REGION 5 RAC2

REMEDIAL ACTION CONTRACT FOR

Remedial, Enforcement Oversight, and
Non-Time Critical Removal Activities at Sites of Release
or Threatened Release of Hazardous Substances in Region 5

2007 ANNUAL REPORT
PENTA WOOD PRODUCTS SITE
Town of Daniels, Wisconsin

Long-Term Response Action

WA No. 004-LRLR-05WE/Contract No. EP-S5-06-01

June 2008

PREPARED FOR

U.S. Environmental Protection Agency

PREPARED BY

CH2M HILL
Ecology and Environment, Inc.
Environmental Design International, Inc.
Teska Associates, Inc.

FOR OFFICIAL USE ONLY

CH2M HILL
135 South 84th Street
Suite 325
Milwaukee, WI 53214-1456

CH2MHILL

June 30, 2008

344511.PC.01

Mr. Tom Williams
Work Assignment Manager (SR-6J)
U.S. Environmental Protection Agency
77 West Jackson Boulevard
Chicago, IL 60604-3507

Subject: Final 2007 Annual Report
Penta Wood Products Site, Siren, WI
WA No. 004-LRLR-05WE, Contract No. EP-S5-06-01

Dear Mr. Williams:

Enclosed for your review and approval, please find the Final 2007 Annual Report for the Penta Wood Products Site in Siren, Wisconsin.

If you have any questions, please feel free to call me at 414-847-0561.

Sincerely,

CH2M HILL

Keli McKenna

Keli McKenna
Site Manager

Enclosures
c: Pat Vogtman, PO/U.S. EPA, Region 5 (w/o enclosure)
Parveen Vij, CO/U.S. EPA, Region 5 (w/o enclosure)
Bill Schultz/WDNR, Rhinelander
Ike Johnson, PM/CH2M HILL, Milwaukee
Dan Plomb, DPM/CH2M HILL, Milwaukee
Regina Bayer, QAM/CH2M HILL, Milwaukee
Beth Rohde, ASM/CH2M HILL , Milwaukee
Cherie Wilson, AA/CH2M HILL, Milwaukee

2007 ANNUAL REPORT

PENTA WOOD PRODUCTS SITE

Town of Daniels, Wisconsin

Long-Term Response Action

WA No. 004-LRLR-05WE / Contract No. EP-S5-06-01

June 2008

Contents

Appendixes

Tables

Figures

Abbreviations and Acronyms

µg/L	micrograms per liter
BTEX	benzene, toluene, ethylbenzene, and xylene
CAMU	Corrective Action Management Unit
ES	Enforcement Standard
EW	extraction well
ft^3	cubic feet
g/cm^3	grams per cubic centimeter
gal	gallon
gpm	gallons per minute
GW	groundwater
HVAC	heating, ventilating, and air conditioning
lb	pound
LNAPL	light nonaqueous phase liquid
MG	million gallons
mg/L	milligrams per liter
MS/MSD	matrix spike/matrix spike duplicate
MW	monitoring well
ORP	oxidation-reduction potential
PAL	Preventive Action Limit
PCP	pentachlorophenol
psi	pounds per square inch
PVC	polyvinyl chloride
QC	quality control
RA	remedial action
RDVF	rotary drum vacuum filter
scfm	standard cubic feet per minute
SM	Site Manager
SOP	standard operating procedure
STL	Severn Trent Laboratories
USEPA	United States Environmental Protection Agency
WA	Work Assignment
WAM	Work Assignment Manager
WDC	Water Development Corporation

WDNR	Wisconsin Department of Natural Resources
WPDES	Wisconsin Pollutant Discharge Elimination System

SECTION 1

Introduction

This Annual Report documents the groundwater monitoring, groundwater treatment system and bioventing system operation, hazardous waste generation and disposal, and site inspection and maintenance activities at the Penta Wood Products Site as performed by CH2M HILL for the U.S. Environmental Protection Agency (USEPA) under Work Assignment (WA) No. 004-LRLR-05WE.

SECTION 2

2007 Groundwater Monitoring

The seventh year of post-remedial action (RA) groundwater monitoring at the Penta Wood Products site included two groundwater sampling events. The semiannual groundwater sampling event was conducted at the Penta Wood Products Site in May 2007 and consisted of sampling at five monitoring wells, five residential wells, and one onsite potable well, along with static water level measurements collected at all monitoring wells, and product level measurements in wells with light nonaqueous phase liquid (LNAPL). The annual groundwater sampling event was conducted in September 2007 and consisted of sampling 14 monitoring wells, 5 residential wells, and 1 onsite potable well; measuring static water levels in all monitoring wells; and measuring product levels in wells with LNAPL. This report presents the results of the two groundwater sampling events and includes tables and figures presenting historical groundwater data. It is an update of the previous year's report, retaining and updating evaluations based on the new data.

The treatment system operated for approximately 1 year prior to September 2001, when it was shut down to allow for pilot testing and plant modifications intended to help meet effluent criteria. Since it was restarted on February 27, 2004, the treatment system has been running continuously with the exception of occasional down-time from routine maintenance and repairs. The September 2007 monitoring well results reflect approximately 3.5 years of system operation since the groundwater treatment system was restarted. Future groundwater monitoring events will also evaluate impacts from the bioventing system which began operation in September 2007.

During the groundwater sampling events, samples are collected to monitor groundwater contaminant levels. Parameters that are analyzed include pentachlorophenol (PCP); naphthalene; benzene, toluene, ethylbenzene, and xylene (BTEX); dissolved metals; and natural attenuation parameters (see the analytical results in Appendix A and B). Water level and LNAPL measurements are made to determine the remaining LNAPL thickness and the groundwater flow direction(s) in the unconfined and semiconfined aquifers. Water level measurements collected during each sampling event to assess groundwater flow direction are provided in Appendix C.

Trends in the distribution and concentrations of PCP and other parameters are used with water level measurements to evaluate the effectiveness of the treatment system in capturing the impacted groundwater, also known as capture zone analysis. The capture zone analysis and parameters help to assess the effectiveness of the groundwater and LNAPL extraction, treatment, and natural attenuation.

2.1 Water Levels and LNAPL Measurements

Water levels in all monitoring wells were measured in May and September 2007. A water level indicator was used to measure the distance from the top of the inner well casing to the water surface. In wells where LNAPL has been previously detected, the depth to the

product surface (if present) and water surface was measured from the top of the inner well casing using an oil/water interface probe. Water level and LNAPL measurements are provided in Appendix C.

The following sections provide a discussion of LNAPL thickness and distribution, and effects of the groundwater extraction well network on the unconfined and semiconfined aquifers.

2.1.1 Light Nonaqueous Phase Liquid Thickness

In May 2007, LNAPL was observed in monitoring well MW-10S (0.58 feet), MW-18 (0.03 feet), MW-19 (0.54 feet) and MW-20 (1.2 feet). During September 2007, LNAPL was again observed in MW-10S (0.04 feet), MW-18 (0.16 feet), MW-19 (1.07 feet), and MW-20 (thickness not measurable due to the location of the groundwater sampling pump). Groundwater elevations, oil/water interface measurement data, historic LNAPL thickness data, and other observations are included in Appendix C.

The LNAPL thickness measured in 2007 is generally in the range of historic observations, although the LNAPL appears to be generally increasing in thickness in MW-19 and MW-20. LNAPL thickness also appears to be generally decreasing in thickness in MW-18. MW-19 and MW-20 are located in the same general area of the Corrective Action Management Unit (CAMU) and are surrounded by extraction wells. The LNAPL appears to be pooling in the hydraulic capture zone resulting from the operation of the extraction wells and resulting in increased LNAPL thickness in the wells centrally located within the capture zone. MW-10S and MW-18 are located nearer the edge of the CAMU and outside the extraction wells.

2.1.2 Unconfined Aquifer Hydraulic Capture

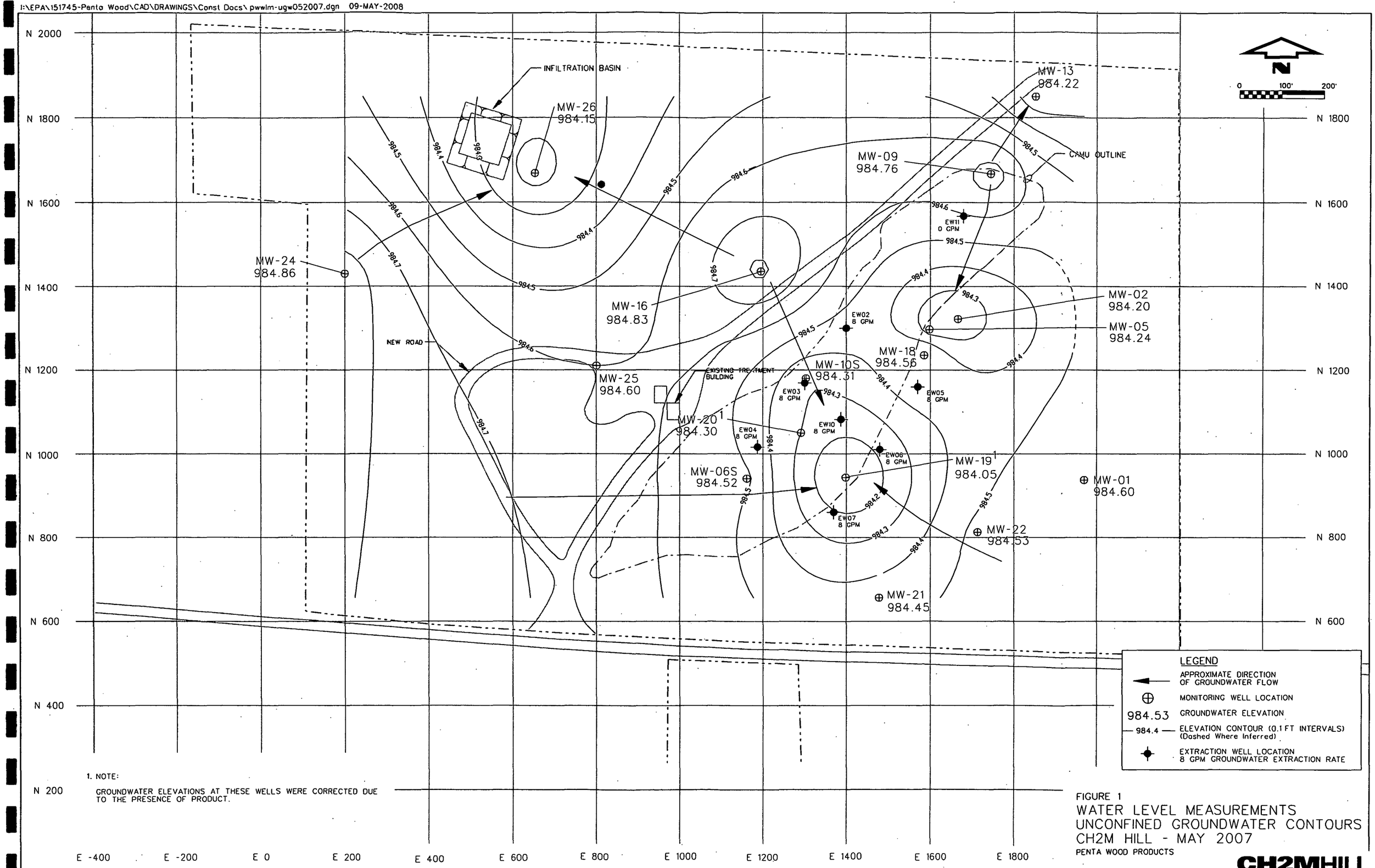
To evaluate the hydraulic capture in the unconfined aquifer, potentiometric surface maps were created. Horizontal gradients were also calculated using wells located inside and outside the capture zone created by the extraction wells.

Potentiometric Surface

The water levels recorded in May and September 2007 continue to show a consistent capture zone in the unconfined aquifer resulting from the operation of the groundwater collection system. Optimization of the treatment system in August 2007 led to increased groundwater treatment system (including extraction wells) operation and an increase in the effective extraction rate. This is shown with an increase in the hydraulic capture zone between May 2007 (Figure 1) and September 2007 (Figure 2).

Groundwater in the unconfined aquifer displays a varied local flow pattern across the site. The May and September 2007 potentiometric surfaces indicate a groundwater divide existing beneath the site, running from the southwest to the northeast. Monitoring wells MW-09 and MW-16 exhibit the local groundwater highs within this divide, possibly indicating infiltration within the unconfined aquifer as a result of surface water runoff from the CAMU. The capture zone is bounded by MW-09 on the north, MW-16 on the west, MW-21 on the south, and MW-22 on the east as indicated by the lower water levels in the CAMU monitoring wells.

I:\EPA\151745-Penta Wood\CAD\DRAWINGS\Const Docs\ pwwlm-ugw052007.dgn 09-MAY-2008



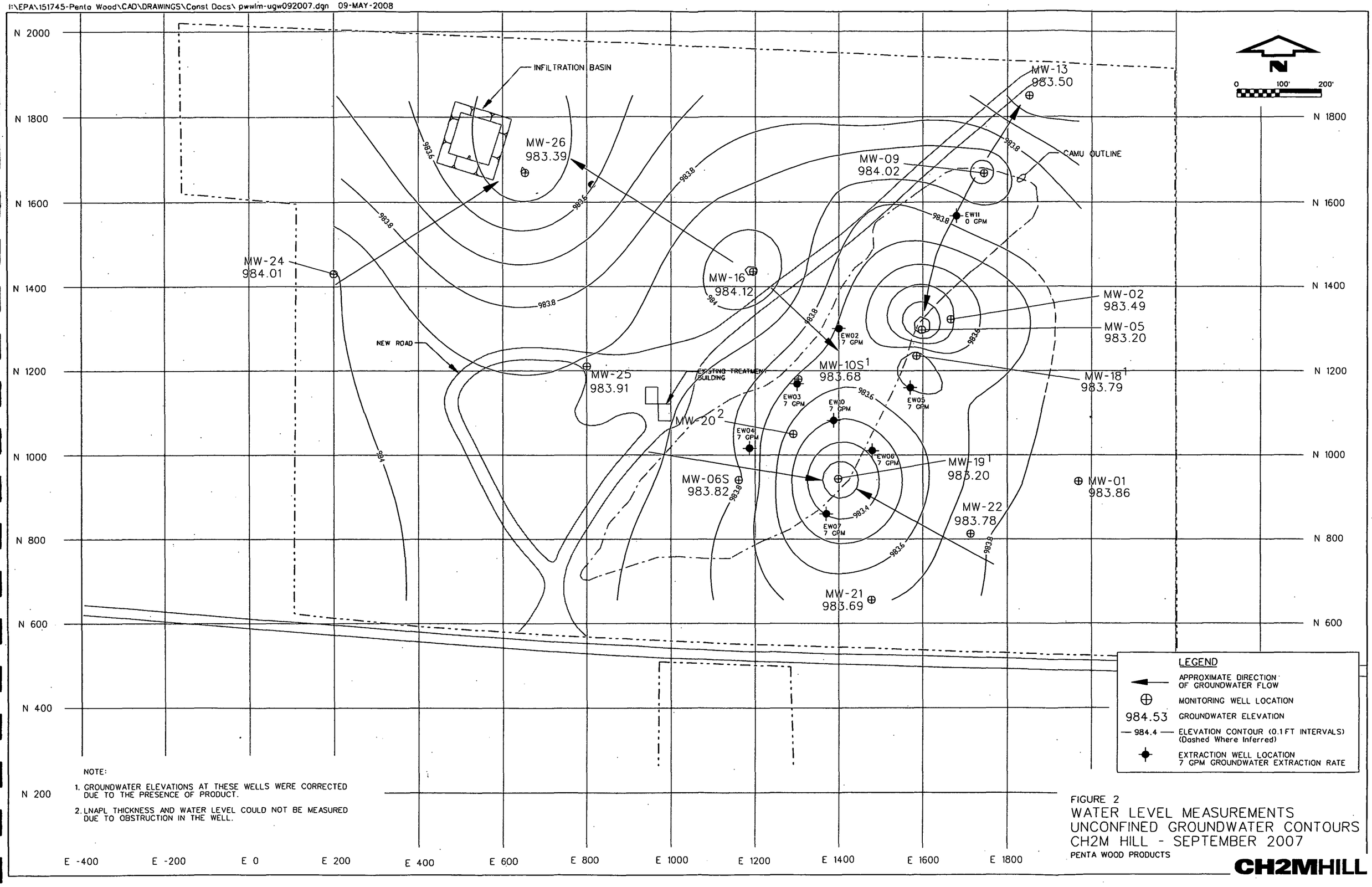
1. NOTE:

GROUNDWATER ELEVATIONS AT THESE WELLS WERE CORRECTED DUE TO THE PRESENCE OF PRODUCT.

FIGURE 1
WATER LEVEL MEASUREMENTS
UNCONFINED GROUNDWATER CONTOURS
CH2M HILL - MAY 2007
PENTA WOOD PRODUCTS

CH2MHILL

I:\EPA\151745-Penta Wood\CAD\DRAWINGS\Const Docs\ pwwlm-ugw092007.dgn 09-MAY-2008



LEGEND

- APPROXIMATE DIRECTION OF GROUNDWATER FLOW
- MONITORING WELL LOCATION
- 984.53 GROUNDWATER ELEVATION
- — 984.4 — ELEVATION CONTOUR (0.1 FT INTERVALS) (Dashed Where Inferred)
- EXTRACTION WELL LOCATION 7 GPM GROUNDWATER EXTRACTION RATE

NOTE:

1. GROUNDWATER ELEVATIONS AT THESE WELLS WERE CORRECTED DUE TO THE PRESENCE OF PRODUCT.
2. LNAPL THICKNESS AND WATER LEVEL COULD NOT BE MEASURED DUE TO OBSTRUCTION IN THE WELL.

FIGURE 2
WATER LEVEL MEASUREMENTS
UNCONFINED GROUNDWATER CONTOURS
CH2M HILL - SEPTEMBER 2007
PENTA WOOD PRODUCTS

CH2MHILL

The effect of the discharge of the treated groundwater at the infiltration basin has continued to show minimal to no response on the unconfined aquifer. The variability of the water table surface observed in the unconfined aquifer in 2007 is likely a function of both the influence of the treatment system's pumping wells and varying surface infiltration rates across the site.

Hydraulic Gradients

Horizontal hydraulic gradients were calculated using monitoring wells screened in the unconfined aquifer located inside and outside the capture zone created by the extraction wells. The gradients were calculated for 2004 which represents the treatment system operation shortly after startup and for 2007. The calculated gradients are summarized in Table 1.

TABLE 1
Horizontal Hydraulic Gradients in the Unconfined Aquifer
Penta Wood Products Site

Monitoring Well Outside Capture Zone	Monitoring Well Inside Capture Zone	Gradients			
		May 2004	May 2007	September 2004	September 2007
MW-16	MW-10S	0.0009	0.0019	0.0015	0.0016
MW-6S	MW-19	0.0019	0.0020	–	0.0026
MW-22	MW-19	0.0012	0.0014	0.0013	0.0017
MW-09	MW-05	0.0012	0.0013	0.0025	0.0020

The horizontal gradients indicate that hydraulic capture was maintained to the same level or greater in 2007 than in 2004. The horizontal gradient calculated between MW-09 and MW-05 in September 2007 was slightly less than in 2004, although there was still a significant inward gradient at this location. The hydraulic gradients support the definition of the capture zone created by the extraction wells.

2.1.3 Semiconfined Aquifer Hydraulic Capture

To evaluate the hydraulic capture in the semiconfined aquifer, potentiometric surface maps were created. Horizontal gradients were also calculated using wells located inside and outside the capture zone created by the extraction wells.

Potentiometric Surface

Groundwater in the semiconfined aquifer exhibited similar flow patterns between May (Figure 3) and September 2007 (Figure 4) with a groundwater divide that ran north-south beneath the site intersecting the infiltration basin. West of this divide, groundwater flow was to the west and northwest. Water levels recorded near the extraction wells in September 2007 indicate a localized groundwater depression on the eastern half of the divide that results from extraction well pumping. Treatment system optimization performed in August 2007 led to increased operation levels and an increase in the effective extraction rate. This is shown with the localized depression in the area of the CAMU in September 2007. Continued pumping from extraction wells is expected to result in the continued presence or expansion of the localized depression in 2008. The May 2007 potentiometric surface is consistent with

that observed in 2004 where little effect was observed from the groundwater extraction wells. The September 2007 potentiometric surface shows a capture zone around MW-10 located near the extraction wells.

The effect of the recharge from the infiltration basin continues to show an elevated potentiometric surface in this area. The effects of the infiltration basin do not impact the collection of contaminated groundwater by the groundwater collection system.

Hydraulic Gradients

Horizontal hydraulic gradients were calculated using monitoring wells screened in the semiconfined aquifer located inside and outside the capture zone created by the extraction wells. The gradients were calculated for 2004, which represents the treatment system operation shortly after startup, and for 2007. The calculated gradients are summarized in Table 2.

TABLE 2
Horizontal Hydraulic Gradients in the Semiconfined Aquifer
Penta Wood Products Site

Monitoring Well Outside Capture Zone	Monitoring Well Inside Capture Zone	Gradients			
		May 2004	May 2007	September 2004	September 2007
MW-12	MW-10	-0.0005	-0.0019	-0.0034	0.0009
MW-14	MW-10	-0.0013	-0.0011	0.0008	0.0007
MW-23	MW-10	-0.0005	-0.0004	0.0007	0.0005

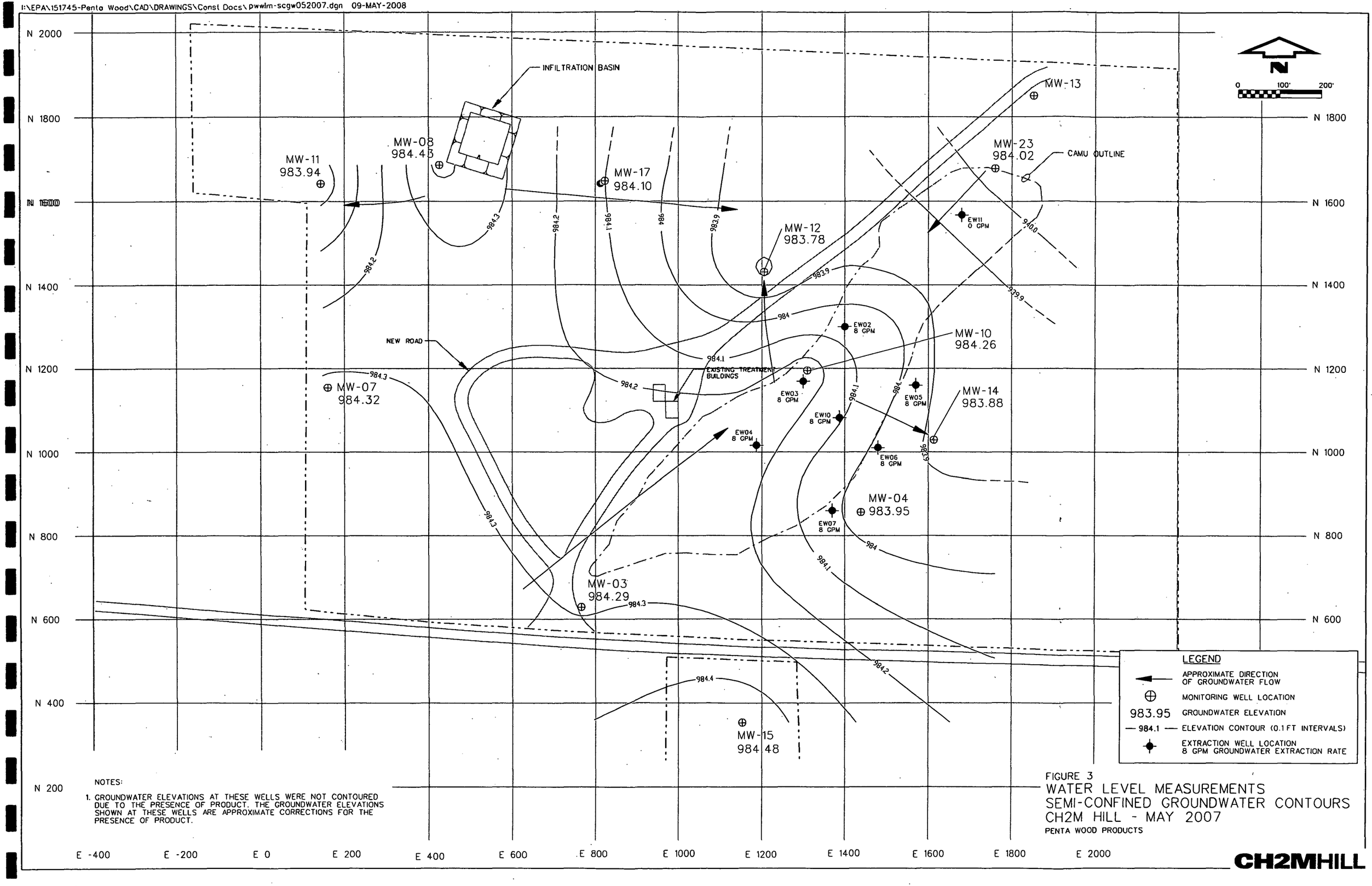
Operation of the extraction wells is expected to result in a capture zone around the extraction wells. Treatment system optimizations performed in August 2007 resulted in increased treatment system and groundwater extraction well operation. This is shown with the positive horizontal gradients in September 2007 supporting potential for flow towards MW-10 and the capture zone. Continued pumping from extraction wells is expected to result in the continued presence or expansion of the localized depression in 2008.

The hydraulic gradients support the conclusion from the potentiometric surface maps that the extents of the 2007 groundwater capture zone are similar to (May 2007) or greater than (September 2007) the extents of the 2004 groundwater capture zone.

2.2 Groundwater Sampling and Analysis

Groundwater analytical data is presented to evaluate the performance of the RA at the site. The data is analyzed in accordance with the following objectives:

I:\EPA\151745-Penta Wood\CAD\DRAWINGS\Const Docs\pwwlm-scgw052007.dgn 09-MAY-2008



NOTES:

1. GROUNDWATER ELEVATIONS AT THESE WELLS WERE NOT CONTOURED DUE TO THE PRESENCE OF PRODUCT. THE GROUNDWATER ELEVATIONS SHOWN AT THESE WELLS ARE APPROXIMATE CORRECTIONS FOR THE PRESENCE OF PRODUCT.

FIGURE 3
WATER LEVEL MEASUREMENTS
SEMI-CONFINED GROUNDWATER CONTOURS
CH2M HILL - MAY 2007
PENTA WOOD PRODUCTS

CH2MHILL

I:\EPA\151745-Penta Wood\CAD\DRAWINGS\Const Docs\pwwlm-scgw092007.dgn 09-MAY-2008

N

0 100' 200'

INFILTRATION BASIN

MW-08
983.61

MW-11
983.17

MW-17
983.38

MW-13

MW-23
983.23

CAMU OUTLINE

EW11
0 GPM

MW-12
983.12

NEW ROAD

EW02
7 GPM

MW-10
982.89

EXISTING TREATMENT BUILDINGS

EW03
7 GPM

EW10
7 GPM

EW05
7 GPM

EW04
7 GPM

EW06
7 GPM

MW-14
983.13

MW-07
983.63

MW-04
983.14

EW07
7 GPM

MW-03
Dry

MW-15
983.75

983.2
983.4
983.6

N 2000
N 1800
N 1600
N 1400
N 1200
N 1000
N 800
N 600
N 400
N 200

E -400
E -200
E 0
E 200
E 400
E 600
E 800
E 1000
E 1200
E 1400
E 1600
E 1800
E 2000

LEGEND

- APPROXIMATE DIRECTION OF GROUNDWATER FLOW
- MONITORING WELL LOCATION
- 983.95 GROUNDWATER ELEVATION
- 984.1 ELEVATION CONTOUR (0.1 FT INTERVALS)
- EXTRACTION WELLLOCATION 7 GPM GROUNDWATER EXTRACTION RATE

FIGURE 4
WATER LEVEL MEASUREMENTS
SEMI-CONFINED GROUNDWATER CONTOURS
CH2M HILL - SEPTEMBER 2007
PENTA WOOD PRODUCTS

CH2MHILL

- Evaluate the current monitoring data to determine whether the plume is declining in size since the February 2004 restart of the treatment system.
- Evaluate the infiltration basin area to determine the effect of reinfiltration on groundwater quality.
- Evaluate the influent data from the groundwater extraction system to determine the amount of PCP removed to date.
- Identify changes needed to groundwater monitoring strategy.

2.2.1 Residential Well Sampling Procedures

Five residential wells and one onsite potable well were sampled during the semiannual sampling (May 2007) and annual sampling (September 2007). Severn Trent Laboratories (STL) of Chicago, Illinois, analyzed the samples. Residential well sample result packages were submitted to the USEPA Region 5 Central Regional Laboratory for data validation.

Semiannual sampling (May 2007) results received from STL showed that PCP was present at low concentrations at one residential well (RW-01) and at the onsite potable well. PCP concentrations were 0.035 micrograms per liter (µg/L) in the residential well and 0.074 µg/L in the onsite potable well, both below the NR 140 Preventive Action Limit (PAL) of 0.1 µg/L. PCP at RW-01 and within the range of previous detections. No other site contaminants (BTEX or naphthalene) were detected in the semiannual residential well groundwater samples. Annual sampling (September 2007) results received from STL showed that PCP was not detected in the residential wells or in the onsite potable well.

The residential well sample information (names, addresses, and telephone numbers) and the analytical results were submitted under separate cover to Tom Williams, USEPA Work Assignment Manager (WAM), on June 29, 2007, and October 24, 2007 (Appendix D).

2.2.2 Monitoring Well Sampling Procedures

For the semiannual sampling round conducted in May 2007, five monitoring wells were sampled. The following monitoring wells were selected for this event:

- MW-01
- MW-12
- MW-19
- MW-21
- MW-26

MW-19 was chosen to represent the unconfined groundwater in the LNAPL area; MW-01, MW-12, and MW-21 were chosen to assess the impacts of plant operation to the perimeter of the plume, particularly in the direction of residential wells; and MW-26 was chosen to monitor groundwater quality near the treated water infiltration basin. Sampling of these wells was started on May 8 and completed on May 10. All monitoring wells were purged of at least three well volumes before sampling. MW-12 and MW-19 were purged and sampled with dedicated Grundfos pumps installed in 2005. The remaining monitoring wells were purged and sampled using disposable polyvinyl chloride (PVC) bailers.

For the annual sampling event conducted during September 2007, 14 monitoring wells were sampled. The following monitoring wells were sampled for this event:

- MW-02
- MW-05
- MW-06S
- MW-07
- MW-10
- MW-10S
- MW-11
- MW-12
- MW-15
- MW-16
- MW-17
- MW-19
- MW-20
- MW-26

Sampling of the wells was completed between September 18 and September 20, 2007. MW-03 was unable to be sampled because the well was dry. All monitoring wells, with the exception of MW-06S and MW-16, were purged and sampled with dedicated Grundfos Redi-Flo 2 pumps, which were installed in 2005. Wells MW-06S and MW-16 were purged and sampled using disposable PVC bailers.

With the installation of the new dedicated Grundfos Redi-Flo 2 MP1 pumps in September 2005, more representative sampling occurred because the task of bailing from these wells was eliminated. Bailing of wells that contained free product required repeatedly passing the bailer through the LNAPL to sample the groundwater. This caused the introduction of product to the sample and biased results higher than expected. The Grundfos Redi-Flo 2 pumps allowed for more reliable samples, which could result in lower results.

The samples for each event were analyzed by STL of Chicago, Illinois. Quality control (QC) samples consisting of field blanks, duplicate samples, and matrix spike/matrix spike duplicate (MS/MSD) samples were collected at the frequency specified in the *Sampling and Analysis Plan* (CH2M HILL, 2000; revised February 2005). All monitoring well and residential well sample result packages were submitted to the USEPA Region 5 Central Regional Laboratory for data validation. Results of the semi-annual and annual sampling events are discussed in the following section.

2.2.3 PCP Plume

The monitoring well analytical results tables presented in Appendix A are formatted into two unique tables: the May 2007 semiannual sampling results and the September 2007 annual sampling results.

To observe PCP trends over time, PCP concentration contours that exceed 1,000 µg/L are presented in Figure 1 of Appendix C. PCP concentration contours that exceed the Wisconsin NR 140 enforcement standard of 1 µg/L are presented in Figure 2 of Appendix C. The 1997 contour represents baseline conditions prior to the operation of the groundwater extraction and treatment system. The 2006 contours are also presented to show changes in the contours over the last year.

A comparison of the 1,000 µg/L PCP contour lines in Figure 1 for 1997, 2006, and 2007 shows that the high concentration plume has shrunk from the 1997 baseline and from 2006 to 2007. Larger annual reductions in plume size are not anticipated until a more significant

amount of LNAPL is removed, given the large mass of PCP that can solubilize from the LNAPL residual.

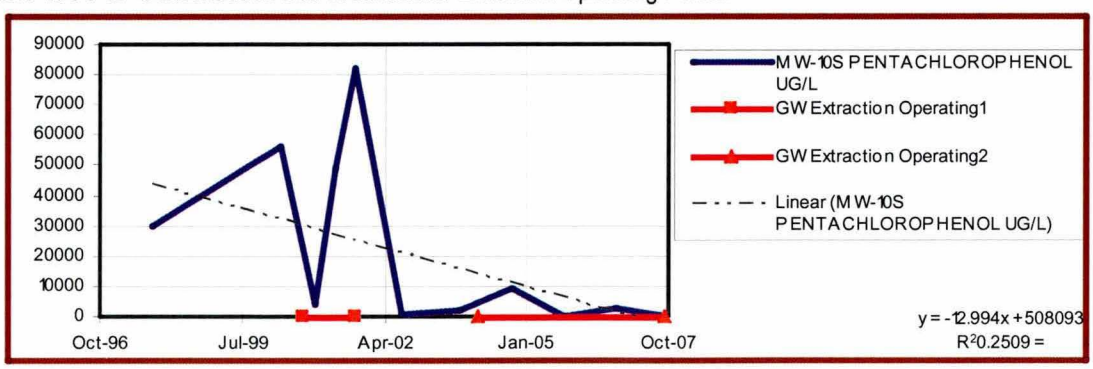
The 2007 extent of the plume exceeding the 1 µg/L contour, as shown in Figure 2 (Appendix C), remains similar to the 2006 contour. There continues to be a sharp decline in PCP concentrations between the high concentration area where LNAPL is present and the surrounding perimeter of the plume, that is, the 1-µg/L contour is only slightly larger than the 1,000-µg/L contour. This is likely due to a combination of the groundwater collection system drawing water towards the approximate center of the plume and biodegradation resulting from the availability of oxygen in groundwater around the plume perimeter.

PCP trends are discussed below for individual monitoring wells within the PCP plume.

MW-10S

Monitoring well MW-10S has shown wide fluctuations in PCP during groundwater collection periods as that shown in Figure 5. Since 2002, the presence of LNAPL (sheen or measurable product) has been inconsistent at MW-10S. The intermittent presence of LNAPL and change in sampling methods results in a wide range of PCP concentrations with concentrations significantly decreased since the use of a dedicated sampling pump. LNAPL was measured in MW-10S in May 2007 at a thickness of 0.58 feet and a thickness of 0.04 feet in September 2007. The presence of free product is likely the result of extraction well EW-03 pulling product towards it while actively pumping. Overall, PCP has declined from 56,100 µg/L prior to groundwater extraction to less than the detection limit in 2005 (less than 0.11 µg/L) and was detected at 24 µg/L in September 2007.

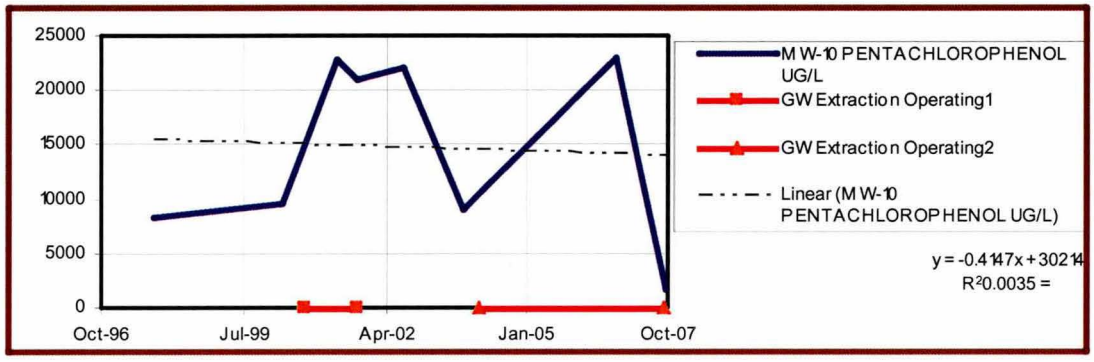
FIGURE 5
MW-10S PCP Concentration and Groundwater Extraction Operating Period



MW-10

PCP in monitoring well MW-10 increased from 9,530 µg/L shortly before the startup of the treatment system to 22,000 µg/L in August 2002 (see Figure 6). Concentrations in the well did not drop immediately, but by September 2003, concentrations had fallen to 9,000 µg/L. In September 2004, PCP concentrations at MW-10 increased to 38,000 µg/L. This is likely a result of the extraction system restart in February 2004. MW-10 is very near to extraction well EW-03, which pulls product toward it while actively pumping. In September 2006, a concentration of 23,000 µg/L was reported, but by September 2007, PCP concentrations at MW-10 decreased to 1,700 µg/L.

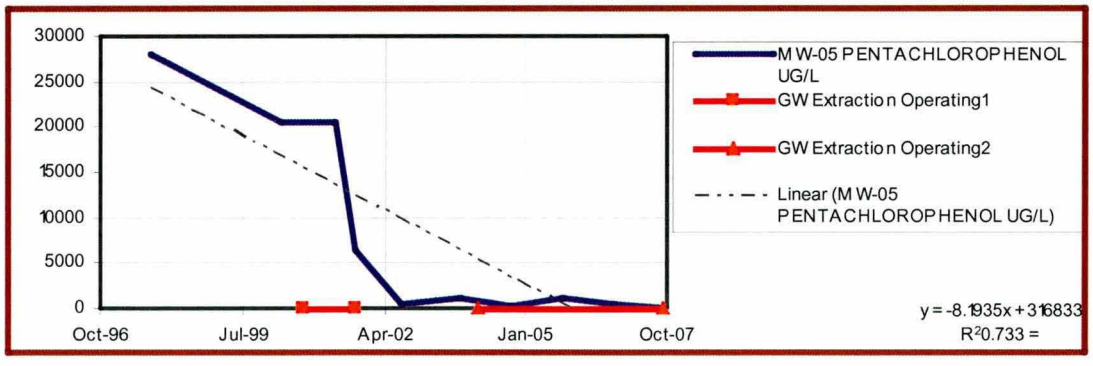
FIGURE 6
MW-10 PCP Concentration and Groundwater Extraction Operating Period



MW-05

PCP in monitoring well MW-05 has dropped sharply from 20,600 µg/L prior to the groundwater treatment system operation to 31 µg/L in the most recent sample in September 2007 (see Figure 7). This area of the plume is being remediated relatively quickly because of the nearby uncontaminated groundwater that is being drawn radially toward EW-02 and EW-05 since their activation in February 2004, thereby purging the aquifer of PCP. Free product has never been observed in this well.

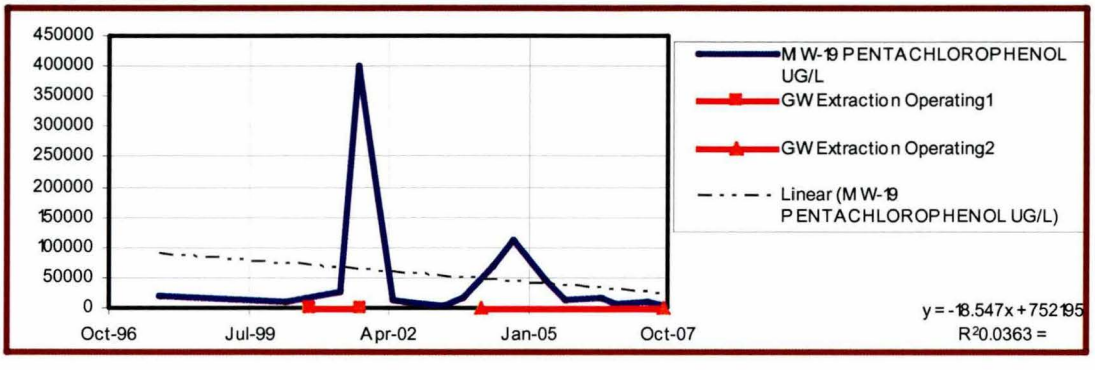
FIGURE 7
MW-05 PCP Concentration and Groundwater Extraction Operating Period



MW-19

LNAPL has been present in MW-19 since monitoring began making the evaluation of PCP trends difficult because any entrainment of LNAPL droplets in the sample will have large effects on PCP concentrations. The LNAPL has resulted in large variations in PCP concentrations (see Figure 8) that are not believed to be indicative of the dissolved phase groundwater concentrations. LNAPL continues to be observed in MW-19 (0.54 feet in May 2007 and 1.07 feet in September 2007), but the variability of PCP concentrations appears to have been reduced since the installation of dedicated sampling equipment in the well in 2005. The PCP concentrations were measured at 8,200 µg/L in September 2006 and 3,500 µg/L in September 2007, which was the lowest PCP concentration that has been detected in this well.

