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SOIL MANAGEMENT PLAN

Former MIR Site
Beaver Dam, Wisconsin

Shaw Project No. 135553

June 2009

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Executive Summary

Dodge County retained Shaw Environmental, Inc. (Shaw) to evaluate various alternatives for placement of soil that may be removed from Lot 8 of the Former Malleable Iron Range (MIR) site located at the southeast corner of the intersection of East Main Street and North Spring Street in Beaver Dam, Dodge County, Wisconsin. The MIR site originally encompassed approximately 14 acres, but has since been subdivided into lots, several of which have been sold and redeveloped as operating businesses. As part of that evaluation, Shaw considered placement of excavated material from one portion of Lot 8 to another portion; placement of excavated material from Lot 8 to another adjacent, vacant lot; and disposal of the soil at a landfill.

NR 718.11(2)(b) allows for the "replacement of contaminated soil on the property from which it was excavated for disposal" if specified conditions have been met. These conditions include a thorough assessment of the soil characteristics, demonstration that generic or site specific residual contaminant levels (RCLs) have been achieved, and compliance with certain disposal site location requirements. The objective of this Soil Management Plan (SMP) is to document that the conditions under NR718.11(2)(b) have been met and to establish a potentially technically and economically feasible method of handling treated soils to facilitate redevelopment of Lot 8.

During the soil evaluation activities conducted on April 14, 2009, 23 soil borings (GP-1 through GP-23) were advanced at the site and soil samples were collected and analyzed for polynuclear aromatic hydrocarbons (PAHs), volatile organic compounds (VOCs), arsenic, cadmium, chromium, and lead to determine residual contaminant levels, if present. A risk assessment was also performed in accordance with the provisions of NR720.19 to determine the actual risk posed by the soil under various closure and re-use options. Key findings from the evaluation activities are as follows:

- PAH compounds were reported at concentrations greater than the NR 720 generic direct contact standard for non-industrial sites in several samples, and include the following: benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenzo(a,h)anthracene, and indeno(1,2,3-cd)pyrene.

- Arsenic was observed in every sample collected at the site at concentrations ranging from 1.8 to 5.6 parts per million, above its NR720 Residual Contaminant Level (RCL). However, the levels detected at the site are similar to background levels found in other areas of the state, and consistent with concentrations that were observed during the course of the site investigation and remediation that occurred at the site from 1992 to closure in 2008. Additionally, since arsenic levels are consistent across the site in all the borings, they are believed to be representative of naturally-occurring background levels.

- The other metals, chromium, cadmium, and lead, were not observed at levels exceeding their respective NR 720 RCL.

- None of the soil samples collected illustrate concentrations close to the suggested RCLs for groundwater pathway; therefore, there is little concern that the minor residual soil contamination will adversely impact the quality of the groundwater present at, and down gradient of, the site. Additionally, years of groundwater monitoring at the site indicated decreasing contaminant trends, thus, warranting conditional closure which was granted by the Wisconsin Department of Natural Resources (WNDR) in 2008.

- Lead was not detected at concentrations above the NR720 RCL in any sample collected from the Lot 8 site.

- No flood plains, wetlands, critical habitat areas, or water supply wells are located within the specified setback distances found within NR718.

- The depth to groundwater is at least 1 meter below the existing ground surface throughout the site.

- If a portion (900 cubic yards) of the soil is removed from the site and transported to a landfill for disposal, the risk analysis determined that the remaining soil would not pose a risk to human health based on carcinogenic or non-carcinogenic compounds when considering both individual and cumulative compound effects and assuming closure as a single mass if used as geotechnical or non-geotechnical fill.

Based on these findings, the current soil characteristics are believed to meet the requirements for on-site replacement of soil excavated for disposal as outlined under NR718.11(2)(b), and would therefore be exempt from the solid waste program requirements under Ch. 289, Stats., and Chs. NR500 to 538. If on-site disposal is not determined to be feasible at the site due to other circumstances (i.e., purchaser requirements or Dodge County restrictions), the soil may be transported to a landfill and disposed of as solid waste.

1.0 Introduction

Dodge County retained Shaw to conduct an assessment of potential soil management options associated with soil located on Lot 8 of the MIR site in Beaver Dam, Wisconsin. Based on a geotechnical study performed at the site by another firm, the existing soil apparently does not meet the criteria necessary for proper redevelopment of Lot 8 with respect to structural integrity of the proposed building and parking areas. The geotechnical study recommended soil removal (top two feet) and replacement with engineered fill.

As described in previously submitted reports and correspondence, and reviewed in subsequent sections of this report, substantial remedial actions have been undertaken at the subject site over the past 15 years to restore the environment following releases of petroleum products, VOCs, chlorinated compounds, and PAHs. Remedial actions taken at the site have achieved the requirements for case closure and the site was closed with land use restrictions by the WDNR in April 2008.

The purpose of this SMP is to present the results of the soil evaluation and site specific soil standard assessment, and to provide an alternative for landfilling the excavated material to promote redevelopment of the property.

2.0 Site Description and History

2.1 Site Location

Lot 8 of the Former MIR site is located on the southeastern corner of the intersection of East Main Street and North Spring Street in Beaver Dam, Wisconsin. The site is located in Dodge County in the SW ¼, SE ¼, Section 33, T12N, R14E. Figure 1 illustrates the site location.

2.2 Background

The MIR Company was founded in 1896 and operated until the mid-1980s. Products that were manufactured by MIR included ranges, grills, heaters, fireplace inserts, and bomb shells. Manufacturing processes at the site included foundry operations, painting, paint stripping, electroplating, acid treatment, porcelain enameling, and assembly.

In March 1985, the owners of MIR Company filed for bankruptcy. A large portion of MIR Company assets were sold to Monarch Appliance and Fabricating Company (MAFCO) in July 1985. In 1986, MAFCO was cited for several hazardous waste activity violations, including failure to establish hazardous waste generator status and failure to meet general requirements for operators of a storage facility. MAFCO then vacated the property. In January of 1987, the debtor-in-possession filed for abandonment of the buildings. A large quantity of potentially hazardous wastes (allegedly generated by the MIR Company) was left on-site after MAFCO's departure.

In 1990, the on-site buildings were destroyed by fire and for years the property was a relatively flat vacant lot, with most of its land surface covered by concrete slabs. The surface topography slopes gradually from the northeast to the southwest. The surrounding land use is both residential and commercial. There is a shoe manufacturing company located to the north and various commercial businesses south of the property.

A portion of the MIR property, including Lot 8, is currently owned by Dodge County. Numerous lots have been sold and the site has undergone much redevelopment in the past 10 years. The property now contains a strip mall, grocery store, credit union, and Napa Auto Parts Store.

2.3 Summary of Investigation/Remediation Activities

Soil and/or groundwater petroleum, VOC, PAH, polychlorinated biphenyl, and metal contamination was observed across the site. Free petroleum product was observed at the site at several locations, but was successfully removed via pumping from groundwater extraction wells. Approximately 10,500 tons of contaminated soil from several former underground storage tank locations was removed from the site during remedial activities. Residual soil and groundwater contamination was treated via a soil vapor extraction, air sparging, and groundwater extraction remedial system. Postremedial groundwater

sampling was conducted and results illustrated stable to decreasing trends across the site. Shaw requested site closure by the WDNR and conditional closure was granted in April 2008.

Geology observed at the MIR property exhibits a general progression from a two- to ten-foot thick silt layer to successively coarser sandy silts, silty sands, cobbles, and sandy gravels until bedrock is encountered. Nearly all of the units appear to be laterally continuous throughout the property, although the cobbles are believed to be confined along the north-south plane to the center of the property. The depth and elevation at which the dolomite bedrock was encountered varies considerably. In general, bedrock lies at a depth of 16 feet below ground surface (bgs) along the western portion of the property and descends in an easterly direction. Along a south-north plane, the bedrock surface demonstrates an irregular trend from a depth of 10 feet bgs to 22 feet bgs. The water table was encountered at approximately 9 to 22 feet bgs.

Additional information regarding site investigation and remedial action taken at the site can be found in the Kiel Environmental Engineering, Inc. Site Investigation Report (November 1991) and Shaw's Closure Assessment Report dated April 9, 2007.

3.0 Lot 8 Redevelopment Soil Sampling

On April 14, 2009, On-Site Environmental, Inc., under the direction of Shaw, advanced 23 Geoprobe® direct push soil borings (GP-1 through GP-23) to characterize the soil at Lot 8 and to determine if residual contaminant levels existed for the purpose of redeveloping the lot. Soil borings GP-1 through GP-4 were advanced to 7 feet bgs and the remaining nineteen borings (GP-5 through GP-23) were advanced to 1.5 feet bgs. Figure 2 illustrates the boring locations.

In general, soil encountered during the investigation consisted primarily of five feet of silty clay overlying sandy silt to a maximum depth of seven feet bgs. Laboratory analytical results indicated that arsenic, cadmium, chromium, lead, several PAHs, methylene chloride, toluene, and trichlorofluoromethane were detected in the soil at the site. Arsenic was the only metal that exceeded the NR 720.11 RCL for direct contact. The following PAH compounds exceeded their respective suggested non-industrial RCLs for direct contact: benzo(a)anthracene; benzo(a)pyrene; benzo(b)fluoranthene; dibenzo(a,h)anthracene; and indeno(1,2,3-cd)pyrene. Table 1 summarizes the laboratory analytical results.

3.1 Location Criteria Evaluation

Per *NR 718.11(2)(b)3,* treated soil may only be replaced on the property from which it was excavated if certain location criteria are met. *NR 718.11(2)(b)3.* defines the critical features and minimal distances. To evaluate the feasibility of using Lot 8 or additional lots on the Former MIR site for soil placement, accessible public records were reviewed to evaluate the site locations relative to the features included in *NR 718.11(2)(b)3.* Per the site location criteria, no placement can occur in the following settings:

- Within floodplains;
- Within 100 feet of any wetlands or critical habitat area;
- Within 300 feet of navigable rivers, streams, lakes, ponds, or flowages; and
- Within 300 feet of water supply wells.

NR 718.11(2)(b)3. Criteria	Comments
Within a floodplain	The Former MIR site is not located within a floodplain. Figure 3 presents the FEMA Flood Map.
Within 100 feet of any wetlands or critical habitat area	There are no wetland areas or critical habitat within 100 feet of the Former MIR site.
Within 300 feet of navigable rivers, streams, lakes, ponds, or flowages	The Beaver Dam River is located over 1,500 feet south of the Former MIR site and Beaver Dam Lake is located over 3,600 feet west of the site.
Within 300 feet of water supply wells	The well search conducted by the Wisconsin Geological & Natural History Survey did not report any water supply wells with 300 feet of the site. Well logs are available upon request.

3.2 Depth to High Groundwater Level Evaluation

Per *NR 718.11(2)(b)5,* contaminated soil shall be placed at least one meter (3.25 feet) above the high groundwater level. The measured depth to water in monitoring wells historically present at the site ranged from 9 to 22 feet bgs. Geologic cross-sections and historical groundwater elevation data have been previously reported in Shaw documents.

4.0 Risk Assessment

As noted in *Section 3.0*, the levels of some constituents of potential concerns (COPCs) at the site exceed the generic exposure pathway levels contained within NR 720 and the suggested PAH standards for direct contact. Therefore, the actual risks posed by the soil under various closure scenarios have been evaluated in accordance with the procedures outlined in NR 720.19 [WDNR, 2007]. The following sections describe the risk assessment approach and results for direct contact.

4.1 Direct Contact Exposure Pathways

The concentrations of PAHs, lead, and arsenic in the soil were evaluated to determine the individual and cumulative risks for both carcinogenic and non-carcinogenic compounds in accordance with procedures outlined in NR 720.19 [WDNR, 2007]. The site data set (April 2009 data) was used to estimate direct contact risk using site-specific residual contaminant levels (SSRCLs). As required by NR 720.19, the goal for individual compounds is to have each carcinogenic compound represent a cancer risk less than 1E-6, and each non-carcinogenic compound represent a hazard quotient of less than 1.0. An equally important requirement of NR 720.19 is that the cumulative cancer risk must not exceed 1E-5 and the hazard index (sum of the individual hazard quotients) must not exceed 1.0. This approach follows NR 720.19(5) and WDNR guidance (WDNR, 1997, 2001a, 2001b, 2001c, 2004).

SSRCLs for individual arsenic and PAH compounds were calculated using United States Environmental Protection Agency (USEPA's) Soil Screening Level (SSL) web-based tool [USEPA, 2007] using WDNR recommended default exposure values, a target cancer risk of 1E-6 for carcinogens, and a target hazard quotient of 1.0 for non-carcinogens. Output results from the USEPA SSLs web calculator are included in Appendix A. For PAH compounds that are not available in the USEPA SSL web-based tool, the Relative Potency Factors (RPF) listed in the WDNR PAH guidance (WDNR, 1997) were used to calculate the SSRCL. The SSRCL for lead (250 mg/kg) is based on the Wisconsin Department of Health and Family Services and WDNR value, which is based on a target hazard quotient (THQ) of 1.0 (WDNR, 2001). For arsenic, the target carcinogenic RCL is set at background level of 4 mg/kg.

4.2 Evaluation of Risk

Table 2 presents the estimated cancer risks and hazards index for the site using both the maximum detected concentration (MDC) and the 95% upper confidence limit (UCL) as the exposure point concentration (EPC) for each constituent based on the samples collected from the site on April 19, 2009. The 95% UCLs were calculated with the USEPA ProUCL 4.0, *A Statistical Software*, using the data from the site. The input data and output results from ProUCL 4.0 are included in Appendix A. The estimated cancer risks and hazards quotients for each compound were determined by calculating ratios of the EPCs (using the MDC and 95% UCL) divided by the SSRCLs. For example, a ratio of 1.0 is equivalent to a risk of 1E-6 or a hazard of 1.0.

4.2.1 Risk From Individual Compounds

As shown on Table 2, the estimated cancer risk for the MDC and 95% UCL of benzo(a)pyrene (0.248 mg/kg and 0.094 mg/kg, respectively) exceed the target cancer risk for individual compounds. Cancer risks and hazards index (assuming residential exposure) for the remaining compounds are less than the target cancer risk and the target hazard quotient using the MDC and the 95% UCL for individual compounds.

4.2.2 Cumulative Risk

The cumulative cancer risk and hazard index are less than the cumulative cancer risk and the hazard index of 1E-5 and 1.0 for both the MDC and 95% UCL. The estimated cumulative cancer risks for the MDC and 95% UCL are 5.9E-6 and 2.5E-6, respectively, for carcinogens. The estimated hazard index for non-carcinogens for the MDC and 95% UCL are 0.31 and 0.19, respectively.

While the cumulative cancer risk for the site using the MDC and 95% UCL as EPCs satisfy the risk screening criteria in NR 720.19(5)(a)2 (cumulative risk), benzo(a)pyrene exceeds the risk screening criteria in NR 720.19(5)(a) 1 for individual compounds, and therefore, a limited remedial action will be required to reduce the direct-contact risk for benzo(a)pyrene prior to reuse of the soil.

Since the soil does not meet the risk screening criteria in NR 720.19(5)(a)1 (for individual compounds) a remedial alternative will need to be implemented in order to reuse the soil as near surface fill on- or off-site. Shaw has evaluated several scenarios that, if implemented, will allow the soil to satisfy the NR 720 risk screening criteria. The most cost effective remedial scenario includes remediating the most highly impacted soil that is proposed for excavation as part of the redevelopment of the property. Under this scenario, soil at or near soil boring GP-1, (representing the highest concentrations of benzo(a)pyrene) would be excavated and disposed of off-site at a licensed landfill.

The concentrations of COPCs for the remainder of the soil, (after excavation of the soil at and near soil boring GP-1), are below the risk and hazard criteria in accordance with NR720.19. The risk and hazards under this scenario are summarized on Table 3. The input data and output results from ProUCL 4.0 are included in Appendix A. As shown on Table 3, the cumulative and individual cancer risk and hazard index meet the direct contact standards using the methods in NR720.19 for both individual compound and considering the cumulative effects. The estimated cumulative cancer risks using the 95% UCL for the EPC is 2.4E-6 for carcinogens. The estimated hazard index for non-carcinogens using the 95% UCL for the EPC is 0.21.

5.0 Conclusions and Recommendations

Shaw has evaluated potential alternatives of soil placement after excavation for redevelopment of Lot 8 at the Former MIR site in Beaver Dam, Wisconsin. Based on the soil evaluation results discussed in this report, the current soil characteristics at Lot 8 are believed to meet the requirements for on-site replacement of soil excavated for disposal as outlined under *NR718.11(2)(b)*. Therefore, this soil and the proposed on-site replacement would be exempt from the solid waste program requirements under *Ch. 289, Stats.*, and *Chs. NR500 to 538*.

If on-site replacement ultimately is not chosen as the preferred alternative, the soil may be transported to a landfill for disposal as solid waste.

6.0 References

Kiel Environmental Engineering, Inc., 1991, *Site Investigation Report – Monarch Property*, November.

Kiel Environmental Engineering, Inc., 1992, *Gasoline UST Investigation Report – Monarch Property*, June.

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Shaw, 2007, *Closure Assessment Report – Malleable Iron Range Site D*, April.

USEPA, 1994, *Technical Support Document for the Integrated Exposure Uptake Biokinetic Model for Lead in Children* (v0.99d) [NTIS #PB94-963505, EPA 9285.7-22], December.

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WDNR, 1997, *Soil Cleanup Levels for Polycyclic Aromatic Hydrocarbons (PAH)*, Interim Guidance, Bureau for Remediation and Redevelopment, Publication RR-519-97, April.

WDNR, 2001a, *Application of Soil Performance Standards Guidance, Bureau for Remediation and Redevelopment*, PUB-RR-676, October 8.

WDNR, 2001b, NR 720 – *Soil Cleanup Standards*, Register, January, No. 541.

WDNR, 2001c, *Remediation and Redevelopment Guidance, Commonly Asked Questions About the Lead Soil Standards in Wisconsin*, Pub-RR-653, May 1.

WDNR, 2002, *Determining Residual Contaminant Levels Using the EPA Soil Screening Level Web Site*, PUB-RR-682, January 11.

WDNR, 2004, *Guidance on Soil Performance Standards*, PUB-RR-528, April.

Tables

Table 1
Soil Sample Laboratory Analytical Results (4/19/09)

Table 2
Soil Risk Baseline Site Conditions

Table 3
Soil Risk Estimated Post Remedial Conditions

Table 2
Soil Risk Baseline Site Conditions
MIR Site
Beaver Dam, Wisconsin

Arithmetic site ProUCL

Constituent	MDC as EPC (mg/kg)	95% UCL as EPC (mg/kg)	Carcinogenic RCL, Risk = 1E-6 (mg/kg)	Non-Carcinogenic RCL, Hazard = 1.0 (mg/kg)	COPC available at EPA SSL website?	WDNR (1997) BaP RPF	USEPA (2007) BaP RPF	RCL Note	Carcinogen Ratio (MDC/RCL)	Carcinogen Ratio (95% UCL/RCL)	Non-Carcinogenic Ratio (MDC/RCL)	Non-Carcenogenic Ratio (95% (UCL/RCL)
Acenaphthene	0.0116	0.00513	NA	4690	Yes	0.001	0	Carcinogenic RCL not est'd w/DNR RPF	NA	NA	0.00000247	0.00000109
Acenaphthylene	0.078	0.0233	87.5	NA	No	0.001	NA	Carcinogenic RCL est'd w/DNR RPF	0.000891	0.000266	NA	NA
Anthracene	0.109	0.0359	NA	23500	Yes	0.01	0	Carcinogenic RCL not est'd w/DNR RPF	NA	NA	0.00000464	0.00000153
Benzo(a)anthracene	**0.236**	**0.0810**	**0.875**	**NA**	**No**	**0.1**	**0.1**	**Carcinogenic RCL est'd w/DNR RPF**	**0.2697**	**0.0926**	**NA**	**NA**
Benzo(a)pyrene	**0.248**	**0.0944**	**0.0875**	**NA**	**Yes**	**1**	**1**	**Carcinogenic RCL est'd w/DNR RPF**	**2.83**	**1.08 ‡**	**NA**	**NA**
Benzo(b)fluoranthene	**0.25**	**0.0979**	**0.875**	**NA**	**No**	**0.1**	**0.1**	**Carcinogenic RCL est'd w/DNR RPF**	**0.286**	**0.112**	**NA**	**NA**
Benzo(ghi)perylene	0.181	0.0706	8.75	NA	No	0.01	NA	Carcinogenic RCL est'd w/DNR RPF	0.02069	0.00807	NA	NA
Benzo(k)fluoranthene	0.232	0.0936	8.75	NA	No	0.01	0.01	Carcinogenic RCL est'd w/DNR RPF	0.0265	0.0107	NA	NA
Chrysene	0.254	0.102	87.5	NA	No	0.001	0.001	Carcinogenic RCL est'd w/DNR RPF	0.00290	0.00116	NA	NA
Dibenz(a,h)anthracene	**0.0734**	**0.0290**	**0.0875**	**NA**	**No**	**1**	**1**	**Carcinogenic RCL est'd w/DNR RPF**	**0.839**	**0.331**	**NA**	**NA**
Fluoranthene	0.559	0.190	NA	3130	Yes	0.001	0	Carcinogenic RCL not est'd w/DNR RPF	NA	NA	0.000179	0.0000606
Fluorene	0.0183	0.00693	NA	3130	Yes	0.001	0	Carcinogenic RCL not est'd w/DNR RPF	NA	NA	0.00000585	0.00000221
Indeno(1,2,3-cd)pyrene	**0.155**	**0.0660**	**0.875**	**NA**	**No**	**0.1**	**0.1**	**Carcinogenic RCL est'd w/DNR RPF**	**0.1771**	**0.0755**	**NA**	**NA**
Naphthalene	0.0171	0.00883	NA	330	Yes	0.001	0	Carcinogenic RCL not est'd w/DNR RPF	NA	NA	0.0000518	0.0000268
Phenanthrene	0.373	0.0979	87.5	NA	No	0.001	NA	Carcinogenic RCL est'd w/DNR RPF	0.00426	0.00112	NA	NA
Pyrene	0.432	0.144	NA	2350	Yes	0.001	0	Carcinogenic RCL not est'd w/DNR RPF	NA	NA	0.000184	0.0000613
1-Methylnaphthalene	0.020	0.00755	87.5	NA	No	0.001	NA	Carcinogenic RCL est'd w/DNR RPF	0.000229	0.0000863	NA	NA
2-Methylnaphthalene	0.0315	0.0105	NA	330	No	0.001	0	Naphthalene used as surrogate	NA	NA	0.0000955	0.0000318
Lead	17.0	15.8	NA	250	No	-	-	Non-carcinogenic RCL est'd w/WDNR Guidance PUB-RR-653	NA	NA	0.0680	0.0631
Arsenic	**5.6**	**3.1**	**4.0**	**23.5**	**Yes**	**-**	**-**	**Represents Background**	**1.40**	**0.772**	**0.238**	**0.131**
								Ratio Sum:	5.9	2.5	0.31	0.19
								Estimated Cummulative Cancer Risk:	**5.9E-06**	**2.5E-06**		
								Estimated Hazard Index:			**0.31**	**0.19**

Inputs: *Site-wide 95% UCLs or MDCs from multiple sample depths from the Site, EPA SSLs with WDNR defaults & Target Cancer Risk of 1E-6 and Target Hazard Quotient of 1.0.*
SSL Pathways include ingestion, inhalation of vapors, inhalation of particles, for residential exposure (lowest SSL selected).
For Arsenic, the Carcinogenic RCL for Arsenic of 4.0 mg/kg is used to represent background levels
For Lead, WDNR Guidance PUB-RR-653 'Commonly Asked Questions About the Lead (Pb) Soil Standards in Wisconsin'.
RCL in ratio denominator assumed equal to EPA SSL.

Red/Bold *= Indicates compound is a potential risk driver*

‡ = ratio for 95% UCL exceeds 1.0 and therefore exceeds acceptable risk for an individual compound in accordance with NR720 of the Wisconsin Administrative Code

95% upper confidence limit (UCL) calculated using USEPA ProUCL version 4.0.

BaP = benzo(a)pyrene

EPC = Site-wide exposure point concentration

MDC = maximum detected concentration.

RPF = relative potency factor

SSL = Soil Screening Level

USEPA (2007) = USEPA Region 3 RBC Table (Oct. 1, 2007).

