Gunter, Jason

From: James, Kevin <kjames@doerun.com>
Sent: Friday, October 10, 2014 7:00 PM
To: Gunter, Jason
Cc: Yingling, Mark; Neaville, Chris; Montgomery, Michael; robert.hinkson@dnr.mo.gov; brandon.wiles@dnr.mo.gov; Ty Morris (TMorris@barr.com); Nations, Mark
Subject: Leadwood Progress Report - August
Attachments: LW_09-14.doc; 2014-09-04 LW NPDES Pace Lab Report.pdf; Remediation Air Report - August 2014.pdf

Categories: Red Category

Jason -

Attached is the August Progress Report for the Leadwood Site.

Kevin James on behalf of Mark Nations

Kevin James
THE DOE RUN COMPANY 150
Environmental Engineering
W: 573.626.2096
C: 573.247.6766

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Superfund
0102

THE DOE RUN COMPANY

Remediation Group

Mark Nations
Mining Properties Manager
mnations@doerun.com

October 10, 2014

Mr. Jason Gunter
Remedial Project Manager
U.S. Environmental Protection Agency
Region 7 - Superfund Branch
11201 Renner Blvd.
Lenexa, KS 66219

Re: The Doe Run Company - Leadwood Mine Tailings Site Monthly Progress Report

Dear Mr. Gunter:

As required by Article VI, Section 50 of the Unilateral Administrative Order (Docket No. CERCLA-07-2006-0272) for the referenced project and on behalf of The Doe Run Company, the progress report for the period September 1, 2014 through September 30, 2014 is enclosed. If you have any questions or comments, please call me at 573-518-0800.

Sincerely,

Mark Nations
Mining Properties Manager

Enclosures
c: Mark Yingling – TDRC (electronic only)
Kevin James – TDRC (electronic only)
Chris Neaville – TDRC (electronic only)
Michael Montgomery – TDRC (electronic only)
Robert Hinkson – MDNR
Brandon Wiles – MDNR
Ty Morris – Barr Engineering

Leadwood Mine Tailings Site
Leadwood, Missouri
Removal Action - Monthly Progress Report
Period: September 1, 2014 – September 30, 2014

1. **Actions Performed or Completed This Period:**
   a. Work continued on the development of the Post Removal Site Control Plan for the site.
   b. Work continued to implement the surface water management plan. This work included clearing and stripping, grading the area to drain, and applying the clay cover to the designated area. As of the end of the period, the work on these tasks continued.
2. **Data and Results Received This Period:**
   a. During this period, water samples were collected from downstream of Leadwood Dam and the East Seep and Erosion Area, as well as from upstream and downstream of the confluence of Eaton Creek with Big River. The analytical results for this event are included with this progress report.
   b. During this period, the ambient air monitoring samples for August were processed and the Ambient Air Monitoring Report for August 2014 was completed. A copy of the Ambient Air Monitoring Report for August is attached.
3. **Scheduled Activities not Completed This Period:**
   a. None.
4. **Planned Activities for Next Period:**
   a. Continue developing the Post Removal Site Control Plan for the site.
   b. Complete monthly water sampling activities as described in the Removal Action Work Plan.
   c. Complete air monitoring activities as described in the Removal Action Work Plan.
5. **Changes in Personnel:**
   a. None.
6. **Issues or Problems Arising This Period:**
   a. None.
7. **Resolution of Issues or Problems Arising This Period:**
   a. None.

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(913)599-5665

September 15, 2014

Amy Sanders
The Doe Run Company
P. O. Box 500
Viburnum, MO 65566

RE: Project: NPDES (LEADWOOD)
Pace Project No.: 60177320

Dear Amy Sanders:
Enclosed are the analytical results for sample(s) received by the laboratory on September 05, 2014. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Jamie Church
jamie.church@pacelabs.com
Project Manager

Enclosures

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CERTIFICATIONS

Project: NPDES (LEADWOOD)
Pace Project No.: 60177320

Kansas Certification IDs
9608 Loiret Boulevard, Lenexa, KS 66219
WY STR Certification #: 2456.01
Arkansas Certification #: 13-012-0
Illinois Certification #: 003097
Iowa Certification #: 118
Kansas/NELAP Certification #: E-10116
Louisiana Certification #: 03055
Nevada Certification #: KS000212008A
Oklahoma Certification #: 9205/9935
Texas Certification #: T104704407
Utah Certification #: KS00021

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: NPDES (LEADWOOD)
Pace Project No.: 60177320

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60177320001	**18452 / LEADWOOD DOWNSTREAM**	Water	09/04/14 09:41	09/05/14 08:50
60177320002	**18453 / LEADWOOD UPSTREAM**	Water	09/04/14 09:22	09/05/14 08:50
60177320003	**18454 / LEADWOOD 001**	Water	09/04/14 12:32	09/05/14 08:50
60177320004	**18455 / LEADWOOD 002**	Water	09/04/14 12:15	09/05/14 08:50

