

403139

Letter of Transmittal**Environmental
Resources
Management**

DATE: 10/30/2008

PROJECT NUMBER: 86002

TO: SCDHEC

**BUREAU OF LAND AND WASTE
MANAGEMENT**

ATTENTION:

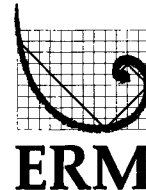
B. Tom Knight, P.G.

RECEIVED498 Wando Park Blvd.
Suite 100
Mt. Pleasant SC 29464
(843) 856-4270
(843) 856-4283 (fax)**SCANNED**
3/19/2018 ap

NOV 03 2008

LAND REVITALIZATION
DIVISION - BLWM**WE ARE SENDING YOU:**☒ Attached ☐ Under separate cover via:

<input type="checkbox"/> Shop drawings	<input type="checkbox"/> Prints	<input type="checkbox"/> Plans	<input type="checkbox"/> Samples
<input type="checkbox"/> Specifications	<input type="checkbox"/> Copy of letter	<input type="checkbox"/> Change order	
<input type="checkbox"/> diskette			

**COPIES DESCRIPTION**

2	Air-Sparge/Soil Vapor Extraction System Design - Wix Filtration Corporation

THESE ARE TRANSMITTED AS CHECKED BELOW

<input checked="" type="checkbox"/> For approval	<input type="checkbox"/> Approved as submitted	<input type="checkbox"/> Resubmit ___ copies for approval
<input type="checkbox"/> For your use	<input type="checkbox"/> Approved as noted	<input type="checkbox"/> Submit ___ copies for distribution
<input type="checkbox"/> As requested	<input type="checkbox"/> Returned for corrections	<input type="checkbox"/> Returned ___ corrected prints
<input checked="" type="checkbox"/> For review and comment	<input type="checkbox"/> Prints returned after loan to us	
<input type="checkbox"/> For bids due _____	<input type="checkbox"/> (other) _____	

REMARKS

Tom,

Please find enclosed two copies of the final air-sparge/soil vapor extraction system design drawings for your comment and approval. Let us know if you have any concerns or questions.

COPY TO:**SIGNED:**

If enclosures are not as noted, kindly notify us at once.

A33

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Lor

SCANNED

403139

**Environmental
Resources
Management**

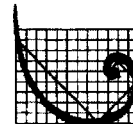
498 Wando Park Blvd.
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Mt. Pleasant, SC 29464
(843) 856-4270
(843) 856-4283 (fax)

October 30, 2008
86002

RECEIVED

NOV 03 2008

LAND REVITALIZATION
DIVISION - BLWM



ERM

Mr. B. Tom Knight, P.G.
South Carolina Department of Health
and Environmental Control
Bureau of Land and Waste Management
2600 Bull Street
Columbia, South Carolina 29201

Subject: Air-Sparge/Soil Vapor Extraction System Design
Wix Filtration Corporation - Dillon, South Carolina
The Affinia Group, Inc.
ERM Project: 86002

Region 4

Dear Mr. Knight:

Environmental Resources Management (ERM) is pleased to present these design drawings on behalf of our client, The Affinia Group, Inc. for their subsidiary, Wix Filtration Corporation. These drawings are provided as a result of an approved air-sparge/soil vapor extraction (AS/SVE) pilot test conducted on August 14, 2008. The pilot test was conducted in an effort to determine site-specific data necessary for sizing a full-scale design of an AS/SVE system to remediate the suspected historical toluene release area (i.e. "source area"). According to the revised AS/SVE implementation schedule dated September 30, 2008 (approved by SCDHEC on October 1, 2008), the system is to be installed beginning in February 2009 for remediation of the source area.

