260	m,p-Xylene	10000	µg/l	2 / 6	33%	7.4	7.8	8.2	GP10D-01
EPA 8260	o-Xylene	10000	µg/l	3 / 6	50%	1.8	3.3	5.8	GP10D-01
EPA 8260	Toluene	1000	µg/l	3 / 6	50%	1.4	2.5	3.5	GP10D-01
EPA 8260	Vinyl chloride	2	µg/l	1 / 6	17%	1.3	1.3	1.3	GP10D-03
VOCs - 8021									
EPA 8021	Benzene	5	µg/l	5 / 6	83%	2.92	8.6	11.4	GP10C-01
EPA 8021	Toluene	1000	µg/l	2 / 6	33%	3.35	3.4	3.4	GP10D-01
EPA 8021	Ethylbenzene	700	µg/l	1 / 6	17%	4.58	4.6	4.58	GP10D-01
EPA 8021	Xylene (Total)	10000	µg/l	2 / 6	33%	13.5	18	22.9	GP10C-02
SVOCs									
EPA 8270	2-Methylnaphthalene	--	µg/l	2 / 6	33%	26	88	150	GP10D-01
EPA 8270	Chrysene	--	µg/l	1 / 6	17%	11	11	11	GP10C-01
EPA 8270	Naphthalene	--	µg/l	1 / 6	17%	150	150	150	GP10D-01
EPA 8270	Phenanthrene	--	µg/l	1 / 6	17%	33	33	33	GP10C-01
EPA 8270	Pyrene	--	µg/l	1 / 6	17%	21	21	21	GP10C-01
TPH									
OA2	TPH as Diesel	--	mg/l	4 / 6	67%	1.2	305	1200	GP10C-02
Metals									
EPA 6010	Aluminum	--	µg/l	3 / 6	50%	94.5	1601	4190	GP10D-02
EPA 6010	Arsenic	50	µg/l	3 / 6	50%	9.94	54	82.2	GP10D-03
EPA 6010	Barium	2000	µg/l	6 / 6	100%	493	1040	1620	GP10C-01
EPA 6010	Calcium	--	µg/l	6 / 6	100%	81000	126000	150000	GP10C-02,GP10D-02
EPA 6010	Copper	1300	µg/l	1 / 6	17%	13.1	13	13.1	GP10D-02
EPA 6010	Iron	--	µg/l	6 / 6	100%	5190	26548	65800	GP10D-02
EPA 6010	Lead	15	µg/l	5 / 6	83%	6.21	13	25.8	GP10D-02
EPA 6010	Magnesium	--	µg/l	6 / 6	100%	26100	48000	94000	GP10C-02

Table 5-7b
North Industrial Corridor (NIC) Site
Summary Statistics, Detected VOCs, SVOCs, TPH, and Metals in Sludge Pit Groundwater Samples

Analytical Method	Compound	MCL	Units	Detects/ Samples	FOD	Minimum Detected Concentration	Average Detected Concentration	Maximum Detected Concentration	Location of Maximum Reported Concentration
EPA 6010	Manganese	--	µg/l	6 / 6	100%	651	2867	5530	GP10D-03
EPA 6010	Potassium	--	µg/l	6 / 6	100%	2180	7313	16400	GP10C-01
EPA 6010	Silver	--	µg/l	2 / 6	33%	7.81	8.3	8.73	GP10D-02
EPA 6010	Sodium	--	µg/l	6 / 6	100%	34200	76000	117000	GP10D-02
EPA 6010	Zinc	10000	µg/l	5 / 6	83%	128	182	288	GP10C-02

NOTE: Only detected analytes presented.
MCL = Safe Drinking Water Act Maximum Contaminant Level in Drinking Water.
FOD = Frequency of Detection.

Table 5-8
North Industrial Corridor (NIC) Site
Geoprobe Groundwater Sample Analytical Results, Site VOCs* by EPA Method 8260

Station	Groundwater Depth Zone / Depth (feet)	Investigation Phase	Sample Date	QC Sample Flag	Units	PCE	TCE	C12DCE	VC	TCA	11DCA	11DCE	CT	CFM	BEN	Other Detected Compounds
GP#11-1	S/20	PH1	01/16/98		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GP#11-2	S/20	PH1	01/15/98		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GP#18-07A	S/17	PH2	08/29/00		µg/L	<1	78	57	1.1	<1	1.2	<1	<1	<1	<1	T12DCE 5.4
GP#18-07A	D/35	PH2	08/29/00		µg/L	<1	110	110	3.8	<1	1.5	<1	<1	<1	<1	T12DCE 8.1
GP#18-1	S/20	PH1	01/08/98		µg/L	<1	18	5.7	<1	110	7.5	26	<1	8.1	<1	12DCA 20, EBN 130, XYL-MP 110, XYL-O 1.7
GP#18-1	S/20	PH2	10/15/99		µg/L	<1	12	9.7	1	5.5	4.4	<1	<1	<1	<1	EBN 110, TOL 9.1, XYL-MP 38, XYL-O 10
GP#18-1	D/33	PH1	01/08/98		µg/L	1.9	62	17	<1	5.9	1	2.1	<1	<1	<1	EBN 27, XYL-MP 22
GP#18-2	S/20	PH1	01/08/98		µg/L	2.2	60	16	<1	5.9	<1	2.3	<1	<1	<1	EBN 27, XYL-MP 22
GP#18-2	S/20	PH2	10/15/99		µg/L	<1	26	9.2	<1	38	1	8.8	<1	1	<1	None
GP#18-2	D/32	PH1	01/08/98		µg/L	2.8	64	16	<1	5.4	1	1.8	<1	<1	<1	EBN 25, XYL-MP 21
GP#18-3	S/20	PH1	01/08/98		µg/L	<1	<1	4.8	21	<1	6	<1	<1	<1	8.2	EBN 1.2, XYL-MP 1.3
GP#18-3	D/33	PH1	01/08/98		µg/L	3.6	86	49	3.6	<1	1.8	1.1	<1	<1	<1	None
GP#18-4	S/20	PH1	01/08/98		µg/L	<1	11	17	15	8.3	23	13	<1	<1	1.4	None
GP#18-4	D/30	PH1	01/08/98		µg/L	<1	23	24	<1	64	6	34	<1	1.9	<1	None
GP#18-5	S/18	PH1	06/04/98		µg/L	<1	180	12	<1	110	12	33	<1	1.2	<1	MECL 2.4 UB
GP#18-5	S/18	PH2	10/15/99		µg/L	<1	120	10	<1	99	6.6	26	<1	2	<1	None
GP#18-5	D/30	PH1	06/04/98		µg/L	<1	39	10	<1	12	2.7	6	<1	<1	<1	MECL 1.6 UB
GP#18-6	S/18	PH1	06/04/98		µg/L	<1	50	8.9	<1	100	1.3	38	<1	9.9	<1	MECL 1 UB
GP#18-6	S/18	PH2	10/15/99		µg/L	<1	35	6.3	<1	180	3.4	52	<1	5.8	<1	None
GP#18-6	D/30	PH1	06/04/98		µg/L	<1	58	9.4	<1	2.1	<1	<1	<1	<1	<1	MECL 2 UB
GP#18-7	S/18	PH1	06/04/98		µg/L	<1	2.9	1.2	<1	2.6	<1	<1	<1	<1	<1	MECL 1 UB
GP#18-7	S/18	PH2	10/15/99		µg/L	<1	170	86	4.1	<1	1.4	2	<1	<1	<1	T12DCE 5.7
GP#18-7	D/30	PH1	06/04/98		µg/L	1.7	170	71	6.5	<1	2.3	2.7	<1	<1	<1	MECL 1.1 UB, T12DCE 3.2
GP#19-1	S/20	PH1	06/02/98		µg/L	<1	46	13	1	<1	<1	<1	<1	<1	<1	MECL 1.8 UB
GP#19-1	D/27	PH1	06/02/98		µg/L	1	220	46	5.3	1.1	3	6.8	<1	<1	<1	MECL 1.6 UB, T12DCE 3.8
GP#19-2	S/19	PH1	06/02/98		µg/L	<1	140	61	30	<1	1.5	1.9	<1	<1	<1	MECL 1.4 UB, T12DCE 2
GP#19-2	S/19	PH2	10/15/99		µg/L	<1	55	35	32	<1	1.3	<1	<1	<1	<1	CHEA 1.3, T12DCE 2.1
GP#19-2	D/30	PH1	06/02/98		µg/L	<1	240	58	7.1	<1	1.8	3.1	<1	<1	<1	T12DCE 2.7
GP#19-3	S/20	PH1	06/02/98		µg/L	<1	32	31	8.4	<1	1.4	<1	<1	<1	<1	MECL 1.7 UB
GP#19-3	D/28	PH1	06/02/98		µg/L	1.2	280	65	7.6	<1	2.9	5.3	<1	<1	<1	MECL 1.7 UB, T12DCE 5.3
GP#19-4	S/20	PH1	06/02/98		µg/L	<1	83	32	<1	<1	<1	<1	<1	<1	<1	MECL 2.6 UB, T12DCE 2.7
GP#19-4	D/28	PH1	06/02/98		µg/L	1	360	100	14	<1	6.4	9.7	<1	<1	<1	MECL 2.5 UB, T12DCE 6.6
GP#19-5	S/20	PH1	06/02/98		µg/L	<1	45	70	31	<1	1.2	1.4	<1	<1	<1	MECL 3 UB, T12DCE 1.9
GP#19-5	D/29	PH1	06/02/98		µg/L	1.2	330	56	4.5	<1	2.5	6.6	<1	<1	<1	MECL 2.7 UB, T12DCE 5.8
GP#19-6	S/20	PH1	06/01/98		µg/L	2.2	310	40	2.7	<1	1.7	2.5	<1	<1	<1	T12DCE 3
GP#19-6	S/20	PH2	10/15/99		µg/L	3.4	160	27	1.2	<1	<1	1.3	<1	<1	<1	T12DCE 2.3
GP#19-6	D/28	PH1	06/01/98		µg/L	1	440	66	2.7	<1	2.1	2.4	<1	<1	<1	T12DCE 4.4
GP#19-7	S/20	PH1	06/01/98		µg/L	1.6	170	25	<1	<1	<1	1.2	<1	<1	<1	MECL 1.5 UB, T12DCE 1.6
GP#19-7	D/29	PH1	06/01/98		µg/L	1.7	620	85	7.3	<1	2.5	5.9	<1	<1	<1	MECL 1.6, T12DCE 5.9
GP#19-8	M/22	PH1	06/01/98		µg/L	<1	190	26	<1	<1	<1	<1	<1	<1	<1	T12DCE 1.2
GP#19-8	D/30	PH1	06/01/98		µg/L	2.3	790	110	9.2	<1	4.2	9	<1	<1	<1	T12DCE 9.5
GP#23-1	S/18	PH1	06/02/98		µg/L	<1	22	7.2	<1	<1	<1	<1	<1	<1	<1	None
GP#23-1	D/32	PH1	06/02/98		µg/L	<1	250	70	16	1.9	4.5	16	<1	<1	<1	T12DCE 3.6
GP#28-1	S/20.5	PH1	12/22/97		µg/L	<1	1.4	<1	<1	<1	<1	<1	150	62	<1	CCL4 150
GP#28-1	D/36	PH1	12/22/97		µg/L	<1	14	6.6	<1	<1	<1	<1	18	19	<1	CCL4 18
GP#29-1	S/20	PH1	01/23/98		µg/L	<1	5.2	1.1	<1	<1	<1	<1	<1	<1	<1	None
GP#29-1	D/36	PH1	01/22/98		µg/L	<1	110	39	9.1	<1	1.3	2.5	<1	<1	<1	None
GP#32-1	S/20	PH1	01/22/98		µg/L	<1	140	73	17	1.7	4.2	11	<1	<1	<1	T12DCE 2
GP#32-1	S/20	PH2	10/21/99		µg/L	<1	5.8	5.9	1.4	<1	<1	<1	<1	<1	<1	None
GP#32-1	D/34	PH1	01/22/98		µg/L	<1	260	150	35	1.6	5.8	16	<1	<1	1.4	CM 2.5, T12DCE 3

Table 5-8
North Industrial Corridor (NIC) Site
Geoprobe Groundwater Sample Analytical Results, Site VOCs* by EPA Method 8260

Station	Groundwater Depth Zone / Depth (feet)	Investigation Phase	Sample Date	QC Sample Flag	Units	PCE	TCE	C12DCE	VC	TCA	11DCA	11DCE	CT	CFM	BEN	Other Detected Compounds
GP#34-1	S/20	PH1	01/22/98		µg/L	<1	2	2.5	<1	<1	<1	<1	<1	<1	<1	None
GP#34-1	D/37	PH1	01/22/98		µg/L	<1	160	99 JS	73 JS	<1	6.2 JS	9.8 JS	<1	<1	2.4 JS	CM 5.3 JS, MECL 1.5 JS, T12DCE 2.2 JS
GP#34-1	D/37	PH1	01/22/98	DUP	µg/L	<1	170	110	81	<1	6.3	10	<1	<1	2.4	CM 5.3, MECL 1.6, T12DCE 2.4
GP#34-10	S/18	PH1	06/08/98		µg/L	<1	22	57	3.1	<1	2.3	5.1	<1	<1	<1	T12DCE 1.1
GP#34-10	S/18	PH2	01/10/00		µg/L	<1	6.4	120	8.4	<1	3.2	5.9	<1	<1	<1	T12DCE 8.1
GP#34-10	D/36	PH1	06/08/98		µg/L	<1	240	160	34	1.1	6.9	21	<1	<1	<1	None
GP#34-2	S/20	PH1	01/22/98		µg/L	<1	11	8.4	2.9	<1	<1	<1	<1	<1	<1	None
GP#34-2	D/35	PH1	01/22/98		µg/L	<1	220 JS	110 JS	110 JS	<1	7 JS	12 JS	<1	<1	2.6 JS	CHEA 2.2 JS, T12DCE 2.1 JS
GP#34-3	S/20	PH1	01/20/98		µg/L	<1	24	26	<1	<1	<1	<1	<1	<1	<1	None
GP#34-3	D/39	PH1	01/20/98		µg/L	<1	340	170	11	1.8	3.6	12	<1	<1	<1	T12DCE 2.8
GP#34-4	S/20	PH1	01/20/98		µg/L	<1	14	50	<1	<1	<1	<1	<1	<1	<1	T12DCE 1.5
GP#34-4	D/37	PH1	01/20/98		µg/L	<1	170	170	42	<1	6.4	18	<1	<1	<1	T12DCE 4
GP#34-5	S/20	PH1	01/20/98		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GP#34-5	D/37	PH1	01/20/98		µg/L	<1	56	150	25	<1	2.9	6.7	<1	<1	<1	None
GP#34-5	D/37	PH1	01/20/98	DUP	µg/L	<1	54	150	22	<1	2.7	6.6	<1	<1	<1	None
GP#34-6	S/20	PH1	01/20/98		µg/L	<1	35	79	5.2	<1	2.1	4.6	<1	<1	<1	T12DCE 1.7
GP#34-6	D/36	PH1	01/20/98		µg/L	<1	360	170	53	2.5	9.3	28	<1	<1	1.1	12DCA 1
GP#34-7	S/18	PH1	06/08/98		µg/L	<1	120	160	3.3	<1	4.3	8.6	<1	<1	<1	MECL 1.2, T12DCE 3.4
GP#34-7	S/18	PH2	10/21/99		µg/L	<1	37	55	<1	<1	1.4	1.7	<1	<1	<1	T12DCE 3.1
GP#34-7	D/36	PH1	06/08/98		µg/L	<1	52	220	18	<1	4.4	14	<1	<1	<1	CM 1.6, MECL 1.4, T12DCE 3.4
GP#34-7	D/36	PH1	06/08/98	DUP	µg/L	<1	51	220	17	<1	4.4	14	<1	<1	<1	CM 1.4, MECL 1.3 UB, T12DCE 3.4
GP#34-8	S/18	PH1	06/08/98		µg/L	<1	20	14	<1	<1	<1	1.7	<1	<1	<1	MECL 1.2
GP#34-8	D/36	PH1	06/08/98		µg/L	<1	150	130	30	<1	4.4	13	<1	<1	<1	None
GP#34-9	S/18	PH1	06/08/98		µg/L	<1	17	59	3.4	<1	1.5	2.7	<1	<1	<1	None
GP#34-9	D/36	PH1	06/08/98		µg/L	<1	97	130	30	<1	3.7	9.8	<1	<1	<1	None
GP#35-1	S/16	PH1	06/08/98		µg/L	<1	2	<1	<1	<1	<1	<1	<1	<1	<1	None
GP#35-1	D/36	PH1	06/08/98		µg/L	<1	190	59	1.1	<1	<1	<1	<1	<1	<1	MECL 1.3
GP#35-2	S/20	PH2	10/19/99		µg/L	<1	3.7	<1	<1	<1	<1	<1	<1	<1	<1	None
GP#35-2	S/16	PH1	06/05/98		µg/L	<1	61	14	<1	<1	<1	<1	<1	<1	<1	TCFM 1.4
GP#35-2	D/36	PH1	06/05/98		µg/L	<1	37	3	<1	<1	<1	<1	<1	<1	<1	MECL 2.9 UB
GP#35-3	M/25	PH1	06/05/98		µg/L	<1	41	12	<1	<1	<1	1.9	<1	<1	<1	None
GP#35-3	D/36	PH1	06/05/98		µg/L	<1	530	240	1.7	15	10	52	5.3	4	1.2	12DCA 1.4, CCL4 5.3, MECL 1.3 UB, T12DCE 15
GP#35-4	S/20	PH1	06/08/98		µg/L	1.7	490	170	25	6.4	14	48	<1	<1	<1	T12DCE 30
GP#35-4	S/20	PH2	10/19/99		µg/L	<1	220	78	12	2.7	5.3	15	<1	<1	<1	T12DCE 14
GP#35-4	D/36	PH1	06/08/98		µg/L	<1	890	310	54	10	21	77	<1	<1	4.1	T12DCE 54
GP#35-5	S/20	PH1	06/08/98		µg/L	<1	19	11	48	<1	4.4	<1	<1	<1	43	None
GP#35-5	D/37	PH1	06/08/98		µg/L	<1	460	100	5.4	11	5.4	30	<1	2.6	3.9	T12DCE 3.7
GP#35-8	S/20	PH1	06/09/98		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	100	EBN 3.1, TOL 10, XYL-MP 34, XYL-O 6.7
GP#35-8	D/36	PH1	06/09/98		µg/L	<1	2.3	21	<1	<1	<1	<1	<1	<1	9.2	EBN 3.2, XYL-MP 2.3
GP#42-1	M/26	PH1	01/21/98		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GP#42-1	D/39	PH1	01/21/98		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GP#42-2	S/20	PH1	01/22/98		µg/L	8	1.4	<1	<1	<1	<1	<1	<1	<1	<1	None
GP#42-2	D/37	PH1	01/22/98		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GP#42-3	S/20	PH1	01/21/98		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GP#42-3	D/36	PH1	01/21/98		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GP#42-4	S/20	PH1	01/21/98		µg/L	17	5.1	<1	<1	<1	<1	<1	<1	<1	<1	None
GP#42-4	D/36	PH1	01/21/98		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None

Table 5-8
North Industrial Corridor (NIC) Site
Geoprobe Groundwater Sample Analytical Results, Site VOCs* by EPA Method 8260

Station	Groundwater Depth Zone / Depth (feet)	Investigation Phase	Sample Date	QC Sample Flag	Units	PCE	TCE	C12DCE	VC	TCA	11DCA	11DCE	CT	CFM	BEN	Other Detected Compounds
GP#43-1	S/20	PH1	12/22/97		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GP#43-1	D/33	PH1	12/22/97		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GP#43-1	D/33	PH1	12/22/97	DUP	µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GP#44-1	S/20	PH1	01/16/98		µg/L	<1	<1	23	<1	<1	<1	<1	<1	<1	2.9	None
GP#44-1	D/31	PH1	01/16/98		µg/L	<1	32	24	<1	<1	<1	<1	<1	<1	<1	None
GP#44-2	S/20	PH1	01/16/98		µg/L	<1	15	8.1	<1	<1	5.6	<1	<1	<1	<1	T12DCE 1.3
GP#44-2	D/33	PH1	01/16/98		µg/L	<1	17	29	<1	<1	2.7	1.8	<1	<1	<1	None
GP#44-3	S/20	PH1	01/16/98		µg/L	<1	18	12	<1	<1	4	<1	<1	<1	<1	None
GP#44-3	D/33	PH1	01/16/98		µg/L	<1	4	33	2.8	<1	1.9	1	<1	<1	<1	T12DCE 2
GP#44-4	S/20	PH1	01/16/98		µg/L	<1	23	14	<1	5.4	3	<1	<1	<1	<1	None
GP#44-4	D/35	PH1	01/16/98		µg/L	<1	11	41	<1	<1	2.4	1.4	<1	<1	<1	T12DCE 3.4
GP#44-4	D/35	PH1	01/16/98	DUP	µg/L	<1	9.7	41	<1	<1	2.4	1.6	<1	<1	<1	T12DCE 3.7
GP#44-5	S/20	PH1	01/16/98		µg/L	<1	30	21	<1	<1	2.3	<1	<1	<1	<1	T12DCE 1.6
GP#44-5	D/32	PH1	01/16/98		µg/L	<1	12	29	2.3	<1	2.1	<1	<1	<1	<1	T12DCE 1.8
GP#44-6	S/20	PH1	01/16/98		µg/L	<1	28	26	<1	<1	2.2	<1	<1	<1	<1	T12DCE 2
GP#44-6	D/33	PH1	01/16/98		µg/L	<1	23	32	1.2	<1	2.6	<1	<1	<1	<1	T12DCE 2.4
GP#47-1	S/20	PH1	01/07/98		µg/L	3.3	70	43	10	<1	3	5.3	<1	<1	<1	T12DCE 1.1
GP#47-1	S/20	PH2	10/19/99		µg/L	2.2	89	51	23	<1	6.1	10	<1	<1	1.5	T12DCE 7.0
GP#47-1	D/33	PH1	01/07/98		µg/L	1.7	550	150	60	6.8	19	40	<1	<1	6.9	None
GP#47-2	S/20	PH1	01/07/98		µg/L	<1	190	69	16	1.4	6.6	10	<1	<1	<1	None
GP#47-2	D/33	PH1	01/07/98		µg/L	1	710	140	68	7.8	15	46	<1	<1	2.7	None
GP#47-3	S/20	PH1	01/07/98		µg/L	<1	75	15	<1	<1	1.3	<1	<1	<1	<1	None
GP#47-3	D/33	PH1	01/07/98		µg/L	<1	480	100	39	4.2	8.1	26	<1	<1	<1	T12DCE 4
GP#47-4	S/20	PH1	01/07/98		µg/L	<1	19	25	2.6	<1	1.3	<1	<1	<1	<1	None
GP#47-4	D/33	PH1	01/07/98		µg/L	<1	320	70	30	5.2	8.6	26	<1	<1	<1	T12DCE 4.1
GP#47-5	S/20	PH1	01/07/98		µg/L	<1	69	13	<1	<1	<1	<1	<1	<1	<1	None
GP#47-5	D/33	PH1	01/07/98		µg/L	1.3	240	51	3	1	2	3.5	<1	<1	<1	T12DCE 2
GP#47-6	S/20	PH1	01/08/98		µg/L	<1	100	28	2.8	<1	1.6	2.5	<1	<1	<1	None
GP#47-6	D/33	PH1	01/08/98		µg/L	<1	290	67	31	3.2	6.2	19	<1	<1	<1	T12DCE 4
GP#47-7	S/20	PH1	01/08/98		µg/L	<1	180	66	8.7	1.7	4.8	7.1	<1	<1	<1	T12DCE 1.9
GP#47-7	D/32	PH1	01/08/98		µg/L	1	400	92	43	5	9.1	28	<1	<1	<1	T12DCE 4.1
GP#47-8	S/20	PH1	01/07/98		µg/L	<1	80	16	<1	<1	<1	<1	<1	<1	<1	None
GP#47-8	D/30	PH1	01/07/98		µg/L	1.2	260	52	4.9	1.5	2.3	5.5	<1	<1	<1	T12DCE 2.4
GP#48-1	S/16	PH1	06/05/98		µg/L	<1	1.9	1.1	<1	<1	<1	<1	<1	<1	<1	MECL 1.2 UB
GP#48-1	D/32	PH1	06/05/98		µg/L	<1	<1	2.8	9.4	<1	<1	<1	<1	<1	9.3	CM 2.9, MECL 2.7 UB
GP#48-2	S/16	PH1	06/05/98		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GP#48-2	D/36	PH1	06/05/98		µg/L	<1	53	25	40	<1	3.6	2.3	<1	<1	140	CM 8.2, EBN 2.4, TOL 1.2, XYL-MP 1.4
GP#48-2	D/36	PH1	06/05/98	DUP	µg/L	<1	56	22	35	<1	3.2	2	<1	<1	140	CM 6.3, EBN 2.1, TOL 1.1
GP#48-3	S/16	PH1	06/05/98		µg/L	<1	360	360	1.9	7.6	14	39	<1	<1	2.2	MECL 2.8 UB, T12DCE 38
GP#48-3	S/16	PH2	12/20/99		µg/L	<1	220	280	14	2.3	11	21	<1	1.1	1.4	T12DCE 41
GP#48-3	D/36	PH1	06/05/98		µg/L	<1	590	200	2	15	11	45	5.8	4	1.4	12DCA 1.6, CCL4 5.8, MECL 1 UB, T12DCE 11
GP#48-3	D/34	PH2	12/20/99		µg/L	<1	87	44	61	1.8	6.7	13	<1	1.1	21	12DCA 1.1, CHEA 5.3, T12DCE 32
GP#48-4	S/18	PH1	06/05/98		µg/L	<1	12	3.2	<1	<1	<1	<1	<1	<1	<1	None
GP#48-4	D/36	PH1	06/05/98		µg/L	<1	56	5.5	<1	<1	<1	1.8	<1	<1	<1	None
GP#48-5	S/18	PH1	06/05/98		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GP#48-5	D/36	PH1	06/05/98		µg/L	1.7	140	100	52	<1	5.7	11	<1	<1	2.2	T12DCE 1.9
GP#48-6	S/18	PH1	06/05/98		µg/L	<1	140	50	13	1	5.8	10	<1	<1	<1	T12DCE 2.5
GP#48-6	D/36	PH1	06/05/98		µg/L	<1	360	120	60	1.4	12	23	<1	<1	6.4	T12DCE 3.4

Table 5-8
North Industrial Corridor (NIC) Site
Geoprobe Groundwater Sample Analytical Results, Site VOCs* by EPA Method 8260

Station	Groundwater Depth Zone / Depth (feet)	Investigation Phase	Sample Date	QC Sample Flag	Units	PCE	TCE	C12DCE	VC	TCA	11DCA	11DCE	CT	CFM	BEN	Other Detected Compounds
GP#48-7	S/18	PH1	06/05/98		µg/L	<1	10	14	<1	<1	<1	<1	<1	<1	<1	None
GP#48-7	D/36	PH1	06/05/98		µg/L	<1	600	170	70	5.7	22	50	<1	<1	7.1	T12DCE 27
GP#50-1	S/20	PH1	01/08/98		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GP#50-1	D/39	PH1	01/08/98		µg/L	<1	36	17	26	<1	<1	<1	<1	<1	<1	None
GP#50-1	D/39	PH1	01/08/98	DUP	µg/L	<1	33	16	25	<1	<1	<1	<1	<1	<1	None
GP#50-2	S/20	PH1	01/08/98		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GP#50-2	D/37	PH1	01/08/98		µg/L	<1	42	25	21	<1	<1	1.1	<1	<1	<1	CM 1.6
GP#50-3	S/20	PH1	01/09/98		µg/L	<1	1.1 JS	1.7	1.4	<1 JS	<1 JS	<1	<1 JS	<1	<1 JS	None
GP#50-3	S/20	PH2	10/19/99		µg/L	<1	<1	1.3	<1	<1	<1	<1	<1	<1	<1	None
GP#50-3	S/20	PH2	10/19/99	DUP	µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GP#50-3	D/39	PH1	01/09/98		µg/L	<1	51 JS	26	21	<1 JS	<1	1.7	<1 JS	<1	<1 JS	CM 3.4
GP#50-4	S/20	PH1	01/09/98		µg/L	<1	<1	1.7	2.3	<1	<1	<1	<1	<1	5.3	None
GP#50-4	D/36	PH1	01/09/98		µg/L	<1	41	23	11	<1	<1	1.4	<1	<1	<1	CM 1.8
GP#50-5	S/20	PH1	01/09/98		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GP#50-5	D/39	PH1	01/09/98		µg/L	<1	27	10	10	<1	<1	<1	<1	<1	<1	None
GP#50-6	S/20	PH1	06/04/98		µg/L	<1 JH	<1 JH	<1 JH	4 JH	<1 JH	<1 JH	<1 JH	<1 JH	<1 JH	<1 JH	MECL 1.5 UB
GP#50-6	D/37	PH1	06/04/98		µg/L	<1	27	20	6.8	<1	<1	1.3	<1	<1	<1	MECL 1.1 UB
GP#53-1	S/18	PH1	06/03/98		µg/L	<1	2.3	<1	<1	<1	<1	<1	<1	<1	1.1	None
GP#53-1	D/36	PH1	06/03/98		µg/L	<5	9.4	<5	<5	<5	<5	<5	<5	<5	<5	MECL 9.1 UB
GP#53-2	S/18	PH1	06/03/98		µg/L	<1	<1	<1	<1	<1	1.2	<1	<1	<1	<1	MECL 0.99 UB
GP#53-2	D/36	PH1	06/03/98		µg/L	<1	24	2	<1	<1	<1	<1	<1	2.7	<1	MECL 1.3 UB
GP#53-3	S/15	PH1	06/03/98		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GP#53-3	D/36	PH1	06/03/98		µg/L	<1	6	<1	<1	<1	<1	<1	<1	<1	<1	MECL 1.9 UB
GP#54-1	S/20	PH1	01/21/98		µg/L	98	56	14	<1	7.7	4.1	2	<1	1.4	28	None
GP#54-1	D/33	PH1	01/21/98		µg/L	3.6	200	37	<1	<1	<1	<1	13	13	19	CCL4 13
GP#54-2	S/20	PH1	01/21/98		µg/L	130	120	22	<1	7.6	2.6	<1	<1	<1	<1	None
GP#54-2	D/33	PH1	01/21/98		µg/L	29	100	51	23	14	5.3	3.9	<1	40	110	None
GP#54-3	S/20	PH1	01/21/98		µg/L	24	53	59	<1	5.7	2.8	<1	<1	<1	2.7	None
GP#54-3	D/34	PH1	01/21/98		µg/L	40	110	38	11	22	4.1	4.5	19	35	170	CCL4 19
GP#54-4	S/20	PH1	01/21/98		µg/L	<1	1.1	<1	<1	<1	<1	<1	<1	<1	<1	None
GP#54-4	D/36	PH1	01/21/98		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GP#55-1	S/20	PH1	12/22/97		µg/L	<1	600	81	1.3	17	5.4	39	3.5	1.8	<1	CCL4 3.5, T12DCE 1.5
GP#55-1	S/20	PH2	10/19/99		µg/L	<1	440	37	<1	11	1.9	13	9.2	4.2	<1	CCL4 9.2, T12DCE 1.7
GP#55-1	S/20	PH2	11/04/99		µg/L	<1	350 JH	33	<1	8.3	2.1	9.6	16	4.9	<1	CCL4 16, T12DCE 1.5
GP#55-1	S/20	PH2	11/04/99	DUP	µg/L	<1	320 JH	34	<1	9.5	2.1	9.6	17	4.5	<1	CCL4 17, T12DCE 2.0
GP#55-1	D/43	PH1	12/22/97		µg/L	1.9	940	120	3.6	27	8.2	64	<1	<1	<1	T12DCE 1.5
GP#56-1	S/20	PH1	01/13/98		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	XYL-O 1.2
GP#56-1	D/39	PH1	01/13/98		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GP#56-2	S/20	PH1	01/13/98		µg/L	<1	200	30	2.2	<1	<1	1.2	<1	<1	<1	CM 1.6, T12DCE 3.1
GP#56-2	S/20	PH2	10/20/99		µg/L	<1	28	36	<1	<1	<1	<1	<1	<1	<1	T12DCE 2.3
GP#56-2	D/39	PH1	01/13/98		µg/L	<1	63	4.2	<1	<1	<1	<1	<1	<1	<1	None
GP#56-3	S/20	PH1	01/13/98		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	3.3	EBN 310, TOL 1.3, XYL-MP 520, XYL-O 8.5
GP#56-3	D/38	PH1	01/13/98		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	EBN 42 JS, XYL-MP 70 JS, XYL-O 1.5
GP#56-4	S/20	PH1	01/13/98		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GP#56-4	D/35	PH1	01/13/98		µg/L	<1	7.8	4.2	<1	<1	<1	<1	<1	<1	<1	None
GP#56-5	S/20	PH1	01/13/98		µg/L	<1	<1	11	99	<1	5.5	<1	<1	<1	5.3	T12DCE 1, XYL-MP 1.3
GP#56-5	D/37	PH1	01/13/98		µg/L	<1	120	64	5.2	<1	2.5	1.3	<1	<1	<1	T12DCE 1.7
GP#56-5	D/37	PH1	01/13/98	DUP	µg/L	<1	140	70	5.3	<1	2.5	1.4	<1	<1	<1	T12DCE 1.7

Table 5-8
North Industrial Corridor (NIC) Site
Geoprobe Groundwater Sample Analytical Results, Site VOCs* by EPA Method 8260

Station	Groundwater Depth Zone / Depth (feet)	Investigation Phase	Sample Date	QC Sample Flag	Units	PCE	TCE	C12DCE	VC	TCA	11DCA	11DCE	CT	CFM	BEN	Other Detected Compounds
GP#56-6	S/20	PH1	01/14/98		µg/L	<1	<1	3.7	20	<1	<1	<1	<1	<1	210	EBN 660, TOL 310, XYL-MP 2000, XYL-O 120
GP#56-6	D/39	PH1	01/14/98		µg/L	<1	68	42	42	<1	6.9	<1	<1	<1	30	EBN 66, TOL 29, XYL-MP 170, XYL-O 25
GP#56-7	S/20	PH1	01/14/98		µg/L	<1	<1	<1	18	<1	<1	<1	<1	<1	9.5	EBN 22, TOL 6, XYL-MP 34, XYL-O 9.2
GP#56-7	D/39	PH1	01/14/98		µg/L	<1	31	67	62	<1	1.5	<1	<1	<1	6.3	EBN 4.6, TOL 2.3, XYL-MP 13, XYL-O 4.5
GP#62-1	S/20	PH1	01/14/98		µg/L	1	490	3000	350	7.5	39	11	<1	<1	8.2	T12DCE 11
GP#62-1	D/42	PH1	01/14/98		µg/L	<1	41	50	6.9	<1	1.6	1.1	<1	<1	<1	None
GP#62-1	D/42	PH1	01/14/98	DUP	µg/L	<1	40	48	5	<1	1.4	<1	<1	<1	<1	None
GP#62-2	S/20	PH1	01/14/98		µg/L	<1	35	20	<1	<1	<1	<1	<1	<1	<1	None
GP#62-2	D/36	PH1	01/14/98		µg/L	<1	130	21	<1	<1	<1	<1	<1	<1	<1	None
GP#62-3	S/20	PH1	01/14/98		µg/L	2.4	230	690	80	3	6.4	2.8	<1	<1	1.2	T12DCE 2.3
GP#62-3	S/20	PH2	11/05/99		µg/L	<1	480 JH	790 JH	19	<1	5.5	2.9	<1	<1	<1	T12DCE 5.6
GP#62-3	D/32	PH1	01/14/98		µg/L	<1	35	46	5.9	<1	1.1	1	<1	<1	<1	None
GP#62-4	S/20	PH1	01/14/98		µg/L	<1	54	9.9	<1	<1	<1	<1	<1	<1	<1	None
GP#62-4	D/33	PH1	01/14/98		µg/L	<1	220	41	<1	<1	<1	<1	<1	<1	<1	None
GP#63-1	S/20	PH1	01/12/98		µg/L	<1	61	7.7	<1	<1	<1	<1	<1	<1	<1	None
GP#63-1	D/30	PH1	01/12/98		µg/L	<1	42	7.1	<1	<1	<1	<1	<1	<1	<1	None
GP#63-2	S/20	PH1	01/12/98		µg/L	<1	1.4	<1	<1	<1	<1	<1	<1	<1	<1	None
GP#63-2	D/33	PH1	01/12/98		µg/L	<1	40	13	<1	<1	<1	<1	<1	<1	<1	None
GP#67-1	S/20	PH1	01/15/98		µg/L	<1	<1	2	<1	<1	<1	<1	<1	<1	3	XYL-O 1.1
GP#67-1	D/39	PH1	01/15/98		µg/L	<1	<1	1.3	<1	<1	<1	<1	<1	<1	<1	None
GP#67-2	S/20	PH1	01/15/98		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GP#67-2	D/37	PH1	01/15/98		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GP#67-3	S/20	PH1	01/15/98		µg/L	<1	<1	1.6	12	<1	1.1	<1	<1	<1	59	EBN 2.8, TOL 3.7, XYL-MP 2.3, XYL-O 3
GP#67-3	D/33	PH1	01/15/98		µg/L	<1	<1	<1	6.1	<1	<1	<1	<1	<1	<1	None
GP#67-4	S/20	PH1	01/15/98		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	39	1122PCA 49, 112TCA 6.4, 12DCP 4.3, CBN
GP#67-4	D/32	PH1	01/15/98		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	2.6	None
GP#67-5	S/20	PH1	01/15/98		µg/L	<1	<1	<1	3.6	<1	<1	<1	<1	<1	51	1122PCA 27, 112TCA 1.5, 12DCP 1.4, CBN 2.1, CM 6.5, TOL 1.1
GP#67-5	D/32	PH1	01/15/98		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GP#70-1	S/20	PH1	01/20/98		µg/L	<1	1.6	1.2	<1	<1	<1	<1	<1	<1	<1	None
GP#70-1	D/36	PH1	01/20/98		µg/L	<1	3.3	1.3	<1	<1	<1	<1	<1	<1	<1	None
GP#73-1	S/20	PH1	01/23/98		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GP#73-1	D/40	PH1	01/23/98		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GP02A-01	M/23	PH2	03/08/00		µg/L	<1	36	2	<1	<1	<1	<1	<1	<1	<1	None
GP02A-01	D/32	PH2	03/08/00		µg/L	<1	47	<1	<1	<1	<1	<1	<1	<1	<1	None
GP02A-02	S/17	PH2	03/08/00		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GP02A-02	D/39	PH2	03/08/00		µg/L	<1	3.9	<1	<1	<1	<1	<1	<1	<1	<1	None
GP02A-02	D/28	PH2	03/08/00		µg/L	<1	27	<1	<1	<1	<1	<1	<1	<1	<1	None
GP02A-03	S/17	PH2	03/08/00		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GP02A-03	D/31	PH2	03/08/00		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GP02A-04	S/17	PH2	10/28/99		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GP02A-04	D/27	PH2	10/28/99		µg/L	<1	64 JH	12	<1	<1	<1	<1	<1	<1	<1	None
GP02A-05	S/17	PH2	10/28/99		µg/L	<1	5	<1	<1	<1	<1	<1	<1	<1	<1	None
GP02A-05	D/35	PH2	10/28/99		µg/L	<1	20	<1	<1	<1	<1	<1	<1	<1	<1	None
GP02A-06	S/17	PH2	10/28/99		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GP02A-06	D/44	PH2	10/28/99		µg/L	<1	9	<1	<1	<1	<1	<1	<1	<1	<1	None
GP02A-07	S/17	PH2	01/17/00		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GP02A-07	D/28	PH2	01/17/00		µg/L	<1	440	9.8	<1	1.1	<1	3.4	<1	2.5	<1	None

Table 5-8
North Industrial Corridor (NIC) Site
Geoprobe Groundwater Sample Analytical Results, Site VOCs* by EPA Method 8260

Station	Groundwater Depth Zone / Depth (feet)	Investigation Phase	Sample Date	QC Sample Flag	Units	PCE	TCE	C12DCE	VC	TCA	11DCA	11DCE	CT	CFM	BEN	Other Detected Compounds
GP02B-01	S/17	PH2	10/21/99		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GP02B-01	D/37	PH2	10/21/99		µg/L	<1	17	<1	<1	<1	<1	<1	<1	<1	<1	None
GP02B-02	S/17	PH2	12/15/99		µg/L	<1	5.6	<1	<1	<1	<1	<1	<1	<1	<1	None
GP02B-02	D/32	PH2	12/15/99		µg/L	<1	210	10	<1	2.4	<1	3.8	<1	<1	<1	None
GP02B-03	S/17	PH2	12/13/99		µg/L	<1	32	<1	<1	<1	<1	<1	<1	<1	<1	None
GP02B-03	D/33	PH2	12/13/99		µg/L	<1	96	5.8	<1	1.7	<1	1.8	<1	<1	<1	None
GP02B-03	D/33	PH2	12/13/99	DUP	µg/L	<1	86	5.7	<1	1.6	<1	1.6	<1	<1	<1	None
GP02B-04	S/17	PH2	12/15/99		µg/L	<1	4.4	<1	<1	<1	<1	<1	<1	<1	<1	None
GP02B-04	D/32	PH2	12/15/99		µg/L	<1	68	2.9	<1	<1	<1	<1	<1	<1	<1	None
GP02B-05	S/17	PH2	12/17/99		µg/L	<1	43	7.7	<1	1.2	<1	1.3	<1	<1	<1	None
GP02B-05	D/37	PH2	12/17/99		µg/L	2.2	500 JH	95 JH	2.9	12	4.5	36	18	1.8	<1	CCL4 18, T12DCE 16
GP02B-06	S/17	PH2	12/20/99		µg/L	<1	80	42	<1	1.9	1.2	3.5	<1	1.3	<1	T12DCE 2.9
GP02B-06	D/39	PH2	12/20/99		µg/L	<1	300	40	1.9	11	4.4	31	16	2.5	<1	CCL4 16, T12DCE 3.2
GP02B-07	S/17	PH2	12/20/99		µg/L	<1	56	2.5	<1	1	<1	<1	<1	<1	<1	None
GP02B-07	D/39	PH2	12/20/99		µg/L	<1	250	31	<1	5.6	2.4	10	<1	<1	<1	T12DCE 4.2
GP02C-01	M/23	PH2	12/09/99		µg/L	<5	110	38	<5	<5	2.6 J	<5	<5	<5	<5	None
GP02C-01	D/28	PH2	12/09/99		µg/L	<10	320	110	<10	<10	4.8 J	15	<10	<10	<10	T12DCE 9.3 J
GP02C-02	S/17	PH2	12/02/99		µg/L	<1	9	1	<1	<1	<1	<1	<1	<1	<1	None
GP02C-02	D/35	PH2	12/02/99		µg/L	<1	360	130	15	8.6	7.3	37	2.8	1.9	2.2	CCL4 2.8, T12DCE 27
GP02C-03	S/17	PH2	11/10/99		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GP02C-03	D/38	PH2	11/10/99		µg/L	1.1	710 JH	250 JH	24	11	10	40	1.5	1.9	3.1	CCL4 1.5, CM 1.6, T12DCE 36
GP02C-03	D/38	PH2	11/10/99	DUP	µg/L	<1	760 JH	290 JH	24	10	10	39	1.2	1.9	3	CCL4 1.2, T12DCE 32
GP02C-04	S/20	PH2	11/01/99		µg/L	<1	<1	18	<1	<1	<1	<1	<1	<1	<1	None
GP02C-04	D/32	PH2	11/01/99		µg/L	<1	480	150	2.2	9.6	6.5	26	<1	2.5	<1	T12DCE 15
GP02C-05	S/17	PH2	01/14/00		µg/L	<1	<1	<1	2.7	<1	<1	<1	<1	<1	98	TOL 1.6
GP02C-05	M/26	PH2	01/14/00		µg/L	<1	<1	15	86	<1	4.5	<1	<1	<1	270	CHEA 2.7, EBN 1.4, TOL 9.7, XYL-MP 3.7, XYL-O 1.1
GP02C-05	D/35	PH2	01/14/00		µg/L	<1	330	100	16	7	6.9	31	<1	1.7	7.6	12DCA 1.1, T12DCE 20
GP02C-06	S/17	PH2	10/29/99		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GP02C-06	D/29	PH2	10/29/99		µg/L	<1	370	120	39	1.3	11	22	<1	<1	2.3	CHEA 2.5, CM 1.8, T12DCE 21
GP02C-07	S/17	PH2	11/01/99		µg/L	<1	6.1	39	78	<1	4.2	1.5	<1	<1	<1	T12DCE 4.9
GP02C-07	D/32	PH2	11/01/99		µg/L	<1	470	170	37	5.8	12	33	<1	<1	2.1	CHEA 2.0, CM 1.5, T12DCE 34
GP02C-08	S/17	PH2	11/01/99		µg/L	<1	240	94	7.9	2.6	5.1	11	<1	<1	<1	T12DCE 16
GP02C-08	D/35	PH2	11/01/99		µg/L	<1	660	220	37	8.4	13	40	<1	<1	2.8	12DCA 1.4, CHEA 1.4, CM 1.6, T12DCE 41
GP02C-09	M/23	PH2	11/01/99		µg/L	<1	<1	150	12	<1	2.9	3.6	<1	<1	9.2	12DCA 1.2, EBN 270, T12DCE 3.0, TOL 8.3, XYL-MP 160, XYL-O 9.5
GP02C-09	D/32	PH2	11/01/99		µg/L	<1	570	190	32	7.6	11	34	<1	<1	1	CHEA 1.5, CM 1.6, T12DCE 33
GP02C-10	S/17	PH2	10/29/99		µg/L	<1	79	36	3.2	<1	2.5	3.9	<1	<1	<1	T12DCE 6.0
GP02C-10	D/28	PH2	10/29/99		µg/L	<1	460	170	41	4.6	13	34	<1	<1	1.6	CM 1.3, T12DCE 27
GP02C-11	S/17	PH2	11/01/99		µg/L	<1	90	41	1.6	<1	2.2	4	<1	<1	<1	T12DCE 7.2
GP02C-11	D/32	PH2	11/01/99		µg/L	<1	400	140	36	3.9	11	30	<1	<1	1.5	CHEA 2.4, CM 1.2, T12DCE 27
GP02E-01	S/17	PH2	10/21/99		µg/L	<1	27	17	<1	<1	<1	<1	<1	<1	<1	None
GP02E-01	D/32	PH2	10/21/99		µg/L	<1	280	51	3.4	1	2.5	4.9	<1	<1	<1	T12DCE 5.6
GP02E-02	S/17	PH2	10/27/99		µg/L	<1	67	13	<1	<1	<1	<1	<1	<1	<1	T12DCE 1.7
GP02E-02	D/32	PH2	10/27/99		µg/L	1.6	500	33	5.1	<1	3.4	3.8	<1	<1	<1	T12DCE 9.4
GP02E-03	S/17	PH2	11/02/99		µg/L	<1	21	22	<1	<1	<1	<1	<1	<1	<1	T12DCE 1.7
GP02E-03	D/31	PH2	11/02/99		µg/L	<1	420	55	2.3	<1	2.1	2.5	<1	<1	<1	T12DCE 6.8
GP02E-05	S/17	PH2	11/11/99		µg/L	<1	2.7	<1	<1	<1	<1	<1	<1	<1	<1	None
GP02E-05	D/29	PH2	11/11/99		µg/L	<1	230 JH	52 JH	1.6	<1	1.5	1.5	<1	<1	<1	T12DCE 3.9

Table 5-8
North Industrial Corridor (NIC) Site
Geoprobe Groundwater Sample Analytical Results, Site VOCs* by EPA Method 8260

Station	Groundwater Depth Zone / Depth (feet)	Investigation Phase	Sample Date	QC Sample Flag	Units	PCE	TCE	C12DCE	VC	TCA	11DCA	11DCE	CT	CFM	BEN	Other Detected Compounds
GP02E-06	S/17	PH2	11/01/99		µg/L	<1	7.1	<1	<1	<1	<1	<1	<1	<1	<1	None
GP02E-06	D/32	PH2	11/01/99		µg/L	<1	490	82	3.6	<1	2.6	3.6	<1	<1	<1	T12DCE 7.5
GP02E-06	D/32	PH2	11/01/99	DUP	µg/L	<1	410	76	3.5	<1	2.6	3.4	<1	<1	<1	T12DCE 6.1
GP02E-07	S/17	PH2	11/12/99		µg/L	<1	51	5.1	<1	<1	<1	<1	<1	<1	<1	None
GP02E-07	D/25	PH2	11/12/99		µg/L	1.7	540	74	6.2	<1	3.9	4.3	<1	<1	<1	T12DCE 6.7
GP02E-08	S/17	PH2	11/12/99		µg/L	<1	110	14	<1	<1	<1	<1	<1	<1	<1	T12DCE 1.7
GP02E-08	D/26	PH2	11/12/99		µg/L	1.2	350	48	3.2	<1	1.9	2.5	<1	<1	<1	T12DCE 3.8
GP02E-09	S/17	PH2	10/27/99		µg/L	<1	11	<1	<1	<1	<1	<1	<1	<1	<1	None
GP02E-09	D/31	PH2	10/27/99		µg/L	1.5	640	88	5.7	<1	3.9	3.9	<1	<1	<1	T12DCE 11
GP02F-01	S/17	PH2	11/02/99		µg/L	<1	13	32	<1	<1	<1	<1	<1	<1	<1	T12DCE 2.6
GP02F-01	D/29	PH2	11/02/99		µg/L	<1	520	84	7.8	<1	4.9	4.4	<1	<1	<1	T12DCE 6.2
GP02F-02	S/17	PH2	10/21/99		µg/L	<1	14	3.3	<1	<1	<1	<1	<1	<1	<1	None
GP02F-02	D/31	PH2	10/21/99		µg/L	<1	280	48	5.4	<1	2.5	3.5	<1	<1	<1	T12DCE 6.2
GP02F-03	S/17	PH2	11/01/99		µg/L	<1 JH	19 JH	5.8 JH	<1 JH	<1 JH	<1 JH	<1 JH	<1 JH	<1 JH	<1 JH	None
GP02F-03	D/31	PH2	11/01/99		µg/L	<1	470	69	4.3	<1	2.9	3.6	<1	<1	<1	T12DCE 6.4
GP02F-04	S/20	PH2	10/29/99		µg/L	<1	53	20	<1	<1	<1	<1	<1	<1	<1	T12DCE 1.4
GP02F-04	D/29	PH2	10/29/99		µg/L	<1	370	72	5.9	<1	2.5	2.8	<1	<1	<1	T12DCE 6.0
GP02F-04	D/29	PH2	10/29/99	DUP	µg/L	<1	380 JH	68 JH	5.6	<1	2.5	2.6	<1	<1	<1	T12DCE 5.3
GP02F-05	S/17	PH2	10/29/99		µg/L	<1	20	1.9	<1	<1	<1	<1	<1	<1	<1	None
GP02F-05	D/31	PH2	10/29/99		µg/L	<1	410 JH	78 JH	7.4	<1	3	2.9	<1	<1	<1	T12DCE 9.5
GP02F-06	S/17	PH2	10/29/99		µg/L	<1	22	2.8	<1	<1	<1	<1	<1	<1	<1	None
GP02F-06	D/32	PH2	10/29/99		µg/L	<1	350 JH	60 JH	3.4	<1	2.4	2.4	<1	<1	<1	T12DCE 7.0
GP02G-01	S/17	PH2	10/21/99		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GP02G-01	S/17	PH2	10/21/99	DUP	µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GP02G-01	D/35	PH2	10/21/99		µg/L	<1	10	<1	<1	<1	<1	<1	<1	<1	<1	None
GP02G-02	S/17	PH2	10/26/99		µg/L	<1	44	5.9	<1	2.2	<1	<1	<1	<1	<1	None
GP02G-02	D/35	PH2	10/26/99		µg/L	<1	320	46	4.6	1.6	2.8	6.5	<1	<1	<1	T12DCE 4.4
GP02G-03	S/17	PH2	11/02/99		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GP02G-03	D/29	PH2	11/02/99		µg/L	<1	77	11	<1	1.5	1	<1	<1	<1	<1	None
GP02G-04	S/17	PH2	11/02/99		µg/L	<1	4.4	<1	<1	<1	<1	<1	<1	<1	<1	None
GP02G-04	D/38	PH2	11/02/99		µg/L	<1	320	67	3.5	1.1	2.6	5	<1	<1	<1	T12DCE 5.4
GP02G-05	S/17	PH2	11/02/99		µg/L	<1	9.2	<1	<1	<1	<1	<1	<1	<1	<1	None
GP02G-05	D/35	PH2	11/02/99		µg/L	<1	270 JH	49 JH	2.7	<1	2	3.3	<1	<1	<1	T12DCE 4.9
GP02G-06	S/17	PH2	11/02/99		µg/L	<1	10	<1	<1	<1	<1	<1	<1	<1	<1	None
GP02G-06	D/35	PH2	11/02/99		µg/L	<1	220 JH	44 JH	2.7	<1	1.9	3.5	<1	<1	<1	T12DCE 4.9
GP02G-07	S/17	PH2	11/05/99		µg/L	<1	11	<1	<1	<1	<1	<1	<1	<1	<1	None
GP02G-07	D/26	PH2	11/05/99		µg/L	<1	47	7.8	<1	<1	<1	<1	<1	<1	<1	MECL 1.2
GP02G-08	S/17	PH2	11/02/99		µg/L	<1	1.3	<1	<1	<1	<1	<1	<1	12	<1	None
GP02G-08	D/38	PH2	11/02/99		µg/L	<1	170 JH	38	1.9	1.8	1.9	2.7	<1	<1	<1	T12DCE 2.0
GP02H-01	S/17	PH2	10/21/99		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GP02H-01	D/39	PH2	10/21/99		µg/L	<1	2.8	5.2	<1	<1	<1	<1	<1	<1	<1	None
GP02H-02	S/19	PH2	10/21/99		µg/L	<1	72	46	<1	<1	<1	<1	<1	<1	<1	T12DCE 2.5
GP02H-02	D/36	PH2	10/21/99		µg/L	<1	1.5	<1	<1	<1	<1	<1	<1	<1	<1	None
GP02H-03	S/17	PH2	10/28/99		µg/L	<1	3.8	<1	<1	<1	<1	<1	<1	<1	<1	None
GP02H-03	D/35	PH2	10/28/99		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GP02H-03	D/35	PH2	10/28/99	DUP	µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GP02H-04	S/17	PH2	10/22/99		µg/L	<1	16	68 JP	<1	<1	<1	<1	<1	<1	<1	T12DCE 9.5
GP02H-04	D/33	PH2	10/22/99		µg/L	<1	1.2	17	<1	<1	<1	<1	<1	<1	<1	None

Table 5-8
North Industrial Corridor (NIC) Site
Geoprobe Groundwater Sample Analytical Results, Site VOCs* by EPA Method 8260

Station	Groundwater Depth Zone / Depth (feet)	Investigation Phase	Sample Date	QC Sample Flag	Units	PCE	TCE	C12DCE	VC	TCA	11DCA	11DCE	CT	CFM	BEN	Other Detected Compounds
GP02H-05	S/17	PH2	11/02/99		µg/L	<1	13	<1	<1	<1	<1	<1	<1	1.5	<1	None
GP02H-05	D/38	PH2	11/02/99		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GP02H-06	S/17	PH2	11/11/99		µg/L	<1	5.8	<1	<1	<1	<1	<1	<1	<1	<1	None
GP02H-06	D/27	PH2	11/11/99		µg/L	<1	<1	1.4	<1	<1	<1	<1	<1	<1	<1	None
GP02H-07	S/17	PH2	11/11/99		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GP02H-07	D/28	PH2	11/11/99		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GP02H-08	S/17	PH2	11/11/99		µg/L	2.7	4.1	<1	<1	<1	<1	<1	<1	<1	<1	None
GP02H-08	D/38	PH2	11/11/99		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GP02H-09	S/17	PH2	11/11/99		µg/L	3.9	370	43	<1	<1	<1	<1	<1	<1	<1	T12DCE 2.0
GP02H-09	D/35	PH2	11/11/99		µg/L	<1	14	<1	<1	<1	<1	<1	<1	<1	<1	None
GP02I-01	S/17	PH2	11/05/99		µg/L	<1	<1	46	3.1	<1	9.2	<1	<1	<1	3	None
GP02I-01	D/31	PH2	11/05/99		µg/L	<1	130 JH	22	1.3	<1	1.3	<1	<1	<1	<1	T12DCE 1.3
GP02I-02	S/17	PH2	01/14/00		µg/L	<1	<1	5.5	3.1	<1	<1	<1	<1	<1	<1	None
GP02I-02	D/29	PH2	01/14/00		µg/L	20	86	51	32	<1	6.3	<1	<1	<1	<1	CM 1.4, T12DCE 2.7
GP02I-03	S/17	PH2	11/29/99		µg/L	1.6	14	6.3	<1	1.2	<1	<1	<1	<1	<1	None
GP02I-03	D/34	PH2	11/29/99		µg/L	7.5	360	91	12	<1	4.2	2.7	<1	<1	<1	12DCP 1.4, T12DCE 9.0
GP02I-03	D/34	PH2	11/29/99	DUP	µg/L	5.4	310	85	12	<1	3.9	2.6	<1	<1	<1	12DCP 1.3, T12DCE 8.9
GP02I-04	S/17	PH2	11/22/99		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GP02I-04	M/26	PH2	11/22/99		µg/L	<1	3.5	32	2	<1	<1	<1	<1	<1	<1	None
GP02I-04	D/35	PH2	01/25/00		µg/L	8.2	270	56	11	<1	3.4	2.7	<1	<1	<1	T12DCE 6.1
GP02I-05	S/17	PH2	01/10/00		µg/L	<1	30	60	18	<1	3.6	<1	<1	<1	<1	T12DCE 2.9
GP02I-05	D/30	PH2	01/10/00		µg/L	8.2	230	82	15	<1	8.3	2.3	<1	<1	<1	T12DCE 5.6
GP02I-06	S/17	PH2	01/10/00		µg/L	4.8	100	43	2.8	<1	2.9	<1	<1	<1	<1	T12DCE 4.3
GP02I-06	D/30	PH2	01/10/00		µg/L	13	310	91	23	<1	6.1	2.9	<1	<1	<1	T12DCE 5.6
GP02I-07	S/17	PH2	01/25/00		µg/L	5.5	40	20	<1	<1	1.4	<1	<1	<1	<1	T12DCE 2.1
GP02I-08	S/17	PH2	01/25/00		µg/L	3.3	38	72	28	<1	5.4	<1	<1	<1	<1	T12DCE 2.8
GP03A-01	S/17	PH2	11/05/99		µg/L	<1	56	4.7	<1	<1	<1	<1	<1	<1	<1	None
GP03A-01	D/29	PH2	11/05/99		µg/L	1.5	140 JH	20	<1	<1	<1	<1	<1	<1	<1	T12DCE 1.1
GP03A-05	S/17	PH2	03/08/00		µg/L	<1	40	6.5	<1	<1	<1	<1	<1	<1	<1	None
GP03A-05	D/32	PH2	03/08/00		µg/L	<1	48	17	<1	<1	<1	<1	<1	<1	<1	None
GP03A-06	S/17	PH2	03/08/00		µg/L	1.7	64	12	<1	<1	<1	<1	<1	<1	<1	None
GP03A-06	D/29	PH2	03/08/00		µg/L	4.8	130	24	<1	<1	<1	<1	<1	<1	<1	T12DCE 2.2
GP03A-07	S/17	PH2	03/08/00		µg/L	<1	17	2.1	<1	<1	<1	<1	<1	<1	<1	CBN 3.4
GP03A-07	D/36	PH2	03/08/00		µg/L	7.8	240	41	<1	<1	<1	<1	<1	<1	<1	T12DCE 3.8
GP03B-01	S/17	PH2	10/26/99		µg/L	<1	1.2	<1	<1	<1	<1	<1	<1	<1	<1	None
GP03B-01	D/35	PH2	10/26/99		µg/L	<1	110	<1	8.6	<1	1.9	4.2	<1	35	<1	T12DCE 2.7
GP03B-02	S/17	PH2	10/26/99		µg/L	<1	12	<1	<1	<1	<1	<1	<1	<1	<1	None
GP03B-02	D/35	PH2	10/26/99		µg/L	<1	150	38	11	<1	3	8.5	<1	<1	<1	T12DCE 2.4
GP03B-03	S/17	PH2	11/10/99		µg/L	<1 JH	10 JH	8 JH	<1 JH	<1 JH	<1 JH	<1 JH	<1 JH	<1 JH	<1 JH	None
GP03B-03	D/35	PH2	11/10/99		µg/L	<1 JH	200 JH	41 JH	8 JH	1.1 JH	2.6 JH	6.9 JH	<1 JH	<1 JH	<1 JH	T12DCE 2.5 JH
GP03B-04	S/17	PH2	10/27/99		µg/L	<1	<1	33	<1	<1	<1	<1	<1	<1	<1	None
GP03B-04	D/29	PH2	10/27/99		µg/L	<1	65	9.2	<1	<1	<1	<1	<1	<1	<1	None
GP03B-05	S/17	PH2	11/12/99		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GP03B-05	D/28	PH2	11/12/99		µg/L	<1	12	<1	<1	<1	<1	<1	<1	<1	<1	None
GP03B-06	M/23	PH2	11/12/99		µg/L	<1	110	15	<1	<1	<1	<1	<1	<1	<1	T12DCE 1.1
GP03B-06	D/29	PH2	11/12/99		µg/L	<1 JIS	1.5 JIS	<1 JIS	<1 JIS	<1 JIS	<1 JIS	<1 JIS	<1 JIS	<1 JIS	<1 JIS	None
GP03B-07	S/20	PH2	11/11/99		µg/L	<1	17	4.6	<1	<1	<1	<1	<1	<1	<1	None
GP03B-07	D/28	PH2	11/11/99		µg/L	<1.7	43	6	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7	None

Table 5-8
North Industrial Corridor (NIC) Site
Geoprobe Groundwater Sample Analytical Results, Site VOCs* by EPA Method 8260

Station	Groundwater Depth Zone / Depth (feet)	Investigation Phase	Sample Date	QC Sample Flag	Units	PCE	TCE	C12DCE	VC	TCA	11DCA	11DCE	CT	CFM	BEN	Other Detected Compounds
GP03B-08	S/14	PH2	08/29/00		µg/L	<1	1.7	<1	<1	<1	<1	<1	<1	<1	<1	None
GP03B-08	D/35	PH2	08/29/00		µg/L	<1	120	44	9.2	<1	2	4	<1	<1	<1	T12DCE 2.5
GP03B-09	S/14	PH2	08/29/00		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GP03C-01	S/20	PH2	10/26/99		µg/L	<1	25	5.3	<1	<1	<1	<1	<1	<1	<1	None
GP03C-01	D/28	PH2	10/26/99		µg/L	<1	240	42	6.9	<1	2.2	4.9	<1	<1	<1	T12DCE 6.0
GP03C-01	D/28	PH2	10/26/99	DUP	µg/L	<1	240	43	5.2	<1	2	3.6	<1	<1	<1	T12DCE 4.1
GP03C-02	S/20	PH2	10/27/99		µg/L	<1	32	10	<1	<1	<1	<1	<1	<1	<1	None
GP03C-02	D/29	PH2	10/27/99		µg/L	<1	140	46	20	<1	3	5.2	<1	<1	<1	T12DCE 3.5
GP03C-03	S/17	PH2	11/12/99		µg/L	<1	2.4	2	<1	<1	<1	<1	<1	<1	<1	None
GP03C-03	D/27	PH2	11/12/99		µg/L	<1	64	27	6	<1	<1	1.3	<1	<1	<1	T12DCE 1.2
GP03C-04	S/17	PH2	11/12/99		µg/L	<1	9.2	1	<1	<1	<1	<1	<1	<1	<1	None
GP03C-04	D/27	PH2	11/12/99		µg/L	<1	120	31	6.8	<1	1.8	3.2	<1	<1	<1	T12DCE 2.3
GP03C-05	S/20	PH2	11/22/99		µg/L	<1	14	2.6	<1	<1	<1	<1	<1	<1	<1	None
GP03C-05	D/34	PH2	11/22/99		µg/L	<1	190	81	41	<1	3.2	6.6	<1	<1	<1	T12DCE 1.8
GP03C-06	S/20	PH2	11/12/99		µg/L	<1	17	2.5	<1	<1	<1	<1	<1	<1	<1	None
GP03C-06	D/35	PH2	11/12/99		µg/L	<1 JH	120 JH	58 JH	16 JH	<1 JH	3.1 JH	6.7 JH	<1 JH	<1 JH	<1 JH	T12DCE 1.6 JH
GP03C-07	S/20	PH2	11/12/99		µg/L	<1	14	4.1	<1	<1	<1	<1	<1	<1	<1	None
GP03C-07	D/34	PH2	11/12/99		µg/L	<1 JH	130 JH	43 JH	12 JH	<1 JH	2.4 JH	4.5 JH	<1 JH	<1 JH	<1 JH	T12DCE 2.3 JH
GP03C-07	D/34	PH2	11/12/99	DUP	µg/L	<1 JH	160 JH	47 JH	12 JH	<1 JH	2.4 JH	5 JH	<1 JH	<1 JH	<1 JH	T12DCE 2.1 JH
GP03D-01	S/17	PH2	10/22/99		µg/L	<1	<1	<1	2.9	<1	1.3	<1	<1	<1	3.3	None
GP03D-01	D/30	PH2	10/22/99		µg/L	<1	210 JP	41	2.3	1.4	1.6	3.7	<1	<1	<1	T12DCE 2.7
GP03D-02	S/17	PH2	01/20/00		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	3.1	None
GP03D-02	D/32	PH2	01/20/00		µg/L	<1	190	31	3.3	<1	1.4	1.5	<1	<1	<1	T12DCE 3.5
GP03D-03	S/17	PH2	11/11/99		µg/L	<1	<1	1.4	1.1	<1	<1	<1	<1	<1	1.4	CM 1.3, TOL 1.3, XYL-MP 5.7
GP03D-03	D/32	PH2	11/11/99		µg/L	<1	160	29	1.3	<1	<1	1.6	<1	<1	<1	T12DCE 2.4
GP03D-03	D/32	PH2	11/11/99	DUP	µg/L	<1	160	30	1.5	<1	<1	1.8	<1	<1	<1	T12DCE 2.2
GP03D-04	S/17	PH2	01/13/00		µg/L	<1	30	17	2.1	<1	<1	<1	<1	<1	<1	None
GP03D-04	D/32	PH2	01/13/00		µg/L	<1	200	45	7.7	1.1	2.4	7.6	<1	<1	<1	T12DCE 2.9
GP03D-05	S/17	PH2	01/18/00		µg/L	<1	3.6	4.8	<1	<1	<1	<1	<1	<1	<1	None
GP03D-05	D/29	PH2	01/18/00		µg/L	<1	120	49	8.1	<1	1.2	1.8	<1	<1	<1	T12DCE 4.4
GP03D-06	S/17	PH2	11/22/99		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	55	None
GP03D-06	D/31	PH2	11/22/99		µg/L	<1	110	94	24	<1	<1	<1	<1	<1	19	T12DCE 1.7
GP03D-07	S/17	PH2	11/22/99		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	1.9	None
GP03D-07	D/29	PH2	11/22/99		µg/L	<1	220	50	8.2	<1	<1	2.5	<1	<1	4.5	T12DCE 1.6
GP03D-08	S/17	PH2	01/14/00		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GP03D-08	D/32	PH2	01/14/00		µg/L	<1	210	42	5.1	<1	1.6	3.9	<1	<1	<1	T12DCE 2.8
GP03D-09	S/17	PH2	01/14/00		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GP03D-09	D/32	PH2	01/14/00		µg/L	<1	190	53	9.1	<1	1.7	3.7	<1	<1	<1	T12DCE 4.0
GP03E-01	S/17	PH2	10/26/99		µg/L	3.4	3.1	<1	<1	<1	<1	<1	<1	<1	<1	MECL 1.6
GP03E-01	D/35	PH2	10/26/99		µg/L	<1	190 JP	58 JP	3.4	1.9	2.5	4.9	<1	<1	<1	T12DCE 4.0
GP03E-02	S/17	PH2	10/26/99		µg/L	6.6	41	4.4	<1	<1	<1	<1	<1	<1	<1	None
GP03E-02	D/34	PH2	10/26/99		µg/L	<1	260 JP	46	2.9	1.1	1.5	2.7	<1	<1	<1	T12DCE 2.7
GP03E-03	S/17	PH2	06/26/99		µg/L	1.5	76 JP	13	<1	<1	<1	<1	<1	<1	<1	T12DCE 1.5
GP03E-03	D/26	PH2	10/26/99		µg/L	<1	530 JP	36	1.5	<1	1.2	1.5	<1	<1	<1	T12DCE 2.6
GP03E-05	S/17	PH2	10/26/99		µg/L	4.1	12	11	<1	<1	<1	<1	<1	<1	<1	None
GP03E-05	D/32	PH2	10/26/99		µg/L	5.1	560 JP	83 JP	5.9	<1	2.7	2.3	<1	<1	<1	T12DCE 5.3
GP03E-06	S/17	PH2	10/26/99		µg/L	7	76 JP	12	<1	<1	<1	<1	<1	<1	<1	None
GP03E-06	D/24	PH2	10/26/99		µg/L	7.9	250 JP	33	1.6	<1	<1	<1	<1	<1	<1	T12DCE 3.1

Table 5-8
North Industrial Corridor (NIC) Site
Geoprobe Groundwater Sample Analytical Results, Site VOCs* by EPA Method 8260

Station	Groundwater Depth Zone / Depth (feet)	Investigation Phase	Sample Date	QC Sample Flag	Units	PCE	TCE	C12DCE	VC	TCA	11DCA	11DCE	CT	CFM	BEN	Other Detected Compounds
GP03E-07	S/17	PH2	10/25/99		µg/L	2.9	100 JP	12	<1	<1	<1	<1	<1	<1	<1	None
GP03E-07	D/25	PH2	10/26/99		µg/L	<1	130 JP	48 JP	2.2	<1	1.7	1.9	<1	<1	<1	T12DCE 4.0
GP03E-08	S/17	PH2	10/26/99		µg/L	17	66	120	12	<1	15	2.1	<1	<1	<1	T12DCE 12
GP03E-08	D/32	PH2	10/26/99		µg/L	<1	350	59	9.4	1.7	2.9	3.7	<1	<1	<1	T12DCE 7.2
GP03E-09	S/17	PH2	10/26/99		µg/L	<1	44 JP	16	<1	<1	<1	<1	<1	<1	<1	T12DCE 1.2
GP03E-09	D/29	PH2	10/26/99		µg/L	2.9	220 JP	65 JP	5.1	1.1	2.8	3.7	<1	<1	<1	T12DCE 7.2
GP03E-10	S/20	PH2	11/22/99		µg/L	5.3	48	10	<1	<1	<1	<1	<1	<1	<1	None
GP03E-10	D/31	PH2	11/22/99		µg/L	<1	640	75	8.9	<1	2.2	3.8	<1	<1	<1	T12DCE 3.8
GP03E-11	S/17	PH2	11/22/99		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GP03E-11	D/35	PH2	11/22/99		µg/L	<1	120	19	<1	<1	<1	<1	<1	<1	<1	None
GP03E-13	S/17	PH2	11/22/99		µg/L	3.4	110	11	<1	<1	<1	<1	<1	<1	<1	None
GP03E-13	M/24	PH2	01/25/00		µg/L	2.5	350	51	4.4	<1	2.7	2.7	<1	<1	<1	T12DCE 4.8
GP03E-13	D/35	PH2	11/22/99		µg/L	1.4	1400	110	14	<1	3.3	5.3	<1	<1	<1	T12DCE 7.0
GP03E-13	D/35	PH2	01/25/00		µg/L	2.3	580	77	9.7	<1	3.2	5.8	<1	<1	<1	T12DCE 7.9
GP03E-14	S/17	PH2	11/22/99		µg/L	2.8	62	6.1	<1	<1	<1	<1	<1	<1	<1	None
GP03E-14	D/29	PH2	11/22/99		µg/L	<1	630	85	9.2	<1	4.1	3.8	<1	<1	<1	T12DCE 4.7
GP03F-01	S/17	PH2	11/22/99		µg/L	<1	170	13	<1	68	4.4	19	<1	<1	<1	None
GP03F-01	D/25	PH2	11/22/99		µg/L	<1	48	7.2	<1	20	2.4	8.6	<1	<1	<1	None
GP03F-02	S/17	PH2	11/23/99		µg/L	15	1100	110	<1	140	10	32	<1	1.3	<1	T12DCE 8.0
GP03F-02	D/35	PH2	11/23/99		µg/L	<1	91	30	1.8	6.9	1.7	4	<1	<1	<1	T12DCE 1.1
GP03F-03	S/17	PH2	12/01/99		µg/L	3.1	420	30	<1	70	7.5	11	11	1.3	<1	12DCP 1.3, CCL4 11, T12DCE 3.7
GP03F-03	D/32	PH2	12/01/99		µg/L	<1	71	16	<1	52	7.5	20	12	1.3	<1	CCL4 12, T12DCE 1.2
GP03F-04	S/17	PH2	12/01/99		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	12DCB 2.4
GP03F-04	D/30	PH2	12/01/99		µg/L	<1	11	5.8	<1	<1	<1	<1	<1	<1	<1	None
GP03G-01	S/17	PH2	11/29/99		µg/L	<1	2.1	1.8	<1	<1	<1	<1	<1	<1	<1	None
GP03G-01	D/30	PH2	11/29/99		µg/L	<1	7.5	7.9	<1	<1	<1	<1	<1	<1	<1	T12DCE 1.5
GP03G-02	S/17	PH2	12/01/99		µg/L	18	1.6	1.7	<1	<1	<1	<1	<1	<1	<1	None
GP03G-02	D/30	PH2	12/01/99		µg/L	1.4	12	13	<1	<1	<1	<1	<1	<1	<1	T12DCE 1.1
GP03G-03	S/17	PH2	11/29/99		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GP03G-03	D/33	PH2	11/29/99		µg/L	<1	15	10	<1	<1	<1	<1	<1	<1	<1	T12DCE 1.3
GP03G-04	S/20	PH2	11/23/99		µg/L	<1	22	15	<1	<1	5.2	<1	<1	<1	<1	T12DCE 2.9
GP03G-04	D/31	PH2	11/23/99		µg/L	<1	24	33	1.5	<1	1.2	<1	<1	<1	<1	T12DCE 2.8
GP03G-04	D/31	PH2	11/23/99	DUP	µg/L	<1	22	33	1.6	<1	1.2	<1	<1	<1	<1	T12DCE 2.6
GP03G-05	S/17	PH2	11/23/99		µg/L	<1	11	20	1.1	<1	1.4	<1	<1	<1	<1	T12DCE 2.4
GP03G-05	D/30	PH2	11/23/99		µg/L	<1	6.5	16	<1	<1	1.1	<1	<1	<1	<1	None
GP03G-06	S/17	PH2	11/24/99		µg/L	<1	15	15	<1	<1	3.3	<1	<1	<1	<1	T12DCE 3.1
GP03G-06	D/32	PH2	11/24/99		µg/L	<1	17	42	1	<1	1.7	<1	<1	<1	<1	T12DCE 3.1
GP03G-07	S/17	PH2	11/24/99		µg/L	<1	4.4	10	<1	<1	<1	<1	<1	<1	<1	T12DCE 4.0
GP03G-07	D/32	PH2	11/24/99		µg/L	<1	33	42	2.8	<1	1.7	<1	<1	<1	<1	T12DCE 3.3
GP03G-08	S/17	PH2	12/01/99		µg/L	<1	<1	<1	<1	6.7	<1	<1	<1	<1	<1	None
GP03G-08	D/32	PH2	12/01/99		µg/L	<1	14	16	<1	<1	1.1	<1	<1	<1	<1	T12DCE 2.5
GP03G-09	S/17	PH2	12/01/99		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	MECL 1.7
GP03G-09	D/32	PH2	12/01/99		µg/L	<1	12	13	<1	<1	<1	<1	<1	<1	<1	T12DCE 1.9
GP04B-01	M/23	PH2	11/03/99		µg/L	<1	150 JH	110 JH	<1	2.6	1.3	3.4	<1	<1	<1	T12DCE 3.9
GP04B-01	D/41	PH2	11/03/99		µg/L	<1	210 JH	81 JH	1.2	3.2	1.5	7.4	<1	<1	<1	T12DCE 1.2
GP04B-02	S/20	PH2	11/03/99		µg/L	<1	200 JH	110 JH	<1	1.7	3.8	9.9	<1	<1	<1	T12DCE 4.9
GP04B-02	D/41	PH2	11/03/99		µg/L	1.3	440 JH	59	<1	11	4	26	<1	<1	<1	T12DCE 5.2
GP04B-03	M/26	PH2	11/05/99		µg/L	<1	33	15	<1	<1	<1	<1	<1	<1	<1	TOL 1.2
GP04B-03	D/41	PH2	11/05/99		µg/L	<1	480 JH	66 JH	1.5	12	4	27	<1	<1	<1	T12DCE 1.5

Table 5-8
North Industrial Corridor (NIC) Site
Geoprobe Groundwater Sample Analytical Results, Site VOCs* by EPA Method 8260

Station	Groundwater Depth Zone / Depth (feet)	Investigation Phase	Sample Date	QC Sample Flag	Units	PCE	TCE	C12DCE	VC	TCA	11DCA	11DCE	CT	CFM	BEN	Other Detected Compounds
GP04B-04	M/23	PH2	11/03/99		µg/L	<1	83 JH	35	1.3	<1	3.7	3.6	<1	<1	<1	None
GP04B-04	D/41	PH2	11/03/99		µg/L	<1	100 JH	19	<1	1.1	1	3.8	<1	4.6	<1	None
GP04B-05	M/26	PH2	11/03/99		µg/L	<1	65	29	<1	<1	<1	1.5	<1	<1	<1	None
GP04B-05	D/44	PH2	11/03/99		µg/L	<1	230	38	<1	2.8	1.5	10	<1	2.3	<1	None
GP04B-06	M/26	PH2	11/04/99		µg/L	<1	100 JH	12	<1	1.8	<1	2.2	<1	<1	<1	T12DCE 1.2
GP04B-06	D/37	PH2	11/04/99		µg/L	<1	70 JH	20	<1	1.5	<1	1.9	<1	<1	<1	T12DCE 2.0
GP04B-07	M/23	PH2	11/04/99		µg/L	<1	170	23	<1	2	1.6	3.2	<1	<1	<1	T12DCE 2.2
GP04B-07	D/41	PH2	11/04/99		µg/L	<1	33	1.4	<1	<1	<1	<1	<1	<1	<1	None
GP04B-08	S/20	PH2	11/03/99		µg/L	<1	240	36	1	3.9	1.2	6.3	<1	<1	<1	T12DCE 1.3
GP04B-08	D/44	PH2	11/03/99		µg/L	2.9	530 JH	78 JH	2.8	7.5	2.9	17	<1	<1	<1	T12DCE 5.1
GP04B-08	D/44	PH2	11/03/99	DUP	µg/L	2.5	560 JH	80 JH	2.9	7.4	2.9	17	<1	<1	<1	T12DCE 5.4
GP04B-09	S/16	PH2	02/10/00		µg/L	<1	<1	15	<1	<1	<1	<1	<1	<1	<1	None
GP04B-09	M/26	PH2	11/03/99		µg/L	<1	830 JH	120 JH	1.5	11	5.5	22	<1	<1	<1	T12DCE 5.5
GP04B-09	D/44	PH2	11/03/99		µg/L	2.4	700 JH	86 JH	2.5	16	6.2	42	<1	<1	<1	T12DCE 3.2
GP04B-10	S/20	PH2	11/04/99		µg/L	<1	190 JH	32	<1	2.9	2	7.3	<1	<1	<1	T12DCE 1.5
GP04B-10	D/41	PH2	11/04/99		µg/L	<1	180 JH	45 JH	<1	3.4	1.3	7	<1	<1	<1	T12DCE1.7
GP04B-11	S/17	PH2	01/17/00		µg/L	<1	<1	2.6	3.6	<1	<1	<1	<1	<1	<1	None
GP04B-11	D/32	PH2	01/17/00		µg/L	<1	51	29	6.8	<1	6.6	4	<1	<1	<1	T12DCE 1.3
GP04B-12	D/40	PH2	11/04/99		µg/L	<1	150 JH	16	<1	3.4	1.1	6.1	<1	<1	<1	None
GP04B-12	D/29	PH2	11/04/99		µg/L	<1	180 JH	38	<1	4.3	2.5	8.1	<1	<1	<1	T12DCE 1.5
GP04B-13	S/17	PH2	01/17/00		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	130	EBN 230, TOL 110, XYL-MP 300, XYL-O 34
GP04B-13	D/35	PH2	01/17/00		µg/L	<1	57	40	11	<1	4.3	1.8	<1	<1	<1	EBN 30, T12DCE 1.4, TOL 8.1, XYL-MP 45, XYL-O 3.8
GP04B-14	S/20	PH2	11/04/99		µg/L	<1	57	3.8	<1	<1	<1	<1	3.7	1.9	<1	CCL4 3.7
GP04B-14	D/44	PH2	11/04/99		µg/L	2.6	640 JH	98 JH	3.4	13	4.4	28	<1	<1	<1	T12DCE 9.3
GP04C-01	S/17	PH2	11/24/99		µg/L	1.2	3	3.7	1.7	<1	<1	<1	<1	<1	<1	None
GP04C-01	D/38	PH2	11/24/99		µg/L	<1	17	14	6.1	<1	<1	<1	<1	<1	<1	EBN 5.4, T12DCE 1.1, XYL-MP 1.6
GP04C-02	S/17	PH2	11/24/99		µg/L	<1	4.8	21	<1	<1	<1	<1	<1	<1	<1	None
GP04C-02	D/31	PH2	11/24/99		µg/L	<1	29	56	9.7	<1	<1	2.5	<1	<1	<1	None
GP04C-03	S/17	PH2	11/24/99		µg/L	<1	7.6	51	2.3	<1	1.2	1.3	<1	<1	<1	T12DCE 1.5
GP04C-03	D/31	PH2	11/24/99		µg/L	<1	29	31	6.9	<1	<1	1.4	<1	<1	<1	112TCA 1.1, CM 1.4, T12DCE 1.9
GP04C-04	S/20	PH2	01/14/00		µg/L	<1	12	58	3.9	<1	1.4	2	<1	<1	<1	T12DCE 1.8
GP04C-04	D/29	PH2	01/14/00		µg/L	<1	<1	58	5.3	<1	<1	2.3	<1	<1	<1	CM 1.2
GP04D-01	S/20	PH2	10/26/99		µg/L	<1	<1	3	2.2	<1	<1	<1	<1	<1	<1	None
GP04D-01	D/32	PH2	10/26/99		µg/L	<1	16	32	7.5	<1	<1	<1	<1	<1	<1	None
GP04E-01	S/17	PH2	10/26/99		µg/L	7.9	1.5	<1	<1	<1	<1	<1	<1	<1	<1	None
GP04E-01	D/29	PH2	10/26/99		µg/L	<1	49	33	2.6	<1	<1	<1	<1	<1	<1	T12DCE 1.5
GP04E-01	D/29	PH2	10/26/99	DUP	µg/L	<1	51	31	2.5	<1	<1	<1	<1	<1	<1	T12DCE 1.5
GP04E-02	S/17	PH2	10/28/99		µg/L	<1	7.1	<1	<1	<1	<1	<1	<1	<1	<1	None
GP04E-02	D/40	PH2	10/26/99		µg/L	<1	67	37	3.3	<1	1.1	1.5	<1	<1	<1	T12DCE 3.1
GP04E-03	S/17	PH2	11/10/99		µg/L	<1	25	12	<1	<1	<1	<1	<1	<1	<1	None
GP04E-03	D/38	PH2	11/10/99		µg/L	<1	430 JH	110 JH	5.5	<1	2.9	5.2	<1	<1	<1	T12DCE 6.8
GP04E-04	S/17	PH2	10/27/99		µg/L	<1	54 JH	33	1.3	<1	1.1	1.7	<1	<1	<1	T12DCE 3.1
GP04E-04	D/34	PH2	10/27/99		µg/L	<1	200	110	3.5	<1	3.2	4.6	<1	<1	<1	T12DCE 5.9
GP04E-05	S/17	PH2	10/27/99		µg/L	<1	14	13	<1	<1	<1	<1	<1	<1	<1	None
GP04E-05	D/38	PH2	10/27/99		µg/L	<1	120	69	1.7	<1	1.8	1.9	<1	<1	<1	T12DCE 2.0
GP04E-06	S/17	PH2	12/03/99		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GP04E-06	D/44	PH2	12/03/99		µg/L	<1	8.4	22	<1	<1	<1	<1	<1	<1	<1	T12DCE 1.9

Table 5-8
North Industrial Corridor (NIC) Site
Geoprobe Groundwater Sample Analytical Results, Site VOCs* by EPA Method 8260

Station	Groundwater Depth Zone / Depth (feet)	Investigation Phase	Sample Date	QC Sample Flag	Units	PCE	TCE	C12DCE	VC	TCA	11DCA	11DCE	CT	CFM	BEN	Other Detected Compounds
GP04E-07	S/17	PH2	12/09/99		µg/L	<1	1.2	2.5	<1	<1	<1	<1	<1	<1	<1	None
GP04E-07	D/30	PH2	12/09/99		µg/L	<1	62	17	1.3	<1	0.58 J	<1	<1	<1	<1	T12DCE 0.65 J
GP04E-07	D/30	PH2	12/09/99	DUP	µg/L	<1	54	18	1.2	<1	0.57 J	<1	<1	<1	<1	None
GP04E-08	S/17	PH2	12/02/99		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GP04E-08	D/37	PH2	12/02/99		µg/L	<1	40	43	5.2	<1	<1	1.5	<1	<1	<1	T12DCE 1.1
GP04F-01	S/17	PH2	11/29/99		µg/L	<1	340	52	<1	<1	<1	<1	<1	<1	<1	12DCP 1.6, T12DCE 6.1
GP04F-01	D/34	PH2	11/29/99		µg/L	<1	5.4	2.4	<1	<1	<1	<1	<1	<1	<1	None
GP04F-02	S/17	PH2	11/29/99		µg/L	<1	7.1	<1	<1	<1	<1	<1	<1	<1	<1	None
GP04F-02	D/38	PH2	11/29/99		µg/L	<1	<1	1.2	<1	<1	<1	<1	<1	<1	<1	None
GP04F-03	S/17	PH2	12/02/99		µg/L	<1	7.2	1.1	<1	<1	<1	<1	<1	<1	<1	None
GP04F-03	D/35	PH2	12/02/99		µg/L	<1	1.2	2.1	<1	<1	<1	<1	<1	<1	<1	None
GP04G-01	S/17	PH2	11/10/99		µg/L	<1	2.2	<1	<1	<1	<1	<1	<1	<1	<1	None
GP04G-01	D/35	PH2	11/10/99		µg/L	<1	52	33	<1	<1	<1	<1	<1	<1	<1	T12DCE 1.8
GP04G-02	S/17	PH2	11/10/99		µg/L	<1	4.1	<1	<1	<1	<1	<1	<1	<1	<1	None
GP04G-02	D/26	PH2	11/10/99		µg/L	<1	8.5	10	<1	<1	<1	<1	<1	<1	<1	None
GP04G-04	S/17	PH2	12/16/99		µg/L	<1	2	<1	<1	<1	<1	<1	<1	<1	<1	None
GP04G-04	D/28	PH2	12/16/99		µg/L	<1	66	25	<1	<1	<1	<1	<1	<1	<1	None
GP04G-05	S/17	PH2	12/02/99		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	2	<1	None
GP04G-05	D/35	PH2	12/02/99		µg/L	<1	54	28	<1	<1	1.1	<1	<1	<1	<1	T12DCE 2.7
GP04G-05	D/35	PH2	12/02/99	DUP	µg/L	<1	47	27	<1	<1	1	<1	<1	<1	<1	T12DCE 2.0
GP04G-08	S/17	PH2	12/02/99		µg/L	1.3	7.9	<1	<1	<1	<1	<1	<1	<1	<1	None
GP04G-08	D/36	PH2	12/02/99		µg/L	<1	7.9	14	<1	<1	<1	<1	<1	<1	<1	None
GP04H-01	S/17	PH2	10/26/99		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GP04H-01	D/32	PH2	10/26/99		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GP04H-02	S/17	PH2	10/28/99		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	2.3	<1	None
GP04H-02	D/34	PH2	10/28/99		µg/L	<1	14	9	<1	<1	1.8	<1	<1	<1	<1	None
GP04H-03	S/17	PH2	12/03/99		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GP04H-03	D/32	PH2	12/03/99		µg/L	<1	6.8	13	<1	<1	1.4	<1	<1	<1	<1	None
GP04H-04	S/17	PH2	12/16/99		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GP04H-04	D/32	PH2	12/16/99		µg/L	<1	4.5	8.8	<1	<1	<1	<1	<1	<1	<1	None
GP04H-05	S/17	PH2	12/03/99		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GP04H-05	D/31	PH2	12/03/99		µg/L	<1	13	9.8	<1	<1	1.6	1.2	<1	<1	<1	None
GP04H-06	S/20	PH2	12/03/99		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GP04H-06	D/29	PH2	12/07/99		µg/L	<1	11	6.4	<1	<1	1.2	<1	<1	<1	<1	None
GP04H-07	S/20	PH2	12/03/99		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GP04H-07	D/34	PH2	12/03/99		µg/L	<1	8.8	7.8	<1	<1	1.1	<1	<1	<1	<1	T12DCE 1.0
GP04H-08	S/20	PH2	12/03/99		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GP04H-08	D/29	PH2	12/03/99		µg/L	3.1	12	14	<1	<1	2	<1	<1	<1	<1	T12DCE 1.4
GP05A-01	S/17	PH2	12/13/99		µg/L	<1	<1	4.6	<1	<1	<1	<1	<1	<1	<1	None
GP05A-01	D/28	PH2	12/13/99		µg/L	<1	90	39	8.7	<1	<1	<1	<1	<1	<1	T12DCE 1.3
GP05A-02	S/17	PH2	01/17/00		µg/L	<1	<1	58	<1	<1	<1	<1	<1	<1	<1	EBN 9.7, TOL 14, XYL-MP 3.4
GP05A-02	D/31	PH2	01/17/00		µg/L	<1	150	3.2	<1	<1	<1	<1	<1	<1	<1	EBN 1.6
GP05A-03	S/17	PH2	01/17/00		µg/L	<1	30	7	<1	<1	<1	<1	<1	<1	<1	None
GP05A-03	D/29	PH2	01/17/00		µg/L	<1	88	23	4.7	<1	<1	<1	<1	<1	<1	None
GP05A-04	S/17	PH2	01/17/00		µg/L	<1	45	21	<1	<1	<1	<1	<1	<1	<1	T12DCE 2.8, TOL 1.9
GP05A-04	D/29	PH2	01/17/00		µg/L	<1	94	12	<1	<1	<1	<1	<1	<1	<1	None
GP05A-04	D/29	PH2	01/17/00	DUP	µg/L	<1	120	8.3	<1	<1	<1	<1	<1	<1	<1	None
GP05B-01	S/17	PH2	12/09/99		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GP05B-01	D/35	PH2	12/09/99		µg/L	<1	5.1	4.3	<1	<1	<1	<1	<1	<1	<1	None

Table 5-8
North Industrial Corridor (NIC) Site
Geoprobe Groundwater Sample Analytical Results, Site VOCs* by EPA Method 8260

Station	Groundwater Depth Zone / Depth (feet)	Investigation Phase	Sample Date	QC Sample Flag	Units	PCE	TCE	C12DCE	VC	TCA	11DCA	11DCE	CT	CFM	BEN	Other Detected Compounds
GP05B-02	S/17	PH2	11/05/99		µg/L	<1	<1	40	9.3	<1	<1	<1	<1	<1	1.6	None
GP05B-02	D/35	PH2	11/05/99		µg/L	<1	11	7.2	<1	<1	<1	<1	<1	<1	<1	None
GP05B-03	S/20	PH2	11/05/99		µg/L	<1	41	32	1.4	<1	<1	<1	<1	<1	<1	T12DCE 1.8
GP05B-03	D/35	PH2	11/05/99		µg/L	<1	90 JH	16	<1	<1	<1	<1	<1	<1	<1	T12DCE 1.5
GP05B-04	S/17	PH2	12/09/99		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GP05B-04	D/35	PH2	12/09/99		µg/L	<1	6.9	4.9	<1	<1	<1	<1	<1	<1	<1	None
GP05B-05	S/17	PH2	12/09/99		µg/L	<1	<1	7.8	1	<1	<1	<1	<1	<1	<1	None
GP05B-05	D/35	PH2	12/09/99		µg/L	<1	7.1	4.6	<1	<1	<1	<1	<1	<1	<1	None
GP05B-06	S/17	PH2	12/09/99		µg/L	<1	69	280	34	1.1	2.9	<1	<1	<1	<1	T12DCE 12
GP05B-06	D/35	PH2	12/09/99		µg/L	<1	44	160	33	<1	2.3	<1	<1	<1	<1	T12DCE 1.5
GP05B-07	S/17	PH2	12/09/99		µg/L	<1	9	14	<1	<1	<1	<1	<1	<1	83	12DCA 3.9
GP05B-07	D/38	PH2	12/09/99		µg/L	<1	77	14	<1	<1	<1	<1	<1	<1	1.7	None
GP05C-01	S/20	PH2	11/10/99		µg/L	<1	2.9	97	1.8	<1	2.1	2.3	<1	<1	<1	T12DCE 5.2
GP05C-01	D/31	PH2	11/10/99		µg/L	<1	150	75	39	<1	8	6.4	<1	<1	5	CHEA 1.5, CM 5.0, T12DCE 4.4
GP05C-02	S/17	PH2	11/10/99		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GP05C-02	D/29	PH2	11/10/99		µg/L	<1	290	120	34	1.9	9.7	18	<1	<1	1	CHEA 2.8, T12DCE 21
GP05C-03	S/20	PH2	01/25/00		µg/L	<1	50	14	2.6	<1	1.7	1.6	<1	<1	<1	T12DCE 1.7
GP05C-03	D/32	PH2	01/25/00		µg/L	<1	83	39	38	<1	4.4	4.2	<1	<1	4	CHEA 1.7, T12DCE 2.1
GP05C-04	D/35	PH2	01/26/00		µg/L	<1	190	57	36	<1	7.9	11	<1	2	4.1	CHEA 4.0, T12DCE 5.0
GP05C-05	S/20	PH2	01/26/00		µg/L	<1	9.8	1.4	<1	<1	<1	<1	<1	<1	<1	None
GP05C-05	D/35	PH2	01/26/00		µg/L	<1	91	38	31	<1	4.8	5.8	<1	<1	5.8	CHEA 3.4, T12DCE 2.7
GP05C-06	S/17	PH2	01/25/00		µg/L	<1	130	62	21	<1	6.8	6.7	<1	<1	<1	T12DCE 7.4
GP05C-06	D/38	PH2	01/25/00		µg/L	<1	160	51	40	<1	6.2	7.6	<1	<1	3.1	CHEA 1.7, T12DCE 3.4
GP05C-07	S/17	PH2	01/25/00		µg/L	<1	68	22	3.2	<1	2.4	2.1	<1	<1	<1	T12DCE 2.9
GP05C-07	D/29	PH2	01/25/00		µg/L	<1	110	57	37	<1	7.4	6.5	<1	<1	2.4	CHEA 2.1, T12DCE 6.4
GP05C-08	S/17	PH2	01/25/00		µg/L	<1	150	52	15	<1	4.5	7.6	<1	<1	<1	CHEA 1.2, T12DCE 10
GP05C-08	D/29	PH2	01/25/00		µg/L	<1	380	130	49	1.1	12	26	<1	<1	2	CHEA 3.6, T12DCE 27
GP05D-01	S/20	PH2	12/16/99		µg/L	<1	1.2	<1	<1	<1	<1	<1	<1	<1	<1	None
GP05D-01	D/32	PH2	12/16/99		µg/L	<1	400	91	2.7	6.5	3.7	20	3.4	<1	<1	CCL4 3.4, T12DCE 5.3
GP05D-02	S/20	PH2	12/16/99		µg/L	<1	20	<1	<1	<1	<1	<1	<1	<1	<1	None
GP05D-02	D/32	PH2	12/16/99		µg/L	<1	530	150	13	6.8	6	26	2.1	1.4	1.6	CCL4 2.1, T12DCE 17
GP06B-01	S/17	PH2	10/28/99		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GP06B-01	D/44	PH2	10/28/99		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GP06B-02	S/17	PH2	12/08/99		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GP06B-02	D/36	PH2	12/08/99		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GP06B-03	S/17	PH2	12/08/99		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GP06B-03	D/35	PH2	12/08/99		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GP06B-04	S/17	PH2	12/08/99		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GP06B-04	D/35	PH2	12/08/99		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GP06B-05	S/17	PH2	12/08/99		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GP06B-05	D/35	PH2	12/08/99		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GP06D-01	S/17	PH2	12/15/99		µg/L	<1	58	23	<1	<1	<1	<1	<1	<1	<1	None
GP06D-01	D/32	PH2	12/15/99		µg/L	<1	140	8.7	<1	1.6	<1	3.1	<1	<1	<1	None
GP06D-02	S/17	PH2	01/18/00		µg/L	<1	130	27	<1	2.2	<1	2.8	<1	<1	<1	T12DCE 1.6
GP06D-02	D/35	PH2	01/18/00		µg/L	<1	520	210	27	5.6	5.3	20	<1	1.1	4.3	T12DCE 25
GP06D-03	S/17	PH2	01/18/00		µg/L	<1	7.2	<1	<1	<1	<1	<1	<1	<1	<1	None
GP06D-03	D/35	PH2	01/18/00		µg/L	<1	690	220	20	7.3	4.9	21	<1	<1	2.4	T12DCE 21
GP06F-01	S/17	PH2	11/01/99		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GP06F-01	D/35	PH2	11/01/99		µg/L	<1	470	170	42	3.7	14	32	<1	<1	1.8	CM 1.7, T12DCE 26

Table 5-8
North Industrial Corridor (NIC) Site
Geoprobe Groundwater Sample Analytical Results, Site VOCs* by EPA Method 8260

Station	Groundwater Depth Zone / Depth (feet)	Investigation Phase	Sample Date	QC Sample Flag	Units	PCE	TCE	C12DCE	VC	TCA	11DCA	11DCE	CT	CFM	BEN	Other Detected Compounds
GP06F-02	S/17	PH2	10/29/99		µg/L	<1	250	140	14	1.8	10	22	<1	<1	<1	T12DCE 20
GP06F-02	D/32	PH2	10/29/99		µg/L	<1	520	190	42	5.4	14	35	<1	<1	1.5	12DCA 1.1, CM 1.4, T12DCE 29
GP06F-03	S/17	PH2	11/01/99		µg/L	<1	1	<1	3.3	<1	1.3	<1	<1	<1	4.1	12DCA 2.4, EBN 2.7, TOL 79, XYL-MP 7.1, XYL-O 4.8
GP06F-03	D/32	PH2	11/01/99		µg/L	2.3	240	120	38	<1	10	16	<1	<1	1.1	CHEA 1.1, T12DCE 11, TOL 8.8
GP06F-04	S/20	PH2	01/14/00		µg/L	<1	74	170	17	<1	8.2	25	<1	<1	<1	T12DCE 12
GP06F-04	D/32	PH2	01/14/00		µg/L	<1	420	200	56	5.5	13	46	<1	<1	<1	CHEA 2.4, T12DCE 35
GP06F-05	S/20	PH2	01/14/00		µg/L	<1	240	120	37	1.9	11	29	<1	<1	<1	CM 2.5, T12DCE 15
GP06F-05	D/31	PH2	01/14/00		µg/L	<1	270	110	48	1.6	13	24	<1	<1	1.3	CM 3.8, T12DCE 19
GP06F-06	S/17	PH2	12/09/99		µg/L	2.4	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GP06F-06	D/29	PH2	12/09/99		µg/L	<1	120	110	39	<1	9.2	9.1	<1	<1	0.78 J	CM 2.1, T12DCE 9.4
GP06F-07	S/20	PH2	01/14/00		µg/L	<1	180	160	30	4.3	11	46	<1	<1	<1	CM 1.9, T12DCE 30
GP06F-07	D/29	PH2	01/14/00		µg/L	<1	35	520	23	3.7	9.9	44	<1	<1	<1	CM 2.1, T12DCE 27
GP06G-01	S/17	PH2	12/16/99		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GP06G-01	D/38	PH2	12/16/99		µg/L	<1	4.6	5	4.2	<1	<1	<1	<1	<1	<1	None
GP06H-01	S/17	PH2	12/07/99		µg/L	3.7	3.9	<1	<1	<1	<1	<1	<1	<1	<1	None
GP06H-01	D/28	PH2	12/07/99		µg/L	7.5	13	5.6	<1	<1	5.3	4	<1	<1	<1	None
GP06H-02	S/20	PH2	12/08/99		µg/L	2.8	3.7	<1	<1	<1	<1	<1	<1	<1	<1	None
GP06H-02	D/31	PH2	12/08/99		µg/L	4.1	6.4	2.5	<1	<1	2.5	1.7	<1	<1	<1	None
GP06H-03	S/20	PH2	12/08/99		µg/L	<1	1.4	<1	<1	<1	<1	<1	<1	<1	<1	None
GP06H-03	D/31	PH2	12/08/99		µg/L	4.5	5.7	2.2	<1	<1	2.2	1.5	<1	<1	<1	None
GP06H-03	D/31	PH2	12/08/99	DUP	µg/L	3.4	5.4	2.3	<1	<1	2.3	1.5	<1	<1	<1	None
GP06I-01	S/17	PH2	10/26/99		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GP06I-01	D/41	PH2	10/26/99		µg/L	<1	46	53	7.3	<1	1.1	2.3	<1	<1	<1	T12DCE 2.4
GP06I-02	M/23	PH2	10/27/99		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	4.2	<1	BDCM 2.6, DBCM 1.2
GP06I-02	D/35	PH2	10/27/99		µg/L	<1	24	16	<1	<1	<1	<1	<1	<1	<1	T12DCE 1.1
GP06I-03	M/26	PH2	10/27/99		µg/L	<1	1.7	<1	<1	<1	<1	<1	<1	<1	<1	None
GP06I-03	D/34	PH2	10/27/99		µg/L	<1	53	28	2.7	<1	1.1	2.3	<1	<1	<1	T12DCE 1.9
GP06I-04	S/20	PH2	12/16/99		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GP06I-04	D/41	PH2	12/16/99		µg/L	<1	65	64	8.5	<1	1.5	2.4	<1	<1	<1	None
GP06K-01	M/23	PH2	10/26/99		µg/L	<1	24	12	<1	<1	<1	<1	<1	<1	<1	None
GP06K-01	D/32	PH2	10/26/99		µg/L	<1	30	39	<1	<1	<1	<1	<1	<1	<1	T12DCE 2.4
GP08B-01	S/17	PH2	12/13/99		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GP08B-01	D/29	PH2	12/13/99		µg/L	<1	5.9	<1	<1	<1	<1	<1	<1	<1	<1	EBN 1.3, XYL-MP 4.3, XYL-O 1.1
GP08B-02	S/20	PH2	12/10/99		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	CM 1.6
GP08B-02	D/28	PH2	12/10/99		µg/L	<1	2.3	<1	<1	<1	<1	<1	<1	<1	1.1	None
GP08B-03	S/20	PH2	12/10/99		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	1.1	CM 1.9
GP08B-03	D/29	PH2	12/10/99		µg/L	<1	2.4	<1	<1	<1	<1	<1	<1	<1	0.71 J	CM 1.1
GP08B-04	S/17	PH2	12/10/99		µg/L	<1	<1	4.1	<1	<1	1.5	1.3	<1	<1	1.1	None
GP08B-04	D/30	PH2	12/10/99		µg/L	<1	6.9	9.6	<1	<1	1.4	<1	<1	<1	0.7 J	None
GP08B-05	S/17	PH2	12/10/99		µg/L	<1	2.8	<1	2.7	<1	36	13	<1	<1	1.9	None
GP08B-05	D/34	PH2	12/10/99		µg/L	<1	13	3.1	<1	<1	<1	<1	<1	<1	<1	None
GP08B-06	S/20	PH2	12/10/99		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GP08B-06	D/26	PH2	12/10/99		µg/L	<1	4.9	1.6	<1	<1	<1	<1	<1	<1	0.87 J	None
GP08C-01	S/17	PH2	12/17/99		µg/L	2.6	150	63	3	<1	3.1	1.1	<1	<1	<1	T12DCE 5.6
GP08C-01	D/29	PH2	12/17/99		µg/L	2.9	130 JH	61 JH	3.7	<1	3.8	1.6	<1	<1	<1	T12DCE 7.1
GP08C-01	D/29	PH2	12/17/99	DUP	µg/L	2.1	130 JH	61 JH	3.7	<1	3.6	1.5	<1	<1	<1	T12DCE 6.7
GP08C-02	S/17	PH2	12/17/99		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GP08C-02	D/29	PH2	12/17/99		µg/L	5.7	230 JH	81 JH	6.3	<1	5	2.3	<1	<1	<1	T12DCE 11

Table 5-8
North Industrial Corridor (NIC) Site
Geoprobe Groundwater Sample Analytical Results, Site VOCs* by EPA Method 8260

Station	Groundwater Depth Zone / Depth (feet)	Investigation Phase	Sample Date	QC Sample Flag	Units	PCE	TCE	C12DCE	VC	TCA	11DCA	11DCE	CT	CFM	BEN	Other Detected Compounds
GP08C-03	S/17	PH2	12/17/99		µg/L	1.3	48	22	<1	<1	1.1	<1	<1	<1	<1	T12DCE 1.7
GP08C-03	D/29	PH2	12/17/99		µg/L	6.7	210 JH	77 JH	9.6	<1	4.5	2.1	<1	<1	<1	T12DCE 12
GP08C-04	S/17	PH2	12/17/99		µg/L	<1	1.9	<1	<1	50	<1	2.9	<1	<1	<1	None
GP08C-04	D/29	PH2	12/17/99		µg/L	6.9	190 JH	66 JH	7.1	1.9	4.2	2.1	<1	<1	<1	T12DCE 9.1
GP08C-05	S/17	PH2	12/17/99		µg/L	<1	2.3	1.1	<1	8.1	<1	<1	<1	<1	<1	None
GP08C-05	D/26	PH2	12/17/99		µg/L	5.2	140 JH	57 JH	3.4	<1	3.5	1.2	<1	<1	<1	T12DCE 8.7
GP08C-06	S/15	PH2	08/29/00		µg/L	<1	85	61	2	<1	<1	<1	<1	<1	<1	T12DCE 4.8
GP08C-06	D/35	PH2	08/29/00		µg/L	<1	140	120	5.7	<1	1.8	2	<1	<1	<1	T12DCE 8.5
GP08C-07	S/17	PH2	08/30/00		µg/L	<1	1.9	<1	<1	1.5	<1	<1	<1	<1	<1	None
GP08C-07	D/35	PH2	08/30/00		µg/L	<1	140	130	4.3	<1	1.8	1.8	<1	<1	<1	T12DCE 7.1
GP08C-08	S/16	PH2	08/30/00		µg/L	<1	2.2	<1	<1	<1	<1	<1	<1	<1	<1	None
GP08C-09	S/16	PH2	08/30/00		µg/L	<1	4.1	1.3	<1	<1	<1	<1	<1	<1	<1	None
GP08E-01	S/17	PH2	12/20/99		µg/L	<1	40	55	<1	<1	4.3	2.6	<1	<1	<1	T12DCE 7.9
GP08E-01	D/35	PH2	12/20/99		µg/L	<1	35	45	17	<1	8.4	5.2	<1	1.6	24	12DCA 1.2, CHEA 4.8, T12DCE 3.5
GP08E-02	S/17	PH2	12/20/99		µg/L	<1	37	30	<1	<1	<1	1.3	<1	<1	<1	T12DCE 1.6
GP08E-02	D/35	PH2	12/20/99		µg/L	<1	290 JH	71 JH	17	3.2	5.6	19	<1	2.4	6.1	CHEA 1.9, CM 1.8, T12DCE 11
GP08E-02	D/35	PH2	12/20/99	DUP	µg/L	<1	260 JH	61 JH	18	3.3	6	18	<1	2.5	6.2	CHEA 2.0, CM 1.4, T12DCE 9.7
GP08E-03	S/17	PH2	12/20/99		µg/L	<1	42	82 JH	34	<1	2.3	2.3	<1	<1	<1	T12DCE 4.5
GP08E-03	D/33	PH2	12/20/99		µg/L	1.1	350 JH	160 JH	33	5.4	5.3	26	<1	<1	4.4	CM 1.8, T12DCE 36
GP10C-01	S/18	PH2-Sludge Area	01/18/01		µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	1.8	<1.0	<1.0	<1.0	17	2MN 26, CHEA 12, CHRY 11, PHEN 33, PYR 21, TPH-GAS 567
GP10C-02	S/18	PH2-Sludge Area	01/18/01		µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	11	CHEA 2.1, EBN 2.4, TOL 1.4, TPH-GAS 4080, XYL-MP 7.4, XYL-O 2.4, XYLT 22.9
GP10C-03	S/16	PH2-Sludge Area	01/18/01		µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	None
GP10D-01	S/16	PH2-Sludge Area	01/19/01		µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	8.7	2MN 150, EBN 5.9, NAP 150, TOL 3.5, TPH-GAS 849, XYL-MP 8.2, XYL-O 5.8, XYLT 13.5
GP10D-02	S/16	PH2-Sludge Area	01/18/01		µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	13	XYL-O 1.8
GP10D-03	S/18	PH2-Sludge Area	01/22/01		µg/L	<1.0	<1.0	<1.0	1.3	<1.0	<1.0	<1.0	<1.0	<1.0	2.8	TOL 2.6, TOL 3.4
GP10D-03	S/18	PH2-Sludge Area	01/22/01	DUP	µg/L	<1.0	<1.0	<1.0	1.4	<1.0	<1.0	<1.0	<1.0	<1.0	3	TOL 2.7, TOL 3.1
GP10F-01	S/18	PH2	03/10/00		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	250	CM 13, EBN 40, TOL 40, XYL-MP 56, XYL-O 9.1
GP10F-01	M/26	PH2	03/10/00		µg/L	<1	20	23	3.3	<1	<1	<1	<1	<1	74	CM 2.7, EBN 40, TOL 5.9, XYL-MP 20
GP10F-01	D/37	PH2	03/10/00		µg/L	<1	84	25	1.6	<1	<1	<1	<1	<1	19	EBN 38, TOL 4.1, XYL-MP 14
GP10F-02	M/26	PH2	03/10/00		µg/L	<1	<1	1.5	<1	<1	<1	<1	<1	<1	<1	None
GP10F-02	D/35	PH2	03/10/00		µg/L	1.8	130	29	<1	<1	<1	<1	<1	<1	<1	T12DCE 3.2
GP10F-03	S/17	PH2	03/09/00		µg/L	52	70	26	1.6	2.7	1.7	<1	20	28	32	112TCA 2.0, 12DCA 1.4, CCL4 20, MECL 1.5, T12DCE 1.3
GP10F-03	M/26	PH2	03/09/00		µg/L	7.1	68	16	<1	<1	<1	<1	15	15	26	CCL4 15
GP10F-03	D/36	PH2	03/09/00		µg/L	1.7	70	21	<1	<1	<1	<1	2.2	2	1.3	CCL4 2.2, T12DCE 2.2
GP10F-04	S/20	PH2	03/09/00		µg/L	<1	<1	4.6	1.7	<1	1.1	<1	<1	<1	310	EBN 380, TOL 28, XYL-MP 63, XYL-O 6.1
GP10F-04	M/26	PH2	03/09/00		µg/L	70	37	36	6.7	<1	5.1	2.8	<1	<1	24	12DCA 2.2, CHEA 1.2, EBN 23, T12DCE 2.6, TOL 1.8, XYL-MP 4.3
GP10F-04	D/35	PH2	03/09/00		µg/L	1.6	8.3	54	13	<1	2.8	<1	<1	<1	3.1	EBN 1.5, T12DCE 2.0
GP10F-05	S/17	PH2	03/09/00		µg/L	<1	<1	<1	<1	<1	5.3	<1	<1	<1	1500	12DCA 45, EBN 250, TOL 85, XYL-MP 210, XYL-O 18
GP10F-05	M/24	PH2	03/09/00		µg/L	<1	3.9	2.4	3.1	11	8.6	<1	<1	1.6	40	EBN 46, TOL 2.5
GP10F-05	D/35	PH2	03/09/00		µg/L	3.5	260	42	<1	<1	<1	<1	<1	<1	2	T12DCE 4.5

Table 5-8
North Industrial Corridor (NIC) Site
Geoprobe Groundwater Sample Analytical Results, Site VOCs* by EPA Method 8260

Station	Groundwater Depth Zone / Depth (feet)	Investigation Phase	Sample Date	QC Sample Flag	Units	PCE	TCE	C12DCE	VC	TCA	11DCA	11DCE	CT	CFM	BEN	Other Detected Compounds
GP10F-06	M/26	PH2	03/14/00		µg/L	<1	<1	1.1	1.7	<1	<1	<1	<1	<1	310	12DCP 4.6, CM 1.1, EBN 210, TOL 13, XYL-MP 32, XYL-O 2.8
GP10F-06	D/38	PH2	03/14/00		µg/L	<1	79	25	<1	<1	<1	<1	<1	<1	6.4	EBN 16, XYL-MP 1.5
GP10F-07	D/36	PH2	03/14/00		µg/L	<1	32	34	3.6	<1	<1	<1	<1	<1	20	CM 2.9, EBN 22, TOL 26, XYL-MP 45, XYL-O 22
GP10F-07	D/28	PH2	03/14/00		µg/L	<1	<1	26	16	<1	<1	<1	<1	<1	1500	12DCA 39, CM 13, EBN 240, TOL 160, XYL-MP 340, XYL-O 130
GP10F-08	S/17	PH2	03/09/00		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	290	EBN 38, TOL 8.1, XYL-MP 21
GP10F-08	D/39	PH2	03/09/00		µg/L	<1	3.3	16	2.9	<1	<1	<1	<1	<1	280	CHEA 2.3, EBN 150, TOL 33, XYL-MP 200, XYL O 6.6
GP10F-08	D/28	PH2	03/09/00		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	160	EBN 180, TOL 130, XYL-MP 220, XYL-O 38
GP10F-09	M/26	PH2	03/14/00		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	98	EBN 50, TOL 25, XYL-MP 76, XYL-O 70
GP10F-09	D/39	PH2	03/14/00		µg/L	14	38	82	62	35	20	4.6	<1	3.9	11	CM 2.9, EBN 1.6, T12DCE 2.2, XYL-MP 2.4, XYL-O 2.0
GPA01-1	S/20	PH1	12/11/97		µg/L	<1	<1	<1	<1	<1	1.5	<1	<1	<1	<1	None
GPA01-1	D/38	PH1	12/11/97		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GPA01-2	S/20	PH1	12/12/97		µg/L	<1	1.5	<1	<1	6	4.5	2.1	<1	<1	<1	None
GPA01-2	D/36	PH1	12/12/97		µg/L	<1	<1	<1	<1	19	6.8	6	<1	<1	<1	None
GPA01-3	S/20	PH1	12/12/97		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GPA01-3	D/38	PH1	12/12/97		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GPA01-4	S/15	PH1	06/03/98		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GPA01-4	D/36	PH1	06/03/98		µg/L	<1	1.8	<1	<1	<1	<1	<1	<1	<1	<1	MECL 1.1 UB
GPA01-5	S/18	PH1	06/02/98		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GPA01-5	D/38	PH1	06/02/98		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	MECL 1 UB
GPA01-6	S/19	PH1	06/03/98		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	MECL 1.2 UB
GPA01-6	D/38	PH1	06/03/98		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	MECL 1.3 UB
GPA02-2	S/20	PH1	12/12/97		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GPA02-3	M/24	PH1	12/12/97		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GPA03-1	S/20	PH1	12/12/97		µg/L	<1	<1	<1	<1	<1	1.3	<1	<1	<1	<1	None
GPA03-1	S/20	PH2	10/15/99		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GPA03-1	D/41	PH1	12/12/97		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GPA03-2	S/20	PH1	12/15/97		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GPA03-2	D/39	PH1	12/15/97		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GPA03-3	S/20	PH1	12/15/97		µg/L	<1	<1	<1 JS	<1 JS	<1	<1 JS	<1 JS	<1	<1 JS	<1	None
GPA03-3	D/36	PH1	12/15/97		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GPA04-2	S/20	PH1	12/15/97		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GPA04-2	D/39	PH1	12/15/97		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GPA04-2	D/39	PH1	12/15/97	DUP	µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GPA04-3	S/20	PH1	12/15/97		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GPA04-3	D/30	PH1	12/15/97		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GPA05-1	D/33	PH1	12/15/97		µg/L	<1	<1	<1	6.3	<1	2.7	<1	<1	<1	<1	CHEA 2.4
GPA05-2	S/20	PH1	12/15/97		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GPA05-2	D/33	PH1	12/15/97		µg/L	<1	40	29	8.9	<1	1.4	<1	<1	<1	2	T12DCE 1.4
GPA05-3	S/20	PH1	12/15/97		µg/L	<1	260	3.9	<1	<1	<1	<1	<1	<1	<1	None
GPA05-3	S/20	PH2	10/15/99		µg/L	<1	160	6.4	<1	<1	<1	<1	<1	<1	<1	None
GPA05-3	D/33	PH1	12/15/97		µg/L	<1	29	1.8	<1	<1	<1	<1	1.7	3.3	<1	CCL4 1.7
GPA05-4	S/20	PH1	12/15/97		µg/L	<1	310	410	3.6	4.4	1.2	7.6	<1	<1	<1	T12DCE 1.6
GPA05-4	D/34	PH1	12/15/97		µg/L	<1	160	27	<1	5.2	1.3	8.1	<1	<1	<1	None

Table 5-8
North Industrial Corridor (NIC) Site
Geoprobe Groundwater Sample Analytical Results, Site VOCs* by EPA Method 8260

Station	Groundwater Depth Zone / Depth (feet)	Investigation Phase	Sample Date	QC Sample Flag	Units	PCE	TCE	C12DCE	VC	TCA	11DCA	11DCE	CT	CFM	BEN	Other Detected Compounds
GPA05-5	S/20	PH1	12/15/97		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GPA05-5	D/35	PH1	12/15/97		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GPA06-1	D/30	PH1	12/16/97		µg/L	<1	6.4	<1	<1	<1	<1	<1	<1	<1	<1	None
GPA06-2	S/20	PH1	12/16/97		µg/L	<1	<1	1.2	<1	<1	<1	<1	<1	<1	6	EBN 26, XYL-MP 33, XYL-O 4.2
GPA06-2	D/33	PH1	12/16/97		µg/L	<1	44	11	<1	<1	<1	<1	<1	<1	<1	XYL-MP 1.3
GPA06-2	D/33	PH1	12/16/97	DUP	µg/L	<1	60	12	<1	<1	<1	<1	<1	<1	<1	None
GPA06-3	S/20	PH1	12/16/97		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GPA06-3	S/20	PH1	06/02/98		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	MECL 1.7 UB
GPA06-3	M/27	PH1	12/16/97		µg/L	<1	42	6	<1	<1	<1	<1	<1	<1	<1	None
GPA06-3	D/38	PH1	06/02/98		µg/L	5.7	250	46	<1	<1	<1	<1	<1	<1	<1	MECL 1.6 UB, TCFM 1.5
GPA06-4	S/20	PH1	12/16/97		µg/L	<1	4.6	1.3	<1	<1	<1	<1	<1	<1	<1	None
GPA06-4	M/24	PH1	12/16/97		µg/L	<1	11	2.6	<1	<1	<1	<1	<1	<1	<1	None
GPA06-4	M/23	PH1	06/11/98		µg/L	<1	11	1.7	<1	<1	<1	<1	<1	<1	<1	TOL 1.8
GPA06-4	D/28	PH1	06/11/98		µg/L	<1	15	2	<1	<1	<1	<1	<1	<1	<1	TOL 1.1
GPA06-5	S/20	PH1	06/03/98		µg/L	<1	2	<1	<1	<1	<1	<1	<1	<1	<1	MECL 1 UB
GPA06-5	D/36	PH1	06/03/98		µg/L	2.2	280	39	<1	<1	<1	<1	<1	<1	<1	T12DCE 1.3
GPA06-5	D/36	PH1	06/03/98	DUP	µg/L	<1	310	45	<1	<1	<1	<1	<1	<1	<1	T12DCE 1.3
GPA06-6	S/20	PH1	06/04/98		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GPA06-6	D/36	PH1	06/04/98		µg/L	3.6	180	43	<1	<1	<1	<1	<1	<1	<1	MECL 1.3
GPA06-7	S/18	PH1	06/03/98		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	MECL 1 UB
GPA06-7	D/36	PH1	06/03/98		µg/L	<1	15	2.4	<1	<1	<1	<1	<1	<1	<1	MECL 1.1 UB
GPA07-1	S/20	PH1	12/16/97		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GPA07-1	D/33	PH1	12/16/97		µg/L	<1	1.1	<1	<1	<1	<1	<1	<1	<1	<1	None
GPA07-2	S/20	PH1	12/16/97		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GPA07-2	D/33	PH1	12/16/97		µg/L	<1	1.1	<1	<1	<1	<1	<1	<1	<1	<1	None
GPA07-3	M/21	PH1	12/16/97		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	92	EBN 17, TOL 1.6, XYL-MP 36, XYL-O 3
GPA07-3	D/36	PH1	12/16/97		µg/L	<1	13	7.3	35	<1	<1	<1	<1	<1	90	EBN 35, TOL 8.3, XYL-MP 31, XYL-O 9.2
GPA07-4	S/20	PH1	12/17/97		µg/L	<1	<1	25	3.8	<1	<1	<1	<1	<1	1800 JS	EBN 400 JS, TOL 160 JS, XYL-MP 610 JS, XYL-O 42
GPA07-4	D/33	PH1	12/17/97		µg/L	<1	110 JS	50	26	<1	7.2	4.8	<1	<1	180 JS	EBN 140 JS, TOL 40 JS, XYL-MP 180 JS, XYL-O 22
GPA07-5	S/20	PH1	12/17/97		µg/L	<1	25	1.1	<1	<1	<1	<1	<1	<1	<1	None
GPA07-5	D/34	PH1	12/17/97		µg/L	<1	55	3.4	<1	1.4	<1	1.4	<1	<1	<1	None
GPA07-6	S/20	PH1	12/17/97		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	29	EBN 290, TOL 29, XYL-MP 220, XYL-O 17
GPA07-6	D/35	PH1	12/17/97		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	EBN 11, XYL-MP 7.5
GPA07-7	S/20	PH1	12/17/97		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GPA07-7	D/33	PH1	12/17/97		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GPA08-1	S/20	PH1	12/17/97		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GPA08-1	D/31	PH1	12/17/97		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GPA08-2	S/20	PH1	12/17/97		µg/L	5	450	560	47	2.5	4.8	3	<1	<1	<1	T12DCE 3.5
GPA08-2	S/20	PH2	10/19/99		µg/L	<1	45	74	7.4	<1	<1	<1	<1	<1	<1	T12DCE 2.4
GPA08-2	D/36	PH1	12/17/97		µg/L	<1	56	110	12	<1	2	1.2	<1	<1	<1	T12DCE 1.1
GPA08-3	S/20	PH1	12/17/97		µg/L	<1	92	16	<1	<1	<1	<1	<1	<1	83	12DCA 2.7, CM 2.2, EBN 1.7, TOL 1.8
GPA08-3	D/33	PH1	12/17/97		µg/L	1.5	300	59	<1	<1	<1	<1	<1	<1	8.4	None
GPA08-4	S/20	PH1	12/17/97		µg/L	1.5	230	34	<1	<1	<1	<1	<1	<1	<1	None
GPA08-4	S/20	PH2	10/19/99		µg/L	1.7	130	24	<1	<1	<1	<1	<1	<1	<1	T12DCE 1.1
GPA08-4	D/31	PH1	12/17/97		µg/L	2.4	450	66	<1	<1	<1	<1	<1	<1	<1	T12DCE 1

Table 5-8
North Industrial Corridor (NIC) Site
Geoprobe Groundwater Sample Analytical Results, Site VOCs* by EPA Method 8260

Station	Groundwater Depth Zone / Depth (feet)	Investigation Phase	Sample Date	QC Sample Flag	Units	PCE	TCE	C12DCE	VC	TCA	11DCA	11DCE	CT	CFM	BEN	Other Detected Compounds
GPA09-1	S/20	PH1	12/29/97		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GPA09-1	D/35	PH1	12/29/97		µg/L	1.4	120	15	<1	<1	<1	<1	<1	<1	<1	None
GPA09-1	D/35	PH1	12/29/97	DUP	µg/L	1	100	16	<1	<1	<1	<1	<1	<1	<1	None
GPA09-2	S/20	PH1	12/29/97		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GPA09-2	D/36	PH1	12/29/97		µg/L	2.4	220	36	<1	<1	<1	<1	<1	<1	<1	None
GPA09-3	S/20	PH1	12/29/97		µg/L	<1	9.2	<1	<1	<1	<1	<1	35	18	<1	CCL4 35
GPA09-3	D/36	PH1	12/29/97		µg/L	<1	190	26	<1	<1	<1	<1	<1	<1	<1	None
GPA09-4	S/20	PH1	12/30/97		µg/L	<1	1.5	<1	<1	<1	<1	<1	<1	<1	<1	None
GPA09-4	D/42	PH1	12/30/97		µg/L	2.8	300	52	<1	<1	<1	<1	<1	<1	<1	None
GPA09-5	S/20	PH1	12/30/97		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GPA09-5	D/35	PH1	12/30/97		µg/L	1.1	160	53	<1	<1	<1	<1	<1	<1	22	CBN 1.3, CM 1.5
GPA10-1	M/22	PH1	12/18/97		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GPA10-1	D/35	PH1	12/18/97		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GPA10-2	M/22	PH1	12/18/97		µg/L	6.8	2.1	<1	<1	<1	6.2	<1	<1	<1	<1	None
GPA10-2	D/36	PH1	12/18/97		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GPA10-2	D/36	PH1	12/18/97	DUP	µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GPA10-3	M/23	PH1	12/18/97	SPLIT	µg/L	<1	1.4	1.2	22	<1	5	<1	<1	<1	<1	None
GPA10-3	D/36	PH1	12/18/97	SPLIT	µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GPA10-4	S/18	PH1	06/09/98		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GPA10-4	D/36	PH1	06/09/98		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GPA10-5	S/18	PH1	06/11/98		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	MECL 1.3 UB
GPA10-5	D/34	PH1	06/11/98		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	MECL 1.5 UB
GPA10-6	S/20	PH1	06/11/98		µg/L	<1	<1	<1	<1	<1	1.5	<1	<1	<1	66	12DCA 3.6, CBN 1.5, CM 2.9, MECL 2.2 UB, XYL-MP 1.6
GPA10-6	D/32	PH1	06/11/98		µg/L	<1	20	32	5.7	<1	<1	<1	<1	3.2	46	12DCA 1.9, CM 1.3, MECL 1.8 UB
GPA10-7	M/21	PH1	06/11/98		µg/L	<1	<1	9.5	3.2	<1	5.7	<1	<1	<1	12	CM 1.3, MECL 1.6 UB
GPA10-7	D/35	PH1	06/11/98		µg/L	5.9	25	65	17	1.7	1.7	2.7	13	35	68	12DCA 2.5, CCL4 13, CM 8.1, MECL 5.1 UB
GPA10-8	S/20	PH1	06/11/98		µg/L	<1	<1	11	35	<1	30	<1	<1	<1	420	12DCA 16, CHEA 2.8, CM 1.5, EBN 1.1, MECL 3.7 UB, TOL 4.3, XYL-O 1.4
GPA10-8	D/32	PH1	06/11/98		µg/L	12	210	72	8.3	19	17	17	30	150	180	12DCA 6.2, CCL4 30, EBN 1.7, MECL 5 UB, TOL 10, XYL-MP 2.6, XYL-O 1.6
GPA11-1	S/20	PH1	12/30/97		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	12	<1	None
GPA11-1	D/37	PH1	12/30/97		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GPA11-2	S/20	PH1	01/09/98		µg/L	<1	1.4 JS	11	3	<1 JS	<1	<1	<1 JS	<1	<1 JS	None
GPA11-2	D/36	PH1	01/09/98		µg/L	<1	68 JS	96	36	<1	2.9	3.4	<1	<1	1.1	CM 5.2, T12DCE 1.5
GPA11-3	S/20	PH1	12/30/97		µg/L	<1	96	66	4.2	<1	3.5	10	<1	<1	<1	T12DCE 4.7
GPA11-3	D/36	PH1	12/30/97		µg/L	<1	690	240	10	15	13	55	<1	2.1	3.3	12DCA 1.4, T12DCE 28
GPA12-1	S/20	PH1	12/30/97		µg/L	<1	<1	9.7	44	<1	2.6	<1	<1	<1	<1	None
GPA12-1	D/36	PH1	12/30/97		µg/L	<1	240	23	<1	6.1	2	8.9	<1	<1	<1	None
GPA12-2	S/20	PH1	01/09/98		µg/L	<1	<1 JS	<1 JS	<1 JS	<1 JS	<1 JS	<1 JS	<1 JS	<1 JS	2300 JS	EBN 670 JS, TOL 320 JS, XYL-MP 810 JS, XYL-O 81 JS
GPA12-2	D/36	PH1	01/09/98		µg/L	<1	55	6	<1	1.3 JS	<1	2.5	<1 JS	<1	650 JS	EBN 320 JS, TOL 230 JS, XYL-MP 780 JS, XYL-O 64

Table 5-8
North Industrial Corridor (NIC) Site
Geoprobe Groundwater Sample Analytical Results, Site VOCs* by EPA Method 8260

Station	Groundwater Depth Zone / Depth (feet)	Investigation Phase	Sample Date	QC Sample Flag	Units	PCE	TCE	C12DCE	VC	TCA	11DCA	11DCE	CT	CFM	BEN	Other Detected Compounds
GPA12-3	S/20	PH1	12/30/97		µg/L	<1	<1 JS	3.1	<1	<1 JS	<1	<1	<1 JS	<1	3200 JS	CM 9.5, EBN 260, TOL 54, XYL-MP 48, XYL-O 8.2
GPA12-3	D/33	PH1	12/30/97		µg/L	<1	5.2	22	3.6	<1	1.2 JS	<1	<1	<1	230 JS	CM 1, EBN 210 JS, TOL 14 JS, XYL-MP 62 JS, XYL-O 4.6 JS
GPA12-3	D/33	PH1	12/30/97	DUP	µg/L	<1	5.4	23	3.4	<1	1.1	<1	<1	<1	210 JS	EBN 190 JS, TOL 17 JS, XYL-MP 78 JS, XYL-O 5.8
GPA12-4	S/20	PH1	12/30/97		µg/L	<1	<1 JS	4.8	1.8	<1 JS	<1	<1	<1 JS	<1	3600 JS	CM 1.8, EBN 550 JS, TOL 360 JS, XYL-MP 1300 JS, XYL-O 120
GPA12-4	D/33	PH1	12/30/97		µg/L	<1	19	44	28	<1	<1	<1	<1	<1	160 JS	CM 1.5, EBN 140 JS, TOL 44 JS, XYL-MP 300 JS, XYL-O 26
GPA12-5	S/20	PH1	12/30/97		µg/L	<1	<1	<1	50	<1	<1	<1	<1	<1	5900	EBN 180, TOL 650, XYL-MP 630, XYL-O 260
GPA12-5	D/31	PH1	12/30/97		µg/L	<1	9.1	63	37	<1	<1	<1	<1	<1	91	EBN 8.5, TOL 29, XYL-MP 29, XYL-O 11
GPA12-6	S/20	PH1	12/31/97		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	19000	EBN 4500, TOL 23000, XYL-MP 16000, XYL-O 7000
GPA12-6	D/30	PH1	12/31/97		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	180	EBN 240, TOL 800, XYL-MP 850, XYL-O 390
GPA12-7	S/20	PH1	12/31/97		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GPA12-7	D/27	PH1	12/31/97		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GPA12-8	S/20	PH1	01/22/98		µg/L	<1	350	86	21	4.7	8.6	24	<1	<1	<1	T12DCE 9.1
GPA12-8	D/34	PH1	01/22/98		µg/L	<1	520	150	120	5.9	15	38	<1	<1	5.7	12DCA 1.4, CHEA 1.1, CM 2.9, T12DCE 16
GPA12-9	S/20	PH1	01/22/98		µg/L	<1	94	57	8.8	<1	4.5	8.9	<1	<1	<1	T12DCE 16
GPA12-9	D/36	PH1	01/22/98		µg/L	<1	790	230	70	11	17	60	<1	1.2	1.6	12DCA 1.6,CM 2.9, T12DCE 35
GPA13-1	S/20	PH1	12/31/97		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GPA13-1	D/39	PH1	12/31/97		µg/L	<1	6.8	2.9	<1	<1	<1	<1	<1	<1	<1	None
GPA13-2	D/36	PH1	12/31/97		µg/L	<1	14	23	15	<1	<1	<1	<1	<1	<1	None
GPA13-3	S/20	PH1	01/06/98		µg/L	<1	<1	260	11	<1	6.6	12	<1	<1	1.1	T12DCE 4.3
GPA13-3	D/37	PH1	01/06/98		µg/L	<1	110	180	32	<1	4.6	11	<1	<1	<1	CM 2.9, T12DCE 2.7
GPA13-4	S/20	PH1	01/07/98		µg/L	<1	36	58	13	<1	2.2	5.2	<1	<1	<1	None
GPA13-4	D/35	PH1	01/07/98		µg/L	<1	100	120	49	<1	3.9	7.8	<1	<1	<1	None
GPA13-4	D/35	PH1	01/07/98	DUP	µg/L	<1	95	110	45	<1	3.8	7.3	<1	<1	<1	None
GPA14-1	S/20	PH1	01/06/98		µg/L	<1	56	18	<1	<1	<1	<1	<1	<1	<1	T12DCE 1.1
GPA14-1	D/33	PH1	01/06/98		µg/L	<1	360	110	59	2.8	8.7	25	<1	<1	1.3	CM 3.5, T12DCE 3.6
GPA14-2	S/20	PH1	01/06/98		µg/L	<1	360	110	42	5	13	32	<1	<1	<1	T12DCE 9.3
GPA14-2	D/33	PH1	01/06/98		µg/L	<1	640	160	64	8.9	23	65	<1	1.1	6.7	12DCA 1.9, CHEA 1.1, T12DCE 15
GPA14-3	S/20	PH1	01/06/98		µg/L	<1	270	98	25	2.7	11	24	<1	<1	<1	CM 1.4, T12DCE 8.7
GPA14-3	D/30	PH1	01/06/98		µg/L	<1	650	180	54	8.9	20	58	<1	<1	1.4	12DCA 1.5, CM 3, T12DCE 27
GPA15-1	M/27	PH1	01/06/98		µg/L	<1	31 JS	130	11	<1	6.6	8.4	<1	<1	<1	CM 1.7, T12DCE 2.1
GPA15-1	D/36	PH1	01/06/98		µg/L	<1	170	80	11	3.7	4.9	12	<1	<1	<1	T12DCE 1.7
GPA15-2	S/20	PH1	01/06/98		µg/L	3.2	11	5.3	<1	1.5	5.6	3.7	<1	<1	<1	None
GPA15-2	S/20	PH2	10/19/99		µg/L	<1	5.1	1.9	<1	<1	2.5	<1	<1	<1	<1	None
GPA15-2	D/31	PH1	01/06/98		µg/L	5.9	13	5.1	<1	1	5.3	4.1	<1	<1	<1	None
GPA15-3	S/20	PH1	01/07/98		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GPA15-3	D/30	PH1	01/07/98		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GPA16-1	S/20	PH1	12/09/97		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GPA16-1	D/45	PH1	12/09/97		µg/L	<1	2.2	1	<1	<1	<1	<1	<1	<1	<1	None
GPA16-2	S/20	PH1	12/10/97		µg/L	<1	1.1	<1	<1	<1	<1	<1	<1	<1	<1	None
GPA16-2	D/41	PH1	12/10/97		µg/L	<1	60	41	9.4	<1	1.3	2.3	<1	<1	<1	None

Table 5-8
North Industrial Corridor (NIC) Site
Geoprobe Groundwater Sample Analytical Results, Site VOCs* by EPA Method 8260