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SAMPLE ANALYTE COUNT

Project: NPDES (LEADWOOD)
Pace Project No.: 60177320

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60177320001	**18452 / LEADWOOD DOWNSTREAM**	EPA 200.7	TDS	6	PASI-K
		EPA 200.7	TDS	3	PASI-K
		SM 2540D	MER	1	PASI-K
		EPA 300.0	OL	1	PASI-K
60177320002	**18453 / LEADWOOD UPSTREAM**	EPA 200.7	TDS	6	PASI-K
		EPA 200.7	TDS	3	PASI-K
		SM 2540D	MER	1	PASI-K
		EPA 300.0	OL	1	PASI-K
60177320003	**18454 / LEADWOOD 001**	EPA 200.7	TDS	3	PASI-K
		SM 2540D	MER	1	PASI-K
		SM 2540F	MER	1	PASI-K
		EPA 300.0	OL	1	PASI-K
60177320004	**18455 / LEADWOOD 002**	EPA 200.7	TDS	3	PASI-K
		SM 2540D	MER	1	PASI-K
		SM 2540F	MER	1	PASI-K
		EPA 300.0	OL	1	PASI-K

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ANALYTICAL RESULTS

Project: NPDES (LEADWOOD)
Pace Project No.: 60177320

Sample: 18452 / LEADWOOD DOWNSTREAM **Lab ID: 60177320001** Collected: 09/04/14 09:41 Received: 09/05/14 08:50 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Cadmium	ND	ug/L	5.0	0.56	1	09/08/14 10:45	09/11/14 16:06	7440-43-9	
Calcium	**55900**	ug/L	100	7.8	1	09/08/14 10:45	09/11/14 16:06	7440-70-2	
Lead	**7.9**	ug/L	5.0	2.2	1	09/08/14 10:45	09/11/14 16:06	7439-92-1	
Magnesium	**34800**	ug/L	50.0	17.0	1	09/08/14 10:45	09/11/14 16:06	7439-95-4	
Total Hardness by 2340B	**283000**	ug/L	500		1	09/08/14 10:45	09/11/14 16:06		
Zinc	**13.0J**	ug/L	50.0	12.5	1	09/08/14 10:45	09/11/14 16:06	7440-66-6	
200.7 Metals, Dissolved (LF)	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Cadmium, Dissolved	ND	ug/L	5.0	0.56	1	09/08/14 17:40	09/12/14 13:33	7440-43-9	
Lead, Dissolved	ND	ug/L	5.0	2.2	1	09/08/14 17:40	09/12/14 13:33	7439-92-1	
Zinc, Dissolved	**19.1J**	ug/L	50.0	12.5	1	09/08/14 17:40	09/12/14 13:33	7440-66-6	
2540D Total Suspended Solids	Analytical Method: SM 2540D								
Total Suspended Solids	ND	mg/L	5.0	5.0	1		09/10/14 10:17		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Sulfate	**61.1**	mg/L	10.0	0.54	10		09/10/14 20:17	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: NPDES (LEADWOOD)
Pace Project No.: 60177320

Sample: 18453 / LEADWOOD UPSTREAM **Lab ID: 60177320002** Collected: 09/04/14 09:22 Received: 09/05/14 08:50 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Cadmium	ND	ug/L	5.0	0.56	1	09/08/14 10:45	09/11/14 16:09	7440-43-9	
Calcium	**47100**	ug/L	100	7.8	1	09/08/14 10:45	09/11/14 16:09	7440-70-2	
Lead	**2.3J**	ug/L	5.0	2.2	1	09/08/14 10:45	09/11/14 16:09	7439-92-1	
Magnesium	**31800**	ug/L	50.0	17.0	1	09/08/14 10:45	09/11/14 16:09	7439-95-4	
Total Hardness by 2340B	**248000**	ug/L	500		1	09/08/14 10:45	09/11/14 16:09		
Zinc	ND	ug/L	50.0	12.5	1	09/08/14 10:45	09/11/14 16:09	7440-66-6	
200.7 Metals, Dissolved (LF)	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Cadmium, Dissolved	ND	ug/L	5.0	0.56	1	09/08/14 17:40	09/12/14 13:35	7440-43-9	
Lead, Dissolved	ND	ug/L	5.0	2.2	1	09/08/14 17:40	09/12/14 13:35	7439-92-1	
Zinc, Dissolved	ND	ug/L	50.0	12.5	1	09/08/14 17:40	09/12/14 13:35	7440-66-6	
2540D Total Suspended Solids	Analytical Method: SM 2540D								
Total Suspended Solids	**9.0**	mg/L	5.0	5.0	1		09/10/14 10:18		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Sulfate	**31.0**	mg/L	2.0	0.11	2		09/10/14 20:32	14808-79-8	

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ANALYTICAL RESULTS

Project: NPDES (LEADWOOD)
Pace Project No.: 60177320

Sample: 18454 / LEADWOOD 001 **Lab ID: 60177320003** Collected: 09/04/14 12:32 Received: 09/05/14 08:50 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Cadmium	**1.8J**	ug/L	5.0	0.56	1	09/08/14 10:45	09/11/14 16:11	7440-43-9	
Lead	**3.2J**	ug/L	5.0	2.2	1	09/08/14 10:45	09/11/14 16:11	7439-92-1	
Zinc	**2030**	ug/L	50.0	12.5	1	09/08/14 10:45	09/11/14 16:11	7440-66-6	
2540D Total Suspended Solids	Analytical Method: SM 2540D								
Total Suspended Solids	ND	mg/L	5.0	5.0	1		09/10/14 10:18		
2540F Total Settleable Solids	Analytical Method: SM 2540F								
Total Settleable Solids	ND	mL/L/hr	0.20	0.20	1		09/05/14 15:26		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Sulfate	**467**	mg/L	50.0	2.7	50		09/10/14 20:46	14808-79-8	

