
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

2013 ANNUAL REPORT
PENTA WOOD PRODUCTS SITE
Penta Wood Products Superfund Site
Burnett County, Wisconsin

WA No. 132-LRLR-05WE/Contract No. EP-S5-06-01

April 2014

PREPARED FOR

U.S. Environmental Protection Agency



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2013 Annual Report

Penta Wood Products Site

WA No. 132-LRLR-05WE/Contract No. EP-S5-06-01

Prepared for



April 2014

CH2MHILL®

Executive Summary

The annual report documents the activities associated with the groundwater long-term remedial action (LTRA) that occurred at the Penta Wood Products Site, as performed by CH2M HILL for the U.S. Environmental Protection Agency (EPA) under Work Assignment No. 132-LRLR-05WE.

The LTRA includes the following:

- Operation and maintenance and performance monitoring of the groundwater extraction and treatment system
- Light nonaqueous phase liquid (LNAPL) removal
- Bioventing system operation and monitoring, and groundwater monitoring for long-term monitored natural attenuation
- Hazardous waste generation and disposal, and site inspections and maintenance.

The continued operation of the groundwater extraction wells has depressed the water table in the LNAPL zone and promoted LNAPL removal. The continued operation of the groundwater extraction wells has also effectively captured and reduced the area of groundwater containing 1,000 micrograms per liter or more of pentachlorophenol (PCP). The overall groundwater concentrations are reducing towards levels that can be improved by natural attenuation in accordance with the Wisconsin Administrative Code NR 140 standards.

The continuous operation of the LNAPL recovery has reduced the source of PCP to the groundwater. Bioventing operation has promoted natural degradation of the residual diesel fuel petroleum hydrocarbons and PCP in unsaturated zones, including the LNAPL smear zone.

The groundwater extraction wells and product recovery wells convey influent to the water treatment system, and the effluent is discharged in accordance a Wisconsin Pollutant Discharge Elimination System permit.

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Abbreviations and Acronyms

BTEX	benzene, toluene, ethylbenzene, and xylene
CAMU	Corrective Action Management Unit
DAF	dissolved air flotation
EPA	U.S. Environmental Protection Agency
ES	Enforcement Standard
EW	extraction well
LNAPL	light nonaqueous phase liquid
LTRA	long-term removal action
MG	million gallons
µg/L	micrograms per liter
mg/L	milligrams per liter
MW	monitoring well
NAPL	nonaqueous phase liquid
ORP	oxidation-reduction potential
PAL	preventative action limit
PCP	pentachlorophenol
PEL	Permissible Exposure Limit
PWP	Penta Wood Products
RA	remedial action
scfm	standard cubic feet per minute
WDNR	Wisconsin Department of Natural Resources
WPDES	Wisconsin Pollutant Discharge Elimination System

Introduction

The purpose of this annual report is to document the groundwater monitoring, groundwater treatment system, and bioventing system operation; the hazardous waste generation and disposal; the site inspections and maintenance; and other remedial activities that occurred at the Penta Wood Products Site, as performed by CH2M HILL for the U.S. Environmental Protection Agency (EPA) under Work Assignment No. 132-LRLR-05WE.

1.1 Background

The Penta Wood Products Superfund Site (PWP) is an inactive wood-treating facility located along Daniels 70 (former State Route 70) in Burnett County, Wisconsin. It is approximately 78 miles northeast of Minneapolis, Minnesota, and 60 miles south of Duluth, Minnesota. The Village of Siren, Wisconsin, is approximately 2 miles east of the site (see Figure 6).

The PWP site property consists of approximately 82 acres that in the pasts were actively used for cutting and treating raw wood timber products. The PWP site is situated on a plateau with a 110-foot drop in elevation from the southern boundary to the northern boundary. The site stratigraphy consists of the following three layers: an upper sand layer, a glacial till layer that is not continuous throughout the site, and a lower sand layer. The depth to groundwater is over 100 feet on the plateau. The regional groundwater flow direction is to the north. Since the closing of the former facility production well, the local groundwater flow direction at the site has been radial.

PWP operated from 1953 to 1992. Raw timber was cut into posts and telephone poles and treated with either a 5 to 7 percent pentachlorophenol (PCP) solution in a No. 2 fuel oil carrier or with a waterborne salt treatment called Chemonite consisting of ammonia, copper II oxide, zinc, and arsenate (ACZA). PWP also conducted blending of pentachlorophenol and fuel oil on a contract basis for industrial users just prior to closing in 1992. During its 39 years of operation, PWP discharged wastewater from an oil/water separator down a gully into a lagoon on the northeast corner of the property. Process wastes were also discharged onto a wood chip pile in the northwestern portion of the property. On December 28, 2000, construction completion at the site was achieved with the startup of the initial treatment system. The treatment system operated for approximately 1 year prior to September 2001. The treatment system only consisted of a carbon filtering system and was having trouble meeting effluent criteria. It was shut down in September 2001 to allow for pilot testing and plant modifications intended to help meet effluent criteria (a pretreatment system was added to more effectively treat the groundwater and capture the LNAPL). It was restarted in February 2004 and has been running continuously, with the exception of occasional downtime for routine maintenance and repairs. The remedy was accepted in August of 2004 by the State of Wisconsin.

1.2 Remedial Action Objectives

Remedial action (RA) objectives were developed as a result of data collected during the remedial investigation to aid in the development and screening of remedial alternatives to be considered for the Record of Decision. Pentachlorophenol and arsenic were identified as the primary risk drivers at the site. PCP present in soils extending down to groundwater is a major component of the source for the light nonaqueous phase liquid (LNAPL) which is present on the surface of the groundwater within the CAMU area. Arsenic was present primarily in surface soils and wetland sediments.

1.2.1 Pentachlorophenol

The LTRA objective is to reduce the PCP content within soils to achieve compliance with Wisconsin Administrative Code Chapter NR 720 and in groundwater to achieve compliance with preventive action limits (PALs) as established in Wisconsin Administrative Code Chapter NR 140 within a reasonable period of time. The reduction is being accomplished by removing the free-phase LNAPL (by extraction and onsite treatment) and associated highly contaminated groundwater, remediating the PCP in the soils, and monitoring the intrinsic attenuation of PCP in

groundwater. Capture of the contaminant groundwater and LNAPL is ongoing. Institutional controls are used to prevent groundwater use or direct-contact exposure prior to achieving compliance.

1.2.2 Arsenic

Highly contaminated arsenic soils were immobilized and consolidated with other arsenic-contaminated soils (above background) and secured in a Corrective Action Management Unit (CAMU) to achieve compliance with Wisconsin Administrative Code Chapter NR 720. Soil contaminated with arsenic and other metals were managed to essentially eliminate the direct-contact exposure route and to protect groundwater.

1.2.3 Erosion Controls

An erosion control plan was implemented and maintained to prevent physical transport of contamination offsite and to protect the CAMU and consolidated areas from damage. The erosion control measures are periodically inspected and maintained/repared as necessary.

1.3 Aquifer Description

The aquifer system at the PWP site consists of two aquifers: an unconfined and semiconfined. The unconfined aquifer consists of a thin zone of groundwater within the upper sand unit, which rests upon a consolidated glacial till. The semiconfined aquifer consists of the groundwater within the sand unit located beneath the glacial till. Beneath the CAMU, the less permeable till deposits are discontinuous. When the deposits are absent, the aquifer likely acts like a single unconfined aquifer. Monitoring wells are installed in both the unconfined and semiconfined aquifers, although the extraction wells penetrate both aquifers in an attempt to remediate the contaminated groundwater that is present in both aquifers. Additional information about the aquifers is located in the remedial investigation report (CH2M HILL 1998).

1.4 Current Site Operations

1.4.1 Groundwater Monitoring

Semiannual and annual groundwater monitoring events are conducted each year. Water level and LNAPL measurements are also made to determine LNAPL thickness and groundwater flow direction(s). The activities are described in more detail in Section 2.

1.4.2 Treatment System Operation and Maintenance

The treatment system at the PWP site 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 to contain groundwater contamination. It also allows LNAPL to collect near the extraction wells. The depressed groundwater also exposes an additional area of LNAPL smear zone. The bioventing system was installed to provide oxygen for the aerobic biodegradation of residual diesel fuel petroleum hydrocarbons and PCP in the vadose zone and LNAPL smear zone. The treatment system is discussed in more detail in Section 3.

1.4.3 Waste Generation and Disposal

The RA activities at the site result in the generation of hazardous waste. There are three main waste streams at the site: filter cake, spent carbon, and LNAPL. Waste generation and disposal at the site is described in detail in Section 4.

1.4.4 Site Inspection and Maintenance

Current site conditions, including erosion conditions, are detailed in Section 5.

SECTION 2

Groundwater Monitoring

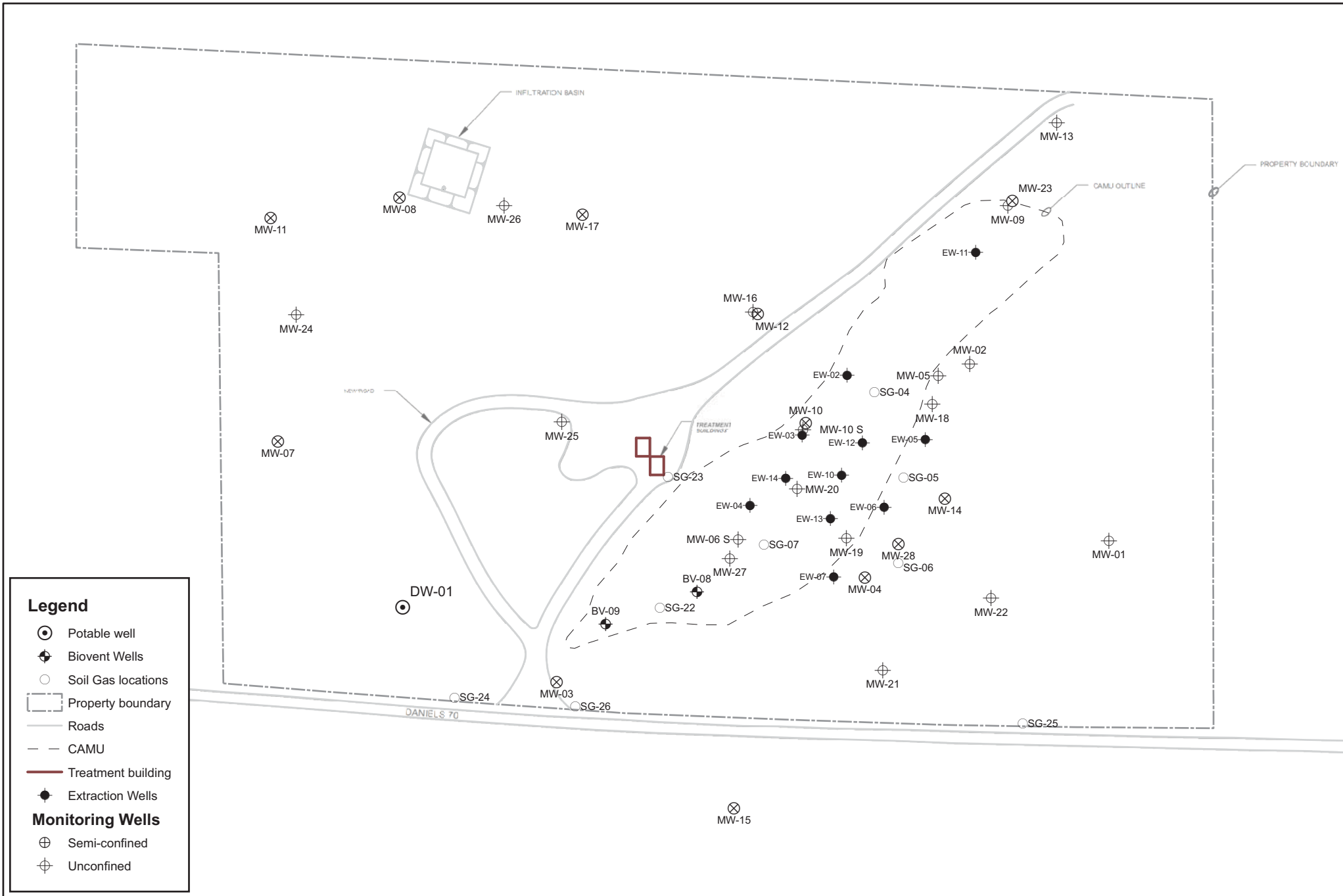
The results of the two groundwater sampling events completed in 2013 are presented in this report. This update of the previous year's report revises evaluations based on new data. This is the 12th year of post-RA groundwater monitoring at the PWP site, and this is the 12th annual report documenting the activities at the site. The groundwater monitoring network at the site consists of 28 monitoring wells (Figure 1) and five residential wells (Figure 2), although some of the wells are not currently sampled because neighboring wells of similar depth are sampled. The two sampling events are called the semiannual (in spring) and the annual (in fall). The semiannual event was added in 2008 to assess seasonal variability in groundwater levels and LNAPL thickness. Less wells are sampled during the semiannual event; however, they are representative of the larger well set during the annual event in depth and site placement.

The semiannual groundwater sampling event was conducted in May 2013 and consisted of sampling five monitoring wells, (MW-12, MW-15, MW-19, MW-22, and MW-26), five residential wells (RW-01 through RW-05), and one onsite potable well, along with static water level measurements collected at monitoring wells and measurement of LNAPL thickness in monitoring wells where present. The annual groundwater sampling event was conducted in October 2013 and consisted of sampling 15 monitoring wells (MW-02, MW-03, MW-05, MW-06S, MW-07, MW-09, MW-10, MW-12, MW-15, MW-16, MW-17, MW-19, MW-22, MW-26, and MW-28), 5 residential wells (RW-01 through RW-05), and 1 onsite potable well. The following wells in the unconfined aquifer were sampled: MW-02, MW-05, MW-06S, MW-09, MW-16, MW-19, MW-22, and MW-26. The following wells in the semiconfined aquifer were sampled: MW-03, MW-07, MW-10, MW-12, MW-15, MW-17, and MW-28.

During the groundwater sampling events, samples were collected to monitor groundwater quality. Parameters that were analyzed include the following compounds of concern: PCP; naphthalene; benzene, toluene, ethylbenzene, and xylene (BTEX); dissolved metals; and natural attenuation parameters. A summary of the analytical results for the May and October sampling events is provided in Appendix A, and the natural attenuation parameters that were sampled for in May and October are provided in Appendix B. The October 2013 monitoring well results reflect approximately 9.5 years of optimized system operation since the groundwater treatment system was restarted in 2004. The groundwater results also reflect approximately 6 years of bioventing system operations.

Water surface elevations and LNAPL thickness measurements were collected to determine the amount of LNAPL remaining in the ground and the groundwater flow direction(s) in the unconfined and semiconfined aquifers. Groundwater elevations, oil/water interface measurement data, historical LNAPL thickness data, and other observations are included 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 affected 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.



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Figure 1

Well Location Map
 2013 Annual Report
 Pentawood Products Superfund Site
 Siren, Wisconsin

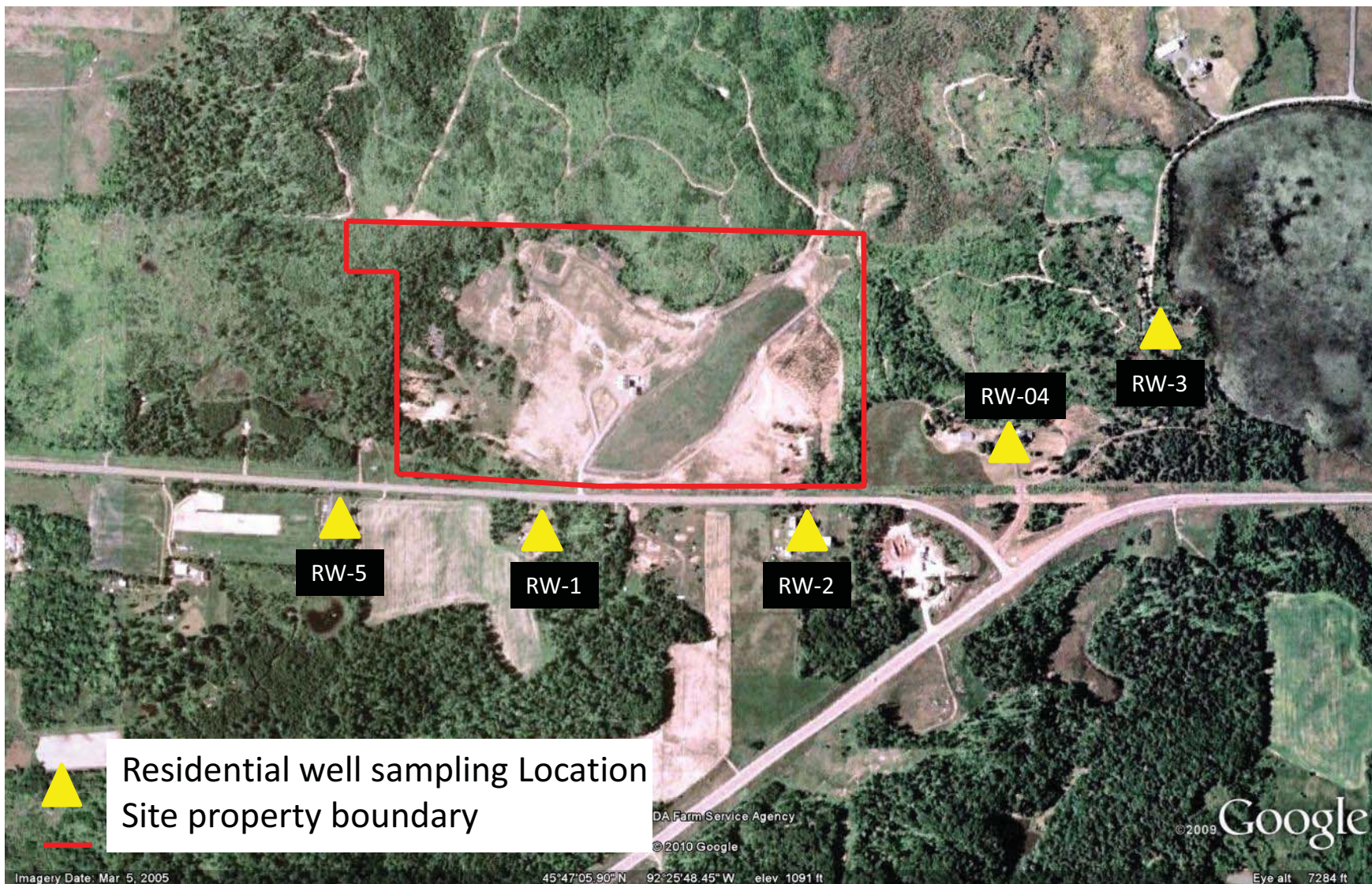


Figure 2
Residential Well Map
Pentawood Products Superfund Site
Siren WI

2.1 Water Levels and LNAPL Measurements

Water levels in monitoring wells were measured in May and October 2013. 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 was present, the depth to the LNAPL surface and water surface were measured from the top of the inner well casing using an oil/water interface probe.

Groundwater elevations, oil/water interface measurement data, historical LNAPL thickness data, and other observations are included in Appendix C.

The following subsection discusses LNAPL thickness and distribution and the effects the groundwater extraction well network has had on the unconfined and semiconfined aquifers.

2.1.1 LNAPL Thickness

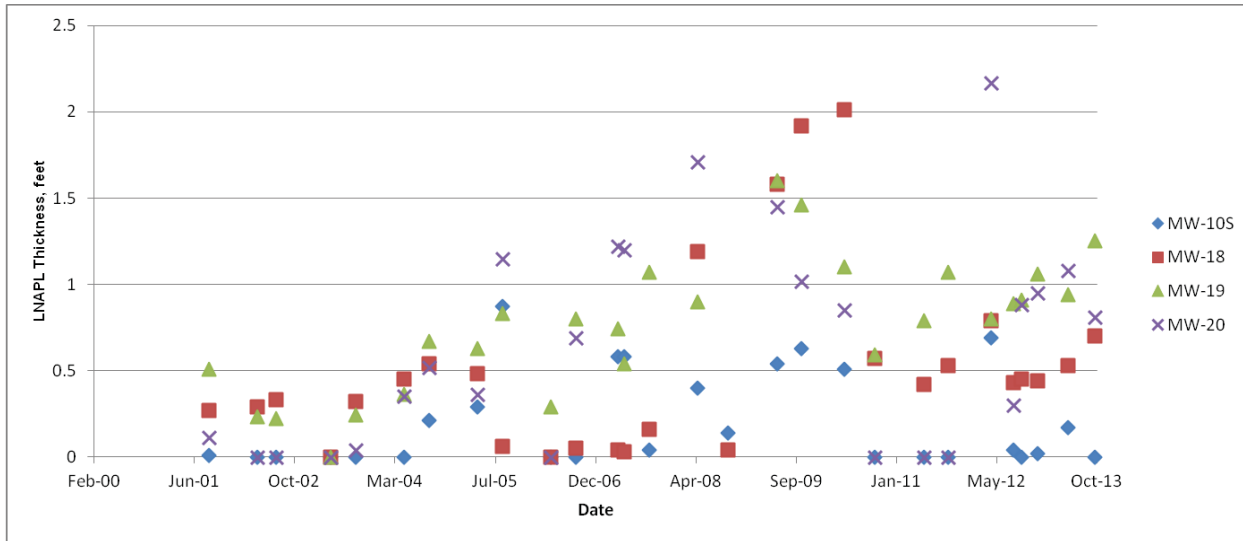
LNAPL was observed in four monitoring wells during the annual and semiannual sampling events. MW-10S was observed to be dry during the semiannual event and therefore no LNAPL was observed. The observed LNAPL thicknesses are summarized in Table 1.

TABLE 1
2013 Monitoring Well LNAPL Measurement
Penta Wood Products Site

Monitoring Well	LNAPL Measurement (feet)	
	Semiannual Event May 2013	Annual Event October 2013
MW-10S	0.17	Not measured
MW-18	0.45	0.70
MW-19	0.91	1.25
MW-20	0.88	0.81

In May 2013, the LNAPL measured in monitoring wells MW-10S, MW-18, and MW-19 was slightly thicker than in May 2012. The October 2013 LNAPL thicknesses measured were similar and slightly thinner than the thicknesses observed in October 2012. There was a measureable amount of LNAPL in the wells monitored in October 2013, except for MW-10S. The increase in LNAPL thickness from May to October is likely the result of a declining water table. As the water table drops, a larger thickness of the smear zone is exposed above the water table. The historical observed LNAPL thicknesses are shown in Figure 3. The observed LNAPL thicknesses have varied since the extraction began controlling the LNAPL extent once the system was turned on for continuous operation in February 2004.

FIGURE 3
Historical LNAPL Thickness
Penta Wood Products Site



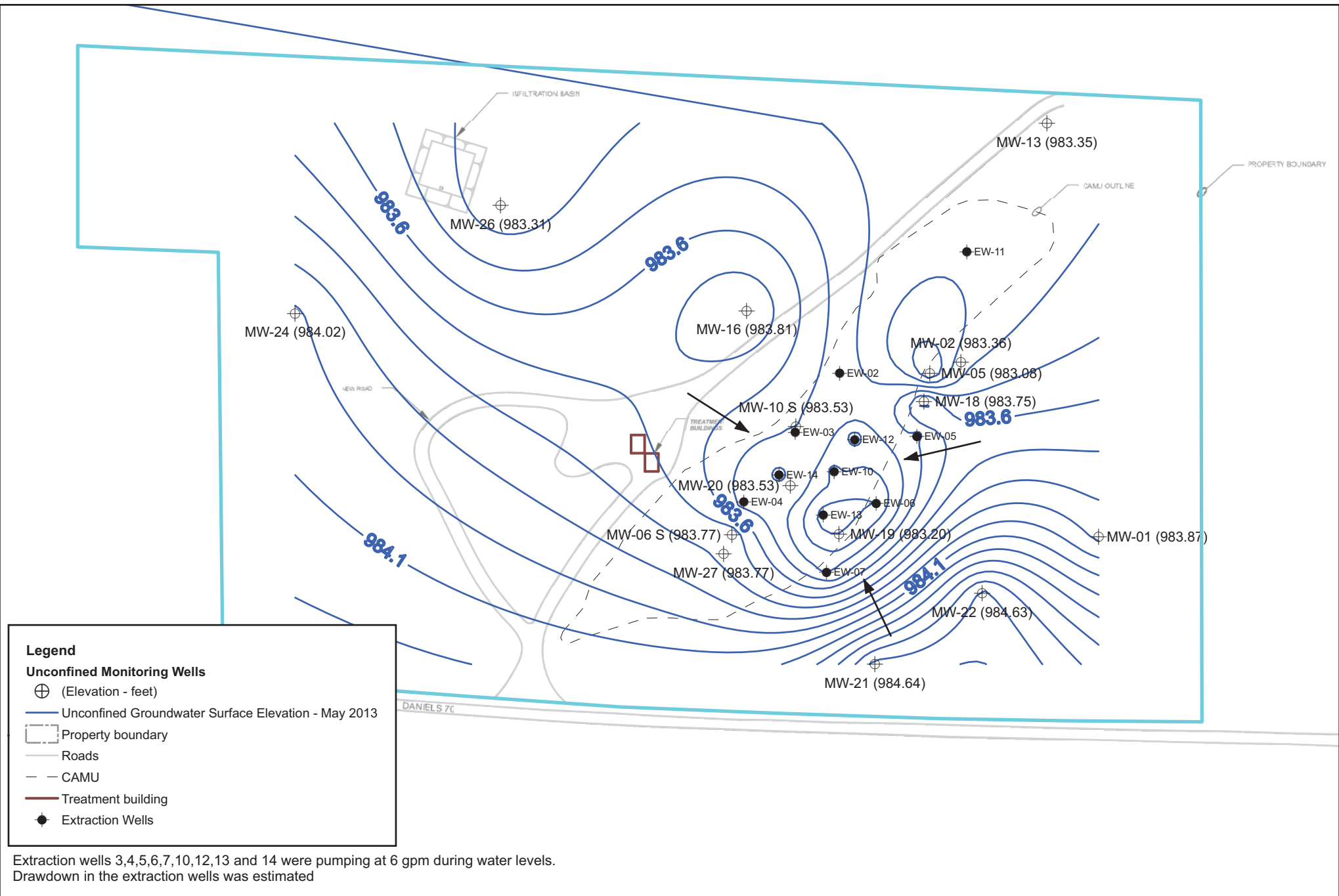
2.1.2 Capture Zone Analysis

The groundwater extraction system at the site was designed to create a depression in the water table promoting migration of LNAPL and groundwater containing dissolved-phase PCP toward the extraction wells to enhance the LNAPL recovery at the site. The capture effectiveness was primarily evaluated based on site-specific field data, including potentiometric surface maps and the calculated horizontal gradients as described in the following subsections. The capture zone analysis will loosely follow EPA’s guidance on capture zone analysis six-step process. The site conceptual model has been developed previously, and the site-specific target capture zone has been established as the area of groundwater with PCP levels exceeding 1,000 micrograms per liter (µg/L). Included in the capture zone analysis are horizontal and vertical gradients, potentiometric surface maps, and concentration trends. No additional modeling or calculations have been completed to confirm the capture because the presented evidence makes a clear case that capture is occurring.

2.1.2.1 Unconfined Aquifer

Potentiometric Surface. The water level elevations recorded in May 2013 and October 2013 continued to show a depression in the potentiometric surface caused by the groundwater extraction system. The May 2013 (Figure 4) and October 2013 (Figure 5) groundwater elevation contours indicate a cone of depression in the groundwater surface that drops more than 1 foot between MW-22 and MW-19. The capture zone is bounded by MW-02 on the north, MW-16 on the west, and MW-22 on the east, as indicated by the lower water level elevations observed in the monitoring wells located within or adjacent to the CAMU. The unconfined aquifer is considered a potentiometric surface due to the presence of LNAPL and the potential for the groundwater surface to be depressed.

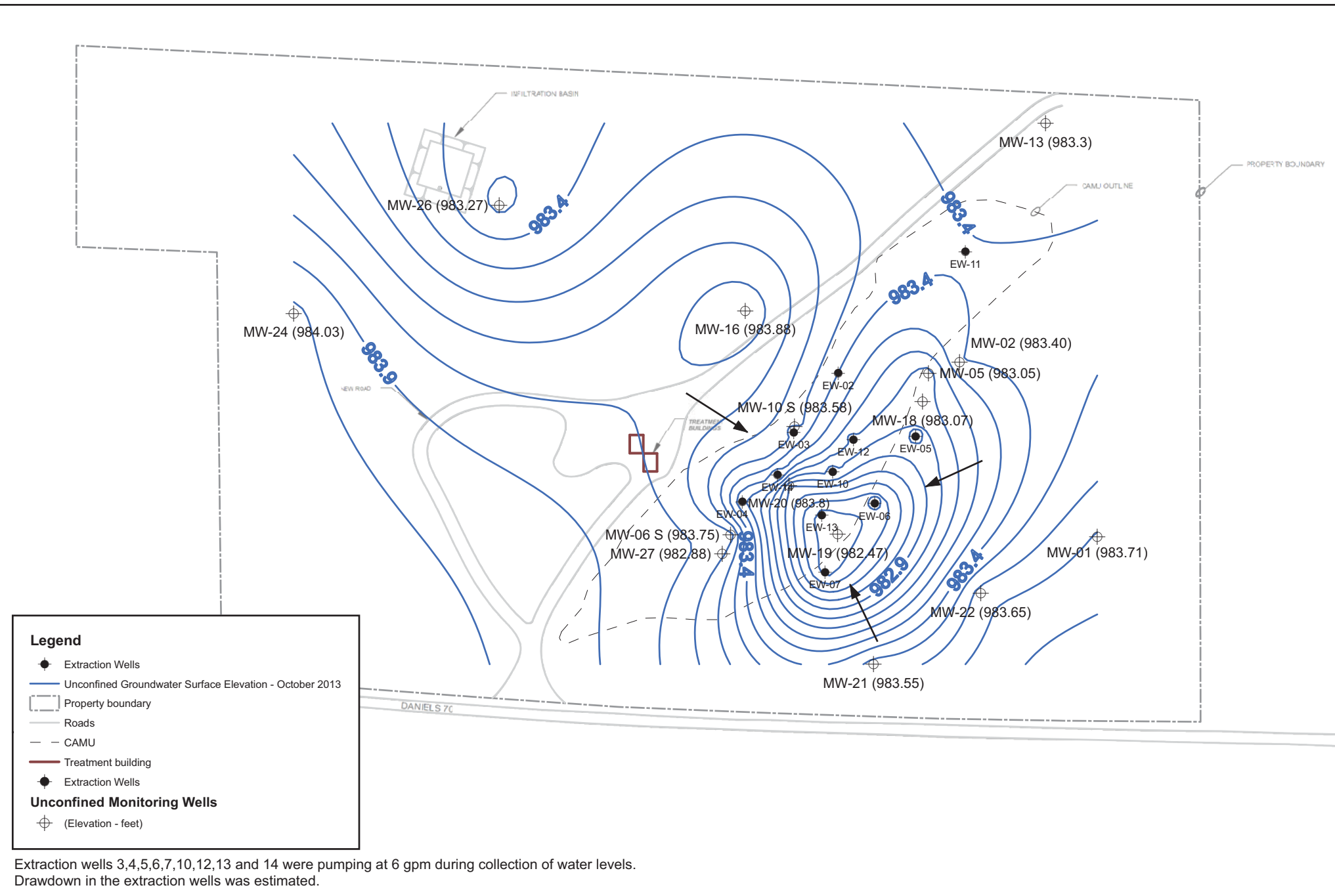
The discharge of treated groundwater into the infiltration basin has caused water levels to be elevated locally but has not negatively impacted the capture zone on the CAMU. In the unconfined aquifer, some variability in the groundwater elevation was observed from 2012 to 2013, especially near MW-05, MW-18, and MW-02, although the capture zone appeared to be largely intact. The variability of the water table surface is likely a function of both the influence of the treatment system’s pumping wells and varying surface infiltration rates across the site.



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Figure 4
 Unconfined Groundwater Elevation - May 2013
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 Siren, Wisconsin



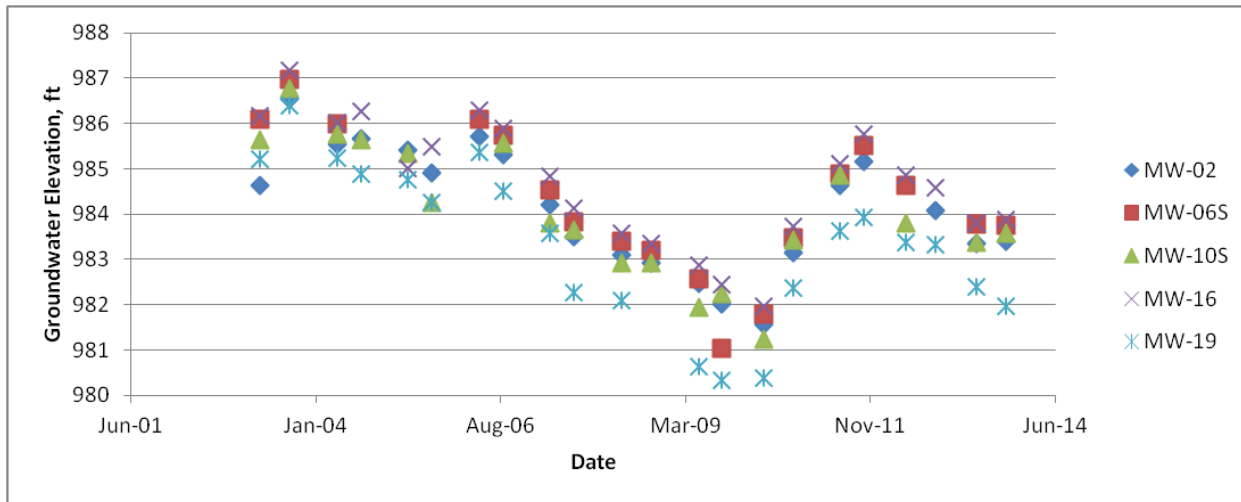
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Figure 5
 Unconfined Groundwater Elevation - October 2013
 2013 Annual Report
 Pentawood Products Superfund Site
 Siren, Wisconsin

Water levels in the unconfined aquifer were steadily declining from 2003 through 2009, likely due to reduced precipitation in the region. In 2011, a wet year was the likely reason for water-table rebound, but once again reduced rainfall in 2012 and 2013 has caused the water table to decline. The water table elevation trends have exhibited an inverse relationship to the thickness of LNAPL (as groundwater elevations decrease, LNAPL thickness increases). Figure 6 shows the trends in the groundwater elevation in unconfined monitoring wells since 2002.

FIGURE 6
Water Elevations in Unconfined Wells
Penta Wood Products Site



Hydraulic Gradients. Horizontal hydraulic gradients were calculated using groundwater elevations from monitoring wells screened in the unconfined aquifer located inside and outside the capture zone created by the extraction wells. The gradients calculated for 2004 (which represents the treatment system operation shortly after startup), 2011, 2012, and 2013 are summarized in Table 2. A positive gradient indicates groundwater flow towards the capture zone and the extraction wells.

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

Monitoring Well Outside Capture Zone	Monitoring Well Inside Capture Zone	Gradients							
		May 2004	June 2011	May 2012	May 2013	September 2004	October 2011	October 2012	October 2013
MW-13	MW-05	0.0004 (outward)	0.0008	0.0006	0.0007	0.0011	0.0009	0.0006	0.0006
MW-6S	MW-19	0.0019	0.0056	0.0066	0.002	--	0.0072	0.0057	0.0054
MW-16	MW-10S	0.0009	0.00096	0.0047	0.001	0.0015	--	--	0.0042
MW-22	MW-19	0.0012	0.0036	0.0040	0.004	0.0013	0.0046	0.0035	0.0035

The horizontal gradients indicate that hydraulic capture was maintained in 2013 at levels similar to historical levels. The calculated hydraulic gradients support the definition of the capture zone created by the extraction wells.

2.1.2.2 Semiconfined Aquifer

Potentiometric Surface. Groundwater in the semiconfined aquifer exhibited similar flow patterns between May 2013 (Figure 7) and October 2013 (Figure 8). The capture zone is apparent throughout the site, although the edge of the capture zone appears outside the edges of the site, except where additional recharge is added from the infiltration basin.

Groundwater flow at the site is toward the CAMU, water levels recorded near the extraction wells in May and October 2013 show a localized groundwater depression. The continued treatment system operation has led to an increased localized depression in the area of the CAMU. Continued pumping is expected to maintain and enlarge the containment.

Hydraulic Gradients. Horizontal hydraulic gradients were calculated using groundwater elevations from 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, 2011, 2012, and 2013. The calculated gradients are summarized in Table 3.

Operation of the extraction wells and continued treatment system operation and the addition of new extraction wells in 2010 has resulted in an increased capture zone around the extraction wells in 2011 over previous years, which was maintained in 2013. Overall gradients in May and October show an inward flow toward the extraction wells confirming the capture zone in the semiconfined aquifer.

TABLE 3
Horizontal Hydraulic Gradients in the Semiconfined Aquifer
Penta Wood Products Site

Monitoring Well Outside Capture Zone	Monitoring Well Inside Capture Zone	Gradients							
		May 2004	June 2011	May 2012	May 2013	September 2004	October 2011	October 2012	October 2013
MW-12	MW-10	-0.0005	0.0052	0.0013	0.0015	-0.0034	0.0013	0.0014	0.0003
MW-14	MW-10	-0.0013	0.0009	0.001	0.0019	0.0008	0.00088	0.0016	0.0003
MW-23	MW-10	-0.0005	0.00088	0.0003	0.0012	0.0007	0.00067	0.0009	0.0004

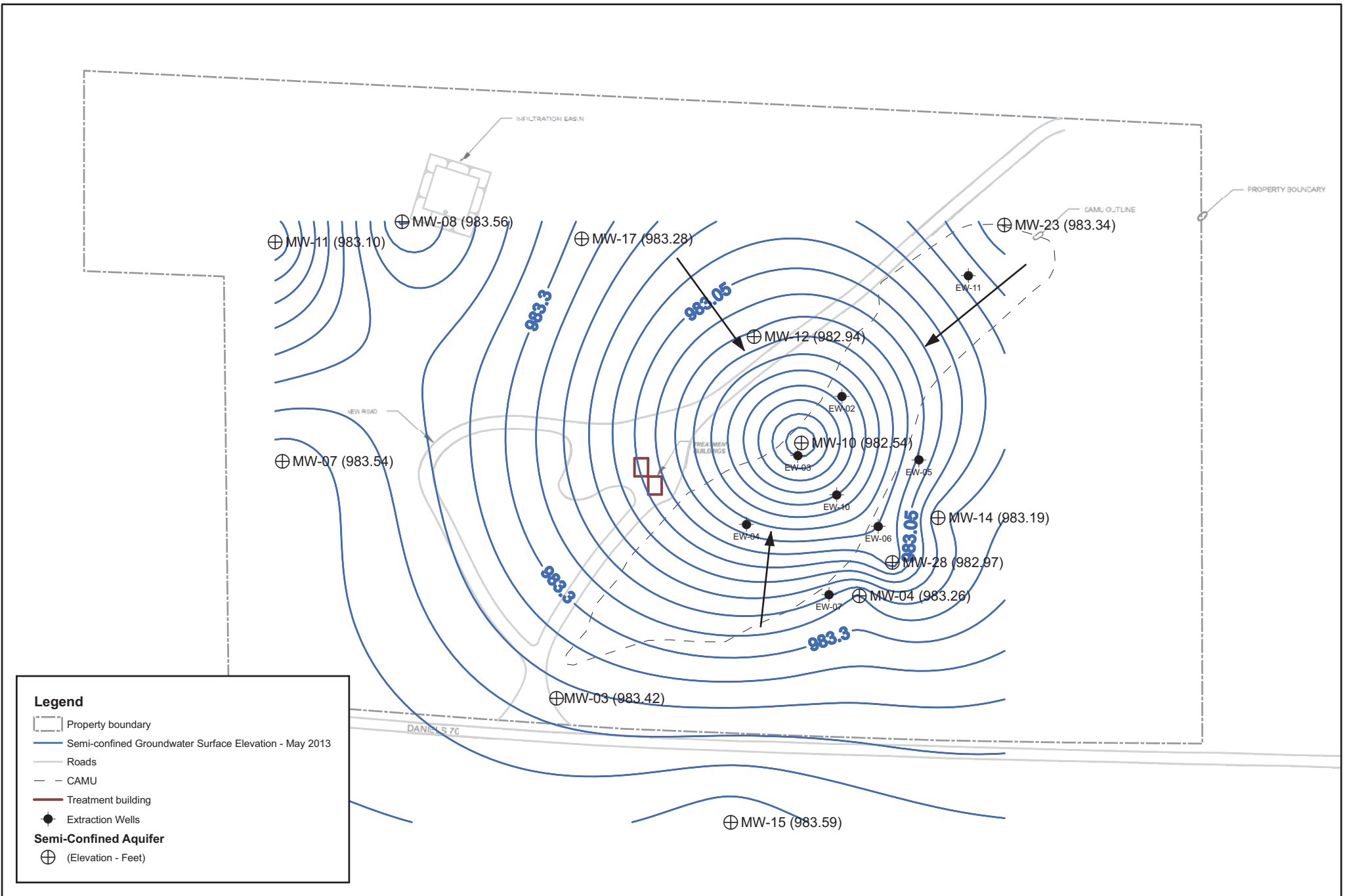
The horizontal gradients indicate that hydraulic capture was maintained at similar levels in 2013 to historical levels. The calculated hydraulic gradients support the definition of the capture zone created by the extraction wells.

2.1.2.3 Vertical Gradients

Vertical gradients were calculated between the semiconfined and unconfined aquifers to determine capture in the vertical direction. The extraction wells are screened through both aquifers to target all the areas with contamination. The vertical hydraulic gradient has consistently been from the unconfined toward the semi-confined in the downward direction. The pumps within each of the extraction wells is placed below the unconfined aquifer so a downward gradient would be expected for capture.

TABLE 4
Vertical Hydraulic Gradients
Penta Wood Products Site

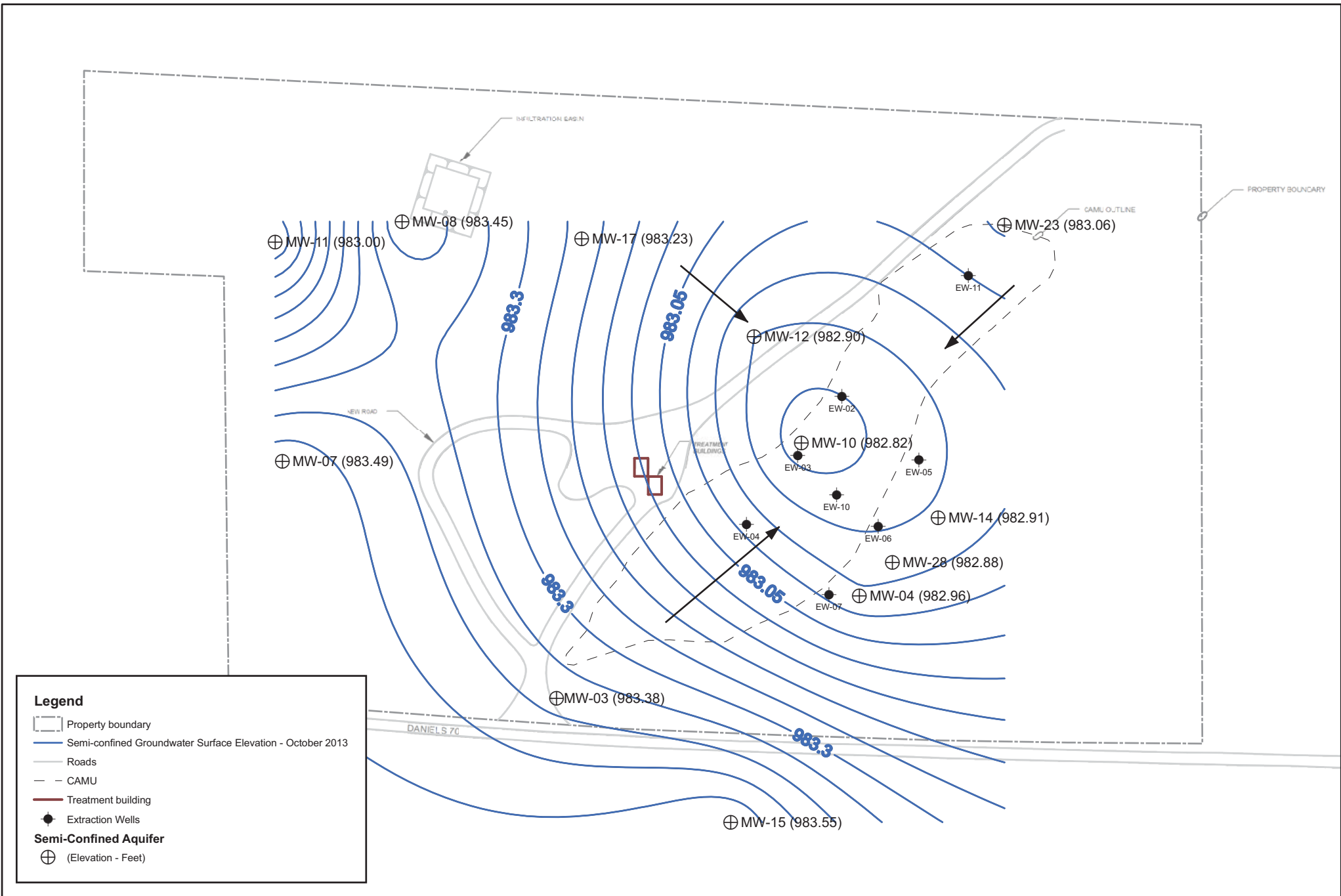
Monitoring Well Unconfined	Monitoring Well Semiconfined	Gradients							
		May 2004	June 2011	May 2012	May 2013	September 2004	October 2011	October 2012	October 2013
MW-10S	MW-10	0.003	0.034	0.006	0.031	0.024	--	--	0.055
MW-16	MW-12	0.016	0.026	0.029	0.030	0.070	0.021	0.030	0.030
MW-09	MW-23	0.01	0.008	0.051	0.052	0.012	0.055	0.052	0.052



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Figure 7
 Semi-confined Groundwater Elevation - May 2013
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 Siren, Wisconsin



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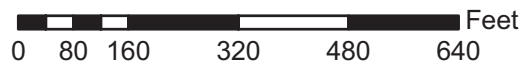


Figure 8
 Semi-confined Groundwater Elevation - October 2013
 2013 Annual Report
 Pentawood Products Superfund Site
 Siren, Wisconsin

2.2 Groundwater Sampling and Analysis

Groundwater analytical data are collected to show groundwater quality and evaluate the performance of the RA at the site. The data are analyzed to determine whether the long-term removal action (LTRA) is achieving the following objectives:

- Confirming compounds related to the site have not migrated into residential drinking water wells.
- The area with PCP in the groundwater is declining in size.
- The infiltration basin is not having an undesired effect of on groundwater quality.
- The groundwater extraction system continues to remove PCP from beneath the site.
- The groundwater monitoring strategy does not need to be changed.

TestAmerica, Inc., of North Canton, Ohio, analyzed both the semiannual (May 2013) and annual (October 2013) samples. Quality control samples consisting of field blanks, duplicate samples, and matrix spike/matrix spike duplicate samples were collected at the frequency specified in the *Sampling and Analysis Plan* (CH2M HILL 2000; revised February 2005). Monitoring well and residential well sample result packages were submitted to the EPA Environmental Services Assistance Team contractor for data validation. The data quality memorandums for the sampling events can be found in Appendix E.

2.2.1 Residential Well Sampling Procedures and Results

Five residential wells and one onsite potable well were sampled during the semiannual sampling (May 2013) and annual sampling (October 2013). The residential wells were sampled by collecting water from the kitchen sink, bathroom sink or outside hose. The potable well is collected from the office bathroom sink. They are purged for ten minutes prior to sample collection.

Semiannual sampling (May 2013) results received from TestAmerica, Inc., showed that BTEX and naphthalene were not detected in the onsite potable well or residential wells. PCP was detected in RW-01, RW-03, and the potable well, which had results that were J-flagged with estimated detections below the PAL of 0.1 µg/L. Two residential wells and the onsite potable well have shown detections sporadically in the last 3 years. The detections have all been below the PEL and are within the historical range at the wells.

Annual sampling (October 2013) results from TestAmerica, Inc., showed that BTEX and naphthalene were not detected in the onsite potable well or residential wells. PCP was detected in RW-01 and the potable well, but were J-flagged as estimated detections below the PEL of 0.1 µg/L. Since the presence of PCP in the residential wells has been variable, the estimated detections reported in October 2013 are not unrealistic and are within the historical range. The residential well sample information (names, addresses, and telephone numbers) and the analytical results were submitted separately to Linda Martin, EPA Work Assignment Manager, on July 3, 2013, and on November 13, 2013 (Appendix D).

2.2.2 Monitoring Well Sampling Procedures

For the semiannual sampling event conducted in May 2013, the following five monitoring wells were sampled:

- MW-12
- MW-15
- MW-19
- MW-22
- MW-26

MW-19 represents the unconfined groundwater in the LNAPL area. MW-15 is used to assess groundwater south of the plume. MW-12 and MW-22 are used to assess the impacts of plant operation to the perimeter of the plume. MW-26 is used to monitor groundwater quality near the treated water infiltration basin. Sampling of the wells was started on May 21, 2013, and was completed on May 23, 2013. Monitoring wells were purged of at least three well volumes before sampling. MW-22 was purged and sampled using disposable polyvinyl chloride bailers. The remaining monitoring wells were purged and sampled with dedicated Grundfos pumps that are maintained in each monitoring well.

For the annual sampling event conducted during October 2013, 15 monitoring wells were sampled. The following monitoring wells were sampled for this event:

- MW-02
- MW-03
- MW-05
- MW-06S
- MW-07
- MW-09
- MW-10
- MW-12
- MW-15
- MW-16
- MW-17
- MW-19
- MW-22
- MW-26
- MW-28

Sampling of the wells was completed between October 8 and 10, 2013. Monitoring wells MW-03, MW-05, MW-07, MW-10, MW-12, MW-15, MW-17, MW-19, MW-26, and MW-28 were purged and sampled with dedicated Grundfos Redi-Flo 2 pumps that are maintained in each monitoring well. Wells MW-02, MW-06S, MW-09, MW-16, and MW-22 were purged and sampled using disposable polyvinyl chloride bailers.

Results of the semiannual and annual sampling events are discussed in the following subsections.

2.2.3 Pentachlorophenol Plume

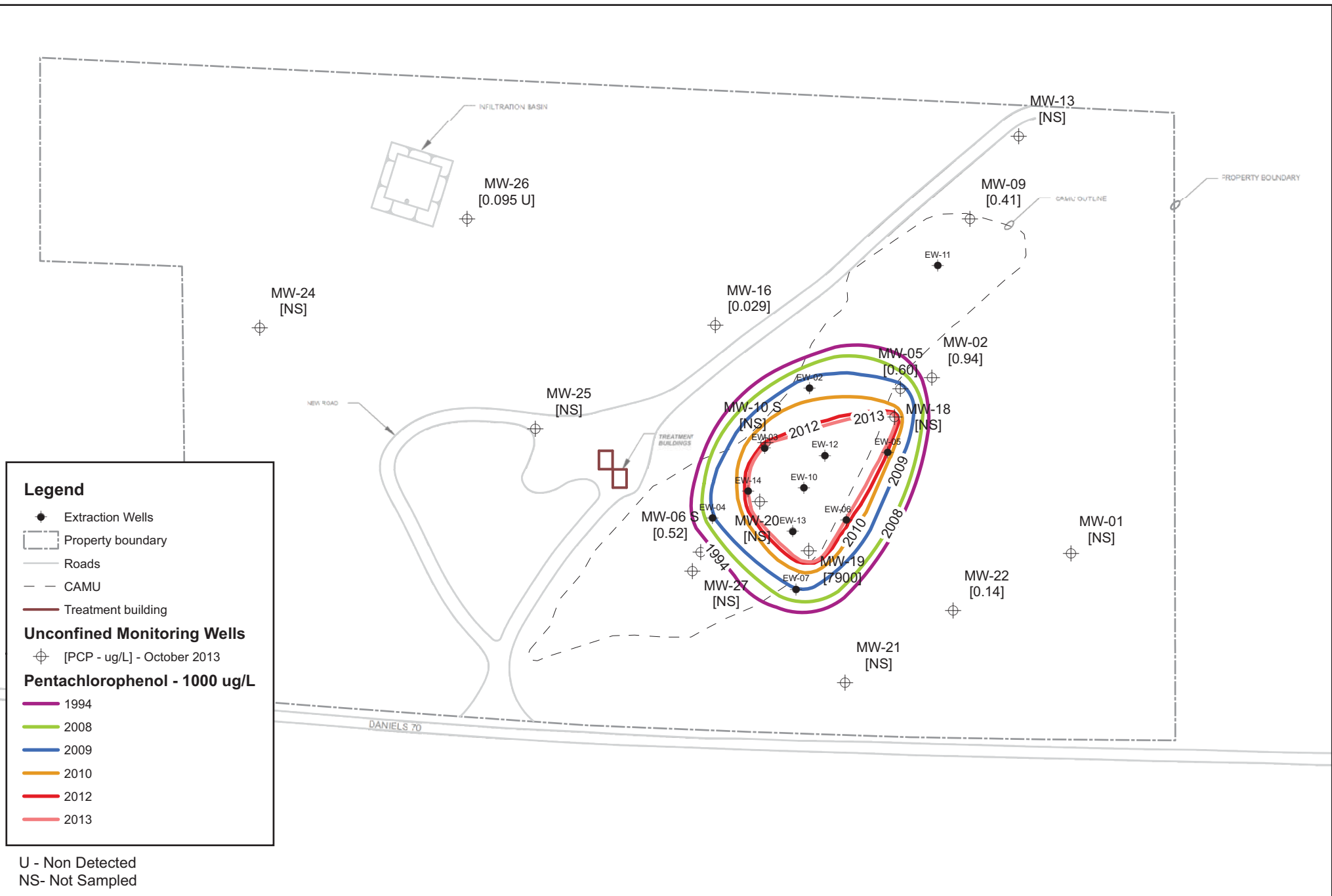
To observe PCP trends over time, the PCP concentrations were contoured and interpolated between the wells, taking into account LNAPL present in wells when the wells were not sampled. The historical aerial extent of PCP in the groundwater was also taken into account. The groundwater for the semiconfined and the unconfined aquifers were contoured separately. PCP concentration contours for the unconfined aquifer are presented in Figures 9 (1,000 µg/L) and 10 (1 µg/L). PCP concentration contours for the semiconfined aquifer are presented in Figures 11 (1,000 µg/L) and 12 (1 µg/L). Historical contours are presented to establish a baseline condition before the operation of the groundwater extraction and treatment system. Several previous contours are also presented to show changes in the extent of PCP concentration in groundwater over the last few years.

A comparison of the 1,000-µg/L PCP contour lines in Figure 9 shows that the zone of PCP defined by this boundary has become smaller each year from the 1994 baseline.

It appears that the removal of NAPL from the site may be contributing to the reduction in PCP concentration in the unconfined aquifer.

In 2010, 2011, and 2012, the concentrations of PCP in the most contaminated well in the sampling program dropped significantly. In MW-19, the level of PCP dropped from 31,800 µg/L to 4,470 µg/L—a drop of more than 85 percent in 2010—and maintained a similar level at 7,900 µg/L in 2013. The reduction is likely due to removal of PCP through the groundwater extraction system, drawing water towards the approximate center of the CAMU, and diluting and removing PCP. The large reductions in the aerial extent are evidence that the PCP LNAPL source is not continuing to contribute to the groundwater contamination outside the immediate LNAPL area.

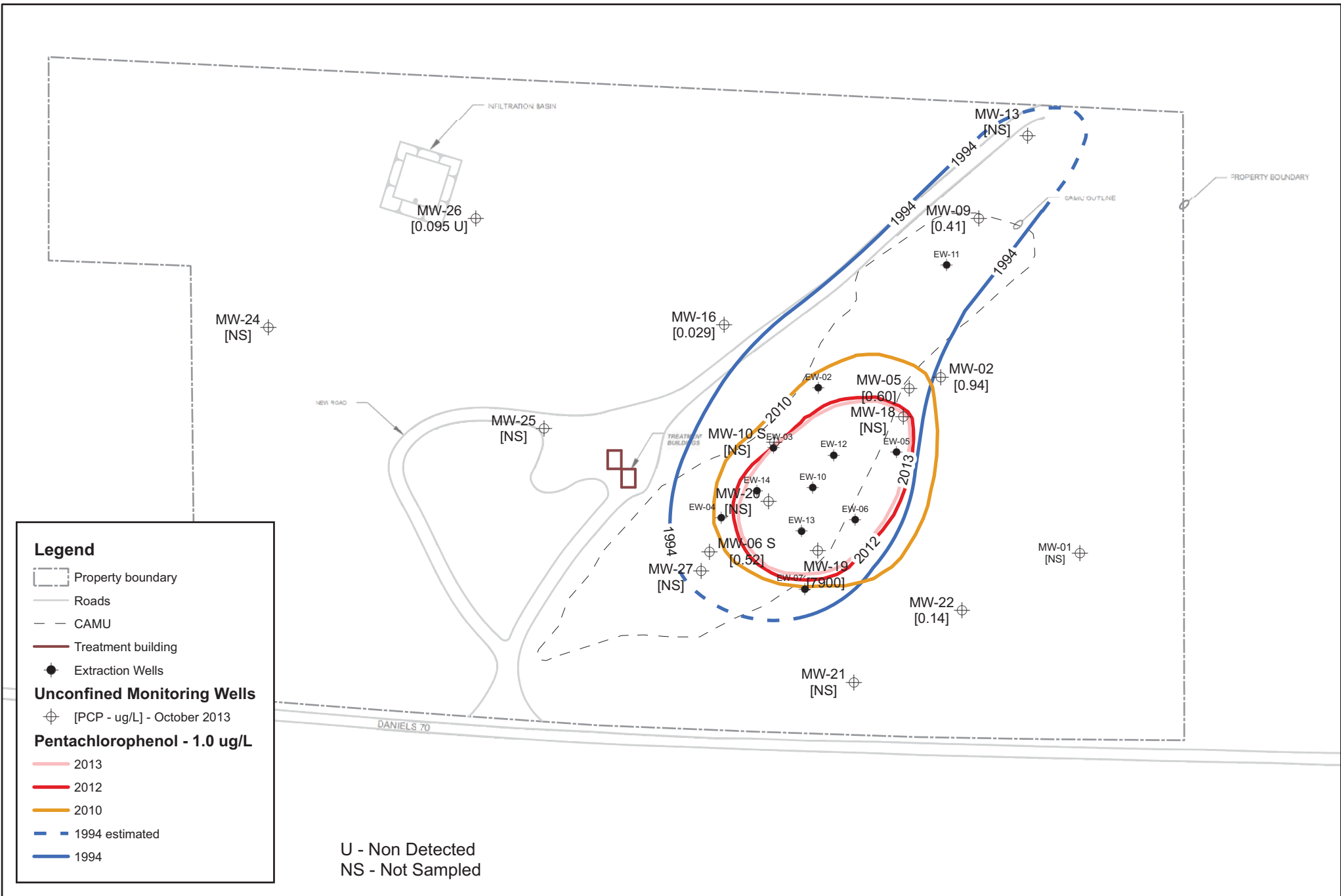
Overall results in 2013 were very similar to results found in 2012, and PCP levels in some wells even rebounded slightly in several wells. The aerial extent of the groundwater contaminated with PCP over 1,000 µg/L is very similar to the areas that are known to contain LNAPL. Although the LNAPL source is being addressed through ongoing extraction, the area where LNAPL is located is expected to continue to provide a source of PCP contamination to the groundwater.



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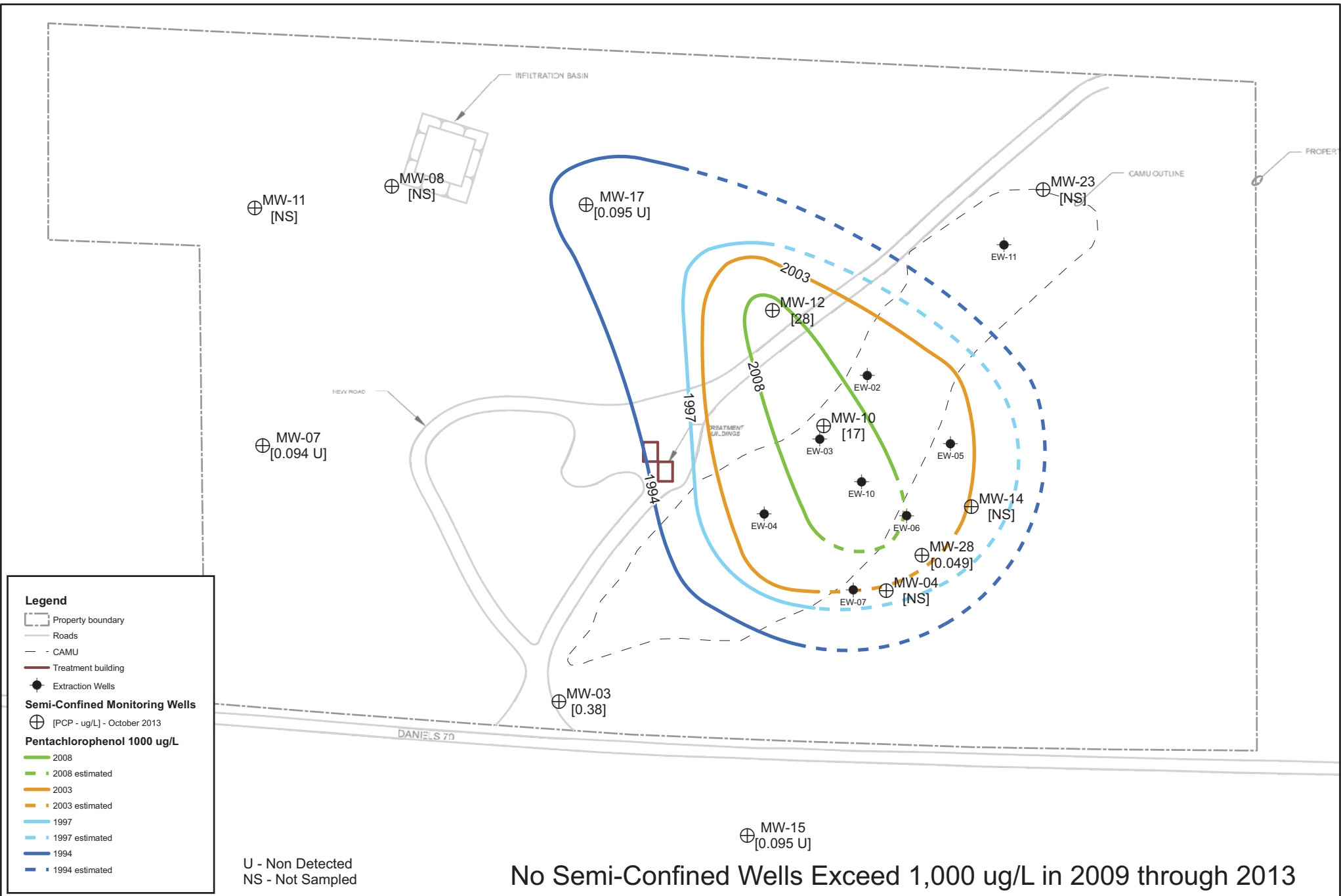
Figure 9
Unconfined PCP Plume - 1000 ug/L
2013 Annual Report
Pentawood Products Superfund Site
Siren, Wisconsin



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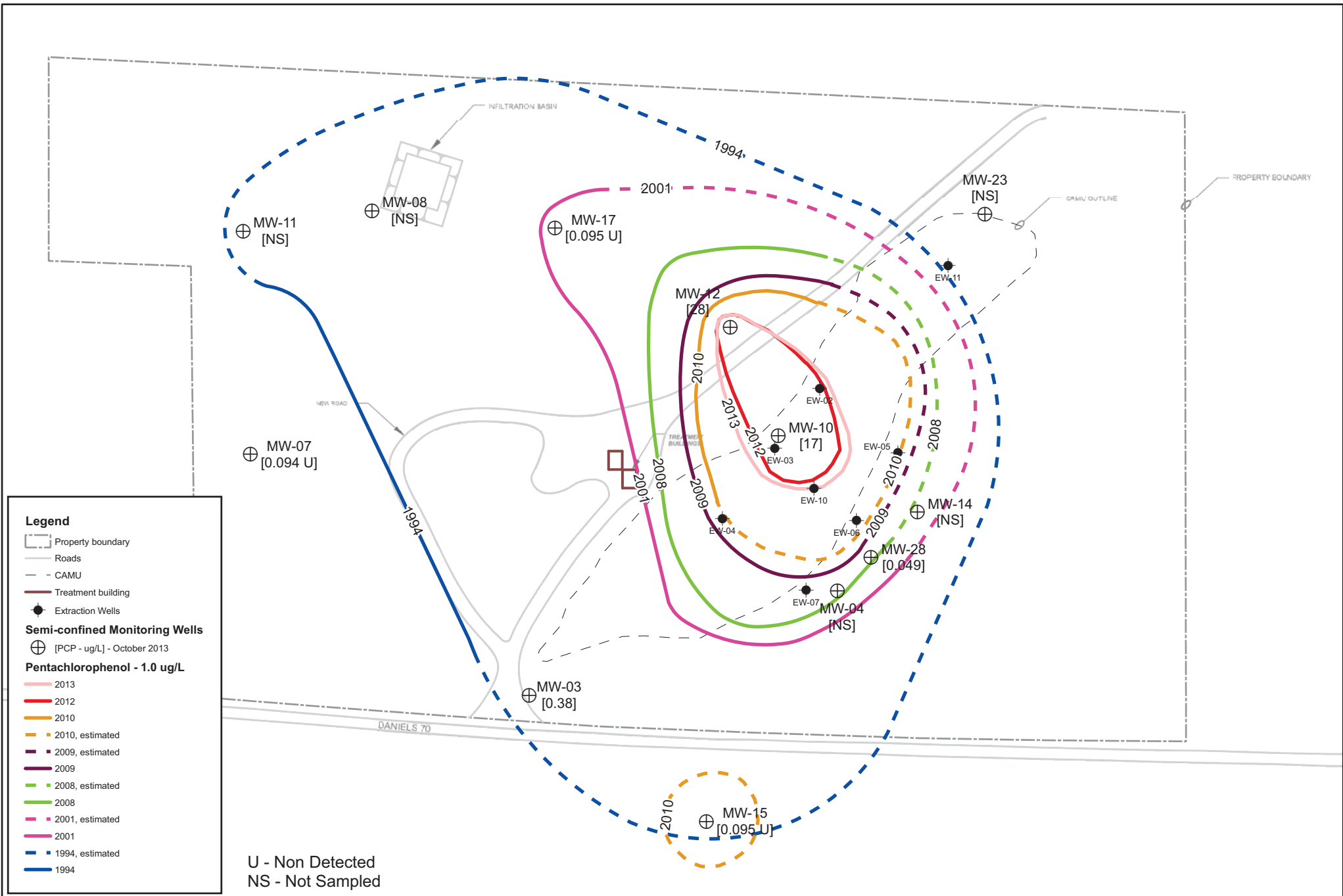
Figure 10
Unconfined PCP Plume - 1.0 ug/L
2013 Annual Report
Pentawood Products Superfund Site
Siren, Wisconsin



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Figure 11
Semi-Confined PCP Plume - 1000 ug/L
2013 Annual Report
Pentawood Products Superfund Site
Siren, Wisconsin



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Figure 12
Semi-Confined PCP Plume - 1.0 ug/L
2013 Annual Report
Pentawood Products Superfund Site
Siren, Wisconsin

A comparison of the 1,000- $\mu\text{g/L}$ PCP contour lines in Figure 11 shows that groundwater with PCP above 1,000 $\mu\text{g/L}$ is not present in the semiconfined aquifer. In October 2009, 2010, 2011, 2012, and 2013, semiconfined wells at the site were reduced in concentration to below the 1,000 $\mu\text{g/L}$ level.

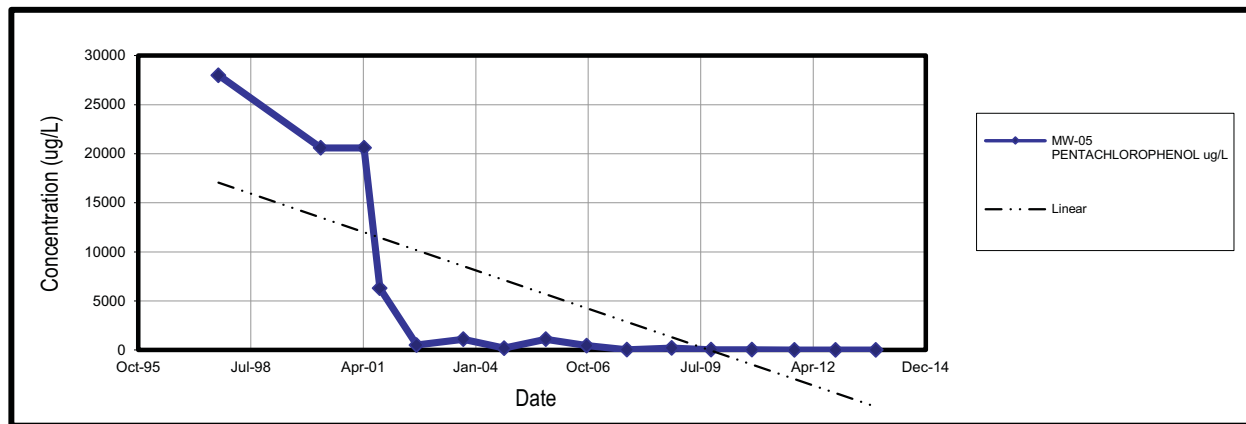
The area delineated by the 1- $\mu\text{g/L}$ contour in the semiconfined aquifer, as shown in Figure 12, has decreased in aerial extent similar to the 1,000 $\mu\text{g/L}$ contour, and is anticipated to continue to reduce in size. PCP trends for individual monitoring wells within the PCP plume are discussed in the following subsections.

2.2.4 Selected Trend Analysis—Unconfined Wells

2.2.4.1 MW-05

The PCP concentration in monitoring well MW-05 dropped 5 orders of magnitude from 20,600 $\mu\text{g/L}$ before groundwater treatment system operation to 0.60 $\mu\text{g/L}$ in the most recent sample in October 2013 (Figure 13). PCP concentrations remain low in this area because nearby uncontaminated groundwater is being drawn radially toward extraction well EW-02 and EW-05. The wells started pumping in February 2004, thereby purging the aquifer of PCP. Free product has never been observed in this well. MW-05 is screened in the unconfined aquifer and, like similar wells, has shown a significant decrease in PCP concentration.

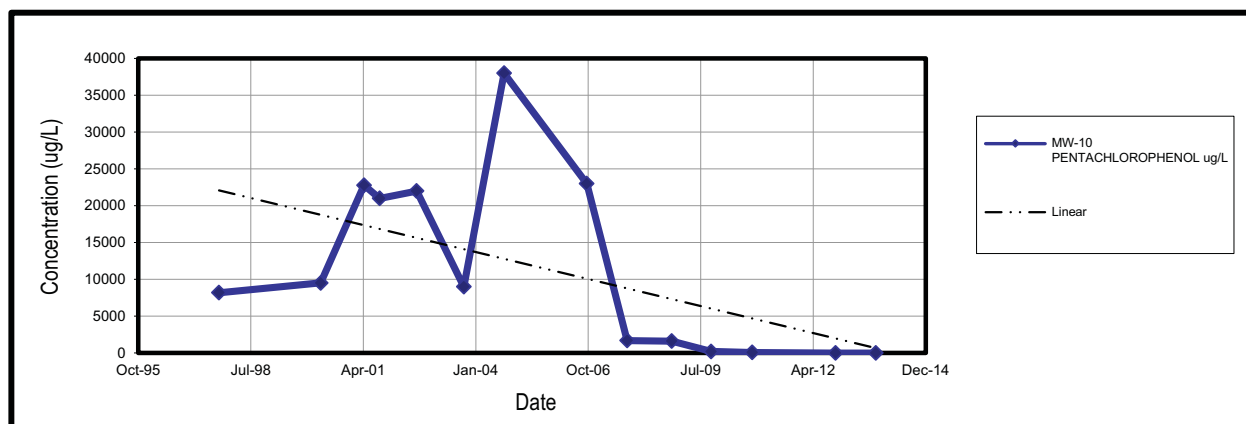
FIGURE 13
MW-05 PCP Concentration
Penta Wood Products Site



2.2.4.2 MW-10

PCP concentrations in MW-10 have declined three orders of magnitude from a high of 38,000 $\mu\text{g/L}$ in February 2004 to a concentration of 17 $\mu\text{g/L}$ in October 2013.

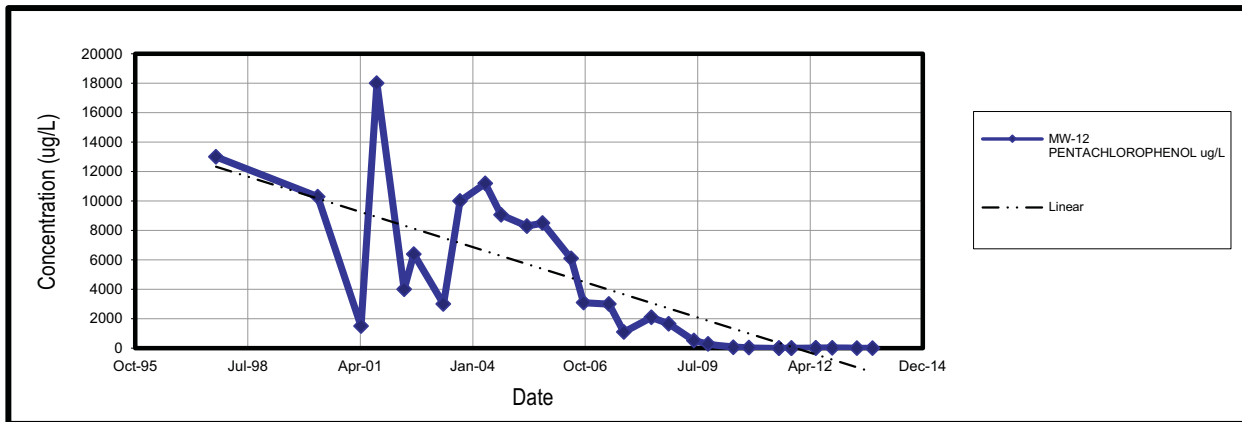
FIGURE 14
MW-10 PCP Concentration
Penta Wood Products Site



2.2.4.3 MW-12

Although monitoring well MW-12 has shown fluctuations in PCP between groundwater sampling events, there is an overall decreasing trend in the PCP concentration (Figure 15). MW-12 is screened in the semiconfined aquifer at a depth of 122 feet below ground surface. PCP has declined from the maximum concentration of 18,000 µg/L in September 2001 to 28 µg/L in the most recent sample in October 2013. Free product (LNAPL) has not been observed in MW-12.

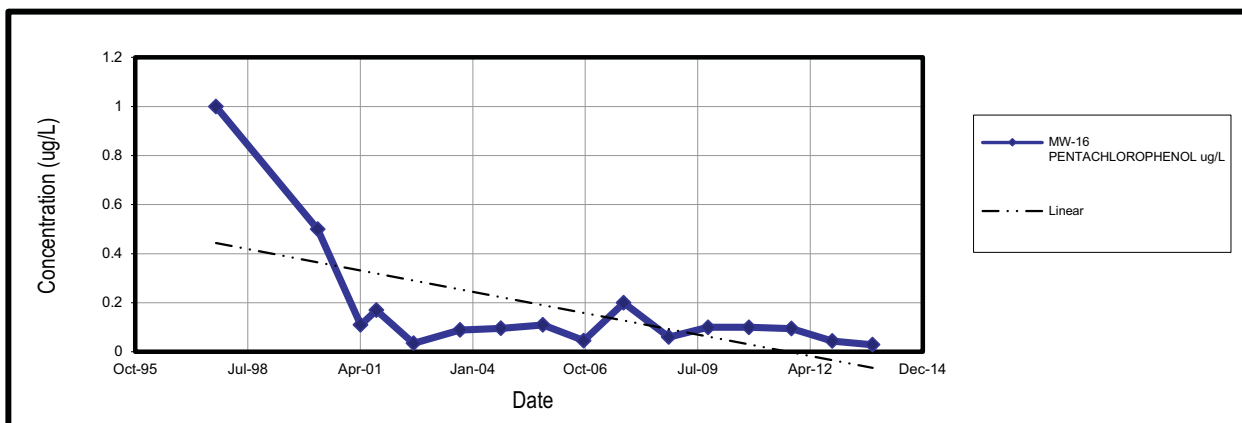
FIGURE 15
MW-12 PCP Concentration
Penta Wood Products Site



2.2.4.4 MW-16

Monitoring well MW-16 is screened in the unconfined aquifer. It is located just outside of the area where LNAPL is present. It has consistently had low concentrations of PCP below 1 µg/L, as shown in Figure 16. The highest concentration of PCP in the past 5 years was observed at 0.2 µg/L in September 2007. In October 2013, an estimated PCP concentration of 0.029 µg/L was reported for the sample from MW-16.

FIGURE 16
MW-16 PCP Concentration
Penta Wood Products Site

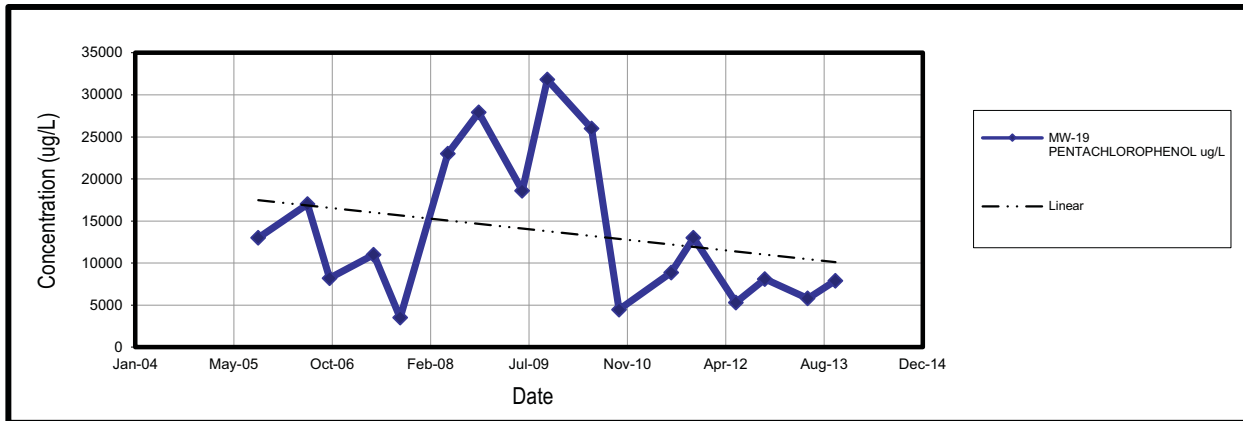


2.2.4.5 MW-19

LNAPL has been present in MW-19 since monitoring began, and entrainment of LNAPL droplets in the sample will have notable effects on PCP concentrations. The PCP concentrations were measured at 5,800 µg/L in May 2013 and 7,900 µg/L in October 2013, which is less than what was observed in 2011. Although variability of PCP

concentrations in samples collected from wells with LNAPL is expected, in the most recent 3 sampling events, the levels in PCP are lower than the previous 2 years.

FIGURE 17
MW-19 PCP Concentration
Penta Wood Products Site



2.2.5 Selected Trend Analysis—Semiconfined Wells

All wells in the semiconfined aquifer are below 1,000 $\mu\text{g/L}$, within the goal for monitored natural attenuation at the site.

2.2.5.1 MW-15

MW-15 is a semiconfined well and is the southernmost well at the site. It is the last well between the site and adjacent residences, so it is considered a sentinel well. PCP was reported at an estimated concentration of 0.025 $\mu\text{g/L}$ in May 2013 and was not detected in the well in October 2013, which is consistent with historical results. Historical results in MW-15 have been generally nondetected with an occasional detection below the PEL.

2.2.6 Naphthalene Analytical Results

Naphthalene was detected in monitoring well MW-19 at concentrations of 29 $\mu\text{g/L}$ in May 2013 and 3.0 $\mu\text{g/L}$ in October 2013. The detection of 3.0 $\mu\text{g/L}$ is below the Wisconsin Department of Natural Resources (WDNR) PAL for naphthalene of 10 $\mu\text{g/L}$ and the WDNR Enforcement Standard (ES) of 100 $\mu\text{g/L}$. The concentration in May 2012 was 50 $\mu\text{g/L}$ and was 8.4 $\mu\text{g/L}$ in October 2012. The concentrations have been continually decreasing from 5,260 $\mu\text{g/L}$ since 2000.

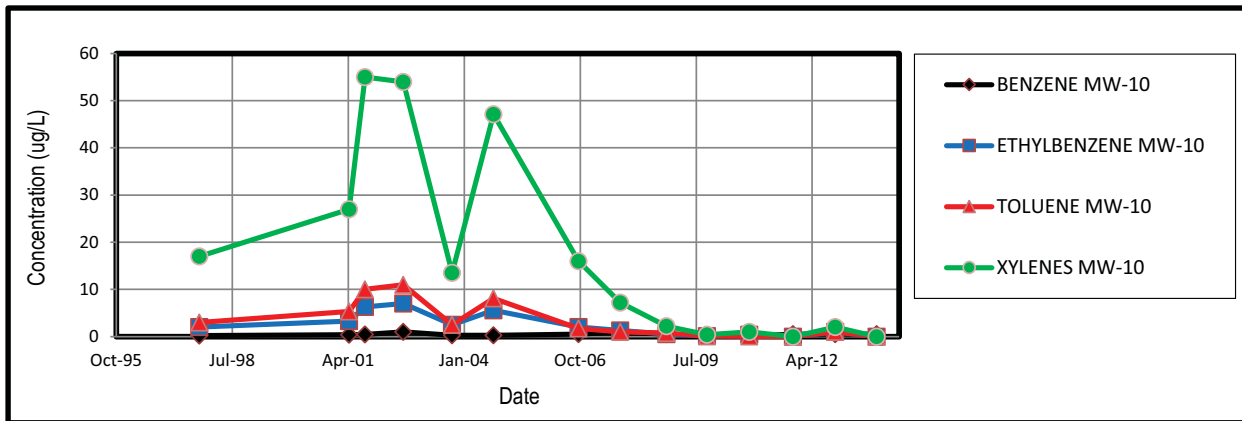
2.2.7 BTEX Analytical Results

BTEX has historically been detected in three wells (MW-10, MW-12, and MW019), but was only detected in MW-19 during 2013. All BTEX detections are below the WDNR PALs.

