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30 November 2001

Mr. Russell D. Hart (HSRW-6J)  
Remedial Project Manager  
U. S. Environmental Protection Agency  
Region V  
77 West Jackson Boulevard  
Chicago, IL 60604

Work Order No. 02687.007.003  
KMC Work Order No. 40-50-01-AKW-B

Re: Quarterly Groundwater Treatment Performance Monitoring Report, Q3 2001  
Moss-American Site, Milwaukee, Wisconsin

Dear Mr. Hart:

On behalf of Kerr-McGee Chemical, LLC (KMC), Roy F. Weston, Inc. (WESTON®), is submitting this report summarizing the results of the third quarter (Q3) 2001 groundwater monitoring event for the above-referenced project. In addition, results are presented for the monthly groundwater sampling conducted in July, August, and September 2001 for the treatment-performance monitoring of the funnel-and-gate groundwater remedial system. A description of the groundwater monitoring program and the results obtained during this monitoring period are presented in the following sections. Also included is a discussion of the laboratory analytical results that exceeded the Preventive Action Limits (PALs) and Enforcement Standards (ESs) Wisconsin Department of Natural Resources (WDNR) promulgated in NR140.10, entitled "Public Health Groundwater Quality Standards."

The groundwater analytical results reported for Q3 2001 (July through September) reflect conditions at the site where the funnel-and-gate groundwater treatment system, including the containment-performance wells and treatment-performance wells, are in place. This quarterly groundwater monitoring report presents the results of the shallow and intermediate plume monitoring wells, the 8 shallow containment-performance wells, and the 18 treatment-performance wells.

## **1 BACKGROUND**

In accordance with paragraph 4a of the Remedial Design/Remedial Action Statement of Work (RD/RA SOW), KMC is required to implement a groundwater monitoring program capable of detecting changes in chemical concentrations in the groundwater. As previously agreed, the monitoring network includes 14 shallow groundwater monitoring wells (MW-3S, MW-5S, MW-6S, MW-7S, MW-9S, MW-10S, MW-13S, MW-20S, MW-25S, MW-26S, MW-27S, MW-28S, MW-29S, and TW-05) and four intermediate groundwater monitoring wells (MW-3I,



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MW-7I, MW-9I, and MW-20I). The locations of all existing shallow and intermediate groundwater monitoring wells included in the sampling program are indicated on Figure 1. Some wells that were previously a 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. Additionally, wells MW-4S and MW-4I were removed during early Q3 2001 to prepare for excavation of soils surrounding the wells. The shallow groundwater monitoring wells are sampled on a quarterly basis, and the intermediate groundwater monitoring wells are sampled on a semiannual basis, coinciding with the Q1 and Q3 sampling events. Additionally, KMC is also required to extend the implementation of the quarterly groundwater monitoring program to include sampling of the eight newly installed 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 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 will be calculated at each treatment gate and will be 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. 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, intermediate, 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(b)fluoranthene, benzo(k)fluoranthene, benzo(g,h,i)perylene, benzo(a)pyrene, 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 monthly field measurements for samples collected from the treatment performance monitoring wells include groundwater elevation, pH, temperature, specific conductance, redox potential, and DO. Quarterly laboratory analyses required for the treatment-performance wells include microbial

enumeration, nitrate-nitrogen ( $\text{NO}_3\text{-N}$ ), nitrite-nitrogen ( $\text{NO}_2\text{-N}$ ), total Kjeldahl nitrogen (TKN), ammonia-nitrogen ( $\text{NH}_3\text{-N}$ ), total phosphate-phosphorous ( $\text{PO}_4\text{-P}$ ), and orthophosphate (ORP) on a monthly basis. Additionally, laboratory analyses include biochemical oxygen demand (BOD), chemical oxygen demand (COD), total organic carbon (TOC), BTEX, and the PAHs indicated in the above paragraph on a quarterly basis.

## **2 GROUNDWATER MONITORING RESULTS**

The Q3 2001 groundwater monitoring event at the Moss-American site was completed between 24 and 28 September 2001. The Q3 2001 groundwater remedial system treatment-performance monitoring sampling includes data obtained during 25 to 26 July 2001, 29 to 30 August 2001, and 24 to 28 September 2001. Tasks completed during the field effort for this event included the collection of groundwater elevation and dissolved oxygen 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, intermediate, 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 24 September 2001, prior to the beginning of groundwater sampling. In addition, the depth to groundwater was measured on a monthly basis 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 1. The groundwater level measurements and corresponding groundwater elevations, calculated hydraulic gradients across the treatment gates, and groundwater flow velocity through the treatment gates are presented in Table 2. The July and August 2001 groundwater elevation data for the treatment performance monitoring wells is available upon request. Figure 1 presents a groundwater elevation contour map that shows the potentiometric surface within the shallow groundwater-bearing zone based on the September 2001 data. An evaluation of these results is presented below.

As shown in Figure 1, the groundwater within the shallow groundwater-bearing zone generally flows northeastward toward the Little Menomonee River (LMR). In the topographically higher (western) portion of the site, the horizontal hydraulic gradient is relatively steep, at approximately 0.051 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 0.0026 ft/ft. The estimated hydraulic gradients within the treatment gates ranged from -0.0078 to 0.0186 ft/ft (Table 2). The hydraulic gradient is relatively flat within the treatment gate area, with an overall hydraulic gradient from TG1 to TG6 of approximately 0.0016 ft/ft, in an easterly direction. It should also be noted that due to the low hydraulic gradient in the vicinity of the treatment gates, the calculated hydraulic gradients through TG3, TG4, and TG6 are westward, contrary to the overall groundwater flow direction at the site. The apparently reversed hydraulic gradients at TG3, TG4, and TG6 are likely a result of error in measuring the depth to groundwater due to equipment limitations.

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  $1 \times 10^{-5}$  to  $1 \times 10^{-6}$  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  $1 \times 10^{-3}$  cm/s (2.8 ft/day). Using a hydraulic gradient of 0.051 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 0.0051 ft/day. Near the river, using a hydraulic gradient of 0.0026 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 0.0243 ft/day. The groundwater flow velocities within the treatment gates are estimated to range from 0.0057 ft/day to 0.1757 ft/day (excluding the erratic data for TG3, TG4, and TG6). The groundwater-flow velocity through each treatment gate is presented in Table 2.

## 2.2 Groundwater Sample Analytical Results

Groundwater samples were collected from a total of 40 shallow monitoring wells screened within the shallow groundwater-bearing unit. The shallow wells sampled include the following: 14 shallow groundwater monitoring wells included in the original quarterly groundwater monitoring program (MW-3S, MW-5S, MW-6S, MW-7S, MW-9S, MW-10S, MW-13S, MW-20S, MW-25S, MW-26S, MW-27S, MW-28S, MW-29S and TW-05); eight 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). The intermediate groundwater monitoring wells sampled include MW-3I, MW-7I, MW-9I, and MW-20I.

In addition to the investigative groundwater samples collected, five sample duplicate, three matrix spike/matrix spike duplicate (MS/MSD) and three field blank (identified by a 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 of 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, dissolved oxygen, and turbidity. The field parameters were collected using portable water quality meters. The results of the September 2001 measurements are provided in Table 3. The results, which vary only slightly from the quarterly measurements, of the monthly field-measured parameters for the treatment performance monitoring wells are presented in Attachment 1. The groundwater pH, redox potential, specific conductance, and temperature are monitored during well purging prior to sampling, and the final (stabilized) values for these measurements prior to sample collection are presented.

#### 2.2.1.1 pH

The pH of the groundwater samples collected during Q3 2001 ranged from 6.68 to 7.44 pH standard units (S.U.). The pH measurements indicate relatively neutral (7.0 S.U.) conditions. pH

40 samples  
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is an important factor in determining the feasibility of bioremediation of contaminants in the site groundwater since biological systems typically function only in narrow pH ranges (typically 6.5 to 8.5 S.U.), and microbial growth rates are pH dependant.

#### 2.2.1.2 Redox Potential

The redox potentials of the groundwater samples collected at the site during Q3 2001 ranged from -107.2 to +129.3 millivolts (mV). 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.,  $\text{NO}_3^-$ ,  $\text{SO}_4^-$ , and  $\text{Fe}^{3+}$ ) predominate in comparison to their reduced counterparts ( $\text{NH}^+$ ,  $\text{S}^{2-}$ , and  $\text{Fe}^{3+}$ , respectively). Once dissolved oxygen 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 Q3 2001 ranged from 0.02 to 0.90 milligrams per liter (mg/L). This dissolved oxygen range indicates the presence of relatively low levels of oxygen in the water, and the system as a whole is considered to be under anaerobic conditions (<1 mg/L DO). DO was measured at a moderate level only once during the Q3 2001 sampling events, which was in well TG1-1 during July 2001 (5.15 mg/L). DO promotes the growth of aerobic and facultative bacteria, the production of readily assimilated nutrients, and provides oxygen. All of these are required to facilitate the oxidation reaction responsible for removal the contaminants from the groundwater under aerobic conditions. Figure 2 indicates the DO concentrations over time in the treatment-performance monitoring wells.

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#### 2.2.1.4 Specific Conductance

The specific conductance, or conductivity, of the groundwater samples collected during Q3 2001 ranged from 0.602 to 2.272 micromhos per centimeter ( $\mu\Omega/\text{cm}$ ). Conductivity of water is a measure of the ability of a solution to carry an electrical current that ions transport 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 12.88 to 18.07 °C during Q3 2001. 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 0.60 to 95.0 nephelometric turbidity units (NTU) during Q3 2001. Turbidity is a measure of the clarity and quality of water and is used as an indicator of the solids present in a water sample.

### 2.2.2 **Laboratory Analyses**

The results of the laboratory analyses performed on the groundwater samples collected during July, August, and September 2001 are provided in Attachments 2, 3, and 4, respectively. A discussion of the results of the laboratory analyses performed on the groundwater samples is presented in the following subsections.

#### 2.2.2.1 Laboratory Analyses for BTEX and PAH

Each groundwater sample collected during the September 2001 sampling event was analyzed for BTEX and PAH compounds. The results of these analyses are presented and compared to WDNr PALs and ESs in Table 4. Table 4 also indicates those parameters that were detected at concentrations exceeding their respective PALs (shown as bold values). Parameters with

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concentrations exceeding both PALs and ESs are presented as bold and shaded values in Table 4. Exceedences of PALs and ESs are summarized in the following paragraphs. The laboratory reports for BTEX and PAH analyses are provided as Attachment 2.

### Groundwater Sample Results

As shown in Table 4, benzene, naphthalene, chrysene, benzo(b)fluoranthene, benzo(a)pyrene, fluorene, fluoranthene, 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 µg/L in the groundwater samples collected from wells MW-7S, 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, TW-05, MW-33S, MW-34S, TG1-1, and TG1-2.
- Chrysene was detected at concentrations exceeding the WDNR PAL of 0.02 µg/L in the groundwater samples collected from wells MW-34S, MW-35S, MW-37S, TG1-1, TG1-2, and TG2-1.
- 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, MW-35S, and TG1-1. Note that benzo(b)fluoranthene was only detected at a concentration exceeding the PAL in the duplicate sample collected from MW-35S.
- 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, MW-35S, TG1-1, and TG5-2. Note that benzo(a)pyrene was only detected at a concentration exceeding the PAL in the duplicate sample collected from MW-35S.
- Fluorene was detected at a concentration exceeding the WDNR PAL of 80 µg/L in the groundwater sample collected from well TG1-1.



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- Fluoranthene was detected at a concentration exceeding the WDNR PAL of 80  $\mu\text{g/L}$  in the groundwater sample collected from well TG1-1.
- Pyrene was detected at a concentration exceeding the WDNR PAL of 50  $\mu\text{g/L}$  in the groundwater sample collected from well TG1-1.

#### ES Exceedances

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

The detected plume boundary is primarily in an area encompassing 10 shallow monitoring wells (MW-7S, MW-33S, MW-34S, MW-35S, MW-37S, TW-05, TG1-1, TG1-2, TG2-1, and TG5-2).

Based on these detected concentrations, the contaminant plume generally indicates a northeasterly trend as indicated in Figure 1. This trend is similar to that observed during the previous 14 quarterly groundwater sampling events. Monitoring well MW-4S, which typically contained elevated levels of contaminants, was removed in early Q3 2001 to facilitate soil excavation activities. In order to estimate the plume boundary upgradient of the funnel-and-gate treatment system, the Q2 2001 plume boundary was used to represent contamination associated with former well MW-4S. Although MW-4S has historically contained elevated contaminant levels, it is anticipated that the source removal activities performed upgradient and in the vicinity of former well MW-4S during Q2 and Q3 2001 will significantly reduce groundwater contamination upgradient of the funnel-and-gate treatment system over the next several quarters. This should reduce the size of the contamination plume in the future.

Overall, the lateral extent of the Q3 2001 groundwater contaminant plume appears to be larger than that observed during Q1 and Q2 2001; however, the lateral extent of the current plume is similar to that observed during Q3 and Q4 2000. WESTON suspects that the trend observed in the groundwater contaminant plume size is due to seasonal groundwater flow conditions.

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 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 trend in monitoring wells MW-7S, MW-32S, and MW-35S. Although well TW-05 has shown relatively steady concentrations of benzene and fluorene and an overall decreasing concentration of benzo(a)pyrene, naphthalene concentrations have fluctuated and show an increase during Q3 2001. Well MW-33S has shown a steady trend for benzene, naphthalene, and benzo(a)pyrene; however, MW-33S has shown a steadily increasing concentration of fluorene over the last 6 quarters. Although well MW-34S has historically shown relatively steady concentrations of benzene, naphthalene, fluorene, and benzo(a)pyrene, relatively higher concentrations of fluorene and benzo(a)pyrene were detected during Q3 2001. Well MW-34S contained approximately 9 inches of free product during Q3 2001, concurring with the elevated levels of fluorene and benzo(a)pyrene. Well TG1-1 had shown relatively steady benzene, naphthalene, fluorene, and benzo(a)pyrene concentrations since it was first sampled in Q3 2000. By contrast, a marked increase in fluorene and benzo(a)pyrene was observed during Q3 2001. Trace amounts of free product were observed in well TG1-1 since sampling of the well began, concurring with the elevated contaminant levels detected. A more accurate trend may be illustrated and a containment performance evaluation performed as additional data for samples collected from the containment-performance wells (MW-30S through MW-37S) becomes available during the future, quarterly groundwater sampling events.

#### 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,  $\text{NO}_3\text{-N}$ ,  $\text{NO}_2\text{-N}$ , TKN,  $\text{NH}_3\text{-N}$ ,  $\text{PO}_4\text{-P}$ , and ORP on a monthly basis, and analyzed for BOD, COD, TOC, BTEX, and PAHs on a quarterly basis. The analytical results for microbial enumeration,  $\text{NO}_3\text{-N}$ ,  $\text{NO}_2\text{-N}$ , TKN,  $\text{NH}_3\text{-N}$ ,  $\text{PO}_4\text{-P}$ , ORP, BOD, COD, and TOC are presented in Table 6. The results of the treatment-performance monitoring well sample analyses are summarized below.

#### Nitrogen and Phosphorous Compounds

$\text{NO}_3\text{-N}$  was detected at concentrations ranging from below method detection limits (non detect) to 0.1 mg/L.  $\text{NO}_2\text{-N}$  was detected at levels ranging from non detect to 0.22 mg/L. TKN was detected at concentrations ranging from non detect to 2.9 mg/L.  $\text{NH}_3\text{-N}$  was detected at levels ranging from non detect to 2.2 mg/L. Overall, nitrogen compound concentrations are at relatively low levels; however,  $\text{NH}_3\text{-N}$  is typically order of magnitude greater than  $\text{NO}_3\text{-N}$  and  $\text{NO}_2\text{-N}$  concentrations. Temporal changes of  $\text{NO}_3\text{-N}$ ,  $\text{NO}_2\text{-N}$ , and  $\text{NH}_3\text{-N}$  concentrations in the treatment performance monitoring wells with respect to the treatment gate are presented in Figures 3, 4, and 5, respectively.

$\text{PO}_4\text{-P}$  was detected at concentrations ranging from non detect to 0.79 mg/L. ORP was detected at concentrations ranging from non detect to 0.222 mg/L. The temporal changes of  $\text{PO}_4\text{-P}$  and ORP concentrations in the treatment-performance monitoring wells with respect to the treatment gate are presented in Figures 6 and 7, respectively.

#### BOD, COD, TOC

BOD concentrations for the samples collected throughout the treatment system range from non detect to 8.3 mg/L. COD concentrations for the samples collected throughout the treatment system range from 6.5 to 82.5 mg/L. TOC concentrations for the samples collected throughout the treatment system range from 2.6 to 20.6 mg/L. As expected, the treatment gate wells indicate less BOD compared to COD. COD indicates presence of constituents that exert an oxygen demand, including carbon compounds such as the site contaminants in the groundwater, as well as other constituents such as ammonia, sulfurous compounds, and biological material such as humic acids and detritus. A significant portion of oxygen demand that the constituents measured exert 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.

### Microbial Enumeration

The monthly mean of the total microbe populations for TG1 and TG2 ranged from  $3.0 \times 10^2$  to  $3.3 \times 10^4$  colony forming units per milliliter (CFU/mL) during Q3 2001. The monthly mean of the total microbe populations for TG3 and TG4 ranged from  $5.1 \times 10^2$  to  $2.7 \times 10^4$  CFU/mL during Q3 2001. The monthly total microbe populations for TG5 and TG6 ranged from  $1.8 \times 10^2$  to  $9.6 \times 10^3$  CFU/mL during Q3 2001. The temporal changes in total microbial populations are presented in Figure 8.

The monthly mean of the degrader microbe populations for TG1 and TG2 ranged from  $9.0 \times 10^1$  to  $1.8 \times 10^4$  CFU/mL during Q3 2001. The monthly mean of the microbe populations for TG3 and TG4 ranged from  $1.6 \times 10^2$  to  $1.74 \times 10^3$  CFU/mL during Q3 2001. The monthly mean of the microbe populations for TG5 and TG6 ranged from  $4.0 \times 10^1$  to  $1.3 \times 10^3$  CFU/mL during Q3 2001. The temporal changes in degrader microbial populations are presented in Figure 9.

## **3 EVALUATION OF PILOT SCALE OPERATIONS**

Augmentation of the groundwater treatment system was initiated in October 2000 by injecting air at TG1. In late June 2001, nutrient addition was initiated at TG1 using a solution containing potassium nitrate ( $\text{KNO}_3$ ) and potassium phosphate ( $\text{KHPO}_4$ ). Based on the hydraulic gradient, effects of nutrient addition and air injection would be observed in treatment performance monitoring wells TG1-2 and TG1-3, which are immediately downgradient of the injection wells. Discussions regarding the effects of the site augmentation activities are discussed below.

### **3.1 Nutrients and pH**

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 (6.82 to 7.62 S.U.) is sufficient to facilitate biological activity. Table 7 contains calculated C:N:P ratios for each of the treatment-performance monitoring wells. Only one well (TG2-2) exhibited the

desired C:N:P ratio. Nevertheless, on a sitewide basis, the C:N:P ratio is 100:9.8:07, which is close to the desired ratio.

NO<sub>3</sub>-N was not detected in any of the TG1 wells during Q3 2001 except for well TG1-3 in September; however, NO<sub>3</sub>-N has historically been detected sporadically in all treatment gates at concentrations similar to that detected in TG1-3 during September 2001. A steady increase in PO<sub>4</sub>-P was observed in TG1 during Q3 2001, with downgradient wells TG1-2 and TG1-3 having higher concentrations than upgradient well TG1-1; however, similar trends and PO<sub>4</sub>-P concentrations were observed in the other treatment gates. Orthophosphate in TG1 was significantly higher in September 2001 compared to the other gates (except well TG4-3); however, the orthophosphate concentrations are less than 1.0 mg/L. Orthophosphate has historically occurred in all gates at similar concentrations.

The groundwater monitoring data presented for the Q2 of 2001 indicate that continued site augmentation might be required for bioremediation since the C:N:P ratios in the treatment gate wells indicate potential nutrient deficiencies in the groundwater. The DO concentrations in the wells indicate an anaerobic environment. Furthermore, the negative redox potentials observed indicate that many alternate electron receptors may already exist in their reduced state.

Nutrient addition will continue at TG1 through Q4 2001. Upon evaluation of the performance of TG1 compared to the other gates and based on Q3 and Q4 2001 data, a recommendation regarding the benefits of nutrient addition will be drafted and included in the Q4 2001 report.

### **3.2 Dissolved Oxygen**

Dissolved oxygen concentrations remained very low in TG1 during Q3 2001, similar to all other gates. Well packers were installed in the TG5 injection wells in June 2000; however, no discernable change in the DO levels has been observed in the TG5 wells to date. 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.

### **3.3 Effects on Bacterial Populations**

There was no significant change in the total bacteria counts in TG1 during Q3 2001; however, the bacteria levels in TG1 were slightly higher than those observed in the other treatment gates.



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Figure 10 compares the degrader populations in TG1 and TG2 since Q3 2000. Although the degrader population in TG1 increased an order of magnitude during Q3 2001, degrader populations have achieved similar levels in quarters prior to implementing nutrient injection. Since air injection began in October 2000, degrader populations in TG1 have typically been higher than in TG2. It is uncertain if this trend is due to air injection, 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 has been observed with site hydrogeology based on the Q3 2001 monitoring results; however, a potential seasonal fluctuation in the site hydrogeology may be responsible for the trend observed in the plume size (as discussed in Subsection 2.2.2.1). KMC/WESTON will continue to monitor and evaluate the site hydrogeology.

If you have any questions or require additional information regarding this submittal, please do not hesitate to call me at (847) 918-4142.

Very truly yours,

ROY F. WESTON, INC.

Thomas P. Graan, Ph.D.  
Principal Project Manager

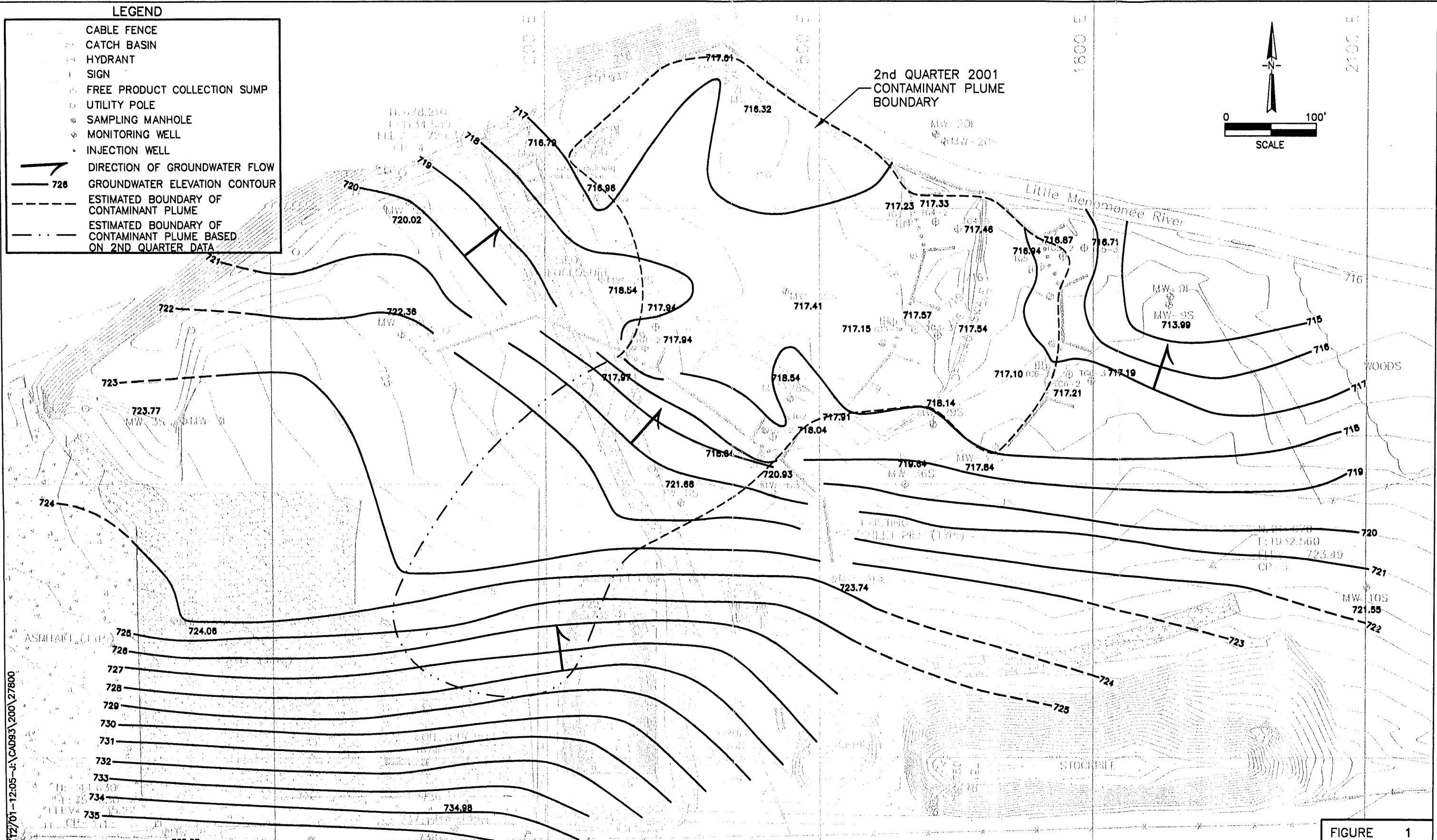
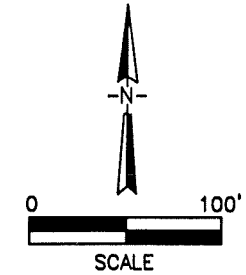
TPG/ld

Attachments

cc: G. Edelstein, WDNR  
B. Felix, WDNR

**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
- · - · - ESTIMATED BOUNDARY OF CONTAMINANT PLUME BASED ON 2ND QUARTER DATA



C:\HERVANDD-0772701-12:05-J\CAD93\200\27800

SOURCE: BERNKLAU SURVEYING, N64 W24801 MAIN ST., SUITE 103, SUSSEX, WI 53089

N: 80 570  
E: 1177070  
ELEV: 73417  
CP: 6



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

GROUNDWATER ELEVATION CONTOUR MAP - 3RD QTR 2001  
KERR MCGEE CORPORATION  
MOSS-AMERICAN SITE  
Milwaukee, Wisconsin

FIGURE 1

Figure 2

Treatment Performance Monitoring Wells  
 Third Quarter 2001  
 Moss-American Site  
 Milwaukee, Wisconsin

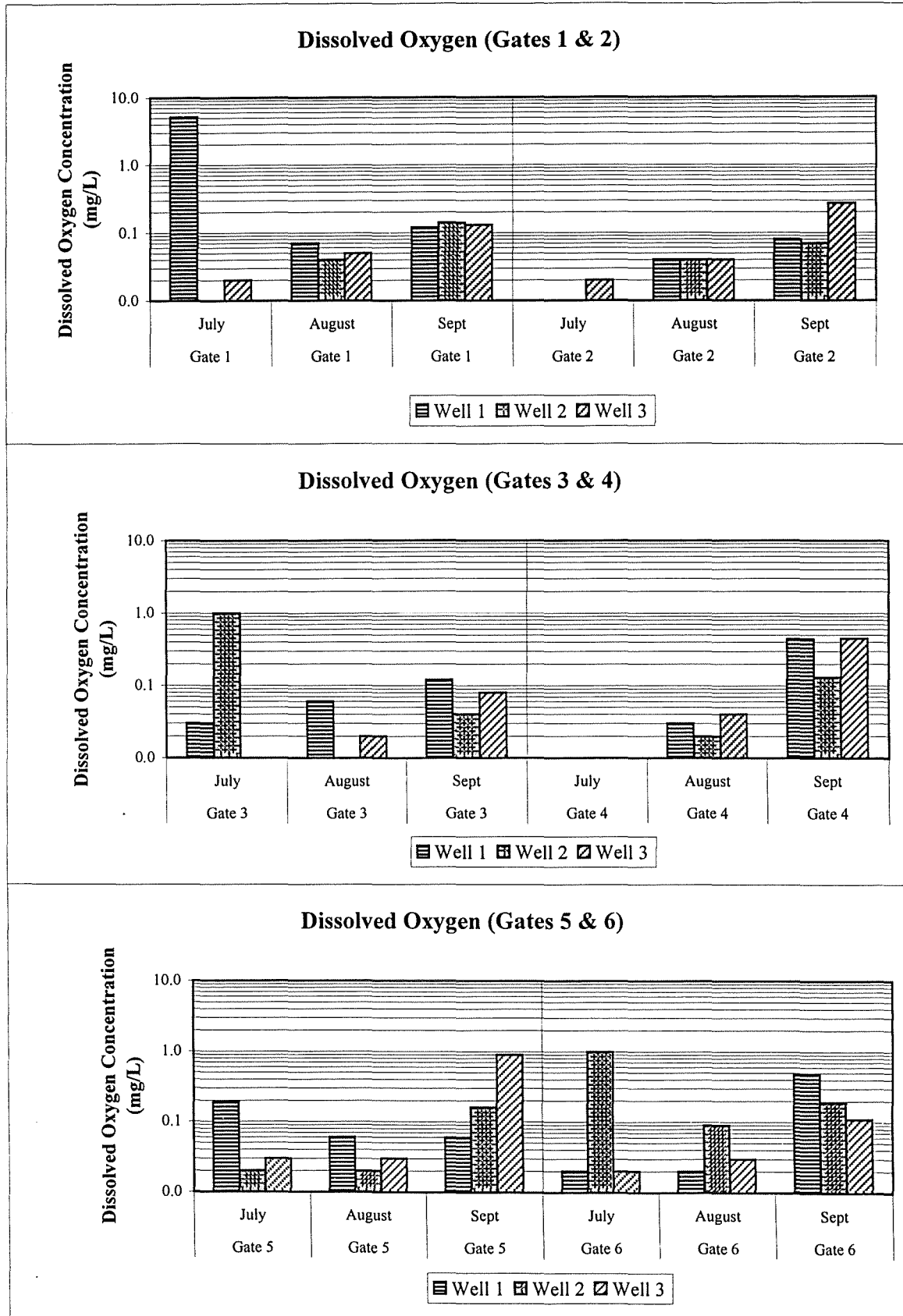




Figure 3

Treatment Performance Monitoring Wells  
 Third Quarter 2001  
 Moss-American Site  
 Milwaukee, Wisconsin

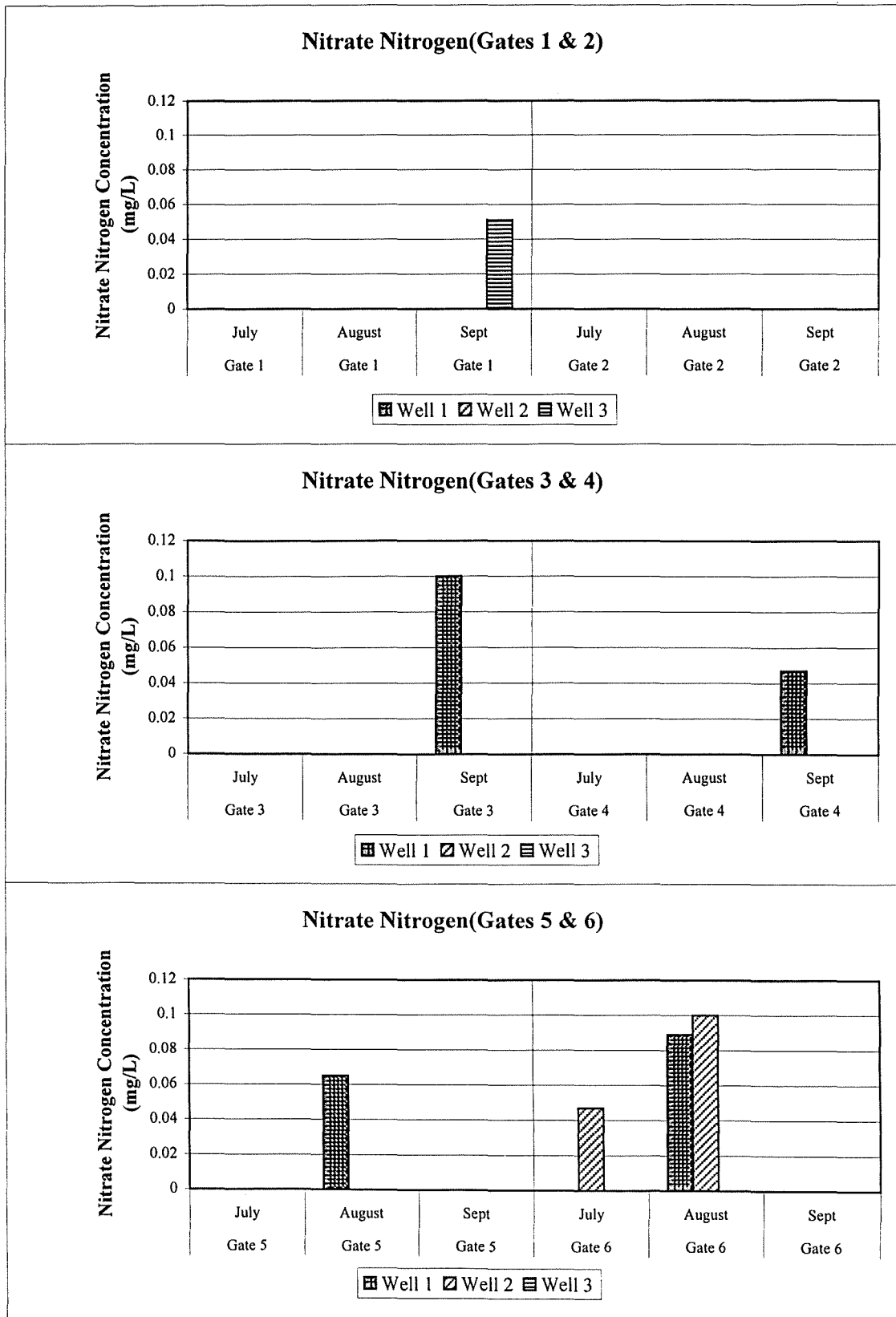


Figure 4

Treatment Performance Monitoring Wells  
 Third Quarter 2001  
 Moss-American Site  
 Milwaukee, Wisconsin

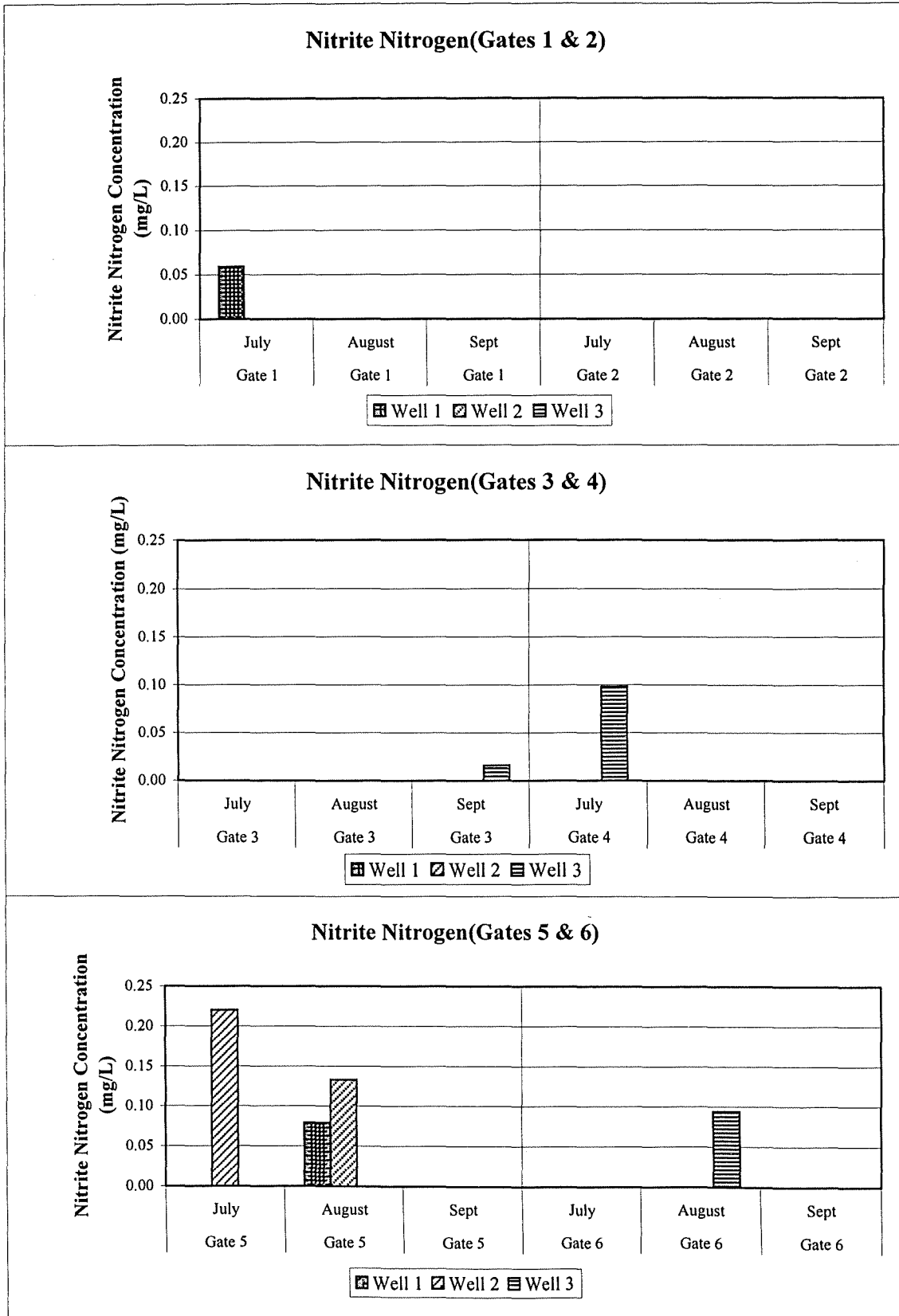


Figure 5

Treatment Performance Monitoring Wells  
 Third Quarter 2001  
 Moss-American Site  
 Milwaukee, Wisconsin

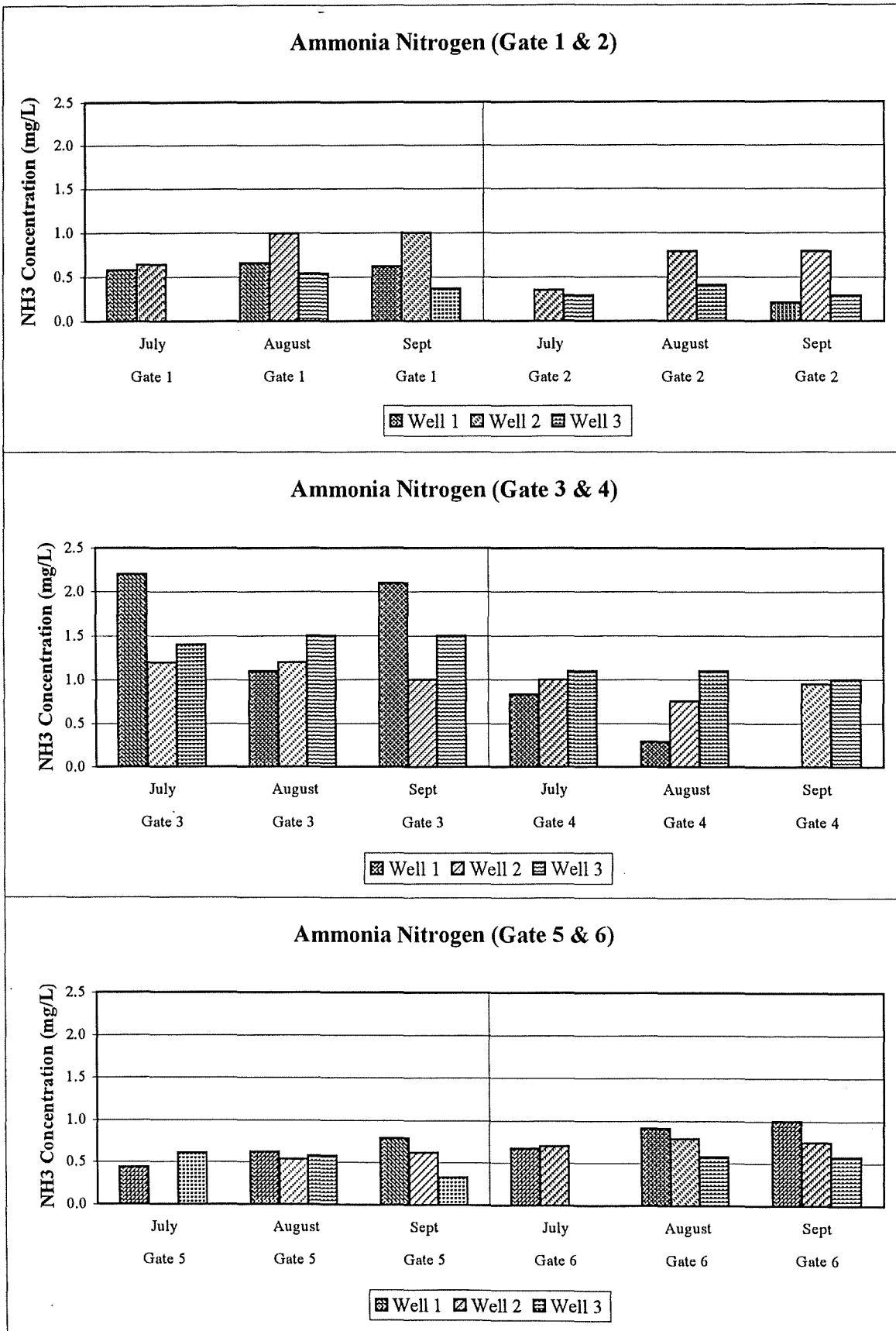


Figure 6

Treatment Performance Monitoring Wells  
 Third Quarter 2001  
 Moss-American Site  
 Milwaukee, Wisconsin

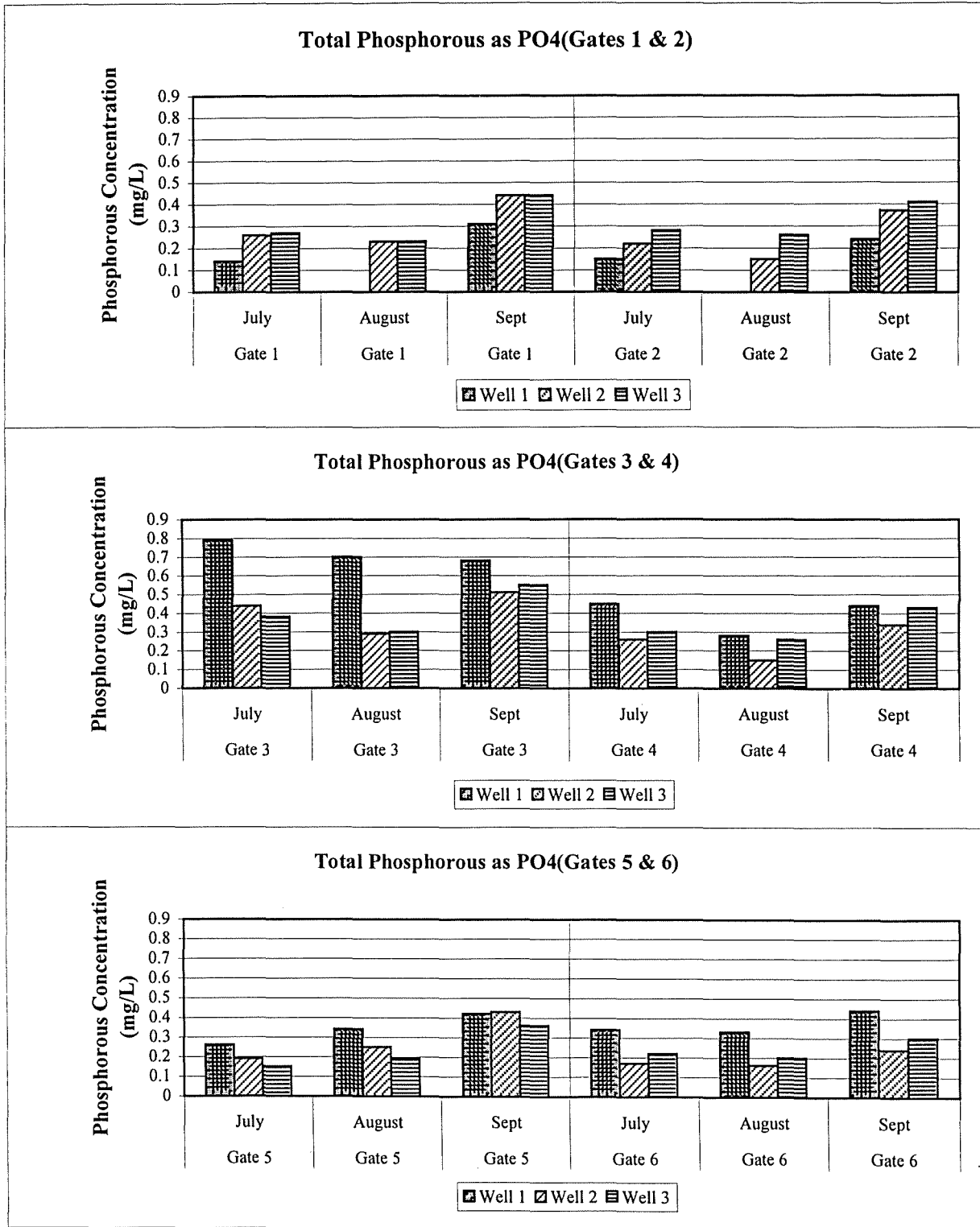


Figure 7

Treatment Performance Monitoring Wells  
 Third Quarter 2001  
 Moss-American Site  
 Milwaukee, Wisconsin

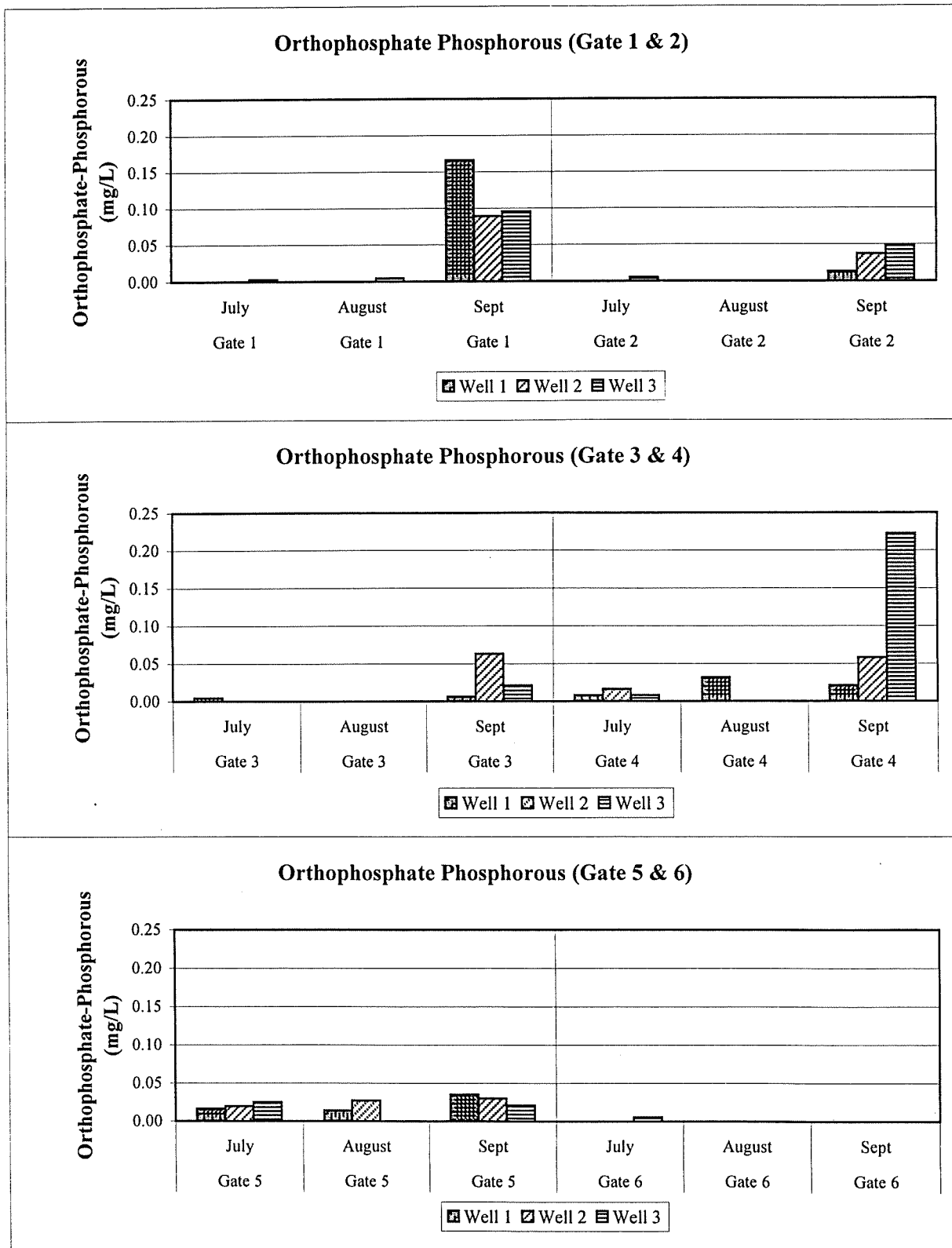
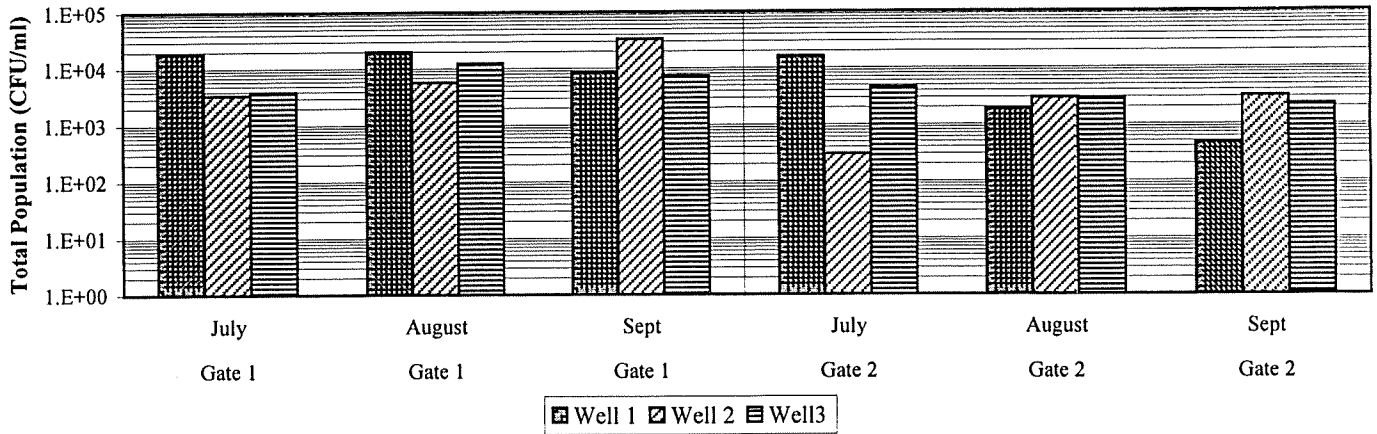


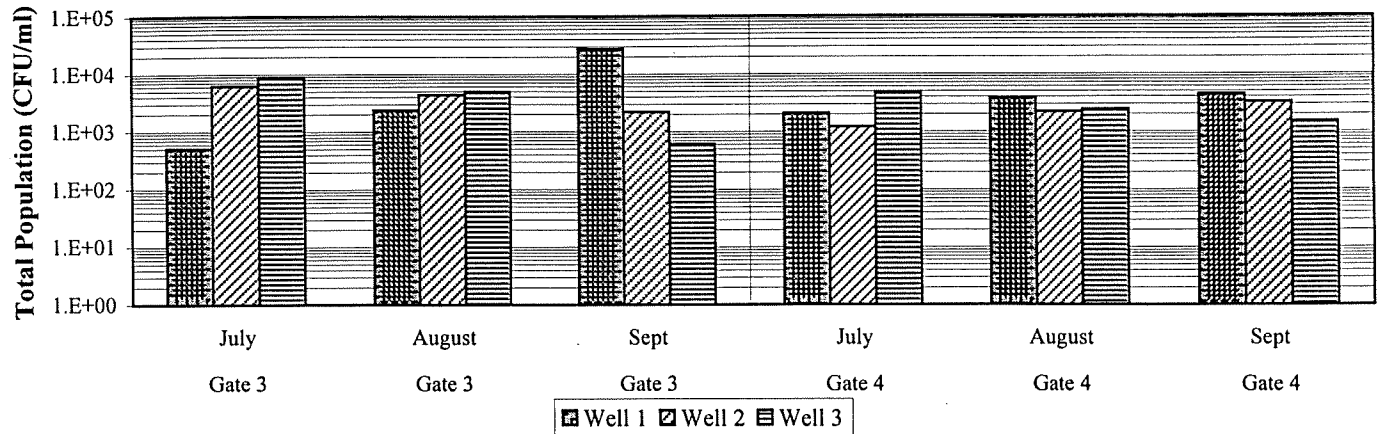
Figure 8

Treatment Performance Monitoring Wells  
 Third Quarter 2001  
 Moss-American Site  
 Milwaukee, Wisconsin

Total Microbial Population (Gates 1 & 2)



Total Microbial Population (Gates 3 & 4)



Total Microbial Population (Gates 5 & 6)

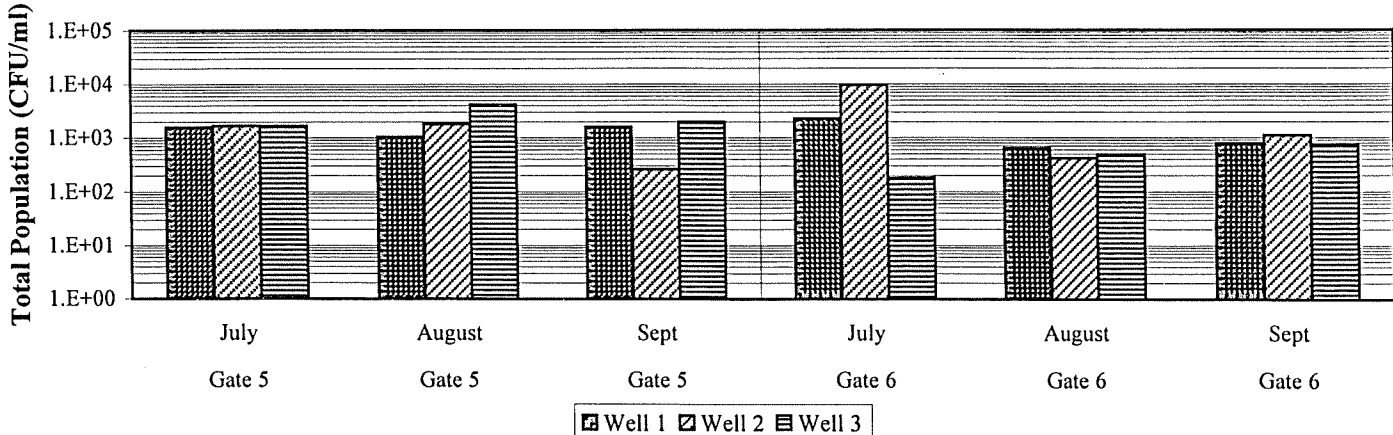


Figure 9

Treatment Performance Monitoring Wells  
 Third Quarter 2001  
 Moss-American Site  
 - Milwaukee, Wisconsin

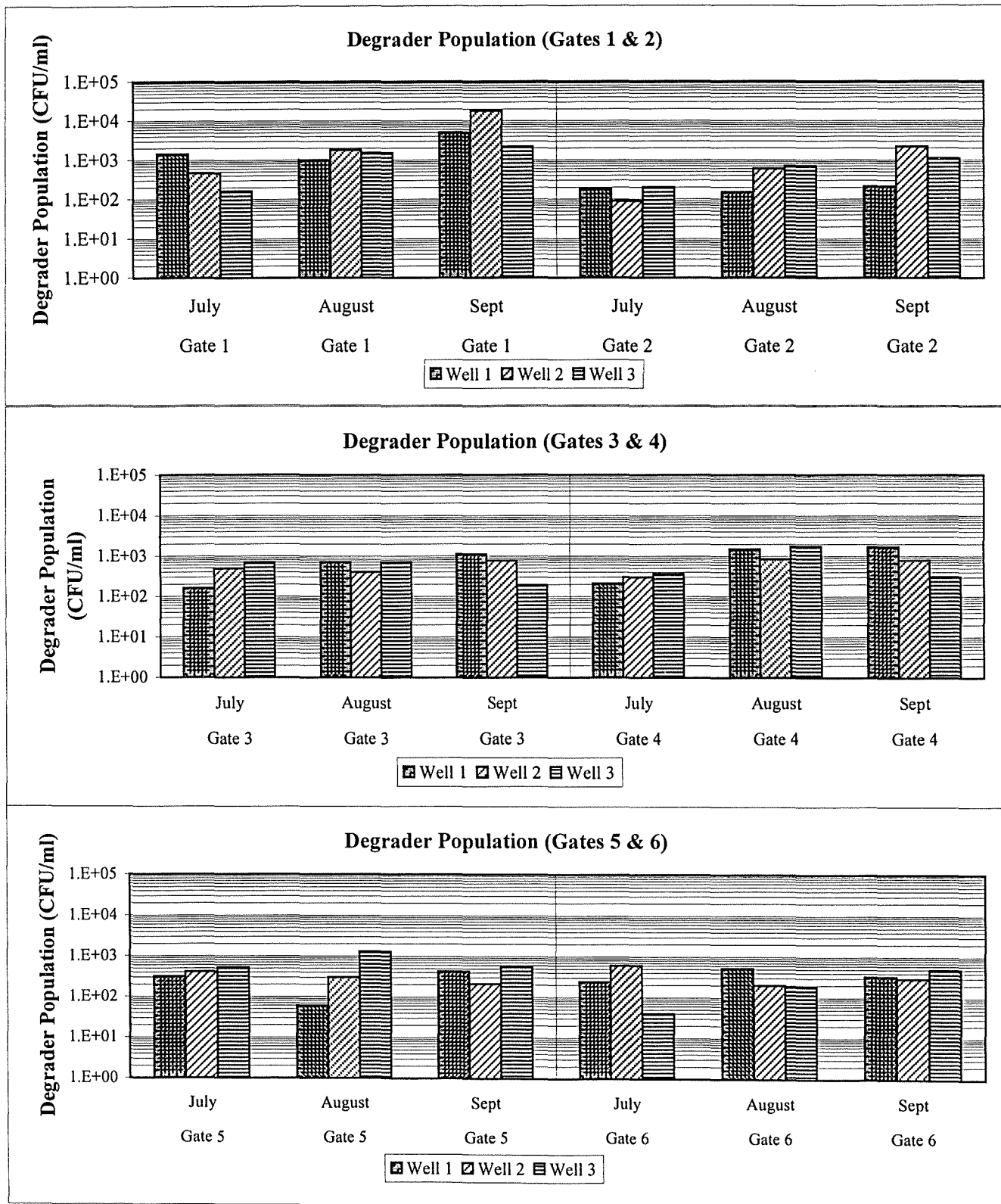
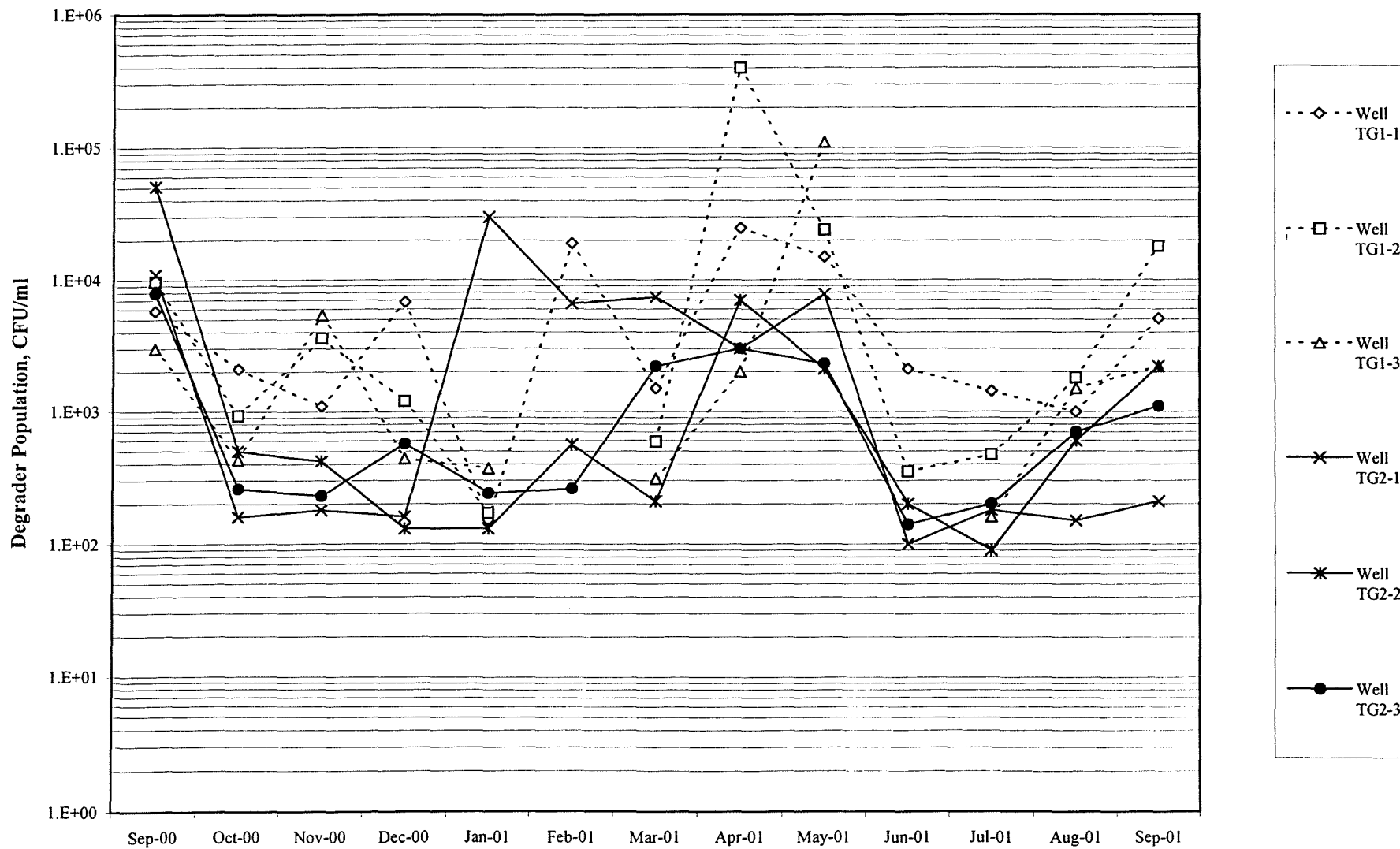


Figure 10

Comparison of Degradable Populations in Treatment Gates 1 and 2 since Q3 2000  
Moss-American Site  
Milwaukee, Wisconsin





**Table 1**

**Groundwater Elevation Measurements**  
**Shallow Monitoring and Containment Performance Monitoring Wells**  
**- Moss-American Site**  
**Milwaukee, Wisconsin**  
**Third Quarter 2001**

<b>Well ID</b>	<b>Ground Elevation</b>	<b>TOC Elevation</b>	<b>Depth to Water</b>	<b>GW Elevation</b>	<b>Product Thickness (inches)</b>
MW-3S	729.00	731.50	7.73	723.77	ND
MW-5S	723.00	724.70	4.68	720.02	ND
MW-6S	727.00	724.28	3.35	720.93	ND
MW-7S	720.00	721.70	4.69	717.01	ND
MW-9S	720.00	721.71	7.72	713.99	ND
MW-10S	723.00	726.58	5.03	721.55	ND
MW-13S	737.00	738.68	3.70	734.98	ND
MW-20S	716.00	719.94	NM	NM	ND
MW-25S	736.83	739.24	3.67	735.57	ND
MW-26S	732.31	731.66	7.60	724.06	ND
MW-27S	720.59	723.15	4.61	718.54	ND
MW-28S	720.04	722.65	4.11	718.54	ND
MW-29S	720.01	722.39	4.25	718.14	ND
TW-05	721.76	724.16	2.50	721.66	ND
MW-30S	724.50	727.19	4.83	722.36	ND
MW-31S	723.80	726.35	2.61	723.74	ND
MW-32S	719.60	722.62	5.66	716.96	ND
MW-33S	719.10	721.69	4.90	716.79	ND
MW-34S	718.60	721.42	5.10	716.32	9.0
MW-35S	718.90	721.54	4.13	717.41	ND
MW-36S	720.20	723.09	3.45	719.64	ND
MW-37S	720.50	723.13	5.29	717.84	ND

Note: All values in feet.

All elevation measurements are with respect to Mean Sea Level (MSL).

TOC = Top of well casing.

GW = Groundwater.

NM = Not able to be measured due to well damage.

ND = Not detected.

Depth to groundwater was measured on 24 September 2001.

**Table 2**

**Groundwater Elevation Measurements  
Treatment Performance Monitoring Wells  
Moss-American Site  
Milwaukee, Wisconsin  
Third Quarter 2001**

Well ID	Ground Elevation	TOC Elevation	Depth to Water	GW Elevation	Hydraulic Gradient (ft/ft)	Groundwater Velocity (ft/day)	Product Thickness
TG1-1	720.05	723.18	5.21	717.97	0.0006	0.0057	TRACE
TG1-2	719.80	722.60	4.66	717.94			ND
TG1-3	719.30	722.35	4.41	717.94			ND
TG2-1	720.50	723.60	4.76	718.84	0.0186	0.1757	ND
TG2-2	719.90	722.86	4.82	718.04			ND
TG2-3	719.90	722.35	4.44	717.91			ND
TG3-1	718.40	720.95	3.80	717.15	-0.0078	-0.0002	ND
TG3-2	718.20	720.75	3.18	717.57			ND
TG3-3	717.80	720.30	2.76	717.54			ND
TG4-1	717.60	720.79	3.56	717.23	-0.0046	-0.0001	ND
TG4-2	717.90	720.51	3.18	717.33			ND
TG4-3	717.40	719.93	2.47	717.46			ND
TG5-1	717.60	720.56	3.62	716.94	0.0046	0.0435	ND
TG5-2	717.30	720.24	3.37	716.87			ND
TG5-3	717.00	719.73	3.02	716.71			ND
TG6-1	719.20	721.73	4.63	717.10	-0.0018	-0.0170	ND
TG6-2	719.20	721.90	4.69	717.21			ND
TG6-3	719.40	722.32	5.13	717.19			ND

Note: All values in feet.

All elevation measurements are with respect to Mean Sea Level (MSL).

Porosity of soil is assumed to be 0.3.

Hydraulic conductivity of treatment gate material is assumed to be 1E-3 cm/s = 2.8 ft/day.

TOC = Top of the casing.

GW = Groundwater.

ft/day = feet per day.

ND = Not detected.

NM = Not able to be measured due to freezing conditions.

A negative value in the groundwater velocity column indicates that the groundwater flow was opposite to the general direction of groundwater flow at the site.

Depth to groundwater was measured on 24 September 2001.

**Table 3**

**Field-Measured Parameters  
Shallow Groundwater and Containment Performance Monitoring Wells  
- Moss-American Site  
Milwaukee, Wisconsin  
Third Quarter 2001**

<b>Well Number</b>	<b>pH (Standard Units)</b>	<b>Specific Conductance (mΩ/cm)</b>	<b>Temperature (°C)</b>	<b>Redox Potential (mV)</b>	<b>Dissolved Oxygen (mg/L)</b>	<b>Turbidity (NTU)</b>
MW-3S	7.18	0.914	14.38	+129.3	0.19	4.20
MW-5S	7.17	0.908	12.88	+48.0	0.02	1.68
MW-6S	7.62	0.678	16.74	-39.1	0.08	95.0
MW-7S	6.75	0.991	13.94	-80.4	0.18	2.50
MW-9S	6.73	0.998	14.05	-73.8	0.09	9.80
MW-10S	6.86	0.796	16.62	+64.4	0.39	3.67
MW-13S	6.98	0.819	15.15	+123.5	0.11	3.80
MW-20S	6.80	1.120	13.86	-40.2	NM	2.20
MW-25S	6.93	0.804	14.44	+128.3	0.38	0.60
MW-26S	7.04	0.717	14.53	+122.9	0.11	3.80
MW-27S	6.82	0.899	15.52	-92.1	0.13	66.0
MW-28S	6.68	2.272	17.70	-40.9	0.06	3.41
MW-29S	6.97	0.984	17.23	-5.2	0.24	6.10
TW-05	6.89	0.857	16.92	-89.8	0.21	2.75
MW-30S	7.00	0.858	15.15	-12.0	0.03	1.02
MW-31S	7.31	0.641	15.11	+112	0.03	52.4
MW-32S	6.87	0.895	18.07	-102.8	0.09	5.0
MW-33S	6.72	1.060	16.60	-75.6	0.11	2.50
MW-34S	NA	NA	NA	NA	0.19	NA
MW-35S	7.01	1.098	17.39	-14.1	0.09	36.5
MW-36S	7.34	0.602	16.36	-82.1	0.12	65.5
MW-37S	7.21	0.796	16.12	-53.5	0.14	1.54

**Table 3 (continued)**

**Field-Measured Parameters  
Treatment Performance Monitoring Wells  
Moss-American Site  
Milwaukee, Wisconsin  
Third Quarter 2001**

Well Number	pH (Standard Units)	Specific Conductance (mΩ/cm)	Temperature (°C)	Redox Potential (mV)	Dissolved Oxygen (mg/L)	Turbidity (NTU)
TG1-1	7.11	1.042	15.16	-75.9	0.12	2.80
TG1-2	6.93	1.133	15.46	-74.1	0.14	10.9
TG1-3	7.14	1.081	15.27	-64.2	0.13	9.60
TG2-1	7.05	0.783	15.70	-23.7	0.08	3.80
TG2-2	7.05	0.746	15.25	-90.9	0.07	6.20
TG2-3	6.90	0.984	16.78	-47.2	0.27	9.50
TG3-1	6.82	1.258	15.43	-61.3	0.12	1.51
TG3-2	6.98	0.903	16.25	-92.3	0.04	5.64
TG3-3	6.84	1.199	16.12	-77.5	0.08	11.0
TG4-1	7.29	0.664	14.60	-107.2	0.44	6.48
TG4-2	7.23	0.748	15.60	-89.7	0.13	13.2
TG4-3	7.13	0.770	14.37	-85.8	0.45	4.20
TG5-1	7.15	0.708	16.08	-63.4	0.06	1.30
TG5-2	7.23	0.684	17.31	-79.4	0.16	17.2
TG5-3	7.44	0.724	14.92	-14.6	0.90	62.0
TG6-1	7.20	1.009	15.56	-46.3	0.48	36.5
TG6-2	7.21	0.877	15.42	+1.4	0.19	0.91
TG6-3	6.88	1.006	15.23	-6.3	0.11	1.40

S - Shallow well.

TW - Temporary well (shallow).

TG - Treatment gate performance monitoring well.

NM - Not measured due to well damage.

NA - Not analyzed due to free product in water.

-- - Data not available.