Table 3
Soil Risk Estimated Post Remedial Conditions
MIR Site
Beaver Dam, Wisconsin

Constituent	95% UCL as EPC (mg/kg)	Carcinogenic RCL, Risk = 1E-6 (mg/kg)	Non-Carcinogenic RCL, Hazard = 1.0 (mg/kg)	COPC available at EPA SSL website?	WDNR (1997) BaP RPF	USEPA (2007) BaP RPF	RCL Note	Carcinogen Ratio (EPC/RCL)	Non-Carcinogen Ratio (EPC/RCL)
Acenaphthene	0.00478	NA	4690	Yes	0.001	0	Carcinogenic RCL not est'd w/DNR RPF	NA	0.0000010
Acenaphthylene	0.0200	87.5	NA	No	0.001	NA	Carcinogenic RCL est'd w/DNR RPF	0.00023	NA
Anthracene	0.0310	NA	23500	Yes	0.01	0	Carcinogenic RCL not est'd w/DNR RPF	NA	0.0000013
Benzo(a)anthracene	0.0690	0.875	NA	No	0.1	0.1	Carcinogenic RCL est'd w/DNR RPF	0.08	NA
Benzo(a)pyrene	0.0839	0.0875	NA	Yes	1	1	Carcinogenic RCL est'd w/DNR RPF	0.96	NA
Benzo(b)fluoranthene	0.0889	0.875	NA	No	0.1	0.1	Carcinogenic RCL est'd w/DNR RPF	0.10	NA
Benzo(ghi)perylene	0.0635	8.75	NA	No	0.01	NA	Carcinogenic RCL est'd w/DNR RPF	0.0073	NA
Benzo(k)fluoranthene	0.0862	8.75	NA	No	0.01	0.01	Carcinogenic RCL est'd w/DNR RPF	0.010	NA
Chrysene	0.0915	87.5	NA	No	0.001	0.001	Carcinogenic RCL est'd w/DNR RPF	0.0010	NA
Dibenz(a,h)anthracene	0.0274	0.0875	NA	No	1	1	Carcinogenic RCL est'd w/DNR RPF	0.31	NA
Fluoranthene	0.163	NA	3130	Yes	0.001	0	Carcinogenic RCL not est'd w/DNR RPF	NA	0.000052
Fluorene	0.00623	NA	3130	Yes	0.001	0	Carcinogenic RCL not est'd w/DNR RPF	NA	0.0000020
Indeno(1,2,3-cd)pyrene	0.0613	0.875	NA	No	0.1	0.1	Carcinogenic RCL est'd w/DNR RPF	0.070	NA
Naphthalene	0.00884	NA	330	Yes	0.001	0	Carcinogenic RCL not est'd w/DNR RPF	NA	0.000027
Phenanthrene	0.0720	87.5	NA	No	0.001	NA	Carcinogenic RCL est'd w/DNR RPF	0.0008	NA
Pyrene	0.124	NA	2350	Yes	0.001	0	Carcinogenic RCL not est'd w/DNR RPF	NA	0.000053
1-Methylnaphthalene	0.00702	87.5	NA	No	0.001	NA	Carcinogenic RCL est'd w/DNR RPF	0.000080	NA
2-Methylnaphthalene	0.0098	NA	330	No	0.001	0	Naphthalene used as surrogate	NA	0.000030
Lead	15.8	NA	250	No	-	-	Non-carcinogenic RCL est'd w/WDNR Guidance PUB-RR-653	NA	0.06
Arsenic	3.5	4	23.5	Yes	-	-	Represents Background	0.86	0.15
							Ratio Sum:	2.4	0.210
							Estimated Cummulative Cancer Risk:	**2.4E-06**	
							Estimated Hazard Index:		**0.21**

Inputs: *Site-wide 95% UCLs from multiple sample depths from the Site, EPA SSLs with WDNR defaults & Target Cancer Risk of 1E-6 and Target Hazard Quotient of 1.0.*
SSL Pathways include ingestion, inhalation of vapors, inhalation of particles, for residential exposure (lowest SSL selected).
For Arsenic, the Carcinogenic RCL for Arsenic of 4.0 mg/kg is used to represent background levels
For Lead, WDNR Guidance PUB-RR-653 'Commonly Asked Questions About the Lead (Pb) Soil Standards in Wisconsin'.
RCL in ratio denominator assumed equal to EPA SSL.

95% upper confidence limit (UCL) calculated using USEPA ProUCL version 4.0.
BaP = benzo(a)pyrene
EPC = Site-wide exposure point concentration
MDC = maximum detected concentration.
RPF = relative potency factor
SSL = Soil Screening Level
USEPA (2007) = USEPA Region 3 RBC Table (Oct. 1, 2007).

Table 1
Soil Sample Analytical Results
MIR Site - Beaver Dam, WI
4/19/2009

Parameter	GP1 2' bgs	GP1 4' bgs	GP2 3' bgs	GP2 7' bgs	GP3 2' bgs	GP3 6' bgs	GP4 4' bgs	GP4 7' bgs	GP5 1.5' bgs	GP6 1.5' bgs	GP7 1.5' bgs	GP8 1.5' bgs	GP9 1.5' bgs	GP10 1.5' bgs	GP11 1.5' bgs	GP12 1.5' bgs	GP13 1.5' bgs	GP14 1.5' bgs	GP15 1.5' bgs	GP
1,1,1,2-Tetrachloroethane	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25
1,1,1-Trichloroethane	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25
1,1,2,2-Tetrachloroethane	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 26	< 25	< 25	< 25	< 25	< 25	< 25	< 25
1,1,2-Trichloroethane	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25
1,1-Dichloroethane	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25
1,1-Dichloroethene	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25
1,1-Dichloropropene	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25
1,2,3-Trichlorobenzene	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25
1,2,3-Trichloropropane	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25
1,2,4-Trichlorobenzene	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25
1,2,4-Trimethylbenzene	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25
1,2-Dibromo-3-chloropropane	< 82.3	< 82.3	< 82.3	< 82.3	< 82.3	< 82.3	< 82.3	< 82.3	< 82.3	< 82.3	< 82.3	< 82.3	< 82.3	< 82.3	< 82.3	< 82.3	< 82.3	< 82.3	< 82.3	< 82
1,2-Dibromoethane (EDB)	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25
1,2-Dichlorobenzene	< 44.4	< 44.4	< 44.4	< 44.4	< 44.4	< 44.4	< 44.4	< 44.4	< 44.4	< 44.4	< 44.4	< 44.4	< 44.4	< 44.4	< 44.4	< 44.4	< 44.4	< 44.4	< 44.4	< 44
1,2-Dichloroethane	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25
1,2-Dichloropropane	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25
1,3,5-Trimethylbenzene	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25
1,3-Dichlorobenzene	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25
1,3-Dichloropropane	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25
1,4-Dichlorobenzene	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25
1-Methylnaphthalene	18.0	20.0	5.8	< 2.1	< 2.1	< 2.1	< 2.3	< 2.1	4.7	3.0	7.3	< 2.1	3.5	2.9	4.7	2.3	13.5	< 2	< 2.3	12
2,2-Dichloropropane	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25
2-Chlorotoluene	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25
2-Methylnaphthalene	23.6	31.5	8.3	< 2.1	< 2.1	< 2.1	< 2.3	< 2.1	7.2	4.5	15.9	3.3	5.4	4.3	7.5	3.8	15.5	< 2	< 2.3	13
4-Chlorotoluene	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25
Acenaphthene	11.6	10.5	< 1.1	< 1	< 1	< 1	< 1.2	< 1	4.3	2.6	9.9	2.5	1.8	4.5	8.6	1.8	1.7	1.0	< 1.2	2
Acenaphthylene	61.7	5.8	3.7	< 1.9	5.3	< 1.9	< 2.1	< 1.9	26.4	34.4	78.0	14.2	16.5	22.5	17.6	12.1	16.7	4.4	5.5	5
Anthracene	109	22.0	10	< 5.1	6.5	< 5.2	< 5.7	< 5.1	27.9	39.8	85.1	25.8	22.1	37.4	37.7	17.7	25.0	7.3	10.0	12
Arsenic	4.4	3.1	3.8	3.1	3.6	2.7	5.6	3.0	2.4	2.3	2.3	2.0	2.2	2.2	2.3	2.2	3.8	2.3	1.9	1
Benzene	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25
Benzo(a)anthracene	236	17.7	20.4	< 9.4	26.8	< 9.5	< 10.4	< 9.3	59.9	91.0	145	80.0	61.7	96.1	93.1	50.1	45.4	25.1	33.3	33
Benzo(a)pyrene	248	18.3	19.2	< 4.1	20.3	< 4.1	< 4.5	< 4	74.5	122	212	109	80.2	114	100	57.0	53.2	27.5	38.4	36
Benzo(b)fluoranthene	250	17.2	17.7	< 6.4	16.7	< 6.4	< 7.1	< 6.3	76.2	129	202	131	91.8	108	104	62.5	51.0	29.8	41.4	47
Benzo(g,h,i)perylene	167	14.0	14.4	< 4.7	8.2	< 4.8	< 5.3	< 4.7	58.6	101	181	97.1	58.5	71.1	61.5	39.7	40.5	17.7	25.3	28
Benzo(k)fluoranthene	183	19.0	19.5	< 7	21.5	< 7	< 7.8	< 6.9	80.0	98.1	164	124	84.1	115	102	57.9	55.4	28.9	41.4	40
Bromobenzene	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25
Bromochloromethane	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25
Bromodichloromethane	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25
Bromoform	< 25.9	< 25.9	< 25.9	< 25.9	< 25.9	< 25.9	< 25.9	< 25.9	< 25.9	< 25.9	< 25.9	< 25.9	< 25.9	< 25.9	< 25.9	< 25.9	< 25.9	< 25.9	< 25.9	< 25
Bromomethane	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25
Cadmium	0.19	0.32	0.093	0.095	0.26	0.038	0.044	0.087	0.14	0.16	0.22	0.15	0.19	0.19	0.18	0.17	0.18	0.084	0.11	0.
Carbon tetrachloride	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25
Chlorobenzene	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25
Chloroethane	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25
Chloroform	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25
Chloromethane	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25
Chromium	16.4	17.9	15.2	8.9	14.5	9.4	23.6	7.5	15.1	16.0	17.6	14.0	16.0	13.4	14.3	16.8	13.3	8.0	20.4	19
Chrysene	254	20.4	21.6	< 3.9	25.6	< 3.9	< 4.3	< 3.8	79.7	131	193	128	89.8	110	113	65.6	59.7	33.8	45.5	49
cis-1,2-Dichloroethene	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25
cis-1,3-Dichloropropene	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25
Dibenz(a,h)anthracene	58.3	< 5.8	< 5.3	< 5.2	< 5.2	< 5.3	< 5.6	< 5.2	20.9	41.7	73.4	40.6	27.9	30.5	27.5	19.5	19.2	7.8	10.2	10
Dibromochloromethane	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25
Dibromomethane	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25
Dichlorodifluoromethane	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25
Diisopropyl ether	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25
Ethylbenzene	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25
Fluoranthene	559	35.2	38.8	5.6	45.2	< 1.2	< 1.4	< 1.2	135	228	265	213	157	215	244	120	109	57.8	90.8	91
Fluorene	17.5	8.2	1.7	< 1	< 1	< 1	< 1.1	< 1	5.4	4.9	10.9	4.4	3.2	5.1	10.3	2.5	2.6	1.4	1.8	3
Hexachloro-1,3-butadiene	< 26.4	< 26.4	< 26.4	< 26.4	< 25.4	< 26.4	< 26.4	< 26.4	< 26.4	< 26.4	< 26.4	< 26.4	< 26.4	< 26.4	< 26.4	< 26.4	< 26.4	< 26.4	< 26.4	< 26
Indeno(1,2,3-cd)pyrene	151	12.5	12.2	< 4.7	8.8	< 4.8	< 5.3	< 4.7	54.0	92.2	155	93.8	62.1	76.4	63.8	39.1	41.1	18.6	26.5	28
Isopropylbenzene (Cumene)	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25
Lead	13.9	7.7	5.5	3.5	13.2	3.0	7.2	2.4	14.1	14.4	16.6	15.4	15.8	12.4	11.2	15.2	14.3	3.1	11.5	14
m&p-Xylene	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
o-Xylene	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25
Methylene Chloride	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25
Methyl-tert-butyl ether	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25
Naphthalene	30.3	8.9	8.8	< 1.4	< 25	< 1.4	< 1.5	< 25	< 25	< 25	36.5	< 25	5.3	< 25	9.5	4.8	< 25	1.6	< 25	4
Naphthalene (by method 8270)	< 25	< 25	< 25	< 25	1.8	< 25	< 25	< 1.4	7.3	7.3	< 25	5.0	< 25	5.6	< 25	< 25	12.3	< 25	2.7	< 25
n-Butylbenzene	< 40.4	< 40.4	< 40.4	< 40.4	< 40.4	< 40.4	< 40.4	< 40.4	< 40.4	< 40.4	< 40.4	< 40.4	< 40.4	< 40.4	< 40.4	< 40.4	< 40.4	< 40.4	< 40.4	< 40
n-Propylbenzene	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25
Percent Moisture	9.3	19.4	12.6	11.1	10.1	11.7	20.1	10.5	17.5	18.3	22.8	12.1	21.5	12.1	19.7	19.3	15.7	8.0	20.7	20
Phenanthrene	373	73.9	22.1	2.6	5.9	< 2.2	< 2.5	< 2.2	51.3	80.8	101	71.1	54.3	76.1	115	43.5	58.5	22.7	31.2	38
p-Isopropyltoluene	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25
Pyrene	432	28.7	28.6	4.3	34.3	< 1.1	< 1.3	< 1.1	106	172	206	163	118	166	179	91.8	88.2	43.8	68.5	66
sec-Butylbenzene	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25
Styrene	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25
tert-Butylbenzene	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25
Tetrachloroethene	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25
Toluene	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25
trans-1,2-Dichloroethene	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25
trans-1,3-Dichloropropene	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25
Trichloroethene	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25
Trichlorofluoromethane	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25
Vinyl chloride	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25

Notes:
bgs: Below ground surface
RCL: Residual contaminant level

PAH: Polynuclear aromatic hydrocarbons
Bold indicates value equals or exceeds the site specific standard

Table 1
Soil Sample Analytical Results
MIR Site - Beaver Dam, WI
4/19/2009

Parameter	GP1 2' bgs	GP1 4' bgs	GP2 3' bgs	GP2 7' bgs	GP3 2' bgs	GP3 6' bgs	GP4 4' bgs	GP4 7' bgs	GP5 1.5' bgs	GP5 1.5' bgs	GP7 1.5' bgs	GP8 1.5' bgs	GP9 1.5' bgs	GP10 1.5' bgs	GP11 1.5' bgs	GP12 1.5' bgs	GP13 1.5' bgs	GP14 1.5' bgs	GP15 1.5' bgs	GP16 1.5' bgs	GP17 1.5' bgs	GP18 1.5' bgs	GP19 1.5' bgs	GP20 1.5' bgs	GP21 1.5' bgs	GP22 1.5' bgs	GP23 1.5' bgs	Units	NR 720 RCL	Suggested PAH RCLs for GW Pathway	Suggested PAH RCLs for Direct Contact	Site Specific Soil Standards
1,1,1,2-Tetrachloroethane	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 50	< 25	< 25	< 25	< 25	< 25	ug/kg				
1,1,1-Trichloroethane	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 50	< 25	< 25	< 25	< 25	< 25	ug/kg				
1,1,2,2-Tetrachloroethane	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 50	< 25	< 25	< 25	< 25	< 25	ug/kg				
1,1,2-Trichloroethane	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 50	< 25	< 25	< 25	< 25	< 25	ug/kg				
1,1-Dichloroethane	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 50	< 25	< 25	< 25	< 25	< 25	ug/kg				
1,1-Dichloroethene	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 50	< 25	< 25	< 25	< 25	< 25	ug/kg				
1,1-Dichloropropene	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 50	< 25	< 25	< 25	< 25	< 25	ug/kg				
1,2,3-Trichlorobenzene	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 50	< 25	< 25	< 25	< 25	< 25	ug/kg				
1,2,3-Trichloropropane	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 50	< 25	< 25	< 25	< 25	< 25	ug/kg				
1,2,4-Trichlorobenzene	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 50	< 25	< 25	< 25	< 25	< 25	ug/kg				
1,2,4-Trimethylbenzene	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 50	< 25	< 25	< 25	< 25	< 25	ug/kg				
1,2-Dibromo-3-chloropropane	< 82.3	< 82.3	< 82.3	< 82.3	< 82.3	< 82.3	< 82.3	< 82.3	< 82.3	< 82.3	< 82.3	< 82.3	< 82.3	< 82.3	< 82.3	< 82.3	< 82.3	< 82.3	< 82.3	< 82.3	< 82.3	< 165	< 82.3	< 82.3	< 82.3	< 82.3	< 82.3	ug/kg				
1,2-Dibromoethane (EDB)	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 50	< 25	< 25	< 25	< 25	< 25	ug/kg				
1,2-Dichlorobenzene	< 44.4	< 44.4	< 44.4	< 44.4	< 44.4	< 44.4	< 44.4	< 44.4	< 44.4	< 44.4	< 44.4	< 44.4	< 44.4	< 44.4	< 44.4	< 44.4	< 44.4	< 44.4	< 44.4	< 44.4	< 44.4	< 88.8	< 44.4	< 44.4	< 44.4	< 44.4	< 44.4	ug/kg				
1,2-Dichloroethane	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 50	< 25	< 25	< 25	< 25	< 25	ug/kg	4.9			
1,2-Dichloropropane	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 50	< 25	< 25	< 25	< 25	< 25	ug/kg				
1,3,5-Trimethylbenzene	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 50	< 25	< 25	< 25	< 25	< 25	ug/kg				
1,3-Dichlorobenzene	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 50	< 25	< 25	< 25	< 25	< 25	ug/kg				
1,3-Dichloropropane	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 50	< 25	< 25	< 25	< 25	< 25	ug/kg				
1,4-Dichlorobenzene	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 50	< 25	< 25	< 25	< 25	< 25	ug/kg				
1-Methylnaphthalene	18.0	20.0	5.8	< 2.1	< 2.1	< 2.1	< 2.3	< 2.1	4.7	3.0	7.3	< 2.1	3.5	2.9	4.7	2.3	13.5	< 2	< 2.3	12.2	6.1	< 2.3	< 2.6	3.8	6.6	4.0	13.5	ug/kg		23,000	1,100,000	
2,2-Dichloropropane	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 50	< 25	< 25	< 25	< 25	< 25	ug/kg				
2-Chlorotoluene	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 50	< 25	< 25	< 25	< 25	< 25	ug/kg				
2-Methylnaphthalene	23.6	31.5	8.3	< 2.1	< 2.1	< 2.1	< 2.3	< 2.1	7.2	4.5	15.9	3.3	5.4	4.3	7.5	3.8	15.5	< 2	< 2.3	13.6	10.5	3.3	2.9	4.7	8.6	6.6	17.9	ug/kg		20,000	600,000	
4-Chlorotoluene	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 50	< 25	< 25	< 25	< 25	< 25	ug/kg				
Acenaphthene	11.6	10.5	< 1.1	< 1	< 1	< 1	< 1.2	< 1	4.3	2.6	9.9	2.5	1.8	4.5	8.6	1.8	1.7	1.0	< 1.2	2.1	8.7	2.1	1.5	3.1	8.6	5.5	7.5	ug/kg		38,000	900,000	4,690,000
Acenaphthylene	61.7	5.8	3.7	< 1.9	5.3	< 1.9	< 2.1	< 1.9	26.4	34.4	78.0	14.2	16.5	22.5	17.6	12.1	16.7	4.4	5.5	5.8	6.7	8.8	8.9	13.8	14.6	12.2	24.5	ug/kg		700	18,000	
Anthracene	109	22.0	10	< 5.1	6.5	< 5.2	< 5.7	< 5.1	27.9	39.8	85.1	25.8	22.1	37.4	37.7	17.7	25.0	7.3	10.0	12.3	17.3	16.4	14.5	23.0	63.1	34.2	47.2	ug/kg		3,000,000	5,000,000	23,500,000
Arsenic	4.4	3.1	3.8	3.1	3.6	2.7	5.6	3.0	2.4	2.3	2.3	2.0	2.2	2.2	2.3	2.2	3.8	2.3	1.9	1.9	2.5	2.4	1.8	3.5	2.9	3.2	2.2	mg/kg	0.039			0.426
Benzene	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 50	< 25	< 25	< 25	< 25	< 25	ug/kg	5.5			
Benzo(a)anthracene	236	17.7	20.4	< 9.4	26.8	< 9.5	< 10.4	< 9.3	59.9	91.0	145	80.0	61.7	96.1	93.1	50.1	45.4	25.1	33.3	33.5	38.6	46.2	38.7	57.2	108	80.7	142	ug/kg		17,000	88	
Benzo(a)pyrene	248	18.3	19.2	< 4.1	20.3	< 4.1	< 4.5	< 4	74.5	122	212	109	80.2	114	100	57.0	53.2	27.5	38.4	38.6	43.9	52.1	46.2	58.7	105	83.5	182	ug/kg		48,000	8.8	87.5
Benzo(b)fluoranthene	250	17.2	17.7	< 6.4	16.7	< 6.4	< 7.1	< 6.3	76.2	129	202	131	91.8	108	104	62.5	51.0	29.8	41.4	47.9	45.6	55.6	55.4	58.3	110	91.7	214	ug/kg		360,000	88	
Benzo(g,h,i)perylene	187	14.0	14.4	< 4.7	8.2	< 4.8	< 5.3	< 4.7	58.6	101	181	97.1	58.5	71.1	61.5	39.7	40.5	17.7	25.3	26.8	28.2	33.7	34.6	38.7	57.4	55.5	146	ug/kg		6,800,000	1,800	
Benzo(k)fluoranthene	183	19.0	19.5	< 7	21.5	< 7	< 7.8	< 6.9	80.0	98.1	164	124	84.1	113	102	57.9	55.4	28.9	41.4	40.8	48.3	56.4	52.3	64.1	107	88.5	232	ug/kg		870,000	880	
Bromobenzene	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 50	< 25	< 25	< 25	< 25	< 25	ug/kg				
Bromochloromethane	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 50	< 25	< 25	< 25	< 25	< 25	ug/kg				
Bromodichloromethane	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 50	< 25	< 25	< 25	< 25	< 25	ug/kg				
Bromoform	< 25.9	< 25.9	< 25.9	< 25.9	< 25.9	< 25.9	< 25.9	< 25.9	< 25.9	< 25.9	< 25.9	< 25.9	< 25.9	< 25.9	< 25.9	< 25.9	< 25.9	< 25.9	< 25.9	< 25.9	< 25.9	< 51.8	< 25.9	< 25.9	< 25.9	< 25.9	< 25.9	ug/kg				
Bromomethane	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 50	< 25	< 25	< 25	< 25	< 25	ug/kg				
Cadmium	0.19	0.32	0.093	0.095	0.26	0.038	0.044	0.087	0.14	0.16	0.22	0.15	0.19	0.19	0.18	0.17	0.18	0.084	0.11	0.12	0.21	0.17	0.078	0.21	0.20	0.31	0.18	mg/kg	8			
Carbon tetrachloride	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 50	< 25	< 25	< 25	< 25	< 25	ug/kg				
Chlorobenzene	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 50	< 25	< 25	< 25	< 25	< 25	ug/kg				
Chloroethane	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 50	< 25	< 25	< 25	< 25	< 25	ug/kg				
Chloroform	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 50	< 25	< 25	< 25	< 25	< 25	ug/kg				
Chloromethane	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 50	< 25	< 25	< 25	< 25	< 25	ug/kg				
Chromium	16.4	17.9	15.2	8.9	14.5	9.4	23.6	7.5	15.1	16.0	17.6	14.0	16.0	13.4	11.3	16.8	13.3	8.0	20.4	19.6	18.1	15.7	22.3	14.3	16.7	16.3	13.6	mg/kg	14 hex/13,900			
Chrysene	254	20.4	21.6	< 3.9	25.6	< 3.9	< 4.3	< 3.8	79.7	131	193	128	89.8	110	113	65.6	59.7	33.8	45.5	49.6	50.6	61.5	58.2	67.3	128	102	206	ug/kg		37,000	8,800	
cis-1,2-Dichloroethene	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 50	< 25	< 25	< 25	< 25	< 25	ug/kg				
cis-1,3-Dichloropropene	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 50	< 25	< 25	< 25	< 25	< 25	ug/kg				
Dibenz(a,h)anthracene	58.3	< 5.8	< 5.3	< 5.2	< 5.2	< 5.3	< 5.6	< 5.2	20.9	41.7	73.4	40.6	27.9	30.5	27.5	19.5	19.2	7.8	10.2	10.7	10.8	13.0	12.8	17.2	24.8	25.7	63.1	ug/kg		38,000	8.8	
Dibromochloromethane	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 50	< 25	< 25	< 25	< 25	< 25	ug/kg				
Dibromomethane	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 50	< 25	< 25	< 25	< 25	< 25	ug/kg				
Dichlorodifluoromethane	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 50	< 25	< 25	< 25	< 25	< 25	ug/kg				
Diisopropyl ether	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 50	< 25	< 25	< 25	< 25	< 25	ug/kg				
Ethylbenzene	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 50	< 25	< 25	< 25	< 25	< 25	ug/kg	2,900			
Fluoranthene	559	35.2	36.8	5.6	45.2	< 1.2	< 1.4	< 1.2	135	228	265	213	157	215	244	120	109	57.8	90.8	91.2	106	123	106	133	284	206	357	ug/kg		500,000	600,000	3,130,000
Fluorene	17.5	8.2	1.7	< 1	< 1	< 1	< 1.1	< 1	5.4	4.9	10.9	4.4	3.2	5.1	10.3	2.5	2.6	1.4	1.8	3.3	7.0	3.2	2.3	4.2	18.3	6.4	7.6	ug/kg		100,000	600,000	3,130,000
Hexachloro-1,3-butadiene	< 26.4	< 26.4	< 26.4	< 26.4	< 26.4	< 26.4	< 26.4	< 26.4	< 26.4	< 26.4	< 26.4	< 26.4	< 26.4	< 26.4	< 26.4	< 26.4	< 26.4	< 26.4	< 26.4	< 26.4	< 26.4	< 52.8	< 26.4	< 26.4	< 26.4	< 26.4	< 26.4	ug/kg				
Indeno(1,2,3-cd)pyrene	151	12.5	12.2	< 4.7	8.8	< 4.8	< 5.3	< 4.7	54.0	92.2	155	93.8	62.1	78.4	63.8	39.1	41.1	18.6	26.5	28.2	27.8	35.9	33.8	40.1	60.4	57.3	144	ug/kg		680,000	88	
Isopropylbenzene (Cumene)	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 50	< 25	< 25	< 25	< 25	< 25	ug/kg				
Lead	13.9	7.7	5.5	3.5	13.2	3.0	7.2	2.4	14.1	14.4	16.6	15.4	15.8	12.4	11.2	15.2	14.3	3.1	11.5	14.8	17.0	14.0	11.0	15.6	13.8	16.4	16.2	mg/kg	50			
m&p-Xylene	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 100	< 50	< 50	< 50	< 50	< 50	ug/kg	4,100			
o-Xylene	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 50	< 25	< 25	< 25	< 25	< 25	ug/kg				
Methylene Chloride	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	67.3	< 25	< 25	< 25	< 25	< 25	< 25	ug/kg				
Methyl-tert-butyl ether	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 50	< 25	< 25	< 25	< 25	< 25	ug/kg				
Naphthalene	30.3	8.9	8.6	< 1.4	< 25	< 1.4	< 1.5	< 25	< 25	< 25	36.5	< 25	5.3	< 25	9.5	4.8	< 25	1.6	< 25	4.3	33.8	< 50	< 25	9.5	9.8	7.9	< 25	ug/kg		400	20,000	330,000
Naphthalene (by method 8270)	< 25	< 25	< 25	< 25	1.8	< 25	< 25	< 1.4	7.3	7.3	< 25	5.0	< 25	5.6	< 25	< 25	12.3	< 25	2.7	< 25	< 25	3.8	4.6	< 25	< 25	< 25	17.1	ug/kg		400	20,000	
n-Butylbenzene	< 40.4	< 40.4	< 40.4	< 40.4	< 40.4	< 40.4	< 40.4	< 40.4	< 40.4	< 40.4	< 40.4	< 40.4	< 40.4	< 40.4	< 40.4	< 40.4	< 40.4	< 40.4	< 40.4	< 40.4	< 40.4	< 80.8	< 40.4	< 40.4	< 40.4	< 40.4	< 40.4	ug/kg				
n-Propylbenzene	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 50	< 25	< 25	< 25	< 25	< 25	ug/kg				
Percent Moisture	9.3	19.4	12.6	11.1	10.1	11.7	20.1	10.5	17.5	18.3	22.8	12.1	21.5	12.1	19.7	19.3	15.7	8.0	20.7	20.3	22.7	19.8	28.1	16.9	34.1	19.7	17.1	%				
Phenanthrene	373	73.9	22.1	2.6	5.9	< 2.2	< 2.5	< 2.2	51.3	80.8	101	71.1	54.3	76.1	115	43.5	68.5	22.7	31.2	38.1	51.9	48.5	42.4	73.0	170	101	137	ug/kg		1,800	18,000	
p-Isopropyltoluene	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 50	< 25	< 25	< 25	< 25	< 25	ug/kg				
Pyrene	432	28.7	28.6	4.3	34.3	< 1.1	< 1.3	< 1.1	106	172	206	163	118	166	179	91.8	88.2	43.8	68.5	68.1	78.5	91.3	78.3	101	197	150	275	ug/kg		8,700,000	500,000	2,350,000
sec-Butylbenzene	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 50	< 25	< 25	< 25	< 25	< 25	ug/kg				
Styrene	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 50	< 25	< 25	< 25	< 25	< 25	ug/kg				
tert-Butylbenzene	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 50	< 25	< 25	< 25	< 25	< 25	ug/kg				
Tetrachloroethene	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 50	< 25	< 25	< 25	< 25	< 25	ug/kg				
Toluene	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	124	1,090	< 25	< 25	< 25	< 25	< 25	ug/kg	1,500			
trans-1,2-Dichloroethene	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 50	< 25	< 25	< 25	< 25	< 25	ug/kg				
trans-1,3-Dichloropropene	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 50	< 25	< 25	< 25	< 25	< 25	ug/kg				
Trichloroethene	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 50	< 25	< 25	< 25	< 25	< 25	ug/kg				
Trichlorofluoromethane	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	42.2	153	< 25	< 25	< 25	< 25	< 25	ug/kg				
Vinyl chloride	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 50	< 25	< 25	< 25	< 25	< 25	ug/kg				

