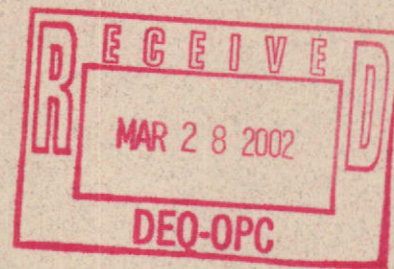


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# **SITE REMEDIATION REPORT**

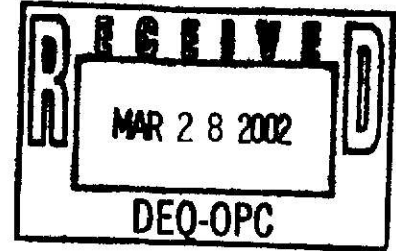
**Edwards Property  
406 Lee Avenue  
Crystal Springs, Mississippi**

Prepared for

**BorgWarner Inc.**

February 2002

**FILE COPY**



# **SITE REMEDIATION REPORT**

**Edwards Property  
406 Lee Avenue  
Crystal Springs, Mississippi**

Prepared for

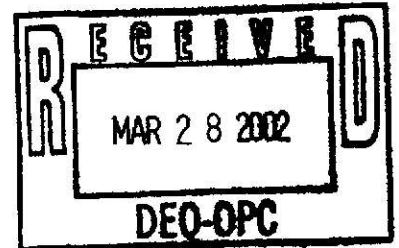
**BorgWarner Inc.**

February 2002

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**SITE REMEDIATION REPORT**

**Edwards Property  
406 Lee Avenue  
Crystal Springs, Mississippi**



Prepared for

**BorgWarner Inc.**

Prepared by

**MARTIN&SLAGLE GeoEnvironmental Associates, LLC  
PO Box 1023  
Black Mountain, North Carolina**

February 2002

A handwritten signature in cursive script, appearing to read "Robert Martin", written over a horizontal line.

**Robert L. Martin, P.G.  
Project Manager**

A handwritten signature in cursive script, appearing to read "Christine Slagle", written over a horizontal line.

**Christine E. Slagle  
Senior Scientist**

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406 Lee Avenue  
Crystal Springs, Mississippi

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## **SECTION 1.0 EXECUTIVE SUMMARY**

The soil on the Edwards property, located at 406 Lee Avenue, Crystal Springs, Mississippi, and consisting of approximately 0.2 acres, was found to contain concentrations of polychlorinated biphenyls (PCBs) during sampling events conducted in August 2000. A total of 69 soil samples and 5 surface wipe samples were collected from the site and analyzed. Eight samples had concentrations of PCBs ranging from 1.3 to 4.5 mg/kg. The soils contaminated with concentrations exceeding the standard of 1.0 mg/kg established by Mississippi Department of Environmental Quality (MDEQ) for PCBs in soils on residential properties were found in three general areas of the property. Surficial soil containing concentrations of PCBs in excess of 1.0 mg/kg were found on the north edge of the property along Lee Avenue and in the grassy area bordered by the house, sidewalk and driveway. A stockpile of soil located west of the driveway also contained concentrations above the MDEQ standard for residential properties

Soil containing concentrations of PCBs in excess of 1.0 mg/kg was remediated by removal and replaced with clean soil. Impacted soil was excavated from around the north and west sides of the Edward's house and from a large area, approximately 95 feet by 60 feet, west of the Edward's driveway. The contaminated soil was then disposed of in the BFI "Little Dixie" Subtitle D landfill in accordance with all applicable state and federal regulations.

Contaminated soil was found within the root zone of a cedar tree and an oak tree west of the Edwards house. The roots were decontaminated using an "Air-Shovel™" pressure washer/vacuum system. Contaminated soil removed by the pressure washer was vacuumed into a tank, properly disposed of, and replaced with clean backfill. The soil was disposed of in the BFI "Little Dixie" Subtitle D landfill in accordance with all applicable state and federal regulations.

Confirmatory soil samples were collected following excavation to confirm that impacted soil had been removed. A total of 75 excavation floor samples and 43 sidewall samples

were collected following removal of impacted soil. All soil samples were collected and managed in accordance with USEPA Region IV Environmental Investigation Standard Operating Procedure and Quality Assurance Manual (EISOPQAM) protocols.

All impacted areas were excavated to an average depth of 1.5 feet below ground surface (bgs). Excavation continued until on-site laboratory analytical results confirmed that all soil containing concentrations of PCBs exceeding the residential cleanup thresholds was removed. The analytical results indicate that all soil containing PCB concentrations of 1.0 mg/kg or greater was removed from the Edwards property. After confirmation results indicated that the remediation objective was met, the excavation area was backfilled with analytically confirmed clean soil. The surface of the remediation area was covered with fresh sod and landscaped.

On May 17, 2001 the Edwards property was effectively remediated by removal of soil containing PCB concentrations in excess of 1.0 mg/kg in accordance with MDEQ established cleanup criteria and supervision. Controls were also incorporated for dust and stormwater run-off potential during and after completion of remediation activities. Based on the MDEQ criteria, no further action is warranted at the Edwards property.

## **2.0 INTRODUCTION**

The soil on the Edwards property was found to contain concentrations of polychlorinated biphenyls (PCBs) during sampling events conducted in August 2000. The concentrations, in some areas of the property, exceeded the standard of 1 mg/kg established by MDEQ for PCBs in soils on residential properties. The soil containing concentrations of PCBs in excess of 1 mg/kg was remediated by removal and replacement with clean soil. This report describes the remediation process and results of soil analytical results. The report also includes maps showing sample locations and the areas of remediation.

### **2.1 Background**

The KEC facility was constructed and has been operated as a transformer manufacturing plant since the 1950s by KEC or its predecessor, a corporate entity also named Kuhlman Electric Corporation. KEC continued to own and operate the plant in March 1999 when BorgWarner Inc. purchased Kuhlman Corporation, the parent of KEC, and thereafter as well. Seven months later, on October 1, 1999, BorgWarner and Kuhlman Corporation sold KEC's stock to KEC Acquisition Corporation. BorgWarner and Kuhlman Corporation indemnified KEC, KEC Acquisition Corporation and their affiliates for historic contamination at the site and may, under the purchase agreement, control any remediation of such contamination. None of BorgWarner, Kuhlman Corporation or KEC Acquisition Corporation has ever owned or operated the plant.

During routine construction activities at KEC's plant in Crystal Springs, Mississippi, construction personnel encountered soil that had been impacted by unknown chemicals. KEC reported that construction activities were immediately halted, and two soil samples were collected by representatives of KEC and sent to an independent laboratory for analysis. KEC reported the detection of PCB in the stained soils, along with various chlorinated benzenes.

On April 19, 2000, BorgWarner received notification from KEC in accordance with the purchase agreement that areas of contaminated soil had been found in Crystal Springs, Mississippi. BorgWarner responded by sending a representative to meet with KEC plant representatives and a representative from Mississippi Department of Environmental Quality (MDEQ), Eric Dear, on April 25, 2000. During this meeting all parties were briefed on the existing situation at the plant and MDEQ's expectations regarding assessment of the site.

In May 2000, a preliminary assessment of the KEC property was conducted. The goal of this preliminary assessment was to:

- Determine the character and concentration of the contaminants in various environmental media on-site,
- Determine if contaminants might have migrated from the site, and,
- Identify and conduct any immediate response actions necessary to alleviate public exposure to the contaminants.

The results of the preliminary assessment indicated a likelihood that PCBs had migrated off site and on to adjacent residential properties. An assessment of the adjacent properties was initiated and remedial activities were completed on seven properties, including the Edwards with confirmed concentrations of PCBs exceeding the residential cleanup thresholds.

## **2.2 Site Description**

The Edwards property is located at 406 Lee Avenue, Crystal Springs, Mississippi and consists of approximately 0.3 acres. The site includes a single story wood frame house and a separate garage. The two structures cover about 10% of the Edwards property (Figure 2). The property is generally flat and is located across Lee Avenue, approximately 50 feet south-southeast of the main employee parking lot entrance of the KEC facility. PCB concentrations exceeding the residential cleanup thresholds were



found in the grassy areas north and west of the house and also in and around a stockpile of soil located west of the driveway.

### **2.3 Previous Investigative Activities**

The initial investigation of the Edwards property occurred on August 24, 2000. A total of 69 soil samples were collected in 27 locations from depths of 0.5 feet and 4 feet below ground surface (bgs) at each location. Samples were collected using a direct-push soil sampler. A detailed description of sampling techniques used during the assessment is included in the *Preliminary Site Characterization Report* (Ogden 2000).

Samples were analyzed by the on site laboratory for PCBs using a modified EPA Method 8080. Ten percent of the samples were split by the field geologist for confirmation analysis by the fixed-base laboratory, Paradigm Analytical Labs (Paradigm) located in Wilmington, North Carolina. All sampling as performed in accordance with EPA Region IV Environmental Investigation Standard Operating Procedures and Quality Assurance Manual (EISQAM).

The results of laboratory analysis of the soil samples confirmed the presence of PCBs in six shallow soil samples (DP-481, DP-482, DP-484, DP-487, DP-518, and DP-526) and two stockpile samples (SP-1B ABD SP-1A) above the residential cleanup threshold.

Remedial activities were conducted between April 30 and May 17, 2001. Impacted soil was removed from around tree roots using an "Air-Shovel™" pressure washer/vacuum system. Contaminated soil removed by the pressure washer was vacuumed into a tank and transferred to a roll-off box located on the KEC property for temporary storage and disposal. Soil removal continued until on site laboratory analytical results confirmed that all soil containing concentrations of PCBs exceeding the residential cleanup thresholds established by MDEQ was removed.

### SECTION 3.0 SAMPLING PROGRAM – LOCATION AND RATIONALE

Remediation of the Edwards, on Lee Avenue, began on April 30, 2001. Remediation of this property involved removal and disposal of all soil containing PCB concentrations of 1.0 mg/kg or greater in accordance with MDEQ's established cleanup criteria for residential properties and MDEQ supervision. All soils containing greater than 1 mg/kg of PCB concentrations were profiled and disposed of at the BFI's "Little Dixie", Subtitle "D" Landfill in Madison County, Mississippi after MDEQ and US EPA approvals were obtained.

Following excavation, all excavated areas were sampled to confirm that impacted soil was removed. In correspondence regarding disposal requirements, Craig Brown, of US EPA Region IV, stated that the excavated soils did not meet the definition of "PCB remediation waste." Under this definition, the remediation activities fell under the management criteria and guidelines set by MDEQ. Remediation was based on criteria established in the *State of Michigan Department of Environmental Quality, Waste Management Division, Guidance Document, Verification of Soil Remediation, April 1994, Revision 1*, as adopted by Mississippi DEQ for use on remediation projects of this nature.

The guidance document provides a procedure for establishing a soil-sampling grid for confirmation that cleanup goals were met or were exceeded. The procedure applies to sites with a surface area less than 10,890 square feet. The procedure involves a biased approach to sampling, i.e. collecting samples from the point of a known release, such as a tank leak or surface spill. The remediation area of the excavation floor is approximately 7,432 ft<sup>2</sup>. The area of the sidewall surrounding excavation is 855 ft<sup>2</sup>. The guidance defined the minimum number of floor samples for this size of site to be eight and the minimum number of sidewall samples to be five.

A total of 75 floor samples and 43 sidewall samples were collected following removal of soil to a depth of approximately 1.5 feet. All samples were collected in accordance with EPA Region IV EISOPQAM. Sample locations are shown in Figure 2. Five duplicate samples were collected for laboratory quality assurance/quality control. The analytical results indicate that all soil containing PCB concentrations of 1.0 mg/kg or greater was removed from the Edwards property. Table 1 contains analytical results that confirm remediation, and Appendix 1 contains data sheets of all samples collected during the remediation process.

## **SECTION 4.0 ANALYTICAL PROGRAM**

All soil samples were collected and managed in accordance with USEPA Region IV EISOPQAM protocols. Samples were collected using clean sampling equipment. Equipment rinseate samples were collected and analyzed to confirm the effectiveness of the decontamination procedures.

Each sample was assigned a unique sample identification designation in accordance with the labeling requirements under section 3.2.1 of the EISOPQAM. Field records were kept in accordance with procedures specified in section 3.5 of EISOPQAM. The sample identification designation, date, and time of collection was recorded in the field book and on the chain of custody form for cross-referencing.

Upon collection, samples were placed in 4 oz amber glass jars, and the jars were transferred to a small sample cooler. Field personnel delivered samples to the on-site laboratory several times each day. Upon arrival at the on-site lab, the samples were transferred to the ECCS sample custodian who logged each sample on ECCS chain of custody forms. Each sample was assigned a unique ECCS internal ID for tracking purposes. After analysis, the samples were transferred to either a sample refrigerator in the on-site lab or stored in coolers until they were either sent to Paradigm for confirmation analysis or disposed of on-site. Chain of custody forms were completed for all samples packaged and shipped to Paradigm for confirmation analysis. Chain of Custody forms are included in Appendix 2.

### **Analytical Methods**

For analysis of samples in the on-site lab, ECCS used EPA 8082m, modified for the mini-extraction.

Paradigm Analytical also used EPA 8082 for quantitation of PCBs.

## **SECTION 5.0        REMEDIATION AND DISPOSAL**

Remediation of the Edwards property, on Lee Avenue, began on April 30, 2001. Remediation of this property involved removal of soil in two general areas. The first lies west of the driveway and extends from Lee Avenue south to approximately one foot in front of the fence. The second is the grassy area that lies in front of and along the west side of the Edward's house. It extends from the house north to Lee Avenue, and from the eastern property line west to the driveway. Disposal of all soil containing PCB concentrations of 1.0 milligram per kilogram (mg/kg) or greater was conducted in accordance with MDEQ's supervision and established clean-up criteria for residential properties. All soils containing concentrations greater than 1 mg/kg PCBs were profiled and disposed of at the BFI's "Little Dixie" Subtitle D Landfill in Madison County, Mississippi after MDEQ and US EPA approvals were obtained.

The soils containing concentrations of PCBs in excess of 1.0 mg/kg were located in the two general areas described above. The contaminated area, totaling approximately 7432 ft<sup>2</sup>, was excavated to an average depth of 1.5 feet bgs. Impacted soil was removed from around tree roots using an "Air-Shovel™" pressure washer/vacuum system. Contaminated soil removed by the pressure washer was vacuumed into a tank and transferred to a roll-off box located on the KEC property. Soil removal continued until on site laboratory analytical results confirmed that all soil containing concentrations of PCBs exceeding the residential cleanup criteria established by MDEQ was removed.

The slurry of water and soil created during contamination removal was solidified by mixing the slurry with "ASTROGEL", a sorbent material consisting of polyacrylamide and sodium polyacrylate copolymer produced by Astro American Chemical Co, Inc., and properly disposed. The solidified soil/water slurry was disposed of in the BFI "Little Dixie" Subtitle D landfill located in Ridgeland, Mississippi in accordance with all applicable state and federal regulations. A total of 366.31 tons of waste was disposed at the landfill. Waste disposal manifests are included in Appendix 3. Confirmatory soil

samples were collected following excavation to confirm that impacted soil was removed. If confirmation samples had concentrations greater than 1 mg/kg PCB's, additional soil was excavated and a new sample was collected directly beneath the previous non-conforming sample. Adding the suffix "-02" to the original sample number, e.g. JEP-EFS-002-02 designated the new samples collected beneath the previously non-conforming sample. If the new sample contained less than 1 mg/kg PCB, then excavation ceased.

After confirmation results indicated that the remediation objective was met, the excavation was backfilled with analytically confirmed clean soil. The surface of the remediation area was covered with fresh sod and landscaped. Photographs showing details of remediation are included in Appendix 4.

**SECTION 6.0      SUMMARY AND CONCLUSIONS**

On May 17, 2001 the Edwards property was effectively remediated by removal and proper disposal of soil containing PCB concentrations of 1 mg/kg or greater in accordance with the MDEQ established residential property cleanup criteria and supervision. Confirmation sampling in the impacted area was performed in accordance with applicable state requirements demonstrating that the remediation goals were met.

Based on the MDEQ criteria no further action is warranted at the Edwards property.