Based on the results of the pilot test that included installation of an approved temporary SVE monitoring well (see Attachment A for boring log and well record), a full-scale SVE system design was completed. The design drawings are included in Attachment B. The full scale system will include five air-sparge wells installed to the top of the perceived clay layer and two horizontal SVE wells at 3½ feet in depth. The location of these wells is shown as Drawing S-1 in Attachment B. The horizontal SVE wells will be installed in a four-inch layer of No. 2 filter sand. The areal extent of the filter sand is shown on Drawing S-1 in Attachment B. Air will be injected into the five air sparge wells at a rate of five standard cubic feet per minute (scfm) each with 25 scfm in total. A rotary vane air compressor will supply the air. To achieve air sparge vapor capture, soil vapor will be extracted at twice the rate of air sparge, which is 50 scfm. The soil vapor will be

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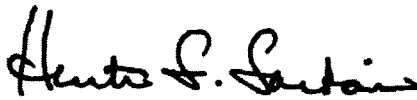
extracted with an explosion-proof regenerative blower. The SVE off-gas will be treated with granular activated carbon (GAC). Two GAC adsorber canisters will be installed for SVE off-gas treatment. The treatment equipment will be housed in a steel building on-site.

Wix will continue to monitor wells MW-1 through MW-4 and MW-7 for volatile organic compounds on a semi-annual basis during implementation, operation, and maintenance of the AS/SVE system. Please review the enclosed design drawings and provide comments at your earliest convenience. Should you have any questions regarding these system design drawings, or the project in general, please do not hesitate to contact us at 843-856-4270.

Sincerely,



Mark Easterbrook
Project Manager



Hunter Sartain
Principal-in-Charge

Attachments

cc: (via electronic transmission)
Mr. Richard P. Fahey, Esq. - Vorys, Sater, Seymour and Pease LLP
Mr. Keith Clark - The Affinia Group
Mr. James Hiller - ERM
Ms. Melody Christopher - ERM
Mr. Ken McCutcheon - Wix Filtration Corporation
Mr. Paul H. Caulford, Jr. - Wix Filtration Corporation

Attachment A
ERM Boring Log and Well
Record

Client: The Affinia Group, Inc.

Site Location: Wix Filtration Corp.

City, State: Dillon, SC

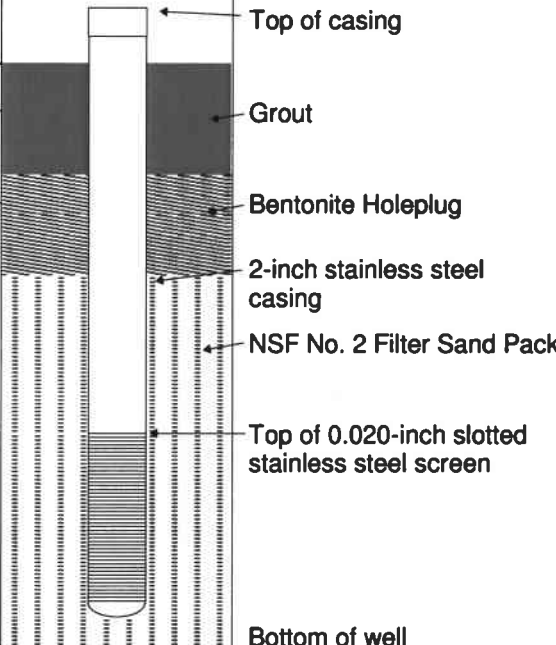
Project Number: 86002

Log of Borehole: SVE-1

Drilled By: Environmental Resources Mgmt.

Logged By: S. Matthews

SUBSURFACE PROFILE			Well Installation Diagram	Remarks
Depth (ft. BGS)	Symbol	Description		
-3				Background PID - 0.0 ppm
-2				
-1				
0		Ground Surface		
		Soft, dark gray organic topsoil, with grass cover.		
1		Gray, silty SAND, odor.		
2		Gray, clayey SILT, plastic, slightly moist.		
3				
4				
5		Becoming brownish red, clayey silt, very moist.		
6				
		End of Borehole		
7				
8				
9				



Driller: Ron Yarborough, P.G.