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ANALYTICAL RESULTS

Project: NPDES (LEADWOOD)
Pace Project No.: 60177320

Sample: 18455 / LEADWOOD 002 **Lab ID: 60177320004** Collected: 09/04/14 12:15 Received: 09/05/14 08:50 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Cadmium	**5.5**	ug/L	5.0	0.56	1	09/08/14 10:45	09/11/14 16:13	7440-43-9	
Lead	**23.3**	ug/L	5.0	2.2	1	09/08/14 10:45	09/11/14 16:13	7439-92-1	
Zinc	**4070**	ug/L	50.0	12.5	1	09/08/14 10:45	09/11/14 16:13	7440-66-6	
2540D Total Suspended Solids	Analytical Method: SM 2540D								
Total Suspended Solids	ND	mg/L	5.0	5.0	1		09/10/14 10:18		
2540F Total Settleable Solids	Analytical Method: SM 2540F								
Total Settleable Solids	ND	mL/L/hr	0.20	0.20	1		09/05/14 15:26		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Sulfate	**413**	mg/L	50.0	2.7	50		09/10/14 21:00	14808-79-8	

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QUALITY CONTROL DATA

Project: NPDES (LEADWOOD)
Pace Project No.: 60177320

QC Batch: MPRP/28827 Analysis Method: EPA 200.7
QC Batch Method: EPA 200.7 Analysis Description: 200.7 Metals, Total
Associated Lab Samples: 60177320001, 60177320002, 60177320003, 60177320004

METHOD BLANK: 1439057 Matrix: Water
Associated Lab Samples: 60177320001, 60177320002, 60177320003, 60177320004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Cadmium	ug/L	ND	5.0	09/11/14 15:40	
Calcium	ug/L	32.4J	100	09/11/14 15:40	
Lead	ug/L	ND	5.0	09/11/14 15:40	
Magnesium	ug/L	ND	50.0	09/11/14 15:40	
Total Hardness by 2340B	ug/L	ND	500	09/11/14 15:40	
Zinc	ug/L	ND	50.0	09/11/14 15:40	

LABORATORY CONTROL SAMPLE: 1439058

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Cadmium	ug/L	1000	1010	101	85-115	
Calcium	ug/L	10000	9980	100	85-115	
Lead	ug/L	1000	990	99	85-115	
Magnesium	ug/L	10000	9700	97	85-115	
Total Hardness by 2340B	ug/L		64900			
Zinc	ug/L	1000	1000	100	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1439059 1439060

Parameter	Units	60177316001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Cadmium	ug/L	ND	1000	1000	1040	1040	103	104	70-130	1	10	
Calcium	ug/L	105000	10000	10000	116000	115000	113	102	70-130	1	9	
Lead	ug/L	6.0	1000	1000	995	1010	99	100	70-130	1	10	
Magnesium	ug/L	54900	10000	10000	65500	65000	106	101	70-130	1	9	
Total Hardness by 2340B	ug/L	488000			560000	555000				1		
Zinc	ug/L	120	1000	1000	1100	1110	98	99	70-130	1	11	

MATRIX SPIKE SAMPLE: 1439061

Parameter	Units	60177236001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Cadmium	ug/L	ND	1000	1020	102	70-130	
Calcium	ug/L	69000	10000	78200	92	70-130	
Lead	ug/L	ND	1000	982	98	70-130	
Magnesium	ug/L	14900	10000	24300	93	70-130	
Total Hardness by 2340B	ug/L	234000		295000			
Zinc	ug/L	100	1000	1080	98	70-130	

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QUALITY CONTROL DATA

Project: NPDES (LEADWOOD)
Pace Project No.: 60177320

QC Batch: MPRP/28843 Analysis Method: EPA 200.7
QC Batch Method: EPA 200.7 Analysis Description: 200.7 Metals, Dissolved
Associated Lab Samples: 60177320001, 60177320002

METHOD BLANK: 1439427 Matrix: Water
Associated Lab Samples: 60177320001, 60177320002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Cadmium, Dissolved	ug/L	ND	5.0	09/12/14 13:14	
Lead, Dissolved	ug/L	ND	5.0	09/12/14 13:14	
Zinc, Dissolved	ug/L	ND	50.0	09/12/14 13:14	

LABORATORY CONTROL SAMPLE: 1439428

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Cadmium, Dissolved	ug/L	1000	994	99	85-115	
Lead, Dissolved	ug/L	1000	1010	101	85-115	
Zinc, Dissolved	ug/L	1000	1000	100	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1439429 1439430

Parameter	Units	60177295001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Cadmium, Dissolved	ug/L	ND	5000	5000	5200	5160	104	103	70-130	1	10	
Lead, Dissolved	ug/L	ND	5000	5000	4820	4810	96	96	70-130	0	10	
Zinc, Dissolved	ug/L	3110	5000	5000	7950	7800	97	94	70-130	2	11	

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QUALITY CONTROL DATA

Project: NPDES (LEADWOOD)
Pace Project No.: 60177320

QC Batch: WET/50158 Analysis Method: SM 2540D
QC Batch Method: SM 2540D Analysis Description: 2540D Total Suspended Solids
Associated Lab Samples: 60177320001, 60177320002, 60177320003, 60177320004