Station	Groundwater Depth Zone / Depth (feet)	Investigation Phase	Sample Date	QC Sample Flag	Units	PCE	TCE	C12DCE	VC	TCA	11DCA	11DCE	CT	CFM	BEN	Other Detected Compounds
GPA16-3	S/20	PH1	12/10/97		µg/L	<1	2	<1	<1	<1	<1	<1	<1	<1	<1	None
GPA16-3	D/38	PH1	12/10/97		µg/L	<1	670	160	42	6.8	12	40	<1	<1	2.2	T12DCE 6.5
GPA16-4	S/18	PH1	06/09/98		µg/L	<1	5.8	1.3	<1	<1	<1	<1	<1	<1	<1	None
GPA16-4	D/38	PH1	06/09/98		µg/L	<1	320	89	13	2.9	5	18	<1	<1	<1	T12DCE 2.6
GPA16-5	S/18	PH1	06/11/98		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	TOL 2
GPA16-5	D/38	PH1	06/11/98		µg/L	<1	340	110	30	2.7	6.8	26	<1	<1	1.2	TOL 5
GPA16-6	S/18	PH1	06/09/98		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GPA16-6	D/38	PH1	06/09/98		µg/L	<1	60	18	3.7	<1	1.1	3.6	<1	<1	<1	None
GPA17-1	S/20	PH1	12/03/97		µg/L	1.3	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GPA17-1	D/33	PH1	12/03/97		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GPA17-2	S/20	PH1	12/03/97		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GPA17-2	D/33	PH1	12/03/97		µg/L	<1	2	11	<1	<1	1.2	<1	<1	<1	<1	None
GPA18-1	S/20	PH1	12/10/97		µg/L	<1	4.1	1.4	<1	<1	<1	<1	<1	<1	<1	None
GPA18-1	D/35	PH1	12/10/97		µg/L	<1	3.6	1.5	<1	<1	<1	<1	<1	<1	<1	None
GPA18-2	S/20	PH1	12/19/97		µg/L	<1 JH	4.9	1	<1 JH	<1 JH	<1 JH	<1 JH	<1 JH	<1 JH	<1 JH	None
GPA18-2	D/37	PH1	12/19/97		µg/L	<1 JH	35	35	3.4 JH	<1 JH	<1 JH	1.4 JH	<1 JH	<1 JH	<1 JH	None
GPA18-3	S/20	PH1	12/10/97		µg/L	<1	6.9	2.8	<1	1.7	<1	<1	<1	<1	<1	None
GPA18-3	D/38	PH1	12/10/97		µg/L	<1	240	120	20	1.4	6	19	<1	<1	<1	T12DCE 4.1
GPA18-4	S/20	PH1	12/29/97		µg/L	<1	39	11	<1	<1	<1	<1	<1	<1	<1	None
GPA18-4	S/20	PH2	10/15/99		µg/L	<1	27	5.2	<1	<1	<1	<1	<1	<1	<1	None
GPA18-4	D/36	PH1	12/29/97		µg/L	<1	220	73	5.2	<1	2.1	5.4	<1	<1	<1	T12DCE 1.9
GPA19-1	S/20	PH1	12/10/97		µg/L	<1	<1	<1	<1	16	9	<1	<1	<1	<1	None
GPA19-1	D/41	PH1	12/10/97		µg/L	<1	55	22	1.5	<1	<1	2.1	<1	<1	<1	None
GPA19-2	S/20	PH1	12/10/97		µg/L	<1	18	<1	<1	<1	<1	<1	<1	<1	<1	14DCB 1.1
GPA19-2	D/35	PH1	12/10/97		µg/L	<1	240	38	2.2	1.6	1.9	5.1	<1	<1	<1	T12DCE 2.3
GPA19-2	D/35	PH1	12/10/97	DUP	µg/L	<1	230	35	2.3	1.5	1.7	4.3	<1	<1	<1	T12DCE 2.4
GPA20-1	S/20	PH1	12/10/97		µg/L	1.2	260	39	4.1	1.5	1.9	5.2	<1	<1	<1	T12DCE 2.4
GPA20-1	D/35	PH1	12/10/97		µg/L	<1	320	44	3.7	2.3	2.4	7	<1	<1	<1	T12DCE 2.6
GPA20-2	S/20	PH1	12/11/97		µg/L	<1	49	9.3	<1	<1	<1	<1	<1	<1	<1	None
GPA20-2	D/33	PH1	12/11/97		µg/L	<1	330	46	5.1	1.9	2.5	6.9	<1	<1	<1	T12DCE 2.5
GPA21-1	S/18	PH1	12/09/97		µg/L	<1	1.2	1.6	<1	<1	3.2	1.1	<1	<1	<1	None
GPA21-1	D/30	PH1	12/09/97		µg/L	1.3	5.2	3.9	<1	<1	5.3	2.8	<1	<1	<1	None
GPA21-2	S/20	PH1	12/09/97		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GPA21-2	D/30	PH1	12/09/97		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GPA22-1	M/23.5	PH1	12/03/97		µg/L	1.1	2	7.3	<1	<1	<1	<1	<1	<1	<1	None
GPA22-1	D/33	PH1	12/03/97		µg/L	1.7	3.5	14	<1	<1	1.1	<1	<1	<1	<1	None
GPA22-1	D/33	PH1	12/03/97	DUP	µg/L	1.8	3.1	12	<1	<1	1.2	<1	<1	<1	<1	None
GPA22-2	S/20	PH1	12/03/97		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GPA22-2	D/41.5	PH1	12/03/97		µg/L	<1	1.3	8.6	<1	<1	1.1	<1	<1	<1	<1	None
GPA23-1	S/20	PH1	12/11/97		µg/L	<1	3.6	<1	<1	<1	<1	<1	<1	<1	<1	None
GPA23-1	D/36	PH1	12/11/97		µg/L	<1	6.7	1.4	<1	<1	<1	<1	<1	<1	<1	None
GPA23-2	S/20	PH1	12/11/97		µg/L	<1	2.4	<1	<1	<1	<1	<1	<1	<1	<1	None
GPA23-2	D/35	PH1	12/11/97		µg/L	<1	360	120	7.5	<1	3.6	8.6	<1	<1	<1	T12DCE 4.7
GPA24-1	S/20	PH1	12/11/97		µg/L	<1	12 JDB	4.8	<1	2.8	1.2	<1	<1	<1	<1	None
GPA24-1	D/39	PH1	12/11/97		µg/L	<1	460	170	22	<1	3.4	4.3	<1	<1	1.8	T12DCE 5.7
GPA24-2	S/20	PH1	12/11/97		µg/L	<1	180	23	1.3	<1	<1	1.1	<1	<1	<1	T12DCE 1.2
GPA24-2	S/20	PH2	10/15/99		µg/L	<1	15	<1	<1	<1	<1	<1	<1	<1	<1	None
GPA24-2	D/36	PH1	12/11/97		µg/L	<1	580	100	11	<1	3.7	6.4	<1	<1	<1	T12DCE 6
GPA24-2	D/36	PH1	12/11/97	DUP	µg/L	1.3	550	98	11	1.4	3.3	7.7	<1	<1	<1	T12DCE 6.7

Table 5-8
North Industrial Corridor (NIC) Site
Geoprobe Groundwater Sample Analytical Results, Site VOCs* by EPA Method 8260

Station	Groundwater Depth Zone / Depth (feet)	Investigation Phase	Sample Date	QC Sample Flag	Units	PCE	TCE	C12DCE	VC	TCA	11DCA	11DCE	CT	CFM	BEN	Other Detected Compounds
GPA24-3	S/20	PH1	12/11/97		µg/L	2.1	310	44	2.2	<1	1.7	1.7	<1	<1	<1	T12DCE 4.5
GPA24-3	D/30	PH1	12/11/97		µg/L	2.2	830	110	6.9	<1	3.8	5.6	<1	<1	<1	T12DCE 8.3
GPA24-4	S/20	PH1	12/11/97		µg/L	<1	410	74	6.9	<1	3.9	3.7	<1	<1	<1	T12DCE 5.6
GPA24-4	D/33	PH1	12/11/97		µg/L	2	770	120	12	<1	6.3	7.3	<1	<1	<1	T12DCE 10
GPA25-1	S/20	PH1	12/09/97		µg/L	1.3	510	96	13	<1	3.8	4.9	<1	<1	<1	T12DCE 5.6
GPA25-1	S/20	PH2	10/15/99		µg/L	<1	290	59	7.4	<1	2.2	4.1	<1	<1	<1	T12DCE 5.3
GPA25-1	D/29	PH1	12/09/97		µg/L	1.3	460	89	16	<1	4.5	6.1	<1	<1	<1	T12DCE 5.2
GPA25-2	S/20	PH1	12/09/97		µg/L	<1	6 JDB	430	11	<1	3.2	5	<1	<1	<1	T12DCE 7.7
GPA25-2	D/28	PH1	12/09/97		µg/L	<1	4.2	390	11	<1	3.2	4.7	<1	<1	<1	T12DCE 6.8
GPA25-2	D/28	PH1	12/09/97	DUP	µg/L	<1	4.2	410	<1	<1	3.2	5.1	<1	<1	<1	T12DCE 7.7
GPA25-3	M/23	PH1	12/09/97		µg/L	<1	<1	2.2	<1	<1	<1	<1	<1	<1	<1	None
GPA25-3	D/28	PH1	12/09/97		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GPA25-4	S/20	PH1	06/02/98		µg/L	<1	5.6	160	1.4	<1	2	3.7	<1	<1	<1	MECL 1.5 UB, T12DCE 4.2
GPA25-4	D/28	PH1	06/02/98		µg/L	<1	4	310	3.7	<1	2.8	5.4	<1	<1	<1	MECL 1.3 UB, T12DCE 4.1
GPA25-5	S/20	PH1	06/02/98		µg/L	<1	190	38	1.7	<1	2.3	2.5	<1	<1	<1	MECL 1.1 UB, T12DCE 1.9
GPA25-5	D/29	PH1	06/02/98		µg/L	1.1	270	58	3.3	1.2	2.7	6.5	<1	<1	<1	MECL 1.6 UB, T12DCE 3.6
GPA25-5	D/29	PH1	06/02/98	DUP	µg/L	1.2	300	50	3.4	<1	2.8	6.6	<1	<1	<1	MECL 1.8 UB, T12DCE 3.6
GPA26-1	S/20	PH1	12/03/97		µg/L	<1	<1	2.2	<1	<1	<1	<1	<1	<1	<1	None
GPA26-1	D/30	PH1	12/03/97		µg/L	<1	3.5	12	<1	<1	1	<1	<1	<1	<1	None
GPA26-2	S/20	PH1	12/03/97		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GPA26-2	D/42	PH1	12/03/97		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GPA27-1	S/20	PH1	12/19/97		µg/L	<1 JH	<1 JH	<1 JH	<1 JH	<1 JH	<1 JH	<1 JH	<1 JH	<1 JH	<1 JH	None
GPA27-1	D/35	PH1	12/19/97		µg/L	<1 JH	13	7.9	<1 JH	<1 JH	<1 JH	<1 JH	<1 JH	<1 JH	<1 JH	None
GPA27-2	S/20	PH1	12/19/97		µg/L	<1 JH	36	9.9	<1 JH	<1 JH	<1 JH	<1 JH	<1 JH	<1 JH	<1 JH	None
GPA27-2	D/33	PH1	12/19/97		µg/L	<1 JH	110 JH	41	<1 JH	<1 JH	2.5 JH	1.8 JH	<1 JH	<1 JH	<1 JH	T12DCE 1.1
GPA27-3	S/20	PH1	12/22/97		µg/L	<1	4	14	<1	<1	<1	<1	<1	<1	<1	CBN 1.8
GPA27-3	D/39	PH1	12/22/97		µg/L	<1	300	100	10	<1	1.9	2.6	<1	<1	<1	T12DCE 2.7
GPA27-4	M/23	PH1	12/29/97		µg/L	<1	27	8.2	<1	1.2	1.2	<1	<1	<1	<1	None
GPA27-4	D/40	PH1	12/29/97		µg/L	<1	180	80	6.4	1.2	2.4	2.3	<1	<1	<1	T12DCE 2
GPA28-1	S/20	PH1	12/08/97		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	5.9	None
GPA28-1	D/25	PH1	12/08/97		µg/L	<1	11	17	5.1	<1	3.1	<1	<1	<1	1	None
GPA28-2	S/20	PH1	12/08/97		µg/L	5.4	160	38	<1	<1	<1	<1	<1	1.5	<1	T12DCE 2
GPA28-2	S/20	PH1	12/08/97	DUP	µg/L	5	130	35	<1	<1	<1	<1	<1	1.3	<1	T12DCE 2.1
GPA28-2	S/20	PH2	10/15/99		µg/L	6.8	60	14	<1	<1	<1	<1	<1	<1	<1	None
GPA28-2	D/27	PH1	12/08/97		µg/L	<1	250	69	1.9	<1	2.1	1.4	<1	<1	<1	T12DCE 2.3
GPA28-3	S/20	PH1	12/08/97		µg/L	<1	240	140	3.5	<1	3.5	2.2	<1	<1	<1	T12DCE 3.7
GPA28-3	S/20	PH2	10/20/99		µg/L	9.3	130	92	<1	<1	1.1	<1	<1	<1	<1	T12DCE 6.6
GPA28-3	D/29	PH1	12/08/97		µg/L	<1	250	73	4.9	<1	3.1	2.8	<1	<1	<1	T12DCE 2
GPA28-4	M/23	PH1	12/09/97		µg/L	<1	75	19	1.3	<1	1.1	<1	<1	<1	<1	None
GPA28-4	D/30	PH1	12/09/97		µg/L	<1	320	70	6.7	<1	4.2	3.8	<1	<1	<1	T12DCE 1.8
GPA28-5	S/20	PH1	12/09/97		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GPA28-5	D/30	PH1	12/09/97		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GPA28-6	S/20	PH1	06/02/98		µg/L	<1	4	84	1.5	<1	1.2	1.4	<1	<1	<1	MECL 1.8 UB
GPA28-6	D/29	PH1	06/02/98		µg/L	<1	17	160	2.8	<1	2.3	3	<1	<1	<1	MECL 1.8 UB, T12DCE 1.9
GPA29-1	S/20	PH1	12/04/97		µg/L	<1	<1	1.8	<1	<1	<1	<1	<1	<1	<1	None
GPA29-1	D/35	PH1	12/04/97		µg/L	<1	1.3	5.4	<1	<1	<1	<1	<1	<1	<1	None
GPA29-2	S/20	PH1	12/04/97		µg/L	<1	9.6	52	<1	<1	<1	<1	<1	<1	<1	EBN 95, TOL 5, XYL-MP 78, XYL-O 51
GPA29-2	D/35	PH1	12/04/97		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	EBN 2.8, XYL-MP 2.5, XYL-O 1.4

Table 5-8
North Industrial Corridor (NIC) Site
Geoprobe Groundwater Sample Analytical Results, Site VOCs* by EPA Method 8260

Station	Groundwater Depth Zone / Depth (feet)	Investigation Phase	Sample Date	QC Sample Flag	Units	PCE	TCE	C12DCE	VC	TCA	11DCA	11DCE	CT	CFM	BEN	Other Detected Compounds
GPA29-3	S/20	PH1	12/04/97		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GPA29-3	D/35	PH1	12/04/97		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GPA29-4	S/20	PH1	05/29/98		µg/L	1.6	180	8.8	<1	<1	<1	<1	<1	<1	<1	None
GPA29-4	S/20	PH2	12/16/99		µg/L	<1	42	<1	<1	<1	<1	<1	<1	<1	<1	None
GPA29-4	D/39	PH1	05/29/98		µg/L	<1	1.7	<1	<1	<1	<1	<1	<1	<1	<1	None
GPA29-5	S/20	PH1	05/29/98		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GPA29-5	D/36	PH1	05/29/98		µg/L	<1	<1	1.3	<1	<1	<1	<1	<1	<1	<1	None
GPA29-6	S/20	PH1	05/29/98		µg/L	<1	30	<1	<1	1.6	<1	<1	<1	<1	<1	None
GPA29-6	S/20	PH2	10/20/99		µg/L	<1	43	<1	<1	1.8	<1	<1	<1	<1	<1	None
GPA29-6	D/33	PH1	05/29/98		µg/L	<1	1.1	1.9	<1	<1	<1	<1	<1	<1	<1	None
GPA29-7	S/20	PH1	05/29/98		µg/L	<1	1.3	<1	<1	<1	<1	<1	<1	<1	<1	None
GPA29-7	D/37	PH1	05/29/98		µg/L	<1	<1	2.4	<1	<1	<1	<1	<1	<1	<1	None
GPA29-7	D/37	PH1	05/29/98	DUP	µg/L	<1	<1	2.4	<1	<1	<1	<1	<1	<1	<1	None
GPA29-8	S/20	PH1	05/29/98		µg/L	<1	<1	250	<1	<1	<1	<1	<1	<1	<1	T12DCE 5.3
GPA29-8	D/36	PH1	05/29/98		µg/L	<1	7.6	36	<1	<1	<1	<1	<1	<1	<1	None
GPA30-1	S/20	PH1	12/19/97		µg/L	<1 JH	<1 JH	<1 JH	<1 JH	<1 JH	<1 JH	<1 JH	<1 JH	<1 JH	<1 JH	None
GPA30-1	D/35	PH1	12/19/97		µg/L	<1 JH	<1 JH	<1 JH	<1 JH	<1 JH	<1 JH	<1 JH	<1 JH	<1 JH	<1 JH	None
GPA30-2	S/20	PH1	01/05/98		µg/L	<1	1.4	1.9	<1	<1	<1	<1	<1	<1	<1	None
GPA30-2	D/34	PH1	01/05/98		µg/L	<1	83	32	3.5	<1	<1	1.6	<1	<1	<1	T12DCE 1.1
GPA30-3	S/20	PH1	01/05/98		µg/L	<1	13	4.5	<1	<1	<1	<1	<1	<1	<1	None
GPA30-3	S/20	PH2	10/15/99		µg/L	<1	2.3	<1	<1	<1	<1	<1	<1	<1	<1	None
GPA30-3	D/36	PH1	01/05/98		µg/L	<1	110	29	<1	<1	1.6	1.2	<1	<1	<1	None
GPA30-4	S/20	PH1	01/05/98		µg/L	<1	6.8	4.3	<1	<1	<1	<1	480	300	<1	CCL4 480, MECL 2.2
GPA30-4	D/36	PH1	01/05/98		µg/L	<1	66	35	<1	<1	<1	1	1.8	3.8	<1	CCL4 1.8
GPA30-4	D/36	PH1	01/05/98	DUP	µg/L	<1	56	35	<1	<1	<1	<1	2.6	4.3	<1	CCL4 2.6
GPA31-1	S/20.5	PH1	12/22/97		µg/L	<1	43	19	<1	<1	<1	<1	<1	<1	<1	None
GPA31-1	S/20	PH2	10/15/99		µg/L	<1	66	40	<1	<1	<1	<1	<1	<1	<1	T12DCE 3.5
GPA31-1	D/35	PH1	12/22/97		µg/L	1.3	250	110	12	<1	3.8	3	<1	<1	<1	T12DCE 4.1
GPA31-10	S/20	PH1	05/29/98		µg/L	2.2	86	61	4.2	<1	3.2	1.7	<1	<1	<1	T12DCE 2.2
GPA31-10	D/27	PH1	05/29/98		µg/L	6.8	230	100	12	2.3	9.1	3	<1	<1	<1	T12DCE 3.7
GPA31-2	S/20.5	PH1	12/22/97		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	11	<1	None
GPA31-2	D/31	PH1	12/22/97		µg/L	1.9	110	19	<1	<1	<1	<1	<1	8.1	<1	T12DCE 1.4
GPA31-3	S/20	PH1	12/23/97		µg/L	3.5	550	81	5	<1	3.8	2.7	<1	<1	<1	T12DCE 4.4
GPA31-3	S/20	PH2	10/20/99		µg/L	9.2	260	50	2.7	<1	1.6	1.2	<1	<1	<1	T12DCE 5.4
GPA31-3	D/30	PH1	12/23/97		µg/L	1.4	400	79	7.7	<1	4.3	3.8	<1	<1	<1	T12DCE 3
GPA31-4	S/18	PH1	06/11/98		µg/L	11	44	22	<1	<1	<1	<1	<1	<1	<1	TOL 1.4
GPA31-4	D/30	PH1	06/11/98		µg/L	6.7	270	54	<1	<1	2.1	1.5	<1	<1	<1	T12DCE 3.3, TOL 3.8
GPA31-4	D/30	PH1	06/11/98	DUP	µg/L	8.7	280	58	2.3	<1	2.6	1.9	<1	<1	<1	T12DCE 3.8, TOL 3.3
GPA31-5	S/20	PH1	05/29/98		µg/L	3.2	53	22	<1	<1	<1	<1	<1	<1	<1	T12DCE 1.3
GPA31-5	D/28	PH1	05/29/98		µg/L	7.5	350	65	2.9	<1	<1	2.1	<1	<1	<1	T12DCE 3.8
GPA31-6	S/20	PH1	05/29/98		µg/L	9	360	72	5.1	<1	2.5	2.6	<1	<1	<1	T12DCE 4.3
GPA31-6	S/20	PH2	01/10/00		µg/L	5.6	92	23	<1	1.3	1.1	<1	<1	<1	<1	T12DCE 2.3
GPA31-6	S/17	PH2	01/10/00		µg/L	<1	1.4	6.9	<1	<1	<1	<1	<1	<1	<1	None
GPA31-6	D/26	PH1	05/29/98		µg/L	11 JS	380	69	4.9 JS	<1 JS	2.5 JS	2.8 JS	<1 JS	<1 JS	<1 JS	T12DCE 4.4 JS
GPA31-7	S/20	PH1	05/29/98		µg/L	2.8	23	6.6	<1	1.5	<1	<1	<1	<1	<1	None
GPA31-7	D/30	PH1	05/29/98		µg/L	6.7	260	57	2.7	<2	<2	<2	<2	<2	<2	MECL 9.7, T12DCE 2.8
GPA31-8	M/23	PH1	05/29/98		µg/L	1.2	48	24	<1	<1	<1	<1	<1	<1	<1	MECL 2.5
GPA31-8	D/35	PH1	05/29/98		µg/L	22	480	80	8.8	<1	2.7	4	<1	<1	<1	MECL 1.7, T12DCE 5.8

Table 5-8
North Industrial Corridor (NIC) Site
Geoprobe Groundwater Sample Analytical Results, Site VOCs* by EPA Method 8260

Station	Groundwater Depth Zone / Depth (feet)	Investigation Phase	Sample Date	QC Sample Flag	Units	PCE	TCE	C12DCE	VC	TCA	11DCA	11DCE	CT	CFM	BEN	Other Detected Compounds
GPA31-9	S/20	PH1	05/29/98		µg/L	<1	22	4.7	<1	<1	<1	<1	<1	4.3	<1	BDCM 1.3
GPA31-9	D/27	PH1	05/29/98		µg/L	1.3	70	21	<1	<1	<1	<1	<1	<1	<1	None
GPA32-1	S/20	PH1	12/08/97		µg/L	1.1	110	80	1.7	<1	2	1.1	<1	<1	<1	T12DCE 2.2
GPA32-1	D/27	PH1	12/08/97		µg/L	<1	56	48	<1	<1	1	<1	<1	<1	<1	None
GPA32-2	S/20	PH1	12/08/97		µg/L	<1	11	24	<1	<1	<1	<1	<1	<1	<1	None
GPA32-2	D/27	PH1	12/08/97		µg/L	<1	24	35	<1	<1	<1	<1	<1	<1	<1	None
GPA33-1	M/23	PH1	12/04/97		µg/L	55	43	20	<1	<1	<1	<1	<1	<1	<1	T12DCE 1.7
GPA33-1	D/33	PH1	12/04/97		µg/L	28	42	4.2	<1	<1	<1	<1	<1	<1	<1	None
GPA33-2	S/20	PH1	12/04/97		µg/L	1	8.5	18	<1	<1	<1	<1	<1	<1	<1	None
GPA33-2	D/39	PH1	12/04/97		µg/L	<1	3.8	25	<1	<1	<1	<1	<1	<1	<1	None
GPA33-3	S/20	PH1	12/04/97		µg/L	<1	4.4	<1	<1	<1	<1	<1	<1	<1	<1	None
GPA33-3	D/35	PH1	12/04/97		µg/L	<1	1.9	<1	<1	<1	<1	<1	<1	<1	<1	None
GPA33-4	S/20	PH1	12/04/97		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GPA33-4	D/35	PH1	12/04/97		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GPA34-1	S/20	PH1	12/23/97		µg/L	<1	5.7	3.6	<1	<1	<1	<1	<1	<1	<1	None
GPA34-1	D/36	PH1	12/23/97		µg/L	<1	35	22	<1	<1	<1	<1	<1	<1	<1	None
GPA34-2	M/23	PH1	12/23/97		µg/L	<1	2.6	11	1.6	<1	2.7	<1	<1	<1	<1	None
GPA34-2	M/23	PH1	12/23/97	DUP	µg/L	<1	2.6	12	1.7	<1	3.2	<1	<1	<1	<1	None
GPA34-2	D/36	PH1	12/23/97		µg/L	1.5	33	21	1.3	<1	<1	<1	<1	<1	<1	None
GPA34-3	S/20	PH1	12/29/97		µg/L	2.1	150	41	1.2	51	12	19	<1	<1	<1	T12DCE 2.0
GPA34-3	S/20	PH2	10/20/99		µg/L	1.6	180	47	3.5	52	12	13	<1	<1	<1	None
GPA34-3	D/33	PH1	12/29/97		µg/L	<1	73	31	<1	97	6.1	27	<1	1.1	<1	None
GPA34-4	S/20	PH1	12/29/97		µg/L	<1	<1	3	<1	<1	<1	<1	<1	<1	<1	None
GPA34-4	D/30	PH1	12/29/97		µg/L	<1	1	6.3	<1	<1	<1	<1	<1	<1	<1	None
GPA34-5	S/20	PH1	05/28/98		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GPA34-5	D/27	PH1	05/28/98		µg/L	<1	<1	2.2	<1	<1	<1	<1	<1	<1	<1	None
GPA34-6	S/20	PH1	05/28/98		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GPA34-6	D/29	PH1	05/28/98		µg/L	<1	<1	1.1	<1	<1	<1	<1	<1	<1	<1	None
GPA34-7	S/20	PH1	05/29/98		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GPA34-7	D/27	PH1	05/29/98		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GPA34-8	S/20	PH1	05/28/98		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	1.6	<1	None
GPA34-8	D/27	PH1	05/29/98		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GPA35-1	M/21	PH1	12/08/97		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GPA35-1	D/29	PH1	12/08/97		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GPA35-2	S/20	PH1	12/08/97		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GPA35-2	D/27	PH1	12/08/97		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GPA36-1	S/20	PH1	12/18/97		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GPA36-1	D/35	PH1	12/18/97		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GPA36-2	S/20	PH1	12/04/97		µg/L	1.3	25	3.3	<1	<1	<1	<1	<1	<1	<1	None
GPA36-2	S/20	PH1	12/04/97	DUP	µg/L	1.3	26	3.5	<1	<1	<1	<1	<1	<1	<1	None
GPA36-2	D/34	PH1	12/04/97		µg/L	<1	1.5	32	<1	<1	<1	<1	<1	<1	<1	None
GPA36-3	S/20	PH1	12/05/97		µg/L	2.3	1.4	<1	<1	<1	<1	<1	<1	<1	<1	None
GPA36-3	D/33.5	PH1	12/05/97		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GPA37-1	S/20	PH1	12/05/97		µg/L	<1	4.5	1.3	<1	<1	<1	<1	<1	<1	<1	EBN 230, TOL 1.8, XYL-MP 320, XYL-O 39
GPA37-1	D/30	PH1	12/05/97		µg/L	<1	7.6	16	<1	<1	2.1	<1	<1	<1	<1	EBN 130, XYL-MP 210, XYL-O 32
GPA37-2	M/23	PH1	12/05/97		µg/L	<1	3.1	1.1	<1	<1	<1	<1	<1	<1	<1	None
GPA37-2	D/30	PH1	12/05/97		µg/L	<1	39	16	<1	<1	3.2	2	<1	<1	<1	T12DCE 1.1
GPA37-3	S/20	PH1	12/05/97		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	11	<1	None
GPA37-3	D/30	PH1	12/05/97		µg/L	<1	2.9	1.2	<1	<1	<1	<1	<1	<1	<1	None

Table 5-8
North Industrial Corridor (NIC) Site
Geoprobe Groundwater Sample Analytical Results, Site VOCs* by EPA Method 8260

Station	Groundwater Depth Zone / Depth (feet)	Investigation Phase	Sample Date	QC Sample Flag	Units	PCE	TCE	C12DCE	VC	TCA	11DCA	11DCE	CT	CFM	BEN	Other Detected Compounds
GPA38-1	S/20	PH1	12/05/97		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GPA38-1	D/30	PH1	12/05/97		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GPA38-2	S/20	PH1	12/05/97		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	MECL 1.6 UB
GPA38-2	D/27	PH1	12/05/97		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	MECL 1.7 UB
GPA38-3	S/20	PH1	12/05/97		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	MECL 1.5 UB
GPA38-3	D/27	PH1	12/05/97		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	MECL 1.5 UB
GPA39-1	S/20	PH1	12/05/97		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	MECL 1.2 UB
GPA39-1	D/27	PH1	12/05/97		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GPA39-2	M/21	PH1	12/08/97		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GPA39-2	D/27	PH1	12/08/97		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GPA39-3	S/20	PH1	12/18/97		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GPA39-3	D/33	PH1	12/18/97		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GPA40-1	S/20	PH1	05/28/98		µg/L	<1	22	8	<1	<1	2	1.5	<1	1.2	<1	None
GPA40-1	S/20	PH2	10/19/99		µg/L	<1	11	5.1	<1	<1	1	<1	<1	<1	<1	None
GPA40-1	D/30	PH1	05/28/98		µg/L	<1	42	17	<1	<1	3.8	3.3	<1	<1	<1	T12DCE 1.2
GPA40-2	S/20	PH1	05/28/98		µg/L	<1	1.3	<1	<1	<1	<1	<1	<1	<1	<1	T12DCE 2.7
GPA40-2	D/29	PH1	05/28/98		µg/L	<1	8.8	24	<1	<1	3	1.4	<1	<1	<1	None
GPA40-3	S/20	PH1	05/28/98		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GPA40-3	D/28	PH1	05/28/98		µg/L	<1	2.3	1.1	<1	<1	<1	<1	<1	<1	<1	None
GPA40-4	S/20	PH1	05/28/98		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GPA40-4	D/29	PH1	05/28/98		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GPA41-1	S/20	PH1	05/27/98		µg/L	25	13	3.8	<1	<1	<1	<1	<1	<1	<1	None
GPA41-1	D/32	PH1	05/27/98		µg/L	<1	8.3	15	<1	<1	<1	<1	<1	<1	<1	None
GPA41-2	S/20	PH1	05/27/98		µg/L	<1	27	78	<1	<1	<1	<1	<1	<1	<1	T12DCE 2.7
GPA41-2	D/31	PH1	05/27/98		µg/L	<1	50	56	<1	<1	<1	<1	<1	<1	<1	T12DCE 1.8
GPA42-1	S/20	PH1	05/27/98		µg/L	8	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GPA42-1	D/36	PH1	05/27/98		µg/L	<1	<1	8.5	<1	<1	<1	<1	<1	<1	<1	None
GPA42-2	S/20	PH1	05/27/98		µg/L	11	1.2	3.2	<1	<1	<1	<1	<1	<1	<1	None
GPA42-2	D/32	PH1	05/27/98		µg/L	2.2	3	6.6	<1	<1	<1	<1	<1	<1	<1	None
GPA42-3	S/20	PH1	05/27/98		µg/L	<1	32	18	<1	<1	<1	<1	<1	<1	<1	None
GPA42-3	D/30	PH1	05/27/98		µg/L	<1	65	35	<1	<1	<1	<1	<1	<1	<1	T12DCE 1.3
GPA42-3	D/30	PH1	05/27/98	DUP	µg/L	<1	55	30	<1	<1	<1	<1	<1	<1	<1	T12DCE 1.4
GPA43-1	S/20	PH1	05/27/98		µg/L	10	4.9	18	<1	<1	<1	<1	<1	<1	<1	None
GPA43-1	D/30	PH1	05/27/98		µg/L	1.1	1.4	9.9	<1	<1	<1	<1	<1	<1	<1	TOL 1
GPA43-2	S/20	PH1	05/27/98		µg/L	<1	42	12	<1	<1	<1	<1	<1	<1	<1	None
GPA43-2	D/31	PH1	05/27/98		µg/L	<1	60	15	<1	<1	<1	<1	<1	<1	<1	None
GPA43-3	S/20	PH1	05/27/98		µg/L	3.2	4.4	<1	<1	<1	<1	<1	<1	<1	<1	None
GPA43-3	D/27	PH1	05/27/98		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GPA44-1	S/20	PH1	06/04/98		µg/L	1.9	23	8.3	<1	<1	<1	<1	<1	<1	<1	CM 1.2, MECL 1.5 UB
GPA44-1	D/34	PH1	06/04/98		µg/L	<1	26	53	<1	<1	<1	<1	<1	<1	<1	MECL 1.2, T12DCE 1.3
GPA44-1	D/34	PH1	06/04/98	DUP	µg/L	<1	22	50	<1	<1	<1	<1	<1	<1	<1	MECL 1.1, T12DCE 1.3
GPA44-2	S/20	PH1	06/11/98		µg/L	1.3	21	3.1	<1	<1	<1	<1	<1	<1	<1	MECL 1.4 UB, TOL 4.8
GPA44-2	D/31	PH1	06/11/98		µg/L	<1	20	18	<1	<1	<1	<1	<1	<1	<1	MECL 1.5 UB, TOL 3.4
GP-HCI-02	S/17	PH2	02/14/00		µg/L	15	14	<1	<1	11	<1	<1	<1	1.3	<1	12DCA 1.3
GP-HCI-05	S/17	PH2	02/14/00		µg/L	78	31	29	<1	7	18	2	<1	<1	<1	T12DCE 2.0
GP-HCI-06	S/17	PH2	02/14/00		µg/L	1300	110	210	<1	14	98	7.6	<1	<1	<1	12DCA 9.3, T12DCE 6.0
GP-HCI-07	S/17	PH2	02/14/00		µg/L	33	69	<1	<1	8.5	<1	<1	<1	2.5	<1	None
GP-HDP-01	S/16	PH2	09/06/00		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None

Table 5-8
North Industrial Corridor (NIC) Site
Geoprobe Groundwater Sample Analytical Results, Site VOCs* by EPA Method 8260

Station	Groundwater Depth Zone / Depth (feet)	Investigation Phase	Sample Date	QC Sample Flag	Units	PCE	TCE	C12DCE	VC	TCA	11DCA	11DCE	CT	CFM	BEN	Other Detected Compounds
GP-HDP-02	S/14	PH2	09/06/00		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GP-HDP-02	D/39	PH2	09/06/00		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GP-HDP-03	S/15	PH2	09/06/00		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
GP-WFS-06	S/19	PH2	07/19/01		µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	None
GP-WFS-07	M/21	PH2	07/19/01		µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	None
GP-WFS-08	S/19	PH2	07/19/01		µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	None
GP-WFS-08	D/31	PH2	07/19/01		µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	None
GP-WFS-09	S/19	PH2	07/17/01		µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	None
GP-WFS-10	S/19	PH2	07/17/01		µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	None
GP-WFS-11	S/19	PH2	07/17/01		µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	None
GP-WFS-11	D/33	PH2	07/17/01		µg/L	<1.0	**2.2**	**6.7**	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	None
GP-WFS-12	S/19	PH2	07/18/01		µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	None
GP-WFS-13	S/19	PH2	07/18/01		µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	None
GP-WFS-13	D/32	PH2	07/18/01		µg/L	<1.0	<1.0	**2.3**	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	None
GP-WFS-14	S/19	PH2	07/18/01		µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	None
GP-WFS-15	S/20	PH2	07/19/01		µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	None
GP-WW-01	S/14	PH2	07/18/00		µg/L	<1	**2.9**	**1**	<1	<1	<1	<1	<1	<1	<1	None
GP-WW-01	D/30	PH2	07/18/00		µg/L	<1	**250**	**80**	**23**	<1	**4.2**	**8.8**	<1	<1	<1	T12DCE 9.8
GP-WW-03	S/14	PH2	07/18/00		µg/L	<1	**2.2**	<1	<1	<1	<1	<1	<1	<1	<1	None
GP-WW-03	D/30	PH2	07/18/00		µg/L	<1	**140**	**43**	**18**	<1	**3.7**	**9**	<1	<1	<1	T12DCE 6.2
GP-WW-04	S/14	PH2	07/18/00		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None

* Site VOCs are the "groundwater target compounds" discussed in Section 5.5.3.1 of the RI Report.

PCE = Tetrachloroethene
TCE = Trichloroethene
C12DCE = cis-1,2-dichloroethene
VC = Vinyl chloride
TCA = 1,1,1-Trichloroethane
11DCA = 1,1-Dichloroethane
11DCE = 1,1-Dichloroethene
CT = Carbon tetrachloride
CFM = Chloroform
BEN = Benzene

Other Detected Compounds:

T12DCE = trans-1,2-Dichloroethene
12DCA = 1,2-Dichloroethane
EBN = Ethylbenzene
XYL-MP = m,p-Xylene
XYL-O = o-Xylene
TOL = Toluene
MECL = Methylene Chloride
CCL4 = Carbon Tetrachloride
NAP = Naphthalene
CHEA = Chloroethane
CM = Chloromethane
TCFM = Trichlorofluoromethane
1122PCA = 1,1,2,2-Tetrachloroethane
112TCA = 1,1,2-Trichloroethane
12DCP = 1,2-Dichloropropane
CBN = Chlorobenzene
12DCB = 1,2-Dichlorobenzene
BDCM = Bromodichloromethane
PYR = Pyrene
TPH-GAS = TPH as Gasoline
XYLT = Xylene (Total)
14DCB = 1,4-Dichlorobenzene

Bold text indicates results above analytical detection limits.
DUP = Field duplicate sample.
J = Estimated, value measured between the reporting limit and the detection limit
JS = Estimated due to surrogate recoveries outside of control limits.
JH = Estimated due to holding time violations.
JP = Estimated due to poor performance standard results.
JIS = Estimated due to low internal standard area.

Table 5-9a
North Industrial Corridor (NIC) Site
Monitoring Well Groundwater Sample Analytical Results, Site VOCs* by EPA Method 8260

Station	Groundwater Depth Zone	Sample Date	Units	PCE	TCE	C12DCE	VC	TCA	11DCA	11DCE	CT	CFM	BEN	Other Detected Compounds
DRB-MW-02	S	07/25/01	µg/L	2.1	60	14	1.2	<1.0	<1.0	1.1	9.1	4.3	6.5	CCL4 9.1, MECL 1.2, TCFM 1.5
DRB-MW-11	S	07/26/01	µg/L	<1.0	<1.0	13	12	<1.0	<1.0	<1.0	<1.0	<1.0	9.9	124TMB 44, 135TMB 7.8, EBN 3.1, IPB 1.4, NAP 18, NPB 1.9, SBB 1.2, XYL-MP 25, XYL-O 1.1
DRB-MW-20	S	07/26/01	µg/L	<1.0	13	9.6	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	560	124 TMB 40, 135 TMB 8.4, CHEA 1.1, EBN 35, IPB 5.9, NAP 30, NPB 10, PIPT 1.0, SBB 1.2, TOL 28, XYL-MP 98, XYL-O 38
DRB-MW-250	D	07/26/01	µg/L	<1.0	<1.0	33	24	<1.0	<1.0	<1.0	<1.0	<1.0	170	IPB 1.2
DRB-MW-30	S	07/25/01	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	32	124 TMB 29, 135 TMB 16, EBN 32, IPB 24, NAP 27, NBB 13, NPB 22, PIPT 11, SBB 9.7, TBB 3.5, TOL 31, XYL-MP 62, XYL-O 21
EXC-MW-01A	S	06/16/98	µg/L	<1	13	17	<1	<1	<1	<1	<1	<1	<1	MECL 1.1 UB
EXC-MW-02A	S	12/08/97	µg/L	<1	42 JDB	2.6 JDB	<1	<1	<1	<1	<1	<1	<1	XYL-MP 1.9
EXC-MW-02B	D	12/08/97	µg/L	<1	23 JDB	1.5 JDB	<1	<1	<1	<1	<1	<1	<1	XYL-MP 1.5
EXC-MW-03A	S	06/15/98	µg/L	<1	4.8	2	<1	<1	<1	<1	<1	<1	<1	MECL 1 UB
EXC-MW-03B	D	06/15/98	µg/L	<1	100	21	<1	1.9	1.6	5.5	<1	1.9	<1	MECL 1.1 UB
EXC-MW-04A	S	06/15/98	µg/L	1.5	330	86	<1	3.9	3.5	18	<1	<1	<1	MECL 1 UB, T12DCE 1.1, TOL 1.5
EXC-MW-04A	S	05/02/01	µg/L	1.4	290	91	2.4	2.4	2.7	15	<1.0	<1.0	<1.0	T12DCE 1.3
EXC-MW-04B	D	06/15/98	µg/L	<1	19	1.6	<1	<1	<1	1.1	<1	<1	<1	MECL 1 UB
EXC-MW-04B	D	05/02/01	µg/L	<1.0	39	7.0	<1.0	<1.0	<1.0	1.9	<1.0	<1.0	<1.0	None
EXC-MW-05B	D	06/15/98	µg/L	<1	270	38	<1	5	2	17	<1	<1	<1	MECL 1.1 UB
EXC-MW-05B	D	05/02/01	µg/L	<1.0	62	8.7	<1.0	<1.0	<1.0	2.4	<1.0	<1.0	<1.0	None
EXC-MW-06A	S	06/16/98	µg/L	<1	100	9.9	<1	2.2	<1	5.3	<1	<1	<1	MECL 1.5 UB
EXC-MW-06B	D	06/16/98	µg/L	<1	92	7.1	<1	1.7	<1	5.3	<1	<1	<1	MECL 1.3 UB
EXC-MW-07B	D	06/16/98	µg/L	<1	99	25	<1	2.0	<1	6.4	<1	<1	<1	MECL 1.4 UB
EXC-MW-07B	D	05/02/01	µg/L	<1.0	51	18	<1.0	<1.0	1.3	2.1	<1.0	<1.0	<1.0	None
EXC-MW-08A	S	12/08/97	µg/L	<1	78 JDB	10 JDB	<1	1.2	<1	1.8	<1	<1	<1	None
EXC-MW-08B	D	12/08/97	µg/L	<1	240	17 JDB	<1	5.1	1.5	10	<1	<1	<1	None
GRR-MW-04	S	12/02/97	µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
HRI-MW-03D	D	12/09/97	µg/L	68 JS	230	47 JDB	11	24	3.5	5.8	13	26 JTB	410	12DCA 13, CCL4 13, CM 3.4, XYL-MP 1.3
NMW-01D	D	05/01/01	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	None
NMW-01S	S	05/01/01	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	None
NMW-02D	D	05/02/01	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	None
NMW-02S	S	05/02/01	µg/L	41	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	None

Table 5-9a
North Industrial Corridor (NIC) Site
Monitoring Well Groundwater Sample Analytical Results, Site VOCs* by EPA Method 8260

Station	Groundwater Depth Zone	Sample Date	Units	PCE	TCE	C12DCE	VC	TCA	11DCA	11DCE	CT	CFM	BEN	Other Detected Compounds
NMW-03D	D	05/09/01	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	None
NMW-03S	S	05/09/01	µg/L	<1.0	1.2	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	None
NMW-04D	D	05/07/01	µg/L	<1.0	140	42	14	<1.0	5.4	8.7	<1.0	<1.0	1.2	T12DCE 1.9
NMW-04S	S	05/07/01	µg/L	<1.0	60	67	36	<1.0	5.2	5.8	1.4	1.6	2	CCL4 1.4, T12DCE 20
NMW-05D	D	05/09/01	µg/L	<1.0	16	23	1.6	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	None
NMW-05S	S	05/09/01	µg/L	7.8	250	500	86	<1.0	10	3.7	<1.0	<1.0	1.9	T12DCE 5.4
NMW-06D	D	05/07/01	µg/L	<1.0	80	49	24	<1.0	3.6	3.3	<1.0	<1.0	<1.0	None
NMW-06S	S	05/07/01	µg/L	<1.0	<1.0	2.1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	None
NMW-07D	D	05/02/01	µg/L	<1.0	2.2	1.7	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	None
NMW-07S	S	05/02/01	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	None
NMW-08D	D	05/10/01	µg/L	<1.0	230	110	34	<1.0	7.9	18	<1.0	<1.0	1.2	T12DCE 11
NMW-08S	S	05/10/01	µg/L	<1.0	130	65	17	<1.0	4.3	9.4	<1.0	<1.0	<1.0	T12DCE 5.0, TOL 120
NMW-09D	D	05/10/01	µg/L	<1.0	290	130	25	2.3	8.4	27	<1.0	<1.0	<1.0	MTBE 1.5, T12DCE 20
NMW-09S	S	05/10/01	µg/L	<1.0	190	180	14	<1.0	6.8	20	<1.0	<1.0	<1.0	T12DCE 12
NMW-10D	D	05/09/01	µg/L	<1.0	140	51	20	<1.0	4	6.5	<1.0	1.3	<1.0	T12DCE 1.6
NMW-10S	S	05/09/01	µg/L	<1.0	150	53	18	<1.0	4.6	7.5	<1.0	<1.0	<1.0	T12DCE 1.4
NMW-11D	D	05/03/01	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	None
NMW-11S	S	05/03/01	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	None
NMW-12D	D	05/08/01	µg/L	<1.0	3.1	180	4.5	<1.0	1.9	5	<1.0	<1.0	<1.0	T12DCE 2.6
NMW-12S	S	05/08/01	µg/L	<1.0	70	88	2.5	<1.0	1.7	3.1	<1.0	<1.0	<1.0	T12DCE 1.6
NMW-13D	D	05/10/01	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	None
NMW-13S	S	05/10/01	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	320	EBN 95, TOL 140, XYL-MP 310, XYL O 84
NMW-14D	D	05/09/01	µg/L	<1.0	8.9	200	2.4	<1.0	1.7	1.9	<1.0	<1.0	<1.0	T12DCE 3.6
NMW-14S	S	05/09/01	µg/L	<1.0	3.8	130	1.7	<1.0	1.4	1.3	<1.0	<1.0	<1.0	T12DCE 2.6
NMW-15D	D	05/08/01	µg/L	<1.0	20	59	<1.0	<1.0	1.1	<1.0	<1.0	<1.0	<1.0	None
NMW-15S	S	05/08/01	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	None
NMW-16D	D	05/04/01	µg/L	7.3	2.4	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	None
NMW-16S	S	05/04/01	µg/L	3.5	1.7	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	None
NMW-17D	D	05/03/01	µg/L	<1.0	1.4	6.7	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	None
NMW-17S	S	05/03/01	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	None
NMW-18D	D	05/08/01	µg/L	<1.0	1.5	10	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	None
NMW-18S	S	05/08/01	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	None
NMW-19D	D	05/08/01	µg/L	<1.0	110	68	3.7	<1.0	1.5	3.6	<1.0	<1.0	<1.0	T12DCE 1.4
NMW-19S	S	05/08/01	µg/L	<1.0	1.7	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	None
NMW-20D	D	05/03/01	µg/L	<1.0	<1.0	4.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	None
NMW-20S	S	05/03/01	µg/L	40	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	None

Table 5-9a
North Industrial Corridor (NIC) Site
Monitoring Well Groundwater Sample Analytical Results, Site VOCs* by EPA Method 8260

Station	Groundwater Depth Zone	Sample Date	Units	PCE	TCE	C12DCE	VC	TCA	11DCA	11DCE	CT	CFM	BEN	Other Detected Compounds
NMW-21D	D	05/04/01	µg/L	<1.0	<1.0	5.8	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	None
NMW-21S	S	05/04/01	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	None
NMW-22D	D	05/07/01	µg/L	2.8	1.8	2.3	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	None
NMW-22S	S	05/07/01	µg/L	19	1.7	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	None
NMW-23D	D	05/03/01	µg/L	<1.0	3.5	2	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	None
NMW-23S	S	05/03/01	µg/L	<1.0	50	7.4	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	None
NMW-24D	D	05/04/01	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	None
NMW-24S	S	05/04/01	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	2	<1.0	None
NMW-25D	D	05/08/01	µg/L	<1.0	19	20	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	None
NMW-25S	S	05/08/01	µg/L	1.2	21	18	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	None
NMW-26D	D	05/08/01	µg/L	1.2	11	34	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	None
NMW-26S	S	05/08/01	µg/L	2.2	13	14	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	None
NMW-27D	D	05/04/01	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	None
NMW-27S	S	05/04/01	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	None
NMW-28D	D	05/04/01	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	None
NMW-28S	S	05/04/01	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	None
NMW-29D	D	05/08/01	µg/L	<1.0	18	9.1	<1.0	<1.0	1.4	1.0	<1.0	<1.0	<1.0	None
NMW-29S	S	05/08/01	µg/L	<1.0	6.2	2.9	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	None
NMW-30D	D	05/04/01	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	None
NMW-30S	S	05/04/01	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	None
NMW-31D	D	05/09/01	µg/L	4	200	43	3.3	<1.0	1.9	1	<1.0	<1.0	<1.0	T12DCE 5.2
NMW-31S	S	05/09/01	µg/L	3	55	11	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.3
NMW-32D	D	05/08/01	µg/L	5.2	270	55	3.1	<1.0	2.1	2.3	<1.0	<1.0	<1.0	T12DCE 3.0
NMW-32S	S	05/08/01	µg/L	4.5	220	40	2.3	<1.0	1.7	1.6	<1.0	<1.0	<1.0	T12DCE 2.7
NMW-33D	D	05/07/01	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	None
NMW-33S	S	05/07/01	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	None
NMW-34D	D	05/07/01	µg/L	<1.0	55	11	23	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	None
NMW-34S	S	05/07/01	µg/L	<1.0	30	62	2.1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	T12DCE 2.4
NMW-35D	D	05/08/01	µg/L	<1.0	270	95	4.5	<1.0	2.5	5.7	<1.0	<1.0	<1.0	T12DCE 3.0
NMW-35S	S	05/08/01	µg/L	<1.0	68	29	<1.0	<1.0	<1.0	1.5	<1.0	<1.0	<1.0	None
NMW-36D	D	07/27/01	µg/L	<1.0	5.8	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	NAP 2.4
NMW-37D	D	07/27/01	µg/L	1.3	66	17	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	NAP 21
NMW-38D	D	07/27/01	µg/L	<1.0	9.9	1.2	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	NAP 1.4
NMW-39D	D	05/09/01	µg/L	<1.0	220	260	18	1.9	6.2	17	<1.0	1.1	1.6	T12DCE 13
NMW-39S	S	05/09/01	µg/L	<1.0	37	360	26	<1.0	8.4	24	<1.0	<1.0	<1.0	T12DCE 17
NMW-40D	D	05/08/01	µg/L	<1.0	150	56	22	<1.0	5.2	7.7	<1.0	<1.0	2.6	T12DCE 4.0
NMW-40S	S	05/08/01	µg/L	<1.0	190	77	25	<1.0	7.2	14	<1.0	<1.0	<1.0	T12DCE 10

Table 5-9a
North Industrial Corridor (NIC) Site
Monitoring Well Groundwater Sample Analytical Results, Site VOCs* by EPA Method 8260

Station	Groundwater Depth Zone	Sample Date	Units	PCE	TCE	C12DCE	VC	TCA	11DCA	11DCE	CT	CFM	BEN	Other Detected Compounds
NMW-41D	D	05/08/01	µg/L	<1.0	170	38	5.7	<1.0	2	4	<1.0	<1.0	<1.0	T12DCE 2.6
NMW-41S	S	05/08/01	µg/L	<1.0	250	55	3.8	<1.0	1.7	3.2	<1.0	<1.0	<1.0	T12DCE 2.2
NMW-42D	D	07/26/01	µg/L	2.2	99	35	1.1	<1.0	<1.0	1.1	1.4	<1.0	<1.0	CCL4 1.4, MECL 1.2, TCFM 1.4
NMW-42S	S	07/25/01	µg/L	13	62	16	1.4	1.3	<1.0	1.3	5.5	8.6	<1.0	CCL4 5.5, NAP 1.6, TCFM 1.4
NMW-43D	D	07/25/01	µg/L	<1.0	8.4	64	15	<1.0	<1.0	<1.0	<1.0	<1.0	82	124TMB 2.8, EBN 4.7, IPB 3.7, NAP 3.5, NPB 3.0, TOL 7.5, XYL-MP 15, XYL-O 1.1
NMW-44D	D	07/26/01	µg/L	<1.0	13	39	18	<1.0	<1.0	1.6	<1.0	<1.0	8.5	IPB 3.3, NPB 6.9, TBB 1.3
NMW-45D	D	07/26/01	µg/L	<1.0	32	17	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	11	124TMB 1.2, MTBE 6.8
NMW-46D	D	07/25/01	µg/L	<1.0	6.9	43	4.4	<1.0	<1.0	<1.0	<1.0	<1.0	1.9	MTBE 10, NAP 1.5
NMW-47D	D	05/09/01	µg/L	<1.0	77	270	33	<1.0	2.5	1.1	<1.0	<1.0	<1.0	None
NMW-47S	S	05/09/01	µg/L	<1.0	25	62	11	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	None
NMW-48D	D	07/27/01	µg/L	<1.0	5	5.7	3.4	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	None
NMW-48S	S	07/27/01	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	None
UPRF-MW-03	S	07/27/01	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	NAP 1.2 UB
UPRF-MW-09	S	07/27/01	µg/L	<1.0	2.8	1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	NAP 44, NPD 1.2
UPRF-MW-16	S	07/27/01	µg/L	<1.0	28	4.3	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	None
VCM-MW-01	S	05/02/01	µg/L	<1.0	9.2	17	<1.0	<1.0	1.5	<1.0	<1.0	<1.0	<1.0	T12DCE 1.4
VCM-MW-02B	S	05/02/01	µg/L	<1.0	15	7.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	None
VCM-MW-03	S	05/02/01	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	None
VCM-MW-04	D	05/02/01	µg/L	<1.0	11	28	<1.0	<1.0	1.7	<1.0	<1.0	<1.0	<1.0	T12DCE 2.0
VCM-MW-06	D	05/02/01	µg/L	<1.0	71	37	1.7	<1.0	1.4	1	<1.0	<1.0	<1.0	T12DCE 2.4
VCM-MW-07	D	05/02/01	µg/L	<1.0	6.1	6	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	TOL 1.6
WNC-05D	D	05/10/01	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	None
WNC-06D	D	05/01/01	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	None
WNC-09D	D	05/02/01	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.1	None
WNC-09SR	S	05/02/01	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	None
WNC-10D	D	05/01/01	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	None
WNC-11D	D	05/09/01	µg/L	<1.0	37	2.4	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	None
WNC-16D	D	05/10/01	µg/L	<1.0	6.4	3.2	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	None
WNC-23D	D	05/08/01	µg/L	<1.0	33	3.7	<1.0	<1.0	<1.0	1.1	<1.0	<1.0	<1.0	None
WNC-31D	D	07/27/01	µg/L	<1.0	48	7.8	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	NAP 6.9
WNC-32D	D	07/27/01	µg/L	1.1	69	12	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	NAP 3.0 UB
WNC-37SR	S	05/07/01	µg/L	<1.0	37	22	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	None
WNC-49SR	S	05/10/01	µg/L	<1.0	<1.0	<1.0	<1.0	1	<1.0	<1.0	<1.0	<1.0	<1.0	None
WND-01S	S	05/08/01	µg/L	<1.0	380	180	5.1	14	8.6	19	<1.0	<1.0	<1.0	None

Table 5-9a
North Industrial Corridor (NIC) Site
Monitoring Well Groundwater Sample Analytical Results, Site VOCs* by EPA Method 8260

Station	Groundwater Depth Zone	Sample Date	Units	PCE	TCE	C12DCE	VC	TCA	11DCA	11DCE	CT	CFM	BEN	Other Detected Compounds
WND-02D	D	12/01/97	µg/L	<1	**48 JDB**	**23 JDB**	**24**	<1	**1.2**	**2**	<1	<1	<1	XYL-MP 1.9
WND-02D	D	05/10/01	µg/L	<1.0	**6.9**	**6.9**	**2.3**	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	None
WND-02S	S	12/01/97	µg/L	<1	**7.8 JDB**	**1.9 JDB**	<1	<1	**2**	**2.3**	<1	<1	<1	XYL-MP 2.6, XYL-O 1.2
WND-02S	S	05/10/01	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	None
WND-03S	S	06/16/98	µg/L	<1	**72**	**760**	**3.3**	<1	**6.9**	**25**	<1	<1	**7.4**	CM 5.1, EBN 40, T12DCE 92, TOL 6.7, XYL-MP 27, XYL-O 3.2
WND-03S	S	05/02/01	µg/L	<1.0	**30**	**240**	**46**	<1.0	**2.5**	**12**	<1.0	<1.0	**5.7**	EBN 13, TOL 2.7, XYL-MP 6.4
WND-04S	S	06/15/98	µg/L	**1.1**	**550**	**77**	**1.2**	**12**	**3.9**	**31**	<1	<1	<1	MECL 1.6 UB
WND-04S	S	05/02/01	µg/L	<1.0	**120**	**41**	<1.0	**1.5**	<1.0	**5.1**	<1.0	<1.0	<1.0	12DBE 1.1
WND-05S	S	05/10/01	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	EBN 1.0, IPB 84, NAP 14, NBB 5.7, NPB 94, SBB 28, TBB 3.0
WND-06S	S	05/01/01	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	None
WND-07S	S	12/05/97	µg/L	**5.5**	**55 JDB**	**8.2 JDB**	<1	<1	<1	<1	<1	<1	<1	None
WND-07S	S	05/09/01	µg/L	<1.0	**5.4**	**6.4**	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	None
WND-08S	S	05/08/01	µg/L	<1.0	**5.5**	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	None
WND-10S	S	05/01/01	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	**1.5**	<1.0	<1.0	CCL4 1.5
WND-11S	S	05/09/01	µg/L	<1.0	**7**	**56**	**3.8**	<1.0	**5.4**	**1.8**	<1.0	<1.0	<1.0	T12DCE 1.0
WND-12D	D	12/01/97	µg/L	<1	**37 JDB**	**3.3 JDB**	<1	**2.1**	**4.9**	**5.7**	**2.2**	**4.2**	<1	CCL4 2.2, XYL-MP 2.4, XYL-O 1.3
WND-12D	D	05/03/01	µg/L	<1.0	**18**	**1.4**	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	None
WND-12S	S	12/01/97	µg/L	**3.4**	**13 JDB**	**3.7 JDB**	**16**	**100**	**670**	**300**	<1	**2.3**	**2.2**	12DCP 5.1, CHEA 35, EBN 2.6, TOL 2.2, XYL-MP 3.8, XYL-O 3.6
WND-12S	S	05/03/01	µg/L	<1.0	**1.4**	**3.7**	**7.1**	**1.5**	**43**	**33**	<1.0	<1.0	<1.0	CHEA 8.8
WND-13D	D	06/16/98	µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	None
WND-13S	S	06/16/98	µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	MECL 1.2 UB
WND-14D	D	05/07/01	µg/L	**1.4**	**51**	**11**	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	None
WND-14S	S	05/07/01	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	None
WND-15D	D	12/04/97	µg/L	<1	**24 JDB**	**2 JDB**	<1	<1	<1	<1	**1.6**	**2.4**	<1	CCL4 1.6, XYL-MP 1.6
WND-15D	D	05/04/01	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	None
WND-15S	S	12/04/97	µg/L	<1	**13 JDB**	<1	<1	<1	<1	<1	<1	<1	<1	XYL-MP 1.3
WND-15S	S	05/04/01	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	None
WND-16S	S	05/10/01	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	**25**	124TMB 2.8, 135TMB 31, EBN 18, IPB 17, NAP 790, NBB 6.9, NPB 26, PIPT 3.5, SBB 3.2, TBB 1.1, TOL 2.3, XYL-MP 28, XYL-O 1.7
WND-18D	D	12/05/97	µg/L	<1	**360**	**90 JDB**	**9.1**	**3.3**	**4.5**	**15**	<1	<1	<1	T12DCE 2.6, XYL-MP 1.5
WND-18D	D	05/09/01	µg/L	<1.0	**170**	**80**	**15**	<1.0	**4.8**	**14**	<1.0	<1.0	<1.0	T12DCE 2.4
WND-18S	S	12/05/97	µg/L	<1	**13 JDB**	<1	<1	<1	<1	<1	<1	<1	<1	XYL-MP 2.5, XYL-O 1.1
WND-18S	S	05/09/01	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	None

Table 5-9a
North Industrial Corridor (NIC) Site
Monitoring Well Groundwater Sample Analytical Results, Site VOCs* by EPA Method 8260

Station	Groundwater Depth Zone	Sample Date	Units	PCE	TCE	C12DCE	VC	TCA	11DCA	11DCE	CT	CFM	BEN	Other Detected Compounds
WND-19D	D	12/03/97	µg/L	<1	330	51 JDB	2.3	<1	1.3	3.6	<1	<1	<1	T12DCE 3.3, XYL-MP 1.4
WND-19D	D	05/09/01	µg/L	<1.0	150	37	5.5	<1.0	1.7	5.2	<1.0	<1.0	<1.0	T12DCE 1.3
WND-19S	S	12/03/97	µg/L	<1	110	17 JDB	<1	<1	<1	<1	<1	<1	<1	BDCM 1.1, XYL-MP 1.8
WND-19S	S	05/09/01	µg/L	<1.0	14	1.6	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	None
WND-20S	S	12/03/97	µg/L	<1	29 JDB	3.9 JDB	1.1	<1	<1	<1	<1	<1	<1	XYL-MP 2
WND-20S	S	05/08/01	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	None
WND-21D	D	12/02/97	µg/L	<1	400	77 JDB	1.2	12	5.4	32	2.9	1.8	<1	12DCA 2.1, CCL4 2.9, T12DCE 4.3, XYL-MP 2
WND-21D	D	05/04/01	µg/L	<1.0	230	86	22	2.9	7.5	21	1.5	1.6	5.2	CCL4 1.5, T12DCE 12
WND-21S	S	12/02/97	µg/L	<1	14 JDB	92 JDB	<1	<1	2.5	5.5	<1	<1	<1	T12DCE 2.1, XYL-MP 2.2
WND-21S	S	05/04/01	µg/L	<1.0	2.9	55	1.4	<1.0	1.2	3.1	<1.0	<1.0	<1.0	T12DCE 1.7
WND-22D	D	12/02/97	µg/L	<1	5.1 JDB	<1	<1	<1	<1	<1	<1	<1	<1	XYL-MP 2
WND-22D	D	05/01/01	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	None
WND-22S	S	12/02/97	µg/L	<1	10 JDB	<1	<1	<1	<1	<1	<1	<1	<1	XYL-MP 2.9, XYL-O 1.5
WND-22S	S	05/01/01	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	None
WND-23S	S	05/08/01	µg/L	<1.0	9.5	5.2	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	None
WND-24D	D	12/08/97	µg/L	<1 JS	220	49 JDB	6.5	2	<1	7.6	<1	<1	<1	T12DCE 1.8
WND-24D	D	05/09/01	µg/L	<1.0	130	44	6.8	<1.0	1.7	3.1	<1.0	<1.0	<1.0	T12DCE 1.1
WND-24S	S	12/08/97	µg/L	<1	50 JDB	13 JDB	<1	<1	<1	<1	<1	<1	<1	XYL-MP 1.5
WND-24S	S	05/09/01	µg/L	<1.0	79	24	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	None
WND-25D	D	05/10/01	µg/L	<1.0	56	3.7	<1.0	<1.0	<1.0	1.7	<1.0	<1.0	<1.0	None
WND-25S	S	05/10/01	µg/L	<1.0	46	1.2	<1.0	<1.0	<1.0	<1.0	<1.0	1.8	<1.0	None
WND-26D	D	05/04/01	µg/L	<1.0	6.4	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	None
WND-26S	S	05/04/01	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	None
WND-27S	S	12/09/97	µg/L	6.8	21 JDB	<1	<1	<1	<1	<1	<1	<1	6.2	XYL-MP 1.5
WND-27S	S	05/09/01	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	None
WND-28S	S	12/01/97	µg/L	<1	12 JDB	1 JDB	<1	<1	<1	<1	<1	<1	<1	XYL-MP 3.8, XYL-O 1.9
WND-28S	S	05/01/01	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	None
WND-29D	D	05/03/01	µg/L	<1.0	4.6	<1.0	<1.0	<1.0	<1.0	<1.0	1.3	<1.0	<1.0	CCL4 1.3
WND-29S	S	05/03/01	µg/L	<1.0	1.1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	None
WND-30D	D	07/25/01	µg/L	1.9	53	17	1.2	<1.0	<1.0	1.1	7.4	3.5	3.3	CCL4 7.4, IPB 1.0, NAP 4.8, TCFM 1.5
WND-31S	S	07/27/01	µg/L	<1.0	3.2	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	6.6	<1.0	NAP 2.8 UB
WND-32S	S	07/27/01	µg/L	<1.0	9.7	1	<1.0	<1.0	<1.0	<1.0	12	39	<1.0	CCL4 12, NAP 1.4 UB

Table 5-9a
North Industrial Corridor (NIC) Site
Monitoring Well Groundwater Sample Analytical Results, Site VOCs* by EPA Method 8260

Station	Groundwater Depth Zone	Sample Date	Units	PCE	TCE	C12DCE	VC	TCA	11DCA	11DCE	CT	CFM	BEN	Other Detected Compounds
WND-33D	D	12/03/97	µg/L	<1	380	150	110	2	12	25	<1	<1	5.4	CHEA 7.9, T12DCE 7.4, TOL 1.2, XYL-MP 2.1, XYL-O 1.1
WND-33D	D	05/07/01	µg/L	<1.0	43	72	<1.0	<1.0	4.3	<1.0	<1.0	<1.0	<1.0	None
WND-33S	S	12/03/97	µg/L	<1	370	120	70	1.8	14	27	<1	<1	4	CHEA 4.6, T12DCE 5.9, XYL-MP 2.6, XYL-O 1.4
WND-33S	S	05/07/01	µg/L	<1.0	160	100	9.4	<1.0	3.5	2.4	<1.0	<1.0	<1.0	T12DCE 1.9
WND-34D	D	06/16/98	µg/L	<1	160	74	31	<1	7.1	10	<1	5.2	230	12DCA 7.2, CHEA 1, CM 7.9, EBN 1.3, T12DCE 2.2, TOL 1.4
WND-34D	D	05/04/01	µg/L	<1.0 JIH	32 JIH	23 JIH	<1.0 JIH	<1.0 JIH	1.7 JIH	1.4 JIH	<1.0 JIH	<1.0 JIH	64 JIH	None
WND-34S	S	06/16/98	µg/L	<1	17	33	79	<1	8.5	2.9	<1	<1	120	12DCA 4.6, CM 5.9, T12DCE 2.7, TOL 1.3
WND-34S	S	05/04/01	µg/L	<1.0	11	7.3	5	<1.0	2.3	<1.0	<1.0	<1.0	160	MECL 4.4, TOL 1.5
WND-36D	D	12/05/97	µg/L	<1	400	76 JDB	22	7.8	6.7	35	<1	2.1	2.7	None
WND-36D	D	05/04/01	µg/L	<1.0	44	49	15	<1.0	2.2	2.5	<1.0	<1.0	1.2	T12DCE 1.1
WND-36S	S	12/05/97	µg/L	<1	<1	4.7 JDB	52	<1	9.2	<1	<1	<1	180	EBN 72, TOL 18, XYL-MP 45, XYL-O 12
WND-36S	S	05/04/01	µg/L	<1.0	3.2	1.1	<1.0	<1.0	4.6	<1.0	<1.0	<1.0	100	EBN 54, TOL 31, XYL-MP 73, XYL-O 10
WND-37DR	D	06/16/98	µg/L	1.4	900	220	12	21	12	70	2.6	3.1	2.9	12DCA 1.7, CCL4 2.6, CM 1.3, MECL 1.2, T12DCE 20, TOL 1.2
WND-37DR	D	05/07/01	µg/L	<1.0	120	37	<1.0	<1.0	5.3	11	<1.0	<1.0	3.3	CHEA 1.1, T12DCE 2.8
WND-38D	D	12/04/97	µg/L	<1	140	26 JDB	4.3	1.3	1.6	5.6	<1	<1	<1	BDCM 1.5
WND-38D	D	05/08/01	µg/L	<1.0	22	8.1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	None
WND-38S	S	12/04/97	µg/L	<1	16 JDB	<1	<1	<1	<1	<1	<1	<1	<1	XYL-MP 1.5
WND-38S	S	05/08/01	µg/L	<1.0	3.3	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	None
WND-39D	D	12/08/97	µg/L	<1	610	120 JS	54 JS	5	12 JS	34 JS	<1	<1	5.4	CM 2.5 JS, T12DCE 3.7 JS, XYL-MP 1.7
WND-39D	D	05/08/01	µg/L	<1.0	32	13	1.8	<1.0	2.5	1.3	<1.0	<1.0	<1.0	None
WND-39S	S	12/08/97	µg/L	<1	47 JDB	7.4 JDB	<1	<1	<1	<1	<1	<1	<1	XYL-MP 2.3 JS, XYL-O 1.1
WND-39S	S	05/08/01	µg/L	<1.0	29	3	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	None
WND-40D	D	05/02/01	µg/L	1.4	54	21	<1.0	9.5	1.9	6.2	<1.0	<1.0	<1.0	None
WND-40S	S	05/02/01	µg/L	<1.0	36	9.6	<1.0	9.7	1.8	6	<1.0	<1.0	<1.0	None
WND-41D	D	05/03/01	µg/L	3.2	45	4.2	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	None
WND-41S	S	05/03/01	µg/L	2.3	7.2	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	None
WND-42D	D	05/03/01	µg/L	<1.0	3.3	41	2	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	T12DCE 1.6
WND-42S	S	05/03/01	µg/L	<1.0	<1.0	4.9	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	None
WND-43D	D	05/09/01	µg/L	<1.0	99	37	6.5	<1.0	1.2	2.7	<1.0	<1.0	1.1	T12DCE 1.1
WND-43S	S	05/09/01	µg/L	<1.0	<1.0	1.7	1.2	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	None

Table 5-9a
North Industrial Corridor (NIC) Site
Monitoring Well Groundwater Sample Analytical Results, Site VOCs* by EPA Method 8260

Station	Groundwater Depth Zone	Sample Date	Units	PCE	TCE	C12DCE	VC	TCA	11DCA	11DCE	CT	CFM	BEN	Other Detected Compounds
WND-44D	D	12/04/97	µg/L	<1	**21 JDB**	**7.7 JDB**	<1	<1	<1	<1	<1	<1	<1	XYL-MP 1.9
WND-44D	D	05/08/01	µg/L	<1.0	**18**	**17**	**2.7**	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	None
WND-44S	S	12/04/97	µg/L	<1	**28 JDB**	**6.7 JDB**	**15**	<1	**2.1**	<1	<1	<1	**1.8**	XYL-MP 2.5, XYL-O 1.3
WND-44S	S	05/08/01	µg/L	<1.0	<1.0	**1.3**	**23**	<1.0	**1.8**	<1.0	<1.0	<1.0	**2.3**	None
WND-45D	D	12/04/97	µg/L	<1	**300**	**110**	**8.8**	<1	**1.9**	**4.1**	<1	<1	<1	T12DCE 2.7, XYL-MP 1.3
WND-45D	D	05/10/01	µg/L	<1.0	**220**	**54**	**3.4**	<1.0	**2.0**	**7.2**	<1.0	<1.0	<1.0	DCDFM 7.3, T12DCE 1.9
WND-45S	S	12/04/97	µg/L	<1	**20 JDB**	**5.6 JDB**	<1	<1	<1	<1	<1	<1	<1	XYL-MP 1.8
WND-45S	S	05/10/01	µg/L	<1.0	**26**	**7.9**	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	None
WND-46D	D	05/10/01	µg/L	<1.0	**130**	**65**	**3.2**	**1.9**	**3.3**	**3.2**	<1.0	<1.0	<1.0	T12DCE 2.7
WND-46S	S	05/10/01	µg/L	<1.0	**8.8**	**2.8**	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	None
WND-47D	D	12/03/97	µg/L	**2.4**	**590**	**88 JDB**	**7.5**	<1	**4.3**	**5.1**	<1	<1	<1	T12DCE 6.3, XYL-MP 1.5
WND-47D	D	05/09/01	µg/L	**7.4**	**340**	**51**	**6.1**	<1.0	**2.5**	**4.6**	<1.0	<1.0	<1.0	T12DCE 4.7
WND-47S	S	12/03/97	µg/L	**9.7**	**170**	**26 JDB**	**1.1**	<1	**1**	**1.2**	<1	<1	<1	12DCP 1.3, T12DCE 1.6, XYL-MP 1.8
WND-47S	S	05/09/01	µg/L	**6.8**	**180**	**27**	**1.1**	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	T12DCE 1.4
WND-48D	D	05/08/01	µg/L	<1.0	**35**	**10**	<1.0	**12**	**2.9**	**7.1**	<1.0	<1.0	<1.0	None
WND-48S	S	05/08/01	µg/L	<1.0	**1.2**	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	None
WND-49D	D	05/09/01	µg/L	<1.0	**44**	**47**	**2.1**	**8.6**	**2.9**	**3.8**	<1.0	<1.0	**1.9**	T12DCE 1.0

* Site VOCs are the "groundwater target compounds" discussed in Section 5.5.3.1 of the RI Report.
Bold text indicates results above analytical detection limits.

PCE = Tetrachloroethene
TCE = Trichloroethene
C12DCE = cis-1,2-dichloroethene
VC = Vinyl chloride
TCA = 1,1,1-Trichloroethane

11DCA = 1,1-Dichloroethane
11DCE = 1,1-Dichloroethene
CT = Carbon tetrachloride
CFM = Chloroform
BEN = Benzene

JS = Estimated due to surrogate recoveries outside of control limits.
JH = Estimated due to holding time violations.
JIH = Estimated due to elevated internal standard area
JTB = Estimated due to contamination detected in the travel blank.
JDB = Estimated due to contamination detected in the decontamination blank.

Other Detected Compounds:

T12DCE = trans-1,2-Dichloroethene
CCL4 = Carbon Tetrachloride
NBB = n-Butylbenzene
PIPT = p-Isopropyltoluene
SBB = sec-Butylbenzene
12DCA = 1,2-Dichloroethane

CHEA = Chloroethane
NAP = Naphthalene
MECL = Methylene Chloride
TCFM = Trichlorofluoromethane
CM = Chloromethane
12DBE = 1,2-Dibromoethane

12DCP = 1,2-Dichloropropane
IPB = Isopropylbenzene
NPB = n-Propylbenzene
TBB = tert-Butylbenzene
124TMB = 1,2,4-Trimethylbenzene
135TMB = 1,3,5-Trimethylbenzene

BDCM = Bromodichloromethane
DCDFM = Dichlorodifluoromethane
TOL = Toluene
MTBE = Methyl-tert-butyl ether
EBN = Ethylbenzene
XYL-MP = m,p-Xylene
XYL-O = o-Xylene

Table 5-9b
North Industrial Corridor (NIC) Site
Monitoring Well Groundwater Sample Analytical Results, SVOCs by EPA Method 8270

Station		NMW-09D	NMW-09S	NMW-22D	NMW-22S	NMW-29S	NMW-31S	WNC-05D	WNC-06D	WNC-16D	WND-02S	WND-05S	WND-06S	WND-16S	WND-22D	WND-22S	WND-45D	WND-45D
Groundwater Depth Zone		D	S	D	S	S	S	D	D	D	S	S	S	S	D	S	D	D
Sample Date (Phase 2B)		5/10/01	5/10/01	5/7/01	5/7/01	5/8/01	5/9/01	5/10/01	5/1/01	5/10/01	5/10/01	5/10/01	5/1/01	5/10/01	5/1/01	5/1/01	5/10/01	5/10/2001
QC Sample Flag																		DUP
Compound	Units																	
1,2,4-Trichlorobenzene	µg/L	<10	<10	<10	<10	<10	<10	<10	<11	<10	<10	<11	<10	<10	<10	<10	<10	<10
1,2-Dichlorobenzene	µg/L	<10	<10	<10	<10	<10	<10	<10	<11	<10	<10	<11	<10	<10	<10	<10	<10	<10
1,3-Dichlorobenzene	µg/L	<10	<10	<10	<10	<10	<10	<10	<11	<10	<10	<11	<10	<10	<10	<10	<10	<10
1,4-Dichlorobenzene	µg/L	<10	<10	<10	<10	<10	<10	<10	<11	<10	<10	<11	<10	<10	<10	<10	<10	<10
2,4,5-Trichlorophenol	µg/L	<50	<50	<52	<50	<50	<50	<50	<53	<50	<52	<54	<50	<50	<51	<50	<50	<50
2,4,6-Trichlorophenol	µg/L	<10	<10	<10	<10	<10	<10	<10	<11	<10	<10	<11	<10	<10	<10	<10	<10	<10
2,4-Dichlorophenol	µg/L	<10	<10	<10	<10	<10	<10	<10	<11	<10	<10	<11	<10	<10	<10	<10	<10	<10
2,4-Dimethylphenol	µg/L	<10	<10	<10	<10	<10	<10	<10	<11	<10	<10	<11	<10	<10	<10	<10	<10	<10
2,4-Dinitrophenol	µg/L	<50	<50	<52	<50	<50	<50	<50	<53	<50	<52	<54	<50	<50	<51	<50	<50	<50
2,4-Dinitrotoluene	µg/L	<10	<10	<10	<10	<10	<10	<10	<11	<10	<10	<11	<10	<10	<10	<10	<10	<10
2,6-Dinitrotoluene	µg/L	<10	<10	<10	<10	<10	<10	<10	<11	<10	<10	<11	<10	<10	<10	<10	<10	<10
2-Chloronaphthalene	µg/L	<10	<10	<10	<10	<10	<10	<10	<11	<10	<10	<11	<10	<10	<10	<10	<10	<10
2-Chlorophenol	µg/L	<10	<10	<10	<10	<10	<10	<10	<11	<10	<10	<11	<10	<10	<10	<10	<10	<10
2-Methylnaphthalene	µg/L	<10	<10	<10	<10	<10	<10	<10	<11	<10	<10	<11	<10	**460**	<10	<10	<10	<10
2-Methylphenol	µg/L	<10	<10	<10	<10	<10	<10	<10	<11	<10	<10	<11	<10	<10	<10	<10	<10	<10
2-Nitroaniline	µg/L	<50	<50	<52	<50	<50	<50	<50	<53	<50	<52	<54	<50	<50	<51	<50	<50	<50
2-Nitrophenol	µg/L	<10	<10	<10	<10	<10	<10	<10	<11	<10	<10	<11	<10	<10	<10	<10	<10	<10
3,3'-Dichlorobenzidine	µg/L	<20	<20	<21	<20	<20	<20	<20	<21	<20	<21	<22	<20	<20	<20	<20	<20	<20
3-Nitroaniline	µg/L	<50	<50	<52	<50	<50	<50	<50	<53	<50	<52	<54	<50	<50	<51	<50	<50	<50
4,6-Dinitro-2-methylphenol	µg/L	<50	<50	<52	<50	<50	<50	<50	<53	<50	<52	<54	<50	<50	<51	<50	<50	<50
4-Bromophenylphenyl ether	µg/L	<10	<10	<10	<10	<10	<10	<10	<11	<10	<10	<11	<10	<10	<10	<10	<10	<10
4-Chloro-3-methylphenol	µg/L	<20	<20	<21	<20	<20	<20	<20	<21	<20	<21	<22	<20	<20	<20	<20	<20	<20
4-Chloroaniline	µg/L	<20	<20	<21	<20	<20	<20	<20	<21	<20	<21	<22	<20	<20	<20	<20	<20	<20
4-Chlorophenylphenyl ether	µg/L	<10	<10	<10	<10	<10	<10	<10	<11	<10	<10	<11	<10	<10	<10	<10	<10	<10
4-Methylphenol	µg/L	<10	<10	<10	<10	<10	<10	<10	<11	<10	<10	<11	<10	<10	<10	<10	<10	<10
4-Nitroaniline	µg/L	<50	<50	<52	<50	<50	<50	<50	<53	<50	<52	<54	<50	<50	<51	<50	<50	<50
4-Nitrophenol	µg/L	<50	<50	<52	<50	<50	<50	<50	<53	<50	<52	<54	<50	<50	<51	<50	<50	<50
Acenaphthene	µg/L	<10	<10	<10	<10	<10	<10	<10	<11	<10	<10	<11	<10	**12**	<10	<10	<10	<10
Acenaphthylene	µg/L	<10	<10	<10	<10	<10	<10	<10	<11	<10	<10	<11	<10	<10	<10	<10	<10	<10
Anthracene	µg/L	<10	<10	<10	<10	<10	<10	<10	<11	<10	<10	<11	<10	<10	<10	<10	<10	<10
Benzo(a)anthracene	µg/L	<10	<10	<10	<10	<10	<10	<10	<11	<10	<10	<11	<10	<10	<10	<10	<10	<10
Benzo(a)pyrene	µg/L	<10	<10	<10	<10	<10	<10	<10	<11	<10	<10	<11	<10	<10	<10	<10	<10	<10
Benzo(b)fluoranthene	µg/L	<10	<10	<10	<10	<10	<10	<10	<11	<10	<10	<11	<10	<10	<10	<10	<10	<10
Benzo(g,h,i)perylene	µg/L	<10	<10	<10	<10	<10	<10	<10	<11	<10	<10	<11	<10	<10	<10	<10	<10	<10
Benzo(k)fluoranthene	µg/L	<10	<10	<10	<10	<10	<10	<10	<11	<10	<10	<11	<10	<10	<10	<10	<10	<10
Benzoic acid	µg/L	<50	<50	<52	<50	<50	<50	<50	<53	<50	<52	<54	<50	<50	<51	<50	<50	<50
Benzyl alcohol	µg/L	<20	<20	<21	<20	<20	<20	<20	<21	<20	<21	<22	<20	<20	<20	<20	<20	<20
bis(2-Chloroethoxy)methane	µg/L	<10	<10	<10	<10	<10	<10	<10	<11	<10	<10	<11	<10	<10	<10	<10	<10	<10
bis(2-Chloroethyl) ether	µg/L	<10	<10	<10	<10	<10	<10	<10	<11	<10	<10	<11	<10	<10	<10	<10	<10	<10

Table 5-9b
North Industrial Corridor (NIC) Site
Monitoring Well Groundwater Sample Analytical Results, SVOCs by EPA Method 8270

Station		NMW-09D	NMW-09S	NMW-22D	NMW-22S	NMW-29S	NMW-31S	WNC-05D	WNC-06D	WNC-16D	WND-02S	WND-05S	WND-06S	WND-16S	WND-22D	WND-22S	WND-45D	WND-45D
Groundwater Depth Zone		D	S	D	S	S	S	D	D	D	S	S	S	S	D	S	D	D
Sample Date (Phase 2B)		5/10/01	5/10/01	5/7/01	5/7/01	5/8/01	5/9/01	5/10/01	5/1/01	5/10/01	5/10/01	5/10/01	5/1/01	5/10/01	5/1/01	5/1/01	5/10/01	5/10/2001
QC Sample Flag																		DUP
Compound	Units																	
bis(2-Chloroisopropyl) ether	µg/L	<10	<10	<10	<10	<10	<10	<10	<11	<10	<10	<11	<10	<10	<10	<10	<10	<10
bis(2-Ethylhexyl)phthalate	µg/L	<10	<10	<10	<10	<10	<10	<10	<11	<10	<10	<11	<10	<10	<10	<10	<10	<10
Butylbenzylphthalate	µg/L	<10	<10	<10	<10	<10	<10	<10	<11	<10	<10	<11	<10	<10	<10	<10	<10	<10
Chrysene	µg/L	<10	<10	<10	<10	<10	<10	<10	<11	<10	<10	<11	<10	<10	<10	<10	<10	<10
Di-n-butylphthalate	µg/L	<10	<10	<10	<10	<10	<10	<10	<11	<10	<10	<11	<10	<10	<10	<10	<10	<10
Di-n-octylphthalate	µg/L	<10	<10	<10	<10	<10	<10	<10	<11	<10	<10	<11	<10	<10	<10	<10	<10	<10
Dibenz(a,h)anthracene	µg/L	<10	<10	<10	<10	<10	<10	<10	<11	<10	<10	<11	<10	<10	<10	<10	<10	<10
Dibenzofuran	µg/L	<10	<10	<10	<10	<10	<10	<10	<11	<10	<10	<11	<10	<10	<10	<10	<10	<10
Diethylphthalate	µg/L	<10	<10	<10	<10	<10	<10	<10	<11	<10	<10	<11	<10	<10	<10	<10	<10	<10
Dimethylphthalate	µg/L	<10	<10	<10	<10	<10	<10	<10	<11	<10	<10	<11	<10	<10	<10	<10	<10	<10
Fluoranthene	µg/L	<10	<10	<10	<10	<10	<10	<10	<11	<10	<10	<11	<10	<10	<10	<10	<10	<10
Fluorene	µg/L	<10	<10	<10	<10	<10	<10	<10	<11	<10	<10	<11	<10	**10**	<10	<10	<10	<10
Hexachloro-1,3-butadiene	µg/L	<10	<10	<10	<10	<10	<10	<10	<11	<10	<10	<11	<10	<10	<10	<10	<10	<10
Hexachlorobenzene	µg/L	<10	<10	<10	<10	<10	<10	<10	<11	<10	<10	<11	<10	<10	<10	<10	<10	<10
Hexachlorocyclopentadiene	µg/L	<10	<10	<10	<10	<10	<10	<10	<11	<10	<10	<11	<10	<10	<10	<10	<10	<10
Hexachloroethane	µg/L	<10	<10	<10	<10	<10	<10	<10	<11	<10	<10	<11	<10	<10	<10	<10	<10	<10
Indeno(1,2,3-cd)pyrene	µg/L	<10	<10	<10	<10	<10	<10	<10	<11	<10	<10	<11	<10	<10	<10	<10	<10	<10
Isophorone	µg/L	<10	<10	<10	<10	<10	<10	<10	<11	<10	<10	<11	<10	<10	<10	<10	<10	<10
N-Nitroso-di-n-propylamine	µg/L	<10	<10	<10	<10	<10	<10	<10	<11	<10	<10	<11	<10	<10	<10	<10	<10	<10
N-Nitrosodiphenylamine	µg/L	<10	<10	<10	<10	<10	<10	<10	<11	<10	<10	<11	<10	<10	<10	<10	<10	<10
Naphthalene	µg/L	<10	<10	<10	<10	<10	<10	<10	<11	<10	<10	<11	<10	**500**	<10	<10	<10	<10
Nitrobenzene	µg/L	<10	<10	<10	<10	<10	<10	<10	<11	<10	<10	<11	<10	<10	<10	<10	<10	<10
Pentachlorophenol	µg/L	<50	<50	<52	<50	<50	<50	<50	<53	<50	<52	<54	<50	<50	<51	<50	<50	<50
Phenanthrene	µg/L	<10	<10	<10	<10	<10	<10	<10	<11	<10	<10	<11	<10	**21**	<10	<10	<10	<10
Phenol	µg/L	<10	<10	<10	<10	<10	<10	<10	<11	<10	<10	<11	<10	<10	<10	<10	<10	<10
Pyrene	µg/L	<10	<10	<10	<10	<10	<10	<10	<11	<10	<10	<11	<10	<10	<10	<10	<10	<10

Bold text indicates results above analytical detection limits.
DUP = Field duplicate sample

Table 5-9c
North Industrial Corridor (NIC) Site
Monitoring Well Groundwater Sample Analytical Results, Pesticides/PCBs by EPA Method 8080

Station		NMW-09D	NMW-09S	NMW-22D	NMW-22S	NMW-29S	NMW-31S	WNC-06D	WNC-16D
Groundwater Depth Zone		D	S	D	S	S	S	D	D
Sample Date(Phase 2B)		5/10/01	5/10/01	5/7/01	5/7/01	5/8/01	5/9/01	5/1/01	5/10/01
QC Sample Flag									
Compound	Units								
4,4'-DDD	µg/L	<0.14	<0.14	<0.11	<0.11	<0.11	<0.11	<0.11	<0.11
4,4'-DDE	µg/L	<0.051	<0.051	<0.041	<0.041	<0.040	<0.040	<0.042	<0.040
4,4'-DDT	µg/L	<0.15	<0.15	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12
Aldrin	µg/L	<0.051	<0.051	<0.041	<0.041	<0.040	<0.040	<0.042	<0.040
alpha-BHC	µg/L	<0.038	<0.038	<0.031	<0.031	<0.030	<0.030	<0.031	<0.030
alpha-Chlordane	µg/L	<0.064	<0.064	<0.052	<0.051	<0.050	<0.050	<0.052	<0.050
beta-BHC	µg/L	<0.077	<0.077	<0.062	<0.061	<0.060	<0.060	<0.062	<0.060
Chlordane (Technical)	µg/L	<0.18	<0.18	<0.14	<0.14	<0.14	<0.14	<0.15	<0.14
delta-BHC	µg/L	<0.12	<0.12	<0.093	<0.092	<0.090	<0.090	<0.094	<0.090
Dieldrin	µg/L	<0.026	<0.026	<0.021	<0.020	<0.020	<0.020	<0.021	<0.020
Endosulfan I	µg/L	<0.18	<0.18	<0.14	<0.14	<0.14	<0.14	<0.15	<0.14
Endosulfan II	µg/L	<0.051	<0.051	<0.041	<0.041	<0.040	<0.040	<0.042	<0.040
Endosulfan sulfate	µg/L	<0.85	<0.85	<0.68	<0.67	<0.66	<0.66	<0.69	<0.66
Endrin	µg/L	<0.077	<0.077	<0.062	<0.061	<0.060	<0.060	<0.062	<0.060
Endrin aldehyde	µg/L	<0.29	<0.29	<0.24	<0.23	<0.23	<0.23	<0.24	<0.23
Endrin ketone	µg/L	<0.13	<0.13	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
gamma-BHC	µg/L	<0.051	<0.051	<0.041	<0.041	<0.040	<0.040	<0.042	<0.040
gamma-Chlordane	µg/L	<0.064	<0.064	<0.052	<0.051	<0.050	<0.050	<0.052	<0.050
Heptachlor	µg/L	<0.038	<0.038	<0.031	<0.031	<0.030	<0.030	<0.031	<0.030
Heptachlor epoxide	µg/L	<0.13	<0.13	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Methoxychlor	µg/L	<2.3	<2.3	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8
Toxaphene	µg/L	<3.1	<3.1	<2.5	<2.4	<2.4	<2.4	<2.5	<2.4
PCB-1016	µg/L	<1.3	<1.3	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
PCB-1221	µg/L	<1.3	<1.3	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
PCB-1232	µg/L	<1.3	<1.3	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
PCB-1242	µg/L	<1.3	<1.3	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
PCB-1248	µg/L	<1.3	<1.3	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
PCB-1254	µg/L	<1.3	<1.3	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
PCB-1260	µg/L	<1.3	<1.3	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0

DUP = Field duplicate sample.
NA = Not analyzed

Table 5-9c
North Industrial Corridor (NIC) Site
Monitoring Well Groundwater Sample Analytical Results, Pesticides/PCBs by EPA Method 8080

Station		WND-02S	WND-05S	WND-06S	WND-16S	WND-22D	WND-22S	WND-45D	WND-45D
Groundwater Depth Zone		S	S	S	S	D	S	D	D
Sample Date(Phase 2B)		5/10/01	5/10/01	5/1/01	5/10/01	5/1/01	5/1/01	5/10/01	5/10/2001
QC Sample Flag									DUP
Compound	Units								
4,4'-DDD	µg/L	<0.12	<1.5	<0.11	<0.14	<0.11	NA	<0.11	<0.11
4,4'-DDE	µg/L	<0.045	<0.56	<0.040	<0.051	<0.041	NA	<0.040	<0.040
4,4'-DDT	µg/L	<0.14	<1.7	<0.12	<0.15	<0.12	NA	<0.12	<0.12
Aldrin	µg/L	<0.045	<0.56	<0.040	<0.051	<0.041	NA	<0.040	<0.040
alpha-BHC	µg/L	<0.034	<0.42	<0.030	<0.038	<0.031	NA	<0.030	<0.030
alpha-Chlordane	µg/L	<0.057	<0.69	<0.050	<0.064	<0.052	NA	<0.050	<0.050
beta-BHC	µg/L	<0.068	<0.83	<0.060	<0.077	<0.062	NA	<0.060	<0.060
Chlordane (Technical)	µg/L	<0.16	<1.9	<0.14	<0.18	<0.14	NA	<0.14	<0.14
delta-BHC	µg/L	<0.10	<1.2	<0.090	<0.12	<0.093	NA	<0.090	<0.090
Dieldrin	µg/L	<0.023	<0.28	<0.020	<0.026	<0.021	NA	<0.020	<0.020
Endosulfan I	µg/L	<0.16	<1.9	<0.14	<0.18	<0.14	NA	<0.14	<0.14
Endosulfan II	µg/L	<0.045	<0.56	<0.040	<0.051	<0.041	NA	<0.040	<0.040
Endosulfan sulfate	µg/L	<0.75	<9.2	<0.66	<0.85	<0.68	NA	<0.66	<0.66
Endrin	µg/L	<0.068	<0.83	<0.060	<0.077	<0.062	NA	<0.060	<0.060
Endrin aldehyde	µg/L	<0.26	<3.2	<0.23	<0.29	<0.24	NA	<0.23	<0.23
Endrin ketone	µg/L	<0.11	<1.4	<0.10	<0.13	<0.10	NA	<0.10	<0.10
gamma-BHC	µg/L	<0.045	<0.56	<0.040	<0.051	<0.041	NA	<0.040	<0.040
gamma-Chlordane	µg/L	<0.057	<0.69	<0.050	<0.064	<0.052	NA	<0.050	<0.050
Heptachlor	µg/L	0.041	<0.42	<0.030	<0.038	<0.031	NA	<0.030	<0.030
Heptachlor epoxide	µg/L	<0.11	<1.4	<0.10	<0.13	<0.10	NA	<0.10	<0.10
Methoxychlor	µg/L	<2.0	<24	<1.8	<2.3	<1.8	NA	<1.8	<1.8
Toxaphene	µg/L	<2.7	<33	<2.4	<3.1	<2.5	NA	<2.4	<2.4
PCB-1016	µg/L	<1.1	<1.4	<1.0	<1.3	<1.0	<1.0	<1.0	<1.0
PCB-1221	µg/L	<1.1	<1.4	<1.0	<1.3	<1.0	<1.0	<1.0	<1.0
PCB-1232	µg/L	<1.1	<1.4	<1.0	<1.3	<1.0	<1.0	<1.0	<1.0
PCB-1242	µg/L	<1.1	<1.4	<1.0	<1.3	<1.0	<1.0	<1.0	<1.0
PCB-1248	µg/L	<1.1	<1.4	<1.0	<1.3	<1.0	<1.0	<1.0	<1.0
PCB-1254	µg/L	<1.1	<1.4	<1.0	<1.3	<1.0	<1.0	<1.0	<1.0
PCB-1260	µg/L	<1.1	<1.4	<1.0	<1.3	<1.0	<1.0	<1.0	<1.0

DUP = Field duplicate sample.
NA = Not analyzed

Table 5-9d
North Industrial Corridor (NIC) Site
Monitoring Well Groundwater Sample Analytical Results, TPH by EPA Method 8015M

Station Groundwater Depth Zone Sample Date(Phase 2B) Compound	Units	NMW-09D D 5/10/01	NMW-09S S 5/10/01	NMW-42D D 7/26/01	NMW-44D D 7/26/01	NMW-45D D 7/26/01	NMW-46D D 7/25/01	NMW-48S S 7/27/01	WNC-16D D 5/10/01	WNC-37SR S 5/7/01	WND-05S S 5/10/01	WND-12S S 5/3/01	WND-16S S 5/10/01	WND-22S S 5/1/01
Extractable Hydrocarbons														
Fuel Oil	mg/L	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40
Jet Fuel	mg/L	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40
Kerosene	mg/L	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40
Mineral Spirits	mg/L	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40
Motor Oil	mg/L	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40
TPH as Diesel	mg/L	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	**7.7**	<0.40
TPH as Gasoline	mg/L	--	--	--	--	--	--	--	--	--	**1.5**	--	--	--
Purgeable Hydrocarbons														
TPH as Gasoline	mg/L	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	**3.69**	<0.50	**14.3**	<0.50

Bold text indicates results above analytical detection limits.

Table 5-9e
North Industrial Corridor (NIC) Site
Monitoring Well Groundwater Sample Analytical Results, Total and Dissolved Metals

Station	Groundwater Depth Zone	Sample Date	Units	Aluminum		Antimony		Arsenic		Barium		Beryllium	
				Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved
NMW-09D	D	5/10/01	µg/L	<75.0	<75.0	<10.0	<10.0	**21.9**	**28.9**	**107**	**115**	<1.00	<1.00
NMW-09S	S	5/10/01	µg/L	**744**	<75.0	<10.0	<10.0	<5.00	<5.00	**99.5**	**97.8**	<1.00	<1.00
NMW-22D	D	5/7/01	µg/L	**207**	<75.0	<10.0	<10.0	<5.00	<5.00	**111**	**115**	<1.00	<1.00
NMW-22S	S	5/7/01	µg/L	**350**	<75.0	<10.0	<10.0	<5.00	<5.00	**117**	**120**	<1.00	<1.00
NMW-29S	S	5/8/01	µg/L	**410**	<75.0	<10.0	<10.0	<5.00	<5.00	**76.8**	**76.6**	<1.00	<1.00
NMW-31S	S	5/9/01	µg/L	<75.0	<75.0	<10.0	<10.0	<5.00	<5.00	**65**	**62.3**	<1.00	<1.00
WNC-06D	D	5/1/01	µg/L	<75.0	<75.0	<10.0	<10.0	<5.00	<5.00	**81.5**	**84.4**	<1.00	<1.00
WNC-16D	D	5/10/01	µg/L	<75.0	<75.0	<10.0	<10.0	<5.00	<5.00	**70.4**	**74.4**	<1.00	<1.00
WND-02S	S	5/10/01	µg/L	**36800**	<75.0	<10.0	<10.0	**70.9**	**19.4**	**1310**	**330**	**2.43**	<1.00
WND-05S	S	5/10/01	µg/L	**19300**	<75.0	<10.0	<10.0	**7.33**	<5.00	**667**	**351**	**1.38**	<1.00
WND-06S	S	5/1/01	µg/L	<75.0	<75.0	<10.0	<10.0	<5.00	<5.00	**104**	**104**	<1.00	<1.00
WND-16S	S	5/10/01	µg/L	**859**	<75.0	<10.0	<10.0	<5.00	<5.00	**693**	**665**	<1.00	<1.00
WND-22D	D	5/1/01	µg/L	<75.0	<75.0	<10.0	<10.0	<5.00	<5.00	**89**	**94.3**	<1.00	<1.00
WND-22S	S	5/1/01	µg/L	<75.0	<75.0	<10.0	<10.0	<5.00	<5.00	**150**	**146**	<1.00	<1.00
WND-45D	D	5/10/01	µg/L	**86500**	<75.0	<10.0	<10.0	**61.2**	<5.00	**2230**	**96.1**	**7.22**	<1.00
WND-45D-DUP	D	5/10/01	µg/L	**75700**	<75.0	<10.0	<10.0	**54.7**	<5.00	**1740**	**87.8**	**6.17**	<1.00

Bold text indicates results above analytical detection limits.
DUP = Field duplicate sample.

Table 5-9e
North Industrial Corridor (NIC) Site
Monitoring Well Groundwater Sample Analytical Results, Total and Dissolved Metals

Station	Groundwater Depth Zone	Sample Date	Units	Cadmium		Calcium		Chromium		Cobalt		Copper	
				Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved
NMW-09D	D	5/10/01	µg/L	<5.00	<5.00	**110000**	**120000**	<7.00	<7.00	<7.00	<7.00	<10.0	**16.5**
NMW-09S	S	5/10/01	µg/L	<5.00	<5.00	**138000**	**140000**	<7.00	<7.00	<7.00	<7.00	<10.0	<10.0
NMW-22D	D	5/7/01	µg/L	<5.00	<5.00	**142000**	**155000**	<7.00	<7.00	<7.00	<7.00	<10.0	<10.0
NMW-22S	S	5/7/01	µg/L	<5.00	<5.00	**132000**	**135000**	<7.00	<7.00	<7.00	<7.00	<10.0	<10.0
NMW-29S	S	5/8/01	µg/L	<5.00	<5.00	**120000**	**125000**	<7.00	<7.00	<7.00	<7.00	<10.0	<10.0
NMW-31S	S	5/9/01	µg/L	<5.00	<5.00	**127000**	**124000**	<7.00	<7.00	**9.86**	**9.68**	<10.0	**40.3**
WNC-06D	D	5/1/01	µg/L	<5.00	<5.00	**99700**	**104000**	<7.00	<7.00	<7.00	<7.00	<10.0	**56.6**
WNC-16D	D	5/10/01	µg/L	<5.00	<5.00	**116000**	**122000**	**7.34**	<7.00	<7.00	<7.00	<10.0	<10.0
WND-02S	S	5/10/01	µg/L	**5.15**	<5.00	**129000**	**105000**	**31.5**	<7.00	**32.5**	<7.00	**86.3**	<10.0
WND-05S	S	5/10/01	µg/L	<5.00	<5.00	**78700**	**70500**	**16.2**	<7.00	**20.4**	<7.00	**39.1**	<10.0
WND-06S	S	5/1/01	µg/L	<5.00	<5.00	**117000**	**109000**	<7.00	<7.00	<7.00	<7.00	**12.1**	<10.0
WND-16S	S	5/10/01	µg/L	<5.00	<5.00	**106000**	**105000**	<7.00	<7.00	<7.00	<7.00	<10.0	<10.0
WND-22D	D	5/1/01	µg/L	<5.00	<5.00	**103000**	**102000**	<7.00	<7.00	<7.00	<7.00	<10.0	<10.0
WND-22S	S	5/1/01	µg/L	<5.00	<5.00	**83400**	**81400**	<7.00	<7.00	<7.00	<7.00	<10.0	<10.0
WND-45D	D	5/10/01	µg/L	<5.00	<5.00	**162000**	**129000**	**112**	<7.00	**72.2**	<7.00	**163**	<10.0
WND-45D-DUP	D	5/10/01	µg/L	<5.00	<5.00	**142000**	**120000**	**96.5**	<7.00	**61**	<7.00	**138**	<10.0

Bold text indicates results above analytical detection
DUP = Field duplicate sample.

Table 5-9e
North Industrial Corridor (NIC) Site
Monitoring Well Groundwater Sample Analytical Results, Total and Dissolved Metals

Station	Groundwater Depth Zone	Sample Date	Units	Iron		Lead		Magnesium		Manganese		Mercury	
				Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved
NMW-09D	D	5/10/01	µg/L	**5390**	**5690**	**5.27**	**5.44**	**33300**	**36000**	**935**	**1020**	<0.200	<0.200
NMW-09S	S	5/10/01	µg/L	**4690**	**4220**	**9.39**	**8.09**	**42700**	**44500**	**1360**	**1360**	<0.200	<0.200
NMW-22D	D	5/7/01	µg/L	**1630**	**1020**	**8.03**	**8.65**	**27700**	**29600**	**200**	**207**	<0.200	<0.200
NMW-22S	S	5/7/01	µg/L	**308**	<40.0	<5.00	<5.00	**15600**	**15600**	**18.4**	<7.00	<0.200	<0.200
NMW-29S	S	5/8/01	µg/L	**482**	<40.0	**6.05**	**6.76**	**19500**	**20000**	**81.1**	**79.2**	<0.200	<0.200
NMW-31S	S	5/9/01	µg/L	**64.2**	<40.0	**10.6**	**15.2**	**30100**	**30000**	**187**	**183**	<0.200	<0.200
WNC-06D	D	5/1/01	µg/L	**65.4**	<40.0	<5.00	<5.00	**41400**	**42400**	<7.00	<7.00	<0.200	<0.200
WNC-16D	D	5/10/01	µg/L	**532**	**494**	<5.00	<5.00	**30100**	**31700**	**1970**	**2030**	<0.200	<0.200
WND-02S	S	5/10/01	µg/L	**87000**	**11400**	**131**	**20.4**	**32300**	**20700**	**5060**	**4010**	<0.200	<0.200
WND-05S	S	5/10/01	µg/L	**57100**	**13000**	**41.4**	<5.00	**16100**	**10500**	**4790**	**4150**	<0.200	<0.200
WND-06S	S	5/1/01	µg/L	**<40.0**	<40.0	<5.00	<5.00	**56200**	**52700**	**161**	**108**	<0.200	<0.200
WND-16S	S	5/10/01	µg/L	**6550**	**5330**	<5.00	<5.00	**25800**	**24700**	**2330**	**2290**	<0.200	<0.200
WND-22D	D	5/1/01	µg/L	**190**	<40.0	<5.00	<5.00	**31000**	**29800**	**158**	**41.5**	<0.200	<0.200
WND-22S	S	5/1/01	µg/L	**115**	**120**	**5.19**	<5.00	**23400**	**23000**	**401**	**387**	<0.200	<0.200
WND-45D	D	5/10/01	µg/L	**114100**	**473**	**152**	**13.4**	**56100**	**25200**	**1340**	**100**	<0.200	<0.200
WND-45D-DUP	D	5/10/01	µg/L	**118000**	**486**	**130**	**16.1**	**47100**	**23400**	**1120**	**95.2**	<0.200	<0.200

Bold text indicates results above analytical detection
DUP = Field duplicate sample.

Table 5-9e
North Industrial Corridor (NIC) Site
Monitoring Well Groundwater Sample Analytical Results, Total and Dissolved Metals

Station	Groundwater Depth Zone	Sample Date	Units	Nickel		Potassium		Selenium		Silver		Sodium	
				Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved
NMW-09D	D	5/10/01	µg/L	<30.0	<30.0	**8410**	**9180**	<10.0	<10.0	<7.00	<7.00	**64700**	**70600**
NMW-09S	S	5/10/01	µg/L	<30.0	<30.0	**4270**	**4580**	**10.1**	<10.0	<7.00	<7.00	**103000**	**105000**
NMW-22D	D	5/7/01	µg/L	<30.0	<30.0	**5080**	**6010**	**13.6**	<10.0	<7.00	<7.00	**110000**	**120000**
NMW-22S	S	5/7/01	µg/L	<30.0	<30.0	**7080**	**7940**	<10.0	<10.0	<7.00	<7.00	**58400**	**59200**
NMW-29S	S	5/8/01	µg/L	<30.0	<30.0	**4630**	**4510**	**10.7**	<10.0	<7.00	<7.00	**71900**	**75900**
NMW-31S	S	5/9/01	µg/L	<30.0	<30.0	**2960**	**2940**	**16.3**	<10.0	<7.00	<7.00	**130000**	**127000**
WNC-06D	D	5/1/01	µg/L	<30.0	<30.0	**2680**	**3190**	<10.0	**13.4**	<7.00	<7.00	**35000**	**36700**
WNC-16D	D	5/10/01	µg/L	<30.0	<30.0	**2140**	**2270**	<10.0	<10.0	<7.00	<7.00	**47900**	**50000**
WND-02S	S	5/10/01	µg/L	**45.7**	<30.0	**9390**	**1820**	**11.6**	**21.3**	**13.6**	**8.2**	**241000**	**235000**
WND-05S	S	5/10/01	µg/L	<30.0	<30.0	**5240**	**1370**	<10.0	<10.0	<7.00	<7.00	**38900**	**37000**
WND-06S	S	5/1/01	µg/L	<30.0	<30.0	**2510**	**1600**	<10.0	<10.0	<7.00	<7.00	**40400**	**37800**
WND-16S	S	5/10/01	µg/L	<30.0	<30.0	**6910**	**6400**	<10.0	<10.0	<7.00	<7.00	**26000**	**26000**
WND-22D	D	5/1/01	µg/L	<30.0	<30.0	**2140**	**2040**	<10.0	<10.0	<7.00	<7.00	**24900**	**24500**
WND-22S	S	5/1/01	µg/L	<30.0	<30.0	<1000	<1000	**11.1**	<10.0	<7.00	<7.00	**66400**	**64500**
WND-45D	D	5/10/01	µg/L	**150**	<30.0	**20600**	**3830**	<10.0	**14.1**	**12.9**	<7.00	**175000**	**179000**
WND-45D-DUP	D	5/10/01	µg/L	**127**	<30.0	**17300**	**3160**	<10.0	**10.2**	**10.9**	<7.00	**156000**	**168000**

Bold text indicates results above analytical detection
DUP = Field duplicate sample.

Table 5-9e
North Industrial Corridor (NIC) Site
Monitoring Well Groundwater Sample Analytical Results, Total and Dissolved Metals

Station	Groundwater Depth Zone	Sample Date	Units	Thallium		Vanadium		Zinc	
				Total	Dissolved	Total	Dissolved	Total	Dissolved
NMW-09D	D	5/10/01	µg/L	<5.00	<5.00	<12.0	<12.0	<100	<100
NMW-09S	S	5/10/01	µg/L	<5.00	<5.00	<12.0	<12.0	<100	<100
NMW-22D	D	5/7/01	µg/L	<5.00	<5.00	<12.0	<12.0	<100	<100
NMW-22S	S	5/7/01	µg/L	<5.00	<5.00	<12.0	<12.0	<100	<100
NMW-29S	S	5/8/01	µg/L	<5.00	**7.2**	<12.0	<12.0	<100	<100
NMW-31S	S	5/9/01	µg/L	<5.00	<5.00	<12.0	<12.0	<100	<100
WNC-06D	D	5/1/01	µg/L	<5.00	<5.00	<12.0	<12.0	<100	<100
WNC-16D	D	5/10/01	µg/L	<5.00	<5.00	<12.0	<12.0	<100	<100
WND-02S	S	5/10/01	µg/L	**7.81**	<5.00	**100**	<12.0	**259**	<100
WND-05S	S	5/10/01	µg/L	<5.00	<5.00	**61.9**	<12.0	**105**	<100
WND-06S	S	5/1/01	µg/L	<5.00	**6.98**	<12.0	<12.0	<100	<100
WND-16S	S	5/10/01	µg/L	<5.00	<5.00	<12.0	<12.0	<100	<100
WND-22D	D	5/1/01	µg/L	<5.00	<5.00	<12.0	<12.0	<100	<100
WND-22S	S	5/1/01	µg/L	<5.00	<5.00	<12.0	<12.0	<100	<100
WND-45D	D	5/10/01	µg/L	**8.44**	<5.00	**279**	<12.0	**373**	<100
WND-45D-DUP	D	5/10/01	µg/L	**8.98**	<5.00	**240**	<12.0	**320**	<100

Bold text indicates results above analytical detection
DUP = Field duplicate sample.

Table 5-9f
North Industrial Corridor (NIC) Site
Monitoring Well Groundwater Sample Analytical Results, Inorganic Parameters

Station		DRB-MW-20	DRB-MW-250	EXC-MW-04B	EXC-MW-05B	EXC-MW-07B	NMW-06D	NMW-06S	NMW-08D	NMW-08S
Groundwater Depth zone		S	D	D	D	D	D	S	D	S
Sample Date (Phase 2B)		7/26/01	7/26/01	5/2/01	5/2/01	5/2/01	5/7/01	5/7/01	5/10/01	5/10/01
QC Sample Flag										
Compound	Units									
Alkalinity, Carbonate (CaCO)	mg/L	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	NA	<1.00	<1.00
Alkalinity, Hydroxide (CaCO)	mg/L	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	NA	<1.00	<1.00
Alkalinity, Total	mg/L	**595**	**412**	**297**	**294**	**300**	**608**	NA	**370**	**308**
Alkalinity,Bicarbonate (CaCO3)	mg/L	**595**	**412**	**297**	**294**	**300**	**608**	NA	**370**	**308**
Chloride	mg/L	**109**	**69.8**	**68.2**	**53.5**	**38.5**	**132**	NA	**256**	**95.4**
Nitrogen, Ammonia	mg/L	**0.692**	**0.382**	<0.256	<0.252	<0.244	<0.264	<0.268	<0.256	**0.344**
Nitrogen, Kjeldahl, Total	mg/L	**2.56**	**0.544**	**0.438**	**0.49**	**1.47**	**0.389**	NA	**0.447**	<0.200
Nitrogen, Nitrate	mg/L	**3.33**	<0.500	**4.02**	**3.18**	**2.85**	<0.500	**7.21**	<0.500	<0.500
Nitrogen, Nitrite	mg/L	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500
Nitrogen, NO2 plus NO3	mg/L	**3.38**	<0.500	**4.04**	**3.2**	**2.87**	<0.500	**7.23**	<0.500	<0.500
Sulfate	mg/L	**58.1**	**80**	**162**	**260**	**147**	**235**	NA	**122**	**112**
Total Dissolved Solids	mg/L	**957**	**675**	**700**	**822**	**627**	**1200**	NA	**1100**	**726**
Total Organic Carbon	mg/L	**22**	**4.6**	**2.2**	**2.7**	**3.3**	**9.2**	NA	**4.7**	**6.8**
Total Suspended Solids	mg/L	**9**	**2760**	**23**	<5.00	<5.00	<5.00	NA	**14**	<5.00

Bold text indicates results
above analytical detection limits.
NA = Not Analyzed.

Table 5-9f
North Industrial Corridor (NIC) Site
Monitoring Well Groundwater Sample Analytical Results, Inorganic Parameters

Station	NMW-10D	NMW-10S	NMW-14D	NMW-18D	NMW-18S	NMW-19D	NMW-25D	NMW-25S	NMW-29D	NMW-29D	NMW-31D
Groundwater Depth zone	D	S	D	D	S	D	D	S	D	D	D
Sample Date (Phase 2B)	5/9/01	5/9/01	5/9/01	5/8/01	5/8/01	5/8/01	5/8/01	5/8/01	5/8/01	5/8/01	5/9/01
QC Sample Flag										DUP	
Compound											
Alkalinity, Carbonate (CaCO)	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
Alkalinity, Hydroxide (CaCO)	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
Alkalinity, Total	**338**	**307**	**289**	**332**	**357**	**461**	**388**	**435**	**375**	**375**	**354**
Alkalinity,Bicarbonate (CaCO3)	**338**	**307**	**289**	**332**	**357**	**461**	**388**	**435**	**367**	**375**	**354**
Chloride	**92.8**	**96.6**	**90.5**	**98.6**	**99.8**	**154**	**129**	**126**	**103**	**102**	**108**
Nitrogen, Ammonia	<0.260	<0.256	<0.276	<0.274	<0.276	<0.240	<0.248	<0.250	<0.276	<0.250	<0.264
Nitrogen, Kjeldahl, Total	<0.200	**0.326**	**0.584**	**0.356**	**0.266**	<0.200	**0.334**	**0.309**	**0.229**	**0.35**	<0.200
Nitrogen, Nitrate	<0.500	<0.500	<0.500	<0.500	**1.8**	<0.500	<0.500	**2.82**	**0.798**	**0.741**	<0.500
Nitrogen, Nitrite	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500
Nitrogen, NO2 plus NO3	<0.500	<0.500	<0.500	<0.500	**1.8**	<0.500	<0.500	**2.84**	**0.755**	**0.755**	<0.500
Sulfate	**142**	**133**	**182**	**159**	**150**	**136**	**210**	**159**	**175**	**175**	**249**
Total Dissolved Solids	**800**	**713**	**771**	**720**	**735**	**909**	**917**	**874**	**788**	**788**	**951**
Total Organic Carbon	**4.9**	**4**	**2**	**2**	**2.3**	**4.1**	**2**	**1.9**	**2**	**2**	**2.3**
Total Suspended Solids	**9**	**9**	**45**	**5**	**16**	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00

Bold text indicates results
above analytical detection limits.
NA = Not Analyzed.

Table 5-9f
North Industrial Corridor (NIC) Site
Monitoring Well Groundwater Sample Analytical Results, Inorganic Parameters

Station	NMW-31S	NMW-44D	NMW-45D	WNC-06D	WNC-16D	WNC-23D	WNC-37SR	WND-03S	WND-04S	WND-06S	WND-14D
Groundwater Depth zone	S	D	D	D	D	D	S	S	S	S	D
Sample Date (Phase 2B)	5/9/01	7/26/01	7/26/01	5/1/01	5/10/01	5/8/01	5/7/01	5/2/01	5/2/01	5/1/01	5/7/01
QC Sample Flag											
Compound											
Alkalinity, Carbonate (CaCO)	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	NA	<1.00	<1.00	<1.00	<1.00
Alkalinity, Hydroxide (CaCO)	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	NA	<1.00	<1.00	<1.00	<1.00
Alkalinity, Total	**334**	**383**	**372**	**333**	**415**	**293**	NA	**494**	**367**	**376**	**368**
Alkalinity,Bicarbonate (CaCO3)	**334**	**383**	**372**	**333**	**415**	**293**	NA	**494**	**367**	**376**	**368**
Chloride	**88.9**	**81.8**	**67.4**	**33**	**28.7**	**47.5**	NA	**24.4**	**55**	**50.3**	**64.2**
Nitrogen, Ammonia	<0.256	<0.240	<0.256	<0.236	<0.260	**4.19**	<0.248	<0.236	<0.248	<0.272	<0.268
Nitrogen, Kjeldahl, Total	**0.448**	**0.787**	**1.08**	<0.200	<0.200	**4.42**	NA	<0.200	<0.200	**0.215**	<0.200
Nitrogen, Nitrate	**3.71**	<0.500	**11.6**	**6.24**	<0.500	**3.22**	**5.1**	<0.500	**2.99**	**6.64**	**2.13**
Nitrogen, Nitrite	<0.500	<0.500	<5.00	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500
Nitrogen, NO2 plus NO3	**3.71**	**0.521**	**11.7**	**6.26**	<0.500	**3.22**	**5.12**	<0.500	**3.02**	**6.66**	**2.15**
Sulfate	**200**	**99.5**	**94.5**	**85.8**	**76.7**	**234**	NA	**19**	**223**	**97.1**	**349**
Total Dissolved Solids	**872**	**719**	**763**	**589**	**645**	**725**	NA	**591**	**841**	**675**	**1090**
Total Organic Carbon	**2.1**	**5.3**	**4.4**	**1.4**	**6.1**	**3**	NA	**2.6**	**3.6**	**1.8**	**1.6**
Total Suspended Solids	<5.00	**1700**	**402**	<5.00	<5.00	<5.00	NA	**9**	<5.00	<5.00	**8**

Bold text indicates results
above analytical detection limits.
NA = Not Analyzed.

Table 5-9f
North Industrial Corridor (NIC) Site
Monitoring Well Groundwater Sample Analytical Results, Inorganic Parameters

Station	WND-16S	WND-21D	WND-21S	WND-22D	WND-22S	WND-23S	WND-33D	WND-33S	WND-34D	WND-34S	WND-36D
Groundwater Depth zone	S	D	S	D	S	S	D	S	D	S	D
Sample Date (Phase 2B)	5/10/01	5/4/01	5/4/01	5/1/01	5/1/01	5/8/01	5/7/01	5/7/01	5/4/01	5/4/01	5/4/01
QC Sample Flag											
Compound											
Alkalinity, Carbonate (CaCO)	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	NA	NA	<1.00
Alkalinity, Hydroxide (CaCO)	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	NA	NA	<1.00
Alkalinity, Total	**355**	**486**	**462**	**261**	**307**	**222**	**655**	**497**	NA	NA	**488**
Alkalinity,Bicarbonate (CaCO3)	**355**	**486**	**462**	**261**	**307**	**222**	**655**	**497**	NA	NA	**488**
Chloride	**38.1**	**42.7**	**42.6**	**46.1**	**48.4**	**44**	**132**	**100**	NA	NA	**71.7**
Nitrogen, Ammonia	**1.45**	<0.260	**3.18**	<0.236	<0.268	**6.54**	**0.374**	<0.256	<0.264	**0.603**	**2.16**
Nitrogen, Kjeldahl, Total	**2.01**	**0.335**	**3.14**	<0.200	<0.200	**8.54**	**0.642**	<0.200	NA	NA	**2.3**
Nitrogen, Nitrate	<0.500	**1.07**	<0.500	**0.569**	<0.500	**1.04**	<0.500	<0.500	<0.500	<0.500	<0.500
Nitrogen, Nitrite	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500
Nitrogen, NO2 plus NO3	<0.500	**1.1**	<0.500	**0.604**	<0.500	**1.04**	<0.500	**0.518**	<0.500	<0.500	<0.500
Sulfate	**5.13**	**98.5**	**98.6**	**110**	**56.4**	**208**	**226**	**164**	NA	NA	**142**
Total Dissolved Solids	**513**	**695**	**793**	**532**	**485**	**600**	**1260**	**874**	NA	NA	**782**
Total Organic Carbon	**13**	**3.5**	**4.3**	**1.8**	**2.6**	**2.1**	**11**	**6.6**	NA	NA	**5.9**
Total Suspended Solids	**141**	<5.00	**25**	<5.00	<5.00	<5.00	**34**	**8**	NA	NA	**33**

Bold text indicates results
above analytical detection limits.
NA = Not Analyzed.

Table 5-9f
North Industrial Corridor (NIC) Site
Monitoring Well Groundwater Sample Analytical Results, Inorganic Parameters

Station	WND-36S	WND-37DR	WND-39D	WND-40D	WND-40S	WND-41D	WND-41S	WND-41S	WND-42D	WND-42S
Groundwater Depth zone	S	D	D	D	S	D	S	S	D	S
Sample Date (Phase 2B)	5/4/01	5/7/01	5/8/01	5/2/01	5/2/01	5/3/01	5/3/01	5/3/01	5/3/01	5/3/01
QC Sample Flag								DUP		
Compound										
Alkalinity, Carbonate (CaCO)	NA	<1.00	**26.2**	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
Alkalinity, Hydroxide (CaCO)	NA	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
Alkalinity, Total	NA	**492**	**479**	**228**	**232**	**265**	**322**	**331**	**288**	**356**
Alkalinity,Bicarbonate (CaCO3)	NA	**492**	**452**	**228**	**232**	**265**	**331**	**331**	**288**	**356**
Chloride	NA	**54.4**	**136**	**106**	**95.9**	**44.2**	**27.4**	**27.2**	**94.4**	**54.1**
Nitrogen, Ammonia	**1.02**	<0.276	<0.272	<0.240	<0.244	<0.276	<0.240	<0.240	<0.236	<0.248
Nitrogen, Kjeldahl, Total	**1.32**	**0.278**	**0.348**	**0.284**	**0.234**	<0.200	<0.200	<0.200	<0.200	**0.309**
Nitrogen, Nitrate	<0.500	<0.500	**1.82**	**6.91**	**5.15**	**11.7**	**14.9**	**15.2**	<0.500	<0.500
Nitrogen, Nitrite	<0.500	<0.500	<0.500	<0.500	<0.500	<5.00	<5.00	<5.00	<0.500	<0.500
Nitrogen, NO2 plus NO3	<0.500	<0.500	**1.83**	**6.96**	**5.2**	**12**	**15.4**	**15.4**	<0.500	<0.500
Sulfate	NA	**96**	**207**	**123**	**112**	**102**	**72**	**71.2**	**140**	**123**
Total Dissolved Solids	NA	**699**	**1030**	**650**	**590**	**596**	**599**	**613**	**684**	**654**
Total Organic Carbon	NA	**6.6**	**6.7**	**2.6**	**4.4**	**1.5**	**2.6**	**2.6**	**2.7**	**2.6**
Total Suspended Solids	NA	**39**	**9**	<5.00	<5.00	**25**	<5.00	<5.00	**70**	**12**

Bold text indicates results
above analytical detection limits.
NA = Not Analyzed.

Table 5-9g
North Industrial Corridor (NIC) Site
Monitoring Well Groundwater Sample Analytical Results, Inorganic Field Parameters

Well	Sample Date	pH	Temp (C)	Cond (uS/cm)	Chemet DO (mg/L)	Eh (mV)	Fe^{2+} (mg/L)	Turbidity (ntu)
DRB-MW20	7/26/2001	6.80	16.7	1460	0.15	-68.2	3.410	5.9
DRB-MW250	7/26/2001	6.66	17.0	1100	0.60	-93.6	8.880	336.0
EXC-MW-04B	5/2/2001	6.94	19.3	1080	0.55	158.3	0.021	53.7
EXC-MW-05B	5/2/2001	6.94	18.0	1150	0.55	124.9	0.075	3.4
EXC-MW-07B	5/2/2001	6.98	17.1	990	0.55	178.8	0.016	2.2
NMW-06D	5/7/2001	6.85	18.8	1620	0.25	138.1	0.027	6.8
NMW-08D	5/10/2001	6.73	17.6	1220	0.25	150.2	0.011	40.7
NMW-08S	5/10/2001	6.38	16.2	790	0.30	171.5	0.002	10.1
NMW-10D	5/9/2001	6.69	17.3	1230	0.20	0.7	1.763	10.3
NMW-10S	5/9/2001	6.71	16.9	1080	0.25	1.3	1.785**	28.3
NMW-14D	5/9/2001	6.82	14.7	1160	0.30	-64.8	4.710	14.0
NMW-18D	5/8/2001	7.23	17.0	1070	0.35	-25.5	1.186	16.0
NMW-18S	5/8/2001	7.35	15.4	1100	2.50	191.7	0.034	39.3
NMW-19D	5/8/2001	6.93	17.9	1460	0.25	98.7	0.221	23.3
NMW-25D	5/8/2001	7.00	18.7	1340	0.35	119.2	0.036	14.7
NMW-25S	5/8/2001	7.02	17.6	1300	0.80	224.1	0.015	9.0
NMW-29D	5/8/2001	6.94	19.4	1150	0.35	231.5	0.008	38.1
NMW-31D	5/9/2001	7.04	16.6	1410	0.30	788.0	0.116	38.8
NMW-31S	5/9/2001	6.75	15.0	1280	0.50	250.0	0.013	6.9
NMW-44D	7/26/2001	6.05	17.1	730	0.20	68.3	0.007	66.8
NMW-45D	7/26/2001	6.88	17.4	1120	0.50	6.9	0.226	191.0
WNC-06D	5/1/2001	6.94	18.3	740	0.50	289.7	0.021	3.3
WNC-16D	5/10/2001	6.81	16.1	1020	0.20	14.9	0.296	4.9
WNC-23D	5/8/2001	7.06	17.2	1040	0.25	218.5	0.015	6.3
WND-03S	5/2/2001	6.83	15.4	1020	0.06	-75.4	4.890	5.7
WND-04S	5/2/2001	6.71	16.9	1190	0.30	163.6	0.025	8.5
WND-06S	5/1/2001	6.36	16.8	850	0.20	196.7	0.033	12.6

Table 5-9g
North Industrial Corridor (NIC) Site
Monitoring Well Groundwater Sample Analytical Results, Inorganic Field Parameters

Well	Sample Date	pH	Temp (C)	Cond (uS/cm)	Chemet DO (mg/L)	Eh (mV)	Fe^{2+} (mg/L)	Turbidity (ntu)
WND-14D	5/7/2001	6.88	18.1	1350	0.15	265.0	0.014	6.5
WND-16S	5/10/2001	6.87	14.2	820	0.10	-74.8	4.010	33.0
WND-21D	5/4/2001	6.80	16.8	970	0.15	173.7	0.017	1.0
WND-21S	5/4/2001	6.51	16.2	1290	0.15	-58.7	6.920	69.9
WND-22D	5/1/2001	7.00	16.5	700	0.15	135.5	0.017	2.8
WND-22S	5/1/2001	7.16	14.7	610	0.90	166.4	0.016	5.9
WND-23S	5/8/2001	7.17	15.1	900	0.70	239.0	0.018	13.6
WND-33D	5/7/2001	6.91	16.9	1910	0.15	186.1	0.014	47.3
WND-33S	5/7/2001	6.60	16.2	1380	0.10	211.8	0.011	201.0
WND-36D	5/4/2001	6.85	16.2	1180	0.15	15.4	0.015	11.4
WND-37DR	5/7/2001	6.65	16.8	1130	0.50	166.7	0.027	43.5
WND-39D	5/8/2001	6.81	15.3	1460	0.15	194.0	0.006	16.5
WND-40D	5/2/2001	6.95	19.9	1060	1.00	186.4	0.012	3.5
WND-40S	5/2/2001	6.77	19.7	980	0.60	149.4	0.021	2.4
WND-41D	5/3/2001	6.73	18.0	870	0.04*	252.7	0.011	73.3
WND-41S	5/3/2001	6.70	16.5	940	2.00	201.2	0.019	3.0
WND-42D	5/3/2001	6.68	18.4	1050	0.15	-52.9	1.224	549.0
WND-42S	5/3/2001	6.42	16.6	981	<0.1	-87.4	7.850	4.0

* Measured by Orion probe
**Measured at a wavelength of 498 nm

NM - Not measured

Temp = Temperature
DO = Dissolved oxygen
Cond = Conductivity
Eh = Oxidation-reduction potential

Table 5-10a
North Industrial Corridor (NIC) Site
Summary Statistics, VOCs in Groundwater

VOCs Units	Abbrev	MCL (µg/L)	KDHE Tier 2 RSK Values*		Detects/ Samples	FOD	Minimum Detected Concentration (µg/L)	Average Detected Concentration (µg/L)	Maximum Detected Concentration (µg/L)	Location of Maximum Reported Concentration
			Residential (µg/L)	*Non-residential* (µg/L)						
1,1,1-Trichloroethane	TCA	200	200	200	227 / 1351	16.8%	1.00	11	180	GP#18-6
1,1,2,2-Tetrachloroethane	1122PCA	--	0.7	1.0	2 / 1351	0.1%	27.00	38	49	GP#67-4
1,1,2-Trichloroethane	112TCA	5	5	5	4 / 1351	0.3%	1.10	2.8	6.4	GP#67-4
1,1-Dichloroethane	11DCA	--	340	1300	521 / 1351	38.6%	0.58	6.1	670	WND-12S
1,1-Dichloroethene	11DCE	7	7	7	482 / 1351	35.7%	1.00	11	300	WND-12S
1,2,4-Trimethylbenzene	124TMB	--	5	17	6 / 45	13.3%	1.20	20	44	DRB-MW-11
1,2-Dibromoethane (Ethylene dibromide)	12DBE	--	0.05	0.05	1 / 45	2.2%	1.10	1.1	1.1	WND-04S
1,2-Dichloroethane	12DCA	5	5	5	34 / 1351	2.5%	1.00	6.0	45	GP10F-05
1,2-Dichloropropane	12DCP	5	5	5	8 / 1351	0.6%	1.30	2.6	5.1	WND-12S
1,3,5-Trimethylbenzene	135TMB	--	5	17	4 / 45	8.9%	7.80	16	31	WND-16S
Benzene	BEN	5	5	5	200 / 1351	14.8%	0.70	240	19000	GPA12-6
Bromodichloromethane	BDCM	100	100	100	4 / 1351	0.3%	1.10	1.6	2.6	GP06I-02
Carbon Tetrachloride	CT	5	5	5	41 / 1351	3.0%	1.30	24	480	GPA30-4
Chlorobenzene	CBN	100	100	100	6 / 1351	0.4%	1.30	2.5	4.8	GP#67-4
Chloroethane	CLA	--	--	--	35 / 1351	2.6%	1.00	3.5	35	WND-12S
Chloroform	CFM	100	100	100	93 / 1351	6.9%	1.00	11	300	GPA30-4
Chloromethane	CM	--	20	40	67 / 1351	5.0%	1.00	3.1	13	GP10F-01, GP10F-07
cis-1,2-Dichloroethene	C12DCE	70	70	70	937 / 1351	69.4%	1.00	54	3000	GP#62-1
Dibromochloromethane	DBCM	100	100	100	1 / 1351	0.1%	1.20	1.2	1.2	GP06I-02
Dichlorodifluoromethane	DCDFM	--	170	570	1 / 45	2.2%	7.30	7.3	7.3	WND-45D
Ethylbenzene	EBN	700	700	700	81 / 1351	6.0%	1.00	155	4500	GPA12-6
Isopropylbenzene	IPB	--	--	--	9 / 45	20.0%	1.00	16	84	WND-05S
m,p-Xylene	XYL-MP	10000	10000	10000	108 / 1351	8.0%	1.30	261	16000	GPA12-6
Methyl-tert-butyl Ether	MTBE	--	20	20	3 / 64	4.7%	1.50	6.1	10	NMW-46D
Methylene chloride	MECL	5	5	5	90 / 1351	6.7%	0.99	1.8	9.7	GPA31-7
n-Butylbenzene	NBB	--	21	80	4 / 45	8.9%	0.99	6.6	13	DRB-MW-30
n-Propylbenzene	NPB	--	20	80	8 / 45	17.8%	1.20	21	94	WND-05S
o-Xylene	XYL-O	10000	10000	10000	70 / 1351	5.2%	1.10	128	7000	GPA12-6
p-Isopropyltoluene	PIPT	--	--	--	4 / 45	8.9%	1.00	4.1	11	DRB-MW-30
sec-Butylbenzene	SBB	--	20	80	5 / 45	11.1%	1.20	8.7	28	WND-05S
tert-Butylbenzene	TBB	--	--	--	4 / 45	8.9%	1.10	2.2	3.5	DRB-MW-30

Table 5-10a
North Industrial Corridor (NIC) Site
Summary Statistics, VOCs in Groundwater

VOCs Units	Abbrev	MCL (µg/L)	KDHE Tier 2 RSK Values*		Detects/ Samples	FOD	Minimum Detected Concentration (µg/L)	Average Detected Concentration (µg/L)	Maximum Detected Concentration (µg/L)	Location of Maximum Reported Concentration
			Residential (µg/L)	*Non-residential* (µg/L)						
Tetrachloroethene	PCE	5	5	5	219 / 1351	16.2%	1.00	13	1300	GP-HCI-06
Toluene	TOL	1000	1000	1000	84 / 1351	6.2%	1.00	327	23000	GPA12-6
trans-1,2-Dichloroethene	T12DCE	100	100	100	445 / 1351	33.0%	0.65	6	92	WND-03S
Trichloroethene	TCE	5	5	5	989 / 1351	73.3%	1.00	124	1400	GP03E-13
Trichlorofluoromethane	TCFM	5	--	--	6 / 1351	0.4%	1.40	1.5	1.5	GPA06-3, WND-30D, DRB MW-02
Vinyl chloride	VC	2	2	2	489 / 1351	36.2%	1.00	16	350	GP#62-1
1,1,1,2-Tetrachloroethane	1112PCA	--	5	10	0 / 45	--	--	--	--	--
1,1-Dichloropropene	11DCP	--	--	--	0 / 45	--	--	--	--	--
1,2,3-Trichlorobenzene	123TCB	--	--	--	0 / 45	--	--	--	--	--
1,2,3-Trichloropropane	123TCP	--	0.02	0.04	0 / 45	--	--	--	--	--
1,2-Dibromo-3-chloropropane	12DB3CP	0.2	--	--	0 / 45	--	--	--	--	--
1,3-Dichloropropane	13DCP	--	--	--	0 / 45	--	--	--	--	--
2,2-Dichloropropane	22DCP	--	--	--	0 / 45	--	--	--	--	--
2-Chloroethylvinyl ether	2CEVE	--	--	--	0 / 45	--	--	--	--	--
2-Chlorotoluene	2CT	--	--	--	0 / 45	--	--	--	--	--
4-Chlorotoluene	4CT	--	--	--	0 / 45	--	--	--	--	--
Bromobenzene	BB	--	--	--	0 / 45	--	--	--	--	--
Bromochloromethane	BCM	--	--	--	0 / 45	--	--	--	--	--
Bromoform	BFM	100	100	100	0 / 1351	--	--	--	--	--
Bromomethane	BM	--	4	10	0 / 1351	--	--	--	--	--
cis-1,3-Dichloropropene	C13DCP	--	--	--	0 / 1351	--	--	--	--	--
Dibromomethane	DBM	--	--	--	0 / 45	--	--	--	--	--
Styrene	STY	100	100	100	0 / 45	--	--	--	--	--
trans-1,3-Dichloropropene	T13DCP	--	--	--	0 / 1351	--	--	--	--	--

NOTE: This statistical summary does not include samples from the sludge area. Summary statistics for the sludge area are provided in Table 5-7a-b.
NOTE: 1351 Groundwater samples were analyzed for VOCs by EPA Method 8260.
45 Groundwater samples were analyzed for extended list VOCs by EPA Method 8260.
MCL = Safe Drinking Water Act Maximum Contaminant Level in Drinking Water.
FOD = Frequency of Detection.
* Source: Risk-Based Standards for Kansas, RSK Manual-3rd Version, March 1, 2003, KDHE, Division of Environment, Bureau of Environmental Remediation

Table 5-10b
North Industrial Corridor (NIC) Site
Summary Statistics, SVOCs and TPH in Groundwater

SVOCs Units	MCL (µg/L)	Detects/ Samples	FOD	Minimum Detected Concentration (µg/L)	Average Detected Concentration (µg/L)	Maximum Detected Concentration (µg/L)	Location of Maximum Reported Concentration
1,2-Dichlorobenzene	600	1 / 1368	0.1%	2.4	2.4	2.4	GP03F-04
1,4-Dichlorobenzene	75	1 / 1368	0.1%	1.1	1.1	1.1	GPA19-2
2-Methylnaphthalene	--	1 / 17	5.9%	460	460	460	WND-16S
Acenaphthene	--	1 / 17	5.9%	12	12	12	WND-16S
Fluorene	--	1 / 17	5.9%	10	10	10	WND-16S
Naphthalene	--	19 / 62	30.6%	1.2	78	790	WND-16S
Phenanthrene	--	1 / 17	5.9%	21	21	21	WND-16S
1,2,4-Trichlorobenzene	70	0 / 62	--	--	--	--	--
1,3-Dichlorobenzene	--	0 / 1368	--	--	--	--	--
2,4,5-Trichlorophenol	--	0 / 17	--	--	--	--	--
2,4,6-Trichlorophenol	--	0 / 17	--	--	--	--	--
2,4-Dichlorophenol	--	0 / 17	--	--	--	--	--
2,4-Dimethylphenol	--	0 / 17	--	--	--	--	--
2,4-Dinitrophenol	--	0 / 17	--	--	--	--	--
2,4-Dinitrotoluene	--	0 / 17	--	--	--	--	--
2,6-Dinitrotoluene	--	0 / 17	--	--	--	--	--
2-Chloronaphthalene	--	0 / 17	--	--	--	--	--
2-Chlorophenol	--	0 / 17	--	--	--	--	--
2-Methylphenol	--	0 / 17	--	--	--	--	--
2-Nitroaniline	--	0 / 17	--	--	--	--	--
2-Nitrophenol	--	0 / 17	--	--	--	--	--
3,3'-Dichlorobenzidine	--	0 / 17	--	--	--	--	--
3-Nitroaniline	--	0 / 17	--	--	--	--	--
4,6-Dinitro-2-methylphenol	--	0 / 17	--	--	--	--	--
4-Bromophenylphenyl ether	--	0 / 17	--	--	--	--	--
4-Chloro-3-methylphenol	--	0 / 17	--	--	--	--	--
4-Chloroaniline	--	0 / 17	--	--	--	--	--
4-Chlorophenylphenyl ether	--	0 / 17	--	--	--	--	--

Table 5-10b
North Industrial Corridor (NIC) Site
Summary Statistics, SVOCs and TPH in Groundwater

SVOCs Units	MCL (µg/L)	Detects/ Samples	FOD	Minimum Detected Concentration (µg/L)	Average Detected Concentration (µg/L)	Maximum Detected Concentration (µg/L)	Location of Maximum Reported Concentration
4-Methylphenol	--	0 / 17	--	--	--	--	--
4-Nitroaniline	--	0 / 17	--	--	--	--	--
4-Nitrophenol	--	0 / 17	--	--	--	--	--
Benzoic acid	--	0 / 17	--	--	--	--	--
Benzyl alcohol	--	0 / 17	--	--	--	--	--
bis(2-Chloroethoxy)methane	--	0 / 17	--	--	--	--	--
bis(2-Chloroethyl) ether	--	0 / 17	--	--	--	--	--
bis(2-Chloroisopropyl) ether	--	0 / 17	--	--	--	--	--
bis(2-Ethylhexyl)phthalate	6	0 / 17	--	--	--	--	--
Butylbenzylphthalate	--	0 / 17	--	--	--	--	--
Di-n-butylphthalate	--	0 / 17	--	--	--	--	--
Di-n-octylphthalate	--	0 / 17	--	--	--	--	--
Dibenzofuran	--	0 / 17	--	--	--	--	--
Diethylphthalate	--	0 / 17	--	--	--	--	--
Dimethylphthalate	--	0 / 17	--	--	--	--	--
Hexachloro-1,3-butadiene	--	0 / 62	--	--	--	--	--
Hexachlorobenzene	1	0 / 17	--	--	--	--	--
Hexachlorocyclopentadiene	50	0 / 17	--	--	--	--	--
Hexachloroethane	--	0 / 17	--	--	--	--	--
Isophorone	--	0 / 17	--	--	--	--	--
N-Nitroso-di-n-propylamine	--	0 / 17	--	--	--	--	--
N-Nitrosodiphenylamine	--	0 / 17	--	--	--	--	--
Nitrobenzene	--	0 / 17	--	--	--	--	--
Pentachlorophenol	1	0 / 17	--	--	--	--	--
Phenol	--	0 / 17	--	--	--	--	--
Acenaphthylene	--	0 / 17	--	--	--	--	--
Anthracene	--	0 / 17	--	--	--	--	--

Table 5-10b
North Industrial Corridor (NIC) Site
Summary Statistics, SVOCs and TPH in Groundwater

SVOCs Units	MCL (µg/L)	Detects/ Samples	FOD	Minimum Detected Concentration (µg/L)	Average Detected Concentration (µg/L)	Maximum Detected Concentration (µg/L)	Location of Maximum Reported Concentration
Benzo(a)anthracene	--	0 / 17	--	--	--	--	--
Benzo(a)pyrene	0.2	0 / 17	--	--	--	--	--
Benzo(b)fluoranthene	--	0 / 17	--	--	--	--	--
Benzo(g,h,i)perylene	--	0 / 17	--	--	--	--	--
Benzo(k)fluoranthene	--	0 / 17	--	--	--	--	--
Chrysene	--	0 / 17	--	--	--	--	--
Dibenz(a,h)anthracene	--	0 / 17	--	--	--	--	--
Fluoranthene	--	0 / 17	--	--	--	--	--
Indeno(1,2,3-cd)pyrene	--	0 / 17	--	--	--	--	--
Pyrene	--	0 / 17	--	--	--	--	--
Total Petroleum Hydrocarbons (TPH)							
TPH	--	1 / 1	100.0%	1500	1500	1500	WND-05S
TPH-DIESEL	--	1 / 13	7.7%	7700	7700	7700	WND-16S
TPH-GASOLINE	--	2 / 13	15.4%	3690	8995	14300	WND-16S
TPH-FUEL	--	0 / 13	--	--	--	--	--
TPH-JET	--	0 / 13	--	--	--	--	--
TPH-KEROSENE	--	0 / 13	--	--	--	--	--
TPH-MINERAL	--	0 / 13	--	--	--	--	--
TPH-MOIL	--	0 / 13	--	--	--	--	--

NOTE: This statistical summary does not include samples from the sludge area. Summary statistics for the sludge area are provided in Table 5-7a-b.