2.2.7.1 MW-10

Since 2004, a consistent decrease in BTEX concentrations has been observed. The concentration of ethylbenzene has decreased from 5.58 $\mu\text{g/L}$ in 2004 to nondetected (1.0 $\mu\text{g/L}$) in 2013, toluene has decreased from 8.09 $\mu\text{g/L}$ in 2004 to nondetected (1.0 $\mu\text{g/L}$) in 2013, and xylene has decreased from 47.1 $\mu\text{g/L}$ in 2004 to nondetected (2.0 $\mu\text{g/L}$) in 2013.

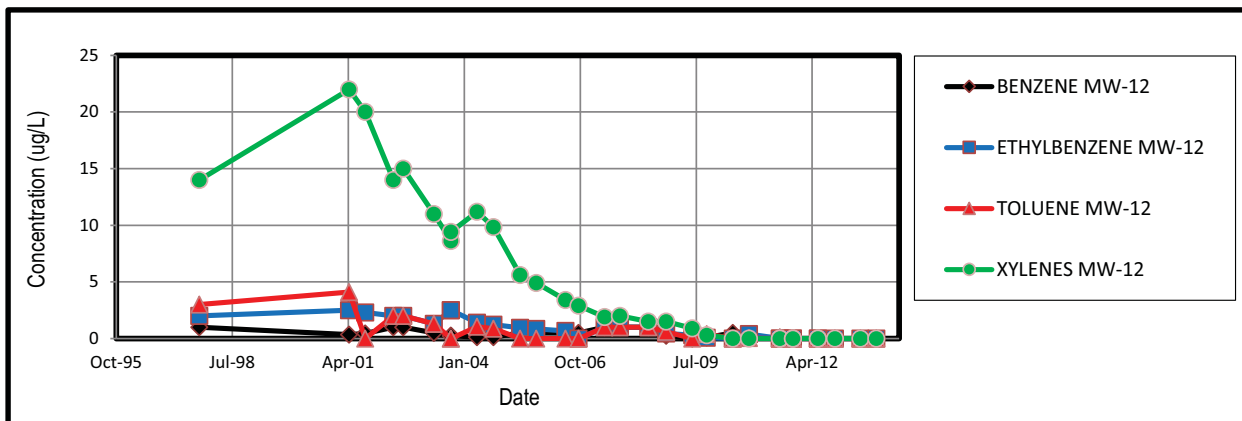
FIGURE 18
MW-10 BTEX Concentrations
Penta Wood Products Site



2.2.7.2 MW-12

The BTEX concentrations have shown steady declines, especially over the last 5 years. The ethylbenzene concentration has declined from 1.39 µg/L in 2004 to nondetected (1.0 µg/L) in 2013, the toluene concentration has declined from 1.03 µg/L in 2004 to nondetected (1.0 µg/L) in 2013, and the xylene concentration has declined from 11.2 µg/L in 2004 to nondetected (2.0 µg/L) in 2013.

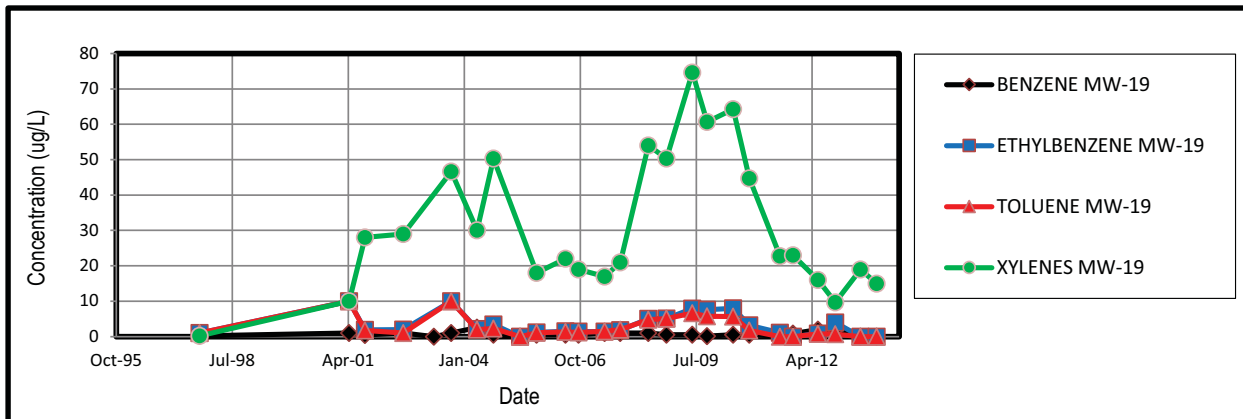
FIGURE 19
MW-12 BTEX Concentrations
Penta Wood Products Site



2.2.7.3 MW-19

The BTEX concentrations have variability over time most likely due to the presence of ongoing nonaqueous phase liquid (NAPL) in the well. Ethylbenzene was detected at an estimated concentration of 0.99 µg/L in May 2013 and was not detected in October 2013. Detections of ethylbenzene are below the WDNR PAL of 140 µg/L. Toluene was detected at a concentration of 1.5 µg/L in May 2013 and 1.1 µg/L in October 2013. Detections of toluene are below the WDNR PAL of 160 µg/L. Xylenes were detected at a concentration of 19 µg/L in May 2013 and 15 µg/L in October 2013. Detections of xylene are below the WDNR PAL of 400 µg/L.

FIGURE 20
MW-19 BTEX Concentrations
Penta Wood Products Site



2.2.8 Dissolved Metal Analytical Results

The following dissolved metals were collected from wells sampled in May and October 2013 at the site: arsenic, copper, iron, manganese, and zinc. The samples were filtered through 0.54-micron filters while in the field.

2.2.8.1 Arsenic

Dissolved arsenic was detected at estimated concentrations in several wells at the site. Concentrations of arsenic for MW-03 (0.088 µg/L), MW-05 (0.39 µg/L), MW-07 (0.34 µg/L), MW-10 (0.19 µg/L), MW-12 (0.37 µg/L), MW-15 (0.36 µg/L), MW-16 (0.61 µg/L), MW-17 (0.72 µg/L), MW-19 (0.26 µg/L), MW-22 (0.24 µg/L), and MW-26 (0.37 µg/L) were below the WDNR PAL for arsenic of 1 µg/L. The 2013 concentrations of arsenic are similar to 2012 and are within the historical levels at the site. Concentrations of dissolved arsenic in 2012 for MW-12 (1.2 µg/L), MW-17 (1.2 µg/L), and MW-26 (1.1 µg/L) were above the WDNR PAL of 1 µg/L but below the WDNR ES of 10 µg/L. Estimated concentrations were also detected below the WDNR PAL in the following wells in 2012: MW-02 (0.82 µg/L), MW-03 (0.59 µg/L), MW-05 (0.57 µg/L), MW-06S (0.54 µg/L), MW-09 (0.91 µg/L), MW-10 (0.55 µg/L), MW-15 (0.97 µg/L), MW-16 (0.66 µg/L), MW-22 (0.59 µg/L), and MW-28 (0.48 µg/L).

2.2.8.2 Copper

Only one estimated detection of dissolved copper was found in May 2013. Dissolved copper was detected in MW-19 at an estimated concentration of 7.3 µg/L. The result was below the WDNR PAL of 130 µg/L, similar to previous years.

2.2.8.3 Iron

In October 2013, dissolved iron was detected above the WDNR PAL of 0.15 milligram per liter (mg/L) in the following wells: MW-05 at 2.2 mg/L, MW-06S at 1.5 mg/L, MW-07 at 10 mg/L, and MW-16 at 1.5 mg/L. In addition, dissolved iron was detected in MW-10 at 0.26 mg/L, below the WDNR ES of 0.3 mg/L. Elevated iron concentrations are an indicator of natural attenuation. The iron concentrations reported in 2013 are similar to the concentrations reported in 2011 and 2012.

2.2.8.4 Manganese

In May and October 2012, dissolved manganese exceeded the WDNR ES of 0.05 mg/L at six wells (MW-05, MW-07, MW-10, MW-12, MW-16, and MW-19) ranging from 0.074 mg/L (MW-07) to 4.7 mg/L (MW-05). An additional three monitoring wells (MW-03, MW-06S, and MW-22) had dissolved manganese detected at concentrations ranging from 0.0028 mg/L (MW-22) to 0.032 mg/L (MW-06S) below the WDNR ES of 0.05 mg/L. Elevated manganese concentrations are an indicator of natural attenuation. The manganese concentrations reported in 2013 are similar to concentrations reported in 2011 and 2012.

2.2.8.5 Zinc

Only one estimated detection of dissolved zinc was found in October 2013. Dissolved zinc was detected in MW-16 at an estimated concentration of 59 µg/L. The result was below the WDNR PAL of 2.5 mg/L, similar to previous years.

2.2.9 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 since 1997.

2.2.9.1 Oxidation/Reduction

Evaluation of the data generated during 2013 suggested that areas at the perimeter or outside the PCP plume are under slight to strong oxidizing conditions as shown by elevated oxidation reduction potential (ORP). Overall, the ORP levels in 2013 are slightly increasing from 2012; therefore, reductive dechlorination is most likely occurring. ORP measurements at wells in the most concentrated area of the PCP plume (greater than 1,000 µg/L) have not been able to be measured because of 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.

2.2.9.2 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 2013, the semiconfined wells had chloride levels ranging from 7.8 mg/L (MW-10) to 70 mg/L (MW-03). The unconfined wells ranged from 1.2 mg/L at (MW-09) to 29 mg/L at MW-06S. Historically, either MW-03 or MW-21 have reported the highest chloride levels, possibly because of their proximity to the highway where influence from seasonal road salting may have caused elevated chloride concentrations.

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.

2.2.9.3 Nitrate

In 2013, nitrate levels remained relatively low, ranging from nondetectable (less than 0.1 mg/L) to 8.9 mg/L at MW-06S, and remaining comparable to concentrations observed in 2012.

2.2.9.4 Methane

Methane, a product of anaerobic degradation, was detected above the reporting limit in three wells, MW-03 (0.0043 mg/L), MW-05 (0.019 mg/L), and MW-07 (0.0022 mg/L), in October 2013. Estimated detections were found in MW-10 (0.027 mg/L) and MW-19 (0.00084 mg/L). The absence of methane at or above the detection limit in most wells suggests that degradation is occurring primarily under nonmethanogenic, anaerobic, or sulfate-reducing conditions.

2.2.9.5 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 2013 were similar to 2012.

2.2.10 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 200 million gallons (MG) of groundwater have been re-infiltrated from 2004 through 2013. The water would be expected to displace groundwater over a considerable area. The re-infiltration of the treated groundwater helps to maintain a water balance to offset the extracted volume of water.

2.2.10.1 Unconfined Aquifer

MW-26 is used to determine the effects that the infiltration basin has on the unconfined aquifer in the area. PCP, methane, nitrate, iron, and manganese concentrations in MW-26 have remained similar to background levels, as would be expected for the discharge of treated groundwater. Sulfate concentrations have increased from a background value of less than 10 mg/L to a high of 2,360 mg/L in June 2009, but in the most recent samples collected in October 2013 the sulfate levels were 110 mg/L.

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 MW-26 before 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 for renovations. Chloride concentrations increased after the treatment system was restarted in 2004, and have ranged from 17 to 203 mg/L, with the most recent concentration of 18 mg/L in October 2013.

2.2.10.2 Semiconfined Aquifer

MW-17 is used to determine the effects of the infiltration basin on the semiconfined aquifer. MW-17 is sampled annually for PCP and natural attenuation parameters. PCP, methane, manganese, and iron in MW-17 have remained similar to background levels. Nitrate concentrations dropped in 2009 because the source area groundwater has minimal nitrate; however, they increased to 5.18 mg/L in 2010, which is similar to the levels experienced from 2005–2008. Nitrate dropped again in 2011 to 3.9 mg/L but increased to 4.5 mg/L in 2013. Sulfate concentrations have remained close to the background value of 10 mg/L but did increase in 2013 to 36 mg/L. 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 4.8 mg/L measured in 1997 has increased to 16 mg/L in October 2013.

Another benefit of re-infiltrating groundwater is that treatment results in aeration and re-oxygenation of the groundwater. Elevated groundwater exists at the location of the infiltration basin; therefore, a portion of the 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

The groundwater contours and reductions in concentrations of PCP measured at the site indicate that the extraction system is effectively capturing the zone of groundwater with PCP from the site. Similar to previous years, the capture zone can be observed in potentiometric surface maps from data collected in May 2013 and October 2013, in both the unconfined and semiconfined aquifers.

LNAPL was present in four unconfined aquifer wells (MW-18, MW-19, MW-10S and MW-20) in May 2013 and in three wells in October 2013 (MW-18, MW-19 and MW-20). LNAPL was observed in the same wells that have historically contained LNAPL.

Results from the residential wells and potable well sampling in May 2013 and October 2013, indicate that BTEX and naphthalene are not present in any residential wells or in the onsite potable well. Estimated detections (below the preventative action limit of 0.1 µg/L) of PCP were found in RW-01, RW-03, and the potable well in May 2013 and in RW-01 and the potable well in October 2013. Since the presence of PCP in the residential wells has been variable, the estimated detections reported in May and October 2013 are not unrealistic and are within the historical range.

Large reductions in PCP concentrations in unconfined monitoring wells show that the groundwater extraction system is effectively pulling LNAPL and dissolved-phase PCP-laden groundwater towards the extraction wells. The area within the 1,000-µg/L contour for PCP in the unconfined aquifer has been steadily reducing as the system has been operating. The 1,000-µg/L PCP contour is generally about the size of the area in which LNAPL is present. Since the area of groundwater contamination has reduced to the area of the source area, it is unlikely that the aerial extent of the plume will become much smaller until the source area becomes smaller. This is

supported by the difference in plume size from last year, which did not decrease in area significantly, but the trend will need to be monitored to confirm. The 1- $\mu\text{g}/\text{L}$ plume in the unconfined aquifer has shrunk significantly since 1994 and currently occupies nearly the same footprint as the 1,000 $\mu\text{g}/\text{L}$ plume.

The PCP plume in the semiconfined aquifer reduced in recent groundwater events. PCP concentrations in the semiconfined aquifer have been less than 1,000 $\mu\text{g}/\text{L}$ since 2009. The area inside the 1- $\mu\text{g}/\text{L}$ contour in the semiconfined aquifer has decreased significantly over time and now appears only on the CAMU area and extends slightly to the northwest of the CAMU area. The PCP plume in the semiconfined aquifer in 2013 was very similar to the plume size and shape in 2012.

All wells with detections of naphthalene and BTEX have declined to below the WDNR PALs for the first time at the site. Evaluation of the natural attenuation parameters revealed similar conditions to those in 2012.

2.4 Recommendations

It is recommended that the current sampling program be continued in 2014. If the groundwater levels remain similar in the future as they were in 2012 and 2013, MW-6S will be sampled during the annual round replacing MW-27 as long as there is enough water in MW-6S.

Treatment System Operation and Maintenance

The treatment system at the PWP site 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 to contain groundwater contamination and allows LNAPL to collect near the extraction wells. The depressed groundwater also exposes additional LNAPL smear zone. 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.

Groundwater treatment system discharge monitoring is performed in accordance with the Wisconsin Pollutant Discharge Elimination System (WPDES) permit dated November 2007.

3.1 Groundwater Extraction System

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 and LNAPL Removal Performance

The estimated PCP mass removed from the groundwater in 2013 was approximately 335 pounds and 8,813 pounds since the groundwater extraction began in 2000 (Table 5).

In addition to the PCP mass removed through groundwater extraction, PCP mass is removed through the extraction of LNAPL. The volume of liquid waste that was extracted through the LNAPL recovery system can be used to make a rough estimate of the mass of PCP removed by LNAPL extraction. The plant recovered approximately 53,841 gallons of liquid waste in the separator through 2013. Before 2008, approximately one-half of the liquid waste was water. Continued optimization of the system resulted in less water in the waste oil storage tank. The estimated amount of LNAPL extracted from the subsurface is based on the volume accumulated in the storage tank through the year. In 2013, approximately 3,950 gallons of LNAPL was recovered. Assuming an LNAPL density of 0.84 gram per cubic centimeter and a PCP concentration of 5 percent, the volume equates to about 1,384 pounds of PCP present in LNAPL removed in 2013 (Table 6). LNAPL recovery rates increased in 2013 from 2012. The increase is likely due to the fact that the LNAPL extraction system was running more effectively with three additional recovery wells operating than in previous years.

TABLE 5
PCP Removed with the Groundwater Extraction System
Penta Wood Products Site

Operation Period	Volume of Groundwater Extracted (gallons)	Average PCP Influent Concentration (µg/L)	PCP Removed (lbs)
09/27/00 to 12/18/00	11,712,960 ^a	12,535	1,224
02/02/01 to 02/08/01	691,200 ^a	12,535	72
03/16/01 to 06/10/01	9,288,000 ^a	10,356	802
06/15/01 to 09/27/01	6,822,720 ^a	7,535	429
Total PCP Removed from 2000 to 2001			2,527
02/27/04 to 12/31/04	18,548,154	9,227	1,427 ^b
01/01/05 to 12/31/05	21,374,796	7,300	1,301 ^b
01/01/06 to 12/31/06	14,759,392	6,425	791 ^b
01/01/07 to 12/31/07	16,551,336	3,557	491
01/01/08 to 12/31/08	18,118,696	3,255	492

TABLE 5
PCP Removed with the Groundwater Extraction System
Penta Wood Products Site

Operation Period	Volume of Groundwater Extracted (gallons)	Average PCP Influent Concentration ($\mu\text{g/L}$)	PCP Removed (lbs)
01/01/09 to 12/31/09	18,533,648	2,883	445
01/01/10 to 12/31/10	18,561,632	1,948	301
01/01/11 to 12/31/11	17,796,668	1,985	295
01/01/12 to 12/31/12	23,051,892	2,125	408
01/01/13 to 12/31/13	29,793,563	1,350	335
Total PCP Removed 2000 to 2013			8,813

^a Volumes are estimated.

^b Values were revised based on measured volumes. Values previously reported were based on estimated volumes.

TABLE 6
PCP Removed from the Free Product Recovery System
Penta Wood Products Site

Operation Period	Amount of Liquid Extracted (gallons)	Amount of LNAPL Extracted (gallons)	Amount of Fuel Oil Removed ^c (gallons)	Amount of PCP Removed ^d (gallons)	Amount of PCP Removed ^d (lbs)
2004	7,640	3,820 ^a	3,629	191	1,338
2005	3,404	1,702 ^a	1,617	85	596
2006	7,550	3,775 ^a	3,586	189	1,322
2007	11,079	5,540 ^a	5,263	277	1,940
2008	4,002	4,002 ^b	3,802	200	1,402
2009	5,090	5,090 ^b	4,836	255	1,783
2010	4,987 ^e	4,987 ^b	4,738	249	1,747
2011	2,500	2,500 ^b	2,375	125	876
2012	3,639	3,639 ^b	3,457	182	1,277
2013	3,890	3,890 ^b	3,696	195	1,363
Total	53,781	38,945	36,997	1,947	13,641

^a Assumes 50 percent of the extracted liquid is LNAPL.

^b Assumes 100 percent of the extracted liquid is LNAPL based on system optimization and observations of waste in storage tank.

^c Assumes LNAPL is 95 percent of the fuel oil.

^d Assumes LNAPL is 5 percent PCP.

^e Includes LNAPL recovered with absorbent socks.

In accordance with the WPDES permit, PCP concentrations in the influent were measured quarterly and are summarized in Table 7. Influent concentrations have continued to decrease year after year.

TABLE 7
Quarterly PCP Influent Concentrations
Penta Wood Products Site

Date	Influent PCP Concentration (µg/L)
February 2013	1,100
May 2013	1,100
July 2013	1,800
October 2013	1,400

As a result of the system operation, there has been over an 80 percent reduction in the annual average PCP influent concentrations since the system was initially started in 2004 (result in November 2004 was 9,140 µg/L).

The remaining PCP mass in the aquifer matrix is adsorbed on the aquifer matrix, dissolved in the groundwater, and present in the LNAPL residual zone. The estimated PCP remaining in the aquifer matrix (such as soil) and dissolved in the groundwater is shown in Table 8. The estimated PCP mass remaining in the LNAPL is shown in Table 9. It should be noted that the 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, the estimates are intended for general comparisons of the relative significance of contaminant mass in different media.

Since the system was restarted in 2004, the system has extracted over 224 MG of groundwater, or approximately 11 pore volumes. In 2013, the system extracted about 29.79 MG (over 1 pore volume), and groundwater extraction rates averaged 64.42 gallons per minute while the system was operating (64.42 is the average influent into the treatment system). The effective extraction rate over 2013, which includes time when the extraction wells were not operating, was 40.48 gallons per minute. With consistent operation, the groundwater extraction system maintained capture of the PCP plume as discussed in the previous section. The 29.79 MG of water treated in 2013 was an increase of 7 MG from 2012, which can be attributed to full operation of the new extraction wells that were installed in spring 2011. A slight increase in influent PCP concentration in 2011/2012 can be attributed to the new extraction wells installed within the most contaminated parts of the site.

3.1.2 Groundwater Treatment System Operation and Maintenance

Continued groundwater treatment system optimization has led to a reduction in carbon changeout frequency, eliminating the need for partial carbon changeouts, and decreasing disposal costs. Optimization of the dosage and monitoring of the pretreatment chemical addition resulted in reduced solids loading to the carbon vessels and extended the operating time between carbon changeouts. The treatment system can operate 20 to 24 weeks and treat approximately 10 to 12 MG of water before requiring a changeout of the lead carbon vessel. A total of two carbon changeouts were completed in 2013. EW-02 was shut down for groundwater extraction because this extraction well appears to be located outside the most contaminated areas of groundwater and will likely pull contamination further out if the well continues to pump. During typical operations, it has been noted that when this well is not running, higher amounts of free product are recovered from the remaining LNAPL recovery wells.

The following is a list of operation and maintenance items that occurred that were replacement or repairs that were made in addition to scheduled operation and maintenance:

- January of 2013—The heat tracer wire for the LNAPL piping coming from the oil/water separator to the storage tank was replaced.
- January 2013—The pump for the RDVF was replaced after damage was discovered within the pump.
- February 2013—A replacement sensor, motor and friction drive used to operate the dissolved air flotation (DAF) unit were needed after the DAF holding tank would not pump into the float tank.
- February 2013—A new sensor for the heater in the RDVF room was installed.

- March 2013—Air/water lines to the DAF unit were replaced.
- April 2013—A new stator for the neat bucket pump was needed to properly pump polymer into the mixing tank.
- May 2013—Cleaned out both filtrate and float tanks to prevent material from clogging the system or damaging pumps.
- May 2013—Installed a sand filter for water coming from the potable well onsite.
- May 2013—The feed pump air supply for the RDVF was replaced after it was discovered that it was damaged during normal operations.
- May 2013—The front gate of the PWP facility was repaired; damage was caused by a passing motorist during the winter.
- June 2013—The rocker arm for the RDVF was broken off during normal operation and was required to be replaced.
- August 2013—A new damper motor was replaced in the air blower for the main process room after the blower stopped working.
- December 2013—The programmable logic controller was replaced in the DAF panel.
- December 2013—The odorous fans froze up and had to be thawed, and belts were replaced.
- December 2013—A series of borings was installed near several extraction well vaults to relieve water pressure that builds up in the vaults during the summer.

3.1.3 LNAPL Extraction Wells Operation and Maintenance

LNAPL removal performance was 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 and pump only water or too shallow and not pump at all. Therefore, the LNAPL pumps were raised or lowered monthly in the spring, summer, and fall of 2013, so the pump was at the appropriate depth within the extraction well.

In August 2013, the submersible pump located in well EW-02 failed and was replaced. Silt had built up in the drop piping and clogged the pump. This is the first instance of this problem at the site.

TABLE 8
Estimate of PCP Remaining in Soil and Groundwater for 2013
Penta Wood Products Site

Contaminant	Parameter	Unconfined MW-10S, MW-19, MW-20 (Area 1)	Unconfined MW-6S, PW-01 (Area 2)	Unconfined MW-3 (Area 3)	Unconfined MW-16 (Area 4)	Semiconfined MW-5,10,18 (Area 1)	Semiconfined MW-6, PW-01 (Area 2)	Semiconfined MW-3 (Area 3)	Semiconfined MW-12 (Area 4)	Total Contaminant (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	
Amount in 2013 (11 th Year Following Groundwater Extraction System restarted in February 2004). Based on groundwater sampling in October 2013.										
PCP	Conc. (µg/L)	7,900	0.52	0.38	0.03	8.80		0.38	28.0	
$K_d^a = 0.60$	PCP in soil (lb)	1,864	0.10	0.05	0.01	3.46	0.00	0.08	19.03	1,886
	PCP in GW (lb)	696	0.04	0.02	0.00	1.29	0.00	0.03	7.11	705
	Total PCP (lb)	2,560	0.13	0.06	0.02	4.75	0.00	0.10	26.15	2,591

^a K_d from Hydrogeologic Investigation, December 1994. K_d is a sorption coefficient.

Contaminant 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 amounts in different media.

Soil density = 1.78 grams per cubic centimeter (g/cm³)

ft³ = cubic feet; GW = groundwater

TABLE 9
Summary of 2013 PCP Estimates
Penta Wood Products Site

Penta Wood Products Site	PCP (lb)	Notes
PCP Remaining		
LNAPL Residual Zone	1,308	Based on original amount less the amount estimated from recovered LNAPL.
Soil (Saturated zone – Adsorbed)	1,886	Based on groundwater concentration and a PCP K_d of 0.6.
Groundwater (saturated zone – dissolved)	705	Based on weighted average groundwater concentrations.
Total PCP Remaining	3,899	
PCP Removed		
Removed by LNAPL Recovery System through 2013	13,662	Assuming LNAPL is 5 percent PCP and based on actual LNAPL recovered.
Removed by GW Extraction System through 2013	8,813	Estimate was revised based on actual GW extraction volumes and concentrations from 2004 through 2013 (see Table 4).
	22,475	

Note: Remaining contaminant 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 amounts in different media.

GW = groundwater

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, which exposes more of the LNAPL smear zone to the air supplied by the bioventing system.

The bioventing system was first started September 24, 2007. Due to 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), the bioventing system is shut down during the winter months. The system is restarted after the spring ground thaw. In June 2009, the bioventing operation was modified to reduce the operating time to 5 days per month. Evaluation of the monitoring data showed that oxygen levels can reach saturation levels within the first several days of blower operation in the majority of the unsaturated zone and, during 1 month of not operating, only a small decrease in the oxygen levels are observed. The effectiveness of the bioventing, therefore, is not compromised by this pulsed operation, which can provide a reduction in operation costs through the lowered energy consumption. Under these parameters, the bioventing system was restarted on May 28, 2013, and operated 5 days per month through October 24, 2013, when the bioventing system was shut down for the winter.

3.2.1 Soil Gas Monitoring

Since startup of the bioventing system, carbon dioxide and methane levels have decreased in the bioventing wells; however, the oxygen level at SG-07S located within the wood chip area have remained at low percentages relative to the other monitored wells. Intermediate wells, deep wells, and shallow wells located outside of the wood chip area have exhibited similar changes in gas composition, including increasing oxygen levels and decreasing carbon dioxide levels, throughout the months of bioventing activity.

Oxygen has generally stabilized for each well at approximately 20 percent. Methane has not been detected or has been found at low concentrations in these wells after the initial startup. No major temperature changes have been observed that would cause concern for a potential fire hazard. Table 10 provides a summary of the baseline measurements prior to startup, measurements immediately after the bioventing system was turned on after the winter, and measurements 1 month prior to winter shutdown.

Soil gas well SG-22 was replaced in December 2013 after it was noticed that the well was clogged with a clay-type material and other rehabilitation methods did not work. Soil gas analytical results are available in Appendix F.

TABLE 10
Bioventing System Soil Gas Measurement Summary
Penta Wood Products Site

Well ID	O ₂ (%)			CO ₂ (%)			CH ₄ (%)		
	Baseline (09/21/07)	Startup from Winter Shutdown (05/28/13)	1 Month Prior to Winter Shutdown (10/23/13)	Baseline (09/21/07)	Startup from Winter Shutdown (05/28/13)	1 Month Prior to Winter Shutdown (10/23/13)	Baseline (09/21/07)	Startup from Winter Shutdown (05/28/13)	1 Month Prior to Winter Shutdown (10/24/13)
Shallow									
SG-04S	21.2	19.3	20.7	0.1	1.1	0.2	0.1	0.0	0.0
SG-05S	17.8	19.8	19.7	1.7	0.4	0.0	0.0	0.0	0.0
SG-06S	17	20.7	20.6	2.3	0.0	0.0	0.0	0.0	0.0
SG-07S	4.3	2.2	0.1	28.5	21.1	26.0	14.1	12.0	11.3
SG-22	0.9 ^a	NM	NM	27.3	NM	NM	18.3 ^a	NM	NM
Intermediate									
SG-04I	1.4	6.8	20.4	14.9	7.1	0.3	0.0	0.0	0.0
SG-05I	9.2	19.9	19.5	8.1	0.2	0.0	0.0	0.0	0.0
SG-06I	12.8	20.8	20.4	5.5	0.0	0.0	0.0	0.0	0.0
SG-07I	12.5	15.5	20.1	7.9	2.8	0.5	0.0	0.1	0.0
Deep									
SG-04D	1.7	1.8	20.0	14.6	12.3	0.5	0.0	0.0	0.0
SG-05D	1.6	19.8	19.7	14.7	0.2	0.0	0.0	0.0	0.0
SG-06D	6.1	19.6	19.6	11.7	0.2	0.0	0.0	0.0	0.0
SG-07D	2.0	20.6	20.0	16.5	0.4	0.6	0.0	0.0	0.0
Perimeter									
SG-23 (3 feet)	18.3	21.4	20.4	1.7	0.0	0.0	0.0	0.0	0.0
SG-24 (5 feet)	19.1	21.2	21.6	0.7	0.0	0.0	0.0	0.0	0.0
SG-25 (5 feet)	17.9	21.3	21.5	2.3	0.0	0.0	0.0	0.0	0.0
SG-26 (5 feet)	21.3	21.1	21.5	0.0	0.0	0.0	0.0	0.0	0.0

3.2.2 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 are monitored periodically during the bioventing operation. Measured pressures in each well stabilize at approximately 1 pound per square inch. Air flow rates for the deep bioventing wells (BV-02, BV-03, BV-04, BV-05, BV-06, BV-07, and BV-11) 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 restarted on May 28, 2013, after the spring ground thaw. The system was shut down for the winter on October 24, 2013.

Bioventing well SG-22 became clogged in spring 2013. It was replaced with an identical well in December 2013 and will be sampled in 2014.

3.3 Summary

The groundwater extraction system was operated continuously with limited down time for maintenance. More than 29.79 MG of groundwater, or over 1 pore volume, were removed from the extraction zone in 2013. An estimated 1,363 pounds of dissolved-phase PCP from groundwater was removed. Approximately 3,890 gallons of LNAPL was extracted from the subsurface. Continued attention to optimization of system operations has led to increased operation of the groundwater extraction system and enhancement of the groundwater capture. The capture zone observed in 2012 was maintained in 2013.

Influent concentrations of PCP from the groundwater extraction wells has declined over time from approximately 9,227 $\mu\text{g/L}$ in 2004 to an average of 1,350 $\mu\text{g/L}$ in 2013 showing an overall decline in the amount of PCP removed from the groundwater influent conveyed to the system from the groundwater extraction wells. The total amount of PCP removed from the environment by the LNAPL recovery and groundwater extraction systems through 2013 is over 22,475 pounds. A majority is estimated to be recovered from the LNAPL recovery system.

The bioventing system operated for approximately 5 months in 2013. During that time, shallow wells within the wood chip area indicated decreases in methane and carbon dioxide concentrations, although well SG-07S showed an increase in carbon dioxide concentrations, and the oxygen concentrations stayed relatively stable. The intermediate and deep wells also showed a general decrease in carbon dioxide (except for SG-07I) and stayed relatively stable in oxygen concentrations. Methane was not detected or was found at low concentrations in the wells.

The bioventing system was shut down for the winter because of concerns about methane migration within the frozen ground surface. However, based on the relatively low oxygen use rate observed during previous years, 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

The bioventing system should continue to operate in 2014, in conjunction with the LNAPL recovery to maximize the LNAPL reductions. Soil gas monitoring will be performed and the bioventing system will be restarted in the spring after the snow melt and the ground thaws. Soil gas measurements will be monitored during startup of the bioventing system in the spring and will then be measured at the start of each monthly operation. The bioventing operation will continue to operate 5 days per month.

Opportunities for continued optimization of the groundwater extraction and treatment system and LNAPL recovery operations will be evaluated throughout the year. The LNAPL recovery pumps will be adjusted monthly to improve LNAPL recovery from the subsurface. EW-02 was shut down in 2013 and will continue to be off through 2014 to increase the effectiveness of the pumping network. The treatment system will continue to operate through 2014.

SECTION 4

Waste Generation and Disposal Summary

The RA activities at the site result in the generation of hazardous waste. Hazardous waste management procedures for the PWP site (EPA ID No. WID006176945) are outlined in the *Waste Handling Plan* (CH2M HILL 2012). Table 11 summarizes the amount and type of waste generated in 2013.

TABLE 11
2013 Detailed Hazardous Waste Generation Summary
Penta Wood Products Site

Manifest #	Date	Filter Cake (lbs)	Carbon (lbs)	LNAPL (lbs)	Yearly Total (lbs)
010775315JJK	1/17/2013	24,400			
010837421JJK	4/1/2013		22,871		
010837422JJK	4/1/2013	22,780			
011462532JJK	5/10/2013	27,980			
011462568JJK	6/20/2013	26,800			
011462638JJK	9/5/2013	28,980			
001247856JJK	10/11/2013			27,252	
011462720JJK	11/11/2013		23,700		
011462719JJK	11/11/2013	25,820			
2013 Total (lbs):		156,760	46,571	27,252	231,062

Table 12 summarizes the amount of waste generated and disposed of offsite from 2000 to 2013.

TABLE 12
Hazardous Waste Generation Summary
Penta Wood Products Site

Date	Filter Cake (lbs)	Misc. Debris (lbs)	Carbon (lbs)	LNAPL (lbs)	Water (gallons)	Yearly Total (lbs)
2000	0	200	6,000	5,009*		11,209
2001	0	400	56,100	6,166*		62,666
2002	0	1,400	48,000	10,790*	27,756	87,946
2003	0	600	0	3,083*	1,376	5,059
2004	155,960	3,200	102,000	53,522*		314,682
2005	178,784	1,290	104,860	23,847*		308,924
2006	112,640	1,200	136,520	52,892*		303,252
2007	174,020	2,200	245,377	77,615*		517,387
2008	211,402	3,176	70,007	28,036		312,621
2009	233,840	1,116	49,757	35,659		320,372
2010	210,940	0	81,227	34,937		327,104
2011	292,903	0	74,247	0		367,150
2012	182,280	0	65,420	25,493		273,193
2013	156,760	0	46,571	27,252	0	230,582

*Volume shows the amount of waste disposed of offsite and is estimated to be approximately 50 percent pure LNAPL and 50 percent mixture of water and emulsified LNAPL.

Although there has been over a 5-MG increase in the amount of groundwater treated at the site from 2012 to 2013, there has been over a 100,000-lb decrease in the production of filter cake. The decrease in filter cake has been

achieved by removing more water from the filter cake and through continued operation of the treatment system using more efficient methods (such as shutting off EW-02 and replacing system components like failing pumps and motors before they completely die, as described in Section 3). LNAPL recovery has increased since the beginning of 2011, which is also due to continued operation of the treatment system using more efficient methods.

Site Inspection and Maintenance

5.1 Community Relations

No community relations issues were encountered in 2013.

5.2 Site Condition

Erosion at the site was almost entirely halted because of erosion control features that are maintained on the site. The grass around the monitoring wells, bioventing wells, and extraction wells was also mowed to maintain accessibility in more frequently travelled areas and to minimize biological hazards in these areas. Several small trees located near the treatment system and other structures were removed to prevent inadvertent damage to the site infrastructure.

A health and safety audit and hazardous waste management audit was performed in 2013 and the health and safety plan was updated in October 2013. A health and safety audit is planned for 2014.

5.3 Quality

The quality management plan was updated twice in 2013 once prior to the installation of the pump in EW-02 and the second time prior to collection of the LNAPL cores.

5.4 Health and Safety

A health and safety audit was performed during at the site on May 7, 2013. The audit was performed to review and evaluate whether proper procedures and equipment were used at the site including for the waste management. The following quality action items found in the 2013 audit were addressed immediately:

- Empty drums on the backside of the granular activated carbon room need to be turned over and eventually removed from the site.
- Housekeeping outside from winter; some garbage, wires, and other debris.
- Test the outside wash station; it had been turned off for winter.
- Mark the mixer in the pretreatment room with caution tape so it is visible and will be moved in the next few months.
- Electrical box for the free product storage tank will need to be replaced.
- Measure head space in the RDVF room with a photoionization detector to determine if there is a risk of hazardous air in the headspace during the formation of the filter cake.
- Install permanent enter and exit signs for the entrance to the site.

5.5 Recommendation

A health and safety audit, along with evaluation of the waste management processes, will be completed in 2014. It is also recommended that all waste shall be removed from the site prior to transition, with the exception of carbon, which still has useful absorption capacity remaining.

SECTION 6

References

CH2M HILL. 1998. *Feasibility Study Report. Penta Wood Products RI/FS.*

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

CH2M HILL. 2010. *Field Sampling Plan.*

CH2M HILL. 2012. *Waste-Handling Plan.*

Appendix A

Analytical Results

Groundwater

Penta Wood

Dissolved Gas Results

May 2013 Groundwater Samples - Monitoring Wells

Field Site Identifier:	01	01	01	01	01	01
Field Sample Location:	MW-12	MW-12	MW-15	MW-19	MW-22	MW-26
Sample Interval:	N/A	N/A	N/A	N/A	N/A	N/A
Matrix:	Water	Water, Dup	Water	Water	Water	Water
Sample Collection Date:	5/22/2013	5/22/2013	5/21/2013	5/22/2013	5/22/2013	5/22/2013
Field Sample Identification:	13CB02-14	13CB02-15	13CB02-16	13CB02-17	13CB02-18	13CB02-19

Dissolved Gasses	Units						
METHANE	ug/l	0.50 U	0.50 U	0.50 U	0.84 J	0.50 U	0.50 U

Penta Wood

Dissolved Gas Results

October 2013 Groundwater Samples - Monitoring Wells

Field Site Identifier:	01	01	01	01	01	01	01
Field Sample Location:	MW-02	MW-03	MW-05	MW-06S	MW-07	MW-09	MW-10
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:	10/9/2013	10/8/2013	10/10/2013	10/9/2013	10/9/2013	10/9/2013	10/10/2013
Field Sample Identification:	14CP02-01	14CP02-02	14CP02-03	14CP02-04	14CP02-05	14CP02-06	14CP02-07

Dissolved Gasses	Units							
METHANE	ug/l	0.50 U	4.3	19	0.50 U	2.2	0.50 U	27 J

**Penta Wood
Dissolved Gas Results
October 2013 Groundwater Samples - Monitoring Wells**

Field Site Identifier:	01	01	01	01	01	01	01
Field Sample Location:	MW-10	MW-12	MW-12	MW-15	MW-16	MW-17	MW-19
Sample Interval:	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Matrix:	Water, Dup	Water	Water, Dup	Water	Water	Water	Water
Sample Collection Date:	10/10/2013	10/8/2013	10/8/2013	10/8/2013	10/8/2013	10/8/2013	10/10/2013
Field Sample Identification:	14CP02-08	14CP02-10	14CP02-11	14CP02-12	14CP02-13	14CP02-14	14CP02-15

Dissolved Gasses	Units						
METHANE	ug/l	140 J	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U

Penta Wood Dissolved Gas Results October 2013 Groundwater Samples - Monitoring Wells

Field Site Identifier:	01	01	01
Field Sample Location:	MW-22	MW-26	MW-28
Sample Interval:	N/A	N/A	N/A
Matrix:	Water	Water	Water
Sample Collection Date:	10/8/2013	10/8/2013	10/9/2013
Field Sample Identification:	14CP02-16	14CP02-17	14CP02-18

Dissolved Gasses	Units			
METHANE	ug/l	0.50 U	0.50 U	0.50 U

Penta Wood Dissolved Metals Results May 2013 Groundwater Samples - Monitoring Wells

Field Site Identifier:	01	01	01	01	01	01
Field Sample Location:	MW-12	MW-12	MW-15	MW-19	MW-22	MW-26
Sample Interval:	N/A	N/A	N/A	N/A	N/A	N/A
Matrix:	Water	Water, Dup	Water	Water	Water	Water
Sample Collection Date:	5/22/2013	5/22/2013	5/21/2013	5/22/2013	5/22/2013	5/22/2013
Field Sample Identification:	13CB02-14	13CB02-15	13CB02-16	13CB02-17	13CB02-18	13CB02-19

Dissolved Metals (Filtered)	Units						
ARSENIC	ug/l	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
COPPER	ug/l	10 U	10 U	10 U	7.3 J	10 U	10 U
IRON	ug/l	50 U	50 UJ	50 U	50 U	50 U	50 U
MANGANESE	ug/l	460	530	10 U	1,100	10 U	10 U
ZINC	ug/l	20 U	20 U	20 U	20 U	20 U	20 U

Penta Wood Dissolved Metals Results October 2013 Groundwater Samples - Monitoring Wells

Field Site Identifier:	01	01	01	01	01	01	01
Field Sample Location:	MW-02	MW-03	MW-05	MW-06S	MW-07	MW-09	MW-10
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:	10/9/2013	10/8/2013	10/10/2013	10/9/2013	10/9/2013	10/9/2013	10/10/2013
Field Sample Identification:	14CP02-01	14CP02-02	14CP02-03	14CP02-04	14CP02-05	14CP02-06	14CP02-07

Dissolved Metals (Filtered)	Units							
ARSENIC	ug/l	2.0 UJ	0.088 J	0.39 J	2.0 UJ	0.34 J	2.0 UJ	0.19 J
COPPER	ug/l	10.0 UJ	10.0 U	10.0 UJ	10.0 UJ	10.0 UJ	10.0 UJ	10.0 UJ
IRON	ug/l	50 UJ	50 U	2,200 J	1,500 J	10,000 J	50 UJ	260 J
MANGANESE	ug/l	10 UJ	8.3 J	4,700 J	32 J	74 J	10 UJ	1,700 J
ZINC	ug/l	20 UJ	20 U	20 UJ	20 UJ	20 UJ	20 UJ	20 UJ

Penta Wood

Dissolved Metals Results

October 2013 Groundwater Samples - Monitoring Wells

Field Site Identifier:	01	01	01	01	01	01	01
Field Sample Location:	MW-10	MW-12	MW-12	MW-15	MW-16	MW-17	MW-19
Sample Interval:	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Matrix:	Water, Dup	Water	Water, Dup	Water	Water	Water	Water
Sample Collection Date:	10/10/2013	10/8/2013	10/8/2013	10/8/2013	10/8/2013	10/8/2013	10/10/2013
Field Sample Identification:	14CP02-08	14CP02-10	14CP02-11	14CP02-12	14CP02-13	14CP02-14	14CP02-15

Dissolved Metals (Filtered)	Units							
ARSENIC	ug/l	0.19 J	0.37 J	0.37 J	0.36 J	0.61 J	0.72 J	0.26 J
COPPER	ug/l	10.0 UJ	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 UJ
IRON	ug/l	230 J	50 U	50 U	50 U	1,500	50 U	50 UJ
MANGANESE	ug/l	1,600 J	680	710	10 U	100	10 U	990 J
ZINC	ug/l	20 UJ	20 U	20 U	20 U	59 J	20 U	20 UJ

Penta Wood Dissolved Metals Results October 2013 Groundwater Samples - Monitoring Wells

Field Site Identifier:	01	01	01
Field Sample Location:	MW-22	MW-26	MW-28
Sample Interval:	N/A	N/A	N/A
Matrix:	Water	Water	Water
Sample Collection Date:	10/8/2013	10/8/2013	10/9/2013
Field Sample Identification:	14CP02-16	14CP02-17	14CP02-18

Dissolved Metals (Filtered)	Units			
ARSENIC	ug/l	0.24 J	0.37 J	2.0 UJ
COPPER	ug/l	10.0 U	10.0 U	10.0 UJ
IRON	ug/l	50 U	50 U	50 UJ
MANGANESE	ug/l	2.8 J	10 U	10 UJ
ZINC	ug/l	20 U	20 U	20 UJ

Penta Wood Semivolatile Results May 2013 Groundwater Samples - Monitoring Wells

Field Site Identifier:	01	01	01	01	01	01
Field Sample Location:	MW-12	MW-12	MW-15	MW-19	MW-22	MW-26
Sample Interval:	N/A	N/A	N/A	N/A	N/A	N/A
Matrix:	Water	Water, Dup	Water	Water	Water	Water
Sample Collection Date:	5/22/2013	5/22/2013	5/21/2013	5/22/2013	5/22/2013	5/22/2013
Field Sample Identification:	13CB02-14	13CB02-15	13CB02-16	13CB02-17	13CB02-18	13CB02-19

Semivolatile Organic Compounds	Units						
NAPHTHALENE	ug/l	0.19 U	0.19 U	0.19 U	29 J	0.19 U	0.19 U
PENTACHLOROPHENOL	ug/l	22	24	0.025 J	5,800	0.11	0.094 U

Penta Wood Semivolatile Results October 2013 Groundwater Samples - Monitoring Wells

Field Site Identifier:	01	01	01	01	01	01	01
Field Sample Location:	MW-02	MW-03	MW-05	MW-06S	MW-07	MW-09	MW-10
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:	10/9/2013	10/8/2013	10/10/2013	10/9/2013	10/9/2013	10/9/2013	10/10/2013
Field Sample Identification:	14CP02-01	14CP02-02	14CP02-03	14CP02-04	14CP02-05	14CP02-06	14CP02-07

Semivolatile Organic Compounds	Units							
NAPHTHALENE	ug/l	0.21 U	0.19 U	0.19 U	0.21 U	0.19 U	0.21 U	0.19 U
PENTACHLOROPHENOL	ug/l	0.94 J	0.38	0.60	0.52 J	0.094 U	0.41 J	17

Penta Wood

Semivolatile Results

October 2013 Groundwater Samples - Monitoring Wells

Field Site Identifier:	01	01	01	01	01	01	01
Field Sample Location:	MW-10	MW-12	MW-12	MW-15	MW-16	MW-17	MW-19
Sample Interval:	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Matrix:	Water, Dup	Water	Water, Dup	Water	Water	Water	Water
Sample Collection Date:	10/10/2013	10/8/2013	10/8/2013	10/8/2013	10/8/2013	10/8/2013	10/10/2013
Field Sample Identification:	14CP02-08	14CP02-10	14CP02-11	14CP02-12	14CP02-13	14CP02-14	14CP02-15

Semivolatile Organic Compounds	Units							
NAPHTHALENE	ug/l	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.20 U	3.0
PENTACHLOROPHENOL	ug/l	16	28	22	0.095 U	0.029 J	0.095 U	7,900

Penta Wood Semivolatile Results October 2013 Groundwater Samples - Monitoring Wells

Field Site Identifier:	01	01	01
Field Sample Location:	MW-22	MW-26	MW-28
Sample Interval:	N/A	N/A	N/A
Matrix:	Water	Water	Water
Sample Collection Date:	10/8/2013	10/8/2013	10/9/2013
Field Sample Identification:	14CP02-16	14CP02-17	14CP02-18

Semivolatile Organic Compounds	Units			
NAPHTHALENE	ug/l	0.20 U	0.19 U	0.19 U
PENTACHLOROPHENOL	ug/l	0.14	0.095 U	0.049 J

Penta Wood Volatile Results May 2013 Groundwater Samples - Monitoring Wells

Field Site Identifier:	01	01	01	01	01	01
Field Sample Location:	MW-12	MW-12	MW-15	MW-19	MW-22	MW-26
Sample Interval:	N/A	N/A	N/A	N/A	N/A	N/A
Matrix:	Water	Water, Dup	Water	Water	Water	Water
Sample Collection Date:	5/22/2013	5/22/2013	5/21/2013	5/22/2013	5/22/2013	5/22/2013
Field Sample Identification:	13CB02-14	13CB02-15	13CB02-16	13CB02-17	13CB02-18	13CB02-19

Volatile Organic Compounds	Units						
BENZENE	ug/l	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
ETHYLBENZENE	ug/l	1.0 U	1.0 U	1.0 U	0.99 J	1.0 U	1.0 U
TOLUENE	ug/l	1.0 U	1.0 U	1.0 U	1.5	1.0 U	1.0 U
XYLENES, TOTAL	ug/l	2.0 U	2.0 U	2.0 U	19	2.0 U	2.0 U

Penta Wood Volatile Results October 2013 Groundwater Samples - Monitoring Wells

Field Site Identifier:	01	01	01	01	01	01	01
Field Sample Location:	MW-02	MW-03	MW-05	MW-06S	MW-07	MW-09	MW-10
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:	10/9/2013	10/8/2013	10/10/2013	10/9/2013	10/9/2013	10/9/2013	10/10/2013
Field Sample Identification:	14CP02-01	14CP02-02	14CP02-03	14CP02-04	14CP02-05	14CP02-06	14CP02-07

Volatile Organic Compounds	Units							
BENZENE	ug/l	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
ETHYLBENZENE	ug/l	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
TOLUENE	ug/l	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
XYLENES, TOTAL	ug/l	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U

Penta Wood Volatile Results October 2013 Groundwater Samples - Monitoring Wells

Field Site Identifier:	01	01	01	01	01	01	01
Field Sample Location:	MW-10	MW-12	MW-12	MW-15	MW-16	MW-17	MW-19
Sample Interval:	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Matrix:	Water, Dup	Water	Water, Dup	Water	Water	Water	Water
Sample Collection Date:	10/10/2013	10/8/2013	10/8/2013	10/8/2013	10/8/2013	10/8/2013	10/10/2013
Field Sample Identification:	14CP02-08	14CP02-10	14CP02-11	14CP02-12	14CP02-13	14CP02-14	14CP02-15

Volatile Organic Compounds	Units							
BENZENE	ug/l	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	2.5 U
ETHYLBENZENE	ug/l	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U
TOLUENE	ug/l	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.1 J
XYLENES, TOTAL	ug/l	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	15

Penta Wood Volatile Results October 2013 Groundwater Samples - Monitoring Wells

Field Site Identifier:	01	01	01
Field Sample Location:	MW-22	MW-26	MW-28
Sample Interval:	N/A	N/A	N/A
Matrix:	Water	Water	Water
Sample Collection Date:	10/8/2013	10/8/2013	10/9/2013
Field Sample Identification:	14CP02-16	14CP02-17	14CP02-18

Volatile Organic Compounds	Units			
BENZENE	ug/l	0.50 U	0.50 U	0.50 U
ETHYLBENZENE	ug/l	1.0 U	1.0 U	1.0 U
TOLUENE	ug/l	1.0 U	1.0 U	1.0 U
XYLENES, TOTAL	ug/l	2.0 U	2.0 U	2.0 U

**Penta Wood
Wet Chemistry Results
May 2013 Groundwater Samples - Monitoring Wells**

Field Site Identifier:	01	01	01	01	01	01
Field Sample Location:	MW-12	MW-12	MW-15	MW-19	MW-22	MW-26
Sample Interval:	N/A	N/A	N/A	N/A	N/A	N/A
Matrix:	Water	Water, Dup	Water	Water	Water	Water
Sample Collection Date:	5/22/2013	5/22/2013	5/21/2013	5/22/2013	5/22/2013	5/22/2013
Field Sample Identification:	13CB02-14	13CB02-15	13CB02-16	13CB02-17	13CB02-18	13CB02-19

Wet Chemistry	Units						
ALKALINITY, TOTAL (AS CaCO3)	mg/l	280	290	280	54	41	170
CHLORIDE (AS CL)	mg/l	12	12	9.8	14	3.7	18
HARDNESS (AS CaCO3)	mg/l	333	355	287	78	37	273
NITROGEN, NITRATE (AS N)	mg/l	2.0 J	2.1 J	4.7 J	1.1 J	1.0 J	1.9 J
SULFATE (AS SO4)	mg/l	150	150	5.9	11	3.9	230
SULFIDE	mg/l	1.0 U	1.0 U	6.3	1.0	1.0 U	1.0 U
TOTAL ORGANIC CARBON	mg/l	1.6	1.6	0.82 J	45	15	0.55 J

Penta Wood Wet Chemistry Results October 2013 Groundwater Samples - Monitoring Wells

Field Site Identifier:	01	01	01	01	01	01	01
Field Sample Location:	MW-02	MW-03	MW-05	MW-06S	MW-07	MW-09	MW-10
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:	10/9/2013	10/8/2013	10/10/2013	10/9/2013	10/9/2013	10/9/2013	10/10/2013
Field Sample Identification:	14CP02-01	14CP02-02	14CP02-03	14CP02-04	14CP02-05	14CP02-06	14CP02-07

Wet Chemistry	Units							
ALKALINITY, TOTAL (AS CaCO3)	mg/l	39 J	390	150	5.0 UJ	200 J	47 J	220
CHLORIDE (AS CL)	mg/l	2.8	70	9.2 J	29	12	1.2	7.8
HARDNESS (AS CaCO3)	mg/l	73	498	235	65	254	63	319
NITROGEN, NITRATE (AS N)	mg/l	2.9 J	3.5 J	0.10 J	8.9 J	1.8 J	3.8 J	0.41 J
SULFATE (AS SO4)	mg/l	28	16	140 J	9.5	120	12	93
SULFIDE	mg/l	1.0 UJ	1.0 U	1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ
TOTAL ORGANIC CARBON	mg/l	4.5 J	1.6	1.8	8.0 J	0.75 J	1.6 J	1.4

Penta Wood Wet Chemistry Results October 2013 Groundwater Samples - Monitoring Wells

Field Site Identifier:	01	01	01	01	01	01	01
Field Sample Location:	MW-10	MW-12	MW-12	MW-15	MW-16	MW-17	MW-19
Sample Interval:	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Matrix:	Water, Dup	Water	Water, Dup	Water	Water	Water	Water
Sample Collection Date:	10/10/2013	10/8/2013	10/8/2013	10/8/2013	10/8/2013	10/8/2013	10/10/2013
Field Sample Identification:	14CP02-08	14CP02-10	14CP02-11	14CP02-12	14CP02-13	14CP02-14	14CP02-15

Wet Chemistry	Units							
ALKALINITY, TOTAL (AS CaCO3)	mg/l	230	270	260	220	34	140	36
CHLORIDE (AS CL)	mg/l	7.9	12	12	11	6.2	16	12
HARDNESS (AS CaCO3)	mg/l	305	401	413	257	33	199	59
NITROGEN, NITRATE (AS N)	mg/l	0.39 J	2.1 J	2.1 J	5.2 J	0.57 J	4.5 J	1.1 J
SULFATE (AS SO4)	mg/l	94	120	120	6.5	6.3	36	11
SULFIDE	mg/l	1.0 UJ	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 UJ
TOTAL ORGANIC CARBON	mg/l	1.7	1.4	1.3	0.50 J	1.1	0.40 J	31

Penta Wood

Wet Chemistry Results

October 2013 Groundwater Samples - Monitoring Wells

Field Site Identifier:	01	01	01
Field Sample Location:	MW-22	MW-26	MW-28
Sample Interval:	N/A	N/A	N/A
Matrix:	Water	Water	Water
Sample Collection Date:	10/8/2013	10/8/2013	10/9/2013
Field Sample Identification:	14CP02-16	14CP02-17	14CP02-18

Wet Chemistry	Units			
ALKALINITY, TOTAL (AS CaCO3)	mg/l	45	160	120 J
CHLORIDE (AS CL)	mg/l	7.2	18	21
HARDNESS (AS CaCO3)	mg/l	51	304	142
NITROGEN, NITRATE (AS N)	mg/l	1.4 J	1.5 J	2.2 J
SULFATE (AS SO4)	mg/l	4.7	110 J	6.5
SULFIDE	mg/l	1.0 U	1.0 U	1.0 UJ
TOTAL ORGANIC CARBON	mg/l	10	1.0 U	0.49 J

Residential

Penta Wood

Semivolatile Results

May 2013 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:	5/21/2013	5/21/2013	5/21/2013	5/21/2013	5/21/2013	5/21/2013	5/21/2013
Field Sample Identification:	13CB02-01	13CB02-20	13CB02-21	13CB02-22	13CB02-23	13CB02-24	13CB02-25

Semivolatile Organic Compounds	Units							
NAPHTHALENE	ug/l	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U
PENTACHLOROPHENOL	ug/l	0.029 J	0.031 J	0.029 J	0.097 U	0.053 J	0.094 U	0.095 U

Penta Wood Volatile Results May 2013 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:	5/21/2013	5/21/2013	5/21/2013	5/21/2013	5/21/2013	5/21/2013	5/21/2013
Field Sample Identification:	13CB02-01	13CB02-20	13CB02-21	13CB02-22	13CB02-23	13CB02-24	13CB02-25

Volatile Organic Compounds	Units							
BENZENE	ug/l	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
ETHYLBENZENE	ug/l	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
TOLUENE	ug/l	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
XYLENES, TOTAL	ug/l	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U

Penta Wood Semivolatile Results October 2013 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	Water	Water	Water	Water
Sample Collection Date:	10/8/2013	10/8/2013	10/8/2013	10/8/2013	10/8/2013	10/8/2013	10/8/2013
Field Sample Identification:	14CP02-27	14CP02-21	14CP02-22	14CP02-23	14CP02-24	14CP02-25	14CP02-26

Semivolatile Organic Compounds	Units						
NAPHTHALENE	ug/l	0.20 U	0.20 U	0.20 U	0.19 U	0.19 U	0.19 U
PENTACHLOROPHENOL	ug/l	0.027 J	0.040 J	0.097 U	0.094 U	0.096 U	0.098 U

Penta Wood Volatile Results October 2013 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	Water	Water	Water	Water
Sample Collection Date:	10/8/2013	10/8/2013	10/8/2013	10/8/2013	10/8/2013	10/8/2013	10/8/2013
Field Sample Identification:	14CP02-27	14CP02-21	14CP02-22	14CP02-23	14CP02-24	14CP02-25	14CP02-26

Volatile Organic Compounds	Units							
BENZENE	ug/l	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
ETHYLBENZENE	ug/l	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
TOLUENE	ug/l	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
XYLENES, TOTAL	ug/l	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U

Treatment

Penta Wood

Diesel Range Organic Results

2013 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:	1/9/2013	2/14/2013	3/8/2013	4/16/2013	5/22/2013	6/18/2013	7/16/2013
Field Sample Identification:	13CP01-16	13CP01-22	13CP01-25B	13CP01-28	13CP01-34	13CP01-38	13CP01-43

Diesel Range Organics	Units							
DIESEL COMPONENTS	mg/l	0.095 U	0.095 U	0.095 UJ	0.096 UB	0.033 J	0.095 U	0.10 U

Penta Wood

Diesel Range Organic Results

2013 Treatment Plant Samples

Field Site Identifier:	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:	8/28/2013	9/24/2013	10/22/2013	11/26/2013	12/23/2013
Field Sample Identification:	13CP01-48	13CP01-52	14CP01-04	14CP01-09	14CP01-13

Diesel Range Organics	Units					
DIESEL COMPONENTS	mg/l	0.036 UB	0.10 U	0.095 UJ	0.052 UB	0.055 UB

Penta Wood Dioxin Results 2013 Treatment Plant Samples

Field Site Identifier: 01
Field Sample Location: EFFLUENT
Sample Interval: N/A
Matrix: Waste Water
Sample Collection Date: 5/22/2013
Field Sample Identification: 13CP01-34

Dioxins and Furans	Units	
2,3,7,8-TETRACHLORODIBENZO-P-DIOXIN	pg/l	9.9 U

Penta Wood Metal Results 2013 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:	2/14/2013	5/22/2013	7/16/2013	10/22/2013
Field Sample Identification:	13CP01-22	13CP01-34	13CP01-43	14CP01-04

Metals	Units				
ARSENIC	ug/l	1.0 U	0.98 UB	0.32 UB	0.39 UB
COPPER	ug/l	4.4	3.3 J	8.9 J	2.5 UB
IRON	ug/l	31 UB	26 UB	50 U	24 J
MANGANESE	ug/l	900	1,000	730 J	830
ZINC	ug/l	37	34 UB	31 UB	33 UB

Penta Wood Pentachlorophenol Results 2013 Treatment Plant Samples

Field Site Identifier:	01	01	01	01	01	01	01
Field Sample Location:	DAF-EFFLUENT	DAF-EFFLUENT	DAF-EFFLUENT	DAF-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:	2/14/2013	5/22/2013	7/16/2013	10/22/2013	1/2/2013	1/9/2013	1/15/2013
Field Sample Identification:	13CP01-21	13CP01-33	13CP01-42	14CP01-03	13CP01-15	13CP01-16	13CP01-17

Semivolatile Organic Compounds	Units							
PENTACHLOROPHENOL	ug/l	1,100	1,100	1,800	1,400	0.095 U	0.095 U	0.094 U

Penta Wood Pentachlorophenol Results 2013 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:	1/22/2013	1/29/2013	2/5/2013	2/14/2013	2/19/2013	2/26/2013	3/8/2013
Field Sample Identification:	13CP01-18	13CP01-19	13CP01-20	13CP01-22	13CP01-23	13CP01-24	13CP01-25B

Semivolatile Organic Compounds	Units							
PENTACHLOROPHENOL	ug/l	0.094 U	0.095 UJ	0.094 UJ	0.031 J	0.095 U	0.095 U	0.027 J

Penta Wood Pentachlorophenol Results 2013 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:	3/12/2013	4/9/2013	4/16/2013	4/23/2013	4/29/2013	5/7/2013	5/14/2013
Field Sample Identification:	13CP01-26	13CP01-27	13CP01-28	13CP01-29	13CP01-30	13CP01-31	13CP01-32

Semivolatile Organic Compounds	Units							
PENTACHLOROPHENOL	ug/l	0.094 U	0.094 U	0.095 U	0.095 UJ	0.095 U	0.095 U	0.094 U

Penta Wood Pentachlorophenol Results 2013 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:	5/22/2013	5/28/2013	6/4/2013	6/11/2013	6/18/2013	6/28/2013	7/2/2013
Field Sample Identification:	13CP01-34	13CP01-35	13CP01-36	13CP01-37	13CP01-38	13CP01-39	13CP01-40

Semivolatile Organic Compounds	Units						
PENTACHLOROPHENOL	ug/l	0.049 J	0.094 U	0.094 U	0.094 U	0.094 U	0.094 U

Penta Wood Pentachlorophenol Results 2013 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:	7/9/2013	7/16/2013	7/23/2013	7/30/2013	8/6/2013	8/13/2013	8/28/2013
Field Sample Identification:	13CP01-41	13CP01-43	13CP01-44	13CP01-45	13CP01-46	13CP01-47	13CP01-48

Semivolatile Organic Compounds	Units							
PENTACHLOROPHENOL	ug/l	0.094 U	0.094 U	0.094 U	0.094 U	0.095 U	0.094 U	0.095 UJ

Penta Wood Pentachlorophenol Results 2013 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:	9/5/2013	9/10/2013	9/17/2013	9/24/2013	10/1/2013	10/8/2013	10/15/2013
Field Sample Identification:	13CP01-49	13CP01-50	13CP01-51	13CP01-52	13CP01-53	14CP01-01	14CP01-02

Semivolatile Organic Compounds	Units							
PENTACHLOROPHENOL	ug/l	0.095 U	0.095 U	0.094 UJ	0.094 U	0.094 U	0.095 U	0.020 J

Penta Wood Pentachlorophenol Results 2013 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:	10/22/2013	10/29/2013	11/5/2013	11/12/2013	11/19/2013	11/26/2013	12/3/2013
Field Sample Identification:	14CP01-04	14CP01-05	14CP01-06	14CP01-07	14CP01-08	14CP01-09	14CP01-10

Semivolatile Organic Compounds	Units							
PENTACHLOROPHENOL	ug/l	0.032 J	0.095 U	0.094 U	0.015 J	0.095 U	0.095 UJ	0.095 U

Penta Wood Pentachlorophenol Results 2013 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:	12/10/2013	12/17/2013	12/23/2013	12/30/2013
Field Sample Identification:	14CP01-11	14CP01-12	14CP01-13	14CP01-14

Semivolatile Organic Compounds	Units				
PENTACHLOROPHENOL	ug/l	0.095 U	0.023 J	0.095 U	0.027 J

Penta Wood Semivolatile Results 2013 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:	1/9/2013	2/14/2013	3/8/2013	4/16/2013	5/22/2013	6/18/2013	7/16/2013
Field Sample Identification:	13CP01-16	13CP01-22	13CP01-25B	13CP01-28	13CP01-34	13CP01-38	13CP01-43

Semivolatile Organic Compounds	Units						
NAPHTHALENE	ug/l	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U
PHENOL	ug/l	NR	0.95 U	NR	NR	0.95 U	NR

Penta Wood Semivolatile Results 2013 Treatment Plant Samples

Field Site Identifier:	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:	8/28/2013	9/24/2013	10/22/2013	11/26/2013	12/23/2013
Field Sample Identification:	13CP01-48	13CP01-52	14CP01-04	14CP01-09	14CP01-13

Semivolatile Organic Compounds	Units					
NAPHTHALENE	ug/l	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U
PHENOL	ug/l	NR	NR	NR	NR	NR

Penta Wood Volatile Results 2013 Treatment Plant Samples

Field Site Identifier: 01
Field Sample Location: EFFLUENT
Sample Interval: N/A
Matrix: Waste Water
Sample Collection Date: 5/22/2013
Field Sample Identification: 13CP01-34

Volatile Organic Compounds	Units	
BENZENE	ug/l	0.50 U
ETHYLBENZENE	ug/l	1.0 U
TOLUENE	ug/l	1.0 U
XYLENES, TOTAL	ug/l	2.0 U

Penta Wood Wet Chemistry Results 2013 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:	2/14/2013	5/22/2013	7/16/2013	10/22/2013
Field Sample Identification:	13CP01-22	13CP01-34	13CP01-43	14CP01-04

Wet Chemistry	Units				
CHLORIDE (AS CL)	mg/l	25	16	19	20

Appendix B
Natural Attenuation Data

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)	
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	
DW-01	5/20/2008								NT	NT	NT	NT	NT	0.094 UJ	NT	
DW-01	10/23/2008								1.79 J	0.0046 J	0.642 J	9.07	0.002 UJ	0.1 UJ	29.6	
DW-01	6/3/2009								NT	NT	NT	NT	NT	<0.1	NT	
DW-01	10/8/2009								NT	NT	NT	NT	NT	0.1 UJ	NT	
DW-01	5/19/2010								NT	NT	NT	NT	NT	<0.1	NT	
DW-01	10/7/2010								NT	NT	NT	NT	NT	0.1 UJ	NT	
DW-01	6/30/2011								NT	NT	NT	NT	NT	<0.1	NT	
DW-01	10/18/2011								NT	NT	NT	NT	NT	0.032 J	NT	
DW-01	5/23/2012								NT	NT	NT	NT	NT	0.028 J	NT	
DW-01	10/18/2012								NT	NT	NT	NT	NT	0.032 J	NT	
DW-01	5/21/2013								NT	NT	NT	NT	NT	0.029 J	NT	
DW-01	10/8/2013								NT	NT	NT	NT	NT	0.027	NT	
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	9.3	
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	7.4	
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	NR	93.8	7.05	217.0	NR	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	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	<0.002	0.1	6.2	
MW-01	5/31/2006	10.76	252	9.33	94.0	7.62	156.3	85.4	1.6 J	<0.01	<0.05	17	<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 J	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	66.7	3 J	<0.01	<0.100	12 J	<0.002	<0.093	9.4	
MW-01	10/21/2008	8.70	276	9.78	84.0	7.17	226.0	58.1	1.62 J	0.01 UJ	0.388	6.19	0.002 UJ	0.42 UJ	3.91	
MW-02	10/9/1997	9.49	143	8.82	77.2	6.42	274.1		1.1	NT	<0.02	17	<0.01	<1.0	3.5	
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	1.0	
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	

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-02	8/6/2002	9.96	128	6.31	NR	5.41	380.5		<0.15	0.018	0.048	10	<0.01	0.1	3.0	
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	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	0.065	27	<0.002	2.2 J	5.6	
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	<0.002	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-02	10/21/2008	10.23	299	9.55	92.3	6.37	184.3	395	1.1 J	0.0052 J	0.424 J	12.9	0.002 UJ	1.6 J	3.17	
MW-02	10/6/2009	9.57	272	4.86	43.0	6.47	212.0	8.2	0.81 J	0.01 UJ	0.129 J	11.6 J	0.00083 UJ	2.21 J	1.97 J	
MW-02	10/6/2010	13.28	340	NR	89.6	6.73	114.1	741	1.01 J	0.0094 J	0.043 J	4.2 J	<0.0013	<0.1	0.56 J	
MW-02	10/19/2011	9.65	230	8.68	74.7	6.48	153.6	210.9	0.5 J	0.0037 J	0.047 J	33	<0.0005	<0.1	7.7	
MW-02	10/16/2012	9.65	212	8.55	81.3	6.58	143.6	170.6	0.9 J	0.0250	0.810	32 J	0.00012 J	0.3	4.1	
MW-02	10/9/2013	10.58	182	5.53	49.0	6.36	209.1	67.0	0.29 J	0.01 UJ	0.05 UJ	28.0	<0.0005	0.94 J	2.8	
MW-03	10/8/1997	10.34	696	3.52	31.5	6.91	38.4		4.4	0.011	0.257	16	<0.01	<1.0	42	
MW-03	4/4/2000	Parameters not measured								2.8	0.010	0.498	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	0.142	11	NT	<0.11	47	
MW-03	9/13/2001	11.53	1118	16.44	NR	6.93	99.0		4	0.031	0.930	14	<0.01	0.093	58	
MW-03	8/7/2002	10.36	1007	4.50	NR	6.74	165.1		<0.15	0.011	0.164	16	<0.01	0.11	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	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	0.120	24	<0.002	0.2 J	62	
MW-03	9/25/2006	Well Dry								Well Dry						
MW-03	9/20/2007	Well Dry								Well Dry						
MW-03	10/21/2008	11.98	1129	1.26	11.8	6.80	63.4	72.8	2.73 J	0.0152 J	2.140	15.2	0.0049 J	0.1 UJ	60.5	
MW-03	10/7/2009	12.34	1098	5.05	51.0	6.87	127.0	NR	2.55 J	0.0124 J	0.722 J	11 J	0.021 J	0.1 UJ	53.8 J	
MW-03	10/5/2010	12.82	1300	25.70	NR	6.52	108.0	12.2	3.62	0.012 J	0.805	19.8 J	0.0016	<0.1	67.2	
MW-03	10/18/2011	10.50	1133	4.64	45.1	6.88	89.1	5.0	3.3	0.0410	0.510	16	0.140	0.58	64	
MW-03	10/16/2012	10.50	1035	4.46	40.1	6.82	12.6	6.3	3.6 J	0.0083 J	0.260	17	0.0130	0.46	69	
MW-03	10/8/2013	11.97	976	5.35	50.2	6.99	152.9	7.5	3.5 J	0.0083 J	< 0.05	16	0.0043	0.38	70	
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	<0.01	28000	50	
MW-05	4/7/2000	8.76	737	4.81	39.3	6.03	119.4		<0.1	3.35	3.4	34.3	0.0009	20600	49	
MW-05	4/26/2001	12.29	1018	3.71	36.0	6.40	-39.7		<0.13	11.3	7.6	28	NT	20600	42	
MW-05	9/13/2001	11.45	698	10.19	97.0	6.80	-68.6		0.17	8.50	4.1	22	<0.01	6300	29	
MW-05	8/7/2002	11.80	589	5.02	NR	6.15	35.2		<0.15	7.84	7.9	21		510	26	

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-05	9/25/2003	10.60	559	2.99	27.0	6.54	-21.3		<0.05	8.32	13.4	20	0.00047 J	1100	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	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	35	0.0230	1100 J	18		
MW-05	9/26/2006	11.49	736	4.79	46.5	6.64	221.0	0.72	<0.1	8.0	23	27	0.0087 J	460	16		
MW-05	9/20/2007	11.60	583	2.95	28.8	6.53	-68.9	0.80	0.1 UJ	7.6	25	39 J	0.0098	31	13		
MW-05	10/22/2008	10.47	552	2.79	26.8	6.74	-73.0	1.08	0.05 UJ	9.7 J	10.5 J	24.8	0.011 J	206	8.68		
MW-05	10/7/2009	13.43	631	3.30	29.8	6.69	-75.5	NR	0.05 UJ	11.8 J	6 J	55.1 J	0.017 J	33.3 J	8.59 J		
MW-05	10/6/2010	12.87	638.5	1.90	18.8	6.37	27.9	2.00	0.1 UJ	12.6	3.0	79.4	0.004	40	11.4 J		
MW-05	10/19/2011	10.33	809	3.05	31.0	6.99	-39.7	0.00	<0.1	11.0	2.6	150	0.038 J	0.97	15		
MW-05	10/17/2012	11.32	634	5.84	61.5	6.88	-47.6	0.90	0.1 UJ	7.0	2.7	130	0.017	0.59 J	11		
MW-05	10/10/2013	12.19	592	5.12	45.5	7.00	-55.0	6.70	0.1 UJ	4.7 J	2.2 J	140 J	0.019	0.60	9.2 J		
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	2.5	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	
MW-06S	8/7/2002	12.75	583	NR	41.4	6.08	77.8		<0.15	1.790	3.33	18	0.270	88 B	17		
MW-06S	9/25/2003	Not measured due to product in the well.								1.01	0.961	1.10	17	0.130	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	NR	4.7 J	0.2	0.51	34 J	0.003	0.099	30		
MW-06S	10/23/2008	10.68	227	8.83	79.5	6.60	245.0	NR	7.11 J	0.0653 J	0.438 J	11	0.002 UJ	2.65	28.3		
MW-06S	10/8/2009	Well Dry								Well Dry							
MW-06S	10/7/2010	14.30	680	92.67	NR	6.26	77.0	>1000	6.94 J	0.0197 J	0.531	11 J	<0.0013	0.1 UJ	21.3		
MW-06S	10/19/2011	10.64	140	10.88	97.7	6.96	245.0	505.1	5.3	0.014	<0.05	9.8	<0.0005	<0.1	17		
MW-06S	10/17/2012	11.67	156	12.23	112.3	7.27	129.0	701.1	5.5 J	0.0039 J	<0.05	11 J	<0.0005	<0.1	16		
MW-06S	10/9/2013	12.20	205	9.69	89.8	6.66	206.0	215.6	8.9 J	0.032 J	1.5 J	9.5	<0.0005	0.52 J	29		
MW-07	10/14/1997	10.13	709	8.23	73.0	6.86	6.04		4.9	NT	0.622	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	0.359	6.06	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	0.154	6.54	0.0047	<0.1	8.4		
MW-07	9/11/2001	11.04	824	8.36	74.5	6.27	208.0		3.0	0.0044	0.230	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	NR	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-07	10/22/2008	10.26	911	8.76	78.4	7.16	112.3	835	1.54 J	0.0416 J	0.926 J	98.9	0.11 J	<0.1	14.1		

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-07	10/8/2009	10.29	811	10.28	96.1	7.33	183.6	(off scale)	1.91 J	0.109 J	0.687 J	152 J	0.0024 J	0.403 J	12.2 J	
MW-07	10/6/2010	12.26	748	8.05	77.6	6.02	61.9	167	2.24 J	0.0632	0.989	168	0.0280	<0.1	13.8 J	
MW-07	10/19/2011	11.72	492	8.65	80.1	7.01	84.8	88.7	1.9 J	0.0210	0.081	92	0.0150	<0.1	12	
MW-07	10/16/2012	12.15	679	9.75	100.3	7.18	75.0	87.3	1.5 J	0.0220	0.230	120	0.0022	<0.1	11	
MW-07	10/9/2013	11.25	711	9.25	84.1	7.89	(*)	218.6	1.8 J	0.074 J	10 J	120	0.0022	< 0.094	12	
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	7.5	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	<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 J	0.013	0.21	76 J	<0.002	<0.093	21	
MW-08	10/22/2008	10.77	560	5.42	48.9	7.61	25.0	30.4	1.92 J	0.0131 J	0.707 J	73.1	0.0008 J	<0.1	24.3	
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 J	0.0041 J	<0.100	15 J	<0.002	0.37	2.6	
MW-09	10/22/2008	9.28	205	13.1	122.1	5.84	282.5	3.38	2.48 J	0.01 UJ	0.166 J	14.9	0.002 UJ	<0.1	3.44	
MW-09	10/8/2009	Well needs redevelopment; pump was pulled							Well needs redevelopment; pump was pulled							
MW-09	5/18/2010	12.17	160	6.99	NR	5.88	197.8	20.1	2.42 J	0.0071 J	0.120 UJ	11	<0.0013	0.073 J	2.63	
MW-09	10/6/2010	13.29	NR	NR	76.8	6.34	72.3	17.4	3.35	<0.016	0.109 J	14 J	<0.0013	<0.1	3.26 J	
MW-09	10/19/2011	9.04	131	7.99	67.0	5.91	214.7	3.0	3.10	0.0029 J	<0.05	8.9	<0.0005	<0.1	<1.0	
MW-09	10/16/2012	8.37	200	8.28	72.3	5.86	232.5	3.4	5.9 J	<0.01	<0.05	10 J	<0.0005	0.39	2.8 J	
MW-09	10/9/2013	9.61	157	9.86	86.9	6.35	197.7	3.1	3.8 J	0.01 UJ	0.05 UJ	12	<0.0005	0.41 J	1.20	
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	

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-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	3.20	2.40	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	Not measured due to product in the well								<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 J	2.7	0.55	25 J	0.0024	1700	20
MW-10	10/23/2008	Not measured due to product in the well								0.05 UJ	2.21 J	1.11 J	28.1	0.006 J	1630	12.4
MW-10	10/7/2009	Not measured due to product in the well								0.05 UJ	2.23 J	1.21 J	58.7 J	0.017 J	220 J	9.82 J
MW-10	10/7/2010	Not measured due to product in the well								0.1 UJ	1.78	0.488	48.2 J	0.0018	92.4 J	7.26 J
MW-10	10/20/2011	10.94	451	4.12	40.9	7.21	-21.7	5.0	0.21	1.7	0.18	53	0.0088 J	21	8.4	
MW-10	10/17/2012	11.10	587	3.32	33.6	7.29	-23.6	4.6	0.075 J	1.6	0.19	68 J	0.012	9	7.8	
MW-10	10/10/2013	11.06	664	6.01	53.9	7.23	39.0	5.6	0.41 J	1.7 J	0.26 J	94	0.140 J	17	7.9	
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	0.00055	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	<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-10S	10/23/2008	Not measured due to product in the well								Well Dry				0.002 UJ	Well Dry	
MW-10S	10/7/2009	Pump is set above water table; No sample collected								Pump is set above water table; No sample collected						
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	
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	<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	NR	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 J	<0.01	<0.100	19 J	<0.002	<0.093	20	

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	10/22/2008	11.93	546	6.93	64.6	7.64	208.7	0.20	2.26 J	0.01 UJ	0.533	17.8	0.002 UJ	0.27	19.9	
MW-12	10/15/1997	10.16	1044	2.86	25.0	6.93	41.2		<0.1	NT	0.00027	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	0.0016	10300	54.5	
MW-12	4/6/2001	Parameters not measured								0.43	1.57	0.1310	16	0.0480	1500	48
MW-12	9/13/2001	11.02	1142	3.95	36.7	6.84	22.2		<0.53	1.40	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	1.60	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	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	NR	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	NR	NR	6.60	155.5	0.58	2.4 J	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 J	0.82	<0.100	29 J	<0.002	1100	14	
MW-12	5/20/2008	11.61	705	1.86	18.2	6.95	168.4	0.00	2.0 J	1.0	0.1 UJ	25	0.002 UJ	2100 J	12	
MW-12	10/21/2008	10.23	706	3.44	31.7	7.06	110.2	0.50	2.96 J	1.14	0.927	31.8	0.002 UJ	1670 J	13.1	
MW-12	6/2/2009	12.99	711	9.30	88.8	7.28	131.8	3.70	2.65 J	1.04	0.310	59.9	0.0008 UJ	521 J	12.3	
MW-12	10/6/2009	10.97	742	4.88	44.8	7.00	184.4	0.37	1.84 J	0.987 J	0.307 J	85.4 J	0.00083 UJ	295 J	13.7 J	
MW-12	5/19/2010	11.92	790	6.43	NR	6.94	162.4	0.76	1.87 J	0.913 J	0.228 J	116	<0.0013	70.3	14.7	
MW-12	10/5/2010	14.78	990	35.60	NR	7.01	85.7	2.07	1.73	0.834	0.358	119	<0.0013	43.7	14.4 J	
MW-12	6/29/2011	11.58	820	3.18	30.2	6.47	308.1	1.50	2.28	0.744	0.314	111	<0.0009	37	14.1 J	
MW-12	10/18/2011	10.51	800	6.51	58.6	7.11	173.1	0.00	2.1	0.66	<0.05	98	<0.0005	37	14	
MW-12	5/22/2012	11.40	793	3.40	31.3	7.10	154.6	0.20	1.8	0.67	<0.05	120	<0.0005	21 J	14	
MW-12	10/16/2012	10.57	773	6.52	58.7	6.94	137.4	1.40	2.0 J	0.41	<0.05	120	<0.0005	26	14	
MW-12	5/22/2013	10.64	777	6.21	56.0	7.07	191.9	0.10	2.1 J	0.53	<0.05	150	<0.0005	24	12	
MW-12	10/8/2013	11.13	714	5.58	57.3	8.04	166.2	0.00	2.1 J	0.71	<0.05	120	<0.0005	28	12	
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	0.1118	<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		1.77	0.110	<0.025	35	<0.00012	0.18	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	<0.0005	2.90	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	