Notes:
bgs: Below ground surface
RCL: Residual contaminant level

PAH: Polynuclear aromatic hydrocarbons
Bold indicates value equals or exceeds the site specific standard

Figures

Figure 1
Site Location Map

Figure 2
Geoprobe Locations (4/19/09)

Figure 3
Site FEMA Flood Plain Map

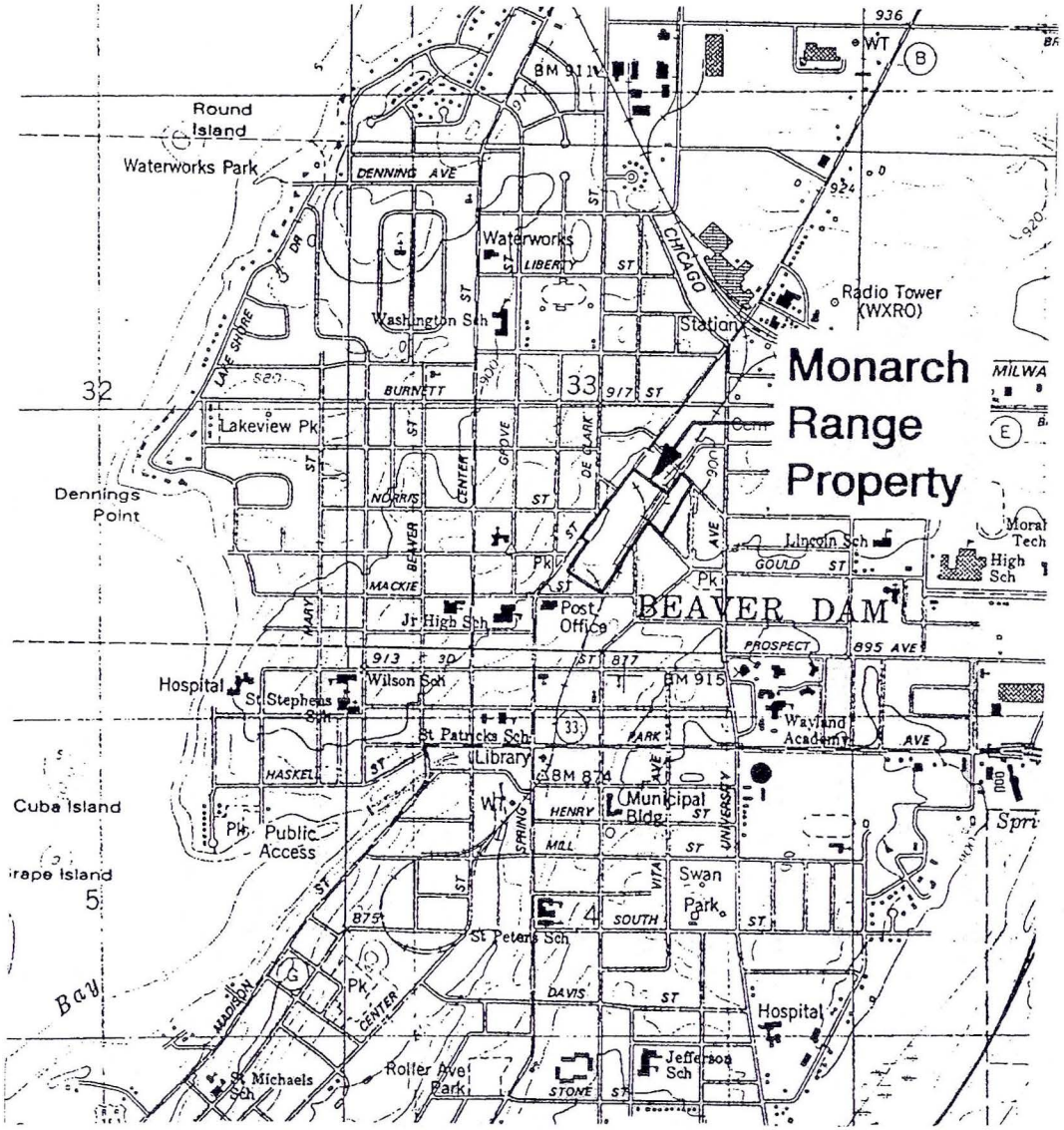


Figure 1
Site Location Map
MIR Site
Beaver Dam, Wisconsin

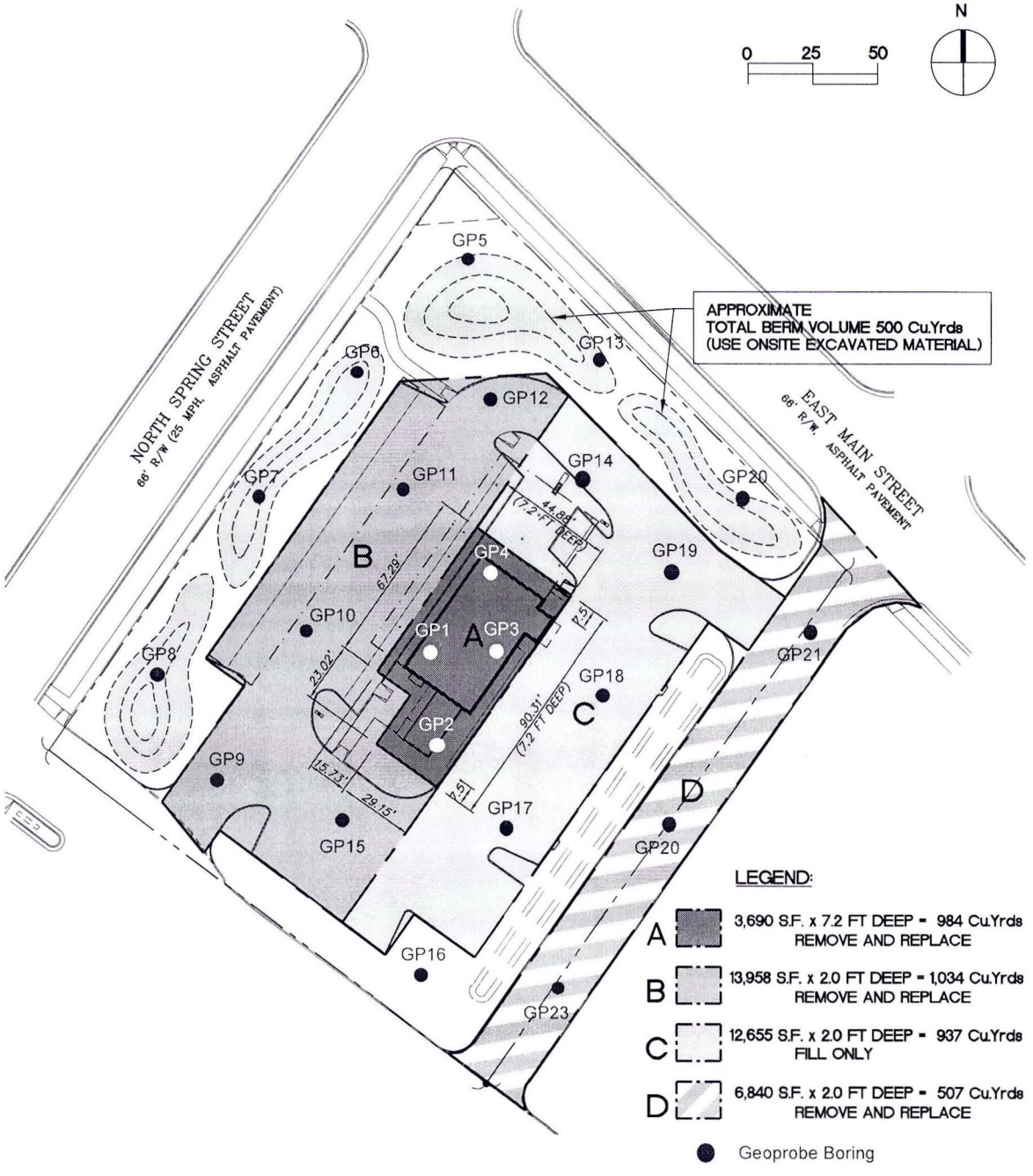
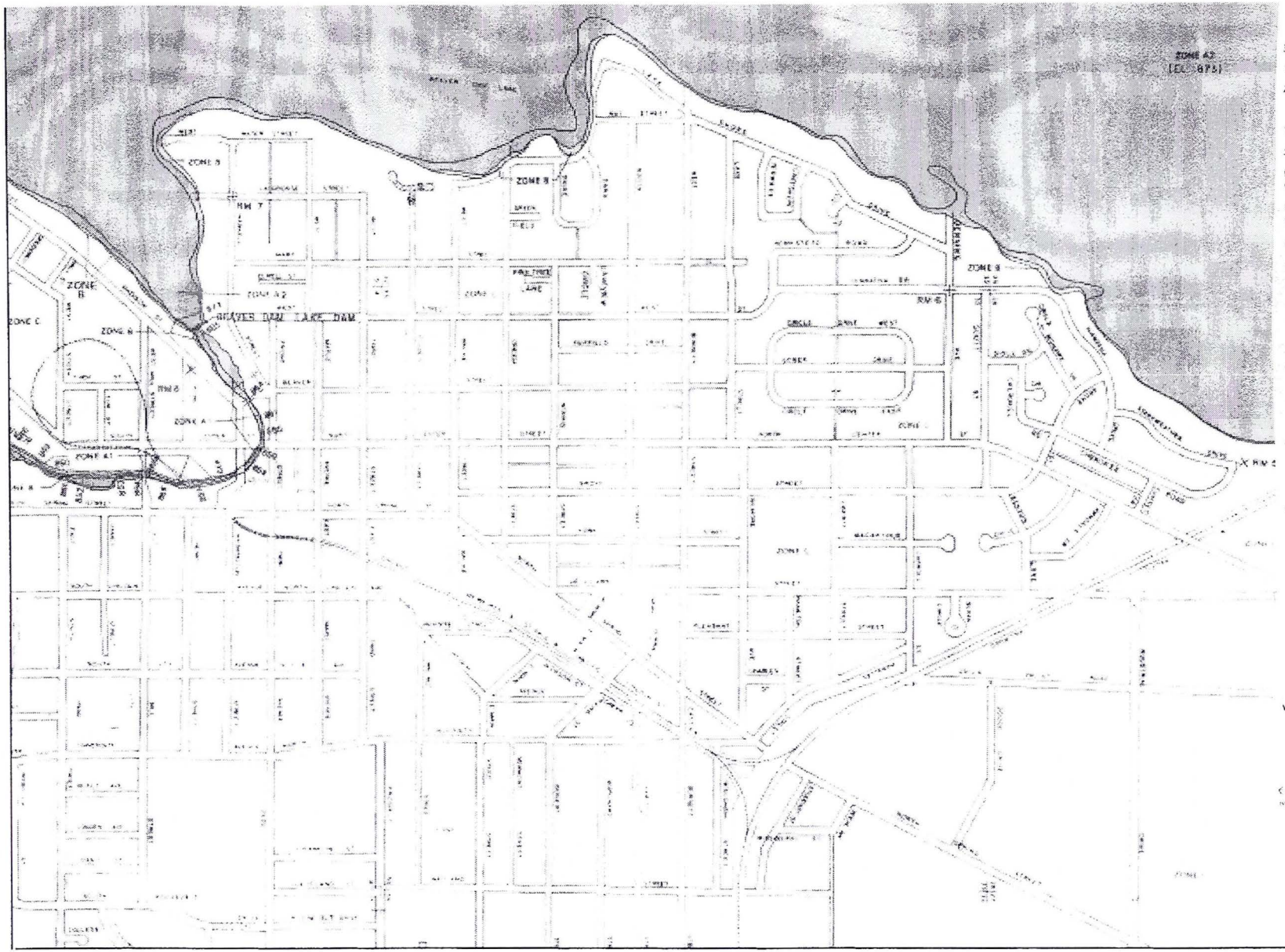


Figure 2
Geoprobe Boring Locations (4/19/09)
MIR Site
Beaver Dam, WI



KEY TO MAP

500-Year Flood Boundary	ZONE B
100-Year Flood Boundary	ZONE A1 / ZONE A2
Zone Designations*	
100-Year Flood Boundary	ZONE B
500-Year Flood Boundary	
Base Flood Elevation Line With Elevation in Feet**	513
Base Flood Elevation in Feet Where Uniform Within Zone**	(EL 863)
Elevation Reference Mark	RM7×
Zone D Boundary	
River Mile	•M1.5

**Referenced to the National Geodetic Vertical Datum of 1929

*EXPLANATION OF ZONE DESIGNATIONS

ZONE	EXPLANATION
A	Areas of 100-year flood; base flood elevations and flood hazard factors not determined.
AO	Areas of 100-year shallow flooding where depths are between one (1) and three (3) feet; average depths of inundation are shown, but no flood hazard factors are determined.
AH	Areas of 100-year shallow flooding where depths are between one (1) and three (3) feet; base flood elevations are shown but no flood hazard factors are determined.
A1-A30	Areas of 100-year flood; base flood elevations and flood hazard factors determined.
A99	Areas of 100-year flood to be protected by flood protection system under construction; base flood elevations and flood hazard factors not determined.
B	Areas between limits of the 100-year flood and 500-year flood; or certain areas subject to 100-year flooding with average depths less than one (1) foot or where the contributing drainage area is less than one square mile; or areas protected by levees from the base flood. (Medium shading)
C	Areas of minimal flooding. (No shading)
D	Areas of undetermined, but possible, flood hazards.
V	Areas of 100-year coastal flood with velocity (wave action); base flood elevations and flood hazard factors not determined.
V1-V30	Areas of 100-year coastal flood with velocity (wave action); base flood elevations and flood hazard factors determined.

NOTES TO USER

Certain areas not in the special flood hazard areas (zones A and V) may be protected by flood control structures.

Figure 3
FEMA Flood Plan Map
MIR Site
Beaver Dam, Wisconsin

Appendices

Appendix A
SSRCLs from EPA Web Caluculator

SSRCLS from EPA Web Calculator

Waste and Cleanup Risk Assessment

http://rais.ornl.gov/cgi-bin/epa/ssl2.cgi
Last updated on Thursday, May 8th, 2008.

Site specific soil standards are circled

SSG Home SSG Search

Soil Screening Guidance for Chemicals

Equation Values for Ingestion

Noncarcinogenic Parameter	Value	Carcinogenic Age-adjusted Parameter	Value	Carcinogenic Nonadjusted Parameter	Value
Target Hazard Quotient (unitless)	1	Target Risk (unitless)	1.0E-6	Target Risk (unitless)	1.0E-6
Body Weight (kg)	15	Adult Body Weight (kg)	70	Body Weight (kg)	70
		Child Body Weight (kg)	15		
Exposure Duration (yr)	6	Adult Exposure Duration (yr)	24	Exposure Duration (yr)	25
		Child Exposure Duration (yr)	6		
Exposure Frequency (day/yr)	350	Exposure Frequency (day/yr)	350	Exposure Frequency (day/yr)	250
Intake Rate (mg/day)	200	Adult Intake Rate (mg/day)	100	Intake Rate (mg/day)	50
		Child Intake Rate (mg/day)	200		
		Average Lifetime (yr)	70	Average Lifetime (yr)	70
		Age-adjusted Ingestion Factor (mg-yr/kg-day)	114.29		

Soil Screening Levels for Ingestion (mg/kg)

Analyte	Cas Number	Oral RfD	Oral Slope Factor	Noncarcinogenic	Carcinogenic (Age-adjusted)	Carcinogenic (Nonadjusted)
Acenaphthene	83329	6.00E-02 [a]		4.69E+03		
Anthracene	120127	3.00E-01 [a]		2.35E+04		
Arsenic, Inorganic	7440382	3.00E-04 [a]	1.50E+00 [a]	2.35E+01	4.26E-01	3.82E+00
Benzo(a)pyrene	50328		7.30E+00 [a]		8.75E-02	7.84E-01
Fluoranthene	206440	4.00E-02 [a]		3.13E+03		
Fluorene	86737	4.00E-02 [a]		3.13E+03		
Naphthalene	91203	2.00E-02 [a]		1.56E+03		
Pyrene	129000	3.00E-02 [a]		2.35E+03		

Equation Values for Inhalation of Fugitive Dust

Particulate Emission Factor Parameter	Value	Noncarcinogenic Parameter	Value	Carcinogenic Parameter	Value
Surface Area (acres)	0.5	Target Hazard Quotient (unitless)	1	Target Risk (unitless)	1.0E-6
City (climate zone)	Minneapolis(V)	Exposure Duration (yr)	30	Exposure Duration (yr)	30
Q/C (g/m^2-s per kg/m^3)	93.77	Exposure Frequency (day/yr)	350	Exposure Frequency (day/yr)	350
Fraction of vegetative cover (unitless)	0.5			Average Lifetime (yr)	70
Mean annual windspeed (m/s)	5				
Equivalent threshold value of windspeed at 7m (m/s)	11				
Function dependent on U_m/U_t (unitless)	0.2707				

Site specific soil standards are circled

Soil Screening Levels for Inhalation of Fugitive Dust (mg/kg)

Analyte	Cas Number	Inhalation RfC	Inhalation Unit Risk	Particulate Emission Factor	Noncarcinogenic	Carcinogenic
Acenaphthene	83329			7.38E+08		
Anthracene	120127			7.38E+08		
Arsenic, Inorganic	7440382		4.3E-03 [a]	7.38E+08		4.17E+02
Benzo(a)pyrene	50328			7.38E+08		
Fluoranthene	206440			7.38E+08		
Fluorene	86737			7.38E+08		
Naphthalene	91203	3.00E-03 [a]		7.38E+08	2.31E+06	
Pyrene	129000			7.38E+08		

Equation Values for Inhalation of Volatiles

Volatilization Factor Parameter	Value	Soil Saturation Concentration Parameter	Value	Noncarcinogenic Parameter	Value	Carcinogenic Parameter	Value
Surface Area (acres)	0.5			Target Hazard Quotient (unitless)	1	Target Risk (unitless)	1.0E-6
City (climate zone)	Minneapolis(V)			Exposure Duration (yr)	30	Exposure Duration (yr)	30
Q/C (g/m^2-s per kg/m^3)	93.77358			Exposure Frequency (day/yr)	350	Exposure Frequency (day/yr)	350
Fraction organic carbon (unitless)	0.006	Fraction organic carbon (unitless)	0.006			Average Lifetime (yr)	70
Dry soil bulk density (g/cm^3)	1.5	Dry soil bulk density (g/cm^3)	1.5				
Soil particle density (g/cm^3)	2.65	Soil particle density (g/cm^3)	2.65				
Water-filled soil porosity (L_{water}/L_{soil})	0.2	Water-filled soil porosity (L_{water}/L_{soil})	0.2				
Exposure interval (s)	9.5e08						

Soil Screening Levels for Inhalation of Volatiles (mg/kg)

Analyte	Cas Number	Inhalation RfC	Inhalation Unit Risk	Volatilization Factor	Soil Saturation Concentration	Noncarcinogenic	Carcinogenic
Acenaphthene	83329			4.0E+05			
Anthracene	120127			1.4E+06			
Arsenic, Inorganic	7440382		4.3E-03 [a]				
Benzo(a)pyrene	50328			3.0E+07			
Fluoranthene	206440			5.3E+06			
Fluorene	86737			9.3E+05			
Naphthalene	91203	3.0E-03 [a]		1.0E+05		3.3E+02	
Pyrene	129000			6.3E+06			

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This site is maintained and operated through an interagency Agreement between the EPA/OSRTI and Oak Ridge National Laboratory. For questions or comments please contact Dave Crawford in EPA/OSRTI.