NOTE: 1368 Groundwater samples were analyzed for SVOCs by either EPA Method 8260 or EPA Method 8270.
62 Groundwater samples were analyzed for SVOCs by either EPA Method 8260 (Extended List) or EPA Method 8270.
17 Groundwater samples were analyzed for SVOCs by EPA Method 8270.
13 Groundwater samples were analyzed for TPH.

MCL = Safe Drinking Water Act Maximum Contaminant Level in Drinking Water.

FOD = Frequency of Detection.

Table 5-10c
North Industrial Corridor (NIC) Site
Summary Statistics, Total and Dissolved Metals in Groundwater

Inorganics Units	Abbrev	MCL (µg/L)	Detects/ Samples	FOD	Minimum Detected Concentration (µg/L)	Average Detected Concentration (µg/L)	Maximum Detected Concentration (µg/L)	Location of Maximum Reported Concentration
NOTE: This statistical summary does not include samples from the sludge area								
Aluminum	AL	--	8 / 15	53%	207	18146	86500	WND-45D
Aluminum-Dis	AL-DIS	--	0 / 15	0%	--	--	--	--
Antimony	SB	6	0 / 15	0%	--	--	--	--
Antimony-Dis	SB-DIS	6	0 / 15	0%	--	--	--	--
Arsenic	AS	10	4 / 15	27%	7.33	40	70.9	WND-02S
Arsenic-Dis	AS-DIS	10	2 / 15	13%	19.4	24	28.9	NMW-09D
Barium	BA	2000	15 / 15	100%	65	398	2230	WND-45D
Barium-Dis	BA-DIS	2000	15 / 15	100%	62.3	169	665	WND-16S
Beryllium	BE	4	3 / 15	20%	1.38	3.7	7.22	WND-45D
Beryllium-Dis	BE-DIS	4	0 / 15	0%	--	--	--	--
Cadmium	CD	5	1 / 15	7%	5.15	5.2	5.15	WND-02S
Cadmium-Dis	CD-DIS	5	0 / 15	0%	--	--	--	--
Calcium	CA	--	15 / 15	100%	78700	117587	162000	WND-45D
Calcium-DIS	CA-DIS	--	15 / 15	100%	70500	115127	155000	NMW-22D
Chromium	CR	100	4 / 15	27%	7.34	42	112	WND-45D
Chromium-Dis	CR-DIS	100	0 / 15	0%	--	--	--	--
Cobalt	CO	--	4 / 15	27%	9.86	34	72.2	WND-45D
Cobalt-Dis	CO-DIS	--	1 / 15	7%	9.68	10	9.68	NMW-31S
Copper	CU	1300	4 / 15	27%	12.1	75	163	WND-45D
Copper-Dis	CU-DIS	1300	3 / 15	20%	16.5	38	56.6	WNC-06D
Iron	FE	--	14 / 15	93%	64.2	21794	141000	WND-45D
Iron-Dis	FE-DIS	--	9 / 15	60%	120	4639	13000	WND-05S
Lead	PB	15	9 / 15	60%	5.19	41	152	WND-45D
Lead-Dis	PB-DIS	15	7 / 15	47%	5.44	11	20.4	WND-02S

Table 5-10c
North Industrial Corridor (NIC) Site
Summary Statistics, Total and Dissolved Metals in Groundwater

Inorganics Units	Abbrev	MCL (µg/L)	Detects/ Samples	FOD	Minimum Detected Concentration (µg/L)	Average Detected Concentration (µg/L)	Maximum Detected Concentration (µg/L)	Location of Maximum Reported Concentration
Magnesium	MG	--	15 / 15	100%	15600	32087	56200	WND-06S
Magnesium-Dis	MG-DIS	--	15 / 15	100%	10500	29093	52700	WND-06S
Manganese	MN	--	14 / 15	93%	18.4	1357	5060	WND-02S
Manganese-Dis	MN-DIS	--	13 / 15	87%	41.5	1228	4150	WND-05S
Mercury	HG	2	0 / 15	0%	--	--	--	--
Mercury-Dis	HG-DIS	2	0 / 15	0%	--	--	--	--
Nickel	NI	--	2 / 15	13%	45.7	98	150	WND-45D
Nickel-Dis	NI-DIS	--	0 / 15	0%	--	--	--	--
Potassium	K	--	14 / 15	93%	2140	6003	20600	WND-45D
Potassium-Dis	K-DIS	--	14 / 15	93%	1370	4120	9180	NMW-09D
Selenium	SE	50	6 / 15	40%	10.1	12	16.3	NMW-31S
Selenium-Dis	SE-DIS	50	3 / 15	20%	13.4	16	21.3	WND-02S
Silver	AG	--	2 / 15	13%	12.9	13	13.6	WND-02S
Silver-Dis	AG-DIS	--	1 / 15	7%	8.2	8.2	8.2	WND-02S
Sodium	NA	--	15 / 15	100%	24900	82233	241000	WND-02S
Sodium-Dis	NA-DIS	--	15 / 15	100%	24500	83213	235000	WND-02S
Thallium	TI	2	2 / 15	13%	7.81	8.1	8.44	WND-45D
Thallium-Dis	TI-DIS	2	2 / 15	13%	6.98	7.1	7.2	NMW-29S
Vanadium	V	--	3 / 15	20%	61.9	147	279	WND-45D
Vanadium-Dis	V-DIS	--	0 / 15	0%	--	--	--	--
Zinc	ZN	10000	3 / 15	20%	105	246	373	WND-45D
Zinc-Dis	ZN-DIS	10000	0 / 15	0%	--	--	--	--

NOTE: This statistical summary does not include samples from the sludge area. Summary statistics for the sludge area are provided in Table 5-7a-b.
NOTE: 15 Groundwater samples were analyzed for total and dissolved metals.
MCL = Safe Drinking Water Act Maximum Contaminant Level in Drinking Water.
FOD = Frequency of Detection.

CDM

Table 5-11
North Industrial Corridor (NIC) Site
Site-Wide Groundwater Target Compounds

VOCs Units	Abbrev	MCL (µg/L)	Detects/ Samples	FOD	Average Detected Concentration (µg/L)	Maximum Detected Concentration (µg/L)	Selection Basis *	Location of Maximum Reported Concentration
Tetrachloroethene	PCE	5	219 / 1351	16.2%	13	1300	M, S	GP-HCI-06
Trichloroethene	TCE	5	989 / 1351	73.3%	124	1400	M, F, S	GP03E-13
cis-1,2-Dichloroethene	C12DCE	70	937 / 1351	69.4%	54	3000	M, F, D	GP#62-1
Vinyl chloride	VC	2	489 / 1351	36.2%	16	350	M, F, D	GP#62-1
1,1,1-Trichloroethane	TCA	200	227 / 1351	16.8%	11	180	F, S	GP#18-6
1,1-Dichloroethane	11DCA	--	521 / 1351	38.6%	6.1	670	F, D	WND-12S
1,1-Dichloroethene	11DCE	7	482 / 1351	35.7%	11	300	M, F, D	WND-12S
Carbon Tetrachloride	CT	5	41 / 1351	3.0%	24	480	M, S	GPA30-4
Chloroform	CFM	100	93 / 1351	6.9%	11	300	M, D	GPA30-4
Benzene	BEN	5	200 / 1351	14.8%	240	19000	M, F	GPA12-6

NOTE: This statistical summary does not include samples from the sludge area. Summary statistics for the sludge area are provided in Table 5-10a-b.
NOTE: 1351 Groundwater samples were analyzed for VOCs by EPA Method 8260.
MCL = Safe Drinking Water Act Maximum Contaminant Level in Drinking Water.
FOD = Frequency of Detection.
Basis for Selection as Site VOC
F = High FOD (Greater than 10%)
M = MCL Exceeded by maximum detection in groundwater samples.
S = Compound may be useful in source identification (see Section 9).
D = Important degradation daughter product (see Section 8).

Table 5-12a
North Industrial Corridor (NIC) Site
Comparison of Site VOCs in Geoprobe Groundwater Samples, Phase 1 and Phase 2

Station	Groundwater Depth Zone / Depth (feet)	Sample Date	Investigation	Units	PCE	TCE	cis12 DCE	VC	TCA	11DCA	11DCE	CT	CFM	BEN
GP#18-1	S/20	01/08/98	Phase 1	µg/L	<1	18	5.7	<1	110	7.5	26	<1	8.1	<1
GP#18-1	S/20	10/15/99	Phase 2	µg/L	<1	12	9.7	1	5.5	4.4	<1	<1	<1	<1
GP#18-2	S/20	01/08/98	Phase 1	µg/L	2.2	60	16	<1	5.9	<1	2.3	<1	<1	<1
GP#18-2	S/20	10/15/99	Phase 2	µg/L	<1	26	9.2	<1	38	1	8.8	<1	1	<1
GP#18-5	S/18	06/04/98	Phase 1	µg/L	<1	180	12	<1	110	12	33	<1	1.2	<1
GP#18-5	S/18	10/15/99	Phase 2	µg/L	<1	120	10	<1	99	6.6	26	<1	2	<1
GP#18-6	S/18	06/04/98	Phase 1	µg/L	<1	50	8.9	<1	100	1.3	38	<1	9.9	<1
GP#18-6	S/18	10/15/99	Phase 2	µg/L	<1	35	6.3	<1	180	3.4	52	<1	5.8	<1
GP#18-7	S/18	06/04/98	Phase 1	µg/L	<1	2.9	1.2	<1	2.6	<1	<1	<1	<1	<1
GP#18-7	S/18	10/15/99	Phase 2	µg/L	<1	170	86	4.1	<1	1.4	2	<1	<1	<1
GP#19-2	S/19	06/02/98	Phase 1	µg/L	<1	140	61	30	<1	1.5	1.9	<1	<1	<1
GP#19-2	S/19	10/15/99	Phase 2	µg/L	<1	55	35	32	<1	1.3	<1	<1	<1	<1
GP#19-6	S/20	06/01/98	Phase 1	µg/L	2.2	310	40	2.7	<1	1.7	2.5	<1	<1	<1
GP#19-6	S/20	10/15/99	Phase 2	µg/L	3.4	160	27	1.2	<1	<1	1.3	<1	<1	<1
GP#32-1	S/20	01/22/98	Phase 1	µg/L	<1	140	73	17	1.7	4.2	11	<1	<1	<1
GP#32-1	S/20	10/21/99	Phase 2	µg/L	<1	5.8	5.9	1.4	<1	<1	<1	<1	<1	<1
GP#34-10	S/18	06/08/98	Phase 1	µg/L	<1	22	57	3.1	<1	2.3	5.1	<1	<1	<1
GP#34-10	S/18	01/10/00	Phase 2	µg/L	<1	6.4	120	8.4	<1	3.2	5.9	<1	<1	<1
GP#34-7	S/18	06/08/98	Phase 1	µg/L	<1	120	160	3.3	<1	4.3	8.6	<1	<1	<1
GP#34-7	S/18	10/21/99	Phase 2	µg/L	<1	37	55	<1	<1	1.4	1.7	<1	<1	<1
GP#35-2	S/16	06/05/98	Phase 1	µg/L	<1	61	14	<1	<1	<1	<1	<1	<1	<1
GP#35-2	S/20	10/19/99	Phase 2	µg/L	<1	3.7	<1	<1	<1	<1	<1	<1	<1	<1
GP#35-4	S/20	06/08/98	Phase 1	µg/L	1.7	490	170	25	6.4	14	48	<1	<1	<1
GP#35-4	S/20	10/19/99	Phase 2	µg/L	<1	220	78	12	2.7	5.3	15	<1	<1	<1
GP#47-1	S/20	01/07/98	Phase 1	µg/L	3.3	70	43	10	<1	3	5.3	<1	<1	<1
GP#47-1	S/20	10/19/99	Phase 2	µg/L	2.2	89	51	23	<1	6.1	10	<1	<1	1.5
GP#48-3	S/16	06/05/98	Phase 1	µg/L	<1	360	360	1.9	7.6	14	39	<1	<1	2.2
GP#48-3	S/16	12/20/99	Phase 2	µg/L	<1	220	280	14	2.3	11	21	<1	1.1	1.4
GP#50-3	S/20	01/09/98	Phase 1	µg/L	<1	1.1 JS	1.7	1.4	<1 JS	<1 JS	<1	<1 JS	<1	<1 JS
GP#50-3	S/20	10/19/99	Phase 2	µg/L	<1	<1	1.3	<1	<1	<1	<1	<1	<1	<1

Table 5-12a
North Industrial Corridor (NIC) Site
Comparison of Site VOCs in Geoprobe Groundwater Samples, Phase 1 and Phase 2

Station	Groundwater Depth Zone / Depth (feet)	Sample Date	Investigation	Units	PCE	TCE	cis12 DCE	VC	TCA	11DCA	11DCE	CT	CFM	BEN
GP#55-1	S/20	12/22/97	Phase 1	µg/L	<1	600	81 JDB	1.3	17	5.4	39	3.5	1.8	<1
GP#55-1	S/20	10/19/99	Phase 2	µg/L	<1	440	37	<1	11	1.9	13	9.2	4.2	<1
GP#56-2	S/20	01/13/98	Phase 1	µg/L	<1	200	30	2.2	<1	<1	1.2	<1	<1	<1
GP#56-2	S/20	10/20/99	Phase 2	µg/L	<1	28	36	<1	<1	<1	<1	<1	<1	<1
GP#62-3	S/20	01/14/98	Phase 1	µg/L	2.4	230	690	80	3	6.4	2.8	<1	<1	1.2
GP#62-3	S/20	11/05/99	Phase 2	µg/L	<1	480 H	790 H	19	<1	5.5	2.9	<1	<1	<1
GPA03-1	S/20	12/12/97	Phase 1	µg/L	<1	<1	<1	<1	<1	1.3	<1	<1	<1	<1
GPA03-1	S/20	10/15/99	Phase 2	µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
GPA05-3	S/20	12/15/97	Phase 1	µg/L	<1	260	3.9 JDB	<1	<1	<1	<1	<1	<1	<1
GPA05-3	S/20	10/15/99	Phase 2	µg/L	<1	160	6.4	<1	<1	<1	<1	<1	<1	<1
GPA08-2	S/20	12/17/97	Phase 1	µg/L	5	450	560	47	2.5	4.8	3	<1	<1	<1
GPA08-2	S/20	10/19/99	Phase 2	µg/L	<1	45	74	7.4	<1	<1	<1	<1	<1	<1
GPA08-4	S/20	12/17/97	Phase 1	µg/L	1.5	230	34 JDB	<1	<1	<1	<1	<1	<1	<1
GPA08-4	S/20	10/19/99	Phase 2	µg/L	1.7	130	24	<1	<1	<1	<1	<1	<1	<1
GPA15-2	S/20	01/06/98	Phase 1	µg/L	3.2	11	5.3	<1	1.5	5.6	3.7	<1	<1	<1
GPA15-2	S/20	10/19/99	Phase 2	µg/L	<1	5.1	1.9	<1	<1	2.5	<1	<1	<1	<1
GPA18-4	S/20	12/29/97	Phase 1	µg/L	<1	39 JDB	11 JDB	<1	<1	<1	<1	<1	<1	<1
GPA18-4	S/20	10/15/99	Phase 2	µg/L	<1	27	5.2	<1	<1	<1	<1	<1	<1	<1
GPA24-2	S/20	12/11/97	Phase 1	µg/L	<1	180	23 JDB	1.3	<1	<1	1.1	<1	<1	<1
GPA24-2	S/20	10/15/99	Phase 2	µg/L	<1	15	<1	<1	<1	<1	<1	<1	<1	<1
GPA25-1	S/20	12/09/97	Phase 1	µg/L	1.3	510	96 JDB	13	<1	3.8	4.9	<1	<1	<1
GPA25-1	S/20	10/15/99	Phase 2	µg/L	<1	290	59	7.4	<1	2.2	4.1	<1	<1	<1
GPA28-2	S/20	12/08/97	Phase 1	µg/L	5.4	160	38 JDB	<1	<1	<1	<1	<1	1.5	<1
GPA28-2	S/20	10/15/99	Phase 2	µg/L	6.8	60	14	<1	<1	<1	<1	<1	<1	<1
GPA28-3	S/20	12/08/97	Phase 1	µg/L	<1	240	140	3.5	<1	3.5	2.2	<1	<1	<1
GPA28-3	S/20	10/20/99	Phase 2	µg/L	9.3	130	92	<1	<1	1.1	<1	<1	<1	<1
GPA29-4	S/20	05/29/98	Phase 1	µg/L	1.6	180	8.8	<1	<1	<1	<1	<1	<1	<1
GPA29-4	S/20	12/16/99	Phase 2	µg/L	<1	42	<1	<1	<1	<1	<1	<1	<1	<1
GPA29-6	S/20	05/29/98	Phase 1	µg/L	<1	30	<1	<1	1.6	<1	<1	<1	<1	<1
GPA29-6	S/20	10/20/99	Phase 2	µg/L	<1	43	<1	<1	1.8	<1	<1	<1	<1	<1

Table 5-12a
North Industrial Corridor (NIC) Site
Comparison of Site VOCs in Geoprobe Groundwater Samples, Phase 1 and Phase 2

Station	Groundwater Depth Zone / Depth (feet)	Sample Date	Investigation	Units	PCE	TCE	cis12 DCE	VC	TCA	11DCA	11DCE	CT	CFM	BEN
GPA30-3	S/20	01/05/98	Phase 1	µg/L	<1	**13**	**4.5**	<1	<1	<1	<1	<1	<1	<1
GPA30-3	S/20	10/15/99	Phase 2	µg/L	<1	**2.3**	<1	<1	<1	<1	<1	<1	<1	<1
GPA31-1	S/20.5	12/22/97	Phase 1	µg/L	<1	**43 JDB**	**19 JDB**	<1	<1	<1	<1	<1	<1	<1
GPA31-1	S/20	10/15/99	Phase 2	µg/L	<1	**66**	**40**	<1	<1	<1	<1	<1	<1	<1
GPA31-3	S/20	12/23/97	Phase 1	µg/L	**3.5**	**550**	**81 JDB**	**5**	<1	**3.8**	**2.7**	<1	<1	<1
GPA31-3	S/20	10/20/99	Phase 2	µg/L	**9.2**	**260**	**50**	**2.7**	<1	**1.6**	**1.2**	<1	<1	<1
GPA31-6	S/20	05/29/98	Phase 1	µg/L	**9**	**360**	**72**	**5.1**	<1	**2.5**	**2.6**	<1	<1	<1
GPA31-6	S/20	01/10/00	Phase 2	µg/L	**5.6**	**92**	**23**	<1	**1.3**	**1.1**	<1	<1	<1	<1
GPA34-3	S/20	12/29/97	Phase 1	µg/L	**2.1**	**150**	**41 JDB**	**1.2**	**51**	**12**	**19**	<1	<1	<1
GPA34-3	S/20	10/20/99	Phase 2	µg/L	**1.6**	**180**	**47**	**3.5**	**52**	**12**	**13**	<1	<1	<1
GPA40-1	S/20	05/28/98	Phase 1	µg/L	<1	**22**	**8**	<1	<1	**2**	**1.5**	<1	**1.2**	<1
GPA40-1	S/20	10/19/99	Phase 2	µg/L	<1	**11**	**5.1**	<1	<1	**1**	<1	<1	<1	<1

PCE = Tetrachloroethene
TCE = Trichloroethene
C12DCE = cis-1,2-dichloroethene
VC = Vinyl chloride
TCA = 1,1,1-Trichloroethane
11DCA = 1,1-Dichloroethane
11DCE = 1,1-Dichloroethene
CT = Carbon tetrachloride
CFM = Chloroform
BEN = Benzene

Bold text indicates results above analytical detection limits.

Table 5-12b
North Industrial Corridor (NIC) Site
Comparison of Site VOCs in Monitoring Well Samples, Phase 1 and Phase 2

Station	Depth Zone	Sample Date	Investigation	PCE (µg/L)	TCE (µg/L)	C12DCE (µg/L)	VC (µg/L)	TCA (µg/L)	11DCA (µg/L)	11DCE (µg/L)	CCL4 (µg/L)	CFM (µg/L)	BEN (µg/L)
EXC-MW-04A	S	6/15/98	Phase 1	1.5	330	86	<1	3.9	3.5	18	<1	<1	<1
EXC-MW-04A	S	5/2/01	Phase 2	1.4	290	91	2.4	2.4	2.7	15	<1.0	<1.0	<1.0
EXC-MW-04B	D	6/15/98	Phase 1	<1	19	1.6	<1	<1	<1	1.1	<1	<1	<1
EXC-MW-04B	D	5/2/01	Phase 2	<1.0	39	7	<1.0	<1.0	<1.0	1.9	<1.0	<1.0	<1.0
EXC-MW-05B	D	6/15/98	Phase 1	<1	270	38	<1	5	2	17	<1	<1	<1
EXC-MW-05B	D	5/2/01	Phase 2	<1.0	62	8.7	<1.0	<1.0	<1.0	2.4	<1.0	<1.0	<1.0
EXC-MW-07B	D	6/16/98	Phase 1	<1	96	24	<1	2.3	1.1	7.3	<1	<1	<1
EXC-MW-07B	D	5/2/01	Phase 2	<1.0	51	18	<1.0	<1.0	1.3	2.1	<1.0	<1.0	<1.0
WND-02D	D	12/1/97	Phase 1	<1	48 JDB	23 JDB	24	<1	1.2	2	<1	<1	<1
WND-02D	D	5/10/01	Phase 2	<1.0	6.9	6.9	2.3	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
WND-02S	S	12/1/97	Phase 1	<1	7.8 JDB	1.9 JDB	<1	<1	2	2.3	<1	<1	<1
WND-02S	S	5/10/01	Phase 2	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
WND-03S	S	6/16/98	Phase 1	<1	72	760	3.3	<1	6.9	25	<1	<1	7.4
WND-03S	S	5/2/01	Phase 2	<1.0	30	240	46	<1.0	2.5	12	<1.0	<1.0	5.7
WND-04S	S	6/15/98	Phase 1	1.1	550	77	1.2	12	3.9	31	<1	<1	<1
WND-04S	S	5/2/01	Phase 2	<1.0	120	41	<1.0	1.5	<1.0	5.1	<1.0	<1.0	<1.0
WND-07S	S	12/5/97	Phase 1	5.5	55 JDB	8.2 JDB	<1	<1	<1	<1	<1	<1	<1
WND-07S	S	5/9/01	Phase 2	<1.0	5.4	6.4	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
WND-12D	D	12/1/97	Phase 1	<1	37 JDB	3.3 JDB	<1	2.1	4.9	5.7	2.2	4.2	<1
WND-12D	D	5/3/01	Phase 2	<1.0	18	1.4	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
WND-12S	S	12/1/97	Phase 1	3.4	13 JDB	3.7 JDB	16	100	670	300	<1	2.3	2.2
WND-12S	S	5/3/01	Phase 2	<1.0	1.4	3.7	7.1	1.5	43	33	<1.0	<1.0	<1.0
WND-15D	D	12/4/97	Phase 1	<1	24 JDB	2 JDB	<1	<1	<1	<1	1.6	2.4	<1
WND-15D	D	5/4/01	Phase 2	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
WND-15S	S	12/4/97	Phase 1	<1	13 JDB	<1	<1	<1	<1	<1	<1	<1	<1
WND-15S	S	5/4/01	Phase 2	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
WND-18D	D	12/5/97	Phase 1	<1	360	90 JDB	9.1	3.3	4.5	15	<1	<1	<1
WND-18D	D	5/9/01	Phase 2	<1.0	170	80	15	<1.0	4.8	14	<1.0	<1.0	<1.0

Table 5-12b
North Industrial Corridor (NIC) Site
Comparison of Site VOCs in Monitoring Well Samples, Phase 1 and Phase 2

Station	Depth Zone	Sample Date	Investigation	PCE (µg/L)	TCE (µg/L)	C12DCE (µg/L)	VC (µg/L)	TCA (µg/L)	11DCA (µg/L)	11DCE (µg/L)	CCL4 (µg/L)	CFM (µg/L)	BEN (µg/L)
WND-18S	S	12/5/97	Phase 1	<1	**13 JDB**	<1	<1	<1	<1	<1	<1	<1	<1
WND-18S	S	5/9/01	Phase 2	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
WND-19D	D	12/3/97	Phase 1	<1	**330**	**51 JDB**	**2.3**	<1	**1.3**	**3.6**	<1	<1	<1
WND-19D	D	5/9/01	Phase 2	<1.0	**150**	**37**	**5.5**	<1.0	**1.7**	**5.2**	<1.0	<1.0	<1.0
WND-19S	S	12/3/97	Phase 1	<1	**110**	**17 JDB**	<1	<1	<1	<1	<1	<1	<1
WND-19S	S	5/9/01	Phase 2	<1.0	**14**	**1.6**	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
WND-20S	S	12/3/97	Phase 1	<1	**29 JDB**	**3.9 JDB**	**1.1**	<1	<1	<1	<1	<1	<1
WND-20S	S	5/8/01	Phase 2	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
WND-21D	D	12/2/97	Phase 1	<1	**400**	**77 JDB**	**1.2**	**12**	**5.4**	**32**	**2.9**	**1.8**	<1
WND-21D	D	5/4/01	Phase 2	<1.0	**230**	**86**	**22**	**2.9**	**7.5**	**21**	**1.5**	**1.6**	**5.2**
WND-21S	S	12/2/97	Phase 1	<1	**14 JDB**	**92 JDB**	<1	<1	**2.5**	**5.5**	<1	<1	<1
WND-21S	S	5/4/01	Phase 2	<1.0	**2.9**	**55**	**1.4**	<1.0	**1.2**	**3.1**	<1.0	<1.0	<1.0
WND-22D	D	12/2/97	Phase 1	<1	**5.1 JDB**	<1	<1	<1	<1	<1	<1	<1	<1
WND-22D	D	5/1/01	Phase 2	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
WND-22S	S	12/2/97	Phase 1	<1	**10 JDB**	<1	<1	<1	<1	<1	<1	<1	<1
WND-22S	S	5/1/01	Phase 2	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
WND-24D	D	12/8/97	Phase 1	<1 JS	**220**	**49 JDB**	**6.5**	**2**	<1	**7.6**	<1	<1	<1
WND-24D	D	5/9/01	Phase 2	<1.0	**130**	**44**	**6.8**	<1.0	**1.7**	**3.1**	<1.0	<1.0	<1.0
WND-24S	S	12/8/97	Phase 1	<1	**50 JDB**	**13 JDB**	<1	<1	<1	<1	<1	<1	<1
WND-24S	S	5/9/01	Phase 2	<1.0	**79**	**24**	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
WND-27S	S	12/9/97	Phase 1	**6.8**	**21 JDB**	<1	<1	<1	<1	<1	<1	<1	**6.2**
WND-27S	S	5/9/01	Phase 2	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
WND-28S	S	12/1/97	Phase 1	<1	**12 JDB**	**1 JDB**	<1	<1	<1	<1	<1	<1	<1
WND-28S	S	5/1/01	Phase 2	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
WND-33D	D	12/3/97	Phase 1	<1	**380**	**150**	**110**	**2**	**12**	**25**	<1	<1	**5.4**
WND-33D	D	5/7/01	Phase 2	<1.0	**43**	**72**	<1.0	<1.0	**4.3**	<1.0	<1.0	<1.0	<1.0
WND-33S	S	12/3/97	Phase 1	<1	**370**	**120**	**70**	**1.8**	**14**	**27**	<1	<1	**4**
WND-33S	S	5/7/01	Phase 2	<1.0	**160**	**100**	**9.4**	<1.0	**3.5**	**2.4**	<1.0	<1.0	<1.0

Table 5-12b
North Industrial Corridor (NIC) Site
Comparison of Site VOCs in Monitoring Well Samples, Phase 1 and Phase 2

Station	Depth Zone	Sample Date	Investigation	PCE (µg/L)	TCE (µg/L)	C12DCE (µg/L)	VC (µg/L)	TCA (µg/L)	11DCA (µg/L)	11DCE (µg/L)	CCL4 (µg/L)	CFM (µg/L)	BEN (µg/L)
WND-34D	D	6/16/98	Phase 1	<1	160	74	31	<1	7.1	10	<1	5.2	230
WND-34D	D	5/4/01	Phase 2	<1.0 JIH	32 JIH	23 JIH	<1.0 JIH	<1.0 JIH	1.7 JIH	1.4 JIH	<1.0 JIH	<1.0 JIH	64 JIH
WND-34S	S	6/16/98	Phase 1	<1	17	33	79	<1	8.5	2.9	<1	<1	120
WND-34S	S	5/4/01	Phase 2	<1.0	11	7.3	5	<1.0	2.3	<1.0	<1.0	<1.0	160
WND-36D	D	12/5/97	Phase 1	<1	400	76 JDB	22	7.8	6.7	35	<1	2.1	2.7
WND-36D	D	5/4/01	Phase 2	<1.0	44	49	15	<1.0	2.2	2.5	<1.0	<1.0	1.2
WND-36S	S	12/5/97	Phase 1	<1	<1	<1	65	<1	9.1	<1	<1	<1	240
WND-36S	S	5/4/01	Phase 2	<1.0	3.2	1.1	<1.0	<1.0	4.6	<1.0	<1.0	<1.0	100
WND-37DR	D	6/16/98	Phase 1	1.4	900	220	12	21	12	70	2.6	3.1	2.9
WND-37DR	D	5/7/01	Phase 2	<1.0	120	37	<1.0	<1.0	5.3	11	<1.0	<1.0	3.3
WND-38D	D	12/4/97	Phase 1	<1	140	26 JDB	4.3	1.3	1.6	5.6	<1	<1	<1
WND-38D	D	5/8/01	Phase 2	<1.0	22	8.1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
WND-38S	S	12/4/97	Phase 1	<1	16 JDB	<1	<1	<1	<1	<1	<1	<1	<1
WND-38S	S	5/8/01	Phase 2	<1.0	3.3	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
WND-39D	D	12/8/97	Phase 1	<1	610	120 JS	54 JS	5	12 JS	34 JS	<1	<1	5.4
WND-39D	D	5/8/01	Phase 2	<1.0	32	13	1.8	<1.0	2.5	1.3	<1.0	<1.0	<1.0
WND-39S	S	12/8/97	Phase 1	<1	47 JDB	7.4 JDB	<1	<1	<1	<1	<1	<1	<1
WND-39S	S	5/8/01	Phase 2	<1.0	29	3	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
WND-44D	D	12/4/97	Phase 1	<1	21 JDB	7.7 JDB	<1	<1	<1	<1	<1	<1	<1
WND-44D	D	5/8/01	Phase 2	<1.0	18	17	2.7	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
WND-44S	S	12/4/97	Phase 1	<1	28 JDB	6.7 JDB	15	<1	2.1	<1	<1	<1	1.8
WND-44S	S	5/8/01	Phase 2	<1.0	<1.0	1.3	23	<1.0	1.8	<1.0	<1.0	<1.0	2.3
WND-45D	D	12/4/97	Phase 1	<1	300	110	8.8	<1	1.9	4.1	<1	<1	<1
WND-45D	D	5/10/01	Phase 2	<1.0	220	54	3.4	<1.0	2	7.2	<1.0	<1.0	<1.0
WND-45S	S	12/4/97	Phase 1	<1	20 JDB	5.6 JDB	<1	<1	<1	<1	<1	<1	<1
WND-45S	S	5/10/01	Phase 2	<1.0	26	7.9	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
WND-47D	D	12/3/97	Phase 1	2.4	590	88 JDB	7.5	<1	4.3	5.1	<1	<1	<1
WND-47D	D	5/9/01	Phase 2	6.1	110	100	4.4	<1.0	2.2	3.8	<1.0	<1.0	<1.0

Table 5-12b
North Industrial Corridor (NIC) Site
Comparison of Site VOCs in Monitoring Well Samples, Phase 1 and Phase 2

Station	Depth Zone	Sample Date	Investigation	PCE (µg/L)	TCE (µg/L)	C12DCE (µg/L)	VC (µg/L)	TCA (µg/L)	11DCA (µg/L)	11DCE (µg/L)	CCL4 (µg/L)	CFM (µg/L)	BEN (µg/L)
WND-47S	S	12/3/97	Phase 1	**9.7**	**170**	**26 JDB**	**1.1**	<1	**1**	**1.2**	<1	<1	<1
WND-47S	S	5/9/01	Phase 2	**6.8**	**180**	**27**	**1.1**	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0

PCE = Tetrachloroethene
TCE = Trichloroethene
C12DCE = cis-1,2-dichloroethene
VC = Vinyl chloride
TCA = 1,1,1-Trichloroethane
11DCA = 1,1-Dichloroethane
11DCE = 1,1-Dichloroethene
CT = Carbon tetrachloride
CFM = Chloroform
BEN = Benzene

Section 6
Data Quality Assessment

Quality assurance (QA) requirements were implemented to maximize delivery of high quality data. Two types of quality control (QC) samples have been evaluated to determine the usability of data generated during the RI. Laboratory QC samples include method blanks, matrix spikes, duplicate analysis, and surrogates. Field QC samples include travel blanks, decontamination rinsate blanks, field duplicates, and performance evaluation samples. Laboratory and field QC samples are discussed below in Sections 6.1 and 6.2, respectively. A data quality summary is provided in Section 6.3.

After performance of a data quality review by CDM on the Phase 1 and 2 data, qualifiers were added to the data, where appropriate. The following qualifiers were added to the NIC data and are defined below:

- E - Value quantified above the linear range of the instrumentation
- J – Result estimated, value measured between the reporting limit and the detection limit
- JDB - Result is estimated due to contamination detected in the decontamination blank
- JTB - Result is estimated due to contamination detected in the travel blank
- JIS – Result is estimated due to low internal standard concentration
- JIH – Result is estimated due to elevated internal standard concentration
- JH - Result is estimated due to holding time violations
- JS – Result is estimated due to surrogate recoveries outside of the control limits
- JP – Result is estimated due to poor performance standard results
- MI – Matrix interference
- UB - Compound was detected in the method blank, travel blank, or decontamination blank and the sample. The detection limit was raised to the value measured in the sample and is considered not detected
- RA – Rejected. Compound does not recover in an acid preserved matrix

6.1 Laboratory Quality Assurance/Quality Control

As discussed in Section 3, field samples included groundwater, surface water, sediment, soil, and air samples. Laboratory QA/QC was reviewed for all samples to evaluate data quality and the results of that review are presented in this section.

As discussed in the KDHE-approved Quality Assurance Project Plan (QAPP), strict data validation was not performed. Instead, laboratory data review consisted of an assessment of holding times; matrix spikes; duplicate analyses as spike duplicates, surrogate spikes, and method blanks.

6.1.1 Laboratory Matrix Spikes

Matrix spike samples were spiked with a known amount of target analyte before sample preparation and analysis. The calculated percent recovery of the matrix spike is considered to be a measure of the relative accuracy of the total analytical method as well as the effect of the sample matrix on the ability of the methodology to detect specific analytes. Percent recovery (%R) is calculated using the following formula:

$$\%R = \frac{A - X}{T} \times 100$$

Where: %R = Percent recovery
A = Measured value of analyte after the spike is added
X = Measured value of analyte concentration before the spike is added
T = Value of the spike

Phase 1 Data

A total of 39 groundwater samples were analyzed as matrix spikes for VOCs by method SW-846 8260. The %R was acceptable for all spiked compounds in 24 of the 39 matrix spike samples. TCE was recovered outside of the control limits in 15 of the 39 matrix spike samples (recoveries between 10 percent low and 40 percent high). 1,1-DCE and benzene were recovered outside the control limits in one matrix spike sample. Because TCE, 1,1-DCE, and benzene were contained in the unspiked samples at levels above the linear range of the instrument (the laboratory does not dilute samples analyzed as matrix spikes), the matrix spike analysis does not provide accurate information on the laboratory's performance for these compounds in these analytical batches. The laboratory control samples (LCS, blank water spikes) analyzed with these samples had TCE, 1,1-DCE, and benzene recovered within the control limits. All other spiked compounds were recovered within the control limits specified by the laboratory. Based on the matrix spike and laboratory control sample (LCS) analyses, the data produced by Pace are considered to be accurate and no data qualification is necessary.

Phase 2 Data
A total of 37 groundwater and two soil samples were analyzed as matrix spikes by method SW-846 8260. The %R was acceptable in 27 of the 37 matrix spike samples. TCE was recovered above the control limits in 6 matrix spike samples (recoveries up to 7 percent high). 1,1-DCE was recovered above the control limits in 4 of the matrix spike samples, benzene in 3 of the matrix spike samples, and chlorobenzene and toluene in one of the matrix spike samples. In all cases in which TCE and 1,1-DCE were recovered outside of the control limits, high concentrations of these compounds were detected in the original sample. Because the levels of TCE and 1,1-DCE measured in the matrix spike sample were significantly above the upper calibration range of the instrument used to analyze the samples, the LCS was used to determine the accuracy of the analysis in these sample batches. In all cases, the LCS had acceptable results. Results for benzene, chlorobenzene and toluene in the LCS samples associated with the matrix spike samples were all within control limits, indicating that the analyses were accurate. Therefore, based on LCS sample analysis, the data are considered acceptable and no data qualification is necessary.

The matrix spike samples analyzed for lead (3), nitrate+nitrite (9), ammonia (8), total Kjedhal nitrogen (TKN) (7), total organic carbon (TOC) (8), gasoline range organics (GRO) (8), diesel range organics (DRO) (8), biochemical oxygen demand (BOD) (1), chloride (8), sulfate (8), alkalinity (5), mercury (9), metals (9), pesticides (11), PCBs (11), and semivolatile organics (11) all had acceptable results.

6.1.2 Laboratory Surrogates

Surrogates were added to all water samples analyzed for VOCs before analysis with a mixture of compounds that were considered to behave similarly during analysis, but were not identical to analytes potentially found in naturally-occurring sample matrices. Interferences having an effect on the actual sample will have a similar effect on the surrogate compounds spiked. %R values for the surrogate compounds can be used to assess the validity of the reported analyte concentrations. %R is calculated using the following formula:

$$\%R = \frac{A}{T} \times 100$$

Where: %R = Percent recovery
A = Measured value of analyte after the spike is added
T = Value of the spike

Phase 1 Data
A total of 145 surrogates were recovered low in 105 of 707 samples analyzed for VOCs. Surrogate recoveries outside of control limits ranged from 10 percent to 78 percent. In 81 of the samples with surrogate recoveries outside of the control limits, the recovery did not have a negative impact on the sample data (the surrogate recoveries were less than 5 % outside of the control limits). Twenty-three samples

had compounds qualified "JS" estimated due to surrogate recoveries outside of the control limits. Only compounds associated with out of control surrogate recoveries have been qualified. In some cases the only compounds qualified were associated with the re-analysis of the sample from a secondary dilution. All other surrogate compounds were recovered within the control limits specified by the lab. Table 6-1a provides a summary of sample surrogate recoveries outside of the control limits and indicates which samples were qualified. Table 6-1b details the specific compounds that were JS-qualified for the sample locations noted in Table 6-1a. Except for the JS-qualified results discussed above, based on surrogate recoveries, all Phase 1 data are considered acceptable and no data qualification is necessary.

Phase 2 Data

A total of 34 surrogates were recovered low in 23 of 888 samples analyzed for VOCs. Surrogate recoveries outside of control limits ranged from 59 percent to 78 percent. The out-of-control surrogate recoveries did not have a negative impact on the associated sample data because of obvious matrix interferences in the samples (hydrocarbon interferences in the samples). Fourteen surrogates compounds in 11 samples for the SVOCs and four surrogates in four samples analyzed for pesticides and PCBs were recovered outside of the control limits. The out-of control surrogate recoveries did not have a negative impact on the associated sample data because of obvious matrix interferences (hydrocarbons) in the samples. All other surrogate compounds were recovered within the control limits specified by the lab. Based on surrogate recoveries, all Phase 2 data are considered acceptable and no data qualification is necessary.

6.1.3 Laboratory Method Blanks

Method blanks are laboratory pure water that has been processed through all procedures, materials, reagents, and labware used for sample preparation and analysis. Method blanks were analyzed at a frequency of one per batch.

Phase 1 Data

A total of 116 method blanks were analyzed with the VOCs by SW-846 method 8260. Methylene chloride (MC) (a common laboratory contaminant) was detected in 28 of the method blanks analyzed. MC was not detected in the associated samples above 10 times the blank result indicating that the MC results are due to laboratory contamination based on EPA guidelines for organic data validation (EPA National Functional Guidelines for Data Review, Publication Number 9240.1-05, 1994). EPA guidance allows the data user to qualify positive results in the field sample that are less than 10 times the blank result for common laboratory contaminants and less than 5 times the blank results for all other compounds with a "UB," not detected, and raise the detection limit to the result reported. Results for MC reported above the detection limit in associated samples have been qualified with a "UB" and are considered not detected. Table 6-2 presents a summary of qualified samples results due to method blank contamination. No other target compounds were detected in the method blanks and the method blank results are considered acceptable.

Phase 2 Data

A total of 161 method blanks were analyzed with the VOCs by SW-846 method 8260. MC was detected in 2 of the method blanks at 3.5 and 4.0 µg/L. Because MC was not detected above 10 times the blank result in the associated samples, positive results for MC in the associated samples have been qualified as not detected "UB". Naphthalene and 1,2,3-trichlorobenzene were detected in one method blank each and n-butylbenzene and p-isopropyltoluene were detected in two method blanks. Because the results in the associated samples were less than 5 times the result in the method blanks for these compounds, the results above the reporting limit in associated samples have been qualified with a "UB" and are considered not detected. Table 6-2 presents a summary of qualified sample results due to method blank contamination. No other target compounds were detected in the method blanks and the method blank results are considered acceptable.

6.1.4 Laboratory Duplicates (Matrix Spike Duplicates)

The laboratory duplicates are duplicates of the laboratory matrix spike samples. Laboratory duplicates were prepared by treating a subsample of the matrix spike sample exactly the same. The relative percent difference (RPD) between the values of the matrix spike (MS) and matrix spike duplicate (MSD) is taken as a measure of precision of the analytical method. RPD is calculated using the following formula:

$$RPD = \frac{D_1 - D_2}{(D_1 + D_2) \times 0.5} \times 100$$

Where: RPD = Relative percent difference
D_1 = First sample value
D_2 = Second sample value (duplicate)

Phase 1 Data

The RPD of the spiked compounds in the 39 matrix spike and matrix spike duplicates analyzed by the lab were within the established limits specified by the laboratory for 26 of the matrix spike samples. The RPD for TCE in 13 of the matrix spike and matrix spike duplicate samples was outside of the control limit of ±16 percent due to high analyte concentration in the sample. RPDs outside of the control limit ranged from 17 to 36 percent for TCE. The RPD for 1,1-DCE, toluene, and chlorobenzene was outside of the control limits in two of the matrix spike and matrix spike duplicate samples. Because the LCS and laboratory control sample duplicate (LCSD), defined as blank water spikes and blank water spike duplicates were acceptable for these batches of samples (the laboratory does not dilute samples analyzed as matrix spike duplicates), no qualification of the data is necessary. The frequency of laboratory duplicate analyses was acceptable. From these data, the precision (reproducibility) of the analytical method is acceptable. Based on the laboratory duplicate RPDs, the Phase 1 data are considered acceptable and no data qualification is necessary.

Phase 2 Data
A total of 37 groundwater and two soil samples were analyzed as matrix spike duplicates by method SW-846 8260. The RPD was acceptable in 22 of the 37 matrix spike samples. TCE was recovered outside of the control limits of ±16 percent in 10 MSD samples. RPDs outside of the control limit ranged from 17 to 41 percent for TCE. 1,1-DCE was recovered outside of the control limits in 6 of the MSD samples, benzene in three of the MSD samples, chlorobenzene in two of the MSD samples, and toluene in three of the MSD samples. In all cases where the TCE and 1,1-DCE RPD were outside of the control limits, high concentration of these compounds was detected in the original sample. Because the levels of TCE and 1,1-DCE measured in the MS and MSD sample were significantly above the upper calibration range of the instrument used to analyze the samples, the LCS/LCSD was used to determine the accuracy of the analysis in these batches of samples (the laboratory does not dilute samples analyzed as matrix spike duplicates). In all cases, the LCS/LCSD had acceptable RPD results. Results for benzene, chlorobenzene and toluene in the LCS/LCSD samples associated with the MS/MSD samples were all within control limits, indicating that the analysis was acceptable. These samples had high hydrocarbon concentrations that may have had an effect on the analysis.

The MSD samples analyzed for lead (3), total organic carbon (TOC) (8), gasoline range organics (GRO) (8), diesel range organics (DRO) (8), mercury (9), metals (9), pesticides (11), PCBs (11), and semivolatile organics (11) all had acceptable RPD results.

Laboratory duplicates were analyzed for nitrate+nitrite, TKN, BOD, chloride, sulfate, alkalinity and ammonia. The RPD between the original sample and the laboratory duplicate were all within the laboratory control limits.

Based on the laboratory duplicate RPDs, the Phase 2 data are considered acceptable and no data qualification is necessary.

6.2 Summary of Field QA/QC Results

Field QA/QC samples consisted of travel blanks, decontamination (rinsate) blanks, field duplicates, and performance evaluation samples. Table 6-3 provides a summary of all field QA/QC samples collected during Phase 1 and Phase 2 of the RI.

6.2.1 Travel Blanks

Travel blanks are samples unopened in the field that are submitted for analysis only when samples for VOCs are submitted. Travel blanks consist of analyte free water (or methanol for field extracted soil samples) that accompanies the VOC samples to the laboratory. Travel blanks are used to measure cross contamination that may have occurred during handling in the field, transport, and storage.

Phase 1 Data

During Phase 1 of the NIC investigation, the travel blanks were either pre-packaged analyte-free water samples provided by the analytical laboratory or store-purchased distilled water placed into the HCl-preserved sample vials in the CDM Wichita office. The latter samples were utilized when laboratory-prepared samples were not available. The typical travel blank sample should be transported from the analytical laboratory to the sampling site, and then returned to the laboratory along with the field samples without having been opened in the field. Upon review of the chain-of-custody forms and sample times, some of the travel blanks submitted to the laboratory may not have accompanied the samples at the collection site and may not have been prepared until packaging and shipment of samples to the laboratory. The times that trip blanks were placed in coolers cannot be established with certainty during Phase 1 of the RI since the sample time did not always coincide with the time the sample was placed in the cooler (e.g. the trip blank sample may have been placed in the cooler at the beginning of the day but labeled at the end of the day). However, this uncertainty does not effect the usability of the data.

Field staff was directed to have travel blanks accompany the sample containers from the time of collection to the laboratory during Phase 2 of the RI. Thirty-six travel blanks were submitted to the laboratory for analysis. MC was detected in six of the travel blanks submitted but has been qualified with a "UB" because MC was detected in the associated laboratory method blank as well. Table 6-4 summarizes parameter detection in travel blank samples.

Chloroform was detected in six travel blanks, dibromochloromethane was detected in two travel blanks and bromoform and bromodichloromethane were detected in one travel blank. These trihalomethane compounds are commonly detected in treated drinking water and were not detected in any of the associated field samples with the exception of sample HRI3S-120997, which had a result for chloroform of 26 µg/L. The result in the associated travel blank WND27M-120997 was 7.5 µg/L. Chloroform in sample HRI3S-120997 has been qualified with a JTB and should be considered an estimated value.

1,4-dichlorobenzene was detected in six travel blanks but was not detected in any of the associated samples. TCE and toluene were detected in one travel blank each. Toluene was not detected in any of the associated samples. TCE was detected in associated samples but at levels equal to 10 times the result in the travel blank (1.1 µg/L). Because the results in the associated samples were all 10 times above the travel blank results, no qualification of affected samples data is appropriate.

Trip blanks can serve several purposes. The primary purpose for trip blanks, according to the U.S. EPA, is to determine if samples were contaminated during storage and/or transportation back to the laboratory. Other means by which a trip blank can become contaminated is 1) if the source water is contaminated prior to being placed in the VOA vial, or 2) in the analytical laboratory if the water is exposed

to contaminants in air after the VOA vial has been opened and before the sample is analyzed. The most common compound detected in trip blank samples is methylene chloride, which is commonly used by analytical laboratories and can be attributed to exposure of the trip blank sample to the air in the laboratory. VOA vials have a proven history of using septa that prevent cross contamination of samples in storage or in transit. Trip blank detections are generally attributable to the analytical laboratory or the source water.

The methylene chloride, 1,4-dichlorobenzene, toluene, and trihalomethane detections are considered to be attributable to laboratory contamination and/or source water. With the exception of chloroform, these compounds are not groundwater target compounds and do not effect site data. The source of the TCE detection in one trip blank sample is unknown, however, the magnitude of the detection was significantly lower than detection in field samples, therefore no further action is warranted.

Phase 2 Data

Forty-one travel blanks were submitted to the laboratory for analysis of VOCs by SW-846 method 8260. Chloroform was detected in 10 travel blanks, and trichlorofluoromethane was detected in one travel blank. These trihalomethanes compounds are commonly detected in treated drinking water and were not detected in any of the associated field samples. MC was detected in one of the travel blanks submitted but has been qualified with a "UB" because MC was detected in the associated laboratory method blank as well. Chlorobenzene was detected in three of the travel blanks but was not detected in any of the associated samples. Table 6-4 summarizes parameter detection in travel blank samples.

6.2.2 Decontamination Rinsate Blanks

Decontamination (rinsate) blanks were prepared from rinsate water derived from the decontamination of sampling equipment (Geoprobe rods or Grundfos sampling pumps). The sample is collected after the final decontamination rinse with analyte free water (store-purchased distilled water).

Phase 1 Data

A total of 32 decontamination rinsate blanks were collected during Phase 1 and submitted to the laboratory for analysis of VOCs by SW-846 method 8260. Table 6-5 presents a summary of detected parameters in decontamination rinsate blanks. Table 6-6 presents a summary of sample results qualified due to decontamination rinsate blank contamination (JDB-qualified).

Chloroform was detected in seven of the decontamination rinsate blanks and bromodichloromethane and dibromochloromethane were detected in one of the decontamination rinsate blanks. These three trihalomethane compounds are commonly contained in treated drinking water. These compounds were not detected in the associated samples so no corrective action has been performed. MC (a common laboratory contaminant) was detected in five of the decontamination rinsate blanks.

Because MC was reported in the associated laboratory method blanks analyzed with these samples at levels within 10 times the values of the samples, all MC detections in these decontamination rinsate blanks have been qualified "UB" not detected, blank contaminated.

TCE and *cis*-1,2-DCE were detected in two decontamination rinsate blanks collected with the monitoring well samples. In blank sample WND-19N, TCE was detected at 42 µg/L and *cis*-1,2-DCE was detected at 2.1 µg/L. In blank sample WND-18N, TCE was detected at 27 µg/L and *cis*-1,2-DCE was detected at 2.1 µg/L. These two decontamination rinsate blanks were collected after decontamination of a Grundfos pump used for sampling from monitoring wells.

It appears that the tubing used on the pump during the December monitoring well sampling was compromised by petroleum hydrocarbon contamination. Standard decontamination procedures were likely insufficient to remove all the petroleum hydrocarbon contamination. The petroleum hydrocarbon contamination would adsorb TCE and *cis*-1,2-DCE. Complete decontamination of the tubing utilizing standard decontamination (Alconox rinses followed by tap water rinses and then distilled water rinses) appears to be insufficient. The apparent inability to completely decontaminate the petroleum hydrocarbon contamination from the Grundfos pump tubing may have resulted in low level TCE and *cis*-1,2-DCE contamination of monitoring well samples collected during December 1997. As a result, all values for TCE and *cis*-1,2-DCE below 100 µg/L in samples collected in December 1997 using a Grundfos pump have been qualified with a "JDB". A total of 37 Phase 1 monitoring well samples have been JDB-qualified.

Subsequent monitoring well sampling methods have been revised to stipulate that the groundwater sample will be collected by a disposable or dedicated bailer after purging a monitoring well with a pump. Sampling through a Grundfos pump system will only be allowed where disposable tubing is utilized.

TCE was detected in four decontamination rinsate blanks collected with the Geoprobe samples. The rinsate blank identified as GPA-25-1-29N-120997 contained TCE at 3.9 µg/L. The sample collected immediately after this rinsate blank (GPA-25-2-20-120997) contained TCE at 6 µg/L and has been qualified JDB. The rinsate blank identified as GPA-23-2-35N-121197 contained TCE at 2.4 µg/L. The sample collected immediately after this rinsate blank (GPA-24-1-20-121198) contained TCE at 12 µg/L and has been qualified JDB. The samples collected after the TCE-contaminated rinsate blanks GPA-62-4-33N-011498 and GPA-16-4-38N-060998 did not have detections of TCE above the reporting limit. Therefore, qualification of the data is not appropriate.

Phase 2 Data
A total of 24 decontamination rinsate blanks were collected and submitted to the laboratory for analysis of VOCs by SW-846 method 8260 during Phase 2 of the investigation.

Table 6-5 presents a summary of the detected parameters in the decontamination rinsate blanks. Of the 24 rinsate blank samples collected during Phase 2 of the RI, 22 were collected during Geoprobe groundwater sampling, one during monitoring well sampling, and one during sediment sampling.

Dibromochloromethane was detected in the decontamination rinsate blank labeled NIC-GPW-GP02B-03N-33-121299. Dibromochloromethane was not detected in the associated samples. No compounds were detected in the other 21 Phase 2 Geoprobe rinsate blank samples. No compounds were detected in the rinsate blank collected during sediment sampling.

All monitoring well samples were collected via disposable tubing or bailers, therefore no decontamination rinsate blanks were required during monitoring well sampling. One rinsate blank sample, NIC-GW-WND-21DN-050401, was collected to evaluate decontamination of the Grundfos pump used to purge selected monitoring wells. TCE, 1,1-DCE, cis-1,2-DCE, chloroform and bromodichloromethane were detected at 37, 1.0, 8.2, 3.6, and 2.1 µg/L, respectively, in this decontamination rinsate blank sample. Because the samples from monitoring wells were collected using disposable bailers, the risk of cross contamination between monitoring wells is minimal and qualification of the associated sample data is not appropriate.

6.2.3 Field Duplicate Samples

Field duplicates were collected as co-located samples, collected identically and consecutively over a minimum period of time. This type of field duplicate provides a measure of the system variability (field and laboratory) including the variability component resulting from the inherent heterogeneity of the field sources. The RPD between the values of the original sample and the duplicate sample is taken as a measure of precision of the field and analytical method. RPD is calculated as previously discussed in Section 6.1.4. Table 6-7a presents a comparison of field duplicate results with corresponding sample results for groundwater compounds. Field duplicate results for other detected parameters are presented in Table 6-7b.

Phase 1 Data
A total of 32 field duplicates were collected during the Phase 1 investigation and submitted for analysis of VOCs by SW-846 method 8260. A total of 160 compounds were detected in the 32 samples with an average RPD of 11.5 percent. Ten of the 160 detected parameters had an RPD above 25 percent, the control limit. The exceedence of the control limits by these detections is not considered significant, as a majority of the detections were less than 10 µg/L. With duplicate samples at low concentrations, high RPDs are common. For example, a concentration of 1.0 µg/L in a sample and 1.5

µg/L in the sample duplicate would result in an RPD of 40% (see Table 6-7a for duplicate sampling results for groundwater compounds). The following table presents a summary of field duplicate results for detected VOCs, including the average RPD:

Parameter	Average RPD (%)	Total Number of Detections	Total Exceedances (above 25% RPD)
1,1,1-TCA	10.2	2	0
1,1-DCA	8.1	18	1
1,1-DCE	9.6	14	0
Benzene	9.4	4	1
Carbon tetrachloride	36.4	1	1
Chloroform	13.3	2	0
Chloromethane	13.2	3	1
cis-1,2-DCE	7.0	28	0
Ethylbenzene	18.3	3	1
m/p-Xylene	26.5	2	1
Methylene chloride	9.5	5	0
o-Xylene	19.2	2	0
PCE	13.6	6	2
Toluene	13.2	4	0
trans-1,2-DCE	5.5	13	0
TCE	9.4	27	1
Vinyl chloride	9.2	15	1

Based upon an evaluation of the field duplicates, both the field and laboratory methodologies are acceptable. PCE had two of the six RPD results outside of the control limit of plus or minus 25 percent. No other parameter had more than one RPD value outside of the control limits.

Phase 2 Data

A total of 34 field duplicates were collected during the Phase 2 investigation. One field duplicate was collected with a surface water sample, one with a sediment sample and one with an air sample. Twenty-two field duplicates were collected with the Geoprobe groundwater samples and nine field duplicates with the monitoring well groundwater samples.

For the groundwater samples analyzed for VOCs (Geoprobe and monitoring well samples), 29 of the 159 detected parameters had an RPD above 25 percent, the groundwater control limit. The exceedence of the control limits by these detections is not considered significant, as majority of the detections were less than 10 ug/L. Table 6-7a presents a summary of these field duplicate results for groundwater compounds.

The following table presents a summary of field duplicate results for detected VOCs, including the average RPD:

Parameter	Average RPD(%)	Total Number of Detections	Total Exceedances (above 25% RPD)
1,1,1-TCA	18.9	7	2
1,1-DCA	7.1	20	2
1,1-DCE	12.1	20	3
Benzene	9.1	3	0
Carbon tetrachloride	14.2	2	0
Chloroform	4.2	3	0
cis-1,2-DCE	12.4	27	5
PCE	21.1	6	3
TCE	17	27	6
Vinyl chloride	9.5	19	3
Toluene	6.8	1	0
Chloromethane	25.0	1	0
Chloroethane	5.1	1	0
1,2-DCP	7.4	1	0
trans-1,2-DCE	17.9	19	5

The field duplicates collected with the sediment and surface water samples were analyzed for VOCs by SW-846 method 8260, SVOCs by SW-846 method 8270, pesticides/PCBs by SW-846 method 8081/8082 and diesel range organics (DRO) by method OA2 for sediments only. Of the five detected parameters in these samples, one compound (2-methylnaphthalene) had an RPD above 25%. Table 6-7b presents a summary of the field duplicate results for detected parameters only.

One groundwater duplicate sample was collected and analyzed for total and dissolved metals and two groundwater duplicate samples were collected and analyzed for conventional parameters (alkalinity, chloride, ammonia, nitrate, nitrite, nitrate+nitrite, sulfate, TDS, TSS, and TOC). Of the forty-five detected parameters in these samples, two parameters (TKN and dissolved selenium) had an RPD above 25%. In both of these situations, the results were near the reporting limit for these parameters where duplicate precision is difficult to achieve.

Inter-method Duplicates

A total of five inter-method duplicates were collected during Phase 2 of the investigation to assess the comparability of collecting groundwater samples by two different methods from small diameter monitoring wells. The two different sampling techniques compared were 1) collecting the sample via gravity drainage from the bottom of the tubing after purging with a peristaltic pump and then crimping and pulling the tubing, and 2) collecting the sample via gravity drainage from the bottom of the tubing after purging using a check valve. Table 6-7c presents the sampling

results for the two methods. Figure 6-1 is a scatter plot showing the correlation between the two methods. The scatter plot shows that no systematic bias exists between the two methods. Therefore, neither sampling method generates analytical results that are systematically higher or lower than the other method.

6.2.4 Performance Evaluation (PE) Samples

Performance evaluation (PE) samples are materials of known composition that have undergone independent multi-laboratory analysis using standard methods. PE samples are used to independently evaluate accuracy of laboratory results.

Phase 1 Data

Four PE sample were submitted to the laboratory for analysis of VOCs during Phase 1 of the investigation. Each compound in the PE sample had a range of acceptable limits assigned by the supplier of the sample. Table 6-8 is a summary of the PE sample results and acceptable limits. Twelve of the 78 compounds reported in the four PE samples were reported outside of the established control limits. MC was reported outside of the control limits in three of the samples, and 1,2-dichloropropane was reported outside of the control limits in two of the samples. VC was the only Site groundwater target compound that was recovered outside of the control limits in PE sample NIC-32223XP-010498. All other target compounds from the NIC site were recovered within the control limits. Samples qualified as estimated due to poor performance standard results have been assigned a "JP" qualifier. JP-qualified sample results are presented in Table 6-11. Except for the JP-qualified results discussed above, based on PE sample results, all Phase 1 data are considered acceptable and no data qualification is necessary.

Phase 2 Data

A total of 16 PE samples were submitted to the laboratory for analysis of VOCs during Phase 2 of the investigation. The PE sample identified as NIC-GW-WND-12DP-050301 was analyzed a second time and reported as NIC-GW-WND-12DP2-050301. Table 6-8 is a summary of the PE sample results. Eighty-eight of the 340 compounds reported in the 17 PE samples were reported outside of the control limits. Three of the PE samples (NIC-GW-WND-12DP-050301, NIC-GW-WND-12DP2-050301 and NIC-GW-WNC-16DP-051001) had all compounds reported outside of the control limits. In all three of the samples, the results were generally not detected indicating that these samples were either mislabeled in the lab or a mistake was made during the spiking of these samples. VC was the only Site groundwater target compound that was recovered outside of the control limits in sample NIC-GW-WND-01SP-050801. Samples qualified as estimated due to poor performance standard results have been assigned a "JP" qualifier. JP-qualified sample results are presented in Table 6-11. Except for the JP-qualified results discussed above, based on PE sample results, all Phase 2 data are considered acceptable and no data qualification is necessary.

6.2.5 Sample Holding Time Violations

With the exception of 10 out of 707 samples during Phase 1/1A of the investigation and 6 out of 888 samples during Phase 2 of the investigation, all samples were analyzed within recommended holding times. Fifteen of the samples were analyzed either 18 or 19 days after collection and are not considered to have grossly exceeded the 14-day holding time. One sample, NMW-34S2Q (a field duplicate) was analyzed 29 days past the holding time. Results for these samples are qualified as "estimated JH." Table 6-9 presents a summary of sample results qualified due to holding time violations.

In addition, a total of seventy-seven parameters in 47 samples were analyzed outside of the holding times because of a secondary dilution during the VOC analysis. The sample was originally analyzed within the holding times but some of the parameters were measured above the calibration range of the instrument. A secondary dilution was needed to bring the parameter results within the calibration range and to get an accurate quantitation. These results have been qualified with an "H" but should be considered usable.

6.3 Summary

Phase 1 Investigation

The data produced during Phase 1 of the NIC RI/FS have been reviewed and are considered to be of high quality. With the exception of minor problems identified above and qualified, the data are useable for intended purposes. Ten samples were analyzed outside of holding times of 14-days from sample collection, but did not grossly exceed the holding times.

During the monitoring well sampling, incomplete decontamination of the sampling equipment was identified through the evaluation of decontamination rinsate blanks. An evaluation of the results for samples associated with these contaminated blank samples was completed and sample results have been qualified as indicated in the previous discussions. A total of 37 monitoring well samples had TCE and/or *cis*-1,2-DCE qualified with a "JDB" during Phase 1 of the RI.

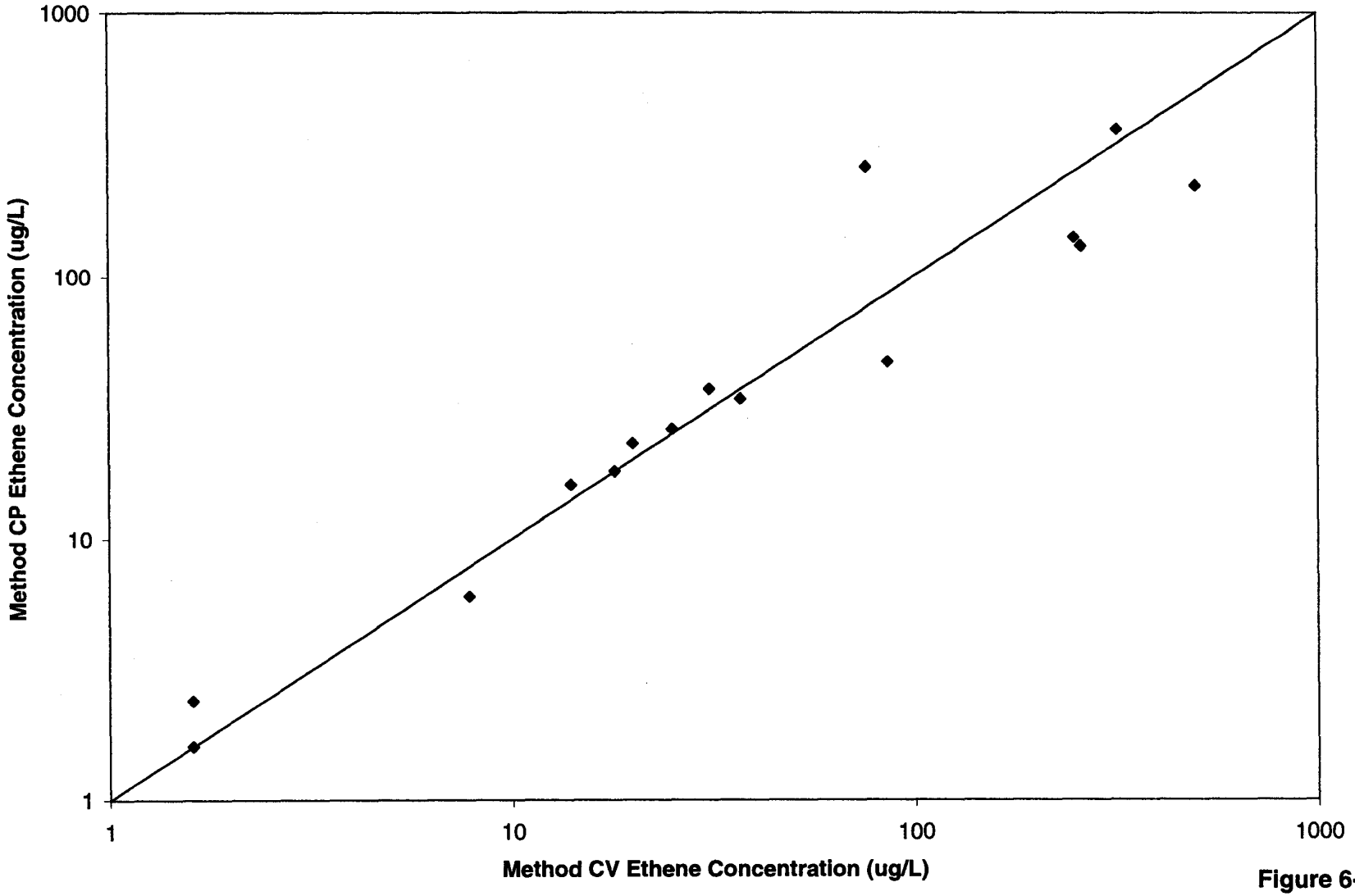
The project laboratory successfully analyzed the four performance evaluation samples submitted. With the exception of vinyl chloride in one of the samples, all of the site compounds of concern were reported within the control limits.

The data quality review also included a review of transcription accuracy between sample IDs recorded on the field chain-of-custody forms and laboratory analytical data sheets. Table 6-10 presents a summary of incorrect laboratory sample IDs and their corresponding corrected CDM IDs. The majority of the incorrect sample IDs in Table 6-10 were due to the laboratory information management system's inability to incorporate the "#" symbol that was part of many sample IDs during Phase 1 of the RI. All laboratory data sheets, corrected as necessary, are presented in Appendix I.

Phase 2 Investigation

The data produced during Phase 2 of the NIC RI/FS have been reviewed and is considered to be of high quality. With the exception of minor problems identified above and qualified, the data are useable for intended purposes. Five samples were analyzed initially outside of holding times of 14-days from sample collection, but did not grossly exceed the holding times. Another 47 samples had individual parameters reported and analyzed outside of the holding times after the initial analysis was analyzed within the holding times and the dilution of the sample for specific compounds was analyzed outside of the holding times. These samples have been qualified with an "H" but should be considered usable for project purposes.

2-chloroethylevinyl ether has been rejected in twenty-five groundwater samples. 2-chloroethylvinyl ether is not recovered in a matrix that has been preserved with HCl. Two samples have been qualified because the internal standard concentrations in the samples were outside of the control limits. NIC-GW-WND-34D-050401 and NIC-GPW-GP03B-06-29-111299 have been qualified as estimated "JIH" and "JIS", respectively.



CDM

Figure 6-1
North Industrial Corridor (NIC) Site
Comparison of Inter-Method Duplicate Sampling Results

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Table 6-1a
North Industrial Corridor (NIC) Site
Summary of Sample Surrogate Recoveries Outside of the Control Limits

Investigation	Sample ID	Sample Date	Compound	Result (%)	Sample Results Qualified?
Phase 1	NIC-GW-WND33D-120397	12/3/1997	Dibromofluoromethane (S)	79	
Phase 1	NIC-GPW-GPA29-2-20-120497	12/4/1997	Toluene-d8 (S)	123	
Phase 1	NIC-GPW-GPA29-3-20-120497	12/4/1997	Dibromofluoromethane (S)	123	
Phase 1	NIC-GPW-GPA37-1-20-120597	12/5/1997	Toluene-d8 (S)	114	
Phase 1	NIC-GPW-GPA37-1-30-120597	12/5/1997	Toluene-d8 (S)	132	
Phase 1	NIC-GPW-GPA38-2-27-120597	12/5/1997	Toluene-d8 (S)	114	
Phase 1	NIC-GW-WND-36SQ1-12-05-97	12/5/1997	4-Bromofluorobenzene (S)	125	
Phase 1	NIC-GW-WND24D-120897	12/8/1997	Dibromofluoromethane (S) %	118	Yes
Phase 1	NIC-GW-WND24D-120897	12/8/1997	Toluene-d8 (S)	83	Yes
Phase 1	NIC-GW-WND24S-120897	12/8/1997	Dibromofluoromethane (S)	120	
Phase 1	NIC-GW-WND39D-120897	12/8/1997	Dibromofluoromethane (S)	120	Yes
Phase 1	NIC-GW-WND39S-120897	12/8/1997	Dibromofluoromethane (S)	123	Yes
Phase 1	NIC-GW-HRI3S-120997	12/9/1997	Toluene-d8 (S)	115	Yes
Phase 1	NIC-GPW-GPA24-2-36Q1-121197	12/11/1997	Toluene-d8 (S)	114	
Phase 1	NIC-GPW-GPA03-3-20-12-15-97	12/15/1997	Dibromofluoromethane (S) %	85	Yes
Phase 1	NIC-GPW-GPA05-2-20-12-15-97	12/15/1997	Toluene-d8 (S)	142	
Phase 1	NIC-GPW-GPA07-4-20-121797	12/17/1997	4-Bromofluorobenzene (S)	129	Yes
Phase 1	NIC-GPW-GPA07-4-20-121797	12/17/1997	Toluene-d8 (S)	145	Yes
Phase 1	NIC-GPW-GPA07-4-33-121797	12/17/1997	1,2-Dichloroethane-d4 (S)	60	Yes
Phase 1	NIC-GPW-GPA07-4-33-121797	12/17/1997	4-Bromofluorobenzene (S)	134	Yes
Phase 1	NIC-GPW-GPA07-4-33-121797	12/17/1997	Toluene-d8 (S)	195	Yes
Phase 1	NIC-GPW-GPA07-6-35-121797	12/17/1997	Toluene-d8 (S)	120	
Phase 1	NIC-GPW-GPA34-1-20-122397	12/23/1997	Dibromofluoromethane (S)	122	
Phase 1	NIC-GPW-GPA34-1-20-122397	12/23/1997	Toluene-d8 (S)	116	
Phase 1	NIC-GPW-GPA12-3-20-123097	12/30/1997	1,2-Dichloroethane-d4 (S)	0	Yes
Phase 1	NIC-GPW-GPA12-3-20-123097	12/30/1997	Toluene-d8 (S)	187	Yes
Phase 1	NIC-GPW-GPA12-3-33-123097	12/30/1997	1,2-Dichloroethane-d4 (S)	155	Yes
Phase 1	NIC-GPW-GPA12-3-33-123097	12/30/1997	Toluene-d8 (S)	145	Yes
Phase 1	NIC-GPW-GPA12-3-33Q1-123097	12/30/1997	Toluene-d8 (S)	142	Yes
Phase 1	NIC-GPW-GPA12-4-20-123097	12/30/1997	1,2-Dichloroethane-d4 (S)	0	Yes
Phase 1	NIC-GPW-GPA12-4-20-123097	12/30/1997	Toluene-d8 (S)	0	Yes
Phase 1	NIC-GPW-GPA12-4-33-123097	12/30/1997	1,2-Dichloroethane-d4 (S)	70	Yes
Phase 1	NIC-GPW-GPA12-4-33-123097	12/30/1997	4-Bromofluorobenzene (S)	129	Yes
Phase 1	NIC-GPW-GPA12-4-33-123097	12/30/1997	Toluene-d8 (S)	171	Yes
Phase 1	NIC-GPW-GPA12-5-20-123097	12/30/1997	4-Bromofluorobenzene (S)	129	
Phase 1	NIC-GPW-GPA12-6-20-123197	12/31/1997	1,2-Dichloroethane-d4 (S)	31	
Phase 1	NIC-GPW-GPA12-6-20-123197	12/31/1997	Dibromofluoromethane (S)	75	
Phase 1	NIC-GPW-GPA12-6-20-123197	12/31/1997	Toluene-d8 (S)	14	
Phase 1	NIC-GPW-GPA15-1-27-010698	1/6/1998	1,2-Dichloroethane-d4 (S) %	126	Yes
Phase 1	NIC-GPW-GP#50-3-20-010998	1/9/1998	1,2-Dichloroethane-d4 (S)	68	Yes
Phase 1	NIC-GPW-GP#50-3-39-010998	1/9/1998	1,2-Dichloroethane-d4 (S)	66	Yes
Phase 1	NIC-GPW-GP#50-5-20-010998	1/9/1998	Toluene-d8 (S)	114	
Phase 1	NIC-GPW-GPA11-2-20-010998	1/9/1998	1,2-Dichloroethane-d4 (S)	68	Yes
Phase 1	NIC-GPW-GPA11-2-36-010998	1/9/1998	1,2-Dichloroethane-d4 (S) %	127	Yes
Phase 1	NIC-GPW-GPA12-2-20-010998	1/9/1998	1,2-Dichloroethane-d4 (S)	139	Yes
Phase 1	NIC-GPW-GPA12-2-20-010998	1/9/1998	4-Bromofluorobenzene (S)	667	Yes
Phase 1	NIC-GPW-GPA12-2-20-010998	1/9/1998	Dibromofluoromethane (S)	34	Yes
Phase 1	NIC-GPW-GPA12-2-20-010998	1/9/1998	Toluene-d8 (S)	576	Yes
Phase 1	NIC-GPW-GPA12-2-36-010998	1/9/1998	1,2-Dichloroethane-d4 (S)	48	Yes
Phase 1	NIC-GPW-GPA12-2-36-010998	1/9/1998	Toluene-d8 (S)	140	Yes
Phase 1	NIC-GPW-GP#56-3-20-011398	1/13/1998	Toluene-d8 (S)	164	
Phase 1	NIC-GPW-GP#56-3-38-011398	1/13/1998	Toluene-d8 (S)	126	Yes

Table 6-1a
North Industrial Corridor (NIC) Site
Summary of Sample Surrogate Recoveries Outside of the Control Limits

Investigation	Sample ID	Sample Date	Compound	Result (%)	Sample Results Qualified?
Phase 1	NIC-GPW-GP#56-6-20-011498	1/14/1998	Toluene-d8 (S)	82	
Phase 1	NIC-GPW-GP#56-7-20-011498	1/14/1998	4-Bromofluorobenzene (S)	180	
Phase 1	NIC-GPW-GP#56-7-39-011498	1/14/1998	4-Bromofluorobenzene (S)	128	
Phase 1	NIC-GPW-GP#67-4-20-011598	1/15/1998	4-Bromofluorobenzene (S)	148	
Phase 1	NIC-GPW-GP#67-5-20-01-15-98	1/15/1998	4-Bromofluorobenzene (S)	134	
Phase 1	NIC-GPW-GP#34-1-37-012298	1/22/1998	Dibromofluoromethane (S)	123	Yes
Phase 1	NIC-GPW-GP#34-1-37-012298	1/22/1998	Toluene-d8 (S)	114	Yes
Phase 1	NIC-GPW-GP#34-2-35-012298	1/22/1998	Toluene-d8 (S)	115	Yes
Phase 1	NIC-GPW-GPA-42-1-20-052798	5/27/1998	Toluene-d8 (S)	121	
Phase 1	NIC-GPW-GPA-34-5-27-052898	5/28/1998	Toluene-d8 (S)	120	
Phase 1	NIC-GPW-GPA-34-6-20-052898	5/28/1998	Toluene-d8 (S)	114	
Phase 1	NIC-GPW-GPA-40-1-20-052898	5/28/1998	Toluene-d8 (S)	117	
Phase 1	NIC-GPW-GPA-40-1-30-052898	5/28/1998	Toluene-d8 (S)	117	
Phase 1	NIC-GPW-GPA-40-2-20-052898	5/28/1998	Toluene-d8 (S)	116	
Phase 1	NIC-GPW-GPA-40-2-29-052898	5/28/1998	Toluene-d8 (S)	121	
Phase 1	NIC-GPW-GPA-40-2-29M-052898	5/28/1998	Toluene-d8 (S)	120	
Phase 1	NIC-GPW-GPA-40-2-29N-052898	5/28/1998	Toluene-d8 (S)	114	
Phase 1	NIC-GPW-GPA-40-3-20-052898	5/28/1998	Toluene-d8 (S)	118	
Phase 1	NIC-GPW-GPA-40-3-28-052898	5/28/1998	Toluene-d8 (S)	118	
Phase 1	NIC-GPW-GPA-40-4-20-052898	5/28/1998	Toluene-d8 (S)	117	
Phase 1	NIC-GPW-GPA-40-4-29-052898	5/28/1998	Toluene-d8 (S)	120	
Phase 1	NIC-GPW-GPA-29-4-39-052998	5/29/1998	Toluene-d8 (S)	118	
Phase 1	NIC-GPW-GPA-31-10-20-052998	5/29/1998	Toluene-d8 (S)	118	
Phase 1	NIC-GPW-GPA-31-10-27-052998	5/29/1998	Toluene-d8 (S)	116	
Phase 1	NIC-GPW-GPA-31-5-28-052998	5/29/1998	Toluene-d8 (S)	114	
Phase 1	NIC-GPW-GPA-31-6-20-052998	5/29/1998	Toluene-d8 (S)	115	
Phase 1	NIC-GPW-GPA-31-6-26-052998	5/29/1998	1,2-Dichloroethane-d4 (S)	135	Yes
Phase 1	NIC-GPW-GPA-31-6-26-052998	5/29/1998	Dibromofluoromethane (S)	126	Yes
Phase 1	NIC-GPW-GPA-31-6-26-052998	5/29/1998	Toluene-d8 (S)	122	Yes
Phase 1	NIC-GPW-GPA-31-7-30-052998	5/29/1998	Toluene-d8 (S)	223	
Phase 1	NIC-GPW-GPA-31-8-23-052998	5/29/1998	Toluene-d8 (S)	115	
Phase 1	NIC-GPW-GPA-31-8-35-052998	5/29/1998	Toluene-d8 (S)	117	
Phase 1	NIC-GPW-GPA-19-6-20-060198	6/1/1998	Toluene-d8 (S)	114	
Phase 1	NIC-GPW-GPA-19-6-28-060198	6/1/1998	Toluene-d8 (S)	119	
Phase 1	NIC-GPW-GP#-19-4-20-060298	6/2/1998	Toluene-d8 (S)	117	
Phase 1	NIC-GPW-GP#-19-4-28-060298	6/2/1998	Toluene-d8 (S)	115	
Phase 1	NIC-GPW-GPA-19-5-20-060298	6/2/1998	Toluene-d8 (S)	117	
Phase 1	NIC-GPW-GPA-19-5-29-060298	6/2/1998	Dibromofluoromethane (S)	120	
Phase 1	NIC-GPW-GPA-19-5-29-060298	6/2/1998	Toluene-d8 (S)	121	
Phase 1	NIC-GPW-GPA-25-5-20-060298	6/2/1998	Toluene-d8 (S)	118	
Phase 1	NIC-GPW-GP#- 53-1-36 -060398	6/3/1998	4-Bromofluorobenzene (S)	505	
Phase 1	NIC-GPW-GP#-48-2-36-060598	6/5/1998	Dibromofluoromethane (S)	64	
Phase 1	NIC-GPW-GP#-48-2-36-060598	6/5/1998	Toluene-d8 (S)	62	
Phase 1	NIC-GPW-GP#-48-2-36Q1-060598	6/5/1998	Toluene-d8 (S)	80	
Phase 1	NIC-GPW-GP#-34-7-36-060598	6/8/1998	1,2-Dichloroethane-d4 (S)	135	
Phase 1	NIC-GPW-GP#-35-8-20-060998	6/9/1998	4-Bromofluorobenzene (S)	180	
Phase 1	NIC-GPW-GP#-35-8-20-060998	6/9/1998	Toluene-d8 (S)	59	
Phase 1	NIC-GW-WND-34DQ3-061698	6/16/1998	Dibromofluoromethane (S)	80	
Phase 1	NIC-GW-WND-34DQ3-061698	6/16/1998	Toluene-d8 (S)	82	
Phase 1	NIC-GW-WND-34SQ3-061698	6/16/1998	Dibromofluoromethane (S)	81	
Phase 1	NIC-GW-WND-34SQ3-061698	6/16/1998	Toluene-d8 (S)	78	
Phase 2	NIC-GPW-GP#18-1-20-101599	10/15/1999	1,2-Dichloroethane-d4 (S)	183	

Table 6-1a
North Industrial Corridor (NIC) Site
Summary of Sample Surrogate Recoveries Outside of the Control Limits

Investigation	Sample ID	Sample Date	Compound	Result (%)	Sample Results Qualified?
Phase 2	NIC-GPW-GP03E-01-35-102699	10/26/1999	1,2-Dichloroethane-d4 (S)	140	
Phase 2	NIC-GPW-GP04E-01N-29-102599	10/26/1999	Toluene-d8 (S)	80	
Phase 2	NIC GPW-GPO2A-04-27-102899	10/28/1999	1,2-Dichloroethane-d4 (S)	179	
Phase 2	NIC-GPW-GP02C-09-23-110199	11/1/1999	1,2-Dichloroethane-d4 (S)	158	
Phase 2	NIC-GPW-GP02G-03-29-110299	11/2/1999	4-Bromofluorobenzene (S)	39	
Phase 2	NIC-GPW-GP04B-02-41-110399	11/3/1999	Toluene-d8 (S)	82	
Phase 2	NIC-GPW-GP04B-08N-0-110399	11/3/1999	Toluene-d8 (S)	79	
Phase 2	NIC-GPW-GP02C-03-17-111099	11/10/1999	Toluene-d8 (S)	81	
Phase 2	NIC-GPW-GP02C-03N-38-111099	11/10/1999	Toluene-d8 (S)	69	
Phase 2	NIC-GPW-GP03D-03-17-111199	11/11/1999	1,2-Dichloroethane-d4 (S)	146	
Phase 2	NIC-GPW-GP03D-03N-32-111199	11/11/1999	Toluene-d8 (S)	81	
Phase 2	NIC-GPW-GP03B-05-28-111299	11/12/1999	Toluene-d8 (S)	79	
Phase 2	NIC-GPW-GP03B-06-23-111299	11/12/1999	Toluene-d8 (S)	81	
Phase 2	NIC-GPW-GP03C-03-17-111299	11/12/1999	Toluene-d8 (S)	82	
Phase 2	NIC-GPW-GP03C-04-17-111299	11/12/1999	1,2-Dichloroethane-d4 (S)	152	
Phase 2	NIC-GPW-GP03C-04-27-111299	11/12/1999	Toluene-d8 (S)	82	
Phase 2	NIC-GPW-GP03C-06-20-111299	11/12/1999	Toluene-d8 (S)	80	
Phase 2	NIC-GPW-GP03C-07-34-111299	11/12/1999	Toluene-d8 (S)	81	
Phase 2	NIC-GPW-GP03C-07N-34-111299	11/12/1999	Toluene-d8 (S)	80	
Phase 2	NIC-GPW-GP03C-07-Q1-34-111299	11/12/1999	Toluene-d8 (S)	76	
Phase 2	NIC-GPW-GP02I-03N-34-112999	11/29/1999	Toluene-d8 (S)	80	
Phase 2	NIC-GPW-GP03F-04-17-120199	12/1/1999	4-Bromofluorobenzene (S)	75	
Phase 2	NIC-GPW-GP03F-04-30-120199	12/1/1999	4-Bromofluorobenzene (S)	74	
Phase 2	NIC-GPW-GP02C-02-17-120299	12/2/1999	4-Bromofluorobenzene (S)	75	
Phase 2	NIC-GPW-GP02C-02-35-120299	12/2/1999	4-Bromofluorobenzene (S)	74	
Phase 2	NIC-GPW-GP02C-02M-120299	12/2/1999	4-Bromofluorobenzene (S)	76	
Phase 2	NIC-GPW-GP04E-08-17-120299	12/2/1999	4-Bromofluorobenzene (S)	73	
Phase 2	NIC-GPW-GP04E-08-37-120299	12/2/1999	4-Bromofluorobenzene (S)	74	
Phase 2	NIC-GPW-GP04F-03-17-120299	12/2/1999	4-Bromofluorobenzene (S)	73	
Phase 2	NIC-GPW-GP04F-03-35-120299	12/2/1999	4-Bromofluorobenzene (S)	74	
Phase 2	NIC-GPW-GP04G-05-17-120299	12/2/1999	4-Bromofluorobenzene (S)	75	
Phase 2	NIC-GPW-GP04G-05-35-120299	12/2/1999	4-Bromofluorobenzene (S)	73	
Phase 2	NIC-GPW-GP04G-05N-35-120299	12/2/1999	4-Bromofluorobenzene (S)	74	
Phase 2	NIC-GPW-GP04G-05N-35-120299	12/2/1999	Toluene-d8 (S)	81	
Phase 2	NIC-GPW-GP04G-05Q1-35-120299	12/2/1999	4-Bromofluorobenzene (S)	75	
Phase 2	NIC-GPW-GP04G-08-17-120299	12/2/1999	4-Bromofluorobenzene (S)	74	
Phase 2	NIC-GPW-GP04G-08-36-120299	12/2/1999	4-Bromofluorobenzene (S)	75	
Phase 2	NIC-GPW-GP04E-06-17-120399	12/3/1999	4-Bromofluorobenzene (S)	75	
Phase 2	NIC-GPW-GP04E-06-44-120399	12/3/1999	4-Bromofluorobenzene (S)	75	
Phase 2	NIC-GPW-GP04H-03-17-120399	12/3/1999	4-Bromofluorobenzene (S)	75	
Phase 2	NIC-GPW-GP04H-03-32-120399	12/3/1999	4-Bromofluorobenzene (S)	76	
Phase 2	NIC-GPW-GP04H-05-17-120399	12/3/1999	4-Bromofluorobenzene (S)	75	
Phase 2	NIC-GPW-GP04H-05-31-120399	12/3/1999	4-Bromofluorobenzene (S)	74	
Phase 2	NIC-GPW-GP04H-06-20-120399	12/3/1999	4-Bromofluorobenzene (S)	74	
Phase 2	NIC-GPW-GP04H-06M-120399	12/3/1999	4-Bromofluorobenzene (S)	75	
Phase 2	NIC-GPW-GP04H-07-20-120399	12/3/1999	4-Bromofluorobenzene (S)	73	
Phase 2	NIC-GPW-GP04H-07-34-120399	12/3/1999	4-Bromofluorobenzene (S)	73	
Phase 2	NIC-GPW-GP04H-08-20-120399	12/3/1999	4-Bromofluorobenzene (S)	75	
Phase 2	NIC-GPW-GP04H-08-29-120399	12/3/1999	4-Bromofluorobenzene (S)	76	
Phase 2	NIC-GPW-GP04H-06-29-120799	12/7/1999	4-Bromofluorobenzene (S)	74	
Phase 2	NIC-GPW-GP06H-01-17-120799	12/7/1999	4-Bromofluorobenzene (S)	75	
Phase 2	NIC-GPW-GP06H-01-28-120799	12/7/1999	4-Bromofluorobenzene (S)	74	

Table 6-1a
North Industrial Corridor (NIC) Site
Summary of Sample Surrogate Recoveries Outside of the Control Limits

Investigation	Sample ID	Sample Date	Compound	Result (%)	Sample Results Qualified?
Phase 2	NIC-GPW-GP06B-03-17-120899	12/8/1999	Toluene-d8 (S)	82	
Phase 2	NIC-GPW-GP06H-03N-31-120899	12/8/1999	Toluene-d8 (S)	81	
Phase 2	NIC-GPW-GP08B-05-17-121099	12/10/1999	4-Bromofluorobenzene (S)	76	
Phase 2	NIC-GPW-GP08C-02-17-121799	12/17/1999	Toluene-d8 (S)	82	
Phase 2	NIC-GPW-GP08C-04-17-121799	12/17/1999	Toluene-d8 (S)	82	
Phase 2	NIC-GPW-GP08E-01-35-122099	12/20/1999	4-Bromofluorobenzene (S)	76	
Phase 2	NIC-GPW-GP02C-05-17-011400	1/14/2000	4-Bromofluorobenzene (S)	78	
Phase 2	NIC-GPW-GP02C-05-26-011400	1/14/2000	1,2-Dichloroethane-d4 (S)	158	
Phase 2	NIC-GPW-GP04B-13-17-011700	1/17/2000	1,2-Dichloroethane-d4 (S)	166	
Phase 2	NIC-GPW-GP04B-13-17-011700	1/17/2000	4-Bromofluorobenzene (S)	77	
Phase 2	NIC-GPW-GP04B-13-17-011700	1/17/2000	Dibromofluoromethane (S)	73	
Phase 2	NIC-GPW-GP04B-13-35-011700	1/17/2000	1,2-Dichloroethane-d4 (S)	145	
Phase 2	NIC-GPW-GP05A-02-17-011700	1/17/2000	4-Bromofluorobenzene (S)	78	
Phase 2	NIC-GPW-GP05A-04N-29-011700	1/17/2000	Toluene-d8 (S)	70	
Phase 2	NIC-GPW-GP5C-05-35-012600	1/26/2000	4-Bromofluorobenzene (S)	80	
Phase 2	NIC-GPW-GP10F-08-28-030900	3/9/2000	Toluene-d8 (S)	114	
Phase 2	NIC-GPW-GP10F-01N-031000	3/10/2000	Toluene-d8 (S)	82	
Phase 2	NIC-GPW-GP010F-07-36-031400	3/14/2000	Dibromofluoromethane (S)	76	
Phase 2	NIC-GPW-GP010F-09M-031400	3/14/2000	Dibromofluoromethane (S)	76	
Phase 2	NIC PRP-WW 4S-14'	7/18/2000	Toluene-d8 (S)	60	
Phase 2	NIC-SSS-GP10D-02-0-0.5	1/18/2001	4-Bromofluorobenzene (S)	79	
Phase 2	NIC-GW-NMW-34SM-050701	5/7/2001	4-Bromofluorobenzene (S)	74	
Phase 2	NIC-GW-NMW-34SM-050701	5/7/2001	Toluene-d8 (S)	114	
Phase 2	NIC-SD-11-051601	5/16/2001	4-Bromofluorobenzene (S)	79	
Phase 2	NIC-SD-11Q-051601	5/16/2001	4-Bromofluorobenzene (S)	78	
Phase 2	NIC-SD-11Q-051601	5/16/2001	Toluene-d8 (S)	81	
Phase 2	NIC-WFS-15M-071901	7/19/2001	1,2-Dichloroethane-d4 (S)	141	
Phase 2	NIC-WFS-15S-20	7/19/2001	1,2-Dichloroethane-d4 (S)	137	
Phase 2	NIC-WFS-6S-19	7/19/2001	4-Bromofluorobenzene (S)	80	
Phase 2	NIC-GW-NMW-36D-072701	7/27/2001	4-Bromofluorobenzene (S)	79	
Phase 2	NIC-GW-NMW-37D-072701	7/27/2001	4-Bromofluorobenzene (S)	78	
Phase 2	NIC-GW-NMW-38D-072701	7/27/2001	4-Bromofluorobenzene (S)	79	
Phase 2	NIC-GW-NMW-48D-072701	7/27/2001	4-Bromofluorobenzene (S)	78	
Phase 2	NIC-GW-NMW-48S-072701	7/27/2001	4-Bromofluorobenzene (S)	78	
Phase 2	NIC-GW-NMW-48SM-072701	7/27/2001	4-Bromofluorobenzene (S)	77	
Phase 2	NIC-GW-UPRF-MW03-072701	7/27/2001	4-Bromofluorobenzene (S)	77	
Phase 2	NIC-GW-UPRF-MW09-072701	7/27/2001	4-Bromofluorobenzene (S)	76	
Phase 2	NIC-GW-UPRF-MW16-072701	7/27/2001	4-Bromofluorobenzene (S)	80	
Phase 2	NIC-GW-WNC-31D-072701	7/27/2001	4-Bromofluorobenzene (S)	75	
Phase 2	NIC-GW-WNC-32D-072701	7/27/2001	4-Bromofluorobenzene (S)	76	
Phase 2	NIC-GW-WND-31S-072701	7/27/2001	4-Bromofluorobenzene (S)	76	
Phase 2	NIC-GW-WND-32S-072701	7/27/2001	4-Bromofluorobenzene (S)	78	

Table 6-1b
North Industrial Corridor (NIC) Site
Sample Results Qualified Due to Surrogate Recovery Exceedances

Investigation	Sample ID	Compound	Result (µg/L)	Detect Flag	CDM Final Flag
Phase 1	NIC-GPW-GP#34-1-37-012298	1,1-Dichloroethene	9.8		JS
Phase 1	NIC-GPW-GP#34-1-37-012298	Benzene	2.4		JS
Phase 1	NIC-GPW-GP#34-1-37-012298	Chloromethane	5.3		JS
Phase 1	NIC-GPW-GP#34-1-37-012298	cis-1,2-Dichloroethene	99		JS
Phase 1	NIC-GPW-GP#34-1-37-012298	Methylene chloride	1.5		JS
Phase 1	NIC-GPW-GP#34-1-37-012298	trans-1,2-Dichloroethene	2.2		JS
Phase 1	NIC-GPW-GP#34-1-37-012298	Vinyl chloride	73		JS
Phase 1	NIC-GPW-GP#34-1-37-012298	1,1-Dichloroethane	6.2		JS
Phase 1	NIC-GPW-GP#34-2-35-012298	1,1-Dichloroethane	7		JS
Phase 1	NIC-GPW-GP#34-2-35-012298	1,1-Dichloroethene	12		JS
Phase 1	NIC-GPW-GP#34-2-35-012298	Benzene	2.6		JS
Phase 1	NIC-GPW-GP#34-2-35-012298	Chloroethane	2.2		JS
Phase 1	NIC-GPW-GP#34-2-35-012298	cis-1,2-Dichloroethene	110		JS
Phase 1	NIC-GPW-GP#34-2-35-012298	trans-1,2-Dichloroethene	2.1		JS
Phase 1	NIC-GPW-GP#34-2-35-012298	Trichloroethene	220		JS
Phase 1	NIC-GPW-GP#34-2-35-012298	Vinyl chloride	110		JS
Phase 1	NIC-GPW-GP#50-3-20-010998	Benzene	1	U	JS
Phase 1	NIC-GPW-GP#50-3-20-010998	Bromodichloromethane	1	U	JS
Phase 1	NIC-GPW-GP#50-3-20-010998	Trichloroethene	1.1		JS
Phase 1	NIC-GPW-GP#50-3-20-010998	1,2-Dichloropropane	1	U	JS
Phase 1	NIC-GPW-GP#50-3-20-010998	1,1,1-Trichloroethane	1	U	JS
Phase 1	NIC-GPW-GP#50-3-20-010998	1,1-Dichloroethane	1	U	JS
Phase 1	NIC-GPW-GP#50-3-20-010998	Carbon Tetrachloride	1	U	JS
Phase 1	NIC-GPW-GP#50-3-39-010998	Carbon Tetrachloride	1	U	JS
Phase 1	NIC-GPW-GP#50-3-39-010998	Trichloroethene	51		JS
Phase 1	NIC-GPW-GP#50-3-39-010998	Bromodichloromethane	1	U	JS
Phase 1	NIC-GPW-GP#50-3-39-010998	Benzene	1	U	JS
Phase 1	NIC-GPW-GP#50-3-39-010998	1,2-Dichloropropane	1	U	JS
Phase 1	NIC-GPW-GP#50-3-39-010998	1,2-Dichloroethane	1	U	JS
Phase 1	NIC-GPW-GP#50-3-39-010998	1,1,1-Trichloroethane	1	U	JS
Phase 1	NIC-GPW-GP#56-3-38-011398	m,p-Xylene	70		JS
Phase 1	NIC-GPW-GP#56-3-38-011398	Ethylbenzene	42		JS
Phase 1	NIC-GPW-GPA-31-6-26-052998	o-Xylene	1.1	U	JS
Phase 1	NIC-GPW-GPA-31-6-26-052998	1,1,2,2-Tetrachloroethane	1	U	JS
Phase 1	NIC-GPW-GPA-31-6-26-052998	Tetrachloroethene	11		JS
Phase 1	NIC-GPW-GPA-31-6-26-052998	Dibromochloromethane	1	U	JS
Phase 1	NIC-GPW-GPA-31-6-26-052998	Chlorobenzene	1	U	JS
Phase 1	NIC-GPW-GPA-31-6-26-052998	Ethylbenzene	1	U	JS
Phase 1	NIC-GPW-GPA-31-6-26-052998	Bromoform	1	U	JS
Phase 1	NIC-GPW-GPA-31-6-26-052998	1,1,2-Trichloroethane	1	U	JS
Phase 1	NIC-GPW-GPA-31-6-26-052998	1,3-Dichlorobenzene	1	U	JS
Phase 1	NIC-GPW-GPA-31-6-26-052998	1,4-Dichlorobenzene	1	U	JS
Phase 1	NIC-GPW-GPA-31-6-26-052998	1,2-Dichlorobenzene	1	U	JS
Phase 1	NIC-GPW-GPA-31-6-26-052998	cis-1,3-Dichloropropene	1	U	JS
Phase 1	NIC-GPW-GPA-31-6-26-052998	m,p-Xylene	1.3	U	JS

Table 6-1b
North Industrial Corridor (NIC) Site
Sample Results Qualified Due to Surrogate Recovery Exceedances

Investigation	Sample ID	Compound	Result (µg/L)	Detect Flag	CDM Final Flag
Phase 1	NIC-GPW-GPA-31-6-26-052998	Trichlorofluoromethane	1	U	JS
Phase 1	NIC-GPW-GPA-31-6-26-052998	Toluene	1	U	JS
Phase 1	NIC-GPW-GPA-31-6-26-052998	trans-1,3-Dichloropropene	1	U	JS
Phase 1	NIC-GPW-GPA-31-6-26-052998	Methylene chloride	1	U	JS
Phase 1	NIC-GPW-GPA-31-6-26-052998	1,1-Dichloroethene	2.8		JS
Phase 1	NIC-GPW-GPA-31-6-26-052998	Bromodichloromethane	1	U	JS
Phase 1	NIC-GPW-GPA-31-6-26-052998	Chloromethane	1	U	JS
Phase 1	NIC-GPW-GPA-31-6-26-052998	Vinyl chloride	4.9		JS
Phase 1	NIC-GPW-GPA-31-6-26-052998	Bromomethane	1	U	JS
Phase 1	NIC-GPW-GPA-31-6-26-052998	Chloroethane	1	U	JS
Phase 1	NIC-GPW-GPA-31-6-26-052998	trans-1,2-Dichloroethene	4.4		JS
Phase 1	NIC-GPW-GPA-31-6-26-052998	1,1-Dichloroethane	2.5		JS
Phase 1	NIC-GPW-GPA-31-6-26-052998	Chloroform	1	U	JS
Phase 1	NIC-GPW-GPA-31-6-26-052998	1,1,1-Trichloroethane	1	U	JS
Phase 1	NIC-GPW-GPA-31-6-26-052998	Carbon Tetrachloride	1	U	JS
Phase 1	NIC-GPW-GPA-31-6-26-052998	Benzene	1	U	JS
Phase 1	NIC-GPW-GPA-31-6-26-052998	1,2-Dichloroethane	1	U	JS
Phase 1	NIC-GPW-GPA-31-6-26-052998	1,2-Dichloropropane	1	U	JS
Phase 1	NIC-GPW-GPA03-3-20-12-15-97	Vinyl chloride	1	U	JS
Phase 1	NIC-GPW-GPA03-3-20-12-15-97	1,1-Dichloroethene	1	U	JS
Phase 1	NIC-GPW-GPA03-3-20-12-15-97	cis-1,2-Dichloroethene	1	U	JS
Phase 1	NIC-GPW-GPA03-3-20-12-15-97	1,1-Dichloroethane	1	U	JS
Phase 1	NIC-GPW-GPA03-3-20-12-15-97	trans-1,2-Dichloroethene	1	U	JS
Phase 1	NIC-GPW-GPA03-3-20-12-15-97	Chloroform	1	U	JS
Phase 1	NIC-GPW-GPA03-3-20-12-15-97	Methylene chloride	1	U	JS
Phase 1	NIC-GPW-GPA03-3-20-12-15-97	Trichlorofluoromethane	1	U	JS
Phase 1	NIC-GPW-GPA03-3-20-12-15-97	Bromomethane	1	U	JS
Phase 1	NIC-GPW-GPA03-3-20-12-15-97	Chloromethane	1	U	JS
Phase 1	NIC-GPW-GPA03-3-20-12-15-97	Chloroethane	1	U	JS
Phase 1	NIC-GPW-GPA07-4-20-121797	Benzene	1800		JS
Phase 1	NIC-GPW-GPA07-4-20-121797	Ethylbenzene	400		JS
Phase 1	NIC-GPW-GPA07-4-20-121797	m,p-Xylene	610		JS
Phase 1	NIC-GPW-GPA07-4-20-121797	Toluene	160		JS
Phase 1	NIC-GPW-GPA07-4-33-121797	Trichloroethene	110		JS
Phase 1	NIC-GPW-GPA07-4-33-121797	Benzene	180		JS
Phase 1	NIC-GPW-GPA07-4-33-121797	Ethylbenzene	140		JS
Phase 1	NIC-GPW-GPA07-4-33-121797	m,p-Xylene	180		JS
Phase 1	NIC-GPW-GPA07-4-33-121797	Toluene	40		JS
Phase 1	NIC-GPW-GPA11-2-20-010998	1,1,1-Trichloroethane	1	U	JS
Phase 1	NIC-GPW-GPA11-2-20-010998	1,2-Dichloroethane	1	U	JS
Phase 1	NIC-GPW-GPA11-2-20-010998	1,2-Dichloropropane	1	U	JS
Phase 1	NIC-GPW-GPA11-2-20-010998	Benzene	1	U	JS
Phase 1	NIC-GPW-GPA11-2-20-010998	Bromodichloromethane	1	U	JS
Phase 1	NIC-GPW-GPA11-2-20-010998	Carbon Tetrachloride	1	U	JS
Phase 1	NIC-GPW-GPA11-2-20-010998	Trichloroethene	1.4		JS

Table 6-1b
North Industrial Corridor (NIC) Site
Sample Results Qualified Due to Surrogate Recovery Exceedances

Investigation	Sample ID	Compound	Result (µg/L)	Detect Flag	CDM Final Flag
Phase 1	NIC-GPW-GPA11-2-36-010998	Trichloroethene	68		JS
Phase 1	NIC-GPW-GPA12-2-20-010998	cis-1,2-Dichloroethene	1	U	JS
Phase 1	NIC-GPW-GPA12-2-20-010998	Chloroform	1	U	JS
Phase 1	NIC-GPW-GPA12-2-20-010998	Trichlorofluoromethane	1	U	JS
Phase 1	NIC-GPW-GPA12-2-20-010998	Trichloroethene	1	U	JS
Phase 1	NIC-GPW-GPA12-2-20-010998	trans-1,2-Dichloroethene	1	U	JS
Phase 1	NIC-GPW-GPA12-2-20-010998	Toluene	320		JS
Phase 1	NIC-GPW-GPA12-2-20-010998	o-Xylene	81		JS
Phase 1	NIC-GPW-GPA12-2-20-010998	Methylene chloride	1	U	JS
Phase 1	NIC-GPW-GPA12-2-20-010998	Ethylbenzene	670		JS
Phase 1	NIC-GPW-GPA12-2-20-010998	Vinyl chloride	1	U	JS
Phase 1	NIC-GPW-GPA12-2-20-010998	1,1-Dichloroethane	1	U	JS
Phase 1	NIC-GPW-GPA12-2-20-010998	1,1,1-Trichloroethane	1	U	JS
Phase 1	NIC-GPW-GPA12-2-20-010998	Carbon Tetrachloride	1	U	JS
Phase 1	NIC-GPW-GPA12-2-20-010998	Bromomethane	1	U	JS
Phase 1	NIC-GPW-GPA12-2-20-010998	Bromodichloromethane	1	U	JS
Phase 1	NIC-GPW-GPA12-2-20-010998	Benzene	2300		JS
Phase 1	NIC-GPW-GPA12-2-20-010998	1,2-Dichloropropane	1	U	JS
Phase 1	NIC-GPW-GPA12-2-20-010998	1,2-Dichloroethane	1	U	JS
Phase 1	NIC-GPW-GPA12-2-20-010998	1,1-Dichloroethene	1	U	JS
Phase 1	NIC-GPW-GPA12-2-20-010998	Chloroethane	1	U	JS
Phase 1	NIC-GPW-GPA12-2-20-010998	m,p-Xylene	810		JS
Phase 1	NIC-GPW-GPA12-2-36-010998	Toluene	230		JS
Phase 1	NIC-GPW-GPA12-2-36-010998	m,p-Xylene	780		JS
Phase 1	NIC-GPW-GPA12-2-36-010998	Ethylbenzene	320		JS
Phase 1	NIC-GPW-GPA12-2-36-010998	Carbon Tetrachloride	1	U	JS
Phase 1	NIC-GPW-GPA12-2-36-010998	Bromodichloromethane	1	U	JS
Phase 1	NIC-GPW-GPA12-2-36-010998	Benzene	650		JS
Phase 1	NIC-GPW-GPA12-2-36-010998	1,2-Dichloropropane	1	U	JS
Phase 1	NIC-GPW-GPA12-2-36-010998	1,1,1-Trichloroethane	1.3		JS
Phase 1	NIC-GPW-GPA12-2-36-010998	1,2-Dichloroethane	1	U	JS
Phase 1	NIC-GPW-GPA12-3-20-123097	Bromodichloromethane	1	U	JS
Phase 1	NIC-GPW-GPA12-3-20-123097	Trichloroethene	1	U	JS
Phase 1	NIC-GPW-GPA12-3-20-123097	Carbon Tetrachloride	1	U	JS
Phase 1	NIC-GPW-GPA12-3-20-123097	1,2-Dichloropropane	1	U	JS
Phase 1	NIC-GPW-GPA12-3-20-123097	1,2-Dichloroethane	1	U	JS
Phase 1	NIC-GPW-GPA12-3-20-123097	1,1,1-Trichloroethane	1	U	JS
Phase 1	NIC-GPW-GPA12-3-20-123097	Benzene	3200		JS
Phase 1	NIC-GPW-GPA12-3-33-123097	Benzene	230		JS
Phase 1	NIC-GPW-GPA12-3-33-123097	Ethylbenzene	210		JS
Phase 1	NIC-GPW-GPA12-3-33-123097	m,p-Xylene	62		JS
Phase 1	NIC-GPW-GPA12-3-33-123097	o-Xylene	4.6		JS
Phase 1	NIC-GPW-GPA12-3-33-123097	Toluene	14		JS
Phase 1	NIC-GPW-GPA12-3-33-123097	1,1-Dichloroethane	1.2		JS
Phase 1	NIC-GPW-GPA12-3-33Q1-123097	m,p-Xylene	78		JS

Table 6-1b
North Industrial Corridor (NIC) Site
Sample Results Qualified Due to Surrogate Recovery Exceedances

Investigation	Sample ID	Compound	Result (µg/L)	Detect Flag	CDM Final Flag
Phase 1	NIC-GPW-GPA12-3-33Q1-123097	Toluene	17		JS
Phase 1	NIC-GPW-GPA12-3-33Q1-123097	Ethylbenzene	190		JS
Phase 1	NIC-GPW-GPA12-3-33Q1-123097	Benzene	210		JS
Phase 1	NIC-GPW-GPA12-4-20-123097	Trichloroethene	1	U	JS
Phase 1	NIC-GPW-GPA12-4-20-123097	1,2-Dichloroethane	1	U	JS
Phase 1	NIC-GPW-GPA12-4-20-123097	1,2-Dichloropropane	1	U	JS
Phase 1	NIC-GPW-GPA12-4-20-123097	Benzene	3600		JS
Phase 1	NIC-GPW-GPA12-4-20-123097	Bromodichloromethane	1	U	JS
Phase 1	NIC-GPW-GPA12-4-20-123097	Carbon Tetrachloride	1	U	JS
Phase 1	NIC-GPW-GPA12-4-20-123097	Ethylbenzene	550		JS
Phase 1	NIC-GPW-GPA12-4-20-123097	m,p-Xylene	1300		JS
Phase 1	NIC-GPW-GPA12-4-20-123097	Toluene	360		JS
Phase 1	NIC-GPW-GPA12-4-20-123097	1,1,1-Trichloroethane	1	U	JS
Phase 1	NIC-GPW-GPA12-4-33-123097	Toluene	44		JS
Phase 1	NIC-GPW-GPA12-4-33-123097	m,p-Xylene	300		JS
Phase 1	NIC-GPW-GPA12-4-33-123097	Ethylbenzene	140		JS
Phase 1	NIC-GPW-GPA12-4-33-123097	Benzene	160		JS
Phase 1	NIC-GPW-GPA15-1-27-010698	Trichloroethene	31		JS
Phase 1	NIC-GW-HRI3S-120997	Tetrachloroethene	68		JS
Phase 1	NIC-GW-WND24D-120897	m,p-Xylene	1.3	U	JS
Phase 1	NIC-GW-WND24D-120897	trans-1,3-Dichloropropene	1	U	JS
Phase 1	NIC-GW-WND24D-120897	Toluene	1	U	JS
Phase 1	NIC-GW-WND24D-120897	o-Xylene	1.1	U	JS
Phase 1	NIC-GW-WND24D-120897	Ethylbenzene	1	U	JS
Phase 1	NIC-GW-WND24D-120897	Dibromochloromethane	1	U	JS
Phase 1	NIC-GW-WND24D-120897	cis-1,3-Dichloropropene	1	U	JS
Phase 1	NIC-GW-WND24D-120897	Chlorobenzene	1	U	JS
Phase 1	NIC-GW-WND24D-120897	Bromoform	1	U	JS
Phase 1	NIC-GW-WND24D-120897	1,1,2-Trichloroethane	1	U	JS
Phase 1	NIC-GW-WND24D-120897	Tetrachloroethene	1	U	JS
Phase 1	NIC-GW-WND39D-120897	1,1-Dichloroethane	12		JS
Phase 1	NIC-GW-WND39D-120897	1,1-Dichloroethene	34		JS
Phase 1	NIC-GW-WND39D-120897	Chloromethane	2.5		JS
Phase 1	NIC-GW-WND39D-120897	cis-1,2-Dichloroethene	120		JS
Phase 1	NIC-GW-WND39D-120897	trans-1,2-Dichloroethene	3.7		JS
Phase 1	NIC-GW-WND39D-120897	Vinyl chloride	54		JS
Phase 1	NIC-GW-WND39S-120897	m,p-Xylene	2.3		JS

Table 6-2
North Industrial Corridor (NIC) Site
Summary of Sample Results Qualified Due to Method Blank Contamination

Investigation	Sample ID	Compound	Media	Result	Units	CDM Final Flag
Phase 1	NIC-GPW-GP# 18-7-18 060498	Methylene chloride	Water	1	µg/L	UB
Phase 1	NIC-GPW-GP#-18-5-18 060498	Methylene chloride	Water	2.4	µg/L	UB
Phase 1	NIC-GPW-GP#-18-5-30 060498	Methylene chloride	Water	1.6	µg/L	UB
Phase 1	NIC-GPW-GP#-18-6-18 060498	Methylene chloride	Water	1	µg/L	UB
Phase 1	NIC-GPW-GP#-18-6-30 060498	Methylene chloride	Water	2	µg/L	UB
Phase 1	NIC-GPW-GP#-18-7-30 060498	Methylene chloride	Water	1.1	µg/L	UB
Phase 1	NIC-GPW-GP#-19-1-20-060298	Methylene chloride	Water	1.8	µg/L	UB
Phase 1	NIC-GPW-GP#-19-1-27-060298	Methylene chloride	Water	1.6	µg/L	UB
Phase 1	NIC-GPW-GP#-19-2-19-060298	Methylene chloride	Water	1.4	µg/L	UB
Phase 1	NIC-GPW-GP#-19-3-20-060298	Methylene chloride	Water	1.7	µg/L	UB
Phase 1	NIC-GPW-GP#-19-3-28-060299	Methylene chloride	Water	1.7	µg/L	UB
Phase 1	NIC-GPW-GP#-19-4-20-060298	Methylene chloride	Water	2.6	µg/L	UB
Phase 1	NIC-GPW-GP#-19-4-28-060298	Methylene chloride	Water	2.5	µg/L	UB
Phase 1	NIC-GPW-GP#-19-5-20-060298	Methylene chloride	Water	3	µg/L	UB
Phase 1	NIC-GPW-GP#-19-5-29-060298	Methylene chloride	Water	2.7	µg/L	UB
Phase 1	NIC-GPW-GP#-19-7-20-060198	Methylene chloride	Water	1.5	µg/L	UB
Phase 1	NIC-GPW-GP#-34-7-36Q1-060898	Methylene chloride	Water	1.3	µg/L	UB
Phase 1	NIC-GPW-GP#-35-2-36 -060598	Methylene chloride	Water	2.9	µg/L	UB
Phase 1	NIC-GPW-GP#-35-3-36 -060598	Methylene chloride	Water	1.3	µg/L	UB
Phase 1	NIC-GPW-GP#-48-1-16 -060598	Methylene chloride	Water	1.2	µg/L	UB
Phase 1	NIC-GPW-GP#-48-1-16M -060598	Methylene chloride	QC	1.3	µg/L	UB
Phase 1	NIC-GPW-GP#-48-1-32 -060598	Methylene chloride	Water	2.7	µg/L	UB
Phase 1	NIC-GPW-GP#-48-3-16-060598	Methylene chloride	Water	2.8	µg/L	UB
Phase 1	NIC-GPW-GP#-48-3-36-060598	Methylene chloride	Water	1	µg/L	UB
Phase 1	NIC-GPW-GP#-50-6-20 060498	Methylene chloride	Water	1.5	µg/L	UB
Phase 1	NIC-GPW-GP#-50-6-37 060498	Methylene chloride	Water	1.1	µg/L	UB
Phase 1	NIC-GPW-GP#-53-1-36 -060398	Methylene chloride	Water	9.1	µg/L	UB
Phase 1	NIC-GPW-GP#-53-2-18 -060398	Methylene chloride	Water	0.99	µg/L	UB
Phase 1	NIC-GPW-GP#-53-2-36 -060398	Methylene chloride	Water	1.3	µg/L	UB
Phase 1	NIC-GPW-GP#-53-2-36N-060398	Methylene chloride	QC	1.3	µg/L	UB
Phase 1	NIC-GPW-GP#-53-3-36 -060398	Methylene chloride	Water	1.9	µg/L	UB
Phase 1	NIC-GPW-GPA 1-4-15M -060398	Methylene chloride	QC	1.3	µg/L	UB
Phase 1	NIC-GPW-GPA 1-4-36 -060398	Methylene chloride	Water	1.1	µg/L	UB
Phase 1	NIC-GPW-GPA 1-5-38 060298	Methylene chloride	Water	1	µg/L	UB
Phase 1	NIC-GPW-GPA 1-6-19 -060398	Methylene chloride	Water	1.2	µg/L	UB
Phase 1	NIC-GPW-GPA 1-6-38 -060398	Methylene chloride	Water	1.3	µg/L	UB
Phase 1	NIC-GPW-GPA 44-1-20 -060498	Methylene chloride	Water	1.5	µg/L	UB
Phase 1	NIC-GPW-GPA 6-5-20 -060398	Methylene chloride	Water	1	µg/L	UB
Phase 1	NIC-GPW-GPA 6-7-18 060398	Methylene chloride	Water	1	µg/L	UB
Phase 1	NIC-GPW-GPA 6-7-36 060398	Methylene chloride	Water	1.1	µg/L	UB
Phase 1	NIC-GPW-GPA-10-5-18-061198	Methylene chloride	Water	1.3	µg/L	UB
Phase 1	NIC-GPW-GPA-10-5-34-061198	Methylene chloride	Water	1.5	µg/L	UB
Phase 1	NIC-GPW-GPA-10-6-20-061198	Methylene chloride	Water	2.2	µg/L	UB
Phase 1	NIC-GPW-GPA-10-6-32-061198	Methylene chloride	Water	1.8	µg/L	UB
Phase 1	NIC-GPW-GPA-10-7-21-061198	Methylene chloride	Water	1.6	µg/L	UB
Phase 1	NIC-GPW-GPA-10-7-35-061198	Methylene chloride	Water	5.1	µg/L	UB
Phase 1	NIC-GPW-GPA-10-8-20-061198	Methylene chloride	Water	3.7	µg/L	UB
Phase 1	NIC-GPW-GPA-10-8-32-061198	Methylene chloride	Water	5	µg/L	UB
Phase 1	NIC-GPW-GPA-19-6-28N-060198	Methylene chloride	QC	1.6	µg/L	UB
Phase 1	NIC-GPW-GPA-19-7-20M-060198	Methylene chloride	QC	1.8	µg/L	UB
Phase 1	NIC-GPW-GPA-25-4-20-060298	Methylene chloride	Water	1.5	µg/L	UB
Phase 1	NIC-GPW-GPA-25-4-28-060298	Methylene chloride	Water	1.3	µg/L	UB

Table 6-2
North Industrial Corridor (NIC) Site
Summary of Sample Results Qualified Due to Method Blank Contamination

Investigation	Sample ID	Compound	Media	Result	Units	CDM Final Flag
Phase 1	NIC-GPW-GPA-25-5-20-060298	Methylene chloride	Water	1.1	µg/L	UB
Phase 1	NIC-GPW-GPA-25-5-29-060298	Methylene chloride	Water	1.6	µg/L	UB
Phase 1	NIC-GPW-GPA-25-5-29Q1-060298	Methylene chloride	QC	1.8	µg/L	UB
Phase 1	NIC-GPW-GPA-28-6-20-060298	Methylene chloride	Water	1.8	µg/L	UB
Phase 1	NIC-GPW-GPA-28-6-29-060298	Methylene chloride	Water	1.8	µg/L	UB
Phase 1	NIC-GPW-GPA29-1-20M-120497	Methylene chloride	QC	1.6	µg/L	UB
Phase 1	NIC-GPW-GPA38-2-20-120597	Methylene chloride	Water	1.6	µg/L	UB
Phase 1	NIC-GPW-GPA38-2-27-120597	Methylene chloride	Water	1.7	µg/L	UB
Phase 1	NIC-GPW-GPA38-3-20-120597	Methylene chloride	Water	1.5	µg/L	UB
Phase 1	NIC-GPW-GPA38-3-27-120597	Methylene chloride	Water	1.5	µg/L	UB
Phase 1	NIC-GPW-GPA39-1-20-120597	Methylene chloride	Water	1.2	µg/L	UB
Phase 1	NIC-GPW-GPA-44-2-20-061198	Methylene chloride	Water	1.4	µg/L	UB
Phase 1	NIC-GPW-GPA-44-2-31-061198	Methylene chloride	Water	1.5	µg/L	UB
Phase 1	NIC-GPW-GPA-6-3-20-060298	Methylene chloride	Water	1.7	µg/L	UB
Phase 1	NIC-GPW-GPA-6-3-38-060298	Methylene chloride	Water	1.6	µg/L	UB
Phase 1	NIC-GPW-GPA-6-4-28N-061198	Methylene chloride	QC	1.4	µg/L	UB
Phase 1	NIC-GW-EXC-MW1A-061598	Methylene chloride	Water	1.1	µg/L	UB
Phase 1	NIC-GW-EXC-MW1AM-061598	Methylene chloride	QC	1	µg/L	UB
Phase 1	NIC-GW-EXC-MW3A-061598	Methylene chloride	Water	1	µg/L	UB
Phase 1	NIC-GW-EXC-MW3B-061598	Methylene chloride	Water	1.1	µg/L	UB
Phase 1	NIC-GW-EXC-MW3BN-061598	Methylene chloride	QC	1	µg/L	UB
Phase 1	NIC-GW-EXC-MW4A-061598	Methylene chloride	Water	1	µg/L	UB
Phase 1	NIC-GW-EXC-MW4B-061598	Methylene chloride	Water	1	µg/L	UB
Phase 1	NIC-GW-EXC-MW5B-061598	Methylene chloride	Water	1.1	µg/L	UB
Phase 1	NIC-GW-EXC-MW6A-061698	Methylene chloride	Water	1.5	µg/L	UB
Phase 1	NIC-GW-EXC-MW6B-061698	Methylene chloride	Water	1.3	µg/L	UB
Phase 1	NIC-GW-EXC-MW7B-061698	Methylene chloride	Water	1.4	µg/L	UB
Phase 1	NIC-GW-EXC-MW7BQ1-061698	Methylene chloride	QC	1.6	µg/L	UB
Phase 1	NIC-GW-WND-13S-061698	Methylene chloride	Water	1.2	µg/L	UB
Phase 1	NIC-GW-WND-37DQ3-061698	Methylene chloride	QC	1.2	µg/L	UB
Phase 1	NIC-GW-WND4-061598	Methylene chloride	Water	1.6	µg/L	UB
Phase 2	NIC-GPW-GP10D-03-18M	Chlorobenzene	QC	2	µg/L	UB
Phase 2	NIC-GW-NMW-31S-050901	n-Butylbenzene	Water	0.99	µg/L	UB
Phase 2	NIC-GW-NMW-31S-050901	p-Isopropyltoluene	Water	1	µg/L	UB
Phase 2	NIC-GW-UPRF-MW03-072701	Naphthalene	Water	1.2	µg/L	UB
Phase 2	NIC-GW-WNC-32D-072701	Naphthalene	Water	3	µg/L	UB
Phase 2	NIC-GW-WND-31S-072701	Naphthalene	Water	2.8	µg/L	UB
Phase 2	NIC-GW-WND-32S-072701	Naphthalene	Water	1.4	µg/L	UB
Phase 2	NIC-SD-02-051501	Methylene chloride	Sediment	6	µg/Kg	UB
Phase 2	NIC-SD-04-051601	Methylene chloride	Sediment	5.3	µg/Kg	UB
Phase 2	NIC-SD-05-051601	Methylene chloride	Sediment	6	µg/Kg	UB
Phase 2	NIC-SD-08-051601	Methylene chloride	Sediment	6.2	µg/Kg	UB
Phase 2	NIC-SD-10-051601	Methylene chloride	Sediment	8.6	µg/Kg	UB
Phase 2	NIC-SSS-GP10D-03-0-0.2	m,p-Xylene	Soil	13	µg/Kg	UB
Phase 2	NIC-SSS-GP10D-05-0-0.4	Methylene chloride	Soil	5.6	µg/Kg	UB

Table 6-3
North Industrial Corridor (NIC) Site
Summary of Phase 1 and Phase 2 Field QA/QC Samples

Investigation	QC Sample Flag	Sample ID	Sample Date
Phase 1	DUP	NIC-GPW-GP#34-1-37Q1-012298	1/22/1998
Phase 1	DUP	NIC-GPW-GP#34-5-37Q1-012098	1/20/1998
Phase 1	DUP	NIC-GPW-GP#-34-7-36Q1-060898	6/8/1998
Phase 1	DUP	NIC-GPW-GP#43-1-33Q1-122297	12/22/1997
Phase 1	DUP	NIC-GPW-GP#44-4-38Q1-011698	1/16/1998
Phase 1	DUP	NIC-GPW-GP#-48-2-36Q1-060598	6/5/1998
Phase 1	DUP	NIC-GPW-GP#50-1-39Q1-010898	1/8/1998
Phase 1	DUP	NIC-GPW-GP#56-5-37Q1-011398	1/13/1998
Phase 1	DUP	NIC-GPW-GP#62-1-42Q1-011498	1/14/1998
Phase 1	DUP	NIC-GPW-GPA 44-1-34Q1-060498	6/4/1998
Phase 1	DUP	NIC-GPW-GPA 6-5-36Q1-060398	6/3/1998
Phase 1	DUP	NIC-GPW-GPA04-2-39Q1-12-15-97	12/15/1997
Phase 1	DUP	NIC-GPW-GPA06-2-33Q1-121697	12/16/1997
Phase 1	DUP	NIC-GPW-GPA09-1-35Q1-122997	12/29/1997
Phase 1	DUP	NIC-GPW-GPA10-2-36Q1-121897	12/18/1997
Phase 1	DUP	NIC-GPW-GPA12-3-33Q1-123097	12/30/1997
Phase 1	DUP	NIC-GPW-GPA13-4-35Q1-010798	1/7/1998
Phase 1	DUP	NIC-GPW-GPA19-2-35Q1-121097	12/10/1997
Phase 1	DUP	NIC-GPW-GPA22-1-33Q1-120397	12/3/1997
Phase 1	DUP	NIC-GPW-GPA24-2-36Q1-121197	12/11/1997
Phase 1	DUP	NIC-GPW-GPA25-2-28Q1-120997	12/9/1997
Phase 1	DUP	NIC-GPW-GPA-25-5-29Q1-060298	6/2/1998
Phase 1	DUP	NIC-GPW-GPA28-2-20Q1-120897	12/8/1997
Phase 1	DUP	NIC-GPW-GPA-29-7-37Q1-052998	5/29/1998
Phase 1	DUP	NIC-GPW-GPA30-4-36Q1-010598	1/5/1998
Phase 1	DUP	NIC-GPW-GPA-31-4-33Q1-061198	6/11/1998
Phase 1	DUP	NIC-GPW-GPA34-2-23Q1-122397	12/23/1997
Phase 1	DUP	NIC-GPW-GPA36-2-20Q1-120497	12/4/1997
Phase 1	DUP	NIC-GPW-GPA-42-3-30Q1-052798	5/27/1998
Phase 1	DUP	NIC-GW-EXC-MW7BQ1-061698	6/16/1998
Phase 1	DUP	NIC-GW-WND19DQ1-120397	12/3/1997
Phase 1	DUP	NIC-GW-WND-36SQ1-12-05-97	12/5/1997
Phase 1	PERF	NIC-32223XP-010498	1/8/1998
Phase 1	PERF	NIC-GPW-3XP-3222	12/9/1997
Phase 1	PERF	NIC-GPW-GPA36-1-35P-121897	12/18/1997
Phase 1	PERF	NIC-GPW-IXP-3222	12/5/1997
Phase 1	RINSATE	NIC-GPW-GP#- 35-2-36N -060598	6/5/1998
Phase 1	RINSATE	NIC-GPW-GP#- 53-2-36N-060398	6/3/1998
Phase 1	RINSATE	NIC-GPW-GP#11-1-20N-011698	1/16/1998
Phase 1	RINSATE	NIC-GPW-GP#28-1-36N-122297	12/22/1997
Phase 1	RINSATE	NIC-GPW-GP#42-4-36N-012198	1/21/1998
Phase 1	RINSATE	NIC-GPW-GP#47-2-33N-010798	1/7/1998
Phase 1	RINSATE	NIC-GPW-GP#47-7-32N-010898	1/8/1998
Phase 1	RINSATE	NIC-GPW-GP#56-2-39N-011398	1/13/1998
Phase 1	RINSATE	NIC-GPW-GP#62-4-33N-011498	1/14/1998
Phase 1	RINSATE	NIC-GPW-GPA03-1-41N-121297	12/12/1997
Phase 1	RINSATE	NIC-GPW-GPA05-2-33N-12-15-97	12/15/1997
Phase 1	RINSATE	NIC-GPW-GPA07-2-33N-121697	12/16/1997
Phase 1	RINSATE	NIC-GPW-GPA08-2-36N-121797	12/17/1997

Table 6-3
North Industrial Corridor (NIC) Site
Summary of Phase 1 and Phase 2 Field QA/QC Samples

Investigation	QC Sample Flag	Sample ID	Sample Date
Phase 1	RINSATE	NIC-GPW-GPA10-3-36N-121897	12/18/1997
Phase 1	RINSATE	NIC-GPW-GPA12-3-33N-123097	12/30/1997
Phase 1	RINSATE	NIC-GPW-GPA12-8-34N-012298	1/22/1998
Phase 1	RINSATE	NIC-GPW-GPA-16-4-38N-060998	6/9/1998
Phase 1	RINSATE	NIC-GPW-GPA17-2-33N-120397	12/3/1997
Phase 1	RINSATE	NIC-GPW-GPA18-4-36N-122997	12/29/1997
Phase 1	RINSATE	NIC-GPW-GPA19-1-41N-121097	12/10/1997
Phase 1	RINSATE	NIC-GPW-GPA-19-6-28N-060198	6/1/1998
Phase 1	RINSATE	NIC-GPW-GPA23-2-35N-121197	12/11/1997
Phase 1	RINSATE	NIC-GPW-GPA25-1-29N-120997	12/9/1997
Phase 1	RINSATE	NIC-GPW-GPA-29-6-33N-052998	5/29/1998
Phase 1	RINSATE	NIC-GPW-GPA30-4-36N-010598	1/5/1998
Phase 1	RINSATE	NIC-GPW-GPA33-4-35N-120497	12/4/1997
Phase 1	RINSATE	NIC-GPW-GPA35-2-27N-120897	12/8/1997
Phase 1	RINSATE	NIC-GPW-GPA-40-2-29N-052898	5/28/1998
Phase 1	RINSATE	NIC-GPW-GPA-6-4-28N-061198	6/11/1998
Phase 1	RINSATE	NIC-GW-EXC-MW3BN-061598	6/15/1998
Phase 1	RINSATE	NIC-GW-WND-18N-12-05-97	12/5/1997
Phase 1	RINSATE	NIC-GW-WND19N-120397	12/3/1997
Phase 1	TRIP	NIC-GPW-GP#- 48-1-16M -060598	6/5/1998
Phase 1	TRIP	NIC-GPW-GP#11-1-20M-011698	1/16/1998
Phase 1	TRIP	NIC-GPW-GP#34-3-20M-012098	1/20/1998
Phase 1	TRIP	NIC-GPW-GP#-35-1-16M-060898	6/8/1998
Phase 1	TRIP	NIC-GPW-GP#42-2-20M-011298	1/22/1998
Phase 1	TRIP	NIC-GPW-GP#47-6-20M-010898	1/8/1998
Phase 1	TRIP	NIC-GPW-GP#50-4-20M-010998	1/9/1998
Phase 1	TRIP	NIC-GPW-GP#56-6-20M-011498	1/14/1998
Phase 1	TRIP	NIC-GPW-GP#63-2-20M-011298	1/12/1998
Phase 1	TRIP	NIC-GPW-GPA 1-4-15M -060398	6/3/1998
Phase 1	TRIP	NIC-GPW-GPA01-2-20M-121297	12/12/1997
Phase 1	TRIP	NIC-GPW-GPA03-2-20M-12-15-97	12/15/1997
Phase 1	TRIP	NIC-GPW-GPA06-4-24M-121697	12/16/1997
Phase 1	TRIP	NIC-GPW-GPA08-2-20M-121797	12/17/1997
Phase 1	TRIP	NIC-GPW-GPA10-1-22M-121897	12/18/1997
Phase 1	TRIP	NIC-GPW-GPA12-6-20M-123197	12/31/1997
Phase 1	TRIP	NIC-GPW-GPA15-3-20M-010798	1/7/1998
Phase 1	TRIP	NIC-GPW-GPA17-2-20M-120397	12/3/1997
Phase 1	TRIP	NIC-GPW-GPA18-2-20M-121997	12/19/1997
Phase 1	TRIP	NIC-GPW-GPA18-3-20M-121097	12/10/1997
Phase 1	TRIP	NIC-GPW-GPA-19-7-20M-060198	6/1/1998
Phase 1	TRIP	NIC-GPW-GPA20-2-20M-121197	12/11/1997
Phase 1	TRIP	NIC-GPW-GPA27-4-23M-122997	12/29/1997
Phase 1	TRIP	NIC-GPW-GPA28-4-30M-120997	12/9/1997
Phase 1	TRIP	NIC-GPW-GPA29-1-20M-120497	12/4/1997
Phase 1	TRIP	NIC-GPW-GPA30-2-20M-010598	1/5/1998
Phase 1	TRIP	NIC-GPW-GPA31-2-31M-121297	12/22/1997
Phase 1	TRIP	NIC-GPW-GPA-34-7-20M-052998	5/29/1998
Phase 1	TRIP	NIC-GPW-GPA35-1-21M-120897	12/8/1997
Phase 1	TRIP	NIC-GPW-GPA38-1-20M-120597	12/5/1997

Table 6-3
North Industrial Corridor (NIC) Site
Summary of Phase 1 and Phase 2 Field QA/QC Samples

Investigation	QC Sample Flag	Sample ID	Sample Date
Phase 1	TRIP	NIC-GPW-GPA-40-2-29M-052898	5/28/1998
Phase 1	TRIP	NIC-GPW-GPA-TRAVEL BLANK-052798	5/27/1998
Phase 1	TRIP	NIC-GW-EXC-MW1AM-061598	6/15/1998
Phase 1	TRIP	NIC-GW-EXC-MW2DM-12-05-97	12/5/1997
Phase 1	TRIP	NIC-GW-WND27M-120997	12/9/1997
Phase 1	TRIP	NIC-GW-WND47M-120397	12/3/1997
Phase 2	CRIMP	NIC-GW-NMW-05DC-050901	05/09/01
Phase 2	CRIMP	NIC-GW-NMW-05SC-050901	05/09/01
Phase 2	CRIMP	NIC-GW-NMW-39DC-050901	05/09/01
Phase 2	CRIMP	NIC-GW-NMW-39SC-050901	05/09/01
Phase 2	CRIMP	NIC-GW-WNC-11DC-050901	05/09/01
Phase 2	CRIMP	NIC-SSS-01-C-051701	05/17/01
Phase 2	CRIMP	NIC-SSS-02-C-051701	05/17/01
Phase 2	DUP	NIC-AQ-02Q-082401 CAN 212	08/24/01
Phase 2	DUP	NIC-GPW-GP#55-01Q1-20-110499	11/04/99
Phase 2	DUP	NIC-GPW-GP02B-03Q1-33-121399	12/13/99
Phase 2	DUP	NIC-GPW-GP02C-03Q1-38-111099	11/10/99
Phase 2	DUP	NIC-GPW-GP02E-06Q1-32-110199	11/01/99
Phase 2	DUP	NIC-GPW-GP02F-04Q1-29-102999	10/29/99
Phase 2	DUP	NIC-GPW-GP02G-01-17Q1-102299	10/21/99
Phase 2	DUP	NIC-GPW-GP02H-03-35Q1-102899	10/28/99
Phase 2	DUP	NIC-GPW-GP02I-03Q1-34-112999	11/29/99
Phase 2	DUP	NIC-GPW-GP03C-01Q1-28-102699	10/26/99
Phase 2	DUP	NIC-GPW-GP03C-07-Q1-34-111299	11/12/99
Phase 2	DUP	NIC-GPW-GP03D-03Q1-32-111199	11/11/99
Phase 2	DUP	NIC-GPW-GP03G-04Q1-31-112399	11/23/99
Phase 2	DUP	NIC-GPW-GP04B-08Q-44-110399	11/03/99
Phase 2	DUP	NIC-GPW-GP04E-01Q1-29-102599	10/26/99
Phase 2	DUP	NIC-GPW-GP04E-07Q1-30-120999	12/09/99
Phase 2	DUP	NIC-GPW-GP04G-05Q1-35-120299	12/02/99
Phase 2	DUP	NIC-GPW-GP05A-04Q1-29-011700	01/17/00
Phase 2	DUP	NIC-GPW-GP06H-03Q1-31-120899	12/08/99
Phase 2	DUP	NIC-GPW-GP08C-01Q1-29-121799	12/17/99
Phase 2	DUP	NIC-GPW-GP08E-02Q1-35-122099	12/20/99
Phase 2	DUP	NIC-GPW-GP10D-03-18Q	01/22/01
Phase 2	DUP	NIC-GPW-GP50-3Q1-20-101999	10/19/99
Phase 2	DUP	NIC-GW-NMW-09DQ-051001	05/10/01
Phase 2	DUP	NIC-GW-NMW-29DQ-050801	05/08/01
Phase 2	DUP	NIC-GW-NMW-29DQ-050801	05/08/01
Phase 2	DUP	NIC-GW-NMW-34S2Q-050701	05/07/01
Phase 2	DUP	NIC-GW-NMW-34SQ-050701	05/07/01
Phase 2	DUP	NIC-GW-WND-18DQ-050901	05/09/01
Phase 2	DUP	NIC-GW-WND-25DQ-051001	05/10/01
Phase 2	DUP	NIC-GW-WND-41DQ-050301	05/03/01
Phase 2	DUP	NIC-GW-WND-41SQ-050301	05/03/01
Phase 2	DUP	NIC-GW-WND-45DQ-051001	05/10/01
Phase 2	DUP	NIC-GW-WND-45DQ-051001	05/10/01
Phase 2	DUP	NIC-GW-WND-45DQ-051001 FILTER	05/10/01
Phase 2	DUP	NIC-GW-WND-47DQ-050901	05/09/01

Table 6-3
North Industrial Corridor (NIC) Site
Summary of Phase 1 and Phase 2 Field QA/QC Samples

Investigation	QC Sample Flag	Sample ID	Sample Date
Phase 2	DUP	NIC-GW-WND-48DQ-050801	05/08/01
Phase 2	DUP	NIC-SD-11Q-051601	05/16/01
Phase 2	DUP	NIC-SW-13Q-051601	05/16/01
Phase 2	PERF	NIC-GPW-GP02I-01P-110599	11/05/99
Phase 2	PERF	NIC-GPW-GP03B-07P-111199	11/11/99
Phase 2	PERF	NIC-GPW-GP03C-05P \603065186	11/22/99
Phase 2	PERF	NIC-GPW-GP03C-07P-111299	11/12/99
Phase 2	PERF	NIC-GPW-GP03E-09P-102699	10/26/99
Phase 2	PERF	NIC-GPW-GP03G-01P-112999	11/29/99
Phase 2	PERF	NIC-GPW-GP04B-03P-110599	11/05/99
Phase 2	PERF	NIC-GPW-GP04H-07P-120399	12/03/99
Phase 2	PERF	NIC-GPW-GP06H-01P-120799	12/07/99
Phase 2	PERF	NIC-GPW-GP10F-01P-031000	03/10/00
Phase 2	PERF	NIC-GPW-GPA15-2P-20-101999	10/19/99
Phase 2	PERF	NIC-GW-WNC-16DP-051001	05/10/01
Phase 2	PERF	NIC-GW-WND-01SP-050801	05/08/01
Phase 2	PERF	NIC-GW-WND-12DP-050301	05/03/01
Phase 2	PERF	NIC-GW-WND-12DP2-050301	05/03/01
Phase 2	PERF	NIC-GW-WND-33DP-050701	05/07/01
Phase 2	PERF	NIC-SW-15P-051601	05/16/01
Phase 2	RINSATE	NIC-GPW-GP#55-01N-20-110499	11/04/99
Phase 2	RINSATE	NIC-GPW-GP02B-03N-33-121399	12/13/99
Phase 2	RINSATE	NIC-GPW-GP02C-03N-38-111099	11/10/99
Phase 2	RINSATE	NIC-GPW-GP02E-06N-32-110199	11/01/99
Phase 2	RINSATE	NIC-GPW-GP02F-04N-29-102999	10/29/99
Phase 2	RINSATE	NIC-GPW-GP02G-01-17N-102299	10/21/99
Phase 2	RINSATE	NIC-GPW-GP02H-03-35N-102899	10/28/99
Phase 2	RINSATE	NIC-GPW-GP02I-03N-34-112999	11/29/99
Phase 2	RINSATE	NIC-GPW-GP03C-01N-28-102699	10/26/99
Phase 2	RINSATE	NIC-GPW-GP03C-07N-34-111299	11/12/99
Phase 2	RINSATE	NIC-GPW-GP03D-03N-32-111199	11/11/99
Phase 2	RINSATE	NIC-GPW-GP03G-04N-31-112399	11/23/99
Phase 2	RINSATE	NIC-GPW-GP04B-08N-0-110399	11/03/99
Phase 2	RINSATE	NIC-GPW-GP04E-01N-29-102599	10/26/99
Phase 2	RINSATE	NIC-GPW-GP04E-07N-30-120999	12/09/99
Phase 2	RINSATE	NIC-GPW-GP04G-05N-35-120299	12/02/99
Phase 2	RINSATE	NIC-GPW-GP05A-04N-29-011700	01/17/00
Phase 2	RINSATE	NIC-GPW-GP06H-03N-31-120899	12/08/99
Phase 2	RINSATE	NIC-GPW-GP08C-01N-29-121799	12/17/99
Phase 2	RINSATE	NIC-GPW-GP08E-02N-35-122099	12/20/99
Phase 2	RINSATE	NIC-GPW-GP10F-01N-031000	03/10/00
Phase 2	RINSATE	NIC-GPW-GP50-3N-20-101999	10/19/99
Phase 2	RINSATE	NIC-GW-WND-21DN-050401	05/04/01
Phase 2	RINSATE	NIC-SD-11N-051601	05/16/01
Phase 2	TRIP	NIC GPW-GPO6B-01M-17-102899	10/28/99
Phase 2	TRIP	NIC-GPW-3B8-14M-082900	08/29/00
Phase 2	TRIP	NIC-GPW-GP 34-7M-18-102199	10/21/99
Phase 2	TRIP	NIC-GPW-GP010F-09M-031400	03/14/00
Phase 2	TRIP	NIC-GPW-GP02B-02M	12/15/99

Table 6-3
North Industrial Corridor (NIC) Site
Summary of Phase 1 and Phase 2 Field QA/QC Samples

Investigation	QC Sample Flag	Sample ID	Sample Date
Phase 2	TRIP	NIC-GPW-GP02B-06M-122099	12/20/99
Phase 2	TRIP	NIC-GPW-GP02C-02M-120299	12/02/99
Phase 2	TRIP	NIC-GPW-GP02C-09M-23-110199	11/01/99
Phase 2	TRIP	NIC-GPW-GP02E-07M-111299	11/11/99
Phase 2	TRIP	NIC-GPW-GP02G-02-17M-102599	10/26/99
Phase 2	TRIP	NIC-GPW-GP02G-05M-0-110299	11/02/99
Phase 2	TRIP	NIC-GPW-GP02H-03-17M-102899	10/28/99
Phase 2	TRIP	NIC-GPW-GP03A-06M-030800	03/08/00
Phase 2	TRIP	NIC-GPW-GP03C-05M \603065178	11/22/99
Phase 2	TRIP	NIC-GPW-GP03D-04M-011300	01/13/00
Phase 2	TRIP	NIC-GPW-GP03G-02M-120199	12/01/99
Phase 2	TRIP	NIC-GPW-GP04B-03M-110599	11/05/99
Phase 2	TRIP	NIC-GPW-GP04B-09M-021000	02/10/00
Phase 2	TRIP	NIC-GPW-GP04G-06M-112499	11/24/99
Phase 2	TRIP	NIC-GPW-GP04H-06M-120399	12/03/99
Phase 2	TRIP	NIC-GPW-GP05C-02M-111099	11/10/99
Phase 2	TRIP	NIC-GPW-GP06H-02M-120899	12/08/99
Phase 2	TRIP	NIC-GPW-GP08B-06M-121099	12/10/99
Phase 2	TRIP	NIC-GPW-GP10D-03-18M	01/22/01
Phase 2	TRIP	NIC-GPW-GP3D-05M-17-011800	01/18/00
Phase 2	TRIP	NIC-GPW-GP5C-03M-20-012500	01/25/00
Phase 2	TRIP	NIC-GPW-GPA03-1M-20-101599	10/15/99
Phase 2	TRIP	NIC-GPW-GPA31-6M-17-011000	01/10/00
Phase 2	TRIP	NIC-GPW-GPA40-1M-20-101999	10/19/99
Phase 2	TRIP	NIC-GPW-HDP-3-15M-090600	09/06/00
Phase 2	TRIP	NIC-GW-NMW-12M-050801	05/08/01
Phase 2	TRIP	NIC-GW-NMW-17DM-050301	05/03/01
Phase 2	TRIP	NIC-GW-NMW-31SM-050901	05/09/01
Phase 2	TRIP	NIC-GW-NMW-34SM-050701	05/07/01
Phase 2	TRIP	NIC-GW-NMW-34SM-050701	05/07/01
Phase 2	TRIP	NIC-GW-NMW-42SM-072501	07/25/01
Phase 2	TRIP	NIC-GW-NMW-48SM-072701	07/27/01
Phase 2	TRIP	NIC-GW-WND-07SM-050901	05/09/01
Phase 2	TRIP	NIC-GW-WND-21SM-050401	05/04/01
Phase 2	TRIP	NIC-GW-WND-28SM-050101	05/01/01
Phase 2	TRIP	NIC-SW-06M-051601	05/16/01
Phase 2	TRIP	NIC-WFS-15M-071901	07/19/01

DUP = Sample field duplicate
PERF = Performance evaluation standard
RINSATE = Decontamination rinsate blank
TRIP = Trip Blank
CRIMP = Inter-method duplicate.

