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QUARTERLY GROUNDWATER TREATMENT PERFORMANCE MONITORING REPORT Q4 2002 MOSS-AMERICAN SITE MILWAUKEE, WISCONSIN

Prepared for

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SECTION 1
INTRODUCTION

In accordance with paragraph 4a of the Remedial Design/Remedial Action Statement of Work (RD/RA SOW), Kerr-McGee Chemical, LLC (KMC) is required to implement a groundwater monitoring program capable of detecting changes in chemical concentrations in the groundwater. KMC has direct Weston Solutions, Inc. (WESTON®) to perform this work. As previously agreed, the monitoring network currently includes seven shallow groundwater monitoring wells (MW-5S, MW-6S, MW-7S, MW-9S, MW-27S, MW-28S, and MW-29S). Additionally, the quarterly groundwater monitoring program includes sampling of the eight containment performance monitoring wells (MW-30S, MW-31S, MW-32S, MW-33S, MW-34S, MW-35S, MW-36S and MW-37S), which are screened in the shallow groundwater-bearing unit underlying the site. The locations of all existing groundwater-monitoring wells included in the sampling program are indicated on Figure 1-1. These shallow groundwater monitoring wells are sampled on a quarterly basis.

Some wells that were previously part of the groundwater-monitoring network have been removed to facilitate soil remediation activities. TW-09, MW-8S, and MW-8I were removed during excavation activities and installation of the funnel-and-gate groundwater treatment system in 1999. Wells MW-4S and MW-4I were removed during early Q3 2001, and well TW-05 was removed during early Q4 2001 during the "hot spot" soil excavation and treatment process. Wells MW-20S and MW-20I were removed during Q3 2002 when the Little Menomonee River (LMR) diversion work was taking place.

Also, as discussed in the Q2 2002 Quarterly Groundwater Treatment Performance Monitoring Report, some modifications were made to the sampling program. The first modification was the reduction of performance monitoring well sampling frequency. The treatment performance monitoring wells were originally sampled on a monthly basis, but sample data showed that minimal changes in site conditions were found on a monthly basis. This recommendation was approved by the Agencies, so the last monthly sampling event occurred in October 2002. The second modification was the reduction of the groundwater monitoring program scope. It was

proposed that some shallow monitoring wells (MW-3S, MW-10S, MW-13S, MW-25S, MW-26S, and MW-20S) and intermediate monitoring wells (MW-3I, MW-7I, MW-9I, and MW-20I) be removed from the groundwater monitoring program due to zero or few sample detections in these wells. The Agencies approved this recommendation. Last time these wells were sampled was during Q3 2002; however, these wells were abandoned. Water levels will continue to be taken from them to assist in the production of the quarterly groundwater elevation contour map.

well abandonment forms

The Quality Assurance Project Plan for Installation of Groundwater Remedial System (QAPP) (WESTON, October 1999) requires KMC to implement a groundwater monitoring program capable of indicating groundwater chemistry before, during, and after treatment. Also, the hydraulic gradient is calculated at each treatment gate and is used to estimate groundwater flow velocity through the treatment gate remediation system. The monitoring network includes six groundwater treatment gates (TG1 through TG6) with three treatment performance monitoring wells located at each groundwater treatment gate. The treatment performance monitoring well locations are indicated on Figure 1-1. The treatment performance monitoring wells include TG1-1, TG1-2, TG1-3, TG2-1, TG2-2, TG2-3, TG3-1, TG3-2, TG3-3, TG4-1, TG4-2, TG4-3, TG5-1, TG5-2, TG5-3, TG6-1, TG6-2, and TG6-3.

In accordance with paragraph 4a (i) of the RD/RA SOW, the quarterly field measurement and analysis of groundwater samples collected from the shallow and containment performance groundwater monitoring wells include groundwater elevation, pH, temperature, turbidity, specific conductance, oxidation-reduction (redox) potential, and dissolved oxygen (DO). Required laboratory analyses include benzene, toluene, ethylbenzene, and xylene (BTEX collectively) and the following polynuclear aromatic hydrocarbon (PAH) compounds: acenaphthylene, acenaphthene, anthracene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, chrysene, dibenzo(a,h)anthracene, fluorene, fluoranthene, indeno(1,2,3-cd)pyrene, naphthalene, phenanthrene, and pyrene.

In accordance with Addendum No. 1 to the QAPP (WESTON, May 2001), the quarterly field measurements for samples collected from the treatment performance monitoring wells include groundwater elevation, pH, temperature, turbidity, specific conductance, redox potential, and

DO. Quarterly laboratory analyses required for the treatment performance wells include microbial enumeration, nitrate-nitrogen (NO_3-N), nitrite-nitrogen (NO_2-N), total Kjeldahl nitrogen (TKN), ammonia-nitrogen (NH_3-N), total phosphate-phosphorous (PO_4-P), orthophosphate (ORP), biochemical oxygen demand (BOD), chemical oxygen demand (COD), total organic carbon (TOC), BTEX, and the PAHs indicated in the above paragraph.

LEGEND

- CABLE FENCE
- CATCH BASIN
- HYDRANT
- SIGN
- FREE PRODUCT COLLECTION SUMP
- UTILITY POLE
- SAMPLING MANHOLE
- MONITORING WELL
- INJECTION WELL

N:678.210
E:1134.580
ELEV = 720.37
CP-4

MW-7S
MW-7I
MW-34S
MW-33S
Existing Building
Pad Elev. 721.8
MW-32S
MW-35S
MW-30S
MW-27S
MW-28S
MW-29S
MW-36S
MW-37S
MW-31S
MW-26S
MW-25S
MW-13S
MW-9I
MW-9S
MW-10S
MW-31

TG1-1
TG1-2
TG1-3
TG2-1
TG2-2
TG2-3
TG3-1
TG3-2
TG3-3
TG4-1
TG4-2
TG4-3
TG5-1
TG5-2
TG5-3
TG6-1
TG6-2
TG6-3

Little Menomonee River

SILO ENCLOSURE

BRYANT AVENUE

WOODS

EXISTING SHEET PILE (TYP.)

ASPHALT PAD

DECON. PAD

DRUM STORAGE AREA

CONSTRUCTION TRAILERS

TREATED SOIL AND SEDIMENT FILL AREA

ASPHALT (TYP.)

GRAVEL (TYP.)

N:211.070
E:1932.560
ELEV = 723.49
CP-5

N:-44.630
E:753.830
ELEV = 735.22
CP-3

N:-80.570
E:1177.070
ELEV = 737.17
CP-6

0 100'
SCALE

FIGURE 1-1

WESTON MANAGERS DESIGNERS/CONSULTANTS

750 E. Bunker Ct.
Suite 500
Vernon Hills, Illinois
60061

MONITORING WELL LOCATIONS
KERR McGEE CORPORATION
MOSS-AMERICAN SITE
Milwaukee, Wisconsin

J:\CAD93\000\00303.dwg

11=4

SECTION 2
GROUNDWATER MONITORING RESULTS

The Q4 2002 groundwater-monitoring event at the Moss-American site was completed between 9 to 12 December 2002. The Q4 2002 groundwater remedial system treatment performance monitoring sampling includes data obtained from 23 to 24 October 2002. Tasks completed during the field effort for this event included the collection of groundwater elevation and DO data from the shallow groundwater monitoring, containment performance monitoring, and treatment performance monitoring wells referenced in Section 1. Following groundwater elevation and DO measurements, groundwater samples were collected from all the shallow, containment performance, and treatment performance groundwater monitoring wells. The results of the groundwater samples that were collected and analyzed from the shallow wells are described in the following subsections.

2.1 GROUNDWATER ELEVATION MEASUREMENTS

The depth to water was measured in each of the shallow groundwater monitoring, containment performance monitoring, and treatment performance monitoring wells on 9 December 2002, prior to the commencement of groundwater sampling. In addition, the depth to groundwater was measured during the monthly sampling event in each treatment performance monitoring well prior to sample collection. These measurements were used to determine the elevation of the potentiometric surface within the shallow groundwater-bearing zone underlying the site. The water level measurements for the shallow groundwater monitoring and containment performance monitoring wells and resulting elevations are presented in Table 2-1. The groundwater level measurements and corresponding groundwater elevations, calculated hydraulic gradients across the treatment gates, and estimated groundwater flow velocities through the treatment gates are presented in Table 2-2. The October 2002 groundwater elevation data for the treatment performance monitoring wells is available upon request. Figure 2-1 presents a groundwater elevation contour map that shows the potentiometric surface within the shallow groundwater-bearing zone based on the 9 December 2002 data. Figure 2-2 indicates the potentiometric surface during Q3 2002. An evaluation of the Q4 2002 potentiometric surface map is presented below.

As shown in Figure 2-1, the groundwater within the shallow groundwater-bearing zone generally flows northeastward toward the LMR. In the topographically higher (western) portion of the site, the horizontal hydraulic gradient is relatively steep, at approximately 0.0230 feet per foot (ft/ft) to the northeast. The topography of the site levels out near the river as does the potentiometric surface with an eastward hydraulic gradient of approximately 0.0020 ft/ft. The estimated hydraulic gradients within the treatment gates ranged from 0.0006 to 0.0192 ft/ft (Table 2-2). The hydraulic gradient is relatively flat within the treatment gate area with an overall hydraulic gradient from TG1 to TG6 of approximately 0.0007 ft/ft in an easterly direction. Due to the low hydraulic gradient in the vicinity of the treatment gates, the calculated hydraulic gradients through TG1 and TG3 are westward, contrary to the overall groundwater flow direction at the site.

The average velocity of groundwater flow within the shallow water-bearing zone can be calculated using the following equation:

$$v = Ki/e$$

where:

v = groundwater velocity
K = hydraulic conductivity (also referred to as the coefficient of permeability)
i = hydraulic gradient
e = porosity

Based on slug tests performed on wells installed during the remedial investigation (RI), the hydraulic conductivity of the deposits located on the topographically higher, western portion of the site were in the range of 1×10^{-5} to 1×10^{-6} centimeters per second (cm/s) (0.03 to 0.003 feet per day [ft/day]). Based on laboratory-performed hydraulic conductivity analyses conducted on material used to backfill areas of the site located along the LMR, the hydraulic conductivity of soils located in the topographically lower portion of the site within the funnel-and-gate remedial system is approximately 1×10^{-3} cm/s (2.8 ft/day). Using a hydraulic gradient of 0.0230 ft/ft, an assumed effective porosity of 0.3, and a hydraulic conductivity of 0.03 ft/day, the groundwater

flow velocity in the western portion of the site is calculated to be approximately 0.0002 ft/day. Near the river, using a hydraulic gradient of 0.0020 ft/ft, a porosity of 0.3, and a hydraulic conductivity of 2.8 ft/day, the velocity of groundwater flow is calculated to be approximately 0.0017 ft/day. The groundwater flow velocities within the treatment gates are estimated to range from 0.0057 ft/day to 0.1814 ft/day (excluding the data for TG1 and TG3). The groundwater flow velocity through each treatment gate is presented in Table 2-2.

2.2 GROUNDWATER SAMPLE ANALYTICAL RESULTS

Groundwater samples were collected from a total of 33 shallow monitoring wells screened within the shallow groundwater-bearing unit. The shallow wells sampled include 7 shallow groundwater monitoring wells (MW-5S, MW-6S, MW-7S, MW-9S, MW-27S, MW-28S, and MW-29S); 8 containment performance monitoring wells (MW-30S, MW-31S, MW-32S, MW-33S, MW-34S, MW-35S, MW-36S and MW-37S); and 18 treatment performance monitoring wells (TG1-1, TG1-2, TG1-3, TG2-1, TG2-2, TG2-3, TG3-1, TG3-2, TG3-3, TG4-1, TG4-2, TG4-3, TG5-1, TG5-2, TG5-3, TG6-1, TG6-2, and TG6-3).

In addition to the investigative groundwater samples collected, four sample duplicate, two matrix spike/matrix spike duplicate (MS/MSD), and two field blank (identified by an FB prefix) samples were collected for quality assurance/quality control (QA/QC) purposes. Trip blanks accompanied each cooler of sample containers from the laboratory to the site and were shipped back to the laboratory within each cooler containing volatile organic compound (VOC) samples.

All groundwater samples were field screened and laboratory analyzed for the parameters indicated in Section 1.

2.2.1 Field-Measured Parameters

The groundwater samples were measured in the field for pH, specific conductance, temperature, redox potential, DO, and turbidity. The field parameters were collected using a YSI 556 portable water quality meter and a turbidimeter. DO readings were collected from each monitoring well

prior to purging the well for groundwater sample collection. The groundwater pH, redox potential, specific conductance, temperature, and turbidity were monitored during well purging prior to sampling. The final (stabilized) values for these measurements prior to sample collection are presented in Table 2-3. They are also presented in Appendix A for the treatment performance monitoring wells during October and December 2002. Water quality measurements were not collected from well TG1-1 due to the presence of free product in the well water.

2.2.1.1 pH

The pH of the groundwater samples collected during Q4 2002 ranged from 6.33 to 7.26 pH standard units (S.U.). The pH measurements indicate relatively neutral (7.0 S.U.) conditions. pH is an important factor in determining the feasibility of bioremediation of contaminants in the site groundwater because biological systems typically function only in narrow pH ranges (typically 6.5 to 8.5 S.U.) and because microbial growth rates are pH dependant.

2.2.1.2 Redox Potential

The redox potentials of the groundwater samples collected at the site during Q4 2002 ranged from –48.1 to 199.2 millivolts (mV). The field readings showed that readings for redox potential in the treatment gate areas were mostly negative while readings for surrounding shallow and containment performance monitoring wells were predominantly positive. Redox potential indicates the capability of the groundwater to promote chemical oxidation-reduction processes that consume organic matter and ultimately oxidize organic compounds. Microorganisms typically act as catalysts in oxidation reactions, and as such, the redox potential indicates the potential for the groundwater to oxidize the contaminants present.

Since environmental systems are typically not in equilibrium, the redox potential is used as a gross indicator of the state of oxidation-reduction in the system. Oxidation reduction rates in the system are greater as the redox potential increases in magnitude. A positive redox potential typically indicates conditions where oxidized ionic species (i.e., NO_3^-, SO_4^-, and Fe^{3+}) predominate in comparison to their reduced counterparts (NH_4^+, S^{2-}, and Fe^{2+}, respectively).

Once DO is removed from water (i.e., via biodegradation of organics), oxidized ionic species become electron acceptors in redox processes. As the processes continue under anaerobic conditions, the reduced ionic species concentration increases, resulting in an overall decrease of the water's redox potential.

2.2.1.3 **Dissolved Oxygen**

DO levels for the groundwater samples collected during Q4 2002 ranged from 0.03 to 3.35 milligrams per liter (mg/L). Readings indicating DO levels greater than 1.0 mg/L were observed intermittently in the monitoring wells. However, these readings were only observed during the December 2002 groundwater sampling event, and DO levels are typically below 1.0 mg/L. These readings could thus be anomalies attributable to equipment malfunction due to cold weather. Overall, the DO readings indicate the presence of low levels of oxygen in the water, and the system as a whole is considered to be generally under anaerobic conditions (<1 mg/L DO). DO promote the growth of aerobic and facultative bacteria and the production of readily assimilated nutrients. All of these factors are required to facilitate the oxidation reaction responsible for removing the contaminants from the groundwater under aerobic conditions. Figure 2-3 indicates the DO concentrations over time in the treatment performance monitoring wells.

2.2.1.4 **Specific Conductance**

The specific conductance, or conductivity, of the groundwater samples collected during Q4 2002 ranged from 0.638 to 1.530 millimhos per centimeter (mU/cm). Conductivity of water is a measure of the ability of the solution to carry an electrical current that is transported by ions in the solution; therefore, conductivity is used as an indicator of the total dissolved solids (TDS) present in a water sample. As the dissolved solids content of a solution increases, the capacity for the water to transmit electrical current increases. Although conductivity is a measure of the aggregate dissolved solids in the water it may be correlated to the readily available nutrient levels in the water, since TDS include nitrate, nitrite, ammonium, and phosphate ions.

2.2.1.5 Temperature

Groundwater temperatures ranged from 6.95 to 14.14 degrees Celsius (°C) during Q4 2002. Temperatures measured approximately 5 °C lower in Q4 2002 in Q3 2002. Q3 2002 temperatures ranged from 11.50 to 19.82 °C. Temperature is an extremely important factor in bioremediation since microbial growth rates are greatly dependent upon temperature.

2.2.1.6 Turbidity

Turbidity ranged from 0.22 to 487 nephelometric turbidity units (NTU) during Q4 2002; however, turbidity was only measured at levels >20 NTU in six wells during Q4 2002. Turbidity is a measure of the clarity of water and is used as an indicator of the solids present in a water sample and overall water quality.

2.2.2 Laboratory Analyses

The results of the laboratory analyses performed on the groundwater samples collected during October and December 2002 are provided in Appendices B and C, respectively. A discussion of the results of the laboratory analyses performed on the groundwater samples are presented in the following subsections.

2.2.2.1 Laboratory Analyses for BTEX and PAH

Each groundwater sample collected during the December 2002 sampling event was analyzed for BTEX and PAH compounds. The results of these analyses are presented and compared to Wisconsin Department of Natural Resource (WDNR) PALs and ESs in Table 2-4. Table 2-4 also indicates those parameters that were detected at concentrations exceeding their respective PALs (shown as shaded values). Parameters with concentrations exceeding both PALs and ESs are presented as shaded and bold values in Table 2-4. Exceedences are summarized in the following paragraphs. The laboratory reports that included results of the BTEX and PAH analyses are

provided as Appendix C.

Groundwater Sample Results

As shown in Table 2-4, benzene, anthracene, benzo(a)pyrene, benzo(b)fluoranthene, chrysene, fluoranthene, fluorene, naphthalene, and pyrene were detected at concentrations exceeding their respective PALs and/or ESs in the groundwater samples collected from the shallow monitoring well network. The results are as follows:

PAL Exceedances

- Benzene was detected at concentrations exceeding the WDNR PAL of 0.5 micrograms per liter (µg/L) in the groundwater samples collected from wells MW-34S and TG1-1.

- Anthracene was detected at a concentration exceeding the WDNR PAL of 600 µg/L in the groundwater sample collected from well TG1-1.

- Benzo(a)pyrene was detected at concentrations exceeding the WDNR PAL of 0.02 µg/L in the groundwater samples collected from wells MW-34S, TG1-1, and TG6-2. A field blank, FB-01, also had a concentration that exceeded the PAL.

- Benzo(b)fluoranthene was detected at concentrations exceeding the WDNR PAL of 0.02 µg/L in the groundwater samples collected from wells MW-34S and TG1-1.

- Chrysene was detected at concentrations exceeding the WDNR PAL of 0.02 µg/L in the groundwater samples collected from wells MW-34S and TG1-1.

- Fluoranthene was detected at concentrations exceeding the WDNR PAL of 80 µg/L in the groundwater samples collected from wells MW-34S and TG1-1.

- Fluorene was detected at concentrations exceeding the WDNR PAL of 80 µg/L in the groundwater samples collected from wells MW-34S and TG1-1.

- Naphthalene was detected at concentrations exceeding the WDNR PAL of 8 µg/L in the groundwater samples collected from wells MW-7S, MW-33S, MW-34S, TG1-1, and TG1-2.

- Pyrene was detected at concentrations exceeding the WDNR PAL of 50 µg/L in the groundwater samples collected from wells MW-34S and TG1-1.

ES Exceedences

- Benzene was detected at a concentration exceeding the WDNR ES of 5 µg/L in the groundwater sample collected from well MW-34S.
- Benzo(a)pyrene was detected at concentrations exceeding the WDNR ES of 0.2 µg/L in the groundwater samples collected from wells MW-34S and TG1-1.
- Benzo(b)fluoranthene was detected at concentrations exceeding the WDNR ES of 0.2 µg/L in the groundwater samples collected from wells MW-34S and TG1-1.
- Chrysene was detected at concentrations exceeding the WDNR ES of 0.2 µg/L in the groundwater samples collected from wells MW-34S and TG1-1.
- Fluoranthene was detected at a concentration that exceeded the WDNR ES of 400 µg/L in the groundwater sample collected from well TG1-1.
- Fluorene was detected at a concentration exceeding the WDNR ES of 400 µg/L in the groundwater sample collected from well TG1-1.
- Naphthalene was detected at concentrations exceeding the WDNR ES of 40 µg/L in the groundwater samples collected from wells MW-7S, MW-33S, MW-34S, TG1-1, and TG1-2.
- Pyrene was detected at a concentration exceeding the WDNR ES of 250 µg/L in the groundwater sample collected from well TG1-1.

The plume boundary is primarily in an area encompassing five shallow monitoring wells (MW-7S, MW-33S, MW-34S, TG1-1, and TG1-2). There was a PAL exceedence in well TG6-2, but it is considered an anomaly because of its distance from the rest of the PAL exceedences and because it was low-level exceedence of benzo(a)pyrene. Therefore, it was not included in the plume boundary. The majority of PAL and ES exceedences are associated with wells MW-34S and TG1-1, which contained trace and 3 inches of free product, respectively, in the quarterly investigation. In general, PAH concentrations measured in groundwater samples collected from the rest of the site were at relatively low levels with a few PAL/ES exceedences. The only

exception is naphthalene, which was measured at higher levels in three other wells at the site. Based on these detected concentrations, the contaminant plume generally indicates a northeasterly trend, as indicated in Figure 2-1, as well as the previous 18 quarterly groundwater sampling events.

Overall, the lateral extent of the groundwater contaminant plume is considerably smaller than in previous years of groundwater sampling. Little change in the contaminant plume size was observed in the past three quarters.

A summary of the concentration of contaminants at wells that have regularly exceeded PALs and/or ESs during the last 12 quarters (3 years) is presented in Table 2-5. Levels of benzene, naphthalene, fluorene, and benzo(a)pyrene fluctuate over wide ranges in these wells without a common pattern. However, these constituents have shown an overall decreasing or constant trend in monitoring wells MW-7S, MW-32S, and MW-35S. These constituents had also shown an overall decreasing trend in well MW-4S prior to its removal in Q2 2001. Well MW-7S has shown a decreasing trend for benzene and benzo(a)pyrene. Although benzene and benzo(a)pyrene concentrations in MW-33S have been consistently below detection limits, an increasing trend is evident for fluorene with naphthalene showing an overall fluctuating level. Well MW-34S has shown overall fluctuating levels in benzene, naphthalene, fluorene, and benzo(a)pyrene. Recently, benzene and naphthalene have showed a decreasing trend in concentrations while fluorene and benzo(a)pyrene have shown an increasing trend. Well MW-34S contained a trace amount of free product during Q4 2002 with varying levels of free product being found in the well in the recent past. This correlates with the elevated levels of constituents found in MW-34S. Well TG1-1 has shown fluctuating benzene, naphthalene, fluorene, and benzo(a)pyrene concentrations since it was first sampled in Q3 2000. Recently, however, TG1-1 showed a large increase in these constituent concentrations. Naphthalene, fluorene, and benzo(a)pyrene concentrations were the highest they have been since sampling began at the well. Fluorene and benzo(a)pyrene levels were approximately 10 times higher, while naphthalene levels were approximately 3 times higher than the levels found in the past.

2.2.2.2 Laboratory Analyses for Treatment Performance Monitoring

The groundwater samples collected from the treatment performance monitoring wells were analyzed for microbial enumeration, NO_3-N, NO_2-N, TKN, NH_3-N, PO_4-P, and ORP in October and for BOD, COD, TOC, BTEX, and PAHs in December. The analytical results for microbial enumeration, NO_3-N, NO_2-N, TKN, NH_3-N, PO_4-P, ORP, BOD, COD, and TOC are presented in Table 2-6. The analytical results for the treatment performance monitoring groundwater samples are summarized below.

Nitrogen and Phosphorous Compounds

NO_3-N was detected at levels ranging from nondetect to 0.13 mg/L. NO_2-N was detected at levels ranging from nondetect to 0.041 mg/L. TKN was detected at concentrations ranging from nondetect to 2.3 mg/L. NH_3-N was detected at levels ranging from nondetect to 1.5 mg/L. Temporal changes of NO_3-N, NO_2-N, and NH_3-N concentrations in the treatment performance monitoring wells with respect to the treatment gates are presented in Figures 2-4, 2-5, and 2-6, respectively. Overall, nitrogen compound concentrations are at relatively low levels; however, NH_3-N is typically an order of magnitude greater than NO_3-N concentrations and approximately two orders or magnitude greater than NO_2-N. NH_3-N is slightly higher in the TG3 wells. NO_3-N levels were mostly nondetect in the wells for Q4 2002. The exceptions were well TG3-1 in October and December, and well TG5-3 in December. There were some sporadic detections of NO_2-N in gates 1, 2, 3, and 4 during Q4, but gates 5 and 6 did not have any detections of NO_2-N.

PO_4-P was detected at concentrations ranging from nondetect to 0.51 mg/L. ORP was detected at concentrations ranging from nondetect to 0.153 mg/L. The temporal changes of PO_4-P and ORP concentrations in the treatment performance monitoring wells with respect to the treatment gates are presented in Figures 2-7 and 2-8, respectively. A relatively good level of PO4-P was found throughout the treatment gates for Q4 2002. However, ORP levels were minimal in the gates for Q4 2002 with the exception of well TG2-1 in December.

BOD, COD, and TOC

BOD concentrations for the samples collected throughout the treatment system range from nondetect to 34.8 mg/L. COD concentrations for the samples collected throughout the treatment system range from 6.8 to 148 mg/L. TOC concentrations for the samples collected throughout the treatment system range from 2.59 to 17.3 mg/L. As expected, the treatment gate wells indicate fewer BODS when compared to COD. COD indicates the presence of constituents that exert an oxygen demand, including carbon compounds such as the site contaminants in the groundwater; other constituents such as ammonia, sulfurous compounds; and biological material such humic acids and detritus. A significant portion of oxygen demand exerted by the constituents measured in the COD test may not be readily biodegradable and would typically exert the oxygen demand over an extended time period. The oxygen demand exerted by the constituents the COD analysis detected is catalyzed chemically and thermally. The low BOD indicates low concentrations of material that is readily biodegradable and/or quickly oxidized. In support of this, only two wells (TG1-1 and TG3-3) had detections for BOD during Q4 2002. The rest of the treatment performance wells were nondetect for BOD. Futhermore BOD and COD levels were quite high in well TG1-1 during December. This could be due to the higher levels of constituent concentrations found in the well during this quarter's sampling.

Microbial Enumeration

The monthly mean of the total microbe populations for TG1 and TG2 ranged from 2.60×10^2 to 1.87×10^4 colony forming units per milliliter (CFU/mL) during Q4 2002. The monthly mean of the total microbe populations for TG3 and TG4 ranged from 7.50×10^2 to 7.50×10^4 CFU/mL during Q4 2002. The monthly mean of the total microbe populations for TG5 and TG6 ranged from 6.30×10^2 to 1.10×10^4 CFU/mL during Q4 2002. The temporal changes in total microbial populations are presented in Figure 2-9.

The monthly mean of the degrader microbe populations for TG1 and TG2 ranged from 1.00×10^1 to 2.00×10^3 CFU/mL during Q4 2002. The monthly mean of the microbe populations for TG3 and TG4 ranged from <10 to 2.20×10^3 CFU/mL during Q4 2002. The monthly mean of

the microbe populations for TG5 and TG6 ranged from <10 to 1.00×10^3 CFU/mL during Q4 2002. The temporal changes in degrader microbial populations are presented in Figure 2-10.

LEGEND

- CABLE FENCE
- CATCH BASIN
- HYDRANT
- SIGN
- FREE PRODUCT COLLECTION SUMP
- UTILITY POLE
- SAMPLING MANHOLE
- MONITORING WELL
- INJECTION WELL

N
0
100'
SCALE

N:678.210
E:1134.580
ELEV = 720.37
CP-4

MW-33S
Existing Building
Pad Elev. 721.8

MW-32S
MW-26S
MW-27S
MW-30S
MW-35S
MW-7S
MW-7I
MW-34S
MW-9I
MW-9S
MW-28S
MW-29S
MW-37S
MW-36S
MW-8S
MW-31S
MW-10S
MW-35
MW-31
MW-26S
MW-25S
MW-13S

TG1-1
TG1-2
TG1-3
TG2-1
TG2-2
TG2-3
TG3-1
TG3-2
TG3-3
TG4-1
TG4-2
TG4-3
TG5-1
TG5-2
TG5-3
TG6-1
TG6-2
TG6-3

SILO ENCLOSURE
Little Menomonee River
DRAINAGE SWALE
WOODS
EXISTING SHEET PILE (TYP.)
ASPHALT PAD
DECON. PAD
ASPHALT (TYP.)
GRAVEL (TYP.)
CONSTRUCTION TRAILERS
DRUM STORAGE AREA
TREATED SOIL AND SEDIMENT FILL AREA

N:-44.630
E:753.830
ELEV = 735.22
CP-3

N:-80.570
E:1177.070
ELEV = 737.17
CP-6

N:211.070
E:1932.560
ELEV = 723.49
CP-5

720 721 722 723 724 725 730 731 732 733 734 735 736 737 738 739 740 745 1800 2100

J:\CAD93\000\00303.dwg

11=4

FIGURE 1-1

WESTON MANAGERS DESIGNERS/CONSULTANTS
750 E. Bunker Ct.
Suite 500
Vernon Hills, Illinois
60061

MONITORING WELL LOCATIONS
KERR McGEE CORPORATION
MOSS-AMERICAN SITE
Milwaukee, Wisconsin

LEGEND

- CABLE FENCE
- CATCH BASIN
- HYDRANT
- SIGN
- FREE PRODUCT COLLECTION SUMP
- UTILITY POLE
- SAMPLING MANHOLE
- MONITORING WELL
- INJECTION WELL
- DIRECTION OF GROUNDWATER FLOW
- 726 GROUNDWATER ELEVATION CONTOUR
- ESTIMATED BOUNDARY OF CONTAMINANT PLUME

N
SCALE 0 100'

N:678.210
E:1134.580
ELEV = 720.37
CP-4

N:-44.630
E:753.830
ELEV = 735.22
CP-3

N:-80.570
E:1177.070
ELEV = 737.17
CP-6

N:211.070
E:1932.560
ELEV = 723.49
CP-5

MW-7S 716.02
MW-7I
MW-34S 716.14
MW-33S 715.79
MW-5S 718.90
MW-32S 716.10
MW-27S 717.43
MW-30S 722.46
MW-35S 718.30
MW-9I
MW-9S 715.86
MW-28S 716.62
MW-29S 716.82
MW-37S 716.95
MW-36S 718.29
MW-6S 720.88
MW-31S 722.30
MW-10S 719.06
MW-3S 716.02
MW-3I 723.40
MW-26S 728.52
MW-25I 734.86
MW-13S 733.78

TG1-1 716.67
TG1-2 716.73
TG1-3 716.74
TG2-1 717.79
TG2-2 717.13
TG2-3 716.83
TG3-1 716.29
TG3-2 716.54
TG3-3 716.54
TG4-1 716.49
TG4-2 716.47
TG4-3 716.46
TG5-1 716.43
TG5-2 716.40
TG5-3 716.33
TG6-1 716.52
TG6-2 716.47
TG6-3 716.46

Existing Building Pad Elev. 721.6
SILO ENCLOSURE
ASPHALT (TYP.)
GRAVEL (TYP.)
ASPHALT PAD
DECON. PAD
CONSTRUCTION TRAILERS
DRUM STORAGE AREA
EXISTING SHEET PILE (TYP.)
EXCAVATION SURFACE
TREATED SOIL AND SEDIMENT FILL AREA
WOODS
Little Menomonee River

FIGURE 2-1

WESTON MANAGERS DESIGNERS/CONSULTANTS
750 E. Bunker Ct.
Suite 500
Vernon Hills, Illinois
60061

GROUNDWATER ELEVATION CONTOUR MAP – 4TH QTR 2002
KERR McGEE CORPORATION
MOSS-AMERICAN SITE
Milwaukee, Wisconsin

J:\CAD93\000\00303.dwg

Figure 2-3

Treatment Performance Monitoring Wells
Fourth Quarter 2002
Moss-American Site
Milwaukee, Wisconsin

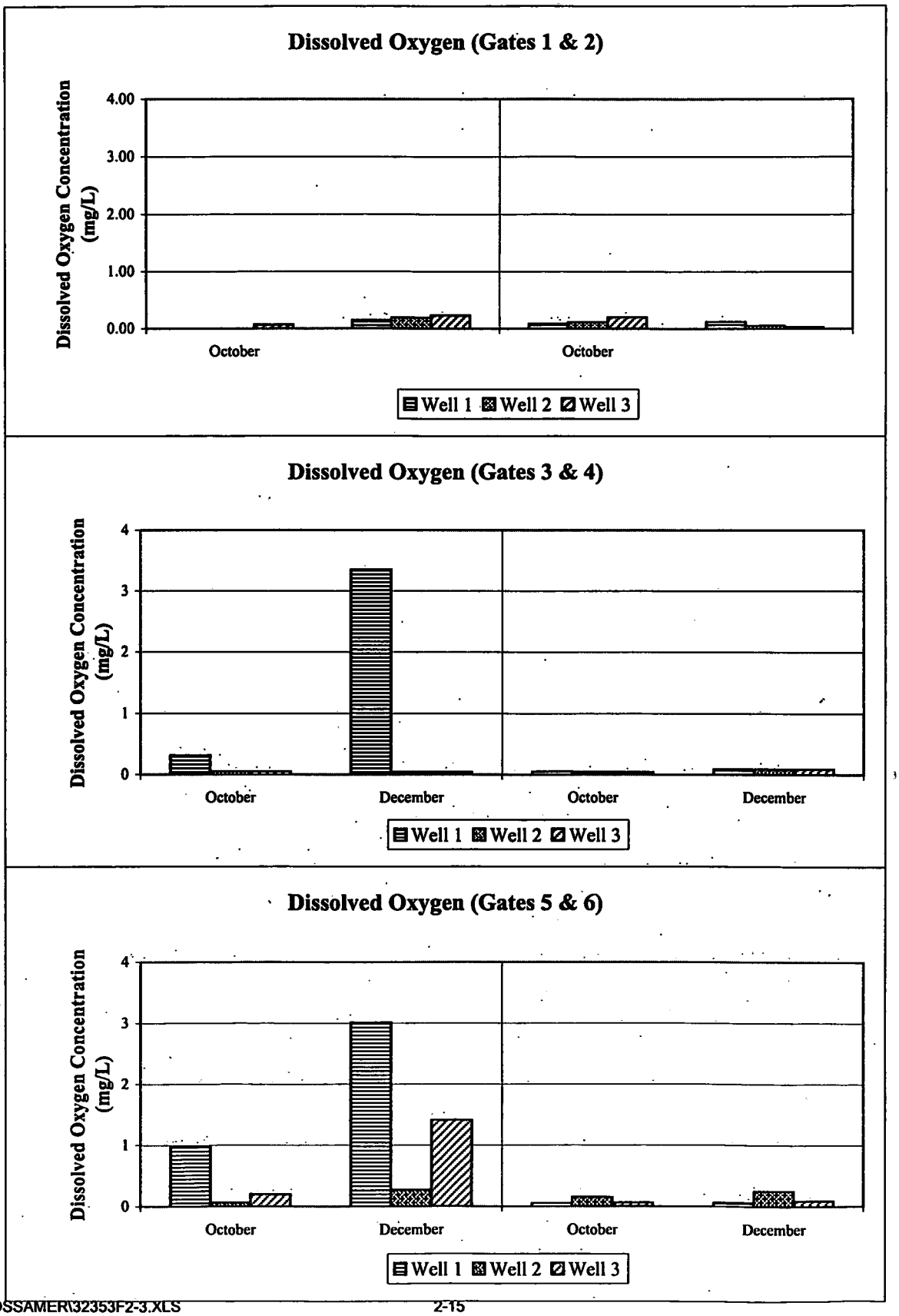


Figure 2-4

Treatment Performance Monitoring Wells
Fourth Quarter 2002
Moss-American Site
Milwaukee, Wisconsin

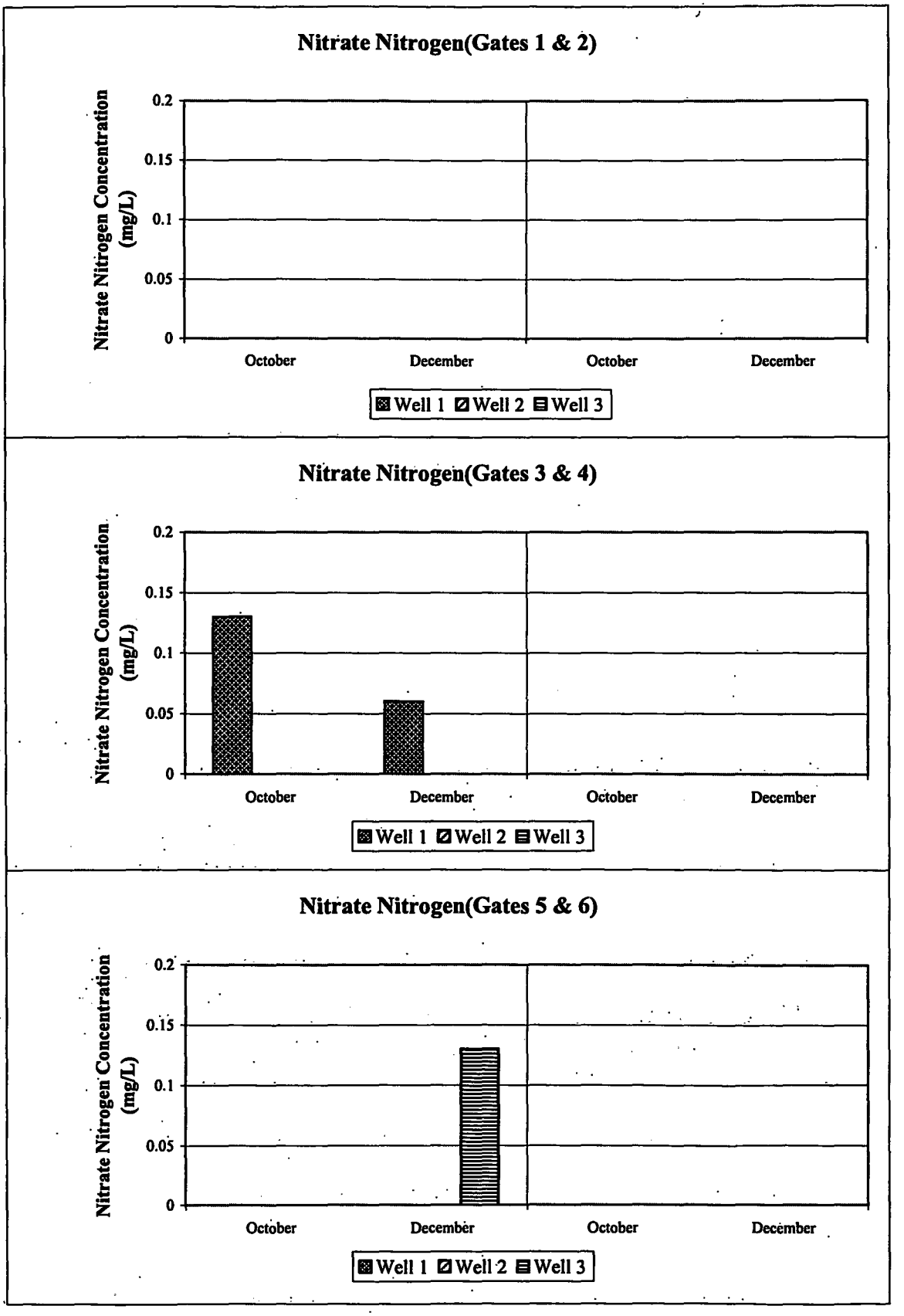


Figure 2-5

Treatment Performance Monitoring Wells
Fourth Quarter 2002
Moss-American Site
Milwaukee, Wisconsin

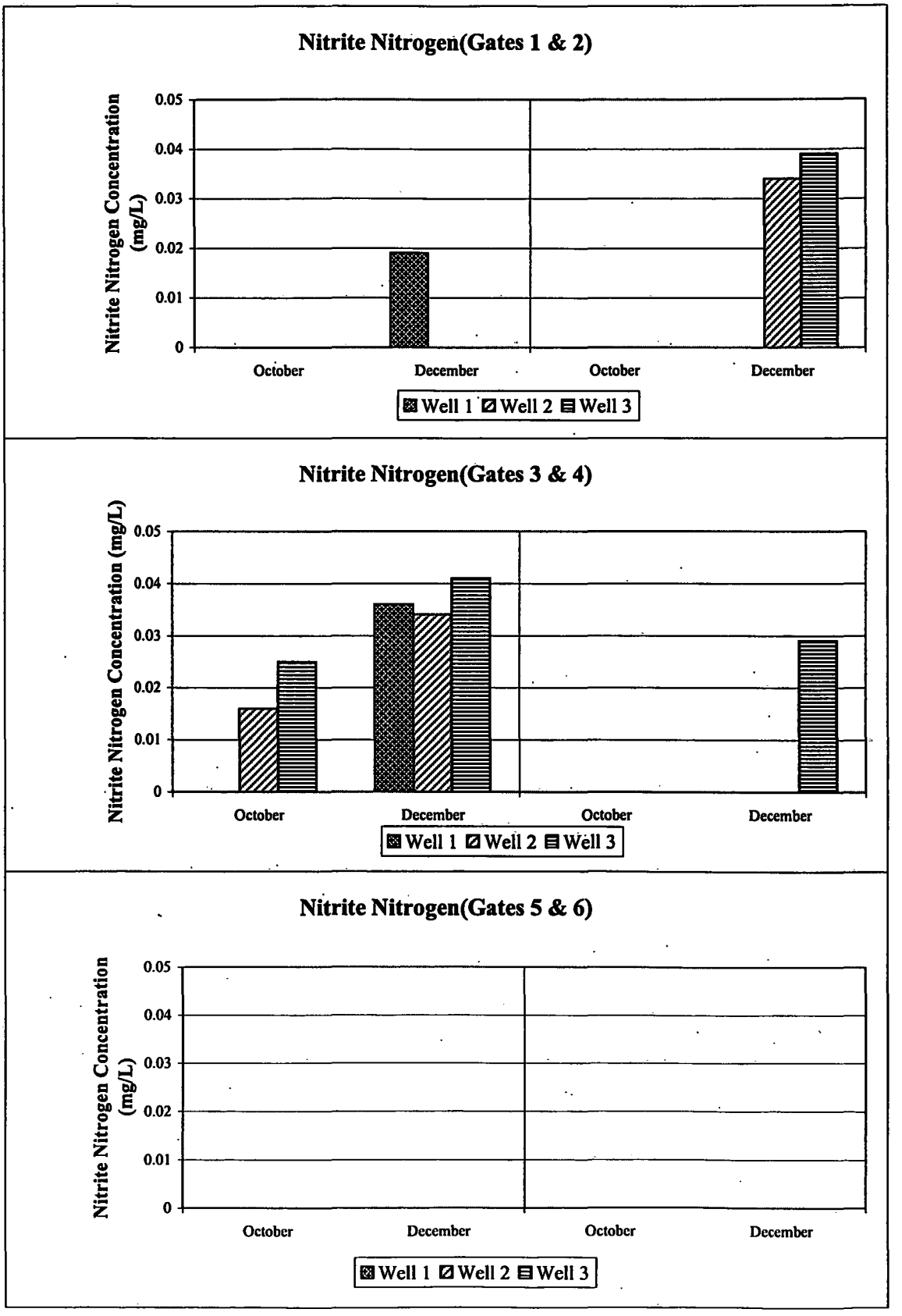


Figure 2-6

Treatment Performance Monitoring Wells
Fourth Quarter 2002
Moss-American Site
Milwaukee, Wisconsin

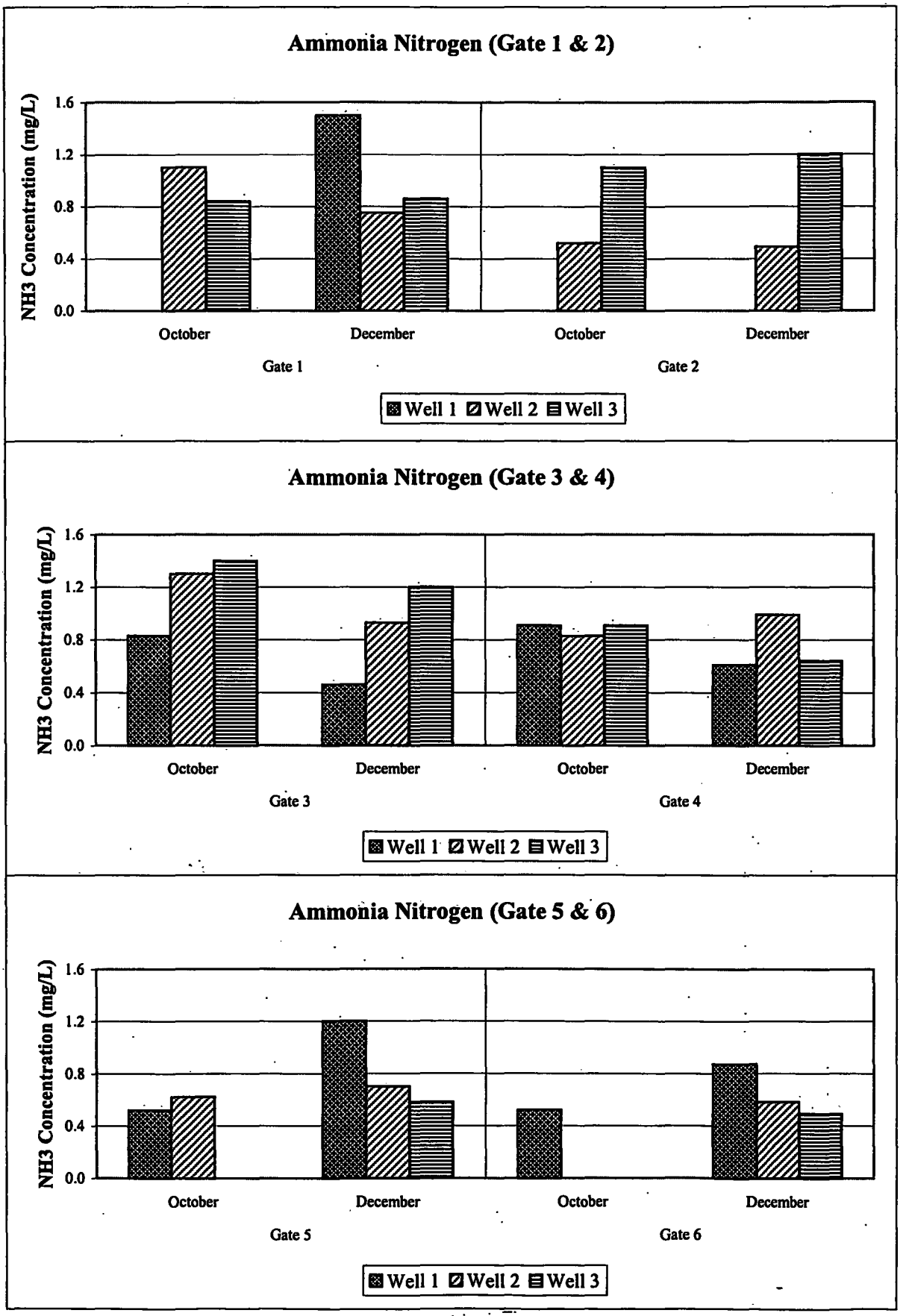


Figure 2-7

Treatment Performance Monitoring Wells
Fourth Quarter 2002
Moss-American Site
Milwaukee, Wisconsin

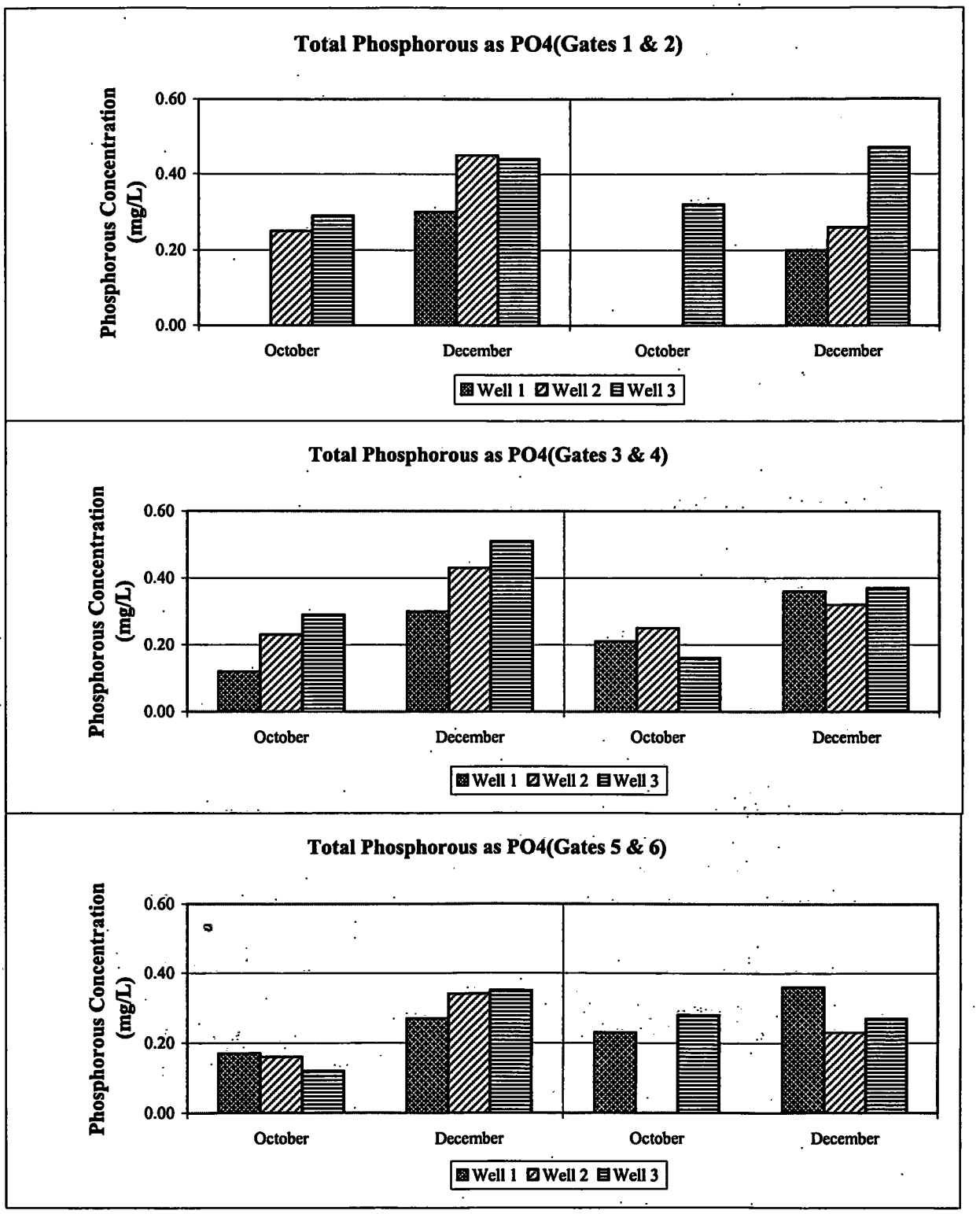


Figure 2-8

Treatment Performance Monitoring Wells
Fourth Quarter 2002
Moss-American Site
Milwaukee, Wisconsin

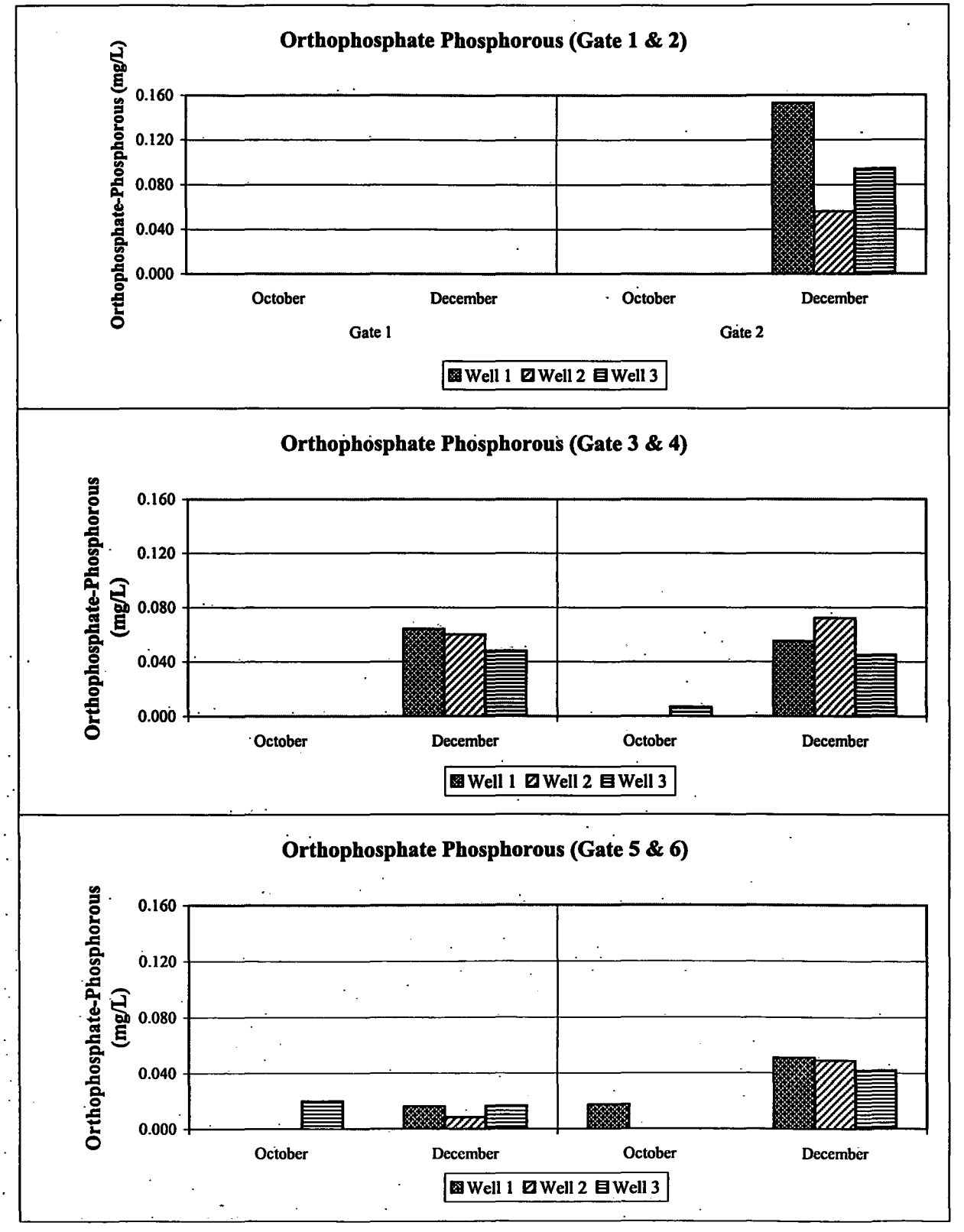


Figure 2-9

Treatment Performance Monitoring Wells
Fourth Quarter 2002
Moss-American Site
Milwaukee, Wisconsin

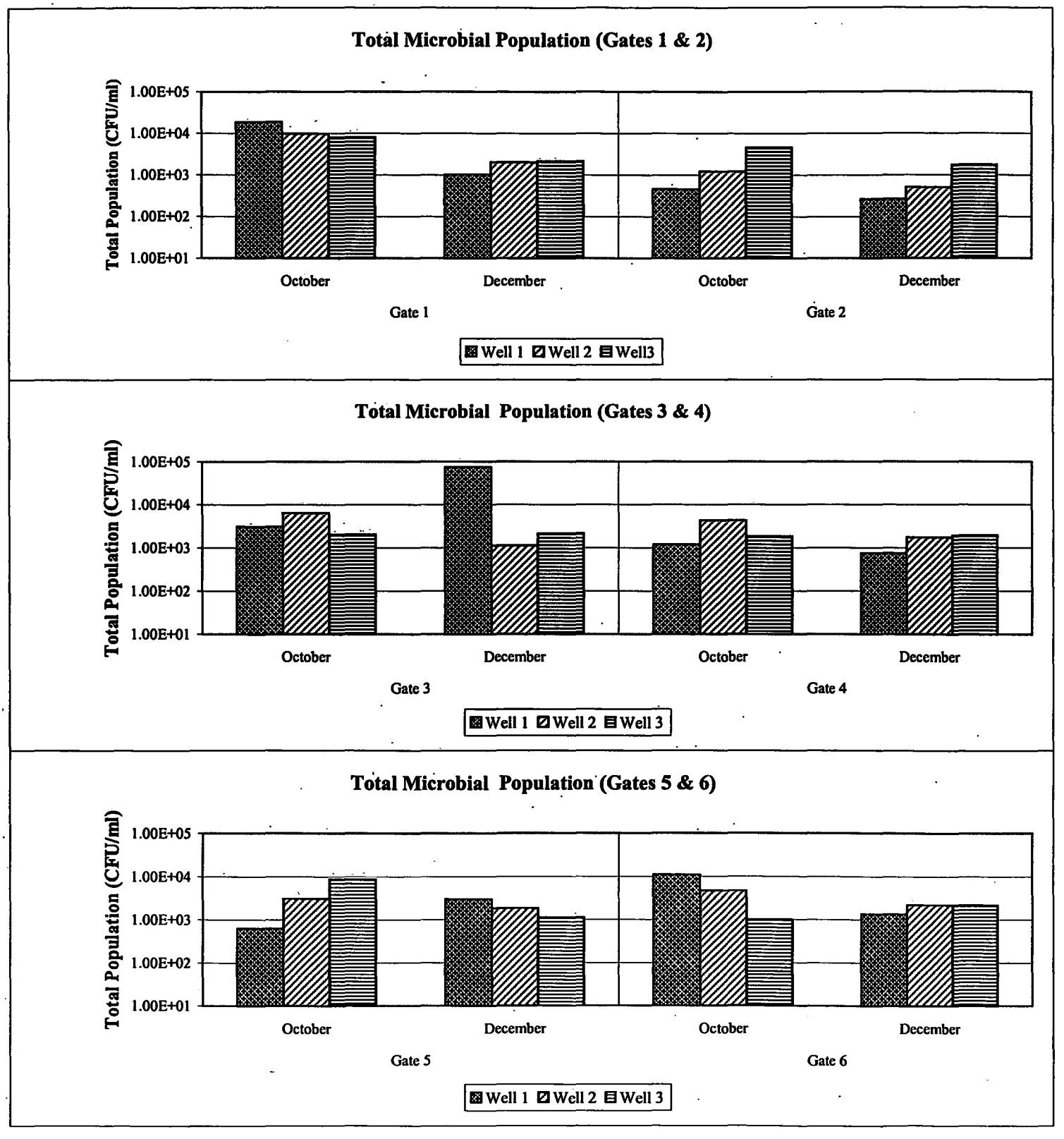


Figure 2-10

Treatment Performance Monitoring Wells
Fourth Quarter 2002
Moss-American Site
Milwaukee, Wisconsin

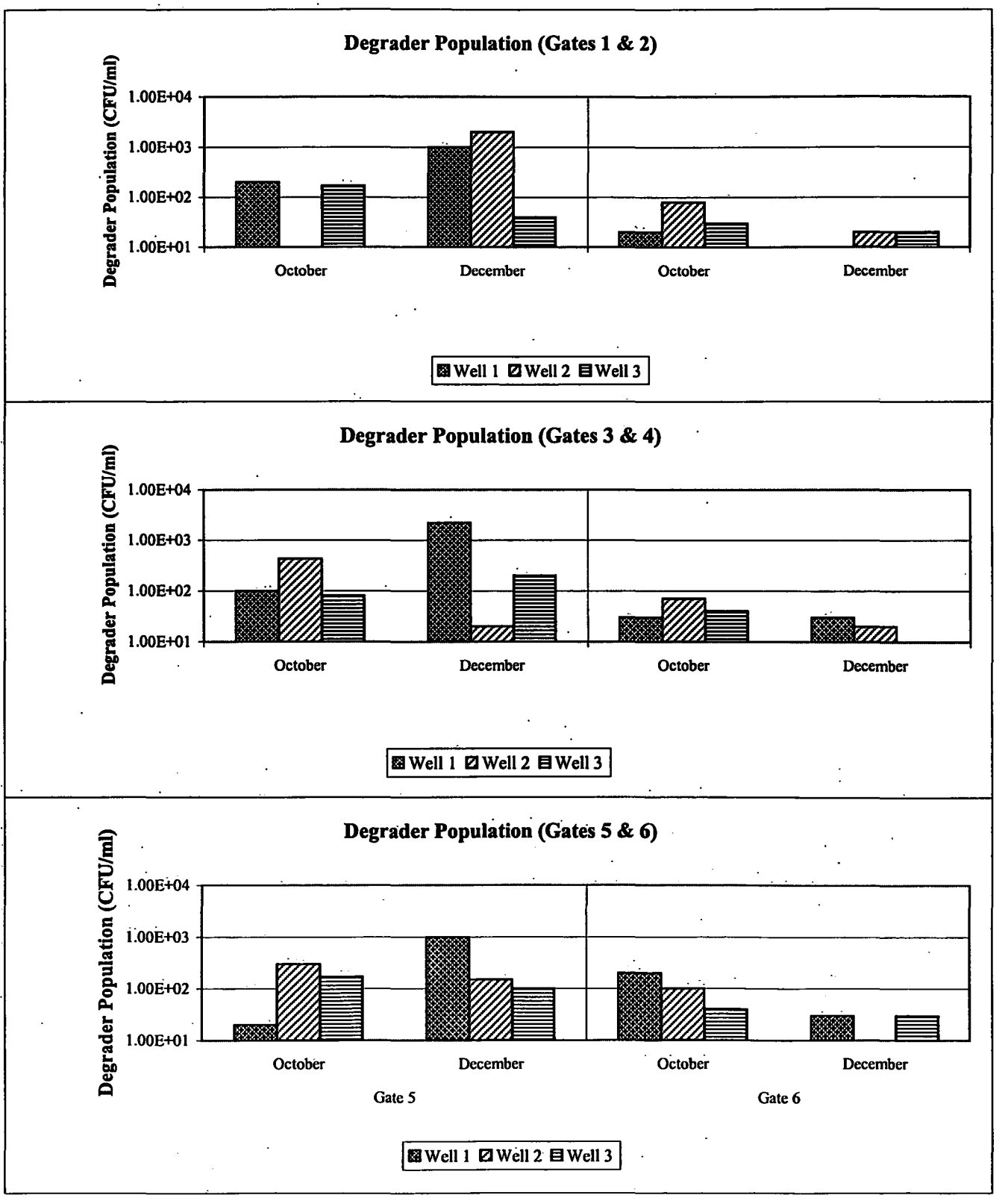


Table 2-1

Groundwater Elevation Measurements
Shallow Monitoring and Containment Performance Monitoring Wells
Moss-American Site
Milwaukee, Wisconsin
Fourth Quarter 2002

Well ID	Ground Elevation	TOC Elevation	Depth to Water	GW Elevation	Product Thickness
MW-3S	729.71	731.45	8.05	723.40	ND
MW-5S	723.41	724.63	5.73	718.90	ND
MW-6S	723.11	725.24	4.58	720.66	ND
MW-7S	719.47	721.59	5.57	716.02	ND
MW-9S	719.15	721.66	5.80	715.86	ND
MW-10S	723.95	726.76	7.70	719.06	ND
MW-13S	737.73	738.58	4.80	733.78	ND
MW-25S	736.95	739.19	4.53	734.66	ND
MW-26S	732.31	731.87	5.35	726.52	ND
MW-27S	720.57	723.10	5.67	717.43	ND
MW-28S	719.64	722.13	5.51	716.62	ND
MW-29S	719.51	722.17	5.35	716.82	ND
MW-30S	725.35	727.34	4.90	722.44	ND
MW-31S	725.29	726.61	4.31	722.30	ND
MW-32S	719.68	722.79	6.69	716.10	ND
MW-33S	719.25	721.81	6.02	715.79	ND
MW-34S	718.97	721.52	5.38	716.14	TRACE
MW-35S	719.14	721.75	5.45	716.30	ND
MW-36S	720.41	723.21	4.92	718.29	ND
MW-37S	721.33	723.30	6.35	716.95	ND

Notes: All values in feet.
All elevation measurements are with respect to Mean Sea Level (MSL).
TOC = Top of well casing.
GW = Groundwater.
NM = Not measured.
ND = Not detected.
Surveying performed on 30 December 2002 Bernklau Surveying.
Depth to groundwater was measured on 9 December 2002.

