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77 West Jackson Boulevard
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10 July 2002 REMEDIAT

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

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Re: Quarterly Groundwater Treatment Performance Monitoring Report, Q1 2002 Moss-American Site, Milwaukee, Wisconsin

Dear Mr. Hart:

On behalf of Kerr-McGee Chemical, LLC (KMC), Weston Solutions, Inc. (WESTON<sub>®</sub>), is submitting this report summarizing the results of the first quarter (Q1) 2002 groundwater monitoring event for the above-referenced project. In addition, results are presented for the monthly groundwater sampling conducted in January, February, and March 2002 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) promulgated by Wisconsin Department of Natural Resources (WDNR) in NR140.10, entitled "Public Health Groundwater Quality Standards."

The groundwater analytical results reported for Q1 2002 (January through March) 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 eight 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 13 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, and MW-29S) and four intermediate groundwater monitoring wells (MW-3I, MW-7I, MW-9I, and MW-20I). The locations of all existing shallow and intermediate groundwater monitoring wells (MW-3I, MW-7I, MW-9I, and MW-20I).



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wells included in the sampling program are indicated on Figure 1A. Some wells that were previously a part of the groundwater monitoring network have been removed to facilitate soil remediation activities. Wells TW-09, MW-8S, and MW-8I were removed during excavation activities and installation of the funnel and gate groundwater treatment system in 1999. In addition, wells MW-4S and MW-4I were removed during early Q3 2001 and well TW-05 was removed during early Q4 2001. The shallow groundwater monitoring wells are sampled on a quarterly basis, and the intermediate groundwater monitoring wells are sampled on a semiannual basis, corresponding with the Q1 and Q3 sampling events. Additionally, the quarterly groundwater monitoring program includes 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 is calculated at each treatment gate, and is used to estimate groundwater flow velocity through the treatment gate remediation system. The monitoring network includes six groundwater treatment gates (TG1 through TG6), with three treatment performance monitoring wells located at each groundwater treatment gate. The treatment performance monitoring well locations are indicated on Figure 1A. 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(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, chrysene, dibenzo(a,h)anthracene, fluorene, fluoranthene. indeno(1,2,3-cd)pyrene, naphthalene, phenanthrene, and pyrene.

In accordance with Addendum No. 1 to the QAPP (WESTON, May 2001), the 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 (NO<sub>3</sub>-N), nitrite-nitrogen (NO<sub>2</sub>-N), total Kjeldahl nitrogen (TKN),

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ammonia-nitrogen (NH<sub>3</sub>-N), total phosphate-phosphorous (PO<sub>4</sub>-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 Q1 2002 groundwater monitoring event at the Moss-American site was completed between 18 March and 9 April 2002. The Q1 2002 groundwater remedial system treatment performance monitoring sampling includes data obtained during 30 to 31 January 2002, 28 February to 01 March 2002, and 18 March to 9 April 2002. Well MW-26S was sampled on 9 April 2002, approximately 2 weeks after the other wells were sampled, because the well could not be located due to site conditions during March 2002. 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, and containment and 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 treatment performance monitoring wells on 18 March 2002, and in the shallow groundwater monitoring and containment performance monitoring wells on 20 March 2002, prior to the beginning of groundwater sampling. Depth to groundwater was not measured in MW-20S due to the damaged well casing nor in MW-26S due to freezing conditions. 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 estimated groundwater flow velocities through the treatment gates are presented in Table 2. The January and February 2002 groundwater elevation data for the treatment performance monitoring wells is available Figure 1A presents a groundwater elevation contour map that shows the upon request. potentiometric surface within the shallow groundwater-bearing zone based on the March 2002 data. An evaluation of these results is presented below.



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As shown in Figure 1A, 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 0.05 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 0.007 ft/ft. The estimated hydraulic gradients within the treatment gates ranged from -0.0048 to 0.0302 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 0.002 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:

where:

v = Ki/e

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 0.05 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 0.005 ft/day. Near the river, using a hydraulic gradient of 0.007 ft/ft, a porosity of 0.3, and a hydraulic conductivity of 0.3, and a hydraulic conductivity of 0.3, and a hydraulic gradient of 0.007 ft/day. Near the river, using a hydraulic gradient of 0.007 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 0.07 ft/day. The groundwater flow velocities within the treatment gates are estimated to range from 0.051 ft/day to 0.2854 ft/day (excluding the erratic data for TG3, TG4, and TG6). The groundwater flow velocity through each treatment gate is presented in Table 2.



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# 2.2 Groundwater Sample Analytical Results

Groundwater samples were collected from a total of 39 shallow monitoring wells screened within the shallow groundwater-bearing unit. The shallow wells sampled include: 13 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, and MW-29S); 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.

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In addition to the investigative groundwater samples collected, five sample duplicate, three matrix spike/matrix spike duplicate (MS/MSD), and five 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 containing VOC samples.

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

## 2.2.1 Field-Measured Parameters

The groundwater samples were measured in the field for pH, specific conductance, temperature, redox potential, dissolved oxygen, and turbidity. The field parameters were collected using portable water quality meters. Due to the presence of free product, groundwater quality parameters were not measured in well MW-34S, and DO was not measured in MW-20S due to the damaged well casing. The results of the monthly field-measured parameters for the treatment performance monitoring wells, which vary only slightly from the quarterly measurements, 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 in Table 3 and Attachment 1.

#### 2.2.1.1 <u>pH</u>

The pH of the groundwater samples collected during Q1 2002 ranged from 6.54 to 8.27 pH standard units (S.U.). The pH measurements indicate relatively neutral (7.0 S.U.) conditions. pH is an important factor in determining the feasibility of bioremediation of contaminants in the site



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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 <u>Redox Potential</u>

The redox potentials of the groundwater samples collected at the site during Q1 2002 ranged from -173.0 to 35.3 millivolts (mV); however, only three positive redox potentials were measured during Q1 2002 (MW-6S, MW-28S, and MW-31S during March 2002). The redox potential data for the site indicate that reducing conditions are present on a site-wide basis. Redox potential indicates the capability of the groundwater to promote chemical oxidationreduction processes that consume organic matter and ultimately oxidize organic compounds. Microorganisms typically act as catalysts in oxidation reactions, and as such, the redox potential indicates the potential for the groundwater to oxidize the contaminants present. Since environmental systems are typically not in equilibrium, the redox potential is used as a gross indicator of the state of oxidation-reduction in the system. Oxidation-reduction rates in the system are greater as the redox potential increases in magnitude. A positive redox potential typically indicates conditions where oxidized ionic species (i.e., NO<sub>3</sub>, SO<sub>4</sub>, and Fe<sup>3+</sup>) predominate in comparison to their reduced counterparts (NH<sub>4</sub><sup>+</sup>, S<sup>2</sup>, and Fe<sup>3+</sup>, 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

Although DO levels for the groundwater samples collected during Q1 2002 ranged from 0.04 to 7.20 milligrams per liter (mg/L), very few readings indicating DO levels greater than 1.0 mg/L were observed. The dissolved oxygen data indicate 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 promotes the growth of aerobic and facultative bacteria, production of readily assimilated nutrients, and provides oxygen, all of which 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.

#### 2.2.1.4 Specific Conductance

The specific conductance, or conductivity, of the groundwater samples collected during Q1 2002 ranged from 0.306 to 1.263 micromhos per centimeter ( $\mu$ mhos/cm). Conductivity of water is a measure of the ability of the solution to carry an electrical current that is transported by ions in

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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 <u>Temperature</u>

Groundwater temperatures ranged from 1.36 to 9.23 °C during Q1 2002. A downward trend in groundwater temperature was observed during Q1 2002 when comparing the data to the previous quarter. Temperatures measured approximately 5 °C lower in Q1 2002 in than that of December 2001 which ranged from 7.83 to 14.73 °C. Temperature is an extremely important factor in bioremediation since microbial growth rates are greatly dependent upon temperature.

2.2.1.6 <u>Turbidity</u>

Turbidity ranged from 0.90 to 387 nephelometric turbidity units (NTU) during Q1 2002; however, turbidity was only measured at levels >20 NTU in five wells during Q1 2002. Turbidity is a measure of the clarity of water, and is used as an indicator of the solids present in a water sample and overall water quality.

#### 2.2.2 Laboratory Analyses

The results of the laboratory analyses performed on the groundwater samples collected during January, February, and March 2002 are provided in Attachments 2, 3, and 4, respectively. A discussion of the results of the laboratory analyses performed on the groundwater samples are presented in the following subsections.

#### 2.2.2.1 Laboratory Analyses for BTEX and PAH

Each groundwater sample collected during the March 2002 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 concentrations exceeding both PALs and ESs are presented as bold and shaded values in Table 4. Exceedences are summarized in the following paragraphs. The laboratory reports that included results of the BTEX and PAH analyses are provided as Attachment 4.



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#### Groundwater Sample Results

As shown in Table 4, benzene, naphthalene, fluorene, fluoranthene, pyrene, benzo(b)fluoranthene, benzo(a)pyrene, and chrysene 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  $\mu$ g/L in the groundwater samples collected from wells MW-7S, MW-34S, and TG1-1. Benzene was also detected at a concentration exceeding its PAL in the duplicate sample collected from well MW-7S.
- Naphthalene was detected at concentrations exceeding the WDNR PAL of 8  $\mu$ g/L in the groundwater samples collected from wells MW-7S, MW-33S, MW-34S, and TG1-1. Naphthalene was also detected at a concentration exceeding its PAL in the duplicate sample collected from wells MW-7S and MW-33S.
- Chrysene was detected at concentrations exceeding the WDNR PAL of 0.02  $\mu$ g/L in the groundwater samples collected from wells MW-34S and TG1-1.
- Benzo(b)fluoranthene was detected at concentrations exceeding the WDNR PAL of 0.02  $\mu$ g/L in the groundwater samples collected from wells MW-34S, TG1-1, and TG6-1.
- Benzo(a)pyrene was detected at concentrations exceeding the WDNR PAL of  $0.02 \ \mu g/L$  in the groundwater samples collected from wells MW-34S, TG1-1, TG1-3, TG4-3, and TG6-1.
- Flourene was detected at concentrations exceeding the WDNR PAL of 80  $\mu$ g/L in the groundwater samples collected from well TG1-1.
- Flouranthene was detected at concentrations exceeding the WDNR PAL of 80  $\mu$ g/L in the groundwater samples collected from well TG1-1.
- Pyrene was detected at concentrations exceeding the WDNR PAL of 50  $\mu$ g/L in the groundwater samples collected from well TG1-1.



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#### ES Exceedances:

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

The detected plume boundary is primarily in an area encompassing seven shallow monitoring wells (MW-7S, MW-33S, MW-34S, TG1-1, TG1-3, TG4-3 and TG6-1). The majority of PAL and ES exceedances are associated with wells MW-34S and TG1-1, which have previously contained varying amounts of free product. During Q1 2002, only trace levels of product were observed in MW-34S. In general, PAH concentrations measured in groundwater samples collected from the rest of the site were at relatively low levels with few PAL/ES exceedances. Based on these detected concentrations, the contaminant plume generally indicates a northeasterly trend as indicated in Figure 1A, which is similar to the previous 15 quarterly groundwater-sampling events.

Overall, the lateral extent of the Q1 2002 groundwater contaminant plume is similar to the past quarter of groundwater sampling. A relatively small, downgradient increase in plume size is noticeable, and may be attributable to seasonal fluctuations of site hydrogeology, source removal activities and disruption to the site hydrogeology caused by excavation of contaminated soil, treatment of contaminated groundwater, and/or other factors. As with the recent quarters, the groundwater contaminant plume does not extend downgradient of treatment gates TG5 and TG6, indicating that groundwater exiting the treatment system meets PALs.



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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-32S and MW-35S. These constituents had also shown an overall decreasing trend in well MW-4S prior to its removal in Q2 2001. Well MW-7S has shown a relatively decreasing trend for naphthalene and fluorene; however, MW-7S has shown a fluctuating trend for benzene. 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 7 quarters. Well MW-34S has shown relatively stable benzene and naphthalene concentrations, and had also shown an increase in fluorene and benzo(a)pyrene until

Q1 2002, when levels were significantly reduced. Well MW-34S contained approximately 10 inches of free product during Q4 2001 and only trace levels during Q1 2002, a trend that correlates with the levels of fluorene and benzo(a)pyrene. Well TG1-1 had shown fluctuating benzene, naphthalene, fluorene, and benzo(a)pyrene concentrations since it was first sampled in Q3 2000.

#### 2.2.2.2 Laboratory Analyses for Treatment Performance Monitoring

The groundwater samples collected from the treatment performance monitoring wells were analyzed for microbial enumeration, NO<sub>3</sub>-N, NO<sub>2</sub>-N, TKN, NH<sub>3</sub>-N, PO<sub>4</sub>-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, NO<sub>3</sub>-N, NO<sub>2</sub>-N, TKN, NH<sub>3</sub>-N, PO<sub>4</sub>-P, ORP, BOD, COD, and TOC are presented in Table 6. The analytical results for the treatment performance monitoring groundwater samples are summarized below.

#### Nitrogen and Phosphorous Compounds

NO<sub>3</sub>-N was detected at concentrations ranging from below method detection limits (nondetect) to 0.27 mg/L. NO<sub>2</sub>-N was detected at levels ranging from nondetect to 0.037 mg/L. TKN was detected at concentrations ranging from nondetect to 1.54 mg/L. NH<sub>3</sub>-N was detected at levels ranging from nondetect to 1.4 mg/L. Temporal changes of NO<sub>3</sub>-N, NO<sub>2</sub>-N, and NH<sub>3</sub>-N concentrations in the treatment performance monitoring wells with respect to treatment gate are presented in Figures 3, 4, and 5, respectively. Overall, nitrogen compound concentrations are at relatively low levels; however, NH<sub>3</sub>-N is typically an order of magnitude greater than NO<sub>3</sub>-N and NO<sub>2</sub>-N concentrations. NH<sub>3</sub>-N is slightly higher in the TG3 wells as compared to the other treatment gates. Oxidized nitrogen compounds (NO<sub>3</sub>-N and NO<sub>2</sub>-N) are more prevalent in TG3, presumably due to the relatively higher DO levels.



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 $PO_4$ -P was detected at concentrations ranging from nondetect to 0.43 mg/L. ORP was detected at concentrations ranging from nondetect to 0.036 mg/L. The temporal changes of  $PO_4$ -P and ORP concentrations in the treatment performance monitoring wells with respect to treatment gate are presented in Figures 6 and 7, respectively. Gates TG1 and TG2 typically had slightly higher  $PO_4$ -P levels than the rest of the system; however, ORP levels appear to be consistent system-wide.

#### BOD, COD, TOC

BOD concentrations for the samples collected throughout the treatment system range from nondetect to 9.1 mg/L. COD concentrations for the samples collected throughout the treatment system range from 5.2 to 35.3 mg/L. TOC concentrations for the samples collected throughout the treatment system range from non-detect to 13.7 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 humic acids and detritus. A significant portion of oxygen demand that is exerted by the constituents measured in the COD test may not be readily biodegradable, and would typically exert the oxygen demand over an extended time period. The oxygen demand exerted by the constituents detected by the COD analysis 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  $4.2 \times 10^2$  to  $7.9 \times 10^3$  colony forming units per milliliter (CFU/mL) during first quarter 2002. The monthly mean of the total microbe populations for TG3 and TG4 ranged from  $7.1 \times 10^2$  to  $1.5 \times 10^5$  CFU/mL during first quarter 2002. The monthly mean of the total microbe populations for TG5 and TG6 ranged from  $5.3 \times 10^2$  to  $8.9 \times 10^3$  CFU/mL during first quarter 2002. 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  $2.0 \times 10^1$  to  $8.4 \times 10^2$  CFU/mL during first quarter 2002. The monthly mean of the degrader populations for TG3 and TG4 ranged from  $4.0 \times 10^1$  to  $4.3 \times 10^4$  CFU/mL during first quarter 2002. The monthly mean of the degrader populations for TG5 and TG6 ranged from  $2.0 \times 10^1$  to  $1.4 \times 10^3$  CFU/mL during first quarter 2002. The temporal changes in degrader microbial populations are presented in Figure 9.

Overall, total and degrader bacterial populations were relatively consistent on a system-wide basis; however, TG3 had slightly higher levels than other gates, presumably due to the higher levels of DO.

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# **3 EVALUATION OF PILOT SCALE OPERATIONS**

Augmentation of the groundwater treatment system was initiated in October 2000 by injecting air at the treatment gates. In late June 2001, nutrient addition was initiated at TG1 using a solution containing potassium nitrate (KNO<sub>3</sub>) and potassium phosphate (KHPO<sub>4</sub>). 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 and are discussed below.

#### 3.1 Dissolved Oxygen

Overall, DO levels at the site remain at relatively low levels such that the system as a whole is considered to be anoxic. Although the entire system is considered to be anaerobic, there were several instances where notable concentrations of DO were observed, as described below.

During January and February 2002, well TG3-1 indicated relatively high DO levels (5.94 and 7.20 mg/L, respectively); however, the DO in well TG3-1 significantly decreased in March 2002 to 0.19 mg/L. Several other wells indicated moderate to relatively high DO levels during Q1 2002: during January, TG1-3 had a DO concentration of 2.17 mg/L; during February, TG4-3, TG5-1, and TG5-2 had DO concentrations of 2.10, 4.10, and 3.60 mg/L, respectively; and well MW-25S had a DO concentration of 2.93 mg/L in March 2002. Although well TG3-1 had been demonstrating relatively high DO levels over the past few quarters, spikes in DO concentrations of this magnitude have not been historically observed in the other monitoring wells.

The cause of the increased DO levels is uncertain; however, based on their inconsistency, the elevated DO levels may be due to the influence of groundwater recharge from precipitation. Although the DO concentrations in these wells indicated that oxidizing conditions should exist, the redox potential measured in the wells at the time of the DO measurements ranged from -25.2 to -68.6 mV, indicating a reducing environment. Furthermore, the sitewide ratio of NO<sub>3</sub>-N to NH<sub>3</sub>-N is approximately 1:10, indicating that nitrogen is primarily present in its reduced state, further signifying that a reducing environment exists in the wells. Although the sitewide NO<sub>3</sub>-N:NH<sub>3</sub>-N ratio indicates a reducing environment, the NO<sub>3</sub>-N levels measured in TG3-1 are significantly greater than levels detected in other wells during Q1 2002, indicating that some oxidation may be occurring.

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



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configuration. KMC/WESTON will continue to evaluate alternatives for air introduction into the treatment gates.

## 3.2 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 (6.54 to 7.29 S.U.) is sufficient to facilitate biological activity. Table 7 contains calculated C:N:P ratios for each of the treatment performance monitoring wells. No wells exhibited the desired C:N:P ratio; however, on a sitewide basis the C:N:P ratio is 100:10.3:0.2, which is somewhat close to the desired ratio. Phosphorus appears to be the limiting nutrient at the site.

NO<sub>3</sub>-N was not detected at significant levels in any of the TG1 wells during Q1 2002. A steady increase in PO<sub>4</sub>-P was observed in TG1 during Q1 2002, with downgradient wells TG1-2 and TG1-3 having higher concentrations than upgradient well TG1-1. Orthophosphate concentrations in TG1 ranged between non-detect and 0.027 mg/L during Q1 2002.

## **3.3 Effects on Bacterial Populations**

Although fluctuations in the total bacteria counts in TG1 were observed during Q1 2002, the levels measured in TG1 were similar to other gates. The bacteria levels in TG3 were slightly higher than those observed in the other treatment gates. Figure 10 compares the degrader populations in TG1 and TG2 since Q1 2001. As indicated in Figure 10, there has been a significant decrease in the total bacteria levels in TG1 and TG2 (and other gates) since Q3 2001, presumably due to the low temperature observed since October or November of 2001. Since air injection began in October 2000, degrader populations in TG1 have typically been higher than in TG2; however, it is uncertain if this trend is due to air/nutrient 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 Q1 2002 monitoring results. KMC/WESTON will continue to monitor and evaluate the site hydrogeology.

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# 3.5 Summary of Overall System Performance and Recommendations for System Modifications

Based on the nutrient levels observed since June 2001, it is inconclusive whether nutrient addition at TG1 has enhanced biodegradation of contaminants. Although a significant concentration gradient is observed across the TG1 wells during the past few quarters, similar concentration gradients were evident prior to implementing the nutrient injection, as indicated in the plot of naphthalene concentrations for Q1 2001, Q2 2002, Q4 2001, and Q1 2002 (Figure 11).

Although significant quantities of nutrients have been added to TG1, evidence of this augmentation has not been observed in the TG1 monitoring wells. This circumstance indicates that either the nutrients are being utilized before the chemicals reach a monitoring station or that the system has such strong reducing conditions that the added nutrients are being reduced before they travel to the next downgradient monitoring well. Similarly, no increase in bacteria levels has been observed in TG1. Bacterial levels in TG1 are similar to the other gates, and have not increased after nutrient augmentation began.

Since it is not apparent that the nutrient augmentation has enhanced biodegradation of contaminants in TG1 and no other treatment gate has sufficient or consistent contaminant levels that would facilitate pilot testing of nutrient injection, KMC proposes to confirm the conclusion that the nutrient addition at TG1 is unnecessary by discontinuing the nutrient augmentation. KMC will continue to monitor the contaminant levels in TG1, and if a sustained rebound in contaminant levels is observed in TG1-2 and TG1-3, KMC will resume nutrient injection at TG1. Air injection at the treatment gates will continue as present.

KMC proposes to reduce the groundwater monitoring at the treatment gates from monthly to quarterly. Based on the monthly monitoring data collected since October 2000, minimal fluctuations in site conditions occur on a monthly basis, thereby nullifying the benefit of monthly monitoring.

Furthermore, KMC proposes to eliminate shallow monitoring wells MW-3S, MW-10S, MW-13S, MW-25S, MW-26S, and MW-20S and the intermediate wells (MW-3I, MW-7I, MW-9I, and MW-20I) from the groundwater monitoring program. The wells proposed for removal from the monitoring program are indicated on Figure 12. Since the inception of the quarterly groundwater monitoring at the site, there have been few instances where contaminants have been detected in these wells, and very few occurrences where a contaminant exceeded a PAL. Typically when these contaminants are detected they are at very low levels, slightly above the

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method detection limit for the target compound. KMC proposes to continue monitoring the remaining wells covered under the groundwater monitoring program on the same frequency they are currently sampled.

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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,

WESTON SOLUTIONS, INC.

10 July 2002

Kin Vor

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

TPG/ld

Attachments

cc: K. Watson, KMC G. Edelstein, WDNR B. Felix, WDNR

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



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



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



Figure 11 Naphthalene Concentrations in Treatment Gate 1 Moss-American Site Milwaukee, Wisconsin



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

Well ID	Ground Elevation	TOC Elevation	Depth to Water	GW Elevation	Product Thickness
MW-3S	729.00	731.50	7.18	724.32	ND
MW-5S	723.00	724.70	4.69	720.01	ND
MW-6S	727.00	724.28	2.99	721.29	ND
MW-7S	720.00	721.70	4.42	717.28	ND
MW-9S	720.00	721.71	6.02	715.69	ND
MW-10S	723.00	726.58	4.57	722.01	ND.
MW-13S	737.00	738.68	3.26	735.42	ND
MW-20S	716.00	719.94	NM	NM	ND
MW-25S	736.83	739.24	2.88	736.36	ND
MW-26S	732.31	731.66	NMF	NMF	ND
MW-27S	720.59	723.15	4.72	718.43	ND
MW-28S	720.04	722.65	3.70	718.95	ND
MW-29S	720.01	722.39	4.00	718.39	ND
MW-30S	724.5	727.19	4.31	722.88	ND
MW-31S	723.8	726.35	1.75	724.60	· ND
MW-32S	719.6	722.62	5.3	717.32	ND
MW-33S	719.1	721.69	4.67	717.02	ND
MW-34S	718.6	721.42	4.79	716.63	TRACE
MW-35S	718.9	721.54	4.24	717.30	ND
MW-36S	720.2	723.09	3.08	720.01	ND
MW-37S	720.5	723.13	5.87	717.26	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 measured due to well casing damage.

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

ND = Not detected.

Depth to groundwater was measured on 20 March 2002.

# Groundwater Elevation Measurements Treatement Performance Monitoring Wells Moss-American Site Milwaukee, Wisconsin First Quarter 2002

			Antin		Hydraulic		
	Ground	тос	Depth to	GW	Gradient	Groundwater	Product
Well ID	Elevation	Elevation	Water	Elevation	(ft/ft)	Velocity (ft/day)	Thickness
TG1-1	720.05	723.18	5.12	718.06			TRACE
TG1-2	719.80	722.60	4.67	717.93	0.0054	0.0510	ND
TG1-3	719.30	722.35	4.56	717.79		·	ND
TG2-1	720.50	723.60	4.15	719.45			ND
TG2-2	719.90	722.86	4.24	718.62	0.0302	0.2854	ND
TG2-3	719.90	722.35	4.41	717.94			ND
TG3-1	718.40	720.95	3.68	717.27			ND
TG3-2	718.20	720.75	3.16	717.59	-0.0012	-0.0113	ND
TG3-3	717.80	720.30	2.97	717.33			ND
TG4-1	717.60	720.79	3.81	716.98			ND
TG4-2	717.90	720.51	3.29	717.22	-0.0048 -0.0454		ND
TG4-3	717.40	719.93	2.71	717.22			ND
TG5-1	717.60	720.56	3.83	716.73			ND
TG5-2	717.30	720.24	3.28	716.96	0.0102	0.0964	ND
TG5-3	717.00	719.73	3.51	716.22	-		ND
TG6-1	719.20	721.73	4.61	717.12			ND
TG6-2	719.20	721.90	4.52	717.38	-0.0006	-0.0057	ND
TG6-3	719.40	722.32	5.17	717.15			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.

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 18 March 2002.

# Field-Measured Parameters Shallow Groundwater, Intermediate Groundwater, and Containment Performance Monitoring Wells Moss-American Site Milwaukee, Wisconsin First Quarter 2002

Well Number	pH (Standard Units)	Specific Conductance (µmho/cm)	Temperature (°C)	Redox Potential (mV)	Dissolved Oxygen (mg/L)	Turbidity (NTU)
MW-3S	7.51	0.943	6.85	-60.1	0.80	8.58
MW-5S	7.23	0.817	4.93	-69.7	1.38	6.19
MW-6S	7.43	0.633	4.00	35.3	0.10	387
MW-7S	6.89	0.857	8.29	-52.6	0.08	4.73
MW-9S	6.98	0.916	7.15	-22.5	0.09	26.8
MW-10S	7.31	0.740	4.28	-7.7	1.01	2.42
MW-13S	7.30	0.936	2.78	-63.1	1.34	4.22
MW-20S	7.26	1.071	6.81	-42.4	NM	1.25
MW-25S	7.43	0.774	1.36	-63.1	2.93	1.13
MW-26S	7.45	0.930	6.65	-48.7	0.78	2.04
MW-27S	6.84	0.806	7.07	-87.2	0.07	14.0
MW-28S	7.09	1.056	2.83	18.7	0.19	5.6
MW-29S	7.11	0.710	5.66	-26.6	0.21	4.98
MW-30S	7.11	0.808	4.25	-93.1	0.21	2.73
MW-31S	7.38	0.638	4.68	25.3	0.08	11.6
MW-32S	6.76	0.815	7.34	-94.5	0.07	0.96
MW-33S	6.77	0.880	7.95	-80.9	0.81	2.8
MW-34S	NMP	NMP	NMP	NMP	NMP	NMP
MW-35S	6.98	1.044	5.63	-10.8	0.55	17.8
MW-36S	7.26	0.577	5.16	-33.0	0.24	141
MW-37S	7.16	0.786	7.15	-32.5	0.19	4.06
MW-3I	8.27	0.355	8.09	-71.7	0.49	2.36
MW-7I	7.38	0.371	9.23	-34.0	0.06	140
MW-9I	7.67	0.393	6.01	-52.4	0.11	0.90
MW-20I	7.98	0.306	8.91	-58.9	0.07	3.52

# Table 3 (continued)

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

Well Number	pH (Standard Units)	Specific Conductance (µmhos/cm)	Temperature (°C)	Redox Potential (mV)	Dissolved Oxygen (mg/L)	Turbidity (NTU)
TG1-1	6.90	1.059	6.62	-74.5	0.04	3.03
TG1-2	6.89	0.981	7.30	-71.6	0.04	2.54
TG1-3	6.94	1.014	7.00	-63.1	0.05	13.1
TG2-1	6.80	0.720	6.28	-14.1	0.08	4.16
TG2-2	7.14	0.653	6.33	-24.0	0.18	1.88
TG2-3	6.64	1.224	6.05	-40.6	0.11	4.56
TG3-1	6.82	1.034	4.88	-63.7	0.19	7.52
TG3-2	6.81	0.817	4.58	-89.3	0.06	2.73
TG3-3	6.59	1.058	5.04	-51.6	0.06	7.15
TG4-1	6.89	0.714	5.53	-73.3	0.05	3.08
TG4-2	7.10	0.734	5.91	-71.9	0.06	1.48
TG4-3	6.99	0.711	6.18	-60.2	0.05	3.13
TG5-1	7.08	0.722	5.86	-75.8	0.20	4.57
TG5-2	7.12	0.721	5.25	-73.5	0.23	5.79
TG5-3	7.17	0.687	7.06	-35.8	0.11	24.2
TG6-1	6.78	1.106	6.00	-173.0	0.26	6.43
TG6-2	6.98	1.189	6.63	-109.3	0.08	3.47
TG6-3	6.72	1.152	6.53	-87.2	0.06	4.2

S - Shallow well.

NM - Not measured due to well casing damage.

NMP - Not measured due to presence of trace free product.

TW - Temporary well (shallow).

TG – Treatment gate performance monitoring well.

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

Sample ID:	MW-3S-220302-01	MW-5S-210302-09	MW-6S-210302-01	MW-7S-200302-04	WDND		
Sample Matrix:	Groundwater	Groundwater	Groundwater	Groundwater	DAT	WDNR	
Sample Date:	3/22/2002	3/21/2002	3/21/2002	3/20/2002	ral,	ES, ug/L	
Units of Measure:	ug/L	ug/L	ug/L	ug/L	ug/L		
Parameters							
VOCs							
Benzene	0.2 U	0.2 U	0.2 U	3.6 J	0.5	5	
Toluene	0.2 U	0.2 U	0.2 U	2 U	68.6	343	
Ethylbenzene	0.2 U	0.2 U	0.2 U	12	140	700	
Total Xylenes	0.6 U	0.6 U	0.6 U	36	124	620	
PAHs							
Naphthalene	1 U	1 U	1 U	2100 J	8.0	40	
Acenaphthalyene	0.8 UJ	0.8 UJ	0.8 UJ	0.8 UJ	NA	NA	
Acenaphthene	0.8 U	0.8 U	0.8 U	58 J	NA	NA	
Fluorene	0.2 U	0.2 U	0.2 U	8 J	80	400	
Phenanthrene	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	600	3,000	
Fluoranthene	0.04 U	0.04 U	0.04 U	0.04 U	80	400	
Pyrene	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	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 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	0.1 U	0.1 U	0.1 U	0.1 U	NA	NA	
Indeno(1,2,3-cd)pyrene	0.08 U	0.08 U	0.08 U	0.08 U	NA	NA	

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#### Table 4 (continued)

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

Sample ID:	MW-9S-210302-04	MW-10S-210302-06	MW-13S-210302-07	MW-20S-200302-01	MW-25S-210302-08	MW-26S-040902-01	WOND	
Sample Matrix:	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	DAI	WDNR
Sample Date:	3/21/2002	3/21/2002	3/21/2002	3/20/2002	3/21/2002	4/9/2002	PAL,	ES, ug/L
Units of Measure:	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	
Parameters								
VOCs								
Benzene	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.5	5
Toluene	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	68.6	343
Ethylbenzene	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	140	700
Total Xylenes	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	124	620
PAHs								
Naphthalene	1 U	1 U	- 1 U	1 U	1 U	0.9 U	8.0	40
Acenaphthalyene	0.8 UJ	0.8 UJ	0.8 UJ	0.8 UJ	0.8 UJ	0.8 U	NA	NA
Acenaphthene	0.8 U	0.8 U	0.8 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	0.08 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	0.2 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	0.08 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	0.1 U	0.1 U	0.1 U	0.1 U	0.1 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

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

Sample ID:	MW-27S-190302-10	MW-28S-210302-02	MW-29S-200302-07	WDND	
Sample Matrix:	Groundwater	Groundwater	Groundwater		WDNR
Sample Date:	3/19/2002	3/21/2002	3/20/2002	rAL,	ES, ug/L
Units of Measure:	ug/L	ug/L	ug/L	ug/L	
Parameters					
VOCs					
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
PAHs					
Naphthalene	1 U	1.00 U	0.9 U	8.0	40
Acenaphthalyene	0.8 UJ	0.90 UJ	0.8 UJ	NA	NA
Acenaphthene	0.8 U	0.90 U	0.8 U	NA	NA
Fluorene	0.2 U	0.20 U	0.2 U	80	400
Phenanthrene	0.08 U	0.09 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	0.20 U	0.2 U	50	250
Benzo(a)anthracene	0.02 U	0.02 U	0.02 U	NA	NA
Chrysene	0.08 U	0.09 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	0.02 U	NA	NA
Benzo(a)pyrene	0.02 U	0.02 U	0.02 Ū	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	0.10 U	0.09 U	NA	NA
Indeno(1,2,3-cd)pyrene	0.08 U	0.09 U	0.08 U	NA	NA

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

Sample ID:	MW-30S-210302-10	MW-31S-210302-03	MW-32S-190302-11	MW-33S-190302-12	MW-34S-200302-03	MW-35S-200302-65	MW-36S-200302-08	MW-37S-200302-09	WIDNID	
Sample Matrix:	Groundwater	DAT	WDNR							
Sample Date:	3/21/2002	3/21/2002	3/19/2002	3/19/2002	3/20/2002	3/20/2002	3/20/2002	3/20/2002	FAL,	ES, ug/L
Units of Measure:	ug/L	ug/L								
Parameters			······			······				
VOCs									<b>i</b>	
Benzene	0.2 U	0.2 U	0.2 U	1 U	8.9 J	0.2 U	0.2 U	0.2 U	0.5	5
Toluene	0.2 U	0.2 U	0.2 U	1 U	2.1 J	0.2 U	0.2 U	<u>0.2</u> U	68.6	343
Ethylbenzene	0.2 U	0.2 U	0.2 U	8.3	23	0.2 U	0.2 U	0.2 U	140	700
Total Xylenes	0.6 U	0.6 U	0.6 U	22	74	0.6 U	0.6 U	0.6 U	124	620
PAHs										
Naphthalene	1 U	1 U	10	2000	5400	1 U	10	1 U	8.0	40
Acenaphthylene	0.8 UJ	0.9 UJ	0.8 UJ	NA	NA					
Acenaphthene	0.8 U	<u>0.9 U</u>	0.8 U	110	180	0.8 U	0.8 U	0.8 U	NA	NA
Fluorene	0.2 U	0.2 U	0.2 U	33	80	0.2 U	0.2 U	0.2 U	80	400
Phenanthrene	0.08 U	0.09 U	0.08 U	2	85	0.1 J	0.08 U	0.08 U	NA	NA
Anthracene	0.04 U	0.04 U	0.04 U	0.04 U	8	0.2 J	0.04 U	0.04 U	600	3,000
Fluoranthene	0.04 U	0.04 U	0.04 U	0.04 U	9	0.6	0.04 U	0.04 U	80	400
Pyrene	0.2 U	0.2 U	0.2 U	0.2 U	77	0.4 J	0.2 U	0.2 U	50	250
Benzo(a)anthracene	0.02 U	0.02 U	0.02 U	0.02 U	0.6	0.03 J	0.02 U	0.02 U	NA	NA
Chrysene	0.08 U	0.09 U	0.08 U	0.08 U	0.5	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	0.2 J	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	0.09 J	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	0.2	0.02 U	0.02 U	0.02 U	0.02	0.2
Dibenzo(a,h)anthracene	0.04 U	NA	NA							
Benzo(g,h,i)perylene	0.1 U	NA	NA							
Indeno(1,2,3-cd)pyrene	0.08 U	0.09 U	0.08 U	0.08 U	0.08 J	0.08 U	0.08 U	0.08 U	NA	NA

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

Sample ID:	TG1-1-191302-04	TG1-2-190302-05	TG1-3-190302-06	TG2-1-190302-01	TG2-2-190302-02	TG2-3-190302-03	WDND	
Sample Matrix:	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	DAT	WDNR
Sample Date:	3/19/2002	3/19/2002	3/19/2002	3/19/2002	3/19/2002	3/19/2002	rAL,	ES, ug/L
Units of Measure:	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	
Parameters								
VOCs								
Benzene	4.3 J	0.2	0.2 U	0.2 U	0.2 U	0.2 U	0.5	5
Toluene	1.4 J	0.2	0.2 U	0.2 U	0.2 U	0.2 U	68.6	343
Ethylbenzene	24	0.32 J	0.2 U	0.2 U	0.2 U	0.2 U	140	700
Total Xylenes	37	0.6 U	124	620				
PAHs								
Naphthalene	2400 J	0.9 U	0.9 U	<u>1</u> U	1 U	1 U	8.0	40
Acenaphthylene	50 J	0.8 UJ	0.8 UJ	0.9 UJ	0.8 UJ	0.8 UJ	NA	NA
Acenaphthene	420 J	0.8 U	0.8 U	0.9 U	0.8 U	0.8 U	NA.	NA
Fluorene	270 J	0.2 U	80	400				
Phenanthrene	640 J	0.08 U	0.08 U	0.09 U	0.08 U	0.08 J	NA	NA
Anthracene	90 J	0.04 U	600	3,000				
Fluoranthene	280 J	0.07 J	0.07 J	0.04 U	0.04 U	0.04 U	80	400
Pyrene	<u>280 J</u>	• 0.2 J	0.2 U	0.2 U	0.2 U	0.2 U	50	250
Benzo(a)anthracene	54 J	0.02 J	0.02 U	0.02 U	0.02 U	0.02 U	NA	NA
Chrysene	42 J	0.08 U	0.08 U	0.09 U	0.08 U	0.08 U	0.02	0.2
Benzo(b)fluoranthene	20 J	0.04 U	0.02	0.2				
Benzo(k)fluoranthene	12 J	0.02 U	NA	NA				
Benzo(a)pyrene	23 J	0.02 U	0.03 J	0.02 U	0.02 U	0.02 U	0.02	0.2
Dibenzo(a,h)anthracene	0.2 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	NA	NA
Benzo(g,h,i)perylene	11 J	0.09 U	0.09 U	0.1 U	0.1 U	0.1 U	NA	NA
Indeno(1,2,3-cd)pyrene	10 J	0.08 U	0.08 U	0.09 U	0.08 U	0.08 U	NA	NA

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

Sample ID:	TG3-1-180302-07	TG3-2-180302-08	TG3-3-180302-09	TG4-1-190302-07	TG4-2-190302-08	TG4-3-190302-09	WDND	
Sample Matrix:	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	DAI	WDNR
Sample Date:	3/18/2002	3/18/2002	3/18/2002	3/19/2002	3/19/2002	3/19/2002	rAL,	ES, ug/L
Units of Measure:	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	
Parameters								
VOCs								
Benzene	0.2 U	0.5	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	140	700					
Total Xylenes	0.6 U	124	620					
PAHs								
Naphthalene	1 U	1 U	1 U	0.9 U	0.9 U	0.9 U	8.0	40
Acenaphthylene	0.8 UJ	0.8 UJ	0.9 UJ	0.8 UJ	0.8 UJ	0.8 UJ	NA	NA
Acenaphthene	0.8 U	0.8 U	0.9 U	0.8 U	0.8 U	0.8 U	NA	NA
Fluorene	0.4 J	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	0.1 J	0.04 U	0.06 J	0.04 U	0.04 U	0.04 U	600	3,000
Fluoranthene	0.07 J	0.04 U	0.05 J	0.04 U	0.04 U	0.07 J	80	400
Pyrene	0.2 U	50	250					
Benzo(a)anthracene	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	0.02	0.2					
Benzo(k)fluoranthene	0.02 U	NA	NA					
Benzo(a)pyrene	0.02 U	0.03 J	0.02	0.2				
Dibenzo(a,h)anthracene	0.04 U	NA	NA					
Benzo(g,h,i)perylene	0.1 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	0.09 U	0.08 U	0.08 U	0.08 U	NA	NA

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

Sample ID:	TG5-1-180302-04	TG5-2-180302-05	TG5-3-180302-06	TG6-1-180302-01	TG6-2-190302-02	TG6-3-190302-03	WDND	
Sample Matrix:	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	DAT	WDNR
Sample Date:	3/18/2002	3/18/2002	3/18/2002	3/18/2002	3/18/2002	3/18/2002	rat,	ES, ug/L
Units of Measure:	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	
Parameters					······································			
VOCs		· · · · · · · · · · · · · · · · · · ·						
Benzene	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.5	5
Toluene	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	68.6	343
Ethylbenzene	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	140	700
Total Xylenes	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	124	620
PAHs								
Naphthalene	1 .U	1 U	1 U	1 U	1 U	0.9 U	8.0	40
Acenaphthylene	0.8 UJ	0.8 UJ	0.9 UJ	0.9 UJ	0.8 UJ	0.8 UJ	NA	NA
Acenaphthene	0.8 U	0.8 U	0.9 U	0.9 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	0.09 U	0.08 U	0.08 U	NA	NA
Anthracene	0.04 U	0.04 U	0.04 U	0.07 J	0.08 J	0.04 J	600	3,000
Fluoranthene	0.04 U	0.04 U	0.05 J	0.06 J	0.1 J	0.05 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	0.05 J	0.02 U	0.02 U	NA	NA
Chrysene	0.08 U	0.08 U	0.09 U	0.09 U	0.08 U	0.08 U	0.02	0.2
Benzo(b)fluoranthene	0.04 U	0.04 U	0.09 U	0.05 J	0.02 U	0.04 U	0.02	0.2
Benzo(k)fluoranthene	0.02 U	0.02 U	0.02 U	0.06 J	0.02 U	0.02 U	NA	NA
Benzo(a)pyrene	0.02 U	0.02 U	0.02 U	0.05 J	0.02 U	0.02 U	0.02	0.2
Dibenzo(a,h)anthracene	0.04 U	0.04 U	0.04 U	0.08 J	0.04 U	0.04 U	NA	NA
Benzo(g,h,i)perylene	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.09 U	NA	NA
Indeno(1,2,3-cd)pyrene	0.08 U	0.08 U	0.09 U	0.09 U	0.08 U	0.08 U	NA	NA

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# Groundwater Sample Analytical Results Intermediate Groundwater Monitoring Well Samples Moss-American Site Milwaukee, Wisconsin First Quarter 2002

Sample ID:	MW-3I-220302-02	MW-71-200302-05	MW-9I-210302-05	MW-20I-200302-02	WDND	
Sample Matrix:	Groundwater	Groundwater	Groundwater	Groundwater		WDNR
Sample Date:	3/22/2002	3/20/2002	3/21/2002	3/20/2002	PAL,	ES, ug/L
Units of Measure:	ug/L	ug/L	ug/L	ug/L	ug/L	
Parameters						
VOCs						
Benzene	0.2 U	0.2 U	0.2 U	0.2 U	0.5	5
Toluene	0.2 U	0.2 U	0.2 U	0.2 UJ	68.6	343
Ethylbenzene	0.2 U	0.2 U	0.2 U	0.2 U	140	700
Total Xylenes	0.6 U	0.6 U	0.6 U	0.6 U	124	620
PAHs						
Naphthalene	1.00 U	1.00 U	1.00 U	1.00 U	8.0	40
Acenaphthylene	0.80 UJ	0.90 UJ	0.80 UJ	1.00 UJ	NA	NA
Acenaphthene	0.80 U	0.90 U	0.80 U	1.00 U	NA	NA .
Fluorene	0.20 U	0.20 U	0.20 U	0.20 U	80	400
Phenanthrene	0.08 U	0.09 U	0.08 U	0.10 U	NA	NA
Anthracene	0.040 U	0.04 U	0.04 U	0.05 U	600	3,000
Fluoranthene	0.04 U	0.04 U	0.04 U	0.05 U	80	400
Pyrene	0.20 U	0.20 U	0.20 U	0.20 U	50	250
Benzo(a)anthracene	0.02 U	0.04 U	0.02 U	0.02 U	NA	NA
Chrysene	0.080 U	0.09 U	0.08 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	0.02 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	0.05 U	NA	NA
Benzo(g,h,i)perylene	0.1 U	0.10 U	0.10 U	0.10 U	NA	NA
Indeno(1,2,3-cd)pyrene	0.08 U	0.09 U	0.08 U	0.10 U	NA	NA

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

Sample ID:	MW-33S-190302-DUP	MW-7S-200302-04-DUP	MW-29S-200302-07-DUP	MW-13S-210302-07-DUP	MW-28S-210302-DUP	WDND	
Sample Matrix:	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	DAT	WDNR
Sample Date:	3/19/2002	3/20/2002	3/20/2002	3/21/2002	3/21/2002	ral,	ES, ug/L
Units of Measure:	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	
Parameters							
VOCs							•
Benzene	1 U	3.3 J	0.2 U	0.2 U	0.2 U	0.5	5
Toluene	1 U	<u>2 U</u>	0.2 U	0.2 U	0.2 U	68.6	343
Ethylbenzene	7.2	12	0.2 U	0.2 U	0.2 U	140	700
Total Xylenes	19	34	0.6 U	0.6 U	0.6 U	124	620
PAHs							
Naphthalene	2200	1200 J	1 U	1 Ŭ	1 U	8.0	40
Acenaphthalyene	43 UJ	0.9 UJ	0.8 UJ	0.8 UJ	0.9 UJ	NA	NA
Acenaphthene	130	56 J	0.8 U	0.8 U	0.9 U	NA	NA
Fluorene	37	8 J	0.2 U	0.2 U	0.2 U	80	400
Phenanthrene	2	0.09 U	0.08 U	0.08 U	0.09 U	NA	NA
Anthracene	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	80	400
Pyrene	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	NA	NA
Chrysene	0.08 U	0.09 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	0.04 U	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	0.02 U	0.02	0.2
Dibenzo(a,h)anthracene	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	NA	NA
Benzo(g,h,I)perylene	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	NA	NA
Indeno(1,2,3-cd)pyrene	0.08 U	0.09 U	0.08 U	0.08 U	0.09 U	NA	NA

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

Sample ID:	MW-09S-210302-04-MS	MW-09S-210302-04-MSD	MW-30S-210302-10-MS	MW-30S-210302-10-MSD	MW-32S-190302-11-MS	MW-32S-190302-11-MSD	WDND	
Sample Matrix:	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater		WDNR
Sample Date:	3/21/2002	3/21/2002	3/21/2002	3/21/2002	3/19/2002	3/19/2002	rAL,	ES, ug/L
Units of Measure:	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	
Parameters								
VOCs							•	
Benzene	22	23	22	21	21	22	0.5	5
Toluene	22	23	22	22	21	22	68.6	343
Ethylbenzene	22	23	22	22	21	22	140	700
Total Xylenes	67	69	68	65	65	66	124	620
PAHs								
Naphthalene	170	160	170	170	150	160	8.0	40
Acenaphthylene	180	180	190	180	170	180	NA	NA
Acenaphthene	190	180	180	180	170	180	NA	NA
Fluorene	19	18	18	17	17	18	. 80	400
Phenanthrene	6	6	6	5	6	6	NA	NA
Anthracene	3	3	3	3	3	3	600	3,000
Fluoranthene	3	3	3	3	3	3	80	400
Pyrene	20	19	19	19	20	21	50	250
Benzo(a)anthracene	2	1	1	1	1	2	NA	NA
Chrysene	6	6	6	6	6	6	0.02	0.2
Benzo(b)fluoranthene	1	1	1	1	1	1	0.02	0.2
Benzo(k)fluoranthene	1	1	1	1	1	1	NA	NA
Benzo(a)pyrene	2	2	1	1	1	2	0.02	0.2
Dibenzo(a,h)anthracene	3	3	3	3	3	3	NA	NA
Benzo(g,h,i)perylene	12	12	12	12	11	12	NA	NA
Indeno(1,2,3-cd)pyrene	6	6	6	6	6	6	NA	NA

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

Sample ID:	FB-01	FB-02	FB-03	FB-04	FB-05	WOND	
Sample Matrix:	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater		WDNR
Sample Date:	3/19/2002	3/20/2002	3/21/2002	3/21/2002	3/22/2002	ral,	ES, ug/L
Units of Measure:	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	
Parameters							
VOCs							
Benzene	0.2 U	0.2 U	NM	0.2 U	0.2 U	0.5	5
Toluene	0.2 U	0.2 U	NM	0.2 U	0.2 U	68.6	343
Ethylbenzene	0.2 U	0.2 U	NM	0.2 U	0.2 U	140	700
Total Xylenes	0.6 U	0.6 U	NM	0.6 U	0.6 U	124	620
PAHs							
Naphthalene	1 U	1 U	0.9 U	1 U	0.9 U	8.0	40
Acenaphthalyene	0.8 UJ	0.8 UJ	0.8 UJ	0.8 UJ	0.8 UJ	NA	NA
Acenaphthene	0.8 U	0.8 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	80	400
Phenanthrene	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U	NA	NA
Anthracene	0.04 U	0.04 U	<u>0.04 U</u>	0.04 U	0.04 U	600	3,000
Fluoranthene	0.04 U	0.04 U	<u>0</u> .04 U	0.04 U	0.04 U	80	400
Pyrene	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	<u>0.02 U</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	0.02	0.2
Benzo(b)fluoranthene	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	NA	NA
Benzo(a)pyrene	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	NA	NA
Benzo(g,h,i)perylene	0.1 U	0.1 U	0.09 U	0.1 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	NA	NA

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

U - Constituent not detected. Detection limit indicated.

J - Estimated concentration.

VOC - Volatile Organic Compound.

PAH - Polynuclear Aromatic Hydrocarbon.

PAL - Wisconsin Department of Natural Resources (WDNR) Preventative Action Limit.

ES - Enforcement Standard (WDNR).

NA - Not Applicable. PAL or ES not available for this parameter.

NM - Not measured.

Bold values indicate concentration exceeding PAL.

Bold and shaded values indicate concentration exceeding PAL and ES.

#### Table 5

# Concentration Trends in Groundwater Monitoring Wells Second Quarter 1999 through First Quarter 2002 Moss-American Site Milwaukee, Wisconsin

	MW-4S <sup>1</sup>	MW-7S	TW-05 <sup>3</sup>	$MW-32S^2$	MW-33S <sup>2</sup>	MW-34S <sup>2</sup>	MW-35S <sup>2</sup>	TG1-1 <sup>2</sup>
Benzene (ug/L)								
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
Fourth Quarter (December '01)		7.70 J		0.20 U	1.00 U	6.10 J	0.20 U	5.70 ·
First Quarter (March '02)		3.6 J		0.20 U	1.00 U	8.9 J	0.20 U	4.3 J
Naphthalene (ug/L)								
Second Quarter (June '99)	940	6,400	. 3.90 J					
Third Quarter (September '99)	418 J	0.80 U	7.90 J					<b></b>
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	40.70	1,920	5,980	42.70	
Third Quarter (September '00)	810	3,960	15.30 J	59.30	2,220	5,720	0.78 U	475
Fourth Quarter (December '00)	720	3,470	10.00 J	1.25 J	1,760	5,050	0.94 J	3,300
First Quarter (March '01)	830	3,800	8.60 J	0.78 U	2,900	5,900	2.36 J	1,890
Second Quarter (June '01)		3,200	8.00 J	0.80 U	2,900	5,700	1.00 J	2,200
Third Quarter (September '01)		3,700	22.00	1.00 U	2,600	6,200	1.00 J	2,400
Fourth Quarter (December '01)		3,300		1.00 U	2,100	6,700	1.00 U	2,600
First Quarter (March '02)		2,100		1.00 U	2,200	5,400	1.00 U	2,400

#### Concentration Trends in Groundwater Monitoring Wells Second Quarter 1999 through First Quarter 2002 Moss-American Site Milwaukee, Wisconsin

	MW-4S <sup>1</sup>	MW-7S	TW-05 <sup>3</sup>	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>
Fluorene (ug/L)								
Second Quarter (June '99)	547	36.5	79.6					(
Third Quarter (September '99)	651	39.2	136.0					
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)		8.5	56.0	0.20 U	27.0	80.0	0.20 U	59.0
Third Quarter (September '01)		11.0	60.0	0.20 U	34.0	120.0	0.20 U	410
Fourth Quarter (December '01)		11.0		0.20 U	32.0	320.0	0.20 U	80
First Quarter (March '02)		8.0		0.20 U	37.0	80.0	0.20 U	270
Benzo(a) pyrene (ug/L)								
Second Quarter (June '99)	35.10	0.12 U	1.420					
Third Quarter (September '99)	40.50	0.022 U	4.330					
Fourth Quarter (December '99)	9.70	0.21 U	1.490					
First Quarter (March '00)	8.40	0.21 U	1.440					
Second Quarter (June '00)	1.70 J	0.021 U	0.361	0.02 U	0.02 U	2.00 U	0.162	
Third Quarter (September '00)	6.70 J	0.019 U	0.890	0.02 U	0.02 U	0.10	0.153	0.052
Fourth Quarter (December '00)	0.051 J	0.02 U	0.096 U	0.021 U	0.02 U	0.031 J	0.138	0.19 U
First Quarter (March '01)	1.00 U	0.19 U	0.110 U	0.019 U	0.20 U	0.23 U	0.023 U	0.39U
Second Quarter (June '01)		0.02 U	0.020 U	0.02	0.02 U	0.030 J	0.020 U	0.05 J
Third Quarter (September '01)		0.02 U	0.020 J	0.02 U	0.02 U	3.00	0.020 J	33.0
Fourth Quarter (December '01)		0.02 U		0.02 U	0.02 U	19.00	0.030 J	0.050 J
First Quarter (March '02)		0.02 U		0.02 U	0.02 U	0.20	0.020 U	23

--- - No data available.

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

J - Estimated concentration.

ug/L - Micrograms per liter.

1 - MW-4S was removed during Q2 2001 to prepare for excavation of soils surrounding the well.

2 - Additional wells (MW-32S, MW-33S, MW-34S, MW-35S, and TG1-1) installed after March 2000.

3 - TW-05 was removed during Q4 2001 to prepare for excavation of soils surrounding the well.

I\WO\MOSSAMER\31595 T-5.XLS

# Table 6

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

				Samp	ole Identific	ation				
Parameter (mg/L)		TG1-1			TG1-2			TG1-3		
	January	February	March	January	February	March	January	February	March	
Kjeldahl Nitrogen	0.8 J	1.3	1.1	1.1 J	1.3	1.1	0.85 J	2.5	0.84 J	
Nitrite Nitrogen	0.015 U	0.015 U	0.015 UJ	0.015 U	0.015 U	0.015 UJ	0.015 U	0.015 U	0.015 UJ	
Nitrate Nitrogen	0.17	0.040 U	0.040 U	0.14	0.040 U	0.040 U	0.040 U	0.040 U	0.040 U	
Ammonia Nitrogen	0.83 J	0.63 J	1.2	0.89 J	0.82 J	0.92 J	0.65 J	0.53 J	0.71 J	
Ortho-Phosphate as P	0.02	0.027	0.0066 UJ	0.013 J	0.025	0.0066 UJ	0.016 J	0.0066 U	0.0066 UJ	
Biochemical Oxygen Demand (BOD)	NA	NA	8.2 J	NA	NA	4.8 J	NA	NA	5.0 UJ	
Total Organic Carbon (non-purgable)	NA	NA	13.7	NA	NA	12.3	NA	NA	8.9	
Total Phosphorous as PO4	0.12 U	0.2	0.2	0.12 J	0.31	0.33	0.16 J	0.18 J	0.34	
Chemical Oxygen Demand (COD)	NA	NA	57	NA	NA	31.9	NA	NA	25.5	
Total Microbial Population (mean)	3.30E+03	5.90E+03	5.60E+03	6.60E+02	7.90E+03	4.20E+02	4.60E+03	6.70E+03	4.40E+02	
Degrader Microbial Population (mean)	8.40E+02	8.30E+02	2.00E+02	1.10E+02	2.80E+02	5.00E+01	3.90E+02	5.90E+02	3.00E+01	
		TG2-1			TG2-2			TG2-3	-3	
	January	February	March	January	February	March	January	February	March	
Kjeldahl Nitrogen	0.30 U	0.65 J	0.30 U	0.6 J	0.68 J	0.41 J	0.82 J	1.5	0.89 J	
Nitrite Nitrogen	0.015 U	0.015 U	0.015 UJ	0.015 U	0.015 U	0.015 UJ	0.016 J	0.018 J	0.015 J	
Nitrate Nitrogen	0.040 U	0.040 U	0.040 U	0.040 U	0.040 U	0.040 U	0.040 U	0.054 J	0.040 U	
Ammonia Nitrogen	0.46 U	0.46 U	0.46 U	0.53 J	0.46 U	0.46 U	0.59 J	0.82 J	1.1	
Ortho-Phosphate as P	0.0197 J	0.0066 U	0.0066 UJ	0.009 J	0.0066 U	0.0096 J	0.015 J	0.0066 U	0.0101 J	
Biochemical Oxygen Demand (BOD)	NA	NA	3.0 UJ	NA	NA	5.2 UJ	NA	NA	5.6 J	
Total Organic Carbon (non-purgable)	NA	NA	1.95 U	NA	NA	2.1 U	NA	NA	11.6	
Total Phosphorous as PO4	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.22	0.12 J	0.2	0.28	
Chemical Oxygen Demand (COD)	NA	NA	5.2 J	NA	NA	6.4 J	NA	NA	17.5	
Total Microbial Population (mean)	4.50E+02	7.10E+03	6.50E+03	4.60E+02	4.50E+02	5.40E+02	6.00E+02	3.10E+03	9.10E+02	
Degrader Microbial Population (mean)	2.10E+02	7.50E+02	3.00E+02	5.60E+02	6.00E+01	2.00E+01	2.90E+02	6.20E+02	2.00E+01	

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

		Sample Identification								
Parameter (mg/L)		TG3-1			TG3-2			TG3-3		
	January	February	March	January	February	March	January	February	March	
Kjeldahl Nitrogen	0.87 J	1.2	1.3	1.24 J	1.3	1.1	1.54 J	1.2	1.3	
Nitrite Nitrogen	0.015 U	0.015 U	0.015 U	0.028 J	0.018 J	0.022 J	0.037 J	0.022 J	0.035 J	
Nitrate Nitrogen	0.27	0.040 U	0.040 U	0.13	0.040 U	0.040 U	0.13	0.040 U	0.040 U	
Ammonia Nitrogen	0.77 J	0.88 J	1.3 J	0.92 J	0.97 J	<u>1.2</u> J	· 1	1 J	1.3 J	
Ortho-Phosphate as P	0.017 J	0.0066 U	0.0066 U	0.0028 U	0.0066 U	0.0066 U	0.012 J	0.0066 U	0.009 J	
Biochemical Oxygen Demand (BOD)	NA	NA	3.8 U	NA	NA	9.1	NA	NA	8.2	
Total Organic Carbon (non-purgable)	NA	NA	11	NA	NA	8	NA	NA	11.9	
Total Phosphorous as PO4	0.12 U	0.14 J	0.26	0.17 J	0.2 J	0.28	0.4	0.3	0.43	
Chemical Oxygen Demand (COD)	NA	NA	28.3	NA	NA	23.6	NA	NA	35.3	
Total Microbial Population (mean)	2.10E+04	1.51E+05	1.18E+04	7.10E+02	1.50E+04	2.70E+03	7.30E+02	9.40E+03	1.46E+03	
Degrader Microbial Population (mean)	7.00E+02	4.30E+04	2.00E+02	3.90E+02	7.10E+03	2.50E+03	6.80E+02	6.70E+02	4.00E+01	
		TG4-1			TG4-2			<u>TG4-3</u>		
	January	February	March	January	February	March	January	February	March	
Kjeldahl Nitrogen	NS	0.67 J	0.40 J	1.02 J	1.1	0.97 J	0.89 J	1.3	0.90 J	
Nitrite Nitrogen	NS	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	NS	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	NS	0.53 J	0.55 J	0.89 J	0.76 J	0.97 J	0.89 J	0.82 J	0.92 J	
Ortho-Phosphate as P	NS	0.0066 U	0.0066 UJ	0.025	0.0066 U	0.0066 UJ	0.036	0.0066 U	0.0066 UJ	
Biochemical Oxygen Demand (BOD)	NS	NA	3.3 UJ	NA	NA	4.4 UJ	NA	NA	3.8 UJ	
Total Organic Carbon (non-purgable)	NS	NA	5.4	NA	NA	8.9	NA	NA	5.8	
Total Phosphorous as PO4	NS	0.2 J	0.28	0.12 U	0.12 U	0.24	0.12 U	0.14 J	0.26	
Chemical Oxygen Demand (COD)	NS	NA	15.1	NA	NA	21.5	NA	NA	17.1	
Total Microbial Population (mean)	NS	2.60E+03	1.58E+03	2.30E+03	3.70E+03	6.30E+03	3.90E+03	2.47E+04	1.49E+03	
Degrader Microbial Population (mean)	NS	4.90E+02	4.90E+02	9.10E+02	1.32E+03	6.00E+02	5.70E+02	2.80E+02	4.00E+01	

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

				Samp	le Identific	ation			
Parameter (mg/L)		TG5-1			TG5-2			TG5-3	
	January	February	March	January	February	March	January	February	March
Kjeldahl Nitrogen	0.45 J	0.55 J	0.49 J	0.60 U	0.67 J	0.48 J	0.60 U	0.58 J	0.47 J
Nitrite Nitrogen	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				
Ammonia Nitrogen	0.46 U	0.55 J	0.46 U	0.46 U	0.8 J				
Ortho-Phosphate as P	0.007 J	0.013 J	0.0066 U	0.0028 U	0.0096 J	0.0066 U	0.008 J	0.013 J	0.0066 U
Biochemical Oxygen Demand (BOD)	NA	NA	2.6 U	NA	NA	2.9 U	NA	NA	2.7 U
Total Organic Carbon (non-purgable)	NA	NA	5.6	NA	NA	5.2	NA	NA	5
Total Phosphorous as PO4	0.12 U	0.12 J	0.19 J	0.12 U	0.12 J	0.2	0.12 U	0.12 U	0.16 J
Chemical Oxygen Demand (COD)	NA	NA	13.2	NA	NA	20.2	NA	NA	10.7
Total Microbial Population (mean)	6.40E+02	9.40E+02	7.00E+03	5.50E+02	7.50E+02	1.47E+03	1.00E+03	1.05E+03	7.90E+03
Degrader Microbial Population (mean)	1.20E+02	5.80E+02	2.00E+02	2.80E+02	1.00E+02	2.00E+01	1.40E+02	6.00E+01	1.00E+02
		TG6-1		TG6-2			TG6-3		
	January	February	March	January	February	March	January	February	March
Kjeldahl Nitrogen	1.12 J	1.2	0.96 J	1.15 J	0.99 J	0.59 J	0.75 J	1.3	0.95 J
Nitrite Nitrogen	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				
Ammonia Nitrogen	0.56 J	1.1	1.4 J	0.46 U	0.46 U	0.5 J	0.46 U	0.53 J	0.84 J
Ortho-Phosphate as P	0.0173 J	0.0066 U	0.034	0.0039 J	0.0066 U	0.0066 U	0.0028 U	0.0066 U	0.0066 U
Biochemical Oxygen Demand (BOD)	NA	NA	2.5 U	NA	NA	2.5 U	NA	NA	2.8 U
Total Organic Carbon (non-purgable)	NA	NA	7.9	NA	NA	10.5	NA	NA	9.9
Total Phosphorous as PO4	0.12 J	0.31	0.27	0.12 U	0.12 U	0.18 J	0.12 U	0.12 U	0.23
Chemical Oxygen Demand (COD)	NA	NA	19.4	NA	NA	25.2	NA	NA	22.9
Total Microbial Population (mean)	6.20E+03	8.70E+03	5.00E+03	1.40E+03	8.90E+02	8.90E+03	5.30E+02	5.50E+03	5.80E+03
Degrader Microbial Population (mean)	3.90E+02	9.30E+02	1.00E+02	6.20E+02	1.60E+02	1.40E+03	1.90E+02	2.90E+02	2.00E+02

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U - Compound not detected. Detection limit indicated.