Table 6-4
North Industrial Corridor (NIC) Site
Summary of Travel Blank Detections (Phase 1 and 2)

Investigation	Sample ID	Sample Date	Compound	Result (µg/L)	CDM Final Flag
Phase 1	NIC-GPW-GP#47-6-20M-010898	10/8/1998	Toluene	1.6	
Phase 1	NIC-GPW-GPA06-4-24M-121697	12/16/1997	Bromoform	1.0	
Phase 1	NIC-GPW-GPA06-4-24M-121697	12/16/1997	Dibromochloromethane	1.3	
Phase 1	NIC-GPW-GPA15-3-20M-010798	1/7/1998	Chloroform	1.3	
Phase 1	NIC-GPW-GPA17-2-20M-120397	12/3/1997	Chloroform	16	
Phase 1	NIC-GPW-GPA28-4-30M-120997	12/9/1997	Trichloroethene	1.1	
Phase 1	NIC-GPW-GPA29-1-20M-120497	12/4/1997	Methylene chloride	1.6	UB
Phase 1	NIC-GPW-GPA29-1-20M-120497	12/5/1997	Chloroform	18	
Phase 1	NIC-GPW-GPA38-1-20M-120597	12/5/1997	Chloroform	17	
Phase 1	NIC-GPW-GP-35-1-16M-060898	6/8/1998	Methylene chloride	1.2	UB
Phase 1	NIC-GPW-GP#48-1-16M -060598	6/5/1998	1,4-Dichlorobenzene	1.9	
Phase 1	NIC-GPW-GP# 48-1-16M -060598	6/5/1998	Methylene chloride	1.3	UB
Phase 1	NIC-GPW-GPA1-4-15M -060398	6/3/1998	Methylene chloride	1.3	UB
Phase 1	NIC-GPW-GPA1-4-15M -060398	6/3/1998	1,4-Dichlorobenzene	1.9	
Phase 1	NIC-GPW-GPA-19-7-20M-060198	6/1/1998	Methylene chloride	1.8	UB
Phase 1	NIC-GPW-GPA-19-7-20M-060198	6/1/1998	1,4-Dichlorobenzene	2.0	
Phase 1	NIC-GPW-GPA-34-7-20M-052998	5/29/1998	1,4-Dichlorobenzene	2.0	
Phase 1	NIC-GPW-GPA-40-2-29M-052898	5/28/1998	1,4-Dichlorobenzene	2.2	
Phase 1	NIC-GPW-GPA-TRIP BLANK-052798	5/27/1998	Dibromochloromethane	11	
Phase 1	NIC-GPW-GPA-TRIP BLANK-052798	5/27/1998	Bromodichloromethane	15	
Phase 1	NIC-GPW-GPA-TRIP BLANK-052798	5/27/1998	Chloroform	15	
Phase 1	NIC-GW-EXC-MW1AM-061598	6/15/1998	1,4-Dichlorobenzene	2.1	
Phase 1	NIC-GW-EXC-MW1AM-061598	6/15/1998	Methylene chloride	1.0	UB
Phase 1	NIC-GW-WND27M-120997	12/9/1997	Chloroform	7.5	
Phase 2	NIC GPW-GPO6B-01M-17-102899	10/28/1999	Chloroform	1.6	
Phase 2	NIC-GPW-GP 34-7M-18-102199	10/21/1999	Chloroform	1.5	
Phase 2	NIC-GPW-GP02C-09M-23-110199	11/1/1999	Chloroform	1.8	
Phase 2	NIC-GPW-GP02E-07M-111299	11/11/1999	Chloroform	1.6	
Phase 2	NIC-GPW-GP02G-02-17M-102599	10/26/1999	Chloroform	1.6	
Phase 2	NIC-GPW-GP02G-05M-0-110299	11/2/1999	Chloroform	1.7	
Phase 2	NIC-GPW-GP02H-03-17M-102899	10/28/1999	Chloroform	1.6	
Phase 2	NIC-GPW-GP03A-06M-030800	3/8/2000	Chlorobenzene	1.0	
Phase 2	NIC-GPW-GP04B-03M-110599	11/5/1999	Chloroform	1.3	
Phase 2	NIC-GPW-GP05C-02M-111099	11/10/1999	Chloroform	1.5	
Phase 2	NIC-GPW-GPA03-1M-20-101599	10/15/1999	Chloroform	1.7	
Phase 2	NIC-GPW-GPA40-1M-20-101999	10/19/1999	Chloroform	1.6	
Phase 2	NIC-GPW-GP10D-03-18M	1/22/2001	Chlorobenzene	2.0	UB
Phase 2	NIC-GPW-3B8-14M-082900	8/29/2000	Chlorobenzene	2.1	
Phase 2	NIC-GPW-3B8-14M-082900	8/29/2000	Methylene Chloride	2.7	
Phase 2	NIC-GPW-HDP-3-15M-090600	9/6/2000	Trichlorofluoromethane	1.8	
Phase 2	NIC-GW-NMW-48SM-072701	7/27/2001	Chloroform	1.8	

Table 6-5
North Industrial Corridor (NIC) Site
Summary of Decontamination Rinsate Blank Detections (Phase 1 and 2)

Investigation	Sample ID	Sample Date	Compound	Result	CDM Final Flag
Phase 1	NIC-GPW-GP#- 53-2-36N-060398	6/3/1998	Methylene chloride	1.3	UB
Phase 1	NIC-GPW-GP#28-1-36N-122297	12/22/1997	Chloroform	2.6	
Phase 1	NIC-GPW-GP#62-4-33N-011498	1/14/1998	Trichloroethene	1.9	
Phase 1	NIC-GPW-GPA-16-4-38N-060998	6/9/1998	Trichloroethene	2.7	
Phase 1	NIC-GPW-GPA-19-6-28N-060198	6/1/1998	Methylene chloride	1.6	UB
Phase 1	NIC-GPW-GPA-29-6-33N-052998	5/29/1998	Chloroform	1.5	
Phase 1	NIC-GPW-GPA-6-4-28N-061198	6/11/1998	Methylene chloride	1.4	UB
Phase 1	NIC-GPW-GPA12-3-33N-123097	12/30/1997	Methylene chloride	1.1	
Phase 1	NIC-GPW-GPA12-3-33N-123097	12/30/1997	Chloroform	1.4	
Phase 1	NIC-GPW-GPA18-4-36N-122997	12/29/1997	Chloroform	2.3	
Phase 1	NIC-GPW-GPA23-2-35N-121197	12/11/1997	Trichloroethene	2.4	
Phase 1	NIC-GPW-GPA25-1-29N-120997	12/9/1997	Trichloroethene	3.9	
Phase 1	NIC-GPW-GPA30-4-36N-010598	1/5/1998	Chloroform	1	
Phase 1	NIC-GW-EXC-MW3BN-061598	6/15/1998	Chloroform	8.8	
Phase 1	NIC-GW-EXC-MW3BN-061598	6/15/1998	Methylene chloride	1	UB
Phase 1	NIC-GW-WND-18N-12-05-97	12/5/1997	cis-1,2-Dichloroethene	2.1	
Phase 1	NIC-GW-WND-18N-12-05-97	12/5/1997	Trichloroethene	27	
Phase 1	NIC-GW-WND19N-120397	12/3/1997	Dibromochloromethane	2	
Phase 1	NIC-GW-WND19N-120397	12/3/1997	cis-1,2-Dichloroethene	2.1	
Phase 1	NIC-GW-WND19N-120397	12/3/1997	Bromodichloromethane	2.2	
Phase 1	NIC-GW-WND19N-120397	12/3/1997	Trichloroethene	42	
Phase 1	NIC-GW-WND19N-120397	12/3/1997	Chloroform	1.8	
Phase 2	NIC-GPW-GP02B-03N-33-121399	12/13/1999	Dibromochloromethane	1.8	
Phase 2	NIC-GW-WND-21DN-050401	5/4/2001	Trichloroethene	37	*
Phase 2	NIC-GW-WND-21DN-050401	5/4/2001	cis-1,2-Dichloroethene	8.2	*
Phase 2	NIC-GW-WND-21DN-050401	5/4/2001	Chloroform	3.6	*
Phase 2	NIC-GW-WND-21DN-050401	5/4/2001	Bromodichloromethane	2.1	*
Phase 2	NIC-GW-WND-21DN-050401	5/4/2001	1,1-Dichloroethene	1	*

* Sample NIC-GW-WND-21DN-050401 was collected after well purging but before well sampling via disposable bailer.

Table 6-6
North Industrial Corridor (NIC) Site
Summary of Sample Results Qualified Due to Decontamination Rinsate Blank Contamination

Investigation	Sample ID	Station ID	Sample Date	Compound	Result µg/L	CDM Final Flag
Phase 1	NIC-GW-EXC-MW-8DQ3-120897	EXC-MW-08B	12/08/97	cis-1,2-Dichloroethene	17	JDB
Phase 1	NIC-GW-EXC-MW02DQ3-120897	EXC-MW-02B	12/08/97	Trichloroethene	23	JDB
Phase 1	NIC-GW-EXC-MW02DQ3-120897	EXC-MW-02B	12/08/97	cis-1,2-Dichloroethene	1.5	JDB
Phase 1	NIC-GW-EXC-MW02SQ3-120897	EXC-MW-02A	12/08/97	Trichloroethene	42	JDB
Phase 1	NIC-GW-EXC-MW02SQ3-120897	EXC-MW-02A	12/08/97	cis-1,2-Dichloroethene	2.6	JDB
Phase 1	NIC-GW-EXC-MW8SQ3-120897	EXC-MW-08A	12/08/97	cis-1,2-Dichloroethene	10	JDB
Phase 1	NIC-GW-EXC-MW8SQ3-120897	EXC-MW-08A	12/08/97	Trichloroethene	78	JDB
Phase 1	NIC-GW-HRI3S-120997	HRI-MW-03D	12/09/97	cis-1,2-Dichloroethene	47	JDB
Phase 1	NIC-GW-WND-15D-12-04-97	WND-15D	12/04/97	cis-1,2-Dichloroethene	2	JDB
Phase 1	NIC-GW-WND-15D-12-04-97	WND-15D	12/04/97	Trichloroethene	24	JDB
Phase 1	NIC-GW-WND-15S-12-04-97	WND-15S	12/04/97	Trichloroethene	13	JDB
Phase 1	NIC-GW-WND-18D-12-05-97	WND-18D	12/05/97	cis-1,2-Dichloroethene	90	JDB
Phase 1	NIC-GW-WND-18S-12-05-97	WND-18S	12/05/97	Trichloroethene	13	JDB
Phase 1	NIC-GW-WND-36D-12-05-97	WND-36D	12/05/97	cis-1,2-Dichloroethene	76	JDB
Phase 1	NIC-GW-WND-36S-12-04-97	WND-36S	12/05/97	cis-1,2-Dichloroethene	4.7	JDB
Phase 1	NIC-GW-WND-38D-12-04-97	WND-38D	12/04/97	cis-1,2-Dichloroethene	26	JDB
Phase 1	NIC-GW-WND-38S-12-04-97	WND-38S	12/04/97	Trichloroethene	16	JDB
Phase 1	NIC-GW-WND-44D-12-04-97	WND-44D	12/04/97	Trichloroethene	21	JDB
Phase 1	NIC-GW-WND-44D-12-04-97	WND-44D	12/04/97	cis-1,2-Dichloroethene	7.7	JDB
Phase 1	NIC-GW-WND-44S-12-04-97	WND-44S	12/04/97	cis-1,2-Dichloroethene	6.7	JDB
Phase 1	NIC-GW-WND-44S-12-04-97	WND-44S	12/04/97	Trichloroethene	28	JDB
Phase 1	NIC-GW-WND-45S-12-04-97	WND-45S	12/04/97	cis-1,2-Dichloroethene	5.6	JDB
Phase 1	NIC-GW-WND-45S-12-04-97	WND-45S	12/04/97	Trichloroethene	20	JDB
Phase 1	NIC-GW-WND-7S-12-05-97	WND-07S	12/05/97	cis-1,2-Dichloroethene	8.2	JDB
Phase 1	NIC-GW-WND-7S-12-05-97	WND-07S	12/05/97	Trichloroethene	55	JDB
Phase 1	NIC-GW-WND02D-120197	WND-02D	12/01/97	Trichloroethene	48	JDB
Phase 1	NIC-GW-WND02D-120197	WND-02D	12/01/97	cis-1,2-Dichloroethene	23	JDB

Table 6-6
North Industrial Corridor (NIC) Site
Summary of Sample Results Qualified Due to Decontamination Rinsate Blank Contamination

Investigation	Sample ID	Station ID	Sample Date	Compound	Result µg/L	CDM Final Flag
Phase 1	NIC-GW-WND02S-120197	WND-02S	12/01/97	Trichloroethene	7.8	JDB
Phase 1	NIC-GW-WND02S-120197	WND-02S	12/01/97	cis-1,2-Dichloroethene	1.9	JDB
Phase 1	NIC-GW-WND12D-120197	WND-12D	12/01/97	cis-1,2-Dichloroethene	3.3	JDB
Phase 1	NIC-GW-WND12D-120197	WND-12D	12/01/97	Trichloroethene	37	JDB
Phase 1	NIC-GW-WND12S-120197	WND-12S	12/01/97	Trichloroethene	13	JDB
Phase 1	NIC-GW-WND12S-120197	WND-12S	12/01/97	cis-1,2-Dichloroethene	3.7	JDB
Phase 1	NIC-GW-WND19D-120397	WND-19D	12/03/97	cis-1,2-Dichloroethene	51	JDB
Phase 1	NIC-GW-WND19DQ1-120397	WND-19D	12/03/97	cis-1,2-Dichloroethene	57	JDB
Phase 1	NIC-GW-WND19S-120397	WND-19S	12/03/97	cis-1,2-Dichloroethene	17	JDB
Phase 1	NIC-GW-WND20S-120397	WND-20S	12/03/97	cis-1,2-Dichloroethene	3.9	JDB
Phase 1	NIC-GW-WND20S-120397	WND-20S	12/03/97	Trichloroethene	29	JDB
Phase 1	NIC-GW-WND21D-120297	WND-21D	12/02/97	cis-1,2-Dichloroethene	77	JDB
Phase 1	NIC-GW-WND21S-120297	WND-21S	12/02/97	cis-1,2-Dichloroethene	92	JDB
Phase 1	NIC-GW-WND21S-120297	WND-21S	12/02/97	Trichloroethene	14	JDB
Phase 1	NIC-GW-WND22D-120297	WND-22D	12/02/97	Trichloroethene	5.1	JDB
Phase 1	NIC-GW-WND22S-120297	WND-22S	12/02/97	Trichloroethene	10	JDB
Phase 1	NIC-GW-WND24D-120897	WND-24D	12/08/97	cis-1,2-Dichloroethene	49	JDB
Phase 1	NIC-GW-WND24S-120897	WND-24S	12/08/97	cis-1,2-Dichloroethene	13	JDB
Phase 1	NIC-GW-WND24S-120897	WND-24S	12/08/97	Trichloroethene	50	JDB
Phase 1	NIC-GW-WND27SQ3-120997	WND-27S	12/09/97	Trichloroethene	21	JDB
Phase 1	NIC-GW-WND28-120197	WND-28S	12/01/97	cis-1,2-Dichloroethene	1	JDB
Phase 1	NIC-GW-WND28-120197	WND-28S	12/01/97	Trichloroethene	12	JDB
Phase 1	NIC-GW-WND39S-120897	WND-39S	12/08/97	Trichloroethene	47	JDB
Phase 1	NIC-GW-WND39S-120897	WND-39S	12/08/97	cis-1,2-Dichloroethene	7.4	JDB
Phase 1	NIC-GW-WND47D-120397	WND-47D	12/03/97	cis-1,2-Dichloroethene	88	JDB
Phase 1	NIC-GW-WND47S-120397	WND-47S	12/03/97	cis-1,2-Dichloroethene	26	JDB
Phase 1	NIC-GPW-GPA25-2-20-120997	GPA25-2	12/09/97	Trichloroethene	6	JDB
Phase 1	NIC-GPW-GPA24-1-20-121197	GPA24-1	12/11/97	Trichloroethene	12	JDB

Table 6-7a
North Industrial Corridor (NIC) Site
Field Duplicate Results, Groundwater Compounds

Station	Sample Depth	QC Flag	Sample Date	PCE	TCE	C12DCE	VC	TCA	11DCA	11DCE	CT	CFM	BEN	EBN	TOL	XYL-MP	XYL-O	T12DCE	CM	CHEA	12DCP	MECL
Phase 1 Investigation (12/97-6/98)																						
EXC-MW-07B			6/16/1998	<1	99	25	<1	2.0	<1	6.4	<1	<1	<1	<1	<1	<1.3	<1.1	<1	<1	<1	<1	1.4
EXC-MW-07B		DUP	6/16/1998	<1	96	24	<1	2.3	1.1	7.3	<1	<1	<1	<1	<1	<1.3	<1.1	<1	<1	<1	<1	1.6
RPD				*NA*	*3.1*	*4.1*	*NA*	*14.0*	*NA*	*13.1*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*13.3*
GP#34-1	37		1/22/1998	<1	160	99	73	<1	6.2	9.8	<1	<1	2.4	<1	<1	<1.3	<1.1	2.2	5.3	<1	<1	1.5
GP#34-1	37	DUP	1/22/1998	<1	170	110	81	<1	6.3	10	<1	<1	2.4	<1	<1	<1.3	<1.1	2.4	5.3	<1	<1	1.6
RPD				*NA*	*6.1*	*10.5*	*10.4*	*NA*	*1.6*	*2.0*	*NA*	*NA*	*0.0*	*NA*	*NA*	*NA*	*NA*	*8.7*	*0.0*	*NA*	*NA*	*6.5*
GP#34-5	37		1/20/1998	<1	56	150	25	<1	2.9	6.7	<1	<1	<1	<1	<1	<1.3	<1.1	<1	<1	<1	<1	<1
GP#34-5	37	DUP	1/20/1998	<1	54	150	22	<1	2.7	6.6	<1	<1	<1	<1	<1	<1.3	<1.1	<1	<1	<1	<1	<1
RPD				*NA*	*3.6*	*0.0*	*12.8*	*NA*	*7.1*	*1.5*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*
GP#34-7	36		6/8/1998	<1	52	220	18	<1	4.4	14	<1	<1	<1	<1	<1	<1.3	<1.1	3.4	1.6	<1	<1	1.4
GP#34-7	36	DUP	6/8/1998	<1	51	220	17	<1	4.4	14	<1	<1	<1	<1	<1	<1.3	<1.1	3.4	1.4	<1	<1	1.3
RPD				*NA*	*1.9*	*0.0*	*5.7*	*NA*	*0.0*	*0.0*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*0.0*	*13.3*	*NA*	*NA*	*7.4*
GP#43-1	33		12/22/1997	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1.3	<1.1	<1	<1	<1	<1	<1
GP#43-1	33	DUP	12/22/1997	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1.3	<1.1	<1	<1	<1	<1	<1
RPD				*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*
GP#44-4	35		1/16/1998	<1	11	41	<1	<1	2.4	1.4	<1	<1	<1	<1	<1	<1.3	<1.1	3.4	<1	<1	<1	<1
GP#44-4	35	DUP	1/16/1998	<1	9.7	41	<1	<1	2.4	1.6	<1	<1	<1	<1	<1	<1.3	<1.1	3.7	<1	<1	<1	<1
RPD				*NA*	*12.6*	*0.0*	*NA*	*NA*	*0.0*	*13.3*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*8.5*	*NA*	*NA*	*NA*	*NA*
GP#48-2	36		6/5/1998	<1	53	25	40	<1	3.6	2.3	<1	<1	140	2.4	1.2	1.4	<1.1	<1	8.2	<1	<1	<1
GP#48-2	36	DUP	6/5/1998	<1	56	22	35	<1	3.2	2.0	<1	<1	140	2.1	1.1	<1.3	<1.1	<1	6.3	<1	<1	<1
RPD				*NA*	*5.5*	*12.8*	*13.3*	*NA*	*11.8*	*14.0*	*NA*	*NA*	*0.0*	*13.3*	*8.7*	*NA*	*NA*	*NA*	*26.2*	*NA*	*NA*	*NA*
GP#50-1	39		1/8/1998	<1	36	17	26	<1	<1	<1	<1	<1	<1	<1	<1	<1.3	<1.1	<1	<1	<1	<1	<1
GP#50-1	39	DUP	1/8/1998	<1	33	16	25	<1	<1	<1	<1	<1	<1	<1	<1	<1.3	<1.1	<1	<1	<1	<1	<1
RPD				*NA*	*8.7*	*6.1*	*3.9*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*
GP#56-5	37		1/13/1998	<1	120	64	5.2	<1	2.5	1.3	<1	<1	<1	<1	<1	<1.3	<1.1	1.7	<1	<1	<1	<1
GP#56-5	37	DUP	1/13/1998	<1	140	70	5.3	<1	2.5	1.4	<1	<1	<1	<1	<1	<1.3	<1.1	1.7	<1	<1	<1	<1
RPD				*NA*	*15.4*	*9.0*	*1.9*	*NA*	*0.0*	*7.4*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*0.0*	*NA*	*NA*	*NA*	*NA*
GP#62-1	42		1/14/1998	<1	41	50	6.9	<1	1.6	1.1	<1	<1	<1	<1	<1	<1.3	<1.1	<1	<1	<1	<1	<1
GP#62-1	42	DUP	1/14/1998	<1	40	48	5	<1	1.4	<1	<1	<1	<1	<1	<1	<1.3	<1.1	<1	<1	<1	<1	<1
RPD				*NA*	*2.5*	*4.1*	*31.9*	*NA*	*13.3*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*
GPA04-2	39		12/15/1997	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1.3	<1.1	<1	<1	<1	<1	<1
GPA04-2	39	DUP	12/15/1997	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1.3	<1.1	<1	<1	<1	<1	<1
RPD				*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*
GPA06-2	33		12/16/1997	<1	44	11	<1	<1	<1	<1	<1	<1	<1	<1	<1	1.3	<1.1	<1	<1	<1	<1	<1
GPA06-2	33	DUP	12/16/1997	<1	60	12	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1.3	<1.1	<1	<1	<1	<1	<1
RPD				*NA*	*30.8*	*8.7*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*
GPA06-5	36		6/3/1998	2.2	280	39	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1.3	<1.1	1.3	<1	<1	<1	<1
GPA06-5	36	DUP	6/3/1998	<1	310	45	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1.3	<1.1	1.3	<1	<1	<1	<1
RPD				*NA*	*10.2*	*14.3*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*0.0*	*NA*	*NA*	*NA*	*NA*
GPA09-1	35		12/29/1997	1.4	120	15	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1.3	<1.1	<1	<1	<1	<1	<1
GPA09-1	35	DUP	12/29/1997	1.0	100	16	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1.3	<1.1	<1	<1	<1	<1	<1
RPD				*33.3*	*18.2*	*6.5*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*
GPA10-2	36		12/18/1997	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1.3	<1.1	<1	<1	<1	<1	<1
GPA10-2	36	DUP	12/18/1997	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1.3	<1.1	<1	<1	<1	<1	<1
RPD				*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*
GPA12-3	33		12/30/1997	<1	5.2	22	3.6	<1	1.2	<1	<1	<1	230	210	14	62	4.6	<1	1.0	<1	<1	<1
GPA12-3	33	DUP	12/30/1997	<1	5.4	23	3.4	<1	1.1	<1	<1	<1	210	190	17	78	5.8	<1	<1	<1	<1	<1
RPD				*NA*	*3.8*	*4.4*	*5.7*	*NA*	*8.7*	*NA*	*NA*	*NA*	*9.1*	*10.0*	*19.4*	*22.9*	*23.1*	*NA*	*NA*	*NA*	*NA*	*NA*
GPA13-4	35		1/7/1998	<1	100	120	49	<1	3.9	7.8	<1	<1	<1	<1	<1	<1.3	<1.1	<1	<1	<1	<1	<1
GPA13-4	35	DUP	1/7/1998	<1	95	110	45	<1	3.8	7.3	<1	<1	<1	<1	<1	<1.3	<1.1	<1	<1	<1	<1	<1
RPD				*NA*	*5.1*	*8.7*	*8.5*	*NA*	*2.6*	*6.6*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*
GPA19-2	35		12/10/1997	<1	240	38	2.2	1.6	1.9	5.1	<1	<1	<1	<1	<1	<1.3	<1.1	2.3	<1	<1	<1	<1
GPA19-2	35	DUP	12/10/1997	<1	230	35	2.3	1.5	1.7	4.3	<1	<1	<1	<1	<1	<1.3	<1.1	2.4	<1	<1	<1	<1
RPD				*NA*	*4.3*	*8.2*	*4.4*	*6.5*	*11.1*	*17.0*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*4.3*	*NA*	*NA*	*NA*	*NA*

Table 6-7a
North Industrial Corridor (NIC) Site
Field Duplicate Results, Groundwater Compounds

Station	Sample Depth	QC Flag	Sample Date	PCE	TCE	C12DCE	VC	TCA	11DCA	11DCE	CT	CFM	BEN	EBN	TOL	XYL-MP	XYL-O	T12DCE	CM	CHEA	12DCP	MECL
GPA22-1	33		12/3/1997	1.7	3.5	14	<1	<1	1.1	<1	<1	<1	<1	<1	<1	<1.3	<1.1	<1	<1	<1	<1	<1
GPA22-1	33	DUP	12/3/1997	1.8	3.1	12	<1	<1	1.2	<1	<1	<1	<1	<1	<1	<1.3	<1.1	<1	<1	<1	<1	<1
RPD				*5.7*	*12.1*	*15.4*	*NA*	*NA*	*8.7*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*
GPA24-2	36		12/11/1997	<1	580	100	11	<1	3.7	6.4	<1	<1	<1	<1	<1	<1.3	<1.1	6	<1	<1	<1	<1
GPA24-2	36	DUP	12/11/1997	1.3	550	98	11	1.4	3.3	7.7	<1	<1	<1	<1	<1	<1.3	<1.1	6.7	<1	<1	<1	<1
RPD				*NA*	*5.3*	*2.0*	*0.0*	*NA*	*11.4*	*18.4*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*11.0*	*NA*	*NA*	*NA*	*NA*
GPA25-2	28		12/9/1997	<1	4.2	390	11	<1	3.2	4.7	<1	<1	<1	<1	<1	<1.3	<1.1	6.8	<1	<1	<1	<1
GPA25-2	28	DUP	12/9/1997	<1	4.2	410	<1	<1	3.2	5.1	<1	<1	<1	<1	<1	<1.3	<1.1	7.7	<1	<1	<1	<1
RPD				*NA*	*0.0*	*5.0*	*NA*	*NA*	*0.0*	*8.2*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*12.4*	*NA*	*NA*	*NA*	*NA*
GPA25-5	29		6/2/1998	1.1	270	58	3.3	1.2	2.7	6.5	<1	<1	<1	<1	<1	<1.3	<1.1	3.6	<1	<1	<1	1.6
GPA25-5	29	DUP	6/2/1998	1.2	300	50	3.4	<1	2.8	6.6	<1	<1	<1	<1	<1	<1.3	<1.1	3.6	<1	<1	<1	1.8
RPD				*8.7*	*10.5*	*14.8*	*3.0*	*NA*	*3.6*	*1.5*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*0.0*	*NA*	*NA*	*NA*	*11.8*
GPA28-2	20		12/8/1997	5.4	160	38	<1	<1	<1	<1	<1	1.5	<1	<1	<1	<1.3	<1.1	2	<1	<1	<1	<1
GPA28-2	20	DUP	12/8/1997	5.0	130	35	<1	<1	<1	<1	<1	1.3	<1	<1	<1	<1.3	<1.1	2.1	<1	<1	<1	<1
RPD				*7.7*	*20.7*	*8.2*	*NA*	*NA*	*NA*	*NA*	*NA*	*14.3*	*NA*	*NA*	*NA*	*NA*	*NA*	*4.9*	*NA*	*NA*	*NA*	*NA*
GPA29-7	37		5/29/1998	<1	<1	2.4	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1.3	<1.1	<1	<1	<1	<1	<1
GPA29-7	37	DUP	5/29/1998	<1	<1	2.4	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1.3	<1.1	<1	<1	<1	<1	<1
RPD				*NA*	*NA*	*0.0*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*
GPA30-4	36		1/5/1998	<1	66	35	<1	<1	<1	1	1.8	3.8	<1	<1	<1	<1.3	<1.1	<1	<1	<1	<1	<1
GPA30-4	36	DUP	1/5/1998	<1	56	35	<1	<1	<1	<1	2.6	4.3	<1	<1	<1	<1.3	<1.1	<1	<1	<1	<1	<1
RPD				*NA*	*16.4*	*0.0*	*NA*	*NA*	*NA*	*NA*	*36.4*	*12.3*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*
GPA31-4	30		6/11/1998	6.7	270	54	<1	<1	2.1	1.5	<1	<1	<1	<1	3.8	<1.3	<1.1	3.3	<1	<1	<1	<1
GPA31-4	30	DUP	6/11/1998	8.7	280	58	2.3	<1	2.6	1.9	<1	<1	<1	<1	3.3	<1.3	<1.1	3.8	<1	<1	<1	<1
RPD				*26.0*	*3.6*	*7.1*	*NA*	*NA*	*21.3*	*23.5*	*NA*	*NA*	*NA*	*NA*	*14.1*	*NA*	*NA*	*14.1*	*NA*	*NA*	*NA*	*NA*
GPA34-2	23		12/23/1997	<1	2.6	11	1.6	<1	2.7	<1	<1	<1	<1	<1	<1	<1.3	<1.1	<1	<1	<1	<1	<1
GPA34-2	23	DUP	12/23/1997	<1	2.6	12	1.7	<1	3.2	<1	<1	<1	<1	<1	<1	<1.3	<1.1	<1	<1	<1	<1	<1
RPD				*NA*	*0.0*	*8.7*	*6.1*	*NA*	*16.9*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*
GPA36-2	20		12/4/1997	1.3	25	3.3	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1.3	<1.1	<1	<1	<1	<1	<1
GPA36-2	20	DUP	12/4/1997	1.3	26	3.5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1.3	<1.1	<1	<1	<1	<1	<1
RPD				*0.0*	*3.9*	*5.9*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*
GPA42-3	30		5/27/1998	<1	65	35	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1.3	<1.1	1.3	<1	<1	<1	<1
GPA42-3	30	DUP	5/27/1998	<1	55	30	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1.3	<1.1	1.4	<1	<1	<1	<1
RPD				*NA*	*16.7*	*15.4*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*7.4*	*NA*	*NA*	*NA*	*NA*
GPA44-1	34		6/4/1998	<1	26	53	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1.3	<1.1	1.3	<1	<1	<1	1.2
GPA44-1	34	DUP	6/4/1998	<1	22	50	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1.3	<1.1	1.3	<1	<1	<1	1.1
RPD				*NA*	*16.7*	*5.8*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*0.0*	*NA*	*NA*	*NA*	*8.7*
WND-19D			12/3/1997	<1	330	51	2.3	<1	1.3	3.6	<1	<1	<1	<1	<1	1.4	<1.1	<1	<1	<1	<1	<1
WND-19D		DUP	12/3/1997	<1	390	57	2.5	<1	1.7	3.9	<1	<1	<1	<1	<1	1.4	<1.1	3.6	<1	<1	<1	<1
RPD				*NA*	*16.7*	*11.1*	*8.3*	*NA*	*26.7*	*8.0*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*
WND-36S			12/5/1997	<1	<1	4.7	52	<1	9.2	<1	<1	<1	180	72	18	45	12	<1	<1	<1	<1	<1
WND-36S		DUP	12/5/1997	<1	<1	<1	65	<1	9.1	<1	<1	<1	240	99	20	61	14	<1	<1	<1	<1	<1
RPD				*NA*	*NA*	*NA*	*22.2*	*NA*	*1.1*	*NA*	*NA*	*NA*	*28.6*	*31.6*	*10.5*	*30.2*	*15.4*	*NA*	*NA*	*NA*	*NA*	*NA*

Table 6-7a
North Industrial Corridor (NIC) Site
Field Duplicate Results, Groundwater Compounds

Station	Sample Depth	QC Flag	Sample Date	PCE	TCE	C12DCE	VC	TCA	11DCA	11DCE	CT	CFM	BEN	EBN	TOL	XYL-MP	XYL-O	T12DCE	CM	CHEA	12DCP	MECL
Phase 2 Investigation (10/99-5/01)																						
GP#50-3	20		10/19/1999	<1	<1	1.3	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1.3	<1.1	<1	<1	<1	<1	<1
GP#50-3	20	DUP	10/19/1999	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1.3	<1.1	<1	<1	<1	<1	<1
RPD				*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*
GP#55-1	20		11/4/1999	<1	350	33	<1	8.3	2.1	9.6	16	4.9	<1	<1	<1	<1.3	<1.1	1.5	<1	<1	<1	<1
GP#55-1	20	DUP	11/4/1999	<1	320	34	<1	9.5	2.1	9.6	17	4.5	<1	<1	<1	<1.3	<1.1	2.0	<1	<1	<1	<1
RPD				*NA*	*9.0*	*3.0*	*NA*	*13.5*	*0.0*	*0.0*	*6.1*	*8.5*	*NA*	*NA*	*NA*	*NA*	*NA*	*28.6*	*NA*	*NA*	*NA*	*NA*
GP02B-03	33		12/13/1999	<1	96	5.8	<1	1.7	<1	1.8	<1	<1	<1	<1	<1	<1.3	<1.1	<1	<1	<1	<1	<1
GP02B-03	33	DUP	12/13/1999	<1	86	5.7	<1	1.6	<1	1.6	<1	<1	<1	<1	<1	<1.3	<1.1	<1	<1	<1	<1	<1
RPD				*NA*	*11.0*	*1.7*	*NA*	*6.1*	*NA*	*11.8*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*
GP02C-03	38		11/10/1999	1.1	710	250	24	11	10	40	1.5	1.9	3.1	<1	<1	<1.3	<1.1	36	1.6	<1	<1	<1
GP02C-03	38	DUP	11/10/1999	<1	760	290	24	10	10	39	1.2	1.9	3.0	<1	<1	<1.3	<1.1	32	<1	<1	<1	<1
RPD				*NA*	*6.8*	*14.8*	*0.0*	*9.5*	*0.0*	*2.5*	*22.2*	*0.0*	*3.3*	*NA*	*NA*	*NA*	*NA*	*11.8*	*NA*	*NA*	*NA*	*NA*
GP02E-06	32		11/1/1999	<1	490	82	3.6	<1	2.6	3.6	<1	<1	<1	<1	<1	<1.3	<1.1	7.5	<1	<1	<1	<1
GP02E-06	32	DUP	11/1/1999	<1	410	76	3.5	<1	2.6	3.4	<1	<1	<1	<1	<1	<1.3	<1.1	6.1	<1	<1	<1	<1
RPD				*NA*	*17.8*	*7.6*	*2.8*	*NA*	*0.0*	*5.7*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*20.6*	*NA*	*NA*	*NA*	*NA*
GP02F-04	29		10/29/1999	<1	370	72	5.9	<1	2.5	2.8	<1	<1	<1	<1	<1	<1.3	<1.1	6	<1	<1	<1	<1
GP02F-04	29	DUP	10/29/1999	<1	380	68	5.6	<1	2.5	2.6	<1	<1	<1	<1	<1	<1.3	<1.1	5.3	<1	<1	<1	<1
RPD				*NA*	*2.7*	*5.7*	*5.2*	*NA*	*0.0*	*7.4*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*12.4*	*NA*	*NA*	*NA*	*NA*
GP02G-01	17		10/21/1999	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1.3	<1.1	<1	<1	<1	<1	<1
GP02G-01	17	DUP	10/21/1999	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1.3	<1.1	<1	<1	<1	<1	<1
RPD				*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*
GP02H-03	35		10/28/1999	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1.3	<1.1	<1	<1	<1	<1	<1
GP02H-03	35	DUP	10/28/1999	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1.3	<1.1	<1	<1	<1	<1	<1
RPD				*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*
GP02I-03	34		11/29/1999	7.5	360	91	12	<1	4.2	2.7	<1	<1	<1	<1	<1	<1.3	<1.1	9	<1	<1	1.4	<1
GP02I-03	34	DUP	11/29/1999	5.4	310	85	12	<1	3.9	2.6	<1	<1	<1	<1	<1	<1.3	<1.1	8.9	<1	<1	1.3	<1
RPD				*32.6*	*14.9*	*6.8*	*0.0*	*NA*	*7.4*	*3.8*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*1.1*	*NA*	*NA*	*7.4*	*NA*
GP03C-01	28		10/26/1999	<1	240	42	6.9	<1	2.2	4.9	<1	<1	<1	<1	<1	<1.3	<1.1	6	<1	<1	<1	<1
GP03C-01	28	DUP	10/26/1999	<1	240	43	5.2	<1	2	3.6	<1	<1	<1	<1	<1	<1.3	<1.1	4.1	<1	<1	<1	<1
RPD				*NA*	*0.0*	*2.4*	*28.1*	*NA*	*9.5*	*30.6*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*37.6*	*NA*	*NA*	*NA*	*NA*
GP03C-07	34		11/12/1999	<1	130	43	12	<1	2.4	4.5	<1	<1	<1	<1	<1	<1.3	<1.1	2.3	<1	<1	<1	<1
GP03C-07	34	DUP	11/12/1999	<1	160	47	12	<1	2.4	5	<1	<1	<1	<1	<1	<1.3	<1.1	2.1	<1	<1	<1	<1
RPD				*NA*	*20.7*	*8.9*	*0.0*	*NA*	*0.0*	*10.5*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*9.1*	*NA*	*NA*	*NA*	*NA*
GP03D-03	32		11/11/1999	<1	160	29	1.3	<1	<1	1.6	<1	<1	<1	<1	<1	<1.3	<1.1	2.4	<1	<1	<1	<1
GP03D-03	32	DUP	11/11/1999	<1	160	30	1.5	<1	<1	1.8	<1	<1	<1	<1	<1	<1.3	<1.1	2.2	<1	<1	<1	<1
RPD				*NA*	*0.0*	*3.4*	*14.3*	*NA*	*NA*	*11.8*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*8.7*	*NA*	*NA*	*NA*	*NA*
GP03G-04	31		11/23/1999	<1	24	33	1.5	<1	1.2	<1	<1	<1	<1	<1	<1	<1.3	<1.1	2.8	<1	<1	<1	<1
GP03G-04	31	DUP	11/23/1999	<1	22	33	1.6	<1	1.2	<1	<1	<1	<1	<1	<1	<1.3	<1.1	2.6	<1	<1	<1	<1
RPD				*NA*	*8.7*	*0.0*	*6.5*	*NA*	*0.0*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*7.4*	*NA*	*NA*	*NA*	*NA*
GP04B-08	44		11/3/1999	2.9	530	78	2.8	7.5	2.9	17	<1	<1	<1	<1	<1	<1.3	<1.1	5.1	<1	<1	<1	<1
GP04B-08	44	DUP	11/3/1999	2.5	560	80	2.9	7.4	2.9	17	<1	<1	<1	<1	<1	<1.3	<1.1	5.4	<1	<1	<1	<1
RPD				*14.8*	*5.5*	*2.5*	*3.5*	*1.3*	*0.0*	*0.0*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*5.7*	*NA*	*NA*	*NA*	*NA*
GP04E-01	29		10/26/1999	<1	49	33	2.6	<1	<1	<1	<1	<1	<1	<1	<1	<1.3	<1.1	1.5	<1	<1	<1	<1
GP04E-01	29	DUP	10/26/1999	<1	61	31	2.5	<1	<1	<1	<1	<1	<1	<1	<1	<1.3	<1.1	1.5	<1	<1	<1	<1
RPD				*NA*	*21.8*	*6.3*	*3.9*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*0.0*	*NA*	*NA*	*NA*	*NA*
GP04E-07	30		12/9/1999	<1	62	17	1.3	<1	0.58	<1	<1	<1	<1	<1	<1	<1.3	<1.1	0.65	<1	<1	<1	<1
GP04E-07	30	DUP	12/9/1999	<1	54	16	1.2	<1	0.57	<1	<1	<1	<1	<1	<1	<1.3	<1.1	<1	<1	<1	<1	<1
RPD				*NA*	*13.8*	*6.1*	*8.0*	*NA*	*1.7*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*
GP04G-05	35		12/2/1999	<1	54	28	<1	<1	1.1	<1	<1	<1	<1	<1	<1	<1.3	<1.1	2.7	<1	<1	<1	<1
GP04G-05	35	DUP	12/2/1999	<1	47	27	<1	<1	1	<1	<1	<1	<1	<1	<1	<1.3	<1.1	2.0	<1	<1	<1	<1
RPD				*NA*	*13.9*	*3.6*	*NA*	*NA*	*9.5*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*29.8*	*NA*	*NA*	*NA*	*NA*
GP05A-04	29		1/17/2000	<1	94	12	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1.3	<1.1	<1	<1	<1	<1	<1
GP05A-04	29	DUP	1/17/2000	<1	120	8.3	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1.3	<1.1	<1	<1	<1	<1	<1
RPD				*NA*	*24.3*	*36.5*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*

Table 6-7a
North Industrial Corridor (NIC) Site
Field Duplicate Results, Groundwater Compounds

Station	Sample Depth	QC Flag	Sample Date	PCE	TCE	C12DCE	VC	TCA	11DCA	11DCE	CT	CFM	BEN	EBN	TOL	XYL-MP	XYL-O	T12DCE	CM	CHEA	12DCP	MECL
GP06H-03	31		12/8/1999	4.5	5.7	2.2	<1	<1	2.2	1.5	<1	<1	<1	<1	<1	<1.3	<1.1	<1	<1	<1	<1	<1
GP06H-03	31	DUP	12/8/1999	3.4	5.4	2.3	<1	<1	2.3	1.5	<1	<1	<1	<1	<1	<1.3	<1.1	<1	<1	<1	<1	<1
RPD				***27.8***	***5.4***	***4.4***	***NA***	***NA***	***4.4***	***0.0***	***NA***	***NA***	***NA***	***NA***	***NA***	***NA***	***NA***	***NA***	***NA***	***NA***	***NA***	***NA***
GP08C-01	29		12/17/1999	2.9	130	61	3.7	<1	3.8	1.6	<1	<1	<1	<1	<1	<1.3	<1.1	7.1	<1	<1	<1	<1
GP08C-01	29	DUP	12/17/1999	2.1	130	61	3.7	<1	3.6	1.5	<1	<1	<1	<1	<1	<1.3	<1.1	6.7	<1	<1	<1	<1
RPD				***32.0***	***0.0***	***0.0***	***0.0***	***NA***	***5.4***	***6.5***	***NA***	***NA***	***NA***	***NA***	***NA***	***NA***	***NA***	***5.8***	***NA***	***NA***	***NA***	***NA***
GP08E-02	35		12/20/1999	<1	290	71	17	3.2	5.6	19	<1	2.4	6.1	<1	<1	<1.3	<1.1	11	1.8	1.9	<1	<1
GP08E-02	35	DUP	12/20/1999	<1	260	61	18	3.3	6	18	<1	2.5	6.2	<1	<1	<1.3	<1.1	9.7	1.4	2.0	<1	<1
RPD				***NA***	***10.9***	***15.2***	***5.7***	***3.1***	***6.9***	***5.4***	***NA***	***4.1***	***1.6***	***NA***	***NA***	***NA***	***NA***	***12.6***	***25.0***	***5.1***	***NA***	***NA***
NMW-09D			5/10/2001	<1	290	130	25	2.3	8.4	27	<1	<1	<1	<1	<1	<1.3	<1.1	20	<1	<1	<1	<1
NMW-09D		DUP	5/10/2001	<1	310	190	15	1.4	5.9	15	<1	<1	<1	<1	<1	<1.3	<1.1	12	<1	<1	<1	<1
RPD				***NA***	***6.7***	***37.5***	***50.0***	***48.6***	***35.0***	***57.1***	***NA***	***NA***	***NA***	***NA***	***NA***	***NA***	***NA***	***50.0***	***NA***	***NA***	***NA***	***NA***
NMW-29D			5/8/2001	<1	18	9.1	<1	<1	1.4	1	<1	<1	<1	<1	<1	<1.3	<1.1	<1	<1	<1	<1	<1
NMW-29D		DUP	5/8/2001	<1	18	9.1	<1	<1	1.4	1.1	<1	<1	<1	<1	<1	<1.3	<1.1	<1	<1	<1	<1	<1
RPD				***NA***	***0.0***	***0.0***	***NA***	***NA***	***0.0***	***9.5***	***NA***	***NA***	***NA***	***NA***	***NA***	***NA***	***NA***	***NA***	***NA***	***NA***	***NA***	***NA***
NMW-34S			5/7/2001	<1	30	62	23	<1	<1	<1	<1	<1	<1	<1	<1	<1.3	<1.1	2.4	<1	<1	<1	<1
NMW-34S		DUP	5/7/2001	<1	46	72	21	7.5	2.6	3.3	<1	<1	1.7	<1	<1	<1.3	<1.1	1.2	<1	1.0	<1	<1
RPD				***NA***	***42.1***	***14.9***	***9.1***	***NA***	***NA***	***NA***	***NA***	***NA***	***NA***	***NA***	***NA***	***NA***	***NA***	***66.7***	***NA***	***NA***	***NA***	***NA***
WND-18D			5/9/2001	<1	170	80	15	<1	4.8	14	<1	<1	<1	<1	<1	<1.3	<1.1	2.4	<1	<1	<1	<1
WND-18D		DUP	5/9/2001	<1	230	100	15	<1	4.2	13	<1	<1	<1	<1	<1	<1.3	<1.1	2.3	<1	<1	<1	<1
RPD				***NA***	***30.0***	***22.2***	***0.0***	***NA***	***13.3***	***7.4***	***NA***	***NA***	***NA***	***NA***	***NA***	***NA***	***NA***	***4.3***	***NA***	***NA***	***NA***	***NA***
WND-25D			5/10/2001	<1	56	3.7	<1	<1	<1	1.7	<1	<1	<1	<1	<1	<1.3	<1.1	<1	<1	<1	<1	<1
WND-25D		DUP	5/10/2001	<1	55	3.6	<1	<1	<1	1.7	<1	<1	<1	<1	<1	<1.3	<1.1	<1	<1	<1	<1	<1
RPD				***NA***	***1.8***	***2.7***	***NA***	***NA***	***NA***	***0.0***	***NA***	***NA***	***NA***	***NA***	***NA***	***NA***	***NA***	***NA***	***NA***	***NA***	***NA***	***NA***
WND-41D			5/3/2001	3.2	45	4.2	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1.3	<1.1	<1	<1	<1	<1	<1
WND-41D		DUP	5/3/2001	3.2	59	4.6	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1.3	<1.1	<1	<1	<1	<1	<1
RPD				***0.0***	***26.9***	***9.1***	***NA***	***NA***	***NA***	***NA***	***NA***	***NA***	***NA***	***NA***	***NA***	***NA***	***NA***	***NA***	***NA***	***NA***	***NA***	***NA***
WND-45D			5/10/2001	<1	220	54	3.4	<1	2	7.2	<1	<1	<1	<1	<1	<1.3	<1.1	1.9	<1	<1	<1	<1
WND-45D		DUP	5/10/2001	<1	160	41	3.3	<1	2.1	7.3	<1	<1	<1	<1	<1	<1.3	<1.1	2.1	<1	<1	<1	<1
RPD				***NA***	***31.6***	***27.4***	***3.0***	***NA***	***4.9***	***1.4***	***NA***	***NA***	***NA***	***NA***	***NA***	***NA***	***NA***	***10.0***	***NA***	***NA***	***NA***	***NA***
WND-47D			5/9/2001	7.4	340	51	6.1	<1	2.5	4.6	<1	<1	<1	<1	<1	<1.3	<1.1	4.7	<1	<1	<1	<1
WND-47D		DUP	5/9/2001	6.1	110	100	4.4	<1	2.2	3.8	<1	<1	<1	<1	<1	<1.3	<1.1	3.9	<1	<1	<1	<1
RPD				***19.3***	***102.2***	***64.9***	***32.4***	***NA***	***12.8***	***19.0***	***NA***	***NA***	***NA***	***NA***	***NA***	***NA***	***NA***	***18.6***	***NA***	***NA***	***NA***	***NA***
WND-48D			5/8/2001	<1	35	10	<1	12	2.9	7.1	<1	<1	<1	<1	<1	<1.3	<1.1	<1	<1	<1	<1	<1
WND-48D		DUP	5/8/2001	<1	47	13	<1	20	4	12	<1	<1	<1	<1	<1	<1.3	<1.1	<1	<1	<1	<1	<1
RPD				***NA***	***29.3***	***26.1***	***NA***	***50.0***	***31.9***	***51.3***	***NA***	***NA***	***NA***	***NA***	***NA***	***NA***	***NA***	***NA***	***NA***	***NA***	***NA***	***NA***
GP10D-03	18		1/22/2001	<1	<1	<1	1.3	<1	<1	<1	<1	<1	2.9	<2	3.4	<1.3	<1.1	<1	<1	<1	<1	<1
GP10D-03	18	DUP	1/22/2001	<1	<1	<1	1.4	<1	<1	<1	<1	<1	3.7	<2	3.1	<1.3	<1.1	<1	<1	<1	<1	<1
RPD				***NA***	***NA***	***NA***	***7.4***	***NA***	***NA***	***NA***	***NA***	***NA***	***22.5***	***NA***	***6.8***	***NA***	***NA***	***NA***	***NA***	***NA***	***NA***	***NA***

NA = Not applicable (2 detections are required to calculate an RPD)

PCE = Tetrachloroethene
TCE = Trichloroethene
C12DCE = cis-1,2-dichloroethene
VC = Vinyl chloride
TCA = 1,1,1-Trichloroethane
11DCA = 1,1-Dichloroethane
11DCE = 1,1-Dichloroethene
CT = Carbon tetrachloride
CFM = Chloroform
BEN = Benzene
EBN = Ethylbenzene
TOL = Toluene
XYL-MP = m,p-xylene
XYL-O = o-xylene
T12DCE = trans-1,2-Dichloroethene
CM = Chloromethane
CHEA = Chloroethane
12DCP = 1,2-Dichloropropane
MECL = Methylene chloride

Table 6-7b
North Industrial Corridor (NIC) Site
Field Duplicate Results, Other Analytical Parameters

Sample ID	Duplicate ID	Date Collected	Parameter	Units	Original Result	Duplicate Result	RPD
WND-45D	WND-45D-DUP	5/10/01	Aluminum	µg/L	86500	75700	13.32
			Arsenic	µg/L	61.2	54.7	11.22
			Barium	µg/L	2230	1740	24.69
			Barium-Dis	µg/L	96.1	87.8	9.03
			Beryllium	µg/L	7.22	6.17	15.68
			Calcium	µg/L	162000	142000	13.16
			Calcium-DIS	µg/L	129000	120000	7.23
			Chromium	µg/L	112	96.5	14.87
			Cobalt	µg/L	72.2	61	16.82
			Copper	µg/L	163	138	16.61
			Iron	µg/L	114100	118000	-3.36
			Iron-Dis	µg/L	473	486	-2.71
			Lead	µg/L	152	130	15.60
			Lead-Dis	µg/L	13.4	16.1	-18.31
			Magnesium	µg/L	56100	47100	17.44
			Magnesium-Dis	µg/L	25200	23400	7.41
			Manganese	µg/L	1340	1120	17.89
			Manganese-Dis	µg/L	100	95.2	4.92
			Nickel	µg/L	150	127	16.61
			Potassium	µg/L	20600	17300	17.41
			Potassium-Dis	µg/L	3830	3160	19.17
			Selenium-Dis	µg/L	14.1	10.2	32.10
			Silver	µg/L	12.9	10.9	16.81
			Sodium	µg/L	175000	156000	11.48
			Sodium-Dis	µg/L	179000	168000	6.34
			Thallium	µg/L	8.44	8.98	-6.20
			Vanadium	µg/L	279	240	15.03
			Zinc	µg/L	373	320	15.30
NMW-29D	NMW-29D-DUP	5/8/01	Alkalinity, Total	mg/L	375	375	0.00
			Alkalinity,Bicarbonate (CaCO3)	mg/L	367	375	-2.16
			Chloride	mg/L	103	102	0.98
			Nitrogen, Kjeldahl, Total	mg/L	0.229	0.35	-41.80
			Nitrogen, Nitrate	mg/L	0.798	0.741	7.41
			Nitrogen, NO2 plus NO3	mg/L	0.755	0.755	0.00
			Sulfate	mg/L	175	175	0.00
			Total Dissolved Solids	mg/L	788	788	0.00
			Total Organic Carbon	mg/L	2	2	0.00
WND-41S	WND-41S-DUP	5/3/01	Alkalinity, Total	mg/L	322	331	-2.76
			Alkalinity,Bicarbonate (CaCO3)	mg/L	331	331	0.00
			Chloride	mg/L	27.4	27.2	0.73
			Nitrogen, Nitrate	mg/L	14.9	15.2	-1.99
			Nitrogen, NO2 plus NO3	mg/L	15.4	15.4	0.00
			Sulfate	mg/L	72	71.2	1.12
			Total Dissolved Solids	mg/L	599	613	-2.31
			Total Organic Carbon	mg/L	2.6	2.6	0.00
SD-11	SD-11-DUP	5/16/01	Motor Oil	mg/kg	5800	5500	5.31
			2-Methylnaphthalene	µg/kg	2200	1600	31.58
			Benzo(g,h,i)perylene	µg/kg	1600	1600	0.00

Table 6-7c
North Industrial Corridor (NIC) Site
Monitoring Well Sampling Method Duplicate Analysis

Station	Sampling Method	Sample Date	PCE	TCE	C12DCE	VC	TCA	11DCA	11DCE	CT	CFM	BEN
NMW-05D	CV	5/9/2001	<1.0	14	20	1.6	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
NMW-05D	CP	5/9/2001	<1.0	16	23	1.6	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
NMW-05S	CV	5/9/2001	7.8	250	500	86	<1.0	10	3.7	<1.0	<1.0	1.9
NMW-05S	CP	5/9/2001	6.0	140	220	47	<1.0	2.9	1.1	<1.0	<1.0	<1.0
NMW-39D	CV	5/9/2001	<1.0	76	260	18	1.5	6.2	16	<1.0	<1.0	1.6
NMW-39D	CP	5/9/2001	<1.0	220	130	18	1.9	6	17	<1.0	1.1	1.5
NMW-39S	CV	5/9/2001	<1.0	37	320	25	<1.0	8	24	<1.0	<1.0	<1.0
NMW-39S	CP	5/9/2001	<1.0	34	360	26	<1.0	8.4	23	<1.0	<1.0	<1.0
WNC-11D	CV	5/9/2001	<1.0	31	1.6	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
WNC-11D	CP	5/9/2001	<1.0	37	2.4	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0

RPD = Relative Percent Difference
CV = Sampled from bottom of tubing after purging via check valve.
CP = Sampled via gravity drainage from bottom of peristaltic tubing after purging with peristaltic pump, followed by crimping and pulling the tubing.

Table 6-8
North Industrial Corridor (NIC) Site
Summary of Performance Evaluation Sample Results (Phase 1 and 2)

Sample ID	Submittal Date	Parameter	Result	Units	Certified Value	Lower Control Limit	Upper Control Limit
NIC-32223XP-010498	1/4/1998	1,1,1-Trichloroethane	4.5	µg/L	6.37	4.36	6.5
NIC-32223XP-010498	1/4/1998	1,1,2-Trichloroethane	5.3	µg/L	6.36	5.1	7.62
NIC-32223XP-010498	1/4/1998	1,1-Dichloroethene	2.8	µg/L	16.23	12.99	19.47 [1]
NIC-32223XP-010498	1/4/1998	1,2-Dichlorobenzene	12	µg/L	14.73	11.79	17.67
NIC-32223XP-010498	1/4/1998	1,2-Dichloroethane	24	µg/L	23.8	19.6	27.7
NIC-32223XP-010498	1/4/1998	1,2-Dichloropropane	29	µg/L	24.8	20.4	29.6
NIC-32223XP-010498	1/4/1998	1,4-Dichlorobenzene	13	µg/L	13.35	11.05	16.32
NIC-32223XP-010498	1/4/1998	Benzene	5.9	µg/L	9.5	7.62	14.3 [1]
NIC-32223XP-010498	1/4/1998	Carbon Tetrachloride	3.6	µg/L	4.24	3.14	5.96
NIC-32223XP-010498	1/4/1998	Chlorobenzene	20	µg/L	18.9	15.4	21.4
NIC-32223XP-010498	1/4/1998	cis-1,2-Dichloroethene	18	µg/L	17.8	12.6	22.3
NIC-32223XP-010498	1/4/1998	Ethylbenzene	25	µg/L	25.6	19.87	30.2
NIC-32223XP-010498	1/4/1998	m,p-Xylene	32	µg/L	35.6	29.8	40.32
NIC-32223XP-010498	1/4/1998	Methylene chloride	5.5	µg/L	13.35	10.68	16.02 [1]
NIC-32223XP-010498	1/4/1998	o-Xylene	28	µg/L	33.6	25.2	41.2
NIC-32223XP-010498	1/4/1998	Tetrachloroethene	8.4	µg/L	9.61	8.32	10.86
NIC-32223XP-010498	1/4/1998	Toluene	5.4	µg/L	6.03	5.02	7.26
NIC-32223XP-010498	1/4/1998	Trichloroethene	21	µg/L	18.2	15.3	24.6
NIC-32223XP-010498	1/4/1998	Vinyl chloride	3.5	µg/L	29.43	23.55	35.4 [1]
NIC-GPW-3XP-3222	12/9/1997	1,1,1-Trichloroethane	9.9	µg/L	22.2	13.32	31.2 [1]
NIC-GPW-3XP-3222	12/9/1997	1,1,2-Trichloroethane	7.6	µg/L	6.36	5.1	7.62
NIC-GPW-3XP-3222	12/9/1997	1,1-Dichloroethene	13	µg/L	16.23	12.99	19.47
NIC-GPW-3XP-3222	12/9/1997	1,2-Dichlorobenzene	16	µg/L	17.73	14.79	20.67
NIC-GPW-3XP-3222	12/9/1997	1,2-Dichloroethane	39	µg/L	42.3	34.5	50.1
NIC-GPW-3XP-3222	12/9/1997	1,2-Dichloropropane	53	µg/L	43.5	34.8	52.2 [1]
NIC-GPW-3XP-3222	12/9/1997	1,4-Dichlorobenzene	17	µg/L	17.79	14.22	21.36
NIC-GPW-3XP-3222	12/9/1997	Benzene	14	µg/L	15.6	13.08	18.12
NIC-GPW-3XP-3222	12/9/1997	Carbon Tetrachloride	9	µg/L	8.82	7.05	10.86
NIC-GPW-3XP-3222	12/9/1997	Chlorobenzene	37	µg/L	31.8	25.44	38.1

Table 6-8
North Industrial Corridor (NIC) Site
Summary of Performance Evaluation Sample Results (Phase 1 and 2)

Sample ID	Submittal Date	Parameter	Result	Units	Certified Value	Lower Control Limit	Upper Control Limit
NIC-GPW-3XP-3222	12/9/1997	cis-1,2-Dichloroethene	27	µg/L	26.97	21.57	32.4
NIC-GPW-3XP-3222	12/9/1997	Ethylbenzene	46	µg/L	39.3	31.5	47.1
NIC-GPW-3XP-3222	12/9/1997	m,p-Xylene	60	µg/L	53.4	42.78	64.02
NIC-GPW-3XP-3222	12/9/1997	Methylene chloride	13	µg/L	13.35	10.68	16.02
NIC-GPW-3XP-3222	12/9/1997	o-Xylene	52	µg/L	42.6	35.4	51.9
NIC-GPW-3XP-3222	12/9/1997	Tetrachloroethene	13	µg/L	12.6	10.08	15.12
NIC-GPW-3XP-3222	12/9/1997	Toluene	11	µg/L	11.34	9.27	15.06
NIC-GPW-3XP-3222	12/9/1997	trans-1,2-Dichloroethene	3.4	µg/L	3.6	2.88	4.32
NIC-GPW-3XP-3222	12/9/1997	Trichloroethene	29	µg/L	29.43	23.55	35.4
NIC-GPW-3XP-3222	12/9/1997	Vinyl chloride	23	µg/L	22.2	13.32	31.2
NIC-GPW-GPA36-1-35P-121897	12/18/1997	1,1,1-Trichloroethane	24	µg/L	30.6	24	36.8
NIC-GPW-GPA36-1-35P-121897	12/18/1997	1,1,2-Trichloroethane	19	µg/L	24	19	28.4
NIC-GPW-GPA36-1-35P-121897	12/18/1997	1,1-Dichloroethene	31	µg/L	29	23.2	34.8
NIC-GPW-GPA36-1-35P-121897	12/18/1997	1,2-Dichlorobenzene	73	µg/L	88.65	73.95	103.35
NIC-GPW-GPA36-1-35P-121897	12/18/1997	1,2-Dichloroethane	170	µg/L	211.5	172.5	250.5
NIC-GPW-GPA36-1-35P-121897	12/18/1997	1,2-Dichloropropane	180	µg/L	217.5	174	261
NIC-GPW-GPA36-1-35P-121897	12/18/1997	1,4-Dichlorobenzene	78	µg/L	88.95	71.1	106.8
NIC-GPW-GPA36-1-35P-121897	12/18/1997	Benzene	37	µg/L	34	28	49
NIC-GPW-GPA36-1-35P-121897	12/18/1997	Carbon Tetrachloride	21	µg/L	18	13.7	25.2
NIC-GPW-GPA36-1-35P-121897	12/18/1997	Chlorobenzene	160	µg/L	159	127.2	190.5
NIC-GPW-GPA36-1-35P-121897	12/18/1997	cis-1,2-Dichloroethene	120	µg/L	134.85	107.85	162
NIC-GPW-GPA36-1-35P-121897	12/18/1997	Ethylbenzene	190	µg/L	196.5	157.5	235.5
NIC-GPW-GPA36-1-35P-121897	12/18/1997	m,p-Xylene	240	µg/L	267	213.9	320.1
NIC-GPW-GPA36-1-35P-121897	12/18/1997	Methylene chloride	35	µg/L	66.75	53.4	80.1
NIC-GPW-GPA36-1-35P-121897	12/18/1997	o-Xylene	200	µg/L	213	177	259.5
NIC-GPW-GPA36-1-35P-121897	12/18/1997	Tetrachloroethene	30	µg/L	34	29.2	41
NIC-GPW-GPA36-1-35P-121897	12/18/1997	Toluene	27	µg/L	21.3	15.3	28
NIC-GPW-GPA36-1-35P-121897	12/18/1997	trans-1,2-Dichloroethene	9	µg/L	9.2	7.8	13.6
NIC-GPW-GPA36-1-35P-121897	12/18/1997	Trichloroethene	130	µg/L	147.15	117.75	177

Table 6-8
North Industrial Corridor (NIC) Site
Summary of Performance Evaluation Sample Results (Phase 1 and 2)

Sample ID	Submittal Date	Parameter	Result	Units	Certified Value	Lower Control Limit	Upper Control Limit
NIC-GPW-GPA36-1-35P-121897	12/18/1997	Vinyl chloride	110	µg/L	111	66.6	156
NIC-GPW-IXP-3222	12/5/1997	1,1,1-Trichloroethane	3.6	µg/L	3.16	2.53	3.79
NIC-GPW-IXP-3222	12/5/1997	1,1-Dichloroethene	4.6	µg/L	5.41	4.33	6.49
NIC-GPW-IXP-3222	12/5/1997	1,2-Dichlorobenzene	6.2	µg/L	5.91	4.93	6.89
NIC-GPW-IXP-3222	12/5/1997	1,2-Dichloroethane	16	µg/L	14.1	11.5	16.7
NIC-GPW-IXP-3222	12/5/1997	1,2-Dichloropropane	21	µg/L	14.5	11.6	17.4 [1]
NIC-GPW-IXP-3222	12/5/1997	1,4-Dichlorobenzene	7	µg/L	5.93	4.74	7.12
NIC-GPW-IXP-3222	12/5/1997	Benzene	5.9	µg/L	5.2	4.36	6.04
NIC-GPW-IXP-3222	12/5/1997	Carbon Tetrachloride	3.6	µg/L	2.94	2.35	3.62
NIC-GPW-IXP-3222	12/5/1997	Chlorobenzene	12	µg/L	10.6	8.48	12.7
NIC-GPW-IXP-3222	12/5/1997	cis-1,2-Dichloroethene	10	µg/L	8.99	7.19	10.8
NIC-GPW-IXP-3222	12/5/1997	Ethylbenzene	15	µg/L	13.1	10.5	15.7
NIC-GPW-IXP-3222	12/5/1997	m,p-Xylene	20	µg/L	17.8	14.26	21.34
NIC-GPW-IXP-3222	12/5/1997	Methylene chloride	6.6	µg/L	4.45	3.56	5.34 [1]
NIC-GPW-IXP-3222	12/5/1997	o-Xylene	17	µg/L	14.2	11.8	17.3
NIC-GPW-IXP-3222	12/5/1997	Tetrachloroethene	3.5	µg/L	4.2	3.36	5.04
NIC-GPW-IXP-3222	12/5/1997	Toluene	4.9	µg/L	3.78	3.09	5.02
NIC-GPW-IXP-3222	12/5/1997	trans-1,2-Dichloroethene	1.3	µg/L	1.2	0.96	1.44
NIC-GPW-IXP-3222	12/5/1997	Trichloroethene	11	µg/L	9.81	7.85	11.8
NIC-GPW-IXP-3222	12/5/1997	Vinyl chloride	9.3	µg/L	7.4	4.44	10.4
NIC-GPW-GP02I-01P-110599	11/5/1999	Benzene	30	µg/L	31.63	25.33	37.94
NIC-GPW-GP02I-01P-110599	11/5/1999	Carbon tetrachloride	57	µg/L	65.37	52.11	78.63
NIC-GPW-GP02I-01P-110599	11/5/1999	Chlorobenzene	50	µg/L	45.58	36.48	54.86
NIC-GPW-GP02I-01P-110599	11/5/1999	1,2-dichlorobenzene	85	µg/L	68.57	54.86	82.29 [1]
NIC-GPW-GP02I-01P-110599	11/5/1999	1,4-dichlorobenzene	42	µg/L	35.93	28.75	43.11
NIC-GPW-GP02I-01P-110599	11/5/1999	1,2-dichloroethane	64	µg/L	53.03	42.42	63.54 [1]
NIC-GPW-GP02I-01P-110599	11/5/1999	1,1-dichloroethene	16	µg/L	22.99	18.38	27.61
NIC-GPW-GP02I-01P-110599	11/5/1999	cis-1,2-dichloroethene	63	µg/L	63.54	50.74	76.34
NIC-GPW-GP02I-01P-110599	11/5/1999	trans-1,2-dichloroethene	45	µg/L	58.06	46.63	69.49

Table 6-8
North Industrial Corridor (NIC) Site
Summary of Performance Evaluation Sample Results (Phase 1 and 2)

Sample ID	Submittal Date	Parameter	Result	Units	Certified Value	Lower Control Limit	Upper Control Limit
NIC-GPW-GP02I-01P-110599	11/5/1999	1,2-dichloropropane	38	µg/L	33.83	27.06	40.59
NIC-GPW-GP02I-01P-110599	11/5/1999	Ethylbenzene	46	µg/L	48.46	38.77	58.06
NIC-GPW-GP02I-01P-110599	11/5/1999	Methylene chloride	46	µg/L	45.03	36.02	53.94
NIC-GPW-GP02I-01P-110599	11/5/1999	Tetrachloroethene	33	µg/L	41.97	33.55	50.29
NIC-GPW-GP02I-01P-110599	11/5/1999	Toluene	28	µg/L	28.94	23.13	34.74
NIC-GPW-GP02I-01P-110599	11/5/1999	1,1,1-trichloroethane	56	µg/L	61.71	49.37	74.06
NIC-GPW-GP02I-01P-110599	11/5/1999	1,1,2-trichloroethane	80	µg/L	63.54	50.74	76.34
NIC-GPW-GP02I-01P-110599	11/5/1999	Trichloroethene	41	µg/L	48.91	39.13	58.51
NIC-GPW-GP02I-01P-110599	11/5/1999	Vinyl chloride	27	µg/L	13.71	8.23	19.20 [1]
NIC-GPW-GP02I-01P-110599	11/5/1999	m,p-xylene	120	µg/L	125.71	100.66	150.86
NIC-GPW-GP02I-01P-110599	11/5/1999	o-xylene	46	µg/L	44.34	35.47	53.03
NIC-GPW-GP03B-07P-111199	11/11/1999	Benzene	24	µg/L	24.71	19.79	29.64
NIC-GPW-GP03B-07P-111199	11/11/1999	Carbon tetrachloride	45	µg/L	51.07	40.71	61.43
NIC-GPW-GP03B-07P-111199	11/11/1999	Chlorobenzene	31	µg/L	35.61	28.50	42.86
NIC-GPW-GP03B-07P-111199	11/11/1999	1,2-dichlorobenzene	55	µg/L	53.57	42.86	64.29
NIC-GPW-GP03B-07P-111199	11/11/1999	1,4-dichlorobenzene	28	µg/L	28.07	22.46	33.68
NIC-GPW-GP03B-07P-111199	11/11/1999	1,2-dichloroethane	47	µg/L	41.43	33.14	49.64
NIC-GPW-GP03B-07P-111199	11/11/1999	1,1-dichloroethene	15	µg/L	17.96	14.36	21.57
NIC-GPW-GP03B-07P-111199	11/11/1999	cis-1,2-dichloroethene	45	µg/L	49.64	39.64	59.64
NIC-GPW-GP03B-07P-111199	11/11/1999	trans-1,2-dichloroethene	39	µg/L	45.36	36.43	54.29
NIC-GPW-GP03B-07P-111199	11/11/1999	1,2-dichloropropane	29	µg/L	26.43	21.14	31.71
NIC-GPW-GP03B-07P-111199	11/11/1999	Ethylbenzene	33	µg/L	37.86	30.29	45.36
NIC-GPW-GP03B-07P-111199	11/11/1999	Methylene chloride	31	µg/L	35.18	28.14	42.14
NIC-GPW-GP03B-07P-111199	11/11/1999	Tetrachloroethene	30	µg/L	32.79	26.21	39.29
NIC-GPW-GP03B-07P-111199	11/11/1999	Toluene	22	µg/L	22.61	18.07	27.14
NIC-GPW-GP03B-07P-111199	11/11/1999	1,1,1-trichloroethane	56	µg/L	48.21	38.57	57.86
NIC-GPW-GP03B-07P-111199	11/11/1999	1,1,2-trichloroethane	47	µg/L	49.64	39.64	59.64
NIC-GPW-GP03B-07P-111199	11/11/1999	Trichloroethene	36	µg/L	38.21	30.57	45.71
NIC-GPW-GP03B-07P-111199	11/11/1999	Vinyl chloride	10	µg/L	10.71	6.43	15.00

Table 6-8
North Industrial Corridor (NIC) Site
Summary of Performance Evaluation Sample Results (Phase 1 and 2)

Sample ID	Submittal Date	Parameter	Result	Units	Certified Value	Lower Control Limit	Upper Control Limit
NIC-GPW-GP03B-07P-111199	11/11/1999	m,p-xylene	79	µg/L	98.21	78.64	117.86
NIC-GPW-GP03B-07P-111199	11/11/1999	o-xylene	31	µg/L	34.64	27.71	41.43
NIC-GPW-GP03C-05P		Benzene	26	µg/L	27.68	22.16	33.2
NIC-GPW-GP03C-05P		Carbon tetrachloride	57	µg/L	57.2	45.6	68.8
NIC-GPW-GP03C-05P		Chlorobenzene	47	µg/L	39.88	31.92	48
NIC-GPW-GP03C-05P		1,2-dichlorobenzene	69	µg/L	60	48	72
NIC-GPW-GP03C-05P		1,4-dichlorobenzene	37	µg/L	31.44	25.16	37.72
NIC-GPW-GP03C-05P		1,2-dichloroethane	53	µg/L	46.4	37.12	55.6
NIC-GPW-GP03C-05P		1,1-dichloroethene	13	µg/L	20.12	16.08	24.16 [1]
NIC-GPW-GP03C-05P		cis-1,2-dichloroethene	54	µg/L	55.6	44.4	66.8
NIC-GPW-GP03C-05P		trans-1,2-dichloroethene	42	µg/L	50.8	40.8	60.8
NIC-GPW-GP03C-05P		1,2-dichloropropane	33	µg/L	29.6	23.68	35.52
NIC-GPW-GP03C-05P		Ethylbenzene	36	µg/L	42.4	33.92	50.8
NIC-GPW-GP03C-05P		Methylene chloride	39	µg/L	39.4	31.52	47.2
NIC-GPW-GP03C-05P		Tetrachloroethene	23	µg/L	36.72	29.36	44 [1]
NIC-GPW-GP03C-05P		Toluene	25	µg/L	25.32	20.24	30.4
NIC-GPW-GP03C-05P		1,1,1-trichloroethane	55	µg/L	54	43.2	64.8
NIC-GPW-GP03C-05P		1,1,2-trichloroethane	66	µg/L	55.6	44.4	66.8
NIC-GPW-GP03C-05P		Trichloroethene	42	µg/L	42.8	34.24	51.2
NIC-GPW-GP03C-05P		Vinyl chloride	15	µg/L	12	7.2	16.8
NIC-GPW-GP03C-05P		m,p-xylene	85	µg/L	110	88.08	132 [1]
NIC-GPW-GP03C-05P		o-xylene	41	µg/L	38.8	31.04	46.4
NIC-GPW-GP03C-07P-111299	11/29/1999	Benzene	42	µg/L	44.4	35.4	53.4
NIC-GPW-GP03C-07P-111299	11/29/1999	Carbon tetrachloride	52	µg/L	51.6	41.4	61.8
NIC-GPW-GP03C-07P-111299	11/29/1999	Chlorobenzene	48	µg/L	48	38.4	57.6
NIC-GPW-GP03C-07P-111299	11/29/1999	1,2-dichlorobenzene	56	µg/L	54.6	43.8	65.4
NIC-GPW-GP03C-07P-111299	11/29/1999	1,4-dichlorobenzene	47	µg/L	47.1	37.8	56.4
NIC-GPW-GP03C-07P-111299	11/29/1999	1,2-dichloroethane	27	µg/L	24.45	19.56	29.34
NIC-GPW-GP03C-07P-111299	11/29/1999	1,1-dichloroethene	27	µg/L	30.3	24.24	36.3

Table 6-8
North Industrial Corridor (NIC) Site
Summary of Performance Evaluation Sample Results (Phase 1 and 2)

Sample ID	Submittal Date	Parameter	Result	Units	Certified Value	Lower Control Limit	Upper Control Limit
NIC-GPW-GP03C-07P-111299	11/29/1999	cis-1,2-dichloroethene	22	µg/L	21.96	17.58	26.34
NIC-GPW-GP03C-07P-111299	11/29/1999	trans-1,2-dichloroethene	20	µg/L	21.84	17.46	26.22
NIC-GPW-GP03C-07P-111299	11/29/1999	1,2-dichloropropane	33	µg/L	31.8	25.44	38.1
NIC-GPW-GP03C-07P-111299	11/29/1999	Ethylbenzene	18	µg/L	19.02	15.21	22.83
NIC-GPW-GP03C-07P-111299	11/29/1999	Methylene chloride	41	µg/L	38.4	30.6	46.2
NIC-GPW-GP03C-07P-111299	11/29/1999	Tetrachloroethene	13	µg/L	13.77	11.01	16.53
NIC-GPW-GP03C-07P-111299	11/29/1999	Toluene	8.8	µg/L	9.51	7.62	11.4
NIC-GPW-GP03C-07P-111299	11/29/1999	1,1,1-trichloroethane	9.4	µg/L	9.36	7.5	11.22
NIC-GPW-GP03C-07P-111299	11/29/1999	1,1,2-trichloroethane	21	µg/L	17.85	14.28	21.42
NIC-GPW-GP03C-07P-111299	11/29/1999	Trichloroethene	20	µg/L	22.56	18.06	27.06
NIC-GPW-GP03C-07P-111299	11/29/1999	Vinyl chloride	12	µg/L	12	7.2	16.8
NIC-GPW-GP03C-07P-111299	11/29/1999	m,p-xylene	36	µg/L	39.93	31.95	47.85
NIC-GPW-GP03C-07P-111299	11/29/1999	o-xylene	37	µg/L	38.7	30.9	46.5
NIC-GPW-GP03E-09P-102699	10/26/1999	Benzene	28	µg/L	27.68	22.16	33.2
NIC-GPW-GP03E-09P-102699	10/26/1999	Carbon tetrachloride	47	µg/L	57.2	45.6	68.8
NIC-GPW-GP03E-09P-102699	10/26/1999	Chlorobenzene	39	µg/L	39.88	31.92	48
NIC-GPW-GP03E-09P-102699	10/26/1999	1,2-dichlorobenzene	52	µg/L	60	48	72
NIC-GPW-GP03E-09P-102699	10/26/1999	1,4-dichlorobenzene	36	µg/L	31.44	25.16	37.72
NIC-GPW-GP03E-09P-102699	10/26/1999	1,2-dichloroethane	43	µg/L	46.4	37.12	55.6
NIC-GPW-GP03E-09P-102699	10/26/1999	1,1-dichloroethene	22	µg/L	20.12	16.08	24.16
NIC-GPW-GP03E-09P-102699	10/26/1999	cis-1,2-dichloroethene	47	µg/L	55.6	44.4	66.8
NIC-GPW-GP03E-09P-102699	10/26/1999	trans-1,2-dichloroethene	42	µg/L	50.8	40.8	60.8
NIC-GPW-GP03E-09P-102699	10/26/1999	1,2-dichloropropane	29	µg/L	29.6	23.68	35.52
NIC-GPW-GP03E-09P-102699	10/26/1999	Ethylbenzene	35	µg/L	42.4	33.92	50.8
NIC-GPW-GP03E-09P-102699	10/26/1999	Methylene chloride	38	µg/L	39.4	31.52	47.2
NIC-GPW-GP03E-09P-102699	10/26/1999	Tetrachloroethene	43	µg/L	36.72	29.36	44
NIC-GPW-GP03E-09P-102699	10/26/1999	Toluene	27	µg/L	25.32	20.24	30.4
NIC-GPW-GP03E-09P-102699	10/26/1999	1,1,1-trichloroethane	46	µg/L	54	43.2	64.8
NIC-GPW-GP03E-09P-102699	10/26/1999	1,1,2-trichloroethane	53	µg/L	55.6	44.4	66.8

Table 6-8
North Industrial Corridor (NIC) Site
Summary of Performance Evaluation Sample Results (Phase 1 and 2)

Sample ID	Submittal Date	Parameter	Result	Units	Certified Value	Lower Control Limit	Upper Control Limit
NIC-GPW-GP03E-09P-102699	10/26/1999	Trichloroethene	36	µg/L	42.8	34.24	51.2
NIC-GPW-GP03E-09P-102699	10/26/1999	Vinyl chloride	13	µg/L	12	7.2	16.8
NIC-GPW-GP03E-09P-102699	10/26/1999	m,p-xylene	89	µg/L	110	88.08	132
NIC-GPW-GP03E-09P-102699	10/26/1999	o-xylene	39	µg/L	38.8	31.04	46.4
NIC-GPW-GP03G-01P-112999	11/29/1999	Benzene	20	µg/L	22.144	17.728	26.56
NIC-GPW-GP03G-01P-112999	11/29/1999	Carbon tetrachloride	46	µg/L	45.76	36.48	55.04
NIC-GPW-GP03G-01P-112999	11/29/1999	Chlorobenzene	37	µg/L	31.904	25.536	38.4
NIC-GPW-GP03G-01P-112999	11/29/1999	1,2-dichlorobenzene	68	µg/L	48	38.4	57.6 [1]
NIC-GPW-GP03G-01P-112999	11/29/1999	1,4-dichlorobenzene	31	µg/L	25.152	20.128	30.176 [1]
NIC-GPW-GP03G-01P-112999	11/29/1999	1,2-dichloroethane	40	µg/L	37.12	29.696	44.48
NIC-GPW-GP03G-01P-112999	11/29/1999	1,1-dichloroethene	11	µg/L	16.096	12.864	19.328 [1]
NIC-GPW-GP03G-01P-112999	11/29/1999	cis-1,2-dichloroethene	50	µg/L	44.48	35.52	53.44
NIC-GPW-GP03G-01P-112999	11/29/1999	trans-1,2-dichloroethene	30	µg/L	36.6	27	41.2
NIC-GPW-GP03G-01P-112999	11/29/1999	1,2-dichloropropane	27	µg/L	22.6	18.944	28.416
NIC-GPW-GP03G-01P-112999	11/29/1999	Ethylbenzene	35	µg/L	33.92	27.136	40.64
NIC-GPW-GP03G-01P-112999	11/29/1999	Methylene chloride	33	µg/L	31.52	25.216	37.76
NIC-GPW-GP03G-01P-112999	11/29/1999	Tetrachloroethene	26	µg/L	29.376	23.488	35.2
NIC-GPW-GP03G-01P-112999	11/29/1999	Toluene	19	µg/L	20.256	16.192	24.32
NIC-GPW-GP03G-01P-112999	11/29/1999	1,1,1-trichloroethane	47	µg/L	43.2	34.56	51.84
NIC-GPW-GP03G-01P-112999	11/29/1999	1,1,2-trichloroethane	61	µg/L	44.48	35.52	53.44 [1]
NIC-GPW-GP03G-01P-112999	11/29/1999	Trichloroethene	31	µg/L	34.24	27.392	40.96
NIC-GPW-GP03G-01P-112999	11/29/1999	Vinyl chloride	5.9	µg/L	9.6	5.76	13.44
NIC-GPW-GP03G-01P-112999	11/29/1999	m,p-xylene	75	µg/L	88	70.464	105.6
NIC-GPW-GP03G-01P-112999	11/29/1999	o-xylene	31	µg/L	31.04	24.832	37.12
NIC-GPW-GP04B-03P-110599	11/5/1999	Benzene	51	µg/L	59.2	47.2	71.2
NIC-GPW-GP04B-03P-110599	11/5/1999	Carbon tetrachloride	57	µg/L	68.8	55.2	82.4
NIC-GPW-GP04B-03P-110599	11/5/1999	Chlorobenzene	58	µg/L	64	51.2	76.8
NIC-GPW-GP04B-03P-110599	11/5/1999	1,2-dichlorobenzene	73	µg/L	72.8	58.4	87.2
NIC-GPW-GP04B-03P-110599	11/5/1999	1,4-dichlorobenzene	58	µg/L	62.8	50.4	75.2

Table 6-8
North Industrial Corridor (NIC) Site
Summary of Performance Evaluation Sample Results (Phase 1 and 2)

Sample ID	Submittal Date	Parameter	Result	Units	Certified Value	Lower Control Limit	Upper Control Limit
NIC-GPW-GP04B-03P-110599	11/5/1999	1,2-dichloroethane	35	µg/L	32.6	26.08	39.12
NIC-GPW-GP04B-03P-110599	11/5/1999	1,1-dichloroethene	35	µg/L	40.4	32.32	48.4
NIC-GPW-GP04B-03P-110599	11/5/1999	cis-1,2-dichloroethene	29	µg/L	29.28	23.44	35.12
NIC-GPW-GP04B-03P-110599	11/5/1999	trans-1,2-dichloroethene	26	µg/L	29.12	23.28	34.96
NIC-GPW-GP04B-03P-110599	11/5/1999	1,2-dichloropropane	40	µg/L	42.4	33.92	50.8
NIC-GPW-GP04B-03P-110599	11/5/1999	Ethylbenzene	21	µg/L	25.36	20.28	30.44
NIC-GPW-GP04B-03P-110599	11/5/1999	Methylene chloride	45	µg/L	51.2	40.8	61.6
NIC-GPW-GP04B-03P-110599	11/5/1999	Tetrachloroethene	17	µg/L	18.36	14.68	22.04
NIC-GPW-GP04B-03P-110599	11/5/1999	Toluene	12	µg/L	12.68	10.16	15.2
NIC-GPW-GP04B-03P-110599	11/5/1999	1,1,1-trichloroethane	12	µg/L	12.48	10	14.96
NIC-GPW-GP04B-03P-110599	11/5/1999	1,1,2-trichloroethane	24	µg/L	23.8	19.04	28.56
NIC-GPW-GP04B-03P-110599	11/5/1999	Trichloroethene	27	µg/L	30.08	24.08	36.08
NIC-GPW-GP04B-03P-110599	11/5/1999	Vinyl chloride	17	µg/L	16	9.6	22.4
NIC-GPW-GP04B-03P-110599	11/5/1999	m,p-xylene	46	µg/L	53.24	42.6	63.8
NIC-GPW-GP04B-03P-110599	11/5/1999	o-xylene	45	µg/L	51.6	41.2	62
NIC-GPW-GP04H-07P-120399	12/3/1999	Benzene	100	µg/L	103.6	82.6	124.6
NIC-GPW-GP04H-07P-120399	12/3/1999	Carbon tetrachloride	110	µg/L	120.4	96.6	144.2
NIC-GPW-GP04H-07P-120399	12/3/1999	Chlorobenzene	130	µg/L	112	89.6	134.4
NIC-GPW-GP04H-07P-120399	12/3/1999	1,2-dichlorobenzene	140	µg/L	127.4	102.2	152.6
NIC-GPW-GP04H-07P-120399	12/3/1999	1,4-dichlorobenzene	120	µg/L	109.9	88.2	131.6
NIC-GPW-GP04H-07P-120399	12/3/1999	1,2-dichloroethane	53	µg/L	57.05	45.64	68.46
NIC-GPW-GP04H-07P-120399	12/3/1999	1,1-dichloroethene	71	µg/L	70.7	56.56	84.7
NIC-GPW-GP04H-07P-120399	12/3/1999	cis-1,2-dichloroethene	56	µg/L	51.24	41.02	61.46
NIC-GPW-GP04H-07P-120399	12/3/1999	trans-1,2-dichloroethene	52	µg/L	50.96	40.74	61.18
NIC-GPW-GP04H-07P-120399	12/3/1999	1,2-dichloropropane	80	µg/L	74.2	59.36	88.9
NIC-GPW-GP04H-07P-120399	12/3/1999	Ethylbenzene	20	µg/L	44.38	35.49	53.27 [1]
NIC-GPW-GP04H-07P-120399	12/3/1999	Methylene chloride	97	µg/L	89.6	71.4	107.8
NIC-GPW-GP04H-07P-120399	12/3/1999	Tetrachloroethene	34	µg/L	32.13	25.69	38.57
NIC-GPW-GP04H-07P-120399	12/3/1999	Toluene	23	µg/L	22.19	17.78	26.6

Table 6-8
North Industrial Corridor (NIC) Site
Summary of Performance Evaluation Sample Results (Phase 1 and 2)

Sample ID	Submittal Date	Parameter	Result	Units	Certified Value	Lower Control Limit	Upper Control Limit
NIC-GPW-GP04H-07P-120399	12/3/1999	1,1,1-trichloroethane	20	µg/L	21.84	17.5	26.18
NIC-GPW-GP04H-07P-120399	12/3/1999	1,1,2-trichloroethane	49	µg/L	41.65	33.32	49.98
NIC-GPW-GP04H-07P-120399	12/3/1999	Trichloroethene	51	µg/L	52.64	42.14	63.14
NIC-GPW-GP04H-07P-120399	12/3/1999	Vinyl chloride	31	µg/L	28	16.8	39.2
NIC-GPW-GP04H-07P-120399	12/3/1999	m,p-xylene	100	µg/L	93.17	74.55	111.65
NIC-GPW-GP04H-07P-120399	12/3/1999	o-xylene	100	µg/L	90.3	72.1	108.5
NIC-GPW-GP06H-01P-120799	12/7/1999	Benzene	61	µg/L	88.8	70.8	106.8 [1]
NIC-GPW-GP06H-01P-120799	12/7/1999	Carbon tetrachloride	57	µg/L	103.2	82.8	123.6 [1]
NIC-GPW-GP06H-01P-120799	12/7/1999	Chlorobenzene	64	µg/L	96	76.8	115.2 [1]
NIC-GPW-GP06H-01P-120799	12/7/1999	1,2-dichlorobenzene	90	µg/L	109.2	87.6	130.8
NIC-GPW-GP06H-01P-120799	12/7/1999	1,4-dichlorobenzene	70	µg/L	94.2	75.6	112.8 [1]
NIC-GPW-GP06H-01P-120799	12/7/1999	1,2-dichloroethane	51	µg/L	48.9	39.12	58.68
NIC-GPW-GP06H-01P-120799	12/7/1999	1,1-dichloroethene	30	µg/L	60.6	48.48	72.6 [1]
NIC-GPW-GP06H-01P-120799	12/7/1999	cis-1,2-dichloroethene	53	µg/L	43.92	35.16	52.68 [1]
NIC-GPW-GP06H-01P-120799	12/7/1999	trans-1,2-dichloroethene	49	µg/L	43.68	34.92	52.44
NIC-GPW-GP06H-01P-120799	12/7/1999	1,2-dichloropropane	46	µg/L	63.6	50.88	76.2 [1]
NIC-GPW-GP06H-01P-120799	12/7/1999	Ethylbenzene	45	µg/L	38.04	30.42	45.66
NIC-GPW-GP06H-01P-120799	12/7/1999	Methylene chloride	51	µg/L	76.8	61.2	92.4 [1]
NIC-GPW-GP06H-01P-120799	12/7/1999	Tetrachloroethene	33	µg/L	27.54	22.02	33.06
NIC-GPW-GP06H-01P-120799	12/7/1999	Toluene	21	µg/L	19.02	15.24	22.8
NIC-GPW-GP06H-01P-120799	12/7/1999	1,1,1-trichloroethane	20	µg/L	18.72	15	22.44
NIC-GPW-GP06H-01P-120799	12/7/1999	1,1,2-trichloroethane	49	µg/L	35.7	28.56	42.84 [1]
NIC-GPW-GP06H-01P-120799	12/7/1999	Trichloroethene	48	µg/L	45.12	36.12	54.12
NIC-GPW-GP06H-01P-120799	12/7/1999	Vinyl chloride	28	µg/L	24	14.4	33.6
NIC-GPW-GP06H-01P-120799	12/7/1999	m,p-xylene	44	µg/L	79.86	63.9	95.7 [1]
NIC-GPW-GP06H-01P-120799	12/7/1999	o-xylene	45	µg/L	77.4	61.8	93 [1]
NIC-GPW-GP10F-01P-031000	3/10/2000	Benzene	11	µg/L	9.88	5.93	13.8
NIC-GPW-GP10F-01P-031000	3/10/2000	Carbon tetrachloride	6.8	µg/L	5.97	3.58	8.36

Table 6-8
North Industrial Corridor (NIC) Site
Summary of Performance Evaluation Sample Results (Phase 1 and 2)

Sample ID	Submittal Date	Parameter	Result	Units	Certified Value	Lower Control Limit	Upper Control Limit
NIC-GPW-GP10F-01P-031000	3/10/2000	Chlorobenzene	10	µg/L	8.97	5.38	12.6
NIC-GPW-GP10F-01P-031000	3/10/2000	1,2-dichlorobenzene	9.4	µg/L	9.12	5.47	12.8
NIC-GPW-GP10F-01P-031000	3/10/2000	1,4-dichlorobenzene	15	µg/L	15.2	12.2	18.2
NIC-GPW-GP10F-01P-031000	3/10/2000	1,2-dichloroethane	7.7	µg/L	6.98	4.19	9.77
NIC-GPW-GP10F-01P-031000	3/10/2000	1,1-dichloroethene	13	µg/L	13.1	10.5	15.7
NIC-GPW-GP10F-01P-031000	3/10/2000	cis-1,2-dichloroethene	13	µg/L	12.1	9.68	14.5
NIC-GPW-GP10F-01P-031000	3/10/2000	trans-1,2-dichloroethene	13	µg/L	12.7	10.2	15.2
NIC-GPW-GP10F-01P-031000	3/10/2000	1,2-dichloropropane	13	µg/L	13.2	10.6	15.8
NIC-GPW-GP10F-01P-031000	3/10/2000	Ethylbenzene	8.5	µg/L	8.98	5.39	12.6
NIC-GPW-GP10F-01P-031000	3/10/2000	Methylene chloride	13	µg/L	12.3	9.84	14.8
NIC-GPW-GP10F-01P-031000	3/10/2000	Tetrachloroethene	8.2	µg/L	7.8	4.68	10.9
NIC-GPW-GP10F-01P-031000	3/10/2000	Toluene	12	µg/L	13.2	10.6	15.8
NIC-GPW-GP10F-01P-031000	3/10/2000	1,1,1-trichloroethane	11	µg/L	10.9	8.72	13.1
NIC-GPW-GP10F-01P-031000	3/10/2000	1,1,2-trichloroethane	8.8	µg/L	7.94	4.76	11.1
NIC-GPW-GP10F-01P-031000	3/10/2000	Trichloroethene	17	µg/L	16.1	12.9	19.3
NIC-GPW-GP10F-01P-031000	3/10/2000	Vinyl chloride		µg/L	4.5	2.7	6.3 [1]
NIC-GPW-GP10F-01P-031000	3/10/2000	m,p-xylene	15	µg/L	21.62	15.73	27.5
NIC-GPW-GP10F-01P-031000	3/10/2000	o-xylene	8.1	µg/L	10.2	8.16	12.2
NIC-GPW-GPA15-2P-20-101999	10/19/1999	Benzene	80	µg/L	72.66	58.17	87.15
NIC-GPW-GPA15-2P-20-101999	10/19/1999	Carbon tetrachloride	170	µg/L	150.15	119.7	180.6
NIC-GPW-GPA15-2P-20-101999	10/19/1999	Chlorobenzene	120	µg/L	104.685	83.79	126
NIC-GPW-GPA15-2P-20-101999	10/19/1999	1,2-dichlorobenzene	180	µg/L	157.5	126	189
NIC-GPW-GPA15-2P-20-101999	10/19/1999	1,4-dichlorobenzene	95	µg/L	82.53	66.045	99.015
NIC-GPW-GPA15-2P-20-101999	10/19/1999	1,2-dichloroethane	140	µg/L	121.8	97.44	145.95
NIC-GPW-GPA15-2P-20-101999	10/19/1999	1,1-dichloroethene	62	µg/L	52.815	42.21	63.42
NIC-GPW-GPA15-2P-20-101999	10/19/1999	cis-1,2-dichloroethene	170	µg/L	145.95	116.55	175.35
NIC-GPW-GPA15-2P-20-101999	10/19/1999	trans-1,2-dichloroethene	150	µg/L	133.35	107.1	159.6
NIC-GPW-GPA15-2P-20-101999	10/19/1999	1,2-dichloropropane	87	µg/L	77.7	62.16	93.24
NIC-GPW-GPA15-2P-20-101999	10/19/1999	Ethylbenzene	130	µg/L	111.3	89.04	133.35

Table 6-8
North Industrial Corridor (NIC) Site
Summary of Performance Evaluation Sample Results (Phase 1 and 2)

Sample ID	Submittal Date	Parameter	Result	Units	Certified Value	Lower Control Limit	Upper Control Limit
NIC-GPW-GPA15-2P-20-101999	10/19/1999	Methylene chloride	120	µg/L	103.425	82.74	123.9
NIC-GPW-GPA15-2P-20-101999	10/19/1999	Tetrachloroethene	110	µg/L	96.39	77.07	115.5
NIC-GPW-GPA15-2P-20-101999	10/19/1999	Toluene	76	µg/L	66.465	53.13	79.8
NIC-GPW-GPA15-2P-20-101999	10/19/1999	1,1,1-trichloroethane	160	µg/L	141.75	113.4	170.1
NIC-GPW-GPA15-2P-20-101999	10/19/1999	1,1,2-trichloroethane	180	µg/L	145.95	116.55	175.35 [1]
NIC-GPW-GPA15-2P-20-101999	10/19/1999	Trichloroethene	130	µg/L	112.35	89.88	134.4
NIC-GPW-GPA15-2P-20-101999	10/19/1999	Vinyl chloride	36	µg/L	31.5	18.9	44.1
NIC-GPW-GPA15-2P-20-101999	10/19/1999	m,p-xylene	310	µg/L	288.75	231.21	346.5
NIC-GPW-GPA15-2P-20-101999	10/19/1999	o-xylene	120	µg/L	101.85	81.48	121.8
NIC-GW-WNC-16DP-051001	5/10/2001	Benzene	1 U	µg/L	9.22	5.53	12.9 [1]
NIC-GW-WNC-16DP-051001	5/10/2001	Carbon tetrachloride	1 U	µg/L	7.64	4.58	10.7 [1]
NIC-GW-WNC-16DP-051001	5/10/2001	Chlorobenzene	2.2	µg/L	29.3	23.4	35.2 [1]
NIC-GW-WNC-16DP-051001	5/10/2001	1,2-dichlorobenzene	1 U	µg/L	12.9	10.3	15.5 [1]
NIC-GW-WNC-16DP-051001	5/10/2001	1,4-dichlorobenzene	1.1	µg/L	14	11.2	16.8 [1]
NIC-GW-WNC-16DP-051001	5/10/2001	1,2-dichloroethane	1 U	µg/L	10.9	8.72	13.1 [1]
NIC-GW-WNC-16DP-051001	5/10/2001	1,1-dichloroethene	1 U	µg/L	11.2	8.96	13.4 [1]
NIC-GW-WNC-16DP-051001	5/10/2001	cis-1,2-dichloroethene	1.5	µg/L	21.5	17.2	25.8 [1]
NIC-GW-WNC-16DP-051001	5/10/2001	trans-1,2-dichloroethene	1 U	µg/L	4.66	2.8	6.52 [1]
NIC-GW-WNC-16DP-051001	5/10/2001	1,2-dichloropropane	1.4 U	µg/L	19.7	15.8	23.6 [1]
NIC-GW-WNC-16DP-051001	5/10/2001	Ethylbenzene	1 U	µg/L	9.15	5.49	12.8 [1]
NIC-GW-WNC-16DP-051001	5/10/2001	Methylene chloride	18	µg/L	7.23	4.34	10.1 [1]
NIC-GW-WNC-16DP-051001	5/10/2001	Tetrachloroethene	1 U	µg/L	11	8.8	13.2 [1]
NIC-GW-WNC-16DP-051001	5/10/2001	Toluene	1 U	µg/L	9.15	5.49	12.8 [1]
NIC-GW-WNC-16DP-051001	5/10/2001	1,1,1-trichloroethane	1 U	µg/L	16.7	13.4	20 [1]
NIC-GW-WNC-16DP-051001	5/10/2001	1,1,2-trichloroethane	1 U	µg/L	5.82	3.49	8.15 [1]
NIC-GW-WNC-16DP-051001	5/10/2001	Trichloroethene	1 U	µg/L	4.3	2.58	6.02 [1]
NIC-GW-WNC-16DP-051001	5/10/2001	Vinyl chloride	1 U	µg/L	4.13	2.48	5.78 [1]

Table 6-8
North Industrial Corridor (NIC) Site
Summary of Performance Evaluation Sample Results (Phase 1 and 2)

Sample ID	Submittal Date	Parameter	Result	Units	Certified Value	Lower Control Limit	Upper Control Limit
NIC-GW-WNC-16DP-051001	5/10/2001	m,p-xylene	1.3 U	µg/L	14.56	8.64	20.13 [1]
NIC-GW-WNC-16DP-051001	5/10/2001	o-xylene	1.1 U	µg/L	14.4	11.5	17.3 [1]
NIC-GW-WND-01SP-050801	5/8/2001	Benzene	36	µg/L	32.75	19.65	45.85
NIC-GW-WND-01SP-050801	5/8/2001	Carbon tetrachloride	62	µg/L	53.5	42.8	64
NIC-GW-WND-01SP-050801	5/8/2001	Chlorobenzene	60	µg/L	57	45.6	68.5
NIC-GW-WND-01SP-050801	5/8/2001	1,2-dichlorobenzene	77	µg/L	67	53.5	80.5
NIC-GW-WND-01SP-050801	5/8/2001	1,4-dichlorobenzene	44	µg/L	41.6	24.95	58
NIC-GW-WND-01SP-050801	5/8/2001	1,2-dichloroethane	75	µg/L	67	53.5	80.5
NIC-GW-WND-01SP-050801	5/8/2001	1,1-dichloroethene	19	µg/L	20.25	12.15	28.35
NIC-GW-WND-01SP-050801	5/8/2001	cis-1,2-dichloroethene	180	µg/L	158.5	127	190
NIC-GW-WND-01SP-050801	5/8/2001	trans-1,2-dichloroethene	47	µg/L	45.85	27.5	64
NIC-GW-WND-01SP-050801	5/8/2001	1,2-dichloropropane	36	µg/L	31.7	19	44.4
NIC-GW-WND-01SP-050801	5/8/2001	Ethylbenzene	14	µg/L	13.85	8.3	19.4
NIC-GW-WND-01SP-050801	5/8/2001	Methylene chloride	100	µg/L	94.5	75.5	113.5
NIC-GW-WND-01SP-050801	5/8/2001	Tetrachloroethene	67	µg/L	65.5	52.5	78.5
NIC-GW-WND-01SP-050801	5/8/2001	Toluene	100	µg/L	96.5	77	116
NIC-GW-WND-01SP-050801	5/8/2001	1,1,1-trichloroethane	66	µg/L	59.5	47.6	71.5
NIC-GW-WND-01SP-050801	5/8/2001	1,1,2-trichloroethane	96	µg/L	81.5	65	98
NIC-GW-WND-01SP-050801	5/8/2001	Trichloroethene	50	µg/L	48.5	29.1	68
NIC-GW-WND-01SP-050801	5/8/2001	Vinyl chloride	54	µg/L	125	75	175 [1]
NIC-GW-WND-01SP-050801	5/8/2001	m,p-xylene	64	µg/L	127.5	92	163 [1]
NIC-GW-WND-01SP-050801	5/8/2001	o-xylene	37	µg/L	31.9	19.15	44.65
NIC-GW-WND-12DP-050301	5/3/2001	Benzene	1 U	µg/L	6.55	3.93	9.17 [1]
NIC-GW-WND-12DP-050301	5/3/2001	Carbon tetrachloride	1 U	µg/L	10.7	8.56	12.8 [1]
NIC-GW-WND-12DP-050301	5/3/2001	Chlorobenzene	1 U	µg/L	11.4	9.12	13.7 [1]
NIC-GW-WND-12DP-050301	5/3/2001	1,2-dichlorobenzene	1 U	µg/L	13.4	10.7	16.1 [1]
NIC-GW-WND-12DP-050301	5/3/2001	1,4-dichlorobenzene	1 U	µg/L	8.32	4.99	11.6 [1]
NIC-GW-WND-12DP-050301	5/3/2001	1,2-dichloroethane	1 U	µg/L	13.4	10.7	16.1 [1]

Table 6-8
North Industrial Corridor (NIC) Site
Summary of Performance Evaluation Sample Results (Phase 1 and 2)

Sample ID	Submittal Date	Parameter	Result	Units	Certified Value	Lower Control Limit	Upper Control Limit
NIC-GW-WND-12DP-050301	5/3/2001	1,1-dichloroethene	1 U	µg/L	4.05	2.43	5.67 [1]
NIC-GW-WND-12DP-050301	5/3/2001	cis-1,2-dichloroethene	1 U	µg/L	31.7	25.4	38 [1]
NIC-GW-WND-12DP-050301	5/3/2001	trans-1,2-dichloroethene	1 U	µg/L	9.17	5.5	12.8 [1]
NIC-GW-WND-12DP-050301	5/3/2001	1,2-dichloropropane	1 U	µg/L	6.34	3.8	8.88 [1]
NIC-GW-WND-12DP-050301	5/3/2001	Ethylbenzene	1 U	µg/L	2.77	1.66	3.88 [1]
NIC-GW-WND-12DP-050301	5/3/2001	Methylene chloride	1.4	µg/L	18.9	15.1	22.7 [1]
NIC-GW-WND-12DP-050301	5/3/2001	Tetrachloroethene	1 U	µg/L	13.1	10.5	15.7 [1]
NIC-GW-WND-12DP-050301	5/3/2001	Toluene	1 U	µg/L	19.3	15.4	23.2 [1]
NIC-GW-WND-12DP-050301	5/3/2001	1,1,1-trichloroethane	1 U	µg/L	11.9	9.52	14.3 [1]
NIC-GW-WND-12DP-050301	5/3/2001	1,1,2-trichloroethane	1 U	µg/L	16.3	13	19.6 [1]
NIC-GW-WND-12DP-050301	5/3/2001	Trichloroethene	1 U	µg/L	9.7	5.82	13.6 [1]
NIC-GW-WND-12DP-050301	5/3/2001	Vinyl chloride	1 U	µg/L	25	15	35 [1]
NIC-GW-WND-12DP-050301	5/3/2001	m,p-xylene	1.3 U	µg/L	25.5	18.4	32.6 [1]
NIC-GW-WND-12DP-050301	5/3/2001	o-xylene	1.1 U	µg/L	6.38	3.83	8.93 [1]
NIC-GW-WND-12DP2-050301	5/3/2001	Benzene	1 U	µg/L	6.55	3.93	9.17 [1]
NIC-GW-WND-12DP2-050301	5/3/2001	Carbon tetrachloride	1 U	µg/L	10.7	8.56	12.8 [1]
NIC-GW-WND-12DP2-050301	5/3/2001	Chlorobenzene	1 U	µg/L	11.4	9.12	13.7 [1]
NIC-GW-WND-12DP2-050301	5/3/2001	1,2-dichlorobenzene	1 U	µg/L	13.4	10.7	16.1 [1]
NIC-GW-WND-12DP2-050301	5/3/2001	1,4-dichlorobenzene	1 U	µg/L	8.32	4.99	11.6 [1]
NIC-GW-WND-12DP2-050301	5/3/2001	1,2-dichloroethane	1 U	µg/L	13.4	10.7	16.1 [1]
NIC-GW-WND-12DP2-050301	5/3/2001	1,1-dichloroethene	1 U	µg/L	4.05	2.43	5.67 [1]
NIC-GW-WND-12DP2-050301	5/3/2001	cis-1,2-dichloroethene	1 U	µg/L	31.7	25.4	38 [1]
NIC-GW-WND-12DP2-050301	5/3/2001	trans-1,2-dichloroethene	1 U	µg/L	9.17	5.5	12.8 [1]
NIC-GW-WND-12DP2-050301	5/3/2001	1,2-dichloropropane	1 U	µg/L	6.34	3.8	8.88 [1]
NIC-GW-WND-12DP2-050301	5/3/2001	Ethylbenzene	1 U	µg/L	2.77	1.66	3.88 [1]
NIC-GW-WND-12DP2-050301	5/3/2001	Methylene chloride	1.5	µg/L	18.9	15.1	22.7 [1]

Table 6-8
North Industrial Corridor (NIC) Site
Summary of Performance Evaluation Sample Results (Phase 1 and 2)

Sample ID	Submittal Date	Parameter	Result	Units	Certified Value	Lower Control Limit	Upper Control Limit
NIC-GW-WND-12DP2-050301	5/3/2001	Tetrachloroethene	1 U	µg/L	13.1	10.5	15.7 [1]
NIC-GW-WND-12DP2-050301	5/3/2001	Toluene	1 U	µg/L	19.3	15.4	23.2 [1]
NIC-GW-WND-12DP2-050301	5/3/2001	1,1,1-trichloroethane	1 U	µg/L	11.9	9.52	14.3 [1]
NIC-GW-WND-12DP2-050301	5/3/2001	1,1,2-trichloroethane	1 U	µg/L	16.3	13	19.6 [1]
NIC-GW-WND-12DP2-050301	5/3/2001	Trichloroethene	1 U	µg/L	9.7	5.82	13.6 [1]
NIC-GW-WND-12DP2-050301	5/3/2001	Vinyl chloride	1 U	µg/L	25	15	35 [1]
NIC-GW-WND-12DP2-050301	5/3/2001	m,p-xylene	1.3 U	µg/L	25.5	18.4	32.6 [1]
NIC-GW-WND-12DP2-050301	5/3/2001	o-xylene	1.1 U	µg/L	6.38	3.83	8.93 [1]
NIC-GW-WND-33DP-050701	5/7/2001	Benzene	12	µg/L	13.1	7.86	18.34
NIC-GW-WND-33DP-050701	5/7/2001	Carbon tetrachloride	17	µg/L	21.4	17.12	25.6
NIC-GW-WND-33DP-050701	5/7/2001	Chlorobenzene	19	µg/L	22.8	18.24	27.4
NIC-GW-WND-33DP-050701	5/7/2001	1,2-dichlorobenzene	25	µg/L	26.8	21.4	32.2
NIC-GW-WND-33DP-050701	5/7/2001	1,4-dichlorobenzene	14	µg/L	16.64	9.98	23.2
NIC-GW-WND-33DP-050701	5/7/2001	1,2-dichloroethane	24	µg/L	26.8	21.4	32.2
NIC-GW-WND-33DP-050701	5/7/2001	1,1-dichloroethene	6.3	µg/L	8.1	4.86	11.34
NIC-GW-WND-33DP-050701	5/7/2001	cis-1,2-dichloroethene	58	µg/L	63.4	50.8	76
NIC-GW-WND-33DP-050701	5/7/2001	trans-1,2-dichloroethene	16	µg/L	18.34	11	25.6
NIC-GW-WND-33DP-050701	5/7/2001	1,2-dichloropropane	12	µg/L	12.68	7.6	17.76
NIC-GW-WND-33DP-050701	5/7/2001	Ethylbenzene	4.8	µg/L	5.54	3.32	7.76
NIC-GW-WND-33DP-050701	5/7/2001	Methylene chloride	34	µg/L	37.8	30.2	45.4
NIC-GW-WND-33DP-050701	5/7/2001	Tetrachloroethene	21	µg/L	26.2	21	31.4
NIC-GW-WND-33DP-050701	5/7/2001	Toluene	35	µg/L	38.6	30.8	46.4
NIC-GW-WND-33DP-050701	5/7/2001	1,1,1-trichloroethane	22	µg/L	23.8	19.04	28.6
NIC-GW-WND-33DP-050701	5/7/2001	1,1,2-trichloroethane	33	µg/L	32.6	26	39.2
NIC-GW-WND-33DP-050701	5/7/2001	Trichloroethene	15	µg/L	19.4	11.64	27.2
NIC-GW-WND-33DP-050701	5/7/2001	Vinyl chloride	24	µg/L	50	30	70 [1]
NIC-GW-WND-33DP-050701	5/7/2001	m,p-xylene	46	µg/L	51	36.8	65.2
NIC-GW-WND-33DP-050701	5/7/2001	o-xylene	12	µg/L	12.76	7.66	17.86

Table 6-8
North Industrial Corridor (NIC) Site
Summary of Performance Evaluation Sample Results (Phase 1 and 2)

Sample ID	Submittal Date	Parameter	Result	Units	Certified Value	Lower Control Limit	Upper Control Limit
NIC-SW-15P-051601	5/16/2001	Benzene	18	µg/L	18.44	11.06	25.8
NIC-SW-15P-051601	5/16/2001	Carbon tetrachloride	15	µg/L	15.28	9.16	21.4
NIC-SW-15P-051601	5/16/2001	Chlorobenzene	60	µg/L	58.6	46.8	70.4
NIC-SW-15P-051601	5/16/2001	1,2-dichlorobenzene	26	µg/L	25.8	20.6	31
NIC-SW-15P-051601	5/16/2001	1,4-dichlorobenzene	25	µg/L	28	22.4	33.6
NIC-SW-15P-051601	5/16/2001	1,2-dichloroethane	21	µg/L	21.8	17.44	26.2
NIC-SW-15P-051601	5/16/2001	1,1-dichloroethene	25	µg/L	22.4	17.92	26.8
NIC-SW-15P-051601	5/16/2001	cis-1,2-dichloroethene	41	µg/L	43	34.4	51.6
NIC-SW-15P-051601	5/16/2001	trans-1,2-dichloroethene	9.3	µg/L	9.32	5.6	13.04
NIC-SW-15P-051601	5/16/2001	1,2-dichloropropane	40	µg/L	39.4	31.6	47.2
NIC-SW-15P-051601	5/16/2001	Ethylbenzene	20	µg/L	18.3	10.98	25.6
NIC-SW-15P-051601	5/16/2001	Methylene chloride	21	µg/L	14.46	8.68	20.2 [1]
NIC-SW-15P-051601	5/16/2001	Tetrachloroethene	23	µg/L	22	17.6	26.4
NIC-SW-15P-051601	5/16/2001	Toluene	18	µg/L	18.3	10.98	25.6
NIC-SW-15P-051601	5/16/2001	1,1,1-trichloroethane	35	µg/L	33.4	26.8	40
NIC-SW-15P-051601	5/16/2001	1,1,2-trichloroethane	13	µg/L	11.64	6.98	16.3
NIC-SW-15P-051601	5/16/2001	Trichloroethene	7.5	µg/L	8.6	5.16	12.04
NIC-SW-15P-051601	5/16/2001	Vinyl chloride	12	µg/L	8.26	4.96	11.56
NIC-SW-15P-051601	5/16/2001	m,p-xylene	20	µg/L	29.12	17.28	40.26
NIC-SW-15P-051601	5/16/2001	o-xylene	32	µg/L	28.8	23	34.6

[1]Result Outside Control Limits

Table 6-9
North Industrial Corridor (NIC) Site
Summary of Sample Results Qualified Due to Holding Time Violations

Investigation	Sample ID	Sample Date	Date Analyzed	Compound	Detect Flag	Media	Result	Units	CDM Final Flag	Days Outside of Holding Times
Phase 1	NIC-GPW-GP#- 50-6-20 060498	6/4/1998	6/23/1998	trans-1,2-Dichloroethene	U	Water	1	µg/L	JH	5
Phase 1	NIC-GPW-GP#- 50-6-20 060498	6/4/1998	6/23/1998	Chloromethane	U	Water	1	µg/L	JH	5
Phase 1	NIC-GPW-GP#- 50-6-20 060498	6/4/1998	6/23/1998	cis-1,3-Dichloropropene	U	Water	1	µg/L	JH	5
Phase 1	NIC-GPW-GP#- 50-6-20 060498	6/4/1998	6/23/1998	Ethylbenzene	U	Water	1	µg/L	JH	5
Phase 1	NIC-GPW-GP#- 50-6-20 060498	6/4/1998	6/23/1998	m,p-Xylene	U	Water	1.3	µg/L	JH	5
Phase 1	NIC-GPW-GP#- 50-6-20 060498	6/4/1998	6/23/1998	o-Xylene	U	Water	1.1	µg/L	JH	5
Phase 1	NIC-GPW-GP#- 50-6-20 060498	6/4/1998	6/23/1998	Chloroform	U	Water	1	µg/L	JH	5
Phase 1	NIC-GPW-GP#- 50-6-20 060498	6/4/1998	6/23/1998	Toluene	U	Water	1	µg/L	JH	5
Phase 1	NIC-GPW-GP#- 50-6-20 060498	6/4/1998	6/23/1998	cis-1,2-Dichloroethene	U	Water	1	µg/L	JH	5
Phase 1	NIC-GPW-GP#- 50-6-20 060498	6/4/1998	6/23/1998	trans-1,3-Dichloropropene	U	Water	1	µg/L	JH	5
Phase 1	NIC-GPW-GP#- 50-6-20 060498	6/4/1998	6/23/1998	Trichloroethene	U	Water	1	µg/L	JH	5
Phase 1	NIC-GPW-GP#- 50-6-20 060498	6/4/1998	6/23/1998	Trichlorofluoromethane	U	Water	1	µg/L	JH	5
Phase 1	NIC-GPW-GP#- 50-6-20 060498	6/4/1998	6/23/1998	Vinyl chloride		Water	4	µg/L	JH	5
Phase 1	NIC-GPW-GP#- 50-6-20 060498	6/4/1998	6/23/1998	1,1,1-Trichloroethane	U	Water	1	µg/L	JH	5
Phase 1	NIC-GPW-GP#- 50-6-20 060498	6/4/1998	6/23/1998	Tetrachloroethene	U	Water	1	µg/L	JH	5
Phase 1	NIC-GPW-GP#- 50-6-20 060498	6/4/1998	6/23/1998	1,2-Dichloropropane	U	Water	1	µg/L	JH	5
Phase 1	NIC-GPW-GP#- 50-6-20 060498	6/4/1998	6/23/1998	1,1,2,2-Tetrachloroethane	U	Water	1	µg/L	JH	5
Phase 1	NIC-GPW-GP#- 50-6-20 060498	6/4/1998	6/23/1998	1,1,2-Trichloroethane	U	Water	1	µg/L	JH	5
Phase 1	NIC-GPW-GP#- 50-6-20 060498	6/4/1998	6/23/1998	1,1-Dichloroethane	U	Water	1	µg/L	JH	5
Phase 1	NIC-GPW-GP#- 50-6-20 060498	6/4/1998	6/23/1998	1,1-Dichloroethene	U	Water	1	µg/L	JH	5
Phase 1	NIC-GPW-GP#- 50-6-20 060498	6/4/1998	6/23/1998	Dibromochloromethane	U	Water	1	µg/L	JH	5
Phase 1	NIC-GPW-GP#- 50-6-20 060498	6/4/1998	6/23/1998	1,2-Dichloroethane	U	Water	1	µg/L	JH	5
Phase 1	NIC-GPW-GP#- 50-6-20 060498	6/4/1998	6/23/1998	Chloroethane	U	Water	1	µg/L	JH	5
Phase 1	NIC-GPW-GP#- 50-6-20 060498	6/4/1998	6/23/1998	1,3-Dichlorobenzene	U	Water	1	µg/L	JH	5
Phase 1	NIC-GPW-GP#- 50-6-20 060498	6/4/1998	6/23/1998	Carbon Tetrachloride	U	Water	1	µg/L	JH	5
Phase 1	NIC-GPW-GP#- 50-6-20 060498	6/4/1998	6/23/1998	Benzene	U	Water	1	µg/L	JH	5
Phase 1	NIC-GPW-GP#- 50-6-20 060498	6/4/1998	6/23/1998	Bromodichloromethane	U	Water	1	µg/L	JH	5
Phase 1	NIC-GPW-GP#- 50-6-20 060498	6/4/1998	6/23/1998	Bromoform	U	Water	1	µg/L	JH	5
Phase 1	NIC-GPW-GP#- 50-6-20 060498	6/4/1998	6/23/1998	Chlorobenzene	U	Water	1	µg/L	JH	5
Phase 1	NIC-GPW-GP#- 50-6-20 060498	6/4/1998	6/23/1998	Bromomethane	U	Water	1	µg/L	JH	5

Table 6-9
North Industrial Corridor (NIC) Site
Summary of Sample Results Qualified Due to Holding Time Violations

Investigation	Sample ID	Sample Date	Date Analyzed	Compound	Detect Flag	Media	Result	Units	CDM Final Flag	Days Outside of Holding Times
Phase 1	NIC-GPW-GP#- 50-6-20 060498	6/4/1998	6/23/1998	1,2-Dichlorobenzene	U	Water	1	µg/L	JH	5
Phase 1	NIC-GPW-GP#- 50-6-20 060498	6/4/1998	6/23/1998	1,4-Dichlorobenzene	U	Water	1	µg/L	JH	5
Phase 1	NIC-GPW-GPA18-2-20-121997	12/19/1997	1/6/1998	1,4-Dichlorobenzene	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA18-2-20-121997	12/19/1997	1/6/1998	cis-1,3-Dichloropropene	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA18-2-20-121997	12/19/1997	1/6/1998	Chloromethane	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA18-2-20-121997	12/19/1997	1/6/1998	Chloroform	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA18-2-20-121997	12/19/1997	1/6/1998	1,1,1-Trichloroethane	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA18-2-20-121997	12/19/1997	1/6/1998	Chloroethane	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA18-2-20-121997	12/19/1997	1/6/1998	1,1,2,2-Tetrachloroethane	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA18-2-20-121997	12/19/1997	1/6/1998	Chlorobenzene	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA18-2-20-121997	12/19/1997	1/6/1998	Carbon Tetrachloride	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA18-2-20-121997	12/19/1997	1/6/1998	Bromomethane	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA18-2-20-121997	12/19/1997	1/6/1998	Bromoform	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA18-2-20-121997	12/19/1997	1/6/1998	Benzene	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA18-2-20-121997	12/19/1997	1/6/1998	trans-1,2-Dichloroethene	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA18-2-20-121997	12/19/1997	1/6/1998	1,3-Dichlorobenzene	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA18-2-20-121997	12/19/1997	1/6/1998	1,2-Dichloropropane	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA18-2-20-121997	12/19/1997	1/6/1998	1,2-Dichloroethane	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA18-2-20-121997	12/19/1997	1/6/1998	1,2-Dichlorobenzene	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA18-2-20-121997	12/19/1997	1/6/1998	1,1-Dichloroethene	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA18-2-20-121997	12/19/1997	1/6/1998	1,1-Dichloroethane	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA18-2-20-121997	12/19/1997	1/6/1998	1,1,2-Trichloroethane	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA18-2-20-121997	12/19/1997	1/6/1998	Dibromochloromethane	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA18-2-20-121997	12/19/1997	1/6/1998	Bromodichloromethane	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA18-2-20-121997	12/19/1997	1/6/1998	m,p-Xylene	U	Water	1.3	µg/L	JH	4
Phase 1	NIC-GPW-GPA18-2-20-121997	12/19/1997	1/6/1998	Methylene chloride	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA18-2-20-121997	12/19/1997	1/6/1998	o-Xylene	U	Water	1.1	µg/L	JH	4
Phase 1	NIC-GPW-GPA18-2-20-121997	12/19/1997	1/6/1998	Toluene	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA18-2-20-121997	12/19/1997	1/6/1998	trans-1,3-Dichloropropene	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA18-2-20-121997	12/19/1997	1/6/1998	Trichlorofluoromethane	U	Water	1	µg/L	JH	4

Table 6-9
North Industrial Corridor (NIC) Site
Summary of Sample Results Qualified Due to Holding Time Violations

Investigation	Sample ID	Sample Date	Date Analyzed	Compound	Detect Flag	Media	Result	Units	CDM Final Flag	Days Outside of Holding Times
Phase 1	NIC-GPW-GPA18-2-20-121997	12/19/1997	1/6/1998	Vinyl chloride	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA18-2-20-121997	12/19/1997	1/6/1998	Tetrachloroethene	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA18-2-20-121997	12/19/1997	1/6/1998	Ethylbenzene	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA18-2-20M-121997	12/19/1997	1/6/1998	Tetrachloroethene	U	QC	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA18-2-20M-121997	12/19/1997	1/6/1998	Chloroform	U	QC	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA18-2-20M-121997	12/19/1997	1/6/1998	Chloromethane	U	QC	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA18-2-20M-121997	12/19/1997	1/6/1998	cis-1,2-Dichloroethene	U	QC	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA18-2-20M-121997	12/19/1997	1/6/1998	cis-1,3-Dichloropropene	U	QC	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA18-2-20M-121997	12/19/1997	1/6/1998	Dibromochloromethane	U	QC	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA18-2-20M-121997	12/19/1997	1/6/1998	Ethylbenzene	U	QC	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA18-2-20M-121997	12/19/1997	1/6/1998	m,p-Xylene	U	QC	1.3	µg/L	JH	4
Phase 1	NIC-GPW-GPA18-2-20M-121997	12/19/1997	1/6/1998	Chloroethane	U	QC	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA18-2-20M-121997	12/19/1997	1/6/1998	o-Xylene	U	QC	1.1	µg/L	JH	4
Phase 1	NIC-GPW-GPA18-2-20M-121997	12/19/1997	1/6/1998	Bromoform	U	QC	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA18-2-20M-121997	12/19/1997	1/6/1998	Toluene	U	QC	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA18-2-20M-121997	12/19/1997	1/6/1998	trans-1,2-Dichloroethene	U	QC	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA18-2-20M-121997	12/19/1997	1/6/1998	trans-1,3-Dichloropropene	U	QC	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA18-2-20M-121997	12/19/1997	1/6/1998	Methylene chloride	U	QC	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA18-2-20M-121997	12/19/1997	1/6/1998	Chlorobenzene	U	QC	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA18-2-20M-121997	12/19/1997	1/6/1998	Carbon Tetrachloride	U	QC	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA18-2-20M-121997	12/19/1997	1/6/1998	Bromomethane	U	QC	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA18-2-20M-121997	12/19/1997	1/6/1998	Trichloroethene	U	QC	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA18-2-20M-121997	12/19/1997	1/6/1998	Bromodichloromethane	U	QC	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA18-2-20M-121997	12/19/1997	1/6/1998	Benzene	U	QC	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA18-2-20M-121997	12/19/1997	1/6/1998	1,4-Dichlorobenzene	U	QC	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA18-2-20M-121997	12/19/1997	1/6/1998	1,3-Dichlorobenzene	U	QC	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA18-2-20M-121997	12/19/1997	1/6/1998	1,2-Dichloroethane	U	QC	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA18-2-20M-121997	12/19/1997	1/6/1998	1,1-Dichloroethene	U	QC	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA18-2-20M-121997	12/19/1997	1/6/1998	1,1-Dichloroethane	U	QC	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA18-2-20M-121997	12/19/1997	1/6/1998	1,1,2-Trichloroethane	U	QC	1	µg/L	JH	4