Table 4

**Groundwater Sample Analytical Results  
Shallow Groundwater Monitoring Well Samples  
Moss-American Site  
Milwaukee, Wisconsin  
Third Quarter 2001**

Sample ID:	MW3S-270901-08	MW5S-250901-10	MW6S-260901-07	MW7S-270901-03	WDNR PAL, ug/L	WDNR ES, ug/L
Sample Matrix:	Groundwater	Groundwater	Groundwater	Groundwater		
Sample Date:	9/27/2001	9/25/2001	9/26/2001	9/27/2001		
Units of Measure:	ug/L	ug/L	ug/L	ug/L		
<b>Parameters</b>						
<b>VOCs</b>						
Benzene	0.20 U	0.20 U	0.20 U	3.7 J	0.5	5
Toluene	0.20 U	0.20 U	0.20 U	2 U	68.6	343
Ethylbenzene	0.20 U	0.20 U	0.20 U	14	140	700
Total Xylenes	0.60 U	0.60 U	0.60 U	41	124	620
<b>PAHs</b>						
Naphthalene	1.00 U	2.00 U	1.00 U	3,700	8.0	40
Acenaphthalylene	0.80 U	1.00 U	0.80 U	100 U	NA	NA
Acenaphthene	0.80 U	1.00 U	0.80 U	68	NA	NA
Fluorene	0.20 U	0.30 U	0.20 U	11	80	400
Phenanthrene	0.08 U	0.10 U	0.08 U	0.08 U	NA	NA
Anthracene	0.04 U	0.07 U	0.04 U	0.04 U	600	3,000
Fluoranthene	0.04 U	0.07 U	0.04 U	0.04 U	80	400
Pyrene	0.20 U	0.30 U	0.20 U	0.20 U	50	250
Benzo(a)anthracene	0.02 U	0.03 U	0.02 U	0.02 U	NA	NA
Chrysene	0.08 U	0.10 U	0.08 U	0.08 U	0.02	0.2
Benzo(b)fluoranthene	0.04 U	0.07 U	0.04 U	0.04 U	0.02	0.2
Benzo(k)fluoranthene	0.02 U	0.03 U	0.02 U	0.02 U	NA	NA
Benzo(a)pyrene	0.02 U	0.03 U	0.02 U	0.02 U	0.02	0.2
Dibenzo(a,h)anthracene	0.04 U	0.07 U	0.04 U	0.04 U	NA	NA
Benzo(g,h,i)perylene	0.10 U	0.20 U	0.10 U	0.10 U	NA	NA
Indeno(1,2,3-cd)pyrene	0.08 U	0.10 U	0.08 U	0.08 U	NA	NA

Table 4 (continued)

**Groundwater Sample Analytical Results  
Shallow Groundwater Monitoring Well Samples  
Moss-American Site  
Milwaukee, Wisconsin  
Third Quarter 2001**

Sample ID:	MW9S-260901-02	MW10S-260901-01	MW13S-280901-03	MW20S-270901-01	MW25S-280901-02	MW26S-280901-01	WDNR PAL, ug/L	WDNR ES, ug/L
Sample Matrix:	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater		
Sample Date:	9/26/2001	9/26/2001	9/28/2001	9/27/2001	9/28/2001	9/28/2001		
Units of Measure:	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L		
<b>Parameters</b>								
<b>VOCs</b>								
Benzene	0.2 U	0.2 U	0.20 U	0.2 U	0.20 U	0.20 U	0.5	5
Toluene	0.2 U	1.0	0.20 U	0.2 U	0.20 U	0.20 U	68.6	343
Ethylbenzene	0.2 U	0.2 U	0.20 U	0.2 U	0.20 U	0.20 U	140	700
Total Xylenes	0.6 U	0.6 U	0.60 U	0.6 U	0.60 U	0.60 U	124	620
<b>PAHs</b>								
Naphthalene	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 J	8.0	40
Acenaphthalene	0.80 U	0.80 U	0.80 U	0.80 U	0.80 U	0.80 U	NA	NA
Acenaphthene	0.80 U	0.80 U	0.80 U	0.80 U	0.80 U	0.80 U	NA	NA
Fluorene	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	80	400
Phenanthrene	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U	NA	NA
Anthracene	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	600	3,000
Fluoranthene	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	80	400
Pyrene	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	50	250
Benzo(a)anthracene	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
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(k)fluoranthene	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
Dibenzo(a,h)anthracene	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	NA	NA
Benzo(g,h,i)perylene	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	NA	NA
Indeno(1,2,3-cd)pyrene	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U	NA	NA

Table 4 (continued)

**Groundwater Sample Analytical Results  
Shallow Groundwater Monitoring Well Samples  
Moss-American Site  
Milwaukee, Wisconsin  
Third Quarter 2001**

Sample ID:	MW27S-270901-05	MW28S-260901-09	MW29S-260901-05	TW05-260901-08	WDNR PAL, ug/L	WDNR ES, ug/L
Sample Matrix:	Groundwater	Groundwater	Groundwater	Groundwater		
Sample Date:	9/27/2001	9/26/2001	9/26/2001	9/26/2001		
Units of Measure:	ug/L	ug/L	ug/L	ug/L		
<b>Parameters</b>						
<b>VOCs</b>						
Benzene	0.20 U	0.20 U	0.20 U	0.20 U	0.5	5
Toluene	0.20 U	0.20 U	0.20 U	0.20 U	68.6	343
Ethylbenzene	0.20 U	0.20 U	0.20 U	0.20 U	140	700
Total Xylenes	0.60 U	0.60 U	0.60 U	0.60 U	124	620
<b>PAHs</b>						
Naphthalene	1.00 J	1.00 J	1.00 U	22.0	8.0	40
Acenaphthylene	0.80 U	0.80 U	0.80 U	13.0	NA	NA
Acenaphthene	0.80 U	0.80 U	0.80 U	78.0	NA	NA
Fluorene	0.20 U	0.20 U	0.20 U	60.0	80	400
Phenanthrene	0.08 U	0.08 U	0.08 U	2.00 U	NA	NA
Anthracene	0.04 U	0.04 U	0.04 U	4.00	600	3,000
Fluoranthene	0.04 U	0.04 U	0.04 U	11.00	80	400
Pyrene	0.20 U	0.20 U	0.20 U	8.00	50	250
Benzo(a)anthracene	0.02 U	0.02 U	0.02 U	0.20	NA	NA
Chrysene	0.08 U	0.08 U	0.08 U	0.08 U	0.02	0.2
Benzo(b)fluoranthene	0.04 U	0.04 U	0.04 U	0.04 U	0.02	0.2
Benzo(k)fluoranthene	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 J	0.02	0.2
Dibenzo(a,h)anthracene	0.04 U	0.04 U	0.04 U	0.04 U	NA	NA
Benzo(g,h,i)perylene	0.10 U	0.10 U	0.10 U	0.10 U	NA	NA
Indeno(1,2,3-cd)pyrene	0.08 U	0.08 U	0.08 U	0.08 U	NA	NA

Table 4 (continued)

**Groundwater Sample Analytical Results  
Containment Performance Monitoring Well Samples  
Moss-American Site  
Milwaukee, Wisconsin  
Third Quarter 2001**

Sample ID:	MW30S-250901-11	MW31S-280901-04	MW32S-260901-11	MW33S-270901-04	WDNR PAL, ug/L	WDNR ES, ug/L
Sample Matrix:	Groundwater	Groundwater	Groundwater	Groundwater		
Sample Date:	9/25/2001	9/28/2001	9/26/2001	9/27/2001		
Units of Measure:	ug/L	ug/L	ug/L	ug/L		
<b>Parameters</b>						
<b>VOCs</b>						
Benzene	0.20 U	0.20 U	0.20 U	1.00 U	0.5	5
Toluene	0.20 U	0.20 U	0.20 U	1.00 U	68.6	343
Ethylbenzene	0.20 U	0.20 U	0.20 U	8.20	140	700
Total Xylenes	0.60 U	0.60 U	0.60 U	21	124	620
<b>PAHs</b>						
Naphthalene	0.90 U	1.00 U	1.00 U	2,600	8.0	40
Acenaphthylene	0.80 U	0.80 U	0.80 U	52	NA	NA
Acenaphthene	0.80 U	0.80 U	0.80 U	130	NA	NA
Fluorene	0.20 U	0.20 U	0.20 U	34	80	400
Phenanthrene	0.08 U	0.08 U	0.08 U	2.00	NA	NA
Anthracene	0.04 U	0.04 U	0.04 U	0.04 U	600	3,000
Fluoranthene	0.04 U	0.04 U	0.04 U	0.04 U	80	400
Pyrene	0.20 U	0.20 U	0.20 U	0.20 U	50	250
Benzo(a)anthracene	0.02 U	0.02 U	0.02 U	0.02 U	NA	NA
Chrysene	0.08 U	0.08 U	0.08 U	0.09 U	0.02	0.2
Benzo(b)fluoranthene	0.04 U	0.04 U	0.04 U	0.04 U	0.02	0.2
Benzo(k)fluoranthene	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	0.2
Dibenzo(a,h)anthracene	0.04 U	0.04 U	0.04 U	0.04 U	NA	NA
Benzo(g,h,i)perylene	0.09 U	0.10 U	0.10 U	0.10 U	NA	NA
Indeno(1,2,3-cd)pyrene	0.08 U	0.08 U	0.08 U	0.09 U	NA	NA



Table 4 (continued)

**Groundwater Sample Analytical Results  
Containment Performance Monitoring Well Samples  
Moss-American Site  
Milwaukee, Wisconsin  
Third Quarter 2001**

Sample ID:	MW34S-270901-06	MW35S-260901-10	MW36S-260901-06	MW37S-260901-04	WDNR PAL, ug/L	WDNR ES, ug/L
Sample Matrix:	Groundwater	Groundwater	Groundwater	Groundwater		
Sample Date:	9/27/2001	9/26/2001	9/26/2001	9/26/2001		
Units of Measure:	ug/L	ug/L	ug/L	ug/L		
<b>Parameters</b>						
<b>VOCs</b>						
Benzene	9.00 J	0.20 U	0.20 U	0.20 U	0.5	5
Toluene	4.00 U	0.20 U	0.20 U	0.20 U	68.6	343
Ethylbenzene	27.00	0.20 U	0.20 U	0.20 U	140	700
Total Xylenes	77.00	0.60 U	0.60 U	0.60 U	124	620
<b>PAHs</b>						
Naphthalene	6,200	1.00 J	1.00 U	1.00 U	8.0	40
Acenaphthylene	70	2.30 J	0.80 U	0.80 U	NA	NA
Acenaphthene	220	0.80 U	0.80 U	0.80 U	NA	NA
Fluorene	120	0.20 U	0.20 U	0.20 U	80	400
Phenanthrene	200	0.25 J	0.08 U	0.08 U	NA	NA
Anthracene	19	0.30	0.04 U	0.04 U	600	3,000
Fluoranthene	60	1.10	0.04 U	0.04 U	80	400
Pyrene	45	0.90	0.20 U	0.20 U	50	250
Benzo(a)anthracene	9	0.06 J	0.02 U	0.02 U	NA	NA
Chrysene	10	0.11 J	0.08 U	0.09 J	0.02	0.2
Benzo(b)fluoranthene	2	0.04 U	0.04 U	0.04 U	0.02	0.2
Benzo(k)fluoranthene	2	0.02 U	0.02 U	0.02 U	NA	NA
Benzo(a)pyrene	3	0.02 J	0.02 U	0.02 U	0.02	0.2
Dibenzo(a,h)anthracene	0.20 U	0.04 U	0.04 U	0.04 U	NA	NA
Benzo(g,h,i)perylene	0.50 U	0.10 U	0.10 U	0.10 U	NA	NA
Indeno(1,2,3-cd)pyrene	1.00 J	0.08 U	0.08 U	0.08 U	NA	NA

Table 4 (continued)

**Groundwater Sample Analytical Results  
Treatment Performance Monitoring Well Samples  
Moss-American Site  
Milwaukee, Wisconsin  
Third Quarter 2001**

Sample ID:	TG1-1-250901-04	TG1-2-250901-05	TG1-3-250901-06	TG2-1-250901-07	TG2-2-250901-08	TG2-3-250901-09	WDNR PAL, ug/L	WDNR ES, ug/L
Sample Matrix:	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater		
Sample Date:	9/25/2001	9/25/2001	9/25/2001	9/25/2001	9/25/2001	9/25/2001		
Units of Measure:	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L		
<b>Parameters</b>								
<b>VOCs</b>								
Benzene	3.1 J	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.5	5
Toluene	1.0 U	0.25 J	0.2 U	0.2 U	0.2 U	0.2 U	68.6	343
Ethylbenzene	15	0.6 J	0.2 U	0.2 U	0.2 U	0.2 U	140	700
Total Xylenes	24	0.7 J	0.6 U	0.6 U	0.6 U	0.6 U	124	620
<b>PAHs</b>								
Naphthalene	2400	72	1.0 U	0.9 U	1.0 U	2.0 U	8.0	40
Acenaphthylene	80 J	8 U	0.8 U	0.8 U	0.8 U	1.0 U	NA	NA
Acenaphthene	500	40	0.8 U	0.8 U	0.8 U	1.0 U	NA	NA
Fluorene	410	10	0.2 J	0.2 U	0.2 U	0.3 U	80	400
Phenanthrene	960	13	0.085 J	0.08 U	0.08 U	0.1 U	NA	NA
Anthracene	120	2.1	0.04 U	0.04 U	0.04 U	0.06 U	600	3,000
Fluoranthene	430	3.4	0.055 J	0.04 U	0.065 J	0.06 U	80	400
Pyrene	410	2.8	0.2 U	0.2 U	0.2 U	0.3 U	50	250
Benzo(a)anthracene	90	0.12	0.02 U	0.02 U	0.02 U	0.03 U	NA	NA
Chrysene	78	0.1 J	0.08 U	0.08 J	0.08 U	0.1 U	0.02	0.2
Benzo(b)fluoranthene	32	0.04 U	0.04 U	0.04 U	0.04 U	0.06 U	0.02	0.2
Benzo(k)fluoranthene	17	0.02 U	0.02 U	0.02 U	0.02 U	0.03 U	NA	NA
Benzo(a)pyrene	33	0.02 J	0.02 U	0.02 U	0.02 U	0.03 U	0.02	0.2
Dibenzo(a,h)anthracene	4	0.04 U	0.04 U	0.04 U	0.04 U	0.06 U	NA	NA
Benzo(g,h,i)perylene	8 J	0.1 U	0.1 U	0.09 U	0.1 U	0.2 U	NA	NA
Indeno(1,2,3-cd)pyrene	17	0.08 U	0.08 U	0.08 U	0.08 U	0.1 U	NA	NA

Table 4 (continued)

**Groundwater Sample Analytical Results  
Treatment Performance Monitoring Well Samples  
Moss-American Site  
Milwaukee, Wisconsin  
Third Quarter 2001**

Sample ID:	TG3-1-240901-07	TG3-2-240901-08	TG3-3-240901-09	TG4-1-250901-01	TG4-2-250901-02	TG4-3-250901-03	WDNR PAL, ug/L	WDNR ES, ug/L
Sample Matrix:	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater		
Sample Date:	9/24/2001	9/24/2001	9/24/2001	9/25/2001	9/25/2001	9/25/2001		
Units of Measure:	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L		
<b>Parameters</b>								
<b>VOCs</b>								
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
<b>PAHs</b>								
Naphthalene	0.9 U	1.0 U	1.0 U	1.4 J	0.9 U	0.9 U	8.0	40
Acenaphthylene	0.8 U	0.8 U	0.8 U	0.8 U	0.8 U	0.8 U	NA	NA
Acenaphthene	0.8 J	0.8 U	0.8 U	0.8 U	0.8 U	0.8 U	NA	NA
Fluorene	0.67 J	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	80	400
Phenanthrene	0.13 J	0.08 U	0.096 J	0.08 U	0.12 J	0.08 U	NA	NA
Anthracene	0.2	0.04 U	0.04 U	0.04 U	0.14 J	0.04 U	600	3,000
Fluoranthene	0.2	0.058 J	0.1 J	0.04 U	0.3	0.04 U	80	400
Pyrene	0.3 J	0.2 U	0.2 U	0.2 U	0.29 J	0.2 U	50	250
Benzo(a)anthracene	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
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(k)fluoranthene	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
Dibenzo(a,h)anthracene	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	NA	NA
Benzo(g,h,i)perylene	0.09 U	0.1 U	0.1 U	0.09 U	0.09 U	0.09 U	NA	NA
Indeno(1,2,3-cd)pyrene	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U	NA	NA

Table 4 (continued)

**Groundwater Sample Analytical Results  
Treatment Performance Monitoring Well Samples  
Moss-American Site  
Milwaukee, Wisconsin  
Third Quarter 2001**

Sample ID:	TG5-1-240901-04	TG5-2-240901-05	TG5-3-240901-06	TG6-1-240901-01	TG6-2-240901-02	TG6-3-240901-03	WDNR PAL, ug/L	WDNR ES, ug/L
Sample Matrix:	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater		
Sample Date:	9/24/2001	9/24/2001	9/24/2001	9/24/2001	9/24/2001	9/24/2001		
Units of Measure:	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L		
<b>Parameters</b>								
<b>VOCs</b>								
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
<b>PAHs</b>								
Naphthalene	0.9 U	1.1 J	1.0 U	0.9 U	0.9 U	0.9 U	8.0	40
Acenaphthylene	0.8 U	0.8 U	0.9 U	0.8 U	0.8 U	0.8 U	NA	NA
Acenaphthene	0.8 U	0.8 U	0.9 U	0.8 U	0.8 U	0.8 U	NA	NA
Fluorene	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	80	400
Phenanthrene	0.08 U	0.08 U	0.09 U	0.08 U	0.08 U	0.08 U	NA	NA
Anthracene	0.04 U	0.044 J	0.04 U	0.04 U	0.057 J	0.04 J	600	3,000
Fluoranthene	0.04 U	0.076 J	0.04 U	0.04 U	0.16 J	0.041 J	80	400
Pyrene	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	50	250
Benzo(a)anthracene	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
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(k)fluoranthene	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	0.03 J	0.02 U	0.02 U	0.02 U	0.02 U	0.02	0.2
Dibenzo(a,h)anthracene	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	NA	NA
Benzo(g,h,i)perylene	0.09 U	0.09 U	0.1 U	0.09 U	0.09 U	0.09 U	NA	NA
Indeno(1,2,3-cd)pyrene	0.08 U	0.08 U	0.09 U	0.08 U	0.08 U	0.08 U	NA	NA

Table 4 (continued)

**Groundwater Sample Analytical Results  
Intermediate Groundwater Monitoring Well Samples  
Moss-American Site  
Milwaukee, Wisconsin  
Third Quarter 2001**

Sample ID:	MW3I-270901-09	MW7I-270901-07	MW9I-260901-03	MW20I-270901-02	WDNR PAL, ug/L	WDNR ES, ug/L
Sample Matrix:	Groundwater	Groundwater	Groundwater	Groundwater		
Sample Date:	9/27/2001	9/27/2001	9/27/2001	9/27/2001		
Units of Measure:	ug/L	ug/L	ug/L	ug/L		
<b>Parameters</b>						
<b>VOCs</b>						
Benzene	0.2 U	0.2 U	0.2 U	0.2 U	0.5	5
Toluene	0.2 U	0.22 J	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
<b>PAHs</b>						
Naphthalene	1.00 U	1.00 U	3.00 J	1.00 U	8.0	40
Acenaphthylene	0.80 U	0.80 U	2.00 U	1.00 U	NA	NA
Acenaphthene	0.80 U	0.80 U	2.00 U	1.00 U	NA	NA
Fluorene	0.20 U	0.20 U	0.40 U	0.20 U	80	400
Phenanthrene	0.08 U	0.08 U	0.2 U	0.1 U	NA	NA
Anthracene	0.04 U	0.040 U	0.08 U	0.05 U	600	3,000
Fluoranthene	0.04 U	0.04 U	0.08 U	0.05 U	80	400
Pyrene	0.20 U	0.20 U	0.40 U	0.20 U	50	250
Benzo(a)anthracene	0.02 U	0.02 U	0.04 U	0.02 U	NA	NA
Chrysene	0.08 U	0.080 U	0.2 U	0.10 U	0.02	0.2
Benzo(b)fluoranthene	0.04 U	0.04 U	0.04 U	0.05 U	0.02	0.2
Benzo(k)fluoranthene	0.02 U	0.02 U	0.04 U	0.02 U	NA	NA
Benzo(a)pyrene	0.02 U	0.02 U	0.08 U	0.02 U	0.02	0.2
Dibenzo(a,h)anthracene	0.04 U	0.04 U	0.08 U	0.05 U	NA	NA
Benzo(g,h,i)perylene	0.1 U	0.1 U	0.2 U	0.1 U	NA	NA
Indeno(1,2,3-cd)pyrene	0.08 U	0.08 U	0.2 U	0.1 U	NA	NA

Table 4 (continued)

Groundwater Sample Analytical Results  
 Field Duplicate Samples  
 Moss-American Site  
 Milwaukee, Wisconsin  
 Third Quarter 2001

Sample ID:	TG2-1-250901-07 DP	MW3S-270901-08 DP	MW10S-260901-01 DP	MW25S-280901-02 DP	MW35S-260901-10 DP	WDNR PAL, ug/L	WDNR ES, ug/L
Sample Matrix:	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater		
Sample Date:	9/25/2001	9/27/2001	9/26/2001	9/28/2001	9/26/2001		
Units of Measure:	ug/L	ug/L	ug/L	ug/L	ug/L		
<b>Parameters</b>							
<b>VOCs</b>							
Benzene	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.5	5
Toluene	0.20 U	0.20 U	2.20	0.20 U	0.20 U	68.6	343
Ethylbenzene	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	140	700
Total Xylenes	0.60 U	0.60 U	0.60 U	0.60 U	0.60 U	124	620
<b>PAHs</b>							
Naphthalene	1.00 U	1.00 U	1.00 U	1.00 U	1.00 J	8.0	40
Acenaphthylene	0.90 U	0.80 U	0.80 U	0.80 U	2.20 J	NA	NA
Acenaphthene	0.90 U	0.80 U	0.80 U	0.80 U	0.90 U	NA	NA
Fluorene	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	80	400
Phenanthrene	0.90 U	0.08 U	0.08 U	0.08 U	0.22 J	NA	NA
Anthracene	0.04 U	0.04 U	0.04 U	0.04 U	0.30	600	3,000
Fluoranthene	0.04 U	0.04 U	0.04 U	0.04 U	1.10	80	400
Pyrene	0.20 U	0.20 U	0.20 U	0.20 U	0.87 J	50	250
Benzo(a)anthracene	0.02 U	0.02 U	0.02 U	0.02 U	0.07 J	NA	NA
Chrysene	0.09 U	0.08 U	0.08 U	0.08 U	0.12 J	0.02	0.2
Benzo(b)fluoranthene	0.04 U	0.04 U	0.04 U	0.04 U	0.07 J	0.02	0.2
Benzo(k)fluoranthene	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	0.03 J	0.02	0.2
Dibenzo(a,h)anthracene	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	NA	NA
Benzo(g,h,i)perylene	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	NA	NA
Indeno(1,2,3-cd)pyrene	0.09 U	0.08 U	0.08 U	0.08 U	0.09 U	NA	NA

Table 4 (continued)

Groundwater Sample Analytical Results  
 Matrix Spike/Matrix Spike Duplicate Samples  
 Moss-American Site  
 Milwaukee, Wisconsin  
 Third Quarter 2001

Sample ID:	TG2-3-250901-09 MS	TG2-3-250901-09 MSD	MW33S-270901-04 MS	MW33S-270901-04 MSD	MW26S-280901-01 MS	MW26S-280901-01 MSD	WDNR PAL, ug/L	WDNR ES, ug/L
Sample Matrix:	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater		
Sample Date:	9/25/2001	9/25/2001	9/27/2001	9/27/2001	9/28/2001	9/28/2001		
Units of Measure:	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L		
<b>Parameters</b>								
<b>VOCs</b>								
Benzene	22	22	120	120	23	22	0.5	5
Toluene	22	22	120	120	23	22	68.6	343
Ethylbenzene	22	22	120	120	23	23	140	700
Total Xylenes	63	64	360	350	71	70	124	620
<b>PAHs</b>								
Naphthalene	230	220	1800	1700	170	180	8.0	40
Acenaphthylene	240	230	250	240	170	180	NA	NA
Acenaphthene	260	250	310	300	180	190	NA	NA
Fluorene	25	24	57	55	18	19	80	400
Phenanthrene	8.4	8.1	8	8	6	6	NA	NA
Anthracene	4.3	4.1	3	3	3	3	600	3,000
Fluoranthene	4.9	4.6	3	3	3	3	80	400
Pyrene	31	30	20	19	19	20	50	250
Benzo(a)anthracene	2.3	2.2	2	1	1	2	NA	NA
Chrysene	9.2	8.8	6	6	6	6	0.02	0.2
Benzo(b)fluoranthene	1.9	1.8	1	1	1	1	0.02	0.2
Benzo(k)fluoranthene	1.9	1.8	1	1	1	1	NA	NA
Benzo(a)pyrene	2.2	2.1	2	2	1	1	0.02	0.2
Dibenzo(a,h)anthracene	5.2	4.9	3	3	3	3	NA	NA
Benzo(g,h,i)perylene	20	19	14	12	12	13	NA	NA
Indeno(1,2,3-cd)pyrene	9.7	9.3	7.0	6	6	6	NA	NA

**Table 4 (continued)**

**Groundwater Sample Analytical Results  
Field Blank Samples  
Moss-American Site  
Milwaukee, Wisconsin  
Third Quarter 2001**

Sample ID:	FB-01	FB-02	FB-03	WDNR PAL, ug/L	WDNR ES, ug/L
Sample Matrix:	Groundwater	Groundwater	Groundwater		
Sample Date:	9/27/2001	9/27/2001	9/27/2001		
Units of Measure:	ug/L	ug/L	ug/L		
<b>Parameters</b>					
<b>VOCs</b>					
Benzene	0.2 U	0.2 U	0.2 U	0.5	5
Toluene	0.2 U	0.2 U	0.2 U	68.6	343
Ethylbenzene	0.2 U	0.2 U	0.2 U	140	700
Total Xylenes	0.6 U	0.6 U	0.6 U	124	620
<b>PAHs</b>					
Naphthalene	1.0 U	0.9 U	1.0 U	8.0	40
Acenaphthylene	0.8 U	0.7 U	0.8 U	NA	NA
Acenaphthene	0.8 U	0.7 U	0.8 U	NA	NA
Fluorene	0.2 U	0.2 U	0.2 U	80	400
Phenanthrene	0.08 U	0.07 U	0.08 U	NA	NA
Anthracene	0.04 U	0.04 U	0.04 U	600	3,000
Fluoranthene	0.04 U	0.04 U	0.04 U	80	400
Pyrene	0.2 U	0.2 U	0.2 U	50	250
Benzo(a)anthracene	0.02 U	0.02 U	0.02 U	NA	NA
Chrysene	0.08 U	0.07 U	0.08 U	0.02	0.2
Benzo(b)fluoranthene	0.04 U	0.04 U	0.04 U	0.02	0.2
Benzo(k)fluoranthene	0.02 U	0.02 U	0.01 U	NA	NA
Benzo(a)pyrene	0.02 U	0.02 U	0.02 U	0.02	0.2
Dibenzo(a,h)anthracene	0.04 U	0.04 U	0.04 U	NA	NA
Benzo(g,h,i)perylene	0.1 U	0.09 U	0.1 U	NA	NA
Indeno(1,2,3-cd)pyrene	0.08 U	0.07 U	0.08 U	NA	NA



**Table 4 (continued)**

**Groundwater Sample Analytical Results**

**Table Notes**

**Moss-American Site  
Milwaukee, Wisconsin  
Third Quarter 2001**

U - Indicates constituent not detected above detection limit. Detection limit indicated.

J - Indicates 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.

NS - Not sampled due to cold weather.

**Bold values indicate concentration exceeding PAL.**

**Bold and shaded values indicate concentration exceeding PAL and ES.**

Table 5

**Concentration Trends in Groundwater Monitoring Wells  
First Quarter 1998 through Third Quarter 2001  
Moss-American Site  
Milwaukee, Wisconsin**

	MW-4S <sup>1</sup>	MW-7S	TW-05	MW-32S <sup>2</sup>	MW-33S <sup>2</sup>	MW-34S <sup>2</sup>	MW-35S <sup>2</sup>	TG1-1 <sup>2</sup>
<b><u>Benzene</u></b>								
Fourth Quarter (December '98)	3.00 J	NS	0.20 U	---	---	---	---	---
First Quarter (March '99)	5.00	9.00	0.20 U	---	---	---	---	---
Second Quarter (June '99)	6.00	7.00 J	0.20 U	---	---	---	---	---
Third Quarter (September '99)	3.00	9.00	0.20 U	---	---	---	---	---
Fourth Quarter (December '99)	2.80	7.10	0.20 U	---	---	---	---	---
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
<b><u>Naphthalene</u></b>								
Fourth Quarter (December '98)	1,760	NS	9.30 J	---	---	---	---	---
First Quarter (March '99)	1,330	5,560	19.9	---	---	---	---	---
Second Quarter (June '99)	940	6,400	3.90 J	---	---	---	---	---
Third Quarter (September '99)	418 J	0.80 U	7.90 J	---	---	---	---	---
Fourth Quarter (December '99)	790	4,740	9.00 J	---	---	---	---	---
First Quarter (March '00)	1,020	3,950	9.80 J	---	---	---	---	---
Second Quarter (June '00)	364 J	4,260	6.96 J	40.7	1,920	5,980	42.7	---
Third Quarter (September '00)	810	3,960	15.3 J	59.3	2,220	5,720	0.78 U	475
Fourth Quarter (December '00)	720	3,470	10.0 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	22.0	1.0 U	2,600	6,200	1.00 J	2,400

Table 5 (continued)

**Concentration Trends in Groundwater Monitoring Wells  
First Quarter 1998 through Third Quarter 2001  
Moss-American Site  
Milwaukee, Wisconsin**

	MW-4S <sup>1</sup>	MW-7S	TW-05	MW-32S <sup>2</sup>	MW-33S <sup>2</sup>	MW-34S <sup>2</sup>	MW-35S <sup>2</sup>	TG1-1 <sup>2</sup>
<b>Fluorene</b>								
Fourth Quarter (December '98)	316	NS	62.3	---	---	---	---	---
First Quarter (March '99)	271	30.0	65.4	---	---	---	---	---
Second Quarter (June '99)	547	36.5	79.6	---	---	---	---	---
Third Quarter (September '99)	651	39.2	136	---	---	---	---	---
Fourth Quarter (December '99)	333	24.4	66.6	---	---	---	---	---
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)	---	8.50	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	0.20 U	410
<b>Benzo(a) pyrene</b>								
Fourth Quarter (December '98)	8.95	NS	1.72	---	---	---	---	---
First Quarter (March '99)	6.10	0.43	2.10	---	---	---	---	---
Second Quarter (June '99)	35.1	0.12 U	1.42	---	---	---	---	---
Third Quarter (September '99)	40.5	0.022 U	4.33	---	---	---	---	---
Fourth Quarter (December '99)	9.70	0.21 U	1.49	---	---	---	---	---
First Quarter (March '00)	8.40	0.21 U	1.44	---	---	---	---	---
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	0.89	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	0.11 U	0.019 U	0.20 U	0.23 U	0.023 U	0.39U
Second Quarter (June '01)	---	0.02 U	0.02 U	0.02	0.02 U	0.03 J	0.020 U	0.05 J
Third Quarter (September '01)	---	0.02 U	0.02 J	0.02 U	0.02 U	3.00	0.02 J	33.0

NS - Not sampled.

U - Constituent not detected; method detection limit (MDL) of the analysis reported.

J - Estimated concentration.

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.

Table 6

**Groundwater Sample Analytical Results  
Treatment Performance Monitoring Wells - Nutrient and Biological Parameters  
Moss-American Site  
Milwaukee, Wisconsin  
Third Quarter 2001**

Parameter (mg/L)	Sample Identification								
	TG1-1			TG1-2			TG1-3		
	July	August	September	July	August	September	July	August	September
Kjeldahl Nitrogen	1.20	0.88 J	0.89 J	1.30	1.30	1.30	0.94 J	0.87 J	0.91 J
Nitrite Nitrogen	0.059	0.015 U	0.015 U	0.015 U	0.015 U	0.015 U	0.015 U	0.015 U	0.015 U
Nitrate Nitrogen	0.040 U	0.040 U	0.040 U	0.040 U	0.040 U	0.040 U	0.040 U	0.040 U	0.051 J
Ammonia Nitrogen	0.58 J	0.66 J	0.62 J	0.64 J	0.99 J	1.0	0.16 U	0.54 J	0.37 J
Ortho-Phosphate as P	0.0028 U	0.0028 U	0.166	0.0028 U	0.0028 U	0.089	0.0028 U	0.0045 J	0.095
Biochemical Oxygen Demand (BOD)	NA	NA	8.3	NA	NA	4.7	NA	NA	2.96 J
Total Organic Carbon (non-purgable)	NA	NA	9.6	NA	NA	10.6	NA	NA	7.1
Total Phosphorous as PO4	0.14 J	0.13 U	0.31	0.26	0.23	0.44	0.27	0.23	0.44
Chemical Oxygen Demand (COD)	NA	NA	82.5	NA	NA	29.0	NA	NA	17.4
Total Microbial Population (mean)	1.90E+04	2.00E+04	8.60E+03	3.40E+03	5.70E+03	3.30E+04	3.90E+03	1.24E+04	7.30E+03
Degrader Microbial Population (mean)	1.43E+03	1.00E+03	5.10E+03	4.70E+02	1.80E+03	1.80E+04	1.60E+02	1.50E+03	2.20E+03
	TG2-1			TG2-2			TG2-3		
	July	August	September	July	August	September	July	August	September
Kjeldahl Nitrogen	0.36 J	0.30 U	0.30 U	0.96 J	0.82 J	0.86 J	0.60 J	0.46 J	0.46 J
Nitrite Nitrogen	0.015 U	0.015 U	0.015 U	0.015 U	0.015 U	0.015 U	0.015 U	0.015 U	0.015 U
Nitrate Nitrogen	0.040 U	0.040 U	0.040 U	0.040 U	0.040 U	0.040 U	0.040 U	0.040 U	0.040 U
Ammonia Nitrogen	0.16 U	0.16 U	0.21 J	0.35 J	0.79 J	0.79 J	0.29 J	0.41 J	0.29 J
Ortho-Phosphate as P	0.0028 U	0.0028 U	0.013 J	0.0028 U	0.0028 U	0.037	0.005 J	0.0028 U	0.049
Biochemical Oxygen Demand (BOD)	NA	NA	4.4 U	NA	NA	3.1	NA	NA	4.3 U
Total Organic Carbon (non-purgable)	NA	NA	2.6	NA	NA	3.6	NA	NA	4.0
Total Phosphorous as PO4	0.15 J	0.13 U	0.24	0.22	0.15 J	0.37	0.28	0.26	0.41
Chemical Oxygen Demand (COD)	NA	NA	6.5 J	NA	NA	9.4	NA	NA	10.1
Total Microbial Population (mean)	1.60E+04	1.89E+03	4.70E+02	3.00E+02	2.90E+03	3.10E+03	4.50E+03	2.80E+03	2.20E+03
Degrader Microbial Population (mean)	1.80E+02	1.50E+02	2.10E+02	9.00E+01	6.00E+02	2.20E+03	2.00E+02	7.00E+02	1.10E+03

Table 6 (continued)

**Groundwater Sample Analytical Results**  
**Treatment Performance Monitoring Wells - Nutrient and Biological Parameters**  
**Moss-American Site**  
**Milwaukee, Wisconsin**  
**Third Quarter 2001**

Parameter (mg/L)	Sample Identification								
	TG3-1			TG3-2			TG3-3		
	July	August	September	July	August	September	July	August	September
Kjeldahl Nitrogen	2.90	2.80	2.50	1.80	1.60	1.40	1.80	1.90	1.40
Nitrite Nitrogen	0.015 U	0.015 U	0.015 U	0.015 U	0.015 U	0.015 U	0.015 U	0.015 U	0.016 J
Nitrate Nitrogen	0.040 U	0.040 U	0.1	0.040 U	0.040 U	0.040 U	0.040 U	0.040 U	0.040 U
Ammonia Nitrogen	2.2	1.1	2.1	1.2	1.2	1.0	1.4	1.5	1.5
Ortho-Phosphate as P	0.0045 J	0.0028 U	0.0065 J	0.0028 U	0.0028 U	0.063	0.0028 U	0.0028 U	0.021
Biochemical Oxygen Demand (BOD)	NA	NA	5.3 U	NA	NA	3.6	NA	NA	5.2 U
Total Organic Carbon (non-purgable)	NA	NA	20.6	NA	NA	11.6	NA	NA	11.4
Total Phosphorous as PO4	0.79	0.7	0.68	0.44	0.29	0.51	0.38	0.3	0.55
Chemical Oxygen Demand (COD)	NA	NA	53.2	NA	NA	29.4	NA	NA	29.7
Total Microbial Population (mean)	5.10E+02	2.36E+03	2.70E+04	6.20E+03	4.30E+03	2.20E+03	8.70E+03	4.90E+03	6.10E+02
Degrader Microbial Population (mean)	1.60E+02	7.10E+02	1.10E+03	4.90E+02	4.00E+02	7.70E+02	6.90E+02	7.00E+02	1.90E+02
	TG4-1			TG4-2			TG4-3		
	July	August	September	July	August	September	July	August	September
Kjeldahl Nitrogen	1.10	0.79 J	0.71 J	1.30	1.30	1.10	1.50	1.50	1.40
Nitrite Nitrogen	0.015 U	0.015 U	0.015 U	0.015 U	0.015 U	0.015 U	0.098	0.015 U	0.015 U
Nitrate Nitrogen	0.040 U	0.040 U	0.047 J	0.040 U	0.040 U	0.040 U	0.040 U	0.040 U	0.040 U
Ammonia Nitrogen	0.83 J	0.29 J	0.16 U	1.0 J	0.75 J	0.95 J	1.1	1.1	1.0
Ortho-Phosphate as P	0.008 J	0.032	0.021	0.0160 J	0.0028 U	0.058	0.008 J	0.0028 U	0.222
Biochemical Oxygen Demand (BOD)	NA	NA	5.0 U	NA	NA	5.4 U	NA	NA	5.1 U
Total Organic Carbon (non-purgable)	NA	NA	7.3	NA	NA	9.7	NA	NA	8.5
Total Phosphorous as PO4	0.45	0.28	0.44	0.26	0.15 J	0.34	0.3	0.26	0.43
Chemical Oxygen Demand (COD)	NA	NA	17.8	NA	NA	25.7	NA	NA	21.6
Total Microbial Population (mean)	2.07E+03	3.80E+03	4.40E+03	1.21E+03	2.19E+03	3.20E+03	4.80E+03	2.41E+03	1.50E+03
Degrader Microbial Population (mean)	2.10E+02	1.50E+03	1.70E+03	3.00E+02	8.20E+02	7.80E+02	3.60E+02	1.74E+03	3.10E+02

Table 6 (continued)

**Groundwater Sample Analytical Results**  
**Treatment Performance Monitoring Wells - Nutrient and Biological Parameters**  
**Moss-American Site**  
**Milwaukee, Wisconsin**  
**Third Quarter 2001**

Parameter (mg/L)	Sample Identification								
	TG5-1			TG5-2			TG5-3		
	July	August	September	July	August	September	July	August	September
Kjeldahl Nitrogen	0.87 J	0.62 J	0.79 J	0.83 J	0.51 J	0.73 J	0.88 J	0.61 J	0.72 J
Nitrite Nitrogen	0.015 U	0.079	0.015 U	0.22	0.133	0.015 U	0.015 U	0.015 U	0.015 U
Nitrate Nitrogen	0.040 U	0.065 J	0.040 U	0.040 U	0.040 U	0.040 U	0.040 U	0.040 U	0.040 U
Ammonia Nitrogen	0.44 J	0.62 J	0.79 J	0.16 U	0.54 J	0.62 J	0.61 J	0.58 J	0.33 J
Ortho-Phosphate as P	0.0165 J	0.014 J	0.035	0.0195 J	0.027	0.03	0.025	0.0028 U	0.021
Biochemical Oxygen Demand (BOD)	NA	NA	3.2 U	NA	NA	3.2 U	NA	NA	3.4 U
Total Organic Carbon (non-purgable)	NA	NA	6.2	NA	NA	7.8	NA	NA	5.1
Total Phosphorous as PO4	0.26	0.34	0.42	0.19	0.25	0.43	0.15 J	0.19	0.36
Chemical Oxygen Demand (COD)	NA	NA	14.1	NA	NA	21.6	NA	NA	13.8
Total Microbial Population (mean)	1.59E+03	1.04E+03	1.60E+03	1.70E+03	1.80E+03	2.60E+02	1.67E+03	4.10E+03	2.00E+03
Degrader Microbial Population (mean)	3.10E+02	6.00E+01	4.30E+02	4.10E+02	3.00E+02	2.10E+02	5.20E+02	1.30E+03	5.70E+02
Parameter (mg/L)	TG6-1			TG6-2			TG6-3		
	July	August	September	July	August	September	July	August	September
	July	August	September	July	August	September	July	August	September
Kjeldahl Nitrogen	1.10	0.89 J	1.1	1.10	0.84 J	0.80 J	0.94 J	0.66 J	0.70 J
Nitrite Nitrogen	0.015 U	0.015 U	0.015 U	0.015 U	0.015 U	0.015 U	0.015 U	0.094	0.015 U
Nitrate Nitrogen	0.040 U	0.089 J	0.040 U	0.047 J	0.1	0.040 U	0.040 U	0.040 U	0.040 U
Ammonia Nitrogen	0.67 J	0.91 J	1.0	0.70 J	0.79 J	0.75 J	0.16 U	0.58 J	0.58 J
Ortho-Phosphate as P	0.0028 U	0.0028 U	0.0028 U	0.0028 U	0.0028 U	0.0028 U	0.0055 J	0.0028 U	0.0028 U
Biochemical Oxygen Demand (BOD)	NA	NA	4.0 U	NA	NA	3.2 U	NA	NA	3.1 U
Total Organic Carbon (non-purgable)	NA	NA	6.2	NA	NA	6.8	NA	NA	7.4
Total Phosphorous as PO4	0.34	0.33	0.44	0.17	0.16 J	0.24	0.22	0.2	0.3
Chemical Oxygen Demand (COD)	NA	NA	15.4	NA	NA	17.1	NA	NA	17.5
Total Microbial Population (mean)	2.30E+03	6.30E+02	7.80E+02	9.60E+03	4.20E+02	1.10E+03	1.80E+02	4.90E+02	7.30E+02
Degrader Microbial Population (mean)	2.40E+02	5.20E+02	3.30E+02	6.10E+02	2.00E+02	2.90E+02	4.00E+01	1.90E+02	4.90E+02

U - Compound not detected above detection limit.

J - Estimated value.

NA - Not analyzed.

NS - Well not measured due to freezing conditions.

--- - No data due to bottle breakage.

**Table 7**

**Calculation of Carbon:Nitrogen:Phosphorous Ratios  
Treatment Performance Monitoring Wells  
Moss-American Site  
Milwaukee, Wisconsin  
Third Quarter 2001**

<b>Well</b>	<b>Carbon<sup>1</sup>, mg/L</b>	<b>Total Nitrogen<sup>2</sup>, mg/L</b>	<b>Phosphorous<sup>3</sup>, mg/L</b>	<b>C-N-P Ratio (100-14-1 desired)</b>
TG1-1	9.6	0.62	0.166	100 - 6.5 - 1.7
TG1-2	10.6	1	0.089	100 - 9.4 - 0.8
TG1-3	7.1	0.421	0.095	100 - 5.9 - 1.3
TG2-1	2.6	0.21	0.013	100 - 8.1 - 0.5
TG2-2	3.6	0.79	0.037	100 - 22 - 1.0
TG2-3	4.0	0.29	0.049	100 - 7.3 - 1.2
TG3-1	20.6	2.2	0.0065	100 - 11 - 0.0
TG3-2	11.6	1	0.063	100 - 8.6 - 0.5
TG3-3	11.4	1.516	0.021	100 - 13.3 - 0.2
TG4-1	7.3	0.047	0.021	100 - 0.6 - 0.3
TG4-2	9.7	0.95	0.058	100 - 9.8 - 0.6
TG4-3	8.5	1	0.222	100 - 11.8 - 2.6
TG5-1	6.2	0.79	0.035	100 - 12.7 - 0.6
TG5-2	7.8	0.62	0.03	100 - 7.9 - 0.4
TG5-3	5.1	0.33	0.021	100 - 6.5 - 0.4
TG6-1	6.2	1	ND	100 - 16 - 0
TG6-2	6.8	0.75	ND	100 - 11 - 0
TG6-3	7.4	0.58	ND	100 - 7.8 - 0
Site Average	8.1	0.8	0.1	100 - 9.8 - 0.7

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

2 - Nitrogen measured as NH<sub>3</sub>-N, NO<sub>2</sub>-N, and NO<sub>3</sub>-N.

3 - Phosphorous measured as orthophosphate (PO<sub>4</sub>-P).

ND - Constituent not detected.

Shaded values indicate values less than desired quantity.

**ATTACHMENT 1**

**MONTHLY FIELD-MEASURED PARAMETERS  
FOR TREATMENT PERFORMANCE MONITORING WELLS**



**Attachment 1**  
**Monthly Field-Measured Parameters**  
**Treatment Performance Monitoring Wells**  
**Moss-American Site**  
**Milwaukee, Wisconsin**  
**Third Quarter 2001**

Well Number	Date	Temperature (C)	pH	Specific Conductance (microohms/cm)	Redox Potential (mV)	Dissolved Oxygen (mg/L)	Turbidity (Ntu)
TG1-1	July-01	17.65	7.08	1.074	-91.4	5.15	NM
	August-01	20.09	7.17	1.045	-109.6	0.07	NM
	September-01	15.16	7.11	1.042	-75.9	0.12	2.80
TG1-2	July-01	18.15	6.91	1.161	-76.2	0.01	NM
	August-01	19.87	6.92	1.179	-82.0	0.04	NM
	September-01	15.46	6.93	1.133	-74.1	0.14	10.9
TG1-3	July-01	17.99	7.22	1.101	-88.5	0.02	NM
	August-01	19.40	7.20	1.098	-78.1	0.05	NM
	September-01	15.27	7.14	1.081	-64.2	0.13	9.60
TG2-1	July-01	17.90	7.03	0.762	-43.0	0.01	NM
	August-01	19.55	7.05	0.788	-49.4	0.04	NM
	September-01	15.70	7.05	0.783	-23.7	0.08	3.80
TG2-2	July-01	17.00	7.01	0.746	-96.0	0.01	NM
	August-01	19.79	7.06	0.755	-95.0	0.04	NM
	September-01	15.25	7.05	0.746	-90.9	0.07	6.20
TG2-3	July-01	18.36	6.85	1.065	-39.1	0.02	NM
	August-01	20.72	6.92	1.004	-49.5	0.04	NM
	September-01	16.78	6.90	0.984	-47.2	0.27	9.50
TG3-1	July-01	17.45	6.60	1.484	-59.9	0.03	NM
	August-01	19.78	6.65	1.361	-65.8	0.06	NM
	September-01	15.43	6.82	1.258	-61.3	0.12	1.51
TG3-2	July-01	17.29	6.82	1.161	-88.8	0.00	NM
	August-01	19.28	6.87	1.033	-95.4	0.01	NM
	September-01	16.25	6.98	0.903	-92.3	0.04	5.64
TG3-3	July-01	17.44	6.72	1.283	-71.4	0.01	NM
	August-01	20.51	6.77	1.283	-81.1	0.02	NM
	September-01	16.12	6.84	1.199	-77.5	0.08	11.0
TG4-1	July-01	16.77	7.18	0.675	-109.3	0.01	NM
	August-01	19.72	7.28	0.637	-103.2	0.03	NM
	September-01	14.60	7.29	0.664	-107.2	0.44	6.48
TG4-2	July-01	17.44	7.23	0.730	-85.5	0.01	NM
	August-01	19.76	7.21	0.749	-71.6	0.02	NM
	September-01	15.60	7.23	0.748	-89.7	0.13	13.2
TG4-3	July-01	17.44	7.07	0.779	-86.6	0.01	NM
	August-01	20.60	7.09	0.766	-79.6	0.04	NM
	September-01	14.37	7.13	0.770	-85.8	0.45	4.20
TG5-1	July-01	17.60	7.12	0.725	-55.1	0.19	NM
	August-01	19.71	7.06	0.720	-81.1	0.06	NM
	September-01	16.08	7.15	0.708	-63.4	0.06	1.30
TG5-2	July-01	18.86	7.18	0.719	-94.2	0.02	NM
	August-01	21.31	7.18	0.654	-92.5	0.02	NM
	September-01	17.31	7.23	0.684	-79.4	0.16	17.2
TG5-3	July-01	17.51	7.26	0.858	-34.3	0.03	NM
	August-01	19.49	7.39	0.823	-6.7	0.03	NM
	September-01	14.92	7.44	0.724	-14.6	0.90	62.0
TG6-1	July-01	17.69	7.25	0.939	-78.1	0.02	NM
	August-01	22.31	7.48	1.025	-77.7	0.02	NM
	September-01	15.56	7.20	1.009	-46.3	0.48	36.5
TG6-2	July-01	16.08	7.11	1.031	-4.4	0.00	NM
	August-01	18.67	7.01	1.034	-38.1	0.09	NM
	September-01	15.42	7.21	0.877	1.4	0.19	0.91
TG6-3	July-01	16.61	6.72	1.224	-44.9	0.02	NM
	August-01	20.20	6.68	1.182	-48.0	0.03	NM
	September-01	15.23	6.88	1.006	-6.3	0.11	1.40

-- - Data not available.

NM- Not measured. Value only measured quarterly.

**ATTACHMENT 2**

**SEPTEMBER 2001 GROUNDWATER SAMPLE ANALYTICAL RESULTS**

# Microbac

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Seaway Division  
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(219) 932-1770

INDIANA CERTIFICATION NUMBERS: M-45-8 C-45-02

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### CERTIFICATE OF ANALYSIS

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

Date Reported: 10/24/01  
P.O. Number:  
Sample ID: 9933-00324  
Date Received: 9/25/01  
Time Received: 09:50

Permit Number

PARAMETERS	RESULTS	DATE	TECH	METHOD
SUBJECT: MA3-TG4-1-250901-01, 9/25/01 @ 09:50 by BS				
Total Aerobic Bacteria	4,400. cfu/ml	9/26/01	NMC	9215B MODIFIED
T.Aerobic Degradar Bacteria	1,700. cfu/ml	9/26/01	NMC	9215B MODIFIED
SUBJECT: MA3-TG4-2-250901-02, 9/25/01 @ 10:00 by BS				
Total Aerobic Bacteria	3,200. cfu/ml	9/26/01	NMC	9215B MODIFIED
T.Aerobic Degradar Bacteria	780. cfu/ml	9/26/01	NMC	9215B MODIFIED
SUBJECT: MA3-TG4-3-250901-03, 9/25/01 @ 10:10 by BS				
Total Aerobic Bacteria	1,500. cfu/ml	9/26/01	NMC	9215B MODIFIED
T.Aerobic Degradar Bacteria	310. cfu/ml	9/26/01	NMC	9215B MODIFIED
SUBJECT: MA3-TG1-1-250901-04, 9/25/01 @ 11:15 by BS				
Total Aerobic Bacteria	8,600. cfu/ml	9/26/01	NMC	9215B MODIFIED
T.Aerobic Degradar Bacteria	5,100. cfu/ml	9/26/01	NMC	9215B MODIFIED
SUBJECT: MA3-TG1-2-250901-05, 9/25/01 @ 11:25 by BS				
Total Aerobic Bacteria	33,000. cfu/ml	9/26/01	NMC	9215B MODIFIED
T.Aerobic Degradar Bacteria	18,000. cfu/ml	9/26/01	NMC	9215B MODIFIED
SUBJECT: MA3-TG1-3-250901-06, 9/25/01 @ 11:35 by BS				
Total Aerobic Bacteria	7,300. cfu/ml	9/26/01	NMC	9215B MODIFIED
T.Aerobic Degradar Bacteria	2,200. cfu/ml	9/26/01	NMC	9215B MODIFIED
SUBJECT: MA3-TG2-1-250901-07, 9/25/01 @ 14:45 by BS				
Total Aerobic Bacteria	470. cfu/ml	9/26/01	NMC	9215B MODIFIED
T.Aerobic Degradar Bacteria	210. cfu/ml	9/26/01	NMC	9215B MODIFIED

\*\*\* Certificate Continues On Next Page \*\*\*

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## CERTIFICATE OF ANALYSIS

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

Date Reported: 10/24/01  
P.O. Number:  
Sample ID: 9933-00324  
Date Received: 9/25/01  
Time Received: 09:50

Permit Number

PARAMETERS	RESULTS	DATE	TECH	METHOD
SUBJECT: MA3-TG2-2-250901-08, 9/25/01 @ 15:00 by BS				
Total Aerobic Bacteria	3,100. cfu/ml	9/26/01	NMC	9215B MODIFIED
T.Aerobic Degradable Bacteria	2,200. cfu/ml	9/26/01	NMC	9215B MODIFIED
SUBJECT: MA3-TG2-3-250901-09, 9/25/01 @ 15:15 by BS				
Total Aerobic Bacteria	2,200. cfu/ml	9/26/01	NMC	9215B MODIFIED
T.Aerobic Degradable Bacteria	1,100. cfu/ml	9/26/01	NMC	9215B MODIFIED

Submitted with Quality by



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## CERTIFICATE OF ANALYSIS

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

Date Reported: 10/24/01  
P.O. Number: CLIENT NAME-Kerr McGe  
Sample ID: 9933-00297  
Date Received: 9/25/01  
Time Received: 09:00

Permit Number

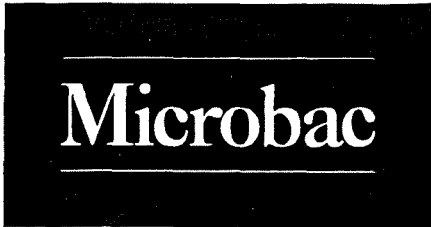
PARAMETERS	RESULTS	DATE	TECH	METHOD
SUBJECT: MA3-TG6-1-240901-01, 9/24/01 @ 11:15 by BS				
Total Aerobic Bacteria	780. cfu/ml	9/25/01	NMC	9215B MODIFIED
T.Aerobic Degradar Bacteria	330. cfu/ml	9/25/01	NMC	9215B MODIFIED
SUBJECT: MA3-TG6-2-240901-02, 9/24/01 @ 11:20 by BS				
Total Aerobic Bacteria	1,100. cfu/ml	9/25/01	NMC	9215B MODIFIED
T.Aerobic Degradar Bacteria	290. cfu/ml	9/25/01	NMC	9215B MODIFIED
SUBJECT: MA3-TG6-3-240901-03, 9/24/01 @ 11:30 by BS				
Total Aerobic Bacteria	730. cfu/ml	9/25/01	NMC	9215B MODIFIED
T.Aerobic Degradar Bacteria	490. cfu/ml	9/25/01	NMC	9215B MODIFIED
SUBJECT: MA3-TG5-1-240901-04, 9/24/01 @ 15:05 by BS				
Total Aerobic Bacteria	1,600. cfu/ml	9/25/01	NMC	9215B MODIFIED
T.Aerobic Degradar Bacteria	430. cfu/ml	9/25/01	NMC	9215B MODIFIED
SUBJECT: MA3-TG5-2-240901-05, 9/24/01 @ 15:15 by BS				
Total Aerobic Bacteria	260. cfu/ml	9/25/01	NMC	9215B MODIFIED
T.Aerobic Degradar Bacteria	310. cfu/ml	9/25/01	NMC	9215B MODIFIED
SUBJECT: MA3-TG5-3-240901-06, 9/24/01 @ 15:30 by BS				
Total Aerobic Bacteria	2,000. cfu/ml	9/25/01	NMC	9215B MODIFIED
T.Aerobic Degradar Bacteria	570. cfu/ml	9/25/01	NMC	9215B MODIFIED
SUBJECT: MA3-TG3-1-240901-07, 9/24/01 @ 17:15 by BS				
Total Aerobic Bacteria	27,000. cfu/ml	9/25/01	NMC	9215B MODIFIED
T.Aerobic Degradar Bacteria	1,100. cfu/ml	9/25/01	NMC	9215B MODIFIED

\*\*\* Certificate Continues On Next Page \*\*\*

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CERTIFICATE OF ANALYSIS

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

Date Reported: 10/24/01
P.O. Number: CLIENT NAME-Kerr McGee
Sample ID: 9933-00297
Date Received: 9/25/01
Time Received: 09:00

Permit Number

Table with 5 columns: PARAMETERS, RESULTS, DATE, TECH, METHOD. Contains two rows of test data for Total Aerobic Bacteria and T.Aerobic Degradar Bacteria.

Submitted with Quality by

Handwritten signature

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**Site Information**

Site Name	Moss America	Date received	24-Sep-01
Location	Milwaukee WI	Date of this report	18-Oct-01
Consultant	Roy F Weston	Microbacl Job Code	9933-297
Proj. Contact	Tom Graan		
Project Ref ID		Number of soil samples	0
Contaminant	BTEX-PAH	Number of gw samples	8

**Section I - Summary of Bioremediation Data**

Nutrient/physical factors are as suggested by Wisconsin DNR guidelines for site characterization requirements for natural biodegradation. Microbial factors are shown according to bio-engineering norms.

Sample ID	Soil microbial populations:							
	Exceeds norm for:		% TON /			% moisture /	% Air-filled	
	Passive	Active	pH	% OM	C:N	C:P	SWHC	pore space
	>1E+06	>1E+03	5.5-8.5	>1.5	<40	<120	25-85%	>10%
Guideline note reference:	1	2	3	4	5	6	7	8
ma3-tg6-1-240901-1	Summary table not applicable for groundwater.							
ma3-tg6-2-440901-2	Summary table not applicable for groundwater.							
ma3-tg6-3-240901-3	Summary table not applicable for groundwater.							
ma3-tg5-1-240901-4	Summary table not applicable for groundwater.							
ma3-tg5-2-240901-5	Summary table not applicable for groundwater.							
ma3-tg5-3-240901-6	Summary table not applicable for groundwater.							
ma3-tg3-1-240901-7	Summary table not applicable for groundwater.							
ma3-tg3-2-240901-8	Summary table not applicable for groundwater.							

The nutrient/physical parameters summarized above for unsaturated zone soils, reflect suggested minimum Wisconsin DNR "site characterization requirements for natural biodegradation projects" as presented on pp. 6-10 in Naturally Occurring Biodegradation as a Remedial Action Option for Soil Contamination: Interim Guidance (Revised) dated August 26, 1994. BioRenewal stresses that these "suggested guidelines" are only intended to provide a working frame of reference for evaluation. Each site is unique and requires professional judgement in order to select an appropriate remedial design. We provide this information in recognition that our clients need to work within the guidelines suggested by the state. Further, we hope this will facilitate continued evolution of a working framework for evaluating sites as to the potential for bioremediation whether through site augmentation or natural attenuation.

✓ = Sample meets guideline.

x = Sample does not meet guideline.

Blank = Below detection limit, not applicable, or not available for that sample.

- NOTES:
- 1) Microbial population levels in soils generally accepted as potentially adequate to support natural biodegradation. These levels are based on bio-engineering norms and not WDNR guidelines.
  - 2) Microbial population levels in soils generally accepted as minimum to serve as an "inoculum" for implementing active bioremediation strate
  - 3) See page 7 and 10. WDNR.
  - 4) See pages 8 and 10. WDNR. Total Organic Nitrogen (calculated from TKN minus ammonium nitrogen ) divided by % organic matter.
  - 5) See pages 8 and 10. WDNR.
  - 6) See pages 8 and 10. WDNR.
  - 7) See page 6 and 10. WDNR. The suggested optimum range is 50-80% (p. 6).
  - 8) See page 8 and 10. WDNR. WDNR suggests a minimum air-filled porosity in soil of 10% is necessary for adequate oxygen diffusion in the soil gas to support biodegradation.

Section II - Microbial Data Summary continued

All values in cfu/ml\*

Groundwater Samples

Total populations

Low and high indicate 95% confidence range

Sample ID	Mean	Low	High
ma3-tg6-1-240901-1	7.8E+02	0.0E+00	0.0E+00
ma3-tg6-2-440901-2	1.1E+03	0.0E+00	0.0E+00
ma3-tg6-3-240901-3	7.3E+02	0.0E+00	0.0E+00
ma3-tg5-1-240901-4	1.6E+03	0.0E+00	0.0E+00
ma3-tg5-2-240901-5	2.6E+02	0.0E+00	0.0E+00
ma3-tg5-3-240901-6	2.0E+03	0.0E+00	0.0E+00
ma3-tg3-1-240901-7	2.7E+04	0.0E+00	0.0E+00
ma3-tg3-2-240901-8	2.2E+03	0.0E+00	0.0E+00

Groundwater Samples

Degrader populations

Low and high indicate 95% confidence range

Sample ID	Mean	Low	High
ma3-tg6-1-240901-1	3.3E+02	0.0E+00	0.0E+00
ma3-tg6-2-440901-2	2.9E+02	0.0E+00	0.0E+00
ma3-tg6-3-240901-3	4.9E+02	0.0E+00	0.0E+00
ma3-tg5-1-240901-4	4.3E+02	0.0E+00	0.0E+00
ma3-tg5-2-240901-5	2.1E+02	0.0E+00	0.0E+00
ma3-tg5-3-240901-6	5.7E+02	0.0E+00	0.0E+00
ma3-tg3-1-240901-7	1.1E+03	0.0E+00	0.0E+00
ma3-tg3-2-240901-8	7.7E+02	0.0E+00	0.0E+00

Marginal inoculum  
 Inoculum levels  
 Active degradation levels

**Marginal inoculum** = Degrader populations below 1.0E+03 are indicative of severe limitations. Substantial augmentation of site conditions will likely be required to attain adequate cell mass to attain measurable biotransformation rates.

**Inoculum levels** = Degrader populations between 1.0E+03 and 1.0E+06 are amenable to site augmentation, but are generally insufficient to attain adequate biotransformation without site augmentation.

**Active degradation levels** = Degrader populations greater than 1.0E+06 are generally of sufficient magnitude to support measurable biotransformation without site augmentation. However, site augmentation may still be required to attain desirable rates of transformation due to specific site conditions.

Assay conditions

Sample ID	Degrader Media		Temp. (Celcius)	Growth Conditions	DOF **		Percent Degraders
	Carbon source	% Carbon (v/v)			Total	Degrader	
ma3-tg6-1-240901-1	BTEX-PAH	1.0	22	aerobic	0	0	42.3%
ma3-tg6-2-440901-2	BTEX-PAH	1.0	22	aerobic	0	0	25.7%
ma3-tg6-3-240901-3	BTEX-PAH	1.0	22	aerobic	0	0	67.1%
ma3-tg5-1-240901-4	BTEX-PAH	1.0	22	aerobic	0	0	26.7%
ma3-tg5-2-240901-5	BTEX-PAH	1.0	22	aerobic	0	0	80.8%
ma3-tg5-3-240901-6	BTEX-PAH	1.0	22	aerobic	0	0	27.9%
ma3-tg3-1-240901-7	BTEX-PAH	1.0	22	aerobic	0	0	4.3%
ma3-tg3-2-240901-8	BTEX-PAH	1.0	22	aerobic	0	0	35.2%

\* cfu/ml = colony forming units per ml of groundwater

\*\* DOF = Degrees of freedom is number of replicates minus one. This parameter is used in calculation of 95% confidence intervals.



**Site Information**

Site Name	Moss America	Date received	25-Sep-01
Location	Milwaukee WI	Date of this report	18-Oct-01
Consultant	Roy F Weston	Microbacl Job Code	9933-324
Proj. Contact	Tom Graan		
Project Ref ID		Number of soil samples	0
Contaminant	BTEX-PAH	Number of gw samples	8

**Section I - Summary of Bioremediation Data**

Nutrient/physical factors are as suggested by Wisconsin DNR guidelines for site characterization requirements for natural biodegradation. Microbial factors are shown according to bio-engineering norms.

Sample ID	Soil microbial populations:		pH	% TON /			% moisture / SWHC	% Air-filled pore space
	<u>Exceeds norm for:</u>			% OM	C:N	C:P		
	Passive	Active						
	>1E+06	>1E+03	5.5-8.5	>1.5	<40	<120	25-85%	>10%
Guideline note reference:	1	2	3	4	5	6	7	8
ma3-tg4-1-250901-1	Summary table not applicable for groundwater.							
ma3-tg4-2-250901-2	Summary table not applicable for groundwater.							
ma3-tg4-3-250901-3	Summary table not applicable for groundwater.							
ma3-tg1-1-250901-4	Summary table not applicable for groundwater.							
ma3-tg1-2-250901-5	Summary table not applicable for groundwater.							
ma3-tg1-3-250901-6	Summary table not applicable for groundwater.							
ma3-tg2-1-250901-7	Summary table not applicable for groundwater.							
ma3-tg2-2-250901-8	Summary table not applicable for groundwater.							

The nutrient/physical parameters summarized above for unsaturated zone soils, reflect suggested minimum Wisconsin DNR "site characterization requirements for natural biodegradation projects" as presented on pp. 6-10 in Naturally Occurring Biodegradation as a Remedial Action Option for Soil Contamination: Interim Guidance (Revised) dated August 26, 1994. **BioRenewal stresses that these "suggested guidelines" are only intended to provide a working frame of reference for evaluation.** Each site is unique and requires professional judgement in order to select an appropriate remedial design. We provide this information in recognition that our clients need to work within the guidelines suggested by the state. Further, we hope this will facilitate continued evolution of a working framework for evaluating sites as to the potential for bioremediation whether through site augmentation or natural attenuation.

✓ = Sample meets guideline.

x = Sample does not meet guideline.

Blank = Below detection limit, not applicable, or not available for that sample.

- NOTES:
- 1) Microbial population levels in soils generally accepted as potentially adequate to support natural biodegradation. These levels are based on bio-engineering norms and not WDNR guidelines.
  - 2) Microbial population levels in soils generally accepted as minimum to serve as an "inoculum" for implementing active bioremediation strategies.
  - 3) See page 7 and 10, WDNR.
  - 4) See pages 8 and 10, WDNR. Total Organic Nitrogen (calculated from TKN minus ammonium nitrogen) divided by % organic matter.
  - 5) See pages 8 and 10, WDNR.
  - 6) See pages 8 and 10, WDNR.
  - 7) See page 6 and 10, WDNR. The suggested optimum range is 50-80% (p. 6).
  - 8) See page 8 and 10, WDNR. WDNR suggests a minimum air-filled porosity in soil of 10% is necessary for adequate oxygen diffusion in the soil gas to support biodegradation.

Section II - Microbial Data Summary continued

All values in cfu/ml\*

Groundwater Samples

Total populations

Low and high indicate 95% confidence range

Sample ID	Mean	Low	High
ma3-tg4-1-250901-1	4.4E+03	0.0E+00	0.0E+00
ma3-tg4-2-250901-2	3.2E+03	0.0E+00	0.0E+00
ma3-tg4-3-250901-3	1.5E+03	0.0E+00	0.0E+00
ma3-tg1-1-250901-4	8.6E+03	0.0E+00	0.0E+00
ma3-tg1-2-250901-5	3.3E+04	0.0E+00	0.0E+00
ma3-tg1-3-250901-6	7.3E+03	0.0E+00	0.0E+00
ma3-tg2-1-250901-7	4.7E+02	0.0E+00	0.0E+00
ma3-tg2-2-250901-8	3.1E+03	0.0E+00	0.0E+00

Groundwater Samples

Degrader populations

Low and high indicate 95% confidence range

Sample ID	Mean	Low	High
ma3-tg4-1-250901-1	1.7E+03	0.0E+00	0.0E+00
ma3-tg4-2-250901-2	7.8E+02	0.0E+00	0.0E+00
ma3-tg4-3-250901-3	3.1E+02	0.0E+00	0.0E+00
ma3-tg1-1-250901-4	5.1E+03	0.0E+00	0.0E+00
ma3-tg1-2-250901-5	1.8E+04	0.0E+00	0.0E+00
ma3-tg1-3-250901-6	2.2E+03	0.0E+00	0.0E+00
ma3-tg2-1-250901-7	2.1E+02	0.0E+00	0.0E+00
ma3-tg2-2-250901-8	7.7E+02	0.0E+00	0.0E+00

Marginal inoculum

Inoculum levels

Active degradation levels

**Marginal inoculum** = Degrader populations below 1.0E+03 are indicative of severe limitations. Substantial augmentation of site conditions will likely be required to attain adequate cell mass to attain measurable biotransformation rates.

**Inoculum levels** = Degrader populations between 1.0E+03 and 1.0E+06 are amenable to site augmentation, but are generally insufficient to attain adequate biotransformation without site augmentation.

**Active degradation levels** = Degrader populations greater than 1.0E+06 are generally of sufficient magnitude to support measurable biotransformation without site augmentation. However, site augmentation may still be required to attain desirable rates of transformation due to specific site conditions.

Assay conditions

Sample ID	Degrader Media		Temp. (Celsius)	Growth Conditions	DOF **		Percent Degraders
	Carbon source	% Carbon (v/v)			Total	Degrader	
ma3-tg4-1-250901-1	BTEX-PAH	1.0	22	aerobic	0	0	38.4%
ma3-tg4-2-250901-2	BTEX-PAH	1.0	22	aerobic	0	0	24.4%
ma3-tg4-3-250901-3	BTEX-PAH	1.0	22	aerobic	0	0	21.2%
ma3-tg1-1-250901-4	BTEX-PAH	1.0	22	aerobic	0	0	59.3%
ma3-tg1-2-250901-5	BTEX-PAH	1.0	22	aerobic	0	0	55.8%
ma3-tg1-3-250901-6	BTEX-PAH	1.0	22	aerobic	0	0	30.1%
ma3-tg2-1-250901-7	BTEX-PAH	1.0	22	aerobic	0	0	44.7%
ma3-tg2-2-250901-8	BTEX-PAH	1.0	22	aerobic	0	0	24.8%

\* cfu/ml = colony forming units per ml of groundwater

\*\* DOF = Degrees of freedom is number of replicates minus one. This parameter is used in calculation of 95% confidence intervals.

Site Information

Site Name	Moss America	Date received	25-Sep-01
Location	Milwaukee WI	Date of this report	18-Oct-01
Consultant	Roy F Weston	Microbac Job Code	9933-324
Proj. Contact	Tom Graan		
Project Ref ID		Number of soil samples	0
Contaminant	BTEX-PAH	Number of gw samples	1

Section I - Summary of Bioremediation Data

Nutrient/physical factors are as suggested by Wisconsin DNR guidelines for site characterization requirements for natural biodegradation. Microbial factors are shown according to bio-engineering norms.

Sample ID	Soil microbial populations:								
	Exceeds norm for:		pH	% TON /		C:N	C:P	% moisture /	% Air-filled
	Passive	Active		% OM				SWHC	pore space
	>1E+06	>1E+03	5.5-8.5	>1.5	<40	<120	25-85%	>10%	
Guideline note reference:	1	2	3	4	5	6	7	8	
ma3-tg2-3-250901-9	Summary table not applicable for groundwater.								

The nutrient/physical parameters summarized above for unsaturated zone soils, reflect suggested minimum Wisconsin DNR "site characterization requirements for natural biodegradation projects" as presented on pp. 6-10 in Naturally Occurring Biodegradation as a Remedial Action Option for *Soil Contamination: Interim Guidance (Revised)* dated August 26, 1994. **BioRenewal stresses that these "suggested guidelines" are only intended to provide a working frame of reference for evaluation.** Each site is unique and requires professional judgement in order to select an appropriate remedial design. We provide this information in recognition that our clients need to work within the guidelines suggested by the state. Further, we hope this will facilitate continued evolution of a working framework for evaluating sites as to the potential for bioremediation whether through site augmentation or natural attenuation.

- ✓ = Sample meets guideline.
- ✗ = Sample does not meet guideline.
- Blank = Below detection limit, not applicable, or not available for that sample.

- NOTES:
- 1) Microbial population levels in soils generally accepted as potentially adequate to support natural biodegradation. These levels are based on bio-engineering norms and not WDNR guidelines.
  - 2) Microbial population levels in soils generally accepted as minimum to serve as an "inoculum" for implementing active bioremediation strategies.
  - 3) See page 7 and 10. WDNR.
  - 4) See pages 8 and 10. WDNR. Total Organic Nitrogen (calculated from TKN minus ammonium nitrogen) divided by % organic matter.
  - 5) See pages 8 and 10. WDNR.
  - 6) See pages 8 and 10. WDNR.
  - 7) See page 6 and 10. WDNR. The suggested optimum range is 50-80% (p. 6).
  - 8) See page 8 and 10. WDNR. WDNR suggests a minimum air-filled porosity in soil of 10% is necessary for adequate oxygen diffusion in the soil gas to support biodegradation.

Section II - Microbial Data Summary continued

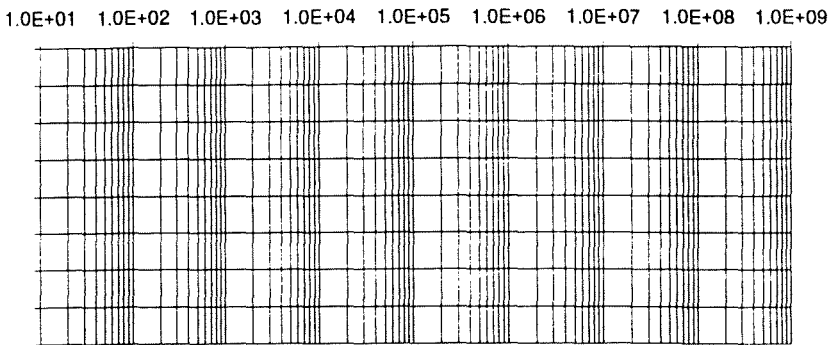
All values in cfu/ml\*

Groundwater Samples

Total populations

Low and high indicate 95% confidence range

Sample ID	Mean	Low	High
ma3-tg2-3-250901-9	2.2E+03	0.0E+00	0.0E+00

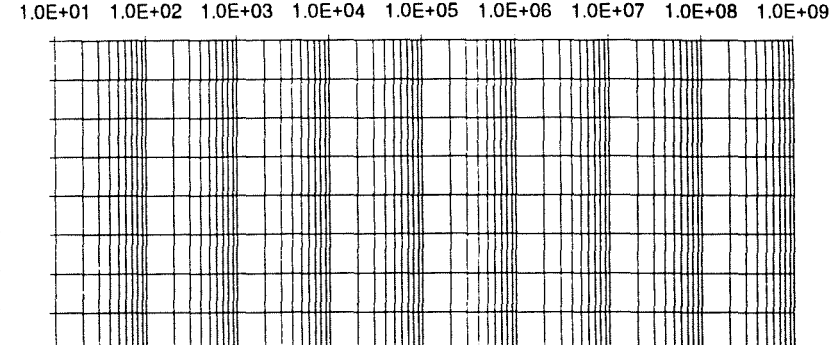


Groundwater Samples

Degrader populations

Low and high indicate 95% confidence range

Sample ID	Mean	Low	High
ma3-tg2-3-250901-9	1.1E+03	0.0E+00	0.0E+00



Marginal inoculum

Inoculum levels

Active degradation levels

**Marginal inoculum** = Degrader populations below 1.0E+03 are indicative of severe limitations. Substantial augmentation of site conditions will likely be required to attain adequate cell mass to attain measurable biotransformation rates.

**Inoculum levels** = Degrader populations between 1.0E+03 and 1.0E+06 are amenable to site augmentation, but are generally insufficient to attain adequate biotransformation without site augmentation.

**Active degradation levels** = Degrader populations greater than 1.0E+06 are generally of sufficient magnitude to support measurable biotransformation without site augmentation. However, site augmentation may still be required to attain desirable rates of transformation due to specific site conditions.

Assay conditions

Sample ID	Degrader Media		Temp. (Celsius)	Growth Conditions	DOF **		Percent Degraders
	Carbon source	% Carbon (v/v)			Total	Degrader	
ma3-tg2-3-250901-9	BTEX-PAH	1.0	22	aerobic	0	0	48.0%

\* cfu/ml = colony forming units per ml of groundwater

\*\* DOF = Degrees of freedom is number of replicates minus one. This parameter is used in calculation of 95% confidence intervals.

**Site Information**

Site Name	Moss America	Date received	24-Sep-01
Location	Milwaukee WI	Date of this report	18-Oct-01
Consultant	Roy F Weston	Microbacl Job Code	9933-297
Proj. Contact	Tom Graan		
Project Ref ID		Number of soil samples	0
Contaminant	BTEX-PAH	Number of gw samples	1

**Section I - Summary of Bioremediation Data**

Nutrient/physical factors are as suggested by Wisconsin DNR guidelines for site characterization requirements for natural biodegradation. Microbial factors are shown according to bio-engineering norms.

Sample ID	Soil microbial populations:		pH	% TON /			% moisture / SWHC	% Air-filled pore space
	Exceeds norm for:			% OM	C:N	C:P		
	Passive	Active						
	>1E+06	>1E+03	5.5-8.5	>1.5	<40	<120	25-85%	>10%
Guideline note reference:	1	2	3	4	5	6	7	8
ma3-tg3-3-240901-9	Summary table not applicable for groundwater.							

The nutrient/physical parameters summarized above for unsaturated zone soils, reflect suggested minimum Wisconsin DNR " site characterization requirements for natural biodegradation projects" as presented on pp. 6-10 in Naturally Occurring Biodegradation as a Remedial Action Option for Soil Contamination: Interim Guidance (Revised) dated August 26, 1994. BioRenewal stresses that these "suggested guidelines" are only intended to provide a working frame of reference for evaluation. Each site is unique and requires professional judgement in order to select an appropriate remedial design. We provide this information in recognition that our clients need to work within the guidelines suggested by the state. Further, we hope this will facilitate continued evolution of a working framework for evaluating sites as to the potential for bioremediation whether through site augmentation or natural attenuation.

- ✓ = Sample meets guideline.
- x = Sample does not meet guideline.
- Blank = Below detection limit, not applicable, or not available for that sample.

- NOTES:
- 1) Microbial population levels in soils generally accepted as potentially adequate to support natural biodegradation. These levels are based on bio-engineering norms and not WDNR guidelines.
  - 2) Microbial population levels in soils generally accepted as minimum to serve as an "inoculum" for implementing active bioremediation strate
  - 3) See page 7 and 10. WDNR.
  - 4) See pages 8 and 10. WDNR. Total Organic Nitrogen (calculated from TKN minus ammonium nitrogen ) divided by % organic matter.
  - 5) See pages 8 and 10. WDNR.
  - 6) See pages 8 and 10. WDNR.
  - 7) See page 6 and 10. WDNR. The suggested optimum range is 50-80% (p. 6).
  - 8) See page 8 and 10. WDNR. WDNR suggests a minimum air-filled porosity in soil of 10% is necessary for adequate oxygen diffusion in the soil gas to support biodegradation.

Section II - Microbial Data Summary continued

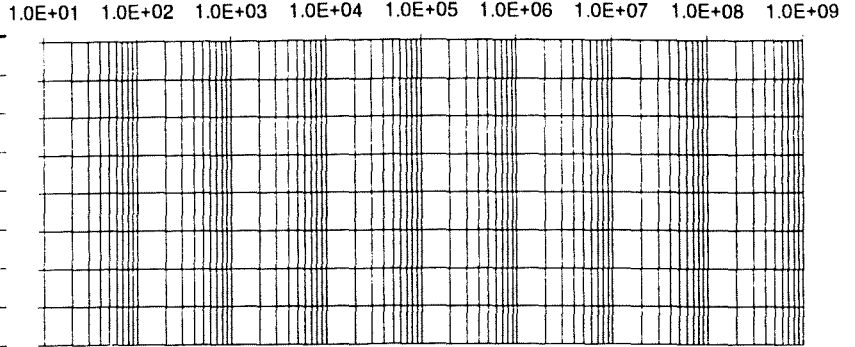
All values in cfu/ml\*

Groundwater Samples

Total populations

Low and high indicate 95% confidence range

Sample ID	Mean	Low	High
ma3-tg3-3-240901-9	6.2E+02	0.0E+00	0.0E+00

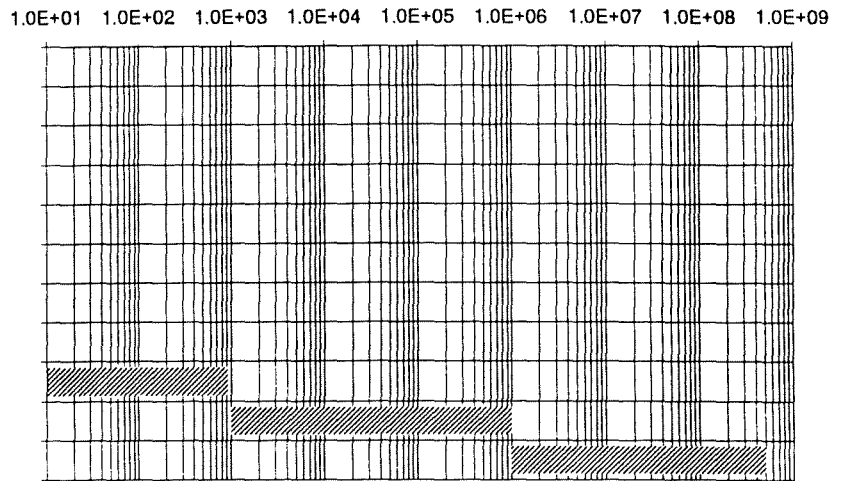


Groundwater Samples

Degrader populations

Low and high indicate 95% confidence range

Sample ID	Mean	Low	High
ma3-tg3-3-240901-9	1.9E+02	0.0E+00	0.0E+00



Marginal inoculum

Inoculum levels

Active degradation levels

**Marginal inoculum** = Degrader populations below 1.0E+03 are indicative of severe limitations. Substantial augmentation of site conditions will likely be required to attain adequate cell mass to attain measurable biotransformation rates.

**Inoculum levels** = Degrader populations between 1.0E+03 and 1.0E+06 are amenable to site augmentation, but are generally insufficient to attain adequate biotransformation without site augmentation.

**Active degradation levels** = Degrader populations greater than 1.0E+06 are generally of sufficient magnitude to support measurable biotransformation without site augmentation. However, site augmentation may still be required to attain desirable rates of transformation due to specific site conditions.

Assay conditions

Sample ID	Degrader Media		Temp. (Celsius)	Growth Conditions	DOF **		Percent Degraders
	Carbon source	% Carbon (v/v)			Total	Degrader	
ma3-tg3-3-240901-9	BTEX-PAH	1.0	22	aerobic	0	0	30.6%

\* cfu/ml = colony forming units per ml of groundwater

\*\* DOF = Degrees of freedom is number of replicates minus one. This parameter is used in calculation of 95% confidence intervals.

# Microbac

## CHAIN OF CUSTODY RECORD

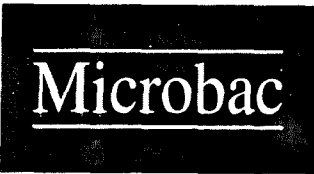
Microbac Laboratories, Inc.  
 Seaway Industrial Laboratory Division  
 542-544 Conkey Street Hammond, Indiana 46324  
 219/932-1770 219/932-1721 Fax

COMPOSITE      BEGIN: \_\_\_\_\_      END: \_\_\_\_\_      TEMP \_\_\_\_\_  
 AUTOMATIC      DATE \_\_\_\_\_      DATE \_\_\_\_\_      TECH \_\_\_\_\_  
 DISCRETE      TIME \_\_\_\_\_      TIME \_\_\_\_\_      MLS/Sample \_\_\_\_\_  
 FLOW PROPORTIONED      FLOW \_\_\_\_\_      FLOW \_\_\_\_\_      # Samples \_\_\_\_\_  
 CONTINUOUS  
 TIME TOTAL FLOW \_\_\_\_\_      INTERVAL \_\_\_\_\_

P.O. #		CLIENT NAME		LOCATION/PROJECT				ANALYSES REQUESTED										REMARKS OBSERVATIONS  LIST SPECIAL HAZARDS HERE	RETURN SAMPLES TO CLIENT		
SAMPLERS (Signature)		SEND REPORT TO:		PHONE ( )				Microbial Enumeration													
LAB I.D. #		Sample Chest #		Sample Temp. at Lab		Method of Shipment To Lab:															
SAMPLE LOCATION		COLLECTED		SAMPLE TYPE			NO OF CONTAINERS	CONTAINER TYPE PRESERVATIVE													
		DATE	TIME	COMP.	GRAB	MATRIX															
1	MA3-T66-1-24901-01	9/24/01	1115		X	W	1	plastic none	X												
2	MA3-T66-2-24901-02		1120		X	W	1	plastic none	X												
3	MA3-T66-3-24901-03		1130		X	W	1	plastic none	X												
4	MA3-T65-1-24901-04		1505		X	W	1	plastic none	X												
5	MA3-T65-2-24901-05		1515		X	W	1	plastic none	X												
6	MA3-T65-3-24901-06		1530		X	W	1	plastic none	X												
7	MA3-T63-1-24901-07		1715		X	W	1	plastic none	X												
8	MA3-T63-2-24901-08		1730		X	W	1	plastic none	X												
9	MA3-T63-3-24901-09		1740		X	W	1	plastic none	X												

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Relinquished by: (Signature)	Date	Time	Received by: (Signature)
<i>Bren Sibany</i>	9/24/01	1900					
Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Relinquished by: (Signature)	Date	Time	Received by: (Signature)
			<i>Steve ...</i>				
Relinquished by: (Signature)	Date	Time	Received for Lab: (Signature)	Date	Time		
			<i>Steve ...</i>	9/24/01	9:00		



# CHAIN OF CUSTODY RECORD

Microbac Laboratories, Inc.  
 Seaway Industrial Laboratory Division  
 542-544 Conkey Street Hammond, Indiana 46324  
 219/932-1770 219/932-1721 Fax

_____ COMPOSITE	BEGIN: _____	END: _____	TEMP _____
_____ AUTOMATIC	DATE _____	DATE _____	TECH _____
_____ DISCRETE	TIME _____	TIME _____	MLS/Sample _____
_____ FLOW PROPORTIONED	FLOW _____	FLOW _____	# Samples _____
_____ CONTINUOUS	TIME _____	INTERVAL _____	
_____ TOTAL FLOW _____			

P.O. #		CLIENT NAME <i>W.P. Weston</i>			LOCATION/PROJECT <i>M. Krausker, WI / Miss American</i>			ANALYSES REQUESTED  <i>Microbial Enumeration</i>										RETURN SAMPLES TO CLIENT		
SAMPLERS (Signature) <i>Bren Schup</i>		SEND REPORT TO: <i>Tan Gorman</i>			PHONE (547) <i>918-4000</i>															
LAB I.D. # <i>9933-324</i>		Sample Chest #	Chest Temp °C	Sample Temp. at Lab °C	Method of Shipment To Lab:		Date												Time	
SAMPLE LOCATION		COLLECTED		SAMPLE TYPE			NO OF CONTAINERS												CONTAINER TYPE PRESERVATIVE	REMARKS OBSERVATIONS  LIST SPECIAL HAZARDS HERE
		DATE	TIME	COMP.	GRAB	MATRIX														
<i>1</i> MAB-TG4-1-250921-01		<i>9/27/01</i>	<i>0950</i>		<i>X</i>	<i>Water</i>	<i>1</i>	<i>plastic none</i>	<i>X</i>											
<i>2</i> MAB-TG4-2-250921-02			<i>1000</i>		<i>X</i>		<i>1</i>		<i>X</i>											
<i>3</i> MAB-TG4-3-250921-03			<i>1010</i>		<i>X</i>		<i>1</i>		<i>X</i>											
<i>4</i> MAB-TG1-1-250921-04			<i>1115</i>		<i>X</i>		<i>1</i>		<i>X</i>											
<i>5</i> MAB-TG1-2-250921-05			<i>1125</i>		<i>X</i>		<i>1</i>		<i>X</i>											
<i>6</i> MAB-TG1-3-250921-06			<i>1135</i>		<i>X</i>		<i>1</i>		<i>X</i>											
<i>7</i> MAB-TG2-1-250921-07			<i>1445</i>		<i>X</i>		<i>1</i>		<i>X</i>											
<i>8</i> MAB-TG2-2-250921-08			<i>1500</i>		<i>X</i>		<i>1</i>		<i>X</i>											
<i>9</i> MAB-TG2-3-250921-09			<i>1515</i>		<i>X</i>		<i>1</i>		<i>X</i>											
Relinquished by: (Signature) <i>Bren Schup</i>		Date <i>9/25/01</i>	Time <i>1300</i>	Received by: (Signature) <i>Tan Gorman</i>			Relinquished by: (Signature)			Date	Time	Received by: (Signature)			4					
Relinquished by: (Signature)		Date	Time	Received by: (Signature)			Relinquished by: (Signature)			Date	Time	Received by: (Signature)			8					
Relinquished by: (Signature)		Date	Time	Received by: (Signature)			Relinquished by: (Signature)			Date	Time	Received by: (Signature)								

*1*  
*2*  
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*8*  
*9*

*Tan Gorman*



Data validation for grab water samples analyses performed by Lancaster Laboratories, Lancaster, Pennsylvania for the Kerr McGee Moss American Site in Milwaukee, WI.  
The water samples were analyzed for Polynuclear Aromatic Hydrocarbons (PAHs 8310), and BTEX 8021 Analyses.