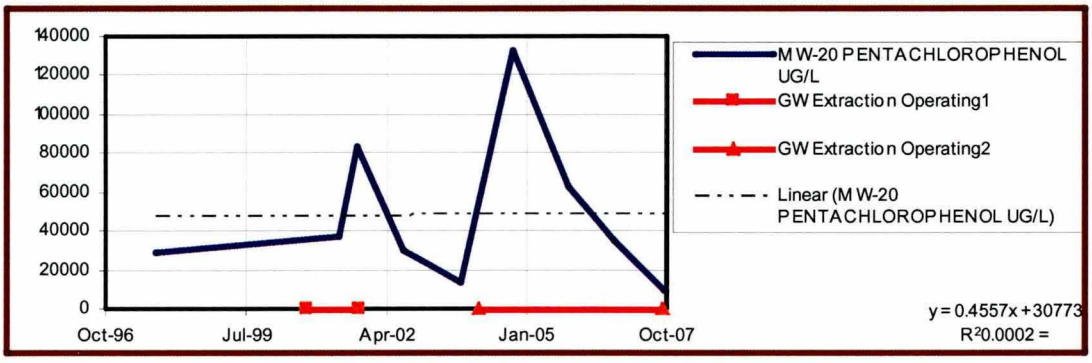
FIGURE 8
MW-19 PCP Concentration and Groundwater Extraction Operating Period



MW-20

LNAPL has also been present in MW-20 since monitoring began, with the exception of May 2006, when the well was dry. As with MW-19, the LNAPL has resulted in large variations in PCP (see Figure 9) that are not believed to be indicative of dissolved phase groundwater concentrations. After eliminating bailer sampling methods with the use of dedicated Grundfos Redi-Flo 2 MP1 pumps starting in 2005, the entrapment of LNAPL in groundwater samples from this well should be minimized. LNAPL was detected in MW-20 in May at a thickness of 1.2 feet and was detected in September 2007. The LNAPL thickness was not able to be measured in September due to the LNAPL extending below the top of the groundwater sampling pump. PCP concentrations have declined since the installation and use of the dedicated sampling pumps, and in September 2007, PCP at MW-20 was detected at 9,500 µg/L.

FIGURE 9
MW-20 PCP Concentration and Groundwater Extraction Operating Period



2.2.4 Naphthalene

Naphthalene was detected in six monitoring wells at levels above the reporting limits in 2007: MW-05, MW-10, MW-10S, MW-12, MW-19, and MW-20, with concentrations ranging from 0.71 µg/L in MW-12 to 71 µg/L in MW-20. All wells where naphthalene was detected are within the area of concentrated PCP (greater than 1,000 µg/L).

2.2.5 BTEX

BTEX compounds were detected above the reporting limits at four monitoring wells in 2007. All wells where these compounds were detected were located within the area of concentrated PCP (greater than 1,000 µg/L). Benzene was not detected in any well. Ethylbenzene was detected in three monitoring wells (MW-10, MW-19, and MW-20) at concentrations ranging from 1.3 µg/L to 6.4 µg/L. Toluene was detected at two monitoring wells (MW-19 and MW-20) at concentrations ranging from 1.5 µg/L to 4.4 µg/L. Xylene was detected at four monitoring wells (MW-10, MW-12, MW-19, and MW-20) at concentrations ranging from 1.9 µg/L to 62 µg/L.

2.2.6 Dissolved Metals

In previous years, both total and dissolved metals analyses were performed on samples collected from monitoring wells. Beginning in 2006, total metals analyses have been removed from the sampling plan, as they are often biased high as a result of the frequent presence of suspended solids. Suspended solids often have a significant impact on total metals concentrations and are therefore not indicative of actual groundwater conditions. Dissolved arsenic, copper, iron, manganese, and zinc were sampled in May and September 2007.

Arsenic

Dissolved arsenic was detected in seven monitoring wells: MW-02, MW-08, MW-10, MW-11, MW-12, MW-15, and MW-17, with concentrations ranging from 0.61 µg/L to 1.2 µg/L, all below the Wisconsin Department of Natural Resources (WDNR) PAL of 5 µg/L. The samples from the on-site potable water well (DW-01) reported concentrations of 0.63 µg/L in September 2007.

Copper

In May and September 2007, dissolved copper was detected in four monitoring wells: MW-09, MW-10, MW-12 and MW-19, with concentrations ranging from 2.1 µg/L to 5.9 µg/L. Dissolved copper at all monitoring wells was below the WDNR PAL of 130 µg/L and the site's reporting limit of 10 µg/L.

Samples collected from the on-site potable water well (DW-01) reported concentrations of 100 µg/L in May 2007 and 89 µg/L in September 2007. This well is not used to monitor site cleanup performance parameters, and copper is expected to be found at a higher level than that in typical groundwater because copper piping was used to provide water service throughout the building, where the samples were collected.

Iron

In September 2007, dissolved iron was detected above the WDNR Enforcement Standard (ES) of 0.3 milligrams per liter (mg/L) in the following three wells: MW-10 at 0.55 mg/L, MW-06S at 0.51 mg/L, and MW-05 at 25.0 mg/L, the highest reading observed in this well. In addition, dissolved iron was detected in MW-07 at 0.26 mg/L and MW-08 at 0.21 mg/L. As discussed below under Natural Attenuation Parameters, reducing conditions were observed in MW-05 during the September 2007 sampling event, which resulted in elevated dissolved iron concentrations.

Manganese

In May and September 2007, dissolved manganese exceeded the WDNR ES of 0.05 mg/L at seven wells (MW-05, MW-06S, MW-10, MW-10S, MW-12, MW-19, and MW-20) ranging from 0.2 mg/L (MW-06S) to 7.6 mg/L (MW-05). An additional six monitoring wells (MW-01, MW-02, MW-07, MW-08, MW-09 and MW-13) had dissolved manganese detected at concentrations ranging from 0.02 mg/L to 0.0024 mg/L below the WDNR ES of 0.05 mg/L. The on-site potable water well (DW-01) was detected at a concentration of 0.0063 mg/L in May 2007.

Zinc

In May 2007 and September 2007, dissolved zinc was detected in five monitoring wells (MW-06S, MW-07, MW-12, MW-13, and MW-21) ranging from 4.2 µg/L to 7.0µg/L. There were no WDNR PAL (2.5 mg/L) or ES (5.0 mg/L) exceedances of dissolved zinc in any monitoring wells. The samples from the on-site potable water well (DW-01) reported concentrations of 0.620 mg/L in May 2007 and 1.10 mg/L in September 2007. This well is not used to monitor site cleanup performance parameters and may not be representative of groundwater because it must pass through metal piping to provide water service to the building, where the sample was collected.

2.2.7 Natural Attenuation Parameters

Natural attenuation is a remediation approach that relies on natural processes that work to reduce mass and concentration of contaminants in soil and groundwater. Natural attenuation processes include dispersion, dilution, abiotic transformation, volatilization, sorption, and biodegradation. Biodegradation is often the most important process for compounds that can be transformed or reduced by indigenous microorganisms.

Appendix B contains a table presenting the natural attenuation parameters for each well as measured in 1997, 2000, 2001, 2002, 2003, 2004, 2005, 2006, and 2007.

Limitations in Field Measurements of Natural Attenuation Parameters

The natural attenuation parameters measured in the field may not be truly representative of groundwater because of the limitations that exist in measurement methods. Installation of the new dedicated Grundfos Redi-Flo 2 MP1 pumps in 2005 has greatly reduced the potential for measurement-induced errors in natural attenuation parameters. Use of these dedicated pumps minimizes suspended solids in samples and decreases aeration during sample collection. Dissolved metals will again be representative of groundwater because of new pump installation. Dedicated downhole Grundfos Redi-Flo 2 pumps are installed in MW-03, MW-05, MW-07, MW-08, MW-09, MW-10, MW-10S, MW-11, MW-12, MW-15, MW-17, MW-19, MW-20, and MW-26.

Oxidation/Reduction

Evaluation of the data generated during 2007 suggested that areas at the perimeter of or outside the PCP plume are under slight to strong oxidizing conditions. Oxidation-reduction potential at wells in the most concentrated area of the PCP plume (greater than 1,000 µg/L) has not been measured, due to the possibility of LNAPL affecting the field measurements. It is expected that the wells within the most concentrated area of the PCP plume would exhibit reducing conditions. This is supported by reducing conditions measured in MW-05, located near the fringe of the PCP plume, and MW-8, located adjacent to the infiltration basin.

Chloride

Elevated chloride concentrations are an indicator of PCP degradation. About 700 µg/L of chloride is produced for each 1,000 µg/L of PCP degraded. Generally, chloride is higher at the plume interior wells than at the perimeter wells. In 2007, the semi-confined wells had chloride levels ranging from 4.7 mg/L to 29 mg/L. The unconfined wells ranged from 2.2 mg/L to 33 mg/L with the highest levels reported in MW-21 (near Daniels 70), MW-26 (near the infiltration basin), and MW-06S (in the CAMU). Historically, MW-03 and MW-21 have reported the highest chloride levels, possibly because of their proximity to the highway where influence from seasonal road salting may be causing elevated chloride concentrations. MW-03 was not sampled in September 2007 because it was dry.

Since the beginning of groundwater extraction, correlation between PCP degradation and chloride production has been difficult because, as chloride is produced, it is removed by the extraction system, creating a net effect that is difficult to discern.

Nitrate

In 2007, nitrate levels remained relatively low, ranging from non-detectable (less than 0.1 mg/L) to 5.7 mg/L, and remaining comparable to concentrations observed in 2006.

Methane

Methane, a product of anaerobic degradation, was detected in four wells in September 2007 (MW-05, MW-06S, MW-07, and MW-10) at low concentrations ranging from 2.4 to 9.8 µg/L. The absence of methane at or above the detection limit in most wells suggests that

degradation is occurring primarily under nonmethanogenic, anaerobic iron, or sulfate-reducing conditions, or potentially, under aerobic degradation.

Sulfate

Once oxygen and nitrate are depleted, sulfate can also be used as an electron acceptor. Sulfate continues to fluctuate within the plume and has not shown any clear trends. Sulfate levels in 2007 are similar to previous years.

2.2.8 Groundwater Quality near the Infiltration Basin

Large quantities of treated groundwater have been discharged at the site's infiltration basin since the beginning of operation. Approximately 100 million gallons (MG) of groundwater have been reinfiltrated from 2000 through 2007. The water would be expected to displace groundwater over a considerable area. Assuming that a 20-foot thickness of the aquifer is affected, the area occupied by 100 MG equals roughly 50 acres. The reinfiltration of the treated groundwater helps to maintain a water balance to offset the extracted volume of water.

Unconfined Aquifer

MW-26 is used to determine the effects that the infiltration basin has on the unconfined aquifer in the area. PCP in MW-26 has remained similar to background levels. Iron concentrations have dropped significantly at MW-26. This was also expected because the aeration of the groundwater results in precipitation and removal of iron from treated groundwater. Nitrate concentrations have also dropped as expected because the source area groundwater has minimal nitrate.

The water discharged at the infiltration basin had been previously extracted from an area of high PCP concentrations and treated to remove dissolved PCP. Chloride does not change significantly during the treatment of the extracted groundwater. A baseline chloride concentration was not measured in this well prior to the operation of the groundwater treatment system. However, chloride concentrations decreased from 30 mg/L in 2001 to 11 mg/L in 2003 while the treatment system was shut down and being expanded. Chloride concentrations increased after the treatment system was restarted in 2004 and have ranged from 17 to 29 mg/L with the most recent concentration of 25 mg/L in September 2007.

Semiconfined Aquifer

MW-08 is used to determine the effects of the infiltration basin on the semiconfined aquifer. MW-08 is sampled annually for PCP and natural attenuation parameters. PCP in MW-08 has remained similar to background levels. Sulfate concentrations have increased from a background value of less than 10 mg/L to a high of 87 mg/L in September 2007. The water discharged at the infiltration basin was extracted from an area of high PCP concentrations and treated to remove dissolved PCP. Chloride does not change significantly during the treatment of the extracted groundwater. The background chloride level of 4.2 mg/L measured in 1997 has increased to 21 mg/L in 2007 with a steady increase since 2002.

Another benefit of reinfiltrating groundwater is that treatment results in aeration and reoxygenation of the groundwater. Dissolved oxygen has generally increased in MW-08. A groundwater divide in the semiconfined aquifer exists at the location of the infiltration

basin; therefore, a portion of this oxygenated water should flow towards the extraction wells and the PCP plume and provide a supply of oxygen for aerobic biodegradation of the PCP.

2.3 Summary

Groundwater treatment system optimization in August 2007 led to more continuous operation and an increased capture zone. The increased capture zone was observed with potentiometric surface maps in September 2007 and greater horizontal gradients in September 2007 in both the unconfined and semiconfined aquifers. In addition, LNAPL thicknesses appear to increasing in the central area of the CAMU where the depression induced by the groundwater extraction wells is the greatest. Evaluation of the concentration trend data in conjunction with the water level and LNAPL measurements indicate that the groundwater treatment system is maintaining capture and the plume boundary is gradually decreasing.

Results from the residential wells that were sampled in May and September 2007 indicate the presence of PCP at very low concentrations in one residential well (less than half of the NR 140 PAL of 0.1 µg/L) and the onsite potable well. The PCP concentrations are within the range previously detected in these wells.

The PCP plume exceeding 1,000 µg/L has continued to shrink since 1997 and 2006 as a result of continued groundwater extraction and natural attenuation. In addition, the use of dedicated Grundfos pumps since 2005 has resulted in more representative groundwater concentrations, particularly within the extents of the LNAPL. The most significant changes in the high concentrations have been in the areas of high PCP concentration. The extent of the plume, as defined by the 1 µg/L contour has also continued to shrink since 1997 and 2006.

More rapid plume remediation is limited by the continued dissolution of PCP from the LNAPL. Naphthalene and BTEX were present in several wells in the area of concentrated PCP. They are not present in any of the monitoring wells along or outside the plume perimeter.

Evaluation of the natural attenuation parameters revealed similar conditions as those in 2006 with the only exception being that in MW-05, located near the PCP plume perimeter, conditions appear to have returned to reducing conditions which were not observed in 2006.

2.4 Recommendations

It is recommended that the steps recommended in 2005 to minimize the impact of laboratory analytical contaminant carryover during PCP analysis should be continued. It is important that lower concentrations of PCP be accurately determined in groundwater beneath the site. Samples should continue to be submitted in three groups representing PCP concentrations from low to high and will be analyzed in that order. The sample groupings are as follows:

1. Wells with PCP levels less than 100 µg/L
2. Wells with PCP levels greater than 100 µg/L and no LNAPL in the well
3. Wells with LNAPL

A proposed monitoring well reduction to the sampling program was proposed on August 24. Where multiple wells are located in the same area and screened in the same aquifer, the sampling program will be streamlined to eliminate redundant wells that are not providing additional benefit to the monitoring program. The proposal was approved by USEPA and WDNR and will be implemented in 2008.

In addition, the bioventing system will operate in 2008 in conjunction with the LNAPL recovery to maximize the biodegradation of LNAPL in the unsaturated zone. The bioventing system startup in 2007 and continued operation for 2008 is discussed in the following sections.

SECTION 3

Treatment System Operation and Maintenance

The treatment system at Penta Wood consists of groundwater extraction and treatment, LNAPL recovery, and bioventing. The groundwater extraction system extracts and treats groundwater containing dissolved phase PCP and depresses the groundwater table. The depressed groundwater table causes the LNAPL to pool at the LNAPL extraction wells where it is extracted and pumped to the groundwater treatment building until it is disposed of offsite. The depressed water table also exposes more of the LNAPL smear zone at the current water. The bioventing system was installed to provide oxygen for the aerobic biodegradation of residual diesel fuel petroleum hydrocarbons and PCP in the LNAPL smear zone.

The following sections describe the performance and activities related to the operation of the groundwater extraction and bioventing system.

3.1 Groundwater Extraction System

The groundwater extraction system was operated between September 27, 2000 and September 27, 2001. After 1 year of operation, the system was shut down and the groundwater treatment system was redesigned to include additional pretreatment. The groundwater treatment system was restarted on February 27, 2004 after construction activities were completed. The groundwater treatment system operated intermittently from February to mid-July 2004, and began consistent operation starting in late July 2004. From 2004 through 2007, the extraction system has operated consistently with the exception of shutdowns for routine maintenance and service or as a result of system alarms. The following section describes the groundwater extraction system performance, which includes the estimates of groundwater and PCP extracted, operational and maintenance items, and a discussion of the LNAPL and groundwater extraction wells.

3.1.1 Groundwater Extraction System Performance

The groundwater extraction system was operated between September 27, 2000, and September 27, 2001, for a total of 280 days, with flow rates ranging from 35 gallons per minute (gpm) to 120 gpm during operation. A total volume of 30 MG of groundwater, or roughly 2 pore volumes of the extraction zone, was removed. PCP influent concentrations were typically in the 5,000 to 14,000 µg/L range. Based on this information, the estimated PCP mass removed was about 2,500 pounds (lbs) (see Table 3).

TABLE 3
PCP Mass Removed with the Groundwater Extraction System: September 27, 2000–September 27, 2001; and February 27, 2004–December 31, 2007
Penta Wood Products Site

Operation Period	Volume of Groundwater Extracted (gallons)	Average PCP Influent Concentration (µg/L)	PCP Mass Removed (lbs)
09/27/2000 to 12/18/2000	11,712,960 [a]	12,535	1,224
02/02/2001 to 02/08/2001	691,200 [a]	12,535	72
03/16/2001 to 06/10/2001	9,288,000 [a]	10,356	802
06/15/2001 to 09/27/2001	6,822,720 [a]	7,535	429
	Total PCP Mass Removed from 2000 to 2001		**2,527**
02/27/2004 to 12/31/2004	18,548,154	9,227	1,427 [b]
01/01/2005 to 12/31/2005	21,374,796	7,300	1,301 [b]
01/01/2006 to 12/31/2006	14,759,392	6,425	791 [b]
01/01/2007 to 12/31/2007	16,551,336	3,557	491
	Total PCP Mass Removed 2000 to 2007		**6,536**

[a] Volumes are estimated
[b] Values were revised based on measured volumes. Values previously reported were based on estimated volumes.

Since the system was restarted in 2004, the system has extracted over 71 MG of groundwater, or approximately 5 pore volumes. In 2007, the system extracted over 16.5 MG (over 1 pore volume) and groundwater extraction rates generally ranged from 40 to 70 gpm with an average of 62 gpm while the system was operating. The effective extraction rate over 2007, which includes time for when the extraction wells were not operating, was 36 gpm. With consistent operation, the groundwater extraction system maintained capture of the PCP plume as discussed in the previous section.

PCP influent concentrations in 2007 ranged from 840 to 6,800 µg/L, with an average concentration of 3,557 µg/L. As a result of the system operation, the average PCP influent concentration has decreased since the groundwater extraction system was restarted in 2004. The estimated PCP mass removed was approximately 490 lbs in 2007 and 6,500 lbs since the groundwater extraction began in 2000 (see Table 3). This represents removal of about 90 percent of the dissolved phase PCP mass that was present in 2000 prior to the operation of the extraction system. However, as shown in Table 4 on the following page, it is estimated that there is considerably more PCP mass adsorbed on the aquifer matrix (2,100 lbs) than in the groundwater (790 lbs). All the remaining PCP mass is present in the LNAPL residual zone (10,000 lbs). It should be noted that the contaminant mass estimates are based on many simplifying assumptions and expected to be accurate only to within a

TABLE 4
Estimate of 2007 Saturated Zone Contaminant Mass
Penta Wood Products Site

Contaminant	Parameter	Unconfined MW-10S, 19, 20 (Area 1)[a]	Unconfined MW-6S, PW01 (Area 2)	Unconfined MW-3 (Area 3)[b]	Unconfined MW-16 (Area 4)	Semiconfined MW-5,10,18 (Area 1)	Semiconfined MW-6, PW-01 (Area 2)	Semiconfined MW-3 (Area 3)[b]	Semiconfined MW-12 (Area 4)	Total Contaminant Mass (lb)
	Aquifer Media Volume (ft^3):	3,540,000	2,790,000	1,800,000	6,100,000	5,900,000	4,650,000	3,000,000	10,200,000	
	Aquifer Water Volume (ft^3):	1,416,000	1,116,000	720,000	2,440,000	2,360,000	1,860,000	1,200,000	4,080,000	
Mass in 2007 (4th Year Following Groundwater Extraction System restarted in February 2004) Based on Groundwater Sampling in September, 2006										
PCP	Conc. (µg/L)	4,341	0.1		0.2	866			1,100	
K_d[c] = 0.60	Mass in soil (lb)	1,024	0	0	0	340	0	0	748	2,112
	Mass in GW (lb)	382.7	0.0	0.0	0.0	127.2	0.0	0.0	279.4	789
	Total Mass (lb)	**1,407**	**0**	**0.0**	**0.1**	**467**	**0**	**0.0**	**1,027**	**2,902**

[a] LNAPL product present in all three wells in this subarea.
[b] MW3 could not be sampled during the September 2007 sampling event.
[c] K_d from Hydrogeologic Investigation, December 1994.

Notes:

Contaminant mass estimates are based on many simplifying assumptions and are expected to be accurate only to within a one order-of-magnitude range. As a result, they are intended as general comparisons of the relative significance of contaminant mass in different media.

Soil Density = 1.78 grams per cubic centimeters (g/cm^3), ft^3 = cubic feet; GW = groundwater

TABLE 5
Summary of 2007 PCP Mass Estimates
Penta Wood Products Site

Penta Wood Products Site	September 2007 PCP Mass (lb)	Notes
LNAPL Residual Zone	10,100	Based on original mass less the mass estimated from recovered LNAPL.
Saturated Zone—Adsorbed	2,100	Based on groundwater concentration and a PCP K_d of 0.6.
Saturated Zone—Dissolved	790	Based on weighted average groundwater concentrations.
Total PCP Mass in the LNAPL residual zone and the saturated zone.	13, 000	
Removed by LNAPL Recovery System through 2007	4,900	Assuming 50% of recovered liquid is LNAPL and LNAPL is 5% PCP.
Removed by GW Extraction System through 2007	6,500	Estimate was revised based on actual GW extraction volumes from 2004 through 2007.

Note: Contaminant mass estimates are based on many simplifying assumptions and are expected to be accurate only to within a one order-of-magnitude range. As a result, they are intended as general comparisons of the relative significance of contaminant mass in different media.

one order-of-magnitude range. As a result, they are intended for general comparisons of the relative significance of contaminant mass in different media. The dedicated sampling pumps allowed have generally resulted in a decrease in measured PCP concentrations and it may be possible to redefine the areas in Table 4 in the future for better estimates of saturated zone contaminant mass.

Table 5 summarizes the PCP mass estimate for 2007 at the Penta Wood Site. The volume of liquid waste that was obtained from the separator can be used to make a rough estimate of the volume of LNAPL that was removed by groundwater extraction. While the plant was operating in 2007, approximately 6,990 gallons of liquid waste were captured in the separator; if the assumption is made that one-half of this waste was water, then roughly 3,495 gallons of LNAPL were removed. Assuming an LNAPL density of 0.84 grams per cubic centimeter (g/cm^3) and a PCP concentration of 5 percent, this volume equates to about 1,224 lbs of PCP present in LNAPL removed in 2007. An estimated 4,869 lbs of PCP have been removed by LNAPL recovery since 2004.

3.1.2 Groundwater Treatment System Operation and Maintenance

In the first half of the year, carbon changeout on the lead 10,000-lb carbon vessels were required every 4 to 5 weeks because of excessive pressure loss in the carbon vessels. The pressure loss is believed to be due to solids accumulating in the upper portion of the vessel and resultant clogging of the carbon pore spaces. While troubleshooting the source of the solids loading, interim modifications to the operation were evaluated to reduce the carbon changeout and disposal cost.

During the May 16, 2007 carbon changeout, only the top 25 percent of carbon bed (approximately 2 feet of material) in the lead 10,000-lb vessel was replaced. This vessel remained in lead mode, and operating differential pressure was within normal ranges following this partial carbon replacement. Operating differential pressure increased during the subsequent 4-week period, and a complete carbon changeout was made on the lead vessel on June 12, 2007. This partial changeout schedule was repeated with July 13 (partial) and August 7 (full) carbon vessels changeouts.

Jar testing was performed on July 30 and 31 to evaluate the solids loading to the carbon vessels. The data collected during the jar testing was used to optimize the current chemistry approach, as needed, to improve system operation. During the jar testing, it was identified that the pH probes in the coagulation tank had gone bad and were reading approximately 1 pH unit below the actual pH. The pH probes were replaced and the result of the pH correction was increased system operation and a reduced carbon changeout frequency which eliminated the need to continue the partial carbon changeout schedule.

The groundwater treatment system operation continued to improve from mid-August through November. The reduced solids loading allowed pressure increases in the lead carbon vessel to stabilize so the lead carbon vessel could last 7 weeks and treat 3.2 MG of water before requiring a changeout. Carbon changeouts had been previously required approximately every 5 weeks and typically only treated approximately 1.5 MG of water over that period.

The system experienced some mechanical issues at the end of November and in December that resulted in down time in December.

3.1.3 Groundwater and LNAPL Extraction Wells

In May, an LNAPL recovery test was performed to determine if the LNAPL recovery could be enhanced by increasing the groundwater extraction rate. Increasing the groundwater extraction rate at EW-05 from 10 gpm to 20 gpm resulted in a greater accumulation of LNAPL in the well. The test showed that the LNAPL was recovered as a higher percentage of the extracted fluid; however, the extracted fluid recovered at a slower rate. As a result, there was no observed change in the LNAPL recovery rate, with 0.017 gpm of LNAPL recovered with the extraction well operating at 10 gpm and 0.015 gpm LNAPL recovered with the extraction well operating at 20 gpm.

LNAPL removal performance can be improved by routinely adjusting the LNAPL pump depth to account for water level fluctuations. The LNAPL pumps have the intake at the top of the pumps and if the water level changes significantly, the pump depth may be too deep or shallow and pump only water or not pump at all. In August, a Standard Operating Procedure (SOP) was developed to raise or lower the LNAPL pumps monthly to ensure the pump is at the appropriate depth. In order to allow this activity to be performed by the site operator easily and safely without any confined space issues, winches were installed and connected to the pumps in EW-5, EW-6, and EW-10. A winch will be installed in 2008 at EW-4, which also has an active LNAPL pump, to allow for the adjustment of the pump depth in this well.

3.2 Bioventing System

The bioventing system was installed to provide oxygen for the aerobic biodegradation of residual diesel fuel petroleum hydrocarbons and PCP in the LNAPL smear zone. As the groundwater extraction system extracts and treats groundwater containing dissolved phase PCP, the groundwater table is depressed exposing more of the LNAPL smear zone at the current water table to the air supplied by the bioventing system.

The bioventing system was started up during the week of September 24, 2007 and operated until December 18 when it was shut down for the winter due to the frozen ground surface. Specific information on startup and maintenance of the bioventing system is provided in Appendix E.

3.2.1 Startup

The bioventing start-up objectives listed in the *Bioventing Startup Work Plan* were as follows:

- Determine whether methane or other potentially explosive gasses are present in the subsurface and if so, whether they may pose an explosive hazard at the onsite treatment system building or the nearby residential buildings.
- Determine whether bioventing increases subsurface temperatures to the point that subsurface ignition of wood chips in the CAMU could occur.
- Determine whether the bioventing system affects LNAPL thickness or results in the spreading of LNAPL.

The bioventing system was started up during the week of September 24 with the blower operating during daylight hours Monday through Friday so the system and soil gas could be monitored during the startup period. During the initial startup, readings were taken in each of the wells periodically throughout the day, as long as the system was running. The system ran fairly continuously until October 12, and was only shut off for the weekends when gas monitoring did not take place.

During the bioventing startup, the soil gas monitoring did demonstrate the presence of methane in the shallow subsurface in the wood chip area of the CAMU. It was apparent that the methane was easily escaping through the CAMU surface prior to migrating laterally. Soil gas monitoring did not show migration of methane in the subsurface to the critical monitoring points adjacent to the treatment building or at the property boundary during system operation. The start-up monitoring demonstrated that there was not an explosive hazard at these locations as a result of bioventing system operation.

Baseline temperatures were collected from each soil gas well prior to bioventing startup. Temperatures were collected initially at all the soil gas wells while the system was running and later temperatures were collected at only the shallow wells where the concern was greatest. Temperature increases of 5 Celsius degrees in a 24-hour period or any temperature recorded that exceeded 75 Celsius degrees would warrant an immediate system shut down due to the potential fire hazards. However, during bioventing system operation, temperatures never changed enough to cause a concern.

During the bioventing system startup, no migration of LNAPL was observed. The bioventing system also did not appear to have an appreciable effect on the LNAPL thickness in the four monitoring wells that have historically had LNAPL present (MW-10S, 18, 19, and 20).

After the objectives of the *Bioventing Startup Work Plan* were met and it was determined that the operation of the bioventing system did not pose a hazard, the bioventing system began continuous operation on October 15, 2007, at which point the system remained on during weekend intervals as well.

3.2.2 Soil Gas Monitoring

The bioventing system ran for a total of approximately 20 hours before a significant change in the gas composition of the intermediate, deep, and certain shallow soil gas monitoring wells was observed. Shallow wells located in the wood chip area showed significant changes in gas composition approximately 100 hours after the system started. In general, it was found that shallow bioventing wells located in the wood chip area (SG-04S, SG-07S, and SG-22) began with a higher methane and carbon dioxide concentration and no oxygen. Table 6 provides a summary of the baseline measurements prior to startup, measurements during bioventing operation, and measurements on December 18 after the bioventing system had been down for approximately one month.

Over the course of the approximately 2 months of the bioventing system operation, carbon dioxide and methane levels decreased in all bioventing wells; however, the oxygen levels at shallow wells SG-04S, SG-07S, and SG-22 located within the wood chip area remained at zero percent. All intermediate wells, deep wells, and shallow wells located outside of the wood chip area exhibited similar changes in gas composition with each other. They all

followed the pattern of increasing oxygen levels and decreasing carbon dioxide levels throughout the months of bioventing activity. Oxygen generally stabilized for each well at approximately 20 percent. Methane was not detected in any of these wells.

The bioventing system did not operate from November 24 through December 18 due to mechanical and electrical issues. After the repairs were completed, soil gas measurements were collected on December 18 to evaluate the current methane concentrations and the oxygen consumption in consideration of bioventing system operation over the winter months. Soil gas measurements from the deep and intermediate wells on December 18 showed no drop in oxygen levels from the soil gas measurements on November 19 prior to the shutdown of the bioventing system. However, shallow wells located in the wood chip area (SG-22 and SG-07S) showed increases in methane (5.8 to 8.6 percent and 0.5 to 5.6 percent, respectively).

Operation of the bioventing system with methane still present in the subsurface during the winter months is a safety concern because the frozen ground surface would result in greater lateral methane migration, possibly to the thawed ground below the treatment building. Because the most important objective of the bioventing system (to maintain oxygen concentrations above 5 percent at the deepest portions of the unsaturated zone where a smear zone of LNAPL is present) was being met with the system off and because of the potential safety hazard, the bioventing system was turned off on December 18 for the winter.

Based on the relatively low oxygen utilization rate, the oxygen is not expected to drop below the 5 percent minimum level for aerobic biodegradation in the deep and intermediate zones while the bioventing is down for the winter months. The bioventing system can remain off throughout the winter without appreciably affecting the biodegradation of PCP in the subsurface.

TABLE 6
Bioventing System Soil Gas Measurement Summary
Penta Wood Products Site

Well ID	O_2 (%)			CO_2 (%)			CH_4 (%)		
	Baseline (09/21/2007)	2 months of operation (11/19/2007)	Shut down 1 month (12/18/2007)	Baseline (09/21/2007)	2 months of operation (11/19/2007)	Shut down 1 month (12/18/2007)	Baseline (09/21/2007)	2 months of operation (11/19/2007)	Shut down 1 month (12/18/2007)
Shallow									
SG-04S[b]	---	---	---	---	---	---	---	---	---
SG-05S	17.8	21.7	22.6	1.7	0.1	0.1	0.0	0.0	0.0
SG-06S	17	21.9	23.2	2.3	0.0	0.0	0.0	0.0	0.0
SG-07S	4.3	0	0	28.5	19.8	18.5	14.1	0.5	5.6
SG-22	0.9[c]	0	0	27.3[c]	20.6	23.1	18.3[c]	5.8	8.6
Intermediate									
SG-04I	1.4	21.1	22.1	14.9	0.0	0.1	0.0	0.0	0.0
SG-05I	9.2	21.8	22.6	8.1	0.0	0.0	0.0	0.0	0.0
SG-06I	12.8	21.9	22.3	5.5	0.0	0.6	0.0	0.0	0.0
SG-07I	12.5	21.6	21.2	7.9	0.0	0.5	0.0	0.0	0.0
Deep									
SG-04D	1.7	22.0	NM	14.6	0.0	NM	0.0	0.0	NM
SG-05D	1.6	21.9	22.6	14.7	0.0	0.0	0.0	0.0	0.0
SG-06D	6.1	21.8	22.6	11.7	0.0	0.0	0.0	0.0	0.0
SG-07D	2.0	21.8	NM	16.5	0.0	NM	0.0	0.0	NM
Perimeter									
SG-23 (3')	18.3	21	21.2	1.7	0.1	0.2	0.0	0.0	0.0

TABLE 6
Bioventing System Soil Gas Measurement Summary
Penta Wood Products Site

SG-24 (5 feet)	19.1	20.3	22	0.7	0.7	0.6	0.0	0.0	0.0
SG-25 (5 feet)	17.9	19.0 [a]	NM	2.3	1.8 [a]	NM	0.0	0.0 [a]	NM
SG-26 (5 feet)	21.3	21.2	22.9	0.0	0.0	0.0	0.0	0.0	0.0

NM = not measured
[a]SG-25 soil gas readings from October 2, 2007 sampling because well was not sampled following this date.
[b]Readings are suspect and not reported due to presence of water above the screen.
[c]Reading after well was repaired.

3.2.3 Bioventing System Operation and Maintenance

Process measurements such as air injection well flow rates and pressures, and vacuum before and pressure after the air injection blower were monitored daily during system startup and monitored weekly following the stabilization of the bioventing system. Measured pressures in each well stabilized at approximately 1 pounds per square inch (psi). Air flow rates for the deep bioventing wells (EW-02, EW-03, EW-04, EW-05, EW-06, and EW-07) were set between 300 and 430 standard cubic feet per minute (scfm). Air flow rates for each of the shallow bioventing wells (BV-08 and BV-09) were set at approximately 160 scfm. Deep wells were designed for a maximum flow of 500 scfm and shallow wells for a maximum of 200 scfm.

The bioventing system was shut off on November 1 because the noise of the blower prevented the workers that were performing the carbon changeout for the groundwater treatment system from communicating. After the carbon changeout, the blower could not be restarted and troubleshooting was performed. The sensitivity switch on the breaker was decreased and the bioventing system resumed operation on November 8. The bioventing system ran continuously until November 24.

The bioventing system was shut down on November 24 because of an equipment failure with the landfill gas meter used to measure soil gas in the biovent wells. On November 26, a factory defect in the motor control center bucket for the blower caused a power failure. The landfill gas meter was repaired on November 26, but the bioventing system was unable to be restarted due to the power failure. After the electrical repairs were completed on December 14, the system was able to be restarted.

The system was restarted on December 18 for soil gas measurements to evaluate the current methane concentrations and the oxygen consumption.

3.3 Summary

The groundwater extraction system was operated from January 2007 through December 2007. More than 16 MG of groundwater, or over 1 pore volume, were removed from the extraction zone. An estimated 1,700 lbs of PCP were removed through the LNAPL extraction and dissolved phase PCP in the extracted groundwater.

LNAPL tests were performed in May 2007 to evaluate options to increase LNAPL recovery prior to the operation of the bioventing system. Increasing the groundwater extraction rate and inducing a steeper cone of depression was not found to increase the LNAPL recovery, so procedures were established to enhance the LNAPL recovery using the existing pumps.

System optimizations performed in August 2007 led to increased operation of the groundwater extraction system and enhancement of the groundwater capture. An improved capture zone was observed during the September 2007 groundwater sampling event as a result and LNAPL appears to be pooling in the area of the groundwater extraction wells due to the localized depression from the extraction wells.

The bioventing system operated for approximately 2 months in 2007. During that time, shallow wells within the wood chip area indicated decreases in methane and carbon dioxide

concentrations, but oxygen concentrations did not increase in these wells. Longer operation of the bioventing system is expected to oxygenate this lower permeability shallow area. The intermediate and deep wells, and shallow wells located outside of the wood chip area exhibited similar changes in gas composition with each other. They all followed the pattern of increasing oxygen levels and decreasing carbon dioxide levels throughout the months of bioventing activity. Oxygen generally stabilized for each well at approximately 20 percent. Methane was not detected in any of these wells.

The bioventing system was shut down for the winter due to concerns about methane migration with the frozen ground surface. However, based on the relatively low oxygen utilization rate, the oxygen is not expected to drop below the 5 percent minimum level for aerobic biodegradation in the deep and intermediate zones while the bioventing is down for the winter months.

3.4 Recommendations

In July, CH2M HILL submitted a proposal for reductions to the groundwater treatment system discharge monitoring performed in accordance with the Wisconsin Pollutant Discharge Elimination System (WPDES) permit. Some of the proposed changes were approved by the WDNR and a new WPDES permit was issued which will be effective beginning January 2008.

Soil gas monitoring will be performed and the bioventing system will be restarted in the spring after snow melts and the ground thaws. Soil gas measurements will be monitored during startup of the bioventing system in the spring and will then follow a routine schedule. Soil gas measurements in the spring will be collected and evaluated to determine a proposed bioventing system schedule for 2008.

SECTION 4

Waste Generation and Disposal Summary

The RA activities at the site resulted in the generation of hazardous waste. Hazardous waste management procedures for the Penta Wood Products Site (USEPA ID No. WID006176945) are outlined in the *Waste Handling Plan* (CH2M HILL, 2005).

Table 7 summarizes the amount of waste generated and disposed of offsite.

TABLE 7
Hazardous Waste Generation Summary
Penta Wood Products Site

Manifest #	Date	Filter Cake (lbs)	Misc. Debris (lbs)	Carbon (lbs)	LNAPL (lbs)	Water (gal)	Yearly Total (lbs)
IL9408187	12/19/2000				5,009		
IL9408188	12/19/2000		200	6,000			
	Total (lb):	**0**	**200**	**6,000**	**5,009**		**11,209**
WIK168068	08/28/2001		400	3,600	4,239		
WIK169159	04/03/2001			44,000			
WIK169160	04/03/2001			8,500	1,927		
	Total (lb):	**0**	**400**	**56,100**	**6,166**		**62,665**
WIK179411	01/08/2002			40,000			
WIK179412	01/08/2002		200	8,000			
WIK179225	04/04/2002		200		3,083		
WIK298473	06/09/2002		1,000		7,707		
IL10328513	06/25/2002					3,328	
	Total (lb):	**0**	**1,400**	**48,000**	**10,790**	**27,756**	**87,944**
WIK296620	10/30/2003		600		3,083		
IL10329166	10/30/2003					165	
	Total (lb):	**0**	**600**	**0**	**3,083**	**1,376**	**5,059**
WIK359186	02/11/2004		200	8,000			
WIK359185	02/12/2004			38,000			
WIK359334	05/04/2004			6,000			
2159985	05/19/2004		1,200				
WIK359343	05/19/2004	10,700					
WIK278209	05/19/2004			10,000			

TABLE 7
Hazardous Waste Generation Summary
Penta Wood Products Site

Manifest #	Date	Filter Cake (lbs)	Misc. Debris (lbs)	Carbon (lbs)	LNAPL (lbs)	Water (gal)	Yearly Total (lbs)
WIK376767	06/07/2004	24,000					
WIK376681	07/12/2004	18,860					
WIK363235	08/05/2004	19,140					
CWM0027842	08/10/2004				25,500		
WIK363114	09/14/2004	18,700					
WIK363151	10/20/2004	15,660					
WIK361532	11/22/2004		1,800	40,000			
WIK448461	11/22/2004	24,900					
WIK361540	12/04/2004				28,022		
WIK446853	12/29/2004	24,000					
	Total (lb):	**155,960**	**3,200**	**102,000**	**53,522**		**314,682**
WIK361592	01/19/2005	26,520					
WIK361599	02/02/2005	800	140	19,465			
WIK302737	03/09/2005	28,100					
WIK390017	03/20/2005			24,498			
WIK390019	03/21/2005				24,415		
WIK390053	05/04/2005		76	18,492			
WIK417972	05/05/2005	28,540					
WIK390072	06/20/2005	32,960					
WIK390144	07/14/2005	5,320	787	19,138			
WIK390188	10/04/2005	27,160					
WIK390189	10/04/2005		287	23,394			
WIK511343	11/29/2005	29,400					
	Total (lb):	**178,775**	**1,290**	**104,987**	**24,415**		**309,467**
WIK511358	01/03/2006				24,085		
WIK511369	01/24/2006	28,500					
WIK511500	02/17/2006		200	44,380			
WIK490587	04/05/2006	30,760					
WIK490632	05/12/2006		800	18,780			
WIK361872	06/20/2006	27,080					

TABLE 7
Hazardous Waste Generation Summary
Penta Wood Products Site

Manifest #	Date	Filter Cake (lbs)	Misc. Debris (lbs)	Carbon (lbs)	LNAPL (lbs)	Water (gal)	Yearly Total (lbs)
WIK361873	06/20/2006				28,807		
WIK490607	06/20/2006		200	18,800			
WIK361868	08/14/2006	26,300					
000598697JJK	10/19/2006			54,560			
	Total (lb):	**112,640**	**1,200**	**136,520**	**52,892**		**303,252**
000600742JJK	01/17/2007	29,020					
000600929JJK	01/17/2007			40,109			
000603373JJK	02/23/2007		600	28,000			
000602277JJK	04/16/2007	32,040					
000602276JJK	04/24/2007			40,582			
000602279JJK	04/16/2007				5,507		
000602527JJK	07/11/2007	27,280					
002022149JJK	07/11/2007		400	36,484			
001863373JJK	09/13/2007	31,700					
002020673JJK	10/16/2007			28,581			
003312957JJK	10/16/2007		800	23,522			
001863387JJK	10/24/2007	32,860					
001863395JJK	12/11/2007	21,120					
001863397JJK	12/11/2007				5,572		
003358750JJK	12/11/2007		400	27,469			
003320508JJK	12/20/2007			38,805			
	Total (lb):	**174,020**	**2,200**	**263,552**	**77,615**		**517,387**

Misc. Debris assumes 200 lb/drum
Weight of Fuel Oil (LNAPL) = 8.34 lb/gal water x 0.84 density
Weight of Water = 8.34 lb/gal
Weight of Carbon based on 2,000 lb/filter bag

gal = gallon

SECTION 5

Site Inspection and Maintenance

5.1 Community Relations

In August, the operator was approached by a neighbor who was concerned about the impact of the National Golf Course irrigation well on the water table and potential impacts on the contaminant plume capture at the Penta Wood site. The golf course was constructed in 2001 so plume distribution was evaluated before and after that time. The plume distribution appears unaffected by the operation of the irrigation well.