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-13	9/27/2005	12.48	168	(*)	NR	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	0.50	0.31 J	0.0063 J	<0.100	29 J	<0.002	0.53	2.9	
MW-13	10/21/2008	10.50	142	11.66	105.9	5.87	196.4	167	0.45 J	<0.01	0.207	10.1	0.002 UJ	0.31 UJ	1.9 J	
MW-13	10/7/2009	12.90	106	8.11	76.8	6.24	54.5	235	0.77 J	0.01 UJ	0.05 UJ	9.71 J	0.00083 UJ	0.16 J	2.12 J	
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	<1.0	6.5	
MW-15	4/4/2000	8.08	483	10.72	85.1	7.69	284.1		3.52	<0.002	<0.05	10.0	0.000339	<0.5	12.3	
MW-15	4/25/2001	11.79	675	8.73	81.3	7.73	179.4		3.97	<0.015	<0.025	2.6	<0.0001	<0.11	15	
MW-15	9/12/2001	9.74	548	9.80	NR	8.00	153.3		3.7	0.00031	<0.035	<4.5	<0.01	0.077	17	
MW-15	8/6/2002	10.24	508	NR	101.4	7.72	285.7		<0.15	<0.00042	<0.011	4.7	<0.01	<0.04	16	
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	<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	36.7	3.9 J	<10.0	0.279	16	
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	5.8	<0.002	<0.11	17	
MW-15	9/27/2006	11.95	607	NR	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 J	<0.01	<0.100	13 J	<0.002	<0.1	15	
MW-15	5/20/2008	12.21	551	8.40	80.5	7.66	136.3	0.80	4.7 J	0.00052 J	0.100 UJ	6.6	0.002 UJ	0.18 J	14	
MW-15	10/21/2008	11.78	575	7.56	70.2	7.54	98.6	1.27	6.05 J	<0.01	0.854	6.99	0.002 UJ	0.1 UJ	14.6	
MW-15	6/2/2009	13.58	560	8.78	85.0	7.83	159.0	NR	5.33 J	<0.01	0.301	6.42	0.0008 UJ	0.1 UJ	13.5	
MW-15	10/7/2009	10.20	576	8.46	75.5	7.65	28.9	16.90	4.74 J	<0.0001 UJ	0.293 J	6.52 J	0.00083 UJ	0.1 UJ	12.9 J	
MW-15	5/18/2010	13.09	563	9.26	NR	7.42	130.9	19.37	4.57 J	0.010 UJ	0.194 J	6.3	<0.0013	<0.1	10.7	
MW-15	10/7/2010	12.50	543	7.99	75.3	7.32	85.7	2.53	5.49 J	<0.016	0.311	6.91 J	<0.0013	2.32 J	13.2 J	
MW-15	6/28/2011	13.24	538	5.96	57.0	7.58	228.9	0.80	5.2 J	<0.01	0.205	6.91	<0.0009	<0.1	12.1J	
MW-15	10/18/2011	11.62	545	8.8	81.3	7.48	140.0	0.00	4.8 J	0.0017 J	<0.05	5.3	<0.0005	<0.1	12	
MW-15	5/22/2012	11.77	537	7.99	83.4	7.51	165.7	0.00	4.6 J	<0.01	<0.05	5.1 J	<0.0005	0.024 J	11	
MW-15	10/16/2012	12.38	554	10.91	107.1	7.51	82.4	1.00	5.3 J	<0.01	<0.05	<5.0	<0.0005	<0.1	12	
MW-15	5/21/2013	11.46	545	8	73.6	7.33	150.1	0.00	4.7 J	<0.01	<0.05	5.9	<0.0005	0.025 J	9.8	
MW-15	10/18/2013	11.91	500	8.69	79.9	8.12	132.5	0.00	5.2 J	<0.01	<0.05	6.5	<0.0005	<0.095	11	
MW-16	10/14/1997	9.86	409	8.57	74.8	6.82	99.4		3.2	NT	0.00002	8.1	<0.01	<1.0	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	0.0094	0.026	29	<0.00012	<0.11	3.6	
MW-16	9/10/2001	Parameters not measured							5.8	0.00082	<0.035	11	<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	0.0782	13	<0.01	0.035	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	

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-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	0.0962	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	
MW-16	9/26/2006	10.69	278	9.33	87.7	6.45	232.3	51.8	1.2 J	<0.00059 B	<0.05 J	32 J	<0.002 J	0.046 J	4.1 J	
MW-16	9/18/2007	10.91	210	11.55	105.1	5.89	318.4	NR	1.2 J	<0.01	<0.100	23 J	<0.002	0.2	4.5	
MW-16	10/22/2008	9.15	248	17.98	156.2	6.52	224.5	267	0.99 J	0.02 J	0.318 J	43.2	0.002 UJ	0.08 J	7.51	
MW-16	10/6/2009	9.61	173	10.62	93.2	7.03	177.8	164	1.03 J	0.0486 J	0.458 J	36.7 J	0.00083 UJ	0.1 UJ	6.35 J	
MW-16	10/5/2010	12.82	290	100.07	NR	7.82	104.7	292.33	0.63 J	<0.016	<0.05	6.29 J	<0.0013	<0.1	5.74 J	
MW-16	10/19/2011	10.03	110	NR	NR	6.97	165.8	101.7	0.63 J	0.014	0.13	12	<0.0005	<0.1	4.2	
MW-16	10/16/2012	9.87	126	10.89	96.5	6.94	204.6	27.5	0.52 J	0.017	0.18	17 J	<0.0005	<0.1	4.6	
MW-16	10/8/2013	11.13	101	9.40	85.8	7.22	198.3	79.5	0.57 J	0.100	1.50	6.3	<0.0005	0.029 J	6.2	
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		4.21	<0.002	<0.05	<3.0	0.00013	<0.5	4.89	
MW-17	4/26/2001	10.38	412	9.64	85.7	7.77	58.6		4.98	<0.015	<0.025	6.8	NT	0.72	4.12	
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	<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	(*)	NR	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	NR	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 J	<0.01	<0.100	14 J	<0.002	<0.099	4.7	
MW-17	10/22/2008	10.57	376	7.24	65.7	7.76	126.0	0.66	5.75 J	0.01 UJ	0.374 J	7.75	0.002 UJ	0.095	7.78	
MW-17	10/6/2009	11.03	361	9.33	84.8	7.80	167.1	1.69	1.65 J	0.01 UJ	0.16 J	6.86 J	0.00083 UJ	0.1 UJ	6.54 J	
MW-17	10/5/2010	12.85	530	68.9	NR	7.87	105.7	1.85	5.18	<0.01	0.163	9.68 J	<0.0013	<0.1	11.6 J	
MW-17	10/18/2011	10.89	400	7.76	72.1	7.76	156.9	0.00	3.9	<0.01	<0.05	24	<0.0005	<0.1	16	
MW-17	10/16/2012	11.49	415	8.55	80.1	7.84	100.8	0.00	4.7	<0.01	<0.05	23 J	<0.0005	<0.1	16	
MW-17	10/8/2013	11.70	429	7.33	67.1	7.69	176.4	2.20	4.5 J	<0.01	<0.05	36.00	<0.0005	<0.095	16	
MW-18	10/10/1997	11.51	777	1.03	9.2	6.13	-12.1		<0.1	NT	0.03	11	<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		6.97	<0.002	<0.05	90	0.000272	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	1.80	0.071	<9.7	0.016	400000	19
MW-19	5/13/2002	Not measured due to product in the well								2.0	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								3.0	3.59	<0.025	27	0.0024	4900	19.6
MW-19	9/25/2003	Not measured due to product in the well								2.0	4.47	0.05 J	90	0.0057	15000	17.5

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-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
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
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
MW-19	5/9/2007	Not measured due to product in the well							0.29 J	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 J	3.1	<0.100	42 J	<0.002	3500	17
MW-19	5/20/2008	Not measured due to product in the well							0.44 J	2.9	0.100 UJ	42	<0.002	23000 J	16
MW-19	10/24/2008	Not measured due to product in the well							0.04 J	4.85 J	0.51 J	46	0.0021 J	27900	15.9
MW-19	6/2/2009	Not measured due to product in the well							0.01 UJ	4.05	0.222	45	0.0039 J	18600 J	12.8
MW-19	10/8/2009	Not measured due to product in the well							0.05 UJ	3.19 J	0.237 J	42 J	0.002 J	31800 J	14.3 J
MW-19	5/20/2010	Not measured due to product in the well							0.05 UJ	1.87 J	0.0922 UJ	32	0.0014	26000	21.5
MW-19	10/7/2010	Not measured due to product in the well							0.10 UJ	0.942	0.114	18.7 J	<0.0013	4470 J	13.6 J
MW-19	6/29/2011	Not measured due to product in the well							0.26	1.3	0.131	20	<0.0009	8880	16.6 J
MW-19	10/20/2011	Not measured due to product in the well							0.3	1.7	0.052 J	17	0.00033 J	13000	19
MW-19	5/22/2012	Not measured due to product in the well							1.1	1.3	<0.05	12	0.00071	5300	15
MW-19	10/17/2012	Not measured due to product in the well							1.4	0.9	<0.05	11 J	<0.0005	8100	12
MW-19	5/22/2013	Not measured due to product in the well							1.1 J	1.1	<0.05	11	0.84 J	5800	14
MW-19	10/10/2013	Not measured due to product in the well							1.1 J	0.99	0.05 UJ	11	<0.0005	7900	12
MW-20	10/15/1997	Well Dry							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	0.841	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 UJ	4.8	<0.100	98 J	<0.002	9500	18
MW-20	10/23/2008	Not measured due to product in the well							0.13 J	3.4 J	0.462	29	0.002 UJ	41000	15.7
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		0.07	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		0.035	49
MW-21	4/29/2003	9.91	473	3.72	NR	6.65	144.9		2.5	<0.005	<0.025	12	<0.0005	0.15	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	<0.0005	0.063 J	48
MW-21	5/4/2004	10.10	557	NR	89.2	6.50	196.3	NR	2.3 J	0.718 R	14000 R	3.6 R	<10.0	<0.135 B	67

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-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	0.474	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	0.33	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	<0.002 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	<0.002	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 J	<0.01	<0.100	9.3 J	<0.002	<0.098	33 J	
MW-21	9/18/2007	12.17	352	7.89	NR	6.32	235.8	150	3.7 J	<0.01	<0.100	12 J	<0.002	0.13	29	
MW-21	10/21/2008	8.57	411	12.83	110.1	6.58	211.3	44.4	2.69 J	<0.01	0.294 J	<7.27	0.002 UJ	0.1 UJ	69	
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	0.0229	14		0.12	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	0.078	7.2	
MW-22	9/24/2003	9.70	303	10.92	96.4	6.89	345.4	1038	2.15	0.542	2.77	3.0 J	<0.0005	0.34	4.9	
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	0.22	11 J	
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	NR	6.53	227.9	NR	2.5 J	<0.01	<0.100	10 J	<0.002	0.13	8.2	
MW-22	5/20/2008	10.05	268	NR	86.6	6.43	273.7	1045.9	2.3 J	0.0036	0.100 UJ	12	0.002 UJ	0.77 J	8.4	
MW-22	10/21/2008	10.31	243	12.46	111.0	6.90	238.5	NR	1.48 J	<0.01	0.303 J	6.95	0.002 UJ	0.09 UJ	4.7	
MW-22	6/2/2009	9.97	188	NR	NR	7.07	196.7	NR	1.97 J	<0.01	0.0831	6.73	0.0008 UJ	0.1 UJ	6.9	
MW-22	10/6/2009	8.94	173	10.02	86.6	7.12	187.4	918	5.31 J	0.168 J	1.56 J	7.53 J	0.00083 UJ	0.1 UJ	7.0 J	
MW-22	5/18/2010	11.91	177	11.71	NR	6.35	238.3	772	1.9 J	NT	NT	6.9	<0.0013	0.1 U	9.2	
MW-22	10/6/2010	12.85	NR	NR	94.4	6.83	123.7	451.83	0.9 J	<0.01	0.0742 J	5.62 J	<0.0013	0.13 UB	1.8 J	
MW-22	6/29/2011	10.45	84	8.77	78.7	6.88	286.9	113	0.46 J	0.0276	0.499	3.9 J	<0.0009	<0.1	0.78 J	
MW-22	10/18/2011	9.56	96	18.25	161.9	7.15	164.3	37.3	0.5 J	0.0027 J	<0.05	3.5 J	<0.0005	<0.1	<1.0	
MW-22	5/22/2012	9.96	112	9.81	87.0	7.34	157.6	74.3	0.76 J	0.013	0.16	3.9 J	<0.0005	0.084 J	3.4	
MW-22	10/16/2012	8.62	131	10.95	93.9	6.64	226.7	35.8	0.48 J	0.0057 J	<0.05	<5.0	<0.0005	<0.1	4.1	
MW-22	5/22/2013	9.30	107	10.39	91.2	6.89	200.0	243.0	1.0 J	<0.01	<0.05	3.9	<0.0005	0.110	3.7	
MW-22	10/8/2013	9.71	145	9.6	84.5	7.20	190.5	142.2	1.4 J	2.8 J	<0.05	4.7	<0.0005	0.140	7.2	
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	NR	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		3.64	0.002	<0.025	12	<0.0001	0.11	36	
MW-25	2/9/1998	8.69	808	8.16	NR	6.95	55.0		NT	NT	<0.1	9.9	0.017	<1.0	16	

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-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	0.10	12	<0.01	0.16	30
MW-26	5/14/2002	12.28	588	7.55	72.8	7.11	17.8		3.0 J	0.001	<0.011	15		0.10	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	<0.0005	<0.11	11	
MW-26	5/4/2004	9.85	172	7.07	62.8	6.19	326.2	NR	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	NR	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 J	<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 J	<0.01	<0.100	220 J	<0.002	<0.095	25	
MW-26	5/20/2008	11.80	921	7.06	66.5	7.06	181.1	0.00	1.8 J	<0.0025	0.100 UJ	230	0.002 UJ	0.096 UJ	22	
MW-26	10/22/2008	10.88	953	4.74	43.0	6.96	192.9	1.83	2.36 J	0.01 UJ	0.777 J	235	0.002 UJ	<0.1	21.7	
MW-26	6/2/2009	13.40	901	15.21	146.0	7.37	195.6	4.10	1.83 J	<0.01	0.341	2360	0.0008UJ	0.1 UJ	203	
MW-26	10/6/2009	12.63	845	9.82	96.6	7.15	133.2	0.31	1.7 J	0.01 UJ	0.325 J	212 J	0.00083 UJ	0.1 UJ	20.7 J	
MW-26	5/19/2010	12.84	919	12.24	NR	7.06	133.8	2.81	2.41 J	0.010 UJ	0.236 J	279	<0.0013	0.13 J	20.4	
MW-26	10/5/2010	12.11	985	2.31	21.6	6.75	102.1	0.67	1.77	<0.01	0.376	232	<0.0013	0.1 UJ	20 J	
MW-26	6/29/2011	12.59	934	7.50	71.0	6.74	355.5	0.90	1.83 J	<0.01	0.274	230	<0.0009	<0.1	18.3 J	
MW-26	10/19/2011	11.14	906	10.80	91.4	7.21	224.3	0.00	1.6 J	<0.01	<0.05	200	<0.0005	<0.1	19	
MW-26	5/22/2012	12.36	839	8.66	81.6	7.33	146.5	0.00	1.7	<0.01	<0.05	210	<0.0005	<0.1	19	
MW-26	10/16/2012	11.52	827	10.10	93.0	7.39	143.6	0.00	1.8 J	<0.01	<0.05	200	<0.0005	<0.1	19	
MW-26	5/22/2013	11.29	790	9.65	88.7	7.08	212.4	0.00	1.9 J	<0.01	<0.05	230	<0.0005	<0.094	18	
MW-26	10/18/2013	11.24	725	9.19	84.7	8.08	142.5	0.00	1.5 J	<0.01	<0.05	110 J	<0.0005	<0.095	18	
MW-27	10/20/2011	12.71	202	9.48	89.3	8.33	168.6	27.60	3.1	<0.01	<0.05	9.1	0.0001 J	0.17	10	
MW-28	10/20/2011	10.52	283	5.11	47.0	7.78	154.2	6.50	1.3	0.006 J	<0.05	5.2	0.00019 J	690	5.5	
MW-28	10/17/2012	10.57	304	10.73	96.7	7.82	112.7	0.00	1.8	<0.01	<0.05	<5.0	<0.0005	<0.1	11	
MW-28	10/9/2013	10.73	394	10.21	92.4	8.28	(*)	21.70	2.2 J	0.01 UJ	0.05 UJ	6.5	<0.0005	0.049 J	21	
PW-01	10/23/1997	11.10	550	5.00	NR	8.92	185.0		7.7	NT	0.0012	10	0.0195	5.0	48	
PZ-03	2/9/1998	7.50	212	11.02	NR	6.91	164.0		NT	NT	NT	NT	NT	<1	NT	

(*) Readings outside normal range, instrument response in question.

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)
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NR - Parameter not Recorded.

NT - Parameter not tested.

Appendix C
Groundwater Elevations and Observations,
and LNAPL Measurements

Water Level and LNAPL Measurements

Pentawood Products Site

2013 Annual Report

Well	Casing Dia. (inches)	Approx. Well Depth (ft)	TOC Elev. (ft MSL)	Aquifer ^a	May 2013		October 2013	
					Depth to Water (ft) DTW	Comments (DTP = Depth to Product)	Depth to Water (ft) DTW	Comments (DTP = Depth to Product)
MW-01	2	97	1072.32	UC	88.45		88.61	
MW-02	2	85	1064.85	UC	81.49		81.45	
MW-03	4	182	1129.50	SC	146.08		146.12	
MW-04	4	187	1087.81	SC	104.55		104.85	
MW-05	4	118	1071.73	UC	88.65		88.68	
MW-06 S	2	129.05	1108.63	UC	124.86		124.88	
MW-07	4	140.5	1096.39	SC	112.85		112.90	
MW-08	4	160	1091.28	SC	107.72		107.83	
MW-09	2	54	1020.71	UC	33.84		33.86	
MW-10	4	131	1089.74	SC	107.2		106.92	
MW-10 S	2	115.23	1090.43	UC	107.05	106.88 ^b	106.85	
MW-11	2	155.5	1085.58	SC	102.48		102.58	
MW-12	2	135	1081.99	SC	99.05		99.09	
MW-13	2	27	1006.10	UC	22.75		22.80	
MW-14	2	175	1078.50	SC	95.31		95.59	
MW-15	2	170	1127.22	SC	143.63		143.67	
MW-16	2	106.5	1081.92	UC	98.11		98.04	
MW-17	2	134	1084.50	SC	101.22		101.27	
MW-18	6	116	1072.44	UC	89.15	88.62 ^c	89.35	88.65 ^f
MW-19	2	112	1088.17	UC	105.78	104.84 ^d	106.20	104.95 ^g
MW-20	2	107.5	1097.76	UC	115.16	114.08 ^e	114.92	114.11 ^h
MW-21	2	114.9	1095.70	UC	112.06		112.15	
MW-22	2	105.16	1084.70	UC	100.07		101.05	
MW-23	2	125	1017.57	SC	34.23		34.51	
MW-24	2	125	1084.10	UC	100.08		100.07	
MW-25	2	117.8	1095.24	UC	111.52		111.28	
MW-26	2	141	1087.07	UC	103.76		103.80	
MW-27	2	135	1111	UC	127.23		127.28	
MW-28	2	135	1083.1	SC	100.13		100.22	

^a UC=Unconfined aquifer; SC=semiconfined aquifer

^bMW-10S NAPL thickness in ft 0.17

^cMW-18 NAPL thickness in ft 0.53

^dMW-19 NAPL thickness in ft 0.94

^eMW-20 NAPL thickness in ft 1.08

^fMW-18 NAPL thickness in ft 0.70

^gMW-19 NAPL thickness in ft 1.25

^hMW-20 NAPL thickness in ft 0.81

Appendix D
Residential Well Memorandums



CH2M HILL
135 South 84th Street
Suite 400
Milwaukee, WI 53214
Tel 414.272.2426
Fax 414.272.4408

July 3, 2013

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

Subject: Subcontract No. 599, May 2013 Sampling Results
Penta Wood Products Site, Town of Daniels, Wisconsin
Long-Term Response Action (LTRA)
WA No. 132-LRLR-05WE, Contract No. EP-S5-06-01

Dear Linda:

Please find the enclosed results of the residential and potable well semi-annual groundwater sampling event that took place between May 21, 2013 and May 23, 2013. This sampling event included the analysis of pentachlorophenol (PCP), benzene, ethylbenzene, toluene, xylene (BTEX), and naphthalene. The following table provides information on the residential wells where samples were collected.

LTRA Residential Well Information

Penta Wood Products Site – Town of Daniels, Wisconsin

Location ID	Resident Name	Resident Address	Resident Phone Number	WI Well No.
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 North Canton, Ohio. Analytical results were received by CH2M HILL on June 18, 2013. During a review of the preliminary results, CH2M HILL's project chemist observed estimated detections (below the preventative action limit (PAL) of 0.1 micrograms per liter) of PCP in RW01, RW01-FR, RW03 and the potable well (DW01). Since the presence of PCP in these residential wells has been observed in the past at low levels, the estimated detections reported in May 2013 are not unrealistic and are within the historical range. No re-sampling was deemed necessary.

Ms. Linda Martin

Page 2

July 3, 2013

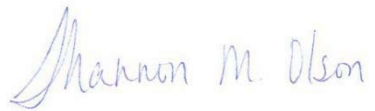
The semi-annual groundwater results were submitted under a cover letter on July 3, 2013 to the U.S. Environmental Protection Agency (USEPA) for validation. The following summary is based on a review of the data before receiving final validation results from USEPA.

The results of the May 2013 semi-annual groundwater sampling event showed no detections of BTEX, naphthalene or PCP in any of the residential wells except for the estimated detections of PCP in RW01, RW01-FR, RW03 and DW01 discussed above.

If you have any questions or comments, please contact me at 262.388.3899, or Mike Niebauer at 608.298.7770.

Sincerely,

CH2M HILL

A handwritten signature in blue ink that reads "Shannon M. Olson". The signature is written in a cursive, flowing style.

Shannon Olson
Project Chemist

Enclosure

cc: Pat Vogtman, PO/USEPA Region 5 (w/o enclosure)
Rhonda Flynn, CO/USEPA Region 5 (w/o enclosure)
Phil Richard/WDNR
Mike Niebauer, SM/CH2M HILL, Milwaukee
Shannon Olson, ASM/CH2M HILL, Milwaukee
Keli McKenna, RTL/CH2M HILL, Milwaukee
Ike Johnson, PM/CH2M HILL, Milwaukee
Paul Arps, DPM/CH2M HILL, Milwaukee
Theresa Rojas, QAM/CH2M HILL, Milwaukee
Dave Shekoski, Sample Coordinator/CH2M HILL, Milwaukee
Cherie Wilson, AA/CH2M HILL, Milwaukee

Client Sample Results

Client: CH2M Hill, Inc.
Project/Site: Penta Wood Products Site

TestAmerica Job ID: 240-24835-1

Client Sample ID: 13CB02-20 (PWP-RW01)

Lab Sample ID: 240-24835-5

Date Collected: 05/21/13 10:45

Matrix: Water

Date Received: 05/23/13 09:15

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.50	U	0.50	0.11	ug/L			06/01/13 19:05	1
Toluene	1.0	U	1.0	0.15	ug/L			06/01/13 19:05	1
Ethylbenzene	1.0	U	1.0	0.21	ug/L			06/01/13 19:05	1
Xylenes, Total	2.0	U	2.0	0.13	ug/L			06/01/13 19:05	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	94		75 - 110		06/01/13 19:05	1
Dibromofluoromethane (Surr)	95		75 - 120		06/01/13 19:05	1
Toluene-d8 (Surr)	99		80 - 120		06/01/13 19:05	1

Method: 8270C - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	0.19	U	0.19	0.097	ug/L		05/28/13 09:42	05/31/13 15:09	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorobiphenyl (Surr)	80		20 - 110	05/28/13 09:42	05/31/13 15:09	1
2-Fluorophenol (Surr)	80		10 - 110	05/28/13 09:42	05/31/13 15:09	1
2,4,6-Tribromophenol (Surr)	79		21 - 110	05/28/13 09:42	05/31/13 15:09	1
Nitrobenzene-d5 (Surr)	73		21 - 110	05/28/13 09:42	05/31/13 15:09	1
Phenol-d5 (Surr)	85		21 - 110	05/28/13 09:42	05/31/13 15:09	1
Terphenyl-d14 (Surr)	87		24 - 110	05/28/13 09:42	05/31/13 15:09	1

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	0.031	J	0.099	0.015	ug/L		05/24/13 16:00	05/30/13 10:55	4

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2,4-Dichlorophenylacetic acid	74		32 - 140	05/24/13 16:00	05/30/13 10:55	4
2,4-Dichlorophenylacetic acid	66		32 - 140	05/24/13 16:00	05/30/13 10:55	4

Client Sample Results

Client: CH2M Hill, Inc.
Project/Site: Penta Wood Products Site

TestAmerica Job ID: 240-24835-1

Client Sample ID: 13CB02-21 (PWP-RW01FR)

Lab Sample ID: 240-24835-6

Date Collected: 05/21/13 10:46

Matrix: Water

Date Received: 05/23/13 09:15

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.50	U	0.50	0.11	ug/L			06/01/13 19:27	1
Toluene	1.0	U	1.0	0.15	ug/L			06/01/13 19:27	1
Ethylbenzene	1.0	U	1.0	0.21	ug/L			06/01/13 19:27	1
Xylenes, Total	2.0	U	2.0	0.13	ug/L			06/01/13 19:27	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	99		75 - 110		06/01/13 19:27	1
Dibromofluoromethane (Surr)	95		75 - 120		06/01/13 19:27	1
Toluene-d8 (Surr)	99		80 - 120		06/01/13 19:27	1

Method: 8270C - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	0.19	U	0.19	0.095	ug/L		05/28/13 09:42	05/31/13 15:36	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorobiphenyl (Surr)	72		20 - 110	05/28/13 09:42	05/31/13 15:36	1
2-Fluorophenol (Surr)	74		10 - 110	05/28/13 09:42	05/31/13 15:36	1
2,4,6-Tribromophenol (Surr)	68		21 - 110	05/28/13 09:42	05/31/13 15:36	1
Nitrobenzene-d5 (Surr)	69		21 - 110	05/28/13 09:42	05/31/13 15:36	1
Phenol-d5 (Surr)	78		21 - 110	05/28/13 09:42	05/31/13 15:36	1
Terphenyl-d14 (Surr)	81		24 - 110	05/28/13 09:42	05/31/13 15:36	1

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	0.029	J	0.096	0.015	ug/L		05/24/13 16:00	05/29/13 22:53	4

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2,4-Dichlorophenylacetic acid	41		32 - 140	05/24/13 16:00	05/29/13 22:53	4
2,4-Dichlorophenylacetic acid	38		32 - 140	05/24/13 16:00	05/29/13 22:53	4

TestAmerica Canton

Client Sample Results

Client: CH2M Hill, Inc.
Project/Site: Penta Wood Products Site

TestAmerica Job ID: 240-24835-1

Client Sample ID: 13CB02-22 (PWP-RW02)

Lab Sample ID: 240-24835-1

Date Collected: 05/21/13 11:45

Matrix: Water

Date Received: 05/23/13 09:15

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.50	U	0.50	0.11	ug/L			06/01/13 17:40	1
Toluene	1.0	U	1.0	0.15	ug/L			06/01/13 17:40	1
Ethylbenzene	1.0	U	1.0	0.21	ug/L			06/01/13 17:40	1
Xylenes, Total	2.0	U	2.0	0.13	ug/L			06/01/13 17:40	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	97		75 - 110		06/01/13 17:40	1
Dibromofluoromethane (Surr)	99		75 - 120		06/01/13 17:40	1
Toluene-d8 (Surr)	99		80 - 120		06/01/13 17:40	1

Method: 8270C - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	0.19	U	0.19	0.095	ug/L		05/28/13 09:42	05/30/13 15:57	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorobiphenyl (Surr)	80		20 - 110	05/28/13 09:42	05/30/13 15:57	1
2-Fluorophenol (Surr)	84		10 - 110	05/28/13 09:42	05/30/13 15:57	1
2,4,6-Tribromophenol (Surr)	82		21 - 110	05/28/13 09:42	05/30/13 15:57	1
Nitrobenzene-d5 (Surr)	74		21 - 110	05/28/13 09:42	05/30/13 15:57	1
Phenol-d5 (Surr)	87		21 - 110	05/28/13 09:42	05/30/13 15:57	1
Terphenyl-d14 (Surr)	89		24 - 110	05/28/13 09:42	05/30/13 15:57	1

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	0.097	U	0.097	0.015	ug/L		05/24/13 16:00	05/30/13 06:29	4

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2,4-Dichlorophenylacetic acid	59		32 - 140	05/24/13 16:00	05/30/13 06:29	4

Client Sample Results

Client: CH2M Hill, Inc.
Project/Site: Penta Wood Products Site

TestAmerica Job ID: 240-24835-1

Client Sample ID: 13CB02-23 (PWP-RW03)

Lab Sample ID: 240-24835-2

Date Collected: 05/21/13 12:05

Matrix: Water

Date Received: 05/23/13 09:15

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.50	U	0.50	0.11	ug/L			06/01/13 18:01	1
Toluene	1.0	U	1.0	0.15	ug/L			06/01/13 18:01	1
Ethylbenzene	1.0	U	1.0	0.21	ug/L			06/01/13 18:01	1
Xylenes, Total	2.0	U	2.0	0.13	ug/L			06/01/13 18:01	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	96		75 - 110		06/01/13 18:01	1
Dibromofluoromethane (Surr)	94		75 - 120		06/01/13 18:01	1
Toluene-d8 (Surr)	99		80 - 120		06/01/13 18:01	1

Method: 8270C - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	0.19	U	0.19	0.097	ug/L		05/28/13 09:42	05/30/13 16:23	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorobiphenyl (Surr)	75		20 - 110	05/28/13 09:42	05/30/13 16:23	1
2-Fluorophenol (Surr)	76		10 - 110	05/28/13 09:42	05/30/13 16:23	1
2,4,6-Tribromophenol (Surr)	72		21 - 110	05/28/13 09:42	05/30/13 16:23	1
Nitrobenzene-d5 (Surr)	67		21 - 110	05/28/13 09:42	05/30/13 16:23	1
Phenol-d5 (Surr)	80		21 - 110	05/28/13 09:42	05/30/13 16:23	1
Terphenyl-d14 (Surr)	84		24 - 110	05/28/13 09:42	05/30/13 16:23	1

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	0.053	J	0.095	0.015	ug/L		05/24/13 16:00	05/30/13 07:17	4

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2,4-Dichlorophenylacetic acid	61		32 - 140	05/24/13 16:00	05/30/13 07:17	4
2,4-Dichlorophenylacetic acid	58		32 - 140	05/24/13 16:00	05/30/13 07:17	4

TestAmerica Canton

Client Sample Results

Client: CH2M Hill, Inc.
Project/Site: Penta Wood Products Site

TestAmerica Job ID: 240-24835-1

Client Sample ID: 13CB02-24 (PWP-RW04)

Lab Sample ID: 240-24835-3

Date Collected: 05/21/13 12:25

Matrix: Water

Date Received: 05/23/13 09:15

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.50	U	0.50	0.11	ug/L			06/01/13 18:23	1
Toluene	1.0	U	1.0	0.15	ug/L			06/01/13 18:23	1
Ethylbenzene	1.0	U	1.0	0.21	ug/L			06/01/13 18:23	1
Xylenes, Total	2.0	U	2.0	0.13	ug/L			06/01/13 18:23	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	96		75 - 110		06/01/13 18:23	1
Dibromofluoromethane (Surr)	93		75 - 120		06/01/13 18:23	1
Toluene-d8 (Surr)	98		80 - 120		06/01/13 18:23	1

Method: 8270C - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	0.19	U	0.19	0.095	ug/L		05/28/13 09:42	05/30/13 16:50	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorobiphenyl (Surr)	75		20 - 110	05/28/13 09:42	05/30/13 16:50	1
2-Fluorophenol (Surr)	75		10 - 110	05/28/13 09:42	05/30/13 16:50	1
2,4,6-Tribromophenol (Surr)	77		21 - 110	05/28/13 09:42	05/30/13 16:50	1
Nitrobenzene-d5 (Surr)	69		21 - 110	05/28/13 09:42	05/30/13 16:50	1
Phenol-d5 (Surr)	79		21 - 110	05/28/13 09:42	05/30/13 16:50	1
Terphenyl-d14 (Surr)	82		24 - 110	05/28/13 09:42	05/30/13 16:50	1

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	0.094	U	0.094	0.015	ug/L		05/24/13 16:00	05/30/13 08:05	4

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2,4-Dichlorophenylacetic acid	45		32 - 140	05/24/13 16:00	05/30/13 08:05	4

Client Sample Results

Client: CH2M Hill, Inc.
Project/Site: Penta Wood Products Site

TestAmerica Job ID: 240-24835-1

Client Sample ID: 13CB02-25 (PWP-RW05)

Lab Sample ID: 240-24835-4

Date Collected: 05/21/13 11:23

Matrix: Water

Date Received: 05/23/13 09:15

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.50	U	0.50	0.11	ug/L			06/01/13 18:44	1
Toluene	1.0	U	1.0	0.15	ug/L			06/01/13 18:44	1
Ethylbenzene	1.0	U	1.0	0.21	ug/L			06/01/13 18:44	1
Xylenes, Total	2.0	U	2.0	0.13	ug/L			06/01/13 18:44	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	99		75 - 110		06/01/13 18:44	1
Dibromofluoromethane (Surr)	99		75 - 120		06/01/13 18:44	1
Toluene-d8 (Surr)	101		80 - 120		06/01/13 18:44	1

Method: 8270C - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	0.19	U	0.19	0.096	ug/L		05/28/13 09:42	05/30/13 15:30	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorobiphenyl (Surr)	79		20 - 110	05/28/13 09:42	05/30/13 15:30	1
2-Fluorophenol (Surr)	79		10 - 110	05/28/13 09:42	05/30/13 15:30	1
2,4,6-Tribromophenol (Surr)	82		21 - 110	05/28/13 09:42	05/30/13 15:30	1
Nitrobenzene-d5 (Surr)	73		21 - 110	05/28/13 09:42	05/30/13 15:30	1
Phenol-d5 (Surr)	82		21 - 110	05/28/13 09:42	05/30/13 15:30	1
Terphenyl-d14 (Surr)	87		24 - 110	05/28/13 09:42	05/30/13 15:30	1

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	0.095	U	0.095	0.015	ug/L		05/24/13 16:00	05/30/13 08:53	4

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2,4-Dichlorophenylacetic acid	50		32 - 140	05/24/13 16:00	05/30/13 08:53	4

Client Sample Results

Client: CH2M Hill, Inc.
Project/Site: Penta Wood Products Site

TestAmerica Job ID: 240-24835-1

Client Sample ID: 13CB02-01 (PWP-DW01)

Lab Sample ID: 240-24835-7

Date Collected: 05/21/13 09:00

Matrix: Water

Date Received: 05/23/13 09:15

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.50	U	0.50	0.11	ug/L			06/01/13 19:48	1
Toluene	1.0	U	1.0	0.15	ug/L			06/01/13 19:48	1
Ethylbenzene	1.0	U	1.0	0.21	ug/L			06/01/13 19:48	1
Xylenes, Total	2.0	U	2.0	0.13	ug/L			06/01/13 19:48	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	99		75 - 110		06/01/13 19:48	1
Dibromofluoromethane (Surr)	96		75 - 120		06/01/13 19:48	1
Toluene-d8 (Surr)	101		80 - 120		06/01/13 19:48	1

Method: 8270C - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	0.19	U	0.19	0.095	ug/L		05/28/13 09:42	05/31/13 16:02	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorobiphenyl (Surr)	84		20 - 110	05/28/13 09:42	05/31/13 16:02	1
2-Fluorophenol (Surr)	81		10 - 110	05/28/13 09:42	05/31/13 16:02	1
2,4,6-Tribromophenol (Surr)	77		21 - 110	05/28/13 09:42	05/31/13 16:02	1
Nitrobenzene-d5 (Surr)	76		21 - 110	05/28/13 09:42	05/31/13 16:02	1
Phenol-d5 (Surr)	88		21 - 110	05/28/13 09:42	05/31/13 16:02	1
Terphenyl-d14 (Surr)	87		24 - 110	05/28/13 09:42	05/31/13 16:02	1

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	0.029	J	0.095	0.015	ug/L		05/24/13 16:00	05/29/13 23:41	4

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2,4-Dichlorophenylacetic acid	61		32 - 140	05/24/13 16:00	05/29/13 23:41	4
2,4-Dichlorophenylacetic acid	58		32 - 140	05/24/13 16:00	05/29/13 23:41	4



CH2M HILL
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Tel 414.272.2426
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November 13, 2013

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

Subject: Subcontract No. 599, October 2013 Sampling Results
Penta Wood Products Site, Town of Daniels, Wisconsin
Long-Term Response Action (LTRA)
WA No. 132-LRLR-05WE, Contract No. EP-S5-06-01

Dear Linda:

Please find the enclosed results of the residential and potable well annual groundwater sampling event that took place between October 8, 2013 and October 11, 2013. This sampling event included the analysis of pentachlorophenol (PCP), benzene, ethylbenzene, toluene, xylene (BTEX), and naphthalene. The following table provides information on the residential wells where samples were collected.

LTRA Residential Well Information

Penta Wood Products Site – Town of Daniels, Wisconsin

Location ID	Resident Name	Resident Address	Resident Phone Number	WI Well No.
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 North Canton, Ohio. Analytical results were received by CH2M HILL on November 4, 2013. During a review of the preliminary results, CH2M HILL's project chemist observed estimated detections (below the preventative action limit (PAL) of 0.1 micrograms per liter) of PCP in RW01 and the potable well (DW01). Since the presence of PCP in these residential wells has been observed in the past at low levels, the estimated detections reported in October 2013 are consistent with the historical range at each well. It is not recommended that either well should be re-sampled.

Ms. Linda Martin
Page 2
November 13, 2013

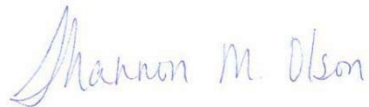
The annual groundwater results were submitted under a cover letter on November 13, 2013 to the U.S. Environmental Protection Agency (USEPA) for validation. The following summary is based on a review of the data before receiving final validation results from USEPA.

The results of the October 2013 annual groundwater sampling event showed no detections of BTEX, naphthalene or PCP in any of the residential wells except for the estimated detections of PCP in RW01 and DW01 discussed above.

If you have any questions or comments, please contact me at 262.388.3899, or Mike Niebauer at 608.298.7770.

Sincerely,

CH2M HILL

A handwritten signature in blue ink that reads "Shannon M. Olson". The signature is written in a cursive style.

Shannon Olson
Project Chemist

Enclosure

cc: Pat Vogtman, PO/USEPA Region 5 (w/o enclosure)
Rhonda Flynn, CO/USEPA Region 5 (w/o enclosure)
Phil Richard/WDNR
Mike Niebauer, SM/CH2M HILL, Milwaukee
Shannon Olson, ASM/CH2M HILL, Milwaukee
Al Erickson, RTL/CH2M HILL, Milwaukee
Paul Arps, PM/CH2M HILL, Milwaukee
Theresa Rojas, QAM/CH2M HILL, Atlanta
Dave Shekoski, Sample Coordinator/CH2M HILL, Milwaukee
Cherie Wilson, AA/CH2M HILL, Milwaukee

Client Sample Results

Client: CH2M Hill, Inc.
Project/Site: Penta Wood Products Site

TestAmerica Job ID: 240-30072-1

Client Sample ID: 14CP02-21 (PWP-RW01)

Lab Sample ID: 240-30072-5

Date Collected: 10/08/13 14:35

Matrix: Water

Date Received: 10/10/13 09:30

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.50	U	0.50	0.13	ug/L			10/16/13 03:14	1
Ethylbenzene	1.0	U	1.0	0.17	ug/L			10/16/13 03:14	1
Toluene	1.0	U	1.0	0.13	ug/L			10/16/13 03:14	1
Xylenes, Total	2.0	U	2.0	0.14	ug/L			10/16/13 03:14	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	96		63 - 129		10/16/13 03:14	1
4-Bromofluorobenzene (Surr)	78		66 - 117		10/16/13 03:14	1
Toluene-d8 (Surr)	78		74 - 115		10/16/13 03:14	1
Dibromofluoromethane (Surr)	100		75 - 121		10/16/13 03:14	1

Method: 8270C - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	0.20	U	0.20	0.061	ug/L		10/11/13 07:15	10/17/13 15:37	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorobiphenyl (Surr)	68		20 - 110	10/11/13 07:15	10/17/13 15:37	1
2-Fluorophenol (Surr)	68		10 - 110	10/11/13 07:15	10/17/13 15:37	1
2,4,6-Tribromophenol (Surr)	86		21 - 110	10/11/13 07:15	10/17/13 15:37	1
Nitrobenzene-d5 (Surr)	70		21 - 110	10/11/13 07:15	10/17/13 15:37	1
Phenol-d5 (Surr)	71		21 - 110	10/11/13 07:15	10/17/13 15:37	1
Terphenyl-d14 (Surr)	83		24 - 110	10/11/13 07:15	10/17/13 15:37	1

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	0.040	J	0.097	0.015	ug/L		10/11/13 17:45	10/14/13 12:52	4

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2,4-Dichlorophenylacetic acid	74		32 - 140	10/11/13 17:45	10/14/13 12:52	4
2,4-Dichlorophenylacetic acid	70		32 - 140	10/11/13 17:45	10/14/13 12:52	4

Client Sample Results

Client: CH2M Hill, Inc.
Project/Site: Penta Wood Products Site

TestAmerica Job ID: 240-30072-1

Client Sample ID: 14CP02-22 (PWP-RW01 FR)

Lab Sample ID: 240-30072-6

Date Collected: 10/08/13 14:35

Matrix: Water

Date Received: 10/10/13 09:30

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.50	U	0.50	0.13	ug/L			10/16/13 03:36	1
Ethylbenzene	1.0	U	1.0	0.17	ug/L			10/16/13 03:36	1
Toluene	1.0	U	1.0	0.13	ug/L			10/16/13 03:36	1
Xylenes, Total	2.0	U	2.0	0.14	ug/L			10/16/13 03:36	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	96		63 - 129		10/16/13 03:36	1
4-Bromofluorobenzene (Surr)	77		66 - 117		10/16/13 03:36	1
Toluene-d8 (Surr)	78		74 - 115		10/16/13 03:36	1
Dibromofluoromethane (Surr)	106		75 - 121		10/16/13 03:36	1

Method: 8270C - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	0.20	U	0.20	0.062	ug/L		10/11/13 07:15	10/17/13 16:01	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorobiphenyl (Surr)	75		20 - 110	10/11/13 07:15	10/17/13 16:01	1
2-Fluorophenol (Surr)	73		10 - 110	10/11/13 07:15	10/17/13 16:01	1
2,4,6-Tribromophenol (Surr)	95		21 - 110	10/11/13 07:15	10/17/13 16:01	1
Nitrobenzene-d5 (Surr)	76		21 - 110	10/11/13 07:15	10/17/13 16:01	1
Phenol-d5 (Surr)	73		21 - 110	10/11/13 07:15	10/17/13 16:01	1
Terphenyl-d14 (Surr)	88		24 - 110	10/11/13 07:15	10/17/13 16:01	1

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	0.097	U	0.097	0.015	ug/L		10/11/13 17:45	10/14/13 14:31	4

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2,4-Dichlorophenylacetic acid	101		32 - 140	10/11/13 17:45	10/14/13 14:31	4
2,4-Dichlorophenylacetic acid	95		32 - 140	10/11/13 17:45	10/14/13 14:31	4

Client Sample Results

Client: CH2M Hill, Inc.
Project/Site: Penta Wood Products Site

TestAmerica Job ID: 240-30072-1

Client Sample ID: 14CP02-23 (PWP-RW02)

Lab Sample ID: 240-30072-1

Date Collected: 10/08/13 15:00

Matrix: Water

Date Received: 10/10/13 09:30

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.50	U	0.50	0.13	ug/L			10/18/13 04:13	1
Ethylbenzene	1.0	U	1.0	0.17	ug/L			10/18/13 04:13	1
Toluene	1.0	U	1.0	0.13	ug/L			10/18/13 04:13	1
Xylenes, Total	2.0	U	2.0	0.14	ug/L			10/18/13 04:13	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	102		63 - 129		10/18/13 04:13	1
4-Bromofluorobenzene (Surr)	75		66 - 117		10/18/13 04:13	1
Toluene-d8 (Surr)	76		74 - 115		10/18/13 04:13	1
Dibromofluoromethane (Surr)	103		75 - 121		10/18/13 04:13	1

Method: 8270C - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	0.19	U	0.19	0.060	ug/L		10/11/13 07:15	10/16/13 14:26	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorobiphenyl (Surr)	57		20 - 110	10/11/13 07:15	10/16/13 14:26	1
2-Fluorophenol (Surr)	65		10 - 110	10/11/13 07:15	10/16/13 14:26	1
2,4,6-Tribromophenol (Surr)	83		21 - 110	10/11/13 07:15	10/16/13 14:26	1
Nitrobenzene-d5 (Surr)	64		21 - 110	10/11/13 07:15	10/16/13 14:26	1
Phenol-d5 (Surr)	65		21 - 110	10/11/13 07:15	10/16/13 14:26	1
Terphenyl-d14 (Surr)	83		24 - 110	10/11/13 07:15	10/16/13 14:26	1

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	0.094	U	0.094	0.015	ug/L		10/11/13 17:45	10/14/13 09:35	4

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2,4-Dichlorophenylacetic acid	68		32 - 140	10/11/13 17:45	10/14/13 09:35	4
2,4-Dichlorophenylacetic acid	66		32 - 140	10/11/13 17:45	10/14/13 09:35	4

TestAmerica Canton

Client Sample Results

Client: CH2M Hill, Inc.
Project/Site: Penta Wood Products Site

TestAmerica Job ID: 240-30072-1

Client Sample ID: 14CP02-24 (PWP-RW03)

Lab Sample ID: 240-30072-2

Date Collected: 10/08/13 15:55

Matrix: Water

Date Received: 10/10/13 09:30

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.50	U	0.50	0.13	ug/L			10/18/13 04:36	1
Ethylbenzene	1.0	U	1.0	0.17	ug/L			10/18/13 04:36	1
Toluene	1.0	U	1.0	0.13	ug/L			10/18/13 04:36	1
Xylenes, Total	2.0	U	2.0	0.14	ug/L			10/18/13 04:36	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	109		63 - 129		10/18/13 04:36	1
4-Bromofluorobenzene (Surr)	81		66 - 117		10/18/13 04:36	1
Toluene-d8 (Surr)	81		74 - 115		10/18/13 04:36	1
Dibromofluoromethane (Surr)	113		75 - 121		10/18/13 04:36	1

Method: 8270C - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	0.19	U	0.19	0.061	ug/L		10/11/13 07:15	10/18/13 13:53	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorobiphenyl (Surr)	67		20 - 110	10/11/13 07:15	10/18/13 13:53	1
2-Fluorophenol (Surr)	71		10 - 110	10/11/13 07:15	10/18/13 13:53	1
2,4,6-Tribromophenol (Surr)	87		21 - 110	10/11/13 07:15	10/18/13 13:53	1
Nitrobenzene-d5 (Surr)	74		21 - 110	10/11/13 07:15	10/18/13 13:53	1
Phenol-d5 (Surr)	71		21 - 110	10/11/13 07:15	10/18/13 13:53	1
Terphenyl-d14 (Surr)	93		24 - 110	10/11/13 07:15	10/18/13 13:53	1

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	0.096	U	0.096	0.015	ug/L		10/11/13 17:45	10/14/13 10:24	4

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2,4-Dichlorophenylacetic acid	74		32 - 140	10/11/13 17:45	10/14/13 10:24	4
2,4-Dichlorophenylacetic acid	75		32 - 140	10/11/13 17:45	10/14/13 10:24	4

Client Sample Results

Client: CH2M Hill, Inc.
Project/Site: Penta Wood Products Site

TestAmerica Job ID: 240-30072-1

Client Sample ID: 14CP02-25 (PWP-RW04)

Lab Sample ID: 240-30072-3

Date Collected: 10/08/13 15:25

Matrix: Water

Date Received: 10/10/13 09:30

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.50	U	0.50	0.13	ug/L			10/16/13 02:29	1
Ethylbenzene	1.0	U	1.0	0.17	ug/L			10/16/13 02:29	1
Toluene	1.0	U	1.0	0.13	ug/L			10/16/13 02:29	1
Xylenes, Total	2.0	U	2.0	0.14	ug/L			10/16/13 02:29	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	95		63 - 129		10/16/13 02:29	1
4-Bromofluorobenzene (Surr)	79		66 - 117		10/16/13 02:29	1
Toluene-d8 (Surr)	78		74 - 115		10/16/13 02:29	1
Dibromofluoromethane (Surr)	99		75 - 121		10/16/13 02:29	1

Method: 8270C - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	0.19	U	0.19	0.060	ug/L		10/11/13 07:15	10/18/13 14:18	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorobiphenyl (Surr)	64		20 - 110	10/11/13 07:15	10/18/13 14:18	1
2-Fluorophenol (Surr)	71		10 - 110	10/11/13 07:15	10/18/13 14:18	1
2,4,6-Tribromophenol (Surr)	87		21 - 110	10/11/13 07:15	10/18/13 14:18	1
Nitrobenzene-d5 (Surr)	72		21 - 110	10/11/13 07:15	10/18/13 14:18	1
Phenol-d5 (Surr)	70		21 - 110	10/11/13 07:15	10/18/13 14:18	1
Terphenyl-d14 (Surr)	85		24 - 110	10/11/13 07:15	10/18/13 14:18	1

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	0.095	U	0.095	0.015	ug/L		10/11/13 17:45	10/14/13 11:13	4

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2,4-Dichlorophenylacetic acid	60		32 - 140	10/11/13 17:45	10/14/13 11:13	4
2,4-Dichlorophenylacetic acid	62		32 - 140	10/11/13 17:45	10/14/13 11:13	4

TestAmerica Canton

Client Sample Results

Client: CH2M Hill, Inc.
Project/Site: Penta Wood Products Site

TestAmerica Job ID: 240-30072-1

Client Sample ID: 14CP02-26 (PWP-RW05)

Lab Sample ID: 240-30072-4

Date Collected: 10/08/13 14:00

Matrix: Water

Date Received: 10/10/13 09:30

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.50	U	0.50	0.13	ug/L			10/16/13 02:51	1
Ethylbenzene	1.0	U	1.0	0.17	ug/L			10/16/13 02:51	1
Toluene	1.0	U	1.0	0.13	ug/L			10/16/13 02:51	1
Xylenes, Total	2.0	U	2.0	0.14	ug/L			10/16/13 02:51	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	96		63 - 129		10/16/13 02:51	1
4-Bromofluorobenzene (Surr)	78		66 - 117		10/16/13 02:51	1
Toluene-d8 (Surr)	75		74 - 115		10/16/13 02:51	1
Dibromofluoromethane (Surr)	101		75 - 121		10/16/13 02:51	1

Method: 8270C - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	0.19	U	0.19	0.060	ug/L		10/11/13 07:15	10/17/13 15:12	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorobiphenyl (Surr)	69		20 - 110	10/11/13 07:15	10/17/13 15:12	1
2-Fluorophenol (Surr)	72		10 - 110	10/11/13 07:15	10/17/13 15:12	1
2,4,6-Tribromophenol (Surr)	88		21 - 110	10/11/13 07:15	10/17/13 15:12	1
Nitrobenzene-d5 (Surr)	71		21 - 110	10/11/13 07:15	10/17/13 15:12	1
Phenol-d5 (Surr)	72		21 - 110	10/11/13 07:15	10/17/13 15:12	1
Terphenyl-d14 (Surr)	88		24 - 110	10/11/13 07:15	10/17/13 15:12	1

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	0.098	U	0.098	0.015	ug/L		10/11/13 17:45	10/14/13 12:03	4

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2,4-Dichlorophenylacetic acid	68		32 - 140	10/11/13 17:45	10/14/13 12:03	4
2,4-Dichlorophenylacetic acid	64		32 - 140	10/11/13 17:45	10/14/13 12:03	4

Client Sample Results

Client: CH2M Hill, Inc.
Project/Site: Penta Wood Products Site

TestAmerica Job ID: 240-30072-1

Client Sample ID: 14CP02-27 (PWP-DW01)

Lab Sample ID: 240-30072-7

Date Collected: 10/08/13 14:30

Matrix: Water

Date Received: 10/10/13 09:30

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.50	U	0.50	0.13	ug/L			10/16/13 03:59	1
Ethylbenzene	1.0	U	1.0	0.17	ug/L			10/16/13 03:59	1
Toluene	1.0	U	1.0	0.13	ug/L			10/16/13 03:59	1
Xylenes, Total	2.0	U	2.0	0.14	ug/L			10/16/13 03:59	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	99		63 - 129		10/16/13 03:59	1
4-Bromofluorobenzene (Surr)	81		66 - 117		10/16/13 03:59	1
Toluene-d8 (Surr)	81		74 - 115		10/16/13 03:59	1
Dibromofluoromethane (Surr)	101		75 - 121		10/16/13 03:59	1

Method: 8270C - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	0.20	U	0.20	0.062	ug/L		10/11/13 07:15	10/17/13 16:26	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorobiphenyl (Surr)	60		20 - 110	10/11/13 07:15	10/17/13 16:26	1
2-Fluorophenol (Surr)	61		10 - 110	10/11/13 07:15	10/17/13 16:26	1
2,4,6-Tribromophenol (Surr)	83		21 - 110	10/11/13 07:15	10/17/13 16:26	1
Nitrobenzene-d5 (Surr)	60		21 - 110	10/11/13 07:15	10/17/13 16:26	1
Phenol-d5 (Surr)	60		21 - 110	10/11/13 07:15	10/17/13 16:26	1
Terphenyl-d14 (Surr)	81		24 - 110	10/11/13 07:15	10/17/13 16:26	1

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	0.027	J	0.096	0.015	ug/L		10/11/13 17:45	10/14/13 15:21	4

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2,4-Dichlorophenylacetic acid	68		32 - 140	10/11/13 17:45	10/14/13 15:21	4
2,4-Dichlorophenylacetic acid	75		32 - 140	10/11/13 17:45	10/14/13 15:21	4

TestAmerica Canton

Appendix E
Data Quality Memorandums

Data Usability Evaluation of the Treatment System Samples Collected at the Penta Wood Products Site, Siren, Wisconsin

PREPARED FOR: U.S. Environmental Protection Agency
PREPARED BY: Shannon Olson/CH2M HILL
DATE: April 17, 2014

This memorandum presents the data usability evaluation of the treatment system samples collected during 2013 conducted at the Penta Wood Products Site in Siren, Wisconsin. The sampling was performed by CH2M HILL. The analyses were performed by Test America, Inc. of North Canton, Ohio.

The onsite treatment system is monitored per the Wisconsin Pollutant Discharge Elimination System (WPDES) permit WI-0061531-01-0, and is therefore required to collect the following:

- Quarterly sampling of the influent for pentachlorophenol (PCP) by SW-846 8151
- Weekly sampling of the effluent for PCP by SW-846 8151
- Monthly sampling of the effluent for naphthalene by SW-846 8270C and diesel range organics (DRO) by Wisconsin DRO method
- Quarterly sampling of the effluent for chloride by EPA 300.0 and total metals (arsenic, copper, iron, manganese and zinc) by SW-846 6020
- Annual sampling of the effluent for benzene, toluene, ethylbenzene and xylenes (BTEX) by SW-846 8260B, phenol by SW-846 8270C and 2,3,7,8-tetrachlorodibenzo-p-dioxin (2,3,7,8-TCDD) by SW-846 8290

One hundred percent of the data set underwent a forms review by CH2M HILL staff to assess the accuracy and precision of the data. Individual method requirements and guidelines from the Quality Assurance Project Plan (QAPP) (CH2M HILL, February 2005), *USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review* (June 2008) and *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review* (January 2010) were used in this assessment. Completeness of the data set was then derived. Data qualifiers were added by CH2M HILL validators when the QC statistics indicated a possible bias to specific compounds or analytes associated with a particular method and sample batch.

Standard data qualifiers were used as a means of classifying the data as to their conformance to QC requirements. The applied data qualifiers are defined as follows:

- [U] The sample target was analyzed for, but was not detected above the level of the associated limit of detection or quantitation.
- [UB] The analyte was detected in the associated blank above the level of the associated limit of detection or quantitation. The associated data were found to be less than five times the concentration detected in the blank and were qualified as not detected at the concentration measured.
- [J] The associated value is an estimated quantity. This qualifier was appended when the data indicated the presence of a specific target analyte but was below the stated reporting (or quantitation) limit, and/or when quality control statistics alluded to an analytical bias.

[UJ] The component was analyzed for, but was not detected at a level equal to or greater than the level of detection or quantification (often the reporting limit). This flag is used when QC measurements indicate a possible low bias in the analytical data.

Findings

The overall summaries of the data validation are contained in the following sections.

Holding Time and Preservation

The analytical holding time for DRO was exceeded for sample 13CP01-25B. The non-detect result in the associated sample was qualified and flagged "UJ" as undetected and estimated in quantity.

Calibration

Initial and continuing calibration analyses were performed as required by the methods. All acceptance criteria were met with the following exceptions:

The percent difference for the continuing calibration verification (CCV) for samples 13CP01-19, 13CP01-20, 13CP01-25B, 13CP01-29, 13CP01-48, 13CP01-51 and 14CP01-02 exceeded acceptance criteria for PCP. The data were qualified as estimated detected and non-detected results and flagged "J" and "UJ" in the associated samples.

Blanks

Method and calibration blanks were analyzed at the required frequency and were free of contamination with the following exceptions:

DRO was detected at concentrations greater than the method detection limit (MDL) in the method blank associated with samples 13CP01-28, 13CP01-48, 14CP01-09 and 14CP01-13. The data were qualified as not detected at the concentration measured and flagged "UB" when the associated sample concentrations were less than five times the concentration detected in the blanks.

The method blank, initial calibration blank (ICB) and/or continuing calibration blank (CCB) detected iron, and manganese greater than the MDL associated with sample 13CP01-22. Arsenic, iron and zinc were detected at concentrations greater than the MDL in the method blank and/or CCB associated with sample 13CP01-34. The method blank and/or CCB detected arsenic, zinc and iron above the MDL associated with sample 13CP01-43. Arsenic, copper, zinc and manganese were detected at concentrations greater than the MDL in the method blank associated with sample 14CP01-04. The data were qualified as not detected at the concentration measured and flagged "UB" when the associated sample concentrations were less than five times the concentration detected in the blanks. Sample results found to be greater than five times the amount found in the blank or were nondetect were not qualified.

Surrogates

Surrogates were added to all samples for the methods requiring their use and all acceptance criteria were met with the following exceptions:

One PCP surrogate was recovered less than the lower control limits for samples 14CP01-09 and 14CP01-12, indicating a possible low bias. The data were qualified as estimated detected and non-detected results and flagged "J" and "UJ" in the associated samples.

Internal Standards

Internal standards were added to the methods requiring their use and all acceptance criteria were met.

Laboratory Control Samples

Laboratory control spike/laboratory control spike duplicates (LCS/LCSDs) were analyzed as required and all accuracy and precision criteria were met with the following exceptions:

DRO was recovered less than the lower control limit in a LCSD associated with sample 14CP01-04, indicating a possible low bias. The non-detect results in the associated sample was qualified and flagged "UJ" as undetected and estimated in quantity.

PCP was recovered greater than the upper control limit in a LCS associated with sample 14CP01-05, indicating a possible high bias. The LCS associated with sample 14CP01-13 recovered DRO greater than the upper control limit. The data were not qualified because the associated samples did not contain reportable levels of these analytes.

DRO reported a relative percent difference (RPD) greater than the control limits in a LCS/LCSD for sample 13CP01-43. The data were not qualified because the associated sample did not contain reportable levels of DRO.

Matrix Spike

Matrix spike/matrix spike duplicates (MS/MSDs) were analyzed as required and all accuracy and precision criteria were met.

Post Digestion Spikes

Post digestion spikes were analyzed according to methods requiring their use and all acceptance criteria were met.

Column Differential

The RPD between the primary and confirmation columns were calculated to determine the precision of the PCP results. The RPD for samples 13CP01-25B and 14CP01-07 exceeded the established QC limits of less than 40% for PCP. The results were qualified as estimated detected results and flagged "J" in the associated samples.

Chain of Custody

Required procedures were followed and were free of errors.

Overall Assessment

The goal of this assessment is to demonstrate that a sufficient number of representative samples were collected and the resulting analytical data can be used to support the decision making process. The following summary highlights the PARCC findings for the above-defined events:

- Precision of the data was verified through the review of the field and laboratory data quality indicators that include LCS/LCSD, MS/MSD and column differential RPDs. Precision was generally acceptable with two PCP samples being qualified as estimated detected results due to column differential RPD issues.

Data users should consider the impact to any result that is qualified as estimated as it may contain a bias which could affect the decision-making process.

- Accuracy of the data was verified through the review of the calibration data, LCS/LCSD, MS/MSD, post-digestion spike, internal standard and surrogate recoveries. Accuracy was generally acceptable with a few analytes being qualified as estimated detected and non-detected results due to calibration, LCSD and surrogate issues.
- Representativeness of the data was verified through the sample's collection, storage and preservation procedures, verification of holding-time compliance and evaluation of method and calibration blank data. The laboratory did not note any discrepancies with sample collection, storage or preservation procedures. The analytical hold time criterion for DRO in one sample was exceeded, resulting in the data being qualified as estimated. All other data were reported from analyses within the USEPA-recommended holding time. The method and calibration blank samples were generally free of contamination with DRO, arsenic, copper, iron and zinc being qualified as non-detected results in a few samples due to low-level detections in the blanks.
- Comparability of the data was ensured through the use of standard USEPA analytical procedures and standard units for reporting. Results obtained are comparable to industry standards in that the collection and analytical techniques followed approved, documented procedures.
- Completeness is a measure of the number of valid measurements obtained in relation to the total number of measurements planned. Completeness is expressed as the percentage of valid or usable measurements compared to planned measurements. Valid data are defined as all data that are not rejected for project use. All data are considered valid. The completeness goal of 90 percent was met for all method/analyte combinations.

References

CH2M HILL. 2005. *Quality Assurance Project Plan, Penta Wood Products Long-Term Response Action, Town of Daniels, Wisconsin*. February.

USEPA. 2008. *Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review*. June.

USEPA. 2010. *Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review*. January.

Data Usability Evaluation of the Groundwater Samples Collected at the Penta Wood Products Site, Siren, Wisconsin

PREPARED FOR: U.S. Environmental Protection Agency
PREPARED BY: Shannon Olson/CH2M HILL
DATE: April 17, 2014

Introduction

The objective of the Data Quality Evaluation memorandum is to assess the data quality of analytical results for samples collected during the semiannual and annual groundwater field investigations conducted at the Penta Wood Products Site in Siren, Wisconsin, from May 21 to May 23 and from October 8 to October 11. Samples were collected and analyzed with the objective to assess existing groundwater contaminant concentrations and monitor the ongoing natural attenuation process. Individual method requirements and guidelines from the Quality Assurance Project Plan (QAPP) (CH2M HILL, February 2005), *USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review* (June 2008) and *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review* (January 2010) were used in this assessment.

This report is intended as a general data quality assessment designed to summarize data issues.

Analytical Data

The following are the analytical laboratory analyses for samples collected:

- Semiannual Sampling Event - May 2013
 - Five residential wells (RW-01, RW-02, RW-03, RW-04 and RW-05), one potable well (DW-01) and one field replicate (FR) were analyzed for benzene, toluene, ethylbenzene and xylenes (BTEX), pentachlorophenol (PCP) and naphthalene.
 - Five monitoring wells (MW-12, MW-15, MW-19, MW-22 and MW-26), one matrix spike/matrix spike duplicate (MS/MSD) and one FR were analyzed for BTEX, PCP, naphthalene, dissolved metals (arsenic, copper, iron, manganese and zinc), methane, alkalinity, chloride, sulfate, nitrate, sulfide, total organic carbon (TOC) and hardness.
 - Two equipment/field blanks and ten trip blanks were collected during the sampling event to evaluate field sampling and decontamination procedures.
- Annual Sampling Event - October 2013
 - Five residential wells (RW-01, RW-02, RW-03, RW-04 and RW-05), one potable well (DW-01) and one FR were analyzed for BTEX, PCP and naphthalene.
 - Fifteen monitoring wells (MW-02, MW-03, MW-05, MW-06S, MW-07, MW-09, MW-10, MW-12, MW-15, MW-16, MW-17, MW-19, MW-22, MW-26, and MW-28), one MS/MSD and two FR's were analyzed for BTEX, PCP, naphthalene, dissolved metals (arsenic, copper, iron, manganese and zinc), methane, alkalinity, chloride, sulfate, nitrate, sulfide, TOC and hardness.

- Two equipment/field blanks and fifteen trip blanks were collected during the sampling event to evaluate field sampling and decontamination procedures.

Both the semiannual and annual samples were analyzed by TestAmerica, Inc. of North Canton, Ohio. All monitoring well and residential well sample result packages were reviewed by the USEPA Environmental Services Assistance Team (ESAT) contractor. Attachment 1 contains the case narratives prepared by Techlaw ESAT during the data reviews. The findings of the reviews are summarized below.

Samples were collected and shipped by overnight carrier to the laboratories for analysis. Selected samples were analyzed for one or more of the analytes/methods in Table 1.

TABLE 1
Analytical Parameters

Parameter	Method	Laboratory
BTEX	SW-846 8260B	TestAmerica
PCP	SW-846 8151A	TestAmerica
Naphthalene	SW-846 8270C	TestAmerica
Dissolved Metals	SW-846 6020	TestAmerica
Methane	RSK-175	TestAmerica
Alkalinity	SM 2320B	TestAmerica
Chloride, Nitrate and Sulfate	EPA 300.0	TestAmerica
Sulfide	SM 4500 S2 F	TestAmerica
Total Organic Carbon	SW-846 9060	TestAmerica
Hardness	Calculated	NA

NA = not applicable

The ESAT assessment of data included a review of the following:

- Chain-of-custody documentation
- Holding-time compliance
- Required QC samples at the specified frequencies
- Flagging for method blanks
- Laboratory control spiking samples
- Surrogate spike recoveries for organic analyses
- Analytical spike data
- MS/MSD samples on a site/location basis
- Calibration data
- Equipment/Field blank samples
- Field duplicate samples
- Trip blank samples

Standard data qualifiers are a means to classify these data with regard to their conformance to QC requirements. The applied data qualifiers are defined as follows:

- [U] The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

[UJ] The analyte was analyzed for, but not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

[J] The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

The USEPA validation case narratives and worksheets indicate that some sample results should be qualified as biased based on the applicable QC limits or other National Functional Guidelines requirements.

Findings

The following sections summarize the data validation findings and usability of the final reportable results. The sample numbers and locations do not include quality assurance/QC samples.

BTEX Data

BTEX data were assessed from 30 groundwater samples collected at 20 locations. The data were analyzed through TestAmerica, and 100 percent were reviewed by the USEPA contractor, ESAT.

In summary of the BTEX data, "U" or "J" qualifiers were applied to sample results that were potentially affected by QC deficiencies. "J" qualifiers were applied to sample results that were reported between the method detection limit (MDL) and the reporting limit (RL).

None of the reported BTEX results were rejected. One hundred percent of the data, as qualified, can be used to make project decisions.

Naphthalene Data

Naphthalene data were assessed from 30 groundwater samples collected at 20 locations. The data were analyzed through TestAmerica, and 100 percent were reviewed by the USEPA contractor, ESAT.

In summary of the naphthalene data, "U" or "J" qualifiers were applied to sample results that were potentially affected by QC deficiencies. Three naphthalene surrogates, for sample 13CB02-17, were recovered above the upper control limit. The detected parent sample result was qualified and flagged "J" as estimated in quantity.

None of the reported naphthalene results were rejected. One hundred percent of the data, as qualified, can be used to make project decisions.

PCP Data

PCP data were assessed from 30 groundwater samples collected at 20 locations. The data were analyzed through TestAmerica, and 100 percent were reviewed by the USEPA contractor, ESAT.

In summary of the PCP data, "U" or "J" qualifiers were applied to sample results that were potentially affected by QC deficiencies. The percent difference initial calibration verification exceeded acceptance criteria for samples 14CP02-01, 14CP02-04, 14CP02-06 and 14CP02-18. The detected parent sample results were qualified and flagged "J" as estimated in quantity. One PCP surrogate for sample 14CP02-04 was recovered greater than the upper control limit. The detected parent sample result was qualified and flagged "J" as estimated in quantity. "J" qualifiers were also applied to sample results that were reported between the MDL and the RL.

None of the reported PCP results were rejected. One hundred percent of the data, as qualified, can be used to make project decisions.

Methane Data

Methane data were assessed for 20 groundwater samples collected at 15 locations. The data were analyzed through TestAmerica, and 100 percent were reviewed by the USEPA contractor, ESAT.

In summary of the methane data, “U” or “J” qualifiers were applied to sample results that were potentially affected by QC deficiencies. The method, field and equipment blanks detected methane above the MDL for the samples collected during the May semiannual groundwater event and October annual groundwater event, indicating possible contamination. Sample results less than five times the amount found in the blank were raised to the laboratory RL and qualified as “U,” not detected above the MDL and considered not detected. “J” qualifiers were also applied to sample results that were reported between the MDL and the RL.

None of the reported methane results were rejected. One hundred percent of the data, as qualified, can be used to make project decisions.

Metal Data

Metal data were assessed for 20 groundwater samples collected at 15 locations. The data were analyzed through TestAmerica, and 100 percent were reviewed by the USEPA contractor, ESAT.

In summary of the metal data, “U”, “UJ” or “J” qualifiers were applied to sample results that were potentially affected by QC deficiencies. The field, equipment and/or preparation blank detected arsenic, copper, manganese and zinc above the MDL for the samples collected during the May semiannual groundwater event, indicating possible contamination. The field, equipment and/or preparation blank detected arsenic, copper, iron, manganese and zinc above the MDL for the samples collected during the October annual groundwater event. Sample results less than five times the amount found in any blank were raised to the laboratory RL and qualified as “U,” not detected above the MDL and considered not detected. Sample results found to be greater than five times the amount found in the blank were qualified and flagged “J” as estimated in quantity. The raw instrument value for iron for sample 13CB02-15 was negative where the absolute value was greater than the RL. Therefore the result was qualified and flagged “UJ” as estimated in quantity. The internal standard percent relative intensities were outside the acceptance window for the continuing calibration verifications for several samples collected during the October annual groundwater event. Detected parent sample results were qualified and flagged “J” as estimated in quantity, and non-detected sample results were qualified and flagged “UJ” as undetected and estimated in quantity. “J” qualifiers were also applied to sample results that were reported between the MDL and the RL.

None of the reported metal results were rejected. One hundred percent of the data, as qualified, can be used to make project decisions.

Wet Chemistry Data

Wet chemistry data were assessed for 20 groundwater samples collected at 15 locations. The data were analyzed through TestAmerica, and 100 percent were reviewed by the USEPA contractor, ESAT.

In summary of the wet chemistry data, “U”, “UJ” or “J” qualifiers were applied to sample results that were potentially affected by QC deficiencies. Nitrate was analyzed past the 48-hour hold time for several samples collected during both the May semiannual and the October annual groundwater sampling events. Detected parent sample results were qualified and flagged “J” as estimated in quantity, and non-detected sample results were qualified and flagged “UJ” as undetected and estimated in quantity. The field and/or equipment blank detected alkalinity above the MDL for the samples collected during

both the May semiannual and October annual groundwater events, indicating possible contamination. The initial and continuing calibration blank detected alkalinity above the MDL for sample 14CP02-04, collected during the October annual groundwater event. Sample results less than five times the amount found in any blank were raised to the laboratory RL and qualified as “U,” not detected above the MDL and considered not detected. Sample results found to be greater than five times the amount found in the blank were not qualified. The MS/MSD was recovered low for sulfate for sample 14CP02-17. The detected parent sample result was qualified and flagged “J” as estimated in quantity. The MS/MSD was recovered high for chloride for sample 14CP02-03. The detected parent sample result was qualified and flagged “J” as estimated in quantity. “J” qualifiers were also applied to sample results that were reported between the MDL and the RL.

None of the reported wet chemistry results were rejected. One hundred percent of the data, as qualified, can be used to make project decisions.

Overall Assessment

The final activity in the data quality evaluation is an assessment of whether the data meet the data quality objectives. The goal of the assessment was to demonstrate that a sufficient number of representative samples were collected, and the resulting analytical data can be used to support the decision making process. The following summary highlights the data evaluation findings for the above-defined events:

1. The completeness objective of 90 percent was met for all method/analyte combinations.
2. The precision and accuracy of the data, as measured by field and laboratory QC indicators, indicate that the data quality objectives were met.

References

CH2M HILL. 2005. *Quality Assurance Project Plan, Penta Wood Products Long-Term Response Action, Town of Daniels, Wisconsin*. February.

USEPA. 2008. *Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review*. June.

USEPA. 2010. *Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review*. January.

Regional Transmittal Form

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION V

DATE:

SUBJECT: Review of Data
Received for Review on: July 9, 2013

FROM: Timothy Prendiville, Supervisor (SR-6J)
Superfund Contract Management Section

TO: Data User: Ch2m Hill
Email addresses: dshekosk@Ch2m.com; Shannon.olson@ch2m.com;
Adrienne.korpela@ch2m.com

Level 4 Data Validation

We have reviewed the data for the following case:

Site Name: Penta Wood Products (WI)

SAS Client No: 13CB02 Job No: 240-24835-1 SDG No: 13CB02-01 Herb

Number and Type of Samples: 9 water samples (Herbicides)

Sample Numbers: 13CB02-01 thru 13CB02-03, 13CB02-20 thru 13CB02-25

Laboratory: TestAmerica – North Canton, OH Hrs for Review:

Following are our findings:

CC: Howard Pham
Region 5 TPO
Mail Code: SA-5J

Below is a summary of the out-of-control audits and the possible effects on the data for this case:

Nine (9) water samples labeled 13CB02-01 thru 13CB02-03 and 13CB02-20 thru 13CB02-25; were shipped to Test America located in North Canton, OH. The samples were collected on May 21, 2013 and received on May 23, 2013. All samples were received intact and within the preferred shipping temperature range of 2 - 6°C. The samples were analyzed for Pentachlorophenol according to the SW-846 Method 8151A and the SAS Contract – water contract for samples collected between April 2011 and December 2014. The Chain-Of-Custodies for this sample delivery group are summarized in the following table:

EPA sample ID	TA sample ID	sample location	collection date	received date
13CB02-01	240-24835-7	PWP-DW01	05/21/13	05/23/13
13CB02-02	240-24835-13	PWP-EB01	05/21/13	05/23/13
13CB02-03	240-24835-12	PWP-FB01	05/21/13	05/23/13
13CB02-20	240-24835-5	PWP-RW01	05/21/13	05/23/13
13CB02-21	240-24835-6	PWP-RW01 FR	05/21/13	05/23/13
13CB02-22	240-24835-1	PWP-RW02	05/21/13	05/23/13
13CB02-23	240-24835-2	PWP-RW03	05/21/13	05/23/13
13CB02-24	240-24835-3	PWP-RW04	05/21/13	05/23/13
13CB02-25	240-24835-4	PWP-RW05	05/21/13	05/23/13
Method blank	MB 180-72964/1-A	NA	NA	NA
Method blank	MB 180-72965/1-A	NA	NA	NA
Lab Control Sample	LCS 180-72964/2-A	NA	NA	NA
Lab Control Sample	LCS 180-72965/2-A	NA	NA	NA
Lab Control Sample Duplicate	LCSD 180-72964/3-A	NA	NA	NA
Lab Control Sample Duplicate	LCSD 180-72965/3-A	NA	NA	NA

MB 180-72964/1-A and MB 180-72965/1-A are the method blanks. LCS 180-72964/2-A and LCS 180-72965/2-A are the Laboratory Control Samples. LCSD 180-72964/3-A and LCSD 180-72965/3-A are the Laboratory Control Sample Duplicates.

No samples were designated by the samplers to be used for laboratory QC, i.e. MS / MSD analyses.

Sample 13CB02-02 was identified as equipment blank. Sample 13CB02-03 was identified as a field blank. Sample 13CB02-21 was identified as a field duplicate of sample 13CE02-20.

The samples were extracted within the SAS holding time of 7 days. The extracts were analyzed within 40 days following the extraction. Therefore, the results are acceptable.

1. HOLDING TIME

Nine (9) water samples labeled 13CB02-01 thru 13CB02-03 and 13CB02-20 thru 13CB02-25; were shipped to Test America located in North Canton, OH. The samples were collected on May 21, 2013 and received on May 23, 2013. All samples were received intact and within the preferred shipping temperature range of 2 - 6°C. The samples were analyzed for Pentachlorophenol according to the SW-846 Method 8151A and the SAS Contract – water contract for samples collected between April 2011 and December 2014.

The samples were extracted within the SAS holding time of 7 days. The extracts were analyzed within 40 days following the extraction. Therefore, the results are acceptable.

2. GC INSTRUMENT PERFORMANCE

GC Resolution met the minimum resolution criteria as defined in SW846 Method 8000B and 8151A for both RTX-50 (Primary) and RTX-1701 (Secondary) columns.

3. CALIBRATION

5-pt Initial calibration curves with the on-column concentrations of 0.0025 ng, 0.005 ng, 0.010 ng, 0.020 ng and 0.040 ng were calibrated on 05/24/2013. An Initial Calibration Verification (second source standard) with concentrations of 0.40 ug/L was analyzed right after the initial calibration standards to verify the standard concentrations of the initial calibration before the samples were analyzed. A total of nine (9) CCVs were analyzed for primary column (RTX-50) and secondary column (RTX-1701) from 05/24/2013 thru 05/31/2013.

The RSDs for the Pentachlorophenol and the surrogate were within the SAS limits of less than 15%. All percent differences for the PCP in the CCVs were less than the method QC limits of 15%.

4. BLANKS

MB 180-72964/1-A and MB 180-72965/1-A are the method blanks. No PCP was detected in the method blanks. Therefore, the results are acceptable. The herbicide method blank summaries (FORM IV) list the samples associated with each blank.

5. SYSTEM MONITORING COMPOUND AND SURROGATE RECOVERY

The recovery for 2,4-Dichlorophenylacetic acid for all samples were within the SAS QC limits of 32 – 140%.

6A. MATRIX SPIKE/SPIKE DUPLICATE

No samples were designated by the samplers to be used for laboratory QC, i.e. MS / MSD analyses. No sample results were qualified for this deficiency.

6B. LABORATORY CONTROL SAMPLES

LCS 180-72964/2-A and LCS 180-72965/2-A are the Laboratory Control Samples. LCSD 180-72964/3-A and LCSD 180-72965/3-A are the Laboratory Control Sample Duplicates. The recoveries of PCP in the LCS and LCSD analyses were within the SAS QC limits of 40% - 140%. The RPDs for PCP in the LCS and LCSD analyses were within the SAS QC limits of less than 30%. Therefore, the results are acceptable.

7. FIELD BLANK AND FIELD DUPLICATE

Sample 13CB02-02 was identified as equipment blank. Sample 13CB02-03 was identified as a field blank. Pentachlorophenol was not detected in the equipment blank or field blank.

Sample 13CB02-21 was identified as a field duplicate of sample 13CE02-20. The results for the duplicate samples are summarized in the following table.

	Sample ID	13CB02-20	13CB02-21	
Analytes	DF, units	4, ug/L	4, ug/L	RPDs
Pentachlorophenol		0.031	0.029	6.7

Sample results are not qualified based on the results of field duplicate samples.

8. INTERNAL STANDARDS

The internal standards were not required for SW-846 Method 8151A.

9. COMPOUND IDENTIFICATION

After reviewing the chromatograms it appears that PCP was properly identified.

10. COMPOUND QUANTITATION AND REPORTED DETECTION LIMITS

Due to matrix interference, all samples and QC samples were analyzed at dilution factors of at least 4.0.

Sample results, SAS reporting limits, laboratory reporting limits and laboratory detection limits on the laboratory result forms and sample summary spreadsheets were adjusted according to the sample dilutions.

SAS Number: 13CB02
Site Name: Penta Wood Products (WI)

Page 5 of 6
SDG Number: 13CB02-01 Herb
Laboratory: TestAmerica

The following Herbicide sample has compound concentrations greater than the laboratory detection limits but less than the laboratory reporting limits. The detected compound is qualified "J".

13CB02-01, 13CB02-20, 13CB02-21, 13CB02-23
Pentachlorophenol

11. SYSTEM PERFORMANCE

GC baselines indicated acceptable performance.

12. ADDITIONAL INFORMATION

TA laboratories received the samples on 05/23/2013. The Laboratory Case Narrative was dated on 06/18/2013. The data was received by EPA Region V on 07/09/2013. The data was not submitted within 21 days from the date the samples were received as required by section 6 of the SAS contracts for Herbicide analyses.

The samples were stored at 4.0°C until analyses. The samples were analyzed using SW-846 Method 8151A. Therefore, the requirement from section 7 of the SAS contract for Herbicide was met.

The most recent MDL study was not included in the data package as required by section 8A of the SAS contract. The laboratory detection limits listed on Sample Summary Reports and Form I were used to evaluate the reported results.

The concentration of the lowest standard (0.025 ug/L) in the initial standard calibration was less than the SAS reporting limits (0.10 ug/L) as required by section 8b of the SAS contracts.

The laboratory reporting limits and MDL were less than the SAS reporting limits listed in Table I of the SAS contract.

Photocopies of the chain of custodies (with no record of the location of the original) were included in the data package. The air bills and sample tags were not included with the data package as required by section 10 of the SAS contracts.

The Sample Summary Reports in excel spreadsheet format with the final qualifiers were generated by the reviewer and included with the deliverable data package.

Data Qualifier Sheet

For the purpose of defining the flagging nomenclature utilized in this document, the following code letters and associated definitions are provided:

VALUE – if the result is a value greater than or equal to the Contract Required Quantitation Limit (CRQL).