**Polynuclear Aromatic Hydrocarbons (PAHs by HPLC, U.S. EPA Method 8310)**  
**Moss American Site**  
**SDG # MOA76**

**1. Samples:**

<u>Client Code</u>	<u>Lab Sample Number</u>	<u>Matrix</u>	<u>Date Collected</u>	<u>Date Extracted</u>	<u>Date Analyzed</u>
TG6-1-240901-01	3692778	Grab water	09/24/01	09/27/01	10/06/01
TG6-2-240901-02	3692779	Grab water	09/24/01	09/27/01	10/06/01
TG6-3-240901-03	3692780	Grab water	09/24/01	09/27/01	10/06/01
TG5-1-240901-04	3692782	Grab water	09/24/01	09/27/01	10/06/01
TG5-2-240901-05	3692783	Grab water	09/24/01	09/27/01	10/06/01
TG5-3-240901-06	3692784	Grab water	09/24/01	09/27/01	10/06/01
TG3-1-240901-07	3692786	Grab water	09/24/01	09/27/01	10/06/01
TG3-2-240901-08	3692787	Grab water	09/24/01	09/27/01	10/06/01
TG3-3-240901-09	3692788	Grab water	09/24/01	09/27/01	10/06/01

**2. Holding Times:**

All the samples were extracted and analyzed within the required holding times.

**3. Method Blank:**

The method blank SBLKWE2691 was associated with this SDG. SBLKWE2691 was analyzed on 10/06/01 and associated with (3692778 thru 3692780, 3692782, thru 3692784, and 3692786 thru 3692788). The method blank SBLKWE2691 results were free of contamination.

**4. Matrix Spike/Matrix Spike Duplicate:**

Sufficient samples volume was not available to perform a matrix spike/matrix spike duplicate for this analysis.

**5. Laboratory control Sample:**

The laboratory control sample/laboratory control sample duplicate recoveries were all within the laboratory and QAPP acceptance limits. Also, the relative percent differences (RPD%) were acceptable.

**6. Surrogate:**

A Lancaster laboratory quantity the reported PAH compounds from the UV-Vis detector, due to reduce sensitivity on the fluorescence detector. All the surrogate recoveries were within the control limits on UV-Vis detector.

Also, the surrogate recoveries from the fluorescence detector were outside the acceptance control limits for Nitrobenzene in 3692579, 3692580, 3692582 thru 3692584, 3692587, but acceptable for Triphenylene for all the samples.

**7. Retention Time:**

The retention time recoveries were within acceptance limits.

**8. Initial and Continuing Calibration:**

All the initial calibrations results were within the quality control limits (RSD  $>+/-30\%$ ), except in lab files ID 01274B-04R thru 01274B-08R which were analyzed on 10/01/01, 10/02/01 for acenaphthylene (105.05%). Therefore, qualify the positive results in the samples as estimated (J).

The continuing calibrations data file 012742-01R associated with (3692578 thru 3692580, 3692582 thru 3692584), and data file 012742-23R associated with 3692586 thru 3692588) showed that the results were within quality control limits (RSD  $>+/-25\%$ ).

The continuing calibrations data file 01274B2-01R associated with (3692578 thru 3692580, 3692582 thru 3692584) and data file 01274B2-23R associated with 3692586 thru 3692588) showed that the results were acceptable, except in acenaphthylene (-43.63%), (-59.53%).

As a result, qualify the results for acenaphthylene in the samples as estimated (J/UJ).

**BETX (U.S. EPA Method 8021B)**  
**SDG # MOA76**

**1. Samples:**

<u>Client Code</u>	<u>Lab Sample Number</u>	<u>Matrix</u>	<u>Date Collected</u>	<u>Date Analyzed</u>
TG6-1-240901-01	3692778	Grab water	09/24/01	09/26/01
TG6-2-240901-02	3692779	Grab water	09/24/01	09/26/01
TG6-3-240901-03	3692780	Grab water	09/24/01	09/26/01
TB-01	3692781	Grab water	09/24/01	09/26/01
TG5-1-240901-04	3692782	Grab water	09/24/01	09/26/01
TG5-2-240901-05	3692783	Grab water	09/24/01	09/26/01
TG5-3-240901-06	3692784	Grab water	09/24/01	09/26/01
TB-03	3692785	Grab water	09/24/01	09/26/01
TG3-1-240901-07	3692786	Grab water	09/24/01	09/26/01
TG3-2-240901-08	3692787	Grab water	09/24/01	09/26/01
TG3-3-240901-09	3692788	Grab water	09/24/01	09/26/01
TB-02	3692789	Grab water	09/24/01	09/26/01

**2. Holding Times:**

All samples were analyzed within the required holding times.

**3. Method Blank:**

The method blank BLK5501 was associated with this SDG. BLK5501 was analyzed on 09/26/01 associated with 3692778 thru 3692789. The method blank BLK5501 results were free of contamination.

**4. Matrix Spike/Matrix Spike Duplicate :**

Sufficient samples volume was not available to perform a matrix spike and matrix spike duplicate for this analysis. Therefore, the laboratory performed only matrix spike on sample 3692578. The matrix spike recoveries were within the laboratory and QAPP acceptance limits.

**5. Laboratory control Sample:**

The laboratory control sample/laboratory control sample duplicate recoveries were within the laboratory and QAPP acceptance limits. Also, the relative percent difference (RPD%) recovery was acceptable.

**6. Surrogate:**

The surrogate recoveries were all within the laboratory and QAPP acceptance limits.

**7. Initial and Continuing Calibration:**

All the initial calibration and continuing calibration results were within the laboratory and QAPP acceptance limits.

Please feel free to contact me at (847) 549-1042 with any question regarding these validation reports.

Sincerely  
Tania Balikji-Shammo



## 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 779324. Samples arrived at the laboratory on Tuesday, September 25, 2001.

<u>Client Description</u>	<u>Lancaster Labs Number</u>
MA3-TG6-1-240901-01 Grab Water Sample	3692578
MA3-TG6-2-240901-02 Grab Water Sample	3692579
MA3-TG6-3-240901-03 Grab Water Sample	3692580
TB-01 Grab Water Sample	3692581
MA3-TG5-1-240901-04 Grab Water Sample	3692582
MA3-TG5-2-240901-05 Grab Water Sample	3692583
MA3-TG5-3-240901-06 Grab Water Sample	3692584
TB-03 Grab Water Sample	3692585
MA3-TG3-1-240901-07 Grab Water Sample	3692586
MA3-TG3-2-240901-08 Grab Water Sample	3692587
MA3-TG3-3-240901-09 Grab Water Sample	3692588
TB-02 Grab Water Sample	3692589

## METHODOLOGY

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

1 COPY TO Kerr-McGee Corporation  
1 COPY TO Roy F. Weston  
1 COPY TO Data Package Group

Attn: Dr. Jeff Ostmeyer  
Attn: Mr. Tom Graan




Lancaster Laboratories, Inc.  
2425 New Holland Pike  
P.O. Box 12425  
Lancaster, PA 17605-2425  
Tel: 717-399-3300 Fax: 717-399-3501

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

Respectfully Submitted,



Erik J. Frederiksen  
Group Leader



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

0  
0  
1  
0



Lancaster Laboratories Sample No. WW 3692578

Collected: 09/24/2001 11:15 by BS

Account Number: 07802

Submitted: 09/25/2001 09:35

Kerr-McGee Corporation

Reported: 10/10/2001 at 20:52

P.O. Box 25861

Discard: 11/10/2001

Oklahoma City OK 73125

MA3-TG6-1-240901-01 Grab Water Sample

Moss American Superfund Site - Milwaukee, WI

TG611 SDG#: MOA76-01

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	1.0	0.16	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.	0.0028	mg/l	1
00235	Biochemical Oxygen Demand	n.a.	N.D.	4.0	mg/l	1
00273	Total Organic Carbon	n.a.	6.2	0.60	mg/l	1
The Total Organic Carbon (TOC) result reported above was determined by measuring total carbon by a persulfate digestion/infrared detection method on an acidified sample which has been purged of inorganic carbon using nitrogen. It represents "non-purgeable TOC".						
00345	Total Phosphorus as PO4 water	14265-44-2	0.44	0.13	mg/l	1
01553	Chemical Oxygen Demand	n.a.	15.4	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
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.	0.9	ug/l	1
00782	Acenaphthylene	208-96-8	N.D.	0.8	ug/l	1
00783	Acenaphthene	83-32-9	N.D.	0.8	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



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Lancaster, PA 17605-2425



Lancaster Laboratories Sample No. **WW 3692578**

Collected: 09/24/2001 11:15 by BS

Account Number: 07802

Submitted: 09/25/2001 09:35  
 Reported: 10/10/2001 at 20:52  
 Discard: 11/10/2001

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

MA3-TG6-1-240901-01 Grab Water Sample  
 Moss American Superfund Site - Milwaukee, WI

TG611 SDG#: MOA76-01

CAT No.	Analysis Name	CAS Number	As Received Result	As Received		Dilution Factor
				Method	Units	
00811	Pyrene	129-00-0	N.D.	Detection Limit	ug/l	1
00812	Benzo(a)anthracene	56-55-3	N.D.	0.20	ug/l	1
00818	Benzo(b)fluoranthene	205-99-2	N.D.	0.02	ug/l	1
00823	Benzo(a)pyrene	50-32-8	N.D.	0.040	ug/l	1
00895	Dibenz(a,h)anthracene	53-70-3	N.D.	0.02	ug/l	1
00898	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.040	ug/l	1
00907	Benzo(g,h,i)perylene	191-24-2	N.D.	0.080	ug/l	1
07409	Chrysene	218-01-9	N.D.	0.09	ug/l	1
07410	Benzo(k)fluoranthene	207-08-9	N.D.	0.08	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		Analyst	Dilution Factor
				Date and Time			
00217	Kjeldahl Nitrogen	EPA 351.2	1	09/30/2001 17:13		Matthew J. Mercer	1
00219	Nitrite Nitrogen	EPA 353.2	1	09/26/2001 10:04		Matthew J. Mercer	1
00220	Nitrate Nitrogen	EPA 353.2	1	10/01/2001 14:36		Matthew J. Mercer	1
00221	Ammonia Nitrogen	EPA 350.2	1	09/27/2001 10:45		Michele L. Hanby	1
00226	Ortho-Phosphate as P	EPA 365.3	1	09/25/2001 23:30		Daniel S. Smith	1
00235	Biochemical Oxygen Demand	EPA 405.1	1	09/25/2001 23:53		Nicole R. Bushong	1
00273	Total Organic Carbon	EPA 415.1	1	09/26/2001 12:05		Timothy M. Petree	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	09/27/2001 17:15		Venia M. McFadden	1
01553	Chemical Oxygen Demand	EPA 410.2	1	09/26/2001 06:02		Susan A. Engle	1
08213	BTEX (8021)	SW-846 8021B	1	09/26/2001 15:07		Melissa-Ann S. McAlpine	1
00774	PAH's in Water by HPLC	SW-846 8310	1	10/06/2001 08:40		Mark Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	09/26/2001 15:07		Melissa-Ann S. McAlpine	n.a.
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	09/28/2001 09:40		James S. Mathiot	1
03337	PAH Water Extraction	SW-846 3510C	1	09/27/2001 09:10		Amanda E. Wade	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	09/27/2001 09:40		James S. Mathiot	1

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1  
1  
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Lancaster Laboratories Sample No. WW 3692578

Collected: 09/24/2001 11:15 by BS

Account Number: 07802

Submitted: 09/25/2001 09:35

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Reported: 10/10/2001 at 20:52

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Discard: 11/10/2001

Oklahoma City OK 73125

MA3-TG6-1-240901-01 Grab Water Sample

Moss American Superfund Site - Milwaukee, WI

TG611 SDG#: MOA76-01



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0013



Lancaster Laboratories Sample No. WW 3692579

Collected: 09/24/2001 11:20 by BS

Account Number: 07802

Submitted: 09/25/2001 09:35

Kerr-McGee Corporation

Reported: 10/10/2001 at 20:52

P.O. Box 25861

Discard: 11/10/2001

Oklahoma City OK 73125

MA3-TG6-2-240901-02 Grab Water Sample

Moss American Superfund Site - Milwaukee, WI

TG622 SDG#: MOA76-02

CAT No.	Analysis Name	CAS Number	As Received		As Received		Dilution Factor
			Result		Method	Units	
00217	Kjeldahl Nitrogen	7727-37-9	0.80	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	0.75	J	0.16	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.		0.0028	mg/l	1
00235	Biochemical Oxygen Demand	n.a.	N.D.		3.2	mg/l	1
00273	Total Organic Carbon	n.a.	6.8		0.60	mg/l	1
The Total Organic Carbon (TOC) result reported above was determined by measuring total carbon by a persulfate digestion/infrared detection method on an acidified sample which has been purged of inorganic carbon using nitrogen. It represents "non-purgeable TOC".							
00345	Total Phosphorus as PO4 water	14265-44-2	0.24		0.13	mg/l	1
01553	Chemical Oxygen Demand	n.a.	17.1		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.		0.9	ug/l	1
00782	Acenaphthylene	208-96-8	N.D.		0.8	ug/l	1
00783	Acenaphthene	83-32-9	N.D.		0.8	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	0.057	J	0.040	ug/l	1
00807	Fluoranthene	206-44-0	0.16	J	0.040	ug/l	1

0014



Lancaster Laboratories Sample No. WW 3692579

Collected: 09/24/2001 11:20 by BS

Account Number: 07802

Submitted: 09/25/2001 09:35  
 Reported: 10/10/2001 at 20:52  
 Discard: 11/10/2001

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 P.O. Box 25861  
 Oklahoma City OK 73125

MA3-TG6-2-240901-02 Grab Water Sample  
 Moss American Superfund Site - Milwaukee, WI

TG622 SDG#: MOA76-02

CAT No.	Analysis Name	CAS Number	As Received Result	As Received		Units	Dilution Factor
				Method	Detection Limit		
00811	Pyrene	129-00-0	N.D.		0.20	ug/l	1
00812	Benzo(a)anthracene	56-55-3	N.D.		0.02	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.		0.02	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.		0.09	ug/l	1
07409	Chrysene	218-01-9	N.D.		0.08	ug/l	1
07410	Benzo(k)fluoranthene	207-08-9	N.D.		0.02	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	Analysis		Analyst	Dilution Factor
			Trial#	Date and Time		
00217	Kjeldahl Nitrogen	EPA 351.2	1	09/30/2001 17:14	Matthew J. Mercer	1
00219	Nitrite Nitrogen	EPA 353.2	1	09/26/2001 10:05	Matthew J. Mercer	1
00220	Nitrate Nitrogen	EPA 353.2	1	10/01/2001 14:38	Matthew J. Mercer	1
00221	Ammonia Nitrogen	EPA 350.2	1	09/27/2001 07:15	Michele L. Hanby	1
00226	Ortho-Phosphate as P	EPA 365.3	1	09/25/2001 23:30	Daniel S. Smith	1
00235	Biochemical Oxygen Demand	EPA 405.1	1	09/25/2001 23:53	Nicole R. Bushong	1
00273	Total Organic Carbon	EPA 415.1	1	09/26/2001 12:29	Timothy M. Petree	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	09/27/2001 17:16	Venia M. McFadden	1
01553	Chemical Oxygen Demand	EPA 410.2	1	09/26/2001 06:02	Susan A. Engle	1
08213	BTEX (8021)	SW-846 8021B	1	09/26/2001 21:39	Melissa-Ann S. McAlpine	1
00774	PAH's in Water by HPLC	SW-846 8310	1	10/06/2001 09:11	Mark Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	09/26/2001 21:39	Melissa-Ann S. McAlpine	n.a.
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	09/28/2001 09:40	James S. Mathiot	1
03337	PAH Water Extraction	SW-846 3510C	1	09/27/2001 09:10	Amanda E. Wade	01
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	09/27/2001 09:40	James S. Mathiot	01

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Lancaster Laboratories Sample No. WW 3692579

Collected: 09/24/2001 11:20 by BS

Account Number: 07802

Submitted: 09/25/2001 09:35

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Reported: 10/10/2001 at 20:52

P.O. Box 25861

Discard: 11/10/2001

Oklahoma City OK 73125

MA3-TG6-2-240901-02 Grab Water Sample

Moss American Superfund Site - Milwaukee, WI

TG622 SDG#: MOA76-02



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0016



Lancaster Laboratories Sample No. **WW 3692580**

Collected: 09/24/2001 11:30 by BS

Account Number: 07802

Submitted: 09/25/2001 09:35

Kerr-McGee Corporation

Reported: 10/10/2001 at 20:52

P.O. Box 25861

Discard: 11/10/2001

Oklahoma City OK 73125

MA3-TG6-3-240901-03 Grab Water Sample  
Moss American Superfund Site - Milwaukee, WI

TG633 SDG#: MOA76-03

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
00217	Kjeldahl Nitrogen	7727-37-9	0.70 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	0.16	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.	0.0028	mg/l	1
00235	Biochemical Oxygen Demand	n.a.	N.D.	3.1	mg/l	1
00273	Total Organic Carbon	n.a.	7.4	0.60	mg/l	1
The Total Organic Carbon (TOC) result reported above was determined by measuring total carbon by a persulfate digestion/infrared detection method on an acidified sample which has been purged of inorganic carbon using nitrogen. It represents "non-purgeable TOC".						
00345	Total Phosphorus as PO4 water	14265-44-2	0.30	0.13	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
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.	0.9	ug/l	1
00782	Acenaphthylene	208-96-8	N.D.	0.8	ug/l	1
00783	Acenaphthene	83-32-9	N.D.	0.8	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	0.040 J	0.040	ug/l	1
00807	Fluoranthene	206-44-0	0.041 J	0.040	ug/l	1



Lancaster Laboratories Sample No. WW 3692580

Collected: 09/24/2001 11:30 by BS

Account Number: 07802

Submitted: 09/25/2001 09:35  
 Reported: 10/10/2001 at 20:52  
 Discard: 11/10/2001

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 Oklahoma City OK 73125

MA3-TG6-3-240901-03 Grab Water Sample  
 Moss American Superfund Site - Milwaukee, WI

TG633 SDG#: MOA76-03

CAT No.	Analysis Name	CAS Number	As Received Result	As Received		Units	Dilution Factor
				Method	Detection Limit		
00811	Pyrene	129-00-0	N.D.		0.20	ug/l	1
00812	Benzo(a)anthracene	56-55-3	N.D.		0.02	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.		0.02	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.		0.09	ug/l	1
07409	Chrysene	218-01-9	N.D.		0.08	ug/l	1
07410	Benzo(k)fluoranthene	207-08-9	N.D.		0.02	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	Analysis			Dilution Factor
			Trial#	Date and Time	Analyst	
00217	Kjeldahl Nitrogen	EPA 351.2	1	09/30/2001 17:15	Matthew J. Mercer	1
00219	Nitrite Nitrogen	EPA 353.2	1	09/26/2001 10:06	Matthew J. Mercer	1
00220	Nitrate Nitrogen	EPA 353.2	1	10/01/2001 14:39	Matthew J. Mercer	1
00221	Ammonia Nitrogen	EPA 350.2	1	09/27/2001 07:15	Michele L. Hanby	1
00226	Ortho-Phosphate as P	EPA 365.3	1	09/25/2001 23:30	Daniel S. Smith	1
00235	Biochemical Oxygen Demand	EPA 405.1	1	09/25/2001 23:53	Nicole R. Bushong	1
00273	Total Organic Carbon	EPA 415.1	1	09/26/2001 12:37	Timothy M. Petree	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	09/27/2001 17:17	Venia M. McFadden	1
01553	Chemical Oxygen Demand	EPA 410.2	1	10/01/2001 05:43	Susan A. Engle	1
08213	BTEX (8021)	SW-846 8021B	1	09/26/2001 15:42	Melissa-Ann S. McAlpine	1
00774	PAH's in Water by HPLC	SW-846 8310	1	10/06/2001 09:41	Mark Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	09/26/2001 15:42	Melissa-Ann S. McAlpine	n.a.
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	09/28/2001 09:40	James S. Mathiot	1
03337	PAH Water Extraction	SW-846 3510C	1	09/27/2001 09:10	Amanda E. Wade	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	09/27/2001 09:40	James S. Mathiot	1



Lancaster Laboratories Sample No. WW 3692580

Collected: 09/24/2001 11:30 by BS

Account Number: 07802

Submitted: 09/25/2001 09:35

Reported: 10/10/2001 at 20:52

Discard: 11/10/2001

Kerr-McGee Corporation

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Oklahoma City OK 73125

MA3-TG6-3-240901-03 Grab Water Sample

Moss American Superfund Site - Milwaukee, WI

TG633 SDG#: MOA76-03



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0019



Lancaster Laboratories Sample No. WW 3692581

Collected: 09/24/2001 18:05

Account Number: 07802

Submitted: 09/25/2001 09:35

Kerr-McGee Corporation

Reported: 10/10/2001 at 20:52

P.O. Box 25861

Discard: 11/10/2001

Oklahoma City OK 73125

TB-01 Grab Water Sample

Moss American Superfund Site - Milwaukee, WI

TB01X SDG#: MOA76-04TB

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	09/26/2001 13:22	Melissa-Ann S. McAlpine	1
01146	GC VOA Water Prep	SW-846 5030B	1	09/26/2001 13:22	Melissa-Ann S. McAlpine	n.a.



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000000





Lancaster Laboratories Sample No. **WW 3692582**

Collected: 09/24/2001 15:05 by BS

Account Number: 07802

Submitted: 09/25/2001 09:35

Kerr-McGee Corporation

Reported: 10/10/2001 at 20:52

P.O. Box 25861

Discard: 11/10/2001

Oklahoma City OK 73125

MA3-TG5-1-240901-04 Grab Water Sample

Moss American Superfund Site - Milwaukee, WI

TG514 SDG#: MOA76-05

CAT No.	Analysis Name	CAS Number	As Received Result	As Received		Units	Dilution Factor
				Method	Detection Limit		
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	0.79 J		0.16	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	0.035		0.0028	mg/l	1
00235	Biochemical Oxygen Demand	n.a.	N.D.		3.2	mg/l	1
00273	Total Organic Carbon	n.a.	6.2		0.60	mg/l	1
The Total Organic Carbon (TOC) result reported above was determined by measuring total carbon by a persulfate digestion/infrared detection method on an acidified sample which has been purged of inorganic carbon using nitrogen. It represents "non-purgeable TOC".							
00345	Total Phosphorus as PO4 water	14265-44-2	0.42		0.13	mg/l	1
01553	Chemical Oxygen Demand	n.a.	14.1		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.		0.9	ug/l	1
00782	Acenaphthylene	208-96-8	N.D.		0.8	ug/l	1
00783	Acenaphthene	83-32-9	N.D.		0.8	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



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 PO Box 12425  
 Lancaster, PA 17605-2425  
 717.556.2200 FAX: 717.556.2681

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0  
2  
1



Lancaster Laboratories Sample No. **WW 3692582**

Collected: 09/24/2001 15:05 by **BS**

Account Number: **07802**

Submitted: 09/25/2001 09:35  
 Reported: 10/10/2001 at 20:52  
 Discard: 11/10/2001

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

MA3-TG5-1-240901-04 Grab Water Sample  
 Moss American Superfund Site - Milwaukee, WI

TG514 SDG#: MOA76-05

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method		Dilution Factor
				Detection Limit	Units	
00811	Pyrene	129-00-0	N.D.	0.20	ug/l	1
00812	Benzo(a)anthracene	56-55-3	N.D.	0.02	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.	0.02	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.	0.09	ug/l	1
07409	Chrysene	218-01-9	N.D.	0.08	ug/l	1
07410	Benzo(k)fluoranthene	207-08-9	N.D.	0.02	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	Analysis			Dilution Factor
			Trial#	Date and Time	Analyst	
00217	Kjeldahl Nitrogen	EPA 351.2	1	09/30/2001 17:17	Matthew J. Mercer	1
00219	Nitrite Nitrogen	EPA 353.2	1	09/26/2001 10:07	Matthew J. Mercer	1
00220	Nitrate Nitrogen	EPA 353.2	1	10/01/2001 14:40	Matthew J. Mercer	1
00221	Ammonia Nitrogen	EPA 350.2	1	09/27/2001 10:45	Michele L. Hanby	1
00226	Ortho-Phosphate as P	EPA 365.3	1	09/25/2001 23:30	Daniel S. Smith	1
00235	Biochemical Oxygen Demand	EPA 405.1	1	09/25/2001 23:53	Nicole R. Bushong	1
00273	Total Organic Carbon	EPA 415.1	1	09/26/2001 12:45	Timothy M. Petree	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	09/27/2001 17:18	Venia M. McFadden	1
01553	Chemical Oxygen Demand	EPA 410.2	1	10/01/2001 05:43	Susan A. Engle	1
08213	BTEX (8021)	SW-846 8021B	1	09/26/2001 16:17	Melissa-Ann S. McAlpine	1
00774	PAH's in Water by HPLC	SW-846 8310	1	10/06/2001 10:12	Mark Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	09/26/2001 16:17	Melissa-Ann S. McAlpine	n.a.
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	09/28/2001 09:40	James S. Mathiot	1
03337	PAH Water Extraction	SW-846 3510C	1	09/27/2001 09:10	Amanda E. Wade	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	09/27/2001 09:40	James S. Mathiot	0



Lancaster Laboratories Sample No. WW 3692582

Collected: 09/24/2001 15:05 by BS

Account Number: 07802

Submitted: 09/25/2001 09:35

Kerr-McGee Corporation

Reported: 10/10/2001 at 20:52

P.O. Box 25861

Discard: 11/10/2001

Oklahoma City OK 73125

MA3-TG5-1-240901-04 Grab Water Sample

Moss American Superfund Site - Milwaukee, WI

TG514 SDG#: MOA76-05



Lancaster Laboratories, Inc.  
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Lancaster, PA 17605-2425  
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000000



Lancaster Laboratories Sample No. **WW 3692583**

Collected: 09/24/2001 15:15 by BS

Account Number: 07802

Submitted: 09/25/2001 09:35  
 Reported: 10/10/2001 at 20:52  
 Discard: 11/10/2001

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

MA3-TG5-2-240901-05 Grab Water Sample  
 Moss American Superfund Site - Milwaukee, WI

TG525 SDG#: MOA76-06

CAT No.	Analysis Name	CAS Number	As Received		As Received		Dilution Factor
			Result	J	Method	Units	
00217	Kjeldahl Nitrogen	7727-37-9	0.73	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	0.62	J	0.16	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	0.030		0.0028	mg/l	1
00235	Biochemical Oxygen Demand	n.a.	N.D.		3.2	mg/l	1
00273	Total Organic Carbon	n.a.	7.8		0.60	mg/l	1
The Total Organic Carbon (TOC) result reported above was determined by measuring total carbon by a persulfate digestion/infrared detection method on an acidified sample which has been purged of inorganic carbon using nitrogen. It represents "non-purgeable TOC".							
00345	Total Phosphorus as PO4 water	14265-44-2	0.43		0.13	mg/l	1
01553	Chemical Oxygen Demand	n.a.	21.6		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
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	1.1	J	0.9	ug/l	1
00782	Acenaphthylene	208-96-8	N.D.		0.8	ug/l	1
00783	Acenaphthene	83-32-9	N.D.		0.8	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	0.044	J	0.040	ug/l	1
00807	Fluoranthene	206-44-0	0.076	J	0.040	ug/l	1

0024



Lancaster Laboratories Sample No. WW 3692583

Collected: 09/24/2001 15:15 by BS

Account Number: 07802

Submitted: 09/25/2001 09:35  
 Reported: 10/10/2001 at 20:52  
 Discard: 11/10/2001

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

MA3-TG5-2-240901-05 Grab Water Sample  
 Moss American Superfund Site - Milwaukee, WI

TG525 SDG#: MOA76-06

CAT No.	Analysis Name	CAS Number	As Received Result	As Received		Units	Dilution Factor
				Method	Detection Limit		
00811	Pyrene	129-00-0	N.D.		0.20	ug/l	1
00812	Benzo(a)anthracene	56-55-3	N.D.		0.02	ug/l	1
00818	Benzo(b)fluoranthene	205-99-2	N.D.		0.040	ug/l	1
00823	Benzo(a)pyrene	50-32-8	0.03	J	0.02	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.		0.09	ug/l	1
07409	Chrysene	218-01-9	N.D.		0.08	ug/l	1
07410	Benzo(k)fluoranthene	207-08-9	N.D.		0.02	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		Analyst	Dilution Factor
				Date and Time			
00217	Kjeldahl Nitrogen	EPA 351.2	1	09/30/2001 17:18		Matthew J. Mercer	1
00219	Nitrite Nitrogen	EPA 353.2	1	09/26/2001 10:09		Matthew J. Mercer	1
00220	Nitrate Nitrogen	EPA 353.2	1	10/01/2001 14:41		Matthew J. Mercer	1
00221	Ammonia Nitrogen	EPA 350.2	1	09/27/2001 10:45		Michele L. Hanby	1
00226	Ortho-Phosphate as P	EPA 365.3	1	09/25/2001 23:30		Daniel S. Smith	1
00235	Biochemical Oxygen Demand	EPA 405.1	1	09/25/2001 23:53		Nicole R. Bushong	1
00273	Total Organic Carbon	EPA 415.1	1	09/26/2001 13:10		Timothy M. Petree	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	09/27/2001 17:21		Venia M. McFadden	1
01553	Chemical Oxygen Demand	EPA 410.2	1	10/01/2001 05:43		Susan A. Engle	1
08213	BTEX (8021)	SW-846 8021B	1	09/26/2001 16:52		Melissa-Ann S. McAlpine	1
00774	PAH's in Water by HPLC	SW-846 8310	1	10/06/2001 10:42		Mark Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	09/26/2001 16:52		Melissa-Ann S. McAlpine	n.a.
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	09/28/2001 09:40		James S. Mathiot	1
03337	PAH Water Extraction	SW-846 3510C	1	09/27/2001 09:10		Amanda E. Wade	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	09/27/2001 09:40		James S. Mathiot	1



Lancaster Laboratories, Inc.  
 2425 New Holland Pike  
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 717.556.2200 FAX 717.656.2681

L110000



Lancaster Laboratories Sample No. WW 3692583

Collected: 09/24/2001 15:15 by BS

Account Number: 07802

Submitted: 09/25/2001 09:35

Reported: 10/10/2001 at 20:52

Discard: 11/10/2001

MA3-TG5-2-240901-05 Grab Water Sample

Moss American Superfund Site - Milwaukee, WI

Kerr-McGee Corporation

P.O. Box 25861

Oklahoma City OK 73125

TG525 SDG#: MOA76-06



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

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6



Lancaster Laboratories Sample No. WW 3692584

Collected: 09/24/2001 15:35 by BS

Account Number: 07802

Submitted: 09/25/2001 09:35

Kerr-McGee Corporation

Reported: 10/10/2001 at 20:53

P.O. Box 25861

Discard: 11/10/2001

Oklahoma City OK 73125

MA3-TG5-3-240901-06 Grab Water Sample

Moss American Superfund Site - Milwaukee, WI

TG536 SDG#: MOA76-07

CAT No.	Analysis Name	CAS Number	As Received Result	As Received		Units	Dilution Factor
				Method	Detection Limit		
00217	Kjeldahl Nitrogen	7727-37-9	0.72 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	0.33 J		0.16	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	0.021		0.0028	mg/l	1
00235	Biochemical Oxygen Demand	n.a.	N.D.		3.4	mg/l	1
00273	Total Organic Carbon	n.a.	5.1		0.60	mg/l	1
The Total Organic Carbon (TOC) result reported above was determined by measuring total carbon by a persulfate digestion/infrared detection method on an acidified sample which has been purged of inorganic carbon using nitrogen. It represents "non-purgeable TOC".							
00345	Total Phosphorus as PO4 water	14265-44-2	0.36		0.13	mg/l	1
01553	Chemical Oxygen Demand	n.a.	13.8		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.	ug/l	1
00782	Acenaphthylene	208-96-8	N.D.		0.9	ug/l	1
00783	Acenaphthene	83-32-9	N.D.		0.9	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	N.D.		0.040	ug/l	1



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Lancaster Laboratories Sample No. WW 3692584

Collected: 09/24/2001 15:35 by BS

Account Number: 07802

Submitted: 09/25/2001 09:35  
 Reported: 10/10/2001 at 20:53  
 Discard: 11/10/2001

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

MA3-TG5-3-240901-06 Grab Water Sample  
 Moss American Superfund Site - Milwaukee, WI

TG536 SDG#: MOA76-07

CAT No.	Analysis Name	CAS Number	As Received Result	As Received		Dilution Factor
				Method	Detection Limit	
00811	Pyrene	129-00-0	N.D.		0.20	1
00812	Benzo(a)anthracene	56-55-3	N.D.		0.02	1
00818	Benzo(b)fluoranthene	205-99-2	N.D.		0.040	1
00823	Benzo(a)pyrene	50-32-8	N.D.		0.02	1
00895	Dibenz(a,h)anthracene	53-70-3	N.D.		0.040	1
00898	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.		0.090	1
00907	Benzo(g,h,i)perylene	191-24-2	N.D.		0.1	1
07409	Chrysene	218-01-9	N.D.		0.09	1
07410	Benzo(k)fluoranthene	207-08-9	N.D.		0.02	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 insufficient sample, the reporting limits for the HPLC PAH compounds were raised.

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis		Analyst	Dilution Fact.
				Date and Time			
00217	Kjeldahl Nitrogen	EPA 351.2	1	09/30/2001 17:19		Matthew J. Mercer	1
00219	Nitrite Nitrogen	EPA 353.2	1	09/26/2001 10:10		Matthew J. Mercer	1
00220	Nitrate Nitrogen	EPA 353.2	1	10/01/2001 14:43		Matthew J. Mercer	1
00221	Ammonia Nitrogen	EPA 350.2	1	09/27/2001 10:45		Michele L. Hanby	1
00226	Ortho-Phosphate as P	EPA 365.3	1	09/25/2001 23:30		Daniel S. Smith	1
00235	Biochemical Oxygen Demand	EPA 405.1	1	09/25/2001 23:53		Nicole R. Bushong	1
00273	Total Organic Carbon	EPA 415.1	1	09/26/2001 13:18		Timothy M. Petree	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	09/27/2001 17:22		Venia M. McFadden	1
01553	Chemical Oxygen Demand	EPA 410.2	1	10/01/2001 05:43		Susan A. Engle	1
08213	BTEX (8021)	SW-846 8021B	1	09/26/2001 17:27		Melissa-Ann S. McAlpine	1
00774	PAH's in Water by HPLC	SW-846 8310	1	10/06/2001 11:13		Mark Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	09/26/2001 17:27		Melissa-Ann S. McAlpine	n.
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	09/28/2001 09:40		James S. Mathiot	1



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

002200





Lancaster Laboratories Sample No. WW 3692584

Collected: 09/24/2001 15:35 by BS

Account Number: 07802

Submitted: 09/25/2001 09:35

Kerr-McGee Corporation

Reported: 10/10/2001 at 20:53

P.O. Box 25861

Discard: 11/10/2001

Oklahoma City OK 73125

MA3-TG5-3-240901-06 Grab Water Sample

Moss American Superfund Site - Milwaukee, WI

TG536 SDG#: MOA76-07

03337 PAH Water Extraction SW-846 3510C 1 09/27/2001 09:10 Amanda E. Wade 1

08264 Total Phos as PO4 Prep EPA 365.1 1 09/27/2001 09:40 James S. Mathiot 1  
(water)



Lancaster Laboratories, Inc.  
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000210



Lancaster Laboratories Sample No. WW 3692585

Collected: 09/24/2001 18:15

Account Number: 07802

Submitted: 09/25/2001 09:35

Kerr-McGee Corporation

Reported: 10/10/2001 at 20:53

P.O. Box 25861

Discard: 11/10/2001

Oklahoma City OK 73125

TB-03 Grab Water Sample

Moss American Superfund Site - Milwaukee, WI

TB03X SDG#: MOA76-08TB

CAT No.	Analysis Name	CAS Number	As Received Result	As Received	Units	Dilution Factor
				Method		
				Detection Limit		
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	Analysis		Analyst	Dilution Factor
			Trial#	Date and Time		
08213	BTEX (8021)	SW-846 8021B	1	09/26/2001 13:57	Melissa-Ann S. McAlpine	1
01146	GC VOA Water Prep	SW-846 5030B	1	09/26/2001 13:57	Melissa-Ann S. McAlpine	n.a.



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Lancaster Laboratories Sample No. **WW 3692586**

Collected: 09/24/2001 17:15 by BS

Account Number: 07802

Submitted: 09/25/2001 09:35

Kerr-McGee Corporation

Reported: 10/10/2001 at 20:53

P.O. Box 25861

Discard: 11/10/2001

Oklahoma City OK 73125

MA3-TG3-1-240901-07 Grab Water Sample

Moss American Superfund Site - Milwaukee, WI

TG317 SDG#: MOA76-09

CAT No.	Analysis Name	CAS Number	As Received Result	As Received		Units	Dilution Factor
				Method	Detection Limit		
00217	Kjeldahl Nitrogen	7727-37-9	2.5	0.30	mg/l	1	
00219	Nitrite Nitrogen	14797-65-0	N.D.	0.015	mg/l	1	
00220	Nitrate Nitrogen	14797-55-8	0.10	0.040	mg/l	1	
00221	Ammonia Nitrogen	7664-41-7	2.1	0.16	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	0.0065 J	0.0028	mg/l	1	
00235	Biochemical Oxygen Demand	n.a.	N.D.	5.3	mg/l	1	
00273	Total Organic Carbon	n.a.	20.6	0.60	mg/l	1	
The Total Organic Carbon (TOC) result reported above was determined by measuring total carbon by a persulfate digestion/infrared detection method on an acidified sample which has been purged of inorganic carbon using nitrogen. It represents "non-purgeable TOC".							
00345	Total Phosphorus as PO4 water	14265-44-2	0.68	0.13	mg/l	1	
01553	Chemical Oxygen Demand	n.a.	53.2	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	
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.	0.9	ug/l	1	
00782	Acenaphthylene	208-96-8	N.D.	0.8	ug/l	1	
00783	Acenaphthene	83-32-9	0.8 J	0.8	ug/l	1	
00784	Fluorene	86-73-7	0.67 J	0.20	ug/l	1	
00785	Phenanthrene	85-01-8	0.13 J	0.080	ug/l	1	
00789	Anthracene	120-12-7	0.2	0.040	ug/l	1	
00807	Fluoranthene	206-44-0	0.2	0.040	ug/l	1	



Lancaster Laboratories Sample No. **WW 3692586**

Collected: 09/24/2001 17:15 by **BS**

Account Number: **07802**

Submitted: 09/25/2001 09:35

Kerr-McGee Corporation

Reported: 10/10/2001 at 20:53

P.O. Box 25861

Discard: 11/10/2001

Oklahoma City OK 73125

MA3-TG3-1-240901-07 Grab Water Sample

Moss American Superfund Site - Milwaukee, WI

TG317 SDG#: MOA76-09

CAT No.	Analysis Name	CAS Number	As Received		As Received		Dilution Factor
			Result	J	Method	Units	
00811	Pyrene	129-00-0	0.30	J	0.20	ug/l	1
00812	Benzo(a)anthracene	56-55-3	N.D.		0.02	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.		0.02	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.		0.09	ug/l	1
07409	Chrysene	218-01-9	N.D.		0.08	ug/l	1
07410	Benzo(k)fluoranthene	207-08-9	N.D.		0.02	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	Analysis		Analyst	Dilution Factor
			Trial#	Date and Time		
00217	Kjeldahl Nitrogen	EPA 351.2	1	09/30/2001 17:20	Matthew J. Mercer	1
00219	Nitrite Nitrogen	EPA 353.2	1	09/26/2001 10:14	Matthew J. Mercer	1
00220	Nitrate Nitrogen	EPA 353.2	1	10/01/2001 14:46	Matthew J. Mercer	1
00221	Ammonia Nitrogen	EPA 350.2	1	09/27/2001 10:45	Michele L. Hanby	1
00226	Ortho-Phosphate as P	EPA 365.3	1	09/25/2001 23:30	Daniel S. Smith	1
00235	Biochemical Oxygen Demand	EPA 405.1	1	09/25/2001 23:53	Nicole R. Bushong	1
00273	Total Organic Carbon	EPA 415.1	1	09/26/2001 13:26	Timothy M. Petree	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	09/27/2001 17:23	Venia M. McFadden	1
01553	Chemical Oxygen Demand	EPA 410.2	1	10/01/2001 05:43	Susan A. Engle	1
08213	BTEX (8021)	SW-846 8021B	1	09/26/2001 18:02	Melissa-Ann S. McAlpine	1
00774	PAH's in Water by HPLC	SW-846 8310	1	10/06/2001 20:00	Mark Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	09/26/2001 18:02	Melissa-Ann S. McAlpine	n.a.
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	09/28/2001 09:40	James S. Mathiot	1
03337	PAH Water Extraction	SW-846 3510C	1	09/27/2001 09:10	Amanda E. Wade	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	09/27/2001 09:40	James S. Mathiot	1



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00337



Lancaster Laboratories Sample No. WW 3692586

Collected: 09/24/2001 17:15 by BS

Account Number: 07802

Submitted: 09/25/2001 09:35

Kerr-McGee Corporation

Reported: 10/10/2001 at 20:53

P.O. Box 25861

Discard: 11/10/2001

Oklahoma City OK 73125

MA3-TG3-1-240901-07 Grab Water Sample  
Moss American Superfund Site - Milwaukee, WI

TG317 SDG#: MOA76-09



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09/24/01



Lancaster Laboratories Sample No. WW 3692587

Collected: 09/24/2001 17:30 by BS

Account Number: 07802

Submitted: 09/25/2001 09:35

Kerr-McGee Corporation

Reported: 10/10/2001 at 20:53

P.O. Box 25861

Discard: 11/10/2001

Oklahoma City OK 73125

MA3-TG3-2-240901-08 Grab Water Sample

Moss American Superfund Site - Milwaukee, WI

TG328 SDG#: MOA76-10

CAT No.	Analysis Name	CAS Number	As Received Result	As Received		Units	Dilution Factor
				Method	Detection Limit		
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	1.0		0.16	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	0.063		0.0028	mg/l	1
00235	Biochemical Oxygen Demand	n.a.	3.6		0.80	mg/l	1
00273	Total Organic Carbon	n.a.	11.6		0.60	mg/l	1
The Total Organic Carbon (TOC) result reported above was determined by measuring total carbon by a persulfate digestion/infrared detection method on an acidified sample which has been purged of inorganic carbon using nitrogen. It represents "non-purgeable TOC".							
00345	Total Phosphorus as PO4 water	14265-44-2	0.51		0.13	mg/l	1
01553	Chemical Oxygen Demand	n.a.	29.4		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
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.	ug/l	1
00782	Acenaphthylene	208-96-8	N.D.		0.8	ug/l	1
00783	Acenaphthene	83-32-9	N.D.		0.8	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



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4-0105



Lancaster Laboratories Sample No. WW 3692587

Collected: 09/24/2001 17:30 by BS

Account Number: 07802

Submitted: 09/25/2001 09:35  
 Reported: 10/10/2001 at 20:53  
 Discard: 11/10/2001

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

MA3-TG3-2-240901-08 Grab Water Sample  
 Moss American Superfund Site - Milwaukee, WI

TG328 SDG#: MOA76-10

CAT No.	Analysis Name	CAS Number	As Received Result	As Received		Dilution Factor
				Method	Detection Limit	
00811	Pyrene	129-00-0	N.D.	0.20	ug/l	1
00812	Benzo(a)anthracene	56-55-3	N.D.	0.02	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.	0.02	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.	0.1	ug/l	1
07409	Chrysene	218-01-9	N.D.	0.08	ug/l	1
07410	Benzo(k)fluoranthene	207-08-9	N.D.	0.02	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 insufficient sample, the reporting limits for the HPLC PAH compounds were raised.

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Analysis		Analyst	Dilution Factor
			Trial#	Date and Time		
00217	Kjeldahl Nitrogen	EPA 351.2	1	09/30/2001 17:22	Matthew J. Mercer	1
00219	Nitrite Nitrogen	EPA 353.2	1	09/26/2001 10:15	Matthew J. Mercer	1
00220	Nitrate Nitrogen	EPA 353.2	1	10/01/2001 14:48	Matthew J. Mercer	1
00221	Ammonia Nitrogen	EPA 350.2	1	09/27/2001 07:15	Michele L. Hanby	1
00226	Ortho-Phosphate as P	EPA 365.3	1	09/25/2001 23:30	Daniel S. Smith	1
00235	Biochemical Oxygen Demand	EPA 405.1	1	09/25/2001 23:53	Nicole R. Bushong	1
00273	Total Organic Carbon	EPA 415.1	1	09/26/2001 13:34	Timothy M. Petree	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	09/27/2001 17:26	Venia M. McFadden	1
01553	Chemical Oxygen Demand	EPA 410.2	1	10/01/2001 05:43	Susan A. Engle	1
08213	BTEX (8021)	SW-846 8021B	1	09/26/2001 18:37	Melissa-Ann S. McAlpine	1
00774	PAH's in Water by HPLC	SW-846 8310	1	10/06/2001 20:31	Mark Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	09/26/2001 18:37	Melissa-Ann S. McAlpine	n.a.
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	09/28/2001 09:40	James S. Mathiot	1



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Lancaster Laboratories Sample No. WW 3692587

Collected: 09/24/2001 17:30 by BS

Account Number: 07802

Submitted: 09/25/2001 09:35

Kerr-McGee Corporation

Reported: 10/10/2001 at 20:53

P.O. Box 25861

Discard: 11/10/2001

Oklahoma City OK 73125

MA3-TG3-2-240901-08 Grab Water Sample

Moss American Superfund Site - Milwaukee, WI

TG328	SDG#: MOA76-10					
03337	PAH Water Extraction	SW-846 3510C	1	09/27/2001 09:10	Amanda E. Wade	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	09/27/2001 09:40	James S. Mathiot	1



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Lancaster Laboratories Sample No. WW 3692588

Collected: 09/24/2001 17:40 by BS

Account Number: 07802

Submitted: 09/25/2001 09:35

Kerr-McGee Corporation

Reported: 10/10/2001 at 20:53

P.O. Box 25861

Discard: 11/10/2001

Oklahoma City OK 73125

MA3-TG3-3-240901-09 Grab Water Sample

Moss American Superfund Site - Milwaukee, WI

TG339 SDG#: MOA76-11

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
00217	Kjeldahl Nitrogen The results obtained for Total Kjeldahl Nitrogen is less than the result obtained for Ammonia-N. The results for both analyses are within the acceptable criteria for duplicate analysis.	7727-37-9	1.4	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 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.	7664-41-7	1.5	0.16	mg/l	1
00226	Ortho-Phosphate as P	14265-44-2	0.021	0.0028	mg/l	1
00235	Biochemical Oxygen Demand	n.a.	N.D.	5.2	mg/l	1
00273	Total Organic Carbon The Total Organic Carbon (TOC) result reported above was determined by measuring total carbon by a persulfate digestion/infrared detection method on an acidified sample which has been purged of inorganic carbon using nitrogen. It represents "non-purgeable TOC".	n.a.	11.4	0.60	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	0.55	0.13	mg/l	1
01553	Chemical Oxygen Demand	n.a.	29.7	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 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.	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.	ug/l	1
00782	Acenaphthylene	208-96-8	N.D.	0.8	ug/l	1
00783	Acenaphthene	83-32-9	N.D.	0.8	ug/l	1
00784	Fluorene	86-73-7	N.D.	0.20	ug/l	1



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Lancaster Laboratories Sample No. WW 3692588

Collected: 09/24/2001 17:40 by BS

Account Number: 07802

Submitted: 09/25/2001 09:35

Kerr-McGee Corporation

Reported: 10/10/2001 at 20:53

P.O. Box 25861

Discard: 11/10/2001

Oklahoma City OK 73125

MA3-TG3-3-240901-09 Grab Water Sample

Moss American Superfund Site - Milwaukee, WI

TG339 SDG#: MOA76-11

CAT No.	Analysis Name	CAS Number	As Received Result	As Received		Dilution Factor
				Method	Units	
				Detection Limit		
00785	Phenanthrene	85-01-8	0.096 J	0.080	ug/l	1
00789	Anthracene	120-12-7	N.D.	0.040	ug/l	1
00807	Fluoranthene	206-44-0	0.10 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.	0.02	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.	0.02	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.	0.1	ug/l	1
07409	Chrysene	218-01-9	N.D.	0.08	ug/l	1
07410	Benzo(k)fluoranthene	207-08-9	N.D.	0.02	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		Analyst	Dilution Factor
				Date and Time			
00217	Kjeldahl Nitrogen	EPA 351.2	1	09/30/2001 17:28		Matthew J. Mercer	1
00219	Nitrite Nitrogen	EPA 353.2	1	09/26/2001 10:16		Matthew J. Mercer	1
00220	Nitrate Nitrogen	EPA 353.2	1	10/01/2001 14:51		Matthew J. Mercer	1
00221	Ammonia Nitrogen	EPA 350.2	1	09/27/2001 10:45		Michele L. Hanby	1
00226	Ortho-Phosphate as P	EPA 365.3	1	09/25/2001 23:30		Daniel S. Smith	1
00235	Biochemical Oxygen Demand	EPA 405.1	1	09/25/2001 23:53		Nicole R. Bushong	1
00273	Total Organic Carbon	EPA 415.1	1	09/26/2001 13:42		Timothy M. Petree	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	09/27/2001 17:26		Venia M. McFadden	1
01553	Chemical Oxygen Demand	EPA 410.2	1	10/02/2001 05:35		Susan A. Engle	1
08213	BTEX (8021)	SW-846 8021B	1	09/26/2001 20:29		Melissa-Ann S. McAlpine	1
00774	PAH's in Water by HPLC	SW-846 8310	1	10/06/2001 21:01		Mark Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	09/26/2001 20:29		Melissa-Ann S. McAlpine	n.a
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	09/28/2001 09:40		James S. Mathiot	1



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00-01-00-00



Lancaster Laboratories Sample No. WW 3692588

Collected: 09/24/2001 17:40 by BS

Account Number: 07802

Submitted: 09/25/2001 09:35

Kerr-McGee Corporation

Reported: 10/10/2001 at 20:53

P.O. Box 25861

Discard: 11/10/2001

Oklahoma City OK 73125

MA3-TG3-3-240901-09 Grab Water Sample

Moss American Superfund Site - Milwaukee, WI

TG339 SDG#: MOA76-11

03337 PAH Water Extraction SW-846 3510C 1 09/27/2001 09:10 Amanda E. Wade 1

08264 Total Phos as PO4 Prep EPA 365.1 1 09/27/2001 09:40 James S. Mathiot 1  
(water)



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Lancaster Laboratories Sample No. WW 3692589

Collected: 09/24/2001 18:10

Account Number: 07802

Submitted: 09/25/2001 09:35

Kerr-McGee Corporation

Reported: 10/10/2001 at 20:53

P.O. Box 25861

Discard: 11/10/2001

Oklahoma City OK 73125

TB-02 Grab Water Sample

Moss American Superfund Site - Milwaukee, WI

TB02X SDG#: MOA76-12TB\*

CAT No.	Analysis Name	CAS Number	As Received Result	As Received	Units	Dilution Factor
				Method Detection Limit		
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	Analysis		Analyst	Dilution Factor:
			Trial#	Date and Time		
08213	BTEX (8021)	SW-846 8021B	1	09/26/2001 14:32	Melissa-Ann S. McAlpine	1
01146	GC VOA Water Prep	SW-846 5030B	1	09/26/2001 14:32	Melissa-Ann S. McAlpine	n.a.



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0040

# Analysis Request/Environmental Services Chain of Custody



For Lancaster Laboratories use only  
 Acct. # 7802 Sample # 3692578-89

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

1 Client: <u>Kerr McGee</u> Acct. #: _____ Project Name/ #: <u>Moss American</u> PWSID #: _____ Project Manager: <u>Tom Gradn</u> P.O. #: _____ Sampler: <u>B Schaefer, J Trout, T Hanzely</u> Quote #: _____ Name of state where samples were collected: <u>WI</u>				Matrix 4 <input type="checkbox"/> Potable (Check if applicable) <input type="checkbox"/> Water <input type="checkbox"/> NPDES <input type="checkbox"/> Soil <input type="checkbox"/> Other		5 Analyses Requested O-Po4/BOD TKN/COD NH3/TP-PO4 PAH BTEX TOC NO3/NO2										For lab use only FSC: _____ SCR #: <u>1152105</u>	
Sample Identification			Date Collected	Time Collected	Grab	Composite	Total # of Containers	Remarks							Temperature of samples upon receipt (if requested)		
<u>MA3-TG6-1-240901-01</u>			<u>9/24/01</u>	<u>1115</u>	<input checked="" type="checkbox"/>		<u>10</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			
<u>MA3-TG6-2-240901-02</u>			<u>9/24/01</u>	<u>1120</u>	<input checked="" type="checkbox"/>		<u>10</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			
<u>MA3-TG6-3-240901-03</u>			<u>9/24/01</u>	<u>1130</u>	<input checked="" type="checkbox"/>		<u>10</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			
<u>TB-01</u>			<u>9/24/01</u>	<u>1805</u>	<input checked="" type="checkbox"/>		<u>2</u>				<input checked="" type="checkbox"/>						
7 Turnaround Time Requested (TAT) (please circle): Normal <input type="checkbox"/> Rush <input type="checkbox"/> (Rush TAT is subject to Lancaster Laboratories approval and surcharge.) Date results are needed: <u>STD TAT</u> Rush results requested by (please circle): Phone <input type="checkbox"/> Fax <input type="checkbox"/> Phone #: <u>647-918-4000</u> Fax #: <u>647-918-4055</u>							Relinquished by: <u>K. M. [Signature]</u> Date: <u>9/17-01</u> Time: <u>1400</u>		Received by: _____ Date: _____ Time: _____								
8 Data Package Options (please circle if requested) QC Summary Type VI (Raw Data) <u>PER QUOTE</u> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Type I (Tier I) GLP Type II (Tier II) Other Type III (NJ Red. Del.) Type IV (CLP)							Relinquished by: <u>Bruce [Signature]</u> Date: <u>9/24/01</u> Time: <u>1900</u>		Received by: _____ Date: _____ Time: _____								
SDG Complete? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Site-specific QC required? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> (If yes, indicate QC sample and submit triplicate volume.) Internal Chain of Custody required? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>							Relinquished by: _____ Date: _____ Time: _____		Received by: _____ Date: _____ Time: _____								
Relinquished by: _____ Date: _____ Time: _____							Relinquished by: _____ Date: _____ Time: _____		Received by: <u>[Signature]</u> Date: <u>9/25/01</u> Time: <u>0730</u>								

# Analysis Request/Environmental Services Chain of Custody



For Lancaster Laboratories use only  
 Acct. # 7802 Sample # 3692578-89

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

Client: <u>Kerr McGee</u>	Acct. #:	Matrix <sup>4</sup>	Analyses Requested <sup>5</sup>	For lab use only
Project Name/#: <u>Moss American</u>	PWSID #:	<input type="checkbox"/> Potable (check if applicable) <input type="checkbox"/> Water <input type="checkbox"/> NPDES <input type="checkbox"/> Other	NO <sub>2</sub> /NO <sub>3</sub> O-POLYBOD TKM/COD NH <sub>3</sub> /TP-PO <sub>4</sub> TOC BTEX PAH	FSC:
Project Manager: <u>Tom Givan</u>	P.O. #:			Total # of Containers
Sampler: <u>Schoefe, J Troast, T Manzely</u>	Quote #:			Temperature of samples upon receipt (if requested) <sup>6</sup>
Name of state where samples were collected: <u>WI</u>				

Sample Identification <sup>2</sup>	Date Collected	Time Collected	Grab <sup>3</sup>	Composite	Soil	Water	Other	Total # of Containers	Analyses Requested <sup>5</sup>	Remarks
MA3-TGS-1-240901-04	9/24/01	1505	X			X		10	X X X X X X X X	
MA3-TGS-2-240901-05	9/24/01	1515	X			X		10	X X X X X X X X	
MA3-TGS-3-240901-06	9/24/01	1535	X			X		10	X X X X X X X X	
TB-03	9/24/01	1815	X			X		2	X X X X X X X X	

<p><b>7 Turnaround Time Requested (TAT)</b> (please circle): Normal <input type="radio"/> Rush <input type="radio"/></p> <p>(Rush TAT is subject to Lancaster Laboratories approval and surcharge.)</p> <p>Date results are needed: <u>STD TAT</u></p> <p>Rush results requested by (please circle): Phone <input type="radio"/> Fax <input type="radio"/></p> <p>Phone #: <u>847-918-4000</u> Fax #: <u>847-918-4055</u></p>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td>Relinquished by: <u>X. J. [Signature]</u></td> <td>Date: <u>9/17/01</u></td> <td>Time: <u>1400</u></td> <td>Received by:</td> <td>Date:</td> <td>Time: <sup>9</sup></td> </tr> <tr> <td>Relinquished by: <u>Brenn [Signature]</u></td> <td>Date: <u>9/24/01</u></td> <td>Time: <u>1900</u></td> <td>Received by:</td> <td>Date:</td> <td>Time:</td> </tr> <tr> <td>Relinquished by:</td> <td>Date:</td> <td>Time:</td> <td>Received by:</td> <td>Date:</td> <td>Time:</td> </tr> <tr> <td>Relinquished by:</td> <td>Date:</td> <td>Time:</td> <td>Received by:</td> <td>Date:</td> <td>Time:</td> </tr> <tr> <td>Relinquished by:</td> <td>Date:</td> <td>Time:</td> <td>Received by: <u>[Signature]</u></td> <td>Date: <u>9/25/01</u></td> <td>Time: <u>0935</u></td> </tr> </table>	Relinquished by: <u>X. J. [Signature]</u>	Date: <u>9/17/01</u>	Time: <u>1400</u>	Received by:	Date:	Time: <sup>9</sup>	Relinquished by: <u>Brenn [Signature]</u>	Date: <u>9/24/01</u>	Time: <u>1900</u>	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: <u>[Signature]</u>	Date: <u>9/25/01</u>	Time: <u>0935</u>
Relinquished by: <u>X. J. [Signature]</u>	Date: <u>9/17/01</u>	Time: <u>1400</u>	Received by:	Date:	Time: <sup>9</sup>																										
Relinquished by: <u>Brenn [Signature]</u>	Date: <u>9/24/01</u>	Time: <u>1900</u>	Received by:	Date:	Time:																										
Relinquished by:	Date:	Time:	Received by:	Date:	Time:																										
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Relinquished by:	Date:	Time:	Received by: <u>[Signature]</u>	Date: <u>9/25/01</u>	Time: <u>0935</u>																										
<p><b>8 Data Package Options</b> (please circle if requested)</p> <p>QC Summary Type VI (Raw Data) <u>PER QUOTE</u></p> <p>Type I (Tier I) GLP</p> <p>Type II (Tier II) Other</p> <p>Type III (NJ Red. Del.)</p> <p>Type IV (CLP)</p>	<p>SDG Complete? Yes <input type="radio"/> No <input checked="" type="radio"/></p> <p>Site-specific QC required? Yes <input type="radio"/> No <input checked="" type="radio"/></p> <p>(If yes, indicate QC sample and submit triplicate volume.)</p> <p>Internal Chain of Custody required? Yes <input type="radio"/> No <input checked="" type="radio"/></p>																														

# Analysis Request/Environmental Services Chain of Custody



For Lancaster Laboratories use only  
 Acct. # 7802 Sample # 369258-89

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

Client: Kerrin McGee Acct. #: \_\_\_\_\_  
 Project Name: Mass American PWSID #: \_\_\_\_\_  
 Project Manager: Tom Grant P.O. #: \_\_\_\_\_  
 Sampler: B Schaefer, T Henzely, J Trost Quote #: \_\_\_\_\_  
 Name of state where samples were collected: VI

Sample Identification	Date Collected	Time Collected	Grab (3)	Composite	Matrix (4)				Total # of Containers	Analyses Requested (5)							Remarks	Temperature of samples upon receipt (if requested) (6)
					Soil	Water	Potable Water	NPDES		NO3/NO2	D-POY/BOD	TKN/LOD	NH3/TP-PO4	TOL	BTEX	PAH		
MA3-TG3-1-240901-07	9/24/01	1715	X			X			6	X	X	X	X	X	X			
MA3-TG3-2-240901-08	↓	1730	X			X			10	X	X	X	X	X	X			
MA3-TG3-3-240901-09	↓	1740	X			X			10	X	X	X	X	X	X			
TB-02	9/24/01	1810	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

Results requested by (please circle): Phone Fax  
 Phone #: 847-918-4000 Fax #: 847-918-4055

**Data Package Options** (please circle if requested) SDG Complete? Yes  No

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)

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
Relinquished by: <u>Brenn Schaefer</u>	9/24/01	1900			
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time

**Case Narrative**  
**SDG #: MOA76 continued**

**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 this analysis. Therefore, a LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.

No problems were encountered during the analysis of these samples.

**QUALITY CONTROL AND NONCONFORMANCE SUMMARY:**


All QC was within specifications.

**DATA INTERPRETATION:**

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

No further interpretation is necessary for the data submitted.

Case Narrative Reviewed and Approved by:

  
\_\_\_\_\_  
Charles J. Neslund  
Group Leader, GC/MS Semivolatiles

Date: 10/22/01



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

SAMPLE ANALYSES

LL Sample #	Sample Designation	Matrix Soil Water	Comments
3692578	TG611	X	
3692578MS	TG611	X	Matrix Spike
3692579	TG622	X	
3692580	TG633	X	
3692581	TB01X	X	
3692582	TG514	X	
3692583	TG525	X	
3692584	TG536	X	
3692585	TB03X	X	
3692586	TG317	X	
3692587	TG328	X	
3692588	TG339	X	
3692589	TB02X	X	

QUALITY CONTROL ANALYSES

BLK5501		X	Method Blank
LCS5501		X	Lab Control Sample
LDS5501		X	Lab Control Dup

SAMPLE PREPARATION

No sample preparation was necessary.

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.

No problems were encountered during analysis.

QUALITY CONTROL AND NONCONFORMANCE SUMMARY

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

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3

Case Narrative  
SDG# MOA76

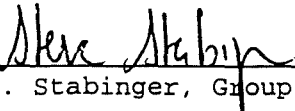
Client : Kerr-McGee Corporation  
Project: Moss American Superfund Site  
Milwaukee, WI  
Volatiles by GC - Water

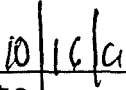
All QC was within specifications.

DATA INTERPRETATION

No explanation is necessary for the data submitted.

Narrative reviewed and approved by:

  
\_\_\_\_\_  
Steve J. Stabinger, Group Leader

  
\_\_\_\_\_  
Date



Where quality is a science.

CLIENT: Kerr-McGee Corporation  
SDG: MOA76

LANCASTER LABORATORIES  
INSTRUMENTAL WET CHEMISTRY

SAMPLE NUMBERS:

<u>Sample #</u>	<u>Sample Code</u>	<u>Comments</u>
3692578	TG611	
3692579	TG622	
3692580	TG633	
3692582	TG514	
3692583	TG525	
3692584	TG536	
3692586	TG317	
3692587	TG328	
3692588	TG339	

ANALYSIS:

Dilutions are listed in the table below:

Sample	Nitrate-N	TP as PO4	TOC
LCS	2	2	5

QUALITY CONTROL AND NONCONFORMANCE SUMMARY:

A number of analyte recoveries were out of specification. Refer to the matrix spike and duplicate forms for the specific analyte recoveries outside the QC limits.

DATA INTERPRETATION:

No further interpretation is necessary for the data submitted.

Case Narrative Reviewed and Approved by:

*Sandra J. Miller* Date: 10/9/01  
 Sandra J. Miller  
 Specialist/Coordinator

218



Where quality is a science.

CLIENT: Kerr-McGee Corporation  
SDG: MOA76

LANCASTER LABORATORIES

MISCELLANEOUS WET CHEMISTRY

SAMPLE NUMBERS:

<u>Sample #</u>	<u>Sample Code</u>	<u>Comments</u>
3692578	TG611	
3692579	TG622	
3692580	TG633	
3692582	TG514	
3692583	TG525	
3692584	TG536	
3692586	TG317	
3692587	TG328	
3692588	TG339	

ANALYSIS:

No problems were encountered during analysis.

QUALITY CONTROL AND NONCONFORMANCE SUMMARY:

The duplicate sample for the ammonia nitrogen (01270022101) analysis was out of specification.

The % RPD of the matrix spike and matrix spike duplicate sample for the biochemical oxygen demand analysis was out of specification.

Site-specific MS/MSD samples were not submitted for the ammonia nitrogen analysis. A LCS/LCD was performed to demonstrate precision and accuracy at a batch level.

DATA INTERPRETATION:

No further interpretation is necessary for the data submitted.

Case Narrative Reviewed and Approved by:

Date: 10.29.01

Sandra J. Miller  
Specialist/Coordinator

01270022101

**CASE NARRATIVE**

**Client: Kerr-McGee Corporation**  
**SDG #: MOA76**

LANCASTER LABORATORIES  
SEMIVOLATILES BY HPLC

**SAMPLE NUMBER(S) :**

<u>LL #'s</u>	<u>Sample Code</u>	<u>Matrix</u> <u>Water</u>	<u>Comments</u>
3692578	TG611	X	
3692579	TG622	X	
3692580	TG633	X	
3692582	TG514	X	
3692583	TG525	X	
3692584	TG536	X	
3692586	TG317	X	
3692587	TG328	X	
3692588	TG339	X	
<b>LABORATORY SUBMITTED QC:</b>			
SBLKWE269	SBLKWE2691	X	Method Blank
269WELCS	269WELCS1	X	Lab Control Sample
269WELCSD	269WELCSD1	X	Lab Control Sample Dup

**SAMPLE PREPARATION:**

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

<u>Sample Code</u>	<u>Volume</u>
TG536	904 mls
TG328	954 mls

No problems were encountered during the extraction of these samples.

**Kerr McGee  
Moss American  
MOA77**

**PAHs – SW846-8310**

Lab Sample No.	Sample Location	Date Collected	Date Analyzed
3693527	T-G4-1-250901-01	9/25/01	10/7/01
3693528	T-G4-2-250901-02	9/25/01	10/7/01
3693529	T-G4-3-250901-03	9/25/01	10/7/01
3693531	TG1-1-250901-04	9/25/01	10/7/01
3693532	TG1-1-250901-05	9/25/01	10/7/01
3693533	TG1-1-250901-06	9/25/01	10/7/01
3693535	TG2-1-250901-07	9/25/01	10/7/01
3693536	TG2-1-250901-07DP	9/25/01	10/7/01
3693537	TG2-1-250901-08	9/25/01	10/7/01
3693538	TG2-1-250901-09	9/25/01	10/7/01
3693542	MW5S-250901-10	9/25/01	10/7/01
3693543	MW30S-250901-11	9/25/01	10/7/01

**1. Holding Time:**

All samples were extracted on 9/28 and analyzed on 10/7/01. All holding times were acceptable.

**2. Method Blanks:**

There was one method blank associated with the samples (SBLKW12701). Results were free of contamination.

**3. Surrogate Recovery:**

All nitrobenzene surrogate recoveries on the primary column were within control limits. Nitrobenzene recoveries on the secondary column were all outside control limits. Triphenylene results were acceptable on both columns except TG104 and TG104DL results which were diluted out. No qualifications are required.

**4. Laboratory Control Sample:**

All LCS recoveries and RPDs were within control limits.

**5. Calibration:**

Calibration recoveries were acceptable.

**BTEX– SW846-8021**

Lab Sample No.	Sample Location	Date Collected	Date Analyzed
3693527	T-G4-1-250901-01	9/25/01	9/27/01
3693528	T-G4-2-250901-02	9/25/01	9/28/01
3693529	T-G4-3-250901-03	9/25/01	9/27/01
3693530	TB-06	9/25/01	9/27/01
3693531	TG1-1-250901-04	9/25/01	9/27/01
3693532	TG1-1-250901-05	9/25/01	9/27/01
3693533	TG1-1-250901-06	9/25/01	9/27/01

3693534	TB-05	9/25/01	9/27/01
3693535	TG2-1-250901-07	9/25/01	9/28/01
3693536	TG2-1-250901-07DP	9/25/01	9/28/01
3693537	TG2-1-250901-08	9/25/01	9/28/01
3693538	TG2-1-250901-09	9/25/01	9/28/01
3693541	TB-04	9/25/01	9/27/01
3693542	MW5S-250901-10	9/25/01	9/28/01
3693543	MW30S-250901-11	9/25/01	9/28/01
3693544	TB-07	9/25/01	9/27/01

1. Holding Times:

All samples were extracted on 9/27 or 9/28 and analyzed on 9/27 and 9/28/01. All holding times were acceptable.

2. Method Blank:

Two method blanks (BLK6808, BLK6809) were associated with the samples. The blanks were free of contamination.

3. Surrogate Recovery:

All surrogate recoveries were within the required control limits.

4. Laboratory Control Sample:

All LCS recoveries were within control limits.

5. Other:

Samples TB04, TB05, TB06, and TB07 are trip blanks. All blanks were free of contamination.

6. Calibration:

Calibration recoveries were acceptable.

Date Reviewed by: T. Balla



Date: 11/8/01



# 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 779492. Samples arrived at the laboratory on Wednesday, September 26, 2001.