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Summary of Sample Results Qualified Due to Holding Time Violations

Investigation	Sample ID	Sample Date	Date Analyzed	Compound	Detect Flag	Media	Result	Units	CDM Final Flag	Days Outside of Holding Times
Phase 1	NIC-GPW-GPA18-2-20M-121997	12/19/1997	1/6/1998	1,1,2,2-Tetrachloroethane	U	QC	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA18-2-20M-121997	12/19/1997	1/6/1998	1,1,1-Trichloroethane	U	QC	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA18-2-20M-121997	12/19/1997	1/6/1998	1,2-Dichloropropane	U	QC	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA18-2-20M-121997	12/19/1997	1/6/1998	Vinyl chloride	U	QC	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA18-2-20M-121997	12/19/1997	1/6/1998	1,2-Dichlorobenzene	U	QC	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA18-2-20M-121997	12/19/1997	1/6/1998	Trichlorofluoromethane	U	QC	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA18-2-37-121997	12/19/1997	1/6/1998	Ethylbenzene	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA18-2-37-121997	12/19/1997	1/6/1998	trans-1,3-Dichloropropene	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA18-2-37-121997	12/19/1997	1/6/1998	Vinyl chloride		Water	3.4	µg/L	JH	4
Phase 1	NIC-GPW-GPA18-2-37-121997	12/19/1997	1/6/1998	Chlorobenzene	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA18-2-37-121997	12/19/1997	1/6/1998	Trichlorofluoromethane	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA18-2-37-121997	12/19/1997	1/6/1998	Chloroform	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA18-2-37-121997	12/19/1997	1/6/1998	Chloromethane	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA18-2-37-121997	12/19/1997	1/6/1998	Carbon Tetrachloride	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA18-2-37-121997	12/19/1997	1/6/1998	Dibromochloromethane	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA18-2-37-121997	12/19/1997	1/6/1998	m,p-Xylene	U	Water	1.3	µg/L	JH	4
Phase 1	NIC-GPW-GPA18-2-37-121997	12/19/1997	1/6/1998	Methylene chloride	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA18-2-37-121997	12/19/1997	1/6/1998	o-Xylene	U	Water	1.1	µg/L	JH	4
Phase 1	NIC-GPW-GPA18-2-37-121997	12/19/1997	1/6/1998	Tetrachloroethene	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA18-2-37-121997	12/19/1997	1/6/1998	Toluene	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA18-2-37-121997	12/19/1997	1/6/1998	trans-1,2-Dichloroethene	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA18-2-37-121997	12/19/1997	1/6/1998	cis-1,3-Dichloropropene	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA18-2-37-121997	12/19/1997	1/6/1998	1,4-Dichlorobenzene	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA18-2-37-121997	12/19/1997	1/6/1998	1,1,1-Trichloroethane	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA18-2-37-121997	12/19/1997	1/6/1998	1,1,2,2-Tetrachloroethane	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA18-2-37-121997	12/19/1997	1/6/1998	1,1,2-Trichloroethane	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA18-2-37-121997	12/19/1997	1/6/1998	1,1-Dichloroethane	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA18-2-37-121997	12/19/1997	1/6/1998	1,1-Dichloroethene		Water	1.4	µg/L	JH	4
Phase 1	NIC-GPW-GPA18-2-37-121997	12/19/1997	1/6/1998	1,2-Dichlorobenzene	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA18-2-37-121997	12/19/1997	1/6/1998	1,2-Dichloroethane	U	Water	1	µg/L	JH	4

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Summary of Sample Results Qualified Due to Holding Time Violations

Investigation	Sample ID	Sample Date	Date Analyzed	Compound	Detect Flag	Media	Result	Units	CDM Final Flag	Days Outside of Holding Times
Phase 1	NIC-GPW-GPA18-2-37-121997	12/19/1997	1/6/1998	1,3-Dichlorobenzene	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA18-2-37-121997	12/19/1997	1/6/1998	Benzene	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA18-2-37-121997	12/19/1997	1/6/1998	Bromodichloromethane	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA18-2-37-121997	12/19/1997	1/6/1998	Bromoform	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA18-2-37-121997	12/19/1997	1/6/1998	Chloroethane	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA18-2-37-121997	12/19/1997	1/6/1998	Bromomethane	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA18-2-37-121997	12/19/1997	1/6/1998	1,2-Dichloropropane	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA27-1-20-121997	12/19/1997	1/6/1998	Trichlorofluoromethane	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA27-1-20-121997	12/19/1997	1/6/1998	1,1,2-Trichloroethane	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA27-1-20-121997	12/19/1997	1/6/1998	1,1,1-Trichloroethane	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA27-1-20-121997	12/19/1997	1/6/1998	1,1,2,2-Tetrachloroethane	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA27-1-20-121997	12/19/1997	1/6/1998	trans-1,2-Dichloroethene	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA27-1-20-121997	12/19/1997	1/6/1998	1,1-Dichloroethane	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA27-1-20-121997	12/19/1997	1/6/1998	Trichloroethene	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA27-1-20-121997	12/19/1997	1/6/1998	1,2-Dichloropropane	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA27-1-20-121997	12/19/1997	1/6/1998	Vinyl chloride	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA27-1-20-121997	12/19/1997	1/6/1998	trans-1,3-Dichloropropene	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA27-1-20-121997	12/19/1997	1/6/1998	Ethylbenzene	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA27-1-20-121997	12/19/1997	1/6/1998	Toluene	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA27-1-20-121997	12/19/1997	1/6/1998	Tetrachloroethene	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA27-1-20-121997	12/19/1997	1/6/1998	o-Xylene	U	Water	1.1	µg/L	JH	4
Phase 1	NIC-GPW-GPA27-1-20-121997	12/19/1997	1/6/1998	1,2-Dichlorobenzene	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA27-1-20-121997	12/19/1997	1/6/1998	m,p-Xylene	U	Water	1.3	µg/L	JH	4
Phase 1	NIC-GPW-GPA27-1-20-121997	12/19/1997	1/6/1998	1,1-Dichloroethene	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA27-1-20-121997	12/19/1997	1/6/1998	Dibromochloromethane	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA27-1-20-121997	12/19/1997	1/6/1998	cis-1,3-Dichloropropene	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA27-1-20-121997	12/19/1997	1/6/1998	cis-1,2-Dichloroethene	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA27-1-20-121997	12/19/1997	1/6/1998	Chloromethane	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA27-1-20-121997	12/19/1997	1/6/1998	Chloroform	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA27-1-20-121997	12/19/1997	1/6/1998	1,3-Dichlorobenzene	U	Water	1	µg/L	JH	4

Table 6-9
North Industrial Corridor (NIC) Site
Summary of Sample Results Qualified Due to Holding Time Violations

Investigation	Sample ID	Sample Date	Date Analyzed	Compound	Detect Flag	Media	Result	Units	CDM Final Flag	Days Outside of Holding Times
Phase 1	NIC-GPW-GPA27-1-20-121997	12/19/1997	1/6/1998	Methylene chloride	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA27-1-20-121997	12/19/1997	1/6/1998	Chloroethane	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA27-1-20-121997	12/19/1997	1/6/1998	1,2-Dichloroethane	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA27-1-20-121997	12/19/1997	1/6/1998	1,4-Dichlorobenzene	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA27-1-20-121997	12/19/1997	1/6/1998	Benzene	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA27-1-20-121997	12/19/1997	1/6/1998	Bromodichloromethane	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA27-1-20-121997	12/19/1997	1/6/1998	Bromoform	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA27-1-20-121997	12/19/1997	1/6/1998	Bromomethane	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA27-1-20-121997	12/19/1997	1/6/1998	Carbon Tetrachloride	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA27-1-20-121997	12/19/1997	1/6/1998	Chlorobenzene	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA27-1-35-121997	12/19/1997	1/6/1998	trans-1,2-Dichloroethene	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA27-1-35-121997	12/19/1997	1/6/1998	Dibromochloromethane	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA27-1-35-121997	12/19/1997	1/6/1998	Trichlorofluoromethane	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA27-1-35-121997	12/19/1997	1/6/1998	Chloroform	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA27-1-35-121997	12/19/1997	1/6/1998	Chloromethane	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA27-1-35-121997	12/19/1997	1/6/1998	cis-1,3-Dichloropropene	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA27-1-35-121997	12/19/1997	1/6/1998	Chloroethane	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA27-1-35-121997	12/19/1997	1/6/1998	Ethylbenzene	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA27-1-35-121997	12/19/1997	1/6/1998	m,p-Xylene	U	Water	1.3	µg/L	JH	4
Phase 1	NIC-GPW-GPA27-1-35-121997	12/19/1997	1/6/1998	Methylene chloride	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA27-1-35-121997	12/19/1997	1/6/1998	o-Xylene	U	Water	1.1	µg/L	JH	4
Phase 1	NIC-GPW-GPA27-1-35-121997	12/19/1997	1/6/1998	Toluene	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA27-1-35-121997	12/19/1997	1/6/1998	Chlorobenzene	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA27-1-35-121997	12/19/1997	1/6/1998	trans-1,3-Dichloropropene	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA27-1-35-121997	12/19/1997	1/6/1998	Tetrachloroethene	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA27-1-35-121997	12/19/1997	1/6/1998	1,1,1-Trichloroethane	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA27-1-35-121997	12/19/1997	1/6/1998	Vinyl chloride	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA27-1-35-121997	12/19/1997	1/6/1998	1,1,2,2-Tetrachloroethane	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA27-1-35-121997	12/19/1997	1/6/1998	1,1,2-Trichloroethane	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA27-1-35-121997	12/19/1997	1/6/1998	1,1-Dichloroethane	U	Water	1	µg/L	JH	4

Table 6-9
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Investigation	Sample ID	Sample Date	Date Analyzed	Compound	Detect Flag	Media	Result	Units	CDM Final Flag	Days Outside of Holding Times
Phase 1	NIC-GPW-GPA27-1-35-121997	12/19/1997	1/6/1998	1,1-Dichloroethene	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA27-1-35-121997	12/19/1997	1/6/1998	1,2-Dichlorobenzene	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA27-1-35-121997	12/19/1997	1/6/1998	1,2-Dichloroethane	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA27-1-35-121997	12/19/1997	1/6/1998	1,3-Dichlorobenzene	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA27-1-35-121997	12/19/1997	1/6/1998	1,4-Dichlorobenzene	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA27-1-35-121997	12/19/1997	1/6/1998	Benzene	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA27-1-35-121997	12/19/1997	1/6/1998	Bromodichloromethane	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA27-1-35-121997	12/19/1997	1/6/1998	Bromoform	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA27-1-35-121997	12/19/1997	1/6/1998	Bromomethane	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA27-1-35-121997	12/19/1997	1/6/1998	1,2-Dichloropropane	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA27-1-35-121997	12/19/1997	1/6/1998	Carbon Tetrachloride	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA27-2-20-121997	12/19/1997	1/6/1998	Trichlorofluoromethane	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA27-2-20-121997	12/19/1997	1/6/1998	Chloroform	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA27-2-20-121997	12/19/1997	1/6/1998	cis-1,3-Dichloropropene	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA27-2-20-121997	12/19/1997	1/6/1998	Ethylbenzene	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA27-2-20-121997	12/19/1997	1/6/1998	m,p-Xylene	U	Water	1.3	µg/L	JH	4
Phase 1	NIC-GPW-GPA27-2-20-121997	12/19/1997	1/6/1998	Methylene chloride	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA27-2-20-121997	12/19/1997	1/6/1998	o-Xylene	U	Water	1.1	µg/L	JH	4
Phase 1	NIC-GPW-GPA27-2-20-121997	12/19/1997	1/6/1998	Tetrachloroethene	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA27-2-20-121997	12/19/1997	1/6/1998	Toluene	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA27-2-20-121997	12/19/1997	1/6/1998	trans-1,3-Dichloropropene	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA27-2-20-121997	12/19/1997	1/6/1998	Vinyl chloride	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA27-2-20-121997	12/19/1997	1/6/1998	Chloroethane	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA27-2-20-121997	12/19/1997	1/6/1998	Chloromethane	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA27-2-20-121997	12/19/1997	1/6/1998	trans-1,2-Dichloroethene	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA27-2-20-121997	12/19/1997	1/6/1998	1,1-Dichloroethane	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA27-2-20-121997	12/19/1997	1/6/1998	1,2-Dichloroethane	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA27-2-20-121997	12/19/1997	1/6/1998	Dibromochloromethane	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA27-2-20-121997	12/19/1997	1/6/1998	Chlorobenzene	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA27-2-20-121997	12/19/1997	1/6/1998	1,1,1-Trichloroethane	U	Water	1	µg/L	JH	4

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Summary of Sample Results Qualified Due to Holding Time Violations

Investigation	Sample ID	Sample Date	Date Analyzed	Compound	Detect Flag	Media	Result	Units	CDM Final Flag	Days Outside of Holding Times
Phase 1	NIC-GPW-GPA27-2-20-121997	12/19/1997	1/6/1998	1,2-Dichloropropane	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA27-2-20-121997	12/19/1997	1/6/1998	1,1,2-Trichloroethane	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA27-2-20-121997	12/19/1997	1/6/1998	1,1-Dichloroethene	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA27-2-20-121997	12/19/1997	1/6/1998	1,2-Dichlorobenzene	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA27-2-20-121997	12/19/1997	1/6/1998	1,4-Dichlorobenzene	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA27-2-20-121997	12/19/1997	1/6/1998	Benzene	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA27-2-20-121997	12/19/1997	1/6/1998	Carbon Tetrachloride	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA27-2-20-121997	12/19/1997	1/6/1998	Bromodichloromethane	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA27-2-20-121997	12/19/1997	1/6/1998	Bromoform	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA27-2-20-121997	12/19/1997	1/6/1998	1,3-Dichlorobenzene	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA27-2-20-121997	12/19/1997	1/6/1998	1,1,2,2-Tetrachloroethane	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA27-2-20-121997	12/19/1997	1/6/1998	Bromomethane	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA27-2-33-121997	12/19/1997	1/6/1998	Chlorobenzene	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA27-2-33-121997	12/19/1997	1/6/1998	Benzene	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA27-2-33-121997	12/19/1997	1/6/1998	Bromodichloromethane	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA27-2-33-121997	12/19/1997	1/6/1998	Bromoform	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA27-2-33-121997	12/19/1997	1/6/1998	Bromomethane	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA27-2-33-121997	12/19/1997	1/6/1998	Chloromethane	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA27-2-33-121997	12/19/1997	1/6/1998	Chloroethane	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA27-2-33-121997	12/19/1997	1/6/1998	Chloroform	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA27-2-33-121997	12/19/1997	1/6/1998	1,1,2-Trichloroethane	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA27-2-33-121997	12/19/1997	1/6/1998	Carbon Tetrachloride	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA27-2-33-121997	12/19/1997	1/6/1998	1,4-Dichlorobenzene	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA27-2-33-121997	12/19/1997	1/6/1998	1,3-Dichlorobenzene	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA27-2-33-121997	12/19/1997	1/6/1998	1,2-Dichloropropane	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA27-2-33-121997	12/19/1997	1/6/1998	1,2-Dichloroethane	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA27-2-33-121997	12/19/1997	1/6/1998	1,2-Dichlorobenzene	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA27-2-33-121997	12/19/1997	1/6/1998	1,1-Dichloroethane		Water	2.5	µg/L	JH	4
Phase 1	NIC-GPW-GPA27-2-33-121997	12/19/1997	1/6/1998	1,1,2,2-Tetrachloroethane	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA27-2-33-121997	12/19/1997	1/6/1998	1,1,1-Trichloroethane	U	Water	1	µg/L	JH	4

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Investigation	Sample ID	Sample Date	Date Analyzed	Compound	Detect Flag	Media	Result	Units	CDM Final Flag	Days Outside of Holding Times
Phase 1	NIC-GPW-GPA27-2-33-121997	12/19/1997	1/6/1998	cis-1,3-Dichloropropene	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA27-2-33-121997	12/19/1997	1/6/1998	Vinyl chloride	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA27-2-33-121997	12/19/1997	1/6/1998	1,1-Dichloroethene		Water	1.8	µg/L	JH	4
Phase 1	NIC-GPW-GPA27-2-33-121997	12/19/1997	1/6/1998	trans-1,3-Dichloropropene	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA27-2-33-121997	12/19/1997	1/6/1998	Dibromochloromethane	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA27-2-33-121997	12/19/1997	1/6/1998	Trichloroethene		Water	110	µg/L	JH	4
Phase 1	NIC-GPW-GPA27-2-33-121997	12/19/1997	1/6/1998	trans-1,2-Dichloroethene		Water	1.1	µg/L	JH	4
Phase 1	NIC-GPW-GPA27-2-33-121997	12/19/1997	1/6/1998	Toluene	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA27-2-33-121997	12/19/1997	1/6/1998	Tetrachloroethene	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA27-2-33-121997	12/19/1997	1/6/1998	o-Xylene	U	Water	1.1	µg/L	JH	4
Phase 1	NIC-GPW-GPA27-2-33-121997	12/19/1997	1/6/1998	Methylene chloride	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA27-2-33-121997	12/19/1997	1/6/1998	m,p-Xylene	U	Water	1.3	µg/L	JH	4
Phase 1	NIC-GPW-GPA27-2-33-121997	12/19/1997	1/6/1998	Ethylbenzene	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA27-2-33-121997	12/19/1997	1/6/1998	Trichlorofluoromethane	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA30-1-20-121997	12/19/1997	1/6/1998	Trichlorofluoromethane	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA30-1-20-121997	12/19/1997	1/6/1998	Methylene chloride	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA30-1-20-121997	12/19/1997	1/6/1998	cis-1,2-Dichloroethene	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA30-1-20-121997	12/19/1997	1/6/1998	cis-1,3-Dichloropropene	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA30-1-20-121997	12/19/1997	1/6/1998	Dibromochloromethane	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA30-1-20-121997	12/19/1997	1/6/1998	Ethylbenzene	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA30-1-20-121997	12/19/1997	1/6/1998	m,p-Xylene	U	Water	1.3	µg/L	JH	4
Phase 1	NIC-GPW-GPA30-1-20-121997	12/19/1997	1/6/1998	o-Xylene	U	Water	1.1	µg/L	JH	4
Phase 1	NIC-GPW-GPA30-1-20-121997	12/19/1997	1/6/1998	Tetrachloroethene	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA30-1-20-121997	12/19/1997	1/6/1998	Toluene	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA30-1-20-121997	12/19/1997	1/6/1998	trans-1,2-Dichloroethene	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA30-1-20-121997	12/19/1997	1/6/1998	Chloromethane	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA30-1-20-121997	12/19/1997	1/6/1998	Trichloroethene	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA30-1-20-121997	12/19/1997	1/6/1998	Bromodichloromethane	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA30-1-20-121997	12/19/1997	1/6/1998	Vinyl chloride	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA30-1-20-121997	12/19/1997	1/6/1998	trans-1,3-Dichloropropene	U	Water	1	µg/L	JH	4

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Investigation	Sample ID	Sample Date	Date Analyzed	Compound	Detect Flag	Media	Result	Units	CDM Final Flag	Days Outside of Holding Times
Phase 1	NIC-GPW-GPA30-1-20-121997	12/19/1997	1/6/1998	1,3-Dichlorobenzene	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA30-1-20-121997	12/19/1997	1/6/1998	1,1,2,2-Tetrachloroethane	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA30-1-20-121997	12/19/1997	1/6/1998	1,1,2-Trichloroethane	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA30-1-20-121997	12/19/1997	1/6/1998	1,1-Dichloroethane	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA30-1-20-121997	12/19/1997	1/6/1998	1,1-Dichloroethene	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA30-1-20-121997	12/19/1997	1/6/1998	1,2-Dichlorobenzene	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA30-1-20-121997	12/19/1997	1/6/1998	Bromomethane	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA30-1-20-121997	12/19/1997	1/6/1998	1,2-Dichloropropane	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA30-1-20-121997	12/19/1997	1/6/1998	Chloroform	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA30-1-20-121997	12/19/1997	1/6/1998	1,4-Dichlorobenzene	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA30-1-20-121997	12/19/1997	1/6/1998	Benzene	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA30-1-20-121997	12/19/1997	1/6/1998	Bromoform	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA30-1-20-121997	12/19/1997	1/6/1998	1,1,1-Trichloroethane	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA30-1-20-121997	12/19/1997	1/6/1998	Carbon Tetrachloride	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA30-1-20-121997	12/19/1997	1/6/1998	Chlorobenzene	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA30-1-20-121997	12/19/1997	1/6/1998	Chloroethane	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA30-1-20-121997	12/19/1997	1/6/1998	1,2-Dichloroethane	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA30-1-35-121997	12/19/1997	1/6/1998	Ethylbenzene	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA30-1-35-121997	12/19/1997	1/6/1998	Toluene	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA30-1-35-121997	12/19/1997	1/6/1998	Chloroform	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA30-1-35-121997	12/19/1997	1/6/1998	Chloromethane	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA30-1-35-121997	12/19/1997	1/6/1998	cis-1,2-Dichloroethene	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA30-1-35-121997	12/19/1997	1/6/1998	Dibromochloromethane	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA30-1-35-121997	12/19/1997	1/6/1998	m,p-Xylene	U	Water	1.3	µg/L	JH	4
Phase 1	NIC-GPW-GPA30-1-35-121997	12/19/1997	1/6/1998	Chloroethane	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA30-1-35-121997	12/19/1997	1/6/1998	o-Xylene	U	Water	1.1	µg/L	JH	4
Phase 1	NIC-GPW-GPA30-1-35-121997	12/19/1997	1/6/1998	Tetrachloroethene	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA30-1-35-121997	12/19/1997	1/6/1998	trans-1,3-Dichloropropene	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA30-1-35-121997	12/19/1997	1/6/1998	Trichloroethene	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA30-1-35-121997	12/19/1997	1/6/1998	Trichlorofluoromethane	U	Water	1	µg/L	JH	4

Table 6-9
North Industrial Corridor (NIC) Site
Summary of Sample Results Qualified Due to Holding Time Violations

Investigation	Sample ID	Sample Date	Date Analyzed	Compound	Detect Flag	Media	Result	Units	CDM Final Flag	Days Outside of Holding Times
Phase 1	NIC-GPW-GPA30-1-35-121997	12/19/1997	1/6/1998	Vinyl chloride	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA30-1-35-121997	12/19/1997	1/6/1998	cis-1,3-Dichloropropene	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA30-1-35-121997	12/19/1997	1/6/1998	1,1,1-Trichloroethane	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA30-1-35-121997	12/19/1997	1/6/1998	Methylene chloride	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA30-1-35-121997	12/19/1997	1/6/1998	1,2-Dichloroethane	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA30-1-35-121997	12/19/1997	1/6/1998	1,1,2,2-Tetrachloroethane	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA30-1-35-121997	12/19/1997	1/6/1998	1,1,2-Trichloroethane	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA30-1-35-121997	12/19/1997	1/6/1998	trans-1,2-Dichloroethene	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA30-1-35-121997	12/19/1997	1/6/1998	Chlorobenzene	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA30-1-35-121997	12/19/1997	1/6/1998	1,1-Dichloroethane	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA30-1-35-121997	12/19/1997	1/6/1998	1,2-Dichlorobenzene	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA30-1-35-121997	12/19/1997	1/6/1998	1,2-Dichloropropane	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA30-1-35-121997	12/19/1997	1/6/1998	Bromodichloromethane	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA30-1-35-121997	12/19/1997	1/6/1998	Carbon Tetrachloride	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA30-1-35-121997	12/19/1997	1/6/1998	1,4-Dichlorobenzene	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA30-1-35-121997	12/19/1997	1/6/1998	Bromomethane	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA30-1-35-121997	12/19/1997	1/6/1998	Benzene	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA30-1-35-121997	12/19/1997	1/6/1998	1,3-Dichlorobenzene	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA30-1-35-121997	12/19/1997	1/6/1998	Bromoform	U	Water	1	µg/L	JH	4
Phase 1	NIC-GPW-GPA30-1-35-121997	12/19/1997	1/6/1998	1,1-Dichloroethene	U	Water	1	µg/L	JH	4
Phase 2	NIC GPW-GP02A-04-27-102899	10/28/1999	11/11/99	Trichloroethene		Water	64	µg/L	JH	1[a]
Phase 2	NIC-GPW-GP#55-01-20-110499	11/4/1999	11/18/99	Trichloroethene		Water	350	µg/L	JH	1[a]
Phase 2	NIC-GPW-GP#55-01Q1-20-110499	11/4/1999	11/18/99	Trichloroethene		Water	320	µg/L	JH	1[a]
Phase 2	NIC-GPW-GP#62-03-20-110599	11/5/1999	11/19/99	cis-1,2-Dichloroethene		Water	790	µg/L	JH	1[a]
Phase 2	NIC-GPW-GP#62-03-20-110599	11/5/1999	11/19/99	Trichloroethene		Water	480	µg/L	JH	1[a]
Phase 2	NIC-GPW-GP02B-05-37-121799	12/17/1999	12/29/99	cis-1,2-Dichloroethene		Water	95	µg/L	JH	1[a]
Phase 2	NIC-GPW-GP02B-05-37-121799	12/17/1999	12/29/99	Trichloroethene		Water	500	µg/L	JH	1[a]
Phase 2	NIC-GPW-GP02C-03-38-111099	11/10/1999	11/23/99	Trichloroethene		Water	710	µg/L	JH	1[a]

Table 6-9
North Industrial Corridor (NIC) Site
Summary of Sample Results Qualified Due to Holding Time Violations

Investigation	Sample ID	Sample Date	Date Analyzed	Compound	Detect Flag	Media	Result	Units	CDM Final Flag	Days Outside of Holding Times
Phase 2	NIC-GPW-GP02C-03-38-111099	11/10/1999	11/23/99	cis-1,2-Dichloroethene		Water	250	µg/L	JH	1[a]
Phase 2	NIC-GPW-GP02C-03Q1-38-111099	11/10/1999	11/23/99	cis-1,2-Dichloroethene		QC	290	µg/L	JH	1[a]
Phase 2	NIC-GPW-GP02C-03Q1-38-111099	11/10/1999	11/23/99	Trichloroethene		QC	760	µg/L	JH	1[a]
Phase 2	NIC-GPW-GP02E-05-29-111199	11/11/1999	11/24/99	cis-1,2-Dichloroethene		Water	52	µg/L	JH	1[a]
Phase 2	NIC-GPW-GP02E-05-29-111199	11/11/1999	11/24/99	Trichloroethene		Water	230	µg/L	JH	1[a]
Phase 2	NIC-GPW-GP02F-03-17-110199	11/1/1999	11/16/99	trans-1,2-Dichloroethene	U	Water	1	µg/L	JH	1
Phase 2	NIC-GPW-GP02F-03-17-110199	11/1/1999	11/16/99	cis-1,2-Dichloroethene		Water	5.8	µg/L	JH	1
Phase 2	NIC-GPW-GP02F-03-17-110199	11/1/1999	11/16/99	cis-1,3-Dichloropropene	U	Water	1	µg/L	JH	1
Phase 2	NIC-GPW-GP02F-03-17-110199	11/1/1999	11/16/99	Dibromochloromethane	U	Water	1	µg/L	JH	1
Phase 2	NIC-GPW-GP02F-03-17-110199	11/1/1999	11/16/99	Ethylbenzene	U	Water	1	µg/L	JH	1
Phase 2	NIC-GPW-GP02F-03-17-110199	11/1/1999	11/16/99	m,p-Xylene	U	Water	1.3	µg/L	JH	1
Phase 2	NIC-GPW-GP02F-03-17-110199	11/1/1999	11/16/99	Methylene Chloride	U	Water	1	µg/L	JH	1
Phase 2	NIC-GPW-GP02F-03-17-110199	11/1/1999	11/16/99	o-Xylene	U	Water	1.1	µg/L	JH	1
Phase 2	NIC-GPW-GP02F-03-17-110199	11/1/1999	11/16/99	Chloromethane	U	Water	1	µg/L	JH	1
Phase 2	NIC-GPW-GP02F-03-17-110199	11/1/1999	11/16/99	Toluene	U	Water	1	µg/L	JH	1
Phase 2	NIC-GPW-GP02F-03-17-110199	11/1/1999	11/16/99	Chlorobenzene	U	Water	1	µg/L	JH	1
Phase 2	NIC-GPW-GP02F-03-17-110199	11/1/1999	11/16/99	trans-1,3-Dichloropropene	U	Water	1	µg/L	JH	1
Phase 2	NIC-GPW-GP02F-03-17-110199	11/1/1999	11/16/99	Trichloroethene		Water	19	µg/L	JH	1
Phase 2	NIC-GPW-GP02F-03-17-110199	11/1/1999	11/16/99	Trichlorofluoromethane	U	Water	1	µg/L	JH	1
Phase 2	NIC-GPW-GP02F-03-17-110199	11/1/1999	11/16/99	Vinyl Chloride	U	Water	1	µg/L	JH	1
Phase 2	NIC-GPW-GP02F-03-17-110199	11/1/1999	11/16/99	Tetrachloroethene	U	Water	1	µg/L	JH	1
Phase 2	NIC-GPW-GP02F-03-17-110199	11/1/1999	11/16/99	1,2-Dichloropropane	U	Water	1	µg/L	JH	1
Phase 2	NIC-GPW-GP02F-03-17-110199	11/1/1999	11/16/99	1,1,1-Trichloroethane	U	Water	1	µg/L	JH	1
Phase 2	NIC-GPW-GP02F-03-17-110199	11/1/1999	11/16/99	1,1,2,2-Tetrachloroethane	U	Water	1	µg/L	JH	1
Phase 2	NIC-GPW-GP02F-03-17-110199	11/1/1999	11/16/99	1,1,2-Trichloroethane	U	Water	1	µg/L	JH	1
Phase 2	NIC-GPW-GP02F-03-17-110199	11/1/1999	11/16/99	1,1-Dichloroethane	U	Water	1	µg/L	JH	1
Phase 2	NIC-GPW-GP02F-03-17-110199	11/1/1999	11/16/99	1,1-Dichloroethene	U	Water	1	µg/L	JH	1
Phase 2	NIC-GPW-GP02F-03-17-110199	11/1/1999	11/16/99	Chloroform	U	Water	1	µg/L	JH	1
Phase 2	NIC-GPW-GP02F-03-17-110199	11/1/1999	11/16/99	1,2-Dichloroethane	U	Water	1	µg/L	JH	1

Table 6-9
North Industrial Corridor (NIC) Site
Summary of Sample Results Qualified Due to Holding Time Violations

Investigation	Sample ID	Sample Date	Date Analyzed	Compound	Detect Flag	Media	Result	Units	CDM Final Flag	Days Outside of Holding Times
Phase 2	NIC-GPW-GP02F-03-17-110199	11/1/1999	11/16/99	Chloroethane	U	Water	1	µg/L	JH	1
Phase 2	NIC-GPW-GP02F-03-17-110199	11/1/1999	11/16/99	1,4-Dichlorobenzene	U	Water	1	µg/L	JH	1
Phase 2	NIC-GPW-GP02F-03-17-110199	11/1/1999	11/16/99	Benzene	U	Water	1	µg/L	JH	1
Phase 2	NIC-GPW-GP02F-03-17-110199	11/1/1999	11/16/99	Bromodichloromethane	U	Water	1	µg/L	JH	1
Phase 2	NIC-GPW-GP02F-03-17-110199	11/1/1999	11/16/99	Bromoform	U	Water	1	µg/L	JH	1
Phase 2	NIC-GPW-GP02F-03-17-110199	11/1/1999	11/16/99	Bromomethane	U	Water	1	µg/L	JH	1
Phase 2	NIC-GPW-GP02F-03-17-110199	11/1/1999	11/16/99	Carbon Tetrachloride	U	Water	1	µg/L	JH	1
Phase 2	NIC-GPW-GP02F-03-17-110199	11/1/1999	11/16/99	1,2-Dichlorobenzene	U	Water	1	µg/L	JH	1
Phase 2	NIC-GPW-GP02F-04Q1-29-102999	10/29/1999	11/12/99	cis-1,2-Dichloroethene		QC	68	µg/L	JH	1[a]
Phase 2	NIC-GPW-GP02F-04Q1-29-102999	10/29/1999	11/12/99	Trichloroethene		QC	380	µg/L	JH	1[a]
Phase 2	NIC-GPW-GP02F-05-31-102999	10/29/1999	11/12/99	cis-1,2-Dichloroethene		Water	78	µg/L	JH	1[a]
Phase 2	NIC-GPW-GP02F-05-31-102999	10/29/1999	11/12/99	Trichloroethene		Water	410	µg/L	JH	1[a]
Phase 2	NIC-GPW-GP02F-06-32-102999	10/29/1999	11/12/99	cis-1,2-Dichloroethene		Water	60	µg/L	JH	1[a]
Phase 2	NIC-GPW-GP02F-06-32-102999	10/29/1999	11/12/99	Trichloroethene		Water	350	µg/L	JH	1[a]
Phase 2	NIC-GPW-GP02G-05-35-110299	11/2/1999	11/15/99	cis-1,2-Dichloroethene		Water	49	µg/L	JH	1[a]
Phase 2	NIC-GPW-GP02G-05-35-110299	11/2/1999	11/15/99	Trichloroethene		Water	270	µg/L	JH	1[a]
Phase 2	NIC-GPW-GP02G-06-35-110299	11/2/1999	11/15/99	cis-1,2-Dichloroethene		Water	44	µg/L	JH	1[a]
Phase 2	NIC-GPW-GP02G-06-35-110299	11/2/1999	11/15/99	Trichloroethene		Water	220	µg/L	JH	1[a]
Phase 2	NIC-GPW-GP02G-08-38-110299	11/2/1999	11/15/99	Trichloroethene		Water	170	µg/L	JH	1[a]
Phase 2	NIC-GPW-GP02I-01-31-110599	11/5/1999	11/19/99	Trichloroethene		Water	130	µg/L	JH	1[a]
Phase 2	NIC-GPW-GP03A-01-29-110599	11/5/1999	11/20/99	Trichloroethene		Water	140	µg/L	JH	1[a]
Phase 2	NIC-GPW-GP03B-03-17-111099	11/10/1999	11/29/99	Toluene	U	Water	1	µg/L	JH	5
Phase 2	NIC-GPW-GP03B-03-17-111099	11/10/1999	11/29/99	Ethylbenzene	U	Water	1	µg/L	JH	5
Phase 2	NIC-GPW-GP03B-03-17-111099	11/10/1999	11/29/99	Chloroform	U	Water	1	µg/L	JH	5
Phase 2	NIC-GPW-GP03B-03-17-111099	11/10/1999	11/29/99	Chloromethane	U	Water	1	µg/L	JH	5
Phase 2	NIC-GPW-GP03B-03-17-111099	11/10/1999	11/29/99	cis-1,2-Dichloroethene		Water	8	µg/L	JH	5
Phase 2	NIC-GPW-GP03B-03-17-111099	11/10/1999	11/29/99	cis-1,3-Dichloropropene	U	Water	1	µg/L	JH	5
Phase 2	NIC-GPW-GP03B-03-17-111099	11/10/1999	11/29/99	Dibromochloromethane	U	Water	1	µg/L	JH	5

Table 6-9
North Industrial Corridor (NIC) Site
Summary of Sample Results Qualified Due to Holding Time Violations

Investigation	Sample ID	Sample Date	Date Analyzed	Compound	Detect Flag	Media	Result	Units	CDM Final Flag	Days Outside of Holding Times
Phase 2	NIC-GPW-GP03B-03-17-111099	11/10/1999	11/29/99	m,p-Xylene	U	Water	1.3	µg/L	JH	5
Phase 2	NIC-GPW-GP03B-03-17-111099	11/10/1999	11/29/99	Methylene Chloride	U	Water	1	µg/L	JH	5
Phase 2	NIC-GPW-GP03B-03-17-111099	11/10/1999	11/29/99	Chloroethane	U	Water	1	µg/L	JH	5
Phase 2	NIC-GPW-GP03B-03-17-111099	11/10/1999	11/29/99	Tetrachloroethene	U	Water	1	µg/L	JH	5
Phase 2	NIC-GPW-GP03B-03-17-111099	11/10/1999	11/29/99	Benzene	U	Water	1	µg/L	JH	5
Phase 2	NIC-GPW-GP03B-03-17-111099	11/10/1999	11/29/99	trans-1,3-Dichloropropene	U	Water	1	µg/L	JH	5
Phase 2	NIC-GPW-GP03B-03-17-111099	11/10/1999	11/29/99	Trichlorofluoromethane	U	Water	1	µg/L	JH	5
Phase 2	NIC-GPW-GP03B-03-17-111099	11/10/1999	11/29/99	o-Xylene	U	Water	1.1	µg/L	JH	5
Phase 2	NIC-GPW-GP03B-03-17-111099	11/10/1999	11/29/99	1,2-Dichloroethane	U	Water	1	µg/L	JH	5
Phase 2	NIC-GPW-GP03B-03-17-111099	11/10/1999	11/29/99	Vinyl Chloride	U	Water	1	µg/L	JH	5
Phase 2	NIC-GPW-GP03B-03-17-111099	11/10/1999	11/29/99	1,1,1-Trichloroethane	U	Water	1	µg/L	JH	5
Phase 2	NIC-GPW-GP03B-03-17-111099	11/10/1999	11/29/99	1,1,2,2-Tetrachloroethane	U	Water	1	µg/L	JH	5
Phase 2	NIC-GPW-GP03B-03-17-111099	11/10/1999	11/29/99	1,1,2-Trichloroethane	U	Water	1	µg/L	JH	5
Phase 2	NIC-GPW-GP03B-03-17-111099	11/10/1999	11/29/99	1,1-Dichloroethane	U	Water	1	µg/L	JH	5
Phase 2	NIC-GPW-GP03B-03-17-111099	11/10/1999	11/29/99	Bromoform	U	Water	1	µg/L	JH	5
Phase 2	NIC-GPW-GP03B-03-17-111099	11/10/1999	11/29/99	1,2-Dichlorobenzene	U	Water	1	µg/L	JH	5
Phase 2	NIC-GPW-GP03B-03-17-111099	11/10/1999	11/29/99	Chlorobenzene	U	Water	1	µg/L	JH	5
Phase 2	NIC-GPW-GP03B-03-17-111099	11/10/1999	11/29/99	1,2-Dichloropropane	U	Water	1	µg/L	JH	5
Phase 2	NIC-GPW-GP03B-03-17-111099	11/10/1999	11/29/99	1,4-Dichlorobenzene	U	Water	1	µg/L	JH	5
Phase 2	NIC-GPW-GP03B-03-17-111099	11/10/1999	11/29/99	Trichloroethene		Water	10	µg/L	JH	5
Phase 2	NIC-GPW-GP03B-03-17-111099	11/10/1999	11/29/99	Bromodichloromethane	U	Water	1	µg/L	JH	5
Phase 2	NIC-GPW-GP03B-03-17-111099	11/10/1999	11/29/99	Bromomethane	U	Water	1	µg/L	JH	5
Phase 2	NIC-GPW-GP03B-03-17-111099	11/10/1999	11/29/99	Carbon Tetrachloride	U	Water	1	µg/L	JH	5
Phase 2	NIC-GPW-GP03B-03-17-111099	11/10/1999	11/29/99	1,1-Dichloroethene	U	Water	1	µg/L	JH	5
Phase 2	NIC-GPW-GP03B-03-17-111099	11/10/1999	11/29/99	trans-1,2-Dichloroethene	U	Water	1	µg/L	JH	5
Phase 2	NIC-GPW-GP03B-03-35-111099	11/10/1999	11/29/99	o-Xylene	U	Water	1.1	µg/L	JH	5
Phase 2	NIC-GPW-GP03B-03-35-111099	11/10/1999	11/29/99	Chloromethane	U	Water	1	µg/L	JH	5
Phase 2	NIC-GPW-GP03B-03-35-111099	11/10/1999	11/29/99	cis-1,2-Dichloroethene		Water	41	µg/L	JH	5
Phase 2	NIC-GPW-GP03B-03-35-111099	11/10/1999	11/29/99	cis-1,3-Dichloropropene	U	Water	1	µg/L	JH	5
Phase 2	NIC-GPW-GP03B-03-35-111099	11/10/1999	11/29/99	Dibromochloromethane	U	Water	1	µg/L	JH	5

Table 6-9
North Industrial Corridor (NIC) Site
Summary of Sample Results Qualified Due to Holding Time Violations

Investigation	Sample ID	Sample Date	Date Analyzed	Compound	Detect Flag	Media	Result	Units	CDM Final Flag	Days Outside of Holding Times
Phase 2	NIC-GPW-GP03B-03-35-111099	11/10/1999	11/29/99	Ethylbenzene	U	Water	1	µg/L	JH	5
Phase 2	NIC-GPW-GP03B-03-35-111099	11/10/1999	11/29/99	Chloroform	U	Water	1	µg/L	JH	5
Phase 2	NIC-GPW-GP03B-03-35-111099	11/10/1999	11/29/99	Methylene Chloride	U	Water	1	µg/L	JH	5
Phase 2	NIC-GPW-GP03B-03-35-111099	11/10/1999	11/29/99	Toluene	U	Water	1	µg/L	JH	5
Phase 2	NIC-GPW-GP03B-03-35-111099	11/10/1999	11/29/99	Tetrachloroethene	U	Water	1	µg/L	JH	5
Phase 2	NIC-GPW-GP03B-03-35-111099	11/10/1999	11/29/99	trans-1,2-Dichloroethene		Water	2.5	µg/L	JH	5
Phase 2	NIC-GPW-GP03B-03-35-111099	11/10/1999	11/29/99	Trichloroethene		Water	200	µg/L	JH	5
Phase 2	NIC-GPW-GP03B-03-35-111099	11/10/1999	11/29/99	Trichlorofluoromethane	U	Water	1	µg/L	JH	5
Phase 2	NIC-GPW-GP03B-03-35-111099	11/10/1999	11/29/99	Vinyl Chloride		Water	8	µg/L	JH	5
Phase 2	NIC-GPW-GP03B-03-35-111099	11/10/1999	11/29/99	m,p-Xylene	U	Water	1.3	µg/L	JH	5
Phase 2	NIC-GPW-GP03B-03-35-111099	11/10/1999	11/29/99	1,2-Dichloroethane	U	Water	1	µg/L	JH	5
Phase 2	NIC-GPW-GP03B-03-35-111099	11/10/1999	11/29/99	1,1,2,2-Tetrachloroethane	U	Water	1	µg/L	JH	5
Phase 2	NIC-GPW-GP03B-03-35-111099	11/10/1999	11/29/99	1,1,2-Trichloroethane	U	Water	1	µg/L	JH	5
Phase 2	NIC-GPW-GP03B-03-35-111099	11/10/1999	11/29/99	1,1-Dichloroethane		Water	2.6	µg/L	JH	5
Phase 2	NIC-GPW-GP03B-03-35-111099	11/10/1999	11/29/99	1,1-Dichloroethene		Water	6.9	µg/L	JH	5
Phase 2	NIC-GPW-GP03B-03-35-111099	11/10/1999	11/29/99	Chloroethane	U	Water	1	µg/L	JH	5
Phase 2	NIC-GPW-GP03B-03-35-111099	11/10/1999	11/29/99	1,2-Dichlorobenzene	U	Water	1	µg/L	JH	5
Phase 2	NIC-GPW-GP03B-03-35-111099	11/10/1999	11/29/99	1,1,1-Trichloroethane		Water	1.1	µg/L	JH	5
Phase 2	NIC-GPW-GP03B-03-35-111099	11/10/1999	11/29/99	1,2-Dichloropropane	U	Water	1	µg/L	JH	5
Phase 2	NIC-GPW-GP03B-03-35-111099	11/10/1999	11/29/99	1,4-Dichlorobenzene	U	Water	1	µg/L	JH	5
Phase 2	NIC-GPW-GP03B-03-35-111099	11/10/1999	11/29/99	Benzene	U	Water	1	µg/L	JH	5
Phase 2	NIC-GPW-GP03B-03-35-111099	11/10/1999	11/29/99	Bromodichloromethane	U	Water	1	µg/L	JH	5
Phase 2	NIC-GPW-GP03B-03-35-111099	11/10/1999	11/29/99	Bromoform	U	Water	1	µg/L	JH	5
Phase 2	NIC-GPW-GP03B-03-35-111099	11/10/1999	11/29/99	Bromomethane	U	Water	1	µg/L	JH	5
Phase 2	NIC-GPW-GP03B-03-35-111099	11/10/1999	11/29/99	Carbon Tetrachloride	U	Water	1	µg/L	JH	5
Phase 2	NIC-GPW-GP03B-03-35-111099	11/10/1999	11/29/99	Chlorobenzene	U	Water	1	µg/L	JH	5
Phase 2	NIC-GPW-GP03B-03-35-111099	11/10/1999	11/29/99	trans-1,3-Dichloropropene	U	Water	1	µg/L	JH	5
Phase 2	NIC-GPW-GP03C-06-35-111299	11/12/1999	11/29/1999	Vinyl Chloride		Water	16	µg/L	JH	3
Phase 2	NIC-GPW-GP03C-06-35-111299	11/12/1999	11/29/1999	Trichlorofluoromethane	U	Water	1	µg/L	JH	3
Phase 2	NIC-GPW-GP03C-06-35-111299	11/12/1999	11/29/1999	Trichloroethene		Water	120	µg/L	JH	3

Table 6-9
North Industrial Corridor (NIC) Site
Summary of Sample Results Qualified Due to Holding Time Violations

Investigation	Sample ID	Sample Date	Date Analyzed	Compound	Detect Flag	Media	Result	Units	CDM Final Flag	Days Outside of Holding Times
Phase 2	NIC-GPW-GP03C-06-35-111299	11/12/1999	11/29/1999	trans-1,3-Dichloropropene	U	Water	1	µg/L	JH	3
Phase 2	NIC-GPW-GP03C-06-35-111299	11/12/1999	11/29/1999	trans-1,2-Dichloroethene		Water	1.6	µg/L	JH	3
Phase 2	NIC-GPW-GP03C-06-35-111299	11/12/1999	11/29/1999	Toluene	U	Water	1	µg/L	JH	3
Phase 2	NIC-GPW-GP03C-06-35-111299	11/12/1999	11/29/1999	Tetrachloroethene	U	Water	1	µg/L	JH	3
Phase 2	NIC-GPW-GP03C-06-35-111299	11/12/1999	11/29/1999	o-Xylene	U	Water	1.1	µg/L	JH	3
Phase 2	NIC-GPW-GP03C-06-35-111299	11/12/1999	11/29/1999	Methylene Chloride	U	Water	1	µg/L	JH	3
Phase 2	NIC-GPW-GP03C-06-35-111299	11/12/1999	11/29/1999	m,p-Xylene	U	Water	1.3	µg/L	JH	3
Phase 2	NIC-GPW-GP03C-06-35-111299	11/12/1999	11/29/1999	Ethylbenzene	U	Water	1	µg/L	JH	3
Phase 2	NIC-GPW-GP03C-06-35-111299	11/12/1999	11/29/1999	Dibromochloromethane	U	Water	1	µg/L	JH	3
Phase 2	NIC-GPW-GP03C-06-35-111299	11/12/1999	11/29/1999	cis-1,3-Dichloropropene	U	Water	1	µg/L	JH	3
Phase 2	NIC-GPW-GP03C-06-35-111299	11/12/1999	11/29/1999	cis-1,2-Dichloroethene		Water	58	µg/L	JH	3
Phase 2	NIC-GPW-GP03C-06-35-111299	11/12/1999	11/29/1999	Chloromethane	U	Water	1	µg/L	JH	3
Phase 2	NIC-GPW-GP03C-06-35-111299	11/12/1999	11/29/1999	Chloroform	U	Water	1	µg/L	JH	3
Phase 2	NIC-GPW-GP03C-06-35-111299	11/12/1999	11/29/1999	Chloroethane	U	Water	1	µg/L	JH	3
Phase 2	NIC-GPW-GP03C-06-35-111299	11/12/1999	11/29/1999	Chlorobenzene	U	Water	1	µg/L	JH	3
Phase 2	NIC-GPW-GP03C-06-35-111299	11/12/1999	11/29/1999	Carbon Tetrachloride	U	Water	1	µg/L	JH	3
Phase 2	NIC-GPW-GP03C-06-35-111299	11/12/1999	11/29/1999	Bromomethane	U	Water	1	µg/L	JH	3
Phase 2	NIC-GPW-GP03C-06-35-111299	11/12/1999	11/29/1999	Bromoform	U	Water	1	µg/L	JH	3
Phase 2	NIC-GPW-GP03C-06-35-111299	11/12/1999	11/29/1999	Bromodichloromethane	U	Water	1	µg/L	JH	3
Phase 2	NIC-GPW-GP03C-06-35-111299	11/12/1999	11/29/1999	Benzene	U	Water	1	µg/L	JH	3
Phase 2	NIC-GPW-GP03C-06-35-111299	11/12/1999	11/29/1999	1,4-Dichlorobenzene	U	Water	1	µg/L	JH	3
Phase 2	NIC-GPW-GP03C-06-35-111299	11/12/1999	11/29/1999	1,3-Dichlorobenzene	U	Water	1	µg/L	JH	3
Phase 2	NIC-GPW-GP03C-06-35-111299	11/12/1999	11/29/1999	1,2-Dichloropropane	U	Water	1	µg/L	JH	3
Phase 2	NIC-GPW-GP03C-06-35-111299	11/12/1999	11/29/1999	1,2-Dichloroethane	U	Water	1	µg/L	JH	3
Phase 2	NIC-GPW-GP03C-06-35-111299	11/12/1999	11/29/1999	1,2-Dichlorobenzene	U	Water	1	µg/L	JH	3
Phase 2	NIC-GPW-GP03C-06-35-111299	11/12/1999	11/29/1999	1,1-Dichloroethene		Water	6.7	µg/L	JH	3
Phase 2	NIC-GPW-GP03C-06-35-111299	11/12/1999	11/29/1999	1,1-Dichloroethane		Water	3.1	µg/L	JH	3
Phase 2	NIC-GPW-GP03C-06-35-111299	11/12/1999	11/29/1999	1,1,2-Trichloroethane	U	Water	1	µg/L	JH	3
Phase 2	NIC-GPW-GP03C-06-35-111299	11/12/1999	11/29/1999	1,1,2,2-Tetrachloroethane	U	Water	1	µg/L	JH	3
Phase 2	NIC-GPW-GP03C-06-35-111299	11/12/1999	11/29/1999	1,1,1-Trichloroethane	U	Water	1	µg/L	JH	3

Table 6-9
North Industrial Corridor (NIC) Site
Summary of Sample Results Qualified Due to Holding Time Violations

Investigation	Sample ID	Sample Date	Date Analyzed	Compound	Detect Flag	Media	Result	Units	CDM Final Flag	Days Outside of Holding Times
Phase 2	NIC-GPW-GP03C-07-34-111299	11/12/1999	11/29/1999	Vinyl Chloride		Water	12	µg/L	JH	3
Phase 2	NIC-GPW-GP03C-07-34-111299	11/12/1999	11/29/1999	Trichlorofluoromethane	U	Water	1	µg/L	JH	3
Phase 2	NIC-GPW-GP03C-07-34-111299	11/12/1999	11/29/1999	Trichloroethene		Water	130	µg/L	JH	3
Phase 2	NIC-GPW-GP03C-07-34-111299	11/12/1999	11/29/1999	trans-1,3-Dichloropropene	U	Water	1	µg/L	JH	3
Phase 2	NIC-GPW-GP03C-07-34-111299	11/12/1999	11/29/1999	trans-1,2-Dichloroethene		Water	2.3	µg/L	JH	3
Phase 2	NIC-GPW-GP03C-07-34-111299	11/12/1999	11/29/1999	Toluene	U	Water	1	µg/L	JH	3
Phase 2	NIC-GPW-GP03C-07-34-111299	11/12/1999	11/29/1999	Tetrachloroethene	U	Water	1	µg/L	JH	3
Phase 2	NIC-GPW-GP03C-07-34-111299	11/12/1999	11/29/1999	o-Xylene	U	Water	1.1	µg/L	JH	3
Phase 2	NIC-GPW-GP03C-07-34-111299	11/12/1999	11/29/1999	Methylene Chloride	U	Water	1	µg/L	JH	3
Phase 2	NIC-GPW-GP03C-07-34-111299	11/12/1999	11/29/1999	m,p-Xylene	U	Water	1.3	µg/L	JH	3
Phase 2	NIC-GPW-GP03C-07-34-111299	11/12/1999	11/29/1999	Ethylbenzene	U	Water	1	µg/L	JH	3
Phase 2	NIC-GPW-GP03C-07-34-111299	11/12/1999	11/29/1999	Dibromochloromethane	U	Water	1	µg/L	JH	3
Phase 2	NIC-GPW-GP03C-07-34-111299	11/12/1999	11/29/1999	cis-1,3-Dichloropropene	U	Water	1	µg/L	JH	3
Phase 2	NIC-GPW-GP03C-07-34-111299	11/12/1999	11/29/1999	cis-1,2-Dichloroethene		Water	43	µg/L	JH	3
Phase 2	NIC-GPW-GP03C-07-34-111299	11/12/1999	11/29/1999	Chloromethane	U	Water	1	µg/L	JH	3
Phase 2	NIC-GPW-GP03C-07-34-111299	11/12/1999	11/29/1999	Chloroform	U	Water	1	µg/L	JH	3
Phase 2	NIC-GPW-GP03C-07-34-111299	11/12/1999	11/29/1999	Chloroethane	U	Water	1	µg/L	JH	3
Phase 2	NIC-GPW-GP03C-07-34-111299	11/12/1999	11/29/1999	Chlorobenzene	U	Water	1	µg/L	JH	3
Phase 2	NIC-GPW-GP03C-07-34-111299	11/12/1999	11/29/1999	Carbon Tetrachloride	U	Water	1	µg/L	JH	3
Phase 2	NIC-GPW-GP03C-07-34-111299	11/12/1999	11/29/1999	Bromomethane	U	Water	1	µg/L	JH	3
Phase 2	NIC-GPW-GP03C-07-34-111299	11/12/1999	11/29/1999	Bromoform	U	Water	1	µg/L	JH	3
Phase 2	NIC-GPW-GP03C-07-34-111299	11/12/1999	11/29/1999	Bromodichloromethane	U	Water	1	µg/L	JH	3
Phase 2	NIC-GPW-GP03C-07-34-111299	11/12/1999	11/29/1999	Benzene	U	Water	1	µg/L	JH	3
Phase 2	NIC-GPW-GP03C-07-34-111299	11/12/1999	11/29/1999	1,4-Dichlorobenzene	U	Water	1	µg/L	JH	3
Phase 2	NIC-GPW-GP03C-07-34-111299	11/12/1999	11/29/1999	1,3-Dichlorobenzene	U	Water	1	µg/L	JH	3
Phase 2	NIC-GPW-GP03C-07-34-111299	11/12/1999	11/29/1999	1,2-Dichloropropane	U	Water	1	µg/L	JH	3
Phase 2	NIC-GPW-GP03C-07-34-111299	11/12/1999	11/29/1999	1,2-Dichloroethane	U	Water	1	µg/L	JH	3
Phase 2	NIC-GPW-GP03C-07-34-111299	11/12/1999	11/29/1999	1,2-Dichlorobenzene	U	Water	1	µg/L	JH	3
Phase 2	NIC-GPW-GP03C-07-34-111299	11/12/1999	11/29/1999	1,1-Dichloroethene		Water	4.5	µg/L	JH	3
Phase 2	NIC-GPW-GP03C-07-34-111299	11/12/1999	11/29/1999	1,1-Dichloroethane		Water	2.4	µg/L	JH	3

Table 6-9
North Industrial Corridor (NIC) Site
Summary of Sample Results Qualified Due to Holding Time Violations

Investigation	Sample ID	Sample Date	Date Analyzed	Compound	Detect Flag	Media	Result	Units	CDM Final Flag	Days Outside of Holding Times
Phase 2	NIC-GPW-GP03C-07-34-111299	11/12/1999	11/29/1999	1,1,2-Trichloroethane	U	Water	1	µg/L	JH	3
Phase 2	NIC-GPW-GP03C-07-34-111299	11/12/1999	11/29/1999	1,1,2,2-Tetrachloroethane	U	Water	1	µg/L	JH	3
Phase 2	NIC-GPW-GP03C-07-34-111299	11/12/1999	11/29/1999	1,1,1-Trichloroethane	U	Water	1	µg/L	JH	3
Phase 2	NIC-GPW-GP03C-07-Q1-34-111299	11/12/1999	11/29/1999	Vinyl Chloride		Water	12	µg/L	JH	3
Phase 2	NIC-GPW-GP03C-07-Q1-34-111299	11/12/1999	11/29/1999	Trichlorofluoromethane	U	Water	1	µg/L	JH	3
Phase 2	NIC-GPW-GP03C-07-Q1-34-111299	11/12/1999	11/29/1999	Trichloroethene		Water	160	µg/L	JH	3
Phase 2	NIC-GPW-GP03C-07-Q1-34-111299	11/12/1999	11/29/1999	trans-1,3-Dichloropropene	U	Water	1	µg/L	JH	3
Phase 2	NIC-GPW-GP03C-07-Q1-34-111299	11/12/1999	11/29/1999	trans-1,2-Dichloroethene		Water	2.1	µg/L	JH	3
Phase 2	NIC-GPW-GP03C-07-Q1-34-111299	11/12/1999	11/29/1999	Toluene	U	Water	1	µg/L	JH	3
Phase 2	NIC-GPW-GP03C-07-Q1-34-111299	11/12/1999	11/29/1999	Tetrachloroethene	U	Water	1	µg/L	JH	3
Phase 2	NIC-GPW-GP03C-07-Q1-34-111299	11/12/1999	11/29/1999	o-Xylene	U	Water	1.1	µg/L	JH	3
Phase 2	NIC-GPW-GP03C-07-Q1-34-111299	11/12/1999	11/29/1999	Methylene Chloride	U	Water	1	µg/L	JH	3
Phase 2	NIC-GPW-GP03C-07-Q1-34-111299	11/12/1999	11/29/1999	m,p-Xylene	U	Water	1.3	µg/L	JH	3
Phase 2	NIC-GPW-GP03C-07-Q1-34-111299	11/12/1999	11/29/1999	Ethylbenzene	U	Water	1	µg/L	JH	3
Phase 2	NIC-GPW-GP03C-07-Q1-34-111299	11/12/1999	11/29/1999	Dibromochloromethane	U	Water	1	µg/L	JH	3
Phase 2	NIC-GPW-GP03C-07-Q1-34-111299	11/12/1999	11/29/1999	cis-1,3-Dichloropropene	U	Water	1	µg/L	JH	3
Phase 2	NIC-GPW-GP03C-07-Q1-34-111299	11/12/1999	11/29/1999	cis-1,2-Dichloroethene		Water	47	µg/L	JH	3
Phase 2	NIC-GPW-GP03C-07-Q1-34-111299	11/12/1999	11/29/1999	Chloromethane	U	Water	1	µg/L	JH	3
Phase 2	NIC-GPW-GP03C-07-Q1-34-111299	11/12/1999	11/29/1999	Chloroform	U	Water	1	µg/L	JH	3
Phase 2	NIC-GPW-GP03C-07-Q1-34-111299	11/12/1999	11/29/1999	Chloroethane	U	Water	1	µg/L	JH	3
Phase 2	NIC-GPW-GP03C-07-Q1-34-111299	11/12/1999	11/29/1999	Chlorobenzene	U	Water	1	µg/L	JH	3
Phase 2	NIC-GPW-GP03C-07-Q1-34-111299	11/12/1999	11/29/1999	Carbon Tetrachloride	U	Water	1	µg/L	JH	3
Phase 2	NIC-GPW-GP03C-07-Q1-34-111299	11/12/1999	11/29/1999	Bromomethane	U	Water	1	µg/L	JH	3
Phase 2	NIC-GPW-GP03C-07-Q1-34-111299	11/12/1999	11/29/1999	Bromoform	U	Water	1	µg/L	JH	3
Phase 2	NIC-GPW-GP03C-07-Q1-34-111299	11/12/1999	11/29/1999	Bromodichloromethane	U	Water	1	µg/L	JH	3
Phase 2	NIC-GPW-GP03C-07-Q1-34-111299	11/12/1999	11/29/1999	Benzene	U	Water	1	µg/L	JH	3
Phase 2	NIC-GPW-GP03C-07-Q1-34-111299	11/12/1999	11/29/1999	1,4-Dichlorobenzene	U	Water	1	µg/L	JH	3
Phase 2	NIC-GPW-GP03C-07-Q1-34-111299	11/12/1999	11/29/1999	1,3-Dichlorobenzene	U	Water	1	µg/L	JH	3
Phase 2	NIC-GPW-GP03C-07-Q1-34-111299	11/12/1999	11/29/1999	1,2-Dichloropropane	U	Water	1	µg/L	JH	3
Phase 2	NIC-GPW-GP03C-07-Q1-34-111299	11/12/1999	11/29/1999	1,2-Dichloroethane	U	Water	1	µg/L	JH	3

Table 6-9
North Industrial Corridor (NIC) Site
Summary of Sample Results Qualified Due to Holding Time Violations

Investigation	Sample ID	Sample Date	Date Analyzed	Compound	Detect Flag	Media	Result	Units	CDM Final Flag	Days Outside of Holding Times
Phase 2	NIC-GPW-GP03C-07-Q1-34-111299	11/12/1999	11/29/1999	1,2-Dichlorobenzene	U	Water	1	µg/L	JH	3
Phase 2	NIC-GPW-GP03C-07-Q1-34-111299	11/12/1999	11/29/1999	1,1-Dichloroethene		Water	5	µg/L	JH	3
Phase 2	NIC-GPW-GP03C-07-Q1-34-111299	11/12/1999	11/29/1999	1,1-Dichloroethane		Water	2.4	µg/L	JH	3
Phase 2	NIC-GPW-GP03C-07-Q1-34-111299	11/12/1999	11/29/1999	1,1,2-Trichloroethane	U	Water	1	µg/L	JH	3
Phase 2	NIC-GPW-GP03C-07-Q1-34-111299	11/12/1999	11/29/1999	1,1,2,2-Tetrachloroethane	U	Water	1	µg/L	JH	3
Phase 2	NIC-GPW-GP03C-07-Q1-34-111299	11/12/1999	11/29/1999	1,1,1-Trichloroethane	U	Water	1	µg/L	JH	3
Phase 2	NIC-GPW-GP04B-01-23-110399	11/3/1999	11/17/99	cis-1,2-Dichloroethene		Water	110	µg/L	JH	1[a]
Phase 2	NIC-GPW-GP04B-01-23-110399	11/3/1999	11/17/99	Trichloroethene		Water	150	µg/L	JH	1[a]
Phase 2	NIC-GPW-GP04B-01-41-110399	11/3/1999	11/17/99	cis-1,2-Dichloroethene		Water	81	µg/L	JH	1[a]
Phase 2	NIC-GPW-GP04B-01-41-110399	11/3/1999	11/17/99	Trichloroethene		Water	210	µg/L	JH	1[a]
Phase 2	NIC-GPW-GP04B-02-20-110399	11/3/1999	11/17/99	cis-1,2-Dichloroethene		Water	110	µg/L	JH	1[a]
Phase 2	NIC-GPW-GP04B-02-20-110399	11/3/1999	11/17/99	Trichloroethene		Water	200	µg/L	JH	1[a]
Phase 2	NIC-GPW-GP04B-02-41-110399	11/3/1999	11/17/99	Trichloroethene		Water	440	µg/L	JH	1[a]
Phase 2	NIC-GPW-GP04B-03-41-110599	11/5/1999	11/19/99	cis-1,2-Dichloroethene		Water	66	µg/L	JH	1[a]
Phase 2	NIC-GPW-GP04B-03-41-110599	11/5/1999	11/19/99	Trichloroethene		Water	480	µg/L	JH	1[a]
Phase 2	NIC-GPW-GP04B-04-23-110399	11/3/1999	11/16/99	Trichloroethene		Water	83	µg/L	JH	1[a]
Phase 2	NIC-GPW-GP04B-04-41-110399	11/3/1999	11/16/99	Trichloroethene		Water	100	µg/L	JH	1[a]
Phase 2	NIC-GPW-GP04B-06-26-110499	11/4/1999	11/17/99	Trichloroethene		Water	100	µg/L	JH	1[a]
Phase 2	NIC-GPW-GP04B-06-37-110499	11/4/1999	11/17/99	Trichloroethene		Water	70	µg/L	JH	1[a]
Phase 2	NIC-GPW-GP04B-08-44-110399	11/3/1999	11/16/99	Trichloroethene		Water	530	µg/L	JH	1[a]
Phase 2	NIC-GPW-GP04B-08-44-110399	11/3/1999	11/16/99	cis-1,2-Dichloroethene		Water	78	µg/L	JH	1[a]
Phase 2	NIC-GPW-GP04B-08Q-44-110399	11/3/1999	11/16/99	cis-1,2-Dichloroethene		QC	80	µg/L	JH	1[a]
Phase 2	NIC-GPW-GP04B-08Q-44-110399	11/3/1999	11/16/99	Trichloroethene		QC	560	µg/L	JH	1[a]
Phase 2	NIC-GPW-GP04B-09-26-110399	11/3/1999	11/16/99	cis-1,2-Dichloroethene		Water	120	µg/L	JH	1[a]
Phase 2	NIC-GPW-GP04B-09-26-110399	11/3/1999	11/16/99	Trichloroethene		Water	830	µg/L	JH	1[a]
Phase 2	NIC-GPW-GP04B-09-44-110399	11/3/1999	11/16/99	cis-1,2-Dichloroethene		Water	86	µg/L	JH	1[a]

Table 6-9
North Industrial Corridor (NIC) Site
Summary of Sample Results Qualified Due to Holding Time Violations

Investigation	Sample ID	Sample Date	Date Analyzed	Compound	Detect Flag	Media	Result	Units	CDM Final Flag	Days Outside of Holding Times
Phase 2	NIC-GPW-GP04B-09-44-110399	11/3/1999	11/16/99	Trichloroethene		Water	700	µg/L	JH	1[a]
Phase 2	NIC-GPW-GP04B-10-20-110499	11/4/1999	11/17/99	Trichloroethene		Water	190	µg/L	JH	1[a]
Phase 2	NIC-GPW-GP04B-10-41-110499	11/4/1999	11/17/99	Trichloroethene		Water	180	µg/L	JH	1[a]
Phase 2	NIC-GPW-GP04B-10-41-110499	11/4/1999	11/17/99	cis-1,2-Dichloroethene		Water	45	µg/L	JH	1[a]
Phase 2	NIC-GPW-GP04B-12-29-110499	11/4/1999	11/17/99	Trichloroethene		Water	180	µg/L	JH	1[a]
Phase 2	NIC-GPW-GP04B-12-40-110499	11/4/1999	11/18/99	Trichloroethene		Water	150	µg/L	JH	1[a]
Phase 2	NIC-GPW-GP04B-14-44-110499	11/4/1999	11/18/99	Trichloroethene		Water	640	µg/L	JH	1[a]
Phase 2	NIC-GPW-GP04B-14-44-110499	11/4/1999	11/18/99	cis-1,2-Dichloroethene		Water	98	µg/L	JH	1[a]
Phase 2	NIC-GPW-GP04E-03-38-111099	11/10/1999	11/24/99	Trichloroethene		Water	430	µg/L	JH	1[a]
Phase 2	NIC-GPW-GP04E-03-38-111099	11/10/1999	11/24/99	cis-1,2-Dichloroethene		Water	110	µg/L	JH	1[a]
Phase 2	NIC-GPW-GP04E-04-17-102799	10/27/1999	11/09/99	Trichloroethene		Water	54	µg/L	JH	1[a]
Phase 2	NIC-GPW-GP05B-03-35-110599	11/5/1999	11/19/99	Trichloroethene		Water	90	µg/L	JH	1[a]
Phase 2	NIC-GPW-GP08C-01-29-121799	12/17/1999	12/30/99	Trichloroethene		Water	130	µg/L	JH	1[a]
Phase 2	NIC-GPW-GP08C-01-29-121799	12/17/1999	12/30/99	cis-1,2-Dichloroethene		Water	61	µg/L	JH	1[a]
Phase 2	NIC-GPW-GP08C-01Q1-29-121799	12/17/1999	12/30/99	Trichloroethene		QC	130	µg/L	JH	1[a]
Phase 2	NIC-GPW-GP08C-01Q1-29-121799	12/17/1999	12/30/99	cis-1,2-Dichloroethene		QC	61	µg/L	JH	1[a]
Phase 2	NIC-GPW-GP08C-02-29-121799	12/17/1999	12/29/99	cis-1,2-Dichloroethene		Water	81	µg/L	JH	1[a]
Phase 2	NIC-GPW-GP08C-02-29-121799	12/17/1999	12/29/99	Trichloroethene		Water	230	µg/L	JH	1[a]
Phase 2	NIC-GPW-GP08C-03-29-121799	12/17/1999	12/29/99	Trichloroethene		Water	210	µg/L	JH	1[a]
Phase 2	NIC-GPW-GP08C-03-29-121799	12/17/1999	12/29/99	cis-1,2-Dichloroethene		Water	77	µg/L	JH	1[a]
Phase 2	NIC-GPW-GP08C-04-29-121799	12/17/1999	12/29/99	cis-1,2-Dichloroethene		Water	66	µg/L	JH	1[a]
Phase 2	NIC-GPW-GP08C-04-29-121799	12/17/1999	12/29/99	Trichloroethene		Water	190	µg/L	JH	1[a]
Phase 2	NIC-GPW-GP08C-05-26-121799	12/17/1999	12/29/99	cis-1,2-Dichloroethene		Water	57	µg/L	JH	1[a]
Phase 2	NIC-GPW-GP08C-05-26-121799	12/17/1999	12/29/99	Trichloroethene		Water	140	µg/L	JH	1[a]
Phase 2	NIC-GPW-GP08E-02-35-122099	12/20/1999	12/31/99	cis-1,2-Dichloroethene		Water	71	µg/L	JH	1[a]
Phase 2	NIC-GPW-GP08E-02-35-122099	12/20/1999	12/31/99	Trichloroethene		Water	290	µg/L	JH	1[a]

Table 6-9
North Industrial Corridor (NIC) Site
Summary of Sample Results Qualified Due to Holding Time Violations

Investigation	Sample ID	Sample Date	Date Analyzed	Compound	Detect Flag	Media	Result	Units	CDM Final Flag	Days Outside of Holding Times
Phase 2	NIC-GPW-GP08E-02Q1-35-122099	12/20/1999	12/31/99	cis-1,2-Dichloroethene		QC	61	µg/L	JH	1[a]
Phase 2	NIC-GPW-GP08E-02Q1-35-122099	12/20/1999	12/31/99	Trichloroethene		QC	260	µg/L	JH	1[a]
Phase 2	NIC-GPW-GP08E-03-17-122099	12/20/1999	12/31/99	cis-1,2-Dichloroethene		Water	82	µg/L	JH	1[a]
Phase 2	NIC-GPW-GP08E-03-33-122099	12/20/1999	12/31/99	cis-1,2-Dichloroethene		Water	160	µg/L	JH	1[a]
Phase 2	NIC-GPW-GP08E-03-33-122099	12/20/1999	12/31/99	Trichloroethene		Water	350	µg/L	JH	1[a]
Phase 2	NIC-GW-NMW-34S2Q-050701	5/7/2001	06/19/01	Dibromochloromethane	U	QC	1	µg/L	JH	29
Phase 2	NIC-GW-NMW-34S2Q-050701	5/7/2001	06/19/01	cis-1,3-Dichloropropene	U	QC	1	µg/L	JH	29
Phase 2	NIC-GW-NMW-34S2Q-050701	5/7/2001	06/19/01	cis-1,2-Dichloroethene		QC	72	µg/L	JH	29
Phase 2	NIC-GW-NMW-34S2Q-050701	5/7/2001	06/19/01	Chloroform	U	QC	1	µg/L	JH	29
Phase 2	NIC-GW-NMW-34S2Q-050701	5/7/2001	06/19/01	Carbon tetrachloride	U	QC	1	µg/L	JH	29
Phase 2	NIC-GW-NMW-34S2Q-050701	5/7/2001	06/19/01	Ethylbenzene	U	QC	1	µg/L	JH	29
Phase 2	NIC-GW-NMW-34S2Q-050701	5/7/2001	06/19/01	Trichloroethene		QC	28	µg/L	JH	29
Phase 2	NIC-GW-NMW-34S2Q-050701	5/7/2001	06/19/01	Chloroethane	U	QC	1	µg/L	JH	29
Phase 2	NIC-GW-NMW-34S2Q-050701	5/7/2001	06/19/01	Chlorobenzene	U	QC	1	µg/L	JH	29
Phase 2	NIC-GW-NMW-34S2Q-050701	5/7/2001	06/19/01	Chloromethane	U	QC	1	µg/L	JH	29
Phase 2	NIC-GW-NMW-34S2Q-050701	5/7/2001	06/19/01	m,p-Xylene	U	QC	1.3	µg/L	JH	29
Phase 2	NIC-GW-NMW-34S2Q-050701	5/7/2001	06/19/01	Methylene chloride	U	QC	1	µg/L	JH	29
Phase 2	NIC-GW-NMW-34S2Q-050701	5/7/2001	06/19/01	o-Xylene	U	QC	1.1	µg/L	JH	29
Phase 2	NIC-GW-NMW-34S2Q-050701	5/7/2001	06/19/01	Tetrachloroethene	U	QC	1	µg/L	JH	29
Phase 2	NIC-GW-NMW-34S2Q-050701	5/7/2001	06/19/01	Toluene	U	QC	1	µg/L	JH	29
Phase 2	NIC-GW-NMW-34S2Q-050701	5/7/2001	06/19/01	trans-1,3-Dichloropropene	U	QC	1	µg/L	JH	29
Phase 2	NIC-GW-NMW-34S2Q-050701	5/7/2001	06/19/01	Trichlorofluoromethane	U	QC	1	µg/L	JH	29
Phase 2	NIC-GW-NMW-34S2Q-050701	5/7/2001	06/19/01	Bromomethane	U	QC	1	µg/L	JH	29
Phase 2	NIC-GW-NMW-34S2Q-050701	5/7/2001	06/19/01	1,1,1-Trichloroethane	U	QC	1	µg/L	JH	29
Phase 2	NIC-GW-NMW-34S2Q-050701	5/7/2001	06/19/01	Vinyl chloride		QC	21	µg/L	JH	29
Phase 2	NIC-GW-NMW-34S2Q-050701	5/7/2001	06/19/01	trans-1,2-Dichloroethene		QC	1.2	µg/L	JH	29
Phase 2	NIC-GW-NMW-34S2Q-050701	5/7/2001	06/19/01	1,1-Dichloroethane	U	QC	1	µg/L	JH	29
Phase 2	NIC-GW-NMW-34S2Q-050701	5/7/2001	06/19/01	Bromoform	U	QC	1	µg/L	JH	29
Phase 2	NIC-GW-NMW-34S2Q-050701	5/7/2001	06/19/01	1,1,2-Trichloroethane	U	QC	1	µg/L	JH	29

Table 6-9
North Industrial Corridor (NIC) Site
Summary of Sample Results Qualified Due to Holding Time Violations

Investigation	Sample ID	Sample Date	Date Analyzed	Compound	Detect Flag	Media	Result	Units	CDM Final Flag	Days Outside of Holding Times
Phase 2	NIC-GW-NMW-34S2Q-050701	5/7/2001	06/19/01	1,1-Dichloroethene	U	QC	1	µg/L	JH	29
Phase 2	NIC-GW-NMW-34S2Q-050701	5/7/2001	06/19/01	1,2-Dichlorobenzene	U	QC	1	µg/L	JH	29
Phase 2	NIC-GW-NMW-34S2Q-050701	5/7/2001	06/19/01	1,2-Dichloroethane	U	QC	1	µg/L	JH	29
Phase 2	NIC-GW-NMW-34S2Q-050701	5/7/2001	06/19/01	1,2-Dichloropropane	U	QC	1	µg/L	JH	29
Phase 2	NIC-GW-NMW-34S2Q-050701	5/7/2001	06/19/01	1,3-Dichlorobenzene	U	QC	1	µg/L	JH	29
Phase 2	NIC-GW-NMW-34S2Q-050701	5/7/2001	06/19/01	1,4-Dichlorobenzene	U	QC	1	µg/L	JH	29
Phase 2	NIC-GW-NMW-34S2Q-050701	5/7/2001	06/19/01	Benzene	U	QC	1	µg/L	JH	29
Phase 2	NIC-GW-NMW-34S2Q-050701	5/7/2001	06/19/01	Bromodichloromethane	U	QC	1	µg/L	JH	29
Phase 2	NIC-SD-11N-051601	5/16/2001	05/31/01	Chlorobenzene	U	QC	10	µg/L	JH	1
Phase 2	NIC-SD-11N-051601	5/16/2001	05/31/01	Benzene	U	QC	10	µg/L	JH	1
Phase 2	NIC-SD-11N-051601	5/16/2001	05/31/01	Ethylbenzene	U	QC	10	µg/L	JH	1
Phase 2	NIC-SD-11N-051601	5/16/2001	05/31/01	Bromodichloromethane	U	QC	10	µg/L	JH	1
Phase 2	NIC-SD-11N-051601	5/16/2001	05/31/01	Bromoform	U	QC	10	µg/L	JH	1
Phase 2	NIC-SD-11N-051601	5/16/2001	05/31/01	1,4-Dichlorobenzene	U	QC	10	µg/L	JH	1
Phase 2	NIC-SD-11N-051601	5/16/2001	05/31/01	Methylene chloride	U	QC	10	µg/L	JH	1
Phase 2	NIC-SD-11N-051601	5/16/2001	05/31/01	Bromomethane	U	QC	10	µg/L	JH	1
Phase 2	NIC-SD-11N-051601	5/16/2001	05/31/01	m,p-Xylene	U	QC	13	µg/L	JH	1
Phase 2	NIC-SD-11N-051601	5/16/2001	05/31/01	Dibromochloromethane	U	QC	10	µg/L	JH	1
Phase 2	NIC-SD-11N-051601	5/16/2001	05/31/01	cis-1,3-Dichloropropene	U	QC	10	µg/L	JH	1
Phase 2	NIC-SD-11N-051601	5/16/2001	05/31/01	cis-1,2-Dichloroethene	U	QC	10	µg/L	JH	1
Phase 2	NIC-SD-11N-051601	5/16/2001	05/31/01	Chloromethane	U	QC	10	µg/L	JH	1
Phase 2	NIC-SD-11N-051601	5/16/2001	05/31/01	Chloroethane	U	QC	10	µg/L	JH	1
Phase 2	NIC-SD-11N-051601	5/16/2001	05/31/01	Carbon tetrachloride	U	QC	10	µg/L	JH	1
Phase 2	NIC-SD-11N-051601	5/16/2001	05/31/01	1,1,1-Trichloroethane	U	QC	10	µg/L	JH	1
Phase 2	NIC-SD-11N-051601	5/16/2001	05/31/01	1,3-Dichlorobenzene	U	QC	10	µg/L	JH	1
Phase 2	NIC-SD-11N-051601	5/16/2001	05/31/01	Chloroform	U	QC	10	µg/L	JH	1
Phase 2	NIC-SD-11N-051601	5/16/2001	05/31/01	Trichlorofluoromethane	U	QC	10	µg/L	JH	1
Phase 2	NIC-SD-11N-051601	5/16/2001	05/31/01	1,2-Dichloropropane	U	QC	10	µg/L	JH	1
Phase 2	NIC-SD-11N-051601	5/16/2001	05/31/01	1,1,2-Trichloroethane	U	QC	10	µg/L	JH	1
Phase 2	NIC-SD-11N-051601	5/16/2001	05/31/01	Toluene	U	QC	10	µg/L	JH	1

Table 6-9
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Summary of Sample Results Qualified Due to Holding Time Violations

Investigation	Sample ID	Sample Date	Date Analyzed	Compound	Detect Flag	Media	Result	Units	CDM Final Flag	Days Outside of Holding Times
Phase 2	NIC-SD-11N-051601	5/16/2001	05/31/01	trans-1,2-Dichloroethene	U	QC	10	µg/L	JH	1
Phase 2	NIC-SD-11N-051601	5/16/2001	05/31/01	Trichloroethene	U	QC	10	µg/L	JH	1
Phase 2	NIC-SD-11N-051601	5/16/2001	05/31/01	Tetrachloroethene	U	QC	10	µg/L	JH	1
Phase 2	NIC-SD-11N-051601	5/16/2001	05/31/01	Vinyl chloride	U	QC	10	µg/L	JH	1
Phase 2	NIC-SD-11N-051601	5/16/2001	05/31/01	o-Xylene	U	QC	11	µg/L	JH	1
Phase 2	NIC-SD-11N-051601	5/16/2001	05/31/01	1,1,2,2-Tetrachloroethane	U	QC	10	µg/L	JH	1
Phase 2	NIC-SD-11N-051601	5/16/2001	05/31/01	1,1-Dichloroethane	U	QC	10	µg/L	JH	1
Phase 2	NIC-SD-11N-051601	5/16/2001	05/31/01	1,1-Dichloroethene	U	QC	10	µg/L	JH	1
Phase 2	NIC-SD-11N-051601	5/16/2001	05/31/01	1,2-Dichlorobenzene	U	QC	10	µg/L	JH	1
Phase 2	NIC-SD-11N-051601	5/16/2001	05/31/01	1,2-Dichloroethane	U	QC	10	µg/L	JH	1
Phase 2	NIC-SD-11N-051601	5/16/2001	05/31/01	trans-1,3-Dichloropropene	U	QC	10	µg/L	JH	1
Phase 2	NIC-SW-06-051601	5/16/2001	05/31/01	Chloromethane	U	Water	1	µg/L	JH	1
Phase 2	NIC-SW-06-051601	5/16/2001	05/31/01	Chloroform	U	Water	1	µg/L	JH	1
Phase 2	NIC-SW-06-051601	5/16/2001	05/31/01	m,p-Xylene	U	Water	1.3	µg/L	JH	1
Phase 2	NIC-SW-06-051601	5/16/2001	05/31/01	cis-1,2-Dichloroethene		Water	30	µg/L	JH	1
Phase 2	NIC-SW-06-051601	5/16/2001	05/31/01	cis-1,3-Dichloropropene	U	Water	1	µg/L	JH	1
Phase 2	NIC-SW-06-051601	5/16/2001	05/31/01	Dibromochloromethane	U	Water	1	µg/L	JH	1
Phase 2	NIC-SW-06-051601	5/16/2001	05/31/01	Ethylbenzene	U	Water	1	µg/L	JH	1
Phase 2	NIC-SW-06-051601	5/16/2001	05/31/01	Methylene chloride	U	Water	1	µg/L	JH	1
Phase 2	NIC-SW-06-051601	5/16/2001	05/31/01	o-Xylene	U	Water	1.1	µg/L	JH	1
Phase 2	NIC-SW-06-051601	5/16/2001	05/31/01	Tetrachloroethene	U	Water	1	µg/L	JH	1
Phase 2	NIC-SW-06-051601	5/16/2001	05/31/01	Toluene		Water	7.6	µg/L	JH	1
Phase 2	NIC-SW-06-051601	5/16/2001	05/31/01	Chloroethane	U	Water	1	µg/L	JH	1
Phase 2	NIC-SW-06-051601	5/16/2001	05/31/01	trans-1,3-Dichloropropene	U	Water	1	µg/L	JH	1
Phase 2	NIC-SW-06-051601	5/16/2001	05/24/01	1,3-Dichlorobenzene	U	Water	120	µg/L	JH	1
Phase 2	NIC-SW-06-051601	5/16/2001	05/31/01	Trichloroethene	U	Water	1	µg/L	JH	1
Phase 2	NIC-SW-06-051601	5/16/2001	05/31/01	Trichlorofluoromethane	U	Water	1	µg/L	JH	1
Phase 2	NIC-SW-06-051601	5/16/2001	05/31/01	trans-1,2-Dichloroethene		Water	2.6	µg/L	JH	1
Phase 2	NIC-SW-06-051601	5/16/2001	05/31/01	1,3-Dichlorobenzene	U	Water	1	µg/L	JH	1
Phase 2	NIC-SW-06-051601	5/16/2001	05/31/01	1,1,2,2-Tetrachloroethane	U	Water	1	µg/L	JH	1

Table 6-9
North Industrial Corridor (NIC) Site
Summary of Sample Results Qualified Due to Holding Time Violations

Investigation	Sample ID	Sample Date	Date Analyzed	Compound	Detect Flag	Media	Result	Units	CDM Final Flag	Days Outside of Holding Times
Phase 2	NIC-SW-06-051601	5/16/2001	05/31/01	1,1,1-Trichloroethane	U	Water	1	µg/L	JH	1
Phase 2	NIC-SW-06-051601	5/16/2001	05/31/01	Vinyl chloride		Water	33	µg/L	JH	1
Phase 2	NIC-SW-06-051601	5/16/2001	05/31/01	1,1,2-Trichloroethane	U	Water	1	µg/L	JH	1
Phase 2	NIC-SW-06-051601	5/16/2001	05/31/01	1,1-Dichloroethane		Water	1.9	µg/L	JH	1
Phase 2	NIC-SW-06-051601	5/16/2001	05/31/01	1,1-Dichloroethene		Water	1.5	µg/L	JH	1
Phase 2	NIC-SW-06-051601	5/16/2001	05/24/01	1,4-Dichlorobenzene	U	Water	120	µg/L	JH	1
Phase 2	NIC-SW-06-051601	5/16/2001	05/31/01	1,2-Dichloropropane	U	Water	1	µg/L	JH	1
Phase 2	NIC-SW-06-051601	5/16/2001	05/31/01	Chlorobenzene	U	Water	1	µg/L	JH	1
Phase 2	NIC-SW-06-051601	5/16/2001	05/31/01	1,4-Dichlorobenzene	U	Water	1	µg/L	JH	1
Phase 2	NIC-SW-06-051601	5/16/2001	05/31/01	Benzene		Water	3.3	µg/L	JH	1
Phase 2	NIC-SW-06-051601	5/16/2001	05/31/01	Bromodichloromethane	U	Water	1	µg/L	JH	1
Phase 2	NIC-SW-06-051601	5/16/2001	05/31/01	Bromoform	U	Water	1	µg/L	JH	1
Phase 2	NIC-SW-06-051601	5/16/2001	05/31/01	Bromomethane	U	Water	1	µg/L	JH	1
Phase 2	NIC-SW-06-051601	5/16/2001	05/31/01	Carbon tetrachloride	U	Water	1	µg/L	JH	1
Phase 2	NIC-SW-06-051601	5/16/2001	05/31/01	1,2-Dichloroethane	U	Water	1	µg/L	JH	1

a = Samples were originally analyzed within holding times. Samples analyzed outside of holding times due to secondary dilution.

Table 6-10
North Industrial Corridor (NIC) Site
Summary of Corrected Pace Sample IDs

Original Laboratory Sample ID	Corrected CDM Sample ID
NIC-GPW-EXC-MW-BDQ3-12-08-97	NIC-GPW-EXC-MW-8DQ3-12-08-97
NIC-GPW-GP-10-4-18-06-09-98	NIC-GPW-GPA10-4-18-06-09-98
NIC-GPW-GP-10-4-36-06-09-98	NIC-GPW-GPA10-4-36-06-09-98
NIC-GPW-GP11-1-20-01-16-98	NIC-GPW-GP#11-1-20-01-16-98
NIC-GPW-GP11-1-20M-01-16-98	NIC-GPW-GP#11-1-20M-01-16-98
NIC-GPW-GP11-1-20N-01-16-98	NIC-GPW-GP#11-1-20N-01-16-98
NIC-GPW-GP11-2-20-01-09-98	NIC-GPW-GP#11-2-20-01-09-98
NIC-GPW-GP11-2-20-01-15-98	NIC-GPW-GP#11-2-20-01-15-98
NIC-GPW-GP11-2-36-01-09-98	NIC-GPW-GP#11-2-36-01-09-98
NIC-GPW-GP12-2-20-01-09-98	NIC-GPW-GP#12-2-20-01-09-98
NIC-GPW-GP12-2-36-01-09-98	NIC-GPW-GP#12-2-36-01-09-98
NIC-GPW-GP-16-4-18-06-09-98	NIC-GPW-GPA16-4-18-06-09-98
NIC-GPW-GP-16-4-38-06-09-98	NIC-GPW-GPA16-4-38-06-09-98
NIC-GPW-GP-16-4-38N-06-09-98	NIC-GPW-GPA16-4-38N-06-09-98
NIC-GPW-GP-16-6-18-06-09-98	NIC-GPW-GPA16-6-18-06-09-98
NIC-GPW-GP-16-6-38-06-09-98	NIC-GPW-GPA16-6-38-06-09-98
NIC-GPW-GP18-1-20-Q3-01-08-98	NIC-GPW-GP#18-1-20-Q3-01-08-98
NIC-GPW-GP18-1-33Q3-01-08-98	NIC-GPW-GP#18-1-33Q3-01-08-98
NIC-GPW-GP18-2-20Q3-01-08-98	NIC-GPW-GP#18-2-20Q3-01-08-98
NIC-GPW-GP18-2-32Q3-01-08-98	NIC-GPW-GP#18-2-32Q3-01-08-98
NIC-GPW-GP18-3-20-01-08-98	NIC-GPW-GP#18-3-20-01-08-98
NIC-GPW-GP18-3-33-01-08-98	NIC-GPW-GP#18-3-33-01-08-98
NIC-GPW-GP18-4-20-01-08-98	NIC-GPW-GP#18-4-20-01-08-98
NIC-GPW-GP18-4-30-01-08-98	NIC-GPW-GP#18-4-30-01-08-98
NIC-GPW-GP18-5-18-06-04-98	NIC-GPW-GP#18-5-18-06-04-98
NIC-GPW-GP18-5-30-06-04-98	NIC-GPW-GP#18-5-30-06-04-98
NIC-GPW-GP18-6-18-06-04-98	NIC-GPW-GP#18-6-18-06-04-98
NIC-GPW-GP18-6-30-06-04-98	NIC-GPW-GP#18-6-30-06-04-98
NIC-GPW-GP18-7-18-06-04-98	NIC-GPW-GP#18-7-18-06-04-98
NIC-GPW-GP18-7-30-06-04-98	NIC-GPW-GP#18-7-30-06-04-98
NIC-GPW-GP19-1-20-06-02-98	NIC-GPW-GP#19-1-20-06-02-98
NIC-GPW-GP19-1-27-06-02-98	NIC-GPW-GP#19-1-27-06-02-98
NIC-GPW-GP19-2-19-06-02-98	NIC-GPW-GP#19-2-19-06-02-98
NIC-GPW-GP19-2-30-06-02-98	NIC-GPW-GP#19-2-30-06-02-98
NIC-GPW-GP19-3-20-06-02-98	NIC-GPW-GP#19-3-20-06-02-98
NIC-GPW-GP19-3-28-06-02-98	NIC-GPW-GP#19-3-28-06-02-98
NIC-GPW-GP19-4-20-06-02-98	NIC-GPW-GP#19-4-20-06-02-98
NIC-GPW-GP19-4-28-06-02-98	NIC-GPW-GP#19-4-28-06-02-98
NIC-GPW-GP19-5-20-06-01-98	NIC-GPW-GP#19-5-20-06-01-98
NIC-GPW-GP19-5-29-06-01-98	NIC-GPW-GP#19-5-29-06-01-98
NIC-GPW-GP19-6-20-06-01-98	NIC-GPW-GP#19-6-20-06-01-98
NIC-GPW-GP19-6-28-06-01-98	NIC-GPW-GP#19-6-28-06-01-98
NIC-GPW-GP19-6-28N-06-01-98	NIC-GPW-GP#19-6-28N-06-01-98
NIC-GPW-GP19-7-20-06-01-98	NIC-GPW-GP#19-7-20-06-01-98
NIC-GPW-GP19-7-20M-06-01-98	NIC-GPW-GP#19-7-20M-06-01-98
NIC-GPW-GP19-7-29-06-01-98	NIC-GPW-GP#19-7-29-06-01-98
NIC-GPW-GP19-8-22-06-01-98	NIC-GPW-GP#19-8-22-06-01-98
NIC-GPW-GP19-8-30-06-01-98	NIC-GPW-GP#19-8-30-06-01-98

Table 6-10
North Industrial Corridor (NIC) Site
Summary of Corrected Pace Sample IDs

Original Laboratory Sample ID	Corrected CDM Sample ID
NIC-GPW-GP23-1-18-06-02-98	NIC-GPW-GP#23-1-18-06-02-98
NIC-GPW-GP23-1-32-06-02-98	NIC-GPW-GP#23-1-32-06-02-98
NIC-GPW-GP28-1-20.5Q3-12-22-97	NIC-GPW-GP#28-1-20.5Q3-12-22-97
NIC-GPW-GP28-1-36N-12-22-97	NIC-GPW-GP#28-1-36N-12-22-97
NIC-GPW-GP28-1-36Q3-12-22-97	NIC-GPW-GP#28-1-36Q3-12-22-97
NIC-GPW-GP29-1-20-01-23-98	NIC-GPW-GP#29-1-20-01-23-98
NIC-GPW-GP29-1-36-01-23-98	NIC-GPW-GP#29-1-36-01-23-98
NIC-GPW-GP32-1-20-01-22-98	NIC-GPW-GP#32-1-20-01-22-98
NIC-GPW-GP32-1-34-01-22-98	NIC-GPW-GP#32-1-34-01-22-98
NIC-GPW-GP34-10-18-06-08-98	NIC-GPW-GP#34-10-18-06-08-98
NIC-GPW-GP34-10-36-06-08-98	NIC-GPW-GP#34-10-36-06-08-98
NIC-GPW-GP34-1-20-01-22-98	NIC-GPW-GP#34-1-20-01-22-98
NIC-GPW-GP34-1-37-01-22-98	NIC-GPW-GP#34-1-37-01-22-98
NIC-GPW-GP34-1-37Q1-01-22-98	NIC-GPW-GP#34-1-37Q1-01-22-98
NIC-GPW-GP34-2-20-01-22-98	NIC-GPW-GP#34-2-20-01-22-98
NIC-GPW-GP34-2-35-01-22-98	NIC-GPW-GP#34-2-35-01-22-98
NIC-GPW-GP34-3-20-01-20-98	NIC-GPW-GP#34-3-20-01-20-98
NIC-GPW-GP34-3-39-01-20-98	NIC-GPW-GP#34-3-39-01-20-98
NIC-GPW-GP34-4-20-01-20-98	NIC-GPW-GP#34-4-20-01-20-98
NIC-GPW-GP34-4-37-01-20-98	NIC-GPW-GP#34-4-37-01-20-98
NIC-GPW-GP34-5-20-01-20-98	NIC-GPW-GP#34-5-20-01-20-98
NIC-GPW-GP34-5-37-01-20-98	NIC-GPW-GP#34-5-37-01-20-98
NIC-GPW-GP34-5-37Q-01-20-98	NIC-GPW-GP#34-5-37Q-01-20-98
NIC-GPW-GP34-6-20-01-20-98	NIC-GPW-GP#34-6-20-01-20-98
NIC-GPW-GP34-6-36-01-20-98	NIC-GPW-GP#34-6-36-01-20-98
NIC-GPW-GP34-7-36-06-05-98	NIC-GPW-GP#34-7-36-06-08-98
NIC-GPW-GP34-7-36Q1-06-08-98	NIC-GPW-GP#34-7-36Q1-06-08-98
NIC-GPW-GP34-8-18-06-05-98	NIC-GPW-GP#34-8-18-06-08-98
NIC-GPW-GP34-8-36-06-05-98	NIC-GPW-GP#34-8-36-06-08-98
NIC-GPW-GP34-9-18-06-08-98	NIC-GPW-GP#34-9-18-06-08-98
NIC-GPW-GP34-9-36-06-08-98	NIC-GPW-GP#34-9-36-06-08-98
NIC-GPW-GP35-1-16-06-08-98	NIC-GPW-GP#35-1-16-06-08-98
NIC-GPW-GP35-1-36-06-08-98	NIC-GPW-GP#35-1-36-06-08-98
NIC-GPW-GP35-2-16-06-05-98	NIC-GPW-GP#35-2-16-06-05-98
NIC-GPW-GP35-2-36-06-05-98	NIC-GPW-GP#35-2-36-06-05-98
NIC-GPW-GP35-2-36N-06-05-98	NIC-GPW-GP#35-2-36N-06-05-98
NIC-GPW-GP35-3-25-06-05-98	NIC-GPW-GP#35-3-25-06-05-98
NIC-GPW-GP35-3-36-06-05-98	NIC-GPW-GP#35-3-36-06-05-98
NIC-GPW-GP35-4-20-06-08-98	NIC-GPW-GP#35-4-20-06-08-98
NIC-GPW-GP35-4-36-06-08-98	NIC-GPW-GP#35-4-36-06-08-98
NIC-GPW-GP35-5-20-06-08-98	NIC-GPW-GP#35-5-20-06-08-98
NIC-GPW-GP35-5-37-06-08-98	NIC-GPW-GP#35-5-37-06-08-98
NIC-GPW-GP-35-8-20-06-09-98	NIC-GPW-GPA35-8-20-06-09-98
NIC-GPW-GP-35-8-36-06-09-98	NIC-GPW-GPA35-8-36-06-09-98
NIC-GPW-GP42-2-20-01-22-98	NIC-GPW-GP#42-2-20-01-22-98
NIC-GPW-GP42-2-20M-01-12-98	NIC-GPW-GP#42-2-20M-01-12-98
NIC-GPW-GP42-2-37-01-22-98	NIC-GPW-GP#42-2-37-01-22-98
NIC-GPW-GP43-1-20-12-22-97	NIC-GPW-GP#43-1-20-12-22-97

Table 6-10
North Industrial Corridor (NIC) Site
Summary of Corrected Pace Sample IDs

Original Laboratory Sample ID	Corrected CDM Sample ID
NIC-GPW-GP43-1-33-12-22-97	NIC-GPW-GP#43-1-33-12-22-97
NIC-GPW-GP43-1-33Q1-12-22-97	NIC-GPW-GP#43-1-33Q1-12-22-97
NIC-GPW-GP44-1-20-01-16-98	NIC-GPW-GP#44-1-20-01-16-98
NIC-GPW-GP44-1-31-01-16-98	NIC-GPW-GP#44-1-31-01-16-98
NIC-GPW-GP44-2-20-01-16-98	NIC-GPW-GP#44-2-20-01-16-98
NIC-GPW-GP44-2-33-01-16-98	NIC-GPW-GP#44-2-33-01-16-98
NIC-GPW-GP44-3-20-01-16-98	NIC-GPW-GP#44-3-20-01-16-98
NIC-GPW-GP44-3-33-01-16-98	NIC-GPW-GP#44-3-33-01-16-98
NIC-GPW-GP44-4-20-01-16-98	NIC-GPW-GP#44-4-20-01-16-98
NIC-GPW-GP44-4-38-01-16-98	NIC-GPW-GP#44-4-38-01-16-98
NIC-GPW-GP44-4-38Q-01-16-98	NIC-GPW-GP#44-4-38Q-01-16-98
NIC-GPW-GP44-5-20-01-16-98	NIC-GPW-GP#44-5-20-01-16-98
NIC-GPW-GP44-5-32-01-16-98	NIC-GPW-GP#44-5-32-01-16-98
NIC-GPW-GP44-6-20-01-16-98	NIC-GPW-GP#44-6-20-01-16-98
NIC-GPW-GP44-6-33-01-16-98	NIC-GPW-GP#44-5-33-01-16-98
NIC-GPW-GP47-1-20-01-07-98	NIC-GPW-GP#47-1-20-01-07-98
NIC-GPW-GP47-1-33-01-07-98	NIC-GPW-GP#47-1-33-01-07-98
NIC-GPW-GP47-2-20-01-07-98	NIC-GPW-GP#47-2-20-01-07-98
NIC-GPW-GP47-2-33-01-07-98	NIC-GPW-GP#47-2-33-01-07-98
NIC-GPW-GP47-2-33N-01-07-98	NIC-GPW-GP#47-2-33N-01-07-98
NIC-GPW-GP47-3-20-01-07-98	NIC-GPW-GP#47-3-20-01-07-98
NIC-GPW-GP47-3-33-01-07-98	NIC-GPW-GP#47-3-33-01-07-98
NIC-GPW-GP47-4-20-01-07-98	NIC-GPW-GP#47-4-20-01-07-98
NIC-GPW-GP47-4-33-01-07-98	NIC-GPW-GP#47-4-33-01-07-98
NIC-GPW-GP47-5-20-01-07-98	NIC-GPW-GP#47-5-20-01-07-98
NIC-GPW-GP47-5-33-01-07-98	NIC-GPW-GP#47-5-33-01-07-98
NIC-GPW-GP47-6-20-01-07-98	NIC-GPW-GP#47-6-20-01-07-98
NIC-GPW-GP47-6-20M-01-07-98	NIC-GPW-GP#47-6-20M-01-07-98
NIC-GPW-GP47-6-30-01-07-98	NIC-GPW-GP#47-6-30-01-07-98
NIC-GPW-GP47-7-20-01-07-98	NIC-GPW-GP#47-7-20-01-07-98
NIC-GPW-GP47-7-32-01-07-98	NIC-GPW-GP#47-7-32-01-07-98
NIC-GPW-GP47-7-32N-01-07-98	NIC-GPW-GP#47-7-32N-01-07-98
NIC-GPW-GP47-8-20-01-07-98	NIC-GPW-GP#47-8-20-01-07-98
NIC-GPW-GP47-8-30-01-07-98	NIC-GPW-GP#47-8-30-01-07-98
NIC-GPW-GP48-1-16-06-05-98	NIC-GPW-GP#48-1-16-06-05-98
NIC-GPW-GP48-1-16M-06-05-98	NIC-GPW-GP#48-1-16M-06-05-98
NIC-GPW-GP48-1-32-06-05-98	NIC-GPW-GP#48-1-32-06-05-98
NIC-GPW-GP48-2-16-06-05-98	NIC-GPW-GP#48-2-16-06-05-98
NIC-GPW-GP48-2-36-06-05-98	NIC-GPW-GP#48-2-36-06-05-98
NIC-GPW-GP48-2-36Q1-06-05-98	NIC-GPW-GP#48-2-36Q1-06-05-98
NIC-GPW-GP48-3-16-06-05-98	NIC-GPW-GP#48-3-16-06-05-98
NIC-GPW-GP48-3-36-06-05-98	NIC-GPW-GP#48-3-36-06-05-98
NIC-GPW-GP48-4-18-06-05-98	NIC-GPW-GP#48-4-18-06-05-98
NIC-GPW-GP48-4-36-06-05-98	NIC-GPW-GP#48-4-36-06-05-98
NIC-GPW-GP48-5-18-06-05-98	NIC-GPW-GP#48-5-18-06-05-98
NIC-GPW-GP48-5-36-06-05-98	NIC-GPW-GP#48-5-36-06-05-98
NIC-GPW-GP48-6-18-06-05-98	NIC-GPW-GP#48-6-18-06-05-98
NIC-GPW-GP48-6-36-06-05-98	NIC-GPW-GP#48-6-36-06-05-98

Table 6-10
North Industrial Corridor (NIC) Site
Summary of Corrected Pace Sample IDs

Original Laboratory Sample ID	Corrected CDM Sample ID
NIC-GPW-GP48-7-18-06-05-98	NIC-GPW-GP#48-7-18-06-05-98
NIC-GPW-GP48-7-36-06-05-98	NIC-GPW-GP#48-7-36-06-05-98
NIC-GPW-GP50-1-20-01-08-98	NIC-GPW-GP#50-1-20-01-08-98
NIC-GPW-GP50-1-39-01-08-98	NIC-GPW-GP#50-1-39-01-08-98
NIC-GPW-GP50-1-39Q1-01-08-98	NIC-GPW-GP#50-1-39Q1-01-08-98
NIC-GPW-GP50-2-20-01-08-98	NIC-GPW-GP#50-2-20-01-08-98
NIC-GPW-GP50-2-37-01-08-98	NIC-GPW-GP#50-2-37-01-08-98
NIC-GPW-GP50-3-20-01-09-98	NIC-GPW-GP#50-3-20-01-09-98
NIC-GPW-GP50-3-39-01-09-98	NIC-GPW-GP#50-3-39-01-09-98
NIC-GPW-GP50-4-20-01-09-98	NIC-GPW-GP#50-4-20-01-09-98
NIC-GPW-GP50-4-20M-01-09-98	NIC-GPW-GP#50-4-20M-01-09-98
NIC-GPW-GP50-4-36-01-09-98	NIC-GPW-GP#50-4-36-01-09-98
NIC-GPW-GP50-5-20-01-09-98	NIC-GPW-GP#50-5-20-01-09-98
NIC-GPW-GP50-5-39-01-09-98	NIC-GPW-GP#50-5-39-01-09-98
NIC-GPW-GP50-6-20-06-04-98	NIC-GPW-GP#50-6-20-06-04-98
NIC-GPW-GP50-6-37-06-04-98	NIC-GPW-GP#50-6-37-06-04-98
NIC-GPW-GP53-1-18-06-03-98	NIC-GPW-GP#53-1-18-06-03-98
NIC-GPW-GP53-1-36-06-03-98	NIC-GPW-GP#53-1-36-06-03-98
NIC-GPW-GP53-2-18-06-03-98	NIC-GPW-GP#53-2-18-06-03-98
NIC-GPW-GP53-2-36-06-03-98	NIC-GPW-GP#53-2-36-06-03-98
NIC-GPW-GP53-2-36N-06-03-98	NIC-GPW-GP#53-2-36N-06-03-98
NIC-GPW-GP53-3-15-06-03-98	NIC-GPW-GP#53-3-15-06-03-98
NIC-GPW-GP53-3-36-06-03-98	NIC-GPW-GP#53-3-36-06-03-98
NIC-GPW-GP54-1-20-01-21-98	NIC-GPW-GP#54-1-20-01-21-98
NIC-GPW-GP54-1-33-01-21-98	NIC-GPW-GP#54-1-33-01-21-98
NIC-GPW-GP54-2-20-01-21-98	NIC-GPW-GP#54-2-20-01-21-98
NIC-GPW-GP54-2-33-01-21-98	NIC-GPW-GP#54-2-33-01-21-98
NIC-GPW-GP54-3-20-01-21-98	NIC-GPW-GP#54-3-20-01-21-98
NIC-GPW-GP54-3-34-01-21-98	NIC-GPW-GP#54-3-34-01-21-98
NIC-GPW-GP54-4-20-01-21-98	NIC-GPW-GP#54-4-20-01-21-98
NIC-GPW-GP54-4-36-01-21-98	NIC-GPW-GP#54-4-36-01-21-98
NIC-GPW-GP55-1-20Q3-12-22-97	NIC-GPW-GP#55-1-22Q3-12-22-97
NIC-GPW-GP55-1-43Q3-12-22-97	NIC-GPW-GP#55-1-43Q3-12-22-97
NIC-GPW-GP56-1-20-01-13-98	NIC-GPW-GP#56-1-20-01-13-98
NIC-GPW-GP56-1-39-01-13-98	NIC-GPW-GP#56-1-39-01-13-98
NIC-GPW-GP56-1-39N-01-13-98	NIC-GPW-GP#56-1-39N-01-13-98
NIC-GPW-GP56-2-20-01-13-98	NIC-GPW-GP#56-2-20-01-13-98
NIC-GPW-GP56-2-39-01-13-98	NIC-GPW-GP#56-2-39-01-13-98
NIC-GPW-GP56-3-20-01-13-98	NIC-GPW-GP#56-3-20-01-13-98
NIC-GPW-GP56-3-38-01-13-98	NIC-GPW-GP#56-3-38-01-13-98
NIC-GPW-GP56-4-20-01-13-98	NIC-GPW-GP#56-4-20-01-13-98
NIC-GPW-GP56-4-35-01-13-98	NIC-GPW-GP#56-4-35-01-13-98
NIC-GPW-GP56-5-20-01-13-98	NIC-GPW-GP#56-5-20-01-13-98
NIC-GPW-GP56-5-37-01-13-98	NIC-GPW-GP#56-5-37-01-13-98
NIC-GPW-GP56-5-37Q-01-13-98	NIC-GPW-GP#56-5-37Q-01-13-98
NIC-GPW-GP56-6-20-01-14-98	NIC-GPW-GP#56-6-20-01-14-98
NIC-GPW-GP56-6-20M-01-14-98	NIC-GPW-GP#56-6-20M-01-14-98
NIC-GPW-GP56-6-39-01-14-98	NIC-GPW-GP#56-6-39-01-14-98

Table 6-10
North Industrial Corridor (NIC) Site
Summary of Corrected Pace Sample IDs

Original Laboratory Sample ID	Corrected CDM Sample ID
NIC-GPW-GP56-7-20-01-14-98	NIC-GPW-GP#56-7-20-01-14-98
NIC-GPW-GP56-7-39-01-14-98	NIC-GPW-GP#56-7-39-01-14-98
NIC-GPW-GP62-1-20-01-14-98	NIC-GPW-GP#62-1-20-01-14-98
NIC-GPW-GP62-1-42-01-14-98	NIC-GPW-GP#62-1-42-01-14-98
NIC-GPW-GP62-1-42Q1-01-14-98	NIC-GPW-GP#62-1-42Q1-01-14-98
NIC-GPW-GP62-2-20-01-14-98	NIC-GPW-GP#62-2-20-01-14-98
NIC-GPW-GP62-2-36-01-14-98	NIC-GPW-GP#62-2-36-01-14-98
NIC-GPW-GP62-3-20-01-14-98	NIC-GPW-GP#62-3-20-01-14-98
NIC-GPW-GP62-3-32-01-14-98	NIC-GPW-GP#62-3-32-01-14-98
NIC-GPW-GP62-4-20-01-14-98	NIC-GPW-GP#62-4-20-01-14-98
NIC-GPW-GP62-4-33-01-14-98	NIC-GPW-GP#62-4-33-01-14-98
NIC-GPW-GP62-4-33N-01-14-98	NIC-GPW-GP#62-4-33N-01-14-98
NIC-GPW-GP63-1-20-01-12-98	NIC-GPW-GP#63-1-20-01-12-98
NIC-GPW-GP63-1-30-01-12-98	NIC-GPW-GP#63-1-30-01-12-98
NIC-GPW-GP63-2-20-01-12-98	NIC-GPW-GP#63-2-20-01-12-98
NIC-GPW-GP63-2-20M-01-12-98	NIC-GPW-GP#63-2-20M-01-12-98
NIC-GPW-GP63-2-33-01-12-98	NIC-GPW-GP#63-2-33-01-12-98
NIC-GPW-GP67-1-20-01-15-98	NIC-GPW-GP#67-1-20-01-15-98
NIC-GPW-GP67-1-39-01-15-98	NIC-GPW-GP#67-1-39-01-15-98
NIC-GPW-GP67-2-20-01-15-98	NIC-GPW-GP#67-2-20-01-15-98
NIC-GPW-GP67-2-37-01-15-98	NIC-GPW-GP#67-2-37-01-15-98
NIC-GPW-GP67-3-20-01-15-98	NIC-GPW-GP#67-3-20-01-15-98
NIC-GPW-GP67-3-33-01-15-98	NIC-GPW-GP#67-3-33-01-15-98
NIC-GPW-GP67-4-20-01-15-98	NIC-GPW-GP#67-4-20-01-15-98
NIC-GPW-GP67-4-32-01-15-98	NIC-GPW-GP#67-4-32-01-15-98
NIC-GPW-GP67-5-20-01-15-98	NIC-GPW-GP#67-5-20-01-15-98
NIC-GPW-GP67-5-32-01-15-98	NIC-GPW-GP#67-5-32-01-15-98
NIC-GPW-GP70-1-20-01-20-98	NIC-GPW-GP#70-1-20-01-20-98
NIC-GPW-GP70-1-36-01-20-98	NIC-GPW-GP#70-1-36-01-20-98
NIC-GPW-GP73-1-20-01-23-98	NIC-GPW-GP#73-1-20-01-23-98
NIC-GPW-GP73-1-40-01-23-98	NIC-GPW-GP#73-1-40-01-23-98
NIC-GPW-GPA-37-2-21-12-08-97	NIC-GPW-GPA-39-2-21-12-08-97
NIC-GPW-GPA-37-2-27-12-08-97	NIC-GPW-GPA-39-2-27-12-08-97
NIC-GW-EXC-MW-BSQ3-12-08-97	NIC-GW-EXC-MW-8SQ3-12-08-97
NIC-GW-HRI-35-12-09-97	NIC-GW-HRI-3S-12-09-97

Table 6-11
North Industrial Corridor (NIC) Site
Other Qualified Analytical Data

Sample ID	Compound	Media	Result	Units	CDM Final Flag
NIC-AAQ-01-082401 CAN 200	Carbon tetrachloride	Air	0.61	µg/m^3	J
NIC-AAQ-01-082401 CAN 200	Chloroform	Air	0.69	µg/m^3	J
NIC-AAQ-01-08240 CAN 200	Benzene	Air	1	µg/m^3	J
NIC-AAQ-02-082401 CAN 06	Benzene	Air	1.13	µg/m^3	J
NIC-AQ-01-091901 (TAG 152)	Chloroform	Air	1.33	µg/m^3	J
NIC-AQ-01-091901 (TAG 152)	1,4-Dichlorobenzene	Air	2.26	µg/m^3	J
NIC-AQ-02-082401 CAN 144	Carbon tetrachloride	Air	0.6	µg/m^3	J
NIC-AQ-02-082401 CAN 144	Chloroform	Air	1.19	µg/m^3	J
NIC-AQ-02-082401 CAN 144	Benzene	Air	0.97	µg/m^3	J
NIC-AQ-02Q-082401 CAN 212	Carbon tetrachloride	QC	0.6	µg/m^3	J
NIC-AQ-02Q-082401 CAN 212	Chloroform	QC	0.94	µg/m^3	J
NIC-AQ-02Q-082401 CAN 212	Benzene	QC	0.94	µg/m^3	J
NIC-AQ-03-082301 CAN 177	Benzene	Air	2.37	µg/m^3	J
NIC-AQ-05-091801 (TAG 102)	Chloroform	Air	2.42	µg/m^3	J
NIC-AQ-08-092001 (TAG 311)	Chloroform	Air	0.84	µg/m^3	J
NIC-AQ-08-092001 (TAG 311)	Benzene	Air	1.3	µg/m^3	J
NIC-AQ-09-082301 CAN 153	Chloroform	Air	0.59	µg/m^3	J
NIC-AQ-09-082301 CAN 153	Carbon tetrachloride	Air	0.83	µg/m^3	J
NIC-AQ-09-082301 CAN 153	Benzene	Air	1.23	µg/m^3	J
NIC-AQ-10-091801 (TAG 164)	1,4-Dichlorobenzene	Air	0.98	µg/m^3	J
NIC-GPW-GP02C-01-23-120999	1,1-Dichloroethane	Water	2.6	µg/L	J
NIC-GPW-GP02C-01-28-120999	1,1-Dichloroethane	Water	4.8	µg/L	J
NIC-GPW-GP02C-01-28-120999	trans-1,2-Dichloroethene	Water	9.3	µg/L	J
NIC-GPW-GP04E-07-30-120999	1,1-Dichloroethane	Water	0.58	µg/L	J
NIC-GPW-GP04E-07-30-120999	trans-1,2-Dichloroethene	Water	0.65	µg/L	J
NIC-GPW-GP04E-07Q1-30-120999	1,1-Dichloroethane	QC	0.57	µg/L	J
NIC-GPW-GP06F-06-29-120999	Benzene	Water	0.78	µg/L	J
NIC-GPW-GP08B-03-29-121099	Benzene	Water	0.71	µg/L	J
NIC-GPW-GP08B-04-30-121099	Benzene	Water	0.70	µg/L	J
NIC-GPW-GP08B-06-26-121099	Benzene	Water	0.87	µg/L	J
NIC-SD-02-051501	Benzo(k)fluoranthene	Sediment	360	µg/kg	J
NIC-SD-02-051501	Indeno(1,2,3-cd)pyrene	Sediment	490	µg/kg	J
NIC-SD-02-051501	Benzo(g,h,i)perylene	Sediment	510	µg/kg	J
NIC-SD-03-051601	Benzo(k)fluoranthene	Sediment	360	µg/kg	J
NIC-SD-03-051601	Indeno(1,2,3-cd)pyrene	Sediment	430	µg/kg	J
NIC-SD-03-051601	Benzo(a)anthracene	Sediment	510	µg/kg	J
NIC-SD-03-051601	Phenanthrene	Sediment	530	µg/kg	J
NIC-SD-03-051601	Benzo(a)pyrene	Sediment	550	µg/kg	J
NIC-SD-11-051601	Chrysene	Sediment	1600	µg/kg	J
NIC-SD-11-051601	Benzo(g,h,i)perylene	Sediment	1600	µg/kg	J
NIC-SD-11-051601	2-Methylnaphthalene	Sediment	2200	µg/kg	J
NIC-SD-11Q-051601	Benzo(g,h,i)perylene	QC	1600	µg/kg	J
NIC-SD-11Q-051601	2-Methylnaphthalene	QC	1600	µg/kg	J
NIC-SD-11Q-051601	Chrysene	QC	1700	µg/kg	J

Table 6-11
North Industrial Corridor (NIC) Site
Other Qualified Analytical Data

Sample ID	Compound	Media	Result	Units	CDM Final Flag
NIC-SS-GP10C-02-5	Anthracene	Soil	2800	µg/kg	J
NIC-SS-GP10C-02-5	Chrysene	Soil	4500	µg/kg	J
NIC-SS-GP10C-03-4.5	Chrysene	Soil	3300	µg/kg	J
NIC-SS-GP10C-03-4.5	Pyrene	Soil	4200	µg/kg	J
NIC-SS-GP10C-03-9.5	Pyrene	Soil	1900	µg/kg	J
NIC-SS-GP10D-01-15	Phenanthrene	Soil	1600	µg/kg	J
NIC-SS-GP10D-01-15	Naphthalene	Soil	1700	µg/kg	J
NIC-SS-GP10D-03-8-10	Benzo(a)anthracene	Soil	1400	µg/kg	J
NIC-SS-GP10D-03-8-10	Pyrene	Soil	1700	µg/kg	J
NIC-SS-GP10D-03-8-10	Chrysene	Soil	2400	µg/kg	J
NIC-SS-GP10D-03-8-10	bis(2-Ethylhexyl)phthalate	Soil	2400	µg/kg	J
NIC-SS-GP10D-03-8-10	Phenanthrene	Soil	2900	µg/kg	J
NIC-SSS-GP10D-02-0-0.5	bis(2-Ethylhexyl)phthalate	Soil	35000	µg/kg	J
NIC-SSS-GP10D-04-TRENCH	Anthracene	Soil	3300	µg/kg	J
NIC-SSS-GP10D-04-TRENCH	PCB-1260	Soil	390	µg/kg	J
NIC-SSS-GP10D-04-TRENCH	Chrysene	Soil	4000	µg/kg	J
NIC-SSS-GP10D-05-0-0.4	bis(2-Ethylhexyl)phthalate	Soil	1800	µg/kg	J
NIC-GW-WND-34D-050401	1,1-Dichloroethene	Water	1.4	µg/L	JIH
NIC-GW-WND-34D-050401	1,1-Dichloroethane	Water	1.7	µg/L	JIH
NIC-GW-WND-34D-050401	cis-1,2-Dichloroethene	Water	23.	µg/L	JIH
NIC-GW-WND-34D-050401	Trichloroethene	Water	32.	µg/L	JIH
NIC-GW-WND-34D-050401	Benzene	Water	64.	µg/L	JIH
NIC-GW-WND-34D-050401	cis-1,3-Dichloropropene	Water	ND	µg/L	JIH
NIC-GW-WND-34D-050401	Dibromochloromethane	Water	ND	µg/L	JIH
NIC-GW-WND-34D-050401	Ethylbenzene	Water	ND	µg/L	JIH
NIC-GW-WND-34D-050401	m,p-Xylene	Water	ND	µg/L	JIH
NIC-GW-WND-34D-050401	Methylene chloride	Water	ND	µg/L	JIH
NIC-GW-WND-34D-050401	o-Xylene	Water	ND	µg/L	JIH
NIC-GW-WND-34D-050401	Tetrachloroethene	Water	ND	µg/L	JIH
NIC-GW-WND-34D-050401	Toluene	Water	ND	µg/L	JIH
NIC-GW-WND-34D-050401	trans-1,3-Dichloropropene	Water	ND	µg/L	JIH
NIC-GW-WND-34D-050401	Trichlorofluoromethane	Water	ND	µg/L	JIH
NIC-GW-WND-34D-050401	Vinyl chloride	Water	ND	µg/L	JIH
NIC-GW-WND-34D-050401	1,3-Dichlorobenzene	Water	ND	µg/L	JIH
NIC-GW-WND-34D-050401	Chloromethane	Water	ND	µg/L	JIH
NIC-GW-WND-34D-050401	trans-1,2-Dichloroethene	Water	ND	µg/L	JIH
NIC-GW-WND-34D-050401	Chloroform	Water	ND	µg/L	JIH
NIC-GW-WND-34D-050401	1,1,1-Trichloroethane	Water	ND	µg/L	JIH
NIC-GW-WND-34D-050401	1,1,2-Trichloroethane	Water	ND	µg/L	JIH
NIC-GW-WND-34D-050401	1,2-Dichlorobenzene	Water	ND	µg/L	JIH
NIC-GW-WND-34D-050401	1,2-Dichloroethane	Water	ND	µg/L	JIH
NIC-GW-WND-34D-050401	1,4-Dichlorobenzene	Water	ND	µg/L	JIH
NIC-GW-WND-34D-050401	Bromodichloromethane	Water	ND	µg/L	JIH
NIC-GW-WND-34D-050401	Bromoform	Water	ND	µg/L	JIH

Table 6-11
North Industrial Corridor (NIC) Site
Other Qualified Analytical Data

Sample ID	Compound	Media	Result	Units	CDM Final Flag
NIC-GW-WND-34D-050401	Bromomethane	Water	ND	µg/L	JIH
NIC-GW-WND-34D-050401	Carbon tetrachloride	Water	ND	µg/L	JIH
NIC-GW-WND-34D-050401	Chlorobenzene	Water	ND	µg/L	JIH
NIC-GW-WND-34D-050401	1,2-Dichloropropane	Water	ND	µg/L	JIH
NIC-GW-WND-34D-050401	Chloroethane	Water	ND	µg/L	JIH
NIC-GW-WND-34D-050401	1,1,2,2-Tetrachloroethane	Water	ND	µg/L	JIH
NIC-GPW-GP03B-06-29-111299	Trichloroethene	Water	1.5	µg/L	JIS
NIC-GPW-GP03B-06-29-111299	Chlorobenzene	Water	ND	µg/L	JIS
NIC-GPW-GP03B-06-29-111299	Methylene Chloride	Water	ND	µg/L	JIS
NIC-GPW-GP03B-06-29-111299	1,4-Dichlorobenzene	Water	ND	µg/L	JIS
NIC-GPW-GP03B-06-29-111299	Benzene	Water	ND	µg/L	JIS
NIC-GPW-GP03B-06-29-111299	Bromodichloromethane	Water	ND	µg/L	JIS
NIC-GPW-GP03B-06-29-111299	Bromoform	Water	ND	µg/L	JIS
NIC-GPW-GP03B-06-29-111299	Carbon Tetrachloride	Water	ND	µg/L	JIS
NIC-GPW-GP03B-06-29-111299	Chloroethane	Water	ND	µg/L	JIS
NIC-GPW-GP03B-06-29-111299	Chloromethane	Water	ND	µg/L	JIS
NIC-GPW-GP03B-06-29-111299	cis-1,3-Dichloropropene	Water	ND	µg/L	JIS
NIC-GPW-GP03B-06-29-111299	Dibromochloromethane	Water	ND	µg/L	JIS
NIC-GPW-GP03B-06-29-111299	1,3-Dichlorobenzene	Water	ND	µg/L	JIS
NIC-GPW-GP03B-06-29-111299	m,p-Xylene	Water	ND	µg/L	JIS
NIC-GPW-GP03B-06-29-111299	Chloroform	Water	ND	µg/L	JIS
NIC-GPW-GP03B-06-29-111299	o-Xylene	Water	ND	µg/L	JIS
NIC-GPW-GP03B-06-29-111299	Tetrachloroethene	Water	ND	µg/L	JIS
NIC-GPW-GP03B-06-29-111299	Toluene	Water	ND	µg/L	JIS
NIC-GPW-GP03B-06-29-111299	trans-1,2-Dichloroethene	Water	ND	µg/L	JIS
NIC-GPW-GP03B-06-29-111299	trans-1,3-Dichloropropene	Water	ND	µg/L	JIS
NIC-GPW-GP03B-06-29-111299	Trichlorofluoromethane	Water	ND	µg/L	JIS
NIC-GPW-GP03B-06-29-111299	Vinyl Chloride	Water	ND	µg/L	JIS
NIC-GPW-GP03B-06-29-111299	Bromomethane	Water	ND	µg/L	JIS
NIC-GPW-GP03B-06-29-111299	Ethylbenzene	Water	ND	µg/L	JIS
NIC-GPW-GP03B-06-29-111299	1,2-Dichloroethane	Water	ND	µg/L	JIS
NIC-GPW-GP03B-06-29-111299	1,2-Dichlorobenzene	Water	ND	µg/L	JIS
NIC-GPW-GP03B-06-29-111299	1,1-Dichloroethene	Water	ND	µg/L	JIS
NIC-GPW-GP03B-06-29-111299	1,1-Dichloroethane	Water	ND	µg/L	JIS
NIC-GPW-GP03B-06-29-111299	1,1,2-Trichloroethane	Water	ND	µg/L	JIS
NIC-GPW-GP03B-06-29-111299	1,1,1-Trichloroethane	Water	ND	µg/L	JIS
NIC-GPW-GP03B-06-29-111299	cis-1,2-Dichloroethene	Water	ND	µg/L	JIS
NIC-GPW-GP03B-06-29-111299	1,2-Dichloropropane	Water	ND	µg/L	JIS
NIC-GPW-GP02H-04-17-102299	cis-1,2-Dichloroethene	Water	68	µg/L	JP
NIC-GPW-GP03D-01-30-102299	Trichloroethene	Water	210	µg/L	JP
NIC-GPW-GP03E-01-35-102699	Trichloroethene	Water	190	µg/L	JP
NIC-GPW-GP03E-01-35-102699	cis-1,2-Dichloroethene	Water	58	µg/L	JP
NIC-GPW-GP03E-02-34-102699	Trichloroethene	Water	260	µg/L	JP
NIC-GPW-GP03E-03-17-102599	Trichloroethene	Water	76	µg/L	JP
NIC-GPW-GP03E-03-26-102599	Trichloroethene	Water	530	µg/L	JP

Table 6-11
North Industrial Corridor (NIC) Site
Other Qualified Analytical Data

Sample ID	Compound	Media	Result	Units	CDM Final Flag
NIC-GPW-GP03E-05-32-102599	Trichloroethene	Water	560	µg/L	JP
NIC-GPW-GP03E-05-32-102599	cis-1,2-Dichloroethene	Water	83	µg/L	JP
NIC-GPW-GP03E-06-17-102599	Trichloroethene	Water	76	µg/L	JP
NIC-GPW-GP03E-06-24-102599	Trichloroethene	Water	250	µg/L	JP
NIC-GPW-GP03E-07-17-102699	Trichloroethene	Water	100	µg/L	JP
NIC-GPW-GP03E-07-25-102699	Trichloroethene	Water	130	µg/L	JP
NIC-GPW-GP03E-07-25-102699	cis-1,2-Dichloroethene	Water	48	µg/L	JP
NIC-GPW-GP03E-09-17-102699	Trichloroethene	Water	44	µg/L	JP
NIC-GPW-GP03E-09-29-102699	Trichloroethene	Water	220	µg/L	JP
NIC-GPW-GP03E-09-29-102699	cis-1,2-Dichloroethene	Water	65	µg/L	JP
NIC-GW-DRB-MW02-072501	2-Chloroethylvinyl ether	Water	ND	µg/L	RA
NIC-GW-DRB-MW11-072601	2-Chloroethylvinyl ether	Water	ND	µg/L	RA
NIC-GW-DRB-MW20-072601	2-Chloroethylvinyl ether	Water	ND	µg/L	RA
NIC-GW-DRB-MW250-072601	2-Chloroethylvinyl ether	Water	ND	µg/L	RA
NIC-GW-DRB-MW30-072501	2-Chloroethylvinyl ether	Water	ND	µg/L	RA
NIC-GW-NMW-36D-072701	2-Chloroethylvinyl ether	Water	ND	µg/L	RA
NIC-GW-NMW-37D-072701	2-Chloroethylvinyl ether	Water	ND	µg/L	RA
NIC-GW-NMW-38D-072701	2-Chloroethylvinyl ether	Water	ND	µg/L	RA
NIC-GW-NMW-42D-072601	2-Chloroethylvinyl ether	Water	ND	µg/L	RA
NIC-GW-NMW-42S-072501	2-Chloroethylvinyl ether	Water	ND	µg/L	RA
NIC-GW-NMW-42SM-072501	2-Chloroethylvinyl ether	Water	ND	µg/L	RA
NIC-GW-NMW-43D-072501	2-Chloroethylvinyl ether	Water	ND	µg/L	RA
NIC-GW-NMW-44D-072601	2-Chloroethylvinyl ether	Water	ND	µg/L	RA
NIC-GW-NMW-45D-072601	2-Chloroethylvinyl ether	Water	ND	µg/L	RA
NIC-GW-NMW-46D-072501	2-Chloroethylvinyl ether	Water	ND	µg/L	RA
NIC-GW-NMW-48S-072701	2-Chloroethylvinyl ether	Water	ND	µg/L	RA
NIC-GW-NMW-48SM-072701	2-Chloroethylvinyl ether	Water	ND	µg/L	RA
NIC-GW-UPRF-MW03-072701	2-Chloroethylvinyl ether	Water	ND	µg/L	RA
NIC-GW-UPRF-MW09-072701	2-Chloroethylvinyl ether	Water	ND	µg/L	RA
NIC-GW-UPRF-MW16-072701	2-Chloroethylvinyl ether	Water	ND	µg/L	RA
NIC-GW-WNC-31D-072701	2-Chloroethylvinyl ether	Water	ND	µg/L	RA
NIC-GW-WNC-32D-072701	2-Chloroethylvinyl ether	Water	ND	µg/L	RA
NIC-GW-WND-30D-072501	2-Chloroethylvinyl ether	Water	ND	µg/L	RA
NIC-GW-WND-31S-072701	2-Chloroethylvinyl ether	Water	ND	µg/L	RA
NIC-GW-WND-32S-072701	2-Chloroethylvinyl ether	Water	ND	µg/L	RA

J - Estimated; value measured between the reporting limit and the detection limit
MI - Matrix Interence
JIS - Estimated due to low internal standard area
JP - Estimated due to poor performance standard results
JIH - Estimated due to elevated internal standard area
RA - Rejected; compound is not recoverable in an acid preserved matrix

Section 7
ARARs

7.1 Introduction

This section provides a review of applicable or relevant and appropriate requirements (ARARs) pertinent to the identification, screening, and selection of remedial alternatives for the North Industrial Corridor (NIC) Site located in Wichita, Kansas and identifies remedial response objectives developed for the Site.

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Section 121, amended by Congress in the Superfund Amendments and Reauthorization Act of 1987 (SARA), in effect codifies EPA's existing approach to compliance with other laws. Section 121(d) and the National Contingency Plan (NCP) (40 CFR Part 300, March 8, 1990) requires that CERCLA remedial actions comply with all federal ARARs. In addition, SARA 121(d) requires that for any material remaining on the Site, the level or standard of control that must be met for the hazardous substance, pollutant, or contaminant be at least that of any applicable or relevant and appropriate standard, requirement, criteria, or limitation under any federal environmental law, or any more stringent standard, requirement, criteria, or limitation promulgated pursuant to a state environmental statute. In this section, ARARs specific to the NIC Site are discussed and used to identify COCs and appropriate cleanup levels, to determine the appropriate extent of site cleanup required, to scope and formulate remedial action alternatives, and to govern the implementation of the selected action.

The statute requires compliance with ARARs at the completion of remedial action. As a matter of policy and consistent with the March 8, 1990 NCP, ARARs must also be met during implementation of the selected remedy. Onsite remedies need only comply with the substantive portion of ARARs whereas offsite actions are subject to all applicable laws, both the substantive and administrative portions. In other words, no federal, state, or local permit submittals are required for onsite actions.

According to SARA Section 121(d)(4)(A-F), compliance with ARARs for onsite actions may be waived by EPA under six specific circumstances as listed below, provided that protection of human health and the environment is still assured.

1. Interim Remedy — The selected remedial action is only part of a total remedial action that will meet the ARAR when completed.

2. Greater Risk — Compliance with the ARAR will result in greater risk to human health and the environment than alternative options.

3. Technically Impracticable — Compliance is technically impracticable from an engineering perspective.

4. Equivalent to Other Standard — The remedial action selected will attain a standard of performance equivalent to the standard required by the ARAR. This may be used where an ARAR specifies design or operating standards but equivalent or better results are available from an alternative design or method of operation.

5. Inconsistent Application — A state standard is not applied consistently in similar circumstances at other remedial actions within the state.

6. Fund Balancing — For actions to be undertaken solely under CERCLA Section 104 using the Trust Fund, the needs of other sites may preclude some remedies. A balance is sought between the need for protection of public health and welfare and the environment at the Site under consideration, and the availability of funds to respond to other sites that present or may present a threat to public health or the environment.

7.2 Definitions of ARARs

Applicable Requirements are those cleanup standards and other substantive requirements, criteria, or limitations promulgated under federal, state, or city environmental laws that specifically address a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance found at a CERCLA site. Only those state standards that are identified by the state in a timely manner and that are more stringent than federal requirements may be applicable.

Relevant and Appropriate Requirements are those federal, state, and city requirements that, while not legally "applicable," are designed to apply to problems sufficiently similar to those encountered at CERCLA sites that their application is appropriate. Requirements may be relevant and appropriate if they would be applicable but for jurisdictional restrictions associated with the requirement.

To-Be-Considered Materials (TBCs) are federal and state non-promulgated requirements, such as guidance documents or criteria. Advisories or guidance documents do not have the status of potential ARARs. However, where no specific ARARs exist for a chemical or situation, or where such ARARs are not sufficient to be protective, guidance or advisories should be identified and used to ensure that a remedy is protective.

7.3 Classification of ARARs

The ARARs have been placed into three categories:

- Chemical-specific
- Action-specific
- Location-specific

Chemical-specific requirements are those values that establish an acceptable amount or concentration of a chemical that may be found in, or discharged to, the ambient environment. Action-specific requirements are technology- or activity-based requirements or limitations on actions taken with respect to hazardous substances. Finally, location-specific requirements are limitations on the use of specific locations, such as wetlands. These requirement types are discussed separately below.

7.4 Consideration of ARARs

CERCLA Section 121 requires that remedial actions attain a level of standard of control that complies with applicable or relevant and appropriate federal and state laws. A law is applicable if, by its terms, it governs the situation at the Site. If the law is not applicable, it may be relevant and appropriate if circumstances at the Site are sufficiently similar to the problems or situations regulated by the law. Because each CERCLA site has unique characteristics, there are no required ARARs that can be specified in advance. ARARs must be identified for the unique particulars of the Site (e.g., sensitive receptors, hazardous materials, and the suggested remedial alternatives). ARARs must be met for hazardous substances remaining on the Site at the completion of the remedial action and also during implementation of the remedial action.