- U Indicates that the compound was analyzed for, but not detected. The sample quantitation limit corrected for dilution and percent moisture is reported.
- J Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of a compound but the result is less than the sample quantitation limit, but greater than zero. The flag is also used to indicate a reported result having an associated QC problem.
- N Indicates presumptive evidence of a compound. This flag is only used for a tentatively identified compound (TIC), where the identification is based on a mass spectral library search.
- R Indicates the data are unusable. (The compound may or may not be present.)
- P Indicates a pesticide/Aroclor target analyte when there is greater than 25% difference for the detect concentrations between the two GC columns. The lower of the two results is reported.
- C Indicates pesticide results that have been confirmed by GC/MS.
- B Indicates the analyte is detected in the associated method blank as well as the sample.
- E Indicates compounds whose concentrations exceeded the calibration range of the instrument.
- D Indicates an identified compound in an analysis has been diluted. This flag alert the data user to any difference between the concentrations reported in the two analyses.
- A Indicates TICs that are suspected to be aldol condensation products.
- G Indicates the TCLP Matrix Spike Recovery was greater than the upper limit of the analytical method.
- L Indicates the TCLP Matrix Spike Recovery was less than the lower limit of the analytical method.
- T Indicates the analyte is found in the associated TCLP extraction blank as well as in the sample.

X, Y, Z are reserved for laboratory defined flags.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION V
SUPERFUND DIVISION

DATE:

SUBJECT: Review of Data
Received for Review on: July 9, 2013

FROM: Timothy Prendiville, Supervisor (**SR-6J**)
Superfund Contract Management Section

TO: Data User: Ch2mHill

Level 4 Manual Data Validation

We have reviewed the data for the following case:

SITE Name: Penta Wood Products Site (WI)

SAS Client No.: 13CB02 Job Number: 240-24835-1 SDG Number: 13CB02-01SVOA

Number and Type of Samples: 9 Water (Naphthalene)

Sample Numbers: 13CB02-01 thru -03, 13CB02-20 thru -25

Laboratory: Test America – North Canton

Hrs for Review:

Following are our findings:

CC: Howard Pham
Region 5 TPO
Mail Code: **SA-5J**

Below is a summary of the out-of-control audits and the possible effects on the data for this case:

Nine (9) preserved water samples, 13CB02-01 thru -03 and 13CB02-20 thru -25, were shipped to TestAmerica-North Canton located in North Canton, OH. The samples were collected on May 21, 2013 and received on May 23, 2013 intact and within the preferred shipping temperature range of 2 - 6°C. The samples were analyzed for Naphthalene according to SW-846 Method 8270C and the SAS contract for samples collected between April 2011 and December 2014.

EPA Sample	Lab ID	Station Location	Collection Date	Time	Received Date
13CB02-01	240-24835-7	PWP-DW01	5-21-13	9:00	5-23-13
13CB02-02	240-24835-13	PWP-EB01	5-21-13	9:40	5-23-13
13CB02-03	240-24835-12	PWP-FB01	5-21-13	9:30	5-23-13
13CB02-20	240-24835-5	PWP-RW01	5-21-13	10:45	5-23-13
13CB02-21	240-24835-6	PWP-RW01FR	5-21-13	10:46	5-23-13
13CB02-22	240-24835-1	PWP-RW02	5-21-13	11:45	5-23-13
13CB02-23	240-24835-2	PWP-RW03	5-21-13	12:05	5-23-13
13CB02-24	240-24835-3	PWP-RW04	5-21-13	12:25	5-23-13
13CB02-25	240-24835-4	PWP-RW05	5-21-13	11:23	5-23-13

No sample from this sample delivery group (SDGs) was designated for MS/MSD analyses. No MS/MSD analyses were conducted for this sample delivery group.

MB 240-87447/21-A is the semivolatiles method blank.

LCS 240-87447/22-A is the semivolatiles laboratory control sample. No LCSD analysis was conducted for this sample delivery group.

Sample 13CB02-02 was identified as an equipment blank. Sample 13CB02-03 was identified as a field blank.

Sample 13CB02-21 was identified as a field duplicate of sample 13CB02-20.

The semivolatiles extractions were performed within the technical holding time of 7 days after sample collection and analyzed within the 40 days after extraction; therefore, the results do not require any qualifications.

1. HOLDING TIME

Nine (9) preserved water samples, 13CB02-01 thru -03 and 13CB02-20 thru -25, were shipped to TestAmerica-North Canton located in North Canton, OH. The samples were collected on May 21, 2013 and received on May 23, 2013 intact and within the preferred shipping temperature range of 2 - 6°C. The samples were analyzed for Naphthalene according to SW-846 Method 8270C and the SAS contract for samples collected between April 2011 and December 2014.

The semivolatile extractions were performed within the technical holding time of 7 days after sample collection and analyzed within the 40 days after extraction; therefore, the results do not require any qualifications.

2. GC/MS TUNING AND GC INSTRUMENT PERFORMANCE

All GC/MS tuning complied with the mass list and ion abundance criteria for DFTPP, and all samples were analyzed within the twelve (12) hour periods for instrument performance checks.

3. CALIBRATION

A 9-pt Initial calibration was completed on May 1, 2013 using the following concentrations; 25 ng/uL, 20 ng/uL, 15 ng/uL, 10 ng/uL, 5 ng/uL, 2 ng/uL, 1 ng/uL, 0.5 ng/uL and 0.1 ng/uL . The %RSDs for Naphthalene was less than the SAS limit of 15%; therefore, the sample results do not require any qualifications.

Two 1-pt continuing calibration was conducted on May 30 and May 31, 2013. The %Ds for the semivolatile compounds were less than 30%; therefore, the sample results do not require any qualifications.

4. BLANKS

MB 240-87447/21-A is the semivolatile method blanks. The method blank was free of contamination. Sample results do not require any qualifications for this criterion.

5. SYSTEM MONITORING COMPOUND AND SURROGATE RECOVERY

The semivolatile surrogate recoveries were within the QC limits identified in the SAS contract; therefore the results do not require any qualifications.

6. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

No sample from this sample delivery group (SDGs) was designated for MS/MSD analyses. No MS/MSD analyses were conducted for this sample delivery group.

6B. LABORATORY CONTROL SAMPLES

LCS 240-87447/22-A is the semivolatile laboratory control sample. No LCSD analysis was conducted for this sample delivery group.

The semivolatile laboratory control sample recovery was within the QC limits (31 – 110%) identified in the SAS contract; therefore the results do not require any qualifications.

7. FIELD BLANK AND FIELD DUPLICATE

Sample 13CB02-02 was identified as an equipment blank. Sample 13CB02-03 was identified as a field blank. The equipment and field blanks were free of contamination. Sample results do not require any qualifications for this criterion.

Sample 13CB02-21 was identified as a field duplicate of sample 13CB02-20. The compounds were not detected in either sample.

8. INTERNAL STANDARDS

The internal standards retention times and area counts for the semivolatile analyses were within the required QC limits for all samples; therefore the results do not require any qualifications.

9. COMPOUND IDENTIFICATION

After reviewing the mass spectra and chromatograms it appears that all semivolatile compounds were properly identified.

10. COMPOUND QUANTITATION AND REPORTED DETECTION LIMITS

All samples were waters and no dilutions were run; therefore, no qualifications are required. All reporting limits were lower than the SAS required reporting limits.

11. SYSTEM PERFORMANCE

GC/MS baseline indicated acceptable performance.

12. ADDITIONAL INFORMATION

The 7-day holding time to sample extraction and 40 day time to sample analysis identified in Section 6 of the SAS contract were met. The Laboratory's Case Narrative dated June 18, 2013 indicates that the lab did not meet the 21 calendar day results turnaround time identified in Section 6.

SAS Number: 13CB02
Site Name: Penta Wood Products Site (WI)

Page 5 of 6
SDG Number: 13CB02-01SVOA
Laboratory: TA – North Canton

MDL Values are included on the individual ‘Organics Analytical Data Sheet’. The lowest calibration standard was 0.1 ng/uL.

The Required Reporting Limits identified in Table I of the SAS contract were met or bettered. The QC Requirements identified in Table II of the SAS contract were met except for a MS/MSD and LCSD being analyzed.

No photocopies of the air bills or sample tags were included with this SDG.

Data Qualifier Sheet

For the purpose of defining the flagging nomenclature utilized in this document, the following code letters and associated definitions are provided:

VALUE – if the result is a value greater than or equal to the Contract Required Quantitation Limit (CRQL).

- U Indicates that the compound was analyzed for, but not detected. The sample quantitation limit corrected for dilution and percent moisture is reported.
- J Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of a compound but the result is less than the sample quantitation limit, but greater than zero. The flag is also used to indicate a reported result having an associated QC problem.
- UJ The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the action limit of quantitation necessary to accurately and precisely measure the analyte in the sample.
- N Indicates presumptive evidence of a compound. This flag is only used for a tentatively identified compound (TIC), where the identification is based on a mass spectral library search.
- R Indicates the data are unusable. (The compound may or may not be present.)
- P Indicates a pesticide/Aroclor target analyte when there is greater than 25% difference for the detect concentrations between the two GC columns. The lower of the two results is reported.
- C Indicates pesticide results that have been confirmed by GC/MS.
- B Indicates the analyte is detected in the associated method blank as well as the sample.
- E Indicates compounds whose concentrations exceeded the calibration range of the instrument.
- D Indicates an identified compound in an analysis has been diluted. This flag alert the data user to any difference between the concentrations reported in the two analyses.
- A Indicates TICs that are suspected to be aldol condensation products.
- G Indicates the TCLP Matrix Spike Recovery was greater than the upper limit of the analytical method.
- L Indicates the TCLP Matrix Spike Recovery was less than the lower limit of the analytical method.
- T Indicates the analyte is found in the associated TCLP extraction blank as well as in the sample.

X, Y, Z are reserved for laboratory defined flags.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION V
SUPERFUND DIVISION

DATE:

SUBJECT: Review of Data
Received for Review on: July 9, 2013

FROM: Timothy Prendiville, Supervisor (**SR-6J**)
Superfund Contract Management Section

TO: Data User: Ch2mHill

Level 4 Manual Data Validation

We have reviewed the data for the following case:

SITE Name: Penta Wood Products Site (WI)

SAS Client No.: 13CB02 Job Number: 240-24835-1 SDG Number: 13CB02-01VOA

Number and Type of Samples: 14 Water (BTEX)

Sample Numbers: 13CB02-01 thru -08, 13CB02-20 thru -25

Laboratory: Test America – North Canton

Hrs for Review:

Following are our findings:

CC: Howard Pham
Region 5 TPO
Mail Code: **SA-5J**

Below is a summary of the out-of-control audits and the possible effects on the data for this case:

Fourteen (14) preserved water samples, 13CB02-01 thru -08 and 13CB02-20 thru -25, were shipped to TestAmerica-North Canton located in North Canton, OH. The samples were collected on May 21 and May 22, 2013 and received on May 23, 2013 intact and within the preferred shipping temperature range of 2 - 6°C. The sample was analyzed for Benzene, Toluene, Ethylbenzene and Xylenes (total) according to SW-846 Method 8260B and the SAS contract for samples collected between April 2011 and December 2014.

EPA Sample	Lab ID	Station Location	Collection Date	Time	Received Date
13CB02-01	240-24835-7	PWP-DW01	5-21-13	9:00	5-23-13
13CB02-02	240-24835-13	PWP-EB01	5-21-13	9:40	5-23-13
13CB02-03	240-24835-12	PWP-FB01	5-21-13	9:30	5-23-13
13CB02-04	240-24835-11	PWP- JS01	5-22-13	0:00	5-23-13
13CB02-05	240-24835-14	PWP-JS02	5-22-13	0:00	5-23-13
13CB02-06	240-24835-10	PWP- JS03	5-22-13	0:00	5-23-13
13CB02-07	240-24835-8	PWP-JS04	5-22-13	0:00	5-23-13
13CB02-08	240-24835-9	PWP- JS05	5-22-13	0:00	5-23-13
13CB02-20	240-24835-5	PWP-RW01	5-21-13	10:45	5-23-13
13CB02-21	240-24835-6	PWP-RW01FR	5-21-13	10:46	5-23-13
13CB02-22	240-24835-1	PWP-RW02	5-21-13	11:45	5-23-13
13CB02-23	240-24835-2	PWP-RW03	5-21-13	12:05	5-23-13
13CB02-24	240-24835-3	PWP-RW04	5-21-13	12:25	5-23-13
13CB02-25	240-24835-4	PWP-RW05	5-21-13	11:23	5-23-13

No sample from this sample delivery group (SDGs) was designated for MS/MSD analyses. No MS/MSD analyses were conducted for this sample delivery group.

MB 310-14947/5 and MB 310-14948/5 are the volatile method blanks.

LCS 310-14947/6 and LCS 310-14948/6 is the volatile laboratory control sample. No LCSD analysis was conducted for this sample delivery group.

Sample 13CB02-02 was identified as an equipment blank. Sample 13CB02-03 was identified as a field blank.

Sample 13CB02-21 was identified as a field duplicate of sample 13CB02-20.

The volatiles were analyzed within the technical holding time of 14 days after sample collection; therefore, the results do not require any qualifications.

1. HOLDING TIME

Fourteen (14) preserved water samples, 13CB02-01 thru -08 and 13CB02-20 thru -25, were shipped to TestAmerica-North Canton located in North Canton, OH. The samples were collected on May 21 and May 22, 2013 and received on May 23, 2013 intact and within the preferred shipping temperature range of 2 - 6°C. The sample was analyzed for Benzene, Toluene, Ethylbenzene and Xylenes (total) according to SW-846 Method 8260B and the SAS contract for samples collected between April 2011 and December 2014.

The volatiles were analyzed within the technical holding time of 14 days after sample collection; therefore, the results do not require any qualifications.

2. GC/MS TUNING AND GC INSTRUMENT PERFORMANCE

All GC/MS tuning complied with the mass list and ion abundance criteria for BFB, and all samples were analyzed within the twelve (12) hour periods for instrument performance checks.

3. CALIBRATION

A 15-pt Initial calibration was completed on May 24, 2013 using the following concentrations; 500 ug/uL, 250 ug/uL, 200 ug/uL, 150 ug/uL, 125 ug/uL, 100 ug/uL, 75 ug/uL, 50 ug/uL, 20 ug/uL, 10 ug/uL, 5 ug/uL, 4 ug/uL, 2 ug/uL, 1 ug/uL and 0.5 ug/uL. The %RSDs for the volatile compounds were less than the SAS limit of 15%; therefore, the sample results do not require any qualifications.

Two 1-pt continuing calibration was conducted on June 1 and June 2, 2013. The %Ds for the volatile compounds were less than 30%; therefore, the sample results do not require any qualifications.

4. BLANKS

MB 310-14947/5 and MB 310-14948/5 are the volatile method blanks. The method blanks were free of contamination. Sample results do not require any qualifications for this criterion.

5. SYSTEM MONITORING COMPOUND AND SURROGATE RECOVERY

The volatile surrogate recoveries were within the QC limits identified in the SAS contract; therefore the results do not require any qualifications.

6. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

No sample from this sample delivery group (SDGs) was designated for MS/MSD analyses. No MS/MSD analyses were conducted for this sample delivery group.

6B. LABORATORY CONTROL SAMPLES

LCS 310-14947/6 and LCS 310-14948/6 is the volatile laboratory control sample. No LCSD analysis was conducted for this sample delivery group.

The volatile laboratory control sample recoveries were within the QC limits (80 – 130%) identified in the SAS contract; therefore the results do not require any qualifications.

7. FIELD BLANK AND FIELD DUPLICATE

Sample 13CB02-02 was identified as an equipment blank. Sample 13CB02-03 was identified as a field blank. The equipment and field blanks were free of contamination. Sample results do not require any qualifications for this criterion.

Sample 13CB02-21 was identified as a field duplicate of sample 13CB02-20. The compounds were not detected in either sample.

8. INTERNAL STANDARDS

The internal standards retention times and area counts for the volatile analyses were within the required QC limits for all samples; therefore the results do not require any qualifications.

9. COMPOUND IDENTIFICATION

After reviewing the mass spectra and chromatograms it appears that all volatile compounds were properly identified.

10. COMPOUND QUANTITATION AND REPORTED DETECTION LIMITS

All samples were waters and no dilutions were run; therefore, no qualifications are required. All reporting limits were lower than the SAS required reporting limits.

11. SYSTEM PERFORMANCE

GC/MS baseline indicated acceptable performance.

12. ADDITIONAL INFORMATION

The 14-day holding time to sample analysis identified in Section 6 of the SAS contract was met. The Laboratory's Case Narrative dated June 18, 2013 indicates that the lab did not meet the 21 calendar day results turnaround time identified in Section 6.

MDL Values are included on the individual 'Organics Analytical Data Sheet'. The lowest calibration standard was 0.5 ug/uL.

SAS Number: 13CB02
Site Name: Penta Wood Products Site (WI)

SDG Number: 13CB02-01VOA
Laboratory: TA – North Canton

The Required Reporting Limits identified in Table I of the SAS contract were met or bettered. The QC Requirements identified in Table II of the SAS contract were met except for a MS/MSD and LCSD being analyzed.

No photocopies of the air bills or sample tags were included with this SDG.

Data Qualifier Sheet

For the purpose of defining the flagging nomenclature utilized in this document, the following code letters and associated definitions are provided:

VALUE – if the result is a value greater than or equal to the Contract Required Quantitation Limit (CRQL).

- U Indicates that the compound was analyzed for, but not detected. The sample quantitation limit corrected for dilution and percent moisture is reported.
- J Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of a compound but the result is less than the sample quantitation limit, but greater than zero. The flag is also used to indicate a reported result having an associated QC problem.
- UJ The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the action limit of quantitation necessary to accurately and precisely measure the analyte in the sample.
- N Indicates presumptive evidence of a compound. This flag is only used for a tentatively identified compound (TIC), where the identification is based on a mass spectral library search.
- R Indicates the data are unusable. (The compound may or may not be present.)
- P Indicates a pesticide/Aroclor target analyte when there is greater than 25% difference for the detect concentrations between the two GC columns. The lower of the two results is reported.
- C Indicates pesticide results that have been confirmed by GC/MS.
- B Indicates the analyte is detected in the associated method blank as well as the sample.
- E Indicates compounds whose concentrations exceeded the calibration range of the instrument.
- D Indicates an identified compound in an analysis has been diluted. This flag alert the data user to any difference between the concentrations reported in the two analyses.
- A Indicates TICs that are suspected to be aldol condensation products.
- G Indicates the TCLP Matrix Spike Recovery was greater than the upper limit of the analytical method.
- L Indicates the TCLP Matrix Spike Recovery was less than the lower limit of the analytical method.
- T Indicates the analyte is found in the associated TCLP extraction blank as well as in the sample.

X, Y, Z are reserved for laboratory defined flags.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION V
SUPERFUND DIVISION

DATE:

SUBJECT: Review of Region V SAS Data
Received for Review on: July 9, 2013

FROM: Timothy Prendiville, Supervisor (SR-6J)
Superfund Contract Management Section

TO: Data User: Ch2m Hill

Level 4 Manual Data Validation

We have reviewed the data for the following case:

SITE Name: Penta Wood Products (WI)

SAS Number: 13CB02 Job Number: 240-24835-1 SDG Number: 13CB02-02 Meth

Number and Type of Samples: 2 Waters (Methane)

Sample Numbers: 13CB02-02, 13CB02-03

Laboratory: TestAmerica – North Canton Hrs for Review: _____

Following are our findings:

CC: Howard Pham
Region 5 TPO
Mail Code: SA-5J

Below is a summary of the out-of-control audits and the possible effects on the data for this case:

Two (2) preserved water samples were shipped to TestAmerica Laboratories, Incorporated located in North Canton, OH. The samples were collected May 21, 2013. All samples were received on May 23, 2013 intact and within the preferred shipping temperature range (2 – 6 °C). The samples were analyzed for Methane by Method RSK-175 (Dissolved Gas Analysis in Water Sample Using a GC Headspace Equilibration Technique) and the SAS contract for samples collected between April 2011 and December 2014. All field samples are identified in the following table:

EPA Sample	Lab ID	Station Location	Collection		Receipt Date
13CB02-02	240-24835-13EB	PWP-EB01	05-21-13	09:40	05-23-13
13CB02-03	240-24835-12FB	PWP-FB01	05-21-13	09:30	05-23-13

Sample MB 240-87321/5 is the method blank. Sample LCS 240-87321/4 is the laboratory control sample. No LCSD analyses were conducted.

No MS/MSD analyses was conducted for this sample delivery group as both samples are QC blanks.

Sample 13CB02-02 was identified as an equipment blank. Sample 13CB02-03 was identified as a field blank.

All samples were analyzed less than fourteen days (14) from sample collection; therefore, the results are acceptable.

1. HOLDING TIME

Two (2) preserved water samples were shipped to TestAmerica Laboratories, Incorporated located in North Canton, OH. The samples were collected May 21, 2013. All samples were received on May 23, 2013 intact and within the preferred shipping temperature range (2 – 6 °C). The samples were analyzed for Methane by Method RSK-175 (Dissolved Gas Analysis in Water Sample Using a GC Headspace Equilibration Technique) and the SAS contract for samples collected between April 2011 and December 2014.

All samples were analyzed less than fourteen days (14) from sample collection; therefore, the results did not require any qualifications.

2. GC/MS TUNING AND GC INSTRUMENT PERFORMANCE

The laboratory used a GC/FID instrument. It appeared that it was properly optimized for resolution of the target analyte and sensitivity. All samples were analyzed within twelve (12) hours of the instrument performance check samples; therefore all acceptance criteria was met.

3. CALIBRATION

A 9-pt Initial calibration curve was generated on January 18, 2013 and evaluated for a coefficient of correlation ≥ 0.995 . Calibration curve appears to span 0.5 to 1500 $\mu\text{g/L}$. The %RSDs were less than 30%; therefore, the results did not require any qualifications.

Two 1-pt continuing calibrations were conducted on January 18th and May 25th, 2013. The percent differences (%D) for Methane and the surrogate were less than 30%; therefore, the results did not require any qualifications.

4. BLANKS

Sample MB 240-87321/5 is the method blank. Methane was detected at 0.129 $\mu\text{g/L}$ which was above the Lab's MDL of 0.070 $\mu\text{g/L}$ and below the reporting limit of 0.50 $\mu\text{g/L}$.

The detection of Methane in the associated samples is qualified as undetected as blank contaminated and qualified "U". The reported concentrations are elevated to the laboratory's reporting limit (RL) of 0.50 $\mu\text{g/L}$.

Methane
13CB02-02, 13CB02-03

The volatile method blank summary (FORM IV) lists the samples associated with the blank.

5. SYSTEM MONITORING COMPOUND AND SURROGATE RECOVERY

1,1,1-Trifluoroethane (TFE) was utilized as the surrogate for this analysis. All %recoveries were within the SAS QC range, 10 - 168%; therefore, the results did not require any qualifications.

6. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

No MS/MSD analyses was conducted for this sample delivery group as both samples are QC blanks.

6B FOR LABORATORY CONTROL SAMPLES:

Sample LCS 240-87321/4 is the laboratory control sample. No LCSD analyses were conducted.

The percent recoveries of Methane were within the SAS QC limits of 75 – 114%; therefore, the results did not require any qualifications.

7. FIELD BLANK AND FIELD DUPLICATE

Sample 13CB02-02 was identified as an equipment blank. Sample 13CB02-03 was identified as a field blank. No detections are reported for these samples.

8. INTERNAL STANDARDS

Not required for this method.

9. COMPOUND IDENTIFICATION

Target analytes were properly identified and quantitated.

10. COMPOUND QUANTITATION AND REPORTED DETECTION LIMITS

The samples were waters and dilutions were not run. All target RLs were properly reported. All target compound quantitations were properly reported and met the SAS required reporting limit (RL) of 2.0 µg/L. All concentrations detected below the laboratory's method detection limit (mdl) of 0.070 µg/L are qualified as non-detects. All concentrations detected between the mdl (0.070 µg/L) and the SAS reporting limit (2.0 µg/L) are qualified "J" as estimated.

Methane
MB 240-87321/5

11. SYSTEM PERFORMANCE

The FID baseline appears acceptable.

12. ADDITIONAL INFORMATION

The 14-day holding time identified in Section 6 of the SAS contract was met. The Laboratory's Case Narrative dated June 18, 2013 indicates that the lab did meet the 21 calendar day results turnaround time identified in Section 6.

All samples appear to have been analyzed by a method 'equivalent' to RSK 175 and not RSK 175 itself. Raw data did not identify responses as ppmV, did not identify volume of headspace, temperature of the samples, etc. The reviewer was unable to find a Henry's Law constant for the surrogate 1,1,1-Trifluoroethane. The reviewer was unable to determine the appropriate density values as no temperature was provided.

The results were calculated following the calculations used for Pesticide analyses.

All requests identified in Section 8, 9 and 10 of the SAS contract appear to have been satisfied. No copies of sample tags were submitted with this sample delivery group.

All QC Requirements identified in Table II of the SAS contract were satisfied with the exceptions that no LCSD analysis was conducted.

The concentration of the surrogate spiked into the LCS appears to be different from the concentration used to spike the field samples and the method blank. The %recovery values calculated by the Reviewer are within the SAS QC acceptance range.

All sample results are summarized in the accompanying Excel spreadsheet.

Data Qualifier Sheet

For the purpose of defining the flagging nomenclature utilized in this document, the following code letters and associated definitions are provided:

VALUE – if the result is a value greater than or equal to the Contract Required Quantitation Limit (CRQL).

- U Indicates that the compound was analyzed for, but not detected. The sample quantitation limit corrected for dilution and percent moisture is reported.
- J Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of a compound but the result is less than the sample quantitation limit, but greater than zero. The flag is also used to indicate a reported result having an associated QC problem.
- UJ The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the action limit of quantitation necessary to accurately and precisely measure the analyte in the sample.
- N Indicates presumptive evidence of a compound. This flag is only used for a tentatively identified compound (TIC), where the identification is based on a mass spectral library search.
- R Indicates the data are unusable. (The compound may or may not be present.)
- P Indicates a pesticide/Aroclor target analyte when there is greater than 25% difference for the detect concentrations between the two GC columns. The lower of the two results is reported.
- C Indicates pesticide results that have been confirmed by GC/MS.
- B Indicates the analyte is detected in the associated method blank as well as the sample.
- E Indicates compounds whose concentrations exceeded the calibration range of the instrument.
- D Indicates an identified compound in an analysis has been diluted. This flag alert the data user to any difference between the concentrations reported in the two analyses.
- A Indicates TICs that are suspected to be aldol condensation products.
- G Indicates the TCLP Matrix Spike Recovery was greater than the upper limit of the analytical method.
- L Indicates the TCLP Matrix Spike Recovery was less than the lower limit of the analytical method.
- T Indicates the analyte is found in the associated TCLP extraction blank as well as in the sample.

X, Y, Z are reserved for laboratory defined flags.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION V
SUPERFUND DIVISION

DATE:

SUBJECT: Review of Data
Received for Review on: July 9, 2013

FROM: Timothy Prendiville, Supervisor (**SR-6J**)
Superfund Contract Management Section

TO: Data User: Ch2mHill

Level 4 Manual Data Validation

We have reviewed the data for the following case:

SITE Name: Penta Wood Products Site (WI)

SAS Client No.: 13CB02 Job Number: 240-24829-1 SDG Number: 13CB02-09VOA

Number and Type of Samples: 11 Water (BTEX)

Sample Numbers: 13CB02-09 thru 13CB02-19

Laboratory: Test America – North Canton

Hrs for Review:

Following are our findings:

CC: Howard Pham
Region 5 TPO
Mail Code: **SA-5J**

Below is a summary of the out-of-control audits and the possible effects on the data for this case:

Eleven (11) preserved water samples, 13CB02-09 thru 13CB02-19, were shipped to Test America-North Canton located in North Canton, OH. The samples were collected between May 21 and May 23, 2013 and received on May 23, and May 24, 2013 intact and within the preferred shipping temperature range of 2 - 6°C. The sample was analyzed for Benzene, Toluene, Ethylbenzene and Xylenes (total) according to SW-846 Method 8260B and the SAS contract for samples collected between April 2011 and December 2014.

EPA Sample	Lab ID	Station Location	Collection		Received
			Date	Time	Date
13CB02-09	240-24829-2	PWP- JS06	5-22-13	0:00	5-23-13
13CB02-10	240-24861-6	PWP- JS07	5-23-13	0:00	5-24-13
13CB02-11	240-24861-8	PWP- JS08	5-23-13	0:00	5-24-13
13CB02-12	240-24861-7	PWP- JS09	5-23-13	0:00	5-24-13
13CB02-13	240-24861-9	PWP- JS10	5-23-13	0:00	5-24-13
13CB02-14	240-24861-3	PWP- MW12	5-22-13	13:20	5-24-13
13CB02-15	240-24861-4	PWP-MW12FR	5-22-13	13:21	5-24-13
13CB02-16	240-24829-1	PWP- MW15	5-21-13	15:45	5-23-13
13CB02-17	240-24861-5	PWP-MW19	5-22-13	13:45	5-24-13
13CB02-18	240-24861-1	PWP-MW22	5-22-13	10:40	5-24-13
13CB02-19	240-24861-2	PWP-MW26	5-22-13	11:30	5-24-13

Sample 13CB02-19 was designated by the samplers to be used for laboratory QC, i.e. MS / MSD analyses.

MB 310-14947/5 and MB 310-14948/5 are the volatile method blanks.

LCS 310-14947/6 and LCS 310-14948/6 are the volatile laboratory control samples. No LCSD analysis was conducted for this sample delivery group.

No samples were identified as field blanks.

Sample 13CB02-15 was identified as a field duplicate of sample 13CB02-14.

The volatiles were analyzed within the technical holding time of 14 days after sample collection; therefore, the results do not require any qualifications.

1. HOLDING TIME

Eleven (11) preserved water samples, 13CB02-09 thru 13CB02-19, were shipped to Test America-North Canton located in North Canton, OH. The samples were collected between May 21 and May 23, 2013 and received on May 23, and May 24, 2013 intact and within the preferred shipping temperature range of 2 - 6°C. The sample was analyzed for Benzene, Toluene, Ethylbenzene and Xylenes (total) according to SW-846 Method 8260B and the SAS contract for samples collected between April 2011 and December 2014.

The volatiles were analyzed within the technical holding time of 14 days after sample collection; therefore, the results do not require any qualifications.

2. GC/MS TUNING AND GC INSTRUMENT PERFORMANCE

All GC/MS tuning complied with the mass list and ion abundance criteria for BFB, and all samples were analyzed within the twelve (12) hour periods for instrument performance checks.

3. CALIBRATION

A 15-pt Initial calibration was completed on May 24, 2013 using the following concentrations; 500 ug/uL, 250 ug/uL, 200 ug/uL, 150 ug/uL, 125 ug/uL, 100 ug/uL, 75 ug/uL, 50 ug/uL, 20 ug/uL, 10 ug/uL, 5 ug/uL, 4 ug/uL, 2 ug/uL, 1 ug/uL and 0.5 ug/uL. The %RSDs for the volatile compounds were less than the SAS limit of 15%; therefore, the sample results do not require any qualifications.

Two 1-pt continuing calibration was conducted on June 1 and June 2, 2013. The %Ds for the volatile compounds were less than 30%; therefore, the sample results do not require any qualifications.

4. BLANKS

MB 310-14947/5 and MB 310-14948/5 are the volatile method blanks. The method blanks were free of contamination. Sample results do not require any qualifications for this criterion.

5. SYSTEM MONITORING COMPOUND AND SURROGATE RECOVERY

The volatile surrogate recoveries were within the QC limits identified in the SAS contract; therefore the results do not require any qualifications.

6. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

Sample 13CB02-19 was designated by the samplers to be used for laboratory QC, i.e. MS / MSD analyses.

The volatile MS/MSD recoveries and %RPDs were within the QC limits identified in the SAS contract; therefore the results do not require any qualifications.

6B. LABORATORY CONTROL SAMPLES

LCS 310-14947/6 and LCS 310-14948/6 are the volatile laboratory control samples. No LCSD analysis was conducted for this sample delivery group.

The volatile laboratory control sample recoveries were within the QC limits (80 – 130%) identified in the SAS contract; therefore the results do not require any qualifications.

7. FIELD BLANK AND FIELD DUPLICATE

No samples were identified as field blanks.

Sample 13CB02-15 was identified as a field duplicate of sample 13CB02-14. The compounds were not detected in either sample.

8. INTERNAL STANDARDS

The internal standards retention times and area counts for the volatile analyses were within the required QC limits for all samples; therefore the results do not require any qualifications.

9. COMPOUND IDENTIFICATION

After reviewing the mass spectra and chromatograms it appears that all volatile compounds were properly identified.

10. COMPOUND QUANTITATION AND REPORTED DETECTION LIMITS

All samples were waters and no dilutions were run; therefore, no qualifications are required. All reporting limits were lower than the SAS required reporting limits.

The following volatile samples have analyte concentrations below the quantitation limit (CRQL). Detected compounds are qualified "J".

13CB02-17
Ethylbenzene

11. SYSTEM PERFORMANCE

GC/MS baseline indicated acceptable performance.

SAS Number: 13CB02
Site Name: Penta Wood Products Site (WI)

Page 5 of 6
SDG Number: 13CB02-09VOA
Laboratory: TA – North Canton

12. ADDITIONAL INFORMATION

The 14-day holding time to sample analysis identified in Section 6 of the SAS contract was met. The Laboratory's Case Narrative dated June 18, 2013 indicates that the lab did not meet the 21 calendar day results turnaround time identified in Section 6.

MDL Values are included on the individual 'Organics Analytical Data Sheet'. The lowest calibration standard was 0.5 ug/uL.

The Required Reporting Limits identified in Table I of the SAS contract were met or bettered. The QC Requirements identified in Table II of the SAS contract were met except no LCSD was analyzed.

No photocopies of the air bills or sample tags were included with this SDG.

Data Qualifier Sheet

For the purpose of defining the flagging nomenclature utilized in this document, the following code letters and associated definitions are provided:

VALUE – if the result is a value greater than or equal to the Contract Required Quantitation Limit (CRQL).

- U Indicates that the compound was analyzed for, but not detected. The sample quantitation limit corrected for dilution and percent moisture is reported.
- J Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of a compound but the result is less than the sample quantitation limit, but greater than zero. The flag is also used to indicate a reported result having an associated QC problem.
- UJ The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the action limit of quantitation necessary to accurately and precisely measure the analyte in the sample.
- N Indicates presumptive evidence of a compound. This flag is only used for a tentatively identified compound (TIC), where the identification is based on a mass spectral library search.
- R Indicates the data are unusable. (The compound may or may not be present.)
- P Indicates a pesticide/Aroclor target analyte when there is greater than 25% difference for the detect concentrations between the two GC columns. The lower of the two results is reported.
- C Indicates pesticide results that have been confirmed by GC/MS.
- B Indicates the analyte is detected in the associated method blank as well as the sample.
- E Indicates compounds whose concentrations exceeded the calibration range of the instrument.
- D Indicates an identified compound in an analysis has been diluted. This flag alert the data user to any difference between the concentrations reported in the two analyses.
- A Indicates TICs that are suspected to be aldol condensation products.
- G Indicates the TCLP Matrix Spike Recovery was greater than the upper limit of the analytical method.
- L Indicates the TCLP Matrix Spike Recovery was less than the lower limit of the analytical method.
- T Indicates the analyte is found in the associated TCLP extraction blank as well as in the sample.

X, Y, Z are reserved for laboratory defined flags.

Regional Transmittal Form

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION V

DATE:

SUBJECT: Review of Data
Received for Review on: July 9, 2013

FROM: Timothy Prendiville, Supervisor (SR-6J)
Superfund Contract Management Section

TO: Data User: Ch2m Hill
Email addresses: dshekosk@Ch2m.com; Shannon.olson@ch2m.com;
Adrienne.korpela@ch2m.com

Level 4 Data Validation

We have reviewed the data for the following case:

Site Name: Penta Wood Products (WI)

SAS Client No: 13CB02 Job No: 240-24861 & 240-24829 SDG No: 13CB02-14 Herb

Number and Type of Samples: 6 water samples (Herbicide)

Sample Numbers: 13CB02-14 thru 13CB02-19

Laboratory: TestAmerica – North Canton, OH Hrs for Review:

Following are our findings:

CC: Howard Pham
Region 5 TPO
Mail Code: SA-5J

Below is a summary of the out-of-control audits and the possible effects on the data for this case:

Six (6) water samples, 13CE02-14 thru 13CE02-19; were shipped to CT Laboratories located in Canton, OH. The samples were collected on May 21 and 23, 2013 and received on May 23 and 24, 2013. All samples were received intact and within the preferred shipping temperature range of 2 - 6°C. The samples were analyzed for Pentachlorophenol according to the SW-846 Method 8151A and the SAS Contract for water samples collected between April 2011 and December 2014. The Chain-Of-Custodies for this sample delivery group are summarized in the following table:

EPA sample ID	TA sample ID	Sample location	Collection date	received date
13CB02-14	240-24861-3	PWP-MW12	05/22/13	05/24/13
13CB02-15	240-24861-4	PWP-MW12 FR	05/22/13	05/24/13
13CB02-16	240-24829-1	PWP-MW15	05/21/13	05/23/13
13CB02-17	240-24861-5	PWP-MW19	05/22/13	05/24/13
13CB02-18	240-24861-1	PWP-MW22	05/22/13	05/24/13
13CB02-19	240-24861-2	PWP-MW26	05/22/13	05/24/13
13CB02-19 MS	240-24861-2 MS	PWP-MW26	05/22/13	05/24/13
13CB02-19 MSD	240-24861-2 MSD	PWP-MW26	05/22/13	05/24/13
Method blank	MB 180-72964/1-A	NA	NA	NA
Method blank	MB 180-73113/1-A	NA	NA	NA
LCS	LCS 180-72964/2-A	NA	NA	NA
LCS	LCS 180-73113/2-A	NA	NA	NA
LCSD	LCSD 180-72964/3-A	NA	NA	NA

MB 180-72964/1-A and MB 180-73113/1-A are the method blanks. LCS 180-72964/2-A and LCS 180-73113/2-A are the Laboratory Control Samples. LCSD 180-72964/3-A is the Laboratory Control Sample Duplicate.

Sample 13CB02-19 was designated by the samplers to be used for laboratory QC, i.e. MS / MSD analyses.

No samples were identified as field blanks. Sample 13CB02-15 was identified as a field duplicate of sample 13CE02-14.

The samples were extracted within the SAS holding time of 7 days. The extracts were analyzed within 40 days following the extraction. Therefore, the results are acceptable.

1. HOLDING TIME

Six (6) water samples, 13CE02-14 thru 13CE02-19; were shipped to CT Laboratories located in Canton, OH. The samples were collected on May 21 and 23, 2013 and received on May 23 and 24, 2013. All samples were received intact and within the preferred shipping temperature range of 2 - 6°C. The samples were analyzed for Pentachlorophenol according to the SW-846 Method 8151A and the SAS Contract for water samples collected between April 2011 and December 2014.

The samples were extracted within the SAS holding time of 7 days. The extracts were analyzed within 40 days following the extraction. Therefore, the results are acceptable.

2. GC INSTRUMENT PERFORMANCE

GC Resolution met the minimum resolution criteria as defined in SW846 Method 8000B and 8151A for both RTX-50 (Primary) and RTX-1701 (Secondary) columns.

3. CALIBRATION

5-pt Initial calibration curves with the on-column concentrations of 0.0025 ng, 0.005 ng, 0.010 ng, 0.020 ng and 0.040 ng were calibrated on 05/24/2013. An Initial Calibration Verification (second source standard) with concentrations of 0.40 ug/L was analyzed right after the initial calibration standards to verify the standard concentrations of the initial calibration before the samples were analyzed. A total of thirteen (13) CCVs were analyzed for primary column (RTX-50) and secondary column (RTX-1701) from 05/24/2013 thru 05/31/2013.

The RSDs for the Pentachlorophenol and the surrogate were within the SAS limits of less than 15%. All percent differences for the PCP in the CCVs were less than the method QC limits of 15%.

4. BLANKS

MB 180-72964/1-A and MB 180-73113/1-A are the method blanks. No PCP was detected in the method blanks. Therefore, the results are acceptable. The herbicide method blank summaries (FORM IV) list the samples associated with each blank.

5. SYSTEM MONITORING COMPOUND AND SURROGATE RECOVERY

Zero percent recovery for 2,4-Dichlorophenylacetic acid was detected in samples 13CB02-14, 13CB02-15 and 13CB02-17 on both the primary and confirmation analyses. No actions were required because these samples have dilution factors of equal to or higher than 5.

6A. MATRIX SPIKE/SPIKE DUPLICATE or LABORATORY DUPLICATE

Sample 13CB02-19 was designated by the samplers to be used for laboratory QC, i.e. MS / MSD analyses.

All spike recoveries (32 – 140%) and RPDs (<30%) were within the SAS QC limits; therefore, the results do not require any qualifications.

6B. LABORATORY CONTROL SAMPLES

LCS 180-72964/2-A and LCS 180-73113/2-A are the Laboratory Control Samples. LCSD 180-72964/3-A is the Laboratory Control Sample Duplicates. The recoveries of PCP in the LCS and LCSD analyses were within the SAS QC limits of 40% - 140%. The RPDs for PCP in the LCS and LCSD analyses were within the SAS QC limits of less than 30%. Therefore, the results are acceptable.

7. FIELD BLANK AND FIELD DUPLICATE

No samples were identified as field blanks. Sample 13CB02-15 was identified as a field duplicate of sample 13CE02-14. The results for the duplicate samples are summarized in the following table.

	Sample ID	13CB02-14	13CB02-15	
Analytes	DF, units	4, ug/L	4, ug/L	RPDs
Pentachlorophenol		22	25	8.7

Sample results are not qualified based on the results of field duplicate samples.

8. INTERNAL STANDARDS

The internal standards were not required for SW-846 Method 8151A.

9. COMPOUND IDENTIFICATION

After reviewing the chromatograms it appears that the PCP were properly identified.

10. COMPOUND QUANTITATION AND REPORTED DETECTION LIMITS

Due to matrix interference, all samples and QC samples were analyzed at dilution factors of at least 4.0.

SAS Number: 13CB02
Site Name: Penta Wood Products (WI)

Page 5 of 6
SDG Number: 13CB02-14 Herb
Laboratory: TestAmerica

Sample results, SAS reporting limits, laboratory reporting limits and laboratory detection limits on the laboratory result forms and sample summary spreadsheets were adjusted according to the sample dilutions.

The following Herbicide sample has compound concentrations greater than the laboratory detection limits but less than the laboratory reporting limits. Detected compound is qualified "J".

13CB02-16
Pentachlorophenol

11. SYSTEM PERFORMANCE

GC baselines indicated acceptable performance.

12. ADDITIONAL INFORMATION

TA laboratories received the samples on 05/23 and 24/2013. The Laboratory Case Narrative was dated on 06/18/2013. The data was received by EPA Region V on 07/09/2013. The data was not submitted within 21 days from the date the samples were received as required by section 6 of the SAS contracts for Herbicide analyses.

The samples were stored at 4.0°C until analyses. The samples were analyzed using SW-846 Method 8151A. Therefore, the requirements from section 7 of the SAS contract for PCP was met.

The most recent MDL study was not included in the data package as required by section 8A of the SAS contract. The laboratory detection limits listed on Sample Summary Reports and Form I were used to evaluate the reported results.

The concentration of the lowest standard (0.025 ug/L) in the initial standard calibration was less than the SAS reporting limits (0.10 ug/L) as required by section 8b of the SAS contracts.

The laboratory reporting limits and MDL were less than the SAS reporting limits listed in Table I of the SAS contract.

Photocopies of the chain of custodies (with no record of the location of the original) were included in the data package. The air bills and sample tags were not included with the data package as required by section 10 of the SAS contracts.

The Sample Summary Reports in excel spreadsheet format with the final qualifiers were generated by the reviewer and included with the deliverable data package.

Data Qualifier Sheet

For the purpose of defining the flagging nomenclature utilized in this document, the following code letters and associated definitions are provided:

VALUE – if the result is a value greater than or equal to the Contract Required Quantitation Limit (CRQL).

- U Indicates that the compound was analyzed for, but not detected. The sample quantitation limit corrected for dilution and percent moisture is reported.
- J Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of a compound but the result is less than the sample quantitation limit, but greater than zero. The flag is also used to indicate a reported result having an associated QC problem.
- N Indicates presumptive evidence of a compound. This flag is only used for a tentatively identified compound (TIC), where the identification is based on a mass spectral library search.
- R Indicates the data are unusable. (The compound may or may not be present.)
- P Indicates a pesticide/Aroclor target analyte when there is greater than 25% difference for the detect concentrations between the two GC columns. The lower of the two results is reported.
- C Indicates pesticide results that have been confirmed by GC/MS.
- B Indicates the analyte is detected in the associated method blank as well as the sample.
- E Indicates compounds whose concentrations exceeded the calibration range of the instrument.
- D Indicates an identified compound in an analysis has been diluted. This flag alert the data user to any difference between the concentrations reported in the two analyses.
- A Indicates TICs that are suspected to be aldol condensation products.
- G Indicates the TCLP Matrix Spike Recovery was greater than the upper limit of the analytical method.
- L Indicates the TCLP Matrix Spike Recovery was less than the lower limit of the analytical method.
- T Indicates the analyte is found in the associated TCLP extraction blank as well as in the sample.

X, Y, Z are reserved for laboratory defined flags.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION V
SUPERFUND DIVISION

DATE:

SUBJECT: Review of Region V SAS Data
Received for Review on: July 9, 2013

FROM: Timothy Prendiville, Supervisor (SR-6J)
Superfund Contract Management Section

TO: Data User: Ch2m Hill

Level 4 Manual Data Validation

We have reviewed the data for the following case:

SITE Name: Penta Wood Products (WI)

SAS Number: 13CB02 Job Number: 240-24829-1 SDG Number: 13CB02-14 Meth

Number and Type of Samples: 6 Waters (Methane)

Sample Numbers: 13CB02-14 to 13CB02-19

Laboratory: TestAmerica – North Canton Hrs for Review: _____

Following are our findings:

CC: Howard Pham
Region 5 TPO
Mail Code: SA-5J

Below is a summary of the out-of-control audits and the possible effects on the data for this case:

Six (6) preserved water samples were shipped to TestAmerica Laboratories, Incorporated located in North Canton, OH. The samples were collected May 21-22, 2013. All samples were received on May 23-24, 2013 intact and within the preferred shipping temperature range (2 – 6 °C). The samples were analyzed for Methane by Method RSK-175 (Dissolved Gas Analysis in Water Sample Using a GC Headspace Equilibration Technique) and the SAS contract for samples collected between April 2011 and December 2014. All field samples are identified in the following table:

EPA Sample	Lab ID	Station Location	Collection Date	Time	Receipt Date
13CB02-14	240-24861-3	PWP-MW12	05/22/13	13:20	05/24/13
13CB02-15	240-24861-4	PWP-MW12FR	05/22/13	13:21	05/24/13
13CB02-16	240-24829-1	PWP-MW15	05/21/13	15:45	05/23/13
13CB02-17	240-24861-5	PWP-MW19	05/22/13	13:45	05/24/13
13CB02-18	240-24861-1	PWP-MW22	05/22/13	10:40	05/24/13
13CB02-19	240-24861-2	PWP-MW26	05/22/13	11:30	05/24/13

Samples MB-240-87230/5 and MB 240-87321/5 are the method blanks. Samples LCS 240-87230/4 and LCS 240-87321/4 are the laboratory control samples. No LCSD analyses were conducted.

Sample 13CB02-19 was identified as the parent sample for the MS/MSD analyses.

Sample 13CB02-15 was identified as a field replicate of sample 13CB02-14.

All samples were analyzed less than fourteen days (14) from sample collection; therefore, the results are acceptable.

1. HOLDING TIME

Six (6) preserved water samples were shipped to TestAmerica Laboratories, Incorporated located in North Canton, OH. The samples were collected May 21-22, 2013. All samples were received on May 23-24, 2013 intact and within the preferred shipping temperature range (2 – 6 °C). The samples were analyzed for Methane by Method RSK-175 (Dissolved Gas Analysis in Water Sample Using a GC Headspace Equilibration Technique) and the SAS contract for samples collected between April 2011 and December 2014.

All samples were analyzed less than fourteen days (14) from sample collection; therefore, the results did not require any qualifications.

2. GC/MS TUNING AND GC INSTRUMENT PERFORMANCE

The laboratory used a GC/FID instrument. It appeared that it was properly optimized for resolution of the target analyte and sensitivity. All samples were analyzed within twelve (12) hours of the instrument performance check samples; therefore all acceptance criteria was met.

3. CALIBRATION

A 9-pt Initial calibration curve was generated on January 18, 2013 and evaluated for a coefficient of correlation ≥ 0.995 . Calibration curve appears to span 0.5 to 1500 $\mu\text{g/L}$. The %RSDs were less than 30%; therefore, the results did not require any qualifications.

Three 1-pt continuing calibrations were conducted on January 18th and May 24th - 25th, 2013. The percent differences (%D) for Methane and the surrogate were less than 30%; therefore, the results did not require any qualifications.

4. BLANKS

Samples MB-240-87230/5 and MB 240-87321/5 are the method blanks. Methane was detected at 0.080 $\mu\text{g/L}$ in method blank MB 240-87230/5 and 0.129 $\mu\text{g/L}$ in method blank MB 240-87321/5 which were both above the Lab's MDL of 0.070 $\mu\text{g/L}$ and below the reporting limit of 0.50 $\mu\text{g/L}$.

The detection of Methane in the samples associated with method blank MB 240-87230/5 are qualified as undetected as blank contaminated and qualified "U". The reported concentrations are elevated to the laboratory's reporting limit (RL) of 0.50 $\mu\text{g/L}$.

Methane
13CB02-14, 13CB02-15, 13CB02-18

The volatile method blank summaries (FORM IV) list the samples associated with each blank.

5. SYSTEM MONITORING COMPOUND AND SURROGATE RECOVERY

1,1,1-Trifluoroethane (TFE) was utilized as the surrogate for this analysis. All %recoveries were within the SAS QC range, 10 - 168%; therefore, the results did not require any qualifications.

6. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

Sample 13CB02-19 was identified as the parent sample for the MS/MSD analyses. The percent recoveries of Methane were within the SAS QC limits of 75 – 114% and the RPD was < 20%; therefore, the results did not require any qualifications.

6B FOR LABORATORY CONTROL SAMPLES:

Samples LCS 240-87230/4 and LCS 240-87321/4 are the laboratory control samples. No LCSD analyses were conducted.

The percent recoveries of Methane were within the SAS QC limits of 75 – 114%; therefore, the results did not require any qualifications.

7. FIELD BLANK AND FIELD DUPLICATE

Sample 13CB02-15 was identified as a field replicate of sample 13CB02-14. No detections are reported for these samples.

8. INTERNAL STANDARDS

Not required for this method.

9. COMPOUND IDENTIFICATION

Target analytes were properly identified and quantitated.

10. COMPOUND QUANTITATION AND REPORTED DETECTION LIMITS

The samples were waters and dilutions were not run. All target RLs were properly reported. All target compound quantitations were properly reported and met the SAS required reporting limit (RL) of 2.0 µg/L. All concentrations detected below the laboratory's method detection limit (mdl) of 0.070 µg/L are qualified as non-detects. All concentrations detected between the mdl (0.070 µg/L) and the SAS reporting limit (2.0 µg/L) are qualified "J" as estimated.

Methane
13CB02-17, MB 240-87230/5, MB 240-87321/5

11. SYSTEM PERFORMANCE

The FID baseline appears acceptable.

12. ADDITIONAL INFORMATION

The 14-day holding time identified in Section 6 of the SAS contract was met. The Laboratory's Case Narrative dated June 18, 2013 indicates that the lab did meet the 21 calendar day results turnaround time identified in Section 6.

All samples appear to have been analyzed by a method 'equivalent' to RSK 175 and not RSK 175 itself. Raw data did not identify responses as ppmV, did not identify volume of headspace, temperature of the samples, etc. The reviewer was unable to find a Henry's Law constant for the surrogate 1,1,1-Trifluoroethane. The reviewer was unable to determine the appropriate density values as no temperature was provided.

The results were calculated following the calculations used for Pesticide analyses.

All requests identified in Section 8, 9 and 10 of the SAS contract appear to have been satisfied. No copies of sample tags were submitted with this sample delivery group.

All QC Requirements identified in Table II of the SAS contract were satisfied with the exceptions that no LCSD analysis was conducted.

The concentration of the surrogate spiked into the LCS appears to be different from the concentration used to spike the field samples and the method blank. The %recovery values calculated by the Reviewer are within the SAS QC acceptance range.

All sample results are summarized in the accompanying Excel spreadsheet.

Data Qualifier Sheet

For the purpose of defining the flagging nomenclature utilized in this document, the following code letters and associated definitions are provided:

VALUE – if the result is a value greater than or equal to the Contract Required Quantitation Limit (CRQL).

- U Indicates that the compound was analyzed for, but not detected. The sample quantitation limit corrected for dilution and percent moisture is reported.
- J Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of a compound but the result is less than the sample quantitation limit, but greater than zero. The flag is also used to indicate a reported result having an associated QC problem.
- UJ The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the action limit of quantitation necessary to accurately and precisely measure the analyte in the sample.
- N Indicates presumptive evidence of a compound. This flag is only used for a tentatively identified compound (TIC), where the identification is based on a mass spectral library search.
- R Indicates the data are unusable. (The compound may or may not be present.)
- P Indicates a pesticide/Aroclor target analyte when there is greater than 25% difference for the detect concentrations between the two GC columns. The lower of the two results is reported.
- C Indicates pesticide results that have been confirmed by GC/MS.
- B Indicates the analyte is detected in the associated method blank as well as the sample.
- E Indicates compounds whose concentrations exceeded the calibration range of the instrument.
- D Indicates an identified compound in an analysis has been diluted. This flag alert the data user to any difference between the concentrations reported in the two analyses.
- A Indicates TICs that are suspected to be aldol condensation products.
- G Indicates the TCLP Matrix Spike Recovery was greater than the upper limit of the analytical method.
- L Indicates the TCLP Matrix Spike Recovery was less than the lower limit of the analytical method.
- T Indicates the analyte is found in the associated TCLP extraction blank as well as in the sample.

X, Y, Z are reserved for laboratory defined flags.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION V
SUPERFUND DIVISION

DATE:

SUBJECT: Review of Data
Received for Review on: July 9, 2013

FROM: Timothy Prendiville, Supervisor (**SR-6J**)
Superfund Contract Management Section

TO: Data User: Ch2mHill

Level 4 Manual Data Validation

We have reviewed the data for the following case:

SITE Name: Penta Wood Products Site (WI)

SAS Client No.: 13CB02 Job Number: 240-24829-1 SDG Number: 13CB02-14SVOA

Number and Type of Samples: 6 Water (Naphthalene)

Sample Numbers: 13CB02-14 thru 13CB02-19

Laboratory: Test America – North Canton

Hrs for Review:

Following are our findings:

CC: Howard Pham
Region 5 TPO
Mail Code: **SA-5J**

Below is a summary of the out-of-control audits and the possible effects on the data for this case:

Six (6) water samples, 13CB02-14 thru 13CB02-19, were shipped to Test America-North Canton located in North Canton, OH. The samples were collected on May 21 and May 22, 2013 and received on May 23, and May 24, 2013 intact and within the preferred shipping temperature range of 2 - 6°C. The samples were analyzed for Naphthalene according to SW-846 Method 8270C and the SAS contract for samples collected between April 2011 and December 2014.

EPA	Lab ID	Station	Collection		Received
Sample		Location	Date	Time	Date
13CB02-14	240-24861-3	PWP- MW12	5-22-13	13:20	5-24-13
13CB02-15	240-24861-4	PWP-MW12FR	5-22-13	13:21	5-24-13
13CB02-16	240-24829-1	PWP- MW15	5-21-13	15:45	5-23-13
13CB02-17	240-24861-5	PWP-MW19	5-22-13	13:45	5-24-13
13CB02-18	240-24861-1	PWP-MW22	5-22-13	10:40	5-24-13
13CB02-19	240-24861-2	PWP-MW26	5-22-13	11:30	5-24-13

Sample 13CB02-19 was designated by the samplers to be used for laboratory QC, i.e. MS / MSD analyses.

MB 240-87447/21-A and MB 240-87456/21-A are the semivolatile method blanks.

LCS 240-87447/22-A and LCS 240-87456/22-A are the semivolatile laboratory control samples. No LCSD analysis was conducted for this sample delivery group.

No samples were identified as field blanks.

Sample 13CB02-15 was identified as a field duplicate of sample 13CB02-14.

The semivolatile extractions were performed within the technical holding time of 7 days after sample collection and analyzed within the 40 days after extraction; therefore, the results do not require any qualifications.

1. HOLDING TIME

Six (6) water samples, 13CB02-14 thru 13CB02-19, were shipped to Test America-North Canton located in North Canton, OH. The samples were collected on May 21 and May 22, 2013 and received on May 23, and May 24, 2013 intact and within the preferred shipping temperature range of 2 - 6°C. The samples were analyzed for Naphthalene according to SW-846 Method 8270C and the SAS contract for samples collected between April 2011 and December 2014.

The semivolatile extractions were performed within the technical holding time of 7 days after sample collection and analyzed within the 40 days after extraction; therefore, the results do not require any qualifications.

2. GC/MS TUNING AND GC INSTRUMENT PERFORMANCE

All GC/MS tuning complied with the mass list and ion abundance criteria for DFTPP, and all samples were analyzed within the twelve (12) hour periods for instrument performance checks.

3. CALIBRATION

A 9-pt Initial calibration was completed on May 1, 2013 using the following concentrations; 25 ng/uL, 20 ng/uL, 15 ng/uL, 10 ng/uL, 5 ng/uL, 2 ng/uL, 1 ng/uL, 0.5 ng/uL and 0.1 ng/uL. The %RSDs for Naphthalene was less than the SAS limit of 15%; therefore, the sample results do not require any qualifications.

Two 1-pt continuing calibration was conducted on May 30 and May 31, 2013. The %Ds for the semivolatile compounds were less than 30%; therefore, the sample results do not require any qualifications.

4. BLANKS

MB 240-87447/21-A and MB 240-87456/21-A are the semivolatile method blanks. The method blanks were free of contamination. Sample results do not require any qualifications for this criterion.

5. SYSTEM MONITORING COMPOUND AND SURROGATE RECOVERY

The semivolatile surrogate recoveries were within the QC limits identified in the SAS contract for all samples except sample 13CB02-17. The % recoveries of Phenol-d5 (124%), 2-Fluorobiphenyl (124%) and 2,4,6-Tribromophenol (119%) were all above the upper limit of 110%. Sample 13CB02-17 for Naphthalene is a detected compound and therefore is qualified "J" for this discrepancy.

6. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

Sample 13CB02-19 was designated by the samplers to be used for laboratory QC, i.e. MS / MSD analyses.

The semivolatile MS/MSD recoveries and %RPDs were within the QC limits identified in the SAS contract; therefore the results do not require any qualifications.

6B. LABORATORY CONTROL SAMPLES

LCS 240-87447/22-A and LCS 240-87456/22-A are the semivolatile laboratory control samples. No LCSD analysis was conducted for this sample delivery group.

The semivolatile laboratory control sample recoveries were within the QC limits (31– 110%) identified in the SAS contract; therefore the results do not require any qualifications.

7. FIELD BLANK AND FIELD DUPLICATE

No samples were identified as field blanks.

Sample 13CB02-15 was identified as a field duplicate of sample 13CB02-14. The compound was not detected in either sample.

8. INTERNAL STANDARDS

The internal standards retention times and area counts for the semivolatile analyses were within the required QC limits for all samples; therefore the results do not require any qualifications.

9. COMPOUND IDENTIFICATION

After reviewing the mass spectra and chromatograms it appears that all semivolatile compounds were properly identified.

10. COMPOUND QUANTITATION AND REPORTED DETECTION LIMITS

All samples were waters and sample 13CB02-17 was analyzed at a dilution; the results do not require any qualification for this criteria. All reporting limits were lower than the SAS required reporting limits.

11. SYSTEM PERFORMANCE

GC/MS baseline indicated acceptable performance.

SAS Number: 13CB02
Site Name: Penta Wood Products Site (WI)

Page 5 of 6
SDG Number: 13CB02-14SVOA
Laboratory: TA – North Canton

12. ADDITIONAL INFORMATION

The 7-day holding time to sample extraction and 40 day time to sample analysis identified in Section 6 of the SAS contract were met. The Laboratory's Case Narrative dated June 18, 2013 indicates that the lab did not meet the 21 calendar day results turnaround time identified in Section 6.

MDL Values are included on the individual 'Organics Analytical Data Sheet'. The lowest calibration standard was 0.1 ng/uL.

The Required Reporting Limits identified in Table I of the SAS contract were met or bettered. The QC Requirements identified in Table II of the SAS contract were met except no LCSD was analyzed.

No photocopies of the air bills or sample tags were included with this SDG.

Data Qualifier Sheet

For the purpose of defining the flagging nomenclature utilized in this document, the following code letters and associated definitions are provided:

VALUE – if the result is a value greater than or equal to the Contract Required Quantitation Limit (CRQL).

- U Indicates that the compound was analyzed for, but not detected. The sample quantitation limit corrected for dilution and percent moisture is reported.
- J Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of a compound but the result is less than the sample quantitation limit, but greater than zero. The flag is also used to indicate a reported result having an associated QC problem.
- UJ The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the action limit of quantitation necessary to accurately and precisely measure the analyte in the sample.
- N Indicates presumptive evidence of a compound. This flag is only used for a tentatively identified compound (TIC), where the identification is based on a mass spectral library search.
- R Indicates the data are unusable. (The compound may or may not be present.)
- P Indicates a pesticide/Aroclor target analyte when there is greater than 25% difference for the detect concentrations between the two GC columns. The lower of the two results is reported.
- C Indicates pesticide results that have been confirmed by GC/MS.
- B Indicates the analyte is detected in the associated method blank as well as the sample.
- E Indicates compounds whose concentrations exceeded the calibration range of the instrument.
- D Indicates an identified compound in an analysis has been diluted. This flag alert the data user to any difference between the concentrations reported in the two analyses.
- A Indicates TICs that are suspected to be aldol condensation products.
- G Indicates the TCLP Matrix Spike Recovery was greater than the upper limit of the analytical method.
- L Indicates the TCLP Matrix Spike Recovery was less than the lower limit of the analytical method.
- T Indicates the analyte is found in the associated TCLP extraction blank as well as in the sample.

X, Y, Z are reserved for laboratory defined flags.

Regional Transmittal Form

**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION V**

DATE: 8/01/13

SUBJECT: Review of Data
Received for review on 7/09/13

FROM: Timothy Prendiville, Supervisor, Chief (SR-6J)
Superfund Contract Management Section

TO: Data User: CH2M Hill
Email address: dshekosk@CH2M.com

LEVEL 4 DATA VALIDATION

We have reviewed the data for the following case:

SITE NAME: Penta Wood Products (WI)

CASE NUMBER: 13CB02 **SDG NUMBER:** 13CB02-14GC

Number and Type of Samples: 6 waters (WC)

Sample Numbers: 13CB02-14 and -19

Laboratory: TestAmerica North Canton **Hrs. for Review:** _____

Following are our findings:

CC: Howard Pham
Region 5 TPO
Mail Code: SA-5J

Narrative

Six (6) water samples, numbered 13CB02-14 thru -19, were collected between May 21 and May 22, 2013. The lab received the samples on May 23 and May 24, 2013 in good condition. All sample results are reported to the MDL. The samples were analyzed for alkalinity using SM 2320B, chloride, nitrate, and sulfate using EPA 300.0, sulfide using SM 4500 S2 F and total organic carbon using SW-846 9060.

Sample ID	Lab ID	Station Location	Sample Date/Time
13CB02-14	240-24861-3	PWP-MW12	5-22-13/13:20
13CB02-15	240-24861-4	PWP-MW12FR	5-22-13/13:21
13CB02-16	240-24829-1	PWP-MW15	5-21-13/15:45
13CB02-17	240-24861-5	PWP-MW19	5-22-13/13:45
13CB02-18	240-24861-1	PWP-MW22	5-22-13/10:40
13CB02-19	240-24861-2	PWP-MW26	5-22-13/11:30

Evidential Audit: All documents provided are copies. No location is noted for the originals. No DC-1 or DC-2 sheets or sample tags were provided. The SAS required a laboratory duplicate; however, the laboratory performed a MS/MSD which is acceptable.

Alkalinity: The SAS requires that the lowest calibration point be run at 5.0 mg/L. However, the alkalinity method does not require a calibration curve. The sample results are not qualified for the absence of this standard requirement. The analysis is acceptable.

Chloride: The analysis is acceptable.

Nitrate: All samples were analyzed outside the 48 hour method holding time. The sample results are estimated "J" due to analysis being performed outside the method holding time.

Sulfate: The analysis is acceptable.

Sulfide: The SAS requires that the lowest calibration point be run at 1.0 mg/L. However, the sulfide method does not require a calibration curve. The sample results are not qualified for the absence of this standard requirement.

TOC: The analysis is acceptable. Samples 13CB02-16 and -19 were between the reporting limit and the MDL. The samples are qualified "J" and considered estimated.

Other comments: Sample 13CB02-14 and 13CB02-15 are the field duplicates. The samples showed good correlation. Samples were compared using laboratory duplicate criteria. No samples were identified as field blanks.

Data Qualifier Sheet

<u>Qualifiers</u>	<u>Data Qualifier Definitions</u>
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting Quality Control (QC) criteria. The analyte may or may not be present in the sample.
UJ	The analyte was analyzed for, but not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

Regional Transmittal Form

**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION V**

DATE: 7/30/13

SUBJECT: Review of Data
Received for review on 7/13/13

FROM: Timothy Prendiville, Supervisor, Chief (SR-6J)
Superfund Contract Management Section

TO: Data User: CH2M Hill
Email address: dshekosk@CH2M.com

LEVEL 3 DATA VALIDATION

We have reviewed the data for the following case:

SITE NAME: Penta Wood Products (WI)

CASE NUMBER: 13CB02 **SDG NUMBER:** 13CB02-14 INO

Number and Type of Samples: 6 water (metals)

Sample Numbers: 13CB02-14 thru -19

Laboratory: TestAmerica North Canton **Hrs. for Review:** _____

Following are our findings:

CC: Howard Pham
Region 5 TPO
Mail Code: SA-5J

Narrative

Six (6) water samples, numbered 13CB02-14 thru -19, were collected May 21-22, 2013. The lab received the samples May 23-24, 2013 in good condition. All sample results are reported to the MDL. The samples were analyzed for dissolved metals using SW846 6020 (ICP-MS) analysis procedures. Only arsenic, calcium, copper, iron, magnesium, manganese and zinc are reported for metals.

<u>Sample ID</u>	<u>Lab ID</u>	<u>Station Location</u>	<u>Sample Date/Time</u>
13CB02-14	240-24861-3	PWP-MW12	5-22-13/13:20
13CB02-15	240-24861-4	PWP-MW12FR	5-22-13/13:21
13CB02-16	240-24829-1	PWP-MW15	5-21-13/15:45
13CB02-17	240-24861-5	PWP-MW19	5-22-13/13:45
13CB02-18	240-24861-1	PWP-MW22	5-22-13/10:40
13CB02-19	240-24861-2	PWP-MW26	5-22-13/11:30

Evidential Audit: All documents provided are copies. No location is noted for the originals. No DC-1 or DC-2 sheets or sample tags were provided. All sample results are reported with 2 significant figures.

Laboratory matrix spike recovery limits vary by element. All are wider than SAS required limits. Only Ca for the matrix spike was outside SAS recovery limits; however, the sample concentration is greater than 4X the spike added and that spike is considered invalid. Section 8(d) of the SAS requires that the reporting limit (RL) must be shown to have been met before any samples are analyzed. Only Cu, Mn and Zn met this requirement.

ICP-MS: Some results (i.e. MS, MSD and LCS) were greater than the calibration range; however, Method 6020 allows the use of linear range and all reported results are within the reported linear range.

2 analytical runs were performed on different instruments. Sample results for 13CB02-16 are reported from instrument I10, all other results are reported from instrument I11. On Form 9-IN (MDL), the masses listed are 43Ca, 65Cu and 25Mg on the I10 instrument (used for sample 13CB02-16 ONLY). The lab reported 24Mg, 44Ca, and 63Cu for that instrument. The MDL values listed on Form 9-IN were used to evaluate the data. Sample results for 13CB02-16 Ca, Cu and Mg are estimated. Internal standard associations are included for the I10 instrument but not the I11 instrument.

For As, the element was present in the preparation blank MB 240-87271 (sample 13CB02-16 only). The level was such that it did not affect the sample result. As was present in one of the CCBs in the other analytical run. Sample results for 13BC02-14, -15 and -17 thru -19 are estimated "J.+" due to possible contamination. The As sample results for all samples is between the MDL and SAS required reporting limit; they are estimated "J." The laboratory RL did not meet the SAS required limit.

For Ca, the laboratory used a reporting limit of 1000 mg/L, which is 10X higher than the SAS

Reviewed by: Stephen Connet

Date: July 30, 2013

required RL. All reported results are greater than the laboratory RL. Both preparation blanks are greater than the SAS required RL but less than the laboratory RL. No sample results are affected by the preparation blank levels.

For Cu, the LCS sample result was not present on the raw data for LCS 240-87271. The LCS result for Cu was taken from Form 7A-IN and is considered estimated. Cu was detected in both preparation blanks. Sample results for 13CB02-14 thru -16, -18 and -19 are estimated "J+" due to possible contamination. All the sample results for are between the MDL and the SAS required RL; they are considered estimated "J."

For Fe, the laboratory RL was greater than the SAS required RL. All Fe results were below the laboratory MDL. The raw instrument value for 13CB02-15 is negative where the absolute value is greater than the SAS required RL. It is estimated "UJ."

For Mg, the laboratory used a reporting limit of 1000 mg/L, which is 10X higher than the SAS required RL. All reported results are greater than the laboratory RL.

For Mn, the element was detected in preparation blank MB240-87454. Sample results for 13CB02-18 and -19 are estimated "J+" due to possible contamination.

For Zn, the element was present in the preparation blank MB 240-87271 (sample 13CB02-16 only) at a level above the SAS required RL and was also detected in the other preparation blank between the MDL and SAS required RL. The sample results for 13CB02-14 thru -18 are estimated "J+" due to possible contamination. Those results are also between the MDL and SAS required RL and are estimated "J."

Other comments: Samples 13CB02-14 and -15 were identified as field duplicates and show good correlation. Duplicates were evaluated according to the same criteria as laboratory duplicates. No samples were identified as field/equipment blanks or field duplicates. No sample results are qualified for field duplicates.

Data Qualifier Sheet

<u>Qualifiers</u>	<u>Data Qualifier Definitions</u>
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting Quality Control (QC) criteria. The analyte may or may not be present in the sample.
UJ	The analyte was analyzed for, but not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

Regional Transmittal Form

**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION V**

DATE: 7/24/13

SUBJECT: Review of Data
Received for review on 7/09/13

FROM: Timothy Prendiville, Supervisor, Chief (SR-6J)
Superfund Contract Management Section

TO: Data User: CH2M Hill
Email address: dshekosk@CH2M.com

LEVEL 4 DATA VALIDATION

We have reviewed the data for the following case:

SITE NAME: Penta Wood Products (WI)

CASE NUMBER: 13CB02 **SDG NUMBER:** 13CB02-02WC

Number and Type of Samples: 2 waters (WC)

Sample Numbers: 13CB02-02 and -03

Laboratory: TestAmerica North Canton **Hrs. for Review:** _____

Following are our findings:

CC: Howard Pham
Region 5 TPO
Mail Code: SA-5J

Narrative

Two (2) water samples, numbered 13CB02-02 and -03, were collected on May 21, 2013. The lab received the samples on May 23, 2013 in good condition. All sample results are reported to the MDL. The samples were analyzed for alkalinity using SM 2320B, chloride, nitrate, and sulfate using EPA 300.0, sulfide using SM 4500 S2 F and total organic carbon using SW-846 9060.

Sample ID	Lab ID	Station Location	Sample Date/Time
13CB02-02	240-24835-13	PWP-EB01	5-21-13/09:40
13CB02-03	240-24835-12	PWP-FB01	5-21-13/09:30

Evidential Audit: All documents provided are copies. No location is noted for the originals. No DC-1 or DC-2 sheets or sample tags were provided. The SAS required a laboratory duplicate; however, the laboratory performed a MS/MSD which is acceptable. Duplicates and matrix spikes were required by all the SAS; however, CLP policy is to not perform batch QC on field or equipment blanks. The samples were not qualified for batch QC not being performed. The chain of custody for 13CB02-02 was not provided.

Alkalinity: The SAS requires that the lowest calibration point be run at 5.0 mg/L. However, the alkalinity method does not require a calibration curve. The sample results are not qualified for the absence of this standard requirement. Samples 13CB02-02 and -03 are between the MDL and RL. The results are considered estimated "J".

Chloride: The analysis is acceptable.

Nitrate: All samples were analyzed outside the 48 hour method holding time. The sample results are estimated "UJ" due to analysis being performed outside the method holding time.

Sulfate: The analysis is acceptable.

Sulfide: The SAS requires that the lowest calibration point be run at 1.0 mg/L. However, the sulfide method does not require a calibration curve. The sample results are not qualified for the absence of this standard requirement.

TOC: The analysis is acceptable.

Other comments: Sample 13CB02-02 and 13CB02-03 are the field/equipment blanks. Alkalinity was detected. Samples are unaffected due to qualification already applied from the instrument blanks. No samples were identified as field duplicates.

Data Qualifier Sheet

<u>Qualifiers</u>	<u>Data Qualifier Definitions</u>
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting Quality Control (QC) criteria. The analyte may or may not be present in the sample.
UJ	The analyte was analyzed for, but not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

Regional Transmittal Form

**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION V**

DATE: 7/24/2013

SUBJECT: Review of Data
Received for review on 7/9/2013

FROM: Timothy Prendiville, Supervisor, Chief (SR-6J)
Superfund Contract Management Section

TO: Data User: CH2M Hill
Email address: dshekosk@CH2M.com

LEVEL 3 DATA VALIDATION

We have reviewed the data for the following case:

SITE NAME: Penta Wood Products (WI)

CASE NUMBER: 13CB02 **SDG NUMBER:** 13CB02-02 MET

Number and Type of Samples: 2 waters (metals)

Sample Numbers: 13CB02-02 and 13CB02-03

Laboratory: TestAmerica North Canton **Hrs. for Review:** _____

Following are our findings:

CC: Howard Pham
Region 5 TPO
Mail Code: SA-5J

Narrative

Two (2) water samples, numbered 13CB02-02 and 13CB02-03, were collected on May 21, 2013. The lab received the samples on May 23, 2012 in good condition. All sample results are reported to the MDL. The samples were analyzed for metals using SW846 6020 (ICP-MS) analysis procedure. Only dissolved arsenic, calcium, copper, iron, magnesium, manganese and zinc are reported for metals.

<u>Sample ID</u>	<u>Lab ID</u>	<u>Station Location</u>	<u>Sample Date/Time</u>
13CB02-02	240-24835-13EB	PWP-EB01	5/21/2013 9:40
13CB02-03	240-24835-12FB	PWP-FB01	5/21/2013 9:30

Evidential Audit: All documents provided are copies. No location is noted for the originals. No DC-1 or DC-2 sheets or sample tags were provided. All sample results are reported with 2 significant figures. No COC was provided for 13CB02-02.

ICP-MS: Some results for the LCS sample were greater than the calibration range; however, Method 6020 allows the use of linear range and all reported results are within the reported linear range. No MS/MSD (required in SAS) were performed since MS/MSD are not required when samples are FB/EB. No sample results are qualified for this.

On Form 9-IN (MDL), the masses for Magnesium, Calcium, and Copper are listed as 25, 43, and 65, respectively. The lab used Mg(24), Ca(44), and Cu(63) for sample results. The MDL values listed on Form 9-IN were used to evaluate the data. All results for these elements are estimated.

For As, the sample results for 13CB02-02 and -03 are between the MDL and the SAS required RL; they are considered estimated "J". Additionally, samples 13CB02-02 and -03 are affected by a preparation blank greater than the MDL indicating possible contamination. These results are estimated "J+."

For Ca, the laboratory used a reporting limit of 1000 mg/L, which is 10X higher than the SAS required RL. The reported results are less than the SAS required RL. The preparation blank results are greater than 2X the SAS required RL. The sample results for 13CB02-02 and -03 are between the MDL and the SAS required RL; they are considered estimated "J". Additionally, samples 13CB02-02 and -03 are affected by a preparation blank greater than the MDL indicating possible contamination. These results are estimated "J+."

For Cu, the LCS sample result was not present on the raw data. The LCS result for Cu was taken from Form 7A-IN and is considered estimated. The sample results for 13CB02-02 and -03 are between the MDL and the SAS required RL; they are considered estimated "J". Additionally, samples 13CB02-02 and -03 are affected by a preparation blank greater than the MDL indicating possible contamination. These results are estimated "J+."

For Mg, the laboratory used a reporting limit of 1000 mg/L, which is 10X higher than the SAS required RL. The reported results are less than the SAS required RL. The sample result for 13CB02-03 is between the MDL and the SAS required RL; it is considered estimated "J". Additionally, samples 13CB02-02 and -03 are affected by a preparation blank greater than the MDL indicating

Reviewed by: Lauren Edinburg

Date: July 24, 2012

possible contamination. These results are estimated “J+.”

For Mn, the sample results for 13CB02-02 and -03 are between the MDL and the SAS required RL; they are considered estimated “J”.

For Zn, the preparation blank results are greater than 2X the SAS required RL. The sample results for 13CB02-02 and -03 are between the MDL and the SAS required RL; they are considered estimated “J”. Additionally, samples 13CB02-02 and -03 are affected by a preparation blank greater than the MDL indicating possible contamination. These results are estimated “J+.”

Other comments: Samples 13CB02-02 and 13CB02-03 are identified as field/equipment blanks.

Data Qualifier Sheet

<u>Qualifiers</u>	<u>Data Qualifier Definitions</u>
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting Quality Control (QC) criteria. The analyte may or may not be present in the sample.
UJ	The analyte was analyzed for, but not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION V
SUPERFUND DIVISION

DATE:

SUBJECT: Review of Region V SAS Data
Received for Review on: 19 November 2013

FROM: Timothy Prendiville, Supervisor (SR-6J)
Superfund Contract Management Section

TO: Data User: Ch2mHill
Dave.shekosk@CH2M.com

Level 4 Manual Data Validation

We have reviewed the data for the following case:

SITE Name: Penta Wood Products (WI)

SAS Number: 14CP02 Job Number: 240-30092-1 SDG Number: 14CP02-01Meth

Number and Type of Samples: 5 Waters (Methane)

Sample Numbers: 14CP02-01, 14CP02-04, 14CP02-05, 14CP02-06, 14CP02-18

Laboratory: TestAmerica – North Canton Hrs for Review: _____

Following are our findings:

CC: Howard Pham
Region 5 TPO
Mail Code: SRT-5J

Below is a summary of the out-of-control audits and the possible effects on the data for this case:

Five (5) preserved water samples were shipped to TestAmerica Laboratories located in North Canton, OH. The samples were collected October 9, 2013. All samples were received October 11, 2013 intact with cooler temperatures in the preferred range of 2 - 6°C. The samples were analyzed for Methane by Method RSK-175 (Dissolved Gas Analysis in Water Sample Using a GC Headspace Equilibration Technique) and the SAS contract for samples collected between April 2011 and December 2014. All field samples are identified in the following table:

EPA Sample	Lab ID	Station Location	Collection Date	Time	Receipt Date
14CP02-01	240-30092-3	PWP-MW02	10-09-13	15:30	10-11-13
14CP02-04	240-30092-4	PWP-MW06S	10-09-13	16:30	10-11-13
14CP02-05	240-30092-1	PWP-MW07	10-09-13	15:30	10-11-13
14CP02-06	240-30092-2	PWP-MW09	10-09-13	14:00	10-11-13
14CP02-18	240-30092-5	PWP-MW28	10-09-13	16:30	10-11-13

Samples MB 240-105536/16 is the method blank. Sample LCS 240-105536/15 is the laboratory control samples. No LCSD analyses were conducted.

No sample from this sample delivery group (SDG) was designated for MS/MSD analyses. No MS/MSD analyses were conducted for this sample delivery group.

No samples were identified as field blanks or field duplicates.

All samples were analyzed less than fourteen days (14) from sample collection; therefore, the results are acceptable.

1. HOLDING TIME

Five (5) preserved water samples were shipped to TestAmerica Laboratories located in North Canton, OH. The samples were collected October 9, 2013. All samples were received October 11, 2013 intact with cooler temperatures in the preferred range of 2 - 6°C. The samples were analyzed for Methane by Method RSK-175 (Dissolved Gas Analysis in Water Sample Using a GC Headspace Equilibration Technique) and the SAS contract for samples collected between April 2011 and December 2014.

All samples were analyzed less than fourteen days (14) from sample collection; therefore, the results are acceptable.

2. GC/MS TUNING AND GC INSTRUMENT PERFORMANCE

The laboratory used a GC/FID instrument. It appeared that it was properly optimized for resolution of the target analyte and sensitivity. All samples were analyzed within twenty-four (24) hours of the instrument performance check samples. According to Table II of the SAS contract, a continuing calibration be conducted either every 12 hours or after 10 field sample analyses. A review of the analytical sequence showed that all samples were analyzed within 12 hours of the daily CCV; therefore, the sample results does not require any qualifications.

3. CALIBRATION

A 9-pt Initial calibration was completed on January 18, 2013 and evaluated for a coefficient of correlation ≥ 0.995 . The %RSD was less than 30%. Calibration curve appears to span 0.25 to 1500 ug/L. No true values were found in the deliverables.

One 1-pt continuing calibration was conducted on October 15, 2013. The percent difference (%D) for methane was less than 30%; therefore, the results did not require any qualifications.

4. BLANKS

Sample MB 240-105536/16 is the method blank. Method blank MB 240-105536/16 contains methane at 0.135 $\mu\text{g/L}$. The following samples, 14CP02-01, 14CP02-04, 14CP02-06, and 14CP02-18, reported the analyte at concentrations below the SAS reporting limits. The presence of the analytes were qualified "U" as resulting from method blank contamination and the reported concentrations were elevated to the SAS reporting limits.