### Client Description

### Lancaster Labs Number

MA3-T-G4-1-250901-01 Grab Water Sample	3693527
MA3-T-G4-2-250901-02 Grab Water Sample	3693528
MA3-T-G4-3-250901-03 Grab Water Sample	3693529
TB-06 Grab Water Sample	3693530
MA3-TG1-1-250901-04 Grab Water Sample	3693531
MA3-TG1-2-250901-05 Grab Water Sample	3693532
MA3-TG1-3-250901-06 Grab Water Sample	3693533
TB-05 Grab Water Sample	3693534
MA3-TG2-1-250901-07 Grab Water Sample	3693535
MA3-TG2-1-250901-07-DP Grab Water Sample	3693536
MA3-TG2-2-250901-08 Grab Water Sample	3693537
MA3-TG2-3-250901-09 Unspiked Grab Water Sample	3693538
MA3-TG2-3-250901-09 Matrix Spike Grab Water Sample	3693539
MA3-TG2-3-250901-09 Matrix Spike Dup Grab Water	3693540
TB-04 Grab Water Sample	3693541
MA3-MW5S-250901-10 Grab Water Sample	3693542
MA3-MW30S-250901-11 Grab Water Sample	3693543
TB-07 Grab Water Sample	3693544

### METHODOLOGY

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

1 COPY TO  
1 COPY TO

Kerr-McGee Corporation  
Roy F. Weston

Attn: Dr. Jeff Ostmeier  
Attn: Mr. Tom Graan



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

0010





1 COPY TO      Data Package Group

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

Respectfully Submitted,



**Jennifer N. Martell**  
**Sr. Chemist/Coordinator**



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

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Lancaster Laboratories Sample No. WW 3693527

Collected: 09/25/2001 09:50 by BS

Account Number: 07802

Submitted: 09/26/2001 09:20

Kerr-McGee Corporation

Reported: 10/18/2001 at 19:38

P.O. Box 25861

Discard: 11/18/2001

Oklahoma City OK 73125

MA3-T-G4-1-250901-01 Grab Water Sample

Moss American Superfund Site - Milwaukee, WI

G4101 SDG#: MOA77-01

CAT No.	Analysis Name	CAS Number	As Received		As Received		Dilution Factor
			Result	J	Method Detection Limit	Units	
00217	Kjeldahl Nitrogen	7727-37-9	0.71	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	0.047	J	0.040	mg/l	1
00221	Ammonia Nitrogen	7664-41-7	N.D.		0.16	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	0.021		0.0028	mg/l	1
00235	Biochemical Oxygen Demand	n.a.	N.D.		5.0	mg/l	1
The chosen aliquots for the QC duplicate sample analyzed with this sample did not yield acceptable dissolved oxygen readings according to EPA method 405.1. Therefore, no duplicate relative percent difference value could be calculated for the BOD QC summary.							
00273	Total Organic Carbon	n.a.	7.3		0.60	mg/l	1
The Total Organic Carbon (TOC) result reported above was determined by measuring total carbon by a persulfate digestion/infrared detection method on an acidified sample which has been purged of inorganic carbon using nitrogen. It represents "non-purgeable TOC".							
00345	Total Phosphorus as PO4 water	14265-44-2	0.44		0.13	mg/l	1
01553	Chemical Oxygen Demand	n.a.	17.8		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	1.4	J	0.9	ug/l	1
00782	Acenaphthylene	208-96-8	N.D.		0.8	ug/l	1
00783	Acenaphthene	83-32-9	N.D.		0.8	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



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

2001-10-18

Lancaster Laboratories Sample No. WW 3693527

Collected: 09/25/2001 09:50 by BS

Account Number: 07802

Submitted: 09/26/2001 09:20

Kerr-McGee Corporation

Reported: 10/18/2001 at 19:38

P.O. Box 25861

Discard: 11/18/2001

Oklahoma City OK 73125

MA3-T-G4-1-250901-01 Grab Water Sample

Moss American Superfund Site - Milwaukee, WI

G4101 SDG#: MOA77-01

CAT No.	Analysis Name	CAS Number	As Received Result	As Received		Dilution Factor
				Method Detection Limit	Units	
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.	0.02	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.	0.02	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.	0.09	ug/l	1
07409	Chrysene	218-01-9	N.D.	0.08	ug/l	1
07410	Benzo(k)fluoranthene	207-08-9	N.D.	0.02	ug/l	1

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Analysis		Analyst	Dilution Factor
			Trial#	Date and Time		
00217	Kjeldahl Nitrogen	EPA 351.2	2	09/30/2001 16:31	Matthew J. Mercer	1
00219	Nitrite Nitrogen	EPA 353.2	1	09/26/2001 19:38	Mark A. Buckwalter	1
00220	Nitrate Nitrogen	EPA 353.2	1	10/04/2001 14:24	Venia M. McFadden	1
00221	Ammonia Nitrogen	EPA 350.2	1	10/01/2001 08:10	Michele L. Hanby	1
00226	Ortho-Phosphate as P	EPA 365.3	1	09/27/2001 03:15	Daniel S. Smith	1
00235	Biochemical Oxygen Demand	EPA 405.1	1	09/26/2001 21:43	Nicole R. Bushong	1
00273	Total Organic Carbon	EPA 415.1	1	10/01/2001 14:14	Timothy M. Petree	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	09/27/2001 17:27	Venia M. McFadden	1
01553	Chemical Oxygen Demand	EPA 410.2	1	10/02/2001 05:35	Susan A. Engle	1
08213	BTEX (8021)	SW-846 8021B	1	09/27/2001 19:31	Barry R. Shoemaker	1
00774	PAH's in Water by HPLC	SW-846 8310	1	10/07/2001 08:44	Mark Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	09/27/2001 19:31	Barry R. Shoemaker	n.a
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	09/28/2001 14:40	Nancy J. Shoop	1
03337	PAH Water Extraction	SW-846 3510C	1	09/28/2001 08:00	Ginelle L. Haines	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	09/27/2001 09:40	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

Lancaster Laboratories Sample No. WW 3693528

Collected: 09/25/2001 10:00 by BS

Account Number: 07802

Submitted: 09/26/2001 09:20

Kerr-McGee Corporation

Reported: 10/18/2001 at 19:38

P.O. Box 25861

Discard: 11/18/2001

Oklahoma City OK 73125

MA3-T-G4-2-250901-02 Grab Water Sample

Moss American Superfund Site - Milwaukee, WI

G4202 SDG#: MOA77-02

CAT No.	Analysis Name	CAS Number	As Received		Units	Dilution Factor
			As Received Result	Method Detection Limit		
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	0.95 J	0.16	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	0.058	0.0028	mg/l	1
00235	Biochemical Oxygen Demand	n.a.	N.D.	5.4	mg/l	1
The chosen aliquots for the QC duplicate sample analyzed with this sample did not yield acceptable dissolved oxygen readings according to EPA method 405.1. Therefore, no duplicate relative percent difference value could be calculated for the BOD QC summary.						
00273	Total Organic Carbon	n.a.	9.7	0.60	mg/l	1
The Total Organic Carbon (TOC) result reported above was determined by measuring total carbon by a persulfate digestion/infrared detection method on an acidified sample which has been purged of inorganic carbon using nitrogen. It represents "non-purgeable TOC".						
00345	Total Phosphorus as PO4 water	14265-44-2	0.34	0.13	mg/l	1
01553	Chemical Oxygen Demand	n.a.	25.7	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.	0.9	ug/l	1
00782	Acenaphthylene	208-96-8	N.D.	0.8	ug/l	1
00783	Acenaphthene	83-32-9	N.D.	0.8	ug/l	1
00784	Fluorene	86-73-7	N.D.	0.20	ug/l	1
00785	Phenanthrene	85-01-8	0.12 J	0.080	ug/l	1
00789	Anthracene	120-12-7	0.14 J	0.040	ug/l	1



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0014

Lancaster Laboratories Sample No. WW 3693528

Collected: 09/25/2001 10:00 by BS

Account Number: 07802

Submitted: 09/26/2001 09:20

Kerr-McGee Corporation

Reported: 10/18/2001 at 19:38

P.O. Box 25861

Discard: 11/18/2001

Oklahoma City OK 73125

MA3-T-G4-2-250901-02 Grab Water Sample

Moss American Superfund Site - Milwaukee, WI

G4202 SDG#: MOA77-02

CAT No.	Analysis Name	CAS Number	As Received Result	As Received		Dilution Factor
				Method	Detection Limit	
00807	Fluoranthene	206-44-0	0.3		0.040	ug/l 1
00811	Pyrene	129-00-0	0.29	J	0.20	ug/l 1
00812	Benzo(a)anthracene	56-55-3	N.D.		0.02	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.		0.02	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.		0.09	ug/l 1
07409	Chrysene	218-01-9	N.D.		0.08	ug/l 1
07410	Benzo(k)fluoranthene	207-08-9	N.D.		0.02	ug/l 1

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Analysis		Analyst	Dilution Factor
			Trial#	Date and Time		
00217	Kjeldahl Nitrogen	EPA 351.2	2	09/30/2001 16:34	Matthew J. Mercer	1
00219	Nitrite Nitrogen	EPA 353.2	1	09/26/2001 19:39	Mark A. Buckwalter	1
00220	Nitrate Nitrogen	EPA 353.2	1	10/04/2001 14:25	Venia M. McFadden	1
00221	Ammonia Nitrogen	EPA 350.2	1	10/01/2001 08:10	Michele L. Hanby	1
00226	Ortho-Phosphate as P	EPA 365.3	1	09/27/2001 03:15	Daniel S. Smith	1
00235	Biochemical Oxygen Demand	EPA 405.1	1	09/26/2001 21:43	Nicole R. Bushong	1
00273	Total Organic Carbon	EPA 415.1	1	10/01/2001 14:22	Timothy M. Petree	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	09/27/2001 17:28	Venia M. McFadden	1
01553	Chemical Oxygen Demand	EPA 410.2	1	10/02/2001 05:35	Susan A. Engle	1
08213	BTEX (8021)	SW-846 8021B	1	09/28/2001 05:45	Barry R. Shoemaker	1
00774	PAH's in Water by HPLC	SW-846 8310	1	10/07/2001 09:45	Mark Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	09/28/2001 05:45	Barry R. Shoemaker	n.a.
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	09/28/2001 14:40	Nancy J. Shoop	1
03337	PAH Water Extraction	SW-846 3510C	1	09/28/2001 08:00	Ginelle L. Haines	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	09/27/2001 09:40	James S. Mathiot	1



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Lancaster Laboratories Sample No. WW 3693529

Collected: 09/25/2001 10:10 by BS

Account Number: 07802

Submitted: 09/26/2001 09:20

Kerr-McGee Corporation

Reported: 10/18/2001 at 19:38

P.O. Box 25861

Discard: 11/18/2001

Oklahoma City OK 73125

MA3-T-G4-3-250901-03 Grab Water Sample

Moss American Superfund Site - Milwaukee, WI

G4303 SDG#: MOA77-03

CAT No.	Analysis Name	CAS Number	As Received Result	As Received		Units	Dilution Factor
				Method	Detection Limit		
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	1.0		0.16	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	0.222		0.0028	mg/l	1
This sample was analyzed on 09/27/01 for Orthophosphate and yielded a result of 0.222 mg/L. However, this result was higher than the result yielded for Total Phosphorous. Therefore, this sample was re-analyzed in duplicate on 10/02/01, past the 48 hour hold time for Orthophosphate. The second trial yielded a result of 0.030 mg/L and the third trial yielded a result of 0.023 mg/L. The first trial was verified because it was analyzed within the holding time.							
00235	Biochemical Oxygen Demand	n.a.	N.D.		5.1	mg/l	1
The chosen aliquots for the QC duplicate sample analyzed with this sample did not yield acceptable dissolved oxygen readings according to EPA method 405.1. Therefore, no duplicate relative percent difference value could be calculated for the BOD QC summary.							
00273	Total Organic Carbon	n.a.	8.5		0.60	mg/l	1
The Total Organic Carbon (TOC) result reported above was determined by measuring total carbon by a persulfate digestion/infrared detection method on an acidified sample which has been purged of inorganic carbon using nitrogen. It represents "non-purgeable TOC".							
00345	Total Phosphorus as PO4 water	14265-44-2	0.43		0.13	mg/l	1
01553	Chemical Oxygen Demand	n.a.	21.6		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						



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0016

Lancaster Laboratories Sample No. WW 3693529

Collected: 09/25/2001 10:10 by BS

Account Number: 07802

Submitted: 09/26/2001 09:20

Kerr-McGee Corporation

Reported: 10/18/2001 at 19:38

P.O. Box 25861

Discard: 11/18/2001

Oklahoma City OK 73125

MA3-T-G4-3-250901-03 Grab Water Sample

Moss American Superfund Site - Milwaukee, WI

G4303 SDG#: MOA77-03

CAT No.	Analysis Name	CAS Number	As Received Result	As Received		Dilution Factor
				Method	Units	
			Detection Limit			
00775	Naphthalene	91-20-3	N.D.	0.9	ug/l	1
00782	Acenaphthylene	208-96-8	N.D.	0.8	ug/l	1
00783	Acenaphthene	83-32-9	N.D.	0.8	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.	0.02	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.	0.02	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.	0.09	ug/l	1
07409	Chrysene	218-01-9	N.D.	0.08	ug/l	1
07410	Benzo(k)fluoranthene	207-08-9	N.D.	0.02	ug/l	1

Laboratory Chronicle

CAT No.	Analysis Name	Method	Analysis		Analyst	Dilution Factor
			Trial#	Date and Time		
00217	Kjeldahl Nitrogen	EPA 351.2	2	09/30/2001 16:36	Matthew J. Mercer	1
00219	Nitrite Nitrogen	EPA 353.2	1	09/26/2001 19:40	Mark A. Buckwalter	1
00220	Nitrate Nitrogen	EPA 353.2	1	10/04/2001 14:27	Venia M. McFadden	1
00221	Ammonia Nitrogen	EPA 350.2	1	10/01/2001 08:10	Michele L. Hanby	1
00226	Ortho-Phosphate as P	EPA 365.3	1	09/27/2001 03:15	Daniel S. Smith	1
00235	Biochemical Oxygen Demand	EPA 405.1	1	09/26/2001 21:43	Nicole R. Bushong	1
00273	Total Organic Carbon	EPA 415.1	1	10/01/2001 14:30	Timothy M. Petree	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	09/27/2001 17:29	Venia M. McFadden	1
01553	Chemical Oxygen Demand	EPA 410.2	1	10/02/2001 05:35	Susan A. Engle	1
08213	BTEX (8021)	SW-846 8021B	1	09/27/2001 20:05	Barry R. Shoemaker	1
00774	PAH's in Water by HPLC	SW-846 8310	1	10/07/2001 10:15	Mark Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	09/27/2001 20:05	Barry R. Shoemaker	n.a.
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	09/28/2001 14:40	Nancy J. Shoop	1



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Lancaster Laboratories Sample No. WW 3693529

Collected: 09/25/2001 10:10 by BS

Account Number: 07802

Submitted: 09/26/2001 09:20

Kerr-McGee Corporation

Reported: 10/18/2001 at 19:38

P.O. Box 25861

Discard: 11/18/2001

Oklahoma City OK 73125

MA3-T-G4-3-250901-03 Grab Water Sample

Moss American Superfund Site - Milwaukee, WI

G4303 SDG#: MOA77-03

03337 PAH Water Extraction

SW-846 3510C

1 09/28/2001 08:00

Ginelle L. Haines

1

08264 Total Phos as PO4 Prep  
(water)

EPA 365.1

1 09/27/2001 09:40

James S. Mathiot

1





Lancaster Laboratories Sample No. WW 3693530

Collected: 09/25/2001 15:40 by BS

Account Number: 07802

Submitted: 09/26/2001 09:20

Kerr-McGee Corporation

Reported: 10/18/2001 at 19:39

P.O. Box 25861

Discard: 11/18/2001

Oklahoma City OK 73125

TB-06 Grab Water Sample

Moss American Superfund Site - Milwaukee, WI

TG4T6 SDG#: MOA77-04TB

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	Analysis		Analyst	Dilution Factor
			Trial#	Date and Time		
08213	BTEX (8021)	SW-846 8021B	1	09/27/2001 17:16	Barry R. Shoemaker	1
01146	GC VOA Water Prep	SW-846 5030B	1	09/27/2001 17:16	Barry R. Shoemaker	n.a.



0019

Lancaster Laboratories Sample No. WW 3693531

Collected: 09/25/2001 11:15 by BS

Account Number: 07802

Submitted: 09/26/2001 09:20

Kerr-McGee Corporation

Reported: 10/18/2001 at 19:39

P.O. Box 25861

Discard: 11/18/2001

Oklahoma City OK 73125

MA3-TG1-1-250901-04 Grab Water Sample

Moss American Superfund Site - Milwaukee, WI

TG104 SDG#: MOA77-05

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	0.62 J		0.16	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	0.166		0.0028	mg/l	1
This sample was analyzed on 09/27/01 for Orthophosphate and yielded a result of 0.166 mg/L. However, this result was higher than the result yielded for Total Phosphorous. Therefore, the sample was re-analyzed on 10/02/01, past the 48 hour hold time for Orthophosphate. The second trial yielded a result of N.D. mg/L. The first trial was verified because it was ran within the holding time.							
00235	Biochemical Oxygen Demand	n.a.	8.3		0.80	mg/l	1
The chosen aliquots for the QC duplicate sample analyzed with this sample did not yield acceptable dissolved oxygen readings according to EPA method 405.1. Therefore, no duplicate relative percent difference value could be calculated for the BOD QC summary.							
00273	Total Organic Carbon	n.a.	9.6		0.60	mg/l	1
The Total Organic Carbon (TOC) result reported above was determined by measuring total carbon by a persulfate digestion/infrared detection method on an acidified sample which has been purged of inorganic carbon using nitrogen. It represents "non-purgeable TOC".							
00345	Total Phosphorus as PO4 water	14265-44-2	0.31		0.13	mg/l	1
01553	Chemical Oxygen Demand	n.a.	82.5		1.7	mg/l	1
08213	BTEX (8021)						
00776	Benzene	71-43-2	3.1 J		1.0	ug/l	5
00777	Toluene	108-88-3	N.D.		1.0	ug/l	5
00778	Ethylbenzene	100-41-4	15.		1.0	ug/l	5
00779	Total Xylenes	1330-20-7	24.		3.0	ug/l	5
The reporting limits were raised because sample dilution was necessary to bring non-target compounds into the calibration range of the system.							



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000000

Lancaster Laboratories Sample No. WW 3693531

Collected: 09/25/2001 11:15 by BS

Account Number: 07802

Submitted: 09/26/2001 09:20

Kerr-McGee Corporation

Reported: 10/18/2001 at 19:39

P.O. Box 25861

Discard: 11/18/2001

Oklahoma City OK 73125

MA3-TG1-1-250901-04 Grab Water Sample

Moss American Superfund Site - Milwaukee, WI

TG104 SDG#: MOA77-05

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	2,400.	20.	ug/l	20
00782	Acenaphthylene	208-96-8	80. J	20.	ug/l	20
00783	Acenaphthene	83-32-9	500.	20.	ug/l	20
00784	Fluorene	86-73-7	410.	3.0	ug/l	20
00785	Phenanthrene	85-01-8	960.	8.0	ug/l	100
00789	Anthracene	120-12-7	120.	0.80	ug/l	20
00807	Fluoranthene	206-44-0	430.	4.0	ug/l	100
00811	Pyrene	129-00-0	410.	3.0	ug/l	20
00812	Benzo(a)anthracene	56-55-3	90.	2.	ug/l	100
00818	Benzo(b)fluoranthene	205-99-2	32.	0.80	ug/l	20
00823	Benzo(a)pyrene	50-32-8	33.	0.4	ug/l	20
00895	Dibenz(a,h)anthracene	53-70-3	4.	0.80	ug/l	20
00898	Indeno(1,2,3-cd)pyrene	193-39-5	17.	2.0	ug/l	20
00907	Benzo(g,h,i)perylene	191-24-2	8. J	2.	ug/l	20
07409	Chrysene	218-01-9	78.	2.	ug/l	20
07410	Benzo(k)fluoranthene	207-08-9	17.	0.4	ug/l	20

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	2	09/30/2001 16:37	Matthew J. Mercer	1
00219	Nitrite Nitrogen	EPA 353.2	1	09/26/2001 19:42	Mark A. Buckwalter	1
00220	Nitrate Nitrogen	EPA 353.2	1	10/04/2001 14:28	Venia M. McFadden	1
00221	Ammonia Nitrogen	EPA 350.2	1	10/01/2001 08:10	Michele L. Hanby	1
00226	Ortho-Phosphate as P	EPA 365.3	1	09/27/2001 03:15	Daniel S. Smith	01
00235	Biochemical Oxygen Demand	EPA 405.1	1	09/26/2001 21:43	Nicole R. Bushong	01
00273	Total Organic Carbon	EPA 415.1	1	10/01/2001 14:38	Timothy M. Petree	01



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Lancaster Laboratories Sample No. WW 3693531

Collected: 09/25/2001 11:15 by BS

Account Number: 07802

Submitted: 09/26/2001 09:20

Kerr-McGee Corporation

Reported: 10/18/2001 at 19:39

P.O. Box 25861

Discard: 11/18/2001

Oklahoma City OK 73125

MA3-TG1-1-250901-04 Grab Water Sample

Moss American Superfund Site - Milwaukee, WI

TG104	SDG#: MOA77-05					
00345	Total Phosphorus as PO4 water	EPA 365.1	1	09/27/2001 17:30	Venia M. McFadden	1
01553	Chemical Oxygen Demand	EPA 410.2	1	10/02/2001 05:35	Susan A. Engle	1
08213	BTEX (8021)	SW-846 8021B	1	09/27/2001 21:46	Barry R. Shoemaker	5
00774	PAH's in Water by HPLC	SW-846 8310	1	10/07/2001 14:24	Mark Clark	20
00774	PAH's in Water by HPLC	SW-846 8310	1	10/09/2001 01:44	Mark Clark	100
01146	GC VOA Water Prep	SW-846 5030B	1	09/27/2001 21:46	Barry R. Shoemaker	n.a.
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	09/28/2001 14:40	Nancy J. Shoop	1
03337	PAH Water Extraction	SW-846 3510C	1	09/28/2001 08:00	Ginelle L. Haines	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	09/27/2001 09:40	James S. Mathiot	1



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0  
0  
2  
2

Lancaster Laboratories Sample No. WW 3693532

Collected: 09/25/2001 11:25 by BS

Account Number: 07802

Submitted: 09/26/2001 09:20

Kerr-McGee Corporation

Reported: 10/18/2001 at 19:39

P.O. Box 25861

Discard: 11/18/2001

Oklahoma City OK 73125

MA3-TG1-2-250901-05 Grab Water Sample

Moss American Superfund Site - Milwaukee, WI

TG105 SDG#: MOA77-06

CAT No.	Analysis Name	CAS Number	As Received Result	As Received		Units	Dilution Factor
				Method	Detection Limit		
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	1.0	0.16		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	0.089	0.0028		mg/l	1
00235	Biochemical Oxygen Demand	n.a.	4.7	0.80		mg/l	1
The chosen aliquots for the QC duplicate sample analyzed with this sample did not yield acceptable dissolved oxygen readings according to EPA method 405.1. Therefore, no duplicate relative percent difference value could be calculated for the BOD QC summary.							
00273	Total Organic Carbon	n.a.	10.6	0.60		mg/l	1
The Total Organic Carbon (TOC) result reported above was determined by measuring total carbon by a persulfate digestion/infrared detection method on an acidified sample which has been purged of inorganic carbon using nitrogen. It represents "non-purgeable TOC".							
00345	Total Phosphorus as PO4 water	14265-44-2	0.44	0.13		mg/l	1
01553	Chemical Oxygen Demand	n.a.	29.0	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	0.25 J	0.20		ug/l	1
00778	Ethylbenzene	100-41-4	0.60 J	0.20		ug/l	1
00779	Total Xylenes	1330-20-7	0.70 J	0.60		ug/l	1
00774	PAH's in Water by HPLC						
00775	Naphthalene	91-20-3	72.	1.		ug/l	1
00782	Acenaphthylene	208-96-8	N.D.	8.		ug/l	1
00783	Acenaphthene	83-32-9	40.	0.8		ug/l	1
00784	Fluorene	86-73-7	10.	0.20		ug/l	1
00785	Phenanthrene	85-01-8	13.	0.080		ug/l	1
00789	Anthracene	120-12-7	2.1	0.040		ug/l	1



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Lancaster Laboratories Sample No. WW 3693532

Collected: 09/25/2001 11:25 by BS

Account Number: 07802

Submitted: 09/26/2001 09:20  
Reported: 10/18/2001 at 19:39  
Discard: 11/18/2001

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

MA3-TG1-2-250901-05 Grab Water Sample  
Moss American Superfund Site - Milwaukee, WI

TG105 SDG#: MOA77-06

CAT No.	Analysis Name	CAS Number	As Received Result	As Received		Units	Dilution Factor
				Method	Detection Limit		
00807	Fluoranthene	206-44-0	3.4		0.040	ug/l	1
00811	Pyrene	129-00-0	2.8		0.20	ug/l	1
00812	Benzo(a)anthracene	56-55-3	0.12		0.02	ug/l	1
00818	Benzo(b)fluoranthene	205-99-2	N.D.		0.040	ug/l	1
00823	Benzo(a)pyrene	50-32-8	0.02	J	0.02	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.		0.1	ug/l	1
07409	Chrysene	218-01-9	0.10	J	0.08	ug/l	1
07410	Benzo(k)fluoranthene	207-08-9	N.D.		0.02	ug/l	1

Due to the presence of an interferent near its retention time, the normal reporting limit was not attained for acenaphthylene. The reporting limit for this compound was raised accordingly.

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Analysis		Analyst	Dilution Factor
			Trial#	Date and Time		
00217	Kjeldahl Nitrogen	EPA 351.2	2	09/30/2001 16:41	Matthew J. Mercer	1
00219	Nitrite Nitrogen	EPA 353.2	1	09/26/2001 19:43	Mark A. Buckwalter	1
00220	Nitrate Nitrogen	EPA 353.2	1	10/04/2001 14:29	Venia M. McFadden	1
00221	Ammonia Nitrogen	EPA 350.2	1	10/01/2001 08:10	Michele L. Hanby	1
00226	Ortho-Phosphate as P	EPA 365.3	1	09/27/2001 03:15	Daniel S. Smith	1
00235	Biochemical Oxygen Demand	EPA 405.1	1	09/26/2001 21:43	Nicole R. Bushong	1
00273	Total Organic Carbon	EPA 415.1	1	10/01/2001 14:46	Timothy M. Petree	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	09/27/2001 17:31	Venia M. McFadden	1
01553	Chemical Oxygen Demand	EPA 410.2	1	10/04/2001 05:38	Susan A. Engle	1
08213	BTEX (8021)	SW-846 8021B	1	09/27/2001 20:39	Barry R. Shoemaker	1
00774	PAH's in Water by HPLC	SW-846 8310	1	10/07/2001 10:46	Mark Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	09/27/2001 20:39	Barry R. Shoemaker	n.a.
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	09/28/2001 14:40	Nancy J. Shoop	1
03337	PAH Water Extraction	SW-846 3510C	1	09/28/2001 08:00	Ginelle L. Haines	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	09/27/2001 09:40	James S. Mathiot	1



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Lancaster Laboratories Sample No. WW 3693532

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MA3-TG1-2-250901-05 Grab Water Sample

Moss American Superfund Site - Milwaukee, WI

TG105 SDG#: MOA77-06



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Lancaster Laboratories Sample No. WW 3693533

Collected: 09/25/2001 11:35 by BS

Account Number: 07802

Submitted: 09/26/2001 09:20

Kerr-McGee Corporation

Reported: 10/18/2001 at 19:39

P.O. Box 25861

Discard: 11/18/2001

Oklahoma City OK 73125

MA3-TG1-3-250901-06 Grab Water Sample

Moss American Superfund Site - Milwaukee, WI

TG106 SDG#: MOA77-07

CAT No.	Analysis Name	CAS Number	As Received		As Received		Dilution Factor
			Result	J	Method Detection Limit	Units	
00217	Kjeldahl Nitrogen	7727-37-9	0.91	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	0.051	J	0.040	mg/l	1
00221	Ammonia Nitrogen	7664-41-7	0.37	J	0.16	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	0.095		0.0028	mg/l	1
00235	Biochemical Oxygen Demand	n.a.	2.96	J	0.80	mg/l	1
The chosen aliquots for the QC duplicate sample analyzed with this sample did not yield acceptable dissolved oxygen readings according to EPA method 405.1. Therefore, no duplicate relative percent difference value could be calculated for the BOD QC summary.							
00273	Total Organic Carbon	n.a.	7.1		0.60	mg/l	1
The Total Organic Carbon (TOC) result reported above was determined by measuring total carbon by a persulfate digestion/infrared detection method on an acidified sample which has been purged of inorganic carbon using nitrogen. It represents "non-purgeable TOC".							
00345	Total Phosphorus as PO4 water	14265-44-2	0.44		0.13	mg/l	1
01553	Chemical Oxygen Demand	n.a.	17.4		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.	ug/l	1
00782	Acenaphthylene	208-96-8	N.D.		0.8	ug/l	1
00783	Acenaphthene	83-32-9	N.D.		0.8	ug/l	1
00784	Fluorene	86-73-7	0.20	J	0.20	ug/l	1
00785	Phenanthrene	85-01-8	0.085	J	0.080	ug/l	1
00789	Anthracene	120-12-7	N.D.		0.040	ug/l	1



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Submitted: 09/26/2001 09:20

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Discard: 11/18/2001

Oklahoma City OK 73125

MA3-TG1-3-250901-06 Grab Water Sample

Moss American Superfund Site - Milwaukee, WI

TG106 SDG#: MOA77-07

CAT No.	Analysis Name	CAS Number	As Received Result	As Received		Dilution Factor
				Method	Units	
00807	Fluoranthene	206-44-0	0.055 J	Detection Limit	ug/l	1
00811	Pyrene	129-00-0	N.D.	0.20	ug/l	1
00812	Benzo(a)anthracene	56-55-3	N.D.	0.02	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.	0.02	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.	0.1	ug/l	1
07409	Chrysene	218-01-9	N.D.	0.08	ug/l	1
07410	Benzo(k)fluoranthene	207-08-9	N.D.	0.02	ug/l	1

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Analysis		Analyst	Dilution Factor
			Trial#	Date and Time		
00217	Kjeldahl Nitrogen	EPA 351.2	2	09/30/2001 16:42	Matthew J. Mercer	1
00219	Nitrite Nitrogen	EPA 353.2	1	09/26/2001 19:47	Mark A. Buckwalter	1
00220	Nitrate Nitrogen	EPA 353.2	1	10/04/2001 14:30	Venia M. McFadden	1
00221	Ammonia Nitrogen	EPA 350.2	1	10/01/2001 08:10	Michele L. Hanby	1
00226	Ortho-Phosphate as P	EPA 365.3	1	09/27/2001 03:15	Daniel S. Smith	1
00235	Biochemical Oxygen Demand	EPA 405.1	1	09/26/2001 21:43	Nicole R. Bushong	1
00273	Total Organic Carbon	EPA 415.1	1	10/01/2001 14:54	Timothy M. Petree	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	09/27/2001 17:32	Venia M. McFadden	1
01553	Chemical Oxygen Demand	EPA 410.2	1	10/04/2001 05:38	Susan A. Engle	1
08213	BTEX (8021)	SW-846 8021B	1	09/27/2001 21:12	Barry R. Shoemaker	1
00774	PAH's in Water by HPLC	SW-846 8310	1	10/07/2001 11:17	Mark Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	09/27/2001 21:12	Barry R. Shoemaker	n.a
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	09/28/2001 14:40	Nancy J. Shoop	1
03337	PAH Water Extraction	SW-846 3510C	1	09/28/2001 08:00	Ginelle L. Haines	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	09/27/2001 09:40	James S. Mathiot	1



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Lancaster Laboratories Sample No. WW 3693534

Collected: 09/25/2001 15:35 by BS

Account Number: 07802

Submitted: 09/26/2001 09:20

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Reported: 10/18/2001 at 19:39

P.O. Box 25861

Discard: 11/18/2001

Oklahoma City OK 73125

TB-05 Grab Water Sample

Moss American Superfund Site - Milwaukee, WI

G1TB5 SDG#: MOA77-08TB

CAT No.	Analysis Name	CAS Number	As Received Result	As Received		Units	Dilution Factor
				Method	Detection Limit		
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	Analysis		Analyst	Dilution Factor
			Trial#	Date and Time		
08213	BTEX (8021)	SW-846 8021B	1	09/27/2001 17:50	Barry R. Shoemaker	1
01146	GC VOA Water Prep	SW-846 5030B	1	09/27/2001 17:50	Barry R. Shoemaker	n.a.



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Lancaster Laboratories Sample No. WW 3693535

Collected: 09/25/2001 14:45 by BS

Account Number: 07802

Submitted: 09/26/2001 09:20

Kerr-McGee Corporation

Reported: 10/18/2001 at 19:39

P.O. Box 25861

Discard: 11/18/2001

Oklahoma City OK 73125

MA3-TG2-1-250901-07 Grab Water Sample

Moss American Superfund Site - Milwaukee, WI

TG207 SDG#: MOA77-09

CAT No.	Analysis Name	CAS Number	As Received Result	As Received		Units	Dilution Factor
				Method	Detection Limit		
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	0.21 J	0.16		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	0.0130 J	0.0028		mg/l	1
00235	Biochemical Oxygen Demand	n.a.	N.D.	4.4		mg/l	1
The chosen aliquots for the QC duplicate sample analyzed with this sample did not yield acceptable dissolved oxygen readings according to EPA method 405.1. Therefore, no duplicate relative percent difference value could be calculated for the BOD QC summary.							
00273	Total Organic Carbon	n.a.	2.6	0.60		mg/l	1
The Total Organic Carbon (TOC) result reported above was determined by measuring total carbon by a persulfate digestion/infrared detection method on an acidified sample which has been purged of inorganic carbon using nitrogen. It represents "non-purgeable TOC".							
00345	Total Phosphorus as PO4 water	14265-44-2	0.24	0.13		mg/l	1
01553	Chemical Oxygen Demand	n.a.	6.5 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.	0.9		ug/l	1
00782	Acenaphthylene	208-96-8	N.D.	0.8		ug/l	1
00783	Acenaphthene	83-32-9	N.D.	0.8		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



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00229

Lancaster Laboratories Sample No. WW 3693535

Collected: 09/25/2001 14:45 by BS

Account Number: 07802

Submitted: 09/26/2001 09:20

Kerr-McGee Corporation

Reported: 10/18/2001 at 19:39

P.O. Box 25861

Discard: 11/18/2001

Oklahoma City OK 73125

MA3-TG2-1-250901-07 Grab Water Sample

Moss American Superfund Site - Milwaukee, WI

TG207 SDG#: MOA77-09

CAT No.	Analysis Name	CAS Number	As Received Result	As Received		Dilution Factor
				Method	Units	
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.	0.02	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.	0.02	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.	0.09	ug/l	1
07409	Chrysene	218-01-9	0.08 J	0.08	ug/l	1
07410	Benzo(k)fluoranthene	207-08-9	N.D.	0.02	ug/l	1

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Analysis		Analyst	Dilution Factor
			Trial#	Date and Time		
00217	Kjeldahl Nitrogen	EPA 351.2	2	09/30/2001 16:43	Matthew J. Mercer	1
00219	Nitrite Nitrogen	EPA 353.2	1	09/26/2001 19:48	Mark A. Buckwalter	1
00220	Nitrate Nitrogen	EPA 353.2	1	10/04/2001 14:32	Venia M. McFadden	1
00221	Ammonia Nitrogen	EPA 350.2	1	10/01/2001 08:10	Michele L. Hanby	1
00226	Ortho-Phosphate as P	EPA 365.3	1	09/27/2001 03:15	Daniel S. Smith	1
00235	Biochemical Oxygen Demand	EPA 405.1	1	09/26/2001 21:43	Nicole R. Bushong	1
00273	Total Organic Carbon	EPA 415.1	1	10/01/2001 15:02	Timothy M. Petree	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	09/27/2001 17:33	Venia M. McFadden	1
01553	Chemical Oxygen Demand	EPA 410.2	1	10/04/2001 05:38	Susan A. Engle	1
08213	BTEX (GC21)	SW-846 8021B	1	09/28/2001 02:56	Barry R. Shoemaker	1
00774	PAH's in Water by HPLC	SW-846 8310	1	10/07/2001 11:47	Mark Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	09/28/2001 02:56	Barry R. Shoemaker	n.a.
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	09/28/2001 14:40	Nancy J. Shoop	1
03337	PAH Water Extraction	SW-846 3510C	1	09/28/2001 08:00	Ginelle L. Haines	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	09/27/2001 09:40	James S. Mathiot	1



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Lancaster Laboratories Sample No. WW 3693536

Collected: 09/25/2001 14:45 by BS

Account Number: 07802

Submitted: 09/26/2001 09:20

Kerr-McGee Corporation

Reported: 10/18/2001 at 19:39

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Discard: 11/18/2001

Oklahoma City OK 73125

MA3-TG2-1-250901-07-DP Grab Water Sample

Moss American Superfund Site - Milwaukee, WI

TG200 SDG#: MOA77-10

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.	ug/l	1
00782	Acenaphthylene	208-96-8	N.D.	0.9	ug/l	1
00783	Acenaphthene	83-32-9	N.D.	0.9	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	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.	0.02	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.	0.02	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.	0.1	ug/l	1
07409	Chrysene	218-01-9	N.D.	0.09	ug/l	1
07410	Benzo(k)fluoranthene	207-08-9	N.D.	0.02	ug/l	1

Due to insufficient sample, the reporting limits for the HPLC PAH compounds were raised.

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
08213	BTEX (8021)	SW-846 8021B	1	09/28/2001 03:30	Barry R. Shoemaker	1



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Collected: 09/25/2001 14:45 by BS

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Submitted: 09/26/2001 09:20

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Reported: 10/18/2001 at 19:39

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Discard: 11/18/2001

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MA3-TG2-1-250901-07-DP Grab Water Sample

Moss American Superfund Site - Milwaukee, WI

TG200	SDG#: MOA77-10					
00774	PAH's in Water by HPLC	SW-846 8310	1	10/07/2001 12:18	Mark Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	09/28/2001 03:30	Barry R. Shoemaker	n.a.
03337	PAH Water Extraction	SW-846 3510C	1	09/28/2001 08:00	Ginelle L. Haines	1



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Lancaster Laboratories Sample No. WW 3693537

Collected: 09/25/2001 15:00 by BS

Account Number: 07802

Submitted: 09/26/2001 09:20

Kerr-McGee Corporation

Reported: 10/18/2001 at 19:39

P.O. Box 25861

Discard: 11/18/2001

Oklahoma City OK 73125

MA3-TG2-2-250901-08 Grab Water Sample

Moss American Superfund Site - Milwaukee, WI

TG208 SDG#: MOA77-11

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
00217	Kjeldahl Nitrogen	7727-37-9	0.86 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	0.79 J	0.16	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	0.037	0.0028	mg/l	1
00235	Biochemical Oxygen Demand	n.a.	3.1	0.80	mg/l	1
The chosen aliquots for the QC duplicate sample analyzed with this sample did not yield acceptable dissolved oxygen readings according to EPA method 405.1. Therefore, no duplicate relative percent difference value could be calculated for the BOD QC summary.						
00273	Total Organic Carbon	n.a.	3.6	0.60	mg/l	1
The Total Organic Carbon (TOC) result reported above was determined by measuring total carbon by a persulfate digestion/infrared detection method on an acidified sample which has been purged of inorganic carbon using nitrogen. It represents "non-purgeable TOC".						
00345	Total Phosphorus as PO4 water	14265-44-2	0.37	0.13	mg/l	1
01553	Chemical Oxygen Demand	n.a.	9.4	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.	ug/l	1
00782	Acenaphthylene	208-96-8	N.D.	0.8	ug/l	1
00783	Acenaphthene	83-32-9	N.D.	0.8	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



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

0404000

Lancaster Laboratories Sample No. WW 3693537

Collected: 09/25/2001 15:00 by BS

Account Number: 07802

Submitted: 09/26/2001 09:20  
Reported: 10/18/2001 at 19:39  
Discard: 11/18/2001

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

MA3-TG2-2-250901-08 Grab Water Sample  
Moss American Superfund Site - Milwaukee, WI

TG208 SDG#: MOA77-11

CAT No.	Analysis Name	CAS Number	As Received Result	As Received		Units	Dilution Factor
				Method	Detection Limit		
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.		0.02	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.		0.02	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.		0.1	ug/l	1
07409	Chrysene	218-01-9	N.D.		0.08	ug/l	1
07410	Benzo(k)fluoranthene	207-08-9	N.D.		0.02	ug/l	1

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis		Analyst	Dilution Factor
				Date and Time			
00217	Kjeldahl Nitrogen	EPA 351.2	2	09/30/2001 16:44		Matthew J. Mercer	1
00219	Nitrite Nitrogen	EPA 353.2	1	09/26/2001 19:49		Mark A. Buckwalter	1
00220	Nitrate Nitrogen	EPA 353.2	1	10/04/2001 14:35		Venia M. McFadden	1
00221	Ammonia Nitrogen	EPA 350.2	1	10/01/2001 08:10		Michele L. Hanby	1
00226	Ortho-Phosphate as P	EPA 365.3	1	09/27/2001 03:15		Daniel S. Smith	1
00235	Biochemical Oxygen Demand	EPA 405.1	1	09/26/2001 21:43		Nicole R. Bushong	1
00273	Total Organic Carbon	EPA 415.1	1	10/01/2001 15:27		Timothy M. Petree	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	09/27/2001 17:34		Venia M. McFadden	1
01553	Chemical Oxygen Demand	EPA 410.2	1	10/04/2001 05:38		Susan A. Engle	1
08213	BTEX (8021)	SW-846 8021B	1	09/28/2001 04:04		Barry R. Shoemaker	1
00774	PAH's in Water by HPLC	SW-846 8310	1	10/07/2001 12:48		Mark Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	09/28/2001 04:04		Barry R. Shoemaker	n.a.
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	09/28/2001 14:40		Nancy J. Shoop	1
03337	PAH Water Extraction	SW-846 3510C	1	09/28/2001 08:00		Ginelle L. Haines	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	09/27/2001 09:40		James S. Mathiot	1



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0034





Lancaster Laboratories Sample No. WW 3693538

Collected: 09/25/2001 15:15 by BS

Account Number: 07802

Submitted: 09/26/2001 09:20

Kerr-McGee Corporation

Reported: 10/18/2001 at 19:39

P.O. Box 25861

Discard: 11/18/2001

Oklahoma City OK 73125

MA3-TG2-3-250901-09 Unspiked Grab Water Sample

Moss American Superfund Site - Milwaukee, WI

TG209 SDG#: MOA77-12BKG

CAT No.	Analysis Name	CAS Number	As Received		As Received		Dilution Factor
			Result		Method Detection Limit	Units	
00217	Kjeldahl Nitrogen	7727-37-9	0.46	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	0.29	J	0.16	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		0.0028	mg/l	1
00235	Biochemical Oxygen Demand	n.a.	N.D.		4.3	mg/l	1
The chosen aliquots for the QC duplicate sample analyzed with this sample did not yield acceptable dissolved oxygen readings according to EPA method 405.1. Therefore, no duplicate relative percent difference value could be calculated for the BOD QC summary.							
00273	Total Organic Carbon	n.a.	4.0		0.60	mg/l	1
The Total Organic Carbon (TOC) result reported above was determined by measuring total carbon by a persulfate digestion/infrared detection method on an acidified sample which has been purged of inorganic carbon using nitrogen. It represents "non-purgeable TOC".							
00345	Total Phosphorus as PO4 water	14265-44-2	0.41		0.13	mg/l	1
01553	Chemical Oxygen Demand	n.a.	10.1		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
00774	PAH's in Water by HPLC						
00775	Naphthalene	91-20-3	N.D.		2.	ug/l	1
00782	Acenaphthylene	208-96-8	N.D.		1.	ug/l	1
00783	Acenaphthene	83-32-9	N.D.		1.	ug/l	1
00784	Fluorene	86-73-7	N.D.		0.30	ug/l	1
00785	Phenanthrene	85-01-8	N.D.		0.10	ug/l	1
00789	Anthracene	120-12-7	N.D.		0.060	ug/l	1



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Lancaster Laboratories Sample No. WW 3693538

Collected: 09/25/2001 15:15 by BS

Account Number: 07802

Submitted: 09/26/2001 09:20  
Reported: 10/18/2001 at 19:39  
Discard: 11/18/2001

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

MA3-TG2-3-250901-09 Unspiked Grab Water Sample  
Moss American Superfund Site - Milwaukee, WI

TG209 SDG#: MOA77-12BKG

CAT No.	Analysis Name	CAS Number	As Received Result	As Received		Units	Dilution Factor
				Method	Detection Limit		
00807	Fluoranthene	206-44-0	N.D.		0.060	ug/l	1
00811	Pyrene	129-00-0	N.D.		0.30	ug/l	1
00812	Benzo(a)anthracene	56-55-3	N.D.		0.03	ug/l	1
00818	Benzo(b)fluoranthene	205-99-2	N.D.		0.060	ug/l	1
00823	Benzo(a)pyrene	50-32-8	N.D.		0.03	ug/l	1
00895	Dibenz(a,h)anthracene	53-70-3	N.D.		0.060	ug/l	1
00898	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.		0.10	ug/l	1
00907	Benzo(g,h,i)perylene	191-24-2	N.D.		0.2	ug/l	1
07409	Chrysene	218-01-9	N.D.		0.1	ug/l	1
07410	Benzo(k)fluoranthene	207-08-9	N.D.		0.03	ug/l	1

Due to insufficient sample, the reporting limits for the HPLC PAH compounds were raised.

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Analysis			Dilution Factor
			Trial#	Date and Time	Analyst	
00217	Kjeldahl Nitrogen	EPA 351.2	2	09/30/2001 16:46	Matthew J. Mercer	1
00219	Nitrite Nitrogen	EPA 353.2	1	09/26/2001 19:50	Mark A. Buckwalter	1
00220	Nitrate Nitrogen	EPA 353.2	1	10/04/2001 14:37	Venia M. McFadden	1
00221	Ammonia Nitrogen	EPA 350.2	1	10/01/2001 08:10	Michele L. Hanby	1
00226	Ortho-Phosphate as P	EPA 365.3	1	09/27/2001 03:15	Daniel S. Smith	1
00235	Biochemical Oxygen Demand	EPA 405.1	1	09/26/2001 21:43	Nicole R. Bushong	1
00273	Total Organic Carbon	EPA 415.1	1	10/01/2001 15:35	Timothy M. Petree	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	09/27/2001 17:37	Venia M. McFadden	1
01553	Chemical Oxygen Demand	EPA 410.2	1	10/04/2001 05:38	Susan A. Engle	1
08213	BTEX (8021)	SW-846 8021B	1	09/28/2001 00:41	Barry R. Shoemaker	1
00774	PAH's in Water by HPLC	SW-846 8310	1	10/07/2001 07:12	Mark Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	09/28/2001 00:41	Barry R. Shoemaker	n.a.
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	09/28/2001 14:40	Nancy J. Shoop	1
03337	PAH Water Extraction	SW-846 3510C	1	09/28/2001 08:00	Ginelle L. Haines	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	09/27/2001 09:40	James S. Mathiot	1



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Lancaster Laboratories Sample No. WW 3693538

Collected: 09/25/2001 15:15 by BS

Account Number: 07802

Submitted: 09/26/2001 09:20

Kerr-McGee Corporation

Reported: 10/18/2001 at 19:39

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Discard: 11/18/2001

Oklahoma City OK 73125

MA3-TG2-3-250901-09 Unspiked Grab Water Sample

Moss American Superfund Site - Milwaukee, WI

TG209 SDG#: MOA77-12BKG



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000007

Lancaster Laboratories Sample No. WW 3693539

Collected: 09/25/2001 15:15 by BS

Account Number: 07802

Submitted: 09/26/2001 09:20

Kerr-McGee Corporation

Reported: 10/18/2001 at 19:40

P.O. Box 25861

Discard: 11/18/2001

Oklahoma City OK 73125

MA3-TG2-3-250901-09 Matrix Spike Grab Water Sample

Moss American Superfund Site - Milwaukee, WI

TG209 SDG#: MOA77-12MS

CAT No.	Analysis Name	CAS Number	As Received Result	As Received		Units	Dilution Factor
				Method	Detection Limit		
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	22.		0.20	ug/l	1
00779	Total Xylenes	1330-20-7	63.		0.60	ug/l	1
00774	PAH's in Water by HPLC						
00775	Naphthalene	91-20-3	230.		2.	ug/l	1
00782	Acenaphthylene	208-96-8	240.		1.	ug/l	1
00783	Acenaphthene	83-32-9	260.		1.	ug/l	1
00784	Fluorene	86-73-7	25.		0.30	ug/l	1
00785	Phenanthrene	85-01-8	8.4		0.10	ug/l	1
00789	Anthracene	120-12-7	4.3		0.060	ug/l	1
00807	Fluoranthene	206-44-0	4.9		0.060	ug/l	1
00811	Pyrene	129-00-0	31.		0.30	ug/l	1
00812	Benzo(a)anthracene	56-55-3	2.3		0.03	ug/l	1
00818	Benzo(b)fluoranthene	205-99-2	1.9		0.060	ug/l	1
00823	Benzo(a)pyrene	50-32-8	2.2		0.03	ug/l	1
00895	Dibenz(a,h)anthracene	53-70-3	5.2		0.060	ug/l	1
00898	Indeno(1,2,3-cd)pyrene	193-39-5	9.7		0.10	ug/l	1
00907	Benzo(g,h,i)perylene	191-24-2	20.		0.2	ug/l	1
07409	Chrysene	218-01-9	9.2		0.1	ug/l	1
07410	Benzo(k)fluoranthene	207-08-9	1.9		0.03	ug/l	1

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis		Analyst	Dilution Factor
				Date and Time			
08213	BTEX (8021)	SW-846 8021B	1	09/28/2001 01:15		Barry R. Shoemaker	1
00774	PAH's in Water by HPLC	SW-846 8310	1	10/07/2001 07:43		Mark Clark	01
01146	GC VOA Water Prep	SW-846 5030B	1	09/28/2001 01:15		Barry R. Shoemaker	n.a.



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Page 2 of 2

Lancaster Laboratories Sample No. WW 3693539

Collected: 09/25/2001 15:15 by BS

Account Number: 07802

Submitted: 09/26/2001 09:20

Kerr-McGee Corporation

Reported: 10/18/2001 at 19:40

P.O. Box 25861

Discard: 11/18/2001

Oklahoma City OK 73125

MA3-TG2-3-250901-09 Matrix Spike Grab Water Sample

Moss American Superfund Site - Milwaukee, WI

TG209 SDG#: MOA77-12MS

03337 PAH Water Extraction

SW-846 3510C

1

09/28/2001 08:00

Ginelle L. Haines

1



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Lancaster, PA 17605-2425  
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001100

Lancaster Laboratories Sample No. WW 3693540

Collected: 09/25/2001 15:15 by BS

Account Number: 07802

Submitted: 09/26/2001 09:20

Kerr-McGee Corporation

Reported: 10/18/2001 at 19:40

P.O. Box 25861

Discard: 11/18/2001

Oklahoma City OK 73125

MA3-TG2-3-250901-09 Matrix Spike Dup Grab Water

Sample

Moss American Superfund Site - Milwaukee, WI

TG209 SDG#: MOA77-12MSD

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	22.	0.20	ug/l	1
00779	Total Xylenes	1330-20-7	64.	0.60	ug/l	1
00774	PAH's in Water by HPLC					
00775	Naphthalene	91-20-3	220.	2.	ug/l	1
00782	Acenaphthylene	208-96-8	230.	1.	ug/l	1
00783	Acenaphthene	83-32-9	250.	1.	ug/l	1
00784	Fluorene	86-73-7	24.	0.30	ug/l	1
00785	Phenanthrene	85-01-8	8.1	0.10	ug/l	1
00789	Anthracene	120-12-7	4.1	0.060	ug/l	1
00807	Fluoranthene	206-44-0	4.6	0.060	ug/l	1
00811	Pyrene	129-00-0	30.	0.30	ug/l	1
00812	Benzo(a)anthracene	56-55-3	2.2	0.03	ug/l	1
00818	Benzo(b)fluoranthene	205-99-2	1.8	0.060	ug/l	1
00823	Benzo(a)pyrene	50-32-8	2.1	0.03	ug/l	1
00895	Dibenz(a,h)anthracene	53-70-3	4.9	0.060	ug/l	1
00898	Indeno(1,2,3-cd)pyrene	193-39-5	9.3	0.10	ug/l	1
00907	Benzo(g,h,i)perylene	191-24-2	19.	0.2	ug/l	1
07409	Chrysene	218-01-9	8.8	0.1	ug/l	1
07410	Benzo(k)fluoranthene	207-08-9	1.8	0.03	ug/l	1

Due to insufficient sample, the reporting limits for the HPLC PAH compounds were raised.

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
08213	BTEX (8021)	SW-846 8021B	1	09/28/2001 01:49	Barry R. Shoemaker	01



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Lancaster Laboratories Sample No. WW 3693540

Collected: 09/25/2001 15:15 by BS

Account Number: 07802

Submitted: 09/26/2001 09:20

Kerr-McGee Corporation

Reported: 10/18/2001 at 19:40

P.O. Box 25861

Discard: 11/18/2001

Oklahoma City OK 73125

MA3-TG2-3-250901-09 Matrix Spike Dup Grab Water Sample

Moss American Superfund Site - Milwaukee, WI

TG209 SDG#: MOA77-12MSD

00774	PAH's in Water by HPLC	SW-846 8310	1	10/07/2001 08:13	Mark Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	09/28/2001 01:49	Barry R. Shoemaker	n.a.
03337	PAH Water Extraction	SW-846 3510C	1	09/28/2001 08:00	Ginelle L. Haines	1



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0041



Lancaster Laboratories Sample No. WW 3693541

Collected: 09/25/2001 15:30 by BS

Account Number: 07802

Submitted: 09/26/2001 09:20

Kerr-McGee Corporation

Reported: 10/18/2001 at 19:40

P.O. Box 25861

Discard: 11/18/2001

Oklahoma City OK 73125

TB-04 Grab Water Sample

Moss American Superfund Site - Milwaukee, WI

TGTB4 SDG#: MOA77-13

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

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
08213	BTEX (8021)	SW-846 8021B	1	09/27/2001 18:23	Barry R. Shoemaker	1
01146	GC VOA Water Prep	SW-846 5030B	1	09/27/2001 18:23	Barry R. Shoemaker	n.a.



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00442





Lancaster Laboratories Sample No. WW 3693542

Collected: 09/25/2001 15:55 by BS

Account Number: 07802

Submitted: 09/26/2001 09:20

Kerr-McGee Corporation

Reported: 10/18/2001 at 19:40

P.O. Box 25861

Discard: 11/18/2001

Oklahoma City OK 73125

MA3-MW5S-250901-10 Grab Water Sample

Moss American Superfund Site - Milwaukee, WI

5S110 SDG#: MOA77-14

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.	2.	ug/l	1
00782	Acenaphthylene	208-96-8	N.D.	1.	ug/l	1
00783	Acenaphthene	83-32-9	N.D.	1.	ug/l	1
00784	Fluorene	86-73-7	N.D.	0.30	ug/l	1
00785	Phenanthrene	85-01-8	N.D.	0.10	ug/l	1
00789	Anthracene	120-12-7	N.D.	0.070	ug/l	1
00807	Fluoranthene	206-44-0	N.D.	0.070	ug/l	1
00811	Pyrene	129-00-0	N.D.	0.30	ug/l	1
00812	Benzo(a)anthracene	56-55-3	N.D.	0.03	ug/l	1
00818	Benzo(b)fluoranthene	205-99-2	N.D.	0.070	ug/l	1
00823	Benzo(a)pyrene	50-32-8	N.D.	0.03	ug/l	1
00895	Dibenz(a,h)anthracene	53-70-3	N.D.	0.070	ug/l	1
00898	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.10	ug/l	1
00907	Benzo(g,h,i)perylene	191-24-2	N.D.	0.2	ug/l	1
07409	Chrysene	218-01-9	N.D.	0.1	ug/l	1
07410	Benzo(k)fluoranthene	207-08-9	N.D.	0.03	ug/l	1

Due to insufficient sample, the reporting limits for the HPLC PAH compounds were raised.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
08213	BTEX (8021)	SW-846 8021B	1	09/28/2001 04:37	Barry R. Shoemaker	01



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# Lancaster Laboratories

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Lancaster Laboratories Sample No. WW 3693542

Collected: 09/25/2001 15:55 by BS

Account Number: 07802

Submitted: 09/26/2001 09:20

Kerr-McGee Corporation

Reported: 10/18/2001 at 19:40

P.O. Box 25861

Discard: 11/18/2001

Oklahoma City OK 73125

MA3-MW5S-250901-10 Grab Water Sample

Moss American Superfund Site - Milwaukee, WI

5S110 SDG#: MOA77-14

00774 PAH's in Water by HPLC

SW-846 8310

1 10/07/2001 13:19

Mark Clark

1

01146 GC VOA Water Prep

SW-846 5030B

1 09/28/2001 04:37

Barry R. Shoemaker

n.a.

03337 PAH Water Extraction

SW-846 3510C

1 09/28/2001 08:00

Ginelle L. Haines

1



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Lancaster, PA 17605-2425  
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4444



Lancaster Laboratories Sample No. WW 3693543

Collected: 09/25/2001 16:40 by BS

Account Number: 07802

Submitted: 09/26/2001 09:20  
 Reported: 10/18/2001 at 19:40  
 Discard: 11/18/2001

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

MA3-MW30S-250901-11 Grab Water Sample  
 Moss American Superfund Site - Milwaukee, WI

A3111 SDG#: MOA77-15

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.	0.9	ug/l	1
00782	Acenaphthylene	208-96-8	N.D.	0.8	ug/l	1
00783	Acenaphthene	83-32-9	N.D.	0.8	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.	0.02	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.	0.02	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.	0.09	ug/l	1
07409	Chrysene	218-01-9	N.D.	0.08	ug/l	1
07410	Benzo(k)fluoranthene	207-08-9	N.D.	0.02	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	09/28/2001 05:11	Barry R. Shoemaker	1
00774	PAH's in Water by HPLC	SW-846 8310	1	10/07/2001 13:49	Mark Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	09/28/2001 05:11	Barry R. Shoemaker	n.a.



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Lancaster Laboratories Sample No. WW 3693543

Collected: 09/25/2001 16:40 by BS

Account Number: 07802

Submitted: 09/26/2001 09:20

Kerr-McGee Corporation

Reported: 10/18/2001 at 19:40

P.O. Box 25861

Discard: 11/18/2001

Oklahoma City OK 73125

MA3-MW30S-250901-11 Grab Water Sample

Moss American Superfund Site - Milwaukee, WI

A3111 SDG#: MOA77-15

03337 PAH Water Extraction

SW-846 3510C

1 09/28/2001 08:00

Ginelle L. Haines

1



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

004008



Lancaster Laboratories Sample No. WW 3693544

Collected: 09/25/2001 15:45 by BS

Account Number: 07802

Submitted: 09/26/2001 09:20

Kerr-McGee Corporation

Reported: 10/18/2001 at 19:40

P.O. Box 25861

Discard: 11/18/2001

Oklahoma City OK 73125

TB-07 Grab Water Sample

Moss American Superfund Site - Milwaukee, WI

MTB07 SDG#: MOA77-16TB\*

CAT No.	Analysis Name	CAS Number	As Received Result	As Received		Units	Dilution Factor
				Method	Detection Limit		
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	Analysis		Analyst	Dilution Factor
			Trial#	Date and Time		
08213	BTEX (8021)	SW-846 8021B	1	09/27/2001 18:57	Barry R. Shoemaker	1
01146	GC VOA Water Prep	SW-846 5030B	1	09/27/2001 18:57	Barry R. Shoemaker	n.a.



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00047

# Analysis Request/Environmental Services



For Lancaster Laboratories use only  
 Acct. # 1802 Sample # 3693527-44

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

Client: Kerr McGee Acct. #: \_\_\_\_\_  
 Project Name/ #: M33 American PWSID #: \_\_\_\_\_  
 Project Manager: Tom Grean P.O. # \_\_\_\_\_  
 Sampler: B. Schaefer, T. Hanzely, J. Trost Quote #: \_\_\_\_\_  
 Name of state where samples were collected: WI

Matrix <span style="border: 1px solid black; border-radius: 50%; padding: 2px;">4</span>		Total # of Containers	Analyses Requested <span style="border: 1px solid black; border-radius: 50%; padding: 2px;">5</span>							For lab use only	
Soil	Water		Other	NO <sub>3</sub> -N/NO <sub>2</sub>	TKN/CO <sub>2</sub>	NH <sub>3</sub> -N/TP-PP-4	TOL	BTEX	PAH	O-PP-4/BOD	FSC: _____
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	10	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	10	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	10	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	2					<input checked="" type="checkbox"/>				

Sample Identification	Date Collected	Time Collected	Grab <span style="border: 1px solid black; border-radius: 50%; padding: 2px;">3</span>	Composite	Soil	Water	Other	Total # of Containers	Remarks	Temperature of samples upon receipt (if requested) <span style="border: 1px solid black; border-radius: 50%; padding: 2px;">6</span>
<u>MA3-TG4.1-250901-01</u>	<u>9/25/01</u>	<u>0950</u>	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>		10		
<u>MA3-TG4.2-250901-02</u>	↓	<u>1000</u>	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>		10		
<u>MA3-TG4.3-250901-03</u>	↓	<u>1010</u>	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>		10		
<u>TB-06</u>	↓	<u>1535 1540</u>	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>		2		

**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 #: 847-918-4035

Relinquished by:	Date	Time	Received by:	Date	Time
<u>Brian Schaefer</u>	<u>9/25/01</u>	<u>1700</u>			

**Data Package Options (please circle if requested)**

QC Summary	Type VI (Raw Data) <u>PER QUOTE</u>	SDG Complete? Yes <input checked="" type="radio"/> No <input type="radio"/>
Type I (Tier I)	GLP	
Type II (Tier II)	Other	Site-specific QC required? Yes <input type="radio"/> No <input type="radio"/>
Type III (NJ Red. Del.)		(If yes, indicate QC sample and submit triplicate volume.)
Type IV (CLP)		Internal Chain of Custody required? Yes <input type="radio"/> No <input type="radio"/>

# Analysis Request/Environmental Services Chain of Custody



For Lancaster Laboratories use only  
 Acct. # 1802 Sample # 3693537-44

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

Client: Kerr McGee Acct. #: \_\_\_\_\_  
 Project Name/#: Miss American PWSID #: \_\_\_\_\_  
 Project Manager: Tom Corbett P.O. #: \_\_\_\_\_  
 Sampler: B. Schaefer, T. Hanzely, S. Truost Quote #: \_\_\_\_\_  
 Name of state where samples were collected: WI

Sample Identification	Date Collected	Time Collected	Matrix (4)		Total # of Containers	Analyses Requested (5)							Remarks	Temperature of samples upon receipt (if requested) (6)
			Soil	Water		NO <sub>2</sub> /NO <sub>3</sub>	MH/TP/PO <sub>4</sub>	TKN/COD	O-PO <sub>4</sub> /BOD	PAH	BTEX	TOL		
MAB-TG1-1-250901-04	9/25/01	1115	X		10	X	X	X	X	X	X	X		
MAB-TG1-2-250901-05	↓	1125	X		10	X	X	X	X	X	X	X		
MAB-TG1-3-250901-06	↓	1135	X		10	X	X	X	X	X	X	X		
TB-05	↓	1535	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) PERQUEST Type I (Tier I) GLP  
 Type II (Tier II) Other Type III (N-Red. Del.) None Type IV (CLP) None  
 Site-specific QC required? Yes  No   
 Internal Chain of Custody required? Yes  No

9 Relinquished by: Brian Schaefer Date: 9/25/01 Time: 1700  
 Received by: \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_



For Lancaster Laboratories use only  
 Acct. # 1502 Sample # 3693527-44

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

Client: Kerr McGee Acct. #: \_\_\_\_\_  
 Project Name/ID: Moss American PWSID #: \_\_\_\_\_  
 Project Manager: Tom Crain P.O.# \_\_\_\_\_  
 Sampler: BS-Laete, J Trossi, T Hanzel Quote #: \_\_\_\_\_  
 Name of state where samples were collected: WI

Sample Identification	Date Collected	Time Collected	Grab (3)	Composite	Matrix (4)			Total # of Containers	Analyses Requested (5)				Remarks	Temperature of samples upon receipt (if requested) (6)
					Soil	Water	Other							
MA3-TG2-1-250901-07-DP	9/15/01	1445	X			X		5	X	X				
MA3-TG2-3-250901-07-MS/MSD	9/15/01	1515	X			X		5	X	X				
MA3-MW55-250901-10	9/25/01	1555	X			X		5	X	X				
MA3-MW305-250901-11	9/25/01	1640	X			X		5	X	X				
TB-07	9/25/01	1545	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: Brian Schaefer Date: 9/25/01 Time: 1700  
 Relinquished by: \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_  
 Relinquished by: \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_  
 Relinquished by: \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_

Received by: \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_  
 Received by: \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_  
 Received by: \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_  
 Received by: \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_





For Lancaster Laboratories use only  
 Acct. # 7802 Sample # 36935 27-41

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

Client: <u>Kerr McGee</u> Acct. #: _____ Project Name/#: <u>Mass American</u> PWSID #: _____ Project Manager: <u>Tom Green</u> P.O.# _____ Sampler: <u>B. Schaefer, J. Travis, T. Hanzely</u> Quote #: _____ Name of state where samples were collected: <u>WI</u>				Matrix (4) <input type="checkbox"/> Potable (Check if applicable) <input type="checkbox"/> Water <input type="checkbox"/> NPDES <input type="checkbox"/> Other			Analyses Requested (5) <u>NO3/NO2</u> <u>TP-P24-WH3</u> <u>TKN, COD</u> <u>OPP, AP, DP</u> <u>BTEX</u> <u>PAH</u> <u>TOL</u>										For lab use only FSC: _____ SCR #: _____		Temperature of samples upon receipt (if requested) (6)
Sample Identification	Date Collected	Time Collected	Grab (3)	Composite	Soil	Total # of Containers	Remarks												
<u>MAB-TG2-1-250901-07</u>	<u>9/25/01</u>	<u>1445</u>	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	<u>10</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>				
<u>MAB-TG2-2-250901-08</u>		<u>1500</u>	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	<u>10</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>				
<u>MAB-TG2-3-250901-09</u>		<u>1515</u>	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	<u>10</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>				
<del><u>MAB-TG2-1-250901-07</u></del>		<u>1145</u>	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	<u>5</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>				
<del><u>MAB-TG2-3-250901-09</u></del>		<u>1515</u>	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	<u>8</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>				
<u>TB-04</u>		<u>1530</u>	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	<u>2</u>						<input checked="" type="checkbox"/>							
7 Turnaround Time Requested (TAT) (please circle): Normal <input type="checkbox"/> Rush <input type="checkbox"/> (Rush TAT is subject to Lancaster Laboratories approval and surcharge.) Date results are needed: <u>STD TAT</u> Rush results requested by (please circle): Phone: Fax: Phone #: <u>647-918-4000</u> Fax #: <u>647-918-4055</u>						Relinquished by: <u>Brian Schaefer</u> Date: <u>9/25/01</u> Time: <u>1700</u>		Received by: _____ Date: _____ Time: _____		Received by: _____ Date: _____ Time: _____									
8 Data Package Options (please circle if requested) QC Summary Type VI (Raw Data) <u>PERQUITE</u> Type I (Tier I) GLP Type II (Tier II) Other Type III (NJ Red. Del.) Type IV (CLP)						SDG Complete? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		Site-specific QC required? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> (If yes, indicate QC sample and submit triplicate volume.)		Internal Chain of Custody required? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>									

**CASE NARRATIVE**

**Client: Kerr-McGee Corporation**  
**SDG #: MOA77**

LANCASTER LABORATORIES  
SEMIVOLATILES BY HPLC

**SAMPLE NUMBER(S) :**

<u>LL #'s</u>	<u>Sample Code</u>	<u>Matrix</u> <u>Water</u>	<u>Comments</u>
3693527	G4101	X	
3693528	G4202	X	
3693529	G4303	X	
3693531	TG104	X	20X Dilution
3693531DL	TG104DL	X	100X Dilution
3693532	TG105	X	
3693533	TG106	X	
3693535	TG207	X	
3693536	TG200	X	
3693537	TG208	X	
3693538	TG209	X	Unspiked
3693539	TG209MS	X	Matrix Spike
3693540	TG209MSD	X	Matrix Spike Dup
3693542	5S110	X	
3693543	A3111	X	

**LABORATORY SUBMITTED QC:**

SBLKW1270	SBLKW12701	X	Method Blank
270WILCS	270WILCS1	X	Lab Control Sample

**SAMPLE PREPARATION:**

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

<u>Sample Code</u>	<u>Volume</u>
TG209 (3693536)	913 mls
TG209 (3693538)	650 mls *

**Case Narrative**  
**SDG #: MOA77 continued**

Reduced volumes continued:

<u>Sample Code</u>	<u>Volume</u>
TG209MS (3693539)	650 mls *
TG209MSD (3693540)	650 mls *
5S110	582 mls

\* The background sample (TG209) was spilled during the extraction process, therefore, TG209MS and TG209MSD were combined and split three ways into background, matrix spike and matrix spike duplicate samples.

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.

TG104 was analyzed at an initial 20X dilution due to a high concentration of non-target compounds.

Due to concentrations of phenanthrene, fluoranthene, and benzo(a)anthracene above calibration range, TG104 was analyzed at a further 100X dilution.

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

**QUALITY CONTROL AND NONCONFORMANCE SUMMARY:**

All QC was within specifications.

**Case Narrative**  
**SDG #: MOA77 continued**

**DATA INTERPRETATION:**

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

No further interpretation is necessary for the data submitted.

Case Narrative Reviewed and Approved by:

  
\_\_\_\_\_  
Charles J. Neslund  
Group Leader, GC/MS Semivolatiles

Date: 10/26/07

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

SAMPLE ANALYSES

LL Sample #	Sample Designation	Matrix Soil Water	Comments
3693527	G4101	X	
3693528	G4202	X	
3693529	G4303	X	
3693530	TG4T6	X	
3693531	TG104	X	DF 5
3693532	TG105	X	
3693533	TG106	X	
3693534	G1TB5	X	
3693535	TG207	X	
3693536	TG200	X	
3693537	TG208	X	
3693538	TG209	X	Unspiked
3693539MS	TG209	X	Matrix Spike
3693540MSD	TG209	X	Matrix Spike Dup
3693541	TGTB4	X	
3693542	5S110	X	
3693543	A3111	X	
3693544	MTB07	X	

QUALITY CONTROL ANALYSES

BLK6808	X	Method Blank
BLK6809	X	Method Blank
LCS6808	X	Lab Control Sample
LDS6808	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-5, 30m, 0.53mm column was used for the analysis of all samples.

No problems were encountered during analysis.

Case Narrative  
SDG# MOA77

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

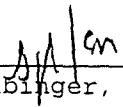
QUALITY CONTROL AND NONCONFORMANCE SUMMARY

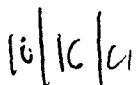
Client submitted batch QC was referenced.  
All QC was within specifications.

DATA INTERPRETATION

No explanation is necessary for the data submitted.

Narrative reviewed and approved by:

  
\_\_\_\_\_  
Steve J. Stabinger, Group Leader

  
\_\_\_\_\_  
Date



Where quality is a science.

CLIENT: Kerr-McGee Corporation  
SDG: MOA77

LANCASTER LABORATORIES

MISCELLANEOUS WET CHEMISTRY

SAMPLE NUMBERS:

<u>Sample #</u>	<u>Sample Code</u>	<u>Comments</u>
3693527	G4101	
3693528	G4202	
3693529	G4303	
3693531	TG104	
3693532	TG105	
3693533	TG106	
3693535	TG207	
3693537	TG208	
3693538	TG209	

ANALYSIS:

No problems were encountered during analysis.

QUALITY CONTROL AND NONCONFORMANCE SUMMARY:

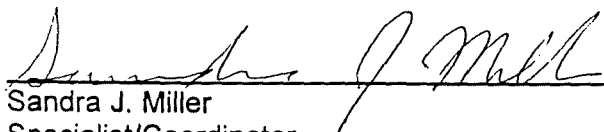
Site-specific MS/MSD samples were not submitted for the ammonia nitrogen analysis.  
A LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.

The chosen aliquots for the QC duplicate sample analyzed with these samples didn't yield acceptable dissolved oxygen readings for the biochemical oxygen demand analysis. Therefore, no duplicate relative difference value could be calculated for this analysis.

DATA INTERPRETATION:

No further interpretation is necessary for the data submitted.

Case Narrative Reviewed and Approved by:

 Date: 10-11-01  
 Sandra J. Miller  
 Specialist/Coordinator

010101

Data validation for grab water samples analyses performed by Lancaster Laboratories, Lancaster, Pennsylvania for the Kerr McGee Moss American Site in Milwaukee, WI.  
The water samples were analyzed for Polynuclear Aromatic Hydrocarbons (PAHs 8310), and BTEX 8021 Analyses.

**Polynuclear Aromatic Hydrocarbons (PAHs by HPLC, U.S. EPA Method 8310)**  
**Moss American Site**  
**SDG # MOA80**

**1. Samples:**

<u>Client Code</u>	<u>Lab Sample Number</u>	<u>Matrix</u>	<u>Date Collected</u>	<u>Date Extracted</u>	<u>Date Analyzed</u>
MW-355-260901-10	3694518	Grab water	09/26/01	09/29/01	10/09/01
MW-385-260901-09	3694519	Grab water	09/26/01	09/29/01	10/09/01
MW-325-260901-11	3694520	Grab water	09/26/01	09/29/01	10/09/01
MW-355-260901-10DP	3694521	Grab water	09/26/01	09/29/01	10/09/01
MW36S-260901-06	3694632	Grab water	09/26/01	10/01/01	10/10/01
MW6S-260901-07	3694633	Grab water	09/26/01	10/01/01	10/10/01
TW05-260901-08	3694634	Grab water	09/26/01	10/01/01	10/10/01
MW29S-260901-05	3694635	Grab water	09/26/01	10/01/01	10/10/01
MW10S-260901-01-DUP	3694637	Grab water	09/26/01	10/01/01	10/10/01
MW10S-260901-01	3694638	Grab water	09/26/01	10/01/01	10/10/01
MW96S-260901-02	3694639	Grab water	09/26/01	10/01/01	10/10/01
MW9I-260901-03	3694640	Grab water	09/26/01	10/01/01	10/10/01
MW37S-260901-04	3694641	Grab water	09/26/01	10/01/01	10/10/01

**2. Holding Times:**

All the samples were extracted and analyzed within the required holding times.

**3. Method Blank:**

Two method blanks SBLKWB2711, and SBLKWB2721 were associated with this SDG. SBLKWB2711 was analyzed on 10/09/01 and associated with (3694518 thru 3694521). SBLKWB2721 was analyzed on 10/10/01 and associated with (3694632 thru 3694635, 3694637 thru 3694641). All the method blank SBLKWB2711, and SBLKWB2721 results were free of contamination.

**4. Matrix Spike/Matrix Spike Duplicate:**

Sufficient samples volume was not available to perform a matrix spike/matrix spike duplicate for the analysis of the first batch of the samples (3694518 thru 3694521). The matrix spike/matrix spike duplicate was performed on sample MW-33S-270901-04 with lab ID (3695586) from (SDG# MOA82) for the second batch of the samples (3694632 thru 3694635, 3694637 thru 3694641).



**5. Laboratory control Sample:**

The laboratory control sample/laboratory control sample duplicate for the first batch of the samples (3694518 thru 3694521) recoveries were all within the laboratory and QAPP acceptance limits. Also, the relative percent differences (RPD%) recovery was acceptable. The laboratory control sample for the second batch of the samples (3694632 thru 3694635, 3694637 thru 3694641) recoveries were all within the laboratory and QAPP acceptance limits.

**6. Surrogate:**

A Lancaster laboratory quantity the reported PAH compounds from the UV-Vis detector, due to reduce sensitivity on the fluorescence detector. All the surrogate recoveries for the analysis of the first batch of the samples (3694518 thru 3694521) were within the control limits on UV-Vis detector. Also, the surrogate recoveries from the fluorescence detector were outside the acceptance control limits for Nitrobenzene in 3694518, 3694519, 3694521 and acceptable for Triphenylene.

All the surrogate recoveries for the analysis of the second batch of the samples (3694632 thru 3694635, 3694637 thru 3694641) were within the control limits for Nitrobenzene, and Triphenylene on UV-Vis detector. Also, the surrogate recoveries from the fluorescence detector were acceptable for only Triphenylene.

**7. Retention Time:**

The retention time recoveries were within acceptance limits.

**8. Initial and Continuing Calibration:**

All the initial calibrations results were within the quality control limits (RSD >+/-30%). The continuing calibration data file 01280-45R was associated with (3694518 thru 3694520) showed acceptable results and within the quality control limits (RSD >+/-25%). The continuing calibration data file 01280B-45R was associated with (3694518 thru 3694520) showed acceptable results, except in acenaphthylene (52.60%). The continuing calibration data file 01280-52R was associated with (3694521) showed acceptable results. The continuing calibration data file 01280B-52R was associated with (3694521) showed acceptable results, except in acenaphthylene (37.99%). The continuing calibration data file 01280-84R was associated with (3694632 thru 3694635, 3694637 thru 3694641) showed acceptable results. The continuing calibration data file 01280B-84R was associated with (3694632 thru 3694635, 3694637 thru 3694641) showed acceptable results, except in acenaphthylene (34.74%). The continuing calibration data files 01280-95R, and 01280B-95R were associated with (3694634DL) showed acceptable results. As a result, qualify the results for acenaphthylene in the samples as estimated (J/UJ).

**BETX (U.S. EPA Method 8021B)**  
**SDG # MOA80**

**1. Samples:**

<u>Client Code</u>	<u>Lab Sample Number</u>	<u>Matrix</u>	<u>Date Collected</u>	<u>Date Analyzed</u>
MW-355-260901-10	3694518	Grab water	09/26/01	09/28/01
MW-385-260901-09	3694519	Grab water	09/26/01	09/28/01
MW-325-260901-11	3694520	Grab water	09/26/01	09/28/01
MW-355-260901-10DP	3694521	Grab water	09/26/01	09/28/01
TB-10	3694522	Grab water	09/26/01	09/28/01
MW36S-260901-06	3694632	Grab water	09/26/01	09/30/01
MW6S-260901-07	3694633	Grab water	09/26/01	09/30/01
TW05-260901-08	3694634	Grab water	09/26/01	09/30/01
MW29S-260901-05	3694635	Grab water	09/26/01	09/30/01
TB-09	3694636	Grab water	09/26/01	09/28/01
MW10S-260901-01-DUP	3694637	Grab water	09/26/01	09/30/01
MW10S-260901-01	3694638	Grab water	09/26/01	09/30/01
MW96S-260901-02	3694639	Grab water	09/26/01	09/30/01
MW9I-260901-03	3694640	Grab water	09/26/01	09/30/01
MW37S-260901-04	3694641	Grab water	09/26/01	09/30/01
TB-08	3694642	Grab water	09/26/01	09/28/01

**2. Holding Times:**

All samples were analyzed within the required holding times.

**3. Method Blank:**

Three methods blanks BLK6625, BLK6626, BLK6627 were associated with this SDG. BLK6625 was analyzed on 09/28/01 associated with (3694518 thru 3694522, 3694636, and 3694642). BLK6626 was analyzed on 09/28/01 associated with (369452MS). BLK6627 was analyzed on 09/30/01 associated with (3694632 thru 3694635, 3694637 thru 3694641). All the methods blanks BLK6625, BLK6626, BLK6627 results were free of contamination.

**4. Matrix Spike/Matrix Spike Duplicate :**

The laboratory performed only matrix spike on sample 3694520 because sufficient volume was not available to perform a MSD. The matrix spike recoveries were within the laboratory and QAPP acceptance limits.

**5. Laboratory control Sample:**

The laboratory control sample/laboratory control sample duplicate recoveries were within the laboratory and QAPP acceptance limits. Also, the relative percent difference (RPD%) recovery was acceptable.

**6. Surrogate:**

The surrogate recoveries were all within the laboratory and QAPP acceptance limits.

**7. Initial and Continuing Calibration:**

All the initial calibration and continuing calibration results were within the laboratory and QAPP acceptance limits.

Please feel free to contact me at (847) 549-1042 with any question regarding these validation reports.

Sincerely  
Tania Balikji-Shammo

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 779694. Samples arrived at the laboratory on Thursday, September 27, 2001.

<u>Client Description</u>	<u>Lancaster Labs Number</u>
MA3-MW-355-260901-10 Grab Water Sample	3694518
MA3-MW-285-260901-09 Grab Water Sample	3694519
MA3-MW-325-260901-11 Grab Water Sample	3694520
MA3-MW-355-260901-10-DP Grab Water Sample	3694521
TB-10 Water Sample	3694522

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	Roy F. Weston	Attn: Mr. Tom Graan
1 COPY TO	Data Package Group	



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

000001



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

Respectfully Submitted,

Jennifer N. Martell  
Sr. Chemist/Coordinator



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

00100000

Lancaster Laboratories Sample No. WW 3694518

Collected: 09/26/2001 16:25 by BS

Account Number: 07802

Submitted: 09/27/2001 09:55

Kerr-McGee Corporation

Reported: 10/12/2001 at 09:49

P.O. Box 25861

Discard: 11/12/2001

Oklahoma City OK 73125

MA3-MW-355-260901-10 Grab Water Sample

Moss American Site - WI

26010 SDG#: MOA80-12

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
05213	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	1. J	1.	ug/l	1
00782	Acenaphthylene	208-96-8	2.3 J	0.8	ug/l	1
00783	Acenaphthene	83-32-9	N.D.	0.8	ug/l	1
00784	Fluorene	86-73-7	N.D.	0.20	ug/l	1
00785	Phenanthrene	85-01-8	0.25 J	0.080	ug/l	1
00789	Anthracene	120-12-7	0.3	0.040	ug/l	1
00807	Fluoranthene	206-44-0	1.1	0.040	ug/l	1
00811	Pyrene	129-00-0	0.9	0.20	ug/l	1
00812	Benzo(a)anthracene	56-55-3	0.06 J	0.02	ug/l	1
00818	Benzo(b)fluoranthene	205-99-2	N.D.	0.040	ug/l	1
00823	Benzo(a)pyrene	50-32-8	0.02 J	0.02	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.	0.1	ug/l	1
07409	Chrysene	218-01-9	0.11 J	0.08	ug/l	1
07410	Benzo(k)fluoranthene	207-08-9	N.D.	0.02	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.						



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

Lancaster Laboratories Sample No. WW 3694518

Collected: 09/26/2001 16:25 by BS

Account Number: 07802

Submitted: 09/27/2001 09:55

Kerr-McGee Corporation

Reported: 10/12/2001 at 09:49

P.O. Box 25861

Discard: 11/12/2001

Oklahoma City OK 73125

MA3-MW-355-260901-10 Grab Water Sample

Moss American Site - WI

26010 SDG#: MOA80-12

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Analysis		Analyst	Dilutic Factor
			Trial#	Date and Time		
08213	BTEX (8021)	SW-846 8021B	1	09/28/2001 17:06	Matthew E. Barton	1
00774	PAH's in Water by HPLC	SW-846 8310	1	10/09/2001 17:41	Mark Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	09/28/2001 17:06	Matthew E. Barton	n.a.
03337	PAH Water Extraction	SW-846 3510C	1	09/29/2001 01:30	Darin P. Wagner	1



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2425 New Holland Pike  
PO Box 12425  
Lancaster, PA 17605-2425  
717-656-2300 Fax: 717-656-2681

0010

Lancaster Laboratories Sample No. WW 3694519

Collected: 09/26/2001 16:15 by BS

Account Number: 07802

Submitted: 09/27/2001 09:55

Kerr-McGee Corporation

Reported: 10/12/2001 at 09:49

P.O. Box 25861

Discard: 11/12/2001

Oklahoma City OK 73125

MA3-MW-285-260901-09 Grab Water Sample  
Moss American Site - WI

09260 SDG#: MOA80-13

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
06213	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	1. J	1.	ug/l	1
00782	Acenaphthylene	208-96-8	N.D.	0.8	ug/l	1
00783	Acenaphthene	83-32-9	N.D.	0.8	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.	0.02	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.	0.02	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.	0.1	ug/l	1
07409	Chrysene	218-01-9	N.D.	0.08	ug/l	1
07410	Benzo(k)fluoranthene	207-08-9	N.D.	0.02	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.						



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Lancaster, PA 17605-2425  
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00111



Lancaster Laboratories Sample No. WW 3694519

Collected: 09/26/2001 16:15 by BS

Account Number: 07802

Submitted: 09/27/2001 09:55

Kerr-McGee Corporation

Reported: 10/12/2001 at 09:49

P.O. Box 25861

Discard: 11/12/2001

Oklahoma City OK 73125

MA3-MW-285-260901-09 Grab Water Sample

Moss American Site - WI

09260 SDG#: MOA80-13

Laboratory Chronicle

CAT No.	Analysis Name	Method	Analysis		Analyst	Dilutio Factor
			Trial#	Date and Time		
08213	BTEX (8021)	SW-846 8021B	1	09/28/2001 17:42	Matthew E. Barton	1
00774	PAH's in Water by HPLC	SW-846 8310	1	10/09/2001 18:12	Mark Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	09/28/2001 17:42	Matthew E. Barton	n.a.
03337	PAH Water Extraction	SW-846 3510C	1	09/29/2001 01:30	Darin P. Wagner	1



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2425 New Holland Pike  
PO Box 12425  
Lancaster, PA 17605-2425  
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00112

Lancaster Laboratories Sample No. WW 3694520

Collected: 09/26/2001 16:45 by BS

Account Number: 07802

Submitted: 09/27/2001 09:55

Kerr-McGee Corporation

Reported: 10/12/2001 at 09:49

P.O. Box 25861

Discard: 11/12/2001

Oklahoma City OK 73125

MA3-MW-325-260901-11 Grab Water Sample

Moss American Site - WI

32511 SDG#: MOA80-14

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.	ug/l	1
00782	Acenaphthylene	208-96-8	N.D.	0.8	ug/l	1
00783	Acenaphthene	83-32-9	N.D.	0.8	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.	0.02	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.	0.02	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.	0.1	ug/l	1
07409	Chrysene	218-01-9	N.D.	0.08	ug/l	1
07410	Benzo(k)fluoranthene	207-08-9	N.D.	0.02	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 insufficient sample, the reporting limits for the HPLC PAH compounds were raised.