Drill and Installation Date: 8/13/2008

Drilling Method: Post Hole Digger/Auger

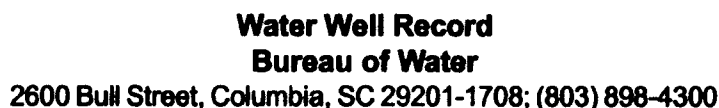


Environmental Resources
Management
498 Wando Park Blvd.
Suite 100
Mt. Pleasant, SC 29464

Borehole Diameter: 6 inches

Total Depth: 6.3 feet

Sheet: 1 of 1



COPY 1 MAIL TO: S.C. DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL (ADDRESS ABOVE)

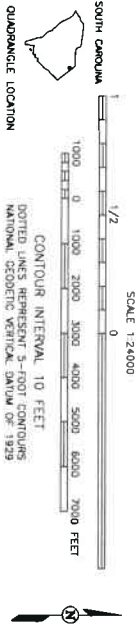
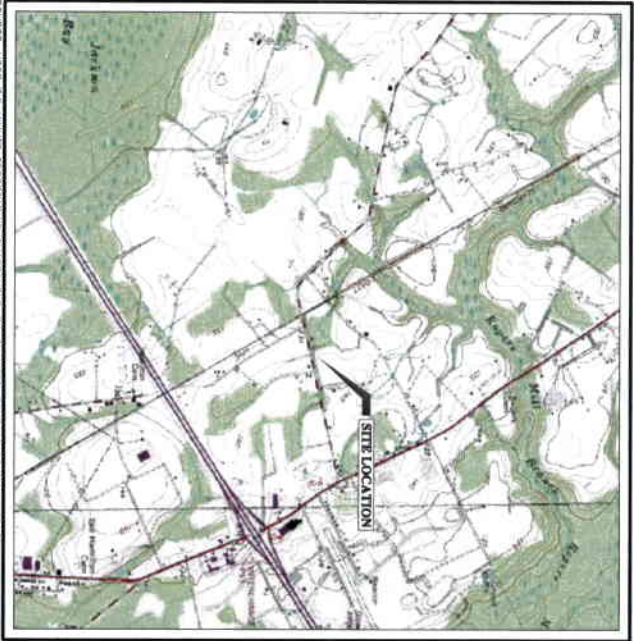
Attachment B
ERM Air-Sparge/Soil Vapor
Extraction Design Drawings