5. SYSTEM MONITORING COMPOUND AND SURROGATE RECOVERY

1,1,1-Trifluoroethane (TFE) was utilized as the surrogate for this analysis. All percent recoveries were within the SAS QC range, 10 - 168%; therefore, the results did not require any qualifications.

6. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

No sample from this sample delivery group (SDG) was designated for MS/MSD analyses. No MS/MSD analyses were conducted for this sample delivery group.

6B FOR LABORATORY CONTROL SAMPLES:

Sample LCS 240-105536/15 is the laboratory control sample. No LCSD analyses were conducted. The percent recovery of methane was within the SAS QC limits of 75 – 114%; therefore, the results did not require any qualifications.

7. FIELD BLANK AND FIELD DUPLICATE

No samples were identified as field blanks or field duplicates.

8. INTERNAL STANDARDS

Not required for this method.

9. COMPOUND IDENTIFICATION

Target analytes were properly identified and quantitated.

10. COMPOUND QUANTITATION AND REPORTED DETECTION LIMITS

The samples were waters and dilutions were not run. All target RLs were properly reported. All target compound quantitations were properly reported and met the SAS required reporting limit (RL) of 2.0 µg/L. All concentrations detected below the laboratory's method detection limit (mdl) of 0.070 µg/L are qualified as non-detects. All concentrations detected between the mdl (0.070 µg/L) and the SAS reporting limit (2.0 µg/L) are qualified "J" as estimated.

11. SYSTEM PERFORMANCE

The FID baseline appears acceptable.

12. ADDITIONAL INFORMATION

All SAS criteria were met with the following exceptions and highlights:

- 1) The 14-day holding time to sample analysis identified in Section 6 of the SAS contract was met. The Laboratory's Case Narrative dated October 25, 2013 indicates that the lab did meet the 21 calendar day results turnaround time identified in Section 6.

- 2) All samples appear to have been analyzed by a method ‘equivalent’ to RSK 175 and not RSK 175 itself. Raw data did not identify responses as ppmV, did not identify volume of headspace, temperature of the samples, etc. The reviewer was unable to find a Henry’s Law constant for the surrogate 1,1,1-Trifluoroethane. The reviewer was unable to determine the appropriate density values as no temperature was provided.
- 3) The results were calculated following the calculations used for Pesticide analyses.
- 4) All requests identified in Section 8 and 9 of the SAS contract appear to have been satisfied. No copies of sample tags were submitted with this sample delivery group.
- 5) All QC Requirements identified in Table II of the SAS contract were satisfied with the exceptions that no LCSD, MS, and MSD analyses were conducted.

All sample results are summarized in the accompanying Excel spreadsheet.

Data Qualifier Sheet

For the purpose of defining the flagging nomenclature utilized in this document, the following code letters and associated definitions are provided:

VALUE – if the result is a value greater than or equal to the Contract Required Quantitation Limit (CRQL).

- U Indicates that the compound was analyzed for, but not detected. The sample quantitation limit corrected for dilution and percent moisture is reported.
- J Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of a compound but the result is less than the sample quantitation limit, but greater than zero. The flag is also used to indicate a reported result having an associated QC problem.
- UJ The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the action limit of quantitation necessary to accurately and precisely measure the analyte in the sample.
- N Indicates presumptive evidence of a compound. This flag is only used for a tentatively identified compound (TIC), where the identification is based on a mass spectral library search.
- R Indicates the data are unusable. (The compound may or may not be present.)
- P Indicates a pesticide/Aroclor target analyte when there is greater than 25% difference for the detect concentrations between the two GC columns. The lower of the two results is reported.
- C Indicates pesticide results that have been confirmed by GC/MS.
- B Indicates the analyte is detected in the associated method blank as well as the sample.
- E Indicates compounds whose concentrations exceeded the calibration range of the instrument.
- D Indicates an identified compound in an analysis has been diluted. This flag alert the data user to any difference between the concentrations reported in the two analyses.
- A Indicates TICs that are suspected to be aldol condensation products.
- G Indicates the TCLP Matrix Spike Recovery was greater than the upper limit of the analytical method.
- L Indicates the TCLP Matrix Spike Recovery was less than the lower limit of the analytical method.
- T Indicates the analyte is found in the associated TCLP extraction blank as well as in the sample.

X, Y, Z are reserved for laboratory defined flags.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION V
SUPERFUND DIVISION

DATE:

SUBJECT: Review of Region V SAS Data
Received for Review on: 19 November 2013

FROM: Timothy Prendiville, Supervisor (SR-6J)
Superfund Contract Management Section

TO: Data User: Ch2mHill
Dave.shekosk@CH2M.com

Level 4 Manual Data Validation

We have reviewed the data for the following case:

SITE Name: Penta Wood Products (WI)

SAS Number: 14CP02 Job Number: 240-30200-1 SDG Number: 14CP02-03Meth

Number and Type of Samples: 4 Waters (Methane)

Sample Numbers: 14CP02-03, 14CP02-07, 14CP02-08, 14CP02-15

Laboratory: TestAmerica – North Canton Hrs for Review: _____

Following are our findings:

CC: Howard Pham
Region 5 TPO
Mail Code: SRT-5J

Below is a summary of the out-of-control audits and the possible effects on the data for this case:

Four (4) preserved water samples were shipped to TestAmerica Laboratories located in North Canton, OH. The samples were collected on October 10, 2013. All samples were received on October 12, 2013 intact with cooler temperatures in the preferred range of 2 - 6°C. The samples were analyzed for Methane by Method RSK-175 (Dissolved Gas Analysis in Water Sample Using a GC Headspace Equilibration Technique) and the SAS contract for samples collected between April 2011 and December 2014. All field samples are identified in the following table:

EPA Sample	Lab ID	Station Location	Collection		Receipt
			Date	Time	Date
14CP02-03	240-30200-1	PWP-MW05	10-10-13	11:50	10-12-13
14CP02-07	240-30200-2	PWP-MW10	10-10-13	10:20	10-12-13
14CP02-08	240-30200-3	PWP-MW10FR	10-10-13	10:20	10-12-13
14CP02-15	240-30200-4	PWP-MW19	10-10-13	13:30	10-12-13

Samples MB 240-105787/5 and MB 240-105787/16 are the method blanks. Sample LCS 240-105787/15 is the laboratory control samples. No LCSD analyses were conducted.

No sample from this sample delivery group (SDG) was designated for MS/MSD analyses. No MS/MSD analyses were conducted for this sample delivery group.

No samples were identified as field blanks. Sample 14CP02-08 was identified as a field replicate of sample 14CP02-07.

All samples were analyzed less than fourteen days (14) from sample collection; therefore, the results are acceptable.

1. HOLDING TIME

Four (4) preserved water samples were shipped to TestAmerica Laboratories located in North Canton, OH. The samples were collected on October 10, 2013. All samples were received on October 12, 2013 intact with cooler temperatures in the preferred range of 2 - 6°C. The samples were analyzed for Methane by Method RSK-175 (Dissolved Gas Analysis in Water Sample Using a GC Headspace Equilibration Technique) and the SAS contract for samples collected between April 2011 and December 2014.

All samples were analyzed less than fourteen days (14) from sample collection; therefore, the results are acceptable.

2. GC/MS TUNING AND GC INSTRUMENT PERFORMANCE

The laboratory used a GC/FID instrument. It appeared that it was properly optimized for resolution of the target analyte and sensitivity. All samples were analyzed within twenty-four (24) hours of the instrument performance check samples. According to Table II of the SAS contract, a continuing calibration be conducted either every 12 hours or after 10 field sample analyses. A review of the analytical sequence showed that all samples were analyzed within 12 hours of the daily CCV; therefore, the sample results do not require any qualifications.

3. CALIBRATION

A 9-pt Initial calibration was completed on January 18, 2013 and evaluated for a coefficient of correlation ≥ 0.995 . The %RSD was less than 30%. Calibration curve appears to span 0.25 to 1500 ug/L. No true values were found in the deliverables.

One 1-pt continuing calibration was conducted on October 16, 2013. The percent difference (%D) for Methane was less than 30%; therefore, the results did not require any qualifications.

4. BLANKS

Samples MB 240-105787/5 and MB 240-105787/16 are the method blanks. Methane was detected in MB 240-105787/5 but did not have any samples qualified for this discrepancy. No methane was detected in MB 240-105787/16; therefore, the sample results did not require any qualifications. The GC volatile method blank summaries (FORM IV) list the samples associated with each blank.

5. SYSTEM MONITORING COMPOUND AND SURROGATE RECOVERY

1,1,1-Trifluoroethane (TFE) was utilized as the surrogate for this analysis. All percent recoveries were within the SAS QC range, 10 - 168%; therefore, the results did not require any qualifications.

SAS Number: 14CP02
 Site Name: Penta Wood Products (WI)

SDG Number: 14CP02-03Meth
 Laboratory: TestAmerica – North Canton

6. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

No sample from this sample delivery group (SDG) was designated for MS/MSD analyses. No MS/MSD analyses were conducted for this sample delivery group.

6B FOR LABORATORY CONTROL SAMPLES:

Sample LCS 240-105787/15 is the laboratory control samples. No LCSD analyses were conducted. The percent recovery of methane was within the SAS QC limits of 75 – 114%; therefore, the results did not require any qualifications.

7. FIELD BLANK AND FIELD DUPLICATE

No samples were identified as a field blank. Sample 14CP02-08 was identified as a field replicate of sample 14CP02-07. The RPD for the replicate pairs are presented in the following table:

	14CP02-07	14CP02-08	RPD
	µg/L	µg/L	%
Methane	27	140	135

Results are not qualified based upon the results of the field duplicates.

8. INTERNAL STANDARDS

Not required for this method.

9. COMPOUND IDENTIFICATION

Target analytes were properly identified and quantitated.

10. COMPOUND QUANTITATION AND REPORTED DETECTION LIMITS

The samples were waters and dilutions were not run. All target RLs were properly reported. All target compound quantitations were properly reported and met the SAS required reporting limit (RL) of 2.0 µg/L. All concentrations detected below the laboratory's method detection limit (mdl) of 0.070 µg/L are qualified as non-detects. All concentrations detected between the mdl (0.070 µg/L) and the SAS reporting limit (2.0 µg/L) are qualified as estimated, "J".

11. SYSTEM PERFORMANCE

The FID baseline appears acceptable.

12. ADDITIONAL INFORMATION

All SAS criteria were met with the following exceptions and highlights:

- 1) The 14-day holding time to sample analysis identified in Section 6 of the SAS contract was met. The Laboratory's Case Narrative dated October 28, 2013 indicates that the lab did meet the 21 calendar day results turnaround time identified in Section 6.
- 2) All samples appear to have been analyzed by a method 'equivalent' to RSK 175 and not RSK 175 itself. Raw data did not identify responses as ppmV, did not identify volume of headspace, temperature of the samples, etc. The reviewer was unable to find a Henry's Law constant for the surrogate 1,1,1-Trifluoroethane. The reviewer was unable to determine the appropriate density values as no temperature was provided.
- 3) The results were calculated following the calculations used for Pesticide analyses.
- 4) All requests identified in Section 8 and 9 of the SAS contract appear to have been satisfied. No copies of sample tags were submitted with this sample delivery group.
- 5) All QC Requirements identified in Table II of the SAS contract were satisfied with the exceptions that no LCSD, MS, and MSD analyses were conducted.

All sample results are summarized in the accompanying Excel spreadsheet.

Data Qualifier Sheet

For the purpose of defining the flagging nomenclature utilized in this document, the following code letters and associated definitions are provided:

VALUE – if the result is a value greater than or equal to the Contract Required Quantitation Limit (CRQL).

- U Indicates that the compound was analyzed for, but not detected. The sample quantitation limit corrected for dilution and percent moisture is reported.
- J Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of a compound but the result is less than the sample quantitation limit, but greater than zero. The flag is also used to indicate a reported result having an associated QC problem.
- UJ The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the action limit of quantitation necessary to accurately and precisely measure the analyte in the sample.
- N Indicates presumptive evidence of a compound. This flag is only used for a tentatively identified compound (TIC), where the identification is based on a mass spectral library search.
- R Indicates the data are unusable. (The compound may or may not be present.)
- P Indicates a pesticide/Aroclor target analyte when there is greater than 25% difference for the detect concentrations between the two GC columns. The lower of the two results is reported.
- C Indicates pesticide results that have been confirmed by GC/MS.
- B Indicates the analyte is detected in the associated method blank as well as the sample.
- E Indicates compounds whose concentrations exceeded the calibration range of the instrument.
- D Indicates an identified compound in an analysis has been diluted. This flag alert the data user to any difference between the concentrations reported in the two analyses.
- A Indicates TICs that are suspected to be aldol condensation products.
- G Indicates the TCLP Matrix Spike Recovery was greater than the upper limit of the analytical method.
- L Indicates the TCLP Matrix Spike Recovery was less than the lower limit of the analytical method.
- T Indicates the analyte is found in the associated TCLP extraction blank as well as in the sample.

X, Y, Z are reserved for laboratory defined flags.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION V
SUPERFUND DIVISION

DATE:

SUBJECT: Review of Data
Received for Review on: 19 November 2013

FROM: Timothy Prendiville, Supervisor (**SR-6J**)
Superfund Contract Management Section

TO: Data User: Ch2mHill
Dave.shekosk@CH2M.com

Level 4 Manual Data Validation

We have reviewed the data for the following case:

SITE Name: Penta Wood Products Site (WI)

SAS Client No.: 14CP02 Job Number: 240-30072-1 SDG Number: 14CP02-19Meth

Number and Type of Samples: 2 Waters (Methane)

Sample Numbers: 14CP02-19, 14CP02-20

Laboratory: Test America – North Canton

Hrs for Review:

Following are our findings:

CC: Howard Pham
Region 5 TPO
Mail Code: **SA-5J**

Below is a summary of the out-of-control audits and the possible effects on the data for this case:

Two (2) preserved water samples, 14CP02-19 and 14CP02-20, were shipped to TestAmerica Laboratories located in North Canton, OH. The samples were collected on October 8, 2013 and received on October 10, 2013 intact and within the preferred shipping temperature range of 2 - 6°C. The samples were analyzed for Methane by Method RSK-175 (Dissolved Gas Analysis in Water Sample Using a GC Headspace Equilibration Technique) and the SAS contract for samples collected between April 2011 and December 2014. All field samples are identified in the following table:

EPA Sample	Lab ID	Station Location	Collection		Received
			Date	Time	Date
14CP02-19	240-30072-9	PWP-EB01	10-08-13	14:50	10-10-13
14CP02-20	240-30072-8	PWP-FB01	10-08-13	14:50	10-10-13

No sample from this sample delivery group (SDG) was designated for MS/MSD analyses. No MS/MSD analyses were conducted for this sample delivery group.

MB 240-105210/25 is the method blank.

LCS 240-105210/24 is the laboratory control sample. No LCSD analysis was conducted for this sample delivery group.

Sample 14CP02-19 was identified as an equipment blank. Sample 14CP02-20 was identified as a field blank.

No samples were identified as field duplicates.

All samples were analyzed less than fourteen (14) days from sample collection; therefore, the results are acceptable.

1. HOLDING TIME

Two (2) preserved water samples, 14CP02-19 and 14CP02-20, were shipped to TestAmerica Laboratories located in North Canton, OH. The samples were collected on October 8, 2013 and received on October 10, 2013 intact and within the preferred shipping temperature range of 2 - 6°C. The samples were analyzed for Methane by Method RSK-175 (Dissolved Gas Analysis in Water Sample Using a GC Headspace Equilibration Technique) and the SAS contract for samples collected between April 2011 and December 2014.

All samples were analyzed less than fourteen (14) days from sample collection; therefore, the results are acceptable.

2. GC/MS TUNING AND GC INSTRUMENT PERFORMANCE

The laboratory used a GC/FID instrument. It appeared that it was properly optimized for resolution of the target analyte and sensitivity. All samples were analyzed within twenty-four (24) hours of the instrument performance check samples. According to Table II of the SAS contract, a continuing calibration be conducted either every 12 hours or after 10 field sample analyses. A review of the analytical sequence showed that all samples were analyzed within 12 hours of the daily CCV; therefore, the sample results do not require any qualifications.

3. CALIBRATION

A 9-pt Initial calibration was completed on January 18, 2013 and evaluated for a coefficient of correlation ≥ 0.995 . The %RSD was less than 30%. Calibration curve appears to span 0.25 to 1500 ug/L. No true values were found in the deliverables.

Two 1-pt continuing calibrations were conducted on October 11 and October 12, 2013. The %Ds for methane were less than 30%; therefore, the sample results do not require any qualifications.

4. BLANKS

MB 240-105210/25 is the method blank. No methane was detected in the blank; therefore, the results did not require any qualifications.

5. SYSTEM MONITORING COMPOUND AND SURROGATE RECOVERY

1,1,1-Trifluoroethane (TFE) was utilized as the surrogate for this analysis. All percent recoveries were within the SAS QC range, 10 - 168%; therefore, the results did not require any qualifications.

6. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

No sample from this sample delivery group (SDG) was designated for MS/MSD analyses. No MS/MSD analyses were conducted for this sample delivery group.

6B. LABORATORY CONTROL SAMPLES

LCS 240-105210/24 is the laboratory control sample. No LCSD analysis was conducted for this sample delivery group. The percent recoveries of methane were within the SAS QC limits of 75 – 114%; therefore, the results did not require any qualifications.

7. FIELD BLANK AND FIELD DUPLICATE

Sample 14CP02-19 was identified as an equipment blank. Sample 14CP02-20 was identified as a field blank. The equipment and field blanks contained methane above the MDL but below the reporting limit. Since the equipment and field blanks were the only samples, sample results do not require any qualifications.

No samples were identified as field duplicates.

8. INTERNAL STANDARDS

Not required for this method.

9. COMPOUND IDENTIFICATION

Target analytes were properly identified and quantitated.

10. COMPOUND QUANTITATION AND REPORTED DETECTION LIMITS

The samples were waters and dilutions were not run. All target RLs were properly reported. All target compound quantitations were properly reported and met the SAS required reporting limit (RL) of 2.0 µg/L. All concentrations detected below the laboratory's method detection limit (mdl) of 0.070 µg/L are qualified as non-detects. All concentrations detected between the mdl (0.070 µg/L) and the SAS reporting limit (2.0 µg/L) are qualified as estimated, "J".

11. SYSTEM PERFORMANCE

The FID baseline appears acceptable.

12. ADDITIONAL INFORMATION

All SAS criteria were met with the following exceptions and highlights:

- 1) The 14-day holding time to sample analysis identified in Section 6 of the SAS contract was met. The Laboratory's Case Narrative was dated October 24, 2013 indicates that the lab did meet the 21 calendar day results turnaround time identified in Section 6.
- 2) All samples appear to have been analyzed by a method 'equivalent' to RSK 175 and not RSK 175 itself. Raw data did not identify responses as ppmV, did not identify volume of headspace, temperature of the samples, etc. The reviewer was unable to find a Henry's Law constant for the surrogate 1,1,1-Trifluoroethane. The reviewer was unable to determine the appropriate density values as no temperature was provided.
- 3) The results were calculated following the calculations used for Pesticide analyses.
- 4) All requests identified in Section 8 and 9 of the SAS contract appear to have been satisfied. No copies of sample tags were submitted with this sample delivery group.
- 5) All QC Requirements identified in Table II of the SAS contract were satisfied with the exceptions that no LCSD, MS, and MSD analyses were conducted.

All sample results are summarized in the accompanying Excel spreadsheet.

Data Qualifier Sheet

For the purpose of defining the flagging nomenclature utilized in this document, the following code letters and associated definitions are provided:

VALUE – if the result is a value greater than or equal to the Contract Required Quantitation Limit (CRQL).

- U Indicates that the compound was analyzed for, but not detected. The sample quantitation limit corrected for dilution and percent moisture is reported.
- J Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of a compound but the result is less than the sample quantitation limit, but greater than zero. The flag is also used to indicate a reported result having an associated QC problem.
- UJ The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the action limit of quantitation necessary to accurately and precisely measure the analyte in the sample.
- N Indicates presumptive evidence of a compound. This flag is only used for a tentatively identified compound (TIC), where the identification is based on a mass spectral library search.
- R Indicates the data are unusable. (The compound may or may not be present.)
- P Indicates a pesticide/Aroclor target analyte when there is greater than 25% difference for the detect concentrations between the two GC columns. The lower of the two results is reported.
- C Indicates pesticide results that have been confirmed by GC/MS.
- B Indicates the analyte is detected in the associated method blank as well as the sample.
- E Indicates compounds whose concentrations exceeded the calibration range of the instrument.
- D Indicates an identified compound in an analysis has been diluted. This flag alert the data user to any difference between the concentrations reported in the two analyses.
- A Indicates TICs that are suspected to be aldol condensation products.
- G Indicates the TCLP Matrix Spike Recovery was greater than the upper limit of the analytical method.
- L Indicates the TCLP Matrix Spike Recovery was less than the lower limit of the analytical method.
- T Indicates the analyte is found in the associated TCLP extraction blank as well as in the sample.

X, Y, Z are reserved for laboratory defined flags.

Regional Transmittal Form

**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION V**

DATE: 01/14/2014

SUBJECT: Review of Data
Received for Review on: 11/19/13

FROM: Timothy Prendiville, Supervisor, Chief (SRT-6J)
Superfund Contract Management Section

TO: Data User: CH2M Hill
Email address: dshekosk@CH2M.com

LEVEL 4 DATA VALIDATION

We have reviewed the data for the following case:

Site Name: Penta Wood Products Site (WI)

Case Number: 14CP02 **SDG Number:** 14CP02-01 GC

Number and Type of Samples: 5 waters (Alkalinity, Anions, Sulfide, TOC)

Sample Numbers: 14CP02-01, 14CP02-04, 14CP02-05, 14CP02-06, 14CP02-18

Laboratory: Test America North Canton **Hrs for Review:** _____

Following are our findings:

CC: Howard Pham
Region 5 TPO
Mail Code: SA-5J

Case: 14CP02
Site: Penta Wood Products Site (WI)

SDG: 14CP02-01 GC
Laboratory: Test America North Canton

Narrative

Five (5) water samples, numbered 14CP02-01, 14CP02-04, 14CP02-05, 14CP02-06, and 14CP02-18, were collected on October 9, 2013. The lab received the samples on October 11, 2013. All sample results are reported to the MDL. The samples were analyzed for alkalinity using SM 2320B, anions (chloride, nitrate, and sulfate) using SM 300.0, sulfide using SM 4500 and total organic carbon using SW-846 9060.

Sample ID	Lab ID	Station Location	Sample Date/Time
14CP02-01	240-30092-3	PWP-MW02	10-09-13/15:30
14CP02-04	240-30092-4	PWP-MW06S	10-09-13/16:30
14CP02-05	240-30092-1	PWP-MW07	10-09-13/15:30
14CP02-06	240-30092-2	PWP-MW09	10-09-13/14:00
14CP02-18	240-30092-5	PWP-MW28	10-09-13/16:30

Evidential Audit: All documents provided are copies. No location is noted for the originals. No DC-1 or DC-2 sheets or sample tags were provided. The SAS required a laboratory duplicate; however, the laboratory performed a MS/MSD which is acceptable. MDLs provided are greater than 2 years old.

Alkalinity: The SAS requires that the lowest calibration point be run at 5.0 mg/L. However, the alkalinity method does not require a calibration curve. The sample results are not qualified for the absence of this standard requirement. MS/MSDs were not performed with the batch. Due to missing batch QC as required by the SAS, all sample data is considered estimated and flagged "J/UJ".

The following inorganic samples are associated with an ICB/CCB or preparation blank concentration which is greater than the method detection limit (MDL). The sample result for 14CP02-04 is greater than the MDL but less than 5 times the blank and is qualified "J+".

All other QC was within the acceptance limits. The result for 14CP02-04 was between the MDL and RL. The sample is considered estimated and flagged "J".

Chloride: All QC was within the acceptance limits. The data is acceptable.

Nitrate: All samples were analyzed within the 48 hour method holding time. The LCS for the batch was greater than the acceptance limits. The samples were reanalyzed outside the holding time with acceptable batch QC. The reanalysis supported the original results. The data is considered estimated and flagged "J/UJ". All other QC was within the acceptance limits.

Sulfate: All QC was within the acceptance limits. The data is acceptable.

Sulfide: The SAS requires that the lowest calibration point be run at 1.0 mg/L. However, the sulfide method does not require a calibration curve. The sample results are not qualified for the absence of this standard requirement. MS/MSDs were not performed with the batch. Due to missing batch QC as required by the SAS, all sample data is considered estimated and flagged "J/UJ".

Reviewed by: Paul Little
Date: January 14, 2014

Case: 14CP02
Site: Penta Wood Products Site (WI)

SDG: 14CP02-01 GC
Laboratory: Test America North Canton

TOC: MS/MSDs were not performed with the batch. Due to missing batch QC as required by the SAS, all sample data is considered estimated and flagged "J/UJ". All other QC was within the acceptance limits. Samples 14CP02-05 and -18 had results between the MDL and RL. The samples are considered estimated and flagged "J".

Other comments: No samples were identified as field/equipment blanks. No samples were identified as field duplicates.

Case: 14CP02
Site: Penta Wood Products Site (WI)

SDG: 14CP02-01 GC
Laboratory: Test America North Canton

Data Qualifier Sheet

<u>Qualifiers</u>	<u>Data Qualifier Definitions</u>
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting Quality Control (QC) criteria. The analyte may or may not be present in the sample.
UJ	The analyte was analyzed for, but not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

Reviewed by: Paul Little
Date: January 14, 2014

Regional Transmittal Form

**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION V**

DATE: 1/10/2013

SUBJECT: Review of Data
Received for review on 11/19/2013

FROM: Timothy Prendiville, Supervisor, Chief (SR-6J)
Superfund Contract Management Section

TO: Data User: CH2M Hill
Email address: dshekosk@CH2M.com

LEVEL 3 DATA VALIDATION

We have reviewed the data for the following case:

SITE NAME: Penta Wood Products (WI)

CASE NUMBER: 14CP02 **SDG NUMBER:** 14CP02-01 MET

Number and Type of Samples: 5 waters (metals)

Sample Numbers: 14CP02-01, 04, 05, 06, 18

Laboratory: TA North Canton **Hrs. for Review:** _____

Following are our findings:

CC: Howard Pham
Region 5 TPO
Mail Code: SA-5J

Narrative

Five (5) water samples, numbered 14CP02-01, 04, 05, 06, and 18, were collected on October 9, 2013. The lab received the samples on October 11, 2013 in good condition. All sample results are reported to the MDL. The samples were analyzed for metals using SW-846 6020 (ICP-MS) analysis procedure (the SAS requires SW-846 Method 6010B or equivalent). Dissolved arsenic, calcium, copper, iron, magnesium, manganese and zinc are reported for metals.

<u>Sample ID</u>	<u>Lab ID</u>	<u>Station Location</u>	<u>Sample Date/Time</u>
14CP02-01	240-30092-3	PWP-MW-02	10/09/2013 15:30
14CP02-04	240-30092-4	PWP-MW-06S	10/09/2013 16:30
14CP02-05	240-30092-1	PWP-MW-07	10/09/2013 15:30
14CP02-06	240-30092-2	PWP-MW-09	10/09/2013 14:00
14CP02-18	240-30092-5	PWP-MW-28	10/09/2013 16:30

Evidential Audit: All documents provided are copies. No location is noted for the originals. No DC-1 or DC-2 sheets or sample tags were provided.

ICP-MS: The lowest calibration point was greater than the SAS required RL and the laboratory RL for all elements except Cu and Zn. For Mn, Cu, Zn, and As, the LCS sample results were greater than the calibration range; however, Method 6020 allows the use of linear range and all reported results are within the reported linear range. No MS/MSD was performed; as a result, all sample results are considered estimated "J". Non-detects are estimated "UJ".

The internal standard percent relative intensities were outside the acceptance window for the method blank, LCS, CCV (18:41), CCV (19:28), CCB (19:32), CCV (20:15), and CCB (20:19). Method 6020 requires the relative intensities for all CCVs and CCBs to be between 80-120%. All sample results are considered estimated "J". Non-detects are estimated "UJ".

For As, the sample results for 14CP02-01, -04, -06, and -18 affected by a blank greater than the MDL indicating possible contamination. Results were less than the CRQL and qualified "U". The sample results were raised to the CRQL.

For Ca, the laboratory MDL was provided for mass 43. All data was reported from the 44 mass. Since all reported results are greater than the laboratory RL, no sample results are estimated for this discrepancy. The laboratory RL is greater than the SAS required RL. Since the laboratory MDLs are less than half the SAS required RL and all reported results are greater than the laboratory RL, reported results are not estimated for this. Sample results for 14CP02-05 were greater than the calibration range; however, Method 6020 allows for the use of linear range and all reported results are within the reported linear range. All Ca results are acceptable.

For Cu, the laboratory MDL was provided for mass 65. All data was reported from the 63 mass. Since all reported results are greater than the laboratory RL, no sample results are estimated for this discrepancy. Samples 14CP02-01, -05, -06, and -18 are affected by a preparation blank greater than the MDL indicating possible contamination. Results were less than the CRQL and raised to the CRQL. The sample results are qualified "U".

For Fe, sample 14CP02-01 is affected by a preparation blank greater than the MDL indicating possible contamination. Results were less than the CRQL and qualified "U". The sample results were raised to the CRQL.

For Mg, the laboratory MDL was provided for mass 25. All data was reported from the 24 mass. Since all reported results are greater than the laboratory RL, no sample results are estimated for this discrepancy. The laboratory RL is greater than the SAS required RL. Since the laboratory MDLs are less than half the SAS required RL and all reported results are greater than the laboratory RL, reported results are not estimated for this. The preparation blank had results greater than the MDL indicating possible contamination. No samples were qualified for this deficiency. All Mg results are acceptable.

For Mn, the laboratory RL is greater than the SAS required RL. Since the laboratory MDLs are less than half the SAS required RL and all reported results are greater than the laboratory RL, reported results are not estimated for this. Samples 14CP02-01 and -06 are affected by a preparation blank greater than the MDL indicating possible contamination. Results were less than the CRQL and raised to the CRQL. The sample results are qualified "U".

For Zn, samples 14CP02-01, -04, -05, and -06 are affected by a preparation blank greater than the MDL indicating possible contamination. Results were less than the CRQL and raised to the CRQL. The sample results are qualified "U".

Other comments: No samples were identified as field/equipment blanks. No sample results were identified as field duplicates.

EXES ISM01.3 Data Qualifier Sheet

<u>Qualifiers</u>	<u>Data Qualifier Definitions</u>
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting Quality Control (QC) criteria. The analyte may or may not be present in the sample.
UJ	The analyte was analyzed for, but not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION V
SUPERFUND DIVISION

DATE:

SUBJECT: Review of Region V Data
Received for Review on: November 19, 2013

FROM: Timothy Prendiville, Supervisor (SR-6J)
Superfund Contract Management Section

TO: Data User: Ch2m Hill
Email address: dave.shekosk@ch2m.com

Level 4 Manual Data Validation

We have reviewed the data for the following case:

SITE Name: Penta Wood Products (WI)

SAS Client No.: 14CP02 Job Number: 240-30092-1 SDG Number: 14CP02-01 PCP

Number and Type of Samples: 5 Waters (Pentachlorophenol)

Sample Numbers: 14CP02-01, 14CP02-04, 14CP02-05, 14CP02-06, 14CP02-18

Laboratory: Test America – North Canton Hrs for Review:

Following are our findings

CC: Howard Pham
Region 5 TPO
Mail Code: SA-5J

Below is a summary of the out-of-control audits and the possible effects on the data for this case:

Five (5) preserved water samples, 14CP02-01, 14CP02-04, 14CP02-05, 14CP02-06 and 14CP02-18, were shipped to TestAmerica North Canton located in North Canton, OH. The samples were transshipped to the Pittsburgh laboratory for this analysis. The samples were collected October 9, 2013 and received intact on October 11, 2013. The cooler temperature was not recorded but according to the "login sample receipt checklist", the cooler temperature is acceptable. The samples were analyzed for Pentachlorophenol according to SW-846 Method 8151A and the SAS contract for samples collected between April 2011 and December 2014.

EPA	Lab ID	Station	Collection		Receipt
Sample		Location	Date	Time	Date
14CP02-01	240-30092-3	PWP-MW02	10/09/13	15:30	10/11/13
14CP02-04	240-30092-4	PWP-MW06S	10/09/13	16:30	10/11/13
14CP02-05	240-30092-1	PWP-MW07	10/09/13	15:30	10/11/13
14CP02-06	240-30092-2	PWP-MW09	10/09/13	14:00	10/11/13
14CP02-18	240-30092-5	PWP-MW28	10/09/13	16:30	10/11/13

No sample was designated as the parent sample for the MS/MSD analyses. No MS/MSD analyses were performed.

MB 180-86921/1-A is the method blank.

LCS 180-86921/2-A is the low level water laboratory control sample and LCSD 180-86921/3-A is the laboratory control sample duplicate.

No samples were identified as field blanks or field duplicates.

The samples were extracted within the technical holding time of 7 days after sample collection. The sample extracts were analyzed within 40 days following the extraction; therefore, the sample results do not require any qualifications for this criterion.

1. HOLDING TIME

Five (5) preserved water samples, 14CP02-01, 14CP02-04, 14CP02-05, 14CP02-06 and 14CP02-18, were shipped to TestAmerica North Canton located in North Canton, OH. The samples were transshipped to the Pittsburgh laboratory for this analysis. The samples were collected October 9, 2013 and received intact on October 11, 2013. The cooler temperature was not recorded but according to the "login sample receipt checklist", the cooler temperature is acceptable. The samples were analyzed for Pentachlorophenol according to SW-846 Method 8151A and the SAS contract for samples collected between April 2011 and December 2014.

The samples were extracted within the technical holding time of 7 days after sample collection. The sample extracts were analyzed within 40 days following the extraction; therefore, the sample results do not require any qualifications for this criterion.

2. GC/MS TUNING AND GC INSTRUMENT PERFORMANCE

GC Resolution met the minimum resolution criteria as defined in SW846 Method 8000B and 8151A for both RTX-50 and RTX-1701 columns.

3. CALIBRATION

One 5-pt Initial Calibration was completed on October 18, 2013 with the following on-column concentrations; 0.0025 ng, 0.005 ng, 0.01 ng, 0.02 ng and 0.04 ng. Three 1-pt Continuing Calibrations were conducted on October 18th and October 21, 2013. The RSDs were less than 15% SAS QC limits.

The percent difference (%D) of Pentachlorophenol exceeded 15% in the ICV 180-87246/6 (A1030265.D) analyzed using column RTX-50 on October 18, 2013 @ 15:00. Detected Pentachlorophenol in samples 14CP02-01, 14CP02-04, 14CP02-06 and 14CP02-18, LCS 180-86921/2-A and LCSD 180-86921/3-A are qualified as estimated, "J". Non-detected Pentachlorophenol in samples 14CP02-05 and MB 180-86921/1-A is not qualified.

4. BLANKS

MB 180-86921/1-A is the method blank. The method blank was free of contamination; therefore, the results do not require qualification for blank contamination. The herbicide method blank summary (Form IV HERBICIDES METHOD BLANK SUMMARY) lists the samples associated with the blank.

5. SYSTEM MONITORING COMPOUND AND SURROGATE RECOVERY

The percent recoveries for the surrogate; 2,4-Dichlorophenylacetic acid, in sample 14CP02-04 (column-RTX-50) was above the SAS QC limit of 140%. Detected Pentachlorophenol was reported from RTX-50; therefore, the result for Pentachlorophenol in sample 14CP02-04 is qualified as estimated, "J".

6. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

No sample was designated as the parent sample for the MS/MSD analyses. No MS/MSD analyses were performed. Sample results are not qualified for this deficiency.

6B. FOR LABORATORY CONTROL SAMPLES:

LCS 180-86921/2-A is the low level water laboratory control sample. LCSD 180-86921/3-A is the laboratory control sample duplicate. The %recoveries for Pentachlorophenol were within the SAS QC range of 40-140%. The RPD for the Pentachlorophenol was within the SAS QC limit of less than 30%; therefore, the sample results do not require any qualifications for this criterion.

7. FIELD BLANK AND FIELD DUPLICATE

No samples were identified as field blank or field duplicates.

8. INTERNAL STANDARDS

Internal Standards are not required for SW-846 Method 8151A.

9. COMPOUND IDENTIFICATION

After reviewing the chromatograms it appears that Pentachlorophenol was properly identified.

10. COMPOUND QUANTITATION AND REPORTED DETECTION LIMITS

The presence of Pentachlorophenol was below the reporting limit of 0.10 µg/L in sample 14CP02-18; therefore, the concentration is qualified as estimated, "J".

11. SYSTEM PERFORMANCE

GC baseline indicated acceptable performance.

12. ADDITIONAL INFORMATION

All SAS criteria were met with the following exceptions and highlights:

- 1) The samples were extracted on October 16, 2013. The Ch2mHill Cover Letter to EPA is dated November 13, 2013. The TestAmerica North Canton Case Narrative is dated October 25, 2013 well within twenty-one (21) calendar days from the sample receipt date of October 10, 2013.

SAS Number: 14CP02
 Site Name: Penta Wood Products (WI)

SDG Number: 14CP02-01 PCP
 Laboratory: TA - Canton

- 2) MDL studies are actually provided to the Users prior to the contract award and are therefore, not included with every sample delivery group. MDL Values are included on the individual 'Organics Analytical Data Sheet'.
- 3) The samples were transshipped from the North Canton, OH lab to the Pittsburgh, PA laboratory for this analysis. The results were sent to North Canton for inclusion in the final report.
- 4) The laboratory analyzed the samples by Method 8151 as requested in section 7 of the SAS Contract.

Analytical results are summarized in the following table:

EPA sample IDs:	Lab Sample IDs:	PCP Conc. µg/L	Qualifiers	Results reported from GC column
14CP02-01	240-30092-3	0.94	J	RTX-50
14CP02-04	240-30092-4	0.52	J	RTX-50
14CP02-05	240-30092-1	ND	U	RTX-50
14CP02-06	240-30092-2	0.41	J	RTX-50
14CP02-18	240-30092-5	0.049	J	RTX-50
Method blank	MB 180-86921/1-A	ND	U	RTX-50
Lab Control Sample	LCS 180-86921/2-A	0.267	J	RTX-50
Lab Control Sample Duplicate	LCSD 180-86921/3-A	0.310	J	RTX-50

Data Qualifier Sheet

For the purpose of defining the flagging nomenclature utilized in this document, the following code letters and associated definitions are provided:

VALUE – if the result is a value greater than or equal to the Contract Required Quantitation Limit (CRQL).

- U Indicates that the compound was analyzed for, but not detected. The sample quantitation limit corrected for dilution and percent moisture is reported.
- J Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of a compound but the result is less than the sample quantitation limit, but greater than zero. The flag is also used to indicate a reported result having an associated QC problem.
- UJ The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the action limit of quantitation necessary to accurately and precisely measure the analyte in the sample.
- N Indicates presumptive evidence of a compound. This flag is only used for a tentatively identified compound (TIC), where the identification is based on a mass spectral library search.
- R Indicates the data are unusable. (The compound may or may not be present.)
- P Indicates a pesticide/Aroclor target analyte when there is greater than 25% difference for the detect concentrations between the two GC columns. The lower of the two results is reported.
- C Indicates pesticide results that have been confirmed by GC/MS.
- B Indicates the analyte is detected in the associated method blank as well as the sample.
- E Indicates compounds whose concentrations exceeded the calibration range of the instrument.
- D Indicates an identified compound in an analysis has been diluted. This flag alert the data user to any difference between the concentrations reported in the two analyses.
- A Indicates TICs that are suspected to be aldol condensation products.
- G Indicates the TCLP Matrix Spike Recovery was greater than the upper limit of the analytical method.
- L Indicates the TCLP Matrix Spike Recovery was less than the lower limit of the analytical method.
- T Indicates the analyte is found in the associated TCLP extraction blank as well as in the sample.

X, Y, Z are reserved for laboratory defined flags.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION V
SUPERFUND DIVISION

DATE:

SUBJECT: Review of Region V Data
Received for Review on: November 19, 2013

FROM: Timothy Prendiville, Supervisor (SR-6J)
Superfund Contract Management Section

TO: Data User: Ch2mHill
Email address: dave.shekosk@ch2m.com

Level 4 Manual Data Validation

We have reviewed the data for the following case:

SITE Name: Penta Wood Products Site (WI)

SAS Client No.: 14CP02 Job Number: 240-30092-1 SDG Number: 14CP02-01 SVOA

Number and Type of Samples: 5 Waters (Naphthalene)

Sample Numbers: 14CP02-01, 14CP02-04, 14CP02-05, 14CP02-06, 14CP02-18

Laboratory: Test America – North Canton Hrs for Review:

Following are our findings:

CC: Howard Pham
Region 5 TPO
Mail Code: SA-5J

SAS Number: 14CP02
 Site Name: Penta Wood Products Site (WI)

SDG Number: 14CP02-01 SVOA
 Laboratory: TA – North Canton

Below is a summary of the out-of-control audits and the possible effects on the data for this case:

Five (5) water samples, 14CP02-01, 14CP02-04, 14CP02-05, 14CP02-06 and 14CP02-18, were shipped to TestAmerica North Canton located in North Canton, OH. The samples were collected October 9th, 2013 and received intact on October 11th, 2013. The cooler temperature was not recorded but according to the “login sample receipt checklist”, the cooler temperature was acceptable. The samples were analyzed for Naphthalene according to SW-846 Method 8270 and the SAS contract for samples collected between April 2011 and December 2014.

EPA	Lab ID	Station	Collection		Receipt
Sample		Location	Date	Time	Date
14CP02-01	240-30092-3	PWP-MW02	10/09/13	15:30	10/11/13
14CP02-04	240-30092-4	PWP-MW06S	10/09/13	16:30	10/11/13
14CP02-05	240-30092-1	PWP-MW07	10/09/13	15:30	10/11/13
14CP02-06	240-30092-2	PWP-MW09	10/09/13	14:00	10/11/13
14CP02-18	240-30092-5	PWP-MW28	10/09/13	16:30	10/11/13

No sample was chosen as the parent sample for the MS/MSD analyses. No MS/MSD analyses were conducted for this sample delivery group.

MB 240-105364/15-A is the method blank.

LCS 240-105364/16-A is the laboratory control sample. No laboratory control sample duplicate analysis was conducted for this sample delivery group.

No samples were identified as QC blanks or field duplicates.

The samples were extracted within the technical holding time of 7 days after sample collection. The sample extracts were analyzed within 40 days following the extraction; therefore, the sample results do not require any qualifications for this criterion.

1. HOLDING TIME

Five (5) water samples, 14CP02-01, 14CP02-04, 14CP02-05, 14CP02-06 and 14CP02-18, were shipped to TestAmerica North Canton located in North Canton, OH. The samples were collected October 9th, 2013 and received intact on October 11th, 2013. The cooler temperature was not recorded but according to the “login sample receipt checklist”, the cooler temperature was acceptable. The samples were analyzed for Naphthalene according to SW-846 Method 8270 and the SAS contract for samples collected between April 2011 and December 2014.

The samples were extracted within the technical holding time of 7 days after sample collection. The sample extracts were analyzed within 40 days following the extraction; therefore, the sample results do not require any qualifications for this criterion.

2. GC/MS TUNING AND GC INSTRUMENT PERFORMANCE

All GC/MS tuning complied with the mass list and ion abundance criteria for DFTPP. All samples were analyzed within the twelve (12) hour periods for instrument performance checks; therefore, the sample results do not require any qualifications.

3. CALIBRATION

One (1) 9-pt initial calibration was completed on October 3rd, 2013 using the following on column concentrations; 0.1 ng, 0.5 ng, 1 ng, 2.0 ng, 5.0 ng, 10 ng, 15 ng, 20 ng and 25 ng. The %RSDs for the Naphthalene and surrogates were less than the SAS limit of 15%; therefore, the sample results do not require any qualifications for this criterion.

Two (2) 1-pt continuing calibrations were conducted on October 16th and October 17th, 2013. The %Ds for Naphthalene and surrogates were less than 20%D; therefore, the sample results do not require any qualifications for this criterion.

4. BLANKS

MB 240-105364/15-A is the method blank. Naphthalene was not detected in the method blank. Sample results do not require any qualifications for this criterion. The semivolatile method blank summary (Form IV GC/MS SVOA METHOD BLANK SUMMARY) lists the samples associated with the blank.

5. SYSTEM MONITORING COMPOUND AND SURROGATE RECOVERY

The semivolatile surrogate recoveries were within the QC limits identified in the laboratory data package for all samples; therefore, the sample results do not require any qualifications for this criterion.

6. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

No sample was chosen as the parent sample for the MS/MSD analyses. No MS/MSD analyses were conducted for this sample delivery group. Sample results are not qualified for this deficiency.

6B. LABORATORY CONTROL SAMPLES

LCS 240-105364/16-A is the laboratory control sample. No laboratory control sample duplicate analysis was conducted for this sample delivery group.

Naphthalene recovery in the LCS was within the QC limits of 31 – 110%; therefore, the sample results do not require any qualifications for this criterion.

7. FIELD BLANK AND FIELD DUPLICATE

No samples were identified as QC blanks or field duplicates.

8. INTERNAL STANDARDS

The internal standards retention times and area counts for the semivolatile analyses were within the required QC limits (50-200%) for all samples; therefore, no qualification of the sample results is required for this criterion.

9. COMPOUND IDENTIFICATION

After reviewing the mass spectra and chromatograms it appears that all semivolatile compounds were properly identified.

10. COMPOUND QUANTITATION AND REPORTED DETECTION LIMITS

All samples were waters and no dilutions were run; therefore, no qualifications are required. All reporting limits were met or lower than the SAS required reporting limits.

11. SYSTEM PERFORMANCE

GC/MS baseline indicated acceptable performance.

SAS Number: 14CP02
Site Name: Penta Wood Products Site (WI)

Page 5 of 6
SDG Number: 14CP02-01 SVOA
Laboratory: TA – North Canton

12. ADDITIONAL INFORMATION

All SAS criteria were met with the following exceptions and highlights:

- 1) Analytical results were submitted to Ch2m Hill, Inc. on October 25th, 2013 within the SAS requested turn-around time of 21 calendar days from receipt of samples.
- 2) MDL studies are actually provided to the Users prior to the contract award and are therefore, not included with every sample delivery group. MDL Values are included on the individual 'Organics Analytical Data Sheet'.
- 3) The lowest calibration standard was 0.2 ug/L.

Data Qualifier Sheet

For the purpose of defining the flagging nomenclature utilized in this document, the following code letters and associated definitions are provided:

VALUE – if the result is a value greater than or equal to the Contract Required Quantitation Limit (CRQL).

- U Indicates that the compound was analyzed for, but not detected. The sample quantitation limit corrected for dilution and percent moisture is reported.
- J Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of a compound but the result is less than the sample quantitation limit, but greater than zero. The flag is also used to indicate a reported result having an associated QC problem.
- N Indicates presumptive evidence of a compound. This flag is only used for a tentatively identified compound (TIC), where the identification is based on a mass spectral library search.
- R Indicates the data are unusable. (The compound may or may not be present.)
- P Indicates a pesticide/Aroclor target analyte when there is greater than 25% difference for the detect concentrations between the two GC columns. The lower of the two results is reported.
- C Indicates pesticide results that have been confirmed by GC/MS.
- B Indicates the analyte is detected in the associated method blank as well as the sample.
- E Indicates compounds whose concentrations exceeded the calibration range of the instrument.
- D Indicates an identified compound in an analysis has been diluted. This flag alert the data user to any difference between the concentrations reported in the two analyses.
- A Indicates TICs that are suspected to be aldol condensation products.
- G Indicates the TCLP Matrix Spike Recovery was greater than the upper limit of the analytical method.
- L Indicates the TCLP Matrix Spike Recovery was less than the lower limit of the analytical method.
- T Indicates the analyte is found in the associated TCLP extraction blank as well as in the sample.

X, Y, Z are reserved for laboratory defined flags.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION V
SUPERFUND DIVISION

DATE:

SUBJECT: Review of Region V Data
Received for Review on: November 19, 2013

FROM: Timothy Prendiville, Supervisor (SR-6J)
Superfund Contract Management Section

TO: Data User: Ch2mHill
Email: dave.shekosk@ch2m.com

Level 4 Manual Data Validation

We have reviewed the data for the following case:

SITE Name: Penta Wood Products Site (WI)

SAS Client No.: 14CP02 Job Number: 240-30092-1 SDG Number: 14CP02-01 VOA

Number and Type of Samples: 8 Waters (Benzene, Toluene, Ethylbenzene & Xylenes, total)

Sample Numbers: 14CP02; -01, -04, -05, -06, -18, -37, -38, -39

Laboratory: Test America – North Canton Hrs for Review:

Following are our findings:

CC: Howard Pham
Region 5 TPO
Mail Code: SA-5J

Below is a summary of the out-of-control audits and the possible effects on the data for this case:

Eight (8) preserved water samples, 14CP02-01, 14CP02-04, 14CP02-05, 14CP02-06, 14CP02-18, 14CP02-37, 14CP02-38 and 14CP02-39, were shipped to TestAmerica North Canton located in North Canton, OH. The samples were collected October 9th and 10th, 2013 and received intact on October 11th, 2013. The cooler temperature was not recorded but according to the “login sample receipt checklist”, the cooler temperature is acceptable. The samples were analyzed for Benzene, Toluene, Ethylbenzene and total Xylenes according to SW-846 Method 8260 and the SAS contract for samples collected between April 2011 and December 2014.

EPA Sample	Lab ID	Station Location	Collection		Receipt Date
			Date	Time	
14CP02-01	240-30092-3	PWP-MW02	10/09/13	15:30	10/11/13
14CP02-04	240-30092-4	PWP-MW06S	10/09/13	16:30	10/11/13
14CP02-05	240-30092-1	PWP-MW07	10/09/13	15:30	10/11/13
14CP02-06	240-30092-2	PWP-MW09	10/09/13	14:00	10/11/13
14CP02-18	240-30092-5	PWP-MW28	10/09/13	16:30	10/11/13
14CP02-37	240-30092-8	PWP-JS10	10/10/13		10/11/13
14CP02-38	240-30092-6	PWP-JS11	10/10/13		10/11/13
14CP02-39	240-30092-7	PWP-JS12	10/10/13		10/11/13

No sample was designated as the parent sample for the MS/MSD analyses. No MS/MSD analyses were performed.

MB 240-105970/6 is the low level water volatile method blank.

LCS 240-105970/4 is the low level water laboratory control sample. No laboratory control duplicate sample analyses were conducted for this sample delivery group.

No samples were identified as field blank or field duplicate samples.

The volatile analyses were performed within the technical holding time of 14 days after sample collection; therefore, the sample results do not require any qualifications for this criterion.

1. HOLDING TIME

Eight (8) preserved water samples, 14CP02-01, 14CP02-04, 14CP02-05, 14CP02-06, 14CP02-18, 14CP02-37, 14CP02-38 and 14CP02-39, were shipped to TestAmerica North Canton located in North Canton, OH. The samples were collected October 9th and 10th, 2013 and received intact on October 11th, 2013. The cooler temperature was not recorded but according to the “login sample receipt checklist”, the cooler temperature is acceptable. The samples were analyzed for Benzene, Toluene, Ethylbenzene and total Xylenes according to SW-846 Method 8260 and the SAS contract for samples collected between April 2011 and December 2014.

The volatile analyses were performed within the technical holding time of 14 days after sample collection; therefore, the sample results do not require any qualifications.

2. GC/MS TUNING AND GC INSTRUMENT PERFORMANCE

All GC/MS tuning complied with the mass list and ion abundance criteria for BFB, and all samples were analyzed within the twelve (12) hour periods for instrument performance checks; therefore, the sample results do not require any qualifications.

3. CALIBRATION

One (1) 6-pt initial calibrations was completed on October 2nd, 2013 using the following on-column concentrations; 40 ng, 20 ng, 10 ng, 5 ng, 2 ng and 0.5 ng. The %RSDs for the BTEX compounds were less than the SAS limit of 15%; therefore, the sample results do not require any qualifications for this criterion.

One (1) 1-pt continuing calibration was conducted on October 17th, 2013. The %Ds for all BTEX compounds were less than 20%D; therefore, the sample results do not require any qualifications for this criterion.

4. BLANKS

MB 240-105970/6 is the low level water volatile method blank. No target compounds were detected in the method blank. Sample results do not require any qualifications for this criterion. The volatile method blank summary (Form IV GC/MS VOA METHOD BLANK SUMMARY) list the samples associated with the blank.

5. SYSTEM MONITORING COMPOUND AND SURROGATE RECOVERY

The volatile surrogate recoveries were within the QC limits identified in the laboratory data package for all samples; therefore, the sample results do not require any qualifications for this criterion.

6. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

No sample was designated as the parent sample for the MS/MSD analyses. No MS/MSD analyses were performed. Sample results are not qualified for this deficiency.

6B. LABORATORY CONTROL SAMPLES

LCS 240-105970/4 is the low level water laboratory control sample. No laboratory control duplicate sample analyses were conducted for this sample delivery group.

The recovery of Xylenes (total) was above the QC limits identified in the laboratory data package. Xylenes (total) was not detected in any samples. No qualification is required.

7. FIELD BLANK AND FIELD DUPLICATE

No samples were identified as field blank or field duplicate samples.

8. INTERNAL STANDARDS

The internal standards retention times and area counts for the volatile analyses were within the required QC limits (50-200%) for all samples; therefore, no qualification of the sample results is required for this criterion.

9. COMPOUND IDENTIFICATION

After reviewing the mass spectra and chromatograms it appears that all volatile compounds were properly identified.

10. COMPOUND QUANTITATION AND REPORTED DETECTION LIMITS

All samples were waters and no dilutions were run; therefore, no qualifications are required. All reporting limits were met or lower than the SAS required reporting limits.

11. SYSTEM PERFORMANCE

GC/MS baseline indicated acceptable performance.

SAS Number: 14CP02
Site Name: Penta Wood Products Site (WI)

Page 5 of 6
SDG Number: 14CP02-01 VOA
Laboratory: TA – North Canton

12. ADDITIONAL INFORMATION

All SAS criteria were met with the following exceptions and highlights:

- 1) Analytical results were submitted to Ch2m Hill, Inc. on October 25th, 2013 within the SAS requested turn-around time of 21 calendar days from receipt of samples.
- 2) MDL studies are actually provided to the Users prior to the contract award and are therefore, not included with every sample delivery group. MDL Values are included on the individual 'Organics Analytical Data Sheet'.
- 3) The lowest calibration standard is 0.1 µg/L which is below the SAS required limits of 0.5 µg/L.

Data Qualifier Sheet

For the purpose of defining the flagging nomenclature utilized in this document, the following code letters and associated definitions are provided:

VALUE – if the result is a value greater than or equal to the Contract Required Quantitation Limit (CRQL).

- U Indicates that the compound was analyzed for, but not detected. The sample quantitation limit corrected for dilution and percent moisture is reported.
- J Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of a compound but the result is less than the sample quantitation limit, but greater than zero. The flag is also used to indicate a reported result having an associated QC problem.
- N Indicates presumptive evidence of a compound. This flag is only used for a tentatively identified compound (TIC), where the identification is based on a mass spectral library search.
- R Indicates the data are unusable. (The compound may or may not be present.)
- P Indicates a pesticide/Aroclor target analyte when there is greater than 25% difference for the detect concentrations between the two GC columns. The lower of the two results is reported.
- C Indicates pesticide results that have been confirmed by GC/MS.
- B Indicates the analyte is detected in the associated method blank as well as the sample.
- E Indicates compounds whose concentrations exceeded the calibration range of the instrument.
- D Indicates an identified compound in an analysis has been diluted. This flag alert the data user to any difference between the concentrations reported in the two analyses.
- A Indicates TICs that are suspected to be aldol condensation products.
- G Indicates the TCLP Matrix Spike Recovery was greater than the upper limit of the analytical method.
- L Indicates the TCLP Matrix Spike Recovery was less than the lower limit of the analytical method.
- T Indicates the analyte is found in the associated TCLP extraction blank as well as in the sample.

X, Y, Z are reserved for laboratory defined flags.

Regional Transmittal Form

**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION V**

DATE: 12/16/2013

SUBJECT: Review of Data
Received for Review on: 11/19/13

FROM: Timothy Prendiville, Supervisor, Chief (SRT-6J)
Superfund Contract Management Section

TO: Data User: CH2M Hill
Email address: dshekosk@CH2M.com

LEVEL 4 DATA VALIDATION

We have reviewed the data for the following case:

Site Name: Penta Wood Products Site (WI)

Case Number: 14CP02 **SDG Number:** 14CP02-02 GC

Number and Type of Samples: 8 waters (Alkalinity, Anions, Sulfide, TOC)

Sample Numbers: 14CP02-02, -10 thru -14, -16, -17

Laboratory: Test America North Canton **Hrs for Review:** _____

Following are our findings:

CC: Howard Pham
Region 5 TPO
Mail Code: SA-5J

Case: 14CP02
 Site: Penta Wood Products Site (WI)

SDG: 14CP02-02 GC
 Laboratory: Test America North Canton

Narrative

Eight (8) water samples, numbered 14CP02-02, -10 thru -14, -16, and -17, were collected on October 8, 2013. The lab received the samples on October 10, 2013. All sample results are reported to the MDL. The samples were analyzed for alkalinity using SM 2320B, anions (chloride, nitrate, and sulfate) using SM 300.0, sulfide using SM 4500 and total organic carbon using SW-846 9060.

Sample ID	Lab ID	Station Location	Sample Date/Time
14CP02-02	240-30075-2	PWP-MW03	10-08-13/11:00
14CP02-10	240-30075-7	PWP-MW12	10-08-13/11:45
14CP02-11	240-30075-8	PWP- MW12FR	10-08-13/11:45
14CP02-12	240-30075-1	PWP-MW15	10-08-13/09:00
14CP02-13	240-30075-5	PWP-MW16	10-08-13/11:15
14CP02-14	240-30075-3	PWP-MW17	10-08-13/14:00
14CP02-16	240-30075-6	PWP-MW22	10-08-13/10:00
14CP02-17	240-30075-4	PWP-MW26	10-08-13/10:20

Evidential Audit: All documents provided are copies. No location is noted for the originals. No DC-1 or DC-2 sheets or sample tags were provided. The SAS required a laboratory duplicate; however, the laboratory performed a MS/MSD which is acceptable. MDLs provided are greater than 2 years old.

Alkalinity: The SAS requires that the lowest calibration point be run at 5.0 mg/L. However, the alkalinity method does not require a calibration curve. The sample results are not qualified for the absence of this standard requirement. The alkalinity data are acceptable based on the precision data from the LCS, laboratory duplicate and MS/MSD samples.

Chloride: All QC were within the acceptance limits. The data is considered acceptable.

Nitrate: All samples were analyzed outside the 48 hour method holding time. These sample results are estimated "J" due to analysis outside method holding time.

Sulfate: The MS/MSD for 14CP02-17 was below the acceptance limiting indicating a low bias. The samples are considered bias low and should be flagged "J-". All other QC was within the acceptance limits.

Sulfide: The SAS requires that the lowest calibration point be run at 1.0 mg/L. However, the sulfide method does not require a calibration curve. The sample results are not qualified for the absence of this standard requirement. The sulfide data are acceptable based on the precision data from the LCS and MS/MSD samples.

TOC: The sample results for 14CP02-12 and -14 are between the MDL and the SAS required RL; they are considered estimated "J." All other results are acceptable.

Reviewed by: Paul Little
 Date: December 16, 2013

Case: 14CP02

SDG: 14CP02-02 GC

Site: Penta Wood Products Site (WI)

Laboratory: Test America North Canton

Other comments: No samples were identified as field/equipment blanks. Samples 14CP02-10 and -11 were identified as field duplicates and show good correlation for all parameters. No sample results are qualified for field duplicates.

Reviewed by: Paul Little
Date: December 16, 2013

Case: 14CP02
Site: Penta Wood Products Site (WI)

SDG: 14CP02-02 GC
Laboratory: Test America North Canton

Data Qualifier Sheet

<u>Qualifiers</u>	<u>Data Qualifier Definitions</u>
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting Quality Control (QC) criteria. The analyte may or may not be present in the sample.
UJ	The analyte was analyzed for, but not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

Reviewed by: Paul Little
Date: December 16, 2013

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION V
SUPERFUND DIVISION

DATE:

SUBJECT: Review of Region V Data
Received for Review on: November 19, 2013

FROM: Timothy Prendiville, Supervisor (SR-6J)
Superfund Contract Management Section

TO: Data User: Ch2m Hill

Level 4 Manual Data Validation

We have reviewed the data for the following case:

SITE Name: Penta Wood Products (WI)

SAS Client No.: 14CP02 Job Number: 240-30075-1 SDG Number: 14CP02-02 MEE

Number and Type of Samples: 8 Waters (Methane)

Sample Numbers: 14CP02-02, 14CP02-10 thru 14CP02-14, 14CP02-16, 14CP02-17

Laboratory: Test America – North Canton Hrs for Review:

Following are our findings:

CC: Howard Pham
Region 5 TPO
Mail Code: SA-5J

SAS Number: 14CP02
 Site Name: Penta Wood Products (WI)

SDG Number: 14CP02-02 MEE
 Laboratory: TestAmerica – North Canton

Below is a summary of the out-of-control audits and the possible effects on the data for this case:

Eight (8) preserved water samples were shipped to TestAmerica Laboratories, Incorporated located in North Canton, OH. The samples were collected October 8th, 2013. All samples were received October 10th, 2013 intact with cooler temperatures in the preferred range of 2 - 6°C. The samples were analyzed for Methane by Method RSK-175 (Dissolved Gas Analysis in Water Sample Using a GC Headspace Equilibration Technique) and the SAS contract for samples collected between April 2011 and December 2014. All field samples are identified in the following table:

EPA	Lab ID	Station	Collection		Receipt
Sample		Location	Date	Time	Date
14CP02-02	240-30075-2	PWP-MW03	10/08/13	11:00	10/10/13
14CP02-10	240-30075-7	PWP-MW12	10/08/13	11:45	10/10/13
14CP02-11	240-30075-8	PWP-MW12FR	10/08/13	11:45	10/10/13
14CP02-12	240-30075-1	PWP-MW15	10/08/13	9:00	10/10/13
14CP02-13	240-30075-5	PWP-MW16	10/08/13	11:15	10/10/13
14CP02-14	240-30075-3	PWP-MW17	10/08/13	14:00	10/10/13
14CP02-16	240-30075-6	PWP-MW22	10/08/13	10:00	10/10/13
14CP02-17	240-30075-4	PWP-MW26	10/08/13	10:20	10/10/13

Sample MB 240-105210/5 is the method blank. Sample LCS 240-105210/4 is the laboratory control sample. No LCSD analysis was conducted.

Sample 14CP02-17 was used for the MS/MSD analyses for this sample delivery group.

No samples were identified as QC blanks. Sample 14CP02-11 was identified as a field replicate of sample 14CP02-10.

All samples were analyzed less than fourteen days (14) from sample collection; therefore, the results are acceptable.

1. HOLDING TIME

Eight (8) preserved water samples were shipped to TestAmerica Laboratories, Incorporated located in North Canton, OH. The samples were collected October 8th, 2013. All samples were received October 10th, 2013 intact with cooler temperatures in the preferred range of 2 - 6°C. The samples were analyzed for Methane by Method RSK-175 (Dissolved Gas Analysis in Water Sample Using a GC Headspace Equilibration Technique) and the SAS contract for samples collected between April 2011 and December 2014.

All samples were analyzed less than fourteen days (14) from sample collection; therefore, the results are acceptable.

2. GC/MS TUNING AND GC INSTRUMENT PERFORMANCE

The laboratory used a GC/FID instrument. It appeared that it was properly optimized for resolution of the target analyte and sensitivity. All samples were analyzed within 12 hours of the instrument performance check samples.

3. CALIBRATION

A 9-pt initial calibration curve for Methane and a 7-pt initial calibration for the surrogate (1,1,1-Trichlorethane) were generated on January 18th, 2013. The %RSDs for Methane and its surrogate were less than 30%. Calibration curve appears to span 0.25 to 1500 µg/L.

Two 1-pt continuing calibrations were conducted on October 11th, 2013. The percent differences (%D) for Methane were less than 30%; therefore, the results did not require any qualifications.

4. BLANKS

Sample MB 240-105210/5 is the method blank. No methane was detected in the blank; therefore, the results did not require any qualifications. The volatile method blank summary (FORM IV GC VOA METHOD BLANK SUMMARY) lists the samples associated with the blank.

5. SYSTEM MONITORING COMPOUND AND SURROGATE RECOVERY

1,1,1-Trifluoroethane (TFE) was utilized as the surrogate for this analysis. All %recoveries were within the SAS QC range, 10 - 168%; therefore, the results did not require any qualifications.

SAS Number: 14CP02
 Site Name: Penta Wood Products (WI)

SDG Number: 14CP02-02 MEE
 Laboratory: TestAmerica – North Canton

6. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

Sample 14CP02-17 was used for the MS/MSD analyses for this sample delivery group. All %recoveries were within the SAS QC range, 75 - 114% and the RPD was less than 20%; therefore, the results did not require any qualifications.

6B FOR LABORATORY CONTROL SAMPLES:

Sample LCS 240-105210/4 is the laboratory control sample. No LCSD analysis was conducted.

The percent recoveries of Methane were within the SAS QC limits of 75 – 114%; therefore, the results did not require any qualifications.

7. FIELD BLANK AND FIELD DUPLICATE

No samples were identified as QC blanks. Sample 14CP02-11 was identified as a field replicate of sample 14CP02-10. The sample results for the field duplicate samples are summarized in the following table:

EPA ID:	14CP02-10	14CP02-11	
Lab ID:	240-30075-7	240-30075-8	
Collection Date	10/08/13	10/08/13	
Collection Time:	11:45	11:45	
Station Location:	PWP-MW12	PWP-MW12FR	
Receipt Date:	10/10/13	10/10/13	
Analysis Date:	10/11/13	10/11/13	
Receipt Temp:	4.6°C	4.6°C	
Dilution factor:	400	400	
Units:	µg/L	µg/L	%RPD
Methane	0.072	ND	200

8. INTERNAL STANDARDS

Not required for this method.

9. COMPOUND IDENTIFICATION

Target analytes were properly identified and quantitated.

10. COMPOUND QUANTITATION AND REPORTED DETECTION LIMITS

The samples were waters and dilutions were not run. All target RLs were properly reported. All target compound quantitations were properly reported and met the SAS required

reporting limit (RL) of 2.0 µg/L. All concentrations detected below the laboratory's method detection limit (MDL) of 0.10 µg/L are qualified as non-detects. All concentrations detected between the MDL (0.10 µg/L) and the SAS reporting limit (2.0 µg/L) are qualified "J" as estimated.

11. SYSTEM PERFORMANCE

The GC/FID baseline appears acceptable.

12. ADDITIONAL INFORMATION

The 14-day holding time identified in Section 6 of the SAS contract was met. The TA Canton Case Narrative is dated October 24th, 2013, within twenty-one (21) calendar days from the sample receipt date of October 8th, 2013.

All samples appear to have been analyzed by a method 'equivalent' to RSK 175 and not RSK 175 itself. Raw data did not identify responses as ppmV, did not identify volume of headspace, temperature of the samples, etc. The reviewer was unable to find a Henry's Law constant for the surrogate 1,1,1-Trifluoroethane. The reviewer was unable to determine the appropriate density values as no temperature was provided.

The results were calculated following the calculations used for Pesticide analyses.

All requests identified in Section 8, 9 and 10 of the SAS contract appear to have been satisfied. No copies of sample tags were submitted with this sample delivery group.

All QC Requirements identified in Table II of the SAS contract were satisfied with the exceptions that no LCSD analyses were conducted. The samples were analyzed within 12 hours following a continuing calibration.

All sample results are summarized in the accompanying Excel spreadsheet.

Data Qualifier Sheet

For the purpose of defining the flagging nomenclature utilized in this document, the following code letters and associated definitions are provided:

VALUE – if the result is a value greater than or equal to the Contract Required Quantitation Limit (CRQL).

- U Indicates that the compound was analyzed for, but not detected. The sample quantitation limit corrected for dilution and percent moisture is reported.
- J Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of a compound but the result is less than the sample quantitation limit, but greater than zero. The flag is also used to indicate a reported result having an associated QC problem.
- UJ The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the action limit of quantitation necessary to accurately and precisely measure the analyte in the sample.
- N Indicates presumptive evidence of a compound. This flag is only used for a tentatively identified compound (TIC), where the identification is based on a mass spectral library search.
- R Indicates the data are unusable. (The compound may or may not be present.)
- P Indicates a pesticide/Aroclor target analyte when there is greater than 25% difference for the detect concentrations between the two GC columns. The lower of the two results is reported.
- C Indicates pesticide results that have been confirmed by GC/MS.
- B Indicates the analyte is detected in the associated method blank as well as the sample.
- E Indicates compounds whose concentrations exceeded the calibration range of the instrument.
- D Indicates an identified compound in an analysis has been diluted. This flag alert the data user to any difference between the concentrations reported in the two analyses.
- A Indicates TICs that are suspected to be aldol condensation products.
- G Indicates the TCLP Matrix Spike Recovery was greater than the upper limit of the analytical method.
- L Indicates the TCLP Matrix Spike Recovery was less than the lower limit of the analytical method.
- T Indicates the analyte is found in the associated TCLP extraction blank as well as in the sample.

X, Y, Z are reserved for laboratory defined flags.

Regional Transmittal Form

**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION V**

DATE: 12/18/13

SUBJECT: Review of Data
Received for review on 11/19/13

FROM: Timothy Prendiville, Supervisor, Chief (SR-6J)
Superfund Contract Management Section

TO: Data User: CH2M Hill
Email address: dshekosk@CH2M.com

LEVEL 3 DATA VALIDATION

We have reviewed the data for the following case:

SITE NAME: Penta Wood Products (WI)

CASE NUMBER: 14CP02 **SDG NUMBER:** 14CP02-02 MET

Number and Type of Samples: 8 waters (metals)

Sample Numbers: 14CP02-02, 10 thru -14, -16, -17

Laboratory: TestAmerica North Canton **Hrs. for Review:** _____

Following are our findings:

CC: Howard Pham
Region 5 TPO
Mail Code: SA-5J

Narrative

Eight (8) water samples, numbered 14CP02-02, -10 thru -14, -16, -17, were collected on October 8, 2013. The lab received the sample on October 10, 2013 in good condition. All sample results are reported to the MDL. The samples were analyzed using SW846 6020 (ICP-MS) analysis procedures (the SAS requires 6010B [ICP-AES] or equivalent). Dissolved arsenic, calcium, copper, iron, magnesium, manganese and zinc are reported.

<u>Sample ID</u>	<u>Lab ID</u>	<u>Station Location</u>	<u>Sample Date/Time</u>
14CP02-02	240-30075-2	PWP-MW03	10-08-13/11:00
14CP02-10	240-30075-7	PWP-MW12	10-08-13/11:45
14CP02-11	240-30075-8	PWP-MW12FR	10-08-13/11:45
14CP02-12	240-30075-1	PWP-MW15	10-08-13/09:00
14CP02-13	240-30075-5	PWP-MW16	10-08-13/11:15
14CP02-14	240-30075-3	PWP-MW17	10-08-13/14:00
14CP02-16	240-30075-6	PWP-MW22	10-08-13/10:00
14CP02-17	240-30075-4	PWP-MW26	10-08-13/10:20

Evidential Audit: All documents provided are copies. No location is noted for the originals. No DC-1 or DC-2 sheets or sample tags were provided. Field Chain of Custody Records were not signed by the laboratory.

ICP-MS: All sample results are reported with 2 significant figures. The lowest calibration point was greater than the SAS required RL and the laboratory RL for all elements except Cu and Zn. No serial dilution was performed. Only Ca and Mg had results high enough to use serial dilution as a QC audit; no sample results are qualified for this. Some results (i.e. MS, MSD and LCS) were greater than the calibration range; however, Method 6020 allows the use of linear range and all reported results are within the reported linear range.

For As, the element was detected in one of the CCBs. The sample result for 14CO02-17 is estimated "J+" due to possible contamination. All reported results are between the MDL and the SAS required RL; they are considered estimated "J."

For Ca, the laboratory MDL was provided for mass 43. However, all data are reported from the 44 mass. Since all reported results are greater than the laboratory RL, no sample results are estimated due to this. The laboratory RL is greater than the SAS required RL. Since the laboratory MDLs are less than half the SAS required RL and all reported results are greater than the laboratory RL, reported results are not estimated for this. The preparation blank had Ca present at a level greater than the SAS required RL; however, all reported sample results are greater than 5X the preparation blank value and are not considered affected. All Ca results are acceptable.

For Cu, the laboratory MDL was provided for mass 65. However, all data are reported from the 63 mass. All reported results are less than the laboratory RL, all sample results are estimated "J" due to this. All Cu data were evaluated using the reported 63Cu results and the MDL reported for 65Cu. Also, Cu was detected in the preparation blank and all CCBs affecting the results. All Cu results except 14CP02-13 are estimated "J+" due to possible contamination.

For Fe, all reported results are less than the lowest calibration point which is greater than the SAS required RL (the lowest calibration point is required to be at the RL). The RL check sample was performed at twice the SAS required RL. Sample results for 14CP02-02 and -16 are less than the laboratory RL and are considered estimated "J". Also, Fe was detected in the preparation blank; sample results for 14CP02-02 and -16 are estimated "J+" due to possible contamination.

For Mg, the laboratory MDL was provided for mass 25. However, all data are reported from the 24 mass. Since all reported results are greater than the laboratory RL, no sample results are estimated due to this. The laboratory RL is greater than the SAS required RL. Since the laboratory MDLs are less than half the SAS required RL and all reported results are greater than the laboratory RL, reported results are not estimated for this. All Mg results are acceptable.

For Mn, reported results for 14CP02-02, -16 and -17 are less than the lowest calibration point which is greater than the SAS required RL (the lowest calibration point is required to be at the RL). The laboratory RL check sample was less than the SAS required RL; no sample results are qualified for the calibration. Mn was detected in the preparation blank and 1 CCB affecting the samples. Sample results for 14CP02-16 and -17 are estimated "J+" due to possible contamination. The sample results for 14CP02-02, -16 and -17 are between the MDL and the SAS required RL; they are considered estimated "J."

For Zn, the element was detected in the preparation blank at a level above the RL. All samples except 14CP02-17 are affected and are estimated "J+" due to possible contamination. Additionally, the sample results for 14CP02-02, -10 thru -12, -14 and -16 are between the MDL and the SAS required RL; they are considered estimated "J."

Other comments: No samples were identified as field/equipment blanks. Samples 14CP02-10 and -11 were identified as field duplicates and show good correlation. No sample results are qualified for field duplicates.

Data Qualifier Sheet

<u>Qualifiers</u>	<u>Data Qualifier Definitions</u>
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting Quality Control (QC) criteria. The analyte may or may not be present in the sample.
UJ	The analyte was analyzed for, but not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION V
SUPERFUND DIVISION

DATE:

SUBJECT: Review of Region V Data
Received for Review on: November 19, 2013

FROM: Timothy Prendiville, Supervisor (SR-6J)
Superfund Contract Management Section

TO: Data User: Ch2m Hill

Level 4 Manual Data Validation

We have reviewed the data for the following case:

SITE Name: Penta Wood Products (WI)

SAS Client No.: 14CP02 Job Number: 240-30075-1 SDG Number: 14CP02-02 Herb

Number and Type of Samples: 8 Waters (Pentachlorophenol)

Sample Numbers: 14CP02-02, 14CP02-10 thru 14CP02-14, 14CP02-16, 14CP02-17

Laboratory: Test America – North Canton Hrs for Review:

Following are our findings

CC: Howard Pham
Region 5 TPO
Mail Code: SA-5J

Below is a summary of the out-of-control audits and the possible effects on the data for this case:

Eight (8) preserved water samples, 14CP02-02, 14CP02-10 through 14CP02-14, 14CP02-16 and 14CP02-17, were shipped to TestAmerica North Canton located in North Canton, OH. The samples were collected October 8th, 2013 and received on October 10th, 2013 intact and within the preferred shipping temperature range of 2 - 6°C. The samples were analyzed for Pentachlorophenol according to SW-846 Method 8151A and the SAS contract for samples collected between April 2011 and December 2014.

EPA	Lab ID	Station	Collection		Receipt
Sample		Location	Date	Time	Date
14CP02-02	240-30075-2	PWP-MW03	10/08/13	11:00	10/10/13
14CP02-10	240-30075-7	PWP-MW12	10/08/13	11:45	10/10/13
14CP02-11	240-30075-8	PWP-MW12FR	10/08/13	11:45	10/10/13
14CP02-12	240-30075-1	PWP-MW15	10/08/13	9:00	10/10/13
14CP02-13	240-30075-5	PWP-MW16	10/08/13	11:15	10/10/13
14CP02-14	240-30075-3	PWP-MW17	10/08/13	14:00	10/10/13
14CP02-16	240-30075-6	PWP-MW22	10/08/13	10:00	10/10/13
14CP02-17	240-30075-4	PWP-MW26	10/08/13	10:20	10/10/13

Sample 14CP02-17 was chosen as the parent sample for the MS/MSD analyses.

MB 180-86657/1-A is the low level water volatile method blank.

LCS 180-86657/2-A is the low level water laboratory control sample. No laboratory control duplicate sample analysis was conducted for this sample delivery group.

No samples were identified as QC blanks. Sample 14CP02-11 was identified as a field replicate of sample 14CP02-10.

The samples were extracted within the technical holding time of 7 days after sample collection. The sample extracts were analyzed within 40 days following the extraction; therefore, the sample results do not require any qualifications for this criterion.

1. HOLDING TIME

Eight (8) preserved water samples, 14CP02-02, 14CP02-10 through 14CP02-14, 14CP02-16 and 14CP02-17, were shipped to TestAmerica North Canton located in North Canton, OH. The samples were collected October 8th, 2013 and received on October 10th, 2013 intact and within the preferred shipping temperature range of 2 - 6°C. The samples were analyzed for Pentachlorophenol according to SW-846 Method 8151A and the SAS contract for samples collected between April 2011 and December 2014.

The samples were extracted within the technical holding time of 7 days after sample collection. The sample extracts were analyzed within 40 days following the extraction; therefore, the sample results do not require any qualifications for this criterion.

2. GC/MS TUNING AND GC INSTRUMENT PERFORMANCE

GC Resolution met the minimum resolution criteria as defined in SW846 Method 8000B and 8151A for both RTX-50 and RTX-1701 columns.

3. CALIBRATION

One 5-pt Initial Calibration was completed on October 10th, 2014 with the following on-column concentrations; 0.0025 ng, 0.005 ng, 0.01 ng, 0.02 ng and 0.04 ng. Five 1-pt Continuing Calibrations were conducted October 15th and 16th, 2014. The percent difference (%D) of Pentachlorophenol exceeded 15% in the CCV 180-86834/28 (A1030238.D) analyzed October 16th, 2014 @ 9:59 using column RTX-50. The results for samples analyzed following the above CCVs were used only for confirmation purposed; therefore, the sample results do not require any qualifications for this criterion.

The percent differences (%Ds) of the surrogate, 2,4-Dichlorophenylacetic acid, exceeded 15% in the CCVRT 180-86834/1 (B1030205.D) analyzed October 15th, 2014 @ 13:16 and CCV 180-86834/16 (B1030220.D) analyzed October 15th, 2014 @ 19:23 using column RTX:1701. the Detected and non-detected results are not qualified based on the %Ds data of the surrogate alone.

4. BLANKS

MB 180-86657/1-A is the low level water method blank. The method blank was free of contamination; therefore, the results do not require qualification for blank contamination.

5. SYSTEM MONITORING COMPOUND AND SURROGATE RECOVERY

The percent recoveries for the surrogate; 2,4-Dichlorophenylacetic acid, were above the SAS QC limits of 32-140% for 14CP02-10 (1:400) and 14CP02-11 (1:400) in the analyses using column RTX-50. Zero recoveries of 2,4-Dichlorophenylacetic acid for 14CP02-10 (1:400) and 14CP02-11 (1:400) were detected in the analyses using column RTX-1701. The samples'

SAS Number: 14CP02
Site Name: Penta Wood Products (WI)

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SDG Number: 14CP02-02Herb
Laboratory: TA - Canton

dilution factors are greater than 5.0; therefore, the sample results are not qualified for this criterion.

The percent recovery for the surrogate; 2,4-Dichlorophenylacetic acid, was below the SAS QC limits of 32-140% for QC sample MB 180-86657/1-A on GC column RTX-1701. GC column RTX-1701 is the confirmatory column for the analysis of this sample; therefore, the sample results are not qualified for this criterion.

6. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

Sample 14CP02-17 was chosen as the parent sample for the MS/MSD analyses.

The %recoveries for Pentachlorophenol were within the SAS QC range of 32-140% and the RPD was within the SAS QC limit of less than 30%; therefore, the sample results do not require any qualifications for this criterion.

6B FOR LABORATORY CONTROL SAMPLES:

LCS 180-86657/2-A is the low level water laboratory control sample. No laboratory control duplicate sample analysis was conducted for this sample delivery group. The %recoveries for Pentachlorophenol were within the SAS QC range of 40-140%; therefore, the sample results do not require any qualifications for this criterion.

7. FIELD BLANK AND FIELD DUPLICATE

No samples were identified as QC blanks. Sample 14CP02-11 was identified as a field duplicate of sample 14CP02-10. The results for the field duplicate samples are summarized in the following table:

	14CP02-10	14CP02-11	
EPA ID:	240-30075-7	240-30075-8	
Lab ID:	10/08/13	10/08/13	
Collection Date	11:45	11:45	
Collection Time:	PWP-MW12	PWP-MW12FR	
Station Location:	10/10/13	10/10/13	
Receipt Date:	10/14/13	10/14/13	
Extraction Date:	10/16/13	10/16/13	
Analysis Date:	4.6°C	4.6°C	
Receipt Temp:	400	400	
Dilution factor:	µg/L	µg/L	%RPD
Units:			
Pentachlorophenol	28	22	24

Sample results are not qualified based on the results of field duplicate samples.

8. INTERNAL STANDARDS

Internal Standards are not required for SW-846 Method 8151A.

9. COMPOUND IDENTIFICATION

After reviewing the chromatograms it appears that Pentachlorophenol was properly identified.