Table 2-3 (continued)

Field-Measured Parameters
Treatment Performance Monitoring Wells
Moss-American Site
Milwaukee, Wisconsin
Fourth Quarter 2002

Well Number	pH (Standard Units)	Specific Conductance (mmho/cm)	Temperature (°C)	Redox Potential (mV)	Dissolved Oxygen (mg/L)	Turbidity (NTU)
TG1-1	NM	NM	NM	NM	0.14	NM
TG1-2	6.89	1.022	9.64	32.5	0.19	4.40
TG1-3	6.92	1.043	9.83	40.9	0.23	18.00
TG2-1	6.62	0.762	9.66	72.2	0.12	2.77
TG2-2	6.76	0.720	9.69	11.5	0.05	2.77
TG2-3	6.33	1.147	8.87	26.0	0.03	1.57
TG3-1	6.52	1.111	9.36	-25.4	3.35	1.50
TG3-2	6.77	0.987	9.29	-32.6	0.04	2.82
TG3-3	6.54	1.095	9.20	-21.5	0.04	7.80
TG4-1	6.93	0.946	8.73	0.0	0.09	6.34
TG4-2	6.91	0.917	9.05	-16.0	0.09	6.89
TG4-3	6.86	0.944	9.30	3.0	0.09	12.80
TG5-1	6.72	0.789	6.95	47.7	3.01	3.90
TG5-2	6.87	0.806	7.40	-9.7	0.27	10.50
TG5-3	7.07	0.781	7.73	64.7	1.41	7.51
TG6-1	6.96	1.171	6.96	33.8	0.06	47.0
TG6-2	6.71	1.013	9.75	65.9	0.25	61.0
TG6-3	6.38	1.211	8.94	58.4	0.09	221.00

Notes: S- Shallow Well.
TG- Treatment gate performance monitoring well.
NM- Not measured.
mmho/cm- millimho per centimeter.
oC- Degrees Celcius.
mV- millivolt.
mg/L- milligrams per liter.
NTU- Nephelometric turbidity units.

Table 2-4

Groundwater Sample Analytical Results
Shallow Groundwater Monitoring Well Samples
Moss-American Site
Milwaukee, Wisconsin
Fourth Quarter 2002

Sample ID:	MW-5S	MW-6S	MW-7S	MW-9S	MW-27S	MW-28S	MW-29S	WDNR	WDNR
Sample Matrix:	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	PAL,	ES,
Sample Date:	12/12/2002	12/11/2002	12/11/2002	12/11/2002	12/11/2002	12/11/2002	12/12/2002	ug/L	ug/L
Units of Measure:	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L		
Parameters									
VOCs									
Benzene	0.2 U	0.2 U	4 U	0.2 U	0.2 U	0.2 U	0.2 U	0.5	5
Toluene	0.2 U	0.2 U	4 U	0.2 U	0.2 U	0.2 U	0.2 U	68.6	343
Ethylbenzene	0.2 U	0.2 U	13 J	0.2 U	0.2 U	0.2 U	0.2 U	140	700
Total Xylenes	0.6 U	0.6 U	31 J	0.6 U	0.6 U	0.6 U	0.6 U	124	620
PAHs									
Acenaphthene	2 U	2 UJ	66 J	2 UJ	2 UJ	2 UJ	2 UJ	NA	NA
Acenaphthylene	2 U	2 UJ	42 J	2 UJ	2 UJ	2 UJ	2 UJ	NA	NA
Anthracene	0.04 U	0.04 UJ	0.04 UJ	0.04 UJ	0.04 UJ	0.04 UJ	0.04 UJ	600	3000
Benzo(a)anthracene	0.02 U	0.02 UJ	0.02 UJ	0.02 UJ	0.02 UJ	0.02 UJ	0.02 UJ	NA	NA
Benzo(a)pyrene	0.02 U	0.02 UJ	0.02 UJ	0.02 UJ	0.02 UJ	0.02 UJ	0.02 UJ	0.02	0.2
Benzo(b)fluoranthene	0.04 U	0.04 UJ	0.04 UJ	0.04 UJ	0.04 UJ	0.04 UJ	0.04 UJ	0.02	0.2
Benzo(g,h,i)perylene	0.1 U	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	NA	NA
Benzo(k)fluoranthene	0.02 U	0.02 UJ	0.02 UJ	0.02 UJ	0.02 UJ	0.02 UJ	0.02 UJ	NA	NA
Chrysene	0.08 U	0.08 UJ	0.08 UJ	0.08 UJ	0.08 UJ	0.08 UJ	0.08 UJ	0.02	0.2
Dibenz(a,h)anthracene	0.04 U	0.04 UJ	0.04 UJ	0.04 UJ	0.04 UJ	0.04 UJ	0.04 UJ	NA	NA
Fluoranthene	0.04 U	0.04 UJ	0.054 J	0.04 UJ	0.04 UJ	0.04 UJ	0.04 UJ	80	400
Fluorene	0.2 U	0.2 UJ	11 J	0.2 UJ	0.2 UJ	0.2 UJ	0.2 UJ	80	400
Indeno(1,2,3-cd)pyrene	0.08 U	0.08 UJ	0.08 UJ	0.08 UJ	0.08 UJ	0.08 UJ	0.08 UJ	NA	NA
Naphthalene	1 U	1 U	2800	1 U	1 U	1 U	1 U	8	40
Phenanthrene	0.08 U	0.08 UJ	0.3 J	0.08 UJ	0.08 UJ	0.08 UJ	0.08 UJ	NA	NA
Pyrene	0.2 U	0.2 UJ	0.2 UJ	0.2 UJ	0.2 UJ	0.2 UJ	0.2 UJ	50	250

Table 2-4 (continued)

Groundwater Sample Analytical Results
Containment Performance Monitoring Well Samples
Moss-American Site
Milwaukee, Wisconsin
Fourth Quarter 2002

Sample ID:	MW-30S	MW-31S	MW-32S	MW-33S	MW-34S	MW-35S	MW-36S	MW-37S	WDNR PAL, ug/L	WDNR ES, ug/L
Sample Matrix:	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater		
Sample Date:	12/12/2002	12/12/2002	12/11/2002	12/11/2002	12/11/2002	12/11/2002	12/11/2002	12/11/2002		
Units of Measure:	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L		
Parameters										
VOCs										
Benzene	0.2 U	0.2 U	0.2 U	2 U	5.6 J	0.2 U	0.2 U	0.2 U	0.5	5
Toluene	0.2 U	0.2 U	0.2 U	5.1 J	5 U	0.2 U	0.27 J	0.2 U	68.6	343
Ethylbenzene	0.2 U	0.2 U	0.2 U	18	22 J	0.2 U	0.2 U	0.2 U	140	700
Total Xylenes	0.6 U	0.6 U	0.6 U	62	54 J	0.6 U	0.6 U	0.6 U	124	620
PAHs										
Acenaphthene	2 U	2 U	2 UJ	170 J	310 J	2 UJ	2 U	2 U	NA	NA
Acenaphthylene	2 U	2 U	2 UJ	46 J	69 J	2 UJ	2 U	2 U	NA	NA
Anthracene	0.04 U	0.04 U	0.04 UJ	0.18 J	28 J	0.12 J	0.04 U	0.04 U	600	3000
Benzo(a)anthracene	0.02 U	0.02 U	0.02 UJ	0.02 UJ	15 J	0.027 J	0.02 U	0.02 U	NA	NA
Benzo(a)pyrene	0.02 U	0.02 U	0.02 UJ	0.02 UJ	5.6 J	0.02 UJ	0.02 U	0.02 U	0.02	0.2
Benzo(b)fluoranthene	0.04 U	0.04 U	0.04 UJ	0.04 UJ	5.3 J	0.04 UJ	0.04 U	0.04 U	0.02	0.2
Benzo(g,h,i)perylene	0.1 U	0.1 U	0.1 UJ	0.1 UJ	2.3 J	0.1 UJ	0.1 U	0.1 U	NA	NA
Benzo(k)fluoranthene	0.02 U	0.02 U	0.02 UJ	0.02 UJ	3 J	0.02 UJ	0.02 U	0.02 U	NA	NA
Chrysene	0.08 U	0.08 U	0.08 UJ	0.08 UJ	12 J	0.08 UJ	0.08 U	0.08 U	0.02	0.2
Dibenz(a,h)anthracene	0.04 U	0.04 U	0.04 UJ	0.04 UJ	0.92 J	0.04 UJ	0.04 U	0.04 U	NA	NA
Fluoranthene	0.04 U	0.04 U	0.04 UJ	0.04 UJ	98 J	0.59 J	0.04 U	0.04 U	80	400
Fluorene	0.2 U	0.2 U	0.2 UJ	59 UJ	170 J	0.2 UJ	0.2 U	0.2 U	80	400
Indeno(1,2,3-cd)pyrene	0.08 U	0.08 U	0.08 UJ	0.08 UJ	2.1 J	0.08 UJ	0.08 U	0.08 U	NA	NA
Naphthalene	1 U	1 U	1 U	2100	5300	1 U	1 U	1 U	8	40
Phenanthrene	0.08 U	0.08 U	0.08 UJ	7.4 J	290 J	0.09 J	0.08 U	0.08 U	NA	NA
Pyrene	0.2 U	0.2 U	0.2 UJ	0.2 UJ	77 J	0.35 J	0.2 U	0.2 U	50	250

Table 2-4 (continued)

Groundwater Sample Analytical Results
Treatment Performance Monitoring Well Samples
Moss-American Site
Milwaukee, Wisconsin
Fourth Quarter 2002

Sample ID:	TG1-1	TG1-2	TG1-3	TG2-1	TG2-2	TG2-3	WDNR PAL,	WDNR ES,
Sample Matrix:	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater		
Sample Date:	12/11/2002	12/11/2002	12/11/2002	12/10/2002	12/10/2002	12/10/2002		
Units of Measure:	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Parameters								
VOCs								
Benzene	4.9 J	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.5	5
Toluene	4 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	68.6	343
Ethylbenzene	36	0.5 J	0.2 U	0.2 U	0.2 U	0.2 U	140	700
Total Xylenes	57 J	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	124	620
PAHs								
Acenaphthene	4400 J	32 J	2 UJ	2 U	2 U	2 U	NA	NA
Acenaphthylene	300 J	2 UJ	2 UJ	2 U	2 U	2 U	NA	NA
Anthracene	860 J	1.5 J	0.04 UJ	0.04 U	0.04 U	0.04 U	600	3000
Benzo(a)anthracene	740 J	0.07 J	0.02 UJ	0.02 U	0.02 U	0.02 U	NA	NA
Benzo(a)pyrene	290 J	0.02 UJ	0.02 UJ	0.02 U	0.02 U	0.02 U	0.02	0.2
Benzo(b)fluoranthene	280 J	0.04 UJ	0.04 UJ	0.04 U	0.04 U	0.04 U	0.02	0.2
Benzo(g,h,i)perylene	110 J	0.1 UJ	0.1 UJ	0.1 U	0.1 U	0.1 U	NA	NA
Benzo(k)fluoranthene	160 J	0.02 UJ	0.02 UJ	0.02 U	0.02 U	0.02 U	NA	NA
Chrysene	290 J	0.08 UJ	0.08 UJ	0.08 U	0.08 U	0.08 U	0.02	0.2
Dibenz(a,h)anthracene	0.8 UJ	0.04 UJ	0.04 UJ	0.04 UJ	0.04 UJ	0.04 UJ	NA	NA
Fluoranthene	4200 J	2.2 J	0.055 J	0.04 U	0.046 J	0.04 U	80	400
Fluorene	3400 J	14 J	0.2 UJ	0.2 U	0.2 U	0.2 U	80	400
Indeno(1,2,3-cd)pyrene	2 UJ	0.08 UJ	0.08 UJ	0.08 UJ	0.08 UJ	0.08 UJ	NA	NA
Naphthalene	8900	48	1 U	1 U	1 U	1 U	8	40
Phenanthrene	8800 J	11 J	0.08 UJ	0.08 U	0.08 U	0.08 U	NA	NA
Pyrene	3300 J	1.4 J	0.2 UJ	0.2 U	0.2 U	0.2 U	50	250

Table 2-4 (continued)

Groundwater Sample Analytical Results
Treatment Performance Monitoring Well Samples
Moss-American Site
Milwaukee, Wisconsin
Fourth Quarter 2002

Sample ID:	TG3-1	TG3-2	TG3-3	TG4-1	TG4-2	TG4-3	WDNR PAL, ug/L	WDNR ES, ug/L
Sample Matrix:	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater		
Sample Date:	12/10/2002	12/10/2002	12/10/2002	12/10/2002	12/10/2002	12/10/2002		
Units of Measure:	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L		
Parameters								
VOCs								
Benzene	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.5	5
Toluene	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	68.6	343
Ethylbenzene	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	140	700
Total Xylenes	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	124	620
PAHs								
Acenaphthene	2 U	2 U	2 U	2 U	2 U	2 U	NA	NA
Acenaphthylene	2 U	2 U	2 U	2 U	2 U	2 U	NA	NA
Anthracene	0.04 U	0.04 U	0.04 U	0.04 U	0.074 J	0.04 U	600	3000
Benzo(a)anthracene	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	NA	NA
Benzo(a)pyrene	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02	0.2
Benzo(b)fluoranthene	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.02	0.2
Benzo(g,h,i)perylene	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	NA	NA
Benzo(k)fluoranthene	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	NA	NA
Chrysene	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U	0.02	0.2
Dibenz(a,h)anthracene	0.04 UJ	0.04 UJ	0.04 UJ	0.04 UJ	0.04 UJ	0.04 UJ	NA	NA
Fluoranthene	0.044 J	0.044 J	0.061 J	0.04 U	0.22	0.04 U	80	400
Fluorene	0.21 J	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	80	400
Indeno(1,2,3-cd)pyrene	0.08 UJ	0.08 UJ	0.08 UJ	0.08 UJ	0.08 UJ	0.08 UJ	NA	NA
Naphthalene	1 U	1 U	1 U	1 U	1 U	1 U	8	40
Phenanthrene	0.08 U	0.08 U	0.11 J	0.08 U	0.08 U	0.08 U	NA	NA
Pyrene	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	50	250

Table 2-4 (continued)

Groundwater Sample Analytical Results
Treatment Performance Monitoring Well Samples
Moss-American Site
Milwaukee, Wisconsin
Fourth Quarter 2002

Sample ID:	TG5-1	TG5-2	TG5-3	TG6-1	TG6-2	TG6-3	WDNR PAL, ug/L	WDNR ES, ug/L
Sample Matrix:	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater		
Sample Date:	12/9/2002	12/9/2002	12/9/2002	12/10/2002	12/10/2002	12/10/2002		
Units of Measure:	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L		
Parameters								
VOCs								
Benzene	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.5	5
Toluene	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	68.6	343
Ethylbenzene	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	140	700
Total Xylenes	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	124	620
PAHs								
Acenaphthene	2 U	2 U	2 U	2 U	2 U	2 U	NA	NA
Acenaphthylene	2 U	2 U	2 U	2 U	2 U	2 U	NA	NA
Anthracene	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	600	3000
Benzo(a)anthracene	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	NA	NA
Benzo(a)pyrene	0.02 U	0.02 U	0.02 U	0.02 U	0.028 J	0.02 U	0.02	0.2
Benzo(b)fluoranthene	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.02	0.2
Benzo(g,h,i)perylene	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	NA	NA
Benzo(k)fluoranthene	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	NA	NA
Chrysene	0.08 U	0.08 U	0.09 U	0.08 U	0.08 U	0.08 U	0.02	0.2
Dibenz(a,h)anthracene	0.04 U	0.04 UJ	0.04 UJ	0.04 UJ	0.095 J	0.04 UJ	NA	NA
Fluoranthene	0.04 U	0.075 J	0.065 J	0.04 U	0.088 J	0.058 J	80	400
Fluorene	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	80	400
Indeno(1,2,3-cd)pyrene	0.08 U	0.08 U	0.09 U	0.08 UJ	0.11 J	0.08 UJ	NA	NA
Naphthalene	1 U	1 U	1 U	1 U	1 U	1 U	8	40
Phenanthrene	0.08 U	0.08 U	0.09 U	0.08 U	0.08 U	0.08 U	NA	NA
Pyrene	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	50	250

Table 2-4 (continued)

Groundwater Sample Analytical Results
Field Duplicate Samples
Moss-American Site
Milwaukee, Wisconsin
Fourth Quarter 2002

Sample ID:	MW-35S-DUP	MW-37S-DUP	TG2-2-DUP	TG5-1-DUP	WDNR PAL, ug/L	WDNR ES, ug/L
Sample Matrix:	Groundwater	Groundwater	Groundwater	Groundwater		
Sample Date:	12/11/2002	12/12/2002	12/10/2002	12/9/2002		
Units of Measure:	ug/L	ug/L	ug/L	ug/L		
Parameters						
VOCs						
Benzene	0.2 U	0.2 U	0.2 U	0.2 U	0.5	5
Toluene	0.2 U	0.2 U	0.2 U	0.2 U	68.6	343
Ethylbenzene	0.2 U	0.2 U	0.2 U	0.2 U	140	700
Total Xylenes	0.6 U	0.6 U	0.6 U	0.6 U	124	620
PAHs						
Acenaphthene	2 UJ	2 U	2 U	2 U	NA	NA
Acenaphthylene	2 UJ	2 U	2 U	2 U	NA	NA
Anthracene	0.14 J	0.04 U	0.04 U	0.04 U	600	3000
Benzo(a)anthracene	0.031 J	0.02 U	0.02 U	0.02 U	NA	NA
Benzo(a)pyrene	0.02 UJ	0.02 U	0.02 U	0.02 U	0.02	0.2
Benzo(b)fluoranthene	0.04 UJ	0.04 U	0.04 U	0.04 U	0.02	0.2
Benzo(g,h,i)perylene	0.1 UJ	0.1 U	0.1 U	0.1 U	NA	NA
Benzo(k)fluoranthene	0.02 UJ	0.02 U	0.02 U	0.02 U	NA	NA
Chrysene	0.08 UJ	0.08 U	0.08 U	0.08 U	0.02	0.2
Dibenz(a,h)anthracene	0.04 UJ	0.04 U	0.04 UJ	0.04 UJ	NA	NA
Fluoranthene	0.7 J	0.04 U	0.046 J	0.04 U	80	400
Fluorene	0.2 UJ	0.2 U	0.2 U	0.2 U	80	400
Indeno(1,2,3-cd)pyrene	0.08 UJ	0.08 U	0.08 UJ	0.08 U	NA	NA
Naphthalene	1 U	1 U	1 U	1 U	8	40
Phenanthrene	0.11 J	0.08 U	0.08 U	0.08 U	NA	NA
Pyrene	0.42 J	0.2 U	0.2 U	0.2 U	50	250

Table 2-4 (continued)

Groundwater Sample Analytical Results
Matrix Spike/Matrix Spike Duplicate Samples
Moss-American Site
Milwaukee, Wisconsin
Fourth Quarter 2002

Sample ID:	MW-29S-MS	MW-29S-MSD	TG6-2-MS	TG6-2-MSD	WDNR PAL, ug/L	WDNR ES, ug/L
Sample Matrix:	Groundwater	Groundwater	Groundwater	Groundwater		
Sample Date:	12/12/2002	12/12/2002	12/10/2002	12/10/2002		
Units of Measure:	ug/L	ug/L	ug/L	ug/L		
Parameters						
VOCs						
Benzene	20	20	22	22	0.5	5
Toluene	22	22	22	23	68.6	343
Ethylbenzene	22	22	23	23	140	700
Total Xylenes	66	66	68	70	124	620
PAHs						
Acenaphthene	170	180	180	180	NA	NA
Acenaphthylene	150	160	160	160	NA	NA
Anthracene	2.7	2.7	2.8	2.8	600	3000
Benzo(a)anthracene	1.4	1.4	1.4	1.5	NA	NA
Benzo(a)pyrene	1.5	1.5	1.5	1.5	0.02	0.2
Benzo(b)fluoranthene	1.2	1.1	1.1	1.2	0.02	0.2
Benzo(g,h,i)perylene	11	11	11	11	NA	NA
Benzo(k)fluoranthene	1.2	1.2	1.1	1.2	NA	NA
Chrysene	5.7	5.6	5.6	5.7	0.02	0.2
Dibenz(a,h)anthracene	3	3	2.9 J	2.9 J	NA	NA
Fluoranthene	3	3	3.1	3.1	80	400
Fluorene	16	17	17	17	80	400
Indeno(1,2,3-cd)pyrene	6.3	6.3	6.3 J	6.4 J	NA	NA
Naphthalene	150	160	160	150	8	40
Phenanthrene	5	5.2	5.4	5.4	NA	NA
Pyrene	18	18	19	19	50	250

Table 2-4 (continued)

Groundwater Sample Analytical Results
Field Blank Samples
Moss-American Site
Milwaukee, Wisconsin
Fourth Quarter 2002

Sample ID:	FB-01	FB-02	WDNR PAL, ug/L	WDNR ES, ug/L
Sample Matrix:	Groundwater	Groundwater		
Sample Date:	12/10/2002	12/12/2002		
Units of Measure:	ug/L	ug/L		
Parameters				
VOCs				
Benzene	0.2 U	0.2 U	0.5	5
Toluene	0.2 U	0.2 U	68.6	343
Ethylbenzene	0.2 U	0.2 U	140	700
Total Xylenes	0.6 U	0.6 U	124	620
PAHs				
Acenaphthene	2 U	2 UJ	NA	NA
Acenaphthylene	2 U	2 UJ	NA	NA
Anthracene	0.04 U	0.04 UJ	600	3000
Benzo(a)anthracene	0.02 U	0.02 UJ	NA	NA
Benzo(a)pyrene	0.032 J	0.02 UJ	0.02	0.2
Benzo(b)fluoranthene	0.04 U	0.04 UJ	0.02	0.2
Benzo(g,h,i)perylene	0.1 U	0.1 UJ	NA	NA
Benzo(k)fluoranthene	0.02 U	0.02 UJ	NA	NA
Chrysene	0.08 U	0.08 UJ	0.02	0.2
Dibenz(a,h)anthracene	0.04 UJ	0.04 UJ	NA	NA
Fluoranthene	0.04 U	0.04 UJ	80	400
Fluorene	0.2 U	0.2 UJ	80	400
Indeno(1,2,3-cd)pyrene	0.08 UJ	0.08 UJ	NA	NA
Naphthalene	1 U	1 U	8	40
Phenanthrene	0.08 U	0.08 UJ	NA	NA
Pyrene	0.2 U	0.2 UJ	50	250

Table 2-4 (continued)

Groundwater Sample Analytical Results
Table Notes
Moss-American Site
Milwaukee, Wisconsin
Fourth Quarter 2002

U - Constituent not detected. Detection limit indicated.
J - Estimated concentration.
VOC - Volatile Organic Compound.
PAH - Polynuclear Aromatic Hydrocarbon.
PAL - Wisconsin Department of Natural Resources (WDNR) Preventative Action Limit.
ES - Enforcement Standard (WDNR).
NA - Not Applicable. PAL or ES not available for this parameter.
NM - Not measured.
Shaded values indicate concentration exceeding PAL.
Shaded and bold values indicate concentration exceeding PAL and ES.

Table 2-5

Concentration Trends in Groundwater Monitoring Wells
First Quarter 2000 through Fourth Quarter 2002
Moss-American Site
Milwaukee, Wisconsin

	MW-4S[1]	MW-7S	TW-05[3]	MW-32S[2]	MW-33S[2]	MW-34S[2]	MW-35S[2]	TG1-1[2]
Benzene (ug/L)								
First Quarter (March '00)	4.00	5.20	0.20 U	---	---	---	---	---
Second Quarter (June '00)	3.40	4.00 J	0.20 U	0.20 U	1.00 U	9.50 J	0.20 U	---
Third Quarter (September '00)	25.0	4.00 U	0.20 U	0.20 U	1.00 U	8.10 J	0.20 U	2.80
Fourth Quarter (December '00)	2.60	3.40 J	0.20 U	0.20 U	8.30 J	2.00 U	0.20 U	7.00
First Quarter (March '01)	5.10 J	5.50 J	0.20 U	0.20 U	4.00 U	9.80 J	0.20 U	2.80
Second Quarter (June '01)	---	2.90 J	0.20 U	0.20 U	1.00 U	6.80 J	0.20 U	5.00
Third Quarter (September '01)	---	3.70 J	0.20 U	0.20 U	1.00 U	9.00 J	0.20 U	3.10
Fourth Quarter (December '01)	---	7.70 J	---	0.20 U	1.00 U	6.10 J	0.20 U	5.70
First Quarter (March '02)	---	3.6 J	---	0.20 U	1.00 U	8.9 J	0.20 U	4.3 J
Second Quarter (June '02)	---	0.43 J	---	0.20 U	2 J	12.00	0.20 U	3.2 J
Third Quarter (September '02)	---	5 U	---	0.20 U	4 UJ	10 UJ	0.20 U	1.30
Fourth Quarter (December '02)	---	4 U	---	0.20 U	2 U	5.6 J	0.20 U	4.9 J
Naphthalene (ug/L)								
First Quarter (March '00)	1,020	3,950	9.80 J	---	---	---	---	---
Second Quarter (June '00)	364 J	4,260	6.96 J	40.70	1,920	5,980	42.70	---
Third Quarter (September '00)	810	3,960	15.30 J	59.30	2,220	5,720	0.78 U	475
Fourth Quarter (December '00)	720	3,470	10.00 J	1.25 J	1,760	5,050	0.94 J	3,300
First Quarter (March '01)	830	3,800	8.60 J	0.78 U	2,900	5,900	2.36 J	1,890
Second Quarter (June '01)	---	3,200	8.00 J	0.80 U	2,900	5,700	1.00 J	2,200
Third Quarter (September '01)	---	3,700	22.00	1.00 U	2,600	6,200	1.00 J	2,400
Fourth Quarter (December '01)	---	3,300	---	1.00 U	2,100	6,700	1.00 U	2,600
First Quarter (March '02)	---	2,100	---	1.00 U	2,200	5,400	1.00 U	2,400
Second Quarter (June '02)	---	3,000	---	1.00 U	2,900	6,100	0.90 U	1,500
Third Quarter (September '02)	---	4,000	---	1.00 U	2,700	7,000	1.00 U	1,200
Fourth Quarter (December '02)	---	2,800	---	1.0 U	2,100	5,300	1.00 U	8,900

Table 2-5 (continued)

Concentration Trends in Groundwater Monitoring Wells
First Quarter 2000 through Fourth Quarter 2002
Moss-American Site
Milwaukee, Wisconsin

	MW-4S[1]	MW-7S	TW-05[3]	MW-32S[2]	MW-33S[2]	MW-34S[2]	MW-35S[2]	TG1-1[2]
Fluorene (ug/L)								
First Quarter (March '00)	281	15.8	55.5	---	---	---	---	---
Second Quarter (June '00)	223	12.8	53.2	0.17 U	1.41	89.0	4.92	---
Third Quarter (September '00)	103	14.2	74.6	0.19	5.86	73.0 J	0.17 U	16.2
Fourth Quarter (December '00)	217	12.7	40.1	0.82 U	15.0	74.0	0.23 J	69.2
First Quarter (March '01)	210	10.0	43.0	0.17 U	19.0	83.0	0.31 J	72.0
Second Quarter (June '01)	---	8.5	56.0	0.20 U	27.0	80.0	0.20 U	59.0
Third Quarter (September '01)	---	11.0	60.0	0.20 U	34.0	120.0	0.20 U	410
Fourth Quarter (December '01)	---	11.0	---	0.20 U	32.0	320.0	0.20 U	80
First Quarter (March '02)	---	8.0	---	0.20 U	37.0	80.0	0.20 U	270
Second Quarter (June '02)	---	7.0	---	0.20 U	50.0	120.0	0.20 U	70
Third Quarter (September '02)	---	11.0	---	0.20 U	60.0	130.0	0.20 U	330
Fourth Quarter (December '02)	---	11.0	---	0.20 UJ	59.0J	170.0J	0.20 UJ	3400J
Benzo(a) pyrene (ug/L)								
First Quarter (March '00)	8.40	0.21 U	1.440	---	---	---	---	---
Second Quarter (June '00)	1.70 J	0.021 U	0.361	0.02 U	0.02 U	2.00 U	0.162	---
Third Quarter (September '00)	6.70 J	0.019 U	0.890	0.02 U	0.02 U	0.10	0.153	0.052
Fourth Quarter (December '00)	0.051 J	0.02 U	0.096 U	0.021 U	0.02 U	0.031 J	0.138	0.19 U
First Quarter (March '01)	1.00 U	0.19 U	0.110 U	0.019 U	0.20 U	0.23 U	0.023 U	0.39U
Second Quarter (June '01)	---	0.02 U	0.020 U	0.02	0.02 U	0.030 J	0.020 U	0.05 J
Third Quarter (September '01)	---	0.02 U	0.020 J	0.02 U	0.02 U	3.00	0.020 J	33.0
Fourth Quarter (December '01)	---	0.02 U	---	0.02 U	0.02 U	19.00	0.030 J	0.050 J
First Quarter (March '02)	---	0.02 U	---	0.02 U	0.02 U	0.20	0.020 U	23
Second Quarter (June '02)	---	0.02 J	---	0.02 U	0.02 U	4.00	0.02 U	0.05 J
Third Quarter (September '02)	---	0.20 U	---	0.02 U	0.02 U	0.78	0.02 U	25
Fourth Quarter (December '02)	---	0.20 U	---	0.02 UJ	0.02 UJ	5.6J	0.02 UJ	290J

--- - No data available.
U - Constituent not detected; method detection limit (MDL) of the analysis reported.
J - Estimated concentration.
ug/L - Micrograms per liter.
1 - MW-4S was removed during Q2 2001 to prepare for excavation of soils surrounding the well.
2 - Additional wells (MW-32S, MW-33S, MW-34S, MW-35S, and TG1-1) installed after March 2000.
3 - TW-05 was removed during Q4 2001 to prepare for excavation of soils surrounding the well.

Table 2-6

Groundwater Sample Analytical Results
Treatment Peformance Monitoring Wells - Nutrient and Biological Parameters
Moss-American Site
Milwaukee, Wisconsin
Fourth Quarter 2002

Parameter (mg/L)	Sample Identification					
	TG1-1		TG1-2		TG1-3	
	October	December	October	December	October	December
Ammonia Nitrogen	0.46 U	1.5	1.1	0.75 J	0.84 J	0.86 J
Biochemical Oxygen Demand (BOD)	NM	34.8	NM	4.4 U	NM	4.3 U
Chemical Oxygen Demand (COD)	NM	148	NM	32.2	NM	28.1
Kjeldahl Nitrogen	1.9	2.3 J	1.7	1.4	1.1	1.1
Nitrate Nitrogen	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
Nitrite Nitrogen	0.015 U	0.019 J	0.015 U	0.015 U	0.015 U	0.015 U
Ortho-Phosphate as P	0.0066 U	0.0066 U	0.0066 U	0.0066 U	0.0066 U	0.0066 U
Total Organic Carbon (non-purgable)	NM	17.3	NM	12.3	NM	9.99
Total Phosphorous as PO4	0.12 U	0.3	0.25	0.45	0.29	0.44
Total Microbial Population (mean)	1.87E+04	1.01E+03	9.80E+03	2.03E+03	8.00E+03	2.16E+03
Degrader Microbial Population (mean)	2.00E+02	1.00E+03	1.00E+01	2.00E+03	1.70E+02	4.00E+01
	TG2-1		TG2-2		TG2-3	
	October	December	October	December	October	December
Ammonia Nitrogen	0.46 U	0.46 U	0.52 J	0.49 J	1.1	1.2
Biochemical Oxygen Demand (BOD)	NM	2.6 U	NM	2.8 U	NM	5.5 U
Chemical Oxygen Demand (COD)	NM	6.8 J	NM	8.4	NM	32.3
Kjeldahl Nitrogen	0.47 J	0.3 U	0.9 J	0.43 J	1.8	1.6
Nitrate Nitrogen	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
Nitrite Nitrogen	0.015 U	0.015 U	0.015 U	0.034 J	0.015 U	0.039 J
Ortho-Phosphate as P	0.0066 U	0.153	0.0066 U	0.056	0.0066 U	0.094
Total Organic Carbon (non-purgable)	NM	2.59	NM	3.15	NM	12.7
Total Phosphorous as PO4	0.12 U	0.2	0.12 U	0.26	0.32	0.47
Total Microbial Population (mean)	4.50E+02	2.60E+02	1.22E+03	5.00E+02	4.60E+03	1.75E+03
Degrader Microbial Population (mean)	2.00E+01	1.00E+01	8.00E+01	2.00E+01	3.00E+01	2.00E+01

Table 2-6 (continued)

Groundwater Sample Analytical Results
Treatment Performance Monitoring Wells - Nutrient and Biological Parameters
Moss-American Site
Milwaukee, Wisconsin
Fourth Quarter 2002

Parameter (mg/L)	Sample Identification					
	TG3-1		TG3-2		TG3-3	
	October	December	October	December	October	December
Ammonia Nitrogen	0.83 J	0.46 J	1.3	0.93 J	1.4	1.2
Biochemical Oxygen Demand (BOD)	NM	2.9 U	NM	5.6 U	NM	6.4
Chemical Oxygen Demand (COD)	NM	26.2	NM	23.2	NM	39.5
Kjeldahl Nitrogen	2.2	0.4 J	1.7	1.3	2.3	2.3
Nitrate Nitrogen	0.13	0.06 J	0.04 U	0.04 U	0.04 U	0.04 U
Nitrite Nitrogen	0.015 U	0.036 J	0.016 J	0.034 J	0.025 J	0.041 J
Ortho-Phosphate as P	0.0066 U	0.064	0.0066 U	0.06	0.0066 U	0.048
Total Organic Carbon (non-purgable)	NM	10.9	NM	8.82	NM	14.4
Total Phosphorous as PO4	0.12 J	0.3	0.23	0.43	0.29	0.51
Total Microbial Population (mean)	3.10E+03	7.50E+04	6.40E+03	1.13E+03	2.01E+03	2.15E+03
Degrader Microbial Population (mean)	1.00E+02	2.20E+03	4.30E+02	2.00E+01	8.00E+01	2.00E+02
	TG4-1		TG4-2		TG4-3	
	October	December	October	December	October	December
Ammonia Nitrogen	0.91 J	0.61 J	0.83 J	0.99 J	0.91 J	0.64 J
Biochemical Oxygen Demand (BOD)	NM	2.7 U	NM	3.6 U	NM	2.5 U
Chemical Oxygen Demand (COD)	NM	26.2	NM	26.6	NM	24.3
Kjeldahl Nitrogen	1.1	0.79 J	1.3	1.2	1.2	1 J
Nitrate Nitrogen	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
Nitrite Nitrogen	0.015 U	0.015 U	0.015 U	0.015 U	0.015 U	0.029 J
Ortho-Phosphate as P	0.0066 U	0.055	0.0066 U	0.072	0.0067 J	0.045
Total Organic Carbon (non-purgable)	NM	8.09	NM	11.5	NM	9.95
Total Phosphorous as PO4	0.21	0.36	0.25	0.32	0.16 J	0.37
Total Microbial Population (mean)	1.18E+03	7.50E+02	4.30E+03	1.75E+03	1.83E+03	1.93E+03
Degrader Microbial Population (mean)	3.00E+01	3.00E+01	7.00E+01	2.00E+01	4.00E+01	<10

Table 2-6 (continued)

Groundwater Sample Analytical Results
Treatment Performance Monitoring Wells - Nutrient and Biological Parameters
Moss-American Site
Milwaukee, Wisconsin
Fourth Quarter 2002

Parameter (mg/L)	Sample Identification					
	TG5-1		TG5-2		TG5-3	
	October	December	October	December	October	December
Ammonia Nitrogen	0.52 J	1.2	0.62 J	0.7 J	0.46 U	0.58 J
Biochemical Oxygen Demand (BOD)	NM	2.6 U	NM	2.5 U	NM	2.8 U
Chemical Oxygen Demand (COD)	NM	10.3	NM	14.8	NM	27
Kjeldahl Nitrogen	0.75 J	0.3 U	1	0.75 J	0.63 J	0.48 J
Nitrate Nitrogen	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.13
Nitrite Nitrogen	0.015 U	0.015 U	0.015 U	0.015 U	0.015 U	0.015 U
Ortho-Phosphate as P	0.0066 U	0.0161 J	0.0066 U	0.0085 J	0.0198 J	0.0166 J
Total Organic Carbon (non-purgable)	NM	4.75	NM	6.19	NM	6.02
Total Phosphorous as PO4	0.17 J	0.27	0.16 J	0.34	0.12 J	0.35
Total Microbial Population (mean)	6.30E+02	3.00E+03	3.10E+03	1.84E+03	8.80E+03	1.11E+03
Degrader Microbial Population (mean)	2.00E+01	1.00E+03	3.00E+02	1.50E+02	1.70E+02	1.00E+02
	TG6-1		TG6-2		TG6-3	
	October	December	October	December	October	December
Ammonia Nitrogen	0.52 J	0.87 J	0.46 U	0.58 J	0.46 U	0.49 J
Biochemical Oxygen Demand (BOD)	NM	3.3 U	NM	3 U	NM	3.4 U
Chemical Oxygen Demand (COD)	NM	21.3	NM	17.5	NM	19.4
Kjeldahl Nitrogen	0.89 J	0.95 J	1.1	0.74 J	1.2	0.85 J
Nitrate Nitrogen	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
Nitrite Nitrogen	0.015 U	0.015 U	0.015 U	0.015 U	0.015 U	0.015 U
Ortho-Phosphate as P	0.0173 J	0.051	0.0066 U	0.049	0.0066 U	0.042
Total Organic Carbon (non-purgable)	NM	8.82	NM	7.22	NM	8.01
Total Phosphorous as PO4	0.23	0.36	0.12 U	0.23	0.28	0.27
Total Microbial Population (mean)	1.10E+04	1.36E+03	4.70E+03	2.19E+03	1.00E+03	2.18E+03
Degrader Microbial Population (mean)	2.00E+02	3.00E+01	1.00E+02	<10	4.00E+01	3.00E+01

U - Compound not detected. Detection limit indicated.
J - Estimated value.
NA - Not analyzed.
NS - Well not measured due to freezing conditions.

SECTION 3
EVALUATION OF PILOT SCALE OPERATIONS

Augmentation of the groundwater treatment system was initiated in October 2000 by injecting air at the treatment gates. In late June 2001, nutrient addition was initiated at TG1 using a solution containing potassium nitrate (KNO_3) and potassium phosphate ($KHPO_4$). System modifications were proposed in the Q2 2002 Quarterly Groundwater Treatment Performance Monitoring Report and are discussed in this section. Information regarding system performance is also presented.

3.1 DISSOLVED OXYGEN

DO concentrations were anomalous during Q4 2002. Levels were very low during October 2002, but there were a few higher DO readings during December 2002. The higher DO readings were found in wells TG3-1 (3.35 mg/L), TG5-1 (3.01 mg/L), TG5-3 (1.41 mg/L), MW-5S (2.37 mg/L), MW-31S (2.24 mg/L), and MW-36S (3.01 mg/L) in December. The cause for the DO anomalies is uncertain but could be attributable to equipment malfunction due to cold weather. However, the DO concentrations in these wells indicate that oxidizing conditions may exist. The redox potential readings seem to affirm this as most of the wells had positive redox potentials. The only negative redox potential measured during December 2002 was –25.4 mV in well TG3-1. However, the ratio of NO_3-N to NH_3-N for the gate wells was 1:37.5 for well TG3-1; 1:30 for well TG5-1; and 1:4.5 for well TG5-3. This information suggest nitrogen is primarily present in its reduced state, indicating a reducing environment exists in the wells. No nitrogen data is available for the shallow monitoring wells.

Well packers were installed in the TG5 injection wells in June 2000; however, no discernable change in the DO levels had been observed in the TG5 wells, until last quarter and this quarter. KMC/WESTON attempted to install inflatable bladder packers in TG1 and TG2 injection wells in August 2001. However, KMC/WESTON was unable to properly install the packers due to the injection well configuration. KMC/WESTON will continue to evaluate alternatives for air

introduction into the treatment gates.

3.2 NUTRIENTS AND pH

Nutrient injection was discontinued at gate area TG1 as a part of the site modifications recommended in the Q2 2002 Monitoring Report. This took place at the end of October 2002, after the Agencies granted approval. Nutrient and contaminant levels will still be monitored, however.

Recommended guidelines for bioremediation of contaminants in site groundwater include a pH range of 5.5 to 8.5 S.U. and a minimum carbon-nitrogen-phosphorous (C:N:P) ratio of 100:14:1. The range of pH values measured in the treatment performance monitoring wells (6.33 to 7.26 S.U.) is sufficient to facilitate biological activity. Table 3-1 contains calculated C:N:P ratios for each of the treatment performance monitoring wells. TG2-1 and TG2-2 were the only wells that exhibited the desired C:N:P ratio. In the recent past, no wells displayed the desired C:N:P ratio. On a sitewide basis, the C:N:P ratio is 100:9.4:0.8, which is very close to the desired ratio. Nitrogen and phosphorus are the limiting nutrients at the site.

3.3 BACTERIAL POPULATIONS

Total bacteria counts in TG1 fluctuated during Q4 2002. Bacteria counts in wells TG1-1 and TG1-2 decreased in October 2002 when compared to last quarter's counts but rebounded again in December 2002. Bacteria counts in well TG1-3 continued to decline since Q3 2002. The TG-2 wells also exhibited a decline in bacterial counts since the last quarter of sampling. Figure 3-1 compares the degrader populations in TG1 and TG2 since Q1 2001. As indicated in Figure 3-1, there has been a trend of general decrease in the total bacteria levels in TG1 and TG2 since Q1 2001. It is not known what is the cause of this bacterial decrease at the site. Since air injection began in October 2000, degrader populations in TG1 have typically been higher than in TG2. This same general trend was evident this quarter as well. However, it is uncertain if this trend is due to air/nutrient injection, the presence of higher levels of substrate (contaminants), or a combination of these and/or other factors.

3.4 HYDROGEOLOGY

KMC/WESTON identified a potential concern associated with the site hydrogeology in the Q2 2001 Monitoring Report. This concern is primarily based on the premise that low flow conditions may cause anoxic conditions and may inhibit KMC/WESTON's ability to introduce nutrients and other additives at an optimum level due to poor dispersion from the injection point. Low flow conditions are apparent based on the hydraulic gradient and flow velocities derived. A low flow velocity may be indirectly beneficial as a longer residence time in the treatment gate may allow for more effective biodegradation. No significant change was observed in relation to site hydrogeology during Q4 2002.

3.5 SITE MODIFICATIONS

Per the Q2 2002 Monitoring Report recommendations, modifications have been made to the system at the site. Beginning at the end of October 2002, the performance monitoring well sampling frequency and scope reductions went into effect, following the Agencies' approval. Groundwater sampling was revised to quarterly sampling regime instead of a monthly sampling regime. Also, shallow monitoring wells MW-3S, MW-10S, MW-13S, MW-25S, MW-26S, and MW-20S as well as intermediate wells MW-3I, MW-7I, MW-9I, and MW-20I were removed from the groundwater monitoring program. However, these wells were not abandoned, per WDNR's request. Water levels will continue to be gathered from these wells on a quarterly basis to assist with the production of the groundwater elevation contour map. Nutrient injection at gate TG1 was also discontinued.

The hydrogeologic investigation proposed in the Q2 2002 Monitoring Report took place in December 2002. This work included the installation of nine piezometers (PZ-01 thru PZ-07, PZ-09, and PZ-10) as well as a staff gauge (SG-1). PZ-08 could not be installed due to muddy site conditions, and PZ-01 had to be relocated from its proposed location due to the steep grade at that spot. It was placed between gates 3 and 6 instead. Hydraulic conductivity tests were also performed on these newly installed piezometers. This additional work and data is currently being reviewed and analyzed. A report summarizing this work will be produced in the near future.

From this investigation, a new round of surveying was performed to verify elevations of the monitoring wells and ground elevations. Records were updated with this information, and it was used to prepare the groundwater elevation contour map for this quarter. Tables 2-1 and 2-2 reflect this new information as well.

Figure 3-1

Comparison of Degrader Populations in Treament Gates 1 and 2 since Q1 2001
Moss-American Site
Milwaukee, Wisconsin

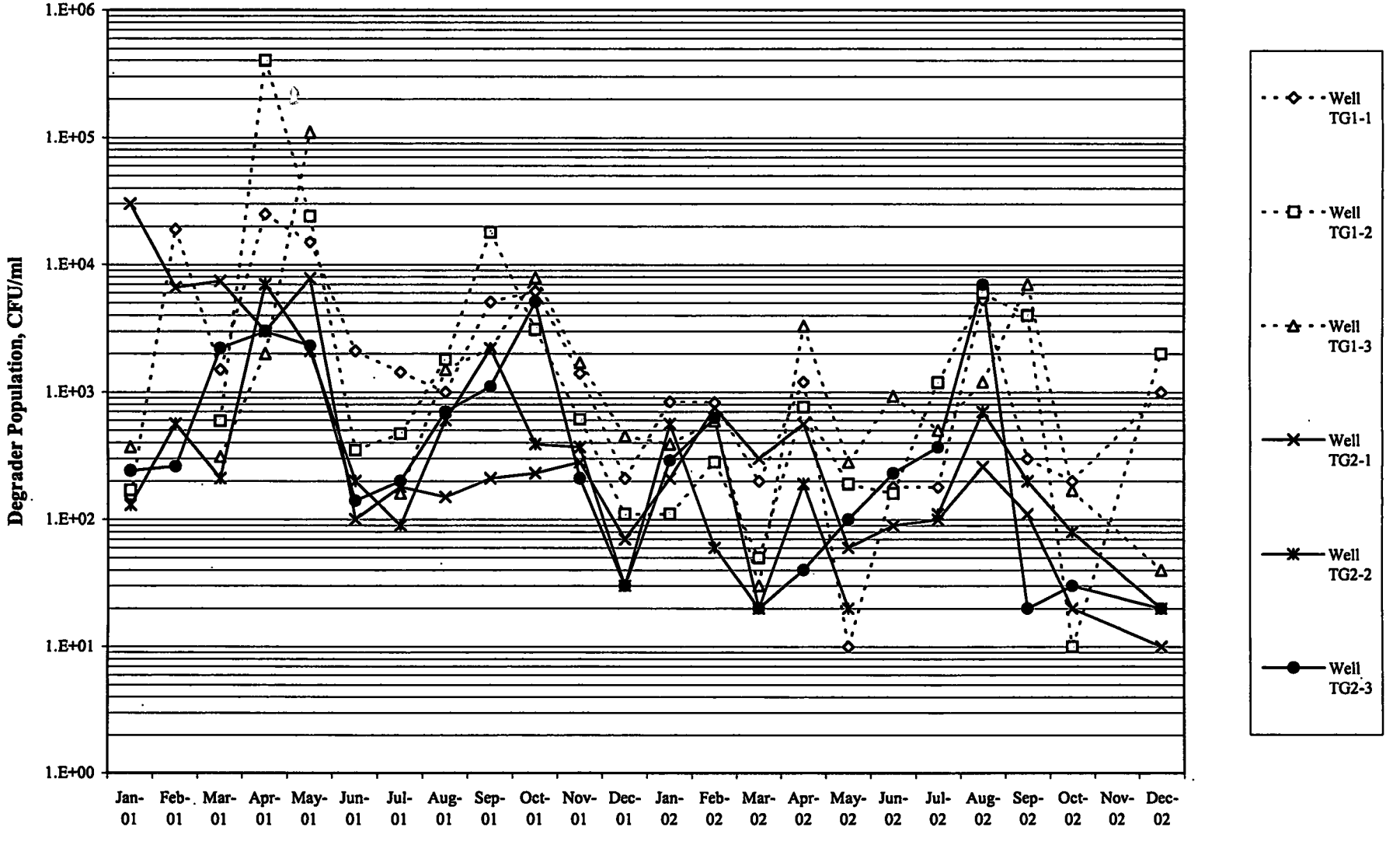


Table 3-1

Calculation of Carbon:Nitrogen:Phosphorous Ratios
Treatment Performance Monitoring Wells
Moss-American Site
Milwaukee, Wisconsin
Fourth Quarter 2002

Well	Carbon[1], mg/L	Total Nitrogen[2], mg/L	Phosphorous[3], mg/L	C-N-P Ratio (100-14-1 desired)
TG1-1	17.3	1.519	ND	100 - 18.8 - 0.0
TG1-2	12.3	0.75	ND	100 - 6.1 - 0.0
TG1-3	9.99	0.86	ND	100 - 8.6 - 0.0
TG2-1	2.59	0.46	0.153	100 - 17.8 - 5.9
TG2-2	3.15	0.524	0.056	100 - 16.6 - 1.8
TG2-3	12.7	1.239	0.094	100 - 9.8 - 0.7
TG3-1	10.9	0.556	0.064	100 - 5.1 - 0.6
TG3-2	8.82	0.964	0.06	100 - 10.9 - 0.7
TG3-3	14.4	1.241	0.048	100 - 8.6 - 0.3
TG4-1	8.09	0.61	0.055	100 - 7.5 - 0.7
TG4-2	11.5	0.99	0.072	100 - 8.6 - 0.6
TG4-3	9.95	0.669	0.045	100 - 6.7 - 0.5
TG5-1	4.75	1.2	0.0161	100 - 25.3 - 0.3
TG5-2	6.19	0.7	0.0085	100 - 11.3 - 0.1
TG5-3	6.02	0.71	0.0166	100 - 11.8 - 0.3
TG6-1	8.82	0.87	0.051	100 - 9.9 - 0.6
TG6-2	7.22	0.58	0.049	100 - 8.0 - 0.7
TG6-3	8.01	0.49	0.042	100 - 6.1 - 0.5
Site Average	9.0	0.83	0.046	100 - 10.4 - 0.8

1- Carbon measured as Total Organic Carbon (non-purgable).

2- Total Nitrogen measured as NH_3-N, NO_2-N, and NO_3-N.

3- Phosphorous measured as Orthophosphate (PO_4-P).

ND- Constituents not detected.

Shaded values indicate values less than desired ratio.

APPENDIX A

MONTHLY FIELD-MEASURED PARAMETERS FOR TREATMENT PERFORMANCE MONITORING WELLS

Appendix A

Monthly Field-Measured Parameters
for Treatment Performance Monitoring Wells

Well Number	Date	Temperature (°C)	pH (Standard Units)	Specific Conductance (mmhos/cm)	Redox Potential (mV)	Dissolved oxygen (mg/L)	Turbidity (NTU)
TG1-1	10/24/2002	11.56	6.88	1.042	-15.7	NM	NM
	12/9/2002	NM	NM	NM	NM	0.14	NM
TG1-2	10/24/2002	13.35	6.83	1.025	-39.9	0.10	NM
	12/11/2002	9.64	6.89	1.022	32.5	0.19	4.40
TG1-3	10/24/2002	13.20	6.90	1.036	-5.4	0.07	NM
	12/11/2002	9.83	6.92	1.043	40.9	0.23	18.00
TG2-1	10/24/2002	12.61	6.70	0.797	70.8	0.08	NM
	12/10/2002	9.66	6.62	0.762	72.2	0.12	2.77
TG2-2	10/24/2002	12.35	6.87	0.768	-18.0	0.11	NM
	12/10/2002	9.69	6.76	0.720	11.5	0.05	2.77
TG2-3	10/24/2002	12.96	6.49	1.222	11.2	0.20	NM
	12/10/2002	8.87	6.33	1.147	26.0	0.03	1.57
TG3-1	10/24/2002	13.72	6.51	1.165	29.6	0.31	NM
	12/10/2002	9.36	6.52	1.111	-25.4	3.35	1.50
TG3-2	10/24/2002	13.23	6.78	1.010	-48.1	0.05	NM
	12/10/2002	9.29	6.77	0.987	-32.6	0.04	2.82
TG3-3	10/24/2002	13.44	6.51	1.180	-32.0	0.05	NM
	12/10/2002	9.20	6.54	1.095	-21.5	0.04	7.80
TG4-1	10/23/2002	13.93	7.00	0.893	-5.7	0.05	NM
	12/10/2002	8.73	6.93	0.946	0.0	0.09	6.34
TG4-2	10/23/2002	13.56	7.02	0.903	-27.3	0.04	NM
	12/10/2002	9.05	6.91	0.917	-16.0	0.09	6.89
TG4-3	10/23/2002	13.61	6.95	0.919	-4.9	0.04	NM
	12/10/2002	9.30	6.86	0.944	3.0	0.09	12.80
TG5-1	10/23/2002	13.90	6.81	0.878	34.5	0.98	NM
	12/9/2002	6.95	6.72	0.789	47.7	3.01	3.90
TG5-2	10/23/2002	13.96	6.98	0.913	-37.2	0.06	NM
	12/9/2002	7.40	6.57	0.806	-9.7	0.27	10.50
TG5-3	10/23/2002	12.77	6.99	0.838	140.9	0.20	NM
	12/9/2002	7.73	7.07	0.781	64.7	1.41	7.51
TG6-1	10/23/2002	13.70	6.76	1.156	49.1	0.05	NM
	12/10/2002	6.96	6.96	1.171	33.8	0.06	47.00
TG6-2	10/23/2002	14.14	6.66	1.144	88.5	0.15	NM
	12/10/2002	9.75	6.71	1.013	65.9	0.25	61.00
TG6-3	10/23/2002	12.81	6.70	1.253	31.2	0.06	NM
	12/10/2002	8.94	6.38	1.211	58.4	0.09	221.00

NM- Not Measured.

APPENDIX B

OCTOBER 2002 GROUNDWATER SAMPLE ANALYTICAL RESULTS

Lancaster Laboratories
Where quality is a science.

ANALYTICAL RESULTS

Prepared for:

Kerr-McGee Corporation
P.O. Box 25861
Oklahoma City OK 73125

405-270-2602

Prepared by:

Lancaster Laboratories
2425 New Holland Pike
Lancaster, PA 17605-2425

SAMPLE GROUP

The sample group for this submittal is 828130. Samples arrived at the laboratory on Thursday, October 24, 2002.

Client Description	Lancaster Labs Number
MA3-TG5-1-231002-04 Grab Water Sample	3926453
MA3-TG5-2-231002-05 Grab Water Sample	3926454
MA3-TG5-3-231002-06 Grab Water Sample	3926455
MA3-TG6-1-231002-01 Grab Water Sample	3926456
MA3-TG6-2-231002-02 Grab Water Sample	3926457
MA3-TG6-3-231002-03 Grab Water Sample	3926458
MA3-TG4-1-231002-07 Grab Water Sample	3926459
MA3-TG4-2-231002-08 Grab Water Sample	3926460
MA3-TG4-3-231002-09 Grab Water Sample	3926461

METHODOLOGY

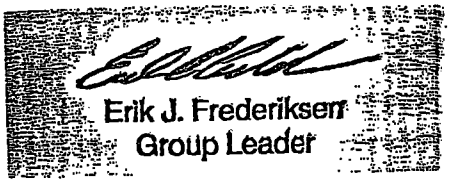
The specific methodologies used in obtaining the enclosed analytical results are indicated on the laboratory chronicles.