METHOD BLANK: 1440283 Matrix: Water
Associated Lab Samples: 60177320001, 60177320002, 60177320003, 60177320004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Suspended Solids	mg/L	ND	5.0	09/10/14 10:15	

SAMPLE DUPLICATE: 1440284

Parameter	Units	60177302001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Suspended Solids	mg/L	11.8	7.6	42	10	D6

SAMPLE DUPLICATE: 1440285

Parameter	Units	60177320003 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Suspended Solids	mg/L	ND	ND		10	

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QUALITY CONTROL DATA

Project: NPDES (LEADWOOD)
Pace Project No.: 60177320

QC Batch: WETA/30926 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60177320001, 60177320002, 60177320003, 60177320004

METHOD BLANK: 1439653 Matrix: Water
Associated Lab Samples: 60177320001, 60177320002, 60177320003, 60177320004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Sulfate	mg/L	ND	1.0	09/10/14 11:32	

LABORATORY CONTROL SAMPLE: 1439654

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Sulfate	mg/L	5	4.9	98	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1439655 1439656

Parameter	Units	60177475001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Sulfate	mg/L	195	100	100	299	305	104	110	80-120	2	15	

MATRIX SPIKE SAMPLE: 1439657

Parameter	Units	60177475002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Sulfate	mg/L	189	50	247	116	80-120	

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REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: NPDES (LEADWOOD)
Pace Project No.: 60177320

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-K Pace Analytical Services - Kansas City

ANALYTE QUALIFIERS

D6 The relative percent difference (RPD) between the sample and sample duplicate exceeded laboratory control limits.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: NPDES (LEADWOOD)
Pace Project No.: 60177320

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60177320001	18452 / LEADWOOD DOWNSTREAM	EPA 200.7	MPRP/28827	EPA 200.7	ICP/21727
60177320002	18453 / LEADWOOD UPSTREAM	EPA 200.7	MPRP/28827	EPA 200.7	ICP/21727
60177320003	18454 / LEADWOOD 001	EPA 200.7	MPRP/28827	EPA 200.7	ICP/21727
60177320004	18455 / LEADWOOD 002	EPA 200.7	MPRP/28827	EPA 200.7	ICP/21727
60177320001	18452 / LEADWOOD DOWNSTREAM	EPA 200.7	MPRP/28843	EPA 200.7	ICP/21739
60177320002	18453 / LEADWOOD UPSTREAM	EPA 200.7	MPRP/28843	EPA 200.7	ICP/21739
60177320001	18452 / LEADWOOD DOWNSTREAM	SM 2540D	WET/50158		
60177320002	18453 / LEADWOOD UPSTREAM	SM 2540D	WET/50158		
60177320003	18454 / LEADWOOD 001	SM 2540D	WET/50158		
60177320004	18455 / LEADWOOD 002	SM 2540D	WET/50158		
60177320003	18454 / LEADWOOD 001	SM 2540F	WET/50086		
60177320004	18455 / LEADWOOD 002	SM 2540F	WET/50086		
60177320001	18452 / LEADWOOD DOWNSTREAM	EPA 300.0	WETA/30926		
60177320002	18453 / LEADWOOD UPSTREAM	EPA 300.0	WETA/30926		
60177320003	18454 / LEADWOOD 001	EPA 300.0	WETA/30926		
60177320004	18455 / LEADWOOD 002	EPA 300.0	WETA/30926		

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Pace Analytical
www.pacelabs.com

Sample Condition Upon Receipt

WO#: 60177320

60177320

Client Name: The Doc Run Company

Optional
Proj Due Date:
Proj Name:

Courier: Fed Ex ☑ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace ☐ Other ☐

Tracking #: 7710 4521 6712 Pace Shipping Label Used? Yes ☐ No ☐

Custody Seal on Cooler/Box Present: Yes ☑ No ☐ Seals intact: Yes ☑ No ☐

Packing Material: Bubble Wrap ☐ Bubble Bags ☐ Foam ☐ None ☐ Other ☑ EPUC

Thermometer Used: (T-239) / T-194 **Type of Ice:** (Wet) Blue None ☐ Samples received on ice, cooling process has begun.
(circle one)

Cooler Temperature: 3.0

Temperature should be above freezing to 6°C

Date and Initials of person examining contents: Att 9/5

Chain of Custody present:	☑Yes ☐No ☐N/A	1.
Chain of Custody filled out:	☑Yes ☐No ☐N/A	2.
Chain of Custody relinquished:	☑Yes ☐No ☐N/A	3.
Sampler name & signature on COC:	☑Yes ☐No ☐N/A	4.
Samples arrived within holding time:	☑Yes ☐No ☐N/A	5.
Short Hold Time analyses (<72hr):	☑Yes ☐No ☐N/A	6. Soil Solid
Rush Turn Around Time requested:	☐Yes ☑No ☐N/A	7.
Sufficient volume:	☑Yes ☐No ☐N/A	8.
Correct containers used:	☑Yes ☐No ☐N/A	
Pace containers used:	☑Yes ☐No ☐N/A	9.
Containers intact:	☑Yes ☐No ☐N/A	10.
Unpreserved 5035A soils frozen w/in 48hrs?	☐Yes ☐No ☑N/A	11.
Filtered volume received for dissolved tests?	☐Yes ☐No ☑N/A	12.
Sample labels match COC:	☑Yes ☐No ☐N/A	
Includes date/time/ID/analyses Matrix: (W)T		13.
All containers needing preservation have been checked.	☑Yes ☐No ☐N/A	
All containers needing preservation are found to be in compliance with EPA recommendation.	☑Yes ☐No ☐N/A	14.
Exceptions: VOA, coliform, TOC, O&G, WI-DRO (water), Phenolics	☐Yes ☑No	Initial when completed / Lot # of added preservative
Trip Blank present:	☐Yes ☐No ☑N/A	
Pace Trip Blank lot # (if purchased):		15.
Headspace in VOA vials (>6mm):	☐Yes ☐No ☑N/A	16.
Project sampled in USDA Regulated Area:	☐Yes ☐No ☑N/A	17. List State:

Client Notification/ Resolution: Copy COC to Client? Y / N Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Jana Church 9/5/14

Project Manager Review: _____ Date: _____

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately

DOE RUN COMPANY

Section A — Required Client Information:

Company:	The Doe Run Company
Address:	PO Box 500
Email To:	asanders@doerun.com
Phone: (573) 689-4535	Fax: (573) 244-8179
Requested Due Date/TAT:	5 To 7 Days

Section B — Required Project Information:

Report To:	Amy Sanders
Copy To:	
Purchase Order No.:	
Project Name:	NPDES (Leadwood)
Project Number:	

Section C — Invoice Information:

Attention:	Amy Sanders
Company Name:	The Doe Run Company
Address:	PO Box 500, Viburnum, MO 6556
Pace Quote Reference:	
Pace Project Manager:	
Pace Profile #:	

REGULATORY AGENCY: ☐ NPDES ☐ GROUND WATER ☐ UST ☐ RCRA

Site Location STATE: MO

Page: 1 of 1

COC#: 712

6017320

Requested Analysis Filtered (Y/N)

Section C — Required Sample Information

Valid Matrix Codes

MATRIX	CODE
WATER	WT
WASTE WATER	WW
SOLID/SOLID	SL

SAMPLE ID
(A-Z, 0-9 / ,-)
Sample IDs MUST BE UNIQUE

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED DATE/TIME: COMPOSITE START DATE (mm/dd/yy)	COMPOSITE START TIME (Military)	COMPOSITE END / GRAB DATE (mm/dd/yy)	COMPOSITE END / GRAB TIME (Military)	SAMPLE TEMP AT COLLECTION	Total # OF CONTAINERS	Bottles / Preservatives: 250 mL Unpreserved	500 mL Unpreserved	1 L Unpreserved	250 mL Nitric	250 mL Amber Glass H_2SO_4	250 mL Plastic H_2SO_4	1000 mL Amber HCL	250 mL ZnAc/NaOH	500 mL Amber Glass H_2SO_4	N N N N N N N N N N N N N N N N	*See Additional Comments Below ↓ Analysis Test ↓	SEMO Lab Project No./ Lab I.D.
1	18452 1(BPZU) 1(BP3N)	WT	G			09/04/14	0941		3	2			1						CD-D, PB-D, ZN-D, HARD, SO4, CD-T, PB-T, TSS-T, ZN-T	001	Leadwood Downstream
2																					
3	18453 1(BPZU) 1(BP3N)	WT	G			09/04/14	0922		3	2			1						CD-D, PB-D, ZN-D, HARD, SO4, CD-T, PB-T, TSS-T, ZN-T	002	Leadwood Upstream
4																					
5	18454 1(BPIU) 1(BPZU) 1(BP3N)	WW	G			09/04/14	1232		3	1		1	1						SO4, SS, TSS, CD-T, PB-T, ZN-T	003	Leadwood 001
6																					
7	18455 1(BPIU) 1(BPZU) 1(BP3N)	WW	G			09/04/14	1215		3	1		1	1						SO4, SS, TSS, CD-T, PB-T, ZN-T	004	Leadwood 002
8																					
9																					
10																					
11																					
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ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME (Military)	ACCEPTED BY / AFFILIATION	DATE	TIME (Military)	SAMPLE CONDITIONS: Temp in °C	pH in SU	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)
*200.7 Total Recoverable and Dissolved Metals	Larry Hopkins DRC	9/4/14	1900	Tom Ramich/PASI	9/5	850	3.0		Y	Y

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Larry Hopkins

SIGNATURE of SAMPLER: [signature]

DATE Signed (MM/DD/YY): 9/4/14

Monthly Ambient Air Monitoring Report

The Doe Run Company
Old Lead Belt Sites:
Federal, Rivermines, National, and Leadwood