J - Estimated value.

NA - Not analyzed.

NS - Well not measured due to freezing conditions.

I\WO\MOSSAMER\31595 T-6.XLS

#### Table 7

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

				C-N-P Ratio	
Well	Carbon <sup>1</sup> , mg/L	Total Nitrogen <sup>2</sup> , mg/L	Phosphorous <sup>3</sup> , mg/L	(100-14-1 desired)	
TG1-1	13.7	1.2	ND	100 - 8.8 - 0.0	
TG1-2	12.3	0.92	ND	100 - 7.5 - 0.0	
TG1-3	8.9	0.71	ND	100 - 8.0 - 0.0	
TG2-1	ND	ND	ND	100 - 0.0 - 0.0	
TG2-2	ND	ND	0.0096	100 - 0 - 0.0	
TG2-3	11.6	1.115	0.0101	100 - 9.6 - 0.1	
TG3-1	11	1.3	ND	100 - 11.82 - 0.0	
TG3-2	8	1.22	ND	100 - 15.3 - 0.0	
TG3-3	11.9	1.34	0.009	100 - 11.2 - 0.1	
TG4-1	5.4	ND	ND	100 - 0.0 - 0.0	
TG4-2	8.9	ND	ND	100 - 0.0 - 0	
TG4-3	5.8	ND	ND	100 - 0.0 - 0.0	
TG5-1	5.6	0.00	ND	100 - 0.0 - 0.0	
TG5-2	5.2	0.55	ND	100 - 10.6 - 0.0	
TG5-3	5	0.80	ND	100 - 16.0 - 0.0	
TG6-1	7.9	1.40	0.0340	100 - 17.72 - 0.4	
TG6-2	10.5	0.5	ND	100 - 4.76 - 0.0	
TG6-3	9.9	0.84	ND	100 - 8.5 - 0.0	
Site Average	8.9	0.91	0.016	100 - 10.3 - 0.2	

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 ( $PO_4$ -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, Wisonsin First Quarter 2002

Well		Temperature		Specific	Redox	Dissolved	
Number	Date	(C)	рН	Conductance	Potential	Oxygen	Turbidity
Number		(0)		(micromhos/cm)	(mV)	(mg/L)	(Ntu)
	January-02	4.8	6.98	0.892	-75.5	NMP	NM
TG1-1	February-02	4.6	7.06	1.105	-77.6	NMP	NM
	March-02	6.6	6.90	1.059	-74.5	0.04	3.03
	January-02	5.9	6.87	1.029	-73.7	0.83	NM
TG1-2	February-02	5.1	6.95	1.127	-53.6	0.50	NM
	March-02	7.3	6.89	0.981	-71.6	0.04	2.5
	January-02	6.0	7.06	1.030	-68.6	2.17	NM
TG1-3	February-02	5.3	7.04	1.148	-66.7	0.30	NM
	March-02	7.0	6.94	1.014	-63.1	0.05	13.10
	January-02	6.1	6.89	0.739	-38.3	0.28	NM
TG2-1	February-02	4.7	7.03	0.802	-46.6	0.40	NM
	March-02	6.3	6.80	0.720	-14.1	0.08	4.16
	January-02	6.5	6.95	0.658	-68.2	0.20	NM
TG2-2	February-02	5.4	7.11	0.750	-67.5	0.30	NM
	March-02	6.3	7.14	0.653	-24	0.18	1.88
	January-02	5.7	6.68	1.263	-49.3	0.24	NM
TG2-3	February-02	4.8	6.83	1.242	-54.7	0.30	NM
.020	March-02	6.1	6.64	1.2.12	-40.6	0.11	4.56
	January 02	5.0	6.63	1.156	-53.5	5.94	NM
TG3-1	February-02	47	6 59	0.984	-35.3	7 20	NM
105-1	March 02	4.7	6.87	1.034	-23.2	0.10	7.52
	Innun 02	5.0	6.02	0.959	-03.7	0.19	NIM
TC3 2	Fabruary 02	3.0	6.77	0.838	-92.0	0.50	NIM
1052	March 02	4.0	6.91	0.785	-00.1	0.10	2 72
TC1 1	Intarcti-02	4.0	0.01	0.017	-09.3	0.00	2.75
	January-02	5.0	0.54	1.137	-11.1	0.40	
105-5	February-02	4.7	6.73	1.050	-00.3	0.10	NM
	Watch-02	3.0	0.39	1.038	-31.0	0.06	7.15
TCAL	January-02	2.8	7.20	0.736	-90.3	NA	NM
104-1	February-02	4.2	/.12	0.805	-68.8	NA	NM
	March-02	5.5	6.89	0.714	-73.3	0.05	3.08
TOUR	January-02	5.5	7.08	0.745	-89.1	0.62	NM
164-2	February-02	4.8	7.09	0.822	-70.6	1.20	NM
	March-02	5.9	7.10	0.734	-71.9	0.06	1.48
-	January-02	5.9	7.06	0.752	-86.3	0.75	NM
TG4-3	February-02	4.8	7.10	0.876	-67.7	2.10	NM
	March-02	6.2	6.99	0.711	-60.2	0.05	3.13
<b>m</b> 04.1	January-02	5.4	7.09	0.665	-82.5	0.57	NM
TG5-1	February-02	6.4	7.05	0.714	-60.2	4.10	NM
	March-02	5.9	7.08	0.722	-75.8	0.20	4.57
	January-02	5.2	7.12	0.678	-96.6	0.56	NM
TG5-2	February-02	6.0	7.09	0.653	-68.6	3.60	NM
	March-02	5.3	7.12	0.721	-73.5	0.23	5.8
	January-02	7.4	7.29	0.694	-64.3	0.61	NM
TG5-3	February-02	7.0	7.08	0.653	-44.2	0.10	NM
	March-02	7.1	7.17	0.687	-35.8	0.11	24.2
	January-02	5.2	7.03	0.933	-105.9	0.49	NM
TG6-1	February-02	5.3	6.96	0.975	-55	0.20	NM
	March-02	6.0	6.78	1.106	-173	0.26	6.43
	January-02	6.2	6.78	1.150	-35.7	0.28	NM
TG6-2	February-02	5.5	6.72	1.087	-28.7	0.60	NM
	March-02	6.6	6.98	1.189	-109.3	0.08	3.47
	January-02	5.9	6.66	1.029	-45	0.20	NM
TG6-3	February-02	5.6	6.73	0.987	-27.6	1.30	NM
	March-02	6.5	6.72	1.152	-87.2	0.06	4.20

NA- Not available due to cold temperatures and ice.

NM- Not measured. Value only measured quarterly. NMP- Not measured due to free product observed in well.

# **ATTACHMENT 2**

# JANUARY 2002 GROUNDWATER SAMPLE ANALYTICAL RESULTS

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 795314. Samples arrived at the laboratory on Friday, February 01, 2002.

Client Description	Lancaster Labs Number
MA3-TG6-1-300102-01 Grab Water Sample	3767304
MA3-TG6-2-300102-02 Grab Water Sample	3767305
MA3-TG6-3-300102-03 Grab Water Sample	3767306
MA3-TG5-1-300102-04 Grab Water Sample	3767307
MA3-TG5-2-300102-05 Grab Water Sample	3767308
MA3-TG5-3-300102-06 Grab Water Sample	3767309
MA3-TG4-2-300102-07 Grab Water Sample	3767310
MA3-TG4-3-300102-08 Grab Water Sample	3767311
MA3-TG3-1-310102-01 Grab Water Sample	3767312
MA3-TG3-2-310102-02 Grab Water Sample	3767313
MA3-TG3-3-310102-03 Grab Water Sample	3767314
MA3-TG2-1-310102-04 Grab Water Sample	3767315
MA3-TG2-2-310102-05 Grab Water Sample	3767316
MA3-TG2-3-310102-06 Grab Water Sample	3767317
MA3-TG1-1-310102-07 Grab Water Sample	3767318
MA3-TG1-2-310102-08 Grab Water Sample	3767319
MA3-TG1-3-310102-09 Grab Water Sample	3767320

#### **METHODOLOGY**

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

I COPY TOKerr-McGI COPY TORoy F. WI COPY TOData Pac

Kerr-McGee Corporation Roy F. Weston Data Package Group Attn: Dr. Jeff Ostmeyer Attn: Mr. Tom Graan

Analysis Report





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

2216 Rev. 9/11/00



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

Respectfully Submitted, Robert G. Heisey Sr. Chemist/Coordinator

Analysis Report



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

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Analysis Report



Page 1 of 1

Lancaster Laboratories Sample No. WW 3767304

Collected:01/30/2002 14:35	by BS	Acc	ount Number: 07802
Submitted: 02/01/2002 09:15		Ker	r-McGee Corporation
Reported: 02/12/2002 at 11:55		P.0	. Box 25861
Discard: 03/15/2002		Okl	ahoma City OK 73125
MA3-TG6-1-300102-01 Grab Water	Sample		
Moss American Superfund Site -	Milwaukee, W	I	

36121 SDG#: KMA03-01

				As Received		
CAT			As Received	Method		Dilution
No.	Analysis Name	CAS Number	Result	Detection	Units	Factor
				Limit		•
00217	Kjeldahl Nitrogen	7727-37-9	1.12 J	0.60	mg/l	1
	Due to interferences from the sa	mple matrix, t	he reporting limi	t for		
	the total kjeldahl nitrogen dete	rmination was	increased.			
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	0.56 J	0.46	mg/l	1
	Sufficient sample volume was not	available to	perform a MS/MSD	for this		
	analysis. Therefore, a LCS/LCSD	was performed	to demonstrate pr	ecision and		
	accuracy at a batch level.					
00226	Ortho-Phosphate as P	14265-44-2	0.0173 J	0.0028	mg/l	1
	This sample was analyzed past th	e 48 hour hold	time for orthoph	osphate.		
00345	Total Phosphorus as PO4 water	14265-44-2	0.12 J	0.12	mg/l	1

		Laboratory	Chro	nicle		
CAT		-		Analysis		Dilution
No.	Analysis Name	Method	Trial#	Date and Time	Analyst	Factor
00217	Kjeldahl Nitrogen	EPA 351.2	1	02/06/2002 20:50	Mark A Buckwalter	1
00219	Nitrite Nitrogen	EPA 353.2	1	02/01/2002 13:38	Mark A Buckwalter	1
00220	Nitrate Nitrogen	EPA 353.2	1	02/08/2002 14:58	Venia B McFadden	1
00221	Ammonia Nitrogen	EPA 350.2	1	02/06/2002 07:15	Michele L Graham	1
00226	Ortho-Phosphate as P	EPA 365.3	1	02/02/2002 01:30	Daniel S Smith	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	02/05/2002 15:14	Matthew J Mercer	1
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	02/05/2002 14:53	Venia B McFadden	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	02/04/2002 10:00	Cheryl L Robinson	1



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Lancaster Laboratories Sample No. WW 3767305

Collected:01/30/2002 14:45 by BS

Submitted: 02/01/2002 09:15 Reported: 02/12/2002 at 11:55 Discard: 03/15/2002 MA3-TG6-2-300102-02 Grab Water Sample Moss American Superfund Site - Milwaukee, WI

TG6-2 SDG#: KMA03-02

				As Received		
CAT			As Received	Method		Dilution
No.	Analysis Name	CAS Number	Result	Detection Limit	Units	Factor
00217	Kjeldahl Nitrogen	7727-37-9	1.15 J	0.60	mg/l	1
	Due to interferences from the sa	mple matrix, t	he reporting limi	t for		·
	the total kjeldahl nitrogen dete	rmination was	increased.			
00219	Nitrite Nitrogen	14797-65-0	N.D.	0.015	mg/l	1
00220	Nitrate Nitrogen	14797-55-8	N.D.	0.040	mg/l	1
00221	Ammonia Nitrogen	7664-41-7	N.D.	0.46	mg/l	1
	Sufficient sample volume was not	available to	perform a MS/MSD	for this		
	analysis. Therefore, a LCS/LCSD accuracy at a batch level.	was performed	to demonstrate pr	ecision and		
00226	Ortho-Phosphate as P	14265-44-2	0.0039 J	0.0028	mg/l	1
	This sample was analyzed past th	e 48 hour hold	time for orthoph	osphate.		
00345	Total Phosphorus as PO4 water	14265-44-2	N.D.	0.12	mg/l	1

		Laboratory	Chro	nicle		
CAT				Analysis		Dilution
No.	Analysis Name	Method	Trial#	Date and Time	Analyst	Factor
00217	Kjeldahl Nitrogen	EPA 351.2	1	02/06/2002 20:51	Mark A Buckwalter	1
00219	Nitrite Nitrogen	EPA 353.2	1	02/01/2002 13:40	Mark A Buckwalter	1
00220	Nitrate Nitrogen	EPA 353.2	1	02/08/2002 14:59	Venia B McFadden	1
00221	Ammonia Nitrogen	EPA 350.2	1	02/06/2002 07:15	Michele L Graham	1
00226	Ortho-Phosphate as P	EPA 365.3	1	02/02/2002 01:30	Daniel S Smith	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	02/05/2002 15:20	Matthew J Mercer	1
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	02/05/2002 14:53	Venia B McFadden	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	02/04/2002 10:00	Cheryl L Robinson	1

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Analysis Report

Account Number: 07802

Kerr-McGee Corporation

Oklahoma City OK 73125

P.O. Box 25861

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Analysis Report

Account Number: 07802

Kerr-McGee Corporation

Oklahoma City OK 73125

P.O. Box 25861



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#### Lancaster Laboratories Sample No. WW 3767306

Collected:01/30/2002 14:55 by BS

Submitted: 02/01/2002 09:15 Reported: 02/12/2002 at 11:55 Discard: 03/15/2002 MA3-TG6-3-300102-03 Grab Water Sample Moss American Superfund Site - Milwaukee, WI

TG6-3 SDG#: KMA03-03

				As Received		
CAT			As Received	Method		Dilution
No.	Analysis Name	CAS Number	Result	Detection	Units	Factor
				Limit		•
00217	Kjeldahl Nitrogen	7727-37-9	0.75 J	0.60	mg/l	1
	Due to interferences from the sa	mple matrix, t	he reporting limi	t for		·
	the total kjeldahl nitrogen dete	rmination was	increased.			
00219	Nitrite Nitrogen	14797-65-0	N.D.	0.015	mg/l	1
00220	Nitrate Nitrogen	14797-55-8	N.D.	0.040	mg/l	1
00221	Ammonia Nitrogen	7664-41-7	N.D.	0.46	mg/l	1
	Sufficient sample volume was not	available to	perform a MS/MSD	for this		
	analysis. Therefore, a LCS/LCSD	was performed	to demonstrate pr	ecision and		
	accuracy at a batch level.					
00226	Ortho-Phosphate as P	14265-44-2	N.D.	0.0028	mg/l	1
	This sample was analyzed past th	e 48 hour hold	time for orthoph	osphate.		
00345	Total Phosphorus as PO4 water	14265-44-2	N.D.	0.12	mg/l	1

		Laboratory	Chro	nicle		
CAT		-		Analysis		Dilution
No.	Analysis Name	Method	Trial#	Date and Time	Analyst	Factor
00217	Kjeldahl Nitrogen	EPA 351.2	1	02/06/2002 20:53	Mark A Buckwalter	1
00219	Nitrite Nitrogen	EPA 353.2	1	02/01/2002 13:41	Mark A Buckwalter	1
00220	Nitrate Nitrogen	EPA 353.2	1	02/08/2002 15:03	Venia B McFadden	1
00221	Ammonia Nitrogen	EPA 350.2	1	02/06/2002 07:15	Michele L Graham	1
00226	Ortho-Phosphate as P	EPA 365.3	2	02/06/2002 20:20	Daniel S Smith	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	02/05/2002 15:21	Matthew J Mercer	1
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	02/05/2002 14:53	Venia B McFadden	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	02/04/2002 10:00	Cheryl L Robinson	1



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3767307 Lancaster Laboratories Sample No. WW

Collected:01/30/2002 15:35 by BS

Submitted: 02/01/2002 09:15 Reported: 02/12/2002 at 11:56 Discard: 03/15/2002 MA3-TG5-1-300102-04 Grab Water Sample Moss American Superfund Site - Milwaukee, WI

SDG#: KMA03-04 TG5-1

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				As Received		
CAT			As Received	Method		Dilution
No.	Analysis Name	CAS Number	Result	Detection Limit	Units	Factor
00217	Kjeldahl Nitrogen	7727-37-9	0.45 J	0.30	mg/l	1
00219	Nitrite Nitrogen	14797-65-0	N.D.	0.015	mg/l	1
00220	Nitrate Nitrogen	14797-55-8	N.D.	0.040	mg/l	1
00221	Ammonia Nitrogen	7664-41-7	N.D.	0.46	mg/l	1
	Sufficient sample volume was not	available to	perform a MS/MSD	for this		
	analysis. Therefore, a LCS/LCSD	was performed	to demonstrate pr	ecision and		
	accuracy at a batch level.					
00226	Ortho-Phosphate as P	14265-44-2	0.0073 J	0.0028	mg/l	1
	This sample was analyzed past th	e 48 hour hold	time for orthoph	osphate.		
00345	Total Phosphorus as PO4 water	14265-44-2	N.D.	0.12	mg/l	1

#### Laboratory Chronicle

CAT				Dilution		
No.	Analysis Name	Method	Trial#	Date and Time	Analyst	Facto
00217	Kjeldahl Nitrogen	EPA 351.2	1	02/06/2002 20:54	Mark A Buckwalter	1
00219	Nitrite Nitrogen	EPA 353.2	1	02/01/2002 13:42	Mark A Buckwalter	1
00220	Nitrate Nitrogen	EPA 353.2	1	02/08/2002 15:04	Venia B McFadden	1
00221	Ammonia Nitrogen	EPA 350.2	1	02/06/2002 07:15	Michele L Graham	1
00226	Ortho-Phosphate as P	EPA 365.3	1	02/02/2002 01:30	Daniel S Smith	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	02/05/2002 15:22	Matthew J Mercer	1
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	02/05/2002 14:53	Venia B McFadden	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	02/04/2002 10:00	Cheryl L Robinson	1



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Account Number: 07802

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

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Analysis Report



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Lancaster Laboratories Sample N	lo. WW 3767308	
Collected:01/30/2002 15:45	by BS	Account Number: 07802
Submitted: 02/01/2002 09:15 Reported: 02/12/2002 at 11:56		Kerr-McGee Corporation P.O. Box 25861
Discard: 03/15/2002		Oklahoma City OK 73125
MA3-TG5-2-300102-05 Grab Water	Sample	
Moss American Superfund Site -	Milwaukee, WI	

TG5-2 SDG#: KMA03-05

				As Received		
CAT			As Received	Method		Dilution
No.	Analysis Name	CAS Number	Result	Detection Limit	Units	Factor
00217	Kjeldahl Nitrogen	7727-37-9	N.D.	0.60	mg/l	1
	Due to interferences from the sa	mple matrix, t	he reporting limi	t for		
	the total kjeldahl nitrogen dete	rmination was	increased.			
00219	Nitrite Nitrogen	14797-65-0	N.D.	0.015	mg/l	1
00220	Nitrate Nitrogen	14797-55-8	N.D.	0.040	mg/l	1
00221	Ammonia Nitrogen	7664-41-7	N.D.	0.46	mg/l	1
	Sufficient sample volume was not	available to	perform a MS/MSD	for this		
	analysis. Therefore, a LCS/LCSD accuracy at a batch level.	was performed	to demonstrate pr	ecision and		
00226	Ortho-Phosphate as P This sample was analyzed past th	14265-44-2 e 48 hour hold	N.D.	0.0028	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	N.D.	0.12	mg/l	1

		Laboratory	Chro	nicle		
CAT				Analysis		Dilution
No.	Analysis Name	Method	Trial#	Date and Time	Analyst	Factor
00217	Kjeldahl Nitrogen	EPA 351.2	1	02/06/2002 21:00	Mark A Buckwalter	1
00219	Nitrite Nitrogen	EPA 353.2	1	02/01/2002 13:43	Mark A Buckwalter	1
00220	Nitrate Nitrogen	EPA 353.2	1	02/08/2002 15:06	Venia B McFadden	1
00221	Ammonia Nitrogen	EPA 350.2	1	02/06/2002 07:15	Michele L Graham	1
00226	Ortho-Phosphate as P	EPA 365.3	2	02/06/2002 20:20	Daniel S Smith	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	02/05/2002 15:23	Matthew J Mercer	1
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	02/05/2002 14:53	Venia B McFadden	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	02/04/2002 10:00	Cheryl L Robinson	1



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Lancaster Laboratories Sample No. WW 3767309 Collected:01/30/2002 15:55 by BS Account Number: 07802 Submitted: 02/01/2002 09:15 Kerr-McGee Corporation P.O. Box 25861

Discard: 03/15/2002 MA3-TG5-3-300102-06 Grab Water Sample Moss American Superfund Site - Milwaukee, WI

TG5-3 SDG#: KMA03-06

				As Received		
CAT			As Received	Method		Dilution
No.	Analysis Name	CAS Number	Result	Detection Limit	Units	Factor
00217	Kjeldahl Nitrogen	7727-37-9	N.D.	0.60	mg/l	1
	Due to interferences from the sa	mple matrix, t	he reporting limi	t for		
	the total kjeldahl nitrogen dete	rmination was	increased.			
00219	Nitrite Nitrogen	14797-65-0	N.D.	0.015	mg/l	1
00220	Nitrate Nitrogen	14797-55-8	N.D.	0.040	mg/l	1
00221	Ammonia Nitrogen	7664-41-7	N.D.	0.46	mg/l	1
	Sufficient sample volume was not	available to	perform a MS/MSD	for this		
	analysis. Therefore, a LCS/LCSD accuracy at a batch level.	was performed	to demonstrate pr	ecision and		
00226	Ortho-Phosphate as P	14265-44-2	0.0083 J	0.0028	mg/l	1
	This sample was analyzed past th	e 48 hour hold	time for orthoph	osphate.		
00345	Total Phosphorus as PO4 water	14265-44-2	N.D.	0.12	mg/l	1

		Laboratory	Chro	nicle		
CAT				Analysis		Dilut:
No.	Analysis Name	Method	Trial#	Date and Time	Analyst	Factor
00217	Kjeldahl Nitrogen	EPA 351.2	1	02/06/2002 21:01	Mark A Buckwalter	1
00219	Nitrite Nitrogen	EPA 353.2	1	02/01/2002 13:44	Mark A Buckwalter	1
00220	Nitrate Nitrogen	EPA 353.2	1	02/08/2002 15:07	Venia B McFadden	1
00221	Ammonia Nitrogen	EPA 350.2	1	02/06/2002 07:15	Michele L Graham	1
00226	Ortho-Phosphate as P	EPA 365.3	2	02/06/2002 20:20	Daniel S Smith	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	02/05/2002 15:24	Matthew J Mercer	1
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	02/05/2002 14:53	Venia B McFadden	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	02/04/2002 10:00	Cheryl L Robinson	1



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Analysis Report

Oklahoma City OK 73125

Reported: 02/12/2002 at 11:56

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Analysis Report

Account Number: 07802

Kerr-McGee Corporation

Oklahoma City OK 73125

P.O. Box 25861

Lancaster Laboratories Sample No. 3767310 WW

Collected:01/30/2002 17:20 by BS

Submitted: 02/01/2002 09:15 Reported: 02/12/2002 at 11:56 Discard: 03/15/2002 MA3-TG4-2-300102-07 Grab Water Sample Moss American Superfund Site - Milwaukee, WI

TG4-2 SDG#: KMA03-07

				As Received		
CAT			As Received	Method		Dilution
No.	Analysis Name	CAS Number	Result	Detection	Units	Factor
00217	Kjeldahl Nitrogen	7727-37-9	1.02 J	0.60	mg/l	1
	Due to interferences from the sa	mple matrix, t	he reporting limi	t for		•
	the total kjeldahl nitrogen dete	rmination was	increased.			
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	0.89 J	0.46	mg/l	1
	-Sufficient sample volume was not	available to	perform a MS/MSD	for this		
	analysis. Therefore, a LCS/LCSD accuracy at a batch level.	was performed	to demonstrate pr	ecision and		
00226	Ortho-Phosphate as P	14265-44-2	0.025	0.0028	mg/l	1
	This sample was analyzed past th	e 48 hour hold	time for orthoph	osphate.		
00345	Total Phosphorus as PO4 water	14265-44-2	N.D.	0.12	mg/l	1

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CAT				Analysis				
No.	Analysis Name	Method	Trial#	Date and Time	Analyst	Factor		
00217	Kjeldahl Nitrogen	EPA 351.2	1	02/06/2002 21:03	Mark A Buckwalter	1		
00219	Nitrite Nitrogen	EPA 353.2	1	02/01/2002 13:46	Mark A Buckwalter	1		
00220	Nitrate Nitrogen	EPA 353.2	1	02/08/2002 15:08	Venia B McFadden	1		
00221	Ammonia Nitrogen	EPA 350.2	1	02/06/2002 07:15	Michele L Graham	1		
00226	Ortho-Phosphate as P	EPA 365.3	1	02/02/2002 01:30	Daniel S Smith	1		
00345	Total Phosphorus as PO4 water	EPA 365.1	1	02/05/2002 15:24	Matthew J Mercer	1		
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	02/05/2002 14:53	Venia B McFadden	1		
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	02/04/2002 10:00	Cheryl L Robinson	1		



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Analysis Report

Account Number: 07802

Kerr-McGee Corporation

Oklahoma City OK 73125

P.O. Box 25861

3767311 Lancaster Laboratories Sample No. WW

Collected:01/30/2002 17:30 by BS

Submitted: 02/01/2002 09:15 Reported: 02/12/2002 at 11:56 Discard: 03/15/2002 MA3-TG4-3-300102-08 Grab Water Sample Moss American Superfund Site - Milwaukee, WI

TG4-3 SDG#: KMA03-08

				As Received		
CAT			As Received	Method		Dilution
No.	Analysis Name	CAS Number	Result	Detection Limit	Units	Factor
00217	Kjeldahl Nitrogen	7727-37-9	0.89 J	0.60	mg/l	1
	Due to interferences from the sa	mple matrix, t	he reporting limi	t for		
	the total kjeldahl nitrogen dete	rmination was	increased.			
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	0.89 J	0.46	mg/l	1
	Sufficient sample volume was not	available to	perform a MS/MSD	for this		
	analysis. Therefore, a LCS/LCSD accuracy at a batch level.	was performed	to demonstrate pr	ecision and		
00226	Ortho-Phosphate as P	14265-44-2	0.036	0.0028	mg/l	1
	This sample was analyzed past th	e 48 hour hold	time for orthoph	osphate.		
00345	Total Phosphorus as PO4 water	14265-44-2	N.D.	0.12	mg/l	1

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CAT					Diluti	
No.	Analysis Name	Method	Trial#	Date and Time	Analyst	Factor
00217	Kjeldahl Nitrogen	EPA 351.2	1	02/06/2002 21:04	Mark A Buckwalter	1
00219	Nitrite Nitrogen	EPA 353.2	1	02/01/2002 13:47	Mark A Buckwalter	1
00220	Nitrate Nitrogen	EPA 353.2	1	02/08/2002 15:26	Venia B McFadden	1
00221	Ammonia Nitrogen	EPA 350.2	1	02/06/2002 07:15	Michele L Graham	1
00226	Ortho-Phosphate as P	EPA 365.3	1	02/02/2002 01:30	Daniel S Smith	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	02/05/2002 15:25	Matthew J Mercer	1
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	02/05/2002 14:53	Venia B McFadden	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	02/04/2002 10:00	Cheryl L Robinson	1



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Analysis Report

Account Number: 07802

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Oklahoma City OK 73125

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Lancaster Laboratories Sample No. WW 3767312

Collected:01/31/2002 09:10. by BS

Submitted: 02/01/2002 09:15 Reported: 02/12/2002 at 11:56 Discard: 03/15/2002 MA3-TG3-1-310102-01 Grab Water Sample Moss American Superfund Site - Milwaukee, WI

TG3-1 SDG#: KMA03-09

				As Received		
CAT			As Received	Method		Dilution
No.	Analysis Name	CAS Number	Result	Detection Limit	Units	Factor
00217	Kjeldahl Nitrogen	7727-37-9	0.87 J	0.60	mg/l	1
	Due to interferences from the sa	ample matrix,	the reporting lim	it for		
	the total kjeldahl nitrogen det	ermination was	increased.			
00219	Nitrite Nitrogen	14797-65-0	N.D.	0.015	mg/l	1
00220	Nitrate Nitrogen	14797-55-8	0.27	0.040	mg/l	1
00221	Ammonia Nitrogen	7664-41-7	0.77 J	0.46	mg/l	1
	Sufficient sample volume was not	t available to	perform a MS/MSD	for this		
	analysis. Therefore, a LCS/LCSD	was performed	to demonstrate p	recision and		
	accuracy at a batch level.					
00226	Ortho-Phosphate as P	14265-44-2	0.0173 J	0.0028	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	N.D.	0.12	mg/l	1

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CAT				Analysis		Dilution
No.	Analysis Name	Method	Trial#	Date and Time	Analyst	Factor
00217	Kjeldahl Nitrogen	EPA 351.2	1	02/06/2002 21:05	Mark A Buckwalter	1
00219	Nitrite Nitrogen	EPA 353.2	1	02/01/2002 13:51	Mark A Buckwalter	1
00220	Nitrate Nitrogen	EPA 353.2	1	02/08/2002 15:27	Venia B McFadden	1
00221	Ammonia Nitrogen	EPA 350.2	1	02/06/2002 07:15	Michele L Graham	1
00226	Ortho-Phosphate as P	EPA 365.3	1	02/02/2002 01:30	Daniel S Smith	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	02/05/2002 15:26	Matthew J Mercer	1
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	02/05/2002 14:53	Venia B McFadden	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	02/04/2002 10:00	Cheryl L Robinson	1



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Analysis Report

 Lancaster Laboratories Sample No.
 WW
 3767313

 Collected:01/31/2002 09:20
 by BS
 Account Number: 07802

 Submitted: 02/01/2002 09:15
 Kerr-McGee Corporation

 Reported: 02/12/2002 at 11:56
 P.O. Box 25861

 Discard: 03/15/2002
 Oklahoma City OK 73125

 MA3-TG3-2-310102-02 Grab Water Sample
 State Sample

TG3-2 SDG#: KMA03-10

Moss American Superfund Site - Milwaukee, WI

				As Received		
CAT			As Received	Method		Dilution
No.	Analysis Name	CAS Number	Result	Detection Limit	Units	Factor
00217	Kjeldahl Nitrogen	7727-37-9	1.24 J	0.60	mg/l	1
	Due to interferences from the sa	ample matrix,	the reporting lim	it for		
	the total kjeldahl nitrogen dete	ermination was	increased.			
00219	Nitrite Nitrogen	14797-65-0	0.028 J	0.015	mg/l	1
00220	Nitrate Nitrogen	14797-55-8	0.13	0.040	mg/l	1
00221	Ammonia Nitrogen	7664-41-7	0.92 J	0.46	mg/l	1
	Sufficient sample volume was not	available to	perform a MS/MSD	for this		
	analysis. Therefore, a LCS/LCSD	was performed	to demonstrate p	recision 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 J	0.12	mg/1	1

Laboratory Chronicle

CAT				Diluti		
No.	Analysis Name	Method	Trial#	Date and Time	Analyst	Facto
00217	Kjeldahl Nitrogen	EPA 351.2	1	02/06/2002 21:06	Mark A Buckwalter	1
00219	Nitrite Nitrogen	EPA 353.2	1	02/01/2002 13:52	Mark A Buckwalter	1
00220	Nitrate Nitrogen	EPA 353.2	1	02/08/2002 15:28	Venia B McFadden	1
00221	Ammonia Nitrogen	EPA 350.2	1	02/06/2002 07:15	Michele L Graham	1
00226	Ortho-Phosphate as P	EPA 365.3	1	02/02/2002 01:30	Daniel S Smith	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	02/05/2002 15:31	Matthew J Mercer	1
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	02/05/2002 14:53	Venia B McFadden	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	02/04/2002 10:45	Cheryl L Robinson	1



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Analysis Report

Account Number: 07802

Kerr-McGee Corporation

Oklahoma City OK 73125

P.O. Box 25861

3767314 Lancaster Laboratories Sample No. WW

Collected:01/31/2002 09:30 by BS

Submitted: 02/01/2002 09:15 Reported: 02/12/2002 at 11:56 Discard: 03/15/2002 MA3-TG3-3-310102-03 Grab Water Sample Moss American Superfund Site - Milwaukee, WI

TG3-3 SDG#: KMA03-11

				As Received		
CAT			As Received	Method		Dilution
No.	Analysis Name	CAS Number	Result	Detection Limit	Units	Factor
00217	Kjeldahl Nitrogen	7727-37-9	1.54 J	0.60	mg/l	1
	Due to interferences from the s	ample matrix,	the reporting lim:	it for		
	the total kjeldahl nitrogen det	ermination was	increased.			
00219	Nitrite Nitrogen	14797-65-0	0.037 J	0.015	mg/l	1
00220	Nitrate Nitrogen	14797-55-8	0.13	0.040	mg/l	1
00221	Ammonia Nitrogen	7664-41-7	1.0	0.46	mg/l	1
	Sufficient sample volume was no	t available to	perform a MS/MSD	for this		
	analysis. Therefore, a LCS/LCSD	was performed	to demonstrate p	recision and		
	accuracy at a batch level.					
00226	Ortho-Phosphate as P	14265-44-2	0.0123 J	0.0028	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	0.40	0.12	mg/l	1

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Laboratory	' Chro	nicle

CAT				Analysis		Dilution
No.	Analysis Name	Method	Trial#	Date and Time	Analyst	Factor
00217	Kjeldahl Nitrogen	EPA 351.2	1	02/06/2002 21:08	Mark A Buckwalter	1
00219	Nitrite Nitrogen	EPA 353.2	1	02/01/2002 13:53	Mark A Buckwalter	1
00220	Nitrate Nitrogen	EPA 353.2	1	02/08/2002 15:29	Venia B McFadden	1
00221	Ammonia Nitrogen	EPA 350.2	1	02/06/2002 07:15	Michele L Graham	1
00226	Ortho-Phosphate as P	EPA 365.3	1	02/02/2002 01:30	Daniel S Smith	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	02/05/2002 15:34	Matthew J Mercer	1
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	02/05/2002 14:53	Venia B McFadden	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	02/04/2002 10:45	Cheryl L Robinson	1



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Account Number: 07802

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Oklahoma City OK 73125

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Lancaster Laboratories Sample No. WW 3767315

Collected:01/31/2002 10:20 by BS

Submitted: 02/01/2002 09:15 Reported: 02/12/2002 at 11:56 Discard: 03/15/2002 MA3-TG2-1-310102-04 Grab Water Sample Moss American Superfund Site - Milwaukee, WI

TG2-1 SDG#: KMA03-12

				As Received		
CAT			As Received	Method		Dilution
No.	Analysis Name	CAS Number	Result	Detection	Units	Factor
				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.	0.46	mg/l	1
	Sufficient sample volume was not	t available to	perform a MS/MSE	) for this		
	analysis. Therefore, a LCS/LCSD	was performed	to demonstrate p	precision and		
	accuracy at a batch level.					
00226	Ortho-Phosphate as P	14265-44-2	0.0197 J	0.0028	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	N.D.	0.12	mg/l	1

#### Laboratory Chronicle

CAT				Dilution		
No.	Analysis Name	Method	Trial#	Date and Time	Analyst	Factc
00217	Kjeldahl Nitrogen	EPA 351.2	1	02/06/2002 21:09	Mark A Buckwalter	1
00219	Nitrite Nitrogen	EPA 353.2	1	02/01/2002 13:54	Mark A Buckwalter	1
00220	Nitrate Nitrogen	EPA 353.2	1	02/08/2002 15:14	Venia B McFadden	1
00221	Ammonia Nitrogen	EPA 350.2	1	02/06/2002 07:15	Michele L Graham	1
00226	Ortho-Phosphate as P	EPA 365.3	1	02/02/2002 01:30	Daniel S Smith	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	02/05/2002 15:35	Matthew J Mercer	1
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	02/05/2002 14:53	Venia B McFadden	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	02/04/2002 10:45	Cheryl L Robinson	1



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Analysis Report



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Lancaster Laboratories Sample No. WW 3767316

Collected:01/31/2002 10:30by BSAccount Number: 07802Submitted: 02/01/2002 09:15Kerr-McGee CorporationReported: 02/12/2002 at 11:56P.O. Box 25861Discard: 03/15/2002Oklahoma City OK 73125MA3-TG2-2-310102-05 Grab Water SampleMoss American Superfund Site - Milwaukee, WI

TG2-2 SDG#: KMA03-13

					As Received		
CAT			As Rece	eived	Method		Dilution
No.	Analysis Name	CAS Number	Result		Detection Limit	Units	Factor
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	0.53	J	0.46	mg/l	1
	Sufficient sample volume was not	available to	perform	a MS/MSD	for this		
	analysis. Therefore, a LCS/LCSD accuracy at a batch level.	was performed	to demor	nstrate pr	ecision and		
00226	Ortho-Phosphate as P	14265-44-2	0.0093	J	0.0028	mg/l	1
	This sample was analyzed past the	e 48 hour hold	time fo	or orthoph	osphate.		
00345	Total Phosphorus as PO4 water	14265-44-2	N.D.		0.12	mg/l	1

Laboratory Chronicle

CAT				Analysis		Dilution
No.	Analysis Name	Method	Trial#	Date and Time	Analyst	Factor
00217	Kjeldahl Nitrogen	EPA 351.2	1	02/06/2002 21:15	Mark A Buckwalter	1
00219	Nitrite Nitrogen	EPA 353.2	1	02/01/2002 13:56	Mark A Buckwalter	1
00220	Nitrate Nitrogen	EPA 353.2	1	02/08/2002 15:18	Venia B McFadden	1
00221	Ammonia Nitrogen	EPA 350.2	1	02/06/2002 07:15	Michele L Graham	1
00226	Ortho-Phosphate as P	EPA 365.3	2	02/06/2002 20:20	Daniel S Smith	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	02/05/2002 15:35	Matthew J Mercer	1
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	02/05/2002 14:53	Venia B McFadden	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	02/04/2002 10:45	Cheryl L Robinson	1



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#### Page 1 of 1

Analysis kepon

Account Number: 07802

Kerr-McGee Corporation

Oklahoma City OK 73125

P.O. Box 25861

#### Lancaster Laboratories Sample No. WW 3767317

Collected:01/31/2002 10:40 by BS

Submitted: 02/01/2002 09:15 Reported: 02/12/2002 at 11:56 Discard: 03/15/2002 MA3-TG2-3-310102-06 Grab Water Sample Moss American Superfund Site - Milwaukee, WI

TG2-3 SDG#: KMA03-14

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				As Received		
CAT			As Received	Method		Dilution
No.	Analysis Name	CAS Number	Result	Detection Limit	Units	Factor
00217	Kjeldahl Nitrogen	7727-37-9	0.82 J	0.60	mg/l	1
	Due to interferences from the sa	mple matrix, t	he reporting limi	t for		
	the total kjeldahl nitrogen dete	rmination was	increased.			
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/1	1
00221	Ammonia Nitrogen	7664-41-7	0.59 J	0.46	mg/l	1
	Sufficient sample volume was not	available to	perform a MS/MSD	for this		
	analysis. Therefore, a LCS/LCSD accuracy at a batch level.	was performed	to demonstrate pr	ecision and		
00226	Ortho-Phosphate as P	14265-44-2	0.0148 J	0.0028	mg/l	1
	This sample was analyzed past th	e 48 hour hold	time for orthoph	osphate.		
00345	Total Phosphorus as PO4 water	14265-44-2	0.12 J	0.12	mg/l	1

		Laboratory	Chro	nicle		
CAT		-		Analysis		Diluti
No.	Analysis Name	Method	Trial#	Date and Time	Analyst	Factor
00217	Kjeldahl Nitrogen	EPA 351.2	1	02/06/2002 21:16	Mark A Buckwalter	1
00219	Nitrite Nitrogen	EPA 353.2	1	02/01/2002 13:57	Mark A Buckwalter	1
00220	Nitrate Nitrogen	EPA 353.2	1	02/08/2002 15:19	Venia B McFadden	1
00221	Ammonia Nitrogen	EPA 350.2	1	02/06/2002 07:15	Michele L Graham	1
00226	Ortho-Phosphate as P	EPA 365.3	2	02/06/2002 20:20	Daniel S Smith	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	02/05/2002 15:36	Matthew J Mercer	1
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	02/05/2002 14:53	Venia B McFadden	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	02/04/2002 10:45	Cheryl L Robinson	1



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Analysis Report



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Lancaster Laboratories Sample No. WW	3767318
Collected:01/31/2002 13:10 by BS	Account Number: 07802
Submitted: 02/01/2002 09:15 Reported: 02/12/2002 at 11:57 Discard: 03/15/2002	Kerr-McGee Corporation P.O. Box 25861 Oklahoma City OK 73125
MA3-TG1-1-310102-07 Grab Water Sample	

Moss American Superfund Site - Milwaukee, WI

TG1-1 SDG#: KMA03-15

				As Received		
CAT			As Received	Method		Dilution
No.	Analysis Name	CAS Number	Result	Detection Limit	Units	Factor
00217	Kjeldahl Nitrogen	7727-37-9	0.80 J	0.60	mg/l	1
	Due to interferences from the sa	mple matrix, t	he reporting limi	t for		
	the total kjeldahl nitrogen dete	rmination was	increased.			
00219	Nitrite Nitrogen	14797-65-0	N.D.	0.015	mg/l	1
00220	Nitrate Nitrogen	14797-55-8	0.17	0.040	mg/l	1
00221	Ammonia Nitrogen	7664-41-7	0.83 J	0.46	mg/l	1
	Sufficient sample volume was not	available to	perform a MS/MSD	for this		
	analysis. Therefore, a LCS/LCSD accuracy at a batch level.	was performed	to demonstrate pr	ecision and		
00226	Ortho-Phosphate as P	14265-44-2	0.020	0.0028	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	N.D.	0.12	mg/l	1

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CAT				Analysis		Dilution
No.	Analysis Name	Method	Trial#	Date and Time	Analyst	Factor
00217	Kjeldahl Nitrogen	EPA 351.2	1	02/06/2002 21:18	Mark A Buckwalter	1
00219	Nitrite Nitrogen	EPA 353.2	1	02/01/2002 13:58	Mark A Buckwalter	1
00220	Nitrate Nitrogen	EPA 353.2	1	02/08/2002 18:03	Venia B McFadden	1
00221	Ammonia Nitrogen	EPA 350.2	1	02/06/2002 07:15	Michele L Graham	1
00226	Ortho-Phosphate as P	EPA 365.3	1	02/02/2002 01:30	Daniel S Smith	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	02/05/2002 15:37	Matthew J Mercer	1
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	02/05/2002 14:53	Venia B McFadden	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	02/04/2002 10:45	Cheryl L Robinson	1



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Andlysis Repon

Account Number: 07802

Kerr-McGee Corporation

Oklahoma City OK 73125

P.O. Box 25861



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## Lancaster Laboratories Sample No. WW 3767319

Collected:01/31/2002 13:20 by BS

Submitted: 02/01/2002 09:15 Reported: 02/12/2002 at 11:57 Discard: 03/15/2002 MA3-TG1-2-310102-08 Grab Water Sample Moss American Superfund Site - Milwaukee, WI

TG1-2 SDG#: KMA03-16

				As Received		
CAT			As Received	Method		Dilution
No.	Analysis Name	CAS Number	Result	Detection	Units	Factor
				Limit		•
00217	Kjeldahl Nitrogen	7727-37-9	1.10 J	0.60	mg/l	1
	Due to interferences from the sa	mple matrix, t	he reporting limi	t for		•
	the total kjeldahl nitrogen dete	rmination was	increased.			
00219	Nitrite Nitrogen	14797-65-0	N.D.	0.015	mg/l	1
00220	Nitrate Nitrogen	14797-55-8	0.14	0.040	mg/l	1
00221	Ammonia Nitrogen	7664-41-7	0.89 J	0.46	mg/l	1
	Sufficient sample volume was not	available to	perform a MS/MSD	for this		
	analysis. Therefore, a LCS/LCSD	was performed	to demonstrate pr	ecision and		
	accuracy at a batch level.					
00226	Ortho-Phosphate as P	14265-44-2	0.0133 J	0.0028	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	0.12 J	0.12	mg/l	1

## Laboratory Chronicle

CAT				Analysis		Dilutic
No.	Analysis Name	Method	Trial#	Date and Time	Analyst	Factor
00217	Kjeldahl Nitrogen	EPA 351.2	1	02/06/2002 21:19	Mark A Buckwalter	1
00219	Nitrite Nitrogen	EPA 353.2	1	02/01/2002 13:59	Mark A Buckwalter	1
00220	Nitrate Nitrogen	EPA 353.2	1	02/08/2002 18:04	Venia B McFadden	1
00221	Ammonia Nitrogen	EPA 350.2	1	02/06/2002 07:15	Michele L Graham	1
00226	Ortho-Phosphate as P	EPA 365.3	1	02/02/2002 01:30	Daniel S Smith	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	02/05/2002 15:38	Matthew J Mercer	1
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	02/05/2002 14:53	Venia B McFadden	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	02/04/2002 10:45	Cheryl L Robinson	1



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#### Lancaster Laboratories Sample No. 3767320 WW

Collected:01/31/2002 13:30 by BS

Submitted: 02/01/2002 09:15 Reported: 02/12/2002 at 11:57 Discard: 03/15/2002 MA3-TG1-3-310102-09 Grab Water Sample Moss American Superfund Site - Milwaukee, WI

#### TG1-3 SDG#: KMA03-17

				As Received		
CAT			As Received	Method		Dilution
No.	Analysis Name	CAS Number	Result	Detection Limit	Units	Factor
00217	Kjeldahl Nitrogen	7727-37-9	0.85 J	0.60	mg/l	1
	Due to interferences from the s	ample matrix,	the reporting lim	it for		
	the total kjeldahl nitrogen det	ermination was	increased.			
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	0.65 J	0.46	mg/l	1
	Sufficient sample volume was no	t available to	perform a MS/MSD	for this		
	analysis. Therefore, a LCS/LCSD	was performed	to demonstrate p	recision and		
	accuracy at a batch level.					
00226	Ortho-Phosphate as P	14265-44-2	0.0163 J	0.0028	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	0.16 J	0.12	ma/1	1

## Laboratory Chronicle

CAT				Analysis		Dilutior
No.	Analysis Name	Method	Trial#	Date and Time	Analyst	Factor
00217	Kjeldahl Nitrogen	EPA 351.2	1	02/06/2002 21:20	Mark A Buckwalter	1
00219	Nitrite Nitrogen	EPA 353.2	1	02/01/2002 14:01	Mark A Buckwalter	1
00220	Nitrate Nitrogen	EPA 353.2	1	02/08/2002 16:37	Venia B McFadden	1
00221	Ammonia Nitrogen	EPA 350.2	1	02/06/2002 07:15	Michele L Graham	1
00226	Ortho-Phosphate as P	EPA 365.3	1	02/02/2002 01:30	Daniel S Smith	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	02/05/2002 15:39	Matthew J Mercer	1
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	02/05/2002 14:53	Venia B McFadden	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	02/04/2002 10:45	Cheryl L Robinson	1



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Analysis Report

Account Number: 07802

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

Please print. Instructions on reverse side correspond with circled numbers.         Client: Lyfs ten /Kfr/ Mc Gee         Project Name/#:       Mc 55       And: Arct. #:       Matrix 0       Soft and analysis teduested.       For Is         Project Name/#:       Mc 55       And: Arct. #:       Image: Soft and Arct. #:
Client:       L/85+bn / Kerr McGee       Act. #:       Marco O       S       Analyses Requested state       For Is         Project Name#:       Marco S       Amelyses Requested state       For Is       SCR #:       SCR
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7       Turnaround Time Requested (TAT) (please circle): Normal Rush (Rush TAT is subject to Lancaster Laboratories approval and surcharge.) Date results are needed:
7       Turnaround Time Requested (TAT) (please circle): Normal Rush (Rush TAT is subject to Lancaster Laboratories approval and surcharge.) Date results are needed:
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 #: SU2-918 - 4000 Fax #: 347-918 - 4055       Relinquished by: Relinquished by:       Date Time Received by: Date Time Received by:       Date Time Received by:         Phone #: SU2-918 - 4000 Fax #: 347-918 - 4055       Relinquished by:       Date Time Received by:       Date Time Received by:
7       Turnaround Time Requested (TAT) (please circle): Normal Rush (Rush TAT is subject to Lancaster Laboratories approval and surcharge.) Date results are needed:
7       Turnaround Time Requested (TAT) (please circle): Normal Rush (Rush TAT is subject to Lancaster Laboratories approval and surcharge.)       Relinquished by:       Date       Time       Received by:       F       D         0       Rush results are needed:       STD       TAT       Relinquished by:       Date       Time       Received by:       F       D         0       Rush results requested by (please circle): Phone       Fax       Phone #: SH7-918-4055       Relinquished by:       Date       Time       Received by:       D         0       Relinquished by:       Relinquished by:       Date       Time       Received by:       D
7       Turnaround Time Requested (TAT) (please circle): Normal Rush (Rush TAT is subject to Lancaster Laboratories approval and surcharge.)       Relinquished by:       Date       Time       Received by:       F       D         Date results are needed:       STD TAT       Relinquished by:       Date       Time       Received by:       F       D         Rush results requested by (please circle): Phone       Fax       Phone #: S47-915 - 4055       Relinquished by:       Date       Time       Received by:       D         Relinquished by:       Date       Time       Received by:       D
7       Turnaround Time Requested (TAT) (please dircle): Normal "Rush (Rush TAT is subject to Lancaster Laboratories approval and surcharge.) Date results are needed:
7       Turnaround Time Requested (TAT) (please circle): Normal * Rush (Rush TAT is subject to Lancaster Laboratories approval and surcharge.) Date results are needed:
Date results are needed:     STD 1/47       Rush results requested by (please circle): Phone Fax     Phone #: <u>847-915 -4000</u> Fax #: <u>347-918 - 4055</u> Relinquished by:     Date       Time     Received by:       Date     Time       Received by:     Date
Phone #: <u>847-918-4000</u> Fax #: <u>847-918-4055</u> Relinquished by: Qate Time Received by: D
(8) Data Package Options (please circle if requested) SDG Complete?
Type I (Tier I) GLP [site specific OC required]. Yes No. Relinquished by:
Type II (Tier II) Other (If yes, indicate QC sample and submit triplicate volume.) Relinquished by: Date Time Received by: D
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# Analysis Requesi/Environmental Services Chain of Custody

Lancaster Laboratories Where quality is a science.

## For Lancaster Laboratories use only Acct. # $\frac{7802}{5}$ Sample # $\frac{3767304-20}{5}$

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Lancaster Laboratories

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CLIENT: Kerr-McGee Corporation SDG: KMA03

## LANCASTER LABORATORIES

## INSTRUMENTAL WET CHEMISTRY

## SAMPLE NUMBERS:

Sample #	Sample Code	<u>Comments</u>
3767304	36121	
3767305	TG6-2	
3767306	TG6-3	
3767307	TG5-1	
3767308	TG5-2	
3767309	TG5-3	
3767310	TG4-2	
3767311	TG4-3	
3767312	TG3-1	
3767313	TG3-2	
3767314	TG3-3	
3767315	TG2-1	
3767316	TG2-2	
3767317	TG2-3	
3767318	TG1-1	
3767319	TG1-2	
3767320	TG1-3	

## ANALYSIS:

Dilutions are listed in the table below.

SAMPLE	NO3-N	TP as PO4
All LCS	2	2

## QUALITY CONTROL AND NONCONFORMANCE SUMMARY:

The duplicate sample (3767313) for the total phosphorus as PO4 analysis was out of specifications.

The matrix spike samples (3767307,3767315) for the total Kjeldahl analysis were out of specifications.

## DATA INTERPRETATION:

No further interpretation is necessary for the data submitted.

Case Narrative Reviewed and Approved by:

Date: 2-19-07 Sandra J. Miller

Sandra J. Miller Specialist/Coordinator

6000.4

ancaster Laboratories

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CLIENT: Kerr – McGee Corporation SDG: KMA03

## LANCASTER LABORATORIES

## MISCELLANEOUS WET CHEMISTRY

## SAMPLE NUMBERS:

Sample #	Sample Code	<u>Comments</u>
3767304	36121	
3767305	TG6-2	
3767306	TG6-3	
3767307	TG5-1	
3767308	TG5-2	
3767309	TG5-3	
3767310	TG4-2	
3767311	TG4-3	
3767312	TG3-1	
3767313	TG3-2	
3767314	TG3-3	
3767315	TG2-1	
3767316	TG2-2	
3767317	TG2-3	
3767318	TG1-1	
3767319	TG1-2	
3767320	TG1-3	

## ANALYSIS:

Samples 3767304-11 were analyzed past the 24 hour hold time for the orthophosphate analysis.

## QUALITY CONTROL AND NONCONFORMANCE SUMMARY:

Sufficient sample volume was not available to perform a MS/MSD for the ammonia nitrogen analysis. Therefore, a LCS/LCSD 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: 2 - 11 - 02 Sandra J. Miller

Specialist/Coordinator

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

$\mathbb{R}$	Microbac Labo	oratories, Inc.		
Microbac	Seaway Division 544 Conkey Street Hammond, IX 48 1019: 932-1770	5324	<b>k</b> [4];	200
	INDIANA CERTIFICAT http://w/w/w/micro	ION NUMBERS: X-4E-8 Dhac.com	C-45-01	
CHEMISTRY • MI	CROBIOLOGY • FOOD S	AFETY • CONSUMER PRO	DUCTS	
WATER • AIR • WA	STES • FOOD • PHARMA	ACEUTICALS • NUTRACEU F ANALYSIS	TICALS	
Tom Graam Roy F. Weston, Inc. 750 East Bunker Court Suite 500 Vernon Hills, IL 60061-	-1450	Date Reported: P.O. Number: Sample ID: Date Received: Time Received:	2/25/02 9937-00349 1/31/02 11:00	
Permit Number				
PARAMETERS	RESULTS	DATE	TECH	NETHOD
SUEJECT: MAG-TG6-1-300102-01, 1/30/0 Total Aerobic Bacteria T.Aerobic Degrader Bacteria	01 0 14:35 by Client 6,200, cfu/ml 392, cfu/ml	2/01/02 2/01/02	D J H D J H	9215B NODIFIEL 9215B NODIFIED
SUBJECT: NA3-TG6-2-300102-02, 1/30/0 Total Aerobic Bacteria Tokerobic Degrader Bacteria	01 € 14:45 by Client 1,400. tfu/ml 620. ofu/ml	2/01/02 2/01/02	D J H D J H	9215B NODIFIFT 9215B NODIFII
SUBJECT: MAB-TG6-2-300102-23, 1.300 Total Aerobic Bacteria T.Aerobic Degrader Bacteria	02 @ 14:58 by Client 530. cfu/ml 193. cfu/ml	2/01/02 2/01/02	DJH DJH	9215B NODIFI 9215B KODIFIED
CUEJECT; MA3-TG5-1-300102-04, 1/30/0 Total Aerobic Bacteria T.Aerobic Degrader Bacteria	01 8 15:35 by Client 640. cfu/ml 120. cfu/ml	2/01/02 2/01/02	D J H D J H	9215B NODIFIED 9215B NODIFIE
SUBJECT: MAB-TGB-2-300102-05, 1/30/) Potal Aerobic Bacteria T.Aerobic Degrader Bacteria	02 @ 15:45 by Client 550. ofu/ml 290. ofu-ml	2/01/02 2/01/22	D J H D J H	9215B NODIFI 9215B NODIFIED
SUBJECT: MAB-TG5-3-300102-06, 1/30/0 Fital Aerobic Bacteria T.Aerobic Degrader Bacteria	02 @ 15:55 by Client 1,000. cfu/ml 140. cfu/cl	2/01/02 2/01/02	D J H D J H	9215B NODIFIED 9215E NODIFI
SUBJECT: NA3-TG4-2-300102-07, 1/30/ Total Aerobic Bacteria T.Aerobic Degrader Bacteria	02 & 17:20 by Client 2,300. cfu/zl 910. cfu/zl	2/01/02 2/01/02	D J H D J H	92156 HODIFI 92158 HODIFIED

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

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Microbac

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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 Bunker Court Suite 500 Vernon Hills, IL 60061-1450 Date Reported: 2/25/02 P.O. Number: Sample ID: 9937-00349 Date Received: 1/31/02 Time Received: 11:00

Permit Number

PARAMETERS	RESULTS	DATE	TECH	KETHOD
SUEJECT: MA3-TG4-3-300102-08, 1/30 Total Aerobic Bacteria T.Aerobic Degrader Bacteria	/02 0 17:30 by Client 3,900. cfu/ml 570. cfu/ml	2/01/02 2/01/02	D J H C J H	9215B NODIFIED 9215B NODIFIED

Submitted with Quality by

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# **CERTIFICATE OF ANALYSIS**

Tom Graam	Date Reported:	2/25/02
Roy F. Weston, Inc.	P.O. Number:	0018581 MOSS AMERICA
750 East Bunker Court	Sample ID:	9938-00001
Suite 500	Date Received:	2/01/02
Vernon Hills, IL 60061-1450	Time Received:	10:15

Permit Number

PARAMETERS	RESULTS	DATE	TECH	NETHOD
SUBJECT: NA3-TG3-1-310102-01, 1/31	/02 @ 09:10 by Client			
Total Aerobic Bacteria T.Aerobic Degrader Bacteria	21,000. cfu/ml 700. cfu/ml	2/01/02 2/01/02	D J H D J H	9215B NODIFIE 9215B NODIFIED
SUBJECT: MA3-TG3-2-310102-02, 1/31	/01 0 09:20 by Client			
Total Aerobic Bacteria T.Aerobic Degrader Bacteria	710. ciu/ml 390. ciu/ml	2/01/02 2/01/02	D J H D J H	9215B NODIFIER 9215B NODIFIE
SUBJECT: NA3-TG3-3-310101-03, 1/31	/02 @ 09:30 by Client			
Total Aerobic Bacteria T.Aerobic Degrader Bacteria	730. cfu/ml 680. cfu/ml	2/01/02 1/01/02	D J H D J H	9215B NODIFIE 9215B NODIFIET
SUBJECT: MA3-TG2-1-310102-04, 1/31	/02 @ 10:20 by Client			
Total Aerobic Bacteria T.Aerobic Degrader Bacteria	450. přu/zl 210. přu/ml	2/01/02 2/01/02	D J H D J H	9215E NODIFIED 9215B NODIFIE
SUBJECT: KA3-TG2-2-310102-05, 1/31	/32 @ 10:20 by Client			
lotal Aerobic Bacteria T.Aerobic Degrader Bacteria	460. oft:/al 560 oft:/al	1/01/02 1/01/02	D J H D J H	9215B KODIFI 9215B KODIFIED
SUBJECT: MA3-TG2-3-310102-06, 1/31	/02 8 10:30 by Client			
Total Aerobic Bacteria T.Aerobic Degrader Bacteria	600. přu/zl 290. přu/ml	2/01/02 2/01/02	D J H D J H	9215B KODIFIED 9215B KODIFIE
SUBJECT: MA3-TG1-1-310102-07, 1/31	/02 @ 10:40 by Client			
ioual Aerobic Bacteria T.Aerobic Degrader Bacteria	3,300. přu/ml 940. přu/ml	2/01/02 2/01/02	D J H D J H	9215E NODIFI 9215E MODIFIED

\*\*\* Certificate Continues on Next Page \*\*\*

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CHEMISTRY •	MICROBIOLOGY • FOOD S	AFETY • CONSUMER PR	ODUCTS	
WATER • AIR • V		ACEUTICALS • NUTRACE	CHCALS	
Tom Graam	-	Date Reported	: 2/25/01	2
Rov F. Weston, Inc.		P.O. Number:	0018581	- MOSS AMERIC
750 East Bunker Court		Sample ID:	9938-000	201
Suite 500		Date Received	: 2/01/02	2
			10 15	
Vernon Hills, IL 6006	1-1450	Time Received	: 10:15	
Vernon Hills, IL 6006 Permit Number	1-1450	Time Received	: 10:15	
Vernon Hills, IL 6006 Permit Number PARAMETERS	1-1450 RESULTS	Time Received	: 10:15 TECH	<b>NE T</b> HO D
Vernon Hills, IL 6006 Permit Number PARANETERS SUBJECT: NA3-TG1-2-310102-08. 1/3	RESULTS RESULTS	Time Received	: 10:15 TECH	<b>NET</b> HOD
Vernon Hills, IL 6006 Permit Number PARANETERS SUEJECT: NA3-TG1-2-310102-08, 1/3 Total Aerobic Bacteria	RESULTS RESULTS 11/02 & 13:10 by Client 660. cfu/ml	Time Received	: 10:15 TECH	NETHOD 9215B NODIF
Vernon Hills, IL 6006 Permit Number PARANETERS SUBJECT: MA3-TG1-2-310102-08, 1/3 Total Aerobic Bacteria T.Aerobic Degrader Bacteria	RESULTS RESULTS 11/02 @ 13:10 by Client 660. cfu/ml 110. cfu/ml	Time Received DATE 2/01/02 2/01/02	TECH DJH DJH	NETHOD 9215B NODIP 9215F HODIF
Vernon Hills, IL 6006 Permit Number PARANETERS SUBJECT: MA3-TG1-2-310102-08, 1/3 Total Aerobic Bacteria T.Aerobic Degrader Bacteria	RESULTS RESULTS 1/02 & 13:10 by Client 660. cfu/ml 110. cfu/ml	Time Received DATE 2/01/02 2/01/02	TECH DJH DJH	NETHOD 9215B NODIP 9215F NODIF
Vernon Hills, IL 6006 Permit Number PARAMETERS SUBJECT: NA3-TG1-2-310102-08, 1/3 Total Aerobic Bacteria T.Aerobic Degrader Bacteria SUBJECT: MA3-TG1-3-310102-09, 1/3 Total Aerobic Bacteria	RESULTS RESULTS 11/02 @ 13:10 by Client 660. cfu/ml 110. cfu/ml 1/02 @ 13:20 by Client 4.600. cfu/ml	Time Received DATE 2/01/02 2/01/02 2/01/02	TECH DJH DJH	NETHOD 9215B NODIP 9215E HODIF 9215B NODIF

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		(Used in test for	degrader mic	robial popula	tions.	give r	atios il applicable	9, 8.g	. 50:5	0, ga	soline:diesel)	Se l	Ana	ane a		er (3	90	.	/ <del>گ</del>		2	- /			
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1	MA3-TG3-1- 310102-01		1/31/02	0910		X	-	1												X					
2	mA3-TG3-2- 310102-02		1/31/02	0920		X	-	1												$\times$				:	
3	MA3-TG3-3- 310102-03	·	1/31/02	5930		X		1												X					
4	MA3-TG2-1- 310102-04		1/31/02	1020		X	-	1												$\boldsymbol{x}$					
5	MA3- TG2-2- 310102-05		1/31/02	1030		X	-	1												X					
G	MA3-TG2-3- 510102-06		1/31/02	1040		X	~	1												X					
1	MA3-TG1-1- 310102-07		1/51/02	1310		x		1												X					
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\*CEA : Comparative Enumeration Assay includes total heterotrophic and degrader populations

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	Site contaminant ·BTEX, creasure, PAH							e note	c and l (source	m, avail Visture (	bii) Jsieve	(soil)	lpacit		stien							
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5	MA3-TG6-3- 300102-03		1/30/02	1455		X	~	1										X				
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2	300:02-06		1/30/02	1555		x									_			X				
Ţ	300102-07		1/30/02	1720		X	-								1			X				
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\*CEA : Comparative Enumeration Assay Includes total heterotrophic and degrader populations

## **ATTACHMENT 3**

## FEBRUARY 2002 GROUNDWATER SAMPLE ANALYTICAL RESULTS

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 798651. Samples arrived at the laboratory on Friday, March 01, 2002.

Client Description MA3-TG1-1-280202-01 Grab Water Sample MA3-TG1-2-280202-02 Grab Water Sample MA3-TG1-3-280202-03 Grab Water Sample MA3-TG4-1-280202-05 Grab Water Sample MA3-TG4-2-280202-04 Grab Water Sample MA3-TG2-1-280202-09 Grab Water Sample MA3-TG2-2-280202-07 Grab Water Sample MA3-TG2-3-280202-08 Grab Water Sample

Analysis Report

### METHODOLOGY

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

1 СОРҮ ТО	Kerr-McGee Corporation
і сору то	Roy F. Weston
і сору то	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



Questions? Contact your Client Services Representative Carrie A Fleming 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

Analysis Report



Page 1 of 1

Lancaster Laboratories Sample No. WW 3780743

Collected:02/28/2002 13:30by THAccount Number: 07802Submitted: 03/01/2002 09:10Kerr-McGee CorporationReported: 03/11/2002 at 12:05P.O. Box 25861Discard: 04/11/2002Oklahoma City OK 73125MA3-TG1-1-280202-01 Grab Water SampleOklahoma City OK 73125Moss American Superfund Site - Milwaukee, WIVI

KM-11 SDG#: KMA04-01

				As Received		
CAT			As Received	Method		Dilution
No .	Analysis Name	CAS Number	Result	Detection Limit	Units	Factor
00217	Kjeldahl Nitrogen	7727-37-9	1.3	0.30	mg/l	1
00219	Nitrite Nitrogen	14797-65-0	N.D.	0.015	mg/l	1
00220	Nitrate Nitrogen	14797-55-8	N.D.	0.040	mg/l	1
00221	Ammonia Nitrogen	7664-41-7	0.63 J	0.46	mg/l	1
	Sufficient sample volume was not	available to	perform a MS/MSD	for this		
	analysis. Therefore, a LCS/LCSD	was performed	to demonstrate p	recision and		
	accuracy at a batch level.					
00226	Ortho-Phosphate as P	14265-44-2	0.027	0.0066	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	0.20	0.12	mg/l	1

		Laboratory	Chro	nicle		
CAT		-		Analysis	•	Dilution
No.	Analysis Name	Method	Trial#	Date and Time	Analyst	Factor
00217	Kjeldahl Nitrogen	EPA 351.2	1	03/07/2002 16:08-	Venia B McFadden	1
00219	Nitrite Nitrogen	EPA 353.2	1	03/01/2002 19:45	Mark A Buckwalter	1
00220	Nitrate Nitrogen	EPA 353.2	1	03/06/2002 15:35	Venia B McFadden	1
00221	Ammonia Nitrogen	EPA 350.2	1	03/07/2002 07:15	Michele L Graham	1
00226	Ortho-Phosphate as P	EPA 365.3	1	03/01/2002 18:30	Daniel S Smith	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	03/05/2002 17:13	Venia B McFadden	1
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	03/06/2002 09:40	Cheryl L Robinson	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	03/04/2002 09:00	Timothy M Petree	1



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

Analysis Repor

Account Number: 07802

Kerr-McGee Corporation

Oklahoma City OK 73125

P.O. Box 25861



Page 1 of 1

Lancaster Laboratories Sample No. WW 3780744

Collected:02/28/2002 13:40 by TH

Submitted: 03/01/2002 09:10 Reported: 03/11/2002 at 12:05 Discard: 04/11/2002 MA3-TG1-2-280202-02 Grab Water Sample Moss American Superfund Site - Milwaukee, WI

KM22- SDG#: KMA04-02

				As Received		
CAT			As Received	Method		Dilution
No.	Analysis Name	CAS Number	Result	Detection	Units	Factor
				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	0.82 J	0.46	mg/l	1
	Sufficient sample volume was not	available to	perform a MS/MSD	for this		
	analysis. Therefore, a LCS/LCSD	was performed	to demonstrate pr	ecision and		
	accuracy at a batch level.					
00226	Ortho-Phosphate as P	14265-44-2	0.025	0.0066	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	0.31	0.12	mg/l	1

		Laboratory	Chro	nicle		
CAT		_		Analysis	`` <b>`</b>	Dilution
NO.	Analysis Name	Method	Trial#	Date and Time	Analyst	Facto:
00217	Kjeldahl Nitrogen	EPA 351.2	1	03/07/2002 16:12-	Venia B McFadden	1
00219	Nitrite Nitrogen	EPA 353.2	1	03/01/2002 19:46	Mark A Buckwalter	1
00220	Nitrate Nitrogen	EPA 353.2	1	03/06/2002 15:37	Venia B McFadden	1
00221	Ammonia Nitrogen	EPA 350.2	1	03/07/2002 07:15	Michele L Graham	1
00226	Ortho-Phosphate as P	EPA 365.3	1	03/01/2002 18:30	Daniel S Smith	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	03/05/2002 17:13	Venia B McFadden	1
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	03/06/2002 09:40	Cheryl L Robinson	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	03/04/2002 09:00	Timothy M Petree	1

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Analysis Repor

3780745 Lancaster Laboratories Sample No. WW Account Number: 07802 Collected:02/28/2002 13:50 by TH

Kerr-McGee Corporation Submitted: 03/01/2002 09:10 P.O. Box 25861 Reported: 03/11/2002 at 12:05 Oklahoma City OK 73125 Discard: 04/11/2002 MA3-TG1-3-280202-03 Grab Water Sample Moss American Superfund Site - Milwaukee, WI

KM33-SDG#: KMA04-03

				As Received		
CAT			As Received	Method		Dilution
No.	Analysis Name	CAS Number	Result	Detection	Units	Factor
				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	N.D.	0.040	mg/l	1
00221	Ammonia Nitrogen	7664-41-7	0.53 J	0.46	mg/l	1
	Sufficient sample volume was not	available to	perform a MS/MSD	for this		
	analysis. Therefore, a LCS/LCSD	was performed	to demonstrate p	recision and		
	accuracy at a batch level.					
00226	Ortho-Phosphate as P	14265-44-2	N.D.	0.0066	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	0.18 J	0.12	mg/l	1

		Laboratory	Chro	nicle	·•	
CAT		-		Analysis	· · ·	Dilution
No.	Analysis Name	Method	Trial#	Date and Time	Analyst	Factor
00217	Kjeldahl Nitrogen	EPA 351.2	1	03/07/2002 16:13.	Venia B McFadden	1
00219	Nitrite Nitrogen	EPA 353.2	1	03/01/2002 19:50	Mark A Buckwalter	1
00220	Nitrate Nitrogen	EPA 353.2	1	03/06/2002 15:38	Venia B McFadden	1
00221	Ammonia Nitrogen	EPA 350.2	1	03/07/2002 07:15	Michele L Graham	1
00226	Ortho-Phosphate as P	EPA 365.3	1	03/01/2002 18:30	Daniel S Smith	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	03/05/2002 15:44	Venia B McFadden	1
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	03/06/2002 09:40	Cheryl L Robinson	. 1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	03/04/2002 09:00	Timothy M Petree	1



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alvsis Repo

Account Number: 07802

Kerr-McGee Corporation

Oklahoma City OK 73125

P.O. Box 25861

Lancaster Laboratories Sample No. 3780746 WW

Collected:02/28/2002 14:55 by TH

Submitted: 03/01/2002 09:10 Reported: 03/11/2002 at 12:05 Discard: 04/11/2002 MA3-TG4-1-280202-05 Grab Water Sample Moss American Superfund Site - Milwaukee, WI

SDG#: KMA04-04 KM15-

					As Received		
CAT			As Rec	eived	Method		Dilution
No.	Analysis Name	CAS Number	Result		Detection Limit	Units	Factor
00217	Kjeldahl Nitrogen	7727-37-9	0.67	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	0.53	J	0.46	mg/l	1
	Sufficient sample volume was not	available to	perform	a MS/MSD	for this		
	analysis. Therefore, a LCS/LCSD accuracy at a batch level.	was performed	to demo	nstrate pr	ecision and		
00226	Ortho-Phosphate as P	14265-44-2	N.D.		0.0066	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	0.20	J	0.12	mg/l	1

## Laboratory Chronicle

CAT				Analysis	``	Dilution
No.	Analysis Name	Method	Trial#	Date and Time	Analyst	Factor
00217	Kjeldahl Nitrogen	EPA 351.2	1	03/07/2002 16:14.	Venia B McFadden	1
00219	Nitrite Nitrogen	EPA 353.2	1	03/01/2002 19:51	Mark A Buckwalter	1
00220	Nitrate Nitrogen	EPA 353.2	1	03/06/2002 15:39	Venia B McFadden	1
00221	Ammonia Nitrogen	EPA 350.2	1	03/07/2002 07:15	Michele L Graham	1
00226	Ortho-Phosphate as P	EPA 365.3	1	03/01/2002 18:30	Daniel S Smith	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	03/05/2002 15:45	Venia B McFadden	1
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	03/06/2002 09:40	Cheryl L Robinson	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	03/04/2002 09:00	Timothy M Petree	1



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Analysis Report

Account Number: 07802

Kerr-McGee Corporation

Oklahoma City OK 73125

P.O. Box 25861

Lancaster Laboratories Sample No. WW 3780747

Collected:02/28/2002 14:45 by TH

Submitted: 03/01/2002 09:10 Reported: 03/11/2002 at 12:05 Discard: 04/11/2002 MA3-TG4-2-280202-04 Grab Water Sample Moss American Superfund Site - Milwaukee, WI

KM24- SDG#: KMA04-05

				As Received		
CAT			As Received	Method		Dilution
No.	Analysis Name	CAS Number	Result	Detection	Units	Factor
				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	0.76 J	0.46	mg/l	1
	Sufficient sample volume was not	available to	perform a MS/MSD	for this		
	analysis. Therefore, a LCS/LCSD	was performed	to demonstrate p	recision and		
	accuracy at a batch level.					
00226	Ortho-Phosphate as P	14265-44-2	N.D.	0.0066	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	N.D.	0.12	mg/l	1

		Laboratory	Chro	nicle		
CAT		-		Analysis	· · · · · · · · · · · · · · · · · · ·	Dilution
No.	Analysis Name	Method	Trial#	Date and Time	Analyst	Factor
00217	Kjeldahl Nitrogen	EPA 351.2	1	03/07/2002 16:15.	Venia B McFadden	1
00219	Nitrite Nitrogen	EPA 353.2	1	03/01/2002 19:52	Mark A Buckwalter	1
00220	Nitrate Nitrogen	EPA 353.2	1	03/06/2002 15:40	Venia B McFadden	1
00221	Ammonia Nitrogen	EPA 350.2	1	03/07/2002 07:15	Michele L Graham	1
00226	Ortho-Phosphate as P	EPA 365.3	1	03/01/2002 18:30	Daniel S Smith	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	03/05/2002 15:46	Venia B McFadden	1
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	03/06/2002 09:40	Cheryl L Robinson	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	03/04/2002 09:00	Timothy M Petree	1



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Analysis Report



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Lancaster Laboratories Sample 1	No. WW 3780748	
Collected:02/28/2002 15:02	by TH	Account Number: 07802
Submitted: 03/01/2002 09:10 Reported: 03/11/2002 at 12:05 Discard: 04/11/2002 MA3-TG4-3-280202-06 Grab Water Moss American Superfund Site -	Sample Milwaukee, WI	Kerr-McGee Corporation P.O. Box 25861 Oklahoma City OK 73125

KM36- SDG#: KMA04-06

				As Received		
CAT			As Received	Method		Dilution
No.	Analysis Name	CAS Number	Result	Detection Limit	Units	Factor
00217	Kjeldahl Nitrogen	7727-37-9	1.3	0.30	mg/l	1
00219	Nitrite Nitrogen	14797-65-0	N.D.	0.015	mg/l	1
00220	Nitrate Nitrogen	14797-55-8	N.D.	0.040	mg/l	1
00221	Ammonia Nitrogen	7664-41-7	0.82 J	0.46	mg/l	1
	Sufficient sample volume was not	available to	perform a MS/MSD	for this		
	analysis. Therefore, a LCS/LCSD	was performed	to demonstrate p	recision and		
	accuracy at a batch level.					
00226	Ortho-Phosphate as P	14265-44-2	N.D.	0.0066	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	0.14 J	0.12	mg/l	1

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CAT				Analysis	``	Dilution
No.	Analysis Name	Method	Trial#	Date and Time	Analyst	Factor
00217	Kjeldahl Nitrogen	EPA 351.2	1	03/07/2002 16:16.	Venia B McFadden	1
00219	Nitrite Nitrogen	EPA 353.2	1	03/01/2002 19:53	Mark A Buckwalter	1
00220	Nitrate Nitrogen	EPA 353.2	1	03/06/2002 15:44	Venia B McFadden	1
00221	Ammonia Nitrogen	EPA 350.2	1	03/07/2002 07:15	Michele L Graham	1
00226	Ortho-Phosphate as P	EPA 365.3	1	03/01/2002 18:30	Daniel S Smith	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	03/05/2002 15:46	Venia B McFadden	1
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	03/06/2002 09:40	Cheryl L Robinson	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	03/04/2002 09:00	Timothy M Petree	1



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Analysis Repor

Account Number: 07802

Kerr-McGee Corporation

Oklahoma City OK 73125

P.O. Box 25861

3780749 Lancaster Laboratories Sample No. WW

by TH Collected:02/28/2002 16:55

Submitted: 03/01/2002 09:10 Reported: 03/11/2002 at 12:05 Discard: 04/11/2002 MA3-TG2-1-280202-09 Grab Water Sample Moss American Superfund Site - Milwaukee, WI

SDG#: KMA04-07 KM19-

				As Received		
CAT			As Received	Method		Dilution
No.	Analysis Name	CAS Number	Result	Detection Limit	Units	Factor
00217	Kjeldahl Nitrogen	7727-37-9	0.65 J	0.30	mg/l	1
00219	Nitrite Nitrogen	14797-65-0	N.D.	0.015	mg/l	1
00220	Nitrate Nitrogen	14797-55-8	N.D.	0.040	mg/l	1
00221	Ammonia Nitrogen	7664-41-7	N.D.	0.46	mg/l	1
	Sufficient sample volume was not	available to	perform a MS/MSD	for this		
	analysis. Therefore, a LCS/LCSD	was performed	to demonstrate p	recision and		
	accuracy at a batch level.					
00226	Ortho-Phosphate as P	14265-44-2	N.D.	0.0066	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	N.D.	0.12	mg/l	1

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CAT				Analysis	· · · · · · · · · · · · · · · · · · ·	Dilution
No.	Analysis Name	Method	Trial#	Date and Time	Analyst	Factor
00217	Kjeldahl Nítrogen	EPA 351.2	1	03/07/2002 16:18.	Venia B McFadden	1
00219	Nitrite Nitrogen	EPA 353.2	1	03/01/2002 19:55	Mark A Buckwalter	1
00220	Nitrate Nitrogen	EPA 353.2	1	03/06/2002 15:45	Venia B McFadden	1
00221	Ammonia Nitrogen	EPA 350.2	1	03/07/2002 07:15	Michele L Graham	1
00226	Ortho-Phosphate as P	EPA 365.3	1	03/01/2002 18:30	Daniel S Smith	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	03/05/2002 15:47	Venia B McFadden	1
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	03/06/2002 09:40	Cheryl L Robinson	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	03/04/2002 09:00	Timothy M Petree	1



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Account Number: 07802

Kerr-McGee Corporation

Oklahoma City OK 73125

P.O. Box 25861

Lancaster Laboratories Sample No. WW 3780750

Collected:02/28/2002 16:30 by TH

Submitted: 03/01/2002 09:10 Reported: 03/11/2002 at 12:06 Discard: 04/11/2002 MA3-TG2-2-280202-07 Grab Water Sample Moss American Superfund Site - Milwaukee, WI

KM27- SDG#: KMA04-08

				As Received		
CAT			As Received	Method		Dilution
No.	Analysis Name	CAS Number	Result	Detection	Units	Factor
				Limit		
00217	Kjeldahl Nítrogen	7727-37-9	0.68 J	0.30	mg/l	1
00219	Nitrite Nitrogen	14797-65-0	N.D.	0.015	mg/l	1
00220	Nitrate Nitrogen	14797-55-8	N.D.	0.040	mg/l	1
00221	Ammonia Nitrogen	7664-41-7	N.D.	0.46	mg/l	1
	Sufficient sample volume was not	available to	perform a MS/MSD	for this		
	analysis. Therefore, a LCS/LCSD	was performed	to demonstrate pr	ecision and		
	accuracy at a batch level.					
00226	Ortho-Phosphate as P	14265-44-2	N.D.	0.0066	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	N.D.	0.12	mg/l	1

## Laboratory Chronicle

CAT				Analysis	``	Dilution
No.	Analysis Name	Method	Trial#	Date and Time	Analyst	Factor
00217	Kjeldahl Nitrogen	EPA 351.2	1	03/07/2002 16:19.	Venia B McFadden	1
00219	Nitrite Nitrogen	EPA 353.2	1	03/01/2002 19:56	•Mark A Buckwalter	1
00220	Nitrate Nitrogen	EPA 353.2	1	03/06/2002 16:50	Venia B McFadden	1
00221	Ammonia Nitrogen	EPA 350.2	1	03/07/2002 07:15	Michele L Graham	1
00226	Ortho-Phosphate as P	EPA 365.3	1	03/01/2002 18:30	Daniel S Smith	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	03/05/2002 15:48	Venia B McFadden	1
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	03/06/2002 09:40	Cheryl L Robinson	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	03/04/2002 09:00	Timothy M Petree	1

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Analysis Report

Lancaster Laboratories Sample No. WW 3780751

Collected:02/28/2002 16:45 by TH Account Number: 07802 Submitted: 03/01/2002 09:10 Kerr-McGee Corporation Reported: 03/11/2002 at 12:06 P.O. Box 25861 Discard: 04/11/2002 MA3-TG2-3-280202-08 Grab Water Sample Moss American Superfund Site - Milwaukee, WI

KM38- SDG#: KMA04-09

				As Received		
CAT			As Received	Method		Dilution
No.	Analysis Name	CAS Number	Result	Detection Limit	Units	Factor
00217	Kjeldahl Nitrogen	7727-37-9	1.5	0.30	mg/l	1
00219	Nitrite Nitrogen	14797-65-0	0.018 J	0.015	mg/l	1
00220	Nitrate Nitrogen	14797-55-8	0.054 J	0.040	mg/l	1
00221	Ammonia Nitrogen	7664-41-7	0.82 J	0.46	mg/l	1
	Sufficient sample volume was not	available to	perform a MS/MSD	for this		
	analysis. Therefore, a LCS/LCSD accuracy at a batch level.	was performed	to demonstrate p	recision and		
00226	Ortho-Phosphate as P	14265-44-2	N.D.	0.0066	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	0.20	0.12	mg/l	1

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CAT				Analysis	``	Dilution
No.	Analysis Name	Method	Trial#	Date and Time	Analyst	Factor
00217	Kjeldahl Nitrogen	EPA 351.2	1	03/07/2002 16:35.	Venia B McFadden	1
00219	Nitrite Nitrogen	EPA 353.2	1	03/01/2002 19:57	• Mark A Buckwalter	1
00220	Nitrate Nitrogen	EPA 353.2	1	03/06/2002 16:54	Venia B McFadden	1
00221	Ammonia Nitrogen	EPA 350.2	1	03/07/2002 07:15	Michele L Graham	1
00226	Ortho-Phosphate as P	EPA 365.3	1	03/01/2002 18:30	Daniel S Smith	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	03/05/2002 15:51	Venia B McFadden	1
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	03/06/2002 13:00	Cheryl L Robinson	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	03/04/2002 09:00	Timothy M Petree	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 798793. Samples arrived at the laboratory on Saturday, March 02, 2002.

#### Client Description

MA3-TG3-1-010302-01 Grab Water Sample MA3-TG3-2-010302-02 Grab Water Sample MA3-TG3-3-010302-03 Grab Water Sample MA3-TG5-1-010302-06 Grab Water Sample MA3-TG5-2-010302-04 Grab Water Sample MA3-TG5-3-010302-05 Grab Water Sample MA3-TG6-1-010302-08 Grab Water Sample MA3-TG6-2-010302-07 Grab Water Sample MA3-TG6-3-010302-09 Grab Water Sample

#### 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	





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

Respectfully Submitted,

Eld Erik J. Frederiksen Group Leader

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nalysis Report

Account Number: 07802

Kerr-McGee Corporation

Oklahoma City OK 73125

P.O. Box 25861



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## Lancaster Laboratories Sample No. WW 3781334

Collected:03/01/2002 10:50 by BC

Submitted: 03/02/2002 10:15 Reported: 03/12/2002 at 19:47 Discard: 04/12/2002 MA3-TG3-1-010302-01 Grab Water Sample Moss American Superfund Site - Milwaukee, WI

311-- SDG#: KMA04-10

				As Received		
CAT			As Received	Method		Dilution
No.	Analysis Name	CAS Number	Result	Detection	Units	Factor
				Limit		
00217	Kjeldahl Nítrogen	7727-37-9	1.2	0.30	mg/l	1
00219	Nitríte 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	0.88 J	0.46	mg/l	1
	Sufficient sample volume was not	t available to	perform a MS/MSE	) for this		
	analysis. Therefore, a LCS/LCSD	was performed	to demonstrate p	precision and		
	accuracy at a batch level.					
00226	Ortho-Phosphate as P	14265-44-2	N.D.	0.0066	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	0.14 J	0.12	mg/l	1

## Laboratory Chronicle

CAT				Analysis	· · ·	Dilution
No.	Analysis Name	Method	Trial#	Date and Time	Analyst	Factor
00217	Kjeldahl Nitrogen	EPA 351.2	1	03/07/2002 16:41	Venia B McFadden	1
00219	Nitrite Nitrogen	EPA 353.2	1	03/02/2002 12:47	Mark A Buckwalter	1
00220	Nitrate Nitrogen	EPA 353.2	1	03/06/2002 16:57	Venia B McFadden	1
00221	Ammonia Nitrogen	EPA 350.2	1	03/07/2002 07:15	Michele L Graham	1
00226	Ortho-Phosphate as P	EPA 365.3	1	03/03/2002 07:15	Daniel S Smith	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	03/05/2002 17:14	Venia B McFadden	1
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	03/06/2002 13:00	Cheryl L Robinson	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	03/04/2002 09:00	Timothy M Petree	1



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Analysis Report

Account Number: 07802

Kerr-McGee Corporation

Oklahoma City OK 73125

P.O. Box 25861

Lancaster Laboratories Sample No. WW 3781335

Collected:03/01/2002 11:00 by BC

Submitted: 03/02/2002 10:15 Reported: 03/12/2002 at 19:47 Discard: 04/12/2002 MA3-TG3-2-010302-02 Grab Water Sample Moss American Superfund Site - Milwaukee, WI

322-- SDG#: KMA04-11

					As Received		
CAT			As Rec	eived	Method		Dilution
No.	Analysis Name	CAS Number	Result		Detection Limit	Units	Factor
00217	Kjeldahl Nitrogen	7727-37-9	1.3		0.30	mg/l	1
00219	Nitrite Nitrogen	14797-65-0	0.018	J	0.015	mg/l	1
00220	Nitrate Nitrogen	14797-55-8	N.D.		0.040	mg/l	1
00221	Ammonia Nitrogen	7664-41-7	0.97	J	0.46	mg/l	1
	Sufficient sample volume was not	available to	perform	a MS/MSD	for this		
	analysis. Therefore, a LCS/LCSD accuracy at a batch level.	was performed	to demo	nstrate pr	ecision and		
00226	Ortho-Phosphate as P	14265-44-2	N.D.		0.0066	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	0.20	J	0.12	mg/l	1

## Laboratory Chronicle

CAT				Analysis	<b>`</b> .	Dilution
No.	Analysis Name	Method	Trial#	Date and Time	Analyst	Factor
00217	Kjeldahl Nitrogen	EPA 351.2	1	03/07/2002 16:43	Venia B McFadden	1
00219	Nitrite Nitrogen	EPA 353.2	1	03/02/2002 12:48	Mark A Buckwalter	1
00220	Nitrate Nitrogen	EPA 353.2	1	03/06/2002 16:59	Venia B McFadden	1
00221	Ammonia Nitrogen	EPA 350.2	1	03/07/2002 07:15	Michele L Graham	1
00226	Ortho-Phosphate as P	EPA 365.3	1	03/03/2002 07:15	Daniel S Smith	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	03/05/2002 15:58	Venia B McFadden	1
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	03/06/2002 13:00	Cheryl L Robinson	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	03/04/2002 09:00	Timothy M Petree	1



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2216 Rev. 9/11/00

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Account Number: 07802

Kerr-McGee Corporation

Oklahoma City OK 73125

P.O. Box 25861



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#### Lancaster Laboratories Sample No. WW 3781336

Collected:03/01/2002 11:05 by BC

Submitted: 03/02/2002 10:15 Reported: 03/12/2002 at 19:47 Discard: 04/12/2002 MA3-TG3-3-010302-03 Grab Water Sample Moss American Superfund Site - Milwaukee, WI

333-- SDG#: KMA04-12

				As Received		
CAT			As Received	Method		Dilution
No.	Analysis Name	CAS Number	Result	Detection Limit	Units	Factor
00217	Kjeldahl Nitrogen	7727-37-9	1.2	0.30	mg/l	1
00219	Nitrite Nitrogen	14797-65-0	0.022 J	0.015	mg/l	1
00220	Nitrate Nitrogen	14797-55-8	N.D.	0.040	mg/l	1
00221	Ammonia Nitrogen	7664-41-7	1.00 J	0.46	mg/l	1
	Sufficient sample volume was not	available to	perform a MS/MSD	for this		
	analysis. Therefore, a LCS/LCSD accuracy at a batch level.	was performed	to demonstrate pr	cecision and		
00226	Ortho-Phosphate as P	14265-44-2	N.D.	0.0066	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	0.30	0.12	mg/l	1

## Laboratory Chronicle

CAT				Analysis	``	Dilution
No.	Analysis Name	Method	Trial#	Date and Time	Analyst	Factor
00217	Kjeldahl Nitrogen	EPA 351.2	1	03/07/2002 16:44	Venia B McFadden	1
00219	Nitrite Nitrogen	EPA 353.2	1	03/02/2002 12:50	Mark A Buckwalter	1
00220	Nitrate Nitrogen	EPA 353.2	1	03/06/2002 17:02	Venia B McFadden	1
00221	Ammonia Nitrogen	EPA 350.2	1	03/08/2002 06:50	Michele L Graham	1
00226	Ortho-Phosphate as P	EPA 365.3	1	03/03/2002 07:15	Daniel S Smith	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	03/05/2002 17:15	Venia B McFadden	1
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	03/06/2002 13:00	Cheryl L Robinson	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	03/04/2002 09:00	Timothy M Petree	1





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Account Number: 07802

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Lancaster Laboratories Sample No. WW 3781337

Collected:03/01/2002 12:30 by BC

Submitted: 03/02/2002 10:15 Reported: 03/12/2002 at 19:47 Discard: 04/12/2002 MA3-TG5-1-010302-06 Grab Water Sample Moss American Superfund Site - Milwaukee, WI

516-- SDG#: KMA04-13

				As Received		
CAT			As Received	Method		Dilution
No .	Analysis Name	CAS Number	Result	Detection Limit	Units	Factor
00217	Kjeldahl Nitrogen	7727-37-9	0.55 J	0.30	mg/l	1
00219	Nitrite Nitrogen	14797-65-0	N.D.	0.015	mg/l	1
00220	Nitrate Nitrogen	14797-55-8	N.D.	0.040	mg/l	1
00221	Ammonia Nitrogen	7664-41-7	N.D.	0.46	mg/l	1
	Sufficient sample volume was not	available to	perform a MS/MS	D for this		
	analysis. Therefore, a LCS/LCSD accuracy at a batch level.	was performed	to demonstrate j	precision and		
00226	Ortho-Phosphate as P	14265-44-2	0.0132 J	0.0066	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	0.12 J	0.12	mg/l	1

## Laboratory Chronicle

CAT				Analysis	`.	Dilution
No.	Analysis Name	Method	Trial#	Date and Time	Analyst	Factor
00217	Kjeldahl Nitrogen	EPA 351.2	1	03/07/2002 16:45	Venia B McFadden	1
00219	Nitrite Nitrogen	EPA 353.2	1	03/02/2002 12:51	Mark A Buckwalter	1
00220	Nitrate Nitrogen	EPA 353.2	1	03/06/2002 17:04	Venia B McFadden	1
00221	Ammonia Nitrogen	EPA 350.2	1	03/08/2002 06:50	Michele L Graham	1
00226	Ortho-Phosphate as P	EPA 365.3	1	03/03/2002 07:15	Daniel S Smith	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	03/05/2002 16:02	Venia B McFadden	1
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	03/06/2002 13:00	Cheryl L Robinson	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	03/04/2002 09:00	Timothy M Petree	1

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Account Number: 07802

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## Lancaster Laboratories Sample No. WW 3781338

Collected:03/01/2002 12:15 by BC

Submitted: 03/02/2002 10:15 Reported: 03/12/2002 at 19:47 Discard: 04/12/2002 MA3-TG5-2-010302-04 Grab Water Sample Moss American Superfund Site - Milwaukee, WI

--524 SDG#: KMA04-14

					As Received		
CAT			As Rece	eived	Method		Dilution
No.	Analysis Name	CAS Number	Result		Detection ` Limit	Units	Factor
00217	Kjeldahl Nitrogen	7727-37-9	0.67	J	0.30	mg/l	1
00219	Nitrite Nitrogen	14797-65-0	N.D.		0.015	mg/l	1
00220	Nitrate Nitrogen	14797-55-8	N.D.		0.040	mg/l	1
00221	Ammonia Nitrogen	7664-41-7	N.D.		0.46	mg/l	1
	Sufficient sample volume was not	available to	perform	a MS/MSD	for this		
	analysis. Therefore, a LCS/LCSD accuracy at a batch level.	was performed	to demor	nstrate pr	ecision and		
00226	Ortho-Phosphate as P	14265-44-2	0.0096	J	0.0066	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	0.12	J	0.12	mg/l	1

## Laboratory Chronicle

CAT				Analysis	``,	Dilution
No.	Analysis Name	Method	Trial#	Date and Time	Analyst	Factor
00217	Kjeldahl Nitrogen	EPA 351.2	1	03/07/2002 16:46	Venía B McFadden	1
00219	Nitrite Nitrogen	EPA 353.2	1	03/02/2002 12:52	Mark A Buckwalter	1
00220	Nitrate Nitrogen	EPA 353.2	1	03/06/2002 17:05	Venia B McFadden	1
00221	Ammonia Nitrogen	EPA 350.2	1	03/08/2002 06:50	Michele L Graham	1
00226	Ortho-Phosphate as P	EPA 365.3	1	03/03/2002 07:15	Daniel S Smith	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	03/05/2002 16:03	Venia B McFadden	1
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	03/06/2002 13:00	Cheryl L Robinson	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	03/04/2002 09:00	Timothy M Petree	1

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Account Number: 07802



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## Lancaster Laboratories Sample No. WW 3781339

Collected:03/01/2002 12:25 by BC

Submitted:03/02/2002 10:15Kerr-McGee CorporationReported:03/12/2002 at 19:47P.O. Box 25861Discard:04/12/2002Oklahoma City OK 73125MA3-TG5-3-010302-05 Grab Water SampleMoss American Superfund Site - Milwaukee, WI

--535 SDG#: KMA04-15

				As Received		
CAT			As Received	Method		Dilution
No.	Analysis Name	CAS Number	Result	Detection Limit	Units	Factor
00217	Kjeldahl Nitrogen	7727-37-9	0.58 J	0.30	mg/l	1
00219	Nitrite Nitrogen	14797-65-0	N.D.	0.015	mg/l	1
00220	Nitrate Nitrogen	14797-55-8	N.D.	0.040	mg/l	1
00221	Ammonia Nitrogen	7664-41-7	N.D.	0.46	mg/l	1
	Sufficient sample volume was not	available to	perform a MS/MSD	for this		
	analysis. Therefore, a LCS/LCSD	was performed	to demonstrate p.	recision and		
	accuracy at a batch level.					
00226	Ortho-Phosphate as P	14265-44-2	0.0132 J	0.0066	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	N.D.	0.12	mg/l	1

## Laboratory Chronicle

CAT				Analysis	``	Dilution
No.	Analysis Name	Method	Trial#	Date and Time	Analyst	Factor
00217	Kjeldahl Nitrogen	EPA 351.2	1	03/07/2002 16:48	Venia B McFadden	1
00219	Nitrite Nitrogen	EPA 353.2	1	03/02/2002 12:53	Mark A Buckwalter	1
00220	Nitrate Nitrogen	EPA 353.2	1	03/06/2002 17:06	Venia B McFadden	1
00221	Ammonia Nitrogen	EPA 350.2	1	03/08/2002 06:50	Michele L Graham	1
00226	Ortho-Phosphate as P	EPA 365.3	1	03/03/2002 07:15	Daniel S Smith	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	03/05/2002 16:04	Venia B McFadden	1
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	03/06/2002 13:00	Cheryl L Robinson	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	03/04/2002 09:00	Timothy M Petree	1



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#### Lancaster Laboratories Sample No. WW 3781340

 Collected:03/01/2002 14:55
 by BC
 Account Number: 07802

 Submitted: 03/02/2002 10:15
 Kerr-McGee Corporation

 Reported: 03/12/2002 at 19:47
 P.O. Box 25861

 Discard: 04/12/2002
 Oklahoma City OK 73125

Discard: 04/12/2002 MA3-TG6-1-010302-08 Grab Water Sample Moss American Superfund Site - Milwaukee, WI

618-- SDG#: KMA04-16

				As Received		
CAT			As Received	Method		Dilution
No.	Analysis Name	CAS Number	Result	Detection	Units	Factor
	-			Limit		
00217	Kjeldahl Nitrogen	7727-37-9	1.2	0.30	mg/l	1
00219	Nitrite Nitrogen	14797-65-0	N.D.	0.015	mg/l	1
00220	Nitrate Nitrogen	14797-55-8	N.D.	0.040	mg/l	1
00221	Ammonia Nitrogen	7664-41-7	1.1	0.46	mg/l	1
	Sufficient sample volume was not	t available to	perform a MS/MS	D for this		
	analysis. Therefore, a LCS/LCSD	was performed	to demonstrate	precision and		
	accuracy at a batch level.					
00226	Ortho-Phosphate as P	14265-44-2	N.D.	0.0066	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	0.31	0.12	mg/l	1

#### Laboratory Chronicle

CAT				Analysis	· · · · · · · · · · · · · · · · · · ·	Dilution
No.	Analysis Name	Method	Trial#	Date and Time	Analyst	Factor
00217	Kjeldahl Nitrogen	EPA 351.2	1	03/07/2002 16:49	Venia B McFadden	1
00219	Nitrite Nitrogen	EPA 353.2	1	03/02/2002 12:55	.Mark A Buckwalter	1
00220	Nitrate Nitrogen	EPA 353.2	1	03/06/2002 17:07	Vènia B McFadden	1
00221	Ammonia Nitrogen	EPA 350.2	1	03/08/2002 06:50	Michele L Graham	1
00226	Ortho-Phosphate as P	EPA 365.3	1	03/03/2002 07:15	Daniel S Smith	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	03/05/2002 17:18	Venia B McFadden	1
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	03/06/2002 13:00	Cheryl L Robinson	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	03/04/2002 09:00	Timothy M Petree	1



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Account Number: 07802

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Oklahoma City OK 73125

P.O. Box 25861

Lancaster Laboratories Sample No. WW 3781341

Collected:03/01/2002 14:45 by BC

Submitted: 03/02/2002 10:15 Reported: 03/12/2002 at 19:47 Discard: 04/12/2002 MA3-TG6-2-010302-07 Grab Water Sample Moss American Superfund Site - Milwaukee, WI

627--SDG#: KMA04-17

				As Received		
CAT			As Received	Method		Dilution
No.	Analysis Name	CAS Number	Result	Detection Limit	Units	Factor
00217	Kjeldahl Nitrogen	7727-37-9	0.99 J	0.30	mg/l	1
00219	Nitrite Nitrogen	14797-65-0	N.D.	0.015	mg/l	1
00220	Nitrate Nitrogen	14797-55-8	N.D.	0.040	mg/l	1
00221	Ammonia Nitrogen	7664-41-7	N.D.	0.46	mg/l	1
	Sufficient sample volume was not	available to	perform a MS/MSD	for this		
	analysis. Therefore, a LCS/LCSD accuracy at a batch level.	was performed	to demonstrate p	recision and		
00226	Ortho-Phosphate as P	14265-44-2	N.D.	0.0066	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	N.D.	0.12	mg/l	1

#### Laboratory Chronicle

CAT				Analysis	· · · · · · · · · · · · · · · · · · ·	Dilution
No.	Analysis Name	Method	Trial#	Date and Time	Analyst	Factor
00217	Kjeldahl Nitrogen	EPA 351.2	1	03/07/2002 16:50	Venia B McFadden	1
00219	Nitrite Nitrogen	EPA 353.2	1	03/02/2002 12:56	Mark A Buckwalter	1
00220	Nitrate Nitrogen	EPA 353.2	1	03/06/2002 17:11	Venia B McFadden	1
00221	Ammonia Nitrogen	EPA 350.2	1	03/08/2002 06:50	Michele L Graham	1
00226	Ortho-Phosphate as P	EPA 365.3	1	03/03/2002 07:15	Daniel S Smith	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	03/05/2002 16:06	Venia B McFadden	1
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	03/06/2002 13:00	Cheryl L Robinson	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	03/04/2002 09:00	Timothy M Petree	1



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Lancaster Laboratories Sample No. WW 3781342

Collected:03/01/2002 15:05 by BC

Submitted: 03/02/2002 10:15 Reported: 03/12/2002 at 19:47 Discard: 04/12/2002 MA3-TG6-3-010302-09 Grab Water Sample Moss American Superfund Site - Milwaukee, WI

639--SDG#: KMA04-18\*

				As Received		
CAT			As Received	Method		Dilution
No.	Analysis Name	CAS Number	Result	Detection Limit	Units	Factor
00217	Kjeldahl Nitrogen	7727-37-9	1.3	0.30	mg/l	1
00219	Nitrite Nitrogen	14797-65-0	N.D.	0.015	mg/l	1
00220	Nitrate Nitrogen	14797-55-8	N.D.	0.040	mg/l	1
00221	Ammonia Nitrogen	7664-41-7	0.53 J	0.46	mg/l	1
	Sufficient sample volume was not	available to	perform a MS/MSD	for this		
	analysis. Therefore, a LCS/LCSD accuracy at a batch level.	was performed	to demonstrate pr	ecision and		
00226	Ortho-Phosphate as P	14265-44-2	N.D.	0.0066	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	N.D.	0.12	mg/l	1

#### Laboratory Chronicle

CAT				Analysis	```	Dilution
No.	Analysis Name	Method	Trial#	Date and Time	Analyst	Factor
00217	Kjeldahl Nitrogen	EPA 351.2	1	03/07/2002 16:51	Venia B McFadden	1
00219	Nitrite Nitrogen	EPA 353.2	1	03/02/2002 13:00	Mark A Buckwalter	1
00220	Nitrate Nitrogen	EPA 353.2	1	03/06/2002 17:12	Venia B McFadden	1
00221	Ammonia Nitrogen	EPA 350.2	1	03/08/2002 06:50	Michele L Graham	1
00226	Ortho-Phosphate as P	EPA 365.3	1	03/03/2002 07:15	Daniel S Smith	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	03/05/2002 16:07	Venia B McFadden	1
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	03/06/2002 13:00	Cheryl L Robinson	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	03/04/2002 09:00	Timothy M Petree	1



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Ţ	Phone #: <u><u><u>B</u>Y</u> +-<u>Y</u>'<u>B</u>Y000 Fax #:</u>	- 847	-710 405	,-7 	Relinqu	ished b	by:		<u></u>			Dat	e	Time	Receiv	ed by:					Date	Ti
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	Type I (Tier I) GLP Site-specific	OC requi	red? Yes	 Nø	Relingu	ushed b	by:					Dat	e	Time	Receiv	ed by:					Date	Tir
	Type II (Tier II) Other (If yes, indicate	e QC sample	and submit tripli	cate volume.)	Relingu	uished b	by:				<u>`</u> ?	Dat	e	Time	Receiv	ed by:					Date	Tir
	Type IV (CLP) Internal Ch	ain of Cus	tody require	d? Yes No											11	11	25	200	$\mathbf{i}$	3	lila	a

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CLIENT: Kerr-Mcgee Corporation SDG: KMA04

#### LANCASTER LABORATORIES

#### INSTRUMENTAL WET CHEMISTRY

#### SAMPLE NUMBERS:

Sample #	Sample Code	<u>Comments</u>
3780743	KM-11	
3780744	KM22-	
3780745	KM33-	
3780746	KM15-	
3780747	KM24-	
3780748	KM36-	
3780749	KM19-	
3780750	KM27-	
3780751	KM38-	
3781334	311	
3781335	322	
3781336	333	
3781337	516	
3781338	524	
3781339	535	
3781340	618- <del>-</del>	
3781341	627	
3781342	639	

#### ANALYSIS:

Dilutions are listed in the table below.

SAMPLE	NO3-N	TP as PO4
LCS	2	2

#### QUALITY CONTROL AND NONCONFORMANCE SUMMARY:

The matrix spike samples for the nitrate nitrogen (3780744, 3780750) and total Kjeldahl nitrogen (3780751) analyses were out of specifications.

#### DATA INTERPRETATION:

No further interpretation is necessary for the data submitted.

Case Narrative Reviewed and Approved by:

Date: 3.3.07. Sandra J. Miller

Specialist/Coordinator

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CLIENT: Kerr – McGee Corporation SDG: KMA04

#### LANCASTER LABORATORIES

#### MISCELLANEOUS WET CHEMISTRY

#### SAMPLE NUMBERS:

<u>Sample #</u>	Sample Code	<u>Comments</u>
3780743	KM-11	
3780744	KM22-	
3780745	KM33-	
3780746	KM15-	
3780747	KM24-	
3780748	KM36-	
3780749	KM19-	
3780750	KM27-	
3780751	KM38-	
3781334	311	
3781335	322	
3781336	333	
3781337	516	
3781338	524	
3781339	535	
3781340	618	
3781341	627	
3781342	639	

#### ANALYSIS:

No problems were encountered during analysis.

#### QUALITY CONTROL AND NONCONFORMANCE SUMMARY:

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

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#### DATA INTERPRETATION:

No further interpretation is necessary for the data submitted.

Case Narrative Reviewed and Approved by:

13-67 Date: Sandra J. Miller

Specialist/Coordinator

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## **CERTIFICATE OF ANALYSIS**

Ton Graam Rov F. Weston, Inc. 750 East Bunker Court Suite 500 Vernon Hills, IL 6006 Sermit Number	1 - 1 4 5 Ø	Date Peported. F.T. Nombars Sample ID: Date Received: Time Seceived	1 19 11 NILKAUKED, 99 79 - JOGGO 300 - 10 09 - 20	WT
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 WATER • AIR • WASTES • FOOD • PHARMACEUTICALS • NUTRACEUTICALS

# CERTIFICATE OF ANALYSIS

Tom Graam	Date Reported: Distri
Roy F. Weston, Ind.	P.O. Number: 0018581 HOSE ANDRIGE
750 East Bunker Court	Sample ID: 9939-00067
Suite 500	Date Received: 3/04/02
Vernon Hills, IL 60061-1450	Time Received: 08:55

Fermit Number

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## CERTIFICATE OF ANALYSIS

Tom Graam Roy F. Weston, Inc. 780 East Bunker Court Suite 500 Vernon Hills, IL 60061-1450 Date Reported: 3:19:00 P.O. Number: 0018581 MCSS AMERI Sample ID: 9939-00007 Date Received: 3/04/00 Time Received: 08:55

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Permit Number

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\*CEA : Comparative Enumeration Assay Includes total heterotrophic and degrader populations

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\*CEA : Comparative Enumeration Assay Includes total heterotrophic and degrader populations

## **ATTACHMENT 4**

## MARCH 2002 GROUNDWATER SAMPLE ANALYTICAL RESULTS

Analytical Data Validation Report Kerr-McGee Corporation Moss American Superfund Site- Milwaukee, WI SDG #: KMA09

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 Semi-Volatile (Polynuclear Aromatic Hydrocarbons-PAH 8310), and Volatile (BTEX 8021) analyses.

## <u>Polynuclear Aromatic Hydrocarbons (PAHs by HPLC, U.S. EPA Method 8310)</u> <u>Moss American Site</u> SDG # KMA09

#### 1.Samples:

	Lab Sample		Date	Date	Date
Client Code	Number	<u>Matrix</u>	<u>Collected</u>	Extracted	Analyzed
MA3-MW-13S-210302-07	3793007	Grab water	03/21/02	03/25/02	04/04/02
MA3-MW-13S-210302-07-DUP	3793008	Grab water	03/21/02	03/25/02	04/04/02
MA3-MW-25S-210302-08	3793009	Grab water	03/21/02	03/25/02	04/04/02
FB-04	3793011	Grab water	03/21/02	03/25/02	04/04/02
MA3-MW-5S-210302-09	3793012	Grab water	03/21/02	03/25/02	04/05/02
MA3-MW-30S-210302-10	3793013	Grab water	03/21/02	03/25/02	04/04/02
MA3-MW-30S-210302-10MS	3793014	Grab water	03/21/02	03/25/02	04/04/02
MA3-MW-30S-210302-10MSD	3793015	Grab water	03/21/02	03/25/02	04/04/02

### 2. Holding Times:

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

#### 3. Method Blank:

The method blank SBLKWC0842 was associated with this SDG. SBLKWC0842 was analyzed on 04/04/02 and associated with (3793007 thru 3793015). The method blank results were free of contamination.

#### 4. Matrix Spike/Matrix Spike Duplicate:

The matrix spike/matrix spike duplicate was performed on 3793013. The MS/MSD recoveries were within the quality control limit. Also, the RPD% values were acceptable.

#### 5. Laboratory control Sample:

The laboratory control sample recoveries were within the quality control limit.

#### 6. Surrogate:

The method blank and investigated samples had recoveries within the acceptance quality control limits.

#### 7. Retention Time:

The retention time recoveries were acceptable.

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Analytical Data Validation Report Kerr-McGee Corporation Moss American Superfund Site- Milwaukee, WI SDG #: KMA09

## 8. Initial and Continuing Calibration:

All the initial calibrations results were within the quality control limits (RSD >+/-30%), except in method file HP03456.i that were analyzed on 04/02/02 for acenaphthylene (77.26%).

All the continuing calibrations results were within the quality control limits (RSD >+/-25%), except in method file HP03456.i/02092-77R, HP03456.i/02092-88R and HP03456.i/02092-99R.d that analyzed on 04/02/02 for acenaphthylene was (-40.09%), (-42.46%), and (-39.70%). According to the initial and continuing calibration above qualify acenaphthylene in the samples as

estimated (J).

Analytical Data Validation Report Kerr-McGee Corporation Moss American Superfund Site- Milwaukee, WI SDG #: KMA09

#### BETX (U.S. EPA Method 8021B) SDG # KMA09

#### 1.Samples:

	Lab Sample		Date	Date
<u>Client Code</u>	Number	Matrix	<u>Collected</u>	<u>Analyzed</u>
MA3-MW-13S-210302-07	3793007	Grab water	03/21/02	03/24/02
MA3-MW-13S-210302-07-DUP	3793008	Grab water	03/21/02	03/24/02
MA3-MW-25S-210302-08	3793009	Grab water	03/21/02	03/24/02
TB-04	3793010	Grab water	03/21/02	03/24/02
FB-04	3793011	Grab water	03/21/02	03/24/02
MA3-MW-5S-210302-09	3793012	Grab water	03/21/02	03/24/02
MA3-MW-30S-210302-10	3793013	Grab water	03/21/02	03/24/02
MA3-MW-30S-210302-10MS	3793014	Grab water	03/21/02	03/24/02
MA3-MW-30S-210302-10MSD	3793015	Grab water	03/21/02	03/24/02

#### 2. Holding Times:

All samples were analyzed within the required holding times.

#### 3. Method Blank:

The method blank BLK6596 was associated with this SDG. BLK6596 was analyzed on 03/23/02 associated with (3793007 thru 3793015). The method blank results were free of contamination.

#### 4. Matrix Spike/Matrix Spike Duplicate :

The matrix spike was performed on sample 3793013. The matrix spike/matrix spike duplicate recoveries were within the quality control limits. Also. The RPD% values were acceptable.

#### 5. Laboratory control Sample:

The laboratory control sample/laboratory control sample duplicate recoveries were within the quality control limits. Also, the relative percent difference (RPD%) values were acceptable.

#### 6. Surrogate:

The method blank and investigated samples had recoveries within the acceptance quality control limits.

#### 7. Initial and Continuing Calibration:

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

Please feel free to contact me at (847) 549-1042 or (847) 971-6800 with any question regarding these validation reports.

Sincerely Tania Balikji-Shammo

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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 801285. Samples arrived at the laboratory on Friday, March 22, 2002.

Client Description	Lancaster Labs Number
MA3-MW-13S-210302-07 Grab Water Sample	3793007
MA3-MW-13S-210302-07-DUP Grab Water Sample	3793008
MA3-MW-25S-210302-08 Grab Water Sample	3793009
TB-04 Water Sample	3793010
FB-04 Grab Water Sample	3793011
MA3-MW-5S-210302-09 Grab Water Sample	3793012
MA3-MW-30S-210302-10 Unspiked Grab Water Sample	3793013
MA3-MW-30S-210302-10-MS Matrix Spike Grab	3793014
MA3-MW-30S-210302-10-MSD Matrix Spike Dup.	3793015

#### **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

Where quality is a science.

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

Respectfully Submitted,

Steven A. Skiles Sr. Chemist



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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Account Number: 07802

Kerr-McGee Corporation

Oklahoma City OK 73125

P.O. Box 25861



#### Page 1 of 2

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#### Lancaster Laboratories Sample No. WW 3793007

Collected:03/21/2002 15:50 by BS

Submitted: 03/22/2002 09:25 Reported: 04/08/2002 at 11:19 Discard: 05/09/2002 MA3-MW-13S-210302-07 Grab Water Sample Moss American Site - WI

07GRA SDG#: KMA09-01

				As Received		
CAT			As Received	Method		Dilution
No.	Analysis Name	CAS Number	Result	Detection Limit	Units	Factor
08213	BTEX (8021)					
00776	Benzene	71-43-2	N.D.	0.20	ug/1 🛰	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. 7	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

		Laborator	y Chro	nicle		
CAT				Analysis		Diluti
No.	Analysis Name	Method	Trial#	Date and Time	Analyst	Facto
08213	BTEX (8021)	SW-846 8021B	1	03/24/2002 00:58	Steven J Stabinger	_ 1
00774	PAH's in Water by HPLC	SW-846 8310	1	04/04/2002 21:14	Mark A Clark	1 E
01146	GC VOA Water Prep	SW-846 5030B	1	03/24/2002 00:58	Steven J Stabinger	🖗 n.a.
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	Lancaster Labo	ratories. Inc.				<u>9</u>



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#### Lancaster Laboratories Sample No. WW 3793007 Collected:03/21/2002 15:50 by BS Account Number: 07802 Submitted: 03/22/2002 09:25 Kerr-McGee Corporation Reported: 04/08/2002 at 11:19 P.O. Box 25861 Discard: 05/09/2002 Oklahoma City OK 73125 MA3-MW-13S-210302-07 Grab Water Sample Moss American Site - WI

07GRA SDG#: KMA09-01 03337 PAH Water Extraction SW-846 3510C

1 03/25/2002 17:00 Desiree J Wann

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Account Number: 07802

Kerr-McGee Corporation

Oklahoma City OK 73125

P.O. Box 25861

Lancaster Laboratories Sample No. WW 3793008

Collected:03/21/2002 15:50 by BS

Submitted: 03/22/2002 09:25 Reported: 04/08/2002 at 11:19 Discard: 05/09/2002 MA3-MW-13S-210302-07-DUP Grab Water Sample Moss American Site - WI

DUP07 SDG#: KMA09-02FD

				As Received		
CAT			As Received	Method		Dilution
No.	Analysis Name	CAS Number	Result	Detection Limit	Units	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. 7	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	<pre>Indeno(1,2,3-cd)pyrene</pre>	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	Chro	nicle			
CAT		-		Analysis		D	ilution
No.	Analysis Name	Method	Trial#	Date and Time	Analyst	Ţ	Fact .:
08213	BTEX (8021)	SW-846 8021B	1	03/24/2002 01:30	Steven J Stabinger		1 .
00774	PAH's in Water by HPLC	SW-846 8310	1	04/04/2002 21:53	Mark A Clark	0	1
01146	GC VOA Water Prep	SW-846 5030B	1	03/24/2002 01:30	Steven J Stabinger	Ē	n.a.
						1	
	Lancaster Labo	ratories, Inc.				1	



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3793008 Lancaster Laboratories Sample No. WW

Collected:03/21/2002 15:50 Account Number: 07802 by BS Submitted: 03/22/2002 09:25 Kerr-McGee Corporation Reported: 04/08/2002 at 11:19 P.O. Box 25861 Discard: 05/09/2002 Oklahoma City OK 73125 MA3-MW-13S-210302-07-DUP Grab Water Sample Moss American Site - WI

DUP07 SDG#: KMA09-02FD 03337 PAH Water Extraction

SW-846 3510C

03/25/2002 17:00 1 Desiree J Wann

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Lancaster	Laboratories	Sample No.	WW	3793009

Collected:03/21/2002 16:00 by BS

Submitted: 03/22/2002 09:25 Reported: 04/08/2002 at 11:19 Discard: 05/09/2002 MA3-MW-25S-210302-08 Grab Water Sample Moss American Site - WI Account Number: 07802

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

325SS SDG#: KMA09-03

				As Received		
CAT			As Received	Method		Dilution
No.	Analysis Name	CAS Number	Result	Detection Limit	Units	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.	Ø.04	ug/1	1
00807	Fluoranthene	206-44-0	N.D.	0.04	ug/i	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

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CAT				Analysis		Dilution
No.	Analysis Name	Method	<b>Trial#</b>	Date and Time	Analyst	Fact
08213	BTEX (8021)	SW-846 8021B	1	03/24/2002 02:03	Steven J Stabinger	- 1
00774	PAH's in Water by HPLC	SW-846 8310	1	04/04/2002 23:10	Mark A Clark	0 1
01146	GC VOA Water Prep	SW-846 5030B	1	03/24/2002 02:03	Steven J Stabinger	0 n.a.
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#### 3793009 Lancaster Laboratories Sample No. WW

Collected:03/21/2002 16:00 by BS

Submitted: 03/22/2002 09:25 Reported: 04/08/2002 at 11:19 Discard: 05/09/2002 MA3-MW-25S-210302-08 Grab Water Sample Moss American Site - WI

325SS SDG#: KMA09-03 03337 PAH Water Extraction

SW-846 3510C

Account Number: 07802

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

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03/25/2002 17:00 Desiree J Wann



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#### Lancaster Laboratories Sample No. WW 3793010

Collected:03/21/2002 18:00

Submitted: 03/22/2002 09:25 Reported: 04/08/2002 at 11:19 Discard: 05/09/2002 TB-04 Water Sample Moss American Site - WI Account Number: 07802

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

TB04W SDG#: KMA09-04TB

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

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CAT	CAT Analysis								
No.	Analysis Name	Method	Trial#	Date and Time	Analyst	Factor			
08213	BTEX (8021)	SW-846 8021B	1	03/24/2002 00:25	Steven J Stabinger	1			
01146	GC VOA Water Prep	SW-846 5030B	1	03/24/2002 00:25	Steven J Stabinger	n.a.			

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#### 3793011 Lancaster Laboratories Sample No. WW

Collected:03/21/2002 16:30 by BS

Submitted: 03/22/2002 09:25 Reported: 04/08/2002 at 11:19 Discard: 05/09/2002 FB-04 Grab Water Sample Moss American Site - WI

Account Number: 07802

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

F04BC SDG#: KMA09-05FB

				As Received		
CAT			As Received	Method		Dilution
No.	Analysis Name	CAS Number	Result	Detection Limit	Units	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	м.д. Э	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				Analysis			
NO.	Analysis Name	Method	Trial#	Date and Time	Analyst	Factor	
08213	BTEX (8021)	SW-846 8021B	1	03/24/2002 02:36	Steven J Stabinger	1	
17700	PAH's in Water by HPLC	SW-846 8310	1	04/04/2002 23:49	Mark A Clark	1	
01146	GC VOA Water Prep	SW-846 5030B	1	03/24/2002 02:36	Steven J Stabinger 🖗	n.a.	
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Lancaster Laboratories Sample No. WW 3793011

Collected:03/21/2002 16:30 by BS

Submitted: 03/22/2002 09:25 Reported: 04/08/2002 at 11:19 Discard: 05/09/2002 FB-04 Grab Water Sample Moss American Site - WI

F04BC SDG#: KMA09-05FB 03337 PAH Water Extraction

SW-846 3510C

Account Number: 07802

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

1 03/25/2002 17:00 Desiree J Wann



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Account Number: 07802

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Oklahoma City OK 73125

P.O. Box 25861

Lancaster	Laboratories	Sample	No.	WW	3793012	
Collected	:03/21/2002 1	7:00	bу	BS		
Submitted	: 03/22/2002 (	09:25				

Reported: 04/08/2002 at 11:19 Discard: 05/09/2002 MA3-MW-5S-210302-09 Grab Water Sample Moss American Site - WI

09GRA SDG#: KMA09-06

				As Received		
CAT			As Received	Method		Dilution
No.	Analysis Name	CAS Number	Result	Detection Limit	Units	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	м.д. Э	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	' Chro	nicle		
CAT				Analysis		Dilution
No.	Analysis Name	Method	Trial#	Date and Time	Analyst	Factor
08213	BTEX (8021)	SW-846 8021B	1	03/24/2002 03:08	Steven J Stabinger	1
00774	PAH's in Water by HPLC	SW-846 8310	1	04/05/2002 00:27	Mark A Clark	3 1
01146	GC VOA Water Prep	SW-846 5030B	1	03/24/2002 03:08	Steven J Stabinger	n.a.
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	Lancaster Labo	ratories, Inc.			l. l.	<b>_</b> *



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Lancaster Laboratories Sample No. WW 3793012

Collected:03/21/2002 17:00 Submitted: 03/22/2002 09:25 Reported: 04/08/2002 at 11:19 Discard: 05/09/2002 MA3-MW-5S-210302-09 Grab Water Sample Moss American Site - WI

09GRA SDG#: KMA09-06 03337 PAH Water Extraction SW-846 3510C

P.O. Box 25861

Account Number: 07802

Kerr-McGee Corporation

Oklahoma City OK 73125

1 03/25/2002 17:00 Desiree J Wann

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Account Number: 07802

Lancaster Laboratories Sample No. WW 3793013

Collected:03/21/2002 17:15 by BS

Kerr-McGee Corporation Submitted: 03/22/2002 09:25 Reported: 04/08/2002 at 11:20 P.O. Box 25861 Discard: 05/09/2002 Oklahoma City OK 73125 MA3-MW-30S-210302-10 Unspiked Grab Water Sample Moss American Site - WI

10SUP SDG#: KMA09-07BKG

				As Received		
CAT			As Received	Method		Dilution
No.	Analysis Name	CAS Number	Result	Detection Limit	Units	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. 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.	0.2	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

CAT				Analysis		Dilution
No.	Analysis Name	Method	Trial#	Date and Time	Analyst	Factor
08213	BTEX (8021)	SW-846 8021B	1	03/24/2002 03:41	Steven J Stabinger	_ 1
00774	PAH's in Water by HPLC	SW-846 8310	1	04/04/2002 17:23	Mark A Clark	61
01146	GC VOA Water Prep	SW-846 5030B	1	03/24/2002 03:41	Steven J Stabinger	🤄 n.a.
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	Lancaster Labo	ratories Inc				0



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Lancaster Laboratories Sample No. WW 3793013 Collected:03/21/2002 17:15 by BS Account Number: 07802 Submitted: 03/22/2002 09:25 Kerr-McGee Corporation Reported: 04/08/2002 at 11:20 P.O. Box 25861 Discard: 05/09/2002 MA3-MW-30S-210302-10 Unspiked Grab Water Sample Moss American Site - WI

 10SUP
 SDG#:
 KMA09-07BKG

 03337
 PAH Water Extraction
 SW-846 3510C

1 03/25/2002 17:00

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Account Number: 07802

Kerr-McGee Corporation

Oklahoma City OK 73125

P.O. Box 25861



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Lancaster Laboratories Sample No. WW 3793014

Collected:03/21/2002 17:15 by BS

Submitted: 03/22/2002 09:25 Reported: 04/08/2002 at 11:20 Discard: 05/09/2002 MA3-MW-30S-210302-10-MS Matrix Spike Grab Water Sample Moss American Site - WI

10SUP SDG#: KMA09-07MS

				As Received		
CAT			As Received	Method		Dilution
No.	Analysis Name	CAS Number	Result	Detection Limit	Units	Factor
08213	BTEX (8021)				<b>\</b>	
	_				)	
00776	Benzene	71-43-2	22.	0.20	ug/1 🛰	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	68.	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	190. 5	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/1	1
00895	Dibenz(a, h) anthracene	53-70-3	3.	0.04	ug/1	1
00898	Indeno(1,2,3-cd)pyrene	193-39-5	6.	0.08	ug/1	1
00907	Benzo(g,h,i)pervlene	191-24-2	12.	0.1	ug/1	-
07409	Chrysene	218-01-9	6.	0.08	ug/1	1
07410	Benzo(k) fluoranthene	207-08-9	1.	0.02	ug/l	1

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Labo	Laco	<u> </u>		T T C T C	5

			Analysis		Dilution
Analysis Name	Method	Trial#	Date and Time	Analyst	Factor
BTEX (8021)	SW-846 8021B	1	03/24/2002 04:13	Steven J Stabinger	_ 1
PAH's in Water by HPLC	SW-846 8310	1	04/04/2002 18:02	Mark A Clark	Ø 1
GC VOA Water Prep	SW-846 5030B	1	03/24/2002 04:13	Steven J Stabinger	🖗 n.a.
		~			2
Lancastor Labo	ratorios Inc				2
	Analysis Name BTEX (8021) PAH's in Water by HPLC GC VOA Water Prep	Analysis NameMethodBTEX (8021)SW-846 8021BPAH's in Water by HPLCSW-846 8310GC VOA Water PrepSW-846 5030B	Analysis NameMethodTrial#BTEX (8021)SW-846 8021B1PAH's in Water by HPLCSW-846 83101GC VOA Water PrepSW-846 5030B1	Analysis NameMethodTrial#Date and TimeBTEX (8021)SW-846 8021B103/24/2002 04:13PAH's in Water by HPLCSW-846 8310104/04/2002 18:02GC VOA Water PrepSW-846 5030B103/24/2002 04:13	Analysis Name       Method       Trial#       Date and Time       Analyst         BTEX (8021)       SW-846 8021B       1       03/24/2002 04:13       Steven J Stabinger         PAH's in Water by HPLC       SW-846 8310       1       04/04/2002 18:02       Mark A Clark         GC VOA Water Prep       SW-846 5030B       1       03/24/2002 04:13       Steven J Stabinger



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## Page 2 of 2

1

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Lancaster Laboratories Sample No. WW 3793014 Collected:03/21/2002 17:15 by BS Account Number: 07802 Submitted: 03/22/2002 09:25 Kerr-McGee Corporation Reported: 04/08/2002 at 11:20 P.O. Box 25861 Discard: 05/09/2002 Oklahoma City OK 73125 MA3-MW-30S-210302-10-MS Matrix Spike Grab Water Sample Moss American Site - WI 10SUP SDG#: KMA09-07MS SW-846 3510C 1 03/25/2002 17:00 03337 PAH Water Extraction Desiree J Wann





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#### Page 1 of 2

Account Number: 07802

Kerr-McGee Corporation

Oklahoma City OK 73125

P.O. Box 25861

Lancaster Laboratories Sample No. 3793015 WW

Collected:03/21/2002 17:15 by BS

Submitted: 03/22/2002 09:25 Reported: 04/08/2002 at 11:20 Discard: 05/09/2002 MA3-MW-30S-210302-10-MSD Matrix Spike Dup. Water Sample Moss American Site - WI :

10SUP SDG#: KMA09-07MSD\*

				As Received		
CAT			As Received	Method		Dilution
No.	Analysis Name	CAS Number	Result	Detection Limit	Units	Factor
08213	BTEX (8021)				~	
00776	Pongono	71-42-2	21	0.00	· · · · · ·	
00770	Teluere	100_00_3	21.	0.20	ug/1	- 1
00779	Ethylbonzono	100-41-4	22.	0.20	ug/1	1
00770	Total Yulanag	1220 20-7	22. CE	0.20	ug/1	1
00779	Total Xylenes	1330-20-7	65.	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	180. Ú	0.8	ug/l	1
00783	Acenaphthene	83-32-9	180.	0.8	ug/l	1
00784	Fluorene	86-73-7	17.	0.2	ug/l	1
00785	Phenanthrene	85-01-8	5.	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/1	1
00823	Benzo(a)pyrene	50-32-8	1.	0.02	ug/1	1
00895	Dibenz(a, h) anthracene	53-70-3	3.	0.04	ug/1	1
00898	Indeno(1,2,3-cd)pyrene	193-39-5	6.	0.08	ug/1	1
00907	Benzo(g,h,i)perylene	191-24-2	12.	0.1	ug/1	1
07409	Chrysene	218-01-9	6.	0.08	ug/1	1
07410	Benzo(k)fluoranthene	207-08-9	1.	0.02	ug/1	1

		Laboratory	Chro	nicle		
CAT				Analysis		Dilution
No.	Analysis Name	Method	Trial#	Date and Time	Analyst	Factor
08213	BTEX (8021)	SW-846 8021B	1	03/24/2002 04:46	Steven J Stabinger	1
00774	PAH's in Water by HPLC	SW-846 8310	1	04/04/2002 18:40	Mark A Clark	1 1
01146	GC VOA Water Prep	SW-846 5030B	1	03/24/2002 04:46	Steven J Stabinger	n.a.
						2
	Lancaster Labo	ratories Inc			4	



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#### Lancaster Laboratories Sample No. WW 3793015

Collected:03/21/2002 17:15 by BS Submitted: 03/22/2002 09:25

Reported: 04/08/2002 at 11:20 Discard: 05/09/2002 MA3-MW-30S-210302-10-MSD Matrix Spike Dup. Water Sample Moss American Site - WI

10SUP SDG#: KMA09-07MSD\* SW-846 3510C 03337 PAH Water Extraction

Account Number: 07802

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

1 03/25/2002 17:00 Desiree J Wann

8825



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

2216 Rev. 9/11/00

#### Page 2 of 2

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## Analysis Requesi/Environmenial Services Cheinio Cersion

# Lancaster Laboratories

For Lancaster Laboratories use only Acct. # \_\_\_\_\_\_ Sample # 3793007 - 1.5

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

Iclient: Kerr Ucgee	Acct. #:			M	atrix	4			(5	)/	40.54	A	nalys	es Re	quest	ed		or lab use	only
Project Name/#: Moss American	PWSID #:			-	Check if pplicable)		S	r		pres	/		7	7		F	SCR #	:	
Project Manager: 10m Gragen	P.O.#			-	ES an	1997 - S	Itaine		/x	<u>/</u> لو									amples equeste
Name of state where samples were collected:	NL Dete	Time	b: ()	- Antonia		ler,	al # of Cor		4		/ /	/						:	perature of s n receipt (if n
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MA3-MW-135-210302-07	3/21/02	0221	V		1		3	3								<u> </u>			
MA3-MW-135-219302-07-DUP	3/21/02	1550	V		$\checkmark$		S	3											
MA3-MW-255-210302-08	3/21/-2	1600	5		~	1	3	3											
TB-04	3/21/02	1800	1		*		2	2										1	
FB-04	3/2/02	1630	1		1		3	3											
MA3-MW-55-210302-8	3/21/02	1700	5		1	ſ	3	3											
MA3-MW-305-210302-10	3/21/02	1715	1		V	1	3	3											
MA3-MW-305-210302-10-MS	3/21/02	1715	-		V	1	3	3											
MA3-MW-305-210302-10-MSD	3/21/02	1715	4		-		3	3											
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7) <b>Turnaround Time Requested</b> (TAT) (please circle): (Rush TAT is subject to Lancaster Laboratories approval and	Normal F surcharge.)	lush	Relinqu	uished	by:	2	1	/		Da	te T	ime Sof	Receive	ed by:				Date	Time (
Date results are needed:			Reliqu	uished	by:	~		F		72(/ Da	te T	ime	Receive	ed by:		~~~~~		Date	Time
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8 Data Package Options (please circle if requested)	SDG	Complete?	Relinqı	uished	by:			;		Da	te T	ime	Receive	ed by:				Date	Time
QC Summary Type VI (Raw Data) PER QU	STE Yes		Relinqu	uished	by:		X			Da	te T	ïme	Receive	ed by:				Date	Time
Type II (Tier II) Other (If yer indicate OC requ	ired? Yes	No,						$\overline{}$										1	$\searrow$
Type III (NJ Red. Del.)			Relinqu	uished	by:					Da	te T	ime	Receive	ed by:				Date	Time
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2102 Rev. 3/7/01

## Analysis Requesi/Environmental Services Chain of Cusioc



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2102 Rev. 3/7/01

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Client: Weston/Ken McGee	Acct. #:			M	latrix .	(4)			(5		<u>978</u> 7	A		es Ke	quest	ea	/ 1	SC:	
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Project Manager: Ton Graan	P.O.#			_	Đ đ		ners										/		les
Sampler: Schaefer, Crawford, Hagiwa	VGQuote #:				DES		ntai		/	/	/		/		/	/ /			samp
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Sample Identification	Date Collected	Time : Collected	Grab	Soil	Wate	othe	Total									Remar	ks		Temp
MAZ-MW-305-210302-10	3/21/02	1715	1	Τ	V		2	2											
MA3-MW-305-210302-10-MS	3/21/02	1715	V		//	1	2	2											
MA3-MW-305-210302-10-MSD	3/21/02	1715	1		~	T	2	2										· . • .	
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Phone #: 847-918-4000 Fax #: 847	1-418-4	055	Relinc	uishec	by.					Da	te	Time	Receiv	ed hv:				Date	Time
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Type II (Tier II)         Other         Site-specific QC requirements           off are studicate Of a sub-         Site sub-         Site specific QC requirements	red? Yes	No							$\sum$		_					. <u></u>			
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Type IV (CLP)											$\checkmark$		Kn	++12	1.	Reall	00	000	7622

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## Analysis Request/Environmental Services Chain of Cusion

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For Lancaster Laboratories use only Acct. # 7802 Sample # 3793007-15

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	Please pri	nt. Instruc	tions or	n reve	erse s	ide co	orres	spond	l with	circlec	l num	bers.							
client: Kerr McGee	Acct. #:			Mat	trix (	4)			5	$\sum$		. , <b>A</b>	nalys	es Re	quest	ed	For FSC:	lab use	only
Project Name/#: Moss American	PWSID #:				ck if Solate)					/ /		/ /	/	/ /	/ /	/	SCR #:		
Project Manager: Tom GMA	P.O.#				applic		lers	-								- Γ			sted)
Sampler: B. Schaefer, B. Crawford, Y. Hagi	WWO Duote #:				able DES		ntair		/		/	/			/ .				sampl reque
Name of state where samples were collected:	WL		© (C)				# of Co	/	$\left  \right\rangle$	'	. /	/ /		/ /					rature of eceipt (if
2) Sample Identification	a Date (Second	Time ( Collected	Grab Comp	Soil	Watei	Othei	Total	$\sqrt{2}$	7							Remarks			Tempe
MA3-MW-135-210302-07	3/21/02	1550	1		V		2	2											
MA3-71W-135-210302-07-DU	3/21/02	1550	1		1		2	2											
10302-NW-255-210302-08	3/21/02	1600	1		~		2	2				ļ		ļ		<b> </b>			
FB-04	3/21/02	1630	K		$\checkmark$		2	Z				ļ	ļ					•	_
MA3 MW-055-210302-09	3/21/02	1700	V		~		2	2				ļ	ļ						
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)Data Package Options (please circle if requested)	SDG	Complete?	Relinqui	shed by	y:	$\overline{\}$	·			Da	te	Time	Řeceiv	ed by:				Date	Time
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Type IV (CLP)	stody require	d? Yes No									~		IK	at	Leil	Penklo	ы   Г	1-22 02	A25

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## CASE NARRATIVE

## Client: Kerr-McGee Corporation SDG #: KMA09

## LANCASTER LABORATORIES PAH BY HPLC

## SAMPLE NUMBER(S) :

		Matrix	
LL #'s	<u>Sample Code</u>	<u>Water</u>	<u>Comments</u>
3793007	07GRA	Х	
3793008	DUP07	Х	
3793009	325SS	Х	
3793011	F04BC	Х	Client Blank
3793012 .	09GRA	Х	
3793013	10SUP	Х	Unspiked 💦
3793014	10SUPMS	Х	Matrix Spike 😁
3793015	10SUPMSD	Х	Matrix Spike Dup

## LABORATORY SUBMITTED QC:

SBLKWC084	SBLKWC0842	Х	Method Blank
084WCLCS	084WCLCS2	Х	Lab Control Sample

## SAMPLE PREPARATION:

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

Sample Code	<u>Volume</u>
DUP07	983 mls
09GRA	983 mls
10SUP, 10SUPMS, 10SUPMSD	940 mls

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

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## Case Narrative SDG #: KMA09 continued

### 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:

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: \_1/16/02



Case Narrative SDG# KMA09

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

#### SAMPLE ANALYSES

LL	Sample	Matrix	
Sample #	Designation	Soil Water	Comments
3793007	07GRA	Х	
3793008	DUP07	Х	
3793009	325SS	Х	
3793010	TB04W	Х	
3793011	F04BC	Х	
3793012	09GRA	Х	
3793013	10SUP	Х	Unspiked
3793014MS	10SUP	Х	Matrix Spike
3793015MSD	10SUP	Х	Matrix Spike Dup
		• •	

#### QUALITY CONTROL ANALYSES

BLK6596	Х	Method Blank
LCS6596	X	Lab Control Sample
LDS6596	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. 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, 2.55um column was used for the analysis of all samples. The surrogate concentration was 30.0 UG/L.

The instrument ID displayed on the analytical data is 5890-64--, while that displayed on the forms is 5890-65--. Although different, these IDs represent the same instrument.

No problems were encountered during analysis.

#### QUALITY CONTROL AND NONCONFORMANCE SUMMARY

Client submitted batch QC was referenced.

All QC was within specifications.

Page 1 of 2

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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:

Lancaster Laboratories 2425 New Holland Pike • Lancaster, PA 17601

Date // 12/02 Steve J. Stabinger, Group Leader

Analytical Data Validation Report Kerr-McGee Corporation Moss American Superfund Site- Milwaukee, WI SDG #: KMA10

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 Semi-Volatile (Polynuclear Aromatic Hydrocarbons-PAH 8310), and Volatile (BTEX 8021) Analyses.

## Polynuclear Aromatic Hydrocarbons (PAHs by HPLC, U.S. EPA Method 8310) Moss American Site SDG # KMA10

### 1.Samples:

	Lab Sample		Date	Date	Date
Client Code	<u>Number</u>	<u>Matrix</u>	<u>Collected</u>	<b>Extracted</b>	<u>Analyzed</u>
MAFB5	3793631	Grab water	03/22/02	03/25/02	04/05/02
MA-3S	3793632	Grab water	03/22/02	03/25/02	04/05/02
MA-3I	3793633	Grab water	03/22/02	03/25/02	04/05/02

## 2. Holding Times:

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

## 3. Method Blank:

The method blank SBLKWC0842 was associated with this SDG. SBLKWC0842 was analyzed on 04/04/02 and associated with (MAFB5, MA-3S, and MA-3I). The method blank SBLKWC0842 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. Therefore, MS/MSD were performed on sample 10SUP (3793013) from different set. The MS/MSD recoveries were within the quality control limit. Also, the RPD% values were acceptable.

### 5. Laboratory control Sample:

The laboratory control sample recoveries were within the quality control limit.

### 6. Surrogate:

The method blank and investigated samples had recoveries within the acceptance quality control limits.

### 7. Retention Time:

The retention time recoveries were acceptable.

Analytical Data Validation Report Kerr-McGee Corporation Moss American Superfund Site- Milwaukee, WI SDG #: KMA10

## 8. Initial and Continuing Calibration:

All the initial calibrations results were within the quality control limits (RSD >+/-30%), except in method file HP03456.i that were analyzed on 04/02/02, 04/02/02 for acenaphthylene (77.26%). Therefore, qualify the positive results in the samples as estimated (J).

All the continuing calibrations results were within the quality control limits (RSD >+/-25%), except in method file HP03456.i that were analyzed on 04/02/02, 04/02/02 for acenaphthylene (-40.09%). Therefore, qualify the positive results in the samples as estimated (J).

Thursday, May 09, 2002

Analytical Data Validation Report Kerr-McGee Corporation Moss American Superfund Site- Milwaukee, WI SDG #: KMA10

## BETX (U.S. EPA Method 8021B) SDG # KMA10

### 1.Samples:

	Lab Sample		Date	Date
Client Code	<u>Number</u>	<u>Matrix</u>	<u>Collected</u>	<u>Analyzed</u>
MAFB5	3793631	Grab water	03/22/02	03/25/02
MA-3S	3793632	Grab water	03/22/02	03/26/02
MA-3I	3793633	Grab water	03/22/02	03/26/02
MA-TB	3793634	Grab water	03/22/02	03/25/02

## 2. Holding Times:

All samples were analyzed within the required holding times.

## 3. Method Blank:

The method blank BLK1623 was associated with this SDG. BLK1623 was analyzed on 03/25/02 associated with (MAFB5, MA-3s, MA-3I, and MA-TB). The method blank BLK1623 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 3793213 from different set. The matrix spike recoveries were within the quality control limits.

## 5. Laboratory control Sample:

The laboratory control sample/laboratory control sample duplicate recoveries were within the quality control limits. Also, the relative percent difference (RPD%) values were acceptable.

### 6. Surrogate:

The method blank and investigated samples had recoveries within the acceptance quality control limits.

## 7. Initial and Continuing Calibration:

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

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

Sincerely Tania Balikji-Shammo 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 801421. Samples arrived at the laboratory on Saturday, March 23, 2002.

Client Description FB-05 Field Blank Grab Water Sample MA3-MW-3S-220302-01 Grab Water Sample MA3-MW-3I-220302-02 Grab Water Sample TB-05 Trip Blank Water Sample Lancaster Labs Number 3793631 3793632 3793633 3793633 3793634

#### METHODOLOGY

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

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

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

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

Respectfully Submitted,

Christine M. Ratchild Onristine M. Ratcliff Er. Chemist



Lancaster Laboratories, Inc. MEMBER 2425 New Holland Pike PO Box 12425 Lancaster, PA 17605-2425 717-656-2300 Fax: 717-656-2681 (1) (2) (2) (2)

Analysis kepon



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Page 1 of 2

#### Lancaster Laboratories Sample No. WW 3793631

Collected:03/22/2002 09:00 by BC

Submitted: 03/23/2002 10:15 Reported: 04/19/2002 at 09:53 Discard: 05/20/2002 FB-05 Field Blank Grab Water Sample Moss American Site - WI Account Number: 07802

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

MAFB5 SDG#: KMA10-01FB

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CATAs ReceivedMethodDilutionNo.Analysis NameCAS NumberResultDetection LimitUnitsFactor08213BTEX (8021)					AS Received		
No.       Analysis Name       CAS Number       Result       Detection Limit       Units       Factor         08213       BTEX (8021)       .	CAT			As Received	Method		Dilution
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         00779       Total Xylenes       1330-20-7       N.D.       0.60       ug/l       1         00779       Total Xylenes       1330-20-7       N.D.       0.60       ug/l       1         00779       Total Xylenes       1030-20-7       N.D.       0.60       ug/l       1         00779       Total Xylenes       1030-20-7       N.D.       0.60       ug/l       1         00774       PAH's in Water by HPLC       00775       Naphthalene       91-20-3       N.D.       0.8       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       <	No.	Analysis Name	CAS Number	Result	Detection Limit	Units	Factor
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         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.       0.2       ug/l       1         00785       Phenanthrene       85-01-8       N.D.       0.08       ug/l       1         00789       Anthracene       1	08213	BTEX (8021)					
00776       Henzene       71-43-2       N.D.       0.20       ug/1       1         00777       Toluene       108-88-3       N.D.       0.20       ug/1       1         00778       Ethylbenzene       100-41-4       N.D.       0.20       ug/1       1         00779       Total Xylenes       1330-20-7       N.D.       0.60       ug/1       1         00779       Total Xylenes       1330-20-7       N.D.       0.60       ug/1       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/1       1         00782       Acenaphthylene       208-96-8       N.D.       0.8       ug/1       1         00783       Acenaphthene       83-32-9       N.D.       0.8       ug/1       1         00784       Fluorene       86-73-7       N.D.       0.2       ug/1       1         00785       Phenanthrene       85-01-8       N.D.       0.04       ug/1       1         00789       Anthracene       1	00776	Desses	<b>71</b> 42 5		A		
00777       Totuene       108-88-3       N.D.       0.20       ug/1       1         00778       Ethylbenzene       100-41-4       N.D.       0.20       ug/1       1         00779       Total Xylenes       1330-20-7       N.D.       0.60       ug/1       1         00779       Total Xylenes       1330-20-7       N.D.       0.60       ug/1       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/1       1         00782       Acenaphthylene       208-96-8       N.D.       0.8       ug/1       1         00783       Acenaphthene       83-32-9       N.D.       0.8       ug/1       1         00784       Fluorene       86-73-7       N.D.       0.2       ug/1       1         00785       Phenanthrene       85-01-8       N.D.       0.08       ug/1       1         00789       Anthracene       120-12-7       N.D.       0.04       ug/1       1         00781       Fluoranthene	00776	Benzene	/1-43-2	N.D.	0.20	ug/1 👞	1
00778       ETHylbenzene       100-41-4       N.D.       0.20       ug/1       1         00779       Total Xylenes       1330-20-7       N.D.       0.60       ug/1       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/1       1         00782       Acenaphthylene       208-96-8       N.D.       0.8       ug/1       1         00784       Fluorene       86-73-7       N.D.       0.8       ug/1       1         00785       Phenanthrene       85-01-8       N.D.       0.08       ug/1       1         00789       Anthracene       12	00777	Toluene	108-88-3	N.D.	0.20	ug/1	1
00779Total Xylenes1330-20-7N.D.0.60ug/l1Sufficient 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.0.9ug/l100774PAH's in Water by HPLC0.99ug/l100782Acenaphthylene208-96-8N.D.0.8ug/l100783Acenaphthene83-32-9N.D.0.8ug/l100784Fluorene86-73-7N.D.0.2ug/l100785Phenanthrene85-01-8N.D.0.08ug/l100789Anthracene120-12-7N.D.0.04ug/l100807Fluoranthene206-44-0N.D.0.04ug/l100811Pyrene129-00-0N.D.0.2ug/l1	00778	Etnyldenzene	100-41-4	N.D.	0.20	ug/1	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 00782 Acenaphthylene 91-20-3 N.D. 0.9 ug/l 1 00783 Acenaphthene 208-96-8 N.D. 0.8 ug/l 1 00784 Fluorene 83-32-9 N.D. 0.8 ug/l 1 00785 Phenanthrene 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	00779	Total Xylenes	1330-20-7	N.D.	0.60	ug/1	1
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         00775       Naphthalene       91-20-3       N.D.       0.9       ug/l       1         00775       Naphthalene       91-20-3       N.D.       0.8       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		Sufficient sample volume was not	available to	perform a MSD for	this		
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.       0.2       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		analysis. However, a MS was perf	ormed. In addi	tion, a LCS/LCSD v	las		
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.       0.2       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		performed to demonstrate precisi	on and accuracy	y at a batch leve			
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       Acenaphthylene       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	00774	PAH's in Water by HPLC					
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	00775	Naphthalene	91-20-3	N.D.	0.9	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	00782	Acenaphthylene	208-96-8	N.D.( T)	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	00783	Acenaphthene	83-32-9	N.D.	0.8	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	00784	Fluorene	86-73-7	N.D.	0.2	uq/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	00785	Phenanthrene	85-01-8	N.D.	0.08	uq/1	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	00789	Anthracene	120-12-7	N.D.	0.04	uq/1	1
00811 Pyrene 129-00-0 N.D. 0.2 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	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	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	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	00895	Dibenz(a,h) anthracene	53-70-3	N.D.	0.04	ug/1	1
00898 Indeno(1.2,3-cd) pyrene 193-39-5 N.D. 0.08 ug/l 1	00898	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.08	ug/1	1
$00907  \text{Benzo}(q,h,i) \text{ pervlene} \qquad 191-24-2  \text{N.D.} \qquad 0.09 \qquad \text{ug/1}  1$	00907	Benzo(q,h,i)pervlene	191-24-2	N.D.	0.09	ug/1	1
07409 Chrysne 218-01-9 N.D. 0.08 mg/l 1	07409	Chrysene	218-01-9	N.D.	0.08	- <u>-</u> , - ug/l	- 1
07410 Benzo(k) fluoranthene 207-08-9 N.D. 0.02 ug/1 1	07410	Benzo(k)fluoranthene	207-08-9	N.D.	0.02	ug/1	-

### Laboratory Chronicle



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## Lancaster Laboratories Sample No. WW 3793631

Collected:03/22/2002 09:00 by BC

Submitted: 03/23/2002 10:15 Reported: 04/19/2002 at 09:53 Discard: 05/20/2002 FB-05 Field Blank Grab Water Sample Moss American Site - WI Account Number: 07802

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

MAFB5	SDG#:	KMA10-01FB
CAT		

CAT				Analysis		Dilution
No.	Analysis Name	Method	Trial#	Date and Time	Analyst	Factor
08213	BTEX (8021)	SW-846 8021B	1	03/25/2002 16:55	Melissa D Mann	1
00774	PAH's in Water by HPLC	SW-846 8310	1	04/05/2002 03:40	Mark A Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	03/25/2002 16:55	Melissa D Mann	n.a.
03337	PAH Water Extraction	SW-846 3510C	1	03/25/2002 17:00	Desiree J Wann	1
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Lancaster Laboratories Sample No. WW 3793632

Collected:03/22/2002 11:00 by BC

Submitted: 03/23/2002 10:15 Reported: 04/19/2002 at 09:53 Discard: 05/20/2002 MA3-MW-3S-220302-01 Grab Water Sample Moss American Site - WI Account Number: 07802

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

MA-3S SDG#: KMA10-02

				As Received		
CAT			As Received	Method		Dilution
No.	Analysis Name	CAS Number	Result	Detection Limit	Units	Factor
08213	BTEX (8021)					
					1	
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	l
	Sufficient sample volume was not	available to	perform a MSD for	this		
	analysis. However, a MS was perf	ormed. In addi	tion, a LCS/LCSD v	√as		
	performed to demonstrate precisi	on and accurac	y at a batch leve	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.DVT	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

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Lancaster Laboratories Sample No. WW 3793632

Collected:03/22/2002 11:00 by BC Submitted: 03/23/2002 10:15 Reported: 04/19/2002 at 09:53

Discard: 05/20/2002 MA3-MW-3S-220302-01 Grab Water Sample Moss American Site - WI

Account Number: 07802

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

MA-3S	SDG#:	KMA10-02	
CAT			
No	Analycia	Namo	

CAT				Analysis		Dilution
No.	Analysis Name	Method	Trial#	Date and Time	Analyst	Factor
08213	BTEX (8021)	SW-846 8021B	1	03/26/2002 00:33	Darvin L Martin	1
00774	PAH's in Water by HPLC	SW-846 8310	1	04/05/2002 04:19	Mark A Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	03/26/2002 00:33	Darvin L Martin	n.a.
03337	PAH Water Extraction	SW-846 3510C	1	03/25/2002 17:00	Desiree J Wann	1





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3793633 Lancaster Laboratories Sample No. WW

Collected:03/22/2002 11:10 by BC

Submitted: 03/23/2002 10:15 Reported: 04/19/2002 at 09:53 Discard: 05/20/2002 MA3-MW-3I-220302-02 Grab Water Sample Moss American Site - WI

Account Number: 07802

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

MA-31 SDG#: KMA10-03

				As Received		
CAT			As Received	Method		Dilution
No.	Analysis Name	CAS Number	Result	Detection Limit	Units	Factor
08213	BTEX (8021)					
					`	
00776	Benzene	71-43-2	N.D.	0.20	ug/1 👞	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 analysis. However, a MS was perf performed to demonstrate precisi	available to y ormed. In addi on and accuracy	perform a MSD for tion, a LCS/LCSD y at a batch leve	this was 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. (UT)	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

TBS 9-02 9-9-02

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Lancaster Laboratories Sample No. WW 3793633

Collected:03/22/2002 11:10 by BC

Submitted: 03/23/2002 10:15 Reported: 04/19/2002 at 09:53 Discard: 05/20/2002 MA3-MW-3I-220302-02 Grab Water Sample Moss American Site - WI Account Number: 07802

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

MA-3I	SDG#:	KMA10-03
CAT		

CAT					Dilution			
No.	Analysis Name	Method		Trial#	Date and 2	Time	Analyst	Factor
08213	BTEX (8021)	SW-846 8	8021B	1	03/26/2002	01:05	Darvin L Martin	1
00774	PAH's in Water by HPLC	SW-846 8	3310	1	04/05/2002	04:57	Mark A Clark	l
01146	GC VOA Water Prep	SW-846 5	5030B	1	03/26/2002	01:05	Darvin L Martin	n.a.
03337	PAH Water Extraction	SW-846 3	510C	1	03/25/2002	17:00	Desiree J Wann	1

9 9 1 1



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## REPRINT

Page 1 of 1

Lancaster Laboratories Sample No. WW 3793634

Collected:03/22/2002 12:00by BCAccount Number: 07802Submitted: 03/23/2002 10:15Kerr-McGee CorporationReported: 04/19/2002 at 09:53P.O. Box 25861Discard: 05/20/2002Oklahoma City OK 73125TB-05 Trip Blank Water SampleMoss American Site - WI

MA-TB SDG#: KMA10-04TB\*

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
08213	BTEX (8021) '					
					1	
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 perf	ormed. In addi	tion, a LCS/LCSD v	√as		
	performed to demonstrate precision	on and accuracy	y at a batch leve	L.		

		Laboratory	Chro	nicle		
CAT		-		Analysis		Dilution
No.	Analysis Name	Method	Trial#	Date and Time	Analyst	Factor
08213	BTEX (8021)	SW-846 8021B	1	03/25/2002 16:22	Melissa D Mann	1
01146	GC VOA Water Prep	SW-846 5030B	1	03/25/2002 16:22	Melissa D Mann	n.a.



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For Lancaster Laboratories use only Acct. # 7802 Sample # 3793631-4

Where quality is a science.

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Client: Weston /Kerr McGee	Acct. #:			N	Лatrix	(4)			5	1		Ana	alyse	s Rec	uest	ed	FSC:	or lab use	only
Project Name/#: Moss American	PWSID #:	•			ck if able)					E.			/	/ /	/ /	/	SCR #:		
Project Manager: Tom Grocon	_ P.O.#	,			applic		iers			J. A.		/							sted)
Sampler B. Crawford, B. Schaeffer, Y. Hag	warae #:				table		ntair		1,20	/ \ <b>ر</b>		/	/		/				samp reque
Name of state where samples were collected:	<u> </u>		3	osite			# of Co			x									erature of receipt (if
2) Sample Identification	Date Collected	Time Collected	Grab		Wate	Othe	Total	$/\dot{\chi}$	2	×		, 	//	/		Remarks	·······		Tempe upon
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MA3-MW-35-220302-01	3/22/01	1100	$ \mathbf{X} $		X		5_	3	2										
MA3-MW-3I-220302-02	3/22/01	1110	×		X		5	3	2								·		
TB-05	3/22/01	1200	$\times$		×		2	2											
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(Rush TAT is subject to Lancaster Laboratories approval and	surcharge.)	(ush	Ba		10	L	-l	)		3/2/02	123	0		,.		$\backslash$		1	
Rush results requested by (please circle): Phone Fax			Relinc	The	d by:					Date	Time	e Ro	eceived	d by:		/		Date	Time
Phone #: 847-918-4000 Fax #: 847-9	18-405	5	Relinc	uishe	d by:				•	Date	Time	- R	eceivec	l bv:				Date	Time
Data Package Options (please circle if requested)	SDG	Complete?				$\overline{\ }$		/						).		$\backslash$			
Type I (Tier I) GLP	E Yes		Relinc	uishe	d by:		X	\		Date	Time	e Re	eceivec	l by:			/	Date	Time
Type II (Tier II) Other Site-specific QC require (If yes, indicate QC sample a	ed? Yes nd submit triplic	No 🦯	Police	wich	dhu					Data							``		
Type III (NJ Red. Del.) Type IV (CLP) Internal Chain of Cust	ody required	d? Yes No	Relinc	laisnei	u by:				$\backslash$	Date	lime		sceivec		Alm	n filte	Ő.	23/5/	

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



## **CASE NARRATIVE**

## Client: Kerr-McGee Corporation SDG #: KMA10

Matrix

## LANCASTER LABORATORIES PAH BY HPLC

## SAMPLE NUMBER(S) :

		IVIALITA		
LL #'s	Sample Code	Water	<u>Comments</u>	
3793631	MAFB5	X	Client Blank	
3793632	MA-3S	Х		
3793633	MA-31	Х		
LABORATORY	SUBMITTED QC:			
SBLKWC084	SBLKWC0842	Х	Method Blank	
3793013	10SUP	Х	Unspiked	$\mathbf{i}$
3793014	10SUPMS	Х	Matrix Spike	~
3793015	10SUPMSD	Х	Matrix Spike Dup	
084WCLCS	084WCLCS2	Х	Lab Control Sample	

Lab Control Sample

## SAMPLE PREPARATION:

084WCLCS

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

Sample Code	<u>Volume</u>
MA-3S	977 mis
MA-31	974 mls
10SUP, 10SUPMS, 10SUPMSD	940 mls

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

## ANALYSIS:

The method used for analysis was SW-846 8310.

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## Case Narrative SDG #: KMA10 continued

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:

All QC was within specifications.

## DATA INTERPRETATION:

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

No further interpretation is necessary for the data submitted.

Case Narrative Reviewed and Approved by:

KOT CJN Date: 4-9-02

Charles J. Neslund Group Leader, GC/MS Semivolatiles

> Lancaster Laboratories + 2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 + Phone: 717-656-2300 + Fax: 717-656-2681 + http:// www.LancasterLabs.com

2214



Case Narrative SDG# KMA10

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

#### SAMPLE ANALYSES

Sample	Matrix
Designation	Soil Water
MAFB5	х
MA-3S	Х
MA-3I	Х
MA-TB	Х
	Sample Designation MAFB5 MA-3S MA-3I MA-TB

Comments

#### QUALITY CONTROL ANALYSES

BLK1623	Х	Method Blank
LCS1623	X	Lab Control Sample
LDS1623	X	Lab Control Dup
3793213	X	Unspiked
3793213MS	X	Matrix Spike

#### 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. 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-MTBE, 60m, 0.45mm, 2.55um 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

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

Page 1 of 1

	Microbac Labo     Hamond Division	oratories, Inc.	na ana ana ana ana ana ana ana ana ana	<b>بالمع</b> ند. محمد مع
Microbac	544 Conkey Street Hammond, IN 46 (219) 932-1770	324	γ π. τ	1997 - 1997 1997 - 1999 1997 - 1999
	INDIANA CERTIFICAT	ION NUNBERS: M-45-8	C-45-02	
CHEMISTRY	• MICROBIOLOGY • FOOD S	AFETY • CONSUMER PF	RODUCTS	
WATER • AIR •	WASTES · FOOD · PHARMA	ACEUTICALS · NUTRAC	EUTICALS	
Tom Graam Roy F. Weston, Inc. 750 East Bunker Cour Suite 500 Vernon Hills, IL 6000	51-1450	Date Reported P.O. Number: Sample ID: Date Received Time Received	: 4/15/02 0018581 9939-002 : 3/19/02 : 09:00	MOSS AMERICA
Permit Number				
PARAMETERS	RESULTS	DATE	TECH	NETHOD
SUBJECT: NA3-TG6-1-180302-01, 3/ Total Aerobic Bacteria T.Aerobic Degrader Bacteria	18/02 @ 14:15 by Client 5,000. cfu/ml 100. cfu/ml	3/20/02 3/20/02	D J H D J H	9215B NODIFIED 9215B NODIFIED
SUBJECT: MA3-TG6-2-180302-02, 3/ Total Aerobic Bacteria T.Aerobic Degrader Bacteria	18/02 @ 14:25 by Client 8,900. cfu/ml 1,400. cfu/ml	3/20/02 3/20/02	D J H D J H	9215B HODIFIED 9215B HODIFIED
SUBJECT: NA3-TG6-3-180302-03, 3/ Total Aerobic Bacteria T.Aerobic Degrader Bacteria	18/02 @ 14:35 by Client 5,800. cfu/ml 200. cfu/ml	3/20/02 3/20/02	D J H D J H	9215B NODIFIED 9215B NODIFIED
SUBJECT: NA3-TG5-1-180302-04, 3/ Total Aerobic Bacteria T.Aerobic Degrader Bacteria	18/02 @ 15:50 by Client 7,000. cfu/ml 200. cfu/ml	3/20/02 3/20/02	D J H D J H	9215B NODIFIED 9215B NODIFIED
SUBJECT: MA3-TG5-2-180302-05, 3/ Total Aerobic Bacteria T.Aerobic Degrader Bacteria	18/02 @ 16:00 by Client 1,470. cfu/ml 20. cfu/ml	3/20/02 3/20/02	D J H D J H	9215B KODIFIED 9215B KODIFIED
SUBJECT: NA3-TG5-3-180302-06, 3/ Total Aerobic Bacteria T.Aerobic Degrader Bacteria	18/02 @ 16:10 by Client 7,900. cfu/ml 100. cfu/ml	3/20/02 3/20/02	D J H D J H	9215B NODIFIED 9215B NODIFIED
SUBJECT: NA3-TG3-1-180302-07, 3/ Total Aerobic Bacteria T.Aerobic Degrader Bacteria	18/02 @ 17:15 by Client 11,800. cfu/ml 200. cfu/ml	3 / 20 / 02 3 / 20 / 02	D J H D J H	9215B KODIFIED 9215B NODIFIED

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

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## CERTIFICATE OF ANALYSIS

Tom Graam	Date Report
Roy F. Weston, Inc.	P.O. Number
750 East Bunker Court	Sample ID:
Suite 500	Date Receiv
Vernon Hills, IL 60061-1450	Time Receiv

Date Reported: 4/15/02 P.O. Number: 0018581 MOSS AMERICA Sample ID: 9939-00222 Date Received: 3/19/02 Time Received: 09:00

Permit Number

P A R A N E T E R S	RESULTS	DATE	TECH	NETHOD
SUBJECT: NA3-TG3-7-180302-08, 3/18	/02 @ 17:25 by Client			
Total Aerobic Bacteria	2,700. cfu/ml	3/20/02	DJH	9215B NODIFILU
T.Aerobic Degrader Bacteria	2,500. cfu/ml	3/20/02	D J H	9215B HODIFIED
SUBJECT: MA3-TG3-3-180302-09, 3/18	/02 @ 17:35 by Client			
Total Aerobic Bacteria	1,460. cfu/ml	3/20/02	DJH	9215B NODIFICT
T.Aerobic Degrader Bacteria	40. cfu/ml	3/20/02	DJH	9215B MODIFI

This document has been reviewed and is electronically signed by:

Karen A. Ziolkowski Laboratory Director

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	CERTIFICATE OF	FANALYSIS		
Tom Graam Rov F. Weston, Inc.		Date Reported: P.O. Number:	4/15/02	2 Moss America
750 East Bunker Court		Sample ID:	9939-002	248
Suite 500 Vernon Hills, IL 60061-	1450	Date Received: Time Received:	3/20/02 09:30	2
Permit Number		-		
PARANETERS	RESULTS	DATE	TECH	NETHOD
STBJECT: NA3-TC2-1-190302-01. 3/19/0	2 8 09.15 hv Client			
Total Aerobic Bacteria	6,500. cfu/ml	3/20/02	DJH	9215B NODIFIE
T.Aerobic Degrader Bacteria	300. cfu/ml	3/20/02	DJH	9215B NODIFIE
SUBJECT: NA3-TG2-2-190302-02, 3/19/0	2 @ 09:25 by Client			
Total Aerobic Bacteria	540. cfu/ml	3/20/02	DJH	9215B MODIFIE
T.Aerobic Degrader Bacteria	20. cfu/ml	3/20/02	DJH	9215B NODIFIE
SUBJECT: NA3-TG2-3-190302-03, 3/19/0	2 @ 09:35 by Client			
Total Aerobic Bacteria	910. cfu/ml	3/20/02	DJH	9215B NODIFIE
T.Aerobic Degrader Bacteria	20. ctu/ml	3/20/02	DJH	9215B NODIFIE
SUBJECT: NA3-TG1-1-190302-04, 3/19/0	2 @ 11:10 by Client			
Total Aerobic Bacteria	5,600. cfu/ml	3/20/02	DJH	9215B MODIFIE
T.Aerobic Degrader Bacteria	200. cfu/ml	3/20/02	DJH	9215B NODIFIE
SUBJECT: NA3-TG1-2-190302-05, 3/19/0	2 @ 11:20 by Client			
Total Aerobic Bacteria	420. cfu/ml	3/20/02	DJH	9215B NODIFIE
T.Aerobic Degrader Bacteria	50. ctu/mal	3/20/02	DJH	9215B KODIFI
SUBJECT: NA3-TG1-3-190302-06, 3/19/0	2 @ 11:30 by Client			
Total Aerobic Bacteria	440. cfu/ml	3/20/02	DJH	9215B NODIFIE
r.werouic begrader bacteria	30. ctu/ml	3/20/02	DJH	9215B NODIFIE
SUBJECT: KA3-TG4-1-190302-07, 3/19/0	)2 @ 15:00 by Client			
Total Aerobic Bacteria	1,580. cfu/ml	3/20/02	DJH	9215B NODIFIE
r, kerobic begrader Bacteria	490. ctu/ml	3/20/02	DJH	9215B NODIFIE

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

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## **CERTIFICATE OF ANALYSIS**

Tom Graam	Date Reported:	4/15/02	
Roy F. Weston, Inc.	P.O. Number:	0018581 MOSS	AMERIC
750 East Bunker Court	Sample ID:	9939-00248	
Suite 500	Date Received:	3/20/02	
Vernon Hills, IL 60061-1450	Time Received:	09:30	
Permit Number			

PARAMETERS	RESULTS	DATE	TECH	METHOD
SUBJECT: NA3-TG4-2-190302-08, 3/19	/02 @ 15:10 by Client			
Total Aerobic Bacteria T.Aerobic Degrader Bacteria	6,300. cfu/ml 600. cfu/ml	3/20/02 3/20/02	D J H D J H	9215B NODIFIED 9215B NODIFIED
SUBJECT: MA3-TG4-3-190302-09, 3/19	/02 @ 15:20 by Client			
Total Aerobic Bacteria	1,490. cfu/ml	3/20/02	DJH	9215B MODIFIED
T.Aerobic Degrader Bacteria	40. cfu/ml	3/20/02	DJH	9215B MODIF)

This document has been reviewed and is electronically signed by:

Karen A. Ziolkowski Laboratory Director



Project name ">>> Ame-ikan Project #									Requested analyses ( $\checkmark$ )												
Project location Milwarker, WI (City) (state)							note	soil/gw)	r, available P. sture (s)	oil) 1 sieve only	soil)		ore				[]				
(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							(soil/gw) See Nic, D Anac	nutrient panel	e anton, e moi e analveir	hydrometer, [3, bore of bore o	(density) (	rre at field ca	y (soil)	1 Frunda							
Sample ID	Lab usə only	Date	Time	Soil )	Gw ()	Sample depth	Jars	Vials (#)	Core	Additional comments		Standard r inci. TKN, an ph. total orogo	Particle siz	% air-filled	Soil moist	Bulk denci	10-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-				
1407-7616-1- 1407-2-01		3/18/52	1415		X	,	1										X				
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MA3-TG6-1- 1973-2-03		3/18/12	1-13-5		X	)	1										X				
1302-745-1-		3/14/07-	1550	T	X		1										X				
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MA3-TG15-3- 1-6-3-236		3/18/07	16:0	1	X	-	1										X				
MA3-TG3-1- 1903-2-07		3/18/02	1715	1	x		1								1	1	X	<u> </u>			
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Aling Nephi 3/19/02 4:00									On ice? 🗶 Yes, 🗆 No												
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9939-222

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

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## 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 803392. Samples arrived at the laboratory on Wednesday, April 10, 2002.

<u>Client Description</u> TB-06 Water Sample MA3-MW26S-040902-01 Grab Water Sample Lancaster Labs Number 3802491 3802492

Analysis Report

#### METHODOLOGY

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

1 COPY TOKerr-McGee Corporation1 COPY TORoy F. Weston1 COPY TOData Package Group

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

000


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

Respectfully Submitted,

Lachel K. Cochis Rachel R. Cochis

Sr. Chemist/Coordinator



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



Page 1 of 1

Lancaster Laboratories Sample No.	WW	3802491	
Collected:04/09/2002 10:15			Account Number: 07802
Submitted: 04/10/2002 09:15 Reported: 04/18/2002 at 16:30 Discard: 05/19/2002 TB-06 Water Sample Moss American Site - WI			Kerr-McGee Corporation P.O. Box 25861 Oklahoma City OK 73125

TB-06 SDG#: KMA11-01TB

CAT	Analysis Name	CAS Number	As Received	As Received Method Detection	Unite	Dilution	
				Limit	0.12.00		
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				Analysis		Dilution		
No.	Analysis Name	Method	Trial#	Date and Time	Analyst	Factor		
08213	BTEX (8021)	SW-846 8021B	1	04/11/2002 20:49	John B Kiser	1		
01146	GC VOA Water Prep	SW-846 5030B	1	04/11/2002 20:49	John B Kiser	n.a.		



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



Page 1 of 2

#### Lancaster Laboratories Sample No. WW 3802492

Collected:04/09/2002 10:05 by TB

Submitted: 04/10/2002 09:15 Reported: 04/18/2002 at 16:30 Discard: 05/19/2002 MA3-MW26S-040902-01 Grab Water Sample Moss American Site - WI Account Number: 07802

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

MW265 SDG#: KMA11-02\*

				As Received		
CAT			As Received	Method		Dilution
No.	Analysis Name	CAS Number	Result	Detection Limit	Units	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
	The vial submitted for volatil of analysis. Due to the volat appropriate for the laboratory receipt.	e analysis did ile nature of t to adjust the	not have a pH < the analytes, it pH at the time c	2 at the time is not of sample		
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.	0.2	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.	0.09	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 n	ot available to	o perform a MS/MS	SD for this		
	analysis. Therefore, a LCS/LCS	D was performe	d to demonstrate	precision and		
	accuracy at a batch level.					



Lancaster Laboratories, Inc. 2425 New Holland Pike PO Box 12425 Lancaster, PA 17605-2425 00007

#### Lancaster Laboratories Sample No. 3802492 WW

Collected:04/09/2002 10:05 by TB

Submitted: 04/10/2002 09:15 Reported: 04/18/2002 at 16:30 Discard: 05/19/2002 MA3-MW26S-040902-01 Grab Water Sample Moss American Site - WI

Account Number: 07802

Analysis Report

Page 2 of 2

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

MW26S SDG#: KMA11-02\*

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Laboratory	Chronicle
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CAT				Analysis		Dilution
No.	Analysis Name	Method	Trial#	Date and Time	Analyst	Factor
08213	BTEX (8021)	SW-846 8021B	1	04/11/2002 21:20	John B Kiser	1
00774	PAH's in Water by HPLC	SW-846 8310	1	04/17/2002 09:44	Mark A Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	04/11/2002 21:20	John B Kiser	n.a.
03337	PAH Water Extraction	SW-846 3510C	1	04/11/2002 23:05	Karen L Beyer	1



# Analysis Requesit Environmental Services Challer Incention



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For Lancaster Laboratories use only Acct. # \_\_\_\_\_\_\_Sample # \_\_\_\_\_\_\_SO3491-97

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

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1	Client: Keri McGre Weston	Acct. #:	7802			Ma					5	R	5	А. /	nalýs /	es Re	quest	ed sta		FC: _ SCR #:	r lab use	only
	Project Name/#: 11025 TIMERILAN Project Manager: 10m Gizann Sampler: Im Borman	PWSID # P.O.# Quote`#:	·				Rotable (Gran		Containers		A ST	S CERT										e of samples is full requested
2	Name of state where samples were collected: <u>W</u>	Date collected	Collected	Gab	Composit	Solice	Water E	- Jones	Total # of		a de			/	_	/	/.	Rema	rks			Temperatur Uppreceip
ļ	MA3 · MW 265 · 040902 · 01	4/9/02	1015	x X			X X		25	X	X											
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7	<b>Turnaround Time Requested</b> (TAT) (please circle): (Rush TAT is subject to Lancaster Laboratories approval and	Normal surcharge.)	Rush	Relin	iquish	ied by	r. n B	601	hch/	/w	éston	Dat	e T 07 1	ime 160	Receiv	ed by:	<u></u>	\			Date	Time (
. (	Rush results requested by (please circle): Phone Fax Phone #: <u>847 918 4060</u> Fax #: <u>647</u>	918 4	055	Relin Relin	iquish iquish	ied by	γ: <sup>ι</sup> γ:			/		Dati Dati	e T e T	ime ime	Receiv Receiv	ed by: ed by:	<del></del>		\		Dâte Date	Time
N N	QC Summary Type VI (Raw Data)	ired? Yes	No	Relin	nquish	ned by	y:	: 	$ \ge $			Date	e T	ime	Receiv	ed by:					Date	Time
•	Type IV (CLP) (If yes, indicate QC sample Internal Chain of Cu	and submit trip stody require	licate volume.) ed? Yes No	Relin	nquish	ned by	y:	1 1 1				Dati	e T	ime	Receiv	ed by:	11	Mug_		C	Date	Time Ĵ∐<



## CASE NARRATIVE

## Client: Kerr-McGee Corporation SDG #: KMA11

### LANCASTER LABORATORIES PAH BY HPLC

### SAMPLE NUMBER(S) :

<u>LL #'s</u> 3802492	<u>Sample Code</u> MW26S	Matrix <u>Water</u> X	<u>Comments</u>
LABORATORY	SUBMITTED QC:		
SBLKWD101	SBLKWD1012	Х	Method Blank
101WDLCS	101WDLCS2	Х	Lab Control Sample

X Lab Control Sample Dup

1

### SAMPLE PREPARATION:

No problems were encountered during the extraction of this sample.

101WDLCSD2

### ANALYSIS:

101WDLCSD

The method used for analysis was SW-846 8310.

MW26S was analyzed for polynuclear aromatic hydrocarbons by HPLC.

Sufficient sample volume was not available to perform a MS/MSD for the analysis of MW26S. Therefore, a LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.

No other problems were encountered during the analysis of this sample.



# Case Narrative SDG #: KMA11 continued

# 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:

histine M. Ratchill for (JN Date: 4-30-02

Charles J. Neslund Group Leader, GC/MS Semivolatiles 2

Case Narrative SDG# KMA11

Lab Control Sample

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

IPLE	ANAL	YS	ES

Lancaster Laboratories

LL	Sample	Matrix	Comments
imple #	Designation	Soil Water	
3802491	TB-06	X	
3802492	MW26S	X	
UALITY CONT	ENDL ANALYSES		
JK1628		X	Method Blank
3802576		X	Unspiked
802577MS		X	Matrix Spike
802578MSD		X	Matrix Spike Dup

### AMPLE PREPARATION

sample preparation was necessary.

#### ALYSIS

**LCS1628** 

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

Х

The method used for analysis was EPA Method SW-846/8021B. A J&W DB-MTBE, 60m, 0.45mm, 2.55um blumn was used for the analysis of all samples. The surrogate concentration was 30.0 UG/L.

No problems were encountered during analysis.

#### UALITY CONTROL AND NONCONFORMANCE SUMMARY

here was no client submitted QC, so Lancaster Laboratories batch QC was referenced.



Case Narrative SDG# KMAll

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

ATA INTERPRETATION

o explanation is necessary for the data submitted.

arrative reviewed and approved by:

iteve J. Stabinger, Group Leader

or Date

Analytical Data Validation Report Kerr-McGee Corporation Moss American Superfund Site- Milwaukee, WI SDG #: KMA08

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 Semi-Volatile (Polynuclear Aromatic Hydrocarbons-PAH 8310), and Volatile (BTEX 8021) analyses.

### <u>Polynuclear Aromatic Hydrocarbons (PAHs by HPLC, U.S. EPA Method 8310)</u> <u>Moss American Site</u> SDG # KMA08

### 1.Samples:

Lab Sample		Date	Date	Date
Number	<u>Matrix</u>	<u>Collected</u>	Extracted	<u>Analyzed</u>
3792995	Grab water	03/21/02	03/28/02	03/30/02
3792996	Grab water	03/21/02	03/28/02	03/30/02
3792997	Grab water	03/21/02	03/28/02	03/30/02
3792998	Grab water	03/21/02	03/28/02	03/30/02
3792999	Grab water	03/21/02	03/28/02	03/31/02
3793000	Grab water	03/21/02	03/28/02	03/31/02
3793001	Grab water	03/21/02	03/28/02	03/31/02
3793002	Grab water	03/21/02	03/28/02	03/30/02
3793003	Grab water	03/21/02	03/28/02	03/30/02
3793005	Grab water	03/21/02	03/28/02	03/30/02
	Lab Sample <u>Number</u> 3792995 3792996 3792997 3792998 3792999 3793000 3793001 3793002 3793003 3793005	Lab Sample   Number Matrix   3792995 Grab water   3792996 Grab water   3792997 Grab water   3792998 Grab water   3792999 Grab water   3792999 Grab water   3792999 Grab water   3793000 Grab water   3793001 Grab water   3793002 Grab water   3793003 Grab water   3793005 Grab water	Lab Sample Date   Number Matrix Collected   3792995 Grab water 03/21/02   3792996 Grab water 03/21/02   3792997 Grab water 03/21/02   3792997 Grab water 03/21/02   3792998 Grab water 03/21/02   3792999 Grab water 03/21/02   3793000 Grab water 03/21/02   3793001 Grab water 03/21/02   3793002 Grab water 03/21/02   3793003 Grab water 03/21/02   3793005 Grab water 03/21/02	Lab SampleDateDateNumberMatrixCollectedExtracted3792995Grab water03/21/0203/28/023792996Grab water03/21/0203/28/023792997Grab water03/21/0203/28/023792998Grab water03/21/0203/28/023792999Grab water03/21/0203/28/023793000Grab water03/21/0203/28/023793001Grab water03/21/0203/28/023793002Grab water03/21/0203/28/023793003Grab water03/21/0203/28/023793005Grab water03/21/0203/28/02

### 2. Holding Times:

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

### 3. Method Blank:

The method blank SBLKWI0862 was associated with this SDG. SBLKW I0862 was analyzed on 03/31/02 and associated with (3792995 thru 3793005). The method blank results were free of contamination.

#### 4. Matrix Spike/Matrix Spike Duplicate:

The matrix spike/matrix spike duplicate was performed on 3792999. The MS/MSD recoveries were within the quality control limit. Also, the RPD% values were acceptable.

### 5. Laboratory control Sample:

The laboratory control sample recoveries were within the quality control limit.

#### 6. Surrogate:

The method blank and investigated samples had recoveries within the quality control limits.

Analytical Data Validation Report Kerr-McGee Corporation Moss American Superfund Site- Milwaukee, WI SDG #: KMA08

# 7. Retention Time:

The retention time recoveries were acceptable, except in method file HP03456.i acenaphthylene was outside the required RT window.

# 8. Initial and Continuing Calibration:

All the initial calibrations results were within the quality control limits (RSD >+/-30%), except in method file HP03456.i that were analyzed on 03/25/02 for acenaphthylene (0%).

All the continuing calibrations results were within the quality control limits (RSD >+/-25%), except in method file HP03456.i/02084B1-77R, HP03456.i/02084B1-88R, and HP03456.i/02084B2-52R.d that analyzed on 03/25/02 for acenaphthylene was (0%).

According to the initial and continuing calibration above qualify acenaphthylene in the samples as estimated (J/UJ).

Monday, May 13, 2002

Analytical Data Validation Report Kerr-McGee Corporation Moss American Superfund Site- Milwaukee, WI SDG #: KMA08

### BETX (U.S. EPA Method 8021B) SDG # KMA08

#### 1.Samples:

	Lab Sample		Date	Date
Client Code	Number	<u>Matrix</u>	Collected	<u>Analyzed</u>
MA3-MW-06S-210302-01	3792995	Grab water	03/21/02	03/23/02
MA3-MW-28S-210302-02	3792996	Grab water	03/21/02	03/23/02
MA3-MW-28S-210302-02-DUP	3792997	Grab water	03/21/02	03/23/02
MA3-MW-31S-210302-03	3792998	Grab water	03/21/02	03/23/02
MA3-MW-09S-210302-04	3792999	Grab water	03/21/02	03/23/02
MA3-MW-09S-210302-04-MS	3793000	Grab water	03/21/02	03/23/02
MA3-MW-09S-210302-04-MSD	3793001	Grab water	03/21/02	03/23/02
MA3-MW-09I-210302-05	3793002	Grab water	03/21/02	03/23/02
MA3-MW-10S-210302-06	3793003	Grab water	03/21/02	03/23/02
TB-03	3793004	Grab water	03/21/02	03/23/02

### 2. Holding Times:

All samples were analyzed within the required holding times.

### 3. Method Blank:

The method blank BLK6595 was associated with this SDG. BLK6595 was analyzed on 03/23/02 associated with (3792114 thru 3792132). The method blank results were free of contamination.

### 4. Matrix Spike/Matrix Spike Duplicate :

The matrix spike was performed on sample 3792999. The matrix spike/matrix spike duplicate recoveries were within the quality control limits. Also. The RPD% values were acceptable.

### 5. Laboratory control Sample:

The laboratory control sample/laboratory control sample duplicate recoveries were within the quality control limits. Also, the relative percent difference (RPD%) values were acceptable.

### 6. Surrogate:

The method blank and investigated samples had recoveries within the quality control limits.

### 7. Initial and Continuing Calibration:

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

Please feel free to contact me at (847) 549-1042 or (847) 971-6800 with any question regarding these validation reports.

Sincerely

Tania Balikji-Shammo

#### ANALYTICAL RESULTS

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#### 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 801283. Samples arrived at the laboratory on Friday, March 22, 2002.

Client Description	Lancaster Labs Number-
MA3-MW-06S-210302-01 Grab Water Sample	3792995
MA3-MW-28S-210302-02 Grab Water Sample	3792996
MA3-MW-28S-210302-02-DUP Grab Water Sample	3792997
MA3-MW-31S-210302-03 Grab Water Sample	3792998
MA3-MW-09S-210302-04 Unspiked Grab Water Sample	3792999
MA3-MW-09S-210302-04-MS Matrix Spike Grab	3793000
MA3-MW-09S-210302-04-MSD Matrix Spike Dup. Grab	3793001
MA3-MW-09I-210302-05 Grab Water Sample	3793002
MA3-MW-10S-210302-06 Grab Water Sample	3793003
TB-03 Water Sample	3793004
FB-03 Grab Water Sample	3793005

#### **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
I COPY TO	Data Package Group	



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2216 Rev. 9/11/00

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

Respectfully Submitted,

Rachel R. Cochis Rachel R. Cochis Sr. Chemist/Coordinator

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#### Page 1 of 2

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#### Lancaster Laboratories Sample No. 3792995 WW

Collected:03/21/2002 09:20 by BS

Submitted: 03/22/2002 09:25 Reported: 04/03/2002 at 13:04 Discard: 05/04/2002 MA3-MW-06S-210302-01 Grab Water Sample Moss American Site - WI

Account Number: 07802

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

06SSS SDG#: KMA08-01

				As Received		
CAT			As Received	Method		Dilution
No.	Analysis Name	CAS Number	Result	Detection Limit	Units	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 V W	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				Analysis		Dilution
No.	Analysis Name	Method	Trial#	Date and Time	Analyst	Factor
08213	BTEX (8021)	SW-846 8021B	1	03/23/2002 15:12	Steven J Stabinger	1
00774	PAH's in Water by HPLC	SW-846 8310	1	03/30/2002 02:12	Mark A Clark	5 1
01146	GC VOA Water Prep	SW-846 5030B	1	03/23/2002 15:12	Steven J Stabinger	n.a.



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#### Page 2 of 2

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AVALOUVANA AVAL

Lancaster Laboratories Sample No. WW 37929	995
Collected:03/21/2002 09:20 by BS	Account Number: 07802
Submitted: 03/22/2002 09:25 Reported: 04/03/2002 at 13:04 Discard: 05/04/2002 MA3-MW-06S-210302-01 Grab Water Sample Moss American Site - WI	Kerr-McGee Corporation P.O. Box 25861 Oklahoma City OK 73125
06SSS SDG#: KMA08-01 03337 PAH Water Extraction SW-846 3510C	2 03/28/2002 09:45 Felix C Arroyo

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AMONYSISTREPOOL



Page 1 of 2

#### Lancaster Laboratories Sample No. WW 3792996

Collected:03/21/2002 09:30 by BS

Submitted: 03/22/2002 09:25 Reported: 04/03/2002 at 13:04 Discard: 05/04/2002 MA3-MW-28S-210302-02 Grab Water Sample Moss American Site - WI Account Number: 07802

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

28SSS SDG#: KMA08-02

	· ·			As Received		
CAT			As Received	Method		Dilution
No.	Analysis Name	CAS Number	Result	Detection Limit	Units	Factor
08213	BTEX (8021) ,					
00776	Benzene	71-43-2	N.D.	0.20	ug/1	1
00777	Toluene	108-88-3	N.D.	0.20	ug/1 -	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.UT	0.9	ug/l	1
00783	Acenaphthene	83-32-9	N.D.	0.9	ug/l	1
00784	Fluorene	86-73-7	N.D.	0.2	ug/l	1
00785	Phenanthrene	85-01-8	N.D.	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 the nature of the sample	matrix, a redu	ced aliquot			
	was used for analysis. The repo	rting limits w	vere raised			
	accordingly.					

TBS 5/13/02

Laboratory (	Chronicle
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Analysis Trial# Date and Time Analyst





Analysis Name

CAT

No.

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

Method

### Page 2 of 2

AMONYSISTKE DOM

Lancaster Laboratories Sample No. WW 3	3792996
Collected:03/21/2002 09:30 by BS	Account Number: 07802
Submitted: 03/22/2002 09:25 Reported: 04/03/2002 at 13:04 Discard: 05/04/2002 MA3-MW-28S-210302-02 Grab Water Sample Moss American Site - WI	Kerr-McGee Corporation P.O. Box 25861 Oklahoma City OK 73125
28SSS SDG#: KMA08-02	

28SSS	SDG#: KMA08-02					
08213	BTEX (8021)	SW-846 8021B	1	03/23/2002 15:45	Steven J Stabinger	1
00774	PAH's in Water by HPLC	SW-846 8310	1	03/30/2002 02:50	Mark A Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	03/23/2002 15:45	Steven J Stabinger	n.a
03337	PAH Water Extraction	SW-846 3510C	2	03/28/2002 09:45	Felix C Arroyo	1





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Page 1 of 2

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#### Lancaster Laboratories Sample No. WW 3792997

Collected:03/21/2002 09:30 by BS

Submitted: 03/22/2002 09:25 Reported: 04/03/2002 at 13:04 Discard: 05/04/2002 MA3-MW-28S-210302-02-DUP Grab Water Sample Moss American Site - WI Account Number: 07802

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

#### 328DU SDG#: KMA08-03FD

				As Received		
CAT			As Received	Method		Dilution
No.	Analysis Name	CAS Number	Result	Detection Limit	Units	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/1	<b>-</b> 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.UT	0.9	ug/l	1
00783	Acenaphthene	83-32-9	N.D.	0.9	ug/l	1
00784	Fluorene	86-73-7	N.D.	0.2	ug/l	1
00785	Phenanchrene	85-01-8	N.D.	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 the nature of the sam	nple matrix, a rec	duced aliquot		-	
	was used for analysis. The	reporting limits	were raised			
	accordingly.	-				

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#### Laboratory Chronicle

Analysis Trial# Date and Time

Analyst



Analysis Name

CAT

No.

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#### Page 2 of 2

#### Lancaster Laboratories Sample No. WW 3792997

Collected:03/21/2002 09:30 by BS

Submitted: 03/22/2002 09:25 Reported: 04/03/2002 at 13:04 Discard: 05/04/2002 MA3-MW-28S-210302-02-DUP Grab Water Sample Moss American Site - WI

Account Number: 07802

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

328DU	SDG#: KMA08-03FD					
08213	BTEX (8021)	SW-846 8021B	1	03/23/2002 16:17	Steven J Stabinger	1
00774	PAH's in Water by HPLC	SW-846 8310	1	03/30/2002 03:29	Mark A Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	03/23/2002 16:17	Steven J Stabinger	n.a.
03337	PAH Water Extraction	SW-846 3510C	2	03/28/2002 09:45	Felix C Arroyo	1



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#### Lancaster Laboratories Sample No. WW 3792998

Collected:03/21/2002 09:40 by BS

Submitted: 03/22/2002 09:25 Reported: 04/03/2002 at 13:05 Discard: 05/04/2002 MA3-MW-31S-210302-03 Grab Water Sample Moss American Site - WI Account Number: 07802

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

31SSS SDG#: KMA08-04

				As Received		
CAT			As Received	Method		Dilution
No.	Analysis Name	CAS Number	Result	Detection Limit	Units	Factor
08213	BTEX (8021)					
00776					<u>```</u>	
00776	Benzene	/1-43-2	N.D.	0.20	ug/1 · 👞	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. UT	0.9	ug/l	1
00783	Acenaphthene	83-32-9	N.D.	0.9	ug/1	1
00784	Fluorene	86-73-7	N.D.	0.2	ug/1	1
00785	Phenanthrene	85-01-8	N.D.	0.09	ug/1	1
00789	Anthracene	120-12-7	N.D.	0.04	ug/1	- 1 ·
00807	Fluoranthene	206-44-0	N.D.	0.04	ug/1	ĩ
00811	Pyrene	129-00-0	N.D.	0.2	ug/1	1
00812	Benzo(a)anthracene	56-55-3	N.D.	0.02	ug/1	1
00818	Benzo(b)fluoranthene	205-99-2	N.D.	0.04	ug/1	1
00823	Benzo(a)pyrene	50-32-8	N.D.	0.02	ug/1	1
00895	Dibenz(a,h)anthracene	53-70-3	N.D.	0.04	ug/]	-
00898	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.09	ug/1	1
00907	Benzo(g,h,i)perylene	191-24-2	N.D.	0.1	ug/1	1
07409	Chrysene	218-01-9	N.D.	0.09	ug/1	1
07410	Benzo(k)fluoranthene	207-08-9	N.D.	0.02	ug/1	1
	Due to the nature of the sampl	e matrix, a rec	luced aliquot	0.0L	4971	-
	was used for analysis. The re	porting limits	were raised			
	accordingly.					

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Factor

#### Laboratory Chronicle

Analysis Analysis Name Method Trial# Date and Time Analyst



CAT

No.

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#### Page 2 of 2

Lancaster	Laboratorie	s Sample	NO.	WW	3792998	
Collected:	03/21/2002	09:40	by	BS		

Account Number: 07802

on .25

Submitted: 03/22/2002 09:25	Kerr-McGee Corporati
Reported: 04/03/2002 at 13:05	P.O. Box 25861
Discard: 05/04/2002	Oklahoma City OK 731
MA3-MW-31S-210302-03 Grab Water Sample	
Moss American Site - WI	

31SSS	SDG#: KMA08-04							
08213	BTEX (8021)	SW-846 80	021B 1	03,	23/2002	16:50	Steven J Stabinger	1
00774	PAH's in Water by HPLC	SW-846 83	310 1	03,	30/2002	04:08	Mark A Clark	1
01146	GC VOA Water Prep	SW-846 50	030B 1	03,	23/2002	16:50	Steven J Stabinger	n.a.
03337	PAH Water Extraction	SW-846 35	510C 2	03,	28/2002	09:45	Felix C Arroyo	1





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Lancaster Laboratories Sample No. WW 3792999

Collected:03/21/2002 11:15 by BS

Submitted: 03/22/2002 09:25 Reported: 04/03/2002 at 13:05 Discard: 05/04/2002 MA3-MW-09S-210302-04 Unspiked Grab Water Sample Moss American Site - WI Account Number: 07802

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

04USP SDG#: KMA08-05BKG

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

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		Laborator	y Chro	nicle		
CAT			-	Analysis		Dilution
No.	Analysis Name	Method	Trial#	Date and Time	Analvst	Factor
08213	BTEX (8021)	SW-846 8021B	1	03/23/2002 17:23	Anastasia Papadoplos	1
00774	PAH's in Water by HPLC	SW-846 8310	1	03/31/2002 19:38	Mark A Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	03/23/2002 17:23	Anastasia Papadoplos	n.a.
					1	
	Lanraster Labo	vratories Inc			7	



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Lancaster Laboratories Sample No. WW 3792999

MA3-MW-09S-210302-04 Unspiked Grab Water Sample

Collected:03/21/2002 11:15 by BS

Submitted: 03/22/2002 09:25

Discard: 05/04/2002

Moss American Site - WI

Reported: 04/03/2002 at 13:05

Account Number: 07802

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

04USP SDG#: KMA08-05BKG 03337 PAH Water Extraction SW-846 3510C

2 03/28/2002 09:45 Felix C Arroyo

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Account Number: 07802

Kerr-McGee Corporation

Oklahoma City OK 73125

P.O. Box 25861



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Lancaster Laboratories Sample No. WW 3793000

Collected:03/21/2002 11:15 by BS

Submitted: 03/22/2002 09:25 Reported: 04/03/2002 at 13:05 Discard: 05/04/2002 MA3-MW-09S-210302-04-MS Matrix Spike Grab Water Sample Moss American Site - WI

04USP SDG#: KMA08-05MS

				As Received		
CAT			As Received	Method		Dilution
No.	Analysis Name	CAS Number	Result	Detection Limit	Units	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	67.	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	180.7	0.8	ug/l	1
00783	Acenaphthene	83-32-9	190. <b><sup>µ</sup></b>	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	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.	0.1	ug/l	1
07409	Chrysene	218-01-9	б.	0.08	ug/l	1
07410	Benzo(k)fluoranthene	207-08-9	1.	0.02	ug/l	1

		Laborator	y Chro	nicle	1P, 5/13/	02
CAT			-	Analysis		Dilution
No.	Analysis Name	Method	Trial#	Date and Time	Analyst	Factor
08213	BTEX (8021)	SW-846 8021B	1	03/23/2002 17:55	Anastasia Papadoplos	1
00774	PAH's in Water by HPLC	SW-846 8310	1	03/31/2002 20:16	Mark A Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	03/23/2002 17:55	Anastasia Papadoplos	n.a.



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stasia	Papadoplos	1
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stasia	Papadoplo	n.a.
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Lancaster Laboratories Sample No. WW 3793000	
Collected:03/21/2002 11:15 by BS	Account Number: 07802
Submitted: 03/22/2002 09:25 Reported: 04/03/2002 at 13:05 Discard: 05/04/2002 MA3-MW-09S-210302-04-MS Matrix Spike Grab Water Sample Moss American Site - WI	Kerr-McGee Corporation P.O. Box 25861 Oklahoma City OK 73125
04USP SDG#: KMA08-05MS 03337 PAH Water Extraction SW-846 3510C 2	2 03/28/2002 09:45 Felix C Arroyo



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#### Lancaster Laboratories Sample No. WW 3793001

Collected:03/21/2002 11:15 by BS

Submitted: 03/22/2002 09:25 Reported: 04/03/2002 at 13:05 Discard: 05/04/2002 MA3-MW-09S-210302-04-MSD Matrix Spike Dup. Grab Water Sample Moss American Site - WI Account Number: 07802

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

04USP SDG#: KMA08-05MSD

				As Received		
CAT			As Received	Method		Dilution
No .	Analysis Name	CAS Number	Result	Detection Limit	Units	Factor
08213	BTEX (8021)				<b>N</b> .	
00776	Benzene	71-43-2	23.	0.20	ug/1 .	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	69.	0.60	ug/l	1
00774	PAH's in Water by HPLC					
00775	Naphthalene	91-20-3	160.	1.	ug/l	1
00782	Acenaphthylene	208-96-8	180.	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	б.	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.	0.1	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	Chro	nicle		
CAT		-		Analysis		Dilution
No.	Analysis Name	Method	Trial#	Date and Time	Analyst	Factor
08213	BTEX (8021)	SW-846 8021B	1	03/23/2002 18:28	Anastasia Papadoplos	1
00774	PAH's in Water by HPLC	SW-846 8310	1	03/31/2002 20:55	Mark A Clark	. 1
01146	GC VOA Water Prep	SW-846 5030B	1	03/23/2002 18:28	Anastasia Papadoplos	n.a.



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Lancaster Laboratories Sample No. WW

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Page 2 of 2

Collect	red:03/21/2002 11:15	by BS	Account Number: 0	7802
Submitt Reporte Discarc MA3-MW- Water S Moss Ar	ted: 03/22/2002 09:25 ed: 04/03/2002 at 13:05 d: 05/04/2002 -09S-210302-04-MSD Matri Sample nerican Site - WI	x Spike Dup. Grab	Kerr-McGee Corpora P.O. Box 25861 Oklahoma City OK	ation 73125
04USP 03337	SDG <b>#:</b> KMA08-05MSD PAH Water Extraction	SW-846 3510C 2	03/28/2002 09:45	Felix C Arroyo

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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

Account Number: 07802

Kerr-McGee Corporation

Oklahoma City OK 73125

P.O. Box 25861



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#### 3793002 Lancaster Laboratories Sample No. WW

Collected:03/21/2002 12:15 by BS

Submitted: 03/22/2002 09:25 Reported: 04/03/2002 at 13:05 Discard: 05/04/2002 MA3-MW-09I-210302-05 Grab Water Sample Water Sample Moss American Site - WI

09III SDG#: KMA08-06

As Received Method Dilution CAT As Received No. Analysis Name CAS Number Result Detection Units Factor Limit BTEX (8021) 08213 00776 Benzene 71-43-2 N.D. 0.20 ug/l 1 00777 Toluene 108-88-3 N.D. 0.20 ug/l 1 N.D. 00778 Ethylbenzene 100 - 41 - 40.20 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.VJ 0.8 ug/l 1 83-32-9 00783 Acenaphthene 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 129-00-0 Pyrene N.D. 0.2 ug/l 1 00812 56-55-3 ug/l Benzo(a)anthracene N.D. 0.02 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 0.08 N.D. ug/l 1 00907 Benzo(g,h,i)perylene 191-24-2 N.D. 0.1 ug/l 1 07409 Chrysene 218 - 01 - 9N.D. 0.08 ug/l 1

		Laboratory	y Chro	nicle	5/12
CAT		_		Analysis	
No.	Analysis Name	Method	Trial#	Date and Time	Analyst
08213	BTEX (8021)	SW-846 8021B	1	03/23/2002 19:00	Steven J Stabinger
00774	PAH's in Water by HPLC	SW-846 8310	1	03/30/2002 04:46	Mark A Clark
01146	GC VOA Water Prep	SW-846 5030B	1	03/23/2002 19:00	Steven J Stabinger

N.D.

0.02

ug/l

207-08-9



Benzo(k)fluoranthene

07410

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#### Lancaster Laboratories Sample No. WW 3793002

Collected:03/21/2002 12:15 by BS

Submitted: 03/22/2002 09:25 Reported: 04/03/2002 at 13:05 Discard: 05/04/2002 MA3-MW-09I-210302-05 Grab Water Sample Water Sample Moss American Site - WI

09III SDG#: KMA08-06 03337 PAH Water Extraction

SW-846 3510C

Account Number: 07802

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

2 03/28/2002 09:45 Felix C Arroyo

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Analysis Report

#### 3793003 Lancaster Laboratories Sample No. WW

Collected:03/21/2002 12:30	by BS	Account Number: 07802
Submitted: 03/22/2002 09:25 Reported: 04/03/2002 at 13:05 Discard: 05/04/2002 MA3-MW-10S-210302-06 Grab Wate: Moss American Site - WI	r Sample	Kerr-McGee Corporation P.O. Box 25861 Oklahoma City OK 73125

SDG#: KMA08-07 10SMW

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

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		Laborato	ry Chro	nicle		
CAT				Analysis		Dilution
No.	Analysis Name	Method	Trial#	Date and Time	Analyst	Facto
08213	BTEX (8021)	SW-846 8021B	1	03/23/2002 19:33	Steven J Stabinger	1
00774	PAH's in Water by HPLC	SW-846 8310	1	03/30/2002 06:03	Mark A Clark	3 1
01146	GC VOA Water Prep	SW-846 5030B	1	03/23/2002 19:33	Steven J Stabinger	n.a.
						2
	Lancaster Labo	ratories, Inc.				5



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#### Page 2 of 2

Lancaster Laboratories Sample No. WW 3793003

Collected:03/21/2002 12:30 by BS

Submitted: 03/22/2002 09:25 Reported: 04/03/2002 at 13:05 Discard: 05/04/2002 MA3-MW-10S-210302-06 Grab Water Sample Moss American Site - WI

10SMWSDG#:KMA08-0703337PAH Water Extraction

SW-846 3510C

2 03/28/2002 09:45 Felix C Arroy

Account Number: 07802

Kerr-McGee Corporation

Oklahoma City OK 73125

P.O. Box 25861

Felix C Arroyo

1



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Page 1 of 1



### Lancaster Laboratories Sample No. WW 3793004

Collected:03/21/2002 08:00

Submitted: 03/22/2002 09:25 Reported: 04/03/2002 at 13:05 Discard: 05/04/2002 TB-03 Water Sample Moss American Site - WI Account Number: 07802

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

TB03C SDG#: KMA08-08TB

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/1 •	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

		Laborator	y Chro	nicle		
CAT			-	Analysis		Dilutic
No.	Analysis Name	Method	Trial#	Date and Time	Analyst	Factor
08213	BTEX (8021)	SW-846 8021B	1	03/23/2002 20:05	Steven J Stabinger	1
01146	GC VOA Water Prep	SW-846 5030B	1	03/23/2002 20:05	Steven J Stabinger	n.a.



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#### Lancaster Laboratories Sample No. WW 3793005

Collected:03/21/2002 08:00 by BS

Submitted: 03/22/2002 09:25 Reported: 04/03/2002 at 13:05 Discard: 05/04/2002 FB-03 Grab Water Sample Moss American Site - WI

Account Number: 07802

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

FB03E SDG#: KMA08-09FB\*

		· .		As Received		
CAT			As Received	Method		Dilution
No.	Analysis Name	CAS Number	Result	Detection Limit	Units	Factor
00774	PAH's in Water by HPLC				~	
00775	Naphthalene	91-20-3	N.D.	0.9	ug/1 ` 👞	1
00782	Acenaphthylene	208-96-8	N.D.V)	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.	0.09	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

		Laborator	nicle	5	
CAT			-	Analysis	
No.	Analysis Name	Method	Trial#	Date and Time	Analyst
00774	PAH's in Water by HPLC	SW-846 8310	1	03/30/2002 06:42	Mark A Clark
03337	PAH Water Extraction	SW-846 3510C	2	03/28/2002 09:45	Felix C Arroyo

Dilution

Factor

1

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Tr: 3/02

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For Lancaster Laboratories use only Acct. # 1802 Sample # 3792.945-05

Where quality is a science.

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Pr	oject Name/II: Moss American	PWSID #:				kk if ^ cable)	34 11			/	AS A	) /		/ /	/ /	/ /	/	SCR #:	<u> </u>	157_
Pr	oject Manager: Tom Graan	P.O.#	<u></u>		1	applie applie		ners	-		<i>}/</i>									ssted)
Sa	mpler: B. Schueler, B. Crawford, Y. Hay	ju Quote #:				PDES		ontai		B	, /	/	/	/	/	/				f samp
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M	13-Mw-065-210302-01	3/21/02	0920	4		$\checkmark$		3	ŝ											
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<u>M</u>	A3-MW-095-210302-04	3/21/12	1115	4		V		3	3								·			
1	A3-210302-04-MS	3/21/02	1115	1		. /		3	3											
1	A3-MW-095-210302-04-MSD	3/21/02	1115	4		-		3	3											
1	A3-MW-09I-210302-05	3/21/02	1215	1		/		3	3											
L	1A3-MW-105-210302-06	3/21/02	1230	1		V		3	3	]				<u> </u>				<u></u>		
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# Andlysis kequesi/Environmental Services Chain of Custody

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Lancaster Laboratories

For Lancaster Laboratories use only Acct. # <u>1702</u> Sample # <u>3792495-05</u>

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Please print. Instruction	ns on reverse side correspond with circled numbers.	
Client: Kerr MC. GER/INJECTS N Acct #	Matrix (4) (5) Analyses Requested For lab	use only
Project Name/#: 1255 Ameri Can pwsid #	x 9 SCR #:	
Project Manager: Town (FMAN) PO#		te S (ed)
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		t (if re
Name of state where samples were collected:(3)		eceip
Sample Identification	K Remarks	Tempe upon r
MA3_MW-95-210302-04 7/21/02/1115 V	1 2 2	
MA3-MW-95-210302-64-MS 3/21/02 1115		
MA3-4W-95-210302-04-MSD 3/2102 1115 1		
MA3-MW-9I-210302-05m 3/2/02 1215 1		
MA3-MW-105-210302-06 3/21/02 1230		
Turnaround Time Requested (TAT) (please circle): Normal Rush	linguished by: Date Time Received by: Da	ite Time (
Date results are needed:	Inquished by: Date Time Received by: Da	ate Time
Phone #: 847-910-4000 Fax #: 847-918-4055		
Data Package Options (please circle if requested) SDG Complete?	linquished by: Date Time Received by: Date Date	ite Time
QC Summary Type VI (Raw Data) Per Quote Yes No Reli	linguished by: Date Time Received by: Da	ate Time
Type II (Tier II) GLP Site-specific QC required? Yes No		
Type III (NJ Red. Del.) (If yes, indicate QC sample and submit triplicate volume.) Relin	linquished by: Date Time Received by: Da	ite Time
Type IV. (CLP). Internal Chain of Custody required? Yes No	Katter Binkoo. Br	20925
Lancaster Laboratories Inc. 2/125	25 New Holland Pike PO Boy 12425 Lancaster PA 17605-2425 (717) 656-2300	

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For Lancaster Laboratories use only 92995-05

Acct. #	-78	VL	Sample	#	370
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Project Name/11: Moss American	PWSID #				ck if table)				/ /		, /	/ /	/ ,	/ /	/ /	so	CR #:	
Project Manager: Tom	P.O.#		<u></u>		Sie (Che	ainers	-									/		mples auested)
Name of state where samples were collected:	WI	· · · · · · · · · · · · · · · · · · · ·	osite			t of Cont		Ŧ		/ /	/	/ /			/ /			ature of sa sceipt (if rec
2) Sample Identification	Collected	Collected	Grab Comp	Soil	Water	Other Total 4	/~	žÝ						$\square$	Rema	rks	:	Temper
MA3-MW-065-210302-01	3/21/02	0920	4	<u>                                     </u>		2	- 2											
MA3-HW-285-210302-02	3/21/02	0930	4		$\checkmark$	2	2		·									
MA3-MW-285-210302-02-A	P 3/21/02	0930	$\checkmark$	-	V	_2	-2							<u> </u>				
MA3-MW-315-210302-03	3/21/02	0940	1		4	2	2							<u> </u>	ļ		<u>_</u>	
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## CASE NARRATIVE

## Client: Kerr-McGee Corporation SDG #: KMA08

## LANCASTER LABORATORIES PAH BY HPLC

#### SAMPLE NUMBER(S) :

		Matrix					
LL #'s	Sample Code	Water	<u>Comments</u>				
3792995	06SSS	Х					
3792996	28SSS	Х					
3792997	328DU	Х					
3792998	31SSS	Х					
3792999	04USP	Х	Unspiked				
3793000	04USPMS	Х	Matrix Spike				
3793001	04USPMSD	Х	Matrix Spike Dup				
3793002	09111	Х					
3793003	10SMW	Х					
3793005	FB03E	Х	Client Blank				
LABORATORY SUBMITTED QC:							
SBLKWI086	SBLKWI0862	Х	Method Blank				
086WILCS	086WILCS2	Х	Lab Control Sample				

#### SAMPLE PREPARATION:

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

Sample Code	<u>Volume</u>
28SSS	930 mls
328DU	893 mis
31SSS	927 mls
09111	973 mis
10SMW	962 mls

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

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#### Case Narrative SDG #: KMA08 continued

#### 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:

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:

atchell for CJN Date: 4-9-02  $\mathcal{N}$ 

Charles J. Neslund Group Leader, GC/MS Semivolatiles

Lancaster Laboratories + 2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 + Phone: 717-656-2300 + Fax: 717-656-2681 + http:// www.LancasterLabs.com

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Case Narrative SDG# KMA08

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

# 2425 New Holland Ele • Lancaster, PA 17601

SAMPLE ANALYSES

LL	Sample	Matrix		
Sample #	Designation	Soil Water	Comments	
3792995	06SSS	Х		
3792996	28555	Х		
3792997	328DU	Х		
3792998	31855	Х		
3792999	04USP	Х	Unspiked	
3793000MS	- 04USP	Х	Matrix Spike	
3793001MSD	_ 04USP	X	Matrix Spike Dup	
3793002	09111	X		
3793003	10SMW	Х		
3793004	TB03C	X		
QUALITY CONT	ROL ANALYSES			
	1			
BLK6595		Х	Method Blank	
LCS6595		х	Lab Control Sample	
LDS6595		Х	Lab Control Dup	

#### SAMPLE PREPARATION

No sample preparation was necessary.

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#### ANALYSIS

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

The method used for analysis was EPA Method SW-846 8021B. A J&W DB-VRX,  $75m \times 0.45mm$ , 2.55um column was used for the analysis of all samples. The surrogate concentration was 30.0 UG/L.

The instrument ID displayed on the analytical data is 5890-64--, while that displayed on the forms is 5890-65--. Although different, these IDs represent the same instrument.

No problems were encountered during analysis.

#### QUALITY CONTROL AND NONCONFORMANCE SUMMARY

Client submitted batch QC was referenced.

All QC was within specifications.

Page 1 of 2

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Case Narrative - SDG# KMA08

> 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 J. Stabinger, Group Leader

4/11/0 Date

Page 2 of 2

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 Semi-Volatile (Polynuclear Aromatic Hydrocarbons-PAH 8310), Volatile (BTEX 8021), Kjeldahl Nitrogen Analysis (TKN), Nitrite Nitrogen, Nitrate Nitrogen, Total Phosphorus as (PO4), Total Organic Carbon (TOC), Ammonia Nitrogen, Ortho-Phosphate as P, and Biochemical Oxygen Demand (BOD) analyses.

## Polynuclear Aromatic Hydrocarbons (PAHs by HPLC, U.S. EPA Method 8310) Moss American Site SDG # KMA05

#### 1.Samples:

Lab Sample		Date	Date	Date
<u>Number</u>	<u>Matrix</u>	<u>Collected</u>	Extracted	<u>Analyzed</u>
3790473	Grab water	03/18/02	03/21/02	03/28/02
3790474	Grab water	03/18/02	03/21/02	03/28/02
3790475	Grab water	03/18/02	03/21/02	03/28/02
3790476	Grab water	03/18/02	03/21/02	03/28/02
3790477	Grab water	03/18/02	03/21/02	03/28/02
3790478	Grab water	03/18/02	03/21/02	03/28/02
3790479	Grab water	03/18/02	03/21/02	03/28/02
3790480	Grab water	03/18/02	03/21/02	03/28/02
3790481	Grab water	03/18/02	03/21/02	03/28/02
	Lab Sample <u>Number</u> 3790473 3790474 3790475 3790476 3790477 3790478 3790479 3790480 3790481	Lab SampleNumberMatrix3790473Grab water3790474Grab water3790475Grab water3790476Grab water3790477Grab water3790478Grab water3790479Grab water3790480Grab water	Lab Sample Date   Number Matrix Collected   3790473 Grab water 03/18/02   3790474 Grab water 03/18/02   3790475 Grab water 03/18/02   3790476 Grab water 03/18/02   3790476 Grab water 03/18/02   3790477 Grab water 03/18/02   3790478 Grab water 03/18/02   3790479 Grab water 03/18/02   3790480 Grab water 03/18/02   3790481 Grab water 03/18/02	Lab SampleDateDateNumberMatrixCollectedExtracted3790473Grab water03/18/0203/21/023790474Grab water03/18/0203/21/023790475Grab water03/18/0203/21/023790476Grab water03/18/0203/21/023790477Grab water03/18/0203/21/023790478Grab water03/18/0203/21/023790479Grab water03/18/0203/21/023790480Grab water03/18/0203/21/023790481Grab water03/18/0203/21/02

#### 2. Holding Times:

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

#### 3. Method Blank:

The method blank SBLKWD0792 was associated with this SDG. SBLKWD0792 was analyzed on 03/28/02 and associated with (3790473 thru 3790481). The method blank 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 within the quality control limit. Also, the RPD% values were acceptable.

#### 6. Surrogate:

The method blank and investigated samples had recoveries within the acceptance quality control limits.

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Analytical Data Validation Report Kerr-McGee Corporation Moss American Superfund Site- Milwaukee, WI SDG #: KMA05

## 7. Retention Time:

The retention time recoveries were acceptable, except in acenaphthylene was outside the required RT window.

## 8. Initial and Continuing Calibration:

All the initial calibrations results were within the quality control limits (RSD >+/-30%), except in method file HP03456.i that were analyzed on 03/25/02 for acenaphthylene (0%).

All the continuing calibrations results were within the quality control limits (RSD >+/-25%), except in method file HP03456.i/02084B1-21R.d, and HP03456.i/02084B1-32R.d that analyzed on 03/25/02 for acenaphthylene was (0%).

According to the initial and continuing calibration above qualify acenaphthylene in the samples as estimated (J/UJ).

## BETX (U.S. EPA Method 8021B) SDG # KMA05

#### 1.Samples:

	Lab Sample		Date	Date
Client Code	<u>Number</u>	<u>Matrix</u>	<b>Collected</b>	Analyzed
TB-01	3790472	Grab water	03/18/02	03/20/02
MA3-TG6-3-180302-03	3790473	Grab water	03/18/02	03/21/02
MA3-TG6-2-180302-02	3790474	Grab water	03/18/02	03/21/02
MA3-TG6-1-180302-01	3790475	Grab water	03/18/02	03/21/02
MA3-TG3-3-180302-09	3790476	Grab water	03/18/02	03/21/02
MA3-TG3-2-180302-08	3790477	Grab water	03/18/02	03/21/02
MA3-TG3-1-180302-07	3790478	Grab water	03/18/02	03/21/02
MA3-TG5-1-180302-04	3790479	Grab water	03/18/02	03/21/02
MA3-TG5-2-180302-05	3790480	Grab water	03/18/02	03/21/02
MA3-TG5-3-180302-06	3790481	Grab water	03/18/02	03/21/02

### 2. Holding Times:

All samples were analyzed within the required holding times.

### 3. Method Blank:

The method blank BLK5333 was associated with this SDG. BLK5333 was analyzed on 03/20/02 associated with (3790472 thru 3790481). The method blank 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 3790367 from different SDG. However, the matrix spike recoveries were within the quality control limits.

#### 5. Laboratory control Sample:

The laboratory control sample/laboratory control sample duplicate recoveries were within the quality control limits. Also, the relative percent difference (RPD%) values were acceptable.

#### 6. Surrogate:

The method blank and investigated samples had recoveries within the acceptance quality control limits.

## 7. Initial and Continuing Calibration:

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

## WET CHEMISTRY ANALYSIS

## Kjeldahl Nitrogen Analysis (TKN): SDG # KMA05

#### 1.Samples:

Lab Sample		Date	Date	Date
Number	<u>Matrix</u>	<b>Collected</b>	Digested	<u>Analyzed</u>
3790473	Grab water	03/18/02	03/22/02	03/26/02
3790474	Grab water	03/18/02	03/22/02	03/26/02
3790475	Grab water	03/18/02	03/22/02	03/26/02
3790476	Grab water	03/18/02	03/22/02	03/26/02
3790477	Grab water	03/18/02	03/22/02	03/26/02
3790478	Grab water	03/18/02	03/22/02	03/26/02
3790479	Grab water	03/18/02	03/22/02	03/26/02
3790480	Grab water	03/18/02	03/22/02	03/26/02
3790481	Grab water	03/18/02	03/22/02	03/26/02
	Lab Sample <u>Number</u> 3790473 3790474 3790475 3790476 3790477 3790478 3790478 3790479 3790480 3790481	Matrix Matrix   3790473 Grab water   3790474 Grab water   3790475 Grab water   3790476 Grab water   3790477 Grab water   3790478 Grab water   3790479 Grab water   3790478 Grab water   3790479 Grab water   3790480 Grab water	Lab Sample Date   Number Matrix Collected   3790473 Grab water 03/18/02   3790474 Grab water 03/18/02   3790475 Grab water 03/18/02   3790476 Grab water 03/18/02   3790476 Grab water 03/18/02   3790477 Grab water 03/18/02   3790478 Grab water 03/18/02   3790479 Grab water 03/18/02   3790480 Grab water 03/18/02   3790481 Grab water 03/18/02	Lab SampleDateDateNumberMatrixCollectedDigested3790473Grab water03/18/0203/22/023790474Grab water03/18/0203/22/023790475Grab water03/18/0203/22/023790476Grab water03/18/0203/22/023790477Grab water03/18/0203/22/023790478Grab water03/18/0203/22/023790479Grab water03/18/0203/22/023790480Grab water03/18/0203/22/023790481Grab water03/18/0203/22/02

#### 2. Holding Times:

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

### 3. Method Blank:

The method blank result was free of contamination.

#### 4. Matrix Spike Recovery:

Two matrix spikes 3790473, and 3790474 associated with all the samples. Both MS recoveries were within the quality control limit.

#### 5. Duplicate Recovery:

Two duplicates 3790473, and 3790474 associated with the analysis. The RPD% value for sample 3790474 was within the control limit. However, The RPD% value for sample 3790473 was not required because the background or the duplicate sample result was less than the limit of quantitation.

#### 6. Laboratory Control Sample Recovery:

The laboratory control sample recovery was within the quality control limits.

## 7. Initial and Continuing Calibration:

## Nitrite Nitrogen Analysis: SDG # KMA05

#### 1.Samples:

	Lab Sample		Date	Date
Client Code	Number	<u>Matrix</u>	Collected	<u>Analyzed</u>
MA3-TG6-3-180302-03	3790473	Grab water	03/18/02	03/19/02
MA3-TG6-2-180302-02	3790474	Grab water	03/18/02	03/19/02
MA3-TG6-1-180302-01	3790475	Grab water	03/18/02	03/19/02
MA3-TG3-3-180302-09	3790476	Grab water	03/18/02	03/19/02
MA3-TG3-2-180302-08	3790477	Grab water	03/18/02	03/19/02
MA3-TG3-1-180302-07	3790478	Grab water	03/18/02	03/19/02
MA3-TG5-1-180302-04	3790479	Grab water	03/18/02	03/19/02
MA3-TG5-2-180302-05	3790480	Grab water	03/18/02	03/19/02
MA3-TG5-3-180302-06	3790481	Grab water	03/18/02	03/19/02

#### 2. Holding Times:

All samples were analyzed within the required holding times.

#### 3. Method Blank:

The method blank result was free of contamination.

#### 4. Matrix Spike Recovery:

The matrix spike recovery was within the quality control limits.

#### 5. Laboratory Control Sample Recovery:

The laboratory control sample recovery was acceptable.

#### 6. Duplicate Recovery:

The RPD% value for sample 3790473 was not required because the background or the duplicate sample result was less than the limit of quantitation.

#### 7. Initial and Continuing Calibration:

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Analytical Data Validation Report Kerr-McGee Corporation Moss American Superfund Site- Milwaukee, WI SDG #: KMA05

## Nitrate Nitrogen Analysis: SDG # KMA05

#### 1.Samples:

	Lab Sample		Date	Date
Client Code	Number	<u>Matrix</u>	<b>Collected</b>	Analyzed
MA3-TG6-3-180302-03	3790473	Grab water	03/18/02	03/24/02
MA3-TG6-2-180302-02	3790474	Grab water	03/18/02	03/24/02
MA3-TG6-1-180302-01	3790475	Grab water	03/18/02	03/24/02
MA3-TG3-3-180302-09	3790476	Grab water	03/18/02	03/24/02
MA3-TG3-2-180302-08	3790477	Grab water	03/18/02	03/25/02
MA3-TG3-1-180302-07	3790478	Grab water	03/18/02	03/25/02
MA3-TG5-1-180302-04	3790479	Grab water	03/18/02	03/25/02
MA3-TG5-2-180302-05	3790480	Grab water	03/18/02	03/25/02
MA3-TG5-3-180302-06	3790481	Grab water	03/18/02	03/25/02

### 2. Holding Times:

All samples were analyzed within the required holding times.

## 3. Method Blank:

The two method blanks results were free of contamination.

#### 4. Matrix Spike Recovery:

Two matrix spikes 3790473 associated with (3790473, 3790474, 3790475, 3790476), and 3790477 associated with (3790477, 3790478, 3790479, 3790480, 3790481). Both MS recoveries were the quality control limits.

## 5. Duplicate Recovery:

The RPD% value for samples 3790473, and 3790477 was not required because the background or the duplicates for both samples result were less than the limit of quantitation.

## 6. Laboratory Control Sample Recovery:

The two associated laboratories control samples recoveries were acceptable.

## 7. Initial and Continuing Calibration:

## Total Phosphorus as (PO4): SDG # KMA05

#### 1.Samples:

	Lab Sample		Date	Date	Date
Client Code	<u>Number</u>	<u>Matrix</u>	<b>Collected</b>	Extracted	Analyzed
MA3-TG6-3-180302-03	3790473	Grab water	03/18/02	03/20/02	03/25/02
MA3-TG6-2-180302-02	3790474	Grab water	03/18/02	03/20/02	03/25/02
MA3-TG6-1-180302-01	3790475	Grab water	03/18/02	03/20/02	03/25/02
MA3-TG3-3-180302-09	3790476	Grab water	03/18/02	03/20/02	03/25/02
MA3-TG3-2-180302-08	3790477	Grab water	03/18/02	03/20/02	03/25/02
MA3-TG3-1-180302-07	3790478	Grab water	03/18/02	03/20/02	03/25/02
MA3-TG5-1-180302-04	3790479	Grab water	03/18/02	03/20/02	03/25/02
MA3-TG5-2-180302-05	3790480	Grab water	03/18/02	03/20/02	03/25/02
MA3-TG5-3-180302-06	3790481	Grab water	03/18/02	03/20/02	03/25/02

#### 2. Holding Times:

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

#### 3. Method Blank:

The method blank result was free of contamination.

#### 4. Matrix Spike Recovery:

Two matrix spikes 3790473, and 3790474 associated with all the samples. Both MS recoveries were within the quality control limit.

#### 5. Duplicate Recovery:

Two duplicates 3790473, and 3790474 associated with the analysis. The RPD% value for sample 3790473 was within the control limit. However, The RPD% value for sample 3790474 was not required because the background or the duplicate sample result was less than the limit of quantitation.

#### 6. Laboratory Control Sample Recovery:

The laboratory control sample recovery was acceptable.

#### 7. Initial and Continuing Calibration:

## Total Organic Carbon Analysis (TOC): SDG # KMA05

#### 1.Samples:

	Lab Sample		Date	Date
Client Code	Number	<u>Matrix</u>	Collected	<u>Analyzed</u>
MA3-TG6-3-180302-03	3790473	Grab water	03/18/02	03/20/02
MA3-TG6-2-180302-02	3790474	Grab water	03/18/02	03/20/02
MA3-TG6-1-180302-01	3790475	Grab water	03/18/02	03/20/02
MA3-TG3-3-180302-09	3790476	Grab water	03/18/02	03/20/02
MA3-TG3-2-180302-08	3790477	Grab water	03/18/02	03/20/02
MA3-TG3-1-180302-07	3790478	Grab water	03/18/02	03/20/02
MA3-TG5-1-180302-04	3790479	Grab water	03/18/02	03/20/02
MA3-TG5-2-180302-05	3790480	Grab water	03/18/02	03/20/02
MA3-TG5-3-180302-06	3790481	Grab water	03/18/02	03/20/02

#### 2. Holding Times:

All samples were analyzed within the required holding times.

### 3. Method Blank:

The method blank contained 0.50 mg/l. The amount found in all the samples was greater than 5X the blank. Therefore, no qualification was applied.

## 4. Matrix Spike/Matrix Spike Duplicate :

The matrix spike was performed on sample 3790473, and 3790474. Both MS recoveries were within the quality control limit.

#### 5. Duplicate Recovery:

The RPD% value for samples 3790473, and 3790474 were not required because the background or the duplicate for the samples result was less than the limit of quantitation.

#### 6. Laboratory Control Sample Recovery:

The laboratory control sample recovery was acceptable.

## 7. Initial and Continuing Calibration:

## Ammonia Nitrogen Analysis: SDG # KMA05

#### 1.Samples:

Lab Sample		Date	Date
Number	<u>Matrix</u>	<b>Collected</b>	Analyzed
3790473	Grab water	03/18/02	03/26/02
3790474	Grab water	03/18/02	03/26/02
3790475	Grab water	03/18/02	03/26/02
3790476	Grab water	03/18/02	03/26/02
3790477	Grab water	03/18/02	03/26/02
3790478	Grab water	03/18/02	03/26/02
3790479	Grab water	03/18/02	03/26/02
3790480	Grab water	03/18/02	03/26/02
3790481	Grab water	03/18/02	03/26/02
	Lab Sample <u>Number</u> 3790473 3790474 3790475 3790476 3790477 3790478 3790478 3790480 3790481	Lab SampleNumberMatrix3790473Grab water3790474Grab water3790475Grab water3790476Grab water3790477Grab water3790478Grab water3790479Grab water3790480Grab water3790481Grab water	Lab SampleDateNumberMatrixCollected3790473Grab water03/18/023790474Grab water03/18/023790475Grab water03/18/023790476Grab water03/18/023790477Grab water03/18/023790478Grab water03/18/023790479Grab water03/18/023790480Grab water03/18/023790481Grab water03/18/02

## 2. Holding Times:

All samples were analyzed within the required holding times.

#### 3. Method Blank:

The method blank result was free of contamination.

## 4. Duplicate Recovery:

The RPD% value for samples 3790473 was 15% outside the control limit of quantitation (7%). Therefore, qualify the positive results as estimated (J).

## 5. Laboratory Control Sample Recovery:

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

#### 6. Matrix Spike Recovery:

No matrix spike was performed for this analysis.

Monday, May 13, 2002

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Analytical Data Validation Report Kerr-McGee Corporation Moss American Superfund Site- Milwaukee, WI SDG #: KMA05

## Ortho-Phosphate as P Analysis: SDG # KMA05

#### 1.Samples:

	Lab Sample		Date	Date
Client Code	Number	<u>Matrix</u>	<b>Collected</b>	<u>Analyzed</u>
MA3-TG6-3-180302-03	3790473	Grab water	03/18/02	03/20/02
MA3-TG6-2-180302-02	3790474	Grab water	03/18/02	03/20/02
MA3-TG6-1-180302-01	3790475	Grab water	03/18/02	03/20/02
MA3-TG3-3-180302-09	3790476	Grab water	03/18/02	03/20/02
MA3-TG3-2-180302-08	3790477	Grab water	03/18/02	03/20/02
MA3-TG3-1-180302-07	3790478	Grab water	03/18/02	03/20/02
MA3-TG5-1-180302-04	3790479	Grab water	03/18/02	03/20/02
MA3-TG5-2-180302-05	3790480	Grab water	03/18/02	03/20/02
MA3-TG5-3-180302-06	3790481	Grab water	03/18/02	03/20/02

## 2. Holding Times:

All samples were analyzed within the required holding time.

### 3. Method Blank:

The method blank result was free of contamination.

## 4. Matrix Spike Recovery:

The matrix spike was performed on sample 3790473. The MS/MSD recoveries were within the quality control limit. Also, the RPD% value was acceptable.

### **5. Duplicate Recovery:**

The duplicate RPD% for sample 3790473 recoveries was within the quality control limits.

## 6. Laboratory Control Sample Recovery:

The two laboratories control sample for sample 3790473 and 3790474 recoveries were within the quality control limits.

Monday, May 13, 2002

Analytical Data Validation Report Kerr-McGee Corporation Moss American Superfund Site- Milwaukee, WI SDG #: KMA05

## **Biochemical Oxygen Demand Analysis (BOD):** SDG # KMA05

#### 1.Samples:

	Lab Sample		Date	Date	
Client Code	Number	<u>Matrix</u>	<b>Collected</b>	<u>Analyzed</u>	
MA3-TG6-3-180302-03	3790473	Grab water	03/18/02	03/19/02	
MA3-TG6-2-180302-02	3790474	Grab water	03/18/02	03/19/02	
MA3-TG6-1-180302-01	3790475	Grab water	03/18/02	03/19/02	
MA3-TG3-3-180302-09	3790476	Grab water	03/18/02	03/19/02	
MA3-TG3-2-180302-08	3790477	Grab water	03/18/02	03/19/02	
MA3-TG3-1-180302-07	3790478	Grab water	03/18/02	03/19/02	
MA3-TG5-1-180302-04	3790479	Grab water	03/18/02	03/19/02	
MA3-TG5-2-180302-05	3790480	Grab water	03/18/02	03/19/02	
MA3-TG5-3-180302-06	3790481	Grab water	03/18/02	03/19/02	

#### 2. Holding Times:

All samples were analyzed within the required holding time.

## 3. Matrix Spike Recovery:

The matrix spike was performed on sample 3790473. The MS/MSD recoveries were within the quality control limit. Also, the RPD% value was acceptable.

#### 4. Duplicate Recovery:

The duplicate RPD% for sample 3790473 recoveries was acceptable.

#### 5. Laboratory Control Sample/Laboratory Control Sample Duplicate Recovery:

The laboratory control sample/ laboratory control sample duplicate recoveries were within the quality control limit. Also, the RPD% value was acceptable.

## <u>Chemical Oxygen Demand Analysis (COD):</u> <u>SDG # KMA05</u>

#### 1.Samples:

10000				
	Lab Sample		Date	Date
<u>Client Code</u>	Number	<u>Matrix</u>	Collected	<u>Analyzed</u>
MA3-TG6-3-180302-03	3790473	Grab water	03/18/02	03/24/02
MA3-TG6-2-180302-02	3790474	Grab water	03/18/02	03/24/02
MA3-TG6-1-180302-01	3790475	Grab water	03/18/02	03/24/02
MA3-TG3-3-180302-09	3790476	Grab water	03/18/02	03/24/02
MA3-TG3-2-180302-08	3790477	Grab water	03/18/02	03/24/02
MA3-TG3-1-180302-07	3790478	Grab water	03/18/02	03/24/02
MA3-TG5-1-180302-04	3790479	Grab water	03/18/02	03/24/02
MA3-TG5-2-180302-05	3790480	Grab water	03/18/02	03/26/02
MA3-TG5-3-180302-06	3790481	Grab water	03/18/02	03/26/02

### 2. Holding Times:

All samples were analyzed within the required holding time.

### 3. Matrix Spike Recovery:

Two matrix spike was performed on sample 3790473 associated with (3790473, 3790474, 3790475, 3790476, 3790477, 3790478, 3790479) and 37904780 associated with 3790480, 3790481. The MS/MSD recoveries were within the quality control limit. Also, the RPD% value was acceptable.

#### 4. Duplicate Recovery:

The two duplicates RPD% for sample 3790473, and 3790480 recoveries was within the quality control limits.

#### 5. Laboratory Control Sample Recovery:

The laboratory control sample recovery was within the quality control limit.

Please feel free to contact me at (847) 549-1042 or (847) 971-6800 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 800732. Samples arrived at the laboratory on Tuesday, March 19, 2002.

Client Description
TB-01 Grab Water Sample
MA3-TG6-3-180302-03 Grab Water Sample
MA3-TG6-2-180302-02 Grab Water Sample
MA3-TG6-1-180302-01 Grab Water Sample
MA3-TG3-3-180302-09 Grab Water Sample
MA3-TG3-2-180302-08 Grab Water Sample
MA3-TG3-1-180302-07 Grab Water Sample
MA3-TG5-1-180302-04 Grab Water Sample
MA3-TG5-2-180302-05 Grab Water Sample
MA3-TG5-3-180302-06 Grab Water Sample

Lancaster Labs Number 3790472 3790473 3790474 3790475 3790476 3790477 3790477 3790478 3790478 3790479 3790480 3790481

Analysis Report

#### 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 СОРҮ ТО	Data Package Group	





Analysis Report



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

Respectfully Submitted,

Erik J. Frederiksen Group Leader



Analysis Report

Kerr-McGee Corporation

Oklahoma City OK 73125

P.O. Box 25861



Page 1 of 1

#### 3790472 Lancaster Laboratories Sample No. WW

Collected:03/18/2002 19:00

Submitted: 03/19/2002 09:15 Reported: 04/03/2002 at 07:28 Discard: 05/04/2002 TB-01 Grab Water Sample Moss American Superfund Site - Milwaukee, WI

SDG#: KMA05-01TB TBX01

CAT			As Received	As Received Method		Dilution
No.	Analysis Name	CAS Number	Result	Detection Limit	Units	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 perf	ormed. In addi	tion, a LCS/LCSD	was		
	performed to demonstrate precisi	on and accurac	y at a batch leve	el.		

#### Laboratory Chronicle

CAT			Analysis	Dilution
No.	Analysis Name	Method	Trial# Date and Time Analyst	Factor
08213	BTEX (8021)	SW-846 8021B	1 '03/20/2002 22:10 Patrick N Ev	ans 1
01146	GC VOA Water Prep	SW-846 5030B	1 03/20/2002 22:10 Patrick N Ev	ans n.a.



Analysis Repo

Kerr-McGee Corporation

Oklahoma City OK 73125

P.O. Box 25861



#### Page 1 of 2

#### Lancaster Laboratories Sample No. WW 3790473

Collected:03/18/2002 14:35 by BS

Submitted: 03/19/2002 09:15 Reported: 04/03/2002 at 07:28 Discard: 05/04/2002 MA3-TG6-3-180302-03 Grab Water Sample Moss American Superfund Site - Milwaukee, WI

TG633 SDG#: KMA05-02

				As Received		
CAT			As Received	Method		Dilution
No.	Analysis Name	CAS Number	Result	Detection Limit	Units	Factor
00217	Kjeldahl Nitrogen	7727-37-9	0.95 J	0.30	mg/l	1
00219	Nitrite Nitrogen	14797-65-0	N.D.	0.015	mg/l	1
00220	Nitrate Nitrogen	14797-55-8	N.D.	0.040	mg/l \	1
00221	Ammonia Nitrogen	7664-41-7	0.84 (J)	0.46	mg/l 🍗	1
	Sufficient sample volume was not	available to	perform a MS/MSD	for this		
	analysis. Therefore, a LCS/LCSD	was performed	to demonstrate pr	ecision and		
00226	Ortho-Phosphate as P	14265-44-2	N.D.	0.0066	ma/l	1
00235	Biochemical Oxygen Demand	n.a.	N.D.	2.8	mg/1	1
00273	Total Organic Carbon	n.a.	9.9	0.50	mg/1	1
00345	Total Phosphorus as PO4 water	14265-44-2	0.23	0.12	mg/1	1
01553	Chemical Oxygen Demand	n.a.	22.9	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 perf	ormed. In addi	tion, a LCS/LCSD	was		
	performed to demonstrate precisi	on and accurac	y at a batch leve	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.115	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	0.04 J	0.04	ug/l	1
00807	Fluoranthene	206-44-0	0.05 J	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	$1 \frac{v_1}{\omega}$
						2
	Lancaster Laboratories. Ir	ic.				Ō



Analysis Report

Account Number: 07802

Kerr-McGee Corporation

Oklahoma City OK 73125

P.O. Box 25861



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#### 3790473 Lancaster Laboratories Sample No. WW

Collected:03/18/2002 14:35 by BS

Submitted: 03/19/2002 09:15 Reported: 04/03/2002 at 07:28 Discard: 05/04/2002 MA3-TG6-3-180302-03 Grab Water Sample Moss American Superfund Site - Milwaukee, WI

TG633 SDG#: KMA05-02

		•		As Received		
CAT			As Received	Method		Dilution
No.	Analysis Name	CAS Number	Result	Detection Limit	Units	Factor
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.	0.09	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/1 🏲	1
	Sufficient sample volume was no analysis. Therefore, a LCS/LCSD	t available to was performed	o perform a MS/MS i to demonstrate	SD for this precision and	· ·	

accuracy at a batch level.

#### Laboratory Chronicle

CAT				Analysis		Dilution
No.	Analysis Name	Method	Trial#	Date and Time	Analyst	Factor
00217	Kjeldahl Nitrogen	EPA 351.2	1	03/26/2002 15:48	Venia B McFadden	1
00219	Nitrite Nitrogen	EPA 353.2	1	03/19/2002 14:26	Matthew J Mercer	1
00220	Nitrate Nitrogen	EPA 353.2	1	03/24/2002 19:09	Matthew J Mercer	1
00221	Ammonia Nitrogen	EPA 350.2	1	103/26/2002 07:30	Michele L Graham	1
00226	Ortho-Phosphate as P	EPA 365.3	1	03/20/2002 07:00	Michele L Graham	1
00235	Biochemical Oxygen Demand	EPA 405.1	1	03/19/2002 22:15	Nicole R Bushong	1
00273	Total Organic Carbon	EPA 415.1	1	03/20/2002 10:07	Timothy M Petree	1
00345	Total Phosphorus as PO4	EPA 365.1	1	03/25/2002 18:23	Venia B McFadden	1
	water					
01553	Chemical Oxygen Demand	EPA 410.2	1	03/24/2002 05:48	Susan A Engle	1
08213	BTEX (8021)	SW-846 8021B	1	03/21/2002 00:28	Linda C Pape	1
00774	PAH's in Water by HPLC	SW-846 8310	1	03/28/2002 12:11	Mark A Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	03/21/2002 00:28	Linda C Pape	n.a.
01460	Total Kjeldahl Nitrogen	EPA 351.2	1	03/22/2002 07:45	James S Mathiot	1
	Digest					
03337	PAH Water Extraction	SW-846 3510C	1	03/21/2002 09:30	Felix C Arroyo	1
08264	Total Phos as PO4 Prep	EPA 365.1	1	03/20/2002 16:20	Nancy J Shoop	1
	(water)					

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

0021

Analysis Report



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#### Lancaster Laboratories Sample No. WW 3790474

Collected:03/18/2002 14:25 by BS

Submitted: 03/19/2002 09:15Kerr-McGee CorporationReported: 04/03/2002 at 07:28P.O. Box 25861Discard: 05/04/2002Oklahoma City OK 73125MA3-TG6-2-180302-02 Grab Water SampleOklahoma City OK 73125Moss American Superfund Site - Milwaukee, WIMI

TG622 SDG#: KMA05-03

					As Received		
CAT			As Receive	d	Method		Dilution
No.	Analysis Name	CAS Number	Result		Detection Limit	Units	Factor
00217	Kjeldahl Nitrogen	7727-37-9	0.59 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/1 \	1
00221	Ammonia Nitrogen	7664-41-7	0.50 J		0.46	mg/1 🛌	1
	Sufficient sample volume was not	available to	perform a M	IS/MSD	for this		
	analysis. Therefore, a LCS/LCSD accuracy at a batch level.	was performed	to demonstr	ate pro	ecision and		
00226	Ortho-Phosphate as P	14265-44-2	N.D.		0.0066	mg/l	1
00235	Biochemical Oxygen Demand	n.a.	N.D.		2.5	mg/l	1
00273	Total Organic Carbon	n.a.	10.5		0.50	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	0.18 J		0.12	mg/l	1
01553	Chemical Oxygen Demand	n.a.	25.2		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 M	1SD for	this		
	analysis. However, a MS was perf	ormed. In addi	tion, a LCS	S/LCSD	was		
	performed to demonstrate precisi	on and accurac	y at a batc	ch leve	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.VT		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	0.08 J		0.04	ug/l	1
00807	Fluoranthene	206-44-0	0.1 J		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 0
00823	Benzo(a)pyrene	50-32-8	N.D.		0.02	ug/l	1 1 1

TPS 1022



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Analysis Report

Account Number: 07802

Kerr-McGee Corporation

Oklahoma City OK 73125

P.O. Box 25861

Lancaster Laboratories Sample No. WW 3790474

Collected:03/18/2002 14:25 by BS

Submitted: 03/19/2002 09:15 Reported: 04/03/2002 at 07:28 Discard: 05/04/2002 MA3-TG6-2-180302-02 Grab Water Sample Moss American Superfund Site - Milwaukee, WI

TG622 SDG#: KMA05-03

				As Received				
CAT			As Received	Method		Dilution		
No.	Analysis Name	CAS Number	Result	Detection Limit	Units.	Factor		
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/1	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	Chro	nicle			
CAT		Analysis					
No.	Analysis Name	Method	Trial#	Date and Time	Analyst	Factor	
00217	Kjeldahl Nitrogen	EPA 351.2	1	03/26/2002 15:49	Venia B McFadden	1	
00219	Nitrite Nitrogen	EPA 353.2	1	03/19/2002 14:27	Matthew J Mercer	1	
00220	Nitrate Nitrogen	EPA 353.2	1	03/24/2002 19:11	Matthew J Mercer	1	
00221	Ammonia Nitrogen	EPA 350.2	1	'03/26/2002 07:30	Michele L Graham	1	
00226	Ortho-Phosphate as P	EPA 365.3	1	03/20/2002 07:00	Michele L Graham	1	
00235	Biochemical Oxygen Demand	EPA 405.1	1	03/19/2002 22:15	Nicole R Bushong	1	
00273	Total Organic Carbon	EPA 415.1	1	03/20/2002 10:15	Timothy M Petree	1	
00345	Total Phosphorus as PO4 water	EPA 365.1	1	03/25/2002 17:18	Venia B McFadden	1	
01553	Chemical Oxygen Demand	EPA 410.2	1	03/24/2002 05:48	Susan A Engle	1	
08213	BTEX (8021)	SW-846 8021B	1	03/21/2002 01:02	Linda C Pape	1	
00774	PAH's in Water by HPLC	SW-846 8310	1	03/28/2002 12:49	Mark A Clark	1	
01146	GC VOA Water Prep	SW-846 5030B	1	03/21/2002 01:02	Linda C Pape	n.a.	
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	03/22/2002 07:45	James S Mathiot	1	
03337	PAH Water Extraction	SW-846 3510C	1	03/21/2002 09:30	Felix C Arroyo	1	
08264	Total Phos as PO4 Prep	EPA 365.1	1	03/20/2002 16:20	Nancy J Shoop	1	

99975



(water)

Kerr-McGee Corporation

Oklahoma City OK 73125

P.O. Box 25861



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#### Lancaster Laboratories Sample No. WW 3790475

Collected:03/18/2002 14:15 by BS

Submitted: 03/19/2002 09:15 Reported: 04/03/2002 at 07:28 Discard: 05/04/2002 MA3-TG6-1-180302-01 Grab Water Sample Moss American Superfund Site - Milwaukee, WI

TG611 SDG#: KMA05-04

					As Received		
CAT			As Rece	ived	Method		Dilution
No.	Analysis Name	CAS Number	Result		Detection Limit	Units	Factor
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	1.4 (5)		0.46	mg/l 🐂	1
	Sufficient sample volume was not	available to	perform .	a MS/MSD	for this		
	analysis. Therefore, a LCS/LCSD accuracy at a batch level.	was performed	to demon	strate pr	ecision and		
00226	Ortho-Phosphate as P	14265-44-2	0.034		0.0066	mg/l	1
00235	Biochemical Oxygen Demand	n.a.	N.D.		2.5	mg/l	1
00273	Total Organic Carbon	n.a.	7.9		0.50	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	0.27		0.12	mg/l	1
01553	Chemical Oxygen Demand	n.a.	19.4		1.7	mg/l	1
08213	BTEX (8021)						
00776	Benzene	71-43-2	N.D.		0.20	ug/l	1
00777	Toluene	108-88-3	N.D.		0.20	ug/l	1
00778	Ethylbenzene	100-41-4	N.D.	,	0.20	ug/l	1
00779	Total Xylenes	1330-20-7	N.D.		0.60	ug/l	1
	Sufficient sample volume was not	available to	perform	a MSD for	this		
	analysis. However, a MS was perf	ormed. In addi	ition, a	LCS/LCSD	was		
	performed to demonstrate precisi	on and accurac	cy at a b	atch leve	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.UT		0.9	ug/l	1
00783	Acenaphthene	83-32-9	N.D. Ŭ		0.9	ug/l	1
00784	Fluorene	86-73-7	N.D.		0.2	ug/l	1
00785	Phenanthrene	85-01-8	N.D.		0.09	ug/l	1
00789	Anthracene	120-12-7	0.07	J	0.04	ug/l	1
00807	Fluoranthene	206-44-0	0.06	J	0.04	ug/l	1
00811	Pyrene	129-00-0	N.D.		0.2	ug/l	1
00812	Benzo(a)anthracene	56-55-3	0.05	J	0.02	ug/l	1
00818	Benzo(b)fluoranthene	205-99-2	0.05	J	0.04	ug/l	1 G
00823	Benzo(a)pyrene	50-32-8	0.05	J	0.02	ug/l	1 <sup>10</sup> 6



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5/13/02

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Analysis Report

Kerr-McGee Corporation

Oklahoma City OK 73125

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Lancaster Laboratories Sample No. WW 3790475

Collected:03/18/2002 14:15 by BS

Submitted: 03/19/2002 09:15 Reported: 04/03/2002 at 07:28 Discard: 05/04/2002 MA3-TG6-1-180302-01 Grab Water Sample Moss American Superfund Site - Milwaukee, WI

TG611 SDG#: KMA05-04

					As Received				
CAT			As Rec	ceived	Method		Dilution		
No.	Analysis Name	CAS Number	Result	2	Detection Limit	Units.	Factor		
00895	Dibenz(a,h)anthracene	53-70-3	0.08	J	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	0.06	J	0.02	ug/1 🐂	1		
	Sufficient sample volume was no	t available to	perform	n a MS/MS	D for this				
	analysis. Therefore, a LCS/LCSD	analysis. Therefore, a LCS/LCSD was performed to demonstrate precision and							
	accuracy at a batch level.				-				

Due to the nature of the sample matrix, a reduced aliquot was used for analysis. The reporting limits were raised accordingly.