1 COPY TO	Kerr-McGee Corporation	Attn: Dr. Jeff Ostmeyer
1 COPY TO	Weston Solutions, Inc.	Attn: Mr. Tom Graan
1 COPY TO	Data Package Group	

Lancaster Laboratories
Where quality is a science.

Questions? Contact your Client Services Representative
Carrie A Fleming at (717) 656-2300.

Respectfully Submitted,



MEMBER ACI
Lancaster Laboratories, Inc.
2425 New Holland Pike
PO Box 12425
Lancaster, PA 17605-2425
717-656-2300 Fax: 717-656-2681

Analysis Report

Lancaster Laboratories
Where quality is a science.

Lancaster Laboratories Sample No. WW 3926453

Collected:10/23/2002 15:15 by BS

Account Number: 07802

Submitted: 10/24/2002 09:10
Reported: 11/06/2002 at 17:26
Discard: 12/07/2002
MA3-TG5-1-231002-04 Grab Water Sample
Moss American Superfund Site - Milwaukee, WI

Kerr-McGee Corporation
P.O. Box 25861
Oklahoma City OK 73125

5-1-2 SDG#: KMA27-01

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
00217	Kjeldahl Nitrogen	7727-37-9	0.75 J	0.30	mg/l	1
00219	Nitrite Nitrogen	14797-65-0	N.D.	0.015	mg/l	1
00220	Nitrate Nitrogen	14797-55-8	N.D.	0.040	mg/l	1
00221	Ammonia Nitrogen	7664-41-7	0.52 J	0.46	mg/l	1
	Sufficient sample volume was not available to perform a MS/MSD for this analysis. Therefore, a LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					
00226	Ortho-Phosphate as P	14265-44-2	N.D.	0.0066	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	0.17 J	0.12	mg/l	1

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00217	Kjeldahl Nitrogen	EPA 351.2	1	10/28/2002 17:09	Nicole M Kepley	1
00219	Nitrite Nitrogen	EPA 353.2	1	10/25/2002 09:03	Christian C Ehrhart	1
00220	Nitrate Nitrogen	EPA 353.2	1	10/30/2002 17:45	Nicole M Kepley	1
00221	Ammonia Nitrogen	EPA 350.2	1	10/28/2002 15:00	Luz M Groff	1
00226	Ortho-Phosphate as P	EPA 365.3	1	10/25/2002 04:15	Daniel S Smith	1
00345	Total Phosphorus as PO4 water	EPA 365.1	2	11/05/2002 16:25	Venia B McFadden	1
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	10/25/2002 09:30	Cheryl L Robinson	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	10/28/2002 08:30	James S Mathiot	1

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Lancaster Laboratories Sample No. WW 3926454

Collected:10/23/2002 15:20 by BS

Account Number: 07802

Submitted: 10/24/2002 09:10
Reported: 11/06/2002 at 17:26
Discard: 12/07/2002
MA3-TG5-2-231002-05 Grab Water Sample
Moss American Superfund Site - Milwaukee, WI

Kerr-McGee Corporation
P.O. Box 25861
Oklahoma City OK 73125

5-5-2 SDG#: KMA27-02

CAT No.	Analysis Name	CAS Number	As Received Result		As Received Method Detection Limit	Units	Dilution Factor
00217	Kjeldahl Nitrogen	7727-37-9	1.0		0.30	mg/l	1
00219	Nitrite Nitrogen	14797-65-0	N.D.		0.015	mg/l	1
00220	Nitrate Nitrogen	14797-55-8	N.D.		0.040	mg/l	1
00221	Ammonia Nitrogen	7664-41-7	0.62	J	0.46	mg/l	1
	Sufficient sample volume was not available to perform a MS/MSD for this analysis. Therefore, a LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.						
00226	Ortho-Phosphate as P	14265-44-2	N.D.		0.0066	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	0.16	J	0.12	mg/l	1

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00217	Kjeldahl Nitrogen	EPA 351.2	1	10/28/2002 17:13	Nicole M Kepley	1
00219	Nitrite Nitrogen	EPA 353.2	1	10/25/2002 09:04	Christian C Ehrhart	1
00220	Nitrate Nitrogen	EPA 353.2	1	10/30/2002 17:46	Nicole M Kepley	1
00221	Ammonia Nitrogen	EPA 350.2	1	10/28/2002 15:00	Luz M Groff	1
00226	Ortho-Phosphate as P	EPA 365.3	1	10/25/2002 04:15	Daniel S Smith	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	10/30/2002 21:39	Venia B McFadden	1
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	10/25/2002 09:30	Cheryl L Robinson	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	10/28/2002 08:30	James S Mathiot	1

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Lancaster Laboratories Sample No. WW 3926455

Collected:10/23/2002 15:25 by BS

Account Number: 07802

Submitted: 10/24/2002 09:10
Reported: 11/06/2002 at 17:26
Discard: 12/07/2002
MA3-TG5-3-231002-06 Grab Water Sample
Moss American Superfund Site - Milwaukee, WI

Kerr-McGee Corporation
P.O. Box 25861
Oklahoma City OK 73125

5-3-2 SDG#: KMA27-03

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
00217	Kjeldahl Nitrogen	7727-37-9	0.63 J	0.30	mg/l	1
00219	Nitrite Nitrogen	14797-65-0	N.D.	0.015	mg/l	1
00220	Nitrate Nitrogen	14797-55-8	N.D.	0.040	mg/l	1
00221	Ammonia Nitrogen	7664-41-7	N.D.	0.46	mg/l	1
	Sufficient sample volume was not available to perform a MS/MSD for this analysis. Therefore, a LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					
00226	Ortho-Phosphate as P	14265-44-2	0.0198 J	0.0066	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	0.12 J	0.12	mg/l	1

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00217	Kjeldahl Nitrogen	EPA 351.2	1	10/28/2002 17:14	Nicole M Kepley	1
00219	Nitrite Nitrogen	EPA 353.2	1	10/25/2002 09:05	Christian C Ehrhart	1
00220	Nitrate Nitrogen	EPA 353.2	1	10/30/2002 17:47	Nicole M Kepley	1
00221	Ammonia Nitrogen	EPA 350.2	1	10/28/2002 15:00	Luz M Groff	1
00226	Ortho-Phosphate as P	EPA 365.3	1	10/25/2002 04:15	Daniel S Smith	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	10/30/2002 21:40	Venia B McFadden	1
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	10/25/2002 09:30	Cheryl L Robinson	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	10/28/2002 08:30	James S Mathiot	1

Lancaster Laboratories
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Lancaster Laboratories Sample No. WW 3926456

Collected:10/23/2002 14:05 by BS

Account Number: 07802

Submitted: 10/24/2002 09:10
Reported: 11/06/2002 at 17:26
Discard: 12/07/2002
MA3-TG6-1-231002-01 Grab Water Sample
Moss American Superfund Site - Milwaukee, WI

Kerr-McGee Corporation
P.O. Box 25861
Oklahoma City OK 73125

6-1-2 SDG#: KMA27-04

CAT No.	Analysis Name	CAS Number	As Received Result		As Received Method Detection Limit	Units	Dilution Factor
00217	Kjeldahl Nitrogen	7727-37-9	0.89	J	0.30	mg/l	1
00219	Nitrite Nitrogen	14797-65-0	N.D.		0.015	mg/l	1
00220	Nitrate Nitrogen	14797-55-8	N.D.		0.040	mg/l	1
00221	Ammonia Nitrogen	7664-41-7	0.52	J	0.46	mg/l	1
	Sufficient sample volume was not available to perform a MS/MSD for this analysis. Therefore, a LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.						
00226	Ortho-Phosphate as P	14265-44-2	0.0173	J	0.0066	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	0.23		0.12	mg/l	1

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00217	Kjeldahl Nitrogen	EPA 351.2	1	10/28/2002 17:16	Nicole M Kepley	1
00219	Nitrite Nitrogen	EPA 353.2	1	10/25/2002 09:09	Christian C Ehrhart	1
00220	Nitrate Nitrogen	EPA 353.2	1	10/30/2002 17:51	Nicole M Kepley	1
00221	Ammonia Nitrogen	EPA 350.2	1	10/28/2002 15:00	Luz M Groff	1
00226	Ortho-Phosphate as P	EPA 365.3	1	10/25/2002 04:15	Daniel S Smith	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	10/30/2002 21:40	Venia B McFadden	1
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	10/25/2002 09:30	Cheryl L Robinson	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	10/28/2002 08:30	James S Mathiot	1

Lancaster Laboratories
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Lancaster Laboratories Sample No. WW 3926457

Collected:10/23/2002 14:10 by BS

Account Number: 07802

Submitted: 10/24/2002 09:10
Reported: 11/06/2002 at 17:26
Discard: 12/07/2002
MA3-TG6-2-231002-02 Grab Water Sample
Moss American Superfund Site - Milwaukee, WI

Kerr-McGee Corporation
P.O. Box 25861
Oklahoma City OK 73125

6-2-2 SDG#: KMA27-05

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
00217	Kjeldahl Nitrogen	7727-37-9	1.1	0.30	mg/l	1
00219	Nitrite Nitrogen	14797-65-0	N.D.	0.015	mg/l	1
00220	Nitrate Nitrogen	14797-55-8	N.D.	0.040	mg/l	1
00221	Ammonia Nitrogen	7664-41-7	N.D.	0.46	mg/l	1
	Sufficient sample volume was not available to perform a MS/MSD for this analysis. Therefore, a LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					
00226	Ortho-Phosphate as P	14265-44-2	N.D.	0.0066	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	N.D.	0.12	mg/l	1

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00217	Kjeldahl Nitrogen	EPA 351.2	1	10/28/2002 17:17	Nicole M Kepley	1
00219	Nitrite Nitrogen	EPA 353.2	1	10/25/2002 09:10	Christian C Ehrhart	1
00220	Nitrate Nitrogen	EPA 353.2	1	10/30/2002 17:52	Nicole M Kepley	1
00221	Ammonia Nitrogen	EPA 350.2	1	10/28/2002 15:00	Luz M Groff	1
00226	Ortho-Phosphate as P	EPA 365.3	1	10/25/2002 04:15	Daniel S Smith	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	10/30/2002 21:41	Venia B McFadden	1
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	10/25/2002 09:30	Cheryl L Robinson	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	10/28/2002 08:30	James S Mathiot	1

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Lancaster, PA 17605-2425
717-656-2300 Fax: 717-656-2681

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Lancaster Laboratories Sample No. WW 3926458

Collected:10/23/2002 14:15 by BS

Account Number: 07802

Submitted: 10/24/2002 09:10
Reported: 11/06/2002 at 17:27
Discard: 12/07/2002
MA3-TG6-3-231002-03 Grab Water Sample
Moss American Superfund Site - Milwaukee, WI

Kerr-McGee Corporation
P.O. Box 25861
Oklahoma City OK 73125

6-3-2 SDG#: KMA27-06

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
00217	Kjeldahl Nitrogen	7727-37-9	1.2	0.30	mg/l	1
00219	Nitrite Nitrogen	14797-65-0	N.D.	0.015	mg/l	1
00220	Nitrate Nitrogen	14797-55-8	N.D.	0.040	mg/l	1
00221	Ammonia Nitrogen	7664-41-7	N.D.	0.46	mg/l	1
	Sufficient sample volume was not available to perform a MS/MSD for this analysis. Therefore, a LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					
00226	Ortho-Phosphate as P	14265-44-2	N.D.	0.0066	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	0.28	0.12	mg/l	1

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00217	Kjeldahl Nitrogen	EPA 351.2	1	10/28/2002 17:18	Nicole M Kepley	1
00219	Nitrite Nitrogen	EPA 353.2	1	10/25/2002 09:11	Christian C Ehrhart	1
00220	Nitrate Nitrogen	EPA 353.2	1	10/30/2002 17:53	Nicole M Kepley	1
00221	Ammonia Nitrogen	EPA 350.2	1	10/28/2002 15:00	Luz M Groff	1
00226	Ortho-Phosphate as P	EPA 365.3	1	10/25/2002 04:15	Daniel S Smith	1
00345	Total Phosphorus as PO4 water	EPA 365.1	2	11/05/2002 16:26	Venia B McFadden	1
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	10/25/2002 09:30	Cheryl L Robinson	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	10/28/2002 08:30	James S Mathiot	1

Analysis Report

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Lancaster Laboratories Sample No. WW 3926459

Collected:10/23/2002 16:35 by BS

Account Number: 07802

Submitted: 10/24/2002 09:10
Reported: 11/06/2002 at 17:27
Discard: 12/07/2002
MA3-TG4-1-231002-07 Grab Water Sample
Moss American Superfund Site - Milwaukee, WI

Kerr-McGee Corporation
P.O. Box 25861
Oklahoma City OK 73125

4-1-2 SDG#: KMA27-07

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
00217	Kjeldahl Nitrogen	7727-37-9	1.1	0.30	mg/l	1
00219	Nitrite Nitrogen	14797-65-0	N.D.	0.015	mg/l	1
00220	Nitrate Nitrogen	14797-55-8	N.D.	0.040	mg/l	1
00221	Ammonia Nitrogen	7664-41-7	0.91 J	0.46	mg/l	1
	Sufficient sample volume was not available to perform a MS/MSD for this analysis. Therefore, a LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					
00226	Ortho-Phosphate as P	14265-44-2	N.D.	0.0066	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	0.21	0.12	mg/l	1

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00217	Kjeldahl Nitrogen	EPA 351.2	1	10/28/2002 17:19	Nicole M Kepley	1
00219	Nitrite Nitrogen	EPA 353.2	1	10/25/2002 09:18	Christian C Ehrhart	1
00220	Nitrate Nitrogen	EPA 353.2	1	10/30/2002 17:55	Nicole M Kepley	1
00221	Ammonia Nitrogen	EPA 350.2	1	10/28/2002 15:00	Luz M Groff	1
00226	Ortho-Phosphate as P	EPA 365.3	1	10/25/2002 04:15	Daniel S Smith	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	10/30/2002 21:45	Venia B McFadden	1
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	10/25/2002 09:30	Cheryl L Robinson	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	10/28/2002 08:30	James S Mathiot	1

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Lancaster Laboratories Sample No. WW 3926460

Collected:10/23/2002 16:40 by BS

Account Number: 07802

Submitted: 10/24/2002 09:10
Reported: 11/06/2002 at 17:27
Discard: 12/07/2002
MA3-TG4-2-231002-08 Grab Water Sample
Moss American Superfund Site - Milwaukee, WI

Kerr-McGee Corporation
P.O. Box 25861
Oklahoma City OK 73125

4-2-2 SDG#: KMA27-08

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
00217	Kjeldahl Nitrogen	7727-37-9	1.3	0.30	mg/l	1
00219	Nitrite Nitrogen	14797-65-0	N.D.	0.015	mg/l	1
00220	Nitrate Nitrogen	14797-55-8	N.D.	0.040	mg/l	1
00221	Ammonia Nitrogen	7664-41-7	0.83 J	0.46	mg/l	1
	Sufficient sample volume was not available to perform a MS/MSD for this analysis. Therefore, a LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					
00226	Ortho-Phosphate as P	14265-44-2	N.D.	0.0066	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	0.25	0.12	mg/l	1

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00217	Kjeldahl Nitrogen	EPA 351.2	1	10/28/2002 17:21	Nicole M Kepley	1
00219	Nitrite Nitrogen	EPA 353.2	1	10/25/2002 09:16	Christian C Ehrhart	1
00220	Nitrate Nitrogen	EPA 353.2	1	10/30/2002 17:56	Nicole M Kepley	1
00221	Ammonia Nitrogen	EPA 350.2	1	10/28/2002 15:00	Luz M Groff	1
00226	Ortho-Phosphate as P	EPA 365.3	1	10/25/2002 04:15	Daniel S Smith	1
00345	Total Phosphorus as PO4 water	EPA 365.1	2	11/05/2002 16:27	Venia B McFadden	1
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	10/25/2002 09:30	Cheryl L Robinson	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	10/28/2002 08:30	James S Mathiot	1

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Lancaster Laboratories Sample No. WW 3926461

Collected:10/23/2002 16:45 by BS

Account Number: 07802

Submitted: 10/24/2002 09:10
Reported: 11/06/2002 at 17:28
Discard: 12/07/2002
MA3-TG4-3-231002-09 Grab Water Sample
Moss American Superfund Site - Milwaukee, WI

Kerr-McGee Corporation
P.O. Box 25861
Oklahoma City OK 73125

4-3-2 SDG#: KMA27-09

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
00217	Kjeldahl Nitrogen	7727-37-9	1.2	0.30	mg/l	1
00219	Nitrite Nitrogen	14797-65-0	N.D.	0.015	mg/l	1
00220	Nitrate Nitrogen	14797-55-8	N.D.	0.040	mg/l	1
00221	Ammonia Nitrogen	7664-41-7	0.91 J	0.46	mg/l	1
	Sufficient sample volume was not available to perform a MS/MSD for this analysis. Therefore, a LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					
00226	Ortho-Phosphate as P	14265-44-2	0.0067 J	0.0066	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	0.16 J	0.12	mg/l	1

Laboratory Chronicle

CAT No.	Analysis Name	Method	Analysis Trial#	Analysis Date and Time	Analyst	Dilution Factor
00217	Kjeldahl Nitrogen	EPA 351.2	1	10/28/2002 17:22	Nicole M Kepley	1
00219	Nitrite Nitrogen	EPA 353.2	1	10/25/2002 09:15	Christian C Ehrhart	1
00220	Nitrate Nitrogen	EPA 353.2	1	10/30/2002 17:57	Nicole M Kepley	1
00221	Ammonia Nitrogen	EPA 350.2	1	10/28/2002 15:00	Luz M Groff	1
00226	Ortho-Phosphate as P	EPA 365.3	1	10/25/2002 04:15	Daniel S Smith	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	10/30/2002 21:47	Venia B McFadden	1
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	10/25/2002 09:30	Cheryl L Robinson	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	10/28/2002 08:30	James S Mathiot	1

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ANALYTICAL RESULTS

Prepared for:

Kerr-McGee Corporation
P.O. Box 25861
Oklahoma City OK 73125

405-270-2602

Prepared by:

Lancaster Laboratories
2425 New Holland Pike
Lancaster, PA 17605-2425

SAMPLE GROUP

The sample group for this submittal is 828314. Samples arrived at the laboratory on Friday, October 25, 2002.

Client Description	Lancaster Labs Number
MA3-TG2-1-241002-04 Grab Water Sample	3927743
MA3-TG2-2-241002-05 Grab Water Sample	3927744
MA3-TG2-3-241002-06 Grab Water Sample	3927745
MA3-TG3-1-241002-01 Grab Water Sample	3927746
MA3-TG3-2-241002-02 Grab Water Sample	3927747
MA3-TG3-3-241002-03 Grab Water Sample	3927748
MA3-TG1-1-241002-07 Grab Water Sample	3927749
MA3-TG1-2-241002-08 Grab Water Sample	3927750
MA3-TG1-3-241002-09 Grab Water Sample	3927751

METHODOLOGY

The specific methodologies used in obtaining the enclosed analytical results are indicated on the laboratory chronicles.

1 COPY TO	Kerr-McGee Corporation	Attn: Dr. Jeff Ostmeyer
1 COPY TO	Weston Solutions, Inc.	Attn: Mr. Tom Graan
1 COPY TO	Data Package Group	

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Questions? Contact your Client Services Representative
Carrie A Fleming at (717) 656-2300.

Respectfully Submitted,

Erik J. Frederiksen
Group Leader

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Lancaster Laboratories Sample No. WW 3927743

Collected:10/24/2002 11:25 by BS

Account Number: 07802

Submitted: 10/25/2002 09:15
Reported: 11/08/2002 at 17:03
Discard: 12/09/2002
MA3-TG2-1-241002-04 Grab Water Sample
Moss American Superfund Site - Milwaukee, WI

Kerr-McGee Corporation
P.O. Box 25861
Oklahoma City OK 73125

M321- SDG#: KMA27-10

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
00217	Kjeldahl Nitrogen	7727-37-9	0.47 J	0.30	mg/l	1
00219	Nitrite Nitrogen	14797-65-0	N.D.	0.015	mg/l	1
00220	Nitrate Nitrogen	14797-55-8	N.D.	0.040	mg/l	1
00221	Ammonia Nitrogen	7664-41-7	N.D.	0.46	mg/l	1
	Sufficient sample volume was not available to perform a MS/MSD for this analysis. Therefore, a LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					
00226	Ortho-Phosphate as P	14265-44-2	N.D.	0.0066	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	N.D.	0.12	mg/l	1

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00217	Kjeldahl Nitrogen	EPA 351.2	1	10/28/2002 17:49	Nicole M Kepley	1
00219	Nitrite Nitrogen	EPA 353.2	1	10/25/2002 17:56	Nicole M Kepley	1
00220	Nitrate Nitrogen	EPA 353.2	1	11/07/2002 15:08	Nicole M Kepley	1
00221	Ammonia Nitrogen	EPA 350.2	1	10/28/2002 15:00	Luz M Groff	1
00226	Ortho-Phosphate as P	EPA 365.3	1	10/25/2002 19:15	Daniel S Smith	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	10/30/2002 21:48	Venia B McFadden	1
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	10/28/2002 08:12	James S Mathiot	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	10/28/2002 08:30	James S Mathiot	1

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Lancaster Laboratories Sample No. WW 3927744

Collected:10/24/2002 11:30 by BS

Account Number: 07802

Submitted: 10/25/2002 09:15
Reported: 11/08/2002 at 17:04
Discard: 12/09/2002
MA3-TG2-2-241002-05 Grab Water Sample
Moss American Superfund Site - Milwaukee, WI

Kerr-McGee Corporation
P.O. Box 25861
Oklahoma City OK 73125

M2224 SDG#: KMA27-11

CAT No.	Analysis Name	CAS Number	As Received Result		As Received Method Detection Limit	Units	Dilution Factor
00217	Kjeldahl Nitrogen	7727-37-9	0.90	J	0.30	mg/l	1
00219	Nitrite Nitrogen	14797-65-0	N.D.		0.015	mg/l	1
00220	Nitrate Nitrogen	14797-55-8	N.D.		0.040	mg/l	1
00221	Ammonia Nitrogen	7664-41-7	0.52	J	0.46	mg/l	1
	Sufficient sample volume was not available to perform a MS/MSD for this analysis. Therefore, a LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.						
00226	Ortho-Phosphate as P	14265-44-2	N.D.		0.0066	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	N.D.		0.12	mg/l	1

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00217	Kjeldahl Nitrogen	EPA 351.2	1	10/28/2002 17:51	Nicole M Kepley	1
00219	Nitrite Nitrogen	EPA 353.2	1	10/25/2002 17:59	Nicole M Kepley	1
00220	Nitrate Nitrogen	EPA 353.2	1	11/07/2002 15:10	Nicole M Kepley	1
00221	Ammonia Nitrogen	EPA 350.2	1	10/29/2002 15:00	Luz M Groff	1
00226	Ortho-Phosphate as P	EPA 365.3	1	10/25/2002 19:15	Daniel S Smith	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	10/30/2002 22:07	Venia B McFadden	1
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	10/28/2002 08:12	James S Mathiot	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	10/28/2002 08:30	James S Mathiot	1

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Lancaster Laboratories Sample No. WW 3927745

Collected:10/24/2002 11:35 by BS

Account Number: 07802

Submitted: 10/25/2002 09:15
Reported: 11/08/2002 at 17:04
Discard: 12/09/2002
MA3-TG2-3-241002-06 Grab Water Sample
Moss American Superfund Site - Milwaukee, WI

Kerr-McGee Corporation
P.O. Box 25861
Oklahoma City OK 73125

32332 SDG#: KMA27-12

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
00217	Kjeldahl Nitrogen	7727-37-9	1.8	0.30	mg/l	1
00219	Nitrite Nitrogen	14797-65-0	N.D.	0.015	mg/l	1
00220	Nitrate Nitrogen	14797-55-8	N.D.	0.040	mg/l	1
00221	Ammonia Nitrogen	7664-41-7	1.1	0.46	mg/l	1
	Sufficient sample volume was not available to perform a MS/MSD for this analysis. Therefore, a LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					
00226	Ortho-Phosphate as P	14265-44-2	N.D.	0.0066	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	0.32	0.12	mg/l	1

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00217	Kjeldahl Nitrogen	EPA 351.2	1	10/28/2002 17:52	Nicole M Kepley	1
00219	Nitrite Nitrogen	EPA 353.2	1	10/25/2002 18:01	Nicole M Kepley	1
00220	Nitrate Nitrogen	EPA 353.2	1	11/07/2002 15:11	Nicole M Kepley	1
00221	Ammonia Nitrogen	EPA 350.2	1	10/29/2002 15:00	Luz M Groff	1
00226	Ortho-Phosphate as P	EPA 365.3	1	10/25/2002 19:15	Daniel S Smith	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	10/30/2002 21:51	Venia B McFadden	1
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	10/28/2002 08:12	James S Mathiot	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	10/28/2002 08:30	James S Mathiot	1

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Lancaster Laboratories Sample No. WW 3927746

Collected:10/24/2002 10:10 by BS

Account Number: 07802

Submitted: 10/25/2002 09:15
Reported: 11/08/2002 at 17:04
Discard: 12/09/2002
MA3-TG3-1-241002-01 Grab Water Sample
Moss American Superfund Site - Milwaukee, WI

Kerr-McGee Corporation
P.O. Box 25861
Oklahoma City OK 73125

31241 SDG#: KMA27-13

CAT No.	Analysis Name	CAS Number	As Received Result		As Received Method Detection Limit	Units	Dilution Factor
00217	Kjeldahl Nitrogen	7727-37-9	2.2		0.30	mg/l	1
00219	Nitrite Nitrogen	14797-65-0	N.D.		0.015	mg/l	1
00220	Nitrate Nitrogen	14797-55-8	0.13		0.040	mg/l	1
00221	Ammonia Nitrogen	7664-41-7	0.83	J	0.46	mg/l	1
	Sufficient sample volume was not available to perform a MS/MSD for this analysis. Therefore, a LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.						
00226	Ortho-Phosphate as P	14265-44-2	N.D.		0.0066	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	0.12	J	0.12	mg/l	1

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00217	Kjeldahl Nitrogen	EPA 351.2	1	10/28/2002 17:56	Nicole M Kepley	1
00219	Nitrite Nitrogen	EPA 353.2	1	10/25/2002 18:02	Nicole M Kepley	1
00220	Nitrate Nitrogen	EPA 353.2	1	11/07/2002 15:12	Nicole M Kepley	1
00221	Ammonia Nitrogen	EPA 350.2	1	10/29/2002 15:00	Luz M Groff	1
00226	Ortho-Phosphate as P	EPA 365.3	1	10/25/2002 19:15	Daniel S Smith	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	10/30/2002 22:08	Venia B McFadden	1
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	10/28/2002 08:12	James S Mathiot	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	10/28/2002 08:30	James S Mathiot	1

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Lancaster Laboratories Sample No. WW 3927747

Collected:10/24/2002 10:15 by BS

Account Number: 07802

Submitted: 10/25/2002 09:15
Reported: 11/08/2002 at 17:04
Discard: 12/09/2002
MA3-TG3-2-241002-02 Grab Water Sample
Moss American Superfund Site - Milwaukee, WI

Kerr-McGee Corporation
P.O. Box 25861
Oklahoma City OK 73125

2-002 SDG#: KMA27-14

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
00217	Kjeldahl Nitrogen	7727-37-9	1.7	0.30	mg/l	1
00219	Nitrite Nitrogen	14797-65-0	0.016 J	0.015	mg/l	1
00220	Nitrate Nitrogen	14797-55-8	N.D.	0.040	mg/l	1
00221	Ammonia Nitrogen	7664-41-7	1.3	0.46	mg/l	1
	Sufficient sample volume was not available to perform a MS/MSD for this analysis. Therefore, a LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					
00226	Ortho-Phosphate as P	14265-44-2	N.D.	0.0066	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	0.23	0.12	mg/l	1

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00217	Kjeldahl Nitrogen	EPA 351.2	1	10/28/2002 17:57	Nicole M Kepley	1
00219	Nitrite Nitrogen	EPA 353.2	1	10/25/2002 18:03	Nicole M Kepley	1
00220	Nitrate Nitrogen	EPA 353.2	1	11/07/2002 15:13	Nicole M Kepley	1
00221	Ammonia Nitrogen	EPA 350.2	1	10/29/2002 15:00	Luz M Groff	1
00226	Ortho-Phosphate as P	EPA 365.3	1	10/25/2002 19:15	Daniel S Smith	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	10/30/2002 22:09	Venia B McFadden	1
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	10/28/2002 08:12	James S Mathiot	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	10/28/2002 08:30	James S Mathiot	1

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Lancaster Laboratories Sample No. WW 3927748

Collected:10/24/2002 10:20 by BS

Account Number: 07802

Submitted: 10/25/2002 09:15
Reported: 11/08/2002 at 17:05
Discard: 12/09/2002
MA3-TG3-3-241002-03 Grab Water Sample
Moss American Superfund Site - Milwaukee, WI

Kerr-McGee Corporation
P.O. Box 25861
Oklahoma City OK 73125

31243 SDG#: KMA27-15

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
00217	Kjeldahl Nitrogen	7727-37-9	2.3	0.30	mg/l	1
00219	Nitrite Nitrogen	14797-65-0	0.025 J	0.015	mg/l	1
00220	Nitrate Nitrogen	14797-55-8	N.D.	0.040	mg/l	1
00221	Ammonia Nitrogen	7664-41-7	1.4	0.46	mg/l	1
	Sufficient sample volume was not available to perform a MS/MSD for this analysis. Therefore, a LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					
00226	Ortho-Phosphate as P	14265-44-2	N.D.	0.0066	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	0.29	0.12	mg/l	1

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00217	Kjeldahl Nitrogen	EPA 351.2	1	10/28/2002 17:58	Nicole M Kepley	1
00219	Nitrite Nitrogen	EPA 353.2	1	10/25/2002 18:04	Nicole M Kepley	1
00220	Nitrate Nitrogen	EPA 353.2	1	11/07/2002 15:15	Nicole M Kepley	1
00221	Ammonia Nitrogen	EPA 350.2	1	10/29/2002 15:00	Luz M Groff	1
00226	Ortho-Phosphate as P	EPA 365.3	1	10/25/2002 19:15	Daniel S Smith	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	10/30/2002 22:10	Venia B McFadden	1
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	10/28/2002 08:12	James S Mathiot	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	10/28/2002 08:30	James S Mathiot	1

Lancaster Laboratories
Where quality is a science.

Lancaster Laboratories Sample No. WW 3927749

Collected:10/24/2002 12:35 by BS

Account Number: 07802

Submitted: 10/25/2002 09:15
Reported: 11/08/2002 at 17:05
Discard: 12/09/2002
MA3-TG1-1-241002-07 Grab Water Sample
Moss American Superfund Site - Milwaukee, WI

Kerr-McGee Corporation
P.O. Box 25861
Oklahoma City OK 73125

11247 SDG#: KMA27-16

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
00217	Kjeldahl Nitrogen	7727-37-9	1.9	0.30	mg/l	1
00219	Nitrite Nitrogen	14797-65-0	N.D.	0.015	mg/l	1
00220	Nitrate Nitrogen	14797-55-8	N.D.	0.040	mg/l	1
00221	Ammonia Nitrogen	7664-41-7	N.D.	0.46	mg/l	1
	Sufficient sample volume was not available to perform a MS/MSD for this analysis. Therefore, a LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					
00226	Ortho-Phosphate as P	14265-44-2	N.D.	0.0066	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	N.D.	0.12	mg/l	1

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00217	Kjeldahl Nitrogen	EPA 351.2	1	10/28/2002 17:59	Nicole M Kepley	1
00219	Nitrite Nitrogen	EPA 353.2	1	10/25/2002 18:08	Nicole M Kepley	1
00220	Nitrate Nitrogen	EPA 353.2	1	11/07/2002 15:16	Nicole M Kepley	1
00221	Ammonia Nitrogen	EPA 350.2	1	10/29/2002 15:00	Luz M Groff	1
00226	Ortho-Phosphate as P	EPA 365.3	1	10/25/2002 19:15	Daniel S Smith	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	10/30/2002 21:57	Venia B McFadden	1
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	10/28/2002 08:12	James S Mathiot	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	10/28/2002 08:30	James S Mathiot	1

Lancaster Laboratories
Where quality is a science.

Lancaster Laboratories Sample No. WW 3927750

Collected:10/24/2002 12:40 by BS

Account Number: 07802

Submitted: 10/25/2002 09:15
Reported: 11/08/2002 at 17:05
Discard: 12/09/2002
MA3-TG1-2-241002-08 Grab Water Sample
Moss American Superfund Site - Milwaukee, WI

Kerr-McGee Corporation
P.O. Box 25861
Oklahoma City OK 73125

12248 SDG#: KMA27-17

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
00217	Kjeldahl Nitrogen	7727-37-9	1.7	0.30	mg/l	1
00219	Nitrite Nitrogen	14797-65-0	N.D.	0.015	mg/l	1
00220	Nitrate Nitrogen	14797-55-8	N.D.	0.040	mg/l	1
00221	Ammonia Nitrogen	7664-41-7	1.1	0.46	mg/l	1
	Sufficient sample volume was not available to perform a MS/MSD for this analysis. Therefore, a LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					
00226	Ortho-Phosphate as P	14265-44-2	N.D.	0.0066	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	0.25	0.12	mg/l	1

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00217	Kjeldahl Nitrogen	EPA 351.2	1	10/28/2002 18:01	Nicole M Kepley	1
00219	Nitrite Nitrogen	EPA 353.2	1	10/25/2002 18:09	Nicole M Kepley	1
00220	Nitrate Nitrogen	EPA 353.2	1	11/07/2002 15:17	Nicole M Kepley	1
00221	Ammonia Nitrogen	EPA 350.2	1	10/29/2002 15:00	Luz M Groff	1
00226	Ortho-Phosphate as P	EPA 365.3	1	10/25/2002 19:15	Daniel S Smith	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	10/30/2002 21:58	Venia B McFadden	1
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	10/28/2002 08:12	James S Mathiot	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	10/28/2002 08:30	James S Mathiot	1

Lancaster Laboratories
Where quality is a science.

Lancaster Laboratories Sample No. WW 3927751

Collected:10/24/2002 12:45 by BS

Account Number: 07802

Submitted: 10/25/2002 09:15
Reported: 11/08/2002 at 17:05
Discard: 12/09/2002
MA3-TG1-3-241002-09 Grab Water Sample
Moss American Superfund Site - Milwaukee, WI

Kerr-McGee Corporation
P.O. Box 25861
Oklahoma City OK 73125

2--09 SDG#: KMA27-18

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
00217	Kjeldahl Nitrogen	7727-37-9	1.1	0.30	mg/l	1
00219	Nitrite Nitrogen	14797-65-0	N.D.	0.015	mg/l	1
00220	Nitrate Nitrogen	14797-55-8	N.D.	0.040	mg/l	1
00221	Ammonia Nitrogen	7664-41-7	0.84 J	0.46	mg/l	1
	Sufficient sample volume was not available to perform a MS/MSD for this analysis. Therefore, a LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					
00226	Ortho-Phosphate as P	14265-44-2	N.D.	0.0066	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	0.29	0.12	mg/l	1

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00217	Kjeldahl Nitrogen	EPA 351.2	1	10/28/2002 18:02	Nicole M Kepley	1
00219	Nitrite Nitrogen	EPA 353.2	1	10/25/2002 18:11	Nicole M Kepley	1
00220	Nitrate Nitrogen	EPA 353.2	1	11/07/2002 15:21	Nicole M Kepley	1
00221	Ammonia Nitrogen	EPA 350.2	1	10/29/2002 15:00	Luz M Groff	1
00226	Ortho-Phosphate as P	EPA 365.3	1	10/25/2002 19:15	Daniel S Smith	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	10/30/2002 21:59	Venia B McFadden	1
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	10/28/2002 08:12	James S Mathiot	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	10/28/2002 08:30	James S Mathiot	1

Analysis Request/Environmental Services Chain of Custody

Lancaster Laboratories
Where quality is a science.

For Lancaster Laboratories use only
Acct.# 7802 Sample # 3926453-61

828130

Please print. Instructions on reverse side correspond with circled numbers.

(1) Client: Weston | Acct. #:
Project Name/#: Moss American | PWSID #:
Project Manager: Tom Graan | P.O.#
Sampler: B. Schaefer, A. Grubb | Quote #:
Name of state where samples were collected: WI

For lab use only
FSC:
SCR #:

(2) Sample Identification	Date Collected	Time Collected	(3) Grab	Composite	(4) Matrix: Soil	Potable (Check if applicable) NPDES	Water	Other	Total # of Containers	(5) Analyses Requested: NH3	TKN	TP-PO4	o-PO4	NO2	NO3			Remarks	Temperature of sample upon receipt (if requested)
MA3-TG5-1-231002-04	10/23/02	~~1515~~ 1515	X				X		5	X	X	X	X	X	X				
MA3-TG5-2-231002-05	↓	~~1520~~ 1520	X				X		5	X	X	X	X	X	X				
MA3-TG5-3-231002-06	↓	~~1525~~ 1525	X				X		5	X	X	X	X	X	X				

(7) **Turnaround Time Requested** (TAT) (please circle): Normal Rush
(Rush TAT is subject to Lancaster Laboratories approval and surcharge.)
Date results are needed: STD TAT
Rush results requested by (please circle): Phone Fax
Phone #: 847-918-4000 Fax #: 847-918-4055

(8) **Data Package Options** (please circle if requested)
QC Summary | Type VI (Raw Data) PER QUOTE | SDG Complete? Yes No
Type I (Tier I) | GLP
Type II (Tier II) | Other
Type III (NJ Red. Del.)
Type IV (CLP)
Site-specific QC required? Yes No
(If yes, indicate QC sample and submit triplicate volume.)
Internal Chain of Custody required? Yes No

Relinquished by:	Date	Time	Received by:	Date	Time
[signature]	10-23-02	1830			
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by: [signature]	10/24/02	0910

Analysis Request/Environmental Services Chain of Custody

Lancaster Laboratories
Where quality is a science.

For Lancaster Laboratories use only
Acct. # 7802 Sample # 3926453-61
82930

Please print. Instructions on reverse side correspond with circled numbers.

(1)
Client: Weston Acct. #:
Project Name/#: Moss American PWSID #:
Project Manager: Tom Graan P.O.#
Sampler: B. Schaefer, A. Grubb Quote #:
Name of state where samples were collected: WI

For lab use only
FSC:
SCR #:

(2) Sample Identification	Date Collected	Time Collected	(3) Grab	Composite	(4) Matrix: Soil	Water	Potable / Non-potable	NPDES	Other	Total # of containers	(5) Analyses Requested: NH3	TKN	TP-P04	O-P04	NO2	NO3	Remarks	Preservation Code (Lancaster Laboratories use only)
MA3-TG6-1-231002-01	10/23/02	1405	X			X				5	X	X	X	X	X	X		
MA3-TG6-2-231002-02	↓	1410	X			X				5	X	X	X	X	X	X		
MA3-TG6-3-231002-03	↓	1415	X			X				5	X	X	X	X	X	X		

(7) **Turnaround Time Requested** (TAT) (please circle): Normal Rush
(Rush TAT is subject to Lancaster Laboratories approval and surcharge.)
Date results are needed: STD TAT
Rush results requested by (please circle): Phone Fax
Phone #: 847-918-4000 Fax #: 847-918-4055

(8) **Data Package Options** (please circle if requested)
QC Summary Type VI (Raw Data) PER QUOTE
Type I (Tier I) GLP
Type II (Tier II) Other
Type III (NJ Red. Del.)
Type IV (CLP)

SDG Complete? Yes No

Site-specific QC required? Yes No
(If yes, indicate QC sample and submit triplicate volume.)

Internal Chain of Custody required? Yes No

Relinquished by:	Date	Time	Received by:	Date	Time
[signature]	10-23-02	1830			
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by: [signature]	10/24/02	0910

Analysis Request/Environmental Services Chain of Custod

Lancaster Laboratories
Where quality is a science.

For Lancaster Laboratories use only
Acct.# 7602 Sample # 3926453-61
828130

Please print. Instructions on reverse side correspond with circled numbers.

(1)
Client: Weston — Acct. #:
Project Name/#: Mass American — PWSID #:
Project Manager: Tom Grgan — P.O.#
Sampler: B. Schaefer A. Grubb — Quote #:
Name of state where samples were collected: WI

(2) (3) (4) (5)

Sample Identification	Date Collected	Time Collected	(3) Grab	(3) Composite	(4) Matrix: Soil	(4) Matrix: Water	(4) Matrix: Other	Total # of Containers	Analyses Requested: NH3	TKN	TP-PO4	O-PO4	NO3	NO2	Remarks
MA3-TG4-1-231002-07	10/23/02	1635	X			X		5	X	X	X	X	X	X	
MA3-TG4-2-231002-08	↓	1640	X			X		5	X	X	X	X	X	X	
MA3-TG4-3-231002-09	↓	1645	X			X		5	X	X	X	X	X	X	

For lab use only
FSC:
SCR #:
Temperature of samples upon receipt (if requested)

(7) **Turnaround Time Requested** (TAT) (please circle): Normal Rush
(Rush TAT is subject to Lancaster Laboratories approval and surcharge.)
Date results are needed: STD TAT
Rush results requested by (please circle): Phone Fax
Phone #: 847-918-4000 Fax #: 847-918-4055

(8) **Data Package Options** (please circle if requested)
QC Summary
Type I (Tier I)
Type II (Tier II)
Type III (NJ Red. Del.)
Type IV (CLP)
Type VI (Raw Data) PER QUOTE
GLP
Other

SDG Complete? Yes No

Site-specific QC required? Yes No
(If yes, indicate QC sample and submit triplicate volume.)

Internal Chain of Custody required? Yes No

Relinquished by:	Date	Time	Received by:	Date	Time
[signature]	10-23-02	1830			
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by: [signature]	10/24/02	0917

Analysis Request / Environmental Services Chain of Custody

Lancaster Laboratories
Where quality is a science.

For Lancaster Laboratories use only
Acct.#: 1802 Group#: 828314 Sample#: 327743-51

COC # 0004718

Please print. Instructions on reverse side correspond with circled numbers. 1 of 3

(1)
Client: Weston Acct. #:
Project Name/#: Moss American PWSID #:
Project Manager: Tom Graan P.O.#:
Sampler: B. Schaefer, A. Grubb Quote #:
Name of state where samples were collected: WI

For Lab Use Only
FSC:
SCR #: 171083

RECEIVED
NOV 18 2002

(2) Sample Identification	Date Collected	Time Collected	(3) Grab	Composite	(4) Matrix: Soil	Potable ☐ NPDES ☐ Check if Applicable: Water	Other	Total # of Containers	(5) Analyses Requested: NH3	TKN	TP-PO4	O-PO4	NO2	NO3					(6) Remarks	Temperature of samples upon receipt (if requested)
MA3-TG2-1-241002-04	10/24/02	1125	X			X		5	X	X	X	X	X	X						
MA3-TG2-2-241002-05	↓	1130	X			X		5	X	X	X	X	X	X						
MA3-TG2-3-241002-06	↓	1135	X			X		5	X	X	X	X	X	X						

(7) **Turnaround Time Requested** (TAT) (please circle): Normal Rush
(Rush TAT is subject to Lancaster Laboratories approval and surcharge.)
Date results are needed: STD TAT
Rush results requested by (please circle): Phone Fax E-mail
Phone #: 847-918-4000 Fax #: 847-918-4055
E-mail address:

(8) **Data Package Options** (please circle if required)
QC Summary Type VI (Raw Data) PER QUOTE
Type I (Tier I) GLP
Type II (Tier II) Other
Type III (NJ Red. Del.)
Type IV (CLP)
SDG Complete? Yes No
State-specific QC required? Yes No
(If yes, indicate QC sample and submit triplicate volume.)
Internal Chain of Custody required? Yes No

(9)

Relinquished by:	Date	Time	Received by:	Date	Time
	10-24-02	1600			
Relinquished by:	Date	Time	Received by:	Date	Time
	10-24-02	1600			
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time
				10/25/02	0915

Analysis Request/Environmental Services Chain of Custody

Lancaster Laboratories
Where quality is a science.

For Lancaster Laboratories use only
Acct. # 7802 Sample # 3927743-51

2 of 3 # 828314

Please print. Instructions on reverse side correspond with circled numbers.

(1) Client: Weston | Acct. #:
Project Name/#: Mars American | PWSID #:
Project Manager: Tom Grdan | P.O.#
Sampler: B. Schaefer, A. Grubb | Quote #:
Name of state where samples were collected: WI

For lab use only
FSC:
SCR #:

(2) Sample Identification	Date Collected	Time Collected	(3) Grab	Composite	(4) Matrix: Soil	Potable / Water / NPDES (applicable)	Other	Total # of Containers	(5) Analyses Requested: NH3	TKN	TP-P04	NO3	NO2	O-P04			Remarks	Temperature of samples upon receipt (if requested)
MA3-TG3-1-241002-01	10/24/02	1010	X			X		5	X	X	X	X	X	X				
MA3-TG3-2-241002-02	↓	1015	X			X		5	X	X	X	X	X	X				
MA3-TG3-3-241002-03	↓	1020	X			X		5	X	X	X	X	X	X				

(7) **Turnaround Time Requested** (TAT) (please circle): Normal Rush
(Rush TAT is subject to Lancaster Laboratories approval and surcharge.)
Date results are needed: STD TAT
Rush results requested by (please circle): Phone Fax
Phone #: 847-918-4000 Fax #: 847-918-4055

(8) **Data Package Options** (please circle if requested)
QC Summary | Type VI (Raw Data) PERQUOTE | SDG Complete? Yes (No)
Type I (Tier I) | GLP
Type II (Tier II) | Other
Type III (NJ Red. Del.)
Type IV (CLP)
Site-specific QC required? Yes No
(If yes, indicate QC sample and submit triplicate volume.)
Internal Chain of Custody required? Yes No

Relinquished by:	Date	Time	Received by:	Date	Time
[signature]	10-24-02	1600			
			[signature]	10/25/02	0915

Lancaster Laboratories, Inc., 2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 (717) 656-2300
Copies: White and yellow should accompany samples to Lancaster Laboratories. The pink copy should be retained by the client

2102 Rev. 3/7/0

Analysis Request / Environmental Services Chain of Custody

Lancaster Laboratories
Where quality is a science.

For Lancaster Laboratories use only
Acct. #: 7802 Group#: 828314 Sample #: 3927743-51

COC # 0004717

3 of 3

Please print. Instructions on reverse side correspond with circled numbers.

(1)
Client: Weston Acct. #: -
Project Name/#: Moss American PWSID #:
Project Manager: Tom Graan P.O.#:
Sampler: B. Schaefer, A. Grubb Quote #:
Name of state where samples were collected: WI

For Lab Use Only
FSC:
SCR #: 117083

(2) Sample Identification	Date Collected	Time Collected	(3) Grab	Composite	Matrix Soil	Water (Potable / NPDES)	Other	(4) Total # of Containers	(5) NH3	TKN	TP-PO4	O-PO4	NO2	NO3				Remarks	(6) Temperature of samples upon receipt (if requested)
MA3-TG1-1-241002-07	10/24/02	1235	X			X		5	X	X	X	X	X	X					
MA3-TG1-2-241002-08	↓	1240	X			X		5	X	X	X	X	X	X					
MA3-TG1-3-241002-09	↓	1245	X			X		5	X	X	X	X	X	X					

(7) Turnaround Time Requested (TAT) (please circle): Normal Rush
(Rush TAT is subject to Lancaster Laboratories approval and surcharge.)
Date results are needed: STD TAT
Rush results requested by (please circle): Phone Fax E-mail
Phone #: 847-918-4000 Fax #: 847-918-4055
E-mail address:

(8) Data Package Options (please circle if required)
QC Summary — Type VI (Raw Data) PER QUOTE
Type I (Tier I) — GLP
Type II (Tier II) — Other
Type III (NJ Red. Del.)
Type IV (CLP)

SDG Complete? (Yes) No
State-specific QC required? Yes No
(If yes, indicate QC sample and submit triplicate volume.)
Internal Chain of Custody required? Yes No

(9)

Relinquished by:	Date	Time	Received by:	Date	Time
[signature]	10-24-02	1600			
[signature] Bren Schaefer	10-24-02	1600			
			[signature]	10/25/02	0915

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Hammond Division
544 Conkey Street
Hammond, IN 46324
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CERTIFICATE OF ANALYSIS

Tom Graam
Weston Solutions, Inc.
750 East Bunker Court
Suite 500
Vernon Hills, IL 60061-1450

Date Reported: 11/20/02
P.O. Number: 0018581
Sample ID: 9946-00398
Date Received: 10/25/02
Time Received: 09:00

Permit Number

PARAMETERS	RESULTS	DATE	TECH	METHOD
SUBJECT: MA3-TG3-1-241002-01, 10/24/02 @ 10:10 by BS/AG				
Total Aerobic Bacteria	3,100. cfu/ml	10/25/02	NHC	9215B MODIFIED
T.Aerobic Degrader Bacteria	100. cfu/ml	10/25/02	NHC	9215B MODIFIED
SUBJECT: MA3-TG3-2-241002-02, 10/24/02 @ 10:15 by BS/AG				
Total Aerobic Bacteria	6,400. cfu/ml	10/25/02	NHC	9215B MODIFIED
T.Aerobic Degrader Bacteria	430. cfu/ml	10/25/02	NHC	9215B MODIFIED
SUBJECT: MA3-TG3-3-241002-03, 10/24/02 @ 10:20 by BS/AG				
Total Aerobic Bacteria	2,010. cfu/ml	10/25/02	NHC	9215B MODIFIED
T.Aerobic Degrader Bacteria	80. cfu/ml	10/25/02	NHC	9215B MODIFIED
SUBJECT: MA3-TG2-1-241002-04, 10/24/02 @ 11:25 by BS/AG				
Total Aerobic Bacteria	450. cfu/ml	10/25/02	NHC	9215B MODIFIED
T.Aerobic Degrader Bacteria	20. cfu/ml	10/25/02	NHC	9215B MODIFIED
SUBJECT: MA3-TG2-2-241002-05, 10/24/02 @ 11:30 by BS/AG				
Total Aerobic Bacteria	1,220. cfu/ml	10/25/02	NHC	9215B MODIFIED
T.Aerobic Degrader Bacteria	80. cfu/ml	10/25/02	NHC	9215B MODIFIED
SUBJECT: MA3-TG2-3-241002-06, 10/24/02 @ 11:35 by BS/AG				
Total Aerobic Bacteria	4,600. cfu/ml	10/25/02	NHC	9215B MODIFIED
T.Aerobic Degrader Bacteria	30. cfu/ml	10/25/02	NHC	9215B MODIFIED
SUBJECT: MA3-TG1-1-241002-07, 10/24/02 @ 12:35 by BS/AG				
Total Aerobic Bacteria	18,700. cfu/ml	10/25/02	NHC	9215B MODIFIED
T.Aerobic Degrader Bacteria	200. cfu/ml	10/25/02	NHC	9215B MODIFIED

*** Certificate Continues On Next Page ***

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INDIANA CERTIFICATION NUMBERS: M-45-8 C-45-02
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CHEMISTRY • MICROBIOLOGY • FOOD SAFETY • CONSUMER PRODUCTS
WATER • AIR • WASTES • FOOD • PHARMACEUTICALS • NUTRACEUTICALS

CERTIFICATE OF ANALYSIS

Tom Graam
Weston Solutions, Inc.
750 East Bunker Court
Suite 500
Vernon Hills, IL 60061-1450

Date Reported: 11/20/02
P.O. Number: 0018581
Sample ID: 9946-00398
Date Received: 10/25/02
Time Received: 09:00

Permit Number

PARAMETERS	RESULTS	DATE	TECH	METHOD
SUBJECT: MA3-TG1-2-241002-08, 10/24/02 @ 12:40 by BS/AG				
Total Aerobic Bacteria	9,800. cfu/ml	10/25/02	NMC	9215B MODIFIED
T.Aerobic Degrader Bacteria	10. cfu/ml	10/25/02	NMC	9215B MODIFIED
SUBJECT: MA3-TG1-3-241002-09, 10/24/02 @ 12:45 by BS/AG				
Total Aerobic Bacteria	8,000. cfu/ml	10/25/02	NMC	9215B MODIFIED
T.Aerobic Degrader Bacteria	170. cfu/ml	10/25/02	NMC	9215B MODIFIED

This document has been reviewed and is electronically signed by:

Karen A. Ziolkowski
Laboratory Director

Microbac

® Microbac Laboratories, Inc.
Hammond Division
544 Conkey Street
Hammond, IN 46324
(219) 932-1770
INDIANA CERTIFICATION NUMBERS: M-45-8 C-45-02
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CERTIFICATE OF ANALYSIS

Tom Graam
Weston Solutions, Inc.
750 East Bunker Court
Suite 500
Vernon Hills, IL 60061-1450

Date Reported: 11/20/02
P.O. Number: 0018581
Sample ID: 9946-00384
Date Received: 10/24/02
Time Received: 10:00

Permit Number

PARAMETERS	RESULTS	DATE	TECH	METHOD
SUBJECT: MA3-TG6-1-231002-01, 10/23/02 @ 14:05 by BS/AG				
Total Aerobic Bacteria	11,000. cfu/ml	10/25/02	NMC	9215B MODIFIED
T.Aerobic Degrader Bacteria	200. cfu/ml	10/25/02	NMC	9215B MODIFIED
SUBJECT: MA3-TG6-2-231002-02, 10/23/02 @ 14:10 by BS/AG				
Total Aerobic Bacteria	4,700. cfu/ml	10/25/02	NMC	9215B MODIFIED
T.Aerobic Degrader Bacteria	100. cfu/ml	10/25/02	NMC	9215B MODIFIED
SUBJECT: MA3-TG6-3-231002-03, 10/23/02 @ 14:15 by BS/AG				
Total Aerobic Bacteria	1,000. cfu/ml	10/25/02	NMC	9215B MODIFIED
T.Aerobic Degrader Bacteria	40. cfu/ml	10/25/02	NMC	9215B MODIFIED
SUBJECT: MA3-TG5-1-231002-04, 10/23/02 @ 15:15 by BS/AG				
Total Aerobic Bacteria	630. cfu/ml	10/25/02	NMC	9215B MODIFIED
T.Aerobic Degrader Bacteria	20. cfu/ml	10/25/02	NMC	9215B MODIFIED
SUBJECT: MA3-TG5-2-231002-05, 10/23/02 @ 15:20 by BS/AG				
Total Aerobic Bacteria	3,100. cfu/ml	10/25/02	NMC	9215B MODIFIED
T.Aerobic Degrader Bacteria	300. cfu/ml	10/25/02	NMC	9215B MODIFIED
SUBJECT: MA3-TG5-3-231002-06, 10/23/02 @ 15:25 by BS/AG				
Total Aerobic Bacteria	8,800. cfu/ml	10/25/02	NMC	9215B MODIFIED
T.Aerobic Degrader Bacteria	170. cfu/ml	10/25/02	NMC	9215B MODIFIED
SUBJECT: MA3-TG4-1-231002-07, 10/23/02 @ 16:35 by BS/AG				
Total Aerobic Bacteria	1,180. cfu/ml	10/25/02	NMC	9215B MODIFIED
T.Aerobic Degrader Bacteria	30. cfu/ml	10/25/02	NMC	9215B MODIFIED

*** Certificate Continues On Next Page ***

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CERTIFICATE OF ANALYSIS

Tom Graam
Weston Solutions, Inc.
750 East Bunker Court
Suite 500
Vernon Hills, IL 60061-1450

Date Reported: 11/20/02
P.O. Number: 0018581
Sample ID: 9946-00384
Date Received: 10/24/02
Time Received: 10:00

Permit Number

PARAMETERS	RESULTS	DATE	TECH	METHOD
SUBJECT: MA3-TG4-2-231002-08, 10/23/02 @ 16:40 by BS/AG				
Total Aerobic Bacteria	4,300. cfu/ml	10/25/02	NMC	9215B MODIFIED
T.Aerobic Degrader Bacteria	70. cfu/ml	10/25/02	NMC	9215B MODIFIED
SUBJECT: MA3-TG4-3-231002-09, 10/23/02 @ 16:45 by BS/AG				
Total Aerobic Bacteria	1,830. cfu/ml	10/25/02	NMC	9215B MODIFIED
T.Aerobic Degrader Bacteria	40. cfu/ml	10/25/02	NMC	9215B MODIFIED

This document has been reviewed and is electronically signed by:

Karen A. Ziolkowski
Laboratory Director

Contact person Tom Graan Sampler D. Schaefer, T. Graan

Project name Moss American Project # ____

Project location Milwaukee, WI
(City) (state)

9946-398

Site contaminant * Creosote
(Used in test for degrader microbial populations, give ratios if applicable, e.g. 50:50, gasoline:diesel)

* If available, a sample of free product is preferred for use as the carbon source for enumerating the degrader microbial populations. Free product included? ☐ yes ☐ No

Requested analyses (✓)

Sample ID	Lab use only	Date	Time	(✓) Soil	(✓) Gw	Sample depth	(#) Jars	(#) Vials	(#) Core	Additional comments	CEA* (soil/gw) See note ☐ Aerobic, ☐ Anaerobic, ☐ Microaerophilic	Standard nutrient panel (soil/gw) - incl. TKN, ammonium nitrogen, available P, pH, total organic carbon, % moisture (s)	Particle size analysis (soil) ☐ sieve and hydrometer, ☐ sieve only	Intact core: % air-filled pore space (soil) (includes bulk density)	Intact core: Soil moisture at field capacity	Bulk density (soil)	Microbial Enumeration				
MA3-TG3-1-241002-01		10/24/02	1010		X	—	1										X				
MA3-TG3-2-241002-02		↓	1015		X	—	1										X				
MA3-TG3-3-241002-03		↓	1020		X	—	1										X				
MA3-TG2-1-241002-04		↓	1125		X	—	1										X				
MA3-TG2-2-241002-05		↓	1130		X	—	1										X				
MA3-TG2-3-241002-06		↓	1135		X	—	1										X				
MA3-TG1-1-241002-07		↓	1235		X	—	1										X				
MA3-TG1-2-241002-08		↓	1240		X	—	1										X				

Relinquished by:	Date/time:	Comments:	Sample condition upon arrival:
[signature]	10/24/02 / 1600		
Received by: [signature]	Date/time: 10/25/02 0900		On ice? ☐ Yes, ☐ No

Microbac Laboratories,
HAMMOND DIVISION
542-544 Conkey Street
Hammond, Indiana 46324
219-932-1770

Send results to:

Name Tom Graan
Company Weston
Address 750 E. Bunker Court, Suite 500
City Vernon Hills State IL Zip 60061
Phone 847-918-4000 Fax 847-918-4055

Send Invoice to: ☒ Same as results

Name ____
Company ____
Address ____
City ____ State ____ Zip ____
Phone ____ Fax ____

Shipping Charge

*CEA : Comparative Enumeration Assay includes total heterotrophic and degrader populations

Contact person Tom Graan Sampler Schaefer, M. Grubb

Project name Moss American Project # _____

Project location Milwaukee, WI

(City) 99446.398 (state)

Site contaminant * Creosote

(Used in test for degrader microbial populations, give ratios if applicable, e.g. 50:50, gasoline:diesel)

* If available, a sample of free product is preferred for use as the carbon source for enumerating the degrader microbial populations. Free product included? ☐ yes ☐ No

Requested analyses (✓)

Sample ID	Lab use only	Date	Time	(✓) Soil	(✓) Gw	Sample depth	(#) Jars	(#) Vials	(#) Core	Additional comments	CEA* (soil/gw) see note ☐ Aerobic, ☐ Anaerobic, ☐ Microaerophilic	Standard nutrient panel (soil/gw) - incl. TKN, ammonium nitrogen, available P, pH, total organic carbon, % moisture (s)	Particle size analysis (soil) ☐ sieve and hydrometer, ☐ sieve only	% air-filled pore space (soil) (includes bulk density)	Intact core: Soil moisture at field capacity	Intact core: Bulk density (soil)	Microbial Enumeration				
MAS-TGH-241002-09		10/24/02	12:45		X	—	1										X				

Relinquished by: [signature] Date/time: 10/24/02 / 1600

Received by: [signature] Date/time: 10/25/02 0900

Comments:

Sample condition upon arrival:

On Ice? ☐ Yes, ☐ No

Microbac Laboratories,
HAMMOND DIVISION
542-544 Conkey Street
Hammond, Indiana 46324
219-932-1770

Send results to:

Name Tom Graan
Company Weston
Address 750 E. Bunker Court, Suite 500
City Vernon Hills State IL Zip 60061
Phone 847-918-4000 Fax 847-918-4055

Send invoice to: ☒ Same as results

Name _____
Company _____
Address _____
City _____ State _____ Zip _____
Phone _____ Fax _____

*CEA : Comparative Enumeration Assay includes total heterotrophic and degrader populations

9446-384

Contact person: Tom Graan Sampler: B. Schaefer, A. Gruber

Project name: Mays American Project #:

Project location: Milwaukee, WI (City) (state)

Site contaminant: creosote
(Used in test for degrader microbial populations, give ratios if applicable, e.g. 50:50, gasoline:diesel)

* If available, a sample of free product is preferred for use as the carbon source for enumerating the degrader microbial populations. Free product included? ☐ yes ☐ No

Sample ID	Lab use only	Date	Time	(✓) Soil	(✓) Gw	Sample depth	(#) Jars	(#) Vials	(#) Core	Additional comments	CEA* (soil/gw) see note ☐ Aerobic ☐ Anaerobic ☐ Microaerophilic	Standard nutrient panel (soil/gw) - incl. TKN, ammonium nitrogen, nitrate, pH, total organic carbon, % moisture (s)	Particle size analysis (soil) ☐ sieve and hydrometer, ☐ sieve only	% air-filled pore space (soil) (includes bulk density)	Intact core: Soil moisture at field capacity	Intact core: Bulk density (soil)	Microbial Enumeration
MAY-TG6-1-231002-01		10/23/02	1405		X	—	1										X
MAY-TG6-2-231002-02			1410		X	—	1										X
MAY-TG6-3-231002-03			1415		X	—	1										X
MAY-TG5-1-231002-04			1515		X	—	1										X
MAY-TG5-2-231002-05			1520		X	—	1										X
MAY-TG5-3-231002-06			1525		X	—	1										X
MAY-TG4-1-231002-07			1635		X	—	1										X
MAY-TG4-2-231002-08			1640		X	—	1										X

Relinquished by: [signature] Date/time: 10-23-02 / 1830

Received by: Date/time:

Comments:

Sample condition upon arrival:

On ice? ☐ Yes, ☐ No

Microbac Laboratories,
HAMMOND DIVISION
542-544 Conkey Street
Hammond, Indiana 46324
219-932-1770

Send results to:

Name: Tom Graan
Company: Weston
Address: 250 E. Broke Court, Suite 500
City: Vernon Hills State: IL Zip: 60061
Phone: 847-918-4000 Fax: 847-918-4055

Send invoice to: ☒ Same as results

Name:
Company:
Address:
City: State: Zip:
Phone: Fax:

*CEA : Comparative Enumeration Assay includes total heterotrophic and degrader populations

9946-384

Contact person Tom Graan Sampler B. Schaefer A. Grubb
Project name Moss American Project # _____
Project location Milwaukee WI
(City) (state)

Site contaminant * creosote
(Used in test for degrader microbial populations, give ratios if applicable, e.g. 50:50, gasoline:diesel)

* If available, a sample of free product is preferred for use as the carbon source for enumerating the degrader microbial populations. Free product included? ☐ yes ☐ No

Sample ID	Lab use only	Date	Time	(✓) Soil	(✓) Gw	Sample depth	(#) Jars	(#) Vials	(#) Core	Additional comments	Requested analyses (✓): CEA* (soil/gw) see note ☐ Aerobic, ☐ Anaerobic, ☐ Microaerophillic	Standard nutrient panel (soil/gw) - incl. TKN, ammonium nitrogen, available P, pH, total organic carbon, % moisture (s)	Particle size analysis (soil) ☐ sieve and hydrometer, ☐ sieve only	% air-filled pore space (soil) (includes bulk density)	Intact core: Soil moisture at field capacity	Intact core: Bulk density (soil)	Microbial Enumeration
MAT647 231002-09		10/23/02	1645		X	—	1										X

Relinquished by: _____ Date/time: 10-23-02 / 1830 Comments: Sample condition upon arrival:

Received by: _____ Date/time: _____ On ice? ☐ Yes, ☐ No

Microbac Laboratories,
HAMMOND DIVISION
542-544 Conkey Street
Hammond, Indiana 46324
219-932-1770

Send results to:
Name Tom Graan
Company Weston
Address 750 E. Bunker Court Suite 500
City Vernon Hills State IL Zip 60061
Phone 847-918-4000 Fax 847-918-4055

Send invoice to: ☒ Same as results
Name _____
Company _____
Address _____
City _____ State _____ Zip _____
Phone _____ Fax _____

*CEA : Comparative Enumeration Assay includes total heterotrophic and degrader populations

APPENDIX C

DECEMBER 2002 GROUNDWATER SAMPLE ANALYTICAL RESULTS

Analytical Data Validation Report
Kerr-McGee Corporation
Moss American Superfund Site- Milwaukee, WI
SDG #: KMA37

Thursday, January 23, 2003

I have reviewed the analytical data provided by Lancaster Laboratories for the Moss American Site in Milwaukee, Wisconsin upon the information that was provided by the laboratory.