August-2014

THE DOE RUN COMPANY | 150 YEARS

SUITE 300
1801 PARK 270 DRIVE
ST. LOUIS, MO 63146

Federal Site

Sample Results for **August-2014**

	St. Joe (Ballfields)		Big River#4		Water Treatment Plant	
Sample Date	**TSP** ug/m3	**Lead** ug/m3	**TSP** ug/m3	**Lead** ug/m3	**TSP** ug/m3	**Lead** ug/m3
8/1/14	31	0.021	45	0.061	32	0.021
8/4/14	39	0.014	41	0.027	40	0.021
8/5/14	38	0.014	42	0.021	38	0.028
8/6/14	26	0.007	30	0.007	30	0.007
8/7/14	16	0.007	14	0.007	15	0.007
8/8/14	17	0.007	18	0.007	17	0.021
8/11/14	28	0.021	28	0.013	31	0.049
8/12/14	26	0.021	21	0.014	23	0.048
8/13/14	30	0.014	31	0.014	21	0.014
8/14/14	26	0.007	40	0.027	25	0.007
8/15/14	32	0.007	30	0.007	36	0.014
8/18/14	25	0.014	32	0.021	30	0.014
8/19/14	34	0.014	36	0.035	30	0.028
8/20/14	57	0.007	56	0.021	46	0.028
8/21/14	40	0.000	46	0.007	47	0.063
8/22/14	65	0.014	63	0.014	66	0.014
8/25/14	48	0.028	50	0.028	46	0.035
8/26/14	47	0.049	47	0.041	46	0.063
8/27/14	37	0.007	32	0.014	32	0.014
8/28/14	35	0.007	33	0.014	28	0.007
8/29/14	27	0.007	23	0.007	22	0.000

Monthly Avg. TSP	34	36	33
Monthly Avg. Pb	0.014	0.019	0.024
Jul-14	0.015	0.023	0.028
Jun-14	0.014	0.013	0.013
Rolling 3-Month	**0.014**	**0.018**	**0.022**

Three month rolling average must be less than 0.15 ug/m3

NOTES:

	Big River QA	
Sample Date	**TSP** ug/m3	**Lead** ug/m3
8/5/14	47	0.021
8/7/14	15	0.007
8/12/14	21	0.014
8/14/14	42	0.028
8/19/14	40	0.028
8/21/14	47	0.007
8/26/14	49	0.042
8/28/14	32	0.007

Rivermines

Sample Results for **August-2014**

	Big River #4		Rivermines South #1		Rivermines North #2		Rivermines East #3	
Sample Date	**TSP** ug/m3	**Lead** ug/m3	**TSP** ug/m3	**Lead** ug/m3	**TSP** ug/m3	**Lead** ug/m3	**TSP** ug/m3	**Lead** ug/m3
8/1/14	45	0.061	invalid	invalid	30	0.014	32	0.021
8/4/14	41	0.027	50	0.075	35	0.021	40	0.021
8/5/14	42	0.021	48	0.062	35	0.035	38	0.028
8/6/14	30	0.007	31	0.055	25	0.014	30	0.007
8/7/14	14	0.007	14	0.007	15	0.007	15	0.007
8/8/14	18	0.007	invalid	invalid	11	0.000	17	0.021
8/11/14	28	0.013	56	0.144	21	0.000	31	0.049
8/12/14	21	0.014	69	0.279	15	0.000	23	0.048
8/13/14	31	0.014	42	0.123	40	0.097	21	0.014
8/14/14	40	0.027	36	0.062	25	0.007	25	0.007
8/15/14	30	0.007	invalid	invalid	30	0.014	36	0.014
8/18/14	32	0.021	68	0.048	25	0.049	30	0.014
8/19/14	36	0.035	59	0.104	32	0.056	30	0.028
8/20/14	56	0.021	67	0.083	74	0.192	46	0.028
8/21/14	46	0.007	43	0.007	49	0.078	47	0.063
8/22/14	63	0.014	invalid	invalid	57	0.007	66	0.014
8/25/14	50	0.028	57	0.104	54	0.092	46	0.035
8/26/14	47	0.041	51	0.124	57	0.169	46	0.063
8/27/14	32	0.014	44	0.110	36	0.007	32	0.014
8/28/14	33	0.014	27	0.007	25	0.007	28	0.007
8/29/14	23	0.007	invalid	invalid	20	0.042	22	0.000

Monthly Avg. TSP	36	48	34	33
Monthly Avg. Pb	0.019	0.087	0.043	0.024
Jul-14	0.023	0.112	0.029	0.028
Jun-14	0.013	0.029	0.047	0.013
Rolling 3-Month	**0.018**	**0.076**	**0.040**	**0.022**

Three month rolling average must be less than 0.15 ug/m3

NOTES: Rivermines South - 8/1, 8/8, 8/22, 8/29: >25hr run time
Rivermines South - 8/15: <23hr run time - motor bearing failure

	Big River QA	
Sample Date	**TSP** ug/m3	**Lead** ug/m3
8/5/14	47	0.021
8/7/14	15	0.007
8/12/14	21	0.014
8/14/14	42	0.028
8/19/14	40	0.028
8/21/14	47	0.007
8/26/14	49	0.042
8/28/14	32	0.007

National Site

Sample Results for **August-2014**

	Big River #4		Ozark #1		Soccer Park #2		Water Treatment Plant	
Sample Date	**TSP** ug/m3	**Lead** ug/m3	**TSP** ug/m3	**Lead** ug/m3	**TSP** ug/m3	**Lead** ug/m3	**TSP** ug/m3	**Lead** ug/m3
8/1/14	45	0.061	30	0.014	38	0.027	32	0.021
8/4/14	41	0.027	42	0.056	40	0.021	40	0.021
8/5/14	42	0.021	37	0.007	41	0.014	38	0.028
8/6/14	30	0.007	22	0.007	31	0.021	30	0.007
8/7/14	14	0.007	17	0.007	17	0.014	15	0.007
8/8/14	18	0.007	29	0.007	22	0.007	17	0.021
8/11/14	28	0.013	23	0.000	26	0.007	31	0.049
8/12/14	21	0.014	16	0.007	21	0.007	23	0.048
8/13/14	31	0.014	29	0.014	31	0.014	21	0.014
8/14/14	40	0.027	31	0.007	28	0.007	25	0.007
8/15/14	30	0.007	30	0.000	29	0.007	36	0.014
8/18/14	32	0.021	26	0.014	28	0.028	30	0.014
8/19/14	36	0.035	30	0.014	36	0.014	30	0.028
8/20/14	56	0.021	52	0.028	53	0.021	46	0.028
8/21/14	46	0.007	49	0.007	49	0.014	47	0.063
8/22/14	63	0.014	57	0.007	63	0.007	66	0.014
8/25/14	50	0.028	40	0.007	44	0.021	46	0.035
8/26/14	47	0.041	41	0.021	39	0.021	46	0.063
8/27/14	32	0.014	32	0.007	29	0.014	32	0.014
8/28/14	33	0.014	27	0.007	30	0.014	28	0.007
8/29/14	23	0.007	28	0.007	26	0.007	22	0.000