10. COMPOUND QUANTITATION AND REPORTED DETECTION LIMITS

The presence of Pentachlorophenol was below the reporting limit of 0.10 µg/L in sample 14CP02-13 and qualified "J". The presence of Pentachlorophenol was high enough in samples 14CP02-10 and 14CP02-11 to require dilutions.

11. SYSTEM PERFORMANCE

GC baseline indicated acceptable performance.

12. ADDITIONAL INFORMATION

The samples were extracted on October 14th, 2014. The Ch2mHill Cover Letter to EPA is dated November 13th, 2013. The TA Canton Case Narrative is dated October 24th, 2013, within twenty-one (21) calendar days from the sample receipt date of October 8th, 2013.

The sample analysis data and quality control information were reported on forms similar to the most recent CLP SOW as specified in section 9.0 of the SAS Contract.

The laboratory analyzed the samples by Method 8151 as requested in section 7 of the SAS Contract.

The following Pentachlorophenol results were reported from diluted analyses; 14CP02-10 (1:400) and 14CP02-11 (1:400).

SAS Number: 14CP02
Site Name: Penta Wood Products (WI)

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SDG Number: 14CP02-02Herb
Laboratory: TA - Canton

Analytical results are summarized in the following table:

Lab ID:	Sample	PCP Conc. µg/L	Qualifiers	Results reported from GC column
14CP02-02	240-30075-2	0.38		RTX-50
14CP02-10	240-30075-7	28		RTX-1701
14CP02-11	240-30075-8	22		RTX-1701
14CP02-12	240-30075-1	ND	U	RTX-1701
14CP02-13	240-30075-5	0.029	J	RTX-50
14CP02-14	240-30075-3	ND	U	RTX-50
14CP02-16	240-30075-6	0.14		RTX-50
14CP02-17	240-30075-4	ND	U	RTX-50
14CP02-17MS	240-30075-4MS	0.245		RTX-50
14CP02-17MSD	240-30075-4MSD	0.270		RTX-50
MB 86657	MB-180-86657/1-A	ND	U	RTX-50
LCS 86657	LCS-180-86657/2-A	0.541		RTX-1701

Data Qualifier Sheet

For the purpose of defining the flagging nomenclature utilized in this document, the following code letters and associated definitions are provided:

VALUE – if the result is a value greater than or equal to the Contract Required Quantitation Limit (CRQL).

- U Indicates that the compound was analyzed for, but not detected. The sample quantitation limit corrected for dilution and percent moisture is reported.
- J Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of a compound but the result is less than the sample quantitation limit, but greater than zero. The flag is also used to indicate a reported result having an associated QC problem.
- UJ The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the action limit of quantitation necessary to accurately and precisely measure the analyte in the sample.
- N Indicates presumptive evidence of a compound. This flag is only used for a tentatively identified compound (TIC), where the identification is based on a mass spectral library search.
- R Indicates the data are unusable. (The compound may or may not be present.)
- P Indicates a pesticide/Aroclor target analyte when there is greater than 25% difference for the detect concentrations between the two GC columns. The lower of the two results is reported.
- C Indicates pesticide results that have been confirmed by GC/MS.
- B Indicates the analyte is detected in the associated method blank as well as the sample.
- E Indicates compounds whose concentrations exceeded the calibration range of the instrument.
- D Indicates an identified compound in an analysis has been diluted. This flag alert the data user to any difference between the concentrations reported in the two analyses.
- A Indicates TICs that are suspected to be aldol condensation products.
- G Indicates the TCLP Matrix Spike Recovery was greater than the upper limit of the analytical method.
- L Indicates the TCLP Matrix Spike Recovery was less than the lower limit of the analytical method.
- T Indicates the analyte is found in the associated TCLP extraction blank as well as in the sample.

X, Y, Z are reserved for laboratory defined flags.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION V
SUPERFUND DIVISION

DATE:

SUBJECT: Review of Region V Data
Received for Review on: November 19, 2013

FROM: Timothy Prendiville, Supervisor (SR-6J)
Superfund Contract Management Section

TO: Data User: Ch2mHill

Level 4 Manual Data Validation

We have reviewed the data for the following case:

SITE Name: Penta Wood Products Site (WI)

SAS Client No.: 14CP02 Job Number: 240-30075-1 SDG Number: 14CP02-02 SVOA

Number and Type of Samples: 8 Waters (Naphthalene)

Sample Numbers: 14CP02-02, 14CP02-10 thru 14CP02-14, 14CP02-16, 14CP02-17

Laboratory: Test America – North Canton Hrs for Review:

Following are our findings:

CC: Howard Pham
Region 5 TPO
Mail Code: SA-5J

Below is a summary of the out-of-control audits and the possible effects on the data for this case:

Eight (8) preserved water samples, 14CP02-02, 14CP02-10 through 14CP02-14, 14CP02-16 and 14CP02-17, were shipped to TestAmerica North Canton located in North Canton, OH. The samples were collected October 8th, 2013 and received on October 10th, 2013 intact and within the preferred shipping temperature range of 2 - 6°C. The samples were analyzed for Naphthalene according to SW-846 Method 8270 and the SAS contract for samples collected between April 2011 and December 2014.

EPA Sample	Lab ID	Station Location	Collection Date	Time	Receipt Date
14CP02-02	240-30075-2	PWP-MW03	10/08/13	11:00	10/10/13
14CP02-10	240-30075-7	PWP-MW12	10/08/13	11:45	10/10/13
14CP02-11	240-30075-8	PWP-MW12FR	10/08/13	11:45	10/10/13
14CP02-12	240-30075-1	PWP-MW15	10/08/13	9:00	10/10/13
14CP02-13	240-30075-5	PWP-MW16	10/08/13	11:15	10/10/13
14CP02-14	240-30075-3	PWP-MW17	10/08/13	14:00	10/10/13
14CP02-16	240-30075-6	PWP-MW22	10/08/13	10:00	10/10/13
14CP02-17	240-30075-4	PWP-MW26	10/08/13	10:20	10/10/13

Sample 14CP02-17 was chosen as the parent sample for the MS/MSD analyses.

MB 240-105146/14-A and MB 240-105145/23-A are the low level water volatile method blanks.

LCS 240-105146/15-A and LCS 240-105145/24-A are the low level water laboratory control samples. No laboratory control duplicate sample analyses were conducted for this sample delivery group.

No samples were identified as QC blanks. Sample 14CP02-11 was identified as a field replicate of sample 14CP02-10.

The samples were extracted within the technical holding time of 7 days after sample collection. The sample extracts were analyzed within 40 days following the extraction; therefore, the sample results do not require any qualifications for this criterion.

1. HOLDING TIME

Eight (8) preserved water samples, 14CP02-02, 14CP02-10 through 14CP02-14, 14CP02-16 and 14CP02-17, were shipped to TestAmerica North Canton located in North Canton, OH. The samples were collected October 8th, 2013 and received on October 10th, 2013 intact and within the preferred shipping temperature range of 2 - 6°C. The samples were analyzed for Naphthalene according to SW-846 Method 8270 and the SAS contract for samples collected between April 2011 and December 2014.

The samples were extracted within the technical holding time of 7 days after sample collection. The sample extracts were analyzed within 40 days following the extraction; therefore, the sample results do not require any qualifications for this criterion.

2. GC/MS TUNING AND GC INSTRUMENT PERFORMANCE

All GC/MS tuning complied with the mass list and ion abundance criteria for DFTPP, and all samples were analyzed within the twelve (12) hour periods for instrument performance checks; therefore, the sample results do not require any qualifications.

3. CALIBRATION

Two (2) 9-pt Initial calibrations was completed on September 9th and October 17th, 2013 using the following on column concentrations; 0.1 ng, 0.5 ng, 1 ng, 2.0 ng, 5.0 ng, 10 ng, 15 ng, 20 ng and 25 ng. The %RSDs for the Naphthalene and surrogates were less than the SAS limit of 15% [or correlation coefficient (r^2) greater than 0.999]; therefore, the sample results do not require any qualifications for this criterion.

Three (3) 1-pt continuing calibrations were conducted on the following days; October 16th, October 17th and October 21st, 2013. The %Ds for Naphthalene and surrogates were less than 20%D; therefore, the sample results do not require any qualifications for this criterion.

4. BLANKS

MB 240-105146/14-A and MB 240-105145/23-A are the low level water volatile method blanks. No target compounds were detected in the method blanks. Sample results do not require any qualifications for this criterion. The semivolatile method blank summaries (Form IV GC/MS SVOA METHOD BLANK SUMMARY) list the samples associated with each blank.

5. SYSTEM MONITORING COMPOUND AND SURROGATE RECOVERY

The semivolatile surrogate recoveries were within the QC limits identified in the laboratory data package for all samples; therefore, the sample results do not require any qualifications for this criterion.

6. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

Sample 14CP02-17 was designated as the parent sample for the MS/MSD analyses. The semivolatile matrix spike sample and matrix spike duplicate sample recoveries were within the SAS QC limits of 32 – 110% and the %RPD was less than 20%; therefore, the sample results do not require any qualifications for this criterion.

6B. LABORATORY CONTROL SAMPLES

LCS 240-105146/15-A and LCS 240-105145/24-A are the low level water laboratory control samples. No laboratory control duplicate sample analyses were conducted for this sample delivery group.

Naphthalene recoveries in the LCSs were within the QC limits of 31 – 110%; therefore, the sample results do not require any qualifications for this criterion.

7. FIELD BLANK AND FIELD DUPLICATE

No samples were identified as QC blanks. Sample 14CP02-11 was identified as a field replicate of sample 14CP02-10. Neither sample contained Naphthalene.

8. INTERNAL STANDARDS

The internal standards retention times and area counts for the semivolatile analyses were within the required QC limits (50-200%) for all samples; therefore, no qualification of the sample results is required for this criterion.

9. COMPOUND IDENTIFICATION

After reviewing the mass spectra and chromatograms it appears that all semivolatile compounds were properly identified.

10. COMPOUND QUANTITATION AND REPORTED DETECTION LIMITS

All samples were waters and no dilutions were run; therefore, no qualifications are required. All reporting limits were met or lower than the SAS required reporting limits.

11. SYSTEM PERFORMANCE

GC/MS baseline indicated acceptable performance.

SAS Number: 14CP02
Site Name: Penta Wood Products Site (WI)

Page 5 of 6
SDG Number: 14CP02-02 SVOA
Laboratory: TA – North Canton

12. ADDITIONAL INFORMATION

All SAS criteria were met with the following exceptions and highlights:

- 1) Analytical results were submitted to Ch2m Hill, Inc. on October 24th, 2013 within the SAS requested turn-around time of 21 calendar days from receipt of samples.
- 2) MDL studies are actually provided to the Users prior to the contract award and are therefore, not included with every sample delivery group. MDL Values are included on the individual 'Organics Analytical Data Sheet'.
- 3) The lowest calibration standard was 0.1 ug/L.

Data Qualifier Sheet

For the purpose of defining the flagging nomenclature utilized in this document, the following code letters and associated definitions are provided:

VALUE – if the result is a value greater than or equal to the Contract Required Quantitation Limit (CRQL).

- U Indicates that the compound was analyzed for, but not detected. The sample quantitation limit corrected for dilution and percent moisture is reported.
- J Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of a compound but the result is less than the sample quantitation limit, but greater than zero. The flag is also used to indicate a reported result having an associated QC problem.
- N Indicates presumptive evidence of a compound. This flag is only used for a tentatively identified compound (TIC), where the identification is based on a mass spectral library search.
- R Indicates the data are unusable. (The compound may or may not be present.)
- P Indicates a pesticide/Aroclor target analyte when there is greater than 25% difference for the detect concentrations between the two GC columns. The lower of the two results is reported.
- C Indicates pesticide results that have been confirmed by GC/MS.
- B Indicates the analyte is detected in the associated method blank as well as the sample.
- E Indicates compounds whose concentrations exceeded the calibration range of the instrument.
- D Indicates an identified compound in an analysis has been diluted. This flag alert the data user to any difference between the concentrations reported in the two analyses.
- A Indicates TICs that are suspected to be aldol condensation products.
- G Indicates the TCLP Matrix Spike Recovery was greater than the upper limit of the analytical method.
- L Indicates the TCLP Matrix Spike Recovery was less than the lower limit of the analytical method.
- T Indicates the analyte is found in the associated TCLP extraction blank as well as in the sample.

X, Y, Z are reserved for laboratory defined flags.

SAS Number: 14CP02
 Site Name: Penta Wood Products Site (WI)

SDG Number: 14CP02-02 VOAREv
 Laboratory: TA – North Canton

Below is a summary of the out-of-control audits and the possible effects on the data for this case:

Twelve (12) preserved water samples, 14CP02-02, 14CP02-10 through 14CP02-14, 14CP02-16, 14CP02-17 and 14CP02-33 through 14CP02-36, were shipped to TestAmerica North Canton located in North Canton, OH. The samples were collected October 8th and 9th, 2013 and received on October 10th, 2013 intact and within the preferred shipping temperature range of 2 - 6°C. The samples were analyzed for Benzene, Toluene, Ethylbenzene and total Xylenes according to SW-846 Method 8260 and the SAS contract for samples collected between April 2011 and December 2014.

EPA	Lab ID	Station	Collection		Receipt
Sample		Location	Date	Time	Date
14CP02-02	240-30075-2	PWP-MW03	10/08/13	11:00	10/10/13
14CP02-10	240-30075-7	PWP-MW12	10/08/13	11:45	10/10/13
14CP02-11	240-30075-8	PWP-MW12FR	10/08/13	11:45	10/10/13
14CP02-12	240-30075-1	PWP-MW15	10/08/13	9:00	10/10/13
14CP02-13	240-30075-5	PWP-MW16	10/08/13	11:15	10/10/13
14CP02-14	240-30075-3	PWP-MW17	10/08/13	14:00	10/10/13
14CP02-16	240-30075-6	PWP-MW22	10/08/13	10:00	10/10/13
14CP02-17	240-30075-4	PWP-MW26	10/08/13	10:20	10/10/13
14CP02-33	240-30075-9	PWP-JS06	10/09/13	0:00	10/10/13
14CP02-34	240-30075-10	PWP-JS07	10/09/13	0:00	10/10/13
14CP02-35	240-30075-12	PWP-JS08	10/09/13	0:00	10/10/13
14CP02-36	240-30075-11	PWP-JS09	10/09/13	0:00	10/10/13

Sample 14CP02-17 was chosen as the parent sample for the MS/MSD analyses.

MB 240-105672/6 and MB 240-105970/6 are the low level water volatile method blanks.

LCS 240-105672/4 and LCS 240-105970/4 are the low level water laboratory control samples. No laboratory control duplicate sample analyses were conducted for this sample delivery group.

No samples were identified as QC blanks. Sample 14CP02-11 was identified as a field replicate of sample 14CP02-10.

The volatile analyses were performed within the technical holding time of 14 days after sample collection; therefore, the sample results do not require any qualifications for this criterion.

1. HOLDING TIME

Twelve (12) preserved water samples, 14CP02-02, 14CP02-10 through 14CP02-14, 14CP02-16, 14CP02-17 and 14CP02-33 through 14CP02-36, were shipped to TestAmerica North Canton located in North Canton, OH. The samples were collected October 8th and 9th, 2013 and received on October 10th, 2013 intact and within the preferred shipping temperature range of 2 - 6°C. The samples were analyzed for Benzene, Toluene, Ethylbenzene and total Xylenes according to SW-846 Method 8260 and the SAS contract for samples collected between April 2011 and December 2014.

The volatile analyses were performed within the technical holding time of 14 days after sample collection; therefore, the sample results do not require any qualifications.

2. GC/MS TUNING AND GC INSTRUMENT PERFORMANCE

All GC/MS tuning complied with the mass list and ion abundance criteria for BFB, and all samples were analyzed within the twelve (12) hour periods for instrument performance checks; therefore, the sample results do not require any qualifications.

3. CALIBRATION

One (1) 6-pt Initial calibrations was completed on October 2nd, 2013 using the following on-column concentrations; 40 ng, 20 ng, 10 ng, 5 ng, 2 ng and 0.5 ng. The %RSDs for the BTEX compounds were less than the SAS limit of 15%; therefore, the sample results do not require any qualifications for this criterion.

Two (2) 1-pt continuing calibrations were conducted on the following days; October 16th and October 17th, 2013. The %Ds for all BTEX compounds were less than 20%D; therefore, the sample results do not require any qualifications for this criterion.

4. BLANKS

MB 240-105672/6 and MB 240-105970/6 are the low level water volatile method blanks. No target compounds were detected in the method blanks. Sample results do not require any qualifications for this criterion. The volatile method blank summaries (Form IV GC/MS VOA METHOD BLANK SUMMARY) list the samples associated with each blank.

5. SYSTEM MONITORING COMPOUND AND SURROGATE RECOVERY

The recoveries of 1,2-Dichloroethane-d₄ and 4-Bromofluorobenzene were above the QC limits in sample 14CP02-17MSD. The positive results in sample 14CP02-17MSD are qualified as estimated "J".

6. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

Sample 14CP02-17 was designated as the parent sample for the MS/MSD analyses. The volatile matrix spike sample and matrix spike duplicate sample recoveries were within the QC limits identified in the laboratory data package and the %RPDs were less than 20%; therefore, the sample results do not require any qualifications for this criterion.

6B. LABORATORY CONTROL SAMPLES

LCS 240-105672/4 and LCS 240-105970/4 are the low level water laboratory control samples. No laboratory control duplicate sample analyses were conducted for this sample delivery group.

The recoveries for Xylenes (total) was above the QC limits identified in the laboratory data package for LCS 240-105970/4. Xylenes (total) was not detected in the associated samples. Non-detected Xylenes (total) do not require any qualifications for this criterion.

7. FIELD BLANK AND FIELD DUPLICATE

No samples were identified as QC blanks. Sample 14CP02-11 was identified as a field replicate of sample 14CP02-10. Neither sample contained any of the BTEX compounds.

8. INTERNAL STANDARDS

The internal standards retention times and area counts for the volatile analyses were within the required QC limits (50-200%) for all samples; therefore, no qualification of the sample results is required for this criterion.

9. COMPOUND IDENTIFICATION

After reviewing the mass spectra and chromatograms it appears that all volatile compounds were properly identified.

10. COMPOUND QUANTITATION AND REPORTED DETECTION LIMITS

All samples were waters and no dilutions were run; therefore, no qualifications are required. All reporting limits were met or lower than the SAS required reporting limits.

11. SYSTEM PERFORMANCE

GC/MS baseline indicated acceptable performance.

SAS Number: 14CP02
Site Name: Penta Wood Products Site (WI)

Page 5 of 6
SDG Number: 14CP02-02 VOAREv
Laboratory: TA – North Canton

12. ADDITIONAL INFORMATION

All SAS criteria were met with the following exceptions and highlights:

- 1) Analytical results were submitted to Ch2m Hill, Inc. on October 24, 2013 within the SAS requested turn-around time of 21 calendar days from receipt of samples.
- 2) MDL studies are actually provided to the Users prior to the contract award and are therefore, not included with every sample delivery group. MDL Values are included on the individual 'Organics Analytical Data Sheet'.
- 3) The lowest calibration standard was 0.5 ng/L (0.0005 µg/L).

Data Qualifier Sheet

For the purpose of defining the flagging nomenclature utilized in this document, the following code letters and associated definitions are provided:

VALUE – if the result is a value greater than or equal to the Contract Required Quantitation Limit (CRQL).

- U Indicates that the compound was analyzed for, but not detected. The sample quantitation limit corrected for dilution and percent moisture is reported.
- J Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of a compound but the result is less than the sample quantitation limit, but greater than zero. The flag is also used to indicate a reported result having an associated QC problem.
- N Indicates presumptive evidence of a compound. This flag is only used for a tentatively identified compound (TIC), where the identification is based on a mass spectral library search.
- R Indicates the data are unusable. (The compound may or may not be present.)
- P Indicates a pesticide/Aroclor target analyte when there is greater than 25% difference for the detect concentrations between the two GC columns. The lower of the two results is reported.
- C Indicates pesticide results that have been confirmed by GC/MS.
- B Indicates the analyte is detected in the associated method blank as well as the sample.
- E Indicates compounds whose concentrations exceeded the calibration range of the instrument.
- D Indicates an identified compound in an analysis has been diluted. This flag alerts the data user to any difference between the concentrations reported in the two analyses.
- A Indicates TICs that are suspected to be aldol condensation products.
- G Indicates the TCLP Matrix Spike Recovery was greater than the upper limit of the analytical method.
- L Indicates the TCLP Matrix Spike Recovery was less than the lower limit of the analytical method.
- T Indicates the analyte is found in the associated TCLP extraction blank as well as in the sample.

X, Y, Z are reserved for laboratory defined flags.

Regional Transmittal Form

**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION V**

DATE: 01/08/2014

SUBJECT: Review of Data
Received for Review on: 11/19/13

FROM: Timothy Prendiville, Supervisor, Chief (SRT-6J)
Superfund Contract Management Section

TO: Data User: CH2M Hill
Email address: dshekosk@CH2M.com

LEVEL 4 DATA VALIDATION

We have reviewed the data for the following case:

Site Name: Penta Wood Products Site (WI)

Case Number: 14CP02 **SDG Number:** 14CP02-03 GC

Number and Type of Samples: 4 waters (Alkalinity, Anions, Sulfide, TOC)

Sample Numbers: 14CP02-03, -07 thru -08, -15

Laboratory: Test America North Canton **Hrs for Review:** _____

Following are our findings:

CC: Howard Pham
Region 5 TPO
Mail Code: SA-5J

Case: 14CP02
Site: Penta Wood Products Site (WI)

SDG: 14CP02-03 GC
Laboratory: Test America North Canton

Narrative

Four (4) water samples, numbered 14CP02-03, -07 thru -08 and -15, were collected on October 10, 2013. The lab received the samples on October 12, 2013. All sample results are reported to the MDL. The samples were analyzed for alkalinity using SM 2320B, anions (chloride, nitrate, and sulfate) using SM 300.0, sulfide using SM 4500 and total organic carbon using SW-846 9060.

Sample ID	Lab ID	Station Location	Sample Date/Time
14CP02-03	240-30200-1	PWP-MW05	10-10-13/11:50
14CP02-07	240-30200-2	PWP-MW10	10-10-13/10:20
14CP02-08	240-30200-3	PWP- MW10FR	10-10-13/10:20
14CP02-15	240-30200-4	PWP-MW19	10-10-13/13:30

Evidential Audit: All documents provided are copies. No location is noted for the originals. No DC-1 or DC-2 sheets or sample tags were provided. The SAS required a laboratory duplicate; however, the laboratory performed a MS/MSD which is acceptable. MDLs provided are greater than 2 years old.

Alkalinity: The SAS requires that the lowest calibration point be run at 5.0 mg/L. However, the alkalinity method does not require a calibration curve. The sample results are not qualified for the absence of this standard requirement. The alkalinity data are acceptable based on the precision data from the LCS, laboratory duplicate and MS/MSD samples.

Chloride: The MS/MSD for 14CP02-03 was above the acceptance limiting indicating a high bias. The samples are considered bias low and should be flagged "J+". All other QC was within the acceptance limits.

Nitrate: All samples were analyzed outside the 48 hour method holding time. These sample results are estimated "J/UJ" due to analysis outside method holding time.

Sulfate: The MS/MSD for 14CP02-03 were above the calibration range of the instrument. They were not rerun diluted. Due to this issue there is no reportable MS/MSD with the batch. The samples are considered estimated due to missing sample QC and flagged "J". All other QC was within the acceptance limits.

Sulfide: The SAS requires that the lowest calibration point be run at 1.0 mg/L. However, the sulfide method does not require a calibration curve. The sample results are not qualified for the absence of this standard requirement. MS/MSDs were not performed with the batch. Due to missing batch QC as required by the SAS, all sample data is considered estimated and flagged "J".

TOC: The sample results are considered acceptable.

Other comments: No samples were identified as field/equipment blanks. Samples 14CP02-07 and -08 were identified as field duplicates and show good correlation for all parameters. No sample results are qualified for field duplicates.

Reviewed by: Paul Little
Date: January 10, 2014

Case: 14CP02
Site: Penta Wood Products Site (WI)

SDG: 14CP02-03 GC
Laboratory: Test America North Canton

Data Qualifier Sheet

<u>Qualifiers</u>	<u>Data Qualifier Definitions</u>
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting Quality Control (QC) criteria. The analyte may or may not be present in the sample.
UJ	The analyte was analyzed for, but not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

Reviewed by: Paul Little
Date: January 10, 2014

Regional Transmittal Form

**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION V**

DATE: 1/9/2013

SUBJECT: Review of Data
Received for review on 11/19/2013

FROM: Timothy Prendiville, Supervisor, Chief (SR-6J)
Superfund Contract Management Section

TO: Data User: CH2M Hill
Email address: dshekosk@CH2M.com

LEVEL 3 DATA VALIDATION

We have reviewed the data for the following case:

SITE NAME: Penta Wood Products (WI)

CASE NUMBER: 14CP02 **SDG NUMBER:** 14CP02-03 MET

Number and Type of Samples: 4 waters (metals)

Sample Numbers: 14CP02-03, 07, 08, 15

Laboratory: TA North Canton **Hrs. for Review:** _____

Following are our findings:

CC: Howard Pham
Region 5 TPO
Mail Code: SA-5J

Narrative

Four (4) water samples, numbered 14CP02-03, 07, 08, and 15, were collected on October 10, 2013. The lab received the samples on October 12, 2013 in good condition. All sample results are reported to the MDL. The samples were analyzed for metals using SW-846 6020 (ICP-MS) analysis procedure (the SAS requires SW-846 Method 6010B or equivalent). Dissolved arsenic, calcium, copper, iron, magnesium, manganese and zinc are reported for metals.

<u>Sample ID</u>	<u>Lab ID</u>	<u>Station Location</u>	<u>Sample Date/Time</u>
14CP02-03	240-30200-1	PWP-MW05	10/10/2013 11:50
14CP02-07	240-30200-2	PWP-MW10	10/10/2013 10:20
14CP02-08	240-30200-3	PWP-MW10 FR	10/10/2013 10:20
14CP02-15	240-30200-4	PWP-MW19	10/10/2013 13:30

Evidential Audit: All documents provided are copies. No location is noted for the originals. No DC-1 or DC-2 sheets or sample tags were provided.

ICP-MS: The lowest calibration point was greater than the SAS required RL and the laboratory RL for all elements except Cu and Zn. Some results for the LCS sample were greater than the calibration range; however, Method 6020 allows the use of linear range and all reported results are within the reported linear range. No MS/MSD was performed; as a result, all sample results are considered estimated "J". Non-detects are estimated "UJ".

The internal standard percent relative intensities were outside the acceptance window for all CCVs. Method 6020 rev.0 requires the relative intensities to be between 80-120% for all CCBs and CCVs. All sample results are considered estimated "J". Non-detects are estimated "UJ".

For As, the sample results for 14CP02-03, -07, -08, and -15 are between the MDL and the SAS required RL; they are considered estimated "J".

For Ca, the laboratory MDL was provided for mass 43. However, all data was reported from the 44 mass. Because all reported results are greater than the laboratory RL, no sample results are estimated for this discrepancy. The laboratory RL is greater than the SAS required RL. Since the laboratory MDLs are less than half the SAS required RL and all reported results are greater than the laboratory RL, reported results are not estimated for this. All sample results except for 14CP02-15 were greater than the calibration range. Method 6020 allows for the use of linear range. All reported results are within the reported linear range. All Ca results are acceptable.

For Cu, the laboratory MDL was provided for mass 65. However, all data was reported from the 63 mass. Samples 14CP02-03, -07, -08, and -15 are affected by a preparation blank greater than the MDL indicating possible contamination. Results were less than the CRQL and raised to the CRQL. The sample results are qualified "U".

For Fe, the sample results for 14CP02-15 is between the MDL and the SAS required RL. Sample 14CP02-15 is considered estimated "J".

For Mg, the laboratory MDL was provided for mass 25. However, all data was reported from the 24 mass. Because all reported results are greater than the laboratory RL, no sample results are estimated for this discrepancy. The laboratory RL is greater than the SAS required RL. Since the laboratory MDLs are less than half the SAS required RL and all reported results are greater than the laboratory RL, reported results are not estimated for this. All Mg results are acceptable.

For Mn, the laboratory RL is greater than the SAS required RL. Because the laboratory MDLs are less than half the SAS required RL and all reported results are greater than the laboratory RL, reported results are not estimated for this discrepancy. All sample results were greater than the calibration range. Method 6020 allows for the use of linear range and all reported results are within the reported linear range. All Mn results are acceptable.

For Zn, the sample results for 14CP02-15 is between the MDL and the SAS required RL. Sample 14CP02-15 is considered estimated "J".

Other comments: No samples were identified as field/equipment blanks. Samples 14CP02-07 and -08 were identified as field duplicates and show good correlation. No sample results are qualified for field duplicates.

EXES ISM01.3 Data Qualifier Sheet

<u>Qualifiers</u>	<u>Data Qualifier Definitions</u>
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting Quality Control (QC) criteria. The analyte may or may not be present in the sample.
UJ	The analyte was analyzed for, but not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION V
SUPERFUND DIVISION

DATE:

SUBJECT: Review of Region V Data
Received for Review on: November 19, 2013

FROM: Timothy Prendiville, Supervisor (SR-6J)
Superfund Contract Management Section

TO: Data User: Ch2m Hill
Email address: dave.shekosk@ch2m.com

Level 4 Manual Data Validation

We have reviewed the data for the following case:

SITE Name: Penta Wood Products (WI)

SAS Client No.: 14CP02 Job Number: 240-30200-1 SDG Number: 14CP02-03 PCP

Number and Type of Samples: 4 Waters (Pentachlorophenol)

Sample Numbers: 14CP02-03, 14CP02-07, 14CP02-08, 14CP02-15

Laboratory: Test America – North Canton Hrs for Review:

Following are our findings

CC: Howard Pham
Region 5 TPO
Mail Code: SA-5J

Below is a summary of the out-of-control audits and the possible effects on the data for this case:

Four (4) preserved water samples, 14CP02-03, 14CP02-07, 14CP02-08 and 14CP02-15, were shipped to TestAmerica North Canton located in North Canton, OH. The samples were transhipped to the Pittsburgh laboratory for this analysis. The samples were collected October 10, 2013 and received on October 12, 2013 intact and within the preferred shipping temperature range of 2 - 6°C. The samples were analyzed for Pentachlorophenol according to SW-846 Method 8151A and the SAS contract for samples collected between April 2011 and December 2014.

EPA	Lab ID	Station	Collection		Receipt
Sample		Location	Date	Time	Date
14CP02-03	240-30200-1	PWP-MW05	10/10/13	11:50	10/12/13
14CP02-07	240-30200-2	PWP-MW10	10/10/13	10:20	10/12/13
14CP02-08	240-30200-3	PWP-MW10 FR	10/10/13	10:20	10/12/13
14CP02-15	240-30200-4	PWP-MW19	10/10/13	13:30	10/12/13

No sample was designated as the parent sample for the MS/MSD analyses. No MS/MSD analyses were performed.

MB 180-86921/1-A is the method blank.

LCS 180-86921/2-A is the low level water laboratory control sample. LCSD 180-86921/3-A is the laboratory control sample duplicate.

No samples were identified as equipment or field blank. Sample 14CP02-08 was identified as a field replicate of sample 14CP02-07.

The samples were extracted within the technical holding time of 7 days after sample collection. The sample extracts were analyzed within 40 days following the extraction; therefore, the sample results do not require any qualifications for this criterion.

1. HOLDING TIME

Four (4) preserved water samples, 14CP02-03, 14CP02-07, 14CP02-08 and 14CP02-15, were shipped to TestAmerica North Canton located in North Canton, OH. The samples were transshipped to the Pittsburgh laboratory for this analysis. The samples were collected October 10, 2013 and received on October 12, 2013 intact and within the preferred shipping temperature range of 2 - 6°C. The samples were analyzed for Pentachlorophenol according to SW-846 Method 8151A and the SAS contract for samples collected between April 2011 and December 2014.

The samples were extracted within the technical holding time of 7 days after sample collection. The sample extracts were analyzed within 40 days following the extraction; therefore, the sample results do not require any qualifications for this criterion.

2. GC/MS TUNING AND GC INSTRUMENT PERFORMANCE

GC Resolution met the minimum resolution criteria as defined in SW846 Method 8000B and 8151A for both RTX-50 and RTX-1701 columns.

3. CALIBRATION

One 5-pt Initial Calibration was completed on October 18, 2013 with the following on-column concentrations; 0.0025 ng, 0.005 ng, 0.01 ng, 0.02 ng and 0.04 ng. Three 1-pt Continuing Calibrations were conducted October 18th and October 21, 2013. The RSDs were less than 15% SAS QC limits. The percent difference (%D) of Pentachlorophenol and surrogate were within the 15% QC limits for all CCVs. Therefore, the sample results do not require any qualifications for this criterion.

4. BLANKS

MB 180-86921/1-A is the method blank. The method blank was free of contamination; therefore, the results do not require qualification for blank contamination. The herbicide method blank summary (Form IV HERBICIDES METHOD BLANK SUMMARY) lists the samples associated with the blank.

5. SYSTEM MONITORING COMPOUND AND SURROGATE RECOVERY

The percent recoveries for the surrogate; 2,4-Dichlorophenylacetic acid, for samples 14CP02-07, 14CP02-08 and 14CP02-15 were above SAS QC limits of 140% on column RTX-50 and zero recoveries on column-RTX-1701. Detected and non-detected compounds are not qualified because the samples have a dilution factor of 5.0 or greater.

6. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

No sample was designated as the parent sample for the MS/MSD analyses. No MS/MSD analyses were performed. Sample results are not qualified for this deficiency.

6B. LABORATORY CONTROL SAMPLES

LCS 180-86921/2-A is the low level water laboratory control sample. LCSD 180-86921/3-A is the laboratory control sample duplicate. The %recoveries for Pentachlorophenol were within the SAS QC range of 40-140%. The RPD for the Pentachlorophenol was within the SAS QC limit of less than 30%; therefore, the sample results do not require any qualifications for this criterion.

7. FIELD BLANK AND FIELD DUPLICATE

No samples were identified as equipment or field blank. Sample 14CP02-08 was identified as a field duplicate of sample 14CP02-07. The results for the field duplicate samples are summarized in the following table:

EPA ID:	14CP02-07	14CP02-08	
Lab ID:	240-30200-2	240-30200-3	
Collection Date	10/10/13	10/10/13	
Collection Time:	10:20	10:20	
Station Location:	PWP-MW10	PWP-MW10 FR	
Receipt Date:	10/12/13	10/12/13	
Extraction Date:	10/16/13	10/16/13	
Analysis Date:	10/21/13	10/21/13	
Receipt Temp:	4.8°C	4.8°C	
Dilution factor:	400	400	
Units:	µg/L	µg/L	%RPD
Pentachlorophenol	17	16	6.1

Sample results are not qualified based on the results of field duplicate samples.

8. INTERNAL STANDARDS

Internal Standards are not required for SW-846 Method 8151A.

9. COMPOUND IDENTIFICATION

After reviewing the chromatograms it appears that Pentachlorophenol was properly identified.

10. COMPOUND QUANTITATION AND REPORTED DETECTION LIMITS

Pentachlorophenol was detected above the reporting limit in all samples. Samples 14CP02-07, 14CP02-08 and 14CP02-15 were analyzed at dilutions because high concentrations of Pentachlorophenol were detected in these samples.

11. SYSTEM PERFORMANCE

GC baseline indicated acceptable performance.

12. ADDITIONAL INFORMATION

All SAS criteria were met with the following exceptions and highlights:

- 1) The samples were extracted on October 16, 2013. The Ch2mHill Cover Letter to EPA is dated November 13, 2013. The TestAmerica North Canton Case Narrative is dated October 28, 2013 well within twenty-one (21) calendar days from the sample receipt date of October 12, 2013.
- 2) MDL studies are actually provided to the Users prior to the contract award and are therefore, not included with every sample delivery group. MDL Values are included on the individual 'Organics Analytical Data Sheet'.
- 3) The laboratory analyzed the samples by Method 8151 as requested in section 7 of the SAS Contract.
- 4) The samples were transshipped from the North Canton, OH lab to the Pittsburgh, PA laboratory for this analysis. The results were sent to North Canton for inclusion in the final report.

Analytical results are summarized in the following table:

EPA sample IDs:	Lab Sample IDs:	PCP Conc. µg/L	Qualifiers	Results reported from GC column
14CP02-03	240-30200-1	0.60		RTX-50
14CP02-07	240-30200-2	17		RTX-1701
14CP02-08	240-30200-3	16		RTX-50
14CP02-15	240-30200-4	7900		RTX-50
Method blank	MB 180-86921/1-A	ND	U	RTX-50
Lab Control Sample	LCS 180-86921/2-A	0.267		RTX-50
Lab Control Sample Duplicate	LCSD 180-86921/3-A	0.310		RTX-50

Data Qualifier Sheet

For the purpose of defining the flagging nomenclature utilized in this document, the following code letters and associated definitions are provided:

VALUE – if the result is a value greater than or equal to the Contract Required Quantitation Limit (CRQL).

- U Indicates that the compound was analyzed for, but not detected. The sample quantitation limit corrected for dilution and percent moisture is reported.
- J Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of a compound but the result is less than the sample quantitation limit, but greater than zero. The flag is also used to indicate a reported result having an associated QC problem.
- UJ The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the action limit of quantitation necessary to accurately and precisely measure the analyte in the sample.
- N Indicates presumptive evidence of a compound. This flag is only used for a tentatively identified compound (TIC), where the identification is based on a mass spectral library search.
- R Indicates the data are unusable. (The compound may or may not be present.)
- P Indicates a pesticide/Aroclor target analyte when there is greater than 25% difference for the detect concentrations between the two GC columns. The lower of the two results is reported.
- C Indicates pesticide results that have been confirmed by GC/MS.
- B Indicates the analyte is detected in the associated method blank as well as the sample.
- E Indicates compounds whose concentrations exceeded the calibration range of the instrument.
- D Indicates an identified compound in an analysis has been diluted. This flag alert the data user to any difference between the concentrations reported in the two analyses.
- A Indicates TICs that are suspected to be aldol condensation products.
- G Indicates the TCLP Matrix Spike Recovery was greater than the upper limit of the analytical method.
- L Indicates the TCLP Matrix Spike Recovery was less than the lower limit of the analytical method.
- T Indicates the analyte is found in the associated TCLP extraction blank as well as in the sample.

X, Y, Z are reserved for laboratory defined flags.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION V
SUPERFUND DIVISION

DATE:

SUBJECT: Review of Region V Data
Received for Review on: November 19, 2013

FROM: Timothy Prendiville, Supervisor (SR-6J)
Superfund Contract Management Section

TO: Data User: Ch2mHill
Email addresses: dave.shekosk@ch2m.com

Level 4 Manual Data Validation

We have reviewed the data for the following case:

SITE Name: Penta Wood Products Site (WI)

SAS Client No.: 14CP02 Job Number: 240-30200-1 SDG Number: 14CP02-03 SVOA

Number and Type of Samples: 4 Waters (Naphthalene)

Sample Numbers: 14CP02-03, 14CP02-07, 14CP02-08, 14CP02-15

Laboratory: Test America – North Canton Hrs for Review:

Following are our findings:

CC: Howard Pham
Region 5 TPO
Mail Code: SA-5J

Below is a summary of the out-of-control audits and the possible effects on the data for this case:

Four (4) preserved water samples, 14CP02-03, 14CP02-07, 14CP02-08 and 14CP02-15, were shipped to TestAmerica North Canton located in North Canton, OH. The samples were collected October 10, 2013 and received on October 12, 2013 intact and within the preferred shipping temperature range of 2 - 6°C. The samples were analyzed for Naphthalene according to SW-846 Method 8270 and the SAS contract for samples collected between April 2011 and December 2014.

EPA	Lab ID	Station	Collection		Receipt
Sample		Location	Date	Time	Date
14CP02-03	240-30200-1	PWP-MW05	10/10/13	11:50	10/12/13
14CP02-07	240-30200-2	PWP-MW10	10/10/13	10:20	10/12/13
14CP02-08	240-30200-3	PWP-MW10 FR	10/10/13	10:20	10/12/13
14CP02-15	240-30200-4	PWP-MW19	10/10/13	13:30	10/12/13

No sample was chosen as the parent sample for the MS/MSD analyses. No MS/MSD analyses were conducted for this sample delivery group.

MB 240-105534/12-A is the method blank.

LCS 240-105534/13-A is the laboratory control sample. No laboratory control sample duplicate analysis was conducted for this sample delivery group.

No samples were identified as QC blanks. Sample 14CP02-08 was identified as a field duplicate of sample 14CP02-07.

The samples were extracted within the technical holding time of 7 days after sample collection. The sample extracts were analyzed within 40 days following the extraction; therefore, the sample results do not require any qualifications for this criterion.

1. HOLDING TIME

Four (4) preserved water samples, 14CP02-03, 14CP02-07, 14CP02-08, 14CP02-15, were shipped to TestAmerica North Canton located in North Canton, OH. The samples were collected October 10, 2013 and received on October 12, 2013 intact and within the preferred shipping temperature range of 2 - 6°C. The samples were analyzed for Naphthalene according to SW-846 Method 8270 and the SAS contract for samples collected between April 2011 and December 2014.

The samples were extracted within the technical holding time of 7 days after sample collection. The sample extracts were analyzed within 40 days following the extraction; therefore, the sample results do not require any qualifications for this criterion.

2. GC/MS TUNING AND GC INSTRUMENT PERFORMANCE

All GC/MS tuning complied with the mass list and ion abundance criteria for DFTPP, and all samples were analyzed within the twelve (12) hour periods for instrument performance checks; therefore, the sample results do not require any qualifications.

3. CALIBRATION

Two (2) 9-pt Initial calibrations was completed on October 8th and October 20, 2013 using the following on column concentrations; 0.1 ng, 0.5 ng, 1 ng, 2.0 ng, 5.0 ng, 10 ng, 15 ng, 20 ng and 25 ng. The %RSDs for the Naphthalene and surrogates were less than the SAS limit of 15% [or correlation coefficient (r^2) greater than 0.999]; therefore, the sample results do not require any qualifications for this criterion.

Two (2) 1-pt continuing calibrations were conducted on the following days; October 18th, and October 21, 2013. The %Ds for Naphthalene and surrogates were less than 20%D; therefore, the sample results do not require any qualifications for this criterion.

4. BLANKS

MB 240-105534/12-A is the method blank. Naphthalene was not detected in the method blank. Sample results do not require any qualifications for this criterion. The semivolatile method blank summary (Form IV GC/MS SVOA METHOD BLANK SUMMARY) lists the samples associated with the blank.

5. SYSTEM MONITORING COMPOUND AND SURROGATE RECOVERY

The semivolatile surrogate recoveries were within the QC limits identified in the laboratory data package for all samples; therefore, the sample results do not require any qualifications for this criterion.

6. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

No sample was chosen as the parent sample for the MS/MSD analyses. No MS/MSD analyses were conducted for this sample delivery group. Sample results are not qualified for this deficiency.

6B. LABORATORY CONTROL SAMPLES

LCS 240-105534/13-A is the laboratory control sample. No laboratory control sample duplicate analysis was conducted for this sample delivery group.

Naphthalene recoveries in the LCSs were within the QC limits of 31 – 110%; therefore, the sample results do not require any qualifications for this criterion.

7. FIELD BLANK AND FIELD DUPLICATE

No samples were identified as QC blanks. Sample 14CP02-08 was identified as a field duplicate of sample 14CP02-07. Naphthalene was not detected in the field duplicate samples.

8. INTERNAL STANDARDS

The internal standards retention times and area counts for the semivolatile analyses were within the required QC limits (50-200%) for all samples; therefore, no qualification of the sample results is required for this criterion.

9. COMPOUND IDENTIFICATION

After reviewing the mass spectra and chromatograms it appears that Naphthalene and its surrogates were properly identified.

10. COMPOUND QUANTITATION AND REPORTED DETECTION LIMITS

All samples were waters and no dilutions were run; therefore, no qualifications are required. All reporting limits were met or lower than the SAS required reporting limits.

11. SYSTEM PERFORMANCE

GC/MS baseline indicated acceptable performance.

SAS Number: 14CP02
Site Name: Penta Wood Products Site (WI)

Page 5 of 6
SDG Number: 14CP02-03 SVOA
Laboratory: TA – North Canton

12. ADDITIONAL INFORMATION

All SAS criteria were met with the following exceptions and highlights:

- 1) Analytical results were submitted to Ch2m Hill, Inc. on October 28, 2013 well within the SAS requested turn-around time of 21 calendar days from receipt of samples.
- 2) MDL studies are actually provided to the Users prior to the contract award and are therefore, not included with every sample delivery group. MDL Values are included on the individual 'Organics Analytical Data Sheet'.
- 3) The lowest calibration standard was 0.1 ug/L.

Data Qualifier Sheet

For the purpose of defining the flagging nomenclature utilized in this document, the following code letters and associated definitions are provided:

VALUE – if the result is a value greater than or equal to the Contract Required Quantitation Limit (CRQL).

- U Indicates that the compound was analyzed for, but not detected. The sample quantitation limit corrected for dilution and percent moisture is reported.
- J Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of a compound but the result is less than the sample quantitation limit, but greater than zero. The flag is also used to indicate a reported result having an associated QC problem.
- N Indicates presumptive evidence of a compound. This flag is only used for a tentatively identified compound (TIC), where the identification is based on a mass spectral library search.
- R Indicates the data are unusable. (The compound may or may not be present.)
- P Indicates a pesticide/Aroclor target analyte when there is greater than 25% difference for the detect concentrations between the two GC columns. The lower of the two results is reported.
- C Indicates pesticide results that have been confirmed by GC/MS.
- B Indicates the analyte is detected in the associated method blank as well as the sample.
- E Indicates compounds whose concentrations exceeded the calibration range of the instrument.
- D Indicates an identified compound in an analysis has been diluted. This flag alert the data user to any difference between the concentrations reported in the two analyses.
- A Indicates TICs that are suspected to be aldol condensation products.
- G Indicates the TCLP Matrix Spike Recovery was greater than the upper limit of the analytical method.
- L Indicates the TCLP Matrix Spike Recovery was less than the lower limit of the analytical method.
- T Indicates the analyte is found in the associated TCLP extraction blank as well as in the sample.

X, Y, Z are reserved for laboratory defined flags.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION V
SUPERFUND DIVISION

DATE:

SUBJECT: Review of Region V Data
Received for Review on: November 19, 2013

FROM: Timothy Prendiville, Supervisor (SR-6J)
Superfund Contract Management Section

TO: Data User: Ch2mHill
Dave.shekosk@ch2m.com

Level 4 Manual Data Validation

We have reviewed the data for the following case:

SITE Name: Penta Wood Products Site (WI)

SAS Client No.: 14CP02 Job Number: 240-30200-1 SDG Number: 14CP02-03 VOA

Number and Type of Samples: 7 Waters (Benzene, Toluene, Ethylbenzene & Xylenes, total)

Sample Numbers: 14CP02; -03, -07, -08, -15, -40, -41, -42

Laboratory: Test America – North Canton Hrs for Review:

Following are our findings:

CC: Howard Pham
Region 5 TPO
Mail Code: SA-5J

Below is a summary of the out-of-control audits and the possible effects on the data for this case:

Seven (7) preserved water samples, 14CP02-03, 14CP02-07, 14CP02-08, 14CP02-15, 14CP02-40, 14CP02-41 and 14CP02-42, were shipped to TestAmerica North Canton located in North Canton, OH. The samples were collected October 10th and 11th, 2013 and received on October 12th, 2013 intact and within the preferred shipping temperature range of 2 - 6°C. The samples were analyzed for Benzene, Toluene, Ethylbenzene and total Xylenes according to SW-846 Method 8260 and the SAS contract for samples collected between April 2011 and December 2014.

EPA	Lab ID	Station	Collection		Receipt
Sample		Location	Date	Time	Date
14CP02-03	240-30200-1	PWP-MW05	10/10/13	11:50	10/12/13
14CP02-07	240-30200-2	PWP-MW10	10/10/13	10:20	10/12/13
14CP02-08	240-30200-3	PWP-MW10 FR	10/10/13	10:20	10/12/13
14CP02-15	240-30200-4	PWP-MW19	10/10/13	13:30	10/12/13
14CP02-40	240-30200-6	PWP-JS13	10/11/13		10/12/13
14CP02-41	240-30200-5	PWP-JS14	10/11/13		10/12/13
14CP02-42	240-30200-7	PWP-JS15	10/11/13		10/12/13

No sample was designated as the parent sample for the MS/MSD analyses. No MS/MSD analyses were performed.

MB 240-106629/5 is the low level water volatile method blank.

LCS 240-106629/3 is the low level water laboratory control sample. No laboratory control duplicate sample analyses were conducted for this sample delivery group.

No samples were identified as field blanks. Sample 14CP02-08 was identified as a field replicate of sample 14CP02-07.

The volatile analyses were performed within the technical holding time of 14 days after sample collection; therefore, the sample results do not require any qualifications for this criterion.

1. HOLDING TIME

Seven (7) preserved water samples, 14CP02-03, 14CP02-07, 14CP02-08, 14CP02-15, 14CP02-40, 14CP02-41 and 14CP02-42, were shipped to TestAmerica North Canton located in North Canton, OH. The samples were collected October 10th and 11th, 2013 and received on October 12th, 2013 intact and within the preferred shipping temperature range of 2 - 6°C. The samples were analyzed for Benzene, Toluene, Ethylbenzene and total Xylenes according to SW-846 Method 8260 and the SAS contract for samples collected between April 2011 and December 2014.

The volatile analyses were performed within the technical holding time of 14 days after sample collection; therefore, the sample results do not require any qualifications.

2. GC/MS TUNING AND GC INSTRUMENT PERFORMANCE

All GC/MS tuning complied with the mass list and ion abundance criteria for BFB, and all samples were analyzed within the twelve (12) hour periods for instrument performance checks; therefore, the sample results do not require any qualifications.

3. CALIBRATION

One (1) 6-pt initial calibrations was completed on October 6th, 2013 using the following on-column concentrations; 40 ng, 20 ng, 10 ng, 5 ng, 1 ng and 0.5 ng. The %RSDs for the Ethylbenzene and m,p-Xylenes were above the SAS QC limit of 15%. Ethylbenzene and m,p-Xylenes were not detected in the field samples; therefore, no qualification was required. The remaining analytes and surrogate were within the SAS QC limits of $\leq 15\%$ or a coefficient of the determination of ≥ 0.99 ; therefore, the sample results do not require any qualifications for this criterion.

One (1) 1-pt continuing calibration was conducted on October 22nd, 2013. The %Ds for all BTEX compounds were less than 20%D; therefore, the sample results do not require any qualifications for this criterion.

4. BLANKS

MB 240-106629/5 is the low level water volatile method blank. No target compounds were detected in the method blank. Sample results do not require any qualifications for this criterion. The volatile method blank summary (Form IV GC/MS VOA METHOD BLANK SUMMARY) list the samples associated with the blank.

5. SYSTEM MONITORING COMPOUND AND SURROGATE RECOVERY

The volatile surrogate recoveries were within the QC limits identified in the laboratory data package for all samples; therefore, the sample results do not require any qualifications for this criterion.

6. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

No sample was designated as the parent sample for the MS/MSD analyses. No MS/MSD analyses were performed. Sample results are not qualified for this deficiency.

6B. LABORATORY CONTROL SAMPLES

LCS 240-106629/3 is the low level water laboratory control sample. No laboratory control duplicate sample analyses were conducted for this sample delivery group.

The LCS recoveries were within the QC limits identified in the laboratory data package.

7. FIELD BLANK AND FIELD DUPLICATE

No samples were identified as field blanks. Sample 14CP02-08 was identified as a field replicate of sample 14CP02-07. No target compounds were detected in the field duplicate samples.

8. INTERNAL STANDARDS

The internal standards retention times and area counts for the volatile analyses were within the required QC limits (50-200%) for all samples; therefore, no qualification of the sample results is required for this criterion.

9. COMPOUND IDENTIFICATION

After reviewing the mass spectra and chromatograms it appears that all volatile compounds were properly identified.

10. COMPOUND QUANTITATION AND REPORTED DETECTION LIMITS

All samples were waters and no dilutions were run; therefore, no qualifications are required. All reporting limits were met or lower than the SAS required reporting limits.

11. SYSTEM PERFORMANCE

GC/MS baseline indicated acceptable performance.

12. ADDITIONAL INFORMATION

All SAS criteria were met with the following exceptions and highlights:

- 1) Analytical results were submitted to Ch2m Hill, Inc. on October 28th, 2013 within the SAS requested turn-around time of 21 calendar days from receipt of samples.

SAS Number: 14CP02
Site Name: Penta Wood Products Site (WI)

SDG Number: 14CP02-03 VOA
Laboratory: TA – North Canton

- 2) MDL studies are actually provided to the Users prior to the contract award and are therefore, not included with every sample delivery group. MDL Values are included on the individual 'Organics Analytical Data Sheet'.
- 3) The lowest calibration standard is 0.1 µg/L which is below the SAS required limits of 0.5 µg/L.

Data Qualifier Sheet

For the purpose of defining the flagging nomenclature utilized in this document, the following code letters and associated definitions are provided:

VALUE – if the result is a value greater than or equal to the Contract Required Quantitation Limit (CRQL).

- U Indicates that the compound was analyzed for, but not detected. The sample quantitation limit corrected for dilution and percent moisture is reported.
- J Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of a compound but the result is less than the sample quantitation limit, but greater than zero. The flag is also used to indicate a reported result having an associated QC problem.
- N Indicates presumptive evidence of a compound. This flag is only used for a tentatively identified compound (TIC), where the identification is based on a mass spectral library search.
- R Indicates the data are unusable. (The compound may or may not be present.)
- P Indicates a pesticide/Aroclor target analyte when there is greater than 25% difference for the detect concentrations between the two GC columns. The lower of the two results is reported.
- C Indicates pesticide results that have been confirmed by GC/MS.
- B Indicates the analyte is detected in the associated method blank as well as the sample.
- E Indicates compounds whose concentrations exceeded the calibration range of the instrument.
- D Indicates an identified compound in an analysis has been diluted. This flag alert the data user to any difference between the concentrations reported in the two analyses.
- A Indicates TICs that are suspected to be aldol condensation products.
- G Indicates the TCLP Matrix Spike Recovery was greater than the upper limit of the analytical method.
- L Indicates the TCLP Matrix Spike Recovery was less than the lower limit of the analytical method.
- T Indicates the analyte is found in the associated TCLP extraction blank as well as in the sample.

X, Y, Z are reserved for laboratory defined flags.

Regional Transmittal Form

**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION V**

DATE: 01/10/2014

SUBJECT: Review of Data
Received for Review on: 11/19/13

FROM: Timothy Prendiville, Supervisor, Chief (SRT-6J)
Superfund Contract Management Section

TO: Data User: CH2M Hill
Email address: dshekosk@CH2M.com

LEVEL 4 DATA VALIDATION

We have reviewed the data for the following case:

Site Name: Penta Wood Products Site (WI)

Case Number: 14CP02 **SDG Number:** 14CP02-19 GC

Number and Type of Samples: 2 waters (Alkalinity, Anions, Sulfide, TOC)

Sample Numbers: 14CP02-19, 14CP02-20

Laboratory: Test America North Canton **Hrs for Review:** _____

Following are our findings:

CC: Howard Pham
Region 5 TPO
Mail Code: SA-5J

Case: 14CP02
Site: Penta Wood Products Site (WI)

SDG: 14CP02-19 GC
Laboratory: Test America North Canton

Narrative

Two (2) water samples, numbered 14CP02-19 and -20, were collected on October 8, 2013. The lab received the samples on October 10, 2013. All sample results are reported to the MDL. The samples were analyzed for alkalinity using SM 2320B, anions (chloride, nitrate, and sulfate) using SM 300.0, sulfide using SM 4500 and total organic carbon using SW-846 9060.

Sample ID	Lab ID	Station Location	Sample Date/Time
14CP02-19	240-30072-9	PWP-EB01	10-08-13/14:50
14CP02-20	240-30072-8	PWP-FB01	10-08-13/14:50

Evidential Audit: All documents provided are copies. No location is noted for the originals. No DC-1 or DC-2 sheets or sample tags were provided. MDLs provided are greater than 2 years old. CLP does not require MS/MSDs be performed on field blank samples. The SAS makes no such distinction so batch QC should have been performed. Flagging for the missing QC is described in the sections below.

Alkalinity: The SAS requires that the lowest calibration point be run at 5.0 mg/L. However, the alkalinity method does not require a calibration curve. The sample results are not qualified for the absence of this standard requirement. MS/MSDs were not performed with the batch. Due to missing batch QC as required by the SAS, all sample data is considered estimated and flagged "J/UJ". All other QC was within the acceptance limits. The result for 14CP02-20 was between the MDL and RL. The samples is considered estimated and flagged "J".

Chloride: MS/MSDs were not performed with the batch. Due to missing batch QC as required by the SAS, all sample data is considered estimated and flagged "J/UJ". All other QC was within the acceptance limits.

Nitrate: All samples were analyzed outside the 48 hour method holding time. These sample results are estimated "J" due to analysis outside method holding time. MS/MSDs were not performed with the batch. Due to missing batch QC as required by the SAS, all sample data is considered estimated and flagged "J/UJ". All other QC was within the acceptance limits.

Sulfate: MS/MSDs were not performed with the batch. Due to missing batch QC as required by the SAS, all sample data is considered estimated and flagged "J/UJ". All other QC was within the acceptance limits.

Sulfide: The SAS requires that the lowest calibration point be run at 1.0 mg/L. However, the sulfide method does not require a calibration curve. The sample results are not qualified for the absence of this standard requirement. MS/MSDs were not performed with the batch. Due to missing batch QC as required by the SAS, all sample data is considered estimated and flagged "J/UJ".

TOC: MS/MSDs were not performed with the batch. Due to missing batch QC as required by the SAS, all sample data is considered estimated and flagged "J/UJ". All other QC was within the acceptance limits.

Reviewed by: Paul Little
Date: January 10, 2014

Case: 14CP02
Site: Penta Wood Products Site (WI)

SDG: 14CP02-19 GC
Laboratory: Test America North Canton

Other comments: 14CP02-19 and -20 were identified as field/equipment blanks. 14CP02-20 showed a result above the MDL for alkalinity. No other contamination was present. No samples were identified as field duplicates.

Reviewed by: Paul Little
Date: January 10, 2014

Case: 14CP02
Site: Penta Wood Products Site (WI)

SDG: 14CP02-19 GC
Laboratory: Test America North Canton

Data Qualifier Sheet

<u>Qualifiers</u>	<u>Data Qualifier Definitions</u>
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting Quality Control (QC) criteria. The analyte may or may not be present in the sample.
UJ	The analyte was analyzed for, but not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

Reviewed by: Paul Little
Date: January 10, 2014

Regional Transmittal Form

**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION V**

DATE: 1/24/2014

SUBJECT: Review of Data
Received for review on 11/19/2013

FROM: Timothy Prendiville, Supervisor, Chief (SR-6J)
Superfund Contract Management Section

TO: Data User: CH2M Hill
Email address: dshekosk@CH2M.com

LEVEL 3 DATA VALIDATION

We have reviewed the data for the following case:

SITE NAME: Penta Wood Products (WI)

CASE NUMBER: 14CP02 **SDG NUMBER:** 14CP02-19 MET

Number and Type of Samples: 2 waters (dissolved metals)

Sample Numbers: 14CP02-19, -20

Laboratory: TA North Canton **Hrs. for Review:** _____

Following are our findings:

CC: Howard Pham
Region 5 TPO
Mail Code: SA-5J

Narrative

Two (2) water samples, numbered 14CP02-19 and -20, were collected on October 8, 2013. The lab received the samples on October 10, 2013 in good condition. All sample results are reported to the MDL. The samples were analyzed for metals using SW-846 6020 (ICP-MS) analysis procedure (the SAS requires SW-846 Method 6010B or equivalent). Dissolved arsenic, calcium, copper, iron, magnesium, manganese and zinc are reported for metals.

<u>Sample ID</u>	<u>Lab ID</u>	<u>Station Location</u>	<u>Sample Date/Time</u>
14CP02-19	240-30072-9	PWP-EB01	10-08-13/14:50
14CP02-20	240-30072-8	PWP-FB01	10-08-13/14:50

Evidential Audit: All documents provided are copies. No location is noted for the originals. No DC-1 or DC-2 sheets or sample tags were provided.

ICP-MS: The lowest calibration point was greater than the SAS required RL and the laboratory RL for all elements except Cu and Zn. For Mn, Cu, Zn, and As, the LCS sample results were greater than the calibration range; however, Method 6020 allows the use of linear range and all reported results are within the reported linear range. No MS/MSD was performed; as a result, all sample results are considered estimated "J". Non-detects are estimated "UJ".

For As, no MS/MSD was performed; as a result, all sample results are considered estimated "J". Non-detects are estimated "UJ".

For Ca, the laboratory MDL was provided for mass 43. All data was reported from the 44 mass. Reported results that are lower than the CRI check standard are considered estimated flagged "J". The sample results for 14CP02-19 and -20 are affected by a blank greater than the MDL indicating possible contamination. Results should be raised to the CRQL and qualified "UJ".

For Cu, the laboratory MDL was provided for mass 65. All data was reported from the 63 mass. The CRI check standard is lower than the CRQL and verifies the data. The sample results for 14CP02-19 and -20 are affected by a blank greater than the MDL indicating possible contamination. Results should be raised to the CRQL and qualified "UJ".

For Fe, sample 14CP02-20 is affected by a blank greater than the MDL indicating possible contamination. Results should be raised to the CRQL and qualified "UJ".

For Mg, the laboratory MDL was provided for mass 25. All data was reported from the 24 mass. Reported results that are lower than the CRI check standard are considered estimated and flagged "J". The sample results for 14CP02-20 are affected by a blank greater than the MDL indicating possible contamination. Results should be raised to the CRQL and qualified "UJ".

For Mn, the laboratory RL is greater than the SAS required RL. The CRI check standard is lower than the CRQL and verifies the data. The sample results for 14CP02-19 and -20 are affected by a blank greater than the MDL indicating possible contamination. Results should be raised to the CRQL and qualified "UJ".

For Zn, sample 14CP02-20 is affected by a blank greater than the MDL indicating possible contamination. Results should be raised to the CRQL and qualified "UJ".

Other comments: 14CP02-19 and -20 were identified as field/equipment blanks. No contamination which affects other samples was present.

No sample results were identified as field duplicates.

EXES ISM01.3 Data Qualifier Sheet

<u>Qualifiers</u>	<u>Data Qualifier Definitions</u>
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting Quality Control (QC) criteria. The analyte may or may not be present in the sample.
UJ	The analyte was analyzed for, but not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION V
SUPERFUND DIVISION

DATE:

SUBJECT: Review of Region V Data
Received for Review on: November 19, 2013

FROM: Timothy Prendiville, Supervisor (SR-6J)
Superfund Contract Management Section

TO: Data User: Ch2m Hill
Email: dave.shekosk@ch2m.com

Level 4 Manual Data Validation

We have reviewed the data for the following case:

SITE Name: Penta Wood Products (WI)

SAS Client No.: 14CP02 Job Number: 240-30072-1 SDG Number: 14CP02-19 PCP

Number and Type of Samples: 9 Waters (Pentachlorophenol)

Sample Numbers: 14CP02-19 thru 14CP02-27

Laboratory: Test America – North Canton Hrs for Review:

Following are our findings

CC: Howard Pham
Region 5 TPO
Mail Code: SA-5J

Below is a summary of the out-of-control audits and the possible effects on the data for this case:

Nine (9) preserved water samples, 14CP02-19 through 14CP02-27, were shipped to TestAmerica North Canton located in North Canton, OH. The samples were transhipped to the Pittsburgh laboratory for this analysis. The samples were collected October 8th, 2013 and received on October 10th, 2013 intact and within the preferred shipping temperature range of 2 - 6°C. The samples were analyzed for Pentachlorophenol according to SW-846 Method 8151A and the SAS contract for samples collected between April 2011 and December 2014.

EPA	Lab ID	Station	Collection		Receipt
Sample		Location	Date	Time	Date
14CP02-19	240-30072-9	PWP-EB01	10/08/13	14:50	10/10/13
14CP02-20	240-30072-8	PWP-FB01	10/08/13	14:50	10/10/13
14CP02-21	240-30072-5	PWP-RW01	10/08/13	14:35	10/10/13
14CP02-22	240-30072-6	PWP-RW01 FR	10/08/13	14:35	10/10/13
14CP02-23	240-30072-1	PWP-RW02	10/08/13	15:00	10/10/13
14CP02-24	240-30072-2	PWP-RW03	10/08/13	15:55	10/10/13
14CP02-25	240-30072-3	PWP-RW04	10/08/13	15:25	10/10/13
14CP02-26	240-30072-4	PWP-RW05	10/08/13	14:00	10/10/13
14CP02-27	240-30072-7	PWP-DW01	10/08/13	14:30	10/10/13

No sample was designated as the parent sample for the MS/MSD analyses. No MS/MSD analyses were performed.

MB 180-86488/1-A is the low level water method blank.

LCS 180-86488/2-A is the low level water laboratory control sample. LCSD 180-86488/3-A is the laboratory control duplicate sample.

Sample 14CP02-19 was identified as an equipment blank. Sample 14CP02-20 was identified as the field blank. Sample 14CP02-22 was identified as a field replicate of sample 14CP02-21.

The samples were extracted within the technical holding time of 7 days after sample collection. The sample extracts were analyzed within 40 days following the extraction; therefore, the sample results do not require any qualifications for this criterion.

1. HOLDING TIME

Nine (9) preserved water samples, 14CP02-19 through 14CP02-27, were shipped to TestAmerica North Canton located in North Canton, OH. The samples were transshipped to the Pittsburgh laboratory for this analysis. The samples were collected October 8th, 2013 and received on October 10th, 2013 intact and within the preferred shipping temperature range of 2 - 6°C. The samples were analyzed for Pentachlorophenol according to SW-846 Method 8151A and the SAS contract for samples collected between April 2011 and December 2014.

The samples were extracted within the technical holding time of 7 days after sample collection. The sample extracts were analyzed within 40 days following the extraction; therefore, the sample results do not require any qualifications for this criterion.

2. GC/MS TUNING AND GC INSTRUMENT PERFORMANCE

GC Resolution met the minimum resolution criteria as defined in SW846 Method 8000B and 8151A for both RTX-50 and RTX-1701 columns.

3. CALIBRATION

One 5-pt initial calibration was completed on October 10th, 2014 with the following on-column concentrations; 0.0025 ng, 0.005 ng, 0.01 ng, 0.02 ng and 0.04 ng. Three 1-pt continuing calibrations were conducted October 14th, 2014. The percent difference (%D) of Pentachlorophenol were within the 15% SAS QC limits for all CCVs. Therefore, the sample results do not require any qualifications for this criterion.

The percent differences (%Ds) of the surrogate, 2,4-Dichlorophenylacetic acid, exceeded 15% in the CCVRT 180-86686/1 (B1030158.D) analyzed October 14th, 2014 @ 7:56 and CCV 180-86686/15 (B1030172.D) analyzed October 14th, 2014 @ 13:42 using column RTX:1701. Detected and non-detected results are not qualified based on the %Ds data of the surrogate alone.

4. BLANKS

MB 180-86488/1-A is the low level water method blank. The method blank was free of contamination; therefore, the results do not require qualification for blank contamination.

5. SYSTEM MONITORING COMPOUND AND SURROGATE RECOVERY

According to the laboratory extraction sheet, twice the amount of surrogate was added to sample 14CP02-22.

The percent recoveries for the surrogate; 2,4-Dichlorophenylacetic acid, were within the SAS QC limits of 32-140% for all samples; therefore, no qualification was required.

6. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

No sample was designated as the parent sample for the MS/MSD analyses. No MS/MSD analyses were performed. Sample results are not qualified for this deficiency.

6B FOR LABORATORY CONTROL SAMPLES:

LCS 180-86488/2-A is the low level water laboratory control sample. LCSD 180-86488/3-A is the laboratory control duplicate sample. The %recoveries for Pentachlorophenol were within the SAS QC range of 40-140%. The RPD for the Pentachlorophenol was within the SAS QC limit of less than 30%; therefore, the sample results do not require any qualifications for this criterion.

7. FIELD BLANK AND FIELD DUPLICATE

Sample 14CP02-19 was identified as an equipment blank. Sample 14CP02-20 was identified as the field blank. No target compounds were detected in the QC blanks. Sample 14CP02-22 was identified as a field replicate of sample 14CP02-21. The results for the field duplicate samples are summarized in the following table:

EPA ID:	14CP02-21	14CP02-22	
Lab ID:	240-30072-5	240-30072-6	
Collection Date	10/08/13	10/08/13	
Collection Time:	14:35	14:35	
Station Location:	PWP-RW01	PWP-RW01 FR	
Receipt Date:	10/10/13	10/10/13	
Extraction Date:	10/11/13	10/11/13	
Analysis Date:	10/14/13	10/14/13	
Receipt Temp:	2.6°C	2.6°C	
Dilution factor:	4.0	4.0	
Units:	µg/L	µg/L	%RPD
Pentachlorophenol	0.04	ND	200

Sample results are not qualified based on the results of field duplicate samples.

8. INTERNAL STANDARDS

Internal Standards are not required for SW-846 Method 8151A.

9. COMPOUND IDENTIFICATION

After reviewing the chromatograms it appears that Pentachlorophenol was properly identified.

SAS Number: 14CP02
 Site Name: Penta Wood Products (WI)

SDG Number: 14CP02-19 PCP
 Laboratory: TA - Canton

10. COMPOUND QUANTITATION AND REPORTED DETECTION LIMITS

The presence of Pentachlorophenol was below the reporting limit of 0.10 µg/L in samples 14CP02-21 and 14CP02-27; therefore, the concentrations are qualified as “J” as estimated.

11. SYSTEM PERFORMANCE

GC baseline indicated acceptable performance.

12. ADDITIONAL INFORMATION

The samples were extracted on October 11th, 2014. The Ch2mHill Cover Letter to EPA is dated November 13th, 2013. The TA Canton Case Narrative is dated October 24th, 2013, within twenty-one (21) calendar days from the sample receipt date of October 10th, 2013.

The sample analysis data and quality control information were reported on forms similar to the most recent CLP SOW as specified in section 9.0 of the SAS Contract.

The laboratory analyzed the samples by Method 8151 as requested in section 7 of the SAS Contract.

The samples were transshipped from the North Canton, OH lab to the Pittsburgh, PA laboratory for this analysis. The results were sent to North Canton for inclusion in the final report.

Analytical results are summarized in the following table:

EPA sample IDs:	Lab Sample IDs:	PCP Conc. µg/L	Qualifiers	Results reported from GC column
14CP02-19	240-30072-9	ND	U	RTX-50
14CP02-20	240-30072-8	ND	U	RTX-50
14CP02-21	240-30072-5	0.040	J	RTX-50
14CP02-22	240-30072-6	ND	U	RTX-50
14CP02-23	240-30072-1	ND	U	RTX-50
14CP02-24	240-30072-2	ND	U	RTX-50
14CP02-25	240-30072-3	ND	U	RTX-50
14CP02-26	240-30072-4	ND	U	RTX-50
14CP02-27	240-30072-7	0.027	J	RTX-50
Method blank	MB 180-86488/1-A	ND	U	RTX-50
Lab Control Sample	LCS 180-86488/2-A	0.297		RTX-50
Lab Control Sample Duplicate	LCSD 180-86488/3-A	0.256		RTX-50

Data Qualifier Sheet

For the purpose of defining the flagging nomenclature utilized in this document, the following code letters and associated definitions are provided:

VALUE – if the result is a value greater than or equal to the Contract Required Quantitation Limit (CRQL).

- U Indicates that the compound was analyzed for, but not detected. The sample quantitation limit corrected for dilution and percent moisture is reported.
- J Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of a compound but the result is less than the sample quantitation limit, but greater than zero. The flag is also used to indicate a reported result having an associated QC problem.
- UJ The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the action limit of quantitation necessary to accurately and precisely measure the analyte in the sample.
- N Indicates presumptive evidence of a compound. This flag is only used for a tentatively identified compound (TIC), where the identification is based on a mass spectral library search.
- R Indicates the data are unusable. (The compound may or may not be present.)
- P Indicates a pesticide/Aroclor target analyte when there is greater than 25% difference for the detect concentrations between the two GC columns. The lower of the two results is reported.
- C Indicates pesticide results that have been confirmed by GC/MS.
- B Indicates the analyte is detected in the associated method blank as well as the sample.
- E Indicates compounds whose concentrations exceeded the calibration range of the instrument.
- D Indicates an identified compound in an analysis has been diluted. This flag alert the data user to any difference between the concentrations reported in the two analyses.
- A Indicates TICs that are suspected to be aldol condensation products.
- G Indicates the TCLP Matrix Spike Recovery was greater than the upper limit of the analytical method.
- L Indicates the TCLP Matrix Spike Recovery was less than the lower limit of the analytical method.
- T Indicates the analyte is found in the associated TCLP extraction blank as well as in the sample.

X, Y, Z are reserved for laboratory defined flags.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION V
SUPERFUND DIVISION

DATE:

SUBJECT: Review of Region V Data
Received for Review on: November 19, 2013

FROM: Timothy Prendiville, Supervisor (SR-6J)
Superfund Contract Management Section

TO: Data User: Ch2mHill
Email address: dave.shekosk@ch2m.com

Level 4 Manual Data Validation

We have reviewed the data for the following case:

SITE Name: Penta Wood Products Site (WI)

SAS Client No.: 14CP02 Job Number: 240-30072-1 SDG Number: 14CP02-19 SVOA

Number and Type of Samples: 9 Waters (Naphthalene)

Sample Numbers: 14CP02-19 thru 14CP02-27

Laboratory: Test America – North Canton Hrs for Review:

Following are our findings:

CC: Howard Pham
Region 5 TPO
Mail Code: SA-5J

SAS Number: 14CP02
 Site Name: Penta Wood Products Site (WI)

SDG Number: 14CP02-19 SVOA
 Laboratory: TA – North Canton

Below is a summary of the out-of-control audits and the possible effects on the data for this case:

Nine (9) water samples, 14CP02-19 through 14CP02-27, were shipped to TestAmerica North Canton located in North Canton, OH. The samples were collected October 8th, 2013 and received on October 10th, 2013 intact and within the preferred shipping temperature range of 2 - 6°C. The samples were analyzed for Naphthalene according to SW-846 Method 8270 and the SAS contract for samples collected between April 2011 and December 2014.

EPA	Lab ID	Station	Collection		Receipt
Sample		Location	Date	Time	Date
14CP02-19	240-30072-9	PWP-EB01	10/08/13	14:50	10/10/13
14CP02-20	240-30072-8	PWP-FB01	10/08/13	14:50	10/10/13
14CP02-21	240-30072-5	PWP-RW01	10/08/13	14:35	10/10/13
14CP02-22	240-30072-6	PWP-RW01 FR	10/08/13	14:35	10/10/13
14CP02-23	240-30072-1	PWP-RW02	10/08/13	15:00	10/10/13
14CP02-24	240-30072-2	PWP-RW03	10/08/13	15:55	10/10/13
14CP02-25	240-30072-3	PWP-RW04	10/08/13	15:25	10/10/13
14CP02-26	240-30072-4	PWP-RW05	10/08/13	14:00	10/10/13
14CP02-27	240-30072-7	PWP-DW01	10/08/13	14:30	10/10/13

No sample was chosen as the parent sample for the MS/MSD analyses. No MS/MSD analyses were conducted for this sample delivery group.

MB 240-105146/14-A is the method blank.

LCS 240-105146/15-A is the laboratory control sample. No laboratory control duplicate sample analysis was conducted for this sample delivery group.

Sample 14CP02-19 was identified as an equipment blank. Sample 14CP02-20 was identified as the field blank. Sample 14CP02-22 was identified as a field replicate of sample 14CP02-21.

The samples were extracted within the technical holding time of 7 days after sample collection. The sample extracts were analyzed within 40 days following the extraction; therefore, the sample results do not require any qualifications for this criterion.

1. HOLDING TIME

Nine (9) water samples, 14CP02-19 through 14CP02-27, were shipped to TestAmerica North Canton located in North Canton, OH. The samples were collected October 8th, 2013 and received on October 10th, 2013 intact and within the preferred shipping temperature range of 2 - 6°C. The samples were analyzed for Naphthalene according to SW-846 Method 8270 and the SAS contract for samples collected between April 2011 and December 2014.

The samples were extracted within the technical holding time of 7 days after sample collection. The sample extracts were analyzed within 40 days following the extraction; therefore, the sample results do not require any qualifications for this criterion.

2. GC/MS TUNING AND GC INSTRUMENT PERFORMANCE

All GC/MS tuning complied with the mass list and ion abundance criteria for DFTPP. All samples were analyzed within the twelve (12) hour periods for instrument performance checks; therefore, the sample results do not require any qualifications.

3. CALIBRATION

One (1) 9-pt initial calibration was completed on September 5th, 2013 using the following on-column concentrations; 0.1 ng, 0.5 ng, 1 ng, 2.0 ng, 5.0 ng, 10 ng, 15 ng, 20 ng and 25 ng. The %RSDs for the Naphthalene and surrogates were less than the SAS limit of 15%; therefore, the sample results do not require any qualifications for this criterion.

Three (3) 1-pt continuing calibrations were conducted on the following days; October 16th, October 17th and October 18th, 2013. The %Ds for Naphthalene and the surrogates were less than 20%D; therefore, the sample results do not require any qualifications for this criterion.

4. BLANKS

MB 240-105146/14-A is the method blank. Naphthalene was not detected in the method blank. Sample results do not require any qualifications for this criterion. The semivolatile method blank summary (Form IV GC/MS SVOA METHOD BLANK SUMMARY) lists the samples associated with the blank.

5. SYSTEM MONITORING COMPOUND AND SURROGATE RECOVERY

The semivolatile surrogate recoveries were within the QC limits identified in the laboratory data package for all samples; therefore, the sample results do not require any qualifications for this criterion.

6. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

No sample was chosen as the parent sample for the MS/MSD analyses. No MS/MSD analyses were conducted for this sample delivery group. Sample results are not qualified for this deficiency.

6B. LABORATORY CONTROL SAMPLES

LCS 240-105146/15-A is the laboratory control sample. No laboratory control duplicate sample analysis was conducted for this sample delivery group.

Naphthalene recovery in the LCS was within the QC limits of 31 – 110%; therefore, the sample results do not require any qualifications for this criterion.

7. FIELD BLANK AND FIELD DUPLICATE

Sample 14CP02-19 was identified as an equipment blank. Sample 14CP02-20 was identified as the field blank. Sample 14CP02-22 was identified as a field duplicate of sample 14CP02-21. Naphthalene was not detected in the QC blanks or field duplicates.

8. INTERNAL STANDARDS

The internal standards retention times and area counts for the semivolatile analyses were within the required QC limits (50-200%) for all samples; therefore, no qualification of the sample results is required for this criterion.

9. COMPOUND IDENTIFICATION

After reviewing the mass spectra and chromatograms it appears that Naphthalene was properly identified.

10. COMPOUND QUANTITATION AND REPORTED DETECTION LIMITS

All samples were waters and no dilutions were run; therefore, no qualifications are required. All reporting limits were met or lower than the SAS required reporting limits.

11. SYSTEM PERFORMANCE

GC/MS baseline indicated acceptable performance.

SAS Number: 14CP02
Site Name: Penta Wood Products Site (WI)

Page 5 of 6
SDG Number: 14CP02-19 SVOA
Laboratory: TA – North Canton

12. ADDITIONAL INFORMATION

All SAS criteria were met with the following exceptions and highlights:

- 1) Analytical results were submitted to Ch2m Hill, Inc. on October 24th, 2013 within the SAS requested turn-around time of 21 calendar days from receipt of samples.
- 2) MDL studies are actually provided to the Users prior to the contract award and are therefore, not included with every sample delivery group. MDL Values are included on the individual 'Organics Analytical Data Sheet'.
- 3) The lowest calibration standard was 0.2 ug/L.

Data Qualifier Sheet

For the purpose of defining the flagging nomenclature utilized in this document, the following code letters and associated definitions are provided:

VALUE – if the result is a value greater than or equal to the Contract Required Quantitation Limit (CRQL).

- U Indicates that the compound was analyzed for, but not detected. The sample quantitation limit corrected for dilution and percent moisture is reported.
- J Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of a compound but the result is less than the sample quantitation limit, but greater than zero. The flag is also used to indicate a reported result having an associated QC problem.
- N Indicates presumptive evidence of a compound. This flag is only used for a tentatively identified compound (TIC), where the identification is based on a mass spectral library search.
- R Indicates the data are unusable. (The compound may or may not be present.)
- P Indicates a pesticide/Aroclor target analyte when there is greater than 25% difference for the detect concentrations between the two GC columns. The lower of the two results is reported.
- C Indicates pesticide results that have been confirmed by GC/MS.
- B Indicates the analyte is detected in the associated method blank as well as the sample.
- E Indicates compounds whose concentrations exceeded the calibration range of the instrument.
- D Indicates an identified compound in an analysis has been diluted. This flag alert the data user to any difference between the concentrations reported in the two analyses.
- A Indicates TICs that are suspected to be aldol condensation products.
- G Indicates the TCLP Matrix Spike Recovery was greater than the upper limit of the analytical method.
- L Indicates the TCLP Matrix Spike Recovery was less than the lower limit of the analytical method.
- T Indicates the analyte is found in the associated TCLP extraction blank as well as in the sample.

X, Y, Z are reserved for laboratory defined flags.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION V
SUPERFUND DIVISION

DATE:

SUBJECT: Review of Region V Data
Received for Review on: November 19, 2013

FROM: Timothy Prendiville, Supervisor (SR-6J)
Superfund Contract Management Section

TO: Data User: Ch2mHill

Level 4 Manual Data Validation

We have reviewed the data for the following case:

SITE Name: Penta Wood Products Site (WI)

SAS Client No.: 14CP02 Job Number: 240-30072-1 SDG Number: 14CP02-19 VOA

Number and Type of Samples: 14 Waters (Benzene, Toluene, Ethylbenzene & Xylenes, total)

Sample Numbers: 14CP02-19 thru 14CP02-32

Laboratory: Test America – North Canton Hrs for Review:

Following are our findings:

CC: Howard Pham
Region 5 TPO
Mail Code: SA-5J

Below is a summary of the out-of-control audits and the possible effects on the data for this case:

Fourteen (14) preserved water samples, 14CP02-19 through 14CP02-32, were shipped to TestAmerica North Canton located in North Canton, OH. The samples were collected October 8th and 9th, 2013 and received on October 10th, 2013 intact and within the preferred shipping temperature range of 2 - 6°C. The samples were analyzed for Benzene, Toluene, Ethylbenzene and total Xylenes according to SW-846 Method 8260 and the SAS contract for samples collected between April 2011 and December 2014.