Polynuclear Aromatic Hydrocarbons (PAHs by HPLC, U.S. EPA Method 8310)
Moss American Site
SDG # KMA37

1.Samples:

Client Sample Description:	Lab Sample Number	Matrix	Date Collected	Date Extracted	Date Analyzed
MA3-MW-29S-121202-02	3960658	Grab water	12/12/02	12/16/02	12/20/02
MA3-MW-29S-121202-02-MS	3960659	Grab water	12/12/02	12/16/02	12/20/02
MA3-MW-29S-121202-02-MSD	3960660	Grab water	12/12/02	12/16/02	12/20/02
MA3-MW-37S-121202-03-DP	3960661	Grab water	12/12/02	12/16/02	12/21/02
MA3-MW-37S-121202-03	3960662	Grab water	12/12/02	12/16/02	12/21/02
MA3-MW-31S-121202-04	3960663	Grab water	12/12/02	12/16/02	12/21/02
MA3-MW-36S-121202-01	3960664	Grab water	12/12/02	12/16/02	12/21/02
MA3-MW-30S-121202-05	3960665	Grab water	12/12/02	12/16/02	12/21/02
MA3-MW-5S-121202-06	3960666	Grab water	12/12/02	12/16/02	12/21/02
FB-02	3960667	Grab water	12/12/02	12/16/02	12/21/02

2. Holding Times:
The samples were extracted and analyzed within the required holding times. Only 3960667 was re-extracted past the required holding time. RE-3960667 results qualified as (J/UJ).

3. Method Blank:
Two method blanks SBLKWI3482, and SBLKWG3572 were associated with this SDG. SBLKWI3482 was analyzed with (3960658 thru 3960667) on 12/20/02. SBLKWG3572 was analyzed with (RE-3960667) on 12/30/02. Both method blanks results were free of contamination.

4. Surrogate:
The surrogate recoveries were coming from UV detector. The method blanks and the investigated samples had surrogate recoveries within the required quality control limits, except in 3960667. The re-extracted 3960667 had acceptable surrogate recoveries. However, RE-3960667 did not meet the required holding time and was qualified as (J/UJ). Therefore, report the 3960667 results from the initial extraction of the sample and qualify the results as (J/UJ).

5. Matrix Spike/Matrix Spike Duplicate Recovery:
The matrix spike and matrix spike duplicate was performed on sample 3960658. The MS/MSD recoveries were within the quality control limit. Also, the RPD% values were acceptable.

6. Laboratory Control Sample:
The LCS that associated with (3960658 thru 3960667) recoveries was within the acceptance quality control limits.
The LCS/LCSD that associated with (RE-3960667) recoveries was within the quality control limit. Also, the RPD% values were acceptable.

7. Retention Time:
All the retention time results were acceptable.

8. Initial and Continuing Calibration:
The initial calibration, and continuing calibration verification were all acceptable.

The retention time, initial and continuing calibration results that associated with (3960658 thru 3960667) were used in the calculation from two detectors: naphthalene, acenaphthylene, 1-methylnaphthalene, 2-methylnaphthalene, fluorene, phenanthrene, and anthracene were taken from ultraviolet detector, and acenaphthene fluoranthene, pyrene, benzo (a) anthracene, chrysene, benzo (b) fluoranthene, benzo (k) fluoranthene, benzo (a) pyrene, dibenzo (a, h) anthracene, benzo (g, h, i) perylene, and indeno (1, 2, 3-cd) pyrene were taken from fluorescence detector.

However, the retention time, initial and continuing calibration results that associated with (RE-3960667) were used in the calculation from two detectors: naphthalene, acenaphthene, acenaphthylene, 1-methylnaphthalene, 2-methylnaphthalene, fluorene, phenanthrene, and anthracene were taken from ultraviolet detector, and fluoranthene, pyrene, benzo (a) anthracene, chrysene, benzo (b) fluoranthene, benzo (k) fluoranthene, benzo (a) pyrene, dibenzo (a, h) anthracene, benzo (g, h, i) perylene, and indeno (1, 2, 3-cd) pyrene were taken from fluorescence detector.

Thursday, January 23, 2003

BETX (U.S. EPA Method 8021B)
SDG # MMA37

1.Samples:

Client Sample Description:	Lab Sample Number	Matrix	Date Collected	Date Prepared	Date Analyzed
MA3-MW-29S-121202-02	3960658	Grab water	12/12/02	12/17/02	12/17/02
MA3-MW-29S-121202-02-MS	3960659	Grab water	12/12/02	12/17/02	12/17/02
MA3-MW-29S-121202-02-MSD	3960660	Grab water	12/12/02	12/17/02	12/17/02
MA3-MW-37S-121202-03-DP	3960661	Grab water	12/12/02	12/17/02	12/17/02
MA3-MW-37S-121202-03	3960662	Grab water	12/12/02	12/17/02	12/17/02
MA3-MW-31S-121202-04	3960663	Grab water	12/12/02	12/17/02	12/17/02
MA3-MW-36S-121202-01	3960664	Grab water	12/12/02	12/17/02	12/17/02
MA3-MW-30S-121202-05	3960665	Grab water	12/12/02	12/17/02	12/17/02
MA3-MW-5S-121202-06	3960666	Grab water	12/12/02	12/17/02	12/17/02
FB-02	3960667	Grab water	12/12/02	12/17/02	12/17/02
TB-05	3960668	Grab water	12/12/02	12/17/02	12/17/02

2. Holding Times:
All samples were analyzed within the required holding times.

3. Method Blank:
The method blank BLK5669 was analyzed with (3960658 thru 3960668) on 12/17/02. The method blank results were free of contamination.

4. Matrix Spike/Matrix Spike Duplicate :
The matrix spike was performed on sample 3960658. The MS/MSD recoveries were within the quality control limits. Also, the RPD% values were acceptable.

5. Laboratory control Sample:
The LCS/LCSD recoveries were within the control limits. Also, the RPD% values were acceptable.

6. Surrogate:
The method blank and the investigated samples had surrogate recoveries within the required quality control limits.

7. Initial and Continuing Calibration:
All the initial calibration and continuing calibration results were within the quality control limits.

Please feel free to contact me at (847) 971-6800 with any question regarding these validation reports.

Sincerely
Tania Balikji-Shammo

Lancaster Laboratories

ANALYTICAL RESULTS

Prepared for:

Kerr-McGee Corporation
P.O. Box 25861
Oklahoma City OK 73125

405-270-2602

Prepared by:

Lancaster Laboratories
2425 New Holland Pike
Lancaster, PA 17605-2425

SAMPLE GROUP

The sample group for this submittal is 834558. Samples arrived at the laboratory on Friday, December 13, 2002.

Client Description	Lancaster Labs Number
MA3-MW-29S-121202-02 Unspiked Grab Water Sample	3960658
MA3-MW-29S-121202-02 Matrix Spike Grab Water	3960659
MA3-MW-29S-121202-02 Matrix Spike Duplicate Grab	3960660
MA3-MW-37S-121202-03-DP Grab Water Sample	3960661
MA3-MW-37S-121202-03 Grab Water Sample	3960662
MA3-MW-31S-121202-04 Grab Water Sample	3960663
MA3-MW-36S-121202-01 Grab Water Sample	3960664
MA3-MW-30S-121202-05 Grab Water Sample	3960665
MA3-MW-5S-121202-06 Grab Water Sample	3960666
FB-02 Grab Water Sample	3960667
TB-05 Trip Blank Water Sample	3960668

METHODOLOGY

The specific methodologies used in obtaining the enclosed analytical results are indicated on the laboratory chronicles.

1 COPY TO	Kerr-McGee Corporation	Attn: Dr. Jeff Ostmeyer
1 COPY TO	Weston Solutions, Inc.	Attn: Mr. Tom Graan
1 COPY TO	Data Package Group	

9 0 0 6

Lancaster Laboratories

Questions? Contact your Client Services Representative
Carrie A Fleming at (717) 656-2300.

Respectfully Submitted,

Christine M. Ratcliff

Christine M. Ratcliff
Sr. Chemist

MEMBER ACIL
Lancaster Laboratories, Inc.
2425 New Holland Pike
PO Box 12425
Lancaster, PA 17605-2425

Analysis Report

Lancaster Laboratories

Lancaster Laboratories Sample No. WW 3960658

Collected:12/12/2002 09:50 by BS

Account Number: 07802

Submitted: 12/13/2002 09:10
Reported: 12/31/2002 at 13:43
Discard: 01/31/2003
MA3-MW-29S-121202-02 Unspiked Grab Water Sample
Moss American Site - WI

Kerr-McGee Corporation
P.O. Box 25861
Oklahoma City OK 73125

MAS02 SDG#: KMA37-01BKG

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
08213	BTEX (8021)					
00776	Benzene	71-43-2	N.D.	0.20	ug/l	1
00777	Toluene	108-88-3	N.D.	0.20	ug/l	1
00778	Ethylbenzene	100-41-4	N.D.	0.20	ug/l	1
00779	Total Xylenes	1330-20-7	N.D.	0.60	ug/l	1
00774	PAH's in Water by HPLC					
00775	Naphthalene	91-20-3	N.D.	1.0	ug/l	1
00782	Acenaphthylene	208-96-8	N.D.	2.0	ug/l	1
00783	Acenaphthene	83-32-9	N.D.	2.0	ug/l	1
00784	Fluorene	86-73-7	N.D.	0.20	ug/l	1
00785	Phenanthrene	85-01-8	N.D.	0.080	ug/l	1
00789	Anthracene	120-12-7	N.D.	0.040	ug/l	1
00807	Fluoranthene	206-44-0	N.D.	0.040	ug/l	1
00811	Pyrene	129-00-0	N.D.	0.20	ug/l	1
00812	Benzo(a)anthracene	56-55-3	N.D.	0.020	ug/l	1
00818	Benzo(b)fluoranthene	205-99-2	N.D.	0.040	ug/l	1
00823	Benzo(a)pyrene	50-32-8	N.D.	0.020	ug/l	1
00895	Dibenz(a,h)anthracene	53-70-3	N.D.	0.040	ug/l	1
00898	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.080	ug/l	1
00907	Benzo(g,h,i)perylene	191-24-2	N.D.	0.10	ug/l	1
07409	Chrysene	218-01-9	N.D.	0.080	ug/l	1
07410	Benzo(k)fluoranthene	207-08-9	N.D.	0.020	ug/l	1

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
08213	BTEX (8021)	SW-846 8021B	1	12/17/2002 14:38	Melissa D Mann	1
00774	PAH's in Water by HPLC	SW-846 8310	1	12/20/2002 21:08	Mark A Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	12/17/2002 14:38	Melissa D Mann	n.a.
03337	PAH Water Extraction	SW-846 3510C	1	12/16/2002 09:30	Felix C Arroyo	1

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Analysis Report

Lancaster Laboratories

Lancaster Laboratories Sample No. WW 3960659

Collected:12/12/2002 09:50 by BS

Account Number: 07802

Submitted: 12/13/2002 09:10
Reported: 12/31/2002 at 13:43
Discard: 01/31/2003
MA3-MW-29S-121202-02 Matrix Spike Grab Water Sample
Moss American Site - WI

Kerr-McGee Corporation
P.O. Box 25861
Oklahoma City OK 73125

MAS02 SDG#: KMA37-01MS

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
08213	BTEX (8021)					
00776	Benzene	71-43-2	20.	0.20	ug/l	1
00777	Toluene	108-88-3	22.	0.20	ug/l	1
00778	Ethylbenzene	100-41-4	22.	0.20	ug/l	1
00779	Total Xylenes	1330-20-7	66.	0.60	ug/l	1
00774	PAH's in Water by HPLC					
00775	Naphthalene	91-20-3	150.	1.0	ug/l	1
00782	Acenaphthylene	208-96-8	150.	2.0	ug/l	1
00783	Acenaphthene	83-32-9	170.	2.0	ug/l	1
00784	Fluorene	86-73-7	16.	0.20	ug/l	1
00785	Phenanthrene	85-01-8	5.0	0.080	ug/l	1
00789	Anthracene	120-12-7	2.7	0.040	ug/l	1
00807	Fluoranthene	206-44-0	3.0	0.040	ug/l	1
00811	Pyrene	129-00-0	18.	0.20	ug/l	1
00812	Benzo(a)anthracene	56-55-3	1.4	0.020	ug/l	1
00818	Benzo(b)fluoranthene	205-99-2	1.2	0.040	ug/l	1
00823	Benzo(a)pyrene	50-32-8	1.5	0.020	ug/l	1
00895	Dibenz(a,h)anthracene	53-70-3	3.0	0.040	ug/l	1
00898	Indeno(1,2,3-cd)pyrene	193-39-5	6.3	0.080	ug/l	1
00907	Benzo(g,h,i)perylene	191-24-2	11.	0.10	ug/l	1
07409	Chrysene	218-01-9	5.7	0.080	ug/l	1
07410	Benzo(k)fluoranthene	207-08-9	1.2	0.020	ug/l	1

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
08213	BTEX (8021)	SW-846 8021B	1	12/17/2002 15:13	Melissa D Mann	1
00774	PAH's in Water by HPLC	SW-846 8310	1	12/20/2002 21:47	Mark A Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	12/17/2002 15:13	Melissa D Mann	n.a.
03337	PAH Water Extraction	SW-846 3510C	1	12/16/2002 09:30	Felix C Arroyo	1

Lancaster Laboratories

Lancaster Laboratories Sample No. WW 3960660

Collected:12/12/2002 09:50 by BS

Account Number: 07802

Submitted: 12/13/2002 09:10
Reported: 12/31/2002 at 13:43
Discard: 01/31/2003
MA3-MW-29S-121202-02 Matrix Spike Duplicate Grab Water Sample
Moss American Site - WI

Kerr-McGee Corporation
P.O. Box 25861
Oklahoma City OK 73125

MAS02 SDG#: KMA37-01MSD

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
08213	BTEX (8021)					
00776	Benzene	71-43-2	20.	0.20	ug/l	1
00777	Toluene	108-88-3	22.	0.20	ug/l	1
00778	Ethylbenzene	100-41-4	22.	0.20	ug/l	1
00779	Total Xylenes	1330-20-7	66.	0.60	ug/l	1
00774	PAH's in Water by HPLC					
00775	Naphthalene	91-20-3	160.	1.0	ug/l	1
00782	Acenaphthylene	208-96-8	160.	2.0	ug/l	1
00783	Acenaphthene	83-32-9	180.	2.0	ug/l	1
00784	Fluorene	86-73-7	17.	0.20	ug/l	1
00785	Phenanthrene	85-01-8	5.2	0.080	ug/l	1
00789	Anthracene	120-12-7	2.7	0.040	ug/l	1
00807	Fluoranthene	206-44-0	3.0	0.040	ug/l	1
00811	Pyrene	129-00-0	18.	0.20	ug/l	1
00812	Benzo(a)anthracene	56-55-3	1.4	0.020	ug/l	1
00818	Benzo(b)fluoranthene	205-99-2	1.1	0.040	ug/l	1
00823	Benzo(a)pyrene	50-32-8	1.5	0.020	ug/l	1
00895	Dibenz(a,h)anthracene	53-70-3	3.0	0.040	ug/l	1
00898	Indeno(1,2,3-cd)pyrene	193-39-5	6.3	0.080	ug/l	1
00907	Benzo(g,h,i)perylene	191-24-2	11.	0.10	ug/l	1
07409	Chrysene	218-01-9	5.6	0.080	ug/l	1
07410	Benzo(k)fluoranthene	207-08-9	1.2	0.020	ug/l	1

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
08213	BTEX (8021)	SW-846 8021B	1	12/17/2002 15:49	Melissa D Mann	1
00774	PAH's in Water by HPLC	SW-846 8310	1	12/20/2002 22:25	Mark A Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	12/17/2002 15:49	Melissa D Mann	n.a.
03337	PAH Water Extraction	SW-846 3510C	1	12/16/2002 09:30	Felix C Arroyo	1

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Analysis Report

Lancaster Laboratories

Lancaster Laboratories Sample No. WW 3960661

Collected:12/12/2002 09:55 by BS

Account Number: 07802

Submitted: 12/13/2002 09:10
Reported: 12/31/2002 at 13:43
Discard: 01/31/2003
MA3-MW-37S-121202-03-DP Grab Water Sample
Moss American Site - WI

Kerr-McGee Corporation
P.O. Box 25861
Oklahoma City OK 73125

FDMAS SDG#: KMA37-02FD

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
08213	BTEX (8021)					
00776	Benzene	71-43-2	N.D.	0.20	ug/l	1
00777	Toluene	108-88-3	N.D.	0.20	ug/l	1
00778	Ethylbenzene	100-41-4	N.D.	0.20	ug/l	1
00779	Total Xylenes	1330-20-7	N.D.	0.60	ug/l	1
00774	PAH's in Water by HPLC					
00775	Naphthalene	91-20-3	N.D.	1.0	ug/l	1
00782	Acenaphthylene	208-96-8	N.D.	2.0	ug/l	1
00783	Acenaphthene	83-32-9	N.D.	2.0	ug/l	1
00784	Fluorene	86-73-7	N.D.	0.20	ug/l	1
00785	Phenanthrene	85-01-8	N.D.	0.080	ug/l	1
00789	Anthracene	120-12-7	N.D.	0.040	ug/l	1
00807	Fluoranthene	206-44-0	N.D.	0.040	ug/l	1
00811	Pyrene	129-00-0	N.D.	0.20	ug/l	1
00812	Benzo(a)anthracene	56-55-3	N.D.	0.020	ug/l	1
00818	Benzo(b)fluoranthene	205-99-2	N.D.	0.040	ug/l	1
00823	Benzo(a)pyrene	50-32-8	N.D.	0.020	ug/l	1
00895	Dibenz(a,h)anthracene	53-70-3	N.D.	0.040	ug/l	1
00898	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.080	ug/l	1
00907	Benzo(g,h,i)perylene	191-24-2	N.D.	0.10	ug/l	1
07409	Chrysene	218-01-9	N.D.	0.080	ug/l	1
07410	Benzo(k)fluoranthene	207-08-9	N.D.	0.020	ug/l	1

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
08213	BTEX (8021)	SW-846 8021B	1	12/17/2002 16:24	Melissa D Mann	1
00774	PAH's in Water by HPLC	SW-846 8310	1	12/21/2002 16:06	Mark A Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	12/17/2002 16:24	Melissa D Mann	n.a.
03337	PAH Water Extraction	SW-846 3510C	1	12/16/2002 09:30	Felix C Arroyo	1

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Analysis Report

Lancaster Laboratories

Lancaster Laboratories Sample No. WW 3960662

Collected:12/12/2002 09:55 by BS

Account Number: 07802

Submitted: 12/13/2002 09:10
Reported: 12/31/2002 at 13:43
Discard: 01/31/2003
MA3-MW-37S-121202-03 Grab Water Sample
Moss American Site - WI

Kerr-McGee Corporation
P.O. Box 25861
Oklahoma City OK 73125

37S03 SDG#: KMA37-03

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
08213	BTEX (8021)					
00776	Benzene	71-43-2	N.D.	0.20	ug/l	1
00777	Toluene	108-88-3	N.D.	0.20	ug/l	1
00778	Ethylbenzene	100-41-4	N.D.	0.20	ug/l	1
00779	Total Xylenes	1330-20-7	N.D.	0.60	ug/l	1
00774	PAH's in Water by HPLC					
00775	Naphthalene	91-20-3	N.D.	1.0	ug/l	1
00782	Acenaphthylene	208-96-8	N.D.	2.0	ug/l	1
00783	Acenaphthene	83-32-9	N.D.	2.0	ug/l	1
00784	Fluorene	86-73-7	N.D.	0.20	ug/l	1
00785	Phenanthrene	85-01-8	N.D.	0.080	ug/l	1
00789	Anthracene	120-12-7	N.D.	0.040	ug/l	1
00807	Fluoranthene	206-44-0	N.D.	0.040	ug/l	1
00811	Pyrene	129-00-0	N.D.	0.20	ug/l	1
00812	Benzo(a)anthracene	56-55-3	N.D.	0.020	ug/l	1
00818	Benzo(b)fluoranthene	205-99-2	N.D.	0.040	ug/l	1
00823	Benzo(a)pyrene	50-32-8	N.D.	0.020	ug/l	1
00895	Dibenz(a,h)anthracene	53-70-3	N.D.	0.040	ug/l	1
00898	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.080	ug/l	1
00907	Benzo(g,h,i)perylene	191-24-2	N.D.	0.10	ug/l	1
07409	Chrysene	218-01-9	N.D.	0.080	ug/l	1
07410	Benzo(k)fluoranthene	207-08-9	N.D.	0.020	ug/l	1

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
08213	BTEX (8021)	SW-846 8021B	1	12/17/2002 16:59	Melissa D Mann	1
00774	PAH's in Water by HPLC	SW-846 8310	1	12/21/2002 16:45	Mark A Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	12/17/2002 16:59	Melissa D Mann	n.a.
03337	PAH Water Extraction	SW-846 3510C	1	12/16/2002 09:30	Felix C Arroyo	1

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Analysis Report

Lancaster Laboratories

Lancaster Laboratories Sample No. WW 3960663

Collected:12/12/2002 11:15 by BS

Account Number: 07802

Submitted: 12/13/2002 09:10
Reported: 12/31/2002 at 13:43
Discard: 01/31/2003
MA3-MW-31S-121202-04 Grab Water Sample
Moss American Site - WI

Kerr-McGee Corporation
P.O. Box 25861
Oklahoma City OK 73125

31S04 SDG#: KMA37-04

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
08213	BTEX (8021)					
00776	Benzene	71-43-2	N.D.	0.20	ug/l	1
00777	Toluene	108-88-3	N.D.	0.20	ug/l	1
00778	Ethylbenzene	100-41-4	N.D.	0.20	ug/l	1
00779	Total Xylenes	1330-20-7	N.D.	0.60	ug/l	1
00774	PAH's in Water by HPLC					
00775	Naphthalene	91-20-3	N.D.	1.0	ug/l	1
00782	Acenaphthylene	208-96-8	N.D.	2.0	ug/l	1
00783	Acenaphthene	83-32-9	N.D.	2.0	ug/l	1
00784	Fluorene	86-73-7	N.D.	0.20	ug/l	1
00785	Phenanthrene	85-01-8	N.D.	0.080	ug/l	1
00789	Anthracene	120-12-7	N.D.	0.040	ug/l	1
00807	Fluoranthene	206-44-0	N.D.	0.040	ug/l	1
00811	Pyrene	129-00-0	N.D.	0.20	ug/l	1
00812	Benzo(a)anthracene	56-55-3	N.D.	0.020	ug/l	1
00818	Benzo(b)fluoranthene	205-99-2	N.D.	0.040	ug/l	1
00823	Benzo(a)pyrene	50-32-8	N.D.	0.020	ug/l	1
00895	Dibenz(a,h)anthracene	53-70-3	N.D.	0.040	ug/l	1
00898	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.080	ug/l	1
00907	Benzo(g,h,i)perylene	191-24-2	N.D.	0.10	ug/l	1
07409	Chrysene	218-01-9	N.D.	0.080	ug/l	1
07410	Benzo(k)fluoranthene	207-08-9	N.D.	0.020	ug/l	1

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
08213	BTEX (8021)	SW-846 8021B	1	12/17/2002 17:35	Melissa D Mann	1
00774	PAH's in Water by HPLC	SW-846 8310	1	12/21/2002 17:23	Mark A Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	12/17/2002 17:35	Melissa D Mann	n.a.
03337	PAH Water Extraction	SW-846 3510C	1	12/16/2002 09:30	Felix C Arroyo	1

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Analysis Report

Lancaster Laboratories

Lancaster Laboratories Sample No. WW 3960664

Collected:12/12/2002 09:45 by BS

Account Number: 07802

Submitted: 12/13/2002 09:10
Reported: 12/31/2002 at 13:44
Discard: 01/31/2003
MA3-MW-36S-121202-01 Grab Water Sample
Moss American Site - WI

Kerr-McGee Corporation
P.O. Box 25861
Oklahoma City OK 73125

36S01 SDG#: KMA37-05

CAT No.	Analysis Name	CAS Number	As Received Result		As Received Method Detection Limit	Units	Dilution Factor
08213	BTEX (8021)						
00776	Benzene	71-43-2	N.D.		0.20	ug/l	1
00777	Toluene	108-88-3	0.27	J	0.20	ug/l	1
00778	Ethylbenzene	100-41-4	N.D.		0.20	ug/l	1
00779	Total Xylenes	1330-20-7	N.D.		0.60	ug/l	1
00774	PAH's in Water by HPLC						
00775	Naphthalene	91-20-3	N.D.		1.0	ug/l	1
00782	Acenaphthylene	208-96-8	N.D.		2.0	ug/l	1
00783	Acenaphthene	83-32-9	N.D.		2.0	ug/l	1
00784	Fluorene	86-73-7	N.D.		0.20	ug/l	1
00785	Phenanthrene	85-01-8	N.D.		0.080	ug/l	1
00789	Anthracene	120-12-7	N.D.		0.040	ug/l	1
00807	Fluoranthene	206-44-0	N.D.		0.040	ug/l	1
00811	Pyrene	129-00-0	N.D.		0.20	ug/l	1
00812	Benzo(a)anthracene	56-55-3	N.D.		0.020	ug/l	1
00818	Benzo(b)fluoranthene	205-99-2	N.D.		0.040	ug/l	1
00823	Benzo(a)pyrene	50-32-8	N.D.		0.020	ug/l	1
00895	Dibenz(a,h)anthracene	53-70-3	N.D.		0.040	ug/l	1
00898	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.		0.080	ug/l	1
00907	Benzo(g,h,i)perylene	191-24-2	N.D.		0.10	ug/l	1
07409	Chrysene	218-01-9	N.D.		0.080	ug/l	1
07410	Benzo(k)fluoranthene	207-08-9	N.D.		0.020	ug/l	1

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
08213	BTEX (8021)	SW-846 8021B	1	12/17/2002 18:10	Melissa D Mann	1
00774	PAH's in Water by HPLC	SW-846 8310	1	12/21/2002 18:02	Mark A Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	12/17/2002 18:10	Melissa D Mann	n.a.
03337	PAH Water Extraction	SW-846 3510C	1	12/16/2002 09:30	Felix C Arroyo	1

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MEMBER ACIL
Lancaster Laboratories, Inc.
2425 New Holland Pike
PO Box 12425
Lancaster, PA 17605-2425

Lancaster Laboratories

Lancaster Laboratories Sample No. WW 3960665

Collected:12/12/2002 12:20 by BS

Account Number: 07802

Submitted: 12/13/2002 09:10
Reported: 12/31/2002 at 13:44
Discard: 01/31/2003
MA3-MW-30S-121202-05 Grab Water Sample
Moss American Site - WI

Kerr-McGee Corporation
P.O. Box 25861
Oklahoma City OK 73125

30S05 SDG#: KMA37-06

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
08213	BTEX (8021)					
00776	Benzene	71-43-2	N.D.	0.20	ug/l	1
00777	Toluene	108-88-3	N.D.	0.20	ug/l	1
00778	Ethylbenzene	100-41-4	N.D.	0.20	ug/l	1
00779	Total Xylenes	1330-20-7	N.D.	0.60	ug/l	1
00774	PAH's in Water by HPLC					
00775	Naphthalene	91-20-3	N.D.	1.0	ug/l	1
00782	Acenaphthylene	208-96-8	N.D.	2.0	ug/l	1
00783	Acenaphthene	83-32-9	N.D.	2.0	ug/l	1
00784	Fluorene	86-73-7	N.D.	0.20	ug/l	1
00785	Phenanthrene	85-01-8	N.D.	0.080	ug/l	1
00789	Anthracene	120-12-7	N.D.	0.040	ug/l	1
00807	Fluoranthene	206-44-0	N.D.	0.040	ug/l	1
00811	Pyrene	129-00-0	N.D.	0.20	ug/l	1
00812	Benzo(a)anthracene	56-55-3	N.D.	0.020	ug/l	1
00818	Benzo(b)fluoranthene	205-99-2	N.D.	0.040	ug/l	1
00823	Benzo(a)pyrene	50-32-8	N.D.	0.020	ug/l	1
00895	Dibenz(a,h)anthracene	53-70-3	N.D.	0.040	ug/l	1
00898	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.080	ug/l	1
00907	Benzo(g,h,i)perylene	191-24-2	N.D.	0.10	ug/l	1
07409	Chrysene	218-01-9	N.D.	0.080	ug/l	1
07410	Benzo(k)fluoranthene	207-08-9	N.D.	0.020	ug/l	1

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
08213	BTEX (8021)	SW-846 8021B	1	12/17/2002 18:45	Melissa D Mann	1
00774	PAH's in Water by HPLC	SW-846 8310	1	12/21/2002 19:19	Mark A Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	12/17/2002 18:45	Melissa D Mann	n.a.
03337	PAH Water Extraction	SW-846 3510C	1	12/16/2002 09:30	Felix C Arroyo	1

0015

Lancaster Laboratories

Lancaster Laboratories Sample No. WW 3960666

Collected:12/12/2002 12:25 by BS

Account Number: 07802

Submitted: 12/13/2002 09:10
Reported: 12/31/2002 at 13:44
Discard: 01/31/2003
MA3-MW-5S-121202-06 Grab Water Sample
Moss American Site - WI

Kerr-McGee Corporation
P.O. Box 25861
Oklahoma City OK 73125

5SX06 SDG#: KMA37-07

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
08213	BTEX (8021)					
00776	Benzene	71-43-2	N.D.	0.20	ug/l	1
00777	Toluene	108-88-3	N.D.	0.20	ug/l	1
00778	Ethylbenzene	100-41-4	N.D.	0.20	ug/l	1
00779	Total Xylenes	1330-20-7	N.D.	0.60	ug/l	1
00774	PAH's in Water by HPLC					
00775	Naphthalene	91-20-3	N.D.	1.0	ug/l	1
00782	Acenaphthylene	208-96-8	N.D.	2.0	ug/l	1
00783	Acenaphthene	83-32-9	N.D.	2.0	ug/l	1
00784	Fluorene	86-73-7	N.D.	0.20	ug/l	1
00785	Phenanthrene	85-01-8	N.D.	0.080	ug/l	1
00789	Anthracene	120-12-7	N.D.	0.040	ug/l	1
00807	Fluoranthene	206-44-0	N.D.	0.040	ug/l	1
00811	Pyrene	129-00-0	N.D.	0.20	ug/l	1
00812	Benzo(a)anthracene	56-55-3	N.D.	0.020	ug/l	1
00818	Benzo(b)fluoranthene	205-99-2	N.D.	0.040	ug/l	1
00823	Benzo(a)pyrene	50-32-8	N.D.	0.020	ug/l	1
00895	Dibenz(a,h)anthracene	53-70-3	N.D.	0.040	ug/l	1
00898	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.080	ug/l	1
00907	Benzo(g,h,i)perylene	191-24-2	N.D.	0.10	ug/l	1
07409	Chrysene	218-01-9	N.D.	0.080	ug/l	1
07410	Benzo(k)fluoranthene	207-08-9	N.D.	0.020	ug/l	1

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
08213	BTEX (8021)	SW-846 8021B	1	12/17/2002 19:20	Melissa D Mann	1
00774	PAH's in Water by HPLC	SW-846 8310	1	12/21/2002 19:57	Mark A Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	12/17/2002 19:20	Melissa D Mann	n.a.
03337	PAH Water Extraction	SW-846 3510C	1	12/16/2002 09:30	Felix C Arroyo	1

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MEMBER ACIL
Lancaster Laboratories, Inc.
2425 New Holland Pike
PO Box 12425
Lancaster, PA 17605-2425

Analysis Report

Lancaster Laboratories

Lancaster Laboratories Sample No. WW 3960667

Collected:12/12/2002 13:00 by BS

Account Number: 07802

Submitted: 12/13/2002 09:10
Reported: 12/31/2002 at 13:44
Discard: 01/31/2003
FB-02 Grab Water Sample
Moss American Site - WI

Kerr-McGee Corporation
P.O. Box 25861
Oklahoma City OK 73125

FB02X SDG#: KMA37-08FB

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
08213	BTEX (8021)					
00776	Benzene	71-43-2	N.D.	0.20	ug/l	1
00777	Toluene	108-88-3	N.D.	0.20	ug/l	1
00778	Ethylbenzene	100-41-4	N.D.	0.20	ug/l	1
00779	Total Xylenes	1330-20-7	N.D.	0.60	ug/l	1
00774	PAH's in Water by HPLC					
00775	Naphthalene	91-20-3	N.D. UJ	1.0	ug/l	1
00782	Acenaphthylene	208-96-8	N.D.	2.0	ug/l	1
00783	Acenaphthene	83-32-9	N.D.	2.0	ug/l	1
00784	Fluorene	86-73-7	N.D.	0.20	ug/l	1
00785	Phenanthrene	85-01-8	N.D.	0.080	ug/l	1
00789	Anthracene	120-12-7	N.D.	0.040	ug/l	1
00807	Fluoranthene	206-44-0	N.D.	0.040	ug/l	1
00811	Pyrene	129-00-0	N.D.	0.20	ug/l	1
00812	Benzo(a)anthracene	56-55-3	N.D.	0.020	ug/l	1
00818	Benzo(b)fluoranthene	205-99-2	N.D.	0.040	ug/l	1
00823	Benzo(a)pyrene	50-32-8	N.D.	0.020	ug/l	1
00895	Dibenz(a,h)anthracene	53-70-3	N.D.	0.040	ug/l	1
00898	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.080	ug/l	1
00907	Benzo(g,h,i)perylene	191-24-2	N.D.	0.10	ug/l	1
07409	Chrysene	218-01-9	N.D.	0.080	ug/l	1
07410	Benzo(k)fluoranthene	207-08-9	N.D.	0.020	ug/l	1

Poor surrogate recoveries were observed for the HPLC PAH compounds. The analysis was repeated outside of the required hold time and surrogate recoveries met requirements. The results reported are from the initial extraction of the sample.

TBS 1/24/03

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
08213	BTEX (8021)	SW-846 8021B	1	12/17/2002 19:55	Melissa D Mann	1
00774	PAH's in Water by HPLC	SW-846 8310	1	12/21/2002 20:36	Mark A Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	12/17/2002 19:55	Melissa D Mann	n.a.
03337	PAH Water Extraction	SW-846 3510C	1	12/16/2002 09:30	Felix C Arroyo	1

MEMBER ACIL
Lancaster Laboratories, Inc.
2425 New Holland Pike
PO Box 12425
Lancaster, PA 17605-2425

Lancaster Laboratories

Lancaster Laboratories Sample No. WW 3960667

Collected:12/12/2002 13:00 by BS

Account Number: 07802

Submitted: 12/13/2002 09:10
Reported: 12/31/2002 at 13:44
Discard: 01/31/2003
FB-02 Grab Water Sample
Moss American Site - WI

Kerr-McGee Corporation
P.O. Box 25861
Oklahoma City OK 73125

FB02X SDG#: KMA37-08FB

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MEMBER

Lancaster Laboratories, Inc.
2425 New Holland Pike
PO Box 12425
Lancaster, PA 17605-2425

Analysis Report

Lancaster Laboratories

Lancaster Laboratories Sample No. WW 3960668

Collected:12/12/2002 11:10

Account Number: 07802

Submitted: 12/13/2002 09:10
Reported: 12/31/2002 at 13:44
Discard: 01/31/2003
TB-05 Trip Blank Water Sample
Moss American Site - WI

Kerr-McGee Corporation
P.O. Box 25861
Oklahoma City OK 73125

TB05T SDG#: KMA37-09TB*

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
08213	BTEX (8021)					
00776	Benzene	71-43-2	N.D.	0.20	ug/l	1
00777	Toluene	108-88-3	N.D.	0.20	ug/l	1
00778	Ethylbenzene	100-41-4	N.D.	0.20	ug/l	1
00779	Total Xylenes	1330-20-7	N.D.	0.60	ug/l	1

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
08213	BTEX (8021)	SW-846 8021B	1	12/17/2002 21:40	Melissa D Mann	1
01146	GC VOA Water Prep	SW-846 5030B	1	12/17/2002 21:40	Melissa D Mann	n.a.

0019

Analysis Request/Environmental Services Chain of Custody

Lancaster Laboratories
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For Lancaster Laboratories use only
Acct. # 7802 Sample # 3960658-68
834558

Please print. Instructions on reverse side correspond with circled numbers.

(1)
Client: Weston Acct. #:
Project Name/#: Moss American PWSID #:
Project Manager: Tom Graan P.O.#
Sampler: B. Schaefer, S. Meyer, M. Castillo Quote #:
Name of state where samples were collected: WI

For lab use only
FSC:
SCR#:

(2) Sample Identification	Date Collected	Time Collected	(3) Grab	Composite	Matrix (4): Soil	Water (Potable / NPDES, if applicable)	Other	Total # of Containers	(5) Analyses Requested: BTEX	Remarks	(6) Temperature of samples upon receipt (°C)
TB-05	12/12/02	1110	X			X		2	X		
MA3-MW-295-121202-02		0950	X			X		3	X		
MA3-MW-295-121202-02-MS		0950	X			X		3	X		
MA3-MW-295-121202-02-MSD		0950	X			X		3	X		
MA3-MW-375-121202-03-DP		0955	X			X		3	X		
MA3-MW-375-121202-03		0955	X			X		3	X		
MA3-MW-315-121202-04		1115	X			X		3	X		
MA3-MW-365-121202-01		0945	X			X		3	X		
MA3-MW-305-121202-05		1220	X			X		3	X		
MA3-MW-55-121202-06		1225	X			X		3	X		
FB-07		1300	X			X		3	X		

(7) **Turnaround Time Requested** (TAT) (please circle): Normal Rush
(Rush TAT is subject to Lancaster Laboratories approval and surcharge.)
Date results are needed: STD TAT
Rush results requested by (please circle): Phone Fax
Phone #: 847-918-4000 Fax #: 847-918-4055

(8) **Data Package Options** (please circle if requested)
QC Summary Type VI (Raw Data) PER QUOTE
Type I (Tier I) GLP
Type II (Tier II) Other
Type III (NJ Red. Del.)
Type IV (CLP)

SDG Complete? (Yes) No

Site-specific QC required? Yes No
(If yes, indicate QC sample and submit triplicate volume.)
Internal Chain of Custody required? Yes No

(9) Relinquished by:	Date	Time	Received by:	Date	Time
	12/12/02	1500			
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by: Jason P. Berger	12/13/02	0910

Lancaster Laboratories, Inc., 2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 (717) 656-2300
...ies: ... d yel... ...ld acc... ...sampl... to Lancaster Laboratories. The pink copy should be retained by the client

2102 Rev. 3/7/01

Analysis Request/Environmental Services Chain of Custody

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For Lancaster Laboratories use only
Acct. # 7802 Sample # 3960658-68
834558

Please print. Instructions on reverse side correspond with circled numbers.

(1) Client: Weston | Acct. #:
Project Name/#: Moss American | PWSID #:
Project Manager: Tom Graan | P.O.#
Sampler: B. Schaefers, Meyer, M. Castillo | Quote #:
Name of state where samples were collected: WI

For lab use only
FSC:
SCR#:

(2) Sample Identification	Date Collected	Time Collected	(3) Grab	Composite	(4) Matrix: Soil	Water (☐ Potable ☐ Non-Potable ☐ NPDES - applicable)	Other	Total # of Containers	(5) Analyses Requested: PAH	Remarks	Temperature of samples upon receipt (°C)
MA3-MW-295-121202-02	12/12/02	0950	X			X		2	X		
MA3-MW-295-121202-02-MS		0950	X			X		2	X		
MA3-MW-295-121202-02-MSD		6950	X			X		2	X		
MA3-MW-375-121202-03		0955	X			X		2	X		
MA3-MW-375-121202-03-DP		0955	X			X		2	X		

(7) **Turnaround Time Requested** (TAT) (please circle): Normal Rush
(Rush TAT is subject to Lancaster Laboratories approval and surcharge.)
Date results are needed: STD TAT
Rush results requested by (please circle): Phone Fax
Phone #: 847-918-4000 Fax #: 847-918-4055

(8) **Data Package Options** (please circle if requested)
QC Summary | Type VI (Raw Data) PER QUOTE | SDG Complete? Yes NO
Type I (Tier I) | GLP
Type II (Tier II) | Other
Type III (NJ Red. Del.)
Type IV (CLP)
Site-specific QC required? Yes No
(If yes, indicate QC sample and submit triplicate volume.)
Internal Chain of Custody required? Yes No

Relinquished by:	Date	Time	Received by:	Date	Time
[signature]	12/12/02	1500			
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by: [signature]	12/13/02	0910

Lancaster Laboratories, Inc., 2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 (717) 656-2300
Copies: White and yellow should accompany samples to Lancaster Laboratories. The pink copy should be retained by the client

2102 Rev. 3/7/0

Analysis Request / Environmental Services Chain of Custody

Lancaster Laboratories
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For Lancaster Laboratories use only
Acct. # 7802 Group# 834558 Sample # 3960658-68

COC # 0006807

Please print. Instructions on reverse side correspond with circled numbers.

(1)
Client: Weston Acct. #:
Project Name/#: Moss American PWSID #:
Project Manager: Tom Graan P.O.#:
Sampler: B. Schaefer, S. Meyer, M. Castillo Quote #:
Name of state where samples were collected: WI

For Lab Use Only
FSC:
SCR #: 112742

(2)

Sample Identification	Date Collected	Time Collected	Grab	Composite	Soil	Water	Other	Total # of Containers	PAH								Remarks
MA3-MW-31S-121202-04	12/12/02	1115	X			X		2	X								
MA3-MW-36S-121202-01	↓	0945	X			X		2	X								
MA3-MW-30S-121202-05		1220	X			X		2	X								
MA3-MW-5S-121202-06		1225	X			X		2	X								
FB-02		1300	X			X		2	X								

Matrix (4): Soil; Water (☐ Potable ☐ NPDES; Check if Applicable); Other. (5) Analyses Requested. (6) Temperature of samples upon receipt (if requested).

(7) Turnaround Time Requested (TAT) (please circle): Normal Rush
(Rush TAT is subject to Lancaster Laboratories approval and surcharge.)
Date results are needed: STD TAT
Rush results requested by (please circle): Phone Fax E-mail
Phone #: 847-918-4000 Fax #: 847-918-4055
E-mail address:

(8) Data Package Options (please circle if required)
QC Summary — Type VI (Raw Data) PER QUOTE
Type I (Tier I) — GLP
Type II (Tier II) — Other
Type III (NJ Red. Del.)
Type IV (CLP)

SDG Complete? (Yes) No
State-specific QC required? Yes No
(If yes, indicate QC sample and submit triplicate volume.)
Internal Chain of Custody required? Yes No

(9)

Relinquished by:	Date	Time	Received by:	Date	Time
[signature]	12-6-02	1400			
[signature]	12/12/02	1500			
			Jason P. Berger	12/13/02	0910

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Where quality is a science.

Case Narrative

Client: Kerr-McGee Corporation
SDG: KMA37

LANCASTER LABORATORIES
PAH by HPLC

SAMPLE NUMBER(S) :

LL #'s	Sample Code	Matrix Water	Comments
3960658	MAS02	X	Unspiked
3960659	MAS02MS	X	Matrix Spike
3960660	MAS02MSD	X	Matrix Spike Dup
3960661	FDMAS	X	
3960662	37S03	X	
3960663	31S04	X	
3960664	36S01	X	
3960665	30S05	X	
3960666	5SX06	X	
3960667	FB02X	X	Client Blank
3960667RE	FB02XRE	X	Reextraction
LABORATORY SUBMITTED QC:			
SBLKWI348	SBLKWI3482	X	Method Blank
SBLKWG357	SBLKWG3572	X	Method Blank
348WILCS	348WILCS2	X	Lab Control Sample
357WGLCS	357WGLCS2	X	Lab Control Sample
357WGLCSD	357WGLCSD2	X	Lab Control Sample Dup

SAMPLE PREPARATION:

Due to insufficient sample, reduced volumes were used in the extraction of the following samples.

Case Narrative (continued)
SDG#: KMA37

Sample Code	Volume
FDMAS	995 mls
37S03	985 mls
31S04	971 mls
30S05	999 mls
5SX06	982 mls
FB02X	995 mls
FB02XRE	993 mls

No other problems were encountered during the extraction of these samples.

ANALYSIS:

The method used for analysis was SW-846 3510C.

All samples were analyzed for polynuclear aromatic hydrocarbons by HPLC.

Sufficient sample volume was not available to perform a MS/MSD for the analysis of FB02XRE. Therefore, a LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.

Reextraction was required for FB02X due to unacceptable surrogate recoveries.

No other problems were encountered during the analysis of these samples.

QUALITY CONTROL AND NONCONFORMANCE SUMMARY:

Due to surrogate recoveries outside QC limits, FB02X was reextracted. The reextraction was performed outside the method required holding time. All recoveries were within QC limits in FB02XRE. Both sets of data are included in this data package.

All other QC was within specifications.

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Case Narrative (continued)
SDG#: KMA37

DATA INTERPRETATION:

Only non-conformances for client requested compounds are addressed in this case narrative.

Due to incorrect integrations during the initial processing, manual integrations were performed for the following compounds:

Sample Code	UV Column - Compound	FL Column - Compound
File ID 02354.09	Indeno(1,2,3-cd)pyrene	Indeno(1,2,3-cd)pyrene

No further interpretation is necessary for the data submitted.

Case Narrative Reviewed and Approved by:

Date: 1/6/05

Charles J. Neslund
Group Leader, GC/MS Semivolatiles

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Lancaster Laboratories
2425 New Holland Pike • Lancaster, PA 17601

Case Narrative
SDG# KMA37

Client : Kerr-McGee Corporation
Project: Moss American Site - WI
Volatiles by GC - Water

IPLE ANALYSES

LL ample #	Sample Designation	Matrix Soil	Matrix Water	Comments
3960658	MAS02		X	
960659MS	MAS02		X	Matrix Spike
960660MSD	MAS02		X	Matrix Spike Dup
960661	FDMAS		X	
3960662	37S03		X	
960663	31S04		X	
960664	36S01		X	
3960665	30S05		X	
960666	5SX06		X	
960667	FB02X		X	
960668	TB05T		X	

JALITY CONTROL ANALYSES

BLK5669		X	Method Blank
LCS5669		X	Lab Control Sample
LDS5669		X	Lab Control Dup

SAMPLE PREPARATION

o sample preparation was necessary.

NALYSIS

he integration system reviews the chromatogram retention times, comparing them to the retention times in the ID window. A peak in the sample chromatogram with a retention time within the ID window is identified as a "hit."

The method used for analysis was EPA Method SW-846 8021B. A J&W DB-VRX, 75m x 0.45mm column was used for the analysis of all samples. The surrogate concentration was 30.0 UG/L.

No problems were encountered during analysis.

QUALITY CONTROL AND NONCONFORMANCE SUMMARY

Client submitted batch QC was referenced.

All QC was within specifications.

DATA INTERPRETATION

No explanation is necessary for the data submitted.

Lancaster Laboratories
2425 New Holland Pike • Lancaster, PA 17601

Case Narrative
SDG# KMA37

Client : Kerr-McGee Corporation
Project: Moss American Site - WI
Volatiles by GC - Water

larrative reviewed and approved by:

[signature] For

ia M. Kauffman, Group Leader

Date 1/6/02

0166

Analytical Data Validation Report
Kerr-McGee Corporation
Moss American Superfund Site- Milwaukee, WI
SDG #: KMA35

Thursday, January 23, 2003

I have reviewed the analytical data provided by Lancaster Laboratories for the Moss American Site in Milwaukee, Wisconsin upon the information that was provided by the laboratory.

Polynuclear Aromatic Hydrocarbons (PAHs by HPLC, U.S. EPA Method 8310)
Moss American Site
SDG # KMA35

1.Samples:

Client Sample Description:	Lab Sample Number	Matrix	Date Collected	Date Extracted	Date Analyzed
MA3-TG1-1-111202-01	3958874	Grab water	12/11/02	12/13/02	20,23,26
MA3-TG1-2-111202-02	3958875	Grab water	12/11/02	12/13/02	12/15/02
MA3-TG1-3-111202-03	3958876	Grab water	12/11/02	12/13/02	12/15/02
MA3-MW-28S-111202-04	3958877	Grab water	12/11/02	12/13/02	12/15/02
MA3-MW-6S-111202-05	3958878	Grab water	12/11/02	12/13/02	12/15/02
MA3-MW-33S-111202-06	3958879	Grab water	12/11/02	12/13/02	12/15,23
MA3-MW-32S-111202-07	3958880	Grab water	12/11/02	12/13/02	12/20/02
MA3-MW-27S-111202-08	3958881	Grab water	12/11/02	12/13/02	12/20/02
MA3-MW-35S-111202-09	3958882	Grab water	12/11/02	12/13/02	12/20/02
MA3-MW-35S-111202-09-DUP	3958883	Grab water	12/11/02	12/13/02	12/20/02
MA3-MW-34S-111202-10	3958884	Grab water	12/11/02	12/13/02	12/20,23
MA3-MW-7S-111202-11	3958885	Grab water	12/11/02	12/13/02	12/20,23
MA3-MW-9S-111202-12	3958886	Grab water	12/11/02	12/13/02	12/20/02

2. Holding Times:
The samples were extracted and analyzed within the required holding times. However, the samples were re-extracted past the holding time. Therefore, all the re-extracting results qualified as (J/UJ). All the results reported from the initial extraction of the samples.

3. Method Blank:
Three method blanks SBLKWH3462, SBLKWH3532, and SBLKWC3542 were associated with this SDG. SBLKWH3462 was analyzed with (3958874 thru 3958886, 3958874DL, 3958874DL2, and 3958884DL) on 12/15/02. SBLKWH3532 was analyzed with the re-extracted samples (3958874 thru 3958885) on 12/26/02. SBLKWC3542 was analyzed with (RE-3958886) on 12/24/02. All the method blanks results were free of contamination.

4. Surrogate:
The surrogate recoveries were coming from UV detector. The method blanks and the investigated samples had surrogate recoveries within the required quality control limits, except nitrobenzene in 3958877RE, and triphenylene in 3958874, 3958874DL, 3958874DL2, 3958874RE, 3958877RE, 3958884, 3958884DL, and 3958884RE. The re-extracted samples were qualified for not meeting the required holding time. However, qualify the results in 3958874, 3958874DL, 3958874DL2, 3958884, and 3958884DL as (J/UJ).

5. Matrix Spike/Matrix Spike Duplicate Recovery:
The matrix spike was performed on sample 3966074 from different SDG. The MS/MSD recoveries were within the quality control limit, except in naphthalene, acenaphthylene, and benzo (b) fluoranthene. However, no action was taken because the original sample was not submitted with this SDG. The RPD% values were acceptable.

6. Laboratory Control Sample:
The LCS/LCSD that associated with (3958874 thru 3958886) recoveries were outside the acceptance quality control limits, except in naphthalene. However, the RPD% values were acceptable. Therefore, qualify the results in 3958874 thru 3958886 as (J/UJ) except in naphthalene.
The LCS that associated with (RE-3958874 thru 3958885) recoveries was outside the control limits, except in naphthalene, acenaphthylene, and in benzo (g, h, i) perylene. No action was applied because all the re-extracted samples were qualified above.
Also, the LCS that associated with the re-extracted (3958886) recoveries was within the control limits.

7. Retention Time:
All the retention time results were acceptable.

8. Initial and Continuing Calibration:
The initial calibration, and continuing calibration verification were all acceptable.

However, the retention time, initial and continuing calibration results were used in the calculation from two detectors: naphthalene, acenaphthylene, 1-methylnaphthalene, 2-methylnaphthalene, fluorene, phenanthrene, and anthracene were taken from ultraviolet detector, and acenaphthene, fluoranthene, pyrene, benzo (a) anthracene, chrysene, benzo (b) fluoranthene, benzo (k) fluoranthene, benzo (a) pyrene, dibenzo (a, h) anthracene, benzo (g, h, i) perylene, and indeno (1, 2, 3-cd) pyrene were taken from fluorescence detector.

BETX (U.S. EPA Method 8021B)
SDG # MMA35

1.Samples:

Client Sample Description:	Lab Sample Number	Matrix	Date Collected	Date Prepared	Date Analyzed
MA3-TG1-1-111202-01	3958874	Grab water	12/11/02	12/14/02	12/14/02
MA3-TG1-2-111202-02	3958875	Grab water	12/11/02	12/14/02	12/14/02
MA3-TG1-3-111202-03	3958876	Grab water	12/11/02	12/14/02	12/14/02
MA3-MW-28S-111202-04	3958877	Grab water	12/11/02	12/14/02	12/14/02
MA3-MW-28S-111202-04-MS	3958877	Grab water	12/11/02	12/14/02	12/14/02
MA3-MW-6S-111202-05	3958878	Grab water	12/11/02	12/14/02	12/14/02
MA3-MW-33S-111202-06	3958879	Grab water	12/11/02	12/14/02	12/14/02
MA3-MW-32S-111202-07	3958880	Grab water	12/11/02	12/14/02	12/14/02
MA3-MW-27S-111202-08	3958881	Grab water	12/11/02	12/14/02	12/14/02
MA3-MW-35S-111202-09	3958882	Grab water	12/11/02	12/14/02	12/14/02
MA3-MW-35S-111202-09-DUP	3958883	Grab water	12/11/02	12/14/02	12/14/02
MA3-MW-34S-111202-10	3958884	Grab water	12/11/02	12/14/02	12/14/02
MA3-MW-7S-111202-11	3958885	Grab water	12/11/02	12/14/02	12/14/02
MA3-MW-9S-111202-12	3958886	Grab water	12/11/02	12/14/02	12/14/02
TB-03	3958887	Grab water	12/11/02	12/14/02	12/14/02
TB-04	3958888	Grab water	12/11/02	12/14/02	12/14/02

2. Holding Times:
All samples were analyzed within the required holding times.

3. Method Blank:
Two method blanks BLK5108, and BLK5109 were associated with this SDG. BLK5108 was analyzed with (3958875 thru 3958884, 3958886 thru 3958888, and MS) on 12/13/02. BLK5109 was analyzed with (3958874, and 3958885) on 12/14/02. Both method blanks BLK5108, and BLK5109 result were free of contamination.