SOIL AND GROUND WATER REMEDIATION SYSTEM

WIX FILTRATION CORPORATION

DILLON, SOUTH CAROLINA

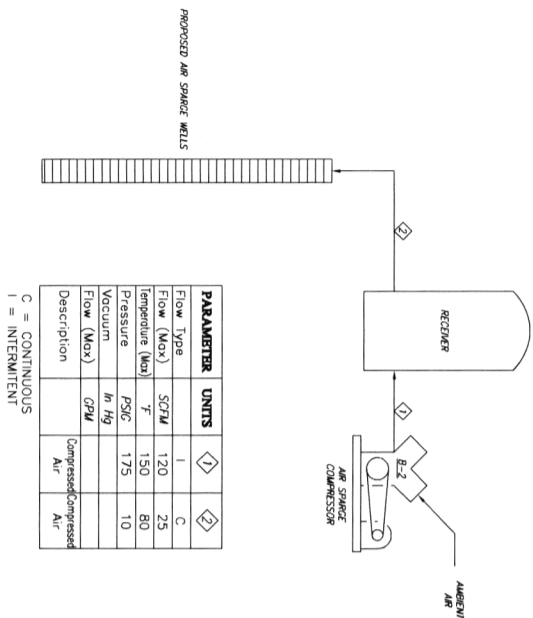
SITE LOCATION MAP



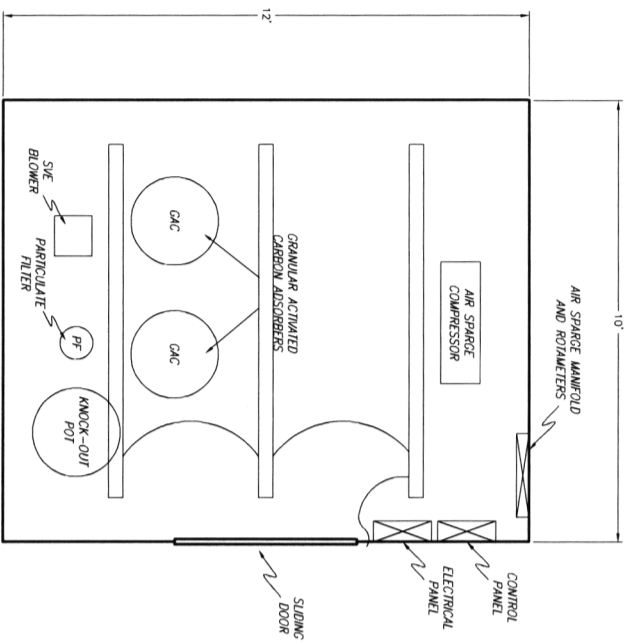
INDEX OF DRAWINGS	
1	COVER SHEET - (1)
2	AS / SVE SYSTEM LAYOUT - (S-1)
3	SVE SYSTEM EQUIPMENT LAYOUT AND PROCESS FLOW DIAGRAM - (P-1)
4	PROCESS & INSTRUMENTATION DIAGRAM - (P-2)
5	CONSTRUCTION DETAILS - (D-1)
6	ELECTRICAL & WIRING PLAN - (E-1)

NO		DATE	APPR	REVISION		NO	DATE	APPR	REVISION	





AIR SPARGE SYSTEM PROCESS FLOW DIAGRAM

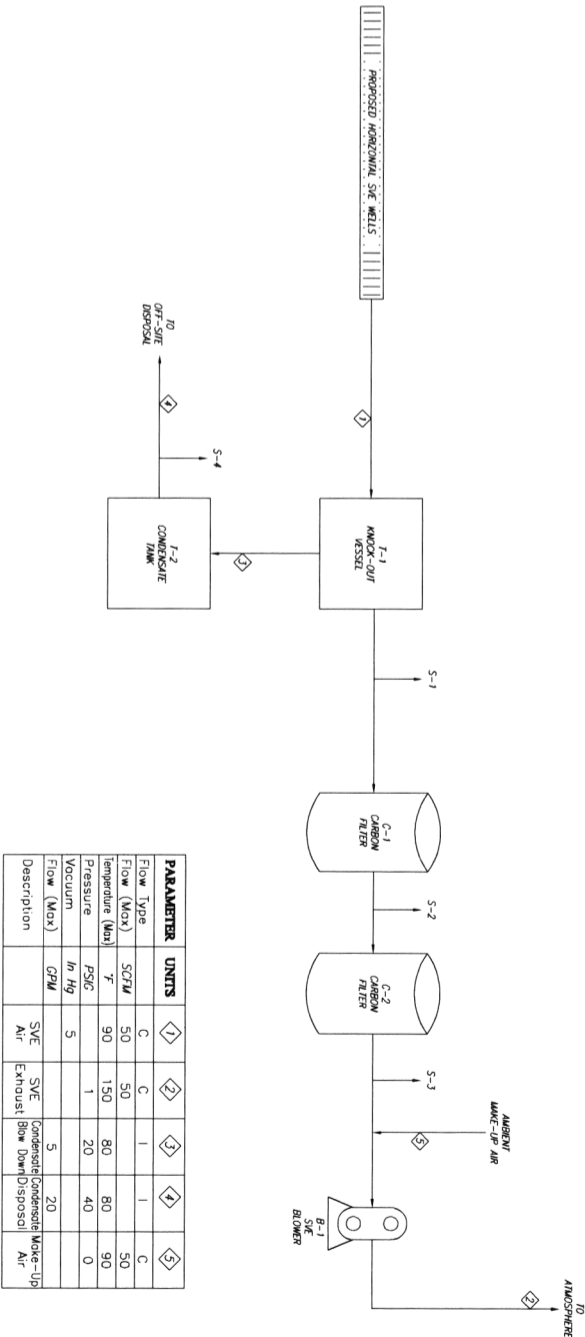


EQUIPMENT LAYOUT

[illegible]

