



ARKANSAS
Department of Environmental Quality

CERTIFIED MAIL: 9489 0090 0027 6022 1838 40

January 18, 2018

City of Springfield Environmental Services – Clean Water Operations
Attn: Ms. Heather Hoggard
Pretreatment Inspector
755 N. Franklin Ave.
Springfield, Missouri 65802-4121

Re: NABORS Landfill – 2nd Semiannual Leachate Sampling Results
1320 Landfill Road, Mountain Home, Baxter County, Arkansas
AFIN 03-00051; Wastewater Contribution Permit No. #593-002

Dear Ms. Hoggard:

The Arkansas Department of Environmental Quality Office of Land Resources (ADEQ) respectfully submits the NABORS Landfill - 2nd Semiannual Leachate Sampling Results for the reporting period of July to December 2017. ADEQ collected the leachate samples on December 27, 2017 and submitted the samples to the lab the same day. The reported concentrations were compared to the permitted limits and the testing criteria of 40 CFR 136. Attached is the leachate report and signed certifying document.

If you have any questions, please contact me at 501-682-0870 or lee@adeq.state.ar.us ..

Sincerely,

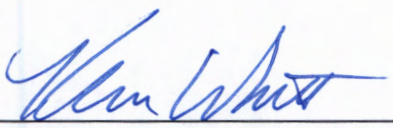
Weston Lee
Project Engineer
ADEQ - Office of Land Resources

NABORS Landfill Leachate Monitoring Report Certification Statement

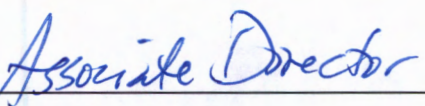
I certify under penalty of law that this document and all attachments were prepared under my supervision by qualified personnel properly trained to gather and evaluate the information submitted. Based on my personnel the management and those directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete.

All samples and measurements taken are to the best of my knowledge representative of the permitted wastewater discharge.

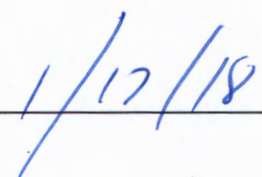
All sampling, measurements, analyses were conducted in accordance with guidelines as prescribed in 40 CFR 136 and the Wastewater Contribution Permit obtained from the City of Springfield, Missouri.



Signature



Title



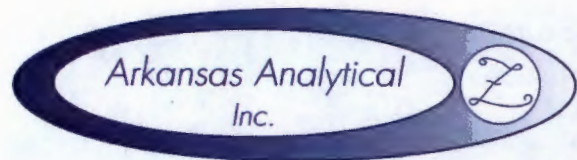
Date

NABORS LANDFILL
LEACHATE Analytical Results
December 27, 2017

Analyte	Daily Maximum	Results	Units
Arsenic, T	0.51	0.0139	mg/L
Cadmium, T	0.13	< 0.00026	mg/L
Chromium, T	2.91	0.0107	mg/L
Copper, T	2.44	0.00177	mg/L
Cyanide, T	0.33	< 0.010	mg/L
Lead, T	0.53	0.000802	mg/L
Mercury, T	0.02	< 0.0002	mg/L
Nickel, T	5.79	0.0865	mg/L
Zinc, T	6.54	0.0247	mg/L
Oil and Grease (A/V)	100	< 3.50	mg/L
Ammonia Nitrogen	Monitoring Only	211	mg/L
Phosphorus, T	Monitoring Only	0.315	mg/L
pH	12.5 (max) to 5 (min)	5.23	
Flashpoint	<140°F	Did not flash	

NABORS LANDFILL
Landfill Discharge Volumes

Month	Number of Loads	Volume (gallons)
April	25	150,000
May	25	150,000
June	35	210,000
July	25	150,000
August	20	120,000
September	24	144,000
Total	154	924,000



8100 National Dr. - Little Rock, AR 72209
501-455-3233 Fax 501-455-6118

05 January 2018

Lessie Redican
ADEQ
5301 Northshore Dr.
North Little Rock, AR 72118

RE: NABORS Leachate (City of Springfield, MO)
Project Number: December 2017 -- Project #10410
SDG Number: 1712372

Enclosed are the results of analyses for samples received by the laboratory on 27-Dec-17 15:15. If you have any questions concerning this report, please feel free to contact me.

Sample Receipt Information:

Custody Seals	✓
Containers Correct	✓
COC/Labels Agree	✓
Received On Ice	✓
Temperature on Receipt	4.0°C

Sincerely,

Norma James
President

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05 January 2018

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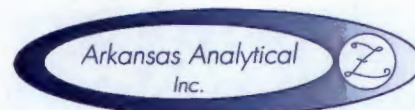
5301 Northshore Dr.

North Little Rock, AR 72118

Project: NABORS Leachate (City of Springfield, MO)

Project Number: December 2017 -- Project #10410

Date Received: 27-Dec-17 15:15



CASE NARRATIVE

Sample Delivery Group -- 1712372

One OR more of the qualifiers described below may appear in this report. Qualifiers in RED apply to this SDG (Sample Delivery Group).

ANALYTICAL QUALIFIERS:

Qualifier	Description
EDL	Result was non-detect at an elevated detection limit due to one or more of the following: Sample Matrix, Sample Dilution, or Limited Sample Volume.
EX	Result exceeds DAILY MAXIMUM and/or MONTHLY AVERAGE.
EX2	The result exceeds the TCLP limit.
J	At client request, J-Values are reported. J-Values are considered "estimated" results as they are below the limit of quantitation yet above the method detection limit (MDL).
N	Insufficient sample volume received as required by the method.
T40	The ambient temperature exceeded 23 +/- 2°C during the TCLP rotation process.

CALIBRATION QUALIFIERS:

Qualifier	Description
CR	Result above highest calibration standard, but within linear calibration range.
Est3	Result at the instrument was above the concentration of the highest standard in the calibration curve.
E5	Second Source Verification Failure
E7	Internal Standard Response Failure
E11	Initial Calibration Minimum Response Factor Failure
E21	CCV Low
E-01	CCV High
E35	Low Level CCV Failure

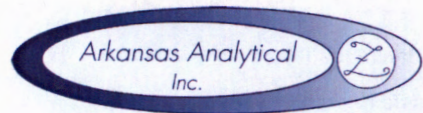
QUALITY CONTROL QUALIFIERS:

Qualifier	Description
E20	Sample used as "parent" for the associated analytical batch.
%D3/S-01	Surrogate failed to recover within acceptance criteria (%D3/S-01).
E1	Results associated with this surrogate were qualified as "estimated" (E1).
B	Present in the Associated Blank
B1	Present in Blank, but Not In the Sample.
%D2 / E5	Laboratory Control Spike (LCS) and/or Laboratory Control Spike Duplicate (LCSD) failed to recover with acceptance criteria (%D2). Associated results were qualified as "estimated" (E5).
%D1	Matrix Spike (MS) and/or Matrix Spike Duplicate (MSD) failed acceptance criteria.
MBA	Failed criteria due the high concentration of analyte in the parent sample.
MBI	Failed criteria due an interference in the parent sample.
%D3	Quality Control Surrogate failed acceptance criteria.
NREC	Quality Control Surrogate failed.

FLASHPOINT QUALIFIER:

Qualifier	Description
DNF	Did Not Flash at or below method required temperature of 100 degrees C or 212 degrees F

05 January 2018



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5301 Northshore Dr.