EPA Sample	Lab ID	Station Location	Collection Date	Time	Receipt Date
14CP02-19	240-30072-9	PWP-EB01	10/08/13	14:50	10/10/13
14CP02-20	240-30072-8	PWP-FB01	10/08/13	14:50	10/10/13
14CP02-21	240-30072-5	PWP-RW01	10/08/13	14:35	10/10/13
14CP02-22	240-30072-6	PWP-RW01 FR	10/08/13	14:35	10/10/13
14CP02-23	240-30072-1	PWP-RW02	10/08/13	15:00	10/10/13
14CP02-24	240-30072-2	PWP-RW03	10/08/13	15:55	10/10/13
14CP02-25	240-30072-3	PWP-RW04	10/08/13	15:25	10/10/13
14CP02-26	240-30072-4	PWP-RW05	10/08/13	14:00	10/10/13
14CP02-27	240-30072-7	PWP-DW01	10/08/13	14:30	10/10/13
14CP02-28	240-30072-12	PWP-JS01	10/09/13		10/10/13
14CP02-29	240-30072-10	PWP-JS02	10/09/13		10/10/13
14CP02-30	240-30072-11	PWP-JS03	10/09/13		10/10/13
14CP02-31	240-30072-14	PWP-JS04	10/09/13		10/10/13
14CP02-32	240-30072-13	PWP-JS05	10/09/13		10/10/13

No sample was designated as the parent sample for the MS/MSD analyses. No MS/MSD analyses were performed.

MB 240-105672/6 and MB 240-106038/6 are the low level water volatile method blanks.

LCS 240-105672/4 and LCS 240-106038/4 are the low level water laboratory control samples. No laboratory control duplicate sample analyses were conducted for this sample delivery group.

Sample 14CP02-19 was identified as an equipment blank. Sample 14CP02-20 was identified as a field blank. No samples were identified as field duplicate samples.

The volatile analyses were performed within the technical holding time of 14 days after sample collection; therefore, the sample results do not require any qualifications for this criterion.

1. HOLDING TIME

Fourteen (14) preserved water samples, 14CP02-19 through 14CP02-32, were shipped to TestAmerica North Canton located in North Canton, OH. The samples were collected October 8th and 9th, 2013 and received on October 10th, 2013 intact and within the preferred shipping temperature range of 2 - 6°C. The samples were analyzed for Benzene, Toluene, Ethylbenzene and total Xylenes according to SW-846 Method 8260 and the SAS contract for samples collected between April 2011 and December 2014.

The volatile analyses were performed within the technical holding time of 14 days after sample collection; therefore, the sample results do not require any qualifications.

2. GC/MS TUNING AND GC INSTRUMENT PERFORMANCE

All GC/MS tuning complied with the mass list and ion abundance criteria for BFB, and all samples were analyzed within the twelve (12) hour periods for instrument performance checks; therefore, the sample results do not require any qualifications.

3. CALIBRATION

One (1) 6-pt initial calibrations was completed on October 2nd, 2013 using the following on-column concentrations; 40 ng, 20 ng, 10 ng, 5 ng, 2 ng and 0.5 ng. The %RSDs for the BTEX compounds were less than the SAS limit of 15%; therefore, the sample results do not require any qualifications for this criterion.

Two (2) 1-pt continuing calibrations were conducted on the following days; October 16th and October 17th, 2013. The %Ds for all BTEX compounds were less than 20%D; therefore, the sample results do not require any qualifications for this criterion.

4. BLANKS

MB 240-105672/6 and MB 240-106038/6 are the low level water volatile method blanks. No target compounds were detected in the method blanks. Sample results do not require any qualifications for this criterion. The volatile method blank summaries (Form IV GC/MS VOA METHOD BLANK SUMMARY) list the samples associated with each blank.

5. SYSTEM MONITORING COMPOUND AND SURROGATE RECOVERY

The volatile surrogate recoveries were within the QC limits identified in the laboratory data package for all samples; therefore, the sample results do not require any qualifications for this criterion.

6. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

No sample was designated as the parent sample for the MS/MSD analyses. No MS/MSD analyses were performed. Sample results are not qualified for this deficiency.

6B. LABORATORY CONTROL SAMPLES

LCS 240-105672/4 and LCS 240-106038/4 are the low level water laboratory control samples. No laboratory control duplicate sample analyses were conducted for this sample delivery group.

The LCS recoveries were within the QC limits identified in the laboratory data package.

7. FIELD BLANK AND FIELD DUPLICATE

Sample 14CP02-19 was identified as an equipment blank. Sample 14CP02-20 was identified as a field blank. Neither blank contained any of the BTEX compounds.

No samples were identified as field duplicate samples.

8. INTERNAL STANDARDS

The internal standards retention times and area counts for the volatile analyses were within the required QC limits (50-200%) for all samples; therefore, no qualification of the sample results is required for this criterion.

9. COMPOUND IDENTIFICATION

After reviewing the mass spectra and chromatograms it appears that all volatile compounds were properly identified.

10. COMPOUND QUANTITATION AND REPORTED DETECTION LIMITS

All samples were waters and no dilutions were run; therefore, no qualifications are required. All reporting limits were met or lower than the SAS required reporting limits.

11. SYSTEM PERFORMANCE

GC/MS baseline indicated acceptable performance.

SAS Number: 14CP02
Site Name: Penta Wood Products Site (WI)

Page 5 of 6
SDG Number: 14CP02-19 VOA
Laboratory: TA – North Canton

12. ADDITIONAL INFORMATION

All SAS criteria were met with the following exceptions and highlights:

- 1) Analytical results were submitted to Ch2m Hill, Inc. on October 24, 2013 within the SAS requested turn-around time of 21 calendar days from receipt of samples.
- 2) MDL studies are actually provided to the Users prior to the contract award and are therefore, not included with every sample delivery group. MDL Values are included on the individual 'Organics Analytical Data Sheet'.
- 3) The concentration for the lowest calibration standard is 0.1 µg/L which is below the SAS required Reporting Limits of 0.5 ug/L.

Data Qualifier Sheet

For the purpose of defining the flagging nomenclature utilized in this document, the following code letters and associated definitions are provided:

VALUE – if the result is a value greater than or equal to the Contract Required Quantitation Limit (CRQL).

- U Indicates that the compound was analyzed for, but not detected. The sample quantitation limit corrected for dilution and percent moisture is reported.
- J Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of a compound but the result is less than the sample quantitation limit, but greater than zero. The flag is also used to indicate a reported result having an associated QC problem.
- N Indicates presumptive evidence of a compound. This flag is only used for a tentatively identified compound (TIC), where the identification is based on a mass spectral library search.
- R Indicates the data are unusable. (The compound may or may not be present.)
- P Indicates a pesticide/Aroclor target analyte when there is greater than 25% difference for the detect concentrations between the two GC columns. The lower of the two results is reported.
- C Indicates pesticide results that have been confirmed by GC/MS.
- B Indicates the analyte is detected in the associated method blank as well as the sample.
- E Indicates compounds whose concentrations exceeded the calibration range of the instrument.
- D Indicates an identified compound in an analysis has been diluted. This flag alert the data user to any difference between the concentrations reported in the two analyses.
- A Indicates TICs that are suspected to be aldol condensation products.
- G Indicates the TCLP Matrix Spike Recovery was greater than the upper limit of the analytical method.
- L Indicates the TCLP Matrix Spike Recovery was less than the lower limit of the analytical method.
- T Indicates the analyte is found in the associated TCLP extraction blank as well as in the sample.

X, Y, Z are reserved for laboratory defined flags.

Appendix F
Soil Gas Analytical Results

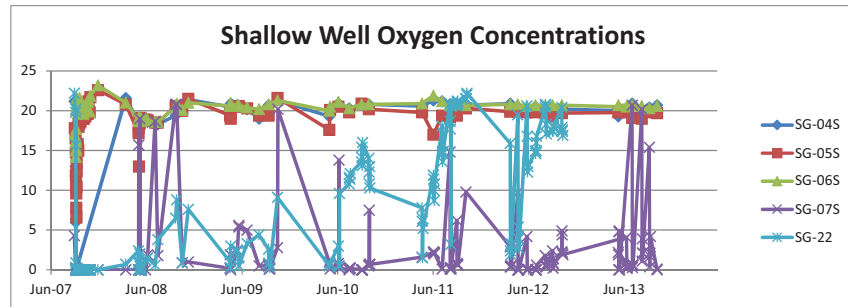
	<i>Well ID</i>	<i>Shallow</i>	SG-22	SG-04S	SG-07S	SG-05S	SG-06S	<i>Intermediate</i>	SG-04I	SG-07I	SG-05I	SG-06I	<i>Deep</i>	SG-04D	SG-07D	SG-05D	SG-06D	<i>Perimeter</i>	SG-23 (3')	SG-24 (5')	SG-25 (5')	SG-26 (5')	
	<i>2 hours after startup</i>																						
O2	4/10/2012		5.0	0.1	21.7	0.3	0.0		3.2	2.0	0.0	0.0		3.2	1.2	0.0	0.3		0.0	0.0	0.0	0.0	
O2	4/11/2012		23.5	NM	25.3	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM	
O2	4/12/2012		22.8	NM	25.5	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM	
O2	4/13/2012		24.3	NM	25.4	NM	NM		0.5	NM	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM	
O2	4/14/2012		22.1	NM	25.2	NM	NM		0.4	NM	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM	
O2	5/9/2012		0.6	0.5	13.0	0.2	0.0		1.0	1.1	0.1	0.0		0.6	0.6	0.1	0.1		0.0	0.0	0.0	0.0	
O2	5/10/2012		21.5	NM	26.9	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM	
O2	5/11/2012		19.0	NM	26.7	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM	
O2	5/12/2012		21.7	NM	27.1	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM	
O2	5/13/2012		21.9	NM	27.3	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM	
O2	6/13/2012		0.1	0.0	15.9	0.1	0.0		0.2	0.7	0.1	0.0		0.6	0.4	0.0	0.0		0.0	0.0	0.0	0.0	
O2	6/14/2012		4.5	NM	28.1	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM	
O2	6/15/2012		8.4	NM	26.9	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM	
O2	6/16/2012		9.6	NM	26.8	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM	
O2	6/17/2012		8.9	NM	27.1	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM	
O2	7/16/2012		6.7	0.1	30.4	0.1	0.0		0.4	0.6	0.1	0.0		0.5	0.3	0.0	0.0		0.1	0.0	0.0	0.0	
O2	7/17/2012		7.2	NM	29.7	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM	
O2	7/18/2012		6.4	NM	27.2	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM	
O2	7/19/2012		5.5	NM	26.0	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM	
O2	7/20/2012		4.5	NM	24.6	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM	
O2	8/22/2012		0.2	0.2	26.1	0.0	0.0		0.5	0.5	0.1	0.0		0.6	0.4	0.0	0.0		0.0	0.0	0.0	0.0	
O2	8/23/2012		0.2	NM	27.3	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM	
O2	8/24/2012		0.1	NM	25.8	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM	
O2	8/25/2012		2.7	NM	23.7	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM	
O2	8/26/2012		4.3	NM	23.5	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM	
O2	9/19/2012		4.7	0.1	26.7	0.0	0.0		0.4	0.7	0.1	0.0		0.5	0.3	0.0	0.0		0.0	0.0	0.0	0.0	
O2	9/20/2012		4.4	NM	27.0	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM	
O2	9/21/2012		4.3	NM	26.8	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM	
O2	9/22/2012		3.7	NM	24.1	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM	
O2	9/23/2012		3.4	NM	24.2	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM	
O2	10/24/2012		0.2	0.1	26.8	0.0	0.0		0.3	0.6	0.1	0.0		0.4	0.2	0.0	0.0		0.0	0.0	0.0	0.0	
O2	10/25/2012		4.4	NM	21.7	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM	
O2	10/26/2012		5.3	NM	22.5	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM	
O2	10/27/2012		4.8	NM	24.1	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM	
O2	10/28/2012		5.7	NM	23.4	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM	
O2	5/28/2013		NM	19.3	2.2	19.8	20.7		6.8	15.5	19.9	20.8		1.8	20.6	19.8	19.6		21.4	21.2	21.3	21.1	
O2	5/29/2013		NM	NM	1.9	NM	NM		14.8	17.2	NM	NM		15.9	NM	NM	NM		NM	NM	NM	NM	
O2	5/30/2013		NM	NM	0.0	NM	NM		17.6	18.9	NM	NM		20.5	NM	NM	NM		NM	NM	NM	NM	
O2	5/31/2013		NM	NM	4.8	NM	NM		19.9	20.5	NM	NM		20.7	NM	NM	NM		NM	NM	NM	NM	
O2	6/1/2013		NM	NM	4.9	NM	NM		19.6	20.9	NM	NM		21.0	NM	NM	NM		NM	NM	NM	NM	
O2	6/2/2013		NM	NM	0.0	NM	NM		20.7	21.4	NM	NM		21.3	NM	NM	NM		NM	NM	NM	NM	
O2	6/29/2013		NM	20.0	4.1	19.8	20.5		6.9	20.1	19.7	20.7		1.9	19.5	19.9	19.7		21.2	21.1	21.1	21.1	
O2	6/30/2013		NM	NM	0.2	NM	NM		19.9	20.6	NM	NM		20.1	NM	NM	NM		NM	NM	NM	NM	
O2	7/1/2013		NM	NM	0.2	NM	NM		21.0	21.1	NM	NM		21.4	NM	NM	NM		NM	NM	NM	NM	
O2	7/2/2013		NM	NM	0.4	NM	NM		21.0	21.2	NM	NM		21.3	NM	NM	NM		NM	NM	NM	NM	
O2	7/3/2013		NM	NM	0.6	NM	NM		21.1	21.2	NM	NM		21.3	NM	NM	NM		NM	NM	NM	NM	
O2	7/20/2013		NM	20.9	20.7	19.1	20.7		20.7	20.9	20.6	20.9		20.7	20.9	20.6	20.2		20.5	20.7	20.6	20.6	
O2	7/21/2013		NM	NM	0.3	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM	
O2	7/22/2013		NM	NM	0.6	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM	
O2	7/23/2013		NM	NM	0.6	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM	
O2	7/24/2013		NM	NM	0.6	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM	
O2	8/26/2013		NM	20.2	20.2	19.0	20.6		20.0	19.0	20.6	20.6		19.4	19.1	20.5	20.3		20.7	20.7	20.5	20.6	
O2	8/27/2013		NM	NM	1.1	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM	

	<i>Well ID</i>	<i>Shallow</i>	SG-22	SG-04S	SG-07S	SG-05S	SG-06S	<i>Intermediate</i>	SG-04I	SG-07I	SG-05I	SG-06I	<i>Deep</i>	SG-04D	SG-07D	SG-05D	SG-06D	<i>Perimeter</i>	SG-23 (3')	SG-24 (5')	SG-25 (5')	SG-26 (5')
O2	8/28/2013		NM	NM	3.9	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM
O2	8/29/2013		NM	NM	2.1	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM
O2	8/30/2013		NM	NM	2.1	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM
O2	9/24/2013		NM	20.4	15.4	19.8	20.3		20.1	19.5	20.3	20.4		20.0	19.5	20.3	20.1		20.6	20.5	20.5	20.6
O2	9/25/2013		NM	NM	0.4	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM
O2	9/26/2013		NM	NM	2.1	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM
O2	9/27/2013		NM	NM	1.7	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM
O2	9/28/2013		NM	NM	4.2	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM
O2	10/23/2013		NM	20.7	0.1	19.7	20.6		20.4	20.1	19.5	20.4		20.0	20.0	19.7	19.6		20.4	21.6	21.5	21.5
O2	10/24/2013		NM	NM	0.0	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM
CO2	2 hours after startup (4/10/2012)		0.0	0.0	13.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0
CO2	4/11/2012		8.8	NM	16.5	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM
CO2	4/12/2012		8.4	NM	16.3	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM
CO2	4/13/2012		7.8	NM	12.1	NM	NM		0.0	NM	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM
CO2	4/14/2012		5.2	NM	8.4	NM	NM		0.0	NM	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM
CO2	5/9/2012		0.0	0.0	4.4	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0
CO2	5/10/2012		4.0	NM	11.1	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM
CO2	5/11/2012		2.8	NM	11.2	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM
CO2	5/12/2012		2.4	NM	9.1	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM
CO2	5/13/2012		1.9	NM	6.2	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM
CO2	6/13/2012		0.0	0.0	4.8	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0
CO2	6/14/2012		1.0	NM	7.8	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM
CO2	6/15/2012		1.3	NM	9.2	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM
CO2	6/16/2012		1.2	NM	7.7	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM
CO2	6/17/2012		1.0	NM	5.5	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM
CO2	7/16/2012		1.0	0.0	10.8	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0
CO2	7/17/2012		1.7	NM	7.7	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM
CO2	7/18/2012		1.2	NM	5.6	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM
CO2	7/19/2012		1.0	NM	3.9	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM
CO2	7/20/2012		0.8	NM	2.2	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM
CO2	8/22/2012		0.0	0.0	9.6	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0
CO2	8/23/2012		0.0	NM	9.2	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM
CO2	8/24/2012		0.0	NM	4.5	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM
CO2	8/25/2012		1.2	NM	2.8	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM
CO2	8/26/2012		0.8	NM	2.1	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM
CO2	9/19/2012		1.5	0.0	9.1	0.0	0.0		0.0	0.1	0.0	0.0		0.0	0.1	0.0	0.0		0.0	0.0	0.0	0.0
CO2	9/20/2012		1.3	NM	6.6	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM
CO2	9/21/2012		1.0	NM	4.2	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM
CO2	9/22/2012		0.9	NM	2.5	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM
CO2	9/23/2012		0.7	NM	1.8	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM
CO2	10/24/2012		0.0	0.0	9.8	0.0	0.0		0.0	0.1	0.0	0.0		0.0	0.1	0.0	0.0		0.0	0.0	0.0	0.0
CO2	10/25/2012		1.2	NM	6.2	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM
CO2	10/26/2012		1.2	NM	5.1	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM
CO2	10/27/2012		1.0	NM	3.5	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM
CO2	10/28/2012		1.0	NM	2.6	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM
CO2	5/28/2013		NM	1.1	21.1	0.4	0.0		7.1	2.8	0.2	0.0		12.3	0.4	0.2	0.2		0.0	0.0	0.0	0.0
CO2	5/29/2013		NM	NM	20.7	NM	NM		4.5	1.3	NM	NM		4.6	NM	NM	NM		NM	NM	NM	NM
CO2	5/30/2013		NM	NM	22.8	NM	NM		2.3	0.8	NM	NM		1.7	NM	NM	NM		NM	NM	NM	NM
CO2	5/31/2013		NM	NM	16.4	NM	NM		1.1	0.5	NM	NM		0.8	NM	NM	NM		NM	NM	NM	NM
CO2	6/1/2013		NM	NM	16.2	NM	NM		1.3	0.4	NM	NM		0.7	NM	NM	NM		NM	NM	NM	NM
CO2	6/2/2013		NM	NM	21.2	NM	NM		0.9	0.5	NM	NM		0.4	NM	NM	NM		NM	NM	NM	NM
CO2	6/29/2013		NM	1.0	18.8	0.0	0.0		8.2	0.2	0.0	0.0		11.4	0.7	0.0	0.0		0.0	0.0	0.0	0.0
CO2	6/30/2013		NM	NM	23.0	NM	NM		1.5	0.7	NM	NM		0.8	NM	NM	NM		NM	NM	NM	NM

	<i>Well ID</i>	<i>Shallow</i>	SG-22	SG-04S	SG-07S	SG-05S	SG-06S	<i>Intermediate</i>	SG-04I	SG-07I	SG-05I	SG-06I	<i>Deep</i>	SG-04D	SG-07D	SG-05D	SG-06D	<i>Perimeter</i>	SG-23 (3')	SG-24 (5')	SG-25 (5')	SG-26 (5')
CO2	7/1/2013		NM	NM	21.4	NM	NM		0.8	0.5	NM	NM		0.5	NM	NM	NM		NM	NM	NM	NM
CO2	7/2/2013		NM	NM	19.7	NM	NM		0.9	0.4	NM	NM		0.5	NM	NM	NM		NM	NM	NM	NM
CO2	7/3/2013		NM	NM	19.4	NM	NM		0.5	0.3	NM	NM		0.2	NM	NM	NM		NM	NM	NM	NM
CO2	7/20/2013		NM	0.0	0.1	1.8	0.0		0.2	0.0	0.3	0.1		0.2	0.1	0.2	0.2		0.0	0.0	0.0	0.0
CO2	7/21/2013		NM	NM	22.4	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM
CO2	7/22/2013		NM	NM	21.4	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM
CO2	7/23/2013		NM	NM	20.0	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM
CO2	7/24/2013		NM	NM	20.0	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM
CO2	8/26/2013		NM	0.1	0.1	1.9	0.1		0.2	0.8	0.3	0.1		0.4	0.6	0.3	0.3		0.0	0.0	0.0	0.0
CO2	8/27/2013		NM	NM	26.3	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM
CO2	8/28/2013		NM	NM	22.5	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM
CO2	8/29/2013		NM	NM	22.8	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM
CO2	8/30/2013		NM	NM	22.4	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM
CO2	9/24/2013		NM	0.1	7.2	0.5	0.1		0.2	0.6	0.2	0.0		0.2	0.4	0.1	0.1		0.0	0.0	0.0	0.0
CO2	9/25/2013		NM	NM	27.9	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM
CO2	9/26/2013		NM	NM	24.4	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM
CO2	9/27/2013		NM	NM	23.8	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM
CO2	9/28/2013		NM	NM	21.4	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM
CO2	10/23/2013		NM	0.2	26.0	0.0	0.0		0.3	0.5	0.0	0.0		0.5	0.6	0.0	0.0		0.0	0.0	0.0	0.0
CO2	10/24/2013		NM	NM	25.2	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM
CH4	2 hours after startup (4/10/2012)		0.0	0.0	100.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0
CH4	4/11/2012		100.0	NM	100.0	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM
CH4	4/12/2012		100.0	NM	100.0	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM
CH4	4/13/2012		100.0	NM	100.0	NM	NM		0.0	NM	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM
CH4	4/14/2012		100.0	NM	100.0	NM	NM		0.1	NM	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM
CH4	5/9/2012		0.0	0.0	88.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0
CH4	5/10/2012		80.0	NM	100.0	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM
CH4	5/11/2012		56.0	NM	100.0	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM
CH4	5/12/2012		49.0	NM	100.0	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM
CH4	5/13/2012		37.0	NM	100.0	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM
CH4	6/13/2012		0.0	0.0	98.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0
CH4	6/14/2012		16.0	NM	100.0	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM
CH4	6/15/2012		25.0	NM	100.0	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM
CH4	6/16/2012		25.0	NM	100.0	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM
CH4	6/17/2012		20.0	NM	100.0	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM
CH4	7/16/2012		20.0	0.0	100.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0
CH4	7/17/2012		33.0	NM	100.0	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM
CH4	7/18/2012		26.0	NM	100.0	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM
CH4	7/19/2012		19.0	NM	77.0	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM
CH4	7/20/2012		14.0	NM	44.0	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM
CH4	8/22/2012		0.0	0.0	100.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0
CH4	8/23/2012		0.0	NM	100.0	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM
CH4	8/24/2012		0.0	NM	88.0	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM
CH4	8/25/2012		22.0	NM	56.0	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM
CH4	8/26/2012		16.0	NM	40.0	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM
CH4	9/19/2012		24.0	0.0	100.0	0.0	0.0		0.0	0.2	0.0	0.0		0.0	0.2	0.0	0.0		0.0	0.0	0.0	0.0
CH4	9/20/2012		26.0	NM	100.0	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM
CH4	9/21/2012		20.0	NM	84.0	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM
CH4	9/22/2012		16.0	NM	51.0	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM
CH4	9/23/2012		13.0	NM	37.0	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM
CH4	10/24/2012		0.0	0.0	100.0	0.0	0.0		0.0	0.2	0.0	0.0		0.0	0.2	0.0	0.0		0.0	0.0	0.0	0.0
CH4	10/25/2012		25.0	NM	100.0	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM
CH4	10/26/2012		24.0	NM	100.0	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM

	<i>Well ID</i>	<i>Shallow</i>	SG-22	SG-04S	SG-07S	SG-05S	SG-06S	<i>Intermediate</i>	SG-04I	SG-07I	SG-05I	SG-06I	<i>Deep</i>	SG-04D	SG-07D	SG-05D	SG-06D	<i>Perimeter</i>	SG-23 (3')	SG-24 (5')	SG-25 (5')	SG-26 (5')
CH4	10/27/2012		19.0	NM	67.0	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM
CH4	10/28/2012		21.0	NM	50.0	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM
CH4	5/28/2013		NM	0.0	12.0	0.0	0.0		0.0	0.1	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0
CH4	5/29/2013		NM	NM	10.5	NM	NM		0.0	0.0	NM	NM		0.0	NM	NM	NM		NM	NM	NM	NM
CH4	5/30/2013		NM	NM	8.0	NM	NM		0.0	0.0	NM	NM		0.0	NM	NM	NM		NM	NM	NM	NM
CH4	5/31/2013		NM	NM	3.4	NM	NM		0.0	0.0	NM	NM		0.0	NM	NM	NM		NM	NM	NM	NM
CH4	6/1/2013		NM	NM	2.9	NM	NM		0.0	0.0	NM	NM		0.0	NM	NM	NM		NM	NM	NM	NM
CH4	6/2/2013		NM	NM	1.7	NM	NM		0.0	0.0	NM	NM		0.0	NM	NM	NM		NM	NM	NM	NM
CH4	6/29/2013		NM	0.0	4.9	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0
CH4	6/30/2013		NM	NM	6.4	NM	NM		0.0	0.0	NM	NM		0.0	NM	NM	NM		NM	NM	NM	NM
CH4	7/1/2013		NM	NM	3.2	NM	NM		0.0	0.0	NM	NM		0.0	NM	NM	NM		NM	NM	NM	NM
CH4	7/2/2013		NM	NM	1.5	NM	NM		0.0	0.0	NM	NM		0.0	NM	NM	NM		NM	NM	NM	NM
CH4	7/3/2013		NM	NM	0.9	NM	NM		0.0	0.0	NM	NM		0.0	NM	NM	NM		NM	NM	NM	NM
CH4	7/20/2013		NM	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0
CH4	7/21/2013		NM	NM	4.8	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM
CH4	7/22/2013		NM	NM	2.2	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM
CH4	7/23/2013		NM	NM	1.0	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM
CH4	7/24/2013		NM	NM	0.5	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM
CH4	8/26/2013		NM	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0
CH4	8/27/2013		NM	NM	8.7	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM
CH4	8/28/2013		NM	NM	5.0	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM
CH4	8/29/2013		NM	NM	2.8	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM
CH4	8/30/2013		NM	NM	1.7	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM
CH4	9/24/2013		NM	0.0	2.6	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0
CH4	9/25/2013		NM	NM	8.4	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM
CH4	9/26/2013		NM	NM	4.6	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM
CH4	9/27/2013		NM	NM	2.4	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM
CH4	9/28/2013		NM	NM	1.5	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM
CH4	10/23/2013		NM	0.0	11.3	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0
CH4	10/24/2013		NM	NM	6.2	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM		NM	NM	NM	NM

SG-04S		SG-05S		SG-06S		SG-07S		SG-22	
Date	O2 (%)	Date	O2 (%)	Date	O2 (%)	Date	O2 (%)	Date	O2 (%)
9/20/2007	21.2	9/21/2007	17.8	9/21/2007	17	9/19/2007	4.3	9/19/2007	22.2
9/24/2007	13	9/24/2007	16.5	9/24/2007	16.1	9/24/2007	0	9/24/2007	15.7
9/25/2007	6	9/25/2007	14.8	9/25/2007	15	9/25/2007	0.2	9/24/2007	19.8
9/25/2007	6.4	9/25/2007	11.9	9/25/2007	14.2	9/25/2007	0	9/25/2007	20.2
9/26/2007	0	9/26/2007	10.4	9/26/2007	15.2	9/25/2007	0	9/25/2007	0.9
4/2/2008	21.6	9/26/2007	9.6	9/26/2007	16.4	9/26/2007	0	9/25/2007	0
5/21/2008	18.6	9/26/2007	7.8	9/26/2007	17.7	9/26/2007	0	9/25/2007	0.3
5/22/2008	18.7	9/27/2007	6.6	9/26/2007	20.1	9/26/2007	0	9/26/2007	0
5/23/2008	17.7	9/27/2007	10.5	9/27/2007	20.6	9/27/2007	0	9/26/2007	0
5/24/2008	18.7	9/28/2007	12.4	9/27/2007	20.2	9/27/2007	0	9/26/2007	0
5/25/2008	18.9	9/28/2007	13.4	9/27/2007	20.2	9/28/2007	0	9/27/2007	0
5/26/2008	19	10/2/2007	15.2	9/28/2007	21.6	10/1/2007	0.1	9/27/2007	0
5/27/2008	19	10/2/2007	15.8	5/27/2008	21.1	10/2/2007	0	9/28/2007	0
5/28/2008	19.1	10/3/2007	15	10/2/2007	20.8	10/3/2007	0	10/1/2007	0
5/29/2008	19	10/3/2007	15	10/2/2007	20.9	10/3/2007	0	10/2/2007	0
5/30/2008	19	10/5/2007	18.4	10/2/2007	20.6	10/4/2007	0	10/2/2007	0
5/31/2008	18.9	10/5/2007	18	10/2/2007	20.6	10/5/2007	0	10/3/2007	0
6/1/2008	18.6	10/8/2007	18.4	10/2/2007	20.8	10/5/2007	0	10/3/2007	0
6/17/2008	18.9	10/9/2007	19.8	10/3/2007	20.5	10/8/2007	0	10/4/2007	0
6/25/2008	18.6	10/11/2007	18.6	10/3/2007	19.7	10/9/2007	0	10/5/2007	0
7/24/2008	18.6	10/12/2007	18.7	10/4/2007	20.9	10/11/2007	0	10/5/2007	0
8/3/2008	18.3	10/15/2007	19.3	10/5/2007	21.2	10/12/2007	0	10/8/2007	0
10/10/2008	19.4	10/16/2007	19.4	10/5/2007	20.9	10/15/2007	0	10/9/2007	0
10/14/2008	20.6	10/17/2007	19.2	10/5/2007	20.8	10/16/2007	0	10/11/2007	0
11/4/2008	20.1	10/18/2007	20.3	10/8/2007	20.7	10/17/2007	0	10/12/2007	0
11/27/2008	21.4	10/19/2007	19.3	10/9/2007	21.6	10/18/2007	0	10/15/2007	0
5/6/2009	20.5	10/23/2007	19	10/9/2007	21.3	10/19/2007	0	10/16/2007	0
5/7/2009	20.4	10/24/2007	19.2	10/11/2007	20.3	10/23/2007	0	10/17/2007	0
5/8/2009	20.9	10/25/2007	19	10/11/2007	20.9	10/24/2007	0	10/18/2007	0
6/3/2009	20.7	10/26/2007	19.7	10/12/2007	19.7	10/25/2007	0	10/19/2007	0
6/8/2009	20.6	10/29/2007	19.4	10/15/2007	20	10/26/2007	0	10/23/2007	0
7/10/2009	20.2	10/30/2007	19.5	10/16/2007	20.6	10/29/2007	0	10/24/2007	0
8/25/2009	19	10/31/2007	19.3	10/17/2007	20.6	10/30/2007	0	10/25/2007	0
9/30/2009	20.7	11/8/2007	20.4	10/18/2007	20.3	10/31/2007	0	10/26/2007	0
11/3/2009	21.3	11/9/2007	19.6	10/19/2007	20.2	11/8/2007	0	10/29/2007	0
5/20/2010	19.3	11/12/2007	21.2	10/23/2007	19.6	11/9/2007	0	10/30/2007	0
5/23/2010	20.2	11/17/2007	19.8	10/24/2007	20.5	11/12/2007	0	10/31/2007	0
6/24/2010	20.9	11/19/2007	21.7	10/25/2007	20.4	11/17/2007	0	11/8/2007	0
8/4/2010	20.3	12/18/2007	22.6	10/26/2007	20.6	11/19/2007	0	11/9/2007	0
9/20/2010	20.8	4/2/2008	20.8	10/29/2007	20.3	12/18/2007	0	11/12/2007	0
10/18/2010	20.8	5/21/2008	17.2	10/30/2007	20.6	4/2/2008	0	11/17/2007	0
5/9/2011	20.6	5/22/2008	17.9	10/31/2007	20.5	5/21/2008	0	11/19/2007	0
6/22/2011	21.3	5/23/2008	13	11/8/2007	20.1	5/22/2008	15.7	12/18/2007	0
7/25/2011	21.2	5/24/2008	18.4	11/9/2007	21.1	5/23/2008	0	4/2/2008	0.7
8/24/2011	20.8	5/25/2008	18.4	11/12/2007	21.4	5/24/2008	0	5/21/2008	2.4
9/19/2011	20.3	5/26/2008	18.8	11/17/2007	19.9	5/25/2008	0	5/22/2008	0.9
10/24/2011	20.7	5/27/2008	18.9	11/19/2007	21.9	5/26/2008	19	5/23/2008	1
4/10/12	20.9	5/28/2008	19.1	12/18/2007	23.2	5/27/2008	0	5/24/2008	0
5/9/12	19.7	5/29/2008	19	4/2/2008	21	5/28/2008	0	5/25/2008	0

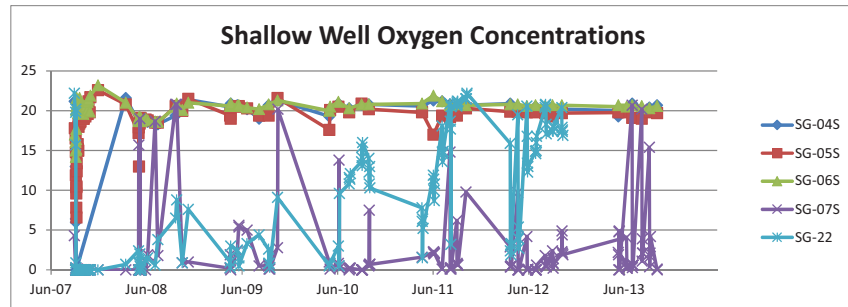


SG-04S		SG-05S		SG-06S		SG-07S		SG-22	
Date	O2 (%)	Date	O2 (%)	Date	O2 (%)	Date	O2 (%)	Date	O2 (%)
6/13/12	19.6	5/30/2008	19	5/21/2008	18.9	5/29/2008	0	5/26/2008	2
7/16/12	20.5	5/31/2008	18.8	5/22/2008	18.7	5/30/2008	0	5/27/2008	0.5
8/22/12	20.4	6/1/2008	18.7	5/23/2008	18.8	5/31/2008	0	5/28/2008	0
9/19/12	20.3	6/17/2008	18.9	5/24/2008	19.2	6/1/2008	0	5/29/2008	0
10/24/12	20.2	6/25/2008	18.8	5/25/2008	19.1	6/17/2008	0	5/30/2008	0
6/29/13	20	7/24/2008	18.5	5/26/2008	19	6/25/2008	1.9	5/31/2008	0.3
5/28/13	19.3	8/3/2008	18.5	5/27/2008	19.1	7/24/2008	18.7	6/1/2008	0.7
7/20/13	20.9	10/10/2008	20.6	5/28/2008	19.1	8/3/2008	1.8	6/17/2008	1.2
8/26/13	20.2	10/14/2008	20.6	5/29/2008	19.1	10/10/2008	20.8	6/25/2008	1.5
9/24/13	20.4	11/4/2008	20	5/30/2008	18.9	10/14/2008	20.8	7/24/2008	0.6
10/23/13	20.7	11/27/2008	21.5	5/31/2008	19	11/4/2008	0.9	8/3/2008	3.8
		5/6/2009	19.4	6/1/2008	18.7	11/27/2008	1	10/10/2008	6.5
		5/7/2009	19.6	6/17/2008	19	5/6/2009	0.2	10/14/2008	8.8
		5/8/2009	19	6/25/2008	18.8	5/7/2009	1.9	11/4/2008	0.9
		6/3/2009	20.5	7/24/2008	18.6	5/8/2009	0	11/27/2008	7.6
		6/8/2009	20.6	8/3/2008	18.6	6/3/2009	2.4	5/6/2009	1
		7/10/2009	20.3	10/10/2008	20.5	6/8/2009	5.6	5/7/2009	0.3
		8/25/2009	19.4	10/14/2008	20.9	6/9/2009	5.4	5/8/2009	3
		9/30/2009	19.4	11/4/2008	20.1	7/10/2009	5	6/3/2009	2.5
		11/3/2009	21.6	11/27/2008	21	8/25/2009	0.5	6/8/2009	1.5
		5/20/2010	17.6	5/6/2009	20.6	9/30/2009	0.5	6/9/2009	0.5
		5/23/2010	20.1	5/7/2009	20.8	10/1/2009	0.7	7/10/2009	3.3
		6/24/2010	20.5	5/8/2009	20.9	10/2/2009	0.1	8/25/2009	4.4
		8/4/2010	19.8	6/3/2009	20.6	10/5/2009	0.1	9/30/2009	2.6
		9/20/2010	20.9	6/8/2009	20.7	11/3/2009	2.8	10/1/2009	0.8
		10/18/2010	20.2	7/10/2009	20.4	11/5/2009	20.2	10/2/2009	0.8
		5/9/2011	19.8	8/25/2009	20.2	5/20/2010	1	10/5/2009	0.3
		6/22/2011	17.0	9/30/2009	20.8	5/23/2010	0.1	11/3/2009	9.1
		7/25/2011	19.4	11/3/2009	21.3	6/24/2010	0.8	5/20/2010	0.5
		8/24/2011	19.2	5/20/2010	20	6/26/2010	0.5	5/23/2010	0.8
		9/19/2011	19.4	5/23/2010	20.5	6/26/2010	13.8	6/24/2010	3
		10/24/2011	20.3	6/24/2010	21.1	6/28/2010	0.2	6/26/2010	0.5
		4/10/12	19.9	8/4/2010	20.3	8/4/2010	0	6/28/2010	9.6
		5/9/12	19.9	9/20/2010	20.8	8/5/2010	0.2	8/4/2010	10.8
		6/13/12	19.8	10/18/2010	20.8	8/6/2010	0.2	8/5/2010	11.6
		7/16/12	19.8	5/9/2011	20.9	8/9/2010	0.2	8/6/2010	11.4
		8/22/12	19.7	6/22/2011	21.9	9/20/2010	0	8/9/2010	12.1
		9/19/12	19.3	7/25/2011	21.2	9/21/2010	0	9/20/2010	13.6
		10/24/12	19.7	8/24/2011	20.7	9/22/2010	0	9/21/2010	15.4
		6/29/13	19.8	9/19/2011	20.8	9/23/2010	0	9/22/2010	14.1
		5/28/13	19.8	10/24/2011	20.7	9/24/2010	0	9/23/2010	13.1
		7/20/13	19.1	4/10/12	20.8	10/18/2010	0.5	9/24/2010	16
		8/26/13	19	5/9/12	20.8	10/19/2010	0.6	10/18/2010	14
		9/24/13	19.8	6/13/12	20.6	10/20/2010	7.5	10/19/2010	12.3
		10/23/13	19.7	7/16/12	20.7	10/21/2010	0.7	10/20/2010	10.8
				8/22/12	20.6	10/22/2010	0.7	10/21/2010	13
				9/19/12	20.7	5/9/2011	1.6	10/22/2010	10.3
				10/24/12	20.7	6/22/2011	2.2	5/9/2011	7.8
				6/29/13	20.5	6/23/2011	2.3	5/10/2011	6.1
				5/28/13	20.7	6/24/2011	2.0	5/11/2011	1.5

SG-04S		SG-05S		SG-06S		SG-07S		SG-22	
Date	O2 (%)	Date	O2 (%)	Date	O2 (%)	Date	O2 (%)	Date	O2 (%)
				7/20/13	20.7	6/25/2011	2.1	5/12/2011	6.4
				8/26/13	20.6	6/26/2011	2.1	5/13/2011	5.2
				9/24/13	20.3	7/25/2011	0.1	6/22/2011	11.9
				10/23/13	20.6	8/24/2011	14.8	6/23/2011	11.4
						8/25/2011	0.1	6/24/2011	10.0
						8/26/2011	0.2	6/25/2011	8.7
						8/27/2011	0.3	6/26/2011	10.8
						8/28/2011	0.1	7/25/2011	18.1
						9/19/2011	6.2	7/26/2011	14.8
						9/20/2011	0.8	7/27/2011	13.6
						9/21/2011	0.7	7/28/2011	14.6
						9/22/2011	0.6	7/29/2011	14.9
						9/23/2011	0.6	8/24/2011	20.9
						10/24/2011	9.8	8/25/2011	18.7
						4/10/12	2.9	8/26/2011	17.7
						4/11/12	0.4	8/27/2011	3.2
						4/12/12	0.4	8/28/2011	20.5
						4/12/12	0.4	9/19/2011	20.6
						4/13/12	0.5	9/20/2011	21.0
						4/14/12	0.5	9/21/2011	20.8
						5/9/12	9.7	9/22/2011	21.2
						5/10/12	0	9/23/2011	21.2
						5/11/12	0	10/24/2011	21.5
						5/12/12	0	10/25/2011	21.5
						5/13/12	0	10/26/2011	21.5
						6/13/12	4.2	10/27/2011	22.0
						6/14/12	0	10/28/2011	22.2
						6/15/12	0	4/10/12	15.9
						6/16/12	0	4/11/12	2.4
						6/17/12	0.1	4/12/12	3.1
						7/16/12	0	4/12/12	3.1
						7/17/12	0	4/13/12	1.9
						7/18/12	0	4/14/12	3.3
						7/19/12	0	5/9/12	19.5
						7/20/12	0.6	5/10/12	4
						8/22/12	1.8	5/11/12	5.4
						8/23/12	0.5	5/12/12	3.9
						8/24/12	0.6	5/13/12	2.7
						8/25/12	0.4	6/13/12	20.6
						8/26/12	0.4	6/14/12	16.8
						9/19/12	2.4	6/15/12	13.4
						9/20/12	0.9	6/16/12	12.3
						9/21/12	0.2	6/17/12	13
						9/22/12	1.4	7/16/12	14.9
						9/23/12	0.7	7/17/12	14.6
						10/24/12	2.3	7/18/12	15
						10/25/12	4.9	7/19/12	16
						10/26/12	4.4	7/20/12	16.8
						10/27/12	2.1	8/22/12	20.4
						10/28/12	1.9	8/23/12	20.7

SG-04S		SG-05S		SG-06S		SG-07S		SG-22	
Date	O2 (%)	Date	O2 (%)	Date	O2 (%)	Date	O2 (%)	Date	O2 (%)
						6/29/13	4.1	8/24/12	20.8
						6/30/13	0.2	8/25/12	18.3
						7/1/13	0.2	8/26/12	17.1
						7/2/13	0.4	9/19/12	17.5
						7/3/13	0.6	9/20/12	17.4
						5/28/13	2.2	9/21/12	17.4
						5/29/13	1.9	9/22/12	17.9
						5/30/13	0	9/23/12	18.1
						5/31/13	4.8	10/24/12	20.4
						6/1/13	4.9	10/25/12	17.9
						6/2/13	0	10/26/12	17.4
						7/20/13	20.7	10/27/12	17.6
						7/21/13	0.3	10/28/12	16.9
						7/22/13	0.6		
						7/23/13	0.6		
						7/24/13	0.6		
						8/26/13	20.2		
						8/27/13	1.1		
						8/28/13	3.9		
						8/29/13	2.1		
						8/30/13	2.1		
						9/24/13	15.4		
						9/25/13	0.4		
						9/26/13	2.1		
						9/27/13	1.7		
						9/28/13	4.2		
						10/23/13	0.1		
						10/24/13	0		

SG-04S		SG-05S		SG-06S		SG-07S		SG-22	
Date	O2 (%)	Date	O2 (%)	Date	O2 (%)	Date	O2 (%)	Date	O2 (%)
9/20/2007	21.2	9/21/2007	17.8	9/21/2007	17	9/19/2007	4.3	9/19/2007	22.2
9/24/2007	13	9/24/2007	16.5	9/24/2007	16.1	9/24/2007	0	9/24/2007	15.7
9/25/2007	6	9/25/2007	14.8	9/25/2007	15	9/25/2007	0.2	9/24/2007	19.8
9/25/2007	6.4	9/25/2007	11.9	9/25/2007	14.2	9/25/2007	0	9/25/2007	20.2
9/26/2007	0	9/26/2007	10.4	9/26/2007	15.2	9/25/2007	0	9/25/2007	0.9
4/2/2008	21.6	9/26/2007	9.6	9/26/2007	16.4	9/26/2007	0	9/25/2007	0
5/21/2008	18.6	9/26/2007	7.8	9/26/2007	17.7	9/26/2007	0	9/25/2007	0.3
5/22/2008	18.7	9/27/2007	6.6	9/26/2007	20.1	9/26/2007	0	9/26/2007	0
5/23/2008	17.7	9/27/2007	10.5	9/27/2007	20.6	9/27/2007	0	9/26/2007	0
5/24/2008	18.7	9/28/2007	12.4	9/27/2007	20.2	9/27/2007	0	9/26/2007	0
5/25/2008	18.9	9/28/2007	13.4	9/27/2007	20.2	9/28/2007	0	9/27/2007	0
5/26/2008	19	10/2/2007	15.2	9/28/2007	21.6	10/1/2007	0.1	9/27/2007	0
5/27/2008	19	10/2/2007	15.8	5/27/2008	21.1	10/2/2007	0	9/28/2007	0
5/28/2008	19.1	10/3/2007	15	10/2/2007	20.8	10/3/2007	0	10/1/2007	0
5/29/2008	19	10/3/2007	15	10/2/2007	20.9	10/3/2007	0	10/2/2007	0
5/30/2008	19	10/5/2007	18.4	10/2/2007	20.6	10/4/2007	0	10/2/2007	0
5/31/2008	18.9	10/5/2007	18	10/2/2007	20.6	10/5/2007	0	10/3/2007	0
6/1/2008	18.6	10/8/2007	18.4	10/2/2007	20.8	10/5/2007	0	10/3/2007	0
6/17/2008	18.9	10/9/2007	19.8	10/3/2007	20.5	10/8/2007	0	10/4/2007	0
6/25/2008	18.6	10/11/2007	18.6	10/3/2007	19.7	10/9/2007	0	10/5/2007	0
7/24/2008	18.6	10/12/2007	18.7	10/4/2007	20.9	10/11/2007	0	10/5/2007	0
8/3/2008	18.3	10/15/2007	19.3	10/5/2007	21.2	10/12/2007	0	10/8/2007	0
10/10/2008	19.4	10/16/2007	19.4	10/5/2007	20.9	10/15/2007	0	10/9/2007	0
10/14/2008	20.6	10/17/2007	19.2	10/5/2007	20.8	10/16/2007	0	10/11/2007	0
11/4/2008	20.1	10/18/2007	20.3	10/8/2007	20.7	10/17/2007	0	10/12/2007	0
11/27/2008	21.4	10/19/2007	19.3	10/9/2007	21.6	10/18/2007	0	10/15/2007	0
5/6/2009	20.5	10/23/2007	19	10/9/2007	21.3	10/19/2007	0	10/16/2007	0
5/7/2009	20.4	10/24/2007	19.2	10/11/2007	20.3	10/23/2007	0	10/17/2007	0
5/8/2009	20.9	10/25/2007	19	10/11/2007	20.9	10/24/2007	0	10/18/2007	0
6/3/2009	20.7	10/26/2007	19.7	10/12/2007	19.7	10/25/2007	0	10/19/2007	0
6/8/2009	20.6	10/29/2007	19.4	10/15/2007	20	10/26/2007	0	10/23/2007	0
7/10/2009	20.2	10/30/2007	19.5	10/16/2007	20.6	10/29/2007	0	10/24/2007	0
8/25/2009	19	10/31/2007	19.3	10/17/2007	20.6	10/30/2007	0	10/25/2007	0
9/30/2009	20.7	11/8/2007	20.4	10/18/2007	20.3	10/31/2007	0	10/26/2007	0
11/3/2009	21.3	11/9/2007	19.6	10/19/2007	20.2	11/8/2007	0	10/29/2007	0
5/20/2010	19.3	11/12/2007	21.2	10/23/2007	19.6	11/9/2007	0	10/30/2007	0
5/23/2010	20.2	11/17/2007	19.8	10/24/2007	20.5	11/12/2007	0	10/31/2007	0
6/24/2010	20.9	11/19/2007	21.7	10/25/2007	20.4	11/17/2007	0	11/8/2007	0
8/4/2010	20.3	12/18/2007	22.6	10/26/2007	20.6	11/19/2007	0	11/9/2007	0
9/20/2010	20.8	4/2/2008	20.8	10/29/2007	20.3	12/18/2007	0	11/12/2007	0
10/18/2010	20.8	5/21/2008	17.2	10/30/2007	20.6	4/2/2008	0	11/17/2007	0
5/9/2011	20.6	5/22/2008	17.9	10/31/2007	20.5	5/21/2008	0	11/19/2007	0
6/22/2011	21.3	5/23/2008	13	11/8/2007	20.1	5/22/2008	15.7	12/18/2007	0
7/25/2011	21.2	5/24/2008	18.4	11/9/2007	21.1	5/23/2008	0	4/2/2008	0.7
8/24/2011	20.8	5/25/2008	18.4	11/12/2007	21.4	5/24/2008	0	5/21/2008	2.4
9/19/2011	20.3	5/26/2008	18.8	11/17/2007	19.9	5/25/2008	0	5/22/2008	0.9
10/24/2011	20.7	5/27/2008	18.9	11/19/2007	21.9	5/26/2008	19	5/23/2008	1
4/10/12	20.9	5/28/2008	19.1	12/18/2007	23.2	5/27/2008	0	5/24/2008	0
5/9/12	19.7	5/29/2008	19	4/2/2008	21	5/28/2008	0	5/25/2008	0

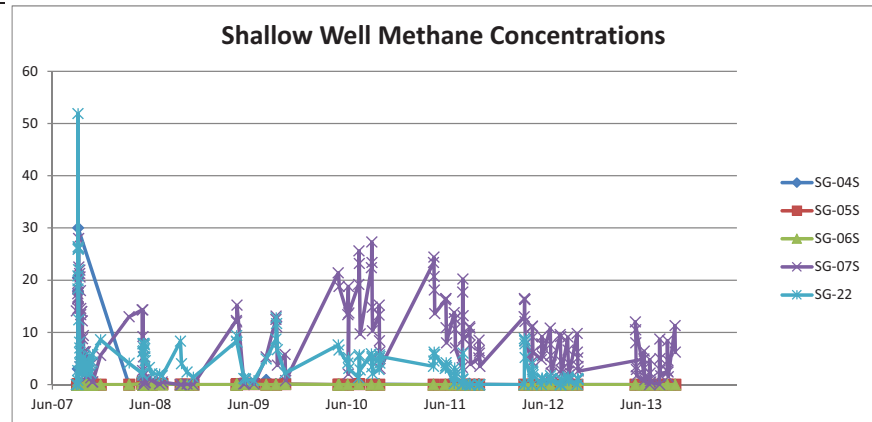


SG-04S		SG-05S		SG-06S		SG-07S		SG-22	
Date	O2 (%)	Date	O2 (%)	Date	O2 (%)	Date	O2 (%)	Date	O2 (%)
6/13/12	19.6	5/30/2008	19	5/21/2008	18.9	5/29/2008	0	5/26/2008	2
7/16/12	20.5	5/31/2008	18.8	5/22/2008	18.7	5/30/2008	0	5/27/2008	0.5
8/22/12	20.4	6/1/2008	18.7	5/23/2008	18.8	5/31/2008	0	5/28/2008	0
9/19/12	20.3	6/17/2008	18.9	5/24/2008	19.2	6/1/2008	0	5/29/2008	0
10/24/12	20.2	6/25/2008	18.8	5/25/2008	19.1	6/17/2008	0	5/30/2008	0
6/29/13	20	7/24/2008	18.5	5/26/2008	19	6/25/2008	1.9	5/31/2008	0.3
5/28/13	19.3	8/3/2008	18.5	5/27/2008	19.1	7/24/2008	18.7	6/1/2008	0.7
7/20/13	20.9	10/10/2008	20.6	5/28/2008	19.1	8/3/2008	1.8	6/17/2008	1.2
8/26/13	20.2	10/14/2008	20.6	5/29/2008	19.1	10/10/2008	20.8	6/25/2008	1.5
9/24/13	20.4	11/4/2008	20	5/30/2008	18.9	10/14/2008	20.8	7/24/2008	0.6
10/23/13	20.7	11/27/2008	21.5	5/31/2008	19	11/4/2008	0.9	8/3/2008	3.8
		5/6/2009	19.4	6/1/2008	18.7	11/27/2008	1	10/10/2008	6.5
		5/7/2009	19.6	6/17/2008	19	5/6/2009	0.2	10/14/2008	8.8
		5/8/2009	19	6/25/2008	18.8	5/7/2009	1.9	11/4/2008	0.9
		6/3/2009	20.5	7/24/2008	18.6	5/8/2009	0	11/27/2008	7.6
		6/8/2009	20.6	8/3/2008	18.6	6/3/2009	2.4	5/6/2009	1
		7/10/2009	20.3	10/10/2008	20.5	6/8/2009	5.6	5/7/2009	0.3
		8/25/2009	19.4	10/14/2008	20.9	6/9/2009	5.4	5/8/2009	3
		9/30/2009	19.4	11/4/2008	20.1	7/10/2009	5	6/3/2009	2.5
		11/3/2009	21.6	11/27/2008	21	8/25/2009	0.5	6/8/2009	1.5
		5/20/2010	17.6	5/6/2009	20.6	9/30/2009	0.5	6/9/2009	0.5
		5/23/2010	20.1	5/7/2009	20.8	10/1/2009	0.7	7/10/2009	3.3
		6/24/2010	20.5	5/8/2009	20.9	10/2/2009	0.1	8/25/2009	4.4
		8/4/2010	19.8	6/3/2009	20.6	10/5/2009	0.1	9/30/2009	2.6
		9/20/2010	20.9	6/8/2009	20.7	11/3/2009	2.8	10/1/2009	0.8
		10/18/2010	20.2	7/10/2009	20.4	11/5/2009	20.2	10/2/2009	0.8
		5/9/2011	19.8	8/25/2009	20.2	5/20/2010	1	10/5/2009	0.3
		6/22/2011	17.0	9/30/2009	20.8	5/23/2010	0.1	11/3/2009	9.1
		7/25/2011	19.4	11/3/2009	21.3	6/24/2010	0.8	5/20/2010	0.5
		8/24/2011	19.2	5/20/2010	20	6/26/2010	0.5	5/23/2010	0.8
		9/19/2011	19.4	5/23/2010	20.5	6/26/2010	13.8	6/24/2010	3
		10/24/2011	20.3	6/24/2010	21.1	6/28/2010	0.2	6/26/2010	0.5
		4/10/12	19.9	8/4/2010	20.3	8/4/2010	0	6/28/2010	9.6
		5/9/12	19.9	9/20/2010	20.8	8/5/2010	0.2	8/4/2010	10.8
		6/13/12	19.8	10/18/2010	20.8	8/6/2010	0.2	8/5/2010	11.6
		7/16/12	19.8	5/9/2011	20.9	8/9/2010	0.2	8/6/2010	11.4
		8/22/12	19.7	6/22/2011	21.9	9/20/2010	0	8/9/2010	12.1
		9/19/12	19.3	7/25/2011	21.2	9/21/2010	0	9/20/2010	13.6
		10/24/12	19.7	8/24/2011	20.7	9/22/2010	0	9/21/2010	15.4
		6/29/13	19.8	9/19/2011	20.8	9/23/2010	0	9/22/2010	14.1
		5/28/13	19.8	10/24/2011	20.7	9/24/2010	0	9/23/2010	13.1
		7/20/13	19.1	4/10/12	20.8	10/18/2010	0.5	9/24/2010	16
		8/26/13	19	5/9/12	20.8	10/19/2010	0.6	10/18/2010	14
		9/24/13	19.8	6/13/12	20.6	10/20/2010	7.5	10/19/2010	12.3
		10/23/13	19.7	7/16/12	20.7	10/21/2010	0.7	10/20/2010	10.8
				8/22/12	20.6	10/22/2010	0.7	10/21/2010	13
				9/19/12	20.7	5/9/2011	1.6	10/22/2010	10.3
				10/24/12	20.7	6/22/2011	2.2	5/9/2011	7.8
				6/29/13	20.5	6/23/2011	2.3	5/10/2011	6.1
				5/28/13	20.7	6/24/2011	2.0	5/11/2011	1.5

SG-04S		SG-05S		SG-06S		SG-07S		SG-22	
Date	O2 (%)	Date	O2 (%)	Date	O2 (%)	Date	O2 (%)	Date	O2 (%)
				7/20/13	20.7	6/25/2011	2.1	5/12/2011	6.4
				8/26/13	20.6	6/26/2011	2.1	5/13/2011	5.2
				9/24/13	20.3	7/25/2011	0.1	6/22/2011	11.9
				10/23/13	20.6	8/24/2011	14.8	6/23/2011	11.4
						8/25/2011	0.1	6/24/2011	10.0
						8/26/2011	0.2	6/25/2011	8.7
						8/27/2011	0.3	6/26/2011	10.8
						8/28/2011	0.1	7/25/2011	18.1
						9/19/2011	6.2	7/26/2011	14.8
						9/20/2011	0.8	7/27/2011	13.6
						9/21/2011	0.7	7/28/2011	14.6
						9/22/2011	0.6	7/29/2011	14.9
						9/23/2011	0.6	8/24/2011	20.9
						10/24/2011	9.8	8/25/2011	18.7
						4/10/12	2.9	8/26/2011	17.7
						4/11/12	0.4	8/27/2011	3.2
						4/12/12	0.4	8/28/2011	20.5
						4/12/12	0.4	9/19/2011	20.6
						4/13/12	0.5	9/20/2011	21.0
						4/14/12	0.5	9/21/2011	20.8
						5/9/12	9.7	9/22/2011	21.2
						5/10/12	0	9/23/2011	21.2
						5/11/12	0	10/24/2011	21.5
						5/12/12	0	10/25/2011	21.5
						5/13/12	0	10/26/2011	21.5
						6/13/12	4.2	10/27/2011	22.0
						6/14/12	0	10/28/2011	22.2
						6/15/12	0	4/10/12	15.9
						6/16/12	0	4/11/12	2.4
						6/17/12	0.1	4/12/12	3.1
						7/16/12	0	4/12/12	3.1
						7/17/12	0	4/13/12	1.9
						7/18/12	0	4/14/12	3.3
						7/19/12	0	5/9/12	19.5
						7/20/12	0.6	5/10/12	4
						8/22/12	1.8	5/11/12	5.4
						8/23/12	0.5	5/12/12	3.9
						8/24/12	0.6	5/13/12	2.7
						8/25/12	0.4	6/13/12	20.6
						8/26/12	0.4	6/14/12	16.8
						9/19/12	2.4	6/15/12	13.4
						9/20/12	0.9	6/16/12	12.3
						9/21/12	0.2	6/17/12	13
						9/22/12	1.4	7/16/12	14.9
						9/23/12	0.7	7/17/12	14.6
						10/24/12	2.3	7/18/12	15
						10/25/12	4.9	7/19/12	16
						10/26/12	4.4	7/20/12	16.8
						10/27/12	2.1	8/22/12	20.4
						10/28/12	1.9	8/23/12	20.7

SG-04S		SG-05S		SG-06S		SG-07S		SG-22	
Date	O2 (%)	Date	O2 (%)	Date	O2 (%)	Date	O2 (%)	Date	O2 (%)
						6/29/13	4.1	8/24/12	20.8
						6/30/13	0.2	8/25/12	18.3
						7/1/13	0.2	8/26/12	17.1
						7/2/13	0.4	9/19/12	17.5
						7/3/13	0.6	9/20/12	17.4
						5/28/13	2.2	9/21/12	17.4
						5/29/13	1.9	9/22/12	17.9
						5/30/13	0	9/23/12	18.1
						5/31/13	4.8	10/24/12	20.4
						6/1/13	4.9	10/25/12	17.9
						6/2/13	0	10/26/12	17.4
						7/20/13	20.7	10/27/12	17.6
						7/21/13	0.3	10/28/12	16.9
						7/22/13	0.6		
						7/23/13	0.6		
						7/24/13	0.6		
						8/26/13	20.2		
						8/27/13	1.1		
						8/28/13	3.9		
						8/29/13	2.1		
						8/30/13	2.1		
						9/24/13	15.4		
						9/25/13	0.4		
						9/26/13	2.1		
						9/27/13	1.7		
						9/28/13	4.2		
						10/23/13	0.1		
						10/24/13	0		

SG-04S		SG-05S		SG-06S		SG-07S		SG-22	
Date	CH4 (%)	Date	CH4 (%)	Date	CH4 (%)	Date	CH4 (%)	Date	CH4 (%)
9/20/2007	0.1	9/21/2007	0	9/21/2007	0	9/19/2007	14.1	9/19/2007	0
9/24/2007	3	9/24/2007	0	9/24/2007	0	9/24/2007	17.4	9/24/2007	2.7
9/25/2007	20.5	9/25/2007	0	9/25/2007	0	9/25/2007	14.6	9/24/2007	0.8
9/25/2007	17.9	9/25/2007	0	9/25/2007	0	9/25/2007	16.4	9/25/2007	0
9/26/2007	30	9/26/2007	0	9/26/2007	0	9/25/2007	16.5	9/25/2007	18.3
4/2/2008	0	9/26/2007	0	9/26/2007	0	9/26/2007	16.7	9/25/2007	51.9
5/21/2008	0.2	9/26/2007	0	9/26/2007	0	9/26/2007	16.8	9/25/2007	20.8
5/22/2008	0.5	9/27/2007	0	9/26/2007	0	9/26/2007	19.4	9/26/2007	19.9
5/23/2008	0.1	9/27/2007	0	9/27/2007	0	9/27/2007	28	9/26/2007	25.9
5/24/2008	0	9/28/2007	0	9/27/2007	0	9/27/2007	26.1	9/26/2007	26.4
5/25/2008	0	9/28/2007	0	9/27/2007	0	9/28/2007	22.5	9/27/2007	26.1
5/26/2008	0	10/2/2007	0	9/28/2007	0	10/1/2007	21.3	9/27/2007	22
5/27/2008	0	10/2/2007	0	10/1/2007	0	10/2/2007	21.9	9/28/2007	12.4
5/28/2008	0	10/3/2007	0	10/2/2007	0	10/3/2007	20.6	10/1/2007	8.1
5/29/2008	0	10/3/2007	0	10/2/2007	0	10/3/2007	3.4	10/2/2007	7
5/30/2008	0	10/5/2007	0	10/2/2007	0	10/4/2007	18	10/2/2007	6.1
5/31/2008	0	10/5/2007	0	10/2/2007	0	10/5/2007	14.6	10/3/2007	4
6/1/2008	0	10/8/2007	0	10/2/2007	0	10/5/2007	13.4	10/3/2007	3.4
6/17/2008	0	10/9/2007	0	10/3/2007	0	10/8/2007	14	10/4/2007	2.7
6/25/2008	0	10/11/2007	0	10/3/2007	0	10/9/2007	14	10/5/2007	2.7
7/24/2008	0.1	10/12/2007	0	10/4/2007	0	10/11/2007	12.2	10/5/2007	2.6
8/3/2008	0.1	10/15/2007	0	10/5/2007	0	10/12/2007	8.8	10/8/2007	4.9
10/10/2008	0	10/16/2007	0	10/5/2007	0	10/15/2007	9.4	10/9/2007	3.9
10/14/2008	0	10/17/2007	0	10/5/2007	0	10/16/2007	6.3	10/11/2007	3.5
11/4/2008	0	10/18/2007	0	10/8/2007	0	10/17/2007	5.4	10/12/2007	3.3
11/27/2008	0	10/19/2007	0	10/9/2007	0	10/18/2007	5.9	10/15/2007	5.2
5/6/2009	0	10/23/2007	0	10/9/2007	0	10/19/2007	6.2	10/16/2007	4
5/7/2009	0	10/24/2007	0	10/11/2007	0	10/23/2007	6.3	10/17/2007	3
5/8/2009	0.1	10/25/2007	0	10/11/2007	0	10/24/2007	3.9	10/18/2007	2.5
6/3/2009	0.1	10/26/2007	0	10/12/2007	0	10/25/2007	2.1	10/19/2007	2.6
6/8/2009	0.1	10/29/2007	0	10/15/2007	0	10/26/2007	1.5	10/23/2007	4.5
7/10/2009	0.1	10/30/2007	0	10/16/2007	0	10/29/2007	2.6	10/24/2007	3.7
8/25/2009	0.9	10/31/2007	0	10/17/2007	0	10/30/2007	1.8	10/25/2007	2.6
9/30/2009	0.1	11/8/2007	0	10/18/2007	0	10/31/2007	1.6	10/26/2007	2.1
11/3/2009	0.1	11/9/2007	0	10/19/2007	0	11/8/2007	2.9	10/29/2007	4
5/20/2010	0	11/12/2007	0	10/23/2007	0	11/9/2007	3.6	10/30/2007	2.9
5/23/2010	0	11/17/2007	0	10/24/2007	0	11/12/2007	1.3	10/31/2007	2.7
6/24/2010	0	11/19/2007	0	10/25/2007	0	11/17/2007	0.5	11/8/2007	5.5
8/4/2010	0.1	12/18/2007	0	10/26/2007	0	11/19/2007	0.5	11/9/2007	4.2
9/20/2010	0	4/2/2008	0	10/29/2007	0	12/18/2007	5.6	11/12/2007	2.2
10/18/2010	0.1	5/21/2008	0.2	10/30/2007	0	4/2/2008	13	11/17/2007	4.3
5/9/2011	0.0	5/22/2008	0.5	10/31/2007	0	5/21/2008	14.3	11/19/2007	5.8
6/22/2011	0.0	5/23/2008	0.2	11/8/2007	0	5/22/2008	2.7	12/18/2007	8.6
7/25/2011	0.0	5/24/2008	0	11/9/2007	0	5/23/2008	14.3	4/2/2008	4.1
8/24/2011	0.1	5/25/2008	0	11/12/2007	0	5/24/2008	9.2	5/21/2008	2.2
9/19/2011	0.2	5/26/2008	0	11/17/2007	0	5/25/2008	5.3	5/22/2008	1.8
10/24/2011	0.1	5/27/2008	0	11/19/2007	0	5/26/2008	0	5/23/2008	6.3
4/10/12	0	5/28/2008	0	12/18/2007	0	5/27/2008	1.8	5/24/2008	7.8

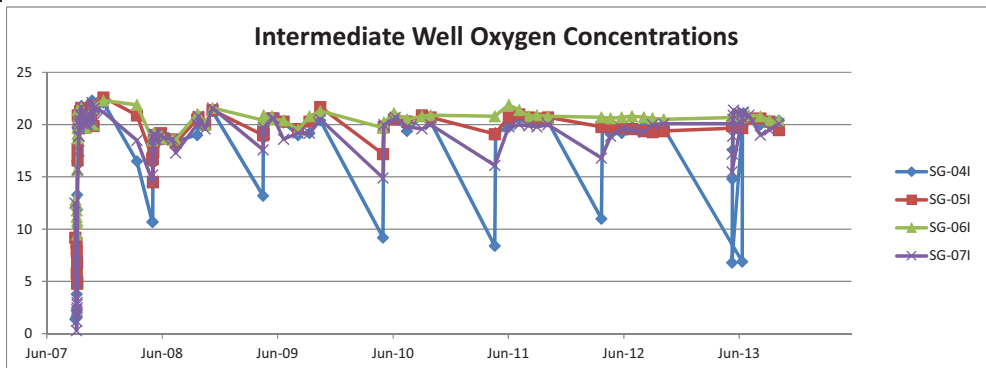


SG-04S	SG-05S	SG-06S	SG-07S	SG-22
Date	Date	Date	Date	Date
CH4 (%)	CH4 (%)	CH4 (%)	CH4 (%)	CH4 (%)
5/9/12	5/29/2008	4/2/2008	5/28/2008	5/25/2008
6/13/12	5/30/2008	5/21/2008	5/29/2008	5/26/2008
7/16/12	5/31/2008	5/22/2008	5/30/2008	5/27/2008
8/22/12	6/1/2008	5/23/2008	5/31/2008	5/28/2008
9/19/12	6/17/2008	5/24/2008	6/1/2008	5/29/2008
10/24/12	6/25/2008	5/25/2008	6/17/2008	5/30/2008
6/29/13	7/24/2008	5/26/2008	6/25/2008	5/31/2008
5/28/13	8/3/2008	5/27/2008	7/24/2008	6/1/2008
7/20/13	10/10/2008	5/28/2008	8/3/2008	6/17/2008
8/26/13	10/14/2008	5/29/2008	10/10/2008	6/25/2008
9/24/13	11/4/2008	5/30/2008	10/14/2008	7/24/2008
10/23/13	11/27/2008	5/31/2008	11/4/2008	8/3/2008
	5/6/2009	6/1/2009	11/27/2008	10/10/2008
	5/7/2009	6/17/2008	5/6/2009	10/14/2008
	5/8/2009	6/25/2008	5/7/2009	11/4/2008
	6/3/2009	7/24/2008	5/8/2009	11/27/2008
	6/8/2009	8/3/2008	6/3/2009	5/6/2009
	7/10/2009	10/10/2008	6/8/2009	5/7/2009
	8/25/2009	10/14/2008	6/9/2009	5/8/2009
	9/30/2009	11/4/2008	7/10/2009	6/3/2009
	11/3/2009	11/27/2008	8/25/2009	6/8/2009
	5/20/2010	5/6/2009	9/30/2009	6/9/2009
	5/23/2010	5/7/2009	10/1/2009	7/10/2009
	6/24/2010	5/8/2009	10/2/2009	8/25/2009
	8/4/2010	6/3/2009	10/5/2009	9/30/2009
	9/20/2010	6/8/2009	11/3/2009	10/1/2009
	10/18/2010	7/10/2009	11/5/2009	10/2/2009
	5/9/2011	8/25/2009	5/20/2010	10/5/2009
	6/22/2011	9/30/2009	5/23/2010	11/3/2009
	7/25/2011	11/3/2009	6/24/2010	5/20/2010
	8/24/2011	5/20/2010	6/26/2010	5/23/2010
	9/19/2011	5/23/2010	6/26/2010	6/24/2010
	10/24/2011	6/24/2010	6/28/2010	6/26/2010
	4/10/12	8/4/2010	8/4/2010	6/28/2010
	5/9/12	9/20/2010	8/5/2010	8/4/2010
	6/13/12	10/18/2010	8/6/2010	8/5/2010
	7/16/12	5/9/2011	8/9/2010	8/6/2010
	8/22/12	6/22/2011	9/20/2010	8/9/2010
	9/19/12	7/25/2011	9/21/2010	9/20/2010
	10/24/12	8/24/2011	9/22/2010	9/21/2010
	6/29/13	9/19/2011	9/23/2010	9/22/2010
	5/28/13	10/24/2011	9/24/2010	9/23/2010
	7/20/13	4/10/12	10/18/2010	9/24/2010
	8/26/13	5/9/12	10/19/2010	10/18/2010
	9/24/13	6/13/12	10/20/2010	10/19/2010
	10/23/13	7/16/12	10/21/2010	10/20/2010
		8/22/12	10/22/2010	10/21/2010
		9/19/12	5/9/2011	10/22/2010
		10/24/12	5/10/2011	5/9/2011
				3.5

SG-04S		SG-05S		SG-06S		SG-07S		SG-22	
Date	CH4 (%)	Date	CH4 (%)	Date	CH4 (%)	Date	CH4 (%)	Date	CH4 (%)
				6/29/13	0	5/11/2011	20.7	5/10/2011	4.5
				5/28/13	0	5/12/2011	18.1	5/11/2011	6.2
				7/20/13	0	5/13/2011	13.6	5/12/2011	5.8
				8/26/13	0	6/22/2011	16.2	5/13/2011	5.8
				9/24/13	0	6/23/2011	16.4	6/22/2011	3.1
				10/23/13	0	6/24/2011	16.5	6/23/2011	3.6
						6/25/2011	10.9	6/24/2011	3.6
						6/26/2011	8.0	6/25/2011	4.2
						7/25/2011	13.8	6/26/2011	3.3
						7/26/2011	12.6	7/25/2011	0.2
						7/27/2011	12.6	7/26/2011	3.2
						7/28/2011	10.6	7/27/2011	2.5
						7/29/2011	7.0	7/28/2011	1.9
						8/24/2011	3.3	7/29/2011	1.4
						8/25/2011	17.7	8/24/2011	0.0
						8/26/2011	20.2	8/25/2011	1.1
						8/27/2011	13.2	8/26/2011	1.0
						8/28/2011	8.9	8/27/2011	6.0
						9/19/2011	9.6	8/28/2011	0.2
						9/20/2011	11.1	9/19/2011	0.0
						9/21/2011	10.8	9/20/2011	0.0
						9/22/2011	7.6	9/21/2011	0.0
						9/23/2011	3.9	9/22/2011	0.0
						10/24/2011	5.1	9/23/2011	0.0
						10/25/2011	8.5	10/24/2011	0.0
						10/26/2011	6.5	10/25/2011	0.0
						10/27/2011	6.0	10/26/2011	0.0
						10/28/2011	3.5	10/27/2011	0.0
						4/10/12	13	10/28/2011	0.0
						4/11/12	16.5	4/10/12	0
						4/12/12	16.3	4/11/12	8.8
						4/12/12	16.3	4/12/12	8.4
						4/13/12	12.1	4/12/12	8.4
						4/14/12	8.4	4/13/12	7.8
						5/9/12	4.4	4/14/12	5.2
						5/10/12	11.1	5/9/12	0
						5/11/12	11.2	5/10/12	4
						5/12/12	9.1	5/11/12	2.8
						5/13/12	6.2	5/12/12	2.4
						6/13/12	4.8	5/13/12	1.9
						6/14/12	7.8	6/13/12	0
						6/15/12	9.2	6/14/12	1
						6/16/12	7.7	6/15/12	1.3
						6/17/12	5.5	6/16/12	1.2
						7/16/12	10.8	6/17/12	1
						7/17/12	7.7	7/16/12	1
						7/18/12	5.6	7/17/12	1.7
						7/19/12	3.9	7/18/12	1.2
						7/20/12	2.2	7/19/12	1

SG-04S		SG-05S		SG-06S		SG-07S		SG-22	
Date	CH4 (%)	Date	CH4 (%)	Date	CH4 (%)	Date	CH4 (%)	Date	CH4 (%)
						8/22/12	9.6	7/20/12	0.8
						8/23/12	9.2	8/22/12	0
						8/24/12	4.5	8/23/12	0
						8/25/12	2.8	8/24/12	0
						8/26/12	2.1	8/25/12	1.2
						9/19/12	9.1	8/26/12	0.8
						9/20/12	6.6	9/19/12	1.5
						9/21/12	4.2	9/20/12	1.3
						9/22/12	2.5	9/21/12	1
						9/23/12	1.8	9/22/12	0.9
						10/24/12	9.8	9/23/12	0.7
						10/25/12	6.2	10/24/12	0
						10/26/12	5.1	10/25/12	1.2
						10/27/12	3.5	10/26/12	1.2
						10/28/12	2.6	10/27/12	1
						6/29/13	4.9	10/28/12	1
						6/30/13	6.4		
						7/1/13	3.2		
						7/2/13	1.5		
						7/3/13	0.9		
						5/28/13	12		
						5/29/13	10.5		
						5/30/13	8		
						5/31/13	3.4		
						6/1/13	2.9		
						6/2/13	1.7		
						7/20/13	0		
						7/21/13	4.8		
						7/22/13	2.2		
						7/23/13	1		
						7/24/13	0.5		
						8/26/13	0		
						8/27/13	8.7		
						8/28/13	5		
						8/29/13	2.8		
						8/30/13	1.7		
						9/24/13	2.6		
						9/25/13	8.4		
						9/26/13	4.6		
						9/27/13	2.4		
						9/28/13	1.5		
						10/23/13	11.3		
						10/24/13	6.2		

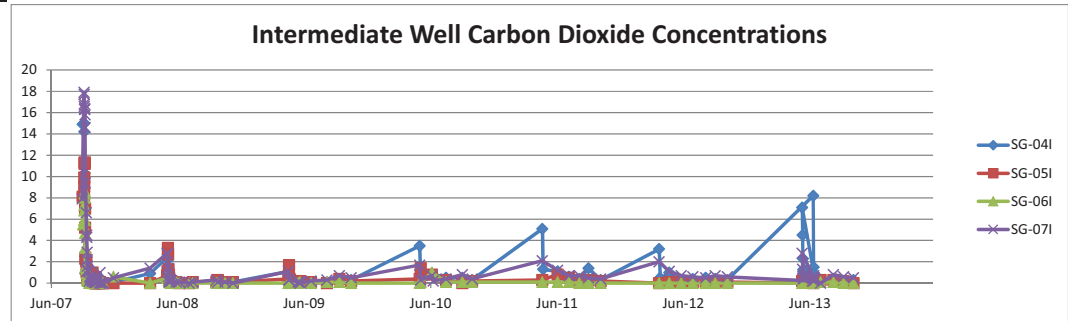
SG-04I		SG-05I		SG-06I		SG-07I	
Date	O2 (%)	Date	O2 (%)	Date	O2 (%)	Date	O2 (%)
9/20/2007	1.4	9/20/2007	9.2	9/21/2007	12.8	9/19/2007	12.5
9/24/2007	1.6	9/24/2007	8.7	9/24/2007	12.4	9/24/2007	0.3
9/25/2007	2.2	9/25/2007	7.9	9/25/2007	11.8	9/25/2007	1.2
9/25/2007	3.8	9/25/2007	5.8	9/25/2007	11.2	9/25/2007	2
9/26/2007	11.9	9/26/2007	4.8	9/26/2007	10.5	9/25/2007	2.3
9/26/2007	13.3	9/26/2007	5	9/26/2007	9.5	9/26/2007	2.5
9/26/2007	16.5	9/26/2007	6.8	9/26/2007	10.8	9/26/2007	2.8
9/27/2007	19.7	9/27/2007	16.6	9/26/2007	15.7	9/26/2007	3
9/27/2007	19.8	9/27/2007	17.7	9/27/2007	18.7	9/27/2007	5
9/28/2007	21.2	9/28/2007	20.9	9/27/2007	19.1	9/27/2007	6.9
10/1/2007	20.5	10/1/2007	19.9	9/27/2007	19.7	9/28/2007	15.7
10/2/2007	20.7	10/2/2007	20.5	9/28/2007	21.4	10/1/2007	17.5
10/3/2007	20.4	10/2/2007	20.8	10/1/2007	20.9	10/2/2007	18.9
10/3/2007	20.3	10/3/2007	20.2	10/2/2007	20.7	10/2/2007	18.9
10/4/2007	20.8	10/3/2007	19.8	10/3/2007	20.4	10/3/2007	19.6
10/5/2007	21.2	10/5/2007	21.3	10/3/2007	19.9	10/3/2007	20
10/5/2007	20.6	10/5/2007	19.7	10/4/2007	20.9	10/4/2007	20.4
10/8/2007	21.1	10/8/2007	21.3	10/5/2007	21.1	10/5/2007	21
10/9/2007	21.8	10/9/2007	21.6	10/5/2007	20.8	10/5/2007	20.4
10/11/2007	20.5	10/11/2007	20.7	10/8/2007	20.8	10/8/2007	20.9
10/12/2007	20	10/12/2007	20.1	10/9/2007	21.6	10/9/2007	21.7
10/15/2007	20.4	10/15/2007	20.5	10/11/2007	20.3	10/11/2007	20.8
10/16/2007	20.6	10/16/2007	20.5	10/12/2007	19.7	10/12/2007	20.1
10/17/2007	20.6	10/17/2007	20.6	10/15/2007	19.9	10/15/2007	20.7
10/18/2007	20.4	10/18/2007	20.3	10/16/2007	20.5	10/16/2007	20.6
10/19/2007	20.4	10/19/2007	20.2	10/17/2007	20.7	10/17/2007	20.5
10/23/2007	19.9	10/23/2007	19.8	10/18/2007	20.3	10/18/2007	20.3
10/24/2007	20.5	10/24/2007	20.2	10/19/2007	20	10/19/2007	20.3
10/25/2007	20.5	10/25/2007	20.3	10/23/2007	19.7	10/23/2007	20
10/26/2007	21	10/26/2007	20.7	10/24/2007	20.3	10/24/2007	20.6
10/29/2007	20.3	10/29/2007	20	10/25/2007	20.3	10/25/2007	20.3
10/30/2007	20.6	10/30/2007	20.3	10/26/2007	20.5	10/26/2007	20.5
10/31/2007	20.9	10/31/2007	20.3	10/29/2007	20.3	10/29/2007	20
11/8/2007	21.2	11/8/2007	21	10/30/2007	20.7	10/30/2007	20.4
11/9/2007	21.9	11/9/2007	21	10/31/2007	20.4	10/31/2007	20.6
11/12/2007	22.3	11/12/2007	21.7	11/8/2007	20.2	11/8/2007	20.5
11/17/2007	20.1	11/17/2007	19.9	11/9/2007	20.1	11/9/2007	21.7
11/19/2007	21.1	11/19/2007	21.8	11/12/2007	21.6	11/12/2007	22.1
12/18/2007	22.1	12/18/2007	22.6	11/17/2007	20.0	11/17/2007	20.2
4/2/2008	16.5	4/2/2008	20.9	11/19/2007	21.9	11/19/2007	21.6
5/21/2008	10.7	5/21/2008	16.8	12/18/2007	22.3	12/18/2007	21.2
5/22/2008	10.7	5/22/2008	16.7	4/2/2008	21.9	4/2/2008	18.5
5/23/2008	16.3	5/23/2008	14.5	5/21/2008	18.6	5/21/2008	14.6
5/24/2008	18.4	5/24/2008	17.4	5/22/2008	18.5	5/22/2008	15.2
5/25/2008	18.7	5/25/2008	18.4	5/23/2008	18.7	5/23/2008	16.9
5/26/2008	18.8	5/26/2008	18.8	5/24/2008	19.1	5/24/2008	17.9
5/27/2008	18.9	5/27/2008	18.9	5/25/2008	19	5/25/2008	18.6
5/28/2008	19.2	5/28/2008	19	5/26/2008	19	5/26/2008	19