4. Matrix Spike/Matrix Spike Duplicate :
Sufficient volume was not available to perform MS/MSD. Therefore, the laboratory performed only matrix spike on sample 3958877. The MS recoveries were within the quality control limits.

5. Laboratory control Sample:
The LCS/LCSD that associated with (3958874 thru 3958888) recoveries were within the control limits. Also, the RPD% values were acceptable.

6. Surrogate:
The method blanks and the investigated samples had surrogate recoveries within the required quality control limits.

7. Initial and Continuing Calibration:

All the initial calibration and continuing calibration results were within the quality control limits.

Please feel free to contact me at (847) 971-6800 with any question regarding these validation reports.

Sincerely
Tania Balikji-Shammo

Lancaster Laboratories

ANALYTICAL RESULTS

Prepared for:

Kerr-McGee Corporation
P.O. Box 25861
Oklahoma City OK 73125

405-270-2602

Prepared by:

Lancaster Laboratories
2425 New Holland Pike
Lancaster, PA 17605-2425

SAMPLE GROUP

The sample group for this submittal is 834229. Samples arrived at the laboratory on Thursday, December 12, 2002.

Client Description	Lancaster Labs Number
MA3-TG1-1-111202-01 Grab Water Sample	3958874
MA3-TG1-2-111202-02 Grab Water Sample	3958875
MA3-TG1-3-111202-03 Grab Water Sample	3958876
MA3-MW-28S-111202-04 Grab Water Sample	3958877
MA3-MW-6S-111202-05 Grab Water Sample	3958878
MA3-MW-33S-111202-06 Grab Water Sample	3958879
MA3-MW-32S-111202-07 Grab Water Sample	3958880
MA3-MW-27S-111202-08 Grab Water Sample	3958881
MA3-MW-35S-111202-09 Grab Water Sample	3958882
MA3-MW-35S-111202-09-DUP Grab Water Sample	3958883
MA3-MW-34S-111202-10 Grab Water Sample	3958884
MA3-MW-7S-111202-11 Grab Water Sample	3958885
MA3-MW-9S-111202-12 Grab Water Sample	3958886
TB-03 Grab Water Sample	3958887
TB-04 Grab Water Sample	3958888

METHODOLOGY

The specific methodologies used in obtaining the enclosed analytical results are indicated on the laboratory chronicles.

1 COPY TO	Kerr-McGee Corporation	Attn: Dr. Jeff Ostmeyer
1 COPY TO	Weston Solutions, Inc.	Attn: Mr. Tom Graan
1 COPY TO	Data Package Group	

Lancaster Laboratories

Questions? Contact your Client Services Representative
Carrie A Fleming at (717) 656-2300.

Respectfully Submitted,

Michele A. Jarosick

Michele A. Jarosick
Senior Chemist

0012

MEMBER ACIL
Lancaster Laboratories, Inc.
2425 New Holland Pike
PO Box 12425

Lancaster Laboratories

Lancaster Laboratories Sample No. WW 3958874

Collected:12/11/2002 09:15 by BS

Account Number: 07802

Submitted: 12/12/2002 09:50
Reported: 01/03/2003 at 11:41
Discard: 02/03/2003
MA3-TG1-1-111202-01 Grab Water Sample
Moss American Superfund Site - Milwaukee, WI

Kerr-McGee Corporation
P.O. Box 25861
Oklahoma City OK 73125

12111 SDG#: KMA35-01

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
00217	Kjeldahl Nitrogen	7727-37-9	2.3 J	1.5	mg/l	1
	Due to interferences from the sample matrix, the reporting limit for the total Kjeldahl nitrogen determination was increased.					
00219	Nitrite Nitrogen	14797-65-0	0.019 J	0.015	mg/l	1
00220	Nitrate Nitrogen	14797-55-8	N.D.	0.040	mg/l	1
00221	Ammonia Nitrogen	7664-41-7	1.5	0.46	mg/l	1
	Sufficient sample volume was not available to perform a MS/MSD for this analysis. Therefore, a LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					
00226	Ortho-Phosphate as P	14265-44-2	N.D.	0.0066	mg/l	1
00235	Biochemical Oxygen Demand	n.a.	34.8	0.80	mg/l	1
00273	Total Organic Carbon	n.a.	17.3	0.500	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	0.30	0.12	mg/l	1
01553	Chemical Oxygen Demand	n.a.	148.	8.4	mg/l	5
08213	BTEX (8021)					
00776	Benzene	71-43-2	4.9 J	4.0	ug/l	20
00777	Toluene	108-88-3	N.D.	4.0	ug/l	20
00778	Ethylbenzene	100-41-4	36.	4.0	ug/l	20
00779	Total Xylenes	1330-20-7	57. J	12.	ug/l	20
	Sufficient sample volume was not available to perform a MSD for this analysis. However, a MS was performed. In addition, a LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					
	Due to dilution of the sample made necessary by the high level of non-target compounds, normal reporting limits were not attained.					
00774	PAH's in Water by HPLC					
00775	Naphthalene	91-20-3	8,900. J TBS	240.	ug/l	200
00782	Acenaphthylene	208-96-8	300. (J)	32.	ug/l	20
00783	Acenaphthene	83-32-9	4,400. J	32.	ug/l	20
00784	Fluorene	86-73-7	3,400. J	36.	ug/l	200
00785	Phenanthrene	85-01-8	8,800. J	160.	ug/l	2000
00789	Anthracene	120-12-7	860. J	8.0	ug/l	200
00807	Fluoranthene	206-44-0	4,200. J	80.	ug/l	2000
00811	Pyrene	129-00-0	3,300. J	36.	ug/l	200
00812	Benzo(a)anthracene	56-55-3	740. J	4.0	ug/l	200

1
3

Lancaster Laboratories

Lancaster Laboratories Sample No. WW 3958874

Collected:12/11/2002 09:15 by BS

Account Number: 07802

Submitted: 12/12/2002 09:50
Reported: 01/03/2003 at 11:41
Discard: 02/03/2003
MA3-TG1-1-111202-01 Grab Water Sample
Moss American Superfund Site - Milwaukee, WI

Kerr-McGee Corporation
P.O. Box 25861
Oklahoma City OK 73125

12111 SDG#: KMA35-01

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
00818	Benzo(b)fluoranthene	205-99-2	280.J	8.0	ug/l	200
00823	Benzo(a)pyrene	50-32-8	290.J	4.0	ug/l	200
00895	Dibenz(a,h)anthracene	53-70-3	N.D.UJ	0.80	ug/l	20
00898	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.UJ	2.0	ug/l	20
00907	Benzo(g,h,i)perylene	191-24-2	110.J	2.0	ug/l	20
07409	Chrysene	218-01-9	290.J	2.0	ug/l	20
07410	Benzo(k)fluoranthene	207-08-9	160.J	4.0	ug/l	200

Sufficient sample volume was not available to perform a MS/MSD for this analysis. Therefore, a LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.

TBS 1/24/03

The recoveries for many of the PAHs were outside QC limits in the LCS/LCSD associated with this sample. The sample was re-extracted outside of the method hold time. Comparable sample results were observed between the two extractions. The results reported are from the initial extraction of the sample.

Surrogate recoveries were also outside QC limits in the LCS/LCSD associated with this sample.

Due to the high concentration of non-target compounds, a dilution was necessary to perform the PAH by HPLC analysis. Therefore, the reporting limits for the HPLC PAH compounds were raised.

The surrogate data is outside the QC limits due to unresolvable matrix problems evident in the sample extraction.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00217	Kjeldahl Nitrogen	EPA 351.2	1	12/13/2002 17:59	Venia B McFadden	1
00219	Nitrite Nitrogen	EPA 353.2	1	12/12/2002 12:48	Nicole M Kepley	1
00220	Nitrate Nitrogen	EPA 353.2	1	12/17/2002 12:48	Ramona V Goss	1
00221	Ammonia Nitrogen	EPA 350.2	1	12/13/2002 14:30	Luz M Groff	1
00226	Ortho-Phosphate as P	EPA 365.3	1	12/12/2002 23:00	Daniel S Smith	1
00235	Biochemical Oxygen Demand	EPA 405.1	1	12/12/2002 22:34	Nicole R Bushong	1
00273	Total Organic Carbon	EPA 415.1	1	12/17/2002 11:48	Timothy M Petree	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	12/24/2002 18:21	Venia B McFadden	1
01553	Chemical Oxygen Demand	EPA 410.2	2	12/19/2002 05:25	Susan A Engle	5

0014

Lancaster Laboratories

Lancaster Laboratories Sample No. WW 3958874

Collected:12/11/2002 09:15 by BS

Account Number: 07802

Submitted: 12/12/2002 09:50
Reported: 01/03/2003 at 11:41
Discard: 02/03/2003
MA3-TG1-1-111202-01 Grab Water Sample
Moss American Superfund Site - Milwaukee, WI

Kerr-McGee Corporation
P.O. Box 25861
Oklahoma City OK 73125

12111 SDG#: KMA35-01

08213	BTEX (8021)	SW-846 8021B	1	12/14/2002 12:56	Martha L Seidel	20
00774	PAH's in Water by HPLC	SW-846 8310	1	12/20/2002 15:59	Mark A Clark	20
00774	PAH's in Water by HPLC	SW-846 8310	1	12/23/2002 22:22	Mark A Clark	200
00774	PAH's in Water by HPLC	SW-846 8310	1	12/26/2002 04:08	Mark A Clark	2000
01146	GC VOA Water Prep	SW-846 5030B	1	12/14/2002 12:56	Martha L Seidel	n.a.
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	12/13/2002 08:40	James S Mathiot	1
03337	PAH Water Extraction	SW-846 3510C	1	12/13/2002 09:00	Jennytza L Marcano	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	12/13/2002 11:00	James S Mathiot	1

0015

Analysis Report

Lancaster Laboratories

Lancaster Laboratories Sample No. WW 3958875

Collected:12/11/2002 09:20 by BS

Account Number: 07802

Submitted: 12/12/2002 09:50
Reported: 01/03/2003 at 11:42
Discard: 02/03/2003
MA3-TG1-2-111202-02 Grab Water Sample
Moss American Superfund Site - Milwaukee, WI

Kerr-McGee Corporation
P.O. Box 25861
Oklahoma City OK 73125

12112 SDG#: KMA35-02

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
00217	Kjeldahl Nitrogen	7727-37-9	1.4	0.30	mg/l	1
00219	Nitrite Nitrogen	14797-65-0	N.D.	0.015	mg/l	1
00220	Nitrate Nitrogen	14797-55-8	N.D.	0.040	mg/l	1
00221	Ammonia Nitrogen	7664-41-7	0.75 J	0.46	mg/l	1
	Sufficient sample volume was not available to perform a MS/MSD for this analysis. Therefore, a LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					
00226	Ortho-Phosphate as P	14265-44-2	N.D.	0.0066	mg/l	1
00235	Biochemical Oxygen Demand	n.a.	N.D.	4.4	mg/l	1
00273	Total Organic Carbon	n.a.	12.3	0.500	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	0.45	0.12	mg/l	1
01553	Chemical Oxygen Demand	n.a.	32.2	1.7	mg/l	1
08213	BTEX (8021)					
00776	Benzene	71-43-2	N.D.	0.20	ug/l	1
00777	Toluene	108-88-3	N.D.	0.20	ug/l	1
00778	Ethylbenzene	100-41-4	0.50 J	0.20	ug/l	1
00779	Total Xylenes	1330-20-7	N.D.	0.60	ug/l	1
	Sufficient sample volume was not available to perform a MSD for this analysis. However, a MS was performed. In addition, a LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					
00774	PAH's in Water by HPLC					
00775	Naphthalene	91-20-3	48. J TBS	1.0	ug/l	1
00782	Acenaphthylene	208-96-8	N.D. UJ	2.0	ug/l	1
00783	Acenaphthene	83-32-9	32. J	2.0	ug/l	1
00784	Fluorene	86-73-7	14. J	0.20	ug/l	1
00785	Phenanthrene	85-01-8	11. J	0.080	ug/l	1
00789	Anthracene	120-12-7	1.5 J	0.040	ug/l	1
00807	Fluoranthene	206-44-0	2.2 J	0.040	ug/l	1
00811	Pyrene	129-00-0	1.4 J	0.20	ug/l	1
00812	Benzo(a)anthracene	56-55-3	0.070 J (J)	0.020	ug/l	1
00818	Benzo(b)fluoranthene	205-99-2	N.D. UJ	0.040	ug/l	1
00823	Benzo(a)pyrene	50-32-8	N.D.	0.020	ug/l	1
00895	Dibenz(a,h)anthracene	53-70-3	N.D.	0.040	ug/l	1
00898	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.080	ug/l	1
00907	Benzo(g,h,i)perylene	191-24-2	N.D.	0.10	ug/l	1
07409	Chrysene	218-01-9	N.D.	0.080	ug/l	1

Analysis Report

Lancaster Laboratories

Lancaster Laboratories Sample No. WW 3958875

Collected:12/11/2002 09:20 by BS

Account Number: 07802

Submitted: 12/12/2002 09:50
Reported: 01/03/2003 at 11:42
Discard: 02/03/2003
MA3-TG1-2-111202-02 Grab Water Sample
Moss American Superfund Site - Milwaukee, WI

Kerr-McGee Corporation
P.O. Box 25861
Oklahoma City OK 73125

12112 SDG#: KMA35-02

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
07410	Benzo(k)fluoranthene	207-08-9	N.D. UJ	0.020	ug/l	1

Sufficient sample volume was not available to perform a MS/MSD for this analysis. Therefore, a LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.

TBS 1/24/03

The recoveries for many of the PAHs were outside QC limits in the LCS/LCSD associated with this sample. The sample was re-extracted outside of the method hold time. Comparable sample results were observed between the two extractions. The results reported are from the initial extraction of the sample.

Surrogate recoveries were also outside QC limits in the LCS/LCSD associated with this sample.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00217	Kjeldahl Nitrogen	EPA 351.2	1	12/13/2002 18:00	Venia B McFadden	1
00219	Nitrite Nitrogen	EPA 353.2	1	12/12/2002 12:49	Nicole M Kepley	1
00220	Nitrate Nitrogen	EPA 353.2	1	12/17/2002 12:49	Ramona V Goss	1
00221	Ammonia Nitrogen	EPA 350.2	1	12/17/2002 18:30	Luz M Groff	1
00226	Ortho-Phosphate as P	EPA 365.3	1	12/12/2002 23:00	Daniel S Smith	1
00235	Biochemical Oxygen Demand	EPA 405.1	1	12/12/2002 22:34	Nicole R Bushong	1
00273	Total Organic Carbon	EPA 415.1	1	12/17/2002 12:12	Timothy M Petree	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	12/24/2002 18:21	Venia B McFadden	1
01553	Chemical Oxygen Demand	EPA 410.2	1	12/19/2002 05:25	Susan A Engle	1
08213	BTEX (8021)	SW-846 8021B	1	12/14/2002 01:59	Martha L Seidel	1
00774	PAH's in Water by HPLC	SW-846 8310	1	12/15/2002 19:01	Mark A Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	12/14/2002 01:59	Martha L Seidel	n.a.
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	12/13/2002 08:40	James S Mathiot	1
03337	PAH Water Extraction	SW-846 3510C	1	12/13/2002 09:00	Jennytza L Marcano	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	12/13/2002 11:00	James S Mathiot	1

0517

Lancaster Laboratories

Lancaster Laboratories Sample No. WW 3958876

Collected:12/11/2002 09:25 by BS

Account Number: 07802

Submitted: 12/12/2002 09:50
Reported: 01/03/2003 at 11:42
Discard: 02/03/2003
MA3-TG1-3-111202-03 Grab Water Sample
Moss American Superfund Site - Milwaukee, WI

Kerr-McGee Corporation
P.O. Box 25861
Oklahoma City OK 73125

12113 SDG#: KMA35-03

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
00217	Kjeldahl Nitrogen	7727-37-9	1.1	0.30	mg/l	1
00219	Nitrite Nitrogen	14797-65-0	N.D.	0.015	mg/l	1
00220	Nitrate Nitrogen	14797-55-8	N.D.	0.040	mg/l	1
00221	Ammonia Nitrogen	7664-41-7	0.86 J	0.46	mg/l	1
	Sufficient sample volume was not available to perform a MS/MSD for this analysis. Therefore, a LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					
00226	Ortho-Phosphate as P	14265-44-2	N.D.	0.0066	mg/l	1
00235	Biochemical Oxygen Demand	n.a.	N.D.	4.3	mg/l	1
00273	Total Organic Carbon	n.a.	9.99	0.500	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	0.44	0.12	mg/l	1
01553	Chemical Oxygen Demand	n.a.	28.1	1.7	mg/l	1
08213	BTEX (8021)					
00776	Benzene	71-43-2	N.D.	0.20	ug/l	1
00777	Toluene	108-88-3	N.D.	0.20	ug/l	1
00778	Ethylbenzene	100-41-4	N.D.	0.20	ug/l	1
00779	Total Xylenes	1330-20-7	N.D.	0.60	ug/l	1
	Sufficient sample volume was not available to perform a MSD for this analysis. However, a MS was performed. In addition, a LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					
00774	PAH's in Water by HPLC					
00775	Naphthalene	91-20-3	N.D.	1.0	ug/l	1
00782	Acenaphthylene	208-96-8	N.D. UJ	2.0	ug/l	1
00783	Acenaphthene	83-32-9	N.D.	2.0	ug/l	1
00784	Fluorene	86-73-7	N.D.	0.20	ug/l	1
00785	Phenanthrene	85-01-8	N.D.	0.080	ug/l	1
00789	Anthracene	120-12-7	N.D.	0.040	ug/l	1
00807	Fluoranthene	206-44-0	0.055 (J)	0.040	ug/l	1
00811	Pyrene	129-00-0	N.D. UJ	0.20	ug/l	1
00812	Benzo(a)anthracene	56-55-3	N.D.	0.020	ug/l	1
00818	Benzo(b)fluoranthene	205-99-2	N.D.	0.040	ug/l	1
00823	Benzo(a)pyrene	50-32-8	N.D.	0.020	ug/l	1
00895	Dibenz(a,h)anthracene	53-70-3	N.D.	0.040	ug/l	1
00898	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.080	ug/l	1
00907	Benzo(g,h,i)perylene	191-24-2	N.D.	0.10	ug/l	1
07409	Chrysene	218-01-9	N.D.	0.080	ug/l	1

TBS 1/24/03

Lancaster Laboratories

Lancaster Laboratories Sample No. WW 3958876

Collected:12/11/2002 09:25 by BS

Account Number: 07802

Submitted: 12/12/2002 09:50
Reported: 01/03/2003 at 11:42
Discard: 02/03/2003
MA3-TG1-3-111202-03 Grab Water Sample
Moss American Superfund Site - Milwaukee, WI

Kerr-McGee Corporation
P.O. Box 25861
Oklahoma City OK 73125

12113 SDG#: KMA35-03

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
07410	Benzo(k)fluoranthene	207-08-9	N.D. UJ	0.020	ug/l	1

Sufficient sample volume was not available to perform a MS/MSD for this analysis. Therefore, a LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.

TBS 1/24/03

The recoveries for many of the PAHs were outside QC limits in the LCS/LCSD associated with this sample. The sample was re-extracted outside of the method hold time. Comparable sample results were observed between the two extractions. The results reported are from the initial extraction of the sample.

Surrogate recoveries were also outside QC limits in the LCS/LCSD associated with this sample.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00217	Kjeldahl Nitrogen	EPA 351.2	1	12/13/2002 18:01	Venia B McFadden	1
00219	Nitrite Nitrogen	EPA 353.2	1	12/12/2002 12:51	Nicole M Kepley	1
00220	Nitrate Nitrogen	EPA 353.2	1	12/17/2002 12:51	Ramona V Goss	1
00221	Ammonia Nitrogen	EPA 350.2	1	12/17/2002 18:30	Luz M Groff	1
00226	Ortho-Phosphate as P	EPA 365.3	1	12/12/2002 23:00	Daniel S Smith	1
00235	Biochemical Oxygen Demand	EPA 405.1	1	12/12/2002 22:34	Nicole R Bushong	1
00273	Total Organic Carbon	EPA 415.1	1	12/17/2002 12:20	Timothy M Petree	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	12/24/2002 18:22	Venia B McFadden	1
01553	Chemical Oxygen Demand	EPA 410.2	1	12/19/2002 05:25	Susan A Engle	1
08213	BTEX (8021)	SW-846 8021B	1	12/14/2002 02:32	Martha L Seidel	1
00774	PAH's in Water by HPLC	SW-846 8310	1	12/15/2002 19:40	Mark A Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	12/14/2002 02:32	Martha L Seidel	n.a.
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	12/13/2002 08:40	James S Mathiot	1
03337	PAH Water Extraction	SW-846 3510C	1	12/13/2002 09:00	Jennytza L Marcano	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	12/13/2002 11:00	James S Mathiot	1

0019

Lancaster Laboratories

Lancaster Laboratories Sample No. WW 3958877

Collected:12/11/2002 10:50 by BS

Account Number: 07802

Submitted: 12/12/2002 09:50
Reported: 01/03/2003 at 11:42
Discard: 02/03/2003
MA3-MW-28S-111202-04 Grab Water Sample
Moss American Site - WI

Kerr-McGee Corporation
P.O. Box 25861
Oklahoma City OK 73125

12114 SDG#: KMA35-04

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
08213	BTEX (8021)					
00776	Benzene	71-43-2	N.D.	0.20	ug/l	1
00777	Toluene	108-88-3	N.D.	0.20	ug/l	1
00778	Ethylbenzene	100-41-4	N.D.	0.20	ug/l	1
00779	Total Xylenes	1330-20-7	N.D.	0.60	ug/l	1
	Sufficient sample volume was not available to perform a MSD for this analysis. However, a MS was performed. In addition, a LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					
00774	PAH's in Water by HPLC					
00775	Naphthalene	91-20-3	N.D. UJ TBS	1.0	ug/l	1
00782	Acenaphthylene	208-96-8	N.D. UJ	2.0	ug/l	1
00783	Acenaphthene	83-32-9	N.D.	2.0	ug/l	1
00784	Fluorene	86-73-7	N.D.	0.20	ug/l	1
00785	Phenanthrene	85-01-8	N.D.	0.080	ug/l	1
00789	Anthracene	120-12-7	N.D.	0.040	ug/l	1
00807	Fluoranthene	206-44-0	N.D.	0.040	ug/l	1
00811	Pyrene	129-00-0	N.D.	0.20	ug/l	1
00812	Benzo(a)anthracene	56-55-3	N.D.	0.020	ug/l	1
00818	Benzo(b)fluoranthene	205-99-2	N.D.	0.040	ug/l	1
00823	Benzo(a)pyrene	50-32-8	N.D.	0.020	ug/l	1
00895	Dibenz(a,h)anthracene	53-70-3	N.D.	0.040	ug/l	1
00898	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.080	ug/l	1
00907	Benzo(g,h,i)perylene	191-24-2	N.D.	0.10	ug/l	1
07409	Chrysene	218-01-9	N.D.	0.080	ug/l	1
07410	Benzo(k)fluoranthene	207-08-9	N.D.	0.020	ug/l	1

Sufficient sample volume was not available to perform a MS/MSD for this analysis. Therefore, a LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.

TBS 1/24/03

The recoveries for many of the PAHs were outside QC limits in the LCS/LCSD associated with this sample. The sample was re-extracted outside of the method hold time. Comparable sample results were observed between the two extractions. The results reported are from the initial extraction of the sample.

Surrogate recoveries were also outside QC limits in the LCS/LCSD

Lancaster Laboratories

Lancaster Laboratories Sample No. WW 3958877

Collected:12/11/2002 10:50 by BS

Account Number: 07802

Submitted: 12/12/2002 09:50
Reported: 01/03/2003 at 11:42
Discard: 02/03/2003
MA3-MW-28S-111202-04 Grab Water Sample
Moss American Site - WI

Kerr-McGee Corporation
P.O. Box 25861
Oklahoma City OK 73125

12114 SDG#: KMA35-04

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor

associated with this sample.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
08213	BTEX (8021)	SW-846 8021B	1	12/14/2002 03:05	Martha L Seidel	1
00774	PAH's in Water by HPLC	SW-846 8310	1	12/15/2002 20:18	Mark A Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	12/14/2002 03:05	Martha L Seidel	n.a.
03337	PAH Water Extraction	SW-846 3510C	1	12/13/2002 09:00	Jennytza L Marcano	1

0021

Analysis Report

Lancaster Laboratories

Lancaster Laboratories Sample No. WW 3958878

Collected:12/11/2002 11:00 by BS

Account Number: 07802

Submitted: 12/12/2002 09:50
Reported: 01/03/2003 at 11:42
Discard: 02/03/2003
MA3-MW-6S-111202-05 Grab Water Sample
Moss American Site - WI

Kerr-McGee Corporation
P.O. Box 25861
Oklahoma City OK 73125

12115 SDG#: KMA35-05

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
08213	BTEX (8021)					
00776	Benzene	71-43-2	N.D.	0.20	ug/l	1
00777	Toluene	108-88-3	N.D.	0.20	ug/l	1
00778	Ethylbenzene	100-41-4	N.D.	0.20	ug/l	1
00779	Total Xylenes	1330-20-7	N.D.	0.60	ug/l	1
	Sufficient sample volume was not available to perform a MSD for this analysis. However, a MS was performed. In addition, a LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					
00774	PAH's in Water by HPLC					
00775	Naphthalene	91-20-3	N.D.	1.0	ug/l	1
00782	Acenaphthylene	208-96-8	N.D. UJ	2.0	ug/l	1
00783	Acenaphthene	83-32-9	N.D.	2.0	ug/l	1
00784	Fluorene	86-73-7	N.D.	0.20	ug/l	1
00785	Phenanthrene	85-01-8	N.D.	0.080	ug/l	1
00789	Anthracene	120-12-7	N.D.	0.040	ug/l	1
00807	Fluoranthene	206-44-0	N.D.	0.040	ug/l	1
00811	Pyrene	129-00-0	N.D.	0.20	ug/l	1
00812	Benzo(a)anthracene	56-55-3	N.D.	0.020	ug/l	1
00818	Benzo(b)fluoranthene	205-99-2	N.D.	0.040	ug/l	1
00823	Benzo(a)pyrene	50-32-8	N.D.	0.020	ug/l	1
00895	Dibenz(a,h)anthracene	53-70-3	N.D.	0.040	ug/l	1
00898	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.080	ug/l	1
00907	Benzo(g,h,i)perylene	191-24-2	N.D.	0.10	ug/l	1
07409	Chrysene	218-01-9	N.D.	0.080	ug/l	1
07410	Benzo(k)fluoranthene	207-08-9	N.D.	0.020	ug/l	1

Sufficient sample volume was not available to perform a MS/MSD for this analysis. Therefore, a LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.

TBS 1/24/03

The recoveries for many of the PAHs were outside QC limits in the LCS/LCSD associated with this sample. The sample was re-extracted outside of the method hold time. Comparable sample results were observed between the two extractions. The results reported are from the initial extraction of the sample.

Surrogate recoveries were also outside QC limits in the LCS/LCSD

22250

Lancaster Laboratories

Lancaster Laboratories Sample No. WW 3958878

Collected:12/11/2002 11:00 by BS

Account Number: 07802

Submitted: 12/12/2002 09:50
Reported: 01/03/2003 at 11:42
Discard: 02/03/2003
MA3-MW-6S-111202-05 Grab Water Sample
Moss American Site - WI

Kerr-McGee Corporation
P.O. Box 25861
Oklahoma City OK 73125

12115 SDG#: KMA35-05

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor

associated with this sample.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
08213	BTEX (8021)	SW-846 8021B	1	12/14/2002 03:38	Martha L Seidel	1
00774	PAH's in Water by HPLC	SW-846 8310	1	12/15/2002 20:57	Mark A Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	12/14/2002 03:38	Martha L Seidel	n.a.
03337	PAH Water Extraction	SW-846 3510C	1	12/13/2002 09:00	Jennytza L Marcano	1

Lancaster Laboratories

Lancaster Laboratories Sample No. WW 3958879

Collected:12/11/2002 11:55 by BS

Account Number: 07802

Submitted: 12/12/2002 09:50
Reported: 01/03/2003 at 11:42
Discard: 02/03/2003
MA3-MW-33S-111202-06 Grab Water Sample
Moss American Site - WI

Kerr-McGee Corporation
P.O. Box 25861
Oklahoma City OK 73125

12116 SDG#: KMA35-06

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
08213	BTEX (8021)					
00776	Benzene	71-43-2	N.D.	2.0	ug/l	10
00777	Toluene	108-88-3	5.1 J	2.0	ug/l	10
00778	Ethylbenzene	100-41-4	18.	2.0	ug/l	10
00779	Total Xylenes	1330-20-7	62.	6.0	ug/l	10

Sufficient sample volume was not available to perform a MSD for this analysis. However, a MS was performed. In addition, a LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.

Due to dilution of the sample made necessary by the high level of non-target compounds, normal reporting limits were not attained.

00774	PAH's in Water by HPLC					
00775	Naphthalene	91-20-3	2,100.	12.	ug/l	10
00782	Acenaphthylene	208-96-8	46. J	2.0	ug/l	1
00783	Acenaphthene	83-32-9	170. J	2.0	ug/l	1
00784	Fluorene	86-73-7	59. J	2.0	ug/l	10
00785	Phenanthrene	85-01-8	7.4 J	0.080	ug/l	1
00789	Anthracene	120-12-7	0.18 (J)	0.040	ug/l	1
00807	Fluoranthene	206-44-0	N.D. UJ	0.040	ug/l	1
00811	Pyrene	129-00-0	N.D.	0.20	ug/l	1
00812	Benzo(a)anthracene	56-55-3	N.D.	0.020	ug/l	1
00818	Benzo(b)fluoranthene	205-99-2	N.D.	0.040	ug/l	1
00823	Benzo(a)pyrene	50-32-8	N.D.	0.020	ug/l	1
00895	Dibenz(a,h)anthracene	53-70-3	N.D.	0.040	ug/l	1
00898	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.080	ug/l	1
00907	Benzo(g,h,i)perylene	191-24-2	N.D.	0.10	ug/l	1
07409	Chrysene	218-01-9	N.D.	0.080	ug/l	1
07410	Benzo(k)fluoranthene	207-08-9	N.D.	0.020	ug/l	1

Sufficient sample volume was not available to perform a MS/MSD for this analysis. Therefore, a LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.

TBS 1/24/03

The recoveries for many of the PAHs were outside QC limits in the LCS/LCSD associated with this sample. The sample was re-extracted outside of the method hold time. Comparable sample results were not observed between the

0524

Lancaster Laboratories

Lancaster Laboratories Sample No. WW 3958879

Collected:12/11/2002 11:55 by BS

Account Number: 07802

Submitted: 12/12/2002 09:50
Reported: 01/03/2003 at 11:42
Discard: 02/03/2003
MA3-MW-33S-111202-06 Grab Water Sample
Moss American Site - WI

Kerr-McGee Corporation
P.O. Box 25861
Oklahoma City OK 73125

12116 SDG#: KMA35-06

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor

two extractions. The results reported are from the initial extraction of the sample.

Surrogate recoveries were also outside QC limits in the LCS/LCSD associated with this sample.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Analysis Trial#	Analysis Date and Time	Analyst	Dilution Factor
08213	BTEX (8021)	SW-846 8021B	1	12/14/2002 10:45	Martha L Seidel	10
00774	PAH's in Water by HPLC	SW-846 8310	1	12/15/2002 21:36	Mark A Clark	1
00774	PAH's in Water by HPLC	SW-846 8310	1	12/23/2002 20:57	Mark A Clark	10
01146	GC VOA Water Prep	SW-846 5030B	1	12/14/2002 10:45	Martha L Seidel	n.a.
03337	PAH Water Extraction	SW-846 3510C	1	12/13/2002 09:00	Jennytza L Marcano	1

Lancaster Laboratories

Lancaster Laboratories Sample No. WW 3958880

Collected:12/11/2002 12:00 by BS

Account Number: 07802

Submitted: 12/12/2002 09:50
Reported: 01/03/2003 at 11:42
Discard: 02/03/2003
MA3-MW-32S-111202-07 Grab Water Sample
Moss American Site - WI

Kerr-McGee Corporation
P.O. Box 25861
Oklahoma City OK 73125

12117 SDG#: KMA35-07

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
08213	BTEX (8021)					
00776	Benzene	71-43-2	N.D.	0.20	ug/l	1
00777	Toluene	108-88-3	N.D.	0.20	ug/l	1
00778	Ethylbenzene	100-41-4	N.D.	0.20	ug/l	1
00779	Total Xylenes	1330-20-7	N.D.	0.60	ug/l	1
	Sufficient sample volume was not available to perform a MSD for this analysis. However, a MS was performed. In addition, a LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					
00774	PAH's in Water by HPLC					
00775	Naphthalene	91-20-3	N.D.	1.0	ug/l	1
00782	Acenaphthylene	208-96-8	N.D. UJ	2.0	ug/l	1
00783	Acenaphthene	83-32-9	N.D.	2.0	ug/l	1
00784	Fluorene	86-73-7	N.D.	0.20	ug/l	1
00785	Phenanthrene	85-01-8	N.D.	0.080	ug/l	1
00789	Anthracene	120-12-7	N.D.	0.040	ug/l	1
00807	Fluoranthene	206-44-0	N.D.	0.040	ug/l	1
00811	Pyrene	129-00-0	N.D.	0.20	ug/l	1
00812	Benzo(a)anthracene	56-55-3	N.D.	0.020	ug/l	1
00818	Benzo(b)fluoranthene	205-99-2	N.D.	0.040	ug/l	1
00823	Benzo(a)pyrene	50-32-8	N.D.	0.020	ug/l	1
00895	Dibenz(a,h)anthracene	53-70-3	N.D.	0.040	ug/l	1
00898	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.080	ug/l	1
00907	Benzo(g,h,i)perylene	191-24-2	N.D.	0.10	ug/l	1
07409	Chrysene	218-01-9	N.D.	0.080	ug/l	1
07410	Benzo(k)fluoranthene	207-08-9	N.D.	0.020	ug/l	1

Sufficient sample volume was not available to perform a MS/MSD for this analysis. Therefore, a LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.

TBS 1/24/03

The recoveries for many of the PAHs were outside QC limits in the LCS/LCSD associated with this sample. The sample was re-extracted outside of the method hold time. Comparable sample results were observed between the two extractions. The results reported are from the initial extraction of the sample.

Surrogate recoveries were also outside QC limits in the LCS/LCSD

0526

Lancaster Laboratories

Lancaster Laboratories Sample No. WW 3958880

Collected:12/11/2002 12:00 by BS

Account Number: 07802

Submitted: 12/12/2002 09:50
Reported: 01/03/2003 at 11:42
Discard: 02/03/2003
MA3-MW-32S-111202-07 Grab Water Sample
Moss American Site - WI

Kerr-McGee Corporation
P.O. Box 25861
Oklahoma City OK 73125

12117 SDG#: KMA35-07

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor

associated with this sample.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
08213	BTEX (8021)	SW-846 8021B	1	12/14/2002 07:27	Martha L Seidel	1
00774	PAH's in Water by HPLC	SW-846 8310	1	12/20/2002 10:51	Mark A Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	12/14/2002 07:27	Martha L Seidel	n.a.
03337	PAH Water Extraction	SW-846 3510C	1	12/13/2002 09:00	Jennytza L Marcano	1

0027

Analysis Report

Lancaster Laboratories

Lancaster Laboratories Sample No. WW 3958881

Collected:12/11/2002 12:05 by BS

Account Number: 07802

Submitted: 12/12/2002 09:50
Reported: 01/03/2003 at 11:42
Discard: 02/03/2003
MA3-MW-27S-111202-08 Grab Water Sample
Moss American Site - WI

Kerr-McGee Corporation
P.O. Box 25861
Oklahoma City OK 73125

12118 SDG#: KMA35-08

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
08213	BTEX (8021)					
00776	Benzene	71-43-2	N.D.	0.20	ug/l	1
00777	Toluene	108-88-3	N.D.	0.20	ug/l	1
00778	Ethylbenzene	100-41-4	N.D.	0.20	ug/l	1
00779	Total Xylenes	1330-20-7	N.D.	0.60	ug/l	1
	Sufficient sample volume was not available to perform a MSD for this analysis. However, a MS was performed. In addition, a LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					
00774	PAH's in Water by HPLC					
00775	Naphthalene	91-20-3	N.D.	1.0	ug/l	1
00782	Acenaphthylene	208-96-8	N.D. UJ	2.0	ug/l	1
00783	Acenaphthene	83-32-9	N.D.	2.0	ug/l	1
00784	Fluorene	86-73-7	N.D.	0.20	ug/l	1
00785	Phenanthrene	85-01-8	N.D.	0.080	ug/l	1
00789	Anthracene	120-12-7	N.D.	0.040	ug/l	1
00807	Fluoranthene	206-44-0	N.D.	0.040	ug/l	1
00811	Pyrene	129-00-0	N.D.	0.20	ug/l	1
00812	Benzo(a)anthracene	56-55-3	N.D.	0.020	ug/l	1
00818	Benzo(b)fluoranthene	205-99-2	N.D.	0.040	ug/l	1
00823	Benzo(a)pyrene	50-32-8	N.D.	0.020	ug/l	1
00895	Dibenz(a,h)anthracene	53-70-3	N.D.	0.040	ug/l	1
00898	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.080	ug/l	1
00907	Benzo(g,h,i)perylene	191-24-2	N.D.	0.10	ug/l	1
07409	Chrysene	218-01-9	N.D.	0.080	ug/l	1
07410	Benzo(k)fluoranthene	207-08-9	N.D.	0.020	ug/l	1

Sufficient sample volume was not available to perform a MS/MSD for this analysis. Therefore, a LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.

TBS 1/24/03

The recoveries for many of the PAHs were outside QC limits in the LCS/LCSD associated with this sample. The sample was re-extracted outside of the method hold time. Comparable sample results were observed between the two extractions. The results reported are from the initial extraction of the sample.

Surrogate recoveries were also outside QC limits in the LCS/LCSD

00208

Lancaster Laboratories

Lancaster Laboratories Sample No. WW 3958881

Collected:12/11/2002 12:05 by BS

Account Number: 07802

Submitted: 12/12/2002 09:50
Reported: 01/03/2003 at 11:42
Discard: 02/03/2003
MA3-MW-27S-111202-08 Grab Water Sample
Moss American Site - WI

Kerr-McGee Corporation
P.O. Box 25861
Oklahoma City OK 73125

12118 SDG#: KMA35-08

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor

associated with this sample.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
08213	BTEX (8021)	SW-846 8021B	1	12/14/2002 08:00	Martha L Seidel	1
00774	PAH's in Water by HPLC	SW-846 8310	1	12/20/2002 11:30	Mark A Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	12/14/2002 08:00	Martha L Seidel	n.a.
03337	PAH Water Extraction	SW-846 3510C	1	12/13/2002 09:00	Jennytza L Marcano	1

0029

Lancaster Laboratories

Lancaster Laboratories Sample No. WW 3958882

Collected:12/11/2002 14:55 by BS

Account Number: 07802

Submitted: 12/12/2002 09:50
Reported: 01/03/2003 at 11:42
Discard: 02/03/2003
MA3-MW-35S-111202-09 Grab Water Sample
Moss American Site - WI

Kerr-McGee Corporation
P.O. Box 25861
Oklahoma City OK 73125

12119 SDG#: KMA35-09

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
08213	BTEX (8021)					
00776	Benzene	71-43-2	N.D.	0.20	ug/l	1
00777	Toluene	108-88-3	N.D.	0.20	ug/l	1
00778	Ethylbenzene	100-41-4	N.D.	0.20	ug/l	1
00779	Total Xylenes	1330-20-7	N.D.	0.60	ug/l	1
	Sufficient sample volume was not available to perform a MSD for this analysis. However, a MS was performed. In addition, a LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					
00774	PAH's in Water by HPLC					
00775	Naphthalene	91-20-3	N.D.	1.0	ug/l	1
00782	Acenaphthylene	208-96-8	N.D. VJ	2.0	ug/l	1
00783	Acenaphthene	83-32-9	N.D.	2.0	ug/l	1
00784	Fluorene	86-73-7	N.D.	0.20	ug/l	1
00785	Phenanthrene	85-01-8	0.090 J	0.080	ug/l	1
00789	Anthracene	120-12-7	0.12 J	0.040	ug/l	1
00807	Fluoranthene	206-44-0	0.59 J	0.040	ug/l	1
00811	Pyrene	129-00-0	0.35 J	0.20	ug/l	1
00812	Benzo(a)anthracene	56-55-3	0.027 J	0.020	ug/l	1
00818	Benzo(b)fluoranthene	205-99-2	N.D. VJ	0.040	ug/l	1
00823	Benzo(a)pyrene	50-32-8	N.D.	0.020	ug/l	1
00895	Dibenz(a,h)anthracene	53-70-3	N.D.	0.040	ug/l	1
00898	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.080	ug/l	1
00907	Benzo(g,h,i)perylene	191-24-2	N.D.	0.10	ug/l	1
07409	Chrysene	218-01-9	N.D.	0.080	ug/l	1
07410	Benzo(k)fluoranthene	207-08-9	N.D.	0.020	ug/l	1

Sufficient sample volume was not available to perform a MS/MSD for this analysis. Therefore, a LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.

TBS 1/24/03

The recoveries for many of the PAHs were outside QC limits in the LCS/LCSD associated with this sample. The sample was re-extracted outside of the method hold time. Comparable sample results were observed between the two extractions. The results reported are from the initial extraction of the sample.

Surrogate recoveries were also outside QC limits in the LCS/LCSD

Lancaster Laboratories

Lancaster Laboratories Sample No. WW 3958882

Collected:12/11/2002 14:55 by BS

Account Number: 07802

Submitted: 12/12/2002 09:50
Reported: 01/03/2003 at 11:42
Discard: 02/03/2003
MA3-MW-35S-111202-09 Grab Water Sample
Moss American Site - WI

Kerr-McGee Corporation
P.O. Box 25861
Oklahoma City OK 73125

12119 SDG#: KMA35-09

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
	associated with this sample.					

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
08213	BTEX (8021)	SW-846 8021B	1	12/14/2002 08:33	Martha L Seidel	1
00774	PAH's in Water by HPLC	SW-846 8310	1	12/20/2002 12:08	Mark A Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	12/14/2002 08:33	Martha L Seidel	n.a.
03337	PAH Water Extraction	SW-846 3510C	1	12/13/2002 09:00	Jennytza L Marcano	1

0031

Lancaster Laboratories

Lancaster Laboratories Sample No. WW 3958883

Collected:12/11/2002 14:55 by BS

Account Number: 07802

Submitted: 12/12/2002 09:50
Reported: 01/03/2003 at 11:42
Discard: 02/03/2003
MA3-MW-35S-111202-09-DUP Grab Water Sample
Moss American Site - WI

Kerr-McGee Corporation
P.O. Box 25861
Oklahoma City OK 73125

12-9D SDG#: KMA35-10FD

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
08213	BTEX (8021)					
00776	Benzene	71-43-2	N.D.	0.20	ug/l	1
00777	Toluene	108-88-3	N.D.	0.20	ug/l	1
00778	Ethylbenzene	100-41-4	N.D.	0.20	ug/l	1
00779	Total Xylenes	1330-20-7	N.D.	0.60	ug/l	1

Sufficient sample volume was not available to perform a MSD for this analysis. However, a MS was performed. In addition, a LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
00774	PAH's in Water by HPLC					
00775	Naphthalene	91-20-3	N.D.	1.0	ug/l	1
00782	Acenaphthylene	208-96-8	N.D. UJ	2.0	ug/l	1
00783	Acenaphthene	83-32-9	N.D.	2.0	ug/l	1
00784	Fluorene	86-73-7	N.D.	0.20	ug/l	1
00785	Phenanthrene	85-01-8	0.11 J	0.080	ug/l	1
00789	Anthracene	120-12-7	0.14 J	0.040	ug/l	1
00807	Fluoranthene	206-44-0	0.70 J	0.040	ug/l	1
00811	Pyrene	129-00-0	0.42 J	0.20	ug/l	1
00812	Benzo(a)anthracene	56-55-3	0.031 J	0.020	ug/l	1
00818	Benzo(b)fluoranthene	205-99-2	N.D. UJ	0.040	ug/l	1
00823	Benzo(a)pyrene	50-32-8	N.D.	0.020	ug/l	1
00895	Dibenz(a,h)anthracene	53-70-3	N.D.	0.040	ug/l	1
00898	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.080	ug/l	1
00907	Benzo(g,h,i)perylene	191-24-2	N.D.	0.10	ug/l	1
07409	Chrysene	218-01-9	N.D.	0.080	ug/l	1
07410	Benzo(k)fluoranthene	207-08-9	N.D.	0.020	ug/l	1

Sufficient sample volume was not available to perform a MS/MSD for this analysis. Therefore, a LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.

TBS 1/24/03

The recoveries for many of the PAHs were outside QC limits in the LCS/LCSD associated with this sample. The sample was re-extracted outside of the method hold time. Comparable sample results were observed between the two extractions. The results reported are from the initial extraction of the sample.

Surrogate recoveries were also outside QC limits in the LCS/LCSD

8932

Lancaster Laboratories

Lancaster Laboratories Sample No. WW 3958883

Collected:12/11/2002 14:55 by BS

Account Number: 07802

Submitted: 12/12/2002 09:50
Reported: 01/03/2003 at 11:42
Discard: 02/03/2003
MA3-MW-35S-111202-09-DUP Grab Water Sample
Moss American Site - WI

Kerr-McGee Corporation
P.O. Box 25861
Oklahoma City OK 73125

12-9D SDG#: KMA35-10FD

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor

associated with this sample.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Analysis Trial#	Analysis Date and Time	Analyst	Dilution Factor
08213	BTEX (8021)	SW-846 8021B	1	12/14/2002 09:06	Martha L Seidel	1
00774	PAH's in Water by HPLC	SW-846 8310	1	12/20/2002 12:47	Mark A Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	12/14/2002 09:06	Martha L Seidel	n.a.
03337	PAH Water Extraction	SW-846 3510C	1	12/13/2002 09:00	Jennytza L Marcano	1

Lancaster Laboratories

Lancaster Laboratories Sample No. WW 3958884

Collected:12/11/2002 15:00 by BS

Account Number: 07802

Submitted: 12/12/2002 09:50
Reported: 01/03/2003 at 11:43
Discard: 02/03/2003
MA3-MW-34S-111202-10 Grab Water Sample
Moss American Site - WI

Kerr-McGee Corporation
P.O. Box 25861
Oklahoma City OK 73125

1234S SDG#: KMA35-11

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
08213	BTEX (8021)					
00776	Benzene	71-43-2	5.6 J	5.0	ug/l	25
00777	Toluene	108-88-3	N.D.	5.0	ug/l	25
00778	Ethylbenzene	100-41-4	22. J	5.0	ug/l	25
00779	Total Xylenes	1330-20-7	54. J	15.	ug/l	25

Sufficient sample volume was not available to perform a MSD for this analysis. However, a MS was performed. In addition, a LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.

Due to dilution of the sample made necessary by the high level of non-target compounds, normal reporting limits were not attained.

00774	PAH's in Water by HPLC					
00775	Naphthalene	91-20-3	5,300.	61.	ug/l	50
00782	Acenaphthylene	208-96-8	69. (J)	8.0	ug/l	5
00783	Acenaphthene	83-32-9	310. J	8.0	ug/l	5
00784	Fluorene	86-73-7	170. J	0.90	ug/l	5
00785	Phenanthrene	85-01-8	290. J	4.0	ug/l	50
00789	Anthracene	120-12-7	28. J	0.20	ug/l	5
00807	Fluoranthene	206-44-0	98. J	2.0	ug/l	50
00811	Pyrene	129-00-0	77. J	0.90	ug/l	5
00812	Benzo(a)anthracene	56-55-3	15. J	0.10	ug/l	5
00818	Benzo(b)fluoranthene	205-99-2	5.3 J	0.20	ug/l	5
00823	Benzo(a)pyrene	50-32-8	5.6 J	0.10	ug/l	5
00895	Dibenz(a,h)anthracene	53-70-3	0.92 (J)	0.20	ug/l	5
00898	Indeno(1,2,3-cd)pyrene	193-39-5	2.1 J	0.40	ug/l	5
00907	Benzo(g,h,i)perylene	191-24-2	2.3 (J)	0.50	ug/l	5
07409	Chrysene	218-01-9	12. J	0.40	ug/l	5
07410	Benzo(k)fluoranthene	207-08-9	3.0 J	0.10	ug/l	5

Sufficient sample volume was not available to perform a MS/MSD for this analysis. Therefore, a LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.

TBS 1/24/03

The recoveries for many of the PAHs were outside QC limits in the LCS/LCSD associated with this sample. The sample was re-extracted outside of the method hold time. Comparable sample results were observed between the

4 3 0 9

Lancaster Laboratories

Lancaster Laboratories Sample No. WW 3958884

Collected:12/11/2002 15:00 by BS

Account Number: 07802

Submitted: 12/12/2002 09:50
Reported: 01/03/2003 at 11:43
Discard: 02/03/2003
MA3-MW-34S-111202-10 Grab Water Sample
Moss American Site - WI

Kerr-McGee Corporation
P.O. Box 25861
Oklahoma City OK 73125

1234S SDG#: KMA35-11

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor

two extractions. The results reported are from the initial extraction of the sample.

Surrogate recoveries were also outside QC limits in the LCS/LCSD associated with this sample.

Due to the high concentration of non-target compounds, a dilution was necessary to perform the PAH by HPLC analysis. Therefore, the reporting limits for the HPLC PAH compounds were raised.

The surrogate data is outside the QC limits due to unresolvable matrix problems evident in the sample extraction.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
08213	BTEX (8021)	SW-846 8021B	1	12/14/2002 11:17	Martha L Seidel	25
00774	PAH's in Water by HPLC	SW-846 8310	1	12/20/2002 16:38	Mark A Clark	5
00774	PAH's in Water by HPLC	SW-846 8310	1	12/23/2002 23:04	Mark A Clark	50
01146	GC VOA Water Prep	SW-846 5030B	1	12/14/2002 11:17	Martha L Seidel	n.a.
03337	PAH Water Extraction	SW-846 3510C	1	12/13/2002 09:00	Jennytza L Marcano	1

Lancaster Laboratories

Lancaster Laboratories Sample No. WW 3958885

Collected:12/11/2002 15:05 by BS

Account Number: 07802

Submitted: 12/12/2002 09:50
Reported: 01/03/2003 at 11:43
Discard: 02/03/2003
MA3-MW-7S-111202-11 Grab Water Sample
Moss American Site - WI

Kerr-McGee Corporation
P.O. Box 25861
Oklahoma City OK 73125

12-7S SDG#: KMA35-12

CAT No.	Analysis Name	CAS Number	As Received Result		As Received Method Detection Limit	Units	Dilution Factor
08213	BTEX (8021)						
00776	Benzene	71-43-2	N.D.		4.0	ug/l	20
00777	Toluene	108-88-3	N.D.		4.0	ug/l	20
00778	Ethylbenzene	100-41-4	13.	J	4.0	ug/l	20
00779	Total Xylenes	1330-20-7	31.	J	12.	ug/l	20

Sufficient sample volume was not available to perform a MSD for this analysis. However, a MS was performed. In addition, a LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.

Due to dilution of the sample made necessary by the high level of non-target compounds, normal reporting limits were not attained.

00774	PAH's in Water by HPLC						
00775	Naphthalene	91-20-3	2,800.		24.	ug/l	20
00782	Acenaphthylene	208-96-8	42.	J	2.0	ug/l	1
00783	Acenaphthene	83-32-9	66.	J	2.0	ug/l	1
00784	Fluorene	86-73-7	11.	J	0.20	ug/l	1
00785	Phenanthrene	85-01-8	0.30	J	0.080	ug/l	1
00789	Anthracene	120-12-7	N.D.	UJ	0.040	ug/l	1
00807	Fluoranthene	206-44-0	0.054	J	0.040	ug/l	1
00811	Pyrene	129-00-0	N.D.	UJ	0.20	ug/l	1
00812	Benzo(a)anthracene	56-55-3	N.D.		0.020	ug/l	1
00818	Benzo(b)fluoranthene	205-99-2	N.D.		0.040	ug/l	1
00823	Benzo(a)pyrene	50-32-8	N.D.		0.020	ug/l	1
00895	Dibenz(a,h)anthracene	53-70-3	N.D.		0.040	ug/l	1
00898	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.		0.080	ug/l	1
00907	Benzo(g,h,i)perylene	191-24-2	N.D.		0.10	ug/l	1
07409	Chrysene	218-01-9	N.D.		0.080	ug/l	1
07410	Benzo(k)fluoranthene	207-08-9	N.D.		0.020	ug/l	1

Sufficient sample volume was not available to perform a MS/MSD for this analysis. Therefore, a LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.

TBS 1/24/03

The recoveries for many of the PAHs were outside QC limits in the LCS/LCSD associated with this sample. The sample was re-extracted outside of the method hold time. Comparable sample results were observed between the

Lancaster Laboratories

Lancaster Laboratories Sample No. WW 3958885

Collected:12/11/2002 15:05 by BS

Account Number: 07802

Submitted: 12/12/2002 09:50
Reported: 01/03/2003 at 11:43
Discard: 02/03/2003
MA3-MW-7S-111202-11 Grab Water Sample
Moss American Site - WI

Kerr-McGee Corporation
P.O. Box 25861
Oklahoma City OK 73125

12-7S SDG#: KMA35-12

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor

two extractions. The results reported are from the initial extraction of the sample.

Surrogate recoveries were also outside QC limits in the LCS/LCSD associated with this sample.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
08213	BTEX (8021)	SW-846 8021B	1	12/14/2002 13:29	Martha L Seidel	20
00774	PAH's in Water by HPLC	SW-846 8310	1	12/20/2002 13:25	Mark A Clark	1
00774	PAH's in Water by HPLC	SW-846 8310	1	12/23/2002 21:40	Mark A Clark	20
01146	GC VOA Water Prep	SW-846 5030B	1	12/14/2002 13:29	Martha L Seidel	n.a.
03337	PAH Water Extraction	SW-846 3510C	1	12/13/2002 09:00	Jennytza L Marcano	1

Lancaster Laboratories

Lancaster Laboratories Sample No. WW 3958886

Collected:12/11/2002 16:35 by BS

Account Number: 07802

Submitted: 12/12/2002 09:50
Reported: 01/03/2003 at 11:43
Discard: 02/03/2003
MA3-MW-9S-111202-12 Grab Water Sample
Moss American Site - WI

Kerr-McGee Corporation
P.O. Box 25861
Oklahoma City OK 73125

12-9S SDG#: KMA35-13

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
08213	BTEX (8021)					
00776	Benzene	71-43-2	N.D.	0.20	ug/l	1
00777	Toluene	108-88-3	N.D.	0.20	ug/l	1
00778	Ethylbenzene	100-41-4	N.D.	0.20	ug/l	1
00779	Total Xylenes	1330-20-7	N.D.	0.60	ug/l	1
	Sufficient sample volume was not available to perform a MSD for this analysis. However, a MS was performed. In addition, a LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					
00774	PAH's in Water by HPLC					
00775	Naphthalene	91-20-3	N.D.	1.0	ug/l	1
00782	Acenaphthylene	208-96-8	N.D. UJ	2.0	ug/l	1
00783	Acenaphthene	83-32-9	N.D.	2.0	ug/l	1
00784	Fluorene	86-73-7	N.D.	0.20	ug/l	1
00785	Phenanthrene	85-01-8	N.D.	0.080	ug/l	1
00789	Anthracene	120-12-7	N.D.	0.040	ug/l	1
00807	Fluoranthene	206-44-0	N.D.	0.040	ug/l	1
00811	Pyrene	129-00-0	N.D.	0.20	ug/l	1
00812	Benzo(a)anthracene	56-55-3	N.D.	0.020	ug/l	1
00818	Benzo(b)fluoranthene	205-99-2	N.D.	0.040	ug/l	1
00823	Benzo(a)pyrene	50-32-8	N.D.	0.020	ug/l	1
00895	Dibenz(a,h)anthracene	53-70-3	N.D.	0.040	ug/l	1
00898	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.080	ug/l	1
00907	Benzo(g,h,i)perylene	191-24-2	N.D.	0.10	ug/l	1
07409	Chrysene	218-01-9	N.D.	0.080	ug/l	1
07410	Benzo(k)fluoranthene	207-08-9	N.D.	0.020	ug/l	1

Sufficient sample volume was not available to perform a MS/MSD for this analysis. Therefore, a LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.

TBS 1/24/03

The recoveries for many of the PAHs were outside QC limits in the LCS/LCSD associated with this sample. The sample was re-extracted outside of the method hold time. Comparable sample results were observed between the two extractions. The results reported are from the initial extraction of the sample.

Surrogate recoveries were also outside QC limits in the LCS/LCSD

Lancaster Laboratories

Lancaster Laboratories Sample No. WW 3958886

Collected:12/11/2002 16:35 by BS

Account Number: 07802

Submitted: 12/12/2002 09:50
Reported: 01/03/2003 at 11:43
Discard: 02/03/2003
MA3-MW-9S-111202-12 Grab Water Sample
Moss American Site - WI

Kerr-McGee Corporation
P.O. Box 25861
Oklahoma City OK 73125

12-9S SDG#: KMA35-13

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor

associated with this sample.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
08213	BTEX (8021)	SW-846 8021B	1	12/14/2002 09:39	Martha L Seidel	1
00774	PAH's in Water by HPLC	SW-846 8310	1	12/20/2002 14:04	Mark A Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	12/14/2002 09:39	Martha L Seidel	n.a.
03337	PAH Water Extraction	SW-846 3510C	1	12/13/2002 09:00	Jennytza L Marcano	1

MEMBER

Analysis Report

Lancaster Laboratories

Lancaster Laboratories Sample No. WW 3958887

Collected:12/11/2002 15:35

Account Number: 07802

Submitted: 12/12/2002 09:50
Reported: 01/03/2003 at 11:43
Discard: 02/03/2003
TB-03 Grab Water Sample
Moss American Site - WI

Kerr-McGee Corporation
P.O. Box 25861
Oklahoma City OK 73125

12TB3 SDG#: KMA35-14TB

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
08213	BTEX (8021)					
00776	Benzene	71-43-2	N.D.	0.20	ug/l	1
00777	Toluene	108-88-3	N.D.	0.20	ug/l	1
00778	Ethylbenzene	100-41-4	N.D.	0.20	ug/l	1
00779	Total Xylenes	1330-20-7	N.D.	0.60	ug/l	1

Sufficient sample volume was not available to perform a MSD for this analysis. However, a MS was performed. In addition, a LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
08213	BTEX (8021)	SW-846 8021B	1	12/14/2002 06:22	Martha L Seidel	1
01146	GC VOA Water Prep	SW-846 5030B	1	12/14/2002 06:22	Martha L Seidel	n.a.

0 0 4 0

Analysis Report

Lancaster Laboratories

Lancaster Laboratories Sample No. WW 3958888

Collected:12/11/2002 16:30

Account Number: 07802

Submitted: 12/12/2002 09:50
Reported: 01/03/2003 at 11:43
Discard: 02/03/2003
TB-04 Grab Water Sample
Moss American Site - WI

Kerr-McGee Corporation
P.O. Box 25861
Oklahoma City OK 73125

12TB4 SDG#: KMA35-15TB

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
08213	BTEX (8021)					
00776	Benzene	71-43-2	N.D.	0.20	ug/l	1
00777	Toluene	108-88-3	N.D.	0.20	ug/l	1
00778	Ethylbenzene	100-41-4	N.D.	0.20	ug/l	1
00779	Total Xylenes	1330-20-7	N.D.	0.60	ug/l	1

Sufficient sample volume was not available to perform a MSD for this analysis. However, a MS was performed. In addition, a LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
08213	BTEX (8021)	SW-846 8021B	1	12/14/2002 06:55	Martha L Seidel	1
01146	GC VOA Water Prep	SW-846 5030B	1	12/14/2002 06:55	Martha L Seidel	n.a.