Monthly Avg. TSP	36	33	34	33
Monthly Avg. Pb	0.019	0.012	0.015	0.024
Jul-14	0.023	0.009	0.014	0.028
Jun-14	0.013	0.008	0.010	0.013
Rolling 3-Month	**0.018**	**0.010**	**0.013**	**0.022**

Three month rolling average must be less than 0.15 ug/m3

NOTES:

	Big River QA	
Sample Date	**TSP** ug/m3	**Lead** ug/m3
8/5/14	47	0.021
8/7/14	15	0.007
8/12/14	21	0.014
8/14/14	42	0.028
8/19/14	40	0.028
8/21/14	47	0.007
8/26/14	49	0.042
8/28/14	32	0.007

Leadwood

Sample Results for **August-2014**

	Big River #4		Leadwood South #1		Leadwood East #2		Leadwood North #3	
Sample Date	**TSP** ug/m3	**Lead** ug/m3	**TSP** ug/m3	**Lead** ug/m3	**TSP** ug/m3	**Lead** ug/m3	**TSP** ug/m3	**Lead** ug/m3
8/1/14	45	0.061	33	0.027	33	0.047	23	0.007
8/4/14	41	0.027	64	0.034	65	0.090	37	0.007
8/5/14	42	0.021	32	0.014	36	0.014	26	0.007
8/6/14	30	0.007	32	0.027	42	0.021	26	0.007
8/7/14	14	0.007	15	0.000	13	0.007	16	0.000
8/8/14	18	0.007	14	0.014	13	0.062	13	0.000
8/11/14	28	0.013	27	0.007	29	0.049	25	0.000
8/12/14	21	0.014	27	0.014	16	0.000	14	0.000
8/13/14	31	0.014	48	0.027	24	0.007	22	0.007
8/14/14	40	0.027	55	0.027	26	0.007	21	0.000
8/15/14	30	0.007	94	0.041	31	0.007	26	0.000
8/18/14	32	0.021	28	0.007	28	0.007	28	0.000
8/19/14	36	0.035	34	0.014	31	0.007	24	0.007
8/20/14	56	0.021	50	0.007	68	0.021	44	0.000
8/21/14	46	0.007	101	0.028	60	0.014	44	0.007
8/22/14	63	0.014	83	0.014	67	0.014	60	0.007
8/25/14	50	0.028	71	0.042	69	0.063	43	0.007
8/26/14	47	0.041	60	0.034	40	0.014	33	0.007
8/27/14	32	0.014	41	0.020	41	0.041	27	0.007
8/28/14	33	0.014	40	0.014	36	0.014	25	0.007
8/29/14	23	0.007	34	0.007	39	0.034	22	0.000

Monthly Avg. TSP	36	47	38	29
Monthly Avg. Pb	0.019	0.020	0.026	0.004
Jul-14	0.023	0.025	0.028	0.004
Jun-14	0.013	0.010	0.016	0.004
Rolling 3-Month	**0.018**	**0.018**	**0.023**	**0.004**

Three month rolling average must be less than 0.15 ug/m3

NOTES:

	Big River QA	
Sample Date	**TSP** ug/m3	**Lead** ug/m3
8/5/14	47	0.021
8/7/14	15	0.007
8/12/14	21	0.014
8/14/14	42	0.028
8/19/14	40	0.028
8/21/14	47	0.007
8/26/14	49	0.042
8/28/14	32	0.007

Federal Site

Sample Results for **August-2014**

Sample Date	St. Joe (Ballfields) **PM10** (ug/m3)	Big River#4 **PM10** (ug/m3)	Water Treatment **PM10** (ug/m3)
8/3/14	30	28	31
8/6/14	22	invalid	22
8/9/14	22	21	15
8/12/14	18	15	18
8/15/14	20	22	25
8/18/14	20	22	18
8/21/14	42	40	41
8/24/14	27	38	43
8/27/14	21	27	33
8/30/14	13	14	12

Compliance with NAAQS is less than 150 ug/m3

Monthly Avg. PM10	24	25	26

NOTES: Big River #4 - 8/6: >25hr run time

Sample Date	Big River QA **PM10** (ug/m3)
8/3/14	25
8/9/14	27
8/15/14	23
8/21/14	41
8/27/14	24