7.5 Identification of ARARs

The following groups of ARARs were considered during the identification process:

- Federal, Kansas, and City of Wichita requirements (applicable or relevant and appropriate)
- Federal and Kansas criteria, advisories, and guidance documents

The federal and state ARARs and TBCs potentially pertinent to the Site are listed and evaluated in the following tables:

Table	Content
7-1	Chemical-specific ARARs and TBCs
7-2	Location-specific ARARs
7-3	Action-specific ARARs
7-4	EPA MCLs
7-5	Federal chemical-specific TBCs
7-6	EPA Region 9 Preliminary Remediation Goals
7-7	State chemical-specific TBCs
7-8	State chemical-specific ARARs

The preliminary identification of ARARs presented in this section are based on current knowledge of the Site, available analytical data, and review of ARARs established for sites with similar contamination. The ARARs from other sites were

derived by reviewing EPA Records of Decisions (RODs). Although the potential remedial alternatives have not yet been formally identified, the review of past EPA RODs from sites both within and outside of Region 7 focuses on the remedial alternatives selected and the final ARARs chosen.

7.5.1 Federal Chemical-Specific ARARs

Chemical-specific ARARs are usually numerical values that provide a maximum concentration level of a chemical that may be found in, or discharged to, the ambient environment. These values are established using risk assessment methodologies that assess the hazards to humans and the environment from a quantified exposure to a chemical. However, selected standards (e.g., maximum contaminant levels) are also based on technical considerations (i.e., how the water can be treated). The evaluation of chemical-specific ARARs is provided in Table 7-1 and discussed in the following paragraphs.

7.5.1.1 Safe Drinking Water Act (SDWA)

The National Primary and Secondary Drinking Water Standards (40 CFR Parts 141, 143), better known as the MCLs, may be appropriate and/or relevant to remedial activities at the Site because the alluvial aquifer in the Wichita area is utilized as a public drinking water source; however, no public water supply wells are being utilized within the NIC Site boundaries.

The determination that the drinking water standards are relevant and appropriate at the Site is fully supported by EPA regulations and guidance. The Preamble to the NCP clearly states the MCLs are relevant and appropriate for groundwater that is a current or potential source of drinking water, 55 FR 8750 (March 8, 1990), and this determination is further supported by requirements in the Remedial Investigation/Feasibility Study (RI/FS) section of the NCP, 40 CFR Part 300.430(e)(2)(i)(B). The EPA's Guidance on Remedial Action for Contaminated Groundwater at Superfund Sites states "MCLs developed under the Safe Drinking Water Act generally are ARARs for current or potential drinking water sources."

The MCLs are relevant and appropriate for remedial actions that will be considered because the aquifer at the site has the potential to be a drinking water source. In addition, the non-zero Maximum Contaminant Level Goals (MCLGs) are relevant and appropriate (55 FR 8750-8752 [March 8, 1990]). The MCLs and the MCLGs are provided in Table 7-4. CT, CFM, MC, PCE, TCE, 1,2-DCE, 1,1-DCE, 1,1,1-TCA, vinyl chloride, and benzene all have federal MCLs. These values are chemical-specific ARARs.

7.5.1.2 Clean Water Act (CWA)

The Federal Clean Water Act as amended by the Water Quality Act of 1987 (Public Law 100-4 § 03) provides the authority for each state to adopt water quality standards designed to protect beneficial uses of each water body and requires each state to

designate uses for each water body. The EPA has developed criteria for numerous substances. The federal water quality criteria are not legally enforceable and are therefore not applicable to the cleanup. However since they do set levels that prevent toxicity, they may be considered relevant and appropriate.

Under Section 121(d)(2)(A) of SARA, the remedy selected must "require a level or standard of control which at least attains ... water quality criteria established under Section 303 and 304 of the Clean Water Act, where such ... criteria are relevant and appropriate under the circumstances of time release or threatened release." SARA further provides that "determining whether or not any water quality criteria under the Clean Water Act is relevant and appropriate under the circumstances of the release, [EPA] shall consider the designated or potential use of the surface or groundwater, the environmental media affected, the purposes for which such criteria were developed, and the latest information available." (Section 121(d)(2)(B)(I) of SARA).

The EPA has determined that the ambient water quality criteria for acute and chronic toxicity to fresh water aquatic life are relevant and appropriate. Federal water quality criteria for various compounds are included in Table 7-5. The Site currently does not impact the Arkansas River but does affect Chisholm Creek and its tributaries; therefore aquatic ambient water quality is a concern.

7.5.1.3 Resource Conservation and Recovery Act (RCRA)

Interim Control of Hazardous Waste Injection

Section 3020 of RCRA eliminates land disposal restrictions as an ARAR for reinjection of groundwater if conducted as a CERCLA response action under Section 104 or 107 and such contaminated groundwater is treated to substantially reduce hazardous constituents prior to such injection. The response action or corrective action upon completion must be sufficient to protect human health and the environment. This regulation is also considered a potential action-specific ARAR.

Groundwater Protection Standards

Under 40 CFR Part 274, Subpart F, concentration limits are set for hazardous constituents in groundwater. These standards may be relevant and appropriate to remedial action at the Site. The limits specified for groundwater protection are the same as or less stringent than the MCLs or MCLGs identified above for those substances; therefore, the MCLs are used ARARs.

The EPA has stated that the test for determining whether such standards may be relevant and appropriate to cleanups at Superfund sites is:

> RCRA Subtitle C requirements for the treatment, storage, or disposal of hazardous waste will be applicable if a combination of the following requirements are met: (a) the waste is listed or characteristic under RCRA; and (b) either (1) the waste was treated, stored, or disposed of after the effective date of the RCRA requirement (November 8, 1980);

> or (2) the activity at the CERCLA site constitutes treatment, storage, or disposal as defined under RCRA. (42 U.S.C. § 7901, et seq.)

Currently, it is not known if hazardous wastes have been released to the subsurface after November 8, 1980. However, some of the contaminants (especially PCE and TCE) in the groundwater may have resulted from disposal of a listed waste and/or listed processes. Therefore, the RCRA standard may be relevant and appropriate.

Land Disposal Restriction

On May 8, 1992, the National Capacity Variance for soils contaminated with wastes listed in 40 CFR 278.10, 278.11 and 278.12 expired. Land Disposal Restrictions (LDRs) are relevant and appropriate to site soils if placement of those soils occurs. LDRs typically set concentration levels or treatment standards that hazardous wastes must meet before they can be land disposed. These treatment standards represent best available demonstrated treatment technology (BADT) for these wastes. This is also an action-specific ARAR. Soil cuttings from the installation of additional monitoring wells and groundwater remediation wells (if installed), may require disposal and potential treatment. Therefore, this legislation has the potential to be both applicable and/or relevant and appropriate.

7.5.1.4 Clean Air Act (CAA)

Section 109 of the Clean Air Act, 42 U.S.C. § 7409, and implementing regulations found at 40 CFR Part 50 set national primary and secondary ambient air quality standards. National primary ambient air quality standards define levels of air quality that are necessary, with an adequate margin of safety, to protect the public health. National secondary ambient air quality standards define levels of air quality that are necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant. EPA has also established National Emission Standards for Hazardous Air Pollutants (NESHAPs) for eight toxic air pollutants. An emission standard for vinyl chloride of 10 ppmv (average 3-hour period) has been established for certain activities and may be relevant and appropriate for releases into the air resulting from remedial actions (e.g., air stripping without vapor phase treatment). This may be considered an action-specific ARAR also.

7.5.1.5 EPA Region 9 Preliminary Remediation Goals

Region 9 of the EPA has published Preliminary Remediation Goals (PRGs) for assessing contamination of soil, air, and water. The PRGs are provided in Table 7-6. These remediation goals may be TBC materials.

7.5.2 Federal Location-Specific ARARs

The evaluation of location-specific ARARs is provided in Table 7-2 and discussed in the following paragraphs.

7.5.2.1 National Historic Preservation Act (NHPA)

This statute and implementing regulations (17 U.S.C. § 470, 40 CFR Part 7.310(b), 37 CFR Part 800), require federal agencies or federal projects to take into account the effect of any federally-assisted undertaking or licensing on any district, site, building, structure, or object that is included in, or eligible for, the Register of Historic Places. If remedial action is likely to have an adverse effect on any cultural resources that are on or near the Site, EPA should examine whether feasible alternatives exist that would avoid such effects. If effects cannot reasonably be avoided, measures should be implemented to minimize or mitigate the potential effect.

NHPA regulations reserve formal determination of eligibility for the National Register of Historic Places and "no adverse effects" determinations for federal agencies.

7.5.2.2 Archaeological and Historic Preservation Act

This statute and implementing regulations (17 U.S.C. § 479, 40 CFR Part 7.301(c)) establish requirements for the evaluation and preservation of historical and archaeological data that may be destroyed through alteration of terrain as a result of a federal construction project or a federally licensed activity or program.

7.5.2.3 Historic Sites, Buildings, and Antiquities Act

This standard (17 U.S.C. §§ 471-477, 40 CFR § 7.301(a)) requires federal agencies to consider the existence and location of landmarks on the National Registry of Natural Landmarks to avoid undesirable impacts on such landmarks.

7.5.2.4 Fish and Wildlife Coordination Act

This standard (17 U.S.C. §§ 1531-1577, 40 CFR § 7.302(g)) requires that federal agencies or federally funded projects ensure that any modification of any stream or other water body affected by any action authorized or funded by the federal agency provide for adequate protection of fish and wildlife resources. Compliance with this ARAR requires the EPA to consult with the National Resource Trustee for the affected state. Further consultation will occur during the public comment period and specific mitigative measures may be identified in consultation with the appropriate agencies. Any remedial action that would affect stream conditions would comply with this ARAR.

7.5.2.5 Endangered Species Act

This statute and implementing regulations (15 U.S.C. §§ 1531-1543, 50 CFR Part 402 40 CFR Part 7.302(h)) require that any federal activity or federally authorized activity may not jeopardize the continued existence of any threatened or endangered species or destroy or adversely modify a critical habitat.

Compliance with this requirement involves consultation between the EPA and the U.S. Fish and Wildlife Service, resulting in a determination as to whether there are

listed or proposed species or critical habitats present on the Site, and if so, whether any proposed activities will impact such wildlife or habitat.

7.5.2.6 Floodplain Management Order

This requirement (40 CFR Part 7, Appendix A, Executive Order No. 11,988) mandates that federally funded or authorized action within the 100-year floodplain avoid, to the maximum extent possible, adverse impact associated with development of a floodplain. Compliance with this requirement is detailed in EPA's August 7, 1985 "Policy of Floodplains and Wetlands Assessments for CERCLA Actions." Specific measures to minimize adverse impact will be identified following consultations with appropriate agencies. Currently no remedial alternative is anticipated in the floodplain.

7.5.2.7 Protection of Wetlands Order

This requirement (40 CFR Part 7, Appendix A, Executive Order No. 11,990) mandates that federal agencies and PRPs avoid, to the extent possible, the adverse impacts associated with the destruction of loss of wetlands and to avoid support of new construction in wetlands if a practicable alternative exists. Currently no identified wetlands will be impacted.

7.5.2.8 RCRA

The requirements set forth at 40 CFR Part 274.18(a) and (b) provide that (a) any hazardous waste facility must not be located within 71 meters (200 feet) of a fault (see Appendix VI of Part 274), and (b) any hazardous waste facility within the 100-year floodplain must be designed, constructed, operated, and maintained to avoid washout. Any discrete disposal or storage facilities that remain on the Site as part of remedial activities should meet these standards. Currently anticipated remedial actions are not within the 100-year floodplain or within 200 feet of a fault.

7.5.3 Federal Action-Specific ARARs

The evaluation of action-specific ARARs are provided in Table 7-3 and discussed in the following sections.

7.5.3.1 CWA

POTW Discharges

Under 40 CFR Part 403, standards are set to control pollutants which contact publicly owned treatment works (POTWs) or that may be contaminated with sewage sludge. 40 CFR Part 421 regulates discharges to POTWs. If groundwater that is pumped and treated is discharged to a POTW, these requirements may be applicable.

There are three categories of limitations for discharges into a POTW. The first is the general standard that applies to all discharges into a POTW. Second, POTWs may issue discharge permits to industrial users to enforce specific limits for a particular facility. Third, EPA has established pretreatment standards for specific industrial

subcategories. All three of these standards may be applicable to a particular wastestream. Generally, discharges into a POTW cannot cause pass through or cause interference within a POTW. Pass through means a discharge that exits the POTW causing a violation of the POTW's National Pollutant Discharge Elimination System (NPDES) permit. Interference is a discharge that inhibits or disrupts a POTW's treatment process or operation, causing a violation of the POTW's NPDES permit. All groundwater will be treated to abide with local POTW limits before discharge to the POTW.

Federal Water Pollution Control Act (FWPCA) as Amended by the Clean Water Act
The objective of the FWPCA as amended by the CWA is to restore and maintain the chemical, physical, and biological integrity of the nation's waters. This objective is achieved through the control of discharges of pollutants to navigable waters. This control is implemented through the application of federal, state, and local discharge standards.

The CWA prohibits the unpermitted discharge of any pollutant or combination of pollutants to waters of the United States from any point source. A point source is defined as "any discernible, confined, and discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, — from which pollutants are or may be discharge." (40 CFR Part 122.2)

A pollutant is defined for regulatory purposes to include: "dredged spoil, solid waste, incinerator residue, filter backwash, sewage, garbage, sewer sludges, munitions, chemical wastes, ... and industrial, municipal, and agricultural waste discharged into water." (40 CFR Part 122.2)

All pollutants are regulated under the CWA. For the purpose of regulation, CWA § 301(b)(2) divides the pollutants into the following three categories:

- **Priority pollutants** — the 127 individual toxic pollutants contained in 75 toxic compounds or classes of toxic compounds adopted by EPA pursuant to § 307(a)(1) of the CWA.

- **Conventional pollutants** — pollutants classified, pursuant to CWA § 304(a)(4), as biochemical oxygen demand (BOD), total suspended solids (TSS), fecal coliform, oil and grease, and pH.

- **Nonconventional pollutants** — any pollutants not identified as either conventional or priority, i.e., ammonia nitrogen, chemical oxygen demand, total solids, and nonpriority toxic pollutants (40 CFR Part 122 (1)(2)).

Three sets of requirements established under CWA may contain potential action-specific ARARs if treated water from the Site (e.g., groundwater, treated rinsate water, or other treated waters resulting from Site activities) is directly discharged to surface water. These requirements are:

- Criteria and Standards for the NPDES (40 CFR Part 129)
- Toxic Pollutant Effluent Standards (40 CFR Part 129)
- Water Quality Standards (40 CFR 131)

Potential remedial alternatives may include discharge of treated groundwater to the surface water (ultimately, the Arkansas River). Before water is discharged, it will be treated to MCLs or other appropriate permit limits; however, a NPDES permit will still be required.

7.5.3.2 SDWA

The underground injection control (UIC) program requirements found at 40 CFR Part 144 will not be applicable unless a remedial alternative involves the reinjection of pumped and treated groundwater.

7.5.3.3 RCRA

Criteria for Classification of Solid Waste Disposal Facilities Practices
The criteria contained in 40 CFR Part 257 are used in accordance with RCRA guidance in determining which practices pose a reasonable probability of having an adverse effect on human health and the environment. Part 257.3-1(a) states that facilities or practices in the floodplain shall not result in washout of solid waste so as to pose a hazard to human life, wildlife, or land or water resources. Part 257.3-2 provides for the protection of threatened or endangered species. Part 257.3-3 provides that a facility shall not cause the discharge of pollutants into waters of the United States. Part 257.3-4 states that a facility or practice shall not contaminate underground drinking water.

Standards Applicable to Transporters of Hazardous Waste
The regulations at 40 CFR Part 273 establish standards that apply to persons that transport hazardous waste within the United States. If hazardous waste is transported on a rail line or public highway on the Site or if transportation occurs off the Site, these regulations may be applicable. Currently no transport of hazardous waste is anticipated.

Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities

A. Releases from Solid Waste Management Units

The regulations at 40 CFR Part 274, Subpart F, establish requirements for groundwater protection for RCRA-regulated solid waste management units (SWMUs) (e.g., waste piles, surface impoundments, land treatment units, and landfills). Subpart F provides for three types of groundwater monitoring: detection monitoring (40 CFR Part 274.98); compliance monitoring (40 CFR Part 274.99); and corrective action monitoring (40 CFR Part 274.100). Monitoring wells must be cased according to 40 CFR Part 274.97(2).

Monitoring is required during the active life of a hazardous waste management unit. At closure, if all hazardous waste, waste residue, and contaminated subsoils are removed, no monitoring is required. If hazardous waste remains, the monitoring requirements continue during the closure period (40 CFR Part 274.117).

Currently no solid waste management unit is anticipated.

B. Closure and Post-Closure

40 CFR Part 274, Subpart G, establishes that hazardous waste management facilities should be closed in such a manner as to (a) minimize the need for further maintenance (b) control, minimize, or eliminate, to the extent necessary to protect public health and the environment, post-closure escape of hazardous wastes, hazardous constituents, leachate, contaminated runoff, or hazardous waste decomposition products to the ground or surface waters or to the atmosphere.

Facilities requiring post-closure care should undertake appropriate monitoring and maintenance actions, control access, and control post-closure use of the property to ensure that the integrity of the final cover, liner, or containment system is not disturbed (40 CFR Part 274.117). In addition, all contaminated equipment, structures and soil should be properly disposed of or decontaminated unless exempt (40 CFR Part 274.114). A survey plat should be submitted to the local zoning authority and to the EPA Regional Administrator indicating the location and dimensions of landfill cells or other hazardous waste disposal units with respect to permanently surveyed benchmarks (40 CFR Part 274.117). 40 CFR Part 274.228(a) requires that at closure, free liquids should be removed or solidified, the wastes stabilized and the waste management unit covered.

C. Waste Piles

40 CFR Part 274, Subpart L, establishes a framework for the safe operation of waste piles until permanent disposal occurs. The framework includes a run-on control system, a runoff control system, and collection and holding systems to prevent the further release of contaminants from the waste pile. No RCRA waste pile is anticipated during treatment.

D. Land Treatment

The requirements of 40 CFR Part 274, Subpart M, regulate the management of land treatment units that treat or dispose of hazardous waste; these requirements may be applicable for any land treatment units established at the Site.

The owner or operator of a land treatment unit should design treatment so that hazardous constituents placed in the treatment zone are degraded, transformed, or immobilized within the treatment zone. "Hazardous constituents" are those identified in Appendix VIII of 40 CFR Part 271 that are reasonably expected to be in, or derived from, waste placed in or on the treatment zone. Design measures and operating practices should be set up to maximize the success of degradation, transformation, and immobilization processes. The treatment zone is the portion of the unsaturated zone below and including the land surface in which the owner or operator intends to maintain the conditions necessary for effective degradation, transformation, or immobilization of hazardous constituents. The maximum depth of the treatment zone should be no more than 1.5 meters (5 feet) from the initial soil surface; and more than 1 meter (3 feet) above the seasonal high water table.

Subpart M also requires the construction and maintenance of control features that prevent the runoff of hazardous constituents and the run-on of water to the treatment unit. The unit should also be inspected weekly and after storms for deterioration, malfunctions, improper operation of run-on and runoff control systems, and improper functioning of dust control measures.

An unsaturated zone monitoring program must be established to monitor soil and soil-pore liquid to determine whether hazardous constituents migrate out on the treatment zone. Specifications related to the monitoring program are contained in 40 CFR Part 274-278. Currently no land treatment unit is anticipated as a remedial alternative.

E. Landfills

40 CFR Part 274, Subpart N, applies to entities that dispose of hazardous waste in landfills. The regulations specify appropriate liner systems and leachate collection systems for landfills, run-on and runoff management systems, and dust controls for landfills. These regulations set forth specific requirements for landfill monitoring and inspection, surveying and recordkeeping, and closure and post-closure. No landfills are currently anticipated as part of the remediation.

Land Disposal Restrictions

If a listed waste for which treatment standards have been set is actively managed, and placement occurs, the RCRA land disposal restrictions set for at 40 CFR Part 278 may be applicable. Placement does not occur when hazardous waste is consolidated within a unit, capped in place or treated *in situ*. (CERCLA Compliance with Other Laws Manual 2-17, 2-17, August 1988).

40 CFR Part 278 mandates that waste subject to a ban on land disposal must attain specified concentration levels, achievable by the BADT, for each hazardous

constituent in each listed waste, if residual is to be land disposed. These concentrations are set forth in Subpart D of the regulations. While levels are set by BADT, any treatment technology may be used if it will achieve the specified concentration levels.

BADT treatment (or its equivalent) is required prior to land treatment or disposal of these wastes. Because land treatment is considered a form of land disposal, these requirements may be considered applicable to any alternative involving treatment of disposal of these wastes. If an alternative contemplates land treatment for soil containing listed wastes, a no migration petition (40 CFR Part 278.7) may be required in order to comply with the land disposal restrictions.

Discharge to Publicly Owned Treatment Works (POTWs)
All discharges of RCRA hazardous wastes to POTWs should comply with the RCRA permit-by-rule requirements at 40 CFR Part 270.70. The regulations provide for permitting of POTW when the owner or operator of the POTW: obtains and complies with an NPDES permit; complies with regulations related to waste identification, manifests, operating records, and reporting. The regulations also require that the waste meet all federal, state, and local pretreatment requirements that would be applicable to the waste if it were being discharged into the POTW through a sewer, pipe, or similar conveyance. Although discharge to POTW is incorporated into some of the remedial alternatives, all water will be treated to local POTW limits before discharge.

7.5.3.4 Hazardous Materials Transportation Act

The Hazardous Materials Transportation Act (49 U.S.C. §§ 1801-1813), as implemented by the Hazardous Material Transportation Regulations (49 CFR Parts 10, 171-177), regulates the transportation of hazardous materials. The regulations apply to any alternatives involving the transport of hazardous waste off the Site, on public highways on the Site or by rail line. No transport of waste is anticipated.

7.5.3.5 Occupational Safety and Health Act (OSHA)

The Occupational Safety and Health Act (29 U.S.C. §§ 651 et seq.) provides standards (29 CFR 1910) and requires training for workers and the workplace including: working surfaces; means of egress; ventilation; noise; hazardous materials; personal protective equipment; sanitation; medical services and first aid; fire protection, detection, and suppression; and materials handling and storage. These regulations will be applicable to workers in potentially hazardous waste sites and are addressed in the Site Health and Safety Plan.

7.5.4 Federal Standards to Be Considered

7.5.4.1 SDWA

Proposed MCLs are unpromulgated versions of the MCLs discussed previously. MCLs apply to public water systems. However, they may be relevant and

appropriate to surface water or groundwater if those waters are used as drinking water.

7.5.4.2 Federal Guidance Documents

Many of the procedures and standards to be used in a CERCLA action are set forth in guidance documents issued by the EPA. A list of the types of guidance that are TBCs is included in the preamble to the Final NCP, 55 FR 8775 (March 8, 1990). That guidance, along with current updates of and additions to that guidance, is to be considered both in the FS and in selecting and implementing of the remedy at the Site.

7.5.4.3 Chemical-Specific TBCs

Ambient water quality criteria, oral reference doses, and health advisories are potential federal TBCs. These are provided in Table 7-5.

7.5.5 State ARARs

As provided by Section 121 of CERCLA, 42 U.S.C. 9721, only those state standards that are more stringent than any federal standard and that have been identified by the state in a timely manner are appropriately included as ARARs.

CERCLA defines as ARARs only federal environmental laws and state environmental or facility-siting laws. Remedial design, implementation, and operation and maintenance must comply with all other applicable laws, both state and federal. Many such laws, while not strictly environmental or facility-siting laws, have environmental impacts. Moreover, applicable laws that are not ARARs because they are not environmental or facility-siting laws are not subject to the ARAR waiver provisions, and the administrative as well as the substantive provisions of such laws must be observed.

The following is a list of state ARARs that may be identified by the state for use on the Site. KDHE Bureau of Environmental Remediation's (BER's) Policy #BER-RS-015 regarding ARARs lists specific state regulations and is included in Appendix M.

7.5.5.1 Chemical-Specific ARARs

- **Kansas Drinking Water Rules (Kansas Administrative Rules [KAR] Title 28, Article 15)** — The Kansas Drinking Water Rules provide for MCLs in drinking water. The state MCL is equal to federal MCL (Table 7-4) for the site target compounds.

- **KDHE-BER Tier 2 Risk-Based Concentrations (3rd Version)** — Tier 2 risk-based concentrations are non-site specific cleanup levels for soil and groundwater. These Tier 2 risk-based concentrations apply to underground storage tank sites and other sites under the oversight of BER. The Tier 2 risk-based standards for various pathways for both residential and non-residential scenarios are listed in Table 7-7 and included in Appendix M.

- **Kansas Surface Water Quality Standards (KAR Title 28, Article 16)** — These regulations provide numerical water quality criteria for surface waters. Since contaminants from the site impact surface water quality, these standards may be applicable. The surface water quality standards for the analytes found in surface water from the NIC site are listed in Table 7-8. Not all analytes have a surface water quality standard. The standards used in the table were approved by KDHE in December of 2001. The standards that are applicable depend on the specific body of surface water and segment of that body. The applicable surface water classifications for the NIC site are listed below in Section 7.5.5.2 Location-Specific ARARs.

- **Kansas Hazardous Waste Management Act (Kansas Statutes Annotated [KSA], Chapter 75, Article 34)** — These regulations incorporate much of the federal RCRA regulations. No stricter ARARs are found in the Kansas regulations.

7.5.5.2 Location-Specific ARARs

Some of the Kansas Waste Management Regulations may be ARARs. These are typically covered under federal RCRA regulations.

The surface water quality standards listed in Table 7-8 are dependent on location of the surface water and the classification of the impacted surface water. Three segments of Chisholm Creek that are partially within the boundaries of the NIC site are classified streams and have designated uses. The three segments and designations, as defined in the Kansas Surface Water Register, are as follows:

- Segment 8 of Chisholm Creek, the section of the West Fork of Chisholm Creek that enters the site from the west until it combines with the East Fork of Chisholm Creek to form the main fork (Figure 1-1), is classified as general purpose and expected aquatic life use waters. The designations for segment 8 include aquatic life use, contact recreational use, domestic water supply use, food procurement use, groundwater recharge, industrial water supply use, and irrigation use. Therefore, all applicable surface water quality standards apply to this segment of Chisholm Creek.

- Segment 7 of Chisholm Creek, the section of the East Fork of Chisholm Creek that enters the site from the east until it combines with West Fork to form the main fork of Chisholm Creek (Figure 1-1), is classified as general purpose and expected aquatic life use waters. The designations for segment 7 include aquatic life use, contact recreational use, domestic water supply use, food procurement use, groundwater recharge, industrial water supply use, and irrigation use. Therefore, all applicable surface water quality standards apply to this segment of Chisholm Creek.

- Segment 6 of Chisholm Creek, the section of the main fork of Chisholm Creek from the confluence of the East Fork and West Fork of Chisholm Creek until the creek

exits the NIC site, is classified as general purpose and expected aquatic life use waters. Segment 6 of Chisholm Creek does not support any of the beneficial uses listed for both Segments 7 and 8.

The Kansas Historic Preservation Act (KSA 75-2715-2725) may be applicable as well as relevant and appropriate should remedial activities at the Site impact historical structures or features. Currently no activities that would impact historical structures or features are anticipated.

7.5.5.3 Action-Specific ARARs

- **Kansas Air Pollution Emission Control Regulations (KAR Title 28, Article 19)** — Requires permits in certain areas for air discharges and limits emissions based upon the specific constituent, amount, and location of the discharge. These regulations and requirements may be applicable depending on the remedial action chosen.

- **Kansas Underground Injection Control (UIC) Regulations (KAR Title 28, Article 47)** — Controls the pressure, flow rate, volume, and quality of water to be injected. Monitoring wells are also required. Some of these requirements may be applicable if recharge galleries are incorporated into selected remedial alternatives.

- **Kansas Drycleaner Environmental Response Act (KAR Title 28, Article 68)** — Requires registration of drycleaning facilities and compliance with waste management measures. May be applicable as well as relevant and appropriate should remedial activities occur in areas where former or existing drycleaner facilities are present.

- **Kansas Board of Technical Professions (KAR Title 66, Articles 6 through 14)** — Establishes the requirements for licensing of engineers, land surveyors, geologists and architects for site investigations or remediation. These regulations are both applicable and relevant and appropriate.

- **Kansas Water Well Contractor's License (KAR Title 28, Article 30)** — Requires that monitoring wells and water wells be installed by a licensed well driller. These regulations are both applicable and relevant and appropriate.

- **Kansas Water Well Construction and Abandonment Rules and Regulations (KAR Title 28, Article 30)** — Sets up specific guidance on well construction and well abandonment procedures. These regulations are both applicable and relevant and appropriate.

- **Kansas Water Appropriations Act (KSA 82a-701 et. seq.)** — Provides procedures for the utilization of groundwater resources. This Act is relevant and appropriate

for groundwater extraction if water appropriations are required for groundwater remediation.

7.5.6 State Criteria to Be Considered

Risk-Based Standards for Kansas RSK Manual- 3rd Version
The KDHE developed the RSK Manual in order to address contaminated sites in the State of Kansas. The manual is only applicable to contaminated properties or sites that are participating in an appropriate state program and is to be used under KDHE guidance. The RSK Manual includes a three-tiered approach. These include:

- Tier 1 – Comparison of sampling results for metals with background concentrations.
- Tier 2 – Use of risk-based concentrations developed by KDHE (see Section 7.5.5.1).
- Tier 3 – Development of site-specific risk-based concentrations.

A copy of the Kansas RSK Manual, 3rd Version, is included in Appendix M.

Policy for Hydraulic Containment
The KDHE/BER has issued policy BER-RS-028, which establishes the criteria for consideration of hydraulic containment of a site as a remedial strategy. The policy states that hydraulic containment of a site with remediation of the contaminated water to alternative cleanup levels (ACLs) and associated compliance monitoring may be considered provided that institutional controls and source control measures are implemented. The policy provides a list of parameters that must be addressed. The policy expressly states that hydraulic containment will not be considered for sites with impacted or threatened active drinking water supply wells.

Policy for Monitored Natural Attenuation
The KDHE/BER has issued policy BER-RS-042, which establishes the criteria for consideration of monitored natural attenuation (MNA) of a site as a remedial strategy. The policy states that MNA of a site may be considered provided the efficacy of the strategy can be demonstrated and documented with site-specific data. The policy provides a list of requirements that must be addressed in order to implement MNA as a sitewide remedial strategy.

7.5.7 City ARARs

The City has regulations concerning discharge to its POTW and use of wells in contaminated areas. Discharge of groundwater requires a permit and the concentration of total toxic organics must be less than 2.13 mg/L (City Code Chapter 17.20.60). These regulations are considered applicable. In addition, City Code 16.04.290 limits the discharge to a maximum period of five years.

City Code Section 7.30.105, Water wells in contaminated areas, states:

> (a) From and after the date of the ordinance codified in this section, no new water well shall be constructed and used for personal use [drinking, cooking, bathing, and sewage disposal] if the health officer determined that such well is in a contaminated area.
>
> (b) Any existing water well shall cease to be used for personal use if the health officer determines that (1) the well is in a contaminated area, (2) public water is available to the well water user, and (3) cessation of use of the water well for personal use is in the best interest of public health, safety and welfare. (Or. No. 43-156 § 2)

The ordinance cannot assure that no persons are using well water for drinking purposes because, 1) water wells for other uses (e.g. lawn and garden irrigation) are still allowed, 2) there are no provisions for property inspections to determine the source of potable water used at a property.

Table 7-1
North Industrial Corridor (NIC) Site
Chemical-Specific ARARs and TBCs

Standard, Requirement, Criteria, or Location	Citation	Description	Potential to be Applicable/Relevant and Appropriate	Comments
Federal ARARs				
Safe Drinking Water Act	40 U.S.C. §300g			
National Primary Drinking Water Standards	40 CFR Part 141	Establishes health-based standards	No/Yes	Alluvial aquifer north of the Site is used as public drinking water source. Aquifer is a drinking water source.
National Secondary Drinking Water Standards	40 CFR Part 143	Establishes welfare-based standards	No/No	Secondary MCLs relate to welfare concerns and not contamination.
Maximum Contaminant Level Goals (MCLGs)	P.L. 99-339 100 Statute 642 (1986)	Establishes drinking water quality goals set at levels of no known or anticipated adverse health effects with an adequate margin of safety	No/No	According to the 1990 NCP [40 CFR §300.43(3) (2)(i)(B)], MCLGs that are above zero (e.g., for noncarcinogens) are cleanup standards where relevant and appropriate. For chemicals of concern at the 4th and Carey site with MCLG above zero (1,1,1-TCA, 1,1-DCE and 1,2-DCE), the MCLG is equal to the MCL. MCLGs equal to zero (e.g., for carcinogens) are not relevant and appropriate. Those chemicals of concern at 4th and Carey with established MCLGs equal to zero are carbon tetrachloride, chloroform, methylene chloride, trichloroethene, and PCE. MCLGs are zero and therefore not ARARs. MCLGs are potential TCBs for chemicals without ARARs.
Clean Water Act	33 U.S.C. §§ 1251-1376			
Water Quality Criteria	40 CFR Part 131	Establishes criteria for water quality based on toxicity to aquatic organisms and human health.	No/Yes	Aquatic AWQC are not a concern because the Arkansas River and Cow Creek are not impacted. Human AWQL are more stringent than the MCL for 1,1-DCE, benzene, PCE, TCE, CT, CFM, and CM.
Resource Conservation and Recovery Act and Regulations	PL 94-580 as amended 40 CFR §§ 260-270			
Underground Source of Drinking Water	Section 3020	Addresses waste injection in the context of RCRA or CERCLA cleanups	Yes/No	According to the 1990 NCP [40 CFR §300.43(3) (2)(i)(B)], MCLGs that are above zero (e.g., for noncarcinogens) are cleanup standards where relevant and appropriate. For chemicals of concern at the 4th and Carey site with MCLG above zero (1,1,1-TCA, 1,1-DCE and 1,2-DCE), the MCLG is equal to the MCL. MCLGs equal to zero (e.g., for carcinogens) are not relevant and appropriate. Those chemicals of concern at 4th and Carey with established MCLGs equal to zero are carbon tetrachloride, chloroform, methylene chloride, trichloroethene, and PCE. MCLGs are zero and therefore not ARARs. MCLGs are potential TCBs for chemicals without ARARs.
Groundwater Protection	40 CFR § 264, Subpart F	Sets concentration limits in groundwater	No/Yes	MCLs are more stringent

Table 7-1
North Industrial Corridor (NIC) Site
Chemical-Specific ARARs and TBCs

Standard, Requirement, Criteria, or Location	Citation	Description	Potential to be Applicable/Relevant and Appropriate	Comments
Land Disposal Restriction	40 CFR § 268	Treatment of wastes subject to ban on land disposal	Yes/Yes	Land disposal restrictions may be an ARAR if remedy involves disposal of contaminated soil. Contaminated soil may be encountered during the installation of monitoring wells and/or remediation wells (if installed).
Interim Treatment Standards for Soil and Debris		BDAT and interim standards	To Be Considered (TBC)	If remedy involves movement of contaminated soil.
Clean Air Act	42 U.S.C. § 7409			
Ambient Air Quality Standards	40 CFR PA-550	Sets emission standards	No/Yes	May be relevant and appropriate for air stripper without vapor phase carbon capture.
EPA Soil Screening Guidance	EPA/540/R-96/018 - April 1996	Developed to help standardize and accelerate the evaluation and cleanup of contaminated soils at sites on the NPL	To Be Considered (TBC)	An evaluation tool only, does not define remediation levels.
EPA Region 9 Preliminary Remediation Goals			Yes/No	
State ARARs				
Kansas Drinking Water Rules	KARa Title 28 Article 15	Establishes health-based standards for public water systems	Yes/No	No levels have been set for VOCs.
Kansas Underground Storage Tank Rules	KAR Title 28 Article 44	Corrective action policy establishes petroleum site remediation levels	To Be Considered (TBC)	Sets soil levels for TPH, benzene, and 1,2-dichloroethane and groundwater levels for BTEX, Pb, and 1,2-dichloroethane.
KDHE Tier 2 Risk-Based Standards			To Be Considered (TBC)	Establishes residential and non-residential concentrations which are risk-based. The concentrations are to be used by KDHE remedial project managers as guidelines for the evaluation of remedial action..
Kansas Surface Water Quality Standards	KAR Title 28 Article 16	Provide numerical water quality criteria for surface waters	Yes/Yes	Establishes surface water quality criteria
Kansas Air Pollution Emission Control Regulations	KAR Title 28 Article 19	Provide criteria for air pollution	Yes/Yes	Establishes air emissions criteria

Table 7-2
North Industrial Corridor (NIC) Site
Location-Specific ARARs

Standard, Requirement, Criteria, or Location	Citation	Description	Potential to be Applicable/Relevant and Appropriate	Comment
Federal ARARs				
National Historic Preservation Act	16 U.S.C. § 47040 CFR §6.301(b)36 CFR § 800	Requires federal agencies to take into account the effect of any federally-assisted undertaking or licensing on any district, site, building, structure, or object that is included in or eligible for inclusion in the National Register of Historic Places	No/No	Review of remedy will affect any district, site, building, structure, or object listed on or eligible for the National Register.
Archaeological and Historic Preservation Act	16 U.S.C. § 46940 CFR § 6.301(c)	Establishes procedures to provide for preservation of historical and archaeological data which might be destroyed through alteration of terrain as a result of a federal construction project or a federally licensed activity or program	No/No	Review if remedy will affect historical or archaeological data.
Historic Sites, Buildings and Antiquities Act	16 U.S.C. §§ 461-46740 CFR § 6.301(a)	Requires federal agencies to consider the existence and location of landmarks on the National Registry of Natural Landmarks to avoid undesirable impacts on such landmarks.	No/No	Review if remedy will affect any Natural Landmark.
Fish and Wildlife Coordination Act	16 U.S.C. §§ 661-66640 CFR § 6.301(g)	Requires consultation when federal department or agency proposes or authorizes any modification of any stream or other water body and adequate provision for protection of fish and wildlife resources	No/No	Unlikely, but potential ARAR if remedy would modify stream (e.g., decrease or increase flow in the Arkansas River).
Endangered Species Act	16 U.S.C. §§ 1531-1543	Requires that federal agencies insure that any action by the agency is not likely to jeopardize endangered species or adversely modify habitat	Yes/No	Applicable only if an alternative developed would impact an endangered species.

Table 7-2
North Industrial Corridor (NIC) Site
Location-Specific ARARs

Standard, Requirement, Criteria, or Location	Citation	Description	Potential to be Applicable/Relevant and Appropriate	Comment
Executive Order on Floodplain Management	EO 11988	Requires evaluation of potential effects of action on floodplain	Yes/No	Applicable only if an alternative developed would impact a floodplain or buffer area.
Executive Order on the Protection of Wetlands	EO 1199040 CFR § 6.302(a)	Requires avoidance of destruction or loss of wetlands and construction in wetlands	Yes/No	Applicable only if an alternative would impact a wetland or buffer area.
RCRA	40 CFR Part 264.18a,b	Requirements for construction in floodplain and distance from faults are given.	Yes/No	Applicable only within floodplain of 200 ft of fault.
State ARARs				
Kansas Historic Preservation Act	KSA 75-27515-2725	Consideration must be given to the poterntial impact to historic features.	No/No	Review if remedy will affect any feature listed or eligible for the State Register.

Table 7-3
North Industrial Corridor (NIC) Site
Action-Specific ARARs

Standard, Requirement, Criteria, or Location	Citation	Description	Potential to be Applicable/Relevant and Appropriate	Comment
Federal ARARs				
Clean Water Act	40 CFR Part 421	Limits discharge to POTWs	Yes/Yes	Water will be treated to meet MCLs.
Federal Water Pollution Control Act	40 CFR Part 122.2, 129, 131	NPDES standards, Toxic Pollutant Effluent Standards, and Water Quality Standard	Yes/Yes	Water will be treated to meet MCL before discharge
Underground Injection Control	40 CFR Part 144	Standards for reinjection of groundwater	Yes/Yes	Water will be treated to MCLs before reinjection
Occupational Safety and Health Act	29 U.S.C. §§ 651-678	Regulates worker health and safety	Yes/Yes	Under 40 CFR § 300.38, requirements of this Act apply to all response activities under the NCP.
Hazardous Materials Transportation Act	47 U.S.C. §§ 1801-1808			Applicable only if an alternative developed would involve transportation of hazardous materials.
Hazardous Materials Transportation Regulations	49 CFR Parts 107, 171-177	Regulates transportation of hazardous materials	Yes/No	Applicable only if an alternative developed would involve transportation of hazardous materials.
Resource Conservation and Recovery Act Regulations including Land Disposal Restrictions	40 CFR Parts 260-270	Regulates generation, treatment, storage, and disposal of hazardous waste	No/Yes	Review if alternatives would involve disposal of contaminated soil or treatment residue.
Consideration for Hydraulic Containment	BER-RS-028	Presents conditions for consideration of hydraulic containment as remedial strategy	To Be Considered (TBC)	Establishes conditions to be met in order for hydraulic containment to be considered as a remedial strategy.
State ARARs				
Kansas Air Pollution Emission Control Regulations	KAR Title 28, Article 19	Requires permits for air discharges and limits emissions based on constituent, amount, and discharge location	Yes/Yes	May be applicable depending on remedial action chosen.
Kansas Underground Injection Control Regulations	KAR Title 28, Article 47	Controls pressure, flow rate, volume, and quality of injected water	Yes/Yes	May be applicable depending on remedial action chosen.
Kansas Drycleaner Environmental Response Act	KAR Title 28, Article 68	Requires drycleaner facility registration and compliance with waste management measures	Yes/Yes	May be applicable if remedial activities occur in areas of former or existing drycleaner facility

Table 7-3
North Industrial Corridor (NIC) Site
Action-Specific ARARs

Standard, Requirement, Criteria, or Location	Citation	Description	Potential to be Applicable/Relevant and Appropriate	Comment
Kansas Board of Technical Professions	KAR Title 66, Articles 6-14	Establishes requirement for licensing of engineers, land surveyors, geologists and architects for site investigation/remediation	Yes/Yes	Will be applicable where geologist, engineer, or land surveyor services are required for investigation/remediation
Kansas Water Well Contractor's License	KAR Title 28, Article 30	Establishes license requirements for Water Well Contractors, and well installation and abandonment rules and regulations	Yes/Yes	Wells installed on the Site must be installed by a licensed water well contractor
Water Well Construction and Abandonment Rules and Regulations	KAR Title 28, Article 30	Establishes license requirements for Water Well Contractors, and well installation and abandonment rules and regulations	Yes/Yes	Wells installed and abandoned on the Site must meet the requirements of this legislation
Kansas Water Appropriations Act	KSA 82a-701 et. seq.	Establishes procedures for the appropriation/distribution of groundwater	Yes/Yes	According to Mark Jennings with the Division of Water Resources (KDHE), a permit must be obtained for diversion of water whether the use is for remediation or other typical uses. The only time a permit is not required is for domestic wells for a private residence.

Table 7-4
North Industrial Corridor (NIC) Site
Maximum Contaminant Levels (MCLs)*

Contaminants	MCL (µg/L)	MCLG (µg/L)	Secondary MCL (µg/L)
Volatile Organic Compounds (VOCs)			
1,1,1-Trichloroethane	200	200	NA
1,1,2,2-Tetrachloroethane	NE	NE	NA
1,1,2-Trichloroethane	5	3	NA
1,1-Dichloroethane	NE	NE	NA
1,1-Dichloroethene	7	7	NA
1,2,4-Trimethylbenzene	NE	NE	NA
1,2-Dibromoethane	NE	NE	NA
1,2-Dichloroethane	5	0	NA
1,2-Dichloropropane	5	0	NA
1,3,5-Trimethylbenzene	NE	NE	NA
Benzene	5	0	NA
Bromodichloromethane	NE	NE	NA
Carbon Tetrachloride	5	0	NA
Chlorobenzene	100	100	NA
Chloroethane	NE	NE	NA
Chloroform	100 **	0	NA
Chloromethane	NE	NE	NA
cis-1,2-Dichloroethene	70	70	NA
Dibromochloromethane	NE	NE	NA
Dichlorodifluoromethane	NE	NE	NA
Ethylbenzene	700	700	NA
Isopropylbenzene	NE	NE	NA
Methylene Chloride	5	0	NA
Methyl-tert-butyl ether	NE	NE	NA
n-Butylbenzene	NE	NE	NA
n-Propylbenzene	NE	NE	NA
p-Isopropyltoluene	NE	NE	NA
sec-Butylbenzene	NE	NE	NA
tert-Butylbenzene	NE	NE	NA
Tetrachloroethene	5	0	NA
Toluene	1,000	1,000	NA
trans-1,2-Dichloroethene	100	100	NA
Trichloroethene (see note below)	5	0	NA
Trichlorofluoromethane	NE	NE	NA
Vinyl Chloride	2	0	NA
Xylene (Total)	10,000	10,000	NA
SVOCs/PAHs			
1,2-Dichlorobenzene	600	600	NA
1,4-Dichlorobenzene	75	75	NA
2-Methylnaphthalene	NE	NE	NA
Acenaphthene	NE	NE	NA
Chrysene	NE	NE	NA
Fluorene	NE	NE	NA
Naphthalene	NE	NE	NA
Phenanthrene	NE	NE	NA
Pyrene	NE	NE	NA

Table 7-4
North Industrial Corridor (NIC) Site
Maximum Contaminant Levels (MCLs)*

Contaminants	MCL (µg/L)	MCLG (µg/L)	Secondary MCL (µg/L)
Pesticides/PCBs			
Heptachlor	0.4	0.4	NA
Inorganic Analytes			
Alkalinity, Carbonate (CaCO)	NE	NE	NA
Alkalinity, Total	NE	NE	NA
Alkalinity,Bicarbonate (CaCO3)	NE	NE	NA
Aluminum	NE	NE	50 - 200
Arsenic	10	0	NA
Barium	2,000	2,000	NA
Beryllium	4	4	NA
Cadmium	5	5	NA
Calcium	NE	NE	NA
Chloride	NE	NE	250,000
Chromium	100	100	NA
Cobalt	NE	NE	NA
Copper	1300***	1300	1000
Iron	NE	NE	300
Lead	15***	0	NA
Magnesium	NE	NE	NA
Manganese	NE	NE	50
Nickel	NE	NE	NA
Nitrogen, Ammonia	NE	NE	NA
Nitrogen, Nitrate	10,000	10,000	NA
Potassium	NE	NE	NA
Selenium	50	50	NA
Silver	NE	NE	100
Sodium	NE	NE	NA
Sulfate	NE	NE	250,000
Thallium	2	0.5	NA
Total Dissolved Solids	NE	NE	500,000
Total Organic Carbon	NE	NE	NA
Total Suspended Solids	NE	NE	NA
Vanadium	NE	NE	NA
Zinc	NE	NE	5,000

SVOC = Semi-volatile Organic Compounds
PAH = Polynuclear Aromatic Hydrocarbons
NE = Not established
NA = Not Applicable
* = MCLs listed for all analytes detected in groundwater only.
** = 1994 Proposed rule for disinfectants and disinfection by-products: total THMs combined cannot exceed the 80 ug/L level.
*** = Regulated by a Treatment Technique that requires systems to control the corrosiveness of the water. If more than 10% of tap water samples exceed the action level, water systems must take additional steps.
Note: EPA is currently reevaluating the toxicity of TCE, Upon completion of EPA's evaluation, the soil pathway value for TCE will change accordingly.

Table 7-5
North Industrial Corridor (NIC) Site
Potential Federal Chemical-Specific TBCs

Parameter	Ambient Water Quality Criteria (µg/L)				Oral Reference Dose (mg/kg-day)	Health Advisory Longer-Term Adult and Children (µg/L)
	Human Health		Aquatic Organisms (Freshwater)			
	Water and Fish	Fish Only	Acute LC	Chronic LC		
1,1,1-Trichloroethane	18,400 #	1,030,000 #	18,000 (I)	--	0.035 (E)	100,000/40,000 (D) (I)
1,1-Dichloroethene	0.057 *a,*c	3.2 *a,*c	11,600 #	--	0.009 (D) (I)	4,000/1,000 (D)
1,1,2-Trichloroethane	0.60 *a,*c	42 *a,*c	18,400 (I)	9,400 #a	0.004 (I)	1,000/400 (D) (I)
1,1-Dichloroethane	--	--	--	--	0.10 (H)	--
1,2-Dichlorobenzene	2,700 *a	17,000 *a	1,120 #a	763 #a	0.09 (I)	30,000/9,000 (D)
1,2-Dichloroethane	0.38 *a,*c	99 *a,*c	18,000 #a	20,000 #a	--	2,600/700(D)
1,2-Dichloropropane	--	--	23,000 #a	5,700 #a	--	--
1,4-Dichlorobenzene	400 *	2,600 *	1,120 #a	763 #a	0.10 (for p) 0.009 (for o,m) (D)	40,000/10,000 (D)
2,4-Dimethylphenol	--	-	2,120 #a	--	0.02 (I)	--
2-Methylnaphthalene	--	--	--	--	1.00 (E)	--
Aluminum	--	--	--	--	0.07 (I)	--
Barium	1,000 (I)	--	--	--	--	--
Benzene	1.2 *a,*c	71 *a,*c	5,300 #a	--	--	--
Bromodichloromethane	0.27 *a,*c	22 *a,*c	11,000 (I)	--	0.02 (I)	13,000/4,000 (I)
Calcium	-	-	-	--	--	--
Carbon Tetrachloride	0.25 *a,*c	4.4 *a,*c	35,200 #a	--	0.0007 (D) (I)	300/70 (D) 250/71 (I)
Chloroform	5.7 *a,*c	470 *a,*c	28,900 #a	1,240 #a	0.01 (D) (I)	400/100 (D)
Chloromethane	-	-	-	--	0.004 (D)	1,000/400 (D)
cis-1,2-Dichloroethene	0.033 #b	1.85 #b	11,600 #a	--	0.01 (D) (H)[a]	11,000/3,000 (D)
Cobalt	--	--	--	--	0.06 (E)	--
Ethylbenzene	3,100 *a	29,000 *a	32,000 #a	--	0.1 (D) (I)	3,000/1,000 (D) 3,400/1,000 (I)
Iron	100 #	--	--	1,000 #	--	--
Magnesium	--	--	--	--	--	--
Manganese	50 #	100 #	--	--	0.14 [c]/0.005[d] (D)	--
Methylene Chloride	4.7 *a,*c	1,600 *a,*c	11,000 (I)	--	0.06 (D) (I)	1,750/500 (I)
Naphthalene	--	--	2,300 #a	620 #a	0.004 (D)	1,000/400 (D)
Potassium	--	--	--	--	--	--
Selenium	10 #	10 (I)	20 *	5 *	0.005 (D) (I)	--
Sodium	--	--	--	--	--	--
Tetrachloroethene	0.8 *c	8.85 *	5,280 #a	840 #a	0.01 (D) (I)	5,000/1,000 (D) 5,000/1,400 (I)
Thallium	1.7 *a	6.3 *a	1,400 #a	40 #a	0.00007 (D)	20/7 (D)
Toluene	6,800 *a	200,000 *a	17,500 #a	--	0.2 (D)	7,000/2,000 (D) 10,000/3,000 [b]

Table 7-5
North Industrial Corridor (NIC) Site
Potential Federal Chemical-Specific TBCs

Parameter	Ambient Water Quality Criteria (µg/L)				Oral Reference Dose (mg/kg-day)	Health Advisory Longer-Term Adult and Children (µg/L)
	Human Health		Aquatic Organisms (Freshwater)			
	Water and Fish	Fish Only	Acute LC	Chronic LC		
trans-1,2-Dichloroethene	0.033 #b	1.85 #b	11,600 #	--	0.02 (D) (I)	6,000/2,000 (D)
Trichloroethene	2.7 *c	80.7 *c	45,000 #a	21,900 #	0.006 (E)	--
Vanadium	--	--	--	--	0.007 (H)	--
Vinyl Chloride	2 *c	525 *c	--	--	--	50/10 (D)46[a]
Xylenes	--	--	--	--	2 (D)	100,000/40,000 (D) 27,300[a]
Zinc	--	--	120 *e,*m	110 *e,*m	0.3 (D) (I)	10,000/3,000 (D)

-- No value found.
[a] Under review.
[b] Recommended.
[c] In food (EPA. 1995. Drinking Water Regulations and Health Advisories Qualifiers. Office of Water.).
[d] In water (EPA. 1995. Drinking Water Regulations and Health Advisories Qualifiers. Office of Water.).

Data Sources

* 40 CFR 131 (December 22, 1992 Federal Register, 57(246):60848-60916).
- *a Criteria revised to reflect current agency q1* or RFD, as contained in the Integrated Risk Information System (IRIS). The fish tissue bioconcentration factor (BCF) from the 1980 criteria documents was retained in all cases.
- *c Criteria is the matrix based on carcinogenity (10-6 risk). For a risk level of 10-5, move the decimal point in the matrix value one place to the right.
- *e Freshwater aquatic life criteria for these metals are expressed as a function of total hardness (mg/L), and as a function of the pollutant's water effect ratio, WER, as defined in §131.36(c). The equations are provided in matrix at §131.36(b)(2). Values displayed above in the matrix correspond to a total hardness of 100 mg/L and a water effect ratio of 1.0.
- *m Criteria for these metals are expressed as a function of the water effect ratio, WER, as defined in 40 CFR 131.36(c). CMC = column B1 or C1 value times WER. CCC = column B2 or C2 value time WER.

\# EPA. 1986. Quality Criteria for Water.
- #a Insufficient data to develop criteria. Value presented is the lowest observed effect level.
- #b Human Health Criteria for carcinogens reported for three risk levels. Value presented is the 10-6 risk level.

D EPA. 1995. Drinking Water Regulations and Health Advisories. Office of Water.
I EPA. 1997. Integrated Risk Information System (IRIS) online database. Volume 34 of Tomes Plus.
E EPA-NCEA Regional Support Provisional Value from R.L. Smith (1997) risk-based concentration table. EPA Region III. Philadelphia, Pennsylvania.
H HEAST (Health Effects Assessment Summary Tables). EPA. 1997. July.

Table 7-6
North Industrial Corridor (NIC) Site
EPA Region 9 Preliminary Remediation Goals

Contaminant	Preliminary Remediation Goals (PRGs)				Soil Screening Levels	
	Residential Soil (mg/kg)	Industrial Soil (mg/kg)	Ambient Air (µg/m³)	Tap Water (µg/l)	DAF 20 (mg/kg)	DAF 1 (mg/kg)
Acephate	55.90581	283.51418	0.77284	7.72776		
Acetaldehyde	10.92427	23.24685	0.87321	1.74641		
Acetochlor	1222.06194	17618.38141	73.00000	729.99947		
Acetone	1569.63867	6219.62278	365.00000	608.33333	16.00000	0.80000
Acetone cyanohydrin	48.88248	704.73526	2.92000	29.20000		
Acetonitrile	267.37473	1741.72452	62.05000	79.21277		
Acetophenone	0.49418	1.61442	0.02084	0.04168		
Acifluorfen	4.42164	22.42339	0.06112	0.61120		
Acrolein	0.10303	0.33659	0.02086	0.04171		
Acrylamide	0.10690	0.54210	0.00148	0.01478		
Acrylic acid	29045.21435	100000.00000	1.04390	18249.66694		
Acrylonitrile	0.20927	0.51450	0.02825	0.03886		
Alachlor	6.04200	30.64069	0.08405	0.83517		
Alar	9165.46455	100000.00000	547.50000	5474.97002		
Aldicarb	61.10310	880.91907	3.65000	36.50000		
Aldicarb sulfone	61.10310	880.91907	3.65000	36.50000		
Aldrin	0.02861	0.14509	0.00039	0.00395	0.50000	0.02000
Ally	15275.77425	100000.00000	912.50000	9124.91674		
Allyl alcohol	305.51549	4404.59535	18.25000	182.49997		
Allyl chloride	3039.45713	43064.37153	1.04286	1824.99667		
Aluminum	76141.95085	100000.00000	5.11000	36498.66780		
Aluminum phosphide	31.28571	817.59866		14.60000		
Amdro	18.33093	264.27572	1.09500	10.95000		
Ametryn	549.92787	7928.27163	32.85000	328.49989		
m-Aminophenol	4277.21679	61664.33493	255.50000	2554.99347		
4-Aminopyridine	1.22206	17.61838	0.07300	0.73000		
Amitraz	152.75774	2202.29768	9.12500	91.24999		
Ammonia			104.28571			
Ammonium sulfamate	12220.83279	100000.00000		7299.94671		
Aniline	85.32991	432.73217	1.04286	11.79501		
Antimony and compounds	31.28571	817.59866		14.60000	5.00000	0.30000
Antimony pentoxide	39.10714	1021.99791		18.25000		
Antimony potassium tartrate	70.39285	1839.59323		32.85000		
Antimony tetroxide	31.28571	817.59866		14.60000		
Antimony trioxide	31.27737	815.85911	0.20805	14.60000		
Apollo	794.34026	11451.94792	47.45000	474.49977		
Aramite	19.45523	98.66301	0.27057	2.68926		
Arsenic (noncancer endpoint)	21.64602	439.25482				
Arsenic (cancer endpoint)	0.38962	2.72718	0.00045	0.04482	29.00000	1.00000
Arsine (see arsenic for cancer endpoint)			0.05220			

Table 7-6
North Industrial Corridor (NIC) Site
EPA Region 9 Preliminary Remediation Goals

Contaminant	Preliminary Remediation Goals (PRGs)				Soil Screening Levels	
	Residential Soil (mg/kg)	Industrial Soil (mg/kg)	Ambient Air (µg/m³)	Tap Water (µg/l)	DAF 20 (mg/kg)	DAF 1 (mg/kg)
Assure	549.92787	7928.27163	32.85000	328.49989		
Asulam	3055.15485	44045.95352	182.50000	1824.99667		
Atrazine	2.19090	11.11070	0.03056	0.30284		
Avermectin B1	24.44124	352.36763	1.46000	14.60000		
Azobenzene	4.42164	22.42343	0.06197	0.61120		
Barium and compounds	5374.90584	100000.00000	0.52143	2554.99347	1600.00000	82.00000
Baygon	244.41239	3523.67628	14.60000	145.99998		
Bayleton	1833.09291	26427.57211	109.50000	1094.99880		
Baythroid	1527.57743	22022.97676	91.25000	912.49917		
Benefin	18330.92910	100000.00000	1095.00000	10949.88010		
Benomyl	3055.15485	44045.95352	182.50000	1824.99667		
Bentazon	1833.09291	26427.57211	109.50000	1094.99880		
Benzaldehyde	6110.30970	88091.90704	365.00000	3649.98668		
Benzene	0.65443	1.45493	0.24903	0.35387	0.03000	0.00200
Benzidine	0.00211	0.01072	0.00003	0.00029		
Benzoic acid	100000.00000	100000.00000	14600.00000	145978.68711	400.00000	20.00000
Benzotrichloride	0.03741	0.18974	0.00052	0.00517		
Benzyl alcohol	18330.92910	100000.00000	1095.00000	10949.88010		
Benzyl chloride	0.89011	2.31008	0.03955	0.06592		
Beryllium and compounds	154.37416	2241.58667	0.00080	72.99999	63.00000	3.00000
Bidrin	6.11031	88.09191	0.36500	3.65000		
Biphenthrin (Talstar)	916.54646	13213.78606	54.75000	547.49970		
1,1-Biphenyl	350.00000	350.00000	182.50000	304.16667		
Bis(2-chloroethyl)ether	0.21090	0.61989	0.00582	0.00978	0.00040	0.00002
Bis(2-chloroisopropyl)ether	2.88422	8.07814	0.19211	0.27443		
Bis(chloromethyl)ether	0.00019	0.00044	0.00003	0.00005		
Bis(2-chloro-1-methylethyl)ether	2.88422	8.07814	0.19211	0.27443		
Bis(2-ethylhexyl)phthalate (DEHP)	34.74147	176.18381	0.48026	4.80225		
Bisphenol A	3055.15485	44045.95352	182.50000	1824.99667		
Boron	5496.87216	79129.82199	20.85714	3284.98921		
Boron trifluoride			0.73000			
Bromobenzene	28.33742	92.35975	10.43900	20.29749		
Bromodichloromethane	1.02407	2.35729	0.10845	0.18074	0.60000	0.03000
Bromoform (tribromomethane)	61.56889	312.24545	1.74641	8.51032	0.80000	0.04000
Bromomethane (Methyl bromide)	3.89656	13.13784	5.21429	8.66102	0.20000	0.01000
4-Bromophenyl phenyl ether						
Bromophos	305.51549	4404.59535	18.25000	182.49997		
Bromoxynil	1222.06194	17618.38141	73.00000	729.99947		
Bromoxynil octanoate	1222.06194	17618.38141	73.00000	729.99947		
1,3-Butadiene	0.00355	0.00761	0.00374	0.00623		

Table 7-6
North Industrial Corridor (NIC) Site
EPA Region 9 Preliminary Remediation Goals

Contaminant	Preliminary Remediation Goals (PRGs)				Soil Screening Levels	
	Residential Soil (mg/kg)	Industrial Soil (mg/kg)	Ambient Air (µg/m³)	Tap Water (µg/l)	DAF 20 (mg/kg)	DAF 1 (mg/kg)
1-Butanol	6110.30970	88091.90704	365.00000	3649.98668	17.00000	0.90000
Butylate	3055.15485	44045.95352	182.50000	1824.99667		
n-Butylbenzene	144.64759	240.00000	36.50000	60.83333		
sec-Butylbenzene	111.41229	220.00000	36.50000	60.83333		
tert-Butylbenzene	131.44030	390.00000	36.50000	60.83333		
Butyl benzyl phthalate	12220.61940	100000.00000	730.00000	7299.94671	930.00000	810.00000
Butylphthalyl butylglycolate	61103.09701	100000.00000	3650.00000	36498.66780		
Cacodylic acid	183.30929	2642.75721	10.95000	109.49999		
Cadmium and compounds	37.03328	808.54365	0.00107	18.25000	8.00000	0.40000
"CAL-Modified PRG" (PEA, 1994)	9.00000					
Caprolactam	30551.54850	100000.00000	1825.00000	18249.66694		
Captafol	56.55587	286.81086	0.78182	7.81762		
Captan	138.96586	704.73526	1.92105	19.20901		
Carbaryl	6110.32619	88092.95612	401.50000	3649.98668		
Carbazole	24.31903	123.32867	0.33618	3.36158	0.60000	0.03000
Carbofuran	305.51549	4404.59535	18.25000	182.49997		
Carbon disulfide	355.34037	720.00000	730.00000	1042.85714	32.00000	2.00000
Carbon tetrachloride	0.23950	0.52926	0.12807	0.17130	0.07000	0.00300
Carbosulfan	611.03097	8809.19070	36.50000	364.99987		
Carboxin	6110.30970	88091.90704	365.00000	3649.98668		
Chloramben	916.54646	13213.78606	54.75000	547.49970		
Chloranil	1.20690	6.12054	0.01681	0.16683		
Chlordane	1.62388	10.69944	0.01921	0.19209	10.00000	0.50000
Chlorimuron-ethyl	1222.06194	17618.38141	73.00000	729.99947		
Chlorine			0.20842			
Chlorine dioxide			0.20857			
Chloroacetaldehyde						
Chloroacetic acid	122.20619	1761.83814	7.30000	72.99999		
2-Chloroacetophenone	0.03260	0.11121	0.03129	0.05217		
4-Chloroaniline	244.41239	3523.67628	14.60000	145.99998	0.70000	0.03000
Chlorobenzene	152.06510	542.92675	62.05000	106.06838	1.00000	0.07000
Chlorobenzilate	1.80141	9.13546	0.02490	0.24901		
p-Chlorobenzoic acid	12220.61940	100000.00000	730.00000	7299.94671		
4-Chlorobenzotrifluoride	1222.06194	17618.38141	73.00000	729.99947		
2-Chloro-1,3-butadiene	3.62472	11.86481	7.30000	14.31373		
1-Chlorobutane	480.00000	480.00000	1460.00000	2433.33333		
1-Chloro-1,1-difluoroethane (HCFC-142b)	340.00000	340.00000	52158.50000	86930.83333		
Chlorodifluoromethane	340.00000	340.00000	51100.00000	85166.66667		
Chloroethane	3.02582	6.50687	2.31851	4.63702		
2-Chloroethyl vinyl ether						

Table 7-6
North Industrial Corridor (NIC) Site
EPA Region 9 Preliminary Remediation Goals

Contaminant	Preliminary Remediation Goals (PRGs)				Soil Screening Levels	
	Residential Soil (mg/kg)	Industrial Soil (mg/kg)	Ambient Air ($\mu g/m^3$)	Tap Water ($\mu g/l$)	DAF 20 (mg/kg)	DAF 1 (mg/kg)
Chloroform	0.24440	0.52101	0.08352	0.16455	0.60000	0.03000
Chloromethane	1.22712	2.66183	1.06725	1.51091		
4-Chloro-2-methylaniline	0.83859	4.25271	0.01159	0.11592		
4-Chloro-2-methylaniline hydrochloride	1.05735	5.36212	0.01462	0.14616		
beta-Chloronaphthalene	3852.59986	27284.27968	292.00000	486.66667		
o-Chloronitrobenzene	8.11227	22.75339	0.26895	0.44824		
p-Chloronitrobenzene	11.26703	31.60193	0.37354	0.62256		
2-Chlorophenol	63.39846	241.33508	18.25000	30.41667	4.00000	0.20000
2-Chloropropane	170.16678	594.93196	104.28571	174.23868		
Chlorothalonil	44.21641	224.23395	0.61124	6.11196		
o-Chlorotoluene	158.41147	567.78852	73.00000	121.66667		
Chlorpropham	12220.61940	100000.00000	730.00000	7299.94671		
Chlorpyrifos	183.30929	2642.75721	10.95000	109.49999		
Chlorpyrifos-methyl	611.03097	8809.19070	36.50000	364.99987		
Chlorsulfuron	3055.15485	44045.95352	182.50000	1824.99667		
Chlorthiophos	48.88248	704.73526	2.92000	29.20000		
Total Chromium (1:6 ratio Cr VI:Cr III)	210.67535	448.31693	0.00016		38.00000	2.00000
Chromium III	100000.00000	100000.00000	0.00000	54747.00260		
Chromium VI	30.09649	64.04533	0.00002	109.49999	38.00000	2.00000
"CAL-Modified PRG" (PEA, 1994)	0.20000			0.16000		
Cobalt	4692.81310	100000.00000		2189.99520		
Coke Oven Emissions			0.00310			
Copper and compounds	2905.08516	75908.47406		1355.71245		
Crotonaldehyde	0.00531	0.01147	0.00354	0.00590		
Cumene (isopropylbenzene)	157.02737	522.12811	401.50000	658.19672		
Cyanazine	0.57902	2.93640	0.00800	0.08004		
Cyanide and compounds	10.77881	35.42437	3.12805	6.20294		
Cyanogen	127.49810	431.89446	146.00000	243.33333		
Cyanogen bromide	286.87067	971.76200	328.50000	547.50000		
Cyanogen chloride	159.37261	539.86801	182.50000	304.16667		
Cyclohexane	140.00000	140.00000	20805.00000	34675.00000		
Cyclohexanone	100000.00000	100000.00000	18250.00000	182466.69983		
Cyclohexylamine	12220.61940	100000.00000	730.00000	7299.94671		
Cyhalothrin/Karate	305.51549	4404.59535	18.25000	182.49997		
Cypermethrin	611.03097	8809.19070	36.50000	364.99987		
Cyromazine	458.27323	6606.89303	27.37500	273.74993		
Dacthal	611.03097	8809.19070	36.50000	364.99987		
Dalapon	1833.09291	26427.57211	109.50000	1094.99880		
Danitol	1527.57743	22022.97676	91.25000	912.49917		
DDD	2.43660	17.07842	0.02802	0.28013	16.00000	0.80000

Table 7-6
North Industrial Corridor (NIC) Site
EPA Region 9 Preliminary Remediation Goals

Contaminant	Preliminary Remediation Goals (PRGs)				Soil Screening Levels	
	Residential Soil (mg/kg)	Industrial Soil (mg/kg)	Ambient Air ($\mu g/m^3$)	Tap Water ($\mu g/l$)	DAF 20 (mg/kg)	DAF 1 (mg/kg)
DDE	1.71996	12.05536	0.01978	0.19774	54.00000	3.00000
DDT	1.71996	12.05536	0.01980	0.19774	32.00000	2.00000
Decabromodiphenyl ether	611.03097	8809.19070	36.50000	364.99987		
Demeton	2.44412	35.23676	0.14600	1.46000		
Diallate	7.97345	40.43563	0.11022	1.10216		
Diazinon	54.99279	792.82716	3.28500	32.85000		
Dibenzofuran	290.52623	5062.80501	14.60000	24.33333		
1,4-Dibromobenzene	611.03097	8809.19070	36.50000	364.99987		
Dibromochloromethane	1.10886	2.65377	0.08004	0.13340	0.40000	0.02000
1,2-Dibromo-3-chloropropane	0.45445	3.97975	0.20857	0.04761		
"CAL-Modified PRG" (PEA, 1994)	0.06000		0.00096	0.00470		
1,2-Dibromoethane	0.00689	0.04833	0.00873	0.00076		
Dibutyl phthalate	6110.30970	88091.90704	365.00000	3649.98668	2300.00000	270.00000
Dicamba		26427.57211	109.50000	1094.99880		
1,2-Dichlorobenzene	370.00000	370.00000	208.57143	370.14085	17.00000	0.90000
1,3-Dichlorobenzene	13.23669	51.75544	3.28500	5.47500		
1,4-Dichlorobenzene	3.44418	8.12869	0.30562	0.50176	2.00000	0.10000
3,3-Dichlorobenzidine	1.08085	5.48127	0.01494	0.14940	0.00700	0.00030
4,4'-Dichlorobenzophenone	1833.09291	26427.57211	109.50000	1094.99880		
1,4-Dichloro-2-butene	0.00791	0.01844	0.00072	0.00120		
Dichlorodifluoromethane	93.87910	308.29057	208.57143	394.59459		
1,1-Dichloroethane	589.41497	2061.34261	521.42857	811.11111	23.00000	1.00000
"CAL-Modified PRG"	3.26698	7.10965	1.17959	1.96596		
1,2-Dichloroethane (EDC)	0.34594	0.76481	0.07389	0.12314	0.02000	0.00100
1,1-Dichloroethylene	0.05365	0.11870	0.03842	0.04558	0.06000	0.00300
1,2-Dichloroethylene (cis)	42.94190	147.35584	36.50000	60.83333	0.40000	0.02000
1,2-Dichloroethylene (trans)	63.23791	214.15232	73.00000	121.66667	0.70000	0.03000
2,4-Dichlorophenol	183.30929	2642.75721	10.95000	109.49999	1.00000	0.05000
4-(2,4-Dichlorophenoxy)butyric Acid (2,4-DB)	488.82478	7047.35256	29.20000	291.99991		
2,4-Dichlorophenoxyacetic Acid (2,4-D)	686.06736	12310.99883	36.50000	364.99987		
1,2-Dichloropropane	0.35056	0.76776	0.09888	0.16479	0.03000	0.00100
1,3-Dichloropropene	0.69561	1.61383	0.48026	0.39549	0.00400	0.00020
2,3-Dichloropropanol	183.30929	2642.75721	10.95000	109.49999		
Dichlorvos	1.67717	8.50543	0.02319	0.23183		
Dicofol	1.10541	5.60585	0.01528	0.15280		
Dicyclopentadiene	0.54468	1.77964	0.20857	0.41698		
Dieldrin	0.03040	0.15416	0.00042	0.00420	0.00400	0.00020
Diethylene glycol, monobutyl ether	348.28765	5021.23870	20.80500	208.04996		
Diethylene glycol, monoethyl ether	100000.00000	100000.00000	7300.00000	72994.67139		
Diethylformamide	672.13407	9690.10977	40.15000	401.49984		

Table 7-6
North Industrial Corridor (NIC) Site
EPA Region 9 Preliminary Remediation Goals

Contaminant	Preliminary Remediation Goals (PRGs)				Soil Screening Levels	
	Residential Soil (mg/kg)	Industrial Soil (mg/kg)	Ambient Air ($\mu g/m^3$)	Tap Water ($\mu g/l$)	DAF 20 (mg/kg)	DAF 1 (mg/kg)
Di(2-ethylhexyl)adipate	405.31709	2055.47783	5.60307	56.02628		
Diethyl phthalate	48882.47761	100000.00000	2920.00000	29199.14738		
Diethylstilbestrol	0.00010	0.00052	0.00000	0.00001		
Difenzoquat (Avenge)	4888.24776	70473.52564	292.00000	2919.99147		
Diflubenzuron	1222.06194	17618.38141	73.00000	729.99947		
1,1-Difluoroethane			41610.00000	69350.00000		
Diisononyl phthalate	1222.06194	17618.38141	73.00000	729.99947		
Diisopropyl methylphosphonate	4888.24776	70473.52564	292.00000	2919.99147		
Dimethipin	1222.06194	17618.38141	73.00000	729.99947		
Dimethoate	12.22062	176.18381	0.73000	7.30000		
3,3'-Dimethoxybenzidine	34.74147	176.18381	0.48026	4.80225		
Dimethylamine	0.06707	0.25233	0.02086	0.03475		
N-N-Dimethylaniline	122.20619	1761.83814	7.30000	72.99999		
2,4-Dimethylaniline	0.64851	3.28876	0.00896	0.08964		
2,4-Dimethylaniline hydrochloride	0.83859	4.25271	0.01159	0.11592		
3,3'-Dimethylbenzidine	0.05287	0.26811	0.00073	0.00731		
1,1-Dimethylhydrazine	0.18707	0.94864	0.00192	0.02586		
1,2-Dimethylhydrazine	0.01315	0.06666	0.00018	0.00182		
N,N-Dimethylformamide	6108.37575	87968.98846	31.28571	3649.98668		
Dimethylphenethylamine	61.10310	880.91907	3.65000	36.50000		
2,4-Dimethylphenol	1222.06194	17618.38141	73.00000	729.99947	9.00000	0.40000
2,6-Dimethylphenol	36.66186	528.55144	2.19000	21.90000		
3,4-Dimethylphenol	61.10310	880.91907	3.65000	36.50000		
Dimethyl phthalate	100000.00000	100000.00000	36500.00000	364866.82361		
Dimethyl terephthalate	6110.30970	88091.90704	365.00000	3649.98668		
4,6-Dinitro-o-cyclohexyl phenol	122.20619	1761.83814	7.30000	72.99999		
1,2-Dinitrobenzene	24.44124	352.36763	1.46000	14.60000		
1,3-Dinitrobenzene	6.11031	88.09191	0.36500	3.65000		
1,4-Dinitrobenzene	24.44124	352.36763	1.46000	14.60000		
2,4-Dinitrophenol	122.20619	1761.83814	7.30000	72.99999	0.30000	0.01000
Dinitrotoluene mixture	0.71527	3.62731	0.00989	0.09887	0.00080	0.00004
2,4-Dinitrotoluene (see Dinitrotoluene mixture)	122.20619	1761.83814	7.30000	72.99999	0.00080	0.00004
2,6-Dinitrotoluene (see Dinitrotoluene mixture)	61.10310	880.91907	3.65000	36.50000	0.00070	0.00003
Dinoseb	61.10310	880.91907	3.65000	36.50000		
di-n-Octyl phthalate	1222.06194	10000.00000	73.00000	729.99947	10000.00000	10000.00000
1,4-Dioxane	44.21641	224.23395	0.61124	6.11196		
Dioxin (2,3,7,8-TCDD)	0.00000	0.00003	0.00000	0.00000		
Diphenamid	1833.09291	26427.57211	109.50000	1094.99880		
Diphenylamine	1527.57743	22022.97676	91.25000	912.49917		
N,N-Diphenyl-1,4 benzenediamine (DPPD)	18.33093	264.27572	1.09500	10.95000		

Table 7-6
North Industrial Corridor (NIC) Site
EPA Region 9 Preliminary Remediation Goals

Contaminant	Preliminary Remediation Goals (PRGs)				Soil Screening Levels	
	Residential Soil (mg/kg)	Industrial Soil (mg/kg)	Ambient Air (µg/m³)	Tap Water (µg/l)	DAF 20 (mg/kg)	DAF 1 (mg/kg)
1,2-Diphenylhydrazine	0.60798	3.08323	0.00873	0.08404		
Diphenyl sulfone	549.92787	7928.27163	32.85000	328.49989		
Diquat	134.42681	1938.02195	8.03000	80.29999		
Direct black 38	0.05656	0.28681	0.00078	0.00782		
Direct blue 6	0.06005	0.30452	0.00083	0.00830		
Direct brown 95	0.05230	0.26522	0.00072	0.00723		
Disulfoton	2.44412	35.23676	0.14600	1.46000		
1,4-Dithiane	611.03097	8809.19070	36.50000	364.99987		
Diuron	122.20619	1761.83814	7.30000	72.99999		
Dodine	244.41239	3523.67628	14.60000	145.99998		
Dysprosium	15642.36776	100000.00000		7299.94671		
Endosulfan	366.61858	5285.51442	21.90000	218.99995	18.00000	0.90000
Endothall	1222.06194	17618.38141	73.00000	729.99947		
Endrin	18.33093	264.27572	1.09500	10.95000	1.00000	0.05000
Epichlorohydrin	7.55894	25.78266	1.04286	2.02778		
1,2-Epoxybutane	348.28768	5021.24035	20.85714	208.04996		
EPTC (S-Ethyl dipropylthiocarbamate)	1527.57743	22022.97676	91.25000	912.49917		
Ethephon (2-chloroethyl phosphonic acid)	305.51549	4404.59535	18.25000	182.49997		
Ethion	30.55155	440.45954	1.82500	18.25000		
2-Ethoxyethanol	24436.88681	100000.00000	208.57143	14599.78684		
2-Ethoxyethanol acetate	18330.92910	100000.00000	1095.00000	10949.88010		
Ethyl acetate	18709.83619	37000.00000	3285.00000	5475.00000		
Ethyl acrylate	0.21094	0.45435	0.14008	0.23346		
Ethylbenzene	230.00000	230.00000	1058.50000	1339.87342	13.00000	0.70000
Ethyl chloride	3.02582	6.50687	2.31851	4.63702		
Ethylene cyanohydrin	18330.92910	100000.00000	1095.00000	10949.88010		
Ethylene diamine	1222.06194	17618.38141	73.00000	729.99947		
Ethylene glycol	100000.00000	100000.00000	7300.00000	72994.67139		
Ethylene glycol, monobutyl ether	30552.33281	100000.00000	13505.00000	18249.66694		
Ethylene oxide	0.14015	0.35936	0.01921	0.02427		
Ethylene thiourea (ETU)	4.42164	22.42339	0.06112	0.61120		
Ethyl ether	1800.00000	1800.00000	730.00000	1216.66667		
Ethyl methacrylate	140.00000	140.00000	328.50000	547.50000		
Ethyl p-nitrophenyl phenylphosphorothioate	0.61103	8.80919	0.03650	0.36500		
Ethylphthalyl ethyl glycolate	100000.00000	100000.00000	10950.00000	109488.01106		
Express	488.82478	7047.35256	29.20000	291.99991		
Fenamiphos	15.27577	220.22977	0.91250	9.12500		
Fluometuron	794.34026	11451.94792	47.45000	474.49977		
Flouride	3666.28120	52859.27471		2189.99520		
Fluoridone	4888.24776	70473.52564	292.00000	2919.99147		

Table 7-6
North Industrial Corridor (NIC) Site
EPA Region 9 Preliminary Remediation Goals

Contaminant	Preliminary Remediation Goals (PRGs)				Soil Screening Levels	
	Residential Soil (mg/kg)	Industrial Soil (mg/kg)	Ambient Air (µg/m³)	Tap Water (µg/l)	DAF 20 (mg/kg)	DAF 1 (mg/kg)
Flurprimidol	1222.06194	17618.38141	73.00000	729.99947		
Flutolanil	3666.28139	52855.14423	219.00000	2189.99520		
Fluvalinate	611.03097	8809.19070	36.50000	364.99987		
Folpet	138.96586	704.73526	1.92105	19.20901		
Fomesafen	2.55990	12.98197	0.03539	0.35385		
Fonofos	122.20619	1761.83814	7.30000	72.99999		
Formaldehyde	9165.65260	100000.00000	0.14777	5474.97002		
Formic Acid	100000.00000	100000.00000	7300.00000	72994.67139		
Fosetyl-al	100000.00000	100000.00000	10950.00000	109488.01106		
Freon 113	5600.00000	5600.00000	31280.50000	59179.85748		
Furan	2.54128	8.54443	3.65000	6.08333		
Furazolidone	0.12799	0.64910	0.00177	0.01769		
Furfural	183.31359	2643.08278	52.14286	109.49999		
Furium	0.00973	0.04933	0.00013	0.00134		
Furmecyclox	16.21268	82.21911	0.22412	2.24105		
Glufosinate-ammonium	24.44124	352.36763	1.46000	14.60000		
Glycidaldehyde	24.44095	352.34917	1.04286	14.60000		
Glyphosate	6110.30970	88091.90704	365.00000	3649.98668		
Haloxyfop-methyl	3.05515	44.04595	0.18250	1.82500		
Harmony	794.34026	11451.94792	47.45000	474.49977		
Heptachlor	0.10808	0.54813	0.00148	0.01494	23.00000	1.00000
Heptachlor epoxide	0.05345	0.27105	0.00074	0.00739	0.70000	0.03000
Hexabromobenzene	122.20619	1761.83814	7.30000	72.99999		
Hexachlorobenzene	0.30399	1.54161	0.00418	0.04202	2.00000	0.10000
Hexachlorobutadiene	6.23565	31.62274	0.08620	0.86194	2.00000	0.10000
HCH (alpha)	0.09022	0.59441	0.00107	0.01067	0.00050	0.00003
HCH (beta)	0.31575	2.08045	0.00374	0.03735	0.00300	0.00010
HCH (gamma) Lindane	0.43720	2.88062	0.00517	0.05172	0.00900	0.00050
HCH-technical	0.31575	2.08045	0.00377	0.03735	0.00300	0.00010
Hexachlorocyclopentadiene	423.33635	5896.84321	0.07300	255.49993	400.00000	20.00000
Hexachlorodibenzo-p-dioxin mixture (HxCDD)	0.00008	0.00040	0.00000	0.00001		
Hexachloroethane	34.74147	176.18381	0.48026	4.80225	0.50000	0.02000
Hexachlorophene	18.33093	264.27572	1.09500	10.95000		
Hexahydro-1,3,5-trinitro-1,3,5-triazine	4.42164	22.42339	0.06112	0.61120		
1,6-Hexamethylene diisocyanate	0.17475	2.51943	0.01044	0.10439		
n-Hexane	110.00000	110.00000	208.57143	350.40000		
Hexazinone	2016.40220	29070.32932	120.45000	1204.49855		
HMX	3055.15485	44045.95352	182.50000	1824.99667		
Hydrazine, hydrazine sulfate	0.16208	0.82168	0.00039	0.02241		
Hydrazine, monomethyl	0.16209	0.82169	0.00040	0.02241		

Table 7-6
North Industrial Corridor (NIC) Site
EPA Region 9 Preliminary Remediation Goals

Contaminant	Preliminary Remediation Goals (PRGs)				Soil Screening Levels	
	Residential Soil (mg/kg)	Industrial Soil (mg/kg)	Ambient Air (µg/m^3)	Tap Water (µg/l)	DAF 20 (mg/kg)	DAF 1 (mg/kg)
Hydrazine, dimethyl	0.16209	0.82169	0.00040	0.02241		
Hydrogen chloride			20.84150			
Hydrogen sulfide			1.04390	109.49999		
p-Hydroquinone	2444.12388	35236.76282	146.00000	1459.99787		
Imazalil	794.34026	11451.94792	47.45000	474.49977		
Imazaquin	15275.77425	100000.00000	912.50000	9124.91674		
Iprodione	2444.12388	35236.76282	146.00000	1459.99787		
Iron	23463.18462	100000.00000		10949.88010		
Isobutanol	12513.92067	40000.00000	1095.00000	1825.00000		
Isophorone	511.97949	2596.39305	7.07756	70.77003	0.50000	0.03000
Isopropalin	916.54646	13213.78606	54.75000	547.49970		
Isopropyl methyl phosphonic acid	6110.32619	88092.95612	401.50000	3649.98668		
Isoxaben	3055.15485	44045.95352	182.50000	1824.99667		
Kepone	0.02702	0.13703	0.00037	0.00374		
Lactofen	122.20619	1761.83814	7.30000	72.99999		
Lead	400.00000	750.00000				
Lead (tetraethyl)	0.00611	0.08810		0.00365		
Linuron	122.20619	1761.83814	7.30000	72.99999		
Lithium	1564.28082	40876.65792		729.99947		
Londax	12220.93795	100000.00000	730.00000	7299.94671		
Malathion	1222.06194	17618.38141	73.00000	729.99947		
Maleic anhydride	6110.30970	88091.90704	365.00000	3649.98668		
Maleic hydrazide	1667.86209	2400.00000	1825.00000	3041.66667		
Malononitrile	1.22206	17.61838	0.07300	0.73000		
Mancozeb	1833.09291	26427.57211	109.50000	1094.99880		
Maneb	8.10634	41.10956	0.11206	1.12053		
Manganese and compounds	1762.35319	32250.16400	0.05110	875.99923		
Mephosfolan	5.49928	79.28272	0.32850	3.28500		
Mepiquat	1833.09291	26427.57211	109.50000	1094.99880		
2-Mercaptobenzothiazole	16.77174	85.05426	0.23185	2.31833		
Mercury and compounds	23.46428	613.19925		10.95000		
Mercury (elemental)			0.31286			
Mercury (methyl)	6.11049	88.10344		3.65000		
Merphos	1.83309	26.42757	0.10950	1.09500		
Merphos oxide	1.83309	26.42757	0.10950	1.09500		
Metalaxyl	3666.28139	52855.14423	219.00000	2189.99520		
Methacrylonitrile	2.06183	8.75469	0.73000	1.04286		
Methamidophos	3.05515	44.04595	0.18250	1.82500		
Methanol	30551.54850	100000.00000	1825.00000	18249.66694		
Methidathion	61.10310	880.91907	3.65000	36.50000		

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North Industrial Corridor (NIC) Site
EPA Region 9 Preliminary Remediation Goals

Contaminant	Preliminary Remediation Goals (PRGs)				Soil Screening Levels	
	Residential Soil (mg/kg)	Industrial Soil (mg/kg)	Ambient Air ($\mu g/m^3$)	Tap Water ($\mu g/l$)	DAF 20 (mg/kg)	DAF 1 (mg/kg)
Methomyl	44.25532	147.48819	91.25000	152.08333		
Methoxychlor	305.51549	4404.59535	18.25000	182.49997	160.00000	8.00000
2-Methoxyethanol	61.10459	881.01428	20.85714	36.50000		
2-Methoxyethanol acetate	122.20619	1761.83814	7.30000	72.99999		
2-Methoxy-5-nitroaniline	10.57349	53.62116	0.14617	1.46156		
Methyl acetate	22086.74401	95821.74681	3650.00000	6083.33333		
Methyl acrylate	69.67175	233.66523	109.50000	182.50000		
2-Methylaniline (o-toluidine)	2.02659	10.27739	0.02802	0.28013		
2-Methylaniline hydrochloride	2.70211	13.70319	0.03735	0.37351		
Methyl chlorocarbonate	61103.09701	100000.00000	3650.00000	36498.66780		
2-Methyl-4-chlorophenoxyacetic acid	30.55155	440.45954	1.82500	18.25000		
4-(2-Methyl-4-chlorophenoxy) butyric acid	611.03097	8809.19070	36.50000	364.99987		
2-(2-Methyl-4-chlorophenoxy) propionic acid	61.10310	880.91907	3.65000	36.50000		
2-(2-Methyl-1,4-chlorophenoxy) propionic acid	61.10310	880.91907	3.65000	36.50000		
Methylcyclohexane	2591.05517	8759.29822	3128.57143	5217.17452		
4,4'-Methylenebisbenzeneamine	1.94552	9.86629	0.02689	0.26893		
4,4'-Methylene bis(2-chloroaniline)	3.74139	18.97364	0.05172	0.51717		
4,4'-Methylene bis(N,N'-dimethyl)aniline	10.57349	53.62116	0.14617	1.46156		
Methylene bromide	66.90805	236.24990	36.50000	60.83333		
Methylene chloride	8.88129	20.52615	4.08735	4.27563	0.02000	0.00100
4,4'-Methylene diphenyl diisocyanate	10.38753	149.75624	0.62050	6.20500		
Methyl ethyl ketone	7325.37739	27714.46648	1042.85714	1904.34783		
Methyl hydrazine	0.44216	2.24234	0.00611	0.06112		
Methyl isobutyl ketone	786.53167	2886.85293	83.42857	157.83784		
Methyl Mercaptan	34.82877	502.12387	2.08050	20.80500		
Methyl methacrylate	2187.37503	2700.00000	730.00000	1419.44444		
2-Methyl-5-nitroaniline	14.73880	74.74465	0.20375	2.03732		
Methyl parathion	15.27577	220.22977	0.91250	9.12500		
2-Methylphenol	3055.15485	44045.95352	182.50000	1824.99667	15.00000	0.80000
3-Methylphenol	3055.15485	44045.95352	182.50000	1824.99667		
4-Methylphenol	305.51549	4404.59535	18.25000	182.49997		
Methyl phosphonic acid	1222.06194	17618.38141	73.00000	729.99947		
Methyl styrene (mixture)	130.55403	563.69165	41.71429	60.41379		
Methyl styrene (alpha)	680.00000	680.00000	255.50000	425.83333		
Methyl tertbutyl ether (MTBE)			3128.05000	20.00000		
"CAL-Modified PRG"	16.70075	36.85750	3.73538	6.22555		
Metolaclor (Dual)	9165.46455	100000.00000	547.50000	5474.97002		
Metribuzin	1527.57743	22022.97676	91.25000	912.49917		
Mirex	0.27021	1.37032	0.00374	0.03735		
Molinate	122.20619	1761.83814	7.30000	72.99999		

Table 7-6
North Industrial Corridor (NIC) Site
EPA Region 9 Preliminary Remediation Goals

Contaminant	Preliminary Remediation Goals (PRGs)				Soil Screening Levels	
	Residential Soil (mg/kg)	Industrial Soil (mg/kg)	Ambient Air (µg/m³)	Tap Water (µg/l)	DAF 20 (mg/kg)	DAF 1 (mg/kg)
Molybdenum	391.07112	10219.79111		182.49997		
Monochloramine	6110.30970	88091.90704	365.00000	3649.98668		
Naled	122.20619	1761.83814	7.30000	72.99999		
Napropamide	6110.30970	88091.90704	365.00000	3649.98668		
Nickel (soluble salts)	1564.28082	40876.65792		729.99947	130.00000	7.00000
"CAL-Modified PRG" (PEA, 1994)	150.00000					
Nickel refinery dust			0.00800			
Nickel subsulfide		11075.82994	0.00396			
Nitrapyrin	91.65465	1321.37861	5.47500	54.75000		
Nitrate				10000.00000		
Nitric Oxide	7821.30622	100000.00000		3649.98668		
Nitrite				1000.00000		
2-Nitroaniline	3.49161	50.33823	0.20857	2.08571		
Nitrobenzene	19.64120	114.46346	2.08571	3.39535	0.10000	0.00700
Nitrofurantoin	4277.21679	61664.33493	255.50000	2554.99347		
Nitrofurazone	0.32416	1.64325	0.00072	0.04482		
Nitroglycerin	34.74147	176.18381	0.48026	4.80225		
Nitroguanidine	6110.30970	88091.90704	365.00000	3649.98668		
4-Nitrophenol	488.82478	7047.35256	29.20000	291.99991		
2-Nitropropane			0.00072	0.00119		
N-Nitrosodi-n-butylamine	0.02435	0.06142	0.00120	0.00201		
N-Nitrosodiethanolamine	0.17371	0.88092	0.00240	0.02401		
N-Nitrosodiethylamine	0.00324	0.01644	0.00004	0.00045		
N-Nitrosodimethylamine	0.00954	0.04836	0.00014	0.00132		
N-Nitrosodiphenylamine	99.26133	503.38233	1.37218	13.72072	1.00000	0.06000
N-Nitroso di-n-propylamine	0.06948	0.35237	0.00096	0.00960	0.00005	0.00000
N-Nitroso-N-methylethylamine	0.02211	0.11212	0.00031	0.00306		
N-Nitrosopyrrolidine	0.23161	1.17456	0.00315	0.03202		
m-Nitrotoluene	366.74527	1000.00000	36.50000	60.83333		
o-Nitrotoluene	366.74527	1000.00000	36.50000	60.83333		
p-Nitrotoluene	366.74527	1000.00000	36.50000	60.83333		
Norflurazon	2444.12388	35236.76282	146.00000	1459.99787		
NuStar	42.77217	616.64335	2.55500	25.55000		
Octabromodiphenyl ether	183.30929	2642.75721	10.95000	109.49999		
Octamethylpyrophosphoramide	122.20619	1761.83814	7.30000	72.99999		
Oryzalin	3055.15485	44045.95352	182.50000	1824.99667		
Oxadiazon	305.51549	4404.59535	18.25000	182.49997		
Oxamyl	1527.57743	22022.97676	91.25000	912.49917		
Oxyfluorfen	183.30929	2642.75721	10.95000	109.49999		
Paclobutrazol	794.34026	11451.94792	47.45000	474.49977		

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North Industrial Corridor (NIC) Site
EPA Region 9 Preliminary Remediation Goals

Contaminant	Preliminary Remediation Goals (PRGs)				Soil Screening Levels	
	Residential Soil (mg/kg)	Industrial Soil (mg/kg)	Ambient Air (µg/m³)	Tap Water (µg/l)	DAF 20 (mg/kg)	DAF 1 (mg/kg)
Paraquat	274.96394	3964.13582	16.42500	164.24997		
Parathion	366.61858	5285.51442	21.90000	218.99995		
Pebulate	3055.15485	44045.95352	182.50000	1824.99667		
Pendimethalin	2444.12388	35236.76282	146.00000	1459.99787		
Pentabromo-6-chloro cyclohexane	21.14698	107.24232	0.29233	2.92311		
Pentabromodiphenyl ether	122.20619	1761.83814	7.30000	72.99999		
Pentachlorobenzene	48.88248	704.73526	2.92000	29.20000		
Pentachloronitrobenzene	1.87069	9.48682	0.02586	0.25858		
Pentachlorophenol	2.97899	11.09069	0.05603	0.56026	0.03000	0.00100
Perchlorate	39.10714	1021.99791		18.25000		
Permethrin	3055.15485	44045.95352	182.50000	1824.99667		
Phenmedipham	15275.77425	100000.00000	912.50000	9124.91674		
Phenol	36661.85820	100000.00000	2190.00000	21899.52040	100.00000	5.00000
Phenothiazine	122.20619	1761.83814	7.30000	72.99999		
m-Phenylenediamine	366.61858	5285.51442	21.90000	218.99995		
p-Phenylenediamine	11609.58843	100000.00000	693.50000	6934.95191		
Phenylmercuric acetate	4.88825	70.47353	0.29200	2.92000		
2-Phenylphenol	250.71189	1271.43302	3.53878	34.65543		
Phorate	12.22062	176.18381	0.73000	7.30000		
Phosmet	1222.06194	17618.38141	73.00000	729.99947		
Phosphine	18.32957	264.18920	0.31286	10.95000		
Phosphoric acid			10.43900			
Phosphorus (white)	1.56429	40.88000		0.73000		
p-Phthalic acid	61103.09701	100000.00000	3650.00000	36498.66780		
Phthalic anhydride	100000.00000	100000.00000	124.10000	72994.67139		
Picloram	4277.21679	61664.33493	255.50000	2554.99347		
Pirimiphos-methyl	611.03097	8809.19070	36.50000	364.99987		
Polybrominated biphenyls	0.05465	0.27714	0.00076	0.00755		
Polychlorinated biphenyls (PCBs)	0.22186	1.00467	0.00336	0.03362		
Aroclor 1016	3.93308	28.70480	0.09605	0.96045		
Aroclor 1221	0.22186	1.00467	0.00336	0.03362		
Aroclor 1232	0.22186	1.00467	0.00336	0.03362		
Aroclor 1242	0.22186	1.00467	0.00336	0.03362		
Aroclor 1248	0.22186	1.00467	0.00336	0.03362		
Aroclor 1254	0.22186	1.00467	0.00336	0.03362		
Aroclor 1260	0.22186	1.00467	0.00336	0.03362		
Polynuclear aromatic hydrocarbons (PAHs)						
Acenaphthene	3681.70575	38358.30113	219.00000	365.00000	570.00000	29.00000
Anthracene	21896.12062	100000.00000	1095.00000	1825.00000	12000.00000	590.00000
Benz[a]anthracene	0.62148	2.88646	0.02169	0.09210	2.00000	0.08000

Table 7-6
North Industrial Corridor (NIC) Site
EPA Region 9 Preliminary Remediation Goals

Contaminant	Preliminary Remediation Goals (PRGs)				Soil Screening Levels	
	Residential Soil (mg/kg)	Industrial Soil (mg/kg)	Ambient Air (µg/m³)	Tap Water (µg/l)	DAF 20 (mg/kg)	DAF 1 (mg/kg)
Benzo[b]fluoranthene	0.62148	2.88646	0.02169	0.09210	5.00000	0.20000
Benzo[k]fluoranthene	6.21475	28.86461	0.21689	0.92098	49.00000	2.00000
"CAL-Modified PRG" (PEA, 1994)	0.61000					
Benzo[a]pyrene	0.06215	0.28865	0.00217	0.00921	8.00000	0.40000
"CAL-Modified PRG" (PEA, 1994)				0.00150		
Chrysene	62.14751	288.64608	2.16893	9.20980	160.00000	8.00000
"CAL-Modified PRG" (PEA, 1994)	6.10000					
Dibenz[ah]anthracene	0.06215	0.28865	0.00217	0.00921	2.00000	0.08000
Fluoranthene	2293.61018	30099.72428	146.00000	1459.99787	4300.00000	210.00000
Fluorene	2643.61367	33133.18214	146.00000	243.33333	560.00000	28.00000
Indeno[1,2,3-cd]pyrene	0.62148	2.88646	0.02169	0.09210	14.00000	0.70000
Naphthalene	55.91606	188.55663	3.12805	6.20294	84.00000	4.00000
Pyrene	2308.67621	54224.14117	109.50000	182.50000	4200.00000	210.00000
Prochloraz	3.24254	16.44382	0.04482	0.44821		
Profluralin	366.61858	5285.51442	21.90000	218.99995		
Prometon	916.54646	13213.78606	54.75000	547.49970		
Prometryn	244.41239	3523.67628	14.60000	145.99998		
Pronamide	4582.73228	66068.93028	273.75000	2737.49251		
Propachlor	794.34026	11451.94792	47.45000	474.49977		
Propanil	305.51549	4404.59535	18.25000	182.49997		
Propargite	1222.06194	17618.38141	73.00000	729.99947		
Propargyl alcohol	122.20619	1761.83814	7.30000	72.99999		
Propazine	1222.06194	17618.38141	73.00000	729.99947		
Propham	1222.06194	17618.38141	73.00000	729.99947		
Propiconazole	794.34026	11451.94792	47.45000	474.49977		
Isopropylbenzene (Cumene)	157.02737	522.12811	401.50000	658.19672		
n-Propylbenzene	144.64759	240.00000	36.50000	60.83333		
Propylene glycol	100000.00000	100000.00000	73000.00000	729467.48873		
Propylene glycol, monoethyl ether	42772.16790	100000.00000	2555.00000	25549.34721		
Propylene glycol, monomethyl ether	42771.88226	100000.00000	2085.71429	25549.34721		
Propylene oxide	1.92853	9.13410	0.51920	0.22062		
Pursuit	15275.77425	100000.00000	912.50000	9124.91674		
Pydrin	1527.57743	22022.97676	91.25000	912.49917		
Pyridine	61.10310	880.91907	3.65000	36.50000		
Quinalphos	30.55155	440.45954	1.82500	18.25000		
Quinoline	0.04053	0.20555	0.00056	0.00560		
RDX (Cyclonite)	4.42164	22.42339	0.06112	0.61120		
Resmethrin	1833.09291	26427.57211	109.50000	1094.99880		
Ronnel	3055.15485	44045.95352	182.50000	1824.99667		
Rotenone	244.41239	3523.67628	14.60000	145.99998		

Table 7-6
North Industrial Corridor (NIC) Site
EPA Region 9 Preliminary Remediation Goals

Contaminant	Preliminary Remediation Goals (PRGs)				Soil Screening Levels	
	Residential Soil (mg/kg)	Industrial Soil (mg/kg)	Ambient Air ($\mu g/m^3$)	Tap Water ($\mu g/l$)	DAF 20 (mg/kg)	DAF 1 (mg/kg)
Savey	1527.57743	22022.97676	91.25000	912.49917		
Selenious Acid	305.52446	4405.15301		182.49997		
Selenium	391.07112	10219.79111		182.49997	5.00000	0.30000
Selenourea	305.52446	4405.15301		182.49997		
Sethoxydim	5499.27873	79282.71634	328.50000	3284.98921		
Silver and compounds	391.07112	10219.79111		182.49997	34.00000	2.00000
Simazine	4.05317	20.55478	0.05603	0.56026		
Sodium azide						
Sodium diethyldithiocarbamate	1.80141	9.13546	0.02490	0.24901		
Sodium fluoroacetate	1.22206	17.61838	0.07300	0.73000		
Sodium metavanadate	61.10310	880.91907	3.65000	36.50000		
Strontium, stable	46924.16726	100000.00000		21899.52040		
Strychnine	18.33093	264.27572	1.09500	10.95000		
Styrene	1700.00000	1700.00000	1058.50000	1641.08527	4.00000	0.20000
1,1'-Sulfonylbis (4-chlorobenzene)	78.21131	2043.37474	3.65000	36.50000		
Systhane	1527.57743	22022.97676	91.25000	912.49917		
2,3,7,8-TCDD (dioxin)	0.00000	0.00003	0.00000	0.00000		
Tebuthiuron	4277.21679	61664.33493	255.50000	2554.99347		
Temephos	1222.06194	17618.38141	73.00000	729.99947		
Terbacil	794.34026	11451.94792	47.45000	474.49977		
Terbufos	1.52758	22.02298	0.09125	0.91250		
Terbutryn	61.10310	880.91907	3.65000	36.50000		
1,2,4,5-Tetrachlorobenzene	18.33093	264.27572	1.09500	10.95000		
1,1,1,2-Tetrachloroethane	2.99962	7.03611	0.25960	0.43239		
1,1,2,2-Tetrachloroethane	0.38358	0.89824	0.03312	0.05534	0.00300	0.00020
Tetrachloroethylene (PCE)	5.68604	18.66692	3.31216	1.08178	0.06000	0.00300
"CAL-Modified PRG" (PEA, 1994)			0.32000			
2,3,4,6-Tetrachlorophenol	1833.09291	26427.57211	109.50000	1094.99880		
p,a,a,a-Tetrachlorotoluene	0.02432	0.12333	0.00034	0.00336		
Tetrachlorovinphos	20.26585	102.77389	0.28015	2.80131		
Tetraethyldithiopyrophosphate	30.55155	440.45954	1.82500	18.25000		
Tetrahydrofuran	63.99781	324.55361	0.98878	8.84625		
Thallium and compounds	5.16214	134.90396		2.40900		
Thiobencarb	611.03097	8809.19070	36.50000	364.99987		
Thiocyanate	6110.30970	100000.00000	365.00000	3649.98668		
Thiofanox	18.33093	264.27572	1.09500	10.95000		
Thiophanate-methyl	4888.24776	70473.52564	292.00000	2919.99147		
Thiram	305.51549	4404.59535	18.25000	182.49997		
Tin (inorganic, see tributyltin oxide for organic tin)	46924.16726	100000.00000		21899.52040		
Toluene	520.00000	520.00000	401.50000	723.42342	12.00000	0.60000

Table 7-6
North Industrial Corridor (NIC) Site
EPA Region 9 Preliminary Remediation Goals

Contaminant	Preliminary Remediation Goals (PRGs)				Soil Screening Levels	
	Residential Soil (mg/kg)	Industrial Soil (mg/kg)	Ambient Air ($\mu g/m^3$)	Tap Water ($\mu g/l$)	DAF 20 (mg/kg)	DAF 1 (mg/kg)
Toluene-2,4-diamine	0.15199	0.77080	0.00210	0.02101		
Toluene-2,5-diamine	36661.85820	100000.00000	2190.00000	21899.52040		
Toluene-2,6-diamine	12220.61940	100000.00000	730.00000	7299.94671		
p-Toluidine	2.55990	12.98197	0.03539	0.35385		
Toxaphene	0.44216	2.24233	0.00600	0.06112	31.00000	2.00000
Tralomethrin	458.27323	6606.89303	27.37500	273.74993		
Triallate	794.34026	11451.94792	47.45000	474.49977		
Triasulfuron	611.03097	8809.19070	36.50000	364.99987		
1,2,4-Tribromobenzene	305.51549	4404.59535	18.25000	182.49997		
Tributyltin oxide (TBTO)	18.33147	264.31027		10.95000		
2,4,6-Trichloroaniline	14.30531	72.54628	0.19776	1.97740		
2,4,6-Trichloroaniline hydrochloride	16.77174	85.05426	0.23185	2.31833		
1,2,4-Trichlorobenzene	646.18076	3000.00000	208.05000	194.43925	5.00000	0.30000
1,1,1-Trichloroethane	634.83533	1400.00000	1042.85714	540.74074	2.00000	0.10000
1,1,2-Trichloroethane	0.84252	1.90155	0.12007	0.19951	0.02000	0.00090
Trichloroethylene (TCE)	2.76997	6.11623	1.12061	1.63989	0.06000	0.00300
Trichlorofluoromethane	385.81790	2000.00000	730.00000	1288.23529		
2,4,5-Trichlorophenol	6110.30970	88091.90704	365.00000	3649.98668	270.00000	14.00000
2,4,6-Trichlorophenol	44.21644	224.23435	0.61969	6.11196	0.20000	0.00800
2,4,5-Trichlorophenoxyacetic Acid	611.03097	8809.19070	36.50000	364.99987		
2-(2,4,5-Trichlorophenoxy) propionic acid	488.82478	7047.35256	29.20000	291.99991		
1,1,2-Trichloropropane	15.08591	51.00216	18.25000	30.41667		
1,2,3-Trichloropropane	0.00143	0.00309	0.00096	0.00160		
1,2,3-Trichloropropene	11.50448	38.57423	18.25000	30.41667		
1,1,2-Trichloro-1,2,2-trifluoroethane	5600.00000	5600.00000	31280.50000	59179.85748		
Tridiphane	183.30929	2642.75721	10.95000	109.49999		
Triethylamine	23.39775	87.94234	7.30000	12.16667		
Trifluralin	63.16630	320.33421	0.87321	8.73137		
Trimellitic Anhydride (TMAN)	8.55443	123.32867	0.51100	5.11000		
1,2,4-Trimethylbenzene	52.00000	170.00000	6.20500	12.32618		
1,3,5-Trimethylbenzene	21.25329	69.75913	6.20500	12.32618		
Trimethyl phosphate	13.14542	66.66415	0.18172	1.81707		
1,3,5-Trinitrobenzene	1833.09291	26427.57211	109.50000	1094.99880		
Trinitrophenylmethylnitramine	611.03097	8809.19070	36.50000	364.99987		
2,4,6-Trinitrotoluene	16.21268	82.21911	0.22412	2.24105		
Triphenylphosphine oxide	6110.30970	88091.90704	365.00000	3649.98668		
Tris(2-chloroethyl) phosphate	34.74147	176.18381	0.48026	4.80225		
Uranium (chemical toxicity only)	15.64286	408.79967		7.30000		
Vanadium and compounds	547.49940	14307.59057		255.49993	6000.00000	300.00000
Vernam	61.10310	880.91907	3.65000	36.50000		

Table 7-6
North Industrial Corridor (NIC) Site
EPA Region 9 Preliminary Remediation Goals

Contaminant	Preliminary Remediation Goals (PRGs)				Soil Screening Levels	
	Residential Soil (mg/kg)	Industrial Soil (mg/kg)	Ambient Air ($\mu g/m^3$)	Tap Water ($\mu g/l$)	DAF 20 (mg/kg)	DAF 1 (mg/kg)
Vinclozolin	1527.57743	22022.97676	91.25000	912.49917		
Vinyl acetate	425.73144	1397.37671	208.57143	412.42938	170.00000	8.00000
Vinyl bromide (bromoethene)	0.19310	0.42157	0.06112	0.10187		
Vinyl chloride (child/adult)	0.14732		0.21689	0.04062	0.01000	0.00070
Vinyl chloride (adult)		0.83000				
Warfarin	18.33093	264.27572	1.09500	10.95000		
Xylenes	210.00000	210.00000	730.00000	1431.37255	210.00000	10.00000
Zinc	23463.18462	100000.00000		10949.88010	12000.00000	620.00000
Zinc phosphide	23.46428	613.19925		10.95000		
Zineb	3055.15485	44045.95352	182.50000	1824.99667		

Table 7-7
North Industrial Corridor (NIC) Site
Potential State Chemical-Specific TBCs*

	KDHE Tier 2 Risk-Based Standards					
	Residential Scenarios			Non-residential Scenarios		
Parameter	Soil Pathway (mg/kg)	Soil to Ground Water Protection Pathway (mg/kg)	Ground Water Pathway (mg/L)	Soil Pathway (mg/kg)	Soil to Ground Water Protection Pathway (mg/kg)	Ground Water Pathway (mg/L)
VOCs and SVOCs						
1,1,1-Trichloroethane	880 n	5.5	0.2 m	1800 s	5.5	0.2 m
1,1,2-Trichloroethane	13 c	0.07	0.005	20 c	0.07	0.005 m
1,1,2,2-Tetrachloroethane	7.1 c	0.02	0.0007 c	12 c	0.03	0.001 c
1,1-Dichloroethane	660 n	3.7	0.34 n	2100 s	13	1.3 n
1,1-Dichloroethene	0.90 c	0.12	0.007 m	1.4 c	0.12	0.007 m
1,2-Dichlorobenzene	990 s	77	0.6 m	990 s	77	0.6 m
1,2-Dichloroethane	4.7 c	0.04	0.005 m	7.3 c	0.04	0.005 m
1,2-Dichloropropane	6.0 c	0.06	0.005 m	9.3 c	0.06	0.005 m
1,2-Dibromoethane	NL	NL	NL	NL	NL	NL
1,2,4-Trimethylbenzene	9.7 s	0.85	0.005 n	9.7 s	2.9	0.017 n
1,3,5-Trimethylbenzene	2.5 n	0.24	0.005 n	69.4 n	0.83	0.017 n
1,4-Dichlorobenzene	57 c	9.5	0.075 m	92 c	9.5	0.075 m
2-Methylnaphthalene	NL	NL	NL	NL	NL	NL
bis(2-Ethylhexyl)phthalate	600 c	51000 s	400 m	1400 c	51000 s	400 m
Benzene	9.8 n	0.08	0.005 m	17 c	0.08	0.005 m
Bromodichloromethane	14 c	1.5	0.1 m	23 c	1.5	0.1 m
Butylbenzylphthalate	1500 s	1500 s	2.1 n	1500 s	1500 s	12 n
Carbon Tetrachloride	2.5 n	0.2	.005 m	7.0 c	0.2	0.005 m
Chlorobenzene	78 n	4.8	0.1 m	240 n	4.8	0.1 m
Chloroethane	NL	NL	NL	NL	NL	NL
Chloroform	3.9 c	1.2	0.1 m	6.0 c	1.2	0.1 m
Chloromethane	86 c	0.11	0.02 c	140 c	0.22	0.04 c
cis-1,2-Dichloroethene	57 n	0.8	0.07 m	180 n	0.8	0.07 m
Dibromochloromethane	100 c	1.7	0.1 m	230 c	1.7	0.1 m
Dichlorodifluoromethane	98 n	7	0.17 n	290 n	23	0.57 n
Ethylbenzene	650 s	55	0.7 m	650 s	55	0.7 m
Isopropylbenzene	NL	NL	NL	NL	NL	NL
Methyl-tert-butyl ether	2400 n	0.09	0.02 h	15000 n	0.09	0.02 h
Methylene Chloride	150 c	0.03	0.005 m	230 c	0.03	0.005 m
n-Butylbenzene	140 n	8	0.021	395 s	12	0.08 n
n-Propylbenzene	140 n	11	0.02 n	400 n	44	0.08 n
Naphthalene	100 n	39	0.10 n	320 n	140	0.35 n
p-Isopropyltoluene	NL	NL	NL	NL	NL	NL
sec-Butylbenzene	110 n	8	0.02 n	380 n	9	0.08 n
tert-Butylbenzene	NL	NL	NL	NL	NL	NL
Tetrachloroethene	79 c	0.18	0.005 m	140 c	0.18	0.005 m
trans-1,2-Dichloroethene	94 n	1.5	0.1 m	290 n	1.5	0.1 m
Trichloroethene	62 c	0.2	0.005 m	98 c	0.2	0.005 m
Trichlorofluoromethane	NL	NL	NL	NL	NL	NL
Toluene	930 n	40	1 m	1000 s	40	1 m
Vinyl Chloride	0.34 c	0.02	0.002 m	0.54 c	0.02	0.002 m
Xylene (Mixed)	700 s	700 s	10 m	700 s	700 s	10 m

Table 7-7
North Industrial Corridor (NIC) Site
Potential State Chemical-Specific TBCs*

Parameter	KDHE Tier 2 Risk-Based Standards					
	Residential Scenarios			Non-residential Scenarios		
	Soil Pathway (mg/kg)	Soil to Ground Water Protection Pathway (mg/kg)	Ground Water Pathway (mg/L)	Soil Pathway (mg/kg)	Soil to Ground Water Protection Pathway (mg/kg)	Ground Water Pathway (mg/L)
Total Petroleum Hydrocarbons						
TPH as DRO	2000 n	3000	0.500 n	20000 n	15000	0.720 n
TPH as GRO	220 n	39	0.500 n	450 n	150	0.500 n
Metals						
Aluminum	NL	NL	NL	NL	NL	NL
Antimony	31 n	n/a	0.006 m	820 n	n/a	0.006 m
Arsenic	11 c	5.84	0.01 m	38 c	5.84	0.01 m
Barium	5500 n	n/a	2.0 m	140000 n	n/a	2.0 m
Beryllium	160 n	n/a	0.004 m	4100 n	n/a	0.004 m
Cadmium	39 n	n/a	0.005 m	1000 n	n/a	0.005 m
Calcium	NL	NL	NL	NL	NL	NL
Chloride	NL	NL	NL	NL	NL	NL
Chromium	390 n	n/a	0.1 m	4000 c	n/a	0.1 m
Cobalt	NL	NL	NL	NL	NL	NL
Copper	2900 n	n/a	1.3 m	76000 n	n/a	1.3 m
Iron	NL	NL	NL	NL	NL	NL
Lead	400	n/a	0.015 m	1000	n/a	0.015 m
Magnesium	NL	NL	NL	NL	NL	NL
Manganese	3600 n	n/a	0.05 M	95000 n	n/a	0.05 M
Mercury	2 n	n/a	0.002 m	20 n	n/a	0.002 m
Nickel	1600 n	n/a	0.10 m	41000 n	n/a	0.10 m
Potassium	NL	NL	NL	NL	NL	NL
Selenium	390 n	n/a	0.05 m	10000 n	n/a	0.05 m
Silver	390 n	n/a	0.1 M	10000 n	n/a	0.1 M
Sodium	NL	NL	NL	NL	NL	NL
Sulfate	NL	NL	NL	NL	NL	NL
Thallium	NL	NL	NL	NL	NL	NL
Vanadium	550 n	n/a	0.11 n	14000 n	n/a	0.71 n
Zinc	23000 n	n/a	5 M	610000 n	n/a	5 M
PAHs						
Acenaphthene	300 s	190	0.13 n	300 s	300 s	0.49 n
Anthracene	13 s	13 s	0.62 n	13 s	13 s	2.3 n
Benzo(a)anthracene	12 c	10	0.0001 c	26 c	35	0.0004 c
Benzo(a)pyrene	1.2 c	16 s	0.0002 m	2.6 c	16 s	0.0002 m
Benzo(b)fluoranthene	12 c	19 s	9.E-05 c	19 s	19 s	0.0003 c
Benzo(g,h,i)perylene	NL	NL	NL	NL	NL	NL
Benzo(k)fluoranthene	10 s	10 s	0.001 c	10 s	10 s	0.003 c
Chrysene	6.4 s	6.4 s	0.01 c	6.4 s	6.4 s	0.04 c
Fluoranthene	220 s	220 s	0.18 n	220 s	220 s	0.89 n
Fluorene	270 s	200	0.07 n	270 s	270 s	0.28 n
Indeno(1,2,3-cd)pyrene	0.76 s	0.76 s	6.E-05 c	0.76 s	0.76 s	0.0002 c
Phenanthrene	NL	NL	NL	NL	NL	NL
Pyrene	140 s	140 s	0.14 n	140 s	140 s	0.72 n

Table 7-7
North Industrial Corridor (NIC) Site
Potential State Chemical-Specific TBCs*

	KDHE Tier 2 Risk-Based Standards					
	Residential Scenarios			Non-residential Scenarios		
Parameter	Soil Pathway (mg/kg)	Soil to Ground Water Protection Pathway (mg/kg)	Ground Water Pathway (mg/L)	Soil Pathway (mg/kg)	Soil to Ground Water Protection Pathway (mg/kg)	Ground Water Pathway (mg/L)
Pesticides/PCBs						
Chlordane	24 c	48	0.002 m	55 c	48	0.002 m
Heptachlor	1.9 c	110	0.0004 m	4.2 c	110	0.0004 m
PCB-1248	4.3 c	53	0.0005 m	9.5 c	53	0.0005 m
PCB-1260	4.3 c	53	0.0005 m	9.5 c	53	0.0005 m

* - Risk-based standards listed for analytes detected in soil or groundwater only.
n/a = insufficient data to calculate value
n = non-carcinogenic resk, HI = 1
c = carcinogenic resk, risk = 1x10^-5
h = health advisory
m = primary maximum contaminant level
M = secondary maximum contaminant level
NL = not listed
s = soil saturation

Table 7-8
North Industrial Corridor (NIC) Site
Potential State Chemical-Specific ARARs*

	Kansas Surface Water Quality Standards			
	Aquatic Life		Public Health	
Parameter	**Acute**	**Chronic**	**Food Procurement**	**Domestic Water Supply**
VOCs (ug/L)				
Chlorinated ethenes, total	11600	a	1.85	a
Tetrachloroethene	5280	840	8.85	b
Trichloroethene	45000	21900	80.7	b
cis-1,2-Dichloroethene	11600	a	1.85	70
trans-1,2-Dichloroethene	11600	a	140000	100
1,1-Dichloroethene	11600	a	1.85	b
Vinyl Chloride	a	a	525	2
Benzene	5300	a	40	b
Bromomethane	11000	a	15.7	b
1,1,1-Trichloroethane	18000	a	173077	200
1,1-Dichloroethane	--	--	--	--
Toluene	17500	a	b	1000
Metals (ug/L)				
Aluminum	--	--	--	--
Arsenic	340	50	20.5	b
Barium	a	a	a	2000
Calcium	--	--	--	--
Copper	c	c	a	1300
Iron	--	--	--	--
Lead	c	c	a	15
Magnesium	--	--	--	--
Manganese	--	--	--	--
Mercury	2.1	0.012	0.146	b
Potassium	--	--	--	--
Sodium	--	--	--	--
Thallium	1400	40	b	2
Zinc	c	c	a	a
Pesticides (ug/L)				
Chlordane	2.4	0.0043	0.00048	b

* - water quality standards listed for analytes detected in surface water only
a - criterion not available
b - US EPA has promulgated criterion for Kansas under the Code of Federal Regulations, Title 40, part 131.36
c - criterion dependant upon site characteristics including water hardness
-- - not listed in table of Kansas Surface Water Standards

Section 8
Contaminant Fate and Transport

The purpose of this section is to present and review the processes that are involved in the fate and transport of the Site chemicals. This discussion includes the contaminant properties and site characteristics that govern some of the fate and transport processes, as well as the processes that contribute to the degradation and retardation of the contaminants in the subsurface. The focus of this discussion is on the processes that are significant or potentially significant to this site, other processes will only be discussed briefly in general terms.

8.1 Contaminant Occurrence in Subsurface

Organic constituents may exist in groundwater as dissolved molecular or ionic species or as non-aqueous phase liquids (NAPLs) as depicted in Figure 8-1. Typically, the contaminant at a facility originally existed and was used as a NAPL. The contamination could reach the groundwater by two mechanisms:

- Some of the contaminants dissolved into infiltrating water that contacted the NAPL in the soil.
- Continued disposal resulted in enough NAPL to exceed the capillary forces and specific retention capacity of the soil and move into the saturated zone as NAPL. At the saturated zone, the contaminants dissolved into the groundwater. The NAPL would continue to move downward or would float on the water depending on soil characteristics and density and quantity of the NAPL.

Light non-aqueous phase liquids (LNAPLs) have densities less than that of water and remain at or near the water table. The most common LNAPL contamination results from the release of petroleum hydrocarbons. LNAPL has been found in several monitoring wells at the NIC site that are associated with two former petroleum refineries and the Coastal Derby Refinery. LNAPLs at the site generally represent potential long-term sources for continued petroleum groundwater contamination. The most water-soluble compounds in the petroleum mixture (e.g., benzene, toluene, ethylbenzene, and xylene) partition into groundwater at a greater concentration than the less soluble fractions (e.g., n-dodecane and n-heptane). LNAPLs may represent a relatively long-term source for petroleum compounds, including benzene, toluene, ethylbenzene, and xylenes (BTEX).

Dense NAPLs (DNAPLs) exist in the soil/aquifer matrix as free phase and/or residual DNAPL. Free phase DNAPL moves downward through the soil under the force of gravity or laterally at the interface of high permeability zones underlain by low permeability zones (e.g., the aquifer-bedrock interface). As the free-phase DNAPL moves, some of the DNAPL is trapped in pores and/or fractures by capillary forces. This DNAPL that remains is termed the residual DNAPL. Overall, the presence of either free phase or residual DNAPL is difficult to document and may

often be undetected by direct methods (EPA 1992). Because of this difficulty, EPA has published guidelines for "Estimating Potential for Occurrence of DNAPLs at Superfund Sites" (EPA 1992). Criteria used to evaluate the presence of DNAPL include:

- Type of industry
- Type of chemicals used
- Type of waste disposal practices
- Concentrations of chemicals in groundwater at greater than 1 percent effective solubility
- Concentrations of chemicals in groundwater increase with depth

Based on the EPA criteria, the NIC site has a "moderate potential" for DNAPLs to be present. The types of industry and historical industrial processes occurring at the site suggest a high probability for the presence of DNAPLs. With the exception of well R-1 at the Unocal facility, no direct evidence (soil borings, etc.) has been identified currently that indicates the presence of DNAPLs at the NIC Site.

Regardless of whether or not DNAPLs exist at the site, the more mobile forms are the aqueous phases, since they tend to travel at nearly the same velocity as the groundwater. Therefore, the following discussion of fate and transport will be with regards to aqueous phase (dissolved) organics. In addition, the aqueous constituents exist as molecular species rather than ionic, since the chlorinated organics do not have functional groups capable of forming ionic species.

8.2 Mechanisms Affecting Subsurface Transport

The transport of organic chemicals in the subsurface environment is affected by a variety of chemical and biological processes. These processes or mechanisms include hydrolysis, oxidation, photolysis, volatilization, adsorption, and biodegradation. The importance of each of these processes depends upon the specific chemical contaminant and the environmental conditions. Each of these mechanisms are discussed briefly below and general conclusions made concerning their importance in effecting subsurface transport of various organic chemicals. In addition, a more specific discussion is provided concerning the process in relation to the chemicals of concern at the NIC site. Table 8-1 provides a list of the aromatic and chlorinated aliphatic compounds of interest as well as information important in evaluating the fate and transport of these compounds.

8.2.1 Substitution and Elimination Reactions

The most relevant substitution reaction in the environment is hydrolysis. Hydrolysis usually results in the introduction of a hydroxyl group (-OH) into the chemical compound with the loss of a leaving group (-X), typically a halide.

$$RX + H_2O \longrightarrow ROH + H^+ + X^-$$

$$\text{Example: } CH_3CH_2CH_2Br + H_2O \longrightarrow CH_3CH_2CH_2OH + H^+ + Br^-$$

Molecules generally susceptible to hydrolysis include alkyl halides, chlorinated amides, esters, and other similar compounds. Non-susceptible molecules include alkanes, alkenes, aldehydes, amines, and carboxyl containing compounds. Hydrolysis reactions may be catalyzed by acids, bases, and selected metals.

Elimination reactions accompany substitution reactions and occur to a greater or lesser degree than the substitution reaction. Elimination reactions with chlorinated alkanes are called dehydrohalogenation. Generally, instead of substituting a halide (X) for a nucleophile (OH-) as in hydrolysis, the halide and a proton (H) are completely eliminated and a double bond is formed.

```
   |     |          \     /
— C  —  C  —  →  C  =  C  +  HX
   |     |          /     \
   H     X
```

Abiotic hydrolysis may be the preferred reaction for chlorinated alkenes while chlorinated alkanes will likely undergo both hydrolysis and dehydrohalogenation.

Hydrolysis of Chlorinated Alkanes and Alkenes at the NIC Site

TCE and PCE may undergo reaction with water to produce such compounds as alcohols, acetic acid, hydrochloric acid, trichloroacetic acid and hydrogen chloride. The reactions rates appear to be pH dependent (react faster at pH > 11) and increase in the presence of metallic ions. The degree of chlorination influences the reaction rates. The more highly chlorinated compounds have longer half-lives than the less chlorinated compounds. Although hydrolysis could be a viable fate process in the groundwater, the reaction rates appear to be too slow for it to be a significant process.

8.2.2 Abiotic Oxidation/Reduction

Oxidation is the loss of electrons during a chemical reaction. The typical pathway for oxidation in the environment is by free-radical reactions. Before an oxidation reaction can occur via the free-radical pathway, a free radical must be formed by the removal of a single electron from a molecule. This can occur through thermal energy, radiant energy, high-energy particles, and other mechanisms. Free-radical concentrations of the single oxygen in natural surface water are approximately 10^{-12} M and result from the photo-disassociation of the water molecule.

Overall, abiotic oxidation of organic compounds in subsurface groundwater systems is extremely limited unless oxygen or oxidizing agents (e.g., peroxides) are added.

Organic chemicals can also undergo reduction reactions (gaining of electrons). In the presence of certain transition metals, reduction of certain halogenated aliphatic compounds can occur in groundwater. Initially, a single electron is transferred from the metal complex to the organic molecule. The result is the loss of the halide group and the formation of an alkyl radical. The alkyl radical can form an alkane or can lose a second halogen to form an alkene.

Oxidation of Chlorinated Alkanes and Alkenes at the NIC Site

Based on the fact that groundwater is the main pathway of concern at the site and abiotic oxidation appears to be photo-induced, oxidation is not considered a major fate process of concern. Dissolved oxygen levels at the Site range from 0 to 3.5 mg/L, but are typically below 1.0 mg/L. Oxidation-reduction potentials typically range from -93 to 265 millivolts. Although a wide range of oxidation-reduction potentials is noted for the site, most of the measured values are indicators of relatively non-oxidizing conditions. Therefore, the occurrence of direct oxidation in groundwater systems at the site is not probable. Halogenated aliphatic compounds can undergo reductive dehalogenation reactions under reducing conditions, and while this process is usually biologically enhanced, it can occur abiotically.

8.2.3 Photolysis

Direct photolysis occurs when the chemical absorbs light and is then transformed from an excited state by rearrangement, dissociation, oxidation, or other mechanisms. The rate of reaction depends upon the sunlight photo flux, the light absorption coefficients of the chemical, and the efficiency of conversion of the absorbed light in the chemical reaction.

Photolysis reactions may be important mechanisms in surface aquatic environments. However, such reactions do not occur directly in the subsurface environment due to the absence of light.

Photolysis of Chlorinated Alkanes and Alkenes at the NIC Site

Because the major transport mechanism of concern at the site is groundwater and no light will enter this medium, photolysis is not an important process, with the exception of groundwater discharge to surface water (i.e. Chisholm Creek).

8.2.4 Volatilization

Volatilization is the process by which a chemical is transferred from soil or water into the air. For the discussion of transport in the subsurface aquatic environment, the chemicals of concern are typically at low concentrations (below saturation) and exist dissolved in the water phase (i.e., no free non-aqueous phase liquids). The chemicals of concern in the air will exist as a gaseous molecule. Depending upon the nature of

the chemical and soil, the chemical may also be adsorbed to the soil (adsorption will be discussed in the next section in detail). Given these environmental conditions, the concentrations of the organic chemical in the soil, water, and air compartments are controlled by the equilibrium processes shown in Figure 8-2. The processes in the unsaturated zone are simplified to some extent in Figure 8-2. Figure 8-2 depicts two phases in the vadose zone; solid phase and vapor phase. The vadose zone actually consists of three phases; solid, vapor, and aqueous phases. Contaminant transfer between the solid and vapor phases in the vadose zone at the NIC Site is likely not direct and most likely includes an intermediate step in the aqueous phase. The K_p equation in Figure 8-2 does not take into account the role of the aqueous phase in the vadose zone. The aqueous phase in the vadose zone varies considerably over time in response to infiltration events.

When contamination occurs primarily as dissolved phase in the groundwater, only volatilization at the water table is a significant fate process. The relation between the concentrations in the air and in the free water at equilibrium is described by Henry's law (Equation 8.1), which states that the concentration of a chemical species in the gas phase is directly proportional to the concentration in the aqueous phase. The proportionality constant is known as Henry's law constant or Henry's constant

$$P_i = H \bullet X_i \tag{8-1}$$

Where: P_i = partial pressure of species i (atm)
X_i = molar concentration of species i in the aqueous phase (mol/liter)
H = Henry's law constant (atm*liter/mol)

Another common expression of Henry's law relates mass concentrations (C_g, C_l) of the compound in each phase (Equation 8.2). H_D is the dimensionless Henry's law constant and is defined by dividing the Henry's law constant by the universal gas constant, R, and the temperature, T (Equation 8.3).

$$C_g = H_D \bullet C_l \tag{8-2}$$

$$H_D = \frac{H}{RT} \tag{8-3}$$

An equilibrium balance for the distribution of contaminants in the water and the air phases can be written as follows:

$$K_H = \frac{[\text{Conc. in water}]\,(\text{mg/L})}{[\text{Conc. in air}]\,(\text{mg/L})} = \frac{1}{H_D} = \frac{C_g}{C_l} \tag{8-4}$$

Henry's law constants are a good measure of a compound's volatility, the higher the Henry's law constant the greater the volatility of the compound. Typically, chemicals with a Henry's law constant greater than 0.005 atm-m^3/mol (0.2 dimensionless)

partition mostly into air. Published Henry's law constants are available for numerous environmental contaminants.

Volatilization of Chlorinated Alkanes and Alkenes at the NIC Site

Based on the data in Table 8-1, the compounds of concern are quite volatile. In fact, volatilization appears to be the major pathway by which the halogenated hydrocarbons of concern close to the top of the water table may be lost from groundwater. Overall, the process of volatilization occurs at a more rapid rate than hydrolysis or oxidation and, therefore, is a major fate process. However, in groundwater systems, volatilization is only a significant fate process near the water table.

8.2.5 Adsorption

One of the most important geochemical processes affecting the rate of migration of chemicals dissolved in groundwater is adsorption to and desorption from the solid matrix. If the organic chemical is strongly adsorbed to the solid matrix (the aquifer material), the chemical is relatively immobile and will not be leached or transported from the source. If the organic chemical is weakly adsorbed, the chemical can be transported large distances from the source, contaminating large quantities of groundwater. The degree of adsorption also effects other transformation reactions such as volatilization, hydrolysis and biodegradation since these reactions require the chemical to be in the dissolved phase.

The distribution of chemicals between water and the adjoining solid matrix (i.e., the geomedia, soil, or aquifer material) is often described by the soil/water distribution coefficient, K_d. For dissolved chemicals at environmental concentrations the distribution coefficient is usually defined as the ratio of concentrations in the solid and water phase (Freeze and Cherry 1979) or as:

$$K_d = \frac{C_s}{C_l} \tag{8-5}$$

C_s is usually expressed in terms of mg/kg (ppm in the solid) and C_l is expressed in terms of mg/L (or ppm in the water, if the density equals one). Therefore, the units on K_d are:

$$\frac{mg/Kg}{mg/L} = \frac{L}{Kg} \text{ or } \frac{mL}{g}$$

K_d has been shown to be proportional to the fraction of natural organic carbon in the solid matrix, the solubility of the chemical in the aqueous phase and the n-octanol/water partition coefficient (K_{ow}). Classification of a variety of chemicals by K_d is illustrated in Figure 8-3 (Olsen and Davis). Retardation factors (described below) and K_d values are site specific. The retardation factor and K_d values shown in Figure 8-3 are for soils that have a greater organic carbon content than the soils at the

NIC site, and are intended only to represent the relative mobility of different chemical classes.

Overall, adsorption appears to be a major mechanism governing the fate and movement of organics in groundwater. Because of its importance, methods of estimating and evaluating adsorption are discussed below.

Adsorption Modeling

A convenient way to express chemical mobility is by use of the retardation factor R, which is expressed as follows:

$$R = 1 + \frac{\rho K_d}{n} = \frac{v}{v_c} \qquad (8\text{-}6)$$

Where v_c is the average velocity of the retarded constituent, v is the velocity of the groundwater, ρ is the soil bulk density, and n is the total porosity.

If $K_d = 0$, the chemical species of concern is not affected by physico-chemical reactions and migrates at the same velocity as the water based on convective-dispersive mechanisms. If $K_d > 0$, the chemical species will be retarded. In general, Equation 8-6 is valid under the assumptions that the adsorption reactions are fast (compared to flow velocity), reversible, and are linear under the conditions that they occur.

Equation 8-6 is typically called the retardation equation because it expresses how much the chemical of concern is retarded by adsorption compared to water. More accurately, the retardation factor is the average linear velocity of the groundwater divided by the velocity of the contaminant chemical at the point when the chemical concentration is one-half the concentration of the chemical at its source. When K_d equals zero (no adsorption), R equals one; i.e., the chemical and water move at the same velocity. If R equals ten, the contaminant chemicals move at one tenth the velocity of the groundwater. The mobility of chemicals can be classified based on their R-value. Typical classifications are illustrated in Figure 8-3. These classifications may not strictly apply to the NIC Site.

To gain a more quantitative feel for the meaning of the retardation equation, some representative parameters can be input. At the NIC Site, the aquifer materials have a total porosity equal to about 0.35 and ρ equal to 1.65 g/mL, therefore:

$$R = 1 + 4.7\,(K_d) \qquad (8\text{-}7)$$

To determine R, the only unknown is K_d, the adsorption constant. This K_d is numerically equal to the distribution coefficient discussed earlier. Therefore, the determination of K_d is essential to the evaluation of the mobility of compounds in water.

Determination of K_d

Values of K_d for a compound vary with the composition of soil or adsorbing geomedia. The amount of organic matter in the soil has been strongly correlated with the adsorption of organic chemicals. Therefore, K_d is usually normalized for the amount of organic carbon in the soil resulting in a new parameter, K_{oc}, the organic-carbon partition coefficient.

$$K_{oc} = \frac{K_d}{f_{oc}} \tag{8-8}$$

Where: f_{oc} = The fraction of natural organic carbon in the soil
= % TOC/100
= (mg/Kg TOC) x 10^6

This relation implies that soil adsorption is linearly related to the amount of organic carbons in the soil. While K_d may vary greatly in different soils, K_{oc} usually does not vary by more than a factor of two to three. K_{oc} can also be defined as follows:

$$K_{oc} = \frac{\text{mg of adsorbed chemical/Kg of organic carbon}}{\text{mg of chemical in solution/L of solution}} \tag{8-9}$$

Researchers have measured the K_{oc} values for many environmental contaminants in different soil types. The EPA has conducted an extensive literature review of measured K_{oc} values for non-ionizing hydrophobic organic compounds to aid in establishing soil screening guidelines (EPA, 1996). However, measured K_{oc} values may not be available for all environmental contaminants. If measured K_{oc} values are not available for the compound of interest there are several methods to estimate K_{oc} using other available chemical characteristics or site-specific data, as outlined below.

One method for the estimation of K_{oc} is based on the relationship between K_{oc} and K_{ow}. As previously described, K_{ow} is the octanol-water partition coefficient. Essentially, this constant gives the distribution of a chemical between octanol and water in contact with each other at equilibrium conditions. The K_{ow} value for many chemicals has been measured in the laboratory and is a readily available parameter. Another method to estimate K_{oc} is based on the relationship between K_{oc} and water solubility, another readily available parameter. When accurate values for K_{ow} and solubility are not available, K_{oc} estimates based on molecular structure can be applied.

Empirical methods to determine K_d can also be employed. Soil samples must be taken at the same interval as groundwater samples. The distribution of the chemicals can then be calculated directly from the concentrations in the water and the soil. Calculated values are variable and only averages from a large number of samples should be used.