BUILDING TO BE PRE-ENGINEERED GALVANIZED STEEL
(MCMASTER CARR MODEL # 6749T42 OR EQUIVALENT)

NOTES



SOIL VAPOR EXTRACTION SYSTEM

PARAMETER	UNITS	①	②	③	④	⑤
Flow Type	C	C	I	I		
Flow (Max)	SCFM	50	50	50	50	50
Temperature (Min)	°F	90	150	80	80	90
Pressure	PSIG		1	20	40	0
Vacuum	In Hg	5				
Flow (Max)	GPM			5	20	
Description	SVE Air Exhaust	SVE Air Exhaust	5 Bar (Max) (Optional)	5 Bar (Max) (Optional)	Make-Up Air	Make-Up Air

C = CONTINUOUS
I = INTERMITTENT

SOIL AND GROUND WATER REMEDIATION SYSTEM

WIX FILTRATION CORPORATION

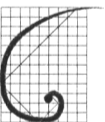
M. HYR

T. HARBAGE

DILLON, SOUTH CAROLINA

H. SARTAIN
ENGINEER

M. EASTERBROOK



ERM

SVE SYSTEM EQUIPMENT LAYOUT AND PROCESS FLOW DIAGRAM

SCALE
1"=20'

DATE SEPTEMBER 22 2008

0086002

DRAWING NO.

P-1

REV. NO.