As discussed in previous sections, the groundwater extraction system appears to be maintaining capture of the PCP groundwater plume based on contaminant trend data in conjunction with water level data.

No other community relations issues were encountered in 2007.

5.2 Site Condition

During 2007, the driveway was recrowned to prevent flooding of the building during rain events. Additional riprap was placed at select areas around the CAMU, treatment building, and sedimentation basin for erosion repairs. Gravel was placed at the entrance of the CAMU to prevent erosion that resulted from periods of heavy rainfall and increased vehicle traffic during the annual groundwater monitoring and bioventing system startup in September.

The overall condition of the site was very good. The CAMU cap remains heavily vegetated with grasses with minimal erosion observed in isolated areas on the CAMU cover.

5.3 Health and Safety

A health and safety audit was performed on August 7, 2007. As a result of the audit, the following has occurred:

- Lone worker equipment was obtained and installed at the site. The equipment calls emergency phone numbers if the operator is inactive for a period of time and fails to acknowledge the alarm when activated.
- Internal procedures were developed and implemented to address housekeeping and daily documentation requirements.
- Health and safety plan revisions were begun to update site-specific information and incorporate new corporate safety programs. The revised health and safety plan will be issued in 2008.

- Options for chains or security gates were evaluated for the ladders at the top of coagulation, flocculation, filtrate, and neutralization tanks. Chains and/or security gates will be installed in 2008.

There were no health and safety issues during 2007.

5.4 Recommendations

Some erosion preventative maintenance (Figure 8) will be required during 2008 that include the following:

- Rip rap any natural drainage areas identified by spring runoff to minimize erosion, as needed.
- Seeding barren areas throughout the site to minimize erosion, as needed.

SECTION 6

References

CH2M HILL. 2000. *Sampling and Analysis Plan*. Revised April 2001.

CH2M HILL. 2005. *Waste Handling Plan*.

Appendix A

2007 Analytical Results

Penta Wood
Dissolved Gas Results
May 2007 Groundwater Samples – Monitoring Wells

Field Site Identifier:		01	01	01	01	01	01
Field Sample Location:		MW-01	MW-12	MW-19	MW-21	MW-26	MW-26
Sample Interval:		N/A	N/A	N/A	N/A	N/A	N/A
Matrix:		Water	Water	Water	Water	Water	Water, Dup
Sample Collection Date:		05/08/2007	05/09/2007	05/09/2007	05/08/2007	05/08/2007	05/08/2007
Field Sample Identification:		07CP28-03	07CP28-04	07CP28-05	07CP28-06	07CP28-07	07CP28-08
Laboratory Sample Identification:		710479	710584	710585	710480	710478	710477
Dissolved Gasses	**Units**						
METHANE	µg/l	2.0 UJ	2.0 UJ	2.0 UJ	2.0 UJ	2.0 UJ	2.0 UJ

QUALIFIER KEY: "U" - Analyte not found at the listed detection limit; "J" - Estimated Result; "B" - Analyte detected in Blank; No Qualifier - Analyte found; "R" - Rejected; "NR" - Not Reported

Penta Wood
Dissolved Metal Results
May 2007 Groundwater Samples – Monitoring Wells

Field Site Identifier:		01	01	01	01	01	01
Field Sample Location:		MW-01	MW-12	MW-19	MW-21	MW-26	MW-26
Sample Interval:		N/A	N/A	N/A	N/A	N/A	N/A
Matrix:		Water	Water	Water	Water	Water	Water, Dup
Sample Collection Date:		05/08/2007	05/09/2007	05/09/2007	05/08/2007	05/08/2007	05/08/2007
Field Sample Identification:		07CP28-03	07CP28-04	07CP28-05	07CP28-06	07CP28-07	07CP28-08
Laboratory Sample Identification:		4129-5	4156-3	4156-11	4129-7	4129-3	4129-1
Dissolved Metals (Filtered)	**Units**						
ARSENIC	µg/L	1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ
COPPER	µg/L	10 UJ	2.1 J	3.7 J	10 UJ	10 UJ	10 UJ
IRON	µg/L	100 UJ	100 UJ	100 UJ	100 UJ	100 UJ	100 UJ
MANGANESE	µg/L	6.3 J	1,100	2,600	10 UJ	10 UJ	10 UJ
ZINC	µg/L	20 UJ	5.2 J	20 UJ	4.2 J	20 UJ	20 UJ

QUALIFIER KEY: "U" - Analyte not found at the listed detection limit; "J" - Estimated Result; "B" - Analyte detected in Blank; No Qualifier - Analyte found; "R" - Rejected; "NR" - Not Reported

Penta Wood
Semivolatile Results
May 2007 Groundwater Samples – Monitoring Wells

Field Site Identifier:		01	01	01	01	01	01
Field Sample Location:		MW-01	MW-12	MW-19	MW-21	MW-26	MW-26
Sample Interval:		N/A	N/A	N/A	N/A	N/A	N/A
Matrix:		Water	Water	Water	Water	Water	Water, Dup
Sample Collection Date:		05/08/2007	05/09/2007	05/09/2007	05/08/2007	05/08/2007	05/08/2007
Field Sample Identification:		07CP28-03	07CP28-04	07CP28-05	07CP28-06	07CP28-07	07CP28-08
Laboratory Sample Identification:		4129-5	4156-3	4156-11	4129-7	4129-3	4129-1
Semivolatile Organic Compounds	**Units**						
NAPHTHALENE	µg/L	1.0 R	0.99 J	54 J	1.0 R	0.92 R	0.92 R
PENTACHLOROPHENOL	µg/L	0.11 J	3,000 J	11,000 J	0.098 UJ	0.093 UJ	0.095 UJ

QUALIFIER KEY: "U" - Analyte not found at the listed detection limit; "J" - Estimated Result; "B" - Analyte detected in Blank; No Qualifier - Analyte found; "R" - Rejected; "NR" - Not Reported

Penta Wood
Volatile Results
May 2007 Groundwater Samples – Monitoring Wells

Field Site Identifier:		01	01	01	01	01	01
Field Sample Location:		MW-01	MW-12	MW-19	MW-21	MW-26	MW-26
Sample Interval:		N/A	N/A	N/A	N/A	N/A	N/A
Matrix:		Water	Water	Water	Water	Water	Water, Dup
Sample Collection Date:		05/08/2007	05/09/2007	05/09/2007	05/08/2007	05/08/2007	05/08/2007
Field Sample Identification:		07CP28-03	07CP28-04	07CP28-05	07CP28-06	07CP28-07	07CP28-08
Laboratory Sample Identification:		4129-5	4156-3	4156-11	4129-7	4129-3	4129-1
Volatile Organic Compounds	**Units**						
BENZENE	µg/L	1.0 U	1.0 UJ	1.0 U	1.0 U	1.0 U	1.0 U
ETHYLBENZENE	µg/L	1.0 U	1.0 UJ	1.4	1.0 U	1.0 U	1.0 U
TOLUENE	µg/L	1.0 U	1.0 UJ	1.5	1.0 U	1.0 U	1.0 U
XYLENES	µg/L	2.0 U	1.9 J	17	2.0 U	2.0 U	2.0 U

QUALIFIER KEY: "U" - Analyte not found at the listed detection limit; "J" - Estimated Result; "B" - Analyte detected in Blank; No Qualifier - Analyte found; "R" - Rejected; "NR" - Not Reported

Penta Wood
Wet Chemistry Results
May 2007 Groundwater Samples – Monitoring Wells

Field Site Identifier:		01	01	01	01	01	01
Field Sample Location:		MW-01	MW-12	MW-19	MW-21	MW-26	MW-26
Sample Interval:		N/A	N/A	N/A	N/A	N/A	N/A
Matrix:		Water	Water	Water	Water	Water	Water, Dup
Sample Collection Date:		05/08/2007	05/09/2007	05/09/2007	05/08/2007	05/08/2007	05/08/2007
Field Sample Identification:		07CP28-03	07CP28-04	07CP28-05	07CP28-06	07CP28-07	07CP28-08
Laboratory Sample Identification:		4129-5	4156-3	4156-11	4129-7	4129-3	4129-1
Wet Chemistry	**Units**						
ALKALINITY, TOTAL (AS CACO3)	mg/L	190 J	340 J	230 J	210 J	260 J	270 J
CHLORIDE (AS CL)	mg/L	2.2 J	13	15	33 J	21 J	21 J
NITROGEN, NITRATE (AS N)	mg/L	1.9	2.4	0.29	4.2	1.5	1.6
NITROGEN, NITRATE-NITRITE	mg/L	1.9 J	3.0 J	0.32 J	4.2 J	1.5 J	1.6 J
NITROGEN, NITRITE	mg/L	0.020 UJ	0.64	0.027	0.020 U	0.020 U	0.020 UJ
SULFATE (AS SO4)	mg/L	15 J	37 J	59 J	9.3 J	210 J	250 J
SULFIDE	mg/L	1.0 J	1.0 J	1.0 J	1.0 J	1.0 J	1.0 J
TOTAL CARBON	mg/L	1.9	7.0 UB	33 UB	1.7	0.68 J	0.76 J

QUALIFIER KEY: "U" - Analyte not found at the listed detection limit; "J" - Estimated Result; "B" - Analyte detected in Blank; No Qualifier - Analyte found; "R" - Rejected; "NR" - Not Reported

Penta Wood
Dissolved Gas Results
May 2007 Groundwater Samples – Residential Wells

Field Site Identifier:	01
Field Sample Location:	DW-01
Sample Interval:	N/A
Matrix:	Water
Sample Collection Date:	05/10/2007
Field Sample Identification:	07CP28-01
Laboratory Sample Identification:	710582

Dissolved Gasses	**Units**	
METHANE	µg/L	2.0 UJ

QUALIFIER KEY: "U" - Analyte not found at the listed detection limit; "J" - Estimated Result; "B" - Analyte detected in Blank; No Qualifier - Analyte found; "R" - Rejected; "NR" - Not Reported

Penta Wood
Dissolved Metal Results
May 2007 Groundwater Samples – Residential Wells

Field Site Identifier:	01
Field Sample Location:	DW-01
Sample Interval:	N/A
Matrix:	Water
Sample Collection Date:	05/10/2007
Field Sample Identification:	07CP28-01
Laboratory Sample Identification:	4156-1

Dissolved Metals (Filtered)	**Units**	
ARSENIC	µg/L	1.0 UJ
COPPER	µg/L	100
IRON	µg/L	100 UJ
MANGANESE	µg/L	10 UB
ZINC	µg/L	620 J

QUALIFIER KEY: "U" - Analyte not found at the listed detection limit; "J" - Estimated Result; "B" - Analyte detected in Blank; No Qualifier - Analyte found; "R" - Rejected; "NR" - Not Reported

Penta Wood
Semivolatile Results
May 2007 Groundwater Samples – Residential Wells

Field Site Identifier:		01	01	01	01	01	01	01
Field Sample Location:		DW-01	RW-01	RW-01	RW-02	RW-03	RW-04	RW-05
Sample Interval:		N/A	N/A	N/A	N/A	N/A	N/A	N/A
Matrix:		Water	Water	Water, Dup	Water	Water	Water	Water
Sample Collection Date:		05/10/2007	05/09/2007	05/09/2007	05/09/2007	05/09/2007	05/09/2007	05/09/2007
Field Sample Identification:		07CP28-01	07CP28-09	07CP28-10	07CP28-11	07CP28-12	07CP28-13	07CP28-14
Laboratory Sample Identification:		4156-1	4156-5	4156-6	4156-9	4156-16	4156-14	4156-8
Semivolatile Organic Compounds	**Units**							
NAPHTHALENE	µg/L	0.95 R	0.95 R	0.95 R	0.97 R	0.95 R	0.96 R	0.93 R
PENTACHLOROPHENOL	µg/L	0.074 J	0.035 J	0.048 J	0.092 UJ	0.092 UJ	0.093 UJ	0.092 UJ

QUALIFIER KEY: "U" - Analyte not found at the listed detection limit; "J" - Estimated Result; "B" - Analyte detected in Blank; No Qualifier - Analyte found; "R" - Rejected; "NR" - Not Reported

Penta Wood
Volatile Results
May 2007 Groundwater Samples – Residential Wells

Field Site Identifier:		01	01	01	01	01	01	01
Field Sample Location:		DW-01	RW-01	RW-01	RW-02	RW-03	RW-04	RW-05
Sample Interval:		N/A	N/A	N/A	N/A	N/A	N/A	N/A
Matrix:		Water	Water	Water, Dup	Water	Water	Water	Water
Sample Collection Date:		05/10/2007	05/09/2007	05/09/2007	05/09/2007	05/09/2007	05/09/2007	05/09/2007
Field Sample Identification:		07CP28-01	07CP28-09	07CP28-10	07CP28-11	07CP28-12	07CP28-13	07CP28-14
Laboratory Sample Identification:		4156-1	4156-5	4156-6	4156-9	4156-16	4156-14	4156-8
Volatile Organic Compounds	**Units**							
BENZENE	µg/L	1.0 UJ	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
ETHYLBENZENE	µg/L	1.0 UJ	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
TOLUENE	µg/L	1.0 UJ	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
XYLENES	µg/L	2.0 UJ	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U

QUALIFIER KEY: "U" - Analyte not found at the listed detection limit; "J" - Estimated Result; "B" - Analyte detected in Blank; No Qualifier - Analyte found; "R" - Rejected; "NR" - Not Reported

Penta Wood
Wet Chemistry Results
May 2007 Groundwater Samples – Residential Wells

Field Site Identifier:	01
Field Sample Location:	DW-01
Sample Interval:	N/A
Matrix:	Water
Sample Collection Date:	05/10/2007
Field Sample Identification:	07CP28-01
Laboratory Sample Identification:	4156-1

Wet Chemistry	**Units**	
ALKALINITY, TOTAL (AS CACO3)	mg/L	400 J
CHLORIDE (AS CL)	mg/L	29
HARDNESS (AS CACO3)	mg/L	320
NITROGEN, NITRATE (AS N)	mg/L	1.8
NITROGEN, NITRATE-NITRITE	mg/L	1.8 J
NITROGEN, NITRITE	mg/L	0.020 U
SULFATE (AS SO4)	mg/L	17 J
SULFIDE	mg/L	1.0 R
TOTAL CARBON	mg/L	1.0 UB

QUALIFIER KEY: "U" - Analyte not found at the listed detection limit; "J" - Estimated Result; "B" - Analyte detected in Blank; No Qualifier - Analyte found; "R" - Rejected; "NR" - Not Reported

Penta Wood
Dissolved Gas Results
September 2007 Groundwater Samples – Monitoring Wells

	Field Site Identifier:	01	01	01	01	01	01	01
	Field Sample Location:	MW-01	MW-02	MW-05	MW-06S	MW-06S	MW-07	MW-08
	Sample Interval:	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Matrix:	Water	Water	Water	Water	Water, Dup	Water	Water
	Sample Collection Date:	09/18/2007	09/19/2007	09/20/2007	09/20/2007	09/20/2007	09/20/2007	09/20/2007
	Field Sample Identification:	07CP43-16	07CP43-17	07CP43-19	07CP43-20	07CP43-21	07CP43-22	07CP43-23
	Laboratory Sample Identification:	725378	725372	725599	725603	725604	725598	725587
Dissolved Gasses	**Units**							
METHANE	µg/l	2.0 UJ	2.0 UJ	9.8	3.0	2.7	3.7	2.0 UJ

QUALIFIER KEY: "U" - Analyte not found at the listed detection limit; "J" - Estimated Result; "B" - Analyte detected in Blank; No Qualifier - Analyte found; "R" - Rejected; "NR" - Not Reported

Penta Wood
Dissolved Gas Results
September 2007 Groundwater Samples - Monitoring Wells

Field Site Identifier:		01	01	01	01	01	01	01
Field Sample Location:		MW-09	MW-10	MW-10S	MW-11	MW-12	MW-12	MW-13
Sample Interval:		N/A	N/A	N/A	N/A	N/A	N/A	N/A
Matrix:		Water	Water	Water	Water	Water	Water, Dup	Water
Sample Collection Date:		09/21/2007	09/21/2007	09/21/2007	09/20/2007	09/19/2007	09/19/2007	09/18/2007
Field Sample Identification:		07CP43-24	07CP43-25	07CP43-26	07CP43-27	07CP43-28	07CP43-29	07CP43-30
Laboratory Sample Identification:		725601	725596	725597	725588	725589	725590	725379
Dissolved Gasses	**Units**							
METHANE	µg/l	2.0 U	2.4 J	2.0 U	2.0 UJ	2.0 UJ	2.0 UJ	2.0 UJ

QUALIFIER KEY: "U" - Analyte not found at the listed detection limit; "J" - Estimated Result; "B" - Analyte detected in Blank; No Qualifier - Analyte found; "R" - Rejected; "NR" - Not Reported

Penta Wood
Dissolved Gas Results
September 2007 Groundwater Samples – Monitoring Wells

	Field Site Identifier:	01	01	01	01	01	01	01
	Field Sample Location:	MW-15	MW-16	MW-17	MW-20	MW-21	MW-22	MW-26
	Sample Interval:	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Matrix:	Water	Water	Water	Water	Water	Water	Water
	Sample Collection Date:	09/19/2007	09/18/2007	09/19/2007	09/21/2007	09/18/2007	09/18/2007	09/19/2007
	Field Sample Identification:	07CP43-31	07CP43-32	07CP43-33	07CP43-35	07CP43-36	07CP43-37	07CP43-38
	Laboratory Sample Identification:	725591	725374	725592	725600	725373	725375	725593
Dissolved Gasses	**Units**							
METHANE	µg/l	2.0 UJ	2.0 UJ	2.0 UJ	2.0 U	2.0 UJ	2.0 UJ	2.0 UJ

QUALIFIER KEY: "U" - Analyte not found at the listed detection limit; "J" - Estimated Result; "B" - Analyte detected in Blank; No Qualifier - Analyte found; "R" - Rejected; "NR" - Not Reported

Penta Wood
Dissolved Metal Results
September 2007 Groundwater Samples – Monitoring Wells

Field Site Identifier:		01	01	01	01	01	01	01
Field Sample Location:		MW-01	MW-02	MW-05	MW-06S	MW-06S	MW-07	MW-08
Sample Interval:		N/A	N/A	N/A	N/A	N/A	N/A	N/A
Matrix:		Water	Water	Water	Water	Water, Dup	Water	Water
Sample Collection Date:		09/18/2007	09/19/2007	09/20/2007	09/20/2007	09/20/2007	09/20/2007	09/20/2007
Field Sample Identification:		07CP43-16	07CP43-17	07CP43-19	07CP43-20	07CP43-21	07CP43-22	07CP43-23
Laboratory Sample Identification:		500-6662-19	500-6662-10	500-6733-5	500-6733-11	500-6733-12	500-6733-4	500-6695-2
Dissolved Metals (Filtered)	**Units**							
ARSENIC	µg/L	1.0 UJ	0.62 J	1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ	0.61 J
COPPER	µg/L	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ
IRON	µg/L	100 UJ	100 UJ	25,000	510	390	260	210
MANGANESE	µg/L	10 UJ	6.5 J	7,600	200	190	22	13 J
ZINC	µg/L	20 UJ	20 UJ	20 UJ	7.0 J	7.0 J	5.9 J	20 UJ

QUALIFIER KEY: "U" - Analyte not found at the listed detection limit; "J" - Estimated Result; "B" - Analyte detected in Blank; No Qualifier - Analyte found; "R" - Rejected; "NR" - Not Reported

Penta Wood
Dissolved Metal Results
September 2007 Groundwater Samples – Monitoring Wells

Field Site Identifier:		01	01	01	01	01	01	01
Field Sample Location:		MW-09	MW-10	MW-10S	MW-11	MW-12	MW-12	MW-13
Sample Interval:		N/A	N/A	N/A	N/A	N/A	N/A	N/A
Matrix:		Water	Water	Water	Water	Water	Water, Dup	Water
Sample Collection Date:		09/21/2007	09/21/2007	09/21/2007	09/20/2007	09/19/2007	09/19/2007	09/18/2007
Field Sample Identification:		07CP43-24	07CP43-25	07CP43-26	07CP43-27	07CP43-28	07CP43-29	07CP43-30
Laboratory Sample Identification:		500-6733-8	500-6733-1	500-6733-2	500-6695-3	500-6695-5	500-6695-6	500-6662-20
Dissolved Metals (Filtered)	**Units**							
ARSENIC	µg/L	1.0 UJ	0.88 J	1.0 UJ	1.2 J	0.97 J	1.1 J	1.0 UJ
COPPER	µg/L	5.9 J	2.3 J	10 UJ	10 UJ	10 UJ	1.7 J	10 UJ
IRON	µg/L	100 UJ	550	100 UJ	100 UJ	100 R	100 R	100 UJ
MANGANESE	µg/L	4.1 J	2,700	1,300	10 UJ	820	790	6.3 J
ZINC	µg/L	20 UJ	20 UJ	20 UJ	20 UJ	20 UJ	20 UJ	5.2 J

QUALIFIER KEY: "U" - Analyte not found at the listed detection limit; "J" - Estimated Result; "B" - Analyte detected in Blank; No Qualifier - Analyte found; "R" - Rejected; "NR" - Not Reported

Penta Wood
Dissolved Metal Results
September 2007 Groundwater Samples – Monitoring Wells

Field Site Identifier:		01	01	01	01	01	01	01
Field Sample Location:		MW-15	MW-16	MW-17	MW-19	MW-20	MW-21	MW-22
Sample Interval:		N/A	N/A	N/A	N/A	N/A	N/A	N/A
Matrix:		Water	Water	Water	Water	Water	Water	Water
Sample Collection Date:		09/19/2007	09/18/2007	09/19/2007	09/21/2007	09/21/2007	09/18/2007	09/18/2007
Field Sample Identification:		07CP43-31	07CP43-32	07CP43-33	07CP43-34	07CP43-35	07CP43-36	07CP43-37
Laboratory Sample Identification:		500-6695-8	500-6662-13	500-6695-9	500-6733-7	500-6733-6	500-6662-11	500-6662-14
Dissolved Metals (Filtered)	**Units**							
ARSENIC	µg/L	0.68 J	1.0 UJ	1.0 J	1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ
COPPER	µg/L	10 UJ	10 UJ	10 UJ	4.0 J	10 UJ	10 UJ	10 UJ
IRON	µg/L	100 UJ	100 UJ	100 UJ	100 UJ	100 UJ	100 UJ	100 UJ
MANGANESE	µg/L	10 UJ	10 UJ	10 UJ	3,100	4,800	10 UJ	10 UJ
ZINC	µg/L	20 UJ	20 UJ	20 UJ	20 UJ	20 UJ	20 UJ	20 UJ

QUALIFIER KEY: "U" - Analyte not found at the listed detection limit; "J" - Estimated Result; "B" - Analyte detected in Blank; No Qualifier - Analyte found; "R" - Rejected; "NR" - Not Reported

Penta Wood
Dissolved Metal Results
September 2007 Groundwater Samples – Monitoring Wells

Field Site Identifier:	01
Field Sample Location:	MW-26
Sample Interval:	N/A
Matrix:	Water
Sample Collection Date:	09/19/2007
Field Sample Identification:	07CP43-38
Laboratory Sample Identification:	500-6695-11

Dissolved Metals (Filtered)	**Units**	
ARSENIC	µg/L	1.0 UJ
COPPER	µg/L	10 UJ
IRON	µg/L	100 R
MANGANESE	µg/L	10 UJ
ZINC	µg/L	20 UJ

QUALIFIER KEY: "U" - Analyte not found at the listed detection limit; "J" - Estimated Result; "B" - Analyte detected in Blank; No Qualifier - Analyte found; "R" - Rejected; "NR" - Not Reported

Penta Wood
Semivolatile Results
September 2007 Groundwater Samples – Monitoring Wells

Field Site Identifier:		01	01	01	01	01	01	01
Field Sample Location:		MW-01	MW-02	MW-05	MW-06S	MW-06S	MW-07	MW-08
Sample Interval:		N/A	N/A	N/A	N/A	N/A	N/A	N/A
Matrix:		Water	Water	Water	Water	Water, Dup	Water	Water
Sample Collection Date:		09/18/2007	09/19/2007	09/20/2007	09/20/2007	09/20/2007	09/20/2007	09/20/2007
Field Sample Identification:		07CP43-16	07CP43-17	07CP43-19	07CP43-20	07CP43-21	07CP43-22	07CP43-23
Laboratory Sample Identification:		500-6662-19	500-6662-10	500-6733-5	500-6733-11	500-6733-12	500-6733-4	500-6695-2
Semivolatile Organic Compounds	**Units**							
NAPHTHALENE	µg/L	0.93 R	0.97 R	0.74 R	0.93 R	0.93 R	0.93 R	0.93 U
PENTACHLOROPHENOL	µg/L	0.093 UJ	3.7 J	31 J	0.099 J	0.14 J	0.093 U	0.093 U

QUALIFIER KEY: "U" - Analyte not found at the listed detection limit; "J" - Estimated Result; "B" - Analyte detected in Blank; No Qualifier - Analyte found; "R" - Rejected; "NR" - Not Reported

Penta Wood
Semivolatile Results
September 2007 Groundwater Samples – Monitoring Wells

Field Site Identifier:		01	01	01	01	01	01	01
Field Sample Location:		MW-09	MW-10	MW-10S	MW-11	MW-12	MW-12	MW-13
Sample Interval:		N/A	N/A	N/A	N/A	N/A	N/A	N/A
Matrix:		Water	Water	Water	Water	Water	Water, Dup	Water
Sample Collection Date:		09/21/2007	09/21/2007	09/21/2007	09/20/2007	09/19/2007	09/19/2007	09/18/2007
Field Sample Identification:		07CP43-24	07CP43-25	07CP43-26	07CP43-27	07CP43-28	07CP43-29	07CP43-30
Laboratory Sample Identification:		500-6733-8	500-6733-1	500-6733-2	500-6695-3	500-6695-5	500-6695-6	500-6662-20
Semivolatile Organic Compounds	**Units**							
NAPHTHALENE	µg/L	0.97 R	12 J	2.4 R	0.93 U	0.71 J	0.74 J	0.93 R
PENTACHLOROPHENOL	µg/L	0.37 J	1,700 J	24 J	0.093 U	1,100 J	1,000 J	0.53 J

QUALIFIER KEY: "U" - Analyte not found at the listed detection limit; "J" - Estimated Result; "B" - Analyte detected in Blank; No Qualifier - Analyte found; "R" - Rejected; "NR" - Not Reported

Penta Wood
Semivolatile Results
September 2007 Groundwater Samples – Monitoring Wells

Field Site Identifier:		01	01	01	01	01	01	01
Field Sample Location:		MW-15	MW-16	MW-17	MW-19	MW-20	MW-21	MW-22
Sample Interval:		N/A	N/A	N/A	N/A	N/A	N/A	N/A
Matrix:		Water	Water	Water	Water	Water	Water	Water
Sample Collection Date:		09/19/2007	09/18/2007	09/19/2007	09/21/2007	09/21/2007	09/18/2007	09/18/2007
Field Sample Identification:		07CP43-31	07CP43-32	07CP43-33	07CP43-34	07CP43-35	07CP43-36	07CP43-37
Laboratory Sample Identification:		500-6695-8	500-6662-13	500-6695-9	500-6733-7	500-6733-6	500-6662-11	500-6662-14
Semivolatile Organic Compounds	**Units**							
NAPHTHALENE	µg/L	1.0 U	0.99 R	0.94 U	47 R	71 R	0.98 R	0.99 R
PENTACHLOROPHENOL	µg/L	0.10 U	0.20 J	0.099 U	3,500 J	9,500 J	0.13 J	0.13 J

QUALIFIER KEY: "U" - Analyte not found at the listed detection limit; "J" - Estimated Result; "B" - Analyte detected in Blank; No Qualifier - Analyte found; "R" - Rejected; "NR" - Not Reported

Penta Wood
Semivolatile Results
September 2007 Groundwater Samples – Monitoring Wells

Field Site Identifier:	01
Field Sample Location:	MW-26
Sample Interval:	N/A
Matrix:	Water
Sample Collection Date:	09/19/2007
Field Sample Identification:	07CP43-38
Laboratory Sample Identification:	500-6695-11

Semivolatile Organic Compounds	**Units**	
NAPHTHALENE	µg/L	0.93 U
PENTACHLOROPHENOL	µg/L	0.095 U

QUALIFIER KEY: "U" - Analyte not found at the listed detection limit; "J" - Estimated Result; "B" - Analyte detected in Blank; No Qualifier - Analyte found; "R" - Rejected; "NR" - Not Reported

Penta Wood
Volatile Results
September 2007 Groundwater Samples – Monitoring Wells

Field Site Identifier:		01	01	01	01	01	01	01
Field Sample Location:		MW-01	MW-02	MW-05	MW-06S	MW-06S	MW-07	MW-08
Sample Interval:		N/A	N/A	N/A	N/A	N/A	N/A	N/A
Matrix:		Water	Water	Water	Water	Water, Dup	Water	Water
Sample Collection Date:		09/18/2007	09/19/2007	09/20/2007	09/20/2007	09/20/2007	09/20/2007	09/20/2007
Field Sample Identification:		07CP43-16	07CP43-17	07CP43-19	07CP43-20	07CP43-21	07CP43-22	07CP43-23
Laboratory Sample Identification:		500-6662-19	500-6662-10	500-6733-5	500-6733-11	500-6733-12	500-6733-4	500-6695-2
Volatile Organic Compounds	**Units**							
BENZENE	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
ETHYLBENZENE	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
TOLUENE	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
XYLENES, TOTAL	µg/L	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U

QUALIFIER KEY: "U" - Analyte not found at the listed detection limit; "J" - Estimated Result; "B" - Analyte detected in Blank; No Qualifier - Analyte found; "R" - Rejected; "NR" - Not Reported

Penta Wood
Volatile Results
September 2007 Groundwater Samples – Monitoring Wells

Field Site Identifier:		01	01	01	01	01	01	01
Field Sample Location:		MW-09	MW-10	MW-10S	MW-11	MW-12	MW-12	MW-13
Sample Interval:		N/A	N/A	N/A	N/A	N/A	N/A	N/A
Matrix:		Water	Water	Water	Water	Water	Water, Dup	Water
Sample Collection Date:		09/21/2007	09/21/2007	09/21/2007	09/20/2007	09/19/2007	09/19/2007	09/18/2007
Field Sample Identification:		07CP43-24	07CP43-25	07CP43-26	07CP43-27	07CP43-28	07CP43-29	07CP43-30
Laboratory Sample Identification:		500-6733-8	500-6733-1	500-6733-2	500-6695-3	500-6695-5	500-6695-6	500-6662-20
Volatile Organic Compounds	**Units**							
BENZENE	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
ETHYLBENZENE	µg/L	1.0 U	1.3	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
TOLUENE	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
XYLENES, TOTAL	µg/L	2.0 U	7.2	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U

QUALIFIER KEY: "U" - Analyte not found at the listed detection limit; "J" - Estimated Result; "B" - Analyte detected in Blank; No Qualifier - Analyte found; "R" - Rejected; "NR" - Not Reported

Penta Wood
Volatile Results
September 2007 Groundwater Samples – Monitoring Wells

Field Site Identifier:		01	01	01	01	01	01	01
Field Sample Location:		MW-15	MW-16	MW-17	MW-19	MW-20	MW-21	MW-22
Sample Interval:		N/A	N/A	N/A	N/A	N/A	N/A	N/A
Matrix:		Water	Water	Water	Water	Water	Water	Water
Sample Collection Date:		09/19/2007	09/18/2007	09/19/2007	09/21/2007	09/21/2007	09/18/2007	09/18/2007
Field Sample Identification:		07CP43-31	07CP43-32	07CP43-33	07CP43-34	07CP43-35	07CP43-36	07CP43-37
Laboratory Sample Identification:		500-6695-8	500-6662-13	500-6695-9	500-6733-7	500-6733-6	500-6662-11	500-6662-14
Volatile Organic Compounds	**Units**							
BENZENE	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
ETHYLBENZENE	µg/L	1.0 U	1.0 U	1.0 U	1.8	6.4	1.0 U	1.0 U
TOLUENE	µg/L	1.0 U	1.0 U	1.0 U	2.0	4.4	1.0 U	1.0 U
XYLENES, TOTAL	µg/L	2.0 U	2.0 U	2.0 U	21	62	2.0 U	2.0 U

QUALIFIER KEY: "U" - Analyte not found at the listed detection limit; "J" - Estimated Result; "B" - Analyte detected in Blank; No Qualifier - Analyte found; "R" - Rejected; "NR" - Not Reported

Penta Wood
Volatile Results
September 2007 Groundwater Samples – Monitoring Wells

Field Site Identifier:	01
Field Sample Location:	MW-26
Sample Interval:	N/A
Matrix:	Water
Sample Collection Date:	09/19/2007
Field Sample Identification:	07CP43-38
Laboratory Sample Identification:	500-6695-11

Volatile Organic Compounds	Units	
BENZENE	µg/L	1.0 U
ETHYLBENZENE	µg/L	1.0 U
TOLUENE	µg/L	1.0 U
XYLENES, TOTAL	µg/L	2.0 U

QUALIFIER KEY: "U" - Analyte not found at the listed detection limit; "J" - Estimated Result; "B" - Analyte detected in Blank; No Qualifier - Analyte found; "R" - Rejected; "NR" - Not Reported

Penta Wood
Wet Chemistry Results
September 2007 Groundwater Samples – Monitoring Wells

Field Site Identifier:		01	01	01	01	01	01	01
Field Sample Location:		MW-01	MW-02	MW-05	MW-06S	MW-06S	MW-07	MW-08
Sample Interval:		N/A	N/A	N/A	N/A	N/A	N/A	N/A
Matrix:		Water	Water	Water	Water	Water, Dup	Water	Water
Sample Collection Date:		09/18/2007	09/19/2007	09/20/2007	09/20/2007	09/20/2007	09/20/2007	09/20/2007
Field Sample Identification:		07CP43-16	07CP43-17	07CP43-19	07CP43-20	07CP43-21	07CP43-22	07CP43-23
Laboratory Sample Identification:		500-6662-19	500-6662-10	500-6733-5	500-6733-11	500-6733-12	500-6733-4	500-6695-2
Wet Chemistry	**Units**							
ALKALINITY, TOTAL (AS CACO3)	mg/L	110 J	160 J	230 J	230 J	230 J	270 J	180
CHLORIDE (AS CL)	mg/L	9.4	3.6	13	30	29	16	21
NITROGEN, NITRATE (AS N)	mg/L	3.0 J	0.22 J	0.10 U	4.7	4.7	1.5	1.5
NITROGEN, NITRATE-NITRITE	mg/L	3.0 J	0.24 J	0.10 U	4.7	4.7	1.5	1.5
NITROGEN, NITRITE	mg/L	0.027 J	0.024 J	0.020 U	0.027 J	0.026 J	0.0034 J	0.020 U
SULFATE (AS SO4)	mg/L	12 J	16 J	39 J	34 J	36 J	170 J	76 J
SULFIDE	mg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
TOTAL CARBON	mg/L	1.1 J	2.1 J	4.1 J	4.7 J	5.2 J	1.1 J	1.1 J

QUALIFIER KEY: "U" - Analyte not found at the listed detection limit; "J" - Estimated Result; "B" - Analyte detected in Blank; No Qualifier - Analyte found; "R" - Rejected; "NR" - Not Reported

Penta Wood
Wet Chemistry Results
September 2007 Groundwater Samples – Monitoring Wells

Field Site Identifier:		01	01	01	01	01	01	01
Field Sample Location:		MW-09	MW-10	MW-10S	MW-11	MW-12	MW-12	MW-13
Sample Interval:		N/A	N/A	N/A	N/A	N/A	N/A	N/A
Matrix:		Water	Water	Water	Water	Water	Water, Dup	Water
Sample Collection Date:		09/21/2007	09/21/2007	09/21/2007	09/20/2007	09/19/2007	09/19/2007	09/18/2007
Field Sample Identification:		07CP43-24	07CP43-25	07CP43-26	07CP43-27	07CP43-28	07CP43-29	07CP43-30
Laboratory Sample Identification:		500-6733-8	500-6733-1	500-6733-2	500-6695-3	500-6695-5	500-6695-6	500-6662-20
Wet Chemistry	**Units**							
ALKALINITY, TOTAL (AS CACO3)	mg/L	58 J	380 J	170 J	220	340	340	71 J
CHLORIDE (AS CL)	mg/L	2.6	20	8.7	20	14	14	2.9
NITROGEN, NITRATE (AS N)	mg/L	3.8	0.68	1.3	2.4	2.8	2.2	0.31 J
NITROGEN, NITRATE-NITRITE	mg/L	3.8	0.87	1.9	2.4	3.6	3.0	0.33 J
NITROGEN, NITRITE	mg/L	0.020 UJ	0.19 J	0.59 J	0.020 U	0.83	0.85	0.017 J
SULFATE (AS SO4)	mg/L	15 J	25 J	69 J	19 J	29 J	2.7 J	29 J
SULFIDE	mg/L	1.0 U	1.0 U H	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
TOTAL CARBON	mg/L	3.3 J	12 J	2.9 J	1.2 J	5.6 J	5.7 J	4.1 J

QUALIFIER KEY: "U" - Analyte not found at the listed detection limit; "J" - Estimated Result; "B" - Analyte detected in Blank; No Qualifier - Analyte found; "R" - Rejected; "NR" - Not Reported

Penta Wood
Wet Chemistry Results
September 2007 Groundwater Samples – Monitoring Wells

Field Site Identifier:		01	01	01	01	01	01	01
Field Sample Location:		MW-15	MW-16	MW-17	MW-19	MW-20	MW-21	MW-22
Sample Interval:		N/A	N/A	N/A	N/A	N/A	N/A	N/A
Matrix:		Water	Water	Water	Water	Water	Water	Water
Sample Collection Date:		09/19/2007	09/18/2007	09/19/2007	09/21/2007	09/21/2007	09/18/2007	09/18/2007
Field Sample Identification:		07CP43-31	07CP43-32	07CP43-33	07CP43-34	07CP43-35	07CP43-36	07CP43-37
Laboratory Sample Identification:		500-6695-8	500-6662-13	500-6695-9	500-6733-7	500-6733-6	500-6662-11	500-6662-14
Wet Chemistry	**Units**							
ALKALINITY, TOTAL (AS CACO3)	mg/L	250	81 J	160	190 J	230 J	110 J	110 J
CHLORIDE (AS CL)	mg/L	15	4.5	4.7	17	18	29	8.2
NITROGEN, NITRATE (AS N)	mg/L	5.7	1.2 J	5.6	0.28	0.10 U	3.7 J	2.5 J
NITROGEN, NITRATE-NITRITE	mg/L	5.7	1.2 J	5.6	0.37	0.64	3.7 J	2.5 J
NITROGEN, NITRITE	mg/L	0.020 U	0.016 J	0.020 U	0.090 J	0.77 J	0.034 J	0.019 J
SULFATE (AS SO4)	mg/L	13 J	23 J	14 J	42 J	98 J	12 J	10 J
SULFIDE	mg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
TOTAL CARBON	mg/L	1.3 J	1.3 J	1.2 J	38 J	13 J	1.2 J	1.0 J