North Little Rock, AR 72118

Project: NABORS Leachate (City of Springfield, MO)

Project Number: December 2017 -- Project #10410

Date Received: 27-Dec-17 15:15

ANALYTICAL RESULTS

Lab Number: 1712372-01
Sample Name: Leachate Sample
Date/Time Collected: 12/27/17 11:41
Sample Matrix: Leachate

Anions	Units	Result	Qualifier(s)	Date/Time Analyzed	Batch	Method
Chloride	mg/L	658		12/28/17 16:49	B712381	EPA 300.0, 2.1-1993
Sulfate as SO4	mg/L	138		12/28/17 16:10	B712381	EPA 300.0, 2.1-1993
Total Metals	Units	Result	Qualifier(s)	Date/Time Analyzed	Batch	Method
Antimony	ug/L	< 2.08		1/3/18 14:03	B801002	EPA 200.8, Rev. 5.4(1994)
Arsenic	ug/L	13.7		1/3/18 14:03	B801002	EPA 200.8, Rev. 5.4(1994)
Barium	ug/L	1490		1/3/18 13:03	B801002	EPA 200.8, Rev. 5.4(1994)
Beryllium	ug/L	< 0.260		1/3/18 14:03	B801002	EPA 200.8, Rev. 5.4(1994)
Cadmium	ug/L	< 0.260		1/3/18 14:03	B801002	EPA 200.8, Rev. 5.4(1994)
Chromium	ug/L	10.7		1/3/18 14:03	B801002	EPA 200.8, Rev. 5.4(1994)
Cobalt	ug/L	19.1		1/3/18 14:03	B801002	EPA 200.8, Rev. 5.4(1994)
Copper	ug/L	1.77		1/3/18 14:03	B801002	EPA 200.8, Rev. 5.4(1994)
Iron	ug/L	8590	E20	1/3/18 13:03	B801002	EPA 200.8, Rev. 5.4(1994)
Lead	ug/L	0.802		1/3/18 14:03	B801002	EPA 200.8, Rev. 5.4(1994)
Manganese	ug/L	1560	E20	1/3/18 13:03	B801002	EPA 200.8, Rev. 5.4(1994)
Mercury	mg/L	< 0.000200		12/28/17 12:29	B712383	SW7470A/EPA245.1, 3.0-1004
Nickel	ug/L	85.6		1/3/18 14:03	B801002	EPA 200.8, Rev. 5.4(1994)
Phosphorus	mg/L	0.314		12/28/17 15:20	B712371	EPA 200.7, Rev. 4.4 (1994)
Selenium	ug/L	< 2.08	E35	1/3/18 14:03	B801002	EPA 200.8, Rev. 5.4(1994)
Silver	ug/L	< 0.260		1/3/18 14:03	B801002	EPA 200.8, Rev. 5.4(1994)
Thallium	ug/L	< 0.260		1/3/18 14:03	B801002	EPA 200.8, Rev. 5.4(1994)
Tin	ug/L	< 20.8		1/3/18 14:03	B801002	EPA 200.8, Rev. 5.4(1994)
Vanadium	ug/L	4.66		1/3/18 14:03	B801002	EPA 200.8, Rev. 5.4(1994)
Zinc	ug/L	24.7		1/3/18 14:03	B801002	EPA 200.8, Rev. 5.4(1994)
Volatiles	Units	Result	Qualifier(s)	Date/Time Analyzed	Batch	Method
1,1-Dichloroethane	ug/L	< 10.0		12/29/17 11:54	B712406	EPA 624 (mod.), 1995
1,1-Dichloroethene	ug/L	< 10.0		12/29/17 11:54	B712406	EPA 624 (mod.), 1995
1,1,1-Trichloroethane	ug/L	< 10.0		12/29/17 11:54	B712406	EPA 624 (mod.), 1995
1,1,2-Trichloroethane	ug/L	< 10.0		12/29/17 11:54	B712406	EPA 624 (mod.), 1995
1,1,2,2-Tetrachloroethane	ug/L	< 10.0		12/29/17 11:54	B712406	EPA 624 (mod.), 1995
1,2-Dichlorobenzene	ug/L	< 5.00		12/29/17 11:54	B712406	EPA 624 (mod.), 1995
1,2-Dichloropropane	ug/L	< 10.0		12/29/17 11:54	B712406	EPA 624 (mod.), 1995
1,2-Dichloroethane	ug/L	< 10.0		12/29/17 11:54	B712406	EPA 624 (mod.), 1995
1,3-Dichlorobenzene	ug/L	< 5.00		12/29/17 11:54	B712406	EPA 624 (mod.), 1995
1,4-Dichlorobenzene	ug/L	< 5.00		12/29/17 11:54	B712406	EPA 624 (mod.), 1995
2-Chloroethyl vinyl ether	ug/L	< 10.0		12/29/17 11:54	B712406	EPA 624 (mod.), 1995
Acrylonitrile	ug/L	< 50.0	EDL	12/29/17 11:54	B712406	EPA 624 (mod.), 1995
Benzene	ug/L	< 10.0		12/29/17 11:54	B712406	EPA 624 (mod.), 1995
Bromodichloromethane	ug/L	< 10.0		12/29/17 11:54	B712406	EPA 624 (mod.), 1995
Bromoform	ug/L	< 10.0		12/29/17 11:54	B712406	EPA 624 (mod.), 1995
Acrolein	ug/L	< 50.0	E5	12/29/17 11:54	B712406	EPA 624 (mod.), 1995
Bromomethane	ug/L	< 50.0		12/29/17 11:54	B712406	EPA 624 (mod.), 1995

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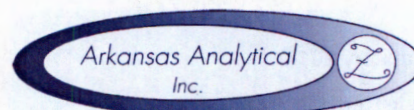
5301 Northshore Dr.

North Little Rock, AR 72118

Project: NABORS Leachate (City of Springfield, MO)

Project Number: December 2017 -- Project #10410

Date Received: 27-Dec-17 15:15



ANALYTICAL RESULTS

Lab Number: 1712372-01
Sample Name: Leachate Sample
Date/Time Collected: 12/27/17 11:41
Sample Matrix: Leachate

<u>Volatiles</u>	<u>Units</u>	<u>Result</u>	<u>Qualifier(s)</u>	<u>Date/Time Analyzed</u>	<u>Batch</u>	<u>Method</u>
Carbon tetrachloride	ug/L	< 10.0	EDL	12/29/17 11:54	B712406	EPA 624 (mod.), 1995
Chlorobenzene	ug/L	< 10.0		12/29/17 11:54	B712406	EPA 624 (mod.), 1995
Chlorodibromomethane	ug/L	< 10.0		12/29/17 11:54	B712406	EPA 624 (mod.), 1995
Chloroethane	ug/L	< 50.0		12/29/17 11:54	B712406	EPA 624 (mod.), 1995
Chloroform	ug/L	< 10.0		12/29/17 11:54	B712406	EPA 624 (mod.), 1995
Chloromethane	ug/L	< 50.0		12/29/17 11:54	B712406	EPA 624 (mod.), 1995
cis-1,3-Dichloropropene	ug/L	< 10.0		12/29/17 11:54	B712406	EPA 624 (mod.), 1995
Ethylbenzene	ug/L	< 10.0		12/29/17 11:54	B712406	EPA 624 (mod.), 1995
Methylene chloride	ug/L	< 20.0		12/29/17 11:54	B712406	EPA 624 (mod.), 1995
Tetrachloroethene	ug/L	< 10.0		12/29/17 11:54	B712406	EPA 624 (mod.), 1995
Toluene	ug/L	< 10.0		12/29/17 11:54	B712406	EPA 624 (mod.), 1995
trans-1,2-Dichloroethene	ug/L	< 10.0		12/29/17 11:54	B712406	EPA 624 (mod.), 1995
Trichloroethene	ug/L	< 10.0		12/29/17 11:54	B712406	EPA 624 (mod.), 1995
trans-1,3-Dichloropropene	ug/L	< 10.0		12/29/17 11:54	B712406	EPA 624 (mod.), 1995
Vinyl chloride	ug/L	< 5.00	EDL	12/29/17 11:54	B712406	EPA 624 (mod.), 1995
Trichlorofluoromethane	ug/L	< 10.0		12/29/17 11:54	B712406	EPA 624 (mod.), 1995
4-Bromofluorobenzene [surr]	%	95.4		12/29/17 11:54	B712406	EPA 624 (mod.), 199
1,2-Dichloroethane-d4 [surr]	%	104		12/29/17 11:54	B712406	EPA 624 (mod.), 199
Toluene-d8 [surr]	%	94.5		12/29/17 11:54	B712406	EPA 624 (mod.), 199

<u>Wet Chemistry</u>	<u>Units</u>	<u>Result</u>	<u>Qualifier(s)</u>	<u>Date/Time Analyzed</u>	<u>Batch</u>	<u>Method</u>
Ammonia as N	mg/L	211		1/3/18 8:16	B801022	SM 4500-NH3 B,D,C-2011
Cyanide (total)	mg/L	< 0.010		1/2/18 16:16	B712401	SM 4500-CN B,E-2011
Flashpoint	°C	Did Not Flash		1/2/18 10:00	B712400	SW 1010A, Rev 1, 2004
Oil and Grease	mg/L	< 3.50		1/2/18 16:31	B801001	EPA1664 Mod, Rev. B
Sulfide	mg/L	< 0.100		1/3/18 9:55	B801023	SM 4500-S2 D-2011
TDS	mg/L	2930		12/29/18 14:15	B712405	SM 2540 C-2011
TOC	mg/L	185		1/2/18 17:51	B801006	SM 5310 B-2011