Lancaster Laboratories, Inc.  
2425 New Holland Pike  
PO Box 12425  
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Lancaster Laboratories Sample No. WW 3694520

Collected: 09/26/2001 16:45 by BS

Account Number: 07802

Submitted: 09/27/2001 09:55

Kerr-McGee Corporation

Reported: 10/12/2001 at 09:49

P.O. Box 25861

Discard: 11/12/2001

Oklahoma City OK 73125

MA3-MW-325-260901-11 Grab Water Sample

Moss American Site - WI

32511 SDG#: MOA80-14

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Analysis		Analyst	Dilution Factor
			Trial#	Date and Time		
08213	BTEX (8021)	SW-846 8021B	1	09/28/2001 18:18	Matthew E. Barton	1
00774	PAH's in Water by HPLC	SW-846 8310	1	10/09/2001 18:42	Mark Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	09/28/2001 18:18	Matthew E. Barton	n.a.
03337	PAH Water Extraction	SW-846 3510C	1	09/29/2001 01:30	Darin P. Wagner	1



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

0  
0  
1  
4

Lancaster Laboratories Sample No. WW 3694521

Collected: 09/26/2001 16:25 by BS

Account Number: 07802

Submitted: 09/27/2001 09:55

Kerr-McGee Corporation

Reported: 10/12/2001 at 09:49

P.O. Box 25861

Discard: 11/12/2001

Oklahoma City OK 73125

MA3-MW-355-260901-10-DP Grab Water Sample

Moss American Site - WI

DP10X SDG#: MOA80-15

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	1. J	1.	ug/l	1
00782	Acenaphthylene	208-96-8	2.2 J	0.9	ug/l	1
00783	Acenaphthene	83-32-9	N.D.	0.9	ug/l	1
00784	Fluorene	86-73-7	N.D.	0.20	ug/l	1
00785	Phenanthrene	85-01-8	0.22 J	0.090	ug/l	1
00789	Anthracene	120-12-7	0.3	0.040	ug/l	1
00807	Fluoranthene	206-44-0	1.1	0.040	ug/l	1
00811	Pyrene	129-00-0	0.87 J	0.20	ug/l	1
00812	Benzo(a)anthracene	56-55-3	0.07 J	0.02	ug/l	1
00818	Benzo(b)fluoranthene	205-99-2	N.D.	0.040	ug/l	1
00823	Benzo(a)pyrene	50-32-8	0.03 J	0.02	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.	0.1	ug/l	1
07409	Chrysene	218-01-9	0.12 J	0.09	ug/l	1
07410	Benzo(k)fluoranthene	207-08-9	N.D.	0.02	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 insufficient sample, the reporting limits for the HPLC PAH compounds were raised.



Lancaster Laboratories, Inc.  
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PO Box 12425  
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Lancaster Laboratories Sample No. WW 3694521

Collected: 09/26/2001 16:25 by BS

Account Number: 07802

Submitted: 09/27/2001 09:55

Kerr-McGee Corporation

Reported: 10/12/2001 at 09:49

P.O. Box 25861

Discard: 11/12/2001

Oklahoma City OK 73125

MA3-MW-355-260901-10-DP Grab Water Sample

Moss American Site - WI

DP10X SDG#: MOA80-15

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Analysis		Analyst	Dilution Factor
			Trial#	Date and Time		
08213	BTEX (8021)	SW-846 8021B	1	09/28/2001 18:54	Matthew E. Barton	1
00774	PAH's in Water by HPLC	SW-846 8310	1	10/09/2001 19:43	Mark Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	09/28/2001 18:54	Matthew E. Barton	n.a.
03337	PAH Water Extraction	SW-846 3510C	1	09/29/2001 01:30	Darin P. Wagner	1



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0016

Lancaster Laboratories Sample No. WW 3694522

Collected: 09/26/2001 18:05 by BS

Account Number: 07802

Submitted: 09/27/2001 09:55

Kerr-McGee Corporation

Reported: 10/12/2001 at 09:49

P.O. Box 25861

Discard: 11/12/2001

Oklahoma City OK 73125

TB-10 Water Sample

Moss American Site - WI

TPDPX SDG#: MOA80-16TB\*

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	09/28/2001 15:18	Matthew E. Barton	1
01146	GC VOA Water Prep	SW-846 5030B	1	09/28/2001 15:18	Matthew E. Barton	n.a.



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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 779725. Samples arrived at the laboratory on Thursday, September 27, 2001.

<u>Client Description</u>	<u>Lancaster Labs Number</u>
MA3-MW36S-260901-06 Grab Water Sample	3694632
MA3-MW6S-260901-07 Grab Water Sample	3694633
MA3-TW05-260901-08 Grab Water Sample	3694634
MA3-MW29S-260901-05 Grab Water Sample	3694635
TB-09 Grab Water Sample	3694636
MA3-MW10S-260901-01-Dup Grab Water Sample	3694637
MA3-MW10S-260901-01 Grab Water Sample	3694638
MA3-MW96S-260901-02 Grab Water Sample	3694639
MA3-MW91-260901-03 Grab Water Sample	3694640
MA3-MW37S-260901-04 Grab Water Sample	3694641
TB-08 Grab Water Sample	3694642

METHODOLOGY

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

1 COPY TO Kerr-McGee Corporation  
1 COPY TO Roy F. Weston  
1 COPY TO Data Package Group

Attn: Dr. Jeff Ostmeyer  
Attn: Mr. Tom Graan



Lancaster Laboratories, Inc.  
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PO Box 12425  
Lancaster, PA 17605-2425  
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000000



**Lancaster Laboratories**

*Where quality is a science.*

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

Respectfully Submitted,

Jennifer N. Martell  
Sr. Chemist/Coordinator



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

030411



Lancaster Laboratories Sample No. WW 3694632

Collected: 09/26/2001 14:50 by BS

Account Number: 07802

Submitted: 09/27/2001 09:55  
 Reported: 10/16/2001 at 23:46  
 Discard: 11/16/2001  
 MA3-MW36S-260901-06 Grab Water Sample  
 Moss American Site - WI

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

MA106 SDG#: MOA80-01

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.	ug/l	1
00782	Acenaphthylene	208-96-8	N.D.	0.8	ug/l	1
00783	Acenaphthene	83-32-9	N.D.	0.8	ug/l	1
00784	Fluorene	86-73-7	N.D.	0.2	ug/l	1
00785	Phenanthrene	85-01-8	N.D.	0.08	ug/l	1
00789	Anthracene	120-12-7	N.D.	0.04	ug/l	1
00807	Fluoranthene	206-44-0	N.D.	0.04	ug/l	1
00811	Pyrene	129-00-0	N.D.	0.2	ug/l	1
00812	Benzo(a)anthracene	56-55-3	N.D.	0.02	ug/l	1
00818	Benzo(b)fluoranthene	205-99-2	N.D.	0.04	ug/l	1
00823	Benzo(a)pyrene	50-32-8	N.D.	0.02	ug/l	1
00895	Dibenz(a,h)anthracene	53-70-3	N.D.	0.04	ug/l	1
00898	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.08	ug/l	1
00907	Benzo(g,h,i)perylene	191-24-2	N.D.	0.1	ug/l	1
07409	Chrysene	218-01-9	N.D.	0.08	ug/l	1
07410	Benzo(k)fluoranthene	207-08-9	N.D.	0.02	ug/l	1

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst
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0  
 1  
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Lancaster Laboratories Sample No. WW 3694632

Collected: 09/26/2001 14:50 by BS

Account Number: 07802

Submitted: 09/27/2001 09:55

Kerr-McGee Corporation

Reported: 10/16/2001 at 23:46

P.O. Box 25861

Discard: 11/16/2001

Oklahoma City OK 73125

MA3-MW36S-260901-06 Grab Water Sample

Moss American Site - WI

MA106	SDG#: MOA80-01					
08213	BTEX (8021)	SW-846 8021B	1	09/30/2001 11:32	Matthew E. Barton	1
00774	PAH's in Water by HPLC	SW-846 8310	1	10/10/2001 12:25	Mark Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	09/30/2001 11:32	Matthew E. Barton	n.a.
03337	PAH Water Extraction	SW-846 3510C	1	10/01/2001 00:10	Darin P. Wagner	1



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Lancaster Laboratories Sample No. WW 3694633

Collected: 09/26/2001 15:00 by BS

Account Number: 07802

Submitted: 09/27/2001 09:55

Kerr-McGee Corporation

Reported: 10/16/2001 at 23:46

P.O. Box 25861

Discard: 11/16/2001

Oklahoma City OK 73125

MA3-MW6S-260901-07 Grab Water Sample

Moss American Site - WI

MAW6S SDG#: MOA80-02

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.	ug/l	1
00782	Acenaphthylene	208-96-8	N.D.	0.8	ug/l	1
00783	Acenaphthene	83-32-9	N.D.	0.8	ug/l	1
00784	Fluorene	86-73-7	N.D.	0.2	ug/l	1
00785	Phenanthrene	85-01-8	N.D.	0.08	ug/l	1
00789	Anthracene	120-12-7	N.D.	0.04	ug/l	1
00807	Fluoranthene	206-44-0	N.D.	0.04	ug/l	1
00811	Pyrene	129-00-0	N.D.	0.2	ug/l	1
00812	Benzo(a)anthracene	56-55-3	N.D.	0.02	ug/l	1
00818	Benzo(b)fluoranthene	205-99-2	N.D.	0.04	ug/l	1
00823	Benzo(a)pyrene	50-32-8	N.D.	0.02	ug/l	1
00895	Dibenz(a,h)anthracene	53-70-3	N.D.	0.04	ug/l	1
00898	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.08	ug/l	1
00907	Benzo(g,h,i)perylene	191-24-2	N.D.	0.1	ug/l	1
07409	Chrysene	218-01-9	N.D.	0.08	ug/l	1
07410	Benzo(k)fluoranthene	207-08-9	N.D.	0.02	ug/l	1
Due to insufficient sample, the reporting limits for the HPLC PAH compounds were raised.						

Laboratory Chronicle



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2425 New Holland Pike  
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00222

Lancaster Laboratories Sample No. WW 3694633

Collected: 09/26/2001 15:00 by BS

Account Number: 07802

Submitted: 09/27/2001 09:55

Kerr-McGee Corporation

Reported: 10/16/2001 at 23:46

P.O. Box 25861

Discard: 11/16/2001

Oklahoma City OK 73125

MA3-MW6S-260901-07 Grab Water Sample

Moss American Site - WI

MAW6S SDG#: MOA80-02

CAT

No.	Analysis Name	Method	Analysis		Analyst	Dilution Factor
			Trial#	Date and Time		
08213	BTEX (8021)	SW-846 8021B	1	09/30/2001 12:07	Matthew E. Barton	1
00774	PAH's in Water by HPLC	SW-846 8310	1	10/10/2001 12:56	Mark Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	09/30/2001 12:07	Matthew E. Barton	n.a.
03337	PAH Water Extraction	SW-846 3510C	1	10/01/2001 00:10	Darin P. Wagner	1



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08213

Lancaster Laboratories Sample No. WW 3694634

Collected: 09/26/2001 15:30 by BS

Account Number: 07802

Submitted: 09/27/2001 09:55

Kerr-McGee Corporation

Reported: 10/16/2001 at 23:46

P.O. Box 25861

Discard: 11/16/2001

Oklahoma City OK 73125

MA3-TW05-260901-08 Grab Water Sample

Moss American Site - WI

TW058 SDG#: MOA80-03

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
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	22.	1.	ug/l	1
00782	Acenaphthylene	208-96-8	13.	0.8	ug/l	1
00783	Acenaphthene	83-32-9	78.	0.8	ug/l	1
00784	Fluorene	86-73-7	60.	0.9	ug/l	5
00785	Phenanthrene	85-01-8	N.D.	2.	ug/l	1
00789	Anthracene	120-12-7	4.	0.04	ug/l	1
00807	Fluoranthene	206-44-0	11.	0.2	ug/l	5
00811	Pyrene	129-00-0	8.	0.2	ug/l	1
00812	Benzo(a)anthracene	56-55-3	0.2	0.02	ug/l	1
00818	Benzo(b)fluoranthene	205-99-2	N.D.	0.04	ug/l	1
00823	Benzo(a)pyrene	50-32-8	0.02 J	0.02	ug/l	1
00895	Dibenz(a,h)anthracene	53-70-3	N.D.	0.04	ug/l	1
00898	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.08	ug/l	1
00907	Benzo(g,h,i)perylene	191-24-2	N.D.	0.1	ug/l	1
07409	Chrysene	218-01-9	N.D.	0.08	ug/l	1
07410	Benzo(k)fluoranthene	207-08-9	N.D.	0.02	ug/l	1

Due to the presence of an interferent near its retention time, the normal reporting limit was not attained for phenanthrene. The reporting limit for this compound was raised accordingly.



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2  
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Lancaster Laboratories Sample No. WW 3694634

Collected: 09/26/2001 15:30 by BS

Account Number: 07802

Submitted: 09/27/2001 09:55

Kerr-McGee Corporation

Reported: 10/16/2001 at 23:46

P.O. Box 25861

Discard: 11/16/2001

Oklahoma City OK 73125

MA3-TW05-260901-08 Grab Water Sample

Moss American Site - WI

TW058 SDG#: MOA80-03

Laboratory Chronicle

CAT No.	Analysis Name	Method	Analysis		Analyst	Dilution Factor
			Trial#	Date and Time		
08213	BTEX (8021)	SW-846 8021B	1	09/30/2001 12:42	Matthew E. Barton	1
00774	PAH's in Water by HPLC	SW-846 8310	1	10/10/2001 13:27	Mark Clark	1
00774	PAH's in Water by HPLC	SW-846 8310	1	10/10/2001 21:12	Mark Clark	5
01146	GC VOA Water Prep	SW-846 5030B	1	09/30/2001 12:42	Matthew E. Barton	n.a.
03337	PAH Water Extraction	SW-846 3510C	1	10/01/2001 00:10	Darin P. Wagner	1



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0301030103

Lancaster Laboratories Sample No. WW 3694635

Collected: 09/26/2001 12:30 by BS

Account Number: 07802

Submitted: 09/27/2001 09:55

Kerr-McGee Corporation

Reported: 10/16/2001 at 23:46

P.O. Box 25861

Discard: 11/16/2001

Oklahoma City OK 73125

MA3-MW29S-260901-05 Grab Water Sample

Moss American Site - WI

29S05 SDG#: MOA80-04

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.	1.	ug/l	1
00782	Acenaphthylene	208-96-8	N.D.	0.8	ug/l	1
00783	Acenaphthene	83-32-9	N.D.	0.8	ug/l	1
00784	Fluorene	86-73-7	N.D.	0.2	ug/l	1
00785	Phenanthrene	85-01-8	N.D.	0.08	ug/l	1
00789	Anthracene	120-12-7	N.D.	0.04	ug/l	1
00807	Fluoranthene	206-44-0	N.D.	0.04	ug/l	1
00811	Pyrene	129-00-0	N.D.	0.2	ug/l	1
00812	Benzo(a)anthracene	56-55-3	N.D.	0.02	ug/l	1
00818	Benzo(b)fluoranthene	205-99-2	N.D.	0.04	ug/l	1
00823	Benzo(a)pyrene	50-32-8	N.D.	0.02	ug/l	1
00895	Dibenz(a,h)anthracene	53-70-3	N.D.	0.04	ug/l	1
00898	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.08	ug/l	1
00907	Benzo(g,h,i)perylene	191-24-2	N.D.	0.1	ug/l	1
07409	Chrysene	218-01-9	N.D.	0.08	ug/l	1
07410	Benzo(k)fluoranthene	207-08-9	N.D.	0.02	ug/l	1

Due to insufficient sample, the reporting limits for the HPLC PAH compounds were raised.

### Laboratory Chronicle



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2425 New Holland Pike  
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Lancaster Laboratories Sample No. WW 3694635

Collected: 09/26/2001 12:30 by BS

Account Number: 07802

Submitted: 09/27/2001 09:55

Kerr-McGee Corporation

Reported: 10/16/2001 at 23:46

P.O. Box 25861

Discard: 11/16/2001

Oklahoma City OK 73125

MA3-MW29S-260901-05 Grab Water Sample

Moss American Site - WI

29S05 SDG#: MOA80-04

CAT

No.	Analysis Name	Method	Analysis		Analyst	Dilution Factor
			Trial#	Date and Time		
08213	BTEX (8021)	SW-846 8021B	1	09/30/2001 13:17	Matthew E. Barton	1
00774	PAH's in Water by HPLC	SW-846 8310	1	10/10/2001 13:57	Mark Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	09/30/2001 13:17	Matthew E. Barton	n.a.
03337	PAH Water Extraction	SW-846 3510C	1	10/01/2001 00:10	Darin P. Wagner	1



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Lancaster, PA 17605-2425  
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Lancaster Laboratories Sample No. WW 3694636

Collected: 09/26/2001 17:55 by BS

Account Number: 07802

Submitted: 09/27/2001 09:55  
 Reported: 10/16/2001 at 23:46  
 Discard: 11/16/2001  
 TB-09 Grab Water Sample  
 Moss American Site - WI

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

MAB09 SDG#: MOA80-05TB

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	Analysis		Analyst	Dilution Factor
			Trial#	Date and Time		
08213	BTEX (8021)	SW-846 8021B	1	09/28/2001 15:54	Matthew E. Barton	1
01146	GC VOA Water Prep	SW-846 5030B	1	09/28/2001 15:54	Matthew E. Barton	n.d.



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Lancaster Laboratories Sample No. WW 3694637

Collected: 09/26/2001 09:30 by BS

Account Number: 07802

Submitted: 09/27/2001 09:55

Kerr-McGee Corporation

Reported: 10/16/2001 at 23:46

P.O. Box 25861

Discard: 11/16/2001

Oklahoma City OK 73125

MA3-MW10S-260901-01-Dup Grab Water Sample

Moss American Site - WI

2609D SDG#: MOA80-06

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	2.2	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.	ug/l	1
00782	Acenaphthylene	208-96-8	N.D.	0.8	ug/l	1
00783	Acenaphthene	83-32-9	N.D.	0.8	ug/l	1
00784	Fluorene	86-73-7	N.D.	0.2	ug/l	1
00785	Phenanthrene	85-01-8	N.D.	0.08	ug/l	1
00789	Anthracene	120-12-7	N.D.	0.04	ug/l	1
00807	Fluoranthene	206-44-0	N.D.	0.04	ug/l	1
00811	Pyrene	129-00-0	N.D.	0.2	ug/l	1
00812	Benzo(a)anthracene	56-55-3	N.D.	0.02	ug/l	1
00818	Benzo(b)fluoranthene	205-99-2	N.D.	0.04	ug/l	1
00823	Benzo(a)pyrene	50-32-8	N.D.	0.02	ug/l	1
00895	Dibenz(a,h)anthracene	53-70-3	N.D.	0.04	ug/l	1
00898	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.08	ug/l	1
00907	Benzo(g,h,i)perylene	191-24-2	N.D.	0.1	ug/l	1
07409	Chrysene	218-01-9	N.D.	0.08	ug/l	1
07410	Benzo(k)fluoranthene	207-08-9	N.D.	0.02	ug/l	1

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
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Lancaster Laboratories, Inc.  
2425 New Holland Pike  
PO Box 12425  
Lancaster, PA 17605-2425  
717-656-2300 Fax: 717-656-2681

Lancaster Laboratories Sample No. WW 3694637

Collected: 09/26/2001 09:30 by BS

Account Number: 07802

Submitted: 09/27/2001 09:55

Kerr-McGee Corporation

Reported: 10/16/2001 at 23:46

P.O. Box 25861

Discard: 11/16/2001

Oklahoma City OK 73125

MA3-MW10S-260901-01-Dup Grab Water Sample

Moss American Site - WI

2609D SDG#: MOA80-06

08213	BTEX (8021)	SW-846 8021B	1	09/30/2001 13:52	Matthew E. Barton	1
00774	PAH's in Water by HPLC	SW-846 8310	1	10/10/2001 14:28	Mark Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	09/30/2001 13:52	Matthew E. Barton	n.a.
03337	PAH Water Extraction	SW-846 3510C	1	10/01/2001 00:10	Darin P. Wagner	1



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

000000

Lancaster Laboratories Sample No. WW 3694638

Collected: 09/26/2001 09:30 by BS

Account Number: 07802

Submitted: 09/27/2001 09:55

Kerr-McGee Corporation

Reported: 10/16/2001 at 23:46

P.O. Box 25861

Discard: 11/16/2001

Oklahoma City OK 73125

MA3-MW10S-260901-01 Grab Water Sample

Moss American Site - WI

10S01 SDG#: MOA80-07

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	1.0	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.	ug/l	1
00782	Acenaphthylene	208-96-8	N.D.	0.8	ug/l	1
00783	Acenaphthene	83-32-9	N.D.	0.8	ug/l	1
00784	Fluorene	86-73-7	N.D.	0.2	ug/l	1
00785	Phenanthrene	85-01-8	N.D.	0.08	ug/l	1
00789	Anthracene	120-12-7	N.D.	0.04	ug/l	1
00807	Fluoranthene	206-44-0	N.D.	0.04	ug/l	1
00811	Pyrene	129-00-0	N.D.	0.2	ug/l	1
00812	Benzo(a)anthracene	56-55-3	N.D.	0.02	ug/l	1
00818	Benzo(b)fluoranthene	205-99-2	N.D.	0.04	ug/l	1
00823	Benzo(a)pyrene	50-32-8	N.D.	0.02	ug/l	1
00895	Dibenz(a,h)anthracene	53-70-3	N.D.	0.04	ug/l	1
00898	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.08	ug/l	1
00907	Benzo(g,h,i)perylene	191-24-2	N.D.	0.1	ug/l	1
07409	Chrysene	218-01-9	N.D.	0.08	ug/l	1
07410	Benzo(k)fluoranthene	207-08-9	N.D.	0.02	ug/l	1

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
						1

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 Sample No. WW 3694638

Collected: 09/26/2001 09:30 by BS

Account Number: 07802

Submitted: 09/27/2001 09:55

Kerr-McGee Corporation

Reported: 10/16/2001 at 23:46

P.O. Box 25861

Discard: 11/16/2001

Oklahoma City OK 73125

MA3-MW10S-260901-01 Grab Water Sample

Moss American Site - WI

10S01 SDG#: MOA80-07

08213	BTEX (8021)	SW-846 8021B	1	09/30/2001 14:27	Matthew E. Barton	1
00774	PAH's in Water by HPLC	SW-846 8310	1	10/10/2001 14:58	Mark Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	09/30/2001 14:27	Matthew E. Barton	n.a.
03337	PAH Water Extraction	SW-846 3510C	1	10/01/2001 00:10	Darin P. Wagner	1

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

2001

Lancaster Laboratories Sample No. WW 3694639

Collected: 09/26/2001 10:40 by BS

Account Number: 07802

Submitted: 09/27/2001 09:55

Kerr-McGee Corporation

Reported: 10/16/2001 at 23:46

P.O. Box 25861

Discard: 11/16/2001

Oklahoma City OK 73125

MA3-MW96S-260901-02 Grab Water Sample

Moss American Site - WI

9S102 SDG#: MOA80-08

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.	ug/l	1
00782	Acenaphthylene	208-96-8	N.D.	0.8	ug/l	1
00783	Acenaphthene	83-32-9	N.D.	0.8	ug/l	1
00784	Fluorene	86-73-7	N.D.	0.2	ug/l	1
00785	Phenanthrene	85-01-8	N.D.	0.08	ug/l	1
00789	Anthracene	120-12-7	N.D.	0.04	ug/l	1
00807	Fluoranthene	206-44-0	N.D.	0.04	ug/l	1
00811	Pyrene	129-00-0	N.D.	0.2	ug/l	1
00812	Benzo(a)anthracene	56-55-3	N.D.	0.02	ug/l	1
00818	Benzo(b)fluoranthene	205-99-2	N.D.	0.04	ug/l	1
00823	Benzo(a)pyrene	50-32-8	N.D.	0.02	ug/l	1
00895	Dibenz(a,h)anthracene	53-70-3	N.D.	0.04	ug/l	1
00898	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.08	ug/l	1
00907	Benzo(g,h,i)perylene	191-24-2	N.D.	0.1	ug/l	1
07409	Chrysene	218-01-9	N.D.	0.08	ug/l	1
07410	Benzo(k)fluoranthene	207-08-9	N.D.	0.02	ug/l	1

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
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Lancaster Laboratories, Inc.  
2425 New Holland Pike  
PO Box 12425  
Lancaster, PA 17605-2425  
717-656-2300 Fax: 717-656-2681

Lancaster Laboratories Sample No. WW 3694639

Collected: 09/26/2001 10:40 by BS

Account Number: 07802

Submitted: 09/27/2001 09:55

Kerr-McGee Corporation

Reported: 10/16/2001 at 23:46

P.O. Box 25861

Discard: 11/16/2001

Oklahoma City OK 73125

MA3-MW96S-260901-02 Grab Water Sample

Moss American Site - WI

9S102	SDG#: MOA80-08					
08213	BTEX (8021)	SW-846 8021B	1	09/30/2001 15:02	Matthew E. Barton	1
00774	PAH's in Water by HPLC	SW-846 8310	1	10/10/2001 15:29	Mark Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	09/30/2001 15:02	Matthew E. Barton	n.a.
03337	PAH Water Extraction	SW-846 3510C	1	10/01/2001 00:10	Darin P. Wagner	1



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

00004

Lancaster Laboratories Sample No. WW 3694640

Collected: 09/26/2001 11:15 by BS

Account Number: 07802

Submitted: 09/27/2001 09:55

Kerr-McGee Corporation

Reported: 10/16/2001 at 23:46

P.O. Box 25861

Discard: 11/16/2001

Oklahoma City OK 73125

MA3-MW9I-260901-03 Grab Water Sample

Moss American Site - WI

9I103 SDG#: MOA80-09

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	3. J	2.	ug/l	1
00782	Acenaphthylene	208-96-8	N.D.	2.	ug/l	1
00783	Acenaphthene	83-32-9	N.D.	2.	ug/l	1
00784	Fluorene	86-73-7	N.D.	0.4	ug/l	1
00785	Phenanthrene	85-01-8	N.D.	0.2	ug/l	1
00789	Anthracene	120-12-7	N.D.	0.08	ug/l	1
00807	Fluoranthene	206-44-0	N.D.	0.08	ug/l	1
00811	Pyrene	129-00-0	N.D.	0.4	ug/l	1
00812	Benzo(a)anthracene	56-55-3	N.D.	0.04	ug/l	1
00818	Benzo(b)fluoranthene	205-99-2	N.D.	0.08	ug/l	1
00823	Benzo(a)pyrene	50-32-8	N.D.	0.04	ug/l	1
00895	Dibenz(a,h)anthracene	53-70-3	N.D.	0.08	ug/l	1
00898	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.2	ug/l	1
00907	Benzo(g,h,i)perylene	191-24-2	N.D.	0.2	ug/l	1
07409	Chrysene	218-01-9	N.D.	0.2	ug/l	1
07410	Benzo(k)fluoranthene	207-08-9	N.D.	0.04	ug/l	1

Due to insufficient sample, the reporting limits for the HPLC PAH compounds were raised.

Laboratory Chronicle



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

L1041010



Lancaster Laboratories Sample No. WW 3694640

Collected: 09/26/2001 11:15 by BS

Account Number: 07802

Submitted: 09/27/2001 09:55

Kerr-McGee Corporation

Reported: 10/16/2001 at 23:46

P.O. Box 25861

Discard: 11/16/2001

Oklahoma City OK 73125

MA3-MW9I-260901-03 Grab Water Sample

Moss American Site - WI

9I103 SDG#: MOA80-09

CAT

No.	Analysis Name	Method	Analysis			Dilution Facto.
			Trial#	Date and Time	Analyst	
08213	BTEX (8021)	SW-846 8021B	1	09/30/2001 15:37	Matthew E. Barton	1
00774	PAH's in Water by HPLC	SW-846 8310	1	10/10/2001 15:59	Mark Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	09/30/2001 15:37	Matthew E. Barton	n.a.
03337	PAH Water Extraction	SW-846 3510C	1	10/01/2001 00:10	Darin P. Wagner	1



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

Lancaster Laboratories Sample No. WW 3694641

Collected: 09/26/2001 11:30 by BS

Account Number: 07802

Submitted: 09/27/2001 09:55

Kerr-McGee Corporation

Reported: 10/16/2001 at 23:46

P.O. Box 25861

Discard: 11/16/2001

Oklahoma City OK 73125

MA3-MW37S-260901-04 Grab Water Sample

Moss American Site - WI

90104 SDG#: MOA80-10

CAT No.	Analysis Name	CAS Number	As Received Result	As Received		Dilution Factor
				Method	Units	
08213	BTEX (8021)			Detection Limit		
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.	ug/l	1
00782	Acenaphthylene	208-96-8	N.D.	0.8	ug/l	1
00783	Acenaphthene	83-32-9	N.D.	0.8	ug/l	1
00784	Fluorene	86-73-7	N.D.	0.2	ug/l	1
00785	Phenanthrene	85-01-8	N.D.	0.08	ug/l	1
00789	Anthracene	120-12-7	N.D.	0.04	ug/l	1
00807	Fluoranthene	206-44-0	N.D.	0.04	ug/l	1
00811	Pyrene	129-00-0	N.D.	0.2	ug/l	1
00812	Benzo(a)anthracene	56-55-3	N.D.	0.02	ug/l	1
00818	Benzo(b)fluoranthene	205-99-2	N.D.	0.04	ug/l	1
00823	Benzo(a)pyrene	50-32-8	N.D.	0.02	ug/l	1
00895	Dibenz(a,h)anthracene	53-70-3	N.D.	0.04	ug/l	1
00898	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.08	ug/l	1
00907	Benzo(g,h,i)perylene	191-24-2	N.D.	0.1	ug/l	1
07409	Chrysene	218-01-9	0.09 J	0.08	ug/l	1
07410	Benzo(k)fluoranthene	207-08-9	N.D.	0.02	ug/l	1

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis		Analyst	Dilution Factor
				Date	Time		



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

Lancaster Laboratories Sample No. WW 3694641

Collected: 09/26/2001 11:30 by BS

Account Number: 07802

Submitted: 09/27/2001 09:55

Kerr-McGee Corporation

Reported: 10/16/2001 at 23:46

P.O. Box 25861

Discard: 11/16/2001

Oklahoma City OK 73125

MA3-MW37S-260901-04 Grab Water Sample

Moss American Site - WI

90104	SDG#: MOA80-10					
08213	BTEX (8021)	SW-846 8021B	1	09/30/2001 16:12	Matthew E. Barton	1
00774	PAH's in Water by HPLC	SW-846 8310	1	10/10/2001 16:30	Mark Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	09/30/2001 16:12	Matthew E. Barton	n.a.
03337	PAH Water Extraction	SW-846 3510C	1	10/01/2001 00:10	Darin P. Wagner	1



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

Lancaster Laboratories Sample No. WW 3694642

Collected: 09/26/2001 17:45 by BS

Account Number: 07802

Submitted: 09/27/2001 09:55

Kerr-McGee Corporation

Reported: 10/16/2001 at 23:46

P.O. Box 25861

Discard: 11/16/2001

Oklahoma City OK 73125

TB-08 Grab Water Sample

Moss American Site - WI

MARB8 SDG#: MOA80-11TB

CAT No.	Analysis Name	CAS Number	As Received Result	As Received		Units	Dilution Factor
				Method	Detection Limit		
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	Analysis		Analyst	Dilution Factor
			Trial#	Date and Time		
08213	BTEX (8021)	SW-846 8021B	1	09/28/2001 16:30	Matthew E. Barton	1
01146	GC VOA Water Prep	SW-846 5030B	1	09/28/2001 16:30	Matthew E. Barton	n.a.



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

# Analysis Request/Environmental Services Chain of Custody



For Lancaster Laboratories use only  
 Acct. # 7800 Sample # 3694518-22

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

1 Client: <u>Kerr McGee</u> Acct. #: _____ Project Name/ #: <u>Moss American</u> PWSID #: _____ Project Manager: <u>Tom Grian</u> P.O.# _____ Sampler: <u>B. Schaefer, T. Hanzely, Y. Hagiwara</u> Quote #: _____ Name of state where samples were collected: <u>VI</u>				Matrix 4 <input type="checkbox"/> Potable (Check if applicable) <input type="checkbox"/> Water <input type="checkbox"/> NPDES <input type="checkbox"/> Other		5 Analyses Requested (Diagonal lines with handwritten: BTEX, PAH)				For lab use only FSC: _____ SCR #: _____				
2 Sample Identification		Date Collected	Time Collected	3 Grab	Composite	Soil	Water	Other	Total # of Containers	Remarks				Temperature of samples upon receipt (if requested)
<u>MA3-MW-355-260901-10</u>		<u>9/26/01</u>	<u>1625</u>	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			
<u>MA3-MW-285-260901-09</u>			<u>1615</u>	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			
<u>MA3-MW-325-260901-4</u>			<u>1615</u>	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			
<u>MA3-MW-355-260901-10-DP</u>			<u>1625</u>	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			
<u>TB-10</u>			<u>1805</u>	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>				
7 Turnaround Time Requested (TAT) (please circle): Normal <input type="checkbox"/> Rush <input type="checkbox"/> (Rush TAT is subject to Lancaster Laboratories approval and surcharge.) Date results are needed: <u>STD TAT</u> Rush results requested by (please circle): Phone <input type="checkbox"/> Fax <input type="checkbox"/> Phone #: <u>847-9184000</u> Fax #: <u>847-918-4055</u>				Relinquished by: <u>[Signature]</u> Date: <u>9/26/01</u> Time: <u>1530</u>		Received by: _____ Date: _____ Time: _____								
8 Data Package Options (please circle if requested) QC Summary Type VI (Raw Data) <u>PER QUOTE</u> SDG Complete? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Type I (Tier I) GLP Type II (Tier II) Other Type III (NJ Red. Del.) Type IV (CLP)				Relinquished by: _____ Date: _____ Time: _____		Received by: _____ Date: _____ Time: _____								
Site-specific QC required? Yes <input type="checkbox"/> No <input type="checkbox"/> (If yes, indicate QC sample and submit triplicate volume.) Internal Chain of Custody required? Yes <input type="checkbox"/> No <input type="checkbox"/>				Relinquished by: _____ Date: _____ Time: _____		Received by: <u>[Signature]</u> Date: <u>9/27/01</u> Time: _____								

# Analysis Request/Environmental Services Chain of Custody



For Lancaster Laboratories use only  
 Acct. # 4802 Sample # 3694632-42

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

Client: <u>Kerr McGee</u> Acct. #: _____			<b>Matrix</b> (4)				<b>Analyses Requested</b> (5)										For lab use only					
Project Name/ID: <u>Moss American</u> PWSID #: _____			<input type="checkbox"/> Potable (Check if applicable) <input type="checkbox"/> Water <input type="checkbox"/> NPDES <input type="checkbox"/> Other				BTEX PAH										FSC: _____					
Project Manager: <u>Tom Graam</u> P.O.# _____																	SCR #: _____					
Sampler: <u>B. Schaefer, T. Hanzely, Y. Hasinara</u> Quote #: _____			Total # of Containers														Temperature of samples upon receipt (if requested)					
Name of state where samples were collected: <u>WI</u>																						
Sample Identification		Date Collected	Time Collected	Grab	Composite	Soil	Water	Other	Total # of Containers											Remarks		
<u>MA3-ML-105-260901-01-Dup</u>		<u>9/26/01</u>	<u>0930</u>	<u>X</u>			<u>X</u>		<u>5</u>	<u>X</u>	<u>X</u>											
<u>MA3-ML-105-260901-01</u>			<u>0930</u>	<u>X</u>			<u>X</u>		<u>5</u>	<u>X</u>	<u>X</u>											
<u>MA3-ML-95-260901-02</u>			<u>1040</u>	<u>X</u>			<u>X</u>		<u>5</u>	<u>X</u>	<u>X</u>											
<u>MA3-ML-91-260901-03</u>			<u>1115</u>	<u>X</u>			<u>X</u>		<u>5</u>	<u>X</u>	<u>X</u>											
<u>MA3-ML-375-260901-04</u>			<u>1130</u>	<u>X</u>			<u>X</u>		<u>5</u>	<u>X</u>	<u>X</u>											
<u>TB-08</u>			<u>1745</u>	<u>X</u>			<u>X</u>		<u>2</u>	<u>X</u>												

<b>7 Turnaround Time Requested (TAT)</b> (please circle): Normal <input type="radio"/> Rush <input type="radio"/> (Rush TAT is subject to Lancaster Laboratories approval and surcharge.) Date results are needed: <u>STD TAT</u>				Relinquished by: <u>Brian Schaefer</u>		Date: <u>9/26/01</u>		Time: <u>1830</u>		Received by: _____		Date: _____		Time: _____			
Rush results requested by (please circle): Phone <input type="checkbox"/> Fax <input type="checkbox"/> Phone #: <u>847-918-4000</u> Fax #: <u>847-918-4055</u>				Relinquished by: _____		Date: _____		Time: _____		Received by: _____		Date: _____		Time: _____			
<b>8 Data Package Options</b> (please circle if requested)				SDG Complete? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		Relinquished by: _____		Date: _____		Time: _____		Received by: _____		Date: _____		Time: _____	
QC Summary Type VI (Raw Data) <u>PER QUOTE</u>		Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		Relinquished by: _____		Date: _____		Time: _____		Received by: _____		Date: _____		Time: _____			
Type I (Tier I) GLP		Site-specific QC required? Yes <input type="checkbox"/> No <input type="checkbox"/>		Relinquished by: _____		Date: _____		Time: _____		Received by: _____		Date: _____		Time: _____			
Type II (Tier II) Other		(If yes, indicate QC sample and submit triplicate volume.)		Relinquished by: _____		Date: _____		Time: _____		Received by: _____		Date: _____		Time: _____			
Type III (NJ Red. Del.)		Internal Chain of Custody required? Yes <input type="checkbox"/> No <input type="checkbox"/>		Relinquished by: _____		Date: _____		Time: _____		Received by: <u>Kathy Binkley</u>		Date: <u>9-27-01</u>		Time: <u>09</u>			
Type IV (CLP)				Relinquished by: _____		Date: _____		Time: _____		Received by: _____		Date: _____		Time: _____			

# Analysis Request/Environmental Services Chain of Custody



For Lancaster Laboratories use only  
 Acct. # 7802 Sample # 3694632-42

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

Client: <u>Kevin McGee</u> Acct. #: _____ Project Name/#: <u>Moss American</u> PWSID #: _____ Project Manager: <u>Tom Green</u> P.O.# _____ Sampler: <u>B Schauf, T Harzely, Y Higuma</u> Quote #: _____ Name of state where samples were collected: <u>WI</u>				Matrix (4) <input type="checkbox"/> Potable (check if applicable) <input type="checkbox"/> NPDES <input type="checkbox"/> Other		Analyses Requested (5) (Diagonal lines with <u>STEX</u> and <u>PAH</u> written across)						For lab use only FSC: _____ SCR #: _____	
Sample Identification	Date Collected	Time Collected	Grab (3)	Composite	Soil	Water	Other	Total # of Containers	Remarks	Temperature of samples upon receipt (if requested) (6)			
<u>MA3-MW-365-260901-06</u>	<u>9/26/01</u>	<u>1450</u>	<u>X</u>			<u>X</u>		<u>5</u>	<u>X</u> <u>X</u>				
<u>MA3-MW-65-260901-07</u>		<u>1500</u>	<u>X</u>			<u>X</u>		<u>5</u>	<u>X</u> <u>X</u>				
<u>MA3-TW-05-260901-08</u>		<u>1530</u>	<u>X</u>			<u>X</u>		<u>5</u>	<u>X</u> <u>X</u>				
<u>MA3-MW-295-260901-05</u>		<u>1230</u>	<u>X</u>			<u>X</u>		<u>5</u>	<u>X</u> <u>X</u>				
<u>TB-09</u>		<u>1755</u>	<u>X</u>			<u>X</u>		<u>2</u>	<u>X</u>				
Turnaround Time Requested (TAT) (please circle): Normal <input type="checkbox"/> Rush <input type="checkbox"/> (Rush TAT is subject to Lancaster Laboratories approval and surcharge.) Date results are needed: <u>STD TAT</u> Rush results requested by (please circle): Phone <input type="checkbox"/> Fax <input type="checkbox"/> Phone #: <u>847-918-4000</u> Fax #: <u>847-918-4055</u>				Relinquished by: <u>Brian Schauf</u> Date: <u>9/26/01</u> Time: <u>1830</u>		Received by: _____ Date: _____ Time: _____		Relinquished by: _____ Date: _____ Time: _____		Received by: _____ Date: _____ Time: _____			
Data Package Options (please circle if requested) QC Summary Type VI (Raw Data) <u>PER QUOTE</u> SDG Complete? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Type I (Tier I) GLP Type II (Tier II) Other Type III (NJ Red. Del.) Type IV (GLP)				Site-specific QC required? Yes <input type="checkbox"/> No <input type="checkbox"/> (If yes, indicate QC sample and submit triplicate volume.) Internal Chain of Custody required? Yes <input type="checkbox"/> No <input type="checkbox"/>		Relinquished by: _____ Date: _____ Time: _____		Received by: _____ Date: _____ Time: _____		Relinquished by: _____ Date: _____ Time: _____		Received by: <u>Kately Binkley</u> Date: <u>9-27-01</u> Time: <u>0955</u>	

**CASE NARRATIVE**

**Client:** Kerr-McGee Corporation  
**SDG #:** MOA80

**LANCASTER LABORATORIES  
SEMIVOLATILES BY HPLC**

**SAMPLE NUMBER(S) :**

<u>LL #'s</u>	<u>Sample Code</u>	<u>Matrix</u> <u>Water</u>	<u>Comments</u>
3694518	26010	X	
3694519	09260	X	
3694520	32511	X	
3694521	DP10X	X	
3694632	MA106	X	
3694633	MAW6S	X	
3694634	TW058	X	
3694634DL	TW058DL	X	5X Dilution
3694635	29S05	X	
3694637	2609D	X	
3694638	10S01	X	
3694639	9S102	X	
3694640	9I103	X	
3694641	90104	X	

**LABORATORY SUBMITTED QC:**

SBLKWB271	SBLKWB2711	X	Method Blank
SBLKWB272	SBLKWB2721	X	Method Blank
3695586	33S04	X	Unspiked
3695586DL	33S04DL	X	20X Dilution
3695587	33S04MS	X	Matrix Spike
3695588	33S04MSD	X	Matrix Spike Dup
271WBLCS	271WBLCS1	X	Lab Control Sample
271WBLCSD	271WBLCSD1	X	Lab Control Sample Dup
272WBLCS	272WBLCS1	X	Lab Control Sample



**Case Narrative**  
**SDG #: MOA80 continued**

**SAMPLE PREPARATION:**

Sufficient sample volume was not available to perform a MS/MSD for the analysis of 26010, 09260, 32511 and DP10X. Therefore, a LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.

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

<u>Sample Code</u>	<u>Volume</u>
32511	973 mls
DP10X	927 mls
MAW6S	949 mls
29S05	979 mls
2609D	999 mls
9I103	500 mls
33S04	914 mls
33S04MS	994 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.

Due to concentrations of fluorine and fluoranthene above calibration range, TW058 was analyzed at a further 5X dilution.

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

**QUALITY CONTROL AND NONCONFORMANCE SUMMARY:**

The recovery of naphthalene in 33S04MS and 33S04MSD was outside QC limits. All recoveries were within specifications in 272WBLCS1.

All other QC was within specifications.



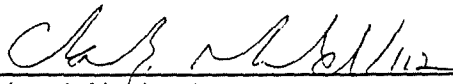
**Case Narrative**  
**SDG #: MOA80 continued**

**DATA INTERPRETATION:**

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

No further interpretation is necessary for the data submitted.

Case Narrative Reviewed and Approved by:



\_\_\_\_\_  
Charles J. Neslund  
Group Leader, GC/MS Semivolatiles

Date: 11/5/87

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

SAMPLE ANALYSES

LL Sample #	Sample Designation	Matrix Soil Water	Comments
3694518	26010	X	
3694519	09260	X	
3694520	32511	X	Unspiked
3694520MS	32511	X	Matrix Spike
3694521	DP10X	X	
3694522	TPDPX	X	
3694632	MA106	X	
3694633	MAW6S	X	
3694634	TW058	X	
3694635	29S05	X	
3694636	MAB09	X	
3694637	2609D	X	
3694638	10S01	X	
3694639	9S102	X	
3694640	9I103	X	
3694641	90104	X	
3694642	MARB8	X	

QUALITY CONTROL ANALYSES

BLK6625	X	Method Blank
BLK6626	X	Method Blank
BLK6627	X	Method Blank
LCS6625	X	Lab Control Sample
LDS6625	X	Lab Control Dup

SAMPLE PREPARATION

No sample preparation was necessary.

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.

Case Narrative  
SDG# MOA80

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

QUALITY CONTROL AND NONCONFORMANCE SUMMARY

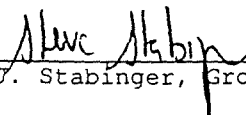
There was no client submitted QC, so Lancaster Laboratories batch QC was referenced. Sufficient sample volume was not available to perform an MSD for this analysis, therefore an LCS/LDS was performed to demonstrate precision and accuracy at a batch level.

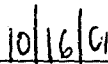
All QC was within specifications.

DATA INTERPRETATION

No explanation is necessary for the data submitted.

Narrative reviewed and approved by:

  
\_\_\_\_\_  
Steve J. Stabinger, Group Leader

  
\_\_\_\_\_  
Date

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

SAMPLE ANALYSES

LL Sample #	Sample Designation	Matrix Soil Water	Comments
3694518	26010	X	
3694519	09260	X	
3694520	32511	X	Unspiked
3694520MS	32511	X	Matrix Spike
3694521	DP10X	X	
3694522	TPDPX	X	
3694632	MA106	X	
3694633	MAW6S	X	
3694634	TW058	X	
3694635	29S05	X	
3694636	MAB09	X	
3694637	2609D	X	
3694638	10S01	X	
3694639	9S102	X	
3694640	9I103	X	
3694641	90104	X	
3694642	MARB8	X	

QUALITY CONTROL ANALYSES

BLK6625	X	Method Blank
BLK6626	X	Method Blank
BLK6627	X	Method Blank
LCS6625	X	Lab Control Sample
LDS6625	X	Lab Control Dup

SAMPLE PREPARATION

No sample preparation was necessary.

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.


**Case Narrative**  
**SDG #: MOA80 continued**

**DATA INTERPRETATION:**

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

No further interpretation is necessary for the data submitted.

Case Narrative Reviewed and Approved by:

  
\_\_\_\_\_  
Charles J. Neslund  
Group Leader, GC/MS Semivolatiles

Date: 11/5/87

Case Narrative  
SDG# MOA80

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

QUALITY CONTROL AND NONCONFORMANCE SUMMARY

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


All QC was within specifications.

DATA INTERPRETATION

No explanation is necessary for the data submitted.

Narrative reviewed and approved by:

  
\_\_\_\_\_  
Steve J. Stabinger, Group Leader

  
\_\_\_\_\_  
Date

**Case Narrative**  
**SDG #: MOA82 continued**

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.

No problems were encountered during the analysis of these samples.

**QUALITY CONTROL AND NONCONFORMANCE SUMMARY:**

The recovery of naphthalene in 33S04MS and 33S04MSD was outside QC limits. All recoveries were within specifications in 272WBLCS1.

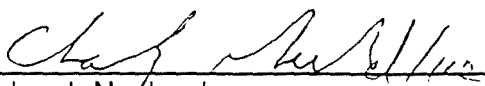
All other QC was within specifications.

**DATA INTERPRETATION:**

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

No further interpretation is necessary for the data submitted.

Case Narrative Reviewed and Approved by:

  
\_\_\_\_\_

Charles J. Neslund  
Group Leader, GC/MS Semivolatiles

Date: 11/16/87



**CASE NARRATIVE**

**Client: Kerr-McGee Corporation**  
**SDG #: MOA82**

LANCASTER LABORATORIES  
SEMIVOLATILES BY HPLC

**SAMPLE NUMBER(S) :**

<u>LL #'s</u>	<u>Sample Code</u>	<u>Matrix</u> <u>Water</u>	<u>Comments</u>
3695576	MAFB1	X	
3695577	MARB2	X	
3695578	B03MA	X	
3695583	A327S	X	
3695586	33S04	X	Unspiked
3695586DL	33S04DL	X	20X Dilution
3695587	33S04MS	X	Matrix Spike
3695588	33S04MSD	X	Matrix Spike Dup
3695589	MA302	X	
3695590	MA33I	X	

**LABORATORY SUBMITTED QC:**

SBLKWB272	SBLKWB2721	X	Method Blank
272WBLCS	272WBLCS1	X	Lab Control Sample

**SAMPLE PREPARATION:**

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

<u>Sample Code</u>	<u>Volume</u>
MAFB1	987 mls
B03MA	999 mls
A327S	985 mls
33S04	914 mls
33S04MS	994 mls
MA302	828 mls



For Lancaster Laboratories use only  
 Acct. # 7802 Sample # 3695576-91

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

1 Client: Kerr McGee Acct. #: \_\_\_\_\_  
 Project Name/ #: Moss American PWSID #: \_\_\_\_\_  
 Project Manager: Tom Graan P.O. #: \_\_\_\_\_  
 Sampler: B. Schaefe, T. Hangel, Y. Haginara Quote #: \_\_\_\_\_  
 Name of state where samples were collected: WI

Matrix: PAH (4)  
 Potable:  Check if applicable  
 Water:  NPDES applicable  
 Other: \_\_\_\_\_  
 Total # of Containers: \_\_\_\_\_

5 **Analyses Requested**

For lab use only  
 FSC: \_\_\_\_\_  
 SCR #: \_\_\_\_\_

6 Temperature of samples (if requested) \_\_\_\_\_

2 Sample Identification	Date Collected	Time Collected	3 Composite	Soil	Water	Other	Total # of Containers	5 Analyses Requested	6 Temperature of samples (if requested)	Remarks
MA3-MW-335-270901-04	9/27/01	1330	X	X			2	X		
MA3-MW-335-270901-04 MS/MS		1330	X	X			2	X		
FB-03		1800	X	X			2	X		
MA3-MW-275-270901-05		1340	X	X			2	X		
MA3-MW-20I-270901-02		1100	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 #: 847-9184000 Fax #: 847-9184055

8 Data Package Options (please circle if requested) SDG Complete? \_\_\_\_\_  
 QC Summary Type VI (Raw Data) PER QUOTE 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: Bruce Stief Date: 9/27/01 Time: 1830  
 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: W. D. New Date: 9/20/01 Time: 0930



For Lancaster Laboratories use only  
 Acct. # 7802 Sample # 3695576-91

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

1

Client: Kerr Mc Gee Acct. #: \_\_\_\_\_  
 Project Name/#: Moss American PWSID #: \_\_\_\_\_  
 Project Manager: Tom Graan P.O.# \_\_\_\_\_  
 Sampler: B Schaefer, J Hazzelly, Y Hoginard Quote #: \_\_\_\_\_  
 Name of state where samples were collected: WI

Matrix 4  
 Soil  
 Potable  
 Water  
 NPDES  
 Other

5 Analyses Requested  
 BTEX  
 PAH

For lab use only  
 FSC: \_\_\_\_\_  
 SCR#: \_\_\_\_\_

6  
 Temperature of samples upon receipt (if required)

2

Sample Identification	Date Collected	Time Collected	Grabs	Composite	Soil	Potable Water	NPDES	Other	Total # of Containers	Remarks
MA3-MW-335-270901-04-MY/MSD	9/27/01	1330	X			X			2	X
MA3-MW-335-270901-04		1330	X			X			3	X
MA3-MW-75-270901-03		1325	X			X			3	X
MA3-MW-20J-270901-02		1100	X			X			3	X
MA3-MW-3I-270901-09		1815	X			X			5 BS	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) SDG Complete? Yes  No

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)

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

Relinquished by: Brunslauf Date: 9/27/01 Time: 1830  
 Relinquished by: \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_  
 Relinquished by: \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_  
 Relinquished by: \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_  
 Relinquished by: \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_

Received by: W. C. New Date: 9/28/01 Time: 0930



For Lancaster Laboratories use only  
 Acct. # 9802 Sample # 3695576-9

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

1 Client: Kgr Mc Gee Acct. #: \_\_\_\_\_  
 Project Name/ #: Moss American PWSID #: \_\_\_\_\_  
 Project Manager: Tom Graan P.O.# \_\_\_\_\_  
 Sampler: B Schaeff, T Honzely, Y Higilawa Quote #: \_\_\_\_\_  
 Name of state where samples were collected: WI

Matrix 4  
 Soil  
 Potable Water  
 NPDES  
 Other

5 Analyses Requested  
BTEX  
PAH

For lab use only  
 FSC: \_\_\_\_\_  
 SCR #: \_\_\_\_\_

2 Sample Identification	Date Collected	Time Collected	3 Grab Composite	Soil	Potable Water	NPDES	Other	Total # of Containers	5	Remarks	Temperature of samples
TB-1f	9/27/01	1755	X		X			2	X		
FB-01	9/27/01	0830	X		X			5	X	X	
FB-02		0900	X		X			5	X	X	
FB-03		1800	X		X			3	X		
MA3-MW-35-270901-08-DUP		1635	X		X			3	X		
MA3-MW-35-270901-08		1635	X		X			3	X		
MA3-MW-7E-270901-07		1530	X		X			3	X		
MA3-MW-345-270901-06		1500	X		X			3	X	will had free product	
MA3-MW-275-270901-05		1440	X		X			3	X		
MA3-MW-205-270901-01	V	1045	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: STP 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) SDG Complete? Yes  No

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)

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

Relinquished by: Brena Schaeff Date: 9/27/01 Time: 1830  
 Received by: \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_  
 Relinquished by: \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_  
 Received by: \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_  
 Relinquished by: \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_  
 Received by: W. Jones Date: 9/28/01 Time: \_\_\_\_\_

Lancaster Laboratories Sample No. WW 3695591

Collected: 09/27/2001 13:25 by BS

Account Number: 07802

Submitted: 09/28/2001 09:30

Kerr-McGee Corporation

Reported: 10/17/2001 at 12:25

P.O. Box 25861

Discard: 11/17/2001

Oklahoma City OK 73125

MA3-MW-7S-270901-03 Grab Water Sample

Moss American Superfund Site - Milwaukee, WI

MA7S3 SDG#: MOA82-14\*

CAT No.	Analysis Name	CAS Number	As Received		As Received	Units	Dilution Factor
			Result		Method		
08213	BTEX (8021)						
00776	Benzene	71-43-2	3.7	J	2.0	ug/l	10
00777	Toluene	108-88-3	N.D.		2.0	ug/l	10
00778	Ethylbenzene	100-41-4	14.		2.0	ug/l	10
00779	Total Xylenes	1330-20-7	41.		6.0	ug/l	10

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

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Analysis		Analyst	Dilution Factor
			Trial#	Date and Time		
08213	BTEX (8021)	SW-846 8021B	1	10/02/2001 08:22	Matthew E. Barton	10
01146	GC VOA Water Prep	SW-846 5030B	1	10/02/2001 08:22	Matthew E. Barton	n.a.



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10/02/01

Lancaster Laboratories Sample No. WW 3695590

Collected: 09/27/2001 18:15 by BS

Account Number: 07802

Submitted: 09/28/2001 09:30

Kerr-McGee Corporation

Reported: 10/17/2001 at 12:24

P.O. Box 25861

Discard: 11/17/2001

Oklahoma City OK 73125

MA3-MW-3I-270901-09 Grab Water Sample

Moss American Superfund Site - Milwaukee, WI

MA33I SDG#: MOA82-13

CAT No.	Analysis Name	CAS Number	As Received Result	As Received		Dilution Factor
				Method	Units	
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.	ug/l	1
00782	Acenaphthylene	208-96-8	N.D.	0.8	ug/l	1
00783	Acenaphthene	83-32-9	N.D.	0.8	ug/l	1
00784	Fluorene	86-73-7	N.D.	0.2	ug/l	1
00785	Phenanthrene	85-01-8	N.D.	0.08	ug/l	1
00789	Anthracene	120-12-7	N.D.	0.04	ug/l	1
00807	Fluoranthene	206-44-0	N.D.	0.04	ug/l	1
00811	Pyrene	129-00-0	N.D.	0.2	ug/l	1
00812	Benzo(a)anthracene	56-55-3	N.D.	0.02	ug/l	1
00818	Benzo(b)fluoranthene	205-99-2	N.D.	0.04	ug/l	1
00823	Benzo(a)pyrene	50-32-8	N.D.	0.02	ug/l	1
00895	Dibenz(a,h)anthracene	53-70-3	N.D.	0.04	ug/l	1
00898	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.08	ug/l	1
00907	Benzo(g,h,i)perylene	191-24-2	N.D.	0.1	ug/l	1
07409	Chrysene	218-01-9	N.D.	0.08	ug/l	1
07410	Benzo(k)fluoranthene	207-08-9	N.D.	0.02	ug/l	1

Laboratory Chronicle

CAT No.	Analysis Name	Method	Analysis		Analyst	Dilution Factor
			Trial#	Date and Time		
08213	BTEX (8021)	SW-846 8021B	1	10/02/2001 06:07	Matthew E. Barton	1
00774	PAH's in Water by HPLC	SW-846 8310	1	10/10/2001 20:38	Mark Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	10/02/2001 06:07	Matthew E. Barton	1



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Page 2 of 2

Lancaster Laboratories Sample No. WW 3695590

Collected: 09/27/2001 18:15 by BS

Account Number: 07802

Submitted: 09/28/2001 09:30

Kerr-McGee Corporation

Reported: 10/17/2001 at 12:24

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Discard: 11/17/2001

Oklahoma City OK 73125

MA3-MW-3I-270901-09 Grab Water Sample

Moss American Superfund Site - Milwaukee, WI

MA33I SDG#: MOA82-13

03337 PAH Water Extraction

SW-846 3510C

1 10/01/2001 00:10

Darin P. Wagner

1



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Lancaster Laboratories Sample No. WW 3695589

Collected: 09/27/2001 11:00 by BS

Account Number: 07802

Submitted: 09/28/2001 09:30

Kerr-McGee Corporation

Reported: 10/17/2001 at 12:24

P.O. Box 25861

Discard: 11/17/2001

Oklahoma City OK 73125

MA3-MW-20I-270901-02 Grab Water Sample

Moss American Superfund Site - Milwaukee, WI

MA302 SDG#: MOA82-12

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.	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.	ug/l	1
00782	Acenaphthylene	208-96-8	N.D.	1.	ug/l	1
00783	Acenaphthene	83-32-9	N.D.	1.	ug/l	1
00784	Fluorene	86-73-7	N.D.	0.2	ug/l	1
00785	Phenanthrene	85-01-8	N.D.	0.1	ug/l	1
00789	Anthracene	120-12-7	N.D.	0.05	ug/l	1
00807	Fluoranthene	206-44-0	N.D.	0.05	ug/l	1
00811	Pyrene	129-00-0	N.D.	0.2	ug/l	1
00812	Benzo(a)anthracene	56-55-3	N.D.	0.02	ug/l	1
00818	Benzo(b)fluoranthene	205-99-2	N.D.	0.05	ug/l	1
00823	Benzo(a)pyrene	50-32-8	N.D.	0.02	ug/l	1
00895	Dibenz(a,h)anthracene	53-70-3	N.D.	0.05	ug/l	1
00898	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.1	ug/l	1
00907	Benzo(g,h,i)perylene	191-24-2	N.D.	0.1	ug/l	1
07409	Chrysene	218-01-9	N.D.	0.1	ug/l	1
07410	Benzo(k)fluoranthene	207-08-9	N.D.	0.02	ug/l	1

Due to insufficient sample, the reporting limits for the HPLC PAH compounds were raised.

## Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
08213	BTEX (8021)	SW-846 8021B	1	10/02/2001 05:33	Matthew E. Barton	1



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Collected: 09/27/2001 11:00 by BS

Account Number: 07802

Submitted: 09/28/2001 09:30

Kerr-McGee Corporation

Reported: 10/17/2001 at 12:24

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Discard: 11/17/2001

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MA3-MW-20I-270901-02 Grab Water Sample  
Moss American Superfund Site - Milwaukee, WI

MA302	SDG#: MOA82-12					
00774	PAH's in Water by HPLC	SW-846 8310	1	10/10/2001 20:07	Mark Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	10/02/2001 05:33	Matthew E. Barton	n.a.
03337	PAH Water Extraction	SW-846 3510C	1	10/01/2001 00:10	Darin P. Wagner	1

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11-01-01

Lancaster Laboratories Sample No. WW 3695588

Collected: 09/27/2001 13:30 by BS

Account Number: 07802

Submitted: 09/28/2001 09:30

Kerr-McGee Corporation

Reported: 10/17/2001 at 12:24

P.O. Box 25861

Discard: 11/17/2001

Oklahoma City OK 73125

MA3-MW-33S-270901-04 Matrix Spike Duplicate

Grab Water Sample

Moss American Superfund Site - Milwaukee, WI

33S04 SDG#: MOA82-11MSD

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	120.	1.0	ug/l	5
00777	Toluene	108-88-3	120.	1.0	ug/l	5
00778	Ethylbenzene	100-41-4	120.	1.0	ug/l	5
00779	Total Xylenes	1330-20-7	350.	3.0	ug/l	5
00774	PAH's in Water by HPLC					
00775	Naphthalene	91-20-3	1,700.	0.9	ug/l	1
00782	Acenaphthylene	208-96-8	240.	0.8	ug/l	1
00783	Acenaphthene	83-32-9	300.	0.8	ug/l	1
00784	Fluorene	86-73-7	55.	0.2	ug/l	1
00785	Phenanthrene	85-01-8	8.	0.08	ug/l	1
00789	Anthracene	120-12-7	3.	0.04	ug/l	1
00807	Fluoranthene	206-44-0	3.	0.04	ug/l	1
00811	Pyrene	129-00-0	19.	0.2	ug/l	1
00812	Benzo(a)anthracene	56-55-3	1.	0.02	ug/l	1
00818	Benzo(b)fluoranthene	205-99-2	1.	0.04	ug/l	1
00823	Benzo(a)pyrene	50-32-8	2.	0.02	ug/l	1
00895	Dibenz(a,h)anthracene	53-70-3	3.	0.04	ug/l	1
00898	Indeno(1,2,3-cd)pyrene	193-39-5	6.	0.08	ug/l	1
00907	Benzo(g,h,i)perylene	191-24-2	12.	0.09	ug/l	1
07409	Chrysene	218-01-9	6.	0.08	ug/l	1
07410	Benzo(k)fluoranthene	207-08-9	1.	0.02	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	10/02/2001 05:00	Anastasia C. Papadopoulos	5
00774	PAH's in Water by HPLC	SW-846 8310	1	10/10/2001 11:24	Mark Clark	1



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08213

Lancaster Laboratories Sample No. WW 3695588

Collected: 09/27/2001 13:30 by BS

Account Number: 07802

Submitted: 09/28/2001 09:30

Kerr-McGee Corporation

Reported: 10/17/2001 at 12:24

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Discard: 11/17/2001

Oklahoma City OK 73125

MA3-MW-33S-270901-04 Matrix Spike Duplicate

Grab Water Sample

Moss American Superfund Site - Milwaukee, WI

33S04 SDG#: MOA82-11MSD

01146 GC VOA Water Prep SW-846 5030B

1 10/02/2001 05:00 Anastasia C. n.a.

03337 PAH Water Extraction SW-846 3510C

1 10/01/2001 00:10 Darin P. Wagner 1



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03031400

Lancaster Laboratories Sample No. WW 3695587

Collected: 09/27/2001 13:30 by BS

Account Number: 07802

Submitted: 09/28/2001 09:30

Kerr-McGee Corporation

Reported: 10/17/2001 at 12:24

P.O. Box 25861

Discard: 11/17/2001

Oklahoma City OK 73125

MA3-MW-33S-270901-04 Matrix Spike Grab Water Sample

Moss American Superfund Site - Milwaukee, WI

33S04 SDG#: MOA82-11MS

CAT No.	Analysis Name	CAS Number	As Received Result	As Received		Dilution Factor
				Method Detection Limit	Units	
08213	BTEX (8021)					
00776	Benzene	71-43-2	120.	1.0	ug/l	5
00777	Toluene	108-88-3	120.	1.0	ug/l	5
00778	Ethylbenzene	100-41-4	120.	1.0	ug/l	5
00779	Total Xylenes	1330-20-7	360.	3.0	ug/l	5
00774	PAH's in Water by HPLC					
00775	Naphthalene	91-20-3	1,800.	1.	ug/l	1
00782	Acenaphthylene	208-96-8	250.	0.8	ug/l	1
00783	Acenaphthene	83-32-9	310.	0.8	ug/l	1
00784	Fluorene	86-73-7	57.	0.2	ug/l	1
00785	Phenanthrene	85-01-8	8.	0.08	ug/l	1
00789	Anthracene	120-12-7	3.	0.04	ug/l	1
00807	Fluoranthene	206-44-0	3.	0.04	ug/l	1
00811	Pyrene	129-00-0	20.	0.2	ug/l	1
00812	Benzo(a)anthracene	56-55-3	2.	0.02	ug/l	1
00818	Benzo(b)fluoranthene	205-99-2	1.	0.04	ug/l	1
00823	Benzo(a)pyrene	50-32-8	2.	0.02	ug/l	1
00895	Dibenz(a,h)anthracene	53-70-3	3.	0.04	ug/l	1
00898	Indeno(1,2,3-cd)pyrene	193-39-5	7.	0.08	ug/l	1
00907	Benzo(g,h,i)perylene	191-24-2	14.	0.1	ug/l	1
07409	Chrysene	218-01-9	6.	0.08	ug/l	1
07410	Benzo(k)fluoranthene	207-08-9	1.	0.02	ug/l	1

Laboratory Chronicle

CAT No.	Analysis Name	Method	Analysis		Analyst	Dilution Factor
			Trial#	Date and Time		
08213	BTEX (8021)	SW-846 8021B	1	10/02/2001 04:26	Anastasia C. Papadopoulos	5
00774	PAH's in Water by HPLC	SW-846 8310	1	10/10/2001 10:54	Mark Clark	1



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Lancaster Laboratories Sample No. WW 3695587

Collected: 09/27/2001 13:30 by BS

Account Number: 07802

Submitted: 09/28/2001 09:30

Kerr-McGee Corporation

Reported: 10/17/2001 at 12:24

P.O. Box 25861

Discard: 11/17/2001

Oklahoma City OK 73125

MA3-MW-33S-270901-04 Matrix Spike Grab Water Sample

Moss American Superfund Site - Milwaukee, WI

33S04 SDG#: MOA82-11MS

01146	GC VOA Water Prep	SW-846 5030B	1	10/02/2001 04:26	Anastasia C. Papadopoulos	n.a.
03337	PAH Water Extraction	SW-846 3510C	1	10/01/2001 00:10	Darin P. Wagner	1



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11/17/01

Lancaster Laboratories Sample No. WW 3695586

Collected: 09/27/2001 13:30 by BS

Account Number: 07802

Submitted: 09/28/2001 09:30

Kerr-McGee Corporation

Reported: 10/17/2001 at 12:24

P.O. Box 25861

Discard: 11/17/2001

Oklahoma City OK 73125

MA3-MW-33S-270901-04 Unspiked Grab Water Sample  
Moss American Superfund Site - Milwaukee, WI

33S04 SDG#: MOA82-11BKG

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.	1.0	ug/l	5
00777	Toluene	108-88-3	N.D.	1.0	ug/l	5
00778	Ethylbenzene	100-41-4	8.2	1.0	ug/l	5
00779	Total Xylenes	1330-20-7	21.	3.0	ug/l	5

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	2,600.	20. J	ug/l	20
00782	Acenaphthylene	208-96-8	52.	0.9	ug/l	1
00783	Acenaphthene	83-32-9	130.	0.9	ug/l	1
00784	Fluorene	86-73-7	34.	0.2	ug/l	1
00785	Phenanthrene	85-01-8	2.	0.09	ug/l	1
00789	Anthracene	120-12-7	N.D.	0.04	ug/l	1
00807	Fluoranthene	206-44-0	N.D.	0.04	ug/l	1
00811	Pyrene	129-00-0	N.D.	0.2	ug/l	1
00812	Benzo(a)anthracene	56-55-3	N.D.	0.02	ug/l	1
00818	Benzo(b)fluoranthene	205-99-2	N.D.	0.04	ug/l	1
00823	Benzo(a)pyrene	50-32-8	N.D.	0.02	ug/l	1
00895	Dibenz(a,h)anthracene	53-70-3	N.D.	0.04	ug/l	1
00898	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.09	ug/l	1
00907	Benzo(g,h,i)perylene	191-24-2	N.D.	0.1	ug/l	1
07409	Chrysene	218-01-9	N.D.	0.09	ug/l	1
07410	Benzo(k)fluoranthene	207-08-9	N.D.	0.02	ug/l	1

Due to insufficient sample, the reporting limits for the HPLC PAH compounds were raised.

Laboratory Chronicle



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TBS  
11/15/01  
2224

Lancaster Laboratories Sample No. WW 3695586

Collected: 09/27/2001 13:30 by BS

Account Number: 07802

Submitted: 09/28/2001 09:30

Kerr-McGee Corporation

Reported: 10/17/2001 at 12:24

P.O. Box 25861

Discard: 11/17/2001

Oklahoma City OK 73125

MA3-MW-33S-270901-04 Unspiked Grab Water Sample  
Moss American Superfund Site - Milwaukee, WI

33S04 SDG#: MOA82-11BKG

No.	Analysis Name	Method	Analysis		Analyst	Dilution Factor
			Trial#	Date and Time		
08213	BTEX (8021)	SW-846 8021B	1	10/02/2001 03:52	Anastasia C. Papadoplos	5
00774	PAH's in Water by HPLC	SW-846 8310	1	10/10/2001 10:23	Mark Clark	1
00774	PAH's in Water by HPLC	SW-846 8310	1	10/10/2001 18:05	Mark Clark	20
01146	GC VOA Water Prep	SW-846 5030B	1	10/02/2001 03:52	Anastasia C. Papadoplos	n.a.
03337	PAH Water Extraction	SW-846 3510C	1	10/01/2001 00:10	Darin P. Wagner	1



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L17020003

Lancaster Laboratories Sample No. WW 3695585

Collected: 09/27/2001 17:55 by BS

Account Number: 07802

Submitted: 09/28/2001 09:30

Kerr-McGee Corporation

Reported: 10/17/2001 at 12:24

P.O. Box 25861

Discard: 11/17/2001

Oklahoma City OK 73125

TB-11 Grab Water Sample

Moss American Superfund Site - Milwaukee, WI

TB11G SDG#: MOA82-10TB

CAT No.	Analysis Name	CAS Number	As Received Result	As Received		Units	Dilution Factor
				Method	Detection Limit		
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	Analysis		Analyst	Dilution Factor
			Trial#	Date and Time		
08213	BTEX (8021)	SW-846 8021B	1	10/01/2001 13:48	Matthew E. Barton	1
01146	GC VOA Water Prep	SW-846 5030B	1	10/01/2001 13:48	Matthew E. Barton	n.a.



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Lancaster Laboratories Sample No. WW 3695584

Collected: 09/27/2001 10:45 by BS

Account Number: 07802

Submitted: 09/28/2001 09:30

Kerr-McGee Corporation

Reported: 10/17/2001 at 12:24

P.O. Box 25861

Discard: 11/17/2001

Oklahoma City OK 73125

MA3-MW-20S-270901-01 Grab Water Sample

Moss American Superfund Site - Milwaukee, WI

MA320 SDG#: MOA82-09

CAT No.	Analysis Name	CAS Number	As Received Result	As Received	Units	Dilution Factor
				Method		
08213	BTEX (8021)			Detection Limit		
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	Analysis		Analyst	Dilution Factor
			Trial#	Date and Time		
08213	BTEX (8021)	SW-846 8021B	1	10/02/2001 03:18	Matthew E. Barton	1
01146	GC VOA Water Prep	SW-846 5030B	1	10/02/2001 03:18	Matthew E. Barton	n.a



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22258

Lancaster Laboratories Sample No. WW 3695583

Collected: 09/27/2001 13:40 by BS

Account Number: 07802

Submitted: 09/28/2001 09:30

Kerr-McGee Corporation

Reported: 10/17/2001 at 12:24

P.O. Box 25861

Discard: 11/17/2001

Oklahoma City OK 73125

MA3-MW-27S-270901-05 Grab Water Sample

Moss American Superfund Site - Milwaukee, WI

A327S SDG#: MOA82-08

03337 PAH Water Extraction

SW-846 3510C

1

10/01/2001 00:10

Darin P. Wagner

1



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Lancaster Laboratories Sample No. WW 3695583

Collected: 09/27/2001 13:40 by BS

Account Number: 07802

Submitted: 09/28/2001 09:30

Kerr-McGee Corporation

Reported: 10/17/2001 at 12:24

P.O. Box 25861

Discard: 11/17/2001

Oklahoma City OK 73125

MA3-MW-27S-270901-05 Grab Water Sample

Moss American Superfund Site - Milwaukee, WI

A327S SDG#: MOA82-08

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
00774	PAH's in Water by HPLC						
00775	Naphthalene	91-20-3	1. J		1.	ug/l	1
00782	Acenaphthylene	208-96-8	N.D.		0.8	ug/l	1
00783	Acenaphthene	83-32-9	N.D.		0.8	ug/l	1
00784	Fluorene	86-73-7	N.D.		0.2	ug/l	1
00785	Phenanthrene	85-01-8	N.D.		0.08	ug/l	1
00789	Anthracene	120-12-7	N.D.		0.04	ug/l	1
00807	Fluoranthene	206-44-0	N.D.		0.04	ug/l	1
00811	Pyrene	129-00-0	N.D.		0.2	ug/l	1
00812	Benzo(a)anthracene	56-55-3	N.D.		0.02	ug/l	1
00818	Benzo(b)fluoranthene	205-99-2	N.D.		0.04	ug/l	1
00823	Benzo(a)pyrene	50-32-8	N.D.		0.02	ug/l	1
00895	Dibenz(a,h)anthracene	53-70-3	N.D.		0.04	ug/l	1
00898	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.		0.08	ug/l	1
00907	Benzo(g,h,i)perylene	191-24-2	N.D.		0.1	ug/l	1
07409	Chrysene	218-01-9	N.D.		0.08	ug/l	1
07410	Benzo(k)fluoranthene	207-08-9	N.D.		0.02	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	10/02/2001 02:45	Matthew E. Barton	1
00774	PAH's in Water by HPLC	SW-846 8310	1	10/10/2001 19:37	Mark Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	10/02/2001 02:45	Matthew E. Barton	n.d.



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

Lancaster Laboratories Sample No. WW 3695582

Collected: 09/27/2001 15:00 by BS

Account Number: 07802

Submitted: 09/28/2001 09:30

Kerr-McGee Corporation

Reported: 10/17/2001 at 12:24

P.O. Box 25861

Discard: 11/17/2001

Oklahoma City OK 73125

MA3-MW-34S-270901-06 Grab Water Sample

Moss American Superfund Site - Milwaukee, WI

A3106 SDG#: MOA82-07

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method		Units	Dilution Factor
				Detection Limit			
08213	BTEX (8021)						
00776	Benzene	71-43-2	9.0 J	4.0		ug/l	20
00777	Toluene	108-88-3	N.D.	4.0		ug/l	20
00778	Ethylbenzene	100-41-4	27.	4.0		ug/l	20
00779	Total Xylenes	1330-20-7	77.	12.		ug/l	20

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

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Analysis		Analyst	Dilution Factor
			Trial#	Date and Time		
08213	BTEX (8021)	SW-846 8021B	1	10/02/2001 02:11	Matthew E. Barton	20
01146	GC VOA Water Prep	SW-846 5030B	1	10/02/2001 02:11	Matthew E. Barton	n.a.



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0011000

Lancaster Laboratories Sample No. WW 3695581

Collected: 09/27/2001 15:30 by BS

Account Number: 07802

Submitted: 09/28/2001 09:30

Kerr-McGee Corporation

Reported: 10/17/2001 at 12:24

P.O. Box 25861

Discard: 11/17/2001

Oklahoma City OK 73125

MA3-MW-7I-270901-07 Grab Water Sample

Moss American Superfund Site - Milwaukee, WI

A37I7 SDG#: MOA82-06

CAT No.	Analysis Name	CAS Number	As Received Result	As Received		Units	Dilution Factor
				Method	Detection Limit		
08213	BTEX (8021)						
00776	Benzene	71-43-2	N.D.		0.20	ug/l	1
00777	Toluene	108-88-3	0.22 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

Laboratory Chronicle

CAT No.	Analysis Name	Method	Analysis		Analyst	Dilution Factor
			Trial#	Date and Time		
08213	BTEX (8021)	SW-846 8021B	1	10/02/2001 01:37	Matthew E. Barton	1
01146	GC VOA Water Prep	SW-846 5030B	1	10/02/2001 01:37	Matthew E. Barton	n.a.



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000100

Lancaster Laboratories Sample No. WW 3695580

Collected: 09/27/2001 16:35 by BS

Account Number: 07802

Submitted: 09/28/2001 09:30

Kerr-McGee Corporation

Reported: 10/17/2001 at 12:23

P.O. Box 25861

Discard: 11/17/2001

Oklahoma City OK 73125

MA3-MW-3S-270901-08 Grab Water Sample

Moss American Superfund Site - Milwaukee, WI

A3108 SDG#: MOA82-05

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

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
08213	BTEX (8021)	SW-846 8021B	1	10/02/2001 01:03	Matthew E. Barton	1
01146	GC VOA Water Prep	SW-846 5030B	1	10/02/2001 01:03	Matthew E. Barton	n.a.



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Lancaster Laboratories Sample No. WW 3695579

Collected: 09/27/2001 16:35 by BS

Account Number: 07802

Submitted: 09/28/2001 09:30

Kerr-McGee Corporation

Reported: 10/17/2001 at 12:23

P.O. Box 25861

Discard: 11/17/2001

Oklahoma City OK 73125

MA3-MW-3S-270901-08-DUP Grab Water Sample

Moss American Superfund Site - Milwaukee, WI

A38DP SDG#: MOA82-04

CAT No.	Analysis Name	CAS Number	As Received Result	As Received	Units	Dilution Factor
				Method		
				Detection Limit		
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	Analyst	Dilution Factor
				Date and Time		
08213	BTEX (8021)	SW-846 8021B	1	10/01/2001 22:06	Matthew E. Barton	1
01146	GC VOA Water Prep	SW-846 5030B	1	10/01/2001 22:06	Matthew E. Barton	n.a



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001100



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Page 2 of 2

Lancaster Laboratories Sample No. WW 3695578

Collected: 09/27/2001 18:00 by BS

Account Number: 07802

Submitted: 09/28/2001 09:30

Kerr-McGee Corporation

Reported: 10/17/2001 at 12:23

P.O. Box 25861

Discard: 11/17/2001

Oklahoma City OK 73125

FB-03 Grab Water Sample

Moss American Superfund Site - Milwaukee, WI

B03MA SDG#: MOA82-03

03337 PAH Water Extraction

SW-846 3510C

1 10/01/2001 00:10 Darin P. Wagner

1

MEMBER  
**ACIL**

Lancaster Laboratories, Inc.  
2425 New Holland Pike  
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2216 Rev. 9/11/00

101-0510



Lancaster Laboratories Sample No. WW 3695578

Collected: 09/27/2001 18:00 by BS

Account Number: 07802

Submitted: 09/28/2001 09:30

Kerr-McGee Corporation

Reported: 10/17/2001 at 12:23

P.O. Box 25861

Discard: 11/17/2001

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FB-03 Grab Water Sample

Moss American Superfund Site - Milwaukee, WI

B03MA SDG#: MOA82-03

CAT No.	Analysis Name	CAS Number	As Received Result	As Received		Units	Dilution Factor
				Method	Detection Limit		
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.	ug/l	1	
00782	Acenaphthylene	208-96-8	N.D.	0.8	ug/l	1	
00783	Acenaphthene	83-32-9	N.D.	0.8	ug/l	1	
00784	Fluorene	86-73-7	N.D.	0.2	ug/l	1	
00785	Phenanthrene	85-01-8	N.D.	0.08	ug/l	1	
00789	Anthracene	120-12-7	N.D.	0.04	ug/l	1	
00807	Fluoranthene	206-44-0	N.D.	0.04	ug/l	1	
00811	Pyrene	129-00-0	N.D.	0.2	ug/l	1	
00812	Benzo(a)anthracene	56-55-3	N.D.	0.02	ug/l	1	
00818	Benzo(b)fluoranthene	205-99-2	N.D.	0.04	ug/l	1	
00823	Benzo(a)pyrene	50-32-8	N.D.	0.02	ug/l	1	
00895	Dibenz(a,h)anthracene	53-70-3	N.D.	0.04	ug/l	1	
00898	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.08	ug/l	1	
00907	Benzo(g,h,i)perylene	191-24-2	N.D.	0.1	ug/l	1	
07409	Chrysene	218-01-9	N.D.	0.08	ug/l	1	
07410	Benzo(k)fluoranthene	207-08-9	N.D.	0.02	ug/l	1	

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis		Analyst	Dilution Factor
				Date	Time		
08213	BTEX (8021)	SW-846 8021B	1	10/01/2001	16:42	Matthew E. Barton	1
00774	PAH's in Water by HPLC	SW-846 8310	1	10/10/2001	19:06	Mark Clark	01
01146	GC VOA Water Prep	SW-846 5030B	1	10/01/2001	16:42	Matthew E. Barton	n.a.