QUALIFIER KEY: "U" - Analyte not found at the listed detection limit; "J" - Estimated Result; "B" - Analyte detected in Blank; No Qualifier - Analyte found; "R" - Rejected; "NR" - Not Reported

Penta Wood
Wet Chemistry Results
September 2007 Groundwater Samples – Monitoring Wells

Field Site Identifier:	01
Field Sample Location:	MW-26
Sample Interval:	N/A
Matrix:	Water
Sample Collection Date:	09/19/2007
Field Sample Identification:	07CP43-38
Laboratory Sample Identification:	500-6695-11

Wet Chemistry	**Units**	
ALKALINITY, TOTAL (AS CACO3)	mg/L	240
CHLORIDE (AS CL)	mg/L	25
NITROGEN, NITRATE (AS N)	mg/L	1.3
NITROGEN, NITRATE-NITRITE	mg/L	1.3
NITROGEN, NITRITE	mg/L	0.020 U
SULFATE (AS SO4)	mg/L	220 J
SULFIDE	mg/L	1.0 U
TOTAL CARBON	mg/L	0.84 J

QUALIFIER KEY: "U" - Analyte not found at the listed detection limit; "J" - Estimated Result; "B" - Analyte detected in Blank; No Qualifier - Analyte found; "R" - Rejected; "NR" - Not Reported

Penta Wood
Dissolved Gas Results
September 2007 Groundwater Samples – Residential Wells

Field Site Identifier:	01
Field Sample Location:	DW-01
Sample Interval:	N/A
Matrix:	Water
Sample Collection Date:	09/19/2007
Field Sample Identification:	07CP43-01
Laboratory Sample Identification:	725376

Dissolved Gasses	**Units**	
METHANE	µg/L	2.0 UJ

QUALIFIER KEY: "U" - Analyte not found at the listed detection limit; "J" - Estimated Result; "B" - Analyte detected in Blank; No Qualifier - Analyte found; "R" - Rejected; "NR" - Not Reported

Penta Wood
Dissolved Metal Results
September 2007 Groundwater Samples – Residential Wells

Field Site Identifier:	01
Field Sample Location:	DW-01
Sample Interval:	N/A
Matrix:	Water
Sample Collection Date:	09/19/2007
Field Sample Identification:	07CP43-01
Laboratory Sample Identification:	500-6662-16

Dissolved Metals (Filtered)	**Units**	
ARSENIC	µg/L	0.63 J
COPPER	µg/L	89
IRON	µg/L	100 UJ
MANGANESE	µg/L	2.4 J
ZINC	µg/L	1,100

QUALIFIER KEY: "U" - Analyte not found at the listed detection limit; "J" - Estimated Result; "B" - Analyte detected in Blank; No Qualifier - Analyte found; "R" - Rejected; "NR" - Not Reported

Penta Wood
Semivolatile Results
September 2007 Groundwater Samples – Residential Wells

Field Site Identifier:		01	01	01	01	01	01	01
Field Sample Location:		DW-01	RW-01	RW-01	RW-02	RW-03	RW-04	RW-05
Sample Interval:		N/A	N/A	N/A	N/A	N/A	N/A	N/A
Matrix:		Water	Water	Water, Dup	Water	Water	Water	Water
Sample Collection Date:		09/19/2007	09/18/2007	09/18/2007	09/18/2007	09/18/2007	09/18/2007	09/18/2007
Field Sample Identification:		07CP43-01	07CP43-39	07CP43-40	07CP43-41	07CP43-42	07CP43-43	07CP43-44
Laboratory Sample Identification:		500-6662-16	500-6662-6	500-6662-7	500-6662-2	500-6662-3	500-6662-4	500-6662-8
Semivolatile Organic Compounds	**Units**							
NAPHTHALENE	µg/L	0.93 R	0.93 R	0.93 R	0.93 R	0.93 R	0.93 R	1.0 R
PENTACHLOROPHENOL	µg/L	0.093 UJ	0.093 UJ	0.27 J	0.093 UJ	0.093 UJ	0.093 UJ	0.093 UJ

QUALIFIER KEY: "U" - Analyte not found at the listed detection limit; "J" - Estimated Result; "B" - Analyte detected in Blank; No Qualifier - Analyte found; "R" - Rejected; "NR" - Not Reported

Penta Wood
Volatile Results
September 2007 Groundwater Samples – Residential Wells

Field Site Identifier:		01	01	01	01	01	01	01
Field Sample Location:		DW-01	RW-01	RW-01	RW-02	RW-03	RW-04	RW-05
Sample Interval:		N/A	N/A	N/A	N/A	N/A	N/A	N/A
Matrix:		Water	Water	Water, Dup	Water	Water	Water	Water
Sample Collection Date:		09/19/2007	09/18/2007	09/18/2007	09/18/2007	09/18/2007	09/18/2007	09/18/2007
Field Sample Identification:		07CP43-01	07CP43-39	07CP43-40	07CP43-41	07CP43-42	07CP43-43	07CP43-44
Laboratory Sample Identification:		500-6662-16	500-6662-6	500-6662-7	500-6662-2	500-6662-3	500-6662-4	500-6662-8
Volatile Organic Compounds	**Units**							
BENZENE	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
ETHYLBENZENE	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
TOLUENE	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
XYLENES, TOTAL	µg/L	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U

QUALIFIER KEY: "U" - Analyte not found at the listed detection limit; "J" - Estimated Result; "B" - Analyte detected in Blank; No Qualifier - Analyte found; "R" - Rejected; "NR" - Not Reported

Penta Wood
Wet Chemistry Results
September 2007 Groundwater Samples – Residential Wells

Field Site Identifier:		01	01
Field Sample Location:		DW-01	DW-01
Sample Interval:		N/A	N/A
Matrix:		Water	Water
Sample Collection Date:		09/19/2007	09/19/2007
Field Sample Identification:		07CP43-01	07CP43-01
Laboratory Sample Identification:		500-6662-16	A7I210294005
Wet Chemistry	**Units**		
ALKALINITY, TOTAL (AS CACO3)	mg/L	250 J	250 J
CHLORIDE (AS CL)	mg/L	27	27
HARDNESS (AS CACO3)	mg/L	330 J	330 J
NITROGEN, NITRATE (AS N)	mg/L	1.5 J	1.5 J
NITROGEN, NITRATE-NITRITE	mg/L	1.5 J	1.5 J
NITROGEN, NITRITE	mg/L	0.012 J	0.012 J
SULFATE (AS SO4)	mg/L	14 J	14 J
SULFIDE	mg/L	1.0 U	1.0 U
TOTAL CARBON	mg/ll	0.92 J	0.92 J

QUALIFIER KEY: "U" - Analyte not found at the listed detection limit; "J" - Estimated Result; "B" - Analyte detected in Blank; No Qualifier - Analyte found; "R" - Rejected; "NR" - Not Reported

Penta Wood
Diesel Range Organic Results
2007 Treatment Plant Samples

	Field Site Identifier:	01	01	01	01	01	01	01
	Field Sample Location:	EFFLUENT	EFFLUENT	EFFLUENT	EFFLUENT	EFFLUENT	EFFLUENT	EFFLUENT
	Sample Interval:	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Matrix:	Waste Water	Waste Water	Waste Water	Waste Water	Waste Water	Waste Water	Waste Water
	Sample Collection Date:	01/10/2007	02/07/2007	03/14/2007	04/05/2007	05/08/2007	06/28/2007	07/17/2007
	Field Sample Identification:	07CP01-10	07CP01-13	07CP01-18	07CP01-22	07CP01-27	07CP01-38	07CP01-45
Diesel Range Organics	**Units**							
DIESEL COMPONENTS	mg/L	0.096 U	0.094 U	0.094 U	0.097 U	0.094 U	0.095 U	0.094 UJ

QUALIFIER KEY: "U" - Analyte not found at the listed detection limit; "J" - Estimated Result; "B" - Analyte detected in Blank; No Qualifier - Analyte found; "R" - Rejected; "NR" - Not Reported

Penta Wood
Diesel Range Organic Results
2007 Treatment Plant Samples

Field Site Identifier:		01	01	01	01
Field Sample Location:		EFFLUENT	EFFLUENT	EFFLUENT	EFFLUENT
Sample Interval:		N/A	N/A	N/A	N/A
Matrix:		Waste Water	Waste Water	Waste Water	Waste Water
Sample Collection Date:		08/15/2007	9/18/2007	10/17/2007	11/20/2007
Field Sample Identification:		07CP01-74	07CP01-81	08CP01-08	08CP01-38
Diesel Range Organics	**Units**				
DIESEL COMPONENTS	mg/L	0.093 U	0.093 U	0.093 U	0.097 U

QUALIFIER KEY: "U" - Analyte not found at the listed detection limit; "j" - Estimated Result; "B" - Analyte detected in Blank; No Qualifier - Analyte found; "R" - Rejected; "NR" - Not Reported

Penta Wood
2,3,7,8-Tetrachlorodibenzo-p-dioxin Results
2007 Treatment Plant Samples

Field Site Identifier:		01	01	01
Field Sample Location:		EFFLUENT	EFFLUENT	EFFLUENT
Sample Interval:		N/A	N/A	N/A
Matrix:		Waste Water	Waste Water	Waste Water
Sample Collection Date:		03/14/2007	06/28/2007	09/18/2007
Field Sample Identification:		07CP01-18	07CP01-38	07CP01-81
Dioxins and Furans	**Units**			
2,3,7,8-TETRACHLORODIBENZO-P-DIOXIN	pg/l	3.9 U	3.2 U	3.1 U

QUALIFIER KEY: "U" - Analyte not found at the listed detection limit; "J" - Estimated Result; "B" - Analyte detected in Blank; No Qualifier - Analyte found; "R" - Rejected; "NR" - Not Reported

Penta Wood
Dioxin and Furan Results
2007 Treatment Plant Samples

Field Site Identifier:	01
Field Sample Location:	EFFLUENT
Sample Interval:	N/A
Matrix:	Waste Water
Sample Collection Date:	03/14/2007
Field Sample Identification:	07CP01-18

Dioxins and Furans	Units	
Total HpCDD	pg/l	3.6 U
Total HpCDF	pg/l	2.8 U
Total HxCDD	pg/l	4.0 U
Total HxCDF	pg/l	2.6 U
Total PeCDD	pg/l	8.0 U
Total PeCDF	pg/l	3.9 U
Total TCDD	pg/l	3.9 U
Total TCDF	pg/l	2.6 U
1,2,3,4,6,7,8-HEPTACHLORODIBENZOFURAN	pg/l	2.5 U
1,2,3,4,6,7,8-HEPTACHLORODIBENZO-P-DIOXIN	pg/l	3.6 U
1,2,3,4,7,8,9-HEPTACHLORODIBENZOFURAN	pg/l	2.8 U
1,2,3,4,7,8-HEXACHLORODIBENZOFURAN	pg/l	2.4 U
1,2,3,4,7,8-HEXACHLORODIBENZO-P-DIOXIN	pg/l	4.0 U
1,2,3,6,7,8-HEXACHLORODIBENZOFURAN	pg/l	2.2 U
1,2,3,6,7,8-HEXACHLORODIBENZO-P-DIOXIN	pg/l	3.9 U
1,2,3,7,8,9-HEXACHLORODIBENZOFURAN	pg/l	2.6 U
1,2,3,7,8,9-HEXACHLORODIBENZO-P-DIOXIN	pg/l	3.7 U
1,2,3,7,8-PENTACHLORODIBENZOFURAN	pg/l	3.0 U
1,2,3,7,8-PENTACHLORODIBENZO-P-DIOXIN	pg/l	5.1 U
2,3,4,6,7,8-HEXACHLORODIBENZOFURAN	pg/l	2.5 U
2,3,4,7,8-PENTACHLORODIBENZOFURAN	pg/l	3.0 U
2,3,7,8-TETRACHLORODIBENZOFURAN	pg/l	2.6 U
2,3,7,8-TETRACHLORODIBENZO-P-DIOXIN	pg/l	3.9 U
OCTACHLORODIBENZOFURAN	pg/l	6.2 U
OCTACHLORODIBENZO-P-DIOXIN	pg/l	7.2 U

QUALIFIER KEY: "U" - Analyte not found at the listed detection limit; "J" - Estimated Result; "B" - Analyte detected in Blank; No Qualifier - Analyte found; "R" - Rejected; "NR" - Not Reported

Penta Wood
Metal Results
2007 Treatment Plant Samples

Field Site Identifier:		01	01	01
Field Sample Location:		EFFLUENT	EFFLUENT	EFFLUENT
Sample Interval:		N/A	N/A	N/A
Matrix:		Waste Water	Waste Water	Waste Water
Sample Collection Date:		03/14/2007	06/28/2007	09/18/2007
Field Sample Identification:		07CP01-18	07CP01-38	07CP01-81
Metals	**Units**			
ARSENIC	mg/L	8.8	0.010 U	0.010 U
COPPER	mg/L	2.2 J	0.010 U	0.010 U
IRON	mg/L	160	0.10 U	0.45
MANGANESE	mg/L	5,400	2.1	2.1
ZINC	mg/L	49	0.027	0.036

QUALIFIER KEY: "U" - Analyte not found at the listed detection limit; "J" - Estimated Result; "B" - Analyte detected in Blank; No Qualifier - Analyte found; "R" - Rejected; "NR" - Not Reported

Penta Wood
Pentachlorophenol Results
2007 Treatment Plant Samples

Field Site Identified:		01	01	01	01	01
Field Sample Location:		EFFLUENT	EFFLUENT	EFFLUENT	EFFLUENT	EFFLUENT
Sample Interval:		N/A	N/A	N/A	N/A	N/A
Matrix:		Waste Water	Waste Water	Waste Water	Waste Water	Waste Water
Sample Collection Date:		01/10/2007	01/25/2007	02/01/2007	02/07/2007	2/14/2007
Field Sample Identification:		07CP01-10	07CP01-11	07CP01-12	07CP01-13	07CP01-14
Laboratory Sample Identification:		250035-001	250137-001	250187-001	250218-001	250237-001
Semivolatile Organic Compounds	**Units**					
PENTACHLOROPHENOL	µg/L	0.025 J	0.096 U	0.095 U	0.098 U	0.010 U

QUALIFIER KEY: "U" - Analyte not found at the listed detection limit; "J" - Estimated Result; "B" - Analyte detected in Blank; No Qualifier - Analyte found; "R" - Rejected; "NR" - Not Reported

Penta Wood
Pentachlorophenol Results
2007 Treatment Plant Samples

Field Site Identifier:		01	01	01	01	01	01	01
Field Sample Location:		EFFLUENT	EFFLUENT	EFFLUENT	EFFLUENT	EFFLUENT	EFFLUENT	EFFLUENT
Sample Interval:		N/A	N/A	N/A	N/A	N/A	N/A	N/A
Matrix:		Waste Water	Waste Water	Waste Water	Waste Water	Waste Water	Waste Water	Waste Water
Sample Collection Date:		02/22/2007	02/28/2007	03/14/2007	03/18/2007	03/28/2007	04/05/2007	04/10/2007
Field Sample Identification:		07CP01-15	07CP01-16	07CP01-18	07CP01-20	07CP01-21	07CP01-22	07CP01-23
Laboratory Sample Identification:		250269-001	250312-001	250393-002	250417-001	250444-001	250478-001	3616-1
Semivolatile Organic Compounds	**Units**							
PENTACHLOROPHENOL	µg/L	0.098 U	0.095 U	0.095 U	0.069 J	0.095 U	0.097 U	0.093 U

QUALIFIER KEY: "U" - Analyte not found at the listed detection limit; "J" - Estimated Result; "B" - Analyte detected in Blank; No Qualifier - Analyte found; "R" - Rejected; "NR" - Not Reported

Penta Wood
Pentachlorophenol Results
2007 Treatment Plant Samples

Field Site Identifier:		01	01	01	01	01	01	01
Field Sample Location:		EFFLUENT	EFFLUENT	EFFLUENT	EFFLUENT	EFFLUENT	EFFLUENT	EFFLUENT
Sample Interval:		N/A	N/A	N/A	N/A	N/A	N/A	N/A
Matrix:		Waste Water	Waste Water	Waste Water	Waste Water	Waste Water	Waste Water	Waste Water
Sample Collection Date:		04/20/2007	04/26/2007	04/30/2007	05/08/2007	05/18/2007	05/24/2007	05/31/2007
Field Sample Identification:		07CP01-24	07CP01-25	07CP01-26	07CP01-27	07CP01-29	07CP01-30	07CP01-31
Laboratory Sample Identification:		500-3787-1	3909-1	500-3936-1	4130-1	500-4328-1	500-4408-1	4497-1
Semivolatile Organic Compounds	**Units**							
PENTACHLOROPHENOL	µg/L	0.096 U	0.095 U	0.095 U	0.095 U	0.092 U	0.095 U	0.061 J

QUALIFIER KEY: "U" - Analyte not found at the listed detection limit; "J" - Estimated Result; "B" - Analyte detected in Blank; No Qualifier - Analyte found; "R" - Rejected; "NR" - Not Reported

Penta Wood
Pentachlorophenol Results
2007 Treatment Plant Samples

Field Site Identifier:		01	01	01	01	01	01	01
Field Sample Location:		EFFLUENT	EFFLUENT	EFFLUENT	EFFLUENT	EFFLUENT	EFFLUENT	EFFLUENT
Sample Interval:		N/A	N/A	N/A	N/A	N/A	N/A	N/A
Matrix:		Waste Water	Waste Water	Waste Water	Waste Water	Waste Water	Waste Water	Waste Water
Sample Collection Date:		06/05/2007	06/15/2007	06/22/2007	06/28/2007	07/05/2007	07/09/2007	07/17/2007
Field Sample Identification:		07CP01-32	07CP01-35	07CP01-36	07CP01-38	07CP01-40	07CP01-44	07CP01-45
Laboratory Sample Identification:		4542-1	4788-1	4945-1	5036-2	5103-1	5128-4	5336-1
Semivolatile Organic Compounds	**Units**							
PENTACHLOROPHENOL	µg/L	0.093 U	0.093 U	0.093 U	0.093 U	0.093 U	0.093 UJ	0.093 UJ

QUALIFIER KEY: "U" - Analyte not found at the listed detection limit; "J" - Estimated Result; "B" - Analyte detected in Blank; No Qualifier - Analyte found; "R" - Rejected; "NR" - Not Reported

Penta Wood
Pentachlorophenol Results
2007 Treatment Plant Samples

Field Site Identifier:		01	01	01	01	01	01	01
Field Sample Location:		EFFLUENT	EFFLUENT	EFFLUENT	EFFLUENT	EFFLUENT	EFFLUENT	EFFLUENT
Sample Interval:		N/A	N/A	N/A	N/A	N/A	N/A	N/A
Matrix:		Waste Water	Waste Water	Waste Water	Waste Water	Waste Water	Waste Water	Waste Water
Sample Collection Date:		07/26/2007	08/02/2007	08/10/2007	08/15/2007	08/24/2007	08/30/2007	09/06/2007
Field Sample Identification:		07CP01-46	07CP01-72	07CP01-73	07CP01-74	07CP01-75	07CP01-76	07CP01-77
Laboratory Sample Identification:		5611-1	5748-1	5945-1	6041-1	500-6210-1	500-6303-1	500-6423-1
Semivolatile Organic Compounds	**Units**							
PENTACHLOROPHENOL	µg/L	0.096 UJ	0.10 UJ	0.10 UJ	0.094 U	0.12 J	0.10 U	0.093 U

QUALIFIER KEY: "U" - Analyte not found at the listed detection limit; "J" - Estimated Result; "B" - Analyte detected in Blank; No Qualifier - Analyte found; "R" - Rejected; "NR" - Not Reported

Penta Wood
Pentachlorophenol Results
2007 Treatment Plant Samples

Field Site Identifier:		01	01	01	01	01	01	01
Field Sample Location:		EFFLUENT	EFFLUENT	EFFLUENT	EFFLUENT	EFFLUENT	EFFLUENT	EFFLUENT
Sample Interval:		N/A	N/A	N/A	N/A	N/A	N/A	N/A
Matrix:		Waste Water	Waste Water	Waste Water	Waste Water	Waste Water	Waste Water	Waste Water
Sample Collection Date:		09/10/2007	09/18/2007	09/24/2007	10/02/2007	10/12/2007	10/17/2007	10/18/2007
Field Sample Identification:		07CP01-79	07CP01-81	07CP01-84	08CP01-01	08CP01-05	08CP01-08	08CP01-11
Laboratory Sample Identification:		500-6455-2	500-6637-2	500-6760-2	500-6921-1	500-7155-3	500-7252-3	500-7299-3
Semivolatile Organic Compounds	**Units**							
PENTACHLOROPHENOL	µg/L	0.093 U	0.093 U	0.093 U	0.093 U	0.095 UJ	0.093 U	0.093 U

QUALIFIER KEY: "U" - Analyte not found at the listed detection limit; "J" - Estimated Result; "B" - Analyte detected in Blank; No Qualifier - Analyte found; "R" - Rejected; "NR" - Not Reported

Penta Wood
Pentachlorophenol Results
2007 Treatment Plant Samples

Field Site Identifier:		01	01	01	01	01	01	01
Field Sample Location:		EFFLUENT	EFFLUENT	EFFLUENT	EFFLUENT	EFFLUENT	EFFLUENT	EFFLUENT
Sample Interval:		N/A	N/A	N/A	N/A	N/A	N/A	N/A
Matrix:		Waste Water	Waste Water	Waste Water	Waste Water	Waste Water	Waste Water	Waste Water
Sample Collection Date:		10/19/2007	10/23/2007	10/29/2007	10/30/2007	11/08/2007	11/13/2007	11/20/2007
Field Sample Identification:		08CP01-14	08CP01-17	08CP01-29	08CP01-32	08CP01-34	08CP01-36	08CP01-38
Laboratory Sample Identification:		500-7299-6	500-7391-3	500-7497-3	500-7497-6	500-7729-2	500-7848-2	500-7951-1
Semivolatile Organic Compounds	**Units**							
PENTACHLOROPHENOL	µg/L	0.093 U	0.094 UJ	0.093 U	0.093 U	0.093 U	0.025 J	15 J

QUALIFIER KEY: "U" - Analyte not found at the listed detection limit; "J" - Estimated Result; "B" - Analyte detected in Blank; No Qualifier - Analyte found; "R" - Rejected; "NR" - Not Reported

Penta Wood
Pentachlorophenol Results
2007 Treatment Plant Samples

Field Site Identifier:		01	01
Field Sample Location:		EFFLUENT	EFFLUENT
Sample Interval:		N/A	N/A
Matrix:		Waste Water	Waste Water
Sample Collection Date:		11/30/2007	12/28/2007
Field Sample Identification:		08CP01-55	08CP01-61
Laboratory Sample Identification:		500-8117-3	500-8618-3
Semivolatile Organic Compounds	**Units**		
PENTACHLOROPHENOL	µg/L	0.093 U	0.094 UJ

QUALIFIER KEY: "U" - Analyte not found at the listed detection limit; "J" - Estimated Result; "B" - Analyte detected in Blank; No Qualifier - Analyte found; "R" - Rejected; "NR" - Not Reported

Penta Wood
Semivolatile Results
2007 Treatment Plant Samples

Field Site Identifier:		01	01	01	01	01	01	01
Field Sample Location:		EFFLUENT	EFFLUENT	EFFLUENT	EFFLUENT	EFFLUENT	EFFLUENT	EFFLUENT
Sample Interval:		N/A	N/A	N/A	N/A	N/A	N/A	N/A
Matrix:		Waste Water	Waste Water	Waste Water	Waste Water	Waste Water	Waste Water	Waste Water
Sample Collection Date:		01/10/2007	02/07/2007	03/14/2007	04/05/2007	05/08/2007	06/28/2007	07/17/2007
Field Sample Identification:		07CP01-10	07CP01-13	07CP01-18	07CP01-22	07CP01-27	07CP01-38	07CP01-45
Semivolatile Organic Compounds	**Units**							
NAPHTHALENE	µg/L	1.0 U	0.95 U	0.95 U	0.95 U	0.92 U	0.95 UJ	0.94 U
PHENOL	µg/L	5.0 U	4.8 U	4.8 U	4.8 U	4.6 U	4.8 U	4.7 UJ

QUALIFIER KEY: "U" - Analyte not found at the listed detection limit; "J" - Estimated Result; "B" - Analyte detected in Blank; No Qualifier - Analyte found; "R" - Rejected; "NR" - Not Reported

Penta Wood
Semivolatile Results
2007 Treatment Plant Samples

Field Site Identifier:		01	01	01	01
Field Sample Location:		EFFLUENT	EFFLUENT	EFFLUENT	EFFLUENT
Sample Interval:		N/A	N/A	N/A	N/A
Matrix:		Waste Water	Waste Water	Waste Water	Waste Water
Sample Collection Date:		08/15/2007	09/18/2007	10/17/2007	11/20/2007
Field Sample Identification:		07CP01-74	07CP01-81	08CP01-08	08CP01-38
Semivolatile Organic Compounds	**Units**				
NAPHTHALENE	µg/L	0.95 R	0.93 U	0.93 U	0.93 U
PHENOL	µg/L	4.8 R	4.7 U	4.7 U	4.7 U

QUALIFIER KEY: "U" - Analyte not found at the listed detection limit; "J" - Estimated Result; "B" - Analyte detected in Blank; No Qualifier - Analyte found; "R" - Rejected; "NR" - Not Reported

Penta Wood
Volatile Results
2007 Treatment Plant Samples

Field Site Identifier:	01	01	01
Field Sample Location:	EFFLUENT	EFFLUENT	EFFLUENT
Sample Interval:	N/A	N/A	N/A
Matrix:	Waste Water	Waste Water	Waste Water
Sample Collection Date:	03/14/2007	06/28/2007	09/18/2007
Field Sample Identification:	07CP01-18	07CP01-38	07CP01-81
Laboratory Sample Identification:	250393-002	5036-2	500-6637-2
Volatile Organic Compounds	**Units**		
1,2,4-TRIMETHYLBENZENE	µg/L	1.0 U	1.0 U	1.0 U
1,3,5-TRIMETHYLBENZENE (MESITYLENE)	µg/L	1.0 U	1.0 U	1.0 U
BENZENE	µg/L	0.50 U	1.0 U	1.0 U
ETHYLBENZENE	µg/L	5.0 U	1.0 U	1.0 U
TOLUENE	µg/L	5.0 U	1.0 U	1.0 U
TRIMETHYL BENZENE	µg/L	1.0 U	1.0 U	1.0 U
XYLENES	µg/L L	5.0 U	2.0 U	2.0 U

QUALIFIER KEY: "U" - Analyte not found at the listed detection limit; "J" - Estimated Result; "B" - Analyte detected in Blank; No Qualifier - Analyte found; "R" - Rejected; "NR" - Not Reported

Penta Wood
Total Organic Carbon Results
2007 Treatment Plant Samples

	Field Site Identifier:	01	01	01	01	01	01	01
	Field Sample Location:	EFFLUENT	EFFLUENT	EFFLUENT	EFFLUENT	EFFLUENT	EFFLUENT	EFFLUENT
	Sample Interval:	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Matrix:	Waste Water	Waste Water	Waste Water	Waste Water	Waste Water	Waste Water	Waste Water
	Sample Collection Date:	01/10/2007	02/07/2007	03/14/2007	04/05/2007	05/08/2007	06/28/2007	07/17/2007
	Field Sample Identification:	07CP01-10	07CP01-13	07CP01-18	07CP01-22	07CP01-27	07CP01-38	07CP01-45
	Laboratory Sample Identification:	250035-001	250218-001	250393-002	250478-001	4130-1	5036-2	5336-1
Wet Chemistry	**Units**							
TOTAL CARBON	mg/L	2.1	0.91 J	1.3	0.68 J	0.43 J	0.45 J	0.59 UB

QUALIFIER KEY: "U" - Analyte not found at the listed detection limit; "J" - Estimated Result; "B" - Analyte detected in Blank; No Qualifier - Analyte found; "R" - Rejected; "NR" - Not Reported

Penta Wood
Total Organic Carbon Results
2007 Treatment Plant Samples

Field Site Identifier:		01	01	01	01
Field Sample Location:		EFFLUENT	EFFLUENT	EFFLUENT	EFFLUENT
Sample Interval:		N/A	N/A	N/A	N/A
Matrix:		Waste Water	Waste Water	Waste Water	Waste Water
Sample Collection Date:		08/15/2007	09/18/2007	10/17/2007	11/20/2007
Field Sample Identification:		07CP01-74	07CP01-81	08CP01-08	08CP01-38
Laboratory Sample Identification:		6041-1	500-6637-2	500-7252-3	500-7951-1
Wet Chemistry	**Units**				
TOTAL CARBON	mg/L	0.69 UB	0.63 UB	0.54 UB	0.59 UB

QUALIFIER KEY: "U" - Analyte not found at the listed detection limit; "J" - Estimated Result; "B" - Analyte detected in Blank; No Qualifier - Analyte found; "R" - Rejected; "NR" - Not Reported

Penta Wood
Chloride and Total Suspended Solids Results
2007 Treatment Plant Samples

Field Site Identifier:		01	01	01	01
Field Sample Location:		EFFLUENT	EFFLUENT	EFFLUENT	EFFLUENT
Sample Interval:		N/A	N/A	N/A	N/A
Matrix:		Waste Water	Waste Water	Waste Water	Waste Water
Sample Collection Date:		03/14/2007	06/28/2007	07/09/2007	09/18/2007
Field Sample Identification:		07CP01-18	07CP01-38	07CP01-44	07CP01-81
Wet Chemistry	**Units**				
CHLORIDE (AS CL)	mg/L	17	22 UB	NR	74
Total Suspended Solids (TSS)	mg/L	5.0 U	5.0 U	1.5 J	5.0 U

QUALIFIER KEY: "U" - Analyte not found at the listed detection limit; "J" - Estimated Result; "B" - Analyte detected in Blank; No Qualifier - Analyte found; "R" - Rejected; "NR" - Not Reported

Appendix B

Natural Attenuation Data

Pentawood Products Site
Natural Attenuation Trend Data
Anuual Groundwater Sampling

Well	Sample Date	Temp. (C)	Specific Cond. (umhos/cm²)	DO (mg/L)	DO (%)	pH	ORP (mV)	Turbidity (ntu)	Nitrate (mg/L)	Dissolved Manganese (mg/L)	Dissolved Iron (mg/L)	Sulfate (mg/L)	Methane (mg/L)	PCP (ug/L)	Chloride (mg/L)
DW-01	9/24/2003								1.48	<0.005	<0.05	<2	<0.5	<0.05	66.9
DW-01	5/31/2005								1.5 J	<0.004 J	<0.05 J	6.5	<0.002	0.039 J	29 J
DW-01	5/10/2007								1.8	<0.01	<0.100	17 J	<0.002	0.074 J	29
DW-01	9/19/2007								1.5 J	0.0024 J	<0.100	14 J	<0.002	<0.093	27
MW-01	10/9/1997	8.46	475	11.23	96.2	7.32	171.0		6.5	NT	<0.02	6.3	<0.01	2.0	18
MW-01	4/5/2000	8.56	416	10.34	86.5	7.14	290.6		1.6	<0.002	<0.05	2.5	0.0003	<0.5	8.7
MW-01	4/24/2001	8.69	431	9.83	84.6	7.08	168.7		6.5	<0.015	<0.025	13.0	<0.00011	<0.1	24
MW-01	9/11/2001	10.18	370	10.63	NR	7.00	235.8		2.6	0.001	<0.035	<8.2	<0.01	0.5	10
MW-01	5/14/2002	8.89	541	9.68	83.6	7.17	113.7		2.7	0.005	<0.011	7.8		0.1	9
MW-01	8/6/2002	8.82	439	NR	89.2	7.33	241.1		<0.15	0.00095 B	<0.011	7.9	<0.01	0.1	7
MW-01	4/29/2003	9.03	383	3.03	26.5	7.13	151.8		2.6	<0.005 J	<0.025	10.0	<0.0005	<0.1 J	4.3
MW-01	9/24/2003	9.22	349	10.23	89.2	7.16	322.6	53.2	2.61	0.036	0.1 J	<2	<0.0005	0.1	3.3
MW-01	5/4/2004	9.15	314	–	93.8	7.05	217.0		2.1 J	15.0 R	790 R	2.0 R		1.06 J	4.3 R
MW-01	9/21/2004	10.05	279	10.89	97.1	7.07	91.1	160	1.8 J	2.60 J	838.0	5.2 J		0.3	2.7
MW-01	5/10/2005	9.30	540	11.68	102.2	7.08	190.8	155	1.7 J	<0.01	<0.05	14 R	<0.002	0.1	3.6 J
MW-01	9/29/2005	8.96	282	12.12	105.1	7.15	154.6	217	1.9	0.0038 J	<0.05	16.0	<0.002	0.1	6.2
MW-01	5/31/2006	10.76	252	9.33	94.0	7.62	156.3	85	1.6 J	<0.01	<0.05	17.0	<0.002	0.049 J	2.3 J
MW-01	9/25/2006	Well Dry							Well Dry						
MW-01	5/8/2007	8.95	274	9.47	82.5	6.99	87.8	109	1.9	0.0063 J	<0.100	15 J	<0.002	0.11 J	2.2 J
MW-01	9/18/2007	9.81	274	11.33	100.6	6.74	180.5	67	3 J	<0.01	<0.100	12 J	<0.002	<0.093	9.4
MW-02	10/9/1997	9.49	143	8.82	77.2	6.42	274.1		1.1	NT	<0.02	17.0	<0.01	<1.0	4
MW-02	4/5/2000	9.47	111	9.59	81.4	6.85	305.8		<0.1	0.003	<0.05	58.3	0.0003	<0.5	1
MW-02	9/12/2001	12.00	172	11.50	99.8	7.62	96.9		2.3	0.057	<0.035	10	<0.01	0.51	6.2
MW-02	8/6/2002	9.96	128	6.31	NR	5.41	380.5		<0.15	0.018	0.0	10.0	<0.01	0.1	3
MW-02	9/24/2003	9.85	172	7.07	62.8	6.19	326.2	Off Scale	2.02	0.443	3.03	3 J	<0.0005	0.28	1 J
MW-02	9/21/2004	10.29	319	1.17	10.7	6.01	182.6	Off Scale	1.4 J	0.0222 J	25800.00	4.0 R		1.26	12 J
MW-02	9/28/2005	10.27	358	8.95	88.0	6.26	156.2	Off Scale	<0.1	0.0093 J	0.07	27.0	<0.002	2.2 J	6
MW-02	9/26/2006	11.03	345	2.44	22.5	6.28	205.0	Off Scale	0.12	<0.0026	<0.05	20.0	<0.002	2.3	1.6 J
MW-02	9/19/2007	10.00	350	7.18	65.3	5.95	200.3	Off Scale	0.22 J	0.0065 J	<0.100	16 J	<0.002	3.7	3.6
MW-03	10/8/1997	10.34	696	3.52	31.5	6.91	38.4		4.4	0.011	0.3	16.0	<0.01	<1.0	42
MW-03	4/4/2000	Parameters not measured							2.8	0.010	0.5	12.5	0.0016	<0.6	64
MW-03	4/25/2001	10.27	1039	3.77	33.8	6.83	169.1		4.42	0.008	0.1	11.0	NT	<0.11	47
MW-03	9/13/2001	11.53	1118	16.44	NR	6.93	99.0		4	0.031	0.9	14.0	<0.01	0.093	58
MW-03	8/7/2002	10.36	1007	4.50	NR	6.74	165.1		<0.15	0.011	0.2	16.0	<0.01	0.1	69
MW-03	9/23/2003	10.32	873	5.68	50.9	7.06	147.3	0.65	4.43	0.008 J	<0.001	<2	0.0025	0.31	52.4
MW-03	9/21/2004	10.70	1071	0.38	3.4	6.80	87.2	10.6	3.5 J	4.99 J	278.0	8.9 R		0.37	62 J
MW-03	9/28/2005	10.58	948	24.95	(*)	6.82	242.6	25.9	3.3	0.0067 J	0.1	24.0	<0.002	0.2 J	62.0
MW-03	9/25/2006	Well Dry							Well Dry						
MW-03	9/20/2007	Well Dry							Well Dry						
MW-04	10/9/1997	9.61	228	1.09	8.0	8.41	-137.9		<0.1	NT	0.04	6.3	0.139	<1.0	7.3
MW-04	4/4/2000	9.43	237	1.38	NR	8.49	NR		<0.1	0.047	<0.05	10.8	0.0008	<0.5	9.6
MW-05	10/10/1997	10.68	887	0.38	3.4	6.24	28.8		<0.1	NT	4.9	15.0	<0.01	28000.0	50
MW-05	4/7/2000	8.76	737	4.81	39.3	6.03	119.4		<0.1	3.350	3.4	34.3	0.0009	20600.0	49
MW-05	4/26/2001	12.29	1018	3.71	36.0	6.40	-39.7		<0.13	11.300	7.6	28.0	NT	20600.0	42
MW-05	9/13/2001	11.45	698	10.19	97.0	6.80	-68.6		0.17	8.500	4.1	22.0	<0.01	6300	29
MW-05	8/7/2002	11.80	589	5.02	NR	6.15	35.2		<0.15	7.840	7.9	21.0		510.0	26
MW-05	9/25/2003	10.60	559	2.99	27.0	6.54	-21.3		<0.05	8.320	13.4	20.0	0.00047 J	1100.0	22.1
MW-05	9/22/2004	11.80	749	8.43	82.8	6.53	-98.5	56.8	0.01 R	5,650 J	30.5	24 R		194.0	29 J
MW-05	9/28/2005	11.13	627	3.27	30.3	6.47	-60.4	0.98	<0.1	7.6	19.0	35.0	0.0230	1100 J	18.0
MW-05	9/26/2006	11.49	736	4.79	46.5	6.64	221.0	0.72	<0.1	8.0	23.0	27.0	0.0087 J	460	16.0
MW-05	9/20/2007	11.60	583	2.95	28.8	6.53	-68.9	0.80	<0.1 U	7.6	25.0	39 J	0.0098	31.0	13.0
MW-06S	10/9/1997	11.26	792	5.25	48.0	6.21	232.1		4.5	NT	0.02	0.9	<0.01	<1.0	72
MW-06S	4/7/2000	Not measured. Sampled for VOCs only													
MW-06S	4/26/2001	12.03	453	2.78	26.7	5.92	142.2		0.87	0.347	<0.025	12	NT	3	14
MW-06S	9/12/2001	Not measured due to product in the well.							1.1	0.8	<0.035	16	<0.01	1.1	12

Pentawood Products Site
Natural Attenuation Trend Data
Anuual Groundwater Sampling