05 January 2018



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ADEQ

5301 Northshore Dr.

North Little Rock, AR 72118

Project: NABORS Leachate (City of Springfield, MO)

Project Number: December 2017 -- Project #10410

Date Received: 27-Dec-17 15:15

ANALYTICAL RESULTS

Lab Number: 1712372-02
Sample Name: Leachate Duplicate Sample
Date/Time Collected: 12/27/17 11:41
Sample Matrix: Leachate

Anions	Units	Result	Qualifier(s)	Date/Time Analyzed	Batch	Method
Chloride	mg/L	650		12/28/17 17:09	B712381	EPA 300.0, 2.1-1993
Sulfate as SO4	mg/L	140		12/28/17 16:30	B712381	EPA 300.0, 2.1-1993

Total Metals	Units	Result	Qualifier(s)	Date/Time Analyzed	Batch	Method
Antimony	ug/L	< 2.08		1/3/18 14:11	B801002	EPA 200.8, Rev. 5.4(1994)
Arsenic	ug/L	13.9		1/3/18 14:11	B801002	EPA 200.8, Rev. 5.4(1994)
Barium	ug/L	1510		1/3/18 13:51	B801002	EPA 200.8, Rev. 5.4(1994)
Beryllium	ug/L	< 0.260		1/3/18 14:11	B801002	EPA 200.8, Rev. 5.4(1994)
Cadmium	ug/L	< 0.260		1/3/18 14:11	B801002	EPA 200.8, Rev. 5.4(1994)
Chromium	ug/L	10.7		1/3/18 14:11	B801002	EPA 200.8, Rev. 5.4(1994)
Cobalt	ug/L	19.4		1/3/18 14:11	B801002	EPA 200.8, Rev. 5.4(1994)
Copper	ug/L	1.73		1/3/18 14:11	B801002	EPA 200.8, Rev. 5.4(1994)
Iron	ug/L	8720		1/3/18 13:51	B801002	EPA 200.8, Rev. 5.4(1994)
Lead	ug/L	0.795		1/3/18 14:11	B801002	EPA 200.8, Rev. 5.4(1994)
Manganese	ug/L	1630		1/3/18 13:51	B801002	EPA 200.8, Rev. 5.4(1994)
Mercury	mg/L	< 0.000200		12/28/17 12:31	B712383	SW7470A/EPA245.1,3.0-1994
Nickel	ug/L	86.5		1/3/18 14:11	B801002	EPA 200.8, Rev. 5.4(1994)
Phosphorus	mg/L	0.315		12/28/17 15:24	B712371	EPA 200.7, Rev 4.4 (1994)
Selenium	ug/L	< 2.08	E35	1/3/18 14:11	B801002	EPA 200.8, Rev. 5.4(1994)
Silver	ug/L	< 0.260		1/3/18 14:11	B801002	EPA 200.8, Rev. 5.4(1994)
Thallium	ug/L	< 0.260		1/3/18 14:11	B801002	EPA 200.8, Rev. 5.4(1994)
Tin	ug/L	< 20.8		1/3/18 14:11	B801002	EPA 200.8, Rev. 5.4(1994)
Vanadium	ug/L	4.71		1/3/18 14:11	B801002	EPA 200.8, Rev. 5.4(1994)
Zinc	ug/L	22.3		1/3/18 14:11	B801002	EPA 200.8, Rev. 5.4(1994)

Volatiles	Units	Result	Qualifier(s)	Date/Time Analyzed	Batch	Method
1,1-Dichloroethane	ug/L	< 10.0		12/29/17 12:22	B712406	EPA 624 (mod.), 1995
1,1-Dichloroethene	ug/L	< 10.0		12/29/17 12:22	B712406	EPA 624 (mod.), 1995
1,1,1-Trichloroethane	ug/L	< 10.0		12/29/17 12:22	B712406	EPA 624 (mod.), 1995
1,1,2-Trichloroethane	ug/L	< 10.0		12/29/17 12:22	B712406	EPA 624 (mod.), 1995
1,1,2,2-Tetrachloroethane	ug/L	< 10.0		12/29/17 12:22	B712406	EPA 624 (mod.), 1995
1,2-Dichlorobenzene	ug/L	< 5.00		12/29/17 12:22	B712406	EPA 824 (mod.), 1995
1,2-Dichloropropane	ug/L	< 10.0		12/29/17 12:22	B712406	EPA 624 (mod.), 1995
1,2-Dichloroethane	ug/L	< 10.0		12/29/17 12:22	B712406	EPA 624 (mod.), 1995
1,3-Dichlorobenzene	ug/L	< 5.00		12/29/17 12:22	B712406	EPA 624 (mod.), 1995
1,4-Dichlorobenzene	ug/L	< 5.00		12/29/17 12:22	B712406	EPA 624 (mod.), 1995
2-Chloroethyl vinyl ether	ug/L	< 10.0		12/29/17 12:22	B712406	EPA 624 (mod.), 1995
Acrylonitrile	ug/L	< 50.0	EDL	12/29/17 12:22	B712406	EPA 624 (mod.), 1995
Benzene	ug/L	< 10.0		12/29/17 12:22	B712406	EPA 624 (mod.), 1995
Bromodichloromethane	ug/L	< 10.0		12/29/17 12:22	B712406	EPA 624 (mod.), 1995
Bromoform	ug/L	< 10.0		12/29/17 12:22	B712406	EPA 624 (mod.), 1995
Acrolein	ug/L	< 50.0	E5	12/29/17 12:22	B712406	EPA 624 (mod.), 1995
Bromomethane	ug/L	< 50.0		12/29/17 12:22	B712406	EPA 624 (mod.), 1995

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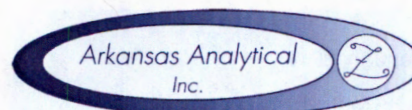
5301 Northshore Dr.

North Little Rock, AR 72118

Project: NABORS Leachate (City of Springfield, MO)

Project Number: December 2017 – Project #10410

Date Received: 27-Dec-17 15:15



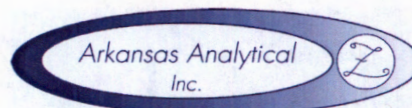
ANALYTICAL RESULTS

Lab Number: 1712372-02
Sample Name: Leachate Duplicate Sample
Date/Time Collected: 12/27/17 11:41
Sample Matrix: Leachate

<u>Volatiles</u>	<u>Units</u>	<u>Result</u>	<u>Qualifier(s)</u>	<u>Date/Time Analyzed</u>	<u>Batch</u>	<u>Method</u>
Carbon tetrachloride	ug/L	< 10.0	EDL	12/29/17 12:22	B712406	EPA 624 (mod.), 1995
Chlorobenzene	ug/L	< 10.0		12/29/17 12:22	B712406	EPA 624 (mod.), 1995
Chlorodibromomethane	ug/L	< 10.0		12/29/17 12:22	B712406	EPA 624 (mod.), 1995
Chloroethane	ug/L	< 50.0		12/29/17 12:22	B712406	EPA 624 (mod.), 1995
Chloroform	ug/L	< 10.0		12/29/17 12:22	B712406	EPA 624 (mod.), 1995
Chloromethane	ug/L	< 50.0		12/29/17 12:22	B712406	EPA 624 (mod.), 1995
cis-1,3-Dichloropropene	ug/L	< 10.0		12/29/17 12:22	B712406	EPA 624 (mod.), 1995
Ethylbenzene	ug/L	< 10.0		12/29/17 12:22	B712406	EPA 624 (mod.), 1995
Methylene chloride	ug/L	< 20.0		12/29/17 12:22	B712406	EPA 624 (mod.), 1995
Tetrachloroethene	ug/L	< 10.0		12/29/17 12:22	B712406	EPA 624 (mod.), 1995
Toluene	ug/L	< 10.0		12/29/17 12:22	B712406	EPA 624 (mod.), 1995
trans-1,2-Dichloroethene	ug/L	< 10.0		12/29/17 12:22	B712406	EPA 624 (mod.), 1995
Trichloroethene	ug/L	< 10.0		12/29/17 12:22	B712406	EPA 624 (mod.), 1995
trans-1,3-Dichloropropene	ug/L	< 10.0		12/29/17 12:22	B712406	EPA 624 (mod.), 1995
Vinyl chloride	ug/L	< 5.00	EDL	12/29/17 12:22	B712406	EPA 624 (mod.), 1995
Trichlorofluoromethane	ug/L	< 50.0		12/29/17 12:22	B712406	EPA 624 (mod.), 1995
4-Bromofluorobenzene [surr]	%	90.0		12/29/17 12:22	B712406	EPA 624 (mod.), 199
1,2-Dichloroethane-d4 [surr]	%	108		12/29/17 12:22	B712406	EPA 624 (mod.), 199
Toluene-d8 [surr]	%	92.6		12/29/17 12:22	B712406	EPA 624 (mod.), 199