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Lancaster Laboratories Sample No. WW 3695577

Collected: 09/27/2001 09:00 by BS

Account Number: 07802

Submitted: 09/28/2001 09:30

Kerr-McGee Corporation

Reported: 10/17/2001 at 12:23

P.O. Box 25861

Discard: 11/17/2001

Oklahoma City OK 73125

FB-02 Grab Water Sample

Moss American Superfund Site - Milwaukee, WI

MARB2 SDG#: MOA82-02  
03337 PAH Water Extraction SW-846 3510C 1 10/01/2001 00:10 Darin P. Wagner 1



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2425 New Holland Pike  
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0013

Lancaster Laboratories Sample No. WW 3695577

Collected: 09/27/2001 09:00 by BS

Account Number: 07802

Submitted: 09/28/2001 09:30

Kerr-McGee Corporation

Reported: 10/17/2001 at 12:23

P.O. Box 25861

Discard: 11/17/2001

Oklahoma City OK 73125

FB-02 Grab Water Sample

Moss American Superfund Site - Milwaukee, WI

MARB2 SDG#: MOA82-02

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.	0.9	ug/l	1
00782	Acenaphthylene	208-96-8	N.D.	0.7	ug/l	1
00783	Acenaphthene	83-32-9	N.D.	0.7	ug/l	1
00784	Fluorene	86-73-7	N.D.	0.2	ug/l	1
00785	Phenanthrene	85-01-8	N.D.	0.07	ug/l	1
00789	Anthracene	120-12-7	N.D.	0.04	ug/l	1
00807	Fluoranthene	206-44-0	N.D.	0.04	ug/l	1
00811	Pyrene	129-00-0	N.D.	0.2	ug/l	1
00812	Benzo(a)anthracene	56-55-3	N.D.	0.02	ug/l	1
00818	Benzo(b)fluoranthene	205-99-2	N.D.	0.04	ug/l	1
00823	Benzo(a)pyrene	50-32-8	N.D.	0.02	ug/l	1
00895	Dibenz(a,h)anthracene	53-70-3	N.D.	0.04	ug/l	1
00898	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.07	ug/l	1
00907	Benzo(g,h,i)perylene	191-24-2	N.D.	0.09	ug/l	1
07409	Chrysene	218-01-9	N.D.	0.07	ug/l	1
07410	Benzo(k)fluoranthene	207-08-9	N.D.	0.02	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	10/01/2001 21:33	Matthew E. Barton	1
00774	PAH's in Water by HPLC	SW-846 8310	1	10/10/2001 18:36	Mark Clark	01
01146	GC VOA Water Prep	SW-846 5030B	1	10/01/2001 21:33	Matthew E. Barton	01



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Lancaster Laboratories Sample No. WW 3695576

Collected: 09/27/2001 08:30 by BS

Account Number: 07802

Submitted: 09/28/2001 09:30

Kerr-McGee Corporation

Reported: 10/17/2001 at 12:23

P.O. Box 25861

Discard: 11/17/2001

Oklahoma City OK 73125

FB-01 Grab Water Sample

Moss American Superfund Site - Milwaukee, WI

MAFB1 SDG#: MOA82-01  
03337 PAH Water Extraction

SW-846 3510C

1 10/01/2001 00:10 Darin P. Wagner

1



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Lancaster Laboratories Sample No. WW 3695576

Collected: 09/27/2001 08:30 by BS

Account Number: 07802

Submitted: 09/28/2001 09:30

Kerr-McGee Corporation

Reported: 10/17/2001 at 12:23

P.O. Box 25861

Discard: 11/17/2001

Oklahoma City OK 73125

FB-01 Grab Water Sample

Moss American Superfund Site - Milwaukee, WI

MAFB1 SDG#: MOA82-01

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.	ug/l	1
00782	Acenaphthylene	208-96-8	N.D.	0.8	ug/l	1
00783	Acenaphthene	83-32-9	N.D.	0.8	ug/l	1
00784	Fluorene	86-73-7	N.D.	0.2	ug/l	1
00785	Phenanthrene	85-01-8	N.D.	0.08	ug/l	1
00789	Anthracene	120-12-7	N.D.	0.04	ug/l	1
00807	Fluoranthene	206-44-0	N.D.	0.04	ug/l	1
00811	Pyrene	129-00-0	N.D.	0.2	ug/l	1
00812	Benzo(a)anthracene	56-55-3	N.D.	0.02	ug/l	1
00818	Benzo(b)fluoranthene	205-99-2	N.D.	0.04	ug/l	1
00823	Benzo(a)pyrene	50-32-8	N.D.	0.02	ug/l	1
00895	Dibenz(a,h)anthracene	53-70-3	N.D.	0.04	ug/l	1
00898	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.08	ug/l	1
00907	Benzo(g,h,i)perylene	191-24-2	N.D.	0.1	ug/l	1
07409	Chrysene	218-01-9	N.D.	0.08	ug/l	1
07410	Benzo(k)fluoranthene	207-08-9	N.D.	0.02	ug/l	1

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Date and Time	Analyst	Dilution Factor
08213	BTEX (8021)	SW-846 8021B	1	10/01/2001 20:59	Matthew E. Barton	1
00774	PAH's in Water by HPLC	SW-846 8310	1	10/10/2001 17:00	Mark Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	10/01/2001 20:59	Matthew E. Barton	1



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

Respectfully Submitted,

A handwritten signature in black ink that reads "J. Martell".

Jennifer N. Martell  
Sr. Chemist/Coordinator



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2425 New Holland Pike  
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40 150 120 100



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 779921. Samples arrived at the laboratory on Friday, September 28, 2001.

Table with 2 columns: Client Description and Lancaster Labs Number. Lists various water samples and their corresponding lab numbers.

METHODOLOGY

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

1 COPY TO Kerr-McGee Corporation
1 COPY TO Roy F. Weston
1 COPY TO Data Package Group

Attn: Dr. Jeff Ostmeyer
Attn: Mr. Tom Graan



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**6. Surrogate:**

The surrogate recoveries were all within the laboratory and QAPP acceptance limits.

**7. Initial and Continuing Calibration:**

All the initial calibration and continuing calibration results were within the laboratory and QAPP acceptance limits.

Please feel free to contact me at (847) 549-1042 with any question regarding these validation reports.

Sincerely  
Tania Balikji-Shammo



**BETX (U.S. EPA Method 8021B)**  
**SDG # MOA82**

**1. Samples:**

<u>Client Code</u>	<u>Lab Sample Number</u>	<u>Matrix</u>	<u>Date Collected</u>	<u>Date Analyzed</u>
FB-01	3695576	Grab water	09/27/01	10/01/01
FB-02	3695577	Grab water	09/27/01	10/01/01
FB-03	3695578	Grab water	09/27/01	10/01/01
MW-3S-270901-08DUP	3695579	Grab water	09/27/01	10/01/01
MW-3S-270901-08	3695580	Grab water	09/27/01	10/02/01
MW-7I-270901-07	3695581	Grab water	09/27/01	10/02/01
MW-34S-270901-06	3695582	Grab water	09/27/01	10/02/01
MW-27S-270901-05	3695583	Grab water	09/27/01	10/02/01
MW-20S-270901-01	3695584	Grab water	09/27/01	10/02/01
TB-11	3695585	Grab water	09/27/01	10/01/01
MW-33S-270901-04	3695586	Grab water	09/27/01	10/02/01
MW-33S-270901-04MS	3695587	Grab water	09/27/01	10/02/01
MW-33S-270901-04MSD	3695588	Grab water	09/27/01	10/02/01
MW-20I-270901-02	3695589	Grab water	09/27/01	10/02/01
MW-3I-270901-09	3695590	Grab water	09/27/01	10/02/01
MW-7S-270901-03	3695591	Grab water	09/27/01	10/02/01

**2. Holding Times:**

All samples were analyzed within the required holding times.

**3. Method Blank:**

Three methods blanks BLK6815, BLK6816, and BLK6817 were associated with this SDG. BLK6815 was analyzed on 10/01/01 associated with 3695585, 3695576, 3695577, 3695578, and 3695579. BLK6816 was analyzed on 10/02/01 associated with 3695580 thru 3695584, 3695586, 3695589, 3695590, and MS/MSD. BLK6817 was analyzed on 10/02/01 associated with 3695591. All the methods blanks BLK6815, BLK6816, and BLK6817 results were free of contamination.

**4. Matrix Spike/Matrix Spike Duplicate :**

The laboratory performed matrix spike/matrix spike duplicate on sample 3695586. The matrix spike/matrix spike duplicate recoveries were within the laboratory and QAPP acceptance limits. Also, the relative percent difference (RPD%) recovery was acceptable.

**5. Laboratory control Sample:**

The laboratory control sample/laboratory control sample duplicate recoveries were within the laboratory and QAPP acceptance limits. Also, the relative percent difference (RPD%) recovery was acceptable.

**6. Surrogate:**

A Lancaster laboratory quantity the reported PAH compounds from the UV-Vis detector, due to reduce sensitivity on the fluorescence detector. All the surrogate recoveries were within the control limits on UV-Vis detector. Also, the surrogate recoveries from the fluorescence detector were outside the acceptance control limits for Nitrobenzene, diluted out in 3695586, and acceptable for Triphenylene.

**7. Retention Time:**

The retention time recoveries were within acceptance limits.

**8. Initial and Continuing Calibration:**

The initial calibrations on 04/04/01 results were within the quality control limits (RSD  $>+/-30\%$ ). The continuing calibration data files 01280-73R, 01280-84R were associated FB-01 showed acceptable results.

The continuing calibration data files 01280-95R, 01280B-95R were associated with (FB-02, FB-03, 3695583, 3695586DL, 3695589, and 3695590) showed acceptable results.

The continuing calibration data file 01280B-73R, 01280B-84R were associated FB-01 showed acceptable results and within quality control limits (RSD  $>+/-25\%$ ), except for acenaphthylene (31.5%), (34.7%). As a result, qualify the results for acenaphthylene in the samples as estimated (J/UJ).

Data validation for grab water samples analyses performed by Lancaster Laboratories, Lancaster, Pennsylvania for the Kerr McGee Moss American Site in Milwaukee, WI.  
The water samples were analyzed for Polynuclear Aromatic Hydrocarbons (PAHs 8310), and BTEX 8021 Analyses.

**Polynuclear Aromatic Hydrocarbons (PAHs by HPLC, U.S. EPA Method 8310)**  
**Moss American Site**  
**SDG # MOA82**

**1. Samples:**

<u>Client Code</u>	<u>Lab Sample Number</u>	<u>Matrix</u>	<u>Date Collected</u>	<u>Date Extracted</u>	<u>Date Analyzed</u>
FB-01	3695576	Grab water	09/27/01	10/01/01	10/10/01
FB-02	3695577	Grab water	09/27/01	10/01/01	10/10/01
FB-03	3695578	Grab water	09/27/01	10/01/01	10/10/01
MW-27S-270901-05	3695583	Grab water	09/27/01	10/01/01	10/10/01
MW-33S-270901-04	3695586	Grab water	09/27/01	10/01/01	10/10/01
MW-33S-270901-04MS	3695587	Grab water	09/27/01	10/01/01	10/10/01
MW-33S-270901-04MSD	3695588	Grab water	09/27/01	10/01/01	10/10/01
MW-20I-270901-02	3695589	Grab water	09/27/01	10/01/01	10/10/01
MW-3I-270901-09	3695590	Grab water	09/27/01	10/01/01	10/10/01

**2. Holding Times:**

All the samples were extracted and analyzed within the required holding times.

**3. Method Blank:**

The method blank SBLKWB2721 was associated with (3695576 thru 3695578, 3695583, 3695586 thru 3695590), and analyzed on 10/10/01. All the method blank results were free of contamination.

**4. Matrix Spike/Matrix Spike Duplicate:**

The matrix spike/matrix spike duplicate was performed on sample MW-33S-270901-04 with lab ID (3695586). The matrix spike/matrix spike duplicate recoveries were within the laboratory and QAPP acceptance limits, except in naphthalene. Therefore, qualify the positive hits for naphthalene in unspiked sample MW-33S-270901-04 as estimated (J). Also, the relative percent difference (RPD %) recoveries were acceptable.

**5. Laboratory control Sample:**

The laboratory control sample recoveries were all within the laboratory and QAPP acceptance limits.

Data validation for grab water samples analyses performed by Lancaster Laboratories, Lancaster, Pennsylvania for the Kerr McGee Moss American Site in Milwaukee, WI.  
The water samples were analyzed for Polynuclear Aromatic Hydrocarbons (PAHs 8310), and BTEX 8021 Analyses.

**Polynuclear Aromatic Hydrocarbons (PAHs by HPLC, U.S. EPA Method 8310)**

**Moss American Site**

**SDG # MOA83**

**1. Samples:**

<u>Client Code</u>	<u>Lab Sample Number</u>	<u>Matrix</u>	<u>Date Collected</u>	<u>Date Extracted</u>	<u>Date Analyzed</u>
MW-3S-270901-08	3696532	Grab water	09/27/01	10/02/01	10/12/01
MW-7I-270901-07	3696533	Grab water	09/27/01	10/02/01	10/12/01
MW-3S-270901-08DUP	3696534	Grab water	09/27/01	10/02/01	10/12/01
MW-34S-270901-06	3696535	Grab water	09/27/01	10/02/01	10/12.13/01
MW-7S-270901-03	3696536	Grab water	09/27/01	10/02/01	10/12.13/01
MW-20S-270901-01	3696537	Grab water	09/27/01	10/02/01	10/12/01
MW-31S-280901-04	3697168	Grab water	09/28/01	10/03/01	10/12/01
MW-13S-280901-03	3697169	Grab water	09/28/01	10/03/01	10/12/01
MW-25S-280901-02	3697170	Grab water	09/28/01	10/03/01	10/12/01
MW-25S-280901-02DUP	3697171	Grab water	09/28/01	10/03/01	10/12/01
MW-26S-280901-01	3697172	Grab water	09/28/01	10/03/01	10/13/01
MW-26S-280901-01MS	3697173	Grab water	09/28/01	10/03/01	10/13/01
MW-26S-280901-01MSD	3697174	Grab water	09/28/01	10/03/01	10/12/01

**2. Holding Times:**

All the samples were extracted and analyzed within the required holding times.

**3. Method Blank:**

Two method blanks SBLKWG2741, and SBLKWE2761 were associated with this SDG. SBLKWG2741 was analyzed on 10/12/01 and associated with (3696532 thru 3696537, 3696535DL, and 3696536DL). SBLKWE2761 was analyzed on 10/12/01 and associated with (3697168 thru 3697174). All the method blank SBLKWG2741, and SBLKWE2761 results were free of contamination.

**4. Matrix Spike/Matrix Spike Duplicate:**

Sufficient samples volume was not available to perform a matrix spike/matrix spike duplicate for the analysis of the first batch of the samples (3696532 thru 3696537).  
The matrix spike/matrix spike duplicate was performed on 3697172 for the analysis of the second batch of the samples (3697168 thru 3697172). The matrix spike/matrix spike duplicate recoveries were within the required quality control limit. Also, the relative percent differences (RPD%) recovery was acceptable.

**5. Laboratory control Sample:**

The laboratory control sample/laboratory control sample duplicate for the first batch of the samples (3696532 thru 3696537) recoveries were all within the laboratory and QAPP acceptance limits. Also, the relative percent differences (RPD%) were acceptable. The laboratory control sample for the second batch of the samples (3697168 thru 3697172) recoveries were all within the laboratory and QAPP acceptance limits.

**6. Surrogate:**

A Lancaster laboratory quantity the reported PAH compounds from the UV-Vis detector, due to reduce sensitivity on the fluorescence detector. All the surrogate recoveries for the analysis of the first batch of the samples (3696532 thru 3696537) were within the control limits on UV-Vis detector. Also, the surrogate recoveries from the fluorescence detector were outside the acceptance control limits for Nitrobenzene, and acceptable for Triphenylene, except diluted out in 3696535, 3696535DL, and 3696537. Therefore, qualify the positive results in 3696535, 3696535DL, and 3696537 as estimated (J).

All the surrogate recoveries for the analysis of the second batch of the samples (3697168 thru 3697172) were within the control limits on for Nitrobenzene, and Triphenylene on UV-Vis detector. Also, the surrogate recoveries from the fluorescence detector were acceptable for only Triphenylene.

**7. Retention Time:**

The retention time recoveries were within acceptance limits.

**8. Initial and Continuing Calibration:**

All the initial calibrations results were within the quality control limits (RSD >+/-30%). The continuing calibration data file 012801-78R was associated with the first batch of the samples (3696532 thru 3696537) showed acceptable results and within quality control limits (RSD >+/-25%). The continuing calibration data file 012801B-78R was associated with the first batch of the samples (3696532 thru 3696537) showed acceptable results, except in acenaphthylene (-46.43%). The continuing calibration data file 012801-88R was associated with the second batch of the samples (3697168 thru 3697172) showed acceptable results. The continuing calibration data file 012801B-88R was associated with the second batch of the samples (3697168 thru 3697172) showed acceptable results, except in acenaphthylene (-65.91%). The continuing calibration data file 012802-08R was associated with (3696535DL, and 3696536DL) showed acceptable results. The continuing calibration data file 012802B-08R was associated with (3696535DL, and 3696536DL) showed acceptable results, except in acenaphthylene (55.84%).

The continuing calibration data file 012802-17R was associated with (3697172, and MS) showed acceptable.

The continuing calibration data file 012802B-17R was associated with (3697172, and MS) showed acceptable results, except in acenaphthylene (42.86%).

As a result, qualify the results for acenaphthylene in the samples as estimated (J/UJ).

**BETX (U.S. EPA Method 8021B)**  
**SDG # MOA83**

**1. Samples:**

<u>Client Code</u>	<u>Lab Sample Number</u>	<u>Matrix</u>	<u>Date Collected</u>	<u>Date Analyzed</u>
MW-31S-280901-04	3697168	Grab water	09/28/01	10/04/01
MW-13S-280901-03	3697169	Grab water	09/28/01	10/04/01
MW-25S-280901-02	3697170	Grab water	09/28/01	10/04/01
MW-25S-280901-02DUP	3697171	Grab water	09/28/01	10/04/01
MW-26S-280901-01	3697172	Grab water	09/28/01	10/04/01
MW-26S-280901-01MS	3697173	Grab water	09/28/01	10/04/01
MW-26S-280901-01MSD	3697174	Grab water	09/28/01	10/04/01
TB-01	3697175	Grab water	09/28/01	10/03/01

**2. Holding Times:**

All samples were analyzed within the required holding times.

**3. Method Blank:**

The method blank BLK5501 was associated with this SDG. BLK5501 was analyzed on 10/03/01 associated with 3697169 thru 3697175. All the method blank BLK5501 results were free of contamination.

**4. Matrix Spike/Matrix Spike Duplicate :**

The laboratory performed matrix spike/matrix spike duplicate on sample 3697172. The matrix spike/matrix spike duplicate recoveries were within the laboratory and QAPP acceptance limits. Also, the relative percent difference (RPD%) recovery was acceptable.

**5. Laboratory control Sample:**

The laboratory control sample/laboratory control sample duplicate recoveries were within the laboratory and QAPP acceptance limits. Also, the relative percent difference (RPD%) recovery was acceptable:

**6. Surrogate:**

The surrogate recoveries were all within the laboratory and QAPP acceptance limits.

**7. Initial and Continuing Calibration:**

All the initial calibration and continuing calibration results were within the laboratory and QAPP acceptance limits.

Please feel free to contact me at (847) 549-1042 with any question regarding these validation reports.

Sincerely  
Tania Balikji-Shammo



- 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 780089. Samples arrived at the laboratory on Saturday, September 29, 2001.

<u>Client Description</u>	<u>Lancaster Labs Number</u>
MA3-MW-3S-270901-08 Grab Water Sample	3696532
MA3-MW-7I-270901-07 Grab Water Sample	3696533
MA3-MW-3S-270901-08-DUP Grab Water Sample	3696534
MA3-MW-34S-270901-06 Grab Water Sample	3696535
MA3-MW-7S-270901-03 Grab Water Sample	3696536
MA3-MW-20S-270901-01 Grab Water Sample	3696537

METHODOLOGY

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

1 COPY TO Kerr-McGee Corporation  
 1 COPY TO Roy F. Weston  
 1 COPY TO Data Package Group

Attn: Dr. Jeff Ostmeyer  
 Attn: Mr. Tom Graan



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 717-656-2300 Fax: 717-656-2681

00000000





**Lancaster Laboratories**

*Where quality is a science.*

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

Respectfully Submitted,

Jennifer N. Martell  
Sr. Chemist/Coordinator



Lancaster Laboratories, Inc.  
2425 New Holland Pike  
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Lancaster, PA 17605-2425  
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Lancaster Laboratories Sample No. WW 3696532

Collected: 09/27/2001 16:35 by TG

Account Number: 07802

Submitted: 09/29/2001 14:00

Kerr-McGee Corporation

Reported: 10/19/2001 at 14:59

P.O. Box 25861

Discard: 11/19/2001

Oklahoma City OK 73125

MA3-MW-3S-270901-08 Grab Water Sample

Moss American Site - WI

3S--8 SDG#: MOA83-01

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.	ug/l	1
00782	Acenaphthylene	208-96-8	N.D.	0.8	ug/l	1
00783	Acenaphthene	83-32-9	N.D.	0.8	ug/l	1
00784	Fluorene	86-73-7	N.D.	0.2	ug/l	1
00785	Phenanthrene	85-01-8	N.D.	0.08	ug/l	1
00789	Anthracene	120-12-7	N.D.	0.04	ug/l	1
00807	Fluoranthene	206-44-0	N.D.	0.04	ug/l	1
00811	Pyrene	129-00-0	N.D.	0.2	ug/l	1
00812	Benzo(a)anthracene	56-55-3	N.D.	0.02	ug/l	1
00818	Benzo(b)fluoranthene	205-99-2	N.D.	0.04	ug/l	1
00823	Benzo(a)pyrene	50-32-8	N.D.	0.02	ug/l	1
00895	Dibenz(a,h)anthracene	53-70-3	N.D.	0.04	ug/l	1
00898	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.08	ug/l	1
00907	Benzo(g,h,i)perylene	191-24-2	N.D.	0.1	ug/l	1
07409	Chrysene	218-01-9	N.D.	0.08	ug/l	1
07410	Benzo(k)fluoranthene	207-08-9	N.D.	0.02	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	Analysis			Dilution Factor
			Trial#	Date and Time	Analyst	
00774	PAH's in Water by HPLC	SW-846 8310	1	10/12/2001 15:17	Mark Clark	1
03337	PAH Water Extraction	SW-846 3510C	1	10/02/2001 09:30	John A. Myers	1



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Lancaster Laboratories Sample No. WW 3696533

Collected: 09/27/2001 15:30 by TG

Account Number: 07802

Submitted: 09/29/2001 14:00  
 Reported: 10/19/2001 at 14:59  
 Discard: 11/19/2001  
 MA3-MW-7I-270901-07 Grab Water Sample  
 Moss American Site - WI

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

7I--7 SDG#: MOA83-02

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.	ug/l	1
00782	Acenaphthylene	208-96-8	N.D.	0.8	ug/l	1
00783	Acenaphthene	83-32-9	N.D.	0.8	ug/l	1
00784	Fluorene	86-73-7	N.D.	0.2	ug/l	1
00785	Phenanthrene	85-01-8	N.D.	0.08	ug/l	1
00789	Anthracene	120-12-7	N.D.	0.04	ug/l	1
00807	Fluoranthene	206-44-0	N.D.	0.04	ug/l	1
00811	Pyrene	129-00-0	N.D.	0.2	ug/l	1
00812	Benzo(a)anthracene	56-55-3	N.D.	0.02	ug/l	1
00818	Benzo(b)fluoranthene	205-99-2	N.D.	0.04	ug/l	1
00823	Benzo(a)pyrene	50-32-8	N.D.	0.02	ug/l	1
00895	Dibenz(a,h)anthracene	53-70-3	N.D.	0.04	ug/l	1
00898	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.08	ug/l	1
00907	Benzo(g,h,i)perylene	191-24-2	N.D.	0.1	ug/l	1
07409	Chrysene	218-01-9	N.D.	0.08	ug/l	1
07410	Benzo(k)fluoranthene	207-08-9	N.D.	0.02	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
00774	PAH's in Water by HPLC	SW-846 8310	1	10/12/2001 15:47	Mark Clark	1
03337	PAH Water Extraction	SW-846 3510C	1	10/02/2001 09:30	John A. Myers	1

MEMBER  
**ACIL**  
 Lancaster Laboratories, Inc.  
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Lancaster Laboratories Sample No. WW 3696534

Collected: 09/27/2001 16:35 by TG

Account Number: 07802

Submitted: 09/29/2001 14:00

Kerr-McGee Corporation

Reported: 10/19/2001 at 14:59

P.O. Box 25861

Discard: 11/19/2001

Oklahoma City OK 73125

MA3-MW-3S-270901-08-DUP Grab Water Sample  
Moss American Site - WI

3S-8D SDG#: MOA83-03

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.	ug/l	1
00782	Acenaphthylene	208-96-8	N.D.	0.8	ug/l	1
00783	Acenaphthene	83-32-9	N.D.	0.8	ug/l	1
00784	Fluorene	86-73-7	N.D.	0.2	ug/l	1
00785	Phenanthrene	85-01-8	N.D.	0.08	ug/l	1
00789	Anthracene	120-12-7	N.D.	0.04	ug/l	1
00807	Fluoranthene	206-44-0	N.D.	0.04	ug/l	1
00811	Pyrene	129-00-0	N.D.	0.2	ug/l	1
00812	Benzo(a)anthracene	56-55-3	N.D.	0.02	ug/l	1
00818	Benzo(b)fluoranthene	205-99-2	N.D.	0.04	ug/l	1
00823	Benzo(a)pyrene	50-32-8	N.D.	0.02	ug/l	1
00895	Dibenz(a,h)anthracene	53-70-3	N.D.	0.04	ug/l	1
00898	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.08	ug/l	1
00907	Benzo(g,h,i)perylene	191-24-2	N.D.	0.1	ug/l	1
07409	Chrysene	218-01-9	N.D.	0.08	ug/l	1
07410	Benzo(k)fluoranthene	207-08-9	N.D.	0.02	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
00774	PAH's in Water by HPLC	SW-846 8310	1	10/12/2001 16:18	Mark Clark	1
03337	PAH Water Extraction	SW-846 3510C	1	10/02/2001 09:30	John A. Myers	1



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10/19/01



Lancaster Laboratories Sample No. WW 3696535

Collected: 09/27/2001 15:00 by TG

Account Number: 07802

Submitted: 09/29/2001 14:00

Reported: 10/19/2001 at 14:59

Discard: 11/19/2001

MA3-MW-34S-270901-06 Grab Water Sample

Moss American Site - WI

Kerr-McGee Corporation

P.O. Box 25861

Oklahoma City OK 73125

34S-6 SDG#: MOA83-04

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	6,200.	50.	ug/l	50
00782	Acenaphthylene	208-96-8	70.	4.	ug/l	5
00783	Acenaphthene	83-32-9	220.	4.	ug/l	5
00784	Fluorene	86-73-7	120.	0.9	ug/l	5
00785	Phenanthrene	85-01-8	200.	4.	ug/l	50
00789	Anthracene	120-12-7	19.	0.2	ug/l	5
00807	Fluoranthene	206-44-0	60.	2.	ug/l	50
00811	Pyrene	129-00-0	45.	0.9	ug/l	5
00812	Benzo(a)anthracene	56-55-3	9.	0.1	ug/l	5
00818	Benzo(b)fluoranthene	205-99-2	2.	0.2	ug/l	5
00823	Benzo(a)pyrene	50-32-8	3.	0.1	ug/l	5
00895	Dibenz(a,h)anthracene	53-70-3	N.D.	0.2	ug/l	5
00898	Indeno(1,2,3-cd)pyrene	193-39-5	1. J	0.4	ug/l	5
00907	Benzo(g,h,i)perylene	191-24-2	N.D.	0.5	ug/l	5
07409	Chrysene	218-01-9	10.	0.4	ug/l	5
07410	Benzo(k)fluoranthene	207-08-9	2.	0.1	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.

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.

Due to insufficient sample, the reporting limits for the HPLC PAH compounds were raised.



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Lancaster Laboratories Sample No. WW 3696535

Collected: 09/27/2001 15:00 by TG

Account Number: 07802

Submitted: 09/29/2001 14:00

Kerr-McGee Corporation

Reported: 10/19/2001 at 14:59

P.O. Box 25861

Discard: 11/19/2001

Oklahoma City OK 73125

MA3-MW-34S-270901-06 Grab Water Sample

Moss American Site - WI

34S-6 SDG#: MOA83-04

Laboratory Chronicle

CAT No.	Analysis Name	Method	Analysis		Analyst	Dilution Factor
			Trial#	Date and Time		
00774	PAH's in Water by HPLC	SW-846 8310	1	10/12/2001 16:52	Mark Clark	5
00774	PAH's in Water by HPLC	SW-846 8310	1	10/13/2001 08:15	Mark Clark	50
03337	PAH Water Extraction	SW-846 3510C	1	10/02/2001 09:30	John A. Myers	1



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

4400



Lancaster Laboratories Sample No. WW 3696536

Collected: 09/27/2001 13:25 by TG

Account Number: 07802

Submitted: 09/29/2001 14:00

Kerr-McGee Corporation

Reported: 10/19/2001 at 14:59

P.O. Box 25861

Discard: 11/19/2001

Oklahoma City OK 73125

MA3-MW-7S-270901-03 Grab Water Sample

Moss American Site - WI

7S--3 SDG#: MOA83-05

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	3,700.	50.	ug/l	50
00782	Acenaphthylene	208-96-8	N.D.	100.	ug/l	1
00783	Acenaphthene	83-32-9	68.	0.8	ug/l	1
00784	Fluorene	86-73-7	11.	0.2	ug/l	1
00785	Phenanthrene	85-01-8	N.D.	0.08	ug/l	1
00789	Anthracene	120-12-7	N.D.	0.04	ug/l	1
00807	Fluoranthene	206-44-0	N.D.	0.04	ug/l	1
00811	Pyrene	129-00-0	N.D.	0.2	ug/l	1
00812	Benzo(a)anthracene	56-55-3	N.D.	0.02	ug/l	1
00818	Benzo(b)fluoranthene	205-99-2	N.D.	0.04	ug/l	1
00823	Benzo(a)pyrene	50-32-8	N.D.	0.02	ug/l	1
00895	Dibenz(a,h)anthracene	53-70-3	N.D.	0.04	ug/l	1
00898	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.08	ug/l	1
00907	Benzo(g,h,i)perylene	191-24-2	N.D.	0.1	ug/l	1
07409	Chrysene	218-01-9	N.D.	0.08	ug/l	1
07410	Benzo(k)fluoranthene	207-08-9	N.D.	0.02	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 presence of an interferent near its retention time, the normal reporting limit was not attained for acenaphthylene. The reporting limit for this compound was raised accordingly.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00774	PAH's in Water by HPLC	SW-846 8310	1	10/12/2001 17:22	Mark Clark	1
00774	PAH's in Water by HPLC	SW-846 8310	1	10/13/2001 08:50	Mark Clark	50
03337	PAH Water Extraction	SW-846 3510C	1	10/02/2001 09:30	John A. Myers	1



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Lancaster Laboratories Sample No. WW 3696536

Collected: 09/27/2001 13:25 by TG

Account Number: 07802

Submitted: 09/29/2001 14:00

Reported: 10/19/2001 at 14:59

Discard: 11/19/2001

MA3-MW-7S-270901-03 Grab Water Sample

Moss American Site - WI

Kerr-McGee Corporation

P.O. Box 25861

Oklahoma City OK 73125

7S--3 SDG#: MOA83-05



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001-0000





Lancaster Laboratories Sample No. WW 3696537

Collected: 09/27/2001 10:45 by TG

Account Number: 07802

Submitted: 09/29/2001 14:00

Reported: 10/19/2001 at 14:59

Kerr-McGee Corporation

P.O. Box 25861

Discard: 11/19/2001

Oklahoma City OK 73125

MA3-MW-20S-270901-01 Grab Water Sample

Moss American Site - WI

20S1- SDG#: MOA83-06

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.	ug/l	1
00782	Acenaphthylene	208-96-8	N.D.	0.8	ug/l	1
00783	Acenaphthene	83-32-9	N.D.	0.8	ug/l	1
00784	Fluorene	86-73-7	N.D.	0.2	ug/l	1
00785	Phenanthrene	85-01-8	N.D.	0.08	ug/l	1
00789	Anthracene	120-12-7	N.D.	0.04	ug/l	1
00807	Fluoranthene	206-44-0	N.D.	0.04	ug/l	1
00811	Pyrene	129-00-0	N.D.	0.2	ug/l	1
00812	Benzo(a)anthracene	56-55-3	N.D.	0.02	ug/l	1
00818	Benzo(b)fluoranthene	205-99-2	N.D.	0.04	ug/l	1
00823	Benzo(a)pyrene	50-32-8	N.D.	0.02	ug/l	1
00895	Dibenz(a,h)anthracene	53-70-3	N.D.	0.04	ug/l	1
00898	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.08	ug/l	1
00907	Benzo(g,h,i)perylene	191-24-2	N.D.	0.1	ug/l	1
07409	Chrysene	218-01-9	N.D.	0.08	ug/l	1
07410	Benzo(k)fluoranthene	207-08-9	N.D.	0.02	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 insufficient sample, the reporting limits for the HPLC PAH compounds were raised.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00774	PAH's in Water by HPLC	SW-846 8310	1	10/12/2001 17:53	Mark Clark	
03337	PAH Water Extraction	SW-846 3510C	1	10/02/2001 09:30	John A. Myers	



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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 780229. Samples arrived at the laboratory on Monday, October 01, 2001.

<u>Client Description</u>	<u>Lancaster Labs Number</u>
MA3-MW-31S-280901-04 Grab Water Sample	3697168
MA3-MW-13S-280901-03 Grab Water Sample	3697169
MA3-MW-25S-280901-02 Grab Water Sample	3697170
MA3-MW-25S-280901-02-DUP Grab Water Sample	3697171
MA3-MW-26S-280901-01 Unspiked Grab Water Sample	3697172
MA3-MW-26S-280901-01 Matrix Spike Grab Water	3697173
MA3-MW-26S-280901-01 Matrix Spike Dup. Grab Water	3697174
TB-01 Trip Blank Water Sample	3697175

METHODOLOGY

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

1 COPY TO Kerr-McGee Corporation  
 1 COPY TO Roy F. Weston  
 1 COPY TO Data Package Group

Attn: Dr. Jeff Ostmeyer  
 Attn: Mr. Tom Graan



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00100



**Lancaster Laboratories**

*Where quality is a science.*

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

Respectfully Submitted,

Jennifer N. Martell  
Sr. Chemist/Coordinator



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717-656-2300 Fax: 717-656-2681

0000000000



Lancaster Laboratories Sample No. WW 3697168

Collected: 09/28/2001 11:50 by BS

Account Number: 07802

Submitted: 10/01/2001 09:30

Reported: 10/19/2001 at 08:15

Discard: 11/19/2001

MA3-MW-31S-280901-04 Grab Water Sample

Moss American Site - WI

Kerr-McGee Corporation

P.O. Box 25861

Oklahoma City OK 73125

31S-4 SDG#: MOA83-07

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.	ug/l	1
00782	Acenaphthylene	208-96-8	N.D.	0.8	ug/l	1
00783	Acenaphthene	83-32-9	N.D.	0.8	ug/l	1
00784	Fluorene	86-73-7	N.D.	0.2	ug/l	1
00785	Phenanthrene	85-01-8	N.D.	0.08	ug/l	1
00789	Anthracene	120-12-7	N.D.	0.04	ug/l	1
00807	Fluoranthene	206-44-0	N.D.	0.04	ug/l	1
00811	Pyrene	129-00-0	N.D.	0.2	ug/l	1
00812	Benzo(a)anthracene	56-55-3	N.D.	0.02	ug/l	1
00818	Benzo(b)fluoranthene	205-99-2	N.D.	0.04	ug/l	1
00823	Benzo(a)pyrene	50-32-8	N.D.	0.02	ug/l	1
00895	Dibenz(a,h)anthracene	53-70-3	N.D.	0.04	ug/l	1
00898	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.08	ug/l	1
00907	Benzo(g,h,i)perylene	191-24-2	N.D.	0.1	ug/l	1
07409	Chrysene	218-01-9	N.D.	0.08	ug/l	1
07410	Benzo(k)fluoranthene	207-08-9	N.D.	0.02	ug/l	1

Due to insufficient sample, the reporting limits for the HPLC PAH compounds were raised.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
08213	BTEX (8021)	SW-846 8021B	1	10/04/2001 00:57	Melissa Mann	1



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Lancaster Laboratories Sample No. WW 3697168

Collected: 09/28/2001 11:50 by BS

Account Number: 07802

Submitted: 10/01/2001 09:30

Kerr-McGee Corporation

Reported: 10/19/2001 at 08:15

P.O. Box 25861

Discard: 11/19/2001

Oklahoma City OK 73125

MA3-MW-31S-280901-04 Grab Water Sample

Moss American Site - WI

31S-4 SDG#: MOA83-07

00774 PAH's in Water by HPLC

SW-846 8310

1 10/12/2001 21:57

Mark Clark

1

01146 GC VOA Water Prep

SW-846 5030B

1 10/04/2001 00:57

Melissa Mann

n.a.

03337 PAH Water Extraction

SW-846 3510C

1 10/03/2001 22:15

Karen L. Beyer

1



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10/19/01



Lancaster Laboratories Sample No. WW 3697169

Collected: 09/28/2001 10:05 by BS

Account Number: 07802

Submitted: 10/01/2001 09:30

Kerr-McGee Corporation

Reported: 10/19/2001 at 08:15

P.O. Box 25861

Discard: 11/19/2001

Oklahoma City OK 73125

MA3-MW-13S-280901-03 Grab Water Sample

Moss American Site - WI

13S-3 SDG#: MOA83-08

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
00774	PAH's in Water by HPLC					
00775	Naphthalene	91-20-3	N.D.	1.	ug/l	1
00782	Acenaphthylene	208-96-8	N.D.	0.8	ug/l	1
00783	Acenaphthene	83-32-9	N.D.	0.8	ug/l	1
00784	Fluorene	86-73-7	N.D.	0.2	ug/l	1
00785	Phenanthrene	85-01-8	N.D.	0.08	ug/l	1
00789	Anthracene	120-12-7	N.D.	0.04	ug/l	1
00807	Fluoranthene	206-44-0	N.D.	0.04	ug/l	1
00811	Pyrene	129-00-0	N.D.	0.2	ug/l	1
00812	Benzo(a)anthracene	56-55-3	N.D.	0.02	ug/l	1
00818	Benzo(b)fluoranthene	205-99-2	N.D.	0.04	ug/l	1
00823	Benzo(a)pyrene	50-32-8	N.D.	0.02	ug/l	1
00895	Dibenz(a,h)anthracene	53-70-3	N.D.	0.04	ug/l	1
00898	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.08	ug/l	1
00907	Benzo(g,h,i)perylene	191-24-2	N.D.	0.1	ug/l	1
07409	Chrysene	218-01-9	N.D.	0.08	ug/l	1
07410	Benzo(k)fluoranthene	207-08-9	N.D.	0.02	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	10/04/2001 01:32	Melissa Mann	1
00774	PAH's in Water by HPLC	SW-846 8310	1	10/12/2001 22:28	Mark Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	10/04/2001 01:32	Melissa Mann	n.a.



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Lancaster Laboratories Sample No. WW 3697169

Collected: 09/28/2001 10:05 by BS

Account Number: 07802

Submitted: 10/01/2001 09:30

Kerr-McGee Corporation

Reported: 10/19/2001 at 08:15

P.O. Box 25861

Discard: 11/19/2001

Oklahoma City OK 73125

MA3-MW-13S-280901-03 Grab Water Sample

Moss American Site - WI

13S-3 SDG#: MOA83-08

03337 PAH Water Extraction

SW-846 3510C

1 10/03/2001 22:15 Karen L. Beyer

1



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Lancaster Laboratories Sample No. WW 3697170

Collected: 09/28/2001 10:00 by BS

Account Number: 07802

Submitted: 10/01/2001 09:30

Reported: 10/19/2001 at 08:15

Discard: 11/19/2001

MA3-MW-25S-280901-02 Grab Water Sample

Moss American Site - WI

Kerr-McGee Corporation

P.O. Box 25861

Oklahoma City OK 73125

25S-2 SDG#: MOA83-09

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
00774	PAH's in Water by HPLC					
00775	Naphthalene	91-20-3	N.D.	1.	ug/l	1
00782	Acenaphthylene	208-96-8	N.D.	0.8	ug/l	1
00783	Acenaphthene	83-32-9	N.D.	0.8	ug/l	1
00784	Fluorene	86-73-7	N.D.	0.2	ug/l	1
00785	Phenanthrene	85-01-8	N.D.	0.08	ug/l	1
00789	Anthracene	120-12-7	N.D.	0.04	ug/l	1
00807	Fluoranthene	206-44-0	N.D.	0.04	ug/l	1
00811	Pyrene	129-00-0	N.D.	0.2	ug/l	1
00812	Benzo(a)anthracene	56-55-3	N.D.	0.02	ug/l	1
00818	Benzo(b)fluoranthene	205-99-2	N.D.	0.04	ug/l	1
00823	Benzo(a)pyrene	50-32-8	N.D.	0.02	ug/l	1
00895	Dibenz(a,h)anthracene	53-70-3	N.D.	0.04	ug/l	1
00898	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.08	ug/l	1
00907	Benzo(g,h,i)perylene	191-24-2	N.D.	0.1	ug/l	1
07409	Chrysene	218-01-9	N.D.	0.08	ug/l	1
07410	Benzo(k)fluoranthene	207-08-9	N.D.	0.02	ug/l	1

Due to insufficient sample, the reporting limits for the HPLC PAH compounds were raised.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
08213	BTEX (8021)	SW-846 8021B	1	10/04/2001 02:07	Melissa Mann	



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Lancaster Laboratories Sample No. WW 3697170

Collected: 09/28/2001 10:00 by BS

Account Number: 07802

Submitted: 10/01/2001 09:30

Kerr-McGee Corporation

Reported: 10/19/2001 at 08:15

P.O. Box 25861

Discard: 11/19/2001

Oklahoma City OK 73125

MA3-MW-25S-280901-02 Grab Water Sample

Moss American Site - WI

25S-2	SDG#: MOA83-09					
00774	PAH's in Water by HPLC	SW-846 8310	1	10/12/2001 22:58	Mark Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	10/04/2001 02:07	Melissa Mann	n.a.
03337	PAH Water Extraction	SW-846 3510C	1	10/03/2001 22:15	Karen L. Beyer	1



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L11105100



Lancaster Laboratories Sample No. WW 3697171

Collected: 09/28/2001 10:00 by BS

Account Number: 07802

Submitted: 10/01/2001 09:30

Kerr-McGee Corporation

Reported: 10/19/2001 at 08:15

P.O. Box 25861

Discard: 11/19/2001

Oklahoma City OK 73125

MA3-MW-25S-280901-02-DUP Grab Water Sample

Moss American Site - WI

25S2D SDG#: MOA83-10

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.	ug/l	1
00782	Acenaphthylene	208-96-8	N.D.	0.8	ug/l	1
00783	Acenaphthene	83-32-9	N.D.	0.8	ug/l	1
00784	Fluorene	86-73-7	N.D.	0.2	ug/l	1
00785	Phenanthrene	85-01-8	N.D.	0.08	ug/l	1
00789	Anthracene	120-12-7	N.D.	0.04	ug/l	1
00807	Fluoranthene	206-44-0	N.D.	0.04	ug/l	1
00811	Pyrene	129-00-0	N.D.	0.2	ug/l	1
00812	Benzo(a)anthracene	56-55-3	N.D.	0.02	ug/l	1
00818	Benzo(b)fluoranthene	205-99-2	N.D.	0.04	ug/l	1
00823	Benzo(a)pyrene	50-32-8	N.D.	0.02	ug/l	1
00895	Dibenz(a,h)anthracene	53-70-3	N.D.	0.04	ug/l	1
00898	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.08	ug/l	1
00907	Benzo(g,h,i)perylene	191-24-2	N.D.	0.1	ug/l	1
07409	Chrysene	218-01-9	N.D.	0.08	ug/l	1
07410	Benzo(k)fluoranthene	207-08-9	N.D.	0.02	ug/l	1

Due to insufficient sample, the reporting limits for the HPLC PAH compounds were raised.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
08213	BTEX (8021)	SW-846 8021B	1	10/04/2001 02:42	Melissa Mann	1



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Lancaster Laboratories Sample No. WW 3697171

Collected: 09/28/2001 10:00 by BS

Account Number: 07802

Submitted: 10/01/2001 09:30

Kerr-McGee Corporation

Reported: 10/19/2001 at 08:15

P.O. Box 25861

Discard: 11/19/2001

Oklahoma City OK 73125

MA3-MW-25S-280901-02-DUP Grab Water Sample

Moss American Site - WI

25S2D	SDG#: MOA83-10					
00774	PAH's in Water by HPLC	SW-846 8310	1	10/12/2001 23:29	Mark Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	10/04/2001 02:42	Melissa Mann	n.a.
03337	PAH Water Extraction	SW-846 3510C	1	10/03/2001 22:15	Karen L. Beyer	1



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09/28/01



Lancaster Laboratories Sample No. WW 3697172

Collected: 09/28/2001 09:45 by BS

Account Number: 07802

Submitted: 10/01/2001 09:30

Reported: 10/19/2001 at 08:16

Discard: 11/19/2001

MA3-MW-26S-280901-01 Unspiked Grab Water Sample

Moss American Site - WI

Kerr-McGee Corporation

P.O. Box 25861

Oklahoma City OK 73125

26S-1 SDG#: MOA83-11BKG

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	1. J	1.	ug/l	1
00782	Acenaphthylene	208-96-8	N.D.	0.8	ug/l	1
00783	Acenaphthene	83-32-9	N.D.	0.8	ug/l	1
00784	Fluorene	86-73-7	N.D.	0.2	ug/l	1
00785	Phenanthrene	85-01-8	N.D.	0.08	ug/l	1
00789	Anthracene	120-12-7	N.D.	0.04	ug/l	1
00807	Fluoranthene	206-44-0	N.D.	0.04	ug/l	1
00811	Pyrene	129-00-0	N.D.	0.2	ug/l	1
00812	Benzo(a)anthracene	56-55-3	N.D.	0.02	ug/l	1
00818	Benzo(b)fluoranthene	205-99-2	N.D.	0.04	ug/l	1
00823	Benzo(a)pyrene	50-32-8	N.D.	0.02	ug/l	1
00895	Dibenz(a,h)anthracene	53-70-3	N.D.	0.04	ug/l	1
00898	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.08	ug/l	1
00907	Benzo(g,h,i)perylene	191-24-2	N.D.	0.1	ug/l	1
07409	Chrysene	218-01-9	N.D.	0.08	ug/l	1
07410	Benzo(k)fluoranthene	207-08-9	N.D.	0.02	ug/l	1

Due to insufficient sample, the reporting limits for the HPLC PAH compounds were raised.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
08213	BTEX (8021)	SW-846 8021B	1	10/03/2001 23:11	Melissa Mann	0.1



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# Lancaster Laboratories

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Lancaster Laboratories Sample No. WW 3697172

Collected: 09/28/2001 09:45 by BS

Account Number: 07802

Submitted: 10/01/2001 09:30

Kerr-McGee Corporation

Reported: 10/19/2001 at 08:16

P.O. Box 25861

Discard: 11/19/2001

Oklahoma City OK 73125

MA3-MW-26S-280901-01 Unspiked Grab Water Sample

Moss American Site - WI

26S-1 SDG#: MOA83-11BKG

00774 PAH's in Water by HPLC

SW-846 8310

1 10/13/2001 09:51

Mark Clark

1

01146 GC VOA Water Prep

SW-846 5030B

1 10/03/2001 23:11

Melissa Mann

n.a.

03337 PAH Water Extraction

SW-846 3510C

1 10/03/2001 22:15

Karen L. Beyer

1



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717-656-2300 Fax: 717-656-2681

000000



Lancaster Laboratories Sample No. WW 3697173

Collected: 09/28/2001 09:45 by BS

Account Number: 07802

Submitted: 10/01/2001 09:30

Kerr-McGee Corporation

Reported: 10/19/2001 at 08:16

P.O. Box 25861

Discard: 11/19/2001

Oklahoma City OK 73125

MA3-MW-26S-280901-01 Matrix Spike Grab Water

Sample

Moss American Site - WI

26S-1 SDG#: MOA83-11MS

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	23.	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	71.	0.60	ug/l	1
00774	PAH's in Water by HPLC					
00775	Naphthalene	91-20-3	170.	1.	ug/l	1
00782	Acenaphthylene	208-96-8	170.	0.8	ug/l	1
00783	Acenaphthene	83-32-9	180.	0.8	ug/l	1
00784	Fluorene	86-73-7	18.	0.2	ug/l	1
00785	Phenanthrene	85-01-8	6.	0.08	ug/l	1
00789	Anthracene	120-12-7	3.	0.04	ug/l	1
00807	Fluoranthene	206-44-0	3.	0.04	ug/l	1
00811	Pyrene	129-00-0	19.	0.2	ug/l	1
00812	Benzo(a)anthracene	56-55-3	1.	0.02	ug/l	1
00818	Benzo(b)fluoranthene	205-99-2	1.	0.04	ug/l	1
00823	Benzo(a)pyrene	50-32-8	1.	0.02	ug/l	1
00895	Dibenz(a,h)anthracene	53-70-3	3.	0.04	ug/l	1
00898	Indeno(1,2,3-cd)pyrene	193-39-5	6.	0.08	ug/l	1
00907	Benzo(g,h,i)perylene	191-24-2	12.	0.1	ug/l	1
07409	Chrysene	218-01-9	6.	0.08	ug/l	1
07410	Benzo(k)fluoranthene	207-08-9	1.	0.02	ug/l	1

Due to insufficient sample, the reporting limits for the HPLC PAH compounds were raised.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
08213	BTEX (8021)	SW-846 8021B	1	10/03/2001 23:47	Melissa Mann	1



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Lancaster Laboratories Sample No. WW 3697173

Collected: 09/28/2001 09:45 by BS

Account Number: 07802

Submitted: 10/01/2001 09:30

Kerr-McGee Corporation

Reported: 10/19/2001 at 08:16

P.O. Box 25861

Discard: 11/19/2001

Oklahoma City OK 73125

MA3-MW-26S-280901-01 Matrix Spike Grab Water

Sample

Moss American Site - WI

26S-1 SDG#: MOA83-11MS

00774	PAH's in Water by HPLC	SW-846 8310	1	10/13/2001 10:21	Mark Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	10/03/2001 23:47	Melissa Mann	n.a.
03337	PAH Water Extraction	SW-846 3510C	1	10/03/2001 22:15	Karen L. Beyer	1



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10/19/01



Lancaster Laboratories Sample No. WW 3697174

Collected: 09/28/2001 09:45 by BS

Account Number: 07802

Submitted: 10/01/2001 09:30

Kerr-McGee Corporation

Reported: 10/19/2001 at 08:16

P.O. Box 25861

Discard: 11/19/2001

Oklahoma City OK 73125

MA3-MW-26S-280901-01 Matrix Spike Dup. Grab Water

Moss American Site - WI

26S-1 SDG#: MOA83-11MSD

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	70.	0.60	ug/l	1
00774	PAH's in Water by HPLC					
00775	Naphthalene	91-20-3	180.	1.	ug/l	1
00782	Acenaphthylene	208-96-8	180.	0.8	ug/l	1
00783	Acenaphthene	83-32-9	190.	0.8	ug/l	1
00784	Fluorene	86-73-7	19.	0.2	ug/l	1
00785	Phenanthrene	85-01-8	6.	0.08	ug/l	1
00789	Anthracene	120-12-7	3.	0.04	ug/l	1
00807	Fluoranthene	206-44-0	3.	0.04	ug/l	1
00811	Pyrene	129-00-0	20.	0.2	ug/l	1
00812	Benzo(a)anthracene	56-55-3	2.	0.02	ug/l	1
00818	Benzo(b)fluoranthene	205-99-2	1.	0.04	ug/l	1
00823	Benzo(a)pyrene	50-32-8	1.	0.02	ug/l	1
00895	Dibenz(a,h)anthracene	53-70-3	3.	0.04	ug/l	1
00898	Indeno(1,2,3-cd)pyrene	193-39-5	6.	0.08	ug/l	1
00907	Benzo(g,h,i)perylene	191-24-2	13.	0.1	ug/l	1
07409	Chrysene	218-01-9	6.	0.08	ug/l	1
07410	Benzo(k)fluoranthene	207-08-9	1.	0.02	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	10/04/2001 00:22	Melissa Mann	1
00774	PAH's in Water by HPLC	SW-846 8310	1	10/12/2001 21:27	Mark Clark	0.1
01146	GC VOA Water Prep	SW-846 5030B	1	10/04/2001 00:22	Melissa Mann	n.a.



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Lancaster Laboratories Sample No. WW 3697174

Collected: 09/28/2001 09:45 by BS

Account Number: 07802

Submitted: 10/01/2001 09:30

Kerr-McGee Corporation

Reported: 10/19/2001 at 08:16

P.O. Box 25861

Discard: 11/19/2001

Oklahoma City OK 73125

MA3-MW-26S-280901-01 Matrix Spike Dup. Grab Water  
Moss American Site - WI

26S-1 SDG#: MOA83-11MSD

03337 PAH Water Extraction

SW-846 3510C

1 10/03/2001 22:15

Karen L. Beyer

1



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01040000



Lancaster Laboratories Sample No. WW 3697175

Collected: 09/28/2001 14:00 by BS

Account Number: 07802

Submitted: 10/01/2001 09:30  
 Reported: 10/19/2001 at 08:16  
 Discard: 11/19/2001  
 TB-01 Trip Blank Water Sample  
 Moss American Site - WI

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

TBS28 SDG#: MOA83-12TB

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	10/03/2001 13:31	Melissa Mann	1
01146	GC VOA Water Prep	SW-846 5030B	1	10/03/2001 13:31	Melissa Mann	n.a.



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# Analysis Request/Environmental Services Chain of Custody



For Lancaster Laboratories use only  
 Acct. # 7802 Sample # 3696532-7

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

Client: <u>Kerr McGee</u> Acct. #: _____ Project Name/#: <u>Moss American</u> PWSID #: _____ Project Manager: <u>Tom Cravan</u> P.O.# _____ Sampler: <u>B. Schaefer, Y. Hagiwara, T. Hanzely</u> Quote #: _____ Name of state where samples were collected: <u>VA</u>		Matrix (4) <input type="checkbox"/> Potable (Check if applicable) <input type="checkbox"/> Water <input type="checkbox"/> NPDES <input type="checkbox"/> Other	Total # of Containers	(5) <b>Analyses Requested</b> <div style="text-align: center; font-size: 2em; opacity: 0.5;">PAH</div>	For lab use only FSC: _____ SCR #: _____							
Sample Identification	Date Collected	Time Collected	Grab (3)	Composite	Soil	Water	Other	Total # of Containers	Remarks	Temperature of samples upon receipt (if requested) (6)		
<del>MA3-MW-35-27.901-09</del>	<del>9/27/01</del>	<del>1815</del>	<del>X</del>			X		<del>2</del>	<del>X</del> BS			
MA3-MW-35-27.901-08	9/27/01	1635	X			X		2	X			
MA3-MW-71-27.901-07		1530	X			X		2	X			
MA3-MW-35-27.901-08-Dup		1635	X			X		2	X			
MA3-MW-345-27.901-06		1500	X			X		2	X	free product present in well when sampling		
MA3-MW-75-27.901-03		1325	X			X		2	X			
MA3-MW-205-27.901-01		1045	X			X		2	X			
↓												
(7) <b>Turnaround Time Requested (TAT)</b> (please circle): Normal Rush (Rush TAT is subject to Lancaster Laboratories approval and surcharge.) Date results are needed: <u>STD TAT</u> Rush results requested by (please circle): Phone Fax Phone #: <u>847-918-4000</u> Fax #: <u>847-918-4055</u>			Relinquished by: <u>Brian S. Lauff</u> Date: <u>9/27/01</u> Time: <u>1830</u>		Received by: _____ Date: _____ Time: _____		Relinquished by: _____ Date: _____ Time: _____		Received by: _____ Date: _____ Time: _____			
(8) <b>Data Package Options</b> (please circle if requested)			SDG Complete? Yes <u>NO</u>		Relinquished by: _____ Date: _____ Time: _____		Received by: _____ Date: _____ Time: _____		Relinquished by: _____ Date: _____ Time: _____		Received by: _____ Date: _____ Time: _____	
QC Summary Type VI (Raw Data) <u>PER ROUTE</u> 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: <u>T. Corbin</u> Date: <u>9/29/01</u> Time: <u>1900</u>		Relinquished by: _____ Date: _____ Time: _____		Received by: _____ Date: _____ Time: _____	

# Analysis Request/Environmental Services Chain of Custody



For Lancaster Laboratories use only  
Acct. # 7802 Sample # 3687168-75

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

Client <u>Am - Mober</u> Acct. #:			Matrix (4)			(5) Analyses Requested										For lab use only				
Project Name/ # <u>Mass American</u> PWSID #:																FSC:				
Project Manager <u>Tom Brown</u> P.O. #:																SCR #:				
Sampler <u>B Schaefer, J Higgins, T Kennedy</u> Quote #:																				
Name of state where samples were collected: <u>WF</u>			<input type="checkbox"/> Potable Water <input type="checkbox"/> NPDES <input type="checkbox"/> Other		Total # of Containers		PAH BTEX										Temperature of samples upon receipt (if requested)			
			Soil																	
Sample Identification			Date Collected	Time Collected	Grab (3)	Composite														Remarks
<u>MA3-MW-315-280901-04</u>			<u>9-28-01</u>	<u>11:50</u>	X		X			1	X	X								
<u>MA3-MW-135-280901-03</u>				<u>10:05</u>	X		X			5	X	X								
<u>MA3-MW-265-280901-02</u>				<u>10:00</u>	X		X			3		X								
<u>MA3-MW-255-280901-02-DP</u>				<u>10:00</u>	X		X			3		X								
<u>MA3-MW-265-280901-01</u>				<u>9:45</u>	X		X			3		X								
<u>MA3 MW-265-280901-01-MS/msi</u>				<u>9:45</u>	X		X			6		X								
<u>TG-01</u>				<u>14:00</u>	X		X			2		X								

(7) Turnaround Time Requested (TAT) (please circle): Normal <input type="radio"/> Rush <input type="radio"/> (Rush TAT is subject to Lancaster Laboratories approval and surcharge.) Date results are needed: <u>STAT</u> Rush results requested by (please circle): Phone <input type="radio"/> Fax <input type="radio"/> Phone #: <u>317-918-4000</u> Fax #: <u>317-918-1655</u>		Relinquished by:	Date	Time	Received by:	Date	Time	
			<u>9-28-01</u>	<u>15:30</u>				
		Relinquished by:	Date	Time	Received by:	Date	Time	
(8) Data Package Options (please circle if requested) QC Summary Type VI (Raw Data) <input checked="" type="checkbox"/> <u>See Quote</u> Type I (Tier I) GLP Type II (Tier II) Other Type III (NJ Red. Del.) Type IV (CLP)		SDG Complete? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Relinquished by:	Date	Time	Received by:	Date	Time
		Site-specific QC required? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> (If yes, indicate QC sample and submit triplicate volume.)						
		Internal Chain of Custody required? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>						

0-1 00 00 00

Mass Zook 10/1/01 073

# ANALYSIS REQUEST / ENVIRONMENTAL SERVICES Chain of Custody



For Lancaster Laboratories use only  
 Acct. # 7802 Sample # 3697163-75

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

Client: <u>KEM-M'Gee</u> Acct. #: _____ Project Name/#: <u>Miss American</u> PWSID #: _____ Project Manager: <u>Tom Conan</u> P.O.# _____ Sampler: <u>B. Schaefer, Y. Henriquez, T. Harshbarger</u> Name of state where samples were collected: <u>VA</u>			<b>Matrix</b> (4) <input type="checkbox"/> Potable (Check if applicable) <input type="checkbox"/> Water <input type="checkbox"/> NPDES <input type="checkbox"/> Other			(5) <b>Analyses Requested</b> PAH					For lab use only ISC #: SCR #:					
Sample Identification		Date Collected	Time Collected	Grab	Composite	Soil	Water	Other	Total # of Containers	Remarks					Temperature of samples upon receipt (if requested)	
<u>MA3-MW-265-280901-01</u>		<u>9-28-01</u>	<u>9:45</u>	<u>X</u>			<u>X</u>		<u>2</u>	<u>X</u>						
<u>MA3-MW-265-280901-01-MS/MSD</u>		<u>9-28-01</u>	<u>9:45</u>	<u>X</u>			<u>X</u>		<u>4</u>	<u>X</u>						
<u>MA3-MW-255-280901-02</u>			<u>10:00</u>	<u>X</u>			<u>X</u>		<u>2</u>	<u>X</u>						
<u>MA3-MW-255-280901-02-DP</u>			<u>10:00</u>	<u>X</u>			<u>X</u>		<u>2</u>	<u>X</u>						

(7) <b>Turnaround Time Requested (TAT)</b> (please circle): Normal Rush (Rush TAT is subject to Lancaster Laboratories approval and surcharge.) Date results are needed: <u>STP/TAT</u> Rush results requested by (please circle): Phone Fax Phone #: <u>847-418-4000</u> Fax #: <u>847-918-4055</u>	Relinquished by: <u>[Signature]</u> Date: <u>9-28-01</u>	Time: <u>15:30</u>	Received by: _____ Date: _____	Date: _____	Time: _____	
	Relinquished by: _____ Date: _____	Date: _____	Time: _____	Received by: _____ Date: _____	Date: _____	Time: _____
	Relinquished by: _____ Date: _____	Date: _____	Time: _____	Received by: _____ Date: _____	Date: _____	Time: _____
	Relinquished by: _____ Date: _____	Date: _____	Time: _____	Received by: _____ Date: _____	Date: _____	Time: _____

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

**CASE NARRATIVE**

**Client: Kerr-McGee Corporation**  
**SDG #: MOA83**

**LANCASTER LABORATORIES**  
**SEMIVOLATILES BY HPLC**

**SAMPLE NUMBER(S) :**

<u>LL #'s</u>	<u>Sample Code</u>	<u>Matrix</u>		<u>Comments</u>
		<u>Soil</u>	<u>Water</u>	
3696532	3S--8		X	
3696533	71--7		X	
3696534	3S-8D		X	
3696535	34S-6		X	5X Dilution
3696535DL	34S-6DL		X	50X Dilution
3696536	7S--3		X	
3696536DL	7S--3DL		X	50X Dilution
3696537	20S1-		X	
3697168	31S-4		X	
3697169	13S-3		X	
3697170	25S-2		X	
3697171	25S2D		X	
3697172	26S-1		X	Unspiked
3697173	26S-1MS		X	Matrix Spike
3697174	26S-1MSD		X	Matrix Spike Dup

**LABORATORY SUBMITTED QC:**

SBLKWG274	SBLKWG2741		X	Method Blank
SBLKWE276	SBLKWE2761		X	Method Blank
274WGLCS	274WGLCS1		X	Lab Control Sample
274WGLCSD	274WGLCSD1		X	Lab Control Sample Dup
276WELCS	276WELCS1		X	Lab Control Sample

**Case Narrative**  
**SDG #: MOA83 continued**

**SAMPLE PREPARATION:**

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

<u>Sample Code</u>	<u>Volume</u>
3S-8D	989 mls
34S-6	975 mls
7S--3	988 mls
20S1-	978 mls
31S-4	976 mls
25S-2	908 mls
25S2D	981 mls
26S-1	972 mls
26S-1MS	959 mls
26S-1MSD	999 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 the samples prepped on organic extraction batch 01274WAG026. Therefore, a LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.

34S-6 was analyzed at an initial 5X dilution due to a high concentration of (target/non-target) compounds.

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

<u>Sample Code</u>	<u>Dilution</u>	<u>Compounds</u>
34S-6	50X	naphthalene, phenanthrene, fluoranthene
7S--3	50X	naphthalene

**Case Narrative**  
**SDG #: MOA83 continued**

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

**QUALITY CONTROL AND NONCONFORMANCE SUMMARY:**

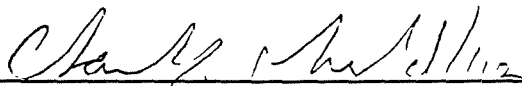
All QC was within specifications.

**DATA INTERPRETATION:**

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

No further interpretation is necessary for the data submitted.

Case Narrative Reviewed and Approved by:

  
\_\_\_\_\_  
Charles J. Neslynd  
Group Leader, GC/MS Semivolatiles

Date: 11/1/89



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

SAMPLE ANALYSES

LL Sample #	Sample Designation	Matrix Soil Water	Comments
3697168	31S-4	X	
3697169	13S-3	X	
3697170	25S-2	X	
3697171	25S2D	X	
3697172	26S-1	X	
3697173MS	26S-1	X	Matrix Spike
3697174MSD	26S-1	X	Matrix Spike Dup
3697175	TBS28	X	

QUALITY CONTROL ANALYSES

BLK5501		X	Method Blank
LCS5501		X	Lab Control Sample
LDS5501		X	Lab Control Dup

SAMPLE PREPARATION

No sample preparation was necessary.

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.

QUALITY CONTROL AND NONCONFORMANCE SUMMARY

Client submitted batch QC was referenced.

All QC was within specifications.

Case Narrative  
SDG# MOA83

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

DATA INTERPRETATION

No explanation is necessary for the data submitted.

Narrative reviewed and approved by:

*Steve A. Stabinger for*

\_\_\_\_\_  
Steve J. Stabinger, Group Leader

*10/22/11*

\_\_\_\_\_  
Date

**ATTACHMENT 3**

**JULY 2001 GROUNDWATER SAMPLE ANALYTICAL RESULTS**

# Microbac

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Seaway Division  
544 Conkey Street  
Hammond, IN 46324  
(219) 932-1770

INDIANA CERTIFICATION NUMBERS: X-45-3 C-45-02

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CHEMISTRY • MICROBIOLOGY • FOOD SAFETY • CONSUMER PRODUCTS  
WATER • AIR • WASTES • FOOD • PHARMACEUTICALS • NUTRACEUTICALS

### CERTIFICATE OF ANALYSIS

Tom Graam  
Roy F. Weston, Inc.  
750 East Bankes Court  
Suite 500  
Vernon Hills, IL 60061

Date Reported: 8/27/01  
P.O. Number:  
Sample ID: 9931-00390  
Date Received: 7/26/01  
Time Received: 10:00

Permit Number

PARAMETERS	RESULTS	DATE	TECH	METHOD
SUBJECT: MA3-TG6-1-250701-01, 7/25/01 @ 15:00 by BS				
Total Aerobic Bacteria	2,300. cfu/ml	7/27/01	DJH	9215B MODIFIED
T.Aerobic Degradar Bacteria	240. cfu/ml	7/27/01	DJH	9215B MODIFIED
SUBJECT: MA3-TG6-2-250701-02, 7/25/01 @ 15:05 by BS				
Total Aerobic Bacteria	9,600. cfu/ml	7/27/01	DJH	9215B MODIFIED
T.Aerobic Degradar Bacteria	610. cfu/ml	7/27/01	DJH	9215B MODIFIED
SUBJECT: MA3-TG6-3-250701-03, 7/25/01 @ 15:10 by BS				
Total Aerobic Bacteria	180. cfu/ml	7/27/01	DJH	9215B MODIFIED
T.Aerobic Degradar Bacteria	40. cfu/ml	7/27/01	DJH	9215B MODIFIED
SUBJECT: MA3-TG5-1-250701-04, 7/25/01 @ 16:15 by BS				
Total Aerobic Bacteria	1,590. cfu/ml	7/27/01	DJH	9215B MODIFIED
T.Aerobic Degradar Bacteria	310. cfu/ml	7/27/01	DJH	9215B MODIFIED
SUBJECT: MA3-TG5-2-250701-05, 7/25/01 @ 16:20 by BS				
Total Aerobic Bacteria	1,700. cfu/ml	7/27/01	DJH	9215B MODIFIED
T.Aerobic Degradar Bacteria	410. cfu/ml	7/27/01	DJH	9215B MODIFIED
SUBJECT: MA3-TG5-3-250701-06, 7/25/01 @ 16:25 by BS				
Total Aerobic Bacteria	1,570. cfu/ml	7/27/01	DJH	9215B MODIFIED
T.Aerobic Degradar Bacteria	520. cfu/ml	7/27/01	DJH	9215B MODIFIED

\*\*\* Certificate Continues On Next Page \*\*\*

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INDIANA CERTIFICATION NUMBERS: N-45-8 C-45-02

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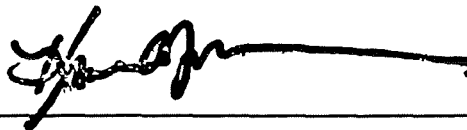
Tom Graam  
Roy F. Weston, Inc.  
750 East Bankes Court  
Suite 500  
Vernon Hills, IL 60061

Date Reported: 8/27/01  
P.O. Number:  
Sample ID: 9931-00390  
Date Received: 7/26/01  
Time Received: 10:00

Permit Number

PARAMETERS	RESULTS	DATE	TECH	METHOD
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Submitted with Quality by



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### CERTIFICATE OF ANALYSIS

Tom Graam  
Roy F. Weston, Inc.  
750 East Bankes Court  
Suite 500  
Vernon Hills, IL 60061

Date Reported: 8/27/01  
P.O. Number:  
Sample ID: 9931-00412  
Date Received: 7/27/01  
Time Received: 10:05

Permit Number

PARAMETERS	RESULTS	DATE	TECH	METHOD
SUBJECT: MA3-TG3-1-260701-01, 7/26/01 @ 10:05 by BS				
Total Aerobic Bacteria	510. cfu/ml	7/27/01	DJH	9215B MODIFIED
T.Aerobic Degradar Bacteria	160. cfu/ml	7/27/01	DJH	9215B MODIFIED
SUBJECT: MA3-TG3-2-260701-01, 7/26/01 @ 10:10 by BS				
Total Aerobic Bacteria	6,200. cfu/ml	7/27/01	DJH	9215B MODIFIED
T.Aerobic Degradar Bacteria	490. cfu/ml	7/27/01	DJH	9215B MODIFIED
SUBJECT: MA3-TG3-3-260701-01, 7/26/01 @ 10:15 by BS				
Total Aerobic Bacteria	8,700. cfu/ml	7/27/01	DJH	9215B MODIFIED
T.Aerobic Degradar Bacteria	690. cfu/ml	7/27/01	DJH	9215B MODIFIED
SUBJECT: MA3-TG4-1-260701-04, 7/26/01 @ 11:05 by BS				
Total Aerobic Bacteria	2,070. cfu/ml	7/27/01	DJH	9215B MODIFIED
T.Aerobic Degradar Bacteria	210. cfu/ml	7/27/01	DJH	9215B MODIFIED
SUBJECT: MA3-TG4-3-260701-05, 7/26/01 @ 11:10 by BS				
Total Aerobic Bacteria	1,210. cfu/ml	7/27/01	DJH	9215B MODIFIED
T.Aerobic Degradar Bacteria	300. cfu/ml	7/27/01	DJH	9215B MODIFIED
SUBJECT: MA3-TG4-3-260701-06, 7/26/01 @ 11:15 by BS				
Total Aerobic Bacteria	4,800. cfu/ml	7/27/01	DJH	9215B MODIFIED
T.Aerobic Degradar Bacteria	360. cfu/ml	7/27/01	DJH	9215B MODIFIED
SUBJECT: MA3-TG2-1-260701-07, 7/26/01 @ 14:30 by BS				
Total Aerobic Bacteria	16,000. cfu/ml	7/27/01	DJH	9215B MODIFIED
T.Aerobic Degradar Bacteria	180. cfu/ml	7/27/01	DJH	9215B MODIFIED

\*\*\* Certificate Continues On Next Page \*\*\*

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Date Reported: 8/27/01  
P.O. Number:  
Sample ID: 9931-00412  
Date Received: 7/27/01  
Time Received: 10:05

Permit Number

PARAMETERS	RESULTS	DATE	TECH	METHOD
SUBJECT: MA3-TG2-2-260701-08, 7/26/01 @ 14:35 by BS				
Total Aerobic Bacteria	300. cfu/ml	7/27/01	DJH	9215B MODIFIED
T.Aerobic Degradar Bacteria	90. cfu/ml	7/27/01	DJH	9215B MODIFIED
SUBJECT: MA3-TG2-3-260701-09, 7/26/01 @ 14:40 by BS				
Total Aerobic Bacteria	4,500. cfu/ml	7/27/01	DJH	9215B MODIFIED
T.Aerobic Degradar Bacteria	200. cfu/ml	7/27/01	DJH	9215B MODIFIED
SUBJECT: MA3-TG1-1-260701-10, 7/26/01 @ 15:40 by BS				
Total Aerobic Bacteria	19,000. cfu/ml	7/27/01	DJH	9215B MODIFIED
T.Aerobic Degradar Bacteria	1,430. cfu/ml	7/27/01	DJH	9215B MODIFIED
SUBJECT: MA3-TG1-2-260701-11, 7/26/01 @ 15:45 by BS				
Total Aerobic Bacteria	3,400. cfu/ml	7/27/01	DJH	9215B MODIFIED
T.Aerobic Degradar Bacteria	470. cfu/ml	7/27/01	DJH	9215B MODIFIED
SUBJECT: MA3-TG1-3-260701-12, 7/26/01 @ 15:50 by BS				
Total Aerobic Bacteria	3,900. cfu/ml	7/27/01	DJH	9215B MODIFIED
T.Aerobic Degradar Bacteria	160. cfu/ml	7/27/01	DJH	9215B MODIFIED

Submitted with Quality by 

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Site Information

Site Name	Moss-America	Date received	25-Jul-01
Location	Milwaukee WI	Date of this report	17-Aug-01
Consultant	R.F. Weston	Microbacl Job Code	9931-390
Proj. Contact	Tom Graan		
Project Ref ID		Number of soil samples	0
Contaminant	btex-pah	Number of gw samples	6

Section I - Summary of Bioremediation Data

Nutrient/physical factors are as suggested by Wisconsin DNR guidelines for site characterization requirements for natural biodegradation. Microbial factors are shown according to bio-engineering norms.

Sample ID	Soil microbial populations:		pH	% TON /			% moisture / SWHC	% Air-filled pore space
	Exceeds norm for:			% OM	C:N	C:P		
	Passive	Active						
	>1E+06	>1E+03	5.5-8.5	>1.5	<40	<120	25-85%	>10%
Guideline note reference:	1	2	3	4	5	6	7	8
ma3-tg6-1-250701-1	Summary table not applicable for groundwater							
ma3-tg6-2-250701-2	Summary table not applicable for groundwater							
ma3-tg6-3-250701-3	Summary table not applicable for groundwater							
ma3-tg5-1-250701-4	Summary table not applicable for groundwater							
ma3-tg5-2-250701-5	Summary table not applicable for groundwater							
ma3-tg5-3-250701-6	Summary table not applicable for groundwater							

The nutrient/physical parameters summarized above for unsaturated zone soils, reflect suggested minimum Wisconsin DNR " site characterization requirements for natural biodegradation projects" as presented on pp. 6-10 in Naturally Occurring Biodegradation as a Remedial Action Option for Soil Contamination: Interim Guidance (Revised) dated August 26, 1994. BioRenewal stresses that these "suggested guidelines" are only intended to provide a working frame of reference for evaluation. Each site is unique and requires professional judgement in order to select an appropriate remedial design. We provide this information in recognition that our clients need to work within the guidelines suggested by the state. Further, we hope this will facilitate continued evolution of a working framework for evaluating sites as to the potential for bioremediation whether through site augmentation or natural attenuation.

- ✓ = Sample meets guideline.
- ✗ = Sample does not meet guideline.
- Blank = Below detection limit, not applicable, or not available for that sample.

- NOTES:
- 1) Microbial population levels in soils generally accepted as potentially adequate to support natural biodegradation. These levels are based on bio-engineering norms and not WDNR guidelines.
  - 2) Microbial population levels in soils generally accepted as minimum to serve as an "inoculum" for implementing active bioremediation strategies.
  - 3) See page 7 and 10, WDNR.
  - 4) See pages 8 and 10, WDNR. Total Organic Nitrogen (calculated from TKN minus ammonium nitrogen ) divided by % organic matter.
  - 5) See pages 8 and 10, WDNR.
  - 6) See pages 8 and 10, WDNR.
  - 7) See page 6 and 10, WDNR. The suggested optimum range is 50-80% (p. 6).
  - 8) See page 8 and 10, WDNR. WDNR suggests a minimum air-filled porosity in soil of 10% is necessary for adequate oxygen diffusion in the soil gas to support biodegradation.



Section II - Microbial Data Summary continued

All values in cfu/ml\*

Groundwater Samples

Total populations

Low and high indicate 95% confidence range

Sample ID	Mean	Low	High	1.0E+01	1.0E+02	1.0E+03	1.0E+04	1.0E+05	1.0E+06	1.0E+07	1.0E+08	1.0E+09
ma3-tg6-1-25070	2.3E+03	0.0E+00	0.0E+00									
ma3-tg6-2-25070	9.6E+03	0.0E+00	0.0E+00									
ma3-tg6-3-25070	1.8E+02	0.0E+00	0.0E+00									
ma3-tg5-1-25070	1.6E+03	0.0E+00	0.0E+00									
ma3-tg5-2-25070	1.7E+03	0.0E+00	0.0E+00									
ma3-tg5-3-25070	1.7E+03	0.0E+00	0.0E+00									

Groundwater Samples

Degrader populations

Low and high indicate 95% confidence range

Sample ID	Mean	Low	High	1.0E+01	1.0E+02	1.0E+03	1.0E+04	1.0E+05	1.0E+06	1.0E+07	1.0E+08	1.0E+09
ma3-tg6-1-25070	2.4E+02	0.0E+00	0.0E+00									
ma3-tg6-2-25070	6.1E+02	0.0E+00	0.0E+00									
ma3-tg6-3-25070	4.0E+01	0.0E+00	0.0E+00									
ma3-tg5-1-25070	3.1E+02	0.0E+00	0.0E+00									
ma3-tg5-2-25070	4.1E+02	0.0E+00	0.0E+00									
ma3-tg5-3-25070	5.2E+02	0.0E+00	0.0E+00									
<b>Marginal inoculum</b>												
<b>Inoculum levels</b>												
<b>Active degradation levels</b>												

**Marginal inoculum** = Degrader populations below 1.0E+03 are indicative of severe limitations. Substantial augmentation of site conditions will likely be required to attain adequate cell mass to attain measurable biotransformation rates.