Most of the available estimation methods that describe the distribution of organic molecules in water-soil systems consider the organic carbon content to be the

principal factor controlling adsorption. However, if the amount of organic carbon is low and the mineral surface area is high, adsorption on inorganic mineral surface may be significant. The lower limit at which contributions of the inorganic fraction dominates adsorption have been estimated by several researchers (McCarty, et al. 1981; Roy and Griffin 1985). The soil characteristic thought to be most important in the adsorption process of organic compounds is the surface area. The surface area is largely dependent upon the quantity of clay. Therefore the clay may dominate adsorption processes. McCarty, et al. (1981) developed a method to relate the sorption of organic chemicals to inorganic materials in the subsurface based on the surface area of the soils. The inorganic adsorption developed by McCarty, et al. is as follows:

$$K_s = \frac{SA}{200}(K_{ow})^{0.16} \tag{8-10}$$

Where: K_s = The surface specific distribution coefficient
SA = The surface area of the soil material (m^2/g)

The model proposed by McCarty, et al. assumes an additive contribution of organic and inorganic adsorption such that

$$K_d \text{ (overall)} = K_d \text{ (organic)} + K_s\,(1\text{-}f_{oc}) \tag{8-11}$$

Adsorption of Chlorinated Alkanes and Alkenes at the NIC Site

Adsorption may be an important process in groundwater. The importance of adsorption depends significantly upon the characteristics of the aquifer material, which acts as the adsorbing medium. In particular, adsorption of hydrophobic organic compounds has been shown to be a function of the amount of natural organic carbon in the aquifer matrix.

The retardation factors for select chemicals at the NIC Site were calculated and are listed in Table 8-2. These retardation factors were calculated using Equations 8-7, 8-8, 8-10, and 8-11. Estimated K_{oc} values were calculated using the estimation methods based on K_{ow}. The nine equations used to calculate K_{ow} and respective references are listed in Table 8-3. The organic K_d was calculated using a fraction of organic carbon, f_{oc}, of 0.000272. This f_{oc} represents the average total organic carbon content of the saturated sands in the NIC Site, excluding anomalous data that are not representative of the typical saturated sands. Results of TOC in subsurface soil samples are presented in Table 5-3d. The measured K_{oc} values listed in Table 8-3 were obtained from EPA Soil Screening Guide: Technical Background Document (EPA, 1996).

The inorganic adsorption term, K_s, was calculated using the following equation for surface area:

$$SA = 0.142 + 5.15x10^{-3}(TOC) \tag{8-12}$$

Where SA = Surface area of the soil (m^2/g)
TOC = Total organic carbon content of the soil (mg/kg)

This equation for surface area is an empirical relationship developed for the Gilbert and Mosley Site by measuring the surface area (BET nitrogen method) of soils containing different concentrations of total organic carbon. The Gilbert and Mosley Site is immediately adjacent to the NIC Site and is representative of the same soil types. The overall K_d and R values were calculated using the geometric means of the measured and estimated K_{oc} values.

Measured K_{oc} values were not available for *cis*-1, 2-DCE or vinyl chloride. Agreement between the measured values for K_{oc} and the estimated values vary for each compound. Generally, the estimated K_{oc} values are higher than the measured values, with the exception of the chlorinated ethanes. Overall, the estimated and measured Koc values are in agreement.

The low organic carbon of the NIC saturated soils has an effect on the R-values obtained. PCE, which is the most strongly adsorbed of the chlorinated compounds, has measured R of 1.44. Methylene chloride (MC), which is the least strongly sorbed, has an R of 1.07. An R of 1.00 would indicate that the chemical is not retarded at all, and the constituent travels at the same velocity as the groundwater. The BTEX compounds, representing the more volatile fraction of petroleum hydrocarbons detected onsite have varying ranges of R, from 1.16 to 1.44. This indicates that the BTEX compounds will move through the aquifer at roughly the same rate as the majority of the chlorinated solvents. Naphthalene, representing the semivolatile fraction of petroleum hydrocarbons has an R of 2.65, which indicates naphthalene moves approximately twice as slow as the chlorinated solvents and is more likely to be sorbed to the soil. The R-values listed above indicate that adsorption processes do not attenuate the chlorinated chemicals of concern to a significant degree. These values represent average values for the NIC site; there may be local heterogeneities that result in more or less retardation due to either organic or inorganic adsorption.

8.2.6 Desorption

The desorption of contaminants from soil and aquifer sediments has often been observed to deviate from the expected behavior for equilibrium adsorption, particularly with respect to organic chemicals. Attempts to remediate contaminated soils both by aquifer flushing in the field and laboratory column and batch studies have shown that cleanup times often far exceed estimates based on the assumption that adsorption may be reversed and that K_d (desorption) is equal to K_d (adsorption). Under equilibrium conditions complete desorption should occur after the same number of pore volumes required for complete adsorption (breakthrough). However, what is often found is that after an initial equilibrium desorption of a fraction of the chemical a residual fraction remains that can only be removed with great difficulty. Therefore, remediation is only accomplished after additional pore volumes are passed through the system. This situation, where initially rapid desorption is followed by a

slow release, is referred to as the "tailing effect." Many studies have focused on the tailing phenomenon, and a great number of theories and models have been proposed over the years to explain the behavior. However, a widely accepted theory is based on the "mobile-immobile" or "two-site" model (Brusseau 1992 and 1991; Goltz and Oxley 1991). In short, the soil or sediment matrix is envisioned to contain two types of sites, one in a region in which the surfaces are exposed to actively flowing solution, or the mobile part of the system, and another where the surfaces are in contact with stagnant pore fluids, or the immobile part of the system. Under this scenario, the initial rapid desorption may be assumed to consist of the mobile part of the system, where instantaneous and reversible equilibrium and sorption applies. The tail then may be considered to be caused by the slow diffusion of the chemical from the isolated pore spaces in the immobile region.

Tailing may be attributed to various rate limiting mechanisms, including transport-related non-equilibrium (e.g., rate-limited mass transfer between mobile and immobile domains) and adsorption-related non-equilibrium (e.g., rate-limited chemical interactions between the sorbate and sorbent) (Brusseau 1991). Adsorption may be assumed to be occurring on the surfaces of mineral grains or organic particles within cavities (pore spaces) formed by the aggregation of soil or sediment particles. Desorption is limited by the diffusion of the chemical sorbate from the pore fluid to the mobile fluid (transport related non-equilibrium) and by desorption from the surface of the pore space to the immobile fluid (adsorption related non-equilibrium). In addition to pore volumes between grains, adsorption may also occur within porous grains, such as amorphous Fe or Mn oxyhydroxides or organic matter. Factors that have been found to influence the above processes include the grain size, tortuosity and degree of aggregation of the sediment (Leenheer, et al. 1971; Wu and Guschwend 1986), the type of organic material making up the sorbent (Szecsody and Bales 1989), the K_{ow} of the sorbate (Wu and Guschwend 1986), the residence time of the contamination (Karickhoff 1984) and the pore water velocity (Brusseau 1992). All early attempts to model tailing based on soil properties have met with only limited success, principally due to the failure to consider many of the factors listed above. Therefore, early "modeling" efforts were based on the use of one or more fitting parameters in order to make empirical data fit the mathematical algorithms. However, numerous process-based models for non-equilibrium processes are now available.

8.2.7 Biodegradation and Biotransformation

Transformation or degradation of organic chemicals in the subsurface environment can occur through the action of microorganisms that may be attached to the soil or contained in the void space. Bacteria have been found in subsurface environments throughout extensive depths. Active microbial populations are found in most typical subsurface conditions. In many cases, significant populations (approaching surface soils) exist at depth. Even in low numbers, subsurface microbes possess adequate metabolic activity to reduce the levels of organic compounds migrating through the subsurface soil profiles.

Biodegradation of organic chemicals by microorganisms ultimately produces microbial cells, water, and carbon dioxide (i.e., complete "mineralization"). The enzymes produced by the microorganisms are essentially responsible for the degradation of the organic chemicals. Whether or not a chemical is transformed depends on the microbial population present and the types of enzymes they express.

Typically, biodegradation rates are found to be proportional to both the substrate and microbial numbers. The substrate is defined as the organic compound that provides the bacteria with carbon and energy. However, some organics, termed secondary substrates, do not provide sufficient energy to support growth of the microbial biomass. In this case, a primary substrate must be present. In some cases, the enzymes produced for degradation of the primary substrate also serve to degrade the secondary substrate, this is termed cometabolism.

Microbes can facilitate both oxidation and reduction of organics under oxic (aerobic) or anoxic (anaerobic) conditions, respectively. A compound is oxidized by losing electrons and is reduced by gaining electrons. Oxidation and reduction reactions are coupled. There must be two compounds present to carry out the reaction. One compound donates electrons (electron donor, often referred to as the substrate) and is oxidized and the other compound accepts the electrons (electron acceptor) donated by the first and is reduced. Normally, the electron acceptor is an inorganic chemical (O_2, NO_3, SO_4, CO_2, etc.) and is not the primary contaminant. Microorganisms carry out the transfer of electrons from one compound to the other as they break down chemicals for energy and carbon. Because biodegradation reactions are important, they will be discussed in more detail below

Biodegradation of Chlorinated Aliphatic Hydrocarbons

Research conducted under both field and laboratory conditions demonstrates that chlorinated aliphatics, including tetrachloroethene (PCE), trichloroethene (TCE), carbon tetrachloride (CT), chloroform (CFM), and 1,1,1-trichloroethane (1,1,1-TCA) can be biodegraded (or biotransformed) under specific environmental conditions in the subsurface. The biodegradation of these chlorinated hydrocarbons occurs primarily via cometabolism. For this discussion, cometabolism is defined as the transformation of a non-growth substrate by growing cells in the presence of a growth substrate, by resting cells in the absence of a growth substrate, or by resting cells in the presence of an energy substrate. This process can occur under both aerobic and anaerobic conditions. Under aerobic conditions the chlorinated hydrocarbon is oxidized and under anaerobic conditions the chlorinated compound is used as an electron acceptor and is reduced. The anaerobic reduction is often termed reductive dechlorination. Reductive dechlorination is not always a cometabolic process. Recent research has demonstrated that there are also microbes that can actually use PCE and TCE as an energy source for growth, which may play an important role in conjunction with the microorganisms that degrade PCE and TCE via cometabolism.

Biodegradation, or biotransformation, that occurs naturally in the subsurface is termed intrinsic remediation. Intrinsic bioremediation has become a widely accepted form of reducing the total mass of organic contaminants dissolved in groundwater. It is advantageous because the contaminants can ultimately be transformed to innocuous byproducts, like carbon dioxide and water, via biologically mediated oxidation/reduction reactions without intervention or introduction of any substance.

The basis for intrinsic bioremediation is the ability for microorganisms to use organic contaminants as a source of carbon and energy for respiration and survival. However, as previously mentioned, not all organic contaminants can be used as carbon and energy. In the environment, microorganisms transform available electron donors into forms useful for cellular energy and growth by facilitating the transfer of electrons from donors to acceptors. For biodegradable compounds, this results in oxidation of the organic donor and reduction of the electron acceptor. For thermodynamic reasons, microorganisms preferentially utilize those electron acceptors that provide the greatest amount of free energy during respiration (in order: oxygen, nitrate, ferric iron, sulfate, carbon dioxide). The energy produced by these reactions is quantified by the Gibb's free energy of the reaction, a measure of the maximum useful energy released by a chemical reaction at a constant temperature and pressure. During biodegradation, microorganisms will facilitate only those redox reactions that yield energy. These redox reactions do not spontaneously occur in groundwater in a relevant timeframe because the initial activation energy requirement is lowered through the use of a catalyst (microorganism).

None of the principal contaminants of concern at the NIC Site can be used as a carbon source for either aerobic or anaerobic biodegradation. They can, however, be cometabolically transformed through oxidation or reductive dechlorination. In addition, both PCE and CT are only biodegradable under anaerobic conditions.

Aerobic Biodegradation of Chlorinated Solvents

Numerous microorganism are capable of cometabolizing chlorinated compounds like TCE, 1,2-DCE, VC, CF and DCM under aerobic conditions. Primary substrates such as phenol, toluene, methane, propane, or ammonia must also be present for aerobic cometabolism, depending on the type of bacteria. PCE and CT are not biodegraded under aerobic conditions.

Anaerobic Dechlorination of Chlorinated Alkenes

While many chlorinated solvents can be degraded aerobically, the anaerobic degradation pathway is much more common in the environment due to the fact that the aerobic cometabolism requires not only an electron donor, but also that the donor must induce the enzymes required for the degradation. The anaerobic reductive dechlorination of chlorinated solvents can be accomplished using numerous electron donors, which are not required to induce certain activity in the microorganisms. The focus of this discussion is on chlorinated alkenes since TCE is the most prevalent chlorinated solvent onsite, but similar patterns are followed for chlorinated alkanes

(e.g. 1,1,1-TCA and CT). The extent to which chlorinated alkenes can be anaerobically transformed to less chlorinated alkenes is highly dependent upon site-specific conditions. The following briefly explains the complexities of anaerobic reductive dechlorination of chlorinated alkenes.

The anaerobic biotransformation of PCE and TCE occurs through a microbially-mediated, sequential dehalogenation process (Figure 8-4):

$$\text{PCE} \longrightarrow \text{TCE} \longrightarrow \textit{cis}\text{-1, 2-DCE} \longrightarrow \text{VC} \longrightarrow \text{ethene} \longrightarrow \text{ethane} \qquad (8\text{-}13)$$

The degree to which this sequence proceeds depends on three factors:

1. The presence of dechlorinating microorganisms
2. The presence of suitable electron donors
3. The presence of competing electron acceptors

The importance of each of these is explained in the following sections.

The Role of Microorganisms in Anaerobic Dechlorination of Chlorinated Alkenes

The microorganisms that carry out anaerobic reductive dechlorination of chlorinated alkenes can be classified into two major groups: (a) methanogens and other anaerobes that incidentally perform dechlorination but derive no benefit from the process, and (b) direct dechlorinators that utilize chlorinated hydrocarbons as electron acceptors in their energy metabolism, a process termed dehalorespiration (Gossett and Zinder 1996). Microorganisms that dechlorinate hydrocarbons incidentally (but do not obtain energy from the process) are ubiquitous. Direct dechlorinators that transform PCE to *cis*-1, 2-DCE appear to be relatively widespread. However, direct dechlorinators capable of transforming PCE and TCE past *cis*-1, 2-DCE seem to be much less common (Gossett and Zinder 1996). Their scarcity or complete absence at a site could mean that complete degradation of PCE and TCE would be problematic (and that *cis*-1, 2-DCE would accumulate). However, more direct dechlorinators will most likely be identified as research in this area continues.

Both groups require highly reducing conditions, at least to the level of sulfate reduction. Furthermore, the environment must be progressively more reducing (lower redox potential) to remove each successive chlorine atom. For example, *cis*-1, 2-DCE cannot be used as an electron acceptor in the redox environment characterized by sulfate reduction (McCarty 1996), and thus the dehalogenation sequence stops at *cis*-1, 2-DCE.

The anaerobic reductive dechlorination of chlorinated hydrocarbons in the environment is most likely performed by a microbial consortium, or group of varied microorganisms, that include both direct and indirect dechlorinators. The degree to

which complete dechlorination occurs is related to the types of microorganisms in the subsurface and their interactions as they compete for the available electron donors and acceptors. Microbial communities can also work synergistically, accomplishing more as a group than as individual microorganisms. For example, DiStefano et al. (1992) demonstrated that a mixed culture was capable of dechlorinating PCE to VC and ethene with the addition of methanol. However, when an inhibitor was added to the culture that inhibited acetogens, bacteria that produce hydrogen, the addition of methanol could not sustain dechlorination. Another inhibitor was added to the culture in a different experiment that inhibited the methanogens and not the acetogens. Reductive dechlorination in this experiment was also inhibited. This suggests that both species play an important role in working together for reductive dechlorination.

The Role of Electron Donors in Anaerobic Dechlorination Chlorinated Alkenes

Not only must the necessary microorganisms be present in the subsurface, but they must also have the required carbon source and for some microorganisms an energy source. This source of carbon and energy is the electron donor. If a suitable electron donor is not available, neither dechlorination nor any other type of energy metabolism will occur.

Typical electron donors in aquifers are naturally occurring organic (carbon-containing) compounds such as humic acid or contaminants such as petroleum hydrocarbons or domestic sewage. Since the transfer of electrons from these organic compounds takes place during their metabolism, they must be biodegradable under the local environmental conditions in order to serve as an electron donor. Certain inorganic compounds can also serve as electron donors: under aerobic conditions, ammonium, nitrite, ferrous iron, and sulfide ions can donate electrons, and under anaerobic conditions, molecular hydrogen is an important electron donor.

When an electron donor is present, several types of microorganisms may compete to utilize it in their metabolism. Competition for hydrogen, an electron donor released during the fermentation of organic compounds, is especially important. Methanogens, sulfate-reducers, and direct dechlorinating microorganisms all compete for hydrogen. When the hydrogen concentration is high, direct dechlorinators cannot compete effectively. However, at low hydrogen concentrations, direct dechlorinators can out-compete the others. Different organics are metabolized at different rates, resulting in higher (or lower) levels of hydrogen and less (or more) dechlorination. Thus, both the quantity and quality of the electron donor available for any site must be considered.

The Role of Electron Acceptors in Anaerobic Dechlorination Chlorinated Alkenes

A relatively small number of compounds can serve as electron acceptors, but some, if not all of them, are available on most sites. Since the reaction in which these

compounds accept electrons involves the release of energy, electron acceptors are used in a sequence according to the amount of energy provided to the cell. The order in which common electron acceptors are used is: oxygen, nitrate, ferric iron, sulfate, and finally carbon dioxide (methanogenesis). As each of these is used in turn, the local environment becomes more reducing (lower redox potential). This is illustrated in the typical hydrocarbon contamination plume, in which the fringes are less reduced and have a high redox potential than the core, which is highly reduced and has a much lower redox potential. Microbial activity thus has a strong impact on the redox potential of a site.

The oxidation of electron donors can be described by stoichiometric equations. In the following equations, the chemical structure for benzene is used as a representative electron donor, and microbial growth is neglected for simplicity. In order of most oxidizing to most reducing conditions, the equations are:

Aerobic Respiration (electron acceptor: oxygen)

$$C_6H_6 + 7.5O_2 \longrightarrow 6CO_2 + 3H_2O \qquad (8\text{-}14)$$

Denitrification (electron acceptor: nitrate)

$$C_6H_6 + 6NO_3^- + 6H^+ \longrightarrow 6CO_2 + 3H_2O + 3N_2 \qquad (8\text{-}15)$$

Iron (III) Reduction (electron acceptor: ferric iron)

$$C_6H_6 + 60H^+ + 30Fe(OH)_3 \longrightarrow 6CO2 + 30Fe^{2+} + 78H_2O \qquad (8\text{-}16)$$

Sulfate Reduction (electron acceptor: sulfate)

$$C_6H_6 + 7.5H^+ + 3.75SO_4^{2-} \longrightarrow 6CO_2 + 3.75H_2S + 3H_2O \qquad (8\text{-}17)$$

Methanogenesis (electron acceptor: carbon dioxide)

$$C_6H_6 + 4.5H_2O \longrightarrow 2.25CO_2 + 3.75CH_4 \qquad (8\text{-}18)$$

Each of the above reactions is mediated by different microbial populations, referred to by the type of energy metabolism they utilize (e.g., denitrifiers, methanogens, sulfate reducers).

For each step in the dechlorination sequence (Equation 8-13), a balanced reaction of the type given above (Equations 8-14 through 8-18) can be written with the chlorinated solvent acting as the electron acceptor:

$$\underset{\text{(PCE)}}{C_6H_6 + 15CHCl_2{=}CCl_2} + 12H_2O \longrightarrow 6CO_2 + \underset{\text{(TCE)}}{15CHCl{=}CHCl_2} + 15HCl \qquad (8\text{-}19)$$

$$\underset{\text{(TCE)}}{C_6H_6 + 15CHCl{=}CCl_2 + 12H_2O} \longrightarrow \underset{\text{(}cis\text{-1, 2-DCE)}}{6CO_2 + 15CHCl{=}CHCl + 15HCl} \qquad (8\text{-}20)$$

$$\underset{\text{(}cis\text{-1, 2-DCE)}}{C_6H_6 + 15CHCl{=}CHCl + 12H_2O} \longrightarrow \underset{\text{(VC)}}{6CO_2 + 15CHCl{=}CH_2 + 15HCl} \qquad (8\text{-}21)$$

$$\underset{\text{(VC)}}{C_6H_6 + 15CHCl{=}CH_2 + 12H_2O} \longrightarrow \underset{\text{(Ethene)}}{6CO_2 + 15CH_2{=}CH_2 + 15HCl} \qquad (8\text{-}22)$$

Biotransformation of PCE and the other chlorinated ethenes is thus a multiple step reaction. Each step has different reaction kinetics. The latter reactions from *cis*-1, 2-DCE to VC to ethene require more highly reducing conditions and will most likely occur under methanogenic conditions whereas the initial steps could occur under iron and sulfate reducing conditions. The rate at which the latter steps occur is also a much slower rate than the initial reactions.

Since the chlorinated alkene acts as the electron acceptor during biotransformation of the molecule, the dechlorination process is limited by competitive inhibition. Competitive inhibition refers to the process of the chlorinated ethene competing with other electron acceptors in the subsurface for the role as the preferred electron acceptor that is used by the subsurface microorganisms. Many different chemicals can act as electron acceptors in the subsurface. The chlorinated ethenes will only be degraded as an electron acceptor under the right conditions. Electron acceptor use in the subsurface is controlled by thermodynamics. The potential energy gained from the oxidation of a particular substrate coupled with the reduction of different electron acceptors varies widely. Microorganisms utilize the electron acceptor that is thermodynamically preferable. That is, they will use the electron acceptor that provides the greatest energy during the transfer of electrons from the donor to the acceptor.

The following table lists several reduction half-reactions of electron acceptors and their corresponding redox potential. The other half of the reaction involves the electron donor, which varies in the subsurface. The redox potential is the measure of an atom or molecule's affinity for electrons. Molecules or atoms with higher potentials have a greater affinity for electrons. The redox potential is also related to the amount of free energy that microorganisms receive from the reaction. Microorganisms will receive the greatest free energy from those electron acceptors with the highest redox potential.

Half-reaction (metabolism mode)	Redox Potential (volts)
O_2 to H_2O (aerobic respiration)	0.8
NO_3^- to N_2 (denitrification)	0.7
PCE to TCE	0.6
TCE to DCE	0.55
NO_3^- to NH_4^+ (nitrate reduction)	0.45
DCE to VC	0.35
Fe^{3+} to Fe^{2+} (ferric iron reduction)	0.06
SO_4^{2-} to HS^- (sulfate reduction)	-0.2
CO_2 to CH_4 (methanogenesis)	-0.25
H^+ to H_2 (acetogenesis)	-0.4

(These approximate values adapted from Bioremediation Engineering: Design and Application, John T. Cookson Jr., 1995 McGraw-Hill, Inc)

Based on the tabulated redox potentials, aerobic metabolism provides the greatest energy to microorganisms in the subsurface and would be the preferential metabolic mode where oxygen is available (dissolved oxygen > 1.0 mg/L). Under anaerobic conditions, denitrification is the most preferable metabolic mode. Competitive inhibition is better explained with an understanding of the redox potentials of several electron acceptors that may be available in the environment. PCE and TCE will compete with nitrate for preferential use as an electron acceptor. In the absence of nitrate, both PCE and TCE are used as the electron acceptor and are degraded to DCE. However, the use of electron acceptors is complex, and the sequence and rate of electron acceptor utilization may vary based on groundwater biological and chemical conditions.

Actual electron acceptor utilization in the environment is dependent on their concentrations. For example, DCE may be converted to VC in the presence of nitrate, but only at an extremely slow rate. As nitrate is used and its concentration decreases, the rate of DCE transformation will increase. The transformation of DCE to VC may be extremely inhibited by the presence of ferric iron or sulfate, and their rate of transformation may increase upon the removal of the electron acceptors from the environment. The specific influence on alternate electron acceptors cannot be generalized. Different microbial systems and groundwater conditions can cause different shifts in thermodynamic equilibrium. The chemical reactions that occur in the groundwater are all site specific; some sites will follow the general guidelines outlined above while others may vary. Research was performed to gain site-specific electron acceptor data from aquifer materials in the Gilbert and Mosley Site, which is south of the NIC and represents the same aquifer (Pon, 1996). Pon suggests that sulfate concentrations greater than 100 mg/L are more favorable to the sulfate-reducing bacteria, which then metabolically out-compete the dehalogenation reactions. Therefore, if the sulfate concentration is too high, TCE can be effectively out-competed by sulfate for electrons. Pon also suggests that dehalogenation of TCE does not even initiate until sulfate concentration are reduced to less than 200 mg/L.

Since *cis*-1, 2-DCE cannot be used as an electron acceptor in the redox environment characterized by sulfate reduction (McCarty 1996), the dehalogenation sequence stops at *cis*-1, 2-DCE.

Biodegradation of Chlorinated Alkanes and Alkenes at the NIC Site

Several factors indicate that anaerobic reductive biodegradation (reductive dechlorination for chlorinated aliphatics) is occurring at the NIC Site. The dissolved oxygen (DO) concentrations vary from 0.0 mg/L to 3.5 mg/L, with the majority of the site exhibiting dissolved oxygen concentrations below 1.0 mg/L, which is a general threshold for anaerobic conditions (DO < 1.0 mg/L). Non-oxidizing to slightly reducing conditions have been documented by the redox potentials (Eh) between -93.6 mV and 265 mV. Most importantly, as an indication of anaerobic reductive dechlorination, is the presence of reductive dechlorination byproducts. Both *cis*-1, 2-dichloroethene (1,2-DCE) and vinyl chloride (VC) are byproducts of the reductive dechlorination of PCE and TCE and are found throughout the NIC site. There are no apparent sources of 1,2-DCE or VC other than biodegradation. In addition, 1,1-dichloroethane (1,1-DCA) and chloroethane (CA) are present at the site and both are reductive dechlorination byproducts of 1,1,1-trichloroethane (1,1,1-TCA), a secondary site contaminant. The specific biodegradation pathways and important parameters for assessing the biodegradation potential at the NIC Site are described further in Section 8.3.

8.2.8 Significance of Environmental Fate

The type and importance of various processes affecting transport of chemicals in groundwater depend upon the specific chemicals and site conditions. However, the importance of each process discussed at the NIC Site is summarized in general terms in the following table.

Significance of Environmental Fate for Volatile Organic Contaminants at the NIC Site

Process	Not Important	Probably Not Important	May Be Important Depending Upon Site Conditions	Should be Considered as Important
Hydrolysis		X	X	
Oxidation		X	X	
Photolysis	X			
Volatilization			X	
Adsorption			X	X
Biodegradation			X	X

Based on the above evaluation, adsorption and biodegradation are the most important fate and transport processes at the NIC Site.

8.3 Monitored Natural Attenuation Assessment

As part of the RI, groundwater from select wells was analyzed for additional parameters to assess the potential for biodegradation at the Site. Forty-five wells, representing 27 locations, were sampled and the groundwater was analyzed for inorganic parameters (alkalinity, chloride, nitrogen, nitrate, sulfate, total dissolved solids, total suspended solids, total organic carbon) and methane, ethane, and ethene, in addition to the field parameters and volatile organic compounds (VOC) in samples collected from all of the site wells. The inorganic parameters were analyzed to provide additional data for the assessment of the biodegradation potential, the major factor in determining the potential for monitored natural attenuation at the NIC site.

8.3.1 MNA Sampling Results and Discussion

The sample locations for the MNA assessment are shown on Figure 8-5. Rationale for selection of the sampling locations was provided in Section 3.2 of the Final Work Plan Addendum. In general, the MNA locations were selected to provide both a localized and site-wide assessment of the potential for MNA within both the shallow and deep portions of the alluvial aquifer within the NIC Site. The analytical results for VOCs, methane, ethane, and ethene; inorganic analytes; and field parameters; are presented in Table 8-4, Table 8-5, and Table 8-6, respectively.

Based on the analytical results for the chlorinated ethenes, the only sample locations that have not been impacted by VOCs are WND-06S, WNC-06D, and WND-22S, D. This was expected since both well pairs are outside of the contaminant plumes at the north end of the site. Therefore, the chemical concentrations in these wells can be used as an estimate of background aquifer conditions for the evaluation of the data.

The pH, conductivity, temperature, and alkalinity are typical of aquifer systems that support natural attenuation. Of particular importance as indicators for the natural reductive dechlorination of PCE and TCE is the availability of electron acceptors and dissolved organic carbon. The presence of any metabolic byproducts from electron acceptor utilization (e.g. methane and ferrous iron) and byproducts of the dechlorination process (ethene, ethane) are also important indicators. Results of MNA sampling at background locations and within the contaminant plumes are discussed below.

Redox potential: The measured redox potentials (Eh) of the background aquifer conditions range from 135.5 mV to 289.7 mV (Table 8-6). The in-plume conditions are slightly lower, varying from -93.6 mV (DRB-MW250) to 265 mV (WND-14D) with an average of 118.7 mV. The measured redox potential can describe the type of conditions that exist in the subsurface. High redox measurements indicate that the aquifer has oxidizing conditions. Low redox measurements indicate that the

conditions are reducing, which are the most conducive to anaerobic reductive dechlorination.

Conclusions: The redox data indicate that the aquifer is slightly reduced and represents the mid range of microbial metabolism conditions, from nitrate reducing (450 mV) to iron reducing (60 mV). However, measured redox values may not reflect the actual oxidation-reduction condition of the aquifer and are sensitive to sampling technique. The values are not an absolute measure of the type of conditions that exist and should be evaluated in conjunction with inorganic concentrations (redox pairs) for a more accurate description of the subsurface redox conditions.

Electron acceptors:

- **Dissolved oxygen:** The aquifer groundwater must be anaerobic (dissolved oxygen concentrations less than 1.0 mg/L) for reductive dechlorination to occur. The dissolved oxygen concentrations in the background wells range from 0.15 mg/L to 0.90 mg/L. Only three of the in-plume wells contain dissolved oxygen equal to or greater than 1.0 mg/L. The remainder of the in-plume wells (42 wells) contain dissolved oxygen at concentrations lower than 1.0 mg/L (Table 8-6).

  Conclusions: From the dissolved oxygen concentrations, the aquifer conditions are anaerobic (DO < 1.0 mg/L) with only 3 wells (WND-40D, WND-41S, and NMW-18S) exhibiting slightly aerobic conditions (DO ≥ 1.0 mg/L) (Table 8-6). Therefore, the majority of oxygen in the aquifer has been depleted and significant aerobic degradation of any site contaminants is unlikely in the absence of added oxygen.

- **Nitrate:** The presence of nitrate can inhibit the degradation of the more highly chlorinated ethenes. The nitrate concentrations in the background wells range from non-detect (< 0.5 mg/L) to 6.64 mg/L (WND-06S) (Table 8-5). Nitrite was not detected (< 0.5 mg/L) in the aquifer. Nitrate concentrations in the contaminated portions of the aquifer are similar to background concentrations, ranging from non-detect (< 0.5 mg/L) to 6.91 mg/L (WND-40D) with three wells containing nitrate at slightly elevated concentrations of 14.9, 11.7, and 11.6 mg/L (WND-41S, WND-41D, and NMW-45D, respectively).

  Conclusions: Locations that have higher concentrations of nitrate appear to have less degradation of PCE and TCE than corresponding areas without nitrate. For example, the degradation at well WND-41D appears to have stopped at TCE. This is demonstrated by the low (3.2 μg/L) PCE concentration, higher TCE concentration (45 μg/L), and only minor amounts of *cis*-1, 2-DCE (4.2 μg/L)(Table 8-4). The degradation of *cis*-1, 2-DCE to VC is completely inhibited by the nitrate, as confirmed by the non-detect (< 1.0 μg/L) of VC in WND-41D. A similar trend exists in NMW-45D, although a greater concentration of *cis*-1, 2-DCE is present (17 μg/L), no *cis*-1, 2-DCE has been converted to VC. The data from these wells identifies the need to determine the concentration

dependence of each electron acceptor. The reduction potentials in the table on page 8-18 indicate that in the presence of nitrate, none of the chlorinated ethenes should be utilized as the electron acceptor. According to the Technical Protocol for Evaluating Natural Attenuation of Chlorinated Solvents in Groundwater (EPA/600/R-98/128, 1998), a nitrate concentration greater than 1 mg/L may inhibit the reductive dechlorination of PCE and TCE. However, the concentration of nitrate in the wells discussed above may only slow the degradation rate of PCE and TCE and not completely inhibit the reaction. The apparent degradation of the chlorinated ethenes observed in the groundwater at wells WND-41D and NMW-45D may have actually occurred upgradient of these wells in a portion of the aquifer with more conducive conditions for biodegradation. The nitrate present at wells WND-41D and NMW-45D may currently be inhibiting further degradation. This is most likely the case for the TCE present in WND-41S.

- **Ferrous iron:** Non-aqueous ferric iron (Fe^{3+}) may be present in the subsurface in solid phases such as hematite, ferric oxyhydroxide, and goethite. Ferric iron may be reduced to ferrous iron (Fe^{2+}), which may be soluble in water. The presence of ferrous iron in groundwater can be an indication that ferric iron is used as an electron acceptor. Ferric iron reducing conditions are conducive to PCE and TCE degradation but can inhibit the degradation of *cis*-1, 2-DCE. The measured ferrous iron concentration in groundwater may be lower than actual available ferrous iron due to precipitation in the subsurface as sulfides or carbonates. Ferrous iron concentrations in the background wells range from 0.033 mg/L to 0.017 mg/L. Thirty of the 45 wells have ferrous iron concentrations (0.002 mg/L to 0.075 mg/L) in the same range as the background wells. Four monitoring wells have slightly elevated ferrous iron concentrations (0.116 mg/L to 0.296 mg/L). Eleven of the monitoring wells, representing 9 locations, have elevated ferrous iron concentrations, ranging from 1.186 mg/L to 8.880 mg/L (Table 8-6). In addition, all nine of the negative redox potentials (Eh) were observed in wells with elevated ferrous iron concentrations.

  Conclusions: Contaminant concentrations in the eleven wells with elevated ferrous iron concentrations further demonstrate the electron acceptor utilization pattern and the role of chlorinated solvents. Seven of the 11 wells with elevated ferrous iron concentrations contain VC, whereas none of the wells with higher nitrate concentrations show degradation of *cis*-1, 2-DCE to VC. Considering the reduction potentials for the half reactions listed in the table on page 8-18, these results are expected. The reduction of nitrate is preferable to the conversion of *cis*-1, 2-DCE to VC. The conversion of *cis*-1, 2-DCE to VC is preferable to the reduction of ferric iron. The data indicate that under some circumstances where elevated ferrous iron is present, the degradation of *cis*-1, 2-DCE to VC may occur, but at a low rate. The conditions at WND-21S provide a good example of the electron acceptor utilization pattern under iron-reducing conditions. As mentioned previously, all of the subsurface reactions involving electron acceptors are concentration dependent. The contaminant concentrations (Table 8-4) in this well indicate that under elevated

ferrous iron conditions (Fe^{2+} = 6.92 mg/L)(Table 8-6), the degradation of *cis*-1, 2-DCE (55 μg/L) to VC (1.4 μg/L) is most likely being inhibited and resulting is an accumulation of *cis*-1, 2-DCE.

- **Sulfate:** High concentrations of sulfate can inhibit the degradation of *cis*-1, 2-DCE and potentially TCE. The background concentrations of sulfate vary from 56.4 mg/L to 110 mg/L. The in-plume concentrations of sulfate range from 5.13 mg/L at WND-16S to 349 mg/L at WND-14D (Table 8-5). Sulfate concentrations in areas with BTEX and other petroleum compounds range from 5.13 mg/L to 200, with an average of 97.3 mg/L. Sulfate concentrations in areas without fuel related compounds range from 72 mg/L to 349 mg/L, with an average of 165mg/L.

  Conclusions: High concentrations of sulfate in the groundwater have led to the inhibition of anaerobic dechlorination except in areas where additional carbon sources are present. For example, the groundwater in NMW-14D contains VC at a concentration of 2.4 μg/L. The groundwater in well WND-03S contains VC at 46 μg/L. Both NMW-14D and WND-03S have similar ferrous iron concentrations (4.71 mg/L and 4.89 mg/L, respectively) and *cis*-1,2-DCE concentrations (200 μg/L and 240 μg/L, respectively) and neither well has detectable nitrate concentrations. The difference in VC concentrations is most likely due to the difference in sulfate concentrations. The sulfate concentration in WND-03S is 19 mg/L, whereas the sulfate concentration in NMW-14D is 182 mg/L, which competes with the *cis*-1,2-DCE as an electron acceptor. Each of the BTEX compounds was detected in WND-03S, indicating the presence of petroleum hydrocarbons. Well WND-03S is located in the vicinity of a former refinery. The presence of petroleum hydrocarbons leads to the consumption of sulfate as an electron acceptor. The depletion of sulfate leads to the use of *cis*-1, 2-DCE as the next preferred electron acceptor, resulting in the production of VC. No fuel related compounds were detected in NMW-14D, which results in a higher concentration of sulfate, since there is no electron donor to lead to the consumption of sulfate as an electron acceptor. Similar trends demonstrating sulfate inhibition are observed in monitoring wells WND-04S and NMW-31D. The sulfate concentration in WND-04S is 223 mg/L. The TCE and *cis*-1, 2-DCE concentrations are 120 μg/L and 41 μg/L, respectively. Vinyl chloride was not detected (< 1.0 μg/L) in well WND-04S, demonstrating the complete inhibition of *cis*-1,2-DCE degradation. The sulfate concentration in NMW-31D is 249 mg/L and the TCE and *cis*-1, 2-DCE concentrations are 200 μg/L and 43 μg/L, respectively. Vinyl chloride was detected at only 3.3 μg/L in well NMW-31D, demonstrating the inhibition of *cis*-1,2-DCE degradation. The high concentration of TCE compared to that of *cis*-1,2-DCE in both WND-04S and NMW-31D shows that TCE degradation has also been inhibited. Fuel related compounds that act as electron donors to drive the consumption of sulfate were not detected in either well.

Methane: Methane concentrations in the subsurface can indicate the presence or absence of methanogenesis. Methanogenesis is the metabolic mode that represents the preferred aquifer conditions for the complete dechlorination of PCE and TCE to ethene. The background methane concentrations range from 0.32 μg/L to 3.5 μg/L. Numerous in-plume wells have concentrations much higher (Table 8-4) than background concentrations. However, according to the Technical Protocol for Evaluating Natural Attenuation of Chlorinated Solvents in Groundwater (EPA/600/R-98/128, 1998) a weighting value for preliminary screening for anaerobic biodegradation is assigned to a site only if methane concentrations are above 500 μg/L. Weighting values are assigned to each parameter that can be indicative of anaerobic reductive dechlorination (e.g. electron acceptors, degradation byproducts, BTEX, etc.). The weighted parameters are used as a preliminary screening tool to determine if biodegradation is occurring. According to the EPA weighting criterion for methane, there are 16 wells with significant methane concentrations. The highest concentrations are in groundwater from wells WND-03S (15,000 μg/L), WND-16S (11,000 μg/L) and DRB-MW20 (9,300 μg/L).

Conclusions: The three locations with the highest methane concentrations indicate much more significant methanogenic activity than is found in the majority of the site. Each of these locations is in the vicinity of former petroleum refineries and has significant petroleum hydrocarbon contaminants (TPH, BTEX, PAH)(Figures 8-6 and 8-7) that provide sufficient electron donors to drive the aquifer to methanogenic conditions. Electron donors are required to deplete all other alternate electron acceptors (nitrate, sulfate, ferrous iron). Sulfate must be depleted to achieve methanogenesis, which is demonstrated by the data. The three locations with the highest methane concentrations (WND-03S, WND-16S and DRB-MW20) have the lowest sulfate concentrations (19 mg/L, 5.13 mg/L, and 58.1 mg/L, respectively). Locations demonstrating methanogenic conditions generally correspond to the highest dechlorination end products, VC and ethene. In fact, the highest concentration of methane (WND-03S - 15,000 μg/L) corresponds to the highest VC (46 μg/L) and ethene (1.4 μg/L) concentrations observed in the 45 wells sampled for MNA parameters.

Vinyl Chloride: The presence of vinyl chloride (VC) at the site indicates that dechlorination proceeds past *cis*-1, 2-DCE at some locations. VC in shallow and deep wells is shown on Figures 5-6a and 5-6b, respectively. The highest concentrations of VC are found at the northeast corner of the site near Coleman Northeast and in the upper middle portion of the site near VMI, between 29th Street and 25th Street. The majority of the VC detected in both shallow and deep wells is generally located immediately south of 21st Street.

Conclusions: The two locations with the highest VC concentration in shallow wells also have fuel related compounds detected at the same location (Figure 8-6). The high VC concentration in the northeast corner is downgradient from the Unocal petroleum facility. The general cluster of locations with VC south of 21st Street is downgradient

from a former refinery north of 25th Street and former stockyards between 21st and 25th Streets, both of which should provide carbon sources to support depletion of competing electron acceptors and production of VC. The distribution of VC at the Site indicates that excess carbon is required for the reductive dechlorination of *cis*-1, 2-DCE to VC. Lower concentrations of VC are found further south in the NIC Site. This VC is most likely from degradation at or near carbon sources that has been transported through the aquifer without further degradation. Vinyl chloride is one of the least retarded of the site contaminants and is transported readily in the groundwater (Section 8.2.5).

Dechlorination end products: The background levels of ethane and ethene are important for the evaluation of complete dechlorination at the site. Concentrations of ethane and ethene that are significantly higher than background concentrations may indicate complete dechlorination of 1,1,1- TCA, PCE and TCE. Neither ethane nor ethene was detected (< 0.005 μg/L) in background wells. The in-plume concentrations for ethane range from non-detect (< 0.005 μg/L) to 4.5 μg/L (well WND-37DA) and from non-detect (< 0.005 μg/L) to 1.4 μg/L (well WND-03S) for ethene. Overall, these concentrations are relatively low.

Conclusions: The highest concentration of ethane occurs at a well (WND-37DA) where the dechlorination of TCE appears to stop at the production of *cis*-1, 2-DCE (Table 8-4). The presence of ethane at this location and the lack of VC indicate complete dechlorination of 1,1,1-TCA, which is confirmed by the presence of 1,1-DCE, 1,1-dichloroethane (DCA), and chloroethane (CA), reductive dechlorination byproducts of 1,1,1-TCA. Many of the wells with ethane concentrations above 1.0 μg/L contain 1,1,1-TCA or 1,1,1-TCA dechlorination byproducts (WND-21D, WND-39D, NMW-06D, NMW-08D, NMW-10S, D, DRB-MW20).

The highest concentration of ethene at well WND-03S is indicative of complete dechlorination of TCE. However, the accumulation of *cis*-1, 2-DCE indicates that the dechlorination of *cis*-1,2-DCE may be the rate-limiting step in the process. The next highest concentration of ethene (0.51 μg/L, DRB-MW250 and NWW-44D) also occurs in wells with methanogenic conditions and significant concentrations of vinyl chloride. Although these patterns may be seen in the data, and the ethane and ethene concentrations are higher than background concentrations, the screening protocol for anaerobic degradation only assigns a weighted value to a site if ethane and ethene concentrations are above 10 μg/L (EPA, 1998). As stated earlier, compounds are assigned weighted values if they are present at a site in significant quantity, to be used as a preliminary screening tool to determine if biodegradation is occurring. The concentrations of ethane and ethene at the NIC site may be considered low according the EPA screening criteria and reflect the general overall site conditions that complete degradation is limited.

Total organic carbon (TOC): Bioavailable organic carbon is the most important parameter for the anaerobic reductive dechlorination of chlorinated solvents. The

organic carbon is required as an electron donor to create the most favorable conditions for reductive dechlorination. If sulfate levels are too high and are inhibiting dechlorination, the addition of organic carbon will stimulate sulfate use as an electron acceptor until it is depleted, and then the next preferred electron acceptor will be used until the electron donor (available organic carbon) is depleted. Once the electron donor is depleted the dechlorination process will stop, until more donor is made available. Other compounds, such as hydrogen, can also be used as an electron donor for anaerobic reductive dechlorination, in addition to BTEX and other organic carbon. As an example of organic carbon requirements for the utilization of sulfate, the removal of 100 mg/L of sulfate would require 22 mg/L of benzene-equivalent organic carbon.

The dissolved TOC concentrations are low at each of the background sampling locations. The TOC concentrations range from 1.4 mg/L to 2.6 mg/L (Table 8-5). The in-plume concentrations of TOC are only slightly higher and are generally less than 10 mg/L for most wells. Due to the sandy nature of the saturated soils in the majority of the site, elevated TOC concentrations will most likely be due to anthropogenic carbon sources (from human sources, not naturally occurring) such as petroleum contaminants (BTEX, TPH, PAH, etc). The highest dissolved TOC concentration occurs at DRB-MW20 (22 mg/L) and is most likely due to the presence of the petroleum products. According to the EPA screening protocol (EPA, 1998), this is the only significant TOC concentration. A weighted value for preliminary screening is given to sites that contain TOC at concentrations greater than 20 mg/L. The next highest concentration, 13 mg/L, also occurs at a well impacted with petroleum products (WND-16S). Well WND-16S contains total petroleum hydrocarbons (TPH) in both gasoline range organics (GRO) and diesel range organics (DRO), at concentrations of 14.3 mg/L and 7.7 mg/L, respectively (Table 8-4). Both wells DRB-MW20 and WND-16S are impacted with light non-aqueous phase liquids (LNAPL, i.e. petroleum free product).

Conclusions: According to the EPA screening criteria, insufficient dissolved TOC exists at the NIC site to sustain complete anaerobic reductive dechlorination. However, the laboratory analysis for TOC may not account for all the anthropogenic carbon. The overall site does not have sufficient bioavailable carbon, including petroleum contaminants to deplete sulfate as a competing electron acceptor and provide for complete reductive dechlorination. Only 12 of the 45 monitoring wells sampled for the MNA assessment contain petroleum contaminants. The other 32 wells all have low TOC concentrations. In addition, the petroleum contaminants at some locations are only present at low concentrations and will not sustain continued dechlorination.

8.3.2 MNA Summary and Conclusions

To achieve complete dechlorination of PCE and TCE, the chlorinated ethene must act as the preferred electron acceptor for microorganisms in the subsurface. The more highly oxidized species (PCE, TCE) are more readily reduced (in anaerobic conditions

with low nitrate levels) than are DCE and VC, which are in a lower oxidation state. The biodegradation of DCE and VC are more susceptible to competitive inhibition. Because of the lower oxidation state of DCE and VC they will compete with alternate electron acceptors (Fe^{3+}, SO_4^{2-}), which may not be thermodynamically preferable but are present at much greater concentrations. Additional electron donors (usually in the form of petroleum hydrocarbons) must be present to lower the concentration of sulfate and ferric iron for degradation to proceed past *cis*-1,2-DCE. This general trend is observed at the NIC Site. The locations of BTEX and other fuel-related compounds are shown in Figures 8-6 and 8-7, respectively. In addition, Plate 8-1 presents the locations and facility-of-record for leaking UST sites in and surrounding the NIC Site based on data provided by Environmental Data Resources, Inc. (EDR). The EDR data search utilized a 3-mile radius from the approximate center of the NIC site and included an inventory of reported leaking UST incidents from the Kansas Department of Environmental Protection's LUST Incident Report. In general, locations of LUST sites shown in the LUST database correspond with the locations of BTEX and other fuel-related compounds within the NIC Site as shown on Figures 8-6 and 8-7. A complete copy of the EDR report is included in Appendix N.

The areas with low sulfate concentrations generally correspond to areas with BTEX, TPH, and other fuel related compounds as shown in Figure 8-8. In addition, the locations at the NIC Site that have methanogenic conditions correspond to the locations with low sulfate concentrations (Figure 8-9), confirming that sulfate concentrations must be depleted before methanogenic conditions can exist. The fermentation of methane from carbon dioxide (methanogenesis) is less favorable thermodynamically than the dechlorination of DCE and VC. Therefore, methanogenic conditions in the aquifer will result in the most complete dechlorination of PCE and TCE.

Areas with Favorable Conditions for MNA

Areas within the NIC site that may be favorable for MNA are very localized due to the specific electron donor needs of the reductive dechlorination process. Eight wells in the middle portion of the NIC site appear to have conditions currently favorable for the complete dechlorination of PCE, TCE, and 1,1,1-TCA. These locations are shown on Figure 8-10. The eight wells that exhibit methanogenic conditions and contain fuel compounds exhibit conditions that are conducive to complete dechlorination. These locations generally have the highest concentrations of end products (ethane and ethene). However, the rate at which complete dechlorination occurs and the currently available electron donor supply may not be sufficient at each of these locations to apply MNA as a remedial strategy. The lack of significant ethene and ethane production indicates that complete reductive dechlorination is not occurring at a significant rate.

While eight wells may currently exhibit the proper conditions for complete reductive dechlorination, only locations WND-16S and DRB-MW20 have the available carbon supply to sustain complete reductive dechlorination for a long period of time. All

other locations that exhibit favorable conditions do not have sufficient carbon supply (petroleum contaminants) to allow for long-term reductive dechlorination. In fact, only wells WND-16S and DRB-MW20 and the area surrounding these wells represent locations that may be favorable for reductive dechlorination. This is due to the fact that petroleum free product is present in these wells. The free product will act as a long-term electron donor supply in the reductive dechlorination process. Without a long-term supply of electron donor, complete reductive dechlorination of the site contaminants is unlikely. However, carbon supply is only one limiting factor for complete reductive dechlorination. The fact that neither well WND-16S nor well DRB-MW20 contains high concentrations (> 100 μg/L, EPA, 1998) of ethene or ethane indicates that a potential deficiency in microbial ecology exists at these locations in relation to anaerobic reductive dechlorination. Recent discoveries show that the naturally occurring micro-organism Dehalococcoides (DHC) is necessary for the dechlorination process to proceed from the cis-1,2-Dichloroethene (DCE) and vinyl chloride stages to the ethene and ethane stage.

MNA as a remedial strategy will be discussed in detail in the Site-wide FS Report and the conclusions presented in this section are to provide general conclusion based on the results of the MNA sampling activities. Other abiotic mechanisms such as dispersion, dilution, and sorption may contribute to the MNA process. The focus of the discussion in this subsection is based on biological processes because it is a major destructive process. The EPA states, "When relying on natural attenuation processes for site remediation, EPA prefers those processes that degrade or destroy contaminants."(EPA 1999). In addition, the initial screening process described in the Technical Protocol for Evaluating Natural Attenuation of Chlorinated Solvents in Ground Water indicates that if biodegradation is not occurring, then engineered remediation is required (EPA 1998), thereby indicating the importance of biodegradation to the MNA process.

Current Site Conditions

Based on the results of a downgradient groundwater investigation conducted in July and August 2003, the ratio of *cis*-1,2-DCE to TCE is increasing at the site. Based on this increased ratio, reductive dechlorination of TCE may be occurring at the site. Evidence of further reductive dechlorination processes, such as increased VC concentrations, was not found during the downgradient investigation. Data from the downgradient investigation were insufficient to evaluate the sustainability of reductive dechlorination at the site. Furthermore, while reductive dechlorination of TCE is occurring within the NIC site, the contaminant plume as a whole is expanding in the downgradient direction.

Further information regarding the downgradient investigation and a plan for additional downgradient monitoring is available in a letter report finalized on April 9, 2004. A plan for additional site-wide monitoring has also been prepared under separate cover. Using the additional groundwater quality data, reductive

dechlorination processes at the NIC site will be evaluated further during the feasibility study.

8.4 Summary of Fate and Transport at the Site by Compound

Of the fate and transport processes discussed, anaerobic biodegradation is the most important process (at least for TCE). In general, adsorption is the next most important process. Volatilization may be important if gases are able to diffuse from the vadose zone at a significant rate. A breakdown of the importance of each fate process by compound is presented below:

Evaluation of Fate Processes for Select Volatile Organics at the NIC Site

Fate Process	PCE	TCE	*cis-1,2-DCE*	VC	CT	CFM	MC	1,1,1-TCA	1,1-DCE	1,1-DCA
Adsorption	2	2	3	5	2	4	5	3	4	4
Anaerobic biodegradation	1	1	2	3	1	1	2	1	2	2
Volatilization	5	5	4	4	4	5	5	4	4	4
Hydrolysis	6	6	6	6	6	6	6	6	6	6
Abiotic degradation	6	6	6	6	6	6	6	3	6	6
Photolysis	C	C	C	C	C	C	C	C	C	C

1 Very important
2 Important
3 Somewhat important
4 Limited
5 Relatively unimportant
6 Unimportant
C Does not occur

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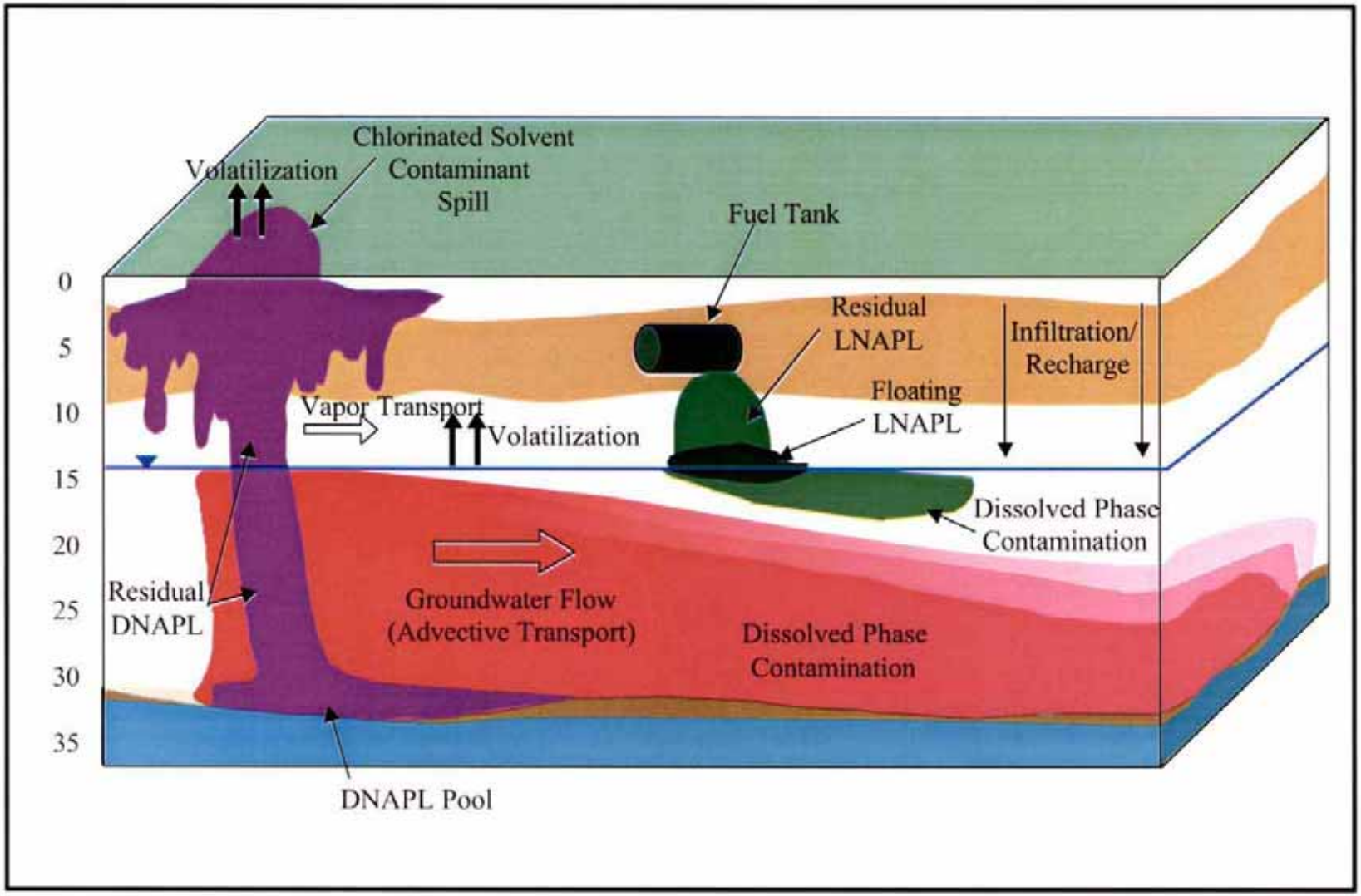

Figure 8-1
North Industrial Corridor (NIC) Site
Conceptual Schematic of Contaminant Release to Subsurface

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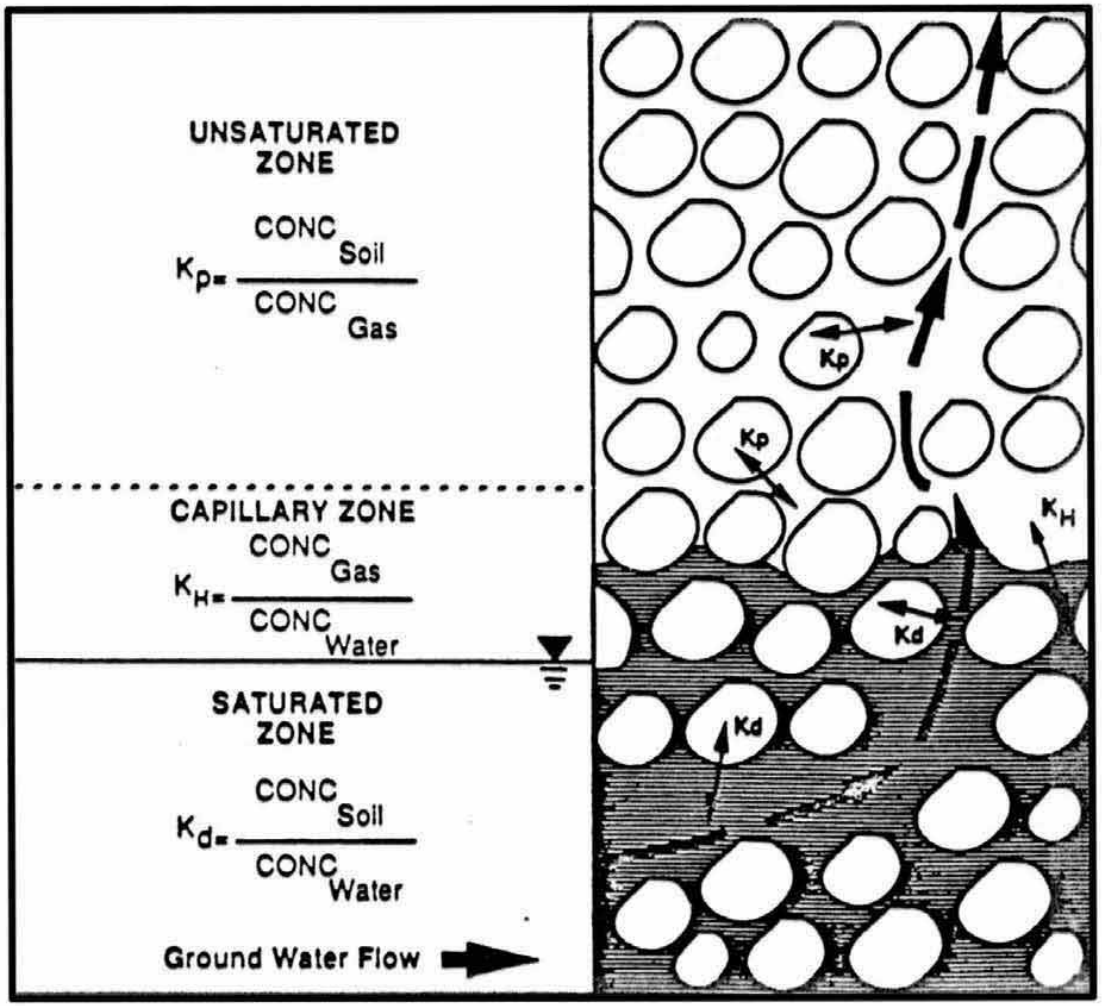
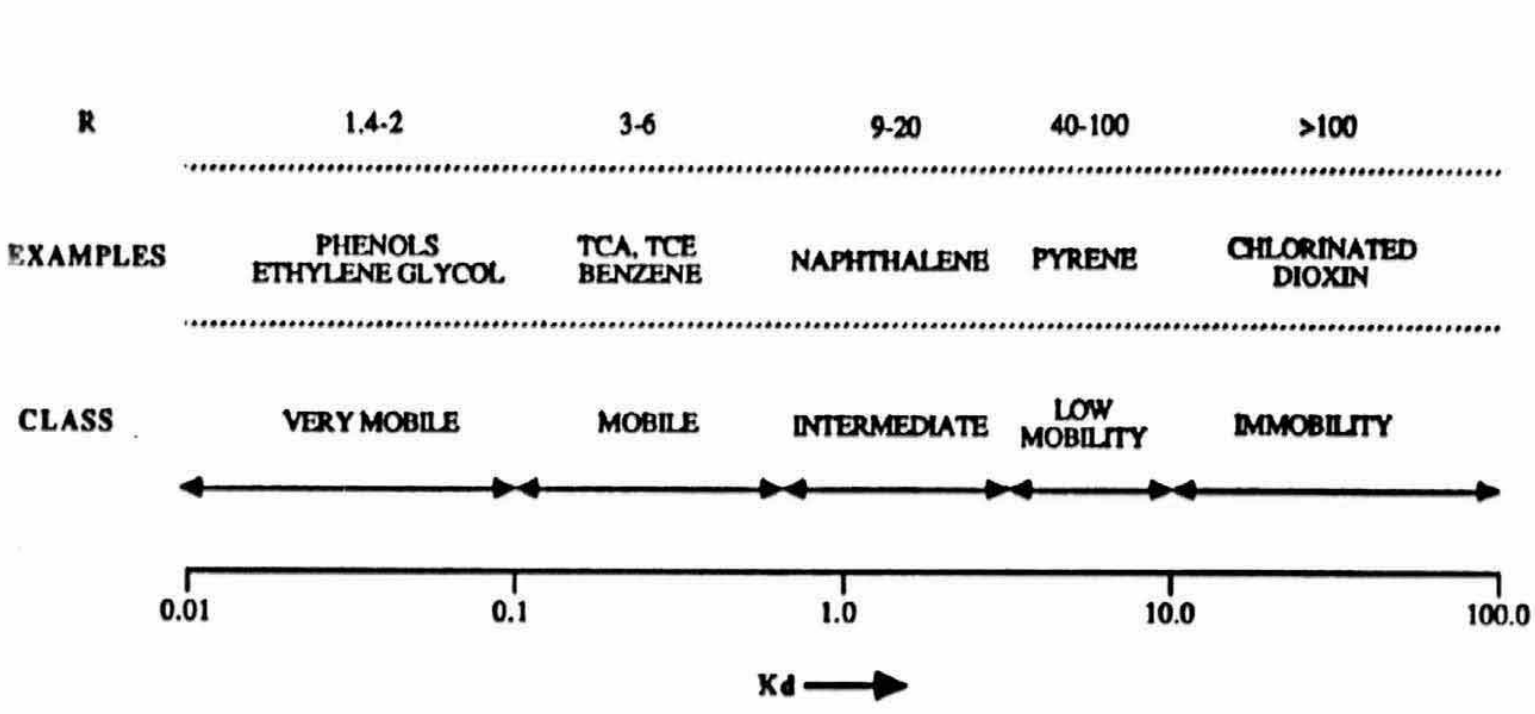


Figure 8-2
North Industrial Corridor (NIC) Site
Distribution Coefficients Relating Groundwater, Gaseous and Sorbed Analyte Concentrations

CDM



Source: Olsen and Davis (1990)

Figure 8-3
North Industrial Corridor (NIC) Site
Mobility Classes

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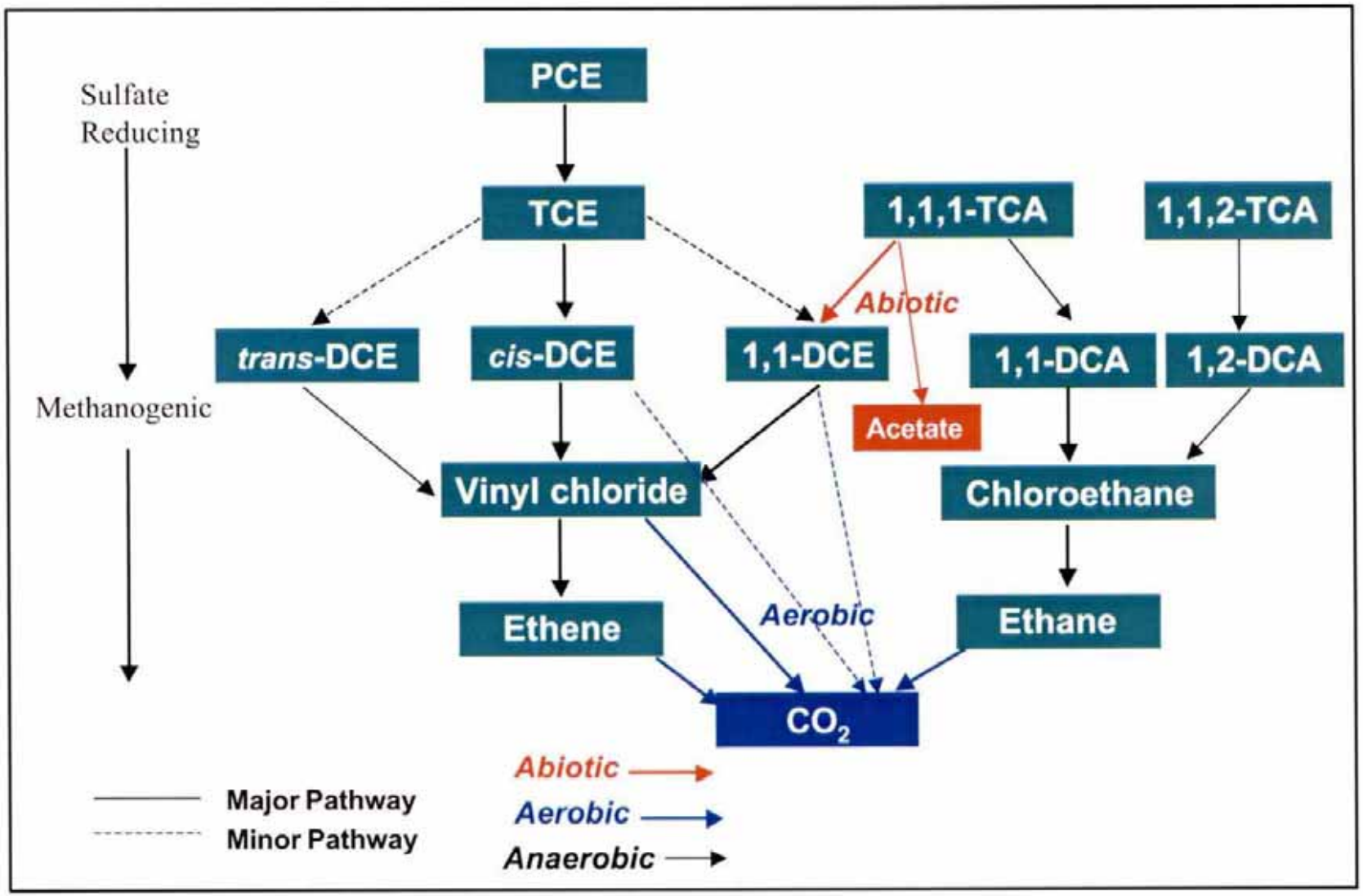

Figure 8-4
North Industrial Corridor (NIC) Site
Degradation Pathways for Chlorinated Aliphatic Hydrocarbons

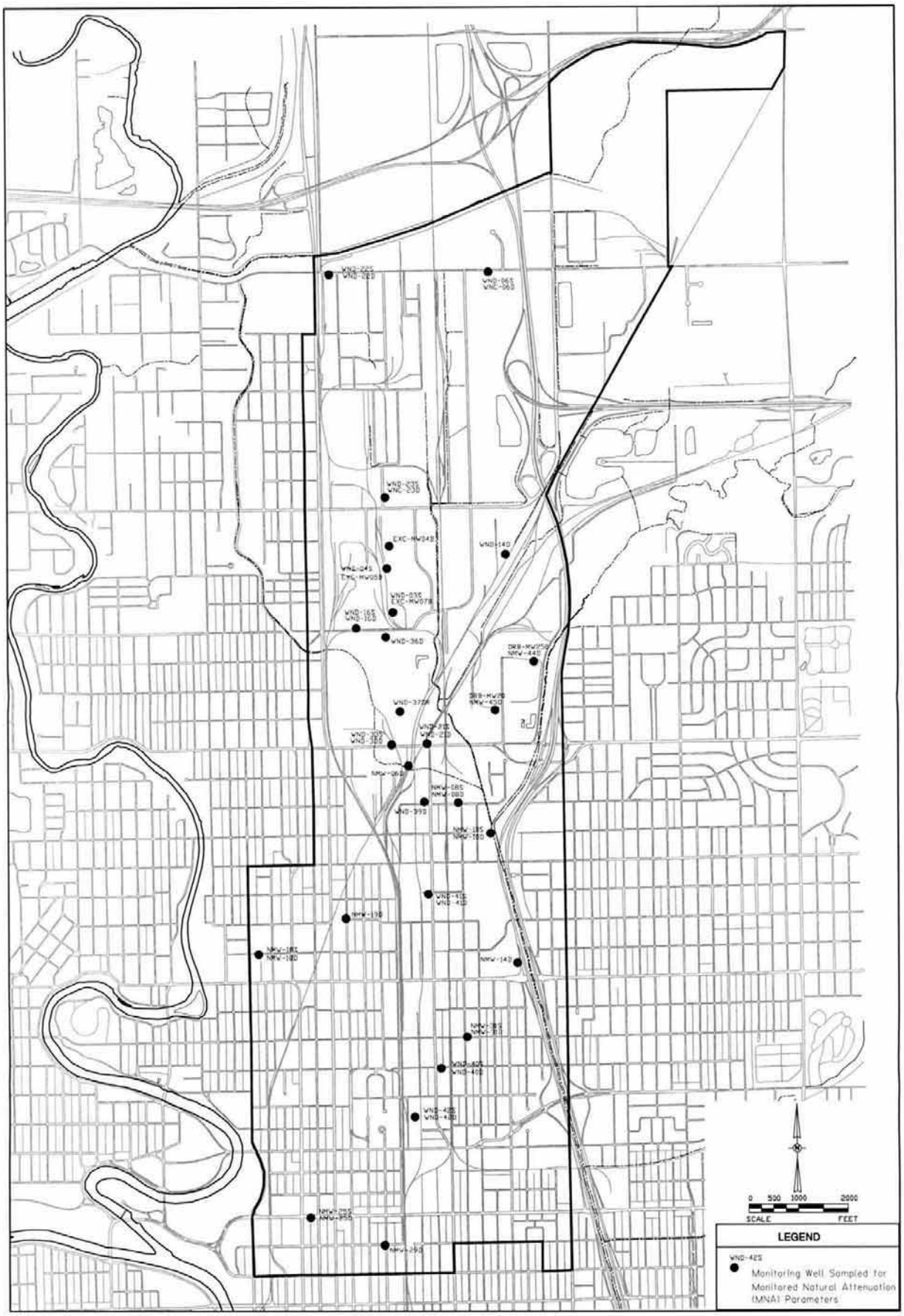

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Figure 8-5
North Industrial Corridor (NIC) Site
Monitoring Wells Sampled for MNA Parameters

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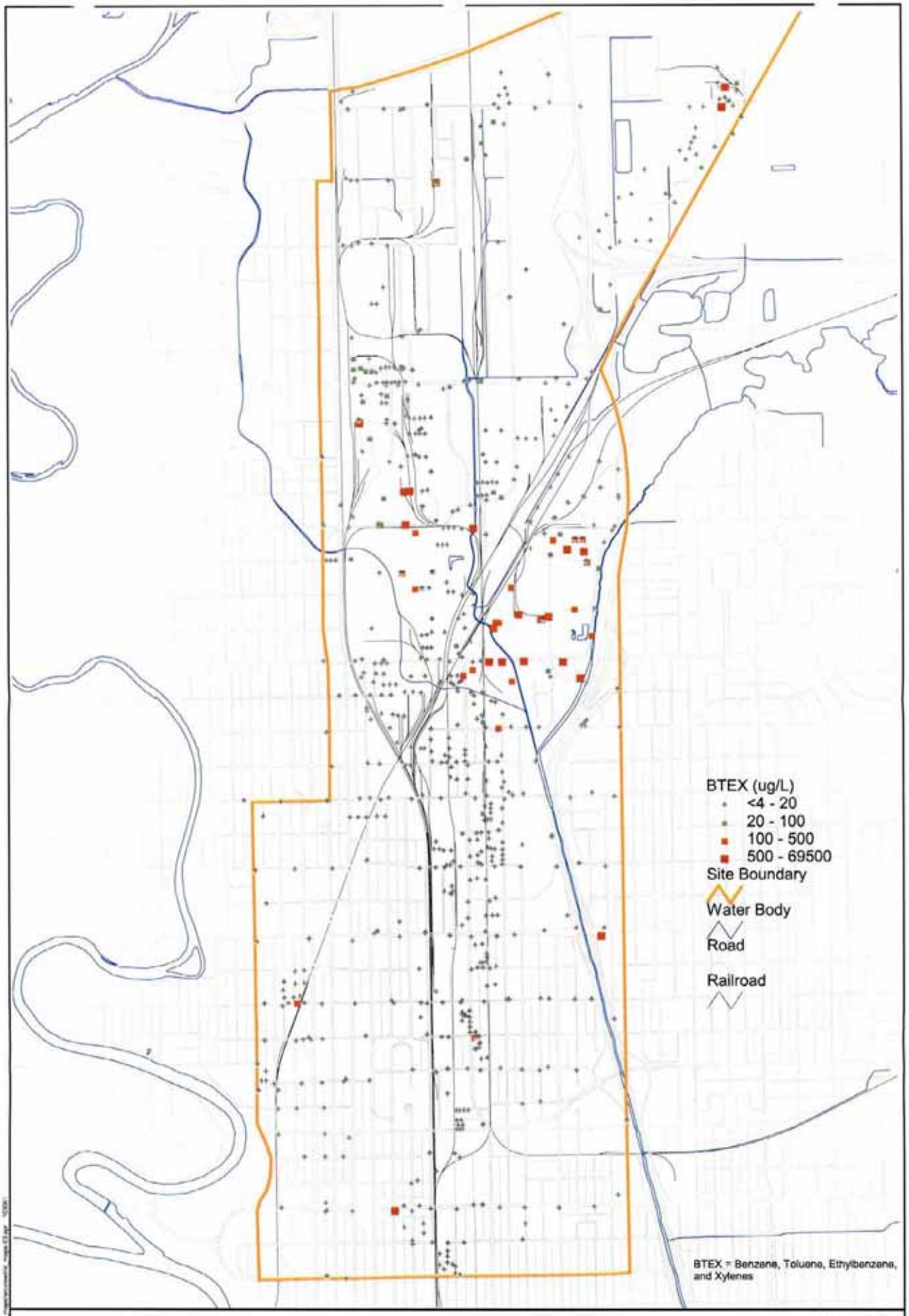

850 0 850 Feet

Scale: 1" = 1700'

Figure 8-6

BTEX in Groundwater

North Industrial Corridor (NIC) Site, Wichita, Kansas

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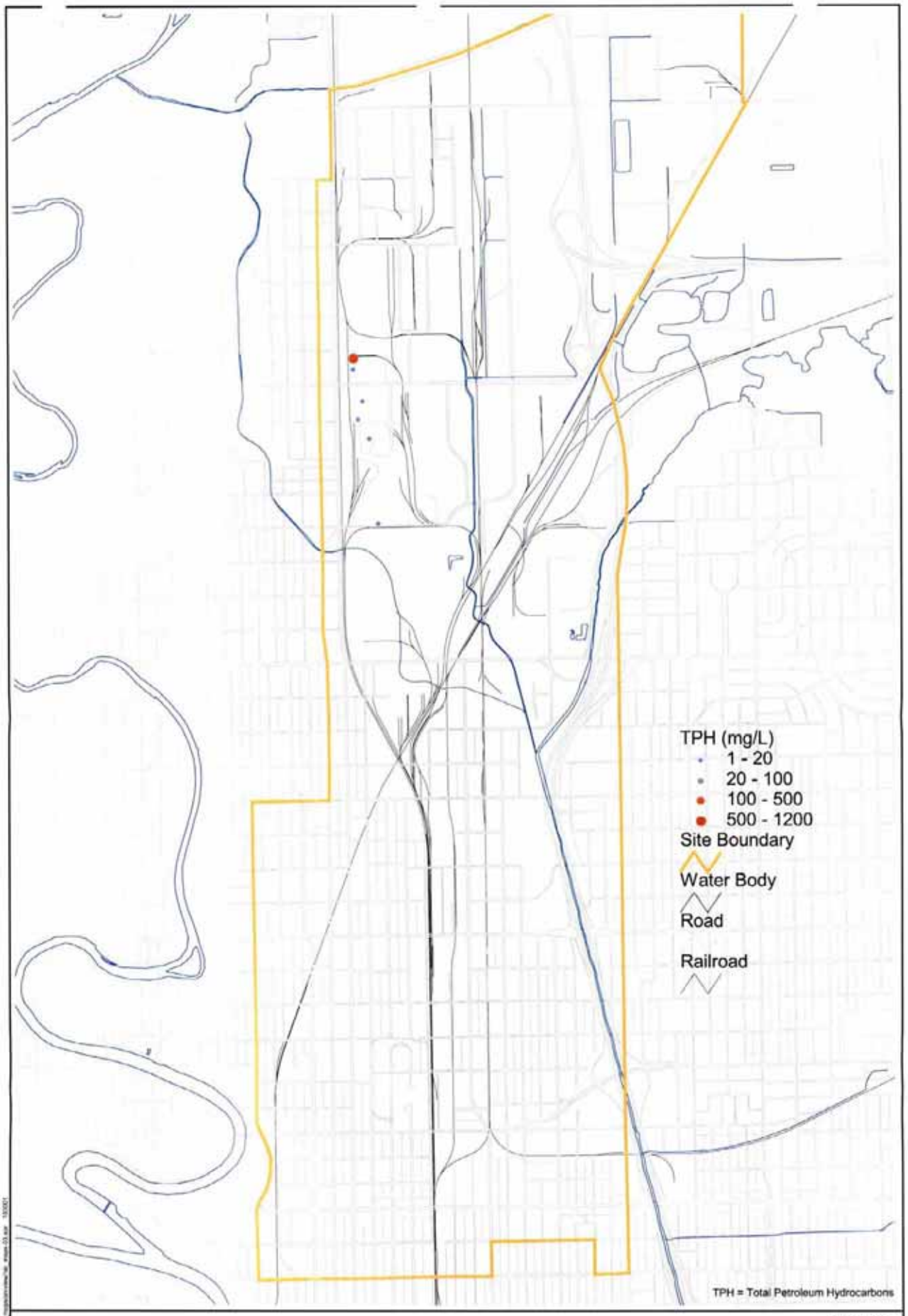

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Scale: 1" = 1700'

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Figure 8-7

TPH in Groundwater

North Industrial Corridor (NIC) Site, Wichita, Kansas

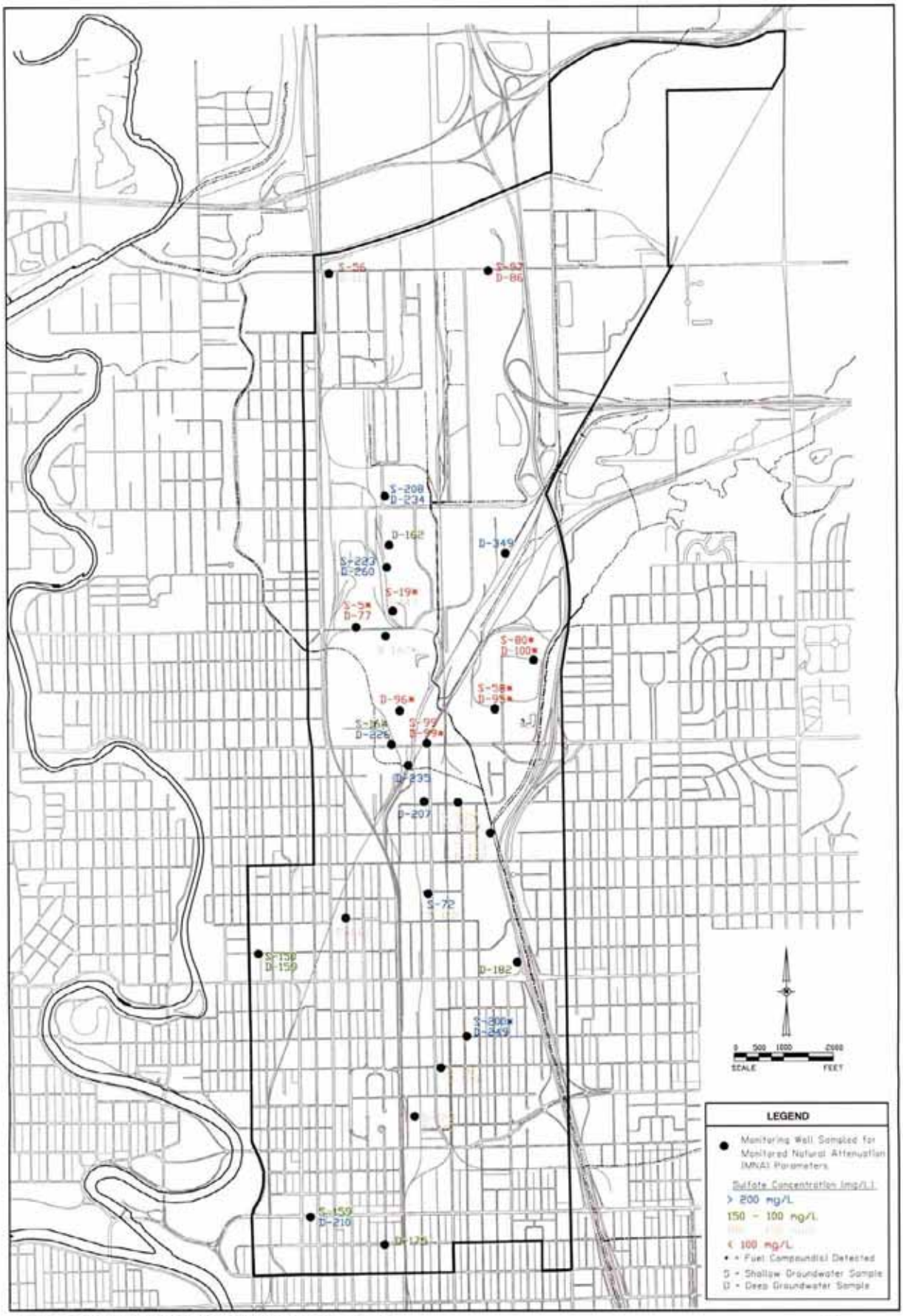

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Figure 8-8
North Industrial Corridor (NIC) Site
Sulfate in Groundwater Samples

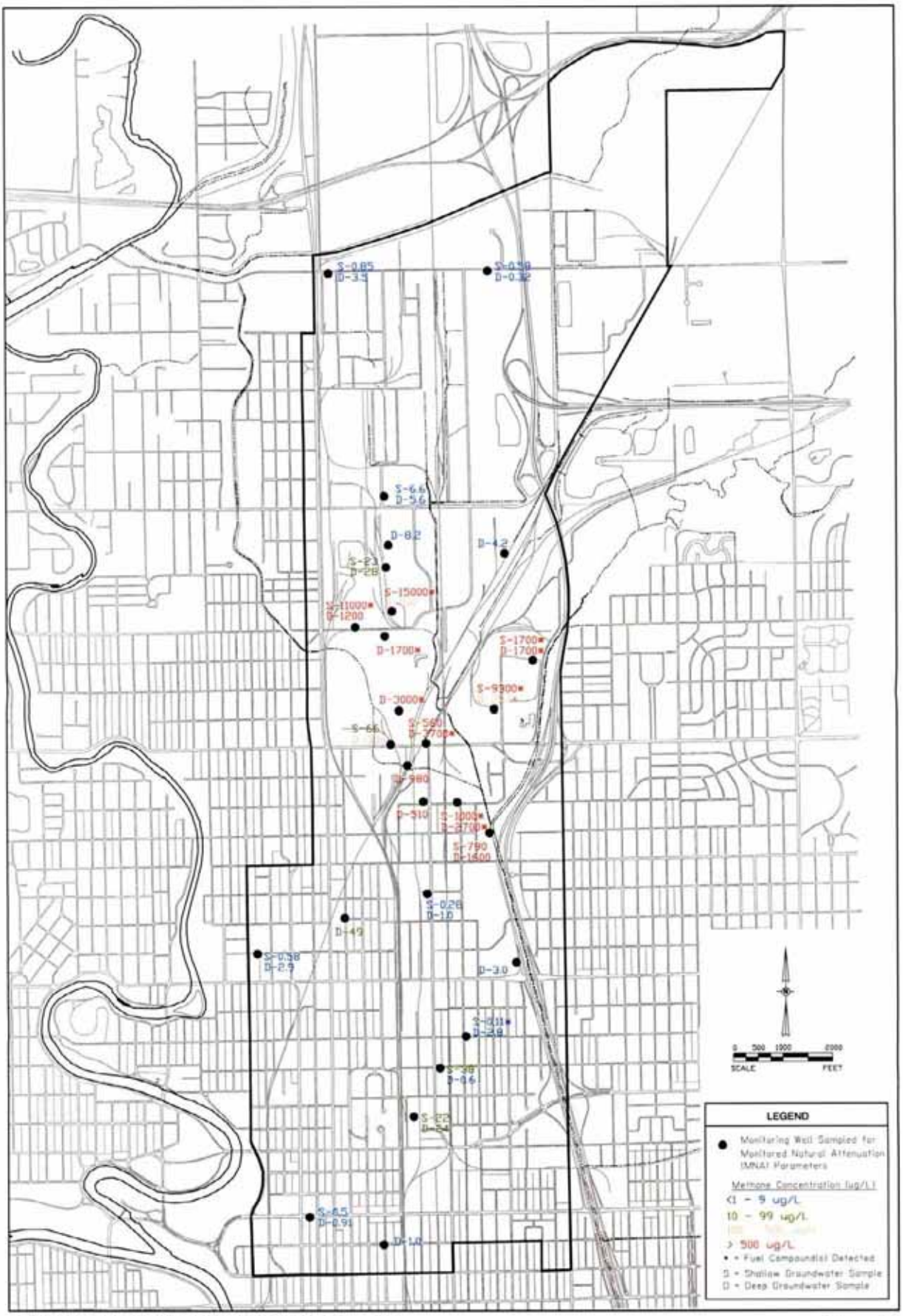

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Figure 8-9
North Industrial Corridor (NIC) Site
Methane in Groundwater Samples

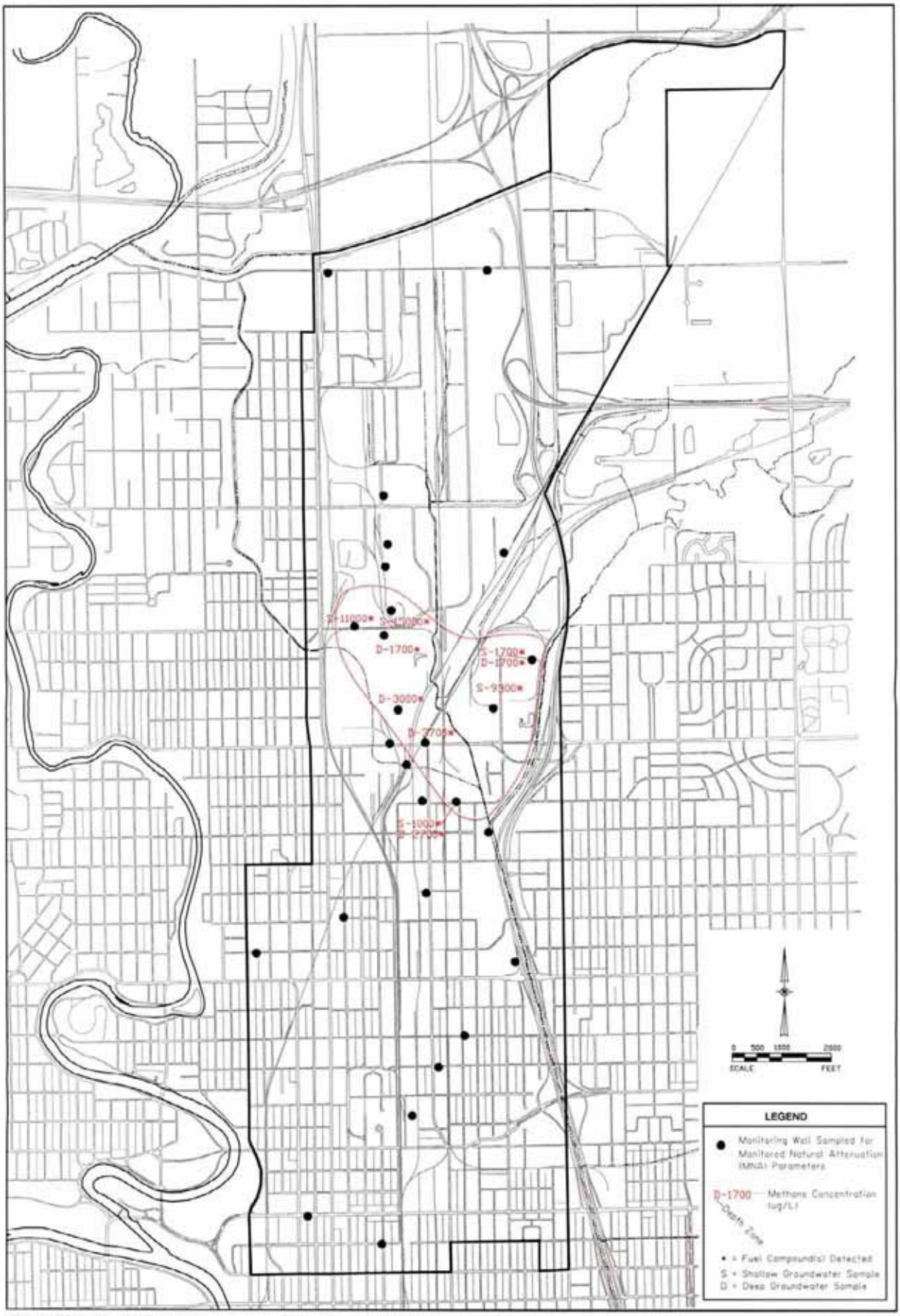
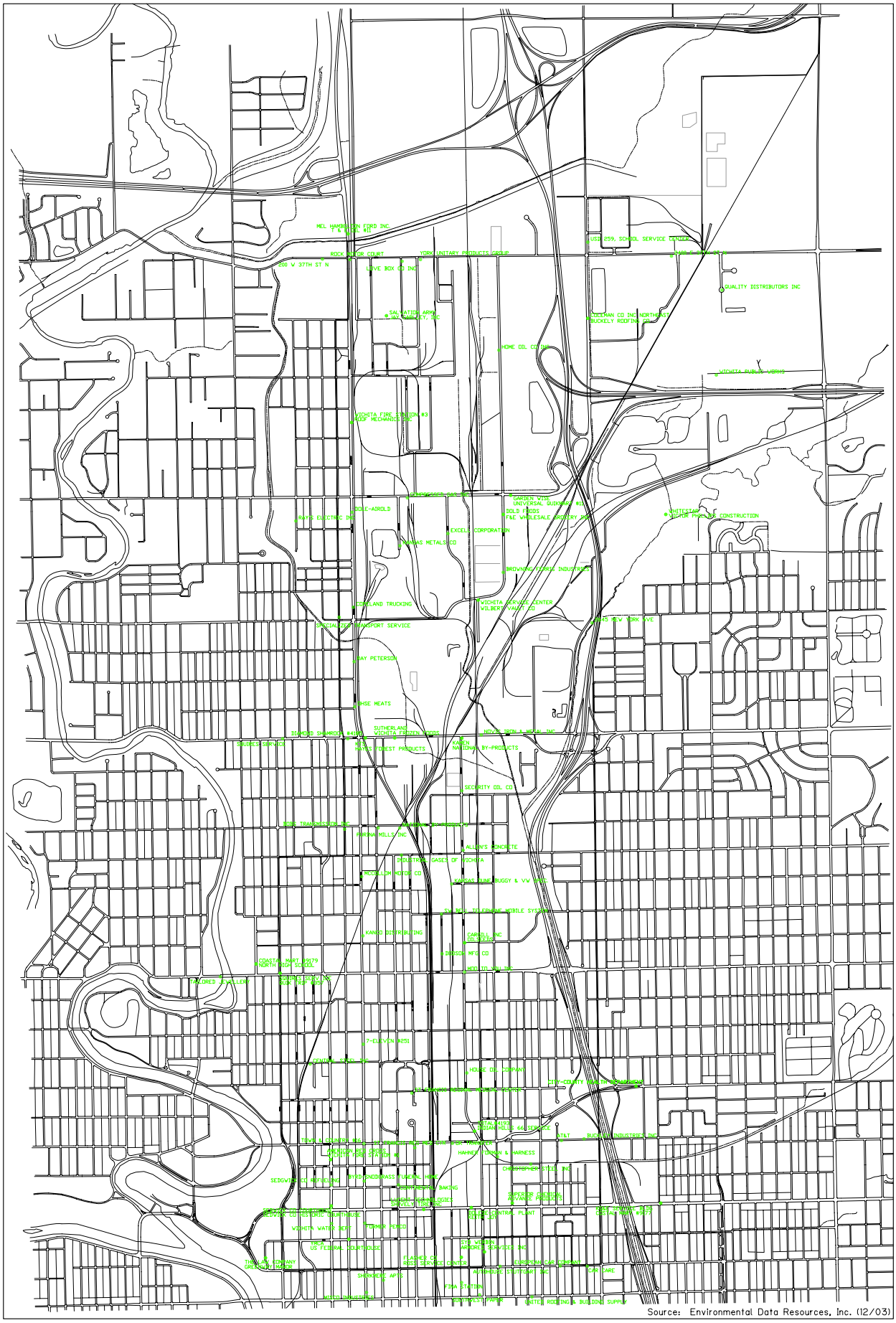


Figure 8-10
North Industrial Corridor (NIC) Site
Area with Significant Dechlorination

CDM



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CDM

Plate 8-1
North Industrial Corridor (NIC) Site
Leaking UST Sites Location Map, 2003

Table 8-1
North Industrial Corridor (NIC) Site
Physical and Chemical Properties of Selected Chemicals

Compound	Molecular Weight (g/mole)	Vapor Pressure (mm Hg)	mp [a] (°C)	bp (°C)	Density (g/cm^3)	Solubility (mg/L)	H ($atm\text{-}m^3/mole$)	Log (K_{ow})
PCE	165.83	14	-19	121	1.63	200	8.3 x 10-3	2.88
TCE	131.39	57.9	-73	87	1.46	1100	9.1 x 10-3	2.29
cis-1,2-DCE	96.94	200	-80.5	60.3	1.27	800	3.4 x 10-3 [b]	1.86 [d]
VC	62.5	2660	-153.8	-13.37	0.91[l]	2,763[k]	1.1 x 10-2	1.38[d]
CT	153.84	113.8 [a]	-23 [a]	76.5 [a]	1.59	805 [a]	3.04 x 10-2 [a]	2.83 [a]
CFM	119.38	160 [c]	-64 [c]	62 [c]	1.48[m]	8000	4.4 x 10-3 [a]	1.97 [d]
MC	84.94	434.9 [a]	-95 [a]	39.8 [a]	1.32	13,000 [a]	2.68 x 10-3 [a]	1.25 [a]
111	133.41	96	-30.4	71/81 [c]	1.35	4,400 [c]	1.8×10^{-2}	2.17
112	133.41	30.3 [a]	-36.5 [a]	113.8 [a]	1.44 [h]	4,420 [a]	1.2×10^{-3} [a]	2.07 [a]
DCA	98.96	180	-97	57.3 [a]	1.17	5500	4.3×10^{-3}	1.79
1,1-DCE	96.94	591	-123	31.9 [c]	1.17	400	3.4×10^{-2}	1.48
1,2-DCA	98.96	78.7 [a]	-35.4 [a]	83.5 [a]	1.257 [h]	8,524 [a]	9.77×10^{-4} [a]	1.48 [a]
Benzene	78.12	95.2	5.5 [c]	80.1 [c]	0.88	1780	5.6×10^{-3}	2.13
Toluene	92.1	28.4 [a]	-95.1 [c]	110.8 [c]	0.87 h	535 [a]	6.3×10^{-3} [a]	2.73 [a]
Xylenes	106.2	8.3 [a]	-53 [c]	139 [c]	0.86 [h]	146 [a]	7.8×10^{-3} [a]	3.20 [a]
Ethylbenzene	106.2	9.5 [c]	-95 [c]	136 [c]	0.87 [h]	152 [c]	8.6×10^{-3} [a]	3.15 [c]
Naphthalene	128.2	0.078 [i]	80.2 [c]	217.9 [c]	1.15 [c]	31.7 [i]	4.1×10^{-4} [g]	3.35 [i]

H = Henry's Law Constant
Log K_{ow} = Log (octanol-water partition coefficient)
Density = Density of pure liquid
Solubility = Solubility at 20°C
Vapor Pressure = Vapor pressure at 20°C
mp = Melting point of pure phase
bp = Boiling point of pure liquid at 760 mm Hg pressure
Note: Values from Callahan, et al. (1979) unless otherwise noted

PCE = Tetrachloroethylene
TCE = Trichloroethylene
cis-1,2-DCE = *cis*-1,2-dichloroethylene
VC = Vinyl chloride
CT = Carbon tetrachloride
CFM = Chloroform
MC = Methylene chloride
111 = 1,1,1-Trichloroethane
112 = 1,1,2-Trichloroethane
DCA = 1,1-Dichloethane
1,1-DCE = 1,1-Dichloroethene
1,2-DCB = 1,2-Dichlorobenzene
1,2-DCA = 1,2-Dichloroethane

[a] Howard (1989)
[b] Hine and Mookerjee (1975)
[c] Verschueren (1983)
[d] Hansch and Leo (1985)
[e] Custance, et al. (1992)
[f] MacKay and Shin (1992)
[g] Estimated using H = (Vp) (MW) (16.04) /(WS) (T) where Vp is the vapor pressure, MW is the molecular weight in g/mole, WS is the water solubility, and T is the Kelvin temperature.
[h] *MERCK Index*, 12th edition (1996)
[i] EPA (1986)
[j] *Chemical Rubber Company (CRC) Handbook*, 62nd edition (1982)
[k] Horvath (1989)
[l] Chemical Rubber Company (CRC) Handbook, 79th edition (1998)
[m] Hawley's Condensed Chemical Dictionary, 13th edition (1997)

Table 8-2
North Industrial Corridor (NIC) Site
Retardation Factors of Selected Chemicals

Compound	Ks[a]	Koc (L/kg) (Measured[b])			Koc (L/kg) (Estimated[c])			R (Measured)			R (Estimated)		
		Minimum	Maximum	Geometric Mean	Minimum	Maximum	Geometric Mean	Minimum	Maximum	Geometric Mean	Minimum	Maximum	Geometric Mean
Tetrachloroethene	0.022	177	373	265	224	871	447	1.33	1.58	1.44	1.39	2.22	1.68
Trichloroethene	0.018	57	150	94	83	417	135	1.16	1.28	1.20	1.19	1.62	1.26
cis-1,2-dichloroethene	0.015	38[de]	38[de]	38[de]	31	245	55	1.12	1.12	1.12	1.11	1.39	1.14
Vinyl chloride	0.013	NA	NA	NA	10	135	20	NA	NA	NA	1.07	1.23	1.09
Carbon tetrachloride	0.022	123	224	152	214	832	407	1.26	1.39	1.30	1.38	2.17	1.62
Chloroform	0.016	28	81	53	40	282	69	1.11	1.18	1.14	1.13	1.44	1.16
Methylene chloride	0.012	10[e]	10[e]	10[e]	8	115	15	1.07	1.07	1.07	1.07	1.20	1.08
1,1,1-trichloroethane	0.017	106	179	135	63	363	105	1.22	1.31	1.25	1.16	1.54	1.21
1,1,2-trichloroethane	0.017	60	108	75	63	363	105	1.15	1.22	1.17	1.16	1.54	1.21
1,1-dichlorethane	0.015	46	62	53	26	224	48	1.13	1.15	1.14	1.10	1.36	1.13
1,1-dichloroethene	0.013	65[e]	65[e]	65[e]	13	151	25	1.15	1.15	1.15	1.08	1.26	1.09
1,2-dichloroethane	0.013	22	76	38	13	151	25	1.09	1.16	1.11	1.08	1.26	1.09
Benzene	0.017	31	100	62	58	347	95	1.12	1.21	1.16	1.15	1.52	1.20
Toluene	0.021	94	247	140	204	692	302	1.22	1.41	1.28	1.36	1.98	1.49
Xylenes	0.025	213[f]	298[f]	249[f]	302	1318	724	1.39	1.50	1.44	1.50	2.80	2.04
Ethylbenzene	0.025	165	255	204	589	1413	776	1.33	1.44	1.38	1.87	2.92	2.11
Naphthalene	0.027	830	1950	1191	407	2344	1202	2.19	3.62	2.65	1.65	4.12	2.66

[a] as determined in McCarty, et al. (1981)
[b] K_{oc} values obtained from compilation of laboratory studies in which Koc was measured, EPA 1996
[c] K_{oc} values estimated from lieterature K_{ow} correlations listed in table 8-4
[d] values for *cis*-1,2-dichloroethene were not available so calculations used values for *trans*-1,2-dichloroethene
[e] only one value available
[f] used average values for o,m,p-xylene
NA - not available

Note: See text in Section 8.2.5 regarding calculation of R-values

Table 8-3
Nrth Industrial Corridor (NIC) Site
Equations to Estimate K_{oc} Based on K_{ow}

Number	Equation	Reference	Data Base Chemicals Used
1	$\log K_{om} = 0.52 \log K_{ow} + 0.62$	Briggs (1981)	72 substituted benzene pesticides
2	$\log K_{oc} = 1.00 \log K_{ow} - 0.21$	Karickhoff et al. (1979)	10 PAHs
3	$K_{oc} = 0.63 K_{ow}$	McCarty et al. (1981)	Variety of organics
4	$\log K_{oc} = 0.544 \log K_{ow} + 1.377$	Kenaga and Goring (1980)	45 organics (mostly pesticides)
5	$\log K_{oc} = 1.029 \log K_{ow} - 0.18$	Rao and Davidson (1980)	44 pesticides
6	$\log K_{oc} = 0.94 \log K_{ow} + 0.02$	Rao and Davidson (1980)	s-triazines and dinitroanaline herbicides
7	$\log K_{oc} = 0.989 \log K_{ow} - 0.346$	Karickhoff (1981)	5 PAHs
8	$\log K_{oc} = 0.937 \log K_{ow} - 0.006$	Brown et al. (1982)	Aromatics, PAHs, triazines
9	$1n K_{oc} = 1n K_{ow} - 0.7301$	McCall (1983)	DDT, tetrachlorobiphenyl, lindane, 2,4-D, and 1,3-dichloropropane

$K_{oc} = 1.724 K_{om}$

Table 8-4
North Industrial Corridor (NIC) Site
Summary of Methane, Ethane, Ethene, and VOCs in Groundwater Samples

Well	Well Location	PCE (µg/L)	TCE (µg/L)	C12DCE (µg/L)	VC (µg/L)	11DCE (µg/L)	11DCA (µg/L)	Ethene (µg/L)	Ethane (µg/L)	Methane (µg/L)	Other Compounds (µg/L)
WND-06S	up/cross-gradient	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	< .005	< .005	0.58	None
WNC-06D	up/cross-gradient	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	< .005	< .005	0.32	None
WND-22S	up/cross-gradient	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	< .005	< .005	0.85	None
WND-22D	up/cross-gradient	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	< .005	< .005	3.5	None
WND-03S	In-plume	<1.0	30	240	46	12	2.5	1.4	0.6	15,000	Benzene-5.7, Ethylbenzene-13, m&p-Xylene-6.4, Toluene-2.7
EXC-MW-07B	In-plume	<1.0	51	18	<1.0	2.1	1.3	0.31	0.66	150	None
WND-04S	In-plume	<1.0	120	41.	<1.0	5.1	<1.0	0.051	0.35	23	1,1,1-Trichloroethane-1.5, 1,2-Dibromoethane-1.1
EXC-MW-05B	In-plume	<1.0	62.	8.7	<1.0	2.4	<1.0	0.21	0.95	28	None
WND-14D	In-plume	1.4	51.	11.	<1.0	<1.0	<1.0	< .005	0.04	4.2	None
WND-16S	In-plume	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	< .005	2.4	11,000	1,2,4-Trimethylbenzene-2.8, 1,3,5-Trimethylbenzene-31, Acenaphthene-12, Benzene-25, Ethylbenzene-18, Fluorene 10, Isopropylbenzene-17, m&p Xylenes-28, n-Butylbenzene-6.9, n-Propylbenzene-26, Naphthalene-500, o-Xylene-1.7, Phenanthrene-21,sec-Butylbenzene-3.2, tert-Butylbenzene-1.1, Toluene-2.3, GRO TPH-14,300, DRO TPH-7,700
WNC-16D	In-plume	<1.0	6.4	3.2	<1.0	<1.0	<1.0	0.049	0.38	1,200	None

Table 8-4
North Industrial Corridor (NIC) Site
Summary of Methane, Ethane, Ethene, and VOCs in Groundwater Samples

Well	Well Location	PCE (µg/L)	TCE (µg/L)	C12DCE (µg/L)	VC (µg/L)	11DCE (µg/L)	11DCA (µg/L)	Ethene (µg/L)	Ethane (µg/L)	Methane (µg/L)	Other Compounds (µg/L)
WND-21S	In-plume	<1.0	2.9	55.	1.4	3.1	1.2	< .005	0.13	560	None
WND-21D	In-plume	<1.0	230	86.	22.	21.	7.5	0.32	3.7	3,700	1,1,1-Trichloroethane-2.9, Benzene-5.2, Carbon tetrachloride-1.5, Chloroform-1.6
WND-23S	In-plume	<1.0	9.5	5.2	<1.0	<1.0	<1.0	< .005	0.17	6.6	None
WNC-23D	In-plume	<1.0	33.	3.7	<1.0	1.1	<1.0	0.067	0.11	5.6	None
WND-33S	In-plume	<1.0	160	100	9.4	2.4	3.5	0.022	0.26	66	None
WND-33D	In-plume	<1.0	43.	72.	<1.0	<1.0	4.3	0.053	0.76	330	None
WND-36D	In-plume	<1.0	44.	49.	15.	2.5	2.2	0.18	0.67	1,700	Benzene-1.2
WND-37DA	In-plume	<1.0	120	37.	<1.0	11.	5.3	0.17	4.5	3,000	Benzene-3.3, Chloroethane-1.1
WND-39D	In-plume	<1.0	32.	13.	1.8	1.3	2.5	< .005	1.4	510	None
WND-40S	In-plume	<1.0	36.	9.6	<1.0	6.0	1.8	< .005	< .005	38	1,1,1, Trichloroethane-9.7
WND-40D	In-plume	1.4	54.	21.	<1.0	6.2	1.9	< .005	0.2	0.6	1,1,1, Trichloroethane-9.5
WND-41S	In-plume	2.3	7.2	<1.0	<1.0	<1.0	<1.0	< .005	< .005	0.28	None
WND-41D	In-plume	3.2	45.	4.2	<1.0	<1.0	<1.0	0.021	0.065	1	None
WND-42S	In-plume	<1.0	<1.0	4.9	<1.0	<1.0	<1.0	0.019	0.073	22	None
WND-42D	In-plume	<1.0	3.3	41.	2.0	<1.0	<1.0	0.041	0.072	24	None
NMW-06D	In-plume	<1.0	80.	49.	24.	3.3	3.6	0.11	1.1	980	None
NMW-08S	In-plume	<1.0	130	65.	17.	9.4	4.3	0.11	0.84	1,000	Toluene-120
NMW-08D	In-plume	<1.0	230	110	34.	18.	7.9	0.2	1.6	2,700	Benzene-1.2
NMW-10S	In-plume	<1.0	150	53.	18.	7.5	4.6	0.18	1.1	790	None
NMW-10D	In-plume	<1.0	140	51.	20.	6.5	4.0	0.13	1.6	1,600	Chloroform-1.3
NMW-14D	In-plume	<1.0	8.9	200	2.4	1.9	1.7	0.057	0.32	3	None
NMW-18S	In-plume	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	< .005	< .005	0.58	None
NMW-18D	In-plume	<1.0	1.5	10.	<1.0	<1.0	<1.0	0.12	0.045	2.9	None
NMW-19D	In-plume	<1.0	110	68	3.7	3.6	1.5	0.075	0.38	49	*trans*-1,2-Dichlorethene
NMW-25S	In-plume	1.2	21.	18.	<1.0	<1.0	<1.0	< .005	0.01	0.5	None
NMW-25D	In-plume	<1.0	19.	20.	<1.0	<1.0	<1.0	0.015	0.015	0.91	None
NMW-29D	In-plume	<1.0	18.	9.1	<1.0	1.0	1.4	0.038	0.06	1	None

Table 8-4
North Industrial Corridor (NIC) Site
Summary of Methane, Ethane, Ethene, and VOCs in Groundwater Samples

Well	Well Location	PCE (µg/L)	TCE (µg/L)	C12DCE (µg/L)	VC (µg/L)	11DCE (µg/L)	11DCA (µg/L)	Ethene (µg/L)	Ethane (µg/L)	Methane (µg/L)	Other Compounds (µg/L)
NMW-31S	In-plume	3.0	55.	11.	<1.0	<1.0	<1.0	0.043	0.051	0.11	n-Butylbenzene-0.99
NMW-31D	In-plume	4.0	200	43.	3.3	1.0	1.9	0.28	0.42	2.8	None
EXC-MW-04B	In-plume	<1.0	39	7	<1.0	1.9	<1.0	0.21	0.03	8.2	None
DRB-MW20	In-plume	<1.0	13.	9.6	<1.0	<1.0	<1.0	0.1	3.9	9,300	1,2,4-Trimethylbenzene-40, 1,3,5-Trimethylbenzene-8.4, Benzene-560, Chloroethane-1.1, Ethylbenzene-35, Isopropylbenzene-5.9, m&p-Xylene-98, n-Propylbenzene-10, Naphthalene-30, o-Xylene-38, sec-Butylbenzene-1.2, Toluene-28
NMW-45D	In-plume	<1.0	32.	17.	<1.0	<1.0	<1.0	0.075	2.7	250	1,2,4-Trimethylbenzene-1.2, Benzene-11, MTBE-6.8
DRB-MW250	In-plume	<1.0	<1.0	33.	24.	<1.0	<1.0	0.51	3.8	1,700	Benzene-170, Isopropylbenzene-1.2
NMW-44D	In-plume	<1.0	13.	39.	18.	1.6	<1.0	0.51	2.8	1,700	Benzene-8.5, Isopropylbenzene-3.3, n-propylbenzene-6.9, tert-butylbenzene-1.3

DRO- Diesel range organics
GRO-Gasoline range organics
TPH-Total petroleum hydrocarbons

Table 8-5
North Industrial Corridor (NIC) Site
Summary of Inorganic Parameters in Groundwater Samples

Well	Location	Nitrogen (Ammonia) (mg/L)	Nitrogen (Total Kjeldahl) (mg/L)	TDS (mg/L)	TSS (mg/L)	Bicarbonate (CaCO3) (mg/L)	Carbonate (CaCO) (mg/L)	Chloride (mg/L)	Nitrite (mg/L)	Nitrate (mg/L)	Sulfate (mg/L)	TOC (mg/L)
WND-06S	up/cross-gradient	< 0.272	0.215	675	< 5.0	376	< 1	50.3	< 0.5	6.64	97.1	1.8
WNC-06D	up/cross-gradient	< 0.236	< 0.20	589	< 5.0	333	< 1	33.0	< 0.5	6.24	85.8	1.4
WND-22S	up/cross-gradient	< 0.268	< 0.20	485	< 5.0	307	< 1	48.4	< 0.5	< 0.5	56.4	2.6
WND-22D	up/cross-gradient	< 0.236	< 0.20	532	< 5.0	261	< 1	46.1	< 0.5	0.569	110	1.8
WND-03S	In-plume	< 0.236	< 0.20	591	9	494	< 1	24.4	< 0.5	< 0.5	19	2.6
EXC-MW-07B	In-plume	< 0.244	1.47	627	< 5.0	300	< 1	38.5	< 0.5	2.85	147	3.3
WND-04S	In-plume	< 0.248	< 0.20	841	< 5.0	367	< 1	55.0	< 0.5	2.99	223	3.6
EXC-MW-05B	In-plume	< 0.252	0.49	822	< 5.0	294	< 1	53.5	< 0.5	3.18	260	2.7
WND-14D	In-plume	< 0.268	< 0.20	1090	8	368	< 1	64.2	< 0.5	2.13	349	1.6
WND-16S	In-plume	1.45	2.01	513	141	355	< 1	38.1	< 0.5	< 0.5	5.13	13
WNC-16D	In-plume	< 0.260	< 0.20	645	< 5.0	415	< 1	28.7	< 0.5	< 0.5	76.7	6.1
WND-21S	In-plume	3.18	3.14	793	25	462	< 1	42.6	< 0.5	< 0.5	98.6	4.3
WND-21D	In-plume	< 0.260	0.335	695	< 5.0	486	< 1	42.7	< 0.5	1.07	98.5	3.5
WND-23S	In-plume	6.54	8.54	600	< 5.0	222	< 1	44.0	< 0.5	1.04	208	2.1
WNC-23D	In-plume	4.19	4.42	725	< 5.0	293	< 1	47.5	< 0.5	3.22	234	3
WND-33S	In-plume	< 0.256	< 0.20	874	8	497	< 1	100.0	< 0.5	< 0.5	164	6.6
WND-33D	In-plume	0.374	0.642	1260	34	655	< 1	132.0	< 0.5	< 0.5	226	11
WND-36D	In-plume	2.16	2.3	782	33	488	< 1	71.7	< 0.5	< 0.5	142	5.9
WND-37DA	In-plume	< 0.276	0.278	699	39	492	< 1	54.4	< 0.5	< 0.5	96	6.6
WND-39D	In-plume	< 0.272	0.348	1030	9	452	26.2	136.0	< 0.5	1.82	207	6.7
WND-40S	In-plume	< 0.244	0.234	590	< 5.0	232	< 1	95.9	< 0.5	5.15	112	4.4
WND-40D	In-plume	< 0.240	0.284	650	< 5.0	228	< 1	106.0	< 0.5	6.91	123	2.6
WND-41S	In-plume	< 0.244	0.506	599	< 5.0	322	< 1	27.4	< 5.0	14.9	72	2.4
WND-41D	In-plume	< 0.276	< 0.20	596	25	265	< 1	44.2	<5.0	11.7	102	1.5
WND-42S	In-plume	< 0.248	0.309	654	12	356	< 1	54.1	< 0.5	< 0.5	123	2.6
WND-42D	In-plume	< 0.236	< 0.20	684	70	228	< 1	94.4	< 0.5	< 0.5	140	2.7
NMW-06D	In-plume	< 0.264	0.389	1200	< 5.0	608	< 1	132.0	< 0.5	< 0.5	235	9.2
NMW-08S	In-plume	0.344	< 0.20	726	< 5.0	308	< 1	95.4	< 0.5	< 0.5	112	6.8
NMW-08D	In-plume	< 0.256	0.447	1100	14	370	< 1	256.0	< 0.5	< 0.5	122	4.7
NMW-10S	In-plume	< 0.256	0.326	713	9	307	< 1	96.6	< 0.5	< 0.5	133	4
NMW-10D	In-plume	< 0.260	< 0.20	800	9	338	< 1	92.8	< 0.5	< 0.5	142	4.9
NMW-14D	In-plume	< 0.276	0.584	771	45	289	< 1	90.5	< 0.5	< 0.5	182	2

Table 8-5
North Industrial Corridor (NIC) Site
Summary of Inorganic Parameters in Groundwater Samples

Well	Location	Nitrogen (Ammonia) (mg/L)	Nitrogen (Total Kjeldahl) (mg/L)	TDS (mg/L)	TSS (mg/L)	Bicarbonate (CaCO3) (mg/L)	Carbonate (CaCO) (mg/L)	Chloride (mg/L)	Nitrite (mg/L)	Nitrate (mg/L)	Sulfate (mg/L)	TOC (mg/L)
NMW-18S	In-plume	< 0.276	0.266	735	16	357	< 1	99.8	< 0.5	1.8	150	2.3
NMW-18D	In-plume	< 0.274	0.356	720	5	332	< 1	98.6	< 0.5	< 0.5	159	2
NMW-19D	In-plume	< 0.240	< 0.20	909	< 5.0	461	< 1	154.0	< 0.5	< 0.5	136	4.1
NMW-25S	In-plume	< 0.250	0.309	874	< 5.0	435	< 1	126.0	< 0.5	2.82	159	1.9
NMW-25D	In-plume	< 0.248	0.334	917	< 5.0	388	< 1	129.0	< 0.5	< 0.5	210	2
NMW-29D	In-plume	< 0.276	0.229	783	< 5.0	367	< 1	103.0	< 0.5	0.798	175	1.6
NMW-31S	In-plume	< 0.256	0.448	872	< 5.0	334	< 1	88.9	< 0.5	3.71	200	2.1
NMW-31D	In-plume	< 0.264	< 0.20	951	< 5.0	354	< 1	108.0	< 0.5	< 0.5	249	2.3
EXC-MW-04B	In-plume	< 0.256	0.438	700	23	297	< 1	68.2	< 0.5	4.02	162	2.2
DRB-MW20	In-plume	0.692	2.56	957	9	595	< 1	109.0	< 0.5	3.33	58.1	22
NMW-45D	In-plume	< 0.256	1.08	763	402	372	< 1	67.4	< 5.0	11.6	94.5	4.4
DRB-MW250	In-plume	0.382	0.544	675	2760	412	< 1	69.8	< 0.5	< 0.5	80	4.6
NMW-44D	In-plume	< 0.240	0.787	719	1700	383	<1	81.8	< 0.5	< 0.5	99.5	5.3

Table 8-6
North Industrial Corridor (NIC) Site
Summary of Field Parameters in Groundwater Samples

Well	Well Location	pH	Temp (C)	Cond (uS/cm)	Chemet DO (mg/L)	Eh (mV)	Eh (mV adjusted)	Fe^{2+} (mg/L)	Turbidity (ntu)
WND-06S	up/cross-gradient	6.36	16.8	850	0.20	186.0	196.7	0.033	12.6
WNC-06D	up/cross-gradient	6.94	18.3	740	0.50	281.0	289.7	0.021	3.3
WND-22S	up/cross-gradient	7.16	14.7	610	0.90	153.0	166.4	0.016	5.9
WND-22D	up/cross-gradient	7.00	16.5	700	0.15	124.4	135.5	0.017	2.8
WND-03S	In-plume	6.83	15.4	1020	0.06	-87.9	-75.4	4.890	5.7
EXC-MW-07B	In-plume	6.98	17.1	990	0.55	168.5	178.8	0.016	2.2
WND-04S	In-plume	6.71	16.9	1190	0.30	153.1	163.6	0.025	8.5
EXC-MW-05B	In-plume	6.94	18.0	1150	0.55	115.8	124.9	0.075	3.4
WND-14D	In-plume	6.88	18.1	1350	0.15	256.0	265.0	0.014	6.5
WND-16S	In-plume	6.87	14.2	820	0.10	-88.8	-74.8	4.010	33.0
WNC-16D	In-plume	6.81	16.1	1020	0.20	3.3	14.9	0.296	4.9
WND-21S	In-plume	6.51	16.2	1290	0.15	-70.1	-58.7	6.920	69.9
WND-21D	In-plume	6.80	16.8	970	0.15	163.0	173.7	0.017	1.0
WND-23S	In-plume	7.17	15.1	900	0.70	226.1	239.0	0.018	13.6
WNC-23D	In-plume	7.06	17.2	1040	0.25	208.4	218.5	0.015	6.3
WND-33S	In-plume	6.60	16.2	1380	0.10	200.4	211.8	0.011	201.0
WND-33D	In-plume	6.91	16.9	1910	0.15	175.6	186.1	0.014	47.3
WND-36D	In-plume	6.85	16.2	1180	0.15	4.0	15.4	0.015	11.4
WND-37DA	In-plume	6.65	16.8	1130	0.50	156.0	166.7	0.027	43.5
WND-39D	In-plume	6.81	15.3	1460	0.15	181.4	194.0	0.006	16.5
WND-40S	In-plume	6.77	19.7	980	0.60	142.5	149.4	0.021	2.4
WND-40D	In-plume	6.95	19.9	1060	1.00	179.8	186.4	0.012	3.5
WND-41S	In-plume	6.70	16.5	940	2.00	190.1	201.2	0.019	3.0
WND-41D	In-plume	6.73	18.0	870	0.04*	243.6	252.7	0.011	73.3
WND-42S	In-plume	6.42	16.6	981	<0.1	-98.3	-87.4	7.850	4.0
WND-42D	In-plume	6.68	18.4	1050	0.15	-61.5	-52.9	1.224	549.0
NMW-06D	In-plume	6.85	18.8	1620	0.25	130.0	138.1	0.027	6.8

Table 8-6
North Industrial Corridor (NIC) Site
Summary of Field Parameters in Groundwater Samples

Well	Well Location	pH	Temp (C)	Cond (uS/cm)	Chemet DO (mg/L)	Eh (mV)	Eh (mV adjusted)	Fe^{2+} (mg/L)	Turbidity (ntu)
NMW-08S	In-plume	6.38	16.2	790	0.30	160.1	171.5	0.002	10.1
NMW-08D	In-plume	6.73	17.6	1220	0.25	140.6	150.2	0.011	40.7
NMW-10S	In-plume	6.71	16.9	1080	0.25	-9.2	1.3	1.785**	28.3
NMW-10D	In-plume	6.69	17.3	1230	0.20	-9.3	0.7	1.763	10.3
NMW-14D	In-plume	6.82	14.7	1160	0.30	-78.2	-64.8	4.710	14.0
NMW-18S	In-plume	7.35	15.4	1100	2.50	179.2	191.7	0.034	39.3
NMW-18D	In-plume	7.23	17.0	1070	0.35	-35.9	-25.5	1.186	16.0
NMW-19D	In-plume	6.93	17.9	1460	0.25	89.5	98.7	0.221	23.3
NMW-25S	In-plume	7.02	17.6	1300	0.80	214.5	224.1	0.015	9.0
NMW-25D	In-plume	7.00	18.7	1340	0.35	111.0	119.2	0.036	14.7
NMW-29D	In-plume	6.94	19.4	1150	0.35	224.2	231.5	0.008	38.1
NMW-31S	In-plume	6.75	15.0	1280	0.50	237.0	250.0	0.013	6.9
NMW-31D	In-plume	7.04	16.6	1410	0.30	777.1	788.0	0.116	38.8
EXC-MW-04B	In-plume	6.94	19.3	1080	0.55	150.9	158.3	0.021	53.7
DRB-MW20	In-plume	6.80	16.7	1460	0.15	-79.0	-68.2	3.410	5.9
NMW-45D	In-plume	6.88	17.4	1120	0.50	-3.0	6.9	0.226	191.0
DRB-MW250	In-plume	6.66	17.0	1100	0.60	-104.0	-93.6	8.880	336.0
NMW-44D	In-plume	6.05	17.1	730	0.20	58.0	68.3	0.007	66.8

* Measured by Orion probe
**Measured at a wavelength of 498 nm
NM - Not measured

Section 9
Source Area Identification

9.1 Introduction

NOTE: Following the original submittal of this RI report in June 2004, additional source investigation activities were completed. An RI addendum report with the results of the additional investigation were submitted to KDHE in August 2005. Please refer to this document for additional information on source areas, as the status provided in this document has changed for some of the source areas.

This section presents the identification of source areas for groundwater contamination within the NIC Site. The focus of the source area identification is to identify the "hot spots" and/or source areas within the Site for the purpose and extent necessary to develop an area-wide FS. The identification of source areas is primarily based upon data collected during the NIC RI field work and supplemented by available data collected during investigations conducted by other parties. The source areas identified in this section are primarily related to chlorinated solvent contamination. Petroleum hydrocarbon contamination associated with leaking underground or above ground fuel storage tanks is under the jurisdiction of KDHE's Storage Tank Section and is not generally documented in this section. Areas with petroleum hydrocarbon contamination within the Site are discussed in Sections 5.5.4.4 and 8.3, and are best demonstrated on Figures 8-6 and 8-7.

The remedial investigation work is consistent with the National Contingency Plan and the level of effort appropriate for the completion of the RI project and the generation of a site-wide FS. The source identifications were based on the best professional judgment of the City and its consultant at the time the draft RI was prepared. On March 25, 2003, KDHE provided comments on source area identifications related to this section of the RI and Appendix L. Responses to KDHE's comments were submitted to KDHE on October 8, 2003. These comment responses indicated that two work plans would be prepared, one for suspect source areas and one for identified source areas where additional investigations were requested by KDHE. The work plans were prepared and submitted to KDHE on April 8, 2004.

Based on a meeting between KDHE and the City on November 6, 2003, the identification of the physical property from which a release has occurred that has impacted groundwater is the information that is needed to complete the RI. Identification of the responsible party(s) is needed in order for KDHE to initiate consent order negotiations. Once a source property has been identified, the City will proceed with investigation activities to identify a PRP(s). A separate work plan will be prepared that presents the methods proposed to identify PRP(s). The goal of this activity will be to provide sufficient information to enable KDHE to pursue a consent order with responsible party(s).

Source areas are identified in this section with the expectation that additional characterization will be conducted as part of the Source Control Measures (SCM) follow-up to be conducted under KDHE oversight. KDHE policy BER-RS-030 provides the requirements for work to be conducted as part of the SCM. SCM work consists of facility-specific:

- Soil and groundwater investigations
- Target risk assessment
- Feasibility Study assessment of remedial alternatives
- Remedial Design and Remedial Action activities

Each SCM follow-up will be conducted by either the identified responsible parties who have negotiated a Consent Order with KDHE or by the City. Under the Settlement Agreement, the City is responsible for SCM follow-up at properties where a viable responsible party cannot be identified, is insolvent, or is defunct.

The remainder of this section is organized as follows. Section 9.2 presents the methodology used to identify and characterize the source areas. Section 9.3 presents the source areas considered "Confirmed". Section 9.4 presents the source areas considered "Identified". "Suspect" source areas are presented in Section 9.5.

9.2 Methodology

The names assigned to the source areas identified in this section are strictly for reference purposes and are not meant to be interpreted as an identification of a responsible party (unless otherwise noted). The focus of the source area identification was to identify the property or facility where the contamination originated. In most cases, neither the party(ies) responsible for the contamination nor the timing of the release could be determined within the scope of work for this RI program. Where possible, potential responsible parties (PRPs) have been identified. The identification of PRPs is based upon available information primarily consisting of current and past occupants of the suspected source area.

Source areas have been identified utilizing three sources of information:

- Data collected during previous investigations by other parties
- Data collected by other parties during the NIC RI
- Data collected by the City/CDM as part of the NIC RI

Source areas have primarily been identified utilizing groundwater sampling results. In some instances, soil data are also available to help confirm the identification of the property as a source area. Identification of a source area utilizing groundwater data was accomplished using the following general criteria:

- Contaminants are present in the downgradient alluvial groundwater (either shallow or deep) which are not present in the upgradient alluvial groundwater
- Contaminants in the shallow alluvial downgradient groundwater were significantly greater than contaminants in the shallow alluvial upgradient groundwater

The source areas have been separated into three general categories:

- **Confirmed** - source areas with identified groundwater impact, and either identified soil impact or confirmed use or storage of contaminant-related chemical(s) on the property.
- **Identified** - source areas with groundwater data that implicates a specific release area; generally confined to a single property. The identified source area lacks confirmatory soil data and information that conclusively demonstrate the use or storage of contaminant-related chemical(s) on the property.
- **Suspect** - areas with groundwater data that indicates a release to groundwater may have occurred but lack sufficient data to identify a specific property or release area. A suspect source area will generally be larger in size than an identified source area and will also lack confirmatory soil data and information that conclusively demonstrates the use or storage of contaminant-related chemical(s) on the property.

Plate 9-1 shows the locations of each of these source areas and identifies the primary source contaminants associated with each source area. Table 9-1 provides information associated with each Confirmed Source Area presented in Plate 9-1 including: reference name; whether a data package has been prepared and whether that data package has been previously submitted to KDHE; address/location description; name of the current owner/operator/or occupant; whether the facility is under regulatory oversight; primary source contaminants; level of contamination; and whether the source area is considered to be an active source area potentially requiring remediation. Table 9-2 provides information associated with each Identified Source Area presented in Plate 9-1 including: reference name; whether a data package has been prepared and whether that data package has been previously submitted to KDHE; address/location description; name of the current owner/operator/or occupant; whether the facility is under regulatory jurisdiction; primary source contaminants; indicating data; and whether the source area is considered to be an active source area potentially requiring remediation. Table 9-3 provides the same information as that presented in Table 9-2 except for the Suspect Source Areas identified in Plate 9-1.

Contribution Assessment

Discussions of the Identified and Suspect Source Areas in Sections 9.4 and 9.5 include assessments as to whether the source area is currently considered to be significant,

moderate, or minor. For the purposes of this report, a significant source area is one with groundwater contamination generally greater than 500 µg/L. A moderate source area is one with groundwater contamination generally between 40 µg/L to 500 µg/L. A minor source area is considered to contribute groundwater contamination of less than 40 µg/L. These concentration ranges are for preliminary screening purposes only and are for specific VOCs in groundwater (e.g. PCE, TCE, 1,1,1-1,1,1-TCA, CT, 1,1,1-PCA, or benzene). Data from additional investigations and KDHE will determine whether remediation is required at a source area. The screening values presented in this Section are intended to identify which facilities are more likely to have source control remedial action measures required by KDHE (significant sources). This initial screening will also be useful in prioritizing source control efforts (e.g. significant sources can be addressed before minor sources), if necessary.

Assessments as to whether the Identified and Suspect Source Areas are actively contributing to groundwater to the point that remedial action may be necessary are also presented in Sections 9.3, 9.4, and 9.5 and the associated tables. The assessments are only made where the data are sufficient; where non-aqueous phase liquids are present; and/or the primary contaminant(s) of concern exceed 500 µg/L. Data are also considered sufficient where elevated groundwater concentrations at the suspect source area(s) are shown to persist over a period of time. Most of the identified and suspect source areas do not have sufficient historical data to provide an assessment as to whether source area remediation is necessary.

9.3 Confirmed Source Areas

The source areas in this section are considered to have sufficient data to qualify as confirmed source areas as previously described. Most of these source areas are already known to KDHE and have some form of an Agreement or Order with KDHE and/or EPA. This section presents thirteen Confirmed Source Areas. Nine of the Confirmed Source Areas have chlorinated solvent(s) as their primary source contaminant(s). The remaining four Confirmed Source Areas have petroleum hydrocarbons as their primary source contaminant.

9.3.1 Former Barnsdall Refinery Facility

The Former Barnsdall Refinery was located in the area between 25th and 29th streets, east of Broadway and west of Mead streets. Plate 9-1 shows the approximate boundaries of the former refinery. Past investigations are discussed in Section 2.4.2. The Former Barnsdall Refinery is a confirmed source area for petroleum hydrocarbon contamination, metals, and PCB contamination. The source of the petroleum contamination is from two different types of releases. Twelve apparent sludge pits have been identified from historical aerial photographs. The sludge pit locations are shown in Figure 5-2b. Three of the most prominent former sludge pits were investigated during the RI. The investigation revealed that one of the pits had significant free product (Pit C). One pit (Pit B) appears to have been over-excavated with little residual evidence of petroleum hydrocarbon contamination from the

former sludge pit. The last pit (Pit A) also appears to have been over-excavated but the material still has strong hydrocarbon odor and possible minor staining. Groundwater impacts from the investigated sludge pits appear to be minimal, despite evident soil impacts. Groundwater sample results appear to indicate that lead concentrations exceeding the EPA tap water action level of 15 µg/L is present at Pit B. The tap water action level has been used as a remediation goal by EPA. Additionally, arsenic also appears to be present above the MCL (10 µg/L) at pits B and C. The soil and product in the sludge pits has been impacted by PCBs and metals (antimony, copper, lead, selenium, and zinc) as noted in Section 5.4.1.

Significant petroleum hydrocarbon contamination also appears to be present in the groundwater at the southeast portion of the former refinery property where the bulk of the refining operations were conducted. Free product was observed in monitoring well WND-16S and was evident during Geoprobe sampling at location GPA07-04. High concentrations of benzene (1,800 µg/L) were also observed in the shallow groundwater sample collected from location GPA07-04. The extent of petroleum hydrocarbon contamination not associated with the sludge pit locations has not been completely delineated, but does not appear to extend significantly downgradient (south) of the former refinery.

A data package providing more detailed information on the Former Barnsdall Refinery is provided in Appendix L-1. Given that free product is present and significant dissolved phase benzene is present at some locations within this former refinery, the implementation of remedial action alternatives at this facility is likely.

As stated in the City's response to KDHE's March 25, 2003 comments on Section 9 and Appendix L, the City will provide information available on parties with connection to the site to assist KDHE in pursuing source control activities with responsible parties at this source area. Specific steps to be taken to identify PRP(s) for this source area will be outlined in a separate work plan addressing methods for PRP identification. If no PRP is identified, the City will negotiate with KDHE to determine source specific requirements for this former refinery that are consistent with the terms of the settlement agreement between the City and KDHE.

9.3.2 Former Coastal Derby Refinery Facility

The Former Coastal Derby Refinery facility is located at 1100 East 21st Street North and is now owned by the El Paso Corporation. The facility is discussed in Section 2.3.7. The facility has significant petroleum hydrocarbon contamination related to past refining activities conducted at the facility. Significant (estimated to be several million gallons) free petroleum hydrocarbon product is present on top of the water table. Soil, groundwater, and surface water impacts have been documented for this facility. In addition to the petroleum hydrocarbon contamination, chlorinated solvent contamination in the form of 1,2-dichloroethane is also attributed to the facility. The facility is already under a KDHE Consent Agreement and remedial action activities are proceeding to address the groundwater contamination. Additional remedial

action activities to address soil contamination may also occur. As stated in the City's response to KDHE's March 25, 2003 comments on Section 9 and Appendix L, no further City actions are required by KDHE for this facility.

9.3.3 Coleman North Facility

The Coleman North facility is located at 801 East 37th St. North and is owned by New Coleman Holdings, Inc. The facility is discussed in detail in Section 2.3.2. Several VOCs have been detected in the groundwater at the facility. The primary contaminant of concern is TCE. Facility-specific groundwater and soil remediation is occurring on the property. Investigations and remediation are being conducted under a Consent Decree between EPA and Coleman, Recreational Vehicle Products, and Evcon. As noted in Section 2.3.2, remedial action activities are already active at this facility. As stated in the City's response to KDHE's March 25, 2003 comments on Section 9 and Appendix L, no further City actions are required by KDHE for this facility.

9.3.4 Coleman Northeast Facility

The Coleman Northeast facility is located at 3600 North Hydraulic Avenue and is owned by The Coleman Company, Inc. The facility is discussed in detail in Section 2.3.3. Several VOCs have been detected in the groundwater at the facility. The primary contaminant of concern is TCE. Facility-specific groundwater remediation is occurring on the property. Investigations and remediation are being conducted under a KDHE Consent Order. As noted in Section 2.3.3, remedial action activities are already active at this facility. As stated in the City's response to KDHE's March 25, 2003 comments on Section 9 and Appendix L, no further City actions are required by KDHE for this facility.

9.3.5 Continental Tank Car Facility

The Continental Tank Car facility is located at 1106 East 37th St. North. The facility is discussed in detail in Section 2.3.1. Several VOCs have been detected in the groundwater and soils at the facility. The primary contaminants of concern are 1,1,1-1,1,1-TCA and TCE. According to KDHE's March 25, 2003 comments on Section 9 and Appendix L, remediation is proceeding under a KDHE Consent Order. As stated in the City's response to KDHE's March 25, 2003 comments on Section 9 and Appendix L, no further City actions are required by KDHE for this facility.

9.3.6 Farmland Facility

The Farmland Elevator is located at 1050 East 25th St. North. The facility is operated by Farmland Industries. The facility is discussed in detail in Section 2.3.10. The facility is a confirmed source of CT contamination. Benzene has also been detected in groundwater samples on the property. The source of the benzene contamination has not been determined at this time. No active groundwater remediation is being conducted at this time. Farmland has reported the "... completion of interim removal and construction work, supervised by KDHE ..." associated with removal of a septic

tank and leachate field that were connected to a well at the elevator. No other information has been provided to the City or CDM. According to KDHE's March 25, 2003 comments on Section 9 and Appendix L, source control measures are being conducted under a KDHE Consent Order. As stated in the City's response to KDHE's March 25, 2003 comments on Section 9 and Appendix L, no further City actions are required by KDHE for this facility.

9.3.7 Former Golden Rule Refinery Facility

The Former Golden Rule Refinery was located north of East 29th Street and east of Broadway Avenue. Plate 9-1 shows the approximate boundaries of the former refinery. Past investigations at the facility are discussed in Section 2.4.1. The Former Golden Rule Refinery is a confirmed source area for petroleum hydrocarbon contamination, metals, and PCB contamination. The source of the petroleum contamination is from two different types of releases. Five apparent sludge pits have been identified from historical aerial photographs. The sludge pit locations are shown in Figure 5-2a. Three of the most prominent former sludge pits were investigated during the RI. The investigation revealed that all three pits had significant free product (Pits A, C, and E). Groundwater impacts from the investigated sludge pits appear to be minimal, despite evident soil impacts. Groundwater sample results show a lead impact (7.15 and 19.13 µg/L) at pits A and C. Additionally, an arsenic impact has been noted at Pit E (9.94 µg/L). The soil and product in the sludge pits has been impacted by PCBs and metals (antimony, lead, and selenium) as noted in Section 5.4.1.