Input Data for Baseline Conditions

Imput Data for ProUCL - Baseline Site Conditions
MIR Site
Beaver Dam, Wisconsin

Sample Location	Sample Depth	Naphthalene (by method 8270)	d_Naphthalene (by method 8270)	2-Methylnaphthalene	d_2-Methylnaphthalene	Acenaphthylene	d_Acenaphthylene	Acenaphthene	d_Acenaphthene	Fluorene	d_Fluorene	Phenanthrene	d_Phenanthrene	Anthracene	d_Anthracene	Fluoranthene	d_Fluoranthene	Pyrene	d_Pyrene	Benzo(a)anthracene	d_Benzo(a)anthracene
GP1	2' bgs	25	0	23.8	1	61.7	1	11.6	1	17.5	1	373	1	109	1	559	1	432	1	**236**	1
GP1	4' bgs	25	0	31.5	1	5.8	1	10.5	1	8.2	1	73.9	1	22	1	35.2	1	28.7	1	17.7	1
GP2	3' bgs	25	0	8.3	1	3.7	1	1.1	0	1.7	1	22.1	1	10	1	36.8	1	28.6	1	20.4	1
GP2	7' bgs	25	0	2.1	0	1.9	0	1	0	1	0	2.6	1	5.1	0	5.6	1	4.3	1	9.4	0
GP3	2' bgs	1.8	1	2.1	0	5.3	1	1	0	1	0	5.9	1	6.5	1	45.2	1	34.3	1	26.8	1
GP3	6' bgs	25	0	2.1	0	1.9	0	1	0	1	0	2.2	0	5.2	0	1.2	0	1.1	0	9.5	0
GP4	4' bgs	25	0	2.3	0	2.1	0	1.2	0	1.1	0	2.5	0	5.7	0	1.4	0	1.3	0	10.4	0
GP4	7' bgs	1.4	0	2.1	0	1.9	0	1	0	1	0	2.2	0	5.1	0	1.2	0	1.1	0	9.3	0
GP5	1.5' bgs	7.3	1	7.2	1	26.4	1	4.3	1	5.4	1	51.3	1	27.9	1	135	1	106	1	59.9	1
GP6	1.5' bgs	7.3	1	4.5	1	34.4	1	2.6	1	4.9	1	80.8	1	39.8	1	228	1	172	1	**91**	1
GP7	1.5' bgs	25	0	15.9	1	78	1	9.9	1	10.9	1	101	1	85.1	1	265	1	206	1	**145**	1
GP8	1.5' bgs	5	1	3.3	1	14.2	1	2.5	1	4.4	1	71.1	1	25.8	1	213	1	163	1	80	1
GP9	1.5' bgs	25	0	5.4	1	16.5	1	1.8	1	3.2	1	54.3	1	22.1	1	157	1	118	1	61.7	1
GP10	1.5' bgs	5.6	1	4.3	1	23.5	1	4.5	1	5.1	1	76.1	1	37.4	1	215	1	166	1	**96.1**	1
GP11	1.5' bgs	25	0	7.5	1	17.6	1	8.6	1	10.3	1	115	1	37.7	1	244	1	179	1	**93.1**	1
GP12	1.5' bgs	25	0	3.8	1	12.1	1	1.8	1	2.5	1	43.5	1	17.7	1	120	1	91.8	1	50.1	1
GP13	1.5' bgs	12.3	1	15.5	1	16.7	1	1.7	1	2.6	1	68.5	1	25	1	109	1	88.2	1	45.4	1
GP14	1.5' bgs	25	0	2	0	4.4	1	1	1	1.4	1	22.7	1	7.3	1	57.8	1	43.8	1	25.1	1
GP15	1.5' bgs	2.7	1	2.3	0	5.5	1	1.2	0	1.8	1	31.2	1	10	1	90.8	1	68.5	1	33.3	1
GP16	1.5' bgs	25	0	13.6	1	5.8	1	2.1	1	3.3	1	38.1	1	12.3	1	91.2	1	68.1	1	33.5	1
GP17	1.5' bgs	25	0	10.5	1	6.7	1	8.7	1	7	1	51.9	1	17.3	1	106	1	78.5	1	38.6	1
GP18	1.5' bgs	3.8	1	3.3	1	8.8	1	2.1	1	3.2	1	48.5	1	16.4	1	123	1	91.3	1	46.2	1
GP19	1.5' bgs	4.6	1	2.9	1	8.9	1	1.5	1	2.3	1	42.4	1	14.5	1	106	1	78.3	1	38.7	1
GP20	1.5' bgs	25	0	4.7	1	13.8	1	3.1	1	4.2	1	73	1	23	1	133	1	101	1	57.2	1
GP21	1.5' bgs	25	0	8.6	1	14.6	1	8.6	1	18.3	1	170	1	63.1	1	284	1	197	1	**108**	1
GP22	1.5' bgs	25	0	6.6	1	12.2	1	5.5	1	6.4	1	101	1	34.2	1	206	1	150	1	80.7	1
GP23	1.5' bgs	17.1	1	17.9	1	24.5	1	7.5	1	7.6	1	137	1	47.2	1	357	1	275	1	**142**	1

Chrysene	d_Chrysene	Benzo(a)pyrene	d_Benzo(a)pyrene	Benzo(b)fluoranthene	d_Benzo(b)fluoranthene	Indeno(1,2,3-cd)pyrene	d_Indeno(1,2,3-cd)pyrene	Dibenz(a,h)anthracene	d_Dibenz(a,h)anthracene	Benzo(g,h,i)perylene	d_Benzo(g,h,i)perylene	Benzo(k)fluoranthene	d_Benzo(k)fluoranthene	1-Methylnaphthalene	d_1-Methylnaphthalene	Arsenic	d_Arsenic	Lead	d_lead
254	1	**248**	1	**250**	1	**151**	1	**58.3**	1	167	1	183	1	18	1	**4.4**	1	13.9	1
20.4	1	**18.3**	1	17.2	1	12.5	1	5.8	0	14	1	19	1	20	1	**3.1**	1	7.7	1
21.6	1	**19.2**	1	17.7	1	12.2	1	5.3	0	14.4	1	19.5	1	5.8	1	**3.8**	1	5.5	1
3.9	0	4.1	0	6.4	0	4.7	0	5.2	0	4.7	0	7	0	2.1	0	**3.1**	1	3.5	1
25.6	1	**20.3**	1	16.7	1	8.8	1	5.2	0	8.2	1	21.5	1	2.1	0	**3.6**	1	13.2	1
3.9	0	4.1	0	6.4	0	4.8	0	5.3	0	4.8	0	7	0	2.1	0	**2.7**	1	3	1
4.3	0	4.5	0	7.1	0	5.3	0	5.8	0	5.3	0	7.8	0	2.3	0	**5.6**	1	7.2	1
3.8	0	4	0	6.3	0	4.7	0	5.2	0	4.7	0	6.9	0	2.1	0	3	1	2.4	1
79.7	1	**74.5**	1	76.2	1	54	1	**20.9**	1	58.6	1	80	1	4.7	1	**2.4**	1	14.1	1
131	1	**122**	1	**129**	1	**92.2**	1	**41.7**	1	101	1	98.1	1	3	1	**2.3**	1	14.4	1
193	1	**212**	1	**202**	1	**155**	1	**73.4**	1	181	1	164	1	7.3	1	**2.3**	1	16.6	1
128	1	**109**	1	**131**	1	**93.8**	1	**40.6**	1	97.1	1	124	1	2.1	0	2	1	15.4	1
89.8	1	**80.2**	1	**91.8**	1	62.1	1	**27.9**	1	58.5	1	84.1	1	3.5	1	**2.2**	1	15.8	1
110	1	**114**	1	**108**	1	76.4	1	**30.5**	1	71.1	1	113	1	2.9	1	**2.2**	1	12.4	1
113	1	**100**	1	**104**	1	63.8	1	**27.5**	1	61.5	1	102	1	4.7	1	**2.3**	1	11.2	1
65.6	1	**57**	1	62.5	1	39.1	1	**19.5**	1	39.7	1	57.9	1	2.3	1	**2.2**	1	15.2	1
59.7	1	**53.2**	1	51	1	41.1	1	**19.2**	1	40.5	1	55.4	1	13.5	1	**3.8**	1	14.3	1
33.8	1	**27.5**	1	29.8	1	18.6	1	7.8	1	17.7	1	28.9	1	2	0	**2.3**	1	3.1	1
45.5	1	**38.4**	1	41.4	1	26.5	1	**10.2**	1	25.3	1	41.4	1	2.3	0	**1.9**	1	11.5	1
49.6	1	**38.6**	1	47.9	1	28.2	1	**10.7**	1	26.8	1	40.8	1	12.2	1	**1.9**	1	14.8	1
50.6	1	**43**	1	45.6	1	27.8	1	**10.8**	1	28.2	1	48.3	1	6.1	1	**2.5**	1	17	1
61.5	1	**52.1**	1	55.6	1	35.9	1	**13**	1	33.7	1	56.4	1	2.3	0	**2.4**	1	14	1
58.2	1	**46.2**	1	55.4	1	33.8	1	**12.8**	1	34.6	1	52.3	1	2.6	0	**1.8**	1	11	1
67.3	1	**58.7**	1	58.3	1	40.1	1	**17.2**	1	38.7	1	64.1	1	3.8	1	**3.5**	1	15.6	1
128	1	**105**	1	**110**	1	60.4	1	**24.8**	1	57.4	1	107	1	6.6	1	**2.9**	1	13.8	1
102	1	**83.5**	1	**91.7**	1	57.3	1	**25.7**	1	55.5	1	88.5	1	4	1	**3.2**	1	16.4	1
206	1	**182**	1	**214**	1	**144**	1	**63.1**	1	146	1	232	1	13.5	1	**2.2**	1	16.2	1

ProUCL Output for Baseline Conditions

Baseline Site Conditions
ProUCL 95% UCL Output

General UCL Statistics for Data Sets with Non-Detects

User Selected Options	
From File	Z:\Users\RPS\MIR data\Copy of MIR_Soil Results Table_04192009.wst
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Naphthalene (by method 8270)

General Statistics

Number of Valid Data	27	Number of Detected Data	10
Number of Distinct Detected Data	9	Number of Non-Detect Data	17
		Percent Non-Detects	62.96%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	1.8	Minimum Detected	0.588
Maximum Detected	17.1	Maximum Detected	2.839
Mean of Detected	6.75	Mean of Detected	1.71
SD of Detected	4.68	SD of Detected	0.669
Minimum Non-Detect	1.4	Minimum Non-Detect	0.336
Maximum Non-Detect	25	Maximum Non-Detect	3.219

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	27
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	0
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	100.00%

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.863	Shapiro Wilk Test Statistic	0.985
5% Shapiro Wilk Critical Value	0.842	5% Shapiro Wilk Critical Value	0.842
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	9.933	Mean	2.117
SD	4.337	SD	0.746
95% DL/2 (t) UCL	11.36	95% H-Stat (DL/2) UCL	25.98
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	1.569
		SD in Log Scale	0.778
		Mean in Original Scale	6.321
		SD in Original Scale	4.836
		95% Percentile Bootstrap UCL	7.812
		95% BCA Bootstrap UCL	8.189

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	1.928	Data appear Normal at 5% Significance Level	
Theta Star	3.501		
nu star	38.56		
A-D Test Statistic	0.233	Nonparametric Statistics	

5% A-D Critical Value	0.733	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.733	Mean	6.3
5% K-S Critical Value	0.269	SD	4.466
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	1.419
		95% KM (t) UCL	8.721
Assuming Gamma Distribution		95% KM (z) UCL	8.635
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	8.742
Minimum	1.0000E-9	95% KM (bootstrap t) UCL	10.97
Maximum	17.1	95% KM (BCA) UCL	9.114
Mean	6.843	95% KM (Percentile Bootstrap) UCL	8.833
Median	6.601	95% KM (Chebyshev) UCL	12.49
SD	4.328	97.5% KM (Chebyshev) UCL	15.16
k star	0.359	99% KM (Chebyshev) UCL	20.42
Theta star	19.05		
Nu star	19.4	Potential UCLs to Use	
AppChi2	10.41	95% KM (t) UCL	8.721
95% Gamma Approximate UCL	12.75	95% KM (Percentile Bootstrap) UCL	8.833
95% Adjusted Gamma UCL	13.29		
Note: DL/2 is not a recommended method.			

Baseline Site Conditions ProUCL 95% UCL Output

2-Methylnaphthalene

General Statistics			
Number of Valid Data	27	Number of Detected Data	20
Number of Distinct Detected Data	19	Number of Non-Detect Data	7
		Percent Non-Detects	25.93%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	2.9	Minimum Detected	1.065
Maximum Detected	31.5	Maximum Detected	3.45
Mean of Detected	9.955	Mean of Detected	2.055
SD of Detected	7.659	SD of Detected	0.701
Minimum Non-Detect	2	Minimum Non-Detect	0.693
Maximum Non-Detect	2.3	Maximum Non-Detect	0.833
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	7
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	20
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	25.93%

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.828	Shapiro Wilk Test Statistic	0.954
5% Shapiro Wilk Critical Value	0.905	5% Shapiro Wilk Critical Value	0.905
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	7.652	Mean	1.54
SD	7.655	SD	1.071
95% DL/2 (t) UCL	10.16	95% H-Stat (DL/2) UCL	12.46
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	

Mean	6.429	Mean in Log Scale	1.623
SD	9.095	SD in Log Scale	0.966
95% MLE (t) UCL	9.415	Mean in Original Scale	7.77
95% MLE (Tiku) UCL	9.505	SD in Original Scale	7.555
		95% Percentile Bootstrap UCL	10.19
		95% BCA Bootstrap UCL	10.61

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	1.912	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	5.207		
nu star	76.47		
A-D Test Statistic	0.512	Nonparametric Statistics	
5% A-D Critical Value	0.751	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.751	Mean	8.126
5% K-S Critical Value	0.196	SD	7.13
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	1.408
		95% KM (t) UCL	10.53
Assuming Gamma Distribution		95% KM (z) UCL	10.44
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	10.44
Minimum	1.0000E-9	95% KM (bootstrap t) UCL	11.22
Maximum	31.5	95% KM (BCA) UCL	10.49
Mean	8.057	95% KM (Percentile Bootstrap) UCL	10.5
Median	5.4	95% KM (Chebyshev) UCL	14.26
SD	7.386	97.5% KM (Chebyshev) UCL	16.92
k star	0.515	99% KM (Chebyshev) UCL	22.13
Theta star	15.64		
Nu star	27.81	Potential UCLs to Use	
AppChi2	16.78	95% KM (Percentile Bootstrap) UCL	10.5
95% Gamma Approximate UCL	13.35		
95% Adjusted Gamma UCL	13.8		

Note: DL/2 is not a recommended method.

Acenaphthylene

General Statistics

Number of Valid Data	27	Number of Detected Data	23
Number of Distinct Detected Data	22	Number of Non-Detect Data	4
		Percent Non-Detects	14.81%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	3.7	Minimum Detected	1.308
Maximum Detected	78	Maximum Detected	4.357
Mean of Detected	18.31	Mean of Detected	2.566
SD of Detected	18.26	SD of Detected	0.81
Minimum Non-Detect	1.9	Minimum Non-Detect	0.642
Maximum Non-Detect	2.1	Maximum Non-Detect	0.742
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	4
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	23
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	14.81%

Baseline Site Conditions ProUCL 95% UCL Output

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.712	Shapiro Wilk Test Statistic	0.96
5% Shapiro Wilk Critical Value	0.914	5% Shapiro Wilk Critical Value	0.914
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	15.74	Mean	2.182
SD	17.93	SD	1.198
95% DL/2 (t) UCL	21.63	95% H-Stat (DL/2) UCL	30.58
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	14.12	Mean in Log Scale	2.289
SD	19.67	SD in Log Scale	1.01
95% MLE (t) UCL	20.58	Mean in Original Scale	15.9
95% MLE (Tiku) UCL	20.42	SD in Original Scale	17.8
		95% Percentile Bootstrap UCL	21.72
		95% BCA Bootstrap UCL	23.54
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	1.432	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	12.79		
nu star	65.85		
A-D Test Statistic	0.674	Nonparametric Statistics	
5% A-D Critical Value	0.759	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.759	Mean	16.14
5% K-S Critical Value	0.185	SD	17.28
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	3.4
		95% KM (t) UCL	21.94
Assuming Gamma Distribution		95% KM (z) UCL	21.74
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	21.85
Minimum	1.0000E-9	95% KM (bootstrap t) UCL	26.21
Maximum	78	95% KM (BCA) UCL	23.29
Mean	15.6	95% KM (Percentile Bootstrap) UCL	22.31
Median	12.1	95% KM (Chebyshev) UCL	30.97
SD	18.06	97.5% KM (Chebyshev) UCL	37.38
k star	0.205	99% KM (Chebyshev) UCL	49.98
Theta star	76.26		
Nu star	11.04	Potential UCLs to Use	
AppChi2	4.605	95% KM (BCA) UCL	23.29
95% Gamma Approximate UCL	37.41		
95% Adjusted Gamma UCL	39.68		

Note: DL/2 is not a recommended method.

Acenaphthene

General Statistics

Number of Valid Data	27	Number of Detected Data	20
Number of Distinct Detected Data	17	Number of Non-Detect Data	7
		Percent Non-Detects	25.93%

Baseline Site Conditions ProUCL 95% UCL Output

Raw Statistics		Log-transformed Statistics	
Minimum Detected	1	Minimum Detected	0
Maximum Detected	11.6	Maximum Detected	2.451
Mean of Detected	4.995	Mean of Detected	1.342
SD of Detected	3.53	SD of Detected	0.772
Minimum Non-Detect	1	Minimum Non-Detect	0
Maximum Non-Detect	1.2	Maximum Non-Detect	0.182
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	8
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	19
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	29.63%

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.866	Shapiro Wilk Test Statistic	0.921
5% Shapiro Wilk Critical Value	0.905	5% Shapiro Wilk Critical Value	0.905
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	3.839	Mean	0.832
SD	3.615	SD	1.101
95% DL/2 (t) UCL	5.026	95% H-Stat (DL/2) UCL	6.961
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	3.151	Mean in Log Scale	0.886
SD	4.45	SD in Log Scale	1.038
95% MLE (t) UCL	4.612	Mean in Original Scale	3.878
95% MLE (Tiku) UCL	4.693	SD in Original Scale	3.58
		95% Percentile Bootstrap UCL	5.04
		95% BCA Bootstrap UCL	5.073
Gamma Distribution Test with Detected Values Only		**Data Distribution Test with Detected Values Only**	
k star (bias corrected)	1.758	Data Follow Appr. Gamma Distribution at 5% Significance Level	
Theta Star	2.842		
nu star	70.3		
A-D Test Statistic	0.777	**Nonparametric Statistics**	
5% A-D Critical Value	0.752	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.752	Mean	3.959
5% K-S Critical Value	0.196	SD	3.44
Data follow Appr. Gamma Distribution at 5% Significance Level		SE of Mean	0.679
		95% KM (t) UCL	5.118
Assuming Gamma Distribution		95% KM (z) UCL	5.076
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	5.037
Minimum	1.0000E-9	95% KM (bootstrap t) UCL	5.297
Maximum	11.6	95% KM (BCA) UCL	5.219
Mean	4.047	95% KM (Percentile Bootstrap) UCL	5.133
Median	2.5	95% KM (Chebyshev) UCL	6.92
SD	3.465	97.5% KM (Chebyshev) UCL	8.201
k star	0.523	99% KM (Chebyshev) UCL	10.72
Theta star	7.736		

Nu star	28.25	Potential UCLs to Use	
AppChi2	17.12	95% KM (Percentile Bootstrap) UCL	5.133
95% Gamma Approximate UCL	6.677		
95% Adjusted Gamma UCL	6.9		

Note: DL/2 is not a recommended method.

Baseline Site Conditions ProUCL 95% UCL Output

Fluorene

General Statistics

Number of Valid Data	27	Number of Detected Data	22
Number of Distinct Detected Data	21	Number of Non-Detect Data	5
		Percent Non-Detects	18.52%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	1.4	Minimum Detected	0.336
Maximum Detected	18.3	Maximum Detected	2.907
Mean of Detected	6.009	Mean of Detected	1.542
SD of Detected	4.683	SD of Detected	0.718
Minimum Non-Detect	1	Minimum Non-Detect	0
Maximum Non-Detect	1.1	Maximum Non-Detect	0.0953
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	5
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	22
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	18.52%

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.817	Shapiro Wilk Test Statistic	0.976
5% Shapiro Wilk Critical Value	0.911	5% Shapiro Wilk Critical Value	0.911
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	4.991	Mean	1.132
SD	4.738	SD	1.089
95% DL/2 (t) UCL	6.546	95% H-Stat (DL/2) UCL	9.221
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	4.504	Mean in Log Scale	1.231
SD	5.322	SD in Log Scale	0.933
95% MLE (t) UCL	6.251	Mean in Original Scale	5.063
95% MLE (Tiku) UCL	6.251	SD in Original Scale	4.671
		95% Percentile Bootstrap UCL	6.605
		95% BCA Bootstrap UCL	6.806
Gamma Distribution Test with Detected Values Only		**Data Distribution Test with Detected Values Only**	
k star (bias corrected)	1.88	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	3.195		
nu star	82.74		
A-D Test Statistic	0.369	**Nonparametric Statistics**	
5% A-D Critical Value	0.755	Kaplan-Meier (KM) Method	

Baseline Site Conditions ProUCL 95% UCL Output

K-S Test Statistic	0.755	Mean	5.156
5% K-S Critical Value	0.188	SD	4.501
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.887
		95% KM (t) UCL	6.668
Assuming Gamma Distribution		95% KM (z) UCL	6.614
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	6.624
Minimum	1.0000E-9	95% KM (bootstrap t) UCL	7.297
Maximum	18.3	95% KM (BCA) UCL	6.93
Mean	5.017	95% KM (Percentile Bootstrap) UCL	6.693
Median	3.3	95% KM (Chebyshev) UCL	9.02
SD	4.723	97.5% KM (Chebyshev) UCL	10.69
k star	0.339	99% KM (Chebyshev) UCL	13.98
Theta star	14.81		
Nu star	18.3	Potential UCLs to Use	
AppChi2	9.606	95% KM (BCA) UCL	6.93
95% Gamma Approximate UCL	9.556		
95% Adjusted Gamma UCL	9.973		

Note: DL/2 is not a recommended method.