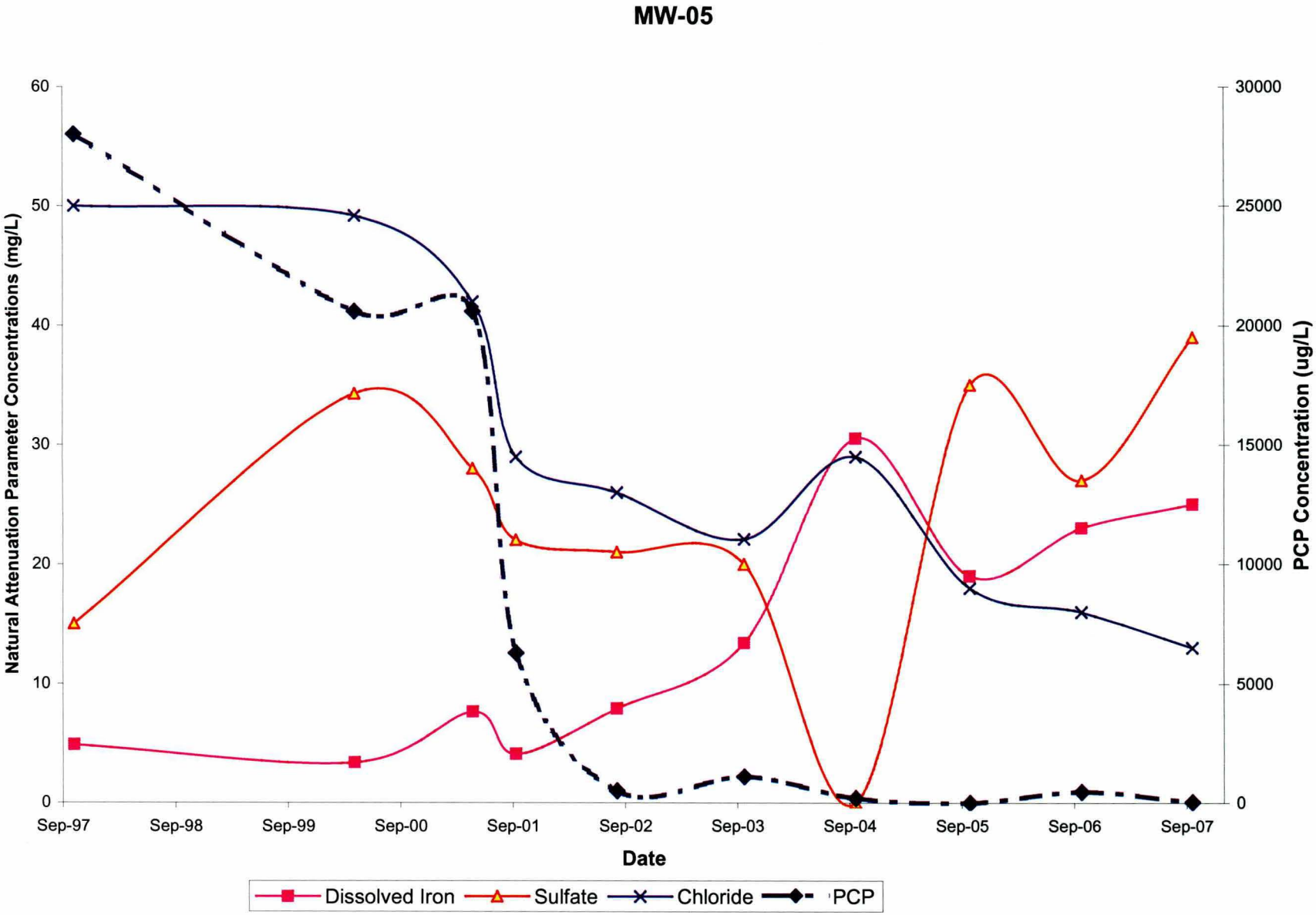
Well	Sample Date	Temp. (C)	Specific Cond. (umhos/cm²)	DO (mg/L)	DO (%)	pH	ORP (mV)	Turbidity (ntu)	Nitrate (mg/L)	Dissolved Manganese (mg/L)	Dissolved Iron (mg/L)	Sulfate (mg/L)	Methane (mg/L)	PCP (ug/L)	Chloride (mg/L)
MW-06S	8/7/2002	12.75	583	NR	41.4	6.08	77.8		<0.15	1.790	3.33	18	0.2700	88 B	17
MW-06S	9/25/2003	Not measured due to product in the well.							1.01	0.961	1.10	17	0.1300	0.33	23.9
MW-06S	9/27/2006	CAMU wells not measured							3.9	0.590	<0.05	18	0.0035 J	0.21	18.0
MW-06S	9/20/2007	10.81	569	6.24	57.0	5.86	86.9		4.7	0.2	0.51	34 J	0.003	0.099	30
MW-07	10/14/1997	10.13	709	8.23	73.0	6.86	6.0		4.9	NT	0.62	6.0	<0.01	<1.0	7.6
MW-07	4/4/2000	9.87	693	5.82	51.5	7.01	156.1		2.7	0.026	0.36	6.1	0.004	<0.5	4.8
MW-07	4/25/2001	12.60	721	7.54	71.2	6.89	127.5		3.6	0.007	0.15	6.5	0.0047	<0.1	8.4
MW-07	9/11/2001	11.04	824	8.36	74.5	6.27	208.0		3	0.0044	0.23	10	0.012	0.083	23
MW-07	8/7/2002	12.68	812	NR	93.7	6.71	256.3		<0.15	0.004 B	0.305	10	<0.01	0.03	21
MW-07	9/24/2003	10.38	680	6.85	61.6	6.90	98.7	1.97	2.97	<0.005	0.09 J	<2	0.0049	0.044 J	12.2
MW-07	9/22/2004	13.90	736	7.89	77.5	6.71	35.2	14.5	3.4 J	9.75 J	1640 J	6.8 R		5.75	7.2 J
MW-07	9/27/2005	10.44	789	8.01	71.9	5.53	146.0	6.97	1.8	0.016	0.88	130 J	<0.002 J	<0.12	18
MW-07	9/27/2006	11.16	799	5.47	69.1	6.77	220.1	–	1.8	0.068 J	<0.05	110	0.0043 J	0.087 J	15
MW-07	9/20/2007	10.55	771	7.43	67.2	6.69	120.5	(off scale)	1.5 J	0.022	0.26	170 J	0.0037	<0.093	16
MW-08	10/14/1997	9.73	363	4.28	37.2	7.93	12.2		1.4	NT	0.148	4.5	0.0365	<1.0	4.2
MW-08	4/5/2000	10.07	295	3.78	33.5	6.91	252.3		3.5	0.0053	<0.05	6.5	0.0072	<0.5	6.26
MW-08	4/26/2001	11.08	358	5.50	52.3	7.94	151.3		1.52	0.027	<0.025	7.47	0.0116	0.2	3.25
MW-08	9/11/2001	10.49	386	4.08	NR	7.77	29.3		1.5	0.018	0.07	<7.6	<0.01	0.062	3.8
MW-08	8/8/2002	11.80	375	NR	75.2	7.56	160.9		<0.15	0.0053 B	0.011 B	6	<0.01	<0.04	4.2
MW-08	9/25/2003	10.67	414	6.20	57.8	7.79	125.4	4.15	2.6	0.006 J	<0.05	<2	0.0092	<0.11	11
MW-08	9/23/2004	11.89	449	5.50	52.8	7.14	11.0	2.99	2.4 J	12.0 J	256	5.8 J	3.75 J	1.94	15
MW-08	9/28/2005	11.10	407	8.25	71.0	7.56	195.2	52.2	2.0 J	0.016	0.13	19	0.0026	0.031 J	20
MW-08	9/25/2006	Well Dry							Well Dry						
MW-08	9/20/2007	11.86	543	4.67	43.9	7.34	-50.4	28.0	1.5	0.013	0.21	76 J	<0.002	<0.093	21
MW-09	10/8/1997	10.59	171	6.30	54.9	5.63	217.6		4.2	NT	<0.0001	3.4	<0.01	<1.0	45
MW-09	4/5/2000	9.65	153	6.36	44.7	5.78	321.7		1.97	0.0217	<0.05	8.46	0.000396	0.6	3.15
MW-09	4/23/2001	9.62	172	5.21	43.1	5.72	162.7		2.46	0.034	<0.025	27	<0.00012	0.12	3.22
MW-09	9/12/2001	11.23	206	5.75	NR	5.54	309.8		3.3	0.016	0.11	<6.8	<0.01	0.76	6.5
MW-09	8/6/2002	9.21	253	1.96	17.3	5.27	391.9		<0.15	0.0063 B	<0.011	22	<0.01	0.54	11
MW-09	9/25/2003	9.22	206	3.53	34.3	5.62	278.7	73.3	2.36	0.016	0.24	24	<0.0005	2.3	4.4
MW-09	9/22/2004	11.91	228	4.99	47.5	5.28	148.1	5.93	1.8 J	8.51 J	0.24 J	26 R	<10.0 J	2.92	3.2 J
MW-09	9/27/2005	10.45	168	(*)	–	4.33	333.6	0.76	1.9 J	0.0054 J	<0.05	20	<0.002 J	0.57	2.6
MW-09	9/25/2006	Well Dry							Well Dry						
MW-09	9/21/2007	9.85	199	7.20	65.2	5.24	239.5	1.50	3.8	0.0041 J	<0.100	15 J	<0.002	0.37	2.6
MW-10	10/15/1997	10.88	803	0.38	3.4	6.83	-33.2		4.9	NT	0.00219	13	0.0135	3400	35
MW-10	4/6/2000	10.76	988	0.47	4.2	6.82	27.4		1.72	1.59	0.1159	13.8	0.003067	9530	55.9
MW-10	4/26/2001	12.31	1029	4.52	42.8	6.89	-103.5		0.18	2.38	5.65	22	NT	22800	48
MW-10	9/12/2001	11.18	1188	6.55	63.1	6.89	-71.1		0.13	3.2	2.4	23	<0.01	21000	61
MW-10	8/7/2002	14.24	1010	NR	60.9	6.30	-147.8		<0.15	2.54	10.7	20	0.011	22000	56
MW-10	10/1/2003								<0.05	1.85	2.59	3	0.00062	9000	22
MW-10	9/23/2004	Not measured due to product in the well							0.0018 J	1.81	0.0241	18	<10.0	38000	38
MW-10	9/29/2005	Well Dry							Well Dry						
MW-10	9/27/2006	CAMU wells not measured							<0.1	2.6	0.12	24	<0.002	23000 J	14
MW-10	9/20/2007	Not measured due to product in the well							0.68	2.7	0.55	25 J	0.0024	1700	20
MW-10S	10/15/1997	13.18	339	10.49	100.0	7.55	135.6		<0.1	NT	0.0000454	23	<0.01	12000	38
MW-10S	4/7/2000	9.41	599	5.02	41.5	6.37	331.6		<100	10.1	<0.05	138	0.001567	56100	53
MW-10S	4/25/2001	Not measured due to product in the well							1.5	6.03	11.30	8.6	0.0006	49000	11
MW-10S	9/12/2001	Not measured due to product in the well							4.7	7.60	0.048	13	<0.01	82000	10
MW-10S	8/7/2002	13.62	431	NR	66.1	6.31	303.8		0.11	7.07	0.0673	14	<0.01	390	10
MW-10S	9/25/2003	Not measured due to product in the well							3.41	5.9	<0.05	2	<0.0005	2200	6.7
MW-10S	9/22/2004	Not measured due to product in the well							3.6 J	3740 J	0.0227 J	15 R	<10.0 J	9490	24 J
MW-10S	9/29/2005	Not measured due to product in the well							2.0 J	3.9	<0.05	120 J	<0.002	<0.11	16
MW-10S	9/27/2006	Not measured due to product in the well							1.2	2.5	<0.05	79	<0.002	2700 J	8.6
MW-10S	9/20/2007	Not measured due to product in the well							1.3	1.3	<0.100	69 J	<0.002	24	8.7
MW-11	10/15/1997	13.98	398	4.86	47.2	7.94	144.3		3.4	NT	<0.0001	12	<0.01	<1.0	7.5

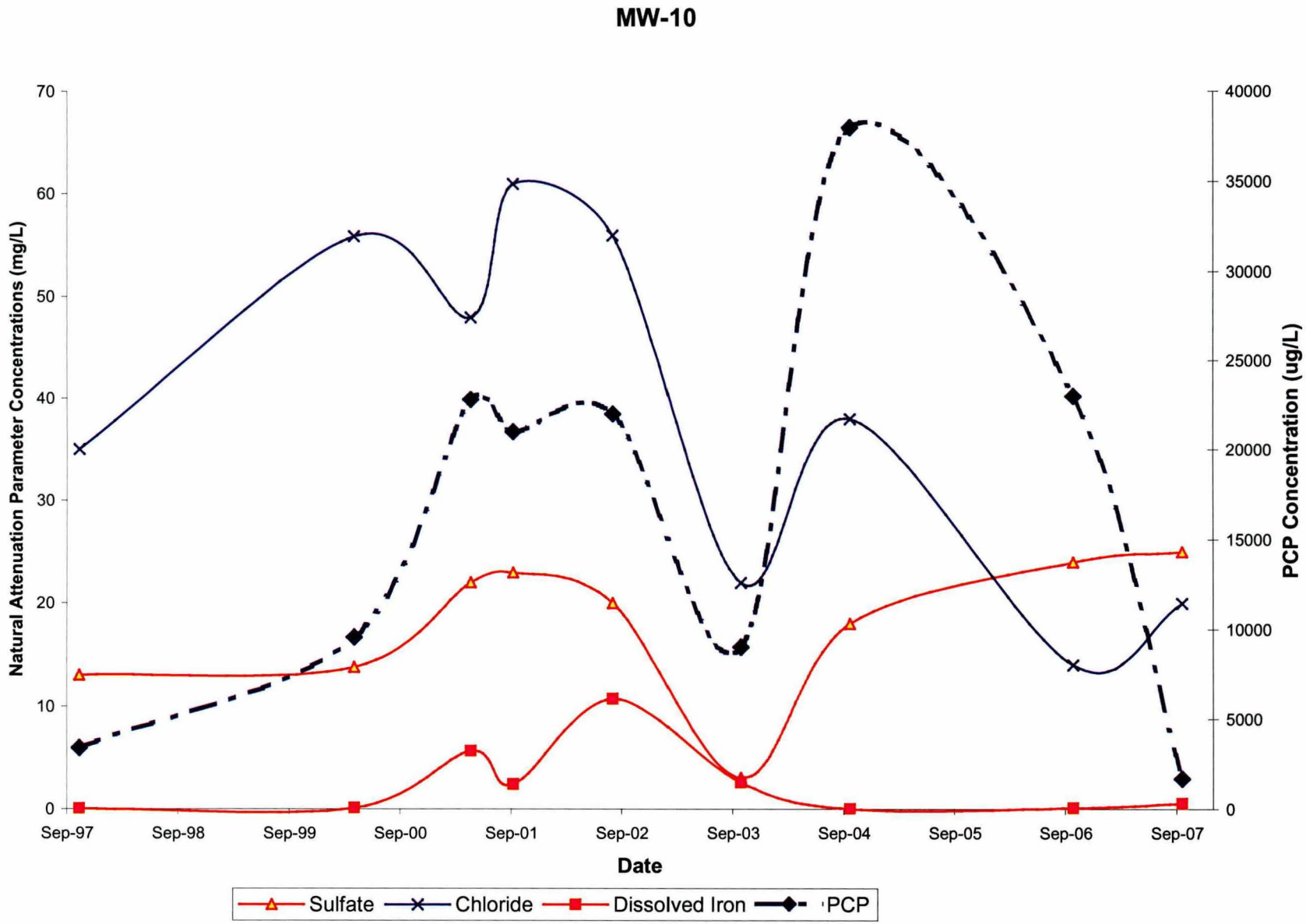
Well	Sample Date	Temp. (C)	Specific Cond. (umhos/cm^2)	DO (mg/L)	DO (%)	pH	ORP (mV)	Turbidity (ntu)	Nitrate (mg/L)	Dissolved Manganese (mg/L)	Dissolved Iron (mg/L)	Sulfate (mg/L)	Methane (mg/L)	PCP (ug/L)	Chloride (mg/L)
MW-11	4/4/2000	13.24	427	6.57	61.9	7.80	215.5		3.09	<0.002	<0.05	9.41	0.000138	<0.6	6.98
MW-11	4/4/2001	12.98	337	6.98	67.6	7.86	138.5		3.74	<0.015	<0.025	3.48	<0.00011	<0.11	6.25
MW-11	9/10/2001	13.13	414	9.09	NR	7.77	100.0		3.1	0.00045	<0.035	<7.4	<0.010	0.091	8
MW-11	8/6/2002	13.12	455	5.37	NR	7.58	240.6		<0.15	0.0012 B	<0.011	7.6	<0.01	<0.04	7.8
MW-11	9/23/2003	12.66	396	6.29	60.7	7.81	245.9	11.3	2.94	<0.005	<0.05	<2	<0.0005	<0.11	6.7
MW-11	9/21/2004	12.15	494	0.48	4.4	7.64	159.3	7.76	3.0 J	1.40 J	15.6	6.2 J	<10.0	0.0656	9
MW-11	9/29/2005	11.55	502	8.12	96.9	7.26	177.2	0.32	2.4 J	0.003 J	<0.05	9.7	<0.002	740 J	14
MW-11	9/27/2006	11.91	490	--	53.8	7.82	159.2	0.16	0.53 J	<0.01 J	<0.05 J	8.8 J	<0.002 J	<0.11	16 J
MW-11	9/20/2007	11.83	520	5.05	47.5	7.54	75.7	0.28	2.4	<0.01	<0.100	19 J	<0.002	<0.093	20
MW-12	10/15/1997	10.16	1044	2.86	25.0	6.93	41.2		<0.1	NT	0.000267	15	<0.01	5000	48
MW-12	4/6/2000	10.10	1097	0.63	5.6	6.89	169.9		0.483	1.59	0.1128	11.9	0.001553	10300	54.5
MW-12	4/6/2001	Parameters not measured							0.43	1.57	0.131	16	0.048	1500	48
MW-12	9/13/2001	11.02	1142	3.95	36.7	6.84	22.2		<0.53	1.4	0.74	16	<0.01	18000	47
MW-12	5/14/2002	10.28	933	0.75	7.0	6.72	110.0		0.67	1.68	<0.011	17		4300	40
MW-12	8/7/2002	12.21	920	NR	45.9	6.69	150.0		0.46	1.6	0.105	15	<0.01	6400	37
MW-12	4/29/2003	10.95	982	5.24	47.2	6.80	126.1		0.8	1.56	<0.025	20	<0.05	3000	31
MW-12	9/23/2003	10.89	864	3.07	27.8	6.62	306.1	0.54	1.17	1.53	<0.05	<2	0.00049 J	10000	30.8
MW-12	5/4/2004	10.64	897	7.50	71.7	7.15	126.2		1.1 J	1480 R	52.7	14 R	1.34 J	11200 J	29
MW-12	9/22/2004	13.49	939	3.87	37.6	6.77	95.6	0.83	1.1 J	1230 J	53.9	12 R	<10.0 J	9060 J	26 J
MW-12	5/12/2005	11.24	1774	2.79	26.4	6.88	176.6	0.46	1.3 J	1.4	<0.05	16 R	<0.002	8300 J	23 J
MW-12	9/27/2005	11.67	760	0.70	6.4	6.56	169.3	4.28	1.1 J	1.3	<0.05	26 J	<0.002 J	8500 J	20
MW-12	6/7/2006	12.10	788	4.85	38.1	6.76	175.9	2.13	2.1 J	1.1 J	0.05 R	32	<0.002	6100 J	21 J
MW-12	9/26/2006	12.39	872	--	41.5	7.07	214.1	1.29	1.9 J	1.2 J	<0.05	15 J	<0.002 J	3100	14 J
MW-12	5/9/2007	12.15	771	--	--	6.60	155.5	0.58	2.4	1.1	<0.100	37 J	<0.002	3000 J	13
MW-12	9/19/2007	11.85	737	3.19	30.6	6.79	144.8	1.27	2.8	0.82	<0.100	29 J	<0.002	1100	14
MW-13	10/8/1997	12.79	185	6.00	54.1	6.19	206.7		1.3	0.000027	0.0000067	1.4	<0.01	0.7	2.7
MW-13	4/5/2000	9.67	189	8.29	51.5	5.49	296.7		<100	0.112	<0.05	431	0.0003	0.8	4.4
MW-13	4/23/2001	9.08	140	3.44	26.8	5.59	207.9		1.8	0.110	<0.025	35	<0.00012	0.2	3.5
MW-13	9/10/2001	10.69	203	NR	NR	5.54	196.0		2.5	0.027	0.052	<7.5	<0.01	0.69	5.4
MW-13	8/5/2002	11.49	223	5.36	48.3	5.38	333.1		<0.15	0.045	1.31	8.4	<0.01	0.64	6.8
MW-13	9/23/2003	11.16	195	3.50	32.3	5.80	317.0	432	1.86	0.182	0.96	7	<0.0005	2.9	5.1
MW-13	9/21/2004	11.13	208	1.57	13.8	5.60	229.7	151	2.4 J	3.67 J	<0.124 J	6.4 R	<10.0 J	4.67	6.5 J
MW-13	9/27/2005	12.48	168	(*)	--	5.19	335.1	221	0.6	0.0071 J	<0.05	19	<0.002 J	0.85	3.1
MW-13	9/25/2006	Well Dry							Well Dry						
MW-13	9/18/2007	11.42	163	7.33	69.0	5.39	311.2		0.31 J	0.0063 J	<0.100	29 J	<0.002	0.53	2.9
MW-14	10/9/1997	9.32	252	6.43	56.2	8.09	108.9		1.6	NT	<0.0001	2.4	<0.01	<1.0	8.0
MW-14	4/6/2000	9.10	283	6.92	60.0	7.42	257.3		2.2	<0.002	<0.05	4.1	0.0002	<0.5	15.7
MW-15	10/16/1997	9.29	409	4.49	39.1	8.22	149.8		4.1	NT	0.00001	6.3	<0.01	<1	6.5
MW-15	4/4/2000	8.08	483	10.72	85.1	7.69	284.1		3.5	<0.002	<0.05	10	0.0003	<0.5	12.3
MW-15	4/25/2001	11.79	675	8.73	81.3	7.73	179.4		4.0	<0.015	<0.025	3	<0.0001	<0.11	15.0
MW-15	9/12/2001	9.74	548	9.80	NR	8.00	153.3		3.7	0.000	<0.035	<4.5	<0.01	0.077	17.0
MW-15	8/6/2002	10.24	508	NR	101.4	7.72	285.7		<0.15	<0.00042	<0.011	5	<0.01	<0.04	16.0
MW-15	9/23/2003	9.74	483	9.14	81.7	7.90	213.6	26.1	3.8	<0.005	<0.05	<2	<0.0005	<0.1	17.4
MW-15	9/21/2004	9.85	514	8.49	77.4	7.55	73.5	4.11	3.2 J	0.976 J	36.70	3.9 J	<10.0	0.3	16.0
MW-15	9/29/2005	11.44	580	10.25	89.3	7.58	163.8	1.50	4.2 J	0.0016 J	<0.05	6	<0.002	<0.11	17.0
MW-15	9/27/2006	11.95	607	--	89.5	7.84	118.3	3.68	4.7 J	<0.002 B	<0.05 J	5.9 J	<0.002 J	< 0.11	14 J
MW-15	9/19/2007	12.75	574	11.08	106.6	7.01	197.0	1.50	5.7	<0.01	<0.100	13 J	<0.002	<0.1	15
MW-16	10/14/1997	9.86	409	8.57	74.8	6.82	99.4		3.2	NT	0.00002	8.10	<0.01	<1	6.1
MW-16	4/6/2000	9.77	169	8.16	70.0	6.63	310.9		3.9	1.69	<0.05	24.1	<0.001068	<0.5	6.5
MW-16	4/26/2001	10.46	1102	4.72	43.2	6.81	75.6		8.7	0.009	0.03	29.0	<0.00012	<0.11	3.6
MW-16	9/10/2001	Parameters not measured							5.8	0.00082	<0.035	11.0	<0.01	0.17	1.8
MW-16	8/6/2002	11.70	247	10.86	NR	6.11	331.3		<0.15	0.0091 B	0.08	13.0	<0.01	0.0	2.0
MW-16	9/23/2003	10.97	216	10.27	93.2	6.34	349.1	29.0	3.5	<0.005	<0.05	3 J	<0.0005	0.089 J	6.2
MW-16	9/21/2004	10.68	222	0.07	0.6	6.49	173.9	37.4	2.1 J	0.617 J	0.025	5.5 J	<10.0	0.1	3.7
MW-16	9/29/2005	10.48	373	11.12	97.6	6.79	233.4	12.8	1.5	0.0021 J	<0.05	71 J	<0.002	<0.11	11.0
MW-16	9/26/2006	10.69	278	9.33	87.7	6.45	232.3	51.80	1.2 J	<0.00059 B	<0.05 J	32 J	<0.002 J	0.046 J	4.1 J

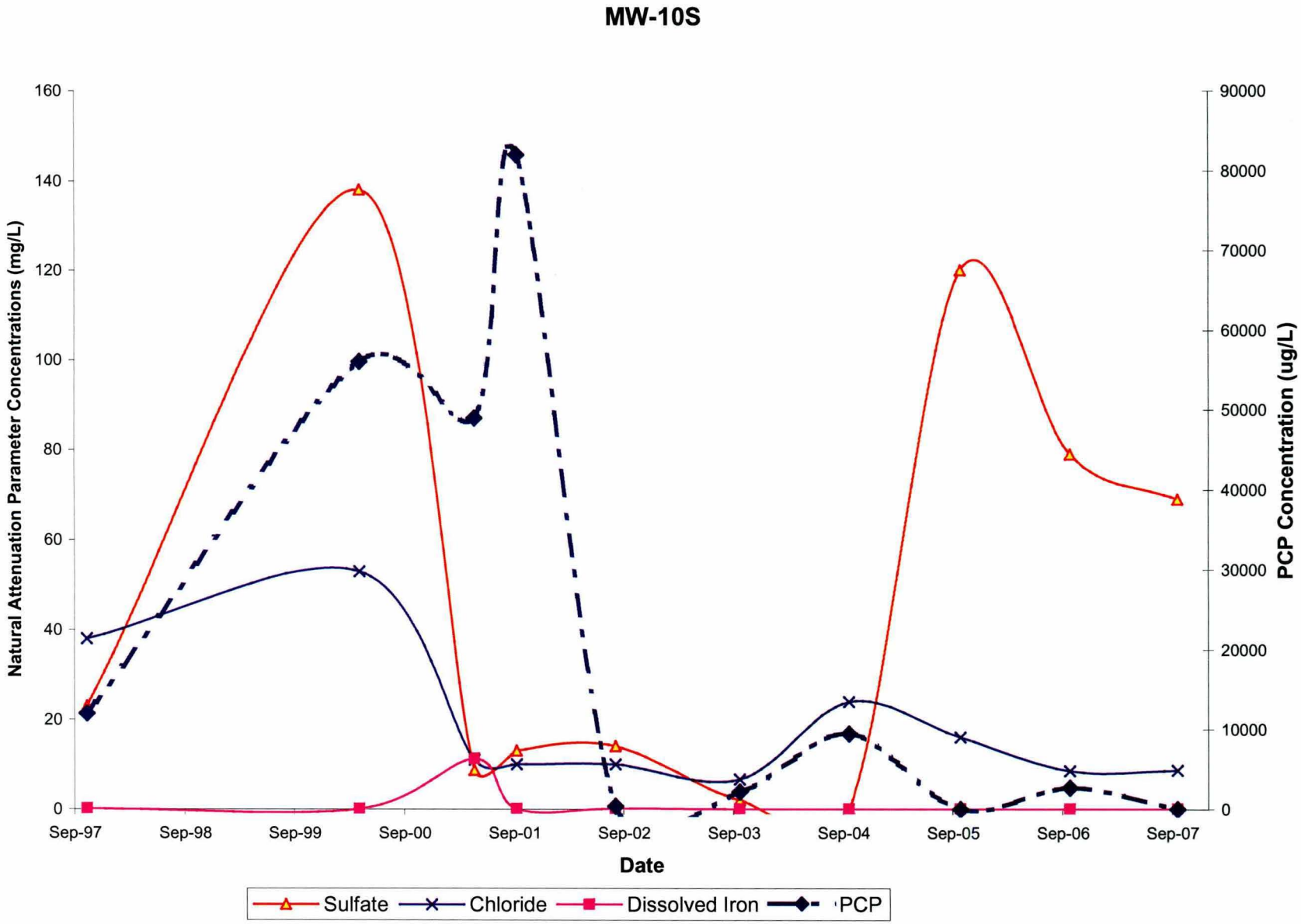
Well	Sample Date	Temp. (C)	Specific Cond. (umhos/cm²)	DO (mg/L)	DO (%)	pH	ORP (mV)	Turbidity (ntu)	Nitrate (mg/L)	Dissolved Manganese (mg/L)	Dissolved Iron (mg/L)	Sulfate (mg/L)	Methane (mg/L)	PCP (ug/L)	Chloride (mg/L)
MW-16	9/18/2007	10.91	210	11.55	105.1	5.89	318.4		1.2 J	<0.01	<0.100	23 J	<0.002	0.2	4.5
MW-17	10/15/1997	9.26	399	4.53	39.0	7.89	147.2		4.1	NT	<0.0001	10	<0.01	<1	4.8
MW-17	4/6/2000	9.15	438	4.81	41.8	7.73	254.9		4.2	<0.002	<0.05	<3	0.0001	<0.5	4.9
MW-17	4/26/2001	10.38	412	9.64	85.7	7.77	58.6		5.0	<0.015	<0.025	6.8	NT	0.7	4.1
MW-17	9/11/2001	11.44	457	6.96	62.9	7.49	262.0		4.4	<0.00027	0.31	<9.3	<0.01	<0.059	4.8
MW-17	8/8/2002	12.88	425	NR	65.8	7.64	204.5		<0.15	<0.00042	<0.011	7.4	<0.01	0.032	4.6
MW-17	9/25/2003	9.80	405	6.45	57.3	7.80	206.0	358	5.1	<0.005	<0.05	<2	<0.0005	0.46	4.4
MW-17	9/22/2004	11.02	498	9.13	87.0	7.57	150.5	8.23	4.8 J	0.045 J	0.0139 J	8.6 R	<10.0 J	2.82	4.1 J
MW-17	9/27/2005	11.94	368	(*)	–	6.31	325.4	0.23	5.1 J	<0.01	<0.05	7.8	<0.002 J	0.054 J	3.9
MW-17	9/26/2006	11.74	429	–	61.9	7.75	222.0	1.05	5.5 J	<0.01 J	<0.05 J	6.5 J	<0.002 J	<0.11	2.9 J
MW-17	9/19/2007	10.42	385	10.15	92.6	7.60	113.7	0.30	5.6	<0.01	<0.100	14 J	<0.002	<0.099	4.7
MW-18	10/10/1997	11.51	777	1.03	9.2	6.13	-12.1		<0.1	NT	0.03	11.0	<0.01	8800	49
MW-19	10/16/1997	8.43	662	12.11	103.4	8.23	133.6		3.8	NT	<0.0001	19	<0.01	8900	47
MW-19	4/7/2000	7.80	650	5.02	40.3	6.75	323.2		7.0	<0.002	<0.05	90	0.0003	11000	37.4
MW-19	4/7/2001	Not measured due to product in the well.							3.37	1.79	<0.025	47	NT	25600	39
MW-19	9/12/2001	Not measured due to product in the well.							1.3	1.8	0.071	<9.7	0.0160	400000	19
MW-19	5/13/2002	Not measured due to product in the well.							2	2.07	<0.011	16		14000	33
MW-19	8/8/2002	Not measured due to product in the well.							0.16	3.11	0.218	16	<0.01	11000	22
MW-19	4/29/2003	Not measured due to product in the well.							3	3.59	<0.025	27	0.0024	4900	20
MW-19	9/25/2003	Not measured due to product in the well.							2	4.47	0.05 J	90	0.0057	15000	17.5
MW-19	5/4/2004	Not measured due to product in the well.							0.71 J	3.36	0.031	16 R	1.13 J	70000 J	25.0
MW-19	9/22/2004	Not measured due to product in the well.							1.5 J	2.65	<0.124	23 R	<10.0 J	111000	15 J
MW-19	5/10/2005	Not measured due to product in the well.							0.76 J	2.3	<0.05	29 R	<0.002	45000 J	18 J
MW-19	9/29/2005	Not measured due to product in the well.							0.75	2.7	<0.05	40 J	<0.002	13000 J	19.0
MW-19	6/7/2006	Not measured due to product in the well.							0.76 J	2.7 J	<0.05 J	36	<0.002	17000 J	18 J
MW-19	9/27/2006	Not measured due to product in the well.							0.66 J	3.1	<0.05	30	<0.002 J	8200 J	14.0
MW-19	5/9/2007	Not measured due to product in the well.							0.29	2.6	<0.100	59 J	<0.002	11000 J	15
MW-19	9/20/2007	Not measured due to product in the well.							0.28	3.1	<0.100	42 J	<0.002	3500	17
MW-20	10/15/1997	Dry. Could not collect parameter sample.							NT	NT	NT	NT	<0.01	11000	NT
MW-20	4/26/2001	Not measured due to product in the well.							<0.13	2.25	0.84	67	NT	36600	24
MW-20	9/12/2001	Not measured due to product in the well.							0.15	2.8	<0.035	24	<0.01	83000	16
MW-20	8/7/2002	Not measured due to product in the well.							<0.15	3.28	0.206	25	<0.01	30000 B	22
MW-20	9/25/2003	Not measured due to product in the well.							<1.25	3.25	0.35	80 J	0.0054	13000	19.4 J
MW-20	9/22/2004	Not measured due to product in the well.							0.29 J	2.32	2.07	23 R	<10.0 J	133000	24 J
MW-20	10/25/2005	Not measured due to product in the well.							2.1 J	2.4	0.14	39 J	<0.002	63000 J	13
MW-20	9/27/2006	Not measured due to product in the well.							0.22	4.2	0.094 J	71	<0.002 J	44000 J	16
MW-20	9/20/2007	Not measured due to product in the well.							<0.1	4.8	<0.100	98 J	<0.002	9500	18
MW-21	2/9/1998	8.50	559	8.35	NT	7.05	177.5		NT	NT	<0.1	9.1	0.011	<1.0	71
MW-21	5/14/2002	9.29	457	10.66	93.5	5.86	152.0		2.0		0.130	7.3		0.1	69
MW-21	8/6/2002	10.72	444	NR	99.0	6.79	297.6		<0.15	0.00063 B	<0.011	9.6		0.0	49
MW-21	4/29/2003	9.91	473	3.72	NR	6.65	144.9		2.5	<0.005	<0.025	12.0	<0.0005	0.2	41
MW-21	9/24/2003	9.30	491	11.13	97.7	6.74	326.0	400	2.6	<0.005	<0.05	<2	<0.0005	0.063 J	48
MW-21	5/4/2004	10.10	557	–	89.2	6.50	196.3		2.3 J	0.718 R	14000 R	3.6 R	<10.0	<0.135 B	67
MW-21	9/21/2004	9.80	510	10.37	92.5	6.61	102.1	365	2.4 J	0.484 J	10300 J	4.8 R	<10.0 J	0.5	63 J
MW-21	5/10/2005	10.47	544	10.89	94.1	6.63	159.6	103	2.8 J	0.00047 J	<0.05	12 R	<0.002	0.3	49 J
MW-21	9/27/2005	10.45	444	13.46	(*)	6.32	129.8	969	2.4 J	0.0098 J	0.036 J	17.0	<0.002 J	0.046 J	47
MW-21	6/1/2006	9.76	496	8.23	62.7	6.77	200.8	684	2.7 J	0.017 J	0.047 J	20.0	<0.002	0.023 J	65 J
MW-21	9/25/2006	Well Dry							Well Dry						
MW-21	5/8/2007	10.64	429	9.20	82.9	6.04	200.1	312	4.2	<0.01	<0.100	9.3 J	<0.002	<0.098	33 J
MW-21	9/18/2007	12.17	352	7.89		6.32	235.8	150	3.7 J	<0.01	<0.100	12 J	<0.002	0.13	29
MW-22	2/9/1998	8.70	558	7.50	NT	6.86	119.5		NT	NT	<0.1	18	0.013	<1.0	56
MW-22	5/14/2002	9.91	423	10.25	91.3	6.77	85.5		3.7 J	0.0035	0.023	14		0.1	18
MW-22	8/6/2002	11.37	343	NR	101.6	6.86	323.7		<0.15	<0.00042	0.025 B	12	<0.01	0.1	7
MW-22	9/24/2003	9.70	303	10.92	96.4	6.89	345.4	1038	2.2	0.542	2.77	3 J	<0.0005	0.3	5
MW-22	9/21/2004	9.78	316	10.59	94.5	6.64	99.3	777	2.2 J	<15.0 J	<0.025 J	6.7 R	<10.0 J	0.2	11 J

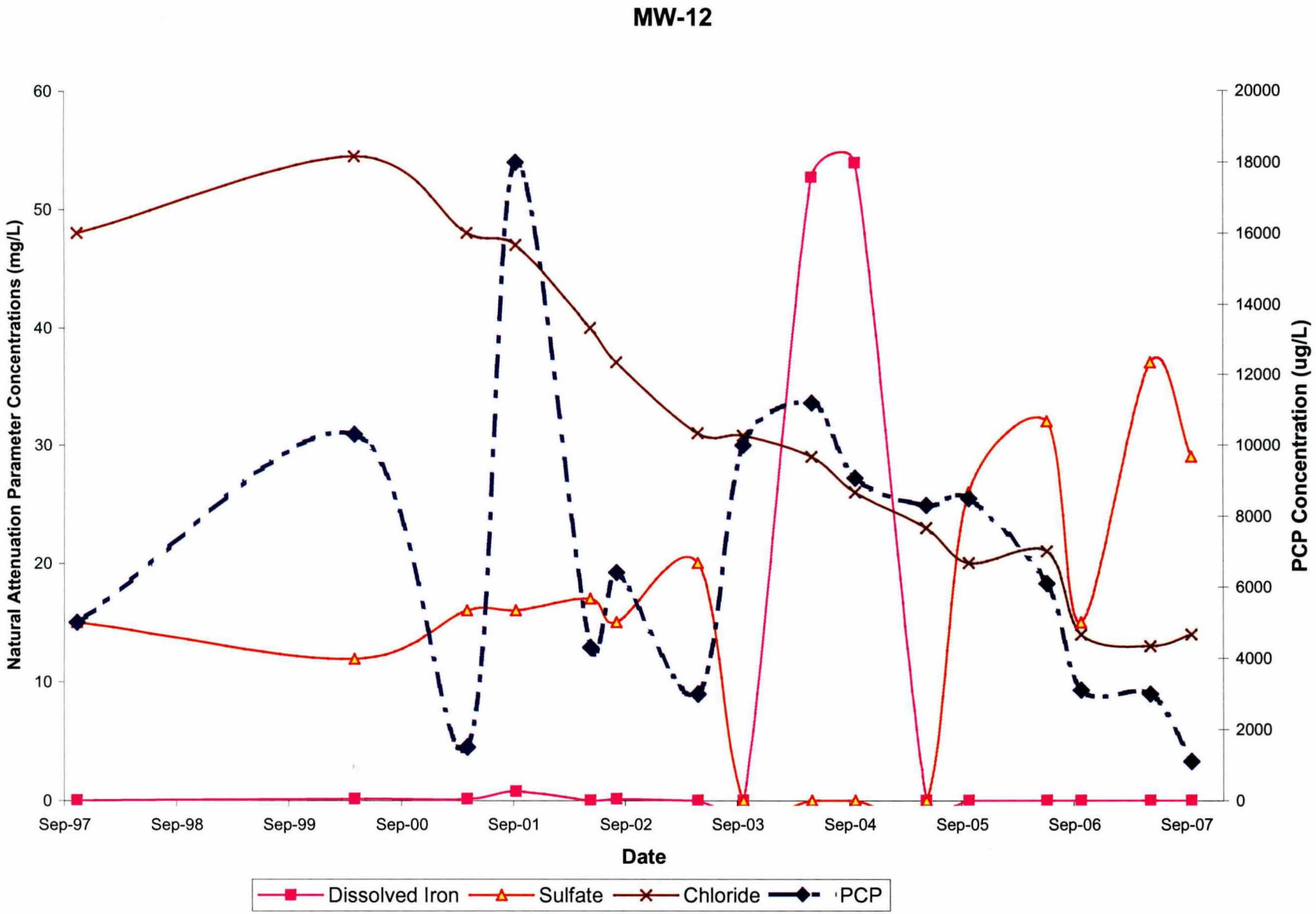
Well	Sample Date	Temp. (C)	Specific Cond. (umhos/cm^2)	DO (mg/L)	DO (%)	pH	ORP (mV)	Turbidity (ntu)	Nitrate (mg/L)	Dissolved Manganese (mg/L)	Dissolved Iron (mg/L)	Sulfate (mg/L)	Methane (mg/L)	PCP (ug/L)	Chloride (mg/L)
MW-22	9/28/2005	9.70	Meter not working		87.4	6.66	260.8	59.5	1.7 J	0.0013 J	<0.05	18	<0.002	0.16 J	10
MW-22	9/25/2006	Well Dry							Well Dry						
MW-22	9/18/2007	11.85	276	8.23		6.53	227.9		2.5 J	<0.01	<0.100	10 J	<0.002	0.13	8
MW-23	2/27/1998	9.63	270	13.68	122.3	7.93	159.0		NT	NT	<0.1	7.6	0.0566	<1.0	8.7
MW-23	9/11/2001	11.57	322	3.21	28.8	7.46	112.6		<0.13	0.029	<0.035	<8.2	<0.01	0.49	10
MW-24	2/8/1998	13.80	524	5.35	NT	6.62	80.0		NT	NT	<0.1	5.2	<0.01	<1	19
MW-24	4/24/2001	15.30	634	3.67	34.9	6.28	209.2		3.6	0.0024	<0.025	12	<0.0001	0.1	36
MW-25	2/9/1998	8.69	808	8.16	NT	6.95	55.0		NT	NT	<0.1	9.9	0.017	<1.0	16
MW-26	4/24/2001	11.24	646	7.73	71.8	7.05	190.2		5.0	<0.015	0.04	10	<0.0001	<0.1	22
MW-26	9/10/2001	Parameters not measured							3.2	<0.004	0.1	12	<0.01	0.16	30
MW-26	5/14/2002	12.28	588	7.55	72.8	7.11	17.8		3 J	0.00073	<0.011	15		0.1	27
MW-26	8/5/2002	11.30	588	NR	66.3	6.52	280.1		<0.15	0.00056 B	<0.011	14	<0.01	0.03	18
MW-26	4/29/2003	10.58	621	8.68	79.2	6.53	157.3		3.5	<0.005	<0.025	14	<0.0005	<0.1	18
MW-26	9/23/2003	10.84	513	7.41	67.7	6.70	279.8	23.7	3.74	<0.005	<0.05	<2	<0.0005	<0.11	11
MW-26	5/4/2004	9.85	172	7.07	62.8	6.19	326.2		3.9 J	1.23 R	0.039	42 R	<10.0	<0.242 B	17
MW-26	9/23/2004	13.16	931	8.85	87.2	6.44	63.4	44.6	1.5 J	19.3	620	120	<10.0	0.393	28
MW-26	5/10/2005	11.49	1120	10.48	97.2	6.92	197.0		2.8 J	0.0018 J	<0.05	200 R	<0.002	0.061 J	26 J
MW-26	9/27/2005	12.13	845	6.77	63.2	6.78	129.2	5.24	1.9 J	<0.01	<0.05	170 J	<0.002 J	0.027 J	25
MW-26	6/7/2006	11.71	830	7.97	74.7	7.00	113.3	2.93	1.8 J	<0.0025 J	<0.05 J	140	<0.002	<0.11	29 J
MW-26	9/27/2006	12.24	1011	7.10	66.6	7.11	227.3	1.03	1.5 J	<0.01 J	<0.05 J	87 J	<0.002 J	<0.11	23 J
MW-26	5/8/2007	11.36	852	7.60	70.4	7.51	60.9	3.07	1.5	<0.01	<0.100	210 J	<0.002	<0.093	21 J
MW-26	9/19/2007	11.65	892	6.03	56.2	7.04	129.7	3.40	1.3	<0.01	<0.100	220 J	<0.002	<0.095	25
PW-01	10/23/1997	11.10	550	5.00	NT	8.92	185.0		7.7	NT	0.0012	10	0.0195	5	48
PZ-03	2/9/1998	7.50	212	11.02	NT	6.91	164.0		NT	NT	NT	NT	NT	<1	NT

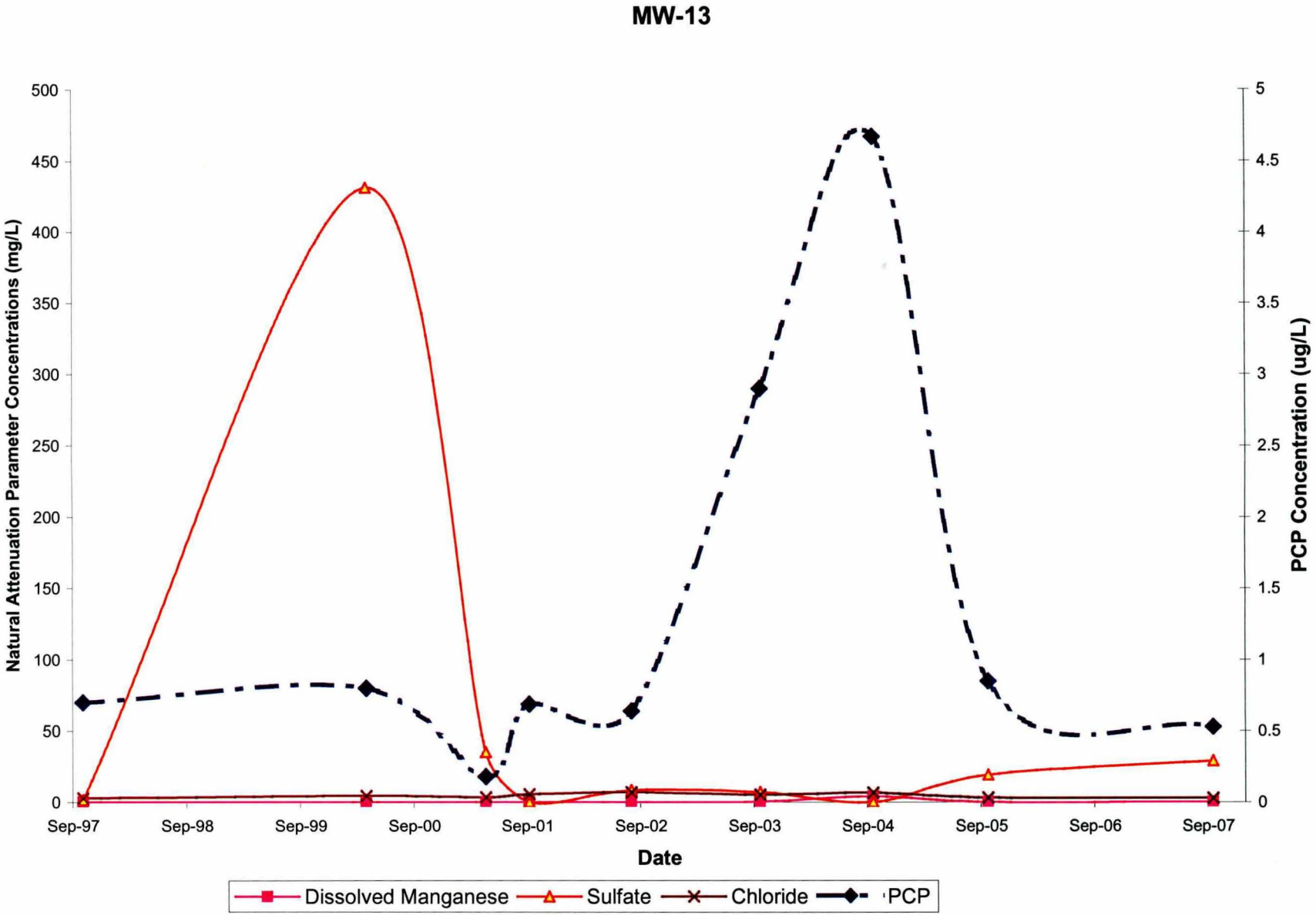
(*) Readings outside normal range, instrument response in question.
NR - Parameter not Recorded.
NT - Parameter not tested.