Rivermines

Sample Results for **August-2014**

Sample Date	Big River #4 **PM10** (ug/m3)	Rivermines South #1 **PM10** (ug/m3)	Rivermines North #2 **PM10** (ug/m3)	Rivermines East #3 **PM10** (ug/m3)
8/3/14	28	39	27	31
8/6/14	invalid	23	20	22
8/9/14	21	21	20	15
8/12/14	15	37	11	18
8/15/14	22	15	18	25
8/18/14	22	27	18	18
8/21/14	40	38	57	41
8/24/14	38	40	37	43
8/27/14	27	37	37	33
8/30/14	14	12	12	12

Compliance with NAAQS is less than 150 ug/m3

Monthly Avg. PM10	25	29	26	26

NOTES: Big River #4 - 8/6: >25hr run time

Sample Date	Big River QA **PM10** (ug/m3)
8/3/14	25
8/9/14	27
8/15/14	23
8/21/14	41
8/27/14	24

National Site

Sample Results for **August-2014**

Sample Date	Big River #4 **PM10** (ug/m3)	Ozark #1 **PM10** (ug/m3)	Soccer Park #2 **PM10** (ug/m3)	Water Treatment **PM10** (ug/m3)
8/3/14	28	30	31	31
8/6/14	invalid	23	26	22
8/9/14	21	20	19	15
8/12/14	15	14	15	18
8/15/14	22	20	23	25
8/18/14	22	19	17	18
8/21/14	40	39	38	41
8/24/14	38	34	38	43
8/27/14	27	28	20	33
8/30/14	14	13	15	12

Compliance with NAAQS is less than 150 ug/m3

Monthly Avg. PM10	25	24	24	26

NOTES: Big River #4 - 8/6: >25hr run time

Sample Date	Big River QA **PM10** (ug/m3)
8/3/14	25
8/9/14	27
8/15/14	23
8/21/14	41
8/27/14	24

Leadwood

Sample Results for **August-2014**

Sample Date	Big River #4 **PM10** (ug/m3)	Leadwood South #1 **PM10** (ug/m3)	Leadwood East #2 **PM10** (ug/m3)	Leadwood North #3 **PM10** (ug/m3)
8/3/14	28	32	38	28
8/6/14	invalid	21	26	23
8/9/14	21	24	10	20
8/12/14	15	16	12	12
8/15/14	22	28	20	17
8/18/14	22	26	22	17
8/21/14	40	46	44	38
8/24/14	38	33	42	35
8/27/14	27	25	28	23
8/30/14	14	10	6	14

Compliance with NAAQS is less than 150 ug/m3

Monthly Avg. PM10	25	26	25	23

NOTES: Big River #4 - 8/6: >25hr run time

Sample Date	Big River QA **PM10** (ug/m3)
8/3/14	25
8/9/14	27
8/15/14	23
8/21/14	41
8/27/14	24

Meterological Data - Old Lead Belt
Aug-2014

24hr average

Date	Wind Speed (MPH)	Wind Direction	Sigma-Theta	Temperature (C)	Air Pressure (mmHg)	Rain (Inches)	Power Supply (Volts)
01-Aug-14	2.197	26.42	42.9	22.83	746	0	13.2
02-Aug-14	2.139	35.26	34.9	22.6	748	0	13.19
03-Aug-14	1.868	148.3	36.29	22.46	748	0	13.2
04-Aug-14	1.794	190.3	38.23	24.25	746	0	13.19
05-Aug-14	2.015	250.5	36.52	25.21	745	0.14	13.18
06-Aug-14	2.406	143.4	31.01	24.83	745	0	13.18
07-Aug-14	4.029	169.8	28.69	22.92	742	0.85	13.18
08-Aug-14	2.038	279.2	37.41	25.36	742	0	13.19
09-Aug-14	2.144	348.4	30.7	24.83	744	0	13.19
10-Aug-14	1.749	338.9	34.18	25.45	744	0	13.19
11-Aug-14	2.765	310.3	36.81	24.75	743	0.63	13.17
12-Aug-14	3.984	295.7	25.95	21.15	744	0	13.21
13-Aug-14	2.35	276.1	31.56	20.31	747	0	13.22
14-Aug-14	1.6	159	40.12	21.38	745	0	13.21
15-Aug-14	2.026	204.7	29.87	24.26	745	0	13.18
16-Aug-14	4.114	189.9	28.13	23.91	742	0.47	13.2
17-Aug-14	2.533	290.7	36.75	23.21	742	0	13.19
18-Aug-14	1.355	301.3	37.26	23.87	741	0	13.2
19-Aug-14	1.542	231.6	32.82	25.46	740	0	13.2
20-Aug-14	1.812	187.4	39.67	26.61	743	0.01	13.17
21-Aug-14	4.081	218.7	28.88	30.37	744	0	13.13
22-Aug-14	2.459	207	33.75	29.63	744	0	13.12
23-Aug-14	1.982	223.8	35.69	30.48	743	0	13.12
24-Aug-14	1.753	159.8	35.74	29.45	744	0	13.12
25-Aug-14	1.789	157	37.93	29.15	744	0	13.12
26-Aug-14	1.747	160.6	42.39	28.31	746	0	13.13
27-Aug-14	1.847	229.2	47.55	25.44	746	0.57	13.15
28-Aug-14	2.199	145.4	36.35	25.37	745	0.17	13.18
29-Aug-14	4.125	183.9	28.62	25.9	743	0	13.18
30-Aug-14	4.222	201.3	26.58	24.85	744	0.02	13.2
31-Aug-14	3.987	188.8	26.79	25.15	743	0	13.19