



**KERR-MCGEE CHEMICAL, LLC**

**Technical Memorandum**

**Predesign Task 11 – Identify and Pilot Test Stream  
Diversion and Dewatering Options**

**Predesign Task 12 – Pilot Test Identification of Creosote  
Residue in Sediments Using Visual Criteria**

**Moss-American Site  
Milwaukee, Wisconsin**

**8 March 2001**

**27 March 2001 (Revision 1)**



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28 March 2001

Mr. Russell D. Hart  
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RFW Work Order No. 02687.007.003  
KMC Work Order No. 40-50-01-AKW-B

Re: Pre-design Tasks 11/12 Technical Memorandum, Revised Pages  
Moss-American Site, Milwaukee, Wisconsin

Dear Mr. Hart:

In response to an 23 March 2001 e-mail message from Gary Edelstein of Wisconsin Department of Natural Resources (WDNR) WESTON has confirmed that Section 3 tables from the above-referenced document contained discrepancies related to the reporting of wet weight results for some samples rather than the more appropriate dry weight results. These tables have been corrected and revised versions of the relevant sections of the document are attached (cover page, Section 3, and Appendix F). We note that these corrections have virtually no impact to the conclusions of the report, since there were few changes to the general categorization of sediment sample CPAH results (i.e., regardless of whether wet weight or dry weight results are considered, sediment samples typically remained in the general categories of less than 15 mg/kg, greater than 15 mg/kg but less than 388 mg/kg, or greater than 388 mg/kg CPAHs).

Should further clarification of this report be required, please contact me at (847) 918-4142 or Keith Watson at (405) 270-3747.

Very truly yours,

ROY F. WESTON, INC.

Thomas P. Graan, Ph.D.  
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TPG:ld

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





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12 March 2001

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

Re: Pre-design Tasks 11/12 Technical Memorandum  
Moss-American Site, Milwaukee, Wisconsin

Dear Mr. Hart:

Roy F. Weston, Inc. (WESTON®), on behalf of the Settling Defendant for the Moss-American Superfund site, Kerr-McGee Chemical, LLC (KMC), is providing two copies of the above-referenced technical memorandum. Should further clarification of this report be required, please contact me at (847) 918-4142 or Keith Watson at (405) 270-3747.

Very truly yours,

ROY F. WESTON, INC.

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

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



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## SECTION 1

### INTRODUCTION

The United States Environmental Protection Agency (U.S. EPA), pursuant to Section 105 of CERCLA (1980), placed the Moss-American site in Milwaukee, Wisconsin on the National Priorities List (NPL) in 1983. U.S. EPA completed a remedial investigation/feasibility study (RI/FS) for the site on 29 May 1990. The U.S. EPA Regional Administrator signed the Record of Decision (ROD) for the remedial action plan for the site on 27 September 1990 (the ROD was subsequently amended on 28 September 1998). A Consent Decree (CD), incorporating the Statement of Work (SOW) for implementation of the remedial action plan, was signed by Kerr-McGee Chemical, LLC (KMC), on 17 July 1991 and lodged by the U.S. Department of Justice on 28 December 1991. Under this CD, KMC will lead in developing and implementing the remedial design and remedial action plan for the Moss-American site.

The Moss-American site is located in the northwestern section of the City of Milwaukee, County of Milwaukee, State of Wisconsin. The site is located at the southeast corner of the intersection of Brown Deer and Granville Roads. The 88-acre site address is 8716 Granville Road. The site includes the former wood-treating facility and approximately 5 miles of the Little Menomonee River (LMR) and associated floodplain downstream of the facility. Milwaukee County currently owns 51 acres of land on the eastern portion of the site, and the Union Pacific Railroad owns the 23-acre parcel comprising the western portion of the site. The LMR flows through the eastern portion of the site, and continues downstream through the Milwaukee County Parkway until its confluence with the Menomonee River approximately 5 miles south of the site.

#### **1.1 Purpose and Objectives of This Technical Memorandum**

To further evaluate the engineering feasibility and environmental impact of U.S. EPA's selected remedy, the SOW requires completion of numerous predesign studies to evaluate the proposed remedial strategies. The predesign studies are intended to obtain essential information for design and implementation of the remedial action for the site. The predesign studies discussed herein are associated with Predesign Tasks 11 and 12, as identified by the SOW.

The purpose of Predesign Task 11 is to evaluate the constructability and identify implementation issues associated with a river diversion and sediment excavation remedial approach. Predesign Task 11 was implemented by construction and operation of a diversion system at two locations along the LMR and examination of the sediment excavation requirements based on test pits excavated, observations of the dewatered channel, and access restrictions identified during the diversion activities.

The purpose of Predesign Task 12 is to determine the effectiveness of visual observation in determining the extent of creosote residue in the LMR. Predesign Task 12 was implemented concurrent with Predesign Task 11, by collecting sediment cores at the diversion locations, examining the sediment recovered for visible signs of contamination and comparing the results of the visual assessment to laboratory analytical data for the samples.

Roy F. Weston, Inc. (WESTON®), completed the field work necessary to accomplish Predesign Tasks 11 and 12 between 7 November 2000 and 5 December 2000.

## **1.2 Report Organization**

Section 2 of this technical memorandum summarizes the activities performed during implementation of Predesign Task 11 and evaluates the implementability of river diversion and sediment excavation activities based on the field effort. Section 3 of this technical memorandum summarizes the activities and methods associated with implementation of Predesign Task 12, as well as an evaluation of the correlation of visible contamination to both the site-specific sediment excavation standard and background sediment quality criteria.

## SECTION 2

### PREDESIGN TASK 11

#### **2.1 Rationale**

The objective of Predesign Task 11 is to evaluate and identify the constructability and implementability issues associated with a river diversion and sediment excavation remedial approach. As stated in the SOW:

*“The objective of the predesign task is to determine the most effective option for diverting and dewatering the existing stream channel in order to determine the extent-of-contamination and examine options for removal of contaminated sediment.*

*Various stream diversion and dewatering options will be evaluated.*

*The results of the stream diversion/dewatering evaluation and pilot testing will be used to design the most appropriate means of diverting and dewatering the stream as well as to determine the extent to which it will be possible to remove contaminated sediment while minimizing impacts on existing wetlands.”*

To accomplish the objectives of Predesign Task 11, the following goals were established in the Predesign Work Plan:

- Identify practical diversion methods and evaluate these methods with respect to the objectives of Predesign Task 11 and the overall project.
- Pilot test the preferred diversion method at one or more locations of the LMR.
- Coordinate the pilot diversion project with other design tasks (Predesign Task 12) to maximize the efficiency of this activity.
- Maintain a cost-effective approach to the pilot river diversion effort, while achieving the information objectives of the predesign task.
- Conduct the pilot diversion during low flow conditions.

#### **2.2 Pilot River Diversion Activities and Methods**

The following sections describe the tasks performed to implement Predesign Tasks 11, including both pre-construction and construction activities.

## 2.2.1 Pre-Construction Tasks and Activities

Pre-construction tasks performed included site selection for implementation of Predesign Tasks 11 and 12, and completion of a survey of existing conditions along the selected river reaches.

### 2.2.1.1 Pilot River Diversion Location Selection and Descriptions

Two sections of the LMR were selected for implementation of the pilot river diversion activities. The location of these two reaches, as well as the rationale for their selection, were initially identified in KMC/WESTON's letter to U.S. EPA regarding implementation of Predesign Tasks 11 and 12 dated 28 July 2000.

The two reaches were selected based on meeting at least two of the following five criteria:

1. Locations where the "loose sediment" depth reported by KMC/WESTON (*Technical Memorandum – Predesign Tasks 2(b), 3, 4, 5, 6, 7, and 19*, WESTON, 1994) and the depth of "unconsolidated sediment" reported by the Wisconsin Department of Natural Resources (WDNR) (*Extent of Contaminated Sediment at the Moss-American Superfund Site*, WDNR, 1999) differed by a factor of 3 to 4.
2. Locations where sediment total CPAH concentrations exceeded 388 mg/kg, based results of either KMC/WESTON's (WESTON, 1994) or WDNR's sampling efforts (WDNR, 1999).
3. Accessibility to surface roads.
4. Locations where the sediment would be removed regardless of the remedy selected due to the presence of infrastructure (i.e., bridges) or overlapping of the proposed new channel footprint and the existing channel.
5. Areas where WDNR had identified sediments containing a total CPAH concentration >15 mg/kg at depths greater than the excavation limit proposed by KMC/WESTON associated with the sediment excavation remedy.

The two reaches that were selected are associated with sediment sampling locations SD01-0002 and SD04-0016 (WESTON, 1994); hereafter, these reaches are referred to as the Bradley Road and LMR Parkway sites, respectively. Figure 2-1 indicates the locations of the river sections selected for implementation of Predesign Tasks 11 and 12. Descriptions for each pilot river diversion location, as well as the selection criteria that were met by each site, are discussed below.

### **Bradley Road Site**

The Bradley Road site was selected due to a discrepancy in the sediment depth reported by KMC/WESTON and WDNR and based on its easy access from Bradley Road and 91<sup>st</sup> Street. In addition, sediment at the Bradley Road site was expected to contain elevated CPAH

concentrations based on the proximity to the former wood treating facility and previous analytical results of sediment samples collected in the vicinity of this location.

The river reach at the Bradley Road site is located northwest of the intersection of Bradley Road and 91<sup>st</sup> Street, upstream of the railway bridge. Sampling point SD01-0002 was determined to be approximately 360 feet (ft) north of the intersection of Bradley Road and the railway. Figure 2-2 is a topographical site map of the Bradley Road location. Photograph 1 in Appendix A depicts the Bradley Road site at the time of the pre-construction channel survey. The LMR is approximately 150 ft west of 91<sup>st</sup> Street at this location. The length of river diverted at the Bradley Road site was approximately 155 ft. The east side of the LMR was used as the “working side” at the Bradley Road site, meaning that access improvements, equipment storage and operation, and surveying and sampling operations at this site were concentrated on the east side of the river.

No tributaries to the LMR were located within the portion of the river that was diverted and dewatered. The nearest upstream tributaries were a natural drainage ditch approximately 315 ft north of the upstream dam and a storm sewer culvert approximately 415 ft north of the upstream dam. Both of these tributaries entered the LMR from the east.

The habitat at the Bradley Road site was determined to be a mixture of old field, wetland field and closed stratum large pole scrub-shrub communities (*Pre-design Task 9 Technical Memorandum – Identify and Evaluate Alternative Alignments for the Little Menomonee River*, WESTON, 1993). The wetland field community is present along the west bank of the LMR, from the riverbank to approximately 20 feet east of the channel. A narrow strip of closed stratum large pole community is present along the west bank of the LMR at both the north and south ends of the diversion segment. Another strip of closed stratum large pole community is present along the east bank, immediately south of the diversion segment. The habitat in the large open area east of the LMR and railway, north of Bradley Road and west of 91<sup>st</sup> Street, is old field community.

Topography at the Bradley Road site is relatively flat; however, the wetland and old field community habitats are approximately 6 to 8 feet lower than the elevation of Bradley Road, 91<sup>st</sup> Street, and the railway. A small ridge (approximately 4 feet high) is present along the east bank of the LMR in the closed stratum large pole community habitat. The riverbanks are relatively steep, up to approximately 45 degrees, and grade down to the river channel, which is approximately 6 to 8 feet below the elevation of the old field community habitat.

### **LMR Parkway Site**

The LMR Parkway site (sediment sampling location SD04-0016) was selected due to a discrepancy in the sediment depth reported by KMC/WESTON and WDNR and based on a total CPAH concentration of 1,118 mg/kg in a sediment sample collected by WDNR. The location also corresponds to the downstream end of a proposed zone of continuous sediment remediation (SD04-0015 was identified to be the endpoint of contiguous remediation in the *Comparative Analysis of River Remedies: Reroute Versus Dry Sediment Excavation* [WESTON, 2000]). The LMR Parkway site is relatively less accessible, located approximately 1,950 ft (0.4 miles) south

of the intersection of Fond Du Lac Avenue and Mill Road, and approximately 2,150 ft (0.4 miles) north of Appleton Avenue (Route 41). Figure 2-3 is a topographical site map of the LMR Parkway location. Photograph 2 in Appendix A depicts the LMR Parkway site at the time of the pre-construction channel survey. The LMR is approximately 400 ft east of the LMR Parkway at this location. The length of river diverted at the LMR Parkway site was approximately 250 ft, and the west side of the LMR was used as the working side at this location.

No tributaries to the LMR were present along the river section that was diverted and dewatered. The nearest upstream tributaries were a drainage ditch from the LMR Parkway approximately 200 ft north of the upstream dam and a storm sewer outfall entering the LMR from the east approximately 250 ft north of the upstream dam. A 3-ft diameter, corrugated steel storm sewer from the LMR Parkway was located immediately downstream of the diverted/dewatered section of river. A logjam was present at the downstream end of the LMR Parkway site (immediately upstream of the 3-ft diameter sewer), which caused restricted the flow along the subject reach.

The habitat at the LMR Parkway site was determined to be a broken canopy woodland community (WESTON, 1993). An area of wetland field community habitat is located immediately south of the LMR Parkway site, and a narrow strip (approximately 15 feet wide) of shaded vernal pond community is located at the northern end of the LMR Parkway site, oriented east-west and reaching from the west bank of the LMR to the east side of the LMR Parkway.

Topography at the LMR Parkway site is relatively flat; however, an approximately 4-ft tall ridge is present along the west bank of the LMR along the section of river diverted. West of this ridge, along the southern portion of the diverted section, the ground is slightly lower in elevation. During periods of wet weather, this area becomes ponded and muddy. The vernal pond community located at the northern end of the diversion segment is located along a drainage swale that is approximately 2 ft lower in topography than the surrounding ground surface. This drainage ditch becomes flooded during precipitation events. The LMR Parkway road surface is approximately 4 ft higher in elevation than the wooded community located between the LMR and the LMR Parkway.

#### 2.2.1.2 Pre-Construction Channel Survey

As required by the Predesign Work Plan, a survey of the existing conditions within the LMR channel was performed prior to implementation of pilot river diversion activities at the Bradley Road and LMR Parkway sites. The pre-construction channel survey was performed on 7 November 2000.

In order to conduct the pre-construction channel surveys, WESTON first identified the sediment sampling locations SD01-0002 and SD04-0016, associated with the Bradley Road and LMR Parkway sites, respectively. Upon locating the sediment sampling locations, 50-ft intervals were measured from the sediment sampling locations for placement of the channel cross-sections that were included in the pre-construction channel survey. Due to the bend in the LMR channel south (downstream) of sediment sampling station SD01-0002 limiting space for placement of downstream environmental controls and also since SD01-0002 is located in the center of a thick stand of specimen trees along the river bend, the downstream dam was located approximately

100 ft north (upstream) of SD01-0002. Therefore, of the four cross-sections locations identified for the Bradley Road site, sediment sampling location SD01-0002 was the southernmost cross-section, and only the two northernmost pre-construction channel survey cross-sections were located within the diverted reach of river. At the LMR Parkway site, four cross sections were identified, with one cross section located north (upstream) of sediment sampling location SD04-0016 and two cross-sections located south (downstream) of SD04-0016. Figures 2-4 and Figure 2-5 depict the layout of the channel cross-sections that were included in the pre-construction channel survey at the Bradley Road and LMR Parkway sites, respectively. All pre-construction channel survey cross-section locations were surveyed during implementation of the pilot river diversion activities.

Tasks included in the pre-construction channel survey included measurements of channel width, water depth, flow velocity, and depth to refusal when probing the river bottom materials with a 3/8-inch diameter tile probe (hereafter referred to as “probing depth” or “probe penetration depth”). Water depths, flow velocities, and probing depths were recorded at stations spaced across the channel width at approximately 4-ft intervals. Each station is identified in Figures 2-4 and 2-5. Channel width was measured from bank to bank at the water surface. Flow velocity was measured using a Flow Probe (manufactured by Global Water of Fair Oaks, California) at locations approximately 6 inches above the channel bottom. Flowrate within the LMR channel was estimated by using the channel width, water depth and flow velocity data. Data obtained from the pre-construction channel survey tasks are included in Table 2-1, and are discussed below. Table 2-2 presents the flowrate calculations for the LMR. Figures 2-4 and 2-5 present the channel cross-sections developed based on the data obtained during the pre-construction channel survey for the Bradley Road and LMR Parkway sites, respectively.

### **Channel Width**

Channel widths of the LMR measured during the pre-construction survey ranged from approximately 13.5 to 21.3 ft. Channel width is typically narrower at the Bradley Road site than at the LMR Parkway site. Channel widths measured at the Bradley Road site ranged from approximately 13.5 to 17.1 ft with an average width of 15.4 ft. Channel widths measured at the LMR Parkway site ranged from approximately 16.8 to 21.3 ft, with an average of 19.6 ft.

### **Water Depth**

Water depths measured indicated that the channel typically has a trapezoidal shape, with steep slopes at the banks and a relatively flat bottom. The deepest water is present at the stations located within the center of the channel (the portion of the channel located approximately 5 ft in from each bank). Water depths measured near the center of the channel during the pre-construction survey ranged from 1.7 to 3.3 ft, with an average depth of 2.6 ft. Water depths measured approximately 6 inches to 1 ft from the banks ranged from 0.3 to 1.8 ft, with an average depth of 1.0 ft. Overall, there was no significant difference in the average water depths measured at the two diversion locations or the cross-sectional shape of the channel; however, water depths measured at the LMR Parkway site consistently increased at each downstream

location, presumably due to flow restriction from the presence of the logjam at the downstream end of the LMR Parkway site.

### **Flow Velocity**

Flow velocity was measured both upstream and downstream of the two reaches using a pygmy meter capable of measuring velocities greater than 0.1 feet per second (fps). Consequently, flow velocities were typically only measurable at or near the thalweg of the channel, since the flow velocities outside of the thalweg were below the range of the pygmy meter. Flow velocities measured near the thalweg ranged from 0.9 to 1.7 fps, with an average velocity of 1.4 fps. Flow velocities measured at the Bradley Road site were relatively consistent at each cross-section, in contrast to the flow velocities at the LMR Parkway site. At the LMR Parkway site, flow velocity decreased at every downstream cross-section, presumably due to flow restriction from the presence of the logjam at the downstream end of the reach. Flow velocities along the thalweg at the Bradley Road ranged from 1.1 to 1.2 fps, where as the thalweg flow velocities measured at the LMR Parkway site ranged from 0.9 to 2.4 fps.

### **LMR Flowrate**

Flowrate of the LMR was estimated using the flow velocity and the channel cross-sectional areas (calculated using the water depth and channel width measured at each sampling station). The calculations are presented in Table 2-2. Since the flow velocities were not measurable at numerous stations because the velocity was less than 0.1 fps, the flow associated with these stations was not included in the flowrate estimation.

Flowrates calculated for the cross-sections located at the Bradley Road site ranged from approximately 10.8 to 17.9 cubic feet per second (cfs) (4,800 to 8,000 gallons per minute [gpm]), with an average flowrate of 15.2 cfs (6,800 gpm). Flowrates estimated for the LMR Parkway site ranged from approximately 16.5 to 37.9 cfs (7,400 to 17,000 gpm), with an average flow of 25.9 cfs (11,600 gpm). At the LMR Parkway site, the flowrate decreased steadily at each cross-section progressing downstream towards the logjam; therefore, the flowrate for the LMR Parkway site is likely to be better represented by the flow measured at the upstream transects (traverses D and A). The average flowrate of traverses D and A is 33.8 cfs (15,200 gpm). It is likely that the river is in a steady state between traverses D and A; therefore, the flow at the downstream cross-sections at the LMR Parkway site is equal to the flow at the upstream cross-sections. Consequently, due to the inability to measure flow velocities under 0.1 fps, it is assumed that the flow calculated for the downstream traverses of the LMR Parkway site is underestimated.

Based on the flowrate estimations calculated using the data obtained from the pre-construction channel survey, the LMR is verified to be a gaining stream between Bradley Road and LMR Parkway. The average flowrate at the LMR Parkway site (excluding the two downstream cross-sections) is approximately 220 percent greater than the flowrate at the Bradley Road site. The



increase of flow at the LMR Parkway site is attributed both to groundwater inflow and increased surface runoff inflow from tributaries and/or stormwater sewer outfalls.

## **Probing Depth**

Based on the results of the probing survey, the probe penetration depths were significantly shallower at the LMR Parkway site relative to the Bradley Road site. The difference in the probe penetration depths is suspected to be primarily due to the type of sediment present at each location. The sediment probed at the Bradley Road site is loose and soft, and is believed to be predominantly silts and clays. The material probed at the LMR Parkway site appears to be sands and gravels with large cobblestones present. Probe refusal due to solid objects (presumably a cobblestone or bedrock) occurred numerous times at the LMR Parkway site. When refusal occurred at a very shallow depth (i.e., less than 0.5 ft), the probe was extracted and re-advanced several inches away from the original probing point to verify that a representative probing depth was obtained for each sampling station. The sediment at the Bradley Road and LMR Parkway locations was classified during coring activities associated with Predesign Task 12, and correlates with the preliminary sediment type determinations.

Probe penetration depths measured at the Bradley Road site ranged from approximately 1.0 to 5.4 ft, with an average depth of 3.7 ft. Probing depths measured at the LMR Parkway site ranged from 0.1 to 2.1 ft, with an average depth of 1.0 ft. The probing depths measured during the pre-construction channel survey (performed while the channel was flooded) are compared to the probing depths measured in the dewatered channel during the implementation of Predesign Task 12 in Section 3.3.2.

## **2.2.2 Construction Tasks and Activities**

### **2.2.2.1 Site Preparation**

Site preparation activities performed for implementation of Predesign Tasks 11 and 12 included clearing and grubbing and access improvements. These tasks are discussed in the following subsections.

### **Clearing and Grubbing**

Work zones were cleared and grubbed at each site to allow construction of roads and provide adequate area for channel access and placement of equipment (i.e., dams, pumps, piping, trailers, storage tanks, etc.). Areas of grass were mowed, and trees were cleared such that the trunks were cut immediately above the ground surface. In general, trees with diameters greater than approximately 6 inches were allowed to remain in place provided they would not inhibit roadway construction, staging areas, or vehicle/heavy equipment operation.

### Bradley Road Site

A staging and operations area approximately 150 ft (east-west) by 300 ft (north-south) was cleared and grubbed to provide space for staging all equipment associated with the pilot river diversion activities (i.e., trailers, storage tanks, heavy equipment storage, generator, etc.) and provide space for activities associated with the pilot river diversion (i.e., vehicle parking, access for tanker and flatbed trucks, etc.). The staging/operations area extended approximately 25 ft north of the location selected for placement of the upstream dam, such that adequate space was available for placement of the upstream dam and diversion pumps and construction of the intake sump. The cleared/grubbed area consisted of old field habitat, requiring grass mowing and clearing of numerous small trees and shrubs. Space for a haul road was cleared along a former dirt road that was already devoid of trees. Figure 2-6 indicates the site layout for the Bradley Road location.

### LMR Parkway Site

A staging and operations area approximately 200 ft wide was cleared along the west side of the diverted reach (approximately 300-ft) of the LMR. Access to the river was achieved by clearing a haul road from Bradley Road to the staging/operations area. The haul road was located along a former path/road that was already clear of trees at the southern end of the operations area. A significant portion of the southern end of the staging/operations area was wetland field habitat, requiring only grass mowing and clearing of few small trees and shrubs. The northern portion of the cleared/grubbed area was broken canopy woodland habitat, requiring clearing of shrubs and small and medium-sized trees (trees up to approximately 6 inches in diameter). Figure 2-7 indicates the site layout for the LMR Parkway location.

## **Access Improvements**

Access improvements required for implementation of Predesign Tasks 11 and 12 included construction of ramps from surface roads and access roads within the LMR corridor. Access improvements required at each pilot river diversion location are discussed below.

### Bradley Road Site

Access to the site from surface roads was provided via Bradley Road. Bradley Road is approximately 8 ft higher in elevation than the floodplain of the LMR corridor, with a relatively steep slope between the road and floodplain. An earthen ramp covered with 3-inch stone and finished with a layer of CA-6 stone was constructed to allow access of flatbed and tanker trucks from Bradley Road. In addition, an access road from the base of the ramp to the operations area was constructed by grading approximately 3 inches of ¾-inch stone over the ground surface. An additional area of approximately 50 ft by 50 ft used for vehicle parking and truck loading/unloading in the operations area was graded with gravel.

## LMR Parkway Site

Access to the site was obtained from the LMR Parkway. Gravel (¾-inch stone) was laid down and graded to a 3-inch thick layer along the haul road and in the southern area of the operations area. The LMR Parkway was approximately 4 ft higher in elevation than the LMR floodplain at the haul road entrance; however, ramp construction was not required at the since the slope between the road and floodplain was relatively flat.

### 2.2.2.2 Site Setup

Site setup activities included mobilization of personnel and equipment, implementation of site security, and construction of decontamination pads. These tasks are discussed in the following subsections.

#### **Mobilization**

Upon completion of site preparation activities, equipment was mobilized to the site. Major pieces of equipment that were utilized at the pilot river diversion sites included:

- Two 6,000-gallon storage tanks.
- Decontamination trailer.
- Equipment storage trailer.
- Trailer-mounted generator with light plant.
- Sanitary facilities.
- 12"-diameter aluminum piping.
- Two 6,000-gallon per minute (gpm) diesel-powered, skid-mounted pumps.
- Two water-filled dams.
- Track-mounted excavator (Komatsu 200 series).
- Bulldozer (Caterpillar D-5).
- Skid loader (Case 1845C).

The bulldozer, excavator, and skid loader were mobilized to the site and used during site preparation activities. Other equipment was delivered in two stages. The first stage of mobilization included delivery and setup of the storage tanks, decontamination and storage trailers, sanitary facilities, and generator. During the second stager of mobilization, which was one day prior to initiating diversion activities, the pumps, piping, and water-filled dams were delivered. Equipment was delivered to the site on flatbed trucks (pumps, piping, and dams), lowboy trailers (bulldozer, excavator, decontamination trailer, and storage tanks) and the storage trailer and generator were towed to the site using pickup trucks.

#### **Site Security**

Concurrent with mobilization of equipment, plastic construction fencing was installed around the perimeter of the work area to restrict access. Location of the perimeter fencing is indicated in

Figures 2-6 and 2-7. Appropriate signage (i.e., “Hardhat Required,” etc.) was posted at the entrance to the work areas. 24-hour security personnel were used to monitor equipment and prevent vandalism or theft of equipment. Security personnel were knowledgeable in operation of critical equipment, i.e., pumps, piping, generator/light plant, etc., such that if equipment malfunctions occurred during non-working hours immediate corrective action could be taken.

### **Decontamination Pad Construction**

Temporary decontamination pads were constructed at both sites by creating a circular earthen berm. The floor of the decontamination pad was sloped such that liquid would drain to one side of the pad to facilitate collection. The bottom of the decontamination pad was layered with a geotextile and approximately 6 inches of ¾-inch stone.

#### **2.2.2.3 Diversion System Installation**

The diversion system used included the following major components: upstream and downstream temporary dams; diversion pumps; transfer pipe assembly; intake lines and sump; discharge breakwater; staff gauge for monitoring water level in the river; and environmental controls (sediment stops, absorbent booms, and surface water samplers). The location and layout of the diversion system for each site are depicted in Figures 2-6 and 2-7. Photograph 3 in Appendix A depicts the diversion system at the upstream end of the Bradley Road site.

### **Construction Sequence**

Construction phasing of the diversion systems was performed as follows:

- Installation of diversion pumps, intake lines and sump, transfer pipe assemblies, and discharge breakwater.
- Installation of environmental controls and staff gauge.
- Activation of diversion pumps.
- Installation of upstream dam.
- Drainage of the proposed diversion reach.
- Installation of downstream dam.
- Removal of remaining water trapped between dams within diverted reach.

### **Flow Transfer System Installation**

The two 6,000-gpm pumps were installed in parallel, such that each pump had an intake line and transfer pipe assembly. The pumps were located approximately 20 ft upstream of the upper dam at the Bradley Road site, and approximately 100 ft upstream of the upper dam at the LMR Parkway site. Skid-mounted Godwin DPC300 automatic Dri-Prime® 12-inch centrifugal pumps (manufactured by Godwin Pumps, Bridgeport, New Jersey) were employed. A staff gauge was installed approximately 60 ft upstream of the intake sump to monitor the river stage such that

pump rates could be increased or decreased as needed to meet flow conditions. Photograph 4 in Appendix A depicts the diversion pumps employed for the pilot river diversion activities.

The intake line for each pump consisted of a flexible pipe that was submerged approximately 1 to 2 ft underwater into the intake sump. The intake sump was a small pit (approximately 5 ft square, 2 ft deep) dug in the channel floor and backfilled with riprap. In addition to the screening provided by the riprap, the ends of the flexible intake hoses were equipped with a 3-inch screen to prevent damage to the diversion pumps from large objects from being drawn into the intake line. Photograph 5 in Appendix A depicts the diversion pump intake lines.

The transfer pipe assemblies were installed along the top of the bank on the working side of the river and assembled using 12-inch diameter, aluminum piping. Pipe segments were 10 ft long, and were equipped with a locking clamp on one end with a ball flange at the opposite end of the segment that the clamp latched onto. Although the pipe used was rigid, since the flange was rounded, the transfer pipe assemblies could allow for small bends at the joints between pipe segments. Pipes were unloaded from the delivery truck and placed using the skid loader. Photograph 6 in Appendix A depicts the diversion piping and locking clamp system.

To minimize entrainment of solids in the flow from bank erosion and sediment within the channel, the transfer pipe discharged onto a riprap breakwater on the bank of the working side of the LMR. To prevent shifting of the transfer line at the discharge location, metal fenceposts were installed to secure the pipe. Photograph 7 in Appendix A depicts the riprap breakwater installed at the transfer line discharge at the Bradley Road site.

## **Dam Installation**

Once the diversion pumps and piping assembly was installed and operational, the upstream dam was installed. Minor grading of the channel floor was required prior to dam placement to create a flat surface that would ensure a tight seal between the dam and river bottom and also remove any obstructions that may puncture the dam. Since the channel width at the LMR Parkway site was approximately 5 ft too wide for the dam, the bank was filled with imported soil to narrow the channel to approximately the dam width. The temporary dams used were 20-ft square, 5-ft tall water-inflated Aqua-Barriers<sup>TM</sup> (manufactured by Aqua-Barrier, Inc. of Houston, Texas). The dams are constructed from two parallel chambers to prevent rolling of the dam from the lateral force of the water on the wetted side of the dam. Each chamber has a fill port and numerous draining ports. Photograph 8 in Appendix A depicts inflation of one of the temporary dams employed during the pilot river diversion. The dam installed at the Bradley Road site is depicted in Photograph 9 in Appendix A. Approximately 30 minutes were required to inflate the dams with river water using trash pumps. Once filled, the dam positions were recorded such that their position could be monitored to ensure shifting of the dam did not occur. Seepage between the channel bank and the end of the dam was mitigated using sandbags; however, minor seepage into the dewatered portion of the channel still occurred.

Upon placement of the upstream dam, the water along the proposed diversion segment was allowed to drain. Due to the minimal gradient of the LMR at the Bradley Road site, in

conjunction to the close proximity of the transfer line discharge to the proposed diversion reach, minimal drainage from the reach occurred. Over the course of several hours, the water level in the proposed diversion reach lowered approximately 6 inches, whereupon the water level stabilized. Better drainage was experienced at the LMR Parkway site, where most of the water was able to drain itself from the diversion reach. A small lip was present at the downstream end of the LMR Parkway reach, which served as a small dam, causing approximately 6 inches of water to remain present within the channel without additional dewatering.

The lower dam was installed at the Bradley Road site once it appeared that no further drainage was occurring from the diversion segment. The lower dam was installed in the same manner as the upstream dam. A downstream dam was not required at the LMR Parkway site since the channel floor elevation drops approximately 1.5 ft downstream from the lip at the former logjam location. In addition, the discharge location of the transfer pipes was located sufficiently far enough downstream to prevent backflow over the lip.

### **Dewatering of the Diverted Reach**

Dewatering of the diverted segment was performed using trash pumps. At the LMR Parkway site, all water removed from the diversion segment, approximately 48,000 gallons, was transferred into tanker trucks and disposed of off-site by Advanced Waste of Milwaukee, Wisconsin. Of the quantity of water removed from the diverted reach, approximately 36,000 gallons was initially trapped between the dams and removed on the first day of the field activities to create dewatered conditions. The remaining water removed from the channel, approximately 12,000 gallons, represents approximately 6,000 gallons of water removed from the channel on the morning of each of the next two days of field activities. Water entered the channel primarily from seeping around the edges and underside of the dams and from groundwater seeps that were observed entering the channel from the banks once the diverted reach was dewatered. The 6,000-gallon storage tanks were used for temporary storage of water removed from the channel while waiting for tanker trucks to return.

Results of KMC/WESTON discussions with U.S. EPA and WDNR regarding water management allowed for water initially trapped within the diverted reach to be pumped downstream and discharged into the LMR, provided it was removed from a collection sump with a weir inlet that would prevent sediment from entering the sump. Agency requirements for management of water that entered the diverted reach subsequent to the initial dewatering designate collection and off-site disposal of this water, since it may have passed through potentially contaminated sediment in entering the diverted reach. The collection sump was constructed using a steel 55-gallon drum cut down to approximately 2 ft in height and installed into the channel such that the rim of the drum was approximately 3 inches above the channel floor, thereby creating a weir inlet. After initially dewatering the reach after dam installation, all water collected from maintenance dewatering was collected from the sump, transferred into tanker trucks, and disposed of off-site by Advanced Waste of Milwaukee, Wisconsin.

## Well-Point System Evaluation

Contract Dewatering Services, Inc. (CDS), of Saranac, Michigan performed an evaluation of the feasibility of using a well-point system to mitigate groundwater inflow to the diverted reach. CDS advanced five soil borings to refusal at both the Bradley Road and LMR Parkway sites. Based on the evaluation performed, CDS concluded that use of a well-point system to mitigate groundwater discharge into the diverted channel section would be relatively ineffective due to the hydrogeological conditions. At the Bradley Road site, CDS concluded that there was approximately 10 to 12 ft of dense silty clay overlying a consolidated dolomitic layer. At the LMR Parkway site, a dense silty clay layer was present to approximately 4 ft below ground surface (bgs), underlain by a 2 to 4 ft thick sand and gravel layer, with the consolidated dolomitic present at approximately 7 to 9 ft bgs. Based on the density of the clay layers and absence of a granular layer of substantial thickness, CDS determined use of well-point systems to collect groundwater would not be cost effective. The CDS report is provided as Appendix B.

## **Installation of Environmental Controls**

Environmental controls implemented to protect surface water quality included installation of absorbent booms and silt fence sediment stops. Locations of these controls are indicated in Figures 2-6 and 2-7. The environmental controls system installed at the Bradley Road site is depicted in Photograph 10 in Appendix A.

## Surface Water Sampling

A surface water monitoring program was implemented to determine the effect of the diversion activities on the surface water quality. Daily surface water samples were collected from locations upstream and downstream of the construction area. Per the Predesign Task 11 Work Plan, surface water samples were analyzed for total suspended solids (TSS), polycyclic aromatic hydrocarbons (PAHs), and benzene, toluene, ethylbenzene, and total xylenes (BTEX collectively). Automatic sampling devices (ISCO GLS samplers) were used to collect 24-hour, time-weighted composite samples of the river water for analysis of TSS and total CPAHs. Grab surface water samples were collected daily for BTEX analysis. Analytical results of the surface water samples collected at the Bradley Road and LMR Parkway sites are presented in Tables 2-3 and 2-4, respectively. Laboratory analytical reports for the surface water samples are presented in Appendix C. Photograph 11 in Appendix A depicts the downstream sampling station and automatic sampler used at the Bradley Road site.

Analytical results of the river water indicated that few chemical parameters were measured above analytical detection limits. Analysis of the surface water samples collected from the downstream sampling station at the Bradley Road site on 14 November 2000 indicated the presence of phenanthrene, fluoranthene, and pyrene at concentrations of 2, 2, and 1 ug/L, respectively. In addition, toluene was detected at 0.21 ug/L in the downstream surface water sample collected on 15 November 2000. Chemical parameters were not detected above method detection limits in any of the surface water samples collected at the LMR Parkway site.

At the Bradley Road site, TSS concentrations of surface water samples collected on 14, 15 and 16 November 2000 were 21, 21, and 16 mg/L in upstream samples and 121, 19, and 18 mg/L in downstream samples, respectively. TSS concentrations of surface water samples collected at the LMR Parkway site on 28 and 29 November 2000 were 14 and 18 mg/L in the upstream samples and 25 and 11.6 mg/L in the downstream samples, respectively.

The elevated TSS concentration and measurable PAHs in the downstream sample collected on 14 November 2000 are attributed to sediment disturbance from installation of the dams and sediment stops, which potentially allowed for entrainment of sediment in and release of PAHs to the surface water. Effects of construction activities on surface water quality at the LMR Parkway site was not as significant as at the Bradley Road site, as indicated by the minimal increase of TSS in downstream samples. Minimal TSS increase during initiation of construction activities at the LMR Parkway site is likely due to avoiding installation of a downstream dam and due to the coarser-grained sediment present at the LMR site, which would settle out of the water column easier than the smaller particles present in the silty sediment at the Bradley Road site. At either site; however, once the diversion system was installed and the system was operating under consistent conditions, minimal impact to surface water was experienced.

#### 2.2.2.4 Operation of Diversion System

Operation of the diversion system included monitoring of river stage and adjusting pump rates accordingly, maintaining a dewatered condition within the diverted reach, and monitoring of the temporary dam structures.

#### **Monitoring of River Stage and Pump Rate**

During diversion activities at Bradley Road, only one of the two 6,000-gpm pumps required operation to divert the LMR flow around the work zone; however, due to the increase of flow in the lower reaches, operation of both pumps was required at the LMR Parkway site. During diversion activities, the LMR stage was monitored to determine if pump rates required adjustment. LMR stage was monitored both by using the staff gauge located upstream of the intake sump as well as observing the water level at the intake sump area. If backwater effects were observed at the staff gauge or the water level at the intake line and upstream dam appeared to have risen, pump rates were increased. If the river level appeared to be dropping at the staff gauge or intake sump area, pump rates were reduced.

A contingency plan for breakdown of the diversion system and work zone was developed to address significant increases in LMR flows due to a precipitation event. A “dry run” of implementing the contingency plan was performed at each site once the diversion system was installed. The contingency plan for breakdown of the diversion system and work area consisted of the following sequential tasks:

- Removal of personnel and equipment from the dewatered channel.
- Securing the downstream dam to the excavator to prevent shifting of the dam.
- Refilling the dewatered channel with one of the diversion pumps.



- Draining the downstream dam by opening the drainage ports and slowly lifting the dam with the excavator to allow for drainage of the bladders.
- Removal of the upstream dam in the same manner as the downstream dam.
- Shutting down diversion pumps, and relocating pumps and piping as needed.

Based on the time required to breakdown the diversion system, it is anticipated that contingency plan for removal of the diversion system could be implemented within 4 to 5 hours. This timeframe allots 1 hour to refill the dewatered channel, 1 hour to remove each dam, and 2 hours to tow pumps, piping, and other equipment away from the river channel.

### **Maintenance of Dewatered Status**

The diverted reach was dewatered daily at the beginning of construction activities. Trash pumps were employed to transfer the accumulated water into the temporary storage tanks or a tanker truck, if available. Approximately 6,000 gallons of water accumulated in the diverted section daily. All water removed from the channel for purposes of maintaining a dewatered status was disposed of off-site by Advanced Waste. Photograph 12 in Appendix A depicts the storage tanks used for temporary storage of water removed from the channel during maintenance dewatering.

### **Monitoring of the Temporary Dams**

Once installed, the positions of the temporary dams was marked and recorded such that any shifting of the dams due to lateral forces exerted by the water on the wetted side of the dam could be observed. Dam positions were periodically checked to ensure the dams were not shifting. In addition, the inflation of the dams was monitored by inspecting the dams periodically for leaks and deflation of the dam, which is evident by the dam shape and position. Leaks were repaired in-situ using a geomembrane patch affixed with a water-resistant epoxy.

### **Test Pitting and Implementation of Predesign Task 12**

To determine the feasibility of sediment excavation from the LMR, the excavator was employed to create several test pits. Only one test pit was excavated at the Bradley Road site. Sediment at the Bradley Road site is very soft, consisting primarily of silty clays and silty sands, and may be readily excavated. Numerous test pits were excavated at the LMR Parkway site. Sediment at the LMR Parkway site consisted primarily of coarse sand and gravel with cobble. Although more difficult to excavate than sediment at the Bradley Road site, sediment at the LMR Parkway site may also be readily excavated.

While dewatered, KMC/WESTON implemented Predesign Task 12, which is discussed in detail in Section 3. Activities performed during implementation of Predesign Task 12 include topographical surveying of the channel along traverses spaced 30 ft apart, visual inspection of the sediment surface, probing of the sediment using a tile probe along traverses spaced 10 ft apart, and collection of sediment cores along the survey traverses. Photograph 13 in Appendix A

depicts a surveyed sampling traverse at the Bradley Road site. Sediment samples were collected from the sediment cores and submitted for laboratory analysis. Upon completion of Predesign Task 12 activities, breakdown of the diversion system was commenced. Photograph 14 depicts another area of the dewatered channel at the Bradley Road site, and Photographs 15 and 16 depict the upstream and downstream portions of the diverted reach at the LMR Parkway site, respectively.

#### 2.2.2.5 Demobilization

Demobilization from the pilot river diversion sites included breakdown of the diversion system and demobilization of equipment from the site. Removal of the diversion system was conducted using the same sequential tasks previously described in the contingency plan. Once all personnel were demobilized from the dewatered channel, the channel was refilled with water using trash and diversion pumps. The downstream dam was drained by connecting the far side of the dam to the excavator bucket with cables, opening the drain ports, and slowly raising the dam out of the channel as the water drained from the bladders. Approximately 1 hour was required to drain a temporary dam. Once the dam was removed from the channel, it was transported to the decontamination pad and washed. The upstream dam was removed and decontaminated in the same manner as the downstream dam. Upon removal of the downstream dam, the diversion pumps were shut down and the natural flow was reestablished in the channel. Environmental controls and the decontamination pads were removed. Equipment was subsequently demobilized from the site. Items left in place include the riprap associated with both the intake sump and breakwater, gravel roadway material, and access ramps.

### **2.3 Evaluation of the Pilot River Diversion Activities**

Numerous evaluation criteria were developed and included in the Predesign Work Plan. Each of these criteria, with the exception of the feasibility of using vegetation for dewatering of sediment, is evaluated below. The evaluation of these criteria was conducted based on implementation of a diversion and sediment excavation remedial approach. Currently, two remedial strategies are being considered for remediation of the LMR: the Consent Decree River Reroute remedy and the alternative Diversion and Sediment Excavation remedy. It should be noted; however, that under selection of the River Reroute remedy, river reaches near infrastructure locations, i.e., bridges, would require implementation of the diversion and sediment excavation remedial approach since the river will not be relocated near these structures.

#### **2.3.1 Construction Phasing**

No problems associated with construction phasing were identified during the implementation of Predesign Task 11. Construction phasing during full-scale activities is expected to be similar to the sequence of tasks described in Subsection 2.2.2.3. In short, the sequence of construction tasks is anticipated to be as follows:

1. Clearing of work zones.

2. Construction of access improvements.
3. Equipment mobilization.
4. Setup of diversion system.
5. Excavation of sediment and overbank soils, including transportation to the former wood-treating facility for management.
6. Restoration of the excavated channel.
7. Setup secondary diversion system, move work zone downstream and repeat tasks 5 through 8 (sediment excavation remedy); or breakdown of the diversion system, relocation to the next infrastructure location downstream, and repeat tasks 4 through 8 (reroute remedy).
8. Restoration of disturbed floodplain habitat.
9. Demobilization from site.

### **2.3.2 Construction Space and Access Requirements**

The size of the work zones and access improvements constructed were adequate for implementation of Predesign Task 11. Based on the pilot river diversion activities, an adequate space for the primary operations area, which would allow for staging of temporary storage tanks, construction trailers, equipment storage, ancillary equipment, decontamination pad, and vehicle parking would be approximately 100 ft wide by 200 to 300 ft long. An area of approximately 50 ft by 50 ft would be required at both the upstream and downstream ends of the diversion segment to facilitate off-loading of the diversion pumps, and installation of the temporary dams. To allow for excavation of sediment and loading into a truck for off-site transport, an area of 40 ft wide would be required along the riverbank. Access roads constructed during the pilot river diversion activities were approximately 12 ft wide, and would be sufficient for full-scale implementation of the river remedy.

Due to the presence of diversion piping along the bank of the diverted river segment, the instability of the river sediment, and the steep grade of the banks in certain locations, an excavator will not easily be able to enter the river channel. Certain construction techniques (i.e., use of crane mats to counter the sediment instability, trenching of the diversion line in certain areas, and regrading of the banks) would mitigate the access limitations; however, implementation of these techniques would be time consuming and costly. Therefore, in order to effectively access sediment on the far side of the channel and regrade the opposite bank to increase slope stability as necessary, access to both sides of the river would be required. Consequently, an approximately 40-ft wide strip may be required on both sides of the LMR in certain locations.

In order to access both sides of the river, ramps from paved roadways may be required on each the east and west sides of the LMR on both the north and south sides of each road. Therefore, four access ramps may require construction at each intersection of the LMR channel with a paved roadway. Certain locations may only require one access point on each side of the river due to the shortness of the reach between the bridge locations, e.g., between the intersections of the LMR and State Road 145 (SR 145) and Mill Road/Fond Du Lac Avenue. In most instances;

however, the length of the LMR between two infrastructure locations is sufficiently great to warrant access locations on both the north and south ends of the reach on each side of the LMR.

Bank access is also inhibited by the presence of large trees, many of which are specimen trees that would not be cleared. Specimen trees located along the riverbanks would likely need pruning to remove the lower branches and provide excavator access to sediments near these trees. Smaller trees located along the riverbanks would require pruning or removal.

### **2.3.3 Diversion of Surface Runoff**

Surface runoff diversion techniques did not require implementation during the pilot river diversion. Construction of a small earthen berm to divert surface runoff could be easily implemented to divert surface runoff during full-scale implementation of the river remedy.

### **2.3.4 Impacts of Precipitation and Flood Events on Stream Diversion and Dewatering**

During implementation of Predesign Task 11, precipitation and flood events did not inhibit the diversion activities; however, precipitation on the last day of field activities at the LMR Parkway site increased the LMR flow such that both 6,000-gpm pumps were operating and the water stage upstream of the upper dam still appeared to be rising. If additional precipitation occurred or if an extension of field activities was required, the contingency plan would have likely required implementation. The precipitation did not affect the ability to maintain dewatered conditions within the channel during diversion activities.

Flowrates within the LMR at a station near Fond Du Lac Avenue were previously evaluated in the Comparative Analysis document. It was determined that during the months of May through December, the LMR flow was less than 16,000 gpm 90 percent of the time.

Precipitation and flood events will likely have greater influence on the diversion activities during implementation of the full-scale remedy since the diversion system will be operational for extended periods of time rather than the few days it was set up at the pilot river diversion locations. Based on the time required to breakdown the diversion system, it is anticipated that contingency plan for removal of the diversion system could be implemented within 4 to 5 hours. Although precipitation and flood events requiring execution of the contingency plan will likely occur during full-scale implementation, these events are anticipated to be a nuisance rather than a problem that would affect overall implementability of the diversion activities.

### **2.3.5 Impacts of Stream Diversion on Tributaries and Infrastructure**

Tributaries and infrastructure were unaffected by the pilot river diversion activities. During full-scale implementation of the river remedy, effects on tributaries may include: requirements for damming and diversion; repair of storm structures if damaged or otherwise influenced by diversion and excavation activities; backup of the tributary/storm sewer if located near the intake

or discharge locations where river stage may be higher than under natural flow conditions. Diversion activities are not anticipated to cause severe impacts to tributaries and storm sewers during full-scale implementation of the remedy. As with any construction project, when working near infrastructure, including bridges, utilities, bike paths, etc., care will require exertion to avoid accidents and ensure no damage is inflicted on these structures.

### **2.3.6 Temporary Dam Effectiveness and Requirements**

The water-filled dams employed during the pilot river diversion activities were highly effective in damming the LMR and allowing for dewatering of the diverted reach. Infiltration occurred around and under the dam; however, this was easily mitigated through maintenance dewatering. The dams are quick to setup and breakdown, and minor punctures are easily repaired.

At the LMR Parkway site, topographical conditions within the channel did not require installation of a downstream dam. Based on this, other areas with similar channel conditions are likely to exist and should be considered when determining the diversion reach lengths during full-scale implementation of the remedy; however, based on the quick setup and breakdown time for the water filled dams, this will not affect project costs or schedule significantly. At the LMR Parkway site, a storm sewer outfall was present at the downstream end of the diverted reach, adjacent to the diversion piping discharge location. Although this feature did not affect the diversion activities, if a significant rain event occurred during implementation of the diversion activities, backwater effects from this discharge may have required installation of a downstream dam to prevent flooding of the dewatered reach.

Minor grading of the channel floor was required to create a flat surface for the dam installation and to remove sharp objects that may puncture the underside of the dam. Although the channel at the LMR Parkway site required backfilling to narrow the channel, this was performed since only one dam size was available during the pilot river diversion activities. During full-scale implementation of the remedy, sets of dams with several widths, (i.e., 20 ft, 25 ft, 30 ft, etc.) could be purchased or rented, or the channel narrowing technique may be employed.

Alternative dam structures would also be effective. However, they may not be as easy to install and remove, may not be as reliable in preventing surface water infiltration, or may be more disruptive to sediments during installation thereby potentially causing greater impact to surface water. Alternative dam systems considered included earthen cofferdams, sheetpile cofferdams, sandbag cofferdams, and portable (steel tube frame with geomembrane) cofferdams.

### **2.3.7 Groundwater and Surface Water Control**

Based on the results of the CDS's evaluation of hydrogeological conditions in floodplain soils near the LMR, well-point systems will be ineffective in intercepting groundwater that may discharge into the LMR channel. CDS suggested excavation of sumps along the channel banks to intercept the groundwater from localized areas; however, this technique will require management of floodplain soil excavated to create the sumps, may restrict access to the river channel, and has

not been proven to be effective at the site. It is uncertain how much of the water collected during maintenance dewatering of the diverted reaches is associated with groundwater discharge versus surface water infiltration at the dam locations. Consequently, it is uncertain whether conventional groundwater collection techniques would yield substantive quantities required to make implementation of these controls cost effective during full-scale remediation.

Surface water infiltration at the dams was controlled to an extent using sandbags to create a tighter seal at the edges and base of the dam; however, significant quantities of surface water was observed to be infiltrating into the diverted section from these locations even with the sandbag placement. In addition to infiltration along the sides of the dams, a significant quantity of surface water is suspected to migrate under the dams through the sediment. To mitigate the water at the dams, a geomembrane sheet could be placed along the wetted side of the dam and along the channel floor for a distance away from the dam. This would elongate the flow path of the surface water through the sediment in order to enter the diversion segment, and reduce the overall flow into the dewatered area. Alternatively, a solid barrier, such as plywood sheets, could be driven into the sediment adjacent to the dam using an excavator. The barrier would be keyed several feet into the sediment and serve as a cut-off wall for surface water infiltrating through the sediment toward the diverted reach. Such a barrier would be easily installed after dam installation and removed prior to dam deflation.

### **2.3.8 Pumping Effectiveness and Requirements**

Overall, the 6,000-gpm centrifugal pumps employed during the pilot river diversion activities were sufficient for the climatic conditions experienced; however, larger pumps would likely be required during the full-scale remedial effort to avoid unnecessary breakdown of the work area due to average storm flows. As stated previously, during May through December 90 percent of the flow experienced in the LMR is below 16,000 gpm. Therefore, 16-inch (8,000-gpm) pumps may be substituted for the 12-inch (6,000 gpm) pumps during full-scale implementation of the river remedy. Further evaluation of the LMR flow is recommended during the RD/RA.

Use of alternative flow conveyance techniques do not appear to be preferable to the pumping and closed pipe conveyance method implemented. In-channel conveyance through a closed pipe by either gravity flow or pumping would not allow for safe and efficient sediment excavation. Conveyance of flow in an adjacent open channel by gravity flow or pumping would require excavation of the diversion channel, management of excavated floodplain soil, restoration of diversion channel, and would also restrict access to the channel banks and thereby make sediment excavation more difficult. Restricted channel sectioning would be difficult due to the narrow width of the channel and would likely be costly due to use of sheet piles to construct the retaining wall.

### **2.3.9 Ability to Determine Extent of Sediment Contamination**

Ability to identify contamination in sediment is addressed under Predesign Task 12, discussed in Section 3.

### **2.3.10 Ability to Remove Contaminated Sediment and Overbank Soil**

Test pits were excavated at each of the pilot river diversion sites. At both locations, sediments were readily excavated; therefore, removal of sediment from the channel should be easily performed using conventional construction equipment. Excavation of the sediment and bank soil will likely require access to both banks of the LMR, unless the excavator is able to enter into the LMR channel.

### **2.3.11 Erosion Control**

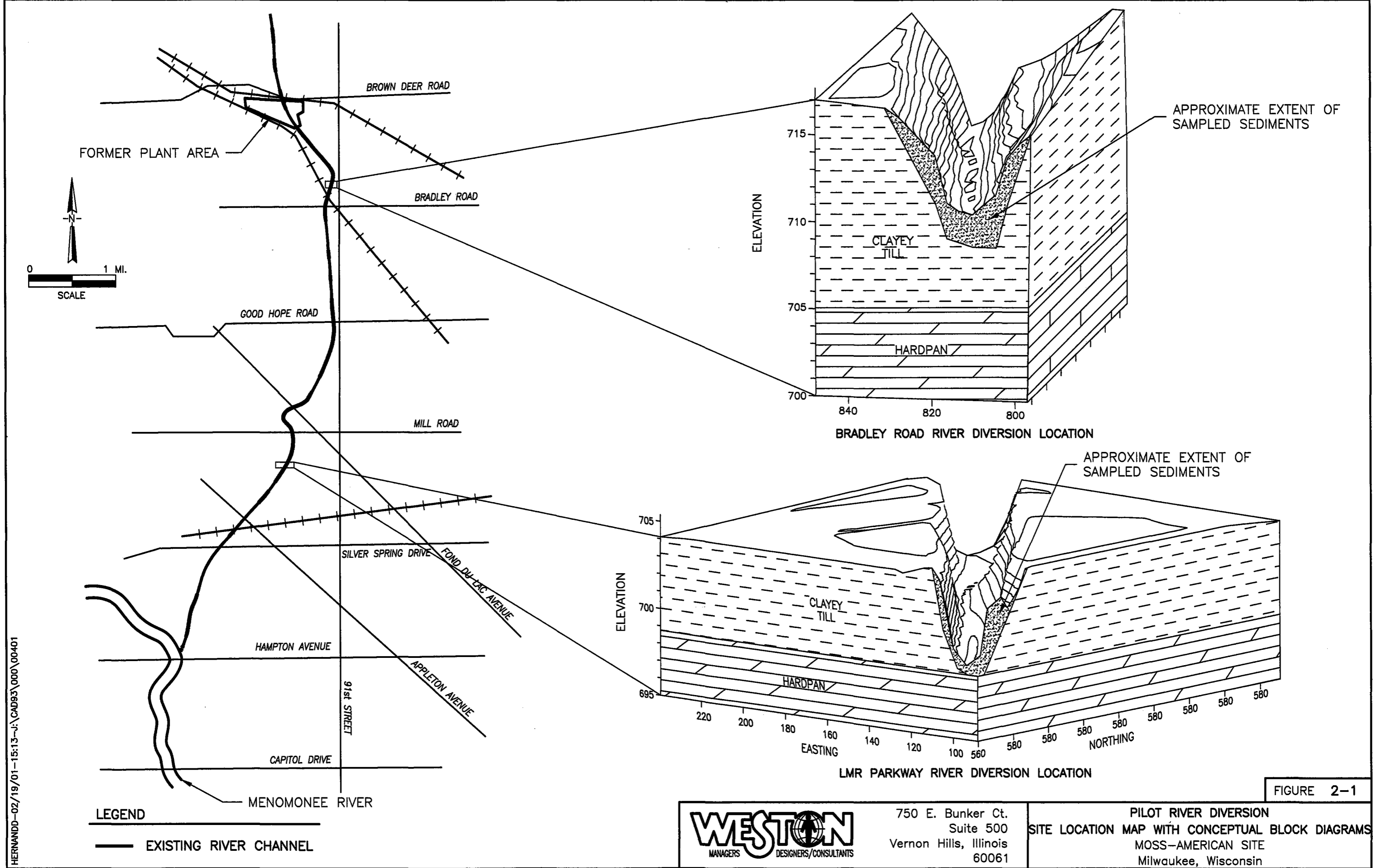
After several days of operation of the diversion system, minimal bank erosion was observed at either of the sites, indicating that the riprap breakwater will be sufficient to control bank erosion. Additionally, discharging the diverted water through a manifold into the river channel could prevent bank erosion.

### **2.3.12 Temporary Diversion of Storm Drains and Tributaries**

During implementation of Predesign Task 11, temporary diversion of storm drains and tributaries to the LMR was not required since these features were not present along the sections of river that were diverted. During full-scale implementation of the river remedy, it is anticipated that temporary diversion of these discharges to the LMR could be easily achieved using dams and smaller diversion pumps. Sizing of these pumps would need to be determined by evaluating the flow within these tributaries prior to full-scale implementation of the remedy.

## **2.4 CONCLUSIONS**

- Temporary diversion of the LMR to allow access for sediment excavation is readily implementable, based on the activities performed during execution of Predesign Task 11. Minor changes in equipment use may further enhance the implementability of LMR diversion. Alternative techniques and equipment use will be considered during the RD/RA.
- Sediment present in the LMR channel may be excavated using conventional construction equipment and techniques.
- Interception of groundwater using conventional technologies (i.e., well-point systems, interception trenches and sumps, etc.) is not likely to be effective and would be prohibitively costly.
- Two major factors identified during the implementation of Predesign Task 11 that influence the constructability and cost effectiveness of river diversion activities are: a) access requirements needed for sediment excavation and bank stabilization; and b) water quantities generated from maintenance dewatering of the diverted channel.



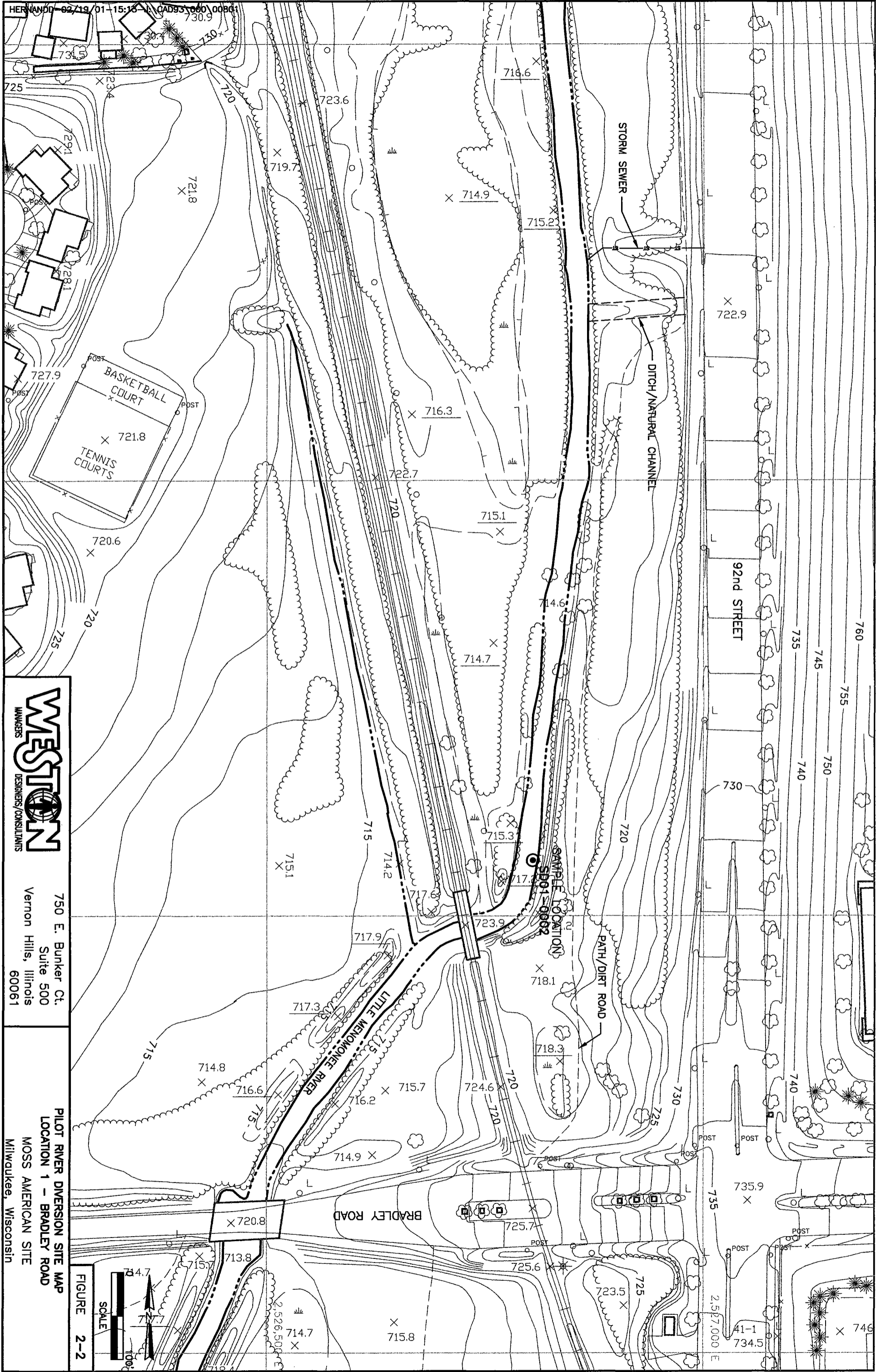
HERNANDD-02/19/01-15:13-j:\CAD93\000\00401

FIGURE 2-1

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

**PILOT RIVER DIVERSION**  
 SITE LOCATION MAP WITH CONCEPTUAL BLOCK DIAGRAMS  
 MOSS-AMERICAN SITE  
 Milwaukee, Wisconsin





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

PILOT RIVER DIVERSION SITE MAP  
LOCATION 1 - BRADLEY ROAD  
MOSS AMERICAN SITE  
Milwaukee, Wisconsin

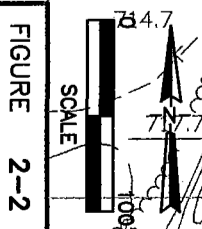
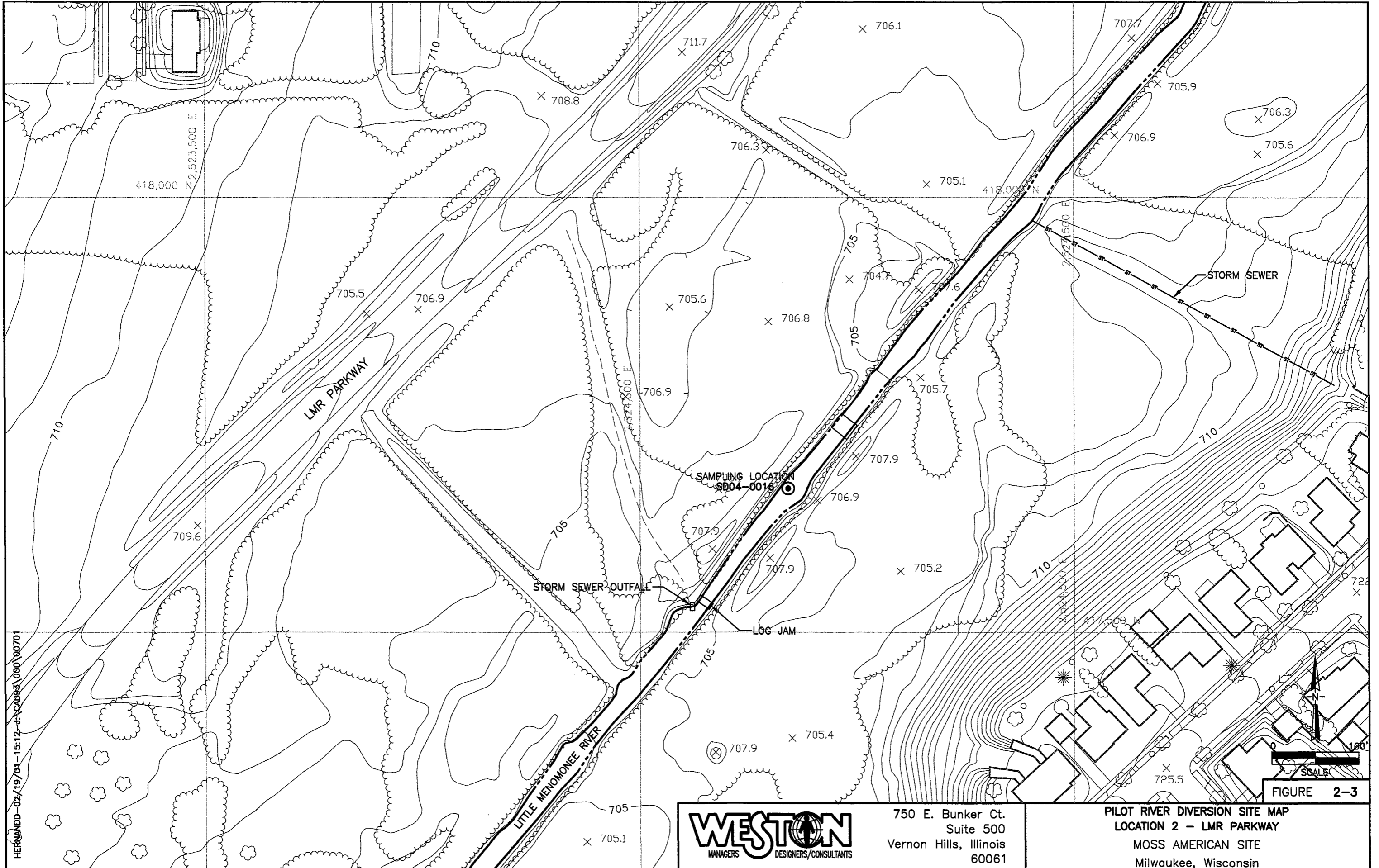


FIGURE 2-2

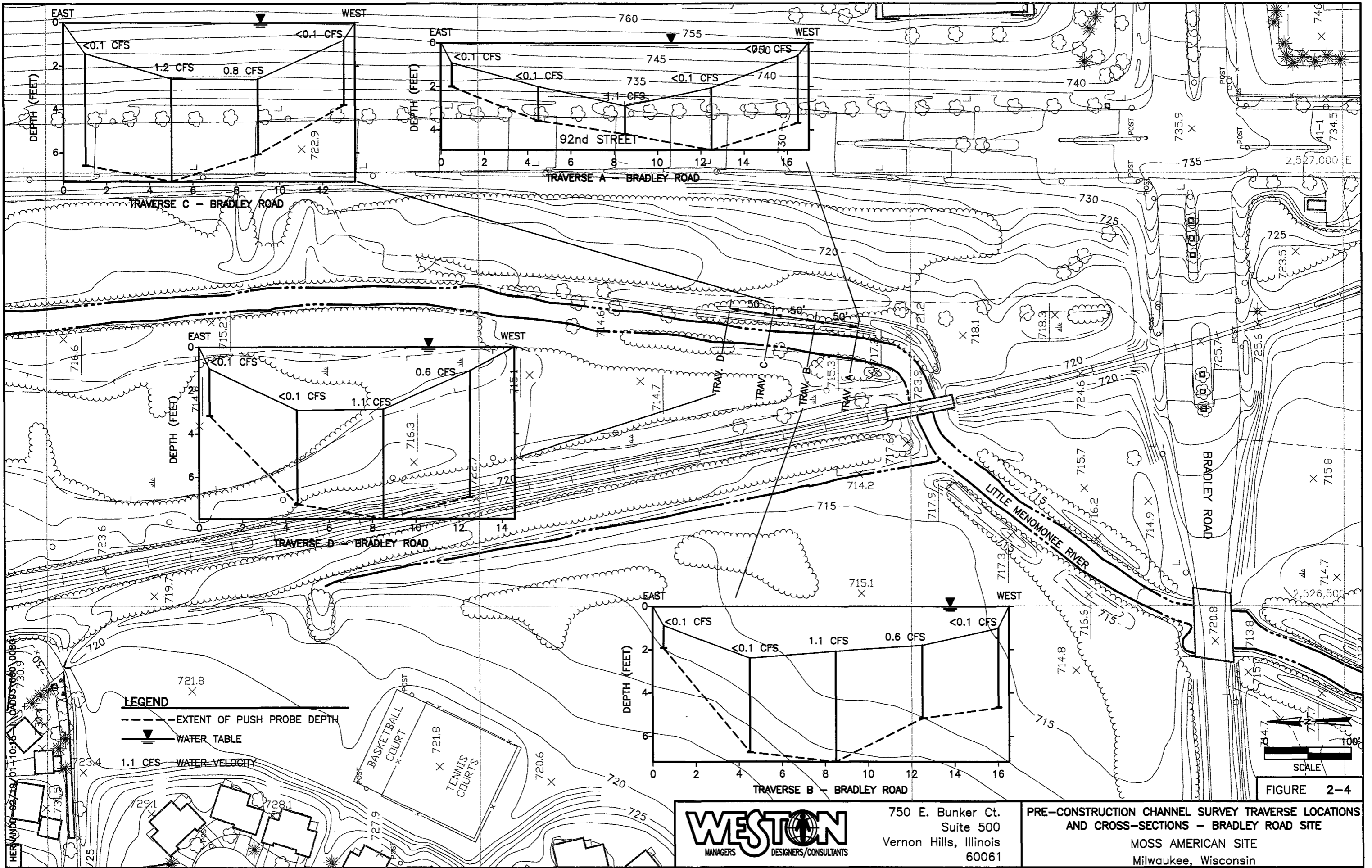


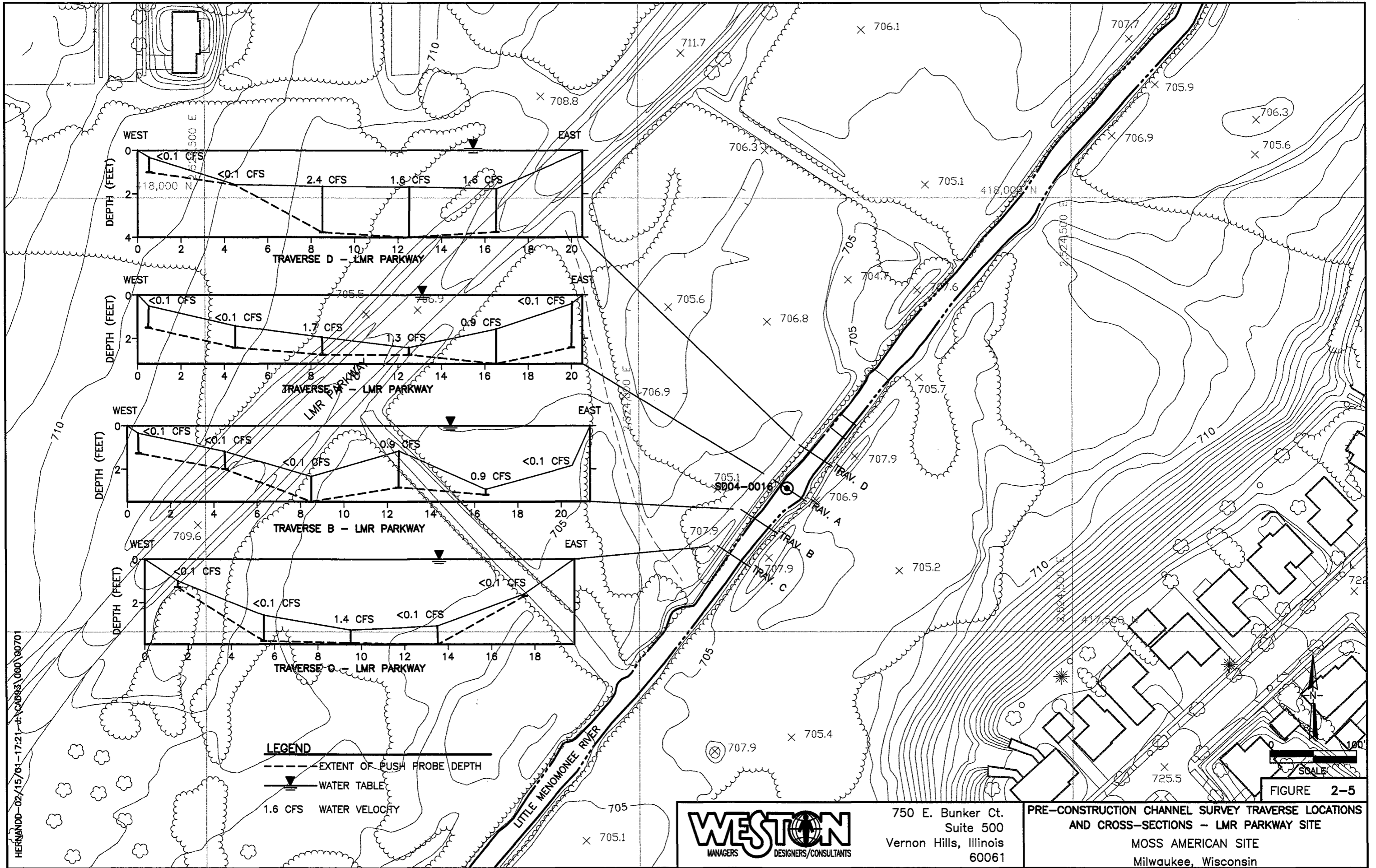
HERMANDD-02/19/01-15:12-u:\CAD\93\080\00701

FIGURE 2-3

**WESTON**  
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**PILOT RIVER DIVERSION SITE MAP  
 LOCATION 2 - LMR PARKWAY  
 MOSS AMERICAN SITE  
 Milwaukee, Wisconsin**



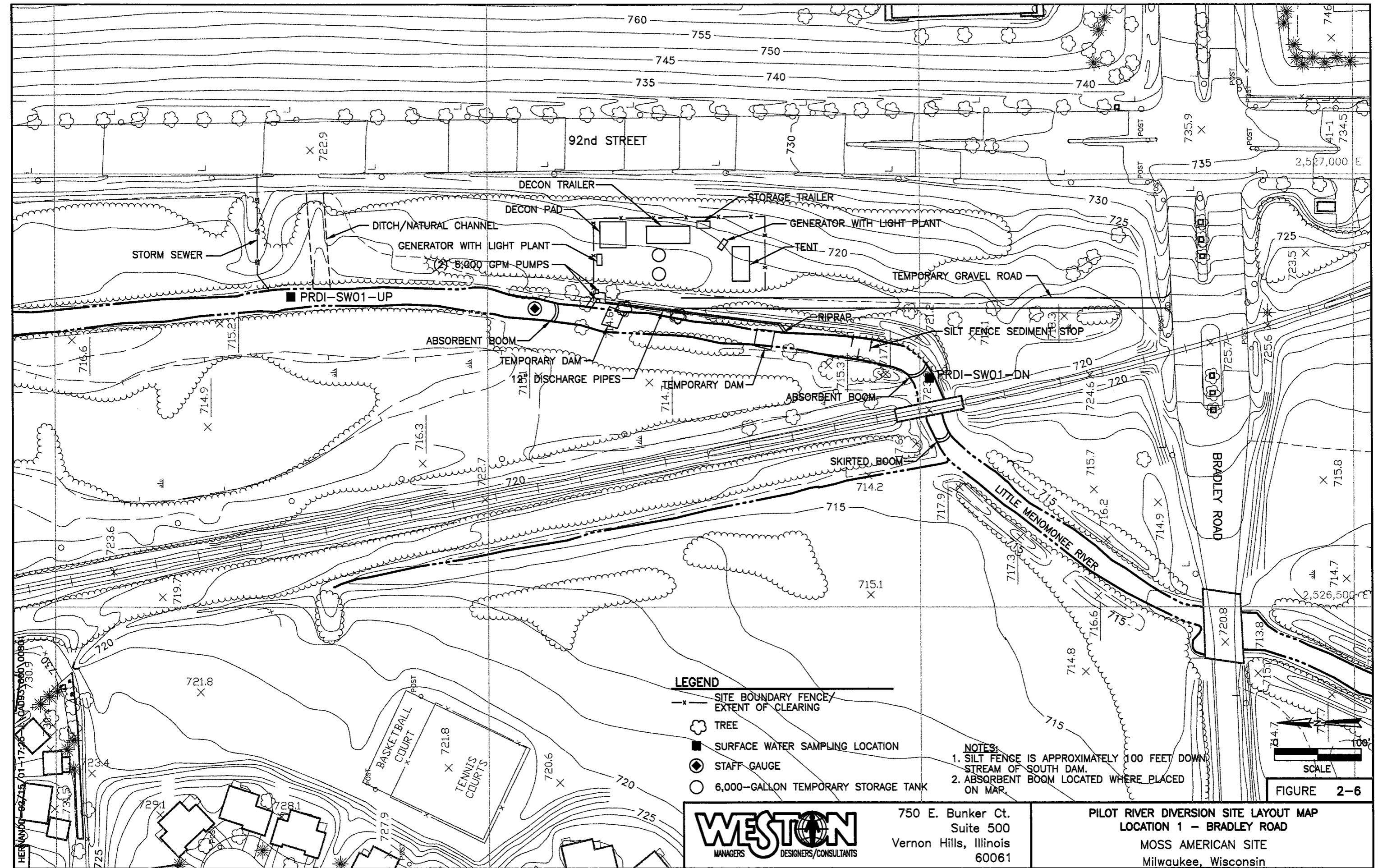


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Suite 500  
Vernon Hills, Illinois  
60061

**PRE-CONSTRUCTION CHANNEL SURVEY TRAVERSE LOCATIONS AND CROSS-SECTIONS - LMR PARKWAY SITE**  
MOSS AMERICAN SITE  
Milwaukee, Wisconsin



750 E. Bunker Ct.  
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Vernon Hills, Illinois  
60061

**PILOT RIVER DIVERSION SITE LAYOUT MAP**  
**LOCATION 1 - BRADLEY ROAD**  
MOSS AMERICAN SITE  
Milwaukee, Wisconsin

**Table 2-1**  
**Pre-Construction Channel Survey Data**  
**Pilot Scale River Diversion Project**  
**Moss-American Site**  
**Milwaukee, Wisconsin**

Bradley Road Site (SD01-0002)					
Traverse	Station	Cross-Channel Distance, ft	Water depth, ft	Flow Velocity, fps	Probing Depth, ft
A	0	0	0	0	NM
	1	0.5	0.9	< 0.1	1.1
	2	4.5	2	< 0.1	1.6
	3	8.5	2.9	1.1	4.2
	4	12.5	2.1	< 0.1	4.9
	5	16.5	0.6	NM	3.7
B	0	0	0	0	NM
	1	0.5	0.9	< 0.1	1.0
	2	4.5	2.4	< 0.1	4.4
	3	8.5	2.1	1.1	5.1
	4	12.5	1.8	0.6	3.3
	5	16	1	< 0.1	3.7
C	0	0	0	0	NM
	1	1	1.4	< 0.1	5.2
	2	5	2.6	1.2	4.8
	3	9	2.6	0.8	3.5
	4	13	0.8	< 0.1	2.2
D	0	0	0	0	NM
	1	0.5	1	< 0.1	2.2
	2	4.5	2.9	< 0.1	4.3
	3	8.5	2.9	1.1	5.0
	4	12.5	1.1	0.6	5.4
5	14.6	0	0	NM	

NM = Not Measured.

LMR Parkway Site - Traverse A (SD04-0016)					
Traverse	Station	Cross-Channel Distance, ft	Water depth, ft	Flow Velocity, fps	Probing Depth, ft
A	0	0	0	0	NM
	1	0.5	0.5	< 0.1	1.0
	2	4.5	1.4	< 0.1	1.0
	3	8.5	1.9	1.7	0.8
	4	12.5	2.4	1.3	0.8
	5	16.5	1.6	0.9	0.8
	6	20	0.4	< 0.1	NM
B	0	0	0	0	NM
	1	0.5	0.3	< 0.1	0.9
	2	4.5	1.2	< 0.1	0.8
	3	8.5	2.3	< 0.1	1.2
	4	12.5	2.8	0.9	1.2
	5	16.5	2.9	0.9	0.3
	6	20.5	1.8	< 0.1	NM
C	0	0	0	0	NM
	1	1.5	1	< 0.1	1.3
	2	5.5	2.6	< 0.1	1.2
	3	9.5	3.3	1.4	0.6
	4	13.5	3.1	< 0.1	0.8
	5	17.5	1.6	< 0.1	0.1
	6	19.8	0	0	NM
D	0	0	0	0	NM
	1	0.5	0.3	< 0.1	0.7
	2	4.5	1.6	< 0.1	0.1
	3	8.5	1.7	2.4	2.1
	4	12.5	1.7	1.6	1.8
	5	16.5	1.8	1.6	2.0
6	16.8	0	0	NM	

**Table 2-2**  
**Pre-Construction Flowrate Calculations**  
**Pilot Scale River Diversion Project**  
**Moss-American Site**  
**Milwaukee, Wisconsin**

Bradley Road Site - (SD01-0002)									
Traverse	Station	Cross-Channel Distance, ft	Water depth, ft	Area Increment, ft <sup>2</sup>	Flow Velocity, fps	Incremental Flow, cfs	Total Area, ft <sup>2</sup>	Total Flow, cfs	Total Flow, gpm
A	0	0	0	--	0	--			
	1	0.5	0.9	0.23	< 0.1	--			
	2	4.5	2	5.8	< 0.1	--			
	3	8.5	2.9	9.8	1.1	10.8			
	4	12.5	2.1	10.0	< 0.1	--			
	5	16.5	0.6	5.4	NM	--			
	6	17.1	0	0.18	0	0	31.41	10.8	4,800
B	0	0	0	--	0	--			
	1	0.5	0.9	0.23	< 0.1	--			
	2	4.5	2.4	6.6	< 0.1	--			
	3	8.5	2.1	9.0	1.1	9.9			
	4	12.5	1.8	7.8	0.6	4.68			
	5	16	1	4.9	< 0.1	--			
6	16.5	0	0.25	0	0	28.78	14.6	6,500	
C	0	0	0	--	0	--			
	1	1	1.4	0.70	< 0.1	--			
	2	5	2.6	8.0	1.2	9.6			
	3	9	2.6	10.4	0.8	8.3			
	4	13	0.8	6.8	< 0.1	--			
5	13.5	0	0.2	0	0	26.1	17.9	8,000	
D	0	0	0	--	0	--			
	1	0.5	1	0.25	< 0.1	--			
	2	4.5	2.9	7.8	< 0.1	--			
	3	8.5	2.9	11.6	1.1	12.8			
	4	12.5	1.1	8.0	0.6	4.8			
5	14.6	0	1.2	0	--	28.8	17.6	7,900	

LMR Parkway Site - (SD04-0016)									
Traverse	Station	Cross-Channel Distance, ft	Water depth, ft	Area Increment, ft <sup>2</sup>	Flow Velocity, fps	Incremental Flow, cfs	Total Area, ft <sup>2</sup>	Total Flow, cfs	Total Flow, gpm
A	0	0	0	--	0	--			
	1	0.5	0.5	0.13	< 0.1	--			
	2	4.5	1.4	3.8	< 0.1	--			
	3	8.5	1.9	6.6	1.7	11.2			
	4	12.5	2.4	8.6	1.3	11.18			
	5	16.5	1.6	8.0	0.9	7.2			
	6	20	0.4	3.50	< 0.1	--			
	7	20.5	0	0.10	0	0	30.73	29.6	13,300
B	0	0	0	--	0	--			
	1	0.5	0.3	0.08	< 0.1	--			
	2	4.5	1.2	3.0	< 0.1	--			
	3	8.5	2.3	7.0	< 0.1	--			
	4	12.5	2.8	10.2	0.9	9.18			
	5	16.5	2.9	11.4	0.9	10.26			
	6	20.5	1.8	9.40	< 0.1	--			
7	21.3	0	0.72	0	0	41.80	19.4	8,700	
C	0	0	0	--	0	--			
	1	1.5	1	0.75	< 0.1	--			
	2	5.5	2.6	7.20	< 0.1	--			
	3	9.5	3.3	11.80	1.4	16.5			
	4	13.5	3.1	12.80	< 0.1	--			
	5	17.5	1.6	9.40	< 0.1	--			
6	19.8	0	1.84	0	0	43.79	16.5	7,400	
D	0	0	0	--	0	--			
	1	0.5	0.3	0.08	< 0.1	--			
	2	4.5	1.6	3.80	< 0.1	--			
	3	8.5	1.7	6.60	2.4	15.8			
	4	12.5	1.7	6.80	1.6	10.88			
	5	16.5	1.8	7.00	1.6	11.2			
6	16.8	0	0.27	0	0	24.55	37.9	17,000	

NM = Not Measured.  
 -- = Value could not be calculated.