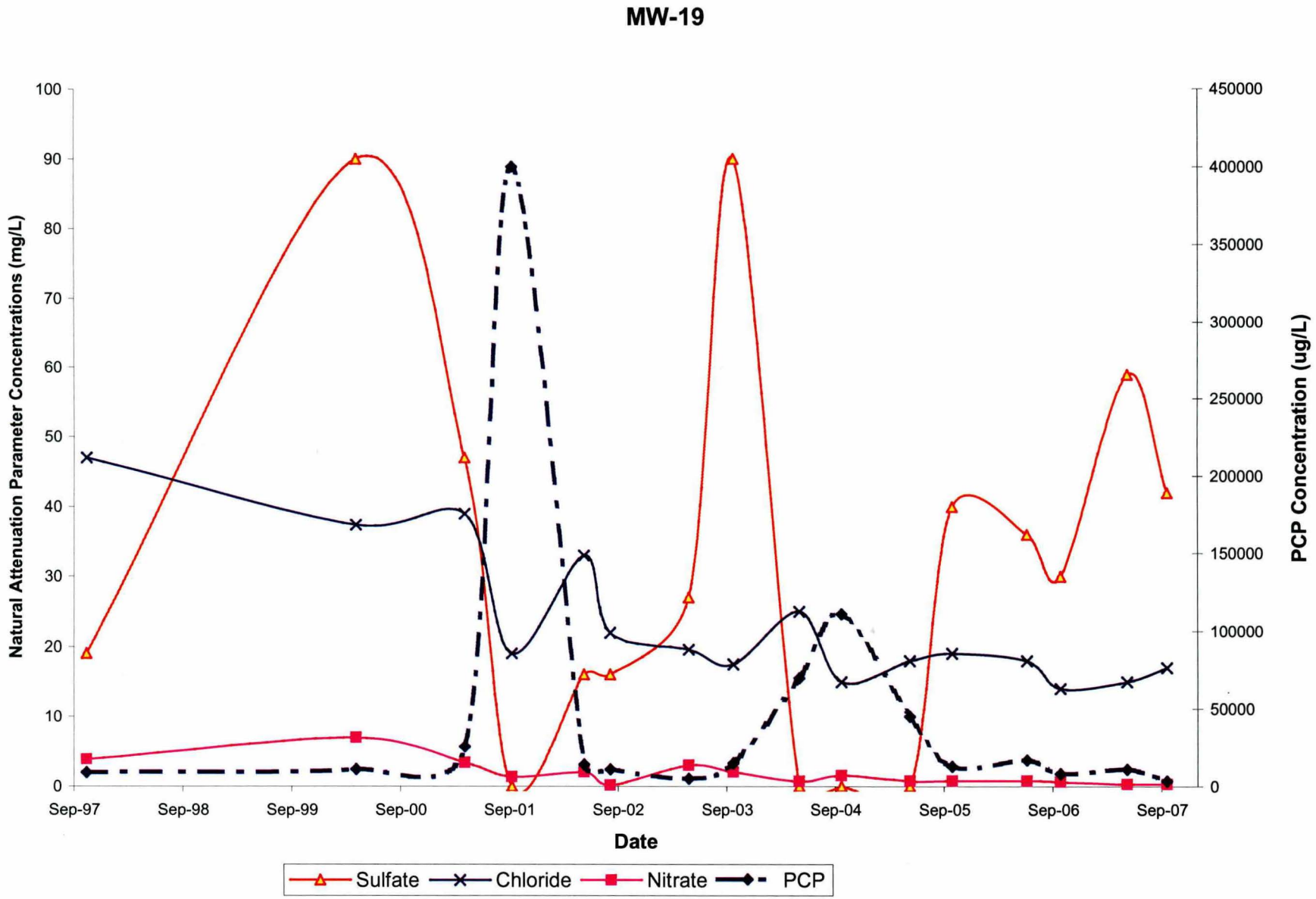

MW-05
Natural Attenuation Parameter Concentrations (mg/L)
PCP Concentration (ug/L)
60
50
40
30
20
10
0
30000
25000
20000
15000
10000
5000
0
Sep-97
Sep-98
Sep-99
Sep-00
Sep-01
Sep-02
Sep-03
Sep-04
Sep-05
Sep-06
Sep-07
Date
Dissolved Iron
Sulfate
Chloride
PCP


MW-10
Natural Attenuation Parameter Concentrations (mg/L)
PCP Concentration (ug/L)
70
60
50
40
30
20
10
0
40000
35000
30000
25000
20000
15000
10000
5000
0
Sep-97
Sep-98
Sep-99
Sep-00
Sep-01
Sep-02
Sep-03
Sep-04
Sep-05
Sep-06
Sep-07
Date
Sulfate
Chloride
Dissolved Iron
PCP


MW-10S
Natural Attenuation Parameter Concentrations (mg/L)
PCP Concentration (ug/L)
160
140
120
100
80
60
40
20
0
90000
80000
70000
60000
50000
40000
30000
20000
10000
0
Sep-97
Sep-98
Sep-99
Sep-00
Sep-01
Sep-02
Sep-03
Sep-04
Sep-05
Sep-06
Sep-07
Date
Sulfate
Chloride
Dissolved Iron
PCP


MW-12
Natural Attenuation Parameter Concentrations (mg/L)
PCP Concentration (ug/L)
60
50
40
30
20
10
0
20000
18000
16000
14000
12000
10000
8000
6000
4000
2000
0
Sep-97
Sep-98
Sep-99
Sep-00
Sep-01
Sep-02
Sep-03
Sep-04
Sep-05
Sep-06
Sep-07
Date
Dissolved Iron
Sulfate
Chloride
PCP


MW-13
Natural Attenuation Parameter Concentrations (mg/L)
PCP Concentration (ug/L)
500
450
400
350
300
250
200
150
100
50
0
5
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
Sep-97
Sep-98
Sep-99
Sep-00
Sep-01
Sep-02
Sep-03
Sep-04
Sep-05
Sep-06
Sep-07
Date
Dissolved Manganese
Sulfate
Chloride
PCP


MW-19
Natural Attenuation Parameter Concentrations (mg/L)
PCP Concentration (ug/L)
100
90
80
70
60
50
40
30
20
10
0
450000
400000
350000
300000
250000
200000
150000
100000
50000
0
Sep-97
Sep-98
Sep-99
Sep-00
Sep-01
Sep-02
Sep-03
Sep-04
Sep-05
Sep-06
Sep-07
Date
Sulfate
Chloride
Nitrate
PCP

Appendix C

Groundwater Contour Maps, Groundwater Elevations and Observations, and LNAPL Measurements

I:\EPA_1532745-Pento_Wood\CAD\DRAWINGS\Const Docs\GW_Concentration Contours_November_07\Figure_01 - Pentachlorophenol Conc. Contours - November 07.dgn 09-MAY-2008

N 2200
N 2000
N 1800
N 1600
N 1400
N 1200
N 1000
N 800
N 600

E 400
E 600
E 800
E 1000
E 1200
E 1400
E 1600
E 1800
E 2000
E 2200
E 2400
E 2600

N

0 100' 200'

INFILTRATION BASIN
PROPERTY BOUNDARY
CAMU OUTLINE
EXISTING TREATMENT BUILDING
NEW TREATMENT BUILDING
NEW ROAD
DANIELS 70

MW 11 U
MW-08 U
MW26 U
MW 17 U
MW 13 0.53
MW23 NT
MW 9 0.37
EW11
MW24 NT
MW 16 0.2
MW 12 3,000J
EW02
MW 2 3.7
MW 5 31
MW 10 1,700
SG04
MW 18 NT
MW 10S 24
EW03
EW05
MW 7 U
EW10
SG05
MW 20 9,500
EW06
MW 14 NT
EW04
MW 19 11,000J
MW 6S 0.099
MW6 NT
SG07
SG06
MW 1 0.11J
BV08
SG22
EW07
MW 4 NT
MW22 0.13
BV09
PW 01 NT
MW 3 NT
MW21 NT
MW 15 U

LEGEND

EW11	EXTRACTION WELL NEST
BV09	BIOVENTING WELL NEST
SG05	SOIL GAS WELL NEST
	UNCONFINED MONITORING WELL LOCATION
	SEMICONFINED MONITORING WELL LOCATION
MW 7	WELL ID
0.093 U	PCP CONCENTRATIONS IN GROUNDWATER (2007)
NT	NOT TESTED FOR
J	PCP IS PRESENT BUT THE REPORTED VALUE IS ESTIMATED
U	PCP WAS NOT DETECTED AT THE SPECIFIED DETECTION LIMIT
	APPROXIMATE EXTENT OF 1000 ug/L PCP CONCENTRATIONS, 1997
	APPROXIMATE EXTENT OF 1000 ug/L PCP CONCENTRATIONS, 2006 (DASHED WHERE INFERRED)
	APPROXIMATE EXTENT OF 1000 ug/L PCP CONCENTRATIONS, 2007

FIGURE 1
PENTACHLOROPHENOL 1,000 ug/L
CONCENTRATION CONTOURS
2007, 2006, AND 1997

CH2MHILL

I:\EPA\151745-Penta Wood\CAD\DRAWINGS\Const Docs\GW Concentration Contours November 07\figure 02 - pcp -1- contours - november 07.dgn 09-MAY-2008

N 2200
N 2000
N 1800
N 1600
N 1400
N 1200
N 1000
N 800
N 600

E 400
E 600
E 800
E 1000
E 1200
E 1400
E 1600
E 1800
E 2000
E 2200
E 2400
E 2600

N

0 100' 200'

INFILTRATION BASIN
PROPERTY BOUNDARY
CAMU OUTLINE
NEW TREATMENT BUILDING
NEW ROAD
EXISTING TREATMENT BUILDING
DANIELS 70

MW 11 U
MW-08 U
MW26 U
MW 17 U
MW 13 0.53
MW23 NT
MW 9 0.37
EW11
MW 2 3.7
MW 24 NT
MW 16 0.2
MW 12 3,000 J
EW02
MW 5 31
SG04
MW 18 NT
MW 10 1,700
MW 10S 24
EW03
EW05
MW 7 U
MW 20 9,500
EW10
SG05
MW 14 NT
EW06
EW04
SG07
MW 19 11,000 J
MW6 NT
MW 6S 0.099
SG06
MW 1 0.11 J
BV08
SG22
EW07
MW 4 NT
MW22 0.13
BV09
PW 01 NT
MW 3 NT
MW21 0.13
MW 15 0.1 U

LEGEND

EW11	EXTRACTION WELL NEST
BV09	BIOVENTING WELL NEST
SG05	SOIL GAS WELL NEST
	UNCONFINED MONITORING WELL LOCATION
	SEMICONFINED MONITORING WELL LOCATION
MW 7	WELL ID
0.093U	PCP CONCENTRATIONS IN GROUNDWATER (2007)
NT	NOT TESTED FOR
J	PCP IS PRESENT BUT THE REPORTED VALUE IS ESTIMATED
U	PCP WAS NOT DETECTED AT THE SPECIFIED DETECTION LIMIT
	APPROXIMATE EXTENT OF 1.0 ug/L PCP CONCENTRATIONS, 1997
	APPROXIMATE EXTENT OF 1.0 ug/L PCP CONCENTRATIONS, 2006 (DASHED WHERE INFERRED)
	APPROXIMATE EXTENT OF 1.0 ug/L PCP CONCENTRATIONS, 2007

FIGURE 2
PENTACHLOROPHENOL 1.0 ug/L
CONCENTRATION CONTOURS
2007, 2006, AND 1997

CH2MHILL

Appendix D

Residential Well Memorandums and Results Summary

Residential Well Results Summary

Penta Wood
Residential Well Results (RW-01)
Historical Data

Field Site Identifier:		01	01	01	01	01	01	01
Field Sample Location:		RW-01	RW-01	RW-01	RW-01	RW-01	RW-01	RW-01
Sample Interval:		N/A	N/A	N/A	N/A	N/A	N/A	N/A
Matrix:		WP	Water	Water	Water	Water	Water	Water
Sample Collection Date:		10/09/1997	04/23/2001	09/11/2001	09/28/2001	09/28/2001	05/14/2002	08/06/2002
Field Sample Identification:		98ZR01-01	01CB07-62	01CB28-27	01CB28-53	01CB28-59	02CB14-17	02CB18-55
Laboratory Sample Identification:		26300*15	210419612	913080-032	210916201	913316-001	02052485-14	02081721-5
Semivolatile Organic Compounds	**Units**							
NAPHTHALENE	µg/L	NR	5.3 U	0.26 U	NR	NR	5 U	5 U
PENTACHLOROPHENOL	µg/L	1 U	0.1 U	0.071 J	0.1 U	0.05 U	0.23	0.04

QUALIFIER KEY: "U" - Analyte not found at the listed detection limit; "J" - Estimated Result; "B" - Analyte detected in Blank; No Qualifier - Analyte found; "R" - Rejected; "NR" - Not Reported

Penta Wood
Residential Well Results (RW-01)
Historical Data

Field Site Identifier:		01	01	01	01	01	01	01
Field Sample Location:		RW-01	RW-01	RW-01	RW-01	RW-01	RW-01	RW-01
Sample Interval:		N/A	N/A	N/A	N/A	N/A	N/A	N/A
Matrix:		Water	Water	Water	Water	Water, Dup	Water	Water, Dup
Sample Collection Date:		04/29/2003	09/23/2003	11/20/2003	05/04/2004	05/04/2004	09/22/2004	09/22/2004
Field Sample Identification:		03CB08-13	03CB14-51	03CB14-71	04CB05-12	04CB05-13	04CA14-53	04CA14-54
Laboratory Sample Identification:		217123-007	19255-024	222528-002	0405056-17B	0405056-18B	0409269-15B	0409269-16B
Semivolatile Organic Compounds	**Units**							
NAPHTHALENE	µg/L	7.1 U	0.97 U	NR	NR	NR	NR	NR
PENTACHLOROPHENOL	µg/L	0.1 J	0.28	0.24	0.140 UB	0.134 UB	0.201	1.51

QUALIFIER KEY: "U" - Analyte not found at the listed detection limit; "J" - Estimated Result; "B" - Analyte detected In Blank; No Qualifier - Analyte found; "R" - Rejected; "NR" - Not Reported

Penta Wood
Residential Well Results (RW-01)
Historical Data

Field Site Identifier:		01	01	01	01	01	01	01
Field Sample Location:		RW-01	RW-01	RW-01	RW-01	RW-01	RW-01	RW-01
Sample Interval:		N/A	N/A	N/A	N/A	N/A	N/A	N/A
Matrix:		Water	Water	Water, Dup	Water	Water, Dup	Water	Water, Dup
Sample Collection Date:		11/01/2004	05/10/2005	05/10/2005	07/07/2005	07/07/2005	09/27/2005	09/27/2005
Field Sample Identification:		05CA01-11	05CA31-10	05CA31-11	05CA31-27	05CA31-28	05CA43-50	05CA43-51
Laboratory Sample Identification:		0411029-03A	236528-008	236528-009	238191-002	238191-003	240447-001	240447-002
Semivolatile Organic Compounds	**Units**							
NAPHTHALENE	µg/L	NR	0.93 U	0.93 U	0.95 U	0.96 U	0.92 UJ	0.93 UJ
PENTACHLOROPHENOL	µg/L	0.0952 U	0.068 J	0.053 J	0.043 J	0.035 J	0.050 J	0.049 J

QUALIFIER KEY: "U" - Analyte not found at the listed detection limit; "J" - Estimated Result; "B" - Analyte detected in Blank; No Qualifier - Analyte found; "R" - Rejected; "NR" - Not Reported

Penta Wood
Residential Well Results (RW-01)
Historical Data

Field Site Identifier:		01	01	01	01	01	01	01
Field Sample Location:		RW-01	RW-01	RW-01	RW-01	RW-01	RW-01	RW-01
Sample Interval:		N/A	N/A	N/A	N/A	N/A	N/A	N/A
Matrix:		Water	Water, Dup	Water	Water, Dup	Water	Water, Dup	Water
Sample Collection Date:		05/31/2006	05/31/2006	09/25/2006	09/25/2006	05/09/2007	05/09/2007	09/18/2007
Field Sample Identification:		06CA20-09	06CA20-10	06CA22-27	06CA22-28	07CP28-09	07CP28-10	07CP43-39
Laboratory Sample Identification:		246864-003	246864-004	248861-006	248861-007	4156-5	4156-6	500-6662-6
Semivolatile Organic Compounds	**Units**							
NAPHTHALENE	µg/L	0.93 U	0.94 U	0.93 U	0.93 U	0.95 R	0.95 R	0.93 R
PENTACHLOROPHENOL	µg/L	0.048 J	0.055 J	0.11 U	0.023 J	0.035 J	0.048 J	0.093 UJ

QUALIFIER KEY: "U" - Analyte not found at the listed detection limit; "J" - Estimated Result; "B" - Analyte detected in Blank; No Qualifier - Analyte found; "R" - Rejected; "NR" - Not Reported

Penta Wood
Residential Well Results (RW-01)
Historical Data

Field Site Identifier:	01
Field Sample Location:	RW-01
Sample Interval:	N/A
Matrix:	Water, Dup
Sample Collection Date:	09/18/2007
Field Sample Identification:	07CP43-40
Laboratory Sample Identification:	500-6662-7

Semivolatile Organic Compounds	**Units**	
NAPHTHALENE	µg/L	0.93 R
PENTACHLOROPHENOL	µg/L	0.27 J

QUALIFIER KEY: "U" - Analyte not found at the listed detection limit; "J" - Estimated Result; "B" - Analyte detected in Blank; No Qualifier - Analyte found; "R" - Rejected; "NR" - Not Reported

Penta Wood
Residential Well Results (RW-01)
Historical Data

Field Site Identifier:		01	01	01	01	01	01	01
Field Sample Location:		RW-01	RW-01	RW-01	RW-01	RW-01	RW-01	RW-01
Sample Interval:		N/A	N/A	N/A	N/A	N/A	N/A	N/A
Matrix:		Water	Water	Water	Water	Water	Water	Water
Sample Collection Date:		04/23/2001	09/11/2001	05/14/2002	08/06/2002	04/29/2003	09/23/2003	05/04/2004
Field Sample Identification:		01CB07-62	01CB28-27	02CB14-17	02CB18-55	03CB08-13	03CB14-51	04CB05-12
Laboratory Sample Identification:		210419612	913080-032	02052485-14	02081721-5	217123-007	19255-024	0405056-17A
Volatile Organic Compounds	**Units**							
BENZENE	µg/L	0.5 U	0.44 U	1 U	1 U	0.5 U	0.25 U	0.500 U
ETHYLBENZENE	µg/L	5 U	0.5 U	5 U	5 U	5 U	2.5 U	5.00 U
TOLUENE	µg/L	5 U	0.4 U	2 J	5 U	5 U	2.5 U	5.00 U
XYLENES, TOTAL	µg/L	NR	NR	NR	NR	NR	NR	5.00 U

QUALIFIER KEY: "U" - Analyte not found at the listed detection limit; "J" - Estimated Result; "B" - Analyte detected in Blank; No Qualifier - Analyte found; "R" - Rejected; "NR" - Not Reported

Penta Wood
Residential Well Results (RW-01)
Historical Data

Field Site Identifier:		01	01	01	01	01	01	01
Field Sample Location:		RW-01	RW-01	RW-01	RW-01	RW-01	RW-01	RW-01
Sample Interval:		N/A	N/A	N/A	N/A	N/A	N/A	N/A
Matrix:		Water, Dup	Water	Water, Dup	Water	Water, Dup	Water	Water, Dup
Sample Collection Date:		05/04/2004	09/22/2004	09/22/2004	05/10/2005	05/10/2005	07/07/2005	07/07/2005
Field Sample Identification:		04CB05-13	04CA14-53	04CA14-54	05CA31-10	05CA31-11	05CA31-27	05CA31-28
Laboratory Sample Identification:		0405056-18A	0409269-15A	0409269-16A	236528-008	236528-009	238191-002	238191-003
Volatile Organic Compounds	**Units**							
BENZENE	µg/L	0.500 U	0.500 U	0.500 U	0.50 U	0.50 U	0.50 U	0.50 U
ETHYLBENZENE	µg/L	5.00 U	5.00 U	5.00 U	5.0 U	5.0 U	5.0 U	5.0 U
TOLUENE	µg/L	5.00 U	5.00 U	5.00 U	5.0 U	5.0 U	5.0 U	5.0 U
XYLENES, TOTAL	µg/L	5.00 U	5.00 U	5.00 U	NR	NR	NR	NR

QUALIFIER KEY: "U" - Analyte not found at the listed detection limit; "J" - Estimated Result; "B" - Analyte detected in Blank; No Qualifier - Analyte found; "R" - Rejected; "NR" - Not Reported

Penta Wood
Residential Well Results (RW-01)
Historical Data

Field Site Identifier:		01	01	01	01	01	01	01
Field Sample Location:		RW-01	RW-01	RW-01	RW-01	RW-01	RW-01	RW-01
Sample Interval:		N/A	N/A	N/A	N/A	N/A	N/A	N/A
Matrix:		Water	Water, Dup	Water	Water, Dup	Water	Water, Dup	Water
Sample Collection Date:		09/27/2005	09/27/2005	05/31/2006	05/31/2006	09/25/2006	09/25/2006	05/09/2007
Field Sample Identification:		05CA43-50	05CA43-51	06CA20-09	06CA20-10	06CA22-27	06CA22-28	07CP28-09
Laboratory Sample Identification:		240447-001	240447-002	246864-003	246864-004	248861-006	248861-007	4156-5
Volatile Organic Compounds	**Units**							
BENZENE	µg/L	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	1.0 U
ETHYLBENZENE	µg/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	1.0 U
TOLUENE	µg/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	1.0 U
XYLENES, TOTAL	µg/L	NR	NR	NR	NR	NR	NR	NR

QUALIFIER KEY: "U" - Analyte not found at the listed detection limit; "J" - Estimated Result; "B" - Analyte detected in Blank; No Qualifier - Analyte found; "R" - Rejected; "NR" - Not Reported

Penta Wood
Residential Well Results (RW-01)
Historical Data

Field Site Identifier:		01	01	01
Field Sample Location:		RW-01	RW-01	RW-01
Sample Interval:		N/A	N/A	N/A
Matrix:		Water, Dup	Water	Water, Dup
Sample Collection Date:		05/09/2007	09/18/2007	09/18/2007
Field Sample Identification:		07CP28-10	07CP43-39	07CP43-40
Laboratory Sample Identification:		4156-6	500-6662-6	500-6662-7
Volatile Organic Compounds	**Units**			
BENZENE	µg/L	1.0 U	1.0 U	1.0 U
ETHYLBENZENE	µg/L	1.0 U	1.0 U	1.0 U
TOLUENE	µg/L	1.0 U	1.0 U	1.0 U
XYLENES, TOTAL	µg/L	NR	2.0 U	2.0 U

QUALIFIER KEY: "U" - Analyte not found at the listed detection limit; "J" - Estimated Result; "B" - Analyte detected in Blank; No Qualifier - Analyte found; "R" - Rejected; "NR" - Not Reported

Penta Wood
Residential Well Results (RW-02)
Historical Data

Field Site Identifier:		01	01	01	01	01	01	01
Field Sample Location:		RW-02	RW-02	RW-02	RW-02	RW-02	RW-02	RW-02
Sample Interval:		N/A	N/A	N/A	N/A	N/A	N/A	N/A
Matrix:		WP	WP, Dup	WP	WP	Water	Water	Water
Sample Collection Date:		10/09/1997	10/09/1997	10/24/1997	04/08/1998	04/24/2001	09/11/2001	9/28/2001
Field Sample Identification:		98ZR01-02	98ZR01-24	98ZR01-67	98ZR02-58	01CB07-80	01CB28-28	01CB28-54
Laboratory Sample Identification:		26300*16	26300*17	26341*5	26951*6	210420904	913080-033	210916202
Semivolatile Organic Compounds	**Units**							
NAPHTHALENE	µg/L	NR	NR	NR	NR	5.4 U	0.25 U	NR
PENTACHLOROPHENOL	µg/L	0.9 J	2	1 U	1 U	0.1 U	9.5	0.1 U

QUALIFIER KEY: "U" - Analyte not found at the listed detection limit; "J" - Estimated Result; "B" - Analyte detected in Blank; No Qualifier - Analyte found; "R" - Rejected; "NR" - Not Reported

Penta Wood
Residential Well Results (RW-02)
Historical Data

Field Site Identifier:		01	01	01	01	01	01	01
Field Sample Location:		RW-02	RW-02	RW-02	RW-02	RW-02	RW-02	RW-02
Sample Interval:		N/A	N/A	N/A	N/A	N/A	N/A	N/A
Matrix:		Water	Water	Water	Water	Water	Water	Water
Sample Collection Date:		09/28/2001	90928/2001	09/28/2001	05/14/2002	08/06/2002	08/06/2002	04/29/2003
Field Sample Identification:		01CB28-55	01CB28-60	01CB28-61	02CB14-18	02CB18-57	02CB18-99	03CB08-14
Laboratory Sample Identification:		210916203	913316-002	913316-003	02052485-15	02081721-2	02081721-3	217123-008
Semivolatile Organic Compounds	**Units**							
NAPHTHALENE	µg/L	NR	NR	NR	5 U	5 U	5 U	6.8 U
PENTACHLOROPHENOL	µg/L	0.1 U	0.05 U	0.05 U	0.1	0.04 U	0.04 U	0.11 U

QUALIFIER KEY: "U" - Analyte not found at the listed detection limit; "J" - Estimated Result; "B" - Analyte detected in Blank; No Qualifier - Analyte found; "R" - Rejected; "NR" - Not Reported

Penta Wood
Residential Well Results (RW-02)
Historical Data

Field Site Identifier:		01	01	01	01	01	01	01
Field Sample Location:		RW-02	RW-02	RW-02	RW-02	RW-02	RW-02	RW-02
Sample Interval:		N/A	N/A	N/A	N/A	N/A	N/A	N/A
Matrix:		Water	Water	Water	Water	Water	Water	Water
Sample Collection Date:		09/24/2003	09/24/2003	05/04/2004	09/22/2004	11/01/2004	05/10/2005	09/27/2005
Field Sample Identification:		03CB14-52	03CB14-53	04CB05-14	04CA14-55	05CA01-12	05CA31-12	05CA43-52
Laboratory Sample Identification:		19255-012	19255-011	0405056-19B	0409269-17B	0411029-04A	236528-005	240447-004
Semivolatile Organic Compounds	**Units**							
NAPHTHALENE	µg/L	0.97 U	0.96 U	NR	NR	NR	0.93 U	0.92 UJ
PENTACHLOROPHENOL	µg/L	0.11 U	0.11 U	0.0252 UB	0.398	0.0962 U	0.11 U	0.11 U

QUALIFIER KEY: "U" - Analyte not found at the listed detection limit; "J" - Estimated Result; "B" - Analyte detected in Blank; No Qualifier - Analyte found; "R" - Rejected; "NR" - Not Reported

Penta Wood
Residential Well Results (RW-02)
Historical Data

Field Site Identifier:		01	01	01	01
Field Sample Location:		RW-02	RW-02	RW-02	RW-02
Sample Interval:		N/A	N/A	N/A	N/A
Matrix:		Water	Water	Water	Water
Sample Collection Date:		05/31/2006	09/25/2006	05/09/2007	09/18/2007
Field Sample Identification:		06CA20-11	06CA22-29	07CP28-11	07CP43-41
Laboratory Sample Identification:		246864-007	248861-005	4156-9	500-6662-2
Semivolatile Organic Compounds	**Units**				
NAPHTHALENE	µg/L	0.93 U	0.93 U	0.97 R	0.93 R
PENTACHLOROPHENOL	µg/L	0.11 UJ	0.11 U	0.092 UJ	0.093 UJ

QUALIFIER KEY: "U" - Analyte not found at the listed detection limit; "J" - Estimated Result; "B" - Analyte detected in Blank; No Qualifier - Analyte found; "R" - Rejected; "NR" - Not Reported

Penta Wood
Residential Well Results (RW-02)
Historical Data

Field Site Identifier:		01	01	01	01	01	01	01
Field Sample Location:		RW-02	RW-02	RW-02	RW-02	RW-02	RW-02	RW-02
Sample Interval:		N/A	N/A	N/A	N/A	N/A	N/A	N/A
Matrix:		Water	Water	Water	Water	Water	Water	Water
Sample Collection Date:		04/24/2001	09/11/2001	05/14/2002	08/06/2002	08/06/2002	04/29/2003	09/24/2003
Field Sample Identification:		01CB07-80	01CB28-28	02CB14-18	02CB18-57	02CB18-99	03CB08-14	03CB14-52
Laboratory Sample Identification:		210420904	913080-033	02052485-15	02081721-2	02081721-3	217123-008	19255-012
Volatile Organic Compounds	**Units**							
BENZENE	µg/L	0.1 U	0.44 U	1 U	1 U	1 U	0.5 U	0.25 U
ETHYLBENZENE	µg/L	1 U	0.5 U	5 U	5 U	5 U	5 U	2.5 U
TOLUENE	µg/L	1 U	0.4 U	5 U	5 U	5 U	5 U	2.5 U
XYLENES, TOTAL	µg/L	NR	NR	NR	NR	NR	NR	NR

QUALIFIER KEY: "U" - Analyte not found at the listed detection limit; "J" - Estimated Result; "B" - Analyte detected in Blank; No Qualifier - Analyte found; "R" - Rejected; "NR" - Not Reported

Penta Wood
Residential Well Results (RW-02)
Historical Data

Field Site Identifier:		01	01	01	01	01	01	01
Field Sample Location:		RW-02	RW-02	RW-02	RW-02	RW-02	RW-02	RW-02
Sample Interval:		N/A	N/A	N/A	N/A	N/A	N/A	N/A
Matrix:		Water	Water	Water	Water	Water	Water	Water
Sample Collection Date:		09/24/2003	05/04/2004	09/22/2004	05/10/2005	09/27/2005	05/31/2006	09/25/2006
Field Sample Identification:		03CB14-53	04CB05-14	04CA14-55	05CA31-12	05CA43-52	06CA20-11	06CA22-29
Laboratory Sample Identification:		19255-011	0405056-19A	0409269-17A	236528-005	240447-004	246864-007	248861-005
Volatile Organic Compounds	**Units**							
BENZENE	µg/L	0.25 U	0.500 U	0.500 U	0.50 U	0.50 U	0.50 U	0.50 U
ETHYLBENZENE	µg/L	2.5 U	5.00 U	5.00 U	5.0 U	5.0 U	5.0 U	5.0 U
TOLUENE	µg/L	2.5 U	5.00 U	5.00 U	5.0 U	5.0 U	5.0 U	5.0 U
XYLENES, TOTAL	µg/L	NR	5.00 U	5.00 U	NR	NR	NR	NR

QUALIFIER KEY: "U" - Analyte not found at the listed detection limit; "J" - Estimated Result; "B" - Analyte detected in Blank; No Qualifier - Analyte found; "R" - Rejected; "NR" - Not Reported

Penta Wood
Residential Well Results (RW-02)
Historical Data

Field Site Identifier:		01	01
Field Sample Location:		RW-02	RW-02
Sample Interval:		N/A	N/A
Matrix:		Water	Water
Sample Collection Date:		05/09/2007	09/18/2007
Field Sample Identification:		07CP28-11	07CP43-41
Laboratory Sample Identification:		4156-9	500-6662-2
Volatile Organic Compounds	**Units**		
BENZENE	µg/L	1.0 U	1.0 U
ETHYLBENZENE	µg/L	1.0 U	1.0 U
TOLUENE	µg/L	1.0 U	1.0 U
XYLENES, TOTAL	µg/L	NR	2.0 U

QUALIFIER KEY: "U" - Analyte not found at the listed detection limit; "J" - Estimated Result; "B" - Analyte detected in Blank; No Qualifier - Analyte found; "R" - Rejected; "NR" - Not Reported

Penta Wood
Residential Well Results (RW-03)
Historical Data

Field Site Identifier:		01	01	01	01	01	01	01
Field Sample Location:		RW-03	RW-03	RW-03	RW-03	RW-03	RW-03	RW-03
Sample Interval:		N/A	N/A	N/A	N/A	N/A	N/A	N/A
Matrix:		WP	Water	Water	Water	Water	Water	Water
Sample Collection Date:		10/09/1997	09/11/2001	09/28/2001	09/28/2001	05/14/2002	08/06/2002	04/29/2003
Field Sample Identification:		98ZR01-03	01CB28-25	01CB28-56	01CB28-62	02CB14-19	02CB18-59	03CB08-15
Laboratory Sample Identification:		26300*18	913080-030	210916204	913316-004	02052485-16	02081721-6	217123-009
Semivolatile Organic Compounds	**Units**							
NAPHTHALENE	µg/L	NR	0.28 U	NR	NR	5 U	5 U	6.8 U
PENTACHLOROPHENOL	µg/L	1 U	0.1 J	0.1 U	0.05 U	0.094 J	0.04 U	0.11 U

QUALIFIER KEY: "U" - Analyte not found at the listed detection limit; "J" - Estimated Result; "B" - Analyte detected in Blank; No Qualifier - Analyte found; "R" - Rejected; "NR" - Not Reported

Penta Wood
Residential Well Results (RW-03)
Historical Data

Field Site Identifier:		01	01	01	01	01	01	01
Field Sample Location:		RW-03	RW-03	RW-03	RW-03	RW-03	RW-03	RW-03
Sample Interval:		N/A	N/A	N/A	N/A	N/A	N/A	N/A
Matrix:		Water	Water	Water	Water	Water	Water	Water
Sample Collection Date:		09/23/2003	05/04/2004	09/22/2004	11/01/2004	05/10/2005	09/27/2005	05/31/2006
Field Sample Identification:		03CB14-54	04CB05-15	04CA14-56	05CA01-13	05CA31-13	05CA43-53	06CA20-12
Laboratory Sample Identification:		19255-025	0405056-20B	0409269-18B	0411029-05A	236528-002	240447-005	246864-008
Semivolatile Organic Compounds	**Units**							
NAPHTHALENE	µg/L	0.96 U	NR	NR	NR	0.93 U	0.93 UJ	0.94 U
PENTACHLOROPHENOL	µg/L	0.11 U	0.0952 U	2.18	0.0962 U	0.11 U	0.11 U	0.11 UJ

QUALIFIER KEY: "U" - Analyte not found at the listed detection limit; "J" - Estimated Result; "B" - Analyte detected in Blank; No Qualifier - Analyte found; "R" - Rejected; "NR" - Not Reported

Penta Wood
Residential Well Results (RW-03)
Historical Data

Field Site Identifier:		01	01	01
Field Sample Location:		RW-03	RW-03	RW-03
Sample Interval:		N/A	N/A	N/A
Matrix:		Water	Water	Water
Sample Collection Date:		09/25/2006	05/09/2007	09/18/2007
Field Sample Identification:		06CA22-30	07CP28-12	07CP43-42
Laboratory Sample Identification:		248861-001	4156-16	500-6662-3
Semivolatile Organic Compounds	**Units**			
NAPHTHALENE	µg/L	0.93 U	0.95 R	0.93 R
PENTACHLOROPHENOL	µg/L	0.11 U	0.092 UJ	0.093 UJ

QUALIFIER KEY: "U" - Analyte not found at the listed detection limit; "J" - Estimated Result; "B" - Analyte detected in Blank; No Qualifier - Analyte found; "R" - Rejected; "NR" - Not Reported