**Inoculum levels** = Degrader populations between 1.0E+03 and 1.0E+06 are amenable to site augmentation, but are generally insufficient to attain adequate biotransformation without site augmentation.

**Active degradation levels** = Degrader populations greater than 1.0E+06 are generally of sufficient magnitude to support measurable biotransformation without site augmentation. However, site augmentation may still be required to attain desirable rates of transformation due to specific site conditions.

Assay conditions

Sample ID	Degrader Media		Temp. (Celsius)	Growth Conditions	DOF **		Percent Degraders
	Carbon source	% Carbon (v/v)			Total	Degrader	
ma3-tg6-1-25070	btex-pah	1.0	22	aerobic	0	0	10.4%
ma3-tg6-2-25070	btex-pah	1.0	22	aerobic	0	0	6.4%
ma3-tg6-3-25070	btex-pah	1.0	22	aerobic	0	0	22.2%
ma3-tg5-1-25070	btex-pah	1.0	22	aerobic	0	0	19.5%
ma3-tg5-2-25070	btex-pah	1.0	22	aerobic	0	0	24.1%
ma3-tg5-3-25070	btex-pah	1.0	22	aerobic	0	0	31.1%

\* cfu/ml = colony forming units per ml of groundwater

\*\* DOF = Degrees of freedom is number of replicates minus one. This parameter is used in calculation of 95% confidence intervals.

Site Information

Site Name	Moss-America	Date received	26-Jul-01
Location	Milwaukee, WI	Date of this report	17-Aug-01
Consultant	R.F. Weston	Microbacl Job Code	9931-412
Proj. Contact	Tom Graan		
Project Ref ID		Number of soil samples	0
Contaminant	btex-pah	Number of gw samples	12

Section I - Summary of Bioremediation Data

Nutrient/physical factors are as suggested by Wisconsin DNR guidelines for site characterization requirements for natural biodegradation. Microbial factors are shown according to bio-engineering norms.

Sample ID	Soil microbial populations:							
	Exceeds norm for:		pH	% TON /			% moisture /	% Air-filled
	Passive	Active		% OM	C:N	C:P	SWHC	pore space
	>1E+06	>1E+03	5.5-8.5	>1.5	<40	<120	25-85%	>10%
Guideline note reference:	1	2	3	4	5	6	7	8
ma3-tg2-3-260701-9	Summary table not applicable for groundwater.							
ma3-tg1-1-260701-10	Summary table not applicable for groundwater.							
ma3-tg1-2-260701-11	Summary table not applicable for groundwater.							
ma3-tg1-3-260701-12	Summary table not applicable for groundwater.							

The nutrient/physical parameters summarized above for unsaturated zone soils, reflect suggested minimum Wisconsin DNR "site characterization requirements for natural biodegradation projects" as presented on pp. 6-10 in Naturally Occurring Biodegradation as a Remedial Action Option for Soil Contamination: Interim Guidance (Revised) dated August 26, 1994. BioRenewal stresses that these "suggested guidelines" are only intended to provide a working frame of reference for evaluation. Each site is unique and requires professional judgement in order to select an appropriate remedial design. We provide this information in recognition that our clients need to work within the guidelines suggested by the state. Further, we hope this will facilitate continued evolution of a working framework for evaluating sites as to the potential for bioremediation whether through site augmentation or natural attenuation.

- ✓ = Sample meets guideline.
- ✗ = Sample does not meet guideline.
- Blank = Below detection limit, not applicable, or not available for that sample.

- NOTES:
- 1) Microbial population levels in soils generally accepted as potentially adequate to support natural biodegradation. These levels are based on bio-engineering norms and not WDNR guidelines.
  - 2) Microbial population levels in soils generally accepted as minimum to serve as an "inoculum" for implementing active bioremediation strategies.
  - 3) See page 7 and 10, WDNR.
  - 4) See pages 8 and 10, WDNR. Total Organic Nitrogen (calculated from TKN minus ammonium nitrogen) divided by % organic matter.
  - 5) See pages 8 and 10, WDNR.
  - 6) See pages 8 and 10, WDNR.
  - 7) See page 6 and 10, WDNR. The suggested optimum range is 50-80% (p. 6).
  - 8) See page 8 and 10, WDNR. WDNR suggests a minimum air-filled porosity in soil of 10% is necessary for adequate oxygen diffusion in the soil gas to support biodegradation.

Section II - Microbial Data Summary continued

All values in cfu/ml\*

Groundwater Samples

Total populations

Low and high indicate 95% confidence range

Sample ID	Mean	Low	High	1.0E+01	1.0E+02	1.0E+03	1.0E+04	1.0E+05	1.0E+06	1.0E+07	1.0E+08	1.0E+09
ma3-tg2-3-26070	4.5E+03	0.0E+00	0.0E+00									
ma3-tg1-1-26070	1.9E+04	0.0E+00	0.0E+00									
ma3-tg1-2-26070	3.4E+03	0.0E+00	0.0E+00									
ma3-tg1-3-26070	3.9E+03	0.0E+00	0.0E+00									

Groundwater Samples

Degrader populations

Low and high indicate 95% confidence range

Sample ID	Mean	Low	High	1.0E+01	1.0E+02	1.0E+03	1.0E+04	1.0E+05	1.0E+06	1.0E+07	1.0E+08	1.0E+09
ma3-tg2-3-26070	2.0E+02	0.0E+00	0.0E+00									
ma3-tg1-1-26070	1.4E+03	0.0E+00	0.0E+00									
ma3-tg1-2-26070	4.7E+02	0.0E+00	0.0E+00									
ma3-tg1-3-26070	1.6E+02	0.0E+00	0.0E+00									

Marginal inoculum

Inoculum levels

Active degradation levels

Marginal inoculum = Degrader populations below 1.0E+03 are indicative of severe limitations. Substantial augmentation of site conditions will likely be required to attain adequate cell mass to attain measurable biotransformation rates.

Inoculum levels = Degrader populations between 1.0E+03 and 1.0E+06 are amenable to site augmentation, but are generally insufficient to attain adequate biotransformation without site augmentation.

Active degradation levels = Degrader populations greater than 1.0E+06 are generally of sufficient magnitude to support measurable biotransformation without site augmentation. However, site augmentation may still be required to attain desirable rates of transformation due to specific site conditions.

Assay conditions

Sample ID	Degrader Media		Temp. (Celcius)	Growth Conditions	DOF **		Percent Degraders
	Carbon source	% Carbon (v/v)			Total	Degrader	
ma3-tg2-3-26070	btex-pah	1.0	22	aerobic	0	0	4.4%
ma3-tg1-1-26070	btex-pah	1.0	22	aerobic	0	0	7.5%
ma3-tg1-2-26070	btex-pah	1.0	22	aerobic	0	0	13.8%
ma3-tg1-3-26070	btex-pah	1.0	22	aerobic	0	0	4.1%

\* cfu/ml = colony forming units per ml of groundwater

\*\* DOF = Degrees of freedom is number of replicates minus one. This parameter is used in calculation of 95% confidence intervals.

Site Information

Site Name	Moss-America	Date received	26-Jul-01
Location	Milwaukee, WI	Date of this report	17-Aug-01
Consultant	R.F. Weston	Microbacl Job Code	9931-412
Proj. Contact	Tom Graan		
Project Ref ID		Number of soil samples	0
Contaminant	btex-pah	Number of gw samples	12

Section I - Summary of Bioremediation Data

Nutrient/physical factors are as suggested by Wisconsin DNR guidelines for site characterization requirements for natural biodegradation. Microbial factors are shown according to bio-engineering norms.

Sample ID	Soil microbial populations:		pH	% TON /			% moisture / SWHC	% Air-filled pore space
	Exceeds norm for:			% OM	C:N	C:P		
	Passive	Active						
	>1E+06	>1E+03	5.5-8.5	>1.5	<40	<120	25-85%	>10%
Guideline note reference:	1	2	3	4	5	6	7	8
ma3-tg3-1-260701-1	Summary table not applicable for groundwater.							
ma3-tg3-2-260701-2	Summary table not applicable for groundwater.							
ma3-tg3-3-260701-3	Summary table not applicable for groundwater.							
ma3-tg4-1-260701-4	Summary table not applicable for groundwater.							
ma3-tg4-2-260701-5	Summary table not applicable for groundwater.							
ma3-tg4-3-260701-6	Summary table not applicable for groundwater.							
ma3-tg2-1-260701-8	Summary table not applicable for groundwater.							
ma3-tg2-2-260701-8	Summary table not applicable for groundwater.							

The nutrient/physical parameters summarized above for unsaturated zone soils, reflect suggested minimum Wisconsin DNR "site characterization requirements for natural biodegradation projects" as presented on pp. 6-10 in Naturally Occurring Biodegradation as a Remedial Action Option for Soil Contamination: Interim Guidance (Revised) dated August 26, 1994. BioRenewal stresses that these "suggested guidelines" are only intended to provide a working frame of reference for evaluation. Each site is unique and requires professional judgement in order to select an appropriate remedial design. We provide this information in recognition that our clients need to work within the guidelines suggested by the state. Further, we hope this will facilitate continued evolution of a working framework for evaluating sites as to the potential for bioremediation whether through site augmentation or natural attenuation.

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x = Sample does not meet guideline.

Blank = Below detection limit, not applicable, or not available for that sample.

- NOTES:
- 1) Microbial population levels in soils generally accepted as potentially adequate to support natural biodegradation. These levels are based on bio-engineering norms and not WDNR guidelines.
  - 2) Microbial population levels in soils generally accepted as minimum to serve as an "inoculum" for implementing active bioremediation strategies.
  - 3) See page 7 and 10, WDNR.
  - 4) See pages 8 and 10, WDNR. Total Organic Nitrogen (calculated from TKN minus ammonium nitrogen) divided by % organic matter.
  - 5) See pages 8 and 10, WDNR.
  - 6) See pages 8 and 10, WDNR.
  - 7) See page 6 and 10, WDNR. The suggested optimum range is 50-80% (p. 6).
  - 8) See page 8 and 10, WDNR. WDNR suggests a minimum air-filled porosity in soil of 10% is necessary for adequate oxygen diffusion in the soil gas to support biodegradation.

Section II - Microbial Data Summary continued

All values in cfu/ml\*

Groundwater Samples

Total populations

Low and high indicate 95% confidence range

Sample ID	Mean	Low	High	1.0E+01	1.0E+02	1.0E+03	1.0E+04	1.0E+05	1.0E+06	1.0E+07	1.0E+08	1.0E+09
ma3-tg3-1-26070	5.1E+02	0.0E+00	0.0E+00									
ma3-tg3-2-26070	6.2E+03	0.0E+00	0.0E+00									
ma3-tg3-3-26070	8.7E+03	0.0E+00	0.0E+00									
ma3-tg4-1-26070	2.1E+03	0.0E+00	0.0E+00									
ma3-tg4-2-26070	1.2E+03	0.0E+00	0.0E+00									
ma3-tg4-3-26070	4.8E+03	0.0E+00	0.0E+00									
ma3-tg2-1-26070	1.6E+04	0.0E+00	0.0E+00									
ma3-tg2-2-26070	3.0E+02	0.0E+00	0.0E+00									

Groundwater Samples

Degrader populations

Low and high indicate 95% confidence range

Sample ID	Mean	Low	High	1.0E+01	1.0E+02	1.0E+03	1.0E+04	1.0E+05	1.0E+06	1.0E+07	1.0E+08	1.0E+09
ma3-tg3-1-26070	1.6E+02	0.0E+00	0.0E+00									
ma3-tg3-2-26070	4.9E+02	0.0E+00	0.0E+00									
ma3-tg3-3-26070	6.9E+02	0.0E+00	0.0E+00									
ma3-tg4-1-26070	2.1E+02	0.0E+00	0.0E+00									
ma3-tg4-2-26070	3.0E+02	0.0E+00	0.0E+00									
ma3-tg4-3-26070	3.6E+02	0.0E+00	0.0E+00									
ma3-tg2-1-26070	1.2E+03	0.0E+00	0.0E+00									
ma3-tg2-2-26070	9.0E+01	0.0E+00	0.0E+00									
Marginal inoculum												
Inoculum levels												
Active degradation levels												

Marginal inoculum = Degrader populations below 1.0E+03 are indicative of severe limitations. Substantial augmentation of site conditions will likely be required to attain adequate cell mass to attain measurable biotransformation rates.

Inoculum levels = Degrader populations between 1.0E+03 and 1.0E+06 are amenable to site augmentation, but are generally insufficient to attain adequate biotransformation without site augmentation.

Active degradation levels = Degrader populations greater than 1.0E+06 are generally of sufficient magnitude to support measurable biotransformation without site augmentation. However, site augmentation may still be required to attain desirable rates of transformation due to specific site conditions.

Assay conditions

Sample ID	Degrader Media		Temp. (Celsius)	Growth Conditions	DOF **		Percent Degraders
	Carbon source	% Carbon (v/v)			Total	Degrader	
ma3-tg3-1-26070	btex-pah	1.0	22	aerobic	0	0	31.4%
ma3-tg3-2-26070	btex-pah	1.0	22	aerobic	0	0	7.9%
ma3-tg3-3-26070	btex-pah	1.0	22	aerobic	0	0	7.9%
ma3-tg4-1-26070	btex-pah	1.0	22	aerobic	0	0	10.1%
ma3-tg4-2-26070	btex-pah	1.0	22	aerobic	0	0	24.8%
ma3-tg4-3-26070	btex-pah	1.0	22	aerobic	0	0	7.5%
ma3-tg2-1-26070	btex-pah	1.0	22	aerobic	0	0	7.4%
ma3-tg2-2-26070	btex-pah	1.0	22	aerobic	0	0	30.0%

\* cfu/ml = colony forming units per ml of groundwater

\*\* DOF = Degrees of freedom is number of replicates minus one. This parameter is used in calculation of 95% confidence intervals.

Contact person Tom Gizaan Sampler B. Schaefer  
 Project name Moss American Project # \_\_\_\_\_  
 Project location Milwaukee WISCONSIN  
 (City) (state)

401-390

Requested analyses (✓)

Site contaminant \* BTEX, PAH  
 (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

CEA* (soil/gw) see note <input type="checkbox"/> Aerobic, <input type="checkbox"/> Anaerobic, <input type="checkbox"/> Microaerophilic	Standard nutrient panel (soil/gw) incl. TKN, ammonium nitrogen, available P, pH, total organic carbon, % moisture (s)	Particle size analysis (soil) <input type="checkbox"/> sieve and hydrometer, <input type="checkbox"/> sieve only	% air-filled pore space (soil) (includes bulk density)	Soil moisture at field capacity	Bulk density (soil)	Intact core	Microbial Enumeration
---	--	---	---	---------------------------------	---------------------	-------------	-----------------------

Sample ID	Lab use only	Date	Time	(✓)		Sample depth	#			Additional comments
				Soil	GW		Jars	Vials	Core	
MAS-T66-1 -250701-01		7/25/01	1500		X	10-12'	1			
MAS-T66-2 -250701-02			1505		X		1			
MAS-T66-3 -250701-03			1510		X		1			
MAS-T65-1 -250701-04			1615		X		1			
MAS-T65-2 -250701-05			1620		X		1			
MAS-T65-3 -250701-06			1625		X		1			

Relinquished by: [Signature] Date/time: 7/25/01 1800 Comments: \_\_\_\_\_ Sample condition upon arrival: \_\_\_\_\_  
 Received by: [Signature] Date/time: 7/25/01 10:00 On ice?  Yes,  No

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

Send results to:  
 Name Tom Gizaan  
 Company Ray F. Weston  
 Address 750 E. Bunker Ct. Ste 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

Contact person Tom Giza Sampler B Schoefer  
 Project name Moss American Project # \_\_\_\_\_  
 Project location Milwaukee, WISCONSIN  
 (City) (state)

Site contaminant \* BTEX, PAHs  
 (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		Sample depth	#			Additional comments
				Soil	GW		Jars	Vials	Core	
1	MA3-T63-1 -260701-01	7/26/01	1605		X		1			
2	MA3-T63-2 -260701-02		1010		X		1			
3	MA3-T63-3 -260701-03		1015		X		1			
4	MA3-T64-1 -260701-04		1105		X		1			
5	MA3-T64-2 -260701-05		1110		X		1			
6	MA3-T64-3 -260701-06		1115		X		1			
7	MA3-T64-1 -260701-07		1430		X		1			
8	MA3-T62-2 -260701-08		1435		X		1			

Relinquished by: N. A. Alun Date/time: 7/26/01 1730 Comments: \_\_\_\_\_ Sample condition upon arrival: \_\_\_\_\_  
 Received by: Anda Defina Date/time: 7/27/01 10:05 On ice?  Yes,  No

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

Send results to:  
 Name Tom Giza  
 Company Roy F. Weston, Inc.  
 Address 250 E. Bunker Ct Ste 500  
 City Vernon Hills State IL Zip 60061  
 Phone 847 948 4000 Fax 847 948 4055

Send Invoice to:  Same as results  
 Name \_\_\_\_\_  
 Company \_\_\_\_\_  
 Address \_\_\_\_\_  
 City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_  
 Phone \_\_\_\_\_ Fax \_\_\_\_\_

9931-412

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

Contact person Tom Green Sampler Steve  
 Project name Moss American Project # \_\_\_\_\_  
 Project location Milwankee WISCONSIN  
 (City) (state)

Site contaminant \* BTEX, PAHs  
 (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 (✓)

CEA* (soil/gw) see note <input type="checkbox"/> Aerobic, <input type="checkbox"/> Anaerobic, <input type="checkbox"/> Microaerophilic	Standard nutrient panel (soil/gw) incl. TKN, ammonium nitrogen, available P, pH, total organic carbon, % moisture (s)	Particle size analysis (soil) <input type="checkbox"/> sieve and hydrometer, <input type="checkbox"/> sieve only	% air-filled pore space (soil) (includes bulk density)	Soil moisture at field capacity	Bulk density (soil)	Intact core	Microbial Enumeration
--	---	---	---	---------------------------------	---------------------	-------------	-----------------------

Sample ID	Lab use only	Date	Time	(✓)		Sample depth	(#)			Additional comments
				Soil	GW		Jars	Vials	Core	
9 MAS-TG2-3 -260701-09		7/26/01	1440		X	10-12'	1			
10 MAS-TG2-1 -260701-10		↓	1540		X	10-12'	1			
11 MAS-TG2-2 -260701-11		↓	1545		X	↓	1			
12 MAS-TG2-3 -260701-12		↓	1550		X	↓	1			

Relinquished by: N. O. Allen Date/time: 7/26/01 1730 Comments: \_\_\_\_\_  
 Received by: \_\_\_\_\_ Date/time: \_\_\_\_\_ Sample condition upon arrival: \_\_\_\_\_  
 On ice?  Yes,  No

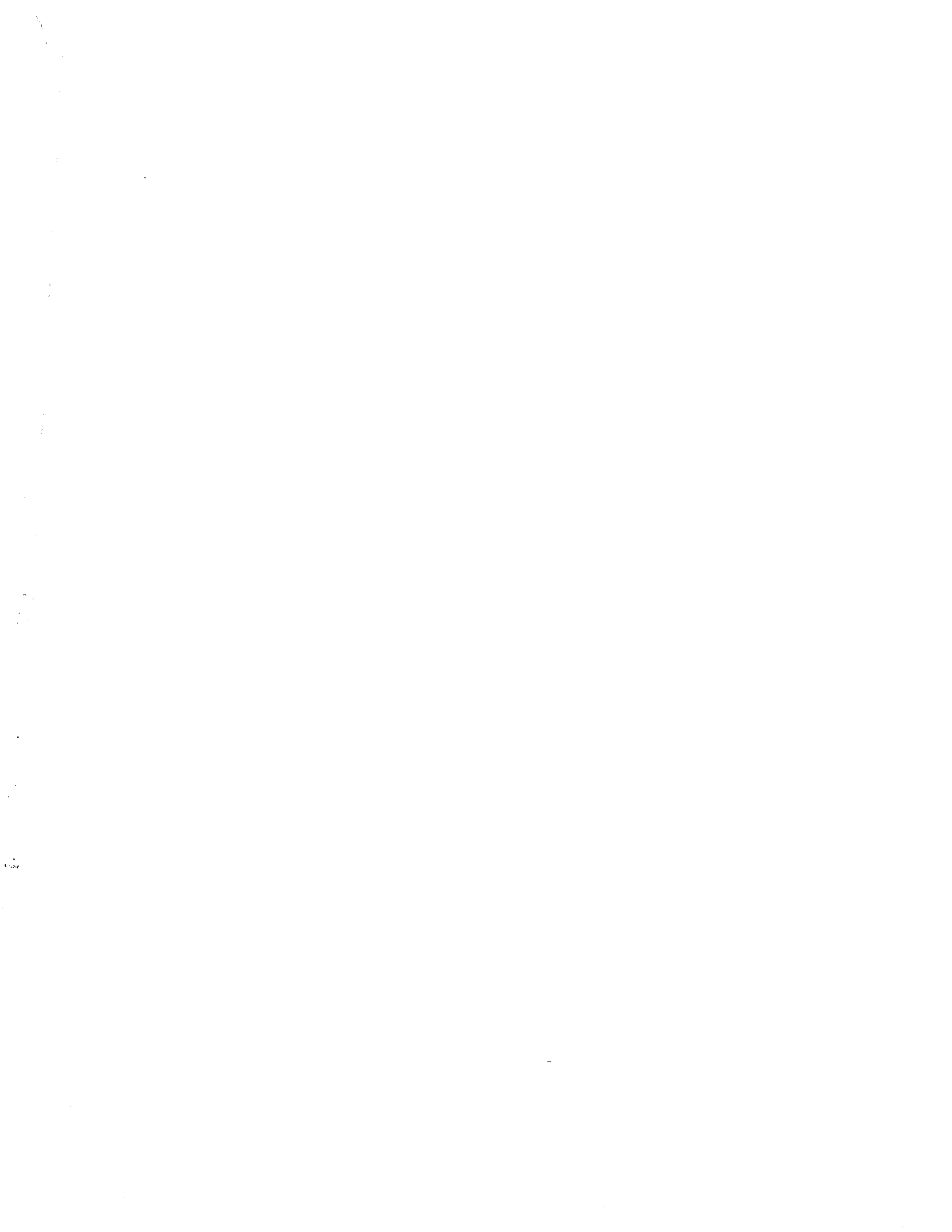
**Microbac Laboratories,**  
**HAMMOND DIVISION**  
**542-544 Conkey Street**  
**Hammond, Indiana 46324**  
**219-932-1770**

Send results to:  
 Name Tom Green  
 Company Ray E. Weston, Inc.  
 Address 750 E. Bunker Ct. Ste. 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







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 771511. Samples arrived at the laboratory on Thursday, July 26, 2001.

Table with 2 columns: Client Description and Lancaster Labs Number. Lists 6 water samples with their respective IDs and lab numbers.

METHODOLOGY

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

1 COPY TO: Kerr-McGee Corporation
1 COPY TO: Roy F. Weston
1 COPY TO: Data Package Group

Attn: Dr. Jeff Ostmeyer
Attn: Mr. Tom Graan



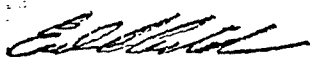
Lancaster Laboratories, Inc.
2425 New Holland Pike
PO Box 12425
Lancaster, PA 17605-2425
717-656-2300 Fax: 717-656-2681

00114



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

Respectfully Submitted,



Erik J. Frederiksen  
Group Leader



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

2004-11-09



Lancaster Laboratories Sample No. WW 3654359

Collected: 07/25/2001 15:00 by BS

Account Number: 07802

Submitted: 07/26/2001 09:15

Kerr-McGee Corporation

Reported: 08/08/2001 at 21:48

P.O. Box 25861

Discard: 09/08/2001

Oklahoma City OK 73125

MA3-TG6-1-250701-01 Grab Water Sample

Moss American Superfund Site - Milwaukee, WI

361-7 SDG#: MOA65-01

CAT No.	Analysis Name	CAS Number	As Received Result	As Received		Units	Dilution Factor
				Method	Detection Limit		
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	0.67 J		0.16	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.		0.0028	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	0.34		0.13	mg/l	1

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis		Analyst	Dilution Factor
				Date	Time		
00217	Kjeldahl Nitrogen	EPA 351.2	1	08/01/2001	13:39	Venia M. McFadden	1
00219	Nitrite Nitrogen	EPA 353.2	1	07/26/2001	15:47	Venia M. McFadden	1
00220	Nitrate Nitrogen	EPA 353.2	1	07/31/2001	14:27	Mark A. Buckwalter	1
00221	Ammonia Nitrogen	EPA 350.2	1	08/06/2001	07:50	Michele L. Hanby	1
00226	Ortho-Phosphate as P	EPA 365.3	1	07/26/2001	21:30	Daniel S. Smith	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	08/06/2001	12:47	Matthew J. Mercer	1
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	07/27/2001	08:53	Michelle A. Hartman	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	07/31/2001	14:45	Nancy J. Shoop	1



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

001105



Lancaster Laboratories Sample No. WW 3654360

Collected: 07/25/2001 15:05 by BS

Account Number: 07802

Submitted: 07/26/2001 09:15  
 Reported: 08/08/2001 at 21:48  
 Discard: 09/08/2001

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

MA3-TG6-2-250701-02 Grab Water Sample  
 Moss American Superfund Site - Milwaukee, WI

36272 SDG#: MOA65-02

CAT No.	Analysis Name	CAS Number	As Received Result	As Received		Units	Dilution Factor
				Method	Detection Limit		
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	0.047 J		0.040	mg/l	1
00221	Ammonia Nitrogen	7664-41-7	0.70 J		0.16	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.		0.0028	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	0.17		0.13	mg/l	1

Laboratory Chronicle

CAT No.	Analysis Name	Method	Analysis			Dilution Factor
			Trial#	Date and Time	Analyst	
00217	Kjeldahl Nitrogen	EPA 351.2	1	08/01/2001 13:40	Venia M. McFadden	1
00219	Nitrite Nitrogen	EPA 353.2	1	07/26/2001 15:51	Venia M. McFadden	1
00220	Nitrate Nitrogen	EPA 353.2	1	07/31/2001 14:29	Mark A. Buckwalter	1
00221	Ammonia Nitrogen	EPA 350.2	1	08/06/2001 07:50	Michele L. Hanby	1
00226	Ortho-Phosphate as P	EPA 365.3	1	07/26/2001 21:30	Daniel S. Smith	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	08/06/2001 12:48	Matthew J. Mercer	1
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	07/27/2001 08:53	Michelle A. Hartman	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	07/31/2001 14:45	Nancy J. Shoop	1



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

08/08/01



Lancaster Laboratories Sample No. WW 3654361

Collected: 07/25/2001 15:10 by BS

Account Number: 07802

Submitted: 07/26/2001 09:15

Kerr-McGee Corporation

Reported: 08/08/2001 at 21:48

P.O. Box 25861

Discard: 09/08/2001

Oklahoma City OK 73125

MA3-TG6-3-250701-03 Grab Water Sample

Moss American Superfund Site - Milwaukee, WI

363-7 SDG#: MOA65-03

CAT No.	Analysis Name	CAS Number	As Received Result	As Received		Units	Dilution Factor
				Method	Detection Limit		
00217	Kjeldahl Nitrogen	7727-37-9	0.94 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.		0.16	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	0.0055 J		0.0028	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	0.22		0.13	mg/l	1

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Analysis			Dilution Factor
			Trial#	Date and Time	Analyst	
00217	Kjeldahl Nitrogen	EPA 351.2	1	08/01/2001 13:42	Venia M. McFadden	1
00219	Nitrite Nitrogen	EPA 353.2	1	07/26/2001 15:52	Venia M. McFadden	1
00220	Nitrate Nitrogen	EPA 353.2	1	07/31/2001 14:30	Mark A. Buckwalter	1
00221	Ammonia Nitrogen	EPA 350.2	1	08/06/2001 07:50	Michele L. Hanby	1
00226	Ortho-Phosphate as P	EPA 365.3	1	07/26/2001 21:30	Daniel S. Smith	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	08/06/2001 12:49	Matthew J. Mercer	1
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	07/27/2001 08:53	Michelle A. Hartman	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	07/31/2001 14:45	Nancy J. Shoop	1



Lancaster Laboratories Sample No. WW 3654362

Collected: 07/25/2001 16:15 by BS

Account Number: 07802

Submitted: 07/26/2001 09:15

Kerr-McGee Corporation

Reported: 08/08/2001 at 21:48

P.O. Box 25861

Discard: 09/08/2001

Oklahoma City OK 73125

MA3-TG5-1-250701-04 Grab Water Sample

Moss American Superfund Site - Milwaukee, WI

35174 SDG#: MOA65-04

CAT No.	Analysis Name	CAS Number	As Received Result	As Received		Units	Dilution Factor
				Method	Detection Limit		
00217	Kjeldahl Nitrogen	7727-37-9	0.87 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	0.44 J		0.16	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	0.0165 J		0.0028	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	0.26		0.13	mg/l	1

Laboratory Chronicle

CAT No.	Analysis Name	Method	Analysis			Dilution Factor
			Trial#	Date and Time	Analyst	
00217	Kjeldahl Nitrogen	EPA 351.2	1	08/01/2001 13:43	Venia M. McFadden	1
00219	Nitrite Nitrogen	EPA 353.2	1	07/26/2001 15:53	Venia M. McFadden	1
00220	Nitrate Nitrogen	EPA 353.2	1	07/31/2001 14:31	Mark A. Buckwalter	1
00221	Ammonia Nitrogen	EPA 350.2	1	08/06/2001 07:50	Michele L. Hanby	1
00226	Ortho-Phosphate as P	EPA 365.3	1	07/26/2001 21:30	Daniel S. Smith	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	08/06/2001 11:32	Matthew J. Mercer	1
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	07/27/2001 08:53	Michelle A. Hartman	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	07/31/2001 14:45	Nancy J. Shoop	1

0019



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



Lancaster Laboratories Sample No. WW 3654363

Collected: 07/25/2001 16:20 by BS

Account Number: 07802

Submitted: 07/26/2001 09:15

Kerr-McGee Corporation

Reported: 08/08/2001 at 21:49

P.O. Box 25861

Discard: 09/08/2001

Oklahoma City OK 73125

MA3-TG5-2-250701-05 Grab Water Sample

Moss American Superfund Site - Milwaukee, WI

35275 SDG#: MOA65-05

CAT No.	Analysis Name	CAS Number	As Received Result	As Received		Units	Dilution Factor
				Method	Detection Limit		
00217	Kjeldahl Nitrogen	7727-37-9	0.83 J		0.30	mg/l	1
00219	Nitrite Nitrogen	14797-65-0	0.220		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.		0.16	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	0.0195 J		0.0028	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	0.19		0.13	mg/l	1

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Analysis		Analyst	Dilution Factor
			Trial#	Date and Time		
00217	Kjeldahl Nitrogen	EPA 351.2	1	08/01/2001 13:44	Venia M. McFadden	1
00219	Nitrite Nitrogen	EPA 353.2	1	07/26/2001 15:55	Venia M. McFadden	1
00220	Nitrate Nitrogen	EPA 353.2	1	07/31/2001 14:35	Mark A. Buckwalter	1
00221	Ammonia Nitrogen	EPA 350.2	1	08/06/2001 07:50	Michele L. Hanby	1
00226	Ortho-Phosphate as P	EPA 365.3	1	07/26/2001 21:30	Daniel S. Smith	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	08/06/2001 11:33	Matthew J. Mercer	1
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	07/27/2001 08:53	Michelle A. Hartman	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	07/31/2001 14:45	Nancy J. Shoop	1



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

00220





Lancaster Laboratories Sample No. WW 3654364

Collected: 07/25/2001 16:25 by BS

Account Number: 07802

Submitted: 07/26/2001 09:15  
 Reported: 08/08/2001 at 21:49  
 Discard: 09/08/2001

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

MA3-TG5-3-250701-06 Grab Water Sample  
 Moss American Superfund Site - Milwaukee, WI

35376 SDG#: MOA65-06

CAT No.	Analysis Name	CAS Number	As Received		As Received		Dilution Factor	
			Result	J	Method	Detection Limit		Units
00217	Kjeldahl Nitrogen	7727-37-9	0.88	J	0.30	0.30	mg/l	1
00219	Nitrite Nitrogen	14797-65-0	N.D.		0.015	0.015	mg/l	1
00220	Nitrate Nitrogen	14797-55-8	N.D.		0.040	0.040	mg/l	1
00221	Ammonia Nitrogen	7664-41-7	0.61	J	0.16	0.16	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	0.025		0.0028	0.0028	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	0.15	J	0.13	0.13	mg/l	1

Laboratory Chronicle

CAT No.	Analysis Name	Method	Analysis			Analyst	Dilution Factor
			Trial#	Date and Time			
00217	Kjeldahl Nitrogen	EPA 351.2	1	08/01/2001 13:45		Venia M. McFadden	1
00219	Nitrite Nitrogen	EPA 353.2	1	07/26/2001 15:56		Venia M. McFadden	1
00220	Nitrate Nitrogen	EPA 353.2	1	07/31/2001 14:36		Mark A. Buckwalter	1
00221	Ammonia Nitrogen	EPA 350.2	1	08/08/2001 07:15		Michele L. Hanby	1
00226	Ortho-Phosphate as P	EPA 365.3	1	07/26/2001 21:30		Daniel S. Smith	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	08/06/2001 11:34		Matthew J. Mercer	1
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	07/27/2001 08:53		Michelle A. Hartman	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	07/31/2001 14:45		Nancy J. Shoop	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 771735. Samples arrived at the laboratory on Friday, July 27, 2001.

Table with 2 columns: Client Description and Lancaster Labs Number. Lists 12 grab water samples with their corresponding IDs and lab numbers.

METHODOLOGY

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

1 COPY TO Kerr-McGee Corporation
1 COPY TO Roy F. Weston
1 COPY TO Data Package Group

Attn: Dr. Jeff Ostmeier
Attn: Mr. Tom Graan



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

Respectfully Submitted,

Erik J. Frederiksen  
Group Leader



Lancaster Laboratories, Inc.  
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04/12/05/05



Lancaster Laboratories Sample No. WW 3655393

Collected: 07/26/2001 10:05 by BS

Account Number: 07802

Submitted: 07/27/2001 09:55

Kerr-McGee Corporation

Reported: 08/14/2001 at 14:04

P.O. Box 25861

Discard: 09/14/2001

Oklahoma City OK 73125

MA3-TG3-1-260701-01 Grab Water Sample

Moss American Superfund Site - Milwaukee, WI

MA301 SDG#: MOA65-07

CAT No.	Analysis Name	CAS Number	As Received Result	As Received		Units	Dilution Factor
				Method	Detection Limit		
00217	Kjeldahl Nitrogen	7727-37-9	2.9		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	2.2		0.16	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	0.0045 J		0.0028	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	0.79		0.13	mg/l	1

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Analysis			Dilution Factor
			Trial#	Date and Time	Analyst	
00217	Kjeldahl Nitrogen	EPA 351.2	1	08/01/2001 14:20	Venia M. McFadden	1
00219	Nitrite Nitrogen	EPA 353.2	1	07/27/2001 16:35	Brad M. La Placa	1
00220	Nitrate Nitrogen	EPA 353.2	1	08/01/2001 09:55	Mark A. Buckwalter	1
00221	Ammonia Nitrogen	EPA 350.2	1	08/08/2001 07:15	Michele L. Hanby	1
00226	Ortho-Phosphate as P	EPA 365.3	1	07/27/2001 19:45	Daniel S. Smith	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	08/06/2001 12:52	Matthew J. Mercer	1
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	07/30/2001 15:20	Nancy J. Shoop	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	07/31/2001 14:45	Nancy J. Shoop	1



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Lancaster Laboratories Sample No. WW 3655394

Collected: 07/26/2001 10:10 by BS

Account Number: 07802

Submitted: 07/27/2001 09:55

Kerr-McGee Corporation

Reported: 08/14/2001 at 14:04

P.O. Box 25861

Discard: 09/14/2001

Oklahoma City OK 73125

MA3-TG3-2-260701-02 Grab Water Sample

Moss American Superfund Site - Milwaukee, WI

MA302 SDG#: MOA65-08

CAT No.	Analysis Name	CAS Number	As Received Result	As Received		Units	Dilution Factor
				Method	Detection Limit		
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	1.2		0.16	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.		0.0028	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	0.44		0.13	mg/l	1

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis		Analyst	Dilution Factor
				Date and Time			
00217	Kjeldahl Nitrogen	EPA 351.2	1	08/01/2001	14:24	Venia M. McFadden	1
00219	Nitrite Nitrogen	EPA 353.2	1	07/27/2001	16:36	Brad M. La Placa	1
00220	Nitrate Nitrogen	EPA 353.2	1	08/01/2001	09:56	Mark A. Buckwalter	1
00221	Ammonia Nitrogen	EPA 350.2	1	08/08/2001	07:15	Michele L. Hanby	1
00226	Ortho-Phosphate as P	EPA 365.3	1	07/27/2001	19:45	Daniel S. Smith	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	08/06/2001	11:43	Matthew J. Mercer	1
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	07/30/2001	15:20	Nancy J. Shoop	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	07/31/2001	14:45	Nancy J. Shoop	1



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Lancaster Laboratories Sample No. WW 3655395

Collected: 07/26/2001 10:15 by BS

Account Number: 07802

Submitted: 07/27/2001 09:55

Kerr-McGee Corporation

Reported: 08/14/2001 at 14:04

P.O. Box 25861

Discard: 09/14/2001

Oklahoma City OK 73125

MA3-TG3-3-260701-03 Grab Water Sample

Moss American Superfund Site - Milwaukee, WI

MA303 SDG#: MOA65-09

CAT No.	Analysis Name	CAS Number	As Received Result	As Received		Units	Dilution Factor
				Method	Detection Limit		
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	1.4		0.16	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.		0.0028	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	0.38		0.13	mg/l	1

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Analysis			Dilution Factor
			Trial#	Date and Time	Analyst	
00217	Kjeldahl Nitrogen	EPA 351.2	1	08/01/2001 14:25	Venia M. McFadden	1
00219	Nitrite Nitrogen	EPA 353.2	1	07/27/2001 16:38	Brad M. La Placa	1
00220	Nitrate Nitrogen	EPA 353.2	1	08/01/2001 09:57	Mark A. Buckwalter	1
00221	Ammonia Nitrogen	EPA 350.2	1	08/08/2001 07:15	Michele L. Hanby	1
00226	Ortho-Phosphate as P	EPA 365.3	1	07/27/2001 19:45	Daniel S. Smith	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	08/06/2001 11:44	Matthew J. Mercer	1
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	07/30/2001 15:20	Nancy J. Shoop	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	07/31/2001 14:45	Nancy J. Shoop	1



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Lancaster Laboratories Sample No. WW 3655396

Collected: 07/26/2001 11:05 by BS

Account Number: 07802

Submitted: 07/27/2001 09:55

Kerr-McGee Corporation

Reported: 08/14/2001 at 14:04

P.O. Box 25861

Discard: 09/14/2001

Oklahoma City OK 73125

MA3-TG4-1-260701-04 Grab Water Sample

Moss American Superfund Site - Milwaukee, WI

MA304 SDG#: MOA65-10

CAT No.	Analysis Name	CAS Number	As Received Result	As Received		Units	Dilution Factor
				Method	Detection Limit		
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	0.83 J		0.16	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	0.0080 J		0.0028	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	0.45		0.13	mg/l	1

Laboratory Chronicle

CAT No.	Analysis Name	Method	Analysis		Analyst	Dilution Factor
			Trial#	Date and Time		
00217	Kjeldahl Nitrogen	EPA 351.2	1	08/01/2001 14:29	Venia M. McFadden	1
00219	Nitrite Nitrogen	EPA 353.2	1	07/27/2001 16:39	Brad M. La Placa	1
00220	Nitrate Nitrogen	EPA 353.2	1	08/01/2001 09:59	Mark A. Buckwalter	1
00221	Ammonia Nitrogen	EPA 350.2	1	08/08/2001 07:15	Michele L. Hanby	1
00226	Ortho-Phosphate as P	EPA 365.3	1	07/27/2001 19:45	Daniel S. Smith	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	08/06/2001 11:45	Matthew J. Mercer	1
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	07/30/2001 15:20	Nancy J. Shoop	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	07/31/2001 14:45	Nancy J. Shoop	1



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Lancaster Laboratories Sample No. WW 3655397

Collected: 07/26/2001 11:10 by BS

Account Number: 07802

Submitted: 07/27/2001 09:55

Kerr-McGee Corporation

Reported: 08/14/2001 at 14:04

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Discard: 09/14/2001

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MA3-TG4-2-260701-05 Grab Water Sample

Moss American Superfund Site - Milwaukee, WI

MA305 SDG#: MOA65-11

CAT No.	Analysis Name	CAS Number	As Received Result	As Received		Units	Dilution Factor
				Method	Detection Limit		
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	1.00 J		0.16	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	0.0160 J		0.0028	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	0.26		0.13	mg/l	1

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Analysis		Analyst	Dilution Factor
			Trial#	Date and Time		
00217	Kjeldahl Nitrogen	EPA 351.2	1	08/01/2001 14:30	Venia M. McFadden	1
00219	Nitrite Nitrogen	EPA 353.2	1	07/27/2001 16:40	Brad M. La Placa	1
00220	Nitrate Nitrogen	EPA 353.2	1	08/01/2001 10:02	Mark A. Buckwalter	1
00221	Ammonia Nitrogen	EPA 350.2	1	08/08/2001 07:15	Michele L. Hanby	1
00226	Ortho-Phosphate as P	EPA 365.3	1	07/27/2001 19:45	Daniel S. Smith	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	08/06/2001 11:48	Matthew J. Mercer	1
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	07/30/2001 15:20	Nancy J. Shoop	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	07/31/2001 14:45	Nancy J. Shoop	1



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Lancaster Laboratories Sample No. WW 3655398

Collected: 07/26/2001 11:15 by BS

Account Number: 07802

Submitted: 07/27/2001 09:55  
 Reported: 08/14/2001 at 14:04  
 Discard: 09/14/2001

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MA3-TG4-3-260701-06 Grab Water Sample  
 Moss American Superfund Site - Milwaukee, WI

MA306 SDG#: MOA65-12

CAT No.	Analysis Name	CAS Number	As Received Result	As Received		Units	Dilution Factor
				Method	Detection Limit		
00217	Kjeldahl Nitrogen	7727-37-9	1.5		0.30	mg/l	1
00219	Nitrite Nitrogen	14797-65-0	0.098		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		0.16	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	0.0080 J		0.0028	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	0.30		0.13	mg/l	1

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis		Analyst	Dilution Factor
				Date	Time		
00217	Kjeldahl Nitrogen	EPA 351.2	1	08/01/2001	14:32	Venia M. McFadden	1
00219	Nitrite Nitrogen	EPA 353.2	1	07/27/2001	16:44	Brad M. La Placa	1
00220	Nitrate Nitrogen	EPA 353.2	1	08/01/2001	10:04	Mark A. Buckwalter	1
00221	Ammonia Nitrogen	EPA 350.2	1	08/08/2001	07:15	Michele L. Hanby	1
00226	Ortho-Phosphate as P	EPA 365.3	1	07/27/2001	19:45	Daniel S. Smith	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	08/06/2001	12:53	Matthew J. Mercer	1
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	07/30/2001	15:20	Nancy J. Shoop	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	07/31/2001	14:45	Nancy J. Shoop	1

0029



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Lancaster Laboratories Sample No. WW 3655399

Collected: 07/26/2001 14:30 by BS

Account Number: 07802

Submitted: 07/27/2001 09:55

Kerr-McGee Corporation

Reported: 08/14/2001 at 14:04

P.O. Box 25861

Discard: 09/14/2001

Oklahoma City OK 73125

MA3-TG2-1-260701-07 Grab Water Sample

Moss American Superfund Site - Milwaukee, WI

MA307 SDG#: MOA65-13

CAT No.	Analysis Name	CAS Number	As Received		As Received	Units	Dilution Factor
			Result		Method		
00217	Kjeldahl Nitrogen	7727-37-9	0.36	J	Detection Limit 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.		0.16	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.		0.0028	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	0.15	J	0.13	mg/l	1

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Analysis		Analyst	Dilution Factor
			Trial#	Date and Time		
00217	Kjeldahl Nitrogen	EPA 351.2	1	08/01/2001 14:33	Venia M. McFadden	1
00219	Nitrite Nitrogen	EPA 353.2	1	07/27/2001 16:45	Brad M. La Placa	1
00220	Nitrate Nitrogen	EPA 353.2	1	08/01/2001 10:54	Mark A. Buckwalter	1
00221	Ammonia Nitrogen	EPA 350.2	1	08/10/2001 07:30	Michele L. Hanby	1
00226	Ortho-Phosphate as P	EPA 365.3	1	07/27/2001 19:45	Daniel S. Smith	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	08/06/2001 11:51	Matthew J. Mercer	1
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	07/30/2001 15:20	Nancy J. Shoop	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	07/31/2001 14:45	Nancy J. Shoop	1



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08/14/01



Lancaster Laboratories Sample No. WW 3655400

Collected: 07/26/2001 14:35 by BS

Account Number: 07802

Submitted: 07/27/2001 09:55

Kerr-McGee Corporation

Reported: 08/14/2001 at 14:04

P.O. Box 25861

Discard: 09/14/2001

Oklahoma City OK 73125

MA3-TG2-2-260701-08 Grab Water Sample

Moss American Superfund Site - Milwaukee, WI

MA308 SDG#: MOA65-14

CAT No.	Analysis Name	CAS Number	As Received Result	As Received		Units	Dilution Factor
				Method	Detection Limit		
00217	Kjeldahl Nitrogen	7727-37-9	0.96 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	0.35 J		0.16	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.		0.0028	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	0.22		0.13	mg/l	1

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Analysis			Dilution Factor
			Trial#	Date and Time	Analyst	
00217	Kjeldahl Nitrogen	EPA 351.2	1	08/01/2001 14:34	Venia M. McFadden	1
00219	Nitrite Nitrogen	EPA 353.2	1	07/27/2001 17:06	Brad M. La Placa	1
00220	Nitrate Nitrogen	EPA 353.2	1	08/01/2001 10:55	Mark A. Buckwalter	1
00221	Ammonia Nitrogen	EPA 350.2	1	08/10/2001 07:30	Michele L. Hanby	1
00226	Ortho-Phosphate as P	EPA 365.3	1	07/27/2001 19:45	Daniel S. Smith	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	08/06/2001 11:52	Matthew J. Mercer	1
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	07/30/2001 15:20	Nancy J. Shoop	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	07/31/2001 14:45	Nancy J. Shoop	1



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0031



Lancaster Laboratories Sample No. WW 3655401

Collected: 07/26/2001 14:40 by BS

Account Number: 07802

Submitted: 07/27/2001 09:55

Kerr-McGee Corporation

Reported: 08/14/2001 at 14:04

P.O. Box 25861

Discard: 09/14/2001

Oklahoma City OK 73125

MA3-TG2-3-260701-09 Grab Water Sample

Moss American Superfund Site - Milwaukee, WI

MA309 SDG#: MOA65-15

CAT No.	Analysis Name	CAS Number	As Received		As Received	Units	Dilution Factor
			Result	J	Method Detection Limit		
00217	Kjeldahl Nitrogen	7727-37-9	0.60	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	0.29	J	0.16	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	0.0050	J	0.0028	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	0.28		0.13	mg/l	1

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis		Analyst	Dilution Factor
				Date and Time			
00217	Kjeldahl Nitrogen	EPA 351.2	1	08/01/2001 14:35		Venia M. McFadden	1
00219	Nitrite Nitrogen	EPA 353.2	1	07/27/2001 16:48		Brad M. La Placa	1
00220	Nitrate Nitrogen	EPA 353.2	1	08/01/2001 10:57		Mark A. Buckwalter	1
00221	Ammonia Nitrogen	EPA 350.2	1	08/10/2001 07:30		Michele L. Hanby	1
00226	Ortho-Phosphate as P	EPA 365.3	1	07/27/2001 19:45		Daniel S. Smith	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	08/06/2001 11:53		Matthew J. Mercer	1
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	07/30/2001 15:20		Nancy J. Shoop	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	07/31/2001 14:45		Nancy J. Shoop	1



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 PO Box 12425  
 Lancaster, PA 17605-2425  
 717-656-2300 Fax: 717-656-2681

08/14/01



Lancaster Laboratories Sample No. WW 3655402

Collected: 07/26/2001 15:40 by BS

Account Number: 07802

Submitted: 07/27/2001 09:55  
 Reported: 08/14/2001 at 14:04  
 Discard: 09/14/2001

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

MA3-TG1-1-260701-10 Grab Water Sample  
 Moss American Superfund Site - Milwaukee, WI

MA310 SDG#: MOA65-16

CAT No.	Analysis Name	CAS Number	As Received Result	As Received		Units	Dilution Factor
				Method	Detection Limit		
00217	Kjeldahl Nitrogen	7727-37-9	1.2		0.30	mg/l	1
00219	Nitrite Nitrogen	14797-65-0	0.059		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		0.16	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.		0.0028	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	0.14 J		0.13	mg/l	1

Laboratory Chronicle

CAT No.	Analysis Name	Method	Analysis			Dilution Factor
			Trial#	Date and Time	Analyst	
00217	Kjeldahl Nitrogen	EPA 351.2	1	08/01/2001 14:39	Venia M. McFadden	1
00219	Nitrite Nitrogen	EPA 353.2	1	07/27/2001 16:49	Brad M. La Placa	1
00220	Nitrate Nitrogen	EPA 353.2	1	08/01/2001 10:58	Mark A. Buckwalter	1
00221	Ammonia Nitrogen	EPA 350.2	1	08/10/2001 07:30	Michele L. Hanby	1
00226	Ortho-Phosphate as P	EPA 365.3	1	07/27/2001 19:45	Daniel S. Smith	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	08/06/2001 11:54	Matthew J. Mercer	1
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	07/30/2001 15:20	Nancy J. Shoop	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	07/31/2001 14:45	Nancy J. Shoop	1



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000000



Lancaster Laboratories Sample No. WW 3655403

Collected: 07/26/2001 15:45 by BS

Account Number: 07802

Submitted: 07/27/2001 09:55

Kerr-McGee Corporation

Reported: 08/14/2001 at 14:04

P.O. Box 25861

Discard: 09/14/2001

Oklahoma City OK 73125

MA3-TG1-2-260701-11 Grab Water Sample

Moss American Superfund Site - Milwaukee, WI

MA311 SDG#: MOA65-17

CAT No.	Analysis Name	CAS Number	As Received Result	As Received		Units	Dilution Factor
				Method	Detection Limit		
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	0.64 J		0.16	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.		0.0028	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	0.26		0.13	mg/l	1

**Laboratory Chronicle**

CAT No.	Analysis Name	Method	Analysis		Analyst	Dilution Factor
			Trial#	Date and Time		
00217	Kjeldahl Nitrogen	EPA 351.2	1	08/01/2001 14:40	Venia M. McFadden	1
00219	Nitrite Nitrogen	EPA 353.2	1	07/27/2001 16:50	Brad M. La Placa	1
00220	Nitrate Nitrogen	EPA 353.2	1	08/01/2001 10:59	Mark A. Buckwalter	1
00221	Ammonia Nitrogen	EPA 350.2	1	08/10/2001 07:30	Michele L. Hanby	1
00226	Ortho-Phosphate as P	EPA 365.3	1	07/27/2001 19:45	Daniel S. Smith	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	08/06/2001 12:53	Matthew J. Mercer	1
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	07/30/2001 15:20	Nancy J. Shoop	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	07/31/2001 15:30	Nancy J. Shoop	1



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 717-656-2300 Fax: 717-656-2681

14-0510-01



Lancaster Laboratories Sample No. WW 3655404

Collected: 07/26/2001 15:50 by BS

Account Number: 07802

Submitted: 07/27/2001 09:55

Kerr-McGee Corporation

Reported: 08/14/2001 at 14:05

P.O. Box 25861

Discard: 09/14/2001

Oklahoma City OK 73125

MA3-TG1-3-260701-12 Grab Water Sample

Moss American Superfund Site - Milwaukee, WI

MA312 SDG#: MOA65-18\*

CAT No.	Analysis Name	CAS Number	As Received Result	As Received		Units	Dilution Factor
				Method	Detection Limit		
00217	Kjeldahl Nitrogen	7727-37-9	0.94 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.		0.16	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.		0.0028	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	0.27		0.13	mg/l	1

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis		Analyst	Dilution Factor
				Date	Time		
00217	Kjeldahl Nitrogen	EPA 351.2	1	08/01/2001	14:44	Venia M. McFadden	1
00219	Nitrite Nitrogen	EPA 353.2	1	07/27/2001	16:51	Brad M. La Placa	1
00220	Nitrate Nitrogen	EPA 353.2	1	08/01/2001	11:00	Mark A. Buckwalter	1
00221	Ammonia Nitrogen	EPA 350.2	1	08/10/2001	07:30	Michele L. Hanby	1
00226	Ortho-Phosphate as P	EPA 365.3	1	07/27/2001	19:45	Daniel S. Smith	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	08/06/2001	11:58	Matthew J. Mercer	1
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	07/30/2001	15:20	Nancy J. Shoop	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	07/31/2001	15:30	Nancy J. Shoop	1



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08/14/01

# Analysis Request / Environmental Services Chain of Custody



For Lancaster Laboratories use only  
 Acct. # 1802 Sample # 3655393-95

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

Client: Keith McGee Acct. #: \_\_\_\_\_  
 Project Name#: Mass American PWSID #: \_\_\_\_\_  
 Project Manager: Tom Green P.O.# \_\_\_\_\_  
 Sampler: B. Schaefer Quote #: \_\_\_\_\_  
 Name of state where samples were collected: WI

For lab use only  
FSC: \_\_\_\_\_  
SCR #: \_\_\_\_\_

Analysis Requested			
NDZ, ND3	G-PO4	TKN, TP, PO4	NH3

Sample ID/Description	Date	Lot	X	V	S	NDZ, ND3	G-PO4	TKN, TP, PO4	NH3	Remarks
MAS-TG3-1-260701-01	7/26/01	1005	X	X	S	X	X	X	X	
MAS-TG3-2-260701-02	↓	1010	X	X	S	X	X	X	X	
MAS-TG3-3-260701-03	↓	1015	X	V	S	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)**      SDG Complete? Yes No

QC Summary      Type VI (Raw Data) Per available

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: <u>[Signature]</u>	Date: <u>7/26/01</u>	Time: <u>1730</u>	Received by: <u>FedEx</u>	Date: <u>7/26/01</u>	Time: <u>1730</u>
Relinquished by:	Date:	Time:	Received by:	Date:	Time:
Relinquished by:	Date:	Time:	Received by:	Date:	Time:
Relinquished by:	Date:	Time:	Received by: <u>[Signature]</u>	Date: <u>7/27/01</u>	Time: <u>095</u>



# Analysis Request/ Environmental Services Chain of Custody



For Lancaster Laboratories use only  
 Acct. # 7802 Sample # 3655396-98

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

<p>1 Client: <u>Kerr McGee</u> Acct #: _____</p> <p>Project Name#: <u>Moss American</u> PWSID #: _____</p> <p>Project Manager: <u>Tom Gizza</u> P.O. # _____</p> <p>Sampler: <u>B. Schaefer</u> Quote #: _____</p> <p>Name of state where samples were collected: <u>WI</u></p>	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
															Analyses Requested															For lab use only																																																																			
															NO <sub>2</sub> , NO <sub>3</sub> , O-P04, TRN, TP, P04, NH <sub>3</sub>																																																																																		
																														Remarks																																																																			
MAB-T64-1-260701-04															7/26/01															1105																																																																			
MAB-T64-2-260701-05															↓															1110																																																																			
MAB-T64-3-260701-06															↓															1115																																																																			

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

Relinquished by: <u>[Signature]</u>	Date: <u>7/26/01</u>	Time: <u>1730</u>	Received by: <u>Fed Ex</u>	Date: <u>7/26/01</u>	Time: <u>1730</u>
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: <u>[Signature]</u>	Date: <u>7/27/01</u>	Time: <u>095</u>

8 Data Package Options (please circle if requested)

QC Summary Type VI (Raw Data) PU quote  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

# Analysis Request/ Environmental Services Chain of Custody



For Lancaster Laboratories use only  
 Acct. # 7802 Sample # 3655399

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

1 Client: Kerr McGee Acct. #: \_\_\_\_\_  
 Project Name/#: Moss American PWSID #: \_\_\_\_\_  
 Project Manager: Tom Green P.O.# \_\_\_\_\_  
 Sampler: B. Schaefer Quote #: \_\_\_\_\_  
 Name of state where samples were collected: WI

4 **Analysis Requested**

5 **For lab use only**

FSC: \_\_\_\_\_  
 SCR #: \_\_\_\_\_

NO<sub>2</sub>, NO<sub>3</sub>  
 O<sub>3</sub>-P<sub>04</sub>  
 TKAL TP P<sub>04</sub>  
 NH<sub>3</sub>

2			3		4		5				6		7	
Sample ID	Date	Volume	NO <sub>2</sub>	NO <sub>3</sub>	O <sub>3</sub>	TKAL	TP	P <sub>04</sub>	NH <sub>3</sub>	Other	Remarks	Temp	Volume	
MAS-TG2-1-260701-07	7/26/01	1430	X	X	S	X	X	X	X					
MAS-TG2-2-260701-08	↓	1435	X	X	S	X	X	X	X					
MAS-TG2-3-260701-09	↓	1440	X	X	S	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: SD TAT  
 Rush results requested by (please circle): Phone fax  
 Phone #: 847 918 400 Fax #: 847 918 4055

Relinquished by:	Date	Time	Received by:	Date	Time
<u>[Signature]</u>	<u>7/26/01</u>	<u>1730</u>	<u>Fed Ex</u>	<u>7/26/01</u>	<u>1730</u>
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time

8 **Data Package Options** (please circle if requested)

QC Summary: Type VI (Raw Data) Per Quote  Yes  No  
 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



For Lancaster Laboratories use only

Acct. # 7802 Sample # 3655402-09

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

1 Client: Kerr McGee Acct. #: \_\_\_\_\_  
 Project Name/#: Mass Amherst PWSID #: \_\_\_\_\_  
 Project Manager: Tom Giza P.O. # \_\_\_\_\_  
 Sampler: B. Schaefer Quote #: \_\_\_\_\_  
 Name of state where samples were collected: MA

5

NO2	NO3	6-P04	TRN TP P04	NH3
-----	-----	-------	------------	-----

For lab use only  
 FSC: \_\_\_\_\_  
 SCR #: 1153928

2

Sample ID	Date	Time	NO2	NO3	6-P04	TRN TP P04	NH3	Remarks
MA3-TG1-1-260701-10	7/26/01	1540	X	X	S	X	X	1225
MA3-TG1-2-260701-11	↓	1545	X	X	S	X	X	
MA3-TG1-3-260701-12	↓	1550	X	X	S	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: STP TAT  
 Rush results requested by: (please circle): Phone 847 918 4000 Fax: 847 918 4055

Relinquished by: <u>[Signature]</u>	Date: <u>7/26/01</u>	Time: <u>1730</u>	Received by: <u>[Signature]</u>	Date: <u>7/26/01</u>	Time: <u>1730</u>
Relinquished by: <u>[Signature]</u>	Date: <u>7/26/01</u>	Time: <u>1730</u>	Received by: <u>Fed Ex</u>	Date: <u>7/26/01</u>	Time: <u>1730</u>
Relinquished by: _____	Date: _____	Time: _____	Received by: _____	Date: _____	Time: _____
Relinquished by: _____	Date: _____	Time: _____	Received by: _____	Date: _____	Time: _____
Relinquished by: _____	Date: _____	Time: _____	Received by: _____	Date: <u>7/27/01</u>	Time: <u>0955</u>

8 Data Package Options (please circle if requested)

QC Summary	Type VI (Raw Data) <u>Per Quote</u>	SDG Complete? <u>Yes</u> No
Type I (Tier I) <u>GLP</u>	Type II (Tier II) <u>Other</u>	Site-specific QC required? Yes No
Type III (NJ Red. Del.)	Type IV (CLP)	Internal Chain of Custody required? Yes No





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Acct. # 7802 Sample # 3654359-64

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

1 Client: Kerr McGee Acct. #: \_\_\_\_\_  
 Project Name/#: Moss American PWSID #: \_\_\_\_\_  
 Project Manager: Tom Green PO.# \_\_\_\_\_  
 Sampler: B. Schaefer Quote #: \_\_\_\_\_  
 Name of state where samples were collected: WI

2

Sample ID	Date	Time	Temp	Humidity	Wind	Dir	Cloud	Vis	Precip	5				Remarks
										NO <sub>2</sub>	TXN	NH <sub>3</sub>	O <sub>3</sub>	
MA3-T65-1-250701-04	7/25/01	1615	X		X					X	X	X	X	
MA3-T65-2-250701-05	↓	1620	X		X					X	X	X	X	
MA3-T65-3-250701-06	↓	1625	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

Relinquished by: <u>Mary Ma</u>	Date: <u>6/20/01</u>	Time: <u>0000</u>	Received by: <u>[Signature]</u>	Date: <u>6/21/01</u>	Time: <u>1000</u>
Relinquished by: <u>[Signature]</u>	Date: <u>7/15/01</u>	Time: <u>1800</u>	Received by: <u>Fed Ex</u>	Date: <u>7/15/01</u>	Time: <u>1800</u>

8 Data Package Options (please circle if requested)

QC Summary Type VI (Raw Data) Per Quote 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: <u>[Signature]</u>	Date: _____	Time: _____	Received by: _____	Date: _____	Time: _____
Relinquished by: <u>[Signature]</u>	Date: _____	Time: _____	Received by: _____	Date: _____	Time: _____

Rodley Binkley 7-26-01



Where quality is a science.

CLIENT: Kerr-McGee Corporation  
SDG: MOA65

LANCASTER LABORATORIES

INSTRUMENTAL WET CHEMISTRY

SAMPLE NUMBERS:

<u>Sample #</u>	<u>Sample Code</u>	<u>Comment</u>
3654359	361-7	
3654360	36272	
3654361	363-7	
3654362	35174	
3654363	35275	
3654364	35376	
3655393	MA301	
3655394	MA302	
3655395	MA303	
3655396	MA304	
3655397	MA305	
3655398	MA306	
3655399	MA307	
3655400	MA308	
3655401	MA309	
3655402	MA310	
3655403	MA311	
3655404	MA312	

ANALYSIS:

Dilutions are listed in the table below:

Sample	Nitrate-N	TKN	TP as PO4
P653440 B,S,D		5	
ALL LCS	2		2

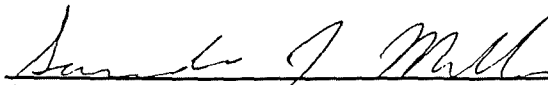
QUALITY CONTROL AND NONCONFORMANCE SUMMARY:

A number of analyte recoveries and % RPD's were out of specification. Refer to the matrix spike, duplicate and matrix spike/matrix spike duplicate forms for the specific analyte recoveries and %RPD's outside the QC limits.

DATA INTERPRETATION:

No further interpretation is necessary for the data submitted.

Case Narrative Reviewed and Approved by:

 Date: 8-9-01  
 Sandra J. Miller  
 Specialist/Coordinator

00015008

**ATTACHMENT 4**

**AUGUST 2001 GROUNDWATER SAMPLE ANALYTICAL RESULTS**

# Microbac

## ® Microbac Laboratories, Inc.

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  
Roy F. Weston, Inc.  
750 East Bankes Court  
Suite 500  
Vernon Hills, IL 60061

Date Reported: 9/25/01  
P.O. Number:  
Sample ID: 9932-00407  
Date Received: 8/30/01  
Time Received: 09:00

Permit Number

PARAMETERS	RESULTS	DATE	TECH	METHOD
SUBJECT: MA3-FG6-1-290801-01, 8/29/00 @ 15:25 by Client				
Total Aerobic Bacteria	630. cfu/ml	8/31/01	DJH	9215B MODIFIED
T.Aerobic Degradar Bacteria	520. cfu/ml	8/31/01	DJH	9215B MODIFIED
SUBJECT: MA3-FG6-2-290801-02, 8/29/00 @ 15:35 by Client				
Total Aerobic Bacteria	420. cfu/ml	8/31/01	DJH	9215B MODIFIED
T.Aerobic Degradar Bacteria	200. cfu/ml	8/31/01	DJH	9215B MODIFIED
SUBJECT: MA3-FG6-3-290801-03, 8/29/00 @ 15:45 by Client				
Total Aerobic Bacteria	490. cfu/ml	8/31/01	DJH	9215B MODIFIED
T.Aerobic Degradar Bacteria	190. cfu/ml	8/31/01	DJH	9215B MODIFIED
SUBJECT: MA3-FG5-1-290801-01, 8/29/00 @ 17:00 by Client				
Total Aerobic Bacteria	1,040. cfu/ml	8/31/01	DJH	9215B MODIFIED
T.Aerobic Degradar Bacteria	60. cfu/ml	8/31/01	DJH	9215B MODIFIED
SUBJECT: MA3-FG5-2-290801-05, 8/29/00 @ 17:10 by Client				
Total Aerobic Bacteria	1,800. cfu/ml	8/31/01	DJH	9215B MODIFIED
T.Aerobic Degradar Bacteria	300. cfu/ml	8/31/01	DJH	9215B MODIFIED
SUBJECT: MA3-FG5-3-290801-06, 8/29/00 @ 17:20 by Client				
Total Aerobic Bacteria	4,100. cfu/ml	8/31/01	DJH	9215B MODIFIED
T.Aerobic Degradar Bacteria	1,300. cfu/ml	8/31/01	DJH	9215B MODIFIED

\*\*\* Certificate Continues On Next Page \*\*\*

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**CERTIFICATE OF ANALYSIS**

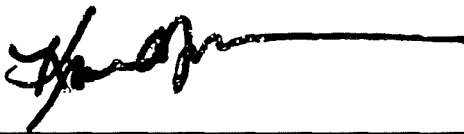
Tom Graam  
Roy F. Weston, Inc.  
750 East Bankes Court  
Suite 500  
Vernon Hills, IL 60061

Date Reported: 9/25/01  
P.O. Number:  
Sample ID: 9932-00407  
Date Received: 8/30/01  
Time Received: 09:00

Permit Number

PARAMETERS	RESULTS	DATE	TECH	METHOD
------------	---------	------	------	--------

Submitted with Quality by



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## CERTIFICATE OF ANALYSIS

Tom Graam  
Roy F. Weston, Inc.  
750 East Bankes Court  
Suite 500  
Vernon Hills, IL 60061

Date Reported: 9/25/01  
P.O. Number:  
Sample ID: 9932-00429  
Date Received: 8/30/01  
Time Received: 11:30

Permit Number

PARAMETERS	RESULTS	DATE	TECH	METHOD
SUBJECT: MA3-TG4-1-300801-01, 8/30/01 @ 10:30 by Client				
Total Aerobic Bacteria	3,800. cfu/ml	8/31/01	DJH	9215B MODIFIED
T.Aerobic Degradar Bacteria	1,500. cfu/ml	8/31/01	DJH	9215B MODIFIED
SUBJECT: MA3-TG4-2-300801-02, 8/30/01 @ 10:40 by Client				
Total Aerobic Bacteria	2,190. cfu/ml	8/31/01	DJH	9215B MODIFIED
T.Aerobic Degradar Bacteria	820. cfu/ml	8/31/01	DJH	9215B MODIFIED
SUBJECT: MA3-TG4-3-300801-03, 8/30/01 @ 10:50 by Client				
Total Aerobic Bacteria	2,410. cfu/ml	8/31/01	DJH	9215B MODIFIED
T.Aerobic Degradar Bacteria	1,740. cfu/ml	8/31/01	DJH	9215B MODIFIED
SUBJECT: MA3-TG3-1-300801-04, 8/30/01 @ 11:40 by Client				
Total Aerobic Bacteria	2,360. cfu/ml	8/31/01	DJH	9215B MODIFIED
T.Aerobic Degradar Bacteria	710. cfu/ml	8/31/01	DJH	9215B MODIFIED
SUBJECT: MA3-TG3-2-300801-05, 8/30/01 @ 11:50 by Client				
Total Aerobic Bacteria	4,300. cfu/ml	8/31/01	DJH	9215B MODIFIED
T.Aerobic Degradar Bacteria	400. cfu/ml	8/31/01	DJH	9215B MODIFIED
SUBJECT: MA3-TG3-3-300801-06, 8/30/01 @ 12:00 by Client				
Total Aerobic Bacteria	4,900. cfu/ml	8/31/01	DJH	9215B MODIFIED
T.Aerobic Degradar Bacteria	700. cfu/ml	8/31/01	DJH	9215B MODIFIED
SUBJECT: MA3-TG2-1-300801-07, 8/30/01 @ 14:40 by Client				
Total Aerobic Bacteria	1,890. cfu/ml	8/31/01	DJH	9215B MODIFIED
T.Aerobic Degradar Bacteria	150. cfu/ml	8/31/01	DJH	9215B MODIFIED

\*\*\* Certificate Continues On Next Page \*\*\*

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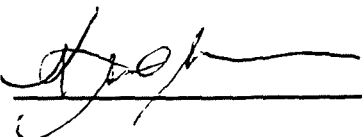
## CERTIFICATE OF ANALYSIS

Tom Graam  
Roy F. Weston, Inc.  
750 East Bankes Court  
Suite 500  
Vernon Hills, IL 60061

Date Reported: 9/25/01  
P.O. Number:  
Sample ID: 9932-00429  
Date Received: 8/30/01  
Time Received: 11:30

Permit Number

PARAMETERS	RESULTS	DATE	TECH	METHOD
SUBJECT: MA3-TG2-2-300801-08, 8/30/01 @ 14:50 by Client				
Total Aerobic Bacteria	2,900. cfu/ml	8/31/01	DJH	9215B MODIFIED
T.Aerobic Degradar Bacteria	600. cfu/ml	8/31/01	DJH	9215B MODIFIED
SUBJECT: MA3-TG2-3-300801-09, 8/30/01 @ 15:00 by Client				
Total Aerobic Bacteria	2,800. cfu/ml	8/31/01	DJH	9215B MODIFIED
T.Aerobic Degradar Bacteria	700. cfu/ml	8/31/01	DJH	9215B MODIFIED
SUBJECT: MA3-TG1-1-300801-10, 8/30/01 @ 15:40 by Client				
Total Aerobic Bacteria	20,000. cfu/ml	8/31/01	DJH	9215B MODIFIED
T.Aerobic Degradar Bacteria	1,000. cfu/ml	8/31/01	DJH	9215B MODIFIED
SUBJECT: MA3-TG1-2-300801-11, 8/30/01 @ 15:50 by Client				
Total Aerobic Bacteria	5,700. cfu/ml	8/31/01	DJH	9215B MODIFIED
T.Aerobic Degradar Bacteria	1,800. cfu/ml	8/31/01	DJH	9215B MODIFIED
SUBJECT: MA3-TG1-3-300801-12, 8/30/01 @ 16:00 by Client				
Total Aerobic Bacteria	12,400. cfu/ml	8/31/01	DJH	9215B MODIFIED
T.Aerobic Degradar Bacteria	1,500. cfu/ml	8/31/01	DJH	9215B MODIFIED

Submitted with Quality by 

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**Site Information**

Site Name	Moss America	Date received	30-Aug-01
Location	Milwaukee, WI	Date of this report	21-Sep-01
Consultant	Roy F Weston	Microbac Job Code	99-32-407
Proj. Contact	Tom Graan		
Project Ref ID		Number of soil samples	0
Contaminant	btex-pah	Number of gw samples	6

**Section I - Summary of Bioremediation Data**

Nutrient/physical factors are as suggested by Wisconsin DNR guidelines for site characterization requirements for natural biodegradation. Microbial factors are shown according to bio-engineering norms.

Sample ID	Soil microbial populations:								
	Exceeds norm for:		pH	% TON /		C:N	C:P	% moisture /	% Air-filled
	Passive	Active		% OM				SWHC	pore space
	>1E+06	>1E+03	5.5-8.5	>1.5	<40	<120	25-85%	>10%	
Guideline note reference:	1	2	3	4	5	6	7	8	
ma3-tg6-1-290801-1	Summary table not applicable for groundwater.								
ma3-tg6-2-290801-2	Summary table not applicable for groundwater.								
ma3-tg6-3-290801-3	Summary table not applicable for groundwater.								
ma3-tg5-1-290801-4	Summary table not applicable for groundwater.								
ma3-tg5-2-290801-5	Summary table not applicable for groundwater.								
ma3-tg5-3-290801-6	Summary table not applicable for groundwater.								

The nutrient/physical parameters summarized above for unsaturated zone soils, reflect suggested minimum Wisconsin DNR site characterization requirements for natural biodegradation projects as presented on pp. 6-10 in Naturally Occurring Biodegradation as a Remedial Action Option for Soil Contamination: Interim Guidance (Revised) dated August 26, 1994. BioRenewal stresses that these "suggested guidelines" are only intended to provide a working frame of reference for evaluation. Each site is unique and requires professional judgement in order to select an appropriate remedial design. We provide this information in recognition that our clients need to work within the guidelines suggested by the state. Further, we hope this will facilitate continued evolution of a working framework for evaluating sites as to the potential for bioremediation whether through site augmentation or natural attenuation.

✓ = Sample meets guideline.

x = Sample does not meet guideline.

Blank = Below detection limit, not applicable, or not available for that sample.

- NOTES:
- 1) Microbial population levels in soils generally accepted as potentially adequate to support natural biodegradation. These levels are based on bio-engineering norms and not WDNR guidelines.
  - 2) Microbial population levels in soils generally accepted as minimum to serve as an "inoculum" for implementing active bioremediation strategies.
  - 3) See page 7 and 10, WDNR.
  - 4) See pages 8 and 10, WDNR. Total Organic Nitrogen (calculated from TKN minus ammonium nitrogen) divided by % organic matter.
  - 5) See pages 8 and 10, WDNR.
  - 6) See pages 8 and 10, WDNR.
  - 7) See page 6 and 10, WDNR. The suggested optimum range is 50-80% (p. 6).
  - 8) See page 8 and 10, WDNR. WDNR suggests a minimum air-filled porosity in soil of 10% is necessary for adequate oxygen diffusion in the soil gas to support biodegradation.

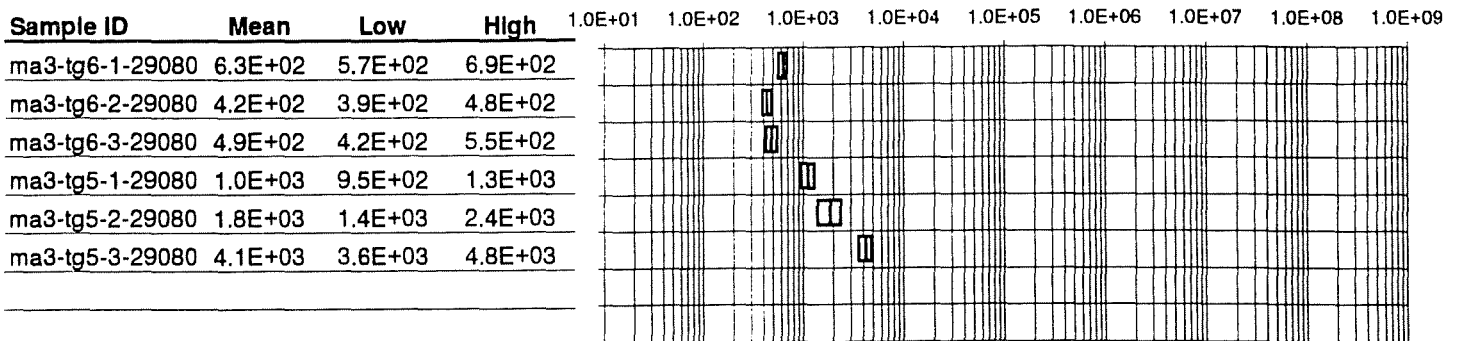
Section II - Microbial Data Summary continued

All values in cfu/ml\*

Groundwater Samples

Total populations

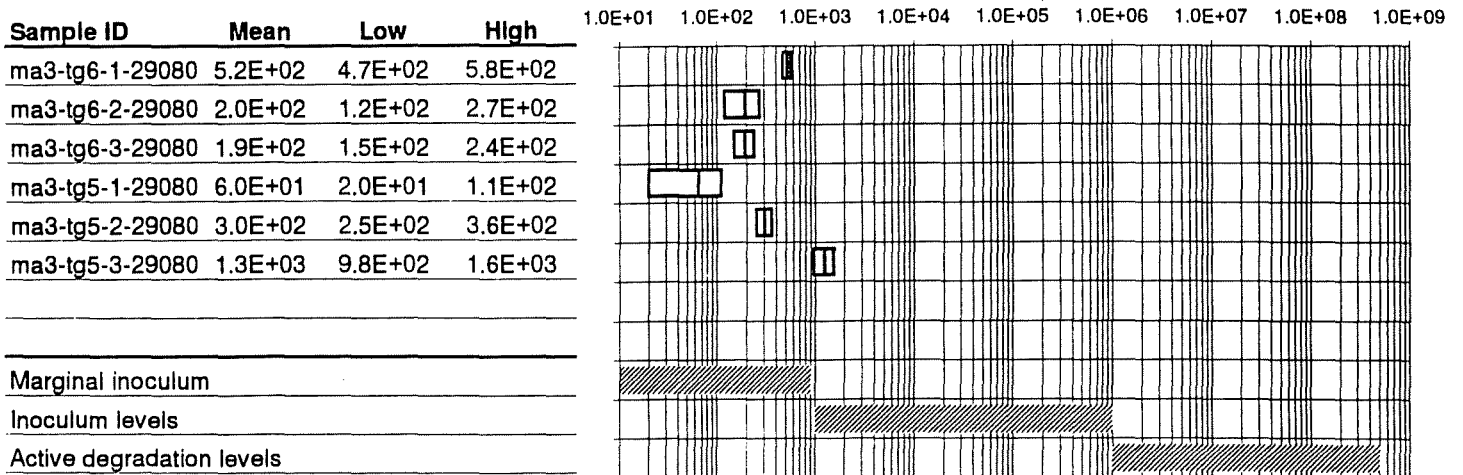
Low and high indicate 95% confidence range



Groundwater Samples

Degrader populations

Low and high indicate 95% confidence range



Marginal inoculum

Inoculum levels

Active degradation levels

**Marginal inoculum** = Degrader populations below 1.0E+03 are indicative of severe limitations. Substantial augmentation of site conditions will likely be required to attain adequate cell mass to attain measurable biotransformation rates.