<u>Wet Chemistry</u>	<u>Units</u>	<u>Result</u>	<u>Qualifier(s)</u>	<u>Date/Time Analyzed</u>	<u>Batch</u>	<u>Method</u>
Ammonia as N	mg/L	210		1/3/18 8:16	B801022	SM 4500-NH3 B,D,C-2011
Cyanide (total)	mg/L	< 0.010		1/2/18 16:16	B712401	SM 4500-CN B,E-2011
Flashpoint	°C	Did Not Flash		1/2/18 10:00	B712400	SW 1010A, Rev 1, 2004
Oil and Grease	mg/L	< 3.50		1/2/18 16:31	B801001	EPA1664 Mod. Rev. B
Sulfide	mg/L	< 0.100		1/3/18 9:55	B801023	SM 4500-S2 D-2011
TDS	mg/L	2890		12/29/18 14:15	B712405	SM 2540 C-2011
TOC	mg/L	187		1/2/18 18:05	B801006	SM 5310 B-2011

05 January 2018



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5301 Northshore Dr.

North Little Rock, AR 72118

Project: NABORS Leachate (City of Springfield, MO)

Project Number: December 2017 -- Project #10410

Date Received: 27-Dec-17 15:15

ANALYTICAL RESULTS

Lab Number: 1712372-03
Sample Name: Trip Blank
Date/Time Collected: 12/27/17 15:15
Sample Matrix: Water

<u>Volatiles</u>	<u>Units</u>	<u>Result</u>	<u>Qualifier(s)</u>	<u>Date/Time Analyzed</u>	<u>Batch</u>	<u>Method</u>
1,1-Dichloroethane	ug/L	< 10.0		12/29/17 11:26	B712406	EPA 624 (mod.), 1995
1,1-Dichloroethene	ug/L	< 10.0		12/29/17 11:26	B712406	EPA 624 (mod.), 1995
1,1,1-Trichloroethane	ug/L	< 10.0		12/29/17 11:26	B712406	EPA 624 (mod.), 1995
1,1,2-Trichloroethane	ug/L	< 10.0		12/29/17 11:26	B712406	EPA 624 (mod.), 1995
1,1,2,2-Tetrachloroethane	ug/L	< 10.0		12/29/17 11:26	B712406	EPA 624 (mod.), 1995
1,2-Dichlorobenzene	ug/L	< 5.00		12/29/17 11:26	B712406	EPA 624 (mod.), 1995
1,2-Dichloropropane	ug/L	< 10.0		12/29/17 11:26	B712406	EPA 624 (mod.), 1995
1,2-Dichloroethane	ug/L	< 10.0		12/29/17 11:26	B712406	EPA 624 (mod.), 1995
1,3-Dichlorobenzene	ug/L	< 5.00		12/29/17 11:26	B712406	EPA 624 (mod.), 1995
1,4-Dichlorobenzene	ug/L	< 5.00		12/29/17 11:26	B712406	EPA 624 (mod.), 1995
2-Chloroethyl vinyl ether	ug/L	< 10.0		12/29/17 11:26	B712406	EPA 624 (mod.), 1995
Acrylonitrile	ug/L	< 20.0		12/29/17 11:26	B712406	EPA 624 (mod.), 1995
Benzene	ug/L	< 10.0		12/29/17 11:26	B712406	EPA 624 (mod.), 1995
Bromodichloromethane	ug/L	< 10.0		12/29/17 11:26	B712406	EPA 624 (mod.), 1995
Bromoform	ug/L	< 10.0		12/29/17 11:26	B712406	EPA 624 (mod.), 1995
Acrolein	ug/L	< 50.0	E5	12/29/17 11:26	B712406	EPA 624 (mod.), 1995
Bromomethane	ug/L	< 50.0		12/29/17 11:26	B712406	EPA 624 (mod.), 1995
Carbon tetrachloride	ug/L	< 2.00		12/29/17 11:26	B712406	EPA 624 (mod.), 1995
Chlorobenzene	ug/L	< 10.0		12/29/17 11:26	B712406	EPA 624 (mod.), 1995
Chlorodibromomethane	ug/L	< 10.0		12/29/17 11:26	B712406	EPA 624 (mod.), 1995
Chloroethane	ug/L	< 50.0		12/29/17 11:26	B712406	EPA 624 (mod.), 1995
Chloroform	ug/L	< 10.0		12/29/17 11:26	B712406	EPA 624 (mod.), 1995
Chloromethane	ug/L	< 50.0		12/29/17 11:26	B712406	EPA 624 (mod.), 1995
cis-1,3-Dichloropropene	ug/L	< 10.0		12/29/17 11:26	B712406	EPA 624 (mod.), 1995
Ethylbenzene	ug/L	< 10.0		12/29/17 11:26	B712406	EPA 624 (mod.), 1995
Methylene chloride	ug/L	< 20.0		12/29/17 11:26	B712406	EPA 624 (mod.), 1995
Tetrachloroethene	ug/L	< 10.0		12/29/17 11:26	B712406	EPA 624 (mod.), 1995
Toluene	ug/L	< 10.0		12/29/17 11:26	B712406	EPA 624 (mod.), 1995
trans-1,2-Dichloroethene	ug/L	< 10.0		12/29/17 11:26	B712406	EPA 624 (mod.), 1995
Trichloroethene	ug/L	< 10.0		12/29/17 11:26	B712406	EPA 624 (mod.), 1995
trans-1,3-Dichloropropene	ug/L	< 10.0		12/29/17 11:26	B712406	EPA 624 (mod.), 1995
Vinyl chloride	ug/L	< 2.00		12/29/17 11:26	B712406	EPA 624 (mod.), 1995
Trichlorofluoromethane	ug/L	< 50.0		12/29/17 11:26	B712406	EPA 624 (mod.), 1995
4-Bromofluorobenzene [surr]	%	90.2		12/29/17 11:26	B712406	EPA 624 (mod.), 199
1,2-Dichloroethane-d4 [surr]	%	108		12/29/17 11:26	B712406	EPA 624 (mod.), 199
Toluene-d8 [surr]	%	99.2		12/29/17 11:26	B712406	EPA 624 (mod.), 199

05 January 2018

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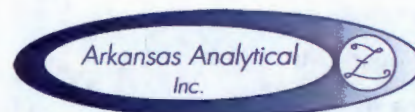
5301 Northshore Dr.