Penta Wood
Residential Well Results (RW-03)
Historical Data

Field Site Identifier:		01	01	01	01	01	01	01
Field Sample Location:		RW-03	RW-03	RW-03	RW-03	RW-03	RW-03	RW-03
Sample Interval:		N/A	N/A	N/A	N/A	N/A	N/A	N/A
Matrix:		Water	Water	Water	Water	Water	Water	Water
Sample Collection Date:		09/11/2001	05/14/2002	08/06/2002	04/29/2003	09/23/2003	05/04/2004	09/22/2004
Field Sample Identification:		01CB28-25	02CB14-19	02CB18-59	03CB08-15	03CB14-54	04CB05-15	04CA14-56
Laboratory Sample Identification:		913080-030	02052485-16	02081721-6	217123-009	19255-025	0405056-20A	0409269-18A
Volatile Organic Compounds	**Units**							
BENZENE	µg/L	0.44 U	1 U	1 U	0.5 U	0.25 U	0.500 U	0.500 U
ETHYLBENZENE	µg/L	0.5 U	5 U	5 U	5 U	2.5 U	5.00 U	5.00 U
TOLUENE	µg/L	0.4 U	5 U	5 U	5 U	2.5 U	5.00 U	5.00 U
XYLENES, TOTAL	µg/L	NR	NR	NR	NR	NR	5.00 U	5.00 U

QUALIFIER KEY: "U" - Analyte not found at the listed detection limit; "J" - Estimated Result; "B" - Analyte detected in Blank; No Qualifier - Analyte found; "R" - Rejected; "NR" - Not Reported

Penta Wood
Residential Well Results (RW-03)
Historical Data

Field Site Identifier:		01	01	01	01	01	01
Field Sample Location:		RW-03	RW-03	RW-03	RW-03	RW-03	RW-03
Sample Interval:		N/A	N/A	N/A	N/A	N/A	N/A
Matrix:		Water	Water	Water	Water	Water	Water
Sample Collection Date:		05/10/2005	09/27/2005	05/31/2006	09/25/2006	05/09/2007	09/18/2007
Field Sample Identification:		05CA31-13	05CA43-53	06CA20-12	06CA22-30	07CP28-12	07CP43-42
Laboratory Sample Identification:		236528-002	240447-005	246864-008	248861-001	4156-16	500-6662-3
Volatile Organic Compounds	**Units**						
BENZENE	µg/L	0.50 U	0.50 U	0.50 U	0.50 U	1.0 U	1.0 U
ETHYLBENZENE	µg/L	5.0 U	5.0 U	5.0 U	5.0 U	1.0 U	1.0 U
TOLUENE	µg/L	5.0 U	5.0 U	5.0 U	5.0 U	1.0 U	1.0 U
XYLENES, TOTAL	µg/L	NR	NR	NR	NR	NR	2.0 U

QUALIFIER KEY: "U" - Analyte not found at the listed detection limit; "J" - Estimated Result; "B" - Analyte detected in Blank; No Qualifier - Analyte found; "R" - Rejected; "NR" - Not Reported

Penta Wood
Residential Well Results (RW-04)
Historical Data

Field Site Identifier:		01	01	01	01	01	01	01
Field Sample Location:		RW-04	RW-04	RW-04	RW-04	RW-04	RW-04	RW-04
Sample Interval:		N/A	N/A	N/A	N/A	N/A	N/A	N/A
Matrix:		WP	Water	Water	Water	Water	Water	Water
Sample Collection Date:		10/09/1997	04/23/2001	09/11/2001	09/28/2001	09/28/2001	05/14/2002	08/06/2002
Field Sample Identification:		98ZR01-04	01CB07-61	01CB28-26	01CB28-57	01CB28-63	02CB14-20	02CB18-61
Laboratory Sample Identification:		26300*19	210419611	913080-031	210916205	913316-005	02052485-17	02081721-1
Semivolatile Organic Compounds	**Units**							
NAPHTHALENE	µg/L	NR	5 U	0.25 U	NR	NR	5 U	5 U
PENTACHLOROPHENOL	µg/L	1 U	0.1 U	0.073 J	0.1 U	0.05 U	0.13	0.04 U

QUALIFIER KEY: "U" - Analyte not found at the listed detection limit; "J" - Estimated Result; "B" - Analyte detected in Blank; No Qualifier - Analyte found; "R" - Rejected; "NR" - Not Reported

Penta Wood
Residential Well Results (RW-04)
Historical Data

Field Site Identifier:		01	01	01	01	01	01	01
Field Sample Location:		RW-04	RW-04	RW-04	RW-04	RW-04	RW-04	RW-04
Sample Interval:		N/A	N/A	N/A	N/A	N/A	N/A	N/A
Matrix:		Water	Water	Water	Water	Water	Water	Water
Sample Collection Date:		04/29/2003	09/23/2003	05/04/2004	09/22/2004	10/01/2004	05/10/2005	09/27/2005
Field Sample Identification:		03CB08-16	03CB14-55	04CB05-16	04CA14-57	05CA01-14	05CA31-14	05CA43-54
Laboratory Sample Identification:		217123-010	19255-026	0405056-21B	0409269-19B	0411029-06A	236528-003	240447-006
Semivolatile Organic Compounds	**Units**							
NAPHTHALENE	µg/L	7.4 U	0.99 U	NR	NR	NR	0.94 U	0.91 UJ
PENTACHLOROPHENOL	µg/L	0.11 U	0.11 U	0.100 U	0.266	0.0962 R	0.11 U	0.11 U

QUALIFIER KEY: "U" - Analyte not found at the listed detection limit; "J" - Estimated Result; "B" - Analyte detected in Blank; No Qualifier - Analyte found; "R" - Rejected; "NR" - Not Reported

Penta Wood
Residential Well Results (RW-04)
Historical Data

Field Site Identifier:		01	01	01	01
Field Sample Location:		RW-04	RW-04	RW-04	RW-04
Sample Interval:		N/A	N/A	N/A	N/A
Matrix:		Water	Water	Water	Water
Sample Collection Date:		05/31/2006	09/25/2006	05/09/2007	09/18/2007
Field Sample Identification:		06CA20-13	06CA22-31	07CP28-13	07CP43-43
Laboratory Sample Identification:		246864-005	248861-002	4156-14	500-6662-4
Semivolatile Organic Compounds	**Units**				
NAPHTHALENE	µg/L	0.97 U	0.93 U	0.96 R	0.93 R
PENTACHLOROPHENOL	µg/L	0.11 UJ	0.11 U	0.093 UJ	0.093 UJ

QUALIFIER KEY: "U" - Analyte not found at the listed detection limit; "J" - Estimated Result; "B" - Analyte detected in Blank; No Qualifier - Analyte found; "R" - Rejected; "NR" - Not Reported

Penta Wood
Residential Well Results (RW-04)
Historical Data

Field Site Identifier:		01	01	01	01	01	01	01
Field Sample Location:		RW-04	RW-04	RW-04	RW-04	RW-04	RW-04	RW-04
Sample Interval:		N/A	N/A	N/A	N/A	N/A	N/A	N/A
Matrix:		Water	Water	Water	Water	Water	Water	Water
Sample Collection Date:		04/23/2001	09/11/2001	05/14/2002	08/06/2002	04/29/2003	09/23/2003	05/04/2004
Field Sample Identification:		01CB07-61	01CB28-26	02CB14-20	02CB18-61	03CB08-16	03CB14-55	04CB05-16
Laboratory Sample Identification:		210419611	913080-031	02052485-17	02081721-1	217123-010	19255-026	0405056-21A
Volatile Organic Compounds	**Units**							
BENZENE	µg/L	0.5 U	0.44 U	1 U	1 U	0.5 U	0.25 U	0.500 U
ETHYLBENZENE	µg/L	5 U	0.5 U	5 U	5 U	5 U	2.5 U	5.00 U
TOLUENE	µg/L	5 U	0.4 U	5 U	5 U	5 U	2.5 U	5.00 U
XYLENES, TOTAL	µg/L	NR	NR	NR	NR	NR	NR	5.00 U

QUALIFIER KEY: "U" - Analyte not found at the listed detection limit; "J" - Estimated Result; "B" - Analyte detected in Blank; No Qualifier - Analyte found; "R" - Rejected; "NR" - Not Reported

Penta Wood
Residential Well Results (RW-04)
Historical Data

Field Site Identifier:		01	01	01	01	01	01	01
Field Sample Location:		RW-04	RW-04	RW-04	RW-04	RW-04	RW-04	RW-04
Sample Interval:		N/A	N/A	N/A	N/A	N/A	N/A	N/A
Matrix:		Water	Water	Water	Water	Water	Water	Water
Sample Collection Date:		09/22/2004	05/10/2005	09/27/2005	05/31/2006	09/25/2006	05/09/2007	09/18/2007
Field Sample Identification:		04CA14-57	05CA31-14	05CA43-54	06CA20-13	06CA22-31	07CP28-13	07CP43-43
Laboratory Sample Identification:		0409269-19A	236528-003	240447-006	246864-005	248861-002	4156-14	500-6662-4
Volatile Organic Compounds	**Units**							
BENZENE	µg/L	0.500 U	0.50 U	0.50 U	0.50 U	0.50 U	1.0 U	1.0 U
ETHYLBENZENE	µg/L	5.00 U	5.0 U	5.0 U	5.0 U	5.0 U	1.0 U	1.0 U
TOLUENE	µg/L	5.00 U	5.0 U	5.0 U	5.0 U	5.0 U	1.0 U	1.0 U
XYLENES, TOTAL	µg/L	5.00 U	NR	NR	NR	NR	NR	2.0 U

QUALIFIER KEY: "U" - Analyte not found at the listed detection limit; "J" - Estimated Result; "B" - Analyte detected In Blank; No Qualifier - Analyte found; "R" - Rejected; "NR" - Not Reported

Penta Wood
Residential Well Results (RW-05)
Historical Data

Field Site Identifier:		01	01	01	01	01	01	01
Field Sample Location:		RW-05	RW-05	RW-05	RW-05	RW-05	RW-05	RW-05
Sample Interval:		N/A	N/A	N/A	N/A	N/A	N/A	N/A
Matrix:		Water	Water	Water	Water	Water	Water	Water
Sample Collection Date:		05/04/2004	09/22/2004	11/01/2004	05/10/2005	09/27/2005	05/31/2006	09/25/2006
Field Sample Identification:		04CB05-17	04CA14-58	05CA01-15	05CA31-15	05CA43-55	06CA20-14	06CA22-32
Laboratory Sample Identification:		0405056-22B	0409269-20B	0411029-07A	236528-006	240447-008	246864-009	248861-003
Semivolatile Organic Compounds	**Units**							
NAPHTHALENE	µg/L	NR	NR	NR	0.93 U	0.92 UJ	0.94 U	0.93 U
PENTACHLOROPHENOL	µg/L	0.0935 U	0.293	0.0962 U	0.11 U	0.11 U	0.11 UJ	0.11 U

QUALIFIER KEY: "U" - Analyte not found at the listed detection limit; "J" - Estimated Result; "B" - Analyte detected in Blank; No Qualifier - Analyte found; "R" - Rejected; "NR" - Not Reported

Penta Wood
Residential Well Results (RW-05)
Historical Data

Field Site Identifier:		01	01
Field Sample Location:		RW-05	RW-05
Sample Interval:		N/A	N/A
Matrix:		Water	Water
Sample Collection Date:		05/09/2007	09/18/2007
Field Sample Identification:		07CP28-14	07CP43-44
Laboratory Sample Identification:		4156-8	500-6662-8
Semivolatile Organic Compounds	**Units**		
NAPHTHALENE	µg/L	0.93 R	1.0 R
PENTACHLOROPHENOL	µg/L	0.092 UJ	0.093 UJ

QUALIFIER KEY: "U" - Analyte not found at the listed detection limit; "J" - Estimated Result; "B" - Analyte detected in Blank; No Qualifier - Analyte found; "R" - Rejected; "NR" - Not Reported

Penta Wood
Residential Well Results (RW-05)
Historical Data

Field Site Identifier:		01	01	01	01	01	01	01
Field Sample Location:		RW-05	RW-05	RW-05	RW-05	RW-05	RW-05	RW-05
Sample Interval:		N/A	N/A	N/A	N/A	N/A	N/A	N/A
Matrix:		Water	Water	Water	Water	Water	Water	Water
Sample Collection Date:		05/04/2004	09/22/2004	05/10/2005	09/27/2005	05/31/2006	09/25/2006	05/09/2007
Field Sample Identification:		04CB05-17	04CA14-58	05CA31-15	05CA43-55	06CA20-14	06CA22-32	07CP28-14
Laboratory Sample Identification:		0405056-22A	0409269-20A	236528-006	240447-008	246864-009	248861-003	4156-8
Volatile Organic Compounds	**Units**							
BENZENE	µg/L	0.500 U	0.500 U	0.50 U	0.50 U	0.50 U	0.50 U	1.0 U
ETHYLBENZENE	µg/L	5.00 U	5.00 U	5.0 U	5.0 U	5.0 U	5.0 U	1.0 U
TOLUENE	µg/L	5.00 U	5.00 U	5.0 U	5.0 U	5.0 U	5.0 U	1.0 U
XYLENES, TOTAL	µg/L	5.00 U	5.00 U	NR	NR	NR	NR	NR

QUALIFIER KEY: "U" - Analyte not found at the listed detection limit; "J" - Estimated Result; "B" - Analyte detected in Blank; No Qualifier - Analyte found; "R" - Rejected; "NR" - Not Reported

Penta Wood
Residential Well Results (RW-05)
Historical Data

Field Site Identifier:	01
Field Sample Location:	RW-05
Sample Interval:	N/A
Matrix:	Water
Sample Collection Date:	09/18/2007
Field Sample Identification:	07CP43-44
Laboratory Sample Identification:	500-6662-8

Volatile Organic Compounds	**Units**	
BENZENE	µg/L	1.0 U
ETHYLBENZENE	µg/L	1.0 U
TOLUENE	µg/L	1.0 U
XYLENES, TOTAL	µg/L	2.0 U

QUALIFIER KEY: "U" - Analyte not found at the listed detection limit; "J" - Estimated Result; "B" - Analyte detected in Blank; No Qualifier - Analyte found; "R" - Rejected; "NR" - Not Reported

2007 Residential Well Memorandums

CH2M HILL
135 South 84th Street
Suite 325
Milwaukee, WI 53214-1456

CH2MHILL

June 29, 2007

Mr. Tom Williams
Remedial Project Manager (SR-6J)
U.S. Environmental Protection Agency
77 West Jackson Boulevard
Chicago, IL 60604-3507

Subject: Subcontract No. 521, Penta Wood Products, Wisconsin
May 2007 Sampling Results
WA No. 004-LRLR-05WE, Contract No. EP-S5-06-01

Dear Tom:

Attached are the results of the residential and potable well sampling event that took place on May 9, 2007, and May 10, 2007. This sampling event included the analysis of pentachlorophenol (PCP), benzene, ethylbenzene, toluene, xylene (BTEX), and naphthalene. The following table provides information for the residential wells where samples were collected.

LTRA Residential Well Information
Penta Wood Products – Siren, Wisconsin

Location ID	Resident Name	Resident Address	Resident Phone Number	WI Well #
RW01	Bill Ellis (formerly Skold)	8713 Daniels 70	(715) 349-5840	SX 303
RW02	LaVonne Brethorst	8627 Daniels 70	(715) 349-5237	Unknown
RW03	Ken and Sheri Nelson	Daniels 70 (same driveway as V. Engstrom)	(715) 349-8070	JB 251
RW04	Vayne Engstrom	8526 Daniels 70	(715) 349-5212	AN 547
RW05	Timothy Tjader	8783 Daniels 70	(715) 349-5192	Unknown

All analyses were performed by Severn Trent Laboratories (STL) of University Park, Illinois. Analytical results were received by CH2M HILL on June 6, 2007, and were submitted on June 19, 2007, to the United States Environmental Protection Agency (USEPA) for validation. The following summary is based on a review of the data prior to receiving final validation results from USEPA.

The results of the May 2007 sampling event showed no detections of BTEX and naphthalene. PCP concentrations were not detected in RW-02, RW-03, RW-04, and RW-05 above the detection limit of 0.015 µg/L. PCP concentrations in RW-01 (Ellis residence) and DW-01 (potable well) were estimated at 0.035 µg/L and 0.074 µg/L, respectively. These values are considered estimated because the values are above the detection limit of 0.015 µg/L, but less than the reporting limit of 0.092 µg/L.

If you have any questions or comments, please give me a call at 414.272.1052, ext. 40476, or Keli McKenna at ext. 40561.

Sincerely,

CH2M HILL

Steven Paukner
Project Chemist

c: Stephen Nathan, PO/U.S. EPA, Region 5 (w/o enclosure)
Charles Foss, CO/U.S. EPA, Region 5 (w/o enclosure)
Bill Schultz/WDNR
Bill Andrae, SM/CH2M HILL, Milwaukee
Beth Rohde, ASM/CH2M HILL, Milwaukee
Ike Johnson, PM/CH2M HILL, Milwaukee
Dan Plomb, DPM/CH2M HILL, Milwaukee
Gina Bayer, RTL/CH2M HILL, Milwaukee
Dave Shekoski/CH2M HILL, Milwaukee
Cherie Wilson, AA/CH2M HILL, Milwaukee

Client: CH2M Hill, Inc. RW-01

Job Number: 500-4156-1

Client Sample ID: 07CP28-09

Lab Sample ID: 500-4156-5
Client Matrix: Water

Date Sampled: 05/09/2007 1522
Date Received: 05/11/2007 0930

8260B Volatile Organic Compounds by GC/MS

Method: 8260B
Preparation: 5030B
Dilution: 1.0
Date Analyzed: 05/17/2007 1949
Date Prepared: 05/17/2007 1949

Analysis Batch: 500-15336

Instrument ID: Agilent 6890N GC - 5975N
Lab File ID: 4156-05.D
Initial Weight/Volume: 10 mL
Final Weight/Volume: 10 mL

Analyte	Result (ug/L)	Qualifier	MDL	RL
Benzene	1.0	U	0.23	1.0
Toluene	1.0	U	0.18	1.0
Ethylbenzene	1.0	U	0.21	1.0
Xylenes, Total	2.0	U	0.55	2.0

Surrogate	%Rec	Acceptance Limits
1,2-Dichloroethane-d4 (Surr)	76	70 - 125
Toluene-d8 (Surr)	87	75 - 120
4-Bromofluorobenzene (Surr)	87	75 - 120
Dibromofluoromethane	78	75 - 120

Client: CH2M Hill, Inc.

Job Number: 500-4156-2

Client Sample ID: 07CP28-09 RW-01

Lab Sample ID: 500-4156-5
Client Matrix: Water

Date Sampled: 05/09/2007 1522
Date Received: 05/11/2007 0930

8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)

Method:	8270C	Analysis Batch: 500-15905	Instrument ID: Agilent 6890N GC - 5973N
Preparation:	3510C	Prep Batch: 500-15006	Lab File ID: 4156-5.D
Dilution:	1.0		Initial Weight/Volume: 1050 mL
Date Analyzed:	05/30/2007 1351		Final Weight/Volume: 1.0 mL
Date Prepared:	05/16/2007 0820		Injection Volume:

Analyte	Result (ug/L)	Qualifier	MDL	RL
Naphthalene	0.95	U	0.033	0.95

Surrogate	%Rec	Acceptance Limits
Nitrobenzene-d5	81	35 - 120
2-Fluorobiphenyl	84	37 - 123
Terphenyl-d14	84	31 - 127

Client: CH2M Hill, Inc.

Job Number: 500-4156-3

Client Sample ID: 07CP28-09 RW-01

Lab Sample ID: 500-4156-5
Client Matrix: Water

Date Sampled: 05/09/2007 1522
Date Received: 05/11/2007 0930

8151A Chlorinated Herbicides by GC

Method: 8151A
Preparation: 8151A
Dilution: 1.0
Date Analyzed: 05/26/2007 0712
Date Prepared: 05/17/2007 2020

Analysis Batch: 500-15985
Prep Batch: 500-15181

Instrument ID: HP 6890 GC
Lab File ID: 05250742_020.d
Initial Weight/Volume: 1090 mL
Final Weight/Volume: 10.0 mL
Injection Volume:
Column ID: PRIMARY

Analyte	Result (ug/L)	Qualifier	MDL	RL
Pentachlorophenol	0.035	J H	0.015	0.092

Surrogate	%Rec	Acceptance Limits
DCAA	84	42 - 120

Client: CH2M Hill, Inc. Job Number: 500-4156-1

Client Sample ID: 07CP28-11 RW-02

Lab Sample ID: 500-4156-9 Date Sampled: 05/09/2007 1717
Client Matrix: Water Date Received: 05/11/2007 0930

8260B Volatile Organic Compounds by GC/MS

Method: 8260B Analysis Batch: 500-15336 Instrument ID: Agilent 6890N GC - 5975N
Preparation: 5030B Lab File ID: 4156-09.D
Dilution: 1.0 Initial Weight/Volume: 10 mL
Date Analyzed: 05/17/2007 2144 Final Weight/Volume: 10 mL
Date Prepared: 05/17/2007 2144

Analyte	Result (ug/L)	Qualifier	MDL	RL
Benzene	1.0	U	0.23	1.0
Toluene	1.0	U	0.18	1.0
Ethylbenzene	1.0	U	0.21	1.0
Xylenes, Total	2.0	U	0.55	2.0

Surrogate	%Rec	Acceptance Limits
1,2-Dichloroethane-d4 (Surr)	76	70 - 125
Toluene-d8 (Surr)	87	75 - 120
4-Bromofluorobenzene (Surr)	87	75 - 120
Dibromofluoromethane	79	75 - 120

Client: CH2M Hill, Inc.

Job Number: 500-4156-2

RW-02

Client Sample ID: 07CP26-11

Lab Sample ID: 500-4156-9
Client Matrix: Water

Date Sampled: 05/09/2007 1717
Date Received: 05/11/2007 0930

8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)

Method: 8270C
Preparation: 3510C
Dilution: 1.0
Date Analyzed: 05/30/2007 1458
Date Prepared: 05/16/2007 0820

Analysis Batch: 500-15905
Prep Batch: 500-15006

Instrument ID: Agilent 6890N GC - 5973N
Lab File ID: 4156-9.D
Initial Weight/Volume: 1030 mL
Final Weight/Volume: 1.0 mL
Injection Volume:

Analyte	Result (ug/L)	Qualifier	MDL	RL
Naphthalene	0.97	U	0.034	0.97

Surrogate	%Rec	Acceptance Limits
Nitrobenzene-d5	94	35 - 120
2-Fluorobiphenyl	94	37 - 123
Terphenyl-d14	95	31 - 127

Client: CH2M Hill, Inc.

Job Number: 500-4156-3

Client Sample ID: 07CP28-11 RW-02

Lab Sample ID: 500-4156-9
Client Matrix: Water

Date Sampled: 05/09/2007 1717
Date Received: 05/11/2007 0930

8151A Chlorinated Herbicides by GC

Method: 8151A
Preparation: 8151A
Dilution: 1.0
Date Analyzed: 05/26/2007 0839
Date Prepared: 05/17/2007 2020

Analysis Batch: 500-15985
Prep Batch: 500-15161

Instrument ID: HP 6890 GC
Lab File ID: 05250742_023.d
Initial Weight/Volume: 1090 mL
Final Weight/Volume: 10.0 mL
Injection Volume:
Column ID: PRIMARY

Analyte	Result (ug/L)	Qualifier	MDL	RL
Pentachlorophenol	0.092	U H	0.015	0.092

Surrogate	%Rec	Acceptance Limits
DCAA	91	42 - 120

Client: CH2M Hill, Inc.

Job Number: 500-4156-1

Client Sample ID: RW-03 07CP28-12

Lab Sample ID: 500-4156-16
Client Matrix: Water

Date Sampled: 05/09/2007 1755
Date Received: 05/11/2007 0930

8260B Volatile Organic Compounds by GC/MS

Method: 8260B
Preparation: 5030B
Dilution: 1.0
Date Analyzed: 05/18/2007 0431
Date Prepared: 05/18/2007 0431

Analysis Batch: 500-15380

Instrument ID: Agilent 6890N GC - 5975N
Lab File ID: 4156-16.D
Initial Weight/Volume: 10 mL
Final Weight/Volume: 10 mL

Analyte	Result (ug/L)	Qualifier	MDL	RL
Benzene	1.0	U	0.23	1.0
Toluene	1.0	U	0.18	1.0
Ethylbenzene	1.0	U	0.21	1.0
Xylenes, Total	2.0	U	0.55	2.0

Surrogate	%Rec	Acceptance Limits
1,2-Dichloroethane-d4 (Surr)	75	70 - 125
Toluene-d8 (Surr)	88	75 - 120
4-Bromofluorobenzene (Surr)	88	75 - 120
Dibromofluoromethane	81	75 - 120

Client: CH2M Hill, Inc.

Job Number: 500-4156-2

Client Sample ID: 07CP28-12 RW-03

Lab Sample ID: 500-4156-16
Client Matrix: Water

Date Sampled: 05/09/2007 1755
Date Received: 05/11/2007 0930

8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)

Method: 8270C
Preparation: 3510C
Dilution: 1.0
Date Analyzed: 05/30/2007 1627
Date Prepared: 05/16/2007 0820

Analysis Batch: 500-15905
Prep Batch: 500-15006

Instrument ID: Agilent 6890N GC - 5973N
Lab File ID: 4156-16.D
Initial Weight/Volume: 1050 mL
Final Weight/Volume: 1.0 mL
Injection Volume:

Analyte	Result (ug/L)	Qualifier	MDL	RL
Naphthalene	0.95	U	0.033	0.95

Surrogate	%Rec	Acceptance Limits
Nitrobenzene-d5	90	35 - 120
2-Fluorobiphenyl	92	37 - 123
Terphenyl-d14	93	31 - 127

Client: CH2M Hill, Inc.

Job Number: 500-4156-3

RW-03

Client Sample ID: 07CP28-12

Lab Sample ID: 500-4156-16
Client Matrix: Water

Date Sampled: 05/09/2007 1755
Date Received: 05/11/2007 0930

8151A Chlorinated Herbicides by GC

Method: 8151A
Preparation: 8151A
Dilution: 1.0
Date Analyzed: 05/26/2007 1104
Date Prepared: 05/17/2007 2020

Analysis Batch: 500-15985
Prep Batch: 500-15181

Instrument ID: HP 6890 GC
Lab File ID: 05250742_028.d
Initial Weight/Volume: 1090 mL
Final Weight/Volume: 10.0 mL
Injection Volume:
Column ID: PRIMARY

Analyte	Result (ug/L)	Qualifier	MDL	RL
Pentachlorophenol	0.092	U H	0.015	0.092

Surrogate	%Rec	Acceptance Limits
DCAA	79	42 - 120

Client: CH2M Hill, Inc. Job Number: 500-4156-1

Client Sample ID: 07CP28-13 RW-04

Lab Sample ID: 500-4156-14 Date Sampled: 05/09/2007 1630
Client Matrix: Water Date Received: 05/11/2007 0930

8260B Volatile Organic Compounds by GC/MS

Method: 8260B Analysis Batch: 500-15380 Instrument ID: Agilent 6890N GC - 5975N
Preparation: 5030B Lab File ID: 4156-14.D
Dilution: 1.0 Initial Weight/Volume: 10 mL
Date Analyzed: 05/18/2007 0323 Final Weight/Volume: 10 mL
Date Prepared: 05/18/2007 0323

Analyte	Result (ug/L)	Qualifier	MDL	RL
Benzene	1.0	U	0.23	1.0
Toluene	1.0	U	0.18	1.0
Ethylbenzene	1.0	U	0.21	1.0
Xylenes, Total	2.0	U	0.55	2.0

Surrogate	%Rec	Acceptance Limits
1,2-Dichloroethane-d4 (Surr)	76	70 - 125
Toluene-d8 (Surr)	87	75 - 120
4-Bromofluorobenzene (Surr)	91	75 - 120
Dibromofluoromethane	79	75 - 120

Client: CH2M Hill, Inc.

Job Number: 500-4156-2

Client Sample ID: RW-04 07CP28-13

Lab Sample ID: 500-4156-14
Client Matrix: Water

Date Sampled: 05/09/2007 1630
Date Received: 05/11/2007 0930

8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)

Method: 8270C
Preparation: 3510C
Dilution: 1.0
Date Analyzed: 05/30/2007 1605
Date Prepared: 05/16/2007 0820

Analysis Batch: 500-15905
Prep Batch: 500-15008

Instrument ID: Agilent 6890N GC - 5973N
Lab File ID: 4156-14.D
Initial Weight/Volume: 1040 mL
Final Weight/Volume: 1.0 mL
Injection Volume:

Analyte	Result (ug/L)	Qualifier	MDL	RL
Naphthalene	0.98	U	0.034	0.96

Surrogate	%Rec	Acceptance Limits
Nitrobenzene-d5	69	35 - 120
2-Fluorobiphenyl	72	37 - 123
Terphenyl-d14	83	31 - 127

Client: CH2M Hill, Inc.

Job Number: 500-4156-3

Client Sample ID: RW-04 07CP28-13

Lab Sample ID: 500-4156-14

Client Matrix: Water

Date Sampled: 05/09/2007 1630

Date Received: 05/11/2007 0930

8151A Chlorinated Herbicides by GC

Method: 8151A

Preparation: 8151A

Dilution: 1.0

Date Analyzed: 05/26/2007 1035

Date Prepared: 05/17/2007 2020

Analysis Batch: 500-15985

Prep Batch: 500-15181

Instrument ID: HP 6890 GC

Lab File ID: 05250742_027.d

Initial Weight/Volume: 1070 mL

Final Weight/Volume: 10.0 mL

Injection Volume:

Column ID: PRIMARY

Analyte	Result (ug/L)	Qualifier	MDL	RL
Pentachlorophenol	0.093	U H	0.015	0.093

Surrogate	%Rec	Acceptance Limits
DCAA	86	42 - 120

Client: CH2M Hill, Inc. Job Number: 500-4156-1

Client Sample ID: RW-05 07CP28-14

Lab Sample ID: 500-4156-8 Date Sampled: 05/09/2007 1547
Client Matrix: Water Date Received: 05/11/2007 0930

8260B Volatile Organic Compounds by GC/MS

Method: 8260B Analysis Batch: 500-15336 Instrument ID: Agilent 6890N GC - 5975N
Preparation: 5030B Lab File ID: 4156-08.D
Dilution: 1.0 Initial Weight/Volume: 10 mL
Date Analyzed: 05/17/2007 2121 Final Weight/Volume: 10 mL
Date Prepared: 05/17/2007 2121

Analyte	Result (ug/L)	Qualifier	MDL	RL
Benzene	1.0	U	0.23	1.0
Toluene	1.0	U	0.18	1.0
Ethylbenzene	1.0	U	0.21	1.0
Xylenes, Total	2.0	U	0.55	2.0

Surrogate	%Rec	Acceptance Limits
1,2-Dichloroethane-d4 (Surr)	76	70 - 125
Toluene-d8 (Surr)	87	75 - 120
4-Bromofluorobenzene (Surr)	90	75 - 120
Dibromofluoromethane	79	75 - 120

Client: CH2M Hill, Inc. Job Number: 500-4156-2

Client Sample ID: RW-05 07CP28-14

Lab Sample ID: 500-4156-8 Date Sampled: 05/09/2007 1547
Client Matrix: Water Date Received: 05/11/2007 0930

8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)

Method: 8270C Analysis Batch: 500-15905 Instrument ID: Agilent 6890N GC - 5973N
Preparation: 3510C Prep Batch: 500-15006 Lab File ID: 4156-8.D
Dilution: 1.0 Initial Weight/Volume: 1070 mL
Date Analyzed: 05/30/2007 1436 Final Weight/Volume: 1.0 mL
Date Prepared: 05/16/2007 0820 Injection Volume:

Analyte	Result (ug/L)	Qualifier	MDL	RL
Naphthalene	0.93	U	0.033	0.93

Surrogate	%Rec	Acceptance Limits
Nitrobenzene-d5	80	35 - 120
2-Fluorobiphenyl	81	37 - 123
Terphenyl-d14	92	31 - 127

Client: CH2M Hill, Inc.

Job Number: 500-4156-3

Client Sample ID: RW-05 07CP28-14

Lab Sample ID: 500-4156-8

Client Matrix: Water

Date Sampled: 05/09/2007 1547

Date Received: 05/11/2007 0930

8151A Chlorinated Herbicides by GC

Method: 8151A

Preparation: 8151A

Dilution: 1.0

Date Analyzed: 05/26/2007 0810

Date Prepared: 05/17/2007 2020

Analysis Batch: 500-15985

Prep Batch: 500-15181

Instrument ID: HP 6890 GC

Lab File ID: 05250742_022.d

Initial Weight/Volume: 1090 mL

Final Weight/Volume: 10.0 mL

Injection Volume:

Column ID: PRIMARY

Analyte	Result (ug/L)	Qualifier	MDL	RL
Pentachlorophenol	0.092	U H	0.015	0.092

Surrogate	%Rec	Acceptance Limits
DCAA	91	42 - 120

Client: CH2M Hill, Inc. Job Number: 500-4156-1

Client Sample ID: 07CP28-01 DW-01

Lab Sample ID: 500-4156-1 Date Sampled: 05/10/2007 0825
Client Matrix: Water Date Received: 05/11/2007 0930

8260B Volatile Organic Compounds by GC/MS

Method: 8260B Analysis Batch: 500-15336 Instrument ID: Agilent 6890N GC - 5975N
Preparation: 5030B Lab File ID: 4156-01.D
Dilution: 1.0 Initial Weight/Volume: 10 mL
Date Analyzed: 05/17/2007 1648 Final Weight/Volume: 10 mL
Date Prepared: 05/17/2007 1648

Analyte	Result (ug/L)	Qualifier	MDL	RL
Benzene	1.0	U	0.23	1.0
Toluene	1.0	U	0.18	1.0
Ethylbenzene	1.0	U	0.21	1.0
Xylenes, Total	2.0	U	0.55	2.0

Surrogate	%Rec	Acceptance Limits
1,2-Dichloroethane-d4 (Surr)	74	70 - 125
Toluene-d8 (Surr)	87	75 - 120
4-Bromofluorobenzene (Surr)	90	75 - 120
Dibromofluoromethane	77	75 - 120

Client: CH2M Hill, Inc. Job Number: 500-4156-2

DW-01

Client Sample ID: 07CP28-01

Lab Sample ID: 500-4156-1 Date Sampled: 05/10/2007 0825
Client Matrix: Water Date Received: 05/11/2007 0930

8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)

Method: 8270C
Preparation: 3510C
Dilution: 1.0
Date Analyzed: 05/30/2007 1307
Date Prepared: 05/16/2007 0820

Analysis Batch: 500-15905
Prep Batch: 500-15006

Instrument ID: Agilent 6890N GC - 5973N
Lab File ID: 4156-1.D
Initial Weight/Volume: 1050 mL
Final Weight/Volume: 1.0 mL
Injection Volume:

Analyte	Result (ug/L)	Qualifier	MDL	RL
Naphthalene	0.95	U	0.033	0.95

Surrogate	%Rec	Acceptance Limits
Nitrobenzene-d5	91	35 - 120
2-Fluorobiphenyl	99	37 - 123
Terphenyl-d14	95	31 - 127

Client: CH2M Hill, Inc. Job Number: 500-4156-3

Client Sample ID: 07CP28-01 DW-01

Lab Sample ID: 500-4156-1 Date Sampled: 05/10/2007 0825

Client Matrix: Water Date Received: 05/11/2007 0930

8151A Chlorinated Herbicides by GC

Method: 8151A Analysis Batch: 500-15985 Instrument ID: HP 6890 GC

Preparation: 8151A Prep Batch: 500-15181 Lab File ID: 05250742_011.d

Dilution: 1.0 Initial Weight/Volume: 1090 mL

Date Analyzed: 05/26/2007 0251 Final Weight/Volume: 10.0 mL

Date Prepared: 05/17/2007 2020 Injection Volume:

Column ID: PRIMARY

Analyte	Result (ug/L)	Qualifier	MDL	RL
Pentachlorophenol	0.074	J	0.015	0.092

Surrogate	%Rec	Acceptance Limits
DCAA	88	42 - 120

CH2M HILL
135 South 84th Street
Suite 325
Milwaukee, WI 53214-1456

CH2MHILL

October 24, 2007

Mr. Tom Williams
Remedial Project Manager (SR-6J)
U.S. Environmental Protection Agency
77 West Jackson Boulevard
Chicago, IL 60604-3507

Subject: Subcontract No. 521, Penta Wood Products, Wisconsin
September 2007 Sampling Results
WA No. 004-LRLR-05WE, Contract No. EP-S5-06-01

Dear Tom:

Attached are the results of the residential and potable well annual groundwater sampling event that took place between September 18, 2007 and September 21, 2007. This sampling event included the analysis of pentachlorophenol (PCP), benzene, ethylbenzene, toluene, xylene (BTEX), and naphthalene. The following table provides information for the residential wells where samples were collected.

LTRA Residential Well Information
Penta Wood Products – Siren, Wisconsin

Location ID	Resident Name	Resident Address	Resident Phone Number	WI Well #
RW01	Bill Ellis (formerly Skold)	8713 Daniels 70	(715) 349-5840	SX 303
RW02	LaVonne Brethorst	8627 Daniels 70	(715) 349-5237	Unknown
RW03	Ken and Sheri Nelson	Daniels 70 (same driveway as V. Engstrom)	(715) 349-8070	JB 251
RW04	Vayne Engstrom	8526 Daniels 70	(715) 349-5212	AN 547
RW05	Timothy Tjader	8783 Daniels 70	(715) 349-5192	Unknown

All analyses were performed by TestAmerica Laboratories, Inc. of Chicago, Illinois. Analytical results were received by CH2M HILL on October 12, 2007, and were submitted on October 23, 2007, to the United States Environmental Protection Agency (USEPA) for validation. The following summary is based on a review of the data prior to receiving final validation results from USEPA.

The results of the September 2007 annual groundwater sampling event showed no detections of BTEX, naphthalene or PCP in any of the residential wells.

If you have any questions or comments, please give me a call at 414.272.1052, ext. 40227, or Keli McKenna at ext. 40561.

