

# **ECOVAC SERVICES**

*The World Leader in Mobile Dual-Phase/Multi-Phase Extraction and  
Patented SURFAC<sup>®</sup>/ISCO-EFR<sup>®</sup>/COSOLV<sup>®</sup> Technologies  
Treatability Studies / Research & Development*

January 20, 2016

Ms. Patty Currier  
Apex Envirotech, Inc.  
1920 W 143<sup>rd</sup> Street, Suite 100  
Leawood, Kansas 66224  
[pcurrier@apexenvirotech.com](mailto:pcurrier@apexenvirotech.com)

**Subject: Enhanced Fluid Recovery (EFR<sup>®</sup>) Results  
Event Nos. 10  
Zill Inc.  
8316 East 31<sup>st</sup> Street  
Kansas City, Missouri**

Dear Ms. Currier:

Please find attached the data summary for the tenth EFR<sup>®</sup> event conducted at the subject site on January 13, 2015. Previous events have been conducted at the site from April 1 to November 12, 2015. The following summarizes the results of this EFR<sup>®</sup> event.

## **DESCRIPTION**

The EFR<sup>®</sup> process is best described as a mobile version of dual-phase or multi-phase extraction (DPE/MPE), but with a much higher vacuum and radius of influence. An EcoVac vacuum truck with two rotary vein vacuum pumps rated as high as 100 horsepower, 29 inches mercury vacuum, and 880 CFM "open air" flow was utilized during this event. EFR<sup>®</sup> simultaneously removes vapors, free product, dissolved-phase hydrocarbons, and groundwater from the subsurface. EFR<sup>®</sup> dewateres and exposes the smear zone to the effects of "high rate" soil vapor extraction. Importantly, EFR<sup>®</sup> also enhances biodegradation by introducing oxygen to the vadose and saturated zones.

## **SUMMARY OF RESULTS**

### **Event No. 10 (January 13, 2016)**

Separate-phase hydrocarbons (SPH) were detected in six of the gauged monitor wells (MW-10 – 1.05 feet, MW-20 – 0.05 feet, MW-21 – 0.02 feet, MW-22 – 1.60 feet, MW-23 – 0.75 feet, and MW-A – 0.02 feet) prior to conducting this EFR<sup>®</sup> event. Historical SPH thicknesses are shown in the attached Cumulative EFR<sup>®</sup> Data Table. EFR<sup>®</sup> was conducted for 10.5 hours at four extraction points, consisting of MW-21, MW-22, MW-23, and MW-A. SPH was detected MW-10 (0.49 feet) and MW-A (0.01 feet) following the event.

A calculated total of 352 pounds of petroleum hydrocarbons (approximately 54 equivalent gallons of gasoline) was removed during this EFR<sup>®</sup> event. Hydrocarbon removal rates ranged from 27 to 46 pounds per hour with a trend of decreasing removal rates throughout the event.

Vapor concentrations were measured by a TLV Sniffer and calibrated to a hexane standard. Samples were collected into Tedlar<sup>®</sup> bags from a sampling port in the vacuum truck stack. Vapor concentrations ranged from 12,000 to 20,000 parts per million by volume (PPM<sub>v</sub>) during this EFR<sup>®</sup> event. Vapor flows were measured by a Dwyer Thermal Anemometer Model 470 (factory calibrated) and collected from the stack sampling port. Vapor flow rates remained at 137 cubic feet per minute (CFM).

In-well vacuums recorded during this EFR<sup>®</sup> event are detailed in the EFR<sup>®</sup> Field Data Sheet and summarized below:

<u>Extraction Well</u>	<u>In-Well Vacuum</u>
MW-21	7 to 9 inches of mercury
MW-22	11 to 14 inches of mercury
MW-23	3 inches of mercury
MW-A	10 inches of mercury

Differential pressures were recorded at surrounding wells during the event to assess the vacuum induced by EFR<sup>®</sup> in the vadose zone. Differential pressures were measured with a Dwyer Digital Manometer Model 477 and are detailed in the attached table and summarized below:

<u>Monitor Well</u>	<u>Maximum Change</u>	<u>Nearest Extraction Well (Approximate Distance)</u>
MW-24	-42.67 inches of water	MW-21 (44 feet)
MW-A	0.00 inch of water	MW-21 (50 feet)
MW-25	-23.47 inches of water	MW-23 (59 feet)

Groundwater levels were recorded during this event to assess the groundwater drawdown created by EFR<sup>®</sup>. The groundwater drawdown data are detailed in the attached table and summarized below:

<u>Monitor Well</u>	<u>Maximum Change</u>	<u>Nearest Extraction Well (Approximate Distance)</u>
MW-24	-5.96 feet	MW-21 (44 feet)
MW-A	-0.56/-0.33 feet*	MW-21 (50 feet)
MW-25	-3.58 feet	MW-23 (59 feet)

\*Maximum change in SPH thickness/Maximum drawdown corrected for the presence of SPH

Approximately 1,592 gallons of liquid were extracted during this EFR<sup>®</sup> event and transported to Magellan Midstream Partners reclamation facility (Kansas City, Kansas) for disposal. SPH was not detected in the vacuum truck tank following completion of the event.

Thank you for this opportunity to team with Apex Envirotech in serving the environmental needs of your clients. We look forward to working with you again in the future to provide innovative and cost effective environmental solutions at this and other sites.

Sincerely,

EcoVac Services



Matthew C. Wittich

# EFR<sup>®</sup> FIELD DATA SHEET

Client: Apex Envirotech	Facility Name: Zill Inc.	Event #: 10
Facility Address: 3816 East 31st Street, Kansas City, Missouri	Technician: K. Free	Date: 1/13/15

Extraction Well(s)	Time hh:mm	Extraction Well-head Vacuum (in. Hg)							Vacuum Truck Exhaust				
		Inlet	MW-21	MW-22	MW-23	MW-A			Concentration PPM	Offgas Velocity FT/MIN	Flow Rate CFM	Removal Rate LBS/HR	Interval Removal LBS
Start Time:	9:15												
MW-21,22,23,A	9:30	20	7	11	3	10			20,000	2,800	137	46	11
"	9:45	20	7	11	3	10			19,500	2,800	137	44	11
"	10:00	20	7	11	3	10			19,500	2,800	137	44	11
"	10:15	20	7	11	3	10			19,200	2,800	137	44	11
"	10:45	20	7	11	3	10			19,000	2,800	137	43	22
"	11:15	20	7	11	3	10			19,000	2,800	137	43	22
"	11:45	20	7	11	3	10			18,000	2,800	137	41	21
"	12:45	20	9	14	3	10			16,000	2,800	137	36	36
"	13:45	20	9	14	3	10			15,000	2,800	137	34	34
"	14:45	20	9	14	3	10			13,000	2,800	137	30	30
"	15:45	20	9	14	3	10			12,000	2,800	137	27	27
"	16:45	20	9	14	3	10			14,000	2,800	137	32	32
"	17:45	20	9	14	3	10			13,000	2,800	137	30	30
"	18:45	20	9	14	3	10			12,000	2,800	137	27	27
"	19:45	20	9	14	3	10			12,000	2,800	137	27	27

Well Gauging Data:			Before EFR <sup>®</sup> Event			After EFR <sup>®</sup> Event			Corr. DTW
Well No.	Diam.	TD (ft)	DTS (ft)	DTW (ft)	SPH (ft)	DTS (ft)	DTW (ft)	SPH (ft)	Change (ft)
MW-10	2"		11.43	12.48	1.05	11.84	12.33	0.49	-0.33
MW-17	2"		-	3.41	0.00				
MW-18	2"	20.50	-	8.72	0.00				
MW-20	2"	14.95	4.20	4.25	0.05				
MW-21	2"	20.20	9.61	9.63	0.02	-	14.55	0.00	-4.94
MW-22	2"	16.20	6.80	8.40	1.60	-	9.63	0.00	-2.59
MW-23	2"	15.00	6.63	7.38	0.75	-	13.08	0.00	-6.34
MW-24	2"		-	8.05	0.00	-	14.61	0.00	-6.56
MW-25	2"		-	8.04	0.00	-	11.62	0.00	-3.58
MW-A	2"		14.12	14.14	0.02	14.14	14.15	0.01	-0.02

Vacuum Truck Information		Well ID	Breather Port	Stinger Depth	Recovery/Disposal Information	
Subcontractor:	AllVac	MW-21	1	10'	Hydrocarbons Removed (vapor):	352 pounds
Truck Operator:	K. Free	MW-22	3	9'	Hydrocarbons Removed (liquid):	0.0 gallons
Truck No.:	148	MW-23	1	8'	Total Hydrocarbons Removed:	54 equiv. gallon
Vacuum Pumps:	Becker	MW-A	1	12'	Molecular Weight Utilized:	105 g/mole
Pump Type:	Twin LC-44s				Disposal Facility:	Magellan
Tank Capacity (gal.):	2,894				Manifest Number:	
Stack I.D. (inches)	3.0				Total Liquids Removed:	1,592 gallons

 www.ecovacservices.com 859-266-5053	<b>Pump Information</b>	Notes:	
	Time:		9:15 - 19:15
	# Pumps:		2
	RPMs:		900

Differential Pressure and Groundwater Drawdown Data Recorded During EFR<sup>®</sup>  
 Event No. 10 - January 13, 2016

Zill Inc.  
 3816 East 31st Street  
 Kansas City, Missouri

**DIFFERENTIAL PRESSURE DATA**

		Well Designation:		
		MW-24	MW-A	MW-25
Nearest Extraction Well:		MW-21	MW-21	MW-23
Approximate Distance:		44 feet	50 feet	59 feet
Time	Elapsed Time	Differential Pressures (inches of water):		
10:15	1.0 hrs.	-16.52	-	-9.87
11:15	2.0 hrs.	-21.77	-	-10.33
12:15	3.0 hrs.	-28.03	-	-14.51
13:15	4.0 hrs.	-35.89	-	-19.17
14:15	5.0 hrs.	-40.32	-	-23.47
15:15	6.0 hrs.	-41.84	0.00	-20.16
16:15	7.0 hrs.	-41.23	0.00	-20.55
17:15	8.0 hrs.	-42.67	0.00	-19.69
Maximum Change:		-42.67	0.00	-23.47

**GROUNDWATER DRAWDOWN DATA**

		Well Designation:		
		MW-24	MW-A	MW-25
Nearest Extraction Well:		MW-21	MW-21	MW-23
Approximate Distance:		44 feet	50 feet	59 feet
Time	Elapsed Time	Depth to Liquid (feet below top of casing):		
Prior to EFR <sup>®</sup>		8.65	11.43/12.48*	8.04
19:15	10 hrs.	14.61	11.84/12.33*	11.62
Maximum Change:		-5.96	-0.56/-0.33**	-3.58

\*Depth to SPH/ Depth to groundwater

\*\*Maximum change in SPH thickness/Maximum drawdown corrected for the presence of SPH

# CUMULATIVE EFR® DATA TABLE

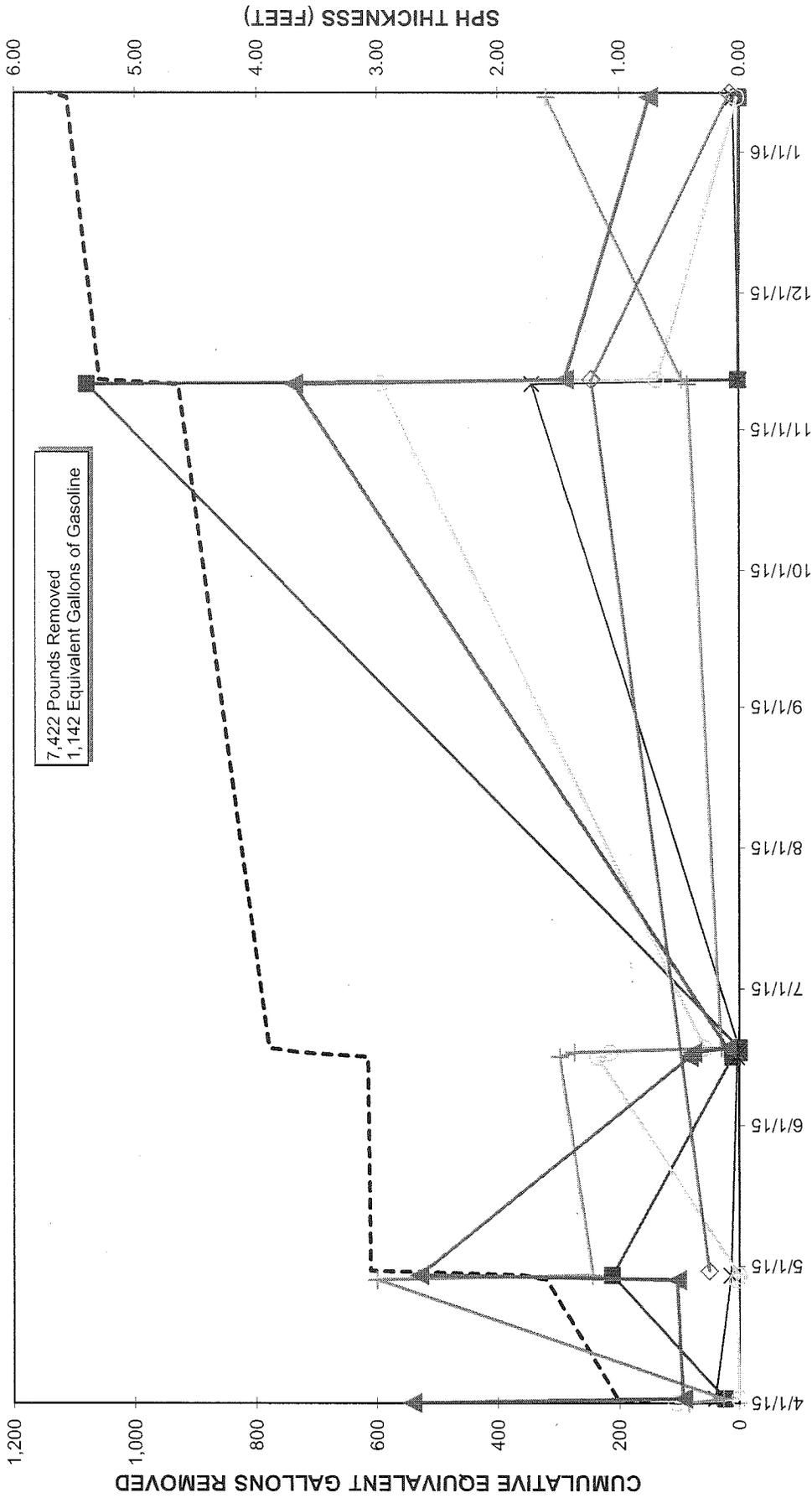
Zill Inc.

3816 East 31st Street  
Kansas City, Missouri

Event No.	4/1/15	4/2/15	4/28/15	4/29/15	4/30/15	6/16/15	6/17/15	6/18/15	11/11/15	11/12/15	1/13/16	1/14/16
	1	2	3	4	1 (On Site)	5	6	7	8	9	10	2 (On Site)
Extraction Wells	MW-21, 22, 23	MW-18, 20, 22, 23	MW- 22, 23	MW-18, 20, 21, 22, 23	MW-7, 9, 10	MW-18, 20	MW-21, 22, 23	MW-21, 22, 23	MW-18, 20, 21, 22, 23	MW-7, 9, 10, 13, 21, 22, 23, A	MW- 21, 22, 23	MW-7, 9, 10
SPH Thickness (ft.) MW-1					0.25					1.23		0.01
SPH Thickness (ft.) MW-7					0.00					0.02		0.08
SPH Thickness (ft.) MW-9					1.03					0.56	1.05	0.24
SPH Thickness (ft.) MW-10										0.19		0.01
SPH Thickness (ft.) MW-13										0.01		0.01
SPH Thickness (ft.) MW-18		0.12		1.06		0.06	0.00	0.00	5.40	0.00	0.00	
SPH Thickness (ft.) MW-20		0.20		0.07		0.02	0.00	0.00	1.72	0.00	0.05	
SPH Thickness (ft.) MW-21	0.53	0.00	0.02	0.00		1.18	1.08	0.29	2.97	0.69	0.02	
SPH Thickness (ft.) MW-22	0.42	0.13	3.00	1.22		1.49	1.37	0.15	0.43	0.48	1.60	
SPH Thickness (ft.) MW-23	2.71	0.47	0.52	2.65		0.42	0.39	0.10	3.69	1.45	0.75	
SPH Thickness (ft.) MW-A									0.02	0.11	0.02	
Liquid Removed/Event (Gal.)	913	723	896	1,182	370	760	1,338	695	920	475	1,592	986
Cumulative Liquid Removed (Gal.)	913	1,636	2,532	3,714	4,084	4,844	6,182	6,877	7,797	8,272	9,864	10,850
Pounds Removed/Event	977	343	756	270	1,625	28	731	334	971	845	352	189
Cumulative Pounds Removed	977	1,320	2,076	2,346	3,971	3,999	4,730	5,065	6,036	6,881	7,233	7,422
Equip. Gal. Gasoline Removed/Event	150	53	116	42	250	4.4	112	51	149	130	54	29
Cumulative Equip. Gal. Removed	150	203	319	361	611	615	728	779	929	1,059	1,113	1,142

# CUMULATIVE EFR® GRAPH

Zill Inc.  
 3816 East 31st Street  
 Kansas City, Missouri



7,422 Pounds Removed  
 1,142 Equivalent Gallons of Gasoline

- Cumulative Equiv. Gal. Removed
- SPH Thickness (ft.) MW-18
- SPH Thickness (ft.) MW-20
- SPH Thickness (ft.) MW-21
- SPH Thickness (ft.) MW-22
- SPH Thickness (ft.) MW-23
- SPH Thickness (ft.) MW-7

# **ECOVAC SERVICES**

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Patented SURFAC<sup>®</sup>/ISCO-EFR<sup>®</sup>/COSOLV<sup>®</sup> Technologies  
Treatability Studies / Research & Development*

January 20, 2016

Ms. Patty Currier  
Apex Envirotech, Inc.  
1920 W 143<sup>rd</sup> Street, Suite 100  
Leawood, Kansas 66224  
[pcurrier@apexenvirotech.com](mailto:pcurrier@apexenvirotech.com)

**Subject: Enhanced Fluid Recovery (EFR<sup>®</sup>) Results  
Event No. 2  
Zill Inc. (On Site)  
8316 East 31<sup>st</sup> Street  
Kansas City, Missouri**

Dear Ms. Currier:

Please find attached the data summary for the second EFR<sup>®</sup> event conducted at the subject site on January 14, 2015. The initial event was conducted at the site from April 30, 2015. The following summarizes the results of this EFR<sup>®</sup> event.

## **DESCRIPTION**

The EFR<sup>®</sup> process is best described as a mobile version of dual-phase or multi-phase extraction (DPE/MPE), but with a much higher vacuum and radius of influence. An EcoVac vacuum truck with two rotary vein vacuum pumps rated as high as 100 horsepower, 29 inches mercury vacuum, and 880 CFM "open air" flow was utilized during this event. EFR<sup>®</sup> simultaneously removes vapors, free product, dissolved-phase hydrocarbons, and groundwater from the subsurface. EFR<sup>®</sup> dewateres and exposes the smear zone to the effects of "high rate" soil vapor extraction. Importantly, EFR<sup>®</sup> also enhances biodegradation by introducing oxygen to the vadose and saturated zones.

## **SUMMARY OF RESULTS**

### **Event No. 2 (January 14, 2016)**

Separate-phase hydrocarbons (SPH) were detected in five of the gauged monitor wells (MW-1 – 0.01 feet, MW-7 – 0.08 feet, MW-9 – 0.24 feet, MW-10 – 0.01 feet, and MW-13 – 0.01 feet) prior to conducting this EFR<sup>®</sup> event. Historical SPH thicknesses are shown in the attached Cumulative EFR<sup>®</sup> Data Table. EFR<sup>®</sup> was conducted for six hours at three extraction points, consisting of MW-7, MW-9, and MW-10. SPH was detected MW-1 (0.01 feet), MW-7 (0.01 feet), MW-10 (0.04 feet) and MW-13 (0.06 feet) following the event.

A calculated total of 189 pounds of petroleum hydrocarbons (approximately 29 equivalent gallons of gasoline) was removed during this EFR<sup>®</sup> event. Hydrocarbon removal rates ranged from 20 to 62 pounds per hour with a trend of decreasing removal rates throughout the event.

Vapor concentrations were measured by a TLV Sniffer and calibrated to a hexane standard. Samples were collected into Tedlar<sup>®</sup> bags from a sampling port in the vacuum truck stack. Vapor concentrations ranged from 12,000 to 38,000 parts per million by volume (PPM<sub>v</sub>) during this EFR<sup>®</sup> event. Vapor flows were measured by a Dwyer Thermal Anemometer Model 470 (factory calibrated) and collected from the stack sampling port. Vapor flow rates remained at 98 cubic feet per minute (CFM).

In-well vacuums recorded during this EFR<sup>®</sup> event are detailed in the EFR<sup>®</sup> Field Data Sheet and summarized below:

<u>Extraction Well</u>	<u>In-Well Vacuum</u>
MW-7	14 inches of mercury
MW-9	15 inches of mercury
MW-10	17 inches of mercury

Differential pressures were recorded at surrounding wells during the event to assess the vacuum induced by EFR<sup>®</sup> in the vadose zone. Differential pressures were measured with a Dwyer Digital Manometer Model 477 and are detailed in the attached table and summarized below:

<u>Monitor Well</u>	<u>Maximum Change</u>	<u>Nearest Extraction Well (Approximate Distance)</u>
MW-13	-12.92 inches of water	MW-7 (21 feet)
MW-16	0.00 inch of water	MW-9 (52 feet)
MW-1	0.00 inch of water	MW-7 (53 feet)

Groundwater levels were recorded during this event to assess the groundwater drawdown created by EFR<sup>®</sup>. The groundwater drawdown data are detailed in the attached table and summarized below:

<u>Monitor Well</u>	<u>Maximum Change</u>	<u>Nearest Extraction Well (Approximate Distance)</u>
MW-13	+0.05/-0.06 feet*	MW-7 (21 feet)
MW-16	-0.03 feet	MW-9 (52 feet)
MW-1	0.00/-0.01 feet*	MW-7 (53 feet)

\*Maximum change in SPH thickness/Maximum drawdown corrected for the presence of SPH

Approximately 986 gallons of liquid were extracted during this EFR<sup>®</sup> event and transported to Magellan Midstream Partners reclamation facility (Kansas City, Kansas) for disposal. SPH was not detected in the vacuum truck tank following completion of the event.

Thank you for this opportunity to team with Apex Envirotech in serving the environmental needs of your clients. We look forward to working with you again in the future to provide innovative and cost effective environmental solutions at this and other sites.

Sincerely,

EcoVac Services



Matthew C. Wittich

# EFR<sup>®</sup> FIELD DATA SHEET

Client: Apex Envirotech	Facility Name: Zill Inc. (On Site)	Event #: 2
Facility Address: 3816 East 31st Street, Kansas City, Missouri	Technician: K. Free	Date: 1/14/15

Extraction Well(s)	Time hh:mm	Extraction Well-head Vacuum (in. Hg)								Vacuum Truck Exhaust				
		Inlet	MW-7	MW-9	MW-10					Concentration PPM	Offgas Velocity FT/MIN	Flow Rate CFM	Removal Rate LBS/HR	Interval Removal LBS
Start Time:	8:15													
MW-7,9,10	8:30	22	14	15	17					38,000	2,000	98	62	15
"	8:45	22	14	15	17					34,000	2,000	98	55	14
"	9:00	22	14	15	17					31,000	2,000	98	50	13
"	9:15	22	14	15	17					28,000	2,000	98	46	11
"	9:45	22	14	15	17					24,000	2,000	98	39	20
"	10:15	22	14	15	17					22,000	2,000	98	36	18
"	10:45	22	14	15	17					21,000	2,000	98	34	17
"	11:15	22	14	15	17					18,000	2,000	98	29	15
"	12:15	22	14	15	17					15,000	2,000	98	24	24
"	13:15	22	14	15	17					14,000	2,000	98	23	23
"	14:15	22	14	15	17					12,000	2,000	98	20	20

Well Gauging Data:			Before EFR <sup>®</sup> Event			After EFR <sup>®</sup> Event			Corr. DTW
Well No.	Diam.	TD (ft)	DTS (ft)	DTW (ft)	SPH (ft)	DTS (ft)	DTW (ft)	SPH (ft)	Change (ft)
MW-1	2"		8.73	8.74	0.01	8.71	8.72	0.01	0.02
MW-7	2"		9.28	9.36	0.08	10.76	10.77	0.01	-1.47
MW-9	2"		10.03	10.27	0.24	-	11.14	0.00	-1.07
MW-10	2"		11.32	11.33	0.01	12.58	12.62	0.04	-1.26
MW-13	2"		8.86	8.87	0.01	8.91	8.97	0.06	-0.06
MW-16	2"		-	9.81	0.00	-	9.84	0.00	-0.03

<u>Vacuum Truck Information</u>	Well ID	Breather Port	Stinger Depth	<u>Recovery/Disposal Information</u>
Subcontractor: AllVac	MW-7	2	10'	Hydrocarbons Removed (vapor): 189 pounds
Truck Operator: K. Free	MW-9	2	10'	Hydrocarbons Removed (liquid): 0.0 gallons
Truck No.: 148	MW-10	1	12'	Total Hydrocarbons Removed: 29 equiv. gallon
Vacuum Pumps: Becker				Molecular Weight Utilized: 105 g/mole
Pump Type: Twin LC-44s				Disposal Facility: Magellan
Tank Capacity (gal.): 2,894				Manifest Number:
Stack I.D. (inches) 3.0				Total Liquids Removed: 986 gallons

 www.ecovacservices.com 859-266-5053	<b>Pump Information</b>	Notes:
	Time: 8:15 - 14:15	
	# Pumps: 2	
RPMs: 900		

Differential Pressure and Groundwater Drawdown Data Recorded During EFR<sup>®</sup>  
 Event No. 2 - January 14, 2016  
 Zill Inc. (On Site)  
 3816 East 31st Street  
 Kansas City, Missouri

**DIFFERENTIAL PRESSURE DATA**

		Well Designation:		
		MW-13	MW-16	MW-1
Nearest Extraction Well:		MW-7	MW-9	MW-7
Approximate Distance:		21 feet	52 feet	53 feet
Time	Elapsed Time	Differential Pressures (inches of water):		
9:15	1.0 hrs.	-9.71	0.00	0.00
10:15	2.0 hrs.	-10.14	0.00	0.00
11:15	3.0 hrs.	-11.94	0.00	0.00
12:15	4.0 hrs.	-12.31	0.00	0.00
13:15	5.0 hrs.	-12.92	0.00	0.00
Maximum Change:		-12.92	0.00	0.00

**GROUNDWATER DRAWDOWN DATA**

		Well Designation:		
		MW-13	MW-16	MW-1
Nearest Extraction Well:		MW-7	MW-9	MW-7
Approximate Distance:		21 feet	52 feet	53 feet
Time	Elapsed Time	Depth to Liquid (feet below top of casing):		
Prior to EFR <sup>®</sup>		8.86/8.87*	9.81	8.73/8.74*
14:15	6.0 hrs.	8.91/8.97*	9.84	8.71/8.72*
Maximum Change:		+0.05/-0.06**	-0.03	0.00/-0.01**

\*Depth to SPH/ Depth to groundwater

\*\*Maximum change in SPH thickness/Maximum drawdown corrected for the presence of SPH

# CUMULATIVE EFR® DATA TABLE

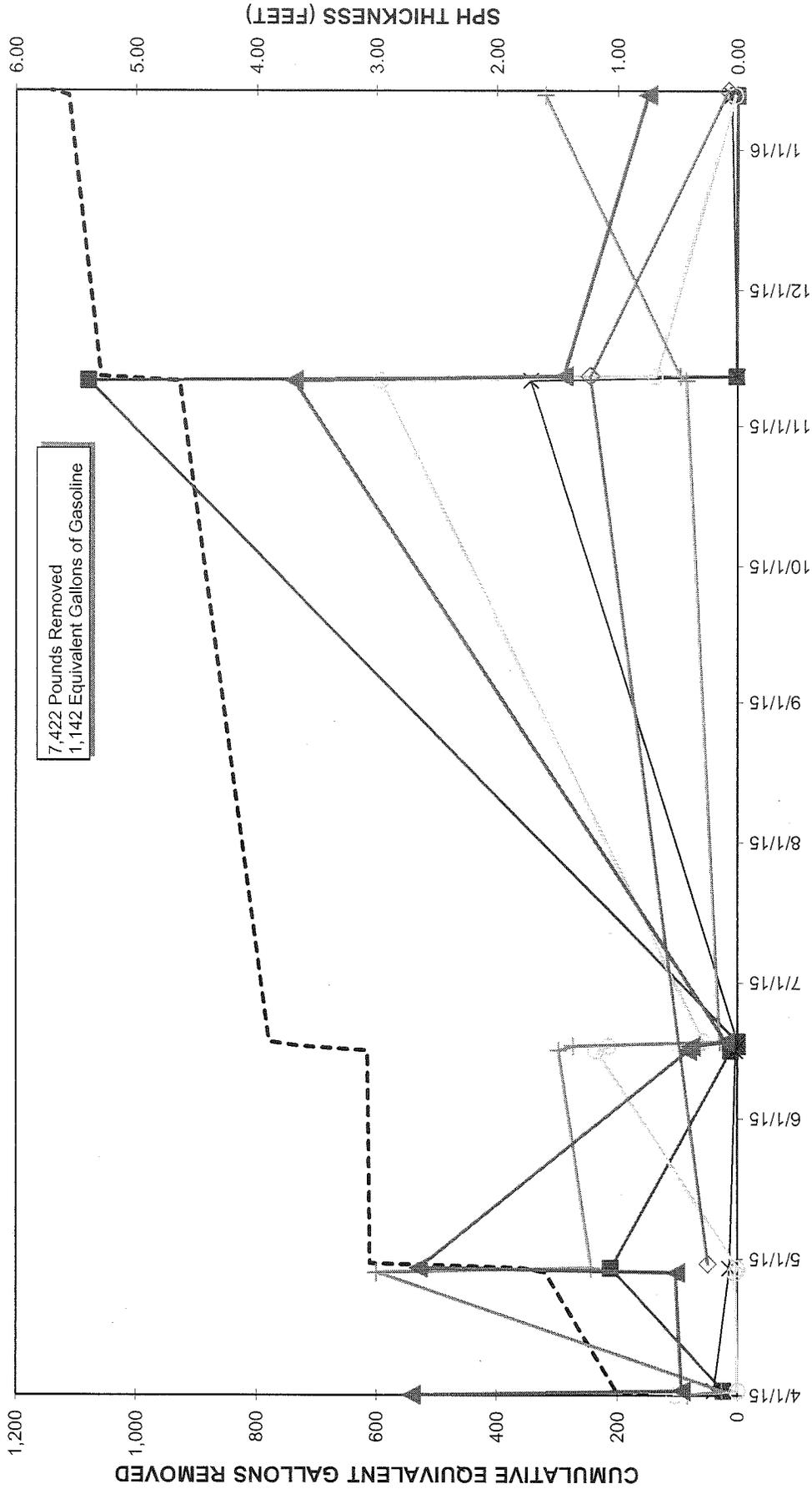
Zill Inc.

3816 East 31st Street  
Kansas City, Missouri

Event No.	4/1/15	4/2/15	4/28/15	4/29/15	4/30/15	6/16/15	6/17/15	6/18/15	11/11/15	11/12/15	1/13/16	1/14/16
	1	2	3	4	1 (On Site)	5	6	7	8	9	10	2 (On Site)
Extraction Wells	MW-21, 22, 23	MW-18, 20, 22, 23	MW- 22,23	MW-18, 20, 21, 22, 23	MW-7, 9, 10	MW-18,20	MW-21, 22, 23	MW-21, 22, 23	MW-18, 20, 21, 22, 23	MW-7, 9, 10, 13, 21, 22, 23, A	MW- 21,22,23	MW-7,9,10
SPH Thickness (ft.) MW-1					0.25					1.23		0.01
SPH Thickness (ft.) MW-7					0.00					0.02		0.08
SPH Thickness (ft.) MW-9					1.03					0.56	1.05	0.24
SPH Thickness (ft.) MW-10										0.19		0.01
SPH Thickness (ft.) MW-13										0.01		0.01
SPH Thickness (ft.) MW-18		0.12		1.06	0.06	0.00	0.00	0.00	5.40	0.00	0.00	
SPH Thickness (ft.) MW-20		0.20		0.07	0.02	0.00	0.00	0.00	1.72	0.00	0.05	
SPH Thickness (ft.) MW-21	0.53	0.00	0.02	0.00	1.18	1.08	1.08	0.29	2.97	0.69	0.02	
SPH Thickness (ft.) MW-22	0.42	0.13	3.00	1.22	1.49	1.37	1.37	0.15	0.43	0.48	1.60	
SPH Thickness (ft.) MW-23	2.71	0.47	0.52	2.65	0.42	0.39	0.39	0.10	3.69	1.45	0.75	
SPH Thickness (ft.) MW-A									0.02	0.11	0.02	
Liquid Removed/Event (Gal.)	913	723	896	1,182	370	760	1,338	695	920	475	1,592	986
Cumulative Liquid Removed (Gal.)	913	1,636	2,532	3,714	4,084	4,844	6,182	6,877	7,797	8,272	9,864	10,850
Pounds Removed/Event	977	343	756	270	1,625	28	731	334	971	845	352	189
Cumulative Pounds Removed	977	1,320	2,076	2,346	3,971	3,999	4,730	5,065	6,036	6,881	7,233	7,422
Equiv. Gal. Gasoline Removed/Event	150	53	116	42	250	4.4	112	51	149	130	54	29
Cumulative Equiv. Gal. Removed	150	203	319	361	611	615	728	779	929	1,059	1,113	1,142

# CUMULATIVE EFR® GRAPH

Zill Inc.  
 3816 East 31st Street  
 Kansas City, Missouri



7,422 Pounds Removed  
 1,142 Equivalent Gallons of Gasoline

- Cumulative Equiv. Gal. Removed
- SPH Thickness (ft.) MW-18
- SPH Thickness (ft.) MW-20
- SPH Thickness (ft.) MW-21
- SPH Thickness (ft.) MW-22
- SPH Thickness (ft.) MW-23