North Little Rock, AR 72118

Project: NABORS Leachate (City of Springfield, MO)

Project Number: December 2017 -- Project #10410

Date Received: 27-Dec-17 15:15



QUALITY CONTROL RESULTS

Wet Chemistry - Quality Control Analyzed: 02-Jan-18 10:00 By: SP

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B712400 - NO PREP

LCS (B712400-BS1)

Prepared: 02-Jan-17 Analyzed: 02-Jan-18

Flashpoint	29.0	1.00	°C	27.0	107	99-134				
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LCS Dup (B712400-BSD1)

Prepared: 02-Jan-17 Analyzed: 02-Jan-18

Flashpoint	29.0	1.00	°C	27.0	107	99-134	0.00	5.98		
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Batch B712401 - NO PREP

Blank (B712401-BLK1)

Prepared: 29-Dec-17 Analyzed: 02-Jan-18

Cyanide (total)	ND	0.010	mg/L							
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LCS (B712401-BS1)

Prepared: 29-Dec-17 Analyzed: 02-Jan-18

Cyanide (total)	0.310	0.010	mg/L	0.300	103	68.7-129				
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LCS Dup (B712401-BSD1)

Prepared: 29-Dec-17 Analyzed: 02-Jan-18

Cyanide (total)	0.305	0.010	mg/L	0.300	102	68.7-129	1.63	16.7		
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Matrix Spike (B712401-MS1)

Source: 1712354-01

Prepared: 29-Dec-17 Analyzed: 02-Jan-18

Cyanide (total)	0.306	0.010	mg/L	0.300	0.004	101	57.1-128			
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Batch B712405 - NO PREP

Blank (B712405-BLK1)

Prepared: 29-Dec-17 Analyzed: 29-Dec-18

TDS	ND	5.00	mg/L							
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LCS (B712405-BS1)

Prepared: 29-Dec-17 Analyzed: 29-Dec-18

TDS	105	5.00	mg/L	100	105	81.7-122				
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LCS Dup (B712405-BSD1)

Prepared: 29-Dec-17 Analyzed: 29-Dec-18

TDS	107	5.00	mg/L	100	107	81.7-122	1.89	19		
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Batch B801001 - NO PREP

Blank (B801001-BLK1)

Prepared & Analyzed: 02-Jan-18

Oil and Grease	ND	3.50	mg/L							
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LCS (B801001-BS1)

Prepared & Analyzed: 02-Jan-18

Oil and Grease	31.8	3.50	mg/L	40.0	79.4	78-114				
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LCS Dup (B801001-BSD1)

Prepared & Analyzed: 02-Jan-18

Oil and Grease	31.6	3.50	mg/L	40.0	79.0	78-114	0.474	18		
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Matrix Spike (B801001-MS1)

Source: 1801001-01

Prepared & Analyzed: 02-Jan-18

Oil and Grease	31.6	3.50	mg/L	40.0	ND	78.9	78-114			
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05 January 2018

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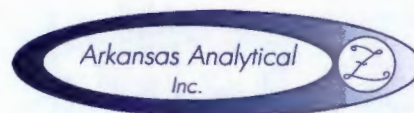
5301 Northshore Dr.

North Little Rock, AR 72118

Project: NABORS Leachate (City of Springfield, MO)

Project Number: December 2017 -- Project #10410

Date Received: 27-Dec-17 15:15

**QUALITY CONTROL RESULTS**
Wet Chemistry - Quality Control
Analyzed: 02-Jan-18 17:22 By: HF

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B801006 - NO PREP**Blank (B801006-BLK1)**

Prepared & Analyzed: 02-Jan-18

TOC	ND	1.00	mg/L							
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LCS (B801006-BS1)

Prepared & Analyzed: 02-Jan-18

TOC	5.24	1.00	mg/L	5.00		105	90.6-118			
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Matrix Spike (B801006-MS1)

Source: 1712372-01

Prepared & Analyzed: 02-Jan-18

TOC	236	10.0	mg/L	50.0	185	102	57.3-136			
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Matrix Spike Dup (B801006-MSD1)

Source: 1712372-01

Prepared & Analyzed: 02-Jan-18

TOC	236	10.0	mg/L	50.0	185	102	57.3-136	0.0424	25.1	
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Batch B801022 - Default Prep GenChem**Blank (B801022-BLK1)**

Prepared & Analyzed: 03-Jan-18

Ammonia as N	ND	0.500	mg/L							
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LCS (B801022-BS1)

Prepared & Analyzed: 03-Jan-18

Ammonia as N	19.8	0.500	mg/L	20.4		97.1	74.2-110			
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Matrix Spike (B801022-MS1)

Source: 1712353-01

Prepared & Analyzed: 03-Jan-18

Ammonia as N	21.5	0.500	mg/L	20.4	1.57	97.5	71.6-111			
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Matrix Spike Dup (B801022-MSD1)

Source: 1712353-01

Prepared & Analyzed: 03-Jan-18

Ammonia as N	20.7	0.500	mg/L	20.4	1.57	93.7	71.6-111	3.67	20	
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Batch B801023 - NO PREP**Blank (B801023-BLK1)**

Prepared & Analyzed: 03-Jan-18

Sulfide	ND	0.100	mg/L							
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LCS (B801023-BS1)

Prepared & Analyzed: 03-Jan-18

Sulfide	0.0760	0.100	mg/L	0.200		38.0	5-112			
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LCS Dup (B801023-BSD1)

Prepared & Analyzed: 03-Jan-18

Sulfide	0.0490	0.100	mg/L	0.200		24.5	5-112	43.2	25	D
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Matrix Spike (B801023-MS1)

Source: 1712372-01

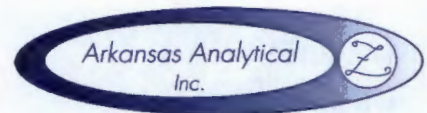
Prepared & Analyzed: 03-Jan-18

Sulfide	0.1400	0.100	mg/L	0.200	ND	70.0	5-115			
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QUALITY CONTROL RESULTS
Total Metals - Quality Control
Analyzed: 28-Dec-17 12:11 By: TA

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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05 January 2018



Lessie Redican
 ADEQ
 5301 Northshore Dr.
 North Little Rock, AR 72118
 Project: NABORS Leachate (City of Springfield, MO)
 Project Number: December 2017 – Project #10410
 Date Received: 27-Dec-17 15:15

QUALITY CONTROL RESULTS

Total Metals - Quality Control Analyzed: 28-Dec-17 12:11 By: TA

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B712371 - Default Prep Metals										
Blank (B712371-BLK1)				Prepared & Analyzed: 28-Dec-17						
Phosphorus	ND	0.026	mg/L							
LCS (B712371-BS1)				Prepared & Analyzed: 28-Dec-17						
Phosphorus	1.00	0.026	mg/L	1.00		100	85-115			
Matrix Spike (B712371-MS1)				Source: 1712320-01 Prepared & Analyzed: 28-Dec-17						
Phosphorus	1.01	0.026	mg/L	1.00	ND	101	75-125			
Matrix Spike Dup (B712371-MSD1)				Source: 1712320-01 Prepared & Analyzed: 28-Dec-17						
Phosphorus	0.985	0.026	mg/L	1.00	ND	98.5	75-125	2.91	20	

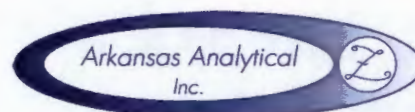
Batch B712383 - Default Prep Metals

Blank (B712383-BLK1)				Prepared & Analyzed: 28-Dec-17						
Mercury	ND	0.000200	mg/L							
LCS (B712383-BS1)				Prepared & Analyzed: 28-Dec-17						
Mercury	0.00365	0.000200	mg/L	0.00350		104	85-115			
Matrix Spike (B712383-MS1)				Source: 1712320-01 Prepared & Analyzed: 28-Dec-17						
Mercury	0.00370	0.000200	mg/L	0.00350	ND	106	80-120			
Matrix Spike Dup (B712383-MSD1)				Source: 1712320-01 Prepared & Analyzed: 28-Dec-17						
Mercury	0.00365	0.000200	mg/L	0.00350	ND	104	80-120	1.36	20	

Batch B801002 - Default Prep Metals

Blank (B801002-BLK1)				Prepared: 02-Jan-18 Analyzed: 03-Jan-18						
Lead	ND	0.260	ug/L							
Cadmium	ND	0.260	"							
Chromium	ND	0.260	"							
Barium	ND	0.260	"							
Iron	ND	20.8	"							
Silver	ND	0.260	"							
Zinc	ND	20.8	"							
Manganese	ND	0.260	"							
Copper	ND	0.260	"							
Cobalt	ND	0.260	"							
Arsenic	ND	0.260	"							
Selenium	ND	2.08	"							
Thallium	ND	0.260	"							
Vanadium	ND	2.08	"							
Nickel	ND	0.26	"							
Tin	ND	20.8	"							
Beryllium	ND	0.260	"							
Antimony	ND	2.08	"							

05 January 2018



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5301 Northshore Dr.