Sincerely,

CH2M HILL

Shannon M. Greene

Shannon Greene
Project Chemist

c: Pat Vogtman, PO/U.S. EPA, Region 5 (w/o enclosure)
Charles Foss, CO/U.S. EPA, Region 5 (w/o enclosure)
Bill Schultz/WDNR
Keli McKenna, SM/CH2M HILL, Milwaukee
Beth Rohde, ASM/CH2M HILL, Milwaukee
Ike Johnson, PM/CH2M HILL, Milwaukee
Dan Plomb, DPM/CH2M HILL, Milwaukee
Gina Bayer, RTL/CH2M HILL, Milwaukee
Dave Shekoski/CH2M HILL, Milwaukee
Cherie Wilson, AA/CH2M HILL, Milwaukee

Mr. Steven Paukner
CH2M Hill, Inc.
135 South 84th Street
Suite 325
Milwaukee, WI 53214

Job Number: 500-6662-1

RW-01

Client Sample ID: 07CP43-39
Lab Sample ID: 500-6662-6

Date Sampled: 09/18/2007 1710
Date Received: 09/20/2007 0925
Client Matrix: Ground Water

Analyte	Result/Qualifier		Unit	MDL	RL	Dilution
Method: 8260B			Date Analyzed:		09/25/2007 0404	
Prep Method: 5030B			Date Prepared:		09/25/2007 0404	
Benzene	1.0	U	ug/L	0.23	1.0	1.0
Toluene	1.0	U	ug/L	0.18	1.0	1.0
Ethylbenzene	1.0	U	ug/L	0.21	1.0	1.0
Xylenes, Total	2.0	U	ug/L	0.55	2.0	1.0
Surrogate					Acceptance Limits	
1,2-Dichloroethane-d4 (Surr)	98		%		70 - 125	
Toluene-d8 (Surr)	96		%		75 - 120	
4-Bromofluorobenzene (Surr)	88		%		75 - 120	
Dibromofluoromethane	108		%		75 - 120	
Method: 8270C			Date Analyzed:		10/01/2007 2149	
Prep Method: 3510C			Date Prepared:		09/23/2007 1000	
Naphthalene	0.93	U	ug/L	0.033	0.93	1.0
Surrogate					Acceptance Limits	
Nitrobenzene-d5	45		%		35 - 120	
2-Fluorobiphenyl	45		%		37 - 123	
Terphenyl-d14	68		%		31 - 127	
Method: 8151A			Date Analyzed:		10/14/2007 1412	
Prep Method: 8151A			Date Prepared:		09/25/2007 1630	
Pentachlorophenol	0.093	U *	ug/L	0.021	0.093	1.0
Surrogate					Acceptance Limits	
DCAA	70		%		42 - 120	

Mr. Steven Paukner
CH2M Hill, Inc.
135 South 84th Street
Suite 325
Milwaukee, WI 53214

Job Number: 500-6662-1

RW-02

Client Sample ID: 07CP43-41
Lab Sample ID: 500-6662-2

Date Sampled: 09/18/2007 1824
Date Received: 09/20/2007 0925
Client Matrix: Finished Water

Analyte	Result/Qualifier		Unit	MDL	RL	Dilution
Method: 8260B			Date Analyzed:		09/25/2007 0234	
Prep Method: 5030B			Date Prepared:		09/25/2007 0234	
Benzene	1.0	U	ug/L	0.23	1.0	1.0
Toluene	1.0	U	ug/L	0.18	1.0	1.0
Ethylbenzene	1.0	U	ug/L	0.21	1.0	1.0
Xylenes, Total	2.0	U	ug/L	0.55	2.0	1.0
Surrogate					Acceptance Limits	
1,2-Dichloroethane-d4 (Surr)	99		%		70 - 125	
Toluene-d8 (Surr)	95		%		75 - 120	
4-Bromofluorobenzene (Surr)	88		%		75 - 120	
Dibromofluoromethane	116		%		75 - 120	
Method: 8270C			Date Analyzed:		10/01/2007 2049	
Prep Method: 3510C			Date Prepared:		09/23/2007 1000	
Naphthalene	0.93	U	ug/L	0.033	0.93	1.0
Surrogate					Acceptance Limits	
Nitrobenzene-d5	38		%		35 - 120	
2-Fluorobiphenyl	41		%		37 - 123	
Terphenyl-d14	58		%		31 - 127	
Method: 8151A			Date Analyzed:		10/14/2007 1212	
Prep Method: 8151A			Date Prepared:		09/25/2007 1630	
Pentachlorophenol	0.093	U *	ug/L	0.021	0.093	1.0
Surrogate					Acceptance Limits	
DCAA	75		%		42 - 120	

Mr. Steven Paukner
CH2M Hill, Inc.
135 South 84th Street
Suite 325
Milwaukee, WI 53214

Job Number: 500-6662-1

RW-03

Client Sample ID: 07CP43-42
Lab Sample ID: 500-6662-3

Date Sampled: 09/18/2007 1759
Date Received: 09/20/2007 0925
Client Matrix: Ground Water

Analyte	Result/Qualifier		Unit	MDL	RL	Dilution
Method: 8260B			Date Analyzed:		09/25/2007 0257	
Prep Method: 5030B			Date Prepared:		09/25/2007 0257	
Benzene	1.0	U	ug/L	0.23	1.0	1.0
Toluene	1.0	U	ug/L	0.18	1.0	1.0
Ethylbenzene	1.0	U	ug/L	0.21	1.0	1.0
Xylenes, Total	2.0	U	ug/L	0.55	2.0	1.0
Surrogate					Acceptance Limits	
1,2-Dichloroethane-d4 (Surr)	99		%		70 - 125	
Toluene-d8 (Surr)	97		%		75 - 120	
4-Bromofluorobenzene (Surr)	90		%		75 - 120	
Dibromofluoromethane	110		%		75 - 120	
Method: 8270C			Date Analyzed:		10/01/2007 2109	
Prep Method: 3510C			Date Prepared:		09/23/2007 1000	
Naphthalene	0.93	U	ug/L	0.033	0.93	1.0
Surrogate					Acceptance Limits	
Nitrobenzene-d5	61		%		35 - 120	
2-Fluorobiphenyl	65		%		37 - 123	
Terphenyl-d14	81		%		31 - 127	
Method: 8151A			Date Analyzed:		10/14/2007 1242	
Prep Method: 8151A			Date Prepared:		09/25/2007 1630	
Pentachlorophenol	0.093	U *	ug/L	0.021	0.093	1.0
Surrogate					Acceptance Limits	
DCAA	62		%		42 - 120	

Mr. Steven Paukner
CH2M Hill, Inc.
135 South 84th Street
Suite 325
Milwaukee, WI 53214

Job Number: 500-6662-1

RW-04

Client Sample ID: 07CP43-43
Lab Sample ID: 500-6662-4

Date Sampled: 09/18/2007 1742
Date Received: 09/20/2007 0925
Client Matrix: Ground Water

Analyte	Result/Qualifier		Unit	MDL	RL	Dilution
Method: 8260B			Date Analyzed:		09/25/2007 0319	
Prep Method: 5030B			Date Prepared:		09/25/2007 0319	
Benzene	1.0	U	ug/L	0.23	1.0	1.0
Toluene	1.0	U	ug/L	0.18	1.0	1.0
Ethylbenzene	1.0	U	ug/L	0.21	1.0	1.0
Xylenes, Total	2.0	U	ug/L	0.55	2.0	1.0
Surrogate					Acceptance Limits	
1,2-Dichloroethane-d4 (Surr)	99		%		70 - 125	
Toluene-d8 (Surr)	97		%		75 - 120	
4-Bromofluorobenzene (Surr)	90		%		75 - 120	
Dibromofluoromethane	113		%		75 - 120	
Method: 8270C			Date Analyzed:		10/01/2007 2129	
Prep Method: 3510C			Date Prepared:		09/23/2007 1000	
Naphthalene	0.93	U	ug/L	0.033	0.93	1.0
Surrogate					Acceptance Limits	
Nitrobenzene-d5	63		%		35 - 120	
2-Fluorobiphenyl	66		%		37 - 123	
Terphenyl-d14	91		%		31 - 127	
Method: 8151A			Date Analyzed:		10/14/2007 1342	
Prep Method: 8151A			Date Prepared:		09/25/2007 1630	
Pentachlorophenol	0.093	U *	ug/L	0.021	0.093	1.0
Surrogate					Acceptance Limits	
DCAA	76		%		42 - 120	

Mr. Steven Paukner
CH2M Hill, Inc.
135 South 84th Street
Suite 325
Milwaukee, WI 53214

Job Number: 500-6662-1

RW-05

Client Sample ID: 07CP43-44
Lab Sample ID: 500-6662-8

Date Sampled: 09/18/2007 1635
Date Received: 09/20/2007 0925
Client Matrix: Ground Water

Analyte	Result/Qualifier		Unit	MDL	RL	Dilution
Method: 8260B			Date Analyzed:		09/25/2007 0450	
Prep Method: 5030B			Date Prepared:		09/25/2007 0450	
Benzene	1.0	U	ug/L	0.23	1.0	1.0
Toluene	1.0	U	ug/L	0.18	1.0	1.0
Ethylbenzene	1.0	U	ug/L	0.21	1.0	1.0
Xylenes, Total	2.0	U	ug/L	0.55	2.0	1.0
Surrogate					Acceptance Limits	
1,2-Dichloroethane-d4 (Surr)	99		%		70 - 125	
Toluene-d8 (Surr)	96		%		75 - 120	
4-Bromofluorobenzene (Surr)	89		%		75 - 120	
Dibromofluoromethane	109		%		75 - 120	
Method: 8270C			Date Analyzed:		10/01/2007 2229	
Prep Method: 3510C			Date Prepared:		09/23/2007 1000	
Naphthalene	1.0	U	ug/L	0.036	1.0	1.0
Surrogate					Acceptance Limits	
Nitrobenzene-d5	81		%		35 - 120	
2-Fluorobiphenyl	89		%		37 - 123	
Terphenyl-d14	113		%		31 - 127	
Method: 8151A			Date Analyzed:		10/14/2007 1612	
Prep Method: 8151A			Date Prepared:		09/25/2007 1630	
Pentachlorophenol	0.093	U *	ug/L	0.021	0.093	1.0
Surrogate					Acceptance Limits	
DCAA	63		%		42 - 120	

Mr. Steven Paukner
CH2M Hill, Inc.
135 South 84th Street
Suite 325
Milwaukee, WI 53214

Job Number: 500-6662-1

DW-01

Client Sample ID: 07CP43-01
Lab Sample ID: 500-6662-16

Date Sampled: 09/19/2007 1115
Date Received: 09/20/2007 0925
Client Matrix: Ground Water

Analyte	Result/Qualifier		Unit	MDL	RL	Dilution
Method: 8260B			Date Analyzed:		09/25/2007 0751	
Prep Method: 5030B			Date Prepared:		09/25/2007 0751	
Benzene	1.0	U	ug/L	0.23	1.0	1.0
Toluene	1.0	U	ug/L	0.18	1.0	1.0
Ethylbenzene	1.0	U	ug/L	0.21	1.0	1.0
Xylenes, Total	2.0	U	ug/L	0.55	2.0	1.0
Surrogate					Acceptance Limits	
1,2-Dichloroethane-d4 (Surr)	98		%		70 - 125	
Toluene-d8 (Surr)	97		%		75 - 120	
4-Bromofluorobenzene (Surr)	89		%		75 - 120	
Dibromofluoromethane	110		%		75 - 120	
Method: 8270C			Date Analyzed:		10/03/2007 1621	
Prep Method: 3510C			Date Prepared:		09/23/2007 1000	
Naphthalene	0.93	U	ug/L	0.033	0.93	1.0
Surrogate					Acceptance Limits	
Nitrobenzene-d5	55		%		35 - 120	
2-Fluorobiphenyl	61		%		37 - 123	
Terphenyl-d14	77		%		31 - 127	
Method: 8151A			Date Analyzed:		10/14/2007 1912	
Prep Method: 8151A			Date Prepared:		09/25/2007 1630	
Pentachlorophenol	0.093	U *	ug/L	0.021	0.093	1.0
Surrogate					Acceptance Limits	
DCAA	62		%		42 - 120	
Method: Dissolved-6010B			Date Analyzed:		09/27/2007 2055	
Prep Method: Soluble Metals			Date Prepared:		09/26/2007 1153	
Copper	89		ug/L	1.7	10	1.0
Iron	100	U	ug/L	48	100	1.0
Manganese	2.4	J	ug/L	1.9	10	1.0
Zinc	1100		ug/L	3.8	20	1.0
Method: Dissolved-7060			Date Analyzed:		10/02/2007 1723	
Prep Method: 3020A			Date Prepared:		09/25/2007 0810	
Arsenic	0.63	J	ug/L	0.55	1.0	1.0
Method: 310.1			Date Analyzed:		09/28/2007 1348	
Alkalinity	250		mg/L	1.9	5.0	1.0
Method: 325.2			Date Analyzed:		09/28/2007 1058	
Chloride	27		mg/L	0.86	2.0	1.0

Appendix E

Bioventing Startup Memorandum

Bioventing Startup Technical Memo

PREPARED FOR: Keli McKenna

PREPARED BY: CH2M HILL

DATE: June 25, 2008

The bioventing system was installed to provide oxygen for the aerobic biodegradation of residual diesel fuel petroleum hydrocarbons and pentachlorophenol (PCP) in the LNAPL smear zone. The groundwater extraction system extracts and treats groundwater containing dissolved phase PCP. The LNAPL extraction system removes LNAPL accumulated on the top of the water table in the cone of depression at the groundwater extraction well. The groundwater extraction system also exposes more of the LNAPL smear zone at the current water table to the air supplied by the bioventing system.

Initially, only the groundwater and LNAPL subsystems were in operation because of the concerns that the operation of the bioventing system may inhibit LNAPL collection. In addition, removal of as much of the LNAPL as possible was desired prior to bioventing operation to minimize the recontamination of the smear zone as the water table naturally fluctuates over the seasons. It was anticipated that startup of the bioventing system would occur once LNAPL could no longer be consistently removed.

Recent evaluation of LNAPL removal and potential improvements to LNAPL removal has shown that LNAPL recovery cannot be substantially improved, and only a relatively small percent of remaining residual LNAPL will likely be recovered. As a result, the bioventing system was started in September 2007. This memo will describe the details of the startup.

The bioventing start-up objectives listed in the Bioventing Startup Work Plan were as follows:

- Determine whether methane or other potentially explosive gasses are present in the subsurface and if so, whether they may pose an explosive hazard at the onsite treatment system building or the nearby residential buildings.
- Determine whether bioventing increases subsurface temperatures to the point that subsurface ignition of wood chips in the Corrective Action Management Unit (CAMU) could occur.
- Determine whether the biovent system effects LNAPL thickness or results in the spreading of LNAPL.

Preparation for Bioventing Startup

Initial Startup Inspection/Equipment Preparation

Each bioventing well (BV-02 through BV-09 and BV-11) was inspected prior to the startup of the bioventing system. The attached figure shows the location of the bioventing and extraction wells, as well as the location of all of the soil gas wells and groundwater monitoring wells. Inspection of each well indicated that the air supply valve had previously been opened and that the cap on each of the biovent/extraction wells was secure and would not be ejected from air pressure once the air supply to the biovent well was turned on. The weight of the pumps in each well held the caps on tightly, and no additional securing was necessary. No confined space entry was required during startup.

Special caps were constructed to seal the soil gas monitoring wells during soil gas monitoring. Caps consisted of a rubber coupler connected to a modified PVC cap. The cap was fitted with a valve to start and stop flow of the soil gas to the monitoring instrument. The sample tubing fit securely on a barb at the end of each valve. This sampling tubing led directly into the entry port of the landfill gas meter. Each cap also had a hole to allow for the measurement of the soil temperature using a temperature probe. The temperature probe was securely fastened in each hole with a rubber stopper to prevent ambient air from affecting the readings.

Temporary Soil Gas Well Installation

Four temporary perimeter wells, SG-23, SG-24, SG-25, and SG-26, were installed on September 18th, 2007 to allow a more complete evaluation of explosive gas migration. Four temporary wells were installed instead of the anticipated three wells. SG-23 was installed as planned at the southeast corner of the onsite treatment building at a depth of 3 feet. SG-24 was installed at a depth of 5 feet along the fence in a direct line between the CAMU and Ellis residence southwest of the site. SG-25 was installed at a depth of 5 feet in a direct line between the CAMU and the Brethorse residence located south-southeast of the site. SG-26 was installed to provide additional information regarding site boundary soil conditions. It was installed on the fence line, along the eastern corner of the entrance gate to the site, at a depth of 5 feet. The location of these wells on Figure 1 is approximate.

The temporary perimeter wells were planned to be installed using a 0.75 inch stainless steel probe with slots in the lower 6 inches of the probe. Actual equipment used was an AMS Gas Vapor Probe Kit with 5/8" dedicated tips and washers for each installed well. Following installation, the ground surface around each well was re-compacted to prevent short circuiting of the atmospheric air into the probe.

Baseline Monitoring

Baseline monitoring took place September 19th through September 24th, 2007. The groundwater extraction system and LNAPL pumps were turned off on September 17th, 2007 as required per the startup plan to allow the groundwater levels and LNAPL to recover prior to baseline monitoring. Baseline readings for oxygen, carbon dioxide, temperature, lower explosive limit (LEL), methane, flame ionization detector (FID), and photo ionization detector (PID) were collected for each permanent soil gas well. Permanent soil gas wells

included four nests of shallow, intermediate, and deep wells (SG-04 through SG-07) as well as one shallow well (SG-22). Baseline information was also collected from five unconfined monitoring wells, including MW-1, MW-2, MW-21, MW-6S, and MW-16. Initially baseline information was to be collected from nine unconfined monitoring wells, including MW-5, MW-10S, MW-22, and MW-09. Readings were not collected from these wells due to inaccessibility for soil gas readings. Baseline information collected for the temporary soil gas wells (SG-23 through SG-26) was oxygen, carbon dioxide, LEL, methane, FID, and PID.

Prior to collecting soil gas measurements, a pump removed approximately three well volumes at a flow rate of 10 liters per minute (L/min) to remove stagnant air from the wells. Equipment was calibrated according to the manufacturer's specifications at the beginning of each day.

Baseline depth to water and LNAPL levels in unconfined aquifer wells were also collected prior to the start-up of the bioventing system. These values were compared to levels collected during the startup of the bioventing system to ensure that the bioventing system was not causing the LNAPL to migrate to areas where LNAPL was not previously detected. Table 1 shows the baseline water and LNAPL levels compared to the levels collected during the bioventing system operation. During the baseline readings, the LNAPL and groundwater extraction pumps had been shut-off for approximately two days before the readings were collected.

Bioventing Startup

Planned Startup Versus Actual Startup

The nine bioventing wells were planned to be activated in three phases. The first phase was to run the biovent well BV-08 with continuous operation for two days. The second phase was to consist of operation of BV-08 and EW-06 for 5 days, with the third phase consisting of the operation of all bioventing wells, including BV-08, EW-06, EW-02, EW-03, EW-04, EW-05, EW-07, BV-09, and EW-11. This third phase would have been in operation for 2 weeks, with continuous monitoring.

During actual bioventing system start-up, it was not possible to start the system in a phased operation. The pressure in the blower system was too high with only a few bioventing wells open, and the system would immediately shut down until the circuit breaker was reset. To alleviate this problem, all biovent well valves had to be opened at once and monitored continuously, thereby eliminating the planned phased startup.

Because the phased startup was not able to be implemented, the system was not run continuously when it was first turned on to limit the operation until sufficient soil gas monitoring was collected. The system ran during daylight hours only on September 24th, 25th, 26th, and 27th, and was left on overnight on September 27th. On September 28th the system did not run because maintenance was being performed. Operation resumed on Monday of the next week (October 1st, 2007). The system ran fairly continuously until October 5th, and was only shut off for the weekends when gas monitoring along the perimeter wells did not take place. Continuous system operation began on October 15th, 2007, at which point the biovent system remained on during weekend intervals as well.

During the initial startup readings were taken in each of the wells continuously throughout the day, as long as the system was running. Particular attention was paid to the perimeter wells (SG-23, SG-24, SG-25, and SG-26), as well as any of the shallow wells, some of which had the possibility of having high levels of methane. During the early monitoring, only three shallow wells, SG-22, SG-04S, and SG-07S, had methane detected in them. Once it was determined that the other shallow wells were not going to be a concern due to methane levels, monitoring of these wells was decreased. Additionally, on September 26th, 2007 SG-04S no longer functioned as a soil gas well. During operation, water was found to be above the screened level in this well, thus preventing soil gas from entering the well and readings were unable to be collected.

Soil Gas Monitoring Results

The first objective of the start-up plan was as follows:

- Determine whether methane or other potentially explosive gasses are present in the subsurface and if so, whether they may pose an explosive hazard at the onsite treatment system building or the nearby residential buildings.

The bioventing system ran for a total of approximately 20 hours before a significant change in the gas composition of the intermediate, deep, and certain shallow wells was visible, as can be seen in the attached Graphs 1, 2 and 3. Shallow wells located in the wood chip area showed significant changes in gas composition approximately 100 hours after the system started, as can be seen in the attached Graph 4. In general it was found that shallow bioventing wells located in the wood chip area (SG-22, SG-07S, SG-04S) began with a higher concentrations of methane and carbon dioxide and no oxygen. Over the course of the approximately two months that the bioventing system was running, carbon dioxide and methane levels dropped; however, the oxygen levels at these three wells remained at zero percent. All intermediate wells, deep wells, and shallow wells located outside of the wood chip area exhibited similar changes in gas composition with each other. They all followed the pattern of increasing oxygen levels and decreasing carbon dioxide levels throughout the months of bioventing activity. Oxygen generally stabilized for each well at approximately 20 percent. Methane was not detected in any of these wells. For examples of the gas levels and changes found in each of the well types, refer to the attached graphs.

As discussed above soil gas monitoring did not show migration of methane in the subsurface to the critical monitoring points adjacent to the treatment building or at the property boundary during system operation. The start-up monitoring demonstrated that there is not an explosive hazard at these locations as a result of bioventing system operation. The monitoring did demonstrate the presence of methane in the shallow subsurface in the wood chip area of the CAMU. It was apparent that the methane was easily escaping through the CAMU surface prior to migrating laterally. As a result of these observations it was felt that operation of the system with the ground frozen would introduce risk from methane migration. This is because the ground can act like a cap, preventing escape of the methane through the CAMU surface and thus resulting in lateral migration. The biovent system thus was shut down during the winter.

The second objective of the start-up plan was as follows:

- Determine whether bioventing increases subsurface temperatures to the point that subsurface ignition of wood chips in the Corrective Action Management Unit (CAMU) could occur.

Sharp temperature increases were a concern in the shallow soil gas wells located in the wood chip area where there was a danger that the wood chips could be ignited and result in a subsurface landfill fire (SG-22, SG-07S, and SG-04S). The concern was based on the bioventing system causing a change from an anaerobic to aerobic environment resulting in rapid biodegradation of organics in the wood chips with attendant rapid rise in temperature to the point of ignition. Temperature increases of 5 Celsius degrees in a 24 hours period or any temperature recorded that exceeded 75 Celsius degrees would warrant an immediate system shut down.

Baseline temperatures were collected from each soil gas well prior to bioventing startup. Temperatures were collected initially at all the soil gas wells while the system was running and later temperatures were collected at only the shallow wells where the concern was greatest. During bioventing system operation, temperatures never changed enough to cause a concern.

Soil gas measurements were also taken to evaluate the radius of influence of the system. Pressure levels were collected from each soil gas well following the start-up of the system. Pressures were collected for the first several days and were discontinued following stabilization of the pressures at each well. At each well pressures typically ranged from 0.1 to 2.4 inches of water.

During the bioventing startup, it was initially thought that VOC readings from a PID and/or FID would provide additional information from the soil gas wells. During startup the PID did not provide consistent VOC measurements and was adversely affected by the wet weather conditions during bioventing startup. The lack of VOC data from startup did not impact the evaluation of the effectiveness of the bioventing system.

During bioventing system start-up it was initially thought that soil gas readings from nearby monitoring wells would provide additional information regarding the effectiveness of the bioventing system. After collecting the baseline readings from these wells and starting the bioventing system, it was determined that soil gas readings from these wells would not be required due to the similarity of readings in nearby soil gas wells.

LNAPL Thickness Monitoring

The second objective of the start-up plan was as follows:

- Determine whether the biovent system effects LNAPL thickness or results in the spreading of LNAPL.

The baseline depth to water and LNAPL measurements showed LNAPL present in monitoring wells MW-10S, 18, 19, and 20. Monitoring wells MW-10S, 18, 19 and 20 have historically had LNAPL present. In general LNPAL thicknesses have fluctuated from not

present to around one foot in thickness in these four monitoring wells. During biovent system operation no spreading of LNAPL was found. The biovent system also did not appear to have an appreciable effect on the LNAPL thickness in the four monitoring wells that have historically had LNAPL present.

Process Monitoring

Process measurements such as air injection well flow rates and pressures, vacuum before and pressure after the air injection blower were constantly monitored during system startup, and monitored weekly following the stabilization of the bioventing system. Measured pressures in each well stabilized at approximately 1 psi. Air flow rates for the deep bioventing wells (EW-02, EW-03, EW-04, EW-05, EW-06, and EW-07) were set between 300 and 430 scfm. Air flow rates for each of the shallow bioventing wells (BV-08 and BV-09) were set at approximately 160 scfm. Deep wells were designed for a maximum flow of 500 scfm and shallow wells for a maximum of 200 scfm.

Bioventing Operation Schedule

The system operated fairly consistently from September 24th until November 1st, at which point an electrical problem shut the system down. Operation was restored on November 8th, and the bioventing system operated until November 24th, at which point an additional electrical problem was found. The bioventing system did not operate from November 24th until December 18th.

Soil gas measurements from the deep and intermediate wells on December 18th showed no drop in oxygen levels from the soil gas measurements on November 19th prior to the shutdown of the bioventing system. However, shallow wells located in the wood chip area (SG-22 and SG-07S) showed increases in methane (5.8 to 8.6% and 0.5 to 5.6%, respectively). Because of the increases of methane and the frozen ground surface (which prevents upward release of the methane and may result in a lateral spreading of the methane to nearby residences), it was deemed prudent to shut the biovent system down until the ground had thawed. In addition, the biovent system has been successful at maintaining a minimum of 5% oxygen in this deep zone as well as in the intermediate zone even while not operating for extended periods of time, therefore constant operation of the biovent system is not required to achieve the aerobic atmosphere.

Following the thawing of the ground and continued monitoring of oxygen utilization rates, the biovent system activity will be restored with new monitoring criteria.

Table 1
Depth to Water and LNAPL measurements

	Baseline-Biovent and LNAPL Collection Systems Off			9/25/2007			9/26/2007			9/28/2007			10/1/2007		
Well ID	DTW (ft)	DTP (ft)	Product Thickness (ft)	DTW (ft)	DTP (ft)	Product Thickness (ft)	DTW (ft)	DTP (ft)	Product Thickness (ft)	DTW (ft)	DTP (ft)	Product Thickness (ft)	DTW (ft)	DTP (ft)	Product Thickness (ft)
MW-1	88.52	NP	0	88.51	NP	0	88.5	NP	0	88.49	NP	0	88.53	NP	0
MW-2	81.44	NP	0	81.39	NP	0	81.38	NP	0	81.37	NP	0	81.43	NP	0
MW-5	88.53	NP	0	88.14	NP	0	88.5	NP	0	NM	NM	0	88.57	NP	0
MW-16	98.06	NP	0	NM	NM	0	97.98	NP	0	97.99	NP	0	98.03	NP	0
MW-21	112.01	NP	0	NM	NM	0	112.77	NP	0	112.05	NP	0	112.1	NP	0
MW-6S	124.89	NP	0	124.84	NP	0	124.84	NP	0	124.86	NP	0	124.91	NP	0
MW-09	36.69	NP	0	NM	NM	0	36.71	NP	0	36.69	NP	0	36.72	NP	0
MW-22	100.92	NP	0	NM	NM	0	100.94	NP	0	100.93	NP	0	100.99	NP	0
MW-10S	106.78	106.74	0.04	NM	NM	0	107.83	NM	0	NM	NM	0	108.22	106.98	1.24
MW-18	NM	NM	NM	NM	NM	0	88.59	88.49	0.1	NM	NM	0	88.72	88.59	0.13
MW-19	105.9	104.83	1.07	NM	NM	0	106.25	104.82	1.43	106.4	104.89	1.51	106.4	104.93	1.47
MW-20	NM	NM	NM	NM	NM	0	115.48	113.89	1.59	115.6	113.92	1.68	115.4	113.97	1.43

	10/2/2007*			10/2/2007*			10/5/2007			10/11/2007*			10/18/2007*			10/30/2007*		
Well ID	DTW (ft)	DTP (ft)	Product Thickness (ft)	DTW (ft)	DTP (ft)	Product Thickness (ft)	DTW (ft)	DTP (ft)	Product Thickness (ft)	DTW (ft)	DTP (ft)	Product Thickness (ft)	DTW (ft)	DTP (ft)	Product Thickness (ft)	DTW (ft)	DTP (ft)	Product Thickness (ft)
MW-1	88.51	NP	0	88.52	NP	0	87.57	NP	0	88.59	NP	0	88.5	NP	0	88.51	0	NP
MW-2	81.42	NP	0	81.44	NP	0	81.44	NP	0	81.42	NP	0	81.49	NP	0	81.42	0	NP
MW-5	NM	NP	0	88.56	NP	0	88.6	NP	0	88.49	NP	0	88.57	NP	0	88.45	0	NP
MW-16	98.03	NP	0	98.05	NP	0	98.06	NP	0	98.16	NP	0	98.1	NP	0	98.06	0	NP
MW-21	112.11	NP	0	112.12	NP	0	112.09	NP	0	112.2	NP	0	112.1	NP	0	112.11	0	NP
MW-6S	124.91	NP	0	124.94	NP	0	124.99	NP	0	124.98	NP	0	125.06	NP	0	*124.96	0	NP
MW-09	36.74	NP	0	36.74	NP	0	36.7	NP	0	36.86	NP	0	36.77	NP	0	36.69	0	NP
MW-22	100.99	NP	0	101	NP	0	101.02	NP	0	101.06	NP	0	101.06	NP	0	101.00	0	NP
MW-10S	NM	NM	0	108.2	107.00	1.2	108.29	107.04	1.25	108.2	107.02	1.18	108.1	107.9	0.2	107.68	107.02	0.66
MW-18	NM	NM	0	88.78	88.60	0.18	88.72	88.59	0.13	88.56	88.69	-0.13	88.82	88.66	0.16	88.79	88.59	0.2
MW-19	106.08	104.95	1.13	106.06	104.95	1.11	106.24	105	1.24	106.01	104.95	1.06	106.71	105.03	1.68	105.89	104.98	0.91
MW-20	115.41	114.00	1.41	115.6	114.04	1.56	115.7	114.09	1.61	115.3	114.03	1.27	115.25	114.15	1.1	115.2	114.04	1.16

NP no product
NM not measured
* LNAPL pumps resumed normal operation after baseline sampling was complete.
LNAPL in well prior to Baseline sampling.

\hercules\proj\EPA\151745-Penta Wood\CAD\DRAWINGS\CONST DOCS\QAPPfig02c_031408.dgn 26-MAR-2008

N

0 100' 200'

N 2200
N 2000
N 1800
N 1600
N 1400
N 1200
N 1000
N 800
N 600

E 200 E 400 E 600 E 800 E 1000 E 1200 E 1400 E 1600 E 1800 E 2000 E 2200 E 2400 E 2600

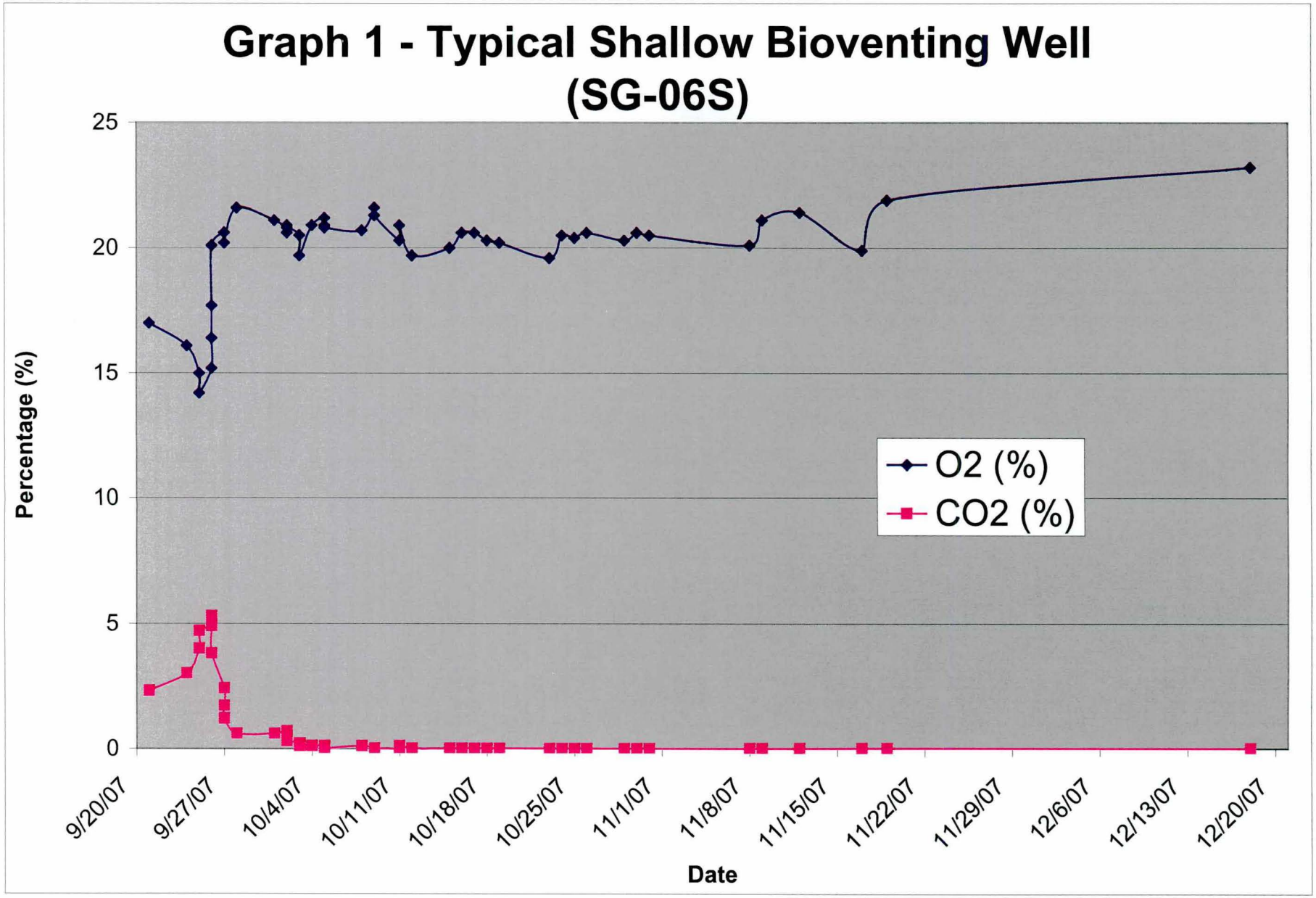
INFILTRATION BASIN
PROPERTY BOUNDARY
CAMU OUTLINE
NEW ROAD
EXISTING TREATMENT BUILDINGS
DANIELS 70

MW 11
MW8
MW26
MW 17
MW 13
MW23
MW 9
EW11
MW 16
MW 12
MW24
EW02
MW 5
MW 2
SG04
MW 10
MW 10S
EW03
MW 18
EW05
MW 7
SG-23
EW-01
EW10
SG05
EW04
MW 20
MW 14
EW06
MW 19
MW 1
MW 6
MW 6S
SG07
SG06
EW07
MW 4
BV08
MW22
BV09
SG22
PW 01
MW 3
MW21
SG-24
SG-26
SG-25
MW 15

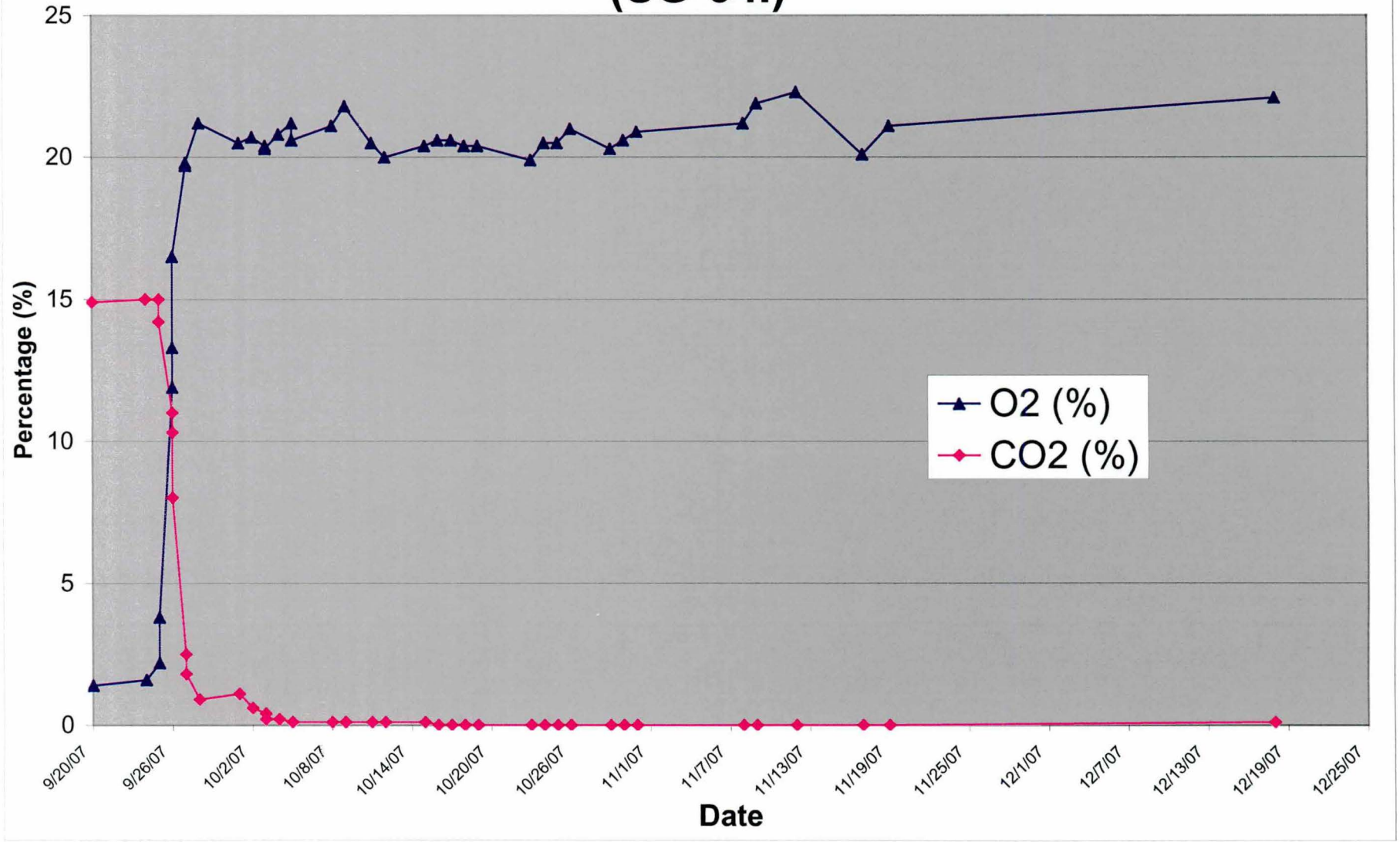
LEGEND

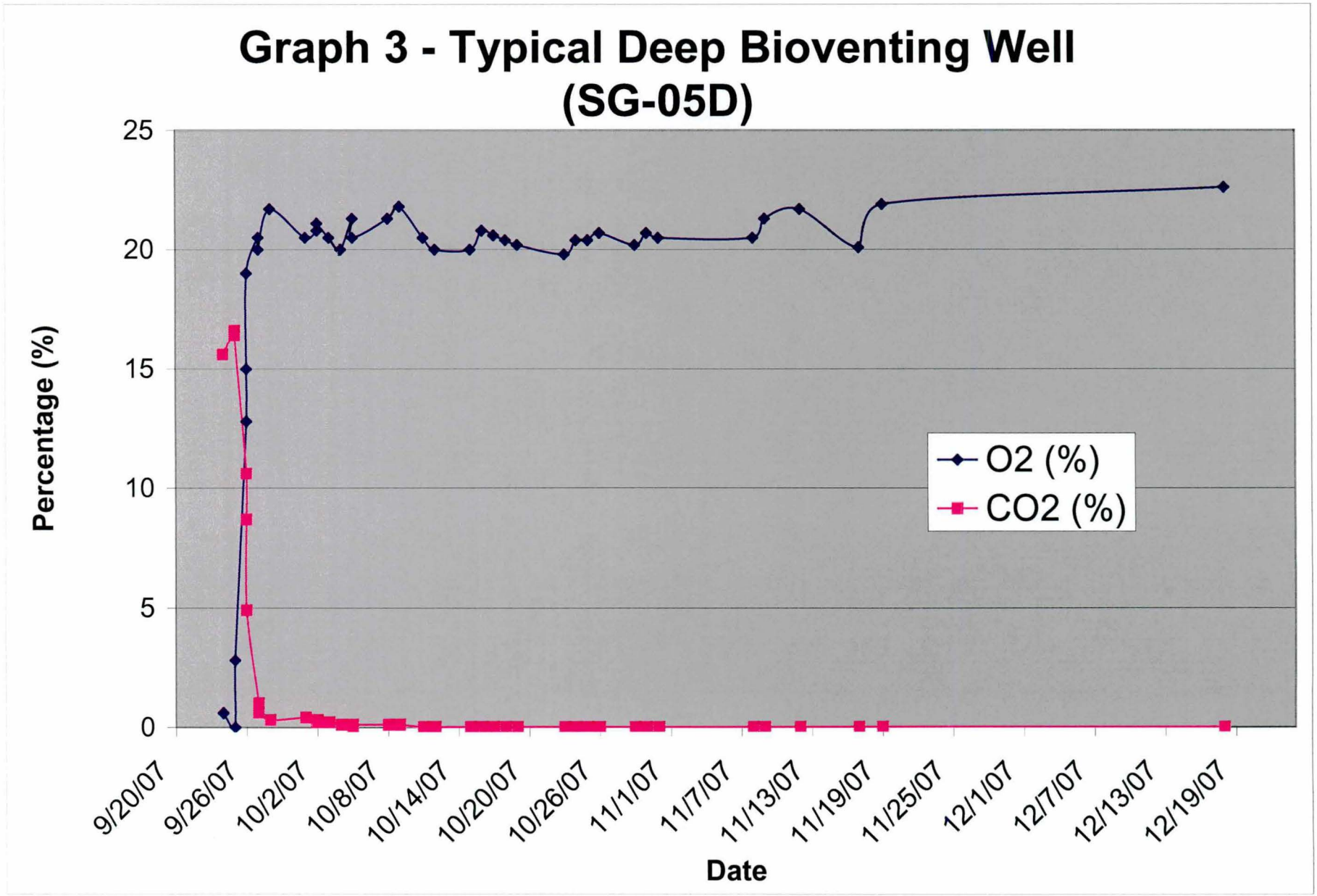
EW11 EXTRACTION WELL NEST
BV09 BIOVENTING WELL NEST
SG05 SOIL GAS WELL NEST
UNCONFINED MONITORING WELL LOCATION
SEMICONFINED MONITORING WELL LOCATION
TEMPORARY SOIL GAS WELL (APPROXIMATE)

SITE PLAN
PENTA WOOD PRODUCTS
CH2MHILL


Graph 1 - Typical Shallow Bioventing Well (SG-06S)
Percentage (%)
25
20
15
10
5
0
O2 (%)
CO2 (%)
9/20/07
9/27/07
10/4/07
10/11/07
10/18/07
10/25/07
11/1/07
11/8/07
11/15/07
11/22/07
11/29/07
12/6/07
12/13/07
12/20/07
Date

Graph 2 - Typical Intermediate Bioventing Well (SG-04I)




Graph 3 - Typical Deep Bioventing Well (SG-05D)
Percentage (%)
25
20
15
10
5
0
9/20/07
9/26/07
10/2/07
10/8/07
10/14/07
10/20/07
10/26/07
11/1/07
11/7/07
11/13/07
11/19/07
11/25/07
12/1/07
12/7/07
12/13/07
12/19/07
Date
O2 (%)
CO2 (%)

Graph 4 - Typical Shallow Bioventing Well in Wood Chip Area (SG-22)