

January 10, 2012

Transmitted via electronic mail

Mr. Tony Russell, Chief
Assessment Remediation Branch
Mississippi Department of Environmental Quality
515 East Amite Street
Jackson, Mississippi 39201

Re: Kuhlman Electric Corporation Facility
Soil Vapor Extraction Pilot Test Plan
Crystal Springs, Mississippi

Dear Mr. Russell:

Environmental Management Services, Inc. (EMS) has prepared the following Soil Vapor Extraction (SVE) Pilot Test Plan in order to set forth the methods and criteria that will be evaluated in support of the implementation of the Corrective Action Plan (CAP) submitted for the facility.

The pilot test will be performed in general accordance with the CAP for the site referenced above; however, the objectives have been modified to address the portions of the project deemed necessary at this stage of implementation. EMS has chosen to evaluate two distinct vertical zones, whereas the original plan did not address this physical characteristic. In addition, the original plan included provisions for air sparging capture zone evaluation; this evaluation is not being conducted at this time. Otherwise, this Plan is consistent with the original CAP prepared by others. The attached figure is a modification of Figure 3 of the original plan. Portions of the text below that are directly excerpted from the CAP are denoted by enclosure in quotation marks.

Pilot System Installation

The proposed remedial “approach relies upon aggressive source area in-situ treatment using SVE. In order to adequately design and implement these technologies, a pilot study is proposed for purposes of refining the design criteria that will be used to determine SVE well placement, extraction flow requirements, mechanical and electrical component needs, and other operational considerations.” The SVE pilot study would entail installation of an SVE well pair and five (5) pilot observation well pairs as shown on the attached Figure. Short-term step testing, using temporary skid mounted equipment, will be used to determine achievable vacuum radius of influence (ROI) under a range of

applied vacuums and extraction flow rates from the SVE well. The system will employ a 20-horsepower, high-vacuum, oil sealed liquid ring pump capable of removing air at 300 cubic feet per minute (CFM) at 25 inches of mercury. The unit will be provided power using a portable diesel generator. The system will be equipped with magnehelic[®] vacuum and pressure gauges and flow meters capable of providing accurate data. The unit will also include a knock-out tank for water removal as necessary.

The SVE pilot wells will consist of a shallow and deep well to be constructed of (2) 2-inch diameter, stainless steel wire-wrapped well screen intervals. A shallow well will be installed to the top of a thin, intermittent clay layer at approximately 22-feet bgs (with approximately 15-feet of screen). This well will aid in evaluation of the effectiveness of shallow wells targeting the core of the contaminant source plume. A deep well will be installed (adjacent to the shallow well) into the saturated reach of the upper aquifer, up to an approximate total depth of up to 80 feet bgs (with approximately 40-feet of screen). Extending the screen of the deep well “into the saturated zone will ensure the wells are able to directly influence soils in the capillary fringe, as well as any adsorbed phase impacts that are periodically exposed during periods of low water table elevation. Based on a preliminary evaluation of the anticipated range of vacuum and flow requirements and the anticipated open screen area, it does not appear that submerging the lower screen interval would present a significant entrainment concern at this site. If during pilot testing it appears that submerging the lower end of the screen interval could prove problematic, appropriate adjustments to the anticipated construction details would be made.” The observation wells will be constructed of 1-inch diameter, PVC well material and will be placed at similar depths and screened intervals as the extraction well pair. See Attachment 1 for boring logs displaying geological details in the area of concern.

All wells will be flush mounted in the slab of the facility for obstruction minimization. Additionally, during the pilot study, a flexible hose will be employed to route the extracted vapors to the skid-mounted SVE unit.

Pilot Study Implementation

The pilot test will be performed by withdrawing soil vapor from the recovery wells (shallow and deep) at various vacuums, measuring the resulting vacuum pressure at surrounding observation wells to determine radial vacuum influence, and calculating an estimated hydrocarbon load rate (based on flow rates and analytical samples collected using a high-vacuum sampling pump at the SVE well head). The samples will be analyzed for volatile organic compounds using EPA Method 8260 SIM by Environmental Analytical Service (EAS).

The test will be used to determine the site specific soil air permeability, concentration of contaminants, and radial influence of the SVE system. Vacuum will be applied to the

SVE test wells in the following increments: 10, 30, 50, 70, and 100 percent of maximum. Vacuum observations will be used to estimate pneumatic conductivity of the vadose zone soils. The pneumatic conductivity will be used, in turn, to model extraction flow requirements, and refine full-scale SVE well placement, in order to achieve optimal pore volume exchange rates throughout the source area treatment extents. The pilot test would also be used to conservatively assess potential VOC emission rates during full-scale operation of the SVE system. These data would be used to assess emission permit requirements in context of allowable thresholds and to determine if and how emission controls need to be factored in to the full-scale design.

Schedule for Pilot Study

Upon approval of this Plan, installation of the extraction and observation wells will be initiated. Well installation will likely be completed within four to six weeks of Plan approval. The field portion of the study will be dependent on the availability of equipment and should be implemented within four to six weeks of well installation. Actual implementation of the pilot study is expected to require two days (one day for each SVE test well). However, the test will be continued for as long as necessary to ensure collection of the required data and sufficiently to evaluate the effectiveness of SVE as a remedial technique for this site.