SG-04I		SG-05I		SG-06I		SG-07I	
Date	O2 (%)	Date	O2 (%)	Date	O2 (%)	Date	O2 (%)
5/29/2008	19	5/29/2008	19	5/27/2008	19	5/27/2008	18.9
5/30/2008	19	5/30/2008	19	5/28/2008	19.1	5/28/2008	19.1
5/31/2008	18.8	5/31/2008	18.9	5/29/2008	19.1	5/29/2008	19
6/1/2008	18.6	6/1/2008	18.6	5/30/2008	19	5/30/2008	19
6/17/2008	18.8	6/17/2008	19.2	5/31/2008	19	5/31/2008	19
6/25/2008	18.6	6/25/2008	18.7	6/1/2008	18.7	6/1/2008	18.6
7/24/2008	18.6	7/24/2008	18.6	6/17/2008	19	6/17/2008	19
8/3/2008	18.4	8/3/2008	18.3	6/25/2008	18.7	6/25/2008	18.7
10/10/2008	19	10/10/2008	20.5	7/24/2008	18.6	7/24/2008	18.6
10/14/2008	20.6	10/14/2008	20.7	8/3/2008	18.6	8/3/2008	17.3
11/4/2008	20	11/4/2008	20	10/10/2008	21	10/10/2008	20
11/27/2008	21.3	11/27/2008	21.4	10/14/2008	20.9	10/14/2008	20.8
5/6/2009	13.2	5/6/2009	19	11/4/2008	20	11/4/2008	19.6
5/7/2009	18.7	5/7/2009	19.5	11/27/2008	21.6	11/27/2008	21.6
5/8/2009	19.9	5/8/2009	19.1	5/6/2009	20.4	5/6/2009	17.6
6/3/2009	20.6	6/3/2009	20.6	5/7/2009	20.7	5/7/2009	19.4
6/8/2009	20.6	6/8/2009	20.6	5/8/2009	20.9	5/8/2009	19.7
7/10/2009	20.2	7/10/2009	20.3	6/3/2009	20.8	6/3/2009	20.6
8/25/2009	19	8/25/2009	19.6	6/8/2009	20.5	6/8/2009	20.6
9/30/2009	19.2	9/30/2009	20.3	7/10/2009	20.4	6/9/2009	20.6
11/3/2009	20.4	11/3/2009	21.7	8/25/2009	19.5	7/10/2009	18.6
5/20/2010	9.2	5/20/2010	17.2	9/30/2009	20.8	8/25/2009	19.2
5/23/2010	20	5/23/2010	19.8	11/3/2009	21.3	9/30/2009	19.2
6/24/2010	20.9	6/24/2010	20.5	5/20/2010	19.7	11/3/2009	20.5
8/4/2010	19.4	8/4/2010	20.3	5/23/2010	20.2	5/20/2010	14.9
9/20/2010	20.8	9/20/2010	20.9	6/24/2010	21.1	5/23/2010	20
10/18/2010	20.3	10/18/2010	20.7	8/4/2010	20.5	6/24/2010	20.4
5/9/2011	8.4	5/9/2011	19.1	9/20/2010	20.8	6/28/2010	20.7
5/11/2011	19.2	6/22/2011	20.7	10/18/2010	20.9	8/4/2010	19.8
6/22/2011	19.8	7/25/2011	21.0	5/9/2011	20.8	9/20/2010	19.6
7/25/2011	20.7	8/24/2011	20.7	6/22/2011	21.9	10/18/2010	20
8/24/2011	20.6	9/19/2011	20.6	7/25/2011	21.4	5/9/2011	16.1
9/19/2011	20.2	10/24/2011	20.7	8/24/2011	20.8	6/22/2011	19.8
10/24/2011	20.3	4/10/12	19.8	9/19/2011	20.9	7/25/2011	20.0
4/10/12	11	5/9/12	19.8	10/24/2011	20.8	8/24/2011	19.9
4/13/12	20.1	6/13/12	19.7	4/10/12	20.7	9/19/2011	19.8
4/14/12	20.1	7/16/12	19.6	5/9/12	20.6	10/24/2011	20.0
5/9/12	19.1	8/22/12	19.4	6/13/12	20.7	4/10/12	16.8
6/13/12	19.2	9/19/12	19.3	7/16/12	20.8	5/9/12	18.9
7/16/12	19.8	10/24/12	19.4	8/22/12	20.7	6/13/12	19.6
8/22/12	19.9	6/29/13	19.7	9/19/12	20.6	7/16/12	19.5
9/19/12	19.8	5/28/13	19.9	10/24/12	20.5	8/22/12	19.3
10/24/12	19.7	7/20/13	20.6	6/29/13	20.7	9/19/12	20
6/29/13	6.9	8/26/13	20.6	5/28/13	20.8	10/24/12	20.1
6/30/13	19.9	9/24/13	20.3	7/20/13	20.9	6/29/13	20.1
7/1/13	21	10/23/13	19.5	8/26/13	20.8	6/30/13	20.6
7/2/13	21			9/24/13	20.4	7/1/13	21.1
7/3/13	21.1			10/23/13	20.4	7/2/13	21.2
5/28/13	6.8					7/3/13	21.2

SG-04I		SG-05I		SG-06I		SG-07I	
Date	O2 (%)	Date	O2 (%)	Date	O2 (%)	Date	O2 (%)
5/29/13	14.8					5/28/13	15.5
5/30/13	17.6					5/29/13	17.2
5/31/13	19.9					5/30/13	18.9
6/1/13	19.6					5/31/13	20.5
6/2/13	20.7					6/1/13	20.9
7/20/13	20.7					6/2/13	21.4
8/26/13	20					7/20/13	20.9
9/24/13	20.1					8/26/13	19
10/23/13	20.4					9/24/13	19.5
						10/23/13	20.1

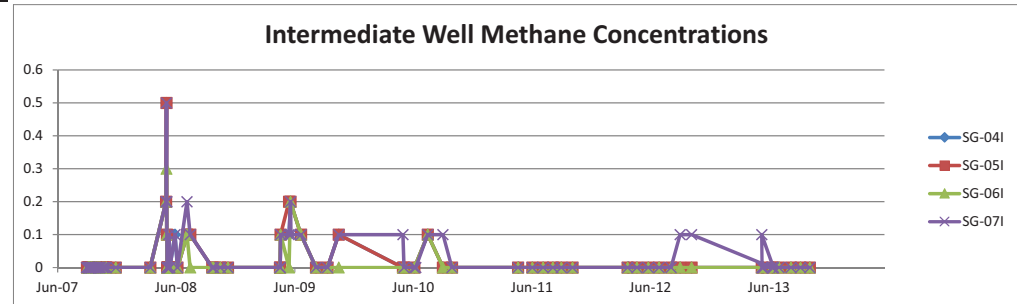
SG-04I	SG-05I	SG-06I	SG-07I				
Date	Date	Date	Date				
CO2 (%)	CO2 (%)	CO2 (%)	CO2 (%)				
9/20/2007	14.9	9/20/2007	8.1	9/21/2007	5.5	9/19/2007	7.9
9/24/2007	15	9/24/2007	8.1	9/24/2007	5.9	9/24/2007	17.9
9/25/2007	15	9/25/2007	9.1	9/25/2007	6.8	9/25/2007	17.7
9/25/2007	14.2	9/25/2007	9.9	9/25/2007	7.3	9/25/2007	16.8
9/26/2007	11	9/26/2007	11.2	9/26/2007	8	9/25/2007	16.6
9/26/2007	10.3	9/26/2007	11.3	9/26/2007	8.5	9/26/2007	16.3
9/26/2007	8	9/26/2007	11.3	9/26/2007	8.6	9/26/2007	16.3
9/27/2007	2.5	9/27/2007	7	9/26/2007	8.4	9/26/2007	16.4
9/27/2007	1.8	9/27/2007	5.2	9/27/2007	5.9	9/27/2007	15.8
9/28/2007	0.9	9/28/2007	2.4	9/27/2007	4.7	9/27/2007	14.6
10/1/2007	1.1	10/1/2007	2.1	9/27/2007	3.3	9/28/2007	9.4
10/2/2007	0.6	10/2/2007	1.2	9/28/2007	1.5	10/1/2007	6.6
10/3/2007	0.4	10/2/2007	1	10/1/2007	1.3	10/2/2007	4.5
10/3/2007	0.2	10/3/2007	0.7	10/2/2007	0.9	10/2/2007	4.3
10/4/2007	0.2	10/3/2007	0.5	10/3/2007	0.6	10/3/2007	2.9
10/5/2007	0.1	10/5/2007	0.3	10/3/2007	0.4	10/3/2007	2.2
10/5/2007	0.1	10/5/2007	0.4	10/4/2007	0.3	10/4/2007	1.6
10/8/2007	0.1	10/8/2007	0.3	10/5/2007	0.2	10/5/2007	1.2
10/9/2007	0.1	10/9/2007	0.3	10/5/2007	0.2	10/5/2007	1.1
10/11/2007	0.1	10/11/2007	0.2	10/8/2007	0.2	10/8/2007	1.1
10/12/2007	0.1	10/12/2007	0.2	10/9/2007	0	10/9/2007	0.2
10/15/2007	0.1	10/15/2007	0.2	10/11/2007	0.1	10/11/2007	0.6
10/16/2007	0	10/16/2007	0.1	10/12/2007	0.1	10/12/2007	0.5
10/17/2007	0	10/17/2007	0.1	10/15/2007	0	10/15/2007	0.5
10/18/2007	0	10/18/2007	0.1	10/16/2007	0	10/16/2007	0.4
10/19/2007	0	10/19/2007	1	10/17/2007	0	10/17/2007	0.3
10/23/2007	0	10/23/2007	0.1	10/18/2007	0	10/18/2007	0.2
10/24/2007	0	10/24/2007	0.1	10/19/2007	0	10/19/2007	0.2
10/25/2007	0	10/25/2007	0	10/23/2007	0	10/23/2007	0.2
10/26/2007	0	10/26/2007	0	10/24/2007	0	10/24/2007	0.1
10/29/2007	0	10/29/2007	0	10/25/2007	0	10/25/2007	0.1
10/30/2007	0	10/30/2007	0	10/26/2007	0	10/26/2007	0.1
10/31/2007	0	10/31/2007	0.1	10/29/2007	0	10/29/2007	0.1
11/8/2007	0	11/8/2007	0.1	10/30/2007	0	10/30/2007	0.1
11/9/2007	0	11/9/2007	0.1	10/31/2007	0	10/31/2007	0.1
11/12/2007	0	11/12/2007	0	11/8/2007	0	11/8/2007	0
11/17/2007	0	11/17/2007	0	11/9/2007	0	11/9/2007	1
11/19/2007	0	11/19/2007	0	11/12/2007	0	11/12/2007	0
12/18/2007	0.1	12/18/2007	0	11/17/2007	0	11/17/2007	0
4/2/2008	0.9	4/2/2008	0	11/19/2007	0	11/19/2007	0
5/21/2008	2.4	5/21/2008	0.7	12/18/2007	0.6	12/18/2007	0.5
5/22/2008	2.7	5/22/2008	1.1	4/2/2008	0	4/2/2008	1.4
5/23/2008	2.2	5/23/2008	3.3	5/21/2008	0.5	5/21/2008	2.8
5/24/2008	1.1	5/24/2008	2.7	5/22/2008	0.8	5/22/2008	2.7
5/25/2008	0.6	5/25/2008	1.3	5/23/2008	0.7	5/23/2008	1.4
5/26/2008	0.4	5/26/2008	0.8	5/24/2008	0.5	5/24/2008	1
5/27/2008	0.4	5/27/2008	0.5	5/25/2008	0.3	5/25/2008	0.6
5/28/2008	0.2	5/28/2008	0.3	5/26/2008	0.2	5/26/2008	0.1



SG-04I		SG-05I		SG-06I		SG-07I	
Date	CO2 (%)	Date	CO2 (%)	Date	CO2 (%)	Date	CO2 (%)
5/29/2008	0.1	5/29/2008	0.1	5/27/2008	0.3	5/27/2008	0.4
5/30/2008	0.2	5/30/2008	0.1	5/28/2008	0.1	5/28/2008	0.2
5/31/2008	0.2	5/31/2008	0.2	5/29/2008	0.1	5/29/2008	0.3
6/1/2008	0.2	6/1/2008	0.2	5/30/2008	0.1	5/30/2008	0.2
6/17/2008	0.2	6/17/2008	0.1	5/31/2008	0	5/31/2008	0.2
6/25/2008	0.1	6/25/2008	0	6/1/2008	0.1	6/1/2008	0.2
7/24/2008	0	7/24/2008	0	6/17/2008	0.1	6/17/2008	0.1
8/3/2008	0.1	8/3/2008	0.1	6/25/2008	0	6/25/2008	0.1
10/10/2008	0.2	10/10/2008	0.1	7/24/2008	0	7/24/2008	0
10/14/2008	0.2	10/14/2008	0.3	8/3/2008	0	8/3/2008	0.1
11/4/2008	0.1	11/4/2008	0.1	10/10/2008	0	10/10/2008	0.3
11/27/2008	0.1	11/27/2008	0.1	10/14/2008	0	10/14/2008	0.1
5/6/2009	1.1	5/6/2009	0.4	11/4/2008	0	11/4/2008	0.1
5/7/2009	0.9	5/7/2009	0.7	11/27/2008	0	11/27/2008	0
5/8/2009	0.8	5/8/2009	1.7	5/6/2009	0	5/6/2009	1.1
6/3/2009	0.1	6/3/2009	0.1	5/7/2009	0	5/7/2009	0.3
6/8/2009	0.1	6/8/2009	0.2	5/8/2009	0.1	5/8/2009	0.3
7/10/2009	0	7/10/2009	0.1	6/3/2009	0	6/3/2009	0.1
8/25/2009	0.1	8/25/2009	0	6/8/2009	0.1	6/8/2009	0.1
9/30/2009	0.4	9/30/2009	0.4	7/10/2009	0	6/9/2009	0
11/3/2009	0.3	11/3/2009	0.2	8/25/2009	0.1	7/10/2009	0.2
5/20/2010	3.5	5/20/2010	0.4	9/30/2009	0.1	8/25/2009	0.3
5/23/2010	0.4	5/23/2010	1.4	11/3/2009	0	9/30/2009	0.7
6/24/2010	0.9	6/24/2010	0.8	5/20/2010	0	11/3/2009	0.5
8/4/2010	0.5	8/4/2010	0.3	5/23/2010	0.1	5/20/2010	1.7
9/20/2010	0.5	9/20/2010	0	6/24/2010	1	5/23/2010	0.3
10/18/2010	0.3	10/18/2010	0.2	8/4/2010	0.1	6/24/2010	0.7
5/9/2011	5.1	5/9/2011	0.3	9/20/2010	0.1	6/28/2010	0.2
5/11/2011	1.3	6/22/2011	0.8	10/18/2010	0.1	8/4/2010	0.4
6/22/2011	1.1	7/25/2011	0.5	5/9/2011	0.1	9/20/2010	0.8
7/25/2011	0.6	8/24/2011	0.3	6/22/2011	0.1	10/18/2010	0.4
8/24/2011	0.4	9/19/2011	0.3	7/25/2011	0.1	5/9/2011	2.1
9/19/2011	1.4	10/24/2011	0.2	8/24/2011	0.0	6/22/2011	1.2
10/24/2011	0.3	4/10/12	0	9/19/2011	0.0	7/25/2011	0.7
4/10/12	3.2	5/9/12	0.1	10/24/2011	0.0	8/24/2011	0.7
4/13/12	0.5	6/13/12	0.1	4/10/12	0	9/19/2011	0.5
4/14/12	0.4	7/16/12	0.1	5/9/12	0	10/24/2011	0.4
5/9/12	1	8/22/12	0.1	6/13/12	0	4/10/12	2
6/13/12	0.2	9/19/12	0.1	7/16/12	0	5/9/12	1.1
7/16/12	0.4	10/24/12	0.1	8/22/12	0	6/13/12	0.7
8/22/12	0.5	6/29/13	0	9/19/12	0	7/16/12	0.6
9/19/12	0.4	5/28/13	0.2	10/24/12	0	8/22/12	0.5
10/24/12	0.3	7/20/13	0.3	6/29/13	0	9/19/12	0.7
6/29/13	8.2	8/26/13	0.3	5/28/13	0	10/24/12	0.6
6/30/13	1.5	9/24/13	0.2	7/20/13	0.1	6/29/13	0.2
7/1/13	0.8	10/23/13	0	8/26/13	0.1	6/30/13	0.7
7/2/13	0.9			9/24/13	0	7/1/13	0.5
7/3/13	0.5			10/23/13	0	7/2/13	0.4
5/28/13	7.1					7/3/13	0.3

SG-04I		SG-05I		SG-06I		SG-07I	
Date	CO2 (%)	Date	CO2 (%)	Date	CO2 (%)	Date	CO2 (%)
5/29/13	4.5					5/28/13	2.8
5/30/13	2.3					5/29/13	1.3
5/31/13	1.1					5/30/13	0.8
6/1/13	1.3					5/31/13	0.5
6/2/13	0.9					6/1/13	0.4
7/20/13	0.2					6/2/13	0.5
8/26/13	0.2					7/20/13	0
9/24/13	0.2					8/26/13	0.8
10/23/13	0.3					9/24/13	0.6
						10/23/13	0.5

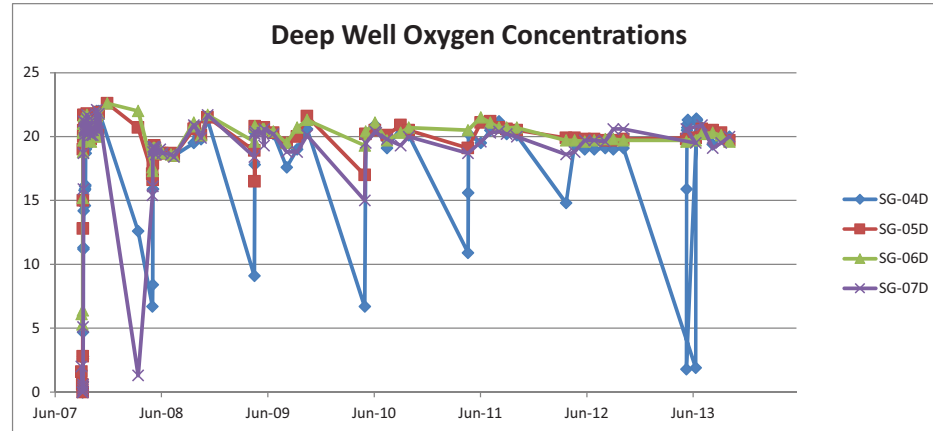
SG-04I	SG-05I	SG-06I	SG-07I
Date	CH4 (%)	Date	CH4 (%)
9/20/2007	0	9/20/2007	0
9/24/2007	0	9/24/2007	0
9/25/2007	0	9/25/2007	0
9/25/2007	0	9/25/2007	0
9/26/2007	0	9/26/2007	0
9/26/2007	0	9/26/2007	0
9/27/2007	0	9/27/2007	0
9/27/2007	0	9/27/2007	0
9/28/2007	0	9/28/2007	0
10/1/2007	0	10/1/2007	0
10/2/2007	0	10/2/2007	0
10/3/2007	0	10/3/2007	0
10/4/2007	0	10/4/2007	0
10/5/2007	0	10/5/2007	0
10/5/2007	0	10/5/2007	0
10/8/2007	0	10/8/2007	0
10/9/2007	0	10/9/2007	0
10/11/2007	0	10/11/2007	0
10/12/2007	0	10/12/2007	0
10/15/2007	0	10/15/2007	0
10/16/2007	0	10/16/2007	0
10/17/2007	0	10/17/2007	0
10/18/2007	0	10/18/2007	0
10/19/2007	0	10/19/2007	0
10/23/2007	0	10/23/2007	0
10/24/2007	0	10/24/2007	0
10/25/2007	0	10/25/2007	0
10/26/2007	0	10/26/2007	0
10/29/2007	0	10/29/2007	0
10/30/2007	0	10/30/2007	0
10/31/2007	0	10/31/2007	0
11/8/2007	0	11/8/2007	0
11/9/2007	0	11/9/2007	0
11/12/2007	0	11/12/2007	0
11/17/2007	0	11/17/2007	0
11/19/2007	0	11/19/2007	0
12/18/2007	0	12/18/2007	0
4/2/2008	0	4/2/2008	0
5/21/2008	0.2	5/21/2008	0.2
5/22/2008	0.5	5/22/2008	0.5
5/23/2008	0.1	5/23/2008	0.1
5/24/2008	0	5/24/2008	0
5/25/2008	0	5/25/2008	0
5/26/2008	0	5/26/2008	0
5/27/2008	0	5/27/2008	0
5/28/2008	0	5/28/2008	0



SG-04I		SG-05I		SG-06I		SG-07I	
Date	CH4 (%)	Date	CH4 (%)	Date	CH4 (%)	Date	CH4 (%)
5/29/2008	0	5/29/2008	0	5/27/2008	0	5/27/2008	0
5/30/2008	0	5/30/2008	0	5/28/2008	0	5/28/2008	0
5/31/2008	0	5/31/2008	0	5/29/2008	0	5/29/2008	0.1
6/1/2008	0	6/1/2008	0	5/30/2008	0	5/30/2008	0
6/17/2008	0.1	6/17/2008	0	5/31/2008	0	5/31/2008	0
6/25/2008	0	6/25/2008	0	6/1/2008	0	6/1/2008	0
7/24/2008	0.1	7/24/2008	0.1	6/17/2008	0	6/17/2008	0.1
8/3/2008	0.1	8/3/2008	0.1	6/25/2008	0	6/25/2008	0
10/10/2008	0	10/10/2008	0	7/24/2008	0.1	7/24/2008	0.2
10/14/2008	0	10/14/2008	0	8/3/2008	0	8/3/2008	0.1
11/4/2008	0	11/4/2008	0	10/10/2008	0	10/10/2008	0
11/27/2008	0	11/27/2008	0	10/14/2008	0	10/14/2008	0
5/6/2009	0	5/6/2009	0	11/4/2008	0	11/4/2008	0
5/7/2009	0	5/7/2009	0	11/27/2008	0	11/27/2008	0
5/8/2009	0.1	5/8/2009	0.1	5/6/2009	0	5/6/2009	0
6/3/2009	0.1	6/3/2009	0.2	5/7/2009	0	5/7/2009	0
6/8/2009	0.2	6/8/2009	0.2	5/8/2009	0.1	5/8/2009	0.1
7/10/2009	0.1	7/10/2009	0.1	6/3/2009	0	6/3/2009	0.1
8/25/2009	0	8/25/2009	0	6/8/2009	0.2	6/8/2009	0.2
9/30/2009	0	9/30/2009	0	7/10/2009	0.1	6/9/2009	0.1
11/3/2009	0.1	11/3/2009	0.1	8/25/2009	0	7/10/2009	0.1
5/20/2010	0	5/20/2010	0	9/30/2009	0	8/25/2009	0
5/23/2010	0	5/23/2010	0	11/3/2009	0	9/30/2009	0
6/24/2010	0	6/24/2010	0	5/20/2010	0	11/3/2009	0.1
8/4/2010	0.1	8/4/2010	0.1	5/23/2010	0	5/20/2010	0.1
9/20/2010	0	9/20/2010	0	6/24/2010	0	5/23/2010	0
10/18/2010	0	10/18/2010	0	8/4/2010	0.1	6/24/2010	0
5/9/2011	0.0	5/9/2011	0.0	9/20/2010	0	6/28/2010	0
5/11/2011	0.0	6/22/2011	0.0	10/18/2010	0	8/4/2010	0.1
6/22/2011	0.0	7/25/2011	0.0	5/9/2011	0.0	9/20/2010	0.1
7/25/2011	0.0	8/24/2011	0.0	6/22/2011	0.0	10/18/2010	0
8/24/2011	0.0	9/19/2011	0.0	7/25/2011	0.0	5/9/2011	0.0
9/19/2011	0.0	10/24/2011	0.0	8/24/2011	0.0	6/22/2011	0.0
10/24/2011	0.0	4/10/12	0	9/19/2011	0.0	7/25/2011	0.0
4/10/12	0	5/9/12	0	10/24/2011	0.0	8/24/2011	0.0
4/13/12	0	6/13/12	0	4/10/12	0	9/19/2011	0.0
4/14/12	0	7/16/12	0	5/9/12	0	10/24/2011	0.0
5/9/12	0	8/22/12	0	6/13/12	0	4/10/12	0
6/13/12	0	9/19/12	0	7/16/12	0	5/9/12	0
7/16/12	0	10/24/12	0	8/22/12	0	6/13/12	0
8/22/12	0	6/29/13	0	9/19/12	0	7/16/12	0
9/19/12	0	5/28/13	0	10/24/12	0	8/22/12	0
10/24/12	0	7/20/13	0	6/29/13	0	9/19/12	0.1
6/29/13	0	8/26/13	0	5/28/13	0	10/24/12	0.1
6/30/13	0	9/24/13	0	7/20/13	0	6/29/13	0
7/1/13	0	10/23/13	0	8/26/13	0	6/30/13	0
7/2/13	0			9/24/13	0	7/1/13	0
7/3/13	0			10/23/13	0	7/2/13	0
5/28/13	0					7/3/13	0

SG-04I		SG-05I		SG-06I		SG-07I	
Date	CH4 (%)	Date	CH4 (%)	Date	CH4 (%)	Date	CH4 (%)
5/29/13	0					5/28/13	0.1
5/30/13	0					5/29/13	0
5/31/13	0					5/30/13	0
6/1/13	0					5/31/13	0
6/2/13	0					6/1/13	0
7/20/13	0					6/2/13	0
8/26/13	0					7/20/13	0
9/24/13	0					8/26/13	0
10/23/13	0					9/24/13	0
						10/23/13	0

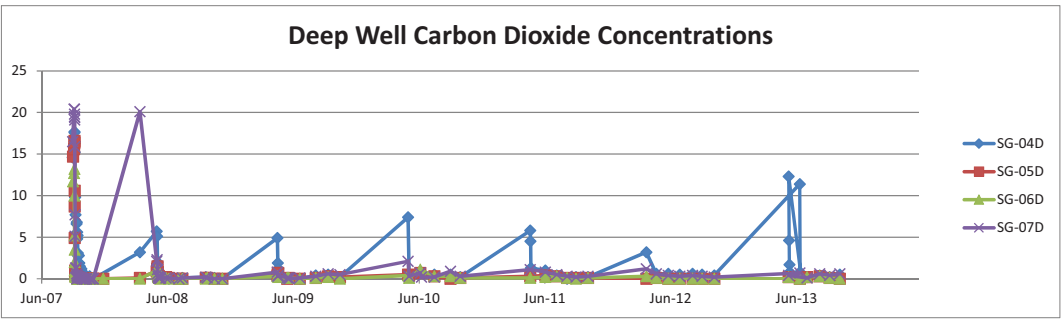
SG-04D		SG-05D		SG-06D		SG-07D	
Date	O2 (%)	Date	O2 (%)	Date	O2 (%)	Date	O2 (%)
9/20/2007	1.7	9/21/2007	1.6	9/21/2007	6.1	9/20/2007	2
9/24/2007	0	9/24/2007	0.6	9/24/2007	5.3	9/24/2007	0
9/25/2007	0	9/25/2007	0	9/25/2007	6.4	9/25/2007	0
9/25/2007	0.8	9/25/2007	2.8	9/25/2007	15.2	9/25/2007	0
9/26/2007	2.6	9/26/2007	12.8	9/26/2007	18.8	9/25/2007	0.2
9/26/2007	2.8	9/26/2007	15	9/26/2007	19.7	9/26/2007	0.4
9/26/2007	4.7	9/26/2007	19	9/26/2007	20.3	9/26/2007	0.6
9/27/2007	11.2	9/27/2007	20.5	9/26/2007	21	9/26/2007	5.1
9/27/2007	11.3	9/27/2007	20	9/27/2007	21	9/27/2007	15.9
9/28/2007	14.2	9/28/2007	21.7	9/27/2007	20.5	9/27/2007	18.7
10/1/2007	15.8	10/1/2007	20.5	9/27/2007	20.4	9/28/2007	21.2
10/2/2007	14.6	10/2/2007	20.8	9/28/2007	21.6	10/1/2007	20.6
10/3/2007	15.9	10/2/2007	21.1	10/1/2007	20.8	10/2/2007	20.7
10/3/2007	16.1	10/3/2007	20.5	10/2/2007	21	10/2/2007	20.5
10/4/2007	16.2	10/4/2007	20	10/3/2007	20.4	10/3/2007	20.4
10/5/2007	19	10/5/2007	21.3	10/3/2007	19.7	10/3/2007	20.2
10/5/2007	18.7	10/5/2007	20.5	10/4/2007	20.8	10/4/2007	20.6
10/8/2007	19.4	10/8/2007	21.3	10/5/2007	21	10/5/2007	21.1
10/9/2007	20.7	10/9/2007	21.8	10/5/2007	20.8	10/5/2007	20.8
10/11/2007	19.6	10/11/2007	20.5	10/8/2007	20.8	10/8/2007	21.4
10/12/2007	19.3	10/12/2007	20	10/9/2007	21.7	10/9/2007	21.7
10/15/2007	19.7	10/15/2007	20	10/11/2007	20.3	10/11/2007	20.8
10/16/2007	20.1	10/16/2007	20.8	10/12/2007	19.8	10/12/2007	20.3
10/17/2007	20.3	10/17/2007	20.6	10/15/2007	20	10/15/2007	21
10/18/2007	20	10/18/2007	20.4	10/16/2007	20.5	10/16/2007	20.8
10/19/2007	20.1	10/19/2007	20.2	10/17/2007	20.5	10/17/2007	20.7
10/23/2007	19.5	10/23/2007	19.8	10/18/2007	20.2	10/18/2007	20.3
10/24/2007	20.1	10/24/2007	20.4	10/19/2007	20.3	10/19/2007	20.4
10/25/2007	20.4	10/25/2007	20.4	10/23/2007	19.6	10/23/2007	20.1
10/26/2007	20.8	10/26/2007	20.7	10/24/2007	20.4	10/24/2007	20.5
10/29/2007	20.3	10/29/2007	20.2	10/25/2007	20.4	10/25/2007	20.5
10/30/2007	20.5	10/30/2007	20.7	10/26/2007	20.5	10/26/2007	20.6
10/31/2007	20.9	10/31/2007	20.5	10/29/2007	20.1	10/29/2007	20.1
11/8/2007	21.0	11/8/2007	20.5	10/30/2007	20.7	10/30/2007	20.5
11/9/2007	21.7	11/9/2007	21.3	10/31/2007	20.5	10/31/2007	20.7
11/12/2007	22.0	11/12/2007	21.7	11/8/2007	20.2	11/8/2007	20.7
11/17/2007	20.2	11/17/2007	20.1	11/9/2007	21.2	11/9/2007	21.8
11/19/2007	22.0	11/19/2007	21.9	11/12/2007	21.6	11/12/2007	22.1
4/2/2008	12.6	12/18/2007	22.6	11/17/2007	20.0	11/17/2007	20.4
5/21/2008	6.7	4/2/2008	20.7	11/19/2007	21.8	11/19/2007	21.8
5/22/2008	8.4	5/21/2008	17.1	12/18/2007	22.6	4/2/2008	1.3
5/23/2008	15.9	5/22/2008	16.6	4/2/2008	22	5/21/2008	15.4
5/24/2008	18.9	5/23/2008	17.9	5/21/2008	17.6	5/22/2008	16.1
5/25/2008	19	5/24/2008	19.1	5/22/2008	17.3	5/23/2008	18.8
5/26/2008	19	5/25/2008	19	5/23/2008	19	5/24/2008	19.2
5/27/2008	19.1	5/26/2008	18.9	5/24/2008	19.1	5/25/2008	19



SG-04D		SG-05D		SG-06D		SG-07D	
Date	O2 (%)	Date	O2 (%)	Date	O2 (%)	Date	O2 (%)
5/28/2008	19.2	5/27/2008	19	5/25/2008	19.1	5/26/2008	19
5/29/2008	19.1	5/28/2008	19.3	5/26/2008	19	5/27/2008	19.2
5/30/2008	19	5/29/2008	19.1	5/27/2008	19	5/28/2008	19.2
5/31/2008	18.9	5/30/2008	19.1	5/28/2008	19.1	5/29/2008	19.1
6/1/2008	18.7	5/31/2008	18.9	5/29/2008	19.1	5/30/2008	19.1
6/17/2008	18.9	6/1/2008	18.6	5/30/2008	19	5/31/2008	18.9
6/25/2008	18.7	6/17/2008	18.7	5/31/2008	18.9	6/1/2008	18.6
7/24/2008	18.6	6/25/2008	18.7	6/1/2008	18.7	6/17/2008	19
8/3/2008	18.5	7/24/2008	18.7	6/17/2008	19	6/25/2008	18.7
10/10/2008	19.5	8/3/2008	18.5	6/25/2008	18.7	7/24/2008	18.6
10/14/2008	20.7	10/10/2008	20.6	7/24/2008	18.6	8/3/2008	18.4
11/4/2008	19.8	10/14/2008	20.7	8/3/2008	18.5	10/10/2008	20.9
11/27/2008	21.3	11/4/2008	20.1	10/10/2008	21.1	10/14/2008	20.8
5/6/2009	9.1	11/27/2008	21.5	10/14/2008	20.8	11/4/2008	19.9
5/7/2009	17.8	5/6/2009	18.9	11/4/2008	20.1	11/27/2008	21.7
5/8/2009	20.3	5/7/2009	16.5	11/27/2008	21.7	5/6/2009	18.4
6/3/2009	20.7	5/8/2009	20.8	5/6/2009	19.6	5/7/2009	20.2
6/8/2009	20.6	6/3/2009	20.6	5/7/2009	20.8	5/8/2009	20.4
7/10/2009	20.2	6/8/2009	20.7	5/8/2009	20.8	6/3/2009	20.3
8/25/2009	17.6	7/10/2009	20.3	6/3/2009	20.6	6/8/2009	19.3
9/30/2009	19	8/25/2009	19.5	6/8/2009	20.6	6/9/2009	20.6
11/3/2009	20.6	9/30/2009	20	7/10/2009	20.4	7/10/2009	20.2
5/20/2010	6.7	11/3/2009	21.6	8/25/2009	19.5	8/25/2009	18.8
5/23/2010	20.2	5/20/2010	17	9/30/2009	20.7	9/30/2009	18.8
6/24/2010	20.9	5/23/2010	20.2	11/3/2009	21.3	11/3/2009	20.1
8/4/2010	19.1	6/24/2010	20.5	5/20/2010	19.3	5/20/2010	15
9/20/2010	20.7	8/4/2010	20.1	5/23/2010	20.4	5/23/2010	19.5
10/18/2010	20.1	9/20/2010	20.9	6/24/2010	21.1	6/24/2010	20.4
5/9/2011	10.9	10/18/2010	20.5	8/4/2010	19.7	6/28/2010	20.3
5/10/2011	15.6	5/9/2011	19.1	9/20/2010	20.3	8/4/2010	19.8
5/11/2011	20.2	6/22/2011	21.1	10/18/2010	20.7	9/20/2010	19.3
6/22/2011	19.5	7/25/2011	21.2	5/9/2011	20.5	10/18/2010	20
7/25/2011	20.5	8/24/2011	20.7	6/22/2011	21.5	5/9/2011	18.7
8/24/2011	21.2	9/19/2011	20.6	7/25/2011	21.1	6/22/2011	19.6
9/19/2011	20.2	10/24/2011	20.5	8/24/2011	20.7	7/25/2011	20.3
10/24/2011	20.1	4/10/12	19.9	9/19/2011	20.7	8/24/2011	20.4
4/10/12	14.8	5/9/12	19.9	10/24/2011	20.7	9/19/2011	20.2
5/9/12	19.4	6/13/12	19.8	4/10/12	19.7	10/24/2011	20.0
6/13/12	19	7/16/12	19.8	5/9/12	19.7	4/10/12	18.6
7/16/12	19	8/22/12	19.7	6/13/12	19.6	5/9/12	18.8
8/22/12	19.1	9/19/12	19.7	7/16/12	19.7	6/13/12	19.7
9/19/12	19	10/24/12	19.8	8/22/12	19.8	7/16/12	19.7
10/24/12	19.1	6/29/13	19.9	9/19/12	19.8	8/22/12	19.6
6/29/13	1.9	5/28/13	19.8	10/24/12	19.7	9/19/12	20.6
6/30/13	20.1	7/20/13	20.6	6/29/13	19.7	10/24/12	20.6
7/1/13	21.4	8/26/13	20.5	5/28/13	19.6	6/29/13	19.5
7/2/13	21.3	9/24/13	20.3	7/20/13	20.2	5/28/13	20.6

SG-04D		SG-05D		SG-06D		SG-07D	
Date	O2 (%)	Date	O2 (%)	Date	O2 (%)	Date	O2 (%)
7/3/13	21.3	10/23/13	19.7	8/26/13	20.3	7/20/13	20.9
5/28/13	1.8			9/24/13	20.1	8/26/13	19.1
5/29/13	15.9			10/23/13	19.6	9/24/13	19.5
5/30/13	20.5					10/23/13	20
5/31/13	20.7						
6/1/13	21						
6/2/13	21.3						
7/20/13	20.7						
8/26/13	19.4						
9/24/13	20						
10/23/13	20						

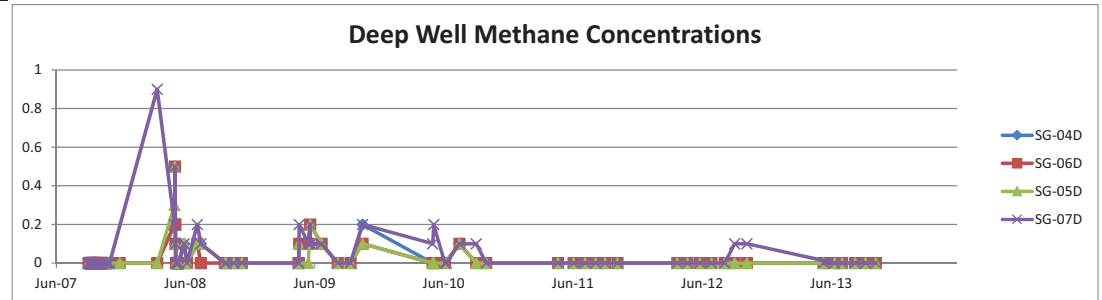
SG-04D		SG-05D		SG-06D		SG-07D	
Date	CO2 (%)	Date	CO2 (%)	Date	CO2 (%)	Date	CO2 (%)
9/20/2007	14.6	9/21/2007	14.7	9/21/2007	11.7	9/20/2007	16.5
9/24/2007	17	9/24/2007	15.6	9/24/2007	12.7	9/24/2007	20.4
9/25/2007	17.7	9/25/2007	16.6	9/25/2007	13.2	9/25/2007	20.4
9/25/2007	17.6	9/25/2007	16.4	9/25/2007	10	9/25/2007	19.8
9/26/2007	16.5	9/26/2007	10.6	9/26/2007	5.2	9/25/2007	19.5
9/26/2007	16.3	9/26/2007	8.7	9/26/2007	3.5	9/26/2007	19.4
9/26/2007	15.2	9/26/2007	4.9	9/26/2007	2	9/26/2007	19.1
9/27/2007	9.9	9/27/2007	1	9/26/2007	1	9/26/2007	15.9
9/27/2007	9.8	9/27/2007	0.6	9/27/2007	0.7	9/27/2007	7.7
9/28/2007	7.7	9/28/2007	0.3	9/27/2007	0.5	9/27/2007	5.1
10/1/2007	6.6	10/1/2007	0.4	9/27/2007	0.3	9/28/2007	1.3
10/2/2007	6.8	10/2/2007	0.3	9/28/2007	0.2	10/1/2007	1.3
10/3/2007	5.6	10/2/2007	0.2	10/1/2007	0.5	10/2/2007	0
10/3/2007	4.8	10/3/2007	0.2	10/2/2007	0.2	10/2/2007	0.6
10/4/2007	5.2	10/4/2007	0.1	10/3/2007	0.1	10/3/2007	0.4
10/5/2007	3.1	10/5/2007	0	10/3/2007	0	10/3/2007	0.3
10/5/2007	2.8	10/5/2007	0.1	10/4/2007	0	10/4/2007	0.2
10/8/2007	2.8	10/8/2007	0.1	10/5/2007	0	10/5/2007	0.1
10/9/2007	1.9	10/9/2007	0.1	10/5/2007	0	10/5/2007	0.1
10/11/2007	1.5	10/11/2007	0	10/8/2007	0	10/8/2007	0.2
10/12/2007	1.1	10/12/2007	0	10/9/2007	0.1	10/9/2007	0.2
10/15/2007	1.2	10/15/2007	0	10/11/2007	0	10/11/2007	0.1
10/16/2007	0.9	10/16/2007	0	10/12/2007	0	10/12/2007	0.1
10/17/2007	0.7	10/17/2007	0	10/15/2007	0.1	10/15/2007	0.1
10/18/2007	0.4	10/18/2007	0	10/16/2007	0	10/16/2007	0.1
10/19/2007	0.3	10/19/2007	0	10/17/2007	0	10/17/2007	0.1
10/23/2007	0.5	10/23/2007	0	10/18/2007	0	10/18/2007	0
10/24/2007	0.3	10/24/2007	0	10/19/2007	0	10/19/2007	0
10/25/2007	0.2	10/25/2007	0	10/23/2007	0	10/23/2007	0
10/26/2007	0.1	10/26/2007	0	10/24/2007	0	10/24/2007	0
10/29/2007	0.3	10/29/2007	0	10/25/2007	0	10/25/2007	0
10/30/2007	0.2	10/30/2007	0	10/26/2007	0	10/26/2007	0
10/31/2007	0.2	10/31/2007	0	10/29/2007	0	10/29/2007	0
11/8/2007	0.3	11/8/2007	0	10/30/2007	0	10/30/2007	0
11/9/2007	0.2	11/9/2007	0	10/31/2007	0	10/31/2007	0
11/12/2007	0	11/12/2007	0	11/8/2007	0	11/8/2007	0
11/17/2007	0	11/17/2007	0	11/9/2007	0	11/9/2007	0
11/19/2007	0	11/19/2007	0	11/12/2007	0	11/12/2007	0
4/2/2008	3.2	12/18/2007	0	11/17/2007	0	11/17/2007	0
5/21/2008	5.7	4/2/2008	0.1	11/19/2007	0	11/19/2007	0
5/22/2008	5.1	5/21/2008	0.9	12/18/2007	0	4/2/2008	20.1
5/23/2008	2	5/22/2008	1.2	4/2/2008	0	5/21/2008	2.1
5/24/2008	1.4	5/23/2008	1.5	5/21/2008	1	5/22/2008	2.3
5/25/2008	0.6	5/24/2008	0.8	5/22/2008	1.3	5/23/2008	1.1
5/26/2008	0.4	5/25/2008	0.4	5/23/2008	0.8	5/24/2008	0.6
5/27/2008	0.3	5/26/2008	0.3	5/24/2008	0.4	5/25/2008	0.3
5/28/2008	0.2	5/27/2008	0.3	5/25/2008	0.2	5/26/2008	0.1
5/29/2008	0.2	5/28/2008	0.1	5/26/2008	0.2	5/27/2008	0.2



SG-04D		SG-05D		SG-06D		SG-07D	
Date	CO2 (%)	Date	CO2 (%)	Date	CO2 (%)	Date	CO2 (%)
5/30/2008	0.2	5/29/2008	0.1	5/27/2008	0.1	5/28/2008	0.1
5/31/2008	0.1	5/30/2008	0.1	5/28/2008	0.1	5/29/2008	0.1
6/1/2008	0.1	5/31/2008	0.1	5/29/2008	0.1	5/30/2008	0.1
6/17/2008	0.1	6/1/2008	0.2	5/30/2008	0.1	5/31/2008	0.1
6/25/2008	0	6/17/2008	0.2	5/31/2008	0	6/1/2008	0.1
7/24/2008	0	6/25/2008	0.1	6/1/2008	0.1	6/17/2008	0.1
8/3/2008	0.1	7/24/2008	0	6/17/2008	0.1	6/25/2008	0.1
10/10/2008	0.2	8/3/2008	0	6/25/2008	0	7/24/2008	0
10/14/2008	0.1	10/10/2008	0.1	7/24/2008	0	8/3/2008	0.1
11/4/2008	0.1	10/14/2008	0.1	8/3/2008	0	10/10/2008	0.2
11/27/2008	0	11/4/2008	0	10/10/2008	0	10/14/2008	0.1
5/6/2009	4.9	11/27/2008	0	10/14/2008	0.1	11/4/2008	0
5/7/2009	1.9	5/6/2009	0.4	11/4/2008	0	11/27/2008	0
5/8/2009	1.2	5/7/2009	0.7	11/27/2008	0	5/6/2009	0.8
6/3/2009	0.1	5/8/2009	0.7	5/6/2009	0.3	5/7/2009	0.3
6/8/2009	0.1	6/3/2009	0	5/7/2009	0.3	5/8/2009	0.4
7/10/2009	0	6/8/2009	0.1	5/8/2009	0.2	6/3/2009	0.1
8/25/2009	0.4	7/10/2009	0	6/3/2009	0.1	6/8/2009	0.1
9/30/2009	0.5	8/25/2009	0.1	6/8/2009	0.1	6/9/2009	0
11/3/2009	0.2	9/30/2009	0.3	7/10/2009	0	7/10/2009	0.1
5/20/2010	7.4	11/3/2009	0.2	8/25/2009	0.1	8/25/2009	0.3
5/23/2010	0.5	5/20/2010	0.5	9/30/2009	0.2	9/30/2009	0.6
6/24/2010	0.9	5/23/2010	0.4	11/3/2009	0	11/3/2009	0.5
8/4/2010	0.5	6/24/2010	0.7	5/20/2010	0.4	5/20/2010	2.1
9/20/2010	0.5	8/4/2010	0.3	5/23/2010	0.1	5/23/2010	0.3
10/18/2010	0.2	9/20/2010	0	6/24/2010	1.1	6/24/2010	0.7
5/9/2011	5.8	10/18/2010	0.1	8/4/2010	0.3	6/28/2010	0.2
5/10/2011	4.5	5/9/2011	0.3	9/20/2010	0.3	8/4/2010	0.2
5/11/2011	1.3	6/22/2011	0.4	10/18/2010	0.1	9/20/2010	0.9
6/22/2011	1.0	7/25/2011	0.3	5/9/2011	0.1	10/18/2010	0.3
7/25/2011	0.4	8/24/2011	0.1	6/22/2011	0.2	5/9/2011	1.1
8/24/2011	0.0	9/19/2011	0.1	7/25/2011	0.3	6/22/2011	0.8
9/19/2011	0.2	10/24/2011	0.1	8/24/2011	0.1	7/25/2011	0.5
10/24/2011	0.2	4/10/12	0	9/19/2011	0.0	8/24/2011	0.3
4/10/12	3.2	5/9/12	0.1	10/24/2011	0.1	9/19/2011	0.2
5/9/12	0.6	6/13/12	0	4/10/12	0.3	10/24/2011	0.3
6/13/12	0.6	7/16/12	0	5/9/12	0.1	4/10/12	1.2
7/16/12	0.5	8/22/12	0	6/13/12	0	5/9/12	0.6
8/22/12	0.6	9/19/12	0	7/16/12	0	6/13/12	0.4
9/19/12	0.5	10/24/12	0	8/22/12	0	7/16/12	0.3
10/24/12	0.4	6/29/13	0	9/19/12	0	8/22/12	0.4
6/29/13	11.4	5/28/13	0.2	10/24/12	0	9/19/12	0.3
6/30/13	0.8	7/20/13	0.2	6/29/13	0	10/24/12	0.2
7/1/13	0.5	8/26/13	0.3	5/28/13	0.2	6/29/13	0.7
7/2/13	0.5	9/24/13	0.1	7/20/13	0.2	5/28/13	0.4
7/3/13	0.2	10/23/13	0	8/26/13	0.3	7/20/13	0.1
5/28/13	12.3			9/24/13	0.1	8/26/13	0.6
5/29/13	4.6			10/23/13	0	9/24/13	0.4
5/30/13	1.7					10/23/13	0.6

SG-04D		SG-05D		SG-06D		SG-07D	
Date	CO2 (%)	Date	CO2 (%)	Date	CO2 (%)	Date	CO2 (%)
5/31/13	0.8						
6/1/13	0.7						
6/2/13	0.4						
7/20/13	0.2						
8/26/13	0.4						
9/24/13	0.2						
10/23/13	0.5						

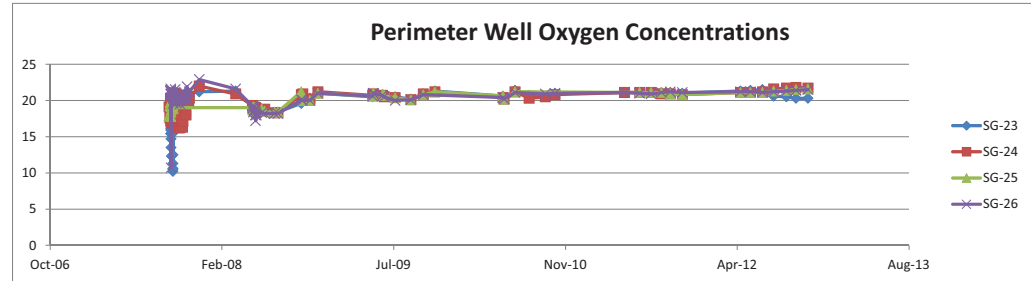
SG-04D		SG-05D		SG-06D		SG-07D	
Date	CH4 (%)	Date	CH4 (%)	Date	CH4 (%)	Date	CH4 (%)
9/20/2007	0	9/21/2007	0	9/21/2007	0	9/20/2007	0
9/24/2007	0	9/24/2007	0	9/24/2007	0	9/24/2007	0
9/25/2007	0	9/25/2007	0	9/25/2007	0	9/25/2007	0
9/25/2007	0	9/25/2007	0	9/25/2007	0	9/25/2007	0
9/26/2007	0	9/26/2007	0	9/26/2007	0	9/25/2007	0
9/26/2007	0	9/26/2007	0	9/26/2007	0	9/26/2007	0
9/26/2007	0	9/26/2007	0	9/26/2007	0	9/26/2007	0
9/27/2007	0	9/27/2007	0	9/26/2007	0	9/26/2007	0
9/27/2007	0	9/27/2007	0	9/27/2007	0	9/27/2007	0
9/28/2007	0	9/28/2007	0	9/27/2007	0	9/27/2007	0
10/1/2007	0	10/1/2007	0	9/27/2007	0	9/28/2007	0
10/2/2007	0	10/2/2007	0	9/28/2007	0	10/1/2007	0
10/3/2007	0	10/2/2007	0	10/1/2007	0	10/2/2007	0
10/3/2007	0	10/3/2007	0	10/2/2007	0	10/2/2007	0
10/4/2007	0	10/4/2007	0	10/3/2007	0	10/3/2007	0
10/5/2007	0	10/5/2007	0	10/3/2007	0	10/3/2007	0
10/5/2007	0	10/5/2007	0	10/4/2007	0	10/4/2007	0
10/8/2007	0	10/8/2007	0	10/5/2007	0	10/5/2007	0
10/9/2007	0	10/9/2007	0	10/5/2007	0	10/5/2007	0
10/11/2007	0	10/11/2007	0	10/8/2007	0	10/8/2007	0
10/12/2007	0	10/12/2007	0	10/9/2007	0	10/9/2007	0
10/15/2007	0	10/15/2007	0	10/11/2007	0	10/11/2007	0
10/16/2007	0	10/16/2007	0	10/12/2007	0	10/12/2007	0
10/17/2007	0	10/17/2007	0	10/15/2007	0	10/15/2007	0
10/18/2007	0	10/18/2007	0	10/16/2007	0	10/16/2007	0
10/19/2007	0	10/19/2007	0	10/17/2007	0	10/17/2007	0
10/23/2007	0	10/23/2007	0	10/18/2007	0	10/18/2007	0
10/24/2007	0	10/24/2007	0	10/19/2007	0	10/19/2007	0
10/25/2007	0	10/25/2007	0	10/23/2007	0	10/23/2007	0
10/26/2007	0	10/26/2007	0	10/24/2007	0	10/24/2007	0
10/29/2007	0	10/29/2007	0	10/25/2007	0	10/25/2007	0
10/30/2007	0	10/30/2007	0	10/26/2007	0	10/26/2007	0
10/31/2007	0	10/31/2007	0	10/29/2007	0	10/29/2007	0
11/8/2007	0	11/8/2007	0	10/30/2007	0	10/30/2007	0
11/9/2007	0	11/9/2007	0	10/31/2007	0	10/31/2007	0
11/12/2007	0	11/12/2007	0	11/8/2007	0	11/8/2007	0
11/17/2007	0	11/17/2007	0	11/9/2007	0	11/9/2007	0
11/19/2007	0	11/19/2007	0	11/12/2007	0	11/12/2007	0
4/2/2008	0	12/18/2007	0	11/17/2007	0	11/17/2007	0
5/21/2008	0.2	4/2/2008	0	11/19/2007	0	11/19/2007	0
5/22/2008	0.5	5/21/2008	0.3	12/18/2007	0	4/2/2008	0.9
5/23/2008	0.1	5/22/2008	0.5	4/2/2008	0	5/21/2008	0.2
5/24/2008	0.1	5/23/2008	0.1	5/21/2008	0.2	5/22/2008	0.5
5/25/2008	0	5/24/2008	0	5/22/2008	0.5	5/23/2008	0.1
5/26/2008	0	5/25/2008	0	5/23/2008	0.2	5/24/2008	0
5/27/2008	0	5/26/2008	0	5/24/2008	0.1	5/25/2008	0
5/28/2008	0	5/27/2008	0	5/25/2008	0	5/26/2008	0
5/29/2008	0	5/28/2008	0	5/26/2008	0	5/27/2008	0



SG-04D		SG-05D		SG-06D		SG-07D	
Date	CH4 (%)	Date	CH4 (%)	Date	CH4 (%)	Date	CH4 (%)
5/30/2008	0	5/29/2008	0	5/27/2008	0	5/28/2008	0
5/31/2008	0	5/30/2008	0	5/28/2008	0	5/29/2008	0
6/1/2008	0	5/31/2008	0	5/29/2008	0	5/30/2008	0
6/17/2008	0.1	6/1/2008	0	5/30/2008	0	5/31/2008	0
6/25/2008	0	6/17/2008	0.1	5/31/2008	0	6/1/2008	0
7/24/2008	0.1	6/25/2008	0	6/1/2008	0	6/17/2008	0.1
8/3/2008	0.1	7/24/2008	0.1	6/17/2008	0	6/25/2008	0
10/10/2008	0	8/3/2008	0.1	6/25/2008	0	7/24/2008	0.2
10/14/2008	0	10/10/2008	0	7/24/2008	0.1	8/3/2008	0.1
11/4/2008	0	10/14/2008	0	8/3/2008	0	10/10/2008	0
11/27/2008	0	11/4/2008	0	10/10/2008	0	10/14/2008	0
5/6/2009	0	11/27/2008	0	10/14/2008	0	11/4/2008	0
5/7/2009	0	5/6/2009	0	11/4/2008	0	11/27/2008	0
5/8/2009	0.1	5/7/2009	0.1	11/27/2008	0	5/6/2009	0
6/3/2009	0.1	5/8/2009	0	5/6/2009	0	5/7/2009	0
6/8/2009	0.1	6/3/2009	0	5/7/2009	0	5/8/2009	0.2
7/10/2009	0.1	6/8/2009	0.2	5/8/2009	0.1	6/3/2009	0.1
8/25/2009	0	7/10/2009	0.1	6/3/2009	0.1	6/8/2009	0.2
9/30/2009	0	8/25/2009	0	6/8/2009	0.2	6/9/2009	0.1
11/3/2009	0.2	9/30/2009	0	7/10/2009	0.1	7/10/2009	0.1
5/20/2010	0	11/3/2009	0.1	8/25/2009	0	8/25/2009	0
5/23/2010	0	5/20/2010	0	9/30/2009	0	9/30/2009	0
6/24/2010	0	5/23/2010	0	11/3/2009	0.1	11/3/2009	0.2
8/4/2010	0.1	6/24/2010	0	5/20/2010	0	5/20/2010	0.1
9/20/2010	0	8/4/2010	0.1	5/23/2010	0	5/23/2010	0.2
10/18/2010	0	9/20/2010	0	6/24/2010	0	6/24/2010	0
5/9/2011	0.0	10/18/2010	0	8/4/2010	0.1	6/28/2010	0
5/10/2011	0.0	5/9/2011	0.0	9/20/2010	0	8/4/2010	0.1
5/11/2011	0.0	6/22/2011	0.0	10/18/2010	0	9/20/2010	0.1
6/22/2011	0.0	7/25/2011	0.0	5/9/2011	0.0	10/18/2010	0
7/25/2011	0.0	8/24/2011	0.0	6/22/2011	0.0	5/9/2011	0.0
8/24/2011	0.0	9/19/2011	0.0	7/25/2011	0.0	6/22/2011	0.0
9/19/2011	0.0	10/24/2011	0.0	8/24/2011	0.0	7/25/2011	0.0
10/24/2011	0.0	4/10/12	0	9/19/2011	0.0	8/24/2011	0.0
4/10/12	0	5/9/12	0	10/24/2011	0.0	9/19/2011	0.0
5/9/12	0	6/13/12	0	4/10/12	0	10/24/2011	0.0
6/13/12	0	7/16/12	0	5/9/12	0	4/10/12	0
7/16/12	0	8/22/12	0	6/13/12	0	5/9/12	0
8/22/12	0	9/19/12	0	7/16/12	0	6/13/12	0
9/19/12	0	10/24/12	0	8/22/12	0	7/16/12	0
10/24/12	0	6/29/13	0	9/19/12	0	8/22/12	0
6/29/13	0	5/28/13	0	10/24/12	0	9/19/12	0.1
6/30/13	0	7/20/13	0	6/29/13	0	10/24/12	0.1
7/1/13	0	8/26/13	0	5/28/13	0	6/29/13	0
7/2/13	0	9/24/13	0	7/20/13	0	5/28/13	0
7/3/13	0	10/23/13	0	8/26/13	0	7/20/13	0
5/28/13	0			9/24/13	0	8/26/13	0
5/29/13	0			10/23/13	0	9/24/13	0
5/30/13	0					10/23/13	0

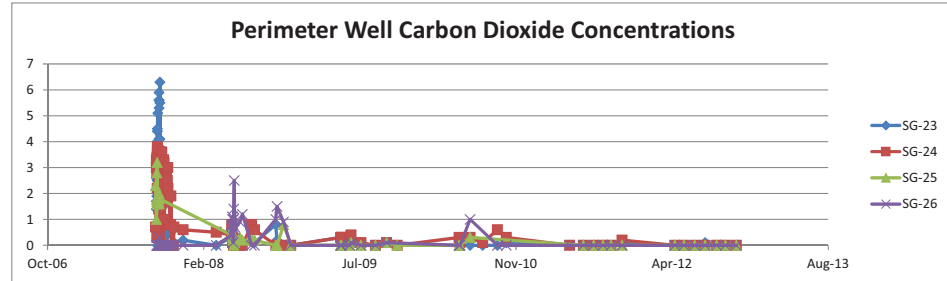
SG-04D		SG-05D		SG-06D		SG-07D	
Date	CH4 (%)	Date	CH4 (%)	Date	CH4 (%)	Date	CH4 (%)
5/31/13	0						
6/1/13	0						
6/2/13	0						
7/20/13	0						
8/26/13	0						
9/24/13	0						
10/23/13	0						

SG-23 Date	O2 (%)	SG-24 Date	O2 (%)	SG-25 Date / Time	O2 (%)	SG-26 Date / Time	O2 (%)
9/24/2007	18.3	9/21/2007	19.1	9/21/2007	17.9	9/25/2007	21.3
9/24/2007	19	9/24/2007	17.6	9/24/2007	19.3	9/26/2007	21.4
9/24/2007	17.2	9/24/2007	17.6	9/25/2007	19.7	9/26/2007	21.6
9/25/2007	18.6	9/25/2007	20.3	9/25/2007	17.9	9/26/2007	20.9
9/25/2007	17.8	9/25/2007	17.9	9/25/2007	19.8	9/26/2007	21.4
9/26/2007	17.5	9/25/2007	17.8	9/26/2007	19.4	9/26/2007	21.2
9/26/2007	16.1	9/26/2007	18.8	9/26/2007	19.2	9/27/2007	20.8
9/26/2007	15.4	9/26/2007	17.9	9/26/2007	17.8	9/27/2007	20.9
9/26/2007	15.9	9/26/2007	17.2	9/27/2007	18.7	9/27/2007	10.7
9/26/2007	15.4	9/27/2007	17.7	9/27/2007	18.4	9/28/2007	21.1
9/27/2007	14.7	9/27/2007	17.2	9/28/2007	19.6	10/1/2007	21.1
9/27/2007	20.8	9/27/2007	17.2	10/1/2007	18.9	10/2/2007	20.8
9/27/2007	13.5	9/27/2007	16.9	10/2/2007	19.3	10/2/2007	21
9/28/2007	12.3	9/28/2007	18	10/2/2007	18.9	10/2/2007	20.7
10/1/2007	15.4	10/1/2007	19.2	10/2/2007	19	10/2/2007	20.5
10/2/2007	12.5	10/2/2007	18.8	10/2/2007	19	10/2/2007	20.8
10/2/2007	11.3	10/2/2007	18.6	5/22/2008	18.7	10/3/2007	20.4
10/2/2007	10.2	10/2/2007	17	5/23/2008	19.1	10/3/2007	19.6
10/2/2007	10.6	10/2/2007	17.9	5/24/2008	19	10/4/2007	20.3
10/2/2007	10.5	10/3/2007	18	5/25/2008	19	10/5/2007	20.3
10/3/2007	16.7	10/3/2007	17.6	5/26/2008	18.9	10/5/2007	20.5
10/3/2007	16.1	10/4/2007	18.7	5/27/2008	19	10/5/2007	20.6
10/4/2007	18.7	10/5/2007	17.1	5/28/2008	19	10/8/2007	20.6
10/5/2007	18.6	10/5/2007	17.3	5/29/2008	19	10/9/2007	21.5
10/5/2007	19	10/5/2007	17	5/30/2008	18.7	10/9/2007	21.1
10/5/2007	19.4	10/8/2007	18.4	5/31/2008	18.8	10/11/2007	20.1
10/8/2007	20	10/9/2007	21	6/1/2008	18.5	10/11/2007	20.1
10/9/2007	21	10/9/2007	17.1	6/17/2008	18.8	10/12/2007	19.6
10/9/2007	20.1	10/11/2007	17.9	6/25/2008	18.5	10/15/2007	19.8
10/11/2007	18.7	10/11/2007	17.1	7/24/2008	18.4	10/16/2007	20.3
10/11/2007	20	10/12/2007	16.8	8/3/2008	18.4	10/17/2007	20.4
10/12/2007	20	10/15/2007	16.9	10/10/2008	21.2	10/18/2007	20.2
10/15/2007	20.6	10/16/2007	16.5	10/14/2008	20	10/19/2007	20
10/16/2007	19.8	10/17/2007	16.7	11/4/2008	20	10/23/2007	19.5
10/17/2007	20.2	10/18/2007	16.2	11/27/2008	21	10/24/2007	20.3
10/18/2007	19.8	10/19/2007	19.7	5/6/2009	20.6	10/25/2007	20.5
10/19/2007	19.8	10/23/2007	16.2	5/7/2009	20.9	10/26/2007	20.6
10/23/2007	20.6	10/24/2007	17.9	5/8/2009	21	10/29/2007	20.2
10/24/2007	20.7	10/25/2007	17	6/3/2009	20.8	10/30/2007	20.2
10/25/2007	20.0	10/26/2007	17	6/8/2009	20.7	10/31/2007	20.3
10/26/2007	20.9	10/29/2007	17	7/10/2009	20.4	11/8/2007	20
10/29/2007	20.2	10/30/2007	16.3	8/25/2009	20.1	11/9/2007	20.8
10/30/2007	20.7	10/31/2007	17.1	9/30/2009	20.8	11/12/2007	21.9
10/31/2007	20.5	11/8/2007	18.4	11/3/2009	21.2	11/17/2007	19.9
11/8/2007	21.0	11/9/2007	18	5/20/2010	20.6	11/19/2007	21.2
11/9/2007	20.8	11/12/2007	20.5	5/23/2010	20.2	12/18/2007	22.9
11/12/2007	20.3	11/17/2007	19.7	6/24/2010	21.2	4/2/2008	21.6
11/17/2007	19.9	11/19/2007	20.3	6/22/2011	21.1	5/21/2008	19.2
11/19/2007	21.0	12/18/2007	22	7/25/2011	21.1	5/22/2008	18.9
12/18/2007	21.2	4/2/2008	20.9	8/24/2011	21.1	5/23/2008	19
4/2/2008	21.3	5/21/2008	19.3	9/19/2011	20.9	5/24/2008	18.4
5/21/2008	19.3	5/22/2008	18.9	10/24/2011	20.8	5/25/2008	18.5



SG-23		SG-24		SG-25		SG-26	
5/22/2008	19.1	5/23/2008	19.1	4/10/12	21.1	5/26/2008	18.7
5/23/2008	19.2	5/24/2008	19	5/9/12	21.1	5/27/2008	19.1
5/24/2008	19.2	5/25/2008	19	6/13/12	21.1	5/28/2008	18.6
5/25/2008	19	5/26/2008	18.9	7/16/12	21.3	5/29/2008	18
5/26/2008	19.1	5/27/2008	18.9	8/22/12	21.4	5/30/2008	17.2
5/27/2008	19	5/28/2008	19	9/19/12	21.5	5/31/2008	18.4
5/28/2008	19.2	5/29/2008	19	10/24/12	21.6	6/1/2008	18
5/29/2008	19	5/30/2008	19	6/29/13	21.1	6/17/2008	18.3
5/30/2008	19	5/31/2008	18.9	5/28/13	21.3	6/25/2008	18.2
5/31/2008	18.9	6/1/2008	18.4	7/20/13	20.6	7/24/2008	18.2
6/1/2008	18.6	6/17/2008	18.7	8/26/13	20.5	8/3/2008	18.2
6/17/2008	18.8	6/25/2008	18.8	9/24/13	20.5	10/10/2008	20.1
6/25/2008	18.8	7/24/2008	18.3	10/23/13	21.5	10/14/2008	20
7/24/2008	18.3	8/3/2008	18.3			11/4/2008	20
8/3/2008	18.4	10/10/2008	20.8			11/27/2008	21
10/10/2008	19.6	10/14/2008	20.9			5/6/2009	20.6
10/14/2008	20.8	11/4/2008	20.2			5/7/2009	21
11/4/2008	20.3	11/27/2008	21.2			5/8/2009	21
11/27/2008	21	5/6/2009	20.7			6/3/2009	20.7
5/6/2009	20.5	5/7/2009	20.9			6/8/2009	20.5
5/7/2009	20.9	5/8/2009	20.8			7/10/2009	20
5/8/2009	20.8	6/3/2009	20.7			8/25/2009	20.1
6/3/2009	20.8	6/8/2009	20.5			9/30/2009	20.8
6/8/2009	20.6	7/10/2009	20.4			5/20/2010	20.4
7/10/2009	20.5	8/25/2009	20.1			5/23/2010	20.2
8/25/2009	20.2	9/30/2009	20.9			6/24/2010	21.1
9/30/2009	20.9	11/3/2009	21.2			9/20/2010	20.9
11/3/2009	21.3	5/20/2010	20.4			10/18/2010	21
5/20/2010	20.6	5/23/2010	20.2			5/9/2011	21.1
5/23/2010	20.3	6/24/2010	21.2			6/22/2011	21.0
6/24/2010	21.4	8/4/2010	20.3			7/25/2011	20.9
8/4/2010	20.7	9/20/2010	20.5			8/24/2011	21.1
9/20/2010	20.6	10/18/2010	20.8			9/19/2011	21.2
10/18/2010	21	5/9/2011	21.1			10/24/2011	21.1
5/9/2011	21.1	6/22/2011	21.1			4/10/12	21.2
6/22/2011	21.1	7/25/2011	21.1			5/9/12	21.2
7/25/2011	21.1	8/24/2011	20.9			6/13/12	21.1
8/24/2011	21.1	9/19/2011	20.9			7/16/12	21.2
9/19/2011	21.1	10/24/2011	20.8			8/22/12	21.3
10/24/2011	21.0	4/10/12	21.1			9/19/12	21.4
4/10/12	21.3	5/9/12	21.1			10/24/12	21.5
5/9/12	21.4	6/13/12	21.2			6/29/13	21.1
6/13/12	21.5	7/16/12	21.6			5/28/13	21.1
7/16/12	20.6	8/22/12	21.7			7/20/13	20.6
8/22/12	20.5	9/19/12	21.8			8/26/13	20.6
9/19/12	20.3	10/24/12	21.7			9/24/13	20.6
10/24/12	20.3	6/29/13	21.1			10/23/13	21.5
6/29/13	21.2	5/28/13	21.2				
5/28/13	21.4	7/20/13	20.7				
7/20/13	20.5	8/26/13	20.7				
8/26/13	20.7	9/24/13	20.5				
9/24/13	20.6	10/23/13	21.6				
10/23/13	20.4						

SG-23		SG-24		SG-25		SG-26	
Date	CO2 (%)	Date	CO2 (%)	Date / Time	CO2 (%)	Date / Time	CO2 (%)
9/24/2007	1.7	9/21/2007	0.7	9/21/2007	2.3	9/25/2007	0
9/24/2007	1.4	9/24/2007	3	9/24/2007	1	9/26/2007	0
9/24/2007	2.6	9/24/2007	3.3	9/25/2007	1.6	9/26/2007	0
9/25/2007	1.6	9/25/2007	0.3	9/25/2007	2.8	9/26/2007	0
9/25/2007	1.9	9/25/2007	2.8	9/25/2007	1.7	9/26/2007	0
9/26/2007	2.5	9/25/2007	3	9/26/2007	1.8	9/26/2007	0
9/26/2007	3.3	9/26/2007	2.2	9/26/2007	1.6	9/27/2007	0
9/26/2007	3.5	9/26/2007	3.4	9/26/2007	3.2	9/27/2007	0
9/26/2007	3.6	9/26/2007	3.4	9/27/2007	1.8	9/27/2007	0
9/26/2007	4	9/26/2007	3.3	9/27/2007	1.8	9/28/2007	0
9/27/2007	4.4	9/27/2007	3.8	9/28/2007	1.9	10/1/2007	0
9/27/2007	0	9/27/2007	3.6	10/1/2007	1.7	10/2/2007	0
9/27/2007	4.5	9/27/2007	3.7	10/2/2007	1.6	10/2/2007	0
9/28/2007	5.1	9/28/2007	3	10/2/2007	2	10/2/2007	0
10/1/2007	3.1	10/1/2007	1.4	10/2/2007	1.8	10/2/2007	0
10/2/2007	4.1	10/2/2007	1.9	5/21/2008	0.4	10/2/2007	0.3
10/2/2007	5.3	10/2/2007	1.7	5/22/2008	0.7	10/3/2007	0
10/2/2007	5.6	10/2/2007	3.4	5/23/2008	0.5	10/3/2007	0
10/2/2007	5.6	10/2/2007	2.5	5/24/2008	0.4	10/4/2007	0
10/2/2007	5.9	10/3/2007	2.3	5/25/2008	0.3	10/5/2007	0
10/3/2007	3.1	10/3/2007	1.9	5/26/2008	0.3	10/5/2007	0
10/3/2007	3.8	10/4/2007	2.1	5/27/2008	0.2	10/5/2007	0
10/4/2007	3.6	10/5/2007	3.3	5/28/2008	0.2	10/8/2007	0
10/5/2007	6.3	10/5/2007	3.4	5/29/2008	0	10/9/2007	0
10/5/2007	5.5	10/5/2007	3.4	5/30/2008	0.3	10/9/2007	0
10/5/2007	4.1	10/8/2007	1.6	5/31/2008	0.1	10/11/2007	0
10/8/2007	0	10/9/2007	0	6/1/2008	0.2	10/11/2007	0
10/9/2007	0	10/9/2007	3.5	6/17/2008	0.3	10/12/2007	0
10/9/2007	2.8	10/11/2007	2	6/25/2008	0.2	10/15/2007	0
10/11/2007	2.5	10/11/2007	3.6	7/24/2008	0.2	10/16/2007	0
10/11/2007	2.5	10/12/2007	2.9	8/3/2008	0.2	10/17/2007	0
10/12/2007	2	10/15/2007	2	10/10/2008	0	10/18/2007	0
10/15/2007	1.5	10/16/2007	0	10/14/2008	0	10/19/2007	0
10/16/2007	2.8	10/17/2007	3.3	11/4/2008	0.8	10/23/2007	0
10/17/2007	1.6	10/18/2007	3.2	11/27/2008	0	10/24/2007	0
10/18/2007	2.8	10/19/2007	1	5/6/2009	0	10/25/2007	0
10/19/2007	0.5	10/23/2007	3	5/7/2009	0	10/26/2007	0
10/23/2007	0.6	10/24/2007	1.7	5/8/2009	0	10/29/2007	0
10/24/2007	0.7	10/25/2007	3	6/3/2009	0	10/30/2007	0
10/25/2007	0.5	10/26/2007	2.7	6/8/2009	0.1	10/31/2007	0
10/26/2007	0.4	10/29/2007	2.5	7/10/2009	0	11/8/2007	0
10/29/2007	0.4	10/30/2007	3	8/25/2009	0	11/9/2007	0
10/30/2007	0.5	10/31/2007	2.2	9/30/2009	0.1	11/12/2007	0
10/31/2007	0.5	11/8/2007	0.8	11/3/2009	0	11/17/2007	0
11/8/2007	0.5	11/9/2007	1.9	5/20/2010	0	11/19/2007	0
11/9/2007	0.5	11/12/2007	0	5/23/2010	0	12/18/2007	0
11/12/2007	0	11/17/2007	0	6/24/2010	0.3	4/2/2008	0
11/17/2007	0	11/19/2007	0.7	6/22/2011	0.0	5/21/2008	0.4
11/19/2007	0.1	12/18/2007	0.6	7/25/2011	0.0	5/22/2008	0.8
12/18/2007	0.2	4/2/2008	0.5	8/24/2011	0.0	5/23/2008	0.5
4/2/2008	0	5/21/2008	0.4	9/19/2011	0.0	5/24/2008	1.1
5/21/2008	0.3	5/22/2008	0.8	10/24/2011	0.0	5/25/2008	1



SG-23		SG-24		SG-25		SG-26	
5/22/2008	0.8	5/23/2008	0.5	4/10/12	0	5/26/2008	0.8
5/23/2008	0.5	5/24/2008	0.3	5/9/12	0	5/27/2008	0.1
5/24/2008	0.3	5/25/2008	0.1	6/13/12	0	5/28/2008	1
5/25/2008	0.1	5/26/2008	0.1	7/16/12	0	5/29/2008	1.4
5/26/2008	0.1	5/27/2008	0.1	8/22/12	0	5/30/2008	2.5
5/27/2008	0.1	5/28/2008	0	9/19/12	0	5/31/2008	0.6
5/28/2008	0.1	5/29/2008	0	10/24/12	0	6/1/2008	0.7
5/29/2008	0	5/30/2008	0	6/29/13	0	6/17/2008	0.9
5/30/2008	0	5/31/2008	0	5/28/13	0	6/25/2008	1.2
5/31/2008	0	6/1/2008	0	7/20/13	0	7/24/2008	0
6/1/2008	0.1	6/17/2008	0	8/26/13	0	8/3/2008	0
6/17/2008	0.2	6/25/2008	0	9/24/13	0	10/10/2008	1
6/25/2008	0	7/24/2008	0.8	10/23/13	0	10/14/2008	1.5
7/24/2008	0.2	8/3/2008	0.6			11/4/2008	0.9
8/3/2008	0.1	10/10/2008	0			11/27/2008	0
10/10/2008	0.8	10/14/2008	0			5/6/2009	0
10/14/2008	0.2	11/4/2008	0			5/7/2009	0
11/4/2008	0	11/27/2008	0			5/8/2009	0
11/27/2008	0	5/6/2009	0.3			6/3/2009	0
5/6/2009	0.3	5/7/2009	0.3			6/8/2009	0.1
5/7/2009	0.1	5/8/2009	0.3			7/10/2009	0
5/8/2009	0.1	6/3/2009	0.3			8/25/2009	0
6/3/2009	0.1	6/8/2009	0.4			9/30/2009	0.1
6/8/2009	0.2	7/10/2009	0.1			5/20/2010	0
7/10/2009	0	8/25/2009	0			5/23/2010	0
8/25/2009	0	9/30/2009	0.1			6/24/2010	1
9/30/2009	0.1	11/3/2009	0			9/20/2010	0
11/3/2009	0	5/20/2010	0.3			10/18/2010	0
5/20/2010	0	5/23/2010	0.1			5/9/2011	0.0
5/23/2010	0	6/24/2010	0.3			6/22/2011	0.0
6/24/2010	0	8/4/2010	0.1			7/25/2011	0.0
8/4/2010	0	9/20/2010	0.6			8/24/2011	0.0
9/20/2010	0	10/18/2010	0.3			9/19/2011	0.0
10/18/2010	0.1	5/9/2011	0.0			10/24/2011	0.0
5/9/2011	0.0	6/22/2011	0.0			4/10/12	0
6/22/2011	0.0	7/25/2011	0.0			5/9/12	0
7/25/2011	0.0	8/24/2011	0.0			6/13/12	0
8/24/2011	0.0	9/19/2011	0.0			7/16/12	0
9/19/2011	0.0	10/24/2011	0.2			8/22/12	0
10/24/2011	0.1	4/10/12	0			9/19/12	0
4/10/12	0	5/9/12	0			10/24/12	0
5/9/12	0	6/13/12	0			6/29/13	0
6/13/12	0	7/16/12	0			5/28/13	0
7/16/12	0.1	8/22/12	0			7/20/13	0
8/22/12	0	9/19/12	0			8/26/13	0
9/19/12	0	10/24/12	0			9/24/13	0
10/24/12	0	6/29/13	0			10/23/13	0
6/29/13	0	5/28/13	0				
5/28/13	0	7/20/13	0				
7/20/13	0	8/26/13	0				
8/26/13	0	9/24/13	0				
9/24/13	0	10/23/13	0				
10/23/13	0						

SG-23		SG-24		SG-25		SG-26	
5/22/2008	0.4	5/23/2008	0.1	4/10/12	0	5/26/2008	0
5/23/2008	0.2	5/24/2008	0.1	5/9/12	0	5/27/2008	0
5/24/2008	0.1	5/25/2008	0	6/13/12	0	5/28/2008	0
5/25/2008	0	5/26/2008	0	7/16/12	0	5/29/2008	0
5/26/2008	0	5/27/2008	0	8/22/12	0	5/30/2008	0
5/27/2008	0	5/28/2008	0	9/19/12	0	5/31/2008	0
5/28/2008	0	5/29/2008	0	10/24/12	0	6/1/2008	0
5/29/2008	0	5/30/2008	0	6/29/13	0	6/17/2008	0
5/30/2008	0	5/31/2008	0	5/28/13	0	6/25/2008	0
5/31/2008	0	6/1/2008	0	7/20/13	0	7/24/2008	0.1
6/1/2008	0	6/17/2008	0	8/26/13	0	8/3/2008	0.1
6/17/2008	0	6/25/2008	0	9/24/13	0	10/10/2008	0
6/25/2008	0	7/24/2008	0.1	10/23/13	0	10/14/2008	0
7/24/2008	0.1	8/3/2008	0.1			11/4/2008	0
8/3/2008	0	10/10/2008	0			11/27/2008	0
10/10/2008	0	10/14/2008	0			5/6/2009	0
10/14/2008	0	11/4/2008	0			5/7/2009	0
11/4/2008	0	11/27/2008	0			5/8/2009	0
11/27/2008	0	5/6/2009	0.1			6/3/2009	0
5/6/2009	0.01	5/7/2009	0			6/8/2009	0.2
5/7/2009	0	5/8/2009	0.1			7/10/2009	0.1
5/8/2009	0.1	6/3/2009	0.1			8/25/2009	0
6/3/2009	0.1	6/8/2009	0.2			9/30/2009	0
6/8/2009	0.2	7/10/2009	0.1			5/20/2010	0
7/10/2009	0.1	8/25/2009	0			5/23/2010	0
8/25/2009	0	9/30/2009	0			6/24/2010	0
9/30/2009	0	11/3/2009	0			9/20/2010	0
11/3/2009	0	5/20/2010	0			10/18/2010	0
5/20/2010	0	5/23/2010	0			5/9/2011	0.0
5/23/2010	0	6/24/2010	0			6/22/2011	0.0
6/24/2010	0	8/4/2010	0.1			7/25/2011	0.0
8/4/2010	0	9/20/2010	0			8/24/2011	0.0
9/20/2010	0	10/18/2010	0			9/19/2011	0.0
10/18/2010	0	5/9/2011	0.0			10/24/2011	0.0
5/9/2011	0.0	6/22/2011	0.0			4/10/12	0
6/22/2011	0.0	7/25/2011	0.0			5/9/12	0
7/25/2011	0.0	8/24/2011	0.0			6/13/12	0
8/24/2011	0.0	9/19/2011	0.0			7/16/12	0
9/19/2011	0.0	10/24/2011	0.0			8/22/12	0
10/24/2011	0.0	4/10/12	0			9/19/12	0
4/10/12	0	5/9/12	0			10/24/12	0
5/9/12	0	6/13/12	0			6/29/13	0
6/13/12	0	7/16/12	0			5/28/13	0
7/16/12	0	8/22/12	0			7/20/13	0
8/22/12	0	9/19/12	0			8/26/13	0
9/19/12	0	10/24/12	0			9/24/13	0
10/24/12	0	6/29/13	0			10/23/13	0
6/29/13	0	5/28/13	0				
5/28/13	0	7/20/13	0				
7/20/13	0	8/26/13	0				
8/26/13	0	9/24/13	0				
9/24/13	0	10/23/13	0				
10/23/13	0						