0041

Analysis Request / Environmental Services Chain of Custody

Lancaster Laboratories
Where quality is a science.

For Lancaster Laboratories use only
Acct.#: 7802 Group#: 834229 Sample #: 395874-88

COC # 0008411

Please print. Instructions on reverse side correspond with circled numbers.

Client: Weston Acct. #:
Project Name/#: Miss American PWSID #:
Project Manager: Tom Graan P.O.#:
Sampler: B. Schaefer, S. Meyer, M. Castillo Quote #:
Name of state where samples were collected: WI

For Lab Use Only
FSC:
SCR #: 117215

1 of 2

Sample Identification	Date Collected	Time Collected	Matrix (4): Grab	Composite	Soil	Water	Other	# of Containers	Analyses Requested (5): BTEX	NO3	NO2	PAH							Remarks
MA3-TG1-1-111202-01	12/11/02	0915	X			X		5	X	X	X								*zone free product in sample*
MA3-TG1-3-111202-03		0920 0925	X			X		5	X	X	X								
MA3-TG1-2-111202-02		0925	X			X		5	X	X	X								
MA3-MW-6S-111202-05		1100	X			X		3	X										
MA3-MW-27S-111202-08		1205	X			X		3	X			X							
MA3-MW-33S-111202-06		1155	X			X		3	X										
MA3-MW-34S-111202-10		1500	X			X		3	X										
MA3-MW-35S-111202-09		1455	X			X		3	X										
MA3-MW-35S-111202-09-DUP		1455	X			X		3	X										
MA3-MW-28S-111202-04		1050	X			X		3	X										

Turnaround Time Requested (TAT) (please circle): Normal Rush
(Rush TAT is subject to Lancaster Laboratories approval and surcharge.)
Date results are needed: STD TAT
Rush results requested by (please circle): Phone Fax E-mail
Phone #: 847-918-4000 Fax #: 847-918-4055
E-mail address:

Data Package Options (please circle if required)
QC Summary Type VI (Raw Data) PEQUOT
Type I (Tier I) GLP
Type II (Tier II) Other
Type III (NJ Red. Del.)
Type IV (CLP)

SDG Complete? Yes No

State-specific QC required? Yes No
(If yes, indicate QC sample and submit triplicate volume.)
Internal Chain of Custody required? Yes No

Relinquished by:	Date	Time	Received by:	Date	Time (9)
K. Martin	12-19-02	0700			
Brian Shay	12/11/02	1800			
			Kathy Brickley	12-12-02	0950

White should accompany samples to Lancaster Laboratories. The pink copy should be retained by the client.

Analysis Request/ Environmental Services Chain of Custody

Lancaster Laboratories
Where quality is a science.

For Lancaster Laboratories use only
Acct. # 7802 Sample # 3958874-88
834229

Please print. Instructions on reverse side correspond with circled numbers.

(1)
Client: Weston Acct. #: ______
Project Name/#: Moss American PWSID #: ______
Project Manager: Tom Graan P.O.# ______
Sampler: B. Schaefer, S. Meyer, M. Castillo Quote #: ______
Name of state where samples were collected: WI

For lab use only
FSC: ______
SCR #: 1149851

2 of 2

(2)

Sample Identification	Date Collected	Time Collected	(3) Grab	Composite	(4) Matrix: Soil	Water (Potable / NPDES)	Other	Total # of Containers	(5) Analyses Requested: BTEX	PAH							Remarks	(6) Temperature of samples upon receipt (if requested)
MA3-MW-32S-111202-07	12/11/02	1200	X			X		5	X	X								
MA3-MW-7S-111202-11	↓	1505	X			X		3	X									
TB-03	↓	1535	X			X		2	X									

Turnaround Time Requested (TAT) (please circle): Normal Rush
(Rush TAT is subject to Lancaster Laboratories approval and surcharge.)
Date results are needed: STD TAT
Rush results requested by (please circle): Phone Fax
Phone #: 847-918-4000 Fax #: 847-918-4055

Data Package Options (please circle if requested)
QC Summary — Type VI (Raw Data) PER QUOTE
Type I (Tier I) — GLP
Type II (Tier II) — Other
Type III (NJ Red. Del.)
Type IV (CLP)

SDG Complete? Yes No

Site-specific QC required? Yes No
(If yes, indicate QC sample and submit triplicate volume.)
Internal Chain of Custody required? Yes No

Relinquished by:	Date	Time	Received by:	Date	Time
K. [signature]	3-20-01	1515			
[signature]	12/11/02	1800			
			Kathy Binkley	12-12-02	0950

(9)

Analysis Request/Environmental Service

Lancaster Laboratories
Where quality is a science.

For Lancaster Laboratories use only
Acct. # 7802 Sample # 395874-88
834229

Please print. Instructions on reverse side correspond with circled numbers.

(1) Client: Weston Acct. #:
Project Name/#: Moss American PWSID #:
Project Manager: Tom Graan P.O.#
Sampler: B. Schaefer, J. Meyer, M. Castillo Quote #:
Name of state where samples were collected: WI

For lab use only
FSC:
SCR#: 114891

(2) Sample Identification	Date Collected	Time Collected	(3) Grab	Composite	(4) Matrix: Soil	Water (Potable / Non-Potable)	Other	Total # of Containers	(5) Analyses Requested: PAH	Remarks	(6) Sample Specific Reporting Limits
MA3-MW-33S-111202-06	12/11/02	1155	X			X		2	X		
MA3-MW-35S-111202-09		1455	X			X		2	X		
MA3-MW-35S-111202-09-DUP		1455	X			X		2	X		
MA3-MW-34S-111202-10		1500	X			X		2	X		
MA3-MW-7S-111202-11		1505	X			X		2	X		

(7) **Turnaround Time Requested** (TAT) (please circle): Normal Rush
(Rush TAT is subject to Lancaster Laboratories approval and surcharge.)
Date results are needed: STD TAT
Rush results requested by (please circle): Phone Fax
Phone #: 847-918-4000 Fax #: 847-918-4055

(8) **Data Package Options** (please circle if requested)
QC Summary
Type I (Tier I)
Type II (Tier II)
Type III (NJ Red. Del.)
Type IV (CLP)
Type VI (Raw Data) PER QUOTE
GLP
Other

SDG Complete? Yes NO

Site-specific QC required? Yes No
(If yes, indicate QC sample and submit triplicate volume.)

Internal Chain of Custody required? Yes No

(9) Relinquished by:	Date	Time	Received by:	Date	Time
	12601	1115			
	12/1/02	1800			
			Kathy Binkley	12-2-02	0950

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Analysis Request/ Environmental Services Chain of Custody

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For Lancaster Laboratories use only
Acct. # 7802 Sample # 3958874-88
834229

Please print. Instructions on reverse side correspond with circled numbers.

(1)
Client: Weston Acct. #:
Project Name/#: Moss American PWSID #:
Project Manager: Tom Graan P.O.#
Sampler: B. Schaefer, S. Meyer, M. Castillo Quote #:
Name of state where samples were collected: WI

For lab use only
FSC:
SCR #:

(2) (3) Matrix (4) (5) Analyses Requested (6)

Sample Identification	Date Collected	Time Collected	Grab	Composite	Soil	Water	Other	Total # of Containers	PAH	BOD	O-PO4	TOC	TP-PO4	NH3	TKN	COD	Remarks
MA3-MW-28S-111202-04	12/11/02	~~12/11/~~ 1050	X			X		2	X								
MA3-MW-6S-111202-05	↓	1100	X			X		2	X								
MA3-TG1-3-111202-03		0925	X			X		1		X	X						
MA3-TG1-1-111202-01		0915	X			X		6	X	X	X	X	X	X	X	X	*Some free product in sample
MA3-TG1-2-111202-02		0920	X			X		1		X	X						

Turnaround Time Requested (TAT) (please circle): Normal Rush
(Rush TAT is subject to Lancaster Laboratories approval and surcharge.)
Date results are needed: STD TAT
Rush results requested by (please circle): Phone Fax
Phone #: 847-918-4000 Fax #: 847-918-4055

(8) Data Package Options (please circle if requested)
QC Summary Type VI (Raw Data) PER QUOTE
Type I (Tier I) GLP
Type II (Tier II) Other
Type III (NJ Red. Del.)
Type IV (CLP)

SDG Complete? Yes No

Site-specific QC required? Yes No
(If yes, indicate QC sample and submit triplicate volume.)
Internal Chain of Custody required? Yes No

(9)

Relinquished by:	Date	Time	Received by:	Date	Time
[signature]	12/11/02	1800			
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by: Kathy Binkley	12-12-02	0950

Analysis Request/ Environmental Services Chain of Custody

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For Lancaster Laboratories use only
Acct. # 7802 Sample # 395874-88
834229

Please print. Instructions on reverse side correspond with circled numbers.

(1)
Client: WPSTON Acct. #:
Project Name/#: Moss American PWSID #:
Project Manager: Tom Gradn P.O.#
Sampler: B. Schaefer, M. Castillo, S. Meyer Quote #:
Name of state where samples were collected: WI

For lab use only
FSC:
SCR#: 1148491

(2) Sample Identification	Date Collected	Time Collected	(3) Grab	Composite	(4) Matrix: Soil	Water (Potable / Ground / NPDES / Effluent)	Other	Total # of Containers	(5) Analyses Requested: BTEX	PAH	NH3	TKN	TP-P04	COD	TOC	Remarks	(6) Temperature of Sample upon receipt (if requested)
TB-04	12/1/02	1630	X			X		2	X								
MA3-TG1-3-111202-03		0925	X			X		5		X	X	X	X	X	X		
MA3-TG1-2-111202-02		0920	X			X		5		X	X	X	X	X	X		
MA3-MW-95-111202-12		1635	X			X		5	X	X							

Turnaround Time Requested (TAT) (please circle): Normal Rush
(Rush TAT is subject to Lancaster Laboratories approval and surcharge.)
Date results are needed: STD TAT
Rush results requested by (please circle): Phone Fax
Phone #: 847-918-4000 Fax #: 847-918-4055

Data Package Options (please circle if requested)
QC Summary Type VI (Raw Data) PER QUOTE
Type I (Tier I) GLP
Type II (Tier II) Other
Type III (NJ Red. Del.)
Type IV (CLP)

SDG Complete? Yes No

Site-specific QC required? Yes No
(If yes, indicate QC sample and submit triplicate volume.)
Internal Chain of Custody required? Yes No

(9) Relinquished by:	Date	Time	Received by:	Date	Time
	12-6-02	1115			
	12/11/02	1800			
			Kathy Rinkley	12-12-02	0950

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Case Narrative
Client: Kerr-McGee Corporation
SDG: KMA35

LANCASTER LABORATORIES
PAH by HPLC

SAMPLE NUMBER(S) :

LL #'s	Sample Code	Matrix Water	Comments
3958874	12111	X	20X Dilution
3958874DL	12111DL	X	200X Dilution
3958874DL2	12111DL2	X	2000X Dilution
3958874RE	12111RE	X	Reextraction 20X Dilution
3958875	12112	X	
3958875RE	12112RE	X	Reextraction
3958876	12113	X	
3958876RE	12113RE	X	Reextraction
3958877	12114	X	
3958877RE	12114RE	X	Reextraction
3958878	12115	X	
3958878RE	12115RE	X	Reextraction
3958879	12116	X	
3958879DL	12116DL	X	10X Dilution
3958879RE	12116RE	X	Reextraction
3958880	12117	X	
3958880RE	12117RE	X	Reextraction
3958881	12118	X	
3958881RE	12118RE	X	Reextraction
3958882	12119	X	
3958882RE	12119RE	X	Reextraction
3958883	12-9D	X	
3958883RE	12-9DRE	X	Reextraction
3958884	1234S	X	5X Dilution
3958884DL	1234SDL	X	50X Dilution
3958884RE	1234SRE	X	Reextraction 5X Dilution
3958885	12-7S	X	
3958885DL	12-7SDL	X	20X Dilution
3958885RE	12-7SRE	X	Reextraction

Case Narrative (continued)
SDG#: KMA35

SAMPLE NUMBER(S) continued:

LL #'s	Sample Code	Matrix Water	Comments
3958886	12-9S	X	
3958886RE	12-9SRE	X	Reextraction

LABORATORY SUBMITTED QC:

SBLKWH346	SBLKWH3462	X	Method Blank
SBLKWH353	SBLKWH3532	X	Method Blank
SBLKWC354	SBLKWC3542	X	Method Blank
3966074	D6XXD	X	Unspiked
3966074	D6XXDDL	X	5X Dilution
3966075	D6XXDMS	X	Matrix Spike
3966076	D6XXDMSD	X	Matrix Spike Dup
346WHLCS	346WHLCS2	X	Lab Control Sample
346WHLCSD	346WHLCSD2	X	Lab Control Sample Dup
353WHLCS	353WHLCS2	X	Lab Control Sample
353WHLCSD	353WHLCSD2	X	Lab Control Sample Dup
354WCLCS	354WCLCS2	X	Lab Control Sample

SAMPLE PREPARATION:

Due to insufficient sample, reduced volumes were used in the extraction of the following samples.

Sample Code	Volume
12111	999 mls
12111RE	974 mls
12113RE	993 mls
12116	963 mls
12117	987 mls
1234S	983 mls
1234SRE	995 mls

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Case Narrative (continued)
SDG#: KMA35

No other problems were encountered during the extraction of these samples.

ANALYSIS:

The method used for analysis was SW-846 8310.

All samples were analyzed for polynuclear aromatic hydrocarbons by HPLC.

Sufficient sample volume was not available to perform MS/MSD's for the analysis of organic extraction batches 02346WAH026 and 02353WAH026. Therefore, LCS/LCSD's were performed to demonstrate precision and accuracy at a batch level.

The following samples were analyzed at initial dilutions due to high concentrations of non-target compounds.

Sample Code	Dilution
12111	20X
1234S	5X

The following samples were analyzed at further dilutions due to target recoveries above calibration range.

Sample Code	Dilution	Compounds
12111	200X	a number of compounds
	2000X	phenanthrene, fluoranthene
12116	10X	naphthalene, fluorene
1234S	50X	naphthalene, phenanthrene, fluoranthene
12-7S	20X	naphthalene

Reextractions were required for the samples in organic extraction batch 02346WAH026 due to unacceptable recoveries in the associated quality control samples.

No other problems were encountered during the analysis of these samples.

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Case Narrative (continued)
SDG#: KMA35

QUALITY CONTROL AND NONCONFORMANCE SUMMARY:

In 12114RE the surrogate recoveries of nitrobenzene and triphenylene were outside QC limits.

The recoveries of naphthalene, acenaphthylene, and benzo(b)fluoranthene in D6XXDMS and D6XXDMSD were outside QC limits. All recoveries were within specifications in 354WCLCS2

A number of compounds had recoveries outside QC limits in 346WHLCS2 and 346WHLCSD2. Refer to the laboratory control sample/laboratoy control sample duplicate recoveries form for the specific compounds outside QC limits.

A number of compounds had recoveries outside QC limits in 353WHLCS2 and 353WHLCSD2. Refer to the laboratory control sample/laboratory control sample duplicate recoveries form for the specific compounds outside QC limits.

All other QC was within specifications.

DATA INTERPRETATION:

Only non-conformances for client requested compounds are addressed in this case narrative.

Due to incorrect integrations during the initial processing, manual integrations were performed for the following compounds:

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Case Narrative (continued)
SDG#: KMA35

Sample Code	Compound
12111	triphenylene
12111DL	triphenylene, benzo(g,h,i)perylene
12111DL2	triphenylene
12111RE	naphthalene, acenaphthylene, phenanthrene, anthracene,triphenylene, dibenz(a,h)anthracene, benzo(g,h,i)perylene
12116	anthracene
1234S	triphenylene, dibenz(a,h)anthracene, benzo(g,h,i)perylene
1234SDL	naphthalene, triphenylene
1234SRE	acenaphthylene, phenanthrene, triphenylene, dibenz(a,h)anthracene, benzo(g,h,i)perylene, indeno(1,2,3-cd)pyrene
12-7SRE	acenaphthylene
Lab file 02354 level 5	indeno(1,2,3-cd)pyrene UV, indeno(1,2,3-cd)pyrene FL
Lab file 02354B1-34R	nitrobenzene, naphthalene UV, acenaohthtlene, naphthalene FL
Lab file 02359-20R	acenaphthylene
Lab file 02359-28R	acenaphthylene
Lab file 02359-48R	indeno(1,2,3-cd)pyrene UV, indeno(1,2,3-cd)pyrene FL

No further interpretation is necessary for the data submitted.

Case Narrative Reviewed and Approved by:

Charles J. Neslund
Group Leader, GC/MS Semivolatiles

Date: 1/8/02

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2425 New Holland Pike • Lancaster, PA 17601

Case Narrative
SDG# KMA35

Client : Kerr-McGee Corporation
Project: Moss American Site - WI
Volatiles by GC - Water

SAMPLE ANALYSES

LL Sample #	Sample Designation	Matrix Soil	Matrix Water	Comments
958874	12111		X	DF 20
958875	12112		X	
3958876	12113		X	
3958877	12114		X	
958877MS	12114		X	Matrix Spike
958878	12115		X	
3958879	12116		X	DF 10
958880	12117		X	
958881	12118		X	
3958882	12119		X	
3958883	12-9D		X	
958884	1234S		X	DF 25
958885	12-7S		X	DF 20
3958886	12-9S		X	
958887	12TB3		X	
958888	12TB4		X	

QUALITY CONTROL ANALYSES

BLK5108	X	Method Blank
BLK5109	X	Method Blank
LCS5108	X	Lab Control Sample
LDS5108	X	Lab Control Dup

SAMPLE PREPARATION

Dilutions were necessary for some samples as noted in the comments section above.

ANALYSIS

The integration system reviews the chromatogram retention times, comparing them to the retention times in the ID window column. A peak in the sample chromatogram with a retention time within the ID window is identified as a "hit."

The method used for analysis was EPA Method SW-846 8021B. A J&W DB-VRX, 75m x 0.45mm column was used for the analysis of all samples. The surrogate concentration was 30.0 UG/L.

No problems were encountered during analysis.

03666

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Case Narrative
SDG# KMA35

Client : Kerr-McGee Corporation
Project: Moss American Site - WI
Volatiles by GC - Water

UALITY CONTROL AND NONCONFORMANCE SUMMARY

] re was no client submitted QC, so Lancaster Laboratories batch QC was referenced. ufficient sample volume was not available to perform an MSD for this analysis, therefore r LCS/LDS was performed to demonstrate precision and accuracy at a batch level.

ll QC was within specifications.

ATA INTERPRETATION

explanation is necessary for the data submitted.

:rative reviewed and approved by:

[signature] for 01/10/03

eve J. Stabinger, Group Leader Date

0367

Analytical Data Validation Report
Kerr-McGee Corporation
Moss American Superfund Site- Milwaukee, WI
SDG #: KMA34

Wednesday, January 22, 2003

I have reviewed the analytical data provided by Lancaster Laboratories for the Moss American Site in Milwaukee, Wisconsin upon the information that was provided by the laboratory.

Polynuclear Aromatic Hydrocarbons (PAHs by HPLC, U.S. EPA Method 8310)
Moss American Site
SDG # KMA34

1.Samples:

Client Sample Description:	Lab Sample Number	Matrix	Date Collected	Date Extracted	Date Analyzed
MA3-TG5-1-091202-01	3957167	Grab water	12/09/02	12/11/02	12/14/02
MA3-TG5-1-091202-01-DUP	3957168	Grab water	12/09/02	12/11/02	12/14/02
MA3-TG5-2-091202-02	3957172	Grab water	12/09/02	12/11/02	12/14/02
MA3-TG5-3-091202-03	3957173	Grab water	12/09/02	12/11/02	12/14/02
MA3-TG4-3-101202-06	3958168	Grab water	12/10/02	12/13/02	12/15/02
MA3-TG2-3-101202-12	3958169	Grab water	12/10/02	12/13/02	12/15/02
MA3-TG4-1-101202-04	3958170	Grab water	12/10/02	12/13/02	12/15/02
MA3-TG4-2-101202-05	3958171	Grab water	12/10/02	12/13/02	12/15/02
MA3-TG2-2-101202-11	3958172	Grab water	12/10/02	12/13/02	12/15/02
MA3-TG2-1-101202-10	3958173	Grab water	12/10/02	12/13/02	12/15/02
MA3-TG6-3-101202-03	3958174	Grab water	12/10/02	12/13/02	12/15/02
MA3-TG6-1-101202-01	3958175	Grab water	12/10/02	12/13/02	12/15/02
MA3-TG3-1-101202-07	3958176	Grab water	12/10/02	12/13/02	12/15/02
MA3-TG6-2-101202-02	3958177	Grab water	12/10/02	12/13/02	12/15/02
MA3-TG6-2-101202-02-MS	3958178	Grab water	12/10/02	12/13/02	12/15/02
MA3-TG6-2-101202-02-MSD	3958179	Grab water	12/10/02	12/13/02	12/15/02
FB-01	3958180	Grab water	12/10/02	12/13/02	12/15/02
MA3-TG3-2-101202-08	3958182	Grab water	12/10/02	12/13/02	12/15/02
MA3-TG3-3-101202-09	3958183	Grab water	12/10/02	12/13/02	12/15/02
MA3-TG2-2-101202-11-DUP	3958184	Grab water	12/10/02	12/13/02	12/15/02

2. Holding Times:

The samples were extracted and analyzed within the required holding times. The samples (3958168 thru 3958184) were re-extracted past the holding time. Therefore, all the re-extracting results qualified as (J/UJ). All the results reported from the initial extraction of the samples.

3. Method Blank:

Three method blanks SBLKWB3452, SBLKWG3462, and SBLKWF3532 were associated with this SDG. SBLKWB3452 was analyzed with (3957167, 3957168, 3957172, and 3957173) on 12/14/02. SBLKWG3462 was analyzed with (3958168 thru 3958180, 3958182 thru 3958184, and 3958199 thru 3958202) on 12/15/02. SBLKWF3532 was analyzed with the re-extracted samples (3958168 thru 3958180, 3958182 thru 3958184, 3958199 thru 3958202, 3958962, and 3958963) on 12/22/02. All the method blanks results were free of contamination.

4. Surrogate:
The surrogate recoveries were coming from UV detector. The method blanks and the investigated samples had surrogate recoveries within the required quality control limits.

5. Matrix Spike/Matrix Spike Duplicate Recovery:
The matrix spike was performed on sample 3958177. The MS/MSD recoveries were within the quality control limit. Also, the RPD% values were acceptable.
The re-extracting MS/MSD recoveries were acceptable. Also, the RPD% values were acceptable.

6. Laboratory Control Sample:
The LCS/LCSD that associated with (3957167, 3957168, 3957172, and 3957173) recoveries were within the acceptance quality control limits. Also, the RPD% values were acceptable.
The LCS that associated with (3958168 thru 3958180, 3958182 thru 3958184, and 3958199 thru 3958202) recoveries was within the control limits, except in dibenz (a, h) anthracene, and in indeno (1,2,3-cd) pyrene. Therefore, qualify the results as (J/UJ).
The LCS that associated with the re-extracted samples (3958168 thru 3958180, 3958182 thru 3958184, 3958199 thru 3958202, 3958962, and 3958963) recoveries was within the control limits.

7. Retention Time:
All the retention time results were acceptable.

8. Initial and Continuing Calibration:
The initial calibration, and continuing calibration verification were all acceptable.

However, the retention time, initial and continuing calibration results were used in the calculation from two detectors: naphthalene, acenaphthylene, 1-methylnaphthalene, 2-methylnaphthalene, fluorene, phenanthrene, and anthracene were taken from ultraviolet detector, and acenaphthene, fluoranthene, pyrene, benzo (a) anthracene, chrysene, benzo (b) fluoranthene, benzo (k) fluoranthene, benzo (a) pyrene, dibenzo (a, h) anthracene, benzo (g, h, i) perylene, and indeno (1, 2, 3-cd) pyrene were taken from fluorescence detector.

Wednesday, January 22, 2003

BETX (U.S. EPA Method 8021B)
SDG # MMA34

1.Samples:

Client Sample Description:	Lab Sample Number	Matrix	Date Collected	Date Prepared	Date Analyzed
MA3-TG5-1-091202-01	3957167	Grab water	12/09/02	12/12/02	12/12/02
MA3-TG5-1-091202-01-DUP	3957168	Grab water	12/09/02	12/12/02	12/12/02
MA3-TG5-2-091202-02	3957169	Grab water	12/09/02	12/12/02	12/12/02
MA3-TG5-3-091202-03	3957170	Grab water	12/09/02	12/12/02	12/12/02
TB-01	3957171	Grab water	12/09/02	12/12/02	12/12/02
MA3-TG4-3-101202-06	3958168	Grab water	12/10/02	12/13/02	12/13/02
MA3-TG2-3-101202-12	3958169	Grab water	12/10/02	12/13/02	12/13/02
MA3-TG4-1-101202-04	3958170	Grab water	12/10/02	12/13/02	12/13/02
MA3-TG4-2-101202-05	3958171	Grab water	12/10/02	12/13/02	12/13/02
MA3-TG2-2-101202-11	3958172	Grab water	12/10/02	12/13/02	12/13/02
MA3-TG2-1-101202-10	3958173	Grab water	12/10/02	12/13/02	12/13/02
MA3-TG6-3-101202-03	3958174	Grab water	12/10/02	12/13/02	12/13/02
MA3-TG6-1-101202-01	3958175	Grab water	12/10/02	12/13/02	12/13/02
MA3-TG3-1-101202-07	3958176	Grab water	12/10/02	12/13/02	12/13/02
MA3-TG6-2-101202-02	3958177	Grab water	12/10/02	12/13/02	12/13/02
MA3-TG6-2-101202-02-MS	3958178	Grab water	12/10/02	12/13/02	12/13/02
MA3-TG6-2-101202-02-MSD	3958179	Grab water	12/10/02	12/13/02	12/13/02
FB-01	3958180	Grab water	12/10/02	12/13/02	12/13/02
TB-02	3958181	Grab water	12/10/02	12/13/02	12/13/02
MA3-TG3-2-101202-08	3958182	Grab water	12/10/02	12/13/02	12/13/02
MA3-TG3-3-101202-09	3958183	Grab water	12/10/02	12/13/02	12/13/02
MA3-TG2-2-101202-11-DUP	3958184	Grab water	12/10/02	12/13/02	12/13/02

2. Holding Times:
All samples were analyzed within the required holding times.

3. Method Blank:
Two method blanks BLK5553, and BLK5555 were associated with this SDG. BLK5553 was analyzed with (3957167 thru 3957170) on 12/12/02. BLK5555 was analyzed with (3958168 thru 3958184) on 12/13/02. Both method blanks BLK5553, and BLK5555 result were free of contamination.

4. Matrix Spike/Matrix Spike Duplicate :
The laboratory performed matrix spike/matrix spike duplicate on sample 3958177. The MS/MSD recoveries were within the quality control limits. Also, the RPD% values were acceptable.

5. Laboratory control Sample:
Two laboratories control samples were associated with this SDG. The LCS/LCSD that associated with (3957167 thru 3957170), and LCS/LCSD associated with (3958168 thru 3958184). Both LCS/LCSD recoveries were within the control limits. Also, the RPD% values were acceptable.

6. Surrogate:
The method blanks and the investigated samples had surrogate recoveries within the required quality control limits.

7. Initial and Continuing Calibration:
All the initial calibration and continuing calibration results were within the quality control limits.

Please feel free to contact me at (847) 971-6800 with any question regarding these validation reports.

Sincerely
Tania Balikji-Shammo

Lancaster Laboratories

ANALYTICAL RESULTS

Prepared for:

Kerr-McGee Corporation
P.O. Box 25861
Oklahoma City OK 73125

405-270-2602

Prepared by:

Lancaster Laboratories
2425 New Holland Pike
Lancaster, PA 17605-2425

SAMPLE GROUP

The sample group for this submittal is 833887. Samples arrived at the laboratory on Tuesday, December 10, 2002.

Client Description	Lancaster Labs Number
MA3-TG5-1-091202-01 Grab Water Sample	3957167
MA3-TG5-1-091202-01-DUP Grab Water Sample	3957168
MA3-TG5-2-091202-02 Grab Water Sample	3957169
MA3-TG5-3-091202-03 Grab Water Sample	3957170
TB-01 Water Sample	3957171
MA3-TG5-2-091202-02 Grab Water Sample	3957172
MA3-TG5-3-091202-03 Grab Water Sample	3957173

METHODOLOGY

The specific methodologies used in obtaining the enclosed analytical results are indicated on the laboratory chronicles.

1 COPY TO	Kerr-McGee Corporation	Attn: Dr. Jeff Ostmeyer
1 COPY TO	Weston Solutions, Inc.	Attn: Mr. Tom Graan
1 COPY TO	Data Package Group	

Lancaster Laboratories

Questions? Contact your Client Services Representative
Carrie A Fleming at (717) 656-2300.

Respectfully Submitted,

Michele A. Jarosick

Michele A. Jarosick
Senior Chemist

MEMBER ACIL
Lancaster Laboratories, Inc.
2425 New Holland Pike
PO Box 12425
Lancaster, PA 17605-2425

Analysis Report

Lancaster Laboratories

Lancaster Laboratories Sample No. WW 3957167

Collected:12/09/2002 15:50 by BS

Account Number: 07802

Submitted: 12/10/2002 09:20
Reported: 01/03/2003 at 11:40
Discard: 02/03/2003
MA3-TG5-1-091202-01 Grab Water Sample
Moss American Superfund Site - Milwaukee, WI

Kerr-McGee Corporation
P.O. Box 25861
Oklahoma City OK 73125

20201 SDG#: KMA34-01

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
00217	Kjeldahl Nitrogen	7727-37-9	N.D.	0.30	mg/l	1
00219	Nitrite Nitrogen	14797-65-0	N.D.	0.015	mg/l	1
00220	Nitrate Nitrogen	14797-55-8	N.D.	0.040	mg/l	1
00221	Ammonia Nitrogen	7664-41-7	1.2	0.46	mg/l	1
	Sufficient sample volume was not available to perform a MS/MSD for this analysis. Therefore, a LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					
00226	Ortho-Phosphate as P	14265-44-2	0.0161 J	0.0066	mg/l	1
00235	Biochemical Oxygen Demand	n.a.	N.D.	2.6	mg/l	1
00273	Total Organic Carbon	n.a.	4.75	0.500	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	0.27	0.12	mg/l	1
01553	Chemical Oxygen Demand	n.a.	10.3	1.7	mg/l	1
08213	BTEX (8021)					
00776	Benzene	71-43-2	N.D.	0.20	ug/l	1
00777	Toluene	108-88-3	N.D.	0.20	ug/l	1
00778	Ethylbenzene	100-41-4	N.D.	0.20	ug/l	1
00779	Total Xylenes	1330-20-7	N.D.	0.60	ug/l	1
	Sufficient sample volume was not available to perform a MSD for this analysis. However, a MS was performed. In addition, a LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					
00774	PAH's in Water by HPLC					
00775	Naphthalene	91-20-3	N.D.	1.0	ug/l	1
00782	Acenaphthylene	208-96-8	N.D.	2.0	ug/l	1
00783	Acenaphthene	83-32-9	N.D.	2.0	ug/l	1
00784	Fluorene	86-73-7	N.D.	0.20	ug/l	1
00785	Phenanthrene	85-01-8	N.D.	0.080	ug/l	1
00789	Anthracene	120-12-7	N.D.	0.040	ug/l	1
00807	Fluoranthene	206-44-0	N.D.	0.040	ug/l	1
00811	Pyrene	129-00-0	N.D.	0.20	ug/l	1
00812	Benzo(a)anthracene	56-55-3	N.D.	0.020	ug/l	1
00818	Benzo(b)fluoranthene	205-99-2	N.D.	0.040	ug/l	1
00823	Benzo(a)pyrene	50-32-8	N.D.	0.020	ug/l	1
00895	Dibenz(a,h)anthracene	53-70-3	N.D.	0.040	ug/l	1
00898	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.080	ug/l	1
00907	Benzo(g,h,i)perylene	191-24-2	N.D.	0.10	ug/l	1
07409	Chrysene	218-01-9	N.D.	0.080	ug/l	1

MEMBER ACIL
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2425 New Holland Pike
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Lancaster Laboratories

Lancaster Laboratories Sample No. WW 3957167

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Account Number: 07802

Submitted: 12/10/2002 09:20
Reported: 01/03/2003 at 11:40
Discard: 02/03/2003
MA3-TG5-1-091202-01 Grab Water Sample
Moss American Superfund Site - Milwaukee, WI

Kerr-McGee Corporation
P.O. Box 25861
Oklahoma City OK 73125

20201 SDG#: KMA34-01

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
07410	Benzo(k)fluoranthene	207-08-9	N.D.	0.020	ug/l	1

Sufficient sample volume was not available to perform a MS/MSD for this analysis. Therefore, a LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00217	Kjeldahl Nitrogen	EPA 351.2	1	12/20/2002 15:52	Venia B McFadden	1
00219	Nitrite Nitrogen	EPA 353.2	1	12/11/2002 10:41	Christian C Ehrhart	1
00220	Nitrate Nitrogen	EPA 353.2	1	12/12/2002 12:00	Ramona V Goss	1
00221	Ammonia Nitrogen	EPA 350.2	1	12/10/2002 15:00	Luz M Groff	1
00226	Ortho-Phosphate as P	EPA 365.3	1	12/10/2002 21:55	Daniel S Smith	1
00235	Biochemical Oxygen Demand	EPA 405.1	1	12/10/2002 22:43	Nicole R Bushong	1
00273	Total Organic Carbon	EPA 415.1	1	12/16/2002 17:07	Timothy M Petree	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	12/24/2002 16:57	Venia B McFadden	1
01553	Chemical Oxygen Demand	EPA 410.2	1	12/16/2002 05:50	Susan A Engle	1
08213	BTEX (8021)	SW-846 8021B	1	12/12/2002 15:09	Melissa D Mann	1
00774	PAH's in Water by HPLC	SW-846 8310	1	12/14/2002 15:54	Mark A Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	12/12/2002 15:09	Melissa D Mann	n.a.
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	2	12/17/2002 13:45	Nancy J Shoop	1
03337	PAH Water Extraction	SW-846 3510C	1	12/11/2002 22:30	Sharon L Jones	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	12/13/2002 11:00	James S Mathiot	1

Lancaster Laboratories, Inc.
2425 New Holland Pike
PO Box 12425
Lancaster, PA 17605-2425

Lancaster Laboratories

Lancaster Laboratories Sample No. WW 3957168

Collected:12/09/2002 15:50 by BS

Account Number: 07802

Submitted: 12/10/2002 09:20
Reported: 01/03/2003 at 11:41
Discard: 02/03/2003
MA3-TG5-1-091202-01-DUP Grab Water Sample
Moss American Superfund Site - Milwaukee, WI

Kerr-McGee Corporation
P.O. Box 25861
Oklahoma City OK 73125

FD01- SDG#: KMA34-02FD

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
08213	BTEX (8021)					
00776	Benzene	71-43-2	N.D.	0.20	ug/l	1
00777	Toluene	108-88-3	N.D.	0.20	ug/l	1
00778	Ethylbenzene	100-41-4	N.D.	0.20	ug/l	1
00779	Total Xylenes	1330-20-7	N.D.	0.60	ug/l	1
	Sufficient sample volume was not available to perform a MSD for this analysis. However, a MS was performed. In addition, a LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					
00774	PAH's in Water by HPLC					
00775	Naphthalene	91-20-3	N.D.	1.0	ug/l	1
00782	Acenaphthylene	208-96-8	N.D.	2.0	ug/l	1
00783	Acenaphthene	83-32-9	N.D.	2.0	ug/l	1
00784	Fluorene	86-73-7	N.D.	0.20	ug/l	1
00785	Phenanthrene	85-01-8	N.D.	0.080	ug/l	1
00789	Anthracene	120-12-7	N.D.	0.040	ug/l	1
00807	Fluoranthene	206-44-0	N.D.	0.040	ug/l	1
00811	Pyrene	129-00-0	N.D.	0.20	ug/l	1
00812	Benzo(a)anthracene	56-55-3	N.D.	0.020	ug/l	1
00818	Benzo(b)fluoranthene	205-99-2	N.D.	0.040	ug/l	1
00823	Benzo(a)pyrene	50-32-8	N.D.	0.020	ug/l	1
00895	Dibenz(a,h)anthracene	53-70-3	N.D.	0.040	ug/l	1
00898	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.080	ug/l	1
00907	Benzo(g,h,i)perylene	191-24-2	N.D.	0.10	ug/l	1
07409	Chrysene	218-01-9	N.D.	0.080	ug/l	1
07410	Benzo(k)fluoranthene	207-08-9	N.D.	0.020	ug/l	1
	Sufficient sample volume was not available to perform a MS/MSD for this analysis. Therefore, a LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
08213	BTEX (8021)	SW-846 8021B	1	12/12/2002 15:41	Melissa D Mann	1
00774	PAH's in Water by HPLC	SW-846 8310	1	12/14/2002 16:33	Mark A Clark	1

Lancaster Laboratories

Lancaster Laboratories Sample No. WW 3957168

Collected:12/09/2002 15:50 by BS

Account Number: 07802

Submitted: 12/10/2002 09:20
Reported: 01/03/2003 at 11:41
Discard: 02/03/2003
MA3-TG5-1-091202-01-DUP Grab Water Sample
Moss American Superfund Site - Milwaukee, WI

Kerr-McGee Corporation
P.O. Box 25861
Oklahoma City OK 73125

FD01- SDG#: KMA34-02FD

01146	GC VOA Water Prep	SW-846 5030B	1	12/12/2002 15:41	Melissa D Mann	n.a.
03337	PAH Water Extraction	SW-846 3510C	1	12/11/2002 22:30	Sharon L Jones	1

0 0 2 3 4

Analysis Report

Lancaster Laboratories

Lancaster Laboratories Sample No. WW 3957169

Collected:12/09/2002 16:00 by BS

Account Number: 07802

Submitted: 12/10/2002 09:20
Reported: 01/03/2003 at 11:41
Discard: 02/03/2003
MA3-TG5-2-091202-02 Grab Water Sample
Moss American Superfund Site - Milwaukee, WI

Kerr-McGee Corporation
P.O. Box 25861
Oklahoma City OK 73125

02-02 SDG#: KMA34-03

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
00219	Nitrite Nitrogen	14797-65-0	N.D.	0.015	mg/l	1
00220	Nitrate Nitrogen	14797-55-8	N.D.	0.040	mg/l	1
08213	BTEX (8021)					
00776	Benzene	71-43-2	N.D.	0.20	ug/l	1
00777	Toluene	108-88-3	N.D.	0.20	ug/l	1
00778	Ethylbenzene	100-41-4	N.D.	0.20	ug/l	1
00779	Total Xylenes	1330-20-7	N.D.	0.60	ug/l	1

Sufficient sample volume was not available to perform a MSD for this analysis. However, a MS was performed. In addition, a LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00219	Nitrite Nitrogen	EPA 353.2	1	12/11/2002 10:00	Christian C Ehrhart	1
00220	Nitrate Nitrogen	EPA 353.2	1	12/12/2002 12:01	Ramona V Goss	1
08213	BTEX (8021)	SW-846 8021B	1	12/12/2002 16:12	Melissa D Mann	1
01146	GC VOA Water Prep	SW-846 5030B	1	12/12/2002 16:12	Melissa D Mann	n.a.

0024

MEMBER ACIL
Lancaster Laboratories, Inc.
2425 New Holland Pike
PO Box 12425
Lancaster, PA 17605-2425

Lancaster Laboratories

Lancaster Laboratories Sample No. WW 3957170

Collected: 12/09/2002 16:10 by BS

Account Number: 07802

Submitted: 12/10/2002 09:20
Reported: 01/03/2003 at 11:41
Discard: 02/03/2003
MA3-TG5-3-091202-03 Grab Water Sample
Moss American Superfund Site - Milwaukee, WI

Kerr-McGee Corporation
P.O. Box 25861
Oklahoma City OK 73125

02-03 SDG#: KMA34-04

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
00219	Nitrite Nitrogen	14797-65-0	N.D.	0.015	mg/l	1
00220	Nitrate Nitrogen	14797-55-8	0.13	0.040	mg/l	1
08213	BTEX (8021)					
00776	Benzene	71-43-2	N.D.	0.20	ug/l	1
00777	Toluene	108-88-3	N.D.	0.20	ug/l	1
00778	Ethylbenzene	100-41-4	N.D.	0.20	ug/l	1
00779	Total Xylenes	1330-20-7	N.D.	0.60	ug/l	1

Sufficient sample volume was not available to perform a MSD for this analysis. However, a MS was performed. In addition, a LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00219	Nitrite Nitrogen	EPA 353.2	1	12/11/2002 09:59	Christian C Ehrhart	1
00220	Nitrate Nitrogen	EPA 353.2	1	12/12/2002 12:05	Ramona V Goss	1
08213	BTEX (8021)	SW-846 8021B	1	12/12/2002 16:45	Melissa D Mann	1
01146	GC VOA Water Prep	SW-846 5030B	1	12/12/2002 16:45	Melissa D Mann	n.a.

0025

Analysis Report

Lancaster Laboratories

Lancaster Laboratories Sample No. WW 3957171

Collected:12/09/2002 17:30

Account Number: 07802

Submitted: 12/10/2002 09:20
Reported: 01/03/2003 at 11:41
Discard: 02/03/2003
TB-01 Water Sample
Moss American Superfund Site - Milwaukee, WI

Kerr-McGee Corporation
P.O. Box 25861
Oklahoma City OK 73125

TBX01 SDG#: KMA34-05TB

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
08213	BTEX (8021)					
00776	Benzene	71-43-2	N.D.	0.20	ug/l	1
00777	Toluene	108-88-3	N.D.	0.20	ug/l	1
00778	Ethylbenzene	100-41-4	N.D.	0.20	ug/l	1
00779	Total Xylenes	1330-20-7	N.D.	0.60	ug/l	1

Sufficient sample volume was not available to perform a MSD for this analysis. However, a MS was performed. In addition, a LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
08213	BTEX (8021)	SW-846 8021B	1	12/12/2002 14:04	Melissa D Mann	1
01146	GC VOA Water Prep	SW-846 5030B	1	12/12/2002 14:04	Melissa D Mann	n.a.

Lancaster Laboratories, Inc.
2425 New Holland Pike
PO Box 12425
Lancaster, PA 17605-2425

Analysis Report

Lancaster Laboratories

Lancaster Laboratories Sample No. WW 3957172

Collected:12/09/2002 16:00 by BS

Account Number: 07802

Submitted: 12/10/2002 09:20
Reported: 01/03/2003 at 11:41
Discard: 02/03/2003
MA3-TG5-2-091202-02 Grab Water Sample
Moss American Superfund Site - Milwaukee, WI

Kerr-McGee Corporation
P.O. Box 25861
Oklahoma City OK 73125

5-2-9 SDG#: KMA34-06

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
00217	Kjeldahl Nitrogen	7727-37-9	0.75 J	0.30	mg/l	1
00221	Ammonia Nitrogen	7664-41-7	0.70 J	0.46	mg/l	1
	Sufficient sample volume was not available to perform a MS/MSD for this analysis. Therefore, a LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					
00226	Ortho-Phosphate as P	14265-44-2	0.0085 J	0.0066	mg/l	1
00235	Biochemical Oxygen Demand	n.a.	N.D.	2.5	mg/l	1
00273	Total Organic Carbon	n.a.	6.19	0.500	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	0.34	0.12	mg/l	1
01553	Chemical Oxygen Demand	n.a.	14.8	1.7	mg/l	1
00774	PAH's in Water by HPLC					
00775	Naphthalene	91-20-3	N.D.	1.0	ug/l	1
00782	Acenaphthylene	208-96-8	N.D.	2.0	ug/l	1
00783	Acenaphthene	83-32-9	N.D.	2.0	ug/l	1
00784	Fluorene	86-73-7	N.D.	0.20	ug/l	1
00785	Phenanthrene	85-01-8	N.D.	0.080	ug/l	1
00789	Anthracene	120-12-7	N.D.	0.040	ug/l	1
00807	Fluoranthene	206-44-0	0.075 J	0.040	ug/l	1
00811	Pyrene	129-00-0	N.D.	0.20	ug/l	1
00812	Benzo(a)anthracene	56-55-3	N.D.	0.020	ug/l	1
00818	Benzo(b)fluoranthene	205-99-2	N.D.	0.040	ug/l	1
00823	Benzo(a)pyrene	50-32-8	N.D.	0.020	ug/l	1
00895	Dibenz(a,h)anthracene	53-70-3	N.D.	0.040	ug/l	1
00898	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.080	ug/l	1
00907	Benzo(g,h,i)perylene	191-24-2	N.D.	0.10	ug/l	1
07409	Chrysene	218-01-9	N.D.	0.080	ug/l	1
07410	Benzo(k)fluoranthene	207-08-9	N.D.	0.020	ug/l	1
	Sufficient sample volume was not available to perform a MS/MSD for this analysis. Therefore, a LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					
	Due to the nature of the sample matrix, a reduced aliquot was used for analysis. The reporting limits were raised accordingly.					

0027

Lancaster Laboratories

Lancaster Laboratories Sample No. WW 3957172

Collected:12/09/2002 16:00 by BS

Account Number: 07802

Submitted: 12/10/2002 09:20
Reported: 01/03/2003 at 11:41
Discard: 02/03/2003
MA3-TG5-2-091202-02 Grab Water Sample
Moss American Superfund Site - Milwaukee, WI

Kerr-McGee Corporation
P.O. Box 25861
Oklahoma City OK 73125

5-2-9 SDG#: KMA34-06

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00217	Kjeldahl Nitrogen	EPA 351.2	1	12/20/2002 15:56	Venia B McFadden	1
00221	Ammonia Nitrogen	EPA 350.2	1	12/10/2002 15:00	Luz M Groff	1
00226	Ortho-Phosphate as P	EPA 365.3	1	12/10/2002 21:55	Daniel S Smith	1
00235	Biochemical Oxygen Demand	EPA 405.1	1	12/10/2002 22:43	Nicole R Bushong	1
00273	Total Organic Carbon	EPA 415.1	1	12/16/2002 17:15	Timothy M Petree	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	12/24/2002 16:58	Venia B McFadden	1
01553	Chemical Oxygen Demand	EPA 410.2	1	12/16/2002 05:50	Susan A Engle	1
00774	PAH's in Water by HPLC	SW-846 8310	1	12/14/2002 17:11	Mark A Clark	1
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	2	12/17/2002 13:45	Nancy J Shoop	1
03337	PAH Water Extraction	SW-846 3510C	1	12/11/2002 22:30	Sharon L Jones	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	12/13/2002 11:00	James S Mathiot	1

0028

Lancaster Laboratories

Lancaster Laboratories Sample No. WW 3957173

Collected:12/09/2002 16:10 by BS

Account Number: 07802

Submitted: 12/10/2002 09:20
Reported: 01/03/2003 at 11:41
Discard: 02/03/2003
MA3-TG5-3-091202-03 Grab Water Sample
Moss American Superfund Site - Milwaukee, WI

Kerr-McGee Corporation
P.O. Box 25861
Oklahoma City OK 73125

35--2 SDG#: KMA34-07

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
00217	Kjeldahl Nitrogen	7727-37-9	0.48 J	0.30	mg/l	1
00221	Ammonia Nitrogen	7664-41-7	0.58 J	0.46	mg/l	1
	Sufficient sample volume was not available to perform a MS/MSD for this analysis. Therefore, a LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					
00226	Ortho-Phosphate as P	14265-44-2	0.0166 J	0.0066	mg/l	1
00235	Biochemical Oxygen Demand	n.a.	N.D.	2.8	mg/l	1
00273	Total Organic Carbon	n.a.	6.02	0.500	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	0.35	0.12	mg/l	1
01553	Chemical Oxygen Demand	n.a.	27.0	1.7	mg/l	1
00774	PAH's in Water by HPLC					
00775	Naphthalene	91-20-3	N.D.	1.0	ug/l	1
00782	Acenaphthylene	208-96-8	N.D.	2.0	ug/l	1
00783	Acenaphthene	83-32-9	N.D.	2.0	ug/l	1
00784	Fluorene	86-73-7	N.D.	0.20	ug/l	1
00785	Phenanthrene	85-01-8	N.D.	0.090	ug/l	1
00789	Anthracene	120-12-7	N.D.	0.040	ug/l	1
00807	Fluoranthene	206-44-0	0.065 J	0.040	ug/l	1
00811	Pyrene	129-00-0	N.D.	0.20	ug/l	1
00812	Benzo(a)anthracene	56-55-3	N.D.	0.020	ug/l	1
00818	Benzo(b)fluoranthene	205-99-2	N.D.	0.040	ug/l	1
00823	Benzo(a)pyrene	50-32-8	N.D.	0.020	ug/l	1
00895	Dibenz(a,h)anthracene	53-70-3	N.D.	0.040	ug/l	1
00898	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.090	ug/l	1
00907	Benzo(g,h,i)perylene	191-24-2	N.D.	0.10	ug/l	1
07409	Chrysene	218-01-9	N.D.	0.090	ug/l	1
07410	Benzo(k)fluoranthene	207-08-9	N.D.	0.020	ug/l	1
	Sufficient sample volume was not available to perform a MS/MSD for this analysis. Therefore, a LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					

Due to the nature of the sample matrix, a reduced aliquot was used for analysis. The reporting limits were raised accordingly.

Lancaster Laboratories

Lancaster Laboratories Sample No. WW 3957173

Collected:12/09/2002 16:10 by BS

Account Number: 07802

Submitted: 12/10/2002 09:20
Reported: 01/03/2003 at 11:41
Discard: 02/03/2003
MA3-TG5-3-091202-03 Grab Water Sample
Moss American Superfund Site - Milwaukee, WI

Kerr-McGee Corporation
P.O. Box 25861
Oklahoma City OK 73125

35--2 SDG#: KMA34-07

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00217	Kjeldahl Nitrogen	EPA 351.2	1	12/20/2002 15:59	Venia B McFadden	1
00221	Ammonia Nitrogen	EPA 350.2	1	12/10/2002 15:00	Luz M Groff	1
00226	Ortho-Phosphate as P	EPA 365.3	1	12/10/2002 21:55	Daniel S Smith	1
00235	Biochemical Oxygen Demand	EPA 405.1	1	12/10/2002 22:43	Nicole R Bushong	1
00273	Total Organic Carbon	EPA 415.1	1	12/16/2002 17:23	Timothy M Petree	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	12/24/2002 17:01	Venia B McFadden	1
01553	Chemical Oxygen Demand	EPA 410.2	1	12/16/2002 05:50	Susan A Engle	1
00774	PAH's in Water by HPLC	SW-846 8310	1	12/14/2002 17:50	Mark A Clark	1
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	2	12/17/2002 13:45	Nancy J Shoop	1
03337	PAH Water Extraction	SW-846 3510C	1	12/11/2002 22:30	Sharon L Jones	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	12/13/2002 11:00	James S Mathiot	1

Lancaster Laboratories

ANALYTICAL RESULTS

Prepared for:

Kerr-McGee Corporation
P.O. Box 25861
Oklahoma City OK 73125

405-270-2602

Prepared by:

Lancaster Laboratories
2425 New Holland Pike
Lancaster, PA 17605-2425

SAMPLE GROUP

The sample group for this submittal is 834101. Samples arrived at the laboratory on Wednesday, December 11, 2002.

Client Description	Lancaster Labs Number
MA3-TG4-3-101202-06 Grab Water Sample	3958168
MA3-TG2-3-101202-12 Grab Water Sample	3958169
MA3-TG4-1-101202-04 Grab Water Sample	3958170
MA3-TG4-2-101202-05 Grab Water Sample	3958171
MA3-TG2-2-101202-11 Grab Water Sample	3958172
MA3-TG2-1-101202-10 Grab Water Sample	3958173
MA3-TG6-3-101202-03 Grab Water Sample	3958174
MA3-TG6-1-101202-01 Grab Water Sample	3958175
MA3-TG3-1-101202-07 Grab Water Sample	3958176
MA3-TG6-2-101202-02 Unspiked Grab Water Sample	3958177
MA3-TG6-2-101202-02 Matrix Spike Grab Water	3958178
MA3-TG6-2-101202-02 Matrix Spike Dup Grab	3958179
FB-01 Grab Water Sample	3958180
TB-02 Grab Water Sample	3958181
MA3-TG3-2-101202-08 Grab Water Sample	3958182
MA3-TG3-3-101202-09 Grab Water Sample	3958183
MA3-TG2-2-101202-11-DUP Grab Water Sample	3958184

METHODOLOGY

The specific methodologies used in obtaining the enclosed analytical results are indicated on the laboratory chronicles.

1 COPY TO	Kerr-McGee Corporation	Attn: Dr. Jeff Ostmeyer
1 COPY TO	Weston Solutions, Inc.	Attn: Mr. Tom Graan
1 COPY TO	Data Package Group	

MEMBER ACIL
Lancaster Laboratories, Inc.
2425 New Holland Pike
PO Box 12425
Lancaster, PA 17605-2425

Lancaster Laboratories

Questions? Contact your Client Services Representative
Carrie A Fleming at (717) 656-2300.