System Modeling and Design

The results of the field test will be used to determine effective radius of influence and this data will be used to determine the number and spacing of extraction wells necessary to treat the source area beneath the KEC facility. A report including field observations, data analysis, system modeling, and full scale implementation design will be prepared within six to eight weeks of receipt of analytical results.

Please contact EMS at (601) 544-3674 if you should have any question or comments concerning the preceding Plan. EMS looks forward to conducting the pilot study and subsequent full-scale system design and implementation at your approval.

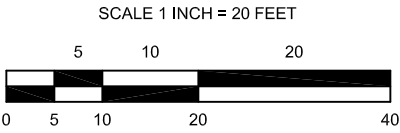
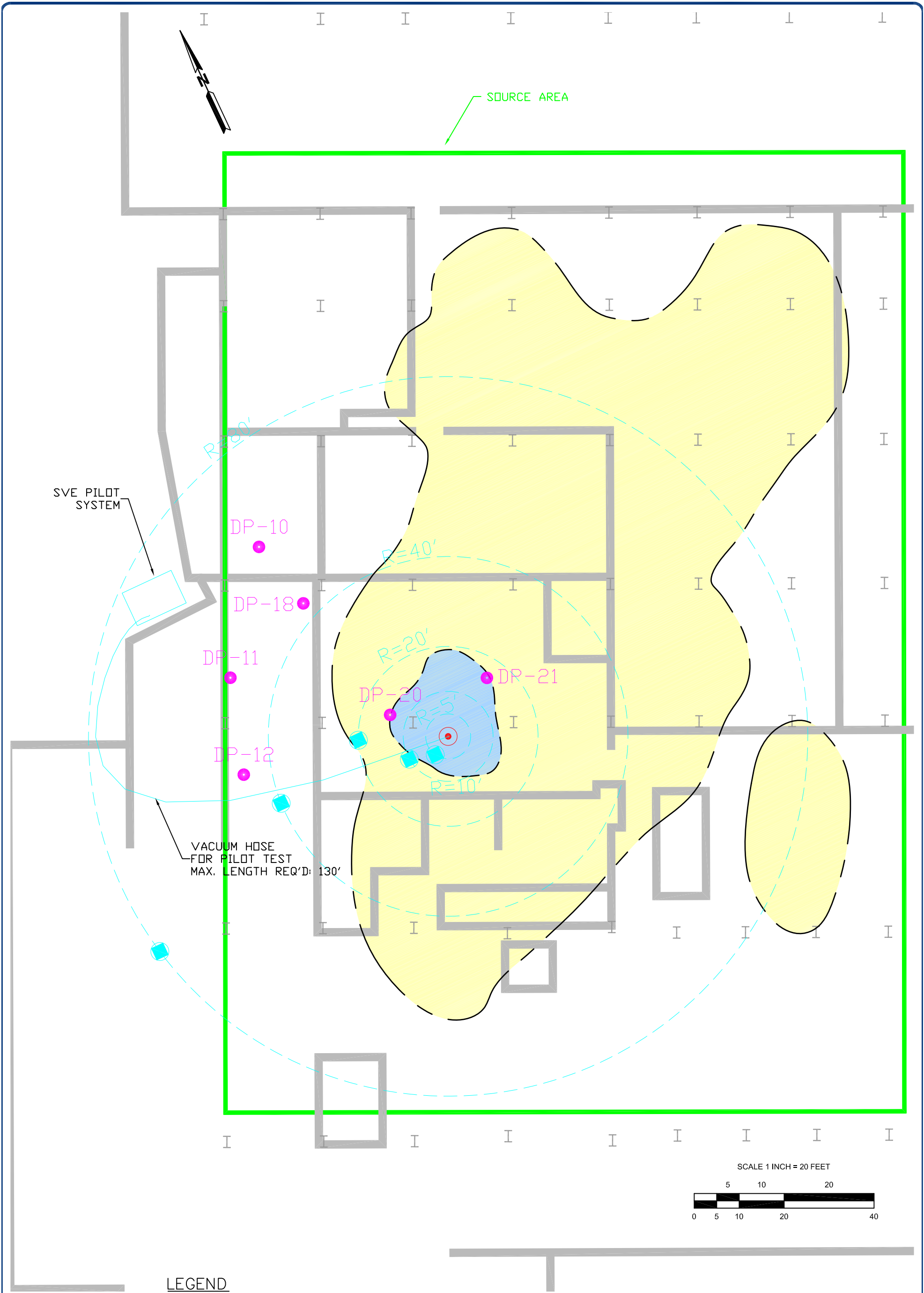
Sincerely,

Environmental Management Services, Inc.