Significant petroleum hydrocarbon contamination also appears to be present at the southeast portion of the former refinery property where the bulk of the refining operations were conducted. Free product was observed in the groundwater at Geoprobe location GP02A-04 and petroleum odors have been noted at other Geoprobe locations in the area. The extent of petroleum hydrocarbon contamination not associated with the sludge pit locations has not been completely delineated, but does not appear to extend significantly downgradient (south) of the former refinery.

A data package providing more detailed information on the former Golden Rule Refinery is provided in Appendix L-2. Given the presence of free product in the investigated sludge pits and petroleum contamination observed areas outside of the sludge pits, remedial action activities are anticipated for this former refinery.

As stated in the City's response to KDHE's March 25, 2003 comments on Section 9 and Appendix L, the City will provide information available on parties with connection to the site to assist KDHE in pursuing source control activities with responsible parties at this source area. Specific steps to be taken to identify PRP(s) for this source area will be outlined in a separate work plan addressing methods for PRP identification. If no PRP is identified, the City will negotiate with KDHE to determine source specific requirements for this former refinery that are consistent with the terms of the settlement agreement between the City and KDHE.

9.3.8 HCI Advance Chemical Facility

The HCI Advance Chemical Facility is located at 1520 North Barwise. The facility conducted its own preliminary investigation, with CDM collecting split groundwater samples at select locations. During the sample collection, CDM observed the storage of PCE at the facility. The investigation revealed soil and groundwater contaminated by PCE. The PCE concentrations in the groundwater exceeded 1,000 μg/L.

A detailed package of information associated with this facility is provided as Appendix L-3. According to KDHE's March 25, 2003 comments on Section 9 and Appendix L, this facility is currently conducting a source area CI/CAS under Administrative Order 02-E-0279 with KDHE. As stated in the City's response to KDHE's March 25, 2003 comments on Section 9 and Appendix L, no further City actions are required by KDHE for this facility.

9.3.9 Safety-Kleen Facility

The Safety-Kleen Facility is located at 2525 North New York Avenue. The Safety-Kleen facility is discussed in detail in Section 2.3.9. The facility is conducting site investigations under RCRA with EPA and KDHE oversight. Characterization was not complete at the time the draft RI was submitted; however, several chlorinated solvents including PCE, TCE, 1,1,1-TCA, and CT have been detected in the groundwater at the facility and are suspected contaminants of concern. Toluene and xylenes are among the petroleum hydrocarbon contamination components. According the KDHE's March 25, 2003 comments on Section 9 and Appendix L, Corrective Measures are being implemented at this facility under an EPA Order with KDHE and EPA oversight. As stated in the City's response to KDHE's March 25, 2003 comments on Section 9 and Appendix L, no further City actions are required by KDHE for this facility.

9.3.10 USD 259 Facility

The USD 259 Facility is located at 3850 North Hydraulic Avenue. The facility is discussed in detail in Section 2.3.4. Several VOCs have been detected in the groundwater beneath the facility. The primary contaminant of concern is PCE. Soil remediation activities have been conducted at the facility and consisted of tank removal and limited soil excavation. The investigations and remediation activities are being conducted under a KDHE Consent Order.

Approximately 78 cubic yards of PCE-contaminated soils were removed during an Interim Remedial Measure Soil Removal Action completed in March 2000. USD reports that all remediation activities were observed an approved by KDHE.

As stated in the City's response to KDHE's March 25, 2003 comments on Section 9 and Appendix L, no further City actions are required by KDHE for this facility.

9.3.11 Unocal Facility

The Unocal facility is located at 2100 East 37th St. North. The facility is discussed in detail in Section 2.3.6. Several VOCs and SVOCs have been detected in the groundwater beneath the facility. The primary chlorinated VOCs are PCE, TCE, and 1,1,1-1,1,1-TCA. Soil and groundwater remediation activities have been conducted at the facility including excavation, soil vapor extraction, and groundwater extraction. Groundwater extraction is also occurring downgradient of the facility on the Coleman Northeast property as a containment and groundwater remediation measure. The investigations and remediation activities are being conducted under a KDHE Consent Order. As noted above and detailed in Section 2.3.6, remedial action activities are already active at this facility.

As stated in the City's response to KDHE's March 25, 2003 comments on Section 9 and Appendix L, no further City actions are required by KDHE for this facility.

9.3.12 Union Pacific Railroad Fueling Terminal Facility

The Union Pacific Railroad Fueling Terminal Facility is located at 2645 North New York Avenue. The facility is discussed in Section 2.3.12. No chlorinated solvent contamination has been attributed to the facility at this time. Soils and groundwater at the facility have been impacted by petroleum hydrocarbon contamination. Free product is present on the water table. The site is being evaluated under the KDHE Underground Storage Tank program.

Based on additional data received from KDHE in response to a request submitted with responses to KDHE's March 25, 2003 comment letter on Section 9 and Appendix L, active skimming of free product was selected as the proposed remedial alternative at this site. Vapor recovery was also proposed as an enhancement of the remedial efforts.

As stated in the City's response to KDHE's March 25, 2003 comments on Section 9 and Appendix L, no further City actions are required by KDHE for this facility.

9.3.13 Former Vim Trailer Facility

The former Vim Trailer facility is located at 2811 North Ohio. Previous investigations at the facility are discussed in Section 2.4.4. Several chlorinated solvents including PCE, TCE, and 1,1,1-1,1,1-TCA have been detected in the soils at the facility and TCE and 1,1,1-1,1,1-TCA have been detected in the groundwater samples. BTEX has also been detected in soils at the facility. No soil or groundwater remediation activities have occurred at the site, aside from the 1993 removal of a 12,000 gallon storage tank reportedly used to collect the spent solvent and rinsate from the tanker cleaning and painting operations. The facility is not under specific regulatory oversight at this time. The available data indicate that this source area is significant for at least TCE. Remedial action alternatives to address soil and groundwater contamination at the

source area are anticipated. A detailed package of information associated with this facility is provided in Appendix L-4.

As stated in the City's response to KDHE's March 25, 2003 comments on Section 9 and Appendix L, the City will provide information available on parties with connection to the site to assist KDHE in pursuing source control activities with responsible parties at this source area. Specific steps to be taken to identify PRP(s) for this source area will be outlined in a separate work plan addressing methods for PRP identification. If no PRP is identified, the City will negotiate with KDHE to determine source specific requirements for this facility that are consistent with the terms of the settlement agreement between the City and KDHE.

9.3.14 Summary of Confirmed Source Areas

Thirteen Confirmed Source Areas have been presented in this section. Nine of the thirteen Confirmed Source Areas have chlorinated solvents as the primary contaminant(s). As noted in Table 9-1, all thirteen Confirmed Source Areas appear to have contaminant concentrations that will require source control remedial measures. Four of the Confirmed Source Areas (former Coastal-Derby Refinery, Coleman North, Coleman Northeast, and Unocal) have active groundwater remedial actions. Nine of the Confirmed Source Areas have conducted some level of soil remedial action.

According the KDHE's March 25, 2003 comments on Section 9 and Appendix L, remediation activities or source control measures are also being conducted at four additional Confirmed Source Areas (Continental Tank Car, Farmland, Safety-Kleen, and USD 259). A source area CI/CAS is being performed at the HCI Advance Chemical Facility and the Union Pacific Railroad Fueling Terminal Facility is being evaluated under the KDHE Storage Tank Program.

Ten of the 13 Confirmed Source Areas are conducting their investigations/ remediation(s) under signed Agreements or Orders with either KDHE or EPA. Three of the Confirmed Source Areas are not currently under regulatory oversight. These three facilities are:

- Former Barnsdall Refinery
- Former Golden Rule Refinery
- Former VIM Trailer Facility

These three facilities are expected to come under regulatory oversight once a viable potentially responsible party has been identified. Under the City's Agreement with KDHE, the City will be responsible for any source areas where a viable potentially responsible party cannot be identified.

9.4 Identified Source Areas

The source areas in this section are considered to have sufficient data to qualify as identified source areas as previously described. A total of 26 Identified Source Areas

are presented in this section. A data package is included in Appendix L for each Identified Source Area. The data package provides a detailed description of the data implicating the source area. This section only presents an overview of the information provided in Appendix L. None of the Identified Source Areas have a Consent Order with KDHE that requires source area remediation; however, three of the Identified Source Areas have agreements with KDHE that require them to conduct an investigation of their property. Those facilities with an "investigation agreement" with KDHE are identified in Table 9-2 and in the individual write-ups provided below.

Twenty-five of the Identified Source Areas have chlorinated solvent(s) as their primary source contaminant(s). The remaining Identified Source Area has PCB and lead as its primary source contaminants.

As noted in Section 9.1, a work plan for additional investigation activities has been prepared based on KDHE's March 25, 2003 comments regarding the need for additional data at 18 of the 26 identified source areas. The following sections have incorporated the City's responses to the Section 9 and Appendix L comments applicable to these Identified Source Areas and provide a brief description of the initial activities proposed in the Identified Source Area Work Plan submitted to KDHE on April 8, 2004. The activities proposed in this work plan will be adjusted in the field as necessary to provide sufficient information to complete source identification.

9.4.1 A&A Auto and Truck Salvage Facility

The Stockyard Properties, A&A Auto and Truck Salvage facility (ATS) is located at 700 East 21st St. North, northwest of the intersection of 21st and Mead streets. The principal contaminant of concern is TCE. During the City's RI, TCE was detected at up to 150 μg/L in the shallow groundwater downgradient of the facility. TCE was also detected in the shallow alluvial groundwater upgradient of the facility, but at concentrations no greater than 50 μg/L. The sampling data suggest that two separate sources of contamination may be present on the property. No documented use or storage of TCE at the facility or in the vicinity of the property has been identified at this time. The available data indicate that the source area(s) are moderate sources of TCE groundwater contamination. Data are insufficient to determine whether remedial action alternatives for the source area(s) are necessary.

Appendix L-5 provides a more detailed discussion and evidence as to why this property has been identified as a source area. This information was provided to KDHE in June 2000 by the City and is currently being evaluated by KDHE.

Additional field investigation activity has been proposed for this facility in the Identified Source Area Work Plan submitted to KDHE on April 8, 2004. These activities include installation of additional water level measurement wells to further define groundwater flow direction and 4 initial groundwater sampling locations.

Groundwater samples will be collected from the shallow and intermediate depth zones during the proposed investigation.

Specific steps needed to identify PRP(s) for this source area will be outlined in a separate work plan addressing methods for PRP identification.

9.4.2 Aero Space Controls Facility

The Aero Space Controls, Inc. facility (ASC) is located at 1050 North Mosley, northwest of the intersection of 9th and Mosley. During the City's RI, TCE was detected at up to 1,100 µg/L in the shallow groundwater downgradient of the facility. TCE has also been detected in the shallow groundwater upgradient of the facility but at concentrations less than 60 µg/L. Definitive documentation of significant TCE use cannot be documented at this time. The available data indicate the presence of a significant source of TCE groundwater contamination. The level of groundwater contamination indicates that remedial action alternatives will likely be necessary at the TCE source area.

Appendix L-6 provides a more detailed discussion and evidence as to why this property has been identified as a source area. This information was provided to KDHE in June 2000 by the City and is currently being evaluated by KDHE.

Additional field investigation activities have been proposed for this facility in the Identified Source Area Work Plan submitted to KDHE on April 8, 2004. These activities include installation of additional water level measurement wells to further define groundwater flow direction and 5 initial groundwater sampling locations. Groundwater samples will be collected from the shallow depth zone during the proposed investigation.

Specific steps needed to identify PRP(s) for this source area will be outlined in a separate work plan addressing methods for PRP identification.

9.4.3 Apex Engineering Facility

The APEX Engineering facility (APX) is located at 1234 North Wellington (11th and Wellington). TCE and PCE are the compounds of concern at this location. During the City's RI, TCE was detected in shallow groundwater downgradient of the facility at concentrations up to 370 µg/L, while the maximum observed upgradient TCE concentration in the shallow groundwater is 13 µg/L. RCRA files indicate the use of TCE at the facility. PCE was detected in shallow groundwater samples collected downgradient of the facility, but at low concentrations (less than 5 µg/L). The available data indicate that this source is a significant, active TCE source area. The PCE contribution appears to be minor at this time.

Appendix L-7 provides a more detailed discussion and evidence as to why this property has been identified as a source area.

This information was provided to KDHE in June 2000 by the City and is currently being evaluated by KDHE. In addition to the data provided in Appendix L-7, KDHE has indicated that it has information provided by APEX in response to an information request from KDHE. KDHE stated that the response included data indicating that three monitoring wells were formerly located on the property. Sampling of one of the monitoring wells at the southern end of the facility resulted in a TCE concentration reported by KDHE to be greater than 1,000 μg/L in the mid 1990s. The City does not currently have this information and it has not been provided in the data package in Appendix L-7.

The available data indicate that this TCE source has been historically significant. The apparent plume length (to at least 2nd Street) indicates that this TCE source area has been significantly active. The current data appears to indicate a moderate source of TCE groundwater contamination. The PCE contribution appears to be minor at this time. Data are insufficient to determine whether remedial action alternatives are necessary at the TCE source area.

KDHE has indicated that they will initiate negotiations for source control at this identified source area with responsible parties. As stated in the City's response to KDHE's March 25, 2003 comments on Section 9 and Appendix L, no further City actions are required by KDHE for this facility.

9.4.4 Cargill Elevator at 715 East 13th Street

The Cargill Elevator facility (CGL) is located at 715 East 13th Street North, northeast of the intersection of 11th Street and Santa Fe streets. CT was detected in shallow groundwater samples collected on and downgradient from the CGL facility during the City's RI at concentrations of up to 480 μg/L. CT was not detected in groundwater samples collected from upgradient of the facility. The existence of at least one underground storage tank (UST) that historically contained CT at the CGL facility has been reported. The available data indicate that this source area is likely a significant source of CT groundwater contamination. Remedial action alternatives are anticipated at this facility. At a minimum, removal of the CT UST and some of the associated soils is anticipated.

Appendix L-8 provides a more detailed discussion and evidence as to why this property has been identified as a source area. KDHE has been verbally informed of the conditions at this facility and the supporting analytical results were provided in the Phase 1/1a Technical Memorandum (CDM 2000). A work plan submitted by Cargill for source investigation has been approved by KDHE and the investigation will be initiated upon finalization of a Consent Order. As stated in the City's response to KDHE's March 25, 2003 comments on Section 9 and Appendix L, no further City actions are required by KDHE for this facility.

9.4.5 Christopher Steel Inc. Facility

The Christopher Steel, Inc. facility (CSI) is located at 1221 East Murdock Street, between Ohio Avenue and Cleveland Avenue, south of Murdock. The historical investigations conducted at the facility are discussed in detail in Section 2.3.8. While the focus of the previous investigations was for lead and petroleum hydrocarbon contamination, the reports also contained results for potential chlorinated solvents.

PCE was detected during onsite investigations at CSI at up to 25 μg/L in shallow groundwater samples collected on the facility in 1995. PCE was not detected at the upgradient boundary of the facility. PCE was also detected in soil samples collected at the facilities at up to 22 μg/kg. Removal of unspecified chlorinated solvents in soils was also documented; however, PCE use at the facility is not documented at this time. The available data indicate that this is not a significant source of PCE groundwater contamination. Data are insufficient to assess whether remedial action alternatives are necessary.

Appendix L-9 provides a more detailed discussion and evidence as to why this property has been identified as a source area.

KDHE has requested that monitoring well CSI-MW-2 be re-sampled. The City has requested that KDHE contact CSI regarding sampling of this well. Additional field investigation activities have been proposed in the Identified Source Area Work Plan submitted to KDHE on April 8, 2004 to determine whether a continuing source of contamination to groundwater is present at this facility.

9.4.6 Former Coastal Boneyard Facility

The Former Coastal Refining and Marketing, Inc. Boneyard facility (CBY) is located northwest of the intersection of 29th and Emporia Circle. The property is currently vacant. During the City's RI phase 2 field investigation (1999-2000), TCE was detected in the groundwater downgradient of the facility at up to 440 μg/L (GP02A-07, 28 feet), while the maximum upgradient TCE concentration was observed to be 47 μg/L (GP02A-01, 32 feet). During investigations conducted by the USGS in 1984 and 1985, concentrations of TCE and 1,1,1-1,1,1-TCA were reported in the groundwater downgradient of the CBY site at up to 1,935 and 216 μg/L, respectively (well GRR-MW-6, screened from 20 to 25 feet). Sampling data indicate that groundwater in this area is also impacted by petroleum hydrocarbon contamination, apparently from the Former Golden Rule Refinery operations. The presence of the petroleum hydrocarbon contamination appears to have resulted in significant degradation of the chlorinated solvents as indicated by the apparent decrease in concentrations between 1984 and 2000. No evidence documenting storage or use of chlorinated solvents on the property has been identified at this time. The available data indicate that this property was a historically significant and active TCE source area. The current data indicate that this property is a moderate source of TCE groundwater contamination. Data are insufficient to assess whether remedial action alternatives are necessary.

Appendix L-10 provides a more detailed discussion and evidence as to why this property has been identified as a source area. This information was provided to KDHE in June 2000 by the City and is currently being evaluated by KDHE.

Additional field investigation activities have been proposed in the Identified Source Area Work Plan submitted to KDHE on April 8, 2004. These activities include installation of additional water level measurement wells to further define groundwater flow direction and 5 initial groundwater sampling locations. Groundwater samples will be collected from the shallow, intermediate, and deep depth zones during the proposed investigation.

Specific steps needed to identify PRP(s) for this source area will be outlined in a separate work plan addressing methods for PRP identification.

9.4.7 Compressed Gases Facility

The Compressed Gases Inc. facility (CGI) is located at 602 East 29th St. North (29th and Emporia). 1,1,1-1,1,1-TCA and its degradation byproducts 1,1-DCA; 1,1-DCE; and CA are the compounds of concern at this location and have been detected at concentrations in the shallow groundwater up to 100, 670, 300, and 35 μg/L, respectively, during the City's RI. Maximum upgradient 1,1,1-1,1,1-TCA; 1,1-DCA; 1,1-DCE; and CA concentrations were observed to be <1 μg/L, 1.2 μg/L, <1 μg/L, and <1 μg/L, respectively. No documentation of 1,1,1-1,1,1-TCA use at this property has been identified at this time. The facility appears to be a moderate source area of groundwater contamination with the primary contaminant of concern being the 1,1-DCE degradation product of 1,1,1-1,1,1-TCA. Data are insufficient to assess whether remedial action alternatives are necessary.

Appendix L-11 provides a more detailed discussion and evidence as to why this property has been identified as a source area. This information was provided to KDHE in June 2000 by the City and is currently being evaluated by KDHE. KDHE has negotiated a Consent Order for additional investigations to be conducted by Compressed Gases. These additional investigations have not been conducted at this time.

KDHE requested that well WND-12S be re-sampled to evaluate whether active source control is warranted. The City has requested that KDHE direct CGI to perform this investigation including re-sampling of WND-12S. The City/CDM will re-sample this well if CGI is not cooperative.

9.4.8 Former Copeland International Trucks Facility

The former Copeland International Trucks, Inc. facility (CIT) is located at 1770 North Broadway (18th and Broadway). During the City's RI, PCE was detected at up to 7.9 μg/L in the shallow groundwater downgradient of the facility with no upgradient detections (<1 μg/L). Although contaminant concentrations are near the MCL of 5 μg/L for PCE, the data appear to indicate that a PCE release has occurred at this

facility. No documented storage or use of PCE has been identified for this property. The available data indicate that this PCE source area is a minor source of groundwater contamination. Remedial action alternatives are not likely to be required at this facility, given the low degree of observed contamination.

Appendix L-12 provides a more detailed discussion and evidence as to why this property has been identified as a source area. This information was provided to KDHE in June 2000 by the City and is currently being evaluated by KDHE.

KDHE has indicated that current contamination concentrations do not warrant additional investigation or remediation. As stated in the City's response to KDHE's March 25, 2003 comments on Section 9 and Appendix L, no further City actions are required by KDHE for this facility.

9.4.9 Former Dold Foods Facility

The former Dold Foods Inc. facility (DLDS) is located at 421 East 21st Street North (SE of 21st and Topeka). It is currently occupied by Trailer Parts and Supply Inc. During the City's RI, TCE was detected in the shallow groundwater downgradient of the facility at up to 120 µg/L. The maximum observed shallow upgradient TCE concentration at the property was 7.6 µg/L. No documented evidence of TCE storage or use at the facility has been identified at this time. The available data indicate that the TCE source area is a moderate source of groundwater contamination. Data are insufficient to assess whether remedial action alternatives are necessary.

Appendix L-13 provides a more detailed discussion and evidence as to why this property has been identified as a source area. This information was provided to KDHE in June 2000 by the City and is currently being evaluated by KDHE.

Additional field investigation activities have been proposed in the Identified Source Area Work Plan submitted to KDHE on April 8, 2004 to address concerns that potential pumping activities at the grain elevator located southeast of the DLD facility may effect groundwater flow direction. These proposed activities include 5 initial groundwater sampling locations. Groundwater samples will be collected from the shallow and intermediate depth zones.

9.4.10 Dow/Essex and Wil-Gro Facilities

The Dow/Essex Chemical Company (DEC) facility at 2728 North Ohio Avenue and the Wil-Gro Fertilizer Inc. (WG) facility at 2808 North Ohio are located northeast of the intersection of 27th Street and Ohio Avenue. Previous investigations at the DEC facility are discussed in Section 2.4.5.

Access refusals by both DOW and Wil-Gro have prevented a more detailed assessment of the nature of the source area at these properties. TCE was detected in the shallow and deep groundwater samples collected during the City's RI downgradient of the DEC/WG facilities at concentrations of up to 230 µg/L and

450 μg/L, respectively. TCE concentrations in the shallow and deep groundwater samples collected immediately upgradient from the DOW/Essex facility facilities did not exceed 64 μg/L and 240 μg/L, respectively. No documented evidence of the use or storage of TCE at these properties has been identified at this time. However, Polk Directory information indicates that DOW/Essex facility was operated as a chemical supply distribution facility in the past. The available data indicate that the TCE source area is a moderate source of groundwater contamination. Data are insufficient to assess whether remedial action alternatives are necessary.

Appendix L-14 provides a more detailed discussion and evidence as to why this property has been identified as a source area.

Additional field investigation activities have been proposed for this area in both the Suspect and Identified Source Area Work Plans submitted to KDHE on April 8, 2004. Three additional water level measurement wells have been proposed to further define groundwater flow direction. Other proposed activities include 6 initial groundwater sampling locations where samples will be collected from both shallow and intermediate depth zones.

Specific steps needed to identify PRP(s) for this source area will be outlined in a separate work plan addressing methods for PRP identification.

9.4.11 Huttig Facility

The Huttig Distributors/Rock Island Millworks, Inc. facility (HUT) facility is located at 1340 North Mosley Avenue, near the intersection of 14th and Mosley streets. TCE was detected in shallow groundwater samples collected during the City's RI downgradient of HUT at concentrations of up to 360 μg/L. TCE concentrations in shallow groundwater samples collected from upgradient of the facility were less than 15 μg/L. No documented evidence of TCE storage or use at this manufacturing facility has been identified at this time. Available data indicate that the TCE source area is a moderate source of groundwater contamination. Data are insufficient to assess whether remedial action alternatives are necessary.

Appendix L-15 provides a more detailed discussion as to why this property has been identified as a source area. Evidence supporting the identification of this property as a source area is also provided in Appendix L-15.

Additional field investigation activities have been proposed for this area in the Identified Source Area Work Plan submitted to KDHE on April 8, 2004. Additional water level measurement wells have been proposed in the vicinity of this identified source area to further define groundwater flow direction. According to an updated search of permitted pumping wells as discussed in Section 4.3.9, the pumping well west of Huttig is no longer an existing permitted pumping well.

Six initial groundwater sampling locations have also been proposed for this identified source area. Groundwater samples will be collected from the shallow and intermediate depth zones during the proposed investigation.

9.4.12 Kansas Plating Facility

The Kansas Plating, Inc. facility is located at 1110 North Mosley Avenue, and occupies most of the block between 10th and 11th and Mosley and Washington streets. Previous investigations at the Kansas Plating facility were documented in Section 2.4.8. Maximum TCE concentrations in the upgradient shallow groundwater samples on the property west of Mosley Avenue were 6.1 µg/L. 1,1,1-1,1,1-TCA has been detected in shallow groundwater samples collected by Kansas Plating and by CDM during the City's RI downgradient of the facility at concentrations as great as 560 µg/L. 1,1,1-1,1,1-TCA concentrations immediately upgradient of the facility in the shallow alluvial aquifer were below detection limits (<1 µg/L). RCRA files contain evidence of both 1,1,1-1,1,1-TCA and TCE storage and use on the facility. Several metals, including lead and chromium, are also stored and used on the facility. At a minimum, data indicate that the facility is currently a moderate source area for groundwater contamination by 1,1,1-1,1,1-TCA and its 1,1-DCE degradation product. Data are insufficient to assess whether remedial action alternatives are necessary.

Appendix L-16 provides a more detailed discussion and evidence as to why this property has been identified as a source area. The information identifying this property as a 1,1,1-1,1,1-TCA source area was originally provided to KDHE in June 2000 by the City. A revised and updated data package was provided to KDHE in January 2001 by the City. The data package is currently under evaluation by KDHE. The updated data package is provided as Appendix L-16.

KDHE requested that wells WND-40S&D and HOC-10 be re-sampled to evaluate whether active source control is warranted. The City has requested that KDHE direct KPI to re-sample these wells. The City has also proposed additional Geoprobe sampling for this area in the Identified Source Area Work Plan submitted to KDHE on April 8, 2004, since it is uncertain whether the monitoring wells are optimally located to monitor worst-case concentrations from this facility and to differentiate 1,1,1-TCA and 1,1-DCE from the Kreonite East source area. In addition, two water level measurement wells have been proposed in the vicinity of this identified source area to further define groundwater flow direction. KDHE has indicated that they will initiate negotiations with Kansas Plating.

9.4.13 Kreonite East Facility

The Kreonite, Inc. - East facility (KRE) is located at 1123 North Mosley Avenue, northwest of the intersection of Mosley and North 10th streets. 1,1,1-TCA has been detected at up to 50 µg/L in shallow groundwater samples collected immediately downgradient of the facility during the City's RI, but was not reported above 2.6 µg/L in samples collected upgradient of the facility. A history of 1,1,1-TCA use by Kreonite Inc. at other sites has been documented at the facilities located at 715 East 10th Street;

however, no documentation that 1,1,1-TCA was either used or stored at this east facility has been identified at this time. No data suggesting a release to groundwater of 1,1,1-TCA greater than MCLs (200 μg/L) has been identified. However, the 1,1-DCE degradation product of 1,1,1-TCA does represent a potential concern as its MCL is 7 μg/L. The 1,1,1-TCA/1,1-DCE source area is considered a minor source of groundwater contamination. Data are insufficient to assess whether remedial action alternatives are necessary.

Appendix L-17 provides a more detailed discussion and evidence as to why this property has been identified as a source area.

The City has proposed additional Geoprobe sampling for this area in conjunction with the investigation activities proposed for Kansas Plating as discussed above. Specific steps needed to identify PRP(s) for this source area will be outlined in a separate work plan addressing methods for PRP identification.

9.4.14 Love Box Facility

The Love Box Company facility (LBC) is located at 700 East 37th Street North (37th and Mead). An environmental investigation of the LBC facility (TerraTech 1999) reported that PCE and its degradation products (TCE and *cis*-1,2-DCE) were detected in the shallow groundwater downgradient of the facility at up to 190, 36 and 140 μg/L, respectively. Adequate upgradient groundwater samples are lacking. 1,1,1-TCA and its degradation products (1,1-DCA and 1,1-DCE) were also detected in the shallow groundwater downgradient of the facility at up to 6, 4.5 and 2.1 μg/L, respectively. LBC has reported to the City that PCE and 1,1,1-TCA were part of a 1996 chemical inventory at the facility. The available data indicate that this facility may have been a historical source of 1,1,1-TCA; however, current data indicate that the 1,1,1-TCA source area is minor and not significantly active. The available data indicate the PCE source area on the property is a moderate source of groundwater contamination. Data are insufficient to assess whether remedial action alternatives are necessary.

Appendix L-18 provides a more detailed discussion and evidence as to why this property has been identified as a source area. This information was provided to KDHE in June 2000 by the City and is currently being evaluated by KDHE. KDHE has had preliminary discussions with the Love Box Company regarding a potential Consent Order. KDHE will work with Love Box to determine if any additional source control is necessary for this facility. Therefore, as stated in the City's response to KDHE's March 25, 2003 comments on Section 9 and Appendix L, no further City actions are required by KDHE for this facility.

9.4.15 National By-Products North Facility

The National By-Products, North Facility (NBPN) is located at 721 East 21st Street North and 2050 North Mosley (21st and Mosley). TCE has been detected at up to 490 μg/L in shallow groundwater samples collected downgradient of the facility

during the City's RI. The sampling results indicate that the most significant area of release exists in the southwest portion of the site, on the western side of Mosley in the vicinity of the NBPN maintenance facility. There may be multiple release areas on the west side of Mosley. No TCE use or storage on the facility has been documented; however, RCRA files indicate a separate facility operated by the same company less than a mile away used and stored TCE. Available data indicate that the TCE source area(s) on the facility are moderate sources of groundwater contamination. Data are insufficient to assess whether remedial action alternatives are necessary.

The City of Wichita has also received a report indicating that drums of solvent were buried on an unspecified portion of the NBPN property. No data to confirm this report have been located.

Appendix L-19 provides a more detailed discussion and evidence as to why this property has been identified as a source area. This information was provided to KDHE in June 2000 by the City and is currently being evaluated by KDHE.

According to an updated search of permitted pumping wells as discussed in Section 4.3.9, a permitted pumping well no longer exists on the NBP property. Additional groundwater sampling activities have been proposed for this area in the Identified Source Area Work Plan submitted to KDHE on April 8, 2004 and include 8 initial groundwater sampling locations. Groundwater samples will be collected from the shallow and intermediate depth zones.

Specific steps needed to identify PRP(s) for this source area will be outlined in a separate work plan addressing methods for PRP identification.

9.4.16 Novick Iron and Metal Facility

The Novick Iron and Metal Salvage Company facility (NOV) is located at 1007 East 21st Street North, south of 21st Street and east of Washington Avenue (projected). It is bounded on the east by the Middle Fork of Chisholm Creek and on the south by the West Fork of Chisholm Creek. These drainages join at the southeastern corner of the property. The approximate property boundaries are shown on Plate 9-1. The previous investigation results of this facility were presented in Section 2.4.6.

Mercury, lead, copper and chromium have been reported in soils at the site in concentrations of up to 3.65, 18,000, 430,000, and 1,400 mμg/kg, respectively. PCBs were also detected in site soils at concentrations of up to 13,000 mg/kg. During the City's RI, TCE was detected at up to 270 μg/L in shallow groundwater samples collected downgradient from NOV; it was not detected in shallow groundwater samples collected upgradient of the facility. Groundwater flow in the area is southeast and the "downgradient" samples on the south side of the West Fork of Chisholm Creek may not have been truly downgradient of the NOV facility. Significant debris and traffic patterns on the NOV facility have inhibited an accurate characterization of the facility groundwater. Lead and PCB soil concentrations are

significant and have the potential to impact the groundwater. In addition, lead was detected in a surface water sample collected at location SW-06 in the West Fork of Chisholm Creek (see Section 5.1.1.4).

Data are currently insufficient to assess whether remedial action alternatives are necessary. Appendix L-20 provides a more detailed discussion and evidence as to why this property has been identified as a source area.

KDHE has indicated that they will initiate negotiations with Novick Iron and Metal and that no further actions by the City are required for this facility.

9.4.17 Wichita Mirror and Glass and Parker Boss Facilities

The Wichita Mirror and Glass (WMG) and Parker Boss Clay Traps (PB) facilities (WMG/PB) are respectively located at 712 and 780 East 15th Street, north of the intersection of Barwise with 15th Street. The Wichita Mirror and Glass facility burned to the ground in 1995 and is now vacant. TCE was detected in shallow groundwater samples collected during the City's RI downgradient of the WMG/PB facilities at concentrations of up to 180 μg/L. TCE concentrations in shallow groundwater samples collected upgradient of the facilities did not exceed 10 μg/L. No documented storage or use of TCE has currently been identified for either facility. Available data indicate that the TCE source area is a moderate source of groundwater contamination. Data are insufficient to assess whether remedial action alternatives are necessary.

Appendix L-21 provides a more detailed discussion and evidence as to why this property has been identified as a source area.

Additional field investigation activities have been proposed for this area in the Identified Source Area Work Plan submitted to KDHE on April 8, 2004. These activities include installation of additional water level measurement wells to further define groundwater flow direction and 6 initial groundwater sampling locations. Groundwater samples will be collected from the shallow and intermediate depth zones.

Specific steps needed to identify PRP(s) for this source area will be outlined in a separate work plan addressing methods for PRP identification.

9.4.18 Stockyard Properties (Area 02B) Facility

The Stockyard Properties (Area 02B) Facility is currently a vacant lot of land located south of 25th and west of the projection of Mead. The location is shown on Plate 9-1. TCE was detected in shallow downgradient groundwater samples collected during the City's RI at concentrations as high as 360 μg/L. Shallow groundwater samples collected immediately upgradient of the suspect source area had TCE concentrations no greater than 80 μg/L. Historical air photos show the presence of an unidentified building that is absent by the 1980s. No TCE storage or use documentation has been identified at this time. The TCE source area appears to have been historically

significant with TCE concentrations in shallow downgradient monitoring well WND-37S exceeding 1,000 μg/L during the 29th and Mead investigation. Currently available data indicate that the TCE source area is a moderate source of groundwater contamination. Data are insufficient to assess whether remedial action alternatives are necessary.

Appendix L-22 provides a more detailed discussion and evidence as to why this property has been identified as a source area.

Additional field investigation activities have been proposed for this area in the Identified Source Area Work Plan submitted to KDHE on April 8, 2004. These activities include additional water level measurement wells to further define groundwater flow direction and 14 initial groundwater sampling locations for the two Stockyard properties (8 for Area 02B and 6 for area 06D). Groundwater samples will be collected from the shallow depth zone during the proposed investigation.

Specific steps needed to identify PRP(s) for this source area will be outlined in a separate work plan addressing methods for PRP identification.

9.4.19 Stockyard Properties (Area 06D) Facility

The Stockyard Properties (Area 06D) facility is located north of the 700-800 blocks of East 21st Street North and is shown on Plate 9-1. During the City's RI, TCE was detected in the shallow groundwater downgradient of the facility at up to 130 μg/L. Upgradient shallow groundwater data had TCE detections; but, they did not exceed 42 μg/L. The data indicate the TCE source area appears to be on a vacant lot just east of a large metal building with no marked address. Available data indicate that facility behind 750 East 21st Street North was formerly occupied by Johnny on the Spot, which was documented by KDHE to have engaged in illegal dumping of industrial wastes. Currently, no documentation of TCE storage or use at the property has been identified. Available data indicate that the TCE source area appears to be a moderate source of groundwater contamination. Data are insufficient to assess whether remedial action alternatives are necessary.

Appendix L-23 provides a more detailed discussion and evidence as to why this property has been identified as a source area. This information was provided to KDHE in June 2000 by the City and is currently being evaluated by KDHE.

Additional field investigation activities have been proposed in conjunction with the activities proposed for the Stockyard Properties Area 02B outlined in Section 9.4.18.

9.4.20 Van Waters & Rogers South Facility

The Van Waters & Rogers, Inc., south facility (VWRS), now Vopac USA, is located at 2071 North Mosley. The VWRS investigation is discussed in Section 2.3.5. The location is shown on Plate 9-1. TCE has been detected during onsite investigations by VWRS at up to 270 μg/L in shallow groundwater samples collected at the

downgradient portion of the facility. Three rounds of samples collected by VWRS indicate TCE concentrations are consistently higher at the downgradient end of the site relative to the upgradient portion of the site. The maximum TCE concentration observed in upgradient shallow onsite groundwater was 150 µg/L. In addition, TCE has also been reported in soil samples at up to 12.0 µg/kg, and there are reports of TCE spillage at the site in 1984 and 1986. PCE has also been reported in some of the 1998 samples from the facility at up to 11.0 µg/L PCE, but was not detected in the 2001 samples.

Available data indicate that the facility is at least a moderate TCE source of groundwater contamination. The data also appear to indicate that the VWRS facility may have been a past source of low-level PCE contamination to groundwater at the NIC Site. Data are insufficient to assess whether remedial action alternatives are necessary.

Appendix L-24 provides a more detailed discussion and evidence as to why this property has been identified as a source area.

KDHE has indicated that they will continue to work with Vopak on source control at this facility under an existing Consent Order. As stated in the City's response to KDHE's March 25, 2003 comments on Section 9 and Appendix L, no further actions by the City are required for this facility.

9.4.21 Via Christi Medical Center, St. Francis Campus

The Via Christi Medical Center, St. Francis Campus (VCM) is located at 929 North St. Francis Street. VCM has conducted its own investigation under a KDHE Consent Order. The VCM investigation is discussed in Section 2.3.13. The facility encompasses an area of approximately 20 city blocks bounded by 11th Street on the north, Broadway Avenue on the west, Santa Fe Avenue on the east and Pine Street on the south. 1,1,1-TCA and methylene chloride have been detected in shallow groundwater samples collected during onsite investigations by VCM at up to 29 µg/L and 11 µg/L, respectively. 1,1,1-TCA and methylene chloride were not detected (<1 µg/L) in upgradient groundwater samples. 1,1,1-TCA and methylene chloride were also reported in soil samples collected during onsite investigations by VCM at up to 1,100 µg/kg, and 1,000 µg/kg, respectively. Lead and arsenic have also been reported in soil samples collected during onsite investigations by VCM at up to 15,039 mg/kg and 32.6 mg/kg, but were not detected in filtered groundwater samples. Additionally, some petroleum hydrocarbon compounds have been reported in shallow groundwater samples at concentrations above regulatory limits (refer to discussion in Appendix L-25). The VCM campus appears to be a minor source area for 1,1,1-TCA, some metals, and some petroleum hydrocarbon contamination of the soil and groundwater. Data are insufficient to assess whether remedial action alternatives are necessary.

Appendix L-25 provides a more detailed discussion and evidence as to why this property has been identified as a source area. VCM has submitted its results to KDHE and is presently awaiting KDHE's review and assessment.

KDHE has indicated that they will address any outstanding issues with Via Christi and that no further action by the City is required at this facility.

9.4.22 Waco Handi-Wash Facility

The Waco Handi-Wash facility (WHW) is located at 1008 North Waco on the northwest corner of 9th and Waco. Section 2.4.10.12 provides a brief discussion of the previous investigation immediately downgradient of this facility. During the City's RI, PCE was detected at up to 55 µg/L in groundwater immediately downgradient of the facility. Upgradient PCE detections in shallow groundwater upgradient of the facility did not exceed 8 µg/L. Both PCE and TCE show an increase in concentration relative to samples collected upgradient of the WHN facility. In addition, PCE and TCE were reported at up to 66.7 and 12.8 µg/L, respectively, in samples collected from the property immediately downgradient of the WHN facility during an environmental investigation of that property in 1993 (TerraTech 1993). The onsite field gas chromatograph identified PCE at a concentration of 202 µg/L; however, that sample was not submitted to an offsite laboratory for confirmation. PCE is used and stored at the Waco Handi-Wash facility. The PCE source area appears to be a moderate source of groundwater contamination. Data are insufficient to assess whether remedial action alternatives are necessary.

Appendix L-26 provides a more detailed discussion and evidence as to why this property has been identified as a source area. This information was provided to KDHE in June 2000 by the City and is currently being evaluated by KDHE.

KDHE has indicated that they will encourage Waco Handi-Wash to apply to the Dry Cleaning Facility Release Trust Fund. As stated in the City's response to KDHE's March 25, 2003 comments on Section 9 and Appendix L, no further actions by the City are required for this facility.

9.4.23 Western Uniform Facility

The Western Uniform and Towel Service, Inc. facility (WU) is located at 1707 North Mosley, northwest of the intersection of 16th and Mosley. The results of Western Uniform's investigations are discussed in Section 2.3.11. PCE has been detected during onsite investigations by WU at up to 36 µg/L in shallow groundwater samples collected on the facility. PCE in shallow upgradient groundwater samples were less than 1 µg/L. Although most PCE concentrations in samples collected in the vicinity of the facility are near or below the MCL of 5 µg/L, the data indicate that a PCE release to the environment has occurred at this facility and that the WU facility is a continuing low-level source of PCE that has migrated from the facility. No documentation of PCE storage or use has been identified at this time. The PCE source

area appears to be a minor source of groundwater contamination and may not require the implementation of remedial action alternatives.

Appendix L-27 provides a more detailed discussion and evidence as to why this property has been identified as a source area.

Additional field investigation activities have been proposed for this area in the Identified Source Area Work Plan submitted to KDHE on April 8, 2004. Geoprobe sampling is proposed to determine whether a source is present on the property. A total of 4 initial groundwater sampling locations are proposed. Groundwater samples will be collected from the shallow depth zone during the proposed investigation.

If a source is present, the City will request that KDHE direct WU to perform additional sampling to determine whether source control is warranted.

9.4.24 Wichita Brass & Aluminum Facility

The Wichita Brass and Aluminum facility (WBA) is located at 412 East 29th St. North, north of 29th Street at approximately Topeka Avenue. Discussions of previous investigation and historical use were provided in Section 2.4.1. 1,1,2,2-tetrachloroethane (PCA) was detected in shallow groundwater samples collected on the WBA facility during the City's RI at concentrations of up to 49 μg/L. 1,1,2,2-PCA was not detected (<1 μg/L) in groundwater samples collected immediately upgradient of the sample locations with the detects, nor from those sample locations upgradient from the facility. Petroleum hydrocarbon impacts to groundwater have been observed at the facility. Other chlorinated VOCs have also been detected in groundwater at the WBA facility. However their relationship to WBA facility is unclear. No documentation of the use or storage of 1,1,2,2-PCA has been identified at this time. Available data indicate that the 1,1,2,2-PCA source area is a minor source of groundwater contamination and is not likely to require the implementation of remedial action alternatives.

Appendix L-28 provides a more detailed discussion and evidence as to why this property has been identified as a source area.

Two additional water level measurement wells have been proposed in the vicinity of this identified source area to further define groundwater flow direction. No additional investigation activities have been proposed for this facility. The City/CDM has requested that KDHE direct WBA to perform an investigation to determine whether source control is warranted.

9.4.25 Wichita Terminal Elevator

The Wichita Terminal Elevator facility (WTE) is located at 508 East 25th St. North, northwest of the intersection of 25th St. North and Mead Avenue. CT was detected in shallow groundwater samples collected on and downgradient from the WTE facility during the City's RI at concentrations of up to 17 μg/L. CT was not detected

(<1 µg/L) in shallow groundwater samples collected from upgradient of the facility. Low-level concentrations of CT were detected on the Stockyard Properties located south of 25th St. North. No documentation of the storage or use of CT at this facility has been identified at this time; however, CT was a commonly used grain fumigant prior to 1985. Available data indicate that the CT source area appears to be a minor source of groundwater contamination and is not likely to require the implementation of remedial action alternatives.

Appendix L-29 provides a more detailed discussion and evidence as to why this property has been identified as a source area.

No additional investigation activities have been proposed for this facility in the Identified Source Area Work Plan submitted to KDHE on April 8, 2004.

9.4.26 11th and State Area

The 11th and State area (11S) consists of three contiguous facilities north of 11th Street between State Avenue and Wellington Place. These are the former Airama/AirKem Sales and Service of Kansas facility at 202 West 11th Street North, the former H&H Parts Company facility at 1209/1211 North Wellington Place and the Winding Specialist Company, Inc. facility at 1217-1225 North Wellington Place. TCE was detected in shallow groundwater samples collected during the City's RI downgradient of the 11S area at concentrations of up to 340 µg/L. TCE concentrations in shallow groundwater samples collected from upgradient of the facilities contained less than 5.8 µg/L. No documentation of the use or storage of TCE at these facilities has been identified at this time. Available data indicate that the TCE source area appears to be a moderate source of groundwater contamination. Data are insufficient to assess whether remedial action alternatives are necessary.

Appendix L-30 provides a more detailed discussion and evidence as to why this property has been identified as a source area.

No additional investigation activities have been proposed for this area in the Identified Source Area Work Plan submitted to KDHE on April 8, 2004 pending results from negotiations with Apex Engineering.

9.4.27 Summary of Identified Source Areas

Twenty-six Identified Source Areas have been presented in this section. The primary contaminant(s) within the twenty-six Identified Source Areas are as follows:

- Thirteen TCE source areas
- Five PCE source areas
- Four 1,1,1-TCA source areas
- Two CT source areas
- One 1,1,2,2-PCA source area
- One lead and PCB source area

As noted in Table 9-2, eight of the Identified Source Areas have contaminant concentrations in groundwater which appear to be elevated to the point that source control remedial actions will be necessary. The eight Identified Source Areas with concentrations indicating an apparent need for source control measures are:

- Aero Space Controls Facility
- Apex Engineering Facility
- Cargill Elevator at 715 E. 13th Street
- Former Coastal Boneyard Facility
- National By-Products North Facility
- Stockyard Properties (02B) Facility
- Van Waters & Rogers South Facility
- 11th and State Area

Additional investigations will have to be conducted at these eight Identified Source Areas to confirm the nature of the release and better quantify the environmental impacts to the soil and groundwater. The investigations will be conducted either by a potential responsible party or by the City, under KDHE oversight.

Additional investigations may determine that other Identified Source Areas may also require source control remedial actions. Of the above facilities, only the Van Waters & Rogers South facility has an agreement with KDHE to conduct a facility investigation. The above Cargill facility is currently negotiating an agreement with KDHE. Three other facilities are either negotiating with KDHE or have an agreement with KDHE to conduct their own site investigations. These facilities are:

- Love Box Facility
- Via Christi Medical Center, St. Francis Campus
- Western Uniform Facility

In addition to the three facilities noted above, KDHE has indicated they will initiate negotiations or pursue conversations with the following:

- Apex Engineering Facility
- Compressed Gases Facility
- Kansas Plating Facility
- Novick Iron and Metal
- Waco Handi-Wash (Dry Cleaner Trust Fund)

9.5 Suspect Source Areas

The source areas in this section are considered to have sufficient data to qualify as suspect source areas as previously described in Section 9.2. As previously discussed, Suspect Source Areas are those areas with groundwater data which implicates a general release area but lack sufficient data to identify a specific property or release area. A suspected source area will generally be larger in size than an identified source

area and will also lack confirmatory soil data and/or information that conclusively demonstrate the use or storage of the suspect contaminant(s) on the property.

All Suspect Source Areas are shown on Plate 9-1. An assessment as to whether the current data indicates that the source area is active to the degree that it may potentially require source control remediation is provided in Table 9-1. A total of 15 Suspect Source Areas are presented in this section. Each Suspect Source Area has a sample location figure presented in Appendix L-31. A description of the data implicating the source area is provided in this section. At this time, none of the Suspect Source Areas have a Consent Order with KDHE requiring remediation or investigation.

Fourteen of the fifteen Suspect Source Areas have chlorinated solvent(s) as their primary source contaminant(s). The remaining Suspect Source Area has petroleum hydrocarbons as its primary contaminant. No data packages for these Suspect Source Areas have been submitted to KDHE. Data packages have only been prepared for the Identified Source Areas and the four Confirmed Source Areas not presently under regulatory oversight.

9.5.1 Altra Color Body Shop and United Steel Facilities

The Altra Color Body Shop (ACB) facility and United Steel (US) facility are respectively located at 1610 and 1632 North Mosley Avenue, northeast of the intersection of 15th Street and Mosley.

Data indicate that this area may be a potential source of chlorinated VOC contamination. Groundwater sampling data show an increase in concentrations of TCE along the groundwater flow path through this area. Site-wide water table maps presented in Appendix G indicate that groundwater flow is to the southeast. Site-wide water table maps (Phase 2) discussed in Section 4 also show a southeasterly groundwater flow.

Sample locations are shown in a figure provided in Appendix L-31. Posted data are available for review on Plate 5-3b. During Phase 1/1A of the City's RI, TCE was reported in shallow (20-22 feet bgs) groundwater samples collected downgradient of the Altra Color Body Shop (ACB) and United Steel (US) facilities from GP#19-8 at 190 µg/L and GPA24-3 at 310 µg/L. TCE was also reported in samples collected from the east side of Mosley Street near the west edge of the facilities at GP#19-6 (310 µg/L) and GP#19-7 (170 µg/L). During Phase 2 of the City's RI, TCE was reported in shallow groundwater samples collected downgradient of these facilities at locations GP02E-07 and GP-02E-08 at 51 µg/L and 110 µg/L, respectively. Location GP#19-6 was also resampled during Phase 2 and the TCE concentration was 160 µg/L. TCE has been reported in shallow groundwater samples collected upgradient of the ACB/US facilities at locations WND-41S, WU-GP-06 (G&E 1997) and 13W-GP-04 (KDHE 1993) at 7.2 µg/L, 14 µg/L and 184 µg/L, respectively. Additional upgradient data (northwest) of these facilities are needed to evaluate the area west of Mosley and

south of 16th Street to determine the significance of TCE detections near and downgradient of the US and ACB facilities.

Polk directory information indicates that a facility located at the southwest corner of 16th and Mosley with an address of 1655 North Mosley had two businesses which may have used chlorinated solvents. The businesses were present at the location in the 1960's and were identified as Kenco Inc. (an aircraft parts manufacturer) and Steel Products Inc. Current data are inconclusive as to whether the 1655 North Mosley address was reassigned or the facility at the 1655 North Mosley address was demolished and replaced by a parking lot. The above is significant in that a TCE source at this location may account for the data indicating potential multiple source areas on the east side of Mosley.

No conclusive data showing TCE storage or use at the properties in question have been identified. Available data indicate the potential presence of a moderate TCE source of groundwater contamination. Data are insufficient to assess whether remedial action alternatives are necessary.

Additional field investigation activities have been proposed for this area in the Suspect Source Area Work Plan submitted to KDHE on April 8, 2004. In this work plan, this facility has been combined with five additional facilities/areas identified as the 15th Street Area. As specific source areas are identified during these subsequent investigation activities, specific steps needed to identify PRP(s) will be outlined in a separate work plan addressing methods for PRP identification.

9.5.2 Excel Facility

The Excel Corporation. Facility (EXC) is located at 2901 North Mead Avenue, southeast of the intersection of East 29th Street and Mead. Data indicate that the EXC facility may be a source of chlorinated VOC contamination. Groundwater sampling data collected during the City's RI have shown an increase in concentrations of TCE along the groundwater flow path through this area. Site-wide water table maps presented in Appendix G (Phase 1/1a) indicate that groundwater flow at the EXC facility is to the south-southwest. Site-wide water level measurements presented in Section 4 (Phase 2) also indicate groundwater flow is to the south and south-southwest in this area.

Sample locations are shown in a figure provided in Appendix L-31. Posted data are available for review on Plate 5-3a. Historical data for this area are provided in Appendix B-21.

In 1991, the EXC facility was the subject of subsurface investigations to determine if a chemical release could have occurred on the property (B&M 1997). The investigation included the installation of 14 groundwater and monitoring wells on and downgradient of the EXC property, the collection and analysis of groundwater samples from the monitoring wells and the collection and analysis of soil samples.

TCE was reported at up to 540 μg/L in shallow monitoring well MW-4A. To integrate data collected at the EXC facility into the NIC database, the identity of groundwater monitoring wells installed by EXC has been modified to provide the facility identifier and to correlate the sample location as noted in the facility's investigation. In the case of EXC, this nomenclature is implemented as such: Monitoring well identities are modified by dropping the "MW" prefix and replacing it with EXC. Shallow monitoring well MW-4A would be renamed EXC-4A by this convention.

During the City's RI, groundwater samples were again collected from EXC' s shallow monitoring well EXC-4A in Phase 1 and in Phase 2. TCE concentrations in these samples were 330 μg/L and 290 μg/L, respectively. During Phase 2, additional samples were collected downgradient (south) of EXC-4A at Geoprobe locations GP04B-02, GP04B-09 and GP04B-10. TCE was reported in samples from the shallow groundwater (20 ft bgs) or intermediate (26 ft bgs) groundwater from these locations at 200 μg/L, 830 μg/L and 190 μg/L, respectively. Samples were also collected from the intermediate groundwater (23-26 ft bgs) upgradient of EXC-4A. These were Geoprobe locations GP04B-01, GP04B-04, GP04B-05, GP04B-06 and GP04B-07, which contained TCE at 150 μg/L, 83 μg/L, 65 μg/L, 100 μg/L and 170 μg/L, respectively. Fine-grained material prevented the collection of groundwater samples from the uppermost portion of the alluvial aquifer at many EXC Geoprobe sample locations. Therefore, it was necessary to collect samples from the intermediate depth instead of the shallow groundwater at many of the locations. Additional sampling data are needed to evaluate to the significance of TCE concentrations reported in and downgradient of EXC-4A, the variation of TCE concentrations with sample depth and variability of TCE concentration exhibited in upgradient samples.

An October 22, 1987 Excel Corporation internal memo documents a practice of dumping waste oil as well as, "solvents and numerous other chemicals" in "the area around the transformers west of the maintenance shop" (B&M 1997). It is unclear as to precisely where on the Excel property the dumping occurred. The memo indicated that the dumping area had been cleaned and re-graveled, but provided no information regarding the scope of the cleanup or analytical data. The memo also stated the practice of unauthorized disposal of waste was to be discontinued and any subsequent occurrences would result in disciplinary action. The Excel Corporation has denied the use of TCE at this facility.

No conclusive data showing TCE storage or use at the property in question have been identified. Available data indicate the potential presence of a moderate TCE source of groundwater contamination. Data are insufficient to assess whether remedial action alternatives are necessary.

KDHE indicated in their March 25, 2003 comments on Section 9 and Appendix L that additional data may be needed and that they will evaluate the 29th and Mead files with regard to this facility as a potential source. No additional activities have been

proposed at this facility until KDHE has completed their review and determines whether additional investigation activities are warranted.

9.5.3 HD Specialty Performance Facility

The HD Specialty Performance (HD) facility is located at 1650 and 1652 North Mosley Avenue, southeast of the intersection of 16th Street and Mosley. Data indicate that this area may a potential source of chlorinated VOC contamination. Groundwater sampling data show an increase in concentrations of TCE along the groundwater flow path through this area. Site-wide water table maps presented in Appendix G (Phase 1/1a) indicate a groundwater flow at the HD facility is to the southeast. Site-wide water level measurements presented in Section 4 (Phase 2) also indicate groundwater flow is southeasterly in this area.

Sample locations are shown in a figure provided in Appendix L-31. Posted data are available for review on Plate 5-3b. During Phase 1/1A of the City's RI, TCE was reported in a shallow (20 feet bgs) groundwater sample (GP#19-6) collected near the southeast corner of the HD Specialty Performance (HD) facility at a concentration of 310 µg/L. When this location was resampled during Phase 2, TCE concentration was 160 µg/L. TCE has been reported in shallow groundwater samples collected upgradient of the HD facility at locations WND-41S, WU-GP-06 (G&E 1997), WU-GP-0 (G&E 1997), 13W-GP-04 (KDHE 1993) and WU-2-S (G&E 1997) at 7.2 µg/L, 14 µg/L, <1 µg/L, 34 µg/L and 19 µg/L, respectively.

Additional sampling data are needed to evaluate to the significance of TCE concentrations reported in the shallow groundwater samples in the area of the HD facility. No conclusive data showing TCE storage or use at the property in question have been identified. Available data indicate that the potential presence of a moderate TCE source of groundwater contamination. Data are insufficient to assess whether remedial action alternatives are necessary.

Additional field investigation activities have been proposed for this area in the Suspect Source Area Work Plan submitted to KDHE on April 8, 2004. In this work plan, this facility has been combined with five additional facilities/areas identified as the 15th Street Area. If specific source areas are identified during these subsequent investigation activities, specific steps needed to identify PRP(s) will be outlined in a separate work plan addressing methods for PRP identification.

9.5.4 Former Johns' Refinery Facility

The Former Johns' Refinery (JRF) facility is located at 915 East 21st North, southeast of the intersection of 21st Street and Mosley. Data indicate that this area may a potential source of chlorinated VOC contamination. Site-wide water table maps presented in Appendix G (Phase 1/1a) indicate that groundwater flow at the JRF facility is to the southeast, but poorly defined. Additional data developed during the Phase 2 and presented in Section 4 has improved definition of groundwater flow in this portion of the site and also indicate a southeast groundwater flow.

The Johns' Refinery (JRF) facility operated from 1950 until 1970 as the Super Refined Oil Company re-refining used motor oil. In 1983, the US EPA' s Emergency Response Branch investigated the abandoned JRF facility, by inventorying and sampling tank contents and sampling soils. A Response Action (RA) was subsequently performed 1984-1985 that consisted of emptying and removing 32 above-ground tanks, 11 underground tanks, disposal of the tank contents, and removal of PCB contaminated soil. The site was subsequently capped with soil and gravel as a parking lot.

Metals, PCB and Petroleum Contamination
Sampling data collected by the US EPA (USEPA 1984) prior to the RA, detected product materials at JRF containing up to 742 mg/kg PCBs and 3,180 mg/kg lead. After the RA, sampling indicated that the average residual PCB concentration in soil had been reduced to below 5 mg/kg, but concentrations of lead and copper in the surface of the remaining soil averaged 300 mg/kg and 58 mg/kg, respectively (USEPA 1985). Kiln dust was used to stabilize remaining "oil-soaked soil" in preparation for capping.

TCE Contamination
During the RA, the EPA discovered an existing well on the JRF property. TCE concentrations in two water samples collected from the well were reported at 550 µg/L and 1,000 µg/L, respectively. The EPA stated that the TCE could not be linked with certainty to the JRF site, and concluded that evaluation of the TCE in groundwater was beyond the scope of the RA (USEPA 1985).

During Phase 2 of the City's RI, groundwater samples were collected from Geoprobe location GP02C-04, which is north (upgradient) of the JRF site and GP02C-06, which is south (downgradient) of the JRF site. TCE was not detected (<1.0 µg/L) in the shallow groundwater sample from either of these locations, but was reported in the deep groundwater sample from GP02C-04 at 480 µg/L, and in the deep groundwater sample from GP02C-06 at 370 µg/L. C*is*-1,2-DCE , a degradation product of TCE, was reported in the shallow sample from GP02C-04 at 18 µg/L, but was not detected (<1.0 µg/L) in the shallow sample from GP02C-06. VC, another degradation product of TCE, was not detected (<1.0 µg/L) in the shallow groundwater sample from either location. DCE and VC were both detected in the deep groundwater sample at GP02C-04 at 150 µg/L and 2.2 µg/L, respectively, and in the deep groundwater sample from GP02C-06 at 120 and 39 µg/L, respectively.

No conclusive data showing TCE storage or use at the property in question have been identified. Additional data are needed to better determine whether the facility is source of TCE contamination. Available data indicate the potential presence of a moderate TCE source of groundwater contamination. Data are insufficient to assess whether remedial action alternatives are necessary.

Additional field investigation activities have been proposed for this facility in the Suspect Source Area Work Plan submitted to KDHE on April 8, 2004. These activities will be performed during the same time frame as activities being performed at National By-Products and the 20th and Washington area.

9.5.5 Kreonite West Facility

The Kreonite, Inc. - West facility (KRW) is located at 715 East 10th Street North, northwest of the intersection of North Santa Fe Avenue and East 10th Street. The facilities in question occupy the area between Santa Fe and the alley east of Santa Fe and between 9th and 10th Streets. Data indicate that the KRW facility may be a potential source of low-level chlorinated VOC contamination. Groundwater sampling data collected during the City's RI indicate the presence of TCE in groundwater downgradient of the KRW facility. Groundwater flow in the area, as shown on the Plates in Section 4, is to the south, but with a slight westerly component near 9th Street and Santa Fe. Between June 1990 and May 1991 dewatering operations to permit construction of building foundations and basements were performed in the area of 8th Street between Emporia and Santa Fe Streets. These operations may have temporarily altered groundwater flow patterns resulting in a more southwesterly flow direction in the area of KRW. Groundwater continues to be extracted at a reported rate of approximately 155 gallons per minute from a water control sump located near the southeast corner of St. Francis and 8th Street. The August 2001 water level data do not indicate a significant alteration of ground water flow pattern in the area associated with this well. However, data in the area are sparse and the well likely affects local contaminant movement within at least the area of the block.

Kreonite has refused onsite access for additional site characterization. Current identification is based upon the closest available data. Sampling locations are shown in the data provided for the Via Christi facility in Appendix B-16 and the figure provided in Appendix L-31. TCE has been detected in groundwater samples collected from shallow monitoring well WND-44S, which is immediately downgradient of some of the KRW facility, during Phase 1 and Phase 2 of the City's RI at concentrations of 28 μg/L and <1.0 μg/L respectively. VC, a degradation product of TCE, was also reported in these samples at 15 μg/L and 23 μg/L, respectively. TCE was also reported in a shallow groundwater sample collected as part of investigations associated with another facility near the northeast Corner of North Santa Fe and East 9th Street (AEC 2000). This sample, designated as VCM-GP7-11, is near the southwest boundary of the KRW facility and contained a reported TCE concentration of 30 μg/L. VC was not detected in this sample (<1.8 μg/L). Shallow groundwater samples collected upgradient (north) of WND-44S and VCM-GP7-1, have contained little or no TCE. These are GP04G-01 (NIC RI, Phase 2), GP04G-02 (NIC RI, Phase 2), VCM-GP-7-01 (AEC 2000) and 13W-GP19 (KDHE 1993), which contained reported concentrations of TCE at 2.2 μg/L, 4.1 μg/L, <1.2 μg/L and 0.6 μg/L, respectively. VC was not detected in any of these samples. Additional sampling data are needed to evaluate to the significance of TCE concentrations reported in the shallow groundwater samples in the area of the KRW facility.

Information supplied by Kreonite, Inc. (Kreonite 1998) indicates historical use of a wide variety of cleaners, solvents, paints, inks, additives and other products that could potentially contain TCE as a component. To date, actual use or storage of TCE has not been documented for the KRW facility. Available data indicate the potential presence of a minor TCE source of groundwater contamination. Data are insufficient to assess whether remedial action alternatives are necessary.

Additional field investigation activities have been proposed for this area in the Suspect Source Area Work Plan submitted to KDHE on April 8, 2004. Access to the Kreonite facility has not been granted; therefore, field investigation activities will be limited to Geoprobe sampling in the City right-of-way both upgradient and downgradient of the facility.

9.5.6 Northern Pipeline Construction Facility

The Northern Pipeline Construction facility (NPC) is located at 2915 North Emporia Avenue, southwest of the intersection of East 29th Street and North Emporia. Data indicate that this area may be a potential source of chlorinated VOC contamination. Groundwater sampling data have shown an increase in concentrations of TCE along the groundwater flow path through this area. Groundwater flow in the area is poorly defined in the water level maps developed during Phase 1/1a (Appendix G) but is generally shown to be southerly. The water level maps provided in Section 4 show a south-southeast groundwater flow direction.

Sample locations are shown in a figure provided in Appendix L-31. Posted data are available for review on Plate 5-3a. During Phase 1/1A of the City's RI, TCE was reported in a shallow groundwater sample collected from Geoprobe location GP#56-2 at 200 μg/L. During Phase 2 of the City's RI, TCE was reported at 28 μg/L in a second shallow groundwater sample that was collected from location GP#56-2. TCE was also detected during Phase 2 in shallow groundwater samples collected upgradient (north) of GP#56-2 from locations NMW-34S, GP05A-03 and GP05A-04 at 30 μg/L, 30 μg/L and 45 μg/L, respectively. TCE was not detected (<1.0 μg/L) in shallow groundwater samples from locations farther upgradient of those points. These are GP#56-1 (Phase 1) and GP10D-01, GP05A-01 and GP05A-02, which were collected during Phase 2. Enhanced biodegradation from residual petroleum hydrocarbon contamination remaining from the Barnsdall and Golden Rule refinery operations at the northern end of the facility may be influencing the observed distribution of chlorinated solvents. Additional sampling data are needed to evaluate to the significance of TCE concentrations reported in the shallow groundwater samples in the area of the NPC facility.

No documentation of TCE storage or use at the NPC facility has been identified at this time. Available data indicate the potential presence of a moderate TCE source of groundwater contamination. Data are insufficient to assess whether remedial action alternatives are necessary.

Additional field investigation activities have been proposed for this area in the Suspect Source Area Work Plan submitted to KDHE on April 8, 2004. Proposed activities include sampling of monitoring wells NMW-34S&D, WND-11S, and WNC-11D to assess concentration changes in this area. Potential effects from petroleum hydrocarbons will also be considered during these investigation activities.

9.5.7 Weaver Manufacturing and Sherwin Williams Facilities

The Weaver Manufacturing, Inc. (WM) facility and Sherwin Williams Paint (SW) facility are respectively located at 1005 East 17th Street North and 1705 North Wabash Avenue, northwest of the intersection of East 16th Street and North Wabash Avenue. Data indicate that this area may be a potential source of chlorinated VOC contamination. Groundwater sampling data have shown an increase in concentrations of TCE along the groundwater flow path through this area. Water level maps presented in Appendix G (Phase 1/1a) indicate groundwater flow in the area to be to the southeast. Section 4 water level maps (Phase 2) indicate groundwater flow in the area to be to the east-southeast.

Sample locations are shown in a figure provided in Appendix L-31. Posted data are available for review on Plate 5-3b. During Phase 1/1A of the City's RI, TCE was reported in a shallow (20-22 feet bgs) groundwater samples collected downgradient of the WM and SW facilities. These were GP#19-1, at 46 μg/L, GP#19-2 at 140 μg/L and GPA25-5 at 190 μg/L. TCE was also reported in a shallow groundwater sample collected from GPA20-1 at 260 μg/L. This location was located northeast of 17th Street and Washington Avenue. It is upgradient of a small part of the northern portion of the WM facility; however, upgradient data were lacking for the remainder of the WM facility and all of the SW facility. During Phase 2 of the City's RI, shallow groundwater samples were collected from eight locations on and upgradient of the WM facility. Two of the samples on the WM facility, GP03D-04 and GP03D-05, contained TCE at 30 μg/L and 4 μg/L, respectively. TCE was not detected (<1.0 μg/L) in shallow groundwater samples collected from the other six locations (GP03D-01, GP03D-02, GP03D-06, GP03D-07, GP03D-08 and GP03D-09). Location GP#19-6 was also resampled during Phase 2 and the TCE concentration was 55 μg/L.

In summary, data indicate the possibility of the northern portion of the WM facility may be a minor source of TCE groundwater contamination. Re-sampling of groundwater at location GP03D-04 and groundwater sampling upgradient of the WM facility are needed to determine if this facility can be classified as an identified source area. Available data also indicate the possibility that the SW facility is a moderate source of TCE groundwater contamination. Additional sampling around the southern portion of the SW facility is necessary to better explain the TCE distribution in the area. Data are insufficient to assess whether remedial action alternatives are necessary.

Additional field investigation activities have been proposed for this area in the Suspect Source Area Work Plan submitted to KDHE on April 8, 2004. In this work

plan, this facility has been combined with five additional facilities/areas identified as the 15th Street Area. If specific source areas are identified during these subsequent investigation activities, specific steps needed to identify PRP(s) will be outlined in a separate work plan addressing methods for PRP identification.

9.5.8 Wilko Paints and BFI Facilities

The Wilko Paint (WP) facility and Browning-Ferris Industries (BFI) facility are respectively located at 2727 North Ohio Avenue and 2745 North Ohio Avenue, northwest of the intersection of East 26th Street and North Ohio Avenue. Data indicate that this area may be a potential source of chlorinated VOC contamination. Groundwater sampling data have shown relatively high, but variable concentrations of TCE in the groundwater at these facilities. Site-wide water table maps presented in the Appendix G (Phase 1/1a) indicate a general southerly groundwater flow direction, but the flow direction was poorly defined due to a lack of water level control east of these facilities. Definition of the groundwater flow direction was improved during Phase 2. Water level measurements in August 2001 (Section 4) show a local groundwater flow direction that is slightly west of south.

Sample locations are shown in a figure provided in Appendix L-31. Posted data are available for review on Plate 5-3a. During Phase 1/1A of the City's RI, a shallow groundwater sample was collected near the northern boundary of the Browning-Ferris Industries (BFI) facility at Geoprobe location GP#62-1. This location is downgradient (south) of the former VIM Trailer facility at 2811 North Ohio, which is a confirmed source of TCE and 1,1,1-TCA groundwater contamination. That sample contained concentrations of TCE at 490 μg/L, cis-1,2 DCE at 3,000 μg/L, VC at 80 μg/L, and benzene at 8.2 μg/L. Samples were also collected during Phase 1 downgradient of the BFI facility (GP#62-03) and WP facility (GPA08-2). TCE was reported in a shallow groundwater samples collected from these locations at 230 μg/L and 450 μg/L, respectively. During Phase 2 of the City's RI, the shallow groundwater was resampled at GP#62-3 and GPA08-2, and TCE was reported at 480 μg/L and at 45 μg/L, respectively. Phase 2 groundwater samples were also collected from locations GP05B-02, and GP05B-03, which are at the south boundary of the BFI facility, and from GP05B-05, GP05B-06 and GP05B-07, which are south of BFI and west of WP but upgradient of GPA08-2. TCE concentrations in these samples were <1.0 μg/L, 41 μg/L, <1.0 μg/L, 69 μg/L and 9.0 μg/L, respectively.

Available data indicate the potential presence of a moderate TCE source of groundwater contamination. The data on the southern portion of the BFI facility and northern portion of the WP facility show contaminant distributions that are south and southeast of the VIM Trailer source area. The currently available data are not considered sufficient to demonstrate that the observed shallow groundwater contamination on the BFI and WP facilities is derived from upgradient sources. No documentation of the use or storage of TCE at either of these facilities has been identified at this time. Wilko has provided the City with chemical storage

information that does not show the use or storage of TCE on the property. Data are insufficient to assess whether remedial action alternatives are necessary.

Additional field investigation activities have been proposed for this area in the Suspect Source Area Work Plan submitted to KDHE on April 8, 2004. In this work plan, these facilities and the former WR Grace Facility have been combined and identified as the 26th Street Area. The primary focus of proposed investigation activities in this area will be to determine if a release to groundwater has occurred on the Wilko Paint and/or BFI property.

9.5.9 Former WR Grace Facility

The former WR Grace Facility is currently occupied by the Wil-Gro Corporation located at the northeast corner of 26th and Ohio at 2728 North Ohio. Data indicate that this area may be a potential source of petroleum hydrocarbon contamination. Petroleum hydrocarbon contamination is reportedly present in an upgradient UST well on the Oneok Kansas Gas Service (OKGS) facility located at 1021 East 26th Street North, just southwest of the Wil-Gro Corporation property. Groundwater flow in the area is to the southwest as shown in the water level maps presented in Section 4.

Data from the UST investigation at the former Wichita Gas Service Center (now OKGS) property indicates a probable source of significant petroleum hydrocarbon contamination from a facility located upgradient of the KGS UST monitoring well MW-4. The OKGS MW-4 is located in the south central portion of the property approximately 100 feet north of the UST tank pit and is reportedly contaminated by petroleum hydrocarbons. Geocore Services, Inc., responsible for conducting the UST investigation under the KDHE Storage Tank Section, has attributed the petroleum hydrocarbon contamination at well MW-4 to an offsite upgradient source. The source of the petroleum hydrocarbon is suspected to be from the Wil-Gro property in the vicinity of two large above ground storage tanks (AGSTs) located on southern portion of the Wil-Gro property. Access to the Wil-Gro property has been denied at this time. Sampling on the Wil-Gro property is necessary to determine the nature and extent of the probable petroleum hydrocarbon contamination in the area. Additionally, a fertilizer package plant was also located on the property when it was owned by WR Grace. The lack of access has inhibited the ability to access whether other contaminants, including chlorinated solvents may also be attributed to the facility.

In the Suspect Source Area Work Plan submitted to KDHE on April 8, 2004, this facility and the Wilko Paints/BFI Facilities have been combined and identified as the 26th Street Area. The former WR Grace Facility is the only suspect source area being investigated for issues unrelated to chlorinated solvents. No additional field investigation activities have been proposed for this facility pending KDHE response to a KORA request for additional UST/pipeline information.

9.5.10 3rd and St. Francis Area

The 3rd and St. Francis area (3SF) is north of the intersection of East 3rd Street with North St. Francis Avenue. Data indicate that this area may be a potential source of low-level chlorinated VOC contamination. Groundwater sampling data have shown an increase in concentrations of TCE along the groundwater flow path through this area. Site-wide water table maps presented in Section 4 show groundwater flow is to the south-southwest. It is likely groundwater flow in this portion of the site is influenced by pumping in the downtown Wichita area.

Sample locations are shown in a figure provided in Appendix L-31. Posted data are available for review on Plate 5-3b. During Phase 1/1A of the City's RI, TCE was reported in a shallow groundwater sample collected from Geoprobe location GPA40-1 at 22 μg/L. Shallow groundwater samples collected upgradient (north) of GPA40-1 at locations GPA37-1 and GPA37-2 contained TCE at 4.5 μg/L and at 3.1 μg/L, respectively. During Phase 2 of the City's RI, TCE was reported at 11 μg/L a second shallow groundwater sample was collected from GPA40-1, and at 6.2 μg/L in NMW-29S. TCE was not detected (<1.0 μg/L) in shallow groundwater samples collected during Phase 2 at locations, GP04H-05, GP04H-06, GP04H-07 and GP04H-08, which are upgradient (north) of GPA40-1 And NMW-29S. Additional sampling data upgradient of GPA-40-1 and NMW-29S are needed to evaluate to the significance of TCE concentrations reported in the shallow groundwater samples from those locations.

Businesses located upgradient of GPA40-1 include Jiffy Print at 410 North St. Francis; Da Mar Mfg at 436 North St. Francis; an auto body shop at 448 North St. Francis; and several Kamen businesses located on the west side of Santa Fe north of 3rd Street. No documentation of the use or storage of TCE at either of these facilities has been identified at this time. Available data indicate the potential presence of a minor TCE source of groundwater contamination. The observed level of groundwater contamination indicates that remedial action alternatives are probably not necessary.

The City/CDM indicated in their response to KDHE's March 25, 2003 comments on Section 9 and Appendix L that monitoring wells NMW-29S&D would be resampled. This sampling was performed during the downgradient investigation activities performed in July 2003. The sampling results indicated that concentrations in this well cluster are relatively stable. Additional field investigation activities have been proposed for this area in the Suspect Source Area Work Plan submitted to KDHE on April 8, 2004 to confirm whether or not a source is present in this area.

9.5.11 13th and Emporia Area

The 13th and Emporia area (13E) is north of the intersection of East 13th Street with North Emporia Avenue. Data indicate that this area may be a potential source of chlorinated VOC contamination. Groundwater sampling data have shown an increase in concentrations of TCE along the groundwater flow path through this area. Water level maps shown in Section 4 indicate groundwater flow is to the south.

Sample locations are shown in a figure provided in Appendix L-31. Posted data are available for review on Plate 5-3b. During Phase 1/1A of the City's RI TCE was reported in a shallow groundwater sample collected at monitoring well WND-45S at 20 μg/L, and in a deep groundwater sample from monitoring well WND-45D at 300 μg/L. Samples collected upgradient (north) of WND-45S&D at location GPA23-2 (near 16th Street North and Topeka Avenue) contained TCE at 2.4 μg/L in the shallow groundwater and at 360 μg/L in the deep groundwater. Samples collected downgradient (south) of WND-45S&D at location GPA30-2 (near 11th Street North and Emporia Avenue) contained TCE at 1.4 μg/L in the shallow groundwater and at 83 μg/L in the deep groundwater. During Phase 2 of the City's RI, WND-45S and WND-45D were resampled and TCE detected at 26 μg/L and 160 μg/L, respectively. TCE was also reported in Phase 2 samples collected in the vicinity of 13th and Emporia at locations GP04E-04 (shallow at 54 μg/L, deep at 200 μg/L), GP04E-03 (shallow at 25 μg/L, deep at 430 μg/L) and GP04E-05 (shallow at 14 μg/L, deep at 560 μg/L). Phase 2 samples were also collected from monitoring wells upgradient (NMW-19S&D, near 15th and Topeka) and downgradient (NMW35S&D, near 11th and Emporia). TCE was reported in the samples collected from NMW-19S and NMW-19D at 1.7 μg/L and 110 μg/L, respectively; and in NMW-35S and NMW-35D at 68 μg/L and 270 μg/L, respectively.

Additional sampling data near and upgradient of WND-45S&D and GP04E-04 are needed to evaluate to the significance of TCE concentrations reported in the shallow and deep groundwater samples in this area. This area consists largely of residential properties. No documentation of the use or storage of TCE has been identified in this area. Available data indicate the potential presence of a moderate TCE source of groundwater contamination. Data are insufficient to assess whether remedial action alternatives are necessary.

Additional field investigation activities have been proposed for this area in the Suspect Source Area Work Plan submitted to KDHE on April 8, 2004.

9.5.12 14th and Washington Area

The 14th and Washington area (14W) comprises four city blocks bounded by 15th Street on the north, Wabash Avenue on the east, 13th Street on the south and Mosley Avenue on the west. At least 12 industrial/commercial facilities are located within the area. Data indicate that this area may be a potential source of chlorinated VOC contamination. Groundwater sampling data have shown relatively high concentrations of TCE, with a significant amount of variability along the groundwater flow path through this area. Site-wide water level maps provided in Section 4 indicate groundwater flow in the area is to the south-southeast.

Sample locations are shown in a figure provided in Appendix L-31. Posted data are available for review on Plate 5-3b. During Phase 1/1A of the City's RI, TCE was reported in shallow groundwater samples collected at locations GPA28-2, WND-47S and GPA28-3 at 160 μg/L, 170 μg/L and 240 μg/L, respectively. There were no

Phase1/1A sample points within 2 blocks upgradient of these locations. TCE was also reported at each of these locations at 60 µg/L, 180 µg/L and 130 µg/L when they were resampled during Phase 2. During Phase 2, groundwater samples were collected from 11 additional locations upgradient (northwest) of the intersection of 13th and Wabash. At one of these locations (GP03E-13), TCE was reported at 110 µg/L in the shallow groundwater sample and at 1,400 µg/L in the deep groundwater sample. TCE was also reported at 62 µg/L and 100 µg/L in shallow groundwater samples and at 630 µg/L and 130 µg/L in deep groundwater samples from two other locations (GP03E-07 and GP03E-14, respectively), that are near GP03E-13. TCE was reported samples from the remaining eight locations at concentrations ranging from 3.1 µg/L (GP03E-01) to 76 µg/L (GP03E-03) in the shallow groundwater and from 130 µg/L (GP03E-07) up to 640 µg/L (GP03E-10) in the deep groundwater.

Additional sampling data are needed throughout this area to further delineate the relationship between TCE concentrations and individual facilities. The high TCE concentrations detected in the deep groundwater at GP03E-13 could indicate the presence of DNAPL accumulation and also requires additional investigation. No documentation of the use or storage of TCE in the area has been identified at this time. Available data indicate the potential presence of one or more moderate TCE sources of groundwater contamination. Data are insufficient to assess whether remedial action alternatives are necessary. If a DNAPL is present in the vicinity of GP03E-13, the implementation of remedial action alternatives at this location will be likely.

Additional field investigation activities have been proposed for this area in the Suspect Source Area Work Plan submitted to KDHE on April 8, 2004. In this work plan, this facility has been combined with five additional facilities/areas identified as the 15th Street Area. As specific source areas are identified during these subsequent investigation activities, specific steps needed to identify PRP(s) will be outlined in a separate work plan addressing methods for PRP identification.

9.5.13 15th and Ohio Area

The 15th and Ohio area (15O) consists of a currently undeveloped parcel of land northwest of the intersection of East 15th Street with North Ohio Avenue. Data indicate that this area may be a potential source of chlorinated VOC contamination. Groundwater sampling data have shown an increase in concentrations of TCE along the groundwater flow path through this area. Water level maps provided in Section 4 indicate groundwater flow in the area is east-southeast.

Sample locations are shown in a figure provided in Appendix L-31. Posted data are available for review on Plate 5-3b. During Phase 1/1A of the City's RI, TCE was reported in a shallow (20 feet bgs) groundwater sample collected at location GPA25-1 at 510 µg/L. TCE was also reported in samples collected upgradient (northwest) of this location, but at lower concentrations. These were GP#19-3 at 190 µg/L, GP#19-5 at 45 µg/L, GP#19-3 at 190 µg/L, and GP#19-4 at 83 µg/L. During Phase 2 of the

City's RI, a second shallow groundwater sample was collected from location GPA-25-1 that contained TCE at 290 μg/L. Subsequently, a groundwater monitoring well (NMW-41S) was also installed at this location. A Phase 2 sample from that well contained TCE at 250 μg/L. Additional samples were also collected from upgradient of GPA25-1 during Phase 2. These were GP02F-02, GP02F-04, GP02F-05 and GP02F-06, which contained TCE at 14 μg/L, 53 μg/L, 20 μg/L and 22 μg/L, respectively.

Additional sampling data near and upgradient of (northwest) of GPA25-4 and NMW-41S are needed to evaluate to the significance of TCE concentrations reported in the shallow groundwater samples from these locations. No documentation of the use or storage of TCE in the area has been identified at this time. Available data indicate the potential presence of a moderate to significant TCE source of groundwater contamination. Data are insufficient to assess whether remedial action alternatives are necessary.

Additional field investigation activities have been proposed for this area in the Suspect Source Area Work Plan submitted to KDHE on April 8, 2004. In this work plan, this facility has been combined with five additional facilities/areas identified as the 15th Street Area. As specific source areas are identified during these subsequent investigation activities, specific steps needed to identify PRP(s) will be outlined in a separate work plan addressing methods for PRP identification.

9.5.14 15th and Washington Area

The area in question is a vacant lot located northwest of 15th and Washington. Data indicate that this area may be a potential source of chlorinated VOC contamination. Groundwater sampling data have shown an increase in concentrations of TCE along the groundwater flow path through this area. Site-wide water level maps presented in Section 4 indicate groundwater flow in the area is east-southeast.

Sample locations are shown in a figure provided in Appendix L-31. Posted data are available for review on Plate 5-3b. During Phase 1/1A of the City's RI TCE was reported in a shallow (20 feet bgs) groundwater sample collected at location GPA24-4 at 410 μg/L. TCE was also reported in a sample collected upgradient (northwest) of this location, but at a lower concentration (GP#19-8 at 190 μg/L). During Phase 2 of the City's RI, four additional shallow samples were collected from the area north and west (upgradient) of GPA24-4. These were GP02E-02, GP02E-07, GP02C-08 and GP02E-09, which contained TCE at concentrations of 67 μg/L, 51 μg/L, 110 μg/L and 11 μg/L, respectively.

Additional sampling data near and upgradient of (northwest) of GPA24-4 are needed to evaluate to the significance of TCE concentration reported in the shallow groundwater sample from that location. No documentation of the use or storage of TCE has been identified at this time. Available data indicate the potential presence of

a moderate TCE source of groundwater contamination. Data are insufficient to assess whether remedial action alternatives are necessary.

Additional field investigation activities have been proposed for this area in the Suspect Source Area Work Plan submitted to KDHE on April 8, 2004. In this work plan, this facility has been combined with five additional facilities/areas identified as the 15th Street Area. As specific source areas are identified during these subsequent investigation activities, specific steps needed to identify PRP(s) will be outlined in a separate work plan addressing methods for PRP identification.

9.5.15 20th and Washington Area

The 20th and Washington area (20W) is north and east of the intersection of East 19th Street with North Wabash Avenue. The area is primarily vacant with one residential house. The eastern portion of Security Oil and National By-Products are located immediately west of the area. Data indicate that this area may be a potential source of chlorinated VOC contamination. Groundwater sampling data have shown an increase in concentrations of TCE along the groundwater flow path through this area. Site-wide water level maps provided in Section 4 indicate that groundwater flow is east-southeast.

Sample locations are shown in a figure provided in Appendix L-31. Posted data are available for review on Plate 5-3b. During Phase 1/1A of the NIC RI, TCE was reported in a shallow groundwater samples collected along 19th Street between Washington and Ohio from Geoprobe locations GP#47-1, GPA14-2 and GPA14-3 at 70 µg/L, 360 µg/L and 270 µg/L, respectively. During Phase 2 of the NIC RI, location GP#47-1 was resampled and TCE was reported at 89 µg/L. Also during Phase 2, additional shallow groundwater samples were collected north of 19th at locations NMW-8S, GP06F-02, GP06F-07 NMW-39S, and NMW-9S. TCE concentrations in these samples were 130 µg/L, 250 µg/L, 180 µg/L, 34 µg/L and 190 µg/L, respectively. Shallow groundwater samples were also collected from five Geoprobe locations (GP06F-06, GP0F-03, GP06F-01, GP06F-05 and GP06F-04) north of 19th Street and Washington, which is upgradient (northwest) of the sample locations along 19th Street east of Washington. TCE concentrations in these samples was <1.0 µg/L, <1.0 µg/L, <1.0 µg/L, 240 µg/L, and 74 µg/L, respectively. TCE concentrations in the deep groundwater samples (Phase 1/1a) from locations GP#47-1, GPA14-2 and GPA14-3 were reported at 550 µg/L, 640 µg/L and 650 µg/L. Concentrations of TCE in samples from the deep groundwater upgradient of these locations were variable and ranged from 35 µg/L (GP06F-07) up to 520 µg/L (GP06F-02).

Many of the samples from this portion of the site exhibit a significant amount of degradation with concentrations of cis-1,2-DCE up to 520 µg/L (GP06F-07, deep sample) and VC up to 64 µg/L (GPA-14-2, deep sample). Petroleum hydrocarbon accumulations were also noted at location GP06F-03.

Data in the vicinity and upgradient of (northwest) GPA14-3 are needed to evaluate the significance of TCE concentration reported in the shallow groundwater sample from that location. No documentation of the use or storage of TCE in the area has been identified at this time. Available data indicate the potential presence of a moderate TCE source of groundwater contamination. Data are insufficient to assess whether remedial action alternatives are necessary.

Additional field investigation activities have been proposed for this area in the Suspect Source Area Work Plan submitted to KDHE on April 8, 2004. Specific steps needed to identify PRP(s) will be outlined in a separate work plan addressing methods for PRP identification.

9.5.16 Additional Suspect Source Areas

11th Street Area

On March 25, 2003, KDHE provided comments on source area identifications related to Section 9 of the RI and Appendix L. The comments included three additional areas (11th and Mosley, 11th and Wabash, and 11th and Indiana/Cleveland) which KDHE considered suspect. Additional field investigation activities have been proposed for this area in the Suspect Source Area Work Plan submitted to KDHE on April 8, 2004. In this plan, this area is referred to as the 11th Street Area.

10th and Ohio Area

Additional field investigation activities have been proposed for this area in the Suspect Source Area Work Plan submitted to KDHE on April 8, 2004 to address two sampling locations (DG-21 and DG-31) that had elevated TCE concentrations in shallow groundwater during the downgradient investigation performed in August/September 2003.

9.5.17 Summary of Suspect Source Areas

Seventeen Suspect Source Areas have been presented in this section. As noted in the sections above, some areas have been combined for the purpose of additional investigations and two areas (11th Street Area and 10th and Ohio Area) have been added. These additional investigations will need to be conducted at these Suspect Source Areas to better determine whether the facility/area is a source of groundwater contamination. Provided that the City can obtain the necessary access, Suspect Source Areas will be investigated by the City to the point that a specific property and viable potential responsible party are identified. TCE is the primary contaminant at fourteen of the fifteen Suspect Source Areas. The remaining Suspect Source Area is a petroleum hydrocarbon source area.

Suspect Source areas that are identified as source areas after additional City investigation will then require further investigation to confirm the nature of the release and better quantify the environmental impacts to the soil and groundwater. These latter investigations will either be conducted by a potential responsible party or the City, under KDHE oversight.

9.6 Summary

Section 9 presented the identification of source areas for groundwater contamination within the NIC Site. The focus of the source area identification is to identify the "hot spots" and/or source areas within the Site for the purpose and extent necessary to support the objectives of an RI and to develop an area-wide FS. The assessment of source areas was primarily based upon the analytical results of groundwater sampling. A total of 54 sources of apparent groundwater contamination were identified in this section. Source areas were divided into three categories: Confirmed, Identified, and Suspect.

Thirteen Confirmed Source Areas were presented in this section. Nine of the thirteen Confirmed Source Areas have chlorinated solvents as the primary contaminant(s). As noted in Table 9-1, all thirteen Confirmed Source Areas appear to have contaminant concentrations at levels that will require source control remedial measures. Four of the Confirmed Source Areas (former Coastal-Derby Refinery, Coleman North, Coleman Northeast, and Unocal) have active groundwater remedial actions.

According the KDHE's March 25, 2003 comments on Section 9 and Appendix L, remediation activities or source control measures are also being conducted at four additional Confirmed Source Areas (Continental Tank Car, Farmland, Safety-Kleen, and USD 259). A source area CI/CAS is being performed at the HCI Advance Chemical Facility and the Union Pacific Railroad Fueling Terminal Facility is being evaluated under the KDHE Storage Tank Program. Nine of the Confirmed Source Areas have conducted some level of soil remedial actions.

Twenty-six Identified Source Areas were presented in this section. The primary contaminant(s) within the twenty-six Identified Source Areas are as follows:

- Thirteen TCE source areas
- Five PCE source areas
- Four 1,1,1-TCA source areas
- Two CT source areas
- One 1,1,2,2-PCA source area
- One lead and PCB source area

As noted in Table 9-2, eight of the Identified Source Areas have contaminant concentrations in groundwater which appear to be elevated to the point that source control remedial actions will be necessary. Additional investigations may determine that other Identified Source Areas may also require source control remedial actions.

Seventeen Suspect Source Areas were presented in this section. TCE is the primary contaminant at all but one of the Suspect Source Areas. The remaining Suspect Source Area is a petroleum hydrocarbon source area. As noted in Table 9-3, at least two of the Suspect Source Areas appear to have contaminant concentrations in groundwater that appear to be elevated to the point that source control remedial

actions will be necessary. Additional investigations may determine that other Suspect Source Areas may also require source control remedial actions.

In general, groundwater data is sufficient to identify areas and properties as either Suspect or Identified Source Areas. Additional investigation will be necessary at all Suspect Source Areas in order to determine whether a source of groundwater contamination is present. Additional investigation activities have been proposed at both Suspect and Identified Source Areas in work plans submitted to KDHE on April 8, 2004. The results of any additional source investigations conducted by the City will be provided to KDHE as an Addendum to the RI.

9.7 References

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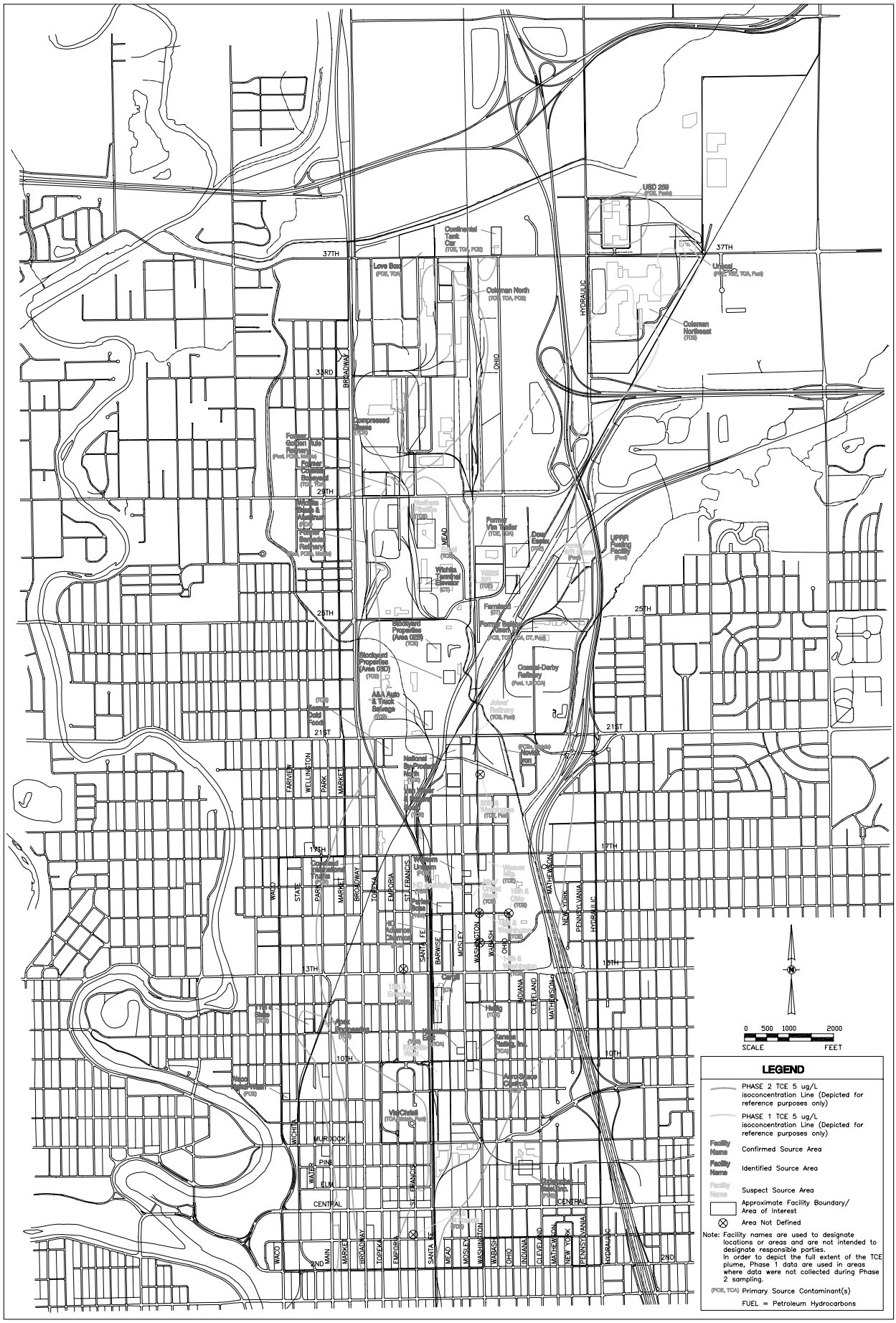
37TH
33RD
29TH
25TH
21ST
17TH
13TH
10TH
MURDOCK
PINE
ELM
CENTRAL
2ND
BROADWAY
HYDRAULIC
OHIO
MEAD
WELLINGTON
PARK
MARKET
FAIRVIEW
WACO
STATE
TOPEKA
EMPORIA
ST. FRANCIS
SANTA FE
BARWISE
MOSLEY
WASHINGTON
WABASH
INDIANA
CLEVELAND
MATHEWSON
NEW YORK
PENNSYLVANIA
MAIN
Continental Tank Car (TCE, TCA, PCE)
Love Box (PCE, TCA)
Coleman North (TCE, TCA, PCE)
Coleman Northeast (TCE)
Unical (PCE, TCE, TCA, Fuel)
USD 259 (PCE, Fuel)
Compressed Gases (TCE)
Former Golden Rule Refinery (Fuel, PCE, TCE, TCA)
Former Coleman Bakeyard (TCE, TCA)
Former Wichita Wholesale Grocery (PCE)
Former Barnsdall Refinery (PCE, Fuel)
Former Van Trailer (TCE, TCA)
Dow Corning (TCE)
UPRR Fueling Facility (Fuel)
Wichita Terminal Elevator (CT)
Farmland (CT)
Former Sanitary Laundry (PCE, TCE, TCA, CT, Fuel)
Stockyard Properties (Area 002B) (TCE)
Stockyard Properties (Area 002D) (TCE)
Coastal-Derby Refinery (Fuel, TCE, TCA)
AAA Auto & Truck Salvage (TCE)
Former Refinery (TCE, Fuel)
Kansas Power & Light (TCE)
National By-Products North (TCE)
Cargill (TCE)
Halling (TCE)
Kansas Fertilizer Inc. (TCE)
Arctic Glacier Co. Inc. (TCE)
Wichita Metal Inc. (PCE)
VisChem (TCA, Metals, Fuel)
Wichita Wholesale Grocery (PCE)
Wichita Tank Lines (TCE)
Lipper Corporation (TCE)
Wichita Tank Lines (TCE)
Wichita Tank Lines (TCE)
Wichita Tank Lines

Table 9-1
North Industrial Corridor (NIC) Site
Summary of Confirmed Source Areas

Facility Name*	Data Package**	Address/Location	Current Operator/ Occupant	Under Regulatory Oversight / Regulatory Agency	Primary Source Contaminants	Level of Groundwater Contamination	Active Source Area***	Remedial Actions ****
Former Barnsdall Refinery Facility	X	Southeast of Broadway and 29th	Glickman and Kansas Metals	No	Petroleum Hydrocarbons, Metals, PCBs	Free Petroleum Hydrocarbon Product	X	At least one former sludge pit overexcavated with sludge and soil disposal. No other remedial actions.
Former Coastal-Derby Facility		1100 E. 21st St. N.	El Paso Corp.	Yes / KDHE	Petroleum Hydrocarbons, 1,2-DCA	Free Petroleum Hydrocarbon Product	X	Groundwater extraction and product removal with reinjection. Two former sludge pits overexcavated and disposed. Active facility.
Coleman North Facility		801 E. 37th St. N.	Coleman/Evcon	Yes / EPA	TCE, TCA, PCE	TCE 21,000 µg/L	X	Sparge and SVE remediation system installed. Groundwater extraction and treatment. Active facility.
Coleman Northeast Facility		3600 N. Hydraulic	Coleman	Yes / KDHE	TCE	TCE 9,600 µg/L	X	Groundwater extraction and treatment. Active facility.
Continental Tank Car Facility		1106 E. 37th St. N.	Continental Tank Car Corp.	Yes / KDHE	TCE, TCA, PCE	TCE 1,510 µg/L TCA 2,270 µg/L	X	No remedial action activities to date.
Farmland Facility		1050 E. 25th St. N.	Farmland	Yes / KDHE	CT, B	CT 78.7 µg/L B 9,200 µg/L	X	Completion of interim removal and construction work associated with carbon tetrachloride UST.
Former Golden Rule Refinery Facility	X	Northeast of Broadway and 29th	Wichita Brass & Aluminum and Dolese Brothers	No	Petroleum Hydrocarbons, Metals, PCBs	Free Petroleum Hydrocarbon Product	X	No remedial action activities to date.
HCl Advance Chemical Facility	X+	1520 N. Barwise	HCl Advance Chemical	Yes / KDHE	PCE	PCE 1,300 µg/L	X	Currently conducting CI/CAS under Administrative Order
Safety-Kleen Facility		2525 New York	Clean Harbors Kansas LLC	Yes / EPA	PCE, TCE, TCA, CT, TOL, XYL	PCE 504 µg/L TCE 6,260 µg/L TCA 4,755 µg/L CT 635 µg/L TOL 190 µg/L XYL 250 µg/L	X	Excavation and disposal of paint can burial pit. No other remedial actions to date.
USD 259 Facility		3850 N. Hydraulic	USD 259	Yes / KDHE	PCE, Petroleum Hydrocarbons	PCE 240,000 µg/L	X	Excavation and disposal of UST and contaminated soil.

Table 9-1
North Industrial Corridor (NIC) Site
Summary of Confirmed Source Areas

Facility Name*	Data Package**	Address/Location	Current Operator/ Occupant	Under Regulatory Oversight / Regulatory Agency	Primary Source Contaminants	Level of Groundwater Contamination	Active Source Area***	Remedial Actions ****
Unocal Facility		2100 E. 37th St. N.	Unocal	Yes / KDHE	PCE, TCE, TCA, TOL, EBN, XYL	PCE 24,000 µg/L TCE 20,000 µg/L TCA 5,700 µg/L XYL 14,000 µg/L TOL 18,000 µg/L	X	Excavation and disposal of contaminated soil. Groundwater extraction and treatment. Active facility.
Union Pacific Railroad Fueling Terminal Facility		2645 N. New York Ave.	Union Pacific Railroad	Yes / KDHE	Petroleum Hydrocarbons	Free Petroleum Hydrocarbon Product	X	No known remedial action activities.
Former Vim Trailer Facility	X	2811 N. Ohio	Chance Coach	No	TCE, TCA	TCE 490 µg/L TCA 2,131 µg/L *cis*-1,2-DCE 3,000 µg/L	X	No remedial action activities to date.

* Facility names are used to designate locations or areas and are not intended to designate responsible parties.
** X = PRP data package provided in Appendix L. X+ = PRP data package previously submitted to KDHE
*** X = Current data indicate an active source area potentially requiring remediation.
**** No evaluation of the effectiveness of any remedial actions has been performed as part of this RI

PCE = Tetrachloroethene
TCE = Trichloroethene
TCA = 1,1,1-Trichloroethane
PCA = 1,1,2,2-Tetrachloroethane
CT = Carbon tetrachloride

PCBs = Polychlorinated byphenols
TOL = Toluene
EBN = Ethybenzene
XYL = Xylenes

Table 9-2
North Industrial Corridor (NIC) Site
Summary of Identified Source Areas

Facility Name*	Data Package**	Address/Location	Current Operator/ Occupant	Under Regulatory Oversight / Regulatory Agency	Primary Source Contaminants	Supporting Data Upgradient/ Downgradient	Active Source Area***
A&A Auto and Truck Salvage Facility	X+	700 E. 21st St. N.	A&A Auto and Truck Salvage	No	TCE	Up - 50 µg/L Down - 150 µg/L	
Aero Space Controls Facility	X+	1050 N. Mosley	Aero Space Controls, Inc.	No	TCE	Up - 60 µg/L Down - 1,100 µg/L	X
Apex Engineering Facility	X+	1234 N. Wellington	APEX Engineering	KDHE to initiate negotiations	TCE	Up - 13 µg/L Down - 370 µg/L (Onsite >1000 µg/L)	X
Cargill Elevator at 715th E.13th Street	X	715 E. 13th St.	Cargill	Negotiating with KDHE	CT	Up - <1 µg/L Down - 480 µg/L	X
Christopher Steel Inc. Facility	X	1221 E. Murdock	Christopher Steel	No	PCE	Up - <1 µg/L Down - 25 µg/L	
Former Coastal Boneyard Facility	X+	500 Block of E. 29th St. N.; Northwest of Emporia Circle and 29th	El Paso Corp.	No	TCE, TCA	**TCE** Up - 47 µg/L Down - 440 µg/L TCE hist. - 1,935 µg/L **TCA** Up - <1 µg/L Down - 216 ug/l	X
Compressed Gases Facility	X+	602 E. 29th St. N.	Compressed Gases	Yes / KDHE (Only to conduct site investigation)	TCA	**TCA** Up - <1 µg/L Down - 100 µg/L **1,1-DCA** Up - 1.2 µg/L Down - 670 µg/L **1,1-DCE** Up - <1 µg/L Down - 300 µg/L	

Table 9-2
North Industrial Corridor (NIC) Site
Summary of Identified Source Areas

Facility Name*	Data Package**	Address/Location	Current Operator/ Occupant	Under Regulatory Oversight / Regulatory Agency	Primary Source Contaminants	Supporting Data Upgradient/ Downgradient	Active Source Area***
Former Copeland Intl. Trucks Facility	X+	1770 N. Broadway	Copeland International Trucks, Inc.	No	PCE	Up - <1 µg/L Down - 7.9 µg/L	
Former Dold Foods Facility	X+	421 E. 21st St. N.	Trailer Parts & Supplies	No	TCE	Up - 7.6 µg/L Down - 120 µg/L	
DOW/Essex and Wil-Gro Facilities	X	2808 N. Ohio; 2728 N. Ohio	DOW	No	TCE	Sh Up - 64 µg/L Sh D - 230 µg/L Deep Up - 240 µg/L Deep Down - 450 µg/L	
Huttig Facility	X	1340 N. Mosly	Anderson Windows	No	TCE	Up - 15 µg/L Down - 360 µg/L	
Kansas Plating Facility	X+	1110 N. Mosley	Kansas Plating, Inc.	KDHE to initiate negotiations	TCA	Up - <1 µg/L Down - 560 µg/L	
Kreonite East	X	1123 N. Mosley	Vacant	No	TCA	Up - 2.6 µg/L Down - 50 µg/L	
Love Box Facility	X+	700 E. 37th St. N.	Love Box	Negotiating with KDHE	PCE, TCA	Up - No Data Down - 190 ug/L	
National By-Products North Facility	X+	721 E. 21st St. N.; 2155 N. Mosley; 2150 N. Mosley	National By-Products	No	TCE	Up - 6.1 µg/L Down - 490 µg/L	X
Novick Iron and Metal Facility	X	1007 E. 21st St. N.	Novick Iron & Metal	KDHE to initiate negotiations	PCBs, Lead	In soil Lead - 18,000 µg/kg PCB - 13,000 µg/kg	
Wichita Mirror and Glass and Parker Boss Facilities	X	780 E. 15th Street	Parker Boss Clay Traps	No	TCE	Up - 10 µg/L Down - 180 µg/L	

Table 9-2
North Industrial Corridor (NIC) Site
Summary of Identified Source Areas

Facility Name*	Data Package**	Address/Location	Current Operator/ Occupant	Under Regulatory Oversight / Regulatory Agency	Primary Source Contaminants	Supporting Data Upgradient/ Downgradient	Active Source Area***
Stockyard Properties (Area 02B) Facility	X	600 to 800 block of E. 25th St. N.; southwest of Mead and 25th	Webb Road Development	No	TCE	Up - 80 µg/L Down - 360 µg/L	X
Stockyard Properties (Area 06D) Facility	X+	North of 700 to 800 Block of E. 21st St. N.	Webb Road Development	No	TCE	Up - 42 µg/L Down - 130 µg/L	
Van Waters & Rogers South Facility	X	2041 N. Mosley	Vopac USA, Inc.	Yes / KDHE (existing Consent Order)	TCE	Up - 150 µg/L Down - 270 µg/L Should look at individual sampling events	X
Via Christi Medical Center, St. Francis Campus	X	929 N. St. Francis	Via Christi Medical	Yes / KDHE (KDHE will address any outstanding issues)	TCA, MC, Lead, Arsenic, Petroleum Hydrocarbons	**TCA** Up - <1 µg/L Down - 29 µg/L **MC** Up - <1 µg/L Down - 11 µg/L **Lead in Soil** 15,039 mg/kg	
Waco Handi-Wash Facility	X+	1008 N. Waco	Waco Handi-Wash	Will be encouraged to apply to Dry Cleaner Trust	PCE	Up - 8 µg/L Down - 55 µg/L	
Western Uniform Facility	X	1707 N. Mosley	Western Uniform & Towel	Yes / KDHE (Only to conduct site investigation)	PCE	Up - <1 µg/L Down - 36 µg/L	
Wichita Brass & Aluminum	X	412 E. 29th St. N.	Wichita Brass & Aluminum	No	PCA	Up - <1 µg/L Down - 49 µg/L	

Table 9-2
North Industrial Corridor (NIC) Site
Summary of Identified Source Areas

Facility Name*	Data Package**	Address/Location	Current Operator/ Occupant	Under Regulatory Oversight / Regulatory Agency	Primary Source Contaminants	Supporting Data Upgradient/ Downgradient	Active Source Area***
Wichita Terminal Elevator	X	508 E. 25th St. N.	Cargill	No	CT	Up - < 1 µg/L Down - 17 µg/L	
11th & State Area	X	Northeast of 11th and State	Former Airama (202 11th & 1209 N. Wellington); Winding Specialists (1217 N. Wellington, 1225 N. Wellington, & 1220 State)	No	TCE	Up - 5.8 µg/L Down - 340 µg/L	X

* Facility names are used to designate locations or areas and are not intended to designate responsible parties.
** X = PRP data package provided in Appendix L. X+ = PRP data package previously submitted to KDHE
*** X = Current data indicate an active source area potentially requiring remediation.

PCE = Tetrachloroethene
TCE = Trichloroethene
TCA = 1,1,1-Trichloroethane
PCA = 1,1,2,2-Tetrachloroethane
CT = Carbon tetrachloride
PCBs = Polychlorinated byphenols
TOL = Toluene
EBN = Ethybenzene
XYL = Xylenes

Table 9-3
North Industrial Corridor (NIC) Site
Summary of Suspect Source Areas

Facility Name*	Data Package**	Address/Location	Current Operator/ Occupant	Under Regulatory Oversight / Regulatory Agency	Primary Source Contaminants	Supporting Data Upgradient/ Downgradient
Altra Color Body Shop Facility/ United Steel Facilities		1610 N. Mosley; 1632 N. Mosley	Altra Color Bodyshop and United Steel	No	TCE	Upgradient 51 to 110 µg/L Downgradient 190 to 310 µg/L
Excel Facility		2901 N. Mead	Excel	No	TCE	Up - 150 µg/L Down - 290 µg/L. Must look at all of the data
HD Specialty Performance Facility		SE of 16th and Mosley	HD Specialty	No	TCE	Up - 34 µg/L Down - 310 µg/L
Former Johns' Refinery		915 E. 21st St. N.	Parking Lot	No	TCE, Petroleum Hydrocarbons	Historical onsite - 1,000 µg/L Require more current data
Kreonite West Facility		715 East 10th	Kreonite	No	TCE	Up - 4.1 µg/L Down - 30 µg/L
Northern Pipeline Construction Facility		2915 N. Emporia St.	Northern Pipeline Const.	No	TCE	Up - <1 µg/L Down - 200 µg/L However, have petroleum hydrocarbon assisted degradation in north half of property.
Weaver Manufacturing and Sherwin Williams Facilities		1005 E. 17th Street	Weaver Mfg.	No	TCE	**Weaver** Up - lack data Down - 30 µg/L **Sherwin Williams** Up - <1 µg/L Down - 140 µg/L

Table 9-3
North Industrial Corridor (NIC) Site
Summary of Suspect Source Areas

Facility Name*	Data Package**	Address/Location	Current Operator/ Occupant	Under Regulatory Oversight / Regulatory Agency	Primary Source Contaminants	Supporting Data Upgradient/ Downgradient
Wilko Paints and BFI Facilities		2727 N. Ohio; 2745 N. Ohio	Wilco Paints and BFI	No	TCE	Several plumes coming into the area. Need better groundwater control and additional shallow groundwater samples.
Former WR Grace Facility		2728 N. Ohio	Wil-Gro	No	Petroleum Hydrocarbons	Reported petroleum contamination downgradient of this facility.
3rd & St. Francis Area		400 block of St. Francis	Jiffy Print (410 N. St. Fancis); Da Mar Mfg. (436 N. St. Francis); Autobody Shop (448 N. St. Francis); Kamen (400 block N. Santa Fe)	No	TCE	Up - 4.5 µg/L Down - 22 µg/L
13th and Emporia Area		Alley north of car wash near 13th & Emporia	Alley north of car wash	No	TCE	Lack sufficient data in area. Up Sh - 1.7 µg/L Down Sh - 25 µg/L, 54 µg/L; Up Deep - 110 µg/L, Down Deep - 430 µg/L; 200 µg/L
14th and Washington Area		Vicinity of 14th and Washington		No	TCE	Lack sufficient data in area. Deep TCE = 1,400 µg/L in area. Shallow TCE from 12 to 240 µg/L in area.

CDM

Table 9-3
North Industrial Corridor (NIC) Site
Summary of Suspect Source Areas

Facility Name*	Data Package**	Address/Location	Current Operator/ Occupant	Under Regulatory Oversight / Regulatory Agency	Primary Source Contaminants	Supporting Data Upgradient/ Downgradient
15th and Ohio Area		North of 15th and Ohio	Vacant	No	TCE	Up - 190 µg/L Down - 510 µg/L
15th and Washington Area		North of Washington and 15th		No	TCE	Up - 190 µg/L Down - 410 µg/L
20th and Washington Area		North of Washington and 19th	National By-Products (south of creek) and Vacant Tramco lot; SW corner of Novick; Security Oil	No	TCE, Petroleum hydrocarbons	Require better upgradient data. Up - 19 - 94 µg/L Down - 130 to 270 µg/L

* Facility names are used to designate locations or areas and are not intended to designate responsible parties.
** No PRP data packages provided for Suspect Source Areas.

PCE = Tetrachloroethene
TCE = Trichloroethene
TCA = 1,1,1-Trichloroethane
PCA = 1,1,2,2-Tetrachloroethane
CT = Carbon tetrachloride
PCBs = Polychlorinated byphenols
TOL = Toluene
EBN = Ethybenzene
XYL = Xylenes

Section 10
Conclusions and Recommendations

This section provides the general conclusions of this RI report. In addition, a series of recommendations are presented. The recommendations are based on the results of the RI, subsequent field activities that have been performed, and proposed activities based upon KDHE discussions.

The conclusions are based upon results of the NIC RI field investigations conducted between 1997 and 2001 and the review of data provided in over 100 other reports and investigations as identified in Appendix A. Field work conducted by the City during the NIC RI included:

- Four water level measurement rounds
- Collection of 1091 groundwater samples from 575 locations
- Electrical Conductivity logging at 68 locations
- Installation of 41 shallow and deep monitoring well clusters, 16 deep monitoring wells, and 3 shallow monitoring wells
- Installation of 5 shallow and deep piezometers, and 8 shallow piezometers
- Sampling of 262 monitoring wells from 109 locations
- Collection of 11 air samples from 9 indoor and 2 outdoor locations
- Collection of 9 surface water samples
- Collection of 12 sediment samples
- Collection of 11 surface soil samples
- Collection of 75 subsurface soil samples at 29 locations

In addition to the above, significant subsurface data were also provided from the following facilities as part of their own ongoing investigations:

- Coleman North
- Coleman Northeast
- Continental Tank Car
- Farmland Elevator
- Safety-Kleen
- USD 259
- Unocal
- Van Waters & Rogers South
- Via Christi Medical Central, St. Francis Campus
- Western Uniform

The above facilities are conducting their own investigations under KDHE or EPA oversight. Available data from these investigations was considered in contaminant nature and extent and source area evaluations in this RI Report.

10.1 Conclusions

Sampling media investigated during the RI included groundwater, surface water, sediment, soils, and air. RI findings from each of the sampling media are discussed below. The findings of the downgradient investigation activities conducted in 2003 as discussed in Section 10.2.1, are incorporated as appropriate into the Site-wide groundwater and MNA evaluations presented below. Based upon the RI results, a Baseline Risk Assessment (BRA) was also conducted and the results submitted to KDHE as a separate document on January 30, 2004. Findings from the BRA are summarized at the end of this section.

Site-Wide Groundwater

Groundwater is the primary media of concern at the NIC Site. Volatile organic compounds (VOCs) have been found to impact groundwater throughout the Site. The following Site groundwater target compounds were identified based on frequency of detection, exceedance of MCL, extent of contamination, utility in source identification, and importance as a biodegradation daughter product:

- Tetrachloroethene (PCE)
- Trichloroethene (TCE)
- *cis*-1,2-dichloroethene (*cis*-1,2-DCE)
- Vinyl chloride (VC)
- 1,1,1-Trichloroethane (1,1,1-TCA)
- 1,1-Dichloroethane (1,1-DCA)
- 1,1,-Dichloroethene (1,1-DCE)
- Carbon tetrachloride (CT)
- Chloroform (CFM)
- Benzene (BEN)

All of the groundwater target compounds listed above were also identified in the BRA as contaminants of potential concern (COPCs). However, these target compounds are selected for closer scrutiny due to their frequency of occurrence and extent of contamination at the site. Of the above compounds, TCE is the most widespread, with *cis*-1,2-DCE second-most widespread. PCE, 1,1,1-TCA, CT, and CFM are fairly localized in extent, but are important in contamination source identification. Both TCE and *cis*-1,2-DCE are present in three general areas; eastern and western lobes north of approximately 28th Street, and a main plume area south of 28th Street. Two smaller plumes are also present in the southwest corner of the Site.

Based on data collected during the Phase 1 and Phase 2 investigations and the 2003 downgradient investigation, general spatial and chronological trends regarding the fate and transport of major contaminants at the site were observed to be as follows:

- Contaminants generally move from shallow to deep groundwater as they move downgradient of source areas.

- TCE and *cis*-1,2-DCE are generally decreasing with respect to time in the northern and central portion of the site. Decreasing contaminant concentrations in this portion of the site appear to be attributable to a number of causes, including source control, active remediation in some source areas, biodegradation, downgradient movement of contaminants in groundwater, or a combination of these factors.

- Concentrations of TCE and *cis*-1,2-DCE are increasing near the downgradient edge of the plume, and the plume appears to be expanding into previously uncontaminated areas.

- The ratio of *cis*-1,2-DCE to TCE is increasing, indicating that partial biodegradation of TCE is occurring at the site.

Monitored Natural Attenuation (MNA) Evaluation
Localized anaerobic dechlorination of PCE and TCE to *cis*-1,2-DCE and VC has occurred in portions of the Site where a source of carbon in groundwater (e.g. fuel-related compounds) is present. Contaminant degradation beyond cis-1,2-DCE appears to be occurring primarily in the area between 17th Street and 25th Street, where fuel-related compounds are present in groundwater at the former Barnsdall Refinery, the Coastal-Derby Refinery, the Stockyard Properties, and other localized carbon sources. However, in areas where no carbon sources are present (the majority of the site) dechlorination does not appear to occur beyond *cis*-1,2-DCE. The ratio of *cis*-1,2-DCE to TCE is increasing in groundwater in the southern portion of the site, but evidence of further dechlorination (such as increased concentrations of VC) is not present. In addition, the contaminant plume appears to be expanding in the downgradient direction.

Eight monitoring wells in the central portion of the Site had geochemical conditions that indicated a potential for MNA to be an effective remedial strategy in those localized areas. However, only two of these eight monitoring wells had a carbon source that was not substantially depleted. If the carbon sources are completely depleted then reductive dechlorination will cease.

MNA for chlorinated ethenes may be applicable in areas with significant carbon sources such as the former Golden Rule, Barnsdall, and Coastal-Derby refineries. However, MNA does not appear to be a suitable site-wide remedial alternative due to the lack of site-wide carbon sources, continued depletion of available carbon sources, evidence of incomplete reductive dechlorination in the majority of the site, and evidence of downgradient expansion of the contaminant plume.

Contamination Sources

Contamination sources were identified and classified in Section 9. Contamination sources have been classified as confirmed, identified, and suspect source areas. Confirmed Source Areas are those areas with identified soil and groundwater impact and documented use or storage of the contaminants on the property. Ten of the thirteen identified Confirmed Source Areas are presently conducting investigations and/or remediation activities under regulatory oversight. Chlorinated solvents are the primary contaminant of concern at nine of the thirteen locations. The remaining four Confirmed Source Areas have significant and extensive petroleum hydrocarbon contamination which impact the fate and transport of the dissolved phase chlorinated solvent contamination.

Identified Source Areas have demonstrated groundwater impact at a specific location but lack conclusive data related to either soil impact and/or the demonstrated use or storage of the contaminant(s) of concern at the property. Twenty-six Identified Source Areas are documented in Section 9 of this report. Twenty-five of the twenty-six identified source areas have chlorinated solvent contaminants as the primary contaminants of concern. TCE is the primary contaminant at thirteen of the Identified Source Areas. PCE is the primary contaminant at five of the Identified Source Areas. 1,1,1-TCA is the primary contaminant at four of the Identified Source Areas and CT is the primary contaminant at two of the Identified Source Area. Several of the identified source area facilities have agreements with KDHE to perform investigation activities. However, none of these facilities have agreements with KDHE at this time to conduct source control measures.

Suspect Source Areas have demonstrated groundwater impact at a generalized location and lack conclusive data related to soil impact and/or the demonstrated use or storage of the contaminant(s) of concern in the area. Fifteen Suspect Source Areas are documented in Section 9. Fourteen of the fifteen Suspect Source Areas have TCE as the primary contaminant.

Data packages have been provided in Appendix L for the three Confirmed Source Areas not currently under regulatory oversight. A data package is also provided for HCI Advance, a confirmed source area which according to KDHE's March 25, 2003 comments on Section 9 and Appendix L is currently conducting a source area CI/CAS under Administrative Order. Data packages for all twenty-six of the Identified Source Areas are also provided.

Baseline Risk Assessment

RI data were used to characterize site contamination and develop the BRA for the site. The goals of the BRA were to identify chemicals of potential concern (COPCs), identify potential contaminant exposure pathways to human or environmental receptors, assess exposure levels for potentially significant pathways, assess the toxicity of COPCs, and characterize risks to human health and the environment.

The majority of the COPCs are VOCs, including groundwater target compounds, other chlorinated solvents, and petroleum-related VOCs. Non-VOC COPCs for groundwater include 1,-4-dichlorobenzene, naphthalene, arsenic, barium, iron, lead, manganese, selenium and mercury. With the exception of the groundwater target compounds, most of the COPCs are associated with fuel-related releases or localized areas of the site. Additional COPCs were added for the sludge pit areas.

Potential exposure pathways for humans include inhalation, ingestion, and dermal contact with contaminated media at the site. The hypothetical scenarios that could result in the highest exposure at the site include groundwater ingestion, dermal contact with groundwater, inhalation of air contaminated by VOC vapors migrating into work/living areas, and inhalation of VOCs released from groundwater.

Based on land use, influence areas for groundwater wells, and contaminant profiles, the site was divided into two major exposure areas: south of 17th Street and north of 17th Street. The area south of 17th Street is generally characterized by greater concentration of non-commercial/industrial land use compared to the area north of 17th Street. Separate exposure point concentrations were developed for each area. These exposure point concentrations were used to calculate the quantitative risk for exposure pathways of concern.

Toxicity values for COPCs were derived from standard sources compiled by the EPA and the Agency for Toxic Substances and Disease Registry (ATSDR). These toxicity values were exposure point concentration estimates to produce quantitative health risk estimates for exposure to COPCs. Migration of groundwater contaminants into indoor air was found to pose no risk to potential receptors. Total cancer risks for current or future receptors who use groundwater for outdoor purposes are within the EPA's acceptable risk range. However, total cancer estimates for current or future receptors who use groundwater for drinking water or showering are above the EPA's acceptable risk range.

The majority of current businesses and residences within and near the NIC site are connected to a municipal water supply and do not use groundwater for potable or domestic purposes. However, the City of Wichita has identified areas within or near the NIC site that may use groundwater in some capacity. The City is identifying and tracking water well use within the NIC site. Property owners that are found to have water wells are notified by letter of the potential risks associated with use of the well water. A water well inspection is also included as a part of every real estate transaction within the NIC site. The City has also conducted at least one public presentation of water use issues in the NIC site. In spite of these efforts, the potential exists for use of water within the NIC site.

Risks associated with residential visitors' exposure to surface water are within the EPA's acceptable risk range. Ecological risks associated with potential movement of shallow groundwater to nearby surface waters were found to be negligible.

Surface Water Sampling Results
Eight of the ten target groundwater compounds (all except CT and CFM) were detected in surface water samples collected from Chisholm Creek and its tributaries. The detected VOCs in surface water samples appear to be attributable to the discharge of contaminated groundwater into these tributaries. Applicable Kansas Surface Water Quality Standards were exceeded in three samples collected from the east and west forks of Chisholm Creek. However, concentrations of VOCs were less than the Safe Drinking Water Act's Maximum Contaminant Levels (MCLs) prior to leaving the Site. Detected VOCs at sample location SW-12 do not appear to be attributable to groundwater contamination within the NIC Site.

Sediment Sampling Results
VOCs were not detected in sediment samples. Several polynuclear aromatic hydrocarbons (PAHs) were detected in sediment samples; however, detected PAH concentrations were substantially lower than KDHE Tier 2 Risk-Based Concentrations.

Air Sampling Results
VOCs detected in air samples did not correspond with the compounds detected in groundwater in the vicinity of the air sampling locations. Vapor-phase PCE may be migrating through the vadose zone or utility corridors from PCE-contaminated groundwater and/or PCE sources in other areas. These source areas could not be defined with data compiled during the Phase 1 and 2 RI investigations. The two compounds detected in groundwater at the greatest frequency, concentration, and extent (TCE and *cis*-1,2-DCE), were not detected in any air samples. In addition, several VOCs (BEN, CT, CFM, and toluene) that were detected in indoor air samples were also detected in ambient (outdoor) air samples. Based on the above observations, the VOCs detected in air samples are not believed to originate from contaminated groundwater.

Soil Sampling Results
Soil sampling consisted of background surface soil sampling and surface and subsurface soil sampling at former sludge pit locations. No VOCs were detected in background surface soil samples. Except for one PAH compound, no semi-volatile organic compounds (SVOCs) were detected in the background surface soil samples. With the exception of one detection of antimony, all metals results from the background surface soil samples were within the range of Western U.S. background soils from *Element Concentrations in Soils and Other Surficial Materials of the Conterminous United States*, U.S.G.S. Professional Paper 1270, 1984.

Surface and subsurface soils collected at the former sludge pits were impacted by free-phase hydrocarbons, fuel-related VOCs, SVOCs (including PAHs), and polychlorinated biphenyls (PCBs). In addition, five metals (antimony, copper, lead, selenium, and zinc) were found in sludge pit soil samples at concentrations exceeding the Western U.S. background soil range from *Element Concentrations in Soils and Other*

Surficial Materials of the Conterminous United States, U.S.G.S. Professional Paper 1270, 1984.

Sludge Pit Groundwater Results
Sludge pit groundwater samples were found to be impacted by fuel-related VOCs, SVOCs (including PAHs), and metals. Metals detected in sludge pit groundwater samples were in filtered samples collected via Geoprobe and may not reflect actual groundwater concentrations.

10.2 Recommendations

This section presents a summary of additional investigation work that has been performed or has been proposed since completion of the draft RI. Recommendations are provided based on results of the investigations conducted to date. Included in these recommendations are strategies and approaches for additional work to be performed to complete both the RI process and the subsequent Feasibility Study (FS).

10.2.1 RI Addenda

Based upon KDHE comments and several meetings between the City of Wichita and KDHE, the data presented in this report finalizes this document. However, supplemental data are being collected as requested by KDHE to evaluate contaminant trends and source areas. These data will be utilized in final preparation of a Site-wide FS as discussed in the following sections and by KDHE to prepare consent orders with PRPs.

Downgradient Investigation and Monitoring Activities
After submittal of the draft RI, additional groundwater investigation activities were proposed to determine if the contaminant plumes in the southern end of the NIC site were migrating and to determine appropriate locations for downgradient monitoring wells. The KDHE-approved investigation was conducted in July 2003. Data from this investigation was submitted to supplement results from the RI activities previously performed. The report submitted was to serve as an Addendum to the Draft RI Report dated August 2002. Conclusions drawn from this data have been incorporated into Section 10.1 of this report. The data and discussion have been incorporated by reference only.

A quarterly monitoring network for the downgradient portion of the site was also proposed in the Downgradient Investigation Report. This quarterly monitoring will begin in April 2004 and will result in four quarters of data that will be used to assess plume migration and to assist in the evaluation of MNA in accordance with KDHE guidance.

Investigation Activities at Suspect and Identified Source Areas
KDHE provided comments on Section 9 and Appendix L of the draft RI in a letter dated March 25, 2003. Responses to KDHE's comments were submitted to KDHE on October 8, 2003. These comment responses indicated that two work plans would be

prepared, one for suspect source areas and one for identified source areas where additional investigations were requested by KDHE. These work plans were submitted to KDHE for review and approval on April 8, 2004.

The purposes of these investigation activities are to: 1) confirm the existence of a source at suspect areas in order to reclassify the site as an identified source or if a source is not present, take no further action; and 2) to collect sufficient data to confirm sources at identified areas. Figure 10-1 presents a decision tree for this process.

These investigations will utilize methods similar to the EPA's Triad Approach where on-site analysis and interpretation of data is used to make real-time decisions. This method uses the results from initial investigation to determine the need for additional investigation activities or adjustments to proposed activities in order to accomplish the goals stated above.

Based on a meeting between KDHE and the City on November 6, 2003, the identification of the physical property from which a release has occurred that has impacted groundwater is the information that is needed to complete the RI. Once the Suspect and Identified Area Investigations are complete and the results of these investigations have been submitted and approved by KDHE, the RI process will be complete.

10.2.2 PRP Identification

Identification of the responsible party(s) for each confirmed source area is needed in order for KDHE to initiate consent order negotiations with responsible party(s). As shown on Figure 10-1, PRP identification is a separate process from physical identification of a source. Once the investigation activities at suspect and identified source areas are complete, a reclassification process will be performed and a work plan prepared detailing specific steps for PRP identification at source areas where a PRP has not yet been identified. The goal of this activity will be to provide sufficient information to enable KDHE to pursue a consent order with responsible party(s).

10.2.3 Site-Wide FS

The Settlement Agreement between the City and KDHE requires the City to conduct a FS to "address area-wide groundwater, soil, and/or surface contamination" (paragraph 99 of the Settlement Agreement).

The Site's primary media of concern is groundwater and, to a lesser extent, surface water. The primary compounds of concern are VOCs. Within an industrial area as large as the NIC Site, many types of contamination issues are probable. However, the widespread presence of VOCs in groundwater was the primary cause for the creation of the NIC Site, and will be the focus of the FS and Remedial Design (RD)/Remedial Action (RA).

As discussed in Section 10.2.1, the downgradient monitoring network was proposed to evaluate migration of VOCs at concentrations above MCLs into uncontaminated areas and at the site boundary. The four quarterly monitoring events, in conjunction with a single site-wide monitoring round proposed to supplement existing RI data, will provide sufficient information to move forward with performing a feasibility study with the primary objective of addressing downgradient groundwater issues.

As approved by KDHE, remaining activities required to complete the RI process, and the activities to be performed to provide sufficient data for completion of the FS, will be performed on a dual track. Figure 10-2 presents a proposed schedule for completion of the supplemental RI activities. Figure 10-2 also depicts the anticipated schedule of FS activities that will result in a dual-track process for concurrent completion of the RI and FS. Source control measures will be addressed individually as discussed below.

10.2.4 Source Control Measures

Source control measures (SCM) are not part of the RI as indicated by the Settlement Agreement between the City and KDHE. Source Areas identified in Section 9 will generally require additional investigation and characterization as part of the SCM requirements provided in KDHE Policy BER-RS-030. SCM work consists of facility-specific:

- Soil and groundwater investigations
- Target risk assessment
- Feasibility Study assessment of remedial alternatives
- Remedial Design and Remedial Action activities

Each SCM follow-up will be conducted by either the identified responsible parties who have negotiated a Consent Order with KDHE, or by the City based upon negotiations with KDHE consistent with the terms of the Settlement Agreement between the City and KDHE.

KDHE will likely require SCM level investigations at the following:

- Sites currently classified as Confirmed Source Areas that are not under regulatory oversight.
- Identified Source Areas where contaminant concentrations indicate SCMs are warranted.
- Suspect Source Areas that are confirmed as source areas and exhibit the need for SCMs.

10.2.5 Operable Units

Based on the large and complex nature of the NIC Site, the City plans to explore the establishment of operable units within specific areas of the Site as a means of expediting total Site cleanup. The City believes the most appropriate time to evaluate this option is during the FS. The development of operable units would assist in evaluating remedial options on a site-wide basis and would provide the ability to address specific contamination in discrete areas of the Site.

10.2.6 MNA Evaluations

Based on the available data, MNA appears to be feasible in some areas of the site, but not as a site-wide or stand-alone remedial alternative. MNA as a remedial alternative will be evaluated further as part of the FS.

10.2.7 Surface Water

Surface water sampling at location SW-12 has been proposed as part of the quarterly downgradient monitoring network. This monitoring network also includes an additional surface water sampling location in the southern portion of the site at Murdock Street.

The Site-wide sampling round being proposed to supplement existing RI data will include surface water sample locations along the East Fork of Chisholm Creek to identify the source of VOCs detected in SW-12. Additional locations will also be proposed to document the gaining portions of the West and Middle Forks of Chisholm Creek that appear to be impacted by VOC-contaminated groundwater. These areas include the Middle Fork south of 25th Street, and the West Fork near the confluence with the Middle Fork. Results of this surface water sampling will be presented with the Site-wide sampling results.

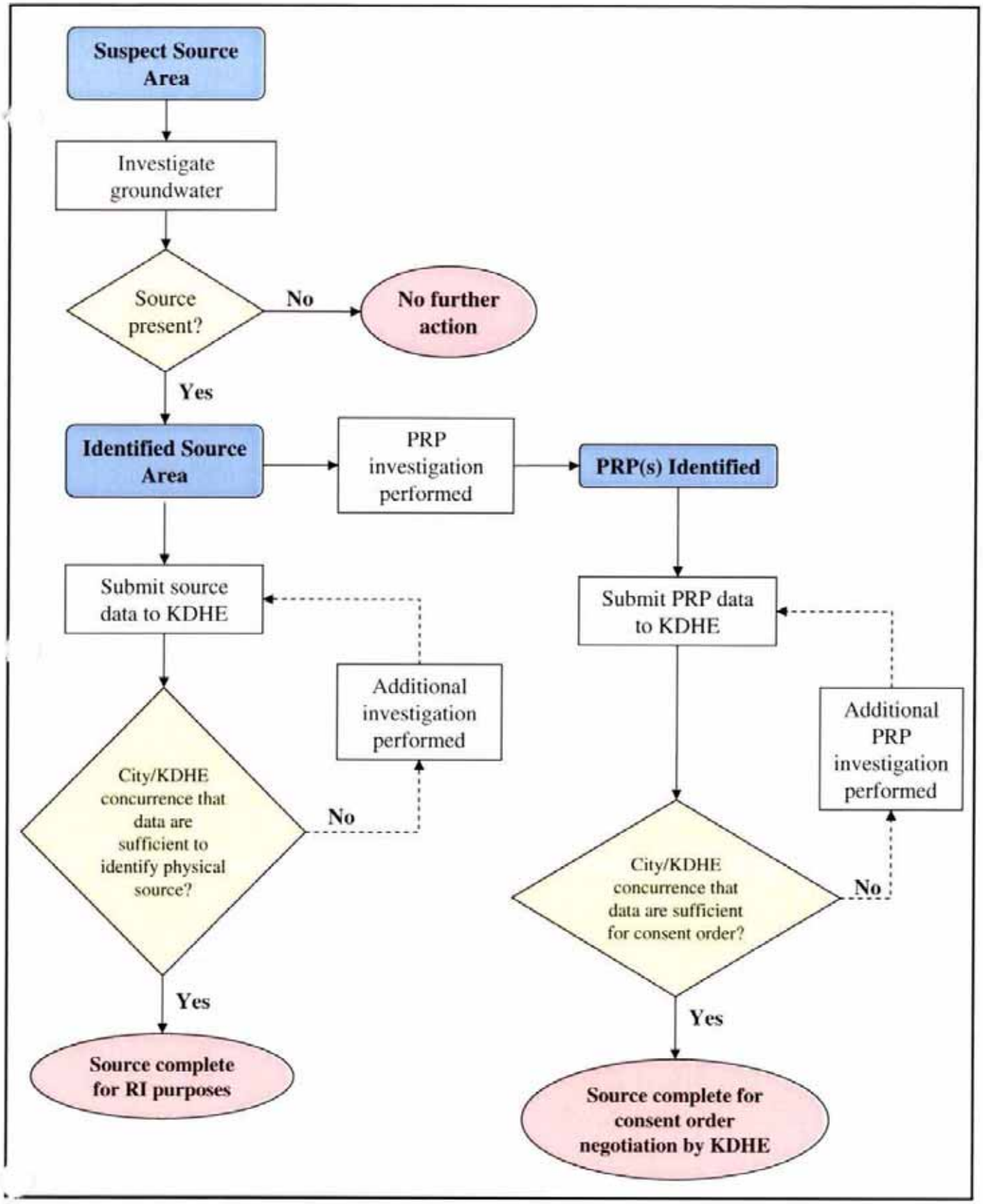

Figure 10-1
North Industrial Corridor (NIC) Site
Source Area Decision Tree

	Apr 04	May 04	Jun 04	Jul 04	Aug 04	Sep 04	Oct 04	Nov 04	Dec 04	Jan 05	Feb 05	Mar 05	Apr 05
RI		Submit Revised RI		*(BLRA and RI Approval)*									
		I----S&I Well Install/Survey/WLs/Geoprobe----I				S&I Report	*S&I Report Approval*						
								RI Process Complete					
FS	DG1		Site-wide/ DG2			DG3			DG4	Prepare/ Submit FS		*FS Approval*	
													FS Process Complete
PRP							Reclassify SAs/ Prepare PRP WP	*PRP WP Approval*	Complete PRP Identification		Prepare/Submit SCM WPs for Sites w/o PRP		

RI - Remedial Investigation
BLRA - Baseline Risk Assessment
FS - Feasibility Study

DG - Downgradient Monitoring
S&I - Suspect & Identified Source Area Investigations
SA - Source Area

PRP - Potentially Responsible Party
WP - Work Plan
SCM - Source Control Measures

Figure 10-2
North Industrial Corridor (NIC) Site
Proposed Schedule of Dual Track RI/FS Process