Phenanthrene

General Statistics

Number of Valid Data	27	Number of Detected Data	24
Number of Distinct Detected Data	23	Number of Non-Detect Data	3
		Percent Non-Detects	11.11%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	2.6	Minimum Detected	0.956
Maximum Detected	373	Maximum Detected	5.922
Mean of Detected	77.29	Mean of Detected	3.961
SD of Detected	74.52	SD of Detected	1.023
Minimum Non-Detect	2.2	Minimum Non-Detect	0.788
Maximum Non-Detect	2.5	Maximum Non-Detect	0.916
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	3
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	24
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	11.11%

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.707	Shapiro Wilk Test Statistic	0.897
5% Shapiro Wilk Critical Value	0.916	5% Shapiro Wilk Critical Value	0.916
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	68.83	Mean	3.537
SD	74.21	SD	1.557
95% DL/2 (t) UCL	93.19	95% H-Stat (DL/2) UCL	229.3
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	63.91	Mean in Log Scale	3.723

SD	79.51	SD in Log Scale	1.184
95% MLE (t) UCL	90.01	Mean in Original Scale	69.39
95% MLE (Tiku) UCL	89.25	SD in Original Scale	73.69
		95% Percentile Bootstrap UCL	94.19
		95% BCA Bootstrap UCL	101.9

Baseline Site Conditions ProUCL 95% UCL Output

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	1.287	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	60.07		
nu star	61.76		
A-D Test Statistic	0.508	Nonparametric Statistics	
5% A-D Critical Value	0.763	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.763	Mean	68.99
5% K-S Critical Value	0.181	SD	72.67
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	14.29
		95% KM (t) UCL	93.36
Assuming Gamma Distribution		95% KM (z) UCL	92.49
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	93.05
Minimum	1.0000E-9	95% KM (bootstrap t) UCL	109.8
Maximum	373	95% KM (BCA) UCL	97.9
Mean	68.7	95% KM (Percentile Bootstrap) UCL	94.91
Median	51.9	95% KM (Chebyshev) UCL	131.3
SD	74.33	97.5% KM (Chebyshev) UCL	158.2
k star	0.236	99% KM (Chebyshev) UCL	211.1
Theta star	291		
Nu star	12.75	Potential UCLs to Use	
AppChi2	5.723	95% KM (BCA) UCL	97.9
95% Gamma Approximate UCL	153		
95% Adjusted Gamma UCL	161.5		

Note: DL/2 is not a recommended method.

Anthracene

General Statistics

Number of Valid Data	27	Number of Detected Data	23
Number of Distinct Detected Data	22	Number of Non-Detect Data	4
		Percent Non-Detects	14.81%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	6.5	Minimum Detected	1.872
Maximum Detected	109	Maximum Detected	4.691
Mean of Detected	30.93	Mean of Detected	3.169
SD of Detected	25.24	SD of Detected	0.733
Minimum Non-Detect	5.1	Minimum Non-Detect	1.629
Maximum Non-Detect	5.7	Maximum Non-Detect	1.74
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	4
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	23
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	14.81%

UCL Statistics

Baseline Site Conditions ProUCL 95% UCL Output

Normal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.799
5% Shapiro Wilk Critical Value	0.914
Data not Normal at 5% Significance Level	
Assuming Normal Distribution	
DL/2 Substitution Method	
Mean	26.74
SD	25.38
95% DL/2 (t) UCL	35.07
Maximum Likelihood Estimate(MLE) Method	
Mean	24.76
SD	27.66
95% MLE (t) UCL	33.84
95% MLE (Tiku) UCL	33.69
Gamma Distribution Test with Detected Values Only	
k star (bias corrected)	1.817
Theta Star	17.02
nu star	83.6
A-D Test Statistic	0.36
5% A-D Critical Value	0.754
K-S Test Statistic	0.754
5% K-S Critical Value	0.184
Data appear Gamma Distributed at 5% Significance Level	
Assuming Gamma Distribution	
Gamma ROS Statistics using Extrapolated Data	
Minimum	1.0000E-9
Maximum	109
Mean	26.42
Median	22
SD	25.7
k star	0.246
Theta star	107.3
Nu star	13.3
AppChi2	6.093
95% Gamma Approximate UCL	57.66
95% Adjusted Gamma UCL	60.75

Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.984
5% Shapiro Wilk Critical Value	0.914
Data appear Lognormal at 5% Significance Level	
Assuming Lognormal Distribution	
DL/2 Substitution Method	
Mean	2.843
SD	1.044
95% H-Stat (DL/2) UCL	46.39
Log ROS Method	
Mean in Log Scale	2.92
SD in Log Scale	0.909
Mean in Original Scale	27.01
SD in Original Scale	25.12
95% Percentile Bootstrap UCL	35.02
95% BCA Bootstrap UCL	36.83
Data Distribution Test with Detected Values Only	
Data appear Gamma Distributed at 5% Significance Level	
Nonparametric Statistics	
Kaplan-Meier (KM) Method	
Mean	27.31
SD	24.38
SE of Mean	4.798
95% KM (t) UCL	35.49
95% KM (z) UCL	35.2
95% KM (jackknife) UCL	35.38
95% KM (bootstrap t) UCL	39.62
95% KM (BCA) UCL	35.85
95% KM (Percentile Bootstrap) UCL	35.81
95% KM (Chebyshev) UCL	48.22
97.5% KM (Chebyshev) UCL	57.27
99% KM (Chebyshev) UCL	75.04
Potential UCLs to Use	
95% KM (BCA) UCL	35.85

Note: DL/2 is not a recommended method.

Fluoranthene

General Statistics			
Number of Valid Data	27	Number of Detected Data	24
Number of Distinct Detected Data	23	Number of Non-Detect Data	3
		Percent Non-Detects	11.11%

Baseline Site Conditions ProUCL 95% UCL Output

Raw Statistics		Log-transformed Statistics	
Minimum Detected	5.6	Minimum Detected	1.723
Maximum Detected	559	Maximum Detected	6.326
Mean of Detected	163.4	Mean of Detected	4.778
SD of Detected	122.3	SD of Detected	0.953
Minimum Non-Detect	1.2	Minimum Non-Detect	0.182
Maximum Non-Detect	1.4	Maximum Non-Detect	0.336
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	3
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	24
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	11.11%

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.878	Shapiro Wilk Test Statistic	0.902
5% Shapiro Wilk Critical Value	0.916	5% Shapiro Wilk Critical Value	0.916
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	145.4	Mean	4.196
SD	126.3	SD	1.902
95% DL/2 (t) UCL	186.8	95% H-Stat (DL/2) UCL	1049
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	137.5	Mean in Log Scale	4.555
SD	136.2	SD in Log Scale	1.104
95% MLE (t) UCL	182.2	Mean in Original Scale	147.1
95% MLE (Tiku) UCL	181.9	SD in Original Scale	124.4
		95% Percentile Bootstrap UCL	187
		95% BCA Bootstrap UCL	194.1

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	1.53	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	106.8		
nu star	73.45		
A-D Test Statistic	0.273	**Nonparametric Statistics**	
5% A-D Critical Value	0.759	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.759	Mean	145.9
5% K-S Critical Value	0.181	SD	123.3
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	24.25
		95% KM (t) UCL	187.3
Assuming Gamma Distribution		95% KM (z) UCL	185.8
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	185.5
Minimum	1.0000E-9	95% KM (bootstrap t) UCL	197.7
Maximum	559	95% KM (BCA) UCL	189.7
Mean	145.3	95% KM (Percentile Bootstrap) UCL	187.3
Median	120	95% KM (Chebyshev) UCL	251.6
SD	126.4	97.5% KM (Chebyshev) UCL	297.3
k star	0.235	99% KM (Chebyshev) UCL	387.1
Theta star	619.1		
Nu star	12.67	**Potential UCLs to Use**	

AppChi2	5.673	95% KM (BCA) UCL	189.7
95% Gamma Approximate UCL	324.5		
95% Adjusted Gamma UCL	342.5		

Note: DL/2 is not a recommended method.

Baseline Site Conditions ProUCL 95% UCL Output

Pyrene

General Statistics

Number of Valid Data	27	Number of Detected Data	24
Number of Distinct Detected Data	24	Number of Non-Detect Data	3
		Percent Non-Detects	11.11%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	4.3	Minimum Detected	1.459
Maximum Detected	432	Maximum Detected	6.068
Mean of Detected	123.7	Mean of Detected	4.503
SD of Detected	93.4	SD of Detected	0.944
Minimum Non-Detect	1.1	Minimum Non-Detect	0.0953
Maximum Non-Detect	1.3	Maximum Non-Detect	0.262

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	3
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	24
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	11.11%

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.867	Shapiro Wilk Test Statistic	0.901
5% Shapiro Wilk Critical Value	0.916	5% Shapiro Wilk Critical Value	0.916
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	

Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	110	Mean	3.942
SD	96.29	SD	1.844
95% DL/2 (t) UCL	141.6	95% H-Stat (DL/2) UCL	693
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	104	Mean in Log Scale	4.282
SD	103.8	SD in Log Scale	1.094
95% MLE (t) UCL	138.1	Mean in Original Scale	111.4
95% MLE (Tiku) UCL	137.8	SD in Original Scale	94.8
		95% Percentile Bootstrap UCL	142.3
		95% BCA Bootstrap UCL	148.3

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	1.545	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	80.1		
nu star	74.14		
A-D Test Statistic	0.277	Nonparametric Statistics	
5% A-D Critical Value	0.759	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.759	Mean	110.5

5% K-S Critical Value	0.181	SD	94.02
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	18.48
		95% KM (t) UCL	142
Assuming Gamma Distribution		95% KM (z) UCL	140.9
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	140.5
Minimum	1.0000E-9	95% KM (bootstrap t) UCL	149.9
Maximum	432	95% KM (BCA) UCL	144.1
Mean	110	95% KM (Percentile Bootstrap) UCL	141.3
Median	91.3	95% KM (Chebyshev) UCL	191
SD	96.37	97.5% KM (Chebyshev) UCL	225.9
k star	0.237	99% KM (Chebyshev) UCL	294.4
Theta star	464.6		
Nu star	12.78	Potential UCLs to Use	
AppChi2	5.747	95% KM (BCA) UCL	144.1
95% Gamma Approximate UCL	244.6		
95% Adjusted Gamma UCL	258.1		
Note: DL/2 is not a recommended method.			

Baseline Site Conditions ProUCL 95% UCL Output

Benzo(a) anthracene

General Statistics

Number of Valid Data	27	Number of Detected Data	23
Number of Distinct Detected Data	23	Number of Non-Detect Data	4
		Percent Non-Detects	14.81%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	17.7	Minimum Detected	2.874
Maximum Detected	236	Maximum Detected	5.464
Mean of Detected	70.72	Mean of Detected	4.044
SD of Detected	51.03	SD of Detected	0.666
Minimum Non-Detect	9.3	Minimum Non-Detect	2.23
Maximum Non-Detect	10.4	Maximum Non-Detect	2.342
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	4
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	23
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	14.81%

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.838	Shapiro Wilk Test Statistic	0.986
5% Shapiro Wilk Critical Value	0.914	5% Shapiro Wilk Critical Value	0.914
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	60.96	Mean	3.678
SD	52.66	SD	1.084
95% DL/2 (t) UCL	78.24	95% H-Stat (DL/2) UCL	109.4
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	56.95	Mean in Log Scale	3.819
SD	57.63	SD in Log Scale	0.823

95% MLE (t) UCL	75.87	Mean in Original Scale	62.09
95% MLE (Tiku) UCL	75.78	SD in Original Scale	51.46
		95% Percentile Bootstrap UCL	79.34
		95% BCA Bootstrap UCL	82.91

Baseline Site Conditions ProUCL 95% UCL Output

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	2.188	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	32.32		
nu star	100.6		
A-D Test Statistic	0.277	Nonparametric Statistics	
5% A-D Critical Value	0.753	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.753	Mean	62.86
5% K-S Critical Value	0.183	SD	49.77
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	9.793
		95% KM (t) UCL	79.57
Assuming Gamma Distribution		95% KM (z) UCL	78.97
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	79.24
Minimum	1.581	95% KM (bootstrap t) UCL	85.63
Maximum	236	95% KM (BCA) UCL	81.3
Mean	60.47	95% KM (Percentile Bootstrap) UCL	79.84
Median	46.2	95% KM (Chebyshev) UCL	105.5
SD	53.2	97.5% KM (Chebyshev) UCL	124
k star	0.897	99% KM (Chebyshev) UCL	160.3
Theta star	67.42		
Nu star	48.44	Potential UCLs to Use	
AppChi2	33.46	95% KM (BCA) UCL	81.3
95% Gamma Approximate UCL	87.54		
95% Adjusted Gamma UCL	89.67		

Note: DL/2 is not a recommended method.

Chrysene

General Statistics

Number of Valid Data	27	Number of Detected Data	23
Number of Distinct Detected Data	22	Number of Non-Detect Data	4
		Percent Non-Detects	14.81%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	20.4	Minimum Detected	3.016
Maximum Detected	254	Maximum Detected	5.537
Mean of Detected	91.04	Mean of Detected	4.296
SD of Detected	61.25	SD of Detected	0.691
Minimum Non-Detect	3.8	Minimum Non-Detect	1.335
Maximum Non-Detect	4.3	Maximum Non-Detect	1.459

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	4
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	23
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	14.81%

UCL Statistics

Normal Distribution Test with Detected Values Only	Lognormal Distribution Test with Detected Values Only

Shapiro Wilk Test Statistic	0.888	Shapiro Wilk Test Statistic	0.973
5% Shapiro Wilk Critical Value	0.914	5% Shapiro Wilk Critical Value	0.914
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	77.85	Mean	3.761
SD	64.91	SD	1.453
95% DL/2 (t) UCL	99.15	95% H-Stat (DL/2) UCL	233.5
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	72.46	Mean in Log Scale	4.063
SD	72.11	SD in Log Scale	0.853
95% MLE (t) UCL	96.13	Mean in Original Scale	79.84
95% MLE (Tiku) UCL	96.35	SD in Original Scale	62.64
		95% Percentile Bootstrap UCL	99.64
		95% BCA Bootstrap UCL	101.9
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	2.178	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	41.8		
nu star	100.2		
A-D Test Statistic	0.23	Nonparametric Statistics	
5% A-D Critical Value	0.753	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.753	Mean	80.57
5% K-S Critical Value	0.183	SD	60.72
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	11.95
		95% KM (t) UCL	101
Assuming Gamma Distribution		95% KM (z) UCL	100.2
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	100.8
Minimum	1.0000E-9	95% KM (bootstrap t) UCL	104.8
Maximum	254	95% KM (BCA) UCL	101.6
Mean	78.35	95% KM (Percentile Bootstrap) UCL	100.5
Median	61.5	95% KM (Chebyshev) UCL	132.7
SD	64.34	97.5% KM (Chebyshev) UCL	155.2
k star	0.468	99% KM (Chebyshev) UCL	199.4
Theta star	167.5		
Nu star	25.26	Potential UCLs to Use	
AppChi2	14.81	95% KM (BCA) UCL	101.6
95% Gamma Approximate UCL	133.6		
95% Adjusted Gamma UCL	138.4		

Note: DL/2 is not a recommended method.

Benzo(a)pyrene

General Statistics			
Number of Valid Data	27	Number of Detected Data	23
Number of Distinct Detected Data	23	Number of Non-Detect Data	4
		Percent Non-Detects	14.81%
Raw Statistics		Log-transformed Statistics	

Minimum Detected	18.3	Minimum Detected	2.907
Maximum Detected	248	Maximum Detected	5.513
Mean of Detected	82.73	Mean of Detected	4.166
SD of Detected	61.41	SD of Detected	0.736
Minimum Non-Detect	4	Minimum Non-Detect	1.386
Maximum Non-Detect	4.5	Maximum Non-Detect	1.504
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	4
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	23
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	14.81%

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.856	Shapiro Wilk Test Statistic	0.971
5% Shapiro Wilk Critical Value	0.914	5% Shapiro Wilk Critical Value	0.914
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	70.78	Mean	3.657
SD	63.59	SD	1.415
95% DL/2 (t) UCL	91.65	95% H-Stat (DL/2) UCL	197.5
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	65.36	Mean in Log Scale	3.917
SD	70.47	SD in Log Scale	0.911
95% MLE (t) UCL	88.49	Mean in Original Scale	72.27
95% MLE (Tiku) UCL	88.51	SD in Original Scale	62
		95% Percentile Bootstrap UCL	92.2
		95% BCA Bootstrap UCL	94.55
Gamma Distribution Test with Detected Values Only		**Data Distribution Test with Detected Values Only**	
k star (bias corrected)	1.901	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	43.52		
nu star	87.44		
A-D Test Statistic	0.277	**Nonparametric Statistics**	
5% A-D Critical Value	0.754	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.754	Mean	73.18
5% K-S Critical Value	0.184	SD	59.97
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	11.8
		95% KM (t) UCL	93.31
Assuming Gamma Distribution		95% KM (z) UCL	92.59
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	93.15
Minimum	1.0000E-9	95% KM (bootstrap t) UCL	98.73
Maximum	248	95% KM (BCA) UCL	94.44
Mean	70.75	95% KM (Percentile Bootstrap) UCL	93.54
Median	53.2	95% KM (Chebyshev) UCL	124.6
SD	63.63	97.5% KM (Chebyshev) UCL	146.9
k star	0.241	99% KM (Chebyshev) UCL	190.6
Theta star	294.1		
Nu star	12.99	**Potential UCLs to Use**	
AppChi2	5.887	95% KM (BCA) UCL	94.44

95% Gamma Approximate UCL	156.1
95% Adjusted Gamma UCL	164.7

Note: DL/2 is not a recommended method.

Benzo(b)fluoranthene

General Statistics

Number of Valid Data	27	Number of Detected Data	23
Number of Distinct Detected Data	23	Number of Non-Detect Data	4
		Percent Non-Detects	14.81%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	16.7	Minimum Detected	2.815
Maximum Detected	250	Maximum Detected	5.521
Mean of Detected	87.25	Mean of Detected	4.21
SD of Detected	63.59	SD of Detected	0.767
Minimum Non-Detect	6.3	Minimum Non-Detect	1.841
Maximum Non-Detect	7.1	Maximum Non-Detect	1.96
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	4
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	23
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	14.81%

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.871	Shapiro Wilk Test Statistic	0.958
5% Shapiro Wilk Critical Value	0.914	5% Shapiro Wilk Critical Value	0.914
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	74.81	Mean	3.762
SD	65.92	SD	1.303
95% DL/2 (t) UCL	96.45	95% H-Stat (DL/2) UCL	180.8
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	69.39	Mean in Log Scale	3.955
SD	72.8	SD in Log Scale	0.943
95% MLE (t) UCL	93.29	Mean in Original Scale	76.12
95% MLE (Tiku) UCL	93.29	SD in Original Scale	64.51
		95% Percentile Bootstrap UCL	96.79
		95% BCA Bootstrap UCL	99.42
Gamma Distribution Test with Detected Values Only		**Data Distribution Test with Detected Values Only**	
k star (bias corrected)	1.842	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	47.37		
nu star	84.73		
A-D Test Statistic	0.284	**Nonparametric Statistics**	
5% A-D Critical Value	0.754	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.754	Mean	76.8
5% K-S Critical Value	0.184	SD	62.63

Data appear Gamma Distributed at 5% Significance Level		SE of Mean	12.32
		95% KM (t) UCL	97.82
Assuming Gamma Distribution		95% KM (z) UCL	97.07
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	97.7
Minimum	1.0000E-9	95% KM (bootstrap t) UCL	101
Maximum	250	95% KM (BCA) UCL	97.91
Mean	74.62	95% KM (Percentile Bootstrap) UCL	97.77
Median	55.6	95% KM (Chebyshev) UCL	130.5
SD	66.15	97.5% KM (Chebyshev) UCL	153.8
k star	0.24	99% KM (Chebyshev) UCL	199.4
Theta star	311.3		
Nu star	12.95	Potential UCLs to Use	
AppChi2	5.857	95% KM (BCA) UCL	97.91
95% Gamma Approximate UCL	165		
95% Adjusted Gamma UCL	174		
Note: DL/2 is not a recommended method.			

Indeno(1,2,3-cd)pyrene

General Statistics

Number of Valid Data	27	Number of Detected Data	23
Number of Distinct Detected Data	23	Number of Non-Detect Data	4
		Percent Non-Detects	14.81%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	8.8	Minimum Detected	2.175
Maximum Detected	155	Maximum Detected	5.043
Mean of Detected	58.03	Mean of Detected	3.787
SD of Detected	43.32	SD of Detected	0.791
Minimum Non-Detect	4.7	Minimum Non-Detect	1.548
Maximum Non-Detect	5.3	Maximum Non-Detect	1.668
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	4
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	23
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	14.81%

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.859	Shapiro Wilk Test Statistic	0.968
5% Shapiro Wilk Critical Value	0.914	5% Shapiro Wilk Critical Value	0.914
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	49.79	Mean	3.358
SD	44.64	SD	1.277
95% DL/2 (t) UCL	64.44	95% H-Stat (DL/2) UCL	115.3
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	46.13	Mean in Log Scale	3.523
SD	49.22	SD in Log Scale	0.974
95% MLE (t) UCL	62.28	Mean in Original Scale	50.54

95% MLE (Tiku) UCL	62.24	SD in Original Scale	43.85
		95% Percentile Bootstrap UCL	64.93
		95% BCA Bootstrap UCL	65.82
Gamma Distribution Test with Detected Values Only		**Data Distribution Test with Detected Values Only**	
k star (bias corrected)	1.746	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	33.24		
nu star	80.31		
A-D Test Statistic	0.267	**Nonparametric Statistics**	
5% A-D Critical Value	0.755	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.755	Mean	50.73
5% K-S Critical Value	0.184	SD	42.84
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	8.429
		95% KM (t) UCL	65.11
Assuming Gamma Distribution		95% KM (z) UCL	64.6
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	64.75
Minimum	1.0000E-9	95% KM (bootstrap t) UCL	68.1
Maximum	155	95% KM (BCA) UCL	66.03
Mean	49.58	95% KM (Percentile Bootstrap) UCL	65.44
Median	39.1	95% KM (Chebyshev) UCL	87.48
SD	44.89	97.5% KM (Chebyshev) UCL	103.4
k star	0.241	99% KM (Chebyshev) UCL	134.6
Theta star	205.6		
Nu star	13.02	**Potential UCLs to Use**	
AppChi2	5.907	95% KM (BCA) UCL	66.03
95% Gamma Approximate UCL	109.3		
95% Adjusted Gamma UCL	115.2		
Note: DL/2 is not a recommended method.			

Dibenz(a,h)anthracene

General Statistics

Number of Valid Data	27	Number of Detected Data	20
Number of Distinct Detected Data	20	Number of Non-Detect Data	7
		Percent Non-Detects	25.93%
Raw Statistics		**Log-transformed Statistics**	
Minimum Detected	7.8	Minimum Detected	2.054
Maximum Detected	73.4	Maximum Detected	4.296
Mean of Detected	27.78	Mean of Detected	3.125
SD of Detected	18.74	SD of Detected	0.644
Minimum Non-Detect	5.2	Minimum Non-Detect	1.649
Maximum Non-Detect	5.8	Maximum Non-Detect	1.758
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	7
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	20
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	25.93%

UCL Statistics

Normal Distribution Test with Detected Values Only		**Lognormal Distribution Test with Detected Values Only**	
Shapiro Wilk Test Statistic	0.859	Shapiro Wilk Test Statistic	0.966

5% Shapiro Wilk Critical Value	0.905	5% Shapiro Wilk Critical Value	0.905
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	21.28	Mean	2.572
SD	19.55	SD	1.101
95% DL/2 (t) UCL	27.69	95% H-Stat (DL/2) UCL	41.77
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	18.27	Mean in Log Scale	2.732
SD	23.3	SD in Log Scale	0.882
95% MLE (t) UCL	25.91	Mean in Original Scale	21.9
95% MLE (Tiku) UCL	26.2	SD in Original Scale	18.96
		95% Percentile Bootstrap UCL	28.04
		95% BCA Bootstrap UCL	28.48
Gamma Distribution Test with Detected Values Only		**Data Distribution Test with Detected Values Only**	
k star (bias corrected)	2.302	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	12.07		
nu star	92.09		
A-D Test Statistic	0.389	**Nonparametric Statistics**	
5% A-D Critical Value	0.749	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.749	Mean	22.6
5% K-S Critical Value	0.195	SD	17.99
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	3.553
		95% KM (t) UCL	28.66
Assuming Gamma Distribution		95% KM (z) UCL	28.44
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	28.26
Minimum	0.428	95% KM (bootstrap t) UCL	30.38
Maximum	73.4	95% KM (BCA) UCL	29.31
Mean	22.85	95% KM (Percentile Bootstrap) UCL	28.98
Median	17.2	95% KM (Chebyshev) UCL	38.09
SD	18.37	97.5% KM (Chebyshev) UCL	44.79
k star	1.368	99% KM (Chebyshev) UCL	57.95
Theta star	16.7		
Nu star	73.87	**Potential UCLs to Use**	
AppChi2	55.08	95% KM (Percentile Bootstrap) UCL	28.98
95% Gamma Approximate UCL	30.64		
95% Adjusted Gamma UCL	31.23		

Note: DL/2 is not a recommended method.