**Inoculum levels** = Degrader populations between 1.0E+03 and 1.0E+06 are amenable to site augmentation, but are generally insufficient to attain adequate biotransformation without site augmentation.

**Active degradation levels** = Degrader populations greater than 1.0E+06 are generally of sufficient magnitude to support measurable biotransformation without site augmentation. However, site augmentation may still be required to attain desirable rates of transformation due to specific site conditions.

Assay conditions

Sample ID	Degrader Media		Temp. (Celsius)	Growth Conditions	DOF **		Percent Degraders
	Carbon source	% Carbon (v/v)			Total	Degrader	
ma3-tg6-1-29080	btex-pah	1.0	22	aerobic	0	0	82.5%
ma3-tg6-2-29080	btex-pah	1.0	22	aerobic	0	0	47.6%
ma3-tg6-3-29080	btex-pah	1.0	22	aerobic	0	0	38.8%
ma3-tg5-1-29080	btex-pah	1.0	22	aerobic	0	0	5.8%
ma3-tg5-2-29080	btex-pah	1.0	22	aerobic	0	0	16.7%
ma3-tg5-3-29080	btex-pah	1.0	22	aerobic	0	0	31.7%

\* cfu/ml = colony forming units per ml of groundwater

\*\* DOF = Degrees of freedom is number of replicates minus one. This parameter is used in calculation of 95% confidence intervals.

**Site Information**

Site Name	Moss America	Date received	31-Aug-01
Location	Milwaukee WI	Date of this report	21-Sep-01
Consultant	Roy F Weston	Microbac Job Code	9932-429
Proj. Contact	Tom Graan		
Project Ref ID		Number of soil samples	0
Contaminant	btex-pah	Number of gw samples	12

**Section I - Summary of Bioremediation Data**

Nutrient/physical factors are as suggested by Wisconsin DNR guidelines for site characterization requirements for natural biodegradation. Microbial factors are shown according to bio-engineering norms.

Sample ID	Soil microbial populations:		pH	% TON /			% moisture / SWHC	% Air-filled pore space
	Exceeds norm for:			% OM	C:N	C:P		
	Passive	Active						
	>1E+06	>1E+03	5.5-8.5	>1.5	<40	<120	25-85%	>10%
Guideline note reference:	1	2	3	4	5	6	7	8
ma3-tg4-1-300801-1	Summary table not applicable for groundwater.							
ma3-tg4-2-300801-2	Summary table not applicable for groundwater.							
ma3-tg4-3-300801-3	Summary table not applicable for groundwater.							
ma3-tg3-1-300801-4	Summary table not applicable for groundwater.							
ma3-tg3-2-300801-5	Summary table not applicable for groundwater.							
ma3-tg3-3-300801-6	Summary table not applicable for groundwater.							
ma3-tg2-1-300801-7	Summary table not applicable for groundwater.							
ma3-tg2-2-300801-8	Summary table not applicable for groundwater.							

The nutrient/physical parameters summarized above for unsaturated zone soils, reflect suggested minimum Wisconsin DNR " site characterization requirements for natural biodegradation projects" as presented on pp. 6-10 in Naturally Occurring Biodegradation as a Remedial Action Option for Soil Contamination: Interim Guidance (Revised) dated August 26, 1994. BioRenewal stresses that these "suggested guidelines" are only intended to provide a working frame of reference for evaluation. Each site is unique and requires professional judgement in order to select an appropriate remedial design. We provide this information in recognition that our clients need to work within the guidelines suggested by the state. Further, we hope this will facilitate continued evolution of a working framework for evaluating sites as to the potential for bioremediation whether through site augmentation or natural attenuation.

✓ = Sample meets guideline.

x = Sample does not meet guideline.

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- NOTES:
- 1) Microbial population levels in soils generally accepted as potentially adequate to support natural biodegradation. These levels are based on bio-engineering norms and not WDNR guidelines.
  - 2) Microbial population levels in soils generally accepted as minimum to serve as an "inoculum" for implementing active bioremediation strategies.
  - 3) See page 7 and 10, WDNR.
  - 4) See pages 8 and 10, WDNR. Total Organic Nitrogen (calculated from TKN minus ammonium nitrogen ) divided by % organic matter.
  - 5) See pages 8 and 10, WDNR.
  - 6) See pages 8 and 10, WDNR.
  - 7) See page 6 and 10, WDNR. The suggested optimum range is 50-80% (p. 6).
  - 8) See page 8 and 10, WDNR. WDNR suggests a minimum air-filled porosity in soil of 10% is necessary for adequate oxygen diffusion in the soil gas to support biodegradation.

Section II - Microbial Data Summary continued

All values in cfu/ml\*

Groundwater Samples

Total populations

Low and high indicate 95% confidence range

Sample ID	Mean	Low	High
ma3-tg4-1-30080	3.8E+03	3.1E+03	4.2E+03
ma3-tg4-2-30080	2.2E+03	1.8E+03	2.8E+03
ma3-tg4-3-30080	2.4E+03	2.1E+03	2.7E+03
ma3-tg3-1-30080	2.4E+03	2.0E+03	2.8E+03
ma3-tg3-2-30080	4.3E+03	3.9E+03	4.8E+03
ma3-tg3-3-30080	4.9E+03	4.5E+03	5.2E+03
ma3-tg2-1-30080	1.9E+03	1.5E+03	2.2E+03
ma3-tg2-2-30080	2.9E+03	2.4E+03	3.4E+03

Groundwater Samples

Degrader populations

Low and high indicate 95% confidence range

Sample ID	Mean	Low	High
ma3-tg4-1-30080	1.5E+03	1.1E+03	1.9E+03
ma3-tg4-2-30080	8.2E+02	7.5E+02	8.8E+02
ma3-tg4-3-30080	1.7E+03	1.1E+03	2.2E+03
ma3-tg3-1-30080	7.1E+02	6.5E+02	7.8E+02
ma3-tg3-2-30080	4.3E+03	3.9E+03	4.8E+03
ma3-tg3-3-30080	7.0E+02	6.0E+02	7.5E+02
ma3-tg2-1-30080	1.5E+02	9.0E+01	2.1E+02
ma3-tg2-2-30080	6.0E+02	5.7E+02	6.5E+02

Marginal inoculum

Inoculum levels

Active degradation levels

**Marginal Inoculum** = Degrader populations below 1.0E+03 are indicative of severe limitations. Substantial augmentation of site conditions will likely be required to attain adequate cell mass to attain measurable biotransformation rates.

**Inoculum levels** = Degrader populations between 1.0E+03 and 1.0E+06 are amenable to site augmentation, but are generally insufficient to attain adequate biotransformation without site augmentation.

**Active degradation levels** = Degrader populations greater than 1.0E+06 are generally of sufficient magnitude to support measurable biotransformation without site augmentation. However, site augmentation may still be required to attain desirable rates of transformation due to specific site conditions.

Assay conditions

Sample ID	Degrader Media		Temp. (Celsius)	Growth Conditions	DOF **		Percent Degraders
	Carbon source	% Carbon (v/v)			Total	Degrader	
ma3-tg4-1-30080	btex-pah	1.0	22	aerobic	0	0	39.5%
ma3-tg4-2-30080	btex-pah	1.0	22	aerobic	0	0	37.4%
ma3-tg4-3-30080	btex-pah	1.0	22	aerobic	0	0	72.2%
ma3-tg3-1-30080	btex-pah	1.0	22	aerobic	0	0	30.1%
ma3-tg3-2-30080	btex-pah	1.0	22	aerobic	0	0	100.0%
ma3-tg3-3-30080	btex-pah	1.0	22	aerobic	0	0	14.3%
ma3-tg2-1-30080	btex-pah	1.0	22	aerobic	0	0	7.9%
ma3-tg2-2-30080	btex-pah	1.0	22	aerobic	0	0	20.7%

\* cfu/ml = colony forming units per ml of groundwater

\*\* DOF = Degrees of freedom is number of replicates minus one. This parameter is used in calculation of 95% confidence intervals.

**Site Information**

Site Name	Moss America	Date received	31-Aug-01
Location	Milwaukee WI	Date of this report	21-Sep-01
Consultant	Roy F Weston	Microbac Job Code	9932-429
Proj. Contact	Tom Graan		
Project Ref ID		Number of soil samples	0
Contaminant	btex-pah	Number of gw samples	12

**Section I - Summary of Bioremediation Data**

Nutrient/physical factors are as suggested by Wisconsin DNR guidelines for site characterization requirements for natural biodegradation. Microbial factors are shown according to bio-engineering norms.

Sample ID	Soil microbial populations:		pH	% TON /		C:N	C:P	% moisture / SWHC	% Air-filled pore space
	Exceeds norm for:			% OM	C:N				
	Passive	Active							
	>1E+06	>1E+03	5.5-8.5	>1.5	<40	<120	25-85%	>10%	
Guideline note reference:	1	2	3	4	5	6	7	8	
ma3-tg2-3-300801-9	Summary table not applicable for groundwater.								
ma3-tg1-1-300801-10	Summary table not applicable for groundwater.								
ma3-tg1-2-300801-11	Summary table not applicable for groundwater.								
ma3-tg1-3-300801-12	Summary table not applicable for groundwater.								

The nutrient/physical parameters summarized above for unsaturated zone soils, reflect suggested minimum Wisconsin DNR "site characterization requirements for natural biodegradation projects" as presented on pp. 6-10 in Naturally Occurring Biodegradation as a Remedial Action Option for Soil Contamination: Interim Guidance (Revised) dated August 26, 1994. BioRenewal stresses that these "suggested guidelines" are only intended to provide a working frame of reference for evaluation. Each site is unique and requires professional judgement in order to select an appropriate remedial design. We provide this information in recognition that our clients need to work within the guidelines suggested by the state. Further, we hope this will facilitate continued evolution of a working framework for evaluating sites as to the potential for bioremediation whether through site augmentation or natural attenuation.

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- NOTES:
- 1) Microbial population levels in soils generally accepted as potentially adequate to support natural biodegradation. These levels are based on bio-engineering norms and not WDNR guidelines.
  - 2) Microbial population levels in soils generally accepted as minimum to serve as an "inoculum" for implementing active bioremediation strategies.
  - 3) See page 7 and 10, WDNR.
  - 4) See pages 8 and 10, WDNR. Total Organic Nitrogen (calculated from TKN minus ammonium nitrogen) divided by % organic matter.
  - 5) See pages 8 and 10, WDNR.
  - 6) See pages 8 and 10, WDNR.
  - 7) See page 6 and 10, WDNR. The suggested optimum range is 50-80% (p. 6).
  - 8) See page 8 and 10, WDNR. WDNR suggests a minimum air-filled porosity in soil of 10% is necessary for adequate oxygen diffusion in the soil gas to support biodegradation.



Section II - Microbial Data Summary continued

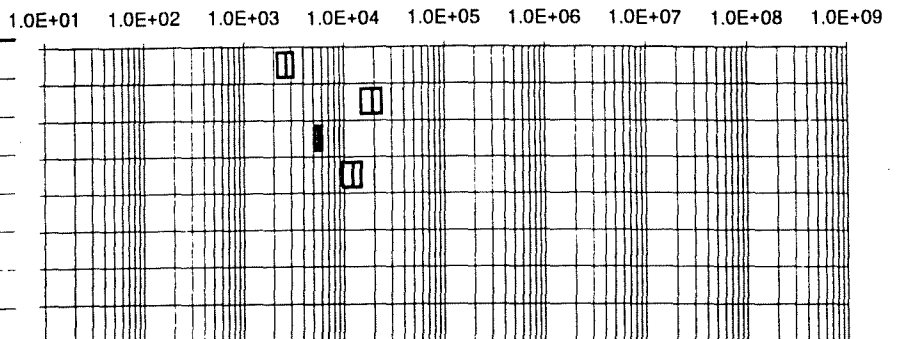
All values in cfu/ml\*

Groundwater Samples

Total populations

Low and high indicate 95% confidence range

Sample ID	Mean	Low	High
ma3-tg2-3-30080	2.8E+03	2.2E+03	3.2E+03
ma3-tg1-1-30080	2.0E+04	1.5E+04	2.4E+04
ma3-tg1-2-30080	5.7E+03	5.2E+03	6.1E+03
ma3-tg1-3-30080	1.2E+04	9.7E+03	1.5E+04

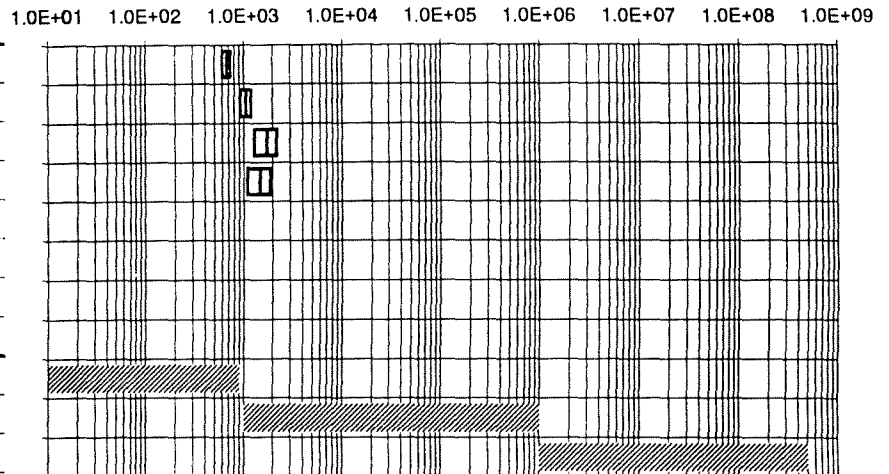


Groundwater Samples

Degrader populations

Low and high indicate 95% confidence range

Sample ID	Mean	Low	High
ma3-tg2-3-30080	7.0E+02	6.1E+02	7.5E+02
ma3-tg1-1-30080	1.0E+03	9.4E+02	1.2E+03
ma3-tg1-2-30080	1.8E+03	1.3E+03	2.2E+03
ma3-tg1-3-30080	1.5E+03	1.1E+03	1.9E+03



Marginal inoculum

Inoculum levels

Active degradation levels

Marginal inoculum = Degrader populations below 1.0E+03 are indicative of severe limitations. Substantial augmentation of site conditions will likely be required to attain adequate cell mass to attain measurable biotransformation rates.

Inoculum levels = Degrader populations between 1.0E+03 and 1.0E+06 are amenable to site augmentation, but are generally insufficient to attain adequate biotransformation without site augmentation.

Active degradation levels = Degrader populations greater than 1.0E+06 are generally of sufficient magnitude to support measurable biotransformation without site augmentation. However, site augmentation may still be required to attain desirable rates of transformation due to specific site conditions.

Assay conditions

Sample ID	Degrader Media		Temp. (Celcius)	Growth Conditions	DOF **		Percent Degraders
	Carbon source	% Carbon (v/v)			Total	Degrader	
ma3-tg2-3-30080	btex-pah	1.0	22	aerobic	0	0	25.0%
ma3-tg1-1-30080	btex-pah	1.0	22	aerobic	0	0	5.0%
ma3-tg1-2-30080	btex-pah	1.0	22	aerobic	0	0	31.6%
ma3-tg1-3-30080	btex-pah	1.0	22	aerobic	0	0	12.1%

\* cfu/ml = colony forming units per ml of groundwater

\*\* DOF = Degrees of freedom is number of replicates minus one. This parameter is used in calculation of 95% confidence intervals.

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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 TOTAL FLOW \_\_\_\_\_ INTERVAL \_\_\_\_\_

BEGIN: \_\_\_\_\_ END: \_\_\_\_\_  
 DATE \_\_\_\_\_ DATE \_\_\_\_\_  
 TIME \_\_\_\_\_ TIME \_\_\_\_\_  
 FLOW \_\_\_\_\_ FLOW \_\_\_\_\_  
 TEMP \_\_\_\_\_  
 TECH \_\_\_\_\_  
 MLS/Sample \_\_\_\_\_  
 # Samples \_\_\_\_\_

P.O. #		CLIENT NAME <i>Roy F. Weston</i>			LOCATION/PROJECT <i>Milwaukee, WI</i>				ANALYSES REQUESTED  <i>Microbial Enumeration</i>										RETURN SAMPLES TO CLIENT	
SAMPLERS (Signature) <i>Brenn Schaefer</i> <i>Ben Marudke</i>		SEND REPORT TO: <i>Tom Green</i>			PHONE ( <i>847</i> ) <i>918-4000</i>															
LAB I.D. # <i>9132-407</i>		Sample Chest # Chest Temp. °C		Sample Temp. at Lab °C		Method of Shipment To Lab: Date _____ Time _____														
SAMPLE LOCATION		COLLECTED DATE TIME		SAMPLE TYPE COMP GRAB MATRIX		NO OF CONTAINERS	CONTAINER TYPE PRESERVATIVE	REMARKS OBSERVATIONS  LIST SPECIAL HAZARDS HERE												
<i>MA3-TG6-1-290801-01</i>		<i>8/29/01 1525</i>		<i>X water</i>		<i>1</i>	<i>Plastic bag no preserv.</i>	<i>X</i>												
<i>MA3-TG6-2-290801-02</i>		<i>1535</i>		<i>X water</i>		<i>1</i>		<i>X</i>												
<i>MA3-TG6-3-290801-03</i>		<i>1545</i>		<i>X water</i>		<i>1</i>		<i>X</i>												
<i>MA3-TG5-1-290801-04</i>		<i>1700</i>		<i>X water</i>		<i>1</i>		<i>X</i>												
<i>MA3-TG5-2-290801-05</i>		<i>1710</i>		<i>X water</i>		<i>1</i>		<i>X</i>												
<i>MA3-TG5-3-290801-06</i>		<i>1720</i>		<i>X water</i>		<i>1</i>		<i>X</i>												
Relinquished by: (Signature) <i>Brenn Schaefer</i>		Date <i>8-29-01</i>	Time <i>1830</i>	Received by: (Signature) <i>Tom Green</i>				Relinquished by: (Signature)			Date	Time	Received by: (Signature)							
Relinquished by: (Signature)		Date	Time	Received by: (Signature)				Relinquished by: (Signature)			Date	Time	Received by: (Signature)							
Relinquished by: (Signature)		Date	Time	Received for Lab by: (Signature) <i>Tom Green</i>				Date <i>8/30/01</i>	Time <i>9:00</i>											



# CHAIN OF CUSTODY RECORD

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 TOTAL FLOW

BEGIN: \_\_\_\_\_ DATE \_\_\_\_\_ TIME \_\_\_\_\_ FLOW \_\_\_\_\_ INTERVAL \_\_\_\_\_  
 END: \_\_\_\_\_ DATE \_\_\_\_\_ TIME \_\_\_\_\_ FLOW \_\_\_\_\_  
 TEMP \_\_\_\_\_ TECH \_\_\_\_\_ MLS/Sample \_\_\_\_\_ # Samples \_\_\_\_\_

P.O. #		CLIENT NAME <i>Roy F. Weston</i>			LOCATION/PROJECT <i>MILWAUKEE, WI</i>			ANALYSES REQUESTED  REMARKS OBSERVATIONS  LIST SPECIAL HAZARDS HERE  RETURN SAMPLES TO CLIENT															
SAMPLERS (Signature) <i>B. Renon Schaefer</i> <i>Ben M. Wackel</i>		SEND REPORT TO:																PHONE <i>(647) 918-4000</i>					
LAB I.D. # <i>9432-429</i>		Sample Chest # <i>1</i>		Sample Temp. at Lab °C		Method of Shipment To Lab:												Date		Time			
SAMPLE LOCATION		COLLECTED		SAMPLE TYPE			NO OF CONTAINERS											CONTAINER TYPE PRESERVATIVE					
		DATE	TIME	COMP	GRAB	MATRIX																	
<i>1 MA3-TG-4-1-300801-12</i>		<i>9/30/01</i>	<i>1030</i>	<i>X</i>	<i>Water</i>	<i>1</i>	<i>Plastic No Preserv</i>	<i>X</i>															
<i>2 MA3-TG-4-2-300801-13</i>		<i>02</i>	<i>1040</i>	<i>X</i>	<i>Water</i>	<i>1</i>		<i>X</i>															
<i>3 MA3-TG-4-3-300801-14</i>		<i>03</i>	<i>1050</i>	<i>X</i>	<i>Water</i>	<i>1</i>		<i>X</i>															
<i>4 MA3-TG-3-1-300801-15</i>		<i>04</i>	<i>1140</i>	<i>X</i>	<i>Water</i>	<i>1</i>		<i>X</i>															
<i>5 MA3-TG-3-2-300801-16</i>		<i>05</i>	<i>1150</i>	<i>X</i>	<i>Water</i>	<i>1</i>		<i>X</i>															
<i>6 MA3-TG-3-3-300801-17</i>		<i>06</i>	<i>1200</i>	<i>X</i>	<i>Water</i>	<i>1</i>		<i>X</i>															
<i>7 MA3-TG-2-1-300801-18</i>		<i>07</i>	<i>1440</i>	<i>X</i>	<i>Water</i>	<i>1</i>		<i>X</i>															
<i>8 MA3-TG-2-2-300801-19</i>		<i>08</i>	<i>1450</i>	<i>X</i>	<i>Water</i>	<i>1</i>		<i>X</i>															
Relinquished by: (Signature) <i>Ben Schaefer</i>		Date <i>10-30-01</i>	Time <i>1800</i>	Received by: (Signature) <i>[Signature]</i>			Relinquished by: (Signature) <i>[Signature]</i>		Date <i>3</i>	Time	Received by: (Signature) <i>[Signature]</i>		4										
Relinquished by: (Signature)		Date	Time	Received by: (Signature)			Relinquished by: (Signature)		Date	Time	Received by: (Signature)		8										
Relinquished by: (Signature)		Date	Time	Received for Lab by: (Signature) <i>[Signature]</i>			Date <i>10/30/01</i>	Time	age														

# Microbac

## CHAIN OF CUSTODY RECORD

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 TOTAL FLOW \_\_\_\_\_ INTERVAL \_\_\_\_\_

BEGIN: \_\_\_\_\_ END: \_\_\_\_\_  
 DATE \_\_\_\_\_ DATE \_\_\_\_\_  
 TIME \_\_\_\_\_ TIME \_\_\_\_\_  
 FLOW \_\_\_\_\_ FLOW \_\_\_\_\_  
 \_\_\_\_\_ # Samples \_\_\_\_\_

P.O. #		CLIENT NAME <i>Ray F. Weston</i>			LOCATION/PROJECT <i>Milwaukee, WI</i>			ANALYSES REQUESTED  <i>Microbial Enumeration</i>										RETURN SAMPLES TO CLIENT
SAMPLERS (Signature) <i>Brennan Schaefer</i>		SEND REPORT TO:			PHONE ( <i>847</i> ) <i>918-4000</i>													
LAB I.D. # <i>9932-429</i>		Sample Chest #	Sample Temp. at Lab °C	Method of Shipment To Lab:	Date	Time												
SAMPLE LOCATION		COLLECTED		SAMPLE TYPE			NO OF CONTAINERS											
		DATE	TIME	COMP.	GRAB	MATRIX												
<b>9</b> <i>MA3-TG-2-3-300801-10</i>		<i>9/8/20</i>	<i>1500</i>	<i>X</i>	<i>Water</i>	<i>1</i>	<i>Plastic Non-Presv.</i>	<i>X</i>										
		<i>10</i>	<i>1310</i>	<i>X</i>	<i>↓</i>	<i>1</i>	<i>↓</i>	<i>X</i>										
		<i>11</i>	<i>1550</i>	<i>X</i>	<i>↓</i>	<i>1</i>	<i>↓</i>	<i>X</i>										
		<i>12</i>	<i>1600</i>	<i>X</i>	<i>↓</i>	<i>1</i>	<i>↓</i>	<i>X</i>										

**9**  
**10**  
**11**  
**12**

Relinquished by: (Signature) <i>Brennan Schaefer</i>		Date <i>18-30-20</i>	Time <i>1800</i>	Received by (Signature) _____			Relinquished by: (Signature) _____		Date _____	Time _____	Received by (Signature) _____		
Relinquished by: (Signature) _____		Date _____	Time _____	Received by: (Signature) _____			Relinquished by: (Signature) _____		Date _____	Time _____	Received by (Signature) _____		
Relinquished by: (Signature) _____		Date _____	Time _____	Received for Lab by (Signature) _____			Date _____	Time _____	Page _____ of _____				



**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 776359. Samples arrived at the laboratory on Friday, August 31, 2001.

<u>Client Description</u>	<u>Lancaster Labs Number</u>
MA3-TG4-1-300801-01 Grab Water Sample	3678133
MA3-TG4-2-300801-02 Grab Water Sample	3678134
MA3-TG4-3-300801-03 Grab Water Sample	3678135
MA3-TG3-1-300801-04 Grab Water Sample	3678136
MA3-TG3-2-300801-05 Grab Water Sample	3678137
MA3-TG3-3-300801-06 Grab Water Sample	3678138
MA3-TG2-1-300801-07 Grab Water Sample	3678139
MA3-TG2-2-300801-08 Grab Water Sample	3678140
MA3-TG2-3-300801-09 Grab Water Sample	3678141
MA3-TG1-1-300801-10 Grab Water Sample	3678142
MA3-TG1-2-300801-11 Grab Water Sample	3678143
MA3-TG1-3-300801-12 Grab Water Sample	3678144

METHODOLOGY

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

1 COPY TO Kerr-McGee Corporation  
 1 COPY TO Roy F. Weston  
 1 COPY TO Data Package Group

Attn: Dr. Jeff Ostmeyer  
 Attn: Mr. Tom Graan



Lancaster Laboratories, Inc.  
 2425 New Holland Pike  
 P.O. Box 14125  
 Lancaster, PA 17605-2425  
 717-656-2300 Fax: 717-656-2681



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

Respectfully Submitted,

*Kenneth A Bell*

Kenneth A. Bell  
Sr. Chemist/Coordinator



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



Lancaster Laboratories Sample No. WW 3678133

Collected: 08/30/2001 10:30 by BS

Account Number: 07802

Submitted: 08/31/2001 09:49

Kerr-McGee Corporation

Reported: 09/20/2001 at 16:54

P.O. Box 25861

Discard: 10/21/2001

Oklahoma City OK 73125

MA3-TG4-1-300801-01 Grab Water Sample

Moss American Superfund Site - Milwaukee, WI

41G83 SDG#: MOA72-01

CAT No.	Analysis Name	CAS Number	As Received Result	As Received		Units	Dilution Factor
				Method	Detection Limit		
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	0.29 J		0.16	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	0.032		0.0028	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	0.28		0.13	mg/l	1

Laboratory Chronicle

CAT No.	Analysis Name	Method	Analysis		Analyst	Dilution Factor
			Trial#	Date and Time		
00217	Kjeldahl Nitrogen	EPA 351.2	1	09/16/2001 11:46	Matthew J. Mercer	1
00219	Nitrite Nitrogen	EPA 353.2	1	08/31/2001 16:57	Brad M. La Placa	1
00220	Nitrate Nitrogen	EPA 353.2	1	09/06/2001 14:00	Matthew J. Mercer	1
00221	Ammonia Nitrogen	EPA 350.2	1	09/11/2001 08:10	Michele L. Hanby	1
00226	Ortho-Phosphate as P	EPA 365.3	1	09/01/2001 05:15	Daniel S. Smith	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	09/18/2001 16:01	Venia M. McFadden	1
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	09/13/2001 09:21	James S. Mathiot	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	09/13/2001 16:30	Nancy J. Shoop	1



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 2425 New Holland Pike  
 PO Box 2425  
 Lancaster, PA 17605-2425  
 717-656-2300 Fax: 717-656-2681



Lancaster Laboratories Sample No. WW 3678134

Collected: 08/30/2001 10:40 by BS

Account Number: 07802

Submitted: 08/31/2001 09:49

Kerr-McGee Corporation

Reported: 09/20/2001 at 16:54

P.O. Box 25861

Discard: 10/21/2001

Oklahoma City OK 73125

MA3-TG4-2-300801-02 Grab Water Sample

Moss American Superfund Site - Milwaukee, WI

42G83 SDG#: MOA72-02

CAT No.	Analysis Name	CAS Number	As Received Result	As Received		Units	Dilution Factor
				Method	Detection Limit		
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	0.75 J		0.16	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.		0.0028	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	0.15 J		0.13	mg/l	1

## Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis		Analyst	Dilution Factor
				Date	Time		
00217	Kjeldahl Nitrogen	EPA 351.2	1	09/16/2001	11:47	Matthew J. Mercer	1
00219	Nitrite Nitrogen	EPA 353.2	1	08/31/2001	17:01	Brad M. La Placa	1
00220	Nitrate Nitrogen	EPA 353.2	1	09/06/2001	14:01	Matthew J. Mercer	1
00221	Ammonia Nitrogen	EPA 350.2	1	09/11/2001	08:10	Michele L. Hanby	1
00226	Ortho-Phosphate as P	EPA 365.3	1	09/01/2001	05:15	Daniel S. Smith	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	09/18/2001	16:02	Venia M. McFadden	1
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	09/13/2001	09:21	James S. Mathiot	1
08264	Total Phos as PO4 Prep (Water)	EPA 365.1	1	09/13/2001	16:30	Nancy J. Shoop	1



Lancaster Laboratories, Inc.  
 2425 New Holland Pike  
 PO Box 12425  
 Lancaster, PA 17605-2425  
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Lancaster Laboratories Sample No. **WW 3678135**

Collected: 08/30/2001 10:50 by BS

Account Number: 07802

Submitted: 08/31/2001 09:49

Kerr-McGee Corporation

Reported: 09/20/2001 at 16:54

P.O. Box 25861

Discard: 10/21/2001

Oklahoma City OK 73125

MA3-TG4-3-300801-03 Grab Water Sample

Moss American Superfund Site - Milwaukee, WI

43G83 SDG#: MOA72-03

CAT No.	Analysis Name	CAS Number	As Received Result	As Received		Dilution Factor
				Method	Detection Limit	
00217	Kjeldahl Nitrogen	7727-37-9	1.5	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	0.16	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.	0.0028	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	0.26	0.13	mg/l	1

**Laboratory Chronicle**

CAT No.	Analysis Name	Method	Analysis		Analyst	Dilution Factor
			Trial#	Date and Time		
00217	Kjeldahl Nitrogen	EPA 351.2	1	09/16/2001 11:49	Matthew J. Mercer	1
00219	Nitrite Nitrogen	EPA 353.2	1	08/31/2001 17:02	Brad M. La Placa	1
00220	Nitrate Nitrogen	EPA 353.2	1	09/06/2001 14:03	Matthew J. Mercer	1
00221	Ammonia Nitrogen	EPA 350.2	1	09/11/2001 08:10	Michele L. Hanby	1
00226	Ortho-Phosphate as P	EPA 365.3	1	09/01/2001 05:15	Daniel S. Smith	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	09/18/2001 16:03	Venia M. McFadden	1
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	09/13/2001 09:21	James S. Mathiot	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	09/13/2001 16:30	Nancy J. Shoop	1



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

Where quality is a science.

Lancaster Laboratories Sample No. WW 3678136

Collected: 08/30/2001 11:40 by ES

Account Number: 07802

Submitted: 08/31/2001 09:49

Kerr-McGee Corporation

Reported: 09/20/2001 at 16:54

P.O. Box 25861

Discard: 10/21/2001

Oklahoma City OK 73125

MA3-TG3-1-300801-04 Grab Water Sample

Moss American Superfund Site - Milwaukee, WI

31G83 SDG#: MOA72-04

CAT No.	Analysis Name	CAS Number	As Received Result	As Received		Units	Dilution Factor
				Method	Detection Limit		
00217	Kjeldahl Nitrogen	7727-37-9	2.8		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		0.16	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.		0.0028	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	0.70		0.13	mg/l	1

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Analysis		Analyst	Dilution Factor
			Trial#	Date and Time		
00217	Kjeldahl Nitrogen	EPA 351.2	1	09/16/2001 11:50	Matthew J. Mercer	1
00219	Nitrite Nitrogen	EPA 353.2	1	08/31/2001 17:03	Brad M. La Placa	1
00220	Nitrate Nitrogen	EPA 353.2	1	09/06/2001 14:04	Matthew J. Mercer	1
00221	Ammonia Nitrogen	EPA 350.2	1	09/11/2001 08:10	Michele L. Hanby	1
00226	Ortho-Phosphate as P	EPA 365.3	1	09/01/2001 05:15	Daniel S. Smith	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	09/18/2001 16:04	Venia M. McFadden	1
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	09/13/2001 09:21	James S. Mathiot	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	09/13/2001 16:30	Nancy J. Shoop	1



Lancaster Laboratories, Inc.  
2425 New Holland Pike  
PO Box 2425  
Lancaster, PA 17605-2425  
717-656-2300 Fax: 717-656-2661



Lancaster Laboratories Sample No. WW 3678137

Collected: 08/30/2001 11:50 by BS

Account Number: 07802

Submitted: 08/31/2001 09:49

Kerr-McGee Corporation

Reported: 09/20/2001 at 16:54

P.O. Box 25861

Discard: 10/21/2001

Oklahoma City OK 73125

MA3-TG3-2-300801-05 Grab Water Sample

Moss American Superfund Site - Milwaukee, WI

32G83 SDG#: MOA72-05

CAT No.	Analysis Name	CAS Number	As Received Result	As Received		Units	Dilution Factor
				Method	Detection Limit		
00217	Kjeldahl Nitrogen	7727-37-9	1.6		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		0.16	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.		0.0028	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	0.29		0.13	mg/l	1

Laboratory Chronicle

CAT No.	Analysis Name	Method	Analysis			Dilution Factor
			Trial#	Date and Time	Analyst	
00217	Kjeldahl Nitrogen	EPA 351.2	1	09/16/2001 11:51	Matthew J. Mercer	1
00219	Nitrite Nitrogen	EPA 353.2	1	08/31/2001 17:05	Brad M. La Placa	1
00220	Nitrate Nitrogen	EPA 353.2	1	09/06/2001 14:05	Matthew J. Mercer	1
00221	Ammonia Nitrogen	EPA 350.2	1	09/11/2001 08:10	Michele L. Hanby	1
00226	Ortho-Phosphate as P	EPA 365.3	1	09/01/2001 05:15	Daniel S. Smith	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	09/18/2001 16:04	Venia M. McFadden	1
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	09/13/2001 09:21	James S. Mathiot	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	09/13/2001 16:30	Nancy J. Shoop	1



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



Lancaster Laboratories Sample No. WW 3678138

Collected: 08/30/2001 12:00 by BS

Account Number: 07802

Submitted: 08/31/2001 09:49

Kerr-McGee Corporation

Reported: 09/20/2001 at 16:54

P.O. Box 25861

Discard: 10/21/2001

Oklahoma City OK 73125

MA3-TG3-3-300801-06 Grab Water Sample

Moss American Superfund Site - Milwaukee, WI

33G83 SDG#: MOA72-06

CAT No.	Analysis Name	CAS Number	As Received Result	As Received		Units	Dilution Factor
				Method	Detection Limit		
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	1.5		0.16	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.		0.0028	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	0.30		0.12	mg/l	1

## Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis		Analyst	Dilution Factor
				Date and Time			
00217	Kjeldahl Nitrogen	EPA 351.2	1	09/16/2001 11:52		Matthew J. Mercer	1
00219	Nitrite Nitrogen	EPA 353.2	1	08/31/2001 17:06		Brad M. La Placa	1
00220	Nitrate Nitrogen	EPA 353.2	1	09/06/2001 14:09		Matthew J. Mercer	1
00221	Ammonia Nitrogen	EPA 350.2	1	09/11/2001 12:20		Michele L. Hanby	1
00226	Ortho-Phosphate as P	EPA 365.3	1	09/01/2001 05:15		Daniel S. Smith	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	09/18/2001 16:05		Venia M. McFadden	1
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	09/13/2001 09:21		James S. Mathiot	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	09/13/2001 16:30		Nancy J. Shoop	1



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Lancaster Laboratories Sample No. WW 3678139

Collected: 08/30/2001 14:40 by BS

Account Number: 07802

Submitted: 08/31/2001 09:49

Kerr-McGee Corporation

Reported: 09/20/2001 at 16:54

P.O. Box 25861

Discard: 10/21/2001

Oklahoma City OK 73125

MA3-TG2-1-300801-07 Grab Water Sample

Moss American Superfund Site - Milwaukee, WI

21G83 SDG#: MOA72-07

CAT No.	Analysis Name	CAS Number	As Received Result	As Received		Units	Dilution Factor
				Method	Detection Limit		
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.		0.16	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.		0.0028	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	N.D.		0.13	mg/l	1

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis		Analyst	Dilution Factor
				Date	Time		
00217	Kjeldahl Nitrogen	EPA 351.2	1	09/16/2001	11:54	Matthew J. Mercer	1
00219	Nitrite Nitrogen	EPA 353.2	1	08/31/2001	17:07	Brad M. La Placa	1
00220	Nitrate Nitrogen	EPA 353.2	1	09/06/2001	14:10	Matthew J. Mercer	1
00221	Ammonia Nitrogen	EPA 350.2	1	09/11/2001	12:20	Michele L. Hanby	1
00226	Ortho-Phosphate as P	EPA 365.3	1	09/01/2001	05:15	Daniel S. Smith	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	09/18/2001	16:06	Venia M. McFadden	1
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	09/13/2001	09:21	James S. Mathiot	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	09/13/2001	16:30	Nancy J. Shoop	1



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Lancaster Laboratories Sample No. WW 3678140

Collected: 08/30/2001 14:50 by BS

Account Number: 07802

Submitted: 08/31/2001 09:49

Kerr-McGee Corporation

Reported: 09/20/2001 at 16:55

P.O. Box 25861

Discard: 10/21/2001

Oklahoma City OK 73125

MA3-TG2-2-300801-08 Grab Water Sample

Moss American Superfund Site - Milwaukee, WI

22G83 SDG#: MOA72-08

CAT No.	Analysis Name	CAS Number	As Received Result	As Received		Units	Dilution Factor
				Method	Detection Limit		
00217	Kjeldahl Nitrogen	7727-37-9	0.82 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	0.79 J		0.16	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.		0.0028	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	0.15 J		0.13	mg/l	1

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Analysis			Dilution Factor
			Trial#	Date and Time	Analyst	
00217	Kjeldahl Nitrogen	EPA 351.2	1	09/16/2001 11:55	Matthew J. Mercer	1
00219	Nitrite Nitrogen	EPA 353.2	1	08/31/2001 17:11	Brad M. La Placa	1
00220	Nitrate Nitrogen	EPA 353.2	1	09/06/2001 14:11	Matthew J. Mercer	1
00221	Ammonia Nitrogen	EPA 350.2	1	09/11/2001 12:20	Michele L. Hanby	1
00226	Ortho-Phosphate as P	EPA 365.3	1	09/01/2001 05:15	Daniel S. Smith	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	09/18/2001 16:07	Venia M. McFadden	1
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	09/13/2001 09:21	James S. Mathiot	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	09/13/2001 16:30	Nancy J. Shoop	1



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Lancaster Laboratories Sample No. WW 3678141

Collected: 08/30/2001 15:00 by BS Account Number: 07802

Submitted: 08/31/2001 09:49  
 Reported: 09/20/2001 at 16:55  
 Discard: 10/21/2001

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

MA3-TG2-3-300801-09 Grab Water Sample  
 Moss American Superfund Site - Milwaukee, WI

23G83 SDG#: MOA72-09

CAT No.	Analysis Name	CAS Number	As Received Result	As Received		Units	Dilution Factor
				Method	Detection Limit		
00217	Kjeldahl Nitrogen	7727-37-9	0.46 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	0.41 J		0.16	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.		0.0028	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	0.26		0.13	mg/l	1

Laboratory Chronicle

CAT No.	Analysis Name	Method	Analysis		Analyst	Dilution Factor
			Trial#	Date and Time		
00217	Kjeldahl Nitrogen	EPA 351.2	1	09/16/2001 11:59	Matthew J. Mercer	1
00219	Nitrite Nitrogen	EPA 353.2	1	08/31/2001 17:12	Brad M. La Placa	1
00220	Nitrate Nitrogen	EPA 353.2	1	09/06/2001 14:13	Matthew J. Mercer	1
00221	Ammonia Nitrogen	EPA 350.2	1	09/11/2001 12:20	Michele L. Hanby	1
00226	Ortho-Phosphate as P	EPA 365.3	1	09/01/2001 05:15	Daniel S. Smith	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	09/18/2001 16:12	Venia M. McFadden	1
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	09/13/2001 09:21	James S. Mathiot	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	09/13/2001 16:30	Nancy J. Shoop	1



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Lancaster Laboratories Sample No. WW 3678142

Collected: 08/30/2001 15:40 by BS

Account Number: 07802

Submitted: 08/31/2001 09:49

Kerr-McGee Corporation

Reported: 09/20/2001 at 16:55

P.O. Box 25861

Discard: 10/21/2001

Oklahoma City OK 73125

MA3-TG1-1-300801-10 Grab Water Sample

Moss American Superfund Site - Milwaukee, WI

G1183 SDG#: MOA72-10

CAT No.	Analysis Name	CAS Number	As Received Result	As Received		Units	Dilution Factor
				Method	Detection Limit		
00217	Kjeldahl Nitrogen	7727-37-9	0.88 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	0.66 J		0.16	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.		0.0028	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	N.D.		0.13	mg/l	1

Laboratory Chronicle

CAT No.	Analysis Name	Method	Analysis		Analyst	Dilution Factor
			Trial#	Date and Time		
00217	Kjeldahl Nitrogen	EPA 351.2	1	09/16/2001 12:00	Matthew J. Mercer	1
00219	Nitrite Nitrogen	EPA 353.2	1	08/31/2001 17:16	Brad M. La Placa	1
00220	Nitrate Nitrogen	EPA 353.2	1	09/06/2001 14:14	Matthew J. Mercer	1
00221	Ammonia Nitrogen	EPA 350.2	1	09/11/2001 12:20	Michele L. Hanby	1
00226	Ortho-Phosphate as P	EPA 365.3	1	09/01/2001 05:15	Daniel S. Smith	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	09/18/2001 16:13	Venia M. McFadden	1
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	09/13/2001 09:21	James S. Mathiot	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	09/13/2001 16:30	Nancy J. Shoop	1



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Lancaster Laboratories Sample No. WW 3678143

Collected: 08/30/2001 15:50 by BS

Account Number: 07802

Submitted: 08/31/2001 09:49  
 Reported: 09/20/2001 at 16:55  
 Discard: 10/21/2001

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MA3-TG1-2-300801-11 Grab Water Sample  
 Moss American Superfund Site - Milwaukee, WI

G1283 SDG#: MOA72-11

CAT No.	Analysis Name	CAS Number	As Received Result	As Received		Units	Dilution Factor
				Method	Detection Limit		
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	0.99 J		0.16	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.		0.0028	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	0.23		0.13	mg/l	1

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Analysis		Analyst	Dilution Factor
			Trial#	Date and Time		
00217	Kjeldahl Nitrogen	EPA 351.2	1	09/16/2001 12:04	Matthew J. Mercer	1
00219	Nitrite Nitrogen	EPA 353.2	1	08/31/2001 17:17	Brad M. La Placa	1
00220	Nitrate Nitrogen	EPA 353.2	1	09/06/2001 14:15	Matthew J. Mercer	1
00221	Ammonia Nitrogen	EPA 350.2	1	09/11/2001 12:20	Michele L. Hanby	1
00226	Ortho-Phosphate as P	EPA 365.3	1	09/01/2001 05:15	Daniel S. Smith	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	09/18/2001 16:14	Venia M. McFadden	1
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	09/13/2001 09:21	James S. Mathiot	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	09/13/2001 16:30	Nancy J. Shoop	1



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Lancaster Laboratories Sample No. WW 3678144

Collected: 08/30/2001 16:00 by BS

Account Number: 07802

Submitted: 08/31/2001 09:49

Reported: 09/20/2001 at 16:55

Discard: 10/21/2001

Kerr-McGee Corporation

P.O. Box 25861

Oklahoma City OK 73125

MA3-TG1-3-300801-12 Grab Water Sample

Moss American Superfund Site - Milwaukee, WI

G1383 SDG#: MOA72-12\*

CAT No.	Analysis Name	CAS Number	As Received		As Received		Dilution Factor	
			Result		Method	Detection Limit		Units
00217	Kjeldahl Nitrogen	7727-37-9	0.87	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	0.54	J	0.16		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	0.0045	J	0.0028		mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	0.23		0.13		mg/l	1

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Analysis		Analyst	Dilution Factor
			Trial#	Date and Time		
00217	Kjeldahl Nitrogen	EPA 351.2	1	09/16/2001 12:05	Matthew J. Mercer	1
00219	Nitrite Nitrogen	EPA 353.2	1	08/31/2001 17:18	Brad M. La Placa	1
00220	Nitrate Nitrogen	EPA 353.2	1	09/06/2001 14:16	Matthew J. Mercer	1
00221	Ammonia Nitrogen	EPA 350.2	1	09/11/2001 12:20	Michele L. Hanby	1
00226	Ortho-Phosphate as P	EPA 365.3	1	09/01/2001 05:15	Daniel S. Smith	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	09/18/2001 16:15	Venia M. McFadden	1
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	09/13/2001 09:21	James S. Mathiot	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	09/13/2001 16:30	Nancy J. Shoop	1





## Lancaster Laboratories

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### Quality Control Summary

Client Name: Kerr-McGee Corporation  
 Reported: 09/20/01 at 04:55 PM

Group Number: 776359

#### Laboratory Compliance Quality Control

Analysis Name	Blank Result	Blank MDL	Report Units	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: 01243105101A Nitrite Nitrogen	Sample number(s): 3678133-3678137 N.D. .015 mg/l			98		90-110		
Batch number: 01243105101B Nitrite Nitrogen	Sample number(s): 3678138-3678144 N.D. .015 mg/l			98		90-110		
Batch number: 01244022601A Ortho-Phosphate as P	Sample number(s): 3678133-3678144 N.D. .0028 mg/l			98		91-122		
Batch number: 01249106103A Nitrate Nitrogen	Sample number(s): 3678133-3678139 N.D. .04 mg/l			102		89-110		
Batch number: 01249106103B Nitrate Nitrogen	Sample number(s): 3678140-3678144 N.D. .04 mg/l			102		89-110		
Batch number: 01254022101A Ammonia Nitrogen	Sample number(s): 3678133-3678137 N.D. .16 mg/l			95	96	92-102	1	2
Batch number: 01254022102A Ammonia Nitrogen	Sample number(s): 3678138-3678144 N.D. .16 mg/l			93	93	92-102	0	2
Batch number: 01256108101A Kjeldahl Nitrogen	Sample number(s): 3678133-3678142 N.D. .3 mg/l			98		90-110		
Batch number: 01256108101B Kjeldahl Nitrogen	Sample number(s): 3678143-3678144 N.D. .3 mg/l			98		90-110		
Batch number: 01256110101A Total Phosphorus as PO4 water	Sample number(s): 3678133-3678139 N.D. .13 mg/l			97		89-110		
Batch number: 01256110101B Total Phosphorus as PO4 water	Sample number(s): 3678140-3678144 N.D. .13 mg/l			97		89-110		

#### Sample Matrix Quality Control

Analysis Name	MS %REC	MSD %REC	MS/MSD Limits	RPD	MAX	BKG Conc	DUP Conc	DUP RPD	Dup RPD Max
Batch number: 01243105101A Nitrite Nitrogen	Sample number(s): 3678133-3678137 101 90-110					N.D.	N.D.	44* (1)	6
Batch number: 01243105101B Nitrite Nitrogen	Sample number(s): 3678138-3678144 110 90-110					N.D.	N.D.	200* (1)	6
Batch number: 01244022601A Ortho-Phosphate as P	99	99	86-123	0	5	0.0045 J	0.0045 J	0 (1)	7
Batch number: 01249106103A	Sample number(s): 3678133-3678139								

\*- Outside of specification

- (1) The result for one or both determinations was less than five times the LOQ.
- (2) The background result was more than four times the spike added.



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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 776164. Samples arrived at the laboratory on Thursday, August 30, 2001.

Client Description

Lancaster Labs Number

MA3-TG6-1-290801-01 Grab Water Sample	3677172
MA3-TG6-2-290801-02 Grab Water Sample	3677173
MA3-TG6-3-290801-03 Grab Water Sample	3677174
MA3-TG5-1-290801-04 Grab Water Sample	3677175
MA3-TG5-2-290801-05 Grab Water Sample	3677176
MA3-TG5-3-290801-06 Grab Water Sample	3677177

METHODOLOGY

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

1 COPY TO      Kerr-McGee Corporation  
1 COPY TO      Roy F. Weston  
1 COPY TO      Data Package Group

Attn: Dr. Jeff Ostmeyer  
Attn: Mr. Tom Graan



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# Lancaster Laboratories

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

Respectfully Submitted,

*[Faint signature]*  
[Faint name]  
[Faint title]



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Lancaster Laboratories Sample No. **WW 3677172**

Collected: 08/29/2001 15:25 by BS

Account Number: 07802

Submitted: 08/30/2001 09:15

Kerr-McGee Corporation

Reported: 09/14/2001 at 13:53

P.O. Box 25861

Discard: 10/15/2001

Oklahoma City OK 73125

MA3-TG6-1-290801-01 Grab Water Sample

Moss American Superfund Site - Milwaukee, WI

62901 SDG#: MOA71-01

CAT No.	Analysis Name	CAS Number	As Received		As Received		Dilution Factor	
			Result		Method	Detection Limit		Units
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	0.089	J	0.040		mg/l	1
00221	Ammonia Nitrogen	7664-41-7	0.91	J	0.16		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.		0.0028		mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	0.33		0.13		mg/l	1

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Analysis			Dilution Factor
			Trial#	Date and Time	Analyst	
00217	Kjeldahl Nitrogen	EPA 351.2	1	09/12/2001 13:26	Matthew J. Mercer	1
00219	Nitrite Nitrogen	EPA 353.2	1	08/30/2001 20:51	Venia M. McFadden	1
00220	Nitrate Nitrogen	EPA 353.2	1	09/04/2001 14:59	Matthew J. Mercer	1
00221	Ammonia Nitrogen	EPA 350.2	1	09/07/2001 07:45	Michele L. Hanby	1
00226	Ortho-Phosphate as P	EPA 365.3	1	08/30/2001 21:45	Daniel S. Smith	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	09/05/2001 14:54	Matthew J. Mercer	1
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	09/11/2001 14:02	Nancy J. Shoop	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	09/04/2001 18:00	Nancy J. Shoop	1



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Lancaster Laboratories Sample No. WW 3677173

Collected: 08/29/2001 15:35 by BS

Account Number: 07802

Submitted: 08/30/2001 09:15

Kerr-McGee Corporation

Reported: 09/14/2001 at 13:53

P.O. Box 25861

Discard: 10/15/2001

Oklahoma City OK 73125

MA3-TG6-2-290801-02 Grab Water Sample

Moss American Superfund Site - Milwaukee, WI

629-2 SDG#: MOA71-02

CAT No.	Analysis Name	CAS Number	As Received Result	As Received		Units	Dilution Factor
				Method	Detection Limit		
00217	Kjeldahl Nitrogen	7727-37-9	0.84 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	0.10		0.040	mg/l	1
00221	Ammonia Nitrogen	7664-41-7	0.79 J		0.16	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.		0.0028	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	0.16 J		0.13	mg/l	1

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Analysis		Analyst	Dilution Factor
			Trial#	Date and Time		
00217	Kjeldahl Nitrogen	EPA 351.2	1	09/12/2001 13:27	Matthew J. Mercer	1
00219	Nitrite Nitrogen	EPA 353.2	1	08/30/2001 20:52	Venia M. McFadden	1
00220	Nitrate Nitrogen	EPA 353.2	1	09/04/2001 15:03	Matthew J. Mercer	1
00221	Ammonia Nitrogen	EPA 350.2	1	09/07/2001 07:45	Michele L. Hanby	1
00226	Ortho-Phosphate as P	EPA 365.3	1	08/30/2001 21:45	Daniel S. Smith	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	09/05/2001 14:55	Matthew J. Mercer	1
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	09/11/2001 14:02	Nancy J. Shoop	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	09/04/2001 18:00	Nancy J. Shoop	1



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 PO Box 12422  
 Lancaster, PA 17605-2422  
 717-656-2300 Fax: 717-656-2681



Lancaster Laboratories Sample No. WW 3677174

Collected: 08/29/2001 15:45 by BS

Account Number: 07802

Submitted: 08/30/2001 09:15

Kerr-McGee Corporation

Reported: 09/14/2001 at 13:53

P.O. Box 25861

Discard: 10/15/2001

Oklahoma City OK 73125

MA3-TG6-3-290801-03 Grab Water Sample

Moss American Superfund Site - Milwaukee, WI

629-3 SDG#: MOA71-03

CAT No.	Analysis Name	CAS Number	As Received		As Received	Units	Dilution Factor
			Result		Method		
00217	Kjeldahl Nitrogen	7727-37-9	0.66	J	0.30	mg/l	1
00219	Nitrite Nitrogen	14797-65-0	0.094		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	0.16	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.		0.0028	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	0.20		0.13	mg/l	1

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Analysis		Analyst	Dilution Factor
			Trial#	Date and Time		
00217	Kjeldahl Nitrogen	EPA 351.2	1	09/12/2001 13:28	Matthew J. Mercer	1
00219	Nitrite Nitrogen	EPA 353.2	1	08/30/2001 20:30	Venia M. McFadden	1
00220	Nitrate Nitrogen	EPA 353.2	1	09/04/2001 15:04	Matthew J. Mercer	1
00221	Ammonia Nitrogen	EPA 350.2	1	09/07/2001 07:45	Michele L. Hanby	1
00226	Ortho-Phosphate as P	EPA 365.3	1	08/30/2001 21:45	Daniel S. Smith	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	09/05/2001 14:56	Matthew J. Mercer	1
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	09/11/2001 14:02	Nancy J. Shoop	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	09/04/2001 18:00	Nancy J. Shoop	1





Lancaster Laboratories Sample No. **WW 3677175**

Collected: 08/29/2001 17:00 by BS

Account Number: 07802

Submitted: 08/30/2001 09:15

Kerr-McGee Corporation

Reported: 09/14/2001 at 13:53

P.O. Box 25861

Discard: 10/15/2001

Oklahoma City OK 73125

MA3-TG5-1-290801-04 Grab Water Sample

Moss American Superfund Site - Milwaukee, WI

52904 SDG#: MOA71-04

CAT No.	Analysis Name	CAS Number	As Received		As Received	Units	Dilution Factor
			Result		Method Detection Limit		
00217	Kjeldahl Nitrogen	7727-37-9	0.62	J	0.30	mg/l	1
00219	Nitrite Nitrogen	14797-65-0	0.079		0.015	mg/l	1
00220	Nitrate Nitrogen	14797-55-8	0.065	J	0.040	mg/l	1
00221	Ammonia Nitrogen	7664-41-7	0.62	J	0.16	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	0.0140	J	0.0028	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	0.34		0.13	mg/l	1

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Analysis			Dilution Factor
			Trial#	Date and Time	Analyst	
00217	Kjeldahl Nitrogen	EPA 351.2	1	09/12/2001 13:30	Matthew J. Mercer	1
00219	Nitrite Nitrogen	EPA 353.2	1	08/30/2001 20:31	Venia M. McFadden	1
00220	Nitrate Nitrogen	EPA 353.2	1	09/04/2001 15:05	Matthew J. Mercer	1
00221	Ammonia Nitrogen	EPA 350.2	1	09/07/2001 07:45	Michele L. Hanby	1
00226	Ortho-Phosphate as P	EPA 365.3	1	08/30/2001 21:45	Daniel S. Smith	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	09/05/2001 14:59	Matthew J. Mercer	1
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	09/11/2001 14:02	Nancy J. Shoop	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	09/04/2001 18:00	Nancy J. Shoop	1



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 717-656-2300 Fax: 717-656-2684



Lancaster Laboratories Sample No. **WW 3677176**

Collected: 08/29/2001 17:10 by BS

Account Number: 07802

Submitted: 08/30/2001 09:15

Kerr-McGee Corporation

Reported: 09/14/2001 at 13:53

P.O. Box 25861

Discard: 10/15/2001

Oklahoma City OK 73125

MA3-TG5-2-290801-05 Grab Water Sample

Moss American Superfund Site - Milwaukee, WI

52905 SDG#: MOA71-05

CAT No.	Analysis Name	CAS Number	As Received		As Received	Units	Dilution Factor
			Result		Method		
00217	Kjeldahl Nitrogen	7727-37-9	0.51	J	0.30	mg/l	1
00219	Nitrite Nitrogen	14797-65-0	0.133		0.015	mg/l	1
00220	Nitrate Nitrogen	14797-55-8	N.D.		0.040	mg/l	1
00221	Ammonia Nitrogen	7664-41-7	0.54	J	0.16	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	0.027		0.0028	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	0.25		0.13	mg/l	1

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Analysis			Dilution Factor
			Trial#	Date and Time	Analyst	
00217	Kjeldahl Nitrogen	EPA 351.2	1	09/12/2001 13:33	Matthew J. Mercer	1
00219	Nitrite Nitrogen	EPA 353.2	1	08/30/2001 20:35	Venia M. McFadden	1
00220	Nitrate Nitrogen	EPA 353.2	1	09/04/2001 15:07	Matthew J. Mercer	1
00221	Ammonia Nitrogen	EPA 350.2	1	09/07/2001 07:45	Michele L. Hanby	1
00226	Ortho-Phosphate as P	EPA 365.3	1	08/30/2001 21:45	Daniel S. Smith	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	09/05/2001 15:00	Matthew J. Mercer	1
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	09/11/2001 14:02	Nancy J. Shoop	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	09/04/2001 18:00	Nancy J. Shoop	1



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 PO Box 12425  
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Lancaster Laboratories Sample No. WW 3677177

Collected: 08/29/2001 17:20 by BS

Account Number: 07802

Submitted: 08/30/2001 09:15

Kerr-McGee Corporation

Reported: 09/14/2001 at 13:53

P.O. Box 25861

Discard: 10/15/2001

Oklahoma City OK 73125

MA3-TG5-3-290801-06 Grab Water Sample

Moss American Superfund Site - Milwaukee, WI

52906 SDG#: MOA71-06\*

CAT No.	Analysis Name	CAS Number	As Received		As Received	Units	Dilution Factor
			Result		Method Detection Limit		
00217	Kjeldahl Nitrogen	7727-37-9	0.61	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	0.16	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.		0.0028	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	0.19		0.13	mg/l	1

Laboratory Chronicle

CAT No.	Analysis Name	Method	Analysis			Dilution Factor
			Trial#	Date and Time	Analyst	
00217	Kjeldahl Nitrogen	EPA 351.2	1	09/12/2001 13:35	Matthew J. Mercer	1
00219	Nitrite Nitrogen	EPA 353.2	1	08/30/2001 20:36	Venia M. McFadden	1
00220	Nitrate Nitrogen	EPA 353.2	1	09/04/2001 15:08	Matthew J. Mercer	1
00221	Ammonia Nitrogen	EPA 350.2	1	09/07/2001 07:45	Michele L. Hanby	1
00226	Ortho-Phosphate as P	EPA 365.3	1	08/30/2001 21:45	Daniel S. Smith	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	09/05/2001 15:01	Matthew J. Mercer	1
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	09/11/2001 14:02	Nancy J. Shoop	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	09/04/2001 18:00	Nancy J. Shoop	1



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**Lancaster Laboratories**  
*Where quality is a science.*  
**Quality Control Summary**

Client Name: Kerr-McGee Corporation  
 Reported: 09/14/01 at 01:53 PM

Group Number: 776164

**Laboratory Compliance Quality Control**

<u>Analysis Name</u>	<u>Blank Result</u>	<u>Blank MDL</u>	<u>Report Units</u>	<u>LCS %REC</u>	<u>LCSD %REC</u>	<u>LCS/LCSD Limits</u>	<u>RPD</u>	<u>RPD Max</u>
Batch number: 01242022601A Ortho-Phosphate as P	Sample number(s): 3677172-3677177 N.D.	.0028	mg/l	96		91-122		
Batch number: 01242105102A Nitrite Nitrogen	Sample number(s): 3677172-3677177 N.D.	.015	mg/l	99		90-110		
Batch number: 01247106101B Nitrate Nitrogen	Sample number(s): 3677172-3677177 N.D.	.04	mg/l	104		89-110		
Batch number: 01247110101A Total Phosphorus as PO4 water	Sample number(s): 3677172-3677177 N.D.	.13	mg/l	100		90-111		
Batch number: 01250022101A Ammonia Nitrogen	Sample number(s): 3677172-3677177 N.D.	.16	mg/l	97	96	92-102	0	2
Batch number: 01254108101A Kjeldahl Nitrogen	Sample number(s): 3677172-3677177 N.D.	.3	mg/l	90		90-110		

**Sample Matrix Quality Control**

<u>Analysis Name</u>	<u>MS %REC</u>	<u>MSD %REC</u>	<u>MS/MSD Limits</u>	<u>RPD</u>	<u>MAX</u>	<u>BKG Conc</u>	<u>DUP Conc</u>	<u>DUP RPD</u>	<u>Dup RPD Max</u>
Batch number: 01242022601A Ortho-Phosphate as P	Sample number(s): 3677172-3677177 96	98	86-123	2	5	N.D.	0.0045 J	200* (1)	7
Batch number: 01242105102A Nitrite Nitrogen	Sample number(s): 3677172-3677177 108		90-110			N.D.	N.D.	4 (1)	6
Batch number: 01247106101B Nitrate Nitrogen	Sample number(s): 3677172-3677177 112*		90-110			0.092 J	0.097 J	6 (1)	6
Batch number: 01247110101A Total Phosphorus as PO4 water	Sample number(s): 3677172-3677177 94		90-110			0.27	0.22	20* (1)	2
Batch number: 01250022101A Ammonia Nitrogen	Sample number(s): 3677172-3677177					4.3	4.4	3 (1)	7
Batch number: 01254108101A Kjeldahl Nitrogen	Sample number(s): 3677172-3677177 89*		90-110			0.32 J	N.D.	34* (1)	20

\*- Outside of specification

- (1) The result for one or both determinations was less than five times the LOQ.
- (2) The background result was more than four times the spike added.



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# Analysis Request/Environmental Services Chain of Custody



For Lancaster Laboratories use only  
 Acct. # 7802 Sample # 3678133-44

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

Client: <u>Kerr McFee</u> Acct. #: _____ Project Name/#: <u>Kerr McFee</u> <sup>MISS America</sup> PWSID #: _____ Project Manager: <u>M. Tom G. Scan</u> P.O. #: _____ Sampler: <u>b. Schaefer</u> Quote #: _____ Name of state where samples were collected: <u>WI</u>				Matrix (4) <input type="checkbox"/> Potable (Check if applicable) <input type="checkbox"/> Water <input type="checkbox"/> NPDES <input type="checkbox"/> Other		(5) Analyses Requested <u>NO2, NO3</u> <u>O-Pey</u> <u>TKN TP-Pey</u> <u>NH3</u>				For lab use only FSC: _____ SCR #: <u>1156463</u>						
Sample Identification	Date Collected	Time Collected	Grab	Composite	Soil	Water	Other	Total # of Containers	Remarks				Temperature of samples upon receipt (if requested)			
<u>MA3-TG-4-1-300801-01</u>	<u>8/30/01</u>	<u>1030</u>	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	NO2 and NO3 were collected in one non-preserve container. Please preserve in Lab.	
<u>MA3-TG-4-2-300801-02</u>	↓	<u>1040</u>	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
<u>MA3-TG-4-3-300801-03</u>	↓	<u>1050</u>	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
(7) Turnaround Time Requested (TAT) (please circle): Normal Rush (Rush TAT is subject to Lancaster Laboratories approval and surcharge.) Date results are needed: <u>STD TAT</u> Rush results requested by (please circle): Phone Fax Phone #: <u>647-912-4000</u> Fax #: <u>647-912-4055</u>				Relinquished by: <u>[Signature]</u> Date: <u>8-20-01</u> Time: <u>1655</u>		Relinquished by: <u>[Signature]</u> Date: <u>8-20-01</u> Time: <u>1800</u>		Relinquished by: _____ Date: _____ Time: _____		Relinquished by: _____ Date: _____ Time: _____		Relinquished by: <u>[Signature]</u> Date: <u>8/31/01</u> Time: <u>0915</u>		Relinquished by: _____ Date: _____ Time: _____		
(8) Data Package Options (please circle if requested) QC Summary Type VI (Raw Data) <u>per private</u> SDG Complete? (Yes) <input checked="" type="checkbox"/> No Type I (Tier I) GLP Type II (Tier II) Other Site-specific QC required? Yes No Type III (NJ Red. Del.) (If yes, indicate QC sample and submit triplicate volume.) Type IV (CLP) Internal Chain of Custody required? Yes No				Relinquished by: _____ Date: _____ Time: _____		Relinquished by: _____ Date: _____ Time: _____		Relinquished by: _____ Date: _____ Time: _____		Relinquished by: _____ Date: _____ Time: _____		Relinquished by: _____ Date: _____ Time: _____				

# Analysis Request/Environmental Services Chain of Custody



For Lancaster Laboratories use only  
 Acct. # 7802 Sample # 3678133-44

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

Client: <u>Karl McFee</u>		Acct. #: _____		Matrix <span style="border: 1px solid black; border-radius: 50%; padding: 2px;">4</span> Total # of Containers <span style="border: 1px solid black; border-radius: 50%; padding: 2px;">5</span> Analyses Requested <u>NO<sub>2</sub> NO<sub>3</sub></u> <u>O-PO<sub>4</sub></u> <u>TKN/TP-PO<sub>4</sub></u> <u>NH<sub>3</sub></u>				For lab use only	
Project Name/#: <u>Mass American</u>		PWSID #: _____						FSC: _____	
Project Manager: <u>Tom Bran</u>		P.O.# _____						SCR #: _____	
Sampler: <u>B Schaefer</u>		Quote #: _____						Temperature of sample upon receipt (if required) <span style="border: 1px solid black; border-radius: 50%; padding: 2px;">6</span>	
Name of state where samples were collected: <u>WI</u>									

<b>7 Turnaround Time Requested (TAT)</b> (please circle): Normal <input type="checkbox"/> Rush <input type="checkbox"/> (Rush TAT is subject to Lancaster Laboratories approval and surcharge.) Date results are needed: <u>STD TAT</u> Rush results requested by (please circle): Phone <input type="checkbox"/> Fax <input type="checkbox"/> Phone #: <u>877-918-6000</u> Fax #: <u>847-918-4655</u>			Relinquished by: <u>Brian Schaefer</u> Date: <u>8-30-07</u> Time: <u>1800</u>		Received by: _____ Date: _____ Time: _____		Relinquished by: _____ Date: _____ Time: _____		Received by: _____ Date: _____ Time: _____			
<b>8 Data Package Options</b> (please circle if requested)			Relinquished by: _____ Date: _____ Time: _____		Received by: _____ Date: _____ Time: _____		Relinquished by: _____ Date: _____ Time: _____		Received by: _____ Date: _____ Time: _____			
QC Summary Type VI (Raw Data) <u>Per Quote</u> Type I (Tier I) GLP Type II (Tier II) Other Type III (NJ Red. Del.) Type IV (CLP)			SDG Complete? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Site-specific QC required? Yes <input type="checkbox"/> No <input type="checkbox"/> (If yes, indicate QC sample and submit triplicate volume.) Internal Chain of Custody required? Yes <input type="checkbox"/> No <input type="checkbox"/>		Relinquished by: _____ Date: _____ Time: _____		Received by: _____ Date: _____ Time: _____		Relinquished by: _____ Date: _____ Time: _____		Received by: <u>Christine</u> <u>8/31/07</u> <u>0915</u>	

# Analysis Request/Environmental Services Chain of Custody



For Lancaster Laboratories use only  
 Acct. # 7802 Sample # 3678133-44

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

Client: <u>Kerr Mcbee</u> Acct. #: _____ Project Name/#: <u>Moss America</u> PWSID #: _____ Project Manager: <u>Tom Graan</u> P.O. #: _____ Sampler: <u>B. Schaefer</u> Quote #: _____ Name of state where samples were collected: <u>WI</u>		4		5	Analysis Requested <u>NO2-NO3</u> <u>O-PO4</u> <u>TKN-TP-PO4</u> <u>NH3</u>	For lab use only FSC: _____ SCR #: _____
	6	Temperature of samples upon receipt (if requested)				

Sample Identification	Date Collected	Time Collected	Grab	Composite	Soil	Water	Other	Total # of Containers	Remarks
<u>MA3-TG2-1-300801-15</u>	<u>8/30/01</u>	<u>1440</u>	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>		4	<u>NO2 and NO3 were collected in one Non-Preserve Container. Please preserve in Lab.</u>
<u>MA3-TG2-2-300801-15</u>	<u>8/30/01</u>	<u>1450</u>	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>		4	
<u>MA3-TG2-3-300801-15</u>	<u>8/30/01</u>	<u>1500</u>	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>		4	

7 Turnaround Time Requested (TAT) (please circle): Normal Rush (Rush TAT is subject to Lancaster Laboratories approval and surcharge.) Date results are needed: <u>SDG TAT</u> Rush results requested by (please circle): Phone Fax Phone #: <u>847-916-4600</u> Fax #: <u>847-916-4055</u>	Relinquished by: <u>Brian Schaefer</u>	Date: <u>8-30-01</u>	Time: <u>1800</u>	Received by: _____	Date: _____	Time: _____
8 Data Package Options (please circle if requested)	Relinquished by: _____	Date: _____	Time: _____	Received by: _____	Date: _____	Time: _____
QC Summary Type VI (Raw Data) <u>Reliquate</u> <input checked="" type="checkbox"/> Yes <input type="checkbox"/> 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.)	Relinquished by: _____	Date: _____	Time: _____	Received by: _____	Date: _____
	Internal Chain of Custody required? Yes No	Relinquished by: _____	Date: _____	Time: _____	Received by: <u>Mcbee</u>	Date: <u>8/31/01</u>

# Analysis Request/Environmental Services Chain of Custody



For Lancaster Laboratories use only  
 Acct. # 7802 Sample # 3678133-44

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

Client: <u>Kerr McFee</u> Acct. #: _____ Project Name/#: <u>Mass America</u> PWSID #: _____ Project Manager: <u>TOM Klean</u> P.O.# _____ Sampler: <u>B. Schaefer</u> Quote #: _____ Name of state where samples were collected: <u>WI</u>			Matrix <b>4</b>	<b>5</b>	Analyses Requested	For lab use only FSC: _____ SCR #: _____			
			Soil <input type="checkbox"/>	Water <input type="checkbox"/>	Other <input type="checkbox"/>	Total # of Containers	Temperature of samples upon receipt (if required)		
			Grab <b>3</b>	Composite					
Sample Identification	Date Collected	Time Collected							Remarks
<u>MA3-TG1-1-300801</u>	<u>8/30/01</u>	<u>1540</u>	<input checked="" type="checkbox"/>			I	X	X	<u>No2 and No3 were collected in one Non-preserve container. Please preserve in Lab.</u>
<u>MA3-TG1-2-300801</u>	<u>8/30/01</u>	<u>1550</u>	<input checked="" type="checkbox"/>			I	X	X	
<u>MA3-TG1-3-300801</u>	<u>8/30/01</u>	<u>1600</u>	<input checked="" type="checkbox"/>			I	X	X	

<b>7 Turnaround Time Requested (TAT)</b> (please circle): Normal Rush (Rush TAT is subject to Lancaster Laboratories approval and surcharge.) Date results are needed: <u>STD TAT</u> Rush results requested by (please circle): Phone Fax Phone #: <u>847-918-4000</u> Fax #: <u>847-918-4055</u>	Relinquished by: <u>Bren Schaefer</u> Date: <u>8-30-01</u> Time: <u>1800</u> Relinquished by: _____ Date: _____ Time: _____ Relinquished by: _____ Date: _____ Time: _____ Relinquished by: _____ Date: _____ Time: _____ Relinquished by: _____ Date: _____ Time: _____	Received by: _____ Date: _____ Time: _____ Received by: _____ Date: _____ Time: _____ Received by: _____ Date: _____ Time: _____ Received by: _____ Date: _____ Time: _____ Received by: <u>L. Warner</u> Date: <u>8/30/01</u> Time: <u>0915</u>
<b>8 Data Package Options</b> (please circle if requested)	SDG Complete? (Yes) No QC Summary Type VI (Raw Data) <u>Request</u> <input checked="" type="checkbox"/> <input type="checkbox"/> 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.) Chain of Custody required? Yes No		



# Analysis Request/Environmental Services Chain of Custody



For Lancaster Laboratories use only  
 Acct. # 7802 Sample # 3677172-77

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

Client: <u>Kerr McCabe</u> Acct. #:		Matrix (4)		(5) <b>Analyses Requested</b>										For lab use only					
Project Name/#: <u>Moss America</u> PWSID #:		<input type="checkbox"/> Potable <input type="checkbox"/> Water <input type="checkbox"/> NPDES <input type="checkbox"/> Other		Total # of Containers		NO <sub>2</sub> NH <sub>3</sub> O <sub>3</sub> -P04 TKN, TP-P04 NH <sub>3</sub>										FSC:			
Project Manager: <u>Tom Egan</u> P.O.#:																SCR #: <u>1156463</u>			
Sampler: <u>B. Schaefer</u> Quote #:																Temperature of samples upon receipt (if requested)			
Name of state where samples were collected: <u>WI</u>		(3) Composite																	
Sample Identification	Date Collected	Time Collected	Grab	Composite	Soil	Water	Other	Total # of Containers	Remarks										Temperature of samples upon receipt (if requested)
<u>MA3-TR-6-1-290801-01</u>	<u>8/29/01</u>	<u>1525</u>	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>		1	NO <sub>2</sub> and NO <sub>3</sub> were collected in one Non-Preserve container. Please preserve in Lab.										
<u>MA3-TR-6-2-290801-02</u>	↓	<u>1535</u>	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>		1											
<u>MA3-TR-6-3-290801-03</u>	↓	<u>1545</u>	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>		1											
(7) Turnaround Time Requested (TAT) (please circle): Normal Rush (Rush TAT is subject to Lancaster Laboratories approval and surcharge.) Date results are needed: <u>STD TAT</u> Rush results requested by (please circle): Phone (Fax) Phone #: <u>547.918.4000</u> Fax #: <u>547.918.4055</u>			Relinquished by: <u>[Signature]</u>		Date	Time	Received by:		Date	Time									
			Relinquished by: <u>[Signature]</u>		<u>8-27-01</u>	<u>1655</u>	Received by:												
			Relinquished by: <u>[Signature]</u>		<u>8-29-01</u>	<u>1830</u>	Received by:												
(8) Data Package Options (please circle if requested)			SDG Complete?		Date	Time	Received by:		Date	Time									
QC Summary Type VI (Raw Data) <u>Per quote</u> <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Type I (Tier I) GLP Type II (Tier II) Other Site-specific QC required? Yes No Type III (NJ Red. Del.) (If yes, indicate QC sample and submit triplicate volume.) Type IV (CLP) Internal Chain of Custody required? Yes No																			

# Analysis Request/Environmental Services Chain of Custody



For Lancaster Laboratories use only  
 Acct. # 7002 Sample # 3677172-77

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

1 Client: Kerr Mcfee Acct. #: \_\_\_\_\_  
 Project Name/#: Mass America PWSID #: \_\_\_\_\_  
 Project Manager: Tom Grant P.O.# \_\_\_\_\_  
 Sampler: B Schaefer Quote #: \_\_\_\_\_  
 Name of state where samples were collected: WI

4

Soil	Water	Other	Total # of Containers
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

5

Analysis Requested

NO<sub>2</sub>-NO<sub>3</sub>  
O-P04  
TAN/TP-P04  
AL#3

For lab use only  
 FSC: \_\_\_\_\_  
 SCR#: \_\_\_\_\_

Sample Identification	Date Collected	Time Collected	Grab	Composite	Soil	Water	Other	Total # of Containers	Analysis Requested	Remarks	Temperature of samples upon receipt (if requested)
MA3-TS5-1-290801-04	8/29/01	17:00	X			X		4	X X X X	NO <sub>2</sub> and NO <sub>3</sub> were collected in one Non-Preserve Container. Please preserve in Lab.	
MA3-TS5-2-290801-05	↓	1710	X			X		4	X X X X		
MA3-TS5-3-290801-06	↓	1720	X			X		4	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: STO TAT  
 Rush results requested by (please circle): Phone  Fax   
 Phone #: 847-918-4000 Fax #: 847-918-4055

Relinquished by: <u>Brian Schaefer</u>	Date: <u>8-29-01</u>	Time: <u>1530</u>	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: _____	Date: _____	Time: _____
Relinquished by: _____	Date: _____	Time: _____	Received by: _____	Date: _____	Time: _____

8 **Data Package Options** (please circle if requested)

QC Summary	Type VI (Raw Data) <u>Per Quote</u>	SDG Complete? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Type I (Tier I)	GLP	
Type II (Tier II)	Other	Site-specific QC required? Yes No
Type III (NJ Red. Del.)		(if yes, indicate QC sample and submit triplicate volume.)
Type IV (CLP)		Internal Chain of Custody required? Yes No



CLIENT: Kerr-McGee Corporation  
SDG: MOA71

LANCASTER LABORATORIES

INSTRUMENTAL WET CHEMISTRY

SAMPLE NUMBERS:

<u>Sample #</u>	<u>Sample Code</u>	<u>Comments</u>
3677172	62901	
3677173	629-2	
3677174	629-3	
3677175	52904	
3677176	52905	
3677177	52906	

ANALYSIS:

The laboratory control standards were analyzed at a dilution factor of 2 for the nitrate nitrogen and total phosphorus analyses.

QUALITY CONTROL AND NONCONFORMANCE SUMMARY:


The duplicate sample for the total phosphorus analysis was out of specifications.

The matrix spike samples for the nitrate nitrogen and total Kjeldahl nitrogen analysis were out of specifications.

DATA INTERPRETATION:

No further interpretation is necessary for the data submitted.

Case Narrative Reviewed and Approved by:

 Date: 9-19-01  
 Sandra J. Miller  
 Specialist/Coordinator

00100

CLIENT: Kerr-McGee Corporation  
SDG: MOA72

**LANCASTER LABORATORIES****INSTRUMENTAL WET CHEMISTRY****SAMPLE NUMBERS:**

<u>Sample #</u>	<u>Sample Code</u>	<u>Comment</u>
3678133	41G83	
3678134	42G83	
3678135	43G83	
3678136	31G83	
3678137	32G83	
3678138	33G83	
3678139	21G83	
3678140	22G83	
3678141	23G83	
3678142	G1183	
3678143	G1283	
3678144	G1383	

**ANALYSIS:**

The LCS's were analyzed at a dilution factor of 2 for the nitrate-nitrogen and total phosphorus as PO<sub>4</sub> analyses.

Sample P680314 was analyzed at a dilution factor of 2 for the total Kjeldahl nitrogen analysis.

**QUALITY CONTROL AND NONCONFORMANCE SUMMARY:**

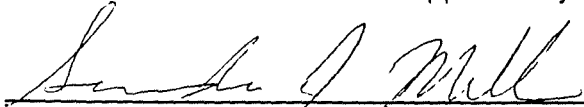
The matrix spike sample (P680314) for the total Kjeldahl nitrogen analysis was out of specification.

The duplicate sample (3678140) for the total phosphorus as PO<sub>4</sub> analysis was out of specification.

**DATA INTERPRETATION:**

No further interpretation is necessary for the data submitted.

Case Narrative Reviewed and Approved by:



Sandra J. Miller  
Specialist/Coordinator

Date: 10-1-01

680314