Overall Average Area, ft<sup>2</sup> = 28.77  
 Overall Average Total Flow, cfs = 15.2  
 Overall Average Total Flow, gpm = 6,800

Overall Average Area, ft<sup>2</sup> = 35.21  
 Overall Average Total Flow, cfs = 25.9  
 Overall Average Total Flow, gpm = 11,600

Table 2-3

**Surface Water Analytical Results  
Pilot Scale River Diversion Project - Bradley Road Location  
Moss-American Site  
Milwaukee, Wisconsin**

Sample ID	UP-141100	DN-141100	UP-151100	DN-151100	UP-161100	DN-161100
Location	Upstream	Downstream	Upstream	Downstream	Upstream	Downstream
Date Collected	11/14/2000	11/14/2000	11/15/2000	11/15/2000	11/16/2000	11/16/2000
<b>Volatile Organic Compounds (ug/L)</b>						
Benzene	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
Toluene	0.20 U	0.20 U	0.20 U	0.21 J	0.20 U	0.20 U
Ethyl benzene	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
Xylene, Total	0.60 U	0.60 U	0.60 U	0.60 U	0.60 U	0.60 U
<b>Polycyclic Aromatic Hydrocarbons (ug/L)</b>						
Naphthalene	1 U	1 U	1 U	1 U	0.9 U	1 U
Acenaphthylene	1 U	1 U	1 U	1 U	0.9 U	1 U
Acenaphthene	1 U	1 U	1 U	1 U	0.9 U	1 U
Fluorene	1 U	1 U	1 U	1 U	0.9 U	1 U
Phenanthrene	1 U	2 J	1 U	1 U	0.9 U	1 U
Anthracene	1 U	1 U	1 U	1 U	0.9 U	1 U
Fluoranthene	1 U	2 J	1 U	1 U	0.9 U	1 U
Pyrene	1 U	1 J	1 U	1 U	0.9 U	1 U
Benzo(a) anthracene	1 U	1 U	1 U	1 U	0.9 U	1 U
Chrysene	1 U	1 U	1 U	1 U	0.9 U	1 U
Benzo(b) fluoranthene	1 U	1 U	1 U	1 U	0.9 U	1 U
Benzo(k) fluoranthene	1 U	1 U	1 U	1 U	0.9 U	1 U
Benzo(a) pyrene	1 U	1 U	1 U	1 U	0.9 U	1 U
Indeno(1,2,3-cd) pyrene	1 U	1 U	1 U	1 U	0.9 U	1 U
Dibenzo(a,h) anthracene	1 U	1 U	1 U	1 U	0.9 U	1 U
Benzo(g,h,i) perylene	1 U	1 U	1 U	1 U	0.9 U	1 U
<b>Total Suspended Solids (mg/L)</b>						
Total Suspended Solids	21	121	21	19	16	18

J- Indicates estimated concentration.

U- Compound not detected above detection limit. Detection limit indicated.



Table 2-4

**Surface Water Analytical Results**  
**Pilot Scale River Diversion Project - LMR Parkway Location**  
**Moss-American Site**  
**Milwaukee, Wisconsin**

Sample ID	UP-281100	DN-281100	UP-291100	DN-291100
Location	Upstream	Downstream	Upstream	Downstream
Date Collected	11/28/2000	11/28/2000	11/29/2000	11/29/2000
<b>Volatile Organic Compounds (ug/L)</b>				
Benzene	0.20 U	0.20 U	0.20 U	0.20 U
Toluene	0.20 U	0.20 U	0.20 U	0.20 U
Ethyl benzene	0.20 U	0.20 U	0.20 U	0.20 U
Xylene, Total	0.60 U	0.60 U	0.60 U	0.60 U
<b>Polycyclic Aromatic Hydrocarbons (ug/L)</b>				
Naphthalene	0.9 U	1 U	1 U	1 U
Acenaphthylene	0.9 U	1 U	1 U	1 U
Acenaphthene	0.9 U	1 U	1 U	1 U
Fluorene	0.9 U	1 U	1 U	1 U
Phenanthrene	0.9 U	1 U	1 U	1 U
Anthracene	0.9 U	1 U	1 U	1 U
Fluoranthene	0.9 U	1 U	1 U	1 U
Pyrene	0.9 U	1 U	1 U	1 U
Benzo(a) anthracene	0.9 U	1 U	1 U	1 U
Chrysene	0.9 U	1 U	1 U	1 U
Benzo(b) fluoranthene	0.9 U	1 U	1 U	1 U
Benzo(k) fluoranthene	0.9 U	1 U	1 U	1 U
Benzo(a) pyrene	0.9 U	1 U	1 U	1 U
Indeno(1,2,3-cd) pyrene	0.9 U	1 U	1 U	1 U
Dibenzo(a,h) anthracene	0.9 U	1 U	1 U	1 U
Benzo(g,h,i) perylene	0.9 U	1 U	1 U	1 U
<b>Total Suspended Solids (mg/L)</b>				
Total Suspended Solids	14	25	18	11.6

J- Indicates estimated concentration.

U- Compound not detected above detection limit. Detection limit indicated.

## SECTION 3

### **PREDESIGN TASK 12**

#### **3.1 Rationale**

The objective of Predesign Task 12 was to test the effectiveness of visual observation in determining the extent of creosote residue within the sediments of the Little Menominee River. Previous investigations had indicated that the creosote residue in the Little Menominee River is not uniformly distributed. Visual observations and analytical methods were implemented, documented, and compared to determine if there is any correlation between visual contamination and laboratory-measured contaminant concentrations.

Visual observations and analytical sampling of the river sediments were conducted in conjunction with Predesign Task 11, the pilot-scale river diversion project. Visual observations of the river sediments were made and documented before and during the sampling activities. The river sediment samples were collected and analyzed for total carcinogenic polynuclear aromatic hydrocarbons (CPAHs).

As stated in the SOW:

*“The objective of this predesign task is to test the effectiveness of using visual observation to determine the extent of creosote residue in the sediments of the Little Menominee River. During field studies, it was shown that creosote residue in the river is not uniformly distributed. The test will indicate whether visual observation is a viable method for identifying the extent and location of creosote residue in the sediment... The analytical results obtained in this predesign task will be used in determining whether visual observation is a viable method to locate the sediments containing the contaminants of concern in the Little Menominee River. If it is not, an alternative method shall be developed. If used, visual identification will be combined with a confirmatory testing method, approved by U.S. EPA.”*

The 1992 Workplan noted that Predesign Task 12 is designed to meet three very focused goals:

- Determine if creosote residue is visible in the dewatered sediments of the Little Menominee River.
- Conduct and record visual observations during sample collection activities (Predesign Task 4) and pilot river diversion (Predesign Task 11).
- Correlate recorded visual observations with CPAH concentrations determined by laboratory analyses.

In 1994, KMC/WESTON initiated the investigations for Predesign Task 4 to define the extent of contaminated sediments. The initial results of the Predesign Task 4 investigation are presented in *Technical Memorandum – Predesign Tasks 2(b), 3, 4, 5, 6, 7, and 19*, WESTON, 1994. Additional sediment characterization and sampling activities under Predesign Task 4 (1992 Work Plan, section 4.3.3.2) were to be completed while the Little Menominee River was diverted during the implementation of Predesign Tasks 11 and 12. The remaining sampling activities required to complete Predesign Tasks 4 and 12 conducted during the Pilot Scale River Diversion are presented in this Technical Memorandum.

Sediment sampling of downstream tributaries to the LMR (Predesign Task 2(b), WESTON, 1994) identified that there are a variety of sources contributing CPAHs to the LMR other than the former wood-treating facility. Tributary sediment samples contained CPAH levels ranging up to 120 mg/kg and tended to increase in concentration with increasing distance downstream from the former wood-treating facility. This increase in tributary sediment CPAH levels, as one moves downstream from the former wood-treating facility, is in general agreement with the increased level of urbanization present in the LMR watershed as one moves downstream. Since the contribution of the former wood-treating facility to LMR sediment CPAHs tends to decrease with distance downstream, and the contribution from other sources tends to increase with distance downstream, there is obviously a point downstream where the site-related contribution is small compared to the other urban sources of CPAHs.

## **3.2 Field Investigation Protocols**

### **3.2.1 Visual Inspection of Sediment Surface**

Before the start of the sampling activities, a visual inspection of the dewatered river segment was conducted. Personnel walked along each side of the river and examined the river surface for oil sheen or staining of the soil/sediment surface. During this inspection, conditions of the river surface were videotaped and photographed. The river surface was visually inspected up to a distance of 5 ft into the flood plain area or to the extent allowed by vegetation, whichever was greater. Visual inspection of the dewatered river surface at the Bradley Road and LMR Parkway locations indicated oil sheen and dark coloration of the river sediments. The ambient air above the streambed was screened with an OVM and recorded in the site logbook. No readings above background levels were encountered with the OVM during site activities.

### **3.2.2 Location of Channel Traverses**

The length of the dewatered river channel was staked and professionally surveyed in state plane coordinates with sample locations along lines of traverse. Elevations with respect to average mean sea level (asml) of each surveyed point were also measured. Each traverse line includes three core sample locations and five probe points uniformly spaced across the river bottom. The three central probe points coincide with an associated core sample location. The layout of the traverse lines, sample locations, and probe points for both the Bradley Road and LMR Parkway

locations are presented in Figures 3-1 and 3-2. The measured survey data coordinates are presented in Appendix D. The initial traverse was located as close to the upstream dam as possible in order to maximize the area of investigation, allowing a maximum of 20 ft between the dam and the first traverse. The traverses were spaced 30 ft apart along the full length of the dewatered river channel. A total of 6 traverses were surveyed at the Bradley Road location and 7 traverses were surveyed at the LMR Parkway location.

### **3.2.3 Sediment Probing**

Probing was performed to determine the extent of non-consolidated sediment thickness. Probing was accomplished with a 3/8" outer diameter steel tile probe, as performed in the pre-construction channel survey. Five probe locations were investigated along each sample traverse. Probing traverses were spaced 10 ft apart. The outer riverbank probe location corresponded to the interface between the river sediments and vegetated banks above the waterline. The probe was hand pushed vertically into the sediments to refusal at depth. The probe was then removed and visually inspected for sheen or staining associated with contamination. A total of 80 soil probe locations were investigated at the Bradley Road location and 95 soil probe locations at the LMR Parkway location (Figure 3-1 and 3-2).

### **3.2.4 Sediment Coring**

At each surveyed core sample location, one sample from the first foot of material at the surface was collected for laboratory analysis of total CPAHs in the upper zone of loose, non-cohesive, organic-rich river sediment. This first foot of sediment defines the surficial sample for both pilot-scale river diversion locations. Additionally, samples were collected from each foot of material underlying the river sediment, using hand-powered equipment to refusal depth or to a maximum of 5 ft below ground surface (bgs). Samples collected below the maximum surficial sample depth of 1-ft are defined as subsurface samples. The material encountered at each core sample location was geologically logged under the Unified Soil Classification System (USCS) and documented.

#### Bradley Road

The sampled material at Bradley Road was collected with a coring device. One sample was collected from each foot of core material to a maximum of 5 samples per core. These soil/sediment core samples were collected at the Bradley Road location using an AMS® Extendible Core Sampler. The AMS Core Sampler is a 2-inch inner-diameter sampler that collects 12-inch undisturbed sample core segments up to a maximum of 72 inches. The AMS Core Sampler was used with butyrate liners for a discreet sample core for each sample interval. The samples were collected by pushing the coring device into the river sediments, aided by a slide or sledge hammer to the desired sample depth as necessary. The core was then retrieved by

hand or with the aid of an extraction jack as necessary. A total of 68 investigative samples were collected at the Bradley Road site using this method. In addition, eight duplicate samples, four matrix spike (MS) samples, and four matrix spike duplicate (MSD) samples were collected. WDNR collected split samples from 17 of the 84 samples collected by KMC/WESTON at the Bradley Road site. KMC/WESTON collected an additional sample (RFW-B23.5-42-49) from a split of a sediment core sample collected by WDNR. Including QA/QC samples, a total of 85 samples were collected at the Bradley Road site.

### LMR Parkway

The sediments at the LMR Parkway location consisted of coarser grained sands and gravels in most locations. As a result, a shovel was used to collect the upper 1-ft sampled interval at each sample location for the LMR Parkway location. Due to the coarser material and proximity of hardpan to the bottom of the river channel (approximately 3 ft below the top of the river channel), only the surface to 2 ft depth subsurface samples were collected at the core sampling points for the LMR Parkway location. The non-cohesive material at the LMR Parkway location segment, which consisted of primarily coarse sands and gravels with debris, required the lower (subsurface) 1-to-2 ft depth sample interval at each sample location to be collected with a bucket auger. The subsurface samples at the LMR Parkway were collected with a bucket auger from the center of each sample location after the upper foot of material within a 1-ft radius was removed. A total of 42 investigative samples were collected using this method. In addition, four duplicate samples, two MS samples, and two MSD samples were collected. WDNR collected split samples from 3 of the 50 samples collected by KMC/WESTON at the LMR Parkway site. KMC/WESTON collected two additional samples (Core1-1-12 and SB-01) from splits of a sediment core sample and surface sediment sample collected by WDNR, respectively. Including QA/QC samples, a total of 52 samples were collected at the LMR Parkway site.

Additionally, test pits were dug at the LMR Parkway location, utilizing a track hoe, to define the subsurface strata. The test pits confirmed that the material at the LMR Parkway location consisted primarily of coarser grained sands and gravels with debris. The test pits also encountered a material too dense for the track hoe to dig through at a depth of 3 to 4 ft below the river channel. Detailed geologic logs of the test pit wall material are presented along with the boring logs in Appendix E.

### **3.2.5 Sediment Sample Collection and Analysis**

The samples were collected with a core-type sampler, bucket auger, shovel or other appropriate sampling device. The sample was then placed in a laboratory cleaned 16-ounce glass jar and covered with aluminum foil. The covered jar was then placed next to a space heater to allow the sample to reach approximately 70° Fahrenheit for field screening with an organic vapor monitor (OVM). After the sample had reached ambient temperature, the aluminum foil cover was pierced with the probe of the OVM and headspace readings were recorded for each sample in the

field logbook. The field screening results indicated OVM readings ranging from 1.1 to 193 ppm at the Bradley Road site and 0.0 to 10.7 ppm at the LMR Parkway site. The sample was then capped and packaged for shipment to Lancaster Laboratories for total CPAH analysis under the U.S. EPA Office of Solid Waste and Emergency Response (OSWER) method SW 846.8310.

### **3.2.6 Documentation**

All field observations and notes were recorded in the site logbook, associated boring logs, and photographs. A description of the samples collected and any notable creosote related residue was recorded for each sample collected. The sample depths were recorded and the sample points were staked and surveyed for accurate descriptions of the streambed width and morphometry. The location of each sample point and push probe location was recorded in the site logbook.

## **3.3 Investigation Results**

### **3.3.1 Visual Inspection of Sediment Surface**

The surfaces of the river sediments at both Bradley Road and LMR Parkway locations were discolored black and had indications of oil sheen at the surface. The discolored sediments also had slight hydrocarbon odors. No evidence of any discolorations, oil sheen, or hydrocarbon odors was noted for sediments outside the banks of the LMR channel.

The field investigation indicated that the majority of surficial sediments at both pilot river diversion locations displayed visible evidence of contamination. The criteria used to determine visible contamination includes black staining or discoloration, hydrocarbon odor, artificial black inclusions or black mottling, and oil sheen. The visible evidence of contamination was noted in the site documentation including photographs, boring logs, laboratory chain of custodies, and the field logbook.

During the visual inspection, numerous articles of debris were noted in the LMR channel at the LMR Parkway site. The debris encountered included items such as automobile and motorcycle tires, aluminum cans, an ATV rack, automobile gas tank, empty antifreeze container, basketballs, tree branches, and other debris. None of the additional debris encountered is attributable to the Moss-American site.

### **3.3.2 Probing Depth**

#### **Bradley Road**

Table 3-1 lists the probe penetration depths results for the Bradley Road site. At the Bradley Road site, the probe penetration ranged from 0.83 to 7.67 ft with an average depth of 4.07 ft.

The maximum probe penetration at this site was 7.67 and 7.33 ft below the bank of the river and the channel bottom, respectively.

### LMR Parkway

Table 3-2 lists the probe depth results for the LMR Parkway site. At the LMR Parkway site, the probe penetration ranged from 0.37 to 3.17 ft with an average depth of 1.55 ft. The maximum probe penetration was 3.17 and 2.25 ft below the bank of the river and the channel bottom, respectively.

The probe investigation depths were compared with those measured during the pre-construction channel survey, presented in Section 2.2.1.1. The average probing depths measured at the Bradley Road site prior and subsequent to dewatering noted only a 0.37 ft increase in probe depth. The average probing depths measured at the LMR Parkway site prior and subsequent to dewatering noted a 0.55 ft increase in probe depth. The difference in probe depth is likely due to the inability to visually identify the top of the sediments that were covered with water during the pre-construction survey.

### **3.3.3 River Sediment Cross-Sections and Profile**

#### Bradley Road

The core samples collected at the Bradley Road location were logged and extrapolated into cross sections of the river channel at that location. These cross-sections are presented in Figures F-1 through F-7 in Appendix F. The cross-sections depict the actual river channel and associated soil types at each core location. Cross-section F-7 depicts the LMR channel along its length at Bradley Road location. The total depth of each core does not exceed 5 ft and is less in areas where the soil type at the bottom of the channel was too dense to core through with hand tools.

The size of materials encountered in the river channel ranged from clay to cobble sized gravels. The Bradley Road site consisted primarily of clay, silt and fine sands. Peat was present at the Bradley Road location in localized areas. The sediments at the Bradley Road site can be roughly described as clayey-silts or clayey-sands grading into silty-clay till at depth.

#### LMR Parkway

The cross-sections depicted for the LMR Parkway location were derived from data obtained from test pit logs and sample descriptions. The coarser material and the presence of bedrock limited the depth of sampling at the LMR Parkway location to a total depth of 2 ft bgs. The cross-sections for the LMR Parkway location are presented as Figures F-8 through F-15 in Appendix F. Cross-section F-15 depicts the LMR channel along its length at the LMR Parkway location. The total depth of the sample material does not exceed 2 ft in any of the traverse locations.

The sediments at the LMR Parkway site consisted of approximately 3 ft of sediments including well-graded clays, silts, sands, gravels, and cobbles overlain by a layer of soft silts and clays. Bedrock was encountered in test pits dug at the LMR Parkway location at depths of 3 to 4 ft below the channel bottom.

### **3.3.4 Sediment Sample Analysis**

#### Visual Observations

Each subsurface sediment sample was examined visually as it was removed from the channel. Samples that had any of the visible indicators (black discoloration, petroleum odor, oil sheen) were noted in the soil boring logs for the Bradley Road location and in the field logbook for the LMR Parkway location. Approximately 56 percent of all samples collected at each of the pilot-scale river diversion locations contained visible indicators. The field observation as to whether or not a sample was determined as visibly contaminated is presented in Tables 3-3 and 3-4.

#### Laboratory Analysis

Laboratory analytical results indicate the presence of total CPAHs ranging from 0.03 mg/kg to 1,078 mg/kg for both pilot river diversion locations. Laboratory analytical results indicate the presence of total CPAHs ranging from 0.03 to 1,078 mg/kg at the Bradley Road location and ranging from 0.06 to 436.5 mg/kg at the LMR Parkway location. No analytical results for split samples collected by WDNR from those supplied by KMC/WESTON were available at the date of this Technical Memorandum.

#### Bradley Road

Only one sample (PRD1-CTA-2-B) at the Bradley Road location was found to contain total CPAH concentrations above 388 mg/kg. The maximum depth for samples with concentrations reported above the proposed background total CPAH concentration of 15 mg/kg total CPAH is 4 ft below the sediment surface, or approximately 706.5 ft amsl at the Bradley Road location. Table 3-3 summarizes the total CPAH concentrations encountered at the Bradley Road site. Total CPAH analytical results for each sample depth are also presented on the cross-sections in Appendix F.

#### LMR Parkway

One sample (PRD2-CTE-2-A) at the LMR Parkway location was found to contain total CPAH concentrations above 388 mg/kg. The maximum depth for samples with concentrations reported above 15 mg/kg total CPAH is 2 ft below the sediment surface or 697 ft amsl at the LMR Parkway location. Table 3-4 summarizes the total CPAH concentrations encountered at the LMR Parkway site. Total CPAH analytical results for each sample depth are also presented on the cross-sections in Appendix F.



### 3.3.4.1 Correlation Between Laboratory Analytical Results and Visual Observations

#### Bradley Road

The LMR channel at the Bradley Road location displayed evidence of visible contamination across the majority of the surficial channel sediments. A total of 69 investigative surface and subsurface samples were analyzed for total CPAHs at the Bradley Road location. Table 3-5 lists the total CPAH concentrations and visible contamination of the samples collected at Bradley Road site in order of decreasing CPAH concentration. For this evaluation, if a duplicate sample exhibited a higher total CPAH concentration than its investigative counterpart, the duplicate was included in place of the investigative sample. Of the surficial samples collected at the Bradley Road location 66% (12 out of 18 samples) were identified as visibly contaminated. Of the remaining 51 subsurface samples collected, 21 samples (41%) displayed evidence of visible contamination. Overall, 48 percent of the total samples collected at the Bradley Road location displayed characteristics of visible contamination (33 of 69 samples). Only one sample (3 %) of the 33 samples that were visibly contaminated was above 388 mg/kg of total CPAHs.

#### LMR Parkway

The LMR channel at the LMR Parkway location displayed evidence of visible contamination across the majority of the surficial channel sediments. A total of 44 investigative surface and subsurface samples were analyzed for total CPAHs at the LMR Parkway location. Table 3-6 lists the total CPAH concentrations and visual contamination of all samples collected at the LMR Parkway site in order of decreasing CPAH concentration. For this evaluation, if a duplicate sample exhibited a higher total CPAH concentration than its investigative counterpart, the duplicate was included in place of the investigative sample. Of the 23 surficial sediment samples at the LMR Parkway location, 21 samples displayed evidence of visible contamination. Of the remaining 21 subsurface samples collected, 4 samples (19%) displayed evidence of visible contamination. Overall, 57 percent of the total samples collected at the LMR Parkway displayed visible indications of contamination (25 of 44 samples). Only one sample (4%) of the 25 visibly contaminated samples was above 388 mg/kg total CPAHs.

#### Summary

Of the 113 investigative samples collected from the two pilot river diversion locations, 58 were determined as visibly contaminated. Out of the 58 samples determined as visibly contaminated, only 2 (3%) exceeded 388 mg/kg total CPAHs. A total of 39 samples (67%) that were visibly contaminated exceeded 15 mg/kg total CPAHs. The 19 remaining samples (33%) that were determined as visibly contaminated had concentrations below 15 mg/kg total CPAHs. Figure 3-3 is a histogram indicating the distribution of total CPAH concentrations for all samples collected, which graphically illustrates the large number of samples with total CPAHs less than background levels. The 55 samples without indication of visible contamination ranged in actual concentrations from 0.03 mg/kg up to 213.5 mg/kg total CPAHs. Complete laboratory analytical

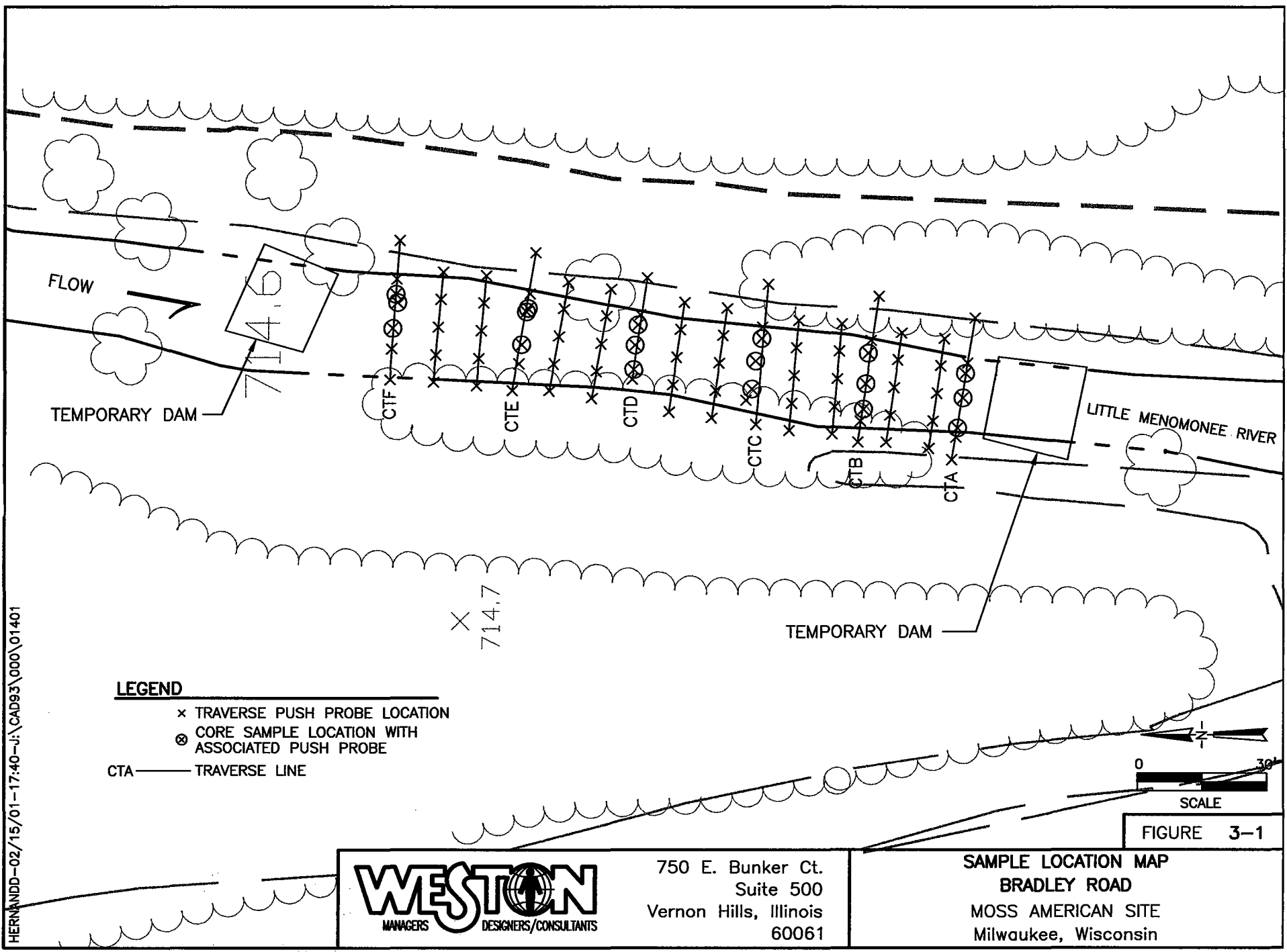
results for the sediment samples collected at both pilot-scale river diversion locations are presented in Appendix G.

### **3.4 Conclusions**

- Consistent with all previous investigations of LMR sediments performed by U.S. EPA, KMC/WESTON, and WDNR, there is very little LMR sediment that contains greater than 388 mg/kg total CPAHs (approximately 3 percent or less of the sediment). Given the very small quantities of this material, difficulty exists in locating and studying it with respect to characteristics that allow rapid field identification during remediation.
- “Visible contamination” of LMR sediments was defined as any combination of the following criteria; hydrocarbon odors, black staining or discoloration, artificial black inclusions or black mottling, and oil sheen or free product. These criteria are equivalent to those used by WDNR in its investigation of LMR sediments (WDNR, 1999). Only 3% of the samples categorized as visibly contaminated exceeded a total CPAH concentration of 388 mg/kg. Furthermore, in both the current KMC/WESTON study, as well as the WDNR study, approximately one-third of the samples that were designated as visibly contaminated contained less than background levels of CPAHs (<15 mg/kg total CPAHs). Therefore, these criteria are relatively ineffective as field indicator of creosote residues.
- At the Bradley Road site the average maximum depth of sediments containing total CPAHs >15 mg/kg is 2.3 ft. Approximately 51 percent of the sediment samples contained less than 15 mg/kg total CPAHs.
- At the LMR Parkway site the average maximum depth of sediments containing total CPAHs > 15 mg/kg is 0.5 ft. Approximately 77 percent of the sediment samples contained less than 15 mg/kg total CPAHs. This portion of the river is characterized by significant urban impact as evidenced by the amount of large debris (car tires, etc.) in the riverbed. It is likely at this location that sources other than the former wood-treating facility are contributing to the CPAHs, hydrocarbon odors, sheen, and black staining found in the LMR sediment.

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**LEGEND**

- x TRAVERSE PUSH PROBE LOCATION
- ⊗ CORE SAMPLE LOCATION WITH ASSOCIATED PUSH PROBE
- CTA ——— TRAVERSE LINE

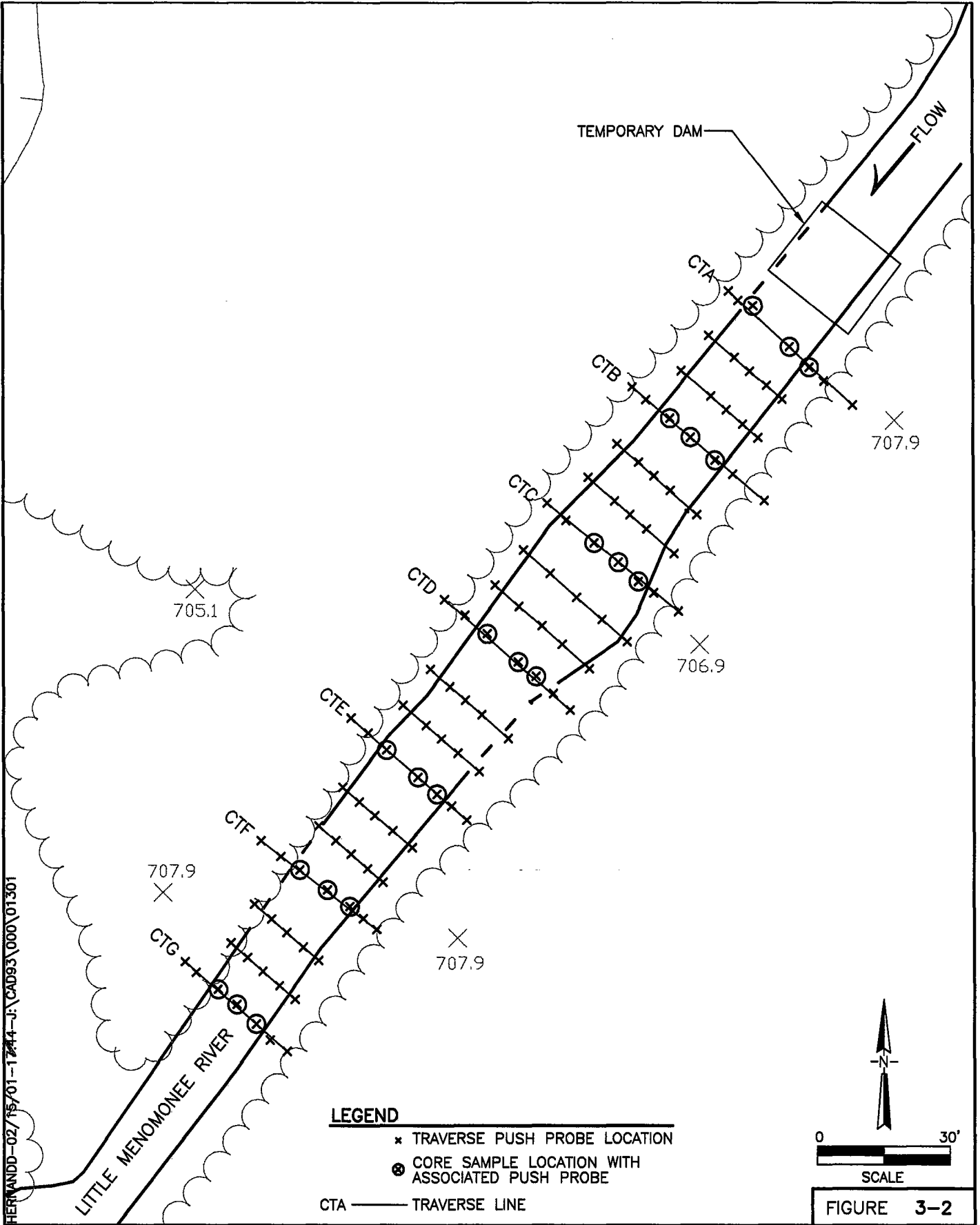


FIGURE 3-1



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

**SAMPLE LOCATION MAP**  
**BRADLEY ROAD**  
MOSS AMERICAN SITE  
Milwaukee, Wisconsin

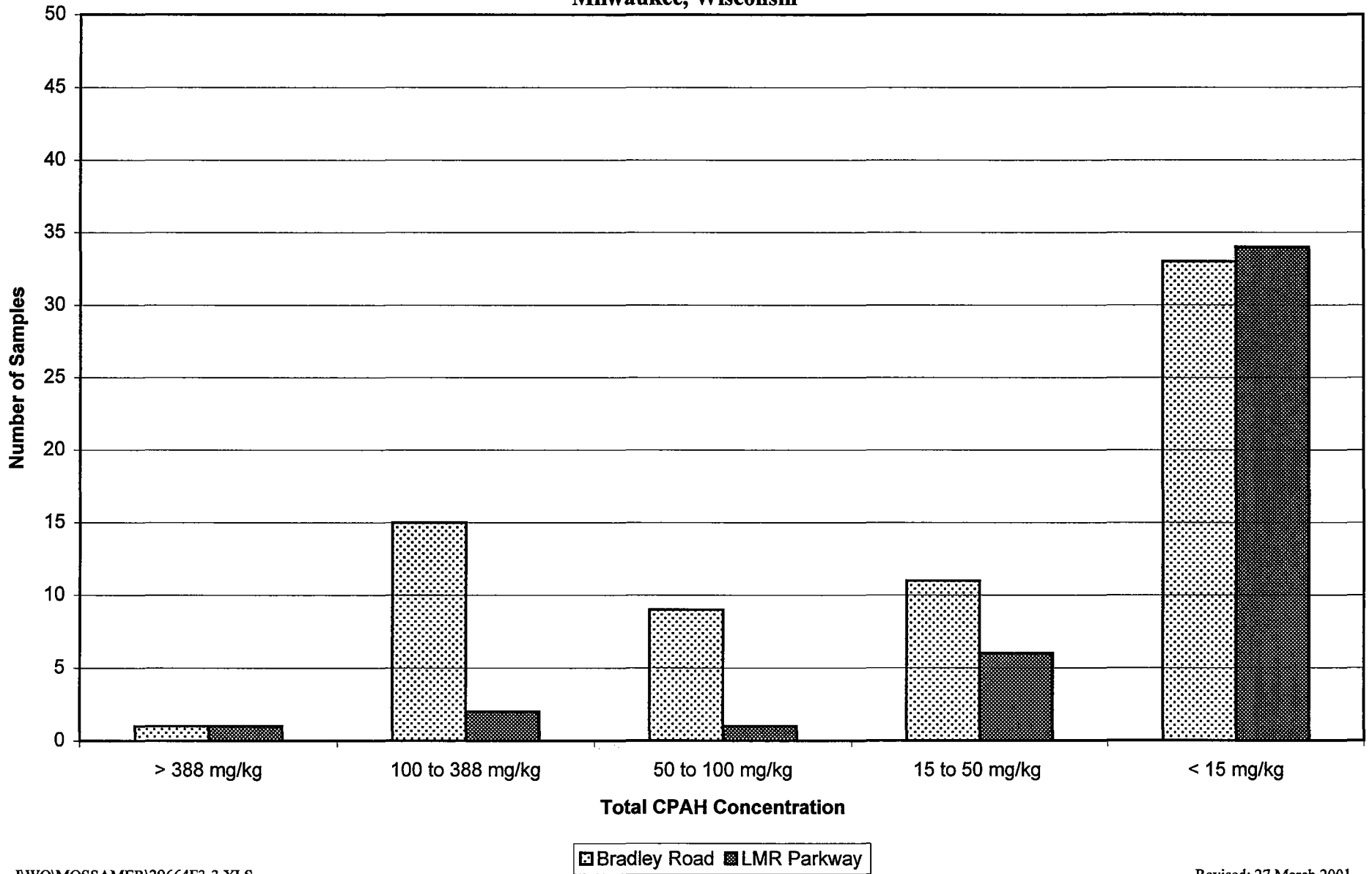


750 E. Bunker Ct.  
Suite 500  
Vernon Hills, Illinois  
60061

**SAMPLE LOCATION MAP**  
**LMR PARKWAY**  
MOSS AMERICAN SITE  
Milwaukee, Wisconsin

Figure 3-3

Total CPAH Distribution  
Pilot Scale River Diversion Project  
Moss-American Site  
Milwaukee, Wisconsin



3-12

Table 3-1

**Probe Penetration Depths  
Pilot Scale River Diversion Project - Bradley Road Location  
Moss-American Site  
Milwaukee, Wisconsin**

<b>Tile Probe Penetration Depth (ft)</b>					
<b>Core Traverse Location</b>	<b>Probe and Core Locations</b>				
	<b>1</b>	<b>2 (Core 1)</b>	<b>3 (Core 2)</b>	<b>4 (Core 3)</b>	<b>5</b>
CTA	4.0	4.8	5.2	4.0	2.8
10ft South of CTA	4.0	3.7	4.9	3.3	3.3
20ft South of CTA	3.6	3.5	4.5	4.5	2.3
CTB	3.3	3.8	5.0	5.1	4.0
10ft South of CTB	1.2	1.5	4.7	7.6	7.7
20ft South of CTB	3.0	1.9	4.3	5.8	4.0
CTC	3.3	2.3	4.8	5.5	4.5
10ft South of CTC	2.9	3.3	4.7	6.8	4.0
20ft South of CTC	3.3	2.3	3.3	6.6	4.0
CTD	0.8	2.0	7.3	6.8	4.8
10ft South of CTD	4.0	2.1	3.8	6.5	4.0
20ft South of CTD	4.0	1.6	3.2	6.5	4.0
CTE	3.3	1.4	2.5	5.9	6.2
10ft South of CTE	4.0	1.8	2.0	7.2	5.2
20ft South of CTE	2.8	2.1	3.7	6.9	6.8
CTF	4.0	2.7	3.5	5.8	4.0

Note: Traverse extends from Probe Location 1 on the East to Probe Location 5 on the West.

Table 3-2

**Probe Penetration Depths  
Pilot Scale River Diversion Project - LMR Parkway Location  
Moss-American Site  
Milwaukee, Wisconsin**

Tile Probe Penetration Depth (ft)					
Core Traverse Location	Probe and Core Locations				
	1	2 (Core 1)	3 (Core 2)	4 (Core 3)	5
CTA	2.00	1.25	1.92	1.42	2.00
10ft South of CTA	3.17	1.17	2.17	1.83	2.08
20ft South of CTA	2.92	0.83	1.83	1.42	2.42
CTB	2.67	1.58	2.17	2.17	1.58
10ft South of CTB	2.67	2.00	1.75	1.42	2.42
20ft South of CTB	1.92	1.67	2.00	1.75	1.83
CTC	2.08	1.92	2.25	0.83	1.67
10ft South of CTC	1.50	1.25	0.58	0.83	1.75
20ft South of CTC	1.58	1.67	1.25	0.92	1.25
CTD	2.25	0.92	1.83	1.33	2.92
10ft South of CTD	2.42	0.75	1.92	1.33	1.67
20ft South of CTD	2.42	0.58	1.08	1.08	1.42
CTE	3.08	1.33	1.25	1.00	2.00
10ft South of CTE	1.58	0.92	1.00	1.17	1.33
20ft South of CTE	1.42	1.42	1.00	1.33	1.25
CTF	2.67	0.83	0.83	0.17	1.58
10ft South of CTF	1.67	1.42	0.58	0.83	2.08
20ft South of CTF	1.17	0.33	0.42	0.42	1.25
CTG	1.75	0.58	0.92	1.33	2

Note: Traverse extends from Probe Location 1 on the West to Probe Location 5 on the East.

Table 3-3

**Sediment Sample Analytical Results and Field Observations**  
**Pilot River Diversion - Bradley Road Location**  
**Moss-American Site**  
**Milwaukee, Wisconsin**

Sample Information			Actual Soil Concentrations, ug/kg								Total CPAHs <sup>1</sup> (mg/kg)	Visibly Contaminated?
Sample ID	Date Collected	Depth Interval, ft	Benzo(a) anthracene	Chrysene	Benzo(b) fluoranthene	Benzo(k) fluoranthene	Benzo(a) pyrene	Dibenzo(a,h) anthracene	Benzo(g,h,i) perylene	Indeno(1,2,3-cd) pyrene		
CTA-1-A	11/15/00	0-1	66,000	52,000 J	29,000	14,000 J	28,000 J	7,200 U	22,000 U	15,000 J	218.60	YES
CTA-1-B	11/15/00	1-2	71,000	57,000	28,000	14,000	29,000	1,700 U	13,000 J	15,000 J	227.85	YES
CTA-1-C	11/15/00	2-3	15,000	12,000 J	7,200	3,500	8,200	670 U	3,900 J	5,200 J	55.34	YES
CTA-1-D	11/15/00	3-4	2,100	1,800 J	790	410	860	130 J	250 U	440 J	6.66	NO
CTA-1-E	11/15/00	4-5	40	38 J	18	8.4 J	19 J	6.4 J	30 J	32 J	0.19	NO
CTA-2-A	11/15/00	0-1	100,000 J	94,000	38,000	20,000	39,000	2,000 J	15,000	21,000	329.00	NO
CTA-2-B	11/15/00	1-2	320,000	200,000 J	110,000	58,000 J	110,000 J	20,000 J	120,000 J	140,000 J	1078.00	YES
CTA-2-C	11/15/00	2-3	55,000	42,000 J	19,000	9,400 J	19,000 J	6,500 U	20,000 U	17,000 J	174.65	YES
CTA-2-D	11/15/00	3-4	64,000	55,000	24,000	12,000	25,000	1,500 J	13,000	19,000	213.50	NO
CTA-3-A	11/15/00	0-1	1,700	1,500 J	1,100	510	1,200	73 U	1,000 J	1,300 J	8.35	NO
CTA-3-B	11/15/00	1-2	7,600	6,400 J	3,700	1,800 J	4,000 J	530	2,600	3,500	30.13	YES
CTA-3-C	11/15/00	2-3	15 J	29 J	9.1 J	3.2 J	10 J	4.7 J	21 J	13 J	0.11	NO
CTB-1-A	11/15/00	0-1	3,500	2,600	2,800	1,300	2,800	280 J	3,600	4,400	21.28	YES
CTB-1-B	11/15/00	1-2	480	280 J	200	93	200	35 J	160 J	180 J	1.63	NO
CTB-1-C	11/15/00	2-3	7 J	29 J	6.2 J	1.4 J	6.4 J	3.1 U	30 J	24 J	0.11	NO
CTB-2-A	11/15/00	0-1	39,000	32,000	18,000	9,000	18,000	2,000	11,000	15,000	144.00	YES
CTB-2-B	11/15/00	1-2	34,000	27,000 J	13,000 J	6,200 J	15,000 J	1,800	6,700	9,800	113.50	YES
CTB-2-C	11/15/00	2-3	1,600	990 J	410 J	230 J	350 J	120 U	370 U	1,100 J	4.93	YES
CTB-2-D	11/15/00	3-4	240	200 J	75	42 J	87 J	21 J	86 J	32 U	0.77	NO
CTB-2-D-DP	11/15/00	3-4	4,200	3,600	1,500	790	1,600	180	930	1,300	14.10	NO
CTB-3-A	11/15/00	0-1	2,500	2,100 J	1,900	850	1,900	150 U	1,800 J	2,300 J	13.43	NO
CTB-3-B	11/15/00	1-2	21,000	16,000	8,200	4,300	6,800	170 U	3,100 J	4,900	64.39	YES
CTB-3-C	11/15/00	2-3	7,700	7,000	4,500	2,100	4,100	650 J	2,400 J	3,100 J	31.55	YES
CTB-3-C-MS	11/15/00	2-3	5,900	5,700	4,200	2,000	3,700	750 J	3,100 J	3,800	29.15	YES
CTB-3-C-MSD	11/15/00	2-3	8,500	6,400	4,700	2,300	4,300	730 J	3,500 J	4,300	34.73	YES
CTB-3-D	11/15/00	3-4	2,100	1,800	840	430	820	100 J	420 J	610	7.12	NO
CTB-3-E	11/15/00	4-5	19 J	72 J	8.5 J	5.3 J	13 J	12 U	37 U	43 J	0.19	NO
CTC-1-A	11/15/00	0-1	90,000	76,000	36,000	18,000	31,000	2,200 J	16,000 J	20,000 J	289.20	YES
CTC-1-B	11/15/00	1-2	11,000	7,000	6,700	2,900	9,400	170 U	9,100	12,000	58.19	YES
CTC-1-C	11/15/00	2-3	76	25 U	25 J	13 J	32 J	12 U	39 J	49 J	0.25	NO
CTC-2-A	11/15/00	0-1	7,800	6,600	4,800	2,300	4,800	600 J	3,800 J	5,100	35.80	YES
CTC-2-B	11/15/00	1-2	3,500 J	19,000 U	12,000	3,100 J	17,000	2,200 J	21,000 J	24,000	92.30	YES
CTC-2-C	11/15/00	2-3	29 J	44 U	11 J	8.7 U	20 J	22 U	66 U	45 J	0.18	NO
CTC-2-D	11/15/00	3-4	13 J	30 U	11 J	6.1 U	15 J	15 U	49 J	38 J	0.15	NO
CTC-2-D-DP	11/15/00	3-4	20 J	34 J	10 J	6 U	11 J	15 U	45 U	30 U	0.12	NO
CTC-3-A	11/15/00	0-1	860	810 J	990	480	840	59 U	720 J	870 J	5.60	NO
CTC-3-B	11/15/00	1-2	41,000	32,000	16,000	8,400	14,000	1,400 J	4,300 J	6,800	123.90	YES
CTC-3-C	11/15/00	2-3	15,000	12,000	7,600	3,700	7,300	960 J	3,400 J	4,700	54.66	NO
CTC-3-D	11/15/00	3-4	65,000	55,000	24,000	12,000	24,000	2,800 J	11,000	17,000	210.80	YES
CTC-3-E	11/15/00	4-5	120 J	62 U	290	19 J	46 J	240 J	93 U	62 U	0.82	YES
CTD-1-A	11/16/00	0-1	12,000	6,800	4,600	2,300	4,400	570 J	3,300 J	4,300	38.27	YES
CTD-1-B	11/16/00	1-2	27,000	22,000	13,000	6,700	14,000	1,500 J	7,300	10,000	101.50	YES
CTD-1-C	11/16/00	2-3	16 J	25 U	7.4 J	4.9 U	16 J	12 U	48 J	25 U	0.12	NO
CTD-2-A	11/16/00	0-1	810	750 J	800	400	800	110 J	1,100 J	1,400	6.17	NO
CTD-2-B	11/16/00	1-2	48,000	33,000	19,000	9,700	21,000	2,900 J	16,000 J	23,000	172.60	NO
CTD-2-C	11/16/00	2-3	790	900 J	320 J	170 J	360 J	81 U	270 J	310 J	3.16	NO
CTD-2-D	11/16/00	3-4	30 J	68 J	19 J	9.5 U	18 J	29 J	92 J	75 J	0.37	NO
CTD-2-E	11/16/00	4-5	17 J	70 J	12 J	6.6 U	14 J	17 U	50 U	33 U	0.17	NO



Table 3-3 (Cont.)

**Sediment Sample Analytical Results and Field Observations**  
**Pilot River Diversion - Bradley Road Location**  
**Moss-American Site**  
**Milwaukee, Wisconsin**

Sample Information			Actual Soil Concentrations, ug/kg								Total	Visibly Contaminated?
Sample ID	Date Collected	Depth Interval, ft	Benzo(a) anthracene	Chrysene	Benzo(b) fluoranthene	Benzo(k) fluoranthene	Benzo(a) pyrene	Dibenzo(a,h) anthracene	Benzo(g,h,i) perylene	Indeno(1,2,3-cd) pyrene	CPAHs <sup>1</sup> (mg/kg)	
CTD-3-A	11/16/00	0-1	1,500	1,300 J	1,300	580	1,300	130 J	1,000 J	1,200 J	8.31	NO
CTD-3-B	11/16/00	1-2	64,000	57,000 J	26,000	13,000 J	22,000	4,300 J	11,000 U	13,000 J	<b>204.80</b>	YES
CTD-3-C	11/16/00	2-3	3,900	2,800	1,900	920	1,900	290 J	940 J	1,400 J	14.05	YES
CTD-3-C-DP	11/16/00	2-3	16,000	14,000	8,000	4,000	7,200	740 J	4,000	5,800	<b>59.74</b>	YES
CTD-3-D	11/16/00	3-4	6,400	6,600	2,800	1,400	2,900	350 J	1,000 J	1,600 J	<b>23.05</b>	NO
CTD-3-D-DP	11/16/00	3-4	2,800	2,700	1,400	700	1,400	160 J	440 J	150 U	9.68	YES
CTD-3-E	11/16/00	4-5	150 J	150 J	69 J	32 J	58 J	56 J	180 J	130 J	0.83	NO
CTD-3-E-MS	11/16/00	4-5	230	620 J	140	130	150 J	280 J	1,300	960	3.81	NO
CTD-3-E-MSD	11/16/00	4-5	220	600 J	150	120	150 J	270 J	950 J	620 J	3.08	NO
CTE-1-A	11/16/00	0-1	120,000	100,000	51,000	27,000	46,000	3,600 U	16,000 J	26,000 J	<b>387.80</b>	YES
CTE-1-B	11/16/00	1-2	34 J	17 J	19 J	9.2 J	23 J	6.2 U	19 U	29 J	0.14	NO
CTE-1-B-DP	11/16/00	1-2	27 J	22 J	15 J	6.5 J	15 J	6.3 U	19 U	13 U	0.10	NO
CTE-1-C	11/16/00	2-3	13 J	35 J	7.7 J	3.1 J	7.3 J	6 U	36 J	18 J	0.12	NO
CTE-2-AB	11/16/00	0-2	4,600	3,400	2,300	1,100	2,100	79 U	1,300 J	1,800	<b>16.64</b>	YES
CTE-2-C	11/16/00	2-3	23 J	25 U	14 J	6.9 J	13 J	13 U	88 J	110 J	0.27	NO
CTE-3-A	11/16/00	0-1	270	270 J	340	160	310	43 J	300 J	340	2.03	NO
CTE-3-B	11/16/00	1-2	98,000	68,000	30,000	16,000	26,000	2,900	6,200 J	11,000	<b>258.10</b>	YES
CTE-3-C	11/16/00	2-3	18,000	17,000	9,200	4,600	8,800	1,100	3,500	5,400	<b>67.60</b>	YES
CTE-3-D	11/16/00	3-4	230	150 J	78	44 J	70 J	17 U	50 U	35 J	0.64	NO
CTE-3-E	11/16/00	4-5	21 J	47 U	20 J	9.5 U	12 U	67 J	71 U	47 U	0.20	NO
CTF-1-A	11/16/00	0-1	26,000	24,000	13,000	6,500	12,000	1,500	4,700	7,000	<b>94.70</b>	YES
CTF-1-B	11/16/00	1-2	1,600	1,600	860	420	790	86 J	200 U	520 J	5.98	NO
CTF-2-A	11/16/00	0-1	11,000	9,700	6,000	3,100	5,400	690 J	2,900	4,100	<b>42.89</b>	YES
CTF-2-A-DP	11/16/00	0-1	11,000	9,800	5,900	2,900	5,400	590 J	2,700 J	3,900	<b>42.19</b>	YES
CTF-2-B	11/16/00	1-2	6,300	6,600	2,100	1,100	2,000	220 J	660 J	1,100 J	<b>20.08</b>	NO
CTF-2-C	11/16/00	2-3	34 J	96 J	14 J	7.8 J	15 J	12 U	52 J	80 J	0.30	NO
CTF-2-C-DP	11/16/00	2-3	7 J	25 U	4.9 U	4.9 U	9.4 J	12 J	37 U	31 J	0.10	NO
CTF-3-AB	11/16/00	0-2	9,800	8,400	6,500	3,000	6,200	730 J	3,200	4,500	<b>42.33</b>	YES
CTF-3-AB-MS	11/16/00	0-2	9,700	8,300	5,800	2,800	5,400	790 J	3,000 J	3,900	<b>39.69</b>	YES
CTF-3-AB-MSD	11/16/00	0-2	10,000	9,000	6,200	2,900	6,000	790 J	3,300	4,300	<b>42.49</b>	YES
CTF-3-C	11/16/00	2-3	11,000	11,000	5,500	2,700	5,400	680 J	2,400 J	3,400	<b>42.08</b>	YES
CTF-3-C-DP	11/16/00	2-3	3,700	3,400	2,000	930	1,800	250 J	750 J	1,200 J	14.03	YES
CTF-3-D	11/16/00	3-4	2.4 J	9 J	2 J	1.3 U	2.1 J	3.8 J	10 U	6.7 U	0.03	NO
CTF-3-E	11/16/00	4-5	14 J	43 J	8.1 J	4.4 U	11 J	25 J	33 U	22 U	0.13	NO
CTF-3-E-MS	11/16/00	4-5	130	460	89	80	110	210	730	390	2.20	NO
CTF-3-E-MSD	11/16/00	4-5	130	480	88	83	110	230	750	400	2.27	NO
RFW-B23.5-42-49	11/16/00	1.38-1.61	23,000	21,000 J	11,000	5,500 J	8,900	1,400 U	4,200 U	4,700 J	<b>76.90</b>	YES

J- Indicates estimated concentration.

U- Compound not detected above detection limit. Detection limit indicated.

<sup>1</sup> - One half of detection limit used if constituent was not detected above detection limit.

Bolded values indicate Total CPAH concentration exceeding background sediment CPAH concentrations of 15 mg/kg.

Shaded values indicate Total CPAH concentration exceeding 388 mg/kg.

Note: Sample RFW-B23.5-42-49 is a split with WDNR sample B23.5-42-49.

Table 3-4

**Sediment Sample Analytical Results and Field Observations  
Pilot Scale River Diversion Project - LMR Parkway Location  
Moss-American Site  
Milwaukee, Wisconsin**

Sample Information					Actual Soil Concentrations, ug/kg								Total	Visibly Contaminated?
Sample ID	Date Collected	Coordinates (N,E)		Depth Interval, ft	Benzo(a) anthracene	Chrysene	Benzo(b) fluoranthene	Benzo(k) fluoranthene	Benzo(a) pyrene	Dibenzo(a,h) anthracene	Benzo(g,h,i) perylene	Indeno(1,2,3-cd) pyrene	CPAHs <sup>1</sup> (mg/kg)	
CTA-1-A	11/28/00	417728.1	2524217.1	0-1	1,800	1,400 J	750	410	730	66 U	350 J	480 J	5.95	YES
CTA-1-B	11/29/00	417728.1	2524217.1	1-2	720	500	390	200	400	74 J	280 J	340	2.90	NO
CTA-2-A	11/28/00	417718.8	2524225.3	0-1	2,100	1,600	1,700	810	1,700	200 J	1,000 J	1,300	10.41	YES
CTA-2-B	11/29/00	417718.8	2524225.3	1-2	46,000	27,000	16,000	8,200	13,000	1,700 J	3,700 J	1,600 U	116.40	YES
CTA-3-A	11/28/00	417714.2	2524229.8	0-1	2,000	1,700	2,100	1,100	2,100	280 J	2,100	2,500	13.88	YES
CTA-3-B	11/29/00	417714.2	2524229.8	1-2	1,000	670	350	180	320	38 J	130 J	220 J	2.91	NO
CTB-1-A	11/28/00	417702.8	2524198.2	0-1	1,400	280 U	860	440 J	820 J	140 U	830 J	850 J	5.41	YES
CTB-1-B	11/29/00	417702.8	2524198.2	1-2	38 J	31 J	17 J	11 J	23 J	11 U	34 U	23 U	0.15	NO
CTB-2-A	11/28/00	417698.4	2524202.9	0-1	5,100	3,800	2,900	1,500	2,700	360 J	2,300 J	2,800 J	21.46	YES
CTB-2-B	11/29/00	417698.4	2524202.9	1-2	1,500	1,100	980	510	1,000	130	540	730	6.49	NO
CTB-3-A	11/28/00	417693.2	2524208.4	0-1	2,100	1,800	1,700	860	1,700	240 J	1,400 J	1,900	11.70	YES
CTB-3-B	11/29/00	417693.2	2524208.4	1-2	720	700	350	200	520	78 J	270 J	340	3.18	NO
CTC-1-A	11/28/00	417674.6	2524181.0	0-1	3,100	3,000 J	3,300	1,600	2,900	420 J	2,300 J	2,800 J	19.42	YES
CTC-1-B	11/29/00	417674.6	2524181.0	1-2	600	530	490	250	490	71 J	270 J	390	3.09	YES
CTC-2-A	11/28/00	417670.1	2524186.5	0-1	2,900	2,300	2,800	1,400	2,600	390 J	1,800 J	2,400	16.59	YES
CTC-2-B	11/29/00	417670.1	2524186.5	1-2	1,400	1,300	830	440	750	89 J	330 J	470	5.61	NO
CTC-3-A	11/28/00	417665.8	2524191.0	0-1	340	310	330	160	300	41 J	250 J	300	2.03	YES
CTC-3-B	11/29/00	417665.8	2524191.0	1-2	80	120 J	47	24 J	43 J	12 U	120 J	130 J	0.57	NO
CTC-3-B-DP	11/29/00	417665.8	2524191.0	1-2	71	74 J	54	27 J	54 J	12 U	46 J	51 J	0.38	NO
CTD-1-A	11/28/00	417654.0	2524156.7	0-1	110 J	110 U	57 J	33 J	59 J	54 U	160 U	110 U	0.48	YES
CTD-1-B	11/29/00	417654.0	2524156.7	1-2	23 J	24 U	20 J	9.5 J	22 J	12 U	49 J	56 J	0.20	NO
CTD-2-A	11/28/00	417647.7	2524163.8	0-1	4,400	3,700	2,900	1,400	2,400	270 J	1,700 J	2,100	18.87	YES
CTD-2-B	11/29/00	417647.7	2524163.8	1-2	1,600	1,400	1,100	610	1,200	180	590	850	7.53	NO
CTD-3-A	11/28/00	417644.4	2524167.9	0-1	2,900	2,000 J	1,900	960	1,900	360 J	1,200 J	1,200 J	12.42	YES
CTD-3-B	11/29/00	417644.4	2524167.9	1-2	350	260 J	280	140	260	37 J	140 J	190 J	1.66	NO

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Table 3-4 (Cont.)

**Sediment Sample Analytical Results and Field Observations  
Pilot Scale River Diversion Project - LMR Parkway Location  
Moss-American Site  
Milwaukee, Wisconsin**

Sample Information				Actual Soil Concentrations, ug/kg									Total CPAHs <sup>1</sup> (mg/kg)	Visibly Contaminated?
Sample ID	Date Collected	Coordinates (N,E)		Depth Interval, ft	Benzo(a) anthracene	Chrysene	Benzo(b) fluoranthene	Benzo(k) fluoranthene	Benzo(a) pyrene	Dibenzo(a,h) anthracene	Benzo(g,h,i) perylene	Indeno(1,2,3-cd) pyrene		
CTE-1-A	11/28/00	417627.8	2524134.0	0-1	130	120 J	130	65	130	24 J	170 J	210 J	0.98	YES
CTE-1-B	11/29/00	417627.8	2524134.0	1-2	11 J	35 J	10 J	8.6 J	21 J	15 J	35 J	23 U	0.15	NO
CTE-2-A	11/28/00	417621.6	2524141.0	0-1	160,000	100,000	51,000	28,000	47,000	3,000 U	22,000 J	27,000 J	<b>436.50</b>	YES
CTE-2-A-DP	11/28/00	417621.6	2524141.0	0-1	140,000	86,000	43,000	23,000	40,000	3,900 J	16,000 J	21,000 J	<b>372.90</b>	YES
CTE-2-B	11/29/00	417621.6	2524141.0	1-2	8,400	6,100	3,100	1,700	2,800	310 J	1,000 J	1,400	<b>24.81</b>	NO
CTE-3-A	11/28/00	417617.8	2524145.3	0-1	14,000	11,000	7,800	3,900	7,800	710	4,000	5,400	<b>54.61</b>	YES
CTE-3-B	11/29/00	417617.8	2524145.3	1-2	210	160 J	91	47	80	13 J	35 J	56 J	0.69	NO
CTF-1-A	11/28/00	417600.7	2524114.3	0-1	110	29 U	84	40 J	71 J	15 J	110 J	29 U	0.46	YES
CTF-1-B	11/29/00	417600.7	2524114.3	1-2	5.7 U	25 J	5.9 J	4.6 U	6.7 J	11 U	34 U	23 U	0.08	NO
CTF-2-A	11/28/00	417596.1	2524120.6	0-1	110,000	71,000 J	36,000	19,000	34,000	4,600 J	10,000 U	17,000 J	<b>296.60</b>	YES
CTF-2-B	11/29/00	417596.1	2524120.6	1-2	3,400	2,200	1,400	760	1,500	190 J	710 J	960 J	11.12	YES
CTF-3-A	11/28/00	417592.4	2524125.6	0-1	540	470 J	440	210	430	47 U	350 J	420 J	2.88	YES
CTF-3-A-DP	11/28/00	417592.4	2524125.6	0-1	99	110 J	110	42 J	140	24 J	120 J	150 J	0.80	YES
CTF-3-B	11/29/00	417592.4	2524125.6	1-2	52 J	49 J	7.5 J	4.4 U	9.2 J	11 U	33 U	22 U	0.15	NO
CTF-3-B-DP	11/29/00	417592.4	2524125.6	1-2	11 J	29 J	6.8 J	4.9 J	5.5 U	11 U	33 U	22 U	0.09	NO
CTG-1-A	11/28/00	417573.7	2524095.8	0-1	730	560	780	400	790	110 J	800	940	5.11	YES
CTG-1-B	11/29/00	417573.7	2524095.8	1-2	570	370	250	130	240	27 J	130 J	150 J	1.87	NO
CTG-2-A	11/28/00	417570.2	2524100.0	0-1	1,200	1,000	820	420	800	110 J	600	760	5.71	YES
CTG-2-B	11/29/00	417570.2	2524100.0	1-2	330	240 J	170	84	150	18 J	64 J	100 J	1.16	YES
CTG-3-A	11/28/00	417565.8	2524104.4	0-1	500	370	450	230	450	12 U	500	570	3.08	YES
CTG-3-A-MS	11/28/00	417565.8	2524104.4	0-1	410	410	370	200	370	160	760	590	3.27	YES
CTG-3-A-MSD	11/28/00	417565.8	2524104.4	0-1	590	560	480	260	470	170	910	760	4.20	YES
CTG-3-B	11/29/00	417565.8	2524104.4	1-2	5.6 U	22 U	6.5 J	4.5 U	5.6 U	11 U	34 U	22 U	0.06	NO
CTG-3-B-MS	11/29/00	417565.8	2524104.4	1-2	62 J	240 J	46	41 J	50 J	100 J	410	220 J	1.12	NO
CTG-3-B-MSD	11/29/00	417565.8	2524104.4	1-2	56 J	240 J	41 J	37 J	45 J	89 J	310 J	170 J	0.99	NO
SB-01	11/28/00	---	---	0-1	390	210 J	250	140	290	38 J	180 J	240 J	1.74	NO
CORE1-0-12	11/29/00	---	---	0-1	11,000	8,600	5,800	2,900	5,400	660 J	2,400 J	3,700	<b>40.46</b>	NO

J- Indicates estimated concentration.

U- Compound not detected above detection limit. Detection limit indicated.

<sup>1</sup> - One half of detection limit used if constituent was not detected above detection limit.

Bolded values indicate Total CPAH concentration exceeding background sediment CPAH concentrations of 15 mg/kg.

Shaded values indicate Total CPAH concentration exceeding 388 mg/kg.

Note: Samples SB-01 and Core1-0-12 are split samples with WDNR.

**Table 3-5**  
**Sediment Sample Total CPAH Concentration and Field Observations**  
**Pilot Scale River Diversion Project - Bradley Road Location**  
**Moss-American Site**  
**Milwaukee, Wisconsin**

Sample Information		Total CPAHs <sup>1</sup> (mg/kg)	Visibly Contaminated?
Sample ID	Depth Interval, ft		
CTA-2-B	1-2	1076.00	YES
CTE-1-A	0-1	387.80	YES
CTA-2-A	0-1	329.00	YES
CTC-1-A	0-1	289.20	YES
CTE-3-B	1-2	258.10	YES
CTA-1-B	1-2	227.85	YES
CTA-1-A	0-1	218.60	YES
CTA-2-D	3-4	213.50	NO
CTC-3-D	3-4	210.80	YES
CTD-3-B	1-2	204.80	YES
CTA-2-C	2-3	174.65	YES
CTD-2-B	1-2	172.60	NO
CTB-2-A	0-1	144.00	YES
CTC-3-B	1-2	123.90	YES
CTB-2-B	1-2	113.50	YES
CTD-1-B	1-2	101.50	YES
CTF-1-A	0-1	94.70	YES
CTC-2-B	1-2	92.30	YES
RFW-B23.5-42-49	1.38-1.61	76.90	YES
CTE-3-C	2-3	67.60	YES
CTB-3-B	1-2	64.39	YES
CTD-3-C-DP	2-3	59.74	YES
CTC-1-B	1-2	58.19	YES
CTA-1-C	2-3	55.34	YES
CTC-3-C	2-3	54.66	NO
CTF-2-A	0-1	42.89	YES
CTF-3-AB	0-2	42.33	YES
CTF-3-C	2-3	42.08	YES
CTD-1-A	0-1	38.27	YES
CTC-2-A	0-1	35.80	YES
CTB-3-C	2-3	31.55	YES
CTA-3-B	1-2	30.13	YES
CTD-3-D	3-4	23.05	NO
CTB-1-A	0-1	21.28	YES
CTF-2-B	1-2	20.08	NO
CTE-2-AB	0-2	16.64	YES
CTB-2-D-DP	3-4	14.10	NO
CTB-3-A	0-1	13.43	NO
CTA-3-A	0-1	8.35	NO
CTD-3-A	0-1	8.31	NO
CTB-3-D	3-4	7.12	NO

**Table 3-5 (Cont.)**  
**Sediment Sample Total CPAH Concentration and Field Observations**  
**Pilot Scale River Diversion Project - Bradley Road Location**  
**Moss-American Site**  
**Milwaukee, Wisconsin**

Sample Information		Total CPAHs <sup>1</sup> (mg/kg)	Visibly Contaminated?
Sample ID	Depth Interval, ft		
CTA-1-D	3-4	6.66	NO
CTD-2-A	0-1	6.17	NO
CTF-1-B	1-2	5.98	NO
CTC-3-A	0-1	5.60	NO
CTB-2-C	2-3	4.93	YES
CTD-2-C	2-3	3.16	NO
CTE-3-A	0-1	2.03	NO
CTB-1-B	1-2	1.63	NO
CTD-3-E	4-5	0.83	NO
CTC-3-E	4-5	0.82	YES
CTE-3-D	3-4	0.64	NO
CTD-2-D	3-4	0.37	NO
CTF-2-C	2-3	0.30	NO
CTE-2-C	2-3	0.27	NO
CTC-1-C	2-3	0.25	NO
CTE-3-E	4-5	0.20	NO
CTA-1-E	4-5	0.19	NO
CTB-3-E	4-5	0.19	NO
CTC-2-C	2-3	0.18	NO
CTD-2-E	4-5	0.17	NO
CTC-2-D	3-4	0.15	NO
CTE-1-B	1-2	0.14	NO
CTF-3-E	4-5	0.13	NO
CTE-1-C	2-3	0.12	NO
CTD-1-C	2-3	0.12	NO
CTB-1-C	2-3	0.11	NO
CTA-3-C	2-3	0.11	NO
CTF-3-D	3-4	0.03	NO

Visible contamination criteria includes black discoloration, hydrocarbon odor, and oil staining.

Bold values indicate total CPAHs exceeding the background CPAH concentration of 15 mg/kg.

Shaded values indicate total CPAH concentrations exceeding 388 mg/kg.

Samples are presented in decreasing total CPAH concentration.

**Table-3-6**  
**Sediment Sample Total CPAH Concentration and Field Observations**  
**Pilot Scale River Diversion Project-LMR Parkway Location**  
**Moss-American Site**  
**Milwaukee, Wisconsin**

Sample Information		Total CPAHs <sup>1</sup> (mg/kg)	Visibly Contaminated?
Sample ID	Depth Interval, ft		
CTE-2-A	0-1	<b>436.50</b>	YES
CTF-2-A	0-1	<b>296.60</b>	YES
CTA-2-B	1-2	<b>116.40</b>	YES
CTE-3-A	0-1	<b>54.26</b>	YES
CORE1-0-12	0-1	<b>40.46</b>	NO
CTE-2-B	1-2	<b>24.66</b>	NO
CTC-1-A	0-1	<b>19.42</b>	YES
CTB-2-A	0-1	<b>18.56</b>	YES
CTC-2-A	0-1	<b>16.59</b>	YES
CTD-2-A	0-1	<b>15.97</b>	YES
CTA-3-A	0-1	13.88	YES
CTD-3-A	0-1	12.42	YES
CTB-3-A	0-1	11.70	YES
CTF-2-B	1-2	11.12	YES
CTA-2-A	0-1	10.41	YES
CTD-2-B	1-2	7.53	NO
CTB-2-B	1-2	6.49	NO
CTA-1-A	0-1	5.95	YES
CTG-2-A	0-1	5.71	YES
CTB-1-A	0-1	5.69	YES
CTC-2-B	1-2	5.61	NO
CTG-1-A	0-1	5.11	YES
CTB-3-B	1-2	3.18	NO
CTC-1-B	1-2	3.09	YES
CTG-3-A	0-1	3.08	YES
CTA-3-B	1-2	2.91	NO
CTA-1-B	1-2	2.90	NO
CTF-3-A	0-1	2.88	YES
CTC-3-A	0-1	2.03	YES
CTG-1-B	1-2	1.87	NO
SB-01	0-1	1.74	NO
CTD-3-B	1-2	1.66	NO
CTG-2-B	1-2	1.16	YES
CTE-1-A	0-1	0.98	YES
CTE-3-B	1-2	0.69	NO
CTC-3-B	1-2	0.57	NO
CTD-1-A	0-1	0.48	YES
CTF-1-A	0-1	0.46	YES
CTD-1-B	1-2	0.20	NO
CTB-1-B	1-2	0.15	NO
CTF-3-B	1-2	0.15	NO
CTE-1-B	1-2	0.15	NO
CTF-1-B	1-2	0.08	NO
CTG-3-B	1-2	0.06	NO

Visible Contamination Criteria includes black discoloration, hydrocarbon odor, and oil sheen.

Bolded values indicate Total CPAH concentration exceeding background sediment CPAH concentrations of 15 mg/kg.

Shaded values indicate Total CPAH concentration exceeding 388 mg/kg.

Samples presented in decreasing total CPAH concentration.

**APPENDIX A**  
**PHOTOGRAPHS**

**APPENDIX B**

**CONTRACT DEWATERING SERVICES WELL-POINT SYSTEM EVALUATION**



**C**ONTRACT  
**D**EWATERING  
**S**ERVICES, INC.

DEC 15 2000

5820 West Riverside Drive • P.O. Box 1 • Saranac, Michigan 48881

Fax No. 616/642-9909 • 616/642-941

December 11, 2000

Ryan Incorporated Central  
P.O. 206  
Janesville, WI. 53547

ATTN: Travis Grossen

RE: Test Boring Services  
Dewatering Evaluation  
Moss American Site  
Milwaukee, Wisconsin

Dear Mr. Grossen,

Contract Dewatering Services was hired to do a dewatering evaluation for the Moss American Remediation site. This evaluation consisted on taking several soil borings at two test locations. These soil borings were used to evaluate the potential dewatering scope and the projected costs.

On November 25, 2000 CDS mobilized to the project site and set up to take the soil borings. The first area we worked in was "Location 1" or the north area that was cleared for the test. We installed 5 soil borings in this area, which were about 60 feet apart. The logs and location plan of these borings are included with this report.

In this area there is a layer of brown silty clay approximately 10 to 12 feet thick. Then you get into gray sandy clay that is extremely dense and has limestone gravel and cobbles in it. Each boring was about the same with the limestone pieces varying in size. Boring 3 had to be relocated because we had refusal at 15 feet.

There was very little if any ground water encountered any of the borings. A thin lense of gravel was encountered in one of the borings, but it was about 12 feet below the ground surface. This is well below the level of excavation required to clean the river bottom.

We moved down to "Location 2" on the south side of the project in the afternoon and to our borings in that area. The top 3 to 4 feet was brown silty clay and then a thin layer of clayey sand and gravel was encountered. This layer varied in thickness from 2 feet thick to 4 foot thick and was moist to wet. Below this clayey sand and gravel layer was limestone. The limestone varied from 7 to 9 feet below the ground.

At both locations the presence of all the clay and rock would eliminate the use of any conventional dewatering systems. Any granular layer that we encountered was too thin to be pumped by wells or wellpoints. The cost to install these systems would greatly outweigh the results. What is more common with these types of soil conditions would be the installation of local sumps. This would intercept the ground water more locally and could be accomplished with the greatest cost efficiency.

*Ground/Water Contractors*

The results of our test borings in these two pilot area's may not be representative of the entire alignment of the redemption. The soil could easily change over the proposed 25,000 feet alignment. Obviously there would need to be a lot of additional soil testing to determine exactly what would be encountered along the alignment. If soils were encountered that were more granular in nature, you could use a wellpoint system to accomplish your dewatering requirements. Your excavation in the river bottom will probably not exceed 5 to 8 feet. This is well within the limits of a wellpoint system.

If a wellpoint system is installed in a clean sand and gravel, you could anticipate a per foot cost of \$12 to \$14.00 per lineal foot of system installed. If the sands got dirtier or had high silt content you would have to install a sand filter around the wellpoints to keep them from plugging. This would raise the cost of the wellpoint dewatering to about \$18.00 per foot. This would represent the worst case scenario.

As this project advances, we would available to do additional testing along the alignment to determine exactly where your dewatering requirements would be. And we could at that time put together a cost proposal that would be more representative to the existing conditions.

We thank you for the opportunity to put this report together for you. Please feel free to contact me if you have any questions or require any additional information.

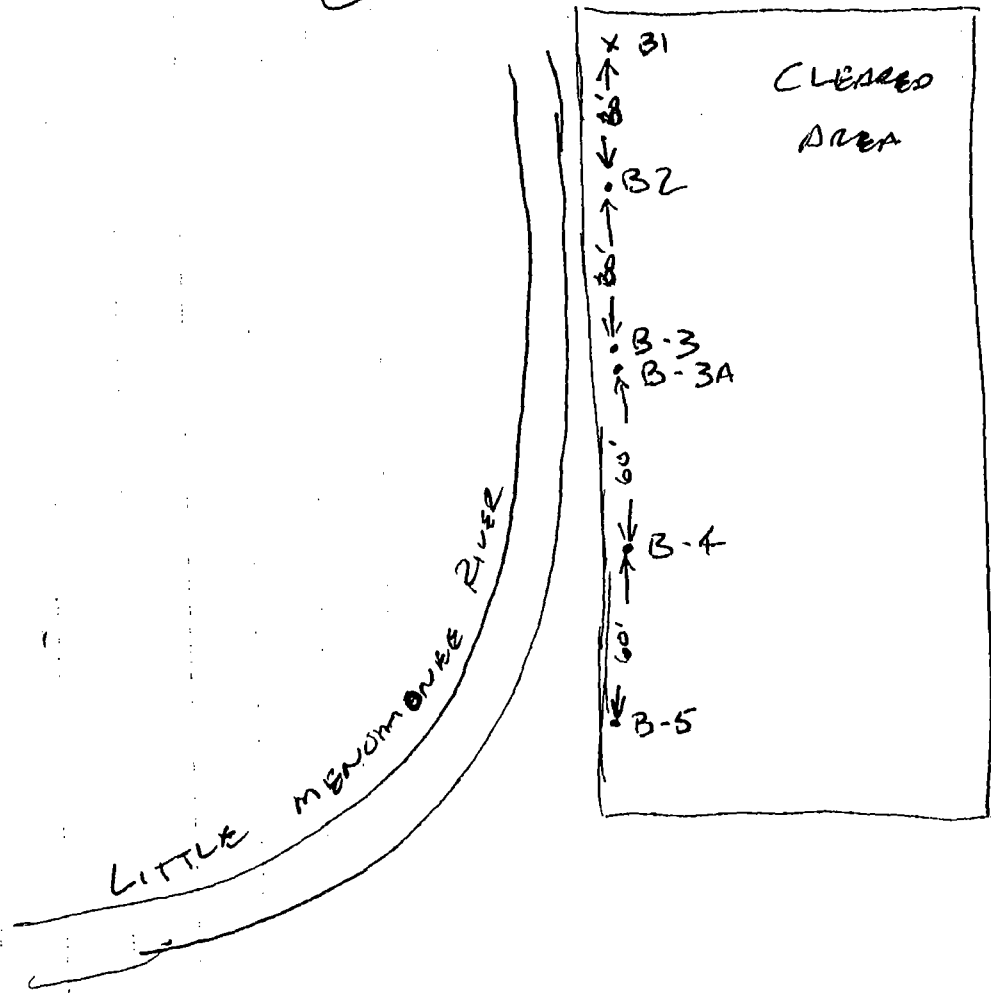
Respectfully,



Richard Neumann, Pres.

CONTRACT DEWATERING SERVICES INC.