Respectfully Submitted,

Steven A. Skiles
Sr. Chemist

MEMBER ACIL
Lancaster Laboratories, Inc.
2425 New Holland Pike
PO Box 12425
Lancaster, PA 17605-2425

Lancaster Laboratories

Lancaster Laboratories Sample No. WW 3958168

Collected:12/10/2002 11:05 by BS

Account Number: 07802

Submitted: 12/11/2002 13:30
Reported: 01/08/2003 at 11:58
Discard: 02/08/2003
MA3-TG4-3-101202-06 Grab Water Sample
Moss American Superfund Site - Milwaukee, WI

Kerr-McGee Corporation
P.O. Box 25861
Oklahoma City OK 73125

431-- SDG#: KMA34-08

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
00217	Kjeldahl Nitrogen	7727-37-9	1.00 J	0.30	mg/l	1
00219	Nitrite Nitrogen	14797-65-0	0.029 J	0.015	mg/l	1
00220	Nitrate Nitrogen	14797-55-8	N.D.	0.040	mg/l	1
00221	Ammonia Nitrogen	7664-41-7	0.64 J	0.46	mg/l	1
	Sufficient sample volume was not available to perform a MS/MSD for this analysis. Therefore, a LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					
00226	Ortho-Phosphate as P	14265-44-2	0.045	0.0066	mg/l	1
00235	Biochemical Oxygen Demand	n.a.	N.D.	2.5	mg/l	1
00273	Total Organic Carbon	n.a.	9.95	0.500	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	0.37	0.12	mg/l	1
01553	Chemical Oxygen Demand	n.a.	24.3	1.7	mg/l	1
08213	BTEX (8021)					
00776	Benzene	71-43-2	N.D.	0.20	ug/l	1
00777	Toluene	108-88-3	N.D.	0.20	ug/l	1
00778	Ethylbenzene	100-41-4	N.D.	0.20	ug/l	1
00779	Total Xylenes	1330-20-7	N.D.	0.60	ug/l	1
00774	PAH's in Water by HPLC					
00775	Naphthalene	91-20-3	N.D.	1.0	ug/l	1
00782	Acenaphthylene	208-96-8	N.D.	2.0	ug/l	1
00783	Acenaphthene	83-32-9	N.D.	2.0	ug/l	1
00784	Fluorene	86-73-7	N.D.	0.20	ug/l	1
00785	Phenanthrene	85-01-8	N.D.	0.080	ug/l	1
00789	Anthracene	120-12-7	N.D.	0.040	ug/l	1
00807	Fluoranthene	206-44-0	N.D.	0.040	ug/l	1
00811	Pyrene	129-00-0	N.D.	0.20	ug/l	1
00812	Benzo(a)anthracene	56-55-3	N.D.	0.020	ug/l	1
00818	Benzo(b)fluoranthene	205-99-2	N.D.	0.040	ug/l	1
00823	Benzo(a)pyrene	50-32-8	N.D.	0.020	ug/l	1
00895	Dibenz(a,h)anthracene	53-70-3	N.D. UJ	0.040	ug/l	1
00898	Indeno(1,2,3-cd)pyrene	193-39-5	N.D. UJ	0.080	ug/l	1
00907	Benzo(g,h,i)perylene	191-24-2	N.D.	0.10	ug/l	1
07409	Chrysene	218-01-9	N.D.	0.080	ug/l	1
07410	Benzo(k)fluoranthene	207-08-9	N.D.	0.020	ug/l	1
	The recoveries for dibenz(a,h)anthracene and benzo(g,h,i)perylene were outside QC limits in the LCS associated with this sample. The sample was					

3 of 3 SDG

TBS 1/22/03

Lancaster Laboratories

Lancaster Laboratories Sample No. WW 3958168

Collected:12/10/2002 11:05 by BS

Account Number: 07802

Submitted: 12/11/2002 13:30
Reported: 01/08/2003 at 11:58
Discard: 02/08/2003
MA3-TG4-3-101202-06 Grab Water Sample
Moss American Superfund Site - Milwaukee, WI

Kerr-McGee Corporation
P.O. Box 25861
Oklahoma City OK 73125

431-- SDG#: KMA34-08

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor

re-extracted outside of the method hold time. Comparable sample results were observed between the two extractions. The results reported are from the initial extraction of the sample.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00217	Kjeldahl Nitrogen	EPA 351.2	1	12/19/2002 15:03	Venia B McFadden	1
00219	Nitrite Nitrogen	EPA 353.2	1	12/11/2002 15:58	Venia B McFadden	1
00220	Nitrate Nitrogen	EPA 353.2	1	12/17/2002 11:13	Ramona V Goss	1
00221	Ammonia Nitrogen	EPA 350.2	1	12/12/2002 22:15	Luz M Groff	1
00226	Ortho-Phosphate as P	EPA 365.3	1	12/11/2002 20:10	Daniel S Smith	1
00235	Biochemical Oxygen Demand	EPA 405.1	1	12/11/2002 23:02	Nicole R Bushong	1
00273	Total Organic Carbon	EPA 415.1	1	12/16/2002 23:43	Timothy M Petree	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	12/24/2002 18:06	Venia B McFadden	1
01553	Chemical Oxygen Demand	EPA 410.2	1	12/16/2002 05:50	Susan A Engle	1
08213	BTEX (8021)	SW-846 8021B	1	12/13/2002 07:00	Linda C Pape	1
00774	PAH's in Water by HPLC	SW-846 8310	1	12/15/2002 04:52	Mark A Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	12/13/2002 07:00	Linda C Pape	n.a.
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	12/12/2002 09:10	Cheryl L Robinson	1
03337	PAH Water Extraction	SW-846 3510C	1	12/13/2002 10:20	Felix C Arroyo	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	12/13/2002 11:00	James S Mathiot	1

0 9 3 4

Lancaster Laboratories

Lancaster Laboratories Sample No. WW 3958169

Collected:12/10/2002 15:10 by BS

Account Number: 07802

Submitted: 12/11/2002 13:30
Reported: 01/08/2003 at 11:58
Discard: 02/08/2003
MA3-TG2-3-101202-12 Grab Water Sample
Moss American Superfund Site - Milwaukee, WI

Kerr-McGee Corporation
P.O. Box 25861
Oklahoma City OK 73125

231-- SDG#: KMA34-09

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
00217	Kjeldahl Nitrogen	7727-37-9	1.6	0.30	mg/l	1
00219	Nitrite Nitrogen	14797-65-0	0.039 J	0.015	mg/l	1
00220	Nitrate Nitrogen	14797-55-8	N.D.	0.040	mg/l	1
00221	Ammonia Nitrogen	7664-41-7	1.2	0.46	mg/l	1
	Sufficient sample volume was not available to perform a MS/MSD for this analysis. Therefore, a LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					
00226	Ortho-Phosphate as P	14265-44-2	0.094	0.0066	mg/l	1
00235	Biochemical Oxygen Demand	n.a.	N.D.	5.5	mg/l	1
00273	Total Organic Carbon	n.a.	12.7	0.500	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	0.47	0.12	mg/l	1
01553	Chemical Oxygen Demand	n.a.	32.3	1.7	mg/l	1
08213	BTEX (8021)					
00776	Benzene	71-43-2	N.D.	0.20	ug/l	1
00777	Toluene	108-88-3	N.D.	0.20	ug/l	1
00778	Ethylbenzene	100-41-4	N.D.	0.20	ug/l	1
00779	Total Xylenes	1330-20-7	N.D.	0.60	ug/l	1
00774	PAH's in Water by HPLC					
00775	Naphthalene	91-20-3	N.D.	1.0	ug/l	1
00782	Acenaphthylene	208-96-8	N.D.	2.0	ug/l	1
00783	Acenaphthene	83-32-9	N.D.	2.0	ug/l	1
00784	Fluorene	86-73-7	N.D.	0.20	ug/l	1
00785	Phenanthrene	85-01-8	N.D.	0.080	ug/l	1
00789	Anthracene	120-12-7	N.D.	0.040	ug/l	1
00807	Fluoranthene	206-44-0	N.D.	0.040	ug/l	1
00811	Pyrene	129-00-0	N.D.	0.20	ug/l	1
00812	Benzo(a)anthracene	56-55-3	N.D.	0.020	ug/l	1
00818	Benzo(b)fluoranthene	205-99-2	N.D.	0.040	ug/l	1
00823	Benzo(a)pyrene	50-32-8	N.D.	0.020	ug/l	1
00895	Dibenz(a,h)anthracene	53-70-3	N.D. UJ	0.040	ug/l	1
00898	Indeno(1,2,3-cd)pyrene	193-39-5	N.D. UJ	0.080	ug/l	1
00907	Benzo(g,h,i)perylene	191-24-2	N.D.	0.10	ug/l	1
07409	Chrysene	218-01-9	N.D.	0.080	ug/l	1
07410	Benzo(k)fluoranthene	207-08-9	N.D.	0.020	ug/l	1
	The recoveries for dibenz(a,h)anthracene and benzo(g,h,i)perylene were outside QC limits in the LCS associated with this sample. The sample was					

LCSD

TBS 1/23/03

Lancaster Laboratories

Lancaster Laboratories Sample No. WW 3958169

Collected:12/10/2002 15:10 by BS

Account Number: 07802

Submitted: 12/11/2002 13:30
Reported: 01/08/2003 at 11:58
Discard: 02/08/2003
MA3-TG2-3-101202-12 Grab Water Sample
Moss American Superfund Site - Milwaukee, WI

Kerr-McGee Corporation
P.O. Box 25861
Oklahoma City OK 73125

231-- SDG#: KMA34-09

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor

re-extracted outside of the method hold time. Comparable sample results were observed between the two extractions. The results reported are from the initial extraction of the sample.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00217	Kjeldahl Nitrogen	EPA 351.2	1	12/19/2002 15:12	Venia B McFadden	1
00219	Nitrite Nitrogen	EPA 353.2	1	12/11/2002 16:08	Venia B McFadden	1
00220	Nitrate Nitrogen	EPA 353.2	1	12/17/2002 11:14	Ramona V Goss	1
00221	Ammonia Nitrogen	EPA 350.2	1	12/12/2002 22:15	Luz M Groff	1
00226	Ortho-Phosphate as P	EPA 365.3	1	12/11/2002 20:10	Daniel S Smith	1
00235	Biochemical Oxygen Demand	EPA 405.1	1	12/11/2002 23:02	Nicole R Bushong	1
00273	Total Organic Carbon	EPA 415.1	1	12/16/2002 23:51	Timothy M Petree	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	12/24/2002 18:07	Venia B McFadden	1
01553	Chemical Oxygen Demand	EPA 410.2	1	12/16/2002 05:50	Susan A Engle	1
08213	BTEX (8021)	SW-846 8021B	1	12/13/2002 07:33	Melissa D Mann	1
00774	PAH's in Water by HPLC	SW-846 8310	1	12/15/2002 05:31	Mark A Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	12/13/2002 07:33	Melissa D Mann	n.a.
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	12/12/2002 09:10	Cheryl L Robinson	1
03337	PAH Water Extraction	SW-846 3510C	1	12/13/2002 10:20	Felix C Arroyo	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	12/13/2002 11:00	James S Mathiot	1

Lancaster Laboratories

Lancaster Laboratories Sample No. WW 3958170

Collected:12/10/2002 10:45 by BS

Account Number: 07802

Submitted: 12/11/2002 13:30
Reported: 01/08/2003 at 11:58
Discard: 02/08/2003
MA3-TG4-1-101202-04 Grab Water Sample
Moss American Superfund Site - Milwaukee, WI

Kerr-McGee Corporation
P.O. Box 25861
Oklahoma City OK 73125

411-- SDG#: KMA34-10

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
00217	Kjeldahl Nitrogen	7727-37-9	0.79 J	0.30	mg/l	1
00219	Nitrite Nitrogen	14797-65-0	N.D.	0.015	mg/l	1
00220	Nitrate Nitrogen	14797-55-8	N.D.	0.040	mg/l	1
00221	Ammonia Nitrogen	7664-41-7	0.61 J	0.46	mg/l	1
	Sufficient sample volume was not available to perform a MS/MSD for this analysis. Therefore, a LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					
00226	Ortho-Phosphate as P	14265-44-2	0.055	0.0066	mg/l	1
00235	Biochemical Oxygen Demand	n.a.	N.D.	2.7	mg/l	1
00273	Total Organic Carbon	n.a.	8.09	0.500	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	0.36	0.12	mg/l	1
01553	Chemical Oxygen Demand	n.a.	26.2	1.7	mg/l	1
08213	BTEX (8021)					
00776	Benzene	71-43-2	N.D.	0.20	ug/l	1
00777	Toluene	108-88-3	N.D.	0.20	ug/l	1
00778	Ethylbenzene	100-41-4	N.D.	0.20	ug/l	1
00779	Total Xylenes	1330-20-7	N.D.	0.60	ug/l	1
00774	PAH's in Water by HPLC					
00775	Naphthalene	91-20-3	N.D.	1.0	ug/l	1
00782	Acenaphthylene	208-96-8	N.D.	2.0	ug/l	1
00783	Acenaphthene	83-32-9	N.D.	2.0	ug/l	1
00784	Fluorene	86-73-7	N.D.	0.20	ug/l	1
00785	Phenanthrene	85-01-8	N.D.	0.080	ug/l	1
00789	Anthracene	120-12-7	N.D.	0.040	ug/l	1
00807	Fluoranthene	206-44-0	N.D.	0.040	ug/l	1
00811	Pyrene	129-00-0	N.D.	0.20	ug/l	1
00812	Benzo(a)anthracene	56-55-3	N.D.	0.020	ug/l	1
00818	Benzo(b)fluoranthene	205-99-2	N.D.	0.040	ug/l	1
00823	Benzo(a)pyrene	50-32-8	N.D.	0.020	ug/l	1
00895	Dibenz(a,h)anthracene	53-70-3	N.D. UJ	0.040	ug/l	1
00898	Indeno(1,2,3-cd)pyrene	193-39-5	N.D. UJ	0.080	ug/l	1
00907	Benzo(g,h,i)perylene	191-24-2	N.D.	0.10	ug/l	1
07409	Chrysene	218-01-9	N.D.	0.080	ug/l	1
07410	Benzo(k)fluoranthene	207-08-9	N.D.	0.020	ug/l	1

The recoveries for dibenz(a,h)anthracene and benzo(g,h,i)perylene were outside QC limits in the LCS associated with this sample. The sample was

0037

TBS 1/23/03

Lancaster Laboratories, Inc.
2425 New Holland Pike
PO Box 12425
Lancaster, PA 17605-2425
717-656-2300 Fax: 717-656-2681

Lancaster Laboratories

Lancaster Laboratories Sample No. WW 3958170

Collected:12/10/2002 10:45 by BS

Account Number: 07802

Submitted: 12/11/2002 13:30
Reported: 01/08/2003 at 11:58
Discard: 02/08/2003
MA3-TG4-1-101202-04 Grab Water Sample
Moss American Superfund Site - Milwaukee, WI

Kerr-McGee Corporation
P.O. Box 25861
Oklahoma City OK 73125

411-- SDG#: KMA34-10

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor

re-extracted outside of the method hold time. Comparable sample results were observed between the two extractions. The results reported are from the initial extraction of the sample.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00217	Kjeldahl Nitrogen	EPA 351.2	1	12/19/2002 15:13	Venia B McFadden	1
00219	Nitrite Nitrogen	EPA 353.2	1	12/11/2002 15:53	Venia B McFadden	1
00220	Nitrate Nitrogen	EPA 353.2	1	12/17/2002 11:16	Ramona V Goss	1
00221	Ammonia Nitrogen	EPA 350.2	1	12/12/2002 22:15	Luz M Groff	1
00226	Ortho-Phosphate as P	EPA 365.3	1	12/11/2002 20:10	Daniel S Smith	1
00235	Biochemical Oxygen Demand	EPA 405.1	1	12/11/2002 23:02	Nicole R Bushong	1
00273	Total Organic Carbon	EPA 415.1	1	12/16/2002 23:59	Timothy M Petree	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	12/24/2002 18:08	Venia B McFadden	1
01553	Chemical Oxygen Demand	EPA 410.2	1	12/16/2002 05:50	Susan A Engle	1
08213	BTEX (8021)	SW-846 8021B	1	12/13/2002 08:05	Melissa D Mann	1
00774	PAH's in Water by HPLC	SW-846 8310	1	12/15/2002 06:10	Mark A Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	12/13/2002 08:05	Melissa D Mann	n.a.
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	12/12/2002 09:10	Cheryl L Robinson	1
03337	PAH Water Extraction	SW-846 3510C	1	12/13/2002 10:20	Felix C Arroyo	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	12/13/2002 11:00	James S Mathiot	1

Lancaster Laboratories

Lancaster Laboratories Sample No. WW 3958171

Collected:12/10/2002 10:55 by BS

Account Number: 07802

Submitted: 12/11/2002 13:30
Reported: 01/08/2003 at 11:58
Discard: 02/08/2003
MA3-TG4-2-101202-05 Grab Water Sample
Moss American Superfund Site - Milwaukee, WI

Kerr-McGee Corporation
P.O. Box 25861
Oklahoma City OK 73125

4-2-1 SDG#: KMA34-11

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
00217	Kjeldahl Nitrogen	7727-37-9	1.2	0.30	mg/l	1
00219	Nitrite Nitrogen	14797-65-0	N.D.	0.015	mg/l	1
00220	Nitrate Nitrogen	14797-55-8	N.D.	0.040	mg/l	1
00221	Ammonia Nitrogen	7664-41-7	0.99 J	0.46	mg/l	1
	Sufficient sample volume was not available to perform a MS/MSD for this analysis. Therefore, a LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					
00226	Ortho-Phosphate as P	14265-44-2	0.072	0.0066	mg/l	1
00235	Biochemical Oxygen Demand	n.a.	N.D.	3.6	mg/l	1
00273	Total Organic Carbon	n.a.	11.5	0.500	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	0.32	0.12	mg/l	1
01553	Chemical Oxygen Demand	n.a.	26.6	1.7	mg/l	1
08213	BTEX (8021)					
00776	Benzene	71-43-2	N.D.	0.20	ug/l	1
00777	Toluene	108-88-3	N.D.	0.20	ug/l	1
00778	Ethylbenzene	100-41-4	N.D.	0.20	ug/l	1
00779	Total Xylenes	1330-20-7	N.D.	0.60	ug/l	1
00774	PAH's in Water by HPLC					
00775	Naphthalene	91-20-3	N.D.	1.0	ug/l	1
00782	Acenaphthylene	208-96-8	N.D.	2.0	ug/l	1
00783	Acenaphthene	83-32-9	N.D.	2.0	ug/l	1
00784	Fluorene	86-73-7	N.D.	0.20	ug/l	1
00785	Phenanthrene	85-01-8	N.D.	0.080	ug/l	1
00789	Anthracene	120-12-7	0.074 J	0.040	ug/l	1
00807	Fluoranthene	206-44-0	0.22	0.040	ug/l	1
00811	Pyrene	129-00-0	N.D.	0.20	ug/l	1
00812	Benzo(a)anthracene	56-55-3	N.D.	0.020	ug/l	1
00818	Benzo(b)fluoranthene	205-99-2	N.D.	0.040	ug/l	1
00823	Benzo(a)pyrene	50-32-8	N.D.	0.020	ug/l	1
00895	Dibenz(a,h)anthracene	53-70-3	N.D. UJ	0.040	ug/l	1
00898	Indeno(1,2,3-cd)pyrene	193-39-5	N.D. UJ	0.080	ug/l	1
00907	Benzo(g,h,i)perylene	191-24-2	N.D.	0.10	ug/l	1
07409	Chrysene	218-01-9	N.D.	0.080	ug/l	1
07410	Benzo(k)fluoranthene	207-08-9	N.D.	0.020	ug/l	1

The recoveries for dibenz(a,h)anthracene and benzo(g,h,i)perylene were outside QC limits in the LCS associated with this sample. The sample was

003239

TBS 1/23/03

MEMBER ACIL
Lancaster Laboratories, Inc.
2425 New Holland Pike
PO Box 12425
Lancaster, PA 17605-2425

Lancaster Laboratories

Lancaster Laboratories Sample No. WW 3958171

Collected:12/10/2002 10:55 by BS

Account Number: 07802

Submitted: 12/11/2002 13:30
Reported: 01/08/2003 at 11:58
Discard: 02/08/2003
MA3-TG4-2-101202-05 Grab Water Sample
Moss American Superfund Site - Milwaukee, WI

Kerr-McGee Corporation
P.O. Box 25861
Oklahoma City OK 73125

4-2-1 SDG#: KMA34-11

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor

re-extracted outside of the method hold time. Comparable sample results were observed between the two extractions. The results reported are from the initial extraction of the sample.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00217	Kjeldahl Nitrogen	EPA 351.2	1	12/19/2002 15:14	Venia B McFadden	1
00219	Nitrite Nitrogen	EPA 353.2	1	12/11/2002 16:09	Venia B McFadden	1
00220	Nitrate Nitrogen	EPA 353.2	1	12/17/2002 11:17	Ramona V Goss	1
00221	Ammonia Nitrogen	EPA 350.2	1	12/12/2002 22:15	Luz M Groff	1
00226	Ortho-Phosphate as P	EPA 365.3	1	12/11/2002 20:10	Daniel S Smith	1
00235	Biochemical Oxygen Demand	EPA 405.1	1	12/11/2002 23:02	Nicole R Bushong	1
00273	Total Organic Carbon	EPA 415.1	1	12/17/2002 00:07	Timothy M Petree	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	12/24/2002 18:09	Venia B McFadden	1
01553	Chemical Oxygen Demand	EPA 410.2	1	12/16/2002 05:50	Susan A Engle	1
08213	BTEX (8021)	SW-846 8021B	1	12/13/2002 08:38	Melissa D Mann	1
00774	PAH's in Water by HPLC	SW-846 8310	1	12/15/2002 06:48	Mark A Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	12/13/2002 08:38	Melissa D Mann	n.a.
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	12/12/2002 09:10	Cheryl L Robinson	1
03337	PAH Water Extraction	SW-846 3510C	1	12/13/2002 10:20	Felix C Arroyo	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	12/13/2002 11:00	James S Mathiot	1

0040

Lancaster Laboratories

Lancaster Laboratories Sample No. WW 3958172

Collected:12/10/2002 15:00 by BS

Account Number: 07802

Submitted: 12/11/2002 13:30
Reported: 01/08/2003 at 11:59
Discard: 02/08/2003
MA3-TG2-2-101202-11 Grab Water Sample
Moss American Superfund Site - Milwaukee, WI

Kerr-McGee Corporation
P.O. Box 25861
Oklahoma City OK 73125

2-2-1 SDG#: KMA34-12

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
00217	Kjeldahl Nitrogen	7727-37-9	0.43 J	0.30	mg/l	1
00219	Nitrite Nitrogen	14797-65-0	0.034 J	0.015	mg/l	1
00220	Nitrate Nitrogen	14797-55-8	N.D.	0.040	mg/l	1
00221	Ammonia Nitrogen	7664-41-7	0.49 J	0.46	mg/l	1
	Sufficient sample volume was not available to perform a MS/MSD for this analysis. Therefore, a LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					
00226	Ortho-Phosphate as P	14265-44-2	0.056	0.0066	mg/l	1
00235	Biochemical Oxygen Demand	n.a.	N.D.	2.8	mg/l	1
00273	Total Organic Carbon	n.a.	3.15	0.500	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	0.26	0.12	mg/l	1
01553	Chemical Oxygen Demand	n.a.	8.4	1.7	mg/l	1
08213	BTEX (8021)					
00776	Benzene	71-43-2	N.D.	0.20	ug/l	1
00777	Toluene	108-88-3	N.D.	0.20	ug/l	1
00778	Ethylbenzene	100-41-4	N.D.	0.20	ug/l	1
00779	Total Xylenes	1330-20-7	N.D.	0.60	ug/l	1
00774	PAH's in Water by HPLC					
00775	Naphthalene	91-20-3	N.D.	1.0	ug/l	1
00782	Acenaphthylene	208-96-8	N.D.	2.0	ug/l	1
00783	Acenaphthene	83-32-9	N.D.	2.0	ug/l	1
00784	Fluorene	86-73-7	N.D.	0.20	ug/l	1
00785	Phenanthrene	85-01-8	N.D.	0.080	ug/l	1
00789	Anthracene	120-12-7	N.D.	0.040	ug/l	1
00807	Fluoranthene	206-44-0	0.046 J	0.040	ug/l	1
00811	Pyrene	129-00-0	N.D.	0.20	ug/l	1
00812	Benzo(a)anthracene	56-55-3	N.D.	0.020	ug/l	1
00818	Benzo(b)fluoranthene	205-99-2	N.D.	0.040	ug/l	1
00823	Benzo(a)pyrene	50-32-8	N.D.	0.020	ug/l	1
00895	Dibenz(a,h)anthracene	53-70-3	N.D. UJ	0.040	ug/l	1
00898	Indeno(1,2,3-cd)pyrene	193-39-5	N.D. UJ	0.080	ug/l	1
00907	Benzo(g,h,i)perylene	191-24-2	N.D.	0.10	ug/l	1
07409	Chrysene	218-01-9	N.D.	0.080	ug/l	1
07410	Benzo(k)fluoranthene	207-08-9	N.D.	0.020	ug/l	1
	The recoveries for dibenz(a,h)anthracene and benzo(g,h,i)perylene were outside QC limits in the LCS associated with this sample. The sample was					

0 0 4 1

TBS 1/23/03

MEMBER ACIL
Lancaster Laboratories, Inc.
2425 New Holland Pike
PO Box 12425
Lancaster, PA 17605-2425

Lancaster Laboratories

Lancaster Laboratories Sample No. WW 3958172

Collected:12/10/2002 15:00 by BS

Account Number: 07802

Submitted: 12/11/2002 13:30
Reported: 01/08/2003 at 11:59
Discard: 02/08/2003
MA3-TG2-2-101202-11 Grab Water Sample
Moss American Superfund Site - Milwaukee, WI

Kerr-McGee Corporation
P.O. Box 25861
Oklahoma City OK 73125

2-2-1 SDG#: KMA34-12

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor

re-extracted outside of the method hold time. Comparable sample results were observed between the two extractions. The results reported are from the initial extraction of the sample.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00217	Kjeldahl Nitrogen	EPA 351.2	1	12/19/2002 15:16	Venia B McFadden	1
00219	Nitrite Nitrogen	EPA 353.2	1	12/11/2002 16:06	Venia B McFadden	1
00220	Nitrate Nitrogen	EPA 353.2	1	12/17/2002 11:18	Ramona V Goss	1
00221	Ammonia Nitrogen	EPA 350.2	1	12/12/2002 22:15	Luz M Groff	1
00226	Ortho-Phosphate as P	EPA 365.3	1	12/11/2002 20:10	Daniel S Smith	1
00235	Biochemical Oxygen Demand	EPA 405.1	1	12/11/2002 23:02	Nicole R Bushong	1
00273	Total Organic Carbon	EPA 415.1	1	12/17/2002 00:32	Timothy M Petree	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	12/24/2002 18:10	Venia B McFadden	1
01553	Chemical Oxygen Demand	EPA 410.2	1	12/16/2002 05:50	Susan A Engle	1
08213	BTEX (8021)	SW-846 8021B	1	12/13/2002 09:10	Melissa D Mann	1
00774	PAH's in Water by HPLC	SW-846 8310	1	12/15/2002 07:27	Mark A Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	12/13/2002 09:10	Melissa D Mann	n.a.
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	12/12/2002 09:10	Cheryl L Robinson	1
03337	PAH Water Extraction	SW-846 3510C	1	12/13/2002 10:20	Felix C Arroyo	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	12/13/2002 11:00	James S Mathiot	1

0942

Lancaster Laboratories

Lancaster Laboratories Sample No. WW 3958173

Collected:12/10/2002 14:50 by BS

Account Number: 07802

Submitted: 12/11/2002 13:30
Reported: 01/08/2003 at 11:59
Discard: 02/08/2003
MA3-TG2-1-101202-10 Grab Water Sample
Moss American Superfund Site - Milwaukee, WI

Kerr-McGee Corporation
P.O. Box 25861
Oklahoma City OK 73125

2-1-1 SDG#: KMA34-13

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
00217	Kjeldahl Nitrogen	7727-37-9	N.D.	0.30	mg/l	1
00219	Nitrite Nitrogen	14797-65-0	N.D.	0.015	mg/l	1
00220	Nitrate Nitrogen	14797-55-8	N.D.	0.040	mg/l	1
00221	Ammonia Nitrogen	7664-41-7	N.D.	0.46	mg/l	1
	Sufficient sample volume was not available to perform a MS/MSD for this analysis. Therefore, a LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					
00226	Ortho-Phosphate as P	14265-44-2	0.153	0.0066	mg/l	1
00235	Biochemical Oxygen Demand	n.a.	N.D.	2.6	mg/l	1
00273	Total Organic Carbon	n.a.	2.59	0.500	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	0.20	0.12	mg/l	1
01553	Chemical Oxygen Demand	n.a.	6.8 J	1.7	mg/l	1
08213	BTEX (8021)					
00776	Benzene	71-43-2	N.D.	0.20	ug/l	1
00777	Toluene	108-88-3	N.D.	0.20	ug/l	1
00778	Ethylbenzene	100-41-4	N.D.	0.20	ug/l	1
00779	Total Xylenes	1330-20-7	N.D.	0.60	ug/l	1
00774	PAH's in Water by HPLC					
00775	Naphthalene	91-20-3	N.D.	1.0	ug/l	1
00782	Acenaphthylene	208-96-8	N.D.	2.0	ug/l	1
00783	Acenaphthene	83-32-9	N.D.	2.0	ug/l	1
00784	Fluorene	86-73-7	N.D.	0.20	ug/l	1
00785	Phenanthrene	85-01-8	N.D.	0.080	ug/l	1
00789	Anthracene	120-12-7	N.D.	0.040	ug/l	1
00807	Fluoranthene	206-44-0	N.D.	0.040	ug/l	1
00811	Pyrene	129-00-0	N.D.	0.20	ug/l	1
00812	Benzo(a)anthracene	56-55-3	N.D.	0.020	ug/l	1
00818	Benzo(b)fluoranthene	205-99-2	N.D.	0.040	ug/l	1
00823	Benzo(a)pyrene	50-32-8	N.D.	0.020	ug/l	1
00895	Dibenz(a,h)anthracene	53-70-3	N.D. UJ	0.040	ug/l	1
00898	Indeno(1,2,3-cd)pyrene	193-39-5	N.D. UJ	0.080	ug/l	1
00907	Benzo(g,h,i)perylene	191-24-2	N.D.	0.10	ug/l	1
07409	Chrysene	218-01-9	N.D.	0.080	ug/l	1
07410	Benzo(k)fluoranthene	207-08-9	N.D.	0.020	ug/l	1
	The recoveries for dibenz(a,h)anthracene and benzo(g,h,i)perylene were outside QC limits in the LCS associated with this sample. The sample was					

0 0 4 3

TBS 1/23/03

MEMBER ACIL
Lancaster Laboratories, Inc.
2425 New Holland Pike
PO Box 12425
Lancaster, PA 17605-2425
717 656 2300 Fax 717 656 2681

Lancaster Laboratories

Lancaster Laboratories Sample No. WW 3958173

Collected:12/10/2002 14:50 by BS

Account Number: 07802

Submitted: 12/11/2002 13:30
Reported: 01/08/2003 at 11:59
Discard: 02/08/2003
MA3-TG2-1-101202-10 Grab Water Sample
Moss American Superfund Site - Milwaukee, WI

Kerr-McGee Corporation
P.O. Box 25861
Oklahoma City OK 73125

2-1-1 SDG#: KMA34-13

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor

re-extracted outside of the method hold time. Comparable sample results were observed between the two extractions. The results reported are from the initial extraction of the sample.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00217	Kjeldahl Nitrogen	EPA 351.2	1	12/19/2002 15:17	Venia B McFadden	1
00219	Nitrite Nitrogen	EPA 353.2	1	12/11/2002 16:05	Venia B McFadden	1
00220	Nitrate Nitrogen	EPA 353.2	1	12/17/2002 11:19	Ramona V Goss	1
00221	Ammonia Nitrogen	EPA 350.2	1	12/13/2002 14:30	Luz M Groff	1
00226	Ortho-Phosphate as P	EPA 365.3	1	12/11/2002 20:10	Daniel S Smith	1
00235	Biochemical Oxygen Demand	EPA 405.1	1	12/11/2002 23:02	Nicole R Bushong	1
00273	Total Organic Carbon	EPA 415.1	1	12/17/2002 00:40	Timothy M Petree	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	12/24/2002 18:10	Venia B McFadden	1
01553	Chemical Oxygen Demand	EPA 410.2	1	12/16/2002 05:50	Susan A Engle	1
08213	BTEX (8021)	SW-846 8021B	1	12/13/2002 09:43	Melissa D Mann	1
00774	PAH's in Water by HPLC	SW-846 8310	1	12/15/2002 08:44	Mark A Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	12/13/2002 09:43	Melissa D Mann	n.a.
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	12/12/2002 09:10	Cheryl L Robinson	1
03337	PAH Water Extraction	SW-846 3510C	1	12/13/2002 10:20	Felix C Arroyo	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	12/13/2002 11:00	James S Mathiot	1

0044

Lancaster Laboratories

Lancaster Laboratories Sample No. WW 3958174

Collected:12/10/2002 09:15 by BS

Account Number: 07802

Submitted: 12/11/2002 13:30
Reported: 01/08/2003 at 11:59
Discard: 02/08/2003
MA3-TG6-3-101202-03 Grab Water Sample
Moss American Superfund Site - Milwaukee, WI

Kerr-McGee Corporation
P.O. Box 25861
Oklahoma City OK 73125

3-101 SDG#: KMA34-14

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
00217	Kjeldahl Nitrogen	7727-37-9	0.85 J	0.30	mg/l	1
00219	Nitrite Nitrogen	14797-65-0	N.D.	0.015	mg/l	1
00220	Nitrate Nitrogen	14797-55-8	N.D.	0.040	mg/l	1
00221	Ammonia Nitrogen	7664-41-7	0.49 J	0.46	mg/l	1
	Sufficient sample volume was not available to perform a MS/MSD for this analysis. Therefore, a LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					
00226	Ortho-Phosphate as P	14265-44-2	0.042	0.0066	mg/l	1
00235	Biochemical Oxygen Demand	n.a.	N.D.	3.4	mg/l	1
00273	Total Organic Carbon	n.a.	8.01	0.500	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	0.27	0.12	mg/l	1
01553	Chemical Oxygen Demand	n.a.	19.4	1.7	mg/l	1
08213	BTEX (8021)					
00776	Benzene	71-43-2	N.D.	0.20	ug/l	1
00777	Toluene	108-88-3	N.D.	0.20	ug/l	1
00778	Ethylbenzene	100-41-4	N.D.	0.20	ug/l	1
00779	Total Xylenes	1330-20-7	N.D.	0.60	ug/l	1
00774	PAH's in Water by HPLC					
00775	Naphthalene	91-20-3	N.D.	1.0	ug/l	1
00782	Acenaphthylene	208-96-8	N.D.	2.0	ug/l	1
00783	Acenaphthene	83-32-9	N.D.	2.0	ug/l	1
00784	Fluorene	86-73-7	N.D.	0.20	ug/l	1
00785	Phenanthrene	85-01-8	N.D.	0.080	ug/l	1
00789	Anthracene	120-12-7	N.D.	0.040	ug/l	1
00807	Fluoranthene	206-44-0	0.058 J	0.040	ug/l	1
00811	Pyrene	129-00-0	N.D.	0.20	ug/l	1
00812	Benzo(a)anthracene	56-55-3	N.D.	0.020	ug/l	1
00818	Benzo(b)fluoranthene	205-99-2	N.D.	0.040	ug/l	1
00823	Benzo(a)pyrene	50-32-8	N.D.	0.020	ug/l	1
00895	Dibenz(a,h)anthracene	53-70-3	N.D. UJ	0.040	ug/l	1
00898	Indeno(1,2,3-cd)pyrene	193-39-5	N.D. UJ	0.080	ug/l	1
00907	Benzo(g,h,i)perylene	191-24-2	N.D.	0.10	ug/l	1
07409	Chrysene	218-01-9	N.D.	0.080	ug/l	1
07410	Benzo(k)fluoranthene	207-08-9	N.D.	0.020	ug/l	1
	The recoveries for dibenz(a,h)anthracene and benzo(g,h,i)perylene were outside QC limits in the LCS associated with this sample. The sample was					

0
0
4
5

TBS 1/23/03

MEMBER ACIL

Lancaster Laboratories, Inc.
2425 New Holland Pike
PO Box 12425
Lancaster, PA 17605-2425

Lancaster Laboratories

Lancaster Laboratories Sample No. WW 3958174

Collected:12/10/2002 09:15 by BS

Account Number: 07802

Submitted: 12/11/2002 13:30
Reported: 01/08/2003 at 11:59
Discard: 02/08/2003
MA3-TG6-3-101202-03 Grab Water Sample
Moss American Superfund Site - Milwaukee, WI

Kerr-McGee Corporation
P.O. Box 25861
Oklahoma City OK 73125

3-101 SDG#: KMA34-14

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor

re-extracted outside of the method hold time. Comparable sample results were observed between the two extractions. The results reported are from the initial extraction of the sample.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Analysis Trial#	Analysis Date and Time	Analyst	Dilution Factor
00217	Kjeldahl Nitrogen	EPA 351.2	1	12/19/2002 15:18	Venia B McFadden	1
00219	Nitrite Nitrogen	EPA 353.2	1	12/11/2002 15:52	Venia B McFadden	1
00220	Nitrate Nitrogen	EPA 353.2	1	12/17/2002 11:21	Ramona V Goss	1
00221	Ammonia Nitrogen	EPA 350.2	1	12/13/2002 14:30	Luz M Groff	1
00226	Ortho-Phosphate as P	EPA 365.3	1	12/11/2002 20:10	Daniel S Smith	1
00235	Biochemical Oxygen Demand	EPA 405.1	1	12/11/2002 23:47	Nicole R Bushong	1
00273	Total Organic Carbon	EPA 415.1	1	12/17/2002 00:48	Timothy M Petree	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	12/24/2002 18:11	Venia B McFadden	1
01553	Chemical Oxygen Demand	EPA 410.2	1	12/16/2002 05:50	Susan A Engle	1
08213	BTEX (8021)	SW-846 8021B	1	12/13/2002 15:39	Melissa D Mann	1
00774	PAH's in Water by HPLC	SW-846 8310	1	12/15/2002 09:23	Mark A Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	12/13/2002 15:39	Melissa D Mann	n.a.
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	12/12/2002 09:10	Cheryl L Robinson	1
03337	PAH Water Extraction	SW-846 3510C	1	12/13/2002 10:20	Felix C Arroyo	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	12/13/2002 11:00	James S Mathiot	1

0046

Lancaster Laboratories

Lancaster Laboratories Sample No. WW 3958175

Collected:12/10/2002 08:55 by BS

Account Number: 07802

Submitted: 12/11/2002 13:30
Reported: 01/08/2003 at 11:59
Discard: 02/08/2003
MA3-TG6-1-101202-01 Grab Water Sample
Moss American Superfund Site - Milwaukee, WI

Kerr-McGee Corporation
P.O. Box 25861
Oklahoma City OK 73125

6-101 SDG#: KMA34-15

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
00217	Kjeldahl Nitrogen	7727-37-9	0.95 J	0.30	mg/l	1
00219	Nitrite Nitrogen	14797-65-0	N.D.	0.015	mg/l	1
00220	Nitrate Nitrogen	14797-55-8	N.D.	0.040	mg/l	1
00221	Ammonia Nitrogen	7664-41-7	0.87 J	0.46	mg/l	1
	Sufficient sample volume was not available to perform a MS/MSD for this analysis. Therefore, a LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					
00226	Ortho-Phosphate as P	14265-44-2	0.051	0.0066	mg/l	1
00235	Biochemical Oxygen Demand	n.a.	N.D.	3.3	mg/l	1
00273	Total Organic Carbon	n.a.	8.82	0.500	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	0.36	0.12	mg/l	1
01553	Chemical Oxygen Demand	n.a.	21.3	1.7	mg/l	1
08213	BTEX (8021)					
00776	Benzene	71-43-2	N.D.	0.20	ug/l	1
00777	Toluene	108-88-3	N.D.	0.20	ug/l	1
00778	Ethylbenzene	100-41-4	N.D.	0.20	ug/l	1
00779	Total Xylenes	1330-20-7	N.D.	0.60	ug/l	1
00774	PAH's in Water by HPLC					
00775	Naphthalene	91-20-3	N.D.	1.0	ug/l	1
00782	Acenaphthylene	208-96-8	N.D.	2.0	ug/l	1
00783	Acenaphthene	83-32-9	N.D.	2.0	ug/l	1
00784	Fluorene	86-73-7	N.D.	0.20	ug/l	1
00785	Phenanthrene	85-01-8	N.D.	0.080	ug/l	1
00789	Anthracene	120-12-7	N.D.	0.040	ug/l	1
00807	Fluoranthene	206-44-0	N.D.	0.040	ug/l	1
00811	Pyrene	129-00-0	N.D.	0.20	ug/l	1
00812	Benzo(a)anthracene	56-55-3	N.D.	0.020	ug/l	1
00818	Benzo(b)fluoranthene	205-99-2	N.D.	0.040	ug/l	1
00823	Benzo(a)pyrene	50-32-8	N.D.	0.020	ug/l	1
00895	Dibenz(a,h)anthracene	53-70-3	N.D. UJ	0.040	ug/l	1
00898	Indeno(1,2,3-cd)pyrene	193-39-5	N.D. UJ	0.080	ug/l	1
00907	Benzo(g,h,i)perylene	191-24-2	N.D.	0.10	ug/l	1
07409	Chrysene	218-01-9	N.D.	0.080	ug/l	1
07410	Benzo(k)fluoranthene	207-08-9	N.D.	0.020	ug/l	1
	The recoveries for dibenz(a,h)anthracene and benzo(g,h,i)perylene were outside QC limits in the LCS associated with this sample. The sample was					

0
0
4
7

TBS
1/23/03

Lancaster Laboratories

Lancaster Laboratories Sample No. WW 3958175

Collected:12/10/2002 08:55 by BS

Account Number: 07802

Submitted: 12/11/2002 13:30
Reported: 01/08/2003 at 11:59
Discard: 02/08/2003
MA3-TG6-1-101202-01 Grab Water Sample
Moss American Superfund Site - Milwaukee, WI

Kerr-McGee Corporation
P.O. Box 25861
Oklahoma City OK 73125

6-101 SDG#: KMA34-15

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor

re-extracted outside of the method hold time. Comparable sample results were observed between the two extractions. The results reported are from the initial extraction of the sample.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00217	Kjeldahl Nitrogen	EPA 351.2	1	12/19/2002 15:19	Venia B McFadden	1
00219	Nitrite Nitrogen	EPA 353.2	1	12/11/2002 15:49	Venia B McFadden	1
00220	Nitrate Nitrogen	EPA 353.2	1	12/17/2002 11:22	Ramona V Goss	1
00221	Ammonia Nitrogen	EPA 350.2	1	12/13/2002 14:30	Luz M Groff	1
00226	Ortho-Phosphate as P	EPA 365.3	1	12/11/2002 20:10	Daniel S Smith	1
00235	Biochemical Oxygen Demand	EPA 405.1	1	12/11/2002 23:47	Nicole R Bushong	1
00273	Total Organic Carbon	EPA 415.1	1	12/17/2002 00:56	Timothy M Petree	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	12/24/2002 18:12	Venia B McFadden	1
01553	Chemical Oxygen Demand	EPA 410.2	1	12/16/2002 05:50	Susan A Engle	1
08213	BTEX (8021)	SW-846 8021B	1	12/13/2002 04:50	Linda C Pape	1
00774	PAH's in Water by HPLC	SW-846 8310	1	12/15/2002 10:01	Mark A Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	12/13/2002 04:50	Linda C Pape	n.a.
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	12/12/2002 09:10	Cheryl L Robinson	1
03337	PAH Water Extraction	SW-846 3510C	1	12/13/2002 10:20	Felix C Arroyo	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	12/13/2002 11:00	James S Mathiot	1

0048

Lancaster Laboratories

Lancaster Laboratories Sample No. WW 3958176

Collected:12/10/2002 13:45 by BS

Account Number: 07802

Submitted: 12/11/2002 13:30
Reported: 01/08/2003 at 11:59
Discard: 02/08/2003
MA3-TG3-1-101202-07 Grab Water Sample
Moss American Superfund Site - Milwaukee, WI

Kerr-McGee Corporation
P.O. Box 25861
Oklahoma City OK 73125

31101 SDG#: KMA34-16

CAT No.	Analysis Name	CAS Number	As Received Result		As Received Method Detection Limit	Units	Dilution Factor
00217	Kjeldahl Nitrogen	7727-37-9	0.40	J	0.30	mg/l	1
00219	Nitrite Nitrogen	14797-65-0	0.036	J	0.015	mg/l	1
00220	Nitrate Nitrogen	14797-55-8	0.060	J	0.040	mg/l	1
00221	Ammonia Nitrogen	7664-41-7	0.46	J	0.46	mg/l	1
	Sufficient sample volume was not available to perform a MS/MSD for this analysis. Therefore, a LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.						
00226	Ortho-Phosphate as P	14265-44-2	0.064		0.0066	mg/l	1
00235	Biochemical Oxygen Demand	n.a.	N.D.		2.9	mg/l	1
00273	Total Organic Carbon	n.a.	10.9		0.500	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	0.30		0.12	mg/l	1
01553	Chemical Oxygen Demand	n.a.	26.2		1.7	mg/l	1
08213	BTEX (8021)						
00776	Benzene	71-43-2	N.D.		0.20	ug/l	1
00777	Toluene	108-88-3	N.D.		0.20	ug/l	1
00778	Ethylbenzene	100-41-4	N.D.		0.20	ug/l	1
00779	Total Xylenes	1330-20-7	N.D.		0.60	ug/l	1
00774	PAH's in Water by HPLC						
00775	Naphthalene	91-20-3	N.D.		1.0	ug/l	1
00782	Acenaphthylene	208-96-8	N.D.		2.0	ug/l	1
00783	Acenaphthene	83-32-9	N.D.		2.0	ug/l	1
00784	Fluorene	86-73-7	0.21	J	0.20	ug/l	1
00785	Phenanthrene	85-01-8	N.D.		0.080	ug/l	1
00789	Anthracene	120-12-7	N.D.		0.040	ug/l	1
00807	Fluoranthene	206-44-0	0.044	J	0.040	ug/l	1
00811	Pyrene	129-00-0	N.D.		0.20	ug/l	1
00812	Benzo(a)anthracene	56-55-3	N.D.		0.020	ug/l	1
00818	Benzo(b)fluoranthene	205-99-2	N.D.		0.040	ug/l	1
00823	Benzo(a)pyrene	50-32-8	N.D.		0.020	ug/l	1
00895	Dibenz(a,h)anthracene	53-70-3	N.D.	UJ	0.040	ug/l	1
00898	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	UJ	0.080	ug/l	1
00907	Benzo(g,h,i)perylene	191-24-2	N.D.		0.10	ug/l	1
07409	Chrysene	218-01-9	N.D.		0.080	ug/l	1
07410	Benzo(k)fluoranthene	207-08-9	N.D.		0.020	ug/l	1
	The recoveries for dibenz(a,h)anthracene and benzo(g,h,i)perylene were outside QC limits in the LCS associated with this sample. The sample was						

0 0 4 9

TBS 1/23/03

MEMBER ACIL
Lancaster Laboratories, Inc.
2425 New Holland Pike
PO Box 12425
Lancaster, PA 17605-2425

Lancaster Laboratories

Lancaster Laboratories Sample No. WW 3958176

Collected:12/10/2002 13:45 by BS

Account Number: 07802

Submitted: 12/11/2002 13:30
Reported: 01/08/2003 at 11:59
Discard: 02/08/2003
MA3-TG3-1-101202-07 Grab Water Sample
Moss American Superfund Site - Milwaukee, WI

Kerr-McGee Corporation
P.O. Box 25861
Oklahoma City OK 73125

31101 SDG#: KMA34-16

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor

re-extracted outside of the method hold time. Comparable sample results were observed between the two extractions. The results reported are from the initial extraction of the sample.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00217	Kjeldahl Nitrogen	EPA 351.2	1	12/20/2002 15:47	Venia B McFadden	1
00219	Nitrite Nitrogen	EPA 353.2	1	12/11/2002 15:59	Venia B McFadden	1
00220	Nitrate Nitrogen	EPA 353.2	1	12/17/2002 12:41	Ramona V Goss	1
00221	Ammonia Nitrogen	EPA 350.2	1	12/13/2002 14:30	Luz M Groff	1
00226	Ortho-Phosphate as P	EPA 365.3	1	12/11/2002 20:10	Daniel S Smith	1
00235	Biochemical Oxygen Demand	EPA 405.1	1	12/11/2002 23:47	Nicole R Bushong	1
00273	Total Organic Carbon	EPA 415.1	1	12/17/2002 01:04	Timothy M Petree	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	12/24/2002 18:13	Venia B McFadden	1
01553	Chemical Oxygen Demand	EPA 410.2	1	12/16/2002 05:50	Susan A Engle	1
08213	BTEX (8021)	SW-846 8021B	1	12/13/2002 15:06	Melissa D Mann	1
00774	PAH's in Water by HPLC	SW-846 8310	1	12/15/2002 10:40	Mark A Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	12/13/2002 15:06	Melissa D Mann	n.a.
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	12/12/2002 09:10	Cheryl L Robinson	1
03337	PAH Water Extraction	SW-846 3510C	1	12/13/2002 10:20	Felix C Arroyo	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	12/13/2002 11:00	James S Mathiot	1

Lancaster Laboratories

Lancaster Laboratories Sample No. WW 3958177

Collected:12/10/2002 09:05 by BS

Account Number: 07802

Submitted: 12/11/2002 13:30
Reported: 01/08/2003 at 11:59
Discard: 02/08/2003
MA3-TG6-2-101202-02 Unspiked Grab Water Sample
Moss American Superfund Site - Milwaukee, WI

Kerr-McGee Corporation
P.O. Box 25861
Oklahoma City OK 73125

62101 SDG#: KMA34-17BKG

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
00217	Kjeldahl Nitrogen	7727-37-9	0.74 J	0.30	mg/l	1
00219	Nitrite Nitrogen	14797-65-0	N.D.	0.015	mg/l	1
00220	Nitrate Nitrogen	14797-55-8	N.D.	0.040	mg/l	1
00221	Ammonia Nitrogen	7664-41-7	0.58 J	0.46	mg/l	1
	Sufficient sample volume was not available to perform a MS/MSD for this analysis. Therefore, a LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					
00226	Ortho-Phosphate as P	14265-44-2	0.049	0.0066	mg/l	1
00235	Biochemical Oxygen Demand	n.a.	N.D.	3.0	mg/l	1
00273	Total Organic Carbon	n.a.	7.22	0.500	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	0.23	0.12	mg/l	1
01553	Chemical Oxygen Demand	n.a.	17.5	1.7	mg/l	1
08213	BTEX (8021)					
00776	Benzene	71-43-2	N.D.	0.20	ug/l	1
00777	Toluene	108-88-3	N.D.	0.20	ug/l	1
00778	Ethylbenzene	100-41-4	N.D.	0.20	ug/l	1
00779	Total Xylenes	1330-20-7	N.D.	0.60	ug/l	1
00774	PAH's in Water by HPLC					
00775	Naphthalene	91-20-3	N.D.	1.0	ug/l	1
00782	Acenaphthylene	208-96-8	N.D.	2.0	ug/l	1
00783	Acenaphthene	83-32-9	N.D.	2.0	ug/l	1
00784	Fluorene	86-73-7	N.D.	0.20	ug/l	1
00785	Phenanthrene	85-01-8	N.D.	0.080	ug/l	1
00789	Anthracene	120-12-7	N.D.	0.040	ug/l	1
00807	Fluoranthene	206-44-0	0.088 J	0.040	ug/l	1
00811	Pyrene	129-00-0	N.D.	0.20	ug/l	1
00812	Benzo(a)anthracene	56-55-3	N.D.	0.020	ug/l	1
00818	Benzo(b)fluoranthene	205-99-2	N.D.	0.040	ug/l	1
00823	Benzo(a)pyrene	50-32-8	0.028 J	0.020	ug/l	1
00895	Dibenz(a,h)anthracene	53-70-3	0.095 (J)	0.040	ug/l	1
00898	Indeno(1,2,3-cd)pyrene	193-39-5	0.11 (J)	0.080	ug/l	1
00907	Benzo(g,h,i)perylene	191-24-2	N.D.	0.10	ug/l	1
07409	Chrysene	218-01-9	N.D.	0.080	ug/l	1
07410	Benzo(k)fluoranthene	207-08-9	N.D.	0.020	ug/l	1

The recoveries for dibenz(a,h)anthracene and benzo(g,h,i)perylene were outside QC limits in the LCS associated with this sample. The sample was

0051

TBS 1/23/03

MEMBER ACIL
Lancaster Laboratories, Inc.
2425 New Holland Pike
PO Box 12425
Lancaster, PA 17605-2425

Lancaster Laboratories

Lancaster Laboratories Sample No. WW 3958177

Collected:12/10/2002 09:05 by BS

Account Number: 07802

Submitted: 12/11/2002 13:30
Reported: 01/08/2003 at 11:59
Discard: 02/08/2003
MA3-TG6-2-101202-02 Unspiked Grab Water Sample
Moss American Superfund Site - Milwaukee, WI

Kerr-McGee Corporation
P.O. Box 25861
Oklahoma City OK 73125

62101 SDG#: KMA34-17BKG

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor

re-extracted outside of the method hold time. Comparable sample results were observed between the two extractions. The results reported are from the initial extraction of the sample.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00217	Kjeldahl Nitrogen	EPA 351.2	1	12/20/2002 15:43	Venia B McFadden	1
00219	Nitrite Nitrogen	EPA 353.2	1	12/11/2002 15:50	Venia B McFadden	1
00220	Nitrate Nitrogen	EPA 353.2	1	12/17/2002 12:42	Ramona V Goss	1
00221	Ammonia Nitrogen	EPA 350.2	1	12/13/2002 14:30	Luz M Groff	1
00226	Ortho-Phosphate as P	EPA 365.3	1	12/11/2002 20:10	Daniel S Smith	1
00235	Biochemical Oxygen Demand	EPA 405.1	1	12/11/2002 23:47	Nicole R Bushong	1
00273	Total Organic Carbon	EPA 415.1	1	12/17/2002 01:12	Timothy M Petree	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	12/24/2002 18:14	Venia B McFadden	1
01553	Chemical Oxygen Demand	EPA 410.2	1	12/16/2002 05:50	Susan A Engle	1
08213	BTEX (8021)	SW-846 8021B	1	12/13/2002 05:23	Linda C Pape	1
00774	PAH's in Water by HPLC	SW-846 8310	1	12/15/2002 02:57	Mark A Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	12/13/2002 05:23	Linda C Pape	n.a.
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	12/12/2002 09:10	Cheryl L Robinson	1
03337	PAH Water Extraction	SW-846 3510C	1	12/13/2002 10:20	Felix C Arroyo	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	12/13/2002 11:00	James S Mathiot	1

0052

Lancaster Laboratories

Lancaster Laboratories Sample No. WW 3958178

Collected:12/10/2002 09:05 by BS

Account Number: 07802

Submitted: 12/11/2002 13:30
Reported: 01/08/2003 at 11:59
Discard: 02/08/2003
MA3-TG6-2-101202-02 Matrix Spike Grab Water Sample
Moss American Superfund Site - Milwaukee, WI

Kerr-McGee Corporation
P.O. Box 25861
Oklahoma City OK 73125

62101 SDG#: KMA34-17MS

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
08213	BTEX (8021)					
00776	Benzene	71-43-2	22.	0.20	ug/l	1
00777	Toluene	108-88-3	22.	0.20	ug/l	1
00778	Ethylbenzene	100-41-4	23.	0.20	ug/l	1
00779	Total Xylenes	1330-20-7	68.	0.60	ug/l	1
00774	PAH's in Water by HPLC					
00775	Naphthalene	91-20-3	160.	1.0	ug/l	1
00782	Acenaphthylene	208-96-8	160.	2.0	ug/l	1
00783	Acenaphthene	83-32-9	180.	2.0	ug/l	1
00784	Fluorene	86-73-7	17.	0.20	ug/l	1
00785	Phenanthrene	85-01-8	5.4	0.080	ug/l	1
00789	Anthracene	120-12-7	2.8	0.040	ug/l	1
00807	Fluoranthene	206-44-0	3.1	0.040	ug/l	1
00811	Pyrene	129-00-0	19.	0.20	ug/l	1
00812	Benzo(a)anthracene	56-55-3	1.4	0.020	ug/l	1
00818	Benzo(b)fluoranthene	205-99-2	1.1	0.040	ug/l	1
00823	Benzo(a)pyrene	50-32-8	1.5	0.020	ug/l	1
00895	Dibenz(a,h)anthracene	53-70-3	2.9 J	0.040	ug/l	1
00898	Indeno(1,2,3-cd)pyrene	193-39-5	6.3 J	0.080	ug/l	1
00907	Benzo(g,h,i)perylene	191-24-2	11.	0.10	ug/l	1
07409	Chrysene	218-01-9	5.6	0.080	ug/l	1
07410	Benzo(k)fluoranthene	207-08-9	1.1	0.020	ug/l	1

The recoveries for dibenz(a,h)anthracene and benzo(g,h,i)perylene were outside QC limits in the LCS associated with this sample. The sample was re-extracted outside of the method hold time. Comparable sample results were observed between the two extractions. The results reported are from the initial extraction of the sample.

TBS 1/23/03

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
08213	BTEX (8021)	SW-846 8021B	1	12/13/2002 12:58	Melissa D Mann	1
00774	PAH's in Water by HPLC	SW-846 8310	1	12/15/2002 03:35	Mark A Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	12/13/2002 12:58	Melissa D Mann	n.a.

CLIENT

MEMBER ACIL
Lancaster Laboratories, Inc.
2425 New Holland Pike
PO Box 12425
Lancaster, PA 17605-2425
717 656 2300 Fax 717 656 2681

Lancaster Laboratories

Lancaster Laboratories Sample No. WW 3958178

Collected:12/10/2002 09:05 by BS

Account Number: 07802

Submitted: 12/11/2002 13:30
Reported: 01/08/2003 at 11:59
Discard: 02/08/2003
MA3-TG6-2-101202-02 Matrix Spike Grab Water Sample
Moss American Superfund Site - Milwaukee, WI

Kerr-McGee Corporation
P.O. Box 25861
Oklahoma City OK 73125

62101 SDG#: KMA34-17MS

03337	PAH Water Extraction	SW-846 3510C	1	12/13/2002 10:20	Felix C Arroyo	1

4500

Lancaster Laboratories

Lancaster Laboratories Sample No. WW 3958179

Collected:12/10/2002 08:05 by BS

Account Number: 07802

Submitted: 12/11/2002 13:30
Reported: 01/08/2003 at 12:00
Discard: 02/08/2003
MA3-TG6-2-101202-02 Matrix Spike Dup Grab Water Sample
Moss American Superfund Site - Milwaukee, WI

Kerr-McGee Corporation
P.O. Box 25861
Oklahoma City OK 73125

62101 SDG#: KMA34-17MSD

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
08213	BTEX (8021)					
00776	Benzene	71-43-2	22.	0.20	ug/l	1
00777	Toluene	108-88-3	23.	0.20	ug/l	1
00778	Ethylbenzene	100-41-4	23.	0.20	ug/l	1
00779	Total Xylenes	1330-20-7	70.	0.60	ug/l	1
00774	PAH's in Water by HPLC					
00775	Naphthalene	91-20-3	150.	1.0	ug/l	1
00782	Acenaphthylene	208-96-8	160.	2.0	ug/l	1
00783	Acenaphthene	83-32-9	180.	2.0	ug/l	1
00784	Fluorene	86-73-7	17.	0.20	ug/l	1
00785	Phenanthrene	85-01-8	5.4	0.080	ug/l	1
00789	Anthracene	120-12-7	2.8	0.040	ug/l	1
00807	Fluoranthene	206-44-0	3.1	0.040	ug/l	1
00811	Pyrene	129-00-0	19.	0.20	ug/l	1
00812	Benzo(a)anthracene	56-55-3	1.5	0.020	ug/l	1
00818	Benzo(b)fluoranthene	205-99-2	1.2	0.040	ug/l	1
00823	Benzo(a)pyrene	50-32-8	1.5	0.020	ug/l	1
00895	Dibenz(a,h)anthracene	53-70-3	2.9J	0.040	ug/l	1
00898	Indeno(1,2,3-cd)pyrene	193-39-5	6.4J	0.080	ug/l	1
00907	Benzo(g,h,i)perylene	191-24-2	11.	0.10	ug/l	1
07409	Chrysene	218-01-9	5.7	0.080	ug/l	1
07410	Benzo(k)fluoranthene	207-08-9	1.2	0.020	ug/l	1

The recoveries for dibenz(a,h)anthracene and benzo(g,h,i)perylene were outside QC limits in the LCS associated with this sample. The sample was re-extracted outside of the method hold time. Comparable sample results were observed between the two extractions. The results reported are from the initial extraction of the sample.

TBS
1/23/03

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
08213	BTEX (8021)	SW-846 8021B	1	12/13/2002 13:30	Melissa D Mann	1
00774	PAH's in Water by HPLC	SW-846 8310	1	12/15/2002 04:14	Mark A Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	12/13/2002 13:30	Melissa D Mann	n.a.

Lancaster Laboratories

Lancaster Laboratories Sample No. WW 3958179

Collected:12/10/2002 08:05 by BS

Account Number: 07802

Submitted: 12/11/2002 13:30
Reported: 01/08/2003 at 12:00
Discard: 02/08/2003
MA3-TG6-2-101202-02 Matrix Spike Dup Grab
Water Sample
Moss American Superfund Site - Milwaukee, WI

Kerr-McGee Corporation
P.O. Box 25861
Oklahoma City OK 73125

62101 SDG#: KMA34-17MSD

03337	PAH Water Extraction	SW-846 3510C	1	12/13/2002 10:20	Felix C Arroyo	1

0056

Analysis Report

Lancaster Laboratories

Lancaster Laboratories Sample No. WW 3958180

Collected:12/10/2002 15:35 by BS

Account Number: 07802

Submitted: 12/11/2002 13:30
Reported: 01/08/2003 at 12:00
Discard: 02/08/2003
FB-01 Grab Water Sample
Moss American Superfund Site - Milwaukee, WI

Kerr-McGee Corporation
P.O. Box 25861
Oklahoma City OK 73125

FBKER SDG#: KMA34-18FB

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
08213	BTEX (8021)					
00776	Benzene	71-43-2	N.D.	0.20	ug/l	1
00777	Toluene	108-88-3	N.D.	0.20	ug/l	1
00778	Ethylbenzene	100-41-4	N.D.	0.20	ug/l	1
00779	Total Xylenes	1330-20-7	N.D.	0.60	ug/l	1
00774	PAH's in Water by HPLC					
00775	Naphthalene	91-20-3	N.D.	1.0	ug/l	1
00782	Acenaphthylene	208-96-8	N.D.	2.0	ug/l	1
00783	Acenaphthene	83-32-9	N.D.	2.0	ug/l	1
00784	Fluorene	86-73-7	N.D.	0.20	ug/l	1
00785	Phenanthrene	85-01-8	N.D.	0.080	ug/l	1
00789	Anthracene	120-12-7	N.D.	0.040	ug/l	1
00807	Fluoranthene	206-44-0	N.D.	0.040	ug/l	1
00811	Pyrene	129-00-0	N.D.	0.20	ug/l	1
00812	Benzo(a)anthracene	56-55-3	N.D.	0.020	ug/l	1
00818	Benzo(b)fluoranthene	205-99-2	N.D.	0.040	ug/l	1
00823	Benzo(a)pyrene	50-32-8	0.032 J	0.020	ug/l	1
00895	Dibenz(a,h)anthracene	53-70-3	N.D. VJ	0.040	ug/l	1
00898	Indeno(1,2,3-cd)pyrene	193-39-5	N.D. VJ	0.080	ug/l	1
00907	Benzo(g,h,i)perylene	191-24-2	N.D.	0.10	ug/l	1
07409	Chrysene	218-01-9	N.D.	0.080	ug/l	1
07410	Benzo(k)fluoranthene	207-08-9	N.D.	0.020	ug/l	1

The recoveries for dibenz(a,h)anthracene and benzo(g,h,i)perylene were outside QC limits in the LCS associated with this sample. The sample was re-extracted outside of the method hold time. Comparable sample results were observed between the two extractions. The results reported are from the initial extraction of the sample.

TBS
1/23/03

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
08213	BTEX (8021)	SW-846 8021B	1	12/13/2002 12:25	Melissa D Mann	1
00774	PAH's in Water by HPLC	SW-846 8310	1	12/15/2002 11:18	Mark A Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	12/13/2002 12:25	Melissa D Mann	n.a.

5
7

Lancaster Laboratories

Lancaster Laboratories Sample No. WW 3958180

Collected:12/10/2002 15:35 by BS

Account Number: 07802

Submitted: 12/11/2002 13:30
Reported: 01/08/2003 at 12:00
Discard: 02/08/2003
FB-01 Grab Water Sample
Moss American Superfund Site - Milwaukee, WI

Kerr-McGee Corporation
P.O. Box 25861
Oklahoma City OK 73125

FBKER SDG#: KMA34-18FB

03337	PAH Water Extraction	SW-846 3510C	1	12/13/2002 10:20	Felix C Arroyo	1

Analysis Report

Lancaster Laboratories

Lancaster Laboratories Sample No. WW 3958181

Collected:12/10/2002 16:05

Account Number: 07802

Submitted: 12/11/2002 13:30
Reported: 01/08/2003 at 12:00
Discard: 02/08/2003
TB-02 Grab Water Sample
Moss American Superfund Site - Milwaukee, WI

Kerr-McGee Corporation
P.O. Box 25861
Oklahoma City OK 73125

TBKER SDG#: KMA34-19TB

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
08213	BTEX (8021)					
00776	Benzene	71-43-2	N.D.	0.20	ug/l	1
00777	Toluene	108-88-3	N.D.	0.20	ug/l	1
00778	Ethylbenzene	100-41-4	N.D.	0.20	ug/l	1
00779	Total Xylenes	1330-20-7	N.D.	0.60	ug/l	1

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
08213	BTEX (8021)	SW-846 8021B	1	12/13/2002 11:53	Melissa D Mann	1
01146	GC VOA Water Prep	SW-846 5030B	1	12/13/2002 11:53	Melissa D Mann	n.a.