North Little Rock, AR 72118

Project: NABORS Leachate (City of Springfield, MO)

Project Number: December 2017 -- Project #10410

Date Received: 27-Dec-17 15:15

QUALITY CONTROL RESULTS
Total Metals - Quality Control
Analyzed: 03-Jan-18 12:19 By: ST

Analyte	Reporting			Spike Level	Source		%REC		RPD		Notes
	Result	Limit	Units		Result	%REC	Limits	RPD	Limit		

Batch B801002 - Default Prep Metals**LCS (B801002-BS1)**

Prepared: 02-Jan-18 Analyzed: 03-Jan-18

Arsenic	49.4	0.265	ug/L	50.0		98.7	85-115			
Cobalt	49.5	0.265	"	50.0		99.1	85-115			
Copper	49.5	0.265	"	50.0		98.9	85-115			
Silver	48.2	0.265	"	50.0		96.4	85-115			
Barium	47.9	0.265	"	50.0		95.8	85-115			
Cadmium	48.8	0.265	"	50.0		97.6	85-115			
Beryllium	49.1	0.265	"	50.0		98.2	85-115			
Tin	48.7	21.2	"	50.0		97.4	85-115			
Vanadium	49.3	2.12	"	50.0		98.5	85-115			
Lead	49.1	0.265	"	50.0		98.1	85-115			
Manganese	50.1	0.265	"	50.0		100	85-115			
Thallium	50.3	0.265	"	50.0		101	85-115			
Antimony	47.1	2.12	"	50.0		94.3	85-115			
Iron	49.4	21.2	"	50.0		98.7	85-115			
Selenium	46.1	2.12	"	50.0		92.2	85-115			
Chromium	50.2	0.265	"	50.0		100	85-115			
Nickel	49.2	0.26	"	50.0		98.4	85-115			
Zinc	48.9	21.2	"	50.0		97.9	85-115			

Matrix Spike (B801002-MS1)

Source: 1712372-01

Prepared: 02-Jan-18 Analyzed: 03-Jan-18

Cobalt	73.4	0.265	ug/L	50.0	19.1	109	75-125			
Selenium	59.6	2.12	"	50.0	1.53	116	75-125			
Antimony	50.8	2.12	"	50.0	0.840	99.9	75-125			
Arsenic	72.1	0.265	"	50.0	13.7	117	75-125			
Tin	51.4	21.2	"	50.0	3.61	95.5	75-125			
Nickel	135	0.26	"	50.0	85.6	99.3	75-125			
Lead	48.6	0.265	"	50.0	0.802	95.6	75-125			
Cadmium	46.5	0.265	"	50.0	0.171	92.7	75-125			
Manganese	MBI	13.2	"	50.0	1560	140	75-125			MBI
Vanadium	51.8	2.12	"	50.0	4.66	94.4	75-125			
Beryllium	43.7	0.265	"	50.0	0.064	87.3	75-125			
Copper	50.9	0.265	"	50.0	1.77	98.3	75-125			
Iron	8640	1060	"	50.0	8590	91.6	75-125			
Thallium	50.4	0.265	"	50.0	ND	101	75-125			
Silver	46.2	0.265	"	50.0	0.098	92.2	75-125			
Chromium	57.1	0.265	"	50.0	10.7	92.8	75-125			
Barium	1540	13.2	"	50.0	1490	113	75-125			
Zinc	74.1	21.2	"	50.0	24.7	98.8	75-125			

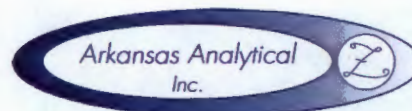
Matrix Spike Dup (B801002-MSD1)

Source: 1712372-01

Prepared: 02-Jan-18 Analyzed: 03-Jan-18

Thallium	51.9	0.265	ug/L	50.0	ND	104	75-125	2.78	20	
Selenium	63.6	2.12	"	50.0	1.53	124	75-125	6.55	20	
Vanadium	51.6	2.12	"	50.0	4.66	93.9	75-125	0.468	20	
Zinc	76.4	21.2	"	50.0	24.7	103	75-125	3.10	20	
Copper	51.9	0.265	"	50.0	1.77	100	75-125	1.89	20	
Cobalt	76.2	0.265	"	50.0	19.1	114	75-125	3.75	20	

05 January 2018



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5301 Northshore Dr.

North Little Rock, AR 72118

Project: NABORS Leachate (City of Springfield, MO)

Project Number: December 2017 – Project #10410

Date Received: 27-Dec-17 15:15

QUALITY CONTROL RESULTS
Total Metals - Quality Control
Analyzed: 03-Jan-18 13:59 By: ST

Analyte	Result	Reporting		Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
		Limit	Units							

Batch B801002 - Default Prep Metals**Matrix Spike Dup (B801002-MSD1)**

Source: 1712372-01

Prepared: 02-Jan-18 Analyzed: 03-Jan-18

Tin	51.7	21.2	ug/L	50.0	3.61	96.1	75-125	0.594	20	
Lead	49.0	0.265	"	50.0	0.802	96.5	75-125	0.949	20	
Arsenic	73.2	0.265	"	50.0	13.7	119	75-125	1.47	20	
Iron	MBI	1060	"	50.0	8590	295	75-125	1.17	20	MBI
Chromium	57.5	0.265	"	50.0	10.7	93.7	75-125	0.837	20	
Nickel	136	0.26	"	50.0	85.6	101	75-125	0.758	20	
Cadmium	46.8	0.265	"	50.0	0.171	93.3	75-125	0.699	20	
Barium	1550	13.2	"	50.0	1490	120	75-125	0.239	20	
Antimony	50.4	2.12	"	50.0	0.840	99.2	75-125	0.688	20	
Manganese	MBI	13.2	"	50.0	1560	204	75-125	1.94	20	MBI
Beryllium	42.9	0.265	"	50.0	0.064	85.7	75-125	1.90	20	
Silver	46.6	0.265	"	50.0	0.098	93.1	75-125	0.958	20	

QUALITY CONTROL RESULTS
Anions - Quality Control
Analyzed: 28-Dec-17 10:37 By: TB

Analyte	Result	Reporting		Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
		Limit	Units							

Batch B712381 - EPA 300.0**Blank (B712381-BLK1)**

Prepared & Analyzed: 28-Dec-17

Chloride	ND	0.500	mg/L							
Sulfate as SO4	ND	0.500	"							

LCS (B712381-BS1)

Prepared & Analyzed: 28-Dec-17

Sulfate as SO4	4.15	0.526	mg/L	4.21		98.6	90-110			
Chloride	2.62	0.526	"	2.63		99.6	90-110			

Matrix Spike (B712381-MS1)

Source: 1712342-01

Prepared & Analyzed: 28-Dec-17

Chloride	252	25.0	mg/L	125	116	108	90-110			
Sulfate as SO4	366	25.0	"	200	145	110	90-110			

Matrix Spike Dup (B712381-MSD1)

Source: 1712342-01

Prepared & Analyzed: 28-Dec-17

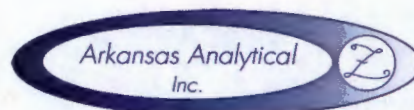
Chloride	241	25.0	mg/L	125	116	99.7	90-110	4.44	20	
Sulfate as SO4	362	25.0	"	200	145	109	90-110	0.893	20	

QUALITY CONTROL RESULTS
Volatiles - Quality Control
Analyzed: 29-Dec-17 10:58 By: ct

Analyte	Result	Reporting		Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
		Limit	Units							

Batch B712406 - Default Prep VOC

05 January 2018



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5301 Northshore Dr.