Chris Johnson, P.E., P.S.
Engineering Manager

Attachment Figure 1 – SVE Pilot Study Preliminary Layout
 Attachment 1 – Boring Logs for Area of Concern



LEGEND

- SOURCE AREA
- KEC PROPERTY LINE
- KEC BUILDING FOOTPRINT
- 1,1-DICHLOROETHENE IN SOIL EXCEEDING UNRESTRICTED TIER 1 TRG (0.0772 mg/kg)
- 1,4-DIOXANE IN SOIL EXCEEDING UNRESTRICTED TIER 1 TRG (58.1 mg/kg)
- MONITOR WELL LOCATION
- SVE PILOT VACUUM WELL PAIR (SHALLOW & DEEP) (2" SS)
- SVE PILOT OBSERVATION WELL PAIR (SHALLOW & DEEP) (1" PVC)
- LOCATION OF PREVIOUS SOIL BORINGS

SVE PILOT STUDY LAYOUT

KUHLMAN ELECTRIC

KEC FACILITY
CRYSTAL SPRINGS, MS

DATE:	10/31/2011	APPROVED:	DRAWN BY:	P.D.M.
SCALE:	AS SHOWN	BY:	CAD NO.	KUH0-11-006

ENVIRONMENTAL
MANAGEMENT SERVICES, INC.

FIGURE

1

Attachment 1
Boring Logs for Area of Concern

Log of Borehole: KEP-DP-010

Project No.: BW05-01

Project: Source Area Sampling

Client: BorgWarner Inc.

Location: Crystal Springs, MS

Project Manager: Robert Martin

Geologist: Robert Martin

Martin & Slagle GeoEnvironmental Associates, LLC
118F Cherry Street
Black Mountain, NC 28711

SUBSURFACE PROFILE						Sample	PID (ppm)	Comments
GW Depth	Depth	Lithology	Description	Depth/Elev.	USCS Class			
	0		Ground Surface	469.4				
	0		Brown silty clay (fill)	0.0				
	2							
	4				CL	KEP-DP-010-001	20	
	6							
	8			461.4		KEP-DP-010-002	1.5	
	8		Brown clayey fine sandy gravel	8.0				
	10				GP	KEP-DP-010-003	24	
	12							
	14			455.0		KEP-DP-010-004	186	
	14		Brown clayey fine sandy gravel becomes clayey fine sand	14.4	SC			
	16			453.4				
	16		Light brown clayey fine sandy gravel	16.0				
	18				GP	KEP-DP-010-005	52	
	20			449.4				
	20			20.0				

Drilled By: Walker-Hill Environmental, Inc.

Hole Size: 2.25"

Drill Method: Direct Push

Drill Date: 4/26/2007

Sheet: 1 of 4

Log of Borehole: KEP-DP-010

Project No.: BW05-01

Project: Source Area Sampling

Client: BorgWarner Inc.

Location: Crystal Springs, MS

Project Manager: Robert Martin

Geologist: Robert Martin

Martin & Slagle GeoEnvironmental
Associates, LLC
118F Cherry Street
Black Mountain, NC 28711

SUBSURFACE PROFILE					Sample	PID (ppm)	Comments
GW Depth	Depth	Lithology	Description	Depth/Elev.			
	22		Light brown silty fine sand with gravel	446.9	SM		
			Red plastic clay	22.5	CH		
	24		Light brown, orange silty fine sand	444.7	SM	KEP-DP-010-006	49
			Red, orange plastic clay	24.7	CH		
	26			442.9			
			Orange, yellow fine sandy gravel	26.5	GP	KEP-DP-010-007	76
	28		Tan slightly silty fine sand	441.4			
	30			28.0			
	32				SM	KEP-DP-010-008	5.9
	34						
	36			433.4			
			Gray to beige sand with gravel at 39.2"	36.0			
	38				SP		
	40			429.4		KEP-DP-010-010	38
				40.0			11.6

Drilled By: Walker-Hill Environmental, Inc.

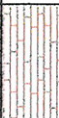

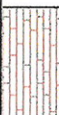
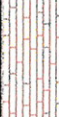
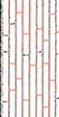


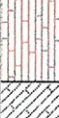


Hole Size: 2.25"

Drill Method: Direct Push

Drill Date: 4/26/2007

Sheet: 2 of 4

**Martin & Slagle GeoEnvironmental
Associates, LLC
118F Cherry Street
Black Mountain, NC 28711**

SUBSURFACE PROFILE						Sample	PID (ppm)	Comments	
GW Depth	Depth	Lithology	Description	Depth/Elev.	USCS Class				
	42		Gray, orange mottled silty fine sand	427.4	SM	KEP-DP-010-011	23.7	Some iron staining	
			Gray, orange gravelly fine sand	42.0	SP				
	44		Gray, pink slightly silty fine sand	425.4	SM		6.3		
				44.0					
	46								KEP-DP-010-012
	48						34		
	50								
	52					KEP-DP-010-013			
54						12.7			
56		Pink clayey fine sand	414.4	SC					
			55.0						
58		Pink to tan fine sand	413.4	SP	KEP-DP-010-014	6.7			
			56.0						
60									

Drilled By: Walker-Hill Environmental, Inc.

Hole Size: 2.25"

Drill Method: Direct Push

Drill Date: 4/26/2007

Sheet: 3 of 4

Log of Borehole: KEP-DP-010

Project No.: BW05-01

Project: Source Area Sampling


Client: BorgWarner Inc.

Location: Crystal Springs, MS

Project Manager: Robert Martin

Geologist: Robert Martin

Martin & Slagle GeoEnvironmental Associates, LLC
118F Cherry Street
Black Mountain, NC 28711

SUBSURFACE PROFILE						Sample	PID (ppm)	Comments
GW Depth	Depth	Lithology	Description	Depth/Elev.	USCS Class			
	62		Pink fine to medium sand with gravel		SP	KEP-DP-010-016	3.9	
	64							
	66							
	68			401.4				
			Boring terminated	68.0				
	70							
	72							
	74							
	76							
	78							
	80							

Drilled By: Walker-Hill Environmental, Inc.

Hole Size: 2.25"

Drill Method: Direct Push

Drill Date: 4/26/2007

Sheet: 4 of 4

Log of Borehole: KEP-DP-011

Project No.: BW05-01

Project: Source Area Sampling

Client: BorgWarner Inc.

Location: Crystal Springs, MS

Project Manager: Robert Martin

Geologist: Robert Martin

**Martin & Slagle GeoEnvironmental
Associates, LLC**
118F Cherry Street
Black Mountain, NC 28711

SUBSURFACE PROFILE

GW Depth	Depth	Lithology	Description	Depth/Elev.	USCS Class	Sample	PID (ppm)	Comments
	0		Ground Surface	469.4				
			Red, brown fine sandy clay	0.0				
	2							
	4					KEP-DP-011-001	4.6	
	6				CL			
	8					KEP-DP-011-002	2.5	
	10							
	12					KEP-DP-011-003	0	
	14				CL	KEP-DP-011-004	23	
	16							
	18					KEP-DP-011-005	26.3	
	20							

Drilled By: Walker-Hill Environmental, Inc.

Hole Size: 2.25"

Drill Method: Direct Push

Drill Date: 4/16/2007 & 4/17/2007

Sheet: 1 of 4

Log of Borehole: KEP-DP-011

Project No.: BW05-01

Project: Source Area Sampling

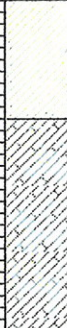


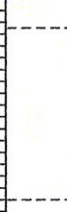
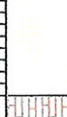
Client: BorgWarner Inc.

Location: Crystal Springs, MS

Project Manager: Robert Martin

Geologist: Robert Martin

Martin & Slagle GeoEnvironmental Associates, LLC
118F Cherry Street
Black Mountain, NC 28711

SUBSURFACE PROFILE							
GW Depth	Depth	Lithology	Description	Depth/Elev.	USCS Class	Sample	PID (ppm)
	22		Brown, red clayey medium sand with gravel	447.4 22.0	SC	KEP-DP-011-006	316
	24						
	26		Tan, brown medium sand	443.8 25.6	SP	KEP-DP-011-007	118
	28						
	30		Tan medium sand with gravel	439.4 30.0	SP	KEP-DP-011-008	109
	32						
	34		Gray, tan fine sand with some gravel	434.1 35.3	SP	KEP-DP-011-009	51.9
	36						
	38		White, tan fine sand	431.2 38.2		KEP-DP-011-010	61.5
	40			429.4 40.0			

Drilled By: Walker-Hill Environmental, Inc.

Drill Method: Direct Push

Drill Date: 4/16/2007 & 4/17/2007

Hole Size: 2.25"

Sheet: 2 of 4

Log of Borehole: KEP-DP-011

Project No.: BW05-01

Project: Source Area Sampling

Client: BorgWarner Inc.



Location: Crystal Springs, MS

Project Manager: Robert Martin

Geologist: Robert Martin

Martin & Slagle GeoEnvironmental Associates, LLC
118F Cherry Street
Black Mountain, NC 28711

SUBSURFACE PROFILE

GW Depth	Depth	Lithology	Description	Depth/Elev.	USCS Class	Sample	PID (ppm)	Comments	
	42		Gray, tan to white silty fine sand with gravel		SM		52.6		
	44			425.4 44.0					KEP-DP-011-011
	46		White, tan, pink fine sand with gravel		SP		34.8		
	48					KEP-DP-011-012			
	50								
	52				SP	KEP-DP-011-013	38		
	54						49.7		
	56					KEP-DP-011-014			
	58						30		
	60					KEP-DP-011-015			

Drilled By: Walker-Hill Environmental, Inc.

Hole Size: 2.25"

Drill Method: Direct Push

Drill Date: 4/16/2007 & 4/17/2007

Sheet: 3 of 4

Log of Borehole: KEP-DP-011

Project No.: BW05-01

Project: Source Area Sampling


Client: BorgWarner Inc.

Location: Crystal Springs, MS

Project Manager: Robert Martin

Geologist: Robert Martin

**Martin & Slagle GeoEnvironmental
Associates, LLC
118F Cherry Street
Black Mountain, NC 28711**

SUBSURFACE PROFILE						Sample	PID (ppm)	Comments
GW Depth	Depth	Lithology	Description	Depth/Elev.	USCS Class			
	62				SP	KEP-DP-011-016	10.7	
	64			405.4 64.0				
	66		Tan, white silty fine sand		SM			
	68		Boring terminated	401.4 68.0				
	70							
	72							
	74							
	76							
	78							
	80							

Drilled By: Walker-Hill Environmental, Inc.

Hole Size: 2.25"

Drill Method: Direct Push

Drill Date: 4/16/2007 & 4/17/2007

Sheet: 4 of 4

Log of Borehole: KEP-DP-012

Project No.: BW05-01

Project: Source Area Sampling

Project Manager: Robert Martin

Client: BorgWarner Inc.

Location: Crystal Springs, MS

Geologist: Robert Martin

Martin & Slagle GeoEnvironmental Associates, LLC
118F Cherry Street
Black Mountain, NC 28711

SUBSURFACE PROFILE						Sample	PID (ppm)	Comments
GW Depth	Depth	Lithology	Description	Depth/Elev.	USCS Class			
	0		Ground Surface	469.4				
			No recovery	0.0				
	2			467.4				
			Red, brown clay to fine sandy clay	2.0				
	4							
	6							
	8				CL	KEP-DP-012-001	9.5	
	10							
	12			457.4		KEP-DP-012-002	27.5	
			Brown fine sand with gravel	12.0				
	14				SP			
	16			453.4		KEP-DP-012-003	89	
			Brown to tan silty fine to medium sand with gravel	16.0				
	18				SM	KEP-DP-012-004	173	
	20							

Drilled By: Walker-Hill Environmental, Inc.

Hole Size: 2.25"

Drill Method: Direct Push

Drill Date: 4/17/2007 & 4/18/2007

Sheet: 1 of 4

Log of Borehole: KEP-DP-012

Project No.: BW05-01

Project: Source Area Sampling

Client: BorgWarner Inc.

Location: Crystal Springs, MS

Project Manager: Robert Martin

Geologist: Robert Martin

Martin & Slagle GeoEnvironmental
Associates, LLC
118F Cherry Street
Black Mountain, NC 28711

SUBSURFACE PROFILE

GW Depth	Depth	Lithology	Description	Depth/Elev.	USCS Class	Sample	PID (ppm)	Comments
	22					KEP-DP-012-005	151	
	24							
	26				SM	KEP-DP-012-006	79	
	28							
	30							
	32			437.4		KEP-DP-012-007	32	
	32		Tan fine sand, moist	32.0				
	34							
	36				SP	KEP-DP-012-008	40.2	
	38							
	38					KEP-DP-012-009	28.5	
	40			429.4				
	40			40.0				

Drilled By: Walker-Hill Environmental, Inc.

Hole Size: 2.25"

Drill Method: Direct Push

Drill Date: 4/17/2007 & 4/18/2007

Sheet: 2 of 4

Log of Borehole: KEP-DP-012

Project No.: BW05-01

Project: Source Area Sampling

Client: BorgWarner Inc.

Location: Crystal Springs, MS

Project Manager: Robert Martin

Geologist: Robert Martin

Martin & Slagle GeoEnvironmental
Associates, LLC
118F Cherry Street
Black Mountain, NC 28711

SUBSURFACE PROFILE						Sample	PID (ppm)	Comments
GW Depth	Depth	Lithology	Description	Depth/Elev.	USCS Class			
	42		Tan fine to coarse sand		SP	KEP-DP-012-010	7.7	
	44		White, pink fine sand	425.4 44.0				
	46							
	48					KEP-DP-012-011	6.5	
	50							
	52				SP	KEP-DP-012-012	15.8	
	54							
	56					KEP-DP-012-013	11.6	
	58							
	60			409.4 60.0		KEP-DP-012-014	7	

Drilled By: Walker-Hill Environmental, Inc.

Hole Size: 2.25"

Drill Method: Direct Push

Drill Date: 4/17/2007 & 4/18/2007

Sheet: 3 of 4

Log of Borehole: KEP-DP-012

Project No.: BW05-01

Project: Source Area Sampling

Client: BorgWarner Inc.

Location: Crystal Springs, MS

Project Manager: Robert Martin

Geologist: Robert Martin

Martin & Slagle GeoEnvironmental Associates, LLC
118F Cherry Street
Black Mountain, NC 28711

SUBSURFACE PROFILE						Sample	PID (ppm)	Comments
GW Depth	Depth	Lithology	Description	Depth/Elev.	USCS Class			
	62		No recovery					
	64		White, pink silty fine sand	405.4 64.0				
	66				SM			
	68		Boring terminated	401.4 68.0				
	70							
	72							
	74							
	76							
	78							
	80							

Drilled By: Walker-Hill Environmental, Inc.

Hole Size: 2.25"

Drill Method: Direct Push

Drill Date: 4/17/2007 & 4/18/2007

Sheet: 4 of 4

Log of Borehole: KEP-DP-018

Project No.: BW05-01

Project: Groundwater Assessment

Project Manager: Robert Martin

Client: BorgWarner Inc

Location: Kuhlman Electric Plant

Geologist: Robert Martin

Martin & Slagle GeoEnvironmental Associates, LLC
118F Cherry Street
Black Mountain, NC 28711

SUBSURFACE PROFILE						Sample	PID (ppm)	Comments
GW Depth	Depth	Lithology	Description	Depth/Elev.	USCS Class			
	0		Ground Surface	469.4				
	0		Brown silty clay	0.0				
	2							
	4				CL	KEP-DP-018-001	10.7	
	6					KEP-DP-018-002	6.4	
	8			461.4				
	8		Red, brown, tan fine sandy gravel	8.0				
	10				GP	KEP-DP-018-003	41	
	12			457.4				
	12		Red, brown clayey fine sand with gravel	12.0				
	14				SC			
	16					KEP-DP-018-004	360	
	18			452.7				
	18		Brown, tan fine sand with gravel	16.7				
	20				SP	KEP-DP-018-005	121	
	20			449.4				
	20			20.0				

Drilled By: Walker-Hill Environmental, Inc.

Hole Size: 2.25"

Drill Method: Direct Push

Drill Date: 4/20/2007

Sheet: 1 of 4

Log of Borehole: KEP-DP-018

Project No.: BW05-01

Project: Groundwater Assessment

Client: BorgWarner Inc

Location: Kuhlman Electric Plant

Project Manager: Robert Martin

Geologist: Robert Martin

Martin & Slagle GeoEnvironmental Associates, LLC
118F Cherry Street
Black Mountain, NC 28711

SUBSURFACE PROFILE					Sample	PID (ppm)	Comments
GW Depth	Depth	Lithology	Description	Depth/Elev.			
			Brown, tan fine sand	447.9	SP		
	22		Red plastic clay	21.5	CH		
	24		Brown, tan fine sand with gravel		SP	KEP-DP-018-006	249
	26		Brown, tan fine sand	443.9			
	28			25.5	SP	KEP-DP-018-007	36
	30						
	32		Brown gravel	438.7	GP		
	34		Beige to tan fine sand, moist at 35'	30.7			
	36			437.6		KEP-DP-018-008	17.9
	38			31.8	SP		
	40		Beige to light brown fine sand	433.4		KEP-DP-018-009	32
				36.0			
					SP	KEP-DP-018-010	11.6
				429.4			
				40.0			

Drilled By: Walker-Hill Environmental, Inc.

Hole Size: 2.25"

Drill Method: Direct Push

Drill Date: 4/20/2007

Sheet: 2 of 4

Log of Borehole: KEP-DP-018

Project No.: BW05-01

Project: Groundwater Assessment

Client: BorgWarner Inc

Location: Kuhlman Electric Plant

Project Manager: Robert Martin

Geologist: Robert Martin

Martin & Slagle GeoEnvironmental Associates, LLC
118F Cherry Street
Black Mountain, NC 28711

SUBSURFACE PROFILE						Sample	PID (ppm)	Comments
GW Depth	Depth	Lithology	Description	Depth/Elev.	USCS Class			
			Light brown to pink fine sand	427.8	SP			
	42		Fine to medium gravel	41.6 426.9	GP			
			Light brown to pink fine sand	42.5				
	44		Beige, pink fine sand with some gravel	425.4 44.0		KEP-DP-018-011	13.8	
	46				SP			
	48					KEP-DP-018-012	6.7	
	50							
						KEP-DP-018-013	15.5	
	52		Pink, yellow fine sand	417.4 52.0				
	54				SP			
						KEP-DP-018-014	12.9	
	56		Pink silty fine sand	413.4 56.0				
	58				SM			
	60					KEP-DP-018-015	11.6	

Drilled By: Walker-Hill Environmental, Inc.

Drill Method: Direct Push

Drill Date: 4/20/2007

Hole Size: 2.25"

Sheet: 3 of 4

Log of Borehole: KEP-DP-018

Project No.: BW05-01

Project: Groundwater Assessment

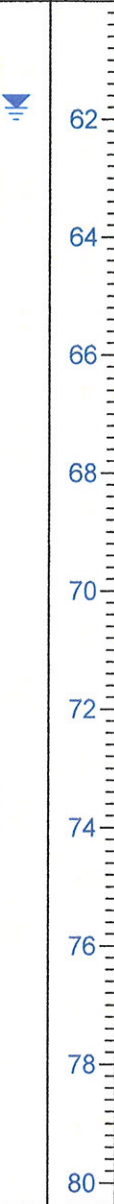
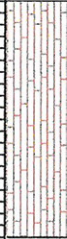
Project Manager: Robert Martin

Client: BorgWarner Inc

Location: Kuhlman Electric Plant

Geologist: Robert Martin

Martin & Slagle GeoEnvironmental Associates, LLC
118F Cherry Street
Black Mountain, NC 28711

SUBSURFACE PROFILE						Sample	PID (ppm)	Comments
GW Depth	Depth	Lithology	Description	Depth/Elev.	USCS Class			
	62		Boring terminated	405.4	SM	KEP-GWP-018-001		
	64			64.0				
	66							
	68							
	70							
	72							
	74							
	76							
	78							
	80							

Drilled By: Walker-Hill Environmental, Inc.

Hole Size: 2.25"

Drill Method: Direct Push

Drill Date: 4/20/2007

Sheet: 4 of 4

Log of Borehole: KEP-DP-020

Project No.: BW05-01

Project: Groundwater Assessment

Project Manager: Robert Martin

Martin & Slagle GeoEnvironmental
Associates, LLC
118F Cherry Street
Black Mountain, NC 28711

Client: BorgWarner Inc

Location: Kuhlman Electric Plant

Geologist: Robert Martin

SUBSURFACE PROFILE								
GW Depth	Depth	Lithology	Description	Depth/Elev.	USCS Class	Sample	PID (ppm)	Comments
	0		Ground Surface	469.4				
	0			0.0				
	2		Brown, red silty fine sand		SM		101	
						KEP-DP-020-001		
	4			465.4				
	4		Brown silty clay	4.0			42	
	6				CL			
						KEP-DP-020-002		
	8			461.4				Strong acetic acid odor
	8		Red, brown to brown clayey fine sandy gravel	8.0				
	10				GP		121	
						KEP-DP-020-003		
	12							Strong acetic acid odor
	14			455.4			191	
	14		Brown fine sand	14.0				
					SP			Strong acetic acid odor
	16						426	
						KEP-DP-020-005		
	18			450.9				
				18.5	SP			
			Brown, red fine sand with gravel	449.9				
				19.5				Strong acetic acid odor
	20							

Drilled By: Walker-Hill Environmental, Inc.

Hole Size: 2.25"

Drill Method: Direct Push

Drill Date: 4/23/2007 & 4/24/2007

Sheet: 1 of 4

Log of Borehole: KEP-DP-020

Project No.: BW05-01

Project: Groundwater Assessment

Client: BorgWarner Inc

Location: Kuhlman Electric Plant

Project Manager: Robert Martin

Geologist: Robert Martin

Martin & Slagle GeoEnvironmental
Associates, LLC
118F Cherry Street
Black Mountain, NC 28711

SUBSURFACE PROFILE						Sample	PID (ppm)	Comments
GW Depth	Depth	Lithology	Description	Depth/Elev.	USCS Class			
	22		Brown fine sand Yellow, brown silty fine sand with gravel	446.1	SP	KEP-DP-020-006	250	
	24		Yellow, brown fine sandy gravel	443.6	GP	KEP-DP-020-007	178	Strong acetic acid odor
	26		Yellow, brown slightly silty fine sand	437.4	SM	KEP-DP-020-008	63	Strong acetic acid odor
	32		Brown and white silty and clayey fine sand	433.4	SM	KEP-DP-020-009	189	Strong acetic acid odor
	36		Gray, white to light brown silty fine sand	430.1	SM	KEP-DP-020-010	61	Slight odor
	40			39.3				Slight odor

Drilled By: Walker-Hill Environmental, Inc.

Hole Size: 2.25"

Drill Method: Direct Push

Drill Date: 4/23/2007 & 4/24/2007

Sheet: 2 of 4

Log of Borehole: KEP-DP-020

Project No.: BW05-01

Project: Groundwater Assessment

Client: BorgWarner Inc

Location: Kuhlman Electric Plant

Project Manager: Robert Martin

Geologist: Robert Martin

Martin & Slagle GeoEnvironmental
Associates, LLC
118F Cherry Street
Black Mountain, NC 28711

SUBSURFACE PROFILE								
GW Depth	Depth	Lithology	Description	Depth/Elev.	USCS Class	Sample	PID (ppm)	Comments
	42		Gray, white to light brown silty fine sand with gravel		SP		67	
			Orange to pink gravelly fine sand			KEP-DP-020-011		
	44			425.4	SM		54	Slight odor
			Pink to white silty fine sand	44.0				
	46					KEP-DP-020-012		
	48							
	50				SC	KEP-DP-020-013	59	Slight odor
	52		Gray, white pink clayey fine sand, moist	417.4			50	Iron staining
				52.0				Slight odor
	54				SM	KEP-DP-020-014	59	
	56		Pink to tan slightly silty fine sand, moist	413.4				
				56.0				
	58					KEP-DP-020-015		
	60			409.2				
				60.2				

Drilled By: Walker-Hill Environmental, Inc.

Hole Size: 2.25"

Drill Method: Direct Push

Drill Date: 4/23/2007 & 4/24/2007

Sheet: 3 of 4

Log of Borehole: KEP-DP-020

Project No.: BW05-01

Project: Groundwater Assessment

Client: BorgWarner Inc

Location: Kuhlman Electric Plant

Project Manager: Robert Martin

Geologist: Robert Martin

Martin & Slagle GeoEnvironmental
Associates, LLC
118F Cherry Street
Black Mountain, NC 28711

SUBSURFACE PROFILE

GW Depth	Depth	Lithology	Description	Depth/Elev.	USCS Class	Sample	PID (ppm)	Comments
	62		Pink and tan silty fine sand with some gravel			KEP-DP-020-016	57	
	64				SM			
	66							
	68			401.4		KEP-GWP-020-001		
	68		Boring terminated	68.0				
	70							
	72							
	74							
	76							
	78							
	80							

Drilled By: Walker-Hill Environmental, Inc.

Hole Size: 2.25"

Drill Method: Direct Push

Drill Date: 4/23/2007 & 4/24/2007

Sheet: 4 of 4

Log of Borehole: KEP-DP-021

Project No.: BW05-01

Project: Groundwater Assessment

Client: BorgWarner Inc

Location: Kuhlman Electric Plant

Project Manager: Robert Martin

Geologist: Robert Martin

Martin & Slagle GeoEnvironmental
Associates, LLC
118F Cherry Street
Black Mountain, NC 28711

SUBSURFACE PROFILE							
GW Depth	Depth	Lithology	Description	Depth/Elev.	USCS Class	Sample	PID (ppm)
	0		Ground Surface	469.4			
	0		Brown, black silty fine sand (fill)	0.0			
	2				SP		
						KEP-DP-021-001	18
	4			465.4			
	4		Brown silty clay (fill)	4.0			
					CL		
						KEP-DP-021-002	18.7
	6						
	8			461.4			
	8		Red, brown clayey gravel	8.0			
	10				GC		
	12			457.4			
	12		Brown clayey gravel	12.0			
					GC		
	14						
				454.4			
				15.0			
	16		Red fine sandy clay	15.0	CL		
				453.4			
	16		Red, brown clayey fine sand with gravel	16.0			
					SC		
						KEP-DP-021-005	685
	20			449.4			
	20			20.0			

Drilled By: Walker-Hill Environmental, Inc.

Hole Size: 2.25"

Drill Method: Direct Push

Drill Date: 4/25/2007

Sheet: 1 of 4

Log of Borehole: KEP-DP-021

Project No.: BW05-01

Project: Groundwater Assessment

Client: BorgWarner Inc

Location: Kuhlman Electric Plant

Project Manager: Robert Martin

Geologist: Robert Martin

Martin & Slagle GeoEnvironmental Associates, LLC
118F Cherry Street
Black Mountain, NC 28711

SUBSURFACE PROFILE								
GW Depth	Depth	Lithology	Description	Depth/Elev.	USCS Class	Sample	PID (ppm)	Comments
	22		Red, brown to tan sandy silt with some gravel	446.4	ML	KEP-DP-021-006	509	
	24		Red, brown plastic clay	445.2	CH			
			Brown fine sandy gravel	442.2	GP	KEP-DP-021-007	45	
	26		Tan silty fine sand			KEP-DP-021-008	198	
	28							
	30				SM			
	32		Tan to light brown clayey fine sand	437.4				
	34			434.9	SC	KEP-DP-021-009	215	
			Brown fine sand	433.4	SP			
	36		Beige to tan silty fine sand with some gravel	429.4				
	38			40.0	SM	KEP-DP-021-010	137	
	40							

Drilled By: Walker-Hill Environmental, Inc.

Hole Size: 2.25"

Drill Method: Direct Push

Drill Date: 4/25/2007

Sheet: 2 of 4

Log of Borehole: KEP-DP-021

Project No.: BW05-01

Project: Groundwater Assessment

Client: BorgWarner Inc

Location: Kuhlman Electric Plant

Project Manager: Robert Martin

Geologist: Robert Martin

Martin & Slagle GeoEnvironmental Associates, LLC
118F Cherry Street
Black Mountain, NC 28711

SUBSURFACE PROFILE								
GW Depth	Depth	Lithology	Description	Depth/Elev.	USCS Class	Sample	PID (ppm)	Comments
	42		Tan fine sand with gravel		SP	KEP-DP-021-011	60	
	44			425.4 44.0				
	46		Tan, pink slightly silty fine sand			KEP-DP-021-012	68	Iron staining
	48				SM			
	50					KEP-DP-021-013	65	
	52		Tan, white slightly silty gravelly fine sand	417.4 52.0				
	54				SM			Iron staining
	56			413.4 56.0		KEP-DP-021-014	25.6	
	58		Tan very silty fine sand to 60.4" becomes white, pink to tan silty fine sand below water table		SM	KEP-DP-021-015	53	
	60							

Drilled By: Walker-Hill Environmental, Inc.

Hole Size: 2.25"

Drill Method: Direct Push

Drill Date: 4/25/2007

Sheet: 3 of 4

Log of Borehole: KEP-DP-021

Project No.: BW05-01

Project: Groundwater Assessment




Project Manager: Robert Martin

Client: BorgWarner Inc

Location: Kuhlman Electric Plant

Geologist: Robert Martin

Martin & Slagle GeoEnvironmental Associates, LLC
118F Cherry Street
Black Mountain, NC 28711

SUBSURFACE PROFILE						Sample	PID (ppm)	Comments
GW Depth	Depth	Lithology	Description	Depth/Elev.	USCS Class			
	62				SM	KEP-DP-021-016	2	
	64							
	66							
	68					KEP-GWP-021-001		
	68							
	70		Boring terminated	401.4 68.0				
	72							
	74							
	76							
	78							
	80							

Drilled By: Walker-Hill Environmental, Inc.

Hole Size: 2.25"

Drill Method: Direct Push

Drill Date: 4/25/2007

Sheet: 4 of 4