Benzo(g,h,i)perylene

General Statistics			
Number of Valid Data	27	Number of Detected Data	23
Number of Distinct Detected Data	23	Number of Non-Detect Data	4
		Percent Non-Detects	14.81%
Raw Statistics		**Log-transformed Statistics**	
Minimum Detected	8.2	Minimum Detected	2.104

Maximum Detected	181	Maximum Detected	5.198
Mean of Detected	59.85	Mean of Detected	3.797
SD of Detected	48.27	SD of Detected	0.806
Minimum Non-Detect	4.7	Minimum Non-Detect	1.548
Maximum Non-Detect	5.3	Maximum Non-Detect	1.668
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	4
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	23
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	14.81%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.832	Shapiro Wilk Test Statistic	0.979
5% Shapiro Wilk Critical Value	0.914	5% Shapiro Wilk Critical Value	0.914
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	51.34	Mean	3.366
SD	49.03	SD	1.287
95% DL/2 (t) UCL	67.44	95% H-Stat (DL/2) UCL	117.8
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	47.18	Mean in Log Scale	3.526
SD	54.04	SD in Log Scale	0.995
95% MLE (t) UCL	64.92	Mean in Original Scale	52.05
95% MLE (Tiku) UCL	64.78	SD in Original Scale	48.32
		95% Percentile Bootstrap UCL	68.07
		95% BCA Bootstrap UCL	69.73
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	1.632	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	36.68		
nu star	75.06		
A-D Test Statistic	0.347	Nonparametric Statistics	
5% A-D Critical Value	0.756	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.756	Mean	52.2
5% K-S Critical Value	0.184	SD	47.28
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	9.304
		95% KM (t) UCL	68.06
Assuming Gamma Distribution		95% KM (z) UCL	67.5
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	67.48
Minimum	1.0000E-9	95% KM (bootstrap t) UCL	73.63
Maximum	181	95% KM (BCA) UCL	70.61
Mean	51.04	95% KM (Percentile Bootstrap) UCL	68.34
Median	38.7	95% KM (Chebyshev) UCL	92.75
SD	49.34	97.5% KM (Chebyshev) UCL	110.3
k star	0.238	99% KM (Chebyshev) UCL	144.8
Theta star	214.6		
Nu star	12.84	Potential UCLs to Use	
AppChi2	5.786	95% KM (BCA) UCL	70.61
95% Gamma Approximate UCL	113.3		

95% Adjusted Gamma UCL	119.5

Note: DL/2 is not a recommended method.

Benzo(k)fluoranthene

General Statistics

Number of Valid Data	27	Number of Detected Data	23
Number of Distinct Detected Data	23	Number of Non-Detect Data	4
		Percent Non-Detects	14.81%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	19	Minimum Detected	2.944
Maximum Detected	232	Maximum Detected	5.447
Mean of Detected	81.79	Mean of Detected	4.19
SD of Detected	54.55	SD of Detected	0.692
Minimum Non-Detect	6.9	Minimum Non-Detect	1.932
Maximum Non-Detect	7.8	Maximum Non-Detect	2.054
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	4
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	23
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	14.81%

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.896	Shapiro Wilk Test Statistic	0.97
5% Shapiro Wilk Critical Value	0.914	5% Shapiro Wilk Critical Value	0.914
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	70.21	Mean	3.758
SD	57.61	SD	1.232
95% DL/2 (t) UCL	89.12	95% H-Stat (DL/2) UCL	154.1
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	65.72	Mean in Log Scale	3.958
SD	63.53	SD in Log Scale	0.854
95% MLE (t) UCL	86.57	Mean in Original Scale	71.73
95% MLE (Tiku) UCL	86.69	SD in Original Scale	55.88
		95% Percentile Bootstrap UCL	90.9
		95% BCA Bootstrap UCL	92.17
Gamma Distribution Test with Detected Values Only		**Data Distribution Test with Detected Values Only**	
k star (bias corrected)	2.19	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	37.34		
nu star	100.8		
A-D Test Statistic	0.191	**Nonparametric Statistics**	
5% A-D Critical Value	0.753	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.753	Mean	72.49
5% K-S Critical Value	0.183	SD	54.06
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	10.64

		95% KM (t) UCL	90.63
Assuming Gamma Distribution		95% KM (z) UCL	89.99
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	90.52
Minimum	1.0000E-9	95% KM (bootstrap t) UCL	95.3
Maximum	232	95% KM (BCA) UCL	93.57
Mean	70.42	95% KM (Percentile Bootstrap) UCL	89.93
Median	56.4	95% KM (Chebyshev) UCL	118.9
SD	57.39	97.5% KM (Chebyshev) UCL	138.9
k star	0.471	99% KM (Chebyshev) UCL	178.3
Theta star	149.4		
Nu star	25.46	Potential UCLs to Use	
AppChi2	14.96	95% KM (BCA) UCL	93.57
95% Gamma Approximate UCL	119.8		
95% Adjusted Gamma UCL	124.1		
Note: DL/2 is not a recommended method.			

1-Methylnaphthalene

General Statistics

Number of Valid Data	27	Number of Detected Data	17
Number of Distinct Detected Data	15	Number of Non-Detect Data	10
		Percent Non-Detects	37.04%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	2.3	Minimum Detected	0.833
Maximum Detected	20	Maximum Detected	2.996
Mean of Detected	7.759	Mean of Detected	1.829
SD of Detected	5.541	SD of Detected	0.671
Minimum Non-Detect	2	Minimum Non-Detect	0.693
Maximum Non-Detect	2.6	Maximum Non-Detect	0.956
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	11
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	16
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	40.74%

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.833	Shapiro Wilk Test Statistic	0.938
5% Shapiro Wilk Critical Value	0.892	5% Shapiro Wilk Critical Value	0.892
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	5.293	Mean	1.186
SD	5.444	SD	1.005
95% DL/2 (t) UCL	7.079	95% H-Stat (DL/2) UCL	7.098
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	3.633	Mean in Log Scale	1.21
SD	7.3	SD in Log Scale	1
95% MLE (t) UCL	6.029	Mean in Original Scale	5.342
95% MLE (Tiku) UCL	6.342	SD in Original Scale	5.409

95% Percentile Bootstrap UCL	7.108
95% BCA Bootstrap UCL	7.417

Gamma Distribution Test with Detected Values Only	
k star (bias corrected)	2.042
Theta Star	3.799
nu star	69.43
A-D Test Statistic	0.657
5% A-D Critical Value	0.748
K-S Test Statistic	0.748
5% K-S Critical Value	0.211
Data appear Gamma Distributed at 5% Significance Level	
Assuming Gamma Distribution	
Gamma ROS Statistics using Extrapolated Data	
Minimum	1.0000E-9
Maximum	20
Mean	6.517
Median	4.7
SD	4.892
k star	0.57
Theta star	11.44
Nu star	30.76
AppChi2	19.09
95% Gamma Approximate UCL	10.5
95% Adjusted Gamma UCL	10.84

Data Distribution Test with Detected Values Only	
Data appear Gamma Distributed at 5% Significance Level	
Nonparametric Statistics	
Kaplan-Meier (KM) Method	
Mean	5.737
SD	5.014
SE of Mean	0.995
95% KM (t) UCL	7.434
95% KM (z) UCL	7.373
95% KM (jackknife) UCL	7.283
95% KM (bootstrap t) UCL	7.978
95% KM (BCA) UCL	7.83
95% KM (Percentile Bootstrap) UCL	7.552
95% KM (Chebyshev) UCL	10.07
97.5% KM (Chebyshev) UCL	11.95
99% KM (Chebyshev) UCL	15.63
Potential UCLs to Use	
95% KM (Percentile Bootstrap) UCL	7.552

Note: DL/2 is not a recommended method.

Arsenic

General Statistics

Number of Valid Observations	27	Number of Distinct Observations	17

Raw Statistics		Log-transformed Statistics	
Minimum	1.8	Minimum of Log Data	0.588
Maximum	5.6	Maximum of Log Data	1.723
Mean	2.8	Mean of log Data	0.989
Median	2.4	SD of log Data	0.28
SD	0.878		
Coefficient of Variation	0.314		
Skewness	1.506		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.861	Shapiro Wilk Test Statistic	0.934
Shapiro Wilk Critical Value	0.923	Shapiro Wilk Critical Value	0.923
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	3.088	95% H-UCL	3.089
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	3.458

95% Adjusted-CLT UCL	3.13	97.5% Chebyshev (MVUE) UCL	3.746
95% Modified-t UCL	3.096	99% Chebyshev (MVUE) UCL	4.312

Gamma Distribution Test		Data Distribution	
k star (bias corrected)	11.16	Data appear Lognormal at 5% Significance Level	
Theta Star	0.251		
MLE of Mean	2.8		
MLE of Standard Deviation	0.838		
nu star	602.7		
Approximate Chi Square Value (.05)	546.8	Nonparametric Statistics	
Adjusted Level of Significance	0.0401	95% CLT UCL	3.078
Adjusted Chi Square Value	543.4	95% Jackknife UCL	3.088
		95% Standard Bootstrap UCL	3.071
Anderson-Darling Test Statistic	0.81	95% Bootstrap-t UCL	3.166
Anderson-Darling 5% Critical Value	0.744	95% Hall's Bootstrap UCL	3.208
Kolmogorov-Smirnov Test Statistic	0.187	95% Percentile Bootstrap UCL	3.096
Kolmogorov-Smirnov 5% Critical Value	0.168	95% BCA Bootstrap UCL	3.13
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	3.536
		97.5% Chebyshev(Mean, Sd) UCL	3.855
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	4.481
95% Approximate Gamma UCL	3.087		
95% Adjusted Gamma UCL	3.106		

Potential UCL to Use		
Use 95% Student's-t UCL	3.088	
or 95% Modified-t UCL	3.096	
or 95% H-UCL	3.089	

Lead

General Statistics

Number of Valid Observations	27	Number of Distinct Observations	27

Raw Statistics		Log-transformed Statistics	
Minimum	2.4	Minimum of Log Data	0.875
Maximum	17	Maximum of Log Data	2.833
Mean	11.82	Mean of log Data	2.34
Median	13.9	SD of log Data	0.597
SD	4.713		
Coefficient of Variation	0.399		
Skewness	-0.974		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.837	Shapiro Wilk Test Statistic	0.741
Shapiro Wilk Critical Value	0.923	Shapiro Wilk Critical Value	0.923
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	13.37	95% H-UCL	15.79
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	18.84
95% Adjusted-CLT UCL	13.13	97.5% Chebyshev (MVUE) UCL	21.66
95% Modified-t UCL	13.34	99% Chebyshev (MVUE) UCL	27.21

Baseline Site Conditions ProUCL 95% UCL Output

Gamma Distribution Test		Data Distribution	
k star (bias corrected)	3.589	Data do not follow a Discernable Distribution (0.05)	
Theta Star	3.294		
MLE of Mean	11.82		
MLE of Standard Deviation	6.24		
nu star	193.8		
Approximate Chi Square Value (.05)	162.6	Nonparametric Statistics	
Adjusted Level of Significance	0.0401	95% CLT UCL	13.31
Adjusted Chi Square Value	160.8	95% Jackknife UCL	13.37
		95% Standard Bootstrap UCL	13.3
Anderson-Darling Test Statistic	2.558	95% Bootstrap-t UCL	13.16
Anderson-Darling 5% Critical Value	0.749	95% Hall's Bootstrap UCL	13.16
Kolmogorov-Smirnov Test Statistic	0.251	95% Percentile Bootstrap UCL	13.32
Kolmogorov-Smirnov 5% Critical Value	0.169	95% BCA Bootstrap UCL	13.1
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	15.78
		97.5% Chebyshev(Mean, Sd) UCL	17.49
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	20.85
95% Approximate Gamma UCL	14.09		
95% Adjusted Gamma UCL	14.25		
Potential UCL to Use		Use 95% Chebyshev (Mean, Sd) UCL	15.78

Input for Post Remedial Site Conditions

Imput Data for ProUCL - Post Remedial Site Conditions
MIR Site
Beaver Dam, Wisconsin

Sample Location	Sample Depth	Naphthalene (by method 8270)	d_Naphthalene (by method 8270)	2-Methylnaphthalene	d_2-Methylnaphthalene	Acenaphthylene	d_Acenaphthylene	Acenaphthene	d_Acenaphthene	Fluorene	d_Fluorene	Phenanthrene	d_Phenanthrene	Anthracene	d_Anthracene	Fluoranthene	d_Fluoranthene	Pyrene	d_Pyrene	Benzo(a)anthracene	d_Benzo(a)anthracene
GP1	4' bgs	25	0	31.5	1	5.8	1	10.5	1	8.2	1	73.9	1	22	1	35.2	1	28.7	1	17.7	1
GP2	3' bgs	25	0	8.3	1	3.7	1	1.1	0	1.7	1	22.1	1	10	1	36.8	1	28.6	1	20.4	1
GP2	7' bgs	25	0	2.1	0	1.9	0	1	0	1	0	2.6	1	5.1	0	5.6	1	4.3	1	9.4	0
GP3	2' bgs	1.8	1	2.1	0	5.3	1	1	0	1	0	5.9	1	6.5	1	45.2	1	34.3	1	26.8	1
GP3	6' bgs	25	0	2.1	0	1.9	0	1	0	1	0	2.2	0	5.2	0	1.2	0	1.1	0	9.5	0
GP4	4' bgs	25	0	2.3	0	2.1	0	1.2	0	1.1	0	2.5	0	5.7	0	1.4	0	1.3	0	10.4	0
GP4	7' bgs	1.4	0	2.1	0	1.9	0	1	0	1	0	2.2	0	5.1	0	1.2	0	1.1	0	9.3	0
GP5	1.5' bgs	7.3	1	7.2	1	26.4	1	4.3	1	5.4	1	51.3	1	27.9	1	135	1	106	1	59.9	1
GP6	1.5' bgs	7.3	1	4.5	1	34.4	1	2.6	1	4.9	1	80.8	1	39.8	1	228	1	172	1	**91**	1
GP7	1.5' bgs	25	0	15.9	1	78	1	9.9	1	10.9	1	101	1	85.1	1	265	1	206	1	**145**	1
GP8	1.5' bgs	5	1	3.3	1	14.2	1	2.5	1	4.4	1	71.1	1	25.8	1	213	1	163	1	80	1
GP9	1.5' bgs	25	0	5.4	1	16.5	1	1.8	1	3.2	1	54.3	1	22.1	1	157	1	118	1	61.7	1
GP10	1.5' bgs	5.6	1	4.3	1	23.5	1	4.5	1	5.1	1	76.1	1	37.4	1	215	1	166	1	**96.1**	1
GP11	1.5' bgs	25	0	7.5	1	17.6	1	8.6	1	10.3	1	115	1	37.7	1	244	1	179	1	**93.1**	1
GP12	1.5' bgs	25	0	3.8	1	12.1	1	1.8	1	2.5	1	43.5	1	17.7	1	120	1	91.8	1	50.1	1
GP13	1.5' bgs	12.3	1	15.5	1	16.7	1	1.7	1	2.6	1	68.5	1	25	1	109	1	88.2	1	45.4	1
GP14	1.5' bgs	25	0	2	0	4.4	1	1	1	1.4	1	22.7	1	7.3	1	57.8	1	43.8	1	25.1	1
GP15	1.5' bgs	2.7	1	2.3	0	5.5	1	1.2	0	1.8	1	31.2	1	10	1	90.8	1	68.5	1	33.3	1
GP16	1.5' bgs	25	0	13.6	1	5.8	1	2.1	1	3.3	1	38.1	1	12.3	1	91.2	1	68.1	1	33.5	1
GP17	1.5' bgs	25	0	10.5	1	6.7	1	8.7	1	7	1	51.9	1	17.3	1	106	1	78.5	1	38.6	1
GP18	1.5' bgs	3.8	1	3.3	1	8.8	1	2.1	1	3.2	1	48.5	1	16.4	1	123	1	91.3	1	46.2	1
GP19	1.5' bgs	4.6	1	2.9	1	8.9	1	1.5	1	2.3	1	42.4	1	14.5	1	106	1	78.3	1	38.7	1
GP20	1.5' bgs	25	0	4.7	1	13.8	1	3.1	1	4.2	1	73	1	23	1	133	1	101	1	57.2	1
GP21	1.5' bgs	25	0	8.6	1	14.6	1	8.6	1	18.3	1	170	1	63.1	1	284	1	197	1	**108**	1
GP22	1.5' bgs	25	0	6.6	1	12.2	1	5.5	1	6.4	1	101	1	34.2	1	206	1	150	1	80.7	1
GP23	1.5' bgs	17.1	1	17.9	1	24.5	1	7.5	1	7.6	1	137	1	47.2	1	357	1	275	1	**142**	1

Chrysene	d_Chrysene	Benzo(a)pyrene	d_Benzo(a)pyrene	Benzo(b)fluoranthene	d_Benzo(b)fluoranthene	Indeno(1,2,3-cd)pyrene	d_Indeno(1,2,3-cd)pyrene	Dibenz(a,h)anthracene	d_Dibenz(a,h)anthracene	Benzo(g,h,i)perylene	d_Benzo(g,h,i)perylene	Benzo(k)fluoranthene	d_Benzo(k)fluoranthene	1-Methylnaphthalene	d_1-Methylnaphthalene	Arsenic	d_Arsenic	Lead	d_lead
20.4	1	**18.3**	1	17.2	1	12.5	1	5.8	0	14	1	19	1	20	1	**3.1**	1	7.7	1
21.6	1	**19.2**	1	17.7	1	12.2	1	5.3	0	14.4	1	19.5	1	5.8	1	**3.8**	1	5.5	1
3.9	0	4.1	0	6.4	0	4.7	0	5.2	0	4.7	0	7	0	2.1	0	**3.1**	1	3.5	1
25.6	1	**20.3**	1	16.7	1	8.8	1	5.2	0	8.2	1	21.5	1	2.1	0	**3.6**	1	13.2	1
3.9	0	4.1	0	6.4	0	4.8	0	5.3	0	4.8	0	7	0	2.1	0	**2.7**	1	3	1
4.3	0	4.5	0	7.1	0	5.3	0	5.8	0	5.3	0	7.8	0	2.3	0	**5.6**	1	7.2	1
3.8	0	4	0	6.3	0	4.7	0	5.2	0	4.7	0	6.9	0	2.1	0	**3**	1	2.4	1
79.7	1	**74.5**	1	76.2	1	54	1	**20.9**	1	58.6	1	80	1	4.7	1	**2.4**	1	14.1	1
131	1	**122**	1	**129**	1	**92.2**	1	**41.7**	1	101	1	98.1	1	3	1	**2.3**	1	14.4	1
193	1	**212**	1	**202**	1	**155**	1	**73.4**	1	181	1	164	1	7.3	1	**2.3**	1	16.6	1
128	1	**109**	1	**131**	1	**93.8**	1	**40.6**	1	97.1	1	124	1	2.1	0	**2**	1	15.4	1
89.8	1	**80.2**	1	**91.8**	1	62.1	1	**27.9**	1	58.5	1	84.1	1	3.5	1	**2.2**	1	15.8	1
110	1	**114**	1	**108**	1	76.4	1	**30.5**	1	71.1	1	113	1	2.9	1	**2.2**	1	12.4	1
113	1	**100**	1	**104**	1	63.8	1	**27.5**	1	61.5	1	102	1	4.7	1	**2.3**	1	11.2	1
65.6	1	**57**	1	62.5	1	39.1	1	**19.5**	1	39.7	1	57.9	1	2.3	1	**2.2**	1	15.2	1
59.7	1	**53.2**	1	51	1	41.1	1	**19.2**	1	40.5	1	55.4	1	13.5	1	**3.8**	1	14.3	1
33.8	1	**27.5**	1	29.8	1	18.6	1	7.8	1	17.7	1	28.9	1	2	0	**2.3**	1	3.1	1
45.5	1	**38.4**	1	41.4	1	26.5	1	**10.2**	1	25.3	1	41.4	1	2.3	0	**1.9**	1	11.5	1
49.6	1	**38.6**	1	47.9	1	28.2	1	**10.7**	1	26.8	1	40.8	1	12.2	1	**1.9**	1	14.8	1
50.6	1	**43**	1	45.6	1	27.8	1	**10.8**	1	28.2	1	48.3	1	6.1	1	**2.5**	1	17	1
61.5	1	**52.1**	1	55.6	1	35.9	1	**13**	1	33.7	1	56.4	1	2.3	0	**2.4**	1	14	1
58.2	1	**46.2**	1	55.4	1	33.8	1	**12.8**	1	34.6	1	52.3	1	2.6	0	**1.8**	1	11	1
67.3	1	**58.7**	1	58.3	1	40.1	1	**17.2**	1	38.7	1	64.1	1	3.8	1	**3.5**	1	15.6	1
128	1	**105**	1	**110**	1	60.4	1	**24.8**	1	57.4	1	107	1	6.6	1	**2.9**	1	13.8	1
102	1	**83.5**	1	**91.7**	1	57.3	1	**25.7**	1	55.5	1	88.5	1	4	1	**3.2**	1	16.4	1
206	1	**182**	1	**214**	1	**144**	1	**63.1**	1	146	1	232	1	13.5	1	**2.2**	1	16.2	1

ProUCL Output for Post Remedial Conditions

Pro-UCL Post Remedial 95% UCL

General UCL Statistics for Data Sets with Non-Detects

User Selected Options	
From File	C:\Documents and Settings\Paul.Overlien\My Documents\Projects\MIR\MIR_Excluding_GP_1_data.wst
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Naphthalene (by method 8270)

General Statistics

Number of Valid Samples	26	Number of Detected Data	10
Number of Unique Samples	9	Number of Non-Detect Data	16
Number of Missing Values	1	Percent Non-Detects	61.54%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	1.8	Minimum Detected	0.588
Maximum Detected	17.1	Maximum Detected	2.839
Mean of Detected	6.75	Mean of Detected	1.71
SD of Detected	4.68	SD of Detected	0.669
Minimum Non-Detect	1.4	Minimum Non-Detect	0.336
Maximum Non-Detect	25	Maximum Non-Detect	3.219

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	26
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	0
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	100.00%

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.863	Shapiro Wilk Test Statistic	0.985
5% Shapiro Wilk Critical Value	0.842	5% Shapiro Wilk Critical Value	0.842
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	9.835	Mean	2.101
SD	4.392	SD	0.756
95% DL/2 (t) UCL	11.31	95% H-Stat (DL/2) UCL	25.23
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	1.569
		SD in Log Scale	0.775
		Mean in Original Scale	6.302
		SD in Original Scale	4.788
		95% Percentile Bootstrap UCL	7.789
		95% BCA Bootstrap UCL	8.103

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only
k star (bias corrected)	1.928	Data appear Normal at 5% Significance Level
Theta Star	3.501	
nu star	38.56	
A-D Test Statistic	0.233	Nonparametric Statistics

5% A-D Critical Value	0.733	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.733	Mean	6.3
5% K-S Critical Value	0.269	SD	4.466
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	1.419
		95% KM (t) UCL	8.725
Assuming Gamma Distribution		95% KM (z) UCL	8.635
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	8.744
Minimum	0	95% KM (bootstrap t) UCL	11.18
Maximum	17.1	95% KM (BCA) UCL	8.856
Mean	6.824	95% KM (Percentile Bootstrap) UCL	8.838
Median	6.513	95% KM (Chebyshev) UCL	12.49
SD	4.34	97.5% KM (Chebyshev) UCL	15.16
k star	0.35	99% KM (Chebyshev) UCL	20.42
Theta star	19.52		
Nu star	18.18	Potential UCLs to Use	
AppChi2	9.519	95% KM (t) UCL	8.725
95% Gamma Approximate UCL	13.03	95% KM (Percentile Bootstrap) UCL	8.838
95% Adjusted Gamma UCL	13.62		

Note: DL/2 is not a recommended method.

Pro-UCL Post Remedial 95% UCL

2-Methylnaphthalene

General Statistics			
Number of Valid Samples	26	Number of Detected Data	19
Number of Unique Samples	18	Number of Non-Detect Data	7
Number of Missing Values	1	Percent Non-Detects	26.92%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	2.9	Minimum Detected	1.065
Maximum Detected	31.5	Maximum Detected	3.45
Mean of Detected	9.226	Mean of Detected	1.996
SD of Detected	7.121	SD of Detected	0.668
Minimum Non-Detect	2	Minimum Non-Detect	0.693
Maximum Non-Detect	2.3	Maximum Non-Detect	0.833

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	7
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	19
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	26.92%

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.797	Shapiro Wilk Test Statistic	0.955
5% Shapiro Wilk Critical Value	0.901	5% Shapiro Wilk Critical Value	0.901
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	7.031	Mean	1.477
SD	7.079	SD	1.041
95% DL/2 (t) UCL	9.402	95% H-Stat (DL/2) UCL	11.29
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	

Mean	5.853	Mean in Log Scale	1.567
SD	8.45	SD in Log Scale	0.928
95% MLE (t) UCL	8.684	Mean in Original Scale	7.158
95% MLE (Tiku) UCL	8.781	SD in Original Scale	6.973
		95% Percentile Bootstrap UCL	9.541
		95% BCA Bootstrap UCL	9.939
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	2.03	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	4.545		
nu star	77.14		
A-D Test Statistic	0.501	Nonparametric Statistics	
5% A-D Critical Value	0.75	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.75	Mean	7.523
5% K-S Critical Value	0.201	SD	6.556
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	1.321
		95% KM (t) UCL	9.779
Assuming Gamma Distribution		95% KM (z) UCL	9.696
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	9.688
Minimum	0	95% KM (bootstrap t) UCL	10.94
Maximum	31.5	95% KM (BCA) UCL	10.05
Mean	7.51	95% KM (Percentile Bootstrap) UCL	9.819
Median	5.05	95% KM (Chebyshev) UCL	13.28
SD	6.77	97.5% KM (Chebyshev) UCL	15.77
k star	0.522	99% KM (Chebyshev) UCL	20.67
Theta star	14.39		
Nu star	27.14	Potential UCLs to Use	
AppChi2	16.26	95% KM (Percentile Bootstrap) UCL	9.819
95% Gamma Approximate UCL	12.53		
95% Adjusted Gamma UCL	12.98		
Note: DL/2 is not a recommended method.			

Pro-UCL Post Remedial 95% UCL

Acenaphthylene

General Statistics			
Number of Valid Samples	26	Number of Detected Data	22
Number of Unique Samples	21	Number of Non-Detect Data	4
Number of Missing Values	1	Percent Non-Detects	15.38%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	3.7	Minimum Detected	1.308
Maximum Detected	78	Maximum Detected	4.357
Mean of Detected	16.34	Mean of Detected	2.496
SD of Detected	15.99	SD of Detected	0.752
Minimum Non-Detect	1.9	Minimum Non-Detect	0.642
Maximum Non-Detect	2.1	Maximum Non-Detect	0.742
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	4
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	22
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	15.38%

Pro-UCL Post Remedial 95% UCL

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.674	Shapiro Wilk Test Statistic	0.964
5% Shapiro Wilk Critical Value	0.911	5% Shapiro Wilk Critical Value	0.911
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	13.97	Mean	2.108
SD	15.7	SD	1.156
95% DL/2 (t) UCL	19.23	95% H-Stat (DL/2) UCL	26.65
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	12.51	Mean in Log Scale	2.229
SD	17.27	SD in Log Scale	0.943
95% MLE (t) UCL	18.3	Mean in Original Scale	14.16
95% MLE (Tiku) UCL	18.17	SD in Original Scale	15.55
		95% Percentile Bootstrap UCL	19.74
		95% BCA Bootstrap UCL	20.78
Gamma Distribution Test with Detected Values Only		**Data Distribution Test with Detected Values Only**	
k star (bias corrected)	1.609	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	10.15		
nu star	70.82		
A-D Test Statistic	0.544	**Nonparametric Statistics**	
5% A-D Critical Value	0.757	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.757	Mean	14.39
5% K-S Critical Value	0.188	SD	15.07
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	3.026
		95% KM (t) UCL	19.56
Assuming Gamma Distribution		95% KM (z) UCL	19.37
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	19.46
Minimum	0	95% KM (bootstrap t) UCL	23.59
Maximum	78	95% KM (BCA) UCL	19.95
Mean	13.88	95% KM (Percentile Bootstrap) UCL	20.12
Median	10.5	95% KM (Chebyshev) UCL	27.58
SD	15.79	97.5% KM (Chebyshev) UCL	33.29
k star	0.243	99% KM (Chebyshev) UCL	44.5
Theta star	57.06		
Nu star	12.65	**Potential UCLs to Use**	
AppChi2	5.656	95% KM (BCA) UCL	19.95
95% Gamma Approximate UCL	31.03		
95% Adjusted Gamma UCL	32.81		

Note: DL/2 is not a recommended method.

Acenaphthene

General Statistics

Number of Valid Samples	26	Number of Detected Data	19
Number of Unique Samples	16	Number of Non-Detect Data	7
Number of Missing Values	1	Percent Non-Detects	26.92%

Pro-UCL Post Remedial 95% UCL

Raw Statistics		Log-transformed Statistics	
Minimum Detected	1	Minimum Detected	0
Maximum Detected	10.5	Maximum Detected	2.351
Mean of Detected	4.647	Mean of Detected	1.284
SD of Detected	3.256	SD of Detected	0.747
Minimum Non-Detect	1	Minimum Non-Detect	0
Maximum Non-Detect	1.2	Maximum Non-Detect	0.182
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	8
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	18
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	30.77%

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.854	Shapiro Wilk Test Statistic	0.921
5% Shapiro Wilk Critical Value	0.901	5% Shapiro Wilk Critical Value	0.901
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	3.54	Mean	0.769
SD	3.33	SD	1.073
95% DL/2 (t) UCL	4.656	95% H-Stat (DL/2) UCL	6.283
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	2.881	Mean in Log Scale	0.822
SD	4.124	SD in Log Scale	1.014
95% MLE (t) UCL	4.263	Mean in Original Scale	3.578
95% MLE (Tiku) UCL	4.348	SD in Original Scale	3.297
		95% Percentile Bootstrap UCL	4.654
		95% BCA Bootstrap UCL	4.696

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	1.83	Data Follow Appr. Gamma Distribution at 5% Significance Level	
Theta Star	2.539		
nu star	69.55		
A-D Test Statistic	0.771	**Nonparametric Statistics**	
5% A-D Critical Value	0.751	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.751	Mean	3.665
5% K-S Critical Value	0.201	SD	3.155
Data follow Appr. Gamma Distribution at 5% Significance Level		SE of Mean	0.636
		95% KM (t) UCL	4.751
Assuming Gamma Distribution		95% KM (z) UCL	4.711
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	4.67
Minimum	0	95% KM (bootstrap t) UCL	4.9
Maximum	10.5	95% KM (BCA) UCL	4.958
Mean	3.774	95% KM (Percentile Bootstrap) UCL	4.777
Median	2.5	95% KM (Chebyshev) UCL	6.437
SD	3.166	97.5% KM (Chebyshev) UCL	7.636
k star	0.524	99% KM (Chebyshev) UCL	9.991
Theta star	7.199		

Nu star	27.26	Potential UCLs to Use	
AppChi2	16.36	95% KM (Percentile Bootstrap) UCL	4.777
95% Gamma Approximate UCL	6.291		
95% Adjusted Gamma UCL	6.514		

Note: DL/2 is not a recommended method.

Pro-UCL Post Remedial 95% UCL

Fluorene

General Statistics

Number of Valid Samples	26	Number of Detected Data	21
Number of Unique Samples	20	Number of Non-Detect Data	5
Number of Missing Values	1	Percent Non-Detects	19.23%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	1.4	Minimum Detected	0.336
Maximum Detected	18.3	Maximum Detected	2.907
Mean of Detected	5.462	Mean of Detected	1.479
SD of Detected	4.014	SD of Detected	0.671
Minimum Non-Detect	1	Minimum Non-Detect	0
Maximum Non-Detect	1.1	Maximum Non-Detect	0.0953

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	5
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	21
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	19.23%

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.831	Shapiro Wilk Test Statistic	0.986
5% Shapiro Wilk Critical Value	0.908	5% Shapiro Wilk Critical Value	0.908
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	

Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	4.51	Mean	1.065
SD	4.105	SD	1.054
95% DL/2 (t) UCL	5.885	95% H-Stat (DL/2) UCL	8.313
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	4.087	Mean in Log Scale	1.177
SD	4.62	SD in Log Scale	0.878
95% MLE (t) UCL	5.635	Mean in Original Scale	4.592
95% MLE (Tiku) UCL	5.643	SD in Original Scale	4.026
		95% Percentile Bootstrap UCL	5.948
		95% BCA Bootstrap UCL	6.119

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	2.124	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	2.571		
nu star	89.22		
A-D Test Statistic	0.256	Nonparametric Statistics	
5% A-D Critical Value	0.752	Kaplan-Meier (KM) Method	

K-S Test Statistic	0.752	Mean	4.681
5% K-S Critical Value	0.191	SD	3.867
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.777
		95% KM (t) UCL	6.008
Assuming Gamma Distribution		95% KM (z) UCL	5.959
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	5.964
Minimum	0	95% KM (bootstrap t) UCL	6.465
Maximum	18.3	95% KM (BCA) UCL	6.231
Mean	4.586	95% KM (Percentile Bootstrap) UCL	6
Median	3.25	95% KM (Chebyshev) UCL	8.068
SD	4.043	97.5% KM (Chebyshev) UCL	9.534
k star	0.512	99% KM (Chebyshev) UCL	12.41
Theta star	8.949		
Nu star	26.65	Potential UCLs to Use	
AppChi2	15.88	95% KM (BCA) UCL	6.231
95% Gamma Approximate UCL	7.696		
95% Adjusted Gamma UCL	7.972		
Note: DL/2 is not a recommended method.			

Pro-UCL Post Remedial 95% UCL

Phenanthrene

General Statistics

Number of Valid Samples	26	Number of Detected Data	23
Number of Unique Samples	22	Number of Non-Detect Data	3
Number of Missing Values	1	Percent Non-Detects	11.54%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	2.6	Minimum Detected	0.956
Maximum Detected	170	Maximum Detected	5.136
Mean of Detected	64.43	Mean of Detected	3.876
SD of Detected	40.71	SD of Detected	0.954
Minimum Non-Detect	2.2	Minimum Non-Detect	0.788
Maximum Non-Detect	2.5	Maximum Non-Detect	0.916
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	3
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	23
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	11.54%

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.952	Shapiro Wilk Test Statistic	0.845
5% Shapiro Wilk Critical Value	0.914	5% Shapiro Wilk Critical Value	0.914
Data appear Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	57.13	Mean	3.445
SD	43.4	SD	1.512
95% DL/2 (t) UCL	71.67	95% H-Stat (DL/2) UCL	199.4
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	54.56	Mean in Log Scale	3.653

SD	46.87	SD in Log Scale	1.096
95% MLE (t) UCL	70.26	Mean in Original Scale	57.81
95% MLE (Tiku) UCL	70.34	SD in Original Scale	42.52
		95% Percentile Bootstrap UCL	70.72
		95% BCA Bootstrap UCL	72.28
Gamma Distribution Test with Detected Values Only		**Data Distribution Test with Detected Values Only**	
k star (bias corrected)	1.661	Data appear Normal at 5% Significance Level	
Theta Star	38.79		
nu star	76.41		
A-D Test Statistic	0.464	**Nonparametric Statistics**	
5% A-D Critical Value	0.756	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.756	Mean	57.3
5% K-S Critical Value	0.184	SD	42.34
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	8.49
		95% KM (t) UCL	71.8
Assuming Gamma Distribution		95% KM (z) UCL	71.26
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	71.56
Minimum	0	95% KM (bootstrap t) UCL	73.66
Maximum	170	95% KM (BCA) UCL	72.73
Mean	57.18	95% KM (Percentile Bootstrap) UCL	71.95
Median	51.6	95% KM (Chebyshev) UCL	94.3
SD	43.33	97.5% KM (Chebyshev) UCL	110.3
k star	0.307	99% KM (Chebyshev) UCL	141.8
Theta star	186.5		
Nu star	15.95	Potential UCLs to Use	
AppChi2	7.925	95% KM (t) UCL	71.8
95% Gamma Approximate UCL	115.1	95% KM (Percentile Bootstrap) UCL	71.95
95% Adjusted Gamma UCL	120.8		
Note: DL/2 is not a recommended method.			

Pro-UCL Post Remedial 95% UCL

Anthracene

General Statistics

Number of Valid Samples	26	Number of Detected Data	22
Number of Unique Samples	21	Number of Non-Detect Data	4
Number of Missing Values	1	Percent Non-Detects	15.38%
Raw Statistics		**Log-transformed Statistics**	
Minimum Detected	6.5	Minimum Detected	1.872
Maximum Detected	85.1	Maximum Detected	4.444
Mean of Detected	27.38	Mean of Detected	3.1
SD of Detected	19.08	SD of Detected	0.669
Minimum Non-Detect	5.1	Minimum Non-Detect	1.629
Maximum Non-Detect	5.7	Maximum Non-Detect	1.74
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	4
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	22
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	15.38%

UCL Statistics

Pro-UCL Post Remedial 95% UCL

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.858	Shapiro Wilk Test Statistic	0.987
5% Shapiro Wilk Critical Value	0.911	5% Shapiro Wilk Critical Value	0.911
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	23.57	Mean	2.772
SD	19.71	SD	0.995
95% DL/2 (t) UCL	30.18	95% H-Stat (DL/2) UCL	40.7
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	22.14	Mean in Log Scale	2.865
SD	21.47	SD in Log Scale	0.833
95% MLE (t) UCL	29.33	Mean in Original Scale	23.91
95% MLE (Tiku) UCL	29.3	SD in Original Scale	19.35
		95% Percentile Bootstrap UCL	30.4
		95% BCA Bootstrap UCL	31.3
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	2.223	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	12.32		
nu star	97.81		
A-D Test Statistic	0.197	Nonparametric Statistics	
5% A-D Critical Value	0.753	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.753	Mean	24.17
5% K-S Critical Value	0.187	SD	18.73
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	3.759
		95% KM (t) UCL	30.59
Assuming Gamma Distribution		95% KM (z) UCL	30.35
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	30.48
Minimum	0	95% KM (bootstrap t) UCL	32.93
Maximum	85.1	95% KM (BCA) UCL	31
Mean	23.48	95% KM (Percentile Bootstrap) UCL	30.61
Median	19.85	95% KM (Chebyshev) UCL	40.55
SD	19.83	97.5% KM (Chebyshev) UCL	47.64
k star	0.48	99% KM (Chebyshev) UCL	61.57
Theta star	48.92		
Nu star	24.96	Potential UCLs to Use	
AppChi2	14.58	95% KM (BCA) UCL	31
95% Gamma Approximate UCL	40.19		
95% Adjusted Gamma UCL	41.69		

Note: DL/2 is not a recommended method.

Fluoranthene

General Statistics			
Number of Valid Samples	26	Number of Detected Data	23
Number of Unique Samples	22	Number of Non-Detect Data	3
Number of Missing Values	1	Percent Non-Detects	11.54%

Pro-UCL Post Remedial 95% UCL

Raw Statistics		Log-transformed Statistics	
Minimum Detected	5.6	Minimum Detected	1.723
Maximum Detected	357	Maximum Detected	5.878
Mean of Detected	146.2	Mean of Detected	4.711
SD of Detected	90.7	SD of Detected	0.914
Minimum Non-Detect	1.2	Minimum Non-Detect	0.182
Maximum Non-Detect	1.4	Maximum Non-Detect	0.336
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	3
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	23
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	11.54%

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.957	Shapiro Wilk Test Statistic	0.864
5% Shapiro Wilk Critical Value	0.914	5% Shapiro Wilk Critical Value	0.914
Data appear Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	129.4	Mean	4.114
SD	97.42	SD	1.89
95% DL/2 (t) UCL	162.1	95% H-Stat (DL/2) UCL	940.3
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	123.5	Mean in Log Scale	4.494
SD	105.7	SD in Log Scale	1.054
95% MLE (t) UCL	158.9	Mean in Original Scale	131.4
95% MLE (Tiku) UCL	159.2	SD in Original Scale	94.91
		95% Percentile Bootstrap UCL	160.5
		95% BCA Bootstrap UCL	163.8
Gamma Distribution Test with Detected Values Only		**Data Distribution Test with Detected Values Only**	
k star (bias corrected)	1.742	Data appear Normal at 5% Significance Level	
Theta Star	83.95		
nu star	80.14		
A-D Test Statistic	0.375	**Nonparametric Statistics**	
5% A-D Critical Value	0.755	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.755	Mean	130
5% K-S Critical Value	0.184	SD	94.76
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	19
		95% KM (t) UCL	162.5
Assuming Gamma Distribution		95% KM (z) UCL	161.3
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	161
Minimum	0	95% KM (bootstrap t) UCL	162.4
Maximum	357	95% KM (BCA) UCL	166.6
Mean	129.7	95% KM (Percentile Bootstrap) UCL	162.8
Median	114.5	95% KM (Chebyshev) UCL	212.8
SD	97.01	97.5% KM (Chebyshev) UCL	248.7
k star	0.301	99% KM (Chebyshev) UCL	319.1
Theta star	431.5		
Nu star	15.64	**Potential UCLs to Use**	

AppChi2	7.706	95% KM (t) UCL	162.5
95% Gamma Approximate UCL	263.3	95% KM (Percentile Bootstrap) UCL	162.8
95% Adjusted Gamma UCL	276.4		

Note: DL/2 is not a recommended method.

Pro-UCL Post Remedial 95% UCL

Pyrene

General Statistics

Number of Valid Samples	26	Number of Detected Data	23
Number of Unique Samples	23	Number of Non-Detect Data	3
Number of Missing Values	1	Percent Non-Detects	11.54%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	4.3	Minimum Detected	1.459
Maximum Detected	275	Maximum Detected	5.617
Mean of Detected	110.3	Mean of Detected	4.435
SD of Detected	67.91	SD of Detected	0.903
Minimum Non-Detect	1.1	Minimum Non-Detect	0.0953
Maximum Non-Detect	1.3	Maximum Non-Detect	0.262

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	3
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	23
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	11.54%

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.958	Shapiro Wilk Test Statistic	0.862
5% Shapiro Wilk Critical Value	0.914	5% Shapiro Wilk Critical Value	0.914
Data appear Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	

Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	97.66	Mean	3.86
SD	73.06	SD	1.83
95% DL/2 (t) UCL	122.1	95% H-Stat (DL/2) UCL	615.3
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	93.22	Mean in Log Scale	4.221
SD	79.22	SD in Log Scale	1.041
95% MLE (t) UCL	119.8	Mean in Original Scale	99.14
95% MLE (Tiku) UCL	120	SD in Original Scale	71.11
		95% Percentile Bootstrap UCL	121.5
		95% BCA Bootstrap UCL	124.3

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	1.778	Data appear Normal at 5% Significance Level	
Theta Star	62.05		
nu star	81.78		
A-D Test Statistic	0.371	Nonparametric Statistics	
5% A-D Critical Value	0.755	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.755	Mean	98.09

5% K-S Critical Value	0.184	SD	71.06
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	14.25
		95% KM (t) UCL	122.4
Assuming Gamma Distribution		95% KM (z) UCL	121.5
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	121.2
Minimum	0	95% KM (bootstrap t) UCL	123.1
Maximum	275	95% KM (BCA) UCL	124.5
Mean	97.91	95% KM (Percentile Bootstrap) UCL	123.8
Median	89.75	95% KM (Chebyshev) UCL	160.2
SD	72.73	97.5% KM (Chebyshev) UCL	187.1
k star	0.304	99% KM (Chebyshev) UCL	239.9
Theta star	322		
Nu star	15.81	Potential UCLs to Use	
AppChi2	7.829	95% KM (t) UCL	122.4
95% Gamma Approximate UCL	197.7	95% KM (Percentile Bootstrap) UCL	123.8
95% Adjusted Gamma UCL	207.5		
Note: DL/2 is not a recommended method.			

Pro-UCL Post Remedial 95% UCL

Benzo(a) anthracene

General Statistics

Number of Valid Samples	26	Number of Detected Data	22
Number of Unique Samples	22	Number of Non-Detect Data	4
Number of Missing Values	1	Percent Non-Detects	15.38%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	17.7	Minimum Detected	2.874
Maximum Detected	145	Maximum Detected	4.977
Mean of Detected	63.2	Mean of Detected	3.979
SD of Detected	36.99	SD of Detected	0.604
Minimum Non-Detect	9.3	Minimum Non-Detect	2.23
Maximum Non-Detect	10.4	Maximum Non-Detect	2.342
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	4
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	22
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	15.38%

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.911	Shapiro Wilk Test Statistic	0.973
5% Shapiro Wilk Critical Value	0.911	5% Shapiro Wilk Critical Value	0.911
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	54.22	Mean	3.609
SD	40.13	SD	1.044
95% DL/2 (t) UCL	67.67	95% H-Stat (DL/2) UCL	97.08
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	51.45	Mean in Log Scale	3.769
SD	43.9	SD in Log Scale	0.748

95% MLE (t) UCL	66.15	Mean in Original Scale	55.58
95% MLE (Tiku) UCL	66.32	SD in Original Scale	38.5
		95% Percentile Bootstrap UCL	67.61
		95% BCA Bootstrap UCL	68.69
Gamma Distribution Test with Detected Values Only		**Data Distribution Test with Detected Values Only**	
k star (bias corrected)	2.753	Data appear Normal at 5% Significance Level	
Theta Star	22.96		
nu star	121.1		
A-D Test Statistic	0.244	**Nonparametric Statistics**	
5% A-D Critical Value	0.749	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.749	Mean	56.2
5% K-S Critical Value	0.187	SD	37.08
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	7.442
		95% KM (t) UCL	68.92
Assuming Gamma Distribution		95% KM (z) UCL	68.45
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	68.62
Minimum	8.454	95% KM (bootstrap t) UCL	70.38
Maximum	145	95% KM (BCA) UCL	69.23
Mean	54.78	95% KM (Percentile Bootstrap) UCL	69.04
Median	45.8	95% KM (Chebyshev) UCL	88.64
SD	39.43	97.5% KM (Chebyshev) UCL	102.7
k star	1.594	99% KM (Chebyshev) UCL	130.3
Theta star	34.36		
Nu star	82.91	**Potential UCLs to Use**	
AppChi2	62.92	95% KM (t) UCL	68.92
95% Gamma Approximate UCL	72.18	95% KM (Percentile Bootstrap) UCL	69.04
95% Adjusted Gamma UCL	73.52		
Note: DL/2 is not a recommended method.			

Pro-UCL Post Remedial 95% UCL

Chrysene

General Statistics

Number of Valid Samples	26	Number of Detected Data	22
Number of Unique Samples	21	Number of Non-Detect Data	4
Number of Missing Values	1	Percent Non-Detects	15.38%
Raw Statistics		**Log-transformed Statistics**	
Minimum Detected	20.4	Minimum Detected	3.016
Maximum Detected	206	Maximum Detected	5.328
Mean of Detected	83.63	Mean of Detected	4.239
SD of Detected	51.07	SD of Detected	0.651
Minimum Non-Detect	3.8	Minimum Non-Detect	1.335
Maximum Non-Detect	4.3	Maximum Non-Detect	1.459
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	4
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	22
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	15.38%

UCL Statistics

Normal Distribution Test with Detected Values Only	**Lognormal Distribution Test with Detected Values Only**

Shapiro Wilk Test Statistic	0.911	Shapiro Wilk Test Statistic	0.965
5% Shapiro Wilk Critical Value	0.911	5% Shapiro Wilk Critical Value	0.911
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	71.07	Mean	3.692
SD	55.62	SD	1.437
95% DL/2 (t) UCL	89.7	95% H-Stat (DL/2) UCL	214.5
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	66.41	Mean in Log Scale	4.013
SD	62.09	SD in Log Scale	0.806
95% MLE (t) UCL	87.21	Mean in Original Scale	73.24
95% MLE (Tiku) UCL	87.58	SD in Original Scale	53
		95% Percentile Bootstrap UCL	90.7
		95% BCA Bootstrap UCL	92.94
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	2.47	Data appear Normal at 5% Significance Level	
Theta Star	33.86		
nu star	108.7		
A-D Test Statistic	0.221	Nonparametric Statistics	
5% A-D Critical Value	0.751	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.751	Mean	73.9
5% K-S Critical Value	0.187	SD	51.25
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	10.29
		95% KM (t) UCL	91.48
Assuming Gamma Distribution		95% KM (z) UCL	90.83
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	91.3
Minimum	0	95% KM (bootstrap t) UCL	94.04
Maximum	206	95% KM (BCA) UCL	92.33
Mean	72.22	95% KM (Percentile Bootstrap) UCL	91.2
Median	60.6	95% KM (Chebyshev) UCL	118.7
SD	54.25	97.5% KM (Chebyshev) UCL	138.2
k star	0.489	99% KM (Chebyshev) UCL	176.3
Theta star	147.7		
Nu star	25.43	Potential UCLs to Use	
AppChi2	14.94	95% KM (t) UCL	91.48
95% Gamma Approximate UCL	122.9	95% KM (Percentile Bootstrap) UCL	91.2
95% Adjusted Gamma UCL	127.5		

Note: DL/2 is not a recommended method.

Pro-UCL Post Remedial 95% UCL

Benzo(a)pyrene

General Statistics			
Number of Valid Samples	26	Number of Detected Data	22
Number of Unique Samples	22	Number of Non-Detect Data	4
Number of Missing Values	1	Percent Non-Detects	15.38%
Raw Statistics		Log-transformed Statistics	

Minimum Detected	18.3	Minimum Detected	2.907
Maximum Detected	212	Maximum Detected	5.357
Mean of Detected	75.21	Mean of Detected	4.104
SD of Detected	50.9	SD of Detected	0.69
Minimum Non-Detect	4	Minimum Non-Detect	1.386
Maximum Non-Detect	4.5	Maximum Non-Detect	1.504
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	4
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	22
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	15.38%

Pro-UCL Post Remedial 95% UCL

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.884	Shapiro Wilk Test Statistic	0.969
5% Shapiro Wilk Critical Value	0.911	5% Shapiro Wilk Critical Value	0.911
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	63.96	Mean	3.586
SD	53.86	SD	1.392
95% DL/2 (t) UCL	82	95% H-Stat (DL/2) UCL	177.7
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	59.33	Mean in Log Scale	3.863
SD	59.97	SD in Log Scale	0.858
95% MLE (t) UCL	79.42	Mean in Original Scale	65.6
95% MLE (Tiku) UCL	79.61	SD in Original Scale	52.02
		95% Percentile Bootstrap UCL	82.93
		95% BCA Bootstrap UCL	85.13
Gamma Distribution Test with Detected Values Only		**Data Distribution Test with Detected Values Only**	
k star (bias corrected)	2.163	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	34.78		
nu star	95.16		
A-D Test Statistic	0.226	**Nonparametric Statistics**	
5% A-D Critical Value	0.753	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.753	Mean	66.46
5% K-S Critical Value	0.187	SD	50.14
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	10.07
		95% KM (t) UCL	83.65
Assuming Gamma Distribution		95% KM (z) UCL	83.01
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	83.5
Minimum	0	95% KM (bootstrap t) UCL	88.15
Maximum	212	95% KM (BCA) UCL	83.92
Mean	64.44	95% KM (Percentile Bootstrap) UCL	84.14
Median	52.65	95% KM (Chebyshev) UCL	110.3
SD	53.33	97.5% KM (Chebyshev) UCL	129.3
k star	0.463	99% KM (Chebyshev) UCL	166.6
Theta star	139.1		
Nu star	24.08	**Potential UCLs to Use**	
AppChi2	13.91	95% KM (BCA) UCL	83.92

95% Gamma Approximate UCL	111.5
95% Adjusted Gamma UCL	115.8

Note: DL/2 is not a recommended method.

Pro-UCL Post Remedial 95% UCL

Benzo(b)fluoranthene

General Statistics

Number of Valid Samples	26	Number of Detected Data	22
Number of Unique Samples	22	Number of Non-Detect Data	4
Number of Missing Values	1	Percent Non-Detects	15.38%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	16.7	Minimum Detected	2.815
Maximum Detected	214	Maximum Detected	5.366
Mean of Detected	79.85	Mean of Detected	4.151
SD of Detected	54.01	SD of Detected	0.728
Minimum Non-Detect	6.3	Minimum Non-Detect	1.841
Maximum Non-Detect	7.1	Maximum Non-Detect	1.96

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	4
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	22
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	15.38%

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.889	Shapiro Wilk Test Statistic	0.952
5% Shapiro Wilk Critical Value	0.911	5% Shapiro Wilk Critical Value	0.911
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	

Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	68.07	Mean	3.694
SD	56.96	SD	1.279
95% DL/2 (t) UCL	87.15	95% H-Stat (DL/2) UCL	165.4
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	63.34	Mean in Log Scale	3.9
SD	63.14	SD in Log Scale	0.898
95% MLE (t) UCL	84.49	Mean in Original Scale	69.5
95% MLE (Tiku) UCL	84.64	SD in Original Scale	55.36
		95% Percentile Bootstrap UCL	86.84
		95% BCA Bootstrap UCL	88.34

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	2.043	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	39.08		
nu star	89.91		
A-D Test Statistic	0.263	Nonparametric Statistics	
5% A-D Critical Value	0.754	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.754	Mean	70.14
5% K-S Critical Value	0.187	SD	53.62

Data appear Gamma Distributed at 5% Significance Level		SE of Mean	10.76
		95% KM (t) UCL	88.53
Assuming Gamma Distribution		95% KM (z) UCL	87.84
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	88.41
Minimum	0	95% KM (bootstrap t) UCL	92.16
Maximum	214	95% KM (BCA) UCL	88.92
Mean	68.34	95% KM (Percentile Bootstrap) UCL	88.14
Median	55.5	95% KM (Chebyshev) UCL	117.1
SD	56.68	97.5% KM (Chebyshev) UCL	137.4
k star	0.456	99% KM (Chebyshev) UCL	177.2
Theta star	150		
Nu star	23.69	Potential UCLs to Use	
AppChi2	13.61	95% KM (BCA) UCL	88.92
95% Gamma Approximate UCL	118.9		
95% Adjusted Gamma UCL	123.5		
Note: DL/2 is not a recommended method.			

Pro-UCL Post Remedial 95% UCL

Indeno(1,2,3-cd)pyrene

General Statistics			
Number of Valid Samples	26	Number of Detected Data	22
Number of Unique Samples	22	Number of Non-Detect Data	4
Number of Missing Values	1	Percent Non-Detects	15.38%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	8.8	Minimum Detected	2.175
Maximum Detected	155	Maximum Detected	5.043
Mean of Detected	53.8	Mean of Detected	3.731
SD of Detected	39.19	SD of Detected	0.762
Minimum Non-Detect	4.7	Minimum Non-Detect	1.548
Maximum Non-Detect	5.3	Maximum Non-Detect	1.668
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	4
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	22
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	15.38%

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.869	Shapiro Wilk Test Statistic	0.974
5% Shapiro Wilk Critical Value	0.911	5% Shapiro Wilk Critical Value	0.911
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	45.9	Mean	3.294
SD	40.59	SD	1.257
95% DL/2 (t) UCL	59.49	95% H-Stat (DL/2) UCL	107.8
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	42.46	Mean in Log Scale	3.467
SD	44.9	SD in Log Scale	0.943
95% MLE (t) UCL	57.5	Mean in Original Scale	46.69

95% MLE (Tiku) UCL	57.51	SD in Original Scale	39.74
		95% Percentile Bootstrap UCL	60.03
		95% BCA Bootstrap UCL	62.79
Gamma Distribution Test with Detected Values Only		**Data Distribution Test with Detected Values Only**	
k star (bias corrected)	1.858	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	28.95		
nu star	81.77		
A-D Test Statistic	0.204	**Nonparametric Statistics**	
5% A-D Critical Value	0.755	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.755	Mean	46.88
5% K-S Critical Value	0.188	SD	38.78
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	7.785
		95% KM (t) UCL	60.17
Assuming Gamma Distribution		95% KM (z) UCL	59.68
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	59.81
Minimum	0	95% KM (bootstrap t) UCL	63
Maximum	155	95% KM (BCA) UCL	61.33
Mean	45.76	95% KM (Percentile Bootstrap) UCL	60.13
Median	37.5	95% KM (Chebyshev) UCL	80.81
SD	40.75	97.5% KM (Chebyshev) UCL	95.49
k star	0.237	99% KM (Chebyshev) UCL	124.3
Theta star	192.7		
Nu star	12.35	**Potential UCLs to Use**	
AppChi2	5.456	95% KM (BCA) UCL	61.33
95% Gamma Approximate UCL	103.6		
95% Adjusted Gamma UCL	109.6		
Note: DL/2 is not a recommended method.			

Pro-UCL Post Remedial 95% UCL

Dibenz(a,h)anthracene

General Statistics

Number of Valid Samples	26	Number of Detected Data	19
Number of Unique Samples	19	Number of Non-Detect Data	7
Number of Missing Values	1	Percent Non-Detects	26.92%
Raw Statistics		**Log-transformed Statistics**	
Minimum Detected	7.8	Minimum Detected	2.054
Maximum Detected	73.4	Maximum Detected	4.296
Mean of Detected	26.17	Mean of Detected	3.076
SD of Detected	17.78	SD of Detected	0.621
Minimum Non-Detect	5.2	Minimum Non-Detect	1.649
Maximum Non-Detect	5.8	Maximum Non-Detect	1.758
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	7
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	19
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	26.92%

UCL Statistics

Normal Distribution Test with Detected Values Only		**Lognormal Distribution Test with Detected Values Only**	
Shapiro Wilk Test Statistic	0.837	Shapiro Wilk Test Statistic	0.97

5% Shapiro Wilk Critical Value	0.901	5% Shapiro Wilk Critical Value	0.901
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	19.85	Mean	2.515
SD	18.45	SD	1.08
95% DL/2 (t) UCL	26.03	95% H-Stat (DL/2) UCL	38.85
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	16.87	Mean in Log Scale	2.679
SD	22.11	SD in Log Scale	0.859
95% MLE (t) UCL	24.28	Mean in Original Scale	20.5
95% MLE (Tiku) UCL	24.59	SD in Original Scale	17.86
		95% Percentile Bootstrap UCL	26.72
		95% BCA Bootstrap UCL	27.35
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	2.396	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	10.92		
nu star	91.06		
A-D Test Statistic	0.375	Nonparametric Statistics	
5% A-D Critical Value	0.749	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.749	Mean	21.23
5% K-S Critical Value	0.2	SD	16.89
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	3.403
		95% KM (t) UCL	27.04
Assuming Gamma Distribution		95% KM (z) UCL	26.82
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	26.63
Minimum	1.288	95% KM (bootstrap t) UCL	28.96
Maximum	73.4	95% KM (BCA) UCL	28.36
Mean	21.62	95% KM (Percentile Bootstrap) UCL	27.42
Median	16.73	95% KM (Chebyshev) UCL	36.06
SD	17.16	97.5% KM (Chebyshev) UCL	42.48
k star	1.628	99% KM (Chebyshev) UCL	55.09
Theta star	13.29		
Nu star	84.63	Potential UCLs to Use	
AppChi2	64.43	95% KM (Percentile Bootstrap) UCL	27.42
95% Gamma Approximate UCL	28.4		
95% Adjusted Gamma UCL	28.93		
Note: DL/2 is not a recommended method.			

Pro-UCL Post Remedial 95% UCL

Benzo(g,h,i)perylene

General Statistics			
Number of Valid Samples	26	Number of Detected Data	22
Number of Unique Samples	22	Number of Non-Detect Data	4
Number of Missing Values	1	Percent Non-Detects	15.38%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	8.2	Minimum Detected	2.104

Maximum Detected	181	Maximum Detected	5.198
Mean of Detected	54.98	Mean of Detected	3.737
SD of Detected	43.24	SD of Detected	0.77
Minimum Non-Detect	4.7	Minimum Non-Detect	1.548
Maximum Non-Detect	5.3	Maximum Non-Detect	1.668
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	4
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	22
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	15.38%

Pro-UCL Post Remedial 95% UCL

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.834	Shapiro Wilk Test Statistic	0.985
5% Shapiro Wilk Critical Value	0.911	5% Shapiro Wilk Critical Value	0.911
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	46.89	Mean	3.299
SD	44.09	SD	1.263
95% DL/2 (t) UCL	61.67	95% H-Stat (DL/2) UCL	108.7
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	43.03	Mean in Log Scale	3.468
SD	48.77	SD in Log Scale	0.956
95% MLE (t) UCL	59.37	Mean in Original Scale	47.66
95% MLE (Tiku) UCL	59.29	SD in Original Scale	43.33
		95% Percentile Bootstrap UCL	62.36
		95% BCA Bootstrap UCL	64.87
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	1.758	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	31.28		
nu star	77.34		
A-D Test Statistic	0.27	Nonparametric Statistics	
5% A-D Critical Value	0.756	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.756	Mean	47.78
5% K-S Critical Value	0.188	SD	42.37
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	8.505
		95% KM (t) UCL	62.31
Assuming Gamma Distribution		95% KM (z) UCL	61.77
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	61.72
Minimum	0	95% KM (bootstrap t) UCL	67.13
Maximum	181	95% KM (BCA) UCL	63.49
Mean	46.7	95% KM (Percentile Bootstrap) UCL	62.47
Median	36.65	95% KM (Chebyshev) UCL	84.85
SD	44.31	97.5% KM (Chebyshev) UCL	100.9
k star	0.236	99% KM (Chebyshev) UCL	132.4
Theta star	198		
Nu star	12.26	Potential UCLs to Use	
AppChi2	5.399	95% KM (BCA) UCL	63.49
95% Gamma Approximate UCL	106		

95% Adjusted Gamma UCL	112.3

Note: DL/2 is not a recommended method.

Pro-UCL Post Remedial 95% UCL

Benzo(k)fluoranthene

General Statistics

Number of Valid Samples	26	Number of Detected Data	22
Number of Unique Samples	22	Number of Non-Detect Data	4
Number of Missing Values	1	Percent Non-Detects	15.38%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	19	Minimum Detected	2.944
Maximum Detected	232	Maximum Detected	5.447
Mean of Detected	77.19	Mean of Detected	4.143
SD of Detected	51.06	SD of Detected	0.671
Minimum Non-Detect	6.9	Minimum Non-Detect	1.932
Maximum Non-Detect	7.8	Maximum Non-Detect	2.054
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	4
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	22
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	15.38%

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.881	Shapiro Wilk Test Statistic	0.97
5% Shapiro Wilk Critical Value	0.911	5% Shapiro Wilk Critical Value	0.911
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	65.87	Mean	3.702
SD	54.07	SD	1.221
95% DL/2 (t) UCL	83.98	95% H-Stat (DL/2) UCL	145.8
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	61.49	Mean in Log Scale	3.91
SD	59.82	SD in Log Scale	0.832
95% MLE (t) UCL	81.53	Mean in Original Scale	67.46
95% MLE (Tiku) UCL	81.68	SD in Original Scale	52.28
		95% Percentile Bootstrap UCL	84.11
		95% BCA Bootstrap UCL	86.88
Gamma Distribution Test with Detected Values Only		**Data Distribution Test with Detected Values Only**	
k star (bias corrected)	2.292	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	33.68		
nu star	100.9		
A-D Test Statistic	0.199	**Nonparametric Statistics**	
5% A-D Critical Value	0.752	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.752	Mean	68.24
5% K-S Critical Value	0.187	SD	50.47
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	10.13

		95% KM (t) UCL	85.54
Assuming Gamma Distribution		95% KM (z) UCL	84.9
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	85.43
Minimum	0	95% KM (bootstrap t) UCL	89.88
Maximum	232	95% KM (BCA) UCL	86.19
Mean	66.39	95% KM (Percentile Bootstrap) UCL	85.25
Median	55.9	95% KM (Chebyshev) UCL	112.4
SD	53.5	97.5% KM (Chebyshev) UCL	131.5
k star	0.477	99% KM (Chebyshev) UCL	169
Theta star	139.1		
Nu star	24.82	Potential UCLs to Use	
AppChi2	14.47	95% KM (BCA) UCL	86.19
95% Gamma Approximate UCL	113.8		
95% Adjusted Gamma UCL	118.1		
Note: DL/2 is not a recommended method.			

Pro-UCL Post Remedial 95% UCL

1-Methylnaphthalene

General Statistics

Number of Valid Samples	26	Number of Detected Data	16
Number of Unique Samples	14	Number of Non-Detect Data	10
Number of Missing Values	1	Percent Non-Detects	38.46%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	2.3	Minimum Detected	0.833
Maximum Detected	20	Maximum Detected	2.996
Mean of Detected	7.119	Mean of Detected	1.763
SD of Detected	5.032	SD of Detected	0.633
Minimum Non-Detect	2	Minimum Non-Detect	0.693
Maximum Non-Detect	2.6	Maximum Non-Detect	0.956
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	11
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	15
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	42.31%

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.82	Shapiro Wilk Test Statistic	0.946
5% Shapiro Wilk Critical Value	0.887	5% Shapiro Wilk Critical Value	0.887
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	4.804	Mean	1.121
SD	4.91	SD	0.964
95% DL/2 (t) UCL	6.449	95% H-Stat (DL/2) UCL	6.477
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	3.252	Mean in Log Scale	1.147
SD	6.629	SD in Log Scale	0.958
95% MLE (t) UCL	5.473	Mean in Original Scale	4.857
95% MLE (Tiku) UCL	5.795	SD in Original Scale	4.875

		95% Percentile Bootstrap UCL	6.416
		95% BCA Bootstrap UCL	6.937

Pro-UCL Post Remedial 95% UCL

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	2.202	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	3.233		
nu star	70.47		
A-D Test Statistic	0.611	Nonparametric Statistics	
5% A-D Critical Value	0.746	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.746	Mean	5.265
5% K-S Critical Value	0.217	SD	4.484
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.908
		95% KM (t) UCL	6.817
Assuming Gamma Distribution		95% KM (z) UCL	6.759
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	6.666
Minimum	0	95% KM (bootstrap t) UCL	7.481
Maximum	20	95% KM (BCA) UCL	7.296
Mean	6.085	95% KM (Percentile Bootstrap) UCL	7.023
Median	4.7	95% KM (Chebyshev) UCL	9.224
SD	4.377	97.5% KM (Chebyshev) UCL	10.94
k star	0.569	99% KM (Chebyshev) UCL	14.3
Theta star	10.69		
Nu star	29.59	Potential UCLs to Use	
AppChi2	18.17	95% KM (Percentile Bootstrap) UCL	7.023
95% Gamma Approximate UCL	9.909		
95% Adjusted Gamma UCL	10.24		

Note: DL/2 is not a recommended method.

Arsenic

General Statistics

Number of Valid Samples	26	Number of Detected Data	26
Number of Unique Samples	16	Number of Non-Detect Data	0
Number of Missing Values	1	Percent Non-Detects	0.00%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	1.8	Minimum Detected	0.588
Maximum Detected	5.6	Maximum Detected	1.723
Mean of Detected	2.738	Mean of Detected	0.97
SD of Detected	0.834	SD of Detected	0.268
Minimum Non-Detect	N/A	Minimum Non-Detect	N/A
Maximum Non-Detect	N/A	Maximum Non-Detect	N/A

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.838	Shapiro Wilk Test Statistic	0.927
5% Shapiro Wilk Critical Value	0.92	5% Shapiro Wilk Critical Value	0.92
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	

DL/2 Substitution Method		DL/2 Substitution Method	
Mean	2.738	Mean	0.97
SD	0.834	SD	0.268
95% DL/2 (t) UCL	3.018	95% H-Stat (DL/2) UCL	3.01
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	N/A
		SD in Log Scale	N/A
		Mean in Original Scale	N/A
		SD in Original Scale	N/A
		95% Percentile Bootstrap UCL	N/A
		95% BCA Bootstrap UCL	N/A
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	12.08	Data appear Lognormal at 5% Significance Level	
Theta Star	0.227		
nu star	628		
A-D Test Statistic	0.813	Nonparametric Statistics	
5% A-D Critical Value	0.744	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.744	Mean	2.738
5% K-S Critical Value	0.171	SD	0.818
Data not Gamma Distributed at 5% Significance Level		SE of Mean	0.164
		95% KM (t) UCL	3.018
Assuming Gamma Distribution		95% KM (z) UCL	3.007
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	3.018
Minimum	1.8	95% KM (bootstrap t) UCL	3.105
Maximum	5.6	95% KM (BCA) UCL	3.015
Mean	2.738	95% KM (Percentile Bootstrap) UCL	3.019
Median	2.4	95% KM (Chebyshev) UCL	3.451
SD	0.834	97.5% KM (Chebyshev) UCL	3.76
k star	12.08	99% KM (Chebyshev) UCL	4.366
Theta star	0.227		
Nu star	628	Potential UCLs to Use	
AppChi2	570.8	95% KM (Chebyshev) UCL	3.451
95% Gamma Approximate UCL	3.013		
95% Adjusted Gamma UCL	3.032		

Note: DL/2 is not a recommended method.

Lead

General Statistics

Number of Valid Samples	26	Number of Detected Data	26
Number of Unique Samples	26	Number of Non-Detect Data	0
Number of Missing Values	1	Percent Non-Detects	0.00%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	2.4	Minimum Detected	0.875
Maximum Detected	17	Maximum Detected	2.833
Mean of Detected	11.74	Mean of Detected	2.329
SD of Detected	4.788	SD of Detected	0.606
Minimum Non-Detect	N/A	Minimum Non-Detect	N/A

Pro-UCL Post Remedial 95% UCL

Pro-UCL Post Remedial 95% UCL

Maximum Non-Detect	N/A	Maximum Non-Detect	N/A

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.843	Shapiro Wilk Test Statistic	0.751
5% Shapiro Wilk Critical Value	0.92	5% Shapiro Wilk Critical Value	0.92
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	11.74	Mean	2.329
SD	4.788	SD	0.606
95% DL/2 (t) UCL	13.35	95% H-Stat (DL/2) UCL	15.82
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	N/A
		SD in Log Scale	N/A
		Mean in Original Scale	N/A
		SD in Original Scale	N/A
		95% Percentile Bootstrap UCL	N/A
		95% BCA Bootstrap UCL	N/A
Gamma Distribution Test with Detected Values Only		**Data Distribution Test with Detected Values Only**	
k star (bias corrected)	3.46	Data do not follow a Discernable Distribution (0.05)	
Theta Star	3.393		
nu star	179.9		
A-D Test Statistic	2.361	**Nonparametric Statistics**	
5% A-D Critical Value	0.748	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.748	Mean	11.74
5% K-S Critical Value	0.172	SD	4.695
Data not Gamma Distributed at 5% Significance Level		SE of Mean	0.939
		95% KM (t) UCL	13.35
Assuming Gamma Distribution		95% KM (z) UCL	13.29
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	13.35
Minimum	2.4	95% KM (bootstrap t) UCL	13.1
Maximum	17	95% KM (BCA) UCL	13.28
Mean	11.74	95% KM (Percentile Bootstrap) UCL	13.3
Median	13.9	95% KM (Chebyshev) UCL	15.84
SD	4.788	97.5% KM (Chebyshev) UCL	17.61
k star	3.46	99% KM (Chebyshev) UCL	21.08
Theta star	3.393		
Nu star	179.9	**Potential UCLs to Use**	
AppChi2	149.9	95% KM (Chebyshev) UCL	15.84
95% Gamma Approximate UCL	14.09		
95% Adjusted Gamma UCL	14.27		

Note: DL/2 is not a recommended method.

02-14-553768

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June 12, 2009

PAID $500.- 6/15/09 SHR

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DNR
SOUTH CENTRAL REGION

Denise Nettesheim
Wisconsin Department of Natural Resources
3911 Fish Hatchery Road
Fitchburg, WI 53711

RE: Fee for WDNR to Review Soil Management Plan for Lot 8, Plat of Monarch Development, to be submitted by Vickie Loveland of Shaw Environmental, Inc., to WDNR

Dear Ms. Nettesheim:

I have enclosed with this letter, Check No. 01533948, dated 06/03/09, issued by Dodge County, Wisconsin, made payable to the Wisconsin Department of Natural Resources, in the amount of $500.00. This check represents the fee required by the WDNR to review the Soil Management Plan for Lot 8, Plat of Monarch Development, to be submitted by Vickie Loveland of Shaw Environmental, Inc.

I am sending this check to you in advance of your receipt of the Soil Management Plan.

If you have any questions, or if I can otherwise be of service to you, please contact me.

Sincerely,

John F. Corey
Corporation Counsel

JFC:kl
Enclosure

cc: Victoria L. Loveland, Engineer 3
Shaw Environmental, Inc.
3708 Hilltop Avenue
Wausau, WI 54401