North Little Rock, AR 72118

Project: NABORS Leachate (City of Springfield, MO)

Project Number: December 2017 -- Project #10410

Date Received: 27-Dec-17 15:15

QUALITY CONTROL RESULTS
Volatiles - Quality Control
Analyzed: 29-Dec-17 10:58 By: ct

Analyte	Reporting			Spike	Source	%REC		RPD		Notes
	Result	Limit	Units			%REC	Limits	RPD	Limit	

Batch B712406 - Default Prep VOC**Blank (B712406-BLK1)**

Prepared & Analyzed: 29-Dec-17

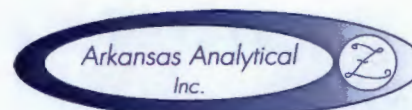
1,1-Dichloroethane	ND	10.0	ug/L							
1,1-Dichloroethene	ND	10.0	"							
1,1,1-Trichloroethane	ND	10.0	"							
1,1,2-Trichloroethane	ND	10.0	"							
1,1,2,2-Tetrachloroethane	ND	10.0	"							
1,2-Dichlorobenzene	ND	5.00	"							
1,2-Dichloropropane	ND	10.0	"							
1,2-Dichloroethane	ND	10.0	"							
1,3-Dichlorobenzene	ND	5.00	"							
1,4-Dichlorobenzene	ND	5.00	"							
2-Chloroethyl vinyl ether	ND	10.0	"							
Acrylonitrile	ND	20.0	"							
Benzene	ND	10.0	"							
Bromodichloromethane	ND	10.0	"							
Bromoform	ND	10.0	"							
Acrolein	ND	50.0	"							E5
Bromomethane	ND	50.0	"							
Carbon tetrachloride	ND	2.00	"							
Chlorobenzene	ND	10.0	"							
Chlorodibromomethane	ND	10.0	"							
Chloroethane	ND	50.0	"							
Chloroform	ND	10.0	"							
Chloromethane	ND	50.0	"							
cis-1,3-Dichloropropene	ND	10.0	"							
Ethylbenzene	ND	10.0	"							
Methylene chloride	ND	20.0	"							
Tetrachloroethene	ND	10.0	"							
Toluene	ND	10.0	"							
trans-1,2-Dichloroethene	ND	10.0	"							
Trichloroethene	ND	10.0	"							
trans-1,3-Dichloropropene	ND	10.0	"							
Vinyl chloride	ND	2.00	"							
Trichlorofluoromethane	ND	50.0	"							
Bromochloromethane	ND	5.00	"							
Surrogate: 4-Bromofluorobenzene	37.2		"	40.0		93.0	70-130			
Surrogate: 1,2-Dichloroethane-d4	43.5		"	40.0		109	70-130			
Surrogate: Toluene-d8	37.0		"	40.0		92.4	70-130			

LCS (B712406-BS1)

Prepared & Analyzed: 29-Dec-17

1,1-Dichloroethane	21.0	10.0	ug/L	20.0		105	72.5-127			
1,1-Dichloroethene	18.1	10.0	"	20.0		90.3	51-149			
1,1,1-Trichloroethane	18.4	10.0	"	20.0		92.2	75-125			
1,1,2-Trichloroethane	18.6	10.0	"	20.0		93.0	71-129			
1,1,2,2-Tetrachloroethane	18.7	10.0	"	20.0		93.3	60.5-140			
1,2-Dichlorobenzene	19.5	5.00	"	20.0		97.7	63-137			
1,2-Dichloropropane	19.0	10.0	"	20.0		95.1	34-166			

05 January 2018



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5301 Northshore Dr.

North Little Rock, AR 72118

Project: NABORS Leachate (City of Springfield, MO)

Project Number: December 2017 -- Project #10410

Date Received: 27-Dec-17 15:15

QUALITY CONTROL RESULTS
Volatiles - Quality Control
Analyzed: 29-Dec-17 10:29 By: ct

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B712406 - Default Prep VOC**LCS (B712406-BS1)**

Prepared & Analyzed: 29-Dec-17

1,2-Dichloroethane	22.8	10.0	ug/L	20.0		114	68-132			
1,3-Dichlorobenzene	20.1	5.00	"	20.0		101	73-127			
1,4-Dichlorobenzene	20.5	5.00	"	20.0		102	63-137			
2-Chloroethyl vinyl ether	20.0	10.0	"	20.0		100	25-224			
Acrylonitrile	41.0	20.0	"	40.0		102	50-150			
Benzene	20.8	10.0	"	20.0		104	64-136			
Bromodichloromethane	18.5	10.0	"	20.0		92.4	65.5-134			
Bromoform	18.1	10.0	"	20.0		90.7	71-129			
Acrolein	36.8	50.0	"	40.0		91.9	5-200			E5
Bromomethane	17.9	50.0	"	20.0		89.3	14-186			
Carbon tetrachloride	21.7	2.00	"	20.0		109	73-127			
Chlorobenzene	18.7	10.0	"	20.0		93.3	66-134			
Chlorodibromomethane	17.2	10.0	"	20.0		86.1	67.5-132			
Chloroethane	17.9	50.0	"	20.0		89.3	38-162			
Chloroform	20.0	10.0	"	20.0		99.8	67.5-132			
Chloromethane	23.9	50.0	"	20.0		119	25-204			
cis-1,3-Dichloropropene	19.4	10.0	"	20.0		97.1	24-176			
Ethylbenzene	16.4	10.0	"	20.0		82.0	59-141			
Methylene chloride	18.2	20.0	"	20.0		91.1	60.5-140			
Tetrachloroethene	16.1	10.0	"	20.0		80.7	73.5-126			
Toluene	16.8	10.0	"	20.0		84.0	74.5-126			
trans-1,2-Dichloroethene	20.3	10.0	"	20.0		102	69.5-130			
Trichloroethene	18.1	10.0	"	20.0		90.3	66.5-133			
trans-1,3-Dichloropropene	18.1	10.0	"	20.0		90.5	50-150			
Vinyl chloride	21.5	2.00	"	20.0		107	4-196			
Trichlorofluoromethane	19.7	50.0	"	20.0		98.7	48-152			
Bromochloromethane	20.6	5.00	"	20.0		103	63-134			
Surrogate: 4-Bromofluorobenzene	39.0		"	40.0		97.6	70-130			
Surrogate: 1,2-Dichloroethane-d4	45.0		"	40.0		113	70-130			
Surrogate: Toluene-d8	36.1		"	40.0		90.2	70-130			

Matrix Spike (B712406-MS1)

Source: 1712372-01

Prepared & Analyzed: 29-Dec-17

1,1-Dichloroethane	230	111	ug/L	222	ND	103	82-126			
1,1-Dichloroethene	222	111	"	222	ND	99.9	84.4-127			
1,1,1-Trichloroethane	239	111	"	222	ND	107	84.5-128			
1,1,2-Trichloroethane	220	111	"	222	ND	98.8	64.9-136			
1,1,2,2-Tetrachloroethane	215	111	"	222	ND	96.9	69.3-138			
1,2-Dichlorobenzene	222	55.6	"	222	ND	99.8	80.2-116			
1,2-Dichloropropane	236	111	"	222	ND	106	86.4-123			
1,2-Dichloroethane	250	111	"	222	ND	112	79.3-126			
1,3-Dichlorobenzene	225	55.6	"	222	ND	101	81.6-116			
1,4-Dichlorobenzene	225	55.6	"	222	3.44	99.8	83.9-111			
2-Chloroethyl vinyl ether	277	111	"	222	ND	125	5-237			
Acrylonitrile	461	222	"	444	ND	104	80.1-147			
Benzene	257	111	"	222	ND	116	82.1-127			
Bromodichloromethane	227	111	"	222	ND	102	90.6-129			

05 January 2018

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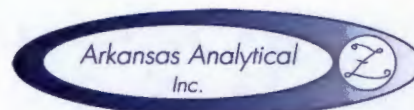
5301 Northshore Dr.

North Little Rock, AR 72118

Project: NABORS Leachate (City of Springfield, MO)

Project Number: December 2017 -- Project #10410

Date Received: 27-Dec-17 15:15

**QUALITY CONTROL RESULTS**
Volatiles - Quality Control
Analyzed: 29-Dec-17 15:19 By: ct

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B712406 - Default Prep VOC**Matrix Spike (B712406-MS1)**