LOCATION NO. 1 (NORTH)

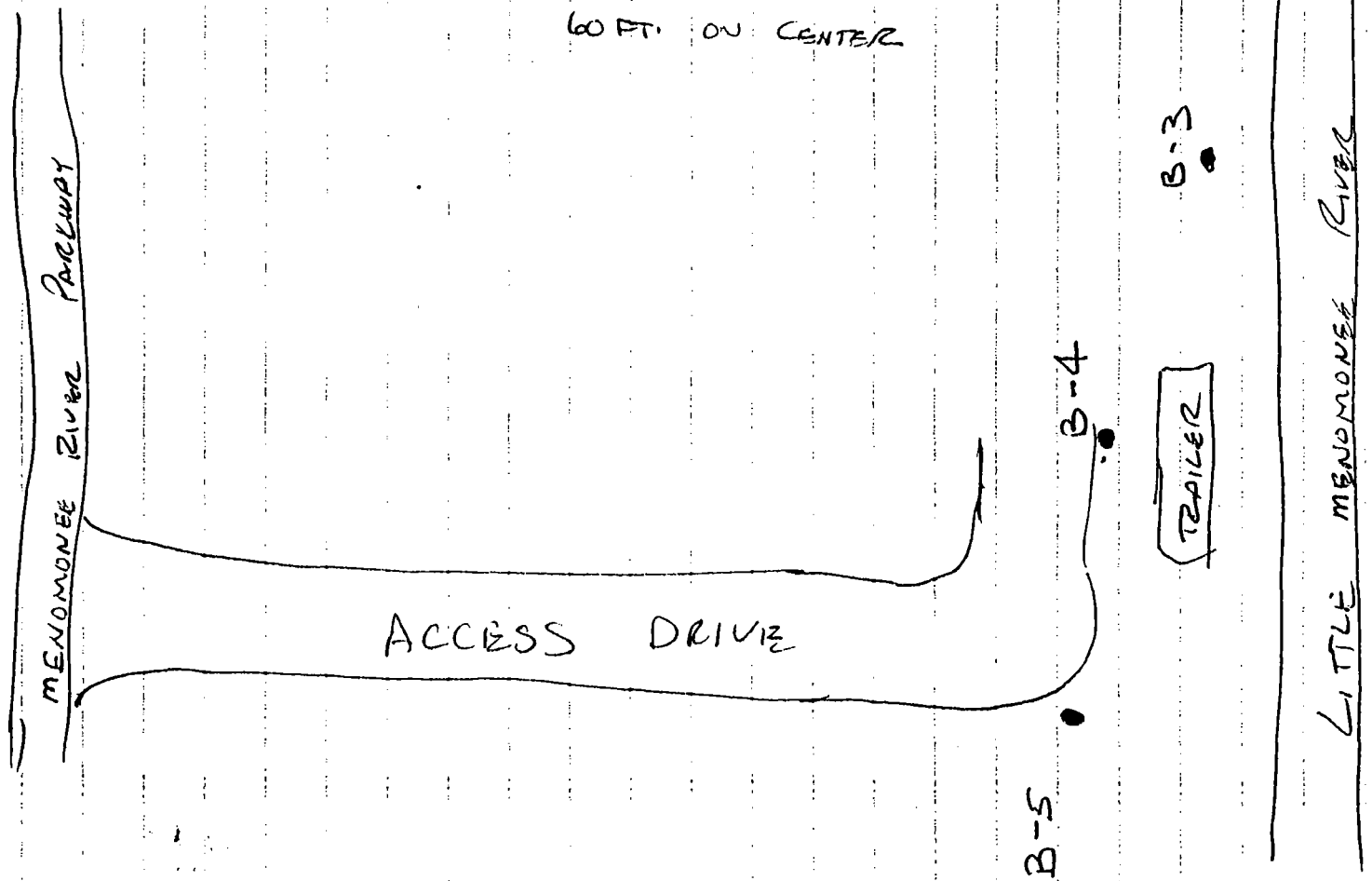


NOTE: ALL BORINGS APPROX.  
60FT ON CENTER

BROADLEY



# LOCATION No. 2. (SOUTH)



NOTE: ALL BORINGS APPROX.  
60 FT. ON CENTER

MENOMONEE RIVER PARKWAY

ACCESS DRIVE

B-5

B-4

TRAILER

B-3

B-2

B-1

PUMP

LITTLE MENOMONEE RIVER

INOPERABLE DAM





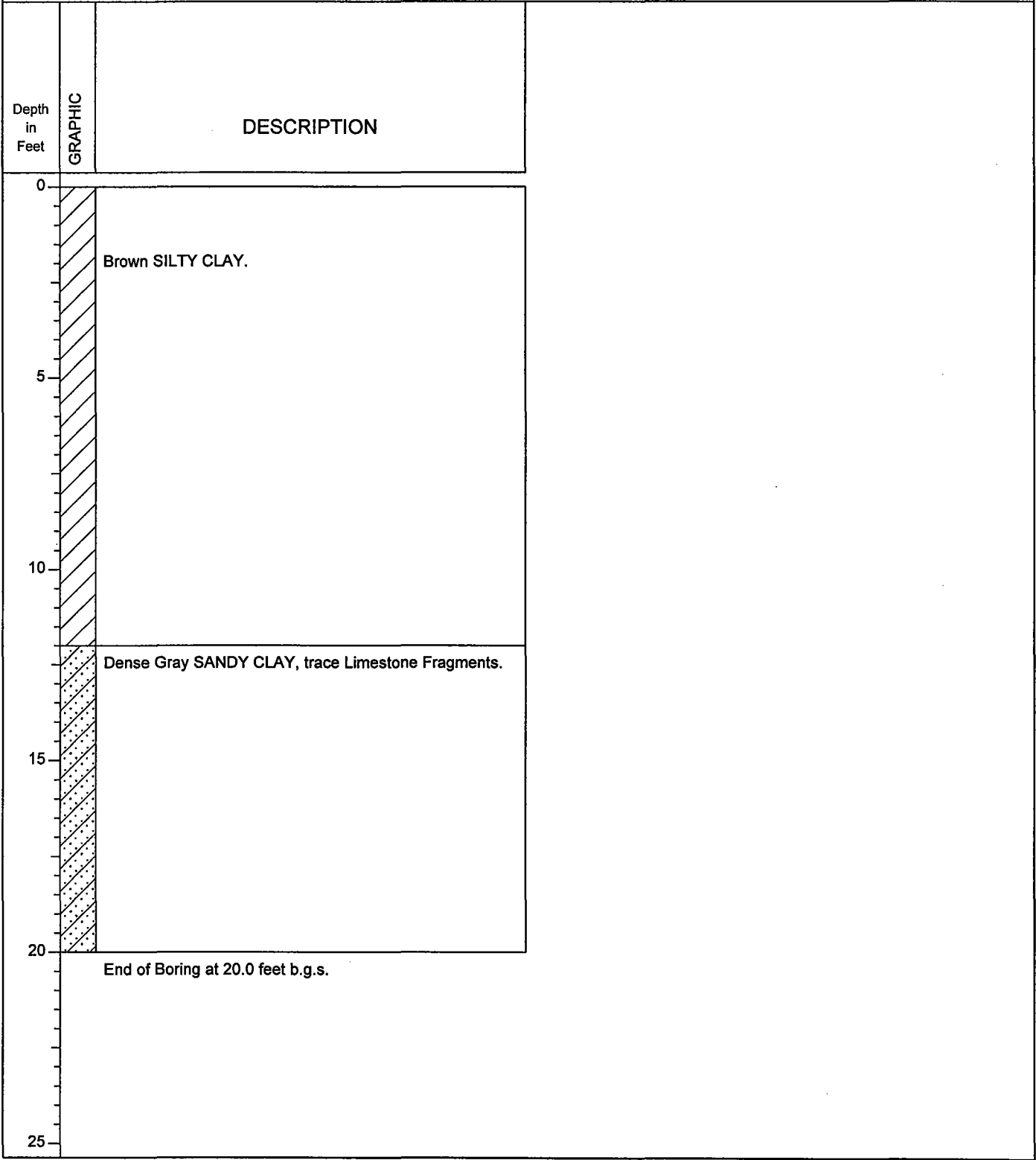


# LOG OF BORING CDS, Inc. (B-1)

(Page 1 of 1)

**Kerr-McGee**  
**Moss-American Pilot River Diversion**  
**Location 1 (91st Street and Bradley Road)**  
**Little Menominee River**  
**Milwaukee, WI**

Date Drilled : 28 November 2000      Location : Northwest  
 Drilling Method : Solid Flight Augers      : Corner of Clearing.  
 Subcontractor : Ryan, Inc.  
 Drilling Company : CDS, Inc.  
 Driller : Dick Neumann



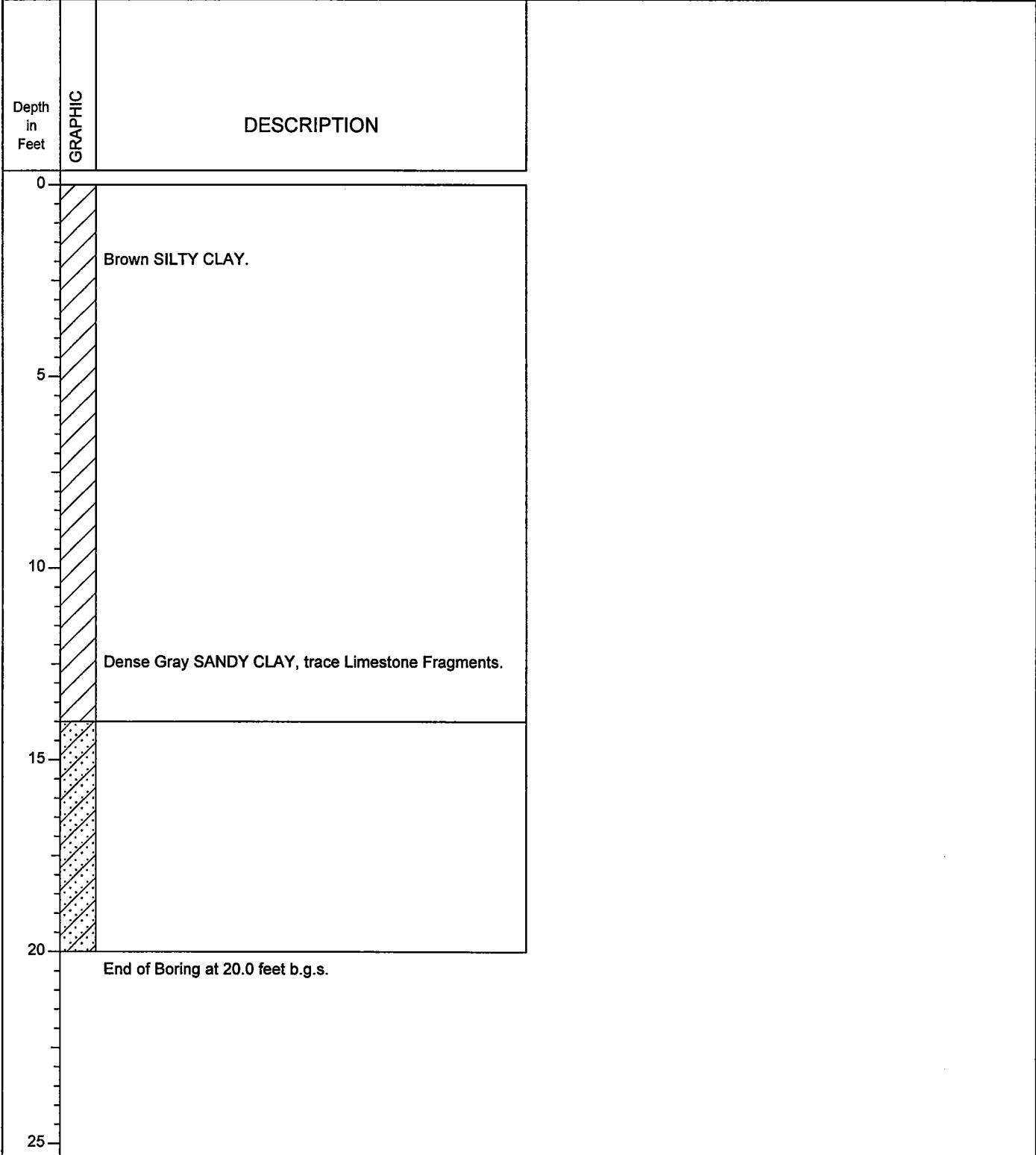
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# LOG OF BORING CDS, Inc. (B-2)

(Page 1 of 1)

Kerr-McGee Moss-American Pilot River Diversion Location 1 (91st Street and Bradley Road)	Date Drilled	: 28 November 2000	Location	: 60' South of NW
	Drilling Method	: Solid Flight Augers		: Corner of Clearing.
Little Menominee River	Subcontractor	: Ryan, Inc.		
Milwaukee, WI	Drilling Company	: CDS, Inc.		
	Driller	: Dick Neumann		



02-19-2001 K:\MOSSAM-2\IRVERR-1\TMREPO-1\APPEND-1\BORING-1\BORING-1\BRADLE-1\CDS2.BOR



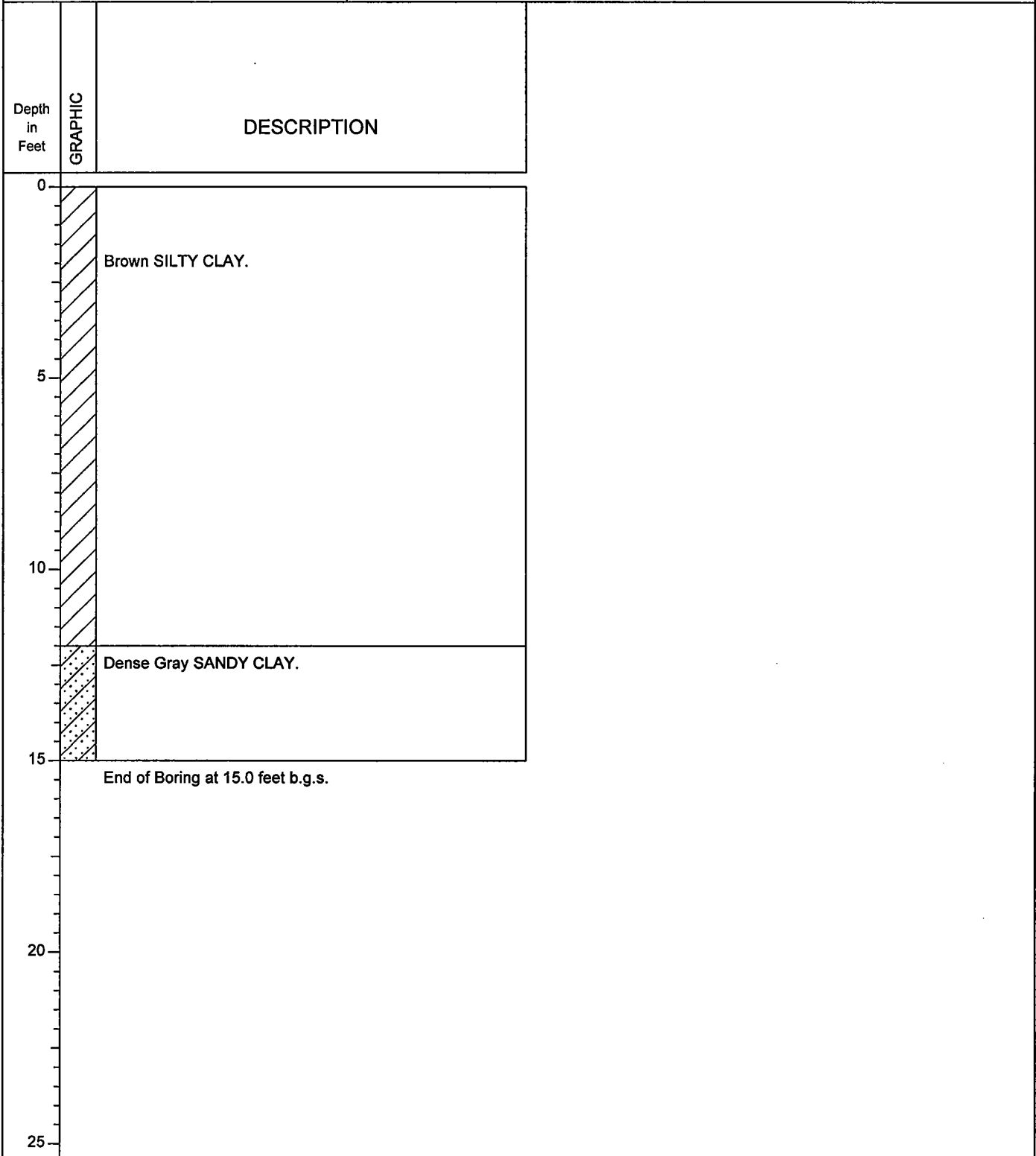


# LOG OF BORING CDS, Inc. (B-3)

(Page 1 of 1)

**Kerr-McGee**  
**Moss-American Pilot River Diversion**  
**Location 1 (91st Street and Bradley Road)**  
**Little Menominee River**  
**Milwaukee, WI**

Date Drilled : 28 November 2000      Location : 60' South of B-2.  
 Drilling Method : Solid Flight Augers  
 Subcontractor : Ryan, Inc.  
 Drilling Company : CDS, Inc.  
 Driller : Dick Neumann



02-19-2001 K:\MOSSAM-2\RIVERR-1\TMREPO-1\APPEND-1\BORING-1\CDSINC-1\BRADLE-1\CDS3.BOR



# LOG OF BORING CDS, Inc. (B-3A)

(Page 1 of 1)

Kerr-McGee  
 Moss-American Pilot River Diversion  
 Location 1 (91st Street and Bradley Road)  
 Little Menominee River  
 Milwaukee, WI

Date Drilled : 28 November 2000  
 Drilling Method : Solid Flight Augers  
 Subcontractor : Ryan, Inc.  
 Drilling Company : CDS, Inc.  
 Driller : Dick Neumann  
 Location : 5' South of B-3.

Depth in Feet	GRAPHIC	DESCRIPTION
0		Brown SILTY CLAY.
5		
10		Dense Gray SANDY CLAY, trace limestone fragments, very dense.
15		
20		End of Boring at 20.0 feet b.g.s.
25		

02-19-2001 K:\MOSSAM-2\RIVER-1\TMREPO-1\APPEND-1\BORING-1\CDSINC-1\BRADLE-1\CDS3A.BOR

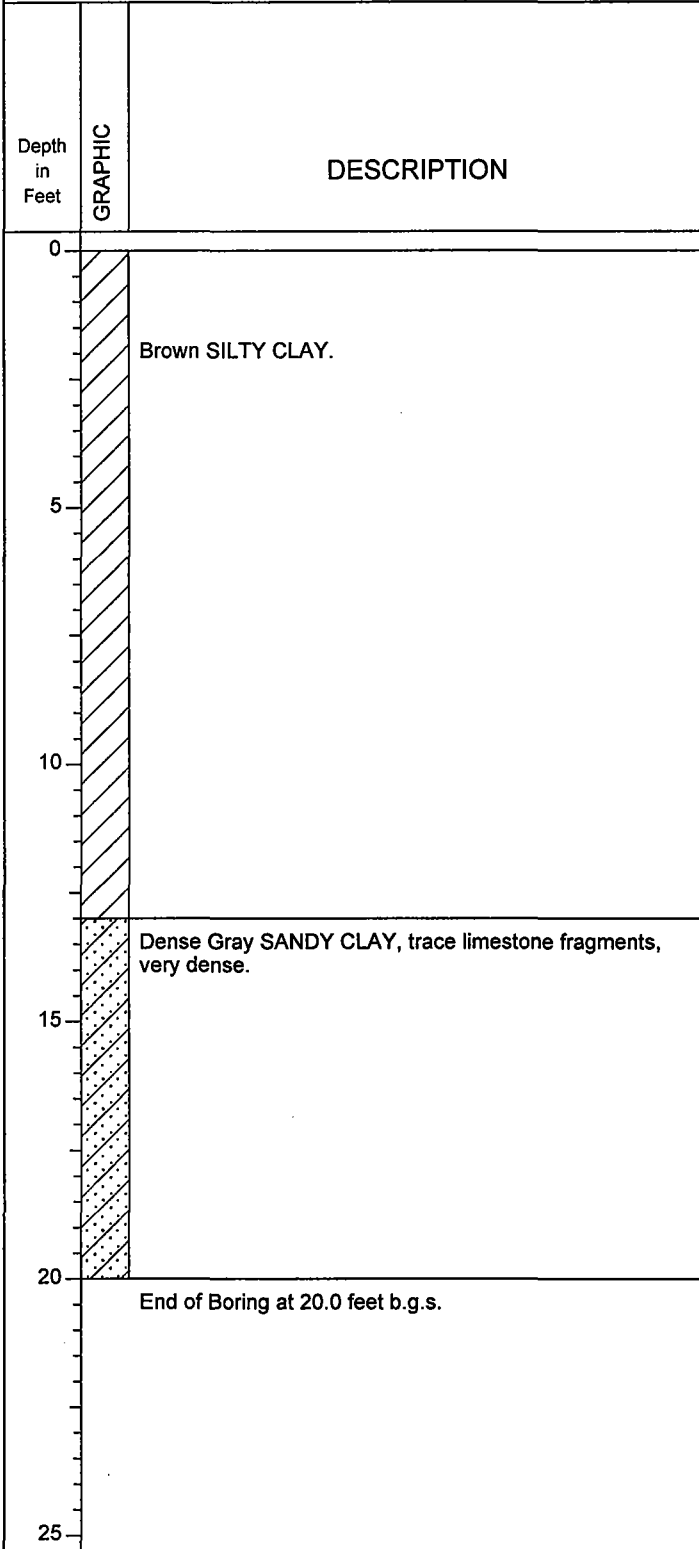


# LOG OF BORING CDS, Inc. (B-4)

(Page 1 of 1)

Kerr-McGee  
 Moss-American Pilot River Diversion  
 Location 1 (91st Street and Bradley Road)  
 Little Menominee River  
 Milwaukee, WI

Date Drilled : 28 November 2000  
 Location : 60' South of B-3.  
 Drilling Method : Solid Flight Augers  
 Subcontractor : Ryan, Inc.  
 Drilling Company : CDS, Inc.  
 Driller : Dick Neumann



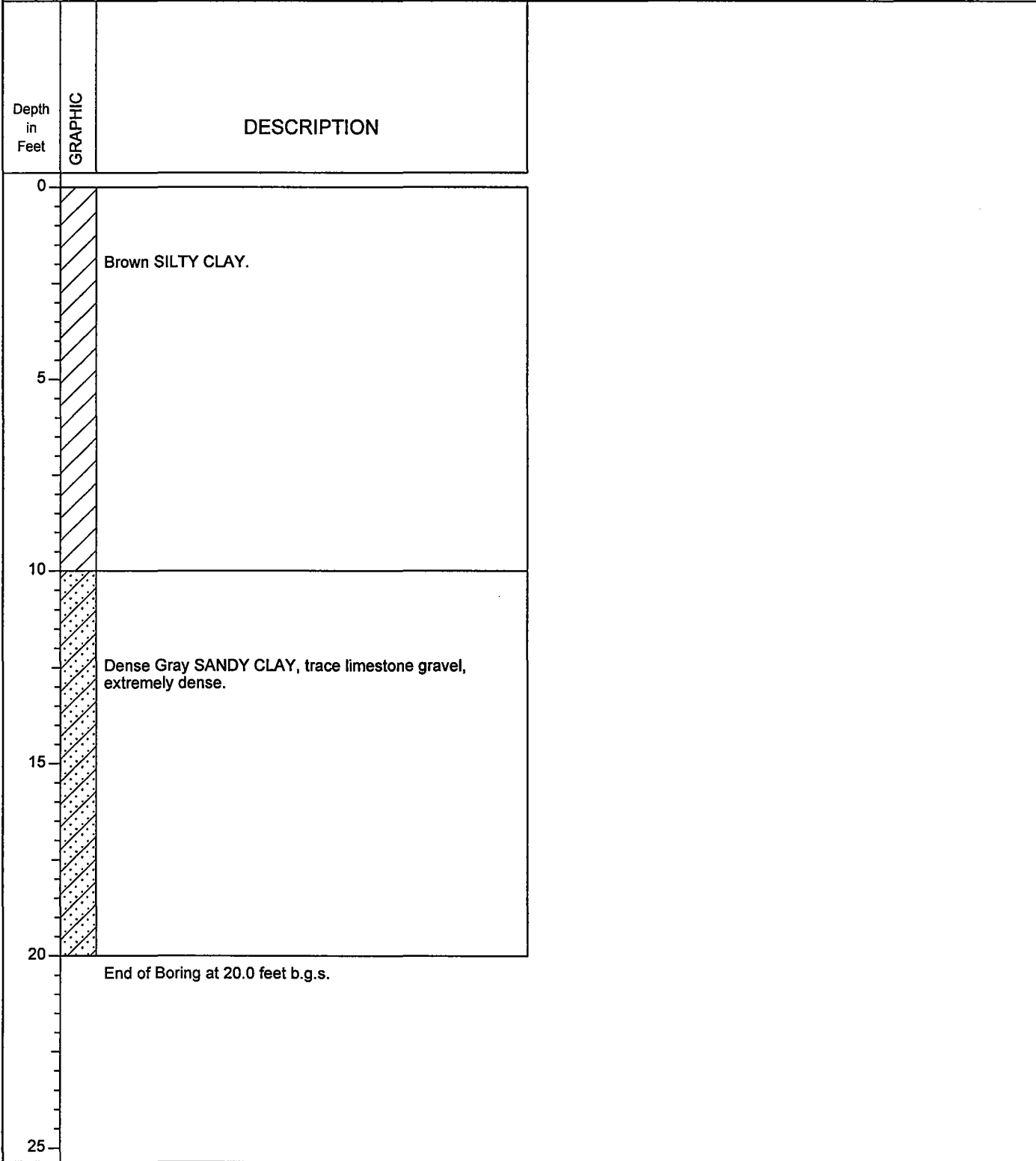
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# LOG OF BORING CDS, Inc. (B-5)

(Page 1 of 1)

Kerr-McGee Moss-American Pilot River Diversion Location 1 (91st Street and Bradley Road)	Date Drilled	: 28 November 2000	Location	: 60' South of B-4.
	Little Menominee River Milwaukee, WI	Drilling Method	: Solid Flight Augers	
	Subcontractor	: Ryan, Inc.		
	Drilling Company	: CDS, Inc.		
	Driller	: Dick Neumann		



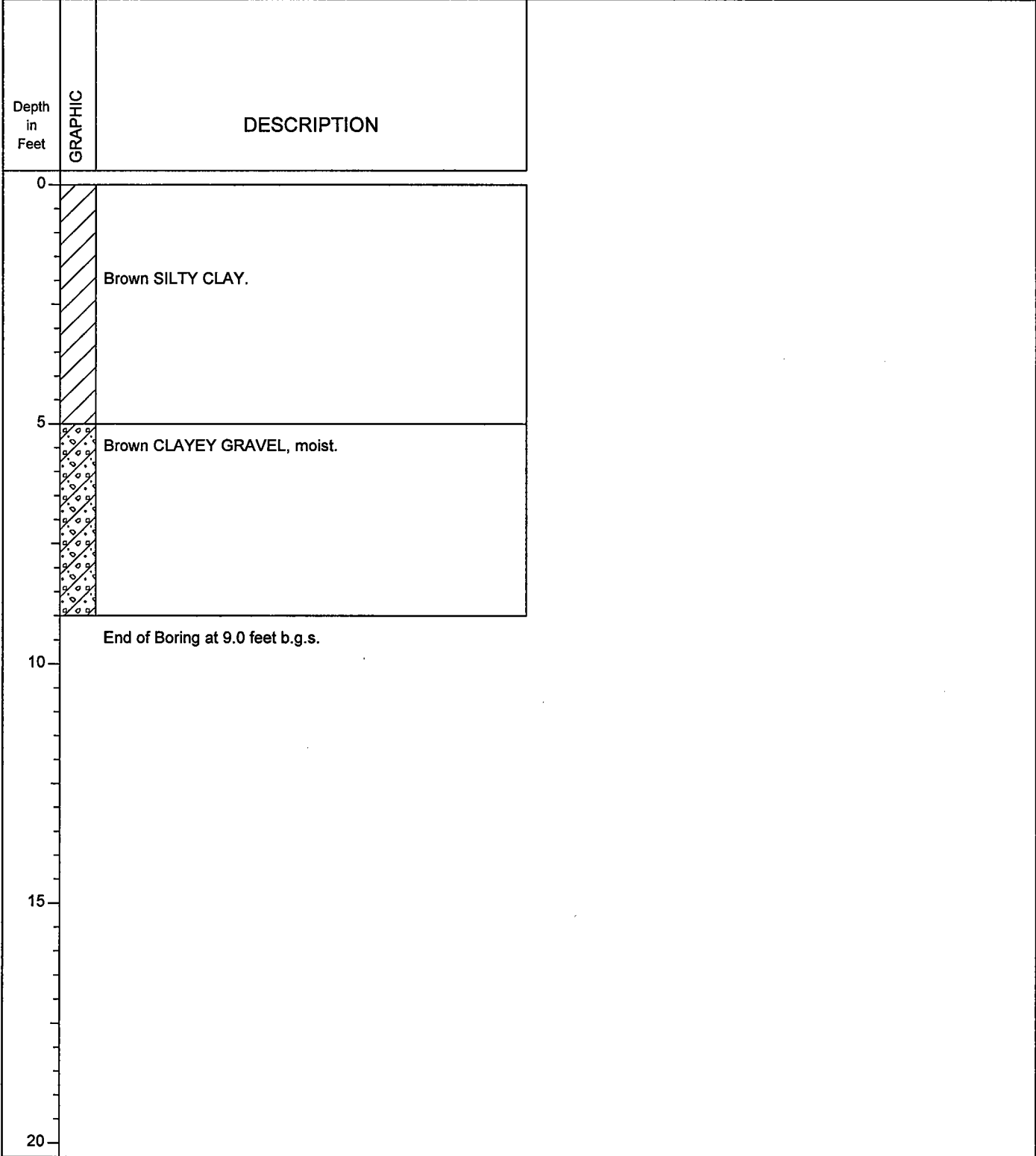
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# LOG OF BORING CDS, Inc. (B-1)

(Page 1 of 1)

Kerr-McGee Moss-American Pilot River Diversion Location 2 (Menominee Parkway)	Date Drilled : 28 November 2000	Location : Northwest
	Little Menominee River Milwaukee, WI	Drilling Method : Solid Flight Augers Subcontractor : Ryan, Inc. Drilling Company : CDS, Inc. Driller : Dick Neumann



02-19-2001 K:\MOSSAM-2\RIVERR-1\TMREPO-1\APPEND-1\BORING-1\CDSINC-1\LMRPAR-1\CDSB1.BOR

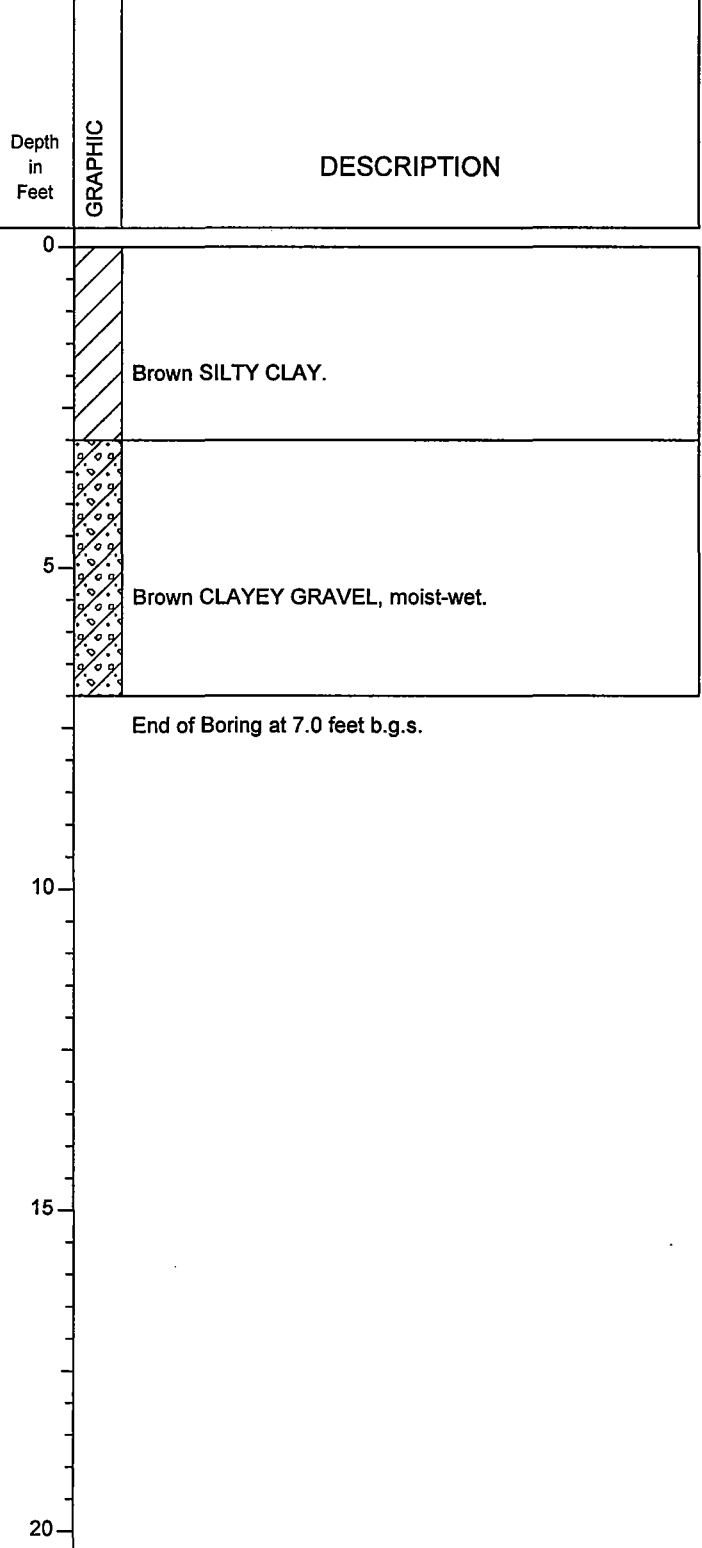


LOG OF BORING CDS, Inc. (B-2)

(Page 1 of 1)

Kerr-McGee  
 Moss-American Pilot River Diversion  
 Location 2 (Menominee Parkway)  
 Little Menominee River  
 Milwaukee, WI

Date Drilled : 28 November 2000  
 Drilling Method : Solid Flight Augers  
 Subcontractor : Ryan, Inc.  
 Drilling Company : CDS, Inc.  
 Driller : Dick Neumann  
 Location : 60' south of B-1.



02-19-2001 K:\WOSSAM-2\RIVER-1\TMRPO-1\APPEND-1\BORING-1\CDSINC-1\MRPAR-1\CDSBZ.BOR



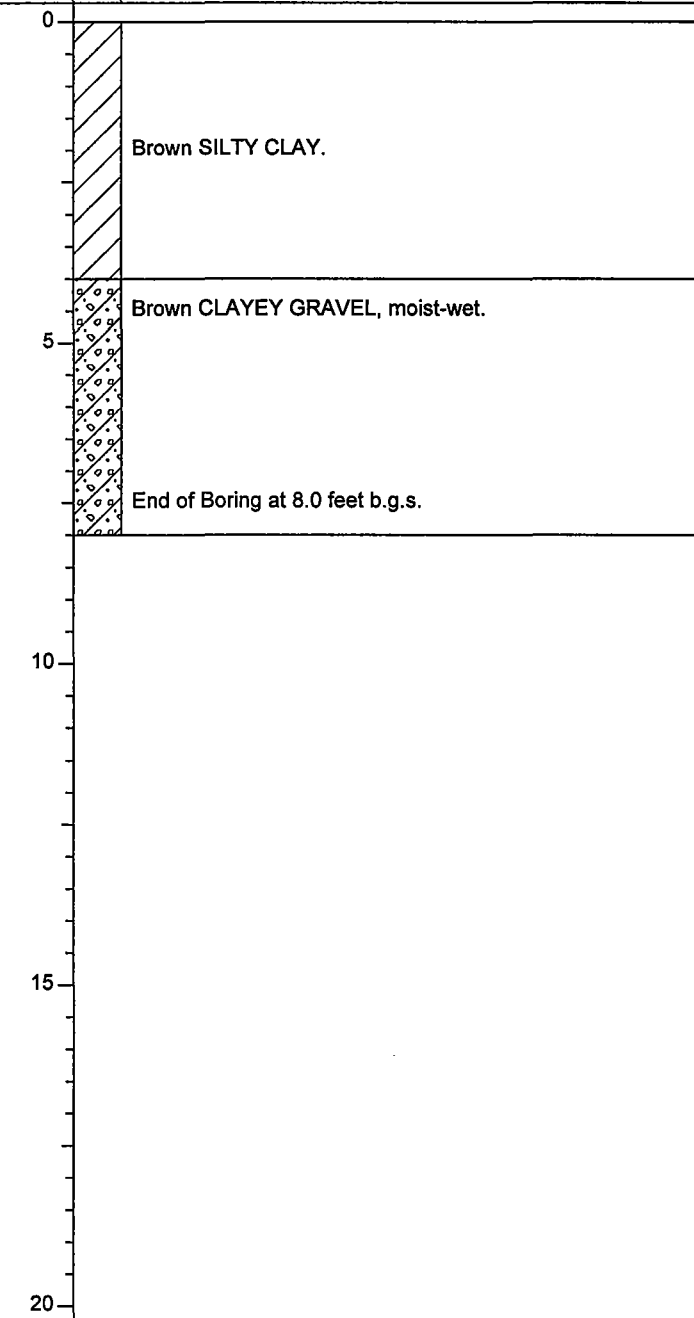
LOG OF BORING CDS, Inc. (B-3)

(Page 1 of 1)

Kerr-McGee  
 Moss-American Pilot River Diversion  
 Location 2 (Menominee Parkway)  
 Little Menominee River  
 Milwaukee, WI

Date Drilled : 28 November 2000 Location : 60' south of B-2.  
 Drilling Method : Solid Flight Augers  
 Subcontractor : Ryan, Inc.  
 Drilling Company : CDS, Inc.  
 Driller : Dick Neumann

Depth in Feet	GRAPHIC	DESCRIPTION
---------------	---------	-------------



02-19-2001 K:\MOSSAM-2\RIVER-1\TMRPO-1\APPEND-1\BORING-1\CDSINC-1\MRPAR-1\CDSB3.BOR



# LOG OF BORING CDS, Inc. (B-4)

(Page 1 of 1)

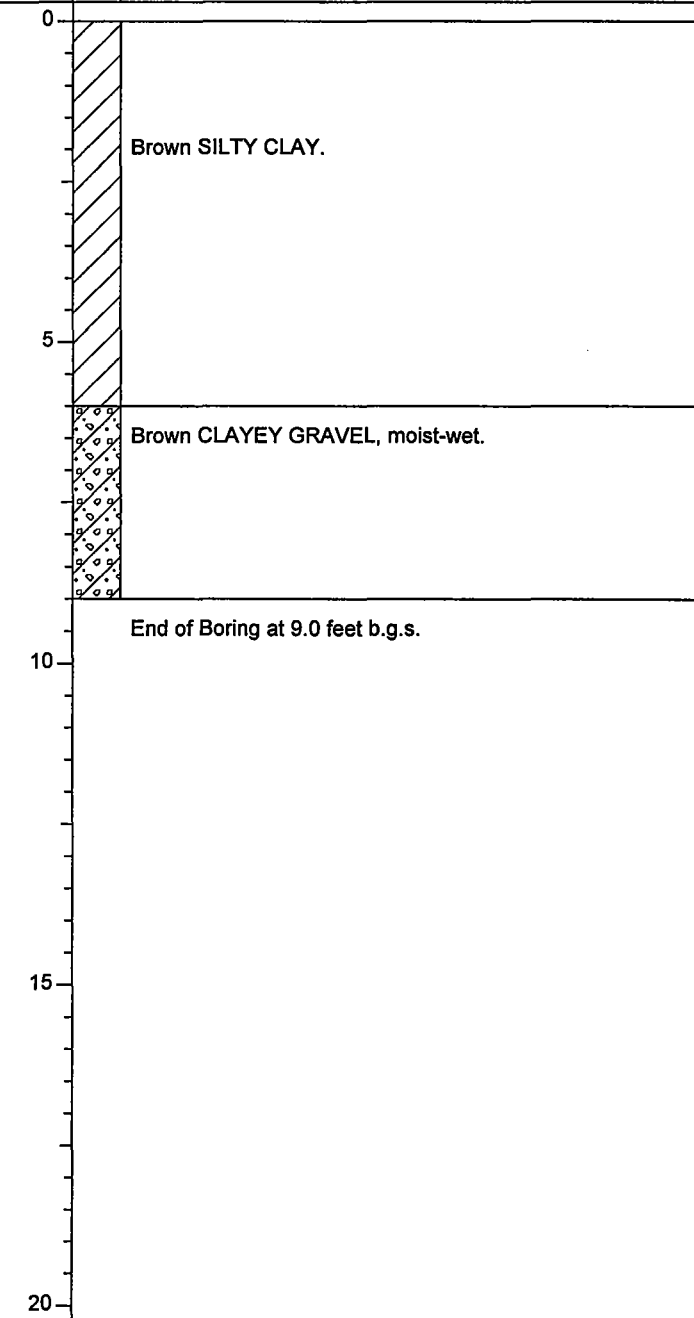
Kerr-McGee  
Moss-American Pilot River Diversion  
Location 2 (Menominee Parkway)

Date Drilled : 28 November 2000  
Drilling Method : Solid Flight Augers  
Subcontractor : Ryan, Inc.  
Drilling Company : CDS, Inc.  
Driller : Dick Neumann

Location : 60' south of B-3.

Little Menominee River  
Milwaukee, WI

Depth in Feet	GRAPHIC	DESCRIPTION
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02-19-2001 K:\WOSSAM-2\RIVER-1\TMRPO-1\APPEND-1\BORING-1\CDSINC-1\MRPAR-1\CDSB4.BOR

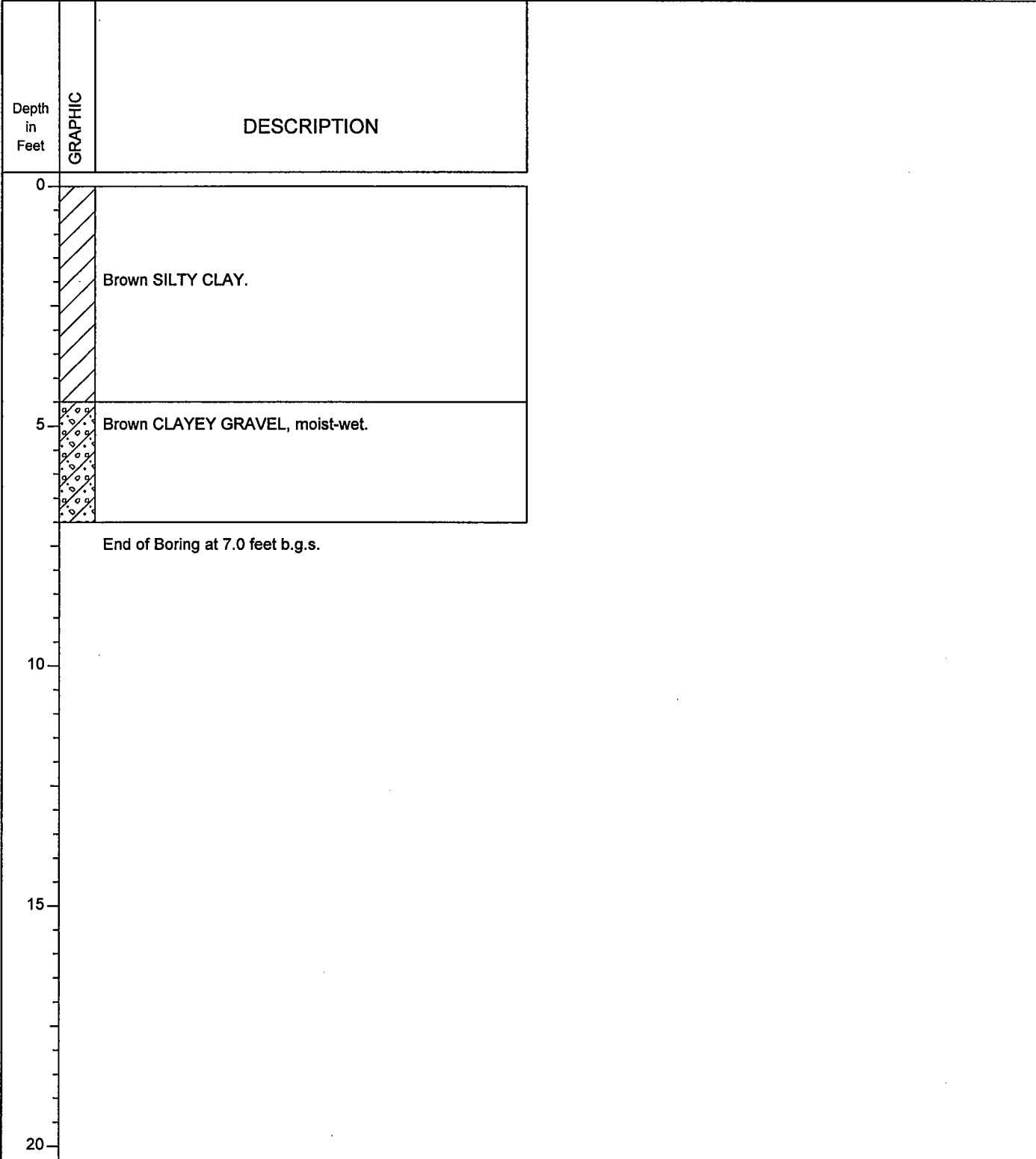




# LOG OF BORING CDS, Inc. (B-5)

(Page 1 of 1)

Kerr-McGee Moss-American Pilot River Diversion Location 2 (Menominee Parkway)	Date Drilled : 28 November 2000	Location : 60' south of B-4.
	Little Menominee River Milwaukee, WI	Drilling Method : Solid Flight Augers Subcontractor : Ryan, Inc. Drilling Company : CDS, Inc. Driller : Dick Neumann



02-19-2001 K:\MOSSAM-2\RVERR-1\TMREPO-1\APPEND-1\BORING-1\CDSINC-1\LMRPAR-1\CDSB5.BOR

**APPENDIX C**

**LABORATORY ANALYTICAL DATA PACKAGE – SURFACE WATER SAMPLES**

# Analysis Request/ Environmental Services Chain of Custody



For Lancaster Laboratories use only  
 Acct. # 7802 Sample # 3501461-62

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

1 Client: <u>Kerr-McBee</u> Acct. #: _____ Project Name/#: <u>Moss American</u> PWSID #: _____ Project Manager: <u>Tom Graan</u> P.O.# _____ Sampler: <u>Joe Klump</u> Quote #: _____ Name of state where samples were collected: <u>WISCONSIN</u>	4 Matrix <input type="checkbox"/> Potable (Check if applicable) <input type="checkbox"/> NPDES <input type="checkbox"/> Other	5 Analyses Requested <div style="border: 1px solid black; padding: 5px; text-align: center;">                     BTEX                      PAHs 8270                      TSS                 </div>	For lab use only FSC: _____ SCR #: _____ Temperature of samples upon receipt (if requested)
--	--	--	--

Sample Identification	Date Collected	Time Collected	Grab	Composite	Soil	Water	Other	Total # of Containers	Remarks	Temperature of samples upon receipt (if requested)
SW-PRD1-WP-141100-01	11/14/00	1500		✓		✓		3		
SW-PRD1-DN-141100-01	11/14/00	1515		✓		✓		3		
SW-PRD1-WP-141100-01	11/14/00	1500	✓			✓		3	✓	
SW-PRD1-DN-141100-01	11/14/00	1515	✓			✓		3	✓	

7 Turnaround Time Requested (TAT) (please circle): Normal <u>Rush</u> (Rush TAT is subject to Lancaster Laboratories approval and surcharge.) Date results are needed: <u>24 hr TAT</u> Rush results requested by (please circle): Phone Fax Phone #: <u>(847) 918-4000</u> Fax #: <u>(847) 918-4055</u>	Relinquished by: <u>[Signature]</u>	Date <u>11-8-00</u>	Time <u>11:50</u>	Received by: _____	Date _____	Time _____
8 Data Package Options (please circle if requested) QC Summary Type VI (Raw Data) Yes <u>No</u> Type I (Tier I) GLP Type II (Tier II) Other Type III (NJ Red. Del.) Type IV (CLP)	Relinquished by: <u>[Signature]</u>	Date _____	Time _____	Received by: _____	Date _____	Time _____
Site-specific QC required? Yes No (If yes, indicate QC sample and submit triplicate volume.)	Relinquished by: _____	Date _____	Time _____	Received by: _____	Date _____	Time _____
Internal Chain of Custody required? Yes No	Relinquished by: _____	Date _____	Time _____	Received by: <u>[Signature]</u>	Date <u>11-15-00</u>	Time <u>05:50</u>



## ANALYTICAL RESULTS

Prepared for:

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

Prepared by:

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

### SAMPLE GROUP

The sample group for this submittal is 739600. Samples arrived at the laboratory on Wednesday, November 15, 2000.

### Client Description

SW-PRD1-DN-141100-01 Composite Water Sample  
SW-PRD1-UP-141100-01 Composite Water Sample

### Lancaster Labs Number

3501461  
3501462

### METHODOLOGY

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

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

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

Questions? Contact your Client Services Representative  
Kay G. Hower at (717) 656-2300.

Respectfully Submitted



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



Lancaster Laboratories Sample No. WW 3501461

Collected: 11/14/2000 15:15 by JK

Account Number: 07802

Submitted: 11/15/2000 09:20

Kerr-McGee Corporation

Reported: 11/28/00 at 10:19 PM

P.O. Box 25861

Discard: 12/29/00

Oklahoma City OK 73125

SW-PRD1-DN-141100-01 Composite Water Sample  
Moss American Superfund Site - Milwaukee, WI

20S10 SDG#: MOS74-01

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
00206	Total Suspended Solids	n.a.	121.	4.1	mg/l	1
08213	BTEX (8021)					
00776	Benzene	71-43-2	N.D.	0.20	ug/l	1
00777	Toluene	108-88-3	N.D.	0.20	ug/l	1
00778	Ethylbenzene	100-41-4	N.D.	0.20	ug/l	1
00779	Total Xylenes	1330-20-7	N.D.	0.60	ug/l	1

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

07805 PAHs in Water by GC/MS

03947	Naphthalene	91-20-3	N.D.	1.	ug/l	1
03951	Acenaphthylene	208-96-8	N.D.	1.	ug/l	1
03954	Acenaphthene	83-32-9	N.D.	1.	ug/l	1
03956	Fluorene	86-73-7	N.D.	1.	ug/l	1
03963	Phenanthrene	85-01-8	2. J	1.	ug/l	1
03964	Anthracene	120-12-7	N.D.	1.	ug/l	1
03966	Fluoranthene	206-44-0	2. J	1.	ug/l	1
03967	Pyrene	129-00-0	1. J	1.	ug/l	1
03970	Benzo(a)anthracene	56-55-3	N.D.	1.	ug/l	1
03971	Chrysene	218-01-9	N.D.	1.	ug/l	1
03975	Benzo(b)fluoranthene	205-99-2	N.D.	1.	ug/l	1
03976	Benzo(k)fluoranthene	207-08-9	N.D.	1.	ug/l	1
03977	Benzo(a)pyrene	50-32-8	N.D.	1.	ug/l	1
03978	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	1.	ug/l	1
03979	Dibenz(a,h)anthracene	53-70-3	N.D.	1.	ug/l	1
03980	Benzo(g,h,i)perylene	191-24-2	N.D.	1.	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.

The sample for BTEX is a grab water sample.



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



Lancaster Laboratories Sample No. WW 3501461

Collected: 11/14/2000 15:15 by JK

Account Number: 07802

Submitted: 11/15/2000 09:20

Kerr-McGee Corporation

Reported: 11/28/00 at 10:19 PM

P.O. Box 25861

Discard: 12/29/00

Oklahoma City OK 73125

SW-PRD1-DN-141100-01 Composite Water Sample  
Moss American Superfund Site - Milwaukee, WI

20S10 SDG#: MOS74-01

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Analysis		Analyst	Dilution Factor
			Trial#	Date and Time		
00206	Total Suspended Solids	EPA 160.2	1	11/15/2000 14:07	Anne L. Kuenzli	1
08213	BTEX (8021)	SW-846 8021B/5030B	1	11/16/2000 11:58	Barry R. Shoemaker	1
07805	PAHs in Water by GC/MS	SW-846 8270C	1	11/16/2000 12:35	Teresa A. Petree	1
07807	BNA Water Extraction	SW-846 3510C	1	11/15/2000 23:35	Ginelle L. Haines	1





Lancaster Laboratories Sample No. WW 3501462

Collected: 11/14/2000 15:00 by JK

Account Number: 07802

Submitted: 11/15/2000 09:20

Kerr-McGee Corporation

Reported: 11/30/00 at 02:31 PM

P.O. Box 25861

Discard: 12/31/00

Oklahoma City, OK 73125

SW-PRD1-UP-141100-01 Composite Water Sample

Moss American Superfund Site - Milwaukee, WI

20SDN SDG#: MOS74-02

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
00206	Total Suspended Solids	n.a.	21.	4.1	mg/l	1
08213	BTEX (8021)					
00776	Benzene	71-43-2	N.D.	0.20	ug/l	1
00777	Toluene	108-88-3	N.D.	0.20	ug/l	1
00778	Ethylbenzene	100-41-4	N.D.	0.20	ug/l	1
00779	Total Xylenes	1330-20-7	N.D.	0.60	ug/l	1
Sufficient sample volume was not available to perform a MSD for this analysis. However, a MS was performed. In addition, a LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.						
07805	PAHs in Water by GC/MS					
03947	Naphthalene	91-20-3	N.D.	1.	ug/l	1
03951	Acenaphthylene	208-96-8	N.D.	1.	ug/l	1
03954	Acenaphthene	83-32-9	N.D.	1.	ug/l	1
03956	Fluorene	86-73-7	N.D.	1.	ug/l	1
03963	Phenanthrene	85-01-8	N.D.	1.	ug/l	1
03964	Anthracene	120-12-7	N.D.	1.	ug/l	1
03966	Fluoranthene	206-44-0	N.D.	1.	ug/l	1
03967	Pyrene	129-00-0	N.D.	1.	ug/l	1
03970	Benzo(a)anthracene	56-55-3	N.D.	1.	ug/l	1
03971	Chrysene	218-01-9	N.D.	1.	ug/l	1
03975	Benzo(b)fluoranthene	205-99-2	N.D.	1.	ug/l	1
03976	Benzo(k)fluoranthene	207-08-9	N.D.	1.	ug/l	1
03977	Benzo(a)pyrene	50-32-8	N.D.	1.	ug/l	1
03978	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	1.	ug/l	1
03979	Dibenz(a,h)anthracene	53-70-3	N.D.	1.	ug/l	1
03980	Benzo(g,h,i)perylene	191-24-2	N.D.	1.	ug/l	1

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



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



Lancaster Laboratories Sample No. WW 3501462

Collected: 11/14/2000 15:00 by JK

Account Number: 07802

Submitted: 11/15/2000 09:20

Kerr-McGee Corporation

Reported: 11/30/00 at 02:31 PM

P.O. Box 25861

Discard: 12/31/00

Oklahoma City, OK 73125

SW-PRD1-UP-141100-01 Composite Water Sample  
Moss American Superfund Site - Milwaukee, WI

20SDN SDG#: MOS74-02

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

The sample for BTEX is a grab water sample.

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Analysis			Analyst	Dilution Factor
			Trial#	Date and Time			
00206	Total Suspended Solids	EPA 160.2	1	11/19/2000 06:43		Susan A. Engle	1
08213	BTEX (8021)	SW-846 8021B/5030B	1	11/16/2000 12:32		Barry R. Shoemaker	1
07805	PAHs in Water by GC/MS	SW-846 8270C	1	11/16/2000 13:28		Teresa A. Petree	1
07807	BNA Water Extraction	SW-846 3510C	1	11/15/2000 23:35		Ginelle L. Haines	1



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



# Analysis Request/ Environmental Services Chain of Custody



For Lancaster Laboratories use only  
 Acct. # 7802 Sample # 3502724-27

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

Client: <u>KERR-MCGEE</u> Acct. #: _____ Project Name#: <u>MOSS-AMERICA</u> PWSID #: _____ Project Manager: <u>TOM GRAAN</u> P.O.# _____ Sampler: <u>JOE KLEMP</u> Quote #: _____ Name of state where samples were collected: <u>WISCONSIN</u>				Matrix (4) <input type="checkbox"/> Potable (Check if applicable) <input type="checkbox"/> Water <input type="checkbox"/> NPDES <input type="checkbox"/> Other		Analyses Requested (5) <u>PAH-83708270</u> <u>ATEX</u> <u>TSS</u>				For lab use only FSC: _____ SCR #: _____					
Sample Identification	Date Collected	Time Collected	Grab (3)	Composite	Soil	Water	Other	Total # of Containers	Remarks				Temperature of samples upon receipt (if requested)		
SW-PRD1- <del>DN</del> -151100-01	11/15/00	1600	✓					3	✓	✓					24 HOUR TAT
SW-PRD1-LP-151100-01	11/15/00	1600	✓	*				3	✓	✓					FAX RESULTS
SW-PRD1-DN-151100-01	11/15/00	1615	✓					3	✓	✓					TO TOM GRAAN
SW-PRD1-DN-151100-01	11/15/00	1615		✓				3	✓	✓					AT 847-918-4055
TRIP BLANK	11/15/00	1620						1							
7 Turnaround Time Requested (TAT) (please circle): Normal <u>(RUSH)</u> (Rush TAT is subject to Lancaster Laboratories approval and surcharge.) Date results are needed: <u>24 HOUR TAT</u> Rush results requested by (please circle): Phone Fax Phone #: <u>847-918-4000</u> Fax #: <u>847-918-4055</u>				Relinquished by: <u>[Signature]</u> Date: <u>11/15/00</u> Time: <u>1730</u>		Received by: <u>FedEx</u> Date: <u>11/15/00</u> Time: <u>1700</u>		Relinquished by: _____ Date: _____ Time: _____		Received by: _____ Date: _____ Time: _____					
8 Data Package Options (please circle if requested) SDG Complete? Yes <u>(No)</u> QC Summary Type VI (Raw Data) <u>PER QUOTE</u> Type I (Tier I) GLP Type II (Tier II) Other Type III (NJ Red. Del.) Type IV (CLP)				Site-specific QC required? Yes No (If yes, indicate QC sample and submit triplicate volume.)		Internal Chain of Custody required? Yes No		Relinquished by: _____ Date: _____ Time: _____		Received by: <u>[Signature]</u> Date: <u>11/16/00</u> Time: <u>0915</u>					



## ANALYTICAL RESULTS

Prepared for:

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

Prepared by:

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

### SAMPLE GROUP

The sample group for this submittal is 739862. Samples arrived at the laboratory on Thursday, November 16, 2000.

### Client Description

SW-PRD1-UP-151100-01 Grab Water Sample  
SW-PRD1-DN-151100-01 Grab Water Sample  
SW-PRD1-DN-151100-01 Composite Water Sample  
Trip Blank Water Sample

### Lancaster Labs Number

3502724  
3502725  
3502726  
3502727

### METHODOLOGY

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

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

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

Questions? Contact your Client Services Representative  
Kay G. Hower at (717) 656-2300.

Respectfully Submitted,

*Christine M. Ralchitt*



Lancaster Laboratories  
2425 New Holland Pike  
PO Box 12425  
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717-656-2300 Fax: 717-656-2681

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See reverse side for explanation of symbols and abbreviations.



Lancaster Laboratories Sample No. WW 3502727

Collected: 11/15/2000 16:20

Account Number: 07802

Submitted: 11/16/2000 09:30

Kerr-McGee Corporation

Reported: 11/20/00 at 07:32 AM

P.O. Box 25861

Discard: 12/21/00

Oklahoma City, OK 73125

Trip Blank Water Sample

Moss American - WI

TB-15 SDG#: MOS75-04TB

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

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

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
08213	BTEX (8021)	SW-846 8021B/5030B	1	11/16/2000 16:03	Steven J. Stabinger	1



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Lancaster Laboratories Sample No. WW 3502726

Collected: 11/15/2000 16:15 by JK

Account Number: 07802

Submitted: 11/16/2000 09:30

Kerr-McGee Corporation

Reported: 11/20/00 at 07:32 AM

P.O. Box 25861

Discard: 12/21/00

Oklahoma City, OK 73125

SW-PRD1-DN-151100-01 Composite Water Sample

Moss American - WI

RD1DC SDG#: MOS75-03

CAT No.	Analysis Name	CAS Number	As Received Result	As Received		Dilution Factor
				Method	Units	
00206	Total Suspended Solids	n.a.	19.	Detection Limit 4.1	mg/l	1
07805	PAHs in Water by GC/MS					
03947	Naphthalene	91-20-3	N.D.	1.	ug/l	1
03951	Acenaphthylene	208-96-8	N.D.	1.	ug/l	1
03954	Acenaphthene	83-32-9	N.D.	1.	ug/l	1
03956	Fluorene	86-73-7	N.D.	1.	ug/l	1
03963	Phenanthrene	85-01-8	N.D.	1.	ug/l	1
03964	Anthracene	120-12-7	N.D.	1.	ug/l	1
03966	Fluoranthene	206-44-0	N.D.	1.	ug/l	1
03967	Pyrene	129-00-0	N.D.	1.	ug/l	1
03970	Benzo(a)anthracene	56-55-3	N.D.	1.	ug/l	1
03971	Chrysene	218-01-9	N.D.	1.	ug/l	1
03975	Benzo(b)fluoranthene	205-99-2	N.D.	1.	ug/l	1
03976	Benzo(k)fluoranthene	207-08-9	N.D.	1.	ug/l	1
03977	Benzo(a)pyrene	50-32-8	N.D.	1.	ug/l	1
03978	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	1.	ug/l	1
03979	Dibenz(a,h)anthracene	53-70-3	N.D.	1.	ug/l	1
03980	Benzo(g,h,i)perylene	191-24-2	N.D.	1.	ug/l	1

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

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Analysis			Dilution Factor
			Trial#	Date and Time	Analyst	
00206	Total Suspended Solids	EPA 160.2	1	11/16/2000 13:58	Anne L. Kuenzli	1
07805	PAHs in Water by GC/MS	SW-846 8270C	1	11/17/2000 05:23	Michele A. Jarosick	1
07807	BNA Water Extraction	SW-846 3510C	1	11/16/2000 14:05	John M. Becker	1



Lancaster Laboratories  
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Lancaster Laboratories Sample No. WW 3502725

Collected: 11/15/2000 16:15 by JK

Account Number: 07802

Submitted: 11/16/2000 09:30

Kerr-McGee Corporation

Reported: 11/20/00 at 07:32 AM

P.O. Box 25861

Discard: 12/21/00

Oklahoma City, OK 73125

SW-PRD1-DN-151100-01 Grab Water Sample

Moss American - WI

RD1DN SDG#: MOS75-02

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
08213	BTEX (8021)					
00776	Benzene	71-43-2	N.D.	0.20	ug/l	1
00777	Toluene	108-88-3	0.21 J	0.20	ug/l	1
00778	Ethylbenzene	100-41-4	N.D.	0.20	ug/l	1
00779	Total Xylenes	1330-20-7	N.D.	0.60	ug/l	1

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

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
08213	BTEX (8021)	SW-846 8021B/5030B	1	11/16/2000 16:37	Steven J. Stabinger	1



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Lancaster Laboratories Sample No. WW 3502724

Collected: 11/15/2000 16:00 by JK

Account Number: 07802

Submitted: 11/16/2000 09:30

Reported: 11/20/00 at 07:32 AM

Discard: 12/21/00

SW-PRD1-UP-151100-01 Grab Water Sample

Moss American - WI

Kerr-McGee Corporation

P.O. Box 25861

Oklahoma City OK 73125

RD1UP SDG#: MOS75-01

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
00206	Total Suspended Solids	n.a.	21.	4.1	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 MS/MSD for this analysis. Therefore, a LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.						
07805	PAHs in Water by GC/MS					
03947	Naphthalene	91-20-3	N.D.	1.	ug/l	1
03951	Acenaphthylene	208-96-8	N.D.	1.	ug/l	1
03954	Acenaphthene	83-32-9	N.D.	1.	ug/l	1
03956	Fluorene	86-73-7	N.D.	1.	ug/l	1
03963	Phenanthrene	85-01-8	N.D.	1.	ug/l	1
03964	Anthracene	120-12-7	N.D.	1.	ug/l	1
03966	Fluoranthene	206-44-0	N.D.	1.	ug/l	1
03967	Pyrene	129-00-0	N.D.	1.	ug/l	1
03970	Benzo(a)anthracene	56-55-3	N.D.	1.	ug/l	1
03971	Chrysene	218-01-9	N.D.	1.	ug/l	1
03975	Benzo(b)fluoranthene	205-99-2	N.D.	1.	ug/l	1
03976	Benzo(k)fluoranthene	207-08-9	N.D.	1.	ug/l	1
03977	Benzo(a)pyrene	50-32-8	N.D.	1.	ug/l	1
03978	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	1.	ug/l	1
03979	Dibenz(a,h)anthracene	53-70-3	N.D.	1.	ug/l	1
03980	Benzo(g,h,i)perylene	191-24-2	N.D.	1.	ug/l	1

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



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Lancaster Laboratories Sample No. WW 3502724

Collected: 11/15/2000 16:00 by JK

Account Number: 07802

Submitted: 11/16/2000 09:30

Reported: 11/20/00 at 07:32 AM

Discard: 12/21/00

SW-PRD1-UP-151100-01 Grab Water Sample

Moss American - WI

Kerr-McGee Corporation

P.O. Box 25861

Oklahoma City OK 73125

RD1UP SDG#: MOS75-01

**Laboratory Chronicle**

CAT No.	Analysis Name	Method	Analysis		Analyst	Dilution Factor
			Trial#	Date and Time		
00206	Total Suspended Solids	EPA 160.2	1	11/16/2000 13:58	Anne L. Kuenzli	1
08213	BTEX (8021)	SW-846 8021B/5030B	1	11/16/2000 17:45	Steven J. Stabinger	1
07805	PAHs in Water by GC/MS	SW-846 8270C	1	11/17/2000 04:28	Michele A. Jarosick	1
07807	BNA Water Extraction	SW-846 3510C	1	11/16/2000 14:05	John M. Becker	1



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Lancaster Laboratories Sample No. **WW 3503671**

Collected: 11/16/2000 16:00 by JK

Account Number: 07802

Submitted: 11/17/2000 09:15

Kerr-McGee Corporation

Reported: 11/22/00 at 01:11 AM

P.O. Box 25861

Discard: 12/23/00

Oklahoma City OK 73125

SW-PRD1-UP-161100-01 Composite Water Sample

Moss American - WI

16-UP SDG#: MOS78-01

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
00206	Total Suspended Solids	n.a.	16.	4.1	mg/l	1
08213	BTEX (8021)					
00776	Benzene	71-43-2	N.D.	0.20	ug/l	1
00777	Toluene	108-88-3	N.D.	0.20	ug/l	1
00778	Ethylbenzene	100-41-4	N.D.	0.20	ug/l	1
00779	Total Xylenes	1330-20-7	N.D.	0.60	ug/l	1
Sufficient sample volume was not available to perform a MSD for this analysis. However, a MS was performed. In addition, a LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.						
07805	PAHs in Water by GC/MS					
03947	Naphthalene	91-20-3	N.D.	0.9	ug/l	1
03951	Acenaphthylene	208-96-8	N.D.	0.9	ug/l	1
03954	Acenaphthene	83-32-9	N.D.	0.9	ug/l	1
03956	Fluorene	86-73-7	N.D.	0.9	ug/l	1
03963	Phenanthrene	85-01-8	N.D.	0.9	ug/l	1
03964	Anthracene	120-12-7	N.D.	0.9	ug/l	1
03966	Fluoranthene	206-44-0	N.D.	0.9	ug/l	1
03967	Pyrene	129-00-0	N.D.	0.9	ug/l	1
03970	Benzo(a)anthracene	56-55-3	N.D.	0.9	ug/l	1
03971	Chrysene	218-01-9	N.D.	0.9	ug/l	1
03975	Benzo(b)fluoranthene	205-99-2	N.D.	0.9	ug/l	1
03976	Benzo(k)fluoranthene	207-08-9	N.D.	0.9	ug/l	1
03977	Benzo(a)pyrene	50-32-8	N.D.	0.9	ug/l	1
03978	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.9	ug/l	1
03979	Dibenz(a,h)anthracene	53-70-3	N.D.	0.9	ug/l	1
03980	Benzo(g,h,i)perylene	191-24-2	N.D.	0.9	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.

The analysis for volatiles was performed on a grab sample.



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PO Box 12425  
Lancaster, PA 17605-2425  
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Lancaster Laboratories Sample No. WW 3503671

Collected: 11/16/2000 16:00 by JK

Account Number: 07802

Submitted: 11/17/2000 09:15

Kerr-McGee Corporation

Reported: 11/22/00 at 01:11 AM

P.O. Box 25861

Discard: 12/23/00

Oklahoma, City, OK 73125

SW-PRD1-UP-161100-01 Composite Water Sample

Moss American - WI

16-UP SDG#: MOS78-01

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Analysis		Analyst	Dilution Factor
			Trial#	Date and Time		
00206	Total Suspended Solids	EPA 160.2	2	11/20/2000 12:21	Anne L. Kuenzli	1
08213	BTEX (8021)	SW-846 8021B/5030B	1	11/19/2000 03:41	K. Robert James	1
07805	PAHs in Water by GC/MS	SW-846 8270C	1	11/19/2000 04:16	Mark Clark	1
07807	BNA Water Extraction	SW-846 3510C	1	11/18/2000 00:20	Darin P. Wagner	1



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PO Box 12425  
Lancaster, PA 17605-2425  
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Lancaster Laboratories Sample No. WW 3503672

Collected: 11/16/2000 16:15 by JK

Account Number: 07802

Submitted: 11/17/2000 09:15

Kerr-McGee Corporation

Reported: 11/22/00 at 01:11 AM

P.O. Box 25861

Discard: 12/23/00

Oklahoma City OK 73125

SW-PRD1-DN-161100-01 Composite Water Sample

Moss American - WI

16-DN SDG#: MOS78-02

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
00206	Total Suspended Solids	n.a.	18.	4.1	mg/l	1
08213	BTEX (8021)					
00776	Benzene	71-43-2	N.D.	0.20	ug/l	1
00777	Toluene	108-88-3	N.D.	0.20	ug/l	1
00778	Ethylbenzene	100-41-4	N.D.	0.20	ug/l	1
00779	Total Xylenes	1330-20-7	N.D.	0.60	ug/l	1
Sufficient sample volume was not available to perform a MSD for this analysis. However, a MS was performed. In addition, a LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.						
07805	PAHs in Water by GC/MS					
03947	Naphthalene	91-20-3	N.D.	1.	ug/l	1
03951	Acenaphthylene	208-96-8	N.D.	1.	ug/l	1
03954	Acenaphthene	83-32-9	N.D.	1.	ug/l	1
03956	Fluorene	86-73-7	N.D.	1.	ug/l	1
03963	Phenanthrene	85-01-8	N.D.	1.	ug/l	1
03964	Anthracene	120-12-7	N.D.	1.	ug/l	1
03966	Fluoranthene	206-44-0	N.D.	1.	ug/l	1
03967	Pyrene	129-00-0	N.D.	1.	ug/l	1
03970	Benzo(a)anthracene	56-55-3	N.D.	1.	ug/l	1
03971	Chrysene	218-01-9	N.D.	1.	ug/l	1
03975	Benzo(b)fluoranthene	205-99-2	N.D.	1.	ug/l	1
03976	Benzo(k)fluoranthene	207-08-9	N.D.	1.	ug/l	1
03977	Benzo(a)pyrene	50-32-8	N.D.	1.	ug/l	1
03978	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	1.	ug/l	1
03979	Dibenz(a,h)anthracene	53-70-3	N.D.	1.	ug/l	1
03980	Benzo(g,h,i)perylene	191-24-2	N.D.	1.	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.

The analysis for volatiles was performed on a grab sample.



Lancaster Laboratories Sample No. WW 3503672

Collected: 11/16/2000 16:15 by JK

Account Number: 07802

Submitted: 11/17/2000 09:15

Kerr-McGee Corporation

Reported: 11/22/00 at 01:11 AM

P.O. Box 25861

Discard: 12/23/00

Oklahoma City, OK 73125

SW-PRD1-DN-161100-01 Composite Water Sample

Moss American - WI

16-DN SDG#: MOS78-02

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Analysis		Analyst	Dilution Factor
			Trial#	Date and Time		
00206	Total Suspended Solids	EPA 160.2	2	11/20/2000 12:21	Anne L. Kuenzli	1
08213	BTEX (8021)	SW-846 8021B/5030B	1	11/19/2000 04:18	K. Robert James	1
07805	PAHs in Water by GC/MS	SW-846 8270C	1	11/19/2000 05:13	Mark Clark	1
07807	BNA Water Extraction	SW-846 3510C	1	11/18/2000 00:20	Darin P. Wagner	1



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2425 New Holland Pike  
PO Box 12425  
Lancaster, PA 17605-2425  
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Lancaster Laboratories Sample No. WW 3503673

Collected: n.a.

Account Number: 07802

Submitted: 11/17/2000 09:15  
Reported: 11/22/00 at 01:11 AM  
Discard: 12/23/00  
Trip Blank Water Sample  
Moss American - WI

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

16-TB SDG#: MOS78-03TB\*

CAT No.	Analysis Name	CAS Number	As Received Result	As Received	Units	Dilution Factor
				Method		
08213	BTEX (8021)					
00776	Benzene	71-43-2	N.D.	0.20	ug/l	1
00777	Toluene	108-88-3	0.21 J	0.20	ug/l	1
00778	Ethylbenzene	100-41-4	N.D.	0.20	ug/l	1
00779	Total Xylenes	1330-20-7	N.D.	0.60	ug/l	1

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.

The analysis for volatiles was performed on a grab sample.

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Analysis		Analyst	Dilution Factor
			Trial#	Date and Time		
08213	BTEX (8021)	SW-846 8021B/5030B	1	11/19/2000 03:05	K. Robert James	1



Lancaster Laboratories, Inc.  
2425 New Holland Pike  
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# Analysis Request/ Environmental Services Chain of Custody



For Lancaster Laboratories use only  
 Acct. # 7802 Sample # 3509359-60  
3509363

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

1 Client: KERR-MCGEE Acct. #: \_\_\_\_\_  
 Project Name/#: MOSS AMERICA PWSID #: \_\_\_\_\_  
 Project Manager: TOM GRAAN P.O.# \_\_\_\_\_  
 Sampler: JOE KLEMP Quote #: \_\_\_\_\_  
 Name of state where samples were collected: \_\_\_\_\_

For lab use only  
 FSC: \_\_\_\_\_  
 SCR #: 1146359

2 Sample Identification	Date Collected	Time Collected	3		4 Matrix			5 Total # of Containers	6 Analyses Requested			Remarks	Temperature of samples upon receipt (if requested)	
			Grab	Composite	Soil	Water	Other		8270-PAH	TSS	BTEX			
SW-PRD2-DN-281100-01	11/28/00	1640	X			X		3			X			
SW-PRD2-DN-281100-01	11/28/00	1640		X		X		3	X	X				
SW-PRD2-UP-281100-01	11/28/00	1615	X			X		3			X			
SW-PRD2-UP-281100-01	11/28/00	1615		X		X		3	X	X				

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

Relinquished by: <u>Sherry Man</u>	Date: <u>11/22/00</u>	Time: <u>0600</u>	Received by: <u>J. Klans</u>	Date: <u>11/27/00</u>	Time: <u>1000</u>
Relinquished by: <u>K. Adams</u>	Date: <u>11/28/00</u>	Time: <u>1730</u>	Received by: <u>Fedex</u>	Date: <u>11/28/00</u>	Time: <u>1730</u>
Relinquished by: _____	Date: _____	Time: _____	Received by: _____	Date: _____	Time: _____
Relinquished by: _____	Date: _____	Time: _____	Received by: _____	Date: _____	Time: _____
Relinquished by: _____	Date: _____	Time: _____	Received by: <u>Koddy Binkley</u>	Date: <u>11-29-00</u>	Time: <u>0915</u>

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

QC Summary Type VI (Raw Data) <u>PER QUOTE</u>	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Type I (Tier I) GLP	
Type II (Tier II) Other	
Type III (NJ Red. Del.)	
Type IV (CLP)	

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



## ANALYTICAL RESULTS

Prepared for:

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

Prepared by:

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

## SAMPLE GROUP

The sample group for this submittal is 741242. Samples arrived at the laboratory on Wednesday, November 29, 2000.

### Client Description

SW-PRD2-DN-281100-01 Composite Water Sample  
SW-PRD2-UP-281100-01 Composite Water Sample

### Lancaster Labs Number

3509359  
3509360

## METHODOLOGY

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

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

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

Questions? Contact your Client Services Representative  
Kay G. Hower at (717) 656-2300.

Respectfully Submitted,



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



## ANALYTICAL RESULTS

Prepared for:

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

Prepared by:

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

SAMPLE GROUP

The sample group for this submittal is 741432. Samples arrived at the laboratory on Thursday, November 30, 2000.

Client Description

SW-PRD2-DN-291100-01 Composite Water Sample  
SW-PRD2-UP-291100-01 Composite Water Sample  
Trip Blank Water Sample

Lancaster Labs Number

3510092  
3510093  
3510094

METHODOLOGY

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

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

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

Questions? Contact your Client Services Representative  
Kay G. Hower at (717) 656-2300.

Respectfully Submitted,



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



Lancaster Laboratories Sample No. WW 3509359

Collected: 11/28/2000 16:40 by JK

Account Number: 07802

Submitted: 11/29/2000 09:15

Kerr-McGee Corporation

Reported: 12/05/00 at 09:20 AM

P.O. Box 25861

Discard: 1/5/01

Oklahoma City OK 73125

SW-PRD2-DN-281100-01 Composite Water Sample  
Moss American - WI

PRD2D SDG#: MOS85-01

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
00206	Total Suspended Solids	n.a.	25.	4.1	mg/l	1
08213	BTEX (8021)					
00776	Benzene	71-43-2	N.D.	0.20	ug/l	1
00777	Toluene	108-88-3	N.D.	0.20	ug/l	1
00778	Ethylbenzene	100-41-4	N.D.	0.20	ug/l	1
00779	Total Xylenes	1330-20-7	N.D.	0.60	ug/l	1
Sufficient sample volume was not available to perform a MSD for this analysis. However, a MS was performed. In addition, a LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.						
07805	PAHs in Water by GC/MS					
03947	Naphthalene	91-20-3	N.D.	1.	ug/l	1
03951	Acenaphthylene	208-96-8	N.D.	1.	ug/l	1
03954	Acenaphthene	83-32-9	N.D.	1.	ug/l	1
03956	Fluorene	86-73-7	N.D.	1.	ug/l	1
03963	Phenanthrene	85-01-8	N.D.	1.	ug/l	1
03964	Anthracene	120-12-7	N.D.	1.	ug/l	1
03966	Fluoranthene	206-44-0	N.D.	1.	ug/l	1
03967	Pyrene	129-00-0	N.D.	1.	ug/l	1
03970	Benzo(a)anthracene	56-55-3	N.D.	1.	ug/l	1
03971	Chrysene	218-01-9	N.D.	1.	ug/l	1
03975	Benzo(b)fluoranthene	205-99-2	N.D.	1.	ug/l	1
03976	Benzo(k)fluoranthene	207-08-9	N.D.	1.	ug/l	1
03977	Benzo(a)pyrene	50-32-8	N.D.	1.	ug/l	1
03978	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	1.	ug/l	1
03979	Dibenz(a,h)anthracene	53-70-3	N.D.	1.	ug/l	1
03980	Benzo(g,h,i)perylene	191-24-2	N.D.	1.	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.

The analysis for volatiles was performed on a grab sample.





Lancaster Laboratories Sample No. WW 3509359

Collected: 11/28/2000 16:40 by JK

Account Number: 07802

Submitted: 11/29/2000 09:15

Kerr-McGee Corporation

Reported: 12/05/00 at 09:20 AM

P.O. Box 25861

Discard: 1/5/01

Oklahoma City OK 73125

SW-PRD2-DN-281100-01 Composite Water Sample

Moss American - WI

PRD2D SDG#: MOS85-01

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Analysis		Analyst	Dilution Factor
			Trial#	Date and Time		
00206	Total Suspended Solids	EPA 160.2	1	11/29/2000 12:26	Anne L. Kuenzli	1
08213	BTEX (8021)	SW-846 8021B/5030B	1	11/30/2000 09:04	Linda C. Pape	1
07805	PAHs in Water by GC/MS	SW-846 8270C	1	11/30/2000 12:08	Timothy Trees	1
07807	BNA Water Extraction	SW-846 3510C	1	11/29/2000 23:30	Ginelle L. Haines	1



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



Lancaster Laboratories Sample No. WW 3509360

Collected: 11/28/2000 16:15 by JK

Account Number: 07802

Submitted: 11/29/2000 09:15

Kerr-McGee Corporation

Reported: 12/05/00 at 09:20 AM

P.O. Box 25861

Discard: 1/5/01

Oklahoma City OK 73125

SW-PRD2-UP-281100-01 Composite Water Sample

Moss American - WI

PRD2U SDG#: MOS85-02

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
00206	Total Suspended Solids	n.a.	14.	4.1	mg/l	1
08213	BTEX (8021)					
00776	Benzene	71-43-2	N.D.	0.20	ug/l	1
00777	Toluene	108-88-3	N.D.	0.20	ug/l	1
00778	Ethylbenzene	100-41-4	N.D.	0.20	ug/l	1
00779	Total Xylenes	1330-20-7	N.D.	0.60	ug/l	1

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

07805 PAHs in Water by GC/MS

03947	Naphthalene	91-20-3	N.D.	0.9	ug/l	1
03951	Acenaphthylene	208-96-8	N.D.	0.9	ug/l	1
03954	Acenaphthene	83-32-9	N.D.	0.9	ug/l	1
03956	Fluorene	86-73-7	N.D.	0.9	ug/l	1
03963	Phenanthrene	85-01-8	N.D.	0.9	ug/l	1
03964	Anthracene	120-12-7	N.D.	0.9	ug/l	1
03966	Fluoranthene	206-44-0	N.D.	0.9	ug/l	1
03967	Pyrene	129-00-0	N.D.	0.9	ug/l	1
03970	Benzo(a)anthracene	56-55-3	N.D.	0.9	ug/l	1
03971	Chrysene	218-01-9	N.D.	0.9	ug/l	1
03975	Benzo(b)fluoranthene	205-99-2	N.D.	0.9	ug/l	1
03976	Benzo(k)fluoranthene	207-08-9	N.D.	0.9	ug/l	1
03977	Benzo(a)pyrene	50-32-8	N.D.	0.9	ug/l	1
03978	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.9	ug/l	1
03979	Dibenz(a,h)anthracene	53-70-3	N.D.	0.9	ug/l	1
03980	Benzo(g,h,i)perylene	191-24-2	N.D.	0.9	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.

The analysis for volatiles was performed on a grab sample.



Lancaster Laboratories Sample No. WW 3509360

Collected: 11/28/2000 16:15 by JK

Account Number: 07802

Submitted: 11/29/2000 09:15

Kerr-McGee Corporation

Reported: 12/05/00 at 09:20 AM

P.O. Box 25861

Discard: 1/5/01

Oklahoma City OK 73125

SW-PRD2-UP-281100-01 Composite Water Sample

Moss American - WI

PRD2U SDG#: MOS85-02

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Analysis		Analyst	Dilution Factor
			Trial#	Date and Time		
00206	Total Suspended Solids	EPA 160.2	1	11/29/2000 12:26	Anne L. Kuenzli	1
08213	BTEX (8021)	SW-846 8021B/5030B	1	11/30/2000 09:36	Linda C. Pape	1
07805	PAHs in Water by GC/MS	SW-846 8270C	1	11/30/2000 12:59	Timothy Trees	1
07807	BNA Water Extraction	SW-846 3510C	1	11/29/2000 23:30	Ginelle L. Haines	1



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

# Analysis Request/ Environmental Services Chain of Custody



For Lancaster Laboratories use only  
 Acct. # 4802 Sample # 3510092-94

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

Client: KERR MCGEE Acct. #: \_\_\_\_\_  
 Project Name/#: MOSS-AMERICA PWSID #: \_\_\_\_\_  
 Project Manager: TOM GRAAN P.O.# \_\_\_\_\_  
 Sampler: JOE KLEMP Quote #: \_\_\_\_\_  
 Name of state where samples were collected: WISCONSIN

Matrix (4)  Potable (check if applicable)  NPDES  Other  
 Total # of Containers (5) 8220-PAH  
TSS  
BTEX  
 Analyses Requested  
 For lab use only  
 FSC: \_\_\_\_\_  
 SCR #: 1146359

Sample Identification	Date Collected	Time Collected	Grab (3)	Composite	Soil	Water	Other	Total # of Containers	Analyses Requested				Remarks	Temperature of samples upon receipt (if requested)	
									8220-PAH	TSS	BTEX				
BW-PRD2-DN-291100-01	1/29/00	1230	X			X		3			X				
SW-PRD2-DN-291100-01	1/29/00	1230		X		X		3	X	X					
SW-PRD2-UP-291100-01	1/29/00	1245	X			X		3			X				
SW-PRD2-UP-291100-01	1/29/00	1245		X		X		3	X	X					

7 Turnaround Time Requested (TAT) (please circle): Normal Rush  
 (Rush TAT is subject to Lancaster Laboratories approval and surcharge.)  
 Date results are needed: 24 HR TAT  
 Rush results requested by (please circle): Phone Fax  
 Phone #: 847-918-4000 Fax #: 847-918-4055

Relinquished by: <u>Henry Man</u>	Date: <u>1/22/00</u>	Time: <u>0600</u>	Received by:	Date:	Time:
Relinquished by: <u>L. G. Thuz</u>	Date: <u>1/29/00</u>	Time: <u>1630</u>	Received by: <u>Fed Ex</u>	Date: <u>1/29/00</u>	Time: <u>1630</u>
Relinquished by:	Date:	Time:	Received by:	Date:	Time:
Relinquished by:	Date:	Time:	Received by:	Date:	Time:
Relinquished by:	Date:	Time:	Received by: <u>Kately Binkley</u>	Date: <u>11-30-00</u>	Time: <u>1000</u>

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



Lancaster Laboratories Sample No. **WW 3510092**

Collected: 11/29/2000 12:30 by JK

Account Number: 07802

Submitted: 11/30/2000 10:00

Kerr-McGee Corporation

Reported: 12/06/00 at 05:40 PM

P.O. Box 25861

Discard: 1/6/01

Oklahoma City OK 73125

SW-PRD2-DN-291100-01 Composite Water Sample  
Moss American - WI

SWDN1 SDG#: MOS90-01

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
00206	Total Suspended Solids	n.a.	11.6 J	4.1	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 MS/MSD for this analysis. Therefore, a LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.						
07805	PAHs in Water by GC/MS					
03947	Naphthalene	91-20-3	N.D.	1.	ug/l	1
03951	Acenaphthylene	208-96-8	N.D.	1.	ug/l	1
03954	Acenaphthene	83-32-9	N.D.	1.	ug/l	1
03956	Fluorene	86-73-7	N.D.	1.	ug/l	1
03963	Phenanthrene	85-01-8	N.D.	1.	ug/l	1
03964	Anthracene	120-12-7	N.D.	1.	ug/l	1
03966	Fluoranthene	206-44-0	N.D.	1.	ug/l	1
03967	Pyrene	129-00-0	N.D.	1.	ug/l	1
03970	Benzo(a)anthracene	56-55-3	N.D.	1.	ug/l	1
03971	Chrysene	218-01-9	N.D.	1.	ug/l	1
03975	Benzo(b)fluoranthene	205-99-2	N.D.	1.	ug/l	1
03976	Benzo(k)fluoranthene	207-08-9	N.D.	1.	ug/l	1
03977	Benzo(a)pyrene	50-32-8	N.D.	1.	ug/l	1
03978	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	1.	ug/l	1
03979	Dibenz(a,h)anthracene	53-70-3	N.D.	1.	ug/l	1
03980	Benzo(g,h,i)perylene	191-24-2	N.D.	1.	ug/l	1

The analysis for volatiles was performed on a grab sample.



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



Lancaster Laboratories Sample No. WW 3510092

Collected: 11/29/2000 12:30 by JK

Account Number: 07802

Submitted: 11/30/2000 10:00

Kerr-McGee Corporation

Reported: 12/06/00 at 05:40 PM

P.O. Box 25861

Discard: 1/6/01

Oklahoma City OK 73125

SW-PRD2-DN-291100-01 Composite Water Sample

Moss American - WI

SWDN1 SDG#: MOS90-01

## Laboratory Chronicle

CAT No.	Analysis Name	Method	Analysis		Analyst	Dilution Factor
			Trial#	Date and Time		
00206	Total Suspended Solids	EPA 160.2	1	11/30/2000 10:37	Anne L. Kuenzli	1
08213	BTEX (8021)	SW-846 8021B/5030B	1	11/30/2000 16:38	Linda C. Pape	1
07805	PAHs in Water by GC/MS	SW-846 8270C	1	12/01/2000 10:41	Phillip R. Esbenshade	1
07807	BNA Water Extraction	SW-846 3510C	1	12/01/2000 00:40	Darin P. Wagner	1



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



Lancaster Laboratories Sample No. WW 3510093

Collected: 11/29/2000 12:45 by JK

Account Number: 07802

Submitted: 11/30/2000 10:00

Kerr-McGee Corporation

Reported: 12/06/00 at 05:40 PM

P.O. Box 25861

Discard: 1/6/01

Oklahoma City OK 73125

SW-PRD2-UP-291100-01 Composite Water Sample

Moss American - WI

SWUP1 SDG#: MOS90-02

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
00206	Total Suspended Solids	n.a.	18.	4.1	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 MS/MSD for this analysis. Therefore, a LCS/LCSD was performed to demonstrate precision and accuracy at a batch level.						
07805	PAHs in Water by GC/MS					
03947	Naphthalene	91-20-3	N.D.	1.	ug/l	1
03951	Acenaphthylene	208-96-8	N.D.	1.	ug/l	1
03954	Acenaphthene	83-32-9	N.D.	1.	ug/l	1
03956	Fluorene	86-73-7	N.D.	1.	ug/l	1
03963	Phenanthrene	85-01-8	N.D.	1.	ug/l	1
03964	Anthracene	120-12-7	N.D.	1.	ug/l	1
03966	Fluoranthene	206-44-0	N.D.	1.	ug/l	1
03967	Pyrene	129-00-0	N.D.	1.	ug/l	1
03970	Benzo(a)anthracene	56-55-3	N.D.	1.	ug/l	1
03971	Chrysene	218-01-9	N.D.	1.	ug/l	1
03975	Benzo(b)fluoranthene	205-99-2	N.D.	1.	ug/l	1
03976	Benzo(k)fluoranthene	207-08-9	N.D.	1.	ug/l	1
03977	Benzo(a)pyrene	50-32-8	N.D.	1.	ug/l	1
03978	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	1.	ug/l	1
03979	Dibenz(a,h)anthracene	53-70-3	N.D.	1.	ug/l	1
03980	Benzo(g,h,i)perylene	191-24-2	N.D.	1.	ug/l	1

The analysis for volatiles was performed on a grab sample.



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



Lancaster Laboratories Sample No. **WW 3510093**

Collected: 11/29/2000 12:45 by JK

Account Number: 07802

Submitted: 11/30/2000 10:00

Kerr-McGee Corporation

Reported: 12/06/00 at 05:40 PM

P.O. Box 25861

Discard: 1/6/01

Oklahoma City OK 73125

SW-PRD2-UP-291100-01 Composite Water Sample

Moss American - WI

SWUP1 SDG#: MOS90-02

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Analysis		Analyst	Dilution Factor
			Trial#	Date and Time		
00206	Total Suspended Solids	EPA 160.2	1	11/30/2000 10:37	Anne L. Kuenzli	1
08213	BTEX (8021)	SW-846 8021B/5030B	1	11/30/2000 17:13	Linda C. Pape	1
07805	PAHs in Water by GC/MS	SW-846 8270C	1	12/01/2000 11:37	Phillip R. Esbenshade	1
07807	BNA Water Extraction	SW-846 3510C	1	12/01/2000 00:40	Darin P. Wagner	1



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





Lancaster Laboratories Sample No. WW 3510094

Collected: n.a.

Account Number: 07802

Submitted: 11/30/2000 10:00

Kerr-McGee Corporation

Reported: 12/06/00 at 05:40 PM

P.O. Box 25861

Discard: 1/6/01

Oklahoma City OK 73125

Trip Blank Water Sample

Moss American - WI

SWUPK SDG#: MOS90-03TB\*

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

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

The analysis for volatiles was performed on a grab sample.

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
08213	BTEX (8021)	SW-846 8021B/5030B	1	11/30/2000 15:53	Linda C. Pape	1



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

**APPENDIX D**

**TOPOGRAPHICAL SURVEY DATA**

Pilot-Scale River Diversion Survey Data  
Moss-American Site  
Bradley Road (92nd Bradley)  
Milwaukee, WI

Weston Sample Location	Bernklau Stake #	North	East	Ground Elevation
	A10	430694.0	526829.9	716.8
	A11	430695.7	526819.4	713.9
CTA-1	A12	430696.3	526817.0	711.2
CTA-2	A13	430696.8	526811.3	710.3
CTA-3	A14	430698.1	526804.3	711.8
	A15	430698.4	526802.1	714.1
	A16	430699.4	526797.0	715.1
	B20	430716.3	526834.9	717.8
	B21	430718.1	526824.7	713.7
CTB-1	B22	430718.8	526821.7	711.4
CTB-2	B23	430719.4	526814.6	709.9
CTB-3	B24	430720.0	526808.7	711.6
	B25	430720.7	526805.9	713.4
	B26	430721.2	526801.0	714.6
	C30	430742.0	526837.7	717.3
	C31	430743.3	526827.8	713.8
CTC-1	C32	430743.5	526825.1	711.6
CTC-2	C33	430744.9	526819.9	709.5
CTC-3	C34	430745.8	526813.4	711.7
	C35	430747.2	526810.8	713.0
	C36	430744.9	526805.1	713.8

Weston Sample Location	Bernklau Stake #	North	East	Ground Elevation
	D40	430770.1	526839.3	716.1
	D41	430771.7	526830.7	713.9
CTD-1	D42	430772.2	526828.3	711.1
CTD-2	D43	430772.9	526823.5	709.7
CTD-3	D44	430773.2	526817.9	711.7
	D45	430773.6	526815.6	713.4
	D46	430774.1	526811.2	713.6
	E50	430796.0	526845.1	716.8
	E51	430797.3	526835.5	713.5
CTE-1	E52	430797.8	526832.1	710.5
CTE-2	E53	430798.1	526831.3	709.5
CTE-3	E54	430799.2	526823.7	711.2
	E55	430799.9	526819.2	713.5
	E56	430801.5	526813.0	713.8
	F60	430827.5	526847.9	716.4
	F61	430828.2	526838.9	713.7
CTF-1	F62	430828.4	526835.4	710.3
CTF-2	F63	430828.1	526833.5	709.8
CTF-3	F64	430829.2	526827.5	711.1
	F65	430829.4	526822.7	713.5
	F66	430829.8	526815.5	714.2
	S1	430576.8	526811.5	714.4
	S2	430628.9	526814.2	713.6
	S3	430738.1	526827.1	714.0
	S4	430945.5	526852.6	713.3

NOTE:

Coordinates are referenced to the Wisconsin State Plane Coordinate System, South Zone, NAD 27.

Elevations are referenced to NGVD 29.

Pilot-Scale River Diversion Survey Data  
Moss-American Site  
LMR Parkway (South of Mill Road)  
Milwaukee, WI

Weston Sample Location	Bernklau Stake #	North	East	Ground Elevation
	A1	417731.4	2524211.6	704.2
	A2	417729.3	2524213.8	703.7
CTA-1	A3	417728.1	2524217.1	700.8
CTA-2	A4	417718.8	2524225.3	699.9
CTA-3	A5	417714.2	2524229.8	700.4
	A6	417711.1	2524233.1	704.1
	A7	417705.6	2524239.6	705.7
	B1	417709.8	2524189.7	704.6
	B2	417706.9	2524192.8	704.7
CTB-1	B3	417702.8	2524198.2	699.9
CTB-2	B4	417698.4	2524202.9	699.5
CTB-3	B5	417693.2	2524208.4	700.1
	B6	417690.1	2524212.4	703.1
	B7	417684.1	2524219.6	705.1
	C1	417683.6	2524170.4	703.7
	C2	417679.6	2524174.7	703.4
CTC-1	C3	417674.6	2524181.0	700.4
CTC-2	C4	417670.1	2524186.5	699.3
CTC-3	C5	417665.8	2524191.0	700.3
	C6	417663.3	2524194.5	702.7
	C7	417659.1	2524200.0	703.2
	D1	417661.8	2524147.1	704.9
	D2	417658.2	2524151.7	704.0
CTD-1	D3	417654.0	2524156.7	701.0
CTD-2	D4	417647.7	2524163.8	699.5
CTD-3	D5	417644.4	2524167.9	699.5
	D6	417640.5	2524171.7	702.9
	D7	417636.8	2524175.5	704.4

Weston Sample Location	Bernklau Stake #	North	East	Ground Elevation
	E1	417635.0	2524125.9	705.1
	E2	417631.6	2524129.8	704.3
CTE-1	E3	417627.8	2524134.0	700.7
CTE-2	E4	417621.6	2524141.0	698.9
CTE-3	E5	417617.8	2524145.3	699.4
	E6	417615.1	2524148.7	703.6
	E7	417611.9	2524152.1	704.8
	F1	417607.2	2524105.5	705.4
	F2	417603.7	2524110.0	704.6
CTF-1	F3	417600.7	2524114.3	700.3
CTF-2	F4	417596.1	2524120.6	698.7
CTF-3	F5	417592.4	2524125.6	699.5
	F6	417589.7	2524128.6	703.4
	F7	417587.2	2524131.7	704.7
	G1	417579.9	2524088.3	704.8
	G2	417577.6	2524090.8	703.7
CTG-1	G3	417573.7	2524095.8	700.0
CTG-2	G4	417570.2	2524100.0	698.7
CTG-3	G5	417565.8	2524104.4	699.3
	G6	417562.2	2524107.6	703.7
	G7	417559.7	2524111.4	704.7

Coordinates are referenced to the Wisconsin State Plane Coordinate System, South Zone, NAD 27

Elevations are referenced to NGVD 29

**APPENDIX E**  
**SEDIMENT CORE LOGS**

### **Boring Log Legend**

#### **UNIFIED SOIL CLASSIFICATION SYSTEM**

<b>Group Symbol</b>	<b>Description</b>
GW	Well-graded gravels and gravel-sand mixtures, little or no fines.
GP	Poorly graded gravels and gravel-sand mixtures, little or no fines.
GM	Silty gravels, gravel-sand-silt mixtures.
GC	Clayey gravels, gravel-sand-clay mixtures.
SW	Well-graded sands and gravelly sands, little or no fines.
SP	Poorly graded sands and gravelly sands, little or no fines.
SM	Silty sands, sand-silt mixtures.
SC	Clayey sands, sand-clay mixtures.
ML	Inorganic silts, very fine sands, rock flour, silty or clayey fine sands.
CL	Inorganic clays of low to medium plasticity, gravelly clay, sandy clays, lean clays.
OL	Organic silts and organic silty clays of low plasticity.
MH	Inorganic silts, micaceous or diatomaceous fine sands or silts, elastic silts.
CH	Inorganic clays of high plasticity, fat clays.
OH	Organic clays of medium to high plasticity.
PT	Peat, muck and other highly organic soils.

Note: "**odor**" in boring logs refers to the presence of a hydrocarbon odor.



# LOG OF BORING CTA-1

(Page 1 of 1)

<b>Kerr-McGee</b> Moss American Pilot River Diversion Location 1 (91st Street and Bradley Road)		Date Started : 11-15-00 Date Finished : 11-15-00 Drilling Method : HAND AUGER Drilling Company : RYAN, INC. Weston Geologist : JOE KLEMP	Total Depth (ft) : 5.0 Borehole Diameter (in) : 2.0 Northing : 430696.3 Easting : 526817.0 Ground Elevation : 711.2
Little Menominee River Milwaukee, WI			

Depth in feet	Samples	Recovery (per 12")	OVM (ppm)	GRAPHIC	USCS	DESCRIPTION	REMARKS
0							
0.1	1	8	1.6		ML	Gray to black CLAYEY SILT, trace sand, embers, slight odor, wet.	Top 1" gray clay over gray and black sediment.
1.1	2	8	1.8		CL	Black CLAY, organic material including decayed leaves, strong odor, wet.	
2.1	3	8	115.2		CL	Black grading into gray CLAY, 1" sandy clay seam at 2'2" depth, strong odor, sand is black, wet.	Gray at bottom of core.
3.1					SM	1" Gray SAND, no odor.	
4.1	4	6	4.0		PT	Black organic PEAT, no odor, moist.	
4.6	5	12	1.1		SC	Gray CLAYEY SAND, wet, no odor.	
5.0					MH	Gray SILT-trace-CLAY	
Boring terminated at 5.0 b.g.s.							
6							

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# LOG OF BORING CTA-2

(Page 1 of 1)

<b>Kerr-McGee</b> Moss American Pilot River Diversion Location 1 (91st Street and Bradley Road) Little Menominee River Milwaukee, WI	Date Started : 11-15-00	Total Depth (ft) : 4.0
	Date Finished : 11-15-00	Borehole Diameter (in) : 2.0
	Drilling Method : HAND AUGER	Northing : 430596.8
	Drilling Company : RYAN, INC.	Easting : 526804.3
	Weston Geologist : JOE KLEMP	Ground Elevation : 710.3

Depth in feet	Samples	Recovery (per 12")	OVM (ppm)	GRAPHIC	USCS	DESCRIPTION	REMARKS
0							
0.1	1	12	179		SC	Top 1" material gray CLAY, fades into gray to black clay with bluish oil sheen, wet, strong odor.	Oil noted
1.0							
1.1	2	12	193		SC	Black material, SAND and CLAY, strong odor, oil sheen.	
2.0							
2.1	3	19	135		CL	Black organic CLAY, trace silt, strong odor, oil sheen.	
3.0							
3.1			1.8		SM	Gray SAND	
3.2					PT	Black organic PEAT, no odor	
4.0						Boring terminated at 4.0 b.g.s.	
5.0							

02-13-2001 K:\MOSSAM-2\RIVER-1\APPEND-1\BORING-1\BRADLE-1\CTA2.BOR





# LOG OF BORING CTA-3

(Page 1 of 1)

<b>Kerr-McGee</b> Moss American Pilot River Diversion Location 1(91st Street and Bradley Road)		Date Started : 11-15-00 Date Finished : 11-15-00 Drilling Method : HAND AUGER Drilling Company : RYAN, INC. Weston Geologist : JOE KLEMP	Total Depth (ft) : 3.0 Borehole Diameter (in) : 2.0 Northing : 430698.1 Easting : 526804.3 Ground Elevation : 711.8
Little Menominee River Milwaukee, WI			

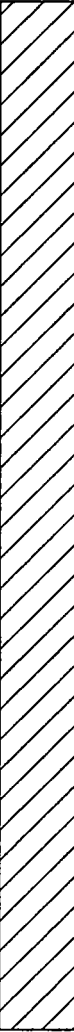
Depth in feet	Samples	Recovery (per 12")	OVM (ppm)	GRAPHIC	USCS	DESCRIPTION	REMARKS
0							
0.5	1	12	1.8		CL	Gray CLAY, no odor, moist	
1.0			9.0		PT	Black PEAT, odor, wet  Black PEAT, no odor, dry. (1.0)	
1.5	2	8	27.1		PT		
2.5	3	10	2.7		CL	Gray SILTY CLAY, no odor, dry	
3.0	Boring terminated at 3.0 b.g.s.						
4.0							
5.0							



# LOG OF BORING CTB-1

(Page 1 of 1)

<b>Kerr-McGee</b> Moss American Pilot River Diversion Location 1(91st Street and Bradley Road) Little Menominee River Milwaukee, WI	Date Started : 11-15-00	Total Depth (ft) : 4.0
	Date Finished : 11-15-00	Borehole Diameter (in) : 2.0
	Drilling Method : HAND AUGER	Northing : 430718.8
	Drilling Company : RYAN, INC.	Easting : 526821.7
	Weston Geologist : JOE KLEMP	Ground Elevation : 711.4

Depth in feet	Samples	Recovery (per 12")	OVM (ppm)	GRAPHIC	USCS	DESCRIPTION	REMARKS
0							
1	1	8	3.7			Gray to black CLAY, slight odor, wet, organic material (leaves) noted.	
2	2	6	3.4		CL	As above, no odor, dry.	
3	3	9	2.7			Gray SILTY CLAY, trace of sand, dry, no odor.	
4	4					As above.	
Boring terminated at 4.0 b.g.s.							
5							

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# LOG OF BORING CTB-2

(Page 1 of 1)

<b>Kerr-McGee</b> Moss American Pilot River Diversion Location 1(91st Street and Bradley Road)		Date Started : 11-15-00 Date Finished : 11-15-00 Drilling Method : HAND AUGER Drilling Company : RYAN, INC. Weston Geologist : JOE KLEMP	Total Depth (ft) : 4.0 Borehole Diameter (in) : 2.0 Northing : 430719.4 Easting : 526814.6 Ground Elevation : 709.9
Little Menominee River Milwaukee, WI			

Depth in feet	Samples	Recovery (per 12")	OVM (ppm)	GRAPHIC	USCS	DESCRIPTION	REMARKS
0					CL	Gray CLAY, mottled.	
1	1	11	5.9		PT	Organic material leaves noted (Peat). Black SAND, slight odor, wet.	
2	2	14	185.2		SM	Black to gray SAND, trace silt, leaves noted, odor, wet.	
3	3	18	6.0		PT	Black organic PEAT, slight odor, dry	
4	4		2.4		CL	Gray CLAY, trace of sand, moist, no odor	Duplicate sample from 3-4' b.g.s.
Boring terminated at 4.0 b.g.s.							
5							

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# LOG OF BORING CTB-3

(Page 1 of 1)

<b>Kerr-McGee</b> Moss American Pilot River Diversion Location 1(91st Street and Bradley Road)		Date Started : 11-15-00 Date Finished : 11-15-00 Drilling Method : HAND AUGER Drilling Company : RYAN, INC. Weston Geologist : JOE KLEMP	Total Depth (ft) : 5.0 Borehole Diameter (in) : 2.0 Northing : 430720.0 Easting : 526808.7 Ground Elevation : 711.6
Little Menominee River Milwaukee, WI			

Depth in feet	Samples	Recovery (per 12")	OVM (ppm)	GRAPHIC	USCS	DESCRIPTION	REMARKS
0							
1	1	8	1.3			Gray CLAY, leaves and organic material noted, molted, wet, slight odor.	
2	2	8	2.8			Black CLAY, roots and leaves noted, oily sheen, odor, moist, trace of sand.	Very black
3	3	8	2.6		CL	Black to brown CLAY, slight odor, moist.	MS/MSD collected
4	4	8	2.1			Gray SILTY CLAY, trace of sand, slight odor, dry.	
5	5	5	1.9			Gray SILTY CLAY, trace of gravel, no odor, dry.	
Boring terminated at 5.0 b.g.s.							
6							

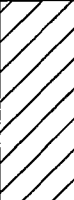
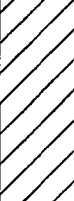
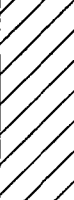
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# LOG OF BORING CTC-1

(Page 1 of 1)

<b>Kerr-McGee</b> Moss American Pilot River Diversion Location 1(91st Street and Bradley Road)	Date Started : 11-15-00	Total Depth (ft) : 3.0
	Date Finished : 11-15-00	Borehole Diameter (in) : 2.0
	Drilling Method : HAND AUGER	Northing : 430743.5
Little Menominee River	Drilling Company : RYAN, INC.	Easting : 526825.1
Milwaukee, WI	Weston Geologist : JOE KLEMP	Ground Elevation : 711.6

Depth in feet	Samples	Recovery (per 12")	OM (ppm)	GRAPHIC	USCS	DESCRIPTION	REMARKS
0							
0.5	1	6	3.9			Brown to black CLAY, leaves and organic material noted, strong odor, moist.	
1.0							
1.5		20	3.4		CL	As above, less organic material, slight odor, wet.	
2.0	2						
2.5			3.1			Brown SILTY CLAY, trace of sand, no odor, dry.	Dense clay
3.0							
Boring terminated at 3.0 b.g.s.							
4.0							
5.0							
6.0							

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# LOG OF BORING CTC-2

(Page 1 of 1)

<b>Kerr-McGee</b> <b>Moss American Pilot River Diversion</b> <b>Location 1(91st Street and Bradley Road)</b> <b>Little Menominee River</b> <b>Milwaukee, WI</b>	Date Started : 11-15-00	Total Depth (ft) : 4.0
	Date Finished : 11-15-00	Borehole Diameter (in) : 2.0
	Drilling Method : HAND AUGER	Northing : 430744.9
	Drilling Company : RYAN, INC.	Easting : 526819.9
	Weston Geologist : JOE KLEMP	Ground Elevation : 709.5

Depth in feet	Samples	Recovery (per 12")	OVM (ppm)	GRAPHIC	USCS	DESCRIPTION	REMARKS
0							
1	6	3.2				Brown to black CLAY, some sand, slight odor, wet.	
1					CL	As above, roots noted, odor, wet.	
2	10	3.0					
2							
3	7	2.9			PT	Black organic PEAT.	light odor, moist
3						Brown to gray CLAY	
3						Brown CLAY, trace of sand, roots noted, no odor, moist.	
4	12	2.9			CL		
4							
Boring terminated at 4.0 b.g.s.							
5							

02-13-2001 K:\MOSSAM-2\RIVERR-1\APPEND-1\BORING-1\BRADLE-1\CTC2.BOR



# LOG OF BORING CTC-3

(Page 1 of 1)

Kerr-McGee Moss American Pilot River Diversion Location 1(91st Street and Bradley Road)	Date Started : 11-15-00	Total Depth (ft) : 5.0
	Date Finished : 11-15-00	Borehole Diameter (in) : 2.0
	Drilling Method : HAND AUGER	Northing : 430745.8
	Drilling Company : RYAN, INC.	Easting : 526813.4
Little Menominee River Milwaukee, WI	Weston Geologist : JOE KLEMP	Ground Elevation : 711.7

Depth in feet	Samples	Recovery (per 12")	OVM (ppm)	GRAPHIC	USCS	DESCRIPTION	REMARKS
0							
1	1	6	3.0		CL	Brown CLAY, trace of sand, slight odor, oily sheen, wet.	
2	2	11	3.1			Black CLAY, trace of sand, odor, moist, roots and leaves noted.	
3	3	7	4.6			Brown CLAY, trace of sand, slight black, mottling, odor, moist.	
4	4	13	191.5			Black to brown CLAY, some sand.	
5	5		4.9		PT	Black organic PEAT, slight odor.	
						As above.	
Boring terminated at 5.0 b.g.s.							
6							

02-13-2001 K:\MOSSAM-2\RIVER-1\APPEND-1\BORING-1\BRADLE-1\CTC3.BOR



# LOG OF BORING CTD-1

(Page 1 of 1)

<b>Kerr-McGee</b> Moss American Pilot River Diversion Location 1(91st Street and Bradley Road)		Date Started : 11-16-00 Date Finished : 11-16-00 Drilling Method : HAND AUGER Drilling Company : RYAN, INC. Weston Geologist : JOE KLEMP	Total Depth (ft) : 3.0 Borehole Diameter (in) : 2.0 Northing : 430772.2 Easting : 526828.3 Ground Elevation : 711.1
Little Menominee River Milwaukee, WI			

Depth in feet	Samples	Recovery (per 12")	OVM (ppm)	GRAPHIC	USCS	DESCRIPTION	REMARKS
0							
1	9	2.9				Black organic CLAY, roots and leaves noted, slight odor, wet.	Core split with WDNR
2	6	2.9			CL	As above	
3	12	2.9				Gray SILTY CLAY, no odor, dry.	
Boring terminated at 3.0 b.g.s.							
4							
5							

02-13-2001 K:\MOSSAM~2\PIVERR~1\APPEND~1\BORING~1\BRADLE~1\CTD1.BOR





# LOG OF BORING CTD-2

(Page 1 of 1)

<b>Kerr-McGee</b> Moss American Pilot River Diversion Location 1(91st Street and Bradley Road)		Date Started : 11-16-00 Date Finished : 11-16-00 Drilling Method : HAND AUGER Drilling Company : RYAN, INC. Weston Geologist : JOE KLEMP	Total Depth (ft) : 5.0 Borehole Diameter (in) : 2.0 Northing : 430772.9 Easting : 526823.5 Ground Elevation : 709.7
<b>Little Menominee River</b> Milwaukee, WI			

Depth in feet	Samples	Recovery (per 12")	OVMM (ppm)	GRAPHIC	USCS	DESCRIPTION	REMARKS
0							
0.5	1	8	2.9		CL	Brown to gray CLAY, slight odor, wet.	Core split with WDNR
1.5	2	8	3.4		SM	Gray SAND, thin 1' clay lens @ 1.2 b.g.s., odor, dry.	
2.5	3	10	2.6		PT	Brown to gray PEAT, little sand, slight odor, dry.	
3.5	4	12	2.6		PT	As above, dark brown, no odor, dry.	
4.5	5	12	2.6		CL	Brown CLAY, no odor, dry, soft.	
5.0							
6.0							

02-13-2001 K:\MOSSAM-2\RIVER-1\BORING-1\BRADLE-1\CTD2.BOR



# LOG OF BORING CTD-3

(Page 1 of 1)

<b>Kerr-McGee</b> Moss American Pilot River Diversion Location 1(91st Street and Bradley Road)		Date Started : 11-16-00	Total Depth (ft) : 5.0
Little Menominee River Milwaukee, WI		Date Finished : 11-16-00	Borehole Diameter (in) : 2.0
		Drilling Method : HAND AUGER	Northing : 430773.2
		Drilling Company : RYAN, INC.	Easting : 526817.9
		Weston Geologist : JOE KLEMP	Ground Elevation : 711.7

Depth in feet	Samples	Recovery (per 12")	OVM (ppm)	GRAPHIC	USCS	DESCRIPTION	REMARKS
0							
1	1	8	3.1			Brown CLAY, soft, trace of sand, light odor, light sheen, wet.	
2	2	7	4.4		CL	Black CLAY, soft, organic material (roots and leaves), odor, wet.	Visibly contaminated at 1.5' b.g.s.
3	3	12	3.4			As above, strong odor.	
4	4	22	3.2		SM	Gray fine SAND.	Duplicate Sample
4					CL	Gray SILTY CLAY.	
5	5		3.1		PT	Black to brown PEAT, organic material noted, no odor, dry.	MS/MSD
Boring terminated at 5.0 b.g.s.							
6							

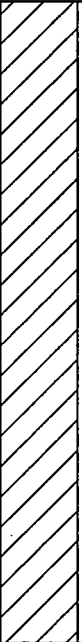
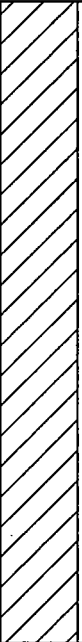
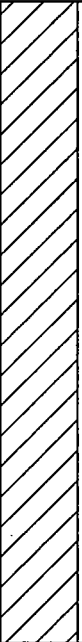
02-13-2001 K:\MOSSAM-2\RIVER-1\APPEND-1\BORING-1\BRADLE-1\CTD3.BOR



# LOG OF BORING CTE-1

(Page 1 of 1)

<b>Kerr-McGee</b> Moss American Pilot River Diversion Location 1(91st Street and Bradley Road)		Date Started : 11-16-00 Date Finished : 11-16-00 Drilling Method : HAND AUGER Drilling Company : RYAN, INC. Weston Geologist : JOE KLEMP	Total Depth (ft) : 2.5 Borehole Diameter (in) : 2.0 Northing : 430797.8 Easting : 526832.1 Ground Elevation : 710.5
Little Menominee River Milwaukee, WI			

Depth in feet	Samples	Recovery (per 12")	OVM (ppm)	GRAPHIC	USCS	DESCRIPTION	REMARKS
0						Black organic SILTY CLAY, odor, moist.	Contaminated at 0 to 1.0' b.g.s.
1	1	8	11.4				
1					CL	Gray SILTY CLAY, trace of sand, no odor, dry.	Duplicate Sample
2	2	10	3.6				
2						As above	
2	3	6	3.5				
Boring terminated at 2.5 b.g.s.							
3							
4							
5							

02-19-2001 K:\MOSSAM-2\RIVERR-1\TMRPO-1\APPEND-1\BORING-1\BRADLE-1\CTE1.BOR



# LOG OF BORING CTE-2

(Page 1 of 1)

<b>Kerr-McGee</b> <b>Moss American Pilot River Diversion</b> <b>Location 1(91st Street and Bradley Road)</b> <b>Little Menominee River</b> <b>Milwaukee, WI</b>	Date Started : 11-16-00	Total Depth (ft) : 3.0
	Date Finished : 11-16-00	Borehole Diameter (in) : 2.0
	Drilling Method : HAND AUGER	Northing : 430798.1
	Drilling Company : RYAN, INC.	Easting : 526831.3
	Weston Geologist : JOE KLEMP	Ground Elevation : 709.5

Depth in feet	Samples	Recovery (per 12")	OVM (ppm)	GRAPHIC	USCS	DESCRIPTION	REMARKS
0							
0 to 1	1	12	4.1		CL	Black to brown organic CLAY, slight odor, wet, roots and leaves noted.	
1 to 2						As above.	
2 to 2.5					SM	Gray SAND, wet, no odor.	
2.5 to 3	2	10	3.2		CL	Gray SILTY CLAY, no odor, dry.	
3 to 5						Boring terminated at 3.0 b.g.s.	

02-13-2001 K:\MOSSAM-2\RIVER-1\APPEND-1\BORING-1\BRADLE-1\CTE2.BOR



# LOG OF BORING CTE-3

(Page 1 of 1)

<b>Kerr-McGee</b> Moss American Pilot River Diversion Location 1(91st Street and Bradley Road)		Date Started : 11-16-00 Date Finished : 11-16-00 Drilling Method : HAND AUGER Drilling Company : RYAN, INC. Weston Geologist : JOE KLEMP	Total Depth (ft) : 5.0 Borehole Diameter (in) : 2.0 Northing : 430799.2 Easting : 526823.7 Ground Elevation : 711.2
Little Menominee River Milwaukee, WI			

Depth in feet	Samples	Recovery (per 12")	OVM (ppm)	GRAPHIC	USCS	DESCRIPTION	REMARKS
0							
1	1	10	3.5		CL	Brown to gray CLAY, some leaves and roots, mottled, no odor, wet.	Bottom 1/4 of sample interval dropped during removal, discarded.  All of core split withWDNR
2	2	10	134.3		CL	Brown to black organic CLAY, roots and leaves, strong odor, moist.	
3	3	12	4.5		SM	Gray SAND, some silt, moist, no odor.	
4	4	12	3.1		PT	Gray to black PEAT and marl, no odor, dry.	
5	5	12	2.2		CL	Gray CLAY, no odor, dry.	
Boring terminated at 5.0 b.g.s.							
6							

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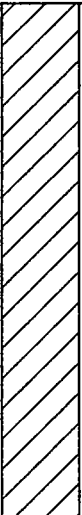
# LOG OF BORING CTF-1

(Page 1 of 1)

**Kerr-McGee**  
 Moss American Pilot River Diversion  
 Location 1(91st Street and Bradley Road)  
 Little Menominee River  
 Milwaukee, WI

Date Started : 11-16-00  
 Date Finished : 11-16-00  
 Drilling Method : HAND AUGER  
 Drilling Company : RYAN, INC.  
 Weston Geologist : JOE KLEMP

Total Depth (ft) : 2.0  
 Borehole Diameter (in) : 2.0  
 Northing : 430828.4  
 Easting : 526835.4  
 Ground Elevation : 710.3

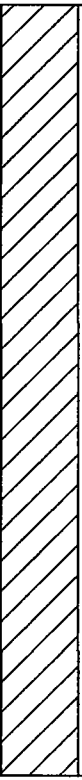
Depth in feet	Samples	Recovery (per 12")	OVM (ppm)	GRAPHIC	USCS	DESCRIPTION	REMARKS
0							
1	1	12	4.6		CL	Brown to black CLAY, organic material noted (roots and leaves), odor, moist.	Core split with WDNR
1						As above, no odor.	
2	2	8	2.7			Gray SILTY CLAY, no odor, dry.	
2	Boring terminated at 2.0 b.g.s.						
3							
4							
5							



# LOG OF BORING CTF-2

(Page 1 of 1)

Kerr-McGee Moss American Pilot River Diversion Location 1(91st Street and Bradley Road) Little Menominee River Milwaukee, WI	Date Started : 11-16-00	Total Depth (ft) : 3.0
	Date Finished : 11-16-00	Borehole Diameter (in) : 2.0
	Drilling Method : HAND AUGER	Northing : 430828.1
	Drilling Company : RYAN, INC.	Easting : 526833.5
	Weston Geologist : JOE KLEMP	Ground Elevation : 709.8

Depth in feet	Samples	Recovery (per 12")	OVM (ppm)	GRAPHIC	USCS	DESCRIPTION	REMARKS
0							
1	1	10	3.5			Brown to black CLAY, odor, wet, roots and leaves noted.	Core split with WDNR
2	2	8	2.9		CL	Brown CLAY, no odor, dry, 1" sand at bottom of core.	
3	3	10	2.5			Gray CLAY, no odor, dry.	
Boring terminated at 3.0 b.g.s.							
4							
5							

02-13-2001 K:\MOSSAM-2\RIVER-1\APPEND-1\BORING-1\BRADLE-1\CTF2.BOR



# LOG OF BORING CTF-3

(Page 1 of 1)

<b>Kerr-McGee</b> Moss American Pilot River Diversion Location 1(91st Street and Bradley Road)		Date Started : 11-16-00 Date Finished : 11-16-00 Drilling Method : HAND AUGER Drilling Company : RYAN, INC. Weston Geologist : JOE KLEMP	Total Depth (ft) : 5.0 Borehole Diameter (in) : 2.0 Northing : 430829.2 Easting : 526827.5 Ground Elevation : 711.1
Little Menominee River Milwaukee, WI			

Depth in feet	Samples	Recovery (per 12")	OVM (ppm)	GRAPHIC	USCS	DESCRIPTION	REMARKS
0							
1	1	12	2.5		CL	Brown to black CLAY, organic material noted, trace of sand, slight odor, wet.	
2	2	6	2.5			Black organic CLAY, little sand, odor, wet.	Duplicate sample collected.
3		24	2.7		SM	Gray SAND, slight odor, wet. As above, no odor, wet.	
4	3		2.4		PT	Gray to brown PEAT, no odor, dry.	MS/MSD sample collected.
5	Boring terminated at 5.0 b.g.s.						
6							

02-13-2001 K:\MOSSAM-2\RIVERR-1\APPEND-1\BORING-1\BRADLE-1\CTF3.BOR





# LOG OF BORING TEST PIT 1

(Page 1 of 1)

Kerr-McGee Moss American Pilot River Diversion Location 2 (Parkway)		Date Started : 11/28/00 Date Finished : 11/28/00 Weston Geologist : J. Klemp
Little Menominee River		Total Depth (ft) : 3.0
Milwaukee, WI		

Depth in feet	GRAPHIC	USCS	DESCRIPTION	REMARKS
0		OL	Dark gray CLAY	Staining noted at upper 6 inches of test pit.
0.5		SP	Brown SAND, Poorly Graded, wet.	
1.0		GP	SAND and GRAVEL with wood and other debris.	
3.0			Test pit dug to bedrock at 3.0 feet b.g.s.	
4.0				
5.0				
6.0				

02-13-2001 K:\MOSSAM-2\DRIVER-1\APPEND-1\BORING-1\MRPAR-1\TESTPIT1.BOR



# LOG OF BORING TEST PIT 2

(Page 1 of 1)

Kerr-McGee  
 Moss American Pilot River Diversion  
 Location 2 (Parkway)  
 Little Menominee River  
 Milwaukee, WI

Date Started : 11/28/00  
 Date Finished : 11/28/00  
 Weston Geologist : J. Klemp  
 Total Depth (ft) : 2.1

Depth in feet	GRAPHIC	USCS	DESCRIPTION	REMARKS
0		GP	GRAVEL, Poorly graded Cobbles with staining	Staining noted at upper 6 inches of test pit.
1		SP	Brown SAND, Poorly Graded, wet.	
2		CL	Gray SILTY CLAY	
2		LS	Test pit dug to limestone bedrock at 2.0 feet b.g.s.	
3				
4				
5				
6				

02-13-2001 K:\MOSSAM-2\RIVER-1\APPEND-1\BORING-1\MRPAR-1\TESTPIT2.BOR



# LOG OF BORING TEST PIT 3

(Page 1 of 1)

Kerr-McGee  
 Moss American Pilot River Diversion  
 Location 2 (Parkway)  
 Little Menominee River  
 Milwaukee, WI

Date Started : 11/28/00  
 Date Finished : 11/28/00  
 Weston Geologist : J. Klemp  
 Total Depth (ft) : 3.0

Depth in feet	GRAPHIC	USCS	DESCRIPTION	REMARKS
0 1 2 3		SC          CL	<p>Dark gray CLAY and SAND with wood debris, slight odor.</p> <p>Gray SILTY CLAY, no odor.</p>	<p>Staining noted at upper 6 inches of test pit.</p>
<p>Test pit dug to bedrock at 3.0 feet b.g.s.</p>				
4 5 6				

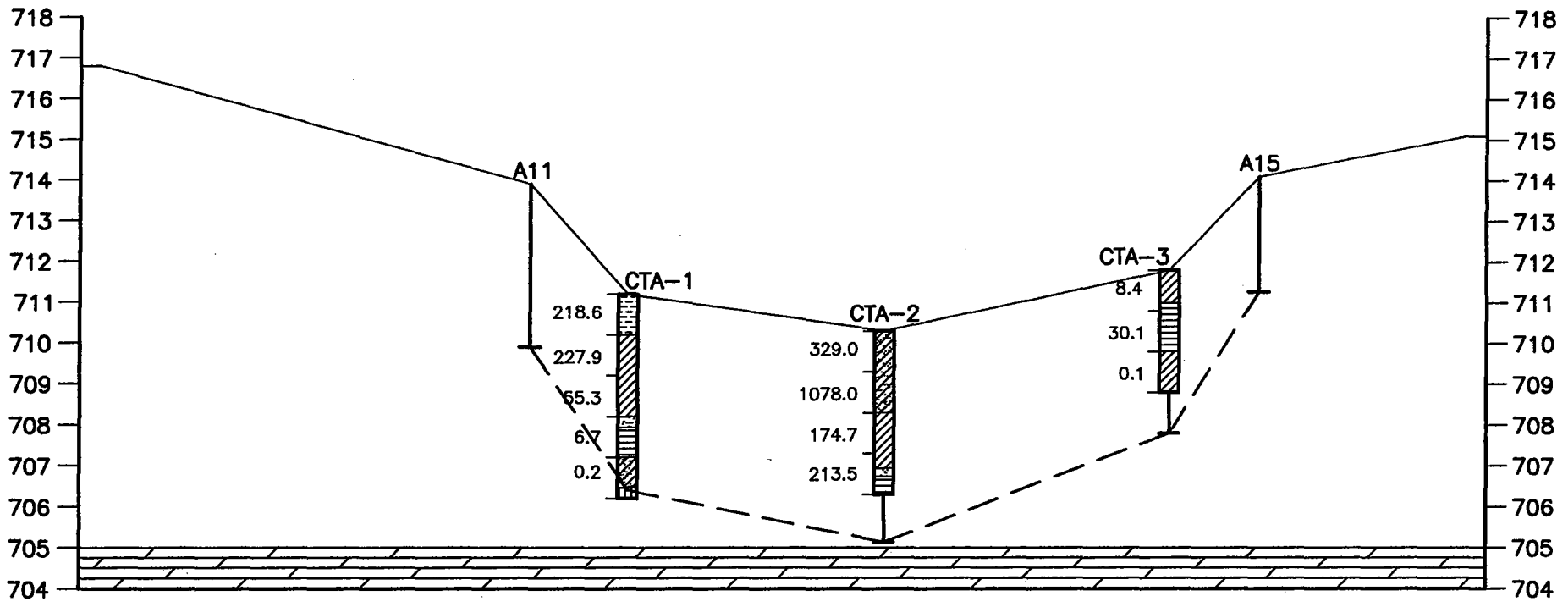
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**APPENDIX F**  
**GEOLOGIC CROSS-SECTIONS AND PROFILES**







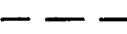


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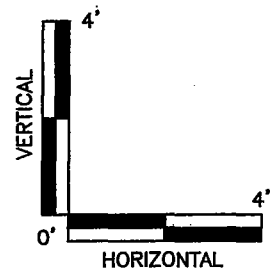
EAST

WEST



**LEGEND**

-  SILT
-  CLAY
-  SAND
-  PEAT
-  CLAYEY SAND
-  CLAYEY SILT
-  EXTENT OF PUSH PROBE DEPTH INVESTIGATION
-  HARDPAN BOUNDARY +/- 2.0 FT.
-  218.6 TOTAL CPAH CONCENTRATIONS



REVISED 27 MARCH 2001

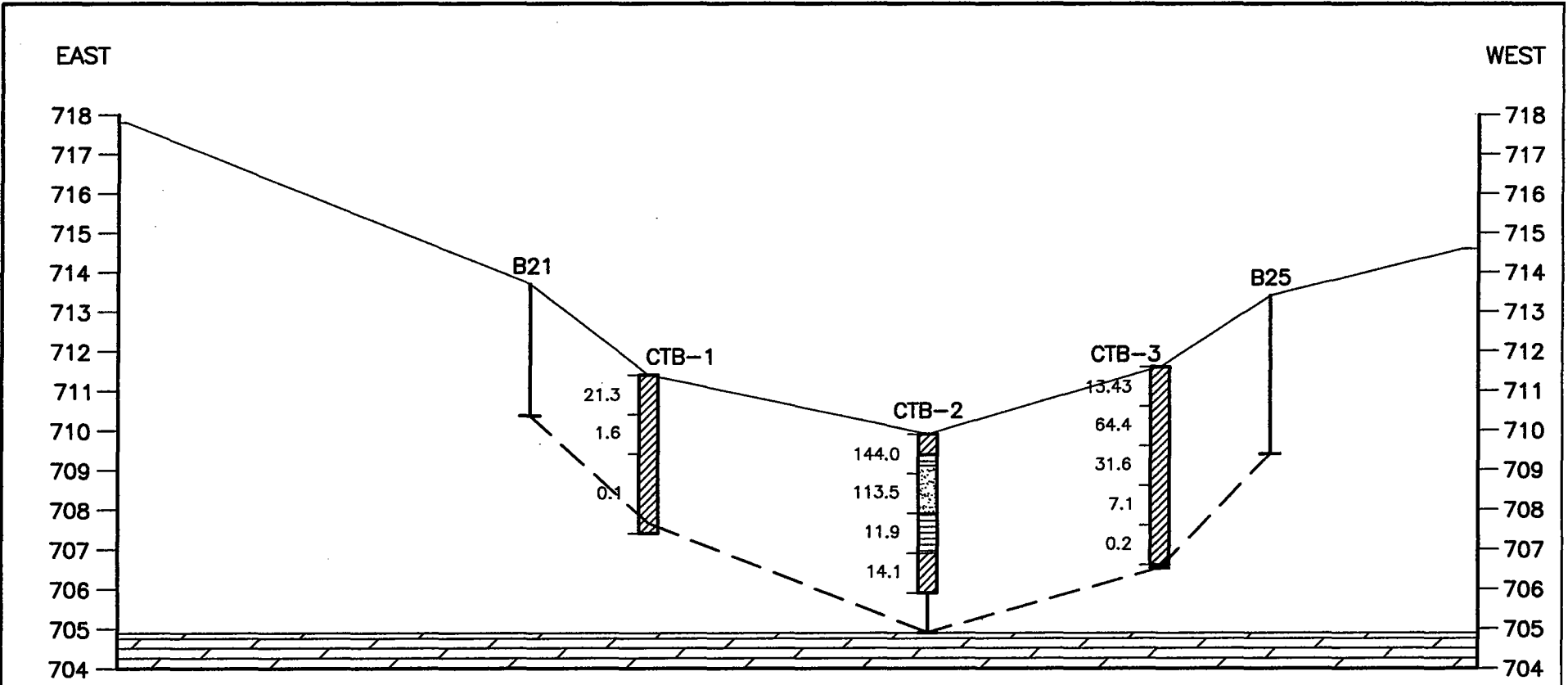
NOTE: ALL TOTAL CPAH CONCENTRATIONS IN mg/kg.

FIGURE F-1











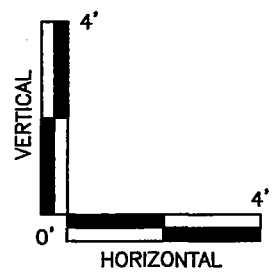
750 E. Bunker Ct.  
Suite 500  
Vernon Hills, Illinois  
60061

PILOT RIVER DIVERSION CROSS SECTION A-A'  
LOCATION 1 - BRADLEY ROAD  
MOSS-AMERICAN SITE  
Milwaukee, Wisconsin



**LEGEND**

-  SILT
-  CLAY
-  SAND
-  PEAT
-  CLAYEY SAND
-  CLAYEY SILT
-  EXTENT OF PUSH PROBE DEPTH INVESTIGATION
-  HARDPAN BOUNDARY +/- 2.0 FT.
- 218.6 TOTAL CPAH CONCENTRATIONS



REVISED 27 MARCH 2001

NOTE: ALL TOTAL CPAH CONCENTRATIONS IN mg/kg.

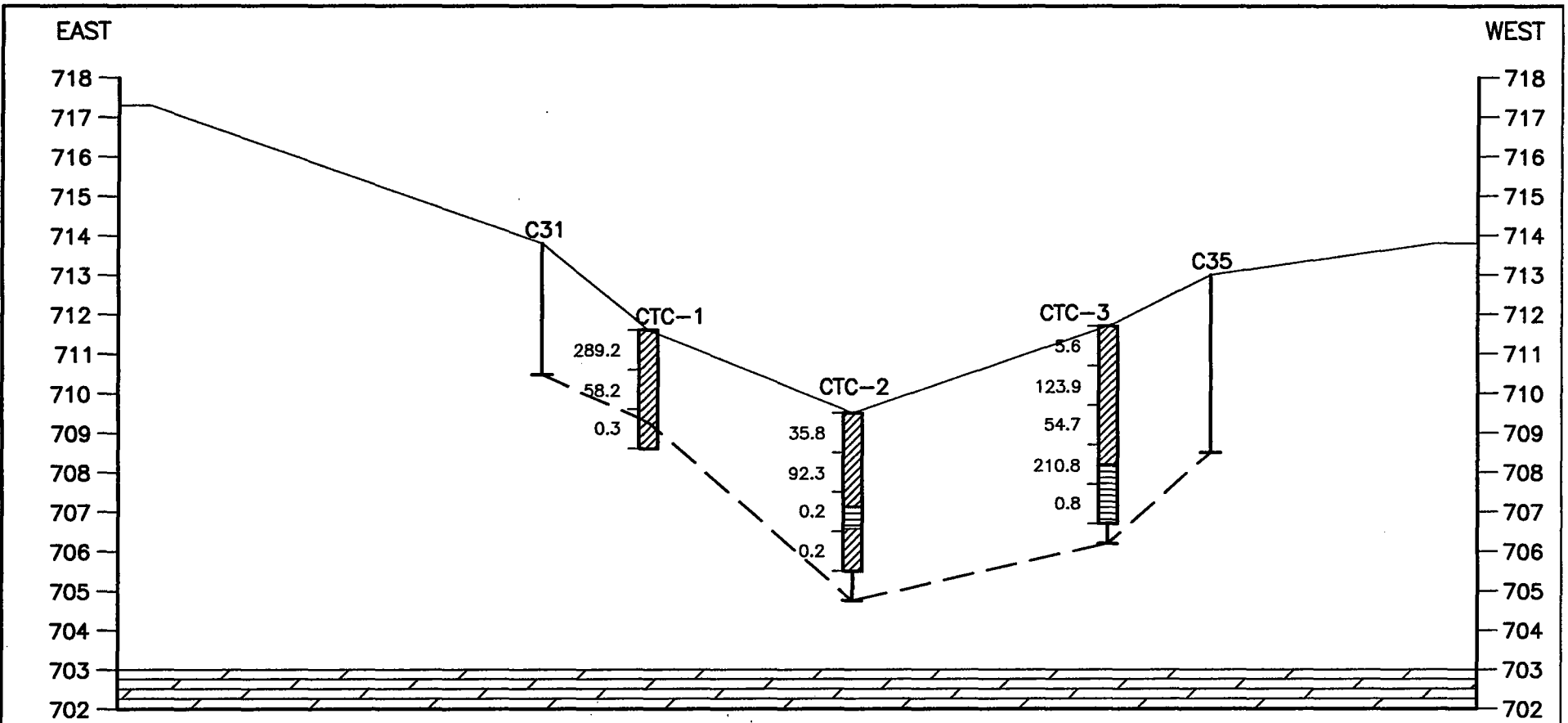
FIGURE F-2












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

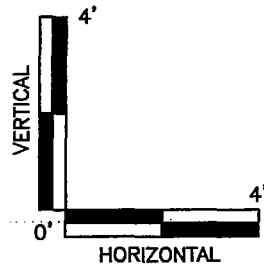
**PILOT RIVER DIVERSION CROSS SECTION B-B'**  
LOCATION 1 - BRADLEY ROAD  
MOSS-AMERICAN SITE  
Milwaukee, Wisconsin

HERNAND-03/26/01-16:17-J:\CAD93\300\34000



**LEGEND**

-  SILT
-  CLAY
-  SAND
-  PEAT
-  CLAYEY SAND
-  CLAYEY SILT
-  EXTENT OF PUSH PROBE DEPTH INVESTIGATION
-  HARDPAN BOUNDARY +/- 2.0 FT.
-  218.6 TOTAL CPAH CONCENTRATIONS



REVISED 27 MARCH 2001

NOTE: ALL TOTAL CPAH CONCENTRATIONS IN mg/kg.

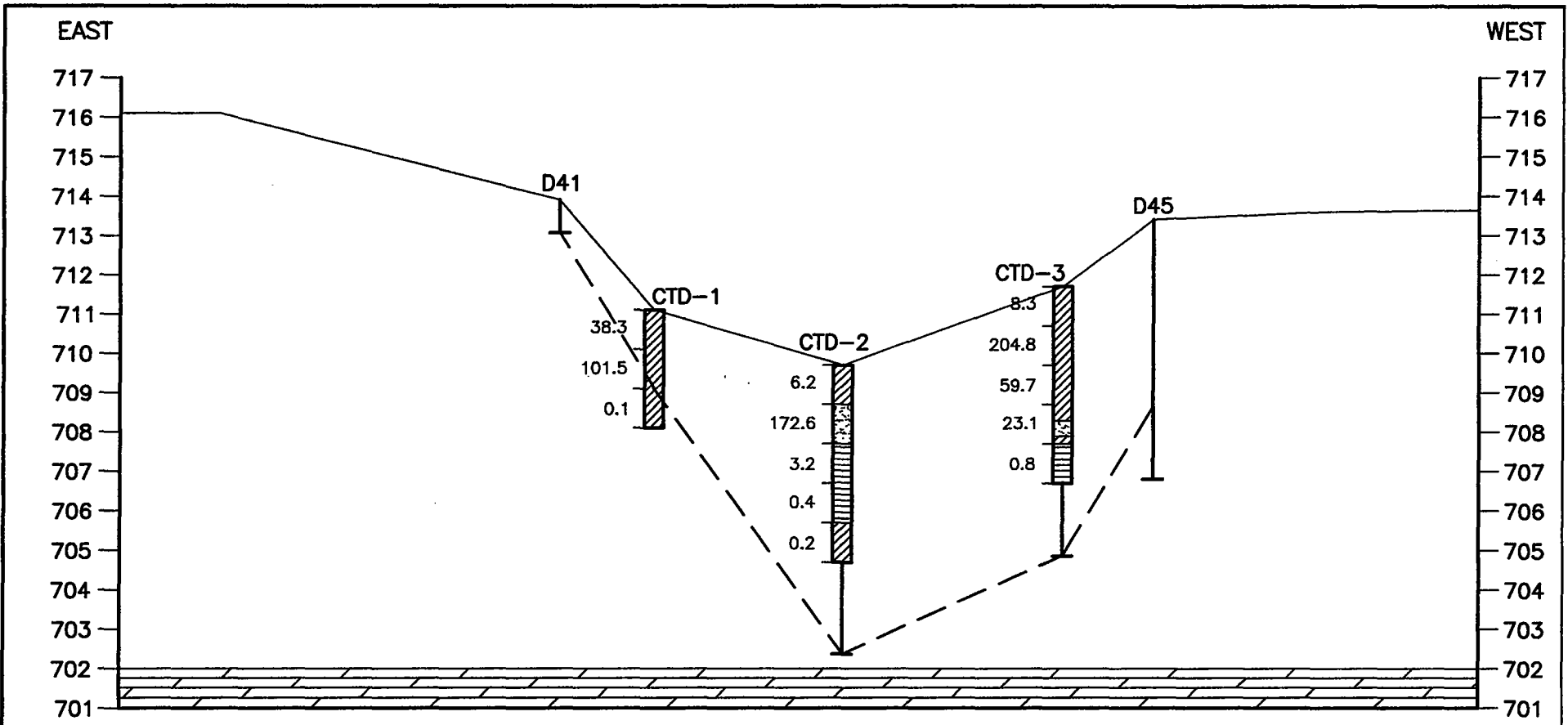
FIGURE F-3











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

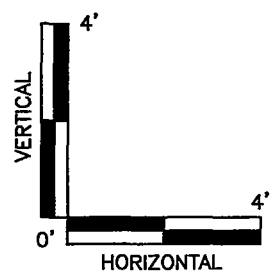
PILOT RIVER DIVERSION CROSS SECTION C-C'  
LOCATION 1 - BRADLEY ROAD  
MOSS-AMERICAN SITE  
Milwaukee, Wisconsin

HERNANDD-03/26/01-16:18-u:\CAD93\300\34000



**LEGEND**

-  SILT
-  CLAY
-  SAND
-  PEAT
-  CLAYEY SAND
-  CLAYEY SILT
-  EXTENT OF PUSH PROBE DEPTH INVESTIGATION
-  HARDPAN BOUNDARY +/- 2.0 FT.
- 218.6 TOTAL CPAH CONCENTRATIONS



REVISED 27 MARCH 2001

NOTE: ALL TOTAL CPAH CONCENTRATIONS IN mg/kg.

FIGURE F-4



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

PILOT RIVER DIVERSION CROSS SECTION D-D'  
LOCATION 1 -- BRADLEY ROAD  
MOSS-AMERICAN SITE  
Milwaukee, Wisconsin

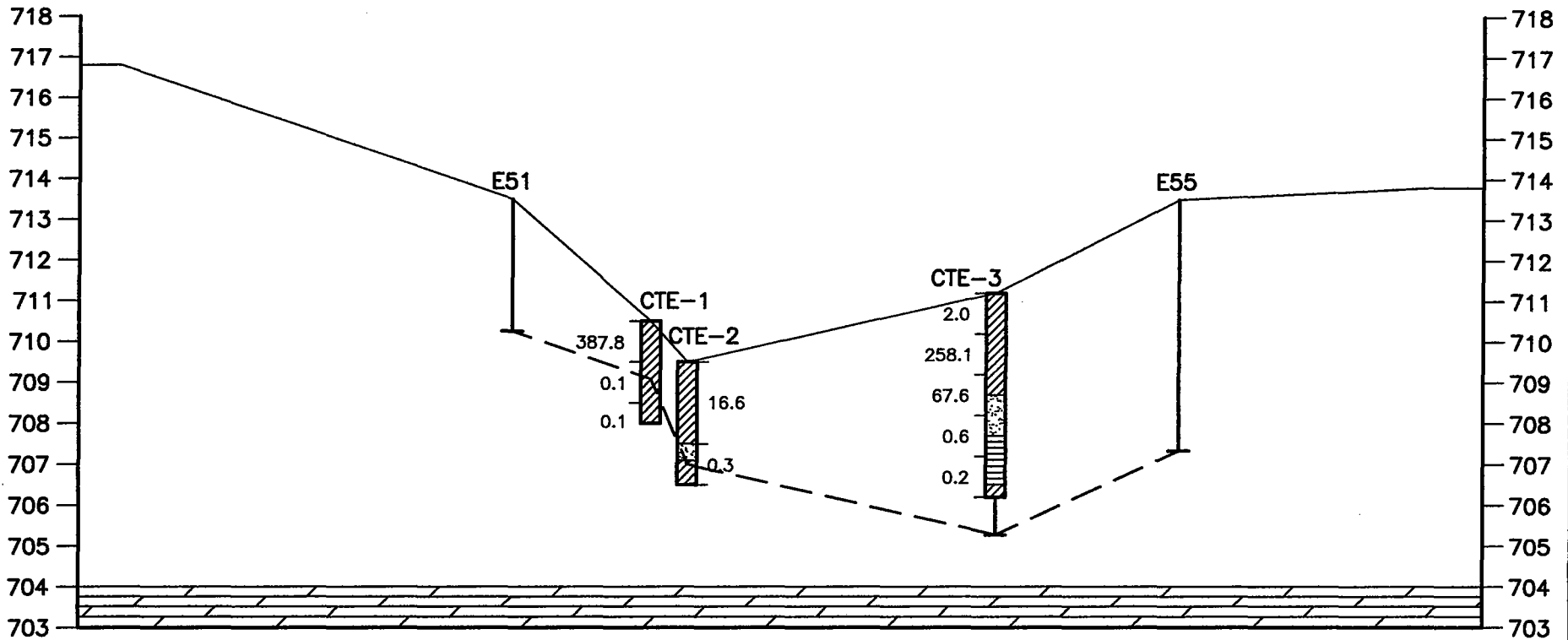
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






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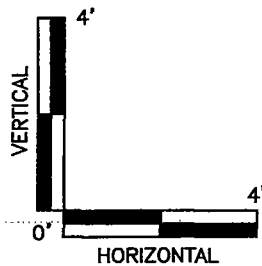
EAST

WEST



LEGEND

-  SILT
-  CLAY
-  SAND
-  PEAT
-  CLAYEY SAND
-  CLAYEY SILT
-  EXTENT OF PUSH PROBE DEPTH INVESTIGATION
-  HARDPAN BOUNDARY +/- 2.0 FT.
-  218.6 TOTAL CPAH CONCENTRATIONS



REVISED 27 MARCH 2001

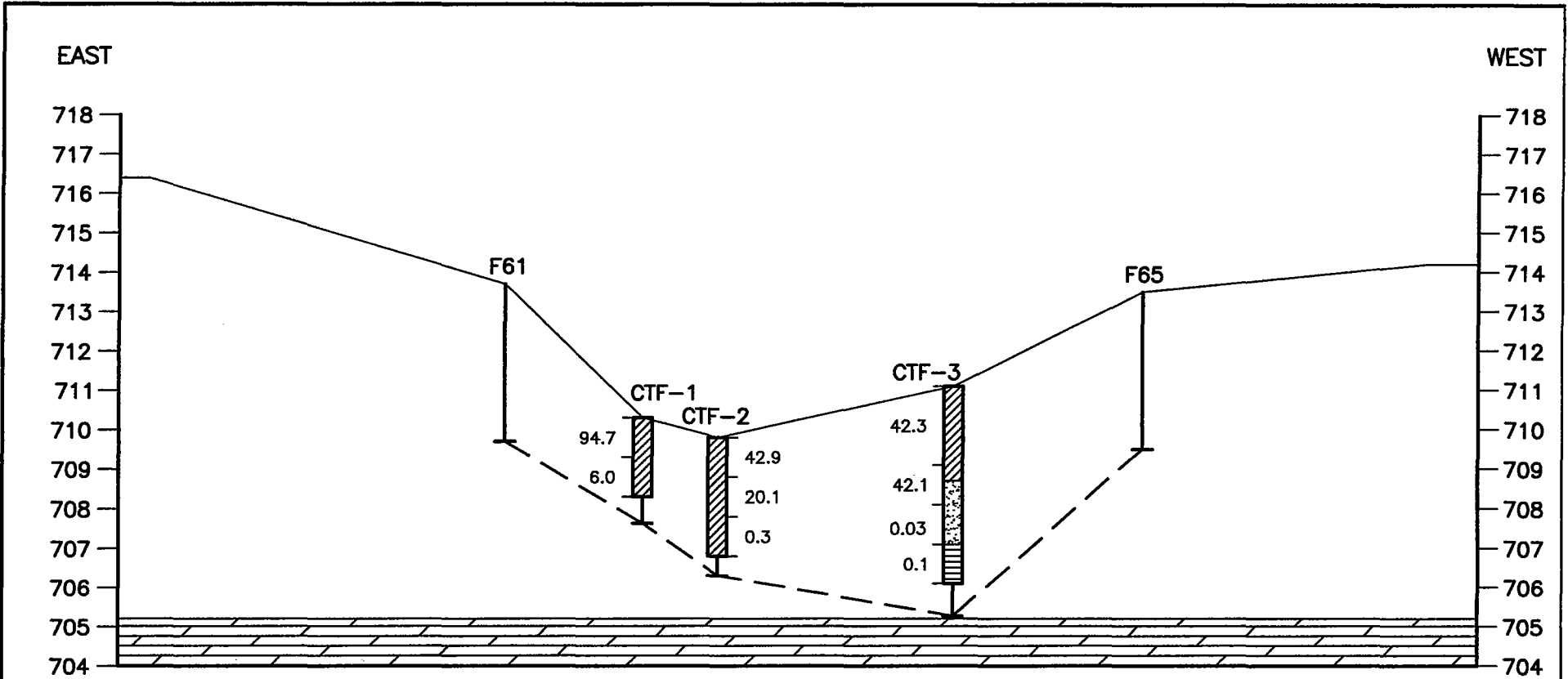
NOTE: ALL TOTAL CPAH CONCENTRATIONS IN mg/kg.

FIGURE F-5











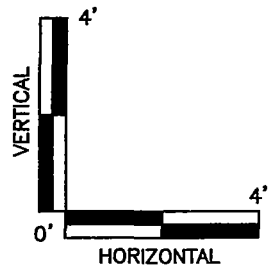
750 E. Bunker Ct.  
 Suite 500  
 Vernon Hills, Illinois  
 60061

PILOT RIVER DIVERSION CROSS SECTION E-E'  
 LOCATION 1 - BRADLEY ROAD  
 MOSS-AMERICAN SITE  
 Milwaukee, Wisconsin



**LEGEND**

-  SILT
-  CLAY
-  SAND
-  PEAT
-  CLAYEY SAND
-  CLAYEY SILT
-  EXTENT OF PUSH PROBE DEPTH INVESTIGATION
-  HARDPAN BOUNDARY +/- 2.0 FT.
- 218.6 TOTAL CPAH CONCENTRATIONS



REVISED 27 MARCH 2001

NOTE: ALL TOTAL CPAH CONCENTRATIONS IN mg/kg.

**FIGURE F-6**

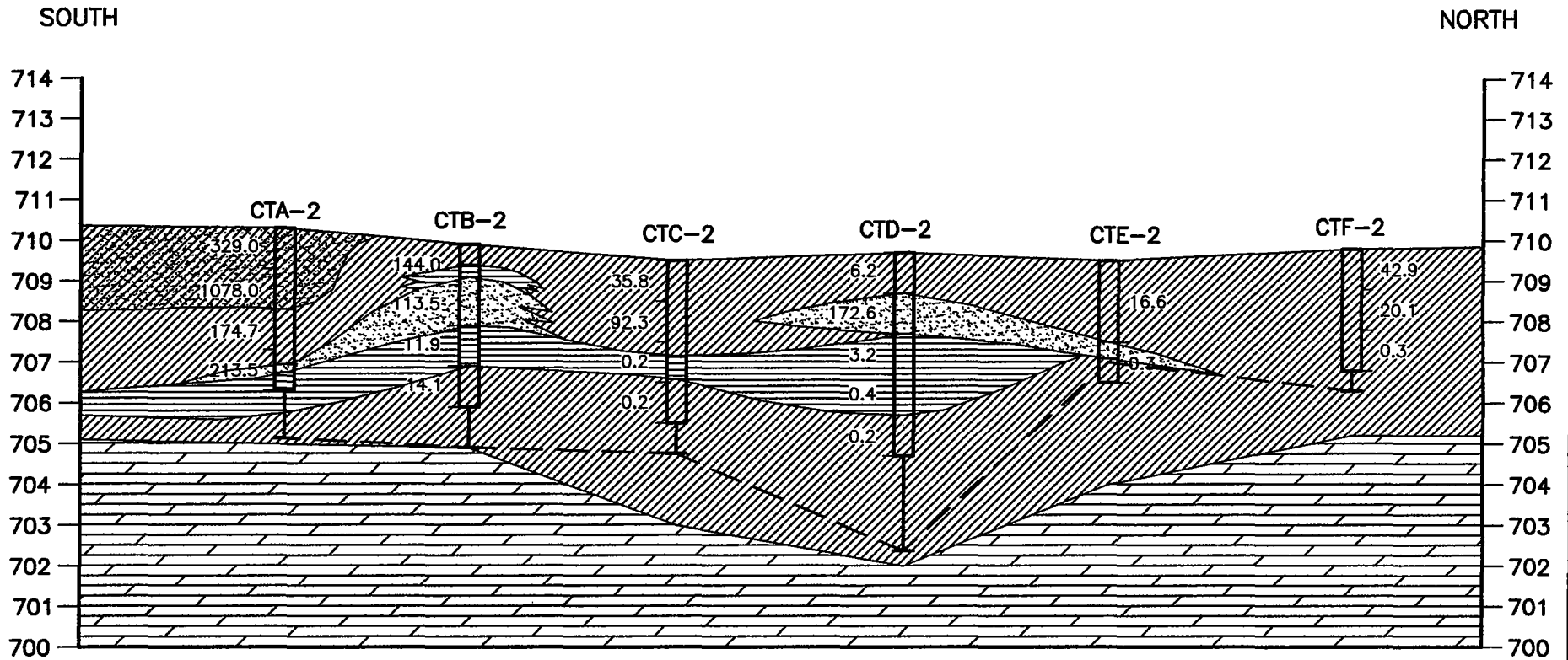


750 E. Bunker Ct.  
Suite 500  
Vernon Hills, Illinois  
60061








**PILOT RIVER DIVERSION CROSS SECTION F-F'**  
LOCATION 1 - BRADLEY ROAD  
MOSS-AMERICAN SITE  
Milwaukee, Wisconsin

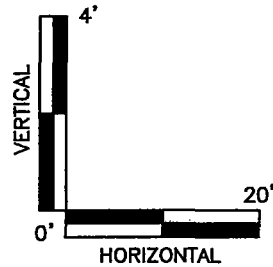
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HERVANDD-03/26/01-16:20-J:\CAD93\000\02001



**LEGEND**

-  CLAY
-  SAND
-  PEAT
-  CLAYEY SAND
-  EXTENT OF PUSH PROBE DEPTH INVESTIGATION
-  HARDPAN BOUNDARY +/- 2.0 FT.
-  TOTAL CPAH CONCENTRATIONS IN mg/kg.



REVISED 27 MARCH 2001

NOTE: FIGURES FOR EACH LOCATION FROM ORIGINAL CENTRAL BORINGS.

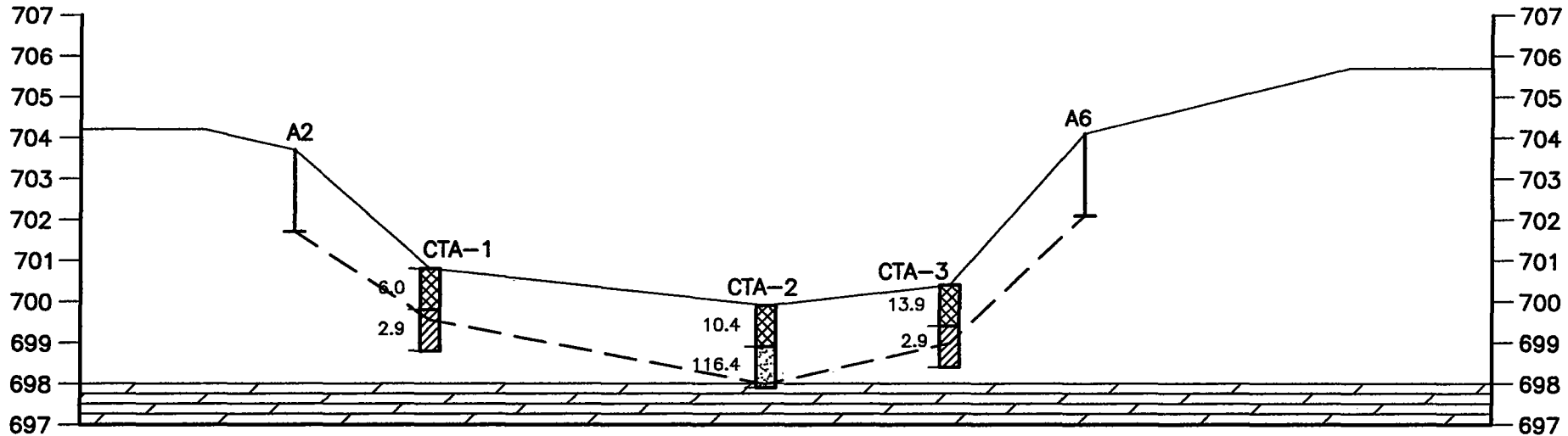
FIGURE F-7








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

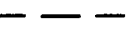

PILOT RIVER DIVERSION CROSS SECTION A-F  
LOCATION 1 - BRADLEY ROAD  
MOSS-AMERICAN SITE  
Milwaukee, Wisconsin

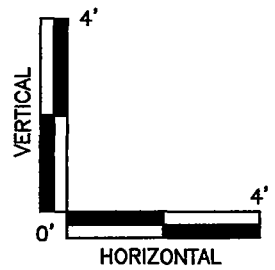
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**LEGEND**

-  CLAY
-  SAND
-  CLAYEY SAND
-  UNDIFFERENTIATE GRAVEL, SANDS, AND SILTS
-  SAND AND GRAVEL

-  EXTENT OF PUSH PROBE DEPTH INVESTIGATION
-  HARDPAN BOUNDARY +/- 2.0 FT.
- 218.6 TOTAL CPAH CONCENTRATIONS



REVISED 27 MARCH 2001

NOTE: ALL TOTAL CPAH CONCENTRATIONS IN mg/kg.

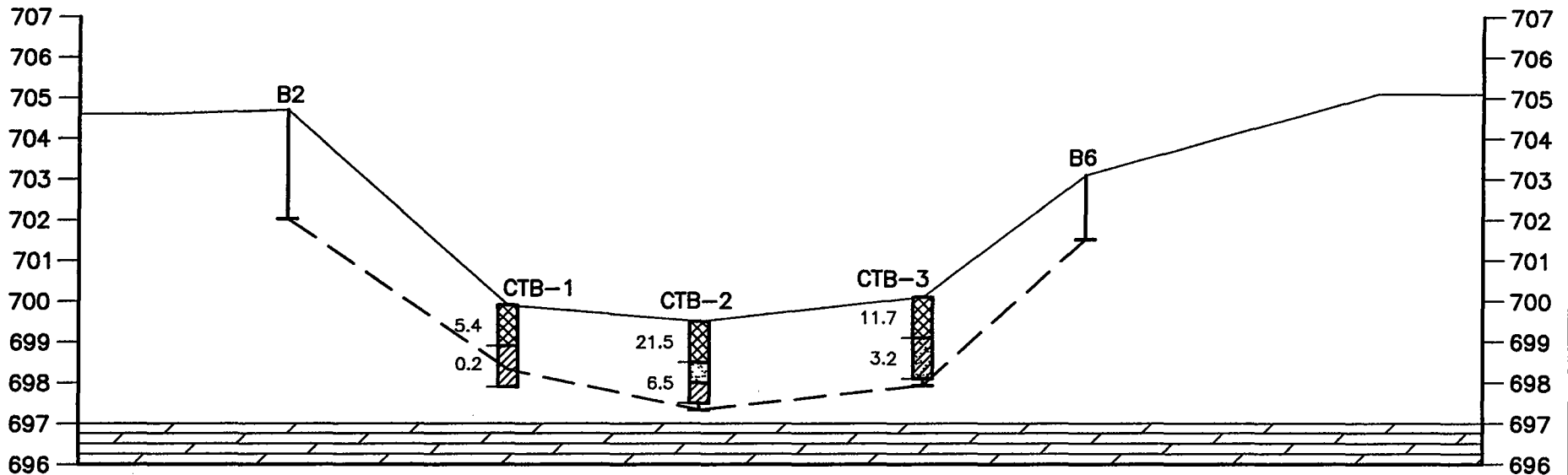
FIGURE F-8









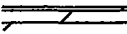

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Suite 500  
Vernon Hills, Illinois  
60061

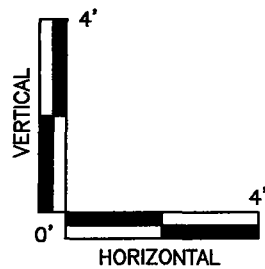
**PILOT RIVER DIVERSION CROSS SECTION A-A'**  
LOCATION 2 - LMR PARKWAY  
MOSS-AMERICAN SITE  
Milwaukee, Wisconsin

HERNAND-03/26/01-16:22-j:\CAD93\300\34400



**LEGEND**

-  CLAY
-  SAND
-  CLAYEY SAND
-  UNDIFFERENTIATE GRAVEL, SANDS, AND SILTS
-  SAND AND GRAVEL
-  EXTENT OF PUSH PROBE DEPTH INVESTIGATION
-  HARDPAN BOUNDARY +/- 2.0 FT.
-  218.6 TOTAL CPAH CONCENTRATIONS



REVISED 27 MARCH 2001

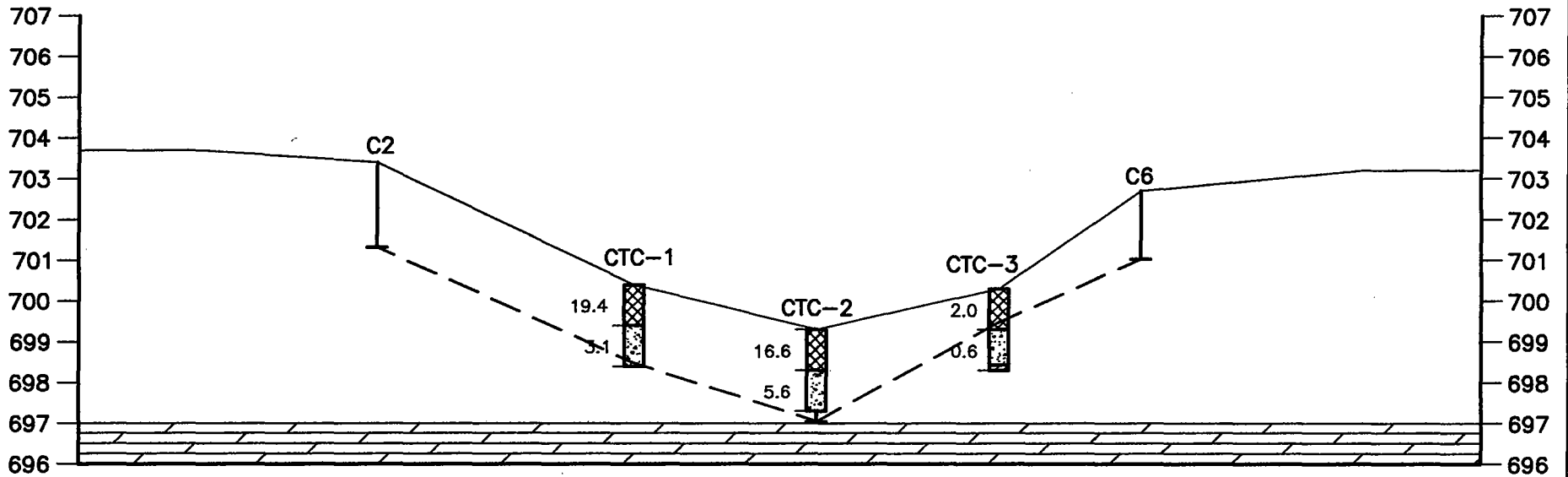
NOTE: ALL TOTAL CPAH CONCENTRATIONS IN mg/kg.

FIGURE F-9






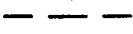



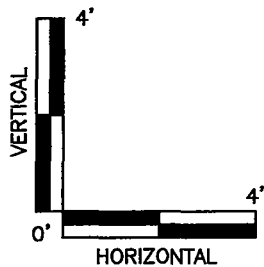
750 E. Bunker Ct.  
Suite 500  
Vernon Hills, Illinois  
60061

**PILOT RIVER DIVERSION CROSS SECTION B-B'**  
LOCATION 2 - LMR PARKWAY  
MOSS-AMERICAN SITE  
Milwaukee, Wisconsin



**LEGEND**

-  CLAY
-  SAND
-  CLAYEY SAND
-  UNDIFFERENTIATE GRAVEL, SANDS, AND SILTS
-  SAND AND GRAVEL
-  EXTENT OF PUSH PROBE DEPTH INVESTIGATION
-  HARDPAN BOUNDARY +/- 2.0 FT.
- 218.6 TOTAL CPAH CONCENTRATIONS



REVISED 27 MARCH 2001

NOTE: ALL TOTAL CPAH CONCENTRATIONS IN mg/kg.

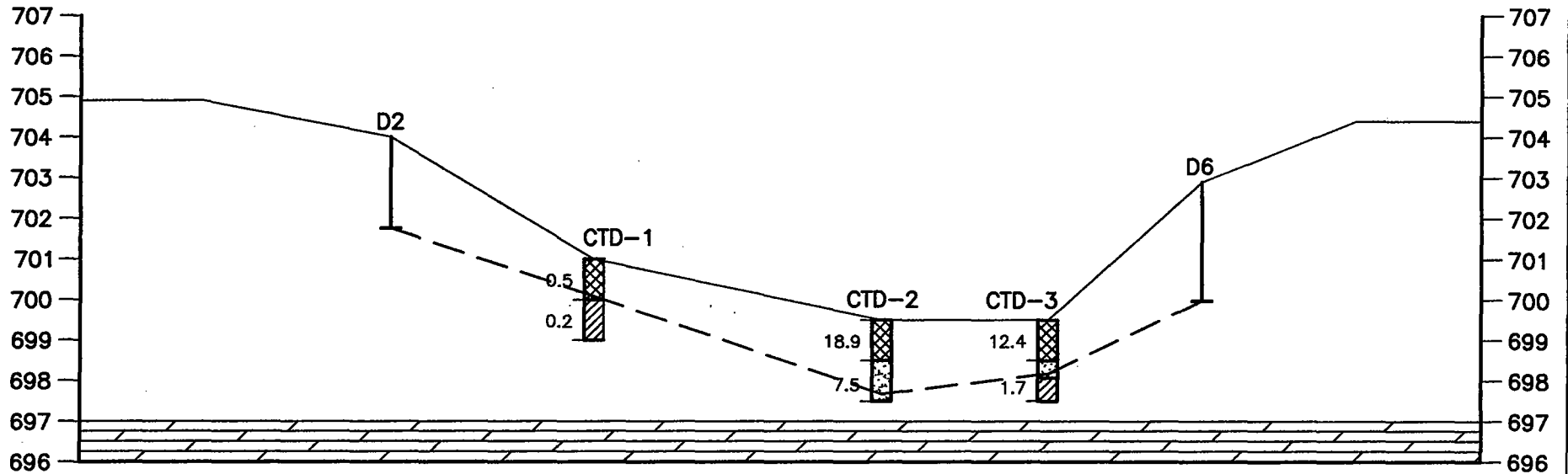
FIGURE F-10









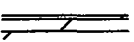
750 E. Bunker Ct.  
Suite 500  
Vernon Hills, Illinois  
60061

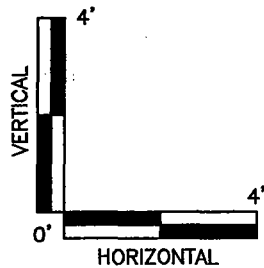
PILOT RIVER DIVERSION CROSS SECTION C-C'  
LOCATION 2 - LMR PARKWAY  
MOSS-AMERICAN SITE  
Milwaukee, Wisconsin

HERNANDD-03/26/01-16:22-J:\CAD93\300\34400



**LEGEND**

-  CLAY
-  SAND
-  CLAYEY SAND
-  UNDIFFERENTIATE GRAVEL, SANDS, AND SILTS
-  SAND AND GRAVEL
-  EXTENT OF PUSH PROBE DEPTH INVESTIGATION
-  HARDPAN BOUNDARY +/- 2.0 FT.
- 218.6 TOTAL CPAH CONCENTRATIONS



REVISED 27 MARCH 2001

NOTE: ALL TOTAL CPAH CONCENTRATIONS IN mg/kg.

FIGURE F-11

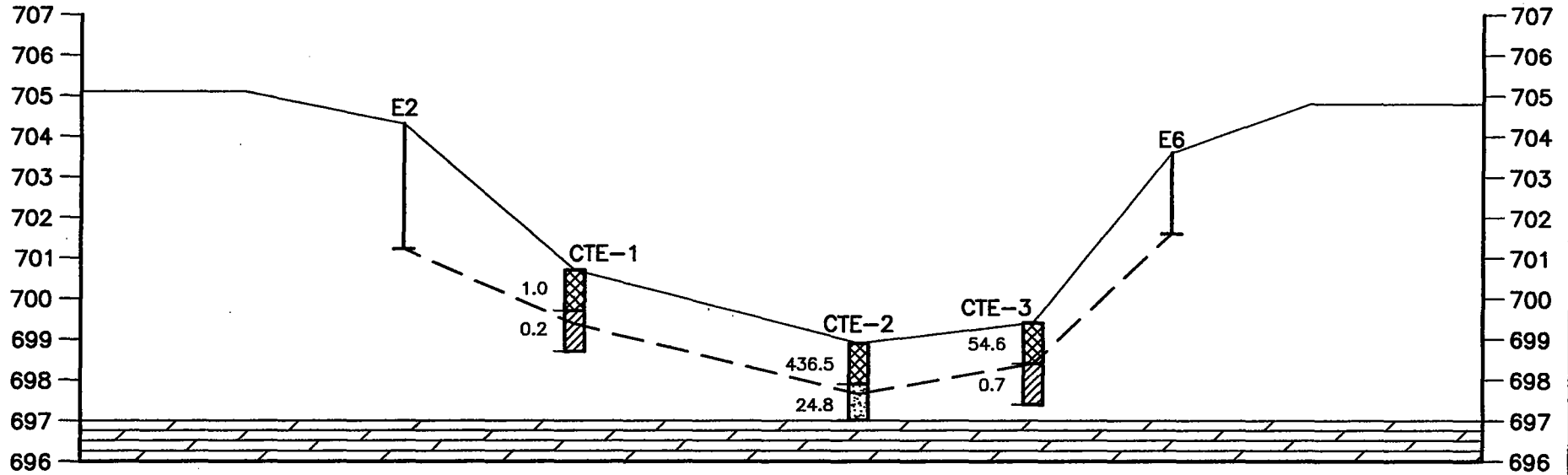


750 E. Bunker Ct.  
Suite 500  
Vernon Hills, Illinois  
60061








PILOT RIVER DIVERSION CROSS SECTION D-D'  
LOCATION 2 - LMR PARKWAY  
MOSS-AMERICAN SITE  
Milwaukee, Wisconsin

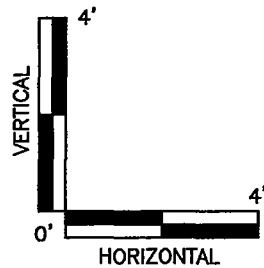
HERNANDD-03/26/01-16:23-J: CAD93\300\34400

HERNAND-03/26/01--16:23--J:\CAD93\300\34400



**LEGEND**

-  CLAY
-  SAND
-  CLAYEY SAND
-  UNDIFFERENTIATE GRAVEL, SANDS, AND SILTS
-  SAND AND GRAVEL
-  EXTENT OF PUSH PROBE DEPTH INVESTIGATION
-  HARDPAN BOUNDARY +/- 2.0 FT.
- 218.6 TOTAL CPAH CONCENTRATIONS



REVISED 27 MARCH 2001

NOTE: ALL TOTAL CPAH CONCENTRATIONS IN mg/kg.

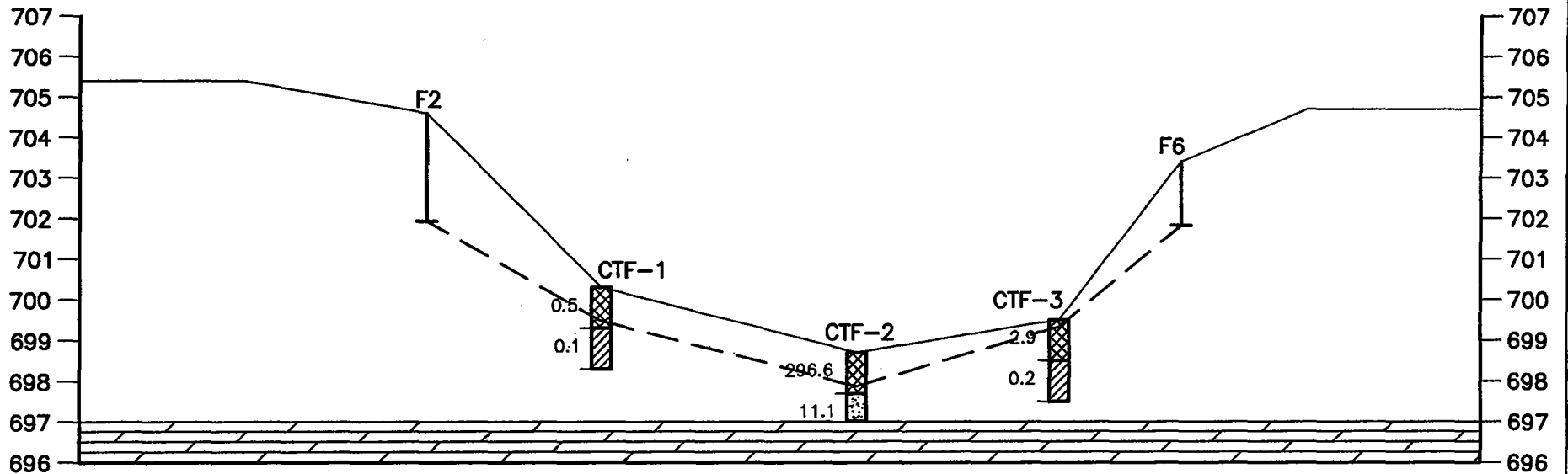
FIGURE F-12









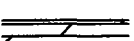
750 E. Bunker Ct.  
 Suite 500  
 Vernon Hills, Illinois  
 60061

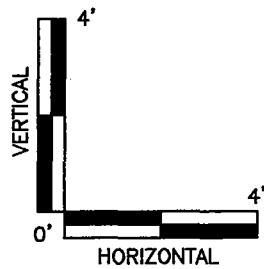
PILOT RIVER DIVERSION CROSS SECTION E-E'  
 LOCATION 2 - LMR PARKWAY  
 MOSS-AMERICAN SITE  
 Milwaukee, Wisconsin





**LEGEND**

-  CLAY
-  SAND
-  CLAYEY SAND
-  UNDIFFERENTIATE GRAVEL, SANDS, AND SILTS
-  SAND AND GRAVEL
-  EXTENT OF PUSH PROBE DEPTH INVESTIGATION
-  HARDPAN BOUNDARY +/- 2.0 FT.
- 218.6 TOTAL CPAH CONCENTRATIONS



REVISED 27 MARCH 2001

NOTE: ALL TOTAL CPAH CONCENTRATIONS IN mg/kg.

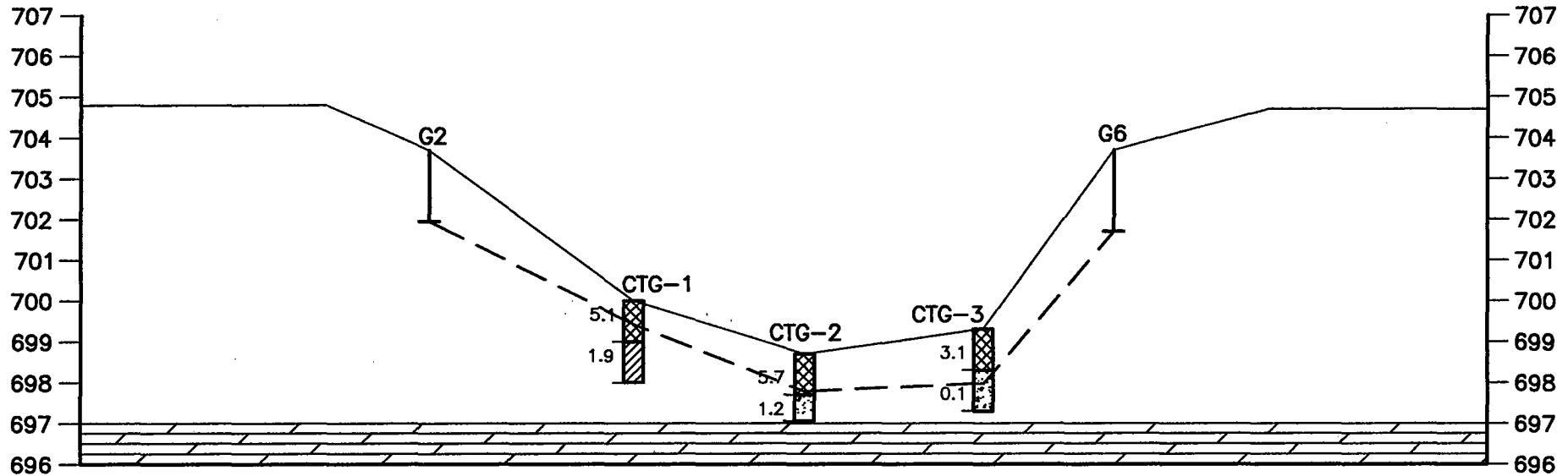
FIGURE F-13










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

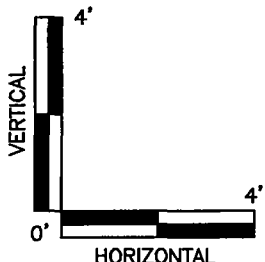
PILOT RIVER DIVERSION CROSS SECTION F-F'  
LOCATION 2 - LMR PARKWAY  
MOSS-AMERICAN SITE  
Milwaukee, Wisconsin

HERNAND-03/26/01-16:24-J:\CAD93\300\34400



**LEGEND**

-  CLAY
-  SAND
-  CLAYEY SAND
-  UNDIFFERENTIATE GRAVEL, SANDS, AND SILTS
-  SAND AND GRAVEL
-  EXTENT OF PUSH PROBE DEPTH INVESTIGATION
-  HARDPAN BOUNDARY +/- 2.0 FT.
- 218.6 TOTAL CPAH CONCENTRATIONS



REVISED 27 MARCH 2001

NOTE: ALL TOTAL CPAH CONCENTRATIONS IN mg/kg.

FIGURE F-14



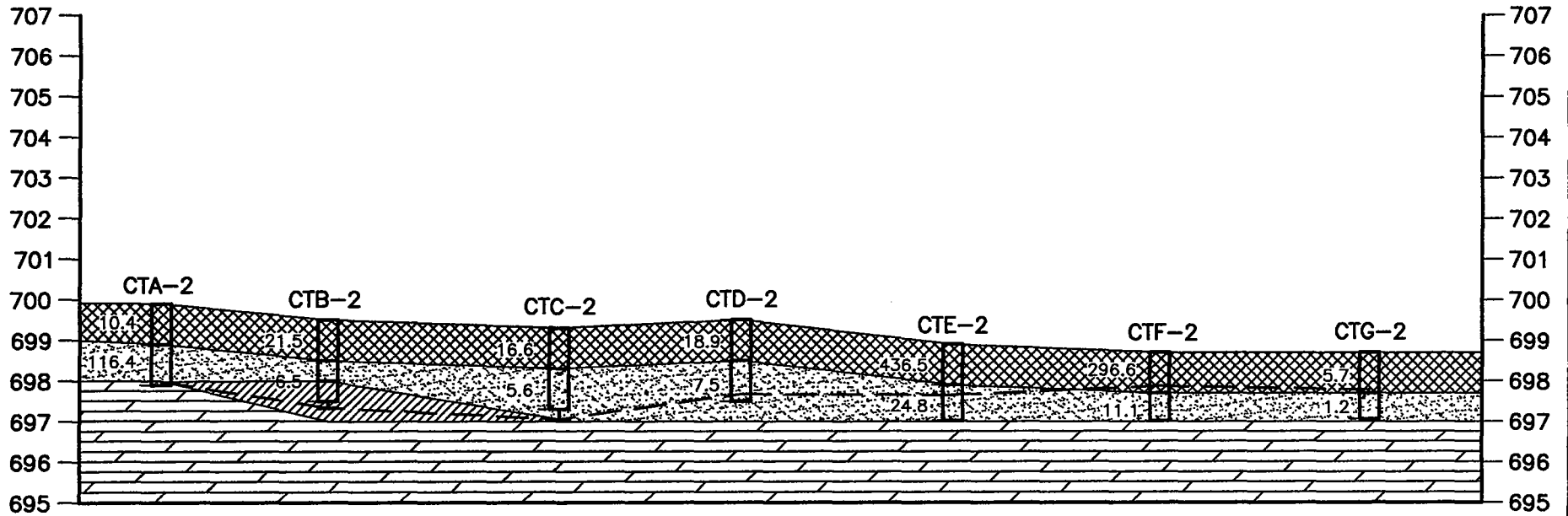
750 E. Bunker Ct.  
Suite 500  
Vernon Hills, Illinois  
60061

**PILOT RIVER DIVERSION CROSS SECTION G-G'**  
LOCATION 2 - LMR PARKWAY  
MOSS-AMERICAN SITE  
Milwaukee, Wisconsin

HERNANDD-03/26/01-16:24-J:\CAD93\300\34400

SOUTH

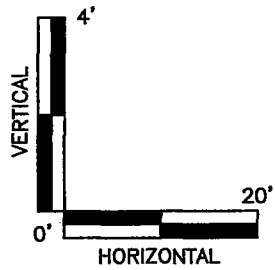
NORTH



REVISED 27 MARCH 2001

LEGEND

- UNDIFFERENTIATE GRAVEL, SANDS, AND SILTS
- CLAY
- SAND
- EXTENT OF PUSH PROBE DEPTH INVESTIGATION
- HARDPAN BOUNDARY +/- 2.0 FT.
- 218.6 TOTAL CPAH CONCENTRATIONS IN mg/kg.



NOTE: FIGURES FOR EACH LOCATION FROM ORIGINAL CENTRAL BORINGS.

FIGURE F-15



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

PILOT RIVER DIVERSION CROSS SECTION A-G  
 LOCATION 2 - LMR PARKWAY  
 MOSS-AMERICAN SITE  
 Milwaukee, Wisconsin

HERNANDD-03/26/01-16:26-J:\CAD93\000\02001

**APPENDIX G**

**LABORATORY ANALYTICAL DATA PACKAGE – SEDIMENT SAMPLES**

# Analysis Request/ Environmental Services Chain of Custody



For Lancaster Laboratories use only  
 Acct. # 7802 Sample # 3503020-39

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

Client: <u>KERR-MCGEE</u> Project Name/#: <u>MOSS-AMERICA</u> Project Manager: <u>TOM GRAAN</u> Sampler: <u>JOE KLEMP</u> Name of state where samples were collected: <u>WISCONSIN</u>	Acct. #: _____ PWSID #: _____ P.O.#: _____ Quote #: _____	Matrix <b>4</b> <input type="checkbox"/> Potable (Check if applicable) <input type="checkbox"/> NPDES	Total # of Containers _____	<b>5</b> Analyses Requested <div style="text-align: center; font-size: 2em; transform: rotate(-45deg); opacity: 0.5;">PAH 8310</div>	For lab use only FSC: _____ SCR #: _____
--	--	---	--------------------------------	---	--

Sample Identification	Date Collected	Time Collected	Grab <b>3</b>	Composite	Soil	Water	Other	Total # of Containers	Remarks	Temperature of samples upon receipt (if requested) <b>6</b>
PRD1-CTA-1-A-01	11-15-00	11:00	X		X			1	X	
PRD1-CTA-1-B-01	11-15-00	11:05	X		X			1	X	
PRD1-CTA-1-C-01	11/15/00	11:10	X		X			1	X	
PRD1-CTA-1-D-01	11/15/00	11:15	X		X			1	X	
PRD1-CTA-1-E-01	11/15/00	11:15	X		X			1	X	
PRD1-CTA-2-A-01	11/15/00	11:30	X		X			1	X	
PRD1-CTA-2-B-01	11/15/00	11:35	X		X			1	X	
PRD1-CTA-2-C-01	11/15/00	11:40	X		X			1	X	
PRD1-CTA-2-D-01	11/15/00	11:45	X		X			1	X	
PRD1-CTA-3-A-01	11/15/00	12:00	X		X			1	X	

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



For Lancaster Laboratories use only  
 Acct. # 7802 Sample # 3503020-39

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

1 Client: <u>KERR-MCGEE</u> Acct. #: _____ Project Name/ #: <u>MOSS-AMERICA</u> PWSID #: _____ Project Manager: <u>TOM GRAAN</u> P.O.# _____ Sampler: <u>JOE KLEMP</u> Quote #: _____ Name of state where samples were collected: <u>WISCONSIN</u>	Matrix 4 <input type="checkbox"/> Potable (Check if applicable) <input type="checkbox"/> NPDES <input type="checkbox"/> Other	5 Analyses Requested <u>PAH 8310</u>	For lab use only FSC: _____ SCR #: _____	
--	--	---	--	--

Sample Identification	Date Collected	Time Collected	Grab 3	Composite	Soil	Water	Other	Total # of Containers	Remarks	Temperature of samples upon receipt (if requested) 6
PRD1-CTA-3-B-01	11/15/00	12:05	X		X			✓		
PRD1-CTA-3-C-01	11/15/00	12:10	X		X			✓		
PRD1-CTB-1-A-01	11/15/00	12:15	X		X			✓		
PRD1-CTB-1-B-01	11/15/00	12:30	X		X			✓		
PRD1-CTB-1-C-01	11/15/00	12:35	X		X			✓		
PRD1-CTB-2-A-01	11/15/00	12:40	X		X			✓		
PRD1-CTB-2-B-01	11/15/00	12:45	X		X			✓		
PRD1-CTB-2-C-01	11/15/00	1:30	X		X			✓		
PRD1-CTB-2-D-01-DP	11/15/00	1:30	X		X			✓		
PRD1-CTB-2-D-01	11/15/00	1:30	X		X			✓		

7 Turnaround Time Requested (TAT) (please circle): <u>Normal</u> Rush (Rush TAT is subject to Lancaster Laboratories approval and surcharge.) Date results are needed: <u>STD TAT</u> Rush results requested by (please circle): Phone Fax Phone #: <u>917-918-4000</u> Fax #: <u>917-918-4055</u>	Relinquished by: _____ Date: _____ Time: _____ Relinquished by: _____ Date: _____ Time: _____ Relinquished by: _____ Date: _____ Time: _____ Relinquished by: _____ Date: _____ Time: _____ Relinquished by: _____ Date: _____ Time: _____	Received by: <u>Fedex</u> Date: <u>11/15/00</u> Time: <u>1730</u> Received by: _____ Date: _____ Time: _____ Received by: _____ Date: _____ Time: _____ Received by: _____ Date: _____ Time: _____
8 Data Package Options (please circle if requested) QC Summary Type VI (Raw Data) <u>PER QUOTE</u> Type I (Tier I) GLP Type II (Tier II) Other Type III (NJ Red. Del.) Type IV (CLP)	SDG Complete? Yes <u>No</u> Site-specific QC required? Yes No (If yes, indicate QC sample and submit triplicate volume.) Internal Chain of Custody required? Yes No	Relinquished by: _____ Date: _____ Time: _____ Relinquished by: _____ Date: _____ Time: _____ Relinquished by: _____ Date: _____ Time: _____



## ANALYTICAL RESULTS

Prepared for:

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

Prepared by:

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

### SAMPLE GROUP

The sample group for this submittal is 739912. Samples arrived at the laboratory on Thursday, November 16, 2000.

<u>Client Description</u>	<u>Lancaster Labs Number</u>
PRD1-CTA-1-A-01 Grab Soil Sample	3503020
PRD1-CTA-1-B-01 Grab Soil Sample	3503021
PRD1-CTA-1-C-01 Grab Soil Sample	3503022
PRD1-CTA-1-D-01 Grab Soil Sample	3503023
PRD1-CTA-1-E-01 Grab Soil Sample	3503024
PRD1-CTA-2-A-01 Grab Soil Sample	3503025
PRD1-CTA-2-B-01 Grab Soil Sample	3503026
PRD1-CTA-2-C-01 Grab Soil Sample	3503027
PRD1-CTA-2-D-01 Grab Soil Sample	3503028
PRD1-CTA-3-A-01 Grab Soil Sample	3503029
PRD1-CTA-3-B-01 Grab Soil Sample	3503030
PRD1-CTA-3-C-01 Grab Soil Sample	3503031
PRD1-CTB-1-A-01 Grab Soil Sample	3503032
PRD1-CTB-1-B-01 Grab Soil Sample	3503033
PRD1-CTB-1-C-01 Grab Soil Sample	3503034
PRD1-CTB-2-A-01 Grab Soil Sample	3503035
PRD1-CTB-2-B-01 Grab Soil Sample	3503036
PRD1-CTB-2-C-01 Grab Soil Sample	3503037
PRD1-CTB-2-D-01-DP Grab Soil Sample	3503038
PRD1-CTB-2-D-01 Grab Soil Sample	3503039

### 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 Ostmeier



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



1 COPY TO  
1 COPY TO

Roy F. Weston  
Data Package Group

Attn: Mr. Tom Graan

Questions? Contact your Client Services Representative  
Kay G. Hower at (717) 656-2300.

Respectfully Submitted,





Lancaster Laboratories Sample No. SW 3503020

Collected: 11/15/2000 11:00 by JK

Account Number: 07802

Submitted: 11/16/2000 09:30

Kerr-McGee Corporation

Reported: 12/04/00 at 06:10 AM

P.O. Box 25861

Discard: 1/4/01

Oklahoma City OK 73125

PRD1-CTA-1-A-01 Grab Soil Sample  
Moss American - WI

A1A01 SDG#: MOS77-01

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit	Units	Dilution Factor
00111	Moisture	n.a.	44.7	0.50	% by wt.	1
"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The result reported above is on an as-received basis.						
01862	PAH's in Solids					
03296	Naphthalene	91-20-3	29,000.	J 3,900.	ug/kg	20
03299	Fluorene	86-73-7	200,000.	J 36,000.	ug/kg	2000
03304	Benzo(a)anthracene	56-55-3	66,000.	J 3,600.	ug/kg	2000
03305	Chrysene	218-01-9	52,000.	J 14,000.	ug/kg	2000
03306	Benzo(b)fluoranthene	205-99-2	29,000.	J 2,900.	ug/kg	2000
03307	Benzo(k)fluoranthene	207-08-9	14,000.	J 2,900.	ug/kg	2000
03308	Benzo(a)pyrene	50-32-8	28,000.	J 3,600.	ug/kg	2000
03309	Dibenzo(a,h)anthracene	53-70-3	N.D.	J 7,200.	ug/kg	2000
03310	Benzo(g,h,i)perylene	191-24-2	N.D.	J 22,000.	ug/kg	2000
03311	Indeno(1,2,3-cd)pyrene	193-39-5	15,000.	J 14,000.	ug/kg	2000
The surrogate data is outside the QC limits due to unresolvable matrix problems evident in the sample chromatogram.						

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	EPA 160.3 modified	1	11/21/2000 16:03	Susan A. Engle	1
01862	PAH's in Solids	SW-846 8310	1	11/26/2000 16:42	Michelle J. Kolodziejcki	20
01862	PAH's in Solids	SW-846 8310	1	11/27/2000 12:50	Michelle J. Kolodziejcki	2000
03338	PAH Solid Extraction	SW-846 3550B	1	11/22/2000 08:30	Andres Amaya	1



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



Lancaster Laboratories Sample No. SW 3503021

Collected: 11/15/2000 11:05 by JK

Account Number: 07802

Submitted: 11/16/2000 09:30

Kerr-McGee Corporation

Reported: 12/04/00 at 06:10 AM

P.O. Box 25861

Discard: 1/4/01

Oklahoma City OK 73125

PRD1-CTA-1-B-01 Grab Soil Sample

Moss American - WI

A1B01 SDG#: MOS77-02

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit	Units	Dilution Factor
00111	Moisture	n.a.	40.7	0.50	% by wt.	1
"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The result reported above is on an as-received basis.						
01862	PAH's in Solids					
03296	Naphthalene	91-20-3	N.D.	91,000.	ug/kg	500
03299	Fluorene	86-73-7	230,000.	8,400.	ug/kg	500
03304	Benzo(a)anthracene	56-55-3	71,000.	840.	ug/kg	500
03305	Chrysene	218-01-9	57,000.	3,400.	ug/kg	500
03306	Benzo(b)fluoranthene	205-99-2	28,000.	670.	ug/kg	500
03307	Benzo(k)fluoranthene	207-08-9	14,000.	670.	ug/kg	500
03308	Benzo(a)pyrene	50-32-8	29,000.	840.	ug/kg	500
03309	Dibenzo(a,h)anthracene	53-70-3	N.D.	1,700.	ug/kg	500
03310	Benzo(g,h,i)perylene	191-24-2	13,000.	J 5,100.	ug/kg	500
03311	Indeno(1,2,3-cd)pyrene	193-39-5	15,000.	J 3,400.	ug/kg	500

Accurate surrogate recoveries could not be determined due to the dilution required for analysis of the sample.

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis		Analyst	Dilution Factor
				Date and Time			
00111	Moisture	EPA 160.3 modified	1	11/21/2000	16:03	Susan A. Engle	1
01862	PAH's in Solids	SW-846 8310	1	11/27/2000	14:05	Michelle J. Kolodziejcki	500
03338	PAH Solid Extraction	SW-846 3550B	1	11/22/2000	08:30	Andres Amaya	1



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



Lancaster Laboratories Sample No. SW 3503022

Collected: 11/15/2000 11:10 by JK

Account Number: 07802

Submitted: 11/16/2000 09:30

Kerr-McGee Corporation

Reported: 12/04/00 at 06:10 AM

P.O. Box 25861

Discard: 1/4/01

Oklahoma City OK 73125

PRD1-CTA-1-C-01 Grab Soil Sample

Moss American - WI

A1C01 SDG#: MOS77-03

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit	Units	Dilution Factor
00111	Moisture "Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The result reported above is on an as-received basis.	n.a.	40.0	0.50	% by wt.	1
01862	PAH's in Solids					
03296	Naphthalene	91-20-3	N.D.	36,000.	ug/kg	200
03299	Fluorene	86-73-7	34,000.	J 3,300.	ug/kg	200
03304	Benzo(a)anthracene	56-55-3	15,000.	330.	ug/kg	200
03305	Chrysene	218-01-9	12,000.	J 1,300.	ug/kg	200
03306	Benzo(b)fluoranthene	205-99-2	7,200.	270.	ug/kg	200
03307	Benzo(k)fluoranthene	207-08-9	3,500.	270.	ug/kg	200
03308	Benzo(a)pyrene	50-32-8	8,200.	330.	ug/kg	200
03309	Dibenzo(a,h)anthracene	53-70-3	N.D.	670.	ug/kg	200
03310	Benzo(g,h,i)perylene	191-24-2	3,900.	J 2,000.	ug/kg	200
03311	Indeno(1,2,3-cd)pyrene	193-39-5	5,200.	J 1,300.	ug/kg	200

Accurate surrogate recoveries could not be determined due to the dilution required for analysis of the sample.

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	EPA 160.3 modified	1	11/21/2000 16:03	Susan A. Engle	1
01862	PAH's in Solids	SW-846 8310	1	11/27/2000 14:31	Michelle J. Kolodziejski	200
03338	PAH Solid Extraction	SW-846 3550B	1	11/22/2000 08:30	Andres Amaya	1



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Lancaster Laboratories Sample No. SW 3503023

Collected: 11/15/2000 11:15 by JK

Account Number: 07802

Submitted: 11/16/2000 09:30

Kerr-McGee Corporation

Reported: 12/04/00 at 06:10 AM

P.O. Box 25861

Discard: 1/4/01

Oklahoma City OK 73125

PRD1-CTA-1-D-01 Grab Soil Sample

Moss American - WI

A1D01 SDG#: MOS77-04

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit	Units	Dilution Factor
00111	Moisture	n.a.	40.8		0.50	% by wt.	1
"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The result reported above is on an as-received basis.							
01862	PAH's in Solids						
03296	Naphthalene	91-20-3	6,000.	J	4,600.	ug/kg	100
03299	Fluorene	86-73-7	5,000.		420.	ug/kg	100
03304	Benzo(a)anthracene	56-55-3	2,100.		42.	ug/kg	100
03305	Chrysene	218-01-9	1,800.	J	170.	ug/kg	100
03306	Benzo(b)fluoranthene	205-99-2	790.		34.	ug/kg	100
03307	Benzo(k)fluoranthene	207-08-9	410.		34.	ug/kg	100
03308	Benzo(a)pyrene	50-32-8	860.		42.	ug/kg	100
03309	Dibenzo(a,h)anthracene	53-70-3	130.	J	84.	ug/kg	100
03310	Benzo(g,h,i)perylene	191-24-2	N.D.		250.	ug/kg	100
03311	Indeno(1,2,3-cd)pyrene	193-39-5	440.	J	170.	ug/kg	100

Accurate surrogate recoveries could not be determined due to the dilution required for analysis of the sample.

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	EPA 160.3 modified	1	11/21/2000 16:03	Susan A. Engle	1
01862	PAH's in Solids	SW-846 8310	1	11/27/2000 14:56	Michelle J. Kolodziejwski	100
03338	PAH Solid Extraction	SW-846 3550B	1	11/22/2000 08:30	Andres Amaya	1



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Lancaster Laboratories Sample No. SW 3503024

Collected: 11/15/2000 11:15 by JK

Account Number: 07802

Submitted: 11/16/2000 09:30

Kerr-McGee Corporation

Reported: 12/04/00 at 06:10 AM

P.O. Box 25861

Discard: 1/4/01

Oklahoma City, OK 73125

PRD1-CTA-1-E-01 Grab Soil Sample

Moss American - WI

AlE01 SDG#: MOS77-05

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method	Detection Limit	Units	Dilution Factor
00111	Moisture	n.a.	30.7		0.50	% by wt.	1
"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The result reported above is on an as-received basis.							
01862	PAH's in Solids						
03296	Naphthalene	91-20-3	N.D.		190.	ug/kg	5
03299	Fluorene	86-73-7	120.	J	18.	ug/kg	5
03304	Benzo(a)anthracene	56-55-3	40.		1.8	ug/kg	5
03305	Chrysene	218-01-9	38.	J	7.2	ug/kg	5
03306	Benzo(b)fluoranthene	205-99-2	18.		1.4	ug/kg	5
03307	Benzo(k)fluoranthene	207-08-9	8.4	J	1.4	ug/kg	5
03308	Benzo(a)pyrene	50-32-8	19.	J	1.8	ug/kg	5
03309	Dibenzo(a,h)anthracene	53-70-3	6.4	J	3.6	ug/kg	5
03310	Benzo(g,h,i)perylene	191-24-2	30.	J	11.	ug/kg	5
03311	Indeno(1,2,3-cd)pyrene	193-39-5	32.	J	7.2	ug/kg	5

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Analysis		Analyst	Dilution Factor
			Trial#	Date and Time		
00111	Moisture	EPA 160.3 modified	1	11/21/2000 16:03	Susan A. Engle	1
01862	PAH's in Solids	SW-846 8310	1	11/27/2000 15:21	Michelle J. Kolodziejwski	5
03338	PAH Solid Extraction	SW-846 3550B	1	11/22/2000 08:30	Andres Amaya	1



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Lancaster Laboratories Sample No. SW 3503025

Collected: 11/15/2000 11:30 by JK

Account Number: 07802

Submitted: 11/16/2000 09:30

Kerr-McGee Corporation

Reported: 12/04/00 at 06:10 AM

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Discard: 1/4/01

Oklahoma City OK 73125

PRD1-CTA-2-A-01 Grab Soil Sample

Moss American - WI

A2A01 SDG#: MOS77-06

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit	Units	Dilution Factor
00111	Moisture	n.a.	43.2	0.50	% by wt.	1
"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The result reported above is on an as-received basis.						
01862	PAH's in Solids					
03296	Naphthalene	91-20-3	550,000.	11,000.	ug/kg	20
03299	Fluorene	86-73-7	560,000.	1,100.	ug/kg	20
03304	Benzo(a)anthracene	56-55-3	100,000.	J 11,000.	ug/kg	2000
03305	Chrysene	218-01-9	94,000.	420.	ug/kg	20
03306	Benzo(b)fluoranthene	205-99-2	38,000.	85.	ug/kg	20
03307	Benzo(k)fluoranthene	207-08-9	20,000.	85.	ug/kg	20
03308	Benzo(a)pyrene	50-32-8	39,000.	110.	ug/kg	20
03309	Dibenzo(a,h)anthracene	53-70-3	2,000.	J 210.	ug/kg	20
03310	Benzo(g,h,i)perylene	191-24-2	15,000.	630.	ug/kg	20
03311	Indeno(1,2,3-cd)pyrene	193-39-5	21,000.	420.	ug/kg	20
The surrogate data is outside the QC limits due to unresolvable matrix problems evident in the sample chromatogram.						

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis		Analyst	Dilution Factor
				Date	Time		
00111	Moisture	EPA 160.3 modified	1	11/21/2000	16:03	Susan A. Engle	1
01862	PAH's in Solids	SW-846 8310	1	11/26/2000	20:01	Michelle J. Kolodziejwski	20
01862	PAH's in Solids	SW-846 8310	1	11/27/2000	15:46	Michelle J. Kolodziejwski	2000
03338	PAH Solid Extraction	SW-846 3550B	1	11/22/2000	08:30	Andres Amaya	1



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Lancaster Laboratories Sample No. SW 3503026

Collected: 11/15/2000 11:35 by JK

Account Number: 07802

Submitted: 11/16/2000 09:30

Kerr-McGee Corporation

Reported: 12/04/00 at 06:10 AM.

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Discard: 1/4/01

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PRD1-CTA-2-B-01 Grab Soil Sample

Moss American - WI

A2B01 SDG#: MOS77-07

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit	Units	Dilution Factor
00111	Moisture	n.a.	39.5	0.50	% by wt.	1
"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The result reported above is on an as-received basis.						
01862	PAH's in Solids					
03296	Naphthalene	91-20-3	1,400,000. J	1,100,000.	ug/kg	2000
03299	Fluorene	86-73-7	1,300,000.	99,000.	ug/kg	2000
03304	Benzo(a)anthracene	56-55-3	320,000.	9,900.	ug/kg	2000
03305	Chrysene	218-01-9	200,000.	J 40,000.	ug/kg	2000
03306	Benzo(b)fluoranthene	205-99-2	110,000.	7,900.	ug/kg	2000
03307	Benzo(k)fluoranthene	207-08-9	58,000.	J 7,900.	ug/kg	2000
03308	Benzo(a)pyrene	50-32-8	110,000.	J 9,900.	ug/kg	2000
03309	Dibenzo(a,h)anthracene	53-70-3	20,000.	J 20,000.	ug/kg	2000
03310	Benzo(g,h,i)perylene	191-24-2	120,000.	J 60,000.	ug/kg	2000
03311	Indeno(1,2,3-cd)pyrene	193-39-5	140,000.	J 40,000.	ug/kg	2000

Accurate surrogate recoveries could not be determined due to the dilution required for analysis of the sample.

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	EPA 160.3 modified	1	11/21/2000 16:03	Susan A. Engle	1
01862	PAH's in Solids	SW-846 8310	1	11/27/2000 16:11	Michelle J. Kolodziejcki	2000
03338	PAH Solid Extraction	SW-846 3550B	1	11/22/2000 08:30	Andres Amaya	1



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Lancaster Laboratories Sample No. SW 3503027

Collected: 11/15/2000 11:40 by JK

Account Number: 07802

Submitted: 11/16/2000 09:30

Kerr-McGee Corporation

Reported: 12/04/00 at 06:10 AM

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Discard: 1/4/01

Oklahoma City, OK 73125

PRD1-CTA-2-C-01 Grab Soil Sample

Moss American - WI

A2C01 SDG#: MOS77-08

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method	Detection Limit	Units	Dilution Factor
00111	Moisture	n.a.	54.1		0.50	% by wt.	1
"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The result reported above is on an as-received basis.							
01862	PAH's in Solids						
03296	Naphthalene	91-20-3	N.D.		350,000.	ug/kg	2000
03299	Fluorene	86-73-7	270,000.	J	33,000.	ug/kg	2000
03304	Benzo(a)anthracene	56-55-3	55,000.		3,300.	ug/kg	2000
03305	Chrysene	218-01-9	42,000.	J	13,000.	ug/kg	2000
03306	Benzo(b)fluoranthene	205-99-2	19,000.	J	2,600.	ug/kg	2000
03307	Benzo(k)fluoranthene	207-08-9	9,400.	J	2,600.	ug/kg	2000
03308	Benzo(a)pyrene	50-32-8	19,000.	J	3,300.	ug/kg	2000
03309	Dibenzo(a,h)anthracene	53-70-3	N.D.		6,500.	ug/kg	2000
03310	Benzo(g,h,i)perylene	191-24-2	N.D.		20,000.	ug/kg	2000
03311	Indeno(1,2,3-cd)pyrene	193-39-5	17,000.	J	13,000.	ug/kg	2000
Accurate surrogate recoveries could not be determined due to the dilution required for analysis of the sample.							

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	EPA 160.3 modified	1	11/21/2000 16:03	Susan A. Engle	1
01862	PAH's in Solids	SW-846 8310	1	11/27/2000 16:58	Michelle J. Kolodziejcki	2000
03338	PAH Solid Extraction	SW-846 3550B	1	11/22/2000 08:30	Andres Amaya	1



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Lancaster Laboratories Sample No. SW 3503028

Collected: 11/15/2000 11:45 by JK

Account Number: 07802

Submitted: 11/16/2000 09:30

Kerr-McGee Corporation

Reported: 12/04/00 at 06:10 AM

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Discard: 1/4/01

Oklahoma City OK 73125

PRD1-CTA-2-D-01 Grab Soil Sample

Moss American - WI

A2D01 SDG#: MOS77-09

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit	Units	Dilution Factor
00111	Moisture	n.a.	38.3	0.50	% by wt.	1
"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The result reported above is on an as-received basis.						
01862	PAH's in Solids					
03296	Naphthalene	91-20-3	350,000.	11,000.	ug/kg	20
03299	Fluorene	86-73-7	340,000.	970.	ug/kg	20
03304	Benzo(a)anthracene	56-55-3	64,000.	4,900.	ug/kg	1000
03305	Chrysene	218-01-9	55,000.	390.	ug/kg	20
03306	Benzo(b)fluoranthene	205-99-2	24,000.	78.	ug/kg	20
03307	Benzo(k)fluoranthene	207-08-9	12,000.	78.	ug/kg	20
03308	Benzo(a)pyrene	50-32-8	25,000.	97.	ug/kg	20
03309	Dibenzo(a,h)anthracene	53-70-3	1,500.	J 190.	ug/kg	20
03310	Benzo(g,h,i)perylene	191-24-2	13,000.	580.	ug/kg	20
03311	Indeno(1,2,3-cd)pyrene	193-39-5	19,000.	390.	ug/kg	20
The surrogate data is outside the QC limits due to unresolvable matrix problems evident in the sample chromatogram.						

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis		Analyst	Dilution Factor
				Date and Time			
00111	Moisture	EPA 160.3 modified	1	11/21/2000	16:03	Susan A. Engle	1
01862	PAH's in Solids	SW-846 8310	1	11/26/2000	21:17	Michelle J. Kolodziejcki	20
01862	PAH's in Solids	SW-846 8310	1	11/27/2000	17:23	Michelle J. Kolodziejcki	1000
03338	PAH Solid Extraction	SW-846 3550B	1	11/22/2000	08:30	Andres Amaya	1



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Lancaster Laboratories Sample No. SW 3503029

Collected: 11/15/2000 12:00 by JK

Account Number: 07802

Submitted: 11/16/2000 09:30

Kerr-McGee Corporation

Reported: 12/04/00 at 06:10 AM

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Discard: 1/4/01

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PRD1-CTA-3-A-01 Grab Soil Sample

Moss American - WI

A3A01 SDG#: MOS77-10

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit	Units	Dilution Factor
00111	Moisture	n.a.	31.5	0.50	% by wt.	1
"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The result reported above is on an as-received basis.						
01862	PAH's in Solids					
03296	Naphthalene	91-20-3	N.D.	3,900.	ug/kg	100
03299	Fluorene	86-73-7	2,600.	J 360.	ug/kg	100
03304	Benzo(a)anthracene	56-55-3	1,700.	36.	ug/kg	100
03305	Chrysene	218-01-9	1,500.	J 150.	ug/kg	100
03306	Benzo(b)fluoranthene	205-99-2	1,100.	29.	ug/kg	100
03307	Benzo(k)fluoranthene	207-08-9	510.	29.	ug/kg	100
03308	Benzo(a)pyrene	50-32-8	1,200.	36.	ug/kg	100
03309	Dibenzo(a,h)anthracene	53-70-3	N.D.	73.	ug/kg	100
03310	Benzo(g,h,i)perylene	191-24-2	1,000.	J 220.	ug/kg	100
03311	Indeno(1,2,3-cd)pyrene	193-39-5	1,300.	J 150.	ug/kg	100

Accurate surrogate recoveries could not be determined due to the dilution required for analysis of the sample.

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	EPA 160.3 modified	1	11/21/2000 16:03	Susan A. Engle	1
01862	PAH's in Solids	SW-846 8310	1	11/27/2000 17:49	Michelle J. Kolodziejcki	100
03338	PAH Solid Extraction	SW-846 3550B	1	11/22/2000 08:30	Andres Amaya	1



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Lancaster Laboratories Sample No. SW 3503030

Collected: 11/15/2000 12:05 by JK

Account Number: 07802

Submitted: 11/16/2000 09:30

Kerr-McGee Corporation

Reported: 12/04/00 at 06:11 AM

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Discard: 1/4/01

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PRD1-CTA-3-B-01 Grab Soil Sample

Moss American - WI

A3B01 SDG#: MOS77-11

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit	Units	Dilution Factor
00111	Moisture	n.a.	36.7	0.50	% by wt.	1
"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The result reported above is on an as-received basis.						
01862	PAH's in Solids					
03296	Naphthalene	91-20-3	16,000.	850.	ug/kg	20
03299	Fluorene	86-73-7	13,000.	79.	ug/kg	20
03304	Benzo(a)anthracene	56-55-3	7,600.	390.	ug/kg	1000
03305	Chrysene	218-01-9	6,400.	J 1,600.	ug/kg	1000
03306	Benzo(b)fluoranthene	205-99-2	3,700.	320.	ug/kg	1000
03307	Benzo(k)fluoranthene	207-08-9	1,800.	J 320.	ug/kg	1000
03308	Benzo(a)pyrene	50-32-8	4,000.	J 390.	ug/kg	1000
03309	Dibenzo(a,h)anthracene	53-70-3	530.	16.	ug/kg	20
03310	Benzo(g,h,i)perylene	191-24-2	2,600.	47.	ug/kg	20
03311	Indeno(1,2,3-cd)pyrene	193-39-5	3,500.	32.	ug/kg	20

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

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	EPA 160.3 modified	1	11/21/2000 16:03	Susan A. Engle	1
01862	PAH's in Solids	SW-846 8310	1	11/26/2000 22:08	Michelle J. Kolodziejcki	20
01862	PAH's in Solids	SW-846 8310	1	11/27/2000 18:14	Michelle J. Kolodziejcki	1000
03338	PAH Solid Extraction	SW-846 3550B	1	11/22/2000 08:30	Andres Amaya	1



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Lancaster Laboratories Sample No. SW 3503031

Collected: 11/15/2000 12:10 by JK

Account Number: 07802

Submitted: 11/16/2000 09:30

Kerr-McGee Corporation

Reported: 12/04/00 at 06:11 AM

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Discard: 1/4/01

Oklahoma City OK 73125

PRD1-CTA-3-C-01 Grab Soil Sample

Moss American - WI

A3C01 SDG#: MOS77-12

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit	Units	Dilution Factor
00111	Moisture "Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The result reported above is on an as-received basis.	n.a.	19.2	0.50	% by wt.	1
01862	PAH's in Solids					
03296	Naphthalene	91-20-3	N.D.	170.	ug/kg	5
03299	Fluorene	86-73-7	60. J	15.	ug/kg	5
03304	Benzo(a)anthracene	56-55-3	15. J	1.5	ug/kg	5
03305	Chrysene	218-01-9	29. J	6.2	ug/kg	5
03306	Benzo(b)fluoranthene	205-99-2	9.1 J	1.2	ug/kg	5
03307	Benzo(k)fluoranthene	207-08-9	3.2 J	1.2	ug/kg	5
03308	Benzo(a)pyrene	50-32-8	10. J	1.5	ug/kg	5
03309	Dibenzo(a,h)anthracene	53-70-3	4.7 J	3.1	ug/kg	5
03310	Benzo(g,h,i)perylene	191-24-2	21. J	9.3	ug/kg	5
03311	Indeno(1,2,3-cd)pyrene	193-39-5	13. J	6.2	ug/kg	5

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	EPA 160.3 modified	1	11/21/2000 16:03	Susan A. Engle	1
01862	PAH's in Solids	SW-846 8310	1	11/27/2000 18:39	Michelle J. Kolodziejwski	5
03338	PAH Solid Extraction	SW-846 3550B	1	11/22/2000 08:30	Andres Amaya	1



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Lancaster Laboratories Sample No. SW 3503032

Collected: 11/15/2000 12:15 by JK

Account Number: 07802

Submitted: 11/16/2000 09:30

Kerr-McGee Corporation

Reported: 12/04/00 at 06:11 AM

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Discard: 1/4/01

Oklahoma City, OK 73125

PRD1-CTB-1-A-01 Grab Soil Sample

Moss American - WI

B1A01 SDG#: MOS77-13

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit	Units	Dilution Factor
00111	Moisture	n.a.	41.5	0.50	% by wt.	1
"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The result reported above is on an as-received basis.						
01862	PAH's in Solids					
03296	Naphthalene	91-20-3	N.D.	3,700.	ug/kg	20
03299	Fluorene	86-73-7	4,300.	340.	ug/kg	20
03304	Benzo(a)anthracene	56-55-3	3,500.	34.	ug/kg	20
03305	Chrysene	218-01-9	2,600.	140.	ug/kg	20
03306	Benzo(b)fluoranthene	205-99-2	2,800.	27.	ug/kg	20
03307	Benzo(k)fluoranthene	207-08-9	1,300.	27.	ug/kg	20
03308	Benzo(a)pyrene	50-32-8	2,800.	34.	ug/kg	20
03309	Dibenzo(a,h)anthracene	53-70-3	280. J	68.	ug/kg	20
03310	Benzo(g,h,i)perylene	191-24-2	3,600.	210.	ug/kg	20
03311	Indeno(1,2,3-cd)pyrene	193-39-5	4,400.	140.	ug/kg	20
The surrogate data is outside the QC limits due to unresolvable matrix problems evident in the sample chromatogram.						

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	EPA 160.3 modified	1	11/21/2000 16:03	Susan A. Engle	1
01862	PAH's in Solids	SW-846 8310	1	11/26/2000 22:59	Michelle J. Kolodziejwski	20
03338	PAH Solid Extraction	SW-846 3550B	1	11/22/2000 08:30	Andres Amaya	1



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



Lancaster Laboratories Sample No. SW 3503033

Collected: 11/15/2000 12:30 by JK

Account Number: 07802

Submitted: 11/16/2000 09:30

Kerr-McGee Corporation

Reported: 12/04/00 at 06:11 AM

P.O. Box 25861

Discard: 1/4/01

Oklahoma, City, OK 73125

PRD1-CTB-1-B-01 Grab Soil Sample

Moss American - WI

B1B01 SDG#: MOS77-14

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit	Units	Dilution Factor
00111	Moisture	n.a.	29.4	0.50	% by wt.	1
"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The result reported above is on an as-received basis.						
01862	PAH's in Solids					
03296	Naphthalene	91-20-3	N.D.	760.	ug/kg	20
03299	Fluorene	86-73-7	1,700.	71.	ug/kg	20
03304	Benzo(a)anthracene	56-55-3	480.	7.1	ug/kg	20
03305	Chrysene	218-01-9	280. J	28.	ug/kg	20
03306	Benzo(b)fluoranthene	205-99-2	200.	5.7	ug/kg	20
03307	Benzo(k)fluoranthene	207-08-9	93.	5.7	ug/kg	20
03308	Benzo(a)pyrene	50-32-8	200.	7.1	ug/kg	20
03309	Dibenzo(a,h)anthracene	53-70-3	35. J	14.	ug/kg	20
03310	Benzo(g,h,i)perylene	191-24-2	160. J	42.	ug/kg	20
03311	Indeno(1,2,3-cd)pyrene	193-39-5	180. J	28.	ug/kg	20
The surrogate data is outside the QC limits due to unresolvable matrix problems evident in the sample chromatogram.						

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	EPA 160.3 modified	1	11/21/2000 16:03	Susan A. Engle	1
01862	PAH's in Solids	SW-846 8310	1	11/26/2000 23:24	Michelle J. Kolodziejwski	20
03338	PAH Solid Extraction	SW-846 3550B	1	11/22/2000 08:30	Andres Amaya	1



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Lancaster Laboratories Sample No. SW 3503034

Collected: 11/15/2000 12:35 by JK

Account Number: 07802

Submitted: 11/16/2000 09:30

Kerr-McGee Corporation

Reported: 12/04/00 at 06:11 AM

P.O. Box 25861

Discard: 1/4/01

Oklahoma City OK 73125

PRD1-CTB-1-C-01 Grab Soil Sample

Moss American - WI

B1C01 SDG#: MOS77-15

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit	Units	Dilution Factor
00111	Moisture "Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The result reported above is on an as-received basis.	n.a.	18.7	0.50	% by wt.	1
01862	PAH's in Solids					
03296	Naphthalene	91-20-3	N.D.	170.	ug/kg	5
03299	Fluorene	86-73-7	21. J	15.	ug/kg	5
03304	Benzo(a)anthracene	56-55-3	7.0 J	1.5	ug/kg	5
03305	Chrysene	218-01-9	29. J	6.2	ug/kg	5
03306	Benzo(b)fluoranthene	205-99-2	6.2 J	1.2	ug/kg	5
03307	Benzo(k)fluoranthene	207-08-9	1.4 J	1.2	ug/kg	5
03308	Benzo(a)pyrene	50-32-8	6.4 J	1.5	ug/kg	5
03309	Dibenzo(a,h)anthracene	53-70-3	N.D.	3.1	ug/kg	5
03310	Benzo(g,h,i)perylene	191-24-2	30. J	9.2	ug/kg	5
03311	Indeno(1,2,3-cd)pyrene	193-39-5	24. J	6.2	ug/kg	5

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	EPA 160.3 modified	1	11/21/2000 16:03	Susan A. Engle	1
01862	PAH's in Solids	SW-846 8310	1	11/27/2000 19:04	Michelle J. Kolodziejwski	5
03338	PAH Solid Extraction	SW-846 3550B	1	11/22/2000 08:30	Andres Amaya	1



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Lancaster Laboratories Sample No. SW 3503035

Collected: 11/15/2000 12:40 by JK

Account Number: 07802

Submitted: 11/16/2000 09:30

Kerr-McGee Corporation

Reported: 12/04/00 at 06:11 AM

P.O. Box 25861

Discard: 1/4/01

Oklahoma City OK 73125

PRD1-CTB-2-A-01 Grab Soil Sample

Moss American - WI

B2A01 SDG#: MOS77-16

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit	Units	Dilution Factor
00111	Moisture	n.a.	38.1	0.50	% by wt.	1
"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The result reported above is on an as-received basis.						
01862	PAH's in Solids					
03296	Naphthalene	91-20-3	14,000.	J 10,000.	ug/kg	20
03299	Fluorene	86-73-7	110,000.	970.	ug/kg	20
03304	Benzo(a)anthracene	56-55-3	39,000.	97.	ug/kg	20
03305	Chrysene	218-01-9	32,000.	390.	ug/kg	20
03306	Benzo(b)fluoranthene	205-99-2	18,000.	78.	ug/kg	20
03307	Benzo(k)fluoranthene	207-08-9	9,000.	78.	ug/kg	20
03308	Benzo(a)pyrene	50-32-8	18,000.	97.	ug/kg	20
03309	Dibenzo(a,h)anthracene	53-70-3	2,000.	190.	ug/kg	20
03310	Benzo(g,h,i)perylene	191-24-2	11,000.	580.	ug/kg	20
03311	Indeno(1,2,3-cd)pyrene	193-39-5	15,000.	390.	ug/kg	20
The surrogate data is outside the QC limits due to unresolvable matrix problems evident in the sample chromatogram.						

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	EPA 160.3 modified	1	11/21/2000 16:03	Susan A. Engle	1
01862	PAH's in Solids	SW-846 8310	1	11/27/2000 00:36	Michelle J. Kolodziejcki	20
03338	PAH Solid Extraction	SW-846 3550B	1	11/22/2000 08:30	Andres Amaya	1



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 717-656-2300 Fax: 717-656-2681





Lancaster Laboratories Sample No. SW 3503036

Collected: 11/15/2000 12:45 by JK

Account Number: 07802

Submitted: 11/16/2000 09:30

Kerr-McGee Corporation

Reported: 12/04/00 at 06:11 AM

P.O. Box 25861

Discard: 1/4/01

Oklahoma City OK 73125

PRD1-CTB-2-B-01 Grab Soil Sample

Moss American - WI

B2B01 SDG#: MOS77-17

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit	Units	Dilution Factor
00111	Moisture	n.a.	31.6	0.50	% by wt.	1
"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The result reported above is on an as-received basis.						
01862	PAH's in Solids					
03296	Naphthalene	91-20-3	250,000.	2,400.	ug/kg	20
03299	Fluorene	86-73-7	110,000.	220.	ug/kg	20
03304	Benzo(a)anthracene	56-55-3	34,000.	2,200.	ug/kg	2000
03305	Chrysene	218-01-9	27,000.	J 8,800.	ug/kg	2000
03306	Benzo(b)fluoranthene	205-99-2	13,000.	J 1,800.	ug/kg	2000
03307	Benzo(k)fluoranthene	207-08-9	6,200.	J 1,800.	ug/kg	2000
03308	Benzo(a)pyrene	50-32-8	15,000.	J 2,200.	ug/kg	2000
03309	Dibenzo(a,h)anthracene	53-70-3	1,800.	44.	ug/kg	20
03310	Benzo(g,h,i)perylene	191-24-2	6,700.	130.	ug/kg	20
03311	Indeno(1,2,3-cd)pyrene	193-39-5	9,800.	88.	ug/kg	20
The surrogate data is outside the QC limits due to unresolvable matrix problems evident in the sample chromatogram.						

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis		Analyst	Dilution Factor
				Date and Time			
00111	Moisture	EPA 160.3 modified	1	11/21/2000	16:03	Susan A. Engle	1
01862	PAH's in Solids	SW-846 8310	1	11/27/2000	01:01	Michelle J. Kolodziejcki	20
01862	PAH's in Solids	SW-846 8310	1	11/27/2000	19:54	Michelle J. Kolodziejcki	2000
03338	PAH Solid Extraction	SW-846 3550B	1	11/22/2000	08:30	Andres Amaya	1



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Lancaster Laboratories Sample No. SW 3503037

Collected: 11/15/2000 13:00 by JK

Account Number: 07802

Submitted: 11/16/2000 09:30

Kerr-McGee Corporation

Reported: 12/04/00 at 06:11 AM

P.O. Box 25861

Discard: 1/4/01

Oklahoma City OK 73125

PRD1-CTB-2-C-01 Grab Soil Sample

Moss American - WI

B2C01 SDG#: MOS77-18

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit	Units	Dilution Factor
00111	Moisture	n.a.	67.7	0.50	% by wt.	1
"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The result reported above is on an as-received basis.						
01862	PAH's in Solids					
03296	Naphthalene	91-20-3	10,000.	J 6,700.	ug/kg	20
03299	Fluorene	86-73-7	2,700.	J 620.	ug/kg	20
03304	Benzo(a)anthracene	56-55-3	1,600.	62.	ug/kg	20
03305	Chrysene	218-01-9	990.	J 250.	ug/kg	20
03306	Benzo(b)fluoranthene	205-99-2	410.	J 50.	ug/kg	20
03307	Benzo(k)fluoranthene	207-08-9	230.	J 50.	ug/kg	20
03308	Benzo(a)pyrene	50-32-8	350.	J 62.	ug/kg	20
03309	Dibenzo(a,h)anthracene	53-70-3	N.D.	120.	ug/kg	20
03310	Benzo(g,h,i)perylene	191-24-2	N.D.	370.	ug/kg	20
03311	Indeno(1,2,3-cd)pyrene	193-39-5	1,100.	J 250.	ug/kg	20
The surrogate data is outside the QC limits due to unresolvable matrix problems evident in the sample chromatogram.						

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	EPA 160.3 modified	1	11/21/2000 16:03	Susan A. Engle	1
01862	PAH's in Solids	SW-846 8310	1	11/27/2000 01:27	Michelle J. Kolodziejwski	20
03338	PAH Solid Extraction	SW-846 3550B	1	11/22/2000 08:30	Andres Amaya	1



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Lancaster Laboratories Sample No. SW 3503039

Collected: 11/15/2000 13:00 by JK

Account Number: 07802

Submitted: 11/16/2000 09:30

Kerr-McGee Corporation

Reported: 12/04/00 at 06:11 AM

P.O. Box 25861

Discard: 1/4/01

Oklahoma City, OK 73125

PRD1-CTB-2-D-01 Grab Soil Sample

Moss American - WI

B2D01 SDG#: MOS77-20\*

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method	Detection Limit	Units	Dilution Factor
00111	Moisture	n.a.	38.1		0.50	% by wt.	1
"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The result reported above is on an as-received basis.							
01862	PAH's in Solids						
03296	Naphthalene	91-20-3	2,100.	J	870.	ug/kg	20
03299	Fluorene	86-73-7	620.	J	81.	ug/kg	20
03304	Benzo(a)anthracene	56-55-3	240.		8.1	ug/kg	20
03305	Chrysene	218-01-9	200.	J	32.	ug/kg	20
03306	Benzo(b)fluoranthene	205-99-2	75.		6.5	ug/kg	20
03307	Benzo(k)fluoranthene	207-08-9	42.	J	6.5	ug/kg	20
03308	Benzo(a)pyrene	50-32-8	87.	J	8.1	ug/kg	20
03309	Dibenzo(a,h)anthracene	53-70-3	21.	J	16.	ug/kg	20
03310	Benzo(g,h,i)perylene	191-24-2	86.	J	48.	ug/kg	20
03311	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.		32.	ug/kg	20
The surrogate data is outside the QC limits due to unresolvable matrix problems evident in the sample chromatogram.							

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	EPA 160.3 modified	1	11/21/2000 16:03	Susan A. Engle	1
01862	PAH's in Solids	SW-846 8310	1	11/27/2000 02:17	Michelle J. Kolodziejcki	20
03338	PAH Solid Extraction	SW-846 3550B	1	11/22/2000 08:30	Andres Amaya	1



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Lancaster Laboratories Sample No. SW 3503038

Collected: 11/15/2000 13:00 by JK

Account Number: 07802

Submitted: 11/16/2000 09:30

Kerr-McGee Corporation

Reported: 12/04/00 at 06:11 AM

P.O. Box 25861

Discard: 1/4/01

Oklahoma City OK 73125

PRD1-CTB-2-D-01-DP Grab Soil Sample

Moss American - WI

DPD01 SDG#: MOS77-19

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit	Units	Dilution Factor
00111	Moisture	n.a.	36.3	0.50	% by wt.	1
"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The result reported above is on an as-received basis.						
01862	PAH's in Solids					
03296	Naphthalene	91-20-3	19,000.	850.	ug/kg	20
03299	Fluorene	86-73-7	10,000.	78.	ug/kg	20
03304	Benzo(a)anthracene	56-55-3	4,200.	7.8	ug/kg	20
03305	Chrysene	218-01-9	3,600.	31.	ug/kg	20
03306	Benzo(b)fluoranthene	205-99-2	1,500.	6.3	ug/kg	20
03307	Benzo(k)fluoranthene	207-08-9	790.	6.3	ug/kg	20
03308	Benzo(a)pyrene	50-32-8	1,600.	7.8	ug/kg	20
03309	Dibenzo(a,h)anthracene	53-70-3	180.	16.	ug/kg	20
03310	Benzo(g,h,i)perylene	191-24-2	930.	47.	ug/kg	20
03311	Indeno(1,2,3-cd)pyrene	193-39-5	1,300.	31.	ug/kg	20
The surrogate data is outside the QC limits due to unresolvable matrix problems evident in the sample chromatogram.						

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	EPA 160.3 modified	1	11/21/2000 16:03	Susan A. Engle	1
01862	PAH's in Solids	SW-846 8310	1	11/27/2000 01:52	Michelle J. Kolodziejski	20
03338	PAH Solid Extraction	SW-846 3550B	1	11/22/2000 08:30	Andres Amaya	1



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

# Analysis Request/ Environmental Services Chain of Custody



For Lancaster Laboratories use only  
 Acct. # 7812 Sample # 3504123-43

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

Client: <u>KERR-MCGEE</u> Project Name/#: <u>MOSS-AMERICA</u> Project Manager: <u>TOM GRAAN</u> Sampler: <u>JOE KLEMP</u> Name of state where samples were collected: <u>WISCONSIN</u>		Acct. #: _____ PWSID #: _____ P.O.#: _____ Quote #: _____		Matrix <span style="border: 1px solid black; border-radius: 50%; padding: 2px;">4</span>		<span style="border: 1px solid black; border-radius: 50%; padding: 2px;">5</span> Analyses Requested					For lab use only FSC: _____ SCR #: _____				
				<input type="checkbox"/> Potable (Check if applicable) <input type="checkbox"/> Water <input type="checkbox"/> NPDES <input type="checkbox"/> Other		Total # of Containers		PAH 8310					Temperature of samples upon receipt (if requested)		
Sample Identification		Date Collected	Time Collected	Grab <span style="border: 1px solid black; border-radius: 50%; padding: 2px;">3</span>	Composite	Soil	Water	Other	Total # of Containers	Remarks					
PRD1-CTC-2B-01		11/15/00	1948	X		X			1	X					
PRD1-CTC-2-C-01		11/15/00	1551	X		X			1	X					
PRD1-CTC-2-D-01		11/15/00	15:55	X		X			1	X					
PRD1-CTC-2-D-01-DP		11/15/00	1555	X		X			1	X					
PRD1-CTC-3-A-01		11/15/00	1610	X		X			1	X					
PRD1-CTC-3-B-01		11/15/00	1612	X		X			1	X					
PRD1-CTC-3-C-01		11/15/00	1615	X		X			1	X					
PRD1-CTC-3-D-01		11/15/00	1620	X		X			1	X					
PRD1-CTC-3-E-01		11/15/00	1620	X		X			1	X					
PRD1-CTD-1-A-01		11/16/00	815	X		X			1	X					
Turnaround Time Requested (TAT) (please circle): <span style="border: 1px solid black; border-radius: 50%; padding: 2px;">Normal</span> Rush (Rush TAT is subject to Lancaster Laboratories approval and surcharge.) Date results are needed: <u>STD-TAT</u> Rush results requested by (please circle): Phone Fax Phone #: <u>847918-4000</u> Fax #: <u>847918-4055</u>				Relinquished by: <u>Ma. M...</u> Date: <u>11/16/00</u> Time: <u>1800</u>		Received by: <u>Fedex</u> Date: <u>11/16/00</u> Time: <u>1800</u>									
Data Package Options (please circle if requested) QC Summary Type VI (Raw Data) <u>PER QUOTE</u> Type I (Tier I) GLP Type II (Tier II) Other Type III (NJ Red. Del.) Type IV (CLP)				SDG Complete? Yes <span style="border: 1px solid black; border-radius: 50%; padding: 2px;">No</span>											
Site-specific QC required? Yes No (If yes, indicate QC sample and submit triplicate volume.)															
Internal Chain of Custody required? Yes No															

# Analysis Request/ Environmental Services Chain of Custody



For Lancaster Laboratories use only  
 Acct. # 7812 Sample # 3504123-43

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

Client: KERR-MCGEE Acct. #: \_\_\_\_\_  
 Project Name/#: MOSS-AMERICA PWSID #: \_\_\_\_\_  
 Project Manager: TOM GRAAN P.O.# \_\_\_\_\_  
 Sampler: JOE KLEMP Quote #: \_\_\_\_\_  
 Name of state where samples were collected: WISCONSIN

Sample Identification	Date Collected	Time Collected	Grab		Matrix			Total # of Containers	Analyses Requested						Remarks	Temperature of samples upon receipt (if requested)
			(3)	Composite	Soil	Water	Other		PAH	8	310					
PRD1-CTB-3-A-01	11/15/00	1425	X		X			X								
PRD1-CTB-3-B-01	11/15/00	1430	X		X			X								
PRD1-CTB-3-C-01	11/15/00	1435	X		X			X								
PRD1-CTB-3-C-01/MS/MSD	11/15/00	1435	X		X			X								
PRD1-CTB-3-D-01	11/15/00	1440	X		X			X								
PRD1-CTB-3-E-01	11/15/00	1445	X		X			X								
PRD1-CTC-1-A-01	11/15/00	1530	X		X			X								
PRD1-CTC-1-B-01	11/15/00	1535	X		X			X								
PRD1-CTC-1-C-01	11/15/00	1540	X		X			X								
PRD1-CTC-2-A-01	11/15/00	1545	X		X			X								

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

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

QC Summary Type VI (Raw Data) PER QUOTE  
 Type I (Tier I) GLP  
 Type II (Tier II) Other  
 Type III (NJ Red. Del.)  
 Type IV (CLP)

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

Relinquished by: J. A. Klem Date 11/16/00 Time 1800 Received by: Feder Date 11/16/00 Time 1800

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

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

Relinquished by: \_\_\_\_\_ Date \_\_\_\_\_ Time \_\_\_\_\_ Received by: Press Zolt Date 11/17/00 Time 0915



## ANALYTICAL RESULTS

Prepared for:

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

Prepared by:

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

### SAMPLE GROUP

The sample group for this submittal is 740149. Samples arrived at the laboratory on Friday, November 17, 2000.

<u>Client Description</u>	<u>Lancaster Labs Number</u>
PRD1-CTC-2-B-01 Grab Soil Sample	3504123
PRD1-CTC-2-C-01 Grab Soil Sample	3504124
PRD1-CTC-2-D-01 Grab Soil Sample	3504125
PRD1-CTC-2-D-01-DP Grab Soil Sample	3504126
PRD1-CTC-3-A-01 Grab Soil Sample	3504127
PRD1-CTC-3-B-01 Grab Soil Sample	3504128
PRD1-CTC-3-C-01 Grab Soil Sample	3504129
PRD1-CTC-3-D-01 Grab Soil Sample	3504130
PRD1-CTC-3-E-01 Grab Soil Sample	3504131
PRD1-CTD-1-A-01 Grab Soil Sample	3504132
PRD1-CTB-3-B-01 Grab Soil Sample	3504133
PRD1-CTB-3-C-01 Unspiked Grab Soil Sample	3504134
PRD1-CTB-3-C-01 Matrix Spike Grab Soil Sample	3504135
PRD1-CTB-3-C-01 Matrix Spike Duplicate Grab Soil	3504136
PRD1-CTB-3-D-01 Grab Soil Sample	3504137
PRD1-CTB-3-E-01 Grab Soil Sample	3504138
PRD1-CTC-1-A-01 Grab Soil Sample	3504139
PRD1-CTC-1-B-01 Grab Soil Sample	3504140
PRD1-CTC-1-C-01 Grab Soil Sample	3504141
PRD1-CTC-2-A-01 Grab Soil Sample	3504142
PRD1-CTB-3-A-01 Grab Soil Sample	3504143

### METHODOLOGY

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



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

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

Questions? Contact your Client Services Representative  
Kay G. Hower at (717) 656-2300.

Respectfully Submitted,

*Christine Dunne*  
*Christine Dunne*  
Senior Chemist

---





Lancaster Laboratories Sample No. SW 3504123

Collected: 11/15/2000 15:48 by JK

Account Number: 07802

Submitted: 11/17/2000 09:15

Kerr-McGee Corporation

Reported: 12/14/00 at 09:06 PM

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Discard: 1/14/01

Oklahoma City OK 73125

PRD1-CTC-2-B-01 Grab Soil Sample

Moss American - WI

2B01X SDG#: MOS80-01

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit	Units	Dilution Factor
00111	Moisture	n.a.	42.0	0.50	% by wt.	1
"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The result reported above is on an as-received basis.						
01862	PAH's in Solids					
03296	Naphthalene	91-20-3	N.D.	47,000.	ug/kg	100
03299	Fluorene	86-73-7	N.D.	4,300.	ug/kg	100
03304	Benzo(a)anthracene	56-55-3	3,500.	430.	ug/kg	100
03305	Chrysene	218-01-9	N.D.	19,000.	ug/kg	100
03306	Benzo(b)fluoranthene	205-99-2	12,000.	340.	ug/kg	100
03307	Benzo(k)fluoranthene	207-08-9	3,100.	340.	ug/kg	100
03308	Benzo(a)pyrene	50-32-8	17,000.	430.	ug/kg	100
03309	Dibenzo(a,h)anthracene	53-70-3	2,200.	860.	ug/kg	100
03310	Benzo(g,h,i)perylene	191-24-2	21,000.	2,600.	ug/kg	100
03311	Indeno(1,2,3-cd)pyrene	193-39-5	24,000.	1,700.	ug/kg	100
Accurate surrogate recoveries could not be determined due to the dilution required for analysis of the sample.						

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	EPA 160.3 modified	1	11/23/2000 08:41	Susan A. Engle	1
01862	PAH's in Solids	SW-846 8310	1	12/02/2000 09:27	Michelle J. Kolodziejski	100
03338	PAH Solid Extraction	SW-846 3550B	1	11/29/2000 08:30	Andres Amaya	1



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Lancaster Laboratories Sample No. SW 3504124

Collected: 11/15/2000 15:51 by JK

Account Number: 07802

Submitted: 11/17/2000 09:15

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Reported: 12/14/00 at 09:06 PM

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Discard: 1/14/01

Oklahoma City OK 73125

PRD1-CTC-2-C-01 Grab Soil Sample

Moss American - WI

2C01- SDG#: MOS80-02

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit	Units	Dilution Factor
00111	Moisture	n.a.	54.2	0.50	% by wt.	1
"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The result reported above is on an as-received basis.						
01862	PAH's in Solids					
03296	Naphthalene	91-20-3	N.D.	1,200.	ug/kg	20
03299	Fluorene	86-73-7	N.D.	110.	ug/kg	20
03304	Benzo(a)anthracene	56-55-3	29. J	11.	ug/kg	20
03305	Chrysene	218-01-9	N.D.	44.	ug/kg	20
03306	Benzo(b)fluoranthene	205-99-2	11. J	8.7	ug/kg	20
03307	Benzo(k)fluoranthene	207-08-9	N.D.	8.7	ug/kg	20
03308	Benzo(a)pyrene	50-32-8	20. J	11.	ug/kg	20
03309	Dibenzo(a,h)anthracene	53-70-3	N.D.	22.	ug/kg	20
03310	Benzo(g,h,i)perylene	191-24-2	N.D.	66.	ug/kg	20
03311	Indeno(1,2,3-cd)pyrene	193-39-5	45. J	44.	ug/kg	20

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	EPA 160.3 modified	1	11/23/2000 08:41	Susan A. Engle	1
01862	PAH's in Solids	SW-846 8310	1	12/03/2000 01:03	Michelle J. Kolodziejcki	20
03338	PAH Solid Extraction	SW-846 3550B-	1	11/29/2000 08:30	Andres Amaya	1



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Lancaster Laboratories Sample No. SW 3504125

Collected: 11/15/2000 15:55 by JK

Account Number: 07802

Submitted: 11/17/2000 09:15

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Reported: 12/14/00 at 09:06 PM

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Discard: 1/14/01

Oklahoma City OK 73125

PRD1-CTC-2-D-01 Grab Soil Sample

Moss American - WI

2C01D SDG#: MOS80-03

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit	Units	Dilution Factor
00111	Moisture	n.a.	34.2	0.50	% by wt.	1
	"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The result reported above is on an as-received basis.					
01862	PAH's in Solids					
03296	Naphthalene	91-20-3	N.D.	820.	ug/kg	20
03299	Fluorene	86-73-7	N.D.	76.	ug/kg	20
03304	Benzo(a)anthracene	56-55-3	13. J	7.6	ug/kg	20
03305	Chrysene	218-01-9	N.D.	30.	ug/kg	20
03306	Benzo(b)fluoranthene	205-99-2	11. J	6.1	ug/kg	20
03307	Benzo(k)fluoranthene	207-08-9	N.D.	6.1	ug/kg	20
03308	Benzo(a)pyrene	50-32-8	15. J	7.6	ug/kg	20
03309	Dibenzo(a,h)anthracene	53-70-3	N.D.	15.	ug/kg	20
03310	Benzo(g,h,i)perylene	191-24-2	49. J	46.	ug/kg	20
03311	Indeno(1,2,3-cd)pyrene	193-39-5	38. J	30.	ug/kg	20

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	EPA 160.3 modified	1	11/23/2000 08:41	Susan A. Engle	1
01862	PAH's in Solids	SW-846 8310	1	12/02/2000 10:17	Michelle J. Kolodziejwski	20
03338	PAH Solid Extraction	SW-846 3550B	1	11/29/2000 08:30	Andres Amaya	1



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Lancaster Laboratories Sample No. SW 3504126

Collected: 11/15/2000 15:55 by JK

Account Number: 07802

Submitted: 11/17/2000 09:15

Kerr-McGee Corporation

Reported: 12/14/00 at 09:06 PM

P.O. Box 25861

Discard: 1/14/01

Oklahoma City OK 73125

PRD1-CTC-2-D-01-DP Grab Soil Sample

Moss American - WI

2CD1D SDG#: MOS80-04FD

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit	Units	Dilution Factor
00111	Moisture	n.a.	33.8	0.50	% by wt.	1
"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The result reported above is on an as-received basis.						
01862	PAH's in Solids					
03296	Naphthalene	91-20-3	N.D.	820.	ug/kg	20
03299	Fluorene	86-73-7	N.D.	76.	ug/kg	20
03304	Benzo(a)anthracene	56-55-3	20. J	7.6	ug/kg	20
03305	Chrysene	218-01-9	34. J	30.	ug/kg	20
03306	Benzo(b)fluoranthene	205-99-2	10. J	6.0	ug/kg	20
03307	Benzo(k)fluoranthene	207-08-9	N.D.	6.0	ug/kg	20
03308	Benzo(a)pyrene	50-32-8	11. J	7.6	ug/kg	20
03309	Dibenzo(a,h)anthracene	53-70-3	N.D.	15.	ug/kg	20
03310	Benzo(g,h,i)perylene	191-24-2	N.D.	45.	ug/kg	20
03311	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	30.	ug/kg	20

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	EPA 160.3 modified	1	11/23/2000 08:41	Susan A. Engle	1
01862	PAH's in Solids	SW-846 8310	1	12/02/2000 11:04	Michelle J. Kolodziejcki	20
03338	PAH Solid Extraction	SW-846 3550B	1	11/29/2000 08:30	Andres Amaya	1



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Lancaster Laboratories Sample No. SW 3504127

Collected: 11/15/2000 16:10 by JK

Account Number: 07802

Submitted: 11/17/2000 09:15  
 Reported: 12/14/00 at 09:06 PM  
 Discard: 1/14/01  
 PRD1-CTC-3-A-01 Grab Soil Sample  
 Moss American - WI

Kerr-McGee Corporation  
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3A01- SDG#: MOS80-05

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit	Units	Dilution Factor
00111	Moisture	n.a.	31.9	0.50	% by wt.	1
"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The result reported above is on an as-received basis.						
01862	PAH's in Solids					
03296	Naphthalene	91-20-3	N.D.	3,200.	ug/kg	20
03299	Fluorene	86-73-7	620. J	290.	ug/kg	20
03304	Benzo(a)anthracene	56-55-3	860.	29.	ug/kg	20
03305	Chrysene	218-01-9	810. J	120.	ug/kg	20
03306	Benzo(b)fluoranthene	205-99-2	990.	23.	ug/kg	20
03307	Benzo(k)fluoranthene	207-08-9	480.	23.	ug/kg	20
03308	Benzo(a)pyrene	50-32-8	840.	29.	ug/kg	20
03309	Dibenzo(a,h)anthracene	53-70-3	N.D.	59.	ug/kg	20
03310	Benzo(g,h,i)perylene	191-24-2	720. J	180.	ug/kg	20
03311	Indeno(1,2,3-cd)pyrene	193-39-5	870. J	120.	ug/kg	20
The surrogate data is outside the QC limits due to unresolvable matrix problems evident in the sample chromatogram.						

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	EPA 160.3 modified	1	11/23/2000 08:41	Susan A. Engle	1
01862	PAH's in Solids	SW-846 8310	1	12/02/2000 11:30	Michelle J. Kolodziejski	20
03338	PAH Solid Extraction	SW-846 3550B	1	11/29/2000 08:30	Andres Amaya	1



Lancaster Laboratories Sample No. SW 3504128

Collected: 11/15/2000 16:12 by JK

Account Number: 07802

Submitted: 11/17/2000 09:15

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Reported: 12/14/00 at 09:07 PM

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Discard: 1/14/01

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PRD1-CTC-3-B-01 Grab Soil Sample

Moss American - WI

3B01- SDG#: MOS80-06

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit	Units	Dilution Factor
00111	Moisture	n.a.	50.5	0.50	% by wt.	1
"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The result reported above is on an as-received basis.						
01862	PAH's in Solids					
03296	Naphthalene	91-20-3	N.D.	11,000.	ug/kg	20
03299	Fluorene	86-73-7	79,000.	1,000.	ug/kg	20
03304	Benzo(a)anthracene	56-55-3	41,000.	100.	ug/kg	20
03305	Chrysene	218-01-9	32,000.	400.	ug/kg	20
03306	Benzo(b)fluoranthene	205-99-2	16,000.	81.	ug/kg	20
03307	Benzo(k)fluoranthene	207-08-9	8,400.	81.	ug/kg	20
03308	Benzo(a)pyrene	50-32-8	14,000.	100.	ug/kg	20
03309	Dibenzo(a,h)anthracene	53-70-3	1,400.	J 200.	ug/kg	20
03310	Benzo(g,h,i)perylene	191-24-2	4,300.	J 610.	ug/kg	20
03311	Indeno(1,2,3-cd)pyrene	193-39-5	6,800.	400.	ug/kg	20

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

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	EPA 160.3 modified	1	11/23/2000 08:41	Susan A. Engle	1
01862	PAH's in Solids	SW-846 8310	1	12/02/2000 11:55	Michelle J. Kolodziejcki	20
03338	PAH Solid Extraction	SW-846 3550B	1	11/29/2000 08:30	Andres Amaya	1



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Lancaster Laboratories Sample No. SW 3504129

Collected: 11/15/2000 16:15 by JK

Account Number: 07802

Submitted: 11/17/2000 09:15  
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 PRD1-CTC-3-C-01 Grab Soil Sample  
 Moss American - WI

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

3C01- SDG#: MOS80-07

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit	Units	Dilution Factor
00111	Moisture	n.a.	39.0	0.50	% by wt.	1
"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The result reported above is on an as-received basis.						
01862	PAH's in Solids					
03296	Naphthalene	91-20-3	38,000.	J 8,900.	ug/kg	20
03299	Fluorene	86-73-7	30,000.	820.	ug/kg	20
03304	Benzo(a)anthracene	56-55-3	15,000.	82.	ug/kg	20
03305	Chrysene	218-01-9	12,000.	330.	ug/kg	20
03306	Benzo(b)fluoranthene	205-99-2	7,600.	66.	ug/kg	20
03307	Benzo(k)fluoranthene	207-08-9	3,700.	66.	ug/kg	20
03308	Benzo(a)pyrene	50-32-8	7,300.	82.	ug/kg	20
03309	Dibenzo(a,h)anthracene	53-70-3	960.	J 160.	ug/kg	20
03310	Benzo(g,h,i)perylene	191-24-2	3,400.	J 490.	ug/kg	20
03311	Indeno(1,2,3-cd)pyrene	193-39-5	4,700.	330.	ug/kg	20

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

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	EPA 160.3 modified	1	11/23/2000 08:41	Susan A. Engle	1
01862	PAH's in Solids	SW-846 8310	1	12/02/2000 12:20	Michelle J. Kolodziejwski	20
03338	PAH Solid Extraction	SW-846 3550B	1	11/29/2000 08:30	Andres Amaya	1



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Lancaster Laboratories Sample No. SW 3504130

Collected: 11/15/2000 16:20 by JK Account Number: 07802

Submitted: 11/17/2000 09:15  
 Reported: 12/14/00 at 09:07 PM  
 Discard: 1/14/01  
 PRD1-CTC-3-D-01 Grab Soil Sample  
 Moss American - WI

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

3CD1- SDG#: MOS80-08

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit	Units	Dilution Factor
00111	Moisture	n.a.	33.2	0.50	% by wt.	1
"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The result reported above is on an as-received basis.						
01862	PAH's in Solids					
03296	Naphthalene	91-20-3	300,000.	16,000.	ug/kg	20
03299	Fluorene	86-73-7	160,000.	1,500.	ug/kg	20
03304	Benzo(a)anthracene	56-55-3	65,000.	150.	ug/kg	20
03305	Chrysene	218-01-9	55,000.	600.	ug/kg	20
03306	Benzo(b)fluoranthene	205-99-2	24,000.	120.	ug/kg	20
03307	Benzo(k)fluoranthene	207-08-9	12,000.	120.	ug/kg	20
03308	Benzo(a)pyrene	50-32-8	24,000.	150.	ug/kg	20
03309	Dibenzo(a,h)anthracene	53-70-3	2,800. J	300.	ug/kg	20
03310	Benzo(g,h,i)perylene	191-24-2	11,000.	900.	ug/kg	20
03311	Indeno(1,2,3-cd)pyrene	193-39-5	17,000.	600.	ug/kg	20

The surrogate data in the original extract is outside the QC limits. Results from the reextraction are also outside the QC limits, indicating possible matrix interference.

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	EPA 160.3 modified	1	11/24/2000 13:50	Susan A. Engle	1
01862	PAH's in Solids	SW-846 8310	1	12/02/2000 12:46	Michelle J. Kolodziejski	20
03338	PAH Solid Extraction	SW-846 3550B	1	11/29/2000 08:30	Andres Amaya	1



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Lancaster Laboratories Sample No. SW 3504131

Collected: 11/15/2000 16:20 by JK

Account Number: 07802

Submitted: 11/17/2000 09:15

Kerr-McGee Corporation

Reported: 12/14/00 at 09:07 PM

P.O. Box 25861

Discard: 1/14/01

Oklahoma City OK 73125

PRD1-CTC-3-E-01 Grab Soil Sample

Moss American - WI

3CE1- SDG#: MOS80-09

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit	Units	Dilution Factor
00111	Moisture "Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The result reported above is on an as-received basis.	n.a.	67.9	0.50	% by wt.	1
01862	PAH's in Solids					
03296	Naphthalene	91-20-3	16,000.	J 1,700.	ug/kg	20
03299	Fluorene	86-73-7	20,000.	160.	ug/kg	20
03304	Benzo(a)anthracene	56-55-3	120.	J 16.	ug/kg	20
03305	Chrysene	218-01-9	N.D.	62.	ug/kg	20
03306	Benzo(b)fluoranthene	205-99-2	290.	12.	ug/kg	20
03307	Benzo(k)fluoranthene	207-08-9	19.	J 12.	ug/kg	20
03308	Benzo(a)pyrene	50-32-8	46.	J 16.	ug/kg	20
03309	Dibenzo(a,h)anthracene	53-70-3	240.	J 31.	ug/kg	20
03310	Benzo(g,h,i)perylene	191-24-2	N.D.	93.	ug/kg	20
03311	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	62.	ug/kg	20

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	EPA 160.3 modified	1	11/24/2000 13:50	Susan A. Engle	1
01862	PAH's in Solids	SW-846 8310	1	12/03/2000 01:28	Michelle J. Kolodziejwski	20
03338	PAH Solid Extraction	SW-846 3550B	1	11/29/2000 08:30	Andres Amaya	1



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Lancaster Laboratories Sample No. SW 3504132

Collected: 11/16/2000 08:15 by JK

Account Number: 07802

Submitted: 11/17/2000 09:15

Kerr-McGee Corporation

Reported: 12/14/00 at 09:07 PM

P.O. Box 25861

Discard: 1/14/01

Oklahoma City OK 73125

PRD1-CTD-1-A-01 Grab Soil Sample

Moss American - WI

1A01- SDG#: MOS80-10

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit	Units	Dilution Factor
00111	Moisture	n.a.	45.7	0.50	% by wt.	1
"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The result reported above is on an as-received basis.						
01862	PAH's in Solids					
03296	Naphthalene	91-20-3	N.D.	9,900.	ug/kg	20
03299	Fluorene	86-73-7	29,000.	920.	ug/kg	20
03304	Benzo(a)anthracene	56-55-3	12,000.	92.	ug/kg	20
03305	Chrysene	218-01-9	6,800.	370.	ug/kg	20
03306	Benzo(b)fluoranthene	205-99-2	4,600.	74.	ug/kg	20
03307	Benzo(k)fluoranthene	207-08-9	2,300.	74.	ug/kg	20
03308	Benzo(a)pyrene	50-32-8	4,400.	92.	ug/kg	20
03309	Dibenzo(a,h)anthracene	53-70-3	570. J	180.	ug/kg	20
03310	Benzo(g,h,i)perylene	191-24-2	3,300. J	550.	ug/kg	20
03311	Indeno(1,2,3-cd)pyrene	193-39-5	4,300.	370.	ug/kg	20

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

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	EPA 160.3 modified	1	11/24/2000 13:50	Susan A. Engle	1
01862	PAH's in Solids	SW-846 8310	1	12/02/2000 13:36	Michelle J. Kolodziejcki	20
03338	PAH Solid Extraction	SW-846 3550B	1	11/29/2000 08:30	Andres Amaya	1



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Lancaster Laboratories Sample No. SW 3504133

Collected: 11/15/2000 14:30 by JK

Account Number: 07802

Submitted: 11/17/2000 09:15

Kerr-McGee Corporation

Reported: 12/14/00 at 09:07 PM

P.O. Box 25861

Discard: 1/14/01

Oklahoma City OK 73125

PRD1-CTB-3-B-01 Grab Soil Sample

Moss American - WI

3B01D SDG#: MOS80-11

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit	Units	Dilution Factor
00111	Moisture	n.a.	40.5	0.50	% by wt.	1
"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The result reported above is on an as-received basis.						
01862	PAH's in Solids					
03296	Naphthalene	91-20-3	N.D.	9,100.	ug/kg	20
03299	Fluoréne	86-73-7	46,000.	840.	ug/kg	20
03304	Benzo(a)anthracene	56-55-3	21,000.	84.	ug/kg	20
03305	Chrysene	218-01-9	16,000.	340.	ug/kg	20
03306	Benzo(b)fluoranthene	205-99-2	8,200.	67.	ug/kg	20
03307	Benzo(k)fluoranthene	207-08-9	4,300.	67.	ug/kg	20
03308	Benzo(a)pyrene	50-32-8	6,800.	84.	ug/kg	20
03309	Dibenzo(a,h)anthracene	53-70-3	N.D.	170.	ug/kg	20
03310	Benzo(g,h,i)perylene	191-24-2	3,100.	J 500.	ug/kg	20
03311	Indeno(1,2,3-cd)pyrene	193-39-5	4,900.	340.	ug/kg	20

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

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	EPA 160.3 modified	1	11/24/2000 13:50	Susan A. Engle	1
01862	PAH's in Solids	SW-846 8310	1	12/02/2000 14:02	Michelle J. Kolodziejski	20
03338	PAH Solid Extraction	SW-846 3550B	1	11/29/2000 08:30	Andres Amaya	1



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Lancaster Laboratories Sample No. SW 3504134

Collected: 11/15/2000 14:35 by JK

Account Number: 07802

Submitted: 11/17/2000 09:15

Kerr-McGee Corporation

Reported: 12/14/00 at 09:07 PM

P.O. Box 25861

Discard: 1/14/01

Oklahoma City OK 73125

PRD1-CTB-3-C-01 Unspiked Grab Soil Sample

Moss American - WI

3C011 SDG#: MOS80-12BKG

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit	Units	Dilution Factor
00111	Moisture	n.a.	37.5	0.50	% by wt.	1
"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The result reported above is on an as-received basis.						
01862	PAH's in Solids					
03296	Naphthalene	91-20-3	N.D.	8,600.	ug/kg	20
03299	Fluorene	86-73-7	7,300.	J 800.	ug/kg	20
03304	Benzo(a)anthracene	56-55-3	7,700.	80.	ug/kg	20
03305	Chrysene	218-01-9	7,000.	320.	ug/kg	20
03306	Benzo(b)fluoranthene	205-99-2	4,500.	64.	ug/kg	20
03307	Benzo(k)fluoranthene	207-08-9	2,100.	64.	ug/kg	20
03308	Benzo(a)pyrene	50-32-8	4,100.	80.	ug/kg	20
03309	Dibenzo(a,h)anthracene	53-70-3	650.	J 160.	ug/kg	20
03310	Benzo(g,h,i)perylene	191-24-2	2,400.	J 480.	ug/kg	20
03311	Indeno(1,2,3-cd)pyrene	193-39-5	3,100.	J 320.	ug/kg	20

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

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	EPA 160.3 modified	1	11/24/2000 13:50	Susan A. Engle	1
01862	PAH's in Solids	SW-846 8310	1	12/02/2000 08:11	Michelle J. Kolodziejwski	20
03338	PAH Solid Extraction	SW-846 3550B	1	11/29/2000 08:30	Andres Amaya	1



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Lancaster Laboratories Sample No. SW 3504135

Collected: 11/15/2000 14:35 by JK

Account Number: 07802

Submitted: 11/17/2000 09:15

Kerr-McGee Corporation

Reported: 12/14/00 at 09:07 PM

P.O. Box 25861

Discard: 1/14/01

Oklahoma City OK 73125

PRD1-CTB-3-C-01 Matrix Spike Grab Soil Sample  
Moss American - WI

3C011 SDG#: MOS80-12MS

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit	Units	Dilution Factor
00118	Moisture	n.a.	37.5		0.50	% by wt.	1
01862	PAH's in Solids						
03296	Naphthalene	91-20-3	14,000.	J	8,600.	ug/kg	20
03299	Fluorene	86-73-7	7,900.	J	800.	ug/kg	20
03304	Benzo(a)anthracene	56-55-3	5,900.		80.	ug/kg	20
03305	Chrysene	218-01-9	5,700.		320.	ug/kg	20
03306	Benzo(b)fluoranthene	205-99-2	4,200.		64.	ug/kg	20
03307	Benzo(k)fluoranthene	207-08-9	2,000.		64.	ug/kg	20
03308	Benzo(a)pyrene	50-32-8	3,700.		80.	ug/kg	20
03309	Dibenzo(a,h)anthracene	53-70-3	750.	J	160.	ug/kg	20
03310	Benzo(g,h,i)perylene	191-24-2	3,100.	J	480.	ug/kg	20
03311	Indeno(1,2,3-cd)pyrene	193-39-5	3,800.		320.	ug/kg	20

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

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00118	Moisture	EPA 160.3 modified	1	11/24/2000 13:50	Susan A. Engle	1
01862	PAH's in Solids	SW-846 8310	1	12/02/2000 08:36	Michelle J. Kolodziejcki	20
03338	PAH Solid Extraction	SW-846 3550B	1	11/29/2000 08:30	Andres Amaya	1



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Lancaster Laboratories Sample No. SW 3504136

Collected: 11/15/2000 14:35 by JK

Account Number: 07802

Submitted: 11/17/2000 09:15

Kerr-McGee Corporation

Reported: 12/14/00 at 09:07 PM

P.O. Box 25861

Discard: 1/14/01

Oklahoma City OK 73125

PRD1-CTB-3-C-01 Matrix Spike Duplicate Grab Soil Sample

Moss American - WI

3C011 SDG#: MOS80-12MSD

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit	Units	Dilution Factor
00118	Moisture	n.a.	37.5	0.50	% by wt.	1
00121	Moisture Duplicate	n.a.	38.1	0.50	% by wt.	1

The duplicate moisture value is provided to assess the precision of the moisture test. For comparability purposes, the initial moisture determination is the value used to perform dry weight calculations.

01862 PAH's in Solids

03296	Naphthalene	91-20-3	14,000.	J	8,600.	ug/kg	20
03299	Fluorene	86-73-7	8,000.	J	800.	ug/kg	20
03304	Benzo(a)anthracene	56-55-3	8,500.		80.	ug/kg	20
03305	Chrysene	218-01-9	6,400.		320.	ug/kg	20
03306	Benzo(b)fluoranthene	205-99-2	4,700.		64.	ug/kg	20
03307	Benzo(k)fluoranthene	207-08-9	2,300.		64.	ug/kg	20
03308	Benzo(a)pyrene	50-32-8	4,300.		80.	ug/kg	20
03309	Dibenzo(a,h)anthracene	53-70-3	730.	J	160.	ug/kg	20
03310	Benzo(g,h,i)perylene	191-24-2	3,500.	J	480.	ug/kg	20
03311	Indeno(1,2,3-cd)pyrene	193-39-5	4,300.		320.	ug/kg	20

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

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00118	Moisture	EPA 160.3 modified	1	11/24/2000 13:50	Susan A. Engle	1
00121	Moisture Duplicate	EPA 160.3 modified	1	11/24/2000 13:50	Susan A. Engle	1
01862	PAH's in Solids	SW-846 8310	1	12/02/2000 09:02	Michelle J. Kolodziejcki	20
03338	PAH Solid Extraction	SW-846 3550B	1	11/29/2000 08:30	Andres Amaya	1



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Lancaster Laboratories Sample No. SW 3504137

Collected: 11/15/2000 14:40 by JK

Account Number: 07802

Submitted: 11/17/2000 09:15

Kerr-McGee Corporation

Reported: 12/14/00 at 09:07 PM

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Discard: 1/14/01

Oklahoma City OK 73125

PRD1-CTB-3-D-01 Grab Soil Sample

Moss American - WI

D01XX SDG#: MOS80-13

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit	Units	Dilution Factor
00111	Moisture	n.a.	24.3	0.50	% by wt.	1
"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The result reported above is on an as-received basis.						
01862	PAH's in Solids					
03296	Naphthalene	91-20-3	790.	J 710.	ug/kg	20
03299	Fluorene	86-73-7	1,700.	66.	ug/kg	20
03304	Benzo(a)anthracene	56-55-3	2,100.	6.6	ug/kg	20
03305	Chrysene	218-01-9	1,800.	26.	ug/kg	20
03306	Benzo(b)fluoranthene	205-99-2	840.	5.3	ug/kg	20
03307	Benzo(k)fluoranthene	207-08-9	430.	5.3	ug/kg	20
03308	Benzo(a)pyrene	50-32-8	820.	6.6	ug/kg	20
03309	Dibenzo(a,h)anthracene	53-70-3	100.	J 13.	ug/kg	20
03310	Benzo(g,h,i)perylene	191-24-2	420.	J 40.	ug/kg	20
03311	Indeno(1,2,3-cd)pyrene	193-39-5	610.	26.	ug/kg	20

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

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Analysis		Analyst	Dilution Factor
			Trial#	Date and Time		
00111	Moisture	EPA 160.3 modified	1	11/24/2000 13:50	Susan A. Engle	1
01862	PAH's in Solids	SW-846 8310	1	12/02/2000 14:27	Michelle J. Kolodziejcki	20
03338	PAH Solid Extraction	SW-846 3550B	1	11/29/2000 08:30	Andres Amaya	1



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Lancaster Laboratories Sample No. SW 3504138

Collected: 11/15/2000 14:45 by JK

Account Number: 07802

Submitted: 11/17/2000 09:15

Kerr-McGee Corporation

Reported: 12/14/00 at 09:07 PM

P.O. Box 25861

Discard: 1/14/01

Oklahoma City OK 73125

PRD1-CTB-3-E-01 Grab Soil Sample

Moss American - WI

D01E0 SDG#: MOS80-14

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit	Units	Dilution Factor
00111	Moisture	n.a.	18.9	0.50	% by wt.	1
	"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The result reported above is on an as-received basis.					
01862	PAH's in Solids					
03296	Naphthalene	91-20-3	N.D.	670.	ug/kg	20
03299	Fluorene	86-73-7	N.D.	62.	ug/kg	20
03304	Benzo(a)anthracene	56-55-3	19. J	6.2	ug/kg	20
03305	Chrysene	218-01-9	72. J	25.	ug/kg	20
03306	Benzo(b)fluoranthene	205-99-2	8.5 J	4.9	ug/kg	20
03307	Benzo(k)fluoranthene	207-08-9	5.3 J	4.9	ug/kg	20
03308	Benzo(a)pyrene	50-32-8	13. J	6.2	ug/kg	20
03309	Dibenzo(a,h)anthracene	53-70-3	N.D.	12.	ug/kg	20
03310	Benzo(g,h,i)perylene	191-24-2	N.D.	37.	ug/kg	20
03311	Indeno(1,2,3-cd)pyrene	193-39-5	43. J	25.	ug/kg	20

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Analysis			Dilution Factor
			Trial#	Date and Time	Analyst	
00111	Moisture	EPA 160.3 modified	1	11/24/2000 13:50	Susan A. Engle	1
01862	PAH's in Solids	SW-846 8310	1	12/02/2000 22:31	Michelle J. Kolodziejski	20
03338	PAH Solid Extraction	SW-846 3550B	1	11/29/2000 08:30	Andres Amaya	1







Lancaster Laboratories Sample No. SW 3504139

Collected: 11/15/2000 15:30 by JK

Account Number: 07802

Submitted: 11/17/2000 09:15

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Reported: 12/14/00 at 09:07 PM

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Discard: 1/14/01

Oklahoma City OK 73125

PRD1-CTC-1-A-01 Grab Soil Sample

Moss American - WI

CTC1A SDG#: MOS80-15

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit	Units	Dilution Factor
00111	Moisture	n.a.	44.9	0.50	% by wt.	1
"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The result reported above is on an as-received basis.						
01862	PAH's in Solids					
03296	Naphthalene	91-20-3	N.D.	98,000.	ug/kg	200
03299	Fluorene	86-73-7	150,000.	9,100.	ug/kg	200
03304	Benzo(a)anthracene	56-55-3	90,000.	910.	ug/kg	200
03305	Chrysene	218-01-9	76,000.	3,600.	ug/kg	200
03306	Benzo(b)fluoranthene	205-99-2	36,000.	730.	ug/kg	200
03307	Benzo(k)fluoranthene	207-08-9	18,000.	730.	ug/kg	200
03308	Benzo(a)pyrene	50-32-8	31,000.	910.	ug/kg	200
03309	Dibenzo(a,h)anthracene	53-70-3	2,200.	J 1,800.	ug/kg	200
03310	Benzo(g,h,i)perylene	191-24-2	16,000.	J 5,400.	ug/kg	200
03311	Indeno(1,2,3-cd)pyrene	193-39-5	20,000.	J 3,600.	ug/kg	200

Accurate surrogate recoveries could not be determined due to the dilution required for analysis of the sample.

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	EPA 160.3 modified	1	11/24/2000 13:50	Susan A. Engle	1
01862	PAH's in Solids	SW-846 8310	1	12/03/2000 21:47	Michelle J. Kolodziejski	200
03338	PAH Solid Extraction	SW-846 3550B	1	11/29/2000 08:30	Andres Amaya	1



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Lancaster Laboratories Sample No. SW 3504140

Collected: 11/15/2000 15:35 by JK

Account Number: 07802

Submitted: 11/17/2000 09:15

Kerr-McGee Corporation

Reported: 12/14/00 at 09:07 PM

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Discard: 1/14/01

Oklahoma City OK 73125

PRD1-CTC-1-B-01 Grab Soil Sample

Moss American - WI

CTC1B SDG#: MOS80-16

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit	Units	Dilution Factor
00111	Moisture	n.a.	41.6	0.50	% by wt.	1
"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The result reported above is on an as-received basis.						
01862	PAH's in Solids					
03296	Naphthalene	91-20-3	N.D.	9,200.	ug/kg	20
03299	Fluorene	86-73-7	8,500.	J 860.	ug/kg	20
03304	Benzo(a)anthracene	56-55-3	11,000.	86.	ug/kg	20
03305	Chrysene	218-01-9	7,000.	340.	ug/kg	20
03306	Benzo(b)fluoranthene	205-99-2	6,700.	68.	ug/kg	20
03307	Benzo(k)fluoranthene	207-08-9	2,900.	68.	ug/kg	20
03308	Benzo(a)pyrene	50-32-8	9,400.	86.	ug/kg	20
03309	Dibenzo(a,h)anthracene	53-70-3	N.D.	170.	ug/kg	20
03310	Benzo(g,h,i)perylene	191-24-2	9,100.	510.	ug/kg	20
03311	Indeno(1,2,3-cd)pyrene	193-39-5	12,000.	340.	ug/kg	20
The surrogate data is outside the QC limits due to unresolvable matrix problems evident in the sample chromatogram.						

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis		Analyst	Dilution Factor
				Date	Time		
00111	Moisture	EPA 160.3 modified	1	11/24/2000	13:50	Susan A. Engle	1
01862	PAH's in Solids	SW-846 8310	1	12/02/2000	23:21	Michelle J. Kolodziejski	20
03338	PAH Solid Extraction	SW-846 3550B	1	11/29/2000	08:30	Andres Amaya	1



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Lancaster Laboratories Sample No. SW 3504141

Collected: 11/15/2000 15:40 by JK

Account Number: 07802

Submitted: 11/17/2000 09:15

Kerr-McGee Corporation

Reported: 12/14/00 at 09:07 PM

P.O. Box 25861

Discard: 1/14/01

Oklahoma City OK 73125

PRD1-CTC-1-C-01 Grab Soil Sample

Moss American - WI

CTCCC SDG#: MOS80-17

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit	Units	Dilution Factor
00111	Moisture	n.a.	18.7	0.50	% by wt.	1
"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The result reported above is on an as-received basis.						
01862	PAH's in Solids					
03296	Naphthalene	91-20-3	N.D.	660.	ug/kg	20
03299	Fluorene	86-73-7	N.D.	62.	ug/kg	20
03304	Benzo(a)anthracene	56-55-3	76.	6.2	ug/kg	20
03305	Chrysene	218-01-9	N.D.	25.	ug/kg	20
03306	Benzo(b)fluoranthene	205-99-2	25. J	4.9	ug/kg	20
03307	Benzo(k)fluoranthene	207-08-9	13. J	4.9	ug/kg	20
03308	Benzo(a)pyrene	50-32-8	32. J	6.2	ug/kg	20
03309	Dibenzo(a,h)anthracene	53-70-3	N.D.	12.	ug/kg	20
03310	Benzo(g,h,i)perylene	191-24-2	39. J	37.	ug/kg	20
03311	Indeno(1,2,3-cd)pyrene	193-39-5	49. J	25.	ug/kg	20

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	EPA 160.3 modified	1	11/24/2000 13:50	Susan A. Engle	1
01862	PAH's in Solids	SW-846 8310	1	12/02/2000 23:47	Michelle J. Kolodziejwski	20
03338	PAH Solid Extraction	SW-846 3550B	1	11/29/2000 08:30	Andres Amaya	1



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Lancaster Laboratories Sample No. SW 3504142

Collected: 11/15/2000 15:45 by JK

Account Number: 07802

Submitted: 11/17/2000 09:15  
 Reported: 12/14/00 at 09:08 PM  
 Discard: 1/14/01  
 PRD1-CTC-2-A-01 Grab Soil Sample  
 Moss American - WI

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

2ACCC SDG#: MOS80-18

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit	Units	Dilution Factor
00111	Moisture	n.a.	41.0	0.50	% by wt.	1
"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The result reported above is on an as-received basis.						
01862	PAH's in Solids					
03296	Naphthalene	91-20-3	N.D.	9,200.	ug/kg	20
03299	Fluorene	86-73-7	7,000.	J 850.	ug/kg	20
03304	Benzo(a)anthracene	56-55-3	7,800.	85.	ug/kg	20
03305	Chrysene	218-01-9	6,600.	340.	ug/kg	20
03306	Benzo(b)fluoranthene	205-99-2	4,800.	68.	ug/kg	20
03307	Benzo(k)fluoranthene	207-08-9	2,300.	68.	ug/kg	20
03308	Benzo(a)pyrene	50-32-8	4,800.	85.	ug/kg	20
03309	Dibenzo(a,h)anthracene	53-70-3	600.	J 170.	ug/kg	20
03310	Benzo(g,h,i)perylene	191-24-2	3,800.	J 510.	ug/kg	20
03311	Indeno(1,2,3-cd)pyrene	193-39-5	5,100.	340.	ug/kg	20
The surrogate data is outside the QC limits due to unresolvable matrix problems evident in the sample chromatogram.						

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	EPA 160.3 modified	1	11/24/2000 13:50	Susan A. Engle	1
01862	PAH's in Solids	SW-846 8310	1	12/03/2000 00:12	Michelle J. Kolodziejwski	20
03338	PAH Solid Extraction	SW-846 3550B	1	11/29/2000 08:30	Andres Amaya	1



Lancaster Laboratories Sample No. SW 3504143

Collected: 11/15/2000 14:25 by JK

Account Number: 07802

Submitted: 11/17/2000 09:15

Kerr-McGee Corporation

Reported: 12/14/00 at 09:08 PM

P.O. Box 25861

Discard: 1/14/01

Oklahoma City OK 73125

PRD1-CTB-3-A-01 Grab Soil Sample  
Moss American - WI

3ACCC SDG#: MOS80-19\*

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit	Units	Dilution Factor
00111	Moisture	n.a.	34.9	0.50	% by wt.	1
"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The result reported above is on an as-received basis.						
01862	PAH's in Solids					
03296	Naphthalene	91-20-3	N.D.	8,300.	ug/kg	20
03299	Fluorene	86-73-7	5,200.	J 770.	ug/kg	20
03304	Benzo(a)anthracene	56-55-3	2,500.	77.	ug/kg	20
03305	Chrysene	218-01-9	2,100.	J 310.	ug/kg	20
03306	Benzo(b)fluoranthene	205-99-2	1,900.	61.	ug/kg	20
03307	Benzo(k)fluoranthene	207-08-9	850.	61.	ug/kg	20
03308	Benzo(a)pyrene	50-32-8	1,900.	77.	ug/kg	20
03309	Dibenzo(a,h)anthracene	53-70-3	N.D.	150.	ug/kg	20
03310	Benzo(g,h,i)perylene	191-24-2	1,800.	J 460.	ug/kg	20
03311	Indeno(1,2,3-cd)pyrene	193-39-5	2,300.	J 310.	ug/kg	20
The surrogate data is outside the QC limits due to unresolvable matrix problems evident in the sample chromatogram.						

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Analysis		Analyst	Dilution Factor
			Trial#	Date and Time		
00111	Moisture	EPA 160.3 modified	1	11/24/2000 13:50	Susan A. Engle	1
01862	PAH's in Solids	SW-846 8310	1	12/03/2000 00:37	Michelle J. Kolodziejcki	20
03338	PAH Solid Extraction	SW-846 3550B	1	11/29/2000 08:30	Andres Amaya	1



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

# Analysis Request/ Environmental Services Chain of Custody



For Lancaster Laboratories use only  
 Acct. # 7802 Sample # 3504144-64

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

Client: <u>KERR-MCGEE</u> Project Name/#: <u>MOSS-AMERICA</u> Project Manager: <u>TOM GRAAN</u> Sampler: <u>JOE KLEMP</u> Name of state where samples were collected: <u>WISCONSIN</u>	Acct. #: _____ PWSID #: _____ P.O.# _____ Quote #: _____	Matrix <span style="border: 1px solid black; border-radius: 50%; padding: 2px;">4</span>	<input type="checkbox"/> Potable (check if applicable) <input type="checkbox"/> Water <input type="checkbox"/> NPDES <input type="checkbox"/> Soil <input type="checkbox"/> Other	Total # of Containers	Analyses Requested <span style="border: 1px solid black; border-radius: 50%; padding: 2px;">5</span> <div style="font-size: 2em; transform: rotate(-45deg); opacity: 0.5; position: absolute; top: 50%; left: 50%;">PAH 8310</div>	For lab use only FSC: _____ SCR #: _____
--	---	--	---	-----------------------	---	--

Sample Identification	Date Collected	Time Collected	Grab <span style="border: 1px solid black; border-radius: 50%; padding: 2px;">3</span>	Composite	Soil	Water	Other	Total # of Containers		Remarks	Temperature of samples upon receipt (if requested) <span style="border: 1px solid black; border-radius: 50%; padding: 2px;">6</span>
PRD1-CTD-1-B-01	11/14/00	820	X		X			1	X		
PRD1-CTD-1-C-01	11/14/00	830	X		X			1	X		
PRD1-CTD-2-A-01	11/16/00	830	X		X			1	X		SS W / DNR
PRD1-CTD-2-B-01	11/16/00	833	X		X			1	X		SS W / DNR
PRD1-CTD-2-C-01	11/16/00	835	X		X			1	X		SS W / DNR
PRD1-CTD-2-D-01	11/16/00	840	X		X			1	X		SS W / DNR
PRD1-CTD-2-E-01	11/16/00	845	X		X			1	X		SS W / DNR
RFN-B23.5-42-49	11/16/00	1040	X		X			1	X		SS/W/DNR
PRD1-CTD-3-A-01	11/16/00	900	X		X			1	X		
PRD1-CTD-3-B-01	11/16/00	900	X		X			1	X		

Turnaround Time Requested (TAT) (please circle): <span style="border: 1px solid black; border-radius: 50%; padding: 2px;">Normal</span> Rush (Rush TAT is subject to Lancaster Laboratories approval and surcharge.) Date results are needed: <u>STD TAT</u> Rush results requested by (please circle): Phone <input type="checkbox"/> Fax <input type="checkbox"/> Phone #: <u>847-918-4000</u> Fax #: <u>847-918-4055</u>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%;">Relinquished by:</td> <td style="width: 10%;">Date</td> <td style="width: 10%;">Time</td> <td style="width: 30%;">Received by:</td> <td style="width: 10%;">Date</td> <td style="width: 10%;">Time</td> </tr> <tr> <td><u>W. a. Allen</u></td> <td><u>11/16/00</u></td> <td><u>1800</u></td> <td><u>Fed ex</u></td> <td><u>11/16/00</u></td> <td><u>1800</u></td> </tr> <tr> <td>Relinquished by:</td> <td>Date</td> <td>Time</td> <td>Received by:</td> <td>Date</td> <td>Time</td> </tr> <tr> <td>Relinquished by:</td> <td>Date</td> <td>Time</td> <td>Received by:</td> <td>Date</td> <td>Time</td> </tr> <tr> <td>Relinquished by:</td> <td>Date</td> <td>Time</td> <td>Received by:</td> <td>Date</td> <td>Time</td> </tr> <tr> <td>Relinquished by:</td> <td>Date</td> <td>Time</td> <td>Received by:</td> <td>Date</td> <td>Time</td> </tr> </table>	Relinquished by:	Date	Time	Received by:	Date	Time	<u>W. a. Allen</u>	<u>11/16/00</u>	<u>1800</u>	<u>Fed ex</u>	<u>11/16/00</u>	<u>1800</u>	Relinquished by:	Date	Time	Received by:	Date	Time	Relinquished by:	Date	Time	Received by:	Date	Time	Relinquished by:	Date	Time	Received by:	Date	Time	Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time																																
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Relinquished by:	Date	Time	Received by:	Date	Time																																
Data Package Options (please circle if requested) QC Summary Type VI (Raw Data) <span style="border: 1px solid black; border-radius: 50%; padding: 2px;">PER QUOTE</span> Type I (Tier I) GLP Type II (Tier II) Other Type III (NJ Red. Del.) Type IV (CLP)	SDG Complete? Yes <span style="border: 1px solid black; border-radius: 50%; padding: 2px;">No</span> Site-specific QC required? Yes No (If yes, indicate QC sample and submit triplicate volume.) Internal Chain of Custody required? Yes No																																				

# Analysis Request/ Environmental Services Chain of Custody



For Lancaster Laboratories use only  
 Acct. # 7802 Sample # 3504144-64

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

Client: <u>KERR-MCGEE</u> Project Name/#: <u>MOSS-AMERICA</u> Project Manager: <u>TOM GRAAN</u> Sampler: <u>JOE KLEMP</u> Name of state where samples were collected: <u>WISCONSIN</u>	Acct. #: _____ PWSID #: _____ P.O.# _____ Quote #: _____	Matrix <span style="border: 1px solid black; border-radius: 50%; padding: 2px;">4</span>	Total # of Containers	Analyses Requested <span style="border: 1px solid black; border-radius: 50%; padding: 2px;">5</span> <u>PAH-8210 8310</u>	For lab use only FSC: _____ SCR #: _____
--	---	--	-----------------------	--	--

Sample Identification	Date Collected	Time Collected	Grab <span style="border: 1px solid black; border-radius: 50%; padding: 2px;">3</span>	Composite	Soil	Water <input type="checkbox"/> Potable (check if applicable) <input type="checkbox"/> NPDES	Other	Total # of Containers	Remarks	Temperature of samples upon receipt (if requested) <span style="border: 1px solid black; border-radius: 50%; padding: 2px;">6</span>
PRD1-CTD-3-C-01	1/16/00	9:03	X		X			1	HIGHLY CONTAMINATED	
PRD1-CTD-3-C-01-DP	1/16/00	9:03	X		X			1	HIGHLY CONTAMINATED	
PRD1-CTD-3-D-01	1/16/00	9:05	X		X			1		
PRD1-CTD-3-E-01	1/16/00	9:05	X		X			1		
PRD1-CTD-3-D-01-DP	1/16/00	9:05	X		X			1		
PRD1-CTD-3-E-01-MS/MSD	1/16/00	9:05	X		X			1		
PRD1-CTE-1-A-01	1/16/00	9:40	X		X			1		
PRD1-CTE-1-B-01	1/16/00	9:45	X		X			1		
PRD1-CTE-1-B-01-DP	1/16/00	9:45	X		X			1		
PRD1-CTE-1-C-01	1/16/00	9:52	X		X			1		

Turnaround Time Requested (TAT) (please circle): <span style="border: 1px solid black; border-radius: 50%; padding: 2px;">Normal</span> Rush (Rush TAT is subject to Lancaster Laboratories approval and surcharge.) Date results are needed: <u>STD TAT</u> Rush results requested by (please circle): Phone Fax Phone #: <u>847-918-4000</u> Fax #: <u>847-918-4055</u>	Relinquished by: _____ Date: <u>1/16/00</u> Time: <u>1800</u>	Received by: <u>Feder</u> Date: <u>1/16/00</u> Time: <u>1800</u>	Relinquished by: _____ Date: _____ Time: _____	Received by: _____ Date: _____ Time: _____		
Data Package Options (please circle if requested) QC Summary Type VI (Raw Data) <u>PERQUOTE</u> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Type I (Tier I) GLP Type II (Tier II) Other Type III (NJ Red. Del.) Type IV (CLP)	SDG Complete? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		Site-specific QC required? Yes No (If yes, indicate QC sample and submit triplicate volume.)		Internal Chain of Custody required? Yes No	



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

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

Questions? Contact your Client Services Representative  
Kay G. Hower at (717) 656-2300.

Respectfully Submitted,



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





## ANALYTICAL RESULTS

Prepared for:

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

Prepared by:

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

### SAMPLE GROUP

The sample group for this submittal is 740150. Samples arrived at the laboratory on Friday, November 17, 2000.

<u>Client Description</u>	<u>Lancaster Labs Number</u>
PRD1-CTD-1-B-01 Grab Soil Sample	3504144
PRD1-CTD-1-C-01 Grab Soil Sample	3504145
PRD1-CTD-2-A-01 Grab Soil Sample	3504146
PRD1-CTD-2-B-01 Grab Soil Sample	3504147
PRD1-CTD-2-C-01 Grab Soil Sample	3504148
PRD1-CTD-2-D-01 Grab Soil Sample	3504149
PRD1-CTD-2-E-01 Grab Soil Sample	3504150
RFW-B23.5-42-49 Grab Soil Sample	3504151
PRD1-CTD-3-A-01 Grab Soil Sample	3504152
PRD1-CTD-3-B-01 Grab Soil Sample	3504153
PRD1-CTD-3-C-01 Grab Soil Sample	3504154
PRD1-CTD-3-C-01-DP Grab Soil Sample	3504155
PRD1-CTD-3-D-01 Grab Soil Sample	3504156
PRD1-CTD-3-E-01 Unspiked Grab Soil Sample	3504157
PRD1-CTD-3-E-01 Matrix Spike Grab Soil Sample	3504158
PRD1-CTD-3-E-01 Matrix Spike Duplicate Grab Soil	3504159
PRD1-CTD-3-D-01-DP Grab Soil Sample	3504160
PRD1-CTE-1-A-01 Grab Soil Sample	3504161
PRD1-CTE-1-B-01 Grab Soil Sample	3504162
PRD1-CTE-1-B-01-DP Grab Soil Sample	3504163
PRD1-CTE-1-C-01 Grab Soil Sample	3504164

### METHODOLOGY

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



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



Lancaster Laboratories Sample No. SW 3504144

Collected: 11/16/2000 08:20 by JK

Account Number: 07802

Submitted: 11/17/2000 09:15

Kerr-McGee Corporation

Reported: 12/04/00 at 09:29 PM

P.O. Box 25861

Discard: 1/4/01

Oklahoma City OK 73125

PRD1-CTD-1-B-01 Grab Soil Sample

Moss American - WI

CTDB1 SDG#: MOS81-01

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit	Units	Dilution Factor
00111	Moisture	n.a.	42.4	0.50	% by wt.	1
"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The result reported above is on an as-received basis.						
01862	PAH's in Solids					
03296	Naphthalene	91-20-3	N.D.	9,400.	ug/kg	100
03299	Fluorene	86-73-7	9,000.	J 870.	ug/kg	100
03304	Benzo(a)anthracene	56-55-3	27,000.	87.	ug/kg	100
03305	Chrysene	218-01-9	22,000.	350.	ug/kg	100
03306	Benzo(b)fluoranthene	205-99-2	13,000.	69.	ug/kg	100
03307	Benzo(k)fluoranthene	207-08-9	6,700.	69.	ug/kg	100
03308	Benzo(a)pyrene	50-32-8	14,000.	87.	ug/kg	100
03309	Dibenzo(a,h)anthracene	53-70-3	1,500.	J 170.	ug/kg	100
03310	Benzo(g,h,i)perylene	191-24-2	7,300.	520.	ug/kg	100
03311	Indeno(1,2,3-cd)pyrene	193-39-5	10,000.	350.	ug/kg	100
Accurate surrogate recoveries could not be determined due to the dilution required for analysis of the sample.						

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	EPA 160.3 modified	1	11/24/2000 13:50	Susan A. Engle	1
01862	PAH's in Solids	SW-846 8310	1	11/30/2000 18:54	Michelle J. Kolodziejki	100
03338	PAH Solid Extraction	SW-846 3550B	1	11/29/2000 19:00	Sally L. Appleyard	1



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



Lancaster Laboratories Sample No. SW 3504145

Collected: 11/16/2000 08:30 by JK

Account Number: 07802

Submitted: 11/17/2000 09:15  
 Reported: 12/04/00 at 09:30 PM  
 Discard: 1/4/01  
 PRD1-CTD-1-C-01 Grab Soil Sample  
 Moss American - WI

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

CTDC1 SDG#: MOS81-02

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit	Units	Dilution Factor
00111	Moisture	n.a.	19.1	0.50	% by wt.	1
"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The result reported above is on an as-received basis.						
01862	PAH's in Solids					
03296	Naphthalene	91-20-3	N.D.	670.	ug/kg	20
03299	Fluorene	86-73-7	N.D.	62.	ug/kg	20
03304	Benzo (a) anthracene	56-55-3	16. J	6.2	ug/kg	20
03305	Chrysene	218-01-9	N.D.	25.	ug/kg	20
03306	Benzo (b) fluoranthene	205-99-2	7.4 J	4.9	ug/kg	20
03307	Benzo (k) fluoranthene	207-08-9	N.D.	4.9	ug/kg	20
03308	Benzo (a) pyrene	50-32-8	16. J	6.2	ug/kg	20
03309	Dibenzo (a, h) anthracene	53-70-3	N.D.	12.	ug/kg	20
03310	Benzo (g, h, i) perylene	191-24-2	48. J	37.	ug/kg	20
03311	Indeno (1, 2, 3-cd) pyrene	193-39-5	N.D.	25.	ug/kg	20

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Analysis		Analyst	Dilution Factor
			Trial#	Date and Time		
00111	Moisture	EPA 160.3 modified	1	11/24/2000 13:50	Susan A. Engle	1
01862	PAH's in Solids	SW-846 8310	1	11/30/2000 19:20	Michelle J. Kolodziejwski	20
03338	PAH Solid Extraction	SW-846 3550B	1	11/29/2000 19:00	Sally L. Appleyard	1



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



Lancaster Laboratories Sample No. SW 3504146

Collected: 11/16/2000 08:30 by JK

Account Number: 07802

Submitted: 11/17/2000 09:15

Kerr-McGee Corporation

Reported: 12/04/00 at 09:30 PM

P.O. Box 25861

Discard: 1/4/01

Oklahoma City OK 73125

PRD1-CTD-2-A-01 Grab Soil Sample

Moss American - WI

CTAC1 SDG#: MOS81-03

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit	Units	Dilution Factor
00111	Moisture	n.a.	31.6	0.50	% by wt.	1
"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The result reported above is on an as-received basis.						
01862	PAH's in Solids					
03296	Naphthalene	91-20-3	N.D.	2,000.	ug/kg	50
03299	Fluorene	86-73-7	1,200.	J 180.	ug/kg	50
03304	Benzo(a)anthracene	56-55-3	810.	18.	ug/kg	50
03305	Chrysene	218-01-9	750.	J 73.	ug/kg	50
03306	Benzo(b)fluoranthene	205-99-2	800.	15.	ug/kg	50
03307	Benzo(k)fluoranthene	207-08-9	400.	15.	ug/kg	50
03308	Benzo(a)pyrene	50-32-8	800.	18.	ug/kg	50
03309	Dibenzo(a,h)anthracene	53-70-3	110.	J 37.	ug/kg	50
03310	Benzo(g,h,i)perylene	191-24-2	1,100.	J 110.	ug/kg	50
03311	Indeno(1,2,3-cd)pyrene	193-39-5	1,400.	73.	ug/kg	50
Accurate surrogate recoveries could not be determined due to the dilution required for analysis of the sample.						

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	EPA 160.3 modified	1	11/24/2000 13:50	Susan A. Engle	1
01862	PAH's in Solids	SW-846 8310	1	11/30/2000 19:45	Michelle J. Kolodziejski	50
03338	PAH Solid Extraction	SW-846 3550B	1	11/29/2000 19:00	Sally L. Appleyard	1



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



Lancaster Laboratories Sample No. SW 3504147

Collected: 11/16/2000 08:33 by JK

Account Number: 07802

Submitted: 11/17/2000 09:15

Kerr-McGee Corporation

Reported: 12/04/00 at 09:30 PM

P.O. Box 25861

Discard: 1/4/01

Oklahoma City OK 73125

PRD1-CTD-2-B-01 Grab Soil Sample

Moss American - WI

CTBC1 SDG#: MOS81-04

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit	Units	Dilution Factor
00111	Moisture	n.a.	34.1	0.50	% by wt.	1
"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The result reported above is on an as-received basis.						
01862	PAH's in Solids					
03296	Naphthalene	91-20-3	N.D.	41,000.	ug/kg	100
03299	Fluorene	86-73-7	88,000.	3,800.	ug/kg	100
03304	Benzo(a)anthracene	56-55-3	48,000.	380.	ug/kg	100
03305	Chrysene	218-01-9	33,000.	1,500.	ug/kg	100
03306	Benzo(b)fluoranthene	205-99-2	19,000.	300.	ug/kg	100
03307	Benzo(k)fluoranthene	207-08-9	9,700.	300.	ug/kg	100
03308	Benzo(a)pyrene	50-32-8	21,000.	380.	ug/kg	100
03309	Dibenzo(a,h)anthracene	53-70-3	2,900.	J 760.	ug/kg	100
03310	Benzo(g,h,i)perylene	191-24-2	16,000.	J 2,300.	ug/kg	100
03311	Indeno(1,2,3-cd)pyrene	193-39-5	23,000.	1,500.	ug/kg	100

Accurate surrogate recoveries could not be determined due to the dilution required for analysis of the sample.

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	EPA 160.3 modified	1	11/24/2000 13:50	Susan A. Engle	1
01862	PAH's in Solids	SW-846 8310	1	11/30/2000 20:10	Michelle J. Kolodziejwski	100
03338	PAH Solid Extraction	SW-846 3550B	1	11/29/2000 19:00	Sally L. Appleyard	1



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



Lancaster Laboratories Sample No. SW 3504148

Collected: 11/16/2000 08:35 by JK

Account Number: 07802

Submitted: 11/17/2000 09:15

Kerr-McGee Corporation

Reported: 12/04/00 at 09:30 PM

P.O. Box 25861

Discard: 1/4/01

Oklahoma City OK 73125

PRD1-CTD-2-C-01 Grab Soil Sample

Moss American - WI

C2B01 SDG#: MOS81-05

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit	Units	Dilution Factor
00111	Moisture	n.a.	38.6	0.50	% by wt.	1
"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The result reported above is on an as-received basis.						
01862	PAH's in Solids					
03296	Naphthalene	91-20-3	N.D.	4,400.	ug/kg	100
03299	Fluorene	86-73-7	N.D.	410.	ug/kg	100
03304	Benzo(a)anthracene	56-55-3	790.	41.	ug/kg	100
03305	Chrysene	218-01-9	900. J	160.	ug/kg	100
03306	Benzo(b)fluoranthene	205-99-2	320. J	33.	ug/kg	100
03307	Benzo(k)fluoranthene	207-08-9	170. J	33.	ug/kg	100
03308	Benzo(a)pyrene	50-32-8	360. J	41.	ug/kg	100
03309	Dibenzo(a,h)anthracene	53-70-3	N.D.	81.	ug/kg	100
03310	Benzo(g,h,i)perylene	191-24-2	270. J	240.	ug/kg	100
03311	Indeno(1,2,3-cd)pyrene	193-39-5	310. J	160.	ug/kg	100

Accurate surrogate recoveries could not be determined due to the dilution required for analysis of the sample.

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	EPA 160.3 modified	1	11/24/2000 13:50	Susan A. Engle	1
01862	PAH's in Solids	SW-846 8310	1	11/30/2000 20:35	Michelle J. Kolodziejwski	100
03338	PAH Solid Extraction	SW-846 3550B	1	11/29/2000 19:00	Sally L. Appleyard	1



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Lancaster Laboratories Sample No. SW 3504149

Collected: 11/16/2000 08:40 by JK

Account Number: 07802

Submitted: 11/17/2000 09:15

Kerr-McGee Corporation

Reported: 12/04/00 at 09:30 PM

P.O. Box 25861

Discard: 1/4/01

Oklahoma City OK 73125

PRD1-CTD-2-D-01 Grab Soil Sample

Moss American - WI

C2D01 SDG#: MOS81-06

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit	Units	Dilution Factor
00111	Moisture	n.a.	57.7	0.50	% by wt.	1
"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The result reported above is on an as-received basis.						
01862	PAH's in Solids					
03296	Naphthalene	91-20-3	N.D.	1,300.	ug/kg	20
03299	Fluorene	86-73-7	N.D.	120.	ug/kg	20
03304	Benzo(a)anthracene	56-55-3	30. J	12.	ug/kg	20
03305	Chrysene	218-01-9	68. J	47.	ug/kg	20
03306	Benzo(b)fluoranthene	205-99-2	19. J	9.5	ug/kg	20
03307	Benzo(k)fluoranthene	207-08-9	N.D.	9.5	ug/kg	20
03308	Benzo(a)pyrene	50-32-8	18. J	12.	ug/kg	20
03309	Dibenzo(a,h)anthracene	53-70-3	29. J	24.	ug/kg	20
03310	Benzo(g,h,i)perylene	191-24-2	92. J	71.	ug/kg	20
03311	Indeno(1,2,3-cd)pyrene	193-39-5	75. J	47.	ug/kg	20

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Analysis		Analyst	Dilution Factor
			Trial#	Date and Time		
00111	Moisture	EPA 160.3 modified	1	11/24/2000 13:50	Susan A. Engle	1
01862	PAH's in Solids	SW-846 8310	1	12/01/2000 18:20	Michelle J. Kolodziejcki	20
03338	PAH Solid Extraction	SW-846 3550B	1	11/29/2000 19:00	Sally L. Appleyard	1



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Lancaster Laboratories Sample No. SW 3504150

Collected: 11/16/2000 08:45 by JK

Account Number: 07802

Submitted: 11/17/2000 09:15

Kerr-McGee Corporation

Reported: 12/04/00 at 09:30 PM

P.O. Box 25861

Discard: 1/4/01

Oklahoma City, OK 73125

PRD1-CTD-2-E-01 Grab Soil Sample  
Moss American - WI

C2E01 SDG#: MOS81-07

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit	Units	Dilution Factor
00111	Moisture	n.a.	39.5	0.50	% by wt.	1
	"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The result reported above is on an as-received basis.					
01862	PAH's in Solids					
03296	Naphthalene	91-20-3	N.D.	890.	ug/kg	20
03299	Fluorene	86-73-7	N.D.	83.	ug/kg	20
03304	Benzo(a)anthracene	56-55-3	17. J	8.3	ug/kg	20
03305	Chrysene	218-01-9	70. J	33.	ug/kg	20
03306	Benzo(b)fluoranthene	205-99-2	12. J	6.6	ug/kg	20
03307	Benzo(k)fluoranthene	207-08-9	N.D.	6.6	ug/kg	20
03308	Benzo(a)pyrene	50-32-8	14. J	8.3	ug/kg	20
03309	Dibenzo(a,h)anthracene	53-70-3	N.D.	17.	ug/kg	20
03310	Benzo(g,h,i)perylene	191-24-2	N.D.	50.	ug/kg	20
03311	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	33.	ug/kg	20

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	EPA 160.3 modified	1	11/24/2000 13:50	Susan A. Engle	1
01862	PAH's in Solids	SW-846 8310	1	12/01/2000 18:45	Michelle J. Kolodziejwski	20
03338	PAH Solid Extraction	SW-846 3550B	1	11/29/2000 19:00	Sally L. Appleyard	1



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Lancaster Laboratories Sample No. SW 3504152

Collected: 11/16/2000 09:00 by JK

Account Number: 07802

Submitted: 11/17/2000 09:15

Kerr-McGee Corporation

Reported: 12/04/00 at 09:30 PM

P.O. Box 25861

Discard: 1/4/01

Oklahoma City OK 73125

PRD1-CTD-3-A-01 Grab Soil Sample

Moss American - WI

CTD3A SDG#: MOS81-09

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit	Units	Dilution Factor
00111	Moisture	n.a.	34.2	0.50	% by wt.	1
	"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The result reported above is on an as-received basis.					
01862	PAH's in Solids					
03296	Naphthalene	91-20-3	N.D.	4,100.	ug/kg	100
03299	Fluorene	86-73-7	910.	J 380.	ug/kg	100
03304	Benzo(a)anthracene	56-55-3	1,500.	38.	ug/kg	100
03305	Chrysene	218-01-9	1,300.	J 150.	ug/kg	100
03306	Benzo(b)fluoranthene	205-99-2	1,300.	30.	ug/kg	100
03307	Benzo(k)fluoranthene	207-08-9	580.	30.	ug/kg	100
03308	Benzo(a)pyrene	50-32-8	1,300.	38.	ug/kg	100
03309	Dibenzo(a,h)anthracene	53-70-3	130.	J 76.	ug/kg	100
03310	Benzo(g,h,i)perylene	191-24-2	1,000.	J 230.	ug/kg	100
03311	Indeno(1,2,3-cd)pyrene	193-39-5	1,200.	J 150.	ug/kg	100

Accurate surrogate recoveries could not be determined due to the dilution required for analysis of the sample.

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	EPA 160.3 modified	1	11/24/2000 14:06	Susan A. Engle	1
01862	PAH's in Solids	SW-846 8310	1	11/30/2000 22:37	Michelle J. Kolodziejcki	100
03338	PAH Solid Extraction	SW-846 3550B	1	11/29/2000 19:00	Sally L. Appleyard	1



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Lancaster Laboratories Sample No. SW 3504153

Collected: 11/16/2000 09:00 by JK

Account Number: 07802

Submitted: 11/17/2000 09:15

Kerr-McGee Corporation

Reported: 12/04/00 at 09:30 PM

P.O. Box 25861

Discard: 1/4/01

Oklahoma City OK 73125

PRD1-CTD-3-B-01 Grab Soil Sample

Moss American - WI

CTD3B SDG#: MOS81-10

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit	Units	Dilution Factor
00111	Moisture	n.a.	45.5	0.50	% by wt.	1
"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The result reported above is on an as-received basis.						
01862	PAH's in Solids					
03296	Naphthalene	91-20-3	N.D.	200,000.	ug/kg	2000
03299	Fluorene	86-73-7	170,000.	J 18,000.	ug/kg	2000
03304	Benzo(a)anthracene	56-55-3	64,000.	1,800.	ug/kg	2000
03305	Chrysene	218-01-9	57,000.	J 7,300.	ug/kg	2000
03306	Benzo(b)fluoranthene	205-99-2	26,000.	1,500.	ug/kg	2000
03307	Benzo(k)fluoranthene	207-08-9	13,000.	J 1,500.	ug/kg	2000
03308	Benzo(a)pyrene	50-32-8	22,000.	1,800.	ug/kg	2000
03309	Dibenzo(a,h)anthracene	53-70-3	4,300.	J 3,700.	ug/kg	2000
03310	Benzo(g,h,i)perylene	191-24-2	N.D.	11,000.	ug/kg	2000
03311	Indeno(1,2,3-cd)pyrene	193-39-5	13,000.	J 7,300.	ug/kg	2000
Accurate surrogate recoveries could not be determined due to the dilution required for analysis of the sample.						

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	EPA 160.3 modified	1	11/24/2000 14:06	Susan A. Engle	1
01862	PAH's in Solids	SW-846 8310	1	12/01/2000 19:35	Michelle J. Kolodziejwski	2000
03338	PAH Solid Extraction	SW-846 3550B	1	11/29/2000 19:00	Sally L. Appleyard	1



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Lancaster Laboratories Sample No. SW 3504154

Collected: 11/16/2000 09:03 by JK

Account Number: 07802

Submitted: 11/17/2000 09:15  
 Reported: 12/04/00 at 09:30 PM  
 Discard: 1/4/01  
 PRD1-CTD-3-C-01 Grab Soil Sample  
 Moss American - WI

Kerr-McGee Corporation  
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CTC3C SDG#: MOS81-11

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit	Units	Dilution Factor
00111	Moisture	n.a.	45.4	0.50	% by wt.	1
"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The result reported above is on an as-received basis.						
01862	PAH's in Solids					
03296	Naphthalene	91-20-3	N.D.	4,900.	ug/kg	100
03299	Fluorene	86-73-7	7,200.	460.	ug/kg	100
03304	Benzo(a)anthracene	56-55-3	3,900.	46.	ug/kg	100
03305	Chrysene	218-01-9	2,800.	180.	ug/kg	100
03306	Benzo(b)fluoranthene	205-99-2	1,900.	37.	ug/kg	100
03307	Benzo(k)fluoranthene	207-08-9	920.	37.	ug/kg	100
03308	Benzo(a)pyrene	50-32-8	1,900.	46.	ug/kg	100
03309	Dibenzo(a,h)anthracene	53-70-3	290. J	92.	ug/kg	100
03310	Benzo(g,h,i)perylene	191-24-2	940. J	270.	ug/kg	100
03311	Indeno(1,2,3-cd)pyrene	193-39-5	1,400. J	180.	ug/kg	100

Accurate surrogate recoveries could not be determined due to the dilution required for analysis of the sample.

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	EPA 160.3 modified	1	11/24/2000 14:06	Susan A. Engle	1
01862	PAH's in Solids	SW-846 8310	1	11/30/2000 23:28	Michelle J. Kolodziejwski	100
03338	PAH Solid Extraction	SW-846 3550B	1	11/29/2000 19:00	Sally L. Appleyard	1



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Lancaster Laboratories Sample No. SW 3504155

Collected: 11/16/2000 09:03 by JK

Account Number: 07802

Submitted: 11/17/2000 09:15

Kerr-McGee Corporation

Reported: 12/04/00 at 09:30 PM

P.O. Box 25861

Discard: 1/4/01

Oklahoma City OK 73125

PRD1-CTD-3-C-01-DP Grab Soil Sample

Moss American - WI

DPC3C SDG#: MOS81-12FD

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method	Detection Limit	Units	Dilution Factor
00111	Moisture	n.a.	44.8		0.50	% by wt.	1
"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The result reported above is on an as-received basis.							
01862	PAH's in Solids						
03296	Naphthalene	91-20-3	5,100.	J	4,900.	ug/kg	100
03299	Fluorene	86-73-7	23,000.		450.	ug/kg	100
03304	Benzo(a)anthracene	56-55-3	16,000.		45.	ug/kg	100
03305	Chrysene	218-01-9	14,000.		180.	ug/kg	100
03306	Benzo(b)fluoranthene	205-99-2	8,000.		36.	ug/kg	100
03307	Benzo(k)fluoranthene	207-08-9	4,000.		36.	ug/kg	100
03308	Benzo(a)pyrene	50-32-8	7,200.		45.	ug/kg	100
03309	Dibenzo(a,h)anthracene	53-70-3	740.	J	91.	ug/kg	100
03310	Benzo(g,h,i)perylene	191-24-2	4,000.		270.	ug/kg	100
03311	Indeno(1,2,3-cd)pyrene	193-39-5	5,800.		180.	ug/kg	100
Accurate surrogate recoveries could not be determined due to the dilution required for analysis of the sample.							

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	EPA 160.3 modified	1	11/24/2000 14:06	Susan A. Engle	1
01862	PAH's in Solids	SW-846 8310	1	11/30/2000 23:53	Michelle J. Kolodziejcki	100
03338	PAH Solid Extraction	SW-846 3550B	1	11/29/2000 19:00	Sally L. Appleyard	1



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Lancaster Laboratories Sample No. SW 3504156

Collected: 11/16/2000 09:05 by JK Account Number: 07802

Submitted: 11/17/2000 09:15  
 Reported: 12/04/00 at 09:30 PM  
 Discard: 1/4/01  
 PRD1-CTD-3-D-01 Grab Soil Sample  
 Moss American - WI

Kerr-McGee Corporation  
 P.O. Box 25861  
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DPD01 SDG#: MOS81-13

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit	Units	Dilution Factor
00111	Moisture	n.a.	33.9	0.50	% by wt.	1
"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The result reported above is on an as-received basis.						
01862	PAH's in Solids					
03296	Naphthalene	91-20-3	N.D.	4,100.	ug/kg	100
03299	Fluorene	86-73-7	450. J	380.	ug/kg	100
03304	Benzo(a) anthracene	56-55-3	6,400.	38.	ug/kg	100
03305	Chrysene	218-01-9	6,600.	150.	ug/kg	100
03306	Benzo(b) fluoranthene	205-99-2	2,800.	30.	ug/kg	100
03307	Benzo(k) fluoranthene	207-08-9	1,400.	30.	ug/kg	100
03308	Benzo(a) pyrene	50-32-8	2,900.	38.	ug/kg	100
03309	Dibenzo(a,h) anthracene	53-70-3	350. J	76.	ug/kg	100
03310	Benzo(g,h,i) perylene	191-24-2	1,000. J	230.	ug/kg	100
03311	Indeno(1,2,3-cd) pyrene	193-39-5	1,600. J	150.	ug/kg	100

Accurate surrogate recoveries could not be determined due to the dilution required for analysis of the sample.

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	EPA 160.3 modified	1	11/24/2000 14:06	Susan A. Engle	1
01862	PAH's in Solids	SW-846 8310	1	12/01/2000 00:18	Michelle J. Kolodziejski	100
03338	PAH Solid Extraction	SW-846 3550B	1	11/29/2000 19:00	Sally L. Appleyard	1



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Lancaster Laboratories Sample No. SW 3504160

Collected: 11/16/2000 09:05 by JK

Account Number: 07802

Submitted: 11/17/2000 09:15

Kerr-McGee Corporation

Reported: 12/04/00 at 09:30 PM

P.O. Box 25861

Discard: 1/4/01

Oklahoma City OK 73125

PRD1-CTD-3-D-01-DP Grab Soil Sample

Moss American - WI

DDP01 SDG#: MOS81-15

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit	Units	Dilution Factor
00111	Moisture	n.a.	31.3	0.50	% by wt.	1
"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The result reported above is on an as-received basis.						
01862	PAH's in Solids					
03296	Naphthalene	91-20-3	N.D.	3,900.	ug/kg	100
03299	Fluorene	86-73-7	N.D.	360.	ug/kg	100
03304	Benzo(a)anthracene	56-55-3	2,800.	36.	ug/kg	100
03305	Chrysene	218-01-9	2,700.	150.	ug/kg	100
03306	Benzo(b)fluoranthene	205-99-2	1,400.	29.	ug/kg	100
03307	Benzo(k)fluoranthene	207-08-9	700.	29.	ug/kg	100
03308	Benzo(a)pyrene	50-32-8	1,400.	36.	ug/kg	100
03309	Dibenzo(a,h)anthracene	53-70-3	160. J	73.	ug/kg	100
03310	Benzo(g,h,i)perylene	191-24-2	440. J	220.	ug/kg	100
03311	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	150.	ug/kg	100

Accurate surrogate recoveries could not be determined due to the dilution required for analysis of the sample.

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	EPA 160.3 modified	1	11/24/2000 14:06	Susan A. Engle	1
01862	PAH's in Solids	SW-846 8310	1	12/01/2000 00:43	Michelle J. Kolodziejski	100
03338	PAH Solid Extraction	SW-846 3550B	1	11/29/2000 19:00	Sally L. Appleyard	1



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Lancaster Laboratories Sample No. SW 3504157

Collected: 11/16/2000 09:05 by JK

Account Number: 07802

Submitted: 11/17/2000 09:15

Kerr-McGee Corporation

Reported: 12/04/00 at 09:30 PM

P.O. Box 25861

Discard: 1/4/01

Oklahoma City OK 73125

PRD1-CTD-3-E-01 Unspiked Grab Soil Sample  
Moss American - WI

EBK01 SDG#: MOS81-14BKG

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit	Units	Dilution Factor
00111	Moisture	n.a.	67.3	0.50	% by wt.	1
"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The result reported above is on an as-received basis.						
01862	PAH's in Solids					
03296	Naphthalene	91-20-3	N.D.	1,700.	ug/kg	20
03299	Fluorene	86-73-7	200.	J 150.	ug/kg	20
03304	Benzo(a)anthracene	56-55-3	150.	J 15.	ug/kg	20
03305	Chrysene	218-01-9	150.	J 61.	ug/kg	20
03306	Benzo(b)fluoranthene	205-99-2	69.	J 12.	ug/kg	20
03307	Benzo(k)fluoranthene	207-08-9	32.	J 12.	ug/kg	20
03308	Benzo(a)pyrene	50-32-8	58.	J 15.	ug/kg	20
03309	Dibenzo(a,h)anthracene	53-70-3	56.	J 31.	ug/kg	20
03310	Benzo(g,h,i)perylene	191-24-2	180.	J 92.	ug/kg	20
03311	Indeno(1,2,3-cd)pyrene	193-39-5	130.	J 61.	ug/kg	20

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	EPA 160.3 modified	1	11/24/2000 14:06	Susan A. Engle	1
01862	PAH's in Solids	SW-846 8310	1	12/01/2000 17:04	Michelle J. Kolodziejwski	20
03338	PAH Solid Extraction	SW-846 3550B	1	11/29/2000 19:00	Sally L. Appleyard	1



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Lancaster Laboratories Sample No. SW 3504158

Collected: 11/16/2000 09:05 by JK

Account Number: 07802

Submitted: 11/17/2000 09:15

Kerr-McGee Corporation

Reported: 12/04/00 at 09:30 PM

P.O. Box 25861

Discard: 1/4/01

Oklahoma City OK 73125

PRD1-CTD-3-E-01 Matrix Spike Grab Soil Sample  
Moss American - WI

EBK01 SDG#: MOS81-14MS

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit	Units	Dilution Factor
00118	Moisture	n.a.	67.3	0.50	% by wt.	1
01862	PAH's in Solids					
03296	Naphthalene	91-20-3	19,000.	1,700.	ug/kg	20
03299	Fluorene	86-73-7	1,900.	150.	ug/kg	20
03304	Benzo(a)anthracene	56-55-3	230.	15.	ug/kg	20
03305	Chrysene	218-01-9	620. J	61.	ug/kg	20
03306	Benzo(b)fluoranthene	205-99-2	140.	12.	ug/kg	20
03307	Benzo(k)fluoranthene	207-08-9	130.	12.	ug/kg	20
03308	Benzo(a)pyrene	50-32-8	150. J	15.	ug/kg	20
03309	Dibenzo(a,h)anthracene	53-70-3	280. J	31.	ug/kg	20
03310	Benzo(g,h,i)perylene	191-24-2	1,300.	92.	ug/kg	20
03311	Indeno(1,2,3-cd)pyrene	193-39-5	960.	61.	ug/kg	20

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00118	Moisture	EPA 160.3 modified	1	11/24/2000 14:06	Susan A. Engle	1
01862	PAH's in Solids	SW-846 8310	1	12/01/2000 17:29	Michelle J. Kolodziejcki	20
03338	PAH Solid Extraction	SW-846 3550B	1	11/29/2000 19:00	Sally L. Appleyard	1



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





Lancaster Laboratories Sample No. SW 3504159

Collected: 11/16/2000 09:05 by JK

Account Number: 07802

Submitted: 11/17/2000 09:15

Kerr-McGee Corporation

Reported: 12/04/00 at 09:30 PM

P.O. Box 25861

Discard: 1/4/01

Oklahoma City OK 73125

PRD1-CTD-3-E-01 Matrix Spike Duplicate Grab Soil Sample

Moss American - WI

EBK01 SDG#: MOS81-14MSD

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit	Units	Dilution Factor
00118	Moisture	n.a.	67.3	0.50	% by wt.	1
00121	Moisture Duplicate	n.a.	67.9	0.50	% by wt.	1
The duplicate moisture value is provided to assess the precision of the moisture test. For comparability purposes, the initial moisture determination is the value used to perform dry weight calculations.						
01862	PAH's in Solids					
03296	Naphthalene	91-20-3	19,000.	1,700.	ug/kg	20
03299	Fluorene	86-73-7	1,900.	150.	ug/kg	20
03304	Benzo(a)anthracene	56-55-3	220.	15.	ug/kg	20
03305	Chrysene	218-01-9	600. J	61.	ug/kg	20
03306	Benzo(b)fluoranthene	205-99-2	150.	12.	ug/kg	20
03307	Benzo(k)fluoranthene	207-08-9	120.	12.	ug/kg	20
03308	Benzo(a)pyrene	50-32-8	150. J	15.	ug/kg	20
03309	Dibenzo(a,h)anthracene	53-70-3	270. J	31.	ug/kg	20
03310	Benzo(g,h,i)perylene	191-24-2	950. J	92.	ug/kg	20
03311	Indeno(1,2,3-cd)pyrene	193-39-5	620. J	61.	ug/kg	20

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Analysis		Analyst	Dilution Factor
			Trial#	Date and Time		
00118	Moisture	EPA 160.3 modified	1	11/24/2000 14:06	Susan A. Engle	1
00121	Moisture Duplicate	EPA 160.3 modified	1	11/24/2000 14:06	Susan A. Engle	1
01862	PAH's in Solids	SW-846 8310	1	12/01/2000 17:54	Michelle J. Kolodziejwski	20
03338	PAH Solid Extraction	SW-846 3550B	1	11/29/2000 19:00	Sally L. Appleyard	1



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Lancaster Laboratories Sample No. SW 3504161

Collected: 11/16/2000 09:40 by JK

Account Number: 07802

Submitted: 11/17/2000 09:15

Kerr-McGee Corporation

Reported: 12/04/00 at 09:31 PM

P.O. Box 25861

Discard: 1/4/01

Oklahoma City OK 73125

PRD1-CTE-1-A-01 Grab Soil Sample

Moss American - WI

CTE1A SDG#: MOS81-16

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit	Units	Dilution Factor
00111	Moisture	n.a.	44.6	0.50	% by wt.	1
"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The result reported above is on an as-received basis.						
01862	PAH's in Solids					
03296	Naphthalene	91-20-3	N.D.	190,000.	ug/kg	2000
03299	Fluorene	86-73-7	240,000.	18,000.	ug/kg	2000
03304	Benzo(a)anthracene	56-55-3	120,000.	1,800.	ug/kg	2000
03305	Chrysene	218-01-9	100,000.	7,200.	ug/kg	2000
03306	Benzo(b)fluoranthene	205-99-2	51,000.	1,400.	ug/kg	2000
03307	Benzo(k)fluoranthene	207-08-9	27,000.	1,400.	ug/kg	2000
03308	Benzo(a)pyrene	50-32-8	46,000.	1,800.	ug/kg	2000
03309	Dibenzo(a,h)anthracene	53-70-3	N.D.	3,600.	ug/kg	2000
03310	Benzo(g,h,i)perylene	191-24-2	16,000.	J 11,000.	ug/kg	2000
03311	Indeno(1,2,3-cd)pyrene	193-39-5	26,000.	J 7,200.	ug/kg	2000
Accurate surrogate recoveries could not be determined due to the dilution required for analysis of the sample.						

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis		Analyst	Dilution Factor
				Date	Time		
00111	Moisture	EPA 160.3 modified	1	11/24/2000	14:06	Susan A. Engle	1
01862	PAH's in Solids	SW-846 8310	1	12/01/2000	20:01	Michelle J. Kolodziejcki	2000
03338	PAH Solid Extraction	SW-846 3550B	1	11/29/2000	19:00	Sally L. Appleyard	1



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Lancaster Laboratories Sample No. SW 3504162

Collected: 11/16/2000 09:45 by JK

Account Number: 07802

Submitted: 11/17/2000 09:15

Kerr-McGee Corporation

Reported: 12/04/00 at 09:31 PM

P.O. Box 25861

Discard: 1/4/01

Oklahoma City OK 73125

PRD1-CTE-1-B-01 Grab Soil Sample

Moss American - WI

CTEBA SDG#: MOS81-17

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit	Units	Dilution Factor
00111	Moisture	n.a.	19.6	0.50	% by wt.	1
"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The result reported above is on an as-received basis.						
01862	PAH's in Solids					
03296	Naphthalene	91-20-3	N.D.	340.	ug/kg	10
03299	Fluorene	86-73-7	42. J	31.	ug/kg	10
03304	Benzo(a)anthracene	56-55-3	34. J	3.1	ug/kg	10
03305	Chrysene	218-01-9	17. J	12.	ug/kg	10
03306	Benzo(b)fluoranthene	205-99-2	19. J	2.5	ug/kg	10
03307	Benzo(k)fluoranthene	207-08-9	9.2 J	2.5	ug/kg	10
03308	Benzo(a)pyrene	50-32-8	23. J	3.1	ug/kg	10
03309	Dibenzo(a,h)anthracene	53-70-3	N.D.	6.2	ug/kg	10
03310	Benzo(g,h,i)perylene	191-24-2	N.D.	19.	ug/kg	10
03311	Indeno(1,2,3-cd)pyrene	193-39-5	29. J	12.	ug/kg	10

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	EPA 160.3 modified	1	11/24/2000 14:06	Susan A. Engle	1
01862	PAH's in Solids	SW-846 8310	1	12/01/2000 01:55	Michelle J. Kolodziejwski	10
03338	PAH Solid Extraction	SW-846 3550B	1	11/29/2000 19:00	Sally L. Appleyard	1



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Lancaster Laboratories Sample No. SW 3504163

Collected: 11/16/2000 09:45 by JK

Account Number: 07802

Submitted: 11/17/2000 09:15

Kerr-McGee Corporation

Reported: 12/04/00 at 09:31 PM

P.O. Box 25861

Discard: 1/4/01

Oklahoma City OK 73125

PRD1-CTE-1-B-01-DP Grab Soil Sample

Moss American - WI

CTEBD SDG#: MOS81-18FD

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit	Units	Dilution Factor
00111	Moisture	n.a.	20.3	0.50	% by wt.	1
	"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The result reported above is on an as-received basis.					
01862	PAH's in Solids					
03296	Naphthalene	91-20-3	N.D.	340.	ug/kg	10
03299	Fluorene	86-73-7	52. J	31.	ug/kg	10
03304	Benzo(a)anthracene	56-55-3	27. J	3.1	ug/kg	10
03305	Chrysene	218-01-9	22. J	13.	ug/kg	10
03306	Benzo(b)fluoranthene	205-99-2	15. J	2.5	ug/kg	10
03307	Benzo(k)fluoranthene	207-08-9	6.5 J	2.5	ug/kg	10
03308	Benzo(a)pyrene	50-32-8	15. J	3.1	ug/kg	10
03309	Dibenzo(a,h)anthracene	53-70-3	N.D.	6.3	ug/kg	10
03310	Benzo(g,h,i)perylene	191-24-2	N.D.	19.	ug/kg	10
03311	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	13.	ug/kg	10

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	EPA 160.3 modified	1	11/24/2000 14:06	Susan A. Engle	1
01862	PAH's in Solids	SW-846 8310	1	12/01/2000 02:21	Michelle J. Kolodziejwski	10
03338	PAH Solid Extraction	SW-846 3550B	1	11/29/2000 19:00	Sally L. Appleyard	1



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Lancaster Laboratories Sample No. SW 3504164

Collected: 11/16/2000 09:52 by JK

Account Number: 07802

Submitted: 11/17/2000 09:15

Kerr-McGee Corporation

Reported: 12/04/00 at 09:31 PM

P.O. Box 25861

Discard: 1/4/01

Oklahoma City OK 73125

PRD1-CTE-1-C-01 Grab Soil Sample

Moss American - WI

C01BD SDG#: MOS81-19\*

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit	Units	Dilution Factor
00111	Moisture	n.a.	16.9	0.50	% by wt.	1
"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The result reported above is on an as-received basis.						
01862	PAH's in Solids					
03296	Naphthalene	91-20-3	N.D.	320.	ug/kg	10
03299	Fluorene	86-73-7	N.D.	30.	ug/kg	10
03304	Benzo(a) anthracene	56-55-3	13. J	3.0	ug/kg	10
03305	Chrysene	218-01-9	35. J	12.	ug/kg	10
03306	Benzo(b) fluoranthene	205-99-2	7.7 J	2.4	ug/kg	10
03307	Benzo(k) fluoranthene	207-08-9	3.1 J	2.4	ug/kg	10
03308	Benzo(a) pyrene	50-32-8	7.3 J	3.0	ug/kg	10
03309	Dibenzo(a,h) anthracene	53-70-3	N.D.	6.0	ug/kg	10
03310	Benzo(g,h,i) perylene	191-24-2	36. J	18.	ug/kg	10
03311	Indeno(1,2,3-cd) pyrene	193-39-5	18. J	12.	ug/kg	10

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	EPA 160.3 modified	1	11/24/2000 14:06	Susan A. Engle	1
01862	PAH's in Solids	SW-846 8310	1	12/01/2000 02:46	Michelle J. Kolodziejwski	10
03338	PAH Solid Extraction	SW-846 3550B	1	11/29/2000 19:00	Sally L. Appleyard	1



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Lancaster Laboratories Sample No. SW 3504151

Collected: 11/16/2000 10:40 by JK

Account Number: 07802

Submitted: 11/17/2000 09:15

Kerr-McGee Corporation

Reported: 12/04/00 at 09:30 PM

P.O. Box 25861

Discard: 1/4/01

Oklahoma City OK 73125

RFW-B23.5-42-49 Grab Soil Sample

Moss American - WI

RFW01 SDG#: MOS81-08

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit	Units	Dilution Factor
00111	Moisture	n.a.	28.8	0.50	% by wt.	1
"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The result reported above is on an as-received basis.						
01862	PAH's in Solids					
03296	Naphthalene	91-20-3	N.D.	76,000.	ug/kg	2000
03299	Fluorene	86-73-7	24,000.	J 7,000.	ug/kg	2000
03304	Benzo(a)anthracene	56-55-3	23,000.	700.	ug/kg	2000
03305	Chrysene	218-01-9	21,000.	J 2,800.	ug/kg	2000
03306	Benzo(b)fluoranthene	205-99-2	11,000.	560.	ug/kg	2000
03307	Benzo(k)fluoranthene	207-08-9	5,500.	J 560.	ug/kg	2000
03308	Benzo(a)pyrene	50-32-8	8,900.	700.	ug/kg	2000
03309	Dibenzo(a,h)anthracene	53-70-3	N.D.	1,400.	ug/kg	2000
03310	Benzo(g,h,i)perylene	191-24-2	N.D.	4,200.	ug/kg	2000
03311	Indeno(1,2,3-cd)pyrene	193-39-5	4,700.	J 2,800.	ug/kg	2000
Accurate surrogate recoveries could not be determined due to the dilution required for analysis of the sample.						

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	EPA 160.3 modified	1	11/24/2000 13:50	Susan A. Engle	1
01862	PAH's in Solids	SW-846 8310	1	12/01/2000 19:10	Michelle J. Kolodziejski	2000
03338	PAH Solid Extraction	SW-846 3550B	1	11/29/2000 19:00	Sally L. Appleyard	1



Lancaster Laboratories, Inc.  
2425 New Holland Pike  
PO Box 12425  
Lancaster, PA 17605-2425  
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# Analysis Request/ Environmental Services Chain of Custody



For Lancaster Laboratories use only  
 Acct. # 1802 Sample # 3504165-68

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

1 Client: KERR-MCGEE Acct. #: \_\_\_\_\_  
 Project Name/#: MOSS-AMERICA PWSID #: \_\_\_\_\_  
 Project Manager: TOM GRAAN P.O.# \_\_\_\_\_  
 Sampler: JOE KLEMP Quote #: \_\_\_\_\_  
 Name of state where samples were collected: \_\_\_\_\_

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

Matrix 4

5

Analyses Requested

Total # of Containers

Temperature of samples upon receipt (if requested)

Sample Identification	Date Collected	Time Collected	3			4		Total # of Containers	5	Remarks	Temperature of samples upon receipt (if requested)
			Grab	Composite	Soil	Water	Other				
PRD1-CTF-3-D-01	11/14/00	1210	X		X			1	X		
PRD1-CTF-3-E-01	11/16/00	1210	X		X			1	X		
PRD1-CTF-3-E-01-MS/MSD	11/16/00	1210	X		X			1	X		

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

Relinquished by: <u>J. A. Klemm</u>	Date: <u>11/16/00</u>	Time: <u>1800</u>	Received by: <u>Fedex</u>	Date: <u>11/16/00</u>	Time: <u>1800</u>
Relinquished by:	Date:	Time:	Received by:	Date:	Time:
Relinquished by:	Date:	Time:	Received by:	Date:	Time:
Relinquished by:	Date:	Time:	Received by:	Date:	Time:
Relinquished by:	Date:	Time:	Received by: <u>Mass Zerk</u>	Date: <u>11/17/00</u>	Time: <u>0915</u>

8 Data Package Options (please circle if requested)

QC Summary	Type VI (Raw Data) <u>PER QUOTE</u>	SDG Complete? <u>Yes</u> <del>No</del>
Type I (Tier I)	GLP	
Type II (Tier II)	Other	
Type III (NJ Red. Del.)		
Type IV (CLP)		

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

Internal Chain of Custody required? Yes No



## ANALYTICAL RESULTS

Prepared for:

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

Prepared by:

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

## SAMPLE GROUP

The sample group for this submittal is 740151. Samples arrived at the laboratory on Friday, November 17, 2000.

<u>Client Description</u>	<u>Lancaster Labs Number</u>
PRD1-CTF-3-D-01 Grab Soil Sample	3504165
PRD1-CTF-3-E-01 Unspiked Grab Soil Sample	3504166
PRD1-CTF-3-E-01 Matrix Spike Grab Soil Sample	3504167
PRD1-CTF-3-E-01 Matrix Spike Duplicate Grab Soil	3504168

## 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	

Questions? Contact your Client Services Representative  
Kay G. Hower at (717) 656-2300.

Respectfully Submitted,



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





Lancaster Laboratories Sample No. SW 3504165

Collected: 11/16/2000 12:10 by JK

Account Number: 07802

Submitted: 11/17/2000 09:15

Kerr-McGee Corporation

Reported: 12/06/00 at 09:58 PM

P.O. Box 25861

Discard: 1/6/01

Oklahoma City OK 73125

PRD1-CTF-3-D-01 Grab Soil Sample

Moss American - WI

CTD3- SDG#: MOS83-01

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit	Units	Dilution Factor
00111	Moisture	n.a.	25.3	0.50	% by wt.	1
"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The result reported above is on an as-received basis.						
01862	PAH's in Solids					
03296	Naphthalene	91-20-3	N.D.	180.	ug/kg	5
03299	Fluorene	86-73-7	N.D.	17.	ug/kg	5
03304	Benzo(a)anthracene	56-55-3	2.4 J	1.7	ug/kg	5
03305	Chrysene	218-01-9	9.0 J	6.7	ug/kg	5
03306	Benzo(b)fluoranthene	205-99-2	2.0 J	1.3	ug/kg	5
03307	Benzo(k)fluoranthene	207-08-9	N.D.	1.3	ug/kg	5
03308	Benzo(a)pyrene	50-32-8	2.1 J	1.7	ug/kg	5
03309	Dibenzo(a,h)anthracene	53-70-3	3.8 J	3.3	ug/kg	5
03310	Benzo(g,h,i)perylene	191-24-2	N.D.	10.	ug/kg	5
03311	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	6.7	ug/kg	5

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	EPA 160.3 modified	1	11/24/2000 14:06	Susan A. Engle	1
01862	PAH's in Solids	SW-846 8310	1	12/04/2000 12:06	Michelle J. Kolodziejwski	5
03338	PAH Solid Extraction	SW-846 3550B	1	11/29/2000 09:00	Jacqueline Fellenbaum	1



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Lancaster Laboratories Sample No. SW 3504166

Collected: 11/16/2000 12:10 by JK Account Number: 07802

Submitted: 11/17/2000 09:15  
 Reported: 12/06/00 at 09:58 PM  
 Discard: 1/6/01  
 PRD1-CTF-3-E-01 Unspiked Grab Soil Sample  
 Moss American - WI

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

CTE1- SDG#: MOS83-02BKG

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit	Units	Dilution Factor
00111	Moisture "Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The result reported above is on an as-received basis.	n.a.	54.2	0.50	% by wt.	1
01862	PAH's in Solids					
03296	Naphthalene	91-20-3	N.D.	590.	ug/kg	10
03299	Fluorene	86-73-7	N.D.	55.	ug/kg	10
03304	Benzo(a)anthracene	56-55-3	14. J	5.5	ug/kg	10
03305	Chrysene	218-01-9	43. J	22.	ug/kg	10
03306	Benzo(b)fluoranthene	205-99-2	8.1 J	4.4	ug/kg	10
03307	Benzo(k)fluoranthene	207-08-9	N.D.	4.4	ug/kg	10
03308	Benzo(a)pyrene	50-32-8	11. J	5.5	ug/kg	10
03309	Dibenzo(a,h)anthracene	53-70-3	25. J	11.	ug/kg	10
03310	Benzo(g,h,i)perylene	191-24-2	N.D.	33.	ug/kg	10
03311	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	22.	ug/kg	10

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	EPA 160.3 modified	1	11/24/2000 14:06	Susan A. Engle	1
01862	PAH's in Solids	SW-846 8310	1	12/04/2000 10:50	Michelle J. Kolodziejski	10
03338	PAH Solid Extraction	SW-846 3550B	1	11/29/2000 09:00	Jacqueline Fellenbaum	1



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Lancaster Laboratories Sample No. SW 3504167

Collected: 11/16/2000 12:10 by JK

Account Number: 07802

Submitted: 11/17/2000 09:15

Reported: 12/06/00 at 09:58 PM

Discard: 1/6/01

PRD1-CTF-3-E-01 Matrix Spike Grab Soil Sample

Moss American - WI

Kerr-McGee Corporation

P.O. Box 25861

Oklahoma City OK 73125

CTE1- SDG#: MOS83-02MS

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit	Units	Dilution Factor
00118	Moisture	n.a.	54.2	0.50	% by wt.	1
01862	PAH's in Solids					
03296	Naphthalene	91-20-3	14,000.	590.	ug/kg	10
03299	Fluorene	86-73-7	1,400.	55.	ug/kg	10
03304	Benzo(a)anthracene	56-55-3	130.	5.5	ug/kg	10
03305	Chrysene	218-01-9	460.	22.	ug/kg	10
03306	Benzo(b)fluoranthene	205-99-2	89.	4.4	ug/kg	10
03307	Benzo(k)fluoranthene	207-08-9	80.	4.4	ug/kg	10
03308	Benzo(a)pyrene	50-32-8	110.	5.5	ug/kg	10
03309	Dibenzo(a,h)anthracene	53-70-3	210.	11.	ug/kg	10
03310	Benzo(g,h,i)perylene	191-24-2	730.	33.	ug/kg	10
03311	Indeno(1,2,3-cd)pyrene	193-39-5	390.	22.	ug/kg	10

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00118	Moisture	EPA 160.3 modified	1	11/24/2000 14:06	Susan A. Engle	1
01862	PAH's in Solids	SW-846 8310	1	12/04/2000 11:15	Michelle J. Kolodziejwski	10
03338	PAH Solid Extraction	SW-846 3550B	1	11/29/2000 09:00	Jacqueline Fellenbaum	1



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



Lancaster Laboratories Sample No. SW 3504168

Collected: 11/16/2000 12:10 by JK

Account Number: 07802

Submitted: 11/17/2000 09:15

Kerr-McGee Corporation

Reported: 12/06/00 at 09:58 PM

P.O. Box 25861

Discard: 1/6/01

Oklahoma City OK 73125

PRD1-CTF-3-E-01 Matrix Spike Duplicate Grab Soil Sample

Moss American - WI

CTE1- SDG#: MOS83-02MSD\*

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit	Units	Dilution Factor
00118	Moisture	n.a.	54.2	0.50	% by wt.	1
00121	Moisture Duplicate	n.a.	57.3	0.50	% by wt.	1
The duplicate moisture value is provided to assess the precision of the moisture test. For comparability purposes, the initial moisture determination is the value used to perform dry weight calculations.						
01862	PAH's in Solids					
03296	Naphthalene	91-20-3	14,000.	590.	ug/kg	10
03299	Fluorene	86-73-7	1,400.	55.	ug/kg	10
03304	Benzo(a)anthracene	56-55-3	130.	5.5	ug/kg	10
03305	Chrysene	218-01-9	480.	22.	ug/kg	10
03306	Benzo(b)fluoranthene	205-99-2	88.	4.4	ug/kg	10
03307	Benzo(k)fluoranthene	207-08-9	83.	4.4	ug/kg	10
03308	Benzo(a)pyrene	50-32-8	110.	5.5	ug/kg	10
03309	Dibenzo(a,h)anthracene	53-70-3	230.	11.	ug/kg	10
03310	Benzo(g,h,i)perylene	191-24-2	750.	33.	ug/kg	10
03311	Indeno(1,2,3-cd)pyrene	193-39-5	400.	22.	ug/kg	10

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00118	Moisture	EPA 160.3 modified	1	11/24/2000 14:06	Susan A. Engle	1
00121	Moisture Duplicate	EPA 160.3 modified	1	11/24/2000 14:06	Susan A. Engle	1
01862	PAH's in Solids	SW-846 8310	1	12/04/2000 11:41	Michelle J. Kolodziejwski	10
03338	PAH Solid Extraction	SW-846 3550B	1	11/29/2000 09:00	Jacqueline Fellenbaum	1



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

# Analysis Request/ Environmental Services Chain of Custody



For Lancaster Laboratories use only  
 Acct. # 7802 Sample # 3504169-87

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

1 Client: <u>KERR-MCGEE</u> Project Name/#: <u>MOSS-AMERICA</u> Project Manager: <u>TOM GRAAN</u> Sampler: <u>JOE KLEMP</u> Name of state where samples were collected: <u>WISCONSIN</u>	Acct. #: _____ PWSID #: _____ P.O.# _____ Quote #: _____	Matrix 4 <input type="checkbox"/> Potable (Check if applicable) <input type="checkbox"/> Water <input type="checkbox"/> NPDES <input type="checkbox"/> Other	5 Analyses Requested <u>PAH 8210 8310</u>	For lab use only FSC: _____ SCR #: _____ Temperature of samples upon receipt (if requested)
--	---	--	--	--

Sample Identification	Date Collected	Time Collected	Grab	Composite	Soil	Water	Other	Total # of Containers	Remarks	Temperature of samples upon receipt (if requested)
PRD1-CTE-2-AB-01	11/16/00	1000	X	X				1	SS W/DNR	
PRD1-CTE-2-C-01	11/16/00	1005	X	X				1	SS W/DNR	
PRD1-CTE-3-A-01	11/16/00	1010	X	X				1	SS W/DNR	
PRD1-CTE-3-B-01	11/16/00	1013	X	X				1	SS W/DNR	
PRD1-CTE-3-C-01	11/16/00	1015	X	X				1	SS W/DNR	
PRD1-CTE-3-D-01	11/16/00	1017	X	X				1	SS W/DNR	
PRD1-CTE-3-E-01	11/16/00	1020	X	X				1	SS W/DNR	
PRD1-CTE-1-A-01	11/16/00	1132	X	X				1	SS W/DNR	
PRD1-CTE-1-B-01	11/16/00	1140	X	X				1	SS W/DNR	
PRD1-CTE-2-A-01	11/16/00	1150	X	X				1	SS W/DNR	

7 Turnaround Time Requested (TAT) (please circle): <u>Normal</u> Rush (Rush TAT is subject to Lancaster Laboratories approval and surcharge.) Date results are needed: <u>STD TAT</u> Rush results requested by (please circle): Phone <input type="checkbox"/> Fax <input type="checkbox"/> Phone #: <u>847-918-4000</u> Fax #: <u>847-918-4055</u>	Relinquished by: <u>L. A. [Signature]</u> Date: <u>11/16/00</u> Time: <u>1800</u>	Received by: <u>Fedex</u> Date: <u>11/16/00</u> Time: <u>1800</u>
8 Data Package Options (please circle if requested) QC Summary Type VI (Raw Data) <u>PER QUOTE</u> Type I (Tier I) GLP Type II (Tier II) Other Type III (NJ Red. Del.) Type IV (CLP)	SDG Complete? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Site-specific QC required? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> (If yes, indicate QC sample and submit triplicate volume.) Internal Chain of Custody required? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Relinquished by: _____ Date: _____ Time: _____ Relinquished by: _____ Date: _____ Time: _____ Relinquished by: _____ Date: _____ Time: _____



For Lancaster Laboratories use only  
 Acct. # 7802 Sample # 3504149-87

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

1 Client: KERR-McGEE Acct. #: \_\_\_\_\_  
 Project Name/#: MOSS-AMERICA PWSID #: \_\_\_\_\_  
 Project Manager: TOM GRAAN P.O.# \_\_\_\_\_  
 Sampler: JOE KLEMP Quote #: \_\_\_\_\_  
 Name of state where samples were collected: WISCONSIN

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

Sample Identification	Date Collected	Time Collected	Grab	Composite	Matrix 4			Total # of Containers	Analyses Requested 5										Remarks	Temperature of samples upon receipt (if requested) 6				
					Soil	Water	Other																	
PRD1-CTF-2-A-01-DP	1/16/00	1150	X		X			1	X														SS W/DNR	
PRD1-CTF-2-B-01	1/16/00	1152	X		X			1	X														SS W/DNR	
PRD1-CTF-2-C-01	1/16/00	1155	X		X			1	X														SS W/DNR	
<del>PRD1-CTF-2-D-01 JR</del>	<del>1/16/00</del>	<del>1155</del>	<del>X</del>		<del>X</del>			<del>1</del>	<del>X</del>															
PRD1-CTF-2-C-01-DP	1/16/00	1155	X		X			1	X														SS W/DNR	
<del>PRD1-CTF-2-D-01 MS/MSD</del>	<del>1/16/00</del>	<del>1155</del>	<del>X</del>		<del>X</del>			<del>1</del>	<del>X</del>															
PRD1-CTF-3-AB01	1/16/00	1200	X		X			1	X															
PRD1-CTF-3-AB01-MS/MSD	1/16/00	1200	X		X			1	X															
PRD1-CTF-3-C-01	1/16/00	1205	X		X			1	X															
PRD1-CTF-3-C-01-DP	1/16/00	1205	X		X			1	X															

7 Turnaround Time Requested (TAT) (please circle): Normal Rush  
 (Rush TAT is subject to Lancaster Laboratories approval and surcharge.)  
 Date results are needed: STD TAT  
 Rush results requested by (please circle): Phone 947-918-4000 Fax 947-918-4055

Relinquished by: <u>[Signature]</u>	Date: <u>1/16/00</u>	Time: <u>1800</u>	Received by: <u>Fedex</u>	Date: <u>1/16/00</u>	Time: <u>1800</u>
Relinquished by:	Date:	Time:	Received by:	Date:	Time:
Relinquished by:	Date:	Time:	Received by:	Date:	Time:
Relinquished by:	Date:	Time:	Received by:	Date:	Time:
Relinquished by:	Date:	Time:	Received by: <u>[Signature]</u>	Date: <u>1/17/00</u>	Time: <u>0915</u>

8 Data Package Options (please circle if requested)

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



1 COPY TO      Data Package Group

Questions? Contact your Client Services Representative  
Kay G. Hower at (717) 656-2300.

Respectfully Submitted,



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



## ANALYTICAL RESULTS

Prepared for:

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

Prepared by:

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

### SAMPLE GROUP

The sample group for this submittal is 740152. Samples arrived at the laboratory on Friday, November 17, 2000.

<u>Client Description</u>	<u>Lancaster Labs Number</u>
PRD1-CTE-2-AB-01 Grab Soil Sample	3504169
PRD1-CTE-2-C-01 Grab Soil Sample	3504170
PRD1-CTE-3-A-01 Grab Soil Sample	3504171
PRD1-CTE-3-B-01 Grab Soil Sample	3504172
PRD1-CTE-3-C-01 Grab Soil Sample	3504173
PRD1-CTE-3-D-01 Grab Soil Sample	3504174
PRD1-CTE-3-E-01 Grab Soil Sample	3504175
PRD1-CTF-1-A-01 Grab Soil Sample	3504176
PRD1-CTF-1-B-01 Grab Soil Sample	3504177
PRD1-CTF-2-A-01 Grab Soil Sample	3504178
PRD1-CTF-2-A-01-DP Grab Soil Sample	3504179
PRD1-CTF-2-B-01 Grab Soil Sample	3504180
PRD1-CTF-2-C-01 Grab Soil Sample	3504181
PRD1-CTF-2-C-01-DP Grab Soil Sample	3504182
PRD1-CTF-3-AB-01 Unspiked Grab Soil Sample	3504183
PRD1-CTF-3-AB-01 Matrix Spike Grab Soil Sample	3504184
PRD1-CTF-3-AB-01 Matrix Spike Duplicate Grab Soil	3504185
PRD1-CTF-3-C-01 Grab Soil Sample	3504186
PRD1-CTF-3-C-01-DP Grab Soil Sample	3504187

### METHODOLOGY

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

1 COPY TO  
1 COPY TO

Kerr-McGee Corporation  
Roy F. Weston

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



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





Lancaster Laboratories Sample No. SW 3504171

Collected: 11/16/2000 10:10 by JK

Account Number: 07802

Submitted: 11/17/2000 09:15

Kerr-McGee Corporation

Reported: 12/07/00 at 11:47 AM

P.O. Box 25861

Discard: 1/7/01

Oklahoma City OK 73125

PRD1-CTE-3-A-01 Grab Soil Sample

Moss American - WI

CE3A1 SDG#: MOS82-03

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit	Units	Dilution Factor
00111	Moisture	n.a.	31.7	0.50	% by wt.	1
"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The result reported above is on an as-received basis.						
01862	PAH's in Solids					
03296	Naphthalene	91-20-3	N.D.	790.	ug/kg	20
03299	Fluorene	86-73-7	150.	73.	ug/kg	20
03304	Benzo(a)anthracene	56-55-3	270.	7.3	ug/kg	20
03305	Chrysene	218-01-9	270.	29.	ug/kg	20
03306	Benzo(b)fluoranthene	205-99-2	340.	5.9	ug/kg	20
03307	Benzo(k)fluoranthene	207-08-9	160.	5.9	ug/kg	20
03308	Benzo(a)pyrene	50-32-8	310.	7.3	ug/kg	20
03309	Dibenzo(a,h)anthracene	53-70-3	43.	15.	ug/kg	20
03310	Benzo(g,h,i)perylene	191-24-2	300.	44.	ug/kg	20
03311	Indeno(1,2,3-cd)pyrene	193-39-5	340.	29.	ug/kg	20

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

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	EPA 160.3 modified	1	11/24/2000 14:06	Susan A. Engle	1
01862	PAH's in Solids	SW-846 8310	1	12/04/2000 13:48	Michelle J. Kolodziejwski	20
03338	PAH Solid Extraction	SW-846 3550B	1	11/29/2000 18:00	Desiree J. Wann	1



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



Lancaster Laboratories Sample No. SW 3504172

Collected: 11/16/2000 10:13 by JK

Account Number: 07802

Submitted: 11/17/2000 09:15

Kerr-McGee Corporation

Reported: 12/07/00 at 11:47 AM

P.O. Box 25861

Discard: 1/7/01

Oklahoma City OK 73125

PRD1-CTE-3-B-01 Grab Soil Sample

Moss American - WI

C3BB1 SDG#: MOS82-04

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit	Units	Dilution Factor
00111	Moisture	n.a.	50.1	0.50	% by wt.	1
"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The result reported above is on an as-received basis.						
01862	PAH's in Solids					
03296	Naphthalene	91-20-3	31,000.	J 11,000.	ug/kg	100
03299	Fluorene	86-73-7	490,000.	1,000.	ug/kg	100
03304	Benzo(a)anthracene	56-55-3	98,000.	2,000.	ug/kg	2000
03305	Chrysene	218-01-9	68,000.	400.	ug/kg	100
03306	Benzo(b)fluoranthene	205-99-2	30,000.	80.	ug/kg	100
03307	Benzo(k)fluoranthene	207-08-9	16,000.	80.	ug/kg	100
03308	Benzo(a)pyrene	50-32-8	26,000.	100.	ug/kg	100
03309	Dibenzo(a,h)anthracene	53-70-3	2,900.	200.	ug/kg	100
03310	Benzo(g,h,i)perylene	191-24-2	6,200.	J 600.	ug/kg	100
03311	Indeno(1,2,3-cd)pyrene	193-39-5	11,000.	400.	ug/kg	100

Accurate surrogate recoveries could not be determined due to the dilution required for analysis of the sample.

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	EPA 160.3 modified	1	11/24/2000 14:06	Susan A. Engle	1
01862	PAH's in Solids	SW-846 8310	1	12/02/2000 01:17	Michelle J. Kolodziejcki	100
01862	PAH's in Solids	SW-846 8310	1	12/03/2000 01:53	Michelle J. Kolodziejcki	2000
03338	PAH Solid Extraction	SW-846 3550B	1	11/29/2000 18:00	Desiree J. Wann	1



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 Lancaster, PA 17605-2425  
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Lancaster Laboratories Sample No. SW 3504173

Collected: 11/16/2000 10:15 by JK

Account Number: 07802

Submitted: 11/17/2000 09:15

Kerr-McGee Corporation

Reported: 12/07/00 at 11:47 AM

P.O. Box 25861

Discard: 1/7/01

Oklahoma City OK 73125

PRD1-CTE-3-C-01 Grab Soil Sample

Moss American - WI

C3C-1 SDG#: MOS82-05

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method	Detection Limit	Units	Dilution Factor
00111	Moisture	n.a.	34.6		0.50	% by wt.	1
	"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The result reported above is on an as-received basis.						
01862	PAH's in Solids						
03296	Naphthalene	91-20-3	7,600.	J	4,100.	ug/kg	100
03299	Fluorene	86-73-7	23,000.		380.	ug/kg	100
03304	Benzo(a)anthracene	56-55-3	18,000.		38.	ug/kg	100
03305	Chrysene	218-01-9	17,000.		150.	ug/kg	100
03306	Benzo(b)fluoranthene	205-99-2	9,200.		31.	ug/kg	100
03307	Benzo(k)fluoranthene	207-08-9	4,600.		31.	ug/kg	100
03308	Benzo(a)pyrene	50-32-8	8,800.		38.	ug/kg	100
03309	Dibenzo(a,h)anthracene	53-70-3	1,100.		76.	ug/kg	100
03310	Benzo(g,h,i)perylene	191-24-2	3,500.		230.	ug/kg	100
03311	Indeno(1,2,3-cd)pyrene	193-39-5	5,400.		150.	ug/kg	100
	Accurate surrogate recoveries could not be determined due to the dilution required for analysis of the sample.						

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Analysis			Analyst	Dilution Factor
			Trial#	Date and Time			
00111	Moisture	EPA 160.3 modified	1	11/24/2000 14:06		Susan A. Engle	1
01862	PAH's in Solids	SW-846 8310	1	12/02/2000 02:04		Michelle J. Kolodziejcki	100
03338	PAH Solid Extraction	SW-846 3550B	1	11/29/2000 18:00		Desiree J. Wann	1



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



Lancaster Laboratories Sample No. SW 3504174

Collected: 11/16/2000 10:17 by JK

Account Number: 07802

Submitted: 11/17/2000 09:15

Kerr-McGee Corporation

Reported: 12/07/00 at 11:47 AM

P.O. Box 25861

Discard: 1/7/01

Oklahoma City OK 73125

PRD1-CTE-3-D-01 Grab Soil Sample

Moss American - WI

C3D-1 SDG#: MOS82-06

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit	Units	Dilution Factor
00111	Moisture	n.a.	40.2	0.50	% by wt.	1
"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The result reported above is on an as-received basis.						
01862	PAH's in Solids					
03296	Naphthalene	91-20-3	N.D.	900.	ug/kg	20
03299	Fluorene	86-73-7	720.	84.	ug/kg	20
03304	Benzo(a)anthracene	56-55-3	230.	8.4	ug/kg	20
03305	Chrysene	218-01-9	150.	33.	ug/kg	20
03306	Benzo(b)fluoranthene	205-99-2	78.	6.7	ug/kg	20
03307	Benzo(k)fluoranthene	207-08-9	44.	6.7	ug/kg	20
03308	Benzo(a)pyrene	50-32-8	70.	8.4	ug/kg	20
03309	Dibenzo(a,h)anthracene	53-70-3	N.D.	17.	ug/kg	20
03310	Benzo(g,h,i)perylene	191-24-2	N.D.	50.	ug/kg	20
03311	Indeno(1,2,3-cd)pyrene	193-39-5	35.	33.	ug/kg	20

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

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	EPA 160.3 modified	1	11/24/2000 14:06	Susan A. Engle	1
01862	PAH's in Solids	SW-846 8310	1	12/03/2000 02:18	Michelle J. Kolodziejski	20
03338	PAH Solid Extraction	SW-846 3550B	1	11/29/2000 18:00	Desiree J. Wann	1



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 2425 New Holland Pike  
 PO Box 12425  
 Lancaster, PA 17605-2425  
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Lancaster Laboratories Sample No. SW 3504175

Collected: 11/16/2000 10:20 by JK

Account Number: 07802

Submitted: 11/17/2000 09:15

Kerr-McGee Corporation

Reported: 12/07/00 at 11:47 AM

P.O. Box 25861

Discard: 1/7/01

Oklahoma City OK 73125

PRD1-CTE-3-E-01 Grab Soil Sample

Moss American - WI

C3E-1 SDG#: MOS82-07

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit	Units	Dilution Factor
00111	Moisture	n.a.	57.7	0.50	% by wt.	1
"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The result reported above is on an as-received basis.						
01862	PAH's in Solids					
03296	Naphthalene	91-20-3	N.D.	1,300.	ug/kg	20
03299	Fluorene	86-73-7	N.D.	120.	ug/kg	20
03304	Benzo(a)anthracene	56-55-3	21. J	12.	ug/kg	20
03305	Chrysene	218-01-9	N.D.	47.	ug/kg	20
03306	Benzo(b)fluoranthene	205-99-2	20. J	9.5	ug/kg	20
03307	Benzo(k)fluoranthene	207-08-9	N.D.	9.5	ug/kg	20
03308	Benzo(a)pyrene	50-32-8	N.D.	12.	ug/kg	20
03309	Dibenzo(a,h)anthracene	53-70-3	67. J	24.	ug/kg	20
03310	Benzo(g,h,i)perylene	191-24-2	N.D.	71.	ug/kg	20
03311	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	47.	ug/kg	20

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	EPA 160.3 modified	1	11/24/2000 14:06	Susan A. Engle	1
01862	PAH's in Solids	SW-846 8310	1	12/03/2000 03:05	Michelle J. Kolodziejcki	20
03338	PAH Solid Extraction	SW-846 3550B	1	11/29/2000 18:00	Desiree J. Wann	1



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



Lancaster Laboratories Sample No. SW 3504176

Collected: 11/16/2000 11:32 by JK

Account Number: 07802

Submitted: 11/17/2000 09:15

Kerr-McGee Corporation

Reported: 12/07/00 at 11:47 AM

P.O. Box 25861

Discard: 1/7/01

Oklahoma City OK 73125

PRD1-CTF-1-A-01 Grab Soil Sample

Moss American - WI

C1A-1 SDG#: MOS82-08

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit	Units	Dilution Factor
00111	Moisture	n.a.	44.0	0.50	% by wt.	1
"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The result reported above is on an as-received basis.						
01862	PAH's in Solids					
03296	Naphthalene	91-20-3	9,600.	J 4,800.	ug/kg	100
03299	Fluorene	86-73-7	36,000.	450.	ug/kg	100
03304	Benzo(a)anthracene	56-55-3	26,000.	890.	ug/kg	2000
03305	Chrysene	218-01-9	24,000.	180.	ug/kg	100
03306	Benzo(b)fluoranthene	205-99-2	13,000.	36.	ug/kg	100
03307	Benzo(k)fluoranthene	207-08-9	6,500.	36.	ug/kg	100
03308	Benzo(a)pyrene	50-32-8	12,000.	45.	ug/kg	100
03309	Dibenzo(a,h)anthracene	53-70-3	1,500.	89.	ug/kg	100
03310	Benzo(g,h,i)perylene	191-24-2	4,700.	270.	ug/kg	100
03311	Indeno(1,2,3-cd)pyrene	193-39-5	7,000.	180.	ug/kg	100

Accurate surrogate recoveries could not be determined due to the dilution required for analysis of the sample.

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	EPA 160.3 modified	1	11/24/2000 14:21	Susan A. Engle	1
01862	PAH's in Solids	SW-846 8310	1	12/02/2000 03:19	Michelle J. Kolodziejski	100
01862	PAH's in Solids	SW-846 8310	1	12/03/2000 03:31	Michelle J. Kolodziejski	2000
03338	PAH Solid Extraction	SW-846 3550B	1	11/29/2000 18:00	Desiree J. Wann	1



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Lancaster Laboratories Sample No. SW 3504177

Collected: 11/16/2000 11:40 by JK

Account Number: 07802

Submitted: 11/17/2000 09:15

Kerr-McGee Corporation

Reported: 12/07/00 at 11:47 AM

P.O. Box 25861

Discard: 1/7/01

Oklahoma City OK 73125

PRD1-CTF-1-B-01 Grab Soil Sample

Moss American - WI

C1B-1 SDG#: MOS82-09

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit	Units	Dilution Factor
00111	Moisture	n.a.	24.0	0.50	% by wt.	1
"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The result reported above is on an as-received basis.						
01862	PAH's in Solids					
03296	Naphthalene	91-20-3	N.D.	3,600.	ug/kg	100
03299	Fluorene	86-73-7	N.D.	330.	ug/kg	100
03304	Benzo(a)anthracene	56-55-3	1,600.	33.	ug/kg	100
03305	Chrysene	218-01-9	1,600.	130.	ug/kg	100
03306	Benzo(b)fluoranthene	205-99-2	860.	26.	ug/kg	100
03307	Benzo(k)fluoranthene	207-08-9	420.	26.	ug/kg	100
03308	Benzo(a)pyrene	50-32-8	790.	33.	ug/kg	100
03309	Dibenzo(a,h)anthracene	53-70-3	86. J	66.	ug/kg	100
03310	Benzo(g,h,i)perylene	191-24-2	N.D.	200.	ug/kg	100
03311	Indeno(1,2,3-cd)pyrene	193-39-5	520. J	130.	ug/kg	100
Accurate surrogate recoveries could not be determined due to the dilution required for analysis of the sample.						

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	EPA 160.3 modified	1	11/24/2000 14:21	Susan A. Engle	1
01862	PAH's in Solids	SW-846 8310	1	12/02/2000 03:45	Michelle J. Kolodziejcki	100
03338	PAH Solid Extraction	SW-846 3550B	1	11/29/2000 18:00	Desiree J. Wann	1



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Lancaster Laboratories Sample No. SW 3504178

Collected: 11/16/2000 11:50 by JK

Account Number: 07802

Submitted: 11/17/2000 09:15  
 Reported: 12/07/00 at 11:47 AM  
 Discard: 1/7/01  
 PRD1-CTF-2-A-01 Grab Soil Sample  
 Moss American - WI

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

C2A-1 SDG#: MOS82-10

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit	Units	Dilution Factor
00111	Moisture	n.a.	40.6	0.50	% by wt.	1
"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The result reported above is on an as-received basis.						
01862	PAH's in Solids					
03296	Naphthalene	91-20-3	N.D.	4,500.	ug/kg	100
03299	Fluorene	86-73-7	15,000.	420.	ug/kg	100
03304	Benzo(a)anthracene	56-55-3	11,000.	42.	ug/kg	100
03305	Chrysene	218-01-9	9,700.	170.	ug/kg	100
03306	Benzo(b)fluoranthene	205-99-2	6,000.	34.	ug/kg	100
03307	Benzo(k)fluoranthene	207-08-9	3,100.	34.	ug/kg	100
03308	Benzo(a)pyrene	50-32-8	5,400.	42.	ug/kg	100
03309	Dibenzo(a,h)anthracene	53-70-3	690. J	84.	ug/kg	100
03310	Benzo(g,h,i)perylene	191-24-2	2,900.	250.	ug/kg	100
03311	Indeno(1,2,3-cd)pyrene	193-39-5	4,100.	170.	ug/kg	100

Accurate surrogate recoveries could not be determined due to the dilution required for analysis of the sample.

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis		Analyst	Dilution Factor
				Date and Time			
00111	Moisture	EPA 160.3 modified	1	11/24/2000	14:21	Susan A. Engle	1
01862	PAH's in Solids	SW-846 8310	1	12/02/2000	04:10	Michelle J. Kolodziejwski	100
03338	PAH Solid Extraction	SW-846 3550B	1	11/29/2000	18:00	Desiree J. Wann	1



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Lancaster Laboratories Sample No. SW 3504179

Collected: 11/16/2000 11:50 by JK

Account Number: 07802

Submitted: 11/17/2000 09:15

Kerr-McGee Corporation

Reported: 12/07/00 at 11:47 AM

P.O. Box 25861

Discard: 1/7/01

Oklahoma City OK 73125

PRD1-CTF-2-A-01-DP Grab Soil Sample

Moss American - WI

D2A01 SDG#: MOS82-11FD

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit	Units	Dilution Factor
00111	Moisture	n.a.	43.8	0.50	% by wt.	1
"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The result reported above is on an as-received basis.						
01862	PAH's in Solids					
03296	Naphthalene	91-20-3	N.D.	4,800.	ug/kg	100
03299	Fluorene	86-73-7	16,000.	440.	ug/kg	100
03304	Benzo(a)anthracene	56-55-3	11,000.	44.	ug/kg	100
03305	Chrysene	218-01-9	9,800.	180.	ug/kg	100
03306	Benzo(b)fluoranthene	205-99-2	5,900.	36.	ug/kg	100
03307	Benzo(k)fluoranthene	207-08-9	2,900.	36.	ug/kg	100
03308	Benzo(a)pyrene	50-32-8	5,400.	44.	ug/kg	100
03309	Dibenzo(a,h)anthracene	53-70-3	590. J	89.	ug/kg	100
03310	Benzo(g,h,i)perylene	191-24-2	2,700. J	270.	ug/kg	100
03311	Indeno(1,2,3-cd)pyrene	193-39-5	3,900.	180.	ug/kg	100
Accurate surrogate recoveries could not be determined due to the dilution required for analysis of the sample.						

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	EPA 160.3 modified	1	11/24/2000 14:21	Susan A. Engle	1
01862	PAH's in Solids	SW-846 8310	1	12/02/2000 04:35	Michelle J. Kolodziejski	100
03338	PAH Solid Extraction	SW-846 3550B	1	11/29/2000 18:00	Desiree J. Wann	1



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Lancaster Laboratories Sample No. SW 3504180

Collected: 11/16/2000 11:52 by JK

Account Number: 07802

Submitted: 11/17/2000 09:15

Kerr-McGee Corporation

Reported: 12/07/00 at 11:47 AM

P.O. Box 25861

Discard: 1/7/01

Oklahoma City OK 73125

PRD1-CTF-2-B-01 Grab Soil Sample

Moss American - WI

D2B01 SDG#: MOS82-12

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit	Units	Dilution Factor
00111	Moisture	n.a.	37.1	0.50	% by wt.	1
"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The result reported above is on an as-received basis.						
01862	PAH's in Solids					
03296	Naphthalene	91-20-3	N.D.	4,300.	ug/kg	100
03299	Fluorene	86-73-7	12,000.	400.	ug/kg	100
03304	Benzo(a)anthracene	56-55-3	6,300.	40.	ug/kg	100
03305	Chrysene	218-01-9	6,600.	160.	ug/kg	100
03306	Benzo(b)fluoranthene	205-99-2	2,100.	32.	ug/kg	100
03307	Benzo(k)fluoranthene	207-08-9	1,100.	32.	ug/kg	100
03308	Benzo(a)pyrene	50-32-8	2,000.	40.	ug/kg	100
03309	Dibenzo(a,h)anthracene	53-70-3	220. J	79.	ug/kg	100
03310	Benzo(g,h,i)perylene	191-24-2	660. J	240.	ug/kg	100
03311	Indeno(1,2,3-cd)pyrene	193-39-5	1,100. J	160.	ug/kg	100

Accurate surrogate recoveries could not be determined due to the dilution required for analysis of the sample.

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	EPA 160.3 modified	1	11/24/2000 14:21	Susan A. Engle	1
01862	PAH's in Solids	SW-846 8310	1	12/02/2000 05:00	Michelle J. Kolodziejcki	100
03338	PAH Solid Extraction	SW-846 3550B	1	11/29/2000 18:00	Desiree J. Wann	1



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Lancaster Laboratories Sample No. SW 3504181

Collected: 11/16/2000 11:55 by JK

Account Number: 07802

Submitted: 11/17/2000 09:15

Kerr-McGee Corporation

Reported: 12/07/00 at 11:47 AM

P.O. Box 25861

Discard: 1/7/01

Oklahoma City OK 73125

PRD1-CTF-2-C-01 Grab Soil Sample

Moss American - WI

D2C01 SDG#: MOS82-13

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method	Detection Limit	Units	Dilution Factor
00111	Moisture	n.a.	18.4		0.50	% by wt.	1
"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The result reported above is on an as-received basis.							
01862	PAH's in Solids						
03296	Naphthalene	91-20-3	N.D.		660.	ug/kg	20
03299	Fluorene	86-73-7	N.D.		61.	ug/kg	20
03304	Benzo(a)anthracene	56-55-3	34.	J	6.1	ug/kg	20
03305	Chrysene	218-01-9	96.	J	25.	ug/kg	20
03306	Benzo(b)fluoranthene	205-99-2	14.	J	4.9	ug/kg	20
03307	Benzo(k)fluoranthene	207-08-9	7.8	J	4.9	ug/kg	20
03308	Benzo(a)pyrene	50-32-8	15.	J	6.1	ug/kg	20
03309	Dibenzo(a,h)anthracene	53-70-3	N.D.		12.	ug/kg	20
03310	Benzo(g,h,i)perylene	191-24-2	52.	J	37.	ug/kg	20
03311	Indeno(1,2,3-cd)pyrene	193-39-5	80.	J	25.	ug/kg	20

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	EPA 160.3 modified	1	11/24/2000 14:21	Susan A. Engle	1
01862	PAH's in Solids	SW-846 8310	1	12/02/2000 05:25	Michelle J. Kolodziejski	20
03338	PAH Solid Extraction	SW-846 3550B	1	11/29/2000 18:00	Desiree J. Wann	1



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Lancaster Laboratories Sample No. SW 3504182

Collected: 11/16/2000 11:55 by JK

Account Number: 07802

Submitted: 11/17/2000 09:15

Kerr-McGee Corporation

Reported: 12/07/00 at 11:47 AM

P.O. Box 25861

Discard: 1/7/01

Oklahoma City OK 73125

PRD1-CTF-2-C-01-DP Grab Soil Sample

Moss American - WI

C01DP SDG#: MOS82-14FD

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit	Units	Dilution Factor
00111	Moisture	n.a.	18.6	0.50	% by wt.	1
"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The result reported above is on an as-received basis.						
01862	PAH's in Solids					
03296	Naphthalene	91-20-3	N.D.	660.	ug/kg	20
03299	Fluorene	86-73-7	N.D.	61.	ug/kg	20
03304	Benzo(a)anthracene	56-55-3	7.0 J	6.1	ug/kg	20
03305	Chrysene	218-01-9	N.D.	25.	ug/kg	20
03306	Benzo(b)fluoranthene	205-99-2	N.D.	4.9	ug/kg	20
03307	Benzo(k)fluoranthene	207-08-9	N.D.	4.9	ug/kg	20
03308	Benzo(a)pyrene	50-32-8	9.4 J	6.1	ug/kg	20
03309	Dibenzo(a,h)anthracene	53-70-3	12. J	12.	ug/kg	20
03310	Benzo(g,h,i)perylene	191-24-2	N.D.	37.	ug/kg	20
03311	Indeno(1,2,3-cd)pyrene	193-39-5	31. J	25.	ug/kg	20

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	EPA 160.3 modified	1	11/24/2000 14:21	Susan A. Engle	1
01862	PAH's in Solids	SW-846 8310	1	12/02/2000 05:51	Michelle J. Kolodziejski	20
03338	PAH Solid Extraction	SW-846 3550B	1	11/29/2000 18:00	Desiree J. Wann	1



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Lancaster Laboratories Sample No. SW 3504183

Collected: 11/16/2000 12:00 by JK

Account Number: 07802

Submitted: 11/17/2000 09:15

Kerr-McGee Corporation

Reported: 12/07/00 at 11:47 AM

P.O. Box 25861

Discard: 1/7/01

Oklahoma City OK 73125

PRD1-CTF-3-AB-01 Unspiked Grab Soil Sample  
Moss American - WI

AB01- SDG#: MOS82-15BKG

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method	Detection Limit	Units	Dilution Factor
00111	Moisture	n.a.	46.3		0.50	% by wt.	1
"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The result reported above is on an as-received basis.							
01862	PAH's in Solids						
03296	Naphthalene	91-20-3	6,200.	J	5,000.	ug/kg	100
03299	Fluorene	86-73-7	17,000.		470.	ug/kg	100
03304	Benzo(a)anthracene	56-55-3	9,800.		47.	ug/kg	100
03305	Chrysene	218-01-9	8,400.		190.	ug/kg	100
03306	Benzo(b)fluoranthene	205-99-2	6,500.		37.	ug/kg	100
03307	Benzo(k)fluoranthene	207-08-9	3,000.		37.	ug/kg	100
03308	Benzo(a)pyrene	50-32-8	6,200.		47.	ug/kg	100
03309	Dibenzo(a,h)anthracene	53-70-3	730.	J	93.	ug/kg	100
03310	Benzo(g,h,i)perylene	191-24-2	3,200.		280.	ug/kg	100
03311	Indeno(1,2,3-cd)pyrene	193-39-5	4,500.		190.	ug/kg	100
Accurate surrogate recoveries could not be determined due to the dilution required for analysis of the sample.							

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis		Analyst	Dilution Factor
				Date and Time			
00111	Moisture	EPA 160.3 modified	1	11/24/2000	14:21	Susan A. Engle	1
01862	PAH's in Solids	SW-846 8310	1	12/01/2000	22:46	Michelle J. Kolodziejwski	100
03338	PAH Solid Extraction	SW-846 3550B	1	11/29/2000	18:00	Desiree J. Wann	1



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Lancaster Laboratories Sample No. SW 3504184

Collected: 11/16/2000 12:00 by JK

Account Number: 07802

Submitted: 11/17/2000 09:15

Kerr-McGee Corporation

Reported: 12/07/00 at 11:47 AM

P.O. Box 25861

Discard: 1/7/01

Oklahoma City OK 73125

PRD1-CTF-3-AB-01 Matrix Spike Grab Soil Sample

Moss American - WI

AB01- SDG#: MOS82-15MS

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit	Units	Dilution Factor
00118	Moisture	n.a.	46.3		0.50	% by wt.	1
01862	PAH's in Solids						
03296	Naphthalene	91-20-3	14,000.	J	5,000.	ug/kg	100
03299	Fluorene	86-73-7	15,000.		470.	ug/kg	100
03304	Benzo(a)anthracene	56-55-3	9,700.		47.	ug/kg	100
03305	Chrysene	218-01-9	8,300.		190.	ug/kg	100
03306	Benzo(b)fluoranthene	205-99-2	5,800.		37.	ug/kg	100
03307	Benzo(k)fluoranthene	207-08-9	2,800.		37.	ug/kg	100
03308	Benzo(a)pyrene	50-32-8	5,400.		47.	ug/kg	100
03309	Dibenzo(a,h)anthracene	53-70-3	790.	J	93.	ug/kg	100
03310	Benzo(g,h,i)perylene	191-24-2	3,000.	J	280.	ug/kg	100
03311	Indeno(1,2,3-cd)pyrene	193-39-5	3,900.		190.	ug/kg	100

Accurate surrogate recoveries could not be determined due to the dilution required for analysis of the sample.

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00118	Moisture	EPA 160.3 modified	1	11/24/2000 14:21	Susan A. Engle	1
01862	PAH's in Solids	SW-846 8310	1	12/01/2000 23:11	Michelle J. Kolodziejwski	100
03338	PAH Solid Extraction	SW-846 3550B	1	11/29/2000 18:00	Desiree J. Wann	1



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Lancaster Laboratories Sample No. SW 3504185

Collected: 11/16/2000 12:00 by JK

Account Number: 07802

Submitted: 11/17/2000 09:15

Kerr-McGee Corporation

Reported: 12/07/00 at 11:48 AM

P.O. Box 25861

Discard: 1/7/01

Oklahoma City OK 73125

PRD1-CTF-3-AB-01 Matrix Spike Duplicate Grab Soil Sample

Moss American - WI

AB01- SDG#: MOS82-15MSD

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit	Units	Dilution Factor
00118	Moisture	n.a.	46.3	0.50	% by wt.	1
00121	Moisture Duplicate	n.a.	49.3	0.50	% by wt.	1

The duplicate moisture value is provided to assess the precision of the moisture test. For comparability purposes, the initial moisture determination is the value used to perform dry weight calculations.

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit	Units	Dilution Factor
01862	PAH's in Solids					
03296	Naphthalene	91-20-3	14,000.	J 5,000.	ug/kg	100
03299	Fluorene	86-73-7	15,000.	470.	ug/kg	100
03304	Benzo(a)anthracene	56-55-3	10,000.	47.	ug/kg	100
03305	Chrysene	218-01-9	9,000.	190.	ug/kg	100
03306	Benzo(b)fluoranthene	205-99-2	6,200.	37.	ug/kg	100
03307	Benzo(k)fluoranthene	207-08-9	2,900.	37.	ug/kg	100
03308	Benzo(a)pyrene	50-32-8	6,000.	47.	ug/kg	100
03309	Dibenzo(a,h)anthracene	53-70-3	790.	J 93.	ug/kg	100
03310	Benzo(g,h,i)perylene	191-24-2	3,300.	280.	ug/kg	100
03311	Indeno(1,2,3-cd)pyrene	193-39-5	4,300.	190.	ug/kg	100

Accurate surrogate recoveries could not be determined due to the dilution required for analysis of the sample.

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00118	Moisture	EPA 160.3 modified	1	11/24/2000 14:21	Susan A. Engle	1
00121	Moisture Duplicate	EPA 160.3 modified	1	11/24/2000 14:21	Susan A. Engle	1
01862	PAH's in Solids	SW-846 8310	1	12/01/2000 23:36	Michelle J. Kolodziejwski	100
03338	PAH Solid Extraction	SW-846 3550B	1	11/29/2000 18:00	Desiree J. Wann	1



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Lancaster Laboratories Sample No. SW 3504186

Collected: 11/16/2000 12:05 by JK

Account Number: 07802

Submitted: 11/17/2000 09:15

Kerr-McGee Corporation

Reported: 12/07/00 at 11:48 AM

P.O. Box 25861

Discard: 1/7/01

Oklahoma City OK 73125

PRD1-CTF-3-C-01 Grab Soil Sample

Moss American - WI

AC01- SDG#: MOS82-16

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit	Units	Dilution Factor
00111	Moisture	n.a.	35.0		0.50	% by wt.	1
"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The result reported above is on an as-received basis.							
01862	PAH's in Solids						
03296	Naphthalene	91-20-3	5,600.	J	4,200.	ug/kg	100
03299	Fluorene	86-73-7	16,000.		380.	ug/kg	100
03304	Benzo(a)anthracene	56-55-3	11,000.		38.	ug/kg	100
03305	Chrysene	218-01-9	11,000.		150.	ug/kg	100
03306	Benzo(b)fluoranthene	205-99-2	5,500.		31.	ug/kg	100
03307	Benzo(k)fluoranthene	207-08-9	2,700.		31.	ug/kg	100
03308	Benzo(a)pyrene	50-32-8	5,400.		38.	ug/kg	100
03309	Dibenzo(a,h)anthracene	53-70-3	680.	J	77.	ug/kg	100
03310	Benzo(g,h,i)perylene	191-24-2	2,400.	J	230.	ug/kg	100
03311	Indeno(1,2,3-cd)pyrene	193-39-5	3,400.		150.	ug/kg	100

Accurate surrogate recoveries could not be determined due to the dilution required for analysis of the sample.

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	EPA 160.3 modified	1	11/24/2000 14:21	Susan A. Engle	1
01862	PAH's in Solids	SW-846 8310	1	12/02/2000 06:38	Michelle J. Kolodziejwski	100
03338	PAH Solid Extraction	SW-846 3550B	1	11/29/2000 18:00	Desiree J. Wann	1



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





Lancaster Laboratories Sample No. SW 3504187

Collected: 11/16/2000 12:05 by JK

Account Number: 07802

Submitted: 11/17/2000 09:15

Kerr-McGee Corporation

Reported: 12/07/00 at 11:48 AM

P.O. Box 25861

Discard: 1/7/01

Oklahoma City OK 73125

PRD1-CTF-3-C-01-DP Grab Soil Sample

Moss American - WI

AC01D SDG#: MOS82-17FD\*

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit	Units	Dilution Factor
00111	Moisture	n.a.	32.6	0.50	% by wt.	1
"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The result reported above is on an as-received basis.						
01862	PAH's in Solids					
03296	Naphthalene	91-20-3	N.D.	4,000.	ug/kg	200
03299	Fluorene	86-73-7	8,400.	370.	ug/kg	200
03304	Benzo(a)anthracene	56-55-3	3,700.	37.	ug/kg	200
03305	Chrysene	218-01-9	3,400.	150.	ug/kg	200
03306	Benzo(b)fluoranthene	205-99-2	2,000.	30.	ug/kg	200
03307	Benzo(k)fluoranthene	207-08-9	930.	30.	ug/kg	200
03308	Benzo(a)pyrene	50-32-8	1,800.	37.	ug/kg	200
03309	Dibenzo(a,h)anthracene	53-70-3	250. J	74.	ug/kg	200
03310	Benzo(g,h,i)perylene	191-24-2	750. J	220.	ug/kg	200
03311	Indeno(1,2,3-cd)pyrene	193-39-5	1,200. J	150.	ug/kg	200

Accurate surrogate recoveries could not be determined due to the dilution required for analysis of the sample.

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	EPA 160.3 modified	1	11/24/2000 14:21	Susan A. Engle	1
01862	PAH's in Solids	SW-846 8310	1	12/02/2000 07:03	Michelle J. Kolodziejwski	200
03338	PAH Solid Extraction	SW-846 3550B	1	11/29/2000 18:00	Desiree J. Wann	1



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

# Analysis Request/ Environmental Services Chain of Custody



For Lancaster Laboratories use only  
 Acct. # 7802 Sample # 3509422-47

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

1 Client: KERR-MCGEE Acct. #: \_\_\_\_\_  
 Project Name/#: MOSS-AMERICA PWSID #: \_\_\_\_\_  
 Project Manager: TOM GRAAN P.O.# \_\_\_\_\_  
 Sampler: JOE KLEMP Quote #: \_\_\_\_\_  
 Name of state where samples were collected: WISCONSIN

2 Sample Identification	Date Collected	Time Collected	3			4 Matrix			5 Total # of Containers	Analyses Requested										Remarks	6 Temperature of samples upon receipt (if requested)							
			Grab	Composite	Soil	Water	Other	Potable (check if applicable)		NPDES																		
PRD2-CTA-1-A-01	11/28/00	1400	X		X				X	8310																		
PRD2-CTA-2-A-01	11/28/00	1405	X		X			X																				
PRD2-CTA-3-A-01	11/28/00	1410	X		X			X																				
PRD2-CTB-1-A-01	11/28/00	1412	X		X			X																				
PRD2-CTB-2-A-01	11/28/00	1413	X		X			X																				
PRD2-CTB-3-A-01	11/28/00	1415	X		X			X																				
PRD2-CTC-1-A-01	11/28/00	1510	X		X			X																				
PRD2-CTC-2-A-01	11/28/00	1511	X		X			X																				
PRD2-CTC-3-A-01	11/28/00	1513	X		X			X																				
PRD2-CTD-1-A-01	11/28/00	1515	X		X			X																				

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

Relinquished by: <u>Henry Mann</u>	Date: <u>11/22/00</u>	Time: <u>0600</u>	Received by: <u>Federick</u>	Date:	Time:
Relinquished by: <u>J. La. Ylman</u>	Date: <u>11/24/00</u>	Time: <u>1730</u>	Received by: <u>Foder</u>	Date: <u>11/24/00</u>	Time: <u>1730</u>
Relinquished by:	Date:	Time:	Received by:	Date:	Time:
Relinquished by:	Date:	Time:	Received by:	Date:	Time:
Relinquished by:	Date:	Time:	Received by: <u>Kathy Binkley</u>	Date: <u>11-29-00</u>	Time: <u>0915</u>

8 Data Package Options (please circle if requested)

QC Summary	Type VI (Raw Data) <u>PER QUOTE</u>	SDG Complete? Yes <u>(N)</u>
Type I (Tier I)	GLP	
Type II (Tier II)	Other	
Type III (NJ Red. Del.)		
Type IV (CLP)		

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



For Lancaster Laboratories use only  
 Acct. # 7802 Sample # 3509422-47

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

1 Client: KERR-MCGEE Acct. #: \_\_\_\_\_  
 Project Name/#: MOSS AMERICA PWSID #: \_\_\_\_\_  
 Project Manager: TOM GRAAN P.O.# \_\_\_\_\_  
 Sampler: JOE KLEMP Quote #: \_\_\_\_\_  
 Name of state where samples were collected: WISCONSIN

Sample Identification	Date Collected	Time Collected	3		4			Total # of Containers	5										Remarks	Temperature of samples upon receipt (if requested)
			Grab	Composite	Soil	Water	Other		Analyses Requested											
PRD2-CTD-2-A-01	1/28/00	1516	X	X				X	8310											
PRD2-CTD-3-A-01	1/28/00	1517	X	X				X												
PRD2-CTE-1-A-01	1/28/00	1518	X	X				X												
PRD2-CTE-2-A-01	1/28/00	1518	X	X				X												
PRD2-CTE-3-A-01	1/28/00	1519	X	X				X												
PRD2-CTE-1-A-01	1/28/00	1520	X	X				X												
PRD2-CTF-2-A-01	1/28/00	1521	X	X				X												
PRD2-CTF-3-A-01	1/28/00	1522	X	X				X												
PRD2-CTE-2-A-01-DP	1/28/00	1518	X	X				X												
PRD2-CTF-3-A-01-IDP	1/28/00	1522	X	X				X												

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

Relinquished by: <u>M. C. Allen</u>	Date: <u>1/28/00</u>	Time: <u>1730</u>	Received by: <u>Fedex</u>	Date: <u>1/28/00</u>	Time: <u>1730</u>
Relinquished by:	Date:	Time:	Received by:	Date:	Time:
Relinquished by:	Date:	Time:	Received by:	Date:	Time:
Relinquished by:	Date:	Time:	Received by:	Date:	Time:
Relinquished by:	Date:	Time:	Received by: <u>Kathy Binkley</u>	Date: <u>11-29-00</u>	Time: <u>0915</u>

8 Data Package Options (please circle if requested)

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

# Analysis Request/ Environmental Services Chain of Custody



For Lancaster Laboratories use only  
 Acct. # 7802 Sample # 3509422-47

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

Client: <u>KERR MCGEE</u> Acct. #: _____ Project Name/ #: <u>MOSS-AMERICA</u> PWSID #: _____ Project Manager: <u>TOM GRAAN</u> P.O.# _____ Sampler: <u>JOE KLUMP</u> Quote #: _____ Name of state where samples were collected: <u>WISCONSIN</u>		Matrix <b>4</b> <input type="checkbox"/> Potable (Check if applicable) <input type="checkbox"/> NPDES <input type="checkbox"/> Soil <input type="checkbox"/> Water <input type="checkbox"/> Other	Total # of Containers	Analyses Requested <b>5</b> <div style="font-size: 2em; transform: rotate(-45deg); opacity: 0.5;">S310-PAH</div>	For lab use only FSC: _____ SCR #: _____ Temperature of samples upon receipt (if requested) <b>6</b>					
Sample Identification	Date Collected	Time Collected	Grab <b>3</b>	Composite	Soil	Water	Other	Total # of Containers	Remarks	Temperature of samples upon receipt (if requested)
PRD2-CTG-1-A-01	11/28/00	1528	X		X			X		
PRD2-CTG-2-A-01	11/28/00	1530	X		X			X		
PRD2-CTG-3-A-01	11/28/00	1537	X		X			X		
PRD2-CTG-3-A-01-MS/MED	11/28/00	1537	X		X			X		
PRD2-SB-01	11/28/00	1543	X		X			X		
<del> </del>			X		X			X		
<del> </del>			X		X			X		
<del> </del>			X		X			X		
<del> </del>			X		X			X		
<del> </del>			X		X			X		

<b>7 Turnaround Time Requested (TAT)</b> (please circle): <u>Normal</u> Rush (Rush TAT is subject to Lancaster Laboratories approval and surcharge.) Date results are needed: <u>STD TAT</u> Rush results requested by (please circle): Phone Fax Phone #: <u>847-918-4000</u> Fax #: <u>847-918-4055</u>	Relinquished by: <u>J. A. Klump</u> Date: <u>11/29/00</u> Time: <u>1730</u> Relinquished by: _____ Date: _____ Time: _____ Relinquished by: _____ Date: _____ Time: _____ Relinquished by: _____ Date: _____ Time: _____ Relinquished by: _____ Date: _____ Time: _____	Received by: <u>FedEx</u> Date: <u>11/29/00</u> Time: <u>1730</u> Received by: _____ Date: _____ Time: _____ Received by: _____ Date: _____ Time: _____ Received by: _____ Date: _____ Time: _____ Received by: <u>Kathy Binkley</u> Date: <u>11-29-00</u> Time: <u>0915</u>
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<b>8 Data Package Options</b> (please circle if requested) QC Summary Type VI (Raw Data) <u>PER QUOTE</u> Type I (Tier I) GLP Type II (Tier II) Other Type III (NJ Red. Del.) Type IV (CLP)	SDG Complete? Yes <u>No</u> Site-specific QC required? Yes No (If yes, indicate QC sample and submit triplicate volume.) Internal Chain of Custody required? Yes No
--	--



## ANALYTICAL RESULTS

Prepared for:

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

Prepared by:

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

SAMPLE GROUP

The sample group for this submittal is 741264. Samples arrived at the laboratory on Wednesday, November 29, 2000.

<u>Client Description</u>	<u>Lancaster Labs Number</u>
PRD2-CTA-1-A-01 Grab Soil Sample	3509422
PRD2-CTA-2-A-01 Grab Soil Sample	3509423
PRD2-CTA-3-A-01 Grab Soil Sample	3509424
PRD2-CTB-1-A-01 Grab Soil Sample	3509425
PRD2-CTB-2-A-01 Grab Soil Sample	3509426
PRD2-CTB-3-A-01 Grab Soil Sample	3509427
PRD2-CTC-1-A-01 Grab Soil Sample	3509428
PRD2-CTC-2-A-01 Grab Soil Sample	3509429
PRD2-CTC-3-A-01 Grab Soil Sample	3509430
PRD2-CTD-1-A-01 Grab Soil Sample	3509431
PRD2-CTD-2-A-01 Grab Soil Sample	3509432
PRD2-CTD-3-A-01 Grab Soil Sample	3509433
PRD2-CTE-1-A-01 Grab Soil Sample	3509434
PRD2-CTE-2-A-01 Grab Soil Sample	3509435
PRD2-CTE-3-A-01 Grab Soil Sample	3509436
PRD2-CTF-1-A-01 Grab Soil Sample	3509437
PRD2-CTF-2-A-01 Grab Soil Sample	3509438
PRD2-CTF-3-A-01 Grab Soil Sample	3509439
PRD2-CTE-2-A-01-DP Grab Soil Sample	3509440
PRD2-CTF-3-A-01-DP Grab Soil Sample	3509441
PRD2-CTG-1-A-01 Grab Soil Sample	3509442
PRD2-CTG-2-A-01 Grab Soil Sample	3509443
PRD2-CTG-3-A-01 Unspiked Grab Soil Sample	3509444
PRD2-CTG-3-A-01 Matrix Spike Grab Soil Sample	3509445
PRD2-CTG-3-A-01 Matrix Spike Dup. Grab Soil Sample	3509446
PRD2-SB-01 Grab Soil Sample	3509447

METHODOLOGY

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



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	

Questions? Contact your Client Services Representative  
Kay G. Hower at (717) 656-2300.

Respectfully Submitted

Erik J. Frederiksen  
Group Leader

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



Lancaster Laboratories Sample No. SW 3509422

Collected: 11/28/2000 14:00 by JK

Account Number: 07802

Submitted: 11/29/2000 09:15

Reported: 12/11/00 at 11:37 PM

Discard: 1/11/01

PRD2-CTA-1-A-01 Grab Soil Sample

Moss American - WI

Kerr-McGee Corporation

P.O. Box 25861

Oklahoma City, OK 73125

PR021 SDG#: MOS86-01

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit	Units	Dilution Factor
00111	Moisture	n.a.	24.4	0.50	% by wt.	1
"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The result reported above is on an as-received basis.						
01862	PAH's in Solids					
03296	Naphthalene	91-20-3	N.D.	3,600.	ug/kg	100
03299	Fluorene	86-73-7	5,400.	330.	ug/kg	100
03304	Benzo(a)anthracene	56-55-3	1,800.	33.	ug/kg	100
03305	Chrysene	218-01-9	1,400.	J 130.	ug/kg	100
03306	Benzo(b)fluoranthene	205-99-2	750.	26.	ug/kg	100
03307	Benzo(k)fluoranthene	207-08-9	410.	26.	ug/kg	100
03308	Benzo(a)pyrene	50-32-8	730.	33.	ug/kg	100
03309	Dibenzo(a,h)anthracene	53-70-3	N.D.	66.	ug/kg	100
03310	Benzo(g,h,i)perylene	191-24-2	350.	J 200.	ug/kg	100
03311	Indeno(1,2,3-cd)pyrene	193-39-5	480.	J 130.	ug/kg	100
Accurate surrogate recoveries could not be determined due to the dilution required for analysis of the sample.						

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	EPA 160.3 modified	1	11/30/2000 21:20	Elaine F. Stoltzfus	1
01862	PAH's in Solids	SW-846 8310	1	12/05/2000 20:49	Michelle J. Kolodziejwski	100
03338	PAH Solid Extraction	SW-846 3550B	1	12/01/2000 09:00	Andres Amaya	1



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



Lancaster Laboratories Sample No. SW 3509423

Collected: 11/28/2000 14:05 by JK

Account Number: 07802

Submitted: 11/29/2000 09:15

Kerr-McGee Corporation

Reported: 12/11/00 at 11:37 PM

P.O. Box 25861

Discard: 1/11/01

Oklahoma City, OK 73125

PRD2-CTA-2-A-01 Grab Soil Sample

Moss American - WI

PR022 SDG#: MOS86-02

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit	Units	Dilution Factor
00111	Moisture	n.a.	25.8	0.50	% by wt.	1
"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The result reported above is on an as-received basis.						
01862	PAH's in Solids					
03296	Naphthalene	91-20-3	N.D.	2,900.	ug/kg	20
03299	Fluorene	86-73-7	460. J	270.	ug/kg	20
03304	Benzo(a)anthracene	56-55-3	2,100.	27.	ug/kg	20
03305	Chrysene	218-01-9	1,600.	110.	ug/kg	20
03306	Benzo(b)fluoranthene	205-99-2	1,700.	22.	ug/kg	20
03307	Benzo(k)fluoranthene	207-08-9	810.	22.	ug/kg	20
03308	Benzo(a)pyrene	50-32-8	1,700.	27.	ug/kg	20
03309	Dibenzo(a,h)anthracene	53-70-3	200. J	54.	ug/kg	20
03310	Benzo(g,h,i)perylene	191-24-2	1,000. J	160.	ug/kg	20
03311	Indeno(1,2,3-cd)pyrene	193-39-5	1,300.	110.	ug/kg	20
The surrogate data is outside the QC limits due to unresolvable matrix problems evident in the sample chromatogram.						

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Analysis		Analyst	Dilution Factor
			Trial#	Date and Time		
00111	Moisture	EPA 160.3 modified	1	11/30/2000 21:20	Elaine F. Stoltzfus	1
01862	PAH's in Solids	SW-846 8310	1	12/03/2000 13:28	Michelle J. Kolodziejwski	20
03338	PAH Solid Extraction	SW-846 3550B	1	12/01/2000 09:00	Andres Amaya	1



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





Lancaster Laboratories Sample No. SW 3509424

Collected: 11/28/2000 14:10 by JK

Account Number: 07802

Submitted: 11/29/2000 09:15

Kerr-McGee Corporation

Reported: 12/11/00 at 11:37 PM

P.O. Box 25861

Discard: 1/11/01

Oklahoma City OK 73125

PRD2-CTA-3-A-01 Grab Soil Sample

Moss American - WI

PR023 SDG#: MOS86-03

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit	Units	Dilution Factor
00111	Moisture	n.a.	31.1	0.50	% by wt.	1
"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The result reported above is on an as-received basis.						
01862	PAH's in Solids					
03296	Naphthalene	91-20-3	N.D.	3,100.	ug/kg	20
03299	Fluorene	86-73-7	670.	J 290.	ug/kg	20
03304	Benzo(a)anthracene	56-55-3	2,000.	29.	ug/kg	20
03305	Chrysene	218-01-9	1,700.	120.	ug/kg	20
03306	Benzo(b)fluoranthene	205-99-2	2,100.	23.	ug/kg	20
03307	Benzo(k)fluoranthene	207-08-9	1,100.	23.	ug/kg	20
03308	Benzo(a)pyrene	50-32-8	2,100.	29.	ug/kg	20
03309	Dibenzo(a,h)anthracene	53-70-3	280.	J 58.	ug/kg	20
03310	Benzo(g,h,i)perylene	191-24-2	2,100.	170.	ug/kg	20
03311	Indeno(1,2,3-cd)pyrene	193-39-5	2,500.	120.	ug/kg	20
The surrogate data is outside the QC limits due to unresolvable matrix problems evident in the sample chromatogram.						

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Analysis		Analyst	Dilution Factor
			Trial#	Date and Time		
00111	Moisture	EPA 160.3 modified	1	11/30/2000 21:20	Elaine F. Stoltzfus	1
01862	PAH's in Solids	SW-846 8310	1	12/03/2000 13:53	Michelle J. Kolodziejcki	20
03338	PAH Solid Extraction	SW-846 3550B	1	12/01/2000 09:00	Andres Amaya	1



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



Lancaster Laboratories Sample No. SW 3509425

Collected: 11/28/2000 14:12 by JK

Account Number: 07802

Submitted: 11/29/2000 09:15  
 Reported: 12/11/00 at 11:37 PM  
 Discard: 1/11/01  
 PRD2-CTB-1-A-01 Grab Soil Sample  
 Moss American - WI

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

D2TB1 SDG#: MOS86-04

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit	Units	Dilution Factor
00111	Moisture	n.a.	27.8	0.50	% by wt.	1
"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The result reported above is on an as-received basis.						
01862	PAH's in Solids					
03296	Naphthalene	91-20-3	N.D.	7,500.	ug/kg	20
03299	Fluorene	86-73-7	2,200.	J 690.	ug/kg	20
03304	Benzo(a)anthracene	56-55-3	1,400.	69.	ug/kg	20
03305	Chrysene	218-01-9	N.D.	280.	ug/kg	20
03306	Benzo(b)fluoranthene	205-99-2	860.	55.	ug/kg	20
03307	Benzo(k)fluoranthene	207-08-9	440.	J 55.	ug/kg	20
03308	Benzo(a)pyrene	50-32-8	820.	J 69.	ug/kg	20
03309	Dibenzo(a,h)anthracene	53-70-3	N.D.	140.	ug/kg	20
03310	Benzo(g,h,i)perylene	191-24-2	830.	J 420.	ug/kg	20
03311	Indeno(1,2,3-cd)pyrene	193-39-5	850.	J 280.	ug/kg	20

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

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	EPA 160.3 modified	1	11/30/2000 21:20	Elaine F. Stoltzfus	1
01862	PAH's in Solids	SW-846 8310	1	12/03/2000 14:18	Michelle J. Kolodziejcki	20
03338	PAH Solid Extraction	SW-846 3550B	1	12/01/2000 09:00	Andres Amaya	1



**Lancaster Laboratories Sample No. SW 3509426**

Collected: 11/28/2000 14:13 by JK

Account Number: 07802

Submitted: 11/29/2000 09:15

Kerr-McGee Corporation

Reported: 12/11/00 at 11:37 PM

P.O. Box 25861

Discard: 1/11/01

Oklahoma City, OK 73125

PRD2-CTB-2-A-01 Grab Soil Sample

Moss American - WI

D2TB2 SDG#: MOS86-05

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit	Units	Dilution Factor
00111	Moisture	n.a.	31.9	0.50	% by wt.	1
"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The result reported above is on an as-received basis.						
01862	PAH's in Solids					
03296	Naphthalene	91-20-3	N.D.	7,900.	ug/kg	20
03299	Fluorene	86-73-7	11,000.	730.	ug/kg	20
03304	Benzo(a)anthracene	56-55-3	5,100.	73.	ug/kg	20
03305	Chrysene	218-01-9	3,800.	290.	ug/kg	20
03306	Benzo(b)fluoranthene	205-99-2	2,900.	59.	ug/kg	20
03307	Benzo(k)fluoranthene	207-08-9	1,500.	59.	ug/kg	20
03308	Benzo(a)pyrene	50-32-8	2,700.	73.	ug/kg	20
03309	Dibenzo(a,h)anthracene	53-70-3	360. J	150.	ug/kg	20
03310	Benzo(g,h,i)perylene	191-24-2	2,300. J	440.	ug/kg	20
03311	Indeno(1,2,3-cd)pyrene	193-39-5	2,800. J	290.	ug/kg	20

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

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis		Analyst	Dilution Factor
				Date and Time			
00111	Moisture	EPA 160.3 modified	1	11/30/2000	20:46	Elaine F. Stoltzfus	1
01862	PAH's in Solids	SW-846 8310	1	12/03/2000	14:44	Michelle J. Kolodziejwski	20
03338	PAH Solid Extraction	SW-846 3550B	1	12/01/2000	09:00	Andres Amaya	1



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Lancaster Laboratories Sample No. SW 3509427

Collected: 11/28/2000 14:15 by JK

Account Number: 07802

Submitted: 11/29/2000 09:15

Kerr-McGee Corporation

Reported: 12/11/00 at 11:37 PM

P.O. Box 25861

Discard: 1/11/01

Oklahoma City OK 73125

PRD2-CTB-3-A-01 Grab Soil Sample  
Moss American - WI

D2TB3 SDG#: MOS86-06

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit	Units	Dilution Factor
00111	Moisture	n.a.	19.7	0.50	% by wt.	1
"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The result reported above is on an as-received basis.						
01862	PAH's in Solids					
03296	Naphthalene	91-20-3	N.D.	2,700.	ug/kg	20
03299	Fluorene	86-73-7	1,400.	J 250.	ug/kg	20
03304	Benzo(a)anthracene	56-55-3	2,100.	25.	ug/kg	20
03305	Chrysene	218-01-9	1,800.	100.	ug/kg	20
03306	Benzo(b)fluoranthene	205-99-2	1,700.	20.	ug/kg	20
03307	Benzo(k)fluoranthene	207-08-9	860.	20.	ug/kg	20
03308	Benzo(a)pyrene	50-32-8	1,700.	25.	ug/kg	20
03309	Dibenzo(a,h)anthracene	53-70-3	240.	J 50.	ug/kg	20
03310	Benzo(g,h,i)perylene	191-24-2	1,400.	J 150.	ug/kg	20
03311	Indeno(1,2,3-cd)pyrene	193-39-5	1,900.	100.	ug/kg	20

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

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis		Analyst	Dilution Factor
				Date	Time		
00111	Moisture	EPA 160.3 modified	1	11/30/2000	20:46	Elaine F. Stoltzfus	1
01862	PAH's in Solids	SW-846 8310	1	12/03/2000	15:09	Michelle J. Kolodziejwski	20
03338	PAH Solid Extraction	SW-846 3550B	1	12/01/2000	09:00	Andres Amaya	1



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Lancaster Laboratories Sample No. SW 3509428

Collected: 11/28/2000 15:10 by JK

Account Number: 07802

Submitted: 11/29/2000 09:15  
 Reported: 12/11/00 at 11:37 PM  
 Discard: 1/11/01  
 PRD2-CTC-1-A-01-Grab Soil Sample  
 Moss American - WI

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2CTC1 SDG#: MOS86-07

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit	Units	Dilution Factor
00111	Moisture	n.a.	48.7	0.50	% by wt.	1
"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The result reported above is on an as-received basis.						
01862	PAH's in Solids					
03296	Naphthalene	91-20-3	N.D.	11,000.	ug/kg	20
03299	Fluorene	86-73-7	N.D.	970.	ug/kg	20
03304	Benzo(a)anthracene	56-55-3	3,100.	97.	ug/kg	20
03305	Chrysene	218-01-9	3,000.	J 390.	ug/kg	20
03306	Benzo(b)fluoranthene	205-99-2	3,300.	78.	ug/kg	20
03307	Benzo(k)fluoranthene	207-08-9	1,600.	78.	ug/kg	20
03308	Benzo(a)pyrene	50-32-8	2,900.	97.	ug/kg	20
03309	Dibenzo(a,h)anthracene	53-70-3	420.	J 190.	ug/kg	20
03310	Benzo(g,h,i)perylene	191-24-2	2,300.	J 580.	ug/kg	20
03311	Indeno(1,2,3-cd)pyrene	193-39-5	2,800.	J 390.	ug/kg	20
The surrogate data is outside the QC limits due to unresolvable matrix problems evident in the sample chromatogram.						

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	EPA 160.3 modified	1	11/30/2000 20:46	Elaine F. Stoltzfus	1
01862	PAH's in Solids	SW-846 8310	1	12/03/2000 15:56	Michelle J. Kolodziejwski	20
03338	PAH Solid Extraction	SW-846 3550B	1	12/01/2000 09:00	Andres Amaya	1



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Lancaster Laboratories Sample No. SW 3509429

Collected: 11/28/2000 15:11 by JK

Account Number: 07802

Submitted: 11/29/2000 09:15

Kerr-McGee Corporation

Reported: 12/11/00 at 11:37 PM

P.O. Box 25861

Discard: 1/11/01

Oklahoma City OK 73125

PRD2-CTC-2-A-01 Grab Soil Sample

Moss American - WI

2CTC2 SDG#: MOS86-08

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit	Units	Dilution Factor
00111	Moisture	n.a.	46.8	0.50	% by wt.	1
"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The result reported above is on an as-received basis.						
01862	PAH's in Solids					
03296	Naphthalene	91-20-3	N.D.	4,100.	ug/kg	20
03299	Fluorene	86-73-7	420.	J 380.	ug/kg	20
03304	Benzo(a)anthracene	56-55-3	2,900.	38.	ug/kg	20
03305	Chrysene	218-01-9	2,300.	150.	ug/kg	20
03306	Benzo(b)fluoranthene	205-99-2	2,800.	30.	ug/kg	20
03307	Benzo(k)fluoranthene	207-08-9	1,400.	30.	ug/kg	20
03308	Benzo(a)pyrene	50-32-8	2,600.	38.	ug/kg	20
03309	Dibenzo(a,h)anthracene	53-70-3	390.	J 75.	ug/kg	20
03310	Benzo(g,h,i)perylene	191-24-2	1,800.	J 230.	ug/kg	20
03311	Indeno(1,2,3-cd)pyrene	193-39-5	2,400.	150.	ug/kg	20

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

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	EPA 160.3 modified	1	11/30/2000 20:46	Elaine F. Stoltzfus	1
01862	PAH's in Solids	SW-846 8310	1	12/03/2000 16:21	Michelle J. Kolodziejski	20
03338	PAH Solid Extraction	SW-846 3550B	1	12/01/2000 09:00	Andres Amaya	1



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Lancaster Laboratories Sample No. SW 3509430

Collected: 11/28/2000 15:13 by JK

Account Number: 07802

Submitted: 11/29/2000 09:15

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Reported: 12/11/00 at 11:37 PM

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Discard: 1/11/01

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PRD2-CTC-3-A-01 Grab Soil Sample

Moss American - WI

2CTC3 SDG#: MOS86-09

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit	Units	Dilution Factor
00111	Moisture	n.a.	18.7	0.50	% by wt.	1
"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The result reported above is on an as-received basis.						
01862	PAH's in Solids					
03296	Naphthalene	91-20-3	N.D.	660.	ug/kg	20
03299	Fluorene	86-73-7	95. J	62.	ug/kg	20
03304	Benzo(a)anthracene	56-55-3	340.	6.2	ug/kg	20
03305	Chrysene	218-01-9	310.	25.	ug/kg	20
03306	Benzo(b)fluoranthene	205-99-2	330.	4.9	ug/kg	20
03307	Benzo(k)fluoranthene	207-08-9	160.	4.9	ug/kg	20
03308	Benzo(a)pyrene	50-32-8	300.	6.2	ug/kg	20
03309	Dibenzo(a,h)anthracene	53-70-3	41. J	12.	ug/kg	20
03310	Benzo(g,h,i)perylene	191-24-2	250. J	37.	ug/kg	20
03311	Indeno(1,2,3-cd)pyrene	193-39-5	300.	25.	ug/kg	20
The surrogate data is outside the QC limits due to unresolvable matrix problems evident in the sample chromatogram.						

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Analysis		Analyst	Dilution Factor
			Trial#	Date and Time		
00111	Moisture	EPA 160.3 modified	1	11/30/2000 20:46	Elaine F. Stoltzfus	1
01862	PAH's in Solids	SW-846 8310	1	12/03/2000 16:47	Michelle J. Kolodziejwski	20
03338	PAH Solid Extraction	SW-846 3550B	1	12/01/2000 09:00	Andres Amaya	1



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Lancaster Laboratories Sample No. SW 3509431

Collected: 11/28/2000 15:15 by JK

Account Number: 07802

Submitted: 11/29/2000 09:15

Kerr-McGee Corporation

Reported: 12/11/00 at 11:38 PM

P.O. Box 25861

Discard: 1/11/01

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PRD2-CTD-1-A-01 Grab Soil Sample

Moss American - WI

2CTD1 SDG#: MOS86-10

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit	Units	Dilution Factor
00111	Moisture	n.a.	26.0	0.50	% by wt.	1
"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The result reported above is on an as-received basis.						
01862	PAH's in Solids					
03296	Naphthalene	91-20-3	N.D.	2,900.	ug/kg	20
03299	Fluorene	86-73-7	N.D.	270.	ug/kg	20
03304	Benzo(a)anthracene	56-55-3	110. J	27.	ug/kg	20
03305	Chrysene	218-01-9	N.D.	110.	ug/kg	20
03306	Benzo(b)fluoranthene	205-99-2	57. J	22.	ug/kg	20
03307	Benzo(k)fluoranthene	207-08-9	33. J	22.	ug/kg	20
03308	Benzo(a)pyrene	50-32-8	59. J	27.	ug/kg	20
03309	Dibenzo(a,h)anthracene	53-70-3	N.D.	54.	ug/kg	20
03310	Benzo(g,h,i)perylene	191-24-2	N.D.	160.	ug/kg	20
03311	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	110.	ug/kg	20
Due to the nature of the sample matrix, a reduced aliquot was used for analysis. The Limits of Quantitation (LOQ's) were raised accordingly.						

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	EPA 160.3 modified	1	11/30/2000 20:46	Elaine F. Stoltzfus	1
01862	PAH's in Solids	SW-846 8310	1	12/03/2000 17:12	Michelle J. Kolodziejwski	20
03338	PAH Solid Extraction	SW-846 3550B	1	12/01/2000 09:00	Andres Amaya	1



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Lancaster Laboratories Sample No. SW 3509432

Collected: 11/28/2000 15:16 by JK

Account Number: 07802

Submitted: 11/29/2000 09:15  
 Reported: 12/11/00 at 11:38 PM  
 Discard: 1/11/01  
 PRD2-CTD-2-A-01 Grab Soil Sample  
 Moss American - WI

Kerr-McGee Corporation  
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2CTD2 SDG#: MOS86-11

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit	Units	Dilution Factor
00111	Moisture	n.a.	44.7	0.50	% by wt.	1
"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The result reported above is on an as-received basis.						
01862	PAH's in Solids					
03296	Naphthalene	91-20-3	N.D.	3,900.	ug/kg	20
03299	Fluorene	86-73-7	730. J	360.	ug/kg	20
03304	Benzo(a)anthracene	56-55-3	4,400.	36.	ug/kg	20
03305	Chrysene	218-01-9	3,700.	140.	ug/kg	20
03306	Benzo(b)fluoranthene	205-99-2	2,900.	29.	ug/kg	20
03307	Benzo(k)fluoranthene	207-08-9	1,400.	29.	ug/kg	20
03308	Benzo(a)pyrene	50-32-8	2,400.	36.	ug/kg	20
03309	Dibenzo(a,h)anthracene	53-70-3	270. J	72.	ug/kg	20
03310	Benzo(g,h,i)perylene	191-24-2	1,700. J	220.	ug/kg	20
03311	Indeno(1,2,3-cd)pyrene	193-39-5	2,100.	140.	ug/kg	20
The surrogate data is outside the QC limits due to unresolvable matrix problems evident in the sample chromatogram.						

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Analysis		Analyst	Dilution Factor
			Trial#	Date and Time		
00111	Moisture	EPA 160.3 modified	1	11/30/2000 20:46	Elaine F. Stoltzfus	1
01862	PAH's in Solids	SW-846 8310	1	12/03/2000 17:37	Michelle J. Kolodziejewski	20
03338	PAH Solid Extraction	SW-846 3550B	1	12/01/2000 09:00	Andres Amaya	1



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Lancaster Laboratories Sample No. SW 3509433

Collected: 11/28/2000 15:17 by JK

Account Number: 07802

Submitted: 11/29/2000 09:15

Kerr-McGee Corporation

Reported: 12/11/00 at 11:38 PM

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Discard: 1/11/01

Oklahoma City OK 73125

PRD2-CTD-3-A-01 Grab Soil Sample  
Moss American - WI

2CTD3 SDG#: MOS86-12

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit	Units	Dilution Factor
00111	Moisture	n.a.	39.9	0.50	% by wt.	1
"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The result reported above is on an as-received basis.						
01862	PAH's in Solids					
03296	Naphthalene	91-20-3	N.D.	9,000.	ug/kg	20
03299	Fluorene	86-73-7	5,200.	J 830.	ug/kg	20
03304	Benzo(a)anthracene	56-55-3	2,900.	83.	ug/kg	20
03305	Chrysene	218-01-9	2,000.	J 330.	ug/kg	20
03306	Benzo(b)fluoranthene	205-99-2	1,900.	67.	ug/kg	20
03307	Benzo(k)fluoranthene	207-08-9	960.	67.	ug/kg	20
03308	Benzo(a)pyrene	50-32-8	1,900.	83.	ug/kg	20
03309	Dibenzo(a,h)anthracene	53-70-3	360.	J 170.	ug/kg	20
03310	Benzo(g,h,i)perylene	191-24-2	1,200.	J 500.	ug/kg	20
03311	Indeno(1,2,3-cd)pyrene	193-39-5	1,200.	J 330.	ug/kg	20
The surrogate data is outside the QC limits due to unresolvable matrix problems evident in the sample chromatogram.						

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	EPA 160.3 modified	1	11/30/2000 20:46	Elaine F. Stoltzfus	1
01862	PAH's in Solids	SW-846 8310	1	12/03/2000 19:23	Michelle J. Kolodziejcki	20
03338	PAH Solid Extraction	SW-846 3550B	1	12/01/2000 09:00	Andres Amaya	1



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**Lancaster Laboratories Sample No. SW 3509434**

Collected: 11/28/2000 15:18 by JK

Account Number: 07802

Submitted: 11/29/2000 09:15  
 Reported: 12/11/00 at 11:38 PM.  
 Discard: 1/11/01  
 PRD2-CTE-1-A-01 Grab Soil Sample  
 Moss American - WI

Kerr-McGee Corporation  
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 Oklahoma City, OK 73125

2CTE1 SDG#: MOS86-13

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit	Units	Dilution Factor
00111	Moisture	n.a.	34.7	0.50	% by wt.	1
"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The result reported above is on an as-received basis.						
01862	PAH's in Solids					
03296	Naphthalene	91-20-3	N.D.	830.	ug/kg	20
03299	Fluorene	86-73-7	N.D.	77.	ug/kg	20
03304	Benzo(a)anthracene	56-55-3	130.	7.7	ug/kg	20
03305	Chrysene	218-01-9	120. J	31.	ug/kg	20
03306	Benzo(b)fluoranthene	205-99-2	130.	6.1	ug/kg	20
03307	Benzo(k)fluoranthene	207-08-9	65.	6.1	ug/kg	20
03308	Benzo(a)pyrene	50-32-8	130.	7.7	ug/kg	20
03309	Dibenzo(a,h)anthracene	53-70-3	24. J	15.	ug/kg	20
03310	Benzo(g,h,i)perylene	191-24-2	170. J	46.	ug/kg	20
03311	Indeno(1,2,3-cd)pyrene	193-39-5	210. J	31.	ug/kg	20

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	EPA 160.3 modified	1	11/30/2000 20:46	Elaine F. Stoltzfus	1
01862	PAH's in Solids	SW-846 8310	1	12/03/2000 19:48	Michelle J. Kolodziejcki	20
03338	PAH Solid Extraction	SW-846 3550B	1	12/01/2000 09:00	Andres Amaya	1



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Lancaster Laboratories Sample No. SW 3509435

Collected: 11/28/2000 15:18 by JK

Account Number: 07802

Submitted: 11/29/2000 09:15

Kerr-McGee Corporation

Reported: 12/11/00 at 11:38 PM

P.O. Box 25861

Discard: 1/11/01

Oklahoma City OK 73125

PRD2-CTE-2-A-01 Grab Soil Sample

Moss American - WI

2CTE2 SDG#: MOS86-14

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit	Units	Dilution Factor
00111	Moisture	n.a.	19.8	0.50	% by wt.	1
"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The result reported above is on an as-received basis.						
01862	PAH's in Solids					
03296	Naphthalene	91-20-3	240,000.	J 160,000.	ug/kg	200
03299	Fluorene	86-73-7	860,000.	15,000.	ug/kg	200
03304	Benzo(a)anthracene	56-55-3	160,000.	1,500.	ug/kg	200
03305	Chrysene	218-01-9	100,000.	6,000.	ug/kg	200
03306	Benzo(b)fluoranthene	205-99-2	51,000.	1,200.	ug/kg	200
03307	Benzo(k)fluoranthene	207-08-9	28,000.	1,200.	ug/kg	200
03308	Benzo(a)pyrene	50-32-8	47,000.	1,500.	ug/kg	200
03309	Dibenzo(a,h)anthracene	53-70-3	N.D.	3,000.	ug/kg	200
03310	Benzo(g,h,i)perylene	191-24-2	22,000.	J 9,000.	ug/kg	200
03311	Indeno(1,2,3-cd)pyrene	193-39-5	27,000.	J 6,000.	ug/kg	200
Accurate surrogate recoveries could not be determined due to the dilution required for analysis of the sample.						

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Analysis		Analyst	Dilution Factor
			Trial#	Date and Time		
00111	Moisture	EPA 160.3 modified	1	11/30/2000 20:46	Elaine F. Stoltzfus	1
01862	PAH's in Solids	SW-846 8310	1	12/04/2000 12:31	Michelle J. Kolodziejcki	200
03338	PAH Solid Extraction	SW-846 3550B	1	12/01/2000 09:00	Andres Amaya	1



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Lancaster Laboratories Sample No. SW 3509436

Collected: 11/28/2000 15:19 by JK

Account Number: 07802

Submitted: 11/29/2000 09:15

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Reported: 12/11/00 at 11:38 PM

P.O. Box 25861

Discard: 1/11/01

Oklahoma City OK 73125

PRD2-CTE-3-A-01 Grab Soil Sample

Moss American - WI

D2TE3 SDG#: MOS86-15

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit	Units	Dilution Factor
00111	Moisture	n.a.	33.5	0.50	% by wt.	1
"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The result reported above is on an as-received basis.						
01862	PAH's in Solids					
03296	Naphthalene	91-20-3	N.D.	3,200.	ug/kg	20
03299	Fluorene	86-73-7	12,000.	300.	ug/kg	20
03304	Benzo(a)anthracene	56-55-3	14,000.	30.	ug/kg	20
03305	Chrysene	218-01-9	11,000.	120.	ug/kg	20
03306	Benzo(b)fluoranthene	205-99-2	7,800.	24.	ug/kg	20
03307	Benzo(k)fluoranthene	207-08-9	3,900.	24.	ug/kg	20
03308	Benzo(a)pyrene	50-32-8	7,800.	30.	ug/kg	20
03309	Dibenzo(a,h)anthracene	53-70-3	710.	60.	ug/kg	20
03310	Benzo(g,h,i)perylene	191-24-2	4,000.	180.	ug/kg	20
03311	Indeno(1,2,3-cd)pyrene	193-39-5	5,400.	120.	ug/kg	20
The surrogate data is outside the QC limits due to unresolvable matrix problems evident in the sample chromatogram.						

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis		Analyst	Dilution Factor
				Date	Time		
00111	Moisture	EPA 160.3 modified	1	11/30/2000	20:46	Elaine F. Stoltzfus	1
01862	PAH's in Solids	SW-846 8310	1	12/03/2000	20:39	Michelle J. Kolodziejwski	20
03338	PAH Solid Extraction	SW-846 3550B	1	12/01/2000	09:00	Andres Amaya	1



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Lancaster Laboratories Sample No. SW 3509437

Collected: 11/28/2000 15:20 by JK

Account Number: 07802

Submitted: 11/29/2000 09:15  
 Reported: 12/11/00 at 11:38 PM  
 Discard: 1/11/01  
 PRD2-CTF-1-A-01 Grab Soil Sample  
 Moss American - WI

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

2CTF1 SDG#: MOS86-16

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit	Units	Dilution Factor
00111	Moisture	n.a.	32.2	0.50	% by wt.	1
"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The result reported above is on an as-received basis.						
01862	PAH's in Solids					
03296	Naphthalene	91-20-3	N.D.	800.	ug/kg	20
03299	Fluorene	86-73-7	N.D.	74.	ug/kg	20
03304	Benzo(a)anthracene	56-55-3	110.	7.4	ug/kg	20
03305	Chrysene	218-01-9	N.D.	29.	ug/kg	20
03306	Benzo(b)fluoranthene	205-99-2	84.	5.9	ug/kg	20
03307	Benzo(k)fluoranthene	207-08-9	40. J	5.9	ug/kg	20
03308	Benzo(a)pyrene	50-32-8	71. J	7.4	ug/kg	20
03309	Dibenzo(a,h)anthracene	53-70-3	15. J	15.	ug/kg	20
03310	Benzo(g,h,i)perylene	191-24-2	110. J	44.	ug/kg	20
03311	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	29.	ug/kg	20

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	EPA 160.3 modified	1	11/30/2000 20:46	Elaine F. Stoltzfus	1
01862	PAH's in Solids	SW-846 8310	1	12/03/2000 21:00	Michelle J. Kolodziejwski	20
03338	PAH Solid Extraction	SW-846 3550B	1	12/01/2000 09:00	Andres Amaya	1



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Lancaster Laboratories Sample No. SW 3509438

Collected: 11/28/2000 15:21 by JK

Account Number: 07802

Submitted: 11/29/2000 09:15

Kerr-McGee Corporation

Reported: 12/11/00 at 11:38 PM

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Discard: 1/11/01

Oklahoma City, OK 73125

PRD2-CTF-2-A-01 Grab Soil Sample

Moss American - WI

2CTF2 SDG#: MOS86-17

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method	Detection Limit	Units	Dilution Factor
00111	Moisture	n.a.	28.0		0.50	% by wt.	1
	"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The result reported above is on an as-received basis.						
01862	PAH's in Solids						
03296	Naphthalene	91-20-3	550,000.	J	180,000.	ug/kg	200
03299	Fluorene	86-73-7	620,000.		17,000.	ug/kg	200
03304	Benzo(a)anthracene	56-55-3	110,000.		1,700.	ug/kg	200
03305	Chrysene	218-01-9	71,000.	J	6,700.	ug/kg	200
03306	Benzo(b)fluoranthene	205-99-2	36,000.		1,300.	ug/kg	200
03307	Benzo(k)fluoranthene	207-08-9	19,000.		1,300.	ug/kg	200
03308	Benzo(a)pyrene	50-32-8	34,000.		1,700.	ug/kg	200
03309	Dibenzo(a,h)anthracene	53-70-3	4,600.	J	3,300.	ug/kg	200
03310	Benzo(g,h,i)perylene	191-24-2	N.D.		10,000.	ug/kg	200
03311	Indeno(1,2,3-cd)pyrene	193-39-5	17,000.	J	6,700.	ug/kg	200
	Accurate surrogate recoveries could not be determined due to the dilution required for analysis of the sample.						

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis		Analyst	Dilution Factor
				Date and Time			
00111	Moisture	EPA 160.3 modified	1	11/30/2000 20:46		Elaine F. Stoltzfus	1
01862	PAH's in Solids	SW-846 8310	1	12/04/2000 12:57		Michelle J. Kolodziejwski	200
03338	PAH Solid Extraction	SW-846 3550B	1	12/01/2000 09:00		Andres Amaya	1



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Lancaster Laboratories Sample No. SW 3509439

Collected: 11/28/2000 15:22 by JK

Account Number: 07802

Submitted: 11/29/2000 09:15

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Reported: 12/11/00 at 11:38 PM

P.O. Box 25861

Discard: 1/11/01

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PRD2-CTF-3-A-01 Grab Soil Sample

Moss American - WI

2CTF3 SDG#: MOS86-18

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit	Units	Dilution Factor
00111	Moisture	n.a.	15.1	0.50	% by wt.	1
"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The result reported above is on an as-received basis.						
01862	PAH's in Solids					
03296	Naphthalene	91-20-3	N.D.	2,500.	ug/kg	20
03299	Fluorene	86-73-7	N.D.	240.	ug/kg	20
03304	Benzo(a)anthracene	56-55-3	540.	24.	ug/kg	20
03305	Chrysene	218-01-9	470. J	94.	ug/kg	20
03306	Benzo(b)fluoranthene	205-99-2	440.	19.	ug/kg	20
03307	Benzo(k)fluoranthene	207-08-9	210.	19.	ug/kg	20
03308	Benzo(a)pyrene	50-32-8	430.	24.	ug/kg	20
03309	Dibenzo(a,h)anthracene	53-70-3	N.D.	47.	ug/kg	20
03310	Benzo(g,h,i)perylene	191-24-2	350. J	140.	ug/kg	20
03311	Indeno(1,2,3-cd)pyrene	193-39-5	420. J	94.	ug/kg	20
The surrogate data is outside the QC limits due to unresolvable matrix problems evident in the sample chromatogram.						

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Analysis		Analyst	Dilution Factor
			Trial#	Date and Time		
00111	Moisture	EPA 160.3 modified	1	11/30/2000 20:46	Elaine F. Stoltzfus	1
01862	PAH's in Solids	SW-846 8310	1	12/03/2000 22:31	Michelle J. Kolodziejwski	20
03338	PAH Solid Extraction	SW-846 3550B	1	12/01/2000 09:00	Andres Amaya	1



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**Lancaster Laboratories Sample No. SW 3509440**

Collected: 11/28/2000 15:18 by JK

Account Number: 07802

Submitted: 11/29/2000 09:15

Kerr-McGee Corporation

Reported: 12/11/00 at 11:38 PM

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Discard: 1/11/01

Oklahoma City OK 73125

PRD2-CTE-2-A-01-DP Grab Soil Sample

Moss American - WI

CTE2A SDG#: MOS86-19

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit	Units	Dilution Factor
00111	Moisture	n.a.	26.6	0.50	% by wt.	1
"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The result reported above is on an as-received basis.						
01862	PAH's in Solids					
03296	Naphthalene	91-20-3	N.D.	180,000.	ug/kg	200
03299	Fluorene	86-73-7	730,000.	16,000.	ug/kg	200
03304	Benzo(a)anthracene	56-55-3	140,000.	1,600.	ug/kg	200
03305	Chrysene	218-01-9	86,000.	6,500.	ug/kg	200
03306	Benzo(b)fluoranthene	205-99-2	43,000.	1,300.	ug/kg	200
03307	Benzo(k)fluoranthene	207-08-9	23,000.	1,300.	ug/kg	200
03308	Benzo(a)pyrene	50-32-8	40,000.	1,600.	ug/kg	200
03309	Dibenzo(a,h)anthracene	53-70-3	3,900.	J 3,300.	ug/kg	200
03310	Benzo(g,h,i)perylene	191-24-2	16,000.	J 9,800.	ug/kg	200
03311	Indeno(1,2,3-cd)pyrene	193-39-5	21,000.	J 6,500.	ug/kg	200
Accurate surrogate recoveries could not be determined due to the dilution required for analysis of the sample.						

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis		Analyst	Dilution Factor
				Date and Time			
00111	Moisture	EPA 160.3 modified	1	11/30/2000	20:46	Elaine F. Stoltzfus	1
01862	PAH's in Solids	SW-846 8310	1	12/04/2000	13:22	Michelle J. Kolodziejski	200
03338	PAH Solid Extraction	SW-846 3550B	1	12/01/2000	09:00	Andres Amaya	1



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Lancaster Laboratories Sample No. SW 3509441

Collected: 11/28/2000 15:22 by JK

Account Number: 07802

Submitted: 11/29/2000 09:15

Kerr-McGee Corporation

Reported: 12/11/00 at 11:38 PM

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Discard: 1/11/01

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PRD2-CTF-3-A-01-DP Grab Soil Sample

Moss American - WI

CTF3A SDG#: MOS86-20

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit	Units	Dilution Factor
00111	Moisture	n.a.	12.7	0.50	% by wt.	1
"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The result reported above is on an as-received basis.						
01862	PAH's in Solids					
03296	Naphthalene	91-20-3	N.D.	620.	ug/kg	20
03299	Fluorene	86-73-7	150.	57.	ug/kg	20
03304	Benzo(a)anthracene	56-55-3	99.	5.7	ug/kg	20
03305	Chrysene	218-01-9	110.	23.	ug/kg	20
03306	Benzo(b)fluoranthene	205-99-2	110.	4.6	ug/kg	20
03307	Benzo(k)fluoranthene	207-08-9	42.	4.6	ug/kg	20
03308	Benzo(a)pyrene	50-32-8	140.	5.7	ug/kg	20
03309	Dibenzo(a,h)anthracene	53-70-3	24.	11.	ug/kg	20
03310	Benzo(g,h,i)perylene	191-24-2	120.	34.	ug/kg	20
03311	Indeno(1,2,3-cd)pyrene	193-39-5	150.	23.	ug/kg	20

Due to the nature of the sample matrix, a reduced aliquot was used for analysis. The Limits of Quantitation (LOQ's) were raised accordingly.

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	EPA 160.3 modified	1	11/30/2000 20:46	Elaine F. Stoltzfus	1
01862	PAH's in Solids	SW-846 8310	1	12/04/2000 23:40	Michelle J. Kolodziejski	20
03338	PAH Solid Extraction	SW-846 3550B	1	12/01/2000 17:45	Desiree J. Wann	1



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Lancaster Laboratories Sample No. SW 3509442

Collected: 11/28/2000 15:28 by JK

Account Number: 07802

Submitted: 11/29/2000 09:15  
 Reported: 12/11/00 at 11:38 PM  
 Discard: 1/11/01  
 PRD2-CTG-1-A-01 Grab Soil Sample  
 Moss American - WI

Kerr-McGee Corporation  
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CTG1A SDG#: MOS86-21

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit	Units	Dilution Factor
00111	Moisture	n.a.	28.3	0.50	% by wt.	1
"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The result reported above is on an as-received basis.						
01862	PAH's in Solids					
03296	Naphthalene	91-20-3	920.	J 750.	ug/kg	20
03299	Fluorene	86-73-7	96.	J 70.	ug/kg	20
03304	Benzo(a)anthracene	56-55-3	730.	7.0	ug/kg	20
03305	Chrysene	218-01-9	560.	28.	ug/kg	20
03306	Benzo(b)fluoranthene	205-99-2	780.	5.6	ug/kg	20
03307	Benzo(k)fluoranthene	207-08-9	400.	5.6	ug/kg	20
03308	Benzo(a)pyrene	50-32-8	790.	7.0	ug/kg	20
03309	Dibenzo(a,h)anthracene	53-70-3	110.	J 14.	ug/kg	20
03310	Benzo(g,h,i)perylene	191-24-2	800.	42.	ug/kg	20
03311	Indeno(1,2,3-cd)pyrene	193-39-5	940.	28.	ug/kg	20
The surrogate data is outside the QC limits due to unresolvable matrix problems evident in the sample chromatogram.						

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	EPA 160.3 modified	1	11/30/2000 20:46	Elaine F. Stoltzfus	1
01862	PAH's in Solids	SW-846 8310	1	12/05/2000 11:24	Michelle J. Kolodziejwski	20
03338	PAH Solid Extraction	SW-846 3550B	1	12/01/2000 17:45	Desiree J. Wann	1



Lancaster Laboratories Sample No. SW 3509443

Collected: 11/28/2000 15:30 by JK

Account Number: 07802

Submitted: 11/29/2000 09:15

Kerr-McGee Corporation

Reported: 12/11/00 at 11:38 PM

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Discard: 1/11/01

Oklahoma City OK 73125

PRD2-CTG-2-A-01 Grab Soil Sample

Moss American - WI

CTG2A SDG#: MOS86-22

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit	Units	Dilution Factor
00111	Moisture	n.a.	18.2	0.50	% by wt.	1
"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The result reported above is on an as-received basis.						
01862	PAH's in Solids					
03296	Naphthalene	91-20-3	N.D.	660.	ug/kg	20
03299	Fluorene	86-73-7	1,300.	61.	ug/kg	20
03304	Benzo(a)anthracene	56-55-3	1,200.	6.1	ug/kg	20
03305	Chrysene	218-01-9	1,000.	24.	ug/kg	20
03306	Benzo(b)fluoranthene	205-99-2	820.	4.9	ug/kg	20
03307	Benzo(k)fluoranthene	207-08-9	420.	4.9	ug/kg	20
03308	Benzo(a)pyrene	50-32-8	800.	6.1	ug/kg	20
03309	Dibenzo(a,h)anthracene	53-70-3	110. J	12.	ug/kg	20
03310	Benzo(g,h,i)perylene	191-24-2	600.	37.	ug/kg	20
03311	Indeno(1,2,3-cd)pyrene	193-39-5	760.	24.	ug/kg	20

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

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Analysis		Analyst	Dilution Factor
			Trial#	Date and Time		
00111	Moisture	EPA 160.3 modified	1	11/30/2000 20:46	Elaine F. Stoltzfus	1
01862	PAH's in Solids	SW-846 8310	1	12/05/2000 00:30	Michelle J. Kolodziejski	20
03338	PAH Solid Extraction	SW-846 3550B	1	12/01/2000 17:45	Desiree J. Wann	1



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Lancaster Laboratories Sample No. SW 3509444

Collected: 11/28/2000 15:37 by JK

Account Number: 07802

Submitted: 11/29/2000 09:15

Kerr-McGee Corporation

Reported: 12/11/00 at 11:38 PM

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Discard: 1/11/01

Oklahoma City, OK 73125

PRD2-CTG-3-A-01 Unspiked Grab Soil Sample

Moss American - WI

CTG3A SDG#: MOS86-23BKG

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit	Units	Dilution Factor
00111	Moisture	n.a.	19.2	0.50	% by wt.	1
"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The result reported above is on an as-received basis.						
01862	PAH's in Solids					
03296	Naphthalene	91-20-3	N.D.	670.	ug/kg	20
03299	Fluorene	86-73-7	250.	J 62.	ug/kg	20
03304	Benzo(a)anthracene	56-55-3	500.	6.2	ug/kg	20
03305	Chrysene	218-01-9	370.	25.	ug/kg	20
03306	Benzo(b)fluoranthene	205-99-2	450.	5.0	ug/kg	20
03307	Benzo(k)fluoranthene	207-08-9	230.	5.0	ug/kg	20
03308	Benzo(a)pyrene	50-32-8	450.	6.2	ug/kg	20
03309	Dibenzo(a,h)anthracene	53-70-3	N.D.	12.	ug/kg	20
03310	Benzo(g,h,i)perylene	191-24-2	500.	37.	ug/kg	20
03311	Indeno(1,2,3-cd)pyrene	193-39-5	570.	25.	ug/kg	20

Due to the nature of the sample matrix, a reduced aliquot was used for analysis. The Limits of Quantitation (LOQ's) were raised accordingly.

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

## Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	EPA 160.3 modified	1	11/30/2000 20:46	Elaine F. Stoltzfus	1
01862	PAH's in Solids	SW-846 8310	1	12/04/2000 22:02	Michelle J. Kolodziejwski	20
03338	PAH Solid Extraction	SW-846 3550B	1	12/01/2000 17:45	Desiree J. Wann	1



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Lancaster Laboratories Sample No. SW 3509445

Collected: 11/28/2000 15:37 by JK

Account Number: 07802

Submitted: 11/29/2000 09:15  
 Reported: 12/11/00 at 11:38 PM  
 Discard: 1/11/01

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 P.O. Box 25861  
 Oklahoma City, OK 73125

PRD2-CTG-3-A-01 Matrix Spike Grab Soil Sample  
 Moss American - WI

CTG3A SDG#: MOS86-23MS

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit	Units	Dilution Factor
00118	Moisture	n.a.	19.2	0.50	% by wt.	1
01862	PAH's in Solids					
03296	Naphthalene	91-20-3	8,300.	670.	ug/kg	20
03299	Fluorene	86-73-7	1,000.	62.	ug/kg	20
03304	Benzo(a)anthracene	56-55-3	410.	6.2	ug/kg	20
03305	Chrysene	218-01-9	410.	25.	ug/kg	20
03306	Benzo(b)fluoranthene	205-99-2	370.	5.0	ug/kg	20
03307	Benzo(k)fluoranthene	207-08-9	200.	5.0	ug/kg	20
03308	Benzo(a)pyrene	50-32-8	370.	6.2	ug/kg	20
03309	Dibenzo(a,h)anthracene	53-70-3	160.	12.	ug/kg	20
03310	Benzo(g,h,i)perylene	191-24-2	760.	37.	ug/kg	20
03311	Indeno(1,2,3-cd)pyrene	193-39-5	590.	25.	ug/kg	20

Due to the nature of the sample matrix, a reduced aliquot was used for analysis. The Limits of Quantitation (LOQ's) were raised accordingly.

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

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Analysis		Analyst	Dilution Factor
			Trial#	Date and Time		
00118	Moisture	EPA 160.3 modified	1	11/30/2000 20:46	Elaine F. Stoltzfus	1
01862	PAH's in Solids	SW-846 8310	1	12/04/2000 22:28	Michelle J. Kolodziejcki	20
03338	PAH Solid Extraction	SW-846 3550B	1	12/01/2000 17:45	Desiree J. Wann	1



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



Lancaster Laboratories Sample No. SW 3509446

Collected: 11/28/2000 15:37 by JK

Account Number: 07802

Submitted: 11/29/2000 09:15

Reported: 12/11/00 at 11:38 PM

Discard: 1/11/01

PRD2-CTG-3-A-01 Matrix Spike Dup. Grab Soil Sample  
Moss American - WI

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

CTG3A SDG#: MOS86-23MSD

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit	Units	Dilution Factor
00118	Moisture	n.a.	19.2	0.50	% by wt.	1
00121	Moisture Duplicate	n.a.	23.0	0.50	% by wt.	1
The duplicate moisture value is provided to assess the precision of the moisture test. For comparability purposes, the initial moisture determination is the value used to perform dry weight calculations.						
01862	PAH's in Solids					
03296	Naphthalene	91-20-3	8,900.	670.	ug/kg	20
03299	Fluorene	86-73-7	1,100.	62.	ug/kg	20
03304	Benzo(a)anthracene	56-55-3	590.	6.2	ug/kg	20
03305	Chrysene	218-01-9	560.	25.	ug/kg	20
03306	Benzo(b)fluoranthene	205-99-2	480.	5.0	ug/kg	20
03307	Benzo(k)fluoranthene	207-08-9	260.	5.0	ug/kg	20
03308	Benzo(a)pyrene	50-32-8	470.	6.2	ug/kg	20
03309	Dibenzo(a,h)anthracene	53-70-3	170.	12.	ug/kg	20
03310	Benzo(g,h,i)perylene	191-24-2	910.	37.	ug/kg	20
03311	Indeno(1,2,3-cd)pyrene	193-39-5	760.	25.	ug/kg	20

Due to the nature of the sample matrix, a reduced aliquot was used for analysis. The Limits of Quantitation (LOQ's) were raised accordingly.

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

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00118	Moisture	EPA 160.3 modified	1	11/30/2000 20:46	Elaine F. Stoltzfus	1
00121	Moisture Duplicate	EPA 160.3 modified	1	11/30/2000 20:46	Elaine F. Stoltzfus	1
01862	PAH's in Solids	SW-846 8310	1	12/04/2000 22:53	Michelle J. Kolodziejwski	20
03338	PAH Solid Extraction	SW-846 3550B	1	12/01/2000 17:45	Desiree J. Wann	1



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



Lancaster Laboratories Sample No. SW 3509446

Collected: 11/28/2000 15:37 by JK

Account Number: 07802

Submitted: 11/29/2000 09:15

Kerr-McGee Corporation

Reported: 12/11/00 at 11:38 PM

P.O. Box 25861

Discard: 1/11/01

Oklahoma City OK 73125

PRD2-CTG-3-A-01 Matrix Spike Dup. Grab Soil Sample  
Moss American - WI

CTG3A SDG#: MOS86-23MSD



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





Lancaster Laboratories Sample No. SW 3509447

Collected: 11/28/2000 15:43 by JK

Account Number: 07802

Submitted: 11/29/2000 09:15  
 Reported: 12/11/00 at 11:38 PM  
 Discard: 1/11/01  
 PRD2-SB-01 Grab Soil Sample  
 Moss American - WI

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

PRD2S SDG#: MOS86-24\*

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit	Units	Dilution Factor
00111	Moisture	n.a.	11.2	0.50	% by wt.	1
"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The result reported above is on an as-received basis.						
01862	PAH's in Solids					
03296	Naphthalene	91-20-3	N.D.	610.	ug/kg	20
03299	Fluorene	86-73-7	130.	J 56.	ug/kg	20
03304	Benzo(a)anthracene	56-55-3	390.	5.6	ug/kg	20
03305	Chrysene	218-01-9	210.	J 23.	ug/kg	20
03306	Benzo(b)fluoranthene	205-99-2	250.	4.5	ug/kg	20
03307	Benzo(k)fluoranthene	207-08-9	140.	4.5	ug/kg	20
03308	Benzo(a)pyrene	50-32-8	290.	5.6	ug/kg	20
03309	Dibenzo(a,h)anthracene	53-70-3	38.	J 11.	ug/kg	20
03310	Benzo(g,h,i)perylene	191-24-2	180.	J 34.	ug/kg	20
03311	Indeno(1,2,3-cd)pyrene	193-39-5	240.	J 23.	ug/kg	20
Accurate surrogate recoveries could not be determined due to the dilution required for analysis of the sample.						

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Analysis		Analyst	Dilution Factor
			Trial#	Date and Time		
00111	Moisture	EPA 160.3 modified	1	11/30/2000 20:46	Elaine F. Stoltzfus	1
01862	PAH's in Solids	SW-846 8310	1	12/05/2000 00:56	Michelle J. Kolodziejcki	20
03338	PAH Solid Extraction	SW-846 3550B	1	12/01/2000 17:45	Desiree J. Wann	1



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

# Analysis Request/ Environmental Services Chain of Custody



For Lancaster Laboratories use only  
 Acct. # 7802 Sample # 3510343-68

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

1 Client: KERR-MCGEE Acct. #: \_\_\_\_\_  
 Project Name #: MISS AMERICA PWSID #: \_\_\_\_\_  
 Project Manager: TOM GRAAN P.O.# \_\_\_\_\_  
 Sampler: JDE KLEMP Quote #: \_\_\_\_\_  
 Name of state where samples were collected: WISCONSIN

For lab use only  
 FSC: \_\_\_\_\_  
 SCR #: 1146359

Matrix 4

5

C.O.C # 1 of 3

Sample Identification	Date Collected	Time Collected	Grab	Composite	Soil	Water	Potable (check if applicable)	NPDES	Other	Total # of Containers	Analyses Requested	Remarks	Temperature of samples upon receipt (if requested)
PRD2-CTA-1-B-01	11/29/00	8:37	X		X					1	X		
PRD2-CTA-2-B-01	11/29/00	8:40	X		X					1	X		
PRD2-CTA-3-B-01	11/29/00	8:56	X		X					1	X	Labelled CTA-3-C-01/20	
PRD2-CTB-1-B-01	11/29/00	9:04	X		X					1	X		
PRD2-CTB-2-B-01	11/29/00	9:10	X		X					1	X		
PRD2-CTB-3-B-01	11/29/00	0925	X		X					1	X		
PRD2-CTC-1-B-01	11/29/00	0930	X		X					1	X		
PRD2-CTC-2-B-01	11/29/00	0930	X		X					1	X		
PRD2-CTC-3-B-01	11/29/00	0933	X		X					1	X		
PRD2-CTC-3-B-01-DP	11/29/00	0933	X		X					1	X		

7 Turnaround Time Requested (TAT) (please circle): Normal Rush

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

Relinquished by: <u>Sherry Mar</u>	Date: <u>11/22/00</u>	Time: <u>0600</u>	Received by:	Date:	Time:
Relinquished by: <u>L.A. Blue</u>	Date: <u>11/29/00</u>	Time: <u>1630</u>	Received by: <u>FedEx</u>	Date: <u>11/29/00</u>	Time: <u>1630</u>
Relinquished by:	Date:	Time:	Received by:	Date:	Time:
Relinquished by:	Date:	Time:	Received by:	Date:	Time:
Relinquished by:	Date:	Time:	Received by: <u>Sherry Mar</u>	Date: <u>11/29/00</u>	Time: <u>1000</u>

8 Data Package Options (please circle if requested)

QC Summary Type VI (Raw Data) PER QUOTE SDG Complete? Yes No

Type I (Tier I) GLP  
 Type II (Tier II) Other  
 Type III (NJ Red. Del.)  
 Type IV (CLP)

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

Internal Chain of Custody required? Yes No

# Analysis Request/ Environmental Services Chain of Custody



For Lancaster Laboratories use only  
 Acct. # 7802 Sample # 3510343-68

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

1 Client: KERR-MC GEE Acct. #: \_\_\_\_\_  
 Project Name/ #: MOSSAMERICA PWSID #: \_\_\_\_\_  
 Project Manager: TOM GRAAN P.O.# \_\_\_\_\_  
 Sampler: JOE KLEMP Quote #: \_\_\_\_\_  
 Name of state where samples were collected: WISCONSIN

For lab use only  
 FSC: \_\_\_\_\_  
 SCR #: 1146359

6  
 temperature of samples upon receipt (if requested)

2 Sample Identification	Date Collected	Time Collected	3		4 Matrix			Total # of Containers	5 Analyses Requested					Remarks	6	
			Grab	Composite	Soil	Water	Other		☐ Potable (check if applicable)	☐ NPDES						
PRD2-CTD-1-B-01	11/29/00	0940	X		X			1	X							
PRD2-CTD-2-B-01	11/29/00	0945	X		X			1	X							
PRD2-CTD-3-B-01	11/29/00	0951	X		X			1	X							
PRD2-CTE-1-B-01	11/29/00	0956	X		X			1	X							
PRD2-CTE-2-B-01	11/29/00	1055	X		X			1	X							
PRD2-CTE-3-B-01	11/29/00	1100	X		X			1	X							
PRD2-CTF-1-B-01	11/29/00	1106	X		X			1	X							SS W/DNR
PRD2-CTF-2-B-01	11/29/00	1110	X		X			1	X							SS W/DNR
PRD2-CTF-3-B-01	11/29/00	1115	X		X			1	X							SS W/DNR
PRD2-CTF-3-B-01-DP	11/29/00	1115	X		X			1	X							

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

Relinquished by: <u>Henry Man</u>	Date: <u>11/29/00</u>	Time: <u>0600</u>	Received by:	Date:	Time:
Relinquished by: <u>L. A. Kelly</u>	Date: <u>11/29/00</u>	Time: <u>1630</u>	Received by: <u>FedEx</u>	Date: <u>11/29/00</u>	Time: <u>1630</u>
Relinquished by:	Date:	Time:	Received by:	Date:	Time:
Relinquished by:	Date:	Time:	Received by:	Date:	Time:
Relinquished by:	Date:	Time:	Received by: <u>Dennis [Signature]</u>	Date: <u>11/29/00</u>	Time: <u>0000</u>

8 Data Package Options (please circle if requested)      SDG Complete? Yes NO

QC Summary      Type VI (Raw Data) PERQUOTE

Type I (Tier I)      GLP

Type II (Tier II)      Other

Type III (NJ Red. Del.)

Type IV (CLP)

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

Internal Chain of Custody required? Yes No

# Analysis Request/ Environmental Services Chain of Custody



For Lancaster Laboratories use only  
 Acct. # 7802 Sample # 3510343-68

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

1

Client: KERR-MCGEE Acct. #: \_\_\_\_\_  
 Project Name/#: MOSS-AMERICA PWSID #: \_\_\_\_\_  
 Project Manager: TOM GRAAN P.O.#: \_\_\_\_\_  
 Sampler: JOE KLEMP Quote #: \_\_\_\_\_  
 Name of state where samples were collected: WISCONSIN

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

2

Sample Identification	Date Collected	Time Collected	Grab	Composite	Soil	Water	Other	Total # of Containers	Analyses Requested	Remarks	Temperature of samples upon receipt (if requested)
PRD2-CTG-1-B-01	11/29/00	1125	X	X				1	X		
PRD2-CTG-2-B-01	11/29/00	1126	X	X				1	X		
PRD2-CTG-3-B-01	11/29/00	1132	X	X				1	X	→ rec'd broken @ U/D	
PRD2-CTG-3-B-01-MS/MSD	11/29/00	1132	X	X				1	X		
CORE 1-0-12	11/29/00	1230	X	X				1	X	SS W/ WDNK	
			X	X					X		
			X	X					X		
			X	X					X		
			X	X					X		
			X	X					X		

8310 PATH

7

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

Relinquished by: <u>[Signature]</u>	Date: <u>11/29/00</u>	Time: <u>1630</u>	Received by: <u>FedEx</u>	Date: <u>11/29/00</u>	Time: <u>1630</u>
Relinquished by: <u>[Signature]</u>	Date: <u>11/29/00</u>	Time: <u>1630</u>	Received by: <u>FedEx</u>	Date: _____	Time: _____

8

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

QC Summary	Type VI (Raw Data) <u>PER QUOTE</u>	SDG Complete? <u>Yes</u> No
Type I (Tier I)	GLP	
Type II (Tier II)	Other	
Type III (NJ Red. Del.)	Site-specific QC required? Yes No	
Type IV (CLP)	Internal Chain of Custody required? Yes No	

Relinquished by:	Date:	Time:	Received by:	Date:	Time:
			<u>H. Abbato</u>	<u>11/29/00</u>	<u>1000</u>



## ANALYTICAL RESULTS

Prepared for:

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

Prepared by:

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

SAMPLE GROUP

The sample group for this submittal is 741479. Samples arrived at the laboratory on Thursday, November 30, 2000.

<u>Client Description</u>	<u>Lancaster Labs Number</u>
PRD2-CTA-1-B-01 Grab Soil Sample	3510343
PRD2-CTA-2-B-01 Grab Soil Sample	3510344
PRD2-CTA-3-B-01 Grab Soil Sample	3510345
PRD2-CTB-1-B-01 Grab Soil Sample	3510346
PRD2-CTB-2-B-01 Grab Soil Sample	3510347
PRD2-CTB-3-B-01 Grab Soil Sample	3510348
PRD2-CTC-1-B-01 Grab Soil Sample	3510349
PRD2-CTC-2-B-01 Grab Soil Sample	3510350
PRD2-CTC-3-B-01 Grab Soil Sample	3510351
PRD2-CTC-3-B-01-DP Grab Soil Sample	3510352
PRD2-CTD-1-B-01 Grab Soil Sample	3510353
PRD2-CTD-2-B-01 Grab Soil Sample	3510354
PRD2-CTD-3-B-01 Grab Soil Sample	3510355
PRD2-CTE-1-B-01 Grab Soil Sample	3510356
PRD2-CTE-2-B-01 Grab Soil Sample	3510357
PRD2-CTE-3-B-01 Grab Soil Sample	3510358
PRD2-CTF-1-B-01 Grab Soil Sample	3510359
PRD2-CTF-2-B-01 Grab Soil Sample	3510360
PRD2-CTF-3-B-01 Grab Soil Sample	3510361
PRD2-CTF-3-B-01-DP Grab Soil Sample	3510362
PRD2-CTG-1-B-01 Grab Soil Sample	3510363
PRD2-CTG-2-B-01 Grab Soil Sample	3510364
PRD2-CTG-3-B-01 Unspiked Grab Soil Sample	3510365
PRD2-CTG-3-B-01 Matrix Spike Grab Soil Sample	3510366
PRD2-CTG-3-B-01 Matrix Spike Dup/Dup Grab Soil	3510367
CORE1-0-12 Grab Soil Sample	3510368

METHODOLOGY

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



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

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

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

Questions? Contact your Client Services Representative  
Kay G. Hower 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



Lancaster Laboratories Sample No. SW 3510343

Collected: 11/29/2000 08:37 by JK

Account Number: 07802

Submitted: 11/30/2000 10:00

Kerr-McGee Corporation

Reported: 12/12/00 at 05:52 AM

P.O. Box 25861

Discard: 1/12/01

Oklahoma City, OK 73125

PRD2-CTA-1-B-01 Grab Soil Sample

Moss American - WI

A1-B1 SDG#: MOS87-01

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit	Units	Dilution Factor
00111	Moisture	n.a.	30.9		0.50	% by wt.	1
"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The result reported above is on an as-received basis.							
01862	PAH's in Solids						
03296	Naphthalene	91-20-3	1,200.	J	780.	ug/kg	20
03299	Fluorene	86-73-7	3,900.		72.	ug/kg	20
03304	Benzo(a)anthracene	56-55-3	720.		7.2	ug/kg	20
03305	Chrysene	218-01-9	500.		29.	ug/kg	20
03306	Benzo(b)fluoranthene	205-99-2	390.		5.8	ug/kg	20
03307	Benzo(k)fluoranthene	207-08-9	200.		5.8	ug/kg	20
03308	Benzo(a)pyrene	50-32-8	400.		7.2	ug/kg	20
03309	Dibenzo(a,h)anthracene	53-70-3	74.	J	14.	ug/kg	20
03310	Benzo(g,h,i)perylene	191-24-2	280.	J	43.	ug/kg	20
03311	Indeno(1,2,3-cd)pyrene	193-39-5	340.		29.	ug/kg	20

Due to the nature of the sample matrix, a reduced aliquot was used for analysis. The Limits of Quantitation (LOQ's) were raised accordingly.

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

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	EPA 160.3 modified	1	12/04/2000 09:17	Susan A. Engle	1
01862	PAH's in Solids	SW-846 8310	1	12/05/2000 01:21	Michelle J. Kolodziejwski	20
03338	PAH Solid Extraction	SW-846 3550B	1	12/01/2000 17:45	Desiree J. Wann	1



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



Lancaster Laboratories Sample No. SW 3510344

Collected: 11/29/2000 08:40 by JK

Account Number: 07802

Submitted: 11/30/2000 10:00

Kerr-McGee Corporation

Reported: 12/12/00 at 05:52 AM

P.O. Box 25861

Discard: 1/12/01

Oklahoma City OK 73125

PRD2-CTA-2-B-01 Grab Soil Sample

Moss American - WI

A2-B1 SDG#: MOS87-02

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit	Units	Dilution Factor
00111	Moisture	n.a.	37.4	0.50	% by wt.	1
"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The result reported above is on an as-received basis.						
01862	PAH's in Solids					
03296	Naphthalene	91-20-3	N.D.	43,000.	ug/kg	1000
03299	Fluorene	86-73-7	180,000.	4,000.	ug/kg	1000
03304	Benzo(a)anthracene	56-55-3	46,000.	400.	ug/kg	1000
03305	Chrysene	218-01-9	27,000.	1,600.	ug/kg	1000
03306	Benzo(b)fluoranthene	205-99-2	16,000.	320.	ug/kg	1000
03307	Benzo(k)fluoranthene	207-08-9	8,200.	320.	ug/kg	1000
03308	Benzo(a)pyrene	50-32-8	13,000.	400.	ug/kg	1000
03309	Dibenzo(a,h)anthracene	53-70-3	1,700.	J 800.	ug/kg	1000
03310	Benzo(g,h,i)perylene	191-24-2	3,700.	J 2,400.	ug/kg	1000
03311	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	1,600.	ug/kg	1000

Accurate surrogate recoveries could not be determined due to the dilution required for analysis of the sample.

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	EPA 160.3 modified	1	12/04/2000 09:17	Susan A. Engle	1
01862	PAH's in Solids	SW-846 8310	1	12/05/2000 11:50	Michelle J. Kolodziejcki	1000
03338	PAH Solid Extraction	SW-846 3550B	1	12/01/2000 17:45	Desiree J. Wann	1



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





Lancaster Laboratories Sample No. SW 3510345

Collected: 11/29/2000 08:56 by JK

Account Number: 07802

Submitted: 11/30/2000 10:00

Kerr-McGee Corporation

Reported: 12/12/00 at 05:52 AM

P.O. Box 25861

Discard: 1/12/01

Oklahoma City, OK 73125

PRD2-CTA-3-B-01 Grab Soil Sample

Moss American - WI

A3-B1 SDG#: MOS87-03

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method	Detection Limit	Units	Dilution Factor
00111	Moisture	n.a.	12.5		0.50	% by wt.	1
	"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The result reported above is on an as-received basis.						
01862	PAH's in Solids						
03296	Naphthalene	91-20-3	990.	J	620.	ug/kg	20
03299	Fluorene	86-73-7	9,000.		57.	ug/kg	20
03304	Benzo(a)anthracene	56-55-3	1,000.		5.7	ug/kg	20
03305	Chrysene	218-01-9	670.		23.	ug/kg	20
03306	Benzo(b)fluoranthene	205-99-2	350.		4.6	ug/kg	20
03307	Benzo(k)fluoranthene	207-08-9	180.		4.6	ug/kg	20
03308	Benzo(a)pyrene	50-32-8	320.		5.7	ug/kg	20
03309	Dibenzo(a,h)anthracene	53-70-3	38.	J	11.	ug/kg	20
03310	Benzo(g,h,i)perylene	191-24-2	130.	J	34.	ug/kg	20
03311	Indeno(1,2,3-cd)pyrene	193-39-5	220.	J	23.	ug/kg	20

Due to the nature of the sample matrix, a reduced aliquot was used for analysis. The Limits of Quantitation (LOQ's) were raised accordingly.

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

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	EPA 160.3 modified	1	12/04/2000 09:17	Susan A. Engle	1
01862	PAH's in Solids	SW-846 8310	1	12/05/2000 02:11	Michelle J. Kolodziejcki	20
03338	PAH Solid Extraction	SW-846 3550B	1	12/01/2000 17:45	Desiree J. Wann	1



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Lancaster Laboratories Sample No. SW 3510346

Collected: 11/29/2000 09:04 by JK

Account Number: 07802

Submitted: 11/30/2000 10:00

Kerr-McGee Corporation

Reported: 12/12/00 at 05:52 AM

P.O. Box 25861

Discard: 1/12/01

Oklahoma City OK 73125

PRD2-CTB-1-B-01 Grab Soil Sample

Moss American - WI

B1-B1 SDG#: MOS87-04

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit	Units	Dilution Factor
00111	Moisture	n.a.	13.0	0.50	% by wt.	1
"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The result reported above is on an as-received basis.						
01862	PAH's in Solids					
03296	Naphthalene	91-20-3	N.D.	620.	ug/kg	20
03299	Fluorene	86-73-7	100. J	57.	ug/kg	20
03304	Benzo(a)anthracene	56-55-3	38. J	5.7	ug/kg	20
03305	Chrysene	218-01-9	31. J	23.	ug/kg	20
03306	Benzo(b)fluoranthene	205-99-2	17. J	4.6	ug/kg	20
03307	Benzo(k)fluoranthene	207-08-9	11. J	4.6	ug/kg	20
03308	Benzo(a)pyrene	50-32-8	23. J	5.7	ug/kg	20
03309	Dibenzo(a,h)anthracene	53-70-3	N.D.	11.	ug/kg	20
03310	Benzo(g,h,i)perylene	191-24-2	N.D.	34.	ug/kg	20
03311	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	23.	ug/kg	20

Due to the nature of the sample matrix, a reduced aliquot was used for analysis. The Limits of Quantitation (LOQ's) were raised accordingly.

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	EPA 160.3 modified	1	12/04/2000 09:17	Susan A. Engle	1
01862	PAH's in Solids	SW-846 8310	1	12/05/2000 02:37	Michelle J. Kolodziejwski	20
03338	PAH Solid Extraction	SW-846 3550B	1	12/01/2000 17:45	Desiree J. Wann	1



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Lancaster Laboratories Sample No. SW 3510347

Collected: 11/29/2000 09:10 by JK

Account Number: 07802

Submitted: 11/30/2000 10:00

Kerr-McGee Corporation

Reported: 12/12/00 at 05:52 AM

P.O. Box 25861

Discard: 1/12/01

Oklahoma City, OK 73125

PRD2-CTB-2-B-01 Grab Soil Sample

Moss American - WI

B2-B1 SDG#: MOS87-05

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit	Units	Dilution Factor
00111	Moisture	n.a.	20.5	0.50	% by wt.	1
"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The result reported above is on an as-received basis.						
01862	PAH's in Solids					
03296	Naphthalene	91-20-3	N.D.	680.	ug/kg	20
03299	Fluorene	86-73-7	2,400.	63.	ug/kg	20
03304	Benzo(a)anthracene	56-55-3	1,500.	6.3	ug/kg	20
03305	Chrysene	218-01-9	1,100.	25.	ug/kg	20
03306	Benzo(b)fluoranthene	205-99-2	980.	5.0	ug/kg	20
03307	Benzo(k)fluoranthene	207-08-9	510.	5.0	ug/kg	20
03308	Benzo(a)pyrene	50-32-8	1,000.	6.3	ug/kg	20
03309	Dibenzo(a,h)anthracene	53-70-3	130.	13.	ug/kg	20
03310	Benzo(g,h,i)perylene	191-24-2	540.	38.	ug/kg	20
03311	Indeno(1,2,3-cd)pyrene	193-39-5	730.	25.	ug/kg	20

Due to the nature of the sample matrix, a reduced aliquot was used for analysis. The Limits of Quantitation (LOQ's) were raised accordingly.

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

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	EPA 160.3 modified	1	12/04/2000 09:17	Susan A. Engle	1
01862	PAH's in Solids	SW-846 8310	1	12/05/2000 03:02	Michelle J. Kolodziejcki	20
03338	PAH Solid Extraction	SW-846 3550B	1	12/01/2000 17:45	Desiree J. Wann	1



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Lancaster Laboratories Sample No. SW 3510348

Collected: 11/29/2000 09:25 by JK

Account Number: 07802

Submitted: 11/30/2000 10:00

Kerr-McGee Corporation

Reported: 12/12/00 at 05:52 AM

P.O. Box 25861

Discard: 1/12/01

Oklahoma City OK 73125

PRD2-CTB-3-B-01 Grab Soil Sample

Moss American - WI

B3-B1 SDG#: MOS87-06

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit	Units	Dilution Factor
00111	Moisture	n.a.	20.1		0.50	% by wt.	1
"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The result reported above is on an as-received basis.							
01862	PAH's in Solids						
03296	Naphthalene	91-20-3	750.	J	680.	ug/kg	20
03299	Fluorene	86-73-7	380.	J	63.	ug/kg	20
03304	Benzo(a)anthracene	56-55-3	720.		6.3	ug/kg	20
03305	Chrysene	218-01-9	700.		25.	ug/kg	20
03306	Benzo(b)fluoranthene	205-99-2	350.		5.0	ug/kg	20
03307	Benzo(k)fluoranthene	207-08-9	200.		5.0	ug/kg	20
03308	Benzo(a)pyrene	50-32-8	520.		6.3	ug/kg	20
03309	Dibenzo(a,h)anthracene	53-70-3	78.	J	13.	ug/kg	20
03310	Benzo(g,h,i)perylene	191-24-2	270.	J	38.	ug/kg	20
03311	Indeno(1,2,3-cd)pyrene	193-39-5	340.		25.	ug/kg	20

Due to the nature of the sample matrix, a reduced aliquot was used for analysis. The Limits of Quantitation (LOQ's) were raised accordingly.

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

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	EPA 160.3 modified	1	12/04/2000 09:17	Susan A. Engle	1
01862	PAH's in Solids	SW-846 8310	1	12/05/2000 03:27	Michelle J. Kolodziejwski	20
03338	PAH Solid Extraction	SW-846 3550B	1	12/01/2000 17:45	Desiree J. Wann	1



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Lancaster Laboratories Sample No. SW 3510349

Collected: 11/29/2000 09:30 by JK

Account Number: 07802

Submitted: 11/30/2000 10:00

Kerr-McGee Corporation

Reported: 12/12/00 at 05:52 AM

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Discard: 1/12/01

Oklahoma City, OK 73125

PRD2-CTC-1-B-01 Grab Soil Sample

Moss American - WI

C1-B1 SDG#: MOS87-07

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit	Units	Dilution Factor
00111	Moisture	n.a.	18.5	0.50	% by wt.	1
"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The result reported above is on an as-received basis.						
01862	PAH's in Solids					
03296	Naphthalene	91-20-3	N.D.	660.	ug/kg	20
03299	Fluorene	86-73-7	300. J	61.	ug/kg	20
03304	Benzo(a)anthracene	56-55-3	600.	6.1	ug/kg	20
03305	Chrysene	218-01-9	530.	25.	ug/kg	20
03306	Benzo(b)fluoranthene	205-99-2	490.	4.9	ug/kg	20
03307	Benzo(k)fluoranthene	207-08-9	250.	4.9	ug/kg	20
03308	Benzo(a)pyrene	50-32-8	490.	6.1	ug/kg	20
03309	Dibenzo(a,h)anthracene	53-70-3	71. J	12.	ug/kg	20
03310	Benzo(g,h,i)perylene	191-24-2	270. J	37.	ug/kg	20
03311	Indeno(1,2,3-cd)pyrene	193-39-5	390.	25.	ug/kg	20

Due to the nature of the sample matrix, a reduced aliquot was used for analysis. The Limits of Quantitation (LOQ's) were raised accordingly.

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

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	EPA 160.3 modified	1	12/04/2000 09:17	Susan A. Engle	1
01862	PAH's in Solids	SW-846 8310	1	12/05/2000 04:14	Michelle J. Kolodziejwski	20
03338	PAH Solid Extraction	SW-846 3550B	1	12/01/2000 17:45	Desiree J. Wann	1



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Lancaster Laboratories Sample No. SW 3510350

Collected: 11/29/2000 09:30 by JK

Account Number: 07802

Submitted: 11/30/2000 10:00

Kerr-McGee Corporation

Reported: 12/12/00 at 05:52 AM

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Discard: 1/12/01

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PRD2-CTC-2-B-01 Grab Soil Sample

Moss American - WI

C2-B1 SDG#: MOS87-08

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit	Units	Dilution Factor
00111	Moisture	n.a.	20.5	0.50	% by wt.	1
"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The result reported above is on an as-received basis.						
01862	PAH's in Solids					
03296	Naphthalene	91-20-3	N.D.	680.	ug/kg	20
03299	Fluorene	86-73-7	120.	63.	ug/kg	20
03304	Benzo(a)anthracene	56-55-3	1,400.	6.3	ug/kg	20
03305	Chrysene	218-01-9	1,300.	25.	ug/kg	20
03306	Benzo(b)fluoranthene	205-99-2	830.	5.0	ug/kg	20
03307	Benzo(k)fluoranthene	207-08-9	440.	5.0	ug/kg	20
03308	Benzo(a)pyrene	50-32-8	750.	6.3	ug/kg	20
03309	Dibenzo(a,h)anthracene	53-70-3	89.	13.	ug/kg	20
03310	Benzo(g,h,i)perylene	191-24-2	330.	38.	ug/kg	20
03311	Indeno(1,2,3-cd)pyrene	193-39-5	470.	25.	ug/kg	20

Due to the nature of the sample matrix, a reduced aliquot was used for analysis. The Limits of Quantitation (LOQ's) were raised accordingly.

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

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	EPA 160.3 modified	1	12/04/2000 09:17	Susan A. Engle	1
01862	PAH's in Solids	SW-846 8310	1	12/05/2000 04:40	Michelle J. Kolodziejwski	20
03338	PAH Solid Extraction	SW-846 3550B	1	12/01/2000 17:45	Desiree J. Wann	1



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Lancaster Laboratories Sample No. SW 3510351

Collected: 11/29/2000 09:33 by JK

Account Number: 07802

Submitted: 11/30/2000 10:00

Kerr-McGee Corporation

Reported: 12/12/00 at 05:52 AM

P.O. Box 25861

Discard: 1/12/01

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PRD2-CTC-3-B-01 Grab Soil Sample

Moss American - WI

C3-B1 SDG#: MOS87-09

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit	Units	Dilution Factor
00111	Moisture	n.a.	13.3	0.50	% by wt.	1
"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The result reported above is on an as-received basis.						
01862	PAH's in Solids					
03296	Naphthalene	91-20-3	N.D.	620.	ug/kg	20
03299	Fluorene	86-73-7	N.D.	58.	ug/kg	20
03304	Benzo(a)anthracene	56-55-3	80.	5.8	ug/kg	20
03305	Chrysene	218-01-9	120. J	23.	ug/kg	20
03306	Benzo(b)fluoranthene	205-99-2	47.	4.6	ug/kg	20
03307	Benzo(k)fluoranthene	207-08-9	24. J	4.6	ug/kg	20
03308	Benzo(a)pyrene	50-32-8	43. J	5.8	ug/kg	20
03309	Dibenzo(a,h)anthracene	53-70-3	N.D.	12.	ug/kg	20
03310	Benzo(g,h,i)perylene	191-24-2	120. J	35.	ug/kg	20
03311	Indeno(1,2,3-cd)pyrene	193-39-5	130. J	23.	ug/kg	20

Due to the nature of the sample matrix, a reduced aliquot was used for analysis. The Limits of Quantitation (LOQ's) were raised accordingly.

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	EPA 160.3 modified	1	12/04/2000 09:17	Susan A. Engle	1
01862	PAH's in Solids	SW-846 8310	1	12/05/2000 05:05	Michelle J. Kolodziejwski	20
03338	PAH Solid Extraction	SW-846 3550B	1	12/01/2000 17:45	Desiree J. Wann	1



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Lancaster Laboratories Sample No. SW 3510352

Collected: 11/29/2000 09:33 by JK

Account Number: 07802

Submitted: 11/30/2000 10:00

Kerr-McGee Corporation

Reported: 12/12/00 at 05:52 AM

P.O. Box 25861

Discard: 1/12/01

Oklahoma City, OK 73125

PRD2-CTC-3-B-01-DP Grab Soil Sample

Moss American - WI

C3B1D SDG#: MOS87-10

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit	Units	Dilution Factor
00111	Moisture	n.a.	14.0	0.50	% by wt.	1
"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The result reported above is on an as-received basis.						
01862	PAH's in Solids					
03296	Naphthalene	91-20-3	N.D.	630.	ug/kg	20
03299	Fluorene	86-73-7	N.D.	58.	ug/kg	20
03304	Benzo(a)anthracene	56-55-3	71.	5.8	ug/kg	20
03305	Chrysene	218-01-9	74. J	23.	ug/kg	20
03306	Benzo(b)fluoranthene	205-99-2	54.	4.7	ug/kg	20
03307	Benzo(k)fluoranthene	207-08-9	27. J	4.7	ug/kg	20
03308	Benzo(a)pyrene	50-32-8	54. J	5.8	ug/kg	20
03309	Dibenzo(a,h)anthracene	53-70-3	N.D.	12.	ug/kg	20
03310	Benzo(g,h,i)perylene	191-24-2	46. J	35.	ug/kg	20
03311	Indeno(1,2,3-cd)pyrene	193-39-5	51. J	23.	ug/kg	20

Due to the nature of the sample matrix, a reduced aliquot was used for analysis. The Limits of Quantitation (LOQ's) were raised accordingly.

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	EPA 160.3 modified	1	12/04/2000 09:17	Susan A. Engle	1
01862	PAH's in Solids	SW-846 8310	1	12/05/2000 05:30	Michelle J. Kolodziejwski	20
03338	PAH Solid Extraction	SW-846 3550B	1	12/01/2000 17:45	Desiree J. Wann	1



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Lancaster Laboratories Sample No. SW 3510353

Collected: 11/29/2000 09:40 by JK

Account Number: 07802

Submitted: 11/30/2000 10:00

Kerr-McGee Corporation

Reported: 12/12/00 at 05:52 AM

P.O. Box 25861

Discard: 1/12/01

Oklahoma City OK 73125

PRD2-CTD-1-B-01 Grab Soil Sample

Moss American - WI

D1-B1 SDG#: MOS87-11

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit	Units	Dilution Factor
00111	Moisture	n.a.	15.5	0.50	% by wt.	1
"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The result reported above is on an as-received basis.						
01862	PAH's in Solids					
03296	Naphthalene	91-20-3	N.D.	640.	ug/kg	20
03299	Fluorene	86-73-7	N.D.	59.	ug/kg	20
03304	Benzo(a)anthracene	56-55-3	23. J	5.9	ug/kg	20
03305	Chrysene	218-01-9	N.D.	24.	ug/kg	20
03306	Benzo(b)fluoranthene	205-99-2	20. J	4.7	ug/kg	20
03307	Benzo(k)fluoranthene	207-08-9	9.5 J	4.7	ug/kg	20
03308	Benzo(a)pyrene	50-32-8	22. J	5.9	ug/kg	20
03309	Dibenzo(a,h)anthracene	53-70-3	N.D.	12.	ug/kg	20
03310	Benzo(g,h,i)perylene	191-24-2	49. J	36.	ug/kg	20
03311	Indeno(1,2,3-cd)pyrene	193-39-5	56. J	24.	ug/kg	20

Due to the nature of the sample matrix, a reduced aliquot was used for analysis. The Limits of Quantitation (LOQ's) were raised accordingly.

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	EPA 160.3 modified	1	12/04/2000 09:17	Susan A. Engle	1
01862	PAH's in Solids	SW-846 8310	1	12/05/2000 05:56	Michelle J. Kolodziejwski	20
03338	PAH Solid Extraction	SW-846 3550B	1	12/01/2000 17:45	Desiree J. Wann	1



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Lancaster Laboratories Sample No. SW 3510354

Collected: 11/29/2000 09:45 by JK

Account Number: 07802

Submitted: 11/30/2000 10:00

Kerr-McGee Corporation

Reported: 12/12/00 at 05:52 AM

P.O. Box 25861

Discard: 1/12/01

Oklahoma City OK 73125

PRD2-CTD-2-B-01 Grab Soil Sample

Moss American - WI

D2-B1 SDG#: MOS87-12

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method	Detection Limit	Units	Dilution Factor
00111	Moisture	n.a.	25.2		0.50	% by wt.	1
"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The result reported above is on an as-received basis.							
01862	PAH's in Solids						
03296	Naphthalene	91-20-3	1,000.	J	720.	ug/kg	20
03299	Fluorene	86-73-7	790.		67.	ug/kg	20
03304	Benzo(a)anthracene	56-55-3	1,600.		6.7	ug/kg	20
03305	Chrysene	218-01-9	1,400.		27.	ug/kg	20
03306	Benzo(b)fluoranthene	205-99-2	1,100.		5.3	ug/kg	20
03307	Benzo(k)fluoranthene	207-08-9	610.		5.3	ug/kg	20
03308	Benzo(a)pyrene	50-32-8	1,200.		6.7	ug/kg	20
03309	Dibenzo(a,h)anthracene	53-70-3	180.		13.	ug/kg	20
03310	Benzo(g,h,i)perylene	191-24-2	590.		40.	ug/kg	20
03311	Indeno(1,2,3-cd)pyrene	193-39-5	850.		27.	ug/kg	20

Due to the nature of the sample matrix, a reduced aliquot was used for analysis. The Limits of Quantitation (LOQ's) were raised accordingly.

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

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	EPA 160.3 modified	1	12/04/2000 09:17	Susan A. Engle	1
01862	PAH's in Solids	SW-846 8310	1	12/05/2000 06:21	Michelle J. Kolodziejski	20
03338	PAH Solid Extraction	SW-846 3550B	1	12/01/2000 17:45	Desiree J. Wann	1



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Lancaster Laboratories Sample No. SW 3510355

Collected: 11/29/2000 09:51 by JK

Account Number: 07802

Submitted: 11/30/2000 10:00

Kerr-McGee Corporation

Reported: 12/12/00 at 05:53 AM

P.O. Box 25861

Discard: 1/12/01

Oklahoma City OK 73125

PRD2-CTD-3-B-01 Grab Soil Sample

Moss American - WI

D3-B1 SDG#: MOS87-13

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method	Detection Limit	Units	Dilution Factor
00111	Moisture	n.a.	17.7		0.50	% by wt.	1
"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The result reported above is on an as-received basis.							
01862	PAH's in Solids						
03296	Naphthalene	91-20-3	N.D.		660.	ug/kg	20
03299	Fluorene	86-73-7	460.	J	61.	ug/kg	20
03304	Benzo(a)anthracene	56-55-3	350.		6.1	ug/kg	20
03305	Chrysene	218-01-9	260.	J	24.	ug/kg	20
03306	Benzo(b)fluoranthene	205-99-2	280.		4.9	ug/kg	20
03307	Benzo(k)fluoranthene	207-08-9	140.		4.9	ug/kg	20
03308	Benzo(a)pyrene	50-32-8	260.		6.1	ug/kg	20
03309	Dibenzo(a,h)anthracene	53-70-3	37.	J	12.	ug/kg	20
03310	Benzo(g,h,i)perylene	191-24-2	140.	J	36.	ug/kg	20
03311	Indeno(1,2,3-cd)pyrene	193-39-5	190.	J	24.	ug/kg	20

Due to the nature of the sample matrix, a reduced aliquot was used for analysis. The Limits of Quantitation (LOQ's) were raised accordingly.

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

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis		Analyst	Dilution Factor
				Date	Time		
00111	Moisture	EPA 160.3 modified	1	12/04/2000	09:17	Susan A. Engle	1
01862	PAH's in Solids	SW-846 8310	1	12/05/2000	06:46	Michelle J. Kolodziejwski	20
03338	PAH Solid Extraction	SW-846 3550B	1	12/01/2000	17:45	Desiree J. Wann	1



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Lancaster Laboratories Sample No. SW 3510356

Collected: 11/29/2000 09:56 by JK

Account Number: 07802

Submitted: 11/30/2000 10:00

Kerr-McGee Corporation

Reported: 12/12/00 at 05:53 AM

P.O. Box 25861

Discard: 1/12/01

Oklahoma City OK 73125

PRD2-CTE-1-B-01 Grab Soil Sample

Moss American - WI

E1-B1 SDG#: MOS87-14

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit	Units	Dilution Factor
00111	Moisture	n.a.	13.0	0.50	% by wt.	1
"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The result reported above is on an as-received basis.						
01862	PAH's in Solids					
03296	Naphthalene	91-20-3	N.D.	620.	ug/kg	20
03299	Fluorene	86-73-7	N.D.	57.	ug/kg	20
03304	Benzo(a)anthracene	56-55-3	11. J	5.7	ug/kg	20
03305	Chrysene	218-01-9	35. J	23.	ug/kg	20
03306	Benzo(b)fluoranthene	205-99-2	10. J	4.6	ug/kg	20
03307	Benzo(k)fluoranthene	207-08-9	8.6 J	4.6	ug/kg	20
03308	Benzo(a)pyrene	50-32-8	21. J	5.7	ug/kg	20
03309	Dibenzo(a,h)anthracene	53-70-3	15. J	11.	ug/kg	20
03310	Benzo(g,h,i)perylene	191-24-2	35. J	34.	ug/kg	20
03311	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	23.	ug/kg	20

Due to the nature of the sample matrix, a reduced aliquot was used for analysis. The Limits of Quantitation (LOQ's) were raised accordingly.

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	EPA 160.3 modified	1	12/04/2000 09:17	Susan A. Engle	1
01862	PAH's in Solids	SW-846 8310	1	12/05/2000 07:12	Michelle J. Kolodziejski	20
03338	PAH Solid Extraction	SW-846 3550B	1	12/01/2000 17:45	Desiree J. Wann	1



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Lancaster Laboratories Sample No. SW 3510357

Collected: 11/29/2000 10:55 by JK

Account Number: 07802

Submitted: 11/30/2000 10:00

Kerr-McGee Corporation

Reported: 12/12/00 at 05:53 AM

P.O. Box 25861

Discard: 1/12/01

Oklahoma City, OK 73125

PRD2-CTE-2-B-01 Grab Soil Sample

Moss American - WI

E2-B1 SDG#: MOS87-15

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit	Units	Dilution Factor
00111	Moisture	n.a.	21.6		0.50	% by wt.	1
"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The result reported above is on an as-received basis.							
01862	PAH's in Solids						
03296	Naphthalene	91-20-3	13,000.	J	3,400.	ug/kg	100
03299	Fluorene	86-73-7	35,000.		320.	ug/kg	100
03304	Benzo(a)anthracene	56-55-3	8,400.		32.	ug/kg	100
03305	Chrysene	218-01-9	6,100.		130.	ug/kg	100
03306	Benzo(b)fluoranthene	205-99-2	3,100.		26.	ug/kg	100
03307	Benzo(k)fluoranthene	207-08-9	1,700.		26.	ug/kg	100
03308	Benzo(a)pyrene	50-32-8	2,800.		32.	ug/kg	100
03309	Dibenzo(a,h)anthracene	53-70-3	310.	J	64.	ug/kg	100
03310	Benzo(g,h,i)perylene	191-24-2	1,000.	J	190.	ug/kg	100
03311	Indeno(1,2,3-cd)pyrene	193-39-5	1,400.		130.	ug/kg	100
Accurate surrogate recoveries could not be determined due to the dilution required for analysis of the sample.							

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Analysis		Analyst	Dilution Factor
			Trial#	Date and Time		
00111	Moisture	EPA 160.3 modified	1	12/04/2000 09:17	Susan A. Engle	1
01862	PAH's in Solids	SW-846 8310	1	12/05/2000 12:15	Michelle J. Kolodziejcki	100
03338	PAH Solid Extraction	SW-846 3550B	1	12/01/2000 17:45	Desiree J. Wann	1



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Lancaster Laboratories Sample No. SW 3510358

Collected: 11/29/2000 11:00 by JK

Account Number: 07802

Submitted: 11/30/2000 10:00  
 Reported: 12/12/00 at 05:53 AM  
 Discard: 1/12/01  
 PRD2-CTE-3-B-01 Grab Soil Sample  
 Moss American - WI

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

E3-B1 SDG#: MOS87-16

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method	Detection Limit	Units	Dilution Factor
00111	Moisture	n.a.	13.7		0.50	% by wt.	1
"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The result reported above is on an as-received basis.							
01862	PAH's in Solids						
03296	Naphthalene	91-20-3	N.D.		630.	ug/kg	20
03299	Fluorene	86-73-7	320.	J	58.	ug/kg	20
03304	Benzo(a)anthracene	56-55-3	210.		5.8	ug/kg	20
03305	Chrysene	218-01-9	160.	J	23.	ug/kg	20
03306	Benzo(b)fluoranthene	205-99-2	91.		4.6	ug/kg	20
03307	Benzo(k)fluoranthene	207-08-9	47.		4.6	ug/kg	20
03308	Benzo(a)pyrene	50-32-8	80.		5.8	ug/kg	20
03309	Dibenzo(a,h)anthracene	53-70-3	13.	J	12.	ug/kg	20
03310	Benzo(g,h,i)perylene	191-24-2	35.	J	35.	ug/kg	20
03311	Indeno(1,2,3-cd)pyrene	193-39-5	56.	J	23.	ug/kg	20

Due to the nature of the sample matrix, a reduced aliquot was used for analysis. The Limits of Quantitation (LOQ's) were raised accordingly.

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Analysis		Analyst	Dilution Factor
			Trial#	Date and Time		
00111	Moisture	EPA 160.3 modified	1	12/04/2000 09:17	Susan A. Engle	1
01862	PAH's in Solids	SW-846 8310	1	12/05/2000 17:06	Michelle J. Kolodziejski	20
03338	PAH Solid Extraction	SW-846 3550B	1	12/01/2000 16:36	Kelly E. Brickley	1



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Lancaster Laboratories Sample No. SW 3510359

Collected: 11/29/2000 11:06 by JK

Account Number: 07802

Submitted: 11/30/2000 10:00

Kerr-McGee Corporation

Reported: 12/12/00 at 05:53 AM

P.O. Box 25861

Discard: 1/12/01

Oklahoma City OK 73125

PRD2-CTF-1-B-01 Grab Soil Sample  
Moss American - WI

F1-B1 SDG#: MOS87-17

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit	Units	Dilution Factor
00111	Moisture	n.a.	12.1	0.50	% by wt.	1
"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The result reported above is on an as-received basis.						
01862	PAH's in Solids					
03296	Naphthalene	91-20-3	N.D.	610.	ug/kg	20
03299	Fluorene	86-73-7	N.D.	57.	ug/kg	20
03304	Benzo(a)anthracene	56-55-3	N.D.	5.7	ug/kg	20
03305	Chrysene	218-01-9	25. J	23.	ug/kg	20
03306	Benzo(b)fluoranthene	205-99-2	5.9 J	4.6	ug/kg	20
03307	Benzo(k)fluoranthene	207-08-9	N.D.	4.6	ug/kg	20
03308	Benzo(a)pyrene	50-32-8	6.7 J	5.7	ug/kg	20
03309	Dibenzo(a,h)anthracene	53-70-3	N.D.	11.	ug/kg	20
03310	Benzo(g,h,i)perylene	191-24-2	N.D.	34.	ug/kg	20
03311	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	23.	ug/kg	20

Due to the nature of the sample matrix, a reduced aliquot was used for analysis. The Limits of Quantitation (LOQ's) were raised accordingly.

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	EPA 160.3 modified	1	12/04/2000 09:17	Susan A. Engle	1
01862	PAH's in Solids	SW-846 8310	1	12/05/2000 17:31	Michelle J. Kolodziejwski	20
03338	PAH Solid Extraction	SW-846 3550B	1	12/01/2000 16:36	Kelly E. Brickley	1



Lancaster Laboratories Sample No. SW 3510360

Collected: 11/29/2000 11:10 by JK

Account Number: 07802

Submitted: 11/30/2000 10:00

Kerr-McGee Corporation

Reported: 12/12/00 at 05:53 AM

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Discard: 1/12/01

Oklahoma City OK 73125

PRD2-CTF-2-B-01 Grab Soil Sample

Moss American - WI

F2-B1 SDG#: MOS87-18

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit	Units	Dilution Factor
00111	Moisture	n.a.	13.3		0.50	% by wt.	1
"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The result reported above is on an as-received basis.							
01862	PAH's in Solids						
03296	Naphthalene	91-20-3	7,300.	J	3,100.	ug/kg	100
03299	Fluorene	86-73-7	17,000.		290.	ug/kg	100
03304	Benzo(a)anthracene	56-55-3	3,400.		29.	ug/kg	100
03305	Chrysene	218-01-9	2,200.		120.	ug/kg	100
03306	Benzo(b)fluoranthene	205-99-2	1,400.		23.	ug/kg	100
03307	Benzo(k)fluoranthene	207-08-9	760.		23.	ug/kg	100
03308	Benzo(a)pyrene	50-32-8	1,500.		29.	ug/kg	100
03309	Dibenzo(a,h)anthracene	53-70-3	190.	J	58.	ug/kg	100
03310	Benzo(g,h,i)perylene	191-24-2	710.	J	170.	ug/kg	100
03311	Indeno(1,2,3-cd)pyrene	193-39-5	960.	J	120.	ug/kg	100

Accurate surrogate recoveries could not be determined due to the dilution required for analysis of the sample.

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis		Analyst	Dilution Factor
				Date and Time			
00111	Moisture	EPA 160.3 modified	1	12/04/2000	09:17	Susan A. Engle	1
01862	PAH's in Solids	SW-846 8310	1	12/06/2000	10:44	Michelle J. Kolodziejski	100
03338	PAH Solid Extraction	SW-846 3550B	1	12/01/2000	16:36	Kelly E. Brickley	1



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Lancaster Laboratories Sample No. SW 3510361

Collected: 11/29/2000 11:15 by JK

Account Number: 07802

Submitted: 11/30/2000 10:00  
 Reported: 12/12/00 at 05:53 AM  
 Discard: 1/12/01

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

PRD2-CTF-3-B-01 Grab Soil Sample  
 Moss American - WI

F3-B1 SDG#: MOS87-19

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit	Units	Dilution Factor
00111	Moisture	n.a.	9.37	0.50	% by wt.	1
"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The result reported above is on an as-received basis.						
01862	PAH's in Solids					
03296	Naphthalene	91-20-3	N.D.	600.	ug/kg	20
03299	Fluorene	86-73-7	N.D.	55.	ug/kg	20
03304	Benzo(a)anthracene	56-55-3	52. J	5.5	ug/kg	20
03305	Chrysene	218-01-9	49. J	22.	ug/kg	20
03306	Benzo(b)fluoranthene	205-99-2	7.5 J	4.4	ug/kg	20
03307	Benzo(k)fluoranthene	207-08-9	N.D.	4.4	ug/kg	20
03308	Benzo(a)pyrene	50-32-8	9.2 J	5.5	ug/kg	20
03309	Dibenzo(a,h)anthracene	53-70-3	N.D.	11.	ug/kg	20
03310	Benzo(g,h,i)perylene	191-24-2	N.D.	33.	ug/kg	20
03311	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	22.	ug/kg	20

Due to the nature of the sample matrix, a reduced aliquot was used for analysis. The Limits of Quantitation (LOQ's) were raised accordingly.

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Analysis		Analyst	Dilution Factor
			Trial#	Date and Time		
00111	Moisture	EPA 160.3 modified	1	12/04/2000 09:17	Susan A. Engle	1
01862	PAH's in Solids	SW-846 8310	1	12/05/2000 18:21	Michelle J. Kolodziejwski	20
03338	PAH Solid Extraction	SW-846 3550B	1	12/01/2000 16:36	Kelly E. Brickley	1



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Lancaster Laboratories Sample No. SW 3510362

Collected: 11/29/2000 11:15 by JK

Account Number: 07802

Submitted: 11/30/2000 10:00

Kerr-McGee Corporation

Reported: 12/12/00 at 05:53 AM

P.O. Box 25861

Discard: 1/12/01

Oklahoma City OK 73125

PRD2-CTF-3-B-01-DP Grab Soil Sample

Moss American - WI

F3B1D SDG#: MOS87-20

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit	Units	Dilution Factor
00111	Moisture	n.a.	8.82	0.50	% by wt.	1
"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The result reported above is on an as-received basis.						
01862	PAH's in Solids					
03296	Naphthalene	91-20-3	N.D.	590.	ug/kg	20
03299	Fluorene	86-73-7	N.D.	55.	ug/kg	20
03304	Benzo(a)anthracene	56-55-3	11. J	5.5	ug/kg	20
03305	Chrysene	218-01-9	29. J	22.	ug/kg	20
03306	Benzo(b)fluoranthene	205-99-2	6.8 J	4.4	ug/kg	20
03307	Benzo(k)fluoranthene	207-08-9	4.9 J	4.4	ug/kg	20
03308	Benzo(a)pyrene	50-32-8	N.D.	5.5	ug/kg	20
03309	Dibenzo(a,h)anthracene	53-70-3	N.D.	11.	ug/kg	20
03310	Benzo(g,h,i)perylene	191-24-2	N.D.	33.	ug/kg	20
03311	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	22.	ug/kg	20

Due to the nature of the sample matrix, a reduced aliquot was used for analysis. The Limits of Quantitation (LOQ's) were raised accordingly.

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	EPA 160.3 modified	1	12/04/2000 09:17	Susan A. Engle	1
01862	PAH's in Solids	SW-846 8310	1	12/05/2000 18:47	Michelle J. Kolodziejski	20
03338	PAH Solid Extraction	SW-846 3550B	1	12/01/2000 16:36	Kelly E. Brickley	1



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Lancaster Laboratories Sample No. SW 3510363

Collected: 11/29/2000 11:22 by JK

Account Number: 07802

Submitted: 11/30/2000 10:00

Kerr-McGee Corporation

Reported: 12/12/00 at 05:53 AM

P.O. Box 25861

Discard: 1/12/01

Oklahoma City OK 73125

PRD2-CTG-1-B-01 Grab Soil Sample

Moss American - WI

G1-B1 SDG#: MOS87-21

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit	Units	Dilution Factor
00111	Moisture	n.a.	22.0	0.50	% by wt.	1
"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The result reported above is on an as-received basis.						
01862	PAH's in Solids					
03296	Naphthalene	91-20-3	N.D.	690.	ug/kg	20
03299	Fluorene	86-73-7	1,900.	64.	ug/kg	20
03304	Benzo(a)anthracene	56-55-3	570.	6.4	ug/kg	20
03305	Chrysene	218-01-9	370.	26.	ug/kg	20
03306	Benzo(b)fluoranthene	205-99-2	250.	5.1	ug/kg	20
03307	Benzo(k)fluoranthene	207-08-9	130.	5.1	ug/kg	20
03308	Benzo(a)pyrene	50-32-8	240.	6.4	ug/kg	20
03309	Dibenzo(a,h)anthracene	53-70-3	27. J	13.	ug/kg	20
03310	Benzo(g,h,i)perylene	191-24-2	130. J	38.	ug/kg	20
03311	Indeno(1,2,3-cd)pyrene	193-39-5	150. J	26.	ug/kg	20

Due to the nature of the sample matrix, a reduced aliquot was used for analysis. The Limits of Quantitation (LOQ's) were raised accordingly.

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

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Analysis		Analyst	Dilution Factor
			Trial#	Date and Time		
00111	Moisture	EPA 160.3 modified	1	12/04/2000 09:33	Susan A. Engle	1
01862	PAH's in Solids	SW-846 8310	1	12/05/2000 19:12	Michelle J. Kolodziejwski	20
03338	PAH Solid Extraction	SW-846 3550B	1	12/01/2000 16:36	Kelly E. Brickley	1



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Lancaster Laboratories Sample No. SW 3510364

Collected: 11/29/2000 11:26 by JK

Account Number: 07802

Submitted: 11/30/2000 10:00

Kerr-McGee Corporation

Reported: 12/12/00 at 05:53 AM

P.O. Box 25861

Discard: 1/12/01

Oklahoma City OK 73125

PRD2-CTG-2-B-01 Grab Soil Sample

Moss American - WI

G2-B1 SDG#: MOS87-22

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit	Units	Dilution Factor
00111	Moisture	n.a.	16.0	0.50	% by wt.	1
"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The result reported above is on an as-received basis.						
01862	PAH's in Solids					
03296	Naphthalene	91-20-3	N.D.	640.	ug/kg	20
03299	Fluorene	86-73-7	740.	60.	ug/kg	20
03304	Benzo(a)anthracene	56-55-3	330.	6.0	ug/kg	20
03305	Chrysene	218-01-9	240. J	24.	ug/kg	20
03306	Benzo(b)fluoranthene	205-99-2	170.	4.8	ug/kg	20
03307	Benzo(k)fluoranthene	207-08-9	84.	4.8	ug/kg	20
03308	Benzo(a)pyrene	50-32-8	150.	6.0	ug/kg	20
03309	Dibenzo(a,h)anthracene	53-70-3	18. J	12.	ug/kg	20
03310	Benzo(g,h,i)perylene	191-24-2	64. J	36.	ug/kg	20
03311	Indeno(1,2,3-cd)pyrene	193-39-5	100. J	24.	ug/kg	20

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

Due to the nature of the sample matrix, a reduced aliquot was used for analysis. The Limits of Quantitation (LOQ's) were raised accordingly.

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	EPA 160.3 modified	1	12/04/2000 09:33	Susan A. Engle	1
01862	PAH's in Solids	SW-846 8310	1	12/05/2000 19:37	Michelle J. Kolodziejski	20
03338	PAH Solid Extraction	SW-846 3550B	1	12/01/2000 16:36	Kelly E. Brickley	1



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Lancaster Laboratories Sample No. SW 3510365

Collected: 11/29/2000 11:32 by JK

Account Number: 07802

Submitted: 11/30/2000 10:00

Kerr-McGee Corporation

Reported: 12/12/00 at 05:53 AM

P.O. Box 25861

Discard: 1/12/01

Oklahoma City, OK 73125

PRD2-CTG-3-B-01 Unspiked Grab Soil Sample  
Moss American - WI

G3-B1 SDG#: MOS87-23BKG

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit	Units	Dilution Factor
00111	Moisture	n.a.	10.7	0.50	% by wt.	1
"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The result reported above is on an as-received basis.						
01862	PAH's in Solids					
03296	Naphthalene	91-20-3	N.D.	600.	ug/kg	20
03299	Fluorene	86-73-7	N.D.	56.	ug/kg	20
03304	Benzo(a)anthracene	56-55-3	N.D.	5.6	ug/kg	20
03305	Chrysene	218-01-9	N.D.	22.	ug/kg	20
03306	Benzo(b)fluoranthene	205-99-2	6.5 J	4.5	ug/kg	20
03307	Benzo(k)fluoranthene	207-08-9	N.D.	4.5	ug/kg	20
03308	Benzo(a)pyrene	50-32-8	N.D.	5.6	ug/kg	20
03309	Dibenzo(a,h)anthracene	53-70-3	N.D.	11.	ug/kg	20
03310	Benzo(g,h,i)perylene	191-24-2	N.D.	34.	ug/kg	20
03311	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	22.	ug/kg	20

Due to the nature of the sample matrix, a reduced aliquot was used for analysis. The Limits of Quantitation (LOQ's) were raised accordingly.

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Analysis		Analyst	Dilution Factor
			Trial#	Date and Time		
00111	Moisture	EPA 160.3 modified	1	12/04/2000 09:33	Susan A. Engle	1
01862	PAH's in Solids	SW-846 8310	1	12/05/2000 15:28	Michelle J. Kolodziejwski	20
03338	PAH Solid Extraction	SW-846 3550B	1	12/01/2000 16:36	Kelly E. Brickley	1



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



Lancaster Laboratories Sample No. SW 3510366

Collected: 11/29/2000 11:32 by JK

Account Number: 07802

Submitted: 11/30/2000 10:00

Kerr-McGee Corporation

Reported: 12/12/00 at 05:53 AM

P.O. Box 25861

Discard: 1/12/01

Oklahoma City, OK 73125

PRD2-CTG-3-B-01 Matrix Spike Grab Soil Sample  
Moss American - WI

G3-B1 SDG#: MOS87-23MS

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit	Units	Dilution Factor
00118	Moisture	n.a.	10.7	0.50	% by wt.	1
01862	PAH's in Solids					
03296	Naphthalene	91-20-3	7,500.	600.	ug/kg	20
03299	Fluorene	86-73-7	710.	56.	ug/kg	20
03304	Benzo(a)anthracene	56-55-3	62. J	5.6	ug/kg	20
03305	Chrysene	218-01-9	240. J	22.	ug/kg	20
03306	Benzo(b)fluoranthene	205-99-2	46.	4.5	ug/kg	20
03307	Benzo(k)fluoranthene	207-08-9	41. J	4.5	ug/kg	20
03308	Benzo(a)pyrene	50-32-8	50. J	5.6	ug/kg	20
03309	Dibenzo(a,h)anthracene	53-70-3	100. J	11.	ug/kg	20
03310	Benzo(g,h,i)perylene	191-24-2	410.	34.	ug/kg	20
03311	Indeno(1,2,3-cd)pyrene	193-39-5	220. J	22.	ug/kg	20

Due to the nature of the sample matrix, a reduced aliquot was used for analysis. The Limits of Quantitation (LOQ's) were raised accordingly.

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00118	Moisture	EPA 160.3 modified	1	12/04/2000 09:33	Susan A. Engle	1
01862	PAH's in Solids	SW-846 8310	1	12/05/2000 15:53	Michelle J. Kolodziejwski	20
03338	PAH Solid Extraction	SW-846 3550B	1	12/01/2000 16:36	Kelly E. Brickley	1



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Lancaster Laboratories Sample No. SW 3510367

Collected: 11/29/2000 11:32 by JK

Account Number: 07802

Submitted: 11/30/2000 10:00

Kerr-McGee Corporation

Reported: 12/12/00 at 05:53 AM

P.O. Box 25861

Discard: 1/12/01

Oklahoma City, OK 73125

PRD2-CTG-3-B-01 Matrix Spike Dup/Dup Grab Soil

Moss American - WI

G3-B1 SDG#: MOS87-23MSD

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit	Units	Dilution Factor
00118	Moisture	n.a.	10.7	0.50	% by wt.	1
00121	Moisture Duplicate	n.a.	11.5	0.50	% by wt.	1

The duplicate moisture value is provided to assess the precision of the moisture test. For comparability purposes, the initial moisture determination is the value used to perform dry weight calculations.

01862 PAH's in Solids

03296	Naphthalene	91-20-3	6,700.	600.	ug/kg	20
03299	Fluorene	86-73-7	660.	56.	ug/kg	20
03304	Benzo(a)anthracene	56-55-3	56. J	5.6	ug/kg	20
03305	Chrysene	218-01-9	240. J	22.	ug/kg	20
03306	Benzo(b)fluoranthene	205-99-2	41. J	4.5	ug/kg	20
03307	Benzo(k)fluoranthene	207-08-9	37. J	4.5	ug/kg	20
03308	Benzo(a)pyrene	50-32-8	45. J	5.6	ug/kg	20
03309	Dibenzo(a,h)anthracene	53-70-3	89. J	11.	ug/kg	20
03310	Benzo(g,h,i)perylene	191-24-2	310. J	34.	ug/kg	20
03311	Indeno(1,2,3-cd)pyrene	193-39-5	170. J	22.	ug/kg	20

Due to the nature of the sample matrix, a reduced aliquot was used for analysis. The Limits of Quantitation (LOQ's) were raised accordingly.

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Analysis		Analyst	Dilution Factor
			Trial#	Date and Time		
00118	Moisture	EPA 160.3 modified	1	12/04/2000 09:33	Susan A. Engle	1
00121	Moisture Duplicate	EPA 160.3 modified	1	12/04/2000 09:33	Susan A. Engle	1
01862	PAH's in Solids	SW-846 8310	1	12/05/2000 16:19	Michelle J. Kolodziejcki	20
03338	PAH Solid Extraction	SW-846 3550B	1	12/01/2000 16:36	Kelly E. Brickley	1



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Lancaster Laboratories Sample No. SW 3510368

Collected: 11/29/2000 12:30 by JK

Account Number: 07802

Submitted: 11/30/2000 10:00

Kerr-McGee Corporation

Reported: 12/12/00 at 05:53 AM

P.O. Box 25861

Discard: 1/12/01

Oklahoma City OK 73125

CORE1-0-12 Grab Soil Sample

Moss American - WI

CORE1 SDG#: MOS87-24\*

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit	Units	Dilution Factor
00111	Moisture	n.a.	44.7	0.50	% by wt.	1
"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The result reported above is on an as-received basis.						
01862	PAH's in Solids					
03296	Naphthalene	91-20-3	N.D.	4,900.	ug/kg	100
03299	Fluorene	86-73-7	15,000.	450.	ug/kg	100
03304	Benzo(a)anthracene	56-55-3	11,000.	45.	ug/kg	100
03305	Chrysene	218-01-9	8,600.	180.	ug/kg	100
03306	Benzo(b)fluoranthene	205-99-2	5,800.	36.	ug/kg	100
03307	Benzo(k)fluoranthene	207-08-9	2,900.	36.	ug/kg	100
03308	Benzo(a)pyrene	50-32-8	5,400.	45.	ug/kg	100
03309	Dibenzo(a,h)anthracene	53-70-3	660. J	90.	ug/kg	100
03310	Benzo(g,h,i)perylene	191-24-2	2,400. J	270.	ug/kg	100
03311	Indeno(1,2,3-cd)pyrene	193-39-5	3,700.	180.	ug/kg	100

Accurate surrogate recoveries could not be determined due to the dilution required for analysis of the sample.

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Analysis		Analyst	Dilution Factor
			Trial#	Date and Time		
00111	Moisture	EPA 160.3 modified	1	12/04/2000 09:33	Susan A. Engle	1
01862	PAH's in Solids	SW-846 8310	1	12/05/2000 20:02	Michelle J. Kolodziejcki	100
03338	PAH Solid Extraction	SW-846 3550B	1	12/01/2000 16:36	Kelly E. Brickley	1



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Lancaster Laboratories Sample No. SW 3504169

Collected: 11/16/2000 10:00 by JK

Account Number: 07802

Submitted: 11/17/2000 09:15

Reported: 12/07/00 at 11:46 AM

Discard: 1/7/01

PRD1-CTE-2-AB-01 Grab Soil Sample

Moss American - WI

Kerr-McGee Corporation

P.O. Box 25861

Oklahoma City OK 73125

CEAB1 SDG#: MOS82-01

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit	Units	Dilution Factor
00111	Moisture	n.a.	36.6	0.50	% by wt.	1
"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The result reported above is on an as-received basis.						
01862	PAH's in Solids					
03296	Naphthalene	91-20-3	N.D.	4,300.	ug/kg	100
03299	Fluorene	86-73-7	9,200.	390.	ug/kg	100
03304	Benzo(a)anthracene	56-55-3	4,600.	39.	ug/kg	100
03305	Chrysene	218-01-9	3,400.	160.	ug/kg	100
03306	Benzo(b)fluoranthene	205-99-2	2,300.	32.	ug/kg	100
03307	Benzo(k)fluoranthene	207-08-9	1,100.	32.	ug/kg	100
03308	Benzo(a)pyrene	50-32-8	2,100.	39.	ug/kg	100
03309	Dibenzo(a,h)anthracene	53-70-3	N.D.	79.	ug/kg	100
03310	Benzo(g,h,i)perylene	191-24-2	1,300.	J 240.	ug/kg	100
03311	Indeno(1,2,3-cd)pyrene	193-39-5	1,800.	160.	ug/kg	100
Accurate surrogate recoveries could not be determined due to the dilution required for analysis of the sample.						

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Analysis		Analyst	Dilution Factor
			Trial#	Date and Time		
00111	Moisture	EPA 160.3 modified	1	11/24/2000 14:06	Susan A. Engle	1
01862	PAH's in Solids	SW-846 8310	1	12/02/2000 00:02	Michelle J. Kolodziejcki	100
03338	PAH Solid Extraction	SW-846 3550B	1	11/29/2000 18:00	Desiree J. Wann	1



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Lancaster Laboratories Sample No. SW 3504170

Collected: 11/16/2000 10:05 by JK

Account Number: 07802

Submitted: 11/17/2000 09:15

Kerr-McGee Corporation

Reported: 12/07/00 at 11:47 AM

P.O. Box 25861

Discard: 1/7/01

Oklahoma City OK 73125

PRD1-CTE-2-C-01 Grab Soil Sample

Moss American - WI

CECC1 SDG#: MOS82-02

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit	Units	Dilution Factor
00111	Moisture	n.a.	20.1	0.50	% by wt.	1
"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The result reported above is on an as-received basis.						
01862	PAH's in Solids					
03296	Naphthalene	91-20-3	N.D.	680.	ug/kg	20
03299	Fluorene	86-73-7	N.D.	63.	ug/kg	20
03304	Benzo(a)anthracene	56-55-3	23. J	6.3	ug/kg	20
03305	Chrysene	218-01-9	N.D.	25.	ug/kg	20
03306	Benzo(b)fluoranthene	205-99-2	14. J	5.0	ug/kg	20
03307	Benzo(k)fluoranthene	207-08-9	6.9 J	5.0	ug/kg	20
03308	Benzo(a)pyrene	50-32-8	13. J	6.3	ug/kg	20
03309	Dibenzo(a,h)anthracene	53-70-3	N.D.	13.	ug/kg	20
03310	Benzo(g,h,i)perylene	191-24-2	88. J	38.	ug/kg	20
03311	Indeno(1,2,3-cd)pyrene	193-39-5	110. J	25.	ug/kg	20

### Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	EPA 160.3 modified	1	11/24/2000 14:06	Susan A. Engle	1
01862	PAH's in Solids	SW-846 8310	1	12/02/2000 00:27	Michelle J. Kolodziejwski	20
03338	PAH Solid Extraction	SW-846 3550B	1	11/29/2000 18:00	Desiree J. Wann	1



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