

## **Health Consultation**

**Kuhlman Electric Corporation - Crystal Springs, Mississippi**



**Prepared by**

**U. S. Department of Health and Human Services  
Agency for Toxic Substances and Disease Registry**

*The findings and conclusions in this report have not been formally disseminated by the Agency for Toxic Substances and Disease Registry and should not be construed to represent any agency determination or policy.*

## **Background and statement of issues**

The Mississippi Department of Environmental Quality (MDEQ) requested a health hazard determination because of five properties contaminated with PCBs (Arochlor 1260) migrating from the Kuhlman Electric Corporation (KEC) in Crystal Springs, Mississippi [1]. The source of the contamination is reportedly a drainage channel carrying storm water from the KEC plant 0.66 mile northwest to Lake Chautauqua [2]. Analytical results indicate that within the north drainage channel PCBs have affected multiple locations in excess of the MDEQ maximum allowable concentration of 1 ppm, with some areas exceeding 50 ppm [2]. Approximately 10.5 acres of the 20.1-acre study area have been contaminated by PCB concentrations exceeding 1 ppm [2]. Of these 10.5 acres, 0.6 acre is estimated to be contaminated with PCB levels greater than 50 ppm [2]. MDEQ will require initial remediation at locations with PCB contamination greater than 10 ppm. Later it will require remediation at contamination locations greater than 1 ppm.

The question MDEQ posed to ATSDR is whether the average PCB levels measured in the five Crystal Springs residential properties pose a public health hazard for intermediate exposures?

### **Environmental data submitted**

For this health consultation, ATSDR reviewed the *North Drainage Channel Site Characterization Report, Kuhlman Electric Corporation Crystal Springs, Mississippi*, which contains details of sampling analytical methodologies and the quality assurance/quality control procedures [2]. The five residential properties are located near the drainage channel, and soil borings were collected on each property. For the intermediate exposure assessment, ATSDR only considered soil samples collected at a depth of 0-6", given that surface soil is more representative of potential exposures. The properties on which ATSDR was asked to comment are the following:

#### ***Property #1***

This property is estimated at 13,891 square feet (0.32 acre) [2]. 40 PCB samples were collected on this property (Table 1 below). PCBs were detected at levels above 1 ppm in many of the discrete surface soil samples (0-6") collected north and east of the house. The highest concentration in surface soil reported was 30 ppm, with the second highest at 27 ppm [2]. All of the elevated PCB levels are near or in the drainage ditch adjacent to the eastern or northern borders of the property [2]. The average PCB level for the property is 3.9 ppm.

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**Table 1. PCB Surface Soil Concentrations, Property 1**

<b>Sample</b>	<b>PCB Concentration (ppm)</b>
WRP-GP14-001	<0.1
DP-891-001	<0.1
WRP-GP13-001	<0.1
WRP-GP12-001	<0.1
DP-900-001	<0.1
DP-892-001	0.17
DP-885-001	<0.1
WRP-GP2-001	<0.1
WRP-GP15-001	0.13
WRP-GP4-001	15
DP-886-001	<0.1
DP-890-001	<0.1
WRP-GP11-001	<0.1
DP-894-001	<0.1
DP-893-001	<0.1
DP-883-001	0.21
DP-894-001	<0.1
WRP-GP20-001	0.1
DP-887-001	0.21
DP-845-001	0.42
DP-882-001	0.4
WRP-GP5-001	0.56
WRP-GP1-001	11
DP-894-B-001	1.5
WRP-GP9-001	<0.1
DP-896-001	<0.1

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<i>Sample</i>	<i>PCB Concentration (ppm)</i>
WRP-GP10-001	<0.1
DP-898-001	<0.1
WRP-GP8-001	<0.1
DP-897-001	0.52
WRP-GP17-001	0.21
WRP-GP7-001	<0.1
FWP-GP47-001	0.19
DP-895-001	9.3
WRP-GP16-001	2.4
WRP-GP18-001	27
CSP-GP22-001	25
WRP-GP19-001	27
DP-889-001	3.4
DP-846-001	30
Average	3.9

### ***Property #2***

This property is approximately 6,194 square feet (0.14 acre) [2]. Twenty soil borings were collected on this property (Table 2). None of the surface soil samples (0-6") taken from the soil borings within the property boundaries were above 1 ppm. Still, in two samples detection limits were at 5 and 2 ppm. The average PCB level inside the property boundary was 0.505 ppm.

**Table 2. PCB Surface Soil Concentrations, Property 2**

<i>Sample</i>	<i>PCB Concentration (ppm)</i>
RWP-GP4-001	<0.1
DP-919-001	0.22
DP-917-001	0.18
DP-918-001	<0.1
DP-857-001	<0.1

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<b>Sample</b>	<b>PCB Concentration (ppm)</b>
RWP-GP5-001	0.12
DP-916-001	<0.2
DP-915-001	<0.5
DP-854-001	<0.1
DP-905-001	<0.1
DP-910-001	<5
DP-909-001	<2
DP-911-001	<0.4
RWP-GP3-001	0.13
DP-853-001	<0.1
DP-907-001	0.21
DP-908-001	<0.1
DP906-001	<0.1
RWP-GP2-001	<0.1
RWP-GP1-001	0.24
Average	0.505

***Property #3***

This property is approximately 16,195 square feet (0.37 acre) [2]. Five samples collected on this property were collected to define the edge of the PCB migration pattern. The highest measured concentration in surface soils (0-6") is 1.2 ppm, near the edge of the ditch [2]. The average soil level on the property is 0.38 ppm.

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**Table 3. PCB Surface Soil Concentrations, Property 3**

<i>Sample</i>	<i>PCB Concentration (ppm)</i>
DP-832-001	<0.1
HP-GP13-001	0.19
HP-GP9-001	0.33
HP-GP8-001	1.2
HP-GP5-001	<0.1
Average	0.38

**\* Property #4**

This property is approximately 5,692 square feet (0.13 acre) [2]. Thirteen soil borings were collected (Table 4). In most of the surface soil samples on this property, PCBs in surface soils (0-6") are below detection levels. The average PCB level on the property is 0.22 ppm [2].

**Table 4. PCB Surface Soil Concentrations, Property 4**

<i>Sample</i>	<i>PCB Concentration (ppm)</i>
DP-926-001	0.15
DP-925-001	0.52
BSP-GP1-001	<0.1
DP-924-001	0.21
BSP-GP2-001	<0.1
DP-923-001	<0.1
DP-920-001	0.13
DP-922-001	0.21
DP-921-001	<0.1
BSP-GP5-001	<0.1
DP-927-001	<0.5
DP-928-001	<0.1
BSP-GP4-001	<0.5
Average	0.22

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**Property #5**

This property is approximately 11,059 square feet (0.25 acre) [2]. Records show that 29 soil borings were collected. In soil samples collected from a depth of 0 to 6" PCBs were detected at less than 1 ppm in most of the discrete surface soil samples, with the highest at 1.8 ppm and the second highest at 0.76 ppm [2]. The area containing greater than 1 ppm PCB's is estimated at 600 square feet [2]. The average soil level is 0.38 ppm.

**Table 5. PCB Surface Soil Concentrations, Property 4**

<b>Sample</b>	<b>PCB Concentration (ppm)</b>
HGP-GP15-001	0.12
DHP-GP1-001	0.32
DP-931-001	0.32
DP-932-001	0.11
DP-865-B-001	0.84
DP-866-001	0.28
DP-950-001	0.66
DP-945-001	0.48
DP-933-001	0.38
DP-951-001	<0.1
DP-949-001	0.25
DP-946-001	0.15
DP-867-001	<0.1
DP-868-001	0.43
DP-952-001	0.76
DP-963-001	0.42
DP-948-001	<0.1
DP-954-001	0.15
DP-961-001	0.16
DP-955-001	<0.1
DP-944-001	0.46
DP-956-001	1.8

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<b>Sample</b>	<b>PCB Concentration (ppm)</b>
DP-957-001	0.31
DP-959-001	<0.1
DP-958-001	0.12
DP-942-001	0.15
DP-960-001	<0.1
DP-941-001	<0.1
DP-938-001	<0.1
Average	0.38

## **Discussion**

Exposure activities and contaminant concentration both play an important role in determining the amount of PCBs to which a person is exposed. That said, however, a variety of other factors are involved that determine whether environmental contamination will result in significant exposure. Some of these factors include

- duration of exposure: when the contamination occurred and how long residents have lived there,
- frequency of exposure: how often the person has contact with the soil,
- area of contamination: does the person come into contact with the highest level of PCBs all the time?, and
- bioavailability: (what is the potential for absorption from the gastrointestinal tract?)

EPA informed ATSDR that children do not reside at these five properties.

### **PCB exposure in the general environment**

- People can be exposed to PCBs from ingestion of contaminated food or soil, from breathing dust or air containing PCBs, from drinking contaminated water, or from absorbing PCBs through the skin [3].
- For most people who do not work with PCBs, exposure occurs primarily through ingesting fish, meats and milk containing small amounts of PCB residues [3].
- Most people in industrialized countries have very small amounts of PCB stored in their body tissues. These background levels of PCBs appear harmless. Over time, our bodies slowly eliminate them. Since PCBs were banned in the late 1970s, levels in the environment, in animal foods, and in human bodies have been slowly declining [3]. At Crystal Springs, the pathway of concern from contaminated soils is incidental ingestion of contaminated soils.



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### **Public health implications**

PCBs have been associated with several noncancerous health effects in animals, including liver, thyroid, dermal, and ocular changes, immunological alterations, neurodevelopmental changes, reduced birth weight, and reproductive effects [3]. Studies attempting to show the same health effects in humans as have been observed in animals have generally been inconclusive. PCB exposures among workers in some occupations such as manufacture and testing of electrical equipment were very high. Some study populations include workers with job-related exposures of 20 years or more. Both the magnitude and duration of exposure provide the best opportunity to observe clearly the kinds of effects attributable to PCB exposure. Studies of PCB-exposed populations collectively suggest that the primary adverse health effects attributable to PCB exposure are chloracne (a severe form of cystic acne), pigmentation changes, and eye irritation [3]. This dermal effect was also seen in populations who consumed PCB-contaminated rice oil [3]. Some recent human studies have found associations between PCB exposure and neurodevelopmental effects in children—particularly infants exposed *in utero* by mothers who ate contaminated fish [3]. ATSDR's chronic Minimal Risk Level (MRL) for PCBs (0.00002 mg/kg/day) is based on the lowest effect level reported in the scientific literature, (i.e., a lowest observed effect level (LOAEL)) of 0.005 mg/kg/day for decreased antibody levels in Rhesus monkeys treated daily for 55 months with Aroclor 1254 in a glycerol/corn oil mixture [3,4,5]. Similar doses for 37 months induced adverse skin effects in adult monkeys as well as their offspring [5,6,7].

Carcinogenicity of PCBs in humans has been investigated in retrospective occupational studies. These studies have evaluated cancer mortality in workers exposed during capacitor manufacturing and repairing, and in case-control studies they have evaluated the general population, examining associations between cancer and serum or adipose tissue levels of PCBs resulting from environmental exposures [3]. A review of the human studies, particularly indications of PCB-related cancer at several sites (e.g., liver, biliary tract, intestines, and skin (melanoma)), provide suggestive evidence that PCBs are carcinogenic [3]. The evidence is unequivocal that PCBs are hepatocarcinogenic in animals. The suggestive evidence for the carcinogenicity of PCBs in humans is supported by extensive conclusive evidence in animals [3]. Both IARC and EPA have classified PCBs as probable human carcinogens, based mainly on evidentiary findings of carcinogenicity in animals [3]. IARC regards the human evidence of carcinogenicity as "limited" or even "inadequate," while EPA finds the evidence "suggestive." Still, neither assessment is based on all currently available studies [3]. NTP similarly concludes that PCBs are reasonably anticipated to be carcinogenic in humans based on sufficient evidence of carcinogenicity in animals [3].

Serum PCB levels were within background ranges in persons at highest risk of non-occupational exposure to PCBs at 10 different contaminated sites, even though the soil was highly contaminated with PCBs [9]. At two other sites, where average blood levels were elevated, it was subsequently determined that occupational exposures and consumption of PCB-contaminated fish had also occurred [9]. These data indicate that in contaminated environments, where food contamination is not an issue, humans did not accumulate additional body burdens of PCBs [10].

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ATSDR used an intermediate exposure (up to 365 days) scenario in evaluating the PCB soil contamination of the five properties, based on MDEQ's anticipated completion of remediation of any PCB contaminated spots on the property greater than 10 ppm within 1 year. Although several soil samples with maximum PCB concentrations of 30 mg/kg or less were collected, the average PCB soil concentration for those residential yards was well below 10 ppm. Because no children reside at these properties, we only evaluated adult exposures. ATSDR evaluated the five properties only, which may not be representative of other surrounding residential properties or the drainage ditch. If a 70 kilogram (kg) adult ingested 100 milligrams (mg) of soil containing 10 ppm of PCBs per day, the daily PCB dose would be 0.00014 mg/kg/day. This is less than ATSDR's chronic Minimal Risk Level of 0.00002 mg/kg/day and less than ATSDR's intermediate MRL of 0.00003 mg/kg/day for PCBs.

## **Conclusions**

***Question to ATSDR: For the initial remediation, do the average PCB levels measured in the five Crystal Springs residential properties pose a public health hazard for intermediate exposures?***

For the five residential properties, ATSDR concluded that short- to intermediate-term exposure to the average level of PCBs in these surface soils does not constitute a public health hazard, provided:

- Measures are taken to prevent children from accessing contaminated soils (>1 ppm) in the ditch.
- Measures for planned remediation efforts are implemented within an intermediate timeframe (i.e., initial removal or remediation of soil levels greater than 10 ppm, with follow-up removal or remediation of soils with PCB concentrations greater than 1 ppm).
- Measures are taken to educate the community members concerning the areas of their properties that are contaminated and the appropriate steps they can take to reduce their exposure to the soil.

## **Recommendations**

ATSDR recommends

- Completing the clean up of these properties within an intermediate time frame (approximately 365 days).
- Prevent children's access to areas with PCB contamination (>1 ppm).
- Informing residents of areas of contamination and steps residents can take to reduce their exposures while removal or remediation is ongoing.

## **Public health action plan**

The Public Health Action Plan for the site contains a description of actions ATSDR has taken or will take, or actions taken by other government agencies at the site, individually

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or in combination. The purpose of the Public Health Action Plan is to ensure that this public health consultation not only identifies public health hazards, but also provides a plan of action designed to mitigate and prevent adverse human health effects resulting from exposure to hazardous substances in the environment. Included is a commitment on the part of ATSDR to follow up on this plan to ensure its implementation.

- ATSDR Division of Regional Operations will forward this health consultation to the appropriate contacts within EPA and MDEQ. They will work with the appropriate parties to implement these recommendations.

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## **Authors, technical advisors**

### **Principal Authors**

James T. Durant, MSPH C.I.H.  
Environmental Health Scientist  
Exposure Investigations and Consultations Branch  
Division of Health Assessment and Consultation  
Agency for Toxic Substances and Disease Registry

### **Reviewed by:**

Greg Zarus  
Strike Team Leader  
Exposure Investigations and Consultation Branch  
Division of Health Assessment and Consultation  
Agency for Toxic Substances and Disease Registry

Clement Welsh, PhD.  
Senior Environmental Health Scientist  
Exposure Investigations and Consultation Branch  
Division of Health Assessment and Consultation  
Agency for Toxic Substances and Disease Registry

Don Joe, PE  
Acting Deputy Branch Chief  
Exposure Investigations and Consultation Branch  
Division of Health Assessment and Consultation  
Agency for Toxic Substances and Disease Registry

Susan Moore, M.S.  
Branch Chief  
Exposure Investigations and Consultation Branch  
Division of Health Assessment and Consultation  
Agency for Toxic Substances and Disease Registry

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## **References**

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10. Kimbrough R. Polychlorinated biphenyls (PCBs) and human health: an update. *Crit Rev Toxicol* 1995;25:133-63.



STATE OF MISSISSIPPI  
DAVID RONALD MUSGROVE, GOVERNOR  
MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY  
CHARLES H. CHISOLM, EXECUTIVE DIRECTOR

April 12, 2002

**FILE COPY**

Ms. Beulah Sojourner  
111 McPherson Street  
Crystal Springs, 39059

RE: Kuhlman Electric Site  
Crystal Springs, Mississippi

Dear Ms. Sojourner:

Thank you for your recent letter regarding the Kuhlman Electric facility in Crystal Springs. Attached is a status report outlining the ongoing remediation activities on and around the plant.

Please call me at 601-961-5318 if you have any additional concerns.

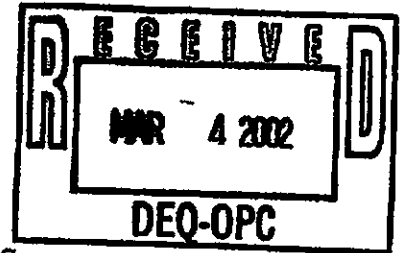
Sincerely,

A handwritten signature in black ink that reads "Tony Russell".

Tony Russell, Chief  
Uncontrolled Sites Branch

Enclosure

C:\My Documents\Kuhlman Electric\Kuhlman Beulah Sojourner lt 4-12-02.doc



Attention: Terry Russell, Chief of Uncontrolled Sites  
Mississippi Department of Environment Quality  
*Bureau of Pollution Control*  
*101 West Capitol Street*  
*Jackson, Ms 39201*

*First of all I come to you in brotherly/sisterly love. I don't know if your faith is in the Heavenly Father or not, but I pray that it is rooted in Him.*

*I am writing to let you know about the PCP, which was found in the residents surround Kulhman Electric location here in Crystal Springs, Ms. I am sure that you have heard and read about this harmful chemical. My mother has lived here at 111 McPherson Street which was once 211 McPherson Street since about 1978. I lived there until 1986. I have lived with my mother for months at a time since 1986. At one time my whole family have lived with my mother for about a year.*

*Well, unfortunately my mother has no choice but to live in this infected area. When every one such as Kulhman Electric Company are concerned about the finance issues, we are concern about the health of our love ones who have no choice but to continue to come in contact with this harmful chemical. My mother is one who has been tested to see if the PCP would be found in her body and the test was shown to be positive. It one thing to hear or read about something that is harmful such as this PCP but to become aware that it has made a home inside your body and nothing is being done on your behalf is another. Then it became known to you that not only are the ones who can do something about it are not concerned about your land, and house and God forbid your body.*

*The reason why we are writing you is because, you are in a position where you can help those who are unable to help themselves, no more than they have already tried. Please let us know that we are one nation under God, in righteousness.*

*Sincerely,*

*Lavern Lawrence*

2-11-2003

Mr Tony Russell  
to M.D.C.

I am writing this letter in concern of me and my family's health I have been tested and have PCB in my body I am waiting for my childrens to be tested I don't think you all are concern about us you are treating us like animals we are living and breathing this poison every day it has ~~contaminated~~ contaminated my body and my property you would not leave animals in this condition you are not concern about us as human beings would you like for your family to live being worried never knowing what could happen in your life if you are going to live or die not having a doctor to treat you are not thinking or caring about us as human being if you were concern you would be trying to do something to help us I did not cause this problem to my health or home I was going to remodel my house last year I payed \$2000 for a house I torn down and payed to have the Lumber moved from Jackson it cost me \$5000 dollars and \$2000 to get help for tearing it down over \$3000 and I could not use it because I was told not to do anything to my house I was hoping it would be soon I have lost most of my material



Jesus Christ sit right but see every  
thing is going on on this earth and  
he really see how we are being  
treated because of you all plant I really  
think we need to go on TV we need to  
go to 3 on your side and expose  
Kuhlman Electric and let the public  
know how we are suffering and going  
through I am not threatening you all I  
am being serious about our future  
I will be expecting to hear from  
you all very soon

Please + Thank you  
Mrs Sarah Soper

you all went right on and cleaned up  
The white neighborhood are you looking  
at the color or the condition  
I hope and pray that you are not that  
way we are humans not animals



**FILE COPY**

**STATE OF MISSISSIPPI**  
DAVID RONALD MUSGROVE, GOVERNOR  
**MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY**  
CHARLES H. CHISOLM, EXECUTIVE DIRECTOR

**February 9, 2001**

**Ms. Beulah Mae Sojourner**  
**111 McPherson Street**  
**Crystal Springs, MS 39059**

**RE: soil sampling**

**Dear Ms. Sojourner:**

**An omission was recently discovered in the table of laboratory data that was delivered to you on January 18, 2001. A corrected table is attached for your records.**

**If you have any questions, concerning this matter, please contact Gretchen Zmitrovich at (601) 961-5240.**

**Sincerely,**

A handwritten signature in black ink, appearing to read "Tony Russell".

**Tony Russell, Chief**  
**Uncontrolled Sites Section**

**Enclosure**

**Kuhlman Electric-111 McPherson (Sojourner)-corrected table\_2-9-01 (gz)**

**SOJOURNER PROPERTY**  
**111 McPherson Street**  
**Crystal Springs, Mississippi**  
**PCB Concentrations Detected in Soil**

			Field Laboratory		Fixed Laboratory	
Sample ID	Sample Depth (ft bgs)	Date Collected	Date Analyzed	Concentration (mg/kg)	Date Analyzed	Concentration (mg/kg)
863	0.5	01-Nov-00	02-Nov-00	<1.0 J	22-Nov-00	<0.330
	1.5	01-Nov-00	02-Nov-00	<0.10		
862	0.5	01-Nov-00	02-Nov-00	0.23		
	1.5	01-Nov-00	02-Nov-00	<0.10		
864	0.5	01-Nov-00	02-Nov-00	0.46		
	1.5	01-Nov-00	03-Nov-00	0.10		
865	0.5	01-Nov-00	03-Nov-00	<0.10	16-Nov-00	0.50
	1.5	01-Nov-00	02-Nov-00	<0.10		
920	0.5	03-Nov-00	04-Nov-00	0.13		
	1.5	03-Nov-00	04-Nov-00	<0.10		
921	0.5	03-Nov-00	04-Nov-00	<0.10	17-Nov-00	<0.10
	1.5	03-Nov-00	04-Nov-00	2.6	18-Nov-00	1.7
	3	16-Nov-00	16-Nov-00	<0.10		
	4	16-Nov-00	16-Nov-00	<0.10		
	5	16-Nov-00	16-Nov-00	<0.10		
	6	16-Nov-00	16-Nov-00	<0.10		
	7	16-Nov-00	16-Nov-00	<0.10		
	11	16-Nov-00	16-Nov-00	<0.10		
922	0.5	03-Nov-00	04-Nov-00	0.21	17-Nov-00	<0.097
	1.5	03-Nov-00	05-Nov-00	<0.10		
923	0.5	03-Nov-00	05-Nov-00	<0.10		
	1.5	03-Nov-00	05-Nov-00	<0.50 J		
924	0.5	03-Nov-00	05-Nov-00	0.21		
	1.5	03-Nov-00	05-Nov-00	0.17		
926	0.5	03-Nov-00	05-Nov-00	0.15		
	1.5	03-Nov-00	05-Nov-00	<0.10		
925	0.5	03-Nov-00	05-Nov-00	0.52		
	1.5	03-Nov-00	05-Nov-00	0.22		
929	0.5	03-Nov-00	05-Nov-00	0.17		
	1.5	03-Nov-00	05-Nov-00	<0.10		
927	0.5	03-Nov-00	05-Nov-00	<0.50 J		
	1.5	03-Nov-00	05-Nov-00	<0.10		
928	0.5	03-Nov-00	05-Nov-00	<0.10		
	1.5	03-Nov-00	05-Nov-00	<0.10		
930	0.5	03-Nov-00	05-Nov-00	<0.20 J		
	1.5	03-Nov-00	04-Nov-00	<0.10		
920-B	3	16-Nov-00	16-Nov-00	0.12		
	7.5	16-Nov-00	16-Nov-00	<0.10		

NA = Not Analyzed

J = Elevated detection level due to toxaphene interference

REV. 1



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**STATE OF MISSISSIPPI**  
DAVID RONALD MUSGROVE, GOVERNOR  
**MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY**  
CHARLES H. CHISOLM, EXECUTIVE DIRECTOR

**February 9, 2001**

**Ms. Orister Harris  
311 West Railroad Avenue  
Crystal Springs, MS 39059**

**RE: soil sampling**

**Dear Ms. Harris:**

**An omission was recently discovered in the table of laboratory data that was delivered to you on January 18, 2001. A corrected table is attached for your records.**

**If you have any questions, concerning this matter, please contact Gretchen Zmitrovich at (601) 961-5240.**

**Sincerely,**

A handwritten signature in black ink, appearing to read "Tony Russell".

**Tony Russell, Chief  
Uncontrolled Sites Section**

**Enclosure**

**Kuhiman Electric-311 W Railroad (Harris)-corrected table\_2-9-01 (gz)**

**HARRIS PROPERTY**  
**311 West Railroad Avenue**  
**Crystal Springs, Mississippi**  
**PCB Concentrations Detected in Soil**

			Field Laboratory		Fixed Laboratory	
Sample ID	Sample Depth (ft bgs)	Date Collected	Date Analyzed	Concentration (mg/kg)	Date Analyzed	Concentration (mg/kg)
865-B	0.5	01-Nov-00	02-Nov-00	0.84		
	1.5	01-Nov-00	03-Nov-00	0.16		
866	0.5	01-Nov-00	02-Nov-00	0.28		
	1.5	01-Nov-00	02-Nov-00	<0.10		
867	0.5	01-Nov-00	02-Nov-00	<0.10		
	1.5	01-Nov-00	02-Nov-00	<0.10		
868	0.5	01-Nov-00	02-Nov-00	0.43		
	1.5	01-Nov-00	02-Nov-00	<0.10		
869	0.5	01-Nov-00	02-Nov-00	0.73		
	1.5	01-Nov-00	02-Nov-00	<0.10	16-Nov-00	<0.097
931	0.5	03-Nov-00	04-Nov-00	0.35		
	1.5	03-Nov-00	06-Nov-00	<0.10		
932	0.5	03-Nov-00	04-Nov-00	0.11		
	1.5	03-Nov-00	04-Nov-00	<0.10		
933	0.5	03-Nov-00	04-Nov-00	0.38		
	1.5	03-Nov-00	04-Nov-00	0.21		
935	0.5	03-Nov-00	04-Nov-00	0.12		
	1.5	03-Nov-00	04-Nov-00	0.23		
936	0.5	03-Nov-00	04-Nov-00	<0.10		
	1.5	03-Nov-00	04-Nov-00	<0.10		
937	0.5	03-Nov-00	04-Nov-00	0.20		
	1.5	03-Nov-00	04-Nov-00	<0.10		
938	0.5	03-Nov-00	05-Nov-00	<0.10		
	1.5	03-Nov-00	05-Nov-00	<0.10		
939	0.5	03-Nov-00	05-Nov-00	<0.10		
	1.5	03-Nov-00	05-Nov-00	<0.10		
940	0.5	03-Nov-00	05-Nov-00	<0.10		
	1.5	03-Nov-00	05-Nov-00	<0.10		
941	0.5	03-Nov-00	05-Nov-00	<0.10		
	1.5	03-Nov-00	05-Nov-00	<0.10		
934	0.5	03-Nov-00	04-Nov-00	0.47		
	1.5	03-Nov-00	04-Nov-00	0.11		
945	0.5	03-Nov-00	05-Nov-00	0.48		
	1.5	03-Nov-00	05-Nov-00	<0.10		
942	0.5	03-Nov-00	05-Nov-00	0.15		
	1.5	03-Nov-00	05-Nov-00	<0.10		
943	0.5	03-Nov-00	05-Nov-00	0.13		
	1.5	03-Nov-00	05-Nov-00	<0.10		
944	0.5	03-Nov-00	05-Nov-00	0.46		
	1.5	03-Nov-00	05-Nov-00	<0.10		
946	0.5	03-Nov-00	05-Nov-00	0.15		
	1.5	03-Nov-00	05-Nov-00	<0.10		
947	0.5	03-Nov-00	05-Nov-00	<0.10		

NA = Not Analyzed

J = Elevated detection limit due to toxaphene interference

REV. 1

**HARRIS PROPERTY**  
**311 West Railroad Avenue**  
**Crystal Springs, Mississippi**  
**PCB Concentrations Detected in Soil**

	1.5	03-Nov-00	06-Nov-00	<0.10		
948	0.5	03-Nov-00	05-Nov-00	<0.10		
	1.5	03-Nov-00	05-Nov-00	<0.10		
			Field Laboratory		Fixed Laboratory	
Sample ID	Sample Depth (ft bgs)	Date Collected	Date Analyzed	Concentration (mg/kg)	Date Analyzed	Concentration (mg/kg)
949	0.5	03-Nov-00	05-Nov-00	0.25		
	1.5	03-Nov-00	06-Nov-00	<0.10		
950	0.5	03-Nov-00	06-Nov-00	0.68		
	1.5	03-Nov-00	06-Nov-00	<0.10		
951	0.5	03-Nov-00	06-Nov-00	<0.10		
	1.5	03-Nov-00	06-Nov-00	0.74		
	3	16-Nov-00	17-Nov-00	<0.10		
	4	16-Nov-00	17-Nov-00	<0.10		
952	0.5	03-Nov-00	06-Nov-00	0.76		
	1.5	03-Nov-00	06-Nov-00	0.42		
954	0.5	03-Nov-00	06-Nov-00	0.15		
	1.5	03-Nov-00	06-Nov-00	0.11		
955	0.5	03-Nov-00	06-Nov-00	<0.10		
	1.5	03-Nov-00	06-Nov-00	<0.10		
953	0.5	03-Nov-00	06-Nov-00	<0.10		
	1.5	03-Nov-00	06-Nov-00	<0.10		
956	0.5	03-Nov-00	06-Nov-00	1.8		
	1.5	03-Nov-00	06-Nov-00	0.16		
957	0.5	03-Nov-00	06-Nov-00	0.31		
	1.5	03-Nov-00	06-Nov-00	0.20		
958	0.5	03-Nov-00	06-Nov-00	0.12		
	1.5	03-Nov-00	06-Nov-00	<0.10		
964	0.5	04-Nov-00	06-Nov-00	0.17		
	1.5	04-Nov-00	06-Nov-00	0.19		
960	0.5	04-Nov-00	06-Nov-00	<0.10		
	1.5	04-Nov-00	06-Nov-00	<0.10		
962	0.3	04-Nov-00	06-Nov-00	0.16		
961	0.5	04-Nov-00	06-Nov-00	0.16		
	1.5	04-Nov-00	06-Nov-00	1.2		
	3	16-Nov-00	17-Nov-00	1.1		
	4	16-Nov-00	17-Nov-00	1.4		
963	0.5	04-Nov-00	06-Nov-00	0.42		
	1.5	04-Nov-00	06-Nov-00	0.18		
959	0.5	04-Nov-00	06-Nov-00	<0.10		
	1.5	04-Nov-00	06-Nov-00	<0.10		

NA = Not Analyzed

J = Elevated detection limit due to toxaphene interference

REV. 1

AH-00-1638

VIA UPS NEXT DAY AIR

December 20, 2000

Ms. Gretchen Zmitrovich  
Mississippi Department of Environmental Quality  
Office of Pollution Control  
101 West Capitol Street  
Jackson, Mississippi 39201

Anastasia Hamel  
Director, Environmental Programs  
BorgWarner Inc.  
11955 East Nine Mile Road  
Warren, Michigan 48089

Re: **Progress Report of Assessment and Remediation Activities  
Kuhlman Electric Corporation and Residential Properties  
Crystal Springs, Mississippi**

**FILE COPY**

Dear Ms. Zmitrovich:

This is a progress report to summarize the assessment and remediation activities related to PCB contamination at Crystal Springs, Mississippi. BorgWarner's last update was October 31, 2000. As you are aware, pursuant to the indemnity agreement between Kuhlman Electric Corporation (KEC) and BorgWarner Inc., BorgWarner has continued the assessment at the KEC plant and began the assessment of residential properties along a drainage channel downgradient of the plant. BorgWarner has also been actively remediating those properties adjacent to the KEC plant for which access was previously granted and sampling was complete.

BorgWarner, as it stated in its October 31, 2000 letter to the Mississippi Department of Environmental Quality (MDEQ), remains committed to working closely with MDEQ, USEPA, local government and KEC in a cooperative manner to accomplish the tasks necessary for the protection of human health and the environment, to the extent that the circumstances are covered by its contractual indemnity to KEC. BorgWarner will continue to seek MDEQ's guidance and direction in its current and future intended activities and to promptly share information.

#### **ACTIONS TAKEN AND PLANNED**

##### **1. Delineation of Residential Properties along Jackson and Lee Avenues**

BorgWarner promptly and voluntarily began sampling and delineation activities at the residential and commercial properties, adjoining the KEC plant that appeared to or reportedly have been affected by runoff or by the removal of soil from the KEC plant prior to October 6, 1999.

Under MDEQ's supervision, BorgWarner conducted delineation activities of these properties during the month of August, 2000. A total of eighteen (18) properties were investigated, which were:

1. Perry Smith, 219 North Jackson Street
2. Stringer Funeral Home, 301 North Jackson Street
3. Stringer Rental Property, 303 North Jackson Street
4. Harold and Suzanne Warren, 403 North Jackson Street
5. Elnor Wright, 401 North Jackson Street
6. Sonny Reeves, 405 North Jackson Street
7. Brent Property, 403 Lee Avenue
8. Louie Lang/David Vinson, 407 North Jackson Street
9. Jerry Youngblood, 100 Lamar St.
10. Medical Clinic, Lee Avenue
11. Edwards Property, 406 Lee Avenue
12. Garment Shop, 414 Lee Avenue
13. Frazier Property, 405 Lee Avenue
14. Duplex Property, 408/410 Lee Avenue
15. Kellum Property, 412 Lee Avenue
16. Dabney/Smith Property, 215 North Jackson
17. Cooper Property, 409 North Jackson
18. Larry and Carol Wright, 305 North Jackson

BorgWarner acted under the continuous guidance and direction of the MDEQ with respect to delineation activities at the residential and commercial properties adjoining the KEC plant. Split samples were analyzed and QA/QC procedures were implemented by two laboratories experienced with polychlorinated biphenyl analysis. Samples were frequently split with on-site MDEQ representatives for MDEQ's independent analysis, which to our knowledge consistently correlated with BorgWarner's on-site and off-site laboratory analytical results.

The delineation activities were conducted utilizing the "US EPA, Region IV Environmental Investigations Standard Operating Procedures and Quality Assurance Manual," May 1996 (EISOPQAM), sampling and analytical protocols. A copy of the work plan with procedures used in the field and applicable sections of the EISOPQAM are attached to this report for reference purposes.

Upon completing the delineation activities, BorgWarner compiled and submitted the analytical results on October 2, 2000 to MDEQ and US EPA, Region IV. Subsequently, BorgWarner began to schedule the remediation of residential and commercial properties adjacent to the KEC plant and along Jackson and Lee Avenues for which access was granted with the assistance of MDEQ and City of Crystal Springs Mayor Webb and where an attorney and/or an independent consultant were not involved in performing conflicting sampling activities.



## **2. Remediation of Residential Properties**

On October 16, 2000 BorgWarner initiated remediation activities at the Medical Center and the Dabney/Smith properties, which are adjacent to the KEC plant. Remediation of the Newman Duplex, on Lee Avenue, began on November 30, 2000. Remediation of these properties involved excavation and disposal of all soil containing 1.0 part per million (ppm) or greater of PCBs in accordance with MDEQ's established clean-up criteria for residential properties. All soils containing greater than 1 ppm PCBs but less than 50 ppm PCBs were profiled and disposed of at the BFI's "Little Dixie" Subtitle D Landfill in Madison County, Mississippi after MDEQ and US EPA, Region IV approvals were obtained.

Following excavation, all excavated areas were sampled to confirm that impacted soil had been 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. As a result, the remediation and confirmation of clean-up standards established by MDEQ guidance were adopted and implemented in all of BorgWarner's residential remediation activities. A grid with ten-foot (10) sampling point centers was used to confirm that impacted soils had been removed at each site.

The remediation of the Dabney/Smith, the Medical Center and the Newman duplex property resulted in the removal of 1400 tons of soil, which was disposed of at the BFI "Little Dixie" Subtitle D Landfill and replaced with 1500 tons of certified clean soil. During the remediation activities, the on-site laboratory analyzed 324 soil samples in the month of November and the fixed-base laboratory analyzed 32 quality control samples.

Vegetation, such as live oak trees, was treated with specialty equipment for maximum protection and to minimize damage to the root systems. Soil surrounding the live oak tree roots was removed using an "Air Shovel"™, a unique technology adopted specifically for this purpose. The Air Shovel™ uses a pressure spray to dislodge soil from around the roots while a vacuum system removes the soil and water by vacuuming into a tank. This method of soil removal has performed effectively with minimal damage to the tree's root system as was confirmed by the landscaping contractor and arborist. However, this process, regardless of its effectiveness, is very tedious and as a result only the tree on the Dabney/Smith property was completed during the second half of November. One other live oak tree, located on the Medical Center property, remains to be treated in a similar fashion and is scheduled for January 2001.

Landscaping and replacement of structures (sheds, car ports, etc.) on both the Medical Center and the Dabney/Smith properties are continuing and will most likely be completed by the end of December 2000. Both properties have been surveyed and the fence between the Dabney/Smith and Medical Center properties is currently being re-installed. Landscaping has been completed on the Newman duplex property.

Third party independent sampling activities commissioned by the Nutt & Associates Law Firm have interfered with planned remediation activities along Lee Avenue, specifically at the Frazier's, Edward's, and Kellum's properties. The Garment Shop is a more complicated matter for two reasons. First, the impacted soil at the Garment Shop is located at the property line between it and the Kellum residence and second, the Kellum elm tree roots extend to the Garment Shop property itself. BorgWarner has filed a Freedom of Information Act request to MDEQ in an effort to obtain a copy of the recently submitted report generated by these independent parties.

BorgWarner, after its evaluation of the sampling results and data contained within the third party report, will begin discussions with the attorney(s) representing each resident (mentioned above) along Lee Avenue in an attempt to resolve the matter, including confirmation that all sampling results have been disclosed, and whether further sampling is necessary, and confirm access to then remediate those properties. BorgWarner also plans to keep MDEQ apprised of any developments and any progress or if no progress is being made with the attorney(s) involved.

BorgWarner will schedule delineation activities for the Gas Station, which is at the corner of Lee Avenue next to the Garment Shop, Mayor Webb's residence and the drainage pathway to the south. BorgWarner will inform MDEQ of the timing for those activities.

### **3. Drainage Channel Properties**

Beginning on October 30<sup>th</sup> through the end of November, BorgWarner collected and analyzed soil samples from nine properties situated along the drainage channel leading from the north side of KEC's plant site to Lake Chautauqua. The properties were:

1. Sojourner Property, 111 M<sup>c</sup>Pherson Street
2. Weathersby Property, 101 Forest Street
3. Robert Williams Property (Lonnie Williams' residence), 103 Forest Street
4. Flossie M<sup>c</sup>Murray Property (Ralph Williams residence), 104 Forest Street
5. Ralph Williams Rental Property, 107 Forest Street
6. Richard Williams Property, 102 Forest Street
7. Roberta Fitzgerald Estate Property, (R.P Edwards point of contact) 108 Tucker Street  
Property currently is being rented to the Kendrick family.
8. Welch Property, 501 Camp Street
9. Orister Harris Property, 311 West Railroad Avenue

A total of 650 soil samples was collected from these properties and analyzed by the on-site laboratory. The fixed-base laboratory analyzed an additional 65 samples for confirmation and quality control purposes. These preliminary assessment activities were conducted in the same manner as the Kuhlman plant preliminary site assessment and the KEC plant adjacent residential properties; and utilizing the "EPA, Region IV Environmental Investigations Standard Operating

Procedures and Quality Assurance Manual", May 1996 (EISOPQAM), sampling and analytical protocols.

Preliminary results available at this time indicate that six of the nine properties that were sampled will require certain remediation. Four properties, including the Sojourner, Williams' rental, Harris and Welch properties, will require remediation under the MDEQ guidelines since the highest concentrations detected are less than 50 ppm. Two properties, including the M<sup>s</sup>Murray and R. P. Edwards properties, have soil with PCB concentrations greater than 50 ppm and therefore will require remediation under the TSCA rules. The following is a list of properties where concentrations greater than 1.0 ppm PCB were detected as well as the highest detected concentration on each property:

<u>Property</u>	<u>Highest Detected Concentration</u>
Sojourner	2.6 ppm
Williams rental	30.0 ppm
Harris	1.2 ppm
Welch	8.4 ppm
M <sup>s</sup> Murray	70.0 ppm
R. P. Edwards	51.0 ppm

Data from this sampling event are being evaluated and once quality control measures are completed the data will be tabulated. Site-specific reports containing collected data, maps of sampling locations, and work plans for remediation, if required, for each individual site are also being prepared and will be submitted to MDEQ and US EPA, Region IV by January 12, 2001.

It is anticipated that additional sampling will be required along the drainage channel. Several undeveloped properties, either abutting the drainage channel or through which the drainage channel runs, will be sampled to delineate the extent of possibly impacted soil and determine the potential for future runoff to Lake Chautauqua. The Department will be kept apprised as to the timing for this additional investigation and sampling activity.

#### 4. KEC Plant

After an initial phase of sampling in the areas identified by KEC's construction activities and the related equipment decontamination zone, BorgWarner conducted further, substantial sampling activities in the south and north parking lot areas as well as the former above ground storage tank area. These delineation activities, other than any possible data gaps, have been completed. The results are currently being tabulated and compared for correlation purposes between the on-site and off-site laboratories, prior to being issued to MDEQ. Should any data gaps exist, BorgWarner will conduct further sampling activities.

This additional data will be incorporated as an addendum to the *Preliminary Site Assessment Report*, submitted to MDEQ in July 2000. Comments to the *Preliminary Site Assessment Report* made by MDEQ will also be addressed and included in the addendum submittal. It is anticipated that the addendum report will be submitted to MDEQ by February 12, 2001.

## **5. Lake Chautauqua**

BorgWarner intends to consider delineation of the sediments at Lake Chautauqua, ecological assessment, and surface water sampling, to the extent appropriate after receipt of the pending "Task Force" report. These activities will not begin on any great scale until the Task Force report is evaluated.

## **6. Groundwater Delineation**

BorgWarner intends to delineate the nature and extent of any groundwater contamination relative to the KEC plant. Groundwater delineation will take place at the time that remediation at the KEC plant commences. It is critical that the protective cover at the KEC plant site is not disturbed for the time being and that the groundwater investigation is addressed when BorgWarner is actively remediating on the KEC plant property. This approach will ensure that sediments from the KEC Plant do not travel to the drainage channel and Lake Chautauqua.

BorgWarner remains dedicated to continuing its open communication with MDEQ and US EPA, Region IV and looks forward to the meeting with MDEQ and City of Crystal Springs Mayor Webb and other Crystal Springs representatives on January 17, 2001 (at 8:30 a.m.) to further discuss any of the above and share its plans for future activities.

Should you have any questions or comments, please contact me directly at (810) 497-4503 at your earliest convenience.

Very truly yours,

A handwritten signature in cursive script, reading "Anastasia Hamel". The signature is written in dark ink and is positioned above the printed name and title.

Anastasia Hamel  
Director, Environmental Programs  
BorgWarner Inc.

Ms. Gretchen Zmitrovich MDEQ

December 20, 2000

Page 7 of 7

**Attachments:**

1. Work Plan – Preliminary Assessment and Remediation
2. Craig Brown, US EPA, Region IV letter to BFI

cc: J. Banks, MDEQ  
T. Russell, MDEQ  
K. Dowell, Esq., MDEQ  
C. Brown, US EPA Region IV  
H. Webb, Mayor Crystal Springs  
Laurene H. Horiszny, Esq.  
Robert Martin, MSGA  
Thomas D. Lupo, Esq.  
Scott E. Schang, Esq.  
Mickey Crockett, KEC  
Al Thomas, KEC

**WORKPLAN FOR THE PRELIMINARY  
ASSESSMENT AND REMEDIATION OF PCB CONTAMINATION IN SOIL  
KUHLMAN ELECTRIC CORPORATION FACILITY  
AND RESIDENTIAL COMMERCIAL PROPERTIES  
IN CRYSTAL SPRINGS, MISSISSIPPI**

As established by the Mississippi Department of Environmental Quality (MDEQ) guidelines in connection with this project, all work related to the preliminary assessment of the extent of contamination at the Kuhlman Electric Corporation (KEC) facility and work related to the preliminary assessment and confirmation of remedial actions at KEC adjacent residential/commercial properties and residential properties along the drainage channel (leading from the north side of KEC's facility to Lake Chautauqua) has been performed in accordance with the *Environmental Protection Agency (EPA), Region IV "Environmental Investigations, Standard Operating Procedures and Quality Assurance Manual", May 1996 (EISOPQAM)*.

Copies of relevant and applicable portions of the EISOPQAM are maintained on site during all field activities and all field personnel are trained in its implementation. Remedial action confirmation sampling grids were established using *MDEQ Guidance Document, Verification of Soil Remediation, Environmental Response Division, Waste Management Division, April 1994, Revision 1*. Specifically, sampling grids were based on Part 2-Medium and Large Site Soil Cleanup Verification, "Establishing Grid Interval."

Field operations were performed under the site-specific Health and Safety Plan guidelines. Modified Level "D" Personal Protective Equipment (PPE) was utilized by all personnel working within the investigative area.

### Sampling Objectives

The soil-sampling objective is to establish the vertical and horizontal extent of contamination resulting from historical facility operations. In the KEC facility case, the soil-sampling objective included historical use of polychlorinated biphenyl (PCB). All sampling procedures were conducted in accordance with the US EPA, Region IV EISOPQAM. Sampling procedures included the collection of soil samples on a twenty foot triangular grid, where possible, at discreet depth intervals. Surface and subsurface soil samples were collected using GeoProbe® MacroProbe™ direct push sampling equipment. The GeoProbe® system uses a hydraulically driven hammer to advance a hollow, split-barrel sampler to the desired depth. The sampler contains an acetate liner in which a sample of the cored soil is retained. The MacroProbe™ corer retains a 1.25-inch diameter continuous 4 feet in length core sample. Once sampling is completed, the direct-push boring holes are backfilled with bentonite chips in unpaved areas, and with grout in parking lots and other paved areas.

Throughout the delineation activities each direct-push boring was sampled at 0.5-3.0 feet below ground surface (bgs) and at 3.0-6.0 feet bgs. Selected borings were completed to depths varying from 8-12 feet bgs and sampled in these deeper intervals to evaluate the vertical distribution of contaminants.

Additional sampling of dust, stream and drainage ditch sediments, surface water and ground water were collected, as warranted, in accordance with applicable EISOPQAM guidelines.

### Analytical Methods

Samples that were collected were analyzed for PCBs by the on-site mobile laboratory, Environmental Chemistry Consulting Services (ECCS) of Madison, Wisconsin. Initially soil samples were also analyzed for chlorinated benzenes until data confirmed that chlorinated benzene contamination is not at issue in samples with low concentrations of PCBs (generally <20 ppm). At least 10% of all samples were split and sent to a fixed-base laboratory, Paradigm Analytical Laboratories, Inc. (PAL) of Wilmington, North Carolina for analysis of the same parameters as for the on-site mobile laboratory to corroborate the results of laboratory analyses for quality control and quality assurance measures. Both the on-site and fixed-base laboratories used the same standard EPA approved analytical methods. PCBs were analyzed by Modified Environmental Protection Agency (EPA) Method 8080/81 and chlorinated benzene compounds were analyzed by EPA Method 8270. Volatile organic compounds (VOCs) were analyzed by EPA Method 8260 for samples suspected of being impacted by other industrial processes solvents unrelated to PCBs. Select soil samples were also analyzed for silver, by EPA Method 6010B, and cyanide, by EPA Method 9012A.

Surface water samples were analyzed by PAL for PCBs using EPA Method 8080/81. Semivolatile organic compounds (SVOCs) were analyzed by EPA Method 8270, Volatile Organic Compounds (VOCs) were analyzed by EPA Method 8260, silver by EPA Method 6010B, and cyanide using Standard Method 4500 Cn-E. Perched ground water was analyzed for PCBs, SVOCs, and VOCs by the same methods as indicated above for surface water.



## Quality Control

The following is the list of key personnel dedicated to this project:

### Project Manager:

Mr. Robert Martin, Martin & Slagle GeoEnvironmental Associates, LLC

#### Duties:

Responsible for management of project **including** all field coordination efforts.

### Field Sample Custodian:

Mr. Robert Martin, Christine Slagle, Martin & Slagle GeoEnvironmental Associates, LLC

#### Duties:

Maintaining custody of samples, completing sample labels, Chain-of-Custody record.

### Field Team Leader:

Mr. Robert Martin, Martin & Slagle GeoEnvironmental Associates, LLC

#### Duties:

Responsible for all activities related to the collection of samples.

### Samplers:

Tim Fitzpatrick, Christine Slagle, Robert Martin

#### Duties:

Individuals responsible for the actual collection of samples.

### Laboratory Sample

#### Custodian:

Mr. Michael Linskens, ECCS

Mr. Nicolas Schertz, ECCS

Ms. Erin Staagard, PAL

#### Duties:

Individuals responsible for accepting custody of samples from the field sample custodian.

### **Quality Assurance Objectives for Data**

Data for this project is being generated by two separate entities. The on-site data is generated by ECCS in their mobile laboratory. The fixed-base laboratory, PAL in Wilmington, North Carolina, generates the analytical results for the split samples.

The data quality objectives are pre-defined for the ECCS data in that Mississippi considers all mobile lab data screening level data. ECCS uses the same equipment and methodology as the fixed-base laboratories with the exception of the mini-extraction modification. Mobile laboratory data is validated by comparison of a minimum of 10% split samples with PAL. Following this procedure, the data qualifies as screening data with definitive confirmation under US EPA, Region IV EISOPQAM guidelines.

All samples sent to PAL were collected as follows: The sample was transferred from the GeoProbe® clean, unused, acetate sample liner into the labeled 4 ounce (oz) amber glass soil jar. The sample jar was then transferred to the mobile lab where ECCS personnel homogenized the sample prior to taking an aliquot for analysis. Due to the limited sample volume required by the ECCS mini-extraction and the low volatility of the chemicals of concern, the initial sampling jar was resealed (after ECCS personnel removed the amount of sample needed for their analysis), refrigerated and then sent to PAL; meaning PAL analyzed the sample from the exact same sample jar as ECCS.

Equipment rinsate samples were collected for evaluation of cross-contamination potential from ineffective decontamination procedures. These were prepared by pouring distilled water over the sampling equipment after decontamination and collecting and preserving the rinsate that was generated. Equipment rinseate samples were collected in accordance with the EPA, Region IV EISOPQAM guidelines.

Field blank samples were collected by filling sampling containers that were kept in the transition zone with distilled water. Field blanks determine the presence of ambient contaminants that may not be directly related to concentrations of contaminants in the sample media.

Blind duplicate soil samples were collected for analysis and sent to both laboratories. Blind duplicates were collected by homogenizing an aliquot of sample in a disposable plastic container and splitting the homogenized sample into two containers. After ECCS took their aliquot of these samples, the remainder of the sample was sent to PAL for analysis.

## **SAMPLE CONTROL AND FIELD RECORDS**

### **Sample Identification**

All samples sent to PAL for analysis conform to the labeling requirements under section 3.2.1 of the EISOPQAM.

#### **8.3.1 Chain of Custody Procedures**

Samples were logged as they were collected from the geoprobe liners. Date, time and sample litholgy were recorded on each log. Samples were then transferred to 4 oz amber glass jars and the jars transferred to a small sample cooler, which was taken to the mobile lab by field personnel in charge of sample handling. Sample identification (ID), date and time sampling occurred were recorded in the field logbook before transferring the samples to the mobile lab. Upon arrival at the mobile 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 number for tracking purposes. After analysis, the samples were transferred to either a sample refrigerator in the mobile lab or stored in coolers with ice until they were either shipped to PAL for confirmation analysis or readied for disposal. For samples sent to PAL, a new chain of custody form was completed by field personnel in charge of sample handling.

#### **8.3.2 Field Records**

Field records were kept in accordance with procedures and guidelines specified in section 3.5 of EISOPQAM.

#### **8.4 Analytical Procedures**

For analysis of samples in the field, ECCS used EPA Method 8082m, modified for quantitation of chlorinated benzenes and the mini extraction procedure.

PAL used EPA Method 8082 for quantitation of PCBs. For chlorinated benzenes, it used EPA Method 8270. While Method 8270 does not cover all the chlorinated benzenes, it provides confirmation of the ones it does detect and has the added benefit of supplying an analysis of a broad range of other semivolatile organic compounds.

For the analysis of cyanide EPA Method 9012A was employed and for silver EPA Method 6010B.

Selected samples were analyzed by EPA Method 8260, primarily to confirm that volatile organic compounds were not present in the samples or part of the site contaminants.

#### **8.5 Laboratory Quality Assurance/Quality Control (QA/QC)**

QA/QC procedures for both labs were found to be virtually identical. Summaries of each laboratory procedures follow.

##### ***ECCS:***

- ◆ Continuous calibration standards analyzed every ten samples or less and at the end of a run.
- ◆ Blank samples and laboratory control samples (LCS) analyzed every twenty samples or less with a minimum of one per day.
- ◆ Matrix Spike/Matrix Spike Duplicate (MS/MSD) samples analyzed every twenty samples or less with a minimum of one per day.

**PAL:**

- ◆ Continuous calibration standards analyzed at least once every 12 hour shift plus a minimum of every 20 samples gas chromatography/mass spectroscopy (GC/MS) criteria follows method specific tuning requirements per EPA Method 8270.
- ◆ Blank and LCS samples analyzed every 20 samples or less with a minimum of one per day.
- ◆ MS/MSD samples analyzed every 20 samples or less with a minimum of one per day.

#### **8.6 Data Validation and Reporting**

As discussed in section 8.2, the primary validation of the ECCS data was accomplished through comparison with the data from PAL.

Since Hexachlorobenzene and 1,2,4-Trichlorobenzene are the only chlorinated benzenes on the standard Method 8270 list, these two compounds and total PCBs were the parameters tracked for the data validation procedure.

Overall, the correlation to this point of the investigation and remediation activities has been excellent with the majority of sample splits showing Relative Percent Differences (RPDs) of less than 100. Considering the inherent variability of soil as a matrix, achieving 93% acceptable split data spanning several orders of magnitude of concentration serves to justify the use of the on-site data as definitive quality.

MM-Pherson

FILE COPY

RobMartin001@aol.com on 01/25/2001 02:28:20 PM

To: Gretchen\_Zmitrovich@deq.state.ms.us  
cc: ahamel@afs.bwauto.com

Subject: RevisedAnalitical Tables for Crystal Springs

Dear Gretchen:

Attached is a full set of analytical tables for the residences located along the drainage way. Six tables were revised to include data on deep samples collected from these sites. The revised tables are for the following properties:

Welch  
Harris  
Fitzgerald  
Sojourner  
Ralph Williams  
McMurray

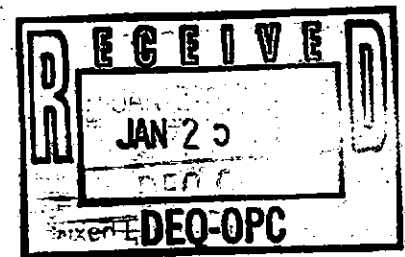
If you have any comments or questions, please call me at (828) 669-3929.

Sincerely,  
Robert



- downgradientfinalrev1.xls

**SOJOURNER PROPERTY**  
**111 McPherson Street**  
**Crystal Springs, Mississippi**  
**PCB Concentrations Detected in Soil**



			Field Laboratory		Fixed Laboratory	
Sample ID	Sample Depth (ft bgs)	Date Collected	Date Analyzed	Concentration (mg/kg)	Date Analyzed	Concentration (mg/kg)
863	0.5	01-Nov-00	02-Nov-00	<1.0 J	22-Nov-00	<0.330
	1.5	01-Nov-00	02-Nov-00	<0.10		
862	0.5	01-Nov-00	02-Nov-00	0.23		
	1.5	01-Nov-00	02-Nov-00	<0.10		
864	0.5	01-Nov-00	02-Nov-00	0.46		
	1.5	01-Nov-00	03-Nov-00	0.10		
865	0.5	01-Nov-00	03-Nov-00	<0.10	16-Nov-00	0.50
	1.5	01-Nov-00	02-Nov-00	<0.10		
920	0.5	03-Nov-00	04-Nov-00	0.13		
	1.5	03-Nov-00	04-Nov-00	<0.10		
921	0.5	03-Nov-00	04-Nov-00	<0.10	17-Nov-00	<0.10
	1.5	03-Nov-00	04-Nov-00	2.6	18-Nov-00	1.7
	3	16-Nov-00	16-Nov-00	<0.10		
	4	16-Nov-00	16-Nov-00	<0.10		
	5	16-Nov-00	16-Nov-00	<0.10		
	6	16-Nov-00	16-Nov-00	<0.10		
	7	16-Nov-00	16-Nov-00	<0.10		
	11	16-Nov-00	16-Nov-00	<0.10		
922	0.5	03-Nov-00	04-Nov-00	0.21	17-Nov-00	<0.097
	1.5	03-Nov-00	05-Nov-00	<0.10		
923	0.5	03-Nov-00	05-Nov-00	<0.10		
	1.5	03-Nov-00	05-Nov-00	<0.50 J		
924	0.5	03-Nov-00	05-Nov-00	0.21		
	1.5	03-Nov-00	05-Nov-00	0.17		
926	0.5	03-Nov-00	05-Nov-00	0.15		
	1.5	03-Nov-00	05-Nov-00	<0.10		
925	0.5	03-Nov-00	05-Nov-00	0.52		
	1.5	03-Nov-00	05-Nov-00	0.22		
929	0.5	03-Nov-00	05-Nov-00	0.17		
	1.5	03-Nov-00	05-Nov-00	<0.10		
927	0.5	03-Nov-00	05-Nov-00	<0.50 J		
	1.5	03-Nov-00	05-Nov-00	<0.10		
928	0.5	03-Nov-00	05-Nov-00	<0.10		
	1.5	03-Nov-00	05-Nov-00	<0.10		
930	0.5	03-Nov-00	05-Nov-00	<0.20 J		
	1.5	03-Nov-00	04-Nov-00	<0.10		
920-B	3	16-Nov-00	16-Nov-00	0.12		
	7.5	16-Nov-00	16-Nov-00	<0.10		

NA = Not Analyzed

J = Elevated detection level due to toxaphene interference

Gretchen Zmitrovich  
09/26/2000 04:06 PM

To: ahamel@afs.bwauto.com @ INETDEQ  
cc:

Subject: Kuhlman

The MDEQ has compiled the following list of people whose yards need to be sampled.

Orester Harris  
311 W. Railroad Ave  
892-1062

The drainage ditch runs through her backyard. The ditch has apparently backed up into her yard before.

Beulah Mae Sojourner  
111 McPherson Rd  
892-1378

The ditch runs through her backyard, about 2 feet from the back of her house. The ditch has apparently backed up into her yard and house before.

Judy Graham  
Convenience store on corner of Lee and Jackson.  
892-3379 home  
942-0780 cell phone

She stated that her property gets a lot of runoff from Kuhlman. Most of her property is paved but there is a small grassy curb that needs to be tested.

Odeal Smith  
302 McPherson Rd  
892-3556

She called Jerry today to say that Kuhlman dumped some dirt on her property. The dirt was made into a driveway that connects the house to her cousin's house next door.

I drove through the neighborhood that the ditch runs through today. If the overflowing ditch has affected the two yards above it has probably affected more yards. I have spoken to Jerry about the issue and we need to get the ditch delineated ASAP. Also, after the

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meeting last Thursday, we have briefly spoken to our legal staff. We are planning to skip the letter requesting a schedule and go directly to issuing orders to both BorgWarner and the Carlyle Group. You will have an opportunity to comment on the order before it is finalized. Do you have an address for the Carlyle Group or any previous owners before BorgWarner that may still be in existence? I will be in the office the rest of this week if you have any questions.