Analysis Report

Lancaster Laboratories

Lancaster Laboratories Sample No. WW 3958182

Collected:12/10/2002 13:50 by BS

Account Number: 07802

Submitted: 12/11/2002 13:30
Reported: 01/08/2003 at 12:00
Discard: 02/08/2003
MA3-TG3-2-101202-08 Grab Water Sample
Moss American Superfund Site - Milwaukee, WI

Kerr-McGee Corporation
P.O. Box 25861
Oklahoma City OK 73125

328-- SDG#: KMA34-20

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
00217	Kjeldahl Nitrogen	7727-37-9	1.3	0.30	mg/l	1
00219	Nitrite Nitrogen	14797-65-0	0.034 J	0.015	mg/l	1
00220	Nitrate Nitrogen	14797-55-8	N.D.	0.040	mg/l	1
00221	Ammonia Nitrogen	7664-41-7	0.93 J	0.46	mg/l	1
	Sufficient sample volume was not available to perform a MS/MSD for this analysis. Therefore, a LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					
00226	Ortho-Phosphate as P	14265-44-2	0.060	0.0066	mg/l	1
00235	Biochemical Oxygen Demand	n.a.	N.D.	5.6	mg/l	1
00273	Total Organic Carbon	n.a.	8.82	0.500	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	0.43	0.12	mg/l	1
01553	Chemical Oxygen Demand	n.a.	23.2	1.7	mg/l	1
08213	BTEX (8021)					
00776	Benzene	71-43-2	N.D.	0.20	ug/l	1
00777	Toluene	108-88-3	N.D.	0.20	ug/l	1
00778	Ethylbenzene	100-41-4	N.D.	0.20	ug/l	1
00779	Total Xylenes	1330-20-7	N.D.	0.60	ug/l	1
00774	PAH's in Water by HPLC					
00775	Naphthalene	91-20-3	N.D.	1.0	ug/l	1
00782	Acenaphthylene	208-96-8	N.D.	2.0	ug/l	1
00783	Acenaphthene	83-32-9	N.D.	2.0	ug/l	1
00784	Fluorene	86-73-7	N.D.	0.20	ug/l	1
00785	Phenanthrene	85-01-8	N.D.	0.080	ug/l	1
00789	Anthracene	120-12-7	N.D.	0.040	ug/l	1
00807	Fluoranthene	206-44-0	0.044 J	0.040	ug/l	1
00811	Pyrene	129-00-0	N.D.	0.20	ug/l	1
00812	Benzo(a)anthracene	56-55-3	N.D.	0.020	ug/l	1
00818	Benzo(b)fluoranthene	205-99-2	N.D.	0.040	ug/l	1
00823	Benzo(a)pyrene	50-32-8	N.D.	0.020	ug/l	1
00895	Dibenz(a,h)anthracene	53-70-3	N.D. UJ	0.040	ug/l	1
00898	Indeno(1,2,3-cd)pyrene	193-39-5	N.D. UJ	0.080	ug/l	1
00907	Benzo(g,h,i)perylene	191-24-2	N.D.	0.10	ug/l	1
07409	Chrysene	218-01-9	N.D.	0.080	ug/l	1
07410	Benzo(k)fluoranthene	207-08-9	N.D.	0.020	ug/l	1
	The recoveries for dibenz(a,h)anthracene and benzo(g,h,i)perylene were outside QC limits in the LCS associated with this sample. The sample was					

0 0 6 0

TBS 1/23/03

Lancaster Laboratories

Lancaster Laboratories Sample No. WW 3958182

Collected:12/10/2002 13:50 by BS

Account Number: 07802

Submitted: 12/11/2002 13:30
Reported: 01/08/2003 at 12:00
Discard: 02/08/2003
MA3-TG3-2-101202-08 Grab Water Sample
Moss American Superfund Site - Milwaukee, WI

Kerr-McGee Corporation
P.O. Box 25861
Oklahoma City OK 73125

328-- SDG#: KMA34-20

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor

re-extracted outside of the method hold time. Comparable sample results were observed between the two extractions. The results reported are from the initial extraction of the sample.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00217	Kjeldahl Nitrogen	EPA 351.2	1	12/20/2002 15:48	Venia B McFadden	1
00219	Nitrite Nitrogen	EPA 353.2	1	12/11/2002 16:00	Venia B McFadden	1
00220	Nitrate Nitrogen	EPA 353.2	1	12/17/2002 12:46	Ramona V Goss	1
00221	Ammonia Nitrogen	EPA 350.2	1	12/13/2002 14:30	Luz M Groff	1
00226	Ortho-Phosphate as P	EPA 365.3	1	12/11/2002 20:10	Daniel S Smith	1
00235	Biochemical Oxygen Demand	EPA 405.1	1	12/11/2002 23:47	Nicole R Bushong	1
00273	Total Organic Carbon	EPA 415.1	1	12/17/2002 01:36	Timothy M Petree	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	12/24/2002 18:19	Venia B McFadden	1
01553	Chemical Oxygen Demand	EPA 410.2	1	12/16/2002 05:50	Susan A Engle	1
08213	BTEX (8021)	SW-846 8021B	1	12/13/2002 16:12	Melissa D Mann	1
00774	PAH's in Water by HPLC	SW-846 8310	1	12/15/2002 11:57	Mark A Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	12/13/2002 16:12	Melissa D Mann	n.a.
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	12/12/2002 09:10	Cheryl L Robinson	1
03337	PAH Water Extraction	SW-846 3510C	1	12/13/2002 10:20	Felix C Arroyo	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	12/13/2002 11:00	James S Mathiot	1

Lancaster Laboratories, Inc.
2425 New Holland Pike
PO Box 12425
Lancaster, PA 17605-2425
717-656-2300 Fax: 717-656-2681

Analysis Report

Lancaster Laboratories

Lancaster Laboratories Sample No. WW 3958183

Collected:12/10/2002 13:55 by BS

Account Number: 07802

Submitted: 12/11/2002 13:30
Reported: 01/08/2003 at 12:00
Discard: 02/08/2003
MA3-TG3-3-101202-09 Grab Water Sample
Moss American Superfund Site - Milwaukee, WI

Kerr-McGee Corporation
P.O. Box 25861
Oklahoma City OK 73125

3309- SDG#: KMA34-21

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
00217	Kjeldahl Nitrogen	7727-37-9	2.3	0.30	mg/l	1
00219	Nitrite Nitrogen	14797-65-0	0.041 J	0.015	mg/l	1
00220	Nitrate Nitrogen	14797-55-8	N.D.	0.040	mg/l	1
00221	Ammonia Nitrogen	7664-41-7	1.2	0.46	mg/l	1
	Sufficient sample volume was not available to perform a MS/MSD for this analysis. Therefore, a LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.					
00226	Ortho-Phosphate as P	14265-44-2	0.048	0.0066	mg/l	1
00235	Biochemical Oxygen Demand	n.a.	6.4	0.80	mg/l	1
00273	Total Organic Carbon	n.a.	14.4	0.500	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	0.51	0.12	mg/l	1
01553	Chemical Oxygen Demand	n.a.	39.5	1.7	mg/l	1
08213	BTEX (8021)					
00776	Benzene	71-43-2	N.D.	0.20	ug/l	1
00777	Toluene	108-88-3	N.D.	0.20	ug/l	1
00778	Ethylbenzene	100-41-4	N.D.	0.20	ug/l	1
00779	Total Xylenes	1330-20-7	N.D.	0.60	ug/l	1
00774	PAH's in Water by HPLC					
00775	Naphthalene	91-20-3	N.D.	1.0	ug/l	1
00782	Acenaphthylene	208-96-8	N.D.	2.0	ug/l	1
00783	Acenaphthene	83-32-9	N.D.	2.0	ug/l	1
00784	Fluorene	86-73-7	N.D.	0.20	ug/l	1
00785	Phenanthrene	85-01-8	0.11 J	0.080	ug/l	1
00789	Anthracene	120-12-7	N.D.	0.040	ug/l	1
00807	Fluoranthene	206-44-0	0.061 J	0.040	ug/l	1
00811	Pyrene	129-00-0	N.D.	0.20	ug/l	1
00812	Benzo(a)anthracene	56-55-3	N.D.	0.020	ug/l	1
00818	Benzo(b)fluoranthene	205-99-2	N.D.	0.040	ug/l	1
00823	Benzo(a)pyrene	50-32-8	N.D.	0.020	ug/l	1
00895	Dibenz(a,h)anthracene	53-70-3	N.D. 0J	0.040	ug/l	1
00898	Indeno(1,2,3-cd)pyrene	193-39-5	N.D. 0J	0.080	ug/l	1
00907	Benzo(g,h,i)perylene	191-24-2	N.D.	0.10	ug/l	1
07409	Chrysene	218-01-9	N.D.	0.080	ug/l	1
07410	Benzo(k)fluoranthene	207-08-9	N.D.	0.020	ug/l	1
	The recoveries for dibenz(a,h)anthracene and benzo(g,h,i)perylene were outside QC limits in the LCS associated with this sample. The sample was					0 0 6 2

TBS 1/23/03

MEMBER ACIL
Lancaster Laboratories, Inc.
2425 New Holland Pike
PO Box 12425
Lancaster, PA 17605-2425

Lancaster Laboratories

Lancaster Laboratories Sample No. WW 3958183

Collected:12/10/2002 13:55 by BS

Account Number: 07802

Submitted: 12/11/2002 13:30
Reported: 01/08/2003 at 12:00
Discard: 02/08/2003
MA3-TG3-3-101202-09 Grab Water Sample
Moss American Superfund Site - Milwaukee, WI

Kerr-McGee Corporation
P.O. Box 25861
Oklahoma City OK 73125

3309- SDG#: KMA34-21

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor

re-extracted outside of the method hold time. Comparable sample results were observed between the two extractions. The results reported are from the initial extraction of the sample.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00217	Kjeldahl Nitrogen	EPA 351.2	1	01/06/2003 16:43	Venia B McFadden	1
00219	Nitrite Nitrogen	EPA 353.2	1	12/11/2002 16:04	Venia B McFadden	1
00220	Nitrate Nitrogen	EPA 353.2	1	12/17/2002 12:47	Ramona V Goss	1
00221	Ammonia Nitrogen	EPA 350.2	1	12/13/2002 14:30	Luz M Groff	1
00226	Ortho-Phosphate as P	EPA 365.3	1	12/11/2002 20:10	Daniel S Smith	1
00235	Biochemical Oxygen Demand	EPA 405.1	1	12/11/2002 23:47	Nicole R Bushong	1
00273	Total Organic Carbon	EPA 415.1	1	12/17/2002 01:44	Timothy M Petree	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	12/24/2002 18:20	Venia B McFadden	1
01553	Chemical Oxygen Demand	EPA 410.2	1	12/16/2002 05:50	Susan A Engle	1
08213	BTEX (8021)	SW-846 8021B	1	12/13/2002 17:51	Melissa D Mann	1
00774	PAH's in Water by HPLC	SW-846 8310	1	12/15/2002 12:35	Mark A Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	12/13/2002 17:51	Melissa D Mann	n.a.
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	2	12/17/2002 13:45	Nancy J Shoop	1
03337	PAH Water Extraction	SW-846 3510C	1	12/13/2002 10:20	Felix C Arroyo	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	12/13/2002 11:00	James S Mathiot	1

Lancaster Laboratories

Lancaster Laboratories Sample No. WW 3958184

Collected:12/10/2002 15:00 by BS

Account Number: 07802

Submitted: 12/11/2002 13:30
Reported: 01/08/2003 at 12:00
Discard: 02/08/2003
MA3-TG2-2-101202-11-DUP Grab Water Sample
Moss American Superfund Site - Milwaukee, WI

Kerr-McGee Corporation
P.O. Box 25861
Oklahoma City OK 73125

11FD- SDG#: KMA34-22FD*

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
08213	BTEX (8021)					
00776	Benzene	71-43-2	N.D.	0.20	ug/l	1
00777	Toluene	108-88-3	N.D.	0.20	ug/l	1
00778	Ethylbenzene	100-41-4	N.D.	0.20	ug/l	1
00779	Total Xylenes	1330-20-7	N.D.	0.60	ug/l	1
00774	PAH's in Water by HPLC					
00775	Naphthalene	91-20-3	N.D.	1.0	ug/l	1
00782	Acenaphthylene	208-96-8	N.D.	2.0	ug/l	1
00783	Acenaphthene	83-32-9	N.D.	2.0	ug/l	1
00784	Fluorene	86-73-7	N.D.	0.20	ug/l	1
00785	Phenanthrene	85-01-8	N.D.	0.080	ug/l	1
00789	Anthracene	120-12-7	N.D.	0.040	ug/l	1
00807	Fluoranthene	206-44-0	0.046 J	0.040	ug/l	1
00811	Pyrene	129-00-0	N.D.	0.20	ug/l	1
00812	Benzo(a)anthracene	56-55-3	N.D.	0.020	ug/l	1
00818	Benzo(b)fluoranthene	205-99-2	N.D.	0.040	ug/l	1
00823	Benzo(a)pyrene	50-32-8	N.D.	0.020	ug/l	1
00895	Dibenz(a,h)anthracene	53-70-3	N.D. UJ	0.040	ug/l	1
00898	Indeno(1,2,3-cd)pyrene	193-39-5	N.D. UJ	0.080	ug/l	1
00907	Benzo(g,h,i)perylene	191-24-2	N.D.	0.10	ug/l	1
07409	Chrysene	218-01-9	N.D.	0.080	ug/l	1
07410	Benzo(k)fluoranthene	207-08-9	N.D.	0.020	ug/l	1

The recoveries for dibenz(a,h)anthracene and benzo(g,h,i)perylene were outside QC limits in the LCS associated with this sample. The sample was re-extracted outside of the method hold time. Comparable sample results were observed between the two extractions. The results reported are from the initial extraction of the sample.

TBS
1/23/03

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
08213	BTEX (8021)	SW-846 8021B	1	12/13/2002 18:23	Melissa D Mann	1
00774	PAH's in Water by HPLC	SW-846 8310	1	12/15/2002 13:14	Mark A Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	12/13/2002 18:23	Melissa D Mann	n.a.

6
4

MEMBER ACIL
Lancaster Laboratories, Inc.
2425 New Holland Pike
PO Box 12425
Lancaster, PA 17605-2425
717-656-2300 Fax 717-656-2681

Lancaster Laboratories

Lancaster Laboratories Sample No. WW 3958184

Collected:12/10/2002 15:00 by BS

Account Number: 07802

Submitted: 12/11/2002 13:30
Reported: 01/08/2003 at 12:00
Discard: 02/08/2003
MA3-TG2-2-101202-11-DUP Grab Water Sample
Moss American Superfund Site - Milwaukee, WI

Kerr-McGee Corporation
P.O. Box 25861
Oklahoma City OK 73125

11FD- SDG#: KMA34-22FD*

03337	PAH Water Extraction	SW-846 3510C	1	12/13/2002 10:20	Felix C Arroyo	1

MEMBER ACIL

Analysis Request / Environmental Services Chain of Custody

Lancaster Laboratories
Where quality is a science.

For Lancaster Laboratories use only
Acct. # 7802 Group# 833887 Sample # 3957167-73

COC # 0010993

Please print. Instructions on reverse side correspond with circled numbers.

1
Client: Weston Acct. #:
Project Name/#: Moss American PWSID #:
Project Manager: Tom Graan P.O.#:
Sampler: B. Schaefer, S. Meyer, M. Castillo Quote #:
Name of state where samples were collected: WI

For Lab Use Only
FSC:
SCR #: 1122253

2 Sample Identification	Date Collected	Time Collected	3 Grab	Composite	Matrix 4 Soil	Water (☐ Potable ☐ NPDES)	Other	Total # of Containers	5 Analyses Requested PAH	TKN	TP-PO4	NH3	COD	O-PO4	BOD	TOC	BTEX	NO3	NO2	Remarks	6 Temperature of samples upon receipt (if requested)
MA3-TGS-1-091202-01	12/9/02	1550	X			X		11	X	X	X	X	X	X	X	X	X	X	X		
MA3-TGS-1-091202-01-DUP	↓	1550	X			X		5	X								X				
MA3-TGS-2-091202-02		1600	X			X		5									X	X	X		
MA3-TGS-3-091202-03		1610	X			X		5									X	X	X		
TB-01		1730	X			X		2									X				

7 Turnaround Time Requested (TAT) (please circle): Normal Rush
(Rush TAT is subject to Lancaster Laboratories approval and surcharge.)
Date results are needed: STD TAT
Rush results requested by (please circle): Phone Fax E-mail
Phone #: 847-918-4000 Fax #: 847-918-4055
E-mail address:

8 Data Package Options (please circle if required)
QC Summary — Type VI (Raw Data) PER QUOTE
Type I (Tier I) — GLP
Type II (Tier II) — Other
Type III (NJ Red. Del.)
Type IV (CLP)

SDG Complete? Yes No
State-specific QC required? Yes No
(If yes, indicate QC sample and submit triplicate volume.)
Internal Chain of Custody required? Yes No

Relinquished by:	Date	Time	Received by:	Date	Time
K. Gunter [signature]	12-5-02	1245			
[signature]	12/9/02	1815			
			Kathy Binkley	12-10-02	0920

9

Lancaster Laboratories, Inc., 2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 (717) 656-2300
Cop lite ow s icco[redacted] sam[redacted] Lan abo ... The pink copy should be retained by the client.

2102 Rev. 7/1/02

Analysis Request / Environmental Services Chain of Custody

Lancaster Laboratories
Where quality is a science.

For Lancaster Laboratories use only
Acct. # 7802 Group# 833887 Sample # 3957167-73

COC # 0010994

Please print. Instructions on reverse side correspond with circled numbers.

1
Client: Weston Acct. #:
Project Name/#: Moss American PWSID #:
Project Manager: Tom Graan P.O.#:
Sampler: B.Schaefer, S.meyer, M.Castillo Quote #:
Name of state where samples were collected: WI

For Lab Use Only
FSC:
SCR #:

2 3 4 5 6

Sample Identification	Date Collected	Time Collected	Grab	Composite	Soil	Water (☐ Potable ☐ NPDES)	Other	Total # of Containers	PAH	TKN	TP-PO4	NH3	COD	O-PO4	BOD	TOC		Remarks	Temperature of samples upon receipt (if requested)
MA3-TG5-2-091202-02	12/9/02	1600	X			X		6	X	X	X	X	X	X	X	X			
MA3-TG5-3-091202-03	12/9/02	1610	X			X		6	X	X	X	X	X	X	X	X			

7 **Turnaround Time Requested (TAT)** (please circle): Normal Rush
(Rush TAT is subject to Lancaster Laboratories approval and surcharge.)
Date results are needed: STD TAT
Rush results requested by (please circle): Phone Fax E-mail
Phone #: 847-918-4000 Fax #: 847-918-4055
E-mail address:

8 **Data Package Options** (please circle if required)
QC Summary
Type I (Tier I)
Type II (Tier II)
Type III (NJ Red. Del.)
Type IV (CLP)
Type VI (Raw Data) PER QUOTE
GLP
Other

SDG Complete? Yes NO

State-specific QC required? Yes No
(If yes, indicate QC sample and submit triplicate volume.)
Internal Chain of Custody required? Yes No

9

Relinquished by:	Date	Time	Received by:	Date	Time
[signature]	12/9/02	1815			
			Kathy Brinkley	12-10-02	0920

Lancaster Laboratories, Inc., 2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 (717) 656-2300
Copi te ai w sh com[redacted]amp[redacted]Lanc ibor The pink copy should be retained by the client.

2102 Rev. 7/1/02

Analysis Request / Environmental Services Chain of Custody

Lancaster Laboratories
Where quality is a science.

For Lancaster Laboratories use only
Acct. # 7802 Group# 834101 Sample # 3958148-84

COC # 0010989

Please print. Instructions on reverse side correspond with circled numbers.

1. Client: Weston Acct. #:
Project Name/#: Moss American PWSID #:
Project Manager: Tom Graan P.O.#:
Sampler: B. Schaefer, S. Meyer, M. Castillo Quote #:
Name of state where samples were collected: WI

For Lab Use Only
FSC:
SCR #:

2. Sample Identification	Date Collected	Time Collected	3. Grab	Composite	Matrix: Soil	Water (Potable / NPDES)	Other	4. Total # of Containers	5. Analyses Requested: TOC	COD	NH3	PAH	TP-PO4	TKN	BOD	O-PO4	Remarks	6. Temperature of samples upon receipt (if requested)
MA3-TG2-2-101202-11	12/10/02	1500	X			X		2	X	X	X							
MA3-TG6-3-101202-03	↓	0915	X			X		6	X	X	X	X	X	X	X	X		
MA3-TG4-3-101202-06	↓	1105	X			X		4		X	X	X	X	X				

7. Turnaround Time Requested (TAT) (please circle): Normal Rush
(Rush TAT is subject to Lancaster Laboratories approval and surcharge.)
Date results are needed: STD TAT
Rush results requested by (please circle): Phone Fax E-mail
Phone #: 847-918-4000 Fax #: 847-918-4055
E-mail address:

8. Data Package Options (please circle if required)
QC Summary · Type VI (Raw Data) PER QUOTE
Type I (Tier I) · GLP
Type II (Tier II) · Other
Type III (NJ Red. Del.)
Type IV (CLP)

SDG Complete? Yes No (circled)
State-specific QC required? Yes No
(If yes, indicate QC sample and submit triplicate volume.)
Internal Chain of Custody required? Yes No

Relinquished by:	Date	Time	Received by:	Date	Time
[signature]	12/10/02	1800			
			[signature]	12/11/02	1330

9.

Analysis Request / Environmental Services Chain of Custody

Lancaster Laboratories
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For Lancaster Laboratories use only
Acct. # 7802 Group# 834101 Sample # 395168-84

COC # 0010995

Please print. Instructions on reverse side correspond with circled numbers.

1
Client: WPSTON Acct. #:
Project Name/#: Mass American PWSID #:
Project Manager: Tom Graan P.O.#:
Sampler: B. Schaefer, S. Meyer, M. Castillo Quote #:
Name of state where samples were collected: WI

For Lab Use Only
FSC:
SCR #:

2 Sample Identification	Date Collected	Time Collected	3 Grab	Composite	4 Matrix: Soil	Water	Other	Total # of Containers	5 Analyses Requested: PA-H	TP-PO4	TKN	NH3	COD	O-PO4	BOD	TOC	Remarks	6 Temperature (°C) Received
MA3-TG6-1-101202-01	12/10/02	0855	X			X		6	X	X	X	X	X	X	X	X		
MA3-TG6-2-101202-02		0905	X			X		6	X	X	X	X	X	X	X	X		
MA3-TG6-2-101202-02-MS		0905	X			X		2	X									
MA3-TG6-2-101202-02-MSD		0905	X			X		2	X									

7
Turnaround Time Requested (TAT) (please circle): Normal Rush
(Rush TAT is subject to Lancaster Laboratories approval and surcharge.)
Date results are needed: STD TAT
Rush results requested by (please circle): Phone Fax E-mail
Phone #: 847-918-4000 Fax #: 847-918-4055
E-mail address:

8
Data Package Options (please circle if required)
QC Summary Type VI (Raw Data) PER QUOTE
Type I (Tier I) GLP
Type II (Tier II) Other
Type III (NJ Red. Del.)
Type IV (CLP)
SDG Complete? Yes NO
State-specific QC required? Yes No
(If yes, indicate QC sample and submit triplicate volume.)
Internal Chain of Custody required? Yes No

9

Relinquished by:	Date	Time	Received by:	Date	Time
[signature]	12/10/02	1800			
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by: [signature]	12/11/02	1330

[redacted]caster[redacted]rator , 24 / Hol ke, F 124 cast PA 17605-2425 (717) 656-2300
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2102 Rev. 7/1/02

Analysis Request / Environmental Services Chain of Custody

Lancaster Laboratories
Where quality is a science.

For Lancaster Laboratories use only
Acct. # 782 Group# 834101 Sample # 3958168-84

COC # 0010990

Please print. Instructions on reverse side correspond with circled numbers.

1 Client: Weston Acct. #:
Project Name/#: Moss American PWSID #:
Project Manager: Tom Graan P.O.#:
Sampler: B. Schaefer, M. Castillo, S. Meyer Quote #:
Name of state where samples were collected: WI

For Lab Use Only
FSC:
SCR #:

2 Sample Identification	Date Collected	Time Collected	3 Grab	Composite	Matrix: Soil	Water (Potable / NPDES)	Other	4 Total # of Containers	5 Analyses Requested: PAH	TKN	TP-PO4	COD	NH3	O-PO4	BOD	TOC	BTEX	Remarks	6 Temperature of samples upon receipt (if requested)
MA3-TG2-2-101202-11	12/10/02	1500	X			X		3	X	X	X	X	X			X		DUP SAMPLE	
MA3-TG2-1-101202-10	↓	1450	X			X		6	X	X	X	X	X	X	X	X		ADDED PER	
MA3-TG2-1-101202-11-DUP									X								X	B. SCHAEFER	
																		REQUEST.	
																		CAF 12/12/02	
																		1046	

7 Turnaround Time Requested (TAT) (please circle): Normal Rush
(Rush TAT is subject to Lancaster Laboratories approval and surcharge.)
Date results are needed: STD TAT
Rush results requested by (please circle): Phone Fax E-mail
Phone #: 847-918-4000 Fax #: 847-918-4055
E-mail address:

8 Data Package Options (please circle if required)
QC Summary Type VI (Raw Data) PER QUOTE
Type I (Tier I) GLP
Type II (Tier II) Other
Type III (NJ Red. Del.)
Type IV (CLP)

SDG Complete? Yes No
State-specific QC required? Yes No
(If yes, indicate QC sample and submit triplicate volume.)
Internal Chain of Custody required? Yes No

Relinquished by:	Date	Time	Received by:	Date	Time 9
[signature]	12/10/02	1800			
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by: [signature]	12/11/02	1330

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Copy [illegible] samples to Lancaster Laboratories. The pink copy should be retained by the client.

2102 Rev. 7/1/02

Analysis Request / Environmental Services Chain of Custody

Lancaster Laboratories
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For Lancaster Laboratories use only
Acct. # 7802 Group# 834101 Sample # 3958168-84

COC # 0010988

Please print. Instructions on reverse side correspond with circled numbers.

(1)
Client: Weston Acct. #:
Project Name/#: Moss American PWSID #:
Project Manager: Tom Gragan P.O.#:
Sampler: B. Schaefer, M. Castillo, S. Meyer Quote #:
Name of state where samples were collected: WI

For Lab Use Only
FSC:
SCR #:

(2) Sample Identification	Date Collected	Time Collected	(3) Grab	Composite	(4) Matrix: Soil	Water	Other	Total # of Containers	(5) Analyses Requested: O-PO4	BOD	TOC	NH3	COD	TKN	TP-PO4	PAH	Remarks	(6) Temperature of Sample(s) Received (°C)
MA3-TG4-3-101202-06	12/10/02	1105	X			X		6	X	X	X							
MA3-TG4-1-101202-04		1045	X			X		6	X	X	X	X	X	X	X	X		
MA3-TG4-2-101202-05		1055	X			X		6	X	X	X	X	X	X	X	X		

(7) Turnaround Time Requested (TAT) (please circle): Normal Rush
(Rush TAT is subject to Lancaster Laboratories approval and surcharge.)
Date results are needed: STD TAT
Rush results requested by (please circle): Phone Fax E-mail
Phone #: 847-918-4000 Fax #: 847-918-4055
E-mail address:

(8) Data Package Options (please circle if required)
QC Summary Type VI (Raw Data) PER QUOTE
Type I (Tier I) GLP
Type II (Tier II) Other
Type III (NJ Red. Del.)
Type IV (CLP)

SDG Complete? Yes No

State-specific QC required? Yes No
(If yes, indicate QC sample and submit triplicate volume.)
Internal Chain of Custody required? Yes No

(9)

Relinquished by:	Date	Time	Received by:	Date	Time
[signature]	12/10/02	1800			
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by: [signature]	12/11/02	735

Analysis Request / Environmental Services Chain of Custody

Lancaster Laboratories
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For Lancaster Laboratories use only
Acct. # 1892 Group# 834101 Sample # 3958168-84

COC # 0010987

1 of 2

Please print. Instructions on reverse side correspond with circled numbers.

1

Client: Weston Acct. #:
Project Name/#: Moss American PWSID #:
Project Manager: Tom Graan P.O.#:
Sampler: B. Schaefer, M. Castillo, S. Meyer Quote #:
Name of state where samples were collected: WI

For Lab Use Only
FSC:
SCR #:

2 Sample Identification	Date Collected	Time Collected	3 Grab	Composite	Matrix: Soil	Water	Other	4 Total # of Containers	5 Analyses Requested: BOD	O-PO4	PAH	TOC	TP-PO4	TKN	COD	NH3	BTEX	NO2	NO3	Remarks	6 Temperature (°C) Received
MA3-TG4-3-101202-06	12/10/02	1105	X			X		6	X	X							X	X	X		
MA3-TG2-3-101202-12		1510	X			X		6	X	X	X	X	X	X	X	X	X	X	X		
MA3-TG4-1-101202-04		1045	X			X		5									X	X	X		
MA3-TG4-2-101202-05		1055	X			X		5									X	X	X		
MA3-TG2-2-101202-11		1500	X			X		5									X	X	X		
MA3-TG2-1-101202-10		1450	X			X		5									X	X	X		
MA3-TG6-3-101202-03		0915	X			X		5									X	X	X		
MA3-TG6-1-101202-01		0855	X			X		5									X	X	X		
MA3-TG6-2-101202-02		0905	X			X		5									X	X	X		
MA3-TG3-1-101202-07		1345	X			X		5									X	X	X		

7 Turnaround Time Requested (TAT) (please circle): Normal Rush
(Rush TAT is subject to Lancaster Laboratories approval and surcharge.)
Date results are needed: STD TAT
Rush results requested by (please circle): Phone Fax E-mail
Phone #: 847-918-4000 Fax #: 847-918-4055
E-mail address:

8 Data Package Options (please circle if required)
QC Summary Type VI (Raw Data) PER QUOTE
Type I (Tier I) GLP
Type II (Tier II) Other
Type III (NJ Red. Del.)
Type IV (CLP)

SDG Complete? Yes No
State-specific QC required? Yes No
(If yes, indicate QC sample and submit triplicate volume.)
Internal Chain of Custody required? Yes No

Relinquished by:	Date	Time	Received by:	Date	Time
[signature]	12/10/02	1800			
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by: [signature]	12/11/02	1358

9

Analysis Request / Environmental Services Chain of Custody

Lancaster Laboratories
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For Lancaster Laboratories use only
Acct. # 7802 Group# 83410 Sample # 395816-84

COC # 0008412

Please print. Instructions on reverse side correspond with circled numbers. 2 of 2

1

Client: Weston Acct. #:
Project Name/#: Mass American PWSID #:
Project Manager: Tom Gragg P.O.#:
Sampler: B. Schaefer, S. Meyer, M. Castillo Quote #:
Name of state where samples were collected: VI

For Lab Use Only
FSC:
SCR #: 117257

2 Sample Identification	Date Collected	Time Collected	3 Grab	Composite	4 Matrix: Soil	Water	Other	Total # of Containers	5 Analyses Requested: NO2	NO3	BTEX	Remarks	6 Temperature (°C) Received
MA3-TG3-2-101202-08	12/10/02	1350	X			X		5	X	X	X		
MA3-TG3-3-101202-09	12/10/02	1355	X			X		5	X	X	X		
FB-01	12/10/02	1535	X			X		3			X		
MA3-TG6-2-101202-02-MS	12/10/02	0905	X			X		3			X		
MA3-TG6-2-101202-02-MSD	12/10/02	0905	X			X		3			X		
TB-02	12/10/02	1605	X			X		2			X		
MA3-TG-2-2-101202-11-DUP	12/10/02	1500	X			X		3			X		

7 Turnaround Time Requested (TAT) (please circle): Normal Rush
(Rush TAT is subject to Lancaster Laboratories approval and surcharge.)
Date results are needed: STD TAT
Rush results requested by (please circle): Phone Fax E-mail
Phone #: 847-918-4000 Fax #: 847-918-4055
E-mail address:

8 Data Package Options (please circle if required)
QC Summary Type VI (Raw Data) PER QUOTE
Type I (Tier I) GLP
Type II (Tier II) Other
Type III (NJ Red. Del.)
Type IV (CLP)
SDG Complete? Yes No
State-specific QC required? Yes No
(If yes, indicate QC sample and submit triplicate volume.)
Internal Chain of Custody required? Yes No

Relinquished by:	Date	Time	Received by:	Date	Time
K. Hunt	12-19-02	0700			
Thomas Chaney	12/10/02	1800			

9

Analysis Request / Environmental Services Chain of Custody

Lancaster Laboratories
Where quality is a science.

For Lancaster Laboratories use only

Acct. # 7802 Group# 834101 Sample # 3958168-84

COC # 0010991

Please print. Instructions on reverse side correspond with circled numbers.

1
Client: Weston Acct. #:
Project Name/#: Moss American PWSID #:
Project Manager: Tom Graan P.O.#:
Sampler: B. Schaefer, S. Meyer, M. Castillo Quote #:
Name of state where samples were collected: WI

For Lab Use Only
FSC:
SCR #:

2 3 4 5 6

Sample Identification	Date Collected	Time Collected	Grab	Composite	Soil	Water (☐ Potable ☐ NPDES)	Other	Total # of Containers	PAH	NH3	COD	TKN	TP-PO4	TOC	O-PO4	BOD		Remarks	Temperature of samples upon receipt (if requested)
-TG3-1-101202-07	12/10/02	1345	X			X		4	X	X	X	X	X						
MA3-TG3-3-101202-09	↓	1355	X			X		6	X	X	X	X	X	X	X	X			
MA3-TG2-2-101202-11	↓	1500						1							X	X			

7 Turnaround Time Requested (TAT) (please circle): Normal Rush
(Rush TAT is subject to Lancaster Laboratories approval and surcharge.)
Date results are needed: STD TAT
Rush results requested by (please circle): Phone Fax E-mail
Phone #: 847-918-4000 Fax #: 847-918-4055
E-mail address:

8 Data Package Options (please circle if required)
QC Summary Type VI (Raw Data) PER QUOTE
Type I (Tier I) GLP
Type II (Tier II) Other
Type III (NJ Red. Del.)
Type IV (CLP)

SDG Complete? Yes (No)

State-specific QC required? Yes No
(If yes, indicate QC sample and submit triplicate volume.)
Internal Chain of Custody required? Yes No

9

Relinquished by:	Date	Time	Received by:	Date	Time
Bren Schaefer	12/10/02	1800			
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by: [signature]	12/11/02	1350

Analysis Request / Environmental ... Chain of Custody

Lancaster Laboratories
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Acct. # 7802 Group# 834101 Sample # 395168-84

COC # 0010992

For Lancaster Laboratories use only

Please print. Instructions on reverse side correspond with circled numbers.

(1) Client: Weston Acct. #:
Project Name/#: Moss American PWSID #:
Project Manager: Tom Gragn P.O.#:
Sampler: B. Schaefer, S. Meyer, M. Castillo Quote #:
Name of state where samples were collected: WI

(2) (3) (4) (5)

Sample Identification	Date Collected	Time Collected	(3) Grab	(3) Composite	(4) Matrix: Soil	(4) Water	(4) Other	(4) Total # Containers	(5) PAH	NH3	COD	TP-PO4	TKN	O-PO4	BOD	TOC	Remarks	(6) Temperature of Sample(s) Received (°C)
MA3-TG6-1-101202-01	12/10/02	0855	X			X		3	X	X	X							
FB-01		1535	X			X		2	X									
MA3-TG3-2-101202-08		1350	X			X		6	X	X	X	X	X	X	X	X		
MA3-TG3-1-101202-07		1345	X			X		2						X	X	X		

(7) Turnaround Time Requested (TAT) (please circle): Normal Rush
(Rush TAT is subject to Lancaster Laboratories approval and surcharge.)
Date results are needed: STD TAT
Rush results requested by (please circle): Phone Fax E-mail
Phone #: 847-918-4500 Fax #: 847-918-4055
E-mail address:

(8) Data Package Options (please circle if required)
QC Summary Type VI (Raw Data) PER QUOTE
Type I (Tier I) GLP
Type II (Tier II) Other
Type III (NJ Red. Del.)
Type IV (CLP)

SDG Complete? Yes No

State-specific QC required? Yes No
(If yes, indicate QC sample and submit triplicate volume.)
Internal Chain of Custody required? Yes No

(9)

Relinquished by:	Date	Time	Received by:	Date	Time
[signature]	12/10/02	1800			
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by: [signature]	12/11/02	1330

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2102 Rev. 7/1/02

Lancaster Laboratories
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Case Narrative
Client: Kerr-McGee Corporation
SDG: KMA34

LANCASTER LABORATORIES
PAH by HPLC

SAMPLE NUMBER(S) :

LL #'s	Sample Code	Matrix Water	Comments
3957167	20201	X	
3957168	FD01-	X	
3957172	5-2-9	X	
3957173	35--2	X	
3958168	431--	X	
3958168RE	431--RE	X	Reextraction
3958169	231--	X	
3958169RE	231--RE	X	Reextraction
3958170	411--	X	
3958170RE	411--RE	X	Reextraction
3958171	4-2-1	X	
3958171RE	4-2-1RE	X	Reextraction
3958172	2-2-1	X	
3958172RE	2-2-1RE	X	Reextraction
3958173	2-1-1	X	
3958173RE	2-1-1RE	X	Reextraction
3958174	3-101	X	
3958174RE	3-101RE	X	Reextraction
3958175	6-101	X	
3958175RE	6-101RE	X	Reextraction
3958176	31101	X	
3958176RE	31101RE	X	Reextraction
3958177	62101	X	Unspiked
3958177RE	62101RE	X	Reextraction
3958178	62101MS	X	Matrix Spike
3958178RE	62101REMS	X	Matrix Spike Reextraction

Case Narrative (continued)
SDG#: KMA34

SAMPLE NUMBER(S) continued:

LL #'s	Sample Code	Matrix Water	Comments
3958179	62101MSD	X	Matrix Spike Dup
3958179RE	62101REMSD	X	Matrix Spike Dup Reextraction
3958180	FBKER	X	Client Blank
3958180RE	FBKERRE	X	Reextraction
3958182	328--	X	
3958182RE	328--RE	X	Reextraction Client Blank
3958183	3309-	X	
3958183RE	3309-RE	X	Reextraction
3958184	11FD-	X	
3958184RE	11FD-RE	X	Reextraction
LABORATORY SUBMITTED QC:			
SBLKWB345	SBLKWB3452	X	Method Blank
SBLKWG346	SBLKWG3462	X	Method Blank
SBLKWF353	SBLKWF3532	X	Method Blank
345WBLCS	345WBLCS2	X	Lab Control Sample
345WBLCSD	345WBLCSD2	X	Lab Control Sample Dup
346WGLCS	346WGLCS2	X	Lab Control Sample
353WFLCS	353WFLCS2	X	Lab Control Sample

SAMPLE PREPARATION:

Due to insufficient sample, reduced volumes were used in the extraction of the following samples.

Sample Code	Volume
20201	998 mls
FD01-	985 mls
5-2-9	965 mls
35--2	900 mls
411--	984 mls
411--RE	969 mls
231--RE	962 mls
6-101	941 mls
328--	976 mls
3309-	975 mls

No other problems were encountered during the extraction of these samples.

ANALYSIS:

The method used for analysis was SW-846 8310.

All samples were analyzed for polynuclear aromatic hydrocarbons by HPLC.

Sufficient sample volume was not available to perform a MS/MSD for the analysis of 20201, FD01-, 5-2-9 and 35--2. Therefore, a LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.

Reextractions were required for all samples on organic extraction batch 02346WAG026 due to unacceptable recoveries in the associated laboratory control sample.

No other problems were encountered during the analysis of these samples.

QUALITY CONTROL AND NONCONFORMANCE SUMMARY:

The recoveries of dibenz(a,h)anthracene and benzo(g,h,i)perylene in 346WGLCS2 were below QC limits. Therefore, all samples on organic extraction batch 02346WAG026 were reextracted. The reextractions were performed outside of the method required holding time. Acceptable QC recoveries were observed in the reanalysis. Both sets of data are reported in this data package.

All other QC was within specifications.

DATA INTERPRETATION:

Only non-conformances for client requested compounds are addressed in this case narrative.

Due to incorrect integrations during the initial processing, manual integrations were performed for the following compounds:

Case Narrative (continued)
SDG#: KMA34

Sample Code	Compound
File ID	Indeno(1,2,3-cd)pyrene
02354.09	
level 5	

No further interpretation is necessary for the data submitted.

Case Narrative Reviewed and Approved by:

Christine M. Ratcliff for CJN Date: 1-2-03

Charles J. Neslund
Group Leader, GC/MS Semivolatiles

Lancaster Laboratories • 2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425
Phone: 717-656-2300 • Fax: 717-656-2300 • http:// www.LancasterLabs.com

Lancaster Laboratories
2425 New Holland Pike • Lancaster, PA 17601

Case Narrative
SDG# KMA34

Client : Kerr-McGee Corporation
Project: Moss American Superfund Site
Milwaukee, WI
Volatiles by GC - Water

SAMPLE ANALYSES

LL Sample #	Sample Designation	Matrix Soil	Matrix Water	Comments
957167	20201		X	
957168	FD01-		X	
3957169	02-02		X	
3957170	02-03		X	
957171	TBX01		X	
958168	431--		X	
3958169	231--		X	
958170	411--		X	
958171	4-2-1		X	
3958172	2-2-1		X	
3958173	2-1-1		X	
958174	3-101		X	
958175	6-101		X	
3958176	31101		X	
3958177	62101		X	Unspiked
3958178MS	62101		X	Matrix Spike
3958179MSD	62101		X	Matrix Spike Dup
3958180	FBKER		X	
3958181	TBKER		X	
3958182	328--		X	
3958183	3309-		X	
3958184	11FD-		X	

QUALITY CONTROL ANALYSES

BLK5553		X	Method Blank
BLK5555		X	Method Blank
LCS5552		X	Lab Control Sample
LDS5552		X	Lab Control Dup
LCS5555		X	Lab Control Sample
LDS5555		X	Lab Control Dup

SAMPLE PREPARATION

No sample preparation was necessary.

Lancaster Laboratories
2425 New Holland Pike • Lancaster, PA 17601

Case Narrative
SDG# KMA34

Client : Kerr-McGee Corporation
Project: Moss American Superfund Site
Milwaukee, WI
Volatiles by GC - Water

LYSIS

The integration system reviews the chromatogram retention times, comparing them to the retention times in the ID window. A peak in the sample chromatogram with a retention time within the ID window is identified as a "hit."

The method used for analysis was EPA Method SW-846 8021B. A J&W DB-VRX, 75m x 0.45mm column was used for the analysis of all samples. The surrogate concentration was 30.0 UG/L.

No problems were encountered during analysis.

ALITY CONTROL AND NONCONFORMANCE SUMMARY

Client submitted batch QC was referenced.

All QC was within specifications.

TA INTERPRETATION

No explanation is necessary for the data submitted.

Narrative reviewed and approved by:

Steve A. Stabinger for
Steve A. Stabinger, Group Leader

12/31/02
Date

03506

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Hammond Division
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CERTIFICATE OF ANALYSIS

Tom Graam
Weston Solutions, Inc.
750 East Bunker Court
Suite 500
Vernon Hills, IL 60061-1450

Date Reported: 12/31/02
P.O. Number: 0018581
Sample ID: 9948-00191
Date Received: 12/12/02
Time Received: 10:15

Permit Number

PARAMETERS	RESULTS	DATE	TECH	METHOD
SUBJECT: MA3-TG1-1-111202-01, 12/11/02 @ 09:15 by BG				
Total Aerobic Bacteria	1,010. cfu/ml	12/13/02	NHC	9215B MODIFIED
T.Aerobic Degrader Bacteria	1,000. cfu/ml	12/13/02	NHC	9215B MODIFIED
SUBJECT: MA3-TG1-1-111202-02, 12/11/02 @ 09:20 by BG				
Total Aerobic Bacteria	2,030. cfu/ml	12/13/02	NHC	9215B MODIFIED
T.Aerobic Degrader Bacteria	2,000. cfu/ml	12/13/02	NHC	9215B MODIFIED
SUBJECT: MA3-TG1-1-111202-03, 12/11/02 @ 09:25 by BG				
Total Aerobic Bacteria	2,160. cfu/ml	12/13/02	NHC	9215B MODIFIED
T.Aerobic Degrader Bacteria	40. cfu/ml	12/13/02	NHC	9215B MODIFIED

This document has been revieved and is electronically signed by:

Karen A. Ziolkowski
Laboratory Director

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Vernon Hills, IL 60061-1450

Permit Number

Date Reported: 12/31/02
P.O. Number: 0018581
Sample ID: 9948-00169
Date Received: 12/11/02
Time Received: 10:00

PARAMETERS	RESULTS	DATE	TECH	METHOD
SUBJECT: MA3-TG6-1-101202-01, 12/10/02 @ 08:55 by Client				
Total Aerobic Bacteria	1,360. cfu/ml	12/12/02	NHC	9215B MODIFIED
T.Aerobic Degrader Bacteria	30. cfu/ml	12/12/02	NHC	9215B MODIFIED
SUBJECT: MA3-TG6-2-101202-02, 12/10/02 @ 09:05 by Client				
Total Aerobic Bacteria	2,190. cfu/ml	12/12/02	NHC	9215B MODIFIED
T.Aerobic Degrader Bacteria	<10. cfu/ml	12/12/02	NHC	9215B MODIFIED
SUBJECT: MA3-TG6-3-101202-03, 12/10/02 @ 09:15 by Client				
Total Aerobic Bacteria	2,180. cfu/ml	12/12/02	NHC	9215B MODIFIED
T.Aerobic Degrader Bacteria	30. cfu/ml	12/12/02	NHC	9215B MODIFIED
SUBJECT: MA3-TG4-1-101202-04, 12/10/02 @ 10:45 by Client				
Total Aerobic Bacteria	750. cfu/ml	12/12/02	NHC	9215B MODIFIED
T.Aerobic Degrader Bacteria	30. cfu/ml	12/12/02	NHC	9215B MODIFIED
SUBJECT: MA3-TG4-2-101202-05, 12/10/02 @ 10:55 by Client				
Total Aerobic Bacteria	1,750. cfu/ml	12/12/02	NHC	9215B MODIFIED
T.Aerobic Degrader Bacteria	20. cfu/ml	12/12/02	NHC	9215B MODIFIED
SUBJECT: MA3-TG4-3-101202-06, 12/10/02 @ 11:05 by Client				
Total Aerobic Bacteria	1,930. cfu/ml	12/12/02	NHC	9215B MODIFIED
T.Aerobic Degrader Bacteria	<10. cfu/ml	12/12/02	NHC	9215B MODIFIED
SUBJECT: MA3-TG3-1-101202-07, 12/10/02 @ 13:45 by Client				
Total Aerobic Bacteria	75,000. cfu/ml	12/12/02	NHC	9215B MODIFIED
T.Aerobic Degrader Bacteria	2,200. cfu/ml	12/12/02	NHC	9215B MODIFIED

*** Certificate Continues On Next Page ***

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CERTIFICATE OF ANALYSIS

Tom Graam
Weston Solutions, Inc.
750 East Bunker Court
Suite 500
Vernon Hills, IL 60061-1450

Date Reported: 12/31/02
P.O. Number: 0018581
Sample ID: 9948-00169
Date Received: 12/11/02
Time Received: 10:00

Permit Number

PARAMETERS	RESULTS	DATE	TECH	METHOD
SUBJECT: MA3-TG3-2-101202-08, 12/10/02 @ 13:50 by Client				
Total Aerobic Bacteria	1,130. cfu/ml	12/12/02	NMC	9215B MODIFIED
T.Aerobic Degrader Bacteria	20. cfu/ml	12/12/02	NMC	9215B MODIFIED
SUBJECT: MA3-TG3-3-101202-09, 12/10/02 @ 13:55 by Client				
Total Aerobic Bacteria	2,150. cfu/ml	12/12/02	NMC	9215B MODIFIED
T.Aerobic Degrader Bacteria	200. cfu/ml	12/12/02	NMC	9215B MODIFIED
SUBJECT: MA3-TG2-1-101202-10, 12/10/02 @ 14:50 by Client				
Total Aerobic Bacteria	260. cfu/ml	12/12/02	NMC	9215B MODIFIED
T.Aerobic Degrader Bacteria	10. cfu/ml	12/12/02	NMC	9215B MODIFIED
SUBJECT: MA3-TG2-2-101202-11, 12/10/02 @ 15:00 by Client				
Total Aerobic Bacteria	500. cfu/ml	12/12/02	NMC	9215B MODIFIED
T.Aerobic Degrader Bacteria	20. cfu/ml	12/12/02	NMC	9215B MODIFIED
SUBJECT: MA3-TG2-3-101202-12, 12/10/02 @ 15:10 by Client				
Total Aerobic Bacteria	1,750. cfu/ml	12/12/02	NMC	9215B MODIFIED
T.Aerobic Degrader Bacteria	20. cfu/ml	12/12/02	NMC	9215B MODIFIED

*** Certificate Continues On Next Page ***

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Tom Graam
Weston Solutions, Inc.
750 East Bunker Court
Suite 500
Vernon Hills, IL 60061-1450

Date Reported: 12/31/02
P.O. Number: 0018581
Sample ID: 9948-00169
Date Received: 12/11/02
Time Received: 10:00

Permit Number

PARAMETERS	RESULTS	DATE	TECH	METHOD

This document has been reviewed and is electronically signed by:

Karen A. Ziolkowski
Laboratory Director

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CERTIFICATE OF ANALYSIS

Tom Graam
Weston Solutions, Inc.
750 East Bunker Court
Suite 500
Vernon Hills, IL 60061-1450

Date Reported: 12/31/02
P.O. Number: 0018581
Sample ID: 9948-00129
Date Received: 12/10/02
Time Received: 10:15

Permit Number

PARAMETERS	RESULTS	DATE	TECH	METHOD
SUBJECT: MA3-TG5-1-091202-01, 12/09/02 @ 15:50 by BS/SM/MC				
Total Aerobic Bacteria	3,000. cfu/ml	12/12/02	MMC	9215B MODIFIED
T.Aerobic Degrader Bacteria	1,000. cfu/ml	12/12/02	MMC	9215B MODIFIED
SUBJECT: MA3-TG5-2-091202-02, 12/09/02 @ 16:00 by BS/SM/MC				
Total Aerobic Bacteria	1,840. cfu/ml	12/12/02	MMC	9215B MODIFIED
T.Aerobic Degrader Bacteria	150. cfu/ml	12/12/02	MMC	9215B MODIFIED
SUBJECT: MA3-TG5-3-091202-03, 12/09/02 @ 16:10 by BS/SM/MC				
Total Aerobic Bacteria	1,110. cfu/ml	12/12/02	MMC	9215B MODIFIED
T.Aerobic Degrader Bacteria	100. cfu/ml	12/12/02	MMC	9215B MODIFIED

This document has been reviewed and is electronically signed by:

Karen A. Ziolkowski
Laboratory Director

CHAIN OF CUSTODY RECORD

Microbac

Microbac Laboratories, Inc.
Seaway Industrial Laboratory Division
542-544 Conkey Street Hammond, Indiana 46324
219/932-1770 219/932-1721 Fax

_____ COMPOSITE
_____ AUTOMATIC
_____ DISCRETE
_____ FLOW PROPORTIONED
_____ CONTINUOUS
_____ TIME

BEGIN: DATE _____ TIME _____ FLOW _____
END: DATE _____ TIME _____ FLOW _____
TOTAL FLOW _____ INTERVAL _____
TEMP _____ TECH _____ MLS/Sample _____ # Samples _____

P.O. #	CLIENT NAME	LOCATION/PROJECT
	WP Stone	Milwaukee, WI / MossAmerican

SAMPLERS (Signature): Brenna Shay

SEND REPORT TO: Tom Graan
PHONE (847) 918-4000

LAB I.D. #: 9948-191
Sample Chest #: Chest Temp 4 °C
Sample Temp. at Lab: 4 °C
Method of Shipment To Lab: FED X
Date 12/12/02 Time 1015

ANALYSES REQUESTED: Microbial Enumeration

SAMPLE LOCATION	COLLECTED DATE	COLLECTED TIME	SAMPLE TYPE COMP.	SAMPLE TYPE GRAB	SAMPLE TYPE MATRIX	NO. OF CONTAINERS	CONTAINER TYPE / PRESERVATIVE	Microbial Enumeration	REMARKS / OBSERVATIONS / LIST SPECIAL HAZARDS HERE	RETURN SAMPLES TO CLIENT
MA3-TG1-1-111202-01	12/11/02	0915		X	Water	1	bottle —	X	* Some free production sample *	
MA3-TG1-2-111202-02	↓	0920		X	↓	1	bottle —	X		
MA3-TG1-3-111202-03	↓	0925		X	↓	1	bottle —	X		

	Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Relinquished by: (Signature)	Date	Time	Received by: (Signature)
1	Brenna Shay	12/11/02	1800	2	3			4
5		12/12/02	1015	6	7			8
9				Received for Lab by: (Signature) [redacted]		Date 12/[redacted]	Time 10[redacted]	

Contact person Tom Graan Sampler B Schaefer, S. Meyer, M. Castillo 9448-169

Project name Moss American Project #

Project location Milwaukee, WI
(City) (state)

Site contaminant * creosote
(Used in test for degrader microbial populations, give ratios if applicable, e.g. 50:50, gasoline:diesel)

* If available, a sample of free product is preferred for use as the carbon source for enumerating the degrader microbial populations. Free product included? ☐ yes ☐ No

Requested analyses (✓) 1 of 2

Sample ID	Lab use only	Date	Time	(✓) Soil	(✓) Gw	Sample depth	(#) Jars	(#) Vials	(#) Core	Additional comments	CEA* (soil/gw) see note ☐ Aerobic, ☐ Anaerobic, ☐ Microaerophilic	Standard nutrient panel (soil/gw) - incl. TKN, ammonium nitrogen, available P, pH, total organic carbon, % moisture (s)	Particle size analysis (soil) ☐ sieve and hydrometer, ☐ sieve only	% air-filled pore space (soil) (includes bulk density)	Intact core: Soil moisture at field capacity	Intact core: Bulk density (soil)	Microbial Enumeration				
MA3-TG6-1-101202-01		12/10/02	0855		X	—	1										X				
MA3-TG6-2-101202-02			0905		X	—	1										X				
MA3-TG6-3-101202-03			0915		X	—	1										X				
MA3-TG4-1-101202-04			1045		X	—	1										X				
MA3-TG4-2-101202-05			1055		X	—	1										X				
MA3-TG4-3-101202-06			1105		X	—	1										X				
MA3-TG3-1-101202-07			1345		X	—	1										X				
MA3-TG3-2-101202-08		↓	1350		X	—	1										X				

Relinquished by: [signature] Date/time: 12/10/02 / 1800

Received by: Date/time:

Comments:

Sample condition upon arrival: 4°

On Ice? ☒ Yes, ☐ No

Microbac Laboratories,
HAMMOND DIVISION
542-544 Conkey Street
Hammond, Indiana 46324
219-932-1770

Send results to:

Name Tom Graan
Company Weston
Address 750 E. Bunker Court, Suite 500
City Vernon Hills State IL Zip 60061
Phone 847-918-4000 Fax 847-918-4055

Send Invoice to: ☒ Same as results

Name
Company
Address
City State Zip
Phone Fax

*CEA : Comparative Enumeration Assay includes total heterotrophic and degrader populations

2 - 5 ml

4448-164

CHAIN OF CUSTODY RECORD

Microbac

Microbac Laboratories, Inc.
Seaway Industrial Laboratory Division
542-544 Conkey Street Hammond, Indiana 46324
219/932-1770 219/932-1721 Fax

____ COMPOSITE
____ AUTOMATIC
____ DISCRETE
____ FLOW PROPORTIONED
____ CONTINUOUS
____ TIME

BEGIN: DATE ____ TIME ____ FLOW ____
END: DATE ____ TIME ____ FLOW ____
TOTAL FLOW ____ INTERVAL ____

TEMP 4°
TECH ____
MLS/Sample ____
Samples ____

P.O. #	CLIENT NAME	LOCATION/PROJECT
	Weston	Milwaukee, WI / MassAmerican

SAMPLERS (Signature): Ben Slack

SEND REPORT TO: Tom Graan

PHONE (847) 918-4000

LAB I.D. #	Sample Chest # . Chest Temp. °C	Sample Temp. at Lab °C	Method of Shipment To Lab: Date Time

2 of 2

SAMPLE LOCATION	COLLECTED DATE	COLLECTED TIME	SAMPLE TYPE COMP.	SAMPLE TYPE GRAB	SAMPLE TYPE MATRIX	NO. OF CONTAINERS	CONTAINER TYPE PRESERVATIVE	ANALYSES REQUESTED: Microbial Enumeration	REMARKS OBSERVATIONS / LIST SPECIAL HAZARDS HERE	RETURN SAMPLES TO CLIENT
MA3-TG3-3-101202-09	12/10/02	1355		X	water	1	—	X		
MA3-TG2-1-101202-10		1450		X		1	—	X		
MA3-TG2-2-101202-11		1500		X		1	—	X		
MA3-TG2-3-101202-12		1510		X		1	—	X		

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Relinquished by: (Signature)	Date	Time	Received by: (Signature)
1 Ben Slack	12/10/02	1800	2	3			4
5			6	7			8

Relinquished by: (Signature)	Date	Time	Received for Lab by: (Signature)	Date	Time
9					

9948-129

Contact person Tom Graan Sampler B. Schaefer, S. Meyer, M. Castillo

Project name Moss American Project # _____

Project location Milwaukee, WI
(City) (state)

Site contaminant * creosote
(Used in test for degrader microbial populations, give ratios if applicable, e.g. 50:50, gasoline:diesel)

* If available, a sample of free product is preferred for use as the carbon source for enumerating the degrader microbial populations. Free product included? ☐ yes ☐ No

Sample ID	Lab use only	Date	Time	(✓) Soil	(✓) Gw	Sample depth	(#) Jars	(#) Vials	(#) Core	Additional comments	Requested analyses (✓): CEA* (soil/gw) see note ☐ Aerobic, ☐ Anaerobic, ☐ Microaerophillic	Standard nutrient panel (soil/gw) - incl. TKN, ammonium nitrogen, available P, pH, total organic carbon, % moisture (s)	Particle size analysis (soil) ☐ sieve and hydrometer, ☐ sieve only	% air-filled pore space (soil) (includes bulk density)	Intact core: Soil moisture at field capacity	Intact core: Bulk density (soil)	Microbial Enumeration				
MAB-TGS-1-091202-01		12/09/02	1550		X	—	1										X				
MAB-TGS-2-091202-02			1600		X	—	1										X				
MAB-TGS-3-091202-03			1610		X	—	1										X				

Relinquished by: _____ Date/time: 12/09/02 / 1815

Received by: _____ Date/time: _____

Comments: _____

Sample condition upon arrival: _____

On Ice? ☐ Yes, ☐ No

Microbac Laboratories,
HAMMOND DIVISION
542-544 Conkey Street
Hammond, Indiana 46324
219-932-1770

Send results to:

Name ~~Dr~~ Tom Graan
Company Weston
Address 750 E. Bunker Court, Suite 500
City Vernon Hills State IL Zip 60061
Phone 847-918-4000 Fax 847-918-4055

Send invoice to: ☒ Same as results

Name _____
Company _____
Address _____
City _____ State _____ Zip _____
Phone _____ Fax _____

*CEA : Comparative Enumeration Assay includes total heterotrophic and degrader populations

12/10