#### Laboratory Chronicle

CAT				, Analysis		Dilution
No.	Analysis Name	Method	Trial#	Date and Time	Analyst	Factor
00217	Kjeldahl Nitrogen	EPA 351.2	1	03/26/2002 15:50	Venia B McFadden	1
00219	Nitrite Nitrogen	EPA 353.2	1	03/19/2002 14:29	Matthew J Mercer	1
00220	Nitrate Nitrogen	EPA 353.2	1	03/24/2002 19:12	Matthew J Mercer	1
00221	Ammonia Nitrogen	EPA 350.2	1	03/26/2002 07:30	Michele L Graham	1
00226	Ortho-Phosphate as P	EPA 365.3	1	03/20/2002 07:00	Michele L Graham	1
00235	Biochemical Oxygen Demand	EPA 405.1	1	03/19/2002 22:15	Nicole R Bushong	1
00273	Total Organic Carbon	EPA 415.1	1	03/20/2002 10:23	Timothy M Petree	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	03/25/2002 17:19	Venia B McFadden	1
01553	Chemical Oxygen Demand	EPA 410.2	1	03/24/2002 05:48	Susan A Engle	1
08213	BTEX (8021)	SW-846 8021B	1	03/21/2002 01:37	Linda C Pape	1
00774	PAH's in Water by HPLC	SW-846 8310	1	03/28/2002 13:28	Mark A Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	03/21/2002 01:37	Linda C Pape	n.a.
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	03/22/2002 07:45	James S Mathiot	1
03337	PAH Water Extraction	SW-846 3510C	1	03/21/2002 09:30	Felix C Arroyo	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	03/20/2002 16:20	Nancy J Shoop	1

0825



Analysis Repo

Account Number: 07802

Kerr-McGee Corporation

Oklahoma City OK 73125

P.O. Box 25861



#### Lancaster Laboratories Sample No. WW 3790475

Collected:03/18/2002 14:15 by BS

Submitted: 03/19/2002 09:15 Reported: 04/03/2002 at 07:28 Discard: 05/04/2002 MA3-TG6-1-180302-01 Grab Water Sample Moss American Superfund Site - Milwaukee, WI

TG611 SDG#: KMA05-04 Page 3 of 3

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Analysis Repo

Kerr-McGee Corporation

Oklahoma City OK 73125

P.O. Box 25861



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#### Lancaster Laboratories Sample No. WW 3790476

Collected:03/18/2002 17:35 by BS

Submitted: 03/19/2002 09:15 Reported: 04/03/2002 at 07:29 Discard: 05/04/2002 MA3-TG3-3-180302-09 Grab Water Sample Moss American Superfund Site - Milwaukee, WI

SDG#: KMA05-05 TG339

				As Received		
CAT			As Received	Method		Dilution
No.	Analysis Name	CAS Number	Result	Detection Limit	Units	Factor
00217	Kjeldahl Nitrogen	7727-37-9	1.3	0.30	mg/l	1
00219	Nitrite Nitrogen	14797-65-0	0.035 J	0.015	mg/l	1
00220	Nitrate Nitrogen	14797-55-8	N.D.	0.040	mg/l \	1
00221	Ammonia Nitrogen	7664-41-7	1.3 5)	0.46	mg/l 🐂	1
	Sufficient sample volume was not	available to	perform a MS/MSD	for this	•	
	analysis. Therefore, a LCS/LCSD	was performed	to demonstrate p	recísion and		
00226	Ortho-Phosphate as P	14265-44-2	0.0091 J	0.0066	ma/1	1
00235	Biochemical Oxygen Demand	n.a.	8.2	0.80	mg/l	1
00273	Total Organic Carbon	n.a.	11.9	0.50	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	0.43	0.12	mg/l	1
01553	Chemical Oxygen Demand	n.a.	35.3	1.7	mg/1	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	r this		
	analysis. However, a MS was perf	ormed. In addi	tion, a LCS/LCSD	was		
	performed to demonstrate precisi	on and accurac	y at a batch leve	21.		
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.	0.2	ug/l	1
00785	Phenanthrene	85-01-8	N.D.	0.09	ug/l	1
00789	Anthracene	120-12-7	0.06 J	0.04	ug/l	1
00807	Fluoranthene	206-44-0	0.05 J	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 1
00823	Benzo(a)pyrene	50-32-8	N.D.	0.02	ug/l	1
						9 2





Analysis Report

Account Number: 07802

Kerr-McGee Corporation

Oklahoma City OK 73125

P.O. Box 25861



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#### Lancaster Laboratories Sample No. WW 3790476

Collected:03/18/2002 17:35 by BS

Submitted: 03/19/2002 09:15 Reported: 04/03/2002 at 07:29 Discard: 05/04/2002 MA3-TG3-3-180302-09 Grab Water Sample Moss American Superfund Site - Milwaukee, WI

TG339 SDG#: KMA05-05

				As Received		
CAT			As Received	Method		Dilution
No.	Analysis Name	CAS Number	Result	Detection Limit	Units	Factor
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/1 🐂	1
	Sufficient sample volume was not	available to	perform a MS/MSD	for this	·	

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

Due to the nature of the sample matrix, a reduced aliquot was used for analysis. The reporting limits were raised accordingly.

#### Laboratory Chronicle

CAT				Analysis		Dilution
No.	Analysis Name	Method	Trial#	Date and Time	Analyst	Factor
00217	Kjeldahl Nitrogen	EPA 351.2	1	03/26/2002 15:51	Venia B McFadden	1
00219	Nitrite Nitrogen	EPA 353.2	1	03/19/2002 14:30	Matthew J Mercer	1
00220	Nitrate Nitrogen	EPA 353.2	1	03/24/2002 19:13	Matthew J Mercer	1
00221	Ammonia Nitrogen	EPA 350.2	1	03/26/2002.07:30	Michele L Graham	1
00226	Ortho-Phosphate as P	EPA 365.3	1	03/20/2002 07:00	Michele L Graham	1
00235	Biochemical Oxygen Demand	EPA 405.1	1	03/19/2002 22:15	Nicole R Bushong	1
00273	Total Organic Carbon	EPA 415.1	1	03/20/2002 10:31	Timothy M Petree	1
00345	Total Phosphorus as PO4	EPA 365.1	1	03/25/2002 17:20	Venia B McFadden	1
	water					
01553	Chemical Oxygen Demand	EPA 410.2	1	03/24/2002 05:48	Susan A Engle	1
08213	BTEX (8021)	SW-846 8021B	1	03/21/2002 05:03	Linda C Pape	1
00774	PAH's in Water by HPLC	SW-846 8310	1	03/28/2002 14:06	Mark A Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	03/21/2002 05:03	Linda C Pape	n.a.
01460	Total Kjeldahl Nitrogen	EPA 351.2	1	03/22/2002 07:45	James S Mathiot	1
	Digest					
03337	PAH Water Extraction	SW-846 3510C	1	03/21/2002 09:30	Felix C Arroyo	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	03/20/2002 16:20	Nancy J Shoop	1

99928



Analysis Report



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#### Lancaster Laboratories Sample No. WW 3790476

Collected:03/18/2002 17:35 by BS

Submitted: 03/19/2002 09:15 Reported: 04/03/2002 at 07:29 Discard: 05/04/2002 MA3-TG3-3-180302-09 Grab Water Sample Moss American Superfund Site - Milwaukee, WI

TG339 SDG**#:** KMA05-05

Account Number: 07802

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





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

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Kerr-McGee Corporation

Oklahoma City OK 73125

P.O. Box 25861



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Lancaster Laboratories Sample No. WW 3790477

Collected:03/18/2002 17:25 by BS

Submitted: 03/19/2002 09:15 Reported: 04/03/2002 at 07:29 Discard: 05/04/2002 MA3-TG3-2-180302-08 Grab Water Sample Moss American Superfund Site - Milwaukee, WI

TG328 SDG#: KMA05-06

				As Received		
CAT			As Received	Method		Dilution
No.	Analysis Name	CAS Number	Result	Detection Limit	Units	Factor
00217	Kjeldahl Nitrogen	7727-37-9	1.1	0.30	mg/l	1
00219	Nitrite Nitrogen	14797-65-0	0.022 J	0.015	mg/l	1
00220	Nitrate Nitrogen	14797-55-8	N.D.	0.040	mg/l 🔪	1
00221	Ammonia Nitrogen	7664-41-7	1.2 5,	0.46	mg/l 🌥	1
	Sufficient sample volume was not	available to	perform a MS/MSD	for this	•	
	analysis. Therefore, a LCS/LCSD accuracy at a batch level.	was performed	to demonstrate pr	ecision and		
00226	Ortho-Phosphate as P	14265-44-2	N.D.	0.0066	mg/l	1
00235	Biochemical Oxygen Demand	n.a.	9.1	0.80	mg/l	1
00273	Total Organic Carbon	n.a.	8.0	0.50	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	0.28	0.12	mg/l	1
01553	Chemical Oxygen Demand	n.a.	23.6	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 perf	ormed. In addi	tion, a LCS/LCSD	was		
	performed to demonstrate precisi-	on and accurac	y at a batch leve	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.VJ	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 G
00823	Benzo(a)pyrene	50-32-8	N.D.	0.02	ug/l	1 0





Analysis Report

Account Number: 07802

Kerr-McGee Corporation

Oklahoma City OK 73125

P.O. Box 25861



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#### Lancaster Laboratories Sample No. WW 3790477

Collected:03/18/2002 17:25 by BS

Submitted: 03/19/2002 09:15 Reported: 04/03/2002 at 07:29 Discard: 05/04/2002 MA3-TG3-2-180302-08 Grab Water Sample Moss American Superfund Site - Milwaukee, WI

TG328 SDG#: KMA05-06

				AS Received				
CAT			As Received	Method		Dilution		
No.	Analysis Name	CAS Number	Result	Detection Limit	Units.	Factor		
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				Analysis		Dilution
No.	Analysis Name	Method	Trial#	Date and Time	Analyst	Factor
00217	Kjeldahl Nitrogen	EPA 351.2	1	03/26/2002 15:53	Venia B McFadden	1
00219	Nitrite Nitrogen	EPA 353.2	1	03/19/2002 14:31	Matthew J Mercer	1
00220	Nitrate Nitrogen	EPA 353.2	1	03/25/2002 14:10	Matthew J Mercer	1
00221	Ammonia Nitrogen	EPA 350.2	1	03/26/2002 07:30	Michele L Graham	1
00226	Ortho-Phosphate as P	EPA 365.3	1	03/20/2002 07:00	Michele L Graham	1
00235	Biochemical Oxygen Demand	EPA 405.1	1	03/19/2002 22:15	Nicole R Bushong	1
00273	Total Organic Carbon	EPA 415.1	1	03/20/2002 10:39	Timothy M Petree	1
00345	Total Phosphorus as PO4	EPA 365.1	1	03/25/2002 17:23	Venia B McFadden	1
	water					
01553	Chemical Oxygen Demand	EPA 410.2	1	03/24/2002 05:48	Susan A Engle	1
08213	BTEX (8021)	SW-846 8021B	1	03/21/2002 05:38	Linda C Pape	1
00774	PAH's in Water by HPLC	SW-846 8310	1	03/28/2002 14:45	Mark A Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	03/21/2002 05:38	Linda C Pape	n.a.
01460	Total Kjeldahl Nitrogen	EPA 351.2	1	03/22/2002 07:45	James S Mathiot	1
	Digest					
03337	PAH Water Extraction	SW-846 3510C	1	03/21/2002 09:30	Felix C Arroyo	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	03/20/2002 16:20	Nancy J Shoop	1



Lancaster Laboratories, Inc. 2425 New Holland Pike PO Box 12425 Lancaster, PA 17605-2425 8831

Analysis Report

Account Number: 07802

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#### Lancaster Laboratories Sample No. WW 3790478

Collected:03/18/2002 17:15 by BS

Submitted: 03/19/2002 09:15Kerr-McGee CorporationReported: 04/03/2002 at 07:29P.O. Box 25861Discard: 05/04/2002Oklahoma City OK 73125MA3-TG3-1-180302-07 Grab Water SampleOklahoma City OK 73125Moss American Superfund Site - Milwaukee, WIMilwaukee, WI

TG317 SDG#: KMA05-07

				As Received		
CAT			As Received	Method	×.	Dilution
No.	Analysis Name	CAS Number	Result	Detection Limit	Units	Factor
00217	Kjeldahl Nitrogen	7727-37-9	1.3	0.30	mg/l	1
00219	Nitrite Nitrogen	14797-65-0	N.D.	0.015	mg/l	1
00220	Nitrate Nitrogen	14797-55-8	N.D.	0.040	mg/l	1
00221	Ammonia Nitrogen	7664-41-7	1.3	0.46	mg/1 -	1
	Sufficient sample volume was not	available to	perform a MS/MSD	for this		
	analysis. Therefore, a LCS/LCSD	was performed	to demonstrate pr	ecision and		
	accuracy at a batch level.					
00226	Ortho-Phosphate as P	14265-44-2	N.D.	0.0066	mg/l	1
00235	Biochemical Oxygen Demand	n.a.	N.D.	3.8	mg/l	1
00273	Total Organic Carbon	n.a.	11.0	0.50	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	0.26	0.12	mg/l	1
01553	Chemical Oxygen Demand	n.a.	28.3	1.7	mg/l	1
08213	BTEX (8021)					
00776	Benzene	71-43-2	N.D.	0.20	ug/l	1
00777	Toluene	108-88-3	N.D.	0.20	ug/l	1
00778	Ethylbenzene	100-41-4	N.D. /	0.20	ug/l	1
00779	Total Xylenes	1330-20-7	N.D.	0.60	ug/l	1
	Sufficient sample volume was not	available to	perform a MSD for	this		
	analysis. However, a MS was perf	ormed. In addi	tion, a LCS/LCSD	was		
	performed to demonstrate precisi	on and accurac	y at a batch leve	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.VT	0.8	ug/l	1
00783	Acenaphthene	83-32-9	N.D.	0.8	ug/l	1
00784	Fluorene	86-73-7	0.4 J	0.2	ug/l	1
00785	Phenanthrene	85-01-8	N.D.	0.08	ug/l	1
00789	Anthracene	120-12-7	0.1 J	0.04	ug/l	1
00807	Fluoranthene	206-44-0	0.07 J	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 0
00823	Benzo(a)pyrene	50-32-8	N.D.	0.02	ug/l	1 0 G
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Lancaster Laboratories, Inc. 2425 New Holland Pike PO Box 12425 Lancaster, PA 17605-2425

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Analysis Report

Kerr-McGee Corporation

Oklahoma City OK 73125

P.O. Box 25861



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#### Lancaster Laboratories Sample No. WW 3790478

Collected:03/18/2002 17:15 by BS

Submitted: 03/19/2002 09:15 Reported: 04/03/2002 at 07:29 Discard: 05/04/2002 MA3-TG3-1-180302-07 Grab Water Sample Moss American Superfund Site - Milwaukee, WI

TG317 SDG#: KMA05-07

				As Received			
CAT			As Received	Method		Dilution	
No.	Analysis Name	CAS Number	Result	Detection Limit	Units	Factor	
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/1	1	
07410	Benzo(k)fluoranthene	207-08-9	N.D.	0.02	ug/1 🎽	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				Analysis		Dilution
No.	Analysis Name	Method	Trial#	Date and Time	Analyst	Factor
00217	Kjeldahl Nitrogen	EPA 351.2	1	03/26/2002 15:56	Venia B McFadden	1
00219	Nitrite Nitrogen	EPA 353.2	1	03/19/2002 14:32	Matthew J Mercer	1
00220	Nitrate Nitrogen	EPA 353.2	1	03/25/2002 14:12	Matthew J Mercer	1
00221	Ammonia Nitrogen	EPA 350.2	1	<i>'</i> 03/26/2002 07:30	Michele L Graham	1
00226	Ortho-Phosphate as P	EPA 365.3	1	03/20/2002 07:00	Michele L Graham	1
00235	Biochemical Oxygen Demand	EPA 405.1	1	03/19/2002 22:15	Nicole R Bushong	1
00273	Total Organic Carbon	EPA 415.1	1	03/20/2002 10:48	Timothy M Petree	1
00345	Total Phosphorus as PO4	EPA 365.1	1	03/25/2002 17:26	Venia B McFadden	1
	water					
01553	Chemical Oxygen Demand	EPA 410.2	1	03/24/2002 05:48	Susan A Engle	1
08213	BTEX (8021)	SW-846 8021B	1	03/21/2002 06:12	Linda C Pape	1
00774	PAH's in Water by HPLC	SW-846 8310	1	03/28/2002 15:24	Mark A Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	03/21/2002 06:12	Linda C Pape	n.a.
01460	Total Kjeldahl Nitrogen	EPA 351.2	1	03/22/2002 07:45	James S Mathiot	1
	Digest					
03337	PAH Water Extraction	SW-846 3510C	1	03/21/2002 09:30	Felix C Arroyo	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	03/20/2002 16:20	Nancy J Shoop	1



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#### Lancaster Laboratories Sample No. WW 3790479

Collected:03/18/2002 15:50 by BS Account Number: 07802 Submitted: 03/19/2002 09:15 Kerr-McGee Corporation Reported: 04/03/2002 at 07:29 P.O. Box 25861 Discard: 05/04/2002 MA3-TG5-1-180302-04 Grab Water Sample Moss American Superfund Site - Milwaukee, WI

TG514 SDG#: KMA05-08

					As Received		
CAT			As Rece	eived	Method		Dilution
No.	Analysis Name	CAS Number	Result		Detection Limit	Units	Factor
00217	Kjeldahl Nitrogen	7727-37-9	0.49	J	0.30	mg/l	1
00219	Nitrite Nitrogen	14797-65-0	N.D.		0.015	mg/l	1
00220	Nitrate Nitrogen	14797-55-8	N.D.		0.040	mg/l \	1
00221	Ammonia Nitrogen	7664-41-7	N.D.		0.46	mg/l 🐂	1
	Sufficient sample volume was not	available to	perform	a MS/MSD	for this		
	analysis. Therefore, a LCS/LCSD	was performed	to demon	nstrate pr	ecision and		
	accuracy at a batch level.						
00226	Ortho-Phosphate as P	14265-44-2	N.D.		0.0066	mg/l	1
00235	Biochemical Oxygen Demand	n.a.	N.D.		2.6	mg/l	1
00273	Total Organic Carbon	n.a.	5.6		0.50	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	0.19	J	0.12	mg/l	1
01553	Chemical Oxygen Demand	n.a.	13.2		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	<b>available</b> 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.UJ		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 Ģ
00823	Benzo(a)pyrene	50-32-8	N.D.		0.02	ug/l	1





Kerr-McGee Corporation

Oklahoma City OK 73125

P.O. Box 25861



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#### Lancaster Laboratories Sample No. WW 3790479

Collected:03/18/2002 15:50 by BS

Submitted: 03/19/2002 09:15 Reported: 04/03/2002 at 07:29 Discard: 05/04/2002 MA3-TG5-1-180302-04 Grab Water Sample Moss American Superfund Site - Milwaukee, WI

TG514 SDG#: KMA05-08

	· · ·			As Received		•	
CAT			As Received	Method		Dilution	
No.	Analysis Name	CAS Number	Result	Detection Limit	Units	Factor	
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/1	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/1 🏲	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	CAT			Analysis			
No.	Analysis Name	Method	Trial#	Date and Time	Analyst	Factor	
00217	Kjeldahl Nitrogen	EPA 351.2	1	03/26/2002 15:57	Venia B McFadden	1	
00219	Nitrite Nitrogen	EPA 353.2	1	03/19/2002 14:34	Matthew J Mercer	1	
00220	Nitrate Nitrogen	EPA 353.2	1	03/25/2002 14:13	Matthew J Mercer	1	
00221	Ammonia Nitrogen	EPA 350.2	1	'03/26/2002 07:30	Michele L Graham	1	
00226	Ortho-Phosphate as P	EPA 365.3	1	03/20/2002 07:00	Michele L Graham	1	
00235	Biochemical Oxygen Demand	EPA 405.1	1	03/19/2002 22:15	Nicole R Bushong	1	
00273	Total Organic Carbon	EPA 415.1	1	03/20/2002 10:56	Timothy M Petree	1	
00345	Total Phosphorus as PO4	EPA 365.1	1	03/25/2002 17:27	Venia B McFadden	1	
	water			•			
01553	Chemical Oxygen Demand	EPA 410.2	1	03/24/2002 05:48	Susan A Engle	1	
08213	BTEX (8021)	SW-846 8021B	1	03/21/2002 06:46	Linda C Pape	1	
00774	PAH's in Water by HPLC	SW-846 8310	1	03/28/2002 16:02	Mark A Clark	1	
01146	GC VOA Water Prep	SW-846 5030B	1	03/21/2002 06:46	Linda C Pape	n.a.	
01460	Total Kjeldahl Nitrogen	EPA 351.2	1	03/22/2002 07:45	James S Mathiot	1	
	Digest						
03337	PAH Water Extraction	SW-846 3510C	1	03/21/2002 09:30	Felix C Arroyo	1	
08264	Total Phos as PO4 Prep	EPA 365.1	1	03/20/2002 16:20	Nancy J Shoop	1	
	(water)						

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Kerr-McGee Corporation

Oklahoma City OK 73125

P.O. Box 25861



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#### Lancaster Laboratories Sample No. WW 3790480

Collected:03/18/2002 16:00 by BS

Submitted: 03/19/2002 09:15 Reported: 04/03/2002 at 07:29 Discard: 05/04/2002 MA3-TG5-2-180302-05 Grab Water Sample Moss American Superfund Site - Milwaukee, WI

TG525 SDG#: KMA05-09

				As Received		
CAT			As Received	Method		Dilution
No.	Analysis Name	CAS Number	Result	Detection Limit	Units	Factor
00217	Kjeldahl Nitrogen	7727-37-9	0.48 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	0.55 (J)	0.46	mg/1 -	1
	Sufficient sample volume was not	available to	perform a MS/MSI	) for this		
	analysis. Therefore, a LCS/LCSD	was performed	to demonstrate p	precision and		
	accuracy at a batch level.		-			
00226	Ortho-Phosphate as P	14265-44-2	N.D.	0.0066	mg/l	1
00235	Biochemical Oxygen Demand	n.a.	N.D.	2.9	mg/l	1
00273	Total Organic Carbon	n.a.	5.2	0.50	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	0.20	0.12	mg/l	1
01553	Chemical Oxygen Demand	n.a.	20.2	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 fo	or this		
	analysis. However, a MS was perf	ormed. In addi	tion, a LCS/LCSI	) was		
	performed to demonstrate precisi	on and accurac	y at a batch lev	vel.		
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.VJ	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 R
00823	Benzo(a)pyrene	50-32-8	N.D.	0.02	ug/l	1 Ö

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#### Lancaster Laboratories Sample No. WW 3790480

Collected:03/18/2002 16:00 by BS

Submitted: 03/19/2002 09:15 Reported: 04/03/2002 at 07:29 Discard: 05/04/2002 MA3-TG5-2-180302-05 Grab Water Sample Moss American Superfund Site - Milwaukee, WI Account Number: 07802

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

#### TG525 SDG#: KMA05-09

	· •			As Received		
CAT			As Received	Method		Dilution
No.	Analysis Name	CAS Number	Result	Detection Limit	Units	Factor
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	t available to	perform a MS/MS	SD for this		
	analysis. Therefore, a LCS/LCSD	was performed	i to demonstrate	precision and		

accuracy at a batch level.

#### Laboratory Chronicle

CAT				Analysis		Dilution
No.	Analysis Name	Method	Trial#	Date and Time	Analyst	Factor
00217	Kjeldahl Nitrogen	EPA 351.2	1	03/26/2002 16:01	Venia B McFadden	1
00219	Nitrite Nitrogen	EPA 353.2	1	03/19/2002 14:35	Matthew J Mercer	1
00220	Nitrate Nitrogen	EPA 353.2	1	03/25/2002 14:14	Matthew J Mercer	1
00221	Ammonia Nitrogen	EPA 350.2	1	03/26/2002 07:30	Michele L Graham	1
00226	Ortho-Phosphate as P	EPA 365.3	1	03/20/2002 07:00	Michele L Graham	1
00235	Biochemical Oxygen Demand	EPA 405.1	1	03/19/2002 22:15	Nicole R Bushong	1
00273	Total Organic Carbon	EPA 415.1	1	03/20/2002 11:04	Timothy M Petree	1
00345	Total Phosphorus as PO4	EPA 365.1	1	03/25/2002 17:28	Venia B McFadden	1
	water					
01553	Chemical Oxygen Demand	EPA 410.2	1	03/26/2002 05:40	Susan A Engle	1
08213	BTEX (8021)	SW-846 8021B	1	03/21/2002 07:21	Linda C Pape	1
00774	PAH's in Water by HPLC	SW-846 8310	1	03/28/2002 17:19	Mark A Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	03/21/2002 07:21	Linda C Pape	n.a.
01460	Total Kjeldahl Nitrogen	EPA 351.2	1	03/22/2002 07:45	James S Mathiot	1
	Digest					
03337	PAH Water Extraction	SW-846 3510C	1	03/21/2002 09:30	Felix C Arroyo	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	03/20/2002 16:20	Nancy J Shoop	1





Analysis Report

Kerr-McGee Corporation

Oklahoma City OK 73125

P.O. Box 25861



Page 1 of 3

#### Lancaster Laboratories Sample No. WW 3790481

Collected:03/18/2002 16:10 by BS

Submitted: 03/19/2002 09:15 Reported: 04/03/2002 at 07:29 Discard: 05/04/2002 MA3-TG5-3-180302-06 Grab Water Sample Moss American Superfund Site - Milwaukee, WI

TG536 SDG#: KMA05-10\*

				As Received		
CAT			As Received	Method		Dilution
No.	Analysis Name	CAS Number	Result	Detection Limit	Units	Factor
00217	Kjeldahl Nitrogen	7727-37-9	0.47 J	0.30	mg/l	1
00219	Nitrite Nitrogeń	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	0.80 (J)	0.46	mg/l 🏲	1
	Sufficient sample volume was not	available to p	perform a MS/	/MSD for this		
	analysis. Therefore, a LCS/LCSD accuracy at a batch level.	was performed	to demonstrat	e precision and		
00226	Ortho-Phosphate as P	14265-44-2	N.D.	0.0066	mg/l	1
00235	Biochemical Oxygen Demand	n.a.	N.D.	2.7	mg/l	1
00273	Total Organic Carbon	n.a.	5.0	0.50	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	0.16 J	0.12	mg/l	1
01553	Chemical Oxygen Demand	n.a.	10.7	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
	Sufficient sample volume was not	available to	perform a MSI	) for this		
	analysis. However, a MS was perf	ormed. In addi	tion, a LCS/I	LCSD was		
	performed to demonstrate precision	on and accurac	y 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.UJ	0.9	ug/l	1
00783	Acenaphthene	83-32-9	N.D.	0.9	ug/l	1
00784	Fluorene	86-73-7	N.D.	0.2	ug/l	1
00785	Phenanthrene	85-01-8	N.D.	0.09	ug/l	1
00789	Anthracene	120-12-7	N.D.	0.04	ug/l	1
00807	Fluoranthene	206-44-0	0.05 J	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 G
00823	Benzo(a)pyrene	50-32-8	N.D.	0.02	ug/l	1 6







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TG536 SDG#: KMA05-10\*

				AS Received		
CAT			As Received	Method		Dilution
No.	Analysis Name	CAS Number	Result	Detection Limit	Units	Factor
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/ト	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
	Sufficient sample volume was not	available to	perform a MS/MS	D for this		
	analysis. Therefore, a LCS/LCSD	was performed	to demonstrate	precision and		
	accuracy at a batch level.					

Due to the nature of the sample matrix, a reduced aliquot was used for analysis. The reporting limits were raised accordingly.

#### Laboratory Chronicle

CAT				Analysis		Dilution
No.	Analysis Name	Method	Trial#	Date and Time	Analyst	Factor
00217	Kjeldahl Nitrogen	EPA 351.2	1	03/26/2002 16:02	Venia B McFadden	1
00219	Nitrite Nitrogen	EPA 353.2	1	03/19/2002 14:39	Matthew J Mercer	1
00220	Nitrate Nitrogen	EPA 353.2	1	03/25/2002 14:15	Matthew J Mercer	1
00221	Ammonia Nitrogen	EPA 350.2	1	03/26/2002 07:30	Michele L Graham	1
00226	Ortho-Phosphate as P	EPA 365.3	1	03/20/2002 07:00	Michele L Graham	1
00235	Biochemical Oxygen Demand	EPA 405.1	1	03/19/2002 22:15	Nicole R Bushong	1
00273	Total Organic Carbon	EPA 415.1	1	03/20/2002 11:12	Timothy M Petree	1
00345	Total Phosphorus as PO4	EPA 365.1	1	03/25/2002 17:29	Venia B McFadden	1
	water					
01553	Chemical Oxygen Demand	EPA 410.2	1	03/26/2002 05:40	Susan A Engle	1
08213	BTEX (8021)	SW-846 8021B	1	03/21/2002 07:55	Linda C Pape	1
00774	PAH's in Water by HPLC	SW-846 8310	1	03/28/2002 17:58	Mark A Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	03/21/2002 07:55	Linda C Pape	n.a.
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	03/22/2002 07:45	James S Mathiot	1
03337	PAH Water Extraction	SW-846 3510C	1	03/21/2002 09:30	Felix C Arroyo	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	03/20/2002 16:20	Nancy J Shoop	1



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

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Page 3 of 3

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Submitted: 03/19/2002 09:15 Reported: 04/03/2002 at 07:29 Discard: 05/04/2002 MA3-TG5-3-180302-06 Grab Water Sample Moss American Superfund Site - Milwaukee, WI

TG536 SDG#: KMA05-10\*

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2102 Rev. 3/7

For Lancaster Laboratories use only Acct. #<u>7807</u>\_\_\_\_\_Sample # <u>3790477-81</u>

Ancaster Laboratories Where quality is a science.

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

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For Lancaster Laboratories use only Acct. # 7807 Sample # 3790477-

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The second s For Lancaster Laboratories use only Acct. # 7802 Sample # 3790172-81 A Lancaster Laboratories Please print. Instructions on reverse side correspond with circled numbers. Analyses Requested and and For lab use only Matrix 4 Client: Weston/Kerr Mc Gee Acet. #: (5)FSC: SCR #: Project Name/#: Moss American PWSID #: Project Manager: Tom Graan P.O.#  $O_{0}$ Anth A Sampler: & Schaefer, YHagiwara, & Crowford Quote #:\_\_\_\_ 12 ୍ଦ Name of state where samples were collected: LNHA MA H. 4h THY. AN AN Roy Sample Identification H Date M Time S Grai Collected Collected Remarks  $\checkmark$ MA3-766-1-180302-01 1415 Х 3/18/02 Х Х ď MA3-TG6-2-180302-02 Х 3/18/02 1425 X X MA -- TG6-3-180302-03 1435  $\mathbf{x}$ 2 Х 5 3/18/02 X Relinguished by: Time Received by: Date Date Time ( Turnaround Time Requested (TAT) (please circle): Normal Rush (Rush TAT is subject to Lancaster Laboratories approval and surcharge.) Date results are needed: 1930 Ine 3/18/2 Date results are needed: Relinguished by: Date Time Received by: Date Time Rush results requested by (please circle): Phone Fax Phone #: <u>847-918-4000</u> Fax #: <u>847-918-4055</u> Relinguished by: Date Time Received by: Date Time Data Package Options (please circle if requested) SDG Complete? 2. Type VI (Raw Data) PEK QUOTE OC Summary Yes Ng Relinguished by: Date Time Received by: Date Time Type I (Tier I) GLP Site-specific QC required? Yes No Type II (Tier II) Other (If yes, indicate QC sample and submit triplicate volume.) Relinquished by: Date Time Received by: Date Time Type:///.NJ:Red. Del.)  $\beta_{191}$ Internal Chain of Custody required? Yes No 09/1-N noi Type IV (CLP)

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# Analysis Requesi/Environmenicipativications

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

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## CASE NARRATIVE

## Client: Kerr-McGee Corporation SDG #: KMA05

## LANCASTER LABORATORIES PAH BY HPLC

## SAMPLE NUMBER(S):

	· · ·	Matrix	(
LL #'s	Sample Code	<u>Water</u>	<u>Comments</u>
3790473	TG633	Х	
3790474	TG622	Х	
3790475	TG611	Х	
3790476 .	TG339	Х	
3790477	TG328	Х	
3790478	TG317	Х	•
3790479	TG514	Х	
3790480	TG525	Х	
3790481	TG536	Х	
LABORATORY SU	BMITTED QC:		
SBLKWD079	SBLKWD0792	Х	Method Blank
079WDLCS	079WDLCS2	Х	Lab Control Sample
079WDLCSD	079WDLCSD2	Х	Lab Control Sample Dup

## SAMPLE PREPARATION:

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

Sample Code	<u>Volume</u>
TG611	908 mls
TG339	905 mis
TG328	993 mls
TG514	996 mls
TG536	876 mls

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

1



## Case Narrative SDG#: KMA05 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 the analysis of these samples. Therefore, a LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.

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:

Mallin

Date: 4/1/02

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

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Case Narrative SDG# KMA05

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

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AMPLE ANALYSES

LL	Sample	Matrix	
ample #	Designation	Soil Water	Comments
3790472	TBX01	Х	
3790473	TG633	Х	
3790474	TG622	Х	
3790475	TG611	Х	
3790476	TG339	Х	
3790477	TG328	Х	
3790478	TG317	Х	
3790479	TG514	X	
3790480	TG525	Х	
3790481	TG536	Х	

#### UALITY CONTROL ANALYSES

BLK5333	Х	Method Blank
3790367	x	Unspiked
3790367MS	x	Matrix Spike
LCS5332	X	Lab Control Sample
LDS5332	X	Lab Control Dup

#### AMPLE 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. 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, 2.55um 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

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.



Case Narrative SDG# KMA05

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

#### ATA INTERPRETATION

to explanation is necessary for the data submitted.

arrative reviewed and approved by:

teve J. Stabinger, Group Leader

4/4/02 Date

Lancaster Laboratories

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CLIENT: Kerr-McGee Corporation SDG: KMA05

## LANCASTER LABORATORIES

## INSTRUMENTAL WET CHEMISTRY

#### SAMPLE NUMBERS:

<u>Sample #</u>	<u>Sample Code</u>	
3790473	TG633	•
3790474	TG622	
3790475	TG611	
3790476	TG339	
3790477	TG328	
3790478	TG317	
3790479	TG514	
3790480	TG525	
3790481	TG536	

#### ANALYSIS:

All dilutions are listed in the table below.

Sample	Nitrate-N	TP as PO4	TOC
All LCS	DF2	DF2	DF5

## QUALITY CONTROL AND NONCONFORMANCE SUMMARY:

The duplicate sample (3790477) for the total phosphorus as PO4 analysis was out of specification.

Comments

## DATA INTERPRETATION:

No further interpretation is necessary for the data submitted.

Case Narrative Reviewed and Approved by:

Date: 3.7 Sandra J. Miller

Sandra J. Miller Specialist/Coordinator



Where quality is a science.

## CLIENT: Kerr-McGee Corporation SDG: KMA05

## LANCASTER LABORATORIES

## MISCELLANEOUS WET CHEMISTRY

### SAMPLE NUMBERS:

Sample #	Sample Code	<u>Comments</u>
3790473	TG633	
3790474	TG622	
3790475	TG611	
3790476	TG339	
3790477	TG328	
3790478	TG317	
3790479	TG514	
3790480	TG525	
3790481	TG536	
P790440	r	BKG/DUP/DF10

### ANALYSIS:

Dilutions for the biochemical oxygen demand analysis are listed in the comments section above.

Sample P790182 (BKG/DUP) was analyzed at a dilution factor of 2 for the chemical oxygen demand analysis.

## QUALITY CONTROL AND NONCONFORMANCE SUMMARY:

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

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.

## DATA INTERPRETATION:

No further interpretation is necessary for the data submitted.

Case Narrative Reviewed and Approved by:

my n/m for Date: \_\_\_\_\_ 4/12/02 Sandra J. Miller

Specialist/Coordinator

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 Semi-Volatile (Polynuclear Aromatic Hydrocarbons-PAH 8310), and Volatile (BTEX 8021), Kjeldahl Nitrogen Analysis (TKN), Nitrite Nitrogen, Nitrate Nitrogen, Total Phosphorus as (PO4), Total Organic Carbon (TOC), Ammonia Nitrogen, Ortho-Phosphate as P, and Biochemical Oxygen Demand (BOD) analyses.

## <u>Polynuclear Aromatic Hydrocarbons (PAHs by HPLC, U.S. EPA Method 8310)</u> <u>Moss American Site</u> <u>SDG # KMA06</u>

#### 1.Samples:

	Lab Sample		Date	Date	Date
Client Code	Number	<u>Matrix</u>	Collected	Extracted	Analyzed
MA3-TG2-1-190302-01	3792071	Grab water	03/19/02	03/22/02	03/29/02
MA3-TG2-2-190302-02	3792072	Grab water	03/19/02	03/22/02	03/29/02
MA3-TG2-3-190302-03	3792073	Grab water	03/19/02	03/22/02	03/29/02
MA3-TG1-1-190302-04	3792074	Grab water	03/19/02	03/22/02	03/29/02
MA3-TG1-2-190302-05	3792075	Grab water	03/19/02	03/22/02	03/29/02
MA3-TG1-3-190302-06	3792076	Grab water	03/19/02	03/22/02	03/29/02
MA3-TG4-1-190302-07	3792077	Grab water	03/19/02	03/22/02	03/29/02
MA3-TG4-2-190302-08	3792078	Grab water	03/19/02	03/22/02	03/29/02
MA3-TG4-3-190302-09	3792079	Grab water	03/19/02	03/22/02	03/29/02
FB-01	3792080	Grab water	03/19/02	03/22/02	03/29/02

#### **2. Holding Times:**

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

## 3. Method Blank:

The method blank SBLKWB0812 was associated with this SDG. SBLKWC0842 was analyzed on 03/28/02 and associated with (3792071 thru 3792080). The method blank SBLKWB0812 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 within the quality control limit. Also, the RPD% values were acceptable.

### 6. Surrogate:

All the surrogate recoveries for the analysis of (3792071 thru 3792080) were within the control limits on UV-Vis detector, except triphenylene for sample 3792074, and 3792074DL on UV-Vis detector. Therefore, qualify the positive results in 3792074, and 3792074DL as estimated (J).

Also, the surrogate recoveries from the fluorescence detector were outside the acceptance control limits for nitrobenzene, and acceptable for triphenylene.

Therefore, the surrogate was reported from the UV-Vis detector, due to reduce sensitivity on the fluorescence detector.

## 7. Retention Time:

The retention time recoveries were acceptable, except in acenaphthylene was outside the required RT window.

## 8. Initial and Continuing Calibration:

All the initial calibrations results were within the quality control limits (RSD >+/-30%), except in method file HP03456.i that were analyzed on 03/25/02 for acenaphthylene (0%).

All the continuing calibrations results were within the quality control limits (RSD >+/-25%), except in method file HP03456.i/02084B1-51R.d and HP03456.i/02084B1-64R.d that analyzed on 03/25/02 for acenaphthylene was (0%).

According to the initial and continuing calibration above qualify acenaphthylene in the samples as estimated (J/UJ).

Analytical Data Validation Report Kerr-McGee Corporation Moss American Superfund Site- Milwaukee, WI SDG #: KMA06

## BETX (U.S. EPA Method 8021B) SDG # KMA06

#### 1.Samples:

			Dete	Data
	Lab Sample		Date	Date
Client Code	<u>Number</u>	<u>Matrix</u>	<u>Collected</u>	<u>Analyzed</u>
MA3-TG2-1-190302-01	3792071	Grab water	03/19/02	03/22/02
MA3-TG2-2-190302-02	3792072	Grab water	03/19/02	03/22/02
MA3-TG2-3-190302-03	3792073	Grab water	03/19/02	03/22/02
MA3-TG1-1-190302-04	3792074	Grab water	03/19/02	03/22/02
MA3-TG1-2-190302-05	3792075	Grab water	03/19/02	03/22/02
MA3-TG1-3-190302-06	3792076	Grab water	03/19/02	03/22/02
MA3-TG4-1-190302-07	3792077	Grab water	03/19/02	03/22/02
MA3-TG4-2-190302-08	3792078	Grab water	03/19/02	03/22/02
MA3-TG4-3-190302-09	3792079	Grab water	03/19/02	03/22/02
FB-01	3792080	Grab water	03/19/02	03/23/02
TB-02	3792081	Grab water	03/19/02	03/23/02

### 2. Holding Times:

All samples were analyzed within the required holding times.

#### 3. Method Blank:

The method blank BLK5127 was associated with this SDG. BLK5127 was analyzed on 03/22/02 associated with (3792071 thru 3792081). The method blank 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 3792071. The matrix spike recoveries were within the quality control limits.

#### 5. Laboratory control Sample:

The laboratory control sample/laboratory control sample duplicate recoveries were within the quality control limits. Also, the relative percent difference (RPD%) values were acceptable.

#### 6. Surrogate:

The method blank and investigated samples had recoveries within the acceptance quality control limits.

#### 7. Initial and Continuing Calibration:

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

## WET CHEMISTRY ANALYSIS

## <u>Kjeldahl Nitrogen Analysis (TKN):</u> SDG # KMA06

#### 1.Samples:

	Lab Sample		Date	Date	Date
Client Code	Number	<u>Matrix</u>	Collected	Digested	<u>Analyzed</u>
MA3-TG2-1-190302-01	3792071	Grab water	03/19/02	03/26/02	03/26/02
MA3-TG2-2-190302-02	3792072	Grab water	03/19/02	03/26/02	03/26/02
MA3-TG2-3-190302-03	3792073	Grab water	03/19/02	03/26/02	03/26/02
MA3-TG1-1-190302-04	3792074	Grab water	03/19/02	03/26/02	03/26/02
MA3-TG1-2-190302-05	3792075	Grab water	03/19/02	03/26/02	03/26/02
MA3-TG1-3-190302-06	3792076	Grab water	03/19/02	03/26/02	03/26/02
MA3-TG4-1-190302-07	3792077	Grab water	03/19/02	03/26/02	03/26/02
MA3-TG4-2-190302-08	3792078	Grab water	03/19/02	03/26/02	03/26/02
MA3-TG4-3-190302-09	3792079	Grab water	03/19/02	03/26/02	03/26/02

### 2. Holding Times:

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

## 3. Method Blank:

The method blank result was free of contamination.

#### 4. Matrix Spike Recovery:

Two matrix spikes 3792071, and 3792072 associated with all the samples. The 3792071/MS recovery was within the quality control limit. However, The 3792072/MS recovery was out. No qualification was required because both MS were associated with the samples and all the samples were analyzed in the same batch.

#### 5. Duplicate Recovery:

Two duplicates 3792071, and 3792072 associated with the analysis. The RPD% value for sample 3792071 was within the control limit. However, The RPD% value for sample 3792072 was not required because the background or the duplicate sample result was less than the limit of quantitation.

#### 6. Laboratory Control Sample Recovery:

The laboratory control sample recovery was within the quality control limits.

## 7. Initial and Continuing Calibration:

## Nitrite Nitrogen Analysis: SDG # KMA06

#### 1.Samples:

	Lab Sample		Date	Date
Client Code	Number	<u>Matrix</u>	<u>Collected</u>	Analyzed
MA3-TG2-1-190302-01	3792071	Grab water	03/19/02	03/21/02
MA3-TG2-2-190302-02	3792072	Grab water	03/19/02	03/21/02
MA3-TG2-3-190302-03	3792073	Grab water	03/19/02	03/21/02
MA3-TG1-1-190302-04	3792074	Grab water	03/19/02	03/21/02
MA3-TG1-2-190302-05	3792075	Grab water	03/19/02	03/21/02
MA3-TG1-3-190302-06	3792076	Grab water	03/19/02	03/21/02
MA3-TG4-1-190302-07	3792077	Grab water	03/19/02	03/21/02
MA3-TG4-2-190302-08	3792078	Grab water	03/19/02	03/21/02
MA3-TG4-3-190302-09	3792079	Grab water	03/19/02	03/21/02

#### 2. Holding Times:

All samples were analyzed within the required holding times for samples 3792077 thru 3792079. However, samples 3792071 thru 3792076 were analyzed past the 48 hrs holding time. Therefore, qualify the results as estimated (J/UJ).

#### 3. Method Blank:

The method blank result was free of contamination.

#### 4. Matrix Spike Recovery:

The matrix spike recovery was within the quality control limits.

#### 5. Laboratory Control Sample Recovery:

The laboratory control sample recovery was acceptable.

#### **6. Duplicate Recovery:**

The RPD% value for sample 3792071 was not required because the background or the duplicate sample result was less than the limit of quantitation.

### 7. Initial and Continuing Calibration:

## Nitrate Nitrogen Analysis: SDG # KMA06

### 1.Samples:

	Lab Sample		Date	Date
Client Code	Number	<u>Matrix</u>	<u>Collected</u>	<u>Analyzed</u>
MA3-TG2-1-190302-01	3792071	Grab water	03/19/02	04/01/02
MA3-TG2-2-190302-02	3792072	Grab water	03/19/02	04/01/02
MA3-TG2-3-190302-03	3792073	Grab water	03/19/02	04/01/02
MA3-TG1-1-190302-04	3792074	Grab water	03/19/02	04/01/02
MA3-TG1-2-190302-05	3792075	Grab water	03/19/02	04/01/02
MA3-TG1-3-190302-06	3792076	Grab water	03/19/02	04/01/02
MA3-TG4-1-190302-07	3792077	Grab water	03/19/02	04/01/02
MA3-TG4-2-190302-08	3792078	Grab water	03/19/02	04/01/02
MA3-TG4-3-190302-09	3792079	Grab water	03/19/02	04/01/02

## 2. Holding Times:

All samples were analyzed within the required holding times.

## 3. Method Blank:

The method blank result was free of contamination.

## 4. Matrix Spike Recovery:

Two matrix spikes 3792071, and 3792072 associated with all the samples. Both MS recoveries were acceptable.

## 5. Duplicate Recovery:

The RPD% value for samples 3792071, and 3792072 was not required because the background or the duplicates for both samples result were less than the limit of quantitation.

## 6. Laboratory Control Sample Recovery:

The laboratory control sample recovery was acceptable.

## 7. Initial and Continuing Calibration:

## Total Phosphorus as (PO4): SDG # KMA06

#### 1.Samples:

	Lab Sample		Date	Date	Date
Client Code	Number	<u>Matrix</u>	<u>Collected</u>	Extracted	<u>Analyzed</u>
MA3-TG2-1-190302-01	3792071	Grab water	03/19/02	03/22/02	03/25/02
MA3-TG2-2-190302-02	3792072	Grab water	03/19/02	03/22/02	03/25/02
MA3-TG2-3-190302-03	3792073	Grab water	03/19/02	03/22/02	03/25/02
MA3-TG1-1-190302-04	3792074	Grab water	03/19/02	03/22/02	03/25/02
MA3-TG1-2-190302-05	3792075	Grab water	03/19/02	03/22/02	03/25/02
MA3-TG1-3-190302-06	3792076	Grab water	03/19/02	03/22/02	03/25/02
MA3-TG4-1-190302-07	3792077	Grab water	03/19/02	03/22/02	03/25/02
MA3-TG4-2-190302-08	3792078	Grab water	03/19/02	03/22/02	03/25/02
MA3-TG4-3-190302-09	3792079	Grab water	03/19/02	03/22/02	03/25/02

#### 2. Holding Times:

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

#### 3. Method Blank:

The method blank result was free of contamination.

#### 4. Matrix Spike Recovery:

Two matrix spikes 3792071, and 3792077 associated with all the samples. Both MS recoveries were within the quality control limit.

### 5. Duplicate Recovery:

Two duplicates 3792071, and 3792072 associated with the analysis. The RPD% value for sample 3792072 was within the control limit. However, The RPD% value for sample 3792071 was not required because the background or the duplicate sample result was less than the limit of quantitation.

## 6. Laboratory Control Sample Recovery:

The laboratory control sample recovery was acceptable.

### 7. Initial and Continuing Calibration:

Data

Data

Analytical Data Validation Report Kerr-McGee Corporation Moss American Superfund Site- Milwaukee, WI SDG #: KMA06

## <u>Total Organic Carbon Analysis (TOC):</u> SDG # KMA06

#### 1.Samples:

	Lab Sample		Date	Date
Client Code	Number	<u>Matrix</u>	Collected	<u>Analyzed</u>
MA3-TG2-1-190302-01	3792071	Grab water	03/19/02	03/26/02
MA3-TG2-2-190302-02	3792072	Grab water	03/19/02	03/26/02
MA3-TG2-3-190302-03	3792073	Grab water	03/19/02	03/26/02
MA3-TG1-1-190302-04	3792074	Grab water	03/19/02	03/26/02
MA3-TG1-2-190302-05	3792075	Grab water	03/19/02	03/26/02
MA3-TG1-3-190302-06	3792076	Grab water	03/19/02	03/26/02
MA3-TG4-1-190302-07	3792077	Grab water	03/19/02	03/26/02
MA3-TG4-2-190302-08	3792078	Grab water	03/19/02	03/26/02
MA3-TG4-3-190302-09	3792079	Grab water	03/19/02	03/26/02

## 2. Holding Times:

All samples were analyzed within the required holding times.

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### 3. Method Blank:

The method blank contained 0.54 mg/l. The amount found in the samples 3792073 thru 3792079 was greater than 5X the blank. Therefore, no qualification was applied.

However, the amount found in 3792071, and 3792072 was less than 5X the blank. Therefore, qualify the results in 3792071, and 3792072 as not detected (U).

## 4. Matrix Spike/Matrix Spike Duplicate :

The matrix spike was performed on sample 3792071. The MS recovery was within the quality control limit.

#### 5. Duplicate Recovery:

The RPD% value for samples 3792071 was not required because the background or the duplicate for the sample result was less than the limit of quantitation.

#### 6. Laboratory Control Sample Recovery:

The laboratory control sample recovery was acceptable.

## 7. Initial and Continuing Calibration:

## Ammonia Nitrogen Analysis: SDG # KMA06

#### 1.Samples:

	Lab Sample		Date	Date
Client Code	<u>Number</u>	<u>Matrix</u>	<u>Collected</u>	<u>Analyzed</u>
MA3-TG2-1-190302-01	3792071	Grab water	03/19/02	03/29/02
MA3-TG2-2-190302-02	3792072	Grab water	03/19/02	03/29/02
MA3-TG2-3-190302-03	3792073	Grab water	03/19/02	03/29/02
MA3-TG1-1-190302-04	3792074	Grab water	03/19/02	03/29/02
MA3-TG1-2-190302-05	3792075	Grab water	03/19/02	03/29/02
MA3-TG1-3-190302-06	3792076	Grab water	03/19/02	03/29/02
MA3-TG4-1-190302-07	3792077	Grab water	03/19/02	03/29/02
MA3-TG4-2-190302-08	3792078	Grab water	03/19/02	03/29/02
MA3-TG4-3-190302-09	3792079	Grab water	03/19/02	03/29/02

### 2. Holding Times:

All samples were analyzed within the required holding times.

#### 3. Method Blank:

The method blank result was free of contamination.

#### 4. Duplicate Recovery:

The RPD% value for samples 3792071 was not required because the background or the duplicate for the sample result was less than the limit of quantitation.

#### 5. Laboratory Control Sample Recovery:

The laboratory control sample recovery was within the quality control limits.

## 6. Matrix Spike Recovery:

The matrix spike/matrix spike duplicate recoveries were within the acceptance QC control limits. Also, the relative percent difference (RPD%) recoveries were acceptable.

## Ortho-Phosphate as P Analysis: SDG # KMA06

#### **1.Samples:**

1.Samples.				
	Lab Sample		Date	Date
Client Code	Number	<u>Matrix</u>	<u>Collected</u>	<u>Analyzed</u>
MA3-TG2-1-190302-01	3792071	Grab water	03/19/02	03/22/02
MA3-TG2-2-190302-02	3792072	Grab water	03/19/02	03/22/02
MA3-TG2-3-190302-03	3792073	Grab water	03/19/02	03/22/02
MA3-TG1-1-190302-04	3792074	Grab water	03/19/02	03/22/02
MA3-TG1-2-190302-05	3792075	Grab water	03/19/02	03/22/02
MA3-TG1-3-190302-06	3792076	Grab water	03/19/02	03/22/02
MA3-TG4-1-190302-07	3792077	Grab water	03/19/02	03/22/02
MA3-TG4-2-190302-08	3792078	Grab water	03/19/02	03/22/02
MA3-TG4-3-190302-09	3792079	Grab water	03/19/02	03/22/02

## 2. Holding Times:

All samples 3792071 thru 3792079 were analyzed past the 48 hrs holding time. Therefore, qualify all the results as estimated (J/UJ).

### 3. Method Blank:

The method blank result was free of contamination.

## 4. Matrix Spike Recovery:

The matrix spike was performed on sample 3792071. The MS/MSD recoveries were within the quality control limit. Also, the RPD% value was acceptable.

## 5. Duplicate Recovery:

The duplicate RPD% for sample 3792071 and 3792072 recoveries were within the quality control limits.

## 6. Laboratory Control Sample Recovery:

The two laboratories control sample for sample 3792071 and 3792072 recoveries were within the quality control limits.

Friday, May 10, 2002

Analytical Data Validation Report Kerr-McGee Corporation Moss American Superfund Site- Milwaukee, WI SDG #: KMA06

## Biochemical Oxygen Demand Analysis (BOD): SDG # KMA06

#### 1.Samples:

<u></u>	Lab Sample		Date	Date
Client Code	Number	<u>Matrix</u>	<u>Collected</u>	<u>Analyzed</u>
MA3-TG2-1-190302-01	3792071	Grab water	03/19/02	03/21/02
MA3-TG2-2-190302-02	3792072	Grab water	03/19/02	03/21/02
MA3-TG2-3-190302-03	3792073	Grab water	03/19/02	03/21/02
MA3-TG1-1-190302-04	3792074	Grab water	03/19/02	03/21/02
MA3-TG1-2-190302-05	3792075	Grab water	03/19/02	03/21/02
MA3-TG1-3-190302-06	3792076	Grab water	03/19/02	03/21/02
MA3-TG4-1-190302-07	3792077	Grab water	03/19/02	03/21/02
MA3-TG4-2-190302-08	3792078	Grab water	03/19/02	03/21/02
MA3-TG4-3-190302-09	3792079	Grab water	03/19/02	03/21/02

#### 2. Holding Times:

All samples 3792071 thru 3792079 were analyzed past the 48 hrs holding time. Therefore, qualify all the results as estimated (J/UJ).

#### 3. Matrix Spike Recovery:

The matrix spike was performed on sample 3792071. The MS/MSD recoveries were within the quality control limit. Also, the RPD% value was acceptable.

#### 4. Duplicate Recovery:

The duplicate RPD% for sample 3792071 recoveries was acceptable.

#### 5. Laboratory Control Sample/Laboratory Control Sample Duplicate Recovery:

The laboratory control sample recovery was within the quality control limit.

## Friday, May 10, 2002

Date

Analytical Data Validation Report Kerr-McGee Corporation Moss American Superfund Site- Milwaukee, WI SDG #: KMA06

## <u>Chemical Oxygen Demand Analysis (COD):</u> SDG # KMA06

#### 1.Samples:

	Lab Sample		Date	Date
Client Code	Number	<u>Matrix</u>	<u>Collected</u>	<u>Analyzed</u>
MA3-TG2-1-190302-01	3792071	Grab water	03/19/02	03/27/02
MA3-TG2-2-190302-02	3792072	Grab water	03/19/02	03/27/02
MA3-TG2-3-190302-03	3792073	Grab water	03/19/02	03/27/02
MA3-TG1-1-190302-04	3792074	Grab water	03/19/02	03/27/02
MA3-TG1-2-190302-05	3792075	Grab water	03/19/02	03/27/02
MA3-TG1-3-190302-06	3792076	Grab water	03/19/02	03/27/02
MA3-TG4-1-190302-07	3792077	Grab water	03/19/02	03/27/02
MA3-TG4-2-190302-08	3792078	Grab water	03/19/02	03/27/02
MA3-TG4-3-190302-09	3792079	Grab water	03/19/02	03/27/02

### 2. Holding Times:

All samples were analyzed within the required holding time.

### 3. Matrix Spike Recovery:

The matrix spike was performed on sample 3792071. The MS/MSD recoveries were within the quality control limit. Also, the RPD% value was acceptable.

Data

#### 4. Duplicate Recovery:

The duplicate RPD% for sample 3792071 recoveries was outside the quality control limits. Therefore, qualify the sample as estimated (J).

#### 5. Laboratory Control Sample/Laboratory Control Sample Duplicate Recovery:

The laboratory control sample recovery was within the quality control limit.

Please feel free to contact me at (847) 549-1042 or (847) 971-6800 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 801093. Samples arrived at the laboratory on Thursday, March 21, 2002.

#### Client Description

MA3-TG2-1-190302-01 Grab Water Sample MA3-TG2-2-190302-02 Grab Water Sample MA3-TG2-3-190302-03 Grab Water Sample MA3-TG1-1-190302-04 Grab Water Sample MA3-TG1-2-190302-05 Grab Water Sample MA3-TG1-3-190302-06 Grab Water Sample MA3-TG4-1-190302-07 Grab Water Sample MA3-TG4-2-190302-08 Grab Water Sample MA3-TG4-3-190302-09 Grab Water Sample FB-01 Grab Water Sample TB-02 Grab Water Sample

Analvsis Re

#### 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			



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

Respectfully Submitted,

Lachel X. Cochis Rachel R. Cochis Sr. Chemist/Coordinator

nalysis Report

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#### Lancaster Laboratories Sample No. WW 3792071

Collected:03/19/2002 09:15 by BS

Submitted: 03/21/2002 09:20 Reported: 04/03/2002 at 12:57 Discard: 05/04/2002 MA3-TG2-1-190302-01 Grab Water Sample Moss American Superfund Site - Milwaukee, WI

MA321 SDG#: KMA06-01

				As Received					
CAT			As Received	Method		Dilution			
No.	Analysis Name	CAS Number	Result	Detection Limit	Units	Factor			
00217	Kjeldahl Nitrogen	7727-37-9	N.D.	0.30	mg/l	1			
00219	Nitrite Nitrogen	14797-65-0	N.D.UJ	0.015	mg/l	1			
	This sample was not submitted with sufficient time for the nitrite analysis								
	to be completed within 48 hours.	,			`-				
00220	Nitrate Nitrogen	14797-55-8	N.D.	0.040	mg/l	1			
00221	Ammonia Nitrogen	7664-41-7	N.D.	0.46	mg/l	1			
	Sufficient sample volume was not available to perform a MS/MSD for this								
	analysis. Therefore, a LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.								
00226	Ortho-Phosphate as P	14265-44-2	N.D.UTI	0.0066	mg/)	1			
	This sample was submitted past t	he 48 hr holdi	ng time for Orth	ophosphate	ing/ I	1			
00235	Biochemical Oxygen Demand	n.a.	N.D. OT	3.0	mg / )	1			
	This sample was analyzed past the 48 hold time for BOD with client consent								
00273	Total Organic Carbon	n.a.	1.95	0.50	ma / 1	1			
00345	Total Phosphorus as PO4 water	14265-44-2	N.D.	0.12	mg/1	1			
01553	Chemical Oxygen Demand	n.a.	5.2 J	1.7	mg/l	1 ·			
08213	BTEX (8021)								
00776	Benzene	71-43-2	N D	0.20	wg / 1	1			
00777	Toluene	108-88-3	N.D.	0.20	ug/1	1			
00778	Ethylbenzene	100-41-4	N.D.	0.20	ug/1	1			
00779	Total Xylenes	1330-20-7	N.D.	0.60	ug/1	1			
	Sufficient sample volume was not	available to	perform a MSD fo	r this	ug/1	1			
	analysis. However, a MS was performed. In addition, a LCS/LCSD was								
	performed to demonstrate precisi	on and accurac	y at a batch lev	el.					
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.(U)	0.9	ug/l	1			
00783	Acenaphthene	83-32-9	N.D.	0.9	uq/l	1			
00784	Fluorene	86-73-7	N.D.	0.2	ug/l	1			
00785	Phenanthrene	85-01-8	N.D.	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 5			
					-	е 1			



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Account Number: 07802

Kerr-McGee Corporation

Oklahoma City OK 73125

P.O. Box 25861
#### Lancaster Laboratories Sample No. 3792071 WW

Collected:03/19/2002 09:15 by BS

Submitted: 03/21/2002 09:20 Reported: 04/03/2002 at 12:57 Discard: 05/04/2002 MA3-TG2-1-190302-01 Grab Water Sample Moss American Superfund Site - Milwaukee, WI

### MA321 SDG#: KMA06-01

				As Received		
CAT			As Received	Method		Dilution
No.	Analysis Name	CAS Number	Result	Detection Limit	Units	Factor
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/1	1
00895	Dibenz(a,h)anthracene	53-70-3	N.D.	0.04	ug/1	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	uq/l	1
	Sufficient sample volume was analysis. Therefore, a LCS/LC	not available to CSD was performed	) perform a MS/MS l to demonstrate	D for this precision and		
	accuracy at a batch level.	-				

Due to the nature of the sample matrix, a reduced aliquot was used for analysis. The reporting limits were raised accordingly.

### Laboratory Chronicle

CAT				Analysis		Dilution
No.	Analysis Name	Method	Trial#	Date and Time	Analyst	Factor
00217	Kjeldahl Nitrogen	EPA 351.2	1	03/26/2002 16:32	Venia B McFadden	1
00219	Nitrite Nitrogen	EPA 353.2	1	03/21/2002 11:25	Matthew I Marcar	1
00220	Nitrate Nitrogen	EPA 353.2	1	04/01/2002 16:00	Mark A Buckwalter	1
00221	Ammonia Nitrogen	EPA 350.2	1	03/29/2002 07:15	Micholo I Craban	1
00226	Ortho-Phosphate as P	EPA 365.3	1	03/22/2002 17:00		1
00235	Biochemical Oxygen Demand	EPA 405.1	1	03/21/2002 22.22	Daniel S Smith	1
00273	Total Organic Carbon	EPA 415.1	1	03/21/2002 22:23	NICOLE R Bushong	1
00345	Total Phosphorus as PO4	EPA 365.1	1	03/20/2002 13:09	Timothy M Petree	1
	water		*	03/23/2002 18:07	venia B McFadden	1
01553	Chemical Oxygen Demand	EPA 410.2	1	03/27/2002 05.20		
08213	BTEX (8021)	SW-846 8021B	1	03/22/2002 18:40	Susan A Engle	1
00774	PAH's in Water by HPLC	SW-846 8310	1	03/29/2002 18:40	Melissa D Mann	1
01146	GC VOA Water Prep	SW-846 5030B	1	03/29/2002 03:32	Mark A Clark	1
01460	Total Kieldahl Nitrogen	EPA 351 2	1	03/22/2002 18:40	Melissa D Mann	n.a.
	Digest	<i>Detty</i> 00112	1	03/26/2002 09:25	Cheryl L Robinson	ğ 1
03337	PAH Water Extraction	SW-846 3510C	1	03/22/2002 17:30	Desiree J Wann	ê 1



CAT

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Account Number: 07802

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#### 3792071 Lancaster Laboratories Sample No. WW

Collected:03/19/2002 09:15 by BS

Submitted: 03/21/2002 09:20 Reported: 04/03/2002 at 12:57 Discard: 05/04/2002 MA3-TG2-1-190302-01 Grab Water Sample Moss American Superfund Site - Milwaukee, WI

MA321 SDG#: KMA06-01 EPA 365.1 08264 Total Phos as PO4 Prep (water)

Account Number: 07802

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

1 03/22/2002 14:45 Nancy J Shoop

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#### WW 3792072 Lancaster Laboratories Sample No.

Collected:03/19/2002 09:25 by BS

Submitted: 03/21/2002 09:20 Reported: 04/03/2002 at 12:57 Discard: 05/04/2002 MA3-TG2-2-190302-02 Grab Water Sample Moss American Superfund Site - Milwaukee, WI

MA322 SDG#: KMA06-02

		·		As Received		
CAT			As Received	Method		Dilution
No.	Analysis Name	CAS Number	Result	Detection Limit	Units	Factor
00217	Kjeldahl Nitrogen	7727-37-9	0.41 J	0.30	mg/l	1
00219	Nitrite Nitrogen	14797-65-0	л.d.(V).d.и	0.015	mg/l	1
	This sample was submitted past	the 48 hour ho	lding time for ni	trite.	~	
00220	Nitrate Nitrogen	14797-55-8	N.D.	0.040	mg/l	1
00221	Ammonia Nitrogen	7664-41-7	N.D.	0.46	mg/l	1
	Sufficient sample volume was no	t available to	perform a MS/MSD	for this		
	analysis. Therefore, a LCS/LCSD accuracy at a batch level.	was performed	to demonstrate p	recision and		
00226	Ortho-Phosphate as P	14265-44-2	0.0096 J	0.0066	mg/l	1
	This sample was submitted past	the 48 hr hold	ing time for Orth	ophosphate.		
00235	Biochemical Oxygen Demand	n.a.	N.D. (UJ)	5.2	mg/l	1
	This sample was analyzed past t	he 48 hold tim	e for BOD with cl	ient consent.		
00273	Total Organic Carbon	n.a.	2.1(U,	0.50	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	0.22	0.12	mg/l	1
01553	Chemical Oxygen Demand	n.a.	6.4 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
	Sufficient sample volume was no analysis. However, a MS was per performed to demonstrate precis:	t available to formed. In add ion and accura	perform a MSD fo ition, a LCS/LCSD cy at a batch lev	r this was el.		
00774	PAH's in Water by HPLC					•
00775	Naphthalene	91-20-3	N.D.	1.	ug/1	1
00782	Acenaphthylene	208-96-8	N.D.()T	0.8	ug/1	1
00783	Acenaphthene	83-32-9	N.D.	0.8	ug/1	1
00784	Fluorene	86-73-7	N.D.	0.2	ug/1	1
00785	Phenanthrene	85-01-8	N.D.	0.08	ug/1	1
00789	Anthracene	120-12-7	N.D.	0.04	ug/1	1
00807	Fluoranthene	206-44-0	N.D.	0.04	ug/1	1 0
00811	Pyrene	129-00-0	N.D.	0.2	ug/l	1 5
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Lancaster Laboratories Sample No. WW 3792072

Collected:03/19/2002 09:25 by BS

Submitted: 03/21/2002 09:20 Reported: 04/03/2002 at 12:57 Discard: 05/04/2002 MA3-TG2-2-190302-02 Grab Water Sample Moss American Superfund Site - Milwaukee, WI

MA322 SDG#: KMA06-02

				As Received		
CAT	·	•	As Received	Method		Dilution
No.	Analysis Name	CAS Number	Result	Detection Limit	Units	Factor
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/f	1
00898	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.08	ug/1 `_	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 analysis. Therefore, a LCS/LCSD	available to was performed	perform a MS/MS to demonstrate	D for this precision and		

accuracy at a batch level.

### Laboratory Chronicle

CAT				Analysis		Dilution
No.	Analysis Name	Method	Trial#	Date and Time	Analyst	Factor
00217	Kjeldahl Nitrogen	EPA 351.2	1	03/26/2002 16:34	Venia B McFadden	1
00219	Nitrite Nitrogen	EPA 353.2	1	03/21/2002 11:26	Matthew J Mercer	ī
00220	Nitrate Nitrogen	EPA 353.2	1	04/01/2002 16:01	Mark A Buckwalter	1
00221	Ammonia Nitrogen	EPA 350.2	1	03/29/2002 07:15	Michele L Graham	1
00226	Ortho-Phosphate as P	EPA 365.3	1	03/22/2002 17:00	Daniel S Smith	1
00235	Biochemical Oxygen Demand	EPA 405.1	1	03/21/2002 22:23	Nicole R Bushong	ī
00273	Total Organic Carbon	EPA 415.1	1	03/26/2002 15:44	Timothy M Petree	1
00345	Total Phosphorus as PO4	EPA 365.1	1	03/25/2002 18:10	Venia B McFadden	ī
	water					-
01553	Chemical Oxygen Demand	EPA 410.2	1	03/27/2002 05:30	Susan A Engle	1
08213	BTEX (8021)	SW-846 8021B	1	03/22/2002 19:14	Melissa D Mann	1
00774	PAH's in Water by HPLC	SW-846 8310	1	03/29/2002 06:11	Mark A Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	03/22/2002 19:14	Melissa D Mann	n a
01460	Total Kjeldahl Nitrogen	EPA 351.2	1	03/26/2002 09:25	Chervl L Robinson	1
	Digest					*
03337	PAH Water Extraction	SW-846 3510C	1	03/22/2002 17:30	Desiree J Wann	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	03/22/2002 14:45	Nancy J Shoop	1



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Account Number: 07802

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#### Lancaster Laboratories Sample No. WW 3792073

by BS Collected:03/19/2002 09:35

Submitted: 03/21/2002 09:20 Reported: 04/03/2002 at 12:58 Discard: 05/04/2002 MA3-TG2-3-190302-03 Grab Water Sample Moss American Superfund Site - Milwaukee, WI

SDG#: KMA06-03 MA323

		-		As Received					
CAT			As Received	Method		Dilution			
No.	Analysis Name	CAS Number	Result	Detection Limit	Units	Factor			
00217	Kjeldahl Nitrogen	7727-37-9	0.89 J	0.30	mg/l	1			
00219	Nitrite Nitrogen	14797-65-0	0.015 (J)	0.015	mg/l	1			
	This sample was submitted past	the 48 hour ho	olding time for n	itrite.	· ` ` ` ` `				
00220	Nitrate Nitrogen	14797-55-8	N.D.	0.040	mg/l	1			
00221	Ammonia Nitrogen	7664-41-7	1.1	0.46	mg/l	1			
	Sufficient sample volume was no	t available to	perform a MS/MS	D for this	-				
	analysis. Therefore, a LCS/LCSD accuracy at a batch level.	was performed	d to demonstrate	precision and					
00226	Ortho-Phosphate as P	14265-44-2	0.0101 J	0.0066	mg/l	1			
	This sample was submitted past	the 48 hr hold	ling time for Ort	hophosphate.					
00235	Biochemical Oxygen Demand	n.a.	5.6(5)	0.80	mg/l	1			
	This sample was analyzed past t	he 48 hold tim	ne for BOD with c	lient consent.					
00273	Total Organic Carbon	n.a.	11.6	0.50	mg/l	1			
00345	Total Phosphorus as PO4 water	14265-44-2	0.28	0.12	mg/l	1			
01553	Chemical Oxygen Demand	n.a.	17.5	1.7	mg/l	1			
08213	BTEX (8021)								
00776	Benzene	71-43-2	N.D.	0.20	ug/l	1			
00777	Toluene	108-88-3	N.D.	0.20	ug/l	1			
00778	Ethylbenzene	100-41-4	N.D.	0.20	ug/l	1			
00779	Total Xylenes	1330-20-7	N.D.	0.60	ug/l	1			
	Sufficient sample volume was no	Sufficient sample volume was not available to perform a MSD for this							
	analysis. However, a MS was per performed to demonstrate precis.	formed. In add ion and accura	lition, a LCS/LCS Cy at a batch le	D was vel.					
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下	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	0.08 J	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 6			
00811	Pyrene	129-00-0	N.D.	0.2	ug/l	1 0			
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Account Number: 07802

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Oklahoma City OK 73125

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### Lancaster Laboratories Sample No. WW 3792073

Collected:03/19/2002 09:35 by BS

Submitted: 03/21/2002 09:20 Reported: 04/03/2002 at 12:58 Discard: 05/04/2002 MA3-TG2-3-190302-03 Grab Water Sample Moss American Superfund Site - Milwaukee, WI

MA323 SDG#: KMA06-03

				As Received				
CAT			As Received	Method		Dilution		
No.	Analysis Name	CAS Number	Result	Detection Limit	Units	Factor		
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/1	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 no	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				Analysis		Dilution
No.	Analysis Name	Method	Trial#	Date and Time	Analyst	Factor
00217	Kjeldahl Nitrogen	EPA 351.2	1	03/26/2002 16:35	Venia B McFadden	1
00219	Nitrite Nitrogen	EPA 353.2	1	03/21/2002 11:27	Matthew J Mercer	1
00220	Nitrate Nitrogen	EPA 353.2	1	04/01/2002 16:03	Mark A Buckwalter	1
00221	Ammonia Nitrogen	EPA 350.2	1	03/29/2002 07:15	Michele L Graham	1
00226	Ortho-Phosphate as P	EPA 365.3	1	03/22/2002 17:00	Daniel S Smith	1
00235	Biochemical Oxygen Demand	EPA 405.1	1	03/21/2002 22:23	Nicole & Bushong	1
00273	Total Organic Carbon	EPA 415.1	1	03/26/2002 16:19	Timothy M Petree	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	03/25/2002 18:11	Venia B McFadden	1
01553	Chemical Oxygen Demand	EPA 410.2	1	03/27/2002 05:30	Susan A Engle	1
08213	BTEX (8021)	SW-846 8021B	1	03/22/2002 19:49	Melissa D Mann	1
00774	PAH's in Water by HPLC	SW-846 8310	1	03/29/2002 06:49	Mark & Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	03/22/2002 19:49	Melissa D Mann	- -
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	03/26/2002 09:25	Cheryl L Robinson	1
03337	PAH Water Extraction	SW-846 3510C	1	03/22/2002 17:30	Desiree J Wann	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	03/22/2002 14:45	Nancy J Shoop	1



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### Page 1 of 3

### Lancaster Laboratories Sample No. WW 3792074

Collected:03/19/2002 11:10 by BS

Submitted: 03/21/2002 09:20 Reported: 04/03/2002 at 12:58 Discard: 05/04/2002 MA3-TG1-1-190302-04 Grab Water Sample Moss American Superfund Site - Milwaukee, WI

### MA311 SDG#: KMA06-04

CAT			As Received	As Received Method		• Dilution
No.	Analysis Name	CAS Number	Result	Detection	Units	Factor
00217	Kjeldahl Nitrogen	7727-37-9	1.1	0.30	mg/l	1
00219	Nitrite Nitrogen	14797-65-0	N.D. VJ	0.015	mg/l	1
	This sample was not submitted w	ith sufficient	time for the ni	trite analysis		
	to be completed within the 48 h	our holding ti	me.		`.	_
00220	Nitrate Nitrogen	14797-55-8	N.D.	0.040	mg/l	1
00221	Ammonia Nitrogen	7664-41-7	1.2	0.46	mg/l	1
	Sufficient sample volume was no	t available to	perform a MS/MS	D 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.U.J	0.0066	mg/l	1
	This sample was submitted past	the 48 hr hold	ing time for Ort	hophosphate.		
00235	Biochemical Oxygen Demand	n.a.	8.2J	0.80	mg/l	1
	This sample was analyzed past the	he 48 hold tim	e for BOD with c	lient consent.		
00273	Total Organic Carbon	n.a.	13.7	0.50	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	0.20	0.12	mg/l	1
01553	Chemical Oxygen Demand	n.a.	57.0	1.7	mg/l	1
08213	BTEX (8021)					
00776	Benzene	71-43-2	4.3 J	1.0	ug/l	5
00777	Toluene	108-88-3	1.4 J	1.0	ug/l	5
00778	Ethylbenzene	100-41-4	24.	1.0	ug/l	5
00779	Total Xylenes	1330-20-7	37.	3.0	ug/l	5
	Sufficient sample volume was not	t available to	perform a MSD f	or this	-	
	analysis. However, a MS was per:	formed. In add	ition, a LCS/LCS	D was		
	performed to demonstrate precis:	ion and accura	cy at a batch le	vel.		
	Due to dilution of the sample ma of non-target compounds, normal attained.	ade necessary reporting lim	by the high leve its were not	1		
00774	PAH's in Water by HPLC					
00775	Naphthalene	91-20-3	2,400. 5	50.	ug/l	50
00782	Acenaphthylene	208-96-8	50. 🥤	4.	ug/1	5 ū
00783	Acenaphthene	83-32-9	420.	4.	ug/l	5 6
			V		-	<u>8</u>
		Inc				2 4



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Account Number: 07802

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Oklahoma City OK 73125

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### Lancaster Laboratories Sample No. WW 3792074

Collected:03/19/2002 11:10 by BS

Submitted: 03/21/2002 09:20 Reported: 04/03/2002 at 12:58 Discard: 05/04/2002 MA3-TG1-1-190302-04 Grab Water Sample Moss American Superfund Site - Milwaukee, WI

MA311 SDG#: KMA06-04

				As Received		
CAT		•	As Received	Method		Dilution
No.	Analysis Name	CAS Number	Result	Detection Limit	Units	Factor
00784	Fluorene	86-73-7	270. Ĵ	9.	ug/l	50
00785	Phenanthrene	85-01-8	640.	4.	ug/l	50
00789	Anthracene	120-12-7	90.	2.	ug/l	50
00807	Fluoranthene	206-44-0	280.	2.	ug/l`	50
00811	Pyrene	129-00-0	280.	9.	ug/l `	50
00812	Benzo(a)anthracene	56-55-3	54.	1.	ug/l	50
00818	Benzo(b)fluoranthene	205-99-2	20.	2.	ug/l	50
00823	Benzo(a)pyrene	50-32-8	23. ¥	1.	ug/l	50
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	10.7	0.4	ug/l	5
00907	Benzo(g,h,i)perylene	191-24-2	11.	0.5	ug/l	5
07409	Chrysene	218-01-9	42.	0.4	ug/l	5
07410	Benzo(k)fluoranthene	207-08-9	12. 🗸	0.1	ug/l	5
	Sufficient sample volume was n	ot available to	perform a MS/MS	SD for this		

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.

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

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

TB5/10/02 5/10/02

Laboratory Chronicle

CAT			-	Analysis		Dilution
No.	Analysis Name	Method	Trial#	Date and Time	Analyst	Factor
00217	Kjeldahl Nitrogen	EPA 351.2	1	03/26/2002 16:36	Venia B McFadden	1
00219	Nitrite Nitrogen	EPA 353.2	1	03/21/2002 11:28	Matthew J Mercer	1
00220	Nitrate Nitrogen	EPA 353.2	1	04/01/2002 16:04	Mark A Buckwalter	1
00221	Ammonia Nitrogen	EPA 350.2	1	03/29/2002 07:15	Michele L Graham	1
00226	Ortho-Phosphate as P	EPA 365.3	1	03/22/2002 17:00	Daniel S Smith	1
00235	Biochemical Oxygen Demand	EPA 405.1	1	03/21/2002 22:23	Nicole R Bushona	G 1
00273	Total Organic Carbon	EPA 415.1	1	03/26/2002 16:30	Timothy M Petree	



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#### 3792074 Lancaster Laboratories Sample No. WW

Collected:03/19/2002 11:10 by BS

Submitted: 03/21/2002 09:20 Reported: 04/03/2002 at 12:58 Discard: 05/04/2002 MA3-TG1-1-190302-04 Grab Water Sample Moss American Superfund Site - Milwaukee, WI

MA311	SDG#: KMA06-04				
00345	Total Phosphorus as PO4	EPA 365.1	1	03/25/2002 18:	12 Venia B McFadden
	water				
01553	Chemical Oxygen Demand	EPA 410.2	1	03/27/2002 05:	30 Susan A Engle
08213	BTEX (8021)	SW-846 8021B	1	03/22/2002 20:	59 Melissa D Mann
00774	PAH's in Water by HPLC	SW-846 8310	1	03/29/2002 07:	31 Mark A Clark
00774	PAH's in Water by HPLC	SW-846 8310	1	03/31/2002 16:	25 Mark A Clark
01146	GC VOA Water Prep	SW-846 5030B	1	03/22/2002 20:	59 Melissa D Mann
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	03/26/2002 09:	25 Cheryl L Robinson
03337	PAH Water Extraction	SW-846 3510C	1	03/22/2002 17:	30 Desiree J <b>W</b> ann
08264	Total Phos as PO4 Prep	EPA 365.1	1	03/22/2002 14:	45 Nancy J Shoop
					- 1

Total Phos as PO4 Prep EPA 365.1 (water)

# 0026



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Lancaster Laboratories Sample No. WW 3792075

Collected:03/19/2002 11:20 by BS

Submitted: 03/21/2002 09:20 Reported: 04/03/2002 at 12:58 Discard: 05/04/2002 MA3-TG1-2-190302-05 Grab Water Sample Moss American Superfund Site - Milwaukee, WI

MA312 SDG#: KMA06-05

	•	•		As Received					
CAT			As Received	Method		Dilution			
No.	Analysis Name	CAS Number	Result	Detection Limit	Units	Factor			
00217	Kjeldahl Nitrogen	7727-37-9	1.1	0.30	mg/l	1			
00219	Nitrite Nitrogen	14797-65-0	N.D. UJ	0.015	mg/l	1			
	This sample was not submitted wi	th sufficient	time for the nit	rite analysis	~ 、				
	to be completed within the 48 ho	our holding tim	ne.		`-				
00220	Nitrate Nitrogen	14797-55-8	N.D.	0.040	mg/l	1			
00221	Ammonia Nitrogen	7664-41-7	0.92 J	0.46	mg/l	1			
	Sufficient sample volume was not available to perform a MS/MSD for this								
	analysis. Therefore, a LCS/LCSD	was performed	to demonstrate p	recision and					
	accuracy at a batch level.		( )						
00226	Ortho-Phosphate as P	14265-44-2	N.D.U.J.	0.0066	mg/l	1			
	This sample was submitted past t	he 48 hr holdi	ng time for Orth	ophosphate.					
00235	Biochemical Oxygen Demand	n.a.	(e. 8(J	0.80	mg/l	1			
	This sample was analyzed past th	e 48 hold time	for BOD with cl	ient consent.					
00273	Total Organic Carbon	n.a.	12.3	0.50	mg/l	1			
00345	Total Phosphorus as PO4 water	14265-44-2	0.33	0.12	mg/l	1			
01553	Chemical Oxygen Demand	n.a.	31.9	1.7	mg/l	1			
08213	BTEX (8021)								
00776	Benzene	71-43-2	N.D.	0.20	ug/1	1			
00777	Toluene	108-88-3	N.D.	0.20	ug/1	1			
00778	Ethylbenzene	100-41-4	0.32 J	0.20	ug/1	1			
00779	Total Xylenes	1330-20-7	N.D.	0.60	ug/1	1			
	Sufficient sample volume was not	available to	perform a MSD fo	r this		-			
	analysis. However, a MS was perf performed to demonstrate precisi	ormed. In addi on and accurac	tion, a LCS/LCSD	was el.					
00774	PAH's in Water by HPLC		-						
00775	Naphthalene	91-20-3	N.D.	0.9	ug/1	1			
00782	Acenaphthylene	208-96-8	N.D.UT	0.8	ug/1	1			
00783	Acenaphthene	83-32-9	N.D.	0.8	ug/1	1			
00784	Fluorene	86-73-7	N.D.	0.2	ug/1	1			
00785	Phenanthrene	85-01-8	N.D.	0.08	ug/1	1			
00789	Anthracene	120-12-7	N.D.	0.04	ug/1	1 5			
00807	Fluoranthene	206-44-0	0.07 J	0.04	ug/1	- 10			
						- U 2			



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Account Number: 07802

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Page 2 of 3

### Lancaster Laboratories Sample No. WW 3792075

Collected:03/19/2002 11:20 by BS

Account Number: 07802

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Submitted: 03/21/2002 09:20 Reported: 04/03/2002 at 12:58 Discard: 05/04/2002 MA3-TG1-2-190302-05 Grab Water Sample Moss American Superfund Site - Milwaukee, WI

### MA312 SDG#: KMA06-05

					As Received		
CAT			As Rece	∋ived	Method		Dilution
No.	Analysis Name	CAS Number	Result		Detection Limit	Units	Factor
00811	Pyrene	129-00-0	0.2	J	0.2	ug/l	1 .
00812	Benzo(a) anthracene	56-55-3	0.02	J	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/1	1
00895	Dibenz(a,h)anthracene	53-70-3	N.D.		0.04	ug/1 🔪	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.		0.09	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/MS	D for this	2	
	analysis. Therefore, a LCS/L	CSD was performed	to demor	nstrate	precision and		
	accuracy at a batch level.				-		

### Laboratory Chronicle

CAT				Analysis		Dilution
No.	Analysis Name	Method	Trial#	Date and Time	Analyst	Factor
00217	Kjeldahl Nitrogen	EPA 351.2	1	03/26/2002 16:37	Venia B McFadden	1
00219	Nitrite Nitrogen	EPA 353.2	1	03/21/2002 11:32	Matthew J Mercer	1
00220	Nitrate Nitrogen	EPA 353.2	1	04/01/2002 16:05	Mark A Buckwalter	1
00221	Ammonia Nitrogen	EPA 350.2	1	03/29/2002 07:15	Michele L Graham	1
00226	Ortho-Phosphate as P	EPA 365.3	1	03/22/2002 17:00	Daniel S Smith	1
00235	Biochemical Oxygen Demand	EPA 405.1	1	03/21/2002 22:23	Nicole B Bushong	1
00273	Total Organic Carbon	EPA 415.1	1	03/26/2002 16:42	Timothy M Petree	1
00345	Total Phosphorus as PO4	EPA 365.1	1	03/25/2002 18:12	Venia B McFadden	1
	water				inter a mer addem	-
01553	Chemical Oxygen Demand	EPA 410.2	1	03/27/2002 05:30	Susan A Engle	1
08213	BTEX (8021)	SW-846 8021B	1	03/22/2002 21:33	Melissa D Mann	1
00774	PAH's in Water by HPLC	SW-846 8310	1	03/29/2002 08:10	Mark A Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	03/22/2002 21:33	Melissa D Mann	1
01460	Total Kjeldahl Nitrogen	EPA 351.2	1	03/26/2002 09:25	Chervi L Pobincon	11.4.
	Digest			10,20,2002 05:25	Cheryr D Robinson	T
03337	PAH Water Extraction	SW-846 3510C	1	03/22/2002 17.30	Desiree J Wann	1
08264	Total Phos as PO4 Prep	EPA 365.1	1	03/22/2002 14:45	Nancy J Shoop	1
	(water)		-	-0,22,2002 19.45	nancy o Shoop	T



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Lancaster Laboratories Sample No. WW 3792075

Collected:03/19/2002 11:20 by BS

Submitted: 03/21/2002 09:20 Reported: 04/03/2002 at 12:58 Discard: 05/04/2002 MA3-TG1-2-190302-05 Grab Water Sample Moss American Superfund Site - Milwaukee, WI

MA312 SDG#: KMA06-05

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Account Number: 07802

**NO**/

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Lancaster Laboratories Sample No. WW 3792076

Collected:03/19/2002 11:30 by BS

Submitted: 03/21/2002 09:20 Reported: 04/03/2002 at 12:58 Discard: 05/04/2002 MA3-TG1-3-190302-06 Grab Water Sample Moss American Superfund Site - Milwaukee, WI Account Number: 07802

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

MA313 SDG#: KMA06-06

				As Received		
CAT			As Received	Method		Dilution
No.	Analysis Name	CAS Number	Result	Detection Limit	Units	Factor
00217	Kjeldahl Nitrogen	7727-37-9	0.84_J	0.30	mg/l	1
00219	Nitrite Nitrogen	14797-65-0	N.D.(V.T)	0.015	mg/l	1
	This sample was not submitted w	ith sufficient	time for the ni	trite analysis		
	to be completed within the 48 h	our holding ti	ime.		`.	
00220	Nitrate Nitrogen	14797-55-8	N.D.	0.040	mg/l	1
00221	Ammonia Nitrogen	7664-41-7	0.71 J	0.46	mg/l	1
	Sufficient sample volume was no	t available to	perform a MS/MS	D for this		
	analysis. Therefore, a LCS/LCSD	was performed	i to demonstrate	precision and		
	accuracy at a batch level.		$\bigcirc$			
00226	Ortho-Phosphate as P	14265-44-2	N.D(UJ	0.0066	mg/l	1
	This sample was submitted past	the 48 hr hold	ling time for Ort	hophosphate.		
00235	Biochemical Oxygen Demand	n.a.	N.D.(VJ)	5.0	mg/l	1
	This sample was analyzed past t	he 48 hold tiπ	he for BOD with c	lient consent.		
00273	Total Organic Carbon	n.a.	8.9	0.50	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	0.34	0.12	mg/l	1
01553	Chemical Oxygen Demand	n.a.	25.5	1.7	mg/l	1
08213	BTEX (8021)					
00776	Benzene	71-43-2	N.D.	0.20	ug/1	1
00777	Toluene	108-88-3	N.D.	0.20	ug/1	1
00778	Ethylbenzene	100-41-4	N.D.	0.20	ug/1	-
00779	Total Xylenes	1330-20-7	N.D.	0.60	ug/1	1
	Sufficient sample volume was not	t available to	perform a MSD f	or this	- ), -	-
	analysis. However, a MS was per:	formed. In add	ition, a LCS/LCS	D was		
	performed to demonstrate precis:	ion and accura	cy at a batch le	vel.		
00774	PAH's in Water by HPLC					
00775	Naphthalene	91-20-3	ND	0.0		
00782	Acenaphthylene	208-96-8	N D UT	0.9	ug/1	1
00783	Acenaphthene	83-32-9	נט.ט.מא	0.0	ug/1	1
00784	Fluorene	86-73-7	N D	0.0	ug/l	1
00785	Phenanthrene	85-01-8	N D	0.2	ug/1	1
00789	Anthracene	120-12-7	N D	0.08	ug/l	1
00807	Fluoranthene	206-44-0	0.07.т	0.04	ug/l	1 6
			5.67 0	0.04	ug/i	1 E
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#### Lancaster Laboratories Sample No. WW 3792076

Collected:03/19/2002 11:30 by BS

Submitted: 03/21/2002 09:20 Reported: 04/03/2002 at 12:58 Discard: 05/04/2002 MA3-TG1-3-190302-06 Grab Water Sample Moss American Superfund Site - Milwaukee, WI

Account Number: 07802

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

MA313 SDG#: KMA06-06

				As Received					
CAT			As Received	Method		Dilution			
No.	Analysis Name	CAS Number	Result	Detection	Units	Factor			
				Limit					
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	0.03 J	0.02	ug/l	1			
00895	Dibenz(a,h)anthracene	53-70-3	N.D.	0.04	ug/1 🖕	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.	0.09	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 no	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				Analysis		Dilution
No.	Analysis Name	Method	Trial#	Date and Time	Analyst	Factor
00217	Kjeldahl Nitrogen	EPA 351.2	1	03/26/2002 16:41	Venia B McFadden	1
00219	Nitrite Nitrogen	EPA 353.2	1	03/21/2002 11:33	Matthew J Mercer	1
00220	Nitrate Nitrogen	EPA 353.2	1	04/01/2002 16:09	Mark A Buckwalter	1
00221	Ammonia Nitrogen	EPA 350.2	1	03/29/2002 07:15	Michele L Graham	1
00226	Ortho-Phosphate as P	EPA 365.3	1	03/22/2002 17:00	Daniel S Smith	1
00235	Biochemical Oxygen Demand	EPA 405.1	1	03/21/2002 22:23	Nicole B Bushong	1
00273	Total Organic Carbon	EPA 415.1	1	03/26/2002 16:53	Timothy M Petree	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	03/25/2002 18:13	Venia B McFadden	1
01553	Chemical Oxygen Demand	EPA 410.2	1	03/27/2002 05:30	Susan A Engle	,
08213	BTEX (8021)	SW-846 8021B	1	03/22/2002 22:08	Meliese D Mann	1
00774	PAH's in Water by HPLC	SW-846 8310	1	03/29/2002 08:48	Mark D Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	03/22/2002 22:08	Malk A Clark Malinga D Mann	1
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	03/26/2002 09:25	Cheryl L Robinson	n.a. 1
03337	PAH Water Extraction	SW-846 3510C	1	03/22/2002 17.30	Desires I Mann	,
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	03/22/2002 14:45	Nancy J Shoop	1

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### Lancaster Laboratories Sample No. WW 3792076

Collected:03/19/2002 11:30 by BS

Submitted: 03/21/2002 09:20 Reported: 04/03/2002 at 12:58 Discard: 05/04/2002 MA3-TG1-3-190302-06 Grab Water Sample Moss American Superfund Site - Milwaukee, WI

MA313 SDG#: KMA06-06

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Account Number: 07802

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### 3792077 Lancaster Laboratories Sample No. WW

Collected:03/19/2002 15:00 by BS

Submitted: 03/21/2002 09:20 Reported: 04/03/2002 at 12:58 Discard: 05/04/2002 MA3-TG4-1-190302-07 Grab Water Sample Moss American Superfund Site - Milwaukee, WI

MA341 SDG#: KMA06-07

				As Received		
CAT			As Received	Method		Dilution
No.	Analysis Name	CAS Number	Result	Detection Limit	Units	Factor
00217	Kjeldahl Nitrogen	7727-37-9	0.40 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/I	1
00221	Ammonia Nitrogen	7664-41-7	0.55 J	0.46	mg/l	1
	Sufficient sample volume was not	available to	perform a MS/MSD	for this	-	
	analysis. Therefore, a LCS/LCSD accuracy at a batch level.	was performed	to demonstrate pr	recision and		
00226	Ortho-Phosphate as P	14265-44-2	N.D.U.T	0.0066	mg/l	1
	This sample was analyzed past th	e 48 hr hold t	ime for Orthophos	phate.		
00235	Biochemical Oxygen Demand	n.a.	N.D	3.3	mg/l	1
	This sample was analyzed past th	e 48 hold time	for BÖD with cli	ent consent.	5	-
00273	Total Organic Carbon	n.a.	5.4	0.50	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	0.28	0.12	mg/l	1
01553	Chemical Oxygen Demand	n.a.	15.1	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 perf	ormed. In addi	tion, a LCS/LCSD	Was		
	performed to demonstrate precisi	on and accurac	y at a batch leve	1.		
00774	PAH's in Water by HPLC					
00775	Naphthalene	91-20-3	N.D.	0.9	ua/1	1
00782	Acenaphthylene	208-96-8	N.D.UT	0.8	ug/1	1
00783	Acenaphthene	83-32-9	N.D.	0.8	ug/1	1
00784	Fluorene	86-73-7	N.D.	0.2	ug/1	1
00785	Phenanthrene	85-01-8	N.D.	0.08	ug/1	1
00789	Anthracene	120-12-7	N.D.	0.04	ug/1	1
00807	Fluoranthene	206-44-0	N.D.	0.04	ug/1	1
00811	Pyrene	129-00-0	N.D.	0.2	ug/1	
00812	Benzo(a) anthracene	56-55-3	N.D.	0.02	ug/l	і И Й



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Account Number: 07802

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

#### 3792077 Lancaster Laboratories Sample No. WW

Collected:03/19/2002 15:00 by BS

Submitted: 03/21/2002 09:20 Reported: 04/03/2002 at 12:58 Discard: 05/04/2002 MA3-TG4-1-190302-07 Grab Water Sample Moss American Superfund Site - Milwaukee, WI

MA341 SDG#: KMA06-07

				As Received				
CAT		· .	As Received	Method		Dilution		
No.	Analysis Name	CAS Number	Result	Detection Limit	Units	Factor		
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		
86800	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.	0.09	ug/1 💊	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	o perform a MS/MS	SD for this				
	analysis. Therefore, a LCS/LCSD was performed to demonstrate precision and							
	accuracy at a batch level.							

### Laboratory Chronicle

CAT				Analysis		Dilution
No.	Analysis Name	Method	Trial#	Date and Time	Analyst	Factor
00217	Kjeldahl Nitrogen	EPA 351.2	1	03/26/2002 16:45	Venia B McFadden	1
00219	Nitrite Nitrogen	EPA 353.2	1	03/21/2002 11:37	Matthew J Mercer	1
00220	Nitrate Nitrogen	EPA 353.2	1	04/01/2002 16:10	Mark A Buckwalter	1
00221	Ammonia Nitrogen	EPA 350.2	1	03/29/2002 07:15	Michele L Graham	1
00226	Ortho-Phosphate as P	EPA 365.3	1	03/22/2002 17:00	Daniel S Smith	1
00235	Biochemical Oxygen Demand	EPA 405.1	1	03/21/2002 22:23	Nicole R Bushong	1
00273	Total Organic Carbon	EPA 415.1	1	03/26/2002 17:05	Timothy M Petree	ī
00345	Total Phosphorus as PO4	EPA 365.1	1	03/25/2002 18:14	Venia B McFadden	1
	water					-
01553	Chemical Oxygen Demand	EPA 410.2	1	03/27/2002 05:30	Susan A Engle	1
08213	BTEX (8021)	SW-846 8021B	1	03/22/2002 22:43	Melissa D Mann	1
00774	PAH's in Water by HPLC	SW-846 8310	1	03/29/2002 09:27	Mark A Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	03/22/2002 22:43	Melissa D Mann	<u>.</u> .а.
01460	Total Kjeldahl Nitrogen	EPA 351.2	1	03/26/2002 09:25	Chervl L Robinson	1
	Digest					-
03337	PAH Water Extraction	SW-846 3510C	1	03/22/2002 17:30	Desiree J Wann	1
08264	Total Phos as PO4 Prep	EPA 365.1	1	03/22/2002 14:45	Nancy J Shoop	ī

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Account Number: 07802

Kerr-McGee Corporation

Oklahoma City OK 73125

P.O. Box 25861

Lancaster Laboratories Sample No. WW 3792078

Collected:03/19/2002 15:10 by BS

Submitted: 03/21/2002 09:20 Reported: 04/03/2002 at 12:58 Discard: 05/04/2002 MA3-TG4-2-190302-08 Grab Water Sample Moss American Superfund Site - Milwaukee, WI

MA342 SDG#: KMA06-08

	•			As Received		
CAT			As Received	Method		Dilution
No.	Analysis Name	CAS Number	Result	Detection Limit	Units	Factor
00217	Kjeldahl Nitrogen	7727-37-9	0.97 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/1	1
00221	Ammonia Nitrogen	7664-41-7	0.97 J	0.46	mg/l	1
	Sufficient sample volume was no	t available to	perform a MS/MS	D for this	•	
	analysis. Therefore, a LCS/LCSD	was performed	to demonstrate	precision and		
	accuracy at a batch level.		$(\cdot)$			
00226	Ortho-Phosphate as P	14265-44-2	м. d. (VJ)	0.0066	mg/l	1
	This sample was analyzed past the	ne 48 hr hold	time for Orthoph	osphate.	2	
00235	Biochemical Oxygen Demand	n.a.	N.D(V.T)	4.4	mg/l	1
	This sample was analyzed past the	ne 48 hold tim	e for BOD with c	lient consent.		
00273	Total Organic Carbon	n.a.	8.9	0.50	mg/l	1
00345	Total Phosphorus as PO4 water	14265-44-2	0.24	0.12	mg/l	1
01553	Chemical Oxygen Demand	n.a.	21.5	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/1	1
	Sufficient sample volume was not	available to	perform a MSD f	or this	-97 -	-
	analysis. However, a MS was perf	formed. In add	ition, a LCS/LCS	D was		
	performed to demonstrate precisi	on and accura	cy at a batch le	vel.		
00774	PAH's in Water by HPLC					
00775	Naphthalene	91-20-3	N.D.	0.9	ua/1	1
00782	Acenaphthylene	208-96-8	N.D.V.	0.8	ug/1	1
00783	Acenaphthene	83-32-9	N.D.	0.8	ug/l	1
00784	Fluorene	86-73-7	N.D.	0.2	ug/1	1
00785	Phenanthrene	85-01-8	N.D.	0.08	ug/1	1
00789	Anthracene	120-12-7	N.D.	0.04	ug/1	1
00807	Fluoranthene	206-44-0	N.D.	0.04	ug/1	1
00811	Pyrene	129-00-0	N.D.	0.2	ug/1	- 1 -
00812	Benzo(a)anthracene	56-55-3	N.D.	0.02	ug/1	1 Ø
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Account Number: 07802

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Account Number: 07802

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### Lancaster Laboratories Sample No. WW 3792078

Collected:03/19/2002 15:10 by BS

Submitted: 03/21/2002 09:20 Reported: 04/03/2002 at 12:58 Discard: 05/04/2002 MA3-TG4-2-190302-08 Grab Water Sample Moss American Superfund Site - Milwaukee, WI

MA342 SDG#: KMA06-08

				As Received					
CAT		• •	As Received	Method		Dilution			
No.	Analysis Name	CAS Number	Result	Detection Limit	Units	Factor			
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.	0.09	ug/1 🖌	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	Sufficient sample volume was not available to perform a MS/MSD for this							
	analysis. Therefore, a LCS/LC accuracy at a batch level.	CSD was performed	d to demonstrate	precision and					

### Laboratory Chronicle

CAT				Analysis		Dilution
No.	Analysis Name	Method	Trial#	Date and Time	Analyst	Factor
00217	Kjeldahl Nitrogen	EPA 351.2	1	03/26/2002 16:46	Venia B McFadden	1
00219	Nitrite Nitrogen	EPA 353,2	1	03/21/2002 11:38	Matthew J Mercer	1
00220	Nitrate Nitrogen	EPA 353.2	1	04/01/2002 16:11	Mark A Buckwalter	1
00221	Ammonia Nitrogen	EPA 350.2	1	03/29/2002 07:15	Michele L Graham	1
00226	Ortho-Phosphate as P	EPA 365.3	1	03/22/2002 17:00	Daniel S Smith	1
00235	Biochemical Oxygen Demand	EPA 405.1	1	03/21/2002 22:23	Nicole R Bushong	1
00273	Total Organic Carbon	EPA 415.1	1	03/26/2002 17:17	Timothy M Petree	1
00345	Total Phosphorus as PO4 water	EPA 365.1	1	03/25/2002 18:19	Venia B McFadden	1
01553	Chemical Oxygen Demand	EPA 410.2	1	03/27/2002 05:30	Susan A Engle	1
08213	BTEX (8021)	SW-846 8021B	1	03/22/2002 23:17	Melissa D Mann	1
00774	PAH's in Water by HPLC	SW-846 8310	1	03/29/2002 10:06	Mark A Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	03/22/2002 23:17	Melissa D Mann	n a
01460	Total Kjeldahl Nitrogen Digest	EPA 351.2	1	03/26/2002 09:25	Cheryl L Robinson	1
03337	PAH Water Extraction	SW-846 3510C	1	03/22/2002 17:30	Desiree J Wann	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	03/22/2002 14:45	Nancy J Shoop	1

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### Lancaster Laboratories Sample No. WW 3792079

Collected:03/19/2002 15:20 by BS

Submitted: 03/21/2002 09:20 Reported: 04/03/2002 at 12:58 Discard: 05/04/2002 MA3-TG4-3-190302-09 Grab Water Sample Moss American Superfund Site - Milwaukee, WI Account Number: 07802

Analysis Repo

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MA343 SDG#: KMA06-09

	· · ·	•		As Received		
CAT			As Received	Method		Dilution
No.	Analysis Name	CAS Number	Result	Detection Limit	Units	Factor
00217	Kjeldahl Nitrogen	7727-37-9	0.90 J	0.30	mg/l	1
00219	Nitrite Nitrogen	14797-65-0	N.D.	0.015	mg/l	1
00220	Nitrate Nitrogen	14797-55-8	N.D.	0.040	mg/1~	1
00221	Ammonia Nitrogen	7664-41-7	0.92 J	0.46	mg/l	1
	Sufficient sample volume was not	t available to	perform a MS/M	SD for this		•
	analysis. Therefore, a LCS/LCSD accuracy at a batch level.	was performed	to demonstrate	precísion and		
00226	Ortho-Phosphate as P	14265-44-2	N.D. WT	0 0066	mg /1	1
	This sample was analyzed past th	he 48 hr hold	time for Orthoni	hosphate	mg/1	T
00235	Biochemical Oxygen Demand	n.a.	N.D.	3.8	mg / }	1
	This sample was analyzed past the	ne 48 hold tim	e for BOD with	client consent	mg/1	1
00273	Total Organic Carbon	n.a.	5.8	0.50	ma / 1	1
00345	Total Phosphorus as PO4 water	14265-44-2	0.26	0.12	mg/1	1
01553	Chemical Oxygen Demand	n.a.	17.1	1.7	mg/l	1
					Mg/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 perf	ormed. In add	ition, a LCS/LCS	SD was		
	performed to demonstrate precisi	on and accurac	cy at a batch le	evel.		
00774	PAH's in Water by HPLC					
00775	Naphthalene	91-20-3	N.D.	0.9	ua/l	1
00782	Acenaphthylene	208-96-8	N.D.VT	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	0.07 J	0.04	ug/l	1
00811	Pyrene	129-00-0	N.D.	0.2	ug/l	1 ი
00812	Benzo(a)anthracene	56-55-3	N.D.	0.02	ug/1	1
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Analysis Repor

Account Number: 07802

Kerr-McGee Corporation

Oklahoma City OK 73125

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# Lancaster Laboratories Sample No. WW 3792079

Collected:03/19/2002 15:20 by BS

Submitted: 03/21/2002 09:20 Reported: 04/03/2002 at 12:58 Discard: 05/04/2002 MA3-TG4-3-190302-09 Grab Water Sample Moss American Superfund Site - Milwaukee, WI

### MA343 SDG#: KMA06-09

				As Received		
CAT	•	•	As Received	Method		Dilution
No.	Analysis Name	CAS Number	Result	Detection Limit	Units	Factor
00818	Benzo(b)fluoranthene	205-99-2	N.D.	0.04	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.	0.04	ug/l	1
86800	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.	0.09	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 pr	ecision and		
	accuracy at a batch level.					

### Laboratory Chronicle

CAT				Analysis		Dilution
No.	Analysis Name	Method	Trial#	Date and Time	Analyst	Factor
00217	Kjeldahl Nitrogen	EPA 351.2	1	03/26/2002 16:47	Venia B McFadden	1
00219	Nitrite Nitrogen	EPA 353.2	1	03/21/2002 11:40	Matthew J Mercer	1
00220	Nitrate Nitrogen	EPA 353.2	1	04/01/2002 16:13	Mark A Buckwalter	1
00221	Ammonia Nitrogen	EPA 350.2	1	03/29/2002 07:15	Michele L Graham	1
00226	Ortho-Phosphate as P	EPA 365.3	1	03/22/2002 17:00	Daniel S Smith	1
00235	Biochemical Oxygen Demand	EPA 405.1	1	03/21/2002 22:23	Nicole R Bushong	1
00273	Total Organic Carbon	EPA 415.1	1	03/26/2002 17:28	Timothy M Petree	1
00345	Total Phosphorus as PO4	EPA 365.1	1	03/25/2002 18:20	Venia B McFadden	1
	water					
01553	Chemical Oxygen Demand	EPA 410.2	1	03/27/2002 05:30	Susan A Engle	1
08213	BTEX (8021)	SW-846 8021B	1	03/22/2002 23:52	Melissa D Mann	1
00774	PAH's in Water by HPLC	SW-846 8310	1	03/29/2002 10:44	Mark A Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	03/22/2002 23:52	Melissa D Mann	n.a.
01460	Total Kjeldahl Nitrogen	EPA 351.2	1	03/26/2002 09:25	Cheryl L Robinson	1
	Digest				-	
03337	PAH Water Extraction	SW-846 3510C	1	03/22/2002 17:30	Desiree J Wann	1
08264	Total Phos as PO4 Prep (water)	EPA 365.1	1	03/22/2002 14:45	Nancy J Shoop	1

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### Lancaster Laboratories Sample No. WW 3792080

Collected:03/19/2002 08:05 by BS

Submitted: 03/21/2002 09:20 Reported: 04/03/2002 at 12:59 Discard: 05/04/2002 FB-01 Grab Water Sample Moss American Superfund Site - Milwaukee, WI

MA3F1 SDG#: KMA06-10FB

				As Received		
CAT			As Received	Method		Dilution
No.	Analysis Name	CAS Number	Result	Detection Limit	Units	Factor
08213	BTEX (8021)			4		
00776	Banzana	71-43-2	ND	0.20		
00777		108-88-3	N.D.	0.20	ug/1 🔪	1
00778	Tordene	100-00-5	N.D.	0.20	ug/1	1
00770	Total Yulones	1220-20-7	N.D.	0.20	ug/1	1
00115	Sufficient cample volume was no	1330-20-7	N.D.	0.60	ug/1	1
	Sufficient Sample Volume was no	t available to	perform a MSD f	or this		
	analysis. However, a MS was per	ion and answer	ition, a LCS/LCS	D was		
	performed to demonstrate precis	ion and accura	icy at a batch le	vel.		
00774	PAH's in Water by HPLC					
00775	Naphthalene	91-20-3	N.D.	1.	ug / }	1
00782	Acenaphthylene	208-96-8	N.D.UT	0.8	ug/1	1
00783	Acenaphthene	83-32-9	N.D.	0.8	ug/1	1.
00784	Fluorene	86-73-7	N.D.	0.2	ug/1	1
00785	Phenanthrene	85-01-8	N.D.	0.08	ug/1	1
00789	Anthracene	120-12-7	N.D.	0.04	ug/1	1
00807	Fluoranthene	206-44-0	N D	0.04	ug/1	1
00811	Pyrene	129-00-0	N.D.	0.04	ug/1	1
00812	Benzo(a) anthracene	56-55-3	N D	0.02	ug/1	1
00818	Benzo(b) fluoranthene	205-99-2	N D	0.02	ug/1	1
00823	Benzo (a) pyrene	50-32-8	N D	0.04	ug/1	1
00895	Dibenz(a, h) anthracene	53-70-3	N D	0.02	ug/1	1
00898	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.04	ug/1	1
00907	Benzo(g,h,i)pervlene	191-24-2	м.р. л л	0.00	ug/1	1
07409	Chrysene	218-01-9	N.D.	0.1	ug/1	1
07410	Benzo(k)fluoranthene	207-08-9	N.D.	0.08	ug/1	1
	Sufficient sample volume was not	zu, uu j r available to	N.D.	0.02	ug/1	1
	analysis. Therefore, a LCS/LCSD	was nerformed	to domonstrate -	for this		
	accuracy at a batch level.	"ap berrormen	to demonstrate p	recision and		

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Account Number: 07802

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

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Account Number: 07802

Kerr-McGee Corporation

Oklahoma City OK 73125

P.O. Box 25861



### Lancaster Laboratories Sample No. WW 3792080

Collected:03/19/2002 08:05 by BS

Submitted: 03/21/2002 09:20 Reported: 04/03/2002 at 12:59 Discard: 05/04/2002 FB-01 Grab Water Sample Moss American Superfund Site - Milwaukee, WI

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### MA3F1 SDG#: KMA06-10FB

### Laboratory Chronicle

CAT				Analysis		Dilution
No.	Analysis Name	Method	Trial#	Date and Time	Analyst	Factor
08213	BTEX (8021)	SW-846 8021B	1	03/23/2002 02:11	Melissa D Mann	1
00774	PAH's in Water by HPLC	SW-846 8310	1	03/29/2002 11:23	Mark A Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	03/23/2002 02:11	Melissa D Mann	n.a.
03337	PAH Water Extraction	SW-846 3510C	1	03/22/2002 17:30	Desiree J Wann	1
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### Lancaster Laboratories Sample No. WW 3792081

Collected:03/19/2002 18:00

Submitted: 03/21/2002 09:20 Reported: 04/03/2002 at 12:59 Discard: 05/04/2002 TB-02 Grab Water Sample Moss American Superfund Site - Milwaukee, WI Account Number: 07802 Kerr-McGee Corporation

Oklahoma City OK 73125

P.O. Box 25861

MA3T2 SDG#: KMA06-11TB

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/1 _	1
00778	Toluene Ethylbenzene	108-88-3	N.D. N.D.	0.20 0.20	ug/l ug/l	1 1
00779	Total Xylenes Sufficient sample volume was not analysis. However, a MS was perf	1330-20-7 available to ormed. In addi	N.D. perform a MSD for tion, a LCS/LCSD	0.60 this was	ug/l	1
	performed to demonstrate precisi	on and accurac	y at a batch leve	1.		

		Laborato	ry Chro	nicle		
CAT			-	Analysis		Dilution
No.	Analysis Name	Method	Trial#	Date and Time	Analyst	Factor
08213	BTEX (8021)	SW-846 8021B	1	03/23/2002 01:36	Melissa D Mann	1
01146	GC VOA Water Prep	SW-846 5030B	1	03/23/2002 01:36	Melissa D Mann	n.a.



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

2216 Rev. 9/11/00

# Analysis Request/Environmental Services Chain of Custody

# Lancaster Laboratories

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For Lancaster Laboratories use only Acct. # \_\_\_\_\_\_\_ Sample # \_379 20 71 - 8 1

2102 Rev. 3/7/(

₩ Where quality is a science.																				
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Client: Weston / Kerr McGee	Acct. #:				ittix (	4			(5		部就有 7	A		25 Re <u>k Artik</u> 7	juesu 7		F	sc:		
Project Name/#: Moss American	_ PWSID #:									/ /	, /	/ /	/ /	/ /	/ /			CR #:		
Project Manager: Tom Gragn	P.O.#						ers.						. /				/			sted)
sampler: & Schaefe Y Hagivora	Ouote #				able		itain				/		$\mathbb{P}/$	/	/	/ /				ldmes
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8) Data Package Options (please circle if requested)	SDG	Complete?	- Reling	uished	by:	<u> </u>	_			Da	ate	Time	Receiv	ed by:				[ [	Date	Time
QC Summary     Type VI (Raw Data)       Type I (Tier I)     GLP   Site-specific QC requirements	STE Ye	s No	Reling	uished	by:			<u>}_</u>		Da	ate	Time	Receiv	ed by:					Date	Time
Iype II (Tier II)     Other     (If yes, indicate QC sample       Type III (NJ Red. Del.)     Internal Chain of Cu	and submit trip	licate volume.) ed? <sup>°</sup> Yes No	Relinc	uished	by:	<u></u>		<u></u>		Dz	ste	Time	Receiv	ed by:			. v 0		ate	Time - 

Lancaster Laboratories, Inc., 2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 (717) 656-2300

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

# Antolysis Request/Environmenial Services Chain of Custoly

For Lancaster Laboratories use only

Acct. # 7802 Sample # 3792071-81

Lancaster Laboratories Where quality is a science.

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

(	1)	Acct. #:			N	latrix	4	1		(5			A	inalys	es Rec	quest	ed is a row	For FSC:	lab use	only
;	Project Name/#: Moss American	PWSID #:									$\square$	,/	/ .	/	/ /	1	//L	SCR #:		
	Project Manager: Tom Graon	P.O.#		·····		allide		iers					. /c	,vr/	~				`;	les (
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		Lancaster La	aboratories, Inc	, 2425 1	New Ho	olland Pik	e, PO E	Box 12	425, La	ncaster, P	A 17605-	2425	(717) 65	6-2300	í			)		

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# Analysis Request/Environmental Services Chain of Custody

Where quality is a science.

For Lancaster Laboratories use only Acct. # 7802 Sample # 3792114-32

Please print. Instructions on reverse side correspond with circled numbers. For lab use only Matrix (4) Analyses Requested (5)Client: WSton /Ken McGee Acct. #:\_\_\_\_ FSC: Project Name/#: Mozy American PWSID #: (Check if applicable) SCR #: Temperature of samples upon receipt (if requested) Project Manager: Ton Gragn P.O.1 Total # of Containers Potable
 NPDES Sampler: BSchnefe, Y Haziwara Quote #:\_\_\_\_  $\mathcal{X}$ Grab 🗊 Composite WI ŵ Name of state where samples were collected: Water Other Date Time R Collected Collected U Soil Sample Identification Remarks Y19/02 0805 FB-0 X x 3  $\overset{}{\sim}$ MA3-MW-275-190302-10 x 3 Х 1705 x MA3-MW-335-190302-12 3 x と х 1725 MA3-MW-335-190302-12-DUP 3 1725  $\boldsymbol{\kappa}$  $\kappa$  $\boldsymbol{\chi}$ MA3-MW-325-190302-11-MS 3 1715 κ χ X MA3-MW-325-1903-2-11-MSA 1715 3  $\chi$ X Χ MA3-MW-325-190302-11 3 X x 1715 γ Relinguished by: Date Time - Received by: Date Time (9) Turnaround Time Requested (TAT) (please circle): Normal Rush (Rush TAT is subject to Lancaster Laboratories approval and surcharge.) Date results are needed: pren Sil 2190 1930 Relinguished by: Date Time Received by: Date Time Rush results requested by (please circle): Phone Fax Phone #: 847-918-4000 Fax #: 847-918-4055 telinquished by: Date Time Received by: Date Time Data Package Options (please circle if requested) SDG Complete? Type VI (Raw Data) PER QUITE QC Summary Yes MP Relinguished by: Time Received by: Date Date Time Type I (Tier I) GLP Site-specific QC required? Yes No Type II (Tier II) Other (If yes, indicate QC sample and submit triplicate volume.) Relinquished by: Received by: Date Time Datei Time Type III (NJ Red. Del.) 3-21and one Type IV (CLP) Atle Berkle 0202 Lancaster Laboratories, Inc., 2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425, Gradien 2500 Copies: White and yellow should accompany samples to Lancaster Laboratories. The pink copy should be retained by the client 2102 Rev. 3/7/01

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# Analysis Request/Environmental Services Chain or Cusioay

For Lancaster Laboratories use only Acct. # 7802 Sample # 3792071-81

# Where quality is a science.

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pe IV (GLP)	ctody require	d? Yes No								$\triangleleft$		$ \mathcal{V} $	At	12 .	P-A A	A Gr.	15-21	50

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

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# Analysis Requesi/Environmental Services Chainfor Custouy

Where guality is a science.

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For Lancaster Laboratories use only Acct. # 102 Sample # 3792071-81

Please print Instructions on reverse side correspond with circled numbers.

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	Project Name/#: Muss /	American	_ PWSID #	!:		AN AL	Check H		1S-1		/		~		/			/	SCR #:		
	Project Manager: Sampler: <u>B</u> Schaller, Y	Hagivara	_ P.O.# _ Quote #	:			table. PDES		ontaine			Z'a'	<u> </u>	$\rightarrow$							of sample:
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	Type IV (CLP)	Internal Chain of Cus	tody requi	red? Yes No	` <del> </del>								~			40	-41.	Rich	¥(æ.	62	$\overline{\alpha}$
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### **CASE NARRATIVE**

### **Client: Kerr-McGee Corporation** SDG #: KMA06

# LANCASTER LABORATORIES PAH BY HPLC

# SAMPLE NUMBER(S) :

		X		
LL #'s	Sample Code	<u>Water</u>	<u>Comments</u>	
3792071	MA321	Х		
3792072	MA322	Х		
3792073	MA323	Х		
3792074	MA311	Х	5X Dilution	
3792074DL	MA311DL	Х	50X Dilution	、 、
3792075	MA312	Х		`•
3792076	MA313	Х		
3792077	MA341	Х		
3792078	MA342	Х		
3792079	MA343	Х		
3792080	MA3F1	Х	Client Blank	
LABORATORY	SUBMITTED QC:			
SBLKWB081	SBLKWB0812	Х	Method Blank	
081WBLCS	081WBLCS2	Х	Lab Control Sample	
081WBLCSD	081WBLCSD2	Х	Lab Control Sample Dup	

### SAMPLE PREPARATION:

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

Sample Code	Volume
MA321	921 mls
MA322	972 mls
MA311	994 mls
MA3F1	998 mis

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

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### Case Narrative SDG#: KMA06 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 the analysis of these samples. Therefore, a LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.

MA311 was analyzed at an initial 5X dilution due to the high concentration of target compounds.

Due to a number of concentrations above calibration range, MA311 was analyzed at a further 50X dilution.

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:

Ker CJN Date: 4-9-02 Charles J. Neslund

Group Leader, GC/MS Semivolatiles

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Case Narrative SDG# KMA06

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

151

SAMPLE ANALYSES

LL	Sample	Matrix	
Sample #	Designation	Soil Water	Comments
3792071	MA321	Х	
3792071MS	MA321	Х	Matrix Spike
3792072	MA322	Х	
3792073	MA323	Х	
3792074	MA311	Х	DF 5
3792075	MA312	Х	
3792076	MA313	Х	
3792077	MA341	, X	
3792078	MA342	Х	
3792079	MA343	Х	
3792080	MA3F1	Х	
3792081	MA3T2	Х	

### QUALITY CONTROL ANALYSES

BLK5127	Х	Method Blank
LCS5127	х	Lab Control Sample
LDS5127	Х	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. 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, 2.55um 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

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.

Page 1 of 2



Case Narrative SDG# KMA06

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

### DATA INTERPRETATION

No explanation is necessary for the data submitted.

Narrative reviewed and approved by:

Stabinger, Group Leader J. stete

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### CLIENT: Kerr-McGee Corporation SDG: KMA06

### LANCASTER LABORATORIES

### INSTRUMENTAL WET CHEMISTRY

### SAMPLE NUMBERS:

Sample #	Sample Code	<u>Comments</u>
3792071	MA321	
3792072	MA322	
3792073	MA323	
3792074	MA311	
3792075	MA312	
3792076	MA313	· •
3792077	MA341	
3792078	MA342	
3792079	MA343	

### ANALYSIS:

Samples 3792072 and 3792073 were submitted past the 48 hour holding time for nitrite nitrogen-analysis.

Samples 3792071,73,74,75 and 3792076 were not submitted with sufficient time for the nitrite nitrogen analysis to be completed within the 48 hour holding time.

Dilutions are listed in the table below.

SAMPL	NO3-N	TKN	TP as PO4	TOC
LCS	2		2	5
P786507 B,D,S		5		

### QUALITY CONTROL AND NONCONFORMANCE SUMMARY:

The matrix spike sample (P786507) for the total Kjeldahl nitrogen analysis was out of specifications.

### DATA INTERPRETATION:

No further interpretation is necessary for the data submitted.

Case Narrative Reviewed and Approved by:

\_\_\_Date: \_\_\_\_4/5/02 Sandra J. Miller Specialist/Coordinator

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CLIENT: Kerr-McGee Corporation SDG: KMA06

### LANCASTER LABORATORIES

### MISCELLANEOUS WET CHEMISTRY

SAMPLE NUMBERS:

Sample #	Sample Code	<u>Comments</u>
3792071	MA321	
3792072	MA322	
3792073	MA323	
3792074	MA311	
3792075	MA312	
3792076	MA313	· ·
3792077	MA341	
3792078	MA342	
3792079	MA343	
P786026	B,D	DF10

### ANALYSIS:

Dilutions for the ortho-phosphate as P analysis are listed in the comments section above.

Samples 3792071-79 were submitted past 48 hour holding time for ortho-phosphate as P analysis.

Samples 3792071-79 were submitted past 48 hour holding time for biochemical oxygen demand analysis with client consent.

### QUALITY CONTROL AND NONCONFORMANCE SUMMARY:

The duplicate sample for the chemical oxygen demand analysis was out of specifications.

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.

### DATA INTERPRETATION:

No further interpretation is necessary for the data submitted.

Case Narrative Reviewed and Approved by:

4-4-02 Date: Sandra J. Miller

Specialist/Coordinator

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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 Semi-Volatile (Polynuclear Aromatic Hydrocarbons-PAH 8310), and Volatile (BTEX 8021) analyses.

# <u>Polynuclear Aromatic Hydrocarbons (PAHs by HPLC, U.S. EPA Method 8310)</u> <u>Moss American Site</u> SDG # KMA07

# **1.Samples:**

	Lab Sample		Date	Date	Date
Client Code	<u>Number</u>	<u>Matrix</u>	<u>Collected</u>	Extracted	Analyzed
MA3-MW-20S-200302-01	3792114	Grab water	03/20/02	03/24/02	03/25/02
MA3-MW-20I-200302-02	3792115	Grab water	03/20/02	03/24/02	03/25/02
MA3-MW-34S-200302-03	3792116	Grab water	03/20/02	03/24/02	03/25/02
MA3-MW-7S-200302-04	3792117	Grab water	03/20/02	03/24/02	03/25/02
MA3-MW-7S-200302-04DUP	3792118	Grab water	03/20/02	03/24/02	03/25/02
MA3-MW-7I-200302-05	3792119	Grab water	03/20/02	03/24/02	03/25/02
MA3-MW-35S-200302-06	3792120	Grab water	03/20/02	03/24/02	03/25/02
MA3-MW-29S-200302-07	3792121	Grab water	03/20/02	03/24/02	03/26/02
MA3-MW-29S-200302-07DUP	3792122	Grab water	03/20/02	03/24/02	03/26/02
MA3-MW-36S-200302-08	3792123	Grab water	03/20/02	03/24/02	03/25/02
MA3-MW-37S-200302-09	3792124	Grab water	03/20/02	03/24/02	03/25/02
FB-02	3792125	Grab water	03/20/02	03/24/02	03/25/02
MA3-MW-27S-190302-10	3792126	Grab water	03/19/02	03/24/02	03/25/02
MA3-MW-32S-190302-11	3792127	Grab water	03/19/02	03/24/02	03/25/02
MA3-MW-32S-190302-11MS	3792128	Grab water	03/19/02	03/24/02	03/25/02
MA3-MW-32S-190302-11MSD	3792129	Grab water	03/19/02	03/24/02	03/25/02
MA3-MW-33S-190302-12	3792130	Grab water	03/19/02	03/24/02	03/25/02
MA3-MW-33S-190302-12DUP	3792131	Grab water	03/19/02	03/24/02	03/25/02

# 2. Holding Times:

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

# 3. Method Blank:

The method blank SBLKWH0812 was associated with this SDG. SBLKWH0812 was analyzed on 03/25/02 and associated with (3792114 thru 3792131). The method blank SBLKWH0812 results were free of contamination.

# 4. Matrix Spike/Matrix Spike Duplicate:

The matrix spike/matrix spike duplicate was performed on 3792127. The MS/MSD recoveries were within the quality control limit. Also, the RPD% values were acceptable.

# 5. Laboratory control Sample:

The laboratory control sample recoveries were within the quality control limit.

# 6. Surrogate:

All the surrogate recoveries for the analysis of (3792114 thru 3792131) were within the control limits on UV-Vis detector for nitrobenzene, and triphenylene. However, the surrogate was out in nitrobenzene for 3792117 and diluted out in 3792117DUP, 3792117DL. Therefore, qualify the positive results in 3792117, 3792117DUP, and 3792117DL as estimated (J).

Also, the surrogate recoveries from the fluorescence detector were within the acceptance quality control limits for triphenylene, except diluted out in 3792116, and 3792131DUP for triphenylene.

The surrogate recoveries from the fluorescence detector were outside the acceptance quality control limits and diluted out in all the samples for nitrobenzene.

Therefore, the surrogate was reported from the UV-Vis detector, due to reduce sensitivity on the fluorescence detector.

# 7. Retention Time:

The retention time recoveries were acceptable, except in method file HP03456.i acenaphthylene was outside the required RT window.

# 8. Initial and Continuing Calibration:

All the initial calibrations results were within the quality control limits (RSD >+/-30%), except in method file HP03456.i that were analyzed on 03/25/02 for acenaphthylene (0%).

All the continuing calibrations results were within the quality control limits (RSD >+/-25%), except in method file HP03456.i/02084-10R, HP03456.i/02084-21R and HP03456.i/02084-32R.d that analyzed on 03/25/02 for acenaphthylene was (0%).

According to the initial and continuing calibration above qualify acenaphthylene in the samples as estimated (J/UJ).

# BETX (U.S. EPA Method 8021B) SDG # KMA07

## **1.Samples:**

	Lab Sample		Date	Date
Client Code	Number	<u>Matrix</u>	<b>Collected</b>	Analyzed
MA3-MW-20S-200302-01	3792114	Grab water	03/20/02	03/22/02
MA3-MW-20I-200302-02	3792115	Grab water	03/20/02	03/22/02
MA3-MW-34S-200302-03	3792116	Grab water	03/20/02	03/22/02
MA3-MW-7S-200302-04	3792117	Grab water	03/20/02	03/22/02
MA3-MW-7S-200302-04DUP	3792118	Grab water	03/20/02	03/22/02
MA3-MW-7I-200302-05	3792119	Grab water	03/20/02	03/22/02
MA3-MW-35S-200302-06	3792120	Grab water	03/20/02	03/22/02
MA3-MW-29S-200302-07	3792121	Grab water	03/20/02	03/22/02
MA3-MW-29S-200302-07DUP	3792122	Grab water	03/20/02	03/22/02
MA3-MW-36S-200302-08	3792123	Grab water	03/20/02	03/22/02
MA3-MW-37S-200302-09	3792124	Grab water	03/20/02	03/22/02
FB-02	3792125	Grab water	03/20/02	03/22/02
MA3-MW-27S-190302-10	3792126	Grab water	03/19/02	03/22/02
MA3-MW-32S-190302-11	3792127	Grab water	03/19/02	03/22/02
MA3-MW-32S-190302-11MS	3792128	Grab water	03/19/02	03/23/02
MA3-MW-32S-190302-11MSD	3792129	Grab water	03/19/02	03/23/02
MA3-MW-33S-190302-12	3792130	Grab water	03/19/02	03/23/02
MA3-MW-33S-190302-12DUP	3792131	Grab water	03/19/02	03/22/02
TB-03	3792132	Grab water	03/19/02	03/22/02

# 2. Holding Times:

All samples were analyzed within the required holding times.

# 3. Method Blank:

The method blank BLK6594 was associated with this SDG. BLK6594 was analyzed on 03/22/02 associated with (3792114 thru 3792132). The method blank results were free of contamination.

## 4. Matrix Spike/Matrix Spike Duplicate :

The matrix spike was performed on sample 3792127. The matrix spike/matrix spike duplicate recoveries were within the quality control limits. Also. The RPD% values were acceptable.

# 5. Laboratory control Sample:

The laboratory control sample/laboratory control sample duplicate recoveries were within the quality control limits. Also, the relative percent difference (RPD%) values were acceptable.

## 6. Surrogate:

The method blank and investigated samples had recoveries within the acceptance quality control limits.

# 7. Initial and Continuing Calibration:

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

Please feel free to contact me at (847) 549-1042 or (847) 971-6800 with any question regarding these validation reports.

Sincerely

Tania Balikji-Shammo



#### ANALYTICAL RESULTS

Analysis Report

#### 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 801101. Samples arrived at the laboratory on Thursday, March 21, 2002.

Client Description	Lancaster Labs Number
MA3-MW-20S-200302-01 Grab Water Sample	3792114
MA3-MW-20I-200302-02 Grab Water Sample	3792115
MA3-MW-34S-200302-03 Grab Water Sample	3792116
MA3-MW-7S-200302-04 Grab Water Sample	3792117
MA3-MW-7S-200302-04-DUP Grab Water Sample	3792118
MA3-MW-7I-200302-05 Grab Water Sample	3792119
MA3-MW-35S-200302-06 Grab Water Sample	3792120
MA3-MW-29S-200302-07 Grab Water Sample	3792121
MA3-MW-29S-200302-07-DUP Grab Water Sample	3792122
MA3-MW-36S-200302-08 Grab Water Sample	3792123
MA3-MW-37S-200302-09 Grab Water Sample	3792124
FB-02 Grab Water Sample	3792125
MA3-MW-27S-190302-10 Grab Water Sample	3792126
MA3-MW-32S-190302-11 Unspiked Grab Water Sample	3792127
MA3-MW-32S-190302-11-MS Matrix Spike Grab Water	3792128
MA3-MW-32S-190302-11-MSD Matrix Spike Dup/Dup Wate	3792129
MA3-MW-33S-190302-12 Grab Water Sample	3792130
MA3-MW-33S-190302-12-DUP Grab Water Sample	3792131
TB-03 Water Sample	3792132

#### METHODOLOGY

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

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Kerr-McGee Corporation Roy F. Weston Attn: Dr. Jeff Ostmeyer Attn: Mr. Tom Graan



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

Respectfully Submitted,



Analysis Report



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Lancaster Laboratories Sample No. WW 3792114	
Collected:03/20/2002 09:30 by BS	Account Number: 07802
Submitted: 03/21/2002 09:20 Reported: 04/02/2002 at 11:59 Discard: 05/03/2002 MA3-MW-20S-200302-01 Grab Water Sample Moss American Site - WI	Kerr-McGee Corporation P.O. Box 25861 Oklahoma City OK 73125

3-20S SDG#: KMA07-01

				As Received		
CAT			As Received	Method		Dilution
No.	Analysis Name	CAS Number	Result	Detection Limit	Units	Factor
08213	BTEX (8021) ·					
00776	Benzene	71-43-2	N.D.	0.20	ug/1 🛰	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.UT	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	ua/1	1

TPS 5/10/02

		Laborato	ry Chroi	nicle			
CAT			-	Analysis		Dilution	
No.	Analysis Name	Method	Trial#	Date and Time	Analyst	Factor	
08213	BTEX (8021)	SW-846 8021B	1	03/22/2002 14:15	Steven J Stabinger	1	
00774	PAH's in Water by HPLC	SW-846 8310	1	03/25/2002 12:41	Mark A Clark	Ū 1	
						8	
						1	
	Lancaster Lab	oratories, Inc.				<u>ن</u>	



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## Lancaster Laboratories Sample No. WW 3792114

Collected:03/20/2002 09:30 by BS

Submitted: 03/21/2002 09:20 Reported: 04/02/2002 at 11:59 Discard: 05/03/2002 MA3-MW-20S-200302-01 Grab Water Sample Moss American Site - WI

3-205	SDG#: KMA07-01	
01146	GC VOA Water Prep	SW-846 5030B
03337	PAH Water Extraction	SW-846 3510C

Account Number: 07802

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

1	03/22/2002	14:15	Steven J Stabinger
1	03/24/2002	12:40	Felix C Arroyo



0014



Account Number: 07802



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#### Lancaster Laboratories Sample No. WW 3792115

Collected:03/20/2002 09:40 by BS

Submitted: 03/21/2002 09:20	Kerr-McGee Corporation
Reported: 04/02/2002 at 11:59	P.O. Box 25861
Discard: 05/03/2002	Oklahoma City OK 73125
MA3-MW-20I-200302-02 Grab Water Sample	
Moss American Site - WI	

3-201 SDG#: KMA07-02

				As Received		
CAT			As Received	Method		Dilution
No.	Analysis Name	CAS Number	Result	Detection Limit	Units	Factor
08213	, BTEX (8021)				~	
00776	Benzene	71-43-2	N.D.	0.20	ug/1	· 1
00777	Toluene	108-88-3	N.D.	0.20	ug/1	1
00778	Ethylbenzene	100-41-4	N.D.	0.20	ug/1	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. UJ	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	l
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 the nature of the sampl	e matrix, a red	uced aliquot		2.	
	was used for analysis. The re	porting limits	were raised			
	accordingly.					
						785 5/10/02



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



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#### Lancaster Laboratories Sample No. WW 3792115

Collected:03/20/2002 09:40 by BS

Submitted: 03/21/2002 09:20 Reported: 04/02/2002 at 11:59 Discard: 05/03/2002 MA3-MW-20I-200302-02 Grab Water Sample Moss American Site - WI Account Number: 07802

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

3-201	SDG#: KMA07-02					
CAT				Analysis		Dilution -
No.	Analysis Name	Method	Trial#	Date and Time	Analyst	Factor
08213	BTEX (8021)	SW-846 8021B	1	03/22/2002 14:49	Steven J Stabinger	1
00774	PAH's in Water by HPLC	SW-846 8310	1	03/25/2002 13:20	Mark A Clark	1
01146	GC VOA Water Prep	SW-846 5030B	1	03/22/2002 14:49	Steven J Stabinger	n.a.
03337	PAH Water Extraction	SW-846 3510C	1	03/24/2002 12:40	Felix C Arroyo	l

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Analysis Repor

#### Lancaster Laboratories Sample No. WW 3792116

by BS Collected:03/20/2002 11:40

Submitted: 03/21/2002 09:20 Reported: 04/02/2002 at 11:59 Discard: 05/03/2002 MA3-MW-34S-200302-03 Grab Water Sample Moss American Site - WI

Account Number: 07802

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

3-34S SDG#: KMA07-03

				As Received		
CAT		4	As Received	Method		Dilution
No.	Analysis Name	CAS Number	Result	Detection Limit	Units	Factor
08213	BTEX (8021)				<b>`</b> `	
					`	
00776	Benzene	71-43-2	8.9 J	2.0	ug/l 🏲	10
00777	Toluene	108-88-3	2.1 J	2.0	ug/l	10
00778	Ethylbenzene	100-41-4	23.	2.0	ug/l	10
00779	Total Xylenes	1330-20-7	74.	6.0	ug/l	10
	Due to dilution of the sample m	ade necessary	by the high level			
	of non-target compounds, normal	reporting lim	its were not			
	attained.					
00774	PAH's in Water by HPLC					
00775	Naphthalene	91-20-3	5,400.	20.	ug/l	20
00782	Acenaphthylene	208-96-8	N.D.UT	0.8	ug/l	1
00783	Acenaphthene	83-32-9	180.	0.8	ug/l	1
00784	Fluorene	86-73-7	80.	4.	ug/l	20
00785	Phenanthrene	85-01-8	85. '	2.	ug/l	20
00789	Anthracene	120-12-7	8.	0.8	ug/l	20
00807	Fluoranthene	206-44-0	9.	0.8	ug/l	20
00811	Pyrene	129-00-0	7.	0.2	ug/l	1
00812	Benzo(a) anthracene	56-55-3	0.6	0.02 .	ug/l	1
00818	Benzo(b)fluoranthene	205-99-2	0.2 J	0.04	ug/l	1
00823	Benzo(a)pyrene	50-32-8	0.2	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	0.08 J	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	0.5	0.08	ug/l	1
07410	Benzo(k)fluoranthene	207-08-9	0.09 J	0.02	ug/l	1

TBS 5/10/02 99947 7

Analysis Repor



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## Lancaster Laboratories Sample No. WW 3792116

Collected:03/20/2002 11:40 by BS -

Submitted: 03/21/2002 09:20 Reported: 04/02/2002 at 11:59 Discard: 05/03/2002 MA3-MW-34S-200302-03 Grab Water Sample Moss American Site - WI Account Number: 07802

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

3-34S	SDG#:	KMA07-03
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			Analysis		Dilution
Analysis Name	Method	Trial#	Date and Time	Analyst	Factor
BTEX (8021)	SW-846 8021B	1	03/22/2002 15:24	Steven J Stabinger	10
PAH's in Water by HPLC	SW-846 8310	1	03/25/2002 13:58	Mark A Clark	1
PAH's in Water by HPLC	SW-846 8310	1	03/26/2002 00:23	Mark A Clark	20
GC VOA Water Prep	SW-846 5030B	1	03/22/2002 15:24	Steven J Stabinger	n.a.
PAH Water Extraction	SW-846 3510C	1	03/24/2002 12:40	Felix C Arroyo	1
	Analysis Name BTEX (8021) PAH's in Water by HPLC PAH's in Water by HPLC GC VOA Water Prep PAH Water Extraction	Analysis Name         Method           BTEX (8021)         SW-846 8021B           PAH's in Water by HPLC         SW-846 8310           PAH's in Water by HPLC         SW-846 8310           GC VOA Water Prep         SW-846 5030B           PAH Water Extraction         SW-846 3510C	Analysis Name         Method         Trial#           BTEX (8021)         SW-846 8021B         1           PAH's in Water by HPLC         SW-846 8310         1           PAH's in Water by HPLC         SW-846 8310         1           GC VOA Water Prep         SW-846 5030B         1           PAH Water Extraction         SW-846 3510C         1	Analysis Name         Method         Trial#         Date and Time           BTEX (8021)         SW-846 8021B         1         03/22/2002 15:24           PAH's in Water by HPLC         SW-846 8310         1         03/25/2002 13:58           PAH's in Water by HPLC         SW-846 8310         1         03/26/2002 00:23           GC VOA Water Prep         SW-846 5030B         1         03/22/2002 15:24           PAH Water Extraction         SW-846 3510C         1         03/22/2002 12:40	AnalysisMethodTrial#Date and TimeAnalystBTEX (8021)SW-846 8021B103/22/2002 15:24Steven J StabingerPAH's in Water by HPLCSW-846 8310103/25/2002 13:58Mark A ClarkPAH's in Water by HPLCSW-846 8310103/26/2002 00:23Mark A ClarkGC VOA Water PrepSW-846 5030B103/22/2002 15:24Steven J StabingerPAH Water ExtractionSW-846 3510C103/24/2002 12:40Felix C Arroyo

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



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#### Lancaster Laboratories Sample No. WW 3792117

Collected:03/20/2002 11:50 by BS

Submitted: 03/21/2002 09:20 Reported: 04/02/2002 at 11:59 Discard: 05/03/2002 MA3-MW-7S-200302-04 Grab Water Sample Moss American Site - WI

Account Number: 07802

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

3-75-SDG#: KMA07-04

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilutior Factor
08213	BTEX (8021)				$\sim$	
00776	Penzone	71-42-2	26	2.0	wg/1	10
00770		108-88-3	ט 5.5	2.0	ug/1	10
00777	Toluene	100-41-4	N.U. 12	2.0	ug/1	10
00778	Echylbenzene Total Yulonoo	100-41-4	12.	2.0	ug/1	10
00779	Due to dilution of the semple r	1330-20-7	30. h. ha hish laval	6.0	ug/ I	10
	of non-target compounds, normal attained.	reporting lim	its were not			
00774	PAH's in Water by HPLC					
00775	Naphthalene	91-20-3	2,100.5	20.	ug/l	20
00782	Acenaphthylene	208-96-8	N.D.UT	0.8	ug/l	1
00783	Acenaphthene	83-32-9	58. T	0.8	ug/l	1
00784	Fluorene	86-73-7	8.5	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	uq/l	1
07410	Benzo(k)fluoranthene	207-08-9	N.D.	0.02	ug/l	1
	The surrogate data is outside t	he QC limits d	ue to unresolvabl	e matrix	-	
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problems evident in the sample extraction.

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



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#### Lancaster Laboratories Sample No. WW 3792117

Collected:03/20/2002 11:50 by BS

MA3-MW-7S-200302-04 Grab Water Sample

Account Number: 07802

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

Moss American Site - WI

Submitted: 03/21/2002 09:20

Reported: 04/02/2002 at 11:59

3-75- SDG#: KMA07-04

Discard: 05/03/2002

		Laboratory	/ Chro	nicle		
CAT		-		Analysis		Dilution
No.	Analysis Name	Method	Trial#	Date and Time	Analyst	Factor
08213	BTEX (8021)	SW-846 8021B	1	03/22/2002 15:58	Steven J Stabinger	10
00774	PAH's in Water by HPLC	SW-846 8310	1	03/25/2002 15:16	Mark A Clark	1
00774	PAH's in Water by HPLC	SW-846 8310	1	03/26/2002 01:05	Mark A Clark	20
01146	GC VOA Water Prep	SW-846 5030B	1	03/22/2002 15:58	Steven J Stabinger	n.a
03337	PAH Water Extraction	SW-846 3510C	1	03/24/2002 12:40	Felix C Arroyo	1



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Analysis Report

Account Number: 07802

#### Lancaster Laboratories Sample No. WW 3792118

Collected:03/20/2002 11:50 by BS

Submitted: 03/21/2002 09:20 Kerr-McGee Corporation Reported: 04/02/2002 at 11:59 P.O. Box 25861 Discard: 05/03/2002 Oklahoma City OK 73125 MA3-MW-7S-200302-04-DUP Grab Water Sample Moss American Site - WI

SDG#: KMA07-05 3-7SD

				As Received		
CAT			As Received	Method		Dilution
No.	Analysis Name	CAS Number	Result	Detection Limit	Units	Factor
08213	, BTEX (8021)					
00776	Benzene	71-43-2	3.3 J	2.0	ug/l	<b>1</b> 0
00777	Toluene	108-88-3	N.D.	2.0	ug/l	10
00778	Ethylbenzene	100-41-4	12.	2.0	uq/l	10
00779	Total Xylenes	1330-20-7	34.	6.0	ug/l	10
	Due to dilution of the sample	e made necessary	by the high leve	1		
	of non-target compounds, nor	nal reporting liπ	its were not			
	attained.					
00774	PAH's in Water by HPLC					
00775	Naphthalene	91-20-3	1,200. J	10.	ug/l	10
00782	Acenaphthylene	208-96-8	N.D. UT	0.9	ug/1	1
00783	Acenaphthene	83-32-9	56. T	0.9	uq/l	1
00784	Fluorene	86-73-7	8. T	0.2	uq/l	1
00785	Phenanthrene	85-01-8	N.D. '	0.09	ug/1	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 the nature of the samp	ole matrix, a red	uced aliquot		2.	
	was used for analysis. The r	eporting limits	were raised			
	accordingly.					





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#### Lancaster Laboratories Sample No. WW 3792118

Collected:03/20/2002 11:50 by BS

Submitted: 03/21/2002 09:20 Reported: 04/02/2002 at 11:59 Discard: 05/03/2002 MA3-MW-7S-200302-04-DUP Grab Water Sample Moss American Site - WI Account Number: 07802

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

3-7SD SDG#: KMA07-05

Laboratory Chronicle							
CAT				Analysis		Dilution	
No.	Analysis Name	Method	Trial#	Date and Time	Analyst	Factor	*
08213	BTEX (8021)	SW-846 8021B	1	03/22/2002 16:33	Steven J Stabinger	10	
00774	PAH's in Water bý HPLC	SW-846 8310	1	03/25/2002 15:54	Mark A Clark	1	
00774	PAH's in Water by HPLC	SW-846 8310	1	03/26/2002 01:47	Mark A Clark	10	
01146	GC VOA Water Prep	SW-846 5030B	1	03/22/2002 16:33	Steven J Stabinger	n.a.	·
03337	PAH Water Extraction	SW-846 3510C	l	03/24/2002 12:40	Felix C Arroyo	1	

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Analysis Report

Account Number: 07802



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#### 3792119 Jancaster Laboratories Sample No. WW

Collected:03/20/2002 13:00 by BS

Submitted: 03/21/2002 09:20 Kerr-McGee Corporation Reported: 04/02/2002 at 11:59 P.O. Box 25861 Discard: 05/03/2002 Oklahoma City OK 73125 MA3-MW-7I-200302-05 Grab Water Sample Moss American Site - WI

3-71- SDG#: KMA07-06

				As Received		
CAT			As Received	Method		Dilution
No.	Analysis Name	CAS Number	Result	Detection Limit	Units	Factor
08213	, BTEX (8021)				~	
00776	Benzene	71-43-2	N.D	0.20	ug/1	► 1
00777	Toluene	108-88-3	N.D.	0.20	ug/1	1
00778	Ethylbenzene	100-41-4	N.D.	0.20	ug/1	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.UJ	0.9	ug/l	1
00783	Acenaphthene	83-32-9	N.D.	0.9	ug/l	1
00784	Fluorene	86-73-7	N.D.	0.2	ug/l	1
00785	Phenanthrene	85-01-8	N.D.	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	uq/l	1
07410	Benzo(k)fluoranthene	207-08-9	N.D.	0.02	ug/l	1
	Due to the nature of the sam	nple matrix, a red	uced aliquot		<b>.</b>	
	was used for analysis. The	reporting limits	were raised			
	accordingly.					

Laboratory Chronicle



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#### 3792119 Lancaster Laboratories Sample No. WW

Collected:03/20/2002 13:00 by BS

Submitted: 03/21/2002 09:20 Reported: 04/02/2002 at 11:59 Discard: 05/03/2002 MA3-MW-7I-200302-05 Grab Water Sample Moss American Site - WI

Account Number: 07802

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

CAT			
No.	Analysis	Name	м

CAT				А
No.	Analysis Name	Method	Trial#	Dat
08213	BTEX (8021)	SW-846 8021B	1	03/2
00774	PAH's in Water by HPLC	SW-846 8310	1	03/2
01146	GC VOA Water Prep	SW-846 5030B	1	03/2
03337	PAH Water Extraction	SW-846 3510C	1	03/2

Analysis					
rial#	Date and Time				
1	03/22/2002 17:07				
1	03/25/2002 16:33				
1	03/22/2002 17:07				
1	03/24/2002 12:40				



Factor 1 1 n.a.

1

Dilution



Account Number: 07802



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#### ancaster Laboratories Sample No. WW 3792120

Collected:03/20/2002 13:10 by BS

Submitted: 03/21/2002 09:20	Kerr-McGee Corporation
Reported: 04/02/2002 at 11:59	P.O. Box 25861
Discard: 05/03/2002	Oklahoma City OK 73125
MA3-MW-35S-200302-06 Grab Water Sample	
Moss American Site - WI	

3-355 SDG#: KMA07-07

1				As Received		
CAT	-		As Received	Method		Dilution
No.	Analysis Name	CAS Number	Result	Detection Limit	Units	Factor
08213	, BTEX (8021)					
00776	Benzene	71-43-2	N.D.	0.20	uq/1 🎽	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.UT	0.8	uq/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	0.1 J	0.08	ug/l	1
00789	Anthracene	120-12-7	0.2 J	0.04	ug/l	1
00807	Fluoranthene	206-44-0	0.6	0.04	ug/l	1
00811	Pyrene	129-00-0	0.4 J '	0.2	ug/l	1
00812	Benzo(a) anthracene	56-55-3	0.03 J	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

					7B 5-	5 10-02
		Laboratory	/ Chro	nicle		
CAT		-	•	Analysis		Dilution
No.	Analysis Name	Method	Trial#	Date and Time	Analyst	Factor
08213	BTEX (8021)	SW-846 8021B	1	03/22/2002 17:45	Steven J Stabinger	1
00774	PAH's in Water by HPLC	SW-846 8310	1	03/25/2002 17:11	Mark A Clark	Ĉ 1



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



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#### Lancaster Laboratories Sample No. WW 3792120

Collected:03/20/2002 13:10 by BS

Submitted: 03/21/2002 09:20 Reported: 04/02/2002 at 11:59 Discard: 05/03/2002 MA3-MW-35S-200302-06 Grab Water Sample Moss American Site - WI

3-355	SDG#: KMA07-07		
01146	GC VOA Water Prep	SW-846	5030B
03337	PAH Water Extraction	SW-846	3510C

Account Number: 07802

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

1	03/22/2002 17:45	Steven J Stabinger	n.a.
1	03/24/2002 12:40	Felix C Arroyo	1



8826



Account Number: 07802



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## Lancaster Laboratories Sample No. WW 3792121

Collected:03/20/2002 16:30 by BS

Submitted: 03/21/2002 09:20	Kerr-McGee Corporation
Reported: 04/02/2002 at 11:59	P.O. Box 25861
Discard: 05/03/2002	Oklahoma City OK 73125
MA3-MW-29S-200302-07 Grab Water Sample	
Moss American Site - WI	

3-295 SDG#: KMA07-08

				As Received		
CAT			As Received	Method		Dilution
No.	Analysis Name	CAS Number	Result	Detection Limit	Units	Factor
08213	, BTEX (8021)					
00776	Benzene	71-43-2	N.D.	0.20	ug/1 🎽	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	м.д. €	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.	0.09	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	l

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# Laboratory Chronicle

CAT				Analysis		Dilution
No.	Analysis Name	Method	Trial#	Date and Time	Analyst	Factor
08213	BTEX (8021)	SW-846 8021B	1	03/22/2002 20:38	Steven J Stabinger	1
00774	PAH's in Water by HPLC	SW-846 8310	1	03/26/2002 02:26	Mark A Clark	01
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						- Ă
						4
	Lancaster Lab	oratories, Inc.				(





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#### Lancaster Laboratories Sample No. WW 3792121

Collected:03/20/2002 16:30 by BS

Submitted: 03/21/2002 09:20 Reported: 04/02/2002 at 11:59 Discard: 05/03/2002 MA3-MW-29S-200302-07 Grab Water Sample Moss American Site - WI

3-295	SDG#: KMA07-08	
01146	GC VOA Water Prep	SW-846 5030B
03337	PAH Water Extraction	SW-846 3510C

Account Number: 07802

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

1	03/22/2002	20:38	Steven J
1	03/24/2002	12:40	Felix C A

n J Stabinger C Arroyo n.a.

1



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Analysis Report



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#### Lancaster Laboratories Sample No. WW 3792122

Collected:03/20/2002 16:30 · by BS

Submitted: 03/21/2002 09:20 Reported: 04/02/2002 at 11:59 Discard: 05/03/2002 MA3-MW-29S-200302-07-DUP Grab Water Sample Moss American Site - WI Account Number: 07802

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

329SD SDG#: KMA07-09

				As Received		
CAT			As Received	Method		Dilution
No.	Analysis Name	CAS Number	Result	Detection Limit	Units	Factor
08213	BTEX (8021)				$\mathbf{\tilde{z}}$	
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	l
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.V.T	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

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# Laboratory Chronicle

CAT			Analysis			Dilutio	
No.	Analysis Name	Method	Trial#	Date and Time	Analyst	Factor	
08213	BTEX (8021)	SW-846 8021B	1	03/22/2002 21:12	Steven J Stabinger	1	
00774	PAH's in Water by HPLC	SW-846 8310	1	03/26/2002 03:04	Mark A Clark	Ŋ 1	



Lancaster Laboratories, Inc. 2425 New Holland Pike PO Box 12425 Lancaster, PA 17605-2425 020



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#### Lancaster Laboratories Sample No. WW 3792122

Collected:03/20/2002 16:30 by BS

Submitted: 03/21/2002 09:20 Reported: 04/02/2002 at 11:59 Discard: 05/03/2002 MA3-MW-29S-200302-07-DUP Grab Water Sample Moss American Site - WI

329SD	SDG#: KMA07-09		
01146	GC VOA Water Prep	SW-846	5030B
03337	PAH Water Extraction	SW-846	3510C

Account Number: 07802

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

1	03/22/2002 21:12	Steven J Stabinger	n.a.
l	03/24/2002 12:40	Felix C Arroyo	1







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#### Lancaster Laboratories Sample No. WW 3792123

Collected:03/20/2002 16:40 by BS

Submitted: 03/21/2002 09:20 Reported: 04/02/2002 at 11:59 Discard: 05/03/2002 MA3-MW-36S-200302-08 Grab Water Sample Moss American Site - WI Account Number: 07802

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

3-365 SDG#: KMA07-10

				As Received		
CAT			As Received	Method		Dilution
No.	Analysis Name	CAS Number	Result	Detection Limit	Units	Factor
08213	, BTEX (8021)				~	
					ì	
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.	uq/l	1
00782	Acenaphthylene	208-96-8	N.D.UJ	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/1	1

# 7B 5 02

## Laboratory Chronicle

CAT			Analysis			Dilutior	
No.	Analysis Name	Method	Trial#	Date and Time	Analyst	Factor	
08213	BTEX (8021)	SW-846 8021B	1	03/22/2002 21:47	Steven J Stabinger	1	
00774	PAH's in Water by HPLC	SW-846 8310	1	03/25/2002 19:07	Mark A Clark	01	

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Analvsis Repor

#### Lancaster Laboratories Sample No. WW 3792123

Collected:03/20/2002 16:40 by BS

Submitted: 03/21/2002 09:20 Reported: 04/02/2002 at 11:59 Discard: 05/03/2002 MA3-MW-36S-200302-08 Grab Water Sample Moss American Site - WI

\_ \_ ...

Account Number: 07802 Kerr-McGee Corporation

P.O. Box 25861 Oklahoma City OK 73125

3-365	SDG#: KMA07-10					
01146	GC VOA Water Prep	SW-846 5030B	1	03/22/2002 21:47	Steven J Stabinger	n.a.
03337	PAH Water Extraction	SW-846 3510C	1	03/24/2002 12:40	Felix C Arroyo	1



Analysis Repo



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#### Lancaster Laboratories Sample No. WW 3792124

Collected:03/20/2002 16:50 by BS

Submitted: 03/21/2002 09:20 Reported: 04/02/2002 at 11:59 Discard: 05/03/2002 MA3-MW-375-200302-09 Grab Water Sample Moss American Site - WI

Account Number: 07802

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

3-375 SDG#: KMA07-11

				As Received		
CAT			As Received	Method		Dilution
NO.	Analysis Name	CAS Number	Result	Detection Limit	Units	Factor
08213	BTEX (8021)				$\mathbf{i}$	
00776	Benzene	71-43-2	N.D.	0.20	uq/l	. 1
00777	Toluene	108-88-3	N.D.	0.20	uq/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.UT	0.8	uq/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/1	1

# Laboratory Chronicle

CAT		Analysis			Dilutio	
No.	Analysis Name	Method	Trial#	Date and Time	Analyst	Factor
08213	BTEX (8021)	SW-846 8021B	1	03/22/2002 22:22	Steven J Stabinger	1
00774	PAH's in Water by HPLC	SW-846 8310	1	03/25/2002 19:46	Mark A Clark	Ø 1

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#### Lancaster Laboratories Sample No. WW 3792124

Collected:03/20/2002 16:50 by BS

Submitted: 03/21/2002 09:20 Reported: 04/02/2002 at 11:59 Discard: 05/03/2002 MA3-MW-37S-200302-09 Grab Water Sample Moss American Site - WI

3-37S	SDG#: KMA07-11	
01146	GC VOA Water Prep	SW-846 5030B
03337	PAH Water Extraction	SW-846 3510C

Account Number: 07802

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

1	03/22/2002 2	2:22	Steven J	Stabinger	n.a.
1	03/24/2002 1	2:40	Felix C A	Arroyo	l







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#### Lancaster Laboratories Sample No. WW 3792125

Collected:03/20/2002 08:00 by BS

Submitted: 03/21/2002 09:20 Reported: 04/02/2002 at 12:00 Discard: 05/03/2002 FB-02 Grab Water Sample Moss American Site - WI

Account Number: 07802

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

3FB02 SDG#: KMA07-12FB

				As Received		
CAT			As Received	Method		Dilution
No.	Analysis Name	CAS Number	Result	Detection Limit	Units	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	l
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.UJ	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	l
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			Analysis			Dilution
No.	Analysis Name	Method	Trial#	Date and Time	Analyst	Factor
08213	BTEX (8021)	SW-846 8021B	1	03/22/2002 20:03	Steven J Stabinger	1
00774	PAH's in Water by HPLC	SW-846 8310	1	03/25/2002 20:24	Mark A Clark	Ø 1

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TBS 5-10-02



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#### Lancaster Laboratories Sample No. WW 3792125

Collected:03/20/2002 08:00by BSAccount Number: 07802Submitted: 03/21/2002 09:20Kerr-McGee CorporationReported: 04/02/2002 at 12:00P.O. Box 25861Discard: 05/03/2002Oklahoma City OK 73125FB-02 Grab Water SampleMoss American Site - WI

3FB02	SDG#: KMA07-12FB		
01146	GC VOA Water Prep	SW-846	5030B
03337	PAH Water Extraction	SW-846	3510C

1	03/22/2002 20:03	Steven J Stabinger
1	03/24/2002 12:40	Felix C Arroyo



0070





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## Lancaster Laboratories Sample No. WW 3792126

Collected:03/19/2002 17:05by BSAccount Number: 07802Submitted: 03/21/2002 09:20Kerr-McGee CorporationReported: 04/02/2002 at 12:00P.O. Box 25861Discard: 05/03/2002Oklahoma City OK 73125MA3-MW-27S-190302-10 Grab Water SampleOklahoma City OK 73125

3-275 SDG#: KMA07-13

				AS RECEIVED		
CAT			As Received	Method		Dilution
No.	Analysis Name	CAS Number	Result	Detection Limit	Units	Factor
08213	, BTEX (8021)				$\sim$	
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.	uq/l	1
00782	Acenaphthylene	208-96-8	N.D.UT	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/1	1

TBS -02

# Laboratory Chronicle

CAT			Analysis			Dilution
No.	Analysis Name	Method	Trial#	Date and Time	Analyst	Factor
08213	BTEX (8021)	SW-846 8021B	1	03/22/2002 22:56	Steven J Stabinger	1
00774	PAH's in Water by HPLC	SW-846 8310	1	03/25/2002 21:03	Mark A Clark	<u>6</u> 1



Lancaster Laboratories, Inc. 2425 New Holland Pike PO Box 12425 Lancaster, PA 17605-2425 837 7



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#### Lancaster Laboratories Sample No. WW 3792126

Collected:03/19/2002 17:05 by BS

Submitted: 03/21/2002 09:20 Reported: 04/02/2002 at 12:00 Discard: 05/03/2002 MA3-MW-27S-190302-10 Grab Water Sample Moss American Site - WI

 3-27S
 SDG#:
 KMA07-13

 01146
 GC VOA Water Prep
 SW-846 5030B

 03337
 PAH Water Extraction
 SW-846 3510C

Account Number: 07802

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

1	03/22/2002 22:56	Steven J Stabinger	n.a.
1	03/24/2002 12:40	Felix C Arroyo	1



8078



Account Number: 07802



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#### Lancaster Laboratories Sample No. WW 3792127

Collected:03/19/2002 17:15 by BS

Submitted: 03/21/2002 09:20 Kerr-McGee Corporation Reported: 04/02/2002 at 12:00 P.O. Box 25861 Discard: 05/03/2002 Oklahoma City OK 73125 MA3-MW-32S-190302-11 Unspiked Grab Water Sample Moss American Site - WI

3-325 SDG#: KMA07-14BKG

				As Received		
CAT			As Received	Method		Dilution
No.	Analysis Name	CAS Number	Result	Detection Limit	Units	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.J.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.	0.2	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	uq/l	1

## Laboratory Chronicle

CAT			Analysis			Dilutior	
No.	Analysis Name	Method	Trial#	Date and Time	Analyst	Factor	
08213	BTEX (8021)	SW-846 8021B	1	03/22/2002 23:31	Steven J Stabinger	1	
00774	PAH's in Water by HPLC	SW-846 8310	1	03/25/2002 09:29	Mark A Clark	ý 1	
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	l annastor i ab	noratories Inc					

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Analysis Report

Account Number: 07802

Kerr-McGee Corporation

Oklahoma City OK 73125

P.O. Box 25861

#### Lancaster Laboratories Sample No. WW 3792127

Collected:03/19/2002 17:15 by BS

Submitted: 03/21/2002 09:20 Reported: 04/02/2002 at 12:00 Discard: 05/03/2002 MA3-MW-32S-190302-11 Unspiked Grab Water Sample Moss American Site - WI

3-32S	SDG#: KMA07-14BKG					
01146	GC VOA Water Prep	SW-846 5030B	1	03/22/2002 23:31	Steven J Stabinger	n.a.
03337	PAH Water Extraction	SW-846 3510C	1	03/24/2002 12:40	Felix C Arroyo	1





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

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Account Number: 07802

Kerr-McGee Corporation

Oklahoma City OK 73125

P.O. Box 25861



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#### Lancaster Laboratories Sample No. WW 3792128

Collected:03/19/2002 17:15 by BS

Submitted: 03/21/2002 09:20 Reported: 04/02/2002 at 12:00 Discard: 05/03/2002 MA3-MW-32S-190302-11-MS Matrix Spike Grab Water Moss American Site - WI

3-32S SDG#: KMA07-14MS

				As Received		
CAT			As Received	Method		Dilution
No.	Analysis Name	CAS Number	Result	Detection Limit	Units	Factor
08213	BTEX (8021)					
00776	Benzene	71-43-2	21.	0.20	ug/l	1
00777	Toluene	108-88-3	21.	0.20	ug/1	1
00778	Ethylbenzene	100-41-4	21.	0.20	uq/1	1
00779	Total Xylenes	1330-20-7	65.	0.60	ug/l	1
00774	PAH's in Water by HPLC					
00775	Naphthalene	91-20-3	150.	1.	ug/l	1
00782	Acenaphthylene	208-96-8	170.7	0.8	ug/l	1
00783	Acenaphthene	83-32-9	170.	0.8	ug/l	1
00784	Fluorene	86-73-7	17.	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	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	11.	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

TBS

## Laboratory Chronicle

CAT				Analysis		Dilution
No.	Analysis Name	Method	Trial#	Date and Time	Analyst	Factor
08213	BTEX (8021)	SW-846 8021B	1	03/23/2002 00:05	Steven J Stabinger	r. 1
00774	PAH's in Water by HPLC	SW-846 8310	1	03/25/2002 10:07	Mark A Clark	0 6
						<i>₽</i>



Lancaster Laboratories, Inc. 2425 New Holland Pike PO Box 12425 Lancaster, PA 17605-2425 4 1



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#### 3792128 Lancaster Laboratories Sample No. WW

Collected:03/19/2002 17:15 by BS

Submitted: 03/21/2002 09:20 Reported: 04/02/2002 at 12:00 Discard: 05/03/2002 MA3-MW-32S-190302-11-MS Matrix Spike Grab Water Moss American Site - WI

3-32S SDG#: KMA07-14MS 01146 GC VOA Water Prep SW-846 5030B SW-846 3510C PAH Water Extraction 03337

Oklahoma City OK 73125

P.O. Box 25861

Account Number: 07802

Kerr-McGee Corporation

1 03/23/2002 00:05 1 03/24/2002 12:40 Felix C Arroyo

Steven J Stabinger

n.a. 1








Page 1 of 2

#### Lancaster Laboratories Sample No. WW 3792129

Collected:03/19/2002 17:15 by BS

Account Number: 07802

Submitted: 03/21/2002 09:20Kerr-McGee CorporationReported: 04/02/2002 at 12:00P.O. Box 25861Discard: 05/03/2002Oklahoma City OK 73125MA3-MW-32S-190302-11-MSD Matrix Spike Dup/Dup WateMoss American Site - WI

3-325 SDG#: KMA07-14MSD

				As Received				
CAT			As Received	Method		Dilution		
No.	Analysis Name	CAS Number	Result	Detection Limit	Units	Factor		
08213	, BTEX (8021)				$\sim$			
						•		
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	66.	0.60	ug/l	l		
00774	PAH's in Water by HPLC							
00775	Naphthalene	91-20-3	160.	1.	ug/l	1		
00782	Acenaphthylene	208-96-8	180.	0.8	ug/l	l		
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	21.	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	uq/1	1		
00823	Benzo(a)pyrene	50-32-8	2.	0.02	uq/l	1		
00895	Dibenz (a,h) anthracene	53-70-3	3.	0.04	uq/1	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	uq/l	1		
07410	Benzo(k)fluoranthene	207-08-9	1.	0.02	ug/l	1		

#### Laboratory Chronicle

CAT					Dilution	
No.	Analysis Name	Method	Trial#	Date and Time	Analyst	Factor
08213	BTEX (8021)	SW-846 8021B	1	03/23/2002 00:40	Steven J Stabinger	o 1
00774	PAH's in Water by HPLC	SW-846 8310	l	03/25/2002 10:46	Mark A Clark	
						10 U



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



Page 2 of 2

Lancaster Laboratories Sample No. WW 3792129

Collected:03/19/2002 17:15 by BS

Account Number: 07802

Submitted: 03/21/2002 09:20Kerr-McGee CorporationReported: 04/02/2002 at 12:00P.O. Box 25861Discard: 05/03/2002Oklahoma City OK 73125MA3-MW-32S-190302-11-MSD Matrix Spike Dup/Dup WateMoss American Site - WI

3-32S	SDG#: KMA07-14MSD					
01146	GC VOA Water Prep	SW-846 5030B	1	03/23/2002 00:40	Steven J Stabinger	n.a.
03337	PAH Water Extraction	SW-846 3510C	1	03/24/2002 12:40	Felix C Arroyo	1

00044 4



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

Account Number: 07802



Page 1 of 2

#### Lancaster Laboratories Sample No. WW 3792130

Collected:03/19/2002 17:25 by BS

Submitted: 03/21/2002 09:20 Kerr-McGee Corporation Reported: 04/02/2002 at 12:00 P.O. Box 25861 Discard: 05/03/2002 Oklahoma City OK 73125 MA3-MW-33S-190302-12 Grab Water Sample Moss American Site - WI

SDG#: KMA07-15 3-335

				As Received		
CAT			As Received	Method		Dilution
No.	Analysis Name	CAS Number	Result	Detection Limit	Units	Factor
08213	BTEX (8021)				$\sim$	
00776	Benzene	71-43-2	ND	1 0		F
00777	Toluene	108-88-3	N.D.	1.0	ug/1	5
00778	Fthylbenzene	100-41-4	9 7	1.0	ug/1	5
00770	Total Vylenes	1770-20-7	2,2	1.0	ug/1	5
00775	Due to dilution of the sample ma	de necessary b	44.	3.0	ug/1	5
	of non-target compounds, normal attained.	reporting limi	ts were not			
00774	PAH's in Water by HPLC					
00775	Naphthalene	91-20-3	2,000.	20.	ug/l	20
00782	Acenaphthylene	208-96-8	N.D. UT	0.8	ug/1	1
00783	Acenaphthene	83-32-9	110.	0.8	uq/l	1
00784	Fluorene	86-73-7	33.	0.2	ug/1	1
00785	Phenanthrene	85-01-8	2. '	0.08	ug/1	1
00789	Anthracene	120-12-7	N.D.	0.04	ug/1	1
00807	Fluoranthene	206-44-0	N.D.	0.04	ug/1	1
00811	Pyrene	129-00-0	N.D.	0.2	ug/1	1
00812	Benzo(a) anthracene	56-55-3	N.D.	0.02	uq/1	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/1	1
00895	Dibenz (a, h) anthracene	53-70-3	N.D.	0.04	ug/1	1
00898	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.08	ug/1	1
00907	Benzo(g,h,i)perylene	191-24-2	N.D.	0.1	ug/1	1
07409	Chrysene	218-01-9	N.D.	0.08	$u_{\alpha}/1$	1
07410	Benzo(k)fluoranthene	207-08-9	N.D.	0.02	1	

Laboratory Chronicle

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Page 2 of 2

#### Lancaster Laboratories Sample No. WW 3792130

Collected:03/19/2002 17:25 by BS

Submitted: 03/21/2002 09:20 Reported: 04/02/2002 at 12:00 Discard: 05/03/2002 MA3-MW-33S-190302-12 Grab Water Sample Moss American Site - WI Account Number: 07802

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

3-33S SDG#: KMA07-15

			Dilution		
Analysis Name	Method	Trial#	Date and Time	Analyst	Factor
BTEX (8021)	SW-846 8021B	1	03/23/2002 01:14	Steven J Stabinger	5
PAH's in Water by HPLC	SW-846 8310	1	03/25/2002 22:20	Mark A Clark	1
PAH's in Water by HPLC	SW-846 8310	1	03/26/2002 03:47	Mark A Clark	20
GC VOA Water Prep	SW-846 5030B	1	03/23/2002 01:14	Steven J Stabinger	n.a.
PAH Water Extraction	SW-846 3510C	1	03/24/2002 12:40	Felix C Arroyo	1
	Analysis Name BTEX (8021) PAH's in Water by HPLC PAH's in Water by HPLC GC VOA Water Prep PAH Water Extraction	Analysis NameMethodBTEX (8021)SW-846 8021BPAH's in Water by HPLCSW-846 8310PAH's in Water by HPLCSW-846 8310GC VOA Water PrepSW-846 5030BPAH Water ExtractionSW-846 3510C	Analysis Name Method Trial#   BTEX (8021) SW-846 8021B 1   PAH's in Water by HPLC SW-846 8310 1   PAH's in Water by HPLC SW-846 8310 1   GC VOA Water Prep SW-846 5030B 1   PAH Water Extraction SW-846 3510C 1	Analysis Name Method Trial# Date and Time   BTEX (8021) SW-846 8021B 1 03/23/2002 01:14   PAH's in Water by HPLC SW-846 8310 1 03/25/2002 22:20   PAH's in Water by HPLC SW-846 8310 1 03/26/2002 03:47   GC VOA Water Prep SW-846 5030B 1 03/23/2002 01:14   PAH Water Extraction SW-846 3510C 1 03/24/2002 12:40	Analysis NameMethodTrial#Date and TimeAnalystBTEX (8021)SW-846 8021B103/23/2002 01:14Steven J StabingerPAH's in Water by HPLCSW-846 8310103/25/2002 22:20Mark A ClarkPAH's in Water by HPLCSW-846 8310103/26/2002 03:47Mark A ClarkGC VOA Water PrepSW-846 5030B103/23/2002 01:14Steven J StabingerPAH Water ExtractionSW-846 3510C103/24/2002 12:40Felix C Arroyo

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

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Account Number: 07802



Page 1 of 2

#### Lancaster Laboratories Sample No. WW 3792131

Collected:03/19/2002 17:25 by BS

Submitted: 03/21/2002 09:20Kerr-McGee CorporationReported: 04/02/2002 at 12:00P.O. Box 25861Discard: 05/03/2002Oklahoma City OK 73125MA3-MW-33S-190302-12-DUP Grab Water SampleMoss American Site - WI

333SD SDG#: KMA07-16

				As Received		
CAT			As Received	Method		Dilution
No.	Analysis Name	CAS Number	Result	Detection Limit	Units	Factor
082,13	BTEX (8021)				$\sim$	
		<b>F1 1 2 2</b>			<b>~</b>	-
00776	Benzene	/1-43-2	N.D.	1.0	ug/1	5
00777	Toluene	108-88-3	N.D.	1.0	ug/1	5
00778	Ethylbenzene	100-41-4	7.2	1.0	ug/l	5
00779	Total Xylenes	1330-20-7	19.	3.0	ug/l	5
	Due to dilution of the sample m	ade necessary l	by the high level			
	of non-target compounds, normal	reporting lim	its were not			
	attained.					
00774	PAH's in Water by HPLC					
00775	Naphthalene	91-20-3	2,200.	20.	ug/l	20
00782	Acenaphthylene	208-96-8	43. T	0.8	ug/l	1
00783	Acenaphthene	83-32-9	130.	0.8	ug/l	1
00784	Fluorene	86-73-7	37.	0.2	ug/l	1
00785	Phenanthrene	85-01-8	2. '	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/1	1
00898	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.08	ug/1	1
00907	Benzo(q,h,i)pervlene	191-24-2	N.D.	0.1	ug/1	1
07409	Chrvsene	218-01-9	N.D.	0.08	ug/1	1
07410	Benzo(k) fluoranthene	207-08-9	N.D.	0.02	ug/1	-
					~3/ -	*

Laboratory Chronicle



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

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Page 2 of 2

#### Lancaster Laboratories Sample No. WW 3792131

Collected:03/19/2002 17:25 by BS

Submitted: 03/21/2002 09:20 Reported: 04/02/2002 at 12:00 Discard: 05/03/2002 MA3-MW-33S-190302-12-DUP Grab Water Sample Moss American Site - WI Account Number: 07802

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

3	3	35	D	SDG# :	:	кма	0	7 -	• 1	6
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CAT				Analysis		Dilution
No.	Analysis Name	Method	Trial#	Date and Time	Analyst	Factor
08213	BTEX (8021)	- SW-846 8021B	1	03/22/2002 18:19	Steven J Stabinger	5
00774	PAH's in Water by HPLC	SW-846 8310	1	03/25/2002 22:58	Mark A Clark	1
00774	PAH's in Water by HPLC	SW-846 8310	1 (	03/26/2002 04:29	Mark A Clark	20
01146	GC VOA Water Prep	SW-846 5030B	1 0	03/22/2002 18:19	Steven J Stabinger	n.a.
03337	PAH Water Extraction	SW-846 3510C	1 (	03/24/2002 12:40	Felix C Arroyo	l



Lancaster Laboratories, Inc. 2425 New Holland Pike PO Box 12425 Lancaster, PA 17605-2425 717-656-2800 Epy: 717-656-2691



Page 1 of 1

#### Lancaster Laboratories Sample No. WW 3792132

Collected:03/20/2002 18:00

Submitted: 03/21/2002 09:20 Reported: 04/02/2002 at 12:00 Discard: 05/03/2002 TB-03 Water Sample Moss American Site - WI Account Number: 07802 Kerr-McGee Corporation P.O. Box 25861 Oklahoma City OK 73125

MTB03 SDG#: KMA07-17TB\*

	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
1	00777	Toluene	108-88-3	N.D.	0.20	ug/l	1
ł	00778	Ethylbenzene	100-41-4	N.D.	0.20	ug/l	1
j	00779	Total Xylenes	1330-20-7	N.D.	0.60	ug/l	1

		Laborator	y Chro	nicle		
CAT				Analysis		Dilution
No.	Analysis Name	Method	Trial#	Date and Time	Analyst	Factor
08213	BTEX (8021)	SW-846 8021B	1	03/22/2002 13:40	Steven J Stabinger	1
01146	GC VOA Water Prep	SW-846 5030B	1	03/22/2002 13:40	Steven J Stabinger	n.a.



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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Where quality is a science.	Please pri	nt. Instru	ctions	on	reverses	side co	orres	spond	with c	irclec	numł	pers.							
Client: <u>WPSton / Ken McGee</u> Project Name/#: <u>Moss American</u> Project Manager: <u>Ton Graan</u> Sampler: <u>BSchaefer Y Hagiwara</u> Name of state where samples were collected: <u>Sample Identification</u>	Acct. #: PWSID #: P.O.# Quote #: X L/J Collected	2 Time a	Gab (u)	Composite	Solity A state of the second state of the second state of the second state of the second state of the second state of the second state of the second state of the second state of the second state of the second state of the second state of the second state of the second state of the second state of the second state of the second state of the second state of the second state of the second state of the second state of the second state of the second state of the second state of the second state of the second state of the second state of the second state of the second state of the second state of the second state of the second state of the second state of the second state of the second state of the second state of the second state of the second state of the second state of the second state of the second state of the second state of the second state of the second state of the second state of the second state of the second state of the second state of the second state of the second state of the second state of the second state of the second state of the second state of the second state of the second state of the second state of the second state of the second state of the second state of the second state of the second state of the second state of the second state of the second state of the second state of the second state of the second state of the second state of the second state of the second state of the second state of the second state of the second state of the second state of the second state of the second state of the second state of the second state of the second state of the second state of the second state of the second state of the second state of the second state of the second state of the second state of the second state of the second state of the second state of the second state of the second state of the second state of the second state of the second state of the second state of the second state of the second state of the second state of the second state of the second state of the second state of the seco	Diner V V V	Iotal # of Containers the second		STRX C					s Re	quest	edia	For FSC: SCR #:	lab use or	Temperature of samples,
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2102 Rev. 3/7/01

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## Analysis Request/Environmental Services Chain of Cent

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Acct. # 7802 Sample # 3792114-32

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

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

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Anenysie Recieles, Entronmental Services C 10/1/201



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Acct. # 7802 Sample # 3792114 - 32

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# Analysis Request/Environmental Services Chain or Cusica,



459. 1946 For Lancaster Laboratories use only Acct. # 7802 Sample # 37921114=322

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Project Name/#: <u>Moss American</u> Project Manager: <u>Tom Groon</u>	PWSID #: P.O.#				A CARLON AND A CARLON AND A CARLON AND A CARLON AND A CARLON AND A CARLON AND A CARLON AND A CARLON AND A CARLON AND A CARLON AND A CARLON AND A CARLON AND A CARLON AND A CARLON AND A CARLON AND A CARLON AND A CARLON AND A CARLON AND A CARLON AND A CARLON AND A CARLON AND A CARLON AND A CARLON AND A CARLON AND A CARLON AND A CARLON AND A CARLON AND A CARLON AND A CARLON AND A CARLON AND A CARLON AND A CARLON AND A CARLON AND A CARLON AND A CARLON AND A CARLON AND A CARLON AND A CARLON AND A CARLON AND A CARLON AND A CARLON AND A CARLON AND A CARLON AND A CARLON AND A CARLON AND A CARLON AND A CARLON AND A CARLON AND A CARLON AND A CARLON AND A CARLON AND A CARLON AND A CARLON AND A CARLON AND A CARLON AND A CARLON AND A CARLON AND A CARLON AND A CARLON AND A CARLON AND A CARLON AND A CARLON AND A CARLON AND A CARLON AND A CARLON AND A CARLON AND A CARLON AND A CARLON AND A CARLON AND A CARLON AND A CARLON AND A CARLON AND A CARLON AND A CARLON AND A CARLON AND A CARLON AND A CARLON AND A CARLON AND A CARLON AND A CARLON AND A CARLON AND A CARLON AND A CARLON AND A CARLON AND A CARLON AND A CARLON AND A CARLON AND A CARLON AND A CARLON AND A CARLON AND A CARLON AND A CARLON AND A CARLON AND A CARLON AND A CARLON AND A CARLON AND A CARLON AND A CARLON AND A CARLON AND A CARLON AND A CARLON AND A CARLON AND A CARLON AND A CARLON AND A CARLON AND A CARLON AND A CARLON AND A CARLON AND A CARLON AND A CARLON AND A CARLON AND A CARLON AND A CARLON AND A CARLON AND A CARLON AND A CARLON AND A		ners	· •	/			, /	/ /	/ /	'		/	· .	seted)
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## Analysis Requestrent intention Standlow Chelling Course



For Lancaster Laboratories use only

Acct. # 7802 Sample # 3792114-32

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## Analysis Request/Environmental Services Chain or Cusice,

## Lancaster Laboratories Where quality is a science.

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MA3-MW-75-200302-04		1150	K		X			$\times$											
MA3-MW-75-200302-04-DUP		1150	K		X			X										1	
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Copies: White and yellow should accompany samples to Lancaster Laboratories. The pink copy should be retained by the client

2102 Rev. 3/7/0

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Acct. #\_7402 Sample # 3.792114-32



## **CASE NARRATIVE**

## Client: Kerr-McGee Corporatiom SDG #: KMA07

## LANCASTER LABORATORIES PAH BY HPLC

## SAMPLE NUMBER(S) :

		Matrix	
<u>LL #'s</u>	Sample Code	<u>Water</u>	<u>Comments</u>
3792114	3-20S	X	
3792115	3-201	Х	
3792116	3-34S	Х	
3792116DL	3-34SDL	Х	20X Dilution
3792117 <sup>·</sup>	3-7S-	Х	
3792117DL	3-7S-DL	Х	20X Dilution
3792118	3-7SD	Х	· · · · · · · · · · · · · · · · · · ·
3792118	3-7SDDL	Х	10X Dilution
3792119	3-71-	Х	
3792120	3-35S	Х	
3792121	3-29S	Х	
3792122	329SD	Х	
3792123	3-36S	Х	
3792124	3-37S	Х	
3792125	3FB02	Х	Client Blank
3792126	3-27S	Х	
3792127	3-32S	Х	Unspiked
3792128	3-32SMS	Х	Matrix Spike
3792129	3-32SMSD	Х	Matrix Spike Dup
3792130	3-33S	Х	
3792130	3-33SDL	Х	20X Dilution
3792131	333SD	Х	
3792131DL	333SDDL	Х	20X Dilution
LABORATORY S	UBMITTED QC:		
SBLKWH081	SBLKWH0812	Х	Method Blank
081WHLCS	081WHLCS2	Х	Lab Control Sample

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## Case Narrative SDG#: KMA07 continued

### SAMPLE PREPARATION:

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

Sample Code	<u>Volume</u>
3-20S	936 mls
3-201	823 mls
3-78-	981 mis
3-7SD	921 mls
3-71-	920 mls
3-35S	934 mls
3-36S	959 mls
3FB02	991 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.

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

<u>npounds</u>
arious
hthalene
hthalene
hthalene
hthalene

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

2

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### Case Narrative SDG#: KMA07 continued

### QUALITY CONTROL AND NONCONFORMANCE SUMMARY:

The surrogate recovery of nitrobenzene is outside QC limits in 3-7S- due to unresolvable matrix problems evident in the sample chromatogram.

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:

ratchell for CJN Date: 4-9-02

Charles J. Neslund Group Leader, GC/MS Semivolatiles



Case Narrative

- SDG# KMA07

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

AMPLE ANALYSES

LL	Sample	Matrix			
ample #	Designation	Soil Water	Comments		
3792114	3-20S	Х			
3792115	3-201	Х			
3792116	3-34S	Х	DF 10-		
3792117	3-75-	Х	DF 10		
3792118	3-7SD	Х	DF 10		
3792119	3-71-	Х			
3792120	3-35S	Х			
3792121	3-29S	X			
3792122	329SD	Х			
3792123	3-36S	Х			
3792124	3-37S	Х			
3792125	3FB02	Х			
3792126	3-27S	Х			
3792127	3-32S	Х	Unspiked		
3792128MS	3-32S	Х	Matrix Spike	`~	
3792129MSD	3-32S	Х	Matrix Spike Dup		
3792130	3-33S	Х	DF 5		
3792131	333SD	Х	DF 5		
3792132	MTB03	Х			
) JUALITY CONTR	OL ANALYSES				
BLK6594		Х	Method Blank		
LCS6594		Х	Lab Control Sample		
LDS6594		Х	Lab Control Dup		
			1		

#### 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. 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, 2.55um column was used for the analysis of all samples. The surrogate concentration was 30.0 UG/L.

The instrument ID displayed on the analytical data is 5890-64--, while that displayed on the forms is 5890-65--. Although different, these IDs represent the same instrument.



Case Narrative SDG# KMA07

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

he calibration verification standard (injection #02 analyzed on 03/22/02 at 09:38) met the equirements of SW-846 Method 8000B (section 7.7) since the average of all percent drift values as < 15%. (The average % drift was calculated using all of the compounds in the standard, hough the CCV summary form in this data package only reflects the client requested compounds.) s stated in method 8000B (section 7.5.1.2.3) the data user should be made aware that the drift for total xylenes fell outside of the +/- 15% criteria.

#### UALITY CONTROL AND NONCONFORMANCE SUMMARY

lient submitted batch QC was referenced.

11 QC was within specifications.

#### )ATA INTERPRETATION

to explanation is necessary for the data submitted.

Carrative reviewed and approved by:

iteve J. Stabinger, Group Leader