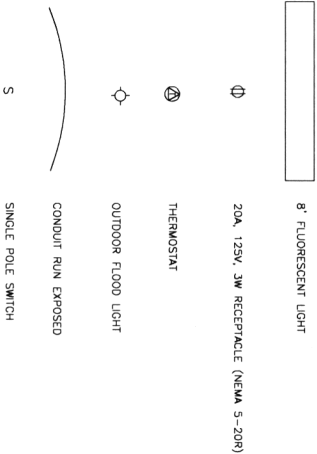
SHELI

3

1

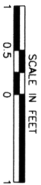
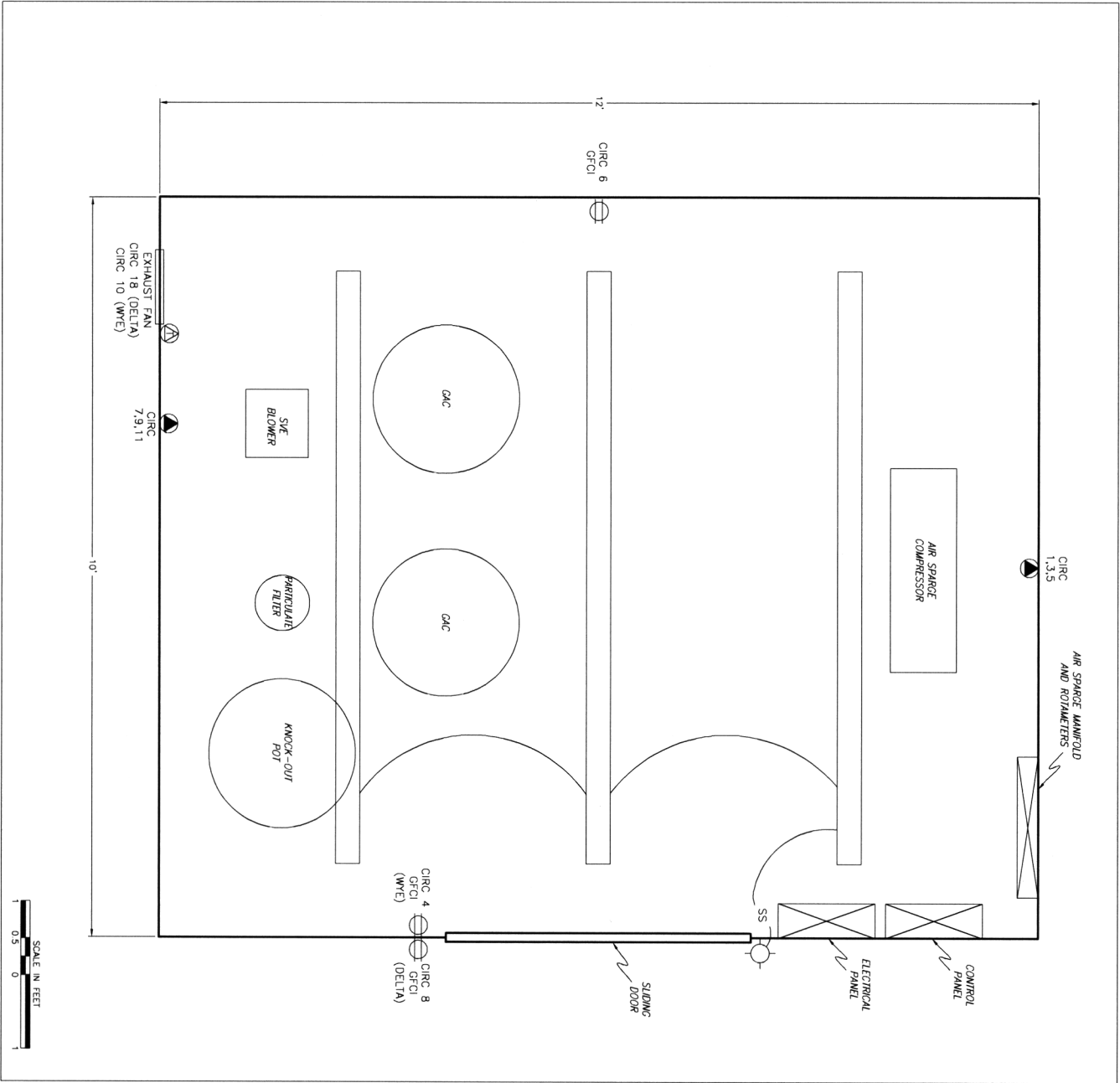
of

LEGEND:



ELECTRICAL NOTES

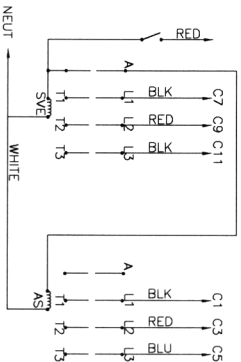
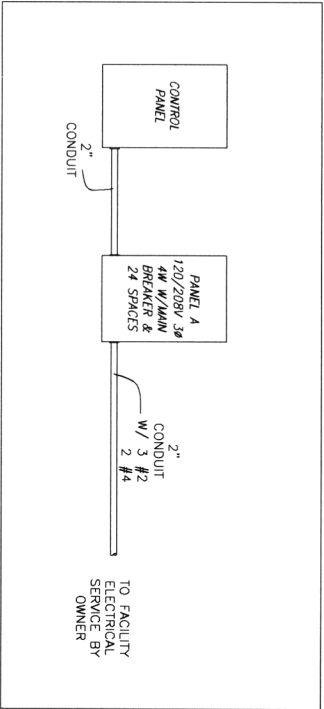
- All general purpose duplex receptacles to be 20 Amp GFCI, both exterior and interior. Mounting height shall be 24" AFF to center of device. Exterior receptacles shall have a metallic in use cover.
- All general purpose light switches shall be 20 Amp. Mounting height shall be 48" AFF to center of device.
- Fluorescent fixtures to be eight feet 2 Lite 120 Volt, and equipped with a disconnecting means in each fixture for both phase and neutral conductors.
- Conduit shall be type EMT with steel fittings, except where RMC is specified. All horizontal conduit runs shall be fastened by means of Unistrut channel (or equal) spaced a maximum of four feet apart.
- All conductors shall be type THHN/THWN 19 strand copper.
- Erection to provide and install a motor starter for the SVE Blower. Starter and protective devices (heaters) shall be sized per the NEC, Article 430.



DELTA PANEL LAYOUT

MAIN: VOLTAGE: 120/208									
CIRCUIT		AMP-100		PHASE: 3		WIRE: 4		MOUNTING:	
CIRCUIT		TRIP		COND		WIRE: 4		TRIP	
CIRCUIT		NO.		DESCRIPTION		CIRCUIT		COND	
1	Air Sparge Compressor	30	0.75	10	2	Lighting	20	0.50	12
3	Air Sparge Compressor	30	0.75	10	6	Interior GFCI Receptacle	20	0.50	12
5	Air Sparge Compressor	30	0.75	12	8	Interior GFCI Receptacle	20	0.50	12
7	SVE Blower	20	0.50	12	10	Exterior Receptacle	20	0.50	12
9	SVE Blower	20	0.50	12	12	Exterior Receptacle	20	0.50	12
11	SVE Blower	20	0.50	12	14	Exterior Receptacle	20	0.50	12
13	Exhaust Fan	15	0.50	12	16	Exhaust Fan	20	0.50	12

NOTE: A green, full size ground conductor shall be installed with each single or multiwire branch circuit. Panel is Delta connected - 3 phases may not be used for 120V branch circuit.



LOGIC: SWITCH: S1 STARTS SVE BLOWER. AUXILIARY CONTACT STARTS AIR SPARGE COMPRESSOR.

NOTE: LOAD SIDE OF CONTROL RELAY CONNECTIONS NOT DRAWN. ASSUME STARTER WITH OVERLOAD DEVICES AT UNIT. IF NOT, USE STARTERS HERE IN LIEU OF RELAYS.

COLOR: CONDUCTORS COLORED FOR WYE SYSTEM 208/120V IF DELTA SYSTEM USED COLORS SHALL BE AS FOLLOWS

A - BLACK
B - ORANGE
C - RED

WYE PANEL LAYOUT

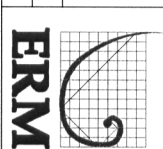
MAIN: VOLTAGE: 120/208									
CIRCUIT		AMP-100		PHASE: 3		WIRE: 4		MOUNTING:	
CIRCUIT		TRIP		COND		WIRE: 4		TRIP	
CIRCUIT		NO.		DESCRIPTION		CIRCUIT		COND	
1	Air Sparge Compressor	30	0.75	10	2	Lighting	20	0.50	12
3	Air Sparge Compressor	30	0.75	10	6	Interior GFCI Receptacle	20	0.50	12
5	Air Sparge Compressor	30	0.75	12	8	Interior GFCI Receptacle	20	0.50	12
7	SVE Blower	20	0.50	12	10	Exterior Receptacle	20	0.50	12
9	SVE Blower	20	0.50	12	12	Exterior Receptacle	20	0.50	12
11	SVE Blower	20	0.50	12	14	Exterior Receptacle	20	0.50	12
13	Exhaust Fan	15	0.50	12	16	Exhaust Fan	20	0.50	12

NOTE: A green, full size ground conductor shall be installed with each single or multiwire branch circuit.

PRELIMINARY

NO.	DATE	APPR.	REVISION	NO.	DATE	APPR.	REVISION

SOIL AND GROUND WATER REMEDIATION SYSTEM		DILLON, SOUTH CAROLINA	
WIX FILTRATION CORPORATION		PROJECT ENGINEER	
DRAWN BY: M. HYRE		H. SARTAIN	
DESIGN ENGINEER: T. HARBAGE		PROJECT MANAGER: M. EASTERBROOK	



NOT FOR CONSTRUCTION

ELECTRICAL PLAN		DRAWING NO. E-1	
SCALE: 1" = 2'		REV. NO.	
PROJECT NO. 0086002		DATE: SEPTEMBER 22, 2008	
PROJECT NO. 0086002		SHEET 6 OF 6	