Source: 1712372-01

Prepared & Analyzed: 29-Dec-17

Bromoform	216	111	ug/L	222	ND	97.1	84.6-143			E5
Acrolein	222	556	"	444	ND	50.1	5-216			
Bromomethane	203	556	"	222	ND	91.5	49.8-157			
Carbon tetrachloride	256	22.2	"	222	ND	115	80.4-130			
Chlorobenzene	231	111	"	222	ND	104	76.9-123			
Chlorodibromomethane	214	111	"	222	ND	96.2	89.2-132			
Chloroethane	195	556	"	222	ND	87.8	76.6-133			
Chloroform	240	111	"	222	ND	108	78.4-128			
Chloromethane	271	556	"	222	15.7	115	61.8-131			
cis-1,3-Dichloropropene	216	111	"	222	ND	97.0	91.9-130			
Ethylbenzene	205	111	"	222	1.16	91.7	64.7-163			
Methylene chloride	204	222	"	222	ND	92.0	79.8-127			
Tetrachloroethene	199	111	"	222	ND	89.5	78.1-126			
Toluene	212	111	"	222	ND	95.2	70.8-132			
trans-1,2-Dichloroethene	227	111	"	222	ND	102	83.6-125			
Trichloroethene	231	111	"	222	ND	104	69.2-133			
trans-1,3-Dichloropropene	212	111	"	222	ND	95.5	88.5-131			
Vinyl chloride	252	22.2	"	222	ND	113	67-153			
Trichlorofluoromethane	236	556	"	222	ND	106	82.2-129			
Bromochloromethane	230	55.6	"	222	ND	104	88.3-136			
Surrogate: 4-Bromofluorobenzene	406		"	444		91.5	70-130			
Surrogate: 1,2-Dichloroethane-d4	474		"	444		107	70-130			
Surrogate: Toluene-d8	419		"	444		94.4	70-130			

Matrix Spike Dup (B712406-MSD1)

Source: 1712372-01

Prepared & Analyzed: 29-Dec-17

1,1-Dichloroethane	245	111	ug/L	222	ND	110	82-126	6.62	15.9	
1,1-Dichloroethene	233	111	"	222	ND	105	84.4-127	4.94	19.7	
1,1,1-Trichloroethane	239	111	"	222	ND	108	84.5-128	0.205	11.2	
1,1,2-Trichloroethane	217	111	"	222	ND	97.5	64.9-136	1.33	19.9	
1,1,2,2-Tetrachloroethane	205	111	"	222	ND	92.2	69.3-138	4.94	18.8	
1,2-Dichlorobenzene	204	55.6	"	222	ND	91.7	80.2-116	8.44	17.4	
1,2-Dichloropropane	232	111	"	222	ND	105	86.4-123	1.38	16.3	
1,2-Dichloroethane	264	111	"	222	ND	119	79.3-126	5.34	14.4	
1,3-Dichlorobenzene	208	55.6	"	222	ND	93.6	81.6-116	7.84	16	
1,4-Dichlorobenzene	201	55.6	"	222	3.44	88.9	83.9-111	11.3	14.5	
Acrylonitrile	489	222	"	444	ND	110	80.1-147	6.03	26.1	
2-Chloroethyl vinyl ether	272	111	"	222	ND	122	5-237	1.76	32.3	
Benzene	262	111	"	222	ND	118	82.1-127	2.02	16	
Bromodichloromethane	236	111	"	222	ND	106	90.6-129	4.13	19.1	
Bromoform	227	111	"	222	ND	102	84.6-143	5.21	17.2	
Acrolein	190	556	"	444	ND	42.7	5-216	15.9	41.6	
Bromomethane	212	556	"	222	ND	95.3	49.8-157	4.06	21.5	
Carbon tetrachloride	265	22.2	"	222	ND	119	80.4-130	3.43	15.3	
Chlorobenzene	234	111	"	222	ND	105	76.9-123	1.52	14.3	
Chlorodibromomethane	223	111	"	222	ND	100	89.2-132	4.21	13	
Chloroethane	215	556	"	222	ND	96.9	76.6-133	9.92	30.9	

05 January 2018

Lessie Redican

ADEQ

5301 Northshore Dr.

North Little Rock, AR 72118

Project: NABORS Leachate (City of Springfield, MO)

Project Number: December 2017 – Project #10410

Date Received: 27-Dec-17 15:15



QUALITY CONTROL RESULTS

Volatiles - Quality Control Analyzed: 29-Dec-17 15:47 By: ct

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B712406 - Default Prep VOC

Matrix Spike Dup (B712406-MSD1)

Source: 1712372-01

Prepared & Analyzed: 29-Dec-17

Chloroform	248	111	ug/L	222	ND	112	78.4-128	3.26	16.2	
Chloromethane	274	556	"	222	15.7	116	61.8-131	1.14	23.7	
cis-1,3-Dichloropropene	245	111	"	222	ND	110	91.9-130	12.9	19.3	
Ethylbenzene	231	111	"	222	1.16	103	64.7-163	12.0	12.6	
Methylene chloride	210	222	"	222	ND	94.4	79.8-127	2.53	20.1	
Tetrachloroethene	208	111	"	222	ND	93.6	78.1-126	4.52	13.8	
Toluene	226	111	"	222	ND	102	70.8-132	6.76	17.4	
trans-1,2-Dichloroethene	250	111	"	222	ND	112	83.6-125	9.60	13.9	
Trichloroethene	234	111	"	222	ND	105	69.2-133	1.02	17.5	
trans-1,3-Dichloropropene	237	111	"	222	ND	107	88.5-131	11.1	17.5	
Vinyl chloride	260	22.2	"	222	ND	117	67-153	3.20	16.3	
Trichlorofluoromethane	250	556	"	222	ND	113	82.2-129	5.90	13.1	
Bromochloromethane	239	55.6	"	222	ND	108	88.3-136	3.88	21.2	
Surrogate: 4-Bromofluorobenzene	384		"	444		86.4	70-130			
Surrogate: 1,2-Dichloroethane-d4	502		"	444		113	70-130			
Surrogate: Toluene-d8	442		"	444		99.3	70-130			

QUALIFIER(S)

- *D: RPD Value Does Not Meet Laboratory Acceptance Criteria
- *E20: Estimated Result Due to Matrix Spike and/or Matrix Spike Duplicate Failure; This sample was used as the "parent sample" in MS/MSD prep.
- *E35: Estimated Result Due to Low Level CCV Failure
- *E5: Estimated Result Due to Quality Control Failure
- *EDL: Elevated Detection Limit Due to one or more of the following: Sample Matrix, Sample Dilution, or Limited Sample Volume
- *MBI: Masked By Interference

All Analysis performed according to EPA approved methodology when available:

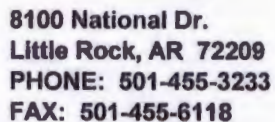
SW 846, Revised December, 1996; EPA 600/4-79-020, Revised March, 1983; Standard Methods.

Instrument calibration and quality control samples performed at or above frequency specified in analytical method.

Reviewed by:

Norma James / Teresa Coins

Norma James and/or Teresa Coins
Technical Director and/or QA Officer

[illegible]

NABORS Landfill (City of Springfield, MO)
Pretreatment permit 593

pH Sample/Analysis (SM 4500-H⁺ B-2011)

Meter Model: YSI EcoSense pH 100A

Meter/Probe Serial Number: JC00984; Lot Code 14F1

Buffer Solution Information

	7	4	10
Lot#	7GB792	6GJ507	6GF340
Expiration Date	Feb 2019	Oct 2018	June 2018

Calibration - pH

Date	Time
12-27-2017	0710

	Buffer Reading (su)					
	7	Temp (°C)	4	Temp (°C)	10	Temp (°C)
Initial	6.90	19.8				
Calibrated	7.01	19.8	4.01	19.7		
Slope Efficiency Reading (%)			95.8%			

pH Results

Outfall 001 (leachate effluent)

Date	Time	pH (su)	Temp (°C)
12-27-17		5.25	6.3
Collected @ 1141		5.23	6.4

Analyzed
@ 1144

1062

ADEQ

ARKANSAS
Department of Environmental Quality

REMEDIATION AND ASSESSMENT, OFFICE OF LAND RESOURCES ROUTING SLIP

January 17, 2018

Subject: NABORS Landfill – 2nd Semiannual Leachate Sampling Report

From: Weston Lee

<u>Route in turn to:</u>	<u>Action Needed</u>	<u>Date Received</u>	<u>Date Reviewed</u>	<u>Initials</u>
B. Reynolds	☒ Concurrence ☐ Review	1/17/18	1/17/18	BR
J. Zweifel	☒ Concurrence ☐ Review	1/17/18	1/17/18	JZ
D. Blanz	☐ Concurrence ☒ Review	1/17/18	1/17/18	DB
K. White	☒ Concurrence ☐ Review	1/17/18	1/17/18	KW

**Note: Marking the Concurrence box indicates the individual agrees with the applicable text as it relates to their individual discipline and Work Section (e.g., Engineer; Risk Assessor; Geology; Compliance; Policy/Management), as applicable. Marking the Review box indicates the individual has read the document.*

Return to Weston Lee for distribution

COMMENTS: