

NM1 - ____10 B____

APPROVALS

YEAR(S):

____2016 - 2017____

State of New Mexico
Energy, Minerals and Natural Resources Department

Susana Martinez
Governor

Ken McQueen
Cabinet Secretary

Matthias Sayer
Deputy Cabinet Secretary

David R. Catanach, Division Director
Oil Conservation Division



September 19, 2017

Ms. Marcella Marquez
JFJ Landfarm, L.L.C.
Industrial Ecosystems Inc.
Soil Reclamation Center
P.O. Box 2043
Farmington, New Mexico 87499

RE: Request for Approval to Reuse Remediated Biopile Soils for the Stabilization/Solidification of Drilling Mud, Tank Bottoms, and Sludge
JFJ Landfarm, LLC - Industrial Ecosystems Inc.
JFJ Landfarm – Permit # NM1-010-B
Location: NW/4 SE/4 of Section 2, Township 29 North, Range 12 West, NMPM,
San Juan County, New Mexico

Dear Ms. Marquez:

The Oil Conservation Division (OCD) has reviewed JFJ Landfarm, LLC's (JFJ) request, emailed to OCD on September 19, 2017, and associated analytical results to reuse the remediated soils for the stabilization and/or solidification of incoming drilling mud and tank bottoms and sludge from following biopile(s): **1047, 1025, 1037, 1049, 1033, 1051, 1050, 1035, 1026, and 1021.**

Based upon the information provided in the request, the above-referenced biopiles are hereby approved for the stabilization and/or solidification of incoming drilling mud and tank bottoms and sludge.

Please be advised that approval of this request does not relieve JFJ of liability should operations result in pollution of surface water, ground water or the environment. Nor does approval relieve JFJ of its responsibility to comply with any other applicable governmental authority's rules and regulations.

If there are any questions regarding this matter, please do not hesitate to contact Brad Jones on my staff at (505) 476-3487 or brad.a.jones@state.nm.us.

Respectfully,

Jim Griswold
Environmental Bureau Chief

JG/baj

cc: OCD District III Office, Aztec

Jones, Brad A., EMNRD

From: Marcella Marquez <marcella@industrialecosystems.com>
Sent: Thursday, September 14, 2017 1:16 PM
To: Jones, Brad A., EMNRD
Subject: Request to Reuse Treated Soils
Attachments: 091417 Request to Reuse Soil.pdf; 090717 analytics.pdf

Importance: High

Brad:

For your review/approval attached please find a request to reuse treated soils along with the corresponding analytical report.

*Thanks,
Marcella Marquez
Regulatory/Compliance/HR Manager
Industrial Ecosystems, Inc.
Phone: (505) 632-1782
Fax: (505) 632-1876 or (505) 334-1003*



**Industrial Ecosystems Inc.
Soil Reclamation Center**

P.O. Box 2043
Farmington, NM 87499

Phone: (505) 632-1782
Fax: (505) 632-1876

#49 CR 3150
Aztec, NM 87410

September 14, 2017

Brad Jones
Environmental Bureau
NM Oil Conservation Division
1220 S. St. Francis Drive
Santa Fe, New Mexico 87505

RE: Use of reclaimed soil

Dear Brad:

Recent analytical results show that the following biopiles(s) have reached acceptable levels as required by our NMOCD permit.

Pile #

1047	DRO, GRO, BTEX & Chlorides Passed 09/07/17
1025	DRO, GRO, BTEX & Chlorides Passed 09/07/17
1037	DRO, GRO, BTEX & Chlorides Passed 09/07/17
1049	DRO, GRO, BTEX & Chlorides Passed 09/07/17
1033	DRO, GRO, BTEX & Chlorides Passed 09/07/17
1051	DRO, GRO, BTEX & Chlorides Passed 09/07/17
1050	DRO, GRO, BTEX & Chlorides Passed 09/07/17
1035	DRO, GRO, BTEX & Chlorides Passed 09/07/17
1026	DRO, GRO, BTEX & Chlorides Passed 09/07/17
1021	DRO, GRO, BTEX & Chlorides Passed 09/07/17

We are seeking your approval to recycle this soil by using it to mix/solidify incoming liquid waste.

Respectfully Submitted,

A handwritten signature in cursive script that reads "Marcella Marquez".

Marcella Marquez
Regulatory/Compliance/HR

Enclosure(s) – Analytical Reports

Analytical Results For:

INDUSTRIAL ECOSYSTEMS
49 CR 3150
AZTEC NM, 87410

Project: JFJ
Project Number: 4867
Project Manager: MARCELLA MARQUEZ
Fax To: (505) 632-1876

Reported:
07-Sep-17 15:58

PILE 1047
H702336-01 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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Cardinal Laboratories

Inorganic Compounds

Chloride	96.0	16.0	mg/kg	4	7090514	AC	07-Sep-17	4500-Cl-B
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Volatile Organic Compounds by EPA Method 8021

Benzene*	<0.050	0.050	mg/kg	50	7090601	MS	06-Sep-17	8021B
Toluene*	<0.050	0.050	mg/kg	50	7090601	MS	06-Sep-17	8021B
Ethylbenzene*	<0.050	0.050	mg/kg	50	7090601	MS	06-Sep-17	8021B
Total Xylenes*	<0.150	0.150	mg/kg	50	7090601	MS	06-Sep-17	8021B
Total BTEX	<0.300	0.300	mg/kg	50	7090601	MS	06-Sep-17	8021B

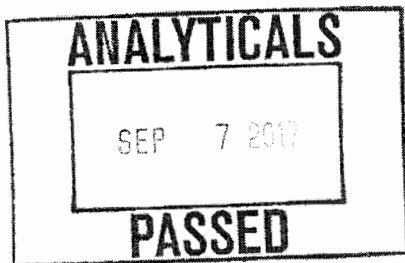
Surrogate: 4-Bromofluorobenzene (BFB)	100 %	72-148	7090601	MS	06-Sep-17	8021B
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Petroleum Hydrocarbons by GC FID

GRO C6-C10	<10.0	10.0	mg/kg	1	7090502	MS	05-Sep-17	8015B
DRO >C10-C28	23.3	10.0	mg/kg	1	7090502	MS	05-Sep-17	8015B

Surrogate: 1-Chlorooctane	94.9 %	28.3-164	7090502	MS	05-Sep-17	8015B
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Surrogate: 1-Chlorooctadecane	96.7 %	34.7-157	7090502	MS	05-Sep-17	8015B
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Cardinal Laboratories

*=Accredited Analyte

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Celey D. Keene

Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

INDUSTRIAL ECOSYSTEMS
49 CR 3150
AZTEC NM, 87410

Project: JFJ
Project Number: 4867
Project Manager: MARCELLA MARQUEZ
Fax To: (505) 632-1876

Reported:
07-Sep-17 15:58

PILE 1025
11702336-02 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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Cardinal Laboratories

Inorganic Compounds

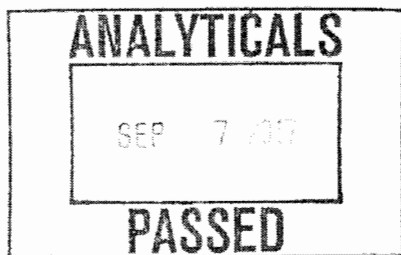
Chloride	112		16.0	mg/kg	4	7090514	AC	07-Sep-17	4500-Cl-B	
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Volatile Organic Compounds by EPA Method 8021

Benzene*	<0.050		0.050	mg/kg	50	7090601	MS	06-Sep-17	8021B	
Toluene*	<0.050		0.050	mg/kg	50	7090601	MS	06-Sep-17	8021B	
Ethylbenzene*	<0.050		0.050	mg/kg	50	7090601	MS	06-Sep-17	8021B	
Total Xylenes*	<0.150		0.150	mg/kg	50	7090601	MS	06-Sep-17	8021B	
Total BTEX	<0.300		0.300	mg/kg	50	7090601	MS	06-Sep-17	8021B	
Surrogate: 4-Bromofluorobenzene (PB1)			98.9 %	72-148		7090601	MS	06-Sep-17	8021B	

Petroleum Hydrocarbons by GC FID

GRO C6-C10	<10.0		10.0	mg/kg	1	7090502	MS	05-Sep-17	8015B	
DRO >C10-C28	21.5		10.0	mg/kg	1	7090502	MS	05-Sep-17	8015B	
Surrogate: 1-Chlorooctane			84.6 %	28.3-164		7090502	MS	05-Sep-17	8015B	
Surrogate: 1-Chlorooctadecane			95.0 %	34.7-157		7090502	MS	05-Sep-17	8015B	



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* = Accredited Analyte

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Ceiley D. Keene

Ceiley D. Keene, Lab Director/Quality Manager

Analytical Results For:

 INDUSTRIAL ECOSYSTEMS
 49 CR 3150
 AZTEC NM, 87410

 Project: JFJ
 Project Number: 4867
 Project Manager: MARCELLA MARQUEZ
 Fax To: (505) 632-1876

 Reported:
 07-Sep-17 15:58

PILE 1037
H702336-03 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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Cardinal Laboratories
Inorganic Compounds

Chloride	16.0	16.0	mg/kg	4	7090514	AC	07-Sep-17	4500-Cl-B
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Volatile Organic Compounds by EPA Method 8021

Benzene*	<0.050	0.050	mg/kg	50	7090601	MS	06-Sep-17	8021B
Toluene*	<0.050	0.050	mg/kg	50	7090601	MS	06-Sep-17	8021B
Ethylbenzene*	<0.050	0.050	mg/kg	50	7090601	MS	06-Sep-17	8021B
Total Xylenes*	<0.150	0.150	mg/kg	50	7090601	MS	06-Sep-17	8021B
Total BTEX	<0.300	0.300	mg/kg	50	7090601	MS	06-Sep-17	8021B

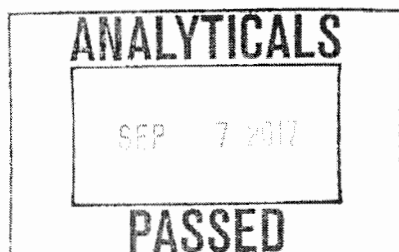
Surrogate: 4-Bromofluorobenzene (PDD)	99.1 %	72-148	7090601	MS	06-Sep-17	8021B
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Petroleum Hydrocarbons by GC FID

GRO C6-C10	<10.0	10.0	mg/kg	1	7090502	MS	05-Sep-17	8015B
DRO >C10-C28	<10.0	10.0	mg/kg	1	7090502	MS	05-Sep-17	8015B

Surrogate: 1-Cl-1-bromooctane	98.3 %	28.3-164	7090502	MS	05-Sep-17	8015B
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Surrogate: 1-Cl-1-bromodecane	97.1 %	34.7-157	7090502	MS	05-Sep-17	8015B
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* = Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

INDUSTRIAL ECOSYSTEMS
49 CR 3150
AZTEC NM, 87410

Project: JFJ
Project Number: 4867
Project Manager: MARCELLA MARQUEZ
Fax To: (505) 632-1876

Reported:
07-Sep-17 15:58

PILE 1049
H702336-04 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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Cardinal Laboratories

Inorganic Compounds

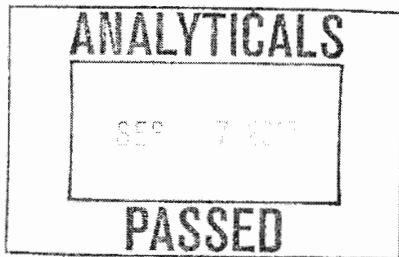
Chloride	48.0		16.0	mg/kg	4	7090514	AC	07-Sep-17	4500-Cl-B	
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Volatile Organic Compounds by EPA Method 8021

Benzene*	<0.050		0.050	mg/kg	50	7090601	MS	06-Sep-17	8021B	
Toluene*	<0.050		0.050	mg/kg	50	7090601	MS	06-Sep-17	8021B	
Ethylbenzene*	<0.050		0.050	mg/kg	50	7090601	MS	06-Sep-17	8021B	
Total Xylenes*	<0.150		0.150	mg/kg	50	7090601	MS	06-Sep-17	8021B	
Total BTEX	<0.300		0.300	mg/kg	50	7090601	MS	06-Sep-17	8021B	
Surrogate: 4-Bromofluorobenzene (P111)			99.9 %	72-148		7090601	MS	06-Sep-17	8021B	

Petroleum Hydrocarbons by GC FID

GRO C6-C10	<10.0		10.0	mg/kg	1	7090502	MS	05-Sep-17	8015B	
DRO >C10-C28	12.0		10.0	mg/kg	1	7090502	MS	05-Sep-17	8015B	
Surrogate: 1-Chlorooctane			83.9 %	28.3-164		7090502	MS	05-Sep-17	8015B	
Surrogate: 1-Chlorooctadecane			87.7 %	34.7-157		7090502	MS	05-Sep-17	8015B	



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Celestine D. Keene
Celestine D. Keene, Lab Director/Quality Manager



PHONE (575) 393-2326 • 101 E. MARLAND • HOBBS, NM 88240

Analytical Results For:

INDUSTRIAL ECOSYSTEMS
49 CR 3150
AZTEC NM, 87410

Project: JFJ
Project Number: 4867
Project Manager: MARCELLA MARQUEZ
Fax To: (505) 632-1876

Reported:
07-Sep-17 15:58

**PILE 1033
H702336-05 (Soil)**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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Cardinal Laboratories

Inorganic Compounds

Chloride	128	16.0	mg/kg	4	7090514	AC	07-Sep-17	4500-Cl-B
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Volatile Organic Compounds by EPA Method 8021

Benzene*	<0.050	0.050	mg/kg	50	7090601	MS	06-Sep-17	8021B
Toluene*	<0.050	0.050	mg/kg	50	7090601	MS	06-Sep-17	8021B
Ethylbenzene*	<0.050	0.050	mg/kg	50	7090601	MS	06-Sep-17	8021B
Total Xylenes*	<0.150	0.150	mg/kg	50	7090601	MS	06-Sep-17	8021B
Total BTEX	<0.300	0.300	mg/kg	50	7090601	MS	06-Sep-17	8021B

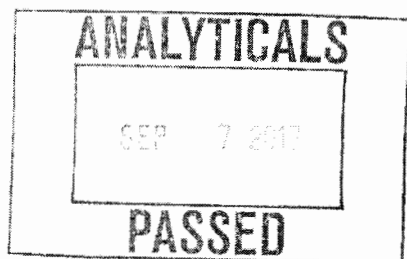
Surrogate: 4-Bromofluorobenzene (P113)	99.6 %	72-148	7090601	MS	06-Sep-17	8021B
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Petroleum Hydrocarbons by GC FID

GRO C6-C10	<10.0	10.0	mg/kg	1	7090511	MS	06-Sep-17	8015B
DRO >C10-C28	68.2	10.0	mg/kg	1	7090511	MS	06-Sep-17	8015B

Surrogate: 1-Chlorooctane	107 %	28.3-164	7090511	MS	06-Sep-17	8015B
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Surrogate: 1-Chlorooctadecane	127 %	34.7-157	7090511	MS	06-Sep-17	8015B
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*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

 INDUSTRIAL ECOSYSTEMS
 49 CR 3150
 AZTEC NM, 87410

 Project: JFJ
 Project Number: 4867
 Project Manager: MARCELLA MARQUEZ
 Fax To: (505) 632-1876

 Reported:
 07-Sep-17 15:58

PILE 1051
H702336-06 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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Cardinal Laboratories
Inorganic Compounds

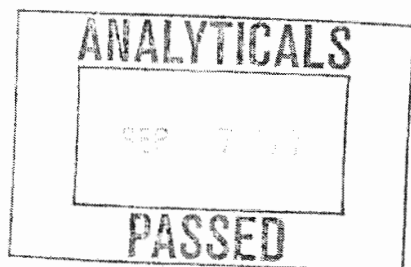
Chloride	16.0		16.0	mg/kg	4	7090514	AC	07-Sep-17	4500-C1-B	
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Volatile Organic Compounds by EPA Method 8021

Benzene*	<0.050		0.050	mg/kg	50	7090601	MS	06-Sep-17	8021B	
Toluene*	<0.050		0.050	mg/kg	50	7090601	MS	06-Sep-17	8021B	
Ethylbenzene*	<0.050		0.050	mg/kg	50	7090601	MS	06-Sep-17	8021B	
Total Xylenes*	<0.150		0.150	mg/kg	50	7090601	MS	06-Sep-17	8021B	
Total BTEX	<0.300		0.300	mg/kg	50	7090601	MS	06-Sep-17	8021B	
Surrogate: 4-Bromofluorobenzene (PBB)			99.1 %	72-148		7090601	MS	06-Sep-17	8021B	

Petroleum Hydrocarbons by GC FID

GRO C6-C10	<10.0		10.0	mg/kg	1	7090511	MS	06-Sep-17	8015B	
DRO >C10-C28	<10.0		10.0	mg/kg	1	7090511	MS	06-Sep-17	8015B	
Surrogate: 1-Chlorooctane			100 %	28.3-164		7090511	MS	06-Sep-17	8015B	
Surrogate: 1-Chlorodecane			102 %	34.7-157		7090511	MS	06-Sep-17	8015B	



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* = Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

 INDUSTRIAL ECOSYSTEMS
 49 CR 3150
 AZTEC NM, 87410

 Project: JFJ
 Project Number: 4867
 Project Manager: MARCELLA MARQUEZ
 Fax To: (505) 632-1876

 Reported:
 07-Sep-17 15:58

PILE 1050
H702336-07 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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Cardinal Laboratories
Inorganic Compounds

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
Chloride	80.0		16.0	mg/kg	4	7090514	AC	07-Sep-17	4500-Cl-B	

Volatile Organic Compounds by EPA Method 8021

Benzene*	<0.050		0.050	mg/kg	50	7090601	MS	06-Sep-17	8021B	
Toluene*	<0.050		0.050	mg/kg	50	7090601	MS	06-Sep-17	8021B	
Ethylbenzene*	<0.050		0.050	mg/kg	50	7090601	MS	06-Sep-17	8021B	
Total Nxylenes*	<0.150		0.150	mg/kg	50	7090601	MS	06-Sep-17	8021B	
Total BTX	<0.300		0.300	mg/kg	50	7090601	MS	06-Sep-17	8021B	

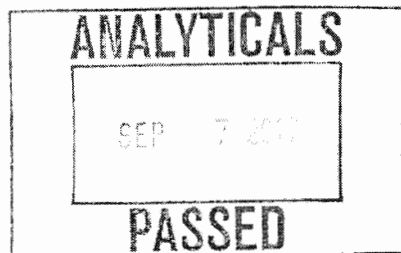
Surrogate: 4-Bromofluorobenzene (P11)	99.6 %		72-148			7090601	MS	06-Sep-17	8021B	
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Petroleum Hydrocarbons by GC FID

GRO C6-C10	<10.0		10.0	mg/kg	1	7090511	MS	06-Sep-17	8015B	
DRO >C10-C28	<10.0		10.0	mg/kg	1	7090511	MS	06-Sep-17	8015B	

Surrogate: 1-Chlorooctane	93.3 %		28.3-164			7090511	MS	06-Sep-17	8015B	
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Surrogate: 1-Chlorodecane	104 %		34.7-157			7090511	MS	06-Sep-17	8015B	
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Cardinal Laboratories

* = Accredited Analyte

PACKAGE NOTE: Liability and Damages: Cardinal's liability and client's exclusive remedy for any claims arising, whether based on contract or tort, shall be limited to the amount paid by client for analysis. All claims, including those for negligence or any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damage including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether the claim is caused upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.

Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

INDUSTRIAL ECOSYSTEMS
49 CR 3150
AZTEC NM, 87410

Project: JFJ
Project Number: 4867
Project Manager: MARCELLA MARQUEZ
Fax To: (505) 632-1876

Reported:
07-Sep-17 15:58

PILE 1035 H702336-08 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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Cardinal Laboratories

Inorganic Compounds

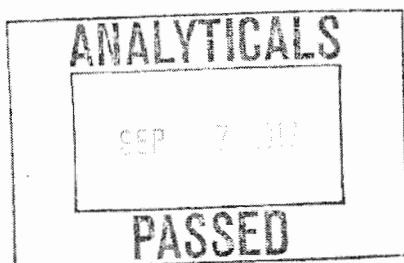
Chloride	176		16.0	mg/kg	4	7090514	AC	07-Sep-17	4500-Cl-B	
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Volatile Organic Compounds by EPA Method 8021

Benzene*	<0.050		0.050	mg/kg	50	7090601	MS	06-Sep-17	8021B	
Toluene*	<0.050		0.050	mg/kg	50	7090601	MS	06-Sep-17	8021B	
Ethylbenzene*	<0.050		0.050	mg/kg	50	7090601	MS	06-Sep-17	8021B	
Total Xylenes*	<0.150		0.150	mg/kg	50	7090601	MS	06-Sep-17	8021B	
Total BTX	<0.300		0.300	mg/kg	50	7090601	MS	06-Sep-17	8021B	
Surrogate: 4-Bromofluorobenzene (P11)	99.4 %		72-148			7090601	MS	06-Sep-17	8021B	

Petroleum Hydrocarbons by GC FID

GRO C6-C10	<10.0		10.0	mg/kg	1	7090511	MS	06-Sep-17	8015B	
DRO >C10-C28	99.9		10.0	mg/kg	1	7090511	MS	06-Sep-17	8015B	
Surrogate: 1-Chlorooctane	107 %		28.3-164			7090511	MS	06-Sep-17	8015B	
Surrogate: 1-Chloronadecane	121 %		34.7-157			7090511	MS	06-Sep-17	8015B	



Cardinal Laboratories

* = Accredited Analyte

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Celeste D. Keene

Celeste D. Keene, Lab Director/Quality Manager

Analytical Results For:

 INDUSTRIAL ECOSYSTEMS
 49 CR 3150
 AZTEC NM, 87410

 Project: JFJ
 Project Number: 4867
 Project Manager: MARCELLA MARQUEZ
 Fax To: (505) 632-1876

 Reported:
 07-Sep-17 15:58

PILE 1026
H702336-09 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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Cardinal Laboratories
Inorganic Compounds

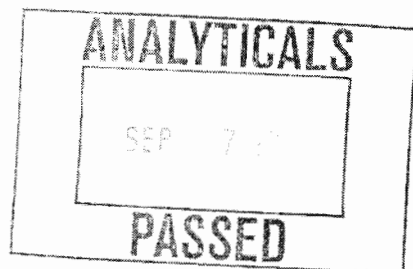
Chloride	272	16.0	mg/kg	4	7090514	AC	07-Sep-17	4500-Cl-B
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Volatile Organic Compounds by EPA Method 8021

Benzene*	<0.050	0.050	mg/kg	50	7090601	MS	06-Sep-17	8021B
Toluene*	<0.050	0.050	mg/kg	50	7090601	MS	06-Sep-17	8021B
Ethylbenzene*	<0.050	0.050	mg/kg	50	7090601	MS	06-Sep-17	8021B
Total Xylenes*	<0.150	0.150	mg/kg	50	7090601	MS	06-Sep-17	8021B
Total BTEX	<0.300	0.300	mg/kg	50	7090601	MS	06-Sep-17	8021B
Surrogate: 4-Bromofluorobenzene (PFB)	99.3 %	72-148			7090601	MS	06-Sep-17	8021B

Petroleum Hydrocarbons by GC FID

GRO C6-C10	<10.0	10.0	mg/kg	1	7090511	MS	06-Sep-17	8015B
DRO >C10-C28	13.1	10.0	mg/kg	1	7090511	MS	06-Sep-17	8015B
Surrogate: 1-Chlorooctane	101 %	28.3-164			7090511	MS	06-Sep-17	8015B
Surrogate: 1-Chlorodecane	111 %	34.7-157			7090511	MS	06-Sep-17	8015B



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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

 INDUSTRIAL ECOSYSTEMS
 49 CR 3150
 AZTEC NM, 87410

 Project: JFJ
 Project Number: 4867
 Project Manager: MARCELLA MARQUEZ
 Fax To: (505) 632-1876

 Reported:
 07-Sep-17 15:58

PILE 1021
H702336-10 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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Cardinal Laboratories
Inorganic Compounds

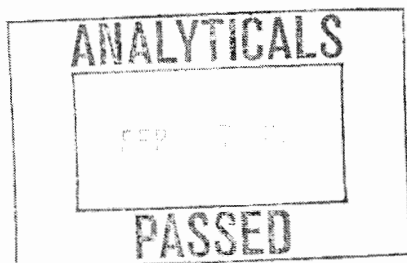
Chloride	16.0	16.0	mg/kg	4	7090514	AC	07-Sep-17	4500-Cl-B
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Volatile Organic Compounds by EPA Method 8021

Benzene*	<0.050	0.050	mg/kg	50	7090601	MS	06-Sep-17	8021B
Toluene*	<0.050	0.050	mg/kg	50	7090601	MS	06-Sep-17	8021B
Ethylbenzene*	<0.050	0.050	mg/kg	50	7090601	MS	06-Sep-17	8021B
Total Xylenes*	<0.150	0.150	mg/kg	50	7090601	MS	06-Sep-17	8021B
Total BTEX	<0.300	0.300	mg/kg	50	7090601	MS	06-Sep-17	8021B
Surrogate: 4-Bromofluorobenzene (P113)	99.2 %	72.148			7090601	MS	06-Sep-17	8021B

Petroleum Hydrocarbons by GC FID

GRO C6-C10	<10.0	10.0	mg/kg	1	7090511	MS	06-Sep-17	8015B
DRO >C10-C28	21.2	10.0	mg/kg	1	7090511	MS	06-Sep-17	8015B
Surrogate: 1-Chlorooctane	96.9 %	28.3-164	7090511	MS	06-Sep-17	8015B		
Surrogate: 1-Chlorooctadecane	103 %	34.7-157	7090511	MS	06-Sep-17	8015B		



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Celey D. Keene, Lab Director/Quality Manager



PHONE (575) 393-2326 • 101 E. MARLAND • HOBBS, NM 88240

Analytical Results For:

INDUSTRIAL ECOSYSTEMS
49 CR 3150
AZTEC NM, 87410

Project: JFJ
Project Number: 4867
Project Manager: MARCELLA MARQUEZ
Fax To: (505) 632-1876

Reported:
07-Sep-17 15:58

Inorganic Compounds - Quality Control Cardinal Laboratories

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC Limits	RPD Limit	Notes
Batch 7090514 - 1:4 DI Water								
Blank (7090514-BL.K1)				Prepared & Analyzed: 05-Sep-17				
Chloride	ND	16.0	mg/kg					
ICS (7090514-BS1)				Prepared & Analyzed: 05-Sep-17				
Chloride	416	16.0	mg/kg	400	104	80-120		
ICS Dup (7090514-BSD1)				Prepared & Analyzed: 05-Sep-17				
Chloride	432	16.0	mg/kg	400	108	80-120	3.77	20

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

INDUSTRIAL ECOSYSTEMS
49 CR 3150
AZTEC NM, 87410

Project: JFJ
Project Number: 4867
Project Manager: MARCELLA MARQUEZ
Fax To: (505) 632-1876

Reported:
07-Sep-17 15:58

Volatile Organic Compounds by EPA Method 8021 - Quality Control

Cardinal Laboratories

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 7090601 - Volatiles										
Blank (7090601-BLK1)				Prepared & Analyzed: 06-Sep-17						
Benzene	ND	0.050	mg/kg							
Toluene	ND	0.050	mg/kg							
Ethylbenzene	ND	0.050	mg/kg							
Total Xylenes	ND	0.150	mg/kg							
Total BTEX	ND	0.300	mg/kg							
Surrogate: 4-Bromofluorobenzene (P11)	ND		mg/kg	0.0500		97.6	72-148			
LCS (7090601-BS1)				Prepared & Analyzed: 06-Sep-17						
Benzene	1.82	0.050	mg/kg	2.00		90.8	79.5-124			
Toluene	1.83	0.050	mg/kg	2.00		91.3	75.5-127			
Ethylbenzene	1.94	0.050	mg/kg	2.00		97.0	77.7-125			
Total Xylenes	5.78	0.150	mg/kg	6.00		96.3	70.9-124			
Surrogate: 4-Bromofluorobenzene (P11)	0.0489		mg/kg	0.0500		97.8	72-148			
LCS Dup (7090601-BS1)				Prepared & Analyzed: 06-Sep-17						
Benzene	1.81	0.050	mg/kg	2.00		90.5	79.5-124	0.313	6.5	
Toluene	1.83	0.050	mg/kg	2.00		91.3	75.5-127	0.0863	7.02	
Ethylbenzene	1.95	0.050	mg/kg	2.00		97.6	77.7-125	0.633	7.83	
Total Xylenes	5.83	0.150	mg/kg	6.00		97.1	70.9-124	0.918	7.78	
Surrogate: 4-Bromofluorobenzene (P11)	0.0496		mg/kg	0.0500		99.2	72-148			

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Celely D. Keene, Lab Director/Quality Manager



PHONE (575) 393-2326 • 101 E. MARLAND • HOBBS, NM 88240

Analytical Results For:INDUSTRIAL ECOSYSTEMS
49 CR 3150
AZTEC NM, 87410Project: JFJ
Project Number: 4867
Project Manager: MARCELLA MARQUEZ
Fax To: (505) 632-1876Reported:
07-Sep-17 15:58**Petroleum Hydrocarbons by GC FID - Quality Control****Cardinal Laboratories**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 7090502 - General Prep - Organics**Blank (7090502-BLK1)**

Prepared & Analyzed: 05-Sep-17

GRO C6-C10	ND	10.0	mg/kg							
DRO >C10-C28	ND	10.0	mg/kg							
Surrogate: 1-Chlorooctane	44.7		mg/kg	50.0		89.4	28.3-164			
Surrogate: 1-Chlorooctadecane	45.8		mg/kg	50.0		91.7	34.7-157			

LCS (7090502-BS1)

Prepared & Analyzed: 05-Sep-17

GRO C6-C10	185	10.0	mg/kg	200		92.4	76.6-119			
DRO >C10-C28	186	10.0	mg/kg	200		92.8	81.4-124			
Surrogate: 1-Chlorooctane	47.4		mg/kg	50.0		94.8	28.3-164			
Surrogate: 1-Chlorooctadecane	47.4		mg/kg	50.0		94.8	34.7-157			

LCS Dup (7090502-BSD1)

Prepared & Analyzed: 05-Sep-17

GRO C6-C10	191	10.0	mg/kg	200		95.4	76.6-119	3.24	7.94	
DRO >C10-C28	191	10.0	mg/kg	200		95.5	81.4-124	2.95	9.83	
Surrogate: 1-Chlorooctane	49.5		mg/kg	50.0		99.1	28.3-164			
Surrogate: 1-Chlorooctadecane	49.0		mg/kg	50.0		98.0	34.7-157			

Batch 7090511 - General Prep - Organics**Blank (7090511-BLK1)**

Prepared: 05-Sep-17 Analyzed: 06-Sep-17

GRO C6-C10	ND	10.0	mg/kg							
DRO >C10-C28	ND	10.0	mg/kg							
Surrogate: 1-Chlorooctane	47.7		mg/kg	50.0		95.3	28.3-164			
Surrogate: 1-Chlorooctadecane	54.5		mg/kg	50.0		109	34.7-157			

LCS (7090511-BS1)

Prepared: 05-Sep-17 Analyzed: 06-Sep-17

GRO C6-C10	207	10.0	mg/kg	200		103	76.6-119			
DRO >C10-C28	209	10.0	mg/kg	200		105	81.4-124			
Surrogate: 1-Chlorooctane	52.9		mg/kg	50.0		106	28.3-164			
Surrogate: 1-Chlorooctadecane	52.5		mg/kg	50.0		105	34.7-157			

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

 INDUSTRIAL ECOSYSTEMS
 49 CR 3150
 AZTEC NM, 87410

 Project: JFJ
 Project Number: 4867
 Project Manager: MARCELLA MARQUEZ
 Fax To: (505) 632-1876

 Reported:
 07-Sep-17 15:58

Petroleum Hydrocarbons by GC FID - Quality Control
Cardinal Laboratories

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 7090511 - General Prep - Organics										
LC5 Dup (7090511-BSD1)				Prepared: 05-Sep-17 Analyzed: 06-Sep-17						
GRO C6-C10	215	10.0	mg/kg	200		107	76.6-119	3.94	7.94	
DRO >C10-C28	216	10.0	mg/kg	200		108	81.4-124	3.61	9.83	
Surrogate: 1-Chlorooctane	54.8		mg/kg	50.0		110	28.3-164			
Surrogate: 1-Chlorooctadecane	53.6		mg/kg	50.0		111	34.7-157			

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Celey D. Keene, Lab Director/Quality Manager

Notes and Definitions

ND	Analyte NOT DETECTED at or above the reporting limit
RPD	Relative Percent Difference
**	Samples not received at proper temperature of 6°C or below.
**A	Insufficient time to reach temperature.
-	Chloride by SM4500Cl-B does not require samples be received at or below 6°C Samples reported on an as received basis (wet) unless otherwise noted on report

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Celey D. Keene, Lab Director/Quality Manager



CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

(970) 247-4220
Fax: (970) 247-4227

service@greenanalytical.com or dzufelt@greenanalytical.com
75 Suttle St Durango, CO 81303

Page 18 of 18

Company Name: IEI		Bill to (if different):		ANALYSIS REQUEST						
Project Manager: marcella		P.O. #: 1867		DRO 8015B GRO 8015B BTEx 8021B Chlorides 300.0						
Address: 49CR 3150		Company:								
City: A2+cc State: Nm Zip: 87400		Attn:								
Phone #: 632-1782 Email:		Address:								
Additional Report To:		City:								
Project Name: JFJ		State:		Zip:						
Project Number:		Phone #:								
Sampler Name (Print): Richard Chavez		Fax or Email:								
Lab I.D.	Sample Name or Location	Collected	Matrix (check one)	# of containers						
		Date	Time	GROUNDWATER SURFACEWATER WASTEWATER PRODUCEDWATER SOIL OTHER:	No preservation (general) HNO ₃ HCl H ₂ SO ₄ Other: Other:					
HTD2336										
1	PILC 1047	8-29-17	7:00 ^{AM}							
2	" " 1025	8-29-17	7:35 ^{AM}							
3	" " 1037	8-29-17	8:10							
4	" " 1049	8-29-17	8:40							
5	" " 1033	8-30-17	7:00 ^{AM}							
6	" " 1051	8-30-17	7:40							
7	" " 1050	8-30-17	8:15							
8	" " 1035	8-30-17	8:40							
9	" " 1026	8-30-17	9:15							
10	" " 1021	8-30-17	9:45							

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Relinquished By:	Date: 8/31/17 Time: 1:31Z	Received By: Christian Clave	ADDITIONAL REMARKS: Report to State? (Circle) Yes No
Relinquished By: Christian Clave	Date: 8/31/17 Time: 1600	Received By: Fed Ex	
Relinquished By:	Date: 9/1/17 Time: 11:45	Received By: Jodi Benson	
Delivered By: (Circle One) #75	Temperature at receipt: 5.05°C	CHECKED BY: u	
Sampler: UPS - FedEx - Kangaroo - Other:			

† GAL cannot always accept verbal changes. Please fax or email written change requests.
* Chain of Custody must be signed in "Relinquished By:" as an acceptance of services and all applicable charges.
collected + .25%

State of New Mexico
Energy, Minerals and Natural Resources Department

Susana Martinez
Governor

Ken McQueen
Cabinet Secretary

Matthias Sayer
Deputy Cabinet Secretary

David R. Catanach, Division Director
Oil Conservation Division



June 26, 2017

Ms. Marcella Marquez
JFJ Landfarm, L.L.C.
Industrial Ecosystems Inc.
Soil Reclamation Center
P.O. Box 2043
Farmington, New Mexico 87499

RE: Request for Approval to Reuse Remediated Biopile Soils for the Stabilization/Solidification of Drilling Mud, Tank Bottoms, and Sludge
JFJ Landfarm, LLC - Industrial Ecosystems Inc.
JFJ Landfarm – Permit # NM1-010-B
Location: NW/4 SE/4 of Section 2, Township 29 North, Range 12 West, NMPM,
San Juan County, New Mexico

Dear Ms. Marquez:

The Oil Conservation Division (OCD) has reviewed JFJ Landfarm, LLC's (JFJ) request, emailed to OCD on June 23, 2017, and associated analytical results to reuse the remediated soils for the stabilization and/or solidification of incoming drilling mud and tank bottoms and sludge from following biopile(s):
512, 510, 550, 848, 1004, 807, 983, 547, 138, 648, and 535.

Based upon the information provided in the request, the above-referenced biopiles are hereby approved for the stabilization and/or solidification of incoming drilling mud and tank bottoms and sludge.

Please be advised that approval of this request does not relieve JFJ of liability should operations result in pollution of surface water, ground water or the environment. Nor does approval relieve JFJ of its responsibility to comply with any other applicable governmental authority's rules and regulations.

If there are any questions regarding this matter, please do not hesitate to contact Brad Jones on my staff at (505) 476-3487 or brad.a.jones@state.nm.us.

Respectfully,

Jim Griswold
Environmental Bureau Chief

JG/baj

cc: OCD District III Office, Aztec

Jones, Brad A., EMNRD

From: Marcella Marquez <marcella@industrialecosystems.com>
Sent: Friday, June 23, 2017 3:10 PM
To: Jones, Brad A., EMNRD
Subject: Request to Reuse Treated Soils
Attachments: Passed Biopiles 060817.pdf; Request to Reuse Soil 062317.pdf

Brad:

Attached please find the request to reuse treated soils along with the corresponding analytical report.

Please let me know if you have any questions or if additional information is needed.

*Thanks,
Marcella Marquez
Regulatory/Compliance/HR Manager
Industrial Ecosystems, Inc.
Phone: (505) 632-1782
Fax: (505) 632-1876 or (505) 334-1003*



**Industrial Ecosystems Inc.
Soil Reclamation Center**

P.O. Box 2043
Farmington, NM 87499

Phone: (505) 632-1782
Fax: (505) 632-1876

#49 CR 3150
Aztec, NM 87410

June 23, 2017

Brad Jones
Environmental Bureau
NM Oil Conservation Division
1220 S. St. Francis Drive
Santa Fe, New Mexico 87505

RE: Use of reclaimed soil

Dear Brad:

Recent analytical results show that the following biopiles(s) have reached acceptable levels as required by our NMOCD permit.

Pile #

512	DRO, GRO, BTEX & Chlorides Passed 06/08/17
510	DRO, GRO, BTEX & Chlorides Passed 06/08/17
550	DRO, GRO, BTEX & Chlorides Passed 06/08/17
848	DRO, GRO, BTEX & Chlorides Passed 06/08/17
1004	DRO, GRO, BTEX & Chlorides Passed 06/08/17
807	DRO, GRO, BTEX & Chlorides Passed 06/08/17
983	DRO, GRO, BTEX & Chlorides Passed 06/08/17
547	DRO, GRO, BTEX & Chlorides Passed 06/08/17
138	DRO, GRO, BTEX & Chlorides Passed 06/08/17
648	DRO, GRO, BTEX & Chlorides Passed 06/08/17
535	DRO, GRO, BTEX & Chlorides Passed 06/08/17

We are seeking your approval to recycle this soil by using it to mix/solidify incoming liquid waste.

Respectfully Submitted,

A handwritten signature in cursive script, appearing to read 'Marcella Marquez'.

Marcella Marquez
Regulatory/Compliance/HR

Enclosure(s) – Analytical Reports



PHONE (575) 393-2326 • 101 E. MARLAND • HOBBS, NM 88240

Analytical Results For:INDUSTRIAL ECOSYSTEMS
49 CR 3150
AZTEC NM, 87410Project: JFJ
Project Number: 4608
Project Manager: MARCELLA MARQUEZ
Fax To: (505) 632-1876Reported:
08-Jun-17 15:54**PILE 512
H701479-01 (Soil)**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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Cardinal Laboratories**Inorganic Compounds**

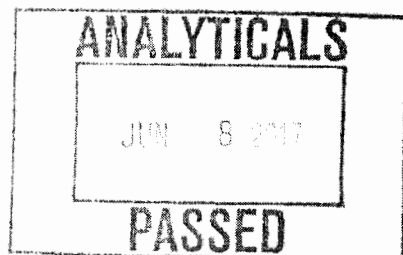
Chloride	96.0		16.0	mg/kg	4	7060601	AC	06-Jun-17	4500-Cl-B	
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Volatile Organic Compounds by EPA Method 8021

Benzene*	<0.050		0.050	mg/kg	50	7060702	MS	07-Jun-17	8021B	
Toluene*	<0.050		0.050	mg/kg	50	7060702	MS	07-Jun-17	8021B	
Ethylbenzene*	<0.050		0.050	mg/kg	50	7060702	MS	07-Jun-17	8021B	
Total Xylenes*	<0.150		0.150	mg/kg	50	7060702	MS	07-Jun-17	8021B	
Total BTEX	<0.300		0.300	mg/kg	50	7060702	MS	07-Jun-17	8021B	
Surrogate: 4-Bromofluorobenzene (PHE)			97.1 %	72-148		7060702	MS	07-Jun-17	8021B	

Petroleum Hydrocarbons by GC FID

GRO C6-C10	<10.0		10.0	mg/kg	1	7060605	MS	06-Jun-17	8015B	
DRO >C10-C28	<10.0		10.0	mg/kg	1	7060605	MS	06-Jun-17	8015B	
Surrogate: 1-Chloronaphthalene			88.3 %	28.3-164		7060605	MS	06-Jun-17	8015B	
Surrogate: 1-Chloronaphthalene			81.8 %	34.7-157		7060605	MS	06-Jun-17	8015B	



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* = Accredited Analyte

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Celley D. Keene, Lab Director/Quality Manager

Analytical Results For:

 INDUSTRIAL ECOSYSTEMS
 49 CR 3150
 AZTEC NM, 87410

 Project: JFJ
 Project Number: 4608
 Project Manager: MARCELLA MARQUEZ
 Fax To: (505) 632-1876

 Reported:
 08-Jun-17 15:54

PILE 510
H701479-02 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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Cardinal Laboratories
Inorganic Compounds

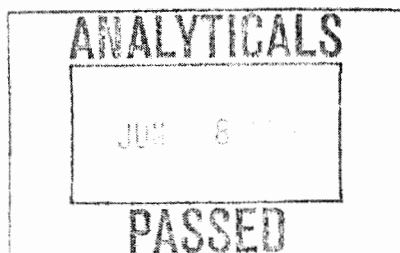
Chloride	64.0		16.0	mg/kg	4	7060601	AC	06-Jun-17	4500-C1-B	
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Volatile Organic Compounds by EPA Method 8021

Benzene*	<0.050		0.050	mg/kg	50	7060702	MS	07-Jun-17	8021B	
Toluene*	<0.050		0.050	mg/kg	50	7060702	MS	07-Jun-17	8021B	
Ethylbenzene*	<0.050		0.050	mg/kg	50	7060702	MS	07-Jun-17	8021B	
Total Xylenes*	<0.150		0.150	mg/kg	50	7060702	MS	07-Jun-17	8021B	
Total BTX	<0.300		0.300	mg/kg	50	7060702	MS	07-Jun-17	8021B	
Surrogate: 1-Bromofluorobenzene (PFB)			97.9 %	72-148		7060702	MS	07-Jun-17	8021B	

Petroleum Hydrocarbons by GC FID

GRO C6-C10	<10.0		10.0	mg/kg	1	7060605	MS	06-Jun-17	8015B	
DRO C10-C28	<10.0		10.0	mg/kg	1	7060605	MS	06-Jun-17	8015B	
Surrogate: 1,1-Dibromonaphthalene			95.3 %	28.3-164		7060605	MS	06-Jun-17	8015B	
Surrogate: 1,1-Dibromonaphthalene			87.1 %	34.7-157		7060605	MS	06-Jun-17	8015B	



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 Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

INDUSTRIAL ECOSYSTEMS 49 CR 3150 AZTEC NM, 87410	Project: JFJ Project Number: 4608 Project Manager: MARCELLA MARQUEZ Fax To: (505) 632-1876	Reported: 08-Jun-17 15:54
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**PILE 550
H701479-03 (Soil)**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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Cardinal Laboratories
Inorganic Compounds

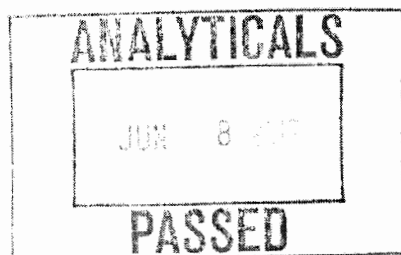
Chloride	128		16.0	mg/kg	4	7060601	AC	06-Jun-17	4500-C1-B	
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Volatile Organic Compounds by EPA Method 8021

Benzene*	<0.050		0.050	mg/kg	50	7060702	MS	07-Jun-17	8021B	
Toluene*	<0.050		0.050	mg/kg	50	7060702	MS	07-Jun-17	8021B	
Ethylbenzene*	<0.050		0.050	mg/kg	50	7060702	MS	07-Jun-17	8021B	
Total Nylenes*	<0.150		0.150	mg/kg	50	7060702	MS	07-Jun-17	8021B	
Total BTEX	<0.300		0.300	mg/kg	50	7060702	MS	07-Jun-17	8021B	
<i>S surrogate: 4-Bromofluorobenzene (P1H)</i>										
			97.6 %	72-148		7060702	MS	07-Jun-17	8021B	

Petroleum Hydrocarbons by GC FID

GRO C6-C10	<10.0		10.0	mg/kg	1	7060605	MS	06-Jun-17	8015B	
DRO >C10-C28	32.2		10.0	mg/kg	1	7060605	MS	06-Jun-17	8015B	
<i>S surrogate: 1-Chlorooctane</i>										
			101 %	28.3-164		7060605	MS	06-Jun-17	8015B	
<i>S surrogate: 1-Chlorooctadecane</i>										
			90.5 %	34.7-157		7060605	MS	06-Jun-17	8015B	



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Cately D. Keene, Lab Director/Quality Manager



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Analytical Results For:

INDUSTRIAL ECOSYSTEMS
49 CR 3150
AZTEC NM, 87410

Project: JFJ
Project Number: 4608
Project Manager: MARCELLA MARQUEZ
Fax To: (505) 632-1876

Reported:
08-Jun-17 15:54

PILE 848
11701479-04 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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Cardinal Laboratories

Inorganic Compounds

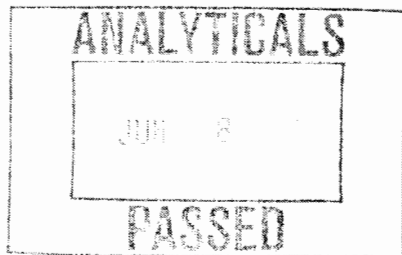
Chloride	144	16.0	mg/kg	4	7060601	AC	06-Jun-17	4500-C1-B	
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Volatile Organic Compounds by EPA Method 8021

Benzene*	<0.050	0.050	mg/kg	50	7060702	MS	07-Jun-17	8021B	
Toluene*	<0.050	0.050	mg/kg	50	7060702	MS	07-Jun-17	8021B	
Ethylbenzene*	<0.050	0.050	mg/kg	50	7060702	MS	07-Jun-17	8021B	
Total Xylenes*	<0.150	0.150	mg/kg	50	7060702	MS	07-Jun-17	8021B	
Total BTEN	<0.300	0.300	mg/kg	50	7060702	MS	07-Jun-17	8021B	
Surrogate: 4-Bromofluorobenzene (BFB)			98.0 %	72-148	7060702	MS	07-Jun-17	8021B	

Petroleum Hydrocarbons by GC FID

GRO C6-C10	<10.0	10.0	mg/kg	1	7060605	MS	06-Jun-17	8015B	
DRO >C10-C28	14.9	10.0	mg/kg	1	7060605	MS	06-Jun-17	8015B	
Surrogate: 1-Chlorooctane			93.8 %	28.3-164	7060605	MS	06-Jun-17	8015B	
Surrogate: 1-Chlorodecane			87.3 %	34.7-157	7060605	MS	06-Jun-17	8015B	



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Celey D. Keene

Celey D. Keene, Lab Director/Quality Manager



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Analytical Results For:

INDUSTRIAL ECOSYSTEMS 49 CR 3150 AZTEC NM, 87410	Project: JFJ Project Number: 4608 Project Manager: MARCELLA MARQUEZ Fax To: (505) 632-1876	Reported: 08-Jun-17 15:54
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**PILE 1004
H701479-06 (Soil)**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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Cardinal Laboratories

Inorganic Compounds

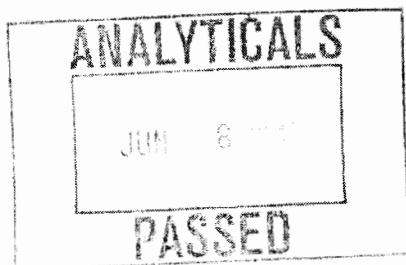
Chloride	80.0	16.0	mg/kg	4	7060601	AC	06-Jun-17	4500-CI-B		
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Volatile Organic Compounds by EPA Method 8021

Benzene*	<0.050	0.050	mg/kg	50	7060702	MS	07-Jun-17	8021B		
Toluene*	<0.050	0.050	mg/kg	50	7060702	MS	07-Jun-17	8021B		
Ethylbenzene*	<0.050	0.050	mg/kg	50	7060702	MS	07-Jun-17	8021B		
Total Nylenes*	<0.150	0.150	mg/kg	50	7060702	MS	07-Jun-17	8021B		
Total BTEX	<0.300	0.300	mg/kg	50	7060702	MS	07-Jun-17	8021B		
Surrogate: 4-Bromofluorobenzene (FID)	97.5 %	72-148	7060702	MS	07-Jun-17	8021B				

Petroleum Hydrocarbons by GC FID

GRO C6-C10	<10.0	10.0	mg/kg	1	7060605	MS	06-Jun-17	8015B		
DRO >C10-C28	20.3	10.0	mg/kg	1	7060605	MS	06-Jun-17	8015B		
Surrogate: 1-Nonadecane	105 %	28.3-164	7060605	MS	06-Jun-17	8015B				
Surrogate: 1-Chlorooctadecane	90.5 %	34.7-157	7060605	MS	06-Jun-17	8015B				



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Deley D. Keene

Deley D. Keene, Lab Director/Quality Manager

Analytical Results For:

INDUSTRIAL ECOSYSTEMS
49 CR 3150
AZTEC NM, 87410

Project: JFJ
Project Number: 4608
Project Manager: MARCELLA MARQUEZ
Fax To: (505) 632-1876

Reported:
08-Jun-17 15:54

PILE 807
H701479-07 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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Inorganic Compounds

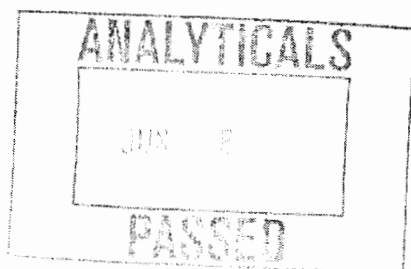
Chloride	80.0	16.0	mg/kg	4	7060601	AC	06-Jun-17	4500-Cl-B
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Volatile Organic Compounds by EPA Method 8021

Benzene*	<0.050	0.050	mg/kg	50	7060702	MS	07-Jun-17	8021B
Toluene*	<0.050	0.050	mg/kg	50	7060702	MS	07-Jun-17	8021B
Ethylbenzene*	<0.050	0.050	mg/kg	50	7060702	MS	07-Jun-17	8021B
Total Xylenes*	<0.150	0.150	mg/kg	50	7060702	MS	07-Jun-17	8021B
Total BTEX	<0.300	0.300	mg/kg	50	7060702	MS	07-Jun-17	8021B
Surrogate: 4-Bromofluorobenzene (BFB)	95.7 %	72-148			7060702	MS	07-Jun-17	8021B

Petroleum Hydrocarbons by GC FID

GRO C6-C10	<10.0	10.0	mg/kg	1	7060605	MS	06-Jun-17	8015B
DRO >C10-C28	<10.0	10.0	mg/kg	1	7060605	MS	06-Jun-17	8015B
Surrogate: 1,4-Dichlorobenzene	95.7 %	28.3-164			7060605	MS	06-Jun-17	8015B
Surrogate: 1,4-Dichlorooctadecane	86.1 %	34.7-157			7060605	MS	06-Jun-17	8015B



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Coley D. Keene

Coley D. Keene, Lab Director/Quality Manager



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Analytical Results For:INDUSTRIAL ECOSYSTEMS
49 CR 3150
AZTEC NM, 87410Project: JFJ
Project Number: 4608
Project Manager: MARCELLA MARQUEZ
Fax To: (505) 632-1876Reported:
08-Jun-17 15:54**PILE 983**
H701479-08 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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Cardinal Laboratories**Inorganic Compounds**

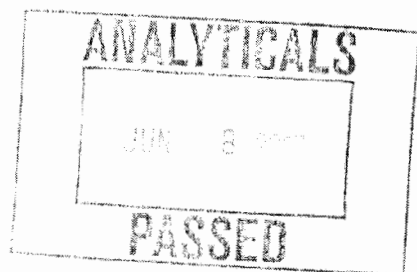
Chloride	112		16.0	mg/kg	4	7060601	AC	06-Jun-17	4500-C1-B	
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Volatile Organic Compounds by EPA Method 8021

Benzene*	<0.050	0.050	mg/kg	50	7060702	MS	07-Jun-17	8021B	
Toluene*	<0.050	0.050	mg/kg	50	7060702	MS	07-Jun-17	8021B	
Ethylbenzene*	<0.050	0.050	mg/kg	50	7060702	MS	07-Jun-17	8021B	
Total Xylenes*	<0.150	0.150	mg/kg	50	7060702	MS	07-Jun-17	8021B	
Total BTX	<0.300	0.300	mg/kg	50	7060702	MS	07-Jun-17	8021B	
Surrogate: 4-Bromofluorobenzene (P1D)			98.8%	72-148	7060702	MS	07-Jun-17	8021B	

Petroleum Hydrocarbons by GC FID

GRO C6-C10	<10.0	10.0	mg/kg	1	7060605	MS	06-Jun-17	8015B	
DRO >C10-C28	31.1	10.0	mg/kg	1	7060605	MS	06-Jun-17	8015B	
Surrogate: 1-Chlorooctane			93.5%	28.3-164	7060605	MS	06-Jun-17	8015B	
Surrogate: 1-Chlorooctadecane			82.8%	34.7-157	7060605	MS	06-Jun-17	8015B	



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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

INDUSTRIAL ECOSYSTEMS
49 CR 3150
AZTEC NM, 87410

Project: JFJ
Project Number: 4608
Project Manager: MARCELLA MARQUEZ
Fax To: (505) 632-1876

Reported:
08-Jun-17 15:54

PILE 547
H701479-09 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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Cardinal Laboratories

Inorganic Compounds

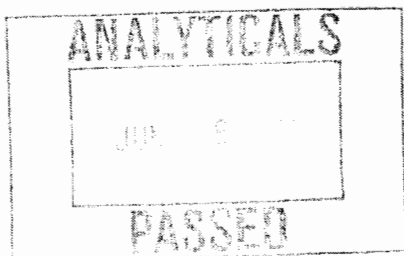
Chloride	80.0		16.0	mg/kg	4	7060606	AC	06-Jun-17	4500-CL-B	
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Volatile Organic Compounds by EPA Method 8021

Benzene*	<0.050		0.050	mg/kg	50	7060702	MS	07-Jun-17	8021B	
Toluene*	<0.050		0.050	mg/kg	50	7060702	MS	07-Jun-17	8021B	
Ethylbenzene*	<0.050		0.050	mg/kg	50	7060702	MS	07-Jun-17	8021B	
Total Xylenes*	<0.150		0.150	mg/kg	50	7060702	MS	07-Jun-17	8021B	
Total BTEX	<0.300		0.300	mg/kg	50	7060702	MS	07-Jun-17	8021B	
Surrogate: 4-Bromofluorobenzene (BFB)			96.6 %	72-148		7060702	MS	07-Jun-17	8021B	

Petroleum Hydrocarbons by GC FID

GRO C6-C10	<10.0		10.0	mg/kg	1	7060605	MS	06-Jun-17	8015B	
DRO C10-C28	<10.0		10.0	mg/kg	1	7060605	MS	06-Jun-17	8015B	
Surrogate: 1,4-Dichlorobenzene			104 %	28.3-164		7060605	MS	06-Jun-17	8015B	
Surrogate: 1,4-Dichlorobenzene			87.9 %	34.7-157		7060605	MS	06-Jun-17	8015B	



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Deley D. Keene

Deley D. Keene, Lab Director/Quality Manager



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Analytical Results For:INDUSTRIAL ECOSYSTEMS
49 CR 3150
AZTEC NM, 87410Project: JFJ
Project Number: 4608
Project Manager: MARCELLA MARQUEZ
Fax To: (505) 632-1876Reported:
08-Jun-17 15:54**PILE 138
H701479-10 (Soil)**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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Cardinal Laboratories**Inorganic Compounds**

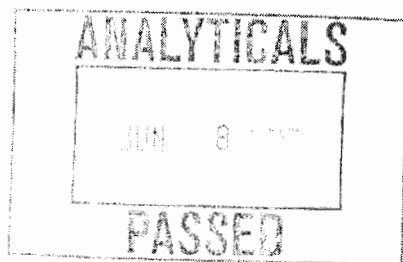
Chloride	112	16.0	mg/kg	4	7060606	AC	06-Jun-17	4500-Cl-B	
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Volatile Organic Compounds by EPA Method 8021

Benzene*	<0.050	0.050	mg/kg	50	7060702	MS	07-Jun-17	8021B
Toluene*	<0.050	0.050	mg/kg	50	7060702	MS	07-Jun-17	8021B
Ethylbenzene*	<0.050	0.050	mg/kg	50	7060702	MS	07-Jun-17	8021B
Total Xylenes*	<0.150	0.150	mg/kg	50	7060702	MS	07-Jun-17	8021B
Total BTEX	<0.300	0.300	mg/kg	50	7060702	MS	07-Jun-17	8021B
Surrogate: 4-Bromofluorobenzene (BFB)		98.6 %	72-148		7060702	MS	07-Jun-17	8021B

Petroleum Hydrocarbons by GC FID

GRO C6-C10	<10.0	10.0	mg/kg	1	7060605	MS	06-Jun-17	8015B
DRO >C10-C28	19.5	10.0	mg/kg	1	7060605	MS	06-Jun-17	8015B
Surrogate: 1-Chlorooctane		106 %	28.3-164		7060605	MS	06-Jun-17	8015B
Surrogate: 1-Chlorodecane		89.3 %	34.7-157		7060605	MS	06-Jun-17	8015B



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* = Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

INDUSTRIAL ECOSYSTEMS
49 CR 3150
AZTEC NM, 87410

Project: JFJ
Project Number: 4608
Project Manager: MARCELLA MARQUEZ
Fax To: (505) 632-1876

Reported:
08-Jun-17 15:54

PILE 648
11701479-11 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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Cardinal Laboratories

Inorganic Compounds

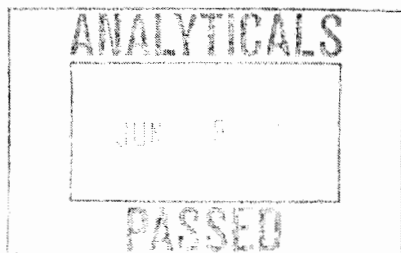
Chloride	128		16.0	mg/kg	4	7060606	AC	06-Jun-17	4500-C1-B	
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Volatile Organic Compounds by EPA Method 8021

Benzene*	<0.050		0.050	mg/kg	50	7060702	MS	07-Jun-17	8021B	
Toluene*	<0.050		0.050	mg/kg	50	7060702	MS	07-Jun-17	8021B	
Ethylbenzene*	<0.050		0.050	mg/kg	50	7060702	MS	07-Jun-17	8021B	
Total Xylenes*	<0.150		0.150	mg/kg	50	7060702	MS	07-Jun-17	8021B	
Total BTEN	<0.300		0.300	mg/kg	50	7060702	MS	07-Jun-17	8021B	
Surrogate: 4-Bromofluorobenzene (PFDB)			98.0 %	72-148		7060702	MS	07-Jun-17	8021B	

Petroleum Hydrocarbons by GC FID

GRO C6-C10	<10.0		10.0	mg/kg	1	7060605	MS	06-Jun-17	8015B	
DRO C10-C28	<10.0		10.0	mg/kg	1	7060605	MS	06-Jun-17	8015B	
Surrogate: 1,3-Dibromobenzene			99.4 %	28.3-164		7060605	MS	06-Jun-17	8015B	
Surrogate: 1,3-Dibromobenzene			84.3 %	34.7-157		7060605	MS	06-Jun-17	8015B	



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Deley D. Keene

Deley D. Keene, Lab Director/Quality Manager



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Analytical Results For:INDUSTRIAL ECOSYSTEMS
49 CR 3150
AZTEC NM, 87410Project: JFJ
Project Number: 4608
Project Manager: MARCELLA MARQUEZ
Fax To: (505) 632-1876Reported:
08-Jun-17 15:54**PILE 535
H701479-12 (Soil)**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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Cardinal Laboratories**Inorganic Compounds**

Chloride	80.0	16.0	mg/kg	4	7060606	AC	06-Jun-17	4500-Cl-B	
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Volatile Organic Compounds by EPA Method 8021

Benzene*	<0.050	0.050	mg/kg	50	7060702	MS	07-Jun-17	8021B
Toluene*	<0.050	0.050	mg/kg	50	7060702	MS	07-Jun-17	8021B
Ethylbenzene*	<0.050	0.050	mg/kg	50	7060702	MS	07-Jun-17	8021B
Total Xylenes*	<0.150	0.150	mg/kg	50	7060702	MS	07-Jun-17	8021B
Total BTEX	<0.300	0.300	mg/kg	50	7060702	MS	07-Jun-17	8021B

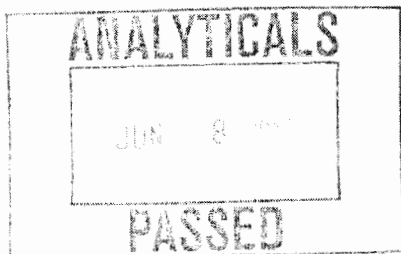
Surrogate: 4-bromofluorobenzene (B*F)	96.5 %	72-148	7060702	MS	07-Jun-17	8021B
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Petroleum Hydrocarbons by GC FID

GRO C6-C10	<10.0	10.0	mg/kg	1	7060605	MS	06-Jun-17	8015B
DRO C10-C28	<10.0	10.0	mg/kg	1	7060605	MS	06-Jun-17	8015B

Surrogate: 1-Chloronaphthalene	107 %	28.3-164	7060605	MS	06-Jun-17	8015B
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Surrogate: 1-Chloronaphthalene	92.3 %	34.7-157	7060605	MS	06-Jun-17	8015B
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Celey D. Keene, Lab Director/Quality Manager



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Analytical Results For:

INDUSTRIAL ECOSYSTEMS 49 CR 3150 AZTEC NM, 87410	Project: JFJ Project Number: 4608 Project Manager: MARCELLA MARQUEZ Fax To: (505) 632-1876	Reported: 08-Jun-17 15:54
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Inorganic Compounds - Quality Control

Cardinal Laboratories

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 7060601 - 1:4 DI Water

Blank (7060601-BLK1)

Prepared & Analyzed: 06-Jun-17

Chloride ND 16.0 mg/kg

LCS (7060601-BS1)

Prepared & Analyzed: 06-Jun-17

Chloride 448 16.0 mg/kg 400 112 80-120

LCS Dup (7060601-BSD1)

Prepared & Analyzed: 06-Jun-17

Chloride 448 16.0 mg/kg 400 112 80-120 0.00 20

Batch 7060606 - 1:4 DI Water

Blank (7060606-BLK1)

Prepared & Analyzed: 06-Jun-17

Chloride ND 16.0 mg/kg

LCS (7060606-BS1)

Prepared & Analyzed: 06-Jun-17

Chloride 464 16.0 mg/kg 400 116 80-120

LCS Dup (7060606-BSD1)

Prepared & Analyzed: 06-Jun-17

Chloride 464 16.0 mg/kg 400 116 80-120 0.00 20

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Coley D. Keene

Coley D. Keene, Lab Director/Quality Manager



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Analytical Results For:INDUSTRIAL ECOSYSTEMS
49 CR 3150
AZTEC NM, 87410Project: JFJ
Project Number: 4608
Project Manager: MARCELLA MARQUEZ
Fax To: (505) 632-1876Reported:
08-Jun-17 15:54**Volatile Organic Compounds by EPA Method 8021 - Quality Control****Cardinal Laboratories**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 7060702 - Volatiles**Blank (7060702-B1 K1)**

Prepared & Analyzed: 07-Jun-17

Benzene	ND	0.050	mg/kg							
Toluene	ND	0.050	mg/kg							
Ethylbenzene	ND	0.050	mg/kg							
Total Xylenes	ND	0.150	mg/kg							
Total BTEX	ND	0.300	mg/kg							
S surrogate: 4-Bromofluorobenzene (P1D)	ND		mg/kg	0.0500		98.1	72-148			

LCS (7060702-BSD1)

Prepared & Analyzed: 07-Jun-17

Benzene	2.03	0.050	mg/kg	2.00		101	79.5-124			
Toluene	2.01	0.050	mg/kg	2.00		100	75.5-127			
Ethylbenzene	2.11	0.050	mg/kg	2.00		106	77.7-125			
Total Xylenes	5.75	0.150	mg/kg	6.00		95.8	70.9-124			
S surrogate: 4-Bromofluorobenzene (P1D)	0.0488		mg/kg	0.0500		97.6	72-148			

LCS Dup (7060702-BSD1)

Prepared & Analyzed: 07-Jun-17

Benzene	2.07	0.050	mg/kg	2.00		103	79.5-124	1.78	6.5	
Toluene	2.07	0.050	mg/kg	2.00		103	75.5-127	2.74	7.02	
Ethylbenzene	2.16	0.050	mg/kg	2.00		108	77.7-125	2.28	7.83	
Total Xylenes	5.87	0.150	mg/kg	6.00		97.8	70.9-124	2.06	7.78	
S surrogate: 4-Bromofluorobenzene (P1D)	0.0496		mg/kg	0.0500		99.3	72-148			

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Celey D. Keene, Lab Director/Quality Manager



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Analytical Results For:INDUSTRIAL ECOSYSTEMS
49 CR 3150
AZTEC NM, 87410Project: JFJ
Project Number: 4608
Project Manager: MARCELLA MARQUEZ
Fax To: (505) 632-1876Reported:
08-Jun-17 15:54**Petroleum Hydrocarbons by GC FID - Quality Control****Cardinal Laboratories**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 7060605 - General Prep - Organics**Blank (7060605-BLK1)**

Prepared & Analyzed: 06-Jun-17

GRO C6-C10	ND	10.0	mg/kg							
DRO C10-C28	ND	10.0	mg/kg							
Surrogate: 1-Chlorooctane	57.1		mg/kg	50.0		114	28.3-164			
Surrogate: 1-Chlorodecane	47.8		mg/kg	50.0		95.5	34.7-157			

LCS (7060605-BS1)

Prepared & Analyzed: 06-Jun-17

GRO C6-C10	196	10.0	mg/kg	200		97.8	76.6-119			
DRO C10-C28	183	10.0	mg/kg	200		91.4	81.4-124			
Surrogate: 1-Chlorooctane	51.9		mg/kg	50.0		104	28.3-164			
Surrogate: 1-Chlorodecane	46.6		mg/kg	50.0		93.2	34.7-157			

LCS Dup (7060605-BSD1)

Prepared & Analyzed: 06-Jun-17

GRO C6-C10	203	10.0	mg/kg	200		102	76.6-119	3.87	7.94	
DRO C10-C28	198	10.0	mg/kg	200		99.0	81.4-124	7.93	9.83	
Surrogate: 1-Chlorooctane	54.5		mg/kg	50.0		109	28.3-164			
Surrogate: 1-Chlorodecane	47.2		mg/kg	50.0		94.4	34.7-157			

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Celey D. Keene, Lab Director/Quality Manager

Notes and Definitions

ND	Analyte NOT DETECTED at or above the reporting limit
RPD	Relative Percent Difference
**	Samples not received at proper temperature of 6°C or below.
***	Insufficient time to reach temperature.
-	Chloride by SM4500Cl-B does not require samples be received at or below 6°C
	Samples reported on an as received basis (wet) unless otherwise noted on report

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Celey D. Keene, Lab Director/Quality Manager



CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

(970) 247-4220
Fax: (970) 247-4227

service@greenanalytical.com or dzufelt@greenanalytical.com
75 Suttle St Durango, CO 81303

Company Name: <u>IEI</u> Project Manager: <u>Marcella</u> Address: <u>49 CR 3150</u> City: <u>AZtec</u> State: <u>NM</u> Zip: <u>87410</u> Phone #: _____ Email: _____ Additional Report To: _____ Project Name: <u>JFT</u> Project Number: _____ Sampler Name (Print): <u>Richard Chavez</u>			Bill to (if different): P.O. #: <u>4608</u> Company: _____ Attn: _____ Address: _____ City: _____ State: _____ Zip: _____ Phone #: _____ Fax or Email: _____			ANALYSIS REQUEST <u>DRO 8015 B</u> <u>CR 8015 B</u> <u>BTEX 8021 B</u> <u>Chlorides</u>										
Lab ID.	Sample Name or Location	Collected		Matrix (check one)						# of containers						
		Date	Time	GROUNDWATER	SURFACEWATER	WASTEWATER	PRODUCEDWATER	SOIL	OTHER	No preservation (general)	HNO ₃	HCl	H ₂ SO ₄	Other:	Other:	Other:
<u>H701479</u>	<u>PILE</u>	<u>5-12</u>	<u>7:00</u>													
<u>1</u>	<u>PILE</u>	<u>5-10</u>	<u>7:30</u>													
<u>2</u>	<u>PILE</u>	<u>5-50</u>	<u>7:55</u>													
<u>3</u>	<u>PILE</u>	<u>848</u>	<u>8:20</u>													
<u>4</u>	<u>PILE</u>	<u>28</u>	<u>8:45</u>													
<u>5</u>	<u>PILE</u>	<u>1004</u>	<u>9:15</u>													
<u>6</u>	<u>PILE</u>	<u>807</u>	<u>9:40</u>													
<u>7</u>	<u>PILE</u>	<u>983</u>	<u>9:00</u>													
<u>8</u>	<u>PILE</u>	<u>547</u>	<u>9:30</u>													
<u>9</u>	<u>PILE</u>	<u>138</u>	<u>9:00</u>													

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Relinquished By: <u>[Signature]</u> Date: <u>6/2/17</u> Time: <u>1430</u> Relinquished By: <u>Charmaine</u> Date: <u>6/15/17</u> Time: <u>1600</u> Relinquished By: <u>Fed Ex</u> Date: <u>6/16/17</u> Time: <u>10:10</u> Delivered By: (Print One) Sampler: <u>GPS - Bertha - Kargara</u> Other: _____	Received By: <u>[Signature]</u> Date: <u>6/2/17</u> Time: <u>1430</u> Received By: <u>Charmaine</u> Date: <u>6/15/17</u> Time: <u>1600</u> Received By: <u>Fed Ex</u> Date: <u>6/16/17</u> Time: <u>10:10</u> Delivered By: (Print One) Sampler: <u>GPS - Bertha - Kargara</u> Other: _____	ADDITIONAL REMARKS: Report to State? (Circle) Yes No <u>6.1C 3.12</u> <u>10 #75</u> All have head space.
---	---	--

† GAL cannot always accept verbal changes. Please fax or email written change requests.
* Chain of Custody must be signed in "Relinquished By:" as an acceptance of services and all applicable charges.

State of New Mexico
Energy, Minerals and Natural Resources Department

Susana Martinez
Governor

Ken McQueen
Cabinet Secretary

Matthias Sayer
Deputy Cabinet Secretary

David R. Catanach, Division Director
Oil Conservation Division



April 18, 2017

Ms. Marcella Marquez
JFJ Landfarm, L.L.C.
Industrial Ecosystems Inc.
Soil Reclamation Center
P.O. Box 2043
Farmington, New Mexico 87499

RE: Request for Approval to Reuse Remediated Biopile Soils for the Stabilization/Solidification of Drilling Mud, Tank Bottoms, and Sludge
JFJ Landfarm, LLC - Industrial Ecosystems Inc.
JFJ Landfarm – Permit # NM1-010-B
Location: NW/4 SE/4 of Section 2, Township 29 North, Range 12 West, NMPM, San Juan County, New Mexico

Dear Ms. Marquez:

The Oil Conservation Division (OCD) has reviewed JFJ Landfarm, LLC's (JFJ) request, emailed to OCD on April 18, 2017, and associated analytical results to reuse the remediated soils for the stabilization and/or solidification of incoming drilling mud and tank bottoms and sludge from following biopile(s): **965, 28, 32, 986, 995, 996, 987, 556, 1011, and 1015.**

Based upon the information provided in the request, the above-referenced biopiles are hereby approved for the stabilization and/or solidification of incoming drilling mud and tank bottoms and sludge.

Please be advised that approval of this request does not relieve JFJ of liability should operations result in pollution of surface water, ground water or the environment. Nor does approval relieve JFJ of its responsibility to comply with any other applicable governmental authority's rules and regulations.

If there are any questions regarding this matter, please do not hesitate to contact Brad Jones on my staff at (505) 476-3487 or brad.a.jones@state.nm.us.

Sincerely,

Jim Griswold
Environmental Bureau Chief

JG/baj

cc: OCD District III Office, Aztec

Jones, Brad A., EMNRD

From: Marcella Marquez <marcella@industrialecosystems.com>
Sent: Tuesday, April 18, 2017 11:00 AM
To: Jones, Brad A., EMNRD
Subject: Request to Reuse Treated Soils
Attachments: Passed Piles 041717.pdf; 1BLANK Request to Reuse Soil.doc

Importance: High

Brad:

For your review/approval, attached please find a request to reuse treated soils along with the corresponding analytical report.

*Thanks,
Marcella Marquez
Regulatory/Compliance/HR Manager
Industrial Ecosystems, Inc.
Phone: (505) 632-1782
Fax: (505) 632-1876 or (505) 334-1003*



**Industrial Ecosystems Inc.
Soil Reclamation Center**

P.O. Box 2043
Farmington, NM 87499

Phone: (505) 632-1782
Fax: (505) 632-1876

#49 CR 3150
Aztec, NM 87410

April 18, 2017

Brad Jones
Environmental Bureau
NM Oil Conservation Division
1220 S. St. Francis Drive
Santa Fe, New Mexico 87505

RE: Use of reclaimed soil

Dear Brad:

Recent analytical results show that the following biopiles(s) have reached acceptable levels as required by our NMOCD permit.

File #

965	DRO, GRO, BTEX & Chlorides Passed 04/17/17
28	DRO, GRO, BTEX & Chlorides Passed 04/17/17
32	DRO, GRO, BTEX & Chlorides Passed 04/17/17
986	DRO, GRO, BTEX & Chlorides Passed 04/17/17
995	DRO, GRO, BTEX & Chlorides Passed 04/17/17
996	DRO, GRO, BTEX & Chlorides Passed 04/17/17
987	DRO, GRO, BTEX & Chlorides Passed 04/17/17
556	DRO, GRO, BTEX & Chlorides Passed 04/17/17
1011	DRO, GRO, BTEX & Chlorides Passed 04/17/17
1015	DRO, GRO, BTEX & Chlorides Passed 04/17/17

We are seeking your approval to recycle this soil by using it to mix/solidify incoming liquid waste.

Respectfully Submitted,

A handwritten signature in cursive script, appearing to read 'Marcella Marquez'.

Marcella Marquez
Regulatory/Compliance/HR

Enclosure(s) – Analytical Reports

Analytical Results For:

 INDUSTRIAL ECOSYSTEMS
 49 CR 3150
 AZTEC NM, 87410

 Project: 4490
 Project Number: P.O. 4490
 Project Manager: MARCELLA MARQUEZ
 Fax To: (505) 632-1876

 Reported:
 17-Apr-17 15:32

PILE # 965
H1700955-01 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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Cardinal Laboratories
Inorganic Compounds

Chloride	128	16.0	mg/kg	4	7041205	AC	13-Apr-17	4500-Cl-B
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Volatile Organic Compounds by EPA Method 8021

Benzene*	<0.050	0.050	mg/kg	50	7041301	MS	13-Apr-17	8021B
Toluene*	<0.050	0.050	mg/kg	50	7041301	MS	13-Apr-17	8021B
Ethylbenzene*	<0.050	0.050	mg/kg	50	7041301	MS	13-Apr-17	8021B
Total Xylenes*	<0.150	0.150	mg/kg	50	7041301	MS	13-Apr-17	8021B
Total BTEX	<0.300	0.300	mg/kg	50	7041301	MS	13-Apr-17	8021B

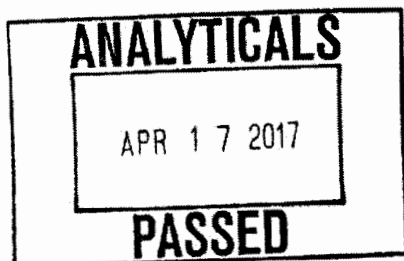
Surrogate: 4-Bromofluorobenzene (PID)	97.6 %	72-148	7041301	MS	13-Apr-17	8021B
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Petroleum Hydrocarbons by GC FID

GRO C6-C10	<10.0	10.0	mg/kg	1	7041207	MS	12-Apr-17	8015B
DRO >C10-C28	<10.0	10.0	mg/kg	1	7041207	MS	12-Apr-17	8015B

Surrogate: 1-Chlorooctane	82.9 %	28.3-164	7041207	MS	12-Apr-17	8015B
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Surrogate: 1-Chlorononadecane	84.4 %	34.7-157	7041207	MS	12-Apr-17	8015B
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Cardinal Laboratories

* = Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

 INDUSTRIAL ECOSYSTEMS
 49 CR 3150
 AZTEC NM, 87410

 Project: 4490
 Project Number: P.O. 4490
 Project Manager: MARCELLA MARQUEZ
 Fax To: (505) 632-1876

 Reported:
 17-Apr-17 15:32

PILE # 28
H700955-02 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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Cardinal Laboratories
Inorganic Compounds

Chloride	96.0	16.0	mg/kg	4	7041205	AC	13-Apr-17	4500-Cl-B
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Volatile Organic Compounds by EPA Method 8021

Benzene*	<0.050	0.050	mg/kg	50	7041301	MS	13-Apr-17	8021B
Toluene*	<0.050	0.050	mg/kg	50	7041301	MS	13-Apr-17	8021B
Ethylbenzene*	<0.050	0.050	mg/kg	50	7041301	MS	13-Apr-17	8021B
Total Xylenes*	<0.150	0.150	mg/kg	50	7041301	MS	13-Apr-17	8021B
Total BTEX	<0.300	0.300	mg/kg	50	7041301	MS	13-Apr-17	8021B

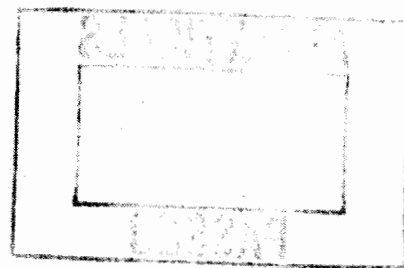
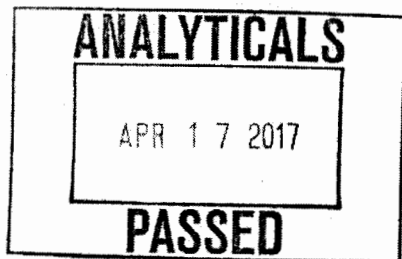
Surrogate: 4-Bromofluorobenzene (PID)	97.8 %	72-148	7041301	MS	13-Apr-17	8021B
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Petroleum Hydrocarbons by GC FID

GRO C6-C10	<10.0	10.0	mg/kg	1	7041207	MS	12-Apr-17	8015B
DRO >C10-C28	<10.0	10.0	mg/kg	1	7041207	MS	12-Apr-17	8015B

Surrogate: 1-Chlorooctane	84.8 %	28.3-164	7041207	MS	12-Apr-17	8015B
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Surrogate: 1-Chlorooctadecane	83.0 %	34.7-157	7041207	MS	12-Apr-17	8015B
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* = Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

INDUSTRIAL ECOSYSTEMS
49 CR 3150
AZTEC NM, 87410

Project: 4490
Project Number: P.O. 4490
Project Manager: MARCELLA MARQUEZ
Fax To: (505) 632-1876

Reported:
17-Apr-17 15:32

PILE # 32
H700955-03 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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Cardinal Laboratories

Inorganic Compounds

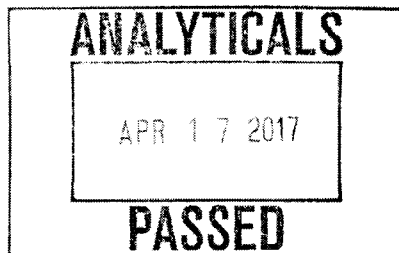
Chloride	32.0		16.0	mg/kg	4	7041205	AC	13-Apr-17	4500-Cl-B	
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Volatile Organic Compounds by EPA Method 8021

Benzene*	<0.050		0.050	mg/kg	50	7041301	MS	13-Apr-17	8021B	
Toluene*	<0.050		0.050	mg/kg	50	7041301	MS	13-Apr-17	8021B	
Ethylbenzene*	<0.050		0.050	mg/kg	50	7041301	MS	13-Apr-17	8021B	
Total Xylenes*	<0.150		0.150	mg/kg	50	7041301	MS	13-Apr-17	8021B	
Total BTEX	<0.300		0.300	mg/kg	50	7041301	MS	13-Apr-17	8021B	
Surrogate: 4-Bromofluorobenzene (P111)			98.0 %	72-148		7041301	MS	13-Apr-17	8021B	

Petroleum Hydrocarbons by GC FID

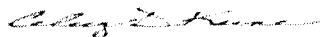
GRO C6-C10	<10.0		10.0	mg/kg	1	7041207	MS	12-Apr-17	8015B	
DRO >C10-C28	<10.0		10.0	mg/kg	1	7041207	MS	12-Apr-17	8015B	
Surrogate: 1-Chlorooctane			84.8 %	28.3-164		7041207	MS	12-Apr-17	8015B	
Surrogate: 1-Chlorooctadecane			81.1 %	34.7-157		7041207	MS	12-Apr-17	8015B	



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Celey D. Keene, Lab Director/Quality Manager



PHONE (575) 393-2326 • 101 E. MARLAND • HOBBS, NM 88240

Analytical Results For:INDUSTRIAL ECOSYSTEMS
49 CR 3150
AZTEC NM, 87410Project: 4490
Project Number: P.O. 4490
Project Manager: MARCELLA MARQUEZ
Fax To: (505) 632-1876Reported:
17-Apr-17 15:32PILE # 986
H700955-04 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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Cardinal Laboratories**Inorganic Compounds**

Chloride	80.0	16.0	mg/kg	4	7041205	AC	13-Apr-17	4500-Cl-B
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Volatile Organic Compounds by EPA Method 8021

Benzene*	<0.050	0.050	mg/kg	50	7041301	MS	13-Apr-17	8021B
Toluene*	<0.050	0.050	mg/kg	50	7041301	MS	13-Apr-17	8021B
Ethylbenzene*	<0.050	0.050	mg/kg	50	7041301	MS	13-Apr-17	8021B
Total Xylenes*	<0.150	0.150	mg/kg	50	7041301	MS	13-Apr-17	8021B
Total BTEX	<0.300	0.300	mg/kg	50	7041301	MS	13-Apr-17	8021B

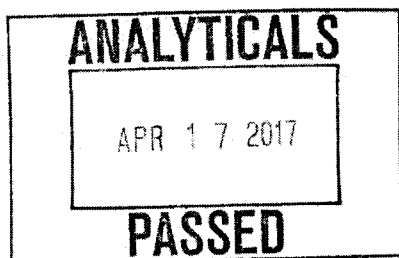
Surrogate: 4-Bromofluorobenzene (P1D)	97.9 %	72-148	7041301	MS	13-Apr-17	8021B
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Petroleum Hydrocarbons by GC FID

GRO C6-C10	<10.0	10.0	mg/kg	1	7041207	MS	12-Apr-17	8015B
DRO >C10-C28	<10.0	10.0	mg/kg	1	7041207	MS	12-Apr-17	8015B

Surrogate: 1-Chlorooctane	96.1 %	28.3-164	7041207	MS	12-Apr-17	8015B
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Surrogate: 1-Chlorooctadecane	96.3 %	34.7-157	7041207	MS	12-Apr-17	8015B
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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

INDUSTRIAL ECOSYSTEMS
49 CR 3150
AZTEC NM, 87410

Project: 4490
Project Number: P.O. 4490
Project Manager: MARCELLA MARQUEZ
Fax To: (505) 632-1876

Reported:
17-Apr-17 15:32

PILE # 995
H700955-05 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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Cardinal Laboratories
Inorganic Compounds

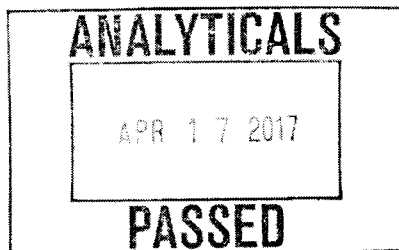
Chloride	64.0		16.0	mg/kg	4	7041205	AC	13-Apr-17	4500-Cl-B
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Volatile Organic Compounds by EPA Method 8021

Benzene*	<0.050		0.050	mg/kg	50	7041301	MS	13-Apr-17	8021B
Toluene*	<0.050		0.050	mg/kg	50	7041301	MS	13-Apr-17	8021B
Ethylbenzene*	<0.050		0.050	mg/kg	50	7041301	MS	13-Apr-17	8021B
Total Xylenes*	<0.150		0.150	mg/kg	50	7041301	MS	13-Apr-17	8021B
Total BTEX	<0.300		0.300	mg/kg	50	7041301	MS	13-Apr-17	8021B
Surrogate: 4-Bromofluorobenzene (P1D)			97.0 %	72-148		7041301	MS	13-Apr-17	8021B

Petroleum Hydrocarbons by GC FID

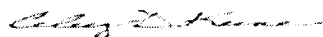
GRO C6-C10	<10.0		10.0	mg/kg	1	7041207	MS	12-Apr-17	8015B
DRO >C10-C28	<10.0		10.0	mg/kg	1	7041207	MS	12-Apr-17	8015B
Surrogate: 1-Chlorooctane			102 %	28.3-164		7041207	MS	12-Apr-17	8015B
Surrogate: 1-Chlorooctadecane			103 %	34.7-157		7041207	MS	12-Apr-17	8015B



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Celey D. Keene, Lab Director/Quality Manager



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Analytical Results For:INDUSTRIAL ECOSYSTEMS
49 CR 3150
AZTEC NM, 87410Project: 4490
Project Number: P.O. 4490
Project Manager: MARCELLA MARQUEZ
Fax To: (505) 632-1876Reported:
17-Apr-17 15:32PILE # 996
H700955-06 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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Cardinal Laboratories**Inorganic Compounds**

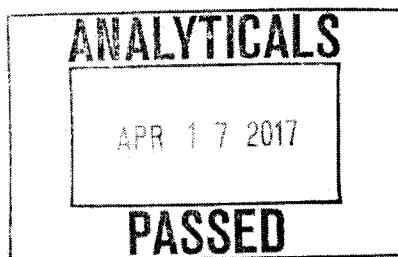
Chloride	32.0	16.0	mg/kg	4	7041205	AC	13-Apr-17	4500-Cl-B
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Volatile Organic Compounds by EPA Method 8021

Benzene*	<0.050	0.050	mg/kg	50	7041301	MS	13-Apr-17	8021B
Toluene*	<0.050	0.050	mg/kg	50	7041301	MS	13-Apr-17	8021B
Ethylbenzene*	<0.050	0.050	mg/kg	50	7041301	MS	13-Apr-17	8021B
Total Xylenes*	<0.150	0.150	mg/kg	50	7041301	MS	13-Apr-17	8021B
Total BTEX	<0.300	0.300	mg/kg	50	7041301	MS	13-Apr-17	8021B
Surrogate: 4-Bromofluorobenzene (P11)	98.7 %	72-148	7041301	MS	13-Apr-17	8021B		

Petroleum Hydrocarbons by GC FID

GRO C6-C10	<10.0	10.0	mg/kg	1	7041207	MS	13-Apr-17	8015B
DRO >C10-C28	<10.0	10.0	mg/kg	1	7041207	MS	13-Apr-17	8015B
Surrogate: 1-Chlorooctane	87.3 %	28.3-164	7041207	MS	13-Apr-17	8015B		
Surrogate: 1-Chlorooctadecane	91.3 %	34.7-157	7041207	MS	13-Apr-17	8015B		



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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

INDUSTRIAL ECOSYSTEMS
49 CR 3150
AZTEC NM, 87410

Project: 4490
Project Number: P.O. 4490
Project Manager: MARCELLA MARQUEZ
Fax To: (505) 632-1876

Reported:
17-Apr-17 15:32

PILE # 987
H1700955-07 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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Cardinal Laboratories

Inorganic Compounds

Chloride	32.0	16.0	mg/kg	4	7041205	AC	13-Apr-17	4500-Cl-B
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Volatile Organic Compounds by EPA Method 8021

Benzene*	<0.050	0.050	mg/kg	50	7041301	MS	13-Apr-17	8021B
Toluene*	<0.050	0.050	mg/kg	50	7041301	MS	13-Apr-17	8021B
Ethylbenzene*	<0.050	0.050	mg/kg	50	7041301	MS	13-Apr-17	8021B
Total Xylenes*	<0.150	0.150	mg/kg	50	7041301	MS	13-Apr-17	8021B
Total BTEX	<0.300	0.300	mg/kg	50	7041301	MS	13-Apr-17	8021B

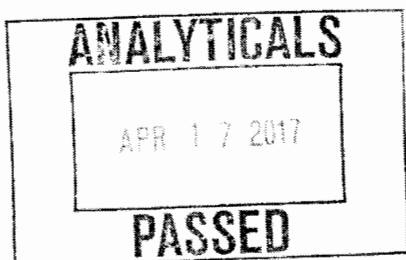
Surrogate: 4-Bromofluorobenzene (PID)	96.9 %	72-148	7041301	MS	13-Apr-17	8021B
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Petroleum Hydrocarbons by GC FID

GRO C6-C10	<10.0	10.0	mg/kg	1	7041207	MS	13-Apr-17	8015B
DRO >C10-C28	30.0	10.0	mg/kg	1	7041207	MS	13-Apr-17	8015B

Surrogate: 1-Chlorooctane	77.2 %	28.3-164	7041207	MS	13-Apr-17	8015B
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Surrogate: 1-Chlorooctadecane	83.3 %	34.7-157	7041207	MS	13-Apr-17	8015B
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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

INDUSTRIAL ECOSYSTEMS
49 CR 3150
AZTEC NM, 87410

Project: 4490
Project Number: P.O. 4490
Project Manager: MARCELLA MARQUEZ
Fax To: (505) 632-1876

Reported:
17-Apr-17 15:32

PILE # 556
H700955-08 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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Cardinal Laboratories
Inorganic Compounds

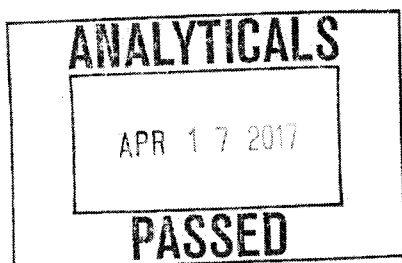
Chloride	64.0	16.0	mg/kg	4	7041205	AC	13-Apr-17	4500-Cl-B	
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Volatile Organic Compounds by EPA Method 8021

Benzene*	<0.050	0.050	mg/kg	50	7041301	MS	13-Apr-17	8021B	
Toluene*	<0.050	0.050	mg/kg	50	7041301	MS	13-Apr-17	8021B	
Ethylbenzene*	<0.050	0.050	mg/kg	50	7041301	MS	13-Apr-17	8021B	
Total Xylenes*	<0.150	0.150	mg/kg	50	7041301	MS	13-Apr-17	8021B	
Total BTEX	<0.300	0.300	mg/kg	50	7041301	MS	13-Apr-17	8021B	
Surrogate: 4-Bromofluorobenzene (PID)		96.9 %	72-148		7041301	MS	13-Apr-17	8021B	

Petroleum Hydrocarbons by GC FID

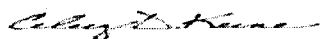
GRO C6-C10	<10.0	10.0	mg/kg	1	7041207	MS	13-Apr-17	8015B	
DRO >C10-C28	<10.0	10.0	mg/kg	1	7041207	MS	13-Apr-17	8015B	
Surrogate: 1-Chlorooctane		73.2 %	28.3-164		7041207	MS	13-Apr-17	8015B	
Surrogate: 1-Chlorooctadecane		75.1 %	34.7-157		7041207	MS	13-Apr-17	8015B	



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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

 INDUSTRIAL ECOSYSTEMS
 49 CR 3150
 AZTEC NM, 87410

 Project: 4490
 Project Number: P.O. 4490
 Project Manager: MARCELLA MARQUEZ
 Fax To: (505) 632-1876

 Reported:
 17-Apr-17 15:32

 PILE # 1011
 H700955-09 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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Cardinal Laboratories
Inorganic Compounds

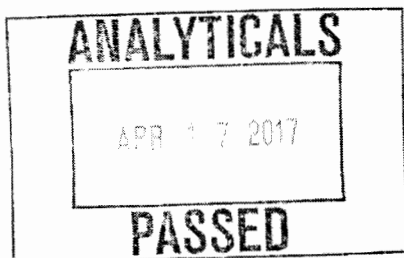
Chloride	32.0	16.0	mg/kg	4	7041205	AC	13-Apr-17	4500-C1-B
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Volatile Organic Compounds by EPA Method 8021

Benzene*	<0.050	0.050	mg/kg	50	7041301	MS	13-Apr-17	8021B
Toluene*	<0.050	0.050	mg/kg	50	7041301	MS	13-Apr-17	8021B
Ethylbenzene*	<0.050	0.050	mg/kg	50	7041301	MS	13-Apr-17	8021B
Total Xylenes*	<0.150	0.150	mg/kg	50	7041301	MS	13-Apr-17	8021B
Total BTEX	<0.300	0.300	mg/kg	50	7041301	MS	13-Apr-17	8021B
Surrogate: 4-Bromofluorobenzene (PID)	99.3 %	72-148	7041301	MS	13-Apr-17	8021B		

Petroleum Hydrocarbons by GC FID

GRO C6-C10	<10.0	10.0	mg/kg	1	7041207	MS	13-Apr-17	8015B
DRO >C10-C28	12.1	10.0	mg/kg	1	7041207	MS	13-Apr-17	8015B
Surrogate: 1-Chlorooctane	92.3 %	28.3-164	7041207	MS	13-Apr-17	8015B		
Surrogate: 1-Chlorooctadecane	97.0 %	34.7-157	7041207	MS	13-Apr-17	8015B		



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 Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

INDUSTRIAL ECOSYSTEMS
49 CR 3150
AZTEC NM, 87410

Project: 4490
Project Number: P.O. 4490
Project Manager: MARCELLA MARQUEZ
Fax To: (505) 632-1876

Reported:
17-Apr-17 15:32

PILE # 1015
H700955-10 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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Cardinal Laboratories

Inorganic Compounds

Chloride	16.0	16.0	mg/kg	4	7041205	AC	13-Apr-17	4500-Cl-B
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Volatile Organic Compounds by EPA Method 8021

Benzene*	<0.050	0.050	mg/kg	50	7041301	MS	13-Apr-17	8021B
Toluene*	<0.050	0.050	mg/kg	50	7041301	MS	13-Apr-17	8021B
Ethylbenzene*	<0.050	0.050	mg/kg	50	7041301	MS	13-Apr-17	8021B
Total Xylenes*	<0.150	0.150	mg/kg	50	7041301	MS	13-Apr-17	8021B
Total BTEX	<0.300	0.300	mg/kg	50	7041301	MS	13-Apr-17	8021B

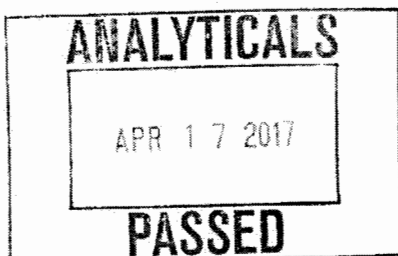
Surrogate: 4-Bromofluorobenzene (P11)	96.6 %	72-148	7041301	MS	13-Apr-17	8021B
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Petroleum Hydrocarbons by GC FID

GRO C6-C10	<10.0	10.0	mg/kg	1	7041207	MS	13-Apr-17	8015B
DRO >C10-C28	<10.0	10.0	mg/kg	1	7041207	MS	13-Apr-17	8015B

Surrogate: 1-Chlorooctane	91.6 %	28.3-164	7041207	MS	13-Apr-17	8015B
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Surrogate: 1-Chlorodecane	91.4 %	34.7-157	7041207	MS	13-Apr-17	8015B
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Coley D. Keene

Coley D. Keene, Lab Director/Quality Manager

Analytical Results For:

 INDUSTRIAL ECOSYSTEMS
 49 CR 3150
 AZTEC NM, 87410

 Project: 4490
 Project Number: P.O. 4490
 Project Manager: MARCELLA MARQUEZ
 Fax To: (505) 632-1876

 Reported:
 17-Apr-17 15:32

Inorganic Compounds - Quality Control
Cardinal Laboratories

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC Limits	RPD	RPD Limit	Notes
Batch 7041205 - 1:4 DI Water									
Blank (7041205-BLK1)				Prepared & Analyzed: 12-Apr-17					
Chloride	ND	16.0	mg/kg						
LCS (7041205-BS1)				Prepared & Analyzed: 12-Apr-17					
Chloride	432	16.0	mg/kg	400		108 80-120			
LCS Dup (7041205-BSD1)				Prepared & Analyzed: 12-Apr-17					
Chloride	432	16.0	mg/kg	400		108 80-120	0.00	20	
Duplicate (7041205-DUP1)				Source: H700952-06		Prepared 12-Apr-17 Analyzed: 13-Apr-17			
Chloride	32.0	16.0	mg/kg		32.0		0.00	20	
Matrix Spike (7041205-MS1)				Source: H700952-06		Prepared 12-Apr-17 Analyzed: 13-Apr-17			
Chloride	432	16.0	mg/kg	400	32.0	100 80-120			

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Celey D. Keene, Lab Director/Quality Manager



PHONE (575) 393-2326 • 101 E. MARLAND • HOBBS, NM 88240

Analytical Results For:INDUSTRIAL ECOSYSTEMS
49 CR 3150
AZTEC NM, 87410Project: 4490
Project Number: P.O. 4490
Project Manager: MARCELLA MARQUEZ
Fax To: (505) 632-1876Reported:
17-Apr-17 15:32**Volatile Organic Compounds by EPA Method 8021 - Quality Control****Cardinal Laboratories**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 7041301 - Volatiles										
Blank (7041301-BLK1)				Prepared & Analyzed: 13-Apr-17						
Benzene	ND	0.050	mg/kg							
Toluene	ND	0.050	mg/kg							
Ethylbenzene	ND	0.050	mg/kg							
Total Xylenes	ND	0.150	mg/kg							
Total BTEX	ND	0.300	mg/kg							
Surrogate: 4-Bromofluorobenzene (P11)	ND		mg/kg	0.0500		97.0	72-148			
LCS (7041301-BS1)				Prepared & Analyzed: 13-Apr-17						
Benzene	1.94	0.050	mg/kg	2.00		97.0	79.5-124			
Toluene	1.84	0.050	mg/kg	2.00		91.9	75.5-127			
Ethylbenzene	1.84	0.050	mg/kg	2.00		91.8	77.7-125			
Total Xylenes	5.19	0.150	mg/kg	6.00		86.5	70.9-124			
Surrogate: 4-Bromofluorobenzene (P11)	0.0496		mg/kg	0.0500		99.1	72-148			
LCS Dup (7041301-BSD1)				Prepared & Analyzed: 13-Apr-17						
Benzene	2.00	0.050	mg/kg	2.00		99.9	79.5-124	2.96	6.5	
Toluene	1.89	0.050	mg/kg	2.00		94.4	75.5-127	2.70	7.02	
Ethylbenzene	1.90	0.050	mg/kg	2.00		94.8	77.7-125	3.22	7.83	
Total Xylenes	5.37	0.150	mg/kg	6.00		89.5	70.9-124	3.36	7.78	
Surrogate: 4-Bromofluorobenzene (P11)	0.0490		mg/kg	0.0500		97.9	72-148			
Matrix Spike (7041301-MS1)				Source: H700952-06		Prepared & Analyzed: 13-Apr-17				
Benzene	2.00	0.050	mg/kg	2.00	ND	99.8	70.9-127			
Toluene	1.82	0.050	mg/kg	2.00	0.005	90.7	46-161			
Ethylbenzene	1.81	0.050	mg/kg	2.00	ND	90.3	38.8-164			
Total Xylenes	5.16	0.150	mg/kg	6.00	0.010	85.9	41.9-151			
Surrogate: 4-Bromofluorobenzene (P11)	0.0486		mg/kg	0.0500		97.3	72-148			

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

 INDUSTRIAL ECOSYSTEMS
 49 CR 3150
 AZTEC NM, 87410

 Project: 4490
 Project Number: P.O. 4490
 Project Manager: MARCELLA MARQUEZ
 Fax To: (505) 632-1876

 Reported:
 17-Apr-17 15:32

Volatile Organic Compounds by EPA Method 8021 - Quality Control
Cardinal Laboratories

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 7041301 - Volatiles
Matrix Spike Dup (7041301-MSD1)

Source: H700952-06

Prepared & Analyzed 13-Apr-17

Benzene	2.04	0.050	mg/kg	2.00	ND	102	70.9-127	2.15	3.45	
Toluene	1.87	0.050	mg/kg	2.00	0.005	93.0	46-161	2.52	5.27	
Ethylbenzene	1.83	0.050	mg/kg	2.00	ND	91.5	38.8-164	1.40	4.92	
Total Xylenes	5.23	0.150	mg/kg	6.00	0.010	87.0	41.9-151	1.28	6.95	
Surrogate: 4-Bromofluorobenzene (P1D)	0.0489		mg/kg	0.0500		97.7	72-148			

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Celey D. Keene, Lab Director/Quality Manager



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Analytical Results For:INDUSTRIAL ECOSYSTEMS
49 CR 3150
AZTEC NM, 87410Project: 4490
Project Number: P.O. 4490
Project Manager: MARCELLA MARQUEZ
Fax To: (505) 632-1876Reported:
17-Apr-17 15:32**Petroleum Hydrocarbons by GC FID - Quality Control****Cardinal Laboratories**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 7041207 - General Prep - Organics										
Blank (7041207-BLK1)				Prepared & Analyzed: 12-Apr-17						
GRO C6-C10	ND	10.0	mg/kg							
DRO >C10-C28	ND	10.0	mg/kg							
EXT DRO >C28-C35	13.7	10.0	mg/kg							
EXT DRO >C28-C36	13.8	10.0	mg/kg							
Total TPH C6-C28	ND	10.0	mg/kg							
Surrogate: 1-Chlorooctane	48.0		mg/kg	50.0		96.1	28.3-164			
Surrogate: 1-Chlorooctadecane	50.7		mg/kg	50.0		101	34.7-157			
LCS (7041207-BS1)				Prepared: 12-Apr-17 Analyzed: 13-Apr-17						
GRO C6-C10	191	10.0	mg/kg	200		95.7	76.6-119			
DRO >C10-C28	212	10.0	mg/kg	200		106	81.4-124			
Total TPH C6-C28	404	10.0	mg/kg	400		101	79.4-121			
Surrogate: 1-Chlorooctane	46.4		mg/kg	50.0		92.8	28.3-164			
Surrogate: 1-Chlorooctadecane	48.4		mg/kg	50.0		96.7	34.7-157			
LCS Dup (7041207-BSD1)				Prepared & Analyzed: 12-Apr-17						
GRO C6-C10	207	10.0	mg/kg	200		103	76.6-119	7.67	7.94	
DRO >C10-C28	217	10.0	mg/kg	200		109	81.4-124	2.39	9.83	
Total TPH C6-C28	424	10.0	mg/kg	400		106	79.4-121	4.93	8.57	
Surrogate: 1-Chlorooctane	50.8		mg/kg	50.0		102	28.3-164			
Surrogate: 1-Chlorooctadecane	52.9		mg/kg	50.0		106	34.7-157			
Matrix Spike (7041207-MS1)				Source: H700955-01	Prepared: 12-Apr-17 Analyzed: 13-Apr-17					
GRO C6-C10	175	10.0	mg/kg	200	ND	87.4	39.3-131			
DRO >C10-C28	187	10.0	mg/kg	200	ND	93.6	18.2-177			
Total TPH C6-C28	362	10.0	mg/kg	400	3.47	89.6	30-150			
Surrogate: 1-Chlorooctane	46.0		mg/kg	50.0		91.9	28.3-164			
Surrogate: 1-Chlorooctadecane	49.3		mg/kg	50.0		98.6	34.7-157			

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Celey D. Keene, Lab Director/Quality Manager



PHONE (575) 393-2326 • 101 E. MARLAND • HOBBS, NM 88240

Analytical Results For:INDUSTRIAL ECOSYSTEMS
49 CR 3150
AZTEC NM, 87410Project: 4490
Project Number: P.O. 4490
Project Manager: MARCELLA MARQUEZ
Fax To: (505) 632-1876Reported:
17-Apr-17 15:32**Petroleum Hydrocarbons by GC FID - Quality Control****Cardinal Laboratories**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 7041207 - General Prep - Organics										
Matrix Spike Dup (7041207-MSD1)		Source: H700955-01			Prepared: 12-Apr-17 Analyzed: 13-Apr-17					
GRO C6-C10	159	10.0	mg/kg	200	ND	79.4	39.3-131	9.52	18.5	
DRO >C10-C28	164	10.0	mg/kg	200	ND	81.8	18.2-177	13.4	22.5	
Total TPH C6-C28	322	10.0	mg/kg	400	3.47	79.8	30-150	11.6	117	
Surrogate: 1-Chlorooctane	40.9		mg/kg	50.0		81.9	28.3-164			
Surrogate: 1-Chlorodecane	43.8		mg/kg	50.0		87.6	34.7-157			

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Celey D. Keene, Lab Director/Quality Manager

Notes and Definitions

ND	Analyte NOT DETECTED at or above the reporting limit
RPD	Relative Percent Difference
**	Samples not received at proper temperature of 6°C or below.
***	Insufficient time to reach temperature.
-	Chloride by SM4500Cl-B does not require samples be received at or below 6°C Samples reported on an as received basis (wet) unless otherwise noted on report

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Celey D. Keene, Lab Director/Quality Manager



CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

(970) 247-4220
Fax: (970) 247-4227

service@greenanalytical.com or dzufelt@greenanalytical.com
75 Suttle St Durango, CO 81303

Company Name: IEI				Bill to (if different):				ANALYSIS REQUEST									
Project Manager: marcella				P.O. #: 4490				DR08015B CR08015B BTEX08021B Chlorides									
Address: 49 CR 3150				Company:													
City: AZtec		State:		Zip:		Attn:											
Phone #: 632-1782 Email:				Address:													
Additional Report To:				City:													
Project Name:				State:				Zip:									
Project Number:				Phone #:													
Sampler Name (Print): Richard Chavez				Fax or Email:													
FOR LAB USE ONLY		Collected		Matrix (check one)				# of containers									
Lab I.D.	Sample Name or Location	Date	Time	GROUNDWATER	SURFACEWATER	WASTEWATER	PRODUCEDWATER	SOIL	OTHER:	No preservation (general)	HNO ₃	HCl	H ₂ SO ₄	Other:	Other:	Other:	
H700955																	
	1 PILE # 965	4/6/17	7:00														
	2 PILE # 28	4/6/17	7:45														
	3 PILE # 32	4/6/17	8:20														
	4 PILE # 986	4/6/17	8:55														
	5 PILE # 995	4/6/17	9:20														
	6 PILE # 996	4/6/17	9:50														
	7 PILE # 987	4/6/17	10:25														
	8 PILE # 556	4/6/17	11:00														
	9 PILE # 1011	4/6/17	11:35														
	10 PILE # 1015	4/6/17	12:10														

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Relinquished By: <i>[Signature]</i>	Date: 4/7/17 Time: 11:15	Received By: <i>[Signature]</i>	ADDITIONAL REMARKS: Report to State? (Circle) Yes No
Relinquished By: <i>[Signature]</i>	Date: 4/7/17 Time: 7:40	Received By: <i>[Signature]</i>	
Relinquished By: <i>[Signature]</i>	Date: 4/10/17 Time: 1600	Received By: <i>[Signature]</i>	
Delivered By: (Circle One) <i>[Signature]</i>		Received By: <i>[Signature]</i>	
Sampler: UPS - FedEx - Kangaroo - Other: Temperature at receipt: 2.2°C CHECKED BY: <i>[Signature]</i>			4/10/17 10:15

↑ GAL cannot always accept verbal changes. Please fax or email written change requests.
* Chain of Custody must be signed in "Relinquished By:" as an acceptance of services and all applicable charges.

State of New Mexico
Energy, Minerals and Natural Resources Department

Susana Martinez
Governor

Ken McQueen
Cabinet Secretary

Matthias Sayer
Deputy Cabinet Secretary

David R. Catanach, Division Director
Oil Conservation Division



March 21, 2017

Ms. Marcella Marquez
JFJ Landfarm, L.L.C.
Industrial Ecosystems Inc.
Soil Reclamation Center
P.O. Box 2043
Farmington, New Mexico 87499

RE: Request for Approval to Reuse Remediated Biopile Soils for the Stabilization/Solidification of Drilling Mud, Tank Bottoms, and Sludge
JFJ Landfarm, LLC - Industrial Ecosystems Inc.
JFJ Landfarm – Permit # NM1-010-B
Location: NW/4 SE/4 of Section 2, Township 29 North, Range 12 West, NMPM,
San Juan County, New Mexico

Dear Ms. Marquez:

The Oil Conservation Division (OCD) has reviewed JFJ Landfarm, LLC's (JFJ) request, emailed to OCD on March 21, 2017, and associated analytical results to reuse the remediated soils for the stabilization and/or solidification of incoming drilling mud and tank bottoms and sludge from following biopile(s): **1019, 738, 982, 993, 1012, 994, 1010, 749, 590, and 690.**

Based upon the information provided in the request, the above-referenced biopiles are hereby approved for the stabilization and/or solidification of incoming drilling mud and tank bottoms and sludge.

Please be advised that approval of this request does not relieve JFJ of liability should operations result in pollution of surface water, ground water or the environment. Nor does approval relieve JFJ of its responsibility to comply with any other applicable governmental authority's rules and regulations.

If there are any questions regarding this matter, please do not hesitate to contact Brad Jones on my staff at (505) 476-3487 or brad.a.jones@state.nm.us.

Sincerely,

Jim Griswold
Environmental Bureau Chief

JG/baj

cc: OCD District III Office, Aztec

Jones, Brad A., EMNRD

From: Marcella Marquez <marcella@industrialecosystems.com>
Sent: Tuesday, March 21, 2017 1:37 PM
To: Jones, Brad A., EMNRD
Subject: Request to Reuse Soil
Attachments: 1BLANK Request to Reuse Soil.doc; Passed Piles 03172017.pdf

Importance: High

Brad:

Attached please find a request to Reuse Treated Soils along with the corresponding analytical report.

Please let me know if you have any questions or concerns.

*Thanks,
Marcella Marquez
Industrial Ecosystems, Inc.*



**Industrial Ecosystems Inc.
Soil Reclamation Center**

P.O. Box 2043
Farmington, NM 87499

Phone: (505) 632-1782
Fax: (505) 632-1876

#49 CR 3150
Aztec, NM 87410

March 21, 2017

Brad Jones

Environmental Bureau
NM Oil Conservation Division
1220 S. St. Francis Drive
Santa Fe, New Mexico 87505

RE: Use of reclaimed soil

Dear Brad:

Recent analytical results show that the following biopiles(s) have reached acceptable levels as required by our NMOCD permit.

Pile #

1019	DRO, GRO, BTEX & Chlorides Passed 03/17/17
738	DRO, GRO, BTEX & Chlorides Passed 03/17/17
982	DRO, GRO, BTEX & Chlorides Passed 03/17/17
993	DRO, GRO, BTEX & Chlorides Passed 03/17/17
1012	DRO, GRO, BTEX & Chlorides Passed 03/17/17
994	DRO, GRO, BTEX & Chlorides Passed 03/17/17
1010	DRO, GRO, BTEX & Chlorides Passed 03/17/17
749	DRO, GRO, BTEX & Chlorides Passed 03/17/17
590	DRO, GRO, BTEX & Chlorides Passed 03/17/17
690	DRO, GRO, BTEX & Chlorides Passed 03/17/17

We are seeking your approval to recycle this soil by using it to mix/solidify incoming liquid waste.

Respectfully Submitted,

A handwritten signature in cursive script that reads "Marcella Marquez".

Marcella Marquez
Regulatory/Compliance/HR

Enclosure(s) – Analytical Reports

Analytical Results For:

INDUSTRIAL ECOSYSTEMS
49 CR 3150
AZTEC NM, 87410

Project: JFJ
Project Number: 4429
Project Manager: MARCELLA MARQUEZ
Fax To: (505) 632-1876

Reported:
17-Mar-17 14:30

PILE 1019
H700637-01 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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Cardinal Laboratories

Inorganic Compounds

Chloride	64.0	16.0	mg/kg	4	7031310	AC	14-Mar-17	4500-Cl-B
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Volatile Organic Compounds by EPA Method 8021

Benzene*	<0.050	0.050	mg/kg	50	7031409	MS	14-Mar-17	8021B
Toluene*	0.081	0.050	mg/kg	50	7031409	MS	14-Mar-17	8021B
Ethylbenzene*	<0.050	0.050	mg/kg	50	7031409	MS	14-Mar-17	8021B
Total Xylenes*	0.186	0.150	mg/kg	50	7031409	MS	14-Mar-17	8021B
Total BTEX	<0.300	0.300	mg/kg	50	7031409	MS	14-Mar-17	8021B

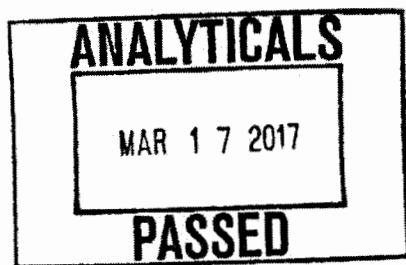
Surrogate: 4-Bromofluorobenzene (PID)	102 %	72-148	7031409	MS	14-Mar-17	8021B
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Petroleum Hydrocarbons by GC FID

GRO C6-C10	<10.0	10.0	mg/kg	1	7031301	MS	13-Mar-17	8015B
DRO >C10-C28	67.8	10.0	mg/kg	1	7031301	MS	13-Mar-17	8015B

Surrogate: 1-Chlorooctane	96.6 %	25.1-158	7031301	MS	13-Mar-17	8015B
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Surrogate: 1-Chlorooctadecane	91.2 %	26.8-170	7031301	MS	13-Mar-17	8015B
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Cardinal Laboratories

*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

INDUSTRIAL ECOSYSTEMS
49 CR 3150
AZTEC NM, 87410

Project: JFJ
Project Number: 4429
Project Manager: MARCELLA MARQUEZ
Fax To: (505) 632-1876

Reported:
17-Mar-17 14:30

PILE 738
H700637-02 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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Cardinal Laboratories

Inorganic Compounds

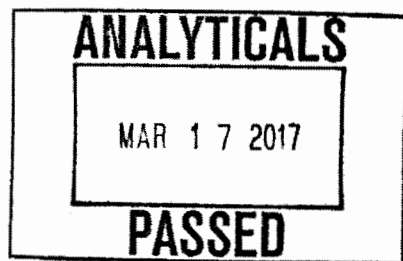
Chloride	16.0		16.0	mg/kg	4	7031310	AC	14-Mar-17	4500-Cl-B
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Volatile Organic Compounds by EPA Method 8021

Benzene*	<0.050		0.050	mg/kg	50	7031409	MS	14-Mar-17	8021B
Toluene*	0.094		0.050	mg/kg	50	7031409	MS	14-Mar-17	8021B
Ethylbenzene*	<0.050		0.050	mg/kg	50	7031409	MS	14-Mar-17	8021B
Total Xylenes*	0.151		0.150	mg/kg	50	7031409	MS	14-Mar-17	8021B
Total BTEX	<0.300		0.300	mg/kg	50	7031409	MS	14-Mar-17	8021B
Surrogate: 4-Bromofluorobenzene (P1D)			102 %	72-148		7031409	MS	14-Mar-17	8021B

Petroleum Hydrocarbons by GC FID

GRO C6-C10	<10.0		10.0	mg/kg	1	7031301	MS	13-Mar-17	8015B
DRO >C10-C28	<10.0		10.0	mg/kg	1	7031301	MS	13-Mar-17	8015B
Surrogate: 1-Chlorooctane			93.2 %	25.1-158		7031301	MS	13-Mar-17	8015B
Surrogate: 1-Chlorooctadecane			86.6 %	26.8-170		7031301	MS	13-Mar-17	8015B



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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

INDUSTRIAL ECOSYSTEMS
49 CR 3150
AZTEC NM, 87410

Project: JFJ
Project Number: 4429
Project Manager: MARCELLA MARQUEZ
Fax To: (505) 632-1876

Reported:
17-Mar-17 14:30

PILE 982
11700637-03 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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Cardinal Laboratories

Inorganic Compounds

Chloride	32.0	16.0	mg/kg	4	7031310	AC	14-Mar-17	4500-Cl-B
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Volatile Organic Compounds by EPA Method 8021

Benzene*	<0.050	0.050	mg/kg	50	7031409	MS	14-Mar-17	8021B
Toluene*	0.164	0.050	mg/kg	50	7031409	MS	14-Mar-17	8021B
Ethylbenzene*	<0.050	0.050	mg/kg	50	7031409	MS	14-Mar-17	8021B
Total Xylenes*	0.325	0.150	mg/kg	50	7031409	MS	14-Mar-17	8021B
Total BTEX	0.489	0.300	mg/kg	50	7031409	MS	14-Mar-17	8021B

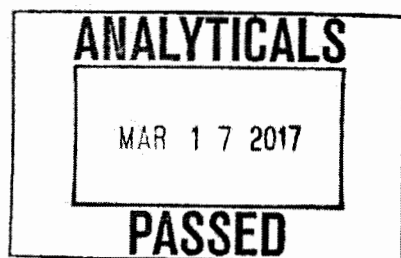
Surrogate: 4-Bromofluorobenzene (P1D)	102 %	72-148	7031409	MS	14-Mar-17	8021B
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Petroleum Hydrocarbons by GC FID

GRO C6-C10	<10.0	10.0	mg/kg	1	7031301	MS	13-Mar-17	8015B
DRO >C10-C28	<10.0	10.0	mg/kg	1	7031301	MS	13-Mar-17	8015B

Surrogate: 1-Chlorooctane	92.4 %	25.1-158	7031301	MS	13-Mar-17	8015B
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Surrogate: 1-Chlorooctadecane	82.7 %	26.8-170	7031301	MS	13-Mar-17	8015B
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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

INDUSTRIAL ECOSYSTEMS
49 CR 3150
AZTEC NM, 87410

Project: JFJ
Project Number: 4429
Project Manager: MARCELLA MARQUEZ
Fax To: (505) 632-1876

Reported:
17-Mar-17 14:30

PILE 993
H700637-04 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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Cardinal Laboratories
Inorganic Compounds

Chloride	32.0		16.0	mg/kg	4	7031310	AC	14-Mar-17	4500-Cl-B	
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Volatile Organic Compounds by EPA Method 8021

Benzene*	0.056		0.050	mg/kg	50	7031409	MS	15-Mar-17	8021B	
Toluene*	0.319		0.050	mg/kg	50	7031409	MS	15-Mar-17	8021B	
Ethylbenzene*	0.068		0.050	mg/kg	50	7031409	MS	15-Mar-17	8021B	
Total Xylenes*	0.442		0.150	mg/kg	50	7031409	MS	15-Mar-17	8021B	
Total BTEX	0.885		0.300	mg/kg	50	7031409	MS	15-Mar-17	8021B	

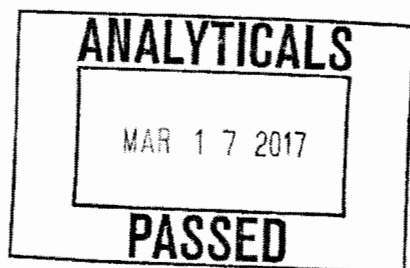
Surrogate: 4-Bromofluorobenzene (P111)			102 %	72-148		7031409	MS	15-Mar-17	8021B	
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Petroleum Hydrocarbons by GC FID

GRO C6-C10	<10.0		10.0	mg/kg	1	7031301	MS	13-Mar-17	8015B	
DRO >C10-C28	<10.0		10.0	mg/kg	1	7031301	MS	13-Mar-17	8015B	

Surrogate: 1-Chlorooctane			75.1 %	25.1-158		7031301	MS	13-Mar-17	8015B	
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Surrogate: 1-Chlorooctadecane			73.4 %	26.8-170		7031301	MS	13-Mar-17	8015B	
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Celey D. Keene, Lab Director/Quality Manager



PHONE (575) 393-2326 • 101 E. MARLAND • HOBBS, NM 88240

Analytical Results For:INDUSTRIAL ECOSYSTEMS
49 CR 3150
AZTEC NM, 87410Project: JFJ
Project Number: 4429
Project Manager: MARCELLA MARQUEZ
Fax To: (505) 632-1876Reported:
17-Mar-17 14:30**PILE 1012**
11700637-05 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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Cardinal Laboratories**Inorganic Compounds**

Chloride	160	16.0	mg/kg	4	7031310	AC	14-Mar-17	4500-Cl-B
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Volatile Organic Compounds by EPA Method 8021

Benzene*	<0.050	0.050	mg/kg	50	7031409	MS	15-Mar-17	8021B
Toluene*	0.195	0.050	mg/kg	50	7031409	MS	15-Mar-17	8021B
Ethylbenzene*	<0.050	0.050	mg/kg	50	7031409	MS	15-Mar-17	8021B
Total Xylenes*	0.223	0.150	mg/kg	50	7031409	MS	15-Mar-17	8021B
Total BTEX	0.418	0.300	mg/kg	50	7031409	MS	15-Mar-17	8021B

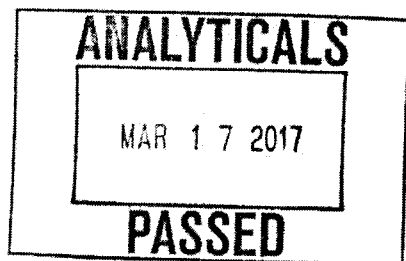
Surrogate: 4-Bromofluorobenzene (PID)	102 %	72-148	7031409	MS	15-Mar-17	8021B
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Petroleum Hydrocarbons by GC FID

GRO C6-C10	<10.0	10.0	mg/kg	1	7031301	MS	13-Mar-17	8015B
DRO >C10-C28	<10.0	10.0	mg/kg	1	7031301	MS	13-Mar-17	8015B

Surrogate: 1-Chlorooctane	78.2 %	25.1-158	7031301	MS	13-Mar-17	8015B
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Surrogate: 1-Chlorooctadecane	74.5 %	26.8-170	7031301	MS	13-Mar-17	8015B
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* = Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

INDUSTRIAL ECOSYSTEMS
49 CR 3150
AZTEC NM, 87410

Project: JFJ
Project Number: 4429
Project Manager: MARCELLA MARQUEZ
Fax To: (505) 632-1876

Reported:
17-Mar-17 14:30

PILE 994
H700637-06 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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Cardinal Laboratories
Inorganic Compounds

Chloride	32.0	16.0	mg/kg	4	7031310	AC	14-Mar-17	4500-Cl-B
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Volatile Organic Compounds by EPA Method 8021

Benzene*	<0.050	0.050	mg/kg	50	7031409	MS	15-Mar-17	8021B
Toluene*	0.126	0.050	mg/kg	50	7031409	MS	15-Mar-17	8021B
Ethylbenzene*	<0.050	0.050	mg/kg	50	7031409	MS	15-Mar-17	8021B
Total Xylenes*	0.183	0.150	mg/kg	50	7031409	MS	15-Mar-17	8021B
Total BTEX	0.309	0.300	mg/kg	50	7031409	MS	15-Mar-17	8021B

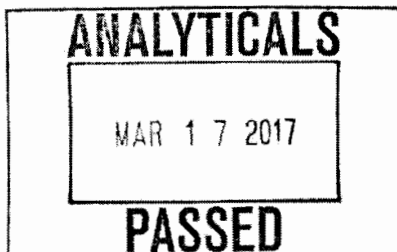
Surrogate: 4-Bromofluorobenzene (P1D)	101 %	72-148	7031409	MS	15-Mar-17	8021B
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Petroleum Hydrocarbons by GC FID

GRO C6-C10	<10.0	10.0	mg/kg	1	7031301	MS	13-Mar-17	8015B
DRO >C10-C28	<10.0	10.0	mg/kg	1	7031301	MS	13-Mar-17	8015B

Surrogate: 1-Chlorooctane	88.9 %	25.1-158	7031301	MS	13-Mar-17	8015B
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Surrogate: 1-Chlorooctadecane	88.4 %	26.8-170	7031301	MS	13-Mar-17	8015B
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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

 INDUSTRIAL ECOSYSTEMS
 49 CR 3150
 AZTEC NM, 87410

 Project: JFJ
 Project Number: 4429
 Project Manager: MARCELLA MARQUEZ
 Fax To: (505) 632-1876

 Reported:
 17-Mar-17 14:30

PILE 1010
H1700637-07 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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Cardinal Laboratories
Inorganic Compounds

Chloride	80.0	16.0	mg/kg	4	7031310	AC	14-Mar-17	4500-Cl-B
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Volatile Organic Compounds by EPA Method 8021

Benzene*	<0.050	0.050	mg/kg	50	7031409	MS	15-Mar-17	8021B
Toluene*	0.177	0.050	mg/kg	50	7031409	MS	15-Mar-17	8021B
Ethylbenzene*	<0.050	0.050	mg/kg	50	7031409	MS	15-Mar-17	8021B
Total Xylenes*	0.264	0.150	mg/kg	50	7031409	MS	15-Mar-17	8021B
Total BTEX	0.441	0.300	mg/kg	50	7031409	MS	15-Mar-17	8021B

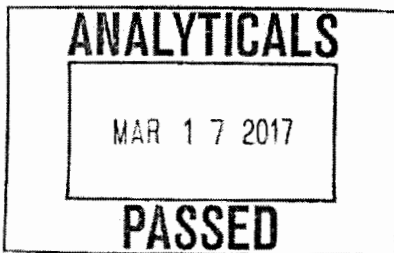
Surrogate: 4-Bromofluorobenzene (PID)	102 %	72-148	7031409	MS	15-Mar-17	8021B
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Petroleum Hydrocarbons by GC FID

GRO C6-C10	<10.0	10.0	mg/kg	1	7031301	MS	13-Mar-17	8015B
DRO >C10-C28	<10.0	10.0	mg/kg	1	7031301	MS	13-Mar-17	8015B

Surrogate: 1-Chlorooctane	94.4 %	25.1-158	7031301	MS	13-Mar-17	8015B
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Surrogate: 1-Chloroadecane	91.1 %	26.8-170	7031301	MS	13-Mar-17	8015B
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Cardinal Laboratories

* = Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

INDUSTRIAL ECOSYSTEMS
49 CR 3150
AZTEC NM, 87410

Project: JFJ
Project Number: 4429
Project Manager: MARCELLA MARQUEZ
Fax To: (505) 632-1876

Reported:
17-Mar-17 14:30

PILE 749
H700637-08 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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Cardinal Laboratories
Inorganic Compounds

Chloride	96.0	16.0	mg/kg	4	7031310	AC	14-Mar-17	4500-Cl-B
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Volatile Organic Compounds by EPA Method 8021

Benzene*	<0.050	0.050	mg/kg	50	7031409	MS	15-Mar-17	8021B
Toluene*	0.168	0.050	mg/kg	50	7031409	MS	15-Mar-17	8021B
Ethylbenzene*	<0.050	0.050	mg/kg	50	7031409	MS	15-Mar-17	8021B
Total Xylenes*	0.231	0.150	mg/kg	50	7031409	MS	15-Mar-17	8021B
Total BTEX	0.399	0.300	mg/kg	50	7031409	MS	15-Mar-17	8021B

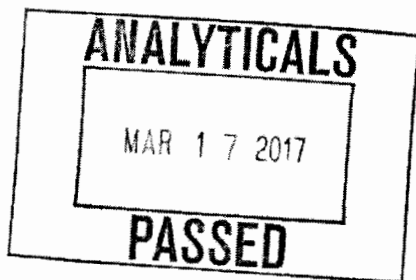
Surrogate: 4-Bromofluorobenzene (PID)	102 %	72-148	7031409	MS	15-Mar-17	8021B
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Petroleum Hydrocarbons by GC FID

GRO C6-C10	<10.0	10.0	mg/kg	1	7031301	MS	13-Mar-17	8015B
DRO >C10-C28	<10.0	10.0	mg/kg	1	7031301	MS	13-Mar-17	8015B

Surrogate: 1-Chlorooctane	94.5 %	25.1-158	7031301	MS	13-Mar-17	8015B
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Surrogate: 1-Chlorooctadecane	87.7 %	26.8-170	7031301	MS	13-Mar-17	8015B
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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

 INDUSTRIAL ECOSYSTEMS
 49 CR 3150
 AZTEC NM, 87410

 Project: JFJ
 Project Number: 4429
 Project Manager: MARCELLA MARQUEZ
 Fax To: (505) 632-1876

 Reported:
 17-Mar-17 14:30

PILE 590
H700637-09 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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Cardinal Laboratories
Inorganic Compounds

Chloride	32.0	16.0	mg/kg	4	7031310	AC	14-Mar-17	4500-Cl-B
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Volatile Organic Compounds by EPA Method 8021

Benzene*	<0.050	0.050	mg/kg	50	7031409	MS	15-Mar-17	8021B
Toluene*	0.063	0.050	mg/kg	50	7031409	MS	15-Mar-17	8021B
Ethylbenzene*	<0.050	0.050	mg/kg	50	7031409	MS	15-Mar-17	8021B
Total Xylenes*	<0.150	0.150	mg/kg	50	7031409	MS	15-Mar-17	8021B
Total BTEX	<0.300	0.300	mg/kg	50	7031409	MS	15-Mar-17	8021B

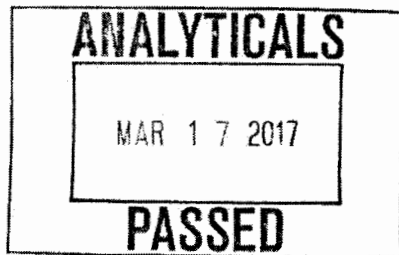
Surrogate: 4-Bromofluorobenzene (PID)	102 %	72-148	7031409	MS	15-Mar-17	8021B
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Petroleum Hydrocarbons by GC FID

GRO C6-C10	<10.0	10.0	mg/kg	1	7031301	MS	13-Mar-17	8015B
DRO >C10-C28	41.9	10.0	mg/kg	1	7031301	MS	13-Mar-17	8015B

Surrogate: 1-Chlorooctane	96.5 %	25.1-158	7031301	MS	13-Mar-17	8015B
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Surrogate: 1-Chlorooctadecane	91.3 %	26.8-170	7031301	MS	13-Mar-17	8015B
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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

INDUSTRIAL ECOSYSTEMS
49 CR 3150
AZTEC NM, 87410

Project: JFJ
Project Number: 4429
Project Manager: MARCELLA MARQUEZ
Fax To: (505) 632-1876

Reported:
17-Mar-17 14:30

PILE 690
H700637-10 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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Cardinal Laboratories
Inorganic Compounds

Chloride	<16.0	16.0	mg/kg	4	7031310	AC	14-Mar-17	4500-Cl-B
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Volatile Organic Compounds by EPA Method 8021

Benzene*	<0.050	0.050	mg/kg	50	7031409	MS	15-Mar-17	8021B
Toluene*	0.081	0.050	mg/kg	50	7031409	MS	15-Mar-17	8021B
Ethylbenzene*	<0.050	0.050	mg/kg	50	7031409	MS	15-Mar-17	8021B
Total Xylenes*	<0.150	0.150	mg/kg	50	7031409	MS	15-Mar-17	8021B
Total BTEX	<0.300	0.300	mg/kg	50	7031409	MS	15-Mar-17	8021B

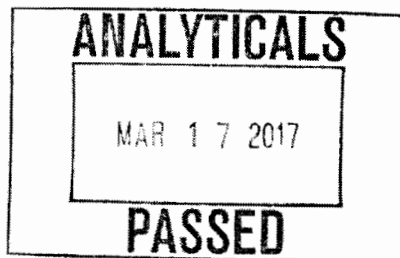
Surrogate: 4-Bromofluorobenzene (PID)	100 %	72-148	7031409	MS	15-Mar-17	8021B
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Petroleum Hydrocarbons by GC FID

GRO C6-C10	<10.0	10.0	mg/kg	1	7031301	MS	13-Mar-17	8015B
DRO >C10-C28	<10.0	10.0	mg/kg	1	7031301	MS	13-Mar-17	8015B

Surrogate: 1-Chlorooctane	92.0 %	25.1-158	7031301	MS	13-Mar-17	8015B
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Surrogate: 1-Chlorooctadecane	87.2 %	26.8-170	7031301	MS	13-Mar-17	8015B
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Celey D. Keene, Lab Director/Quality Manager



PHONE (575) 393-2326 • 101 E. MARLAND • HOBBS, NM 88240

Analytical Results For:

INDUSTRIAL ECOSYSTEMS
49 CR 3150
AZTEC NM, 87410

Project: JFJ
Project Number: 4429
Project Manager: MARCELLA MARQUEZ
Fax To: (505) 632-1876

Reported:
17-Mar-17 14:30

Inorganic Compounds - Quality Control
Cardinal Laboratories

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 7031310 - 1:4 DI Water

Blank (7031310-BLK1)

Prepared & Analyzed: 13-Mar-17

Chloride ND 16.0 mg/kg

LCS (7031310-BS1)

Prepared & Analyzed: 13-Mar-17

Chloride 400 16.0 mg/kg 400 100 80-120

LCS Dup (7031310-BSD1)

Prepared & Analyzed: 13-Mar-17

Chloride 416 16.0 mg/kg 400 104 80-120 3.92 20

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

INDUSTRIAL ECOSYSTEMS
49 CR 3150
AZTEC NM, 87410

Project: JFJ
Project Number: 4429
Project Manager: MARCELLA MARQUEZ
Fax To: (505) 632-1876

Reported:
17-Mar-17 14:30

Volatile Organic Compounds by EPA Method 8021 - Quality Control

Cardinal Laboratories

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 7031409 - Volatiles										
Blank (7031409-BLK1)				Prepared & Analyzed: 14-Mar-17						
Benzene	ND	0.050	mg/kg							
Toluene	ND	0.050	mg/kg							
Ethylbenzene	ND	0.050	mg/kg							
Total Xylenes	ND	0.150	mg/kg							
Total BTEX	ND	0.300	mg/kg							
Surrogate: 4-Bromofluorobenzene (PH)	0.0513		mg/kg	0.0500		103	72-148			
LCS (7031409-BS1)				Prepared & Analyzed: 14-Mar-17						
Benzene	2.16	0.050	mg/kg	2.00		108	79.5-124			
Toluene	2.01	0.050	mg/kg	2.00		101	75.5-127			
Ethylbenzene	2.00	0.050	mg/kg	2.00		100	77.7-125			
Total Xylenes	5.72	0.150	mg/kg	6.00		95.4	70.9-124			
Surrogate: 4-Bromofluorobenzene (PH)	0.0509		mg/kg	0.0500		102	72-148			
LCS Dup (7031409-BSD1)				Prepared & Analyzed: 14-Mar-17						
Benzene	2.18	0.050	mg/kg	2.00		109	79.5-124	0.812	6.5	
Toluene	2.04	0.050	mg/kg	2.00		102	75.5-127	1.18	7.02	
Ethylbenzene	2.03	0.050	mg/kg	2.00		101	77.7-125	1.33	7.83	
Total Xylenes	5.80	0.150	mg/kg	6.00		96.7	70.9-124	1.43	7.78	
Surrogate: 4-Bromofluorobenzene (PH)	0.0506		mg/kg	0.0500		101	72-148			

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Analytical Results For:INDUSTRIAL ECOSYSTEMS
49 CR 3150
AZTEC NM, 87410Project: JFJ
Project Number: 4429
Project Manager: MARCELLA MARQUEZ
Fax To: (505) 632-1876Reported:
17-Mar-17 14:30**Petroleum Hydrocarbons by GC FID - Quality Control****Cardinal Laboratories**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 7031301 - General Prep - Organics**Blank (7031301-BLK1)**

Prepared & Analyzed: 13-Mar-17

GRO C6-C10	ND	10.0	mg/kg							
DRO >C10-C28	ND	10.0	mg/kg							
Surrogate: 1-Chlorooctane	48.2		mg/kg	50.0		96.3	25.1-158			
Surrogate: 1-Chlorooctadecane	43.2		mg/kg	50.0		86.5	26.8-170			

LCS (7031301-BS1)

Prepared & Analyzed: 13-Mar-17

GRO C6-C10	205	10.0	mg/kg	200		103	78.6-112			
DRO >C10-C28	206	10.0	mg/kg	200		103	76.7-124			
Surrogate: 1-Chlorooctane	55.8		mg/kg	50.0		112	25.1-158			
Surrogate: 1-Chlorooctadecane	47.5		mg/kg	50.0		94.9	26.8-170			

LCS Dup (7031301-BSD1)

Prepared & Analyzed: 13-Mar-17

GRO C6-C10	201	10.0	mg/kg	200		100	78.6-112	2.10	13	
DRO >C10-C28	200	10.0	mg/kg	200		99.9	76.7-124	3.06	15.5	
Surrogate: 1-Chlorooctane	54.8		mg/kg	50.0		110	25.1-158			
Surrogate: 1-Chlorooctadecane	48.3		mg/kg	50.0		96.6	26.8-170			

Cardinal Laboratories

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Celey D. Keene, Lab Director/Quality Manager

Notes and Definitions

ND	Analyte NOT DETECTED at or above the reporting limit
RPD	Relative Percent Difference
**	Samples not received at proper temperature of 6°C or below.
***	Insufficient time to reach temperature.
-	Chloride by SM4500Cl-B does not require samples be received at or below 6°C Samples reported on an as received basis (wet) unless otherwise noted on report

Cardinal Laboratories

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Celey D. Keene, Lab Director/Quality Manager



(970) 247-4220 service@greenanalytical.com or dadel@greenanalytical.com
Fax: (970) 247-4227 75 Suite St Durango, CO 81303

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

Company Name: <u>TEI</u>		Bill to (if different):		ANALYSIS REQUEST	
Project Manager: <u>Marcella</u>		P.O. #: <u>1425</u>			
Address: <u>49 CR 3150</u>		Company:			
City: <u>Aspen</u>		State: <u>CO</u>			
Phone #: <u>632-1782</u>		City:			
Email:		State: <u>CO</u>			
Additional Report To:		Zip:			
Project Name:		Phone #:			
Project Number:		Fax or Email:			
Sampler Name (Print):		Matrix (check one)			
FOR LAB USE ONLY		# of containers			
Lab I.D.	Sample Name or Location	Date	Time	GROUNDWATER	
				SURFACEWATER	
				WASTEWATER	
				PRODUCEDWATER	
				SOIL	
				OTHER:	
				No preservation (general)	
				HNO ₃	
				HCl	
				H ₂ SO ₄	
				Other:	
				Other:	
				Other:	
#100637	RIE 1019	3/17	7:00a		DRO
1	738	3/17	7:00a		GRO
2	983	3/17	7:45a		BTF X
3	993	3/17	8:10a		Chlorides
4	1012	3/17	8:55a		
5	994	3/17	9:00a		
6	1010	3/17	7:00a		
7	749	3/17	8:05a		
8	540	3/17	8:30a		
9	690	3/17	8:30a		
10					
REMARKS: PLEASE NOTE: GAL's liability is limited to the amount of the fee paid for the analysis. GAL does not warrant the accuracy of the results and any other claims whatsoever and is not responsible for any damage or loss of data or equipment resulting from the use of the results of the analysis. GAL's liability is limited to the amount of the fee paid for the analysis. GAL does not warrant the accuracy of the results and any other claims whatsoever and is not responsible for any damage or loss of data or equipment resulting from the use of the results of the analysis.					
Retrieved By: <u>Christa Clark</u>					
Received By: <u>Feed Ex</u>					
Date: <u>3/18/17</u>					
Time: <u>1:45</u>					
Delivered By: <u>John Menden</u>					
Date: <u>3/18/17</u>					
Time: <u>2:45</u>					
Temperature at receipt: <u>5.3°C</u>					
CHECKED BY: <u>cc</u>					
Sampler - UPS - FedEx - Kangaroo - Other: <u>#75 2:30 on 14</u>					
Chain of Custody must be signed in "Retrieved By" as an acceptance of services and all applicable charges.					

State of New Mexico
Energy, Minerals and Natural Resources Department

Susana Martinez
Governor

Ken McQueen
Cabinet Secretary

Matthias Sayer
Deputy Cabinet Secretary

David R. Catanach, Division Director
Oil Conservation Division



March 21, 2017

Ms. Marcella Marquez
JFJ Landfarm, L.L.C.
Industrial Ecosystems Inc.
Soil Reclamation Center
P.O. Box 2043
Farmington, New Mexico 87499

RE: Request for Approval to Reuse Remediated Biopile Soils for the Stabilization/Solidification of Drilling Mud, Tank Bottoms, and Sludge
JFJ Landfarm, LLC - Industrial Ecosystems Inc.
JFJ Landfarm – Permit # NM1-010-B
Location: NW/4 SE/4 of Section 2, Township 29 North, Range 12 West, NMPM,
San Juan County, New Mexico

Dear Ms. Marquez:

The Oil Conservation Division (OCD) has reviewed JFJ Landfarm, LLC's (JFJ) request, emailed to OCD on March 21, 2017, and associated analytical results to reuse the remediated soils for the stabilization and/or solidification of incoming drilling mud and tank bottoms and sludge from following biopile(s): **742 and 1002.**

Based upon the information provided in the request, the above-referenced biopiles are hereby approved for the stabilization and/or solidification of incoming drilling mud and tank bottoms and sludge.

Please be advised that approval of this request does not relieve JFJ of liability should operations result in pollution of surface water, ground water or the environment. Nor does approval relieve JFJ of its responsibility to comply with any other applicable governmental authority's rules and regulations.

If there are any questions regarding this matter, please do not hesitate to contact Brad Jones on my staff at (505) 476-3487 or brad.a.jones@state.nm.us.

Sincerely,

Jim Griswold
Environmental Bureau Chief

JG/baj

cc: OCD District III Office, Aztec

Jones, Brad A., EMNRD

From: Marcella Marquez <marcella@industrialecosystems.com>
Sent: Tuesday, March 21, 2017 1:27 PM
To: Jones, Brad A., EMNRD
Subject: Request to Reuse Soil
Attachments: 1BLANK Request to Reuse Soil.doc; Passed Piles 031717.pdf

Importance: High

Brad:

Attached please find a request to reuse treated soils along with the corresponding analytical report.

Please let me know if you have any questions or concerns.

*Thanks,
Marcella Marquez
Industrial Ecosystems, Inc.*



**Industrial Ecosystems Inc.
Soil Reclamation Center**

P.O. Box 2043
Farmington, NM 87499

Phone: (505) 632-1782
Fax: (505) 632-1876

#49 CR 3150
Aztec, NM 87410

March 21, 2017

Brad Jones
Environmental Bureau
NM Oil Conservation Division
1220 S. St. Francis Drive
Santa Fe, New Mexico 87505

RE: Use of reclaimed soil

Dear Brad:

Recent analytical results show that the following biopiles(s) have reached acceptable levels as required by our NMOCD permit.

Pile #

1002	DRO, GRO, BTEX & Chlorides Passed 03/17/17
742	DRO, GRO, BTEX & Chlorides Passed 03/17/17

We are seeking your approval to recycle this soil by using it to mix/solidify incoming liquid waste.

Respectfully Submitted,

A handwritten signature in cursive script that reads 'Marcella Marquez'.

Marcella Marquez
Regulatory/Compliance/HR

Enclosure(s) – Analytical Reports

Analytical Results For:

INDUSTRIAL ECOSYSTEMS
49 CR 3150
AZTEC NM, 87410

Project: JFJ
Project Number: 4429
Project Manager: MARCELLA MARQUEZ
Fax To: (505) 632-1876

Reported:
17-Mar-17 14:37

PILE 1002
H700639-01 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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Cardinal Laboratories
Inorganic Compounds

Chloride	32.0	16.0	mg/kg	4	7031310	AC	14-Mar-17	4500-Cl-B
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Volatile Organic Compounds by EPA Method 8021

Benzene*	<0.050	0.050	mg/kg	50	7031409	MS	15-Mar-17	8021B
Toluene*	0.097	0.050	mg/kg	50	7031409	MS	15-Mar-17	8021B
Ethylbenzene*	<0.050	0.050	mg/kg	50	7031409	MS	15-Mar-17	8021B
Total Xylenes*	0.214	0.150	mg/kg	50	7031409	MS	15-Mar-17	8021B
Total BTEX	0.311	0.300	mg/kg	50	7031409	MS	15-Mar-17	8021B

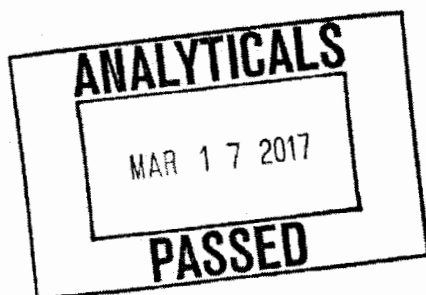
Surrogate: 4-Bromofluorobenzene (P11)	103 %	72-148	7031409	MS	15-Mar-17	8021B
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Petroleum Hydrocarbons by GC FID

GRO C6-C10	<10.0	10.0	mg/kg	1	7031301	MS	13-Mar-17	8015B
DRO >C10-C28	<10.0	10.0	mg/kg	1	7031301	MS	13-Mar-17	8015B

Surrogate: 1-Chlorooctane	85.1 %	25.1-158	7031301	MS	13-Mar-17	8015B
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Surrogate: 1-Chlorooctadecane	87.1 %	26.8-170	7031301	MS	13-Mar-17	8015B
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Celey D. Keene, Lab Director/Quality Manager



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Analytical Results For:INDUSTRIAL ECOSYSTEMS
49 CR 3150
AZTEC NM, 87410Project: JFJ
Project Number: 4429
Project Manager: MARCELLA MARQUEZ
Fax To: (505) 632-1876Reported:
17-Mar-17 14:37**PILE 742
H700639-02 (Soil)**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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Cardinal Laboratories**Inorganic Compounds**

Chloride	32.0		16.0	mg/kg	4	7031310	AC	14-Mar-17	4500-Cl-B
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Volatile Organic Compounds by EPA Method 8021

Benzene*	<0.050		0.050	mg/kg	50	7031503	MS	16-Mar-17	8021B
Toluene*	0.066		0.050	mg/kg	50	7031503	MS	16-Mar-17	8021B
Ethylbenzene*	<0.050		0.050	mg/kg	50	7031503	MS	16-Mar-17	8021B
Total Xylenes*	<0.150		0.150	mg/kg	50	7031503	MS	16-Mar-17	8021B
Total BTEX	<0.300		0.300	mg/kg	50	7031503	MS	16-Mar-17	8021B

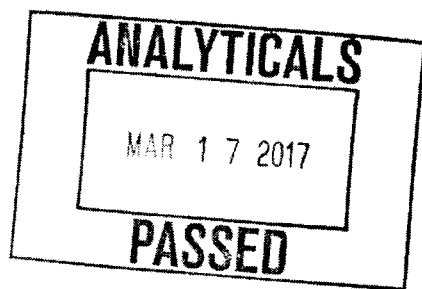
Surrogate: 4-Bromofluorobenzene (PID)		102 %	72-148		7031503	MS	16-Mar-17	8021B
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Petroleum Hydrocarbons by GC FID

GRO C6-C10	<10.0		10.0	mg/kg	1	7031301	MS	13-Mar-17	8015B
DRO >C10-C28	<10.0		10.0	mg/kg	1	7031301	MS	13-Mar-17	8015B

Surrogate: 1-Chlorooctane		88.3 %	25.1-158		7031301	MS	13-Mar-17	8015B
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Surrogate: 1-Chlorooctadecane		91.8 %	26.8-170		7031301	MS	13-Mar-17	8015B
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Cardinal Laboratories

* = Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager



PHONE (575) 393-2326 • 101 E. MARLAND • HOBBS, NM 88240

Analytical Results For:INDUSTRIAL ECOSYSTEMS
49 CR 3150
AZTEC NM, 87410Project: JFJ
Project Number: 4429
Project Manager: MARCELLA MARQUEZ
Fax To: (505) 632-1876Reported:
17-Mar-17 14:37**Inorganic Compounds - Quality Control****Cardinal Laboratories**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 7031310 - 1:4 DI Water**Blank (7031310-BLK1)**

Prepared & Analyzed: 13-Mar-17

Chloride ND 16.0 mg/kg

LCS (7031310-BS1)

Prepared & Analyzed: 13-Mar-17

Chloride 400 16.0 mg/kg 400 100 80-120

LCS Dup (7031310-BSD1)

Prepared & Analyzed: 13-Mar-17

Chloride 416 16.0 mg/kg 400 104 80-120 3.92 20

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Analytical Results For:INDUSTRIAL ECOSYSTEMS
49 CR 3150
AZTEC NM, 87410Project: JFJ
Project Number: 4429
Project Manager: MARCELLA MARQUEZ
Fax To: (505) 632-1876Reported:
17-Mar-17 14:37**Volatile Organic Compounds by EPA Method 8021 - Quality Control****Cardinal Laboratories**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 7031409 - Volatiles**Blank (7031409-BLK1)**

Prepared & Analyzed: 14-Mar-17

Benzene	ND	0.050	mg/kg
Toluene	ND	0.050	mg/kg
Ethylbenzene	ND	0.050	mg/kg
Total Xylenes	ND	0.150	mg/kg
Total BTEX	ND	0.300	mg/kg

Surrogate: 4-Bromofluorobenzene (P1D) 0.0513 mg/kg 0.0500 103 72-148

LCS (7031409-BS1)

Prepared & Analyzed: 14-Mar-17

Benzene	2.16	0.050	mg/kg	2.00	108	79.5-124
Toluene	2.01	0.050	mg/kg	2.00	101	75.5-127
Ethylbenzene	2.00	0.050	mg/kg	2.00	100	77.7-125
Total Xylenes	5.72	0.150	mg/kg	6.00	95.4	70.9-124

Surrogate: 4-Bromofluorobenzene (P1D) 0.0509 mg/kg 0.0500 102 72-148

LCS Dup (7031409-BSD1)

Prepared & Analyzed: 14-Mar-17

Benzene	2.18	0.050	mg/kg	2.00	109	79.5-124	0.812	6.5
Toluene	2.04	0.050	mg/kg	2.00	102	75.5-127	1.18	7.02
Ethylbenzene	2.03	0.050	mg/kg	2.00	101	77.7-125	1.33	7.83
Total Xylenes	5.80	0.150	mg/kg	6.00	96.7	70.9-124	1.43	7.78

Surrogate: 4-Bromofluorobenzene (P1D) 0.0506 mg/kg 0.0500 101 72-148

Batch 7031503 - Volatiles**Blank (7031503-BLK1)**

Prepared: 15-Mar-17 Analyzed: 16-Mar-17

Benzene	ND	0.050	mg/kg
Toluene	ND	0.050	mg/kg
Ethylbenzene	ND	0.050	mg/kg
Total Xylenes	ND	0.150	mg/kg
Total BTEX	ND	0.300	mg/kg

Surrogate: 4-Bromofluorobenzene (P1D) 0.0512 mg/kg 0.0500 102 72-148

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

INDUSTRIAL ECOSYSTEMS
49 CR 3150
AZTEC NM, 87410

Project: JFJ
Project Number: 4429
Project Manager: MARCELLA MARQUEZ
Fax To: (505) 632-1876

Reported:
17-Mar-17 14:37

Volatile Organic Compounds by EPA Method 8021 - Quality Control
Cardinal Laboratories

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 7031503 - Volatiles
LCS (7031503-BS1)

Prepared: 15-Mar-17 Analyzed: 16-Mar-17

Benzene	2.00	0.050	mg/kg	2.00		99.8	79.5-124			
Toluene	1.87	0.050	mg/kg	2.00		93.5	75.5-127			
Ethylbenzene	1.86	0.050	mg/kg	2.00		93.1	77.7-125			
Total Xylenes	5.32	0.150	mg/kg	6.00		88.7	70.9-124			
Surrogate: 4-Bromofluorobenzene (PID)	0.0507		mg/kg	0.0500		101	72-148			

LCS Dup (7031503-BS1)

Prepared: 15-Mar-17 Analyzed: 16-Mar-17

Benzene	1.99	0.050	mg/kg	2.00		99.3	79.5-124	0.479	6.5	
Toluene	1.86	0.050	mg/kg	2.00		92.9	75.5-127	0.616	7.02	
Ethylbenzene	1.85	0.050	mg/kg	2.00		92.3	77.7-125	0.899	7.83	
Total Xylenes	5.27	0.150	mg/kg	6.00		87.9	70.9-124	0.918	7.78	
Surrogate: 4-Bromofluorobenzene (PID)	0.0505		mg/kg	0.0500		101	72-148			

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Analytical Results For:INDUSTRIAL ECOSYSTEMS
49 CR 3150
AZTEC NM, 87410Project: JFJ
Project Number: 4429
Project Manager: MARCELLA MARQUEZ
Fax To: (505) 632-1876Reported:
17-Mar-17 14:37**Petroleum Hydrocarbons by GC FID - Quality Control****Cardinal Laboratories**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 7031301 - General Prep - Organics**Blank (7031301-BLK1)**

Prepared & Analyzed: 13-Mar-17

GRO C6-C10	ND	10.0	mg/kg							
DRO >C10-C28	ND	10.0	mg/kg							
Surrogate: 1-Chlorooctane	48.2		mg/kg	50.0		96.3	25.1-158			
Surrogate: 1-Chlorooctadecane	43.2		mg/kg	50.0		86.5	26.8-170			

LCS (7031301-BS1)

Prepared & Analyzed: 13-Mar-17

GRO C6-C10	205	10.0	mg/kg	200		103	78.6-112			
DRO >C10-C28	206	10.0	mg/kg	200		103	76.7-124			
Surrogate: 1-Chlorooctane	55.8		mg/kg	50.0		112	25.1-158			
Surrogate: 1-Chlorooctadecane	47.5		mg/kg	50.0		94.9	26.8-170			

LCS Dup (7031301-BSD1)

Prepared & Analyzed: 13-Mar-17

GRO C6-C10	201	10.0	mg/kg	200		100	78.6-112	2.10	13	
DRO >C10-C28	200	10.0	mg/kg	200		99.9	76.7-124	3.06	15.5	
Surrogate: 1-Chlorooctane	54.8		mg/kg	50.0		110	25.1-158			
Surrogate: 1-Chlorooctadecane	48.3		mg/kg	50.0		96.6	26.8-170			

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Celey D. Keene, Lab Director/Quality Manager

Notes and Definitions

ND	Analyte NOT DETECTED at or above the reporting limit
RPD	Relative Percent Difference
**	Samples not received at proper temperature of 6°C or below.
***	Insufficient time to reach temperature.
-	Chloride by SM4500Cl-B does not require samples be received at or below 6°C Samples reported on an as received basis (wet) unless otherwise noted on report

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Celey D. Keene, Lab Director/Quality Manager



CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

(970) 247-4220 service@greenanalytical.com or dzufelt@greenanalytical.com
 Fax: (970) 247-4227 75 Suttle St Durango, CO 81303

Company Name: <u>LEI</u>		Bill to (if different):		ANALYSIS REQUEST												
Project Manager: <u>Morcella</u>		P.O. #: <u>4/29</u>		DRO GRO BTEX Chlorides												
Address: <u>49 CR 3150</u>		Company:														
City: <u>Aztec</u> State: <u>NM</u> Zip: <u>87410</u>		Attn:														
Phone #: <u>632-1782</u> Email:		Address:														
Additional Report To:		City:														
Project Name:		State: Zip:														
Project Number:		Phone #:														
Sampler Name (Print):		Fax or Email:														
FOR LAB USE ONLY		Collected		Matrix (check one)		# of containers										
Lab I.D.	Sample Name or Location	Date	Time	GROUNDWATER	SURFACEWATER	WASTEWATER	PRODUCEDWATER	SOIL	OTHER:	No preservation (general)	HNO ₃	HCl	H ₂ SO ₄	Other:	Other:	Other:
<u>#70429</u>	<u>1 PILE 1002</u>	<u>3/8/17</u>	<u>9:00am</u>													
	<u>2 742</u>	<u>3/8/17</u>	<u>9:25am</u>													

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Relinquished By: <u>[Signature]</u>	Date: <u>3/8/17</u>	Received By: <u>Christen Clark</u>	ADDITIONAL REMARKS:	Report to State? (Circle) Yes No
Relinquished By: <u>Christen Clark</u>	Date: <u>3/8/17</u>	Received By: <u>FedEx</u>		
Relinquished By:	Date: <u>3-10-17</u>	Received By: <u>Jamara Oldaker</u>		
Delivered By: (Circle One)	Date: <u>3-10-17</u>	Temperature at receipt: <u>5.3°C</u>		
Sampler - UPS - FedEx - Kangaroo - Other: <u>#75</u>			CHECKED BY: <u>Conia</u>	

† GAL cannot always accept verbal changes. Please fax or email written change requests.
 * Chain of Custody must be signed in "Relinquished By:" as an acceptance of services and all applicable charges.

State of New Mexico
Energy, Minerals and Natural Resources Department

Susana Martinez
Governor

Ken McQueen
Cabinet Secretary

Matthias Sayer
Deputy Cabinet Secretary

David R. Catanach, Division Director
Oil Conservation Division



January 9, 2017

Ms. Marcella Marquez
JFJ Landfarm, L.L.C.
Industrial Ecosystems Inc.
Soil Reclamation Center
P.O. Box 2043
Farmington, New Mexico 87499

RE: Request for Approval to Reuse Remediated Biopile Soils for the Stabilization/Solidification of Drilling Mud and Tank Bottoms and Sludge
JFJ Landfarm, LLC - Industrial Ecosystems Inc.
JFJ Landfarm – Permit # NM1-010-B
Location: NW/4 SE/4 of Section 2, Township 29 North, Range 12 West, NMPM,
San Juan County, New Mexico

Dear Ms. Marquez:

The Oil Conservation Division (OCD) has reviewed JFJ Landfarm, LLC's (JFJ) request, emailed to OCD on December 30, 2016, and associated analytical results to reuse the remediated soils for the stabilization and/or solidification of incoming drilling mud and tank bottoms and sludge from following biopile(s):
904, 786, 985, 1013, 1014, 1016, and 1018.

Based upon the information provided in the request, the above-referenced biopiles are hereby approved for the stabilization and/or solidification of incoming drilling mud and tank bottoms and sludge.

Please be advised that approval of this request does not relieve JFJ of liability should operations result in pollution of surface water, ground water or the environment. Nor does approval relieve JFJ of its responsibility to comply with any other applicable governmental authority's rules and regulations.

If there are any questions regarding this matter, please do not hesitate to contact Brad Jones on my staff at (505) 476-3487 or brad.a.jones@state.nm.us.

Sincerely,

Jim Griswold
Environmental Bureau Chief

JG/baj

cc: OCD District III Office, Aztec

Jones, Brad A., EMNRD

From: Marcella Marquez <marcella@industrialecosystems.com>
Sent: Friday, December 30, 2016 4:45 PM
To: Jones, Brad A., EMNRD
Subject: Request to Reuse Soil
Attachments: 1BLANK Request to Reuse Soil.doc; 122216 passed piles.pdf

Importance: High

Brad:

Please see attached letter requesting to reuse treated soils along with the corresponding analytical report.

Thanks,
Marcella Marquez
Industrial Ecosystems, Inc.



**Industrial Ecosystems Inc.
Soil Reclamation Center**

P.O. Box 2043
Farmington, NM 87499

Phone: (505) 632-1782
Fax: (505) 632-1876

#49 CR 3150
Aztec, NM 87410

December 30, 2016

Brad Jones
Environmental Bureau
NM Oil Conservation Division
1220 S. St. Francis Drive
Santa Fe, New Mexico 87505

RE: Use of reclaimed soil

Dear Brad:

Recent analytical results show that the following biopiles(s) have reached acceptable levels as required by our NMOCD permit.

Pile #

904	DRO, GRO, BTEX & Chlorides Passed 12/22/16
786	DRO, GRO, BTEX & Chlorides Passed 12/22/16
985	DRO, GRO, BTEX & Chlorides Passed 12/22/16
1013	DRO, GRO, BTEX & Chlorides Passed 12/22/16
1014	DRO, GRO, BTEX & Chlorides Passed 12/22/16
1016	DRO, GRO, BTEX & Chlorides Passed 12/22/16
1018	DRO, GRO, BTEX & Chlorides Passed 12/22/16

We are seeking your approval to recycle this soil by using it to mix/solidify incoming liquid waste.

Respectfully Submitted,


Marcella Marquez
Regulatory/Compliance/HR

Enclosure(s) – Analytical Reports

Analytical Results For:

 INDUSTRIAL ECOSYSTEMS
 49 CR 3150
 AZTEC NM, 87410

 Project: JFJ
 Project Number: NOT GIVEN
 Project Manager: MARCELLA MARQUEZ
 Fax To: (505) 632-1876

 Reported:
 22-Dec-16 11:43

PILE 904
H602809-01 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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Cardinal Laboratories
Inorganic Compounds

Chloride	96.0	16.0	mg/kg	4	6121706	AC	20-Dec-16	4500-Cl-B
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Volatile Organic Compounds by EPA Method 8021

Benzene*	<0.050	0.050	mg/kg	50	6121605	MS	16-Dec-16	8021B
Toluene*	<0.050	0.050	mg/kg	50	6121605	MS	16-Dec-16	8021B
Ethylbenzene*	<0.050	0.050	mg/kg	50	6121605	MS	16-Dec-16	8021B
Total Xylenes*	<0.150	0.150	mg/kg	50	6121605	MS	16-Dec-16	8021B
Total BTEX	<0.300	0.300	mg/kg	50	6121605	MS	16-Dec-16	8021B

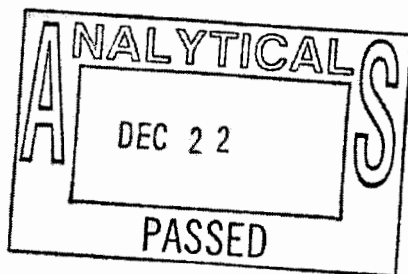
Surrogate: 4-Bromofluorobenzene (P11)	119 %	73.6-140	6121605	MS	16-Dec-16	8021B
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Petroleum Hydrocarbons by GC FID

GRO C6-C10	<10.0	10.0	mg/kg	1	6121603	MS	16-Dec-16	8015B
DRO >C10-C28	33.7	10.0	mg/kg	1	6121603	MS	16-Dec-16	8015B

Surrogate: 1-Chlorooctane	75.1 %	35-147	6121603	MS	16-Dec-16	8015B
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Surrogate: 1-Chlorotetradecane	103 %	28-171	6121603	MS	16-Dec-16	8015B
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Celey D. Keene, Lab Director/Quality Manager



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Analytical Results For:INDUSTRIAL ECOSYSTEMS
49 CR 3150
AZTEC NM, 87410Project: JFJ
Project Number: NOT GIVEN
Project Manager: MARCELLA MARQUEZ
Fax To: (505) 632-1876Reported:
22-Dec-16 11:43**PILE 786
H602809-02 (Soil)**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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Cardinal Laboratories**Inorganic Compounds**

Chloride	96.0	16.0	mg/kg	4	6121706	AC	20-Dec-16	4500-Cl-B	
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Volatile Organic Compounds by EPA Method 8021

Benzene*	<0.050	0.050	mg/kg	50	6121605	MS	16-Dec-16	8021B	
Toluene*	<0.050	0.050	mg/kg	50	6121605	MS	16-Dec-16	8021B	
Ethylbenzene*	<0.050	0.050	mg/kg	50	6121605	MS	16-Dec-16	8021B	
Total Xylenes*	<0.150	0.150	mg/kg	50	6121605	MS	16-Dec-16	8021B	
Total BTEX	<0.300	0.300	mg/kg	50	6121605	MS	16-Dec-16	8021B	

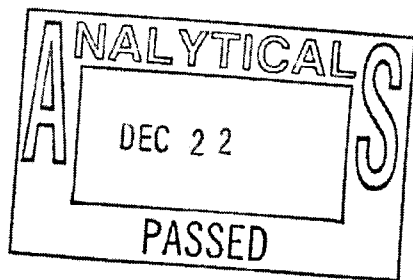
Surrogate: 4-Bromofluorobenzene (P111) 120 % 73.6-140 6121605 MS 16-Dec-16 8021B

Petroleum Hydrocarbons by GC FID

GRO C6-C10	<10.0	10.0	mg/kg	1	6121603	MS	16-Dec-16	8015B	
DRO >C10-C28	22.2	10.0	mg/kg	1	6121603	MS	16-Dec-16	8015B	

Surrogate: 1-Chlorooctane 78.0 % 35-147 6121603 MS 16-Dec-16 8015B

Surrogate: 1-Chlorooctadecane 90.4 % 28-171 6121603 MS 16-Dec-16 8015B



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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

INDUSTRIAL ECOSYSTEMS 49 CR 3150 AZTEC NM, 87410	Project: JFJ Project Number: NOT GIVEN Project Manager: MARCELLA MARQUEZ Fax To: (505) 632-1876	Reported: 22-Dec-16 11:43
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PILE 985 H602809-03 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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Cardinal Laboratories

Inorganic Compounds

Chloride	80.0	16.0	mg/kg	4	6121706	AC	20-Dec-16	4500-Cl-B		
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Volatile Organic Compounds by EPA Method 8021

Benzene*	<0.050	0.050	mg/kg	50	6121605	MS	16-Dec-16	8021B		
Toluene*	<0.050	0.050	mg/kg	50	6121605	MS	16-Dec-16	8021B		
Ethylbenzene*	<0.050	0.050	mg/kg	50	6121605	MS	16-Dec-16	8021B		
Total Xylenes*	<0.150	0.150	mg/kg	50	6121605	MS	16-Dec-16	8021B		
Total BTEX	<0.300	0.300	mg/kg	50	6121605	MS	16-Dec-16	8021B		

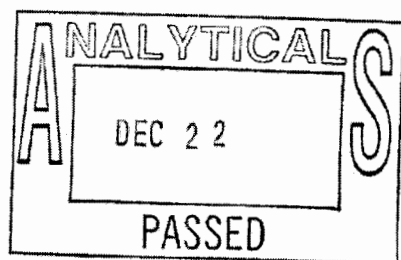
Surrogate: 4-Bromofluorobenzene (PID) 121 % 73.6-140 6121605 MS 16-Dec-16 8021B

Petroleum Hydrocarbons by GC FID

GRO C6-C10	<10.0	10.0	mg/kg	1	6121603	MS	16-Dec-16	8015B		
DRO >C10-C28	32.3	10.0	mg/kg	1	6121603	MS	16-Dec-16	8015B		

Surrogate: 1-Chlorooctane 74.9 % 35-147 6121603 MS 16-Dec-16 8015B

Surrogate: 1-Chlorodecane 97.1 % 28-171 6121603 MS 16-Dec-16 8015B



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Celey D. Keene, Lab Director/Quality Manager



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Analytical Results For:INDUSTRIAL ECOSYSTEMS
49 CR 3150
AZTEC NM, 87410Project: JFJ
Project Number: NOT GIVEN
Project Manager: MARCELLA MARQUEZ
Fax To: (505) 632-1876Reported:
22-Dec-16 11:43**PILE 1013
H602809-04 (Soil)**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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Cardinal Laboratories**Inorganic Compounds**

Chloride	48.0	16.0	mg/kg	4	6121706	AC	20-Dec-16	4500-Cl-B	
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Volatile Organic Compounds by EPA Method 8021

Benzene*	<0.050	0.050	mg/kg	50	6121902	MS	19-Dec-16	8021B
Toluene*	<0.050	0.050	mg/kg	50	6121902	MS	19-Dec-16	8021B
Ethylbenzene*	<0.050	0.050	mg/kg	50	6121902	MS	19-Dec-16	8021B
Total Xylenes*	<0.150	0.150	mg/kg	50	6121902	MS	19-Dec-16	8021B
Total BTEX	<0.300	0.300	mg/kg	50	6121902	MS	19-Dec-16	8021B

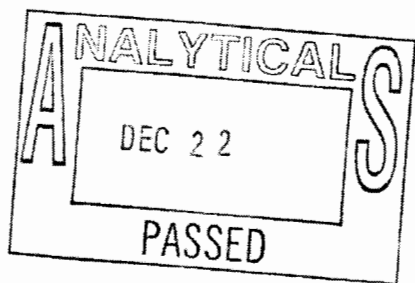
Surrogate: 4-Bromofluorobenzene (P111) 120 % 73.6-140 6121902 MS 19-Dec-16 8021B

Petroleum Hydrocarbons by GC FID

GRO C6-C10	<10.0	10.0	mg/kg	1	6121603	MS	16-Dec-16	8015B
DRO >C10-C28	<10.0	10.0	mg/kg	1	6121603	MS	16-Dec-16	8015B

Surrogate: 1-Chlorooctane 93.1 % 35-147 6121603 MS 16-Dec-16 8015B

Surrogate: 1-Chlorooctadecane 98.0 % 28-171 6121603 MS 16-Dec-16 8015B



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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

 INDUSTRIAL ECOSYSTEMS
 49 CR 3150
 AZTEC NM, 87410

 Project: JFJ
 Project Number: NOT GIVEN
 Project Manager: MARCELLA MARQUEZ
 Fax To: (505) 632-1876

 Reported:
 22-Dec-16 11:43

PILE 1014
H602809-05 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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Cardinal Laboratories
Inorganic Compounds

Chloride	64.0	16.0	mg/kg	4	6121706	AC	20-Dec-16	4500-Cl-B
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Volatile Organic Compounds by EPA Method 8021

Benzene*	<0.050	0.050	mg/kg	50	6122005	MS	21-Dec-16	8021B
Toluene*	<0.050	0.050	mg/kg	50	6122005	MS	21-Dec-16	8021B
Ethylbenzene*	<0.050	0.050	mg/kg	50	6122005	MS	21-Dec-16	8021B
Total Xylenes*	<0.150	0.150	mg/kg	50	6122005	MS	21-Dec-16	8021B
Total BTEX	<0.300	0.300	mg/kg	50	6122005	MS	21-Dec-16	8021B

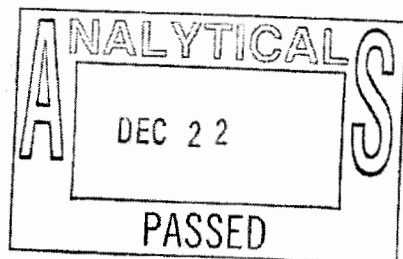
Surrogate: 4-Bromofluorobenzene (P1D)	121 %	73.6-140	6122005	MS	21-Dec-16	8021B
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Petroleum Hydrocarbons by GC FID

GRO C6-C10	<10.0	10.0	mg/kg	1	6121603	MS	16-Dec-16	8015B
DRO >C10-C28	21.2	10.0	mg/kg	1	6121603	MS	16-Dec-16	8015B

Surrogate: 1-Chlorooctane	84.4 %	35-147	6121603	MS	16-Dec-16	8015B
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Surrogate: 1-Chlorooctadecane	103 %	28-171	6121603	MS	16-Dec-16	8015B
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Celey D. Keene, Lab Director/Quality Manager



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Analytical Results For:INDUSTRIAL ECOSYSTEMS
49 CR 3150
AZTEC NM, 87410Project: JFJ
Project Number: NOT GIVEN
Project Manager: MARCELLA MARQUEZ
Fax To: (505) 632-1876Reported:
22-Dec-16 11:43**PILE 1016**
H602809-06 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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Cardinal Laboratories**Inorganic Compounds**

Chloride	64.0	16.0	mg/kg	4	6121706	AC	20-Dec-16	4500-Cl-B
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Volatile Organic Compounds by EPA Method 8021

Benzene*	<0.050	0.050	mg/kg	50	6122005	MS	21-Dec-16	8021B
Toluene*	0.059	0.050	mg/kg	50	6122005	MS	21-Dec-16	8021B
Ethylbenzene*	<0.050	0.050	mg/kg	50	6122005	MS	21-Dec-16	8021B
Total Xylenes*	<0.150	0.150	mg/kg	50	6122005	MS	21-Dec-16	8021B
Total BTEX	<0.300	0.300	mg/kg	50	6122005	MS	21-Dec-16	8021B

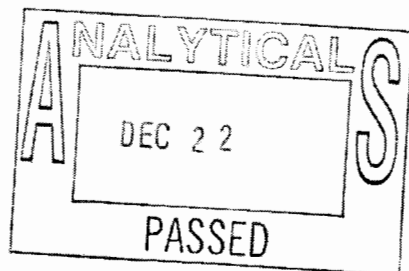
Surrogate: 4-Bromofluorobenzene (P11)	123 %	73.6-140	6122005	MS	21-Dec-16	8021B
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Petroleum Hydrocarbons by GC FID

GRO C6-C10	<10.0	10.0	mg/kg	1	6121603	MS	16-Dec-16	8015B
DRO >C10-C28	<10.0	10.0	mg/kg	1	6121603	MS	16-Dec-16	8015B

Surrogate: 1-Chlorooctane	83.0 %	55-147	6121603	MS	16-Dec-16	8015B
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Surrogate: 1-Chloroundecane	85.6 %	28-171	6121603	MS	16-Dec-16	8015B
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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

INDUSTRIAL ECOSYSTEMS 49 CR 3150 AZTEC NM, 87410	Project: JFJ Project Number: NOT GIVEN Project Manager: MARCELLA MARQUEZ Fax To: (505) 632-1876	Reported: 22-Dec-16 11:43
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PILE 1018 H602809-07 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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Cardinal Laboratories

Inorganic Compounds

Chloride	48.0		16.0	mg/kg	4	6121706	AC	20-Dec-16	4500-Cl-B	
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Volatile Organic Compounds by EPA Method 8021

Benzene*	<0.050		0.050	mg/kg	50	6122005	MS	21-Dec-16	8021B	
Toluene*	<0.050		0.050	mg/kg	50	6122005	MS	21-Dec-16	8021B	
Ethylbenzene*	<0.050		0.050	mg/kg	50	6122005	MS	21-Dec-16	8021B	
Total Xylenes*	<0.150		0.150	mg/kg	50	6122005	MS	21-Dec-16	8021B	
Total BTEX	<0.300		0.300	mg/kg	50	6122005	MS	21-Dec-16	8021B	

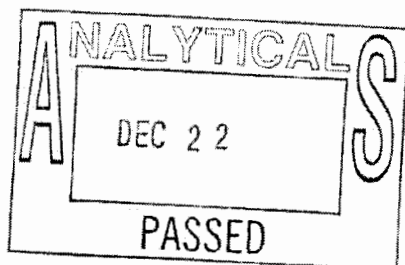
Surrogate: 4-Bromofluorobenzene (PID)		122 %	73.6-140		6122005	MS	21-Dec-16	8021B		
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Petroleum Hydrocarbons by GC FID

GRO C6-C10	<10.0		10.0	mg/kg	1	6121603	MS	16-Dec-16	8015B	
DRO >C10-C28	14.3		10.0	mg/kg	1	6121603	MS	16-Dec-16	8015B	

Surrogate: 1-Chlorooctane		89.3 %	35-147		6121603	MS	16-Dec-16	8015B		
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Surrogate: 1-Chlorooctadecane		107 %	28-171		6121603	MS	16-Dec-16	8015B		
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Celey D. Keene, Lab Director/Quality Manager



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Analytical Results For:

INDUSTRIAL ECOSYSTEMS
49 CR 3150
AZTEC NM, 87410

Project: JFJ
Project Number: NOT GIVEN
Project Manager: MARCELLA MARQUEZ
Fax To: (505) 632-1876

Reported:
22-Dec-16 11:43

Inorganic Compounds - Quality Control

Cardinal Laboratories

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 6121706 - 1:4 DI Water

Blank (6121706-BLK1)

Prepared & Analyzed: 17-Dec-16

Chloride ND 16.0 mg/kg

LCS (6121706-BS1)

Prepared & Analyzed: 17-Dec-16

Chloride 416 16.0 mg/kg 400 104 80-120

LCS Dup (6121706-BSD1)

Prepared & Analyzed: 17-Dec-16

Chloride 432 16.0 mg/kg 400 108 80-120 3.77 20

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Celley D. Keene

Celley D. Keene, Lab Director/Quality Manager

Analytical Results For:

INDUSTRIAL ECOSYSTEMS
49 CR 3150
AZTEC NM, 87410

Project: JFJ
Project Number: NOT GIVEN
Project Manager: MARCELLA MARQUEZ
Fax To: (505) 632-1876

Reported:
22-Dec-16 11:43

Volatile Organic Compounds by EPA Method 8021 - Quality Control

Cardinal Laboratories

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 6121605 - Volatiles

Blank (6121605-BLK1)

Prepared & Analyzed: 16-Dec-16

Benzene	ND	0.050	mg/kg							
Toluene	ND	0.050	mg/kg							
Ethylbenzene	ND	0.050	mg/kg							
Total Xylenes	ND	0.150	mg/kg							
Total BTEX	ND	0.300	mg/kg							
Surrogate: 4-Bromofluorobenzene (P1D)	0.0606		mg/kg	0.0500		121	73.6-140			

LCS (6121605-BS1)

Prepared & Analyzed: 16-Dec-16

Benzene	2.08	0.050	mg/kg	2.00		104	82.6-122			
Toluene	2.14	0.050	mg/kg	2.00		107	72.9-122			
Ethylbenzene	2.09	0.050	mg/kg	2.00		104	65.4-131			
Total Xylenes	6.34	0.150	mg/kg	6.00		106	73.8-125			
Surrogate: 4-Bromofluorobenzene (P1D)	0.0605		mg/kg	0.0500		121	73.6-140			

LCS Dup (6121605-BS1)

Prepared & Analyzed: 16-Dec-16

Benzene	2.08	0.050	mg/kg	2.00		104	82.6-122	0.242	8.23	
Toluene	2.15	0.050	mg/kg	2.00		107	72.9-122	0.405	8.71	
Ethylbenzene	2.10	0.050	mg/kg	2.00		105	65.4-131	0.356	9.46	
Total Xylenes	6.36	0.150	mg/kg	6.00		106	73.8-125	0.381	8.66	
Surrogate: 4-Bromofluorobenzene (P1D)	0.0610		mg/kg	0.0500		122	73.6-140			

Batch 6121902 - Volatiles

Blank (6121902-BLK1)

Prepared & Analyzed: 19-Dec-16

Benzene	ND	0.050	mg/kg							
Toluene	ND	0.050	mg/kg							
Ethylbenzene	ND	0.050	mg/kg							
Total Xylenes	ND	0.150	mg/kg							
Total BTEX	ND	0.300	mg/kg							
Surrogate: 4-Bromofluorobenzene (P1D)	0.0600		mg/kg	0.0500		120	73.6-140			

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Celey D. Keene

Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

INDUSTRIAL ECOSYSTEMS
49 CR 3150
AZTEC NM, 87410

Project: JFJ
Project Number: NOT GIVEN
Project Manager: MARCELLA MARQUEZ
Fax To: (505) 632-1876

Reported:
22-Dec-16 11:43

Volatile Organic Compounds by EPA Method 8021 - Quality Control
Cardinal Laboratories

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 6121902 - Volatiles

LCS (6121902-BS1) Prepared & Analyzed: 19-Dec-16										
Benzene	2.13	0.050	mg/kg	2.00		107	82.6-122			
Toluene	2.19	0.050	mg/kg	2.00		110	72.9-122			
Ethylbenzene	2.16	0.050	mg/kg	2.00		108	65.4-131			
Total Xylenes	6.47	0.150	mg/kg	6.00		108	73.8-125			
Surrogate: 4-Bromofluorobenzene (PID)	0.0596		mg/kg	0.0500		119	73.6-140			

LCS Dup (6121902-BS1) Prepared & Analyzed: 19-Dec-16										
Benzene	2.13	0.050	mg/kg	2.00		107	82.6-122	0.0690	8.23	
Toluene	2.24	0.050	mg/kg	2.00		112	72.9-122	2.25	8.71	
Ethylbenzene	2.21	0.050	mg/kg	2.00		111	65.4-131	2.36	9.46	
Total Xylenes	6.61	0.150	mg/kg	6.00		110	73.8-125	2.22	8.66	
Surrogate: 4-Bromofluorobenzene (PID)	0.0608		mg/kg	0.0500		122	73.6-140			

Batch 6122005 - Volatiles

Blank (6122005-BLK1) Prepared: 20-Dec-16 Analyzed: 21-Dec-16										
Benzene	ND	0.050	mg/kg							
Toluene	ND	0.050	mg/kg							
Ethylbenzene	ND	0.050	mg/kg							
Total Xylenes	ND	0.150	mg/kg							
Total BTEX	ND	0.300	mg/kg							
Surrogate: 4-Bromofluorobenzene (PID)	0.0397		mg/kg	0.0500		119	73.6-140			

LCS (6122005-BS1) Prepared: 20-Dec-16 Analyzed: 21-Dec-16										
Benzene	2.24	0.050	mg/kg	2.00		112	82.6-122			
Toluene	2.33	0.050	mg/kg	2.00		116	72.9-122			
Ethylbenzene	2.28	0.050	mg/kg	2.00		114	65.4-131			
Total Xylenes	6.84	0.150	mg/kg	6.00		114	73.8-125			
Surrogate: 4-Bromofluorobenzene (PID)	0.0601		mg/kg	0.0500		120	73.6-140			

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

 INDUSTRIAL ECOSYSTEMS
 49 CR 3150
 AZTEC NM, 87410

 Project: JFJ
 Project Number: NOT GIVEN
 Project Manager: MARCELLA MARQUEZ
 Fax To: (505) 632-1876

 Reported:
 22-Dec-16 11:43

Volatile Organic Compounds by EPA Method 8021 - Quality Control
Cardinal Laboratories

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 6122005 - Volatiles										
LCS Dup (6122005-BSD1)				Prepared: 20-Dec-16 Analyzed: 21-Dec-16						
Benzene	2.30	0.050	mg/kg	2.00		115	82.6-122	2.50	8.23	
Toluene	2.41	0.050	mg/kg	2.00		120	72.9-122	3.39	8.71	
Ethylbenzene	2.37	0.050	mg/kg	2.00		118	65.4-131	3.89	9.46	
Total Xylenes	7.08	0.150	mg/kg	6.00		118	73.8-125	3.53	8.66	
Surrogate: 4-Bromofluorobenzene (P11)	0.0612		mg/kg	0.0500		122	73.6-140			

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* = Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager



PHONE (575) 393-2326 • 101 E. MARLAND • HOBBS, NM 88240

Analytical Results For:INDUSTRIAL ECOSYSTEMS
49 CR 3150
AZTEC NM, 87410Project: JFJ
Project Number: NOT GIVEN
Project Manager: MARCELLA MARQUEZ
Fax To: (505) 632-1876Reported:
22-Dec-16 11:43**Petroleum Hydrocarbons by GC FID - Quality Control****Cardinal Laboratories**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 6121603 - General Prep - Organics										
Blank (6121603-BLK1)				Prepared & Analyzed: 16-Dec-16						
GRO C6-C10	ND	10.0	mg/kg							
DRO >C10-C28	ND	10.0	mg/kg							
Surrogate: 1-Chlorooctane	42.8		mg/kg	50.0		85.7	35-147			
Surrogate: 1-Chlorooctadecane	48.6		mg/kg	50.0		97.3	28-171			
LCS (6121603-BS1)				Prepared & Analyzed: 16-Dec-16						
GRO C6-C10	192	10.0	mg/kg	200		95.8	76.7-115			
DRO >C10-C28	197	10.0	mg/kg	200		98.5	78.3-122			
Surrogate: 1-Chlorooctane	48.1		mg/kg	50.0		96.2	35-147			
Surrogate: 1-Chlorooctadecane	49.4		mg/kg	50.0		98.8	28-171			
LCS Dup (6121603-BSD1)				Prepared & Analyzed: 16-Dec-16						
GRO C6-C10	187	10.0	mg/kg	200		93.6	76.7-115	2.26	9.42	
DRO >C10-C28	194	10.0	mg/kg	200		97.2	78.3-122	1.29	13.2	
Surrogate: 1-Chlorooctane	46.9		mg/kg	50.0		93.9	35-147			
Surrogate: 1-Chlorooctadecane	51.6		mg/kg	50.0		103	28-171			

Cardinal Laboratories

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Celey D. Keene, Lab Director/Quality Manager

Notes and Definitions

ND	Analyte NOT DETECTED at or above the reporting limit
RPD	Relative Percent Difference
**	Samples not received at proper temperature of 6°C or below.
***	Insufficient time to reach temperature.
-	Chloride by SM4500Cl-B does not require samples be received at or below 6°C Samples reported on an as received basis (wet) unless otherwise noted on report

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*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager



CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

(970) 247-4220 service@greenanalytical.com or dzufelt@greenanalytical.com
 Fax: (970) 247-4227 75 Suttle St Durango, CO 81303

Company Name: LEI		Bill to (if different):		ANALYSIS REQUEST											
Project Manager: MacCella		P.O. #:													
Address: 49 CR 3150		Company:													
City: AZtec State: NM Zip: 87410		Attn:													
Phone #: 632-1782 Email:		Address:													
Additional Report To:		City:													
Project Name: JFJ		State: Zip:													
Project Number:		Phone #:													
Sampler Name (Print): Richard R Chavez		Fax or Email:													
FOR LAB USE ONLY															
Lab I.D.	Sample Name or Location	Collected	Matrix (check one)	# of containers											
		Date	Time	GROUNDWATER	SURFACEWATER	WASTEWATER	PRODUCEDWATER	SOIL	OTHER:	No preservation (general)	HNO ₃	HCl	H ₂ SO ₄	Other:	Other:
H602809															
1	PILE = 904	12/14/16	7:30 am												
2	PILE = 786	12/14/16	8:15 am												
3	PILE = 985	12/14/16	8:45 am												
4	PILE = 1013	12/14/16	9:20 am												
5	PILE = 1014	12/14/16	10:00 am												
6	PILE = 1016	12/14/16	10:30 am												
7	PILE = 1018	12/14/16	11:05 am												

PLEASE NOTE: GAL's liability and client's exclusive remedy for any claim arising whether based in contract or tort, shall be limited to the amount paid by the client for the analysis. All claims, including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by GAL within 30 days after completion. In no event shall GAL be liable for incidental or consequential damages, including without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of services hereunder by GAL, regardless of whether such claim is based upon any of the above stated reasons or otherwise.

Relinquished By:	Date: 12/14/16	Received By:	Report to State? (Circle):
Rebecca Packer	Time: 12:13	Christina Clare	Yes No
Relinquished By:	Date: 12/14/16	Received By:	
Christina Clare	Time: 16:00	Fred Ex	
Relinquished By:	Date: 12/15/16	Received By:	
	Time: 10:00	Joaci Menzon	
Delivered By: (Circle One)	#75	Temperature at receipt:	CHECKED BY:
Sampler - UPS - FedEx - Kangaroo - Other:	3.12	6.8°C	a

† GAL cannot always accept verbal changes. Please fax or email written change requests.
 * Chain of Custody must be signed in "Relinquished By:" as an acceptance of services and all applicable charges.

State of New Mexico
Energy, Minerals and Natural Resources Department

Susana Martinez
Governor

Ken McQueen
Cabinet Secretary

Matthias Sayer
Deputy Cabinet Secretary

David R. Catanach, Division Director
Oil Conservation Division



January 9, 2017

Ms. Marcella Marquez
JFJ Landfarm, L.L.C.
Industrial Ecosystems Inc.
Soil Reclamation Center
P.O. Box 2043
Farmington, New Mexico 87499

RE: Request for Approval to Reuse Remediated Biopile Soils for the Stabilization/Solidification of Drilling Mud and Tank Bottoms and Sludge
JFJ Landfarm, LLC - Industrial Ecosystems Inc.
JFJ Landfarm – Permit # NM1-010-B
Location: NW/4 SE/4 of Section 2, Township 29 North, Range 12 West, NMPM,
San Juan County, New Mexico

Dear Ms. Marquez:

The Oil Conservation Division (OCD) has reviewed JFJ Landfarm, LLC's (JFJ) request, emailed to OCD on December 20, 2016, and associated analytical results to reuse the remediated soils for the stabilization and/or solidification of incoming drilling mud and tank bottoms and sludge from following biopile(s): **991, 981, 992, 984, 787, 893, and 905.**

Based upon the information provided in the request, the above-referenced biopiles are hereby approved for the stabilization and/or solidification of incoming drilling mud and tank bottoms and sludge.

Please be advised that approval of this request does not relieve JFJ of liability should operations result in pollution of surface water, ground water or the environment. Nor does approval relieve JFJ of its responsibility to comply with any other applicable governmental authority's rules and regulations.

If there are any questions regarding this matter, please do not hesitate to contact Brad Jones on my staff at (505) 476-3487 or brad.a.jones@state.nm.us.

Sincerely,

Jim Griswold
Environmental Bureau Chief

JG/baj

cc: OCD District III Office, Aztec

Jones, Brad A., EMNRD

From: Marcella Marquez <marcella@industrialecosystems.com>
Sent: Tuesday, December 20, 2016 1:44 PM
To: Jones, Brad A., EMNRD
Subject: Request to Reuse Soil
Attachments: Request to Reuse Soil122016.pdf; Passed Piles 12202016.pdf

Importance: High

Brad:

Please see attached request to reuse soil along with the corresponding analytical report.

Please let me know if you have any questions or concerns or if any additional information is needed.

***Thanks,
Marcella Marquez
Industrial Ecosystems, Inc.***



**Industrial Ecosystems Inc.
Soil Reclamation Center**

P.O. Box 2043
Farmington, NM 87499

Phone: (505) 632-1782
Fax: (505) 632-1876

#49 CR 3150
Aztec, NM 87410

December 20, 2016

Brad Jones
Environmental Bureau
NM Oil Conservation Division
1220 S. St. Francis Drive
Santa Fe, New Mexico 87505

RE: Use of reclaimed soil

Dear Brad:

Recent analytical results show that the following biopiles(s) have reached acceptable levels as required by our NMOCD permit.

Pile #

991	DRO, GRO, BTEX & Chlorides Passed 12/20/16
981	DRO, GRO, BTEX & Chlorides Passed 12/20/16
992	DRO, GRO, BTEX & Chlorides Passed 12/20/16
984	DRO, GRO, BTEX & Chlorides Passed 12/20/16
787	DRO, GRO, BTEX & Chlorides Passed 12/20/16
893	DRO, GRO, BTEX & Chlorides Passed 12/20/16
905	DRO, GRO, BTEX & Chlorides Passed 12/20/16

We are seeking your approval to recycle this soil by using it to mix/solidify incoming liquid waste.

Respectfully Submitted,

A handwritten signature in cursive script that reads "Marcella Marquez".

Marcella Marquez
Regulatory/Compliance/HR

Enclosure(s) – Analytical Reports

December 20, 2016

MARCELLA MARQUEZ
INDUSTRIAL ECOSYSTEMS
49 CR 3150
AZTEC, NM 87410

RE: JFJ

Enclosed are the results of analyses for samples received by the laboratory on 12/15/16 10:00.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-16-8. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (*). For a complete list of accredited analytes and matrices visit the TCEQ website at www.tceq.texas.gov/field/qa/lab_accred_certif.html.

Cardinal Laboratories is accredited through the State of Colorado Department of Public Health and Environment for:

Method EPA 552.2	Total Haloacetic Acids (HAA-5)
Method EPA 524.2	Total Trihalomethanes (TTHM)
Method EPA 524.4	Regulated VOCs (V1, V2, V3)

Cardinal Laboratories is accredited through the State of New Mexico Environment Department for:

Method SM 9223-B	Total Coliform and E. coli (Colilert MMO-MUG)
Method EPA 524.2	Regulated VOCs and Total Trihalomethanes (TTHM)
Method EPA 552.2	Total Haloacetic Acids (HAA-5)

Accreditation applies to public drinking water matrices for State of Colorado and New Mexico.

This report meets NELAP requirements and is made up of a cover page, analytical results, and a copy of the original chain-of-custody. If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Celey D. Keene
Lab Director/Quality Manager

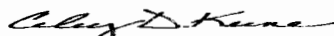
Analytical Results For:INDUSTRIAL ECOSYSTEMS
49 CR 3150
AZTEC NM, 87410Project: JFJ
Project Number: NOT GIVEN
Project Manager: MARCELLA MARQUEZ
Fax To: (505) 632-1876Reported:
20-Dec-16 12:48

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
PILE 991	H602808-01	Soil	13-Dec-16 07:00	15-Dec-16 10:00
PILE 981	H602808-02	Soil	13-Dec-16 07:40	15-Dec-16 10:00
PILE 992	H602808-03	Soil	13-Dec-16 08:20	15-Dec-16 10:00
PILE 984	H602808-04	Soil	13-Dec-16 08:40	15-Dec-16 10:00
PILE 787	H602808-05	Soil	13-Dec-16 09:20	15-Dec-16 10:00
PILE 893	H602808-06	Soil	13-Dec-16 10:00	15-Dec-16 10:00
PILE 905	H602808-07	Soil	13-Dec-16 10:35	15-Dec-16 10:00

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

INDUSTRIAL ECOSYSTEMS
49 CR 3150
AZTEC NM, 87410

Project: JFJ
Project Number: NOT GIVEN
Project Manager: MARCELLA MARQUEZ
Fax To: (505) 632-1876

Reported:
20-Dec-16 12:48

PILE 991
H602808-01 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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Cardinal Laboratories
Inorganic Compounds

Chloride	48.0	16.0	mg/kg	4	6121706	AC	20-Dec-16	4500-Cl-B
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Volatile Organic Compounds by EPA Method 8021

Benzene*	<0.050	0.050	mg/kg	50	6121605	MS	16-Dec-16	8021B
Toluene*	<0.050	0.050	mg/kg	50	6121605	MS	16-Dec-16	8021B
Ethylbenzene*	<0.050	0.050	mg/kg	50	6121605	MS	16-Dec-16	8021B
Total Xylenes*	<0.150	0.150	mg/kg	50	6121605	MS	16-Dec-16	8021B
Total BTEX	<0.300	0.300	mg/kg	50	6121605	MS	16-Dec-16	8021B

Surrogate: 4-Bromofluorobenzene (PID)	121 %	73.6-140	6121605	MS	16-Dec-16	8021B
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Petroleum Hydrocarbons by GC FID

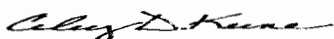
GRO C6-C10	<10.0	10.0	mg/kg	1	6121603	MS	16-Dec-16	8015B
DRO >C10-C28	<10.0	10.0	mg/kg	1	6121603	MS	16-Dec-16	8015B

Surrogate: 1-Chlorooctane	77.4 %	35-147	6121603	MS	16-Dec-16	8015B
Surrogate: 1-Chlorooctadecane	93.5 %	28-171	6121603	MS	16-Dec-16	8015B

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

 INDUSTRIAL ECOSYSTEMS
 49 CR 3150
 AZTEC NM, 87410

 Project: JFJ
 Project Number: NOT GIVEN
 Project Manager: MARCELLA MARQUEZ
 Fax To: (505) 632-1876

 Reported:
 20-Dec-16 12:48

PILE 981
H602808-02 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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Cardinal Laboratories
Inorganic Compounds

Chloride	48.0		16.0	mg/kg	4	6121706	AC	20-Dec-16	4500-Cl-B	
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Volatile Organic Compounds by EPA Method 8021

Benzene*	<0.050		0.050	mg/kg	50	6121605	MS	16-Dec-16	8021B	
Toluene*	<0.050		0.050	mg/kg	50	6121605	MS	16-Dec-16	8021B	
Ethylbenzene*	<0.050		0.050	mg/kg	50	6121605	MS	16-Dec-16	8021B	
Total Xylenes*	<0.150		0.150	mg/kg	50	6121605	MS	16-Dec-16	8021B	
Total BTEX	<0.300		0.300	mg/kg	50	6121605	MS	16-Dec-16	8021B	

Surrogate: 4-Bromofluorobenzene (PID) 120 % 73.6-140 6121605 MS 16-Dec-16 8021B

Petroleum Hydrocarbons by GC FID

GRO C6-C10	<10.0		10.0	mg/kg	1	6121603	MS	16-Dec-16	8015B	
DRO >C10-C28	<10.0		10.0	mg/kg	1	6121603	MS	16-Dec-16	8015B	

Surrogate: 1-Chlorooctane 73.0 % 35-147 6121603 MS 16-Dec-16 8015B

Surrogate: 1-Chlorooctadecane 84.2 % 28-171 6121603 MS 16-Dec-16 8015B

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*=Accredited Analyte

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Caley D. Keene, Lab Director/Quality Manager

Analytical Results For:

 INDUSTRIAL ECOSYSTEMS
 49 CR 3150
 AZTEC NM, 87410

 Project: JFJ
 Project Number: NOT GIVEN
 Project Manager: MARCELLA MARQUEZ
 Fax To: (505) 632-1876

 Reported:
 20-Dec-16 12:48

PILE 992
H602808-03 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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Cardinal Laboratories
Inorganic Compounds

Chloride	32.0		16.0	mg/kg	4	6121706	AC	20-Dec-16	4500-Cl-B	
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Volatile Organic Compounds by EPA Method 8021

Benzene*	<0.050		0.050	mg/kg	50	6121605	MS	16-Dec-16	8021B	
Toluene*	<0.050		0.050	mg/kg	50	6121605	MS	16-Dec-16	8021B	
Ethylbenzene*	<0.050		0.050	mg/kg	50	6121605	MS	16-Dec-16	8021B	
Total Xylenes*	<0.150		0.150	mg/kg	50	6121605	MS	16-Dec-16	8021B	
Total BTEX	<0.300		0.300	mg/kg	50	6121605	MS	16-Dec-16	8021B	

Surrogate: 4-Bromofluorobenzene (PID) 121 % 73.6-140 6121605 MS 16-Dec-16 8021B

Petroleum Hydrocarbons by GC FID

GRO C6-C10	<10.0		10.0	mg/kg	1	6121603	MS	16-Dec-16	8015B	
DRO >C10-C28	<10.0		10.0	mg/kg	1	6121603	MS	16-Dec-16	8015B	

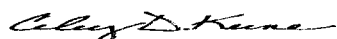
Surrogate: 1-Chlorooctane 83.3 % 35-147 6121603 MS 16-Dec-16 8015B

Surrogate: 1-Chlorooctadecane 104 % 28-171 6121603 MS 16-Dec-16 8015B

Cardinal Laboratories

*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

INDUSTRIAL ECOSYSTEMS
49 CR 3150
AZTEC NM, 87410

Project: JFJ
Project Number: NOT GIVEN
Project Manager: MARCELLA MARQUEZ
Fax To: (505) 632-1876

Reported:
20-Dec-16 12:48

PILE 984
H602808-04 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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Cardinal Laboratories
Inorganic Compounds

Chloride	368		16.0	mg/kg	4	6121706	AC	20-Dec-16	4500-Cl-B	
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Volatile Organic Compounds by EPA Method 8021

Benzene*	<0.050		0.050	mg/kg	50	6121605	MS	16-Dec-16	8021B	
Toluene*	<0.050		0.050	mg/kg	50	6121605	MS	16-Dec-16	8021B	
Ethylbenzene*	<0.050		0.050	mg/kg	50	6121605	MS	16-Dec-16	8021B	
Total Xylenes*	<0.150		0.150	mg/kg	50	6121605	MS	16-Dec-16	8021B	
Total BTEX	<0.300		0.300	mg/kg	50	6121605	MS	16-Dec-16	8021B	

Surrogate: 4-Bromofluorobenzene (PID) 121 % 73.6-140 6121605 MS 16-Dec-16 8021B

Petroleum Hydrocarbons by GC FID

GRO C6-C10	<10.0		10.0	mg/kg	1	6121603	MS	16-Dec-16	8015B	
DRO >C10-C28	56.7		10.0	mg/kg	1	6121603	MS	16-Dec-16	8015B	

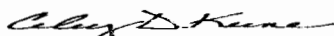
Surrogate: 1-Chlorooctane 83.2 % 35-147 6121603 MS 16-Dec-16 8015B

Surrogate: 1-Chlorooctadecane 100 % 28-171 6121603 MS 16-Dec-16 8015B

Cardinal Laboratories

*=Accredited Analyte

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Celestine D. Keene, Lab Director/Quality Manager

Analytical Results For:

INDUSTRIAL ECOSYSTEMS
49 CR 3150
AZTEC NM, 87410

Project: JFJ
Project Number: NOT GIVEN
Project Manager: MARCELLA MARQUEZ
Fax To: (505) 632-1876

Reported:
20-Dec-16 12:48

PILE 787
H602808-05 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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Cardinal Laboratories
Inorganic Compounds

Chloride	176		16.0	mg/kg	4	6121706	AC	20-Dec-16	4500-Cl-B	
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Volatile Organic Compounds by EPA Method 8021

Benzene*	<0.050		0.050	mg/kg	50	6121605	MS	16-Dec-16	8021B	
Toluene*	<0.050		0.050	mg/kg	50	6121605	MS	16-Dec-16	8021B	
Ethylbenzene*	<0.050		0.050	mg/kg	50	6121605	MS	16-Dec-16	8021B	
Total Xylenes*	<0.150		0.150	mg/kg	50	6121605	MS	16-Dec-16	8021B	
Total BTEX	<0.300		0.300	mg/kg	50	6121605	MS	16-Dec-16	8021B	

Surrogate: 4-Bromofluorobenzene (PID)			120 %	73.6-140		6121605	MS	16-Dec-16	8021B	
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Petroleum Hydrocarbons by GC FID

GRO C6-C10	<10.0		10.0	mg/kg	1	6121603	MS	16-Dec-16	8015B	
DRO >C10-C28	38.4		10.0	mg/kg	1	6121603	MS	16-Dec-16	8015B	

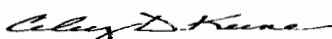
Surrogate: 1-Chlorooctane			83.2 %	35-147		6121603	MS	16-Dec-16	8015B	
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Surrogate: 1-Chlorooctadecane			89.2 %	28-171		6121603	MS	16-Dec-16	8015B	
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Cardinal Laboratories

*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

INDUSTRIAL ECOSYSTEMS
49 CR 3150
AZTEC NM, 87410

Project: JFJ
Project Number: NOT GIVEN
Project Manager: MARCELLA MARQUEZ
Fax To: (505) 632-1876

Reported:
20-Dec-16 12:48

PILE 893
H602808-06 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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Cardinal Laboratories
Inorganic Compounds

Chloride	80.0	16.0	mg/kg	4	6121706	AC	20-Dec-16	4500-Cl-B	
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Volatile Organic Compounds by EPA Method 8021

Benzene*	<0.050	0.050	mg/kg	50	6121605	MS	16-Dec-16	8021B
Toluene*	<0.050	0.050	mg/kg	50	6121605	MS	16-Dec-16	8021B
Ethylbenzene*	<0.050	0.050	mg/kg	50	6121605	MS	16-Dec-16	8021B
Total Xylenes*	<0.150	0.150	mg/kg	50	6121605	MS	16-Dec-16	8021B
Total BTEX	<0.300	0.300	mg/kg	50	6121605	MS	16-Dec-16	8021B

Surrogate: 4-Bromofluorobenzene (PID) 120 % 73.6-140 6121605 MS 16-Dec-16 8021B

Petroleum Hydrocarbons by GC FID

GRO C6-C10	<10.0	10.0	mg/kg	1	6121603	MS	16-Dec-16	8015B
DRO >C10-C28	14.9	10.0	mg/kg	1	6121603	MS	16-Dec-16	8015B

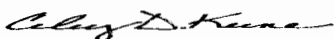
Surrogate: 1-Chlorooctane 70.6 % 35-147 6121603 MS 16-Dec-16 8015B

Surrogate: 1-Chlorooctadecane 91.9 % 28-171 6121603 MS 16-Dec-16 8015B

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

 INDUSTRIAL ECOSYSTEMS
 49 CR 3150
 AZTEC NM, 87410

 Project: JFJ
 Project Number: NOT GIVEN
 Project Manager: MARCELLA MARQUEZ
 Fax To: (505) 632-1876

 Reported:
 20-Dec-16 12:48

PILE 905
H602808-07 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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Cardinal Laboratories
Inorganic Compounds

Chloride	80.0		16.0	mg/kg	4	6121706	AC	20-Dec-16	4500-Cl-B	
----------	------	--	------	-------	---	---------	----	-----------	-----------	--

Volatile Organic Compounds by EPA Method 8021

Benzene*	<0.050		0.050	mg/kg	50	6121605	MS	16-Dec-16	8021B	
Toluene*	<0.050		0.050	mg/kg	50	6121605	MS	16-Dec-16	8021B	
Ethylbenzene*	<0.050		0.050	mg/kg	50	6121605	MS	16-Dec-16	8021B	
Total Xylenes*	<0.150		0.150	mg/kg	50	6121605	MS	16-Dec-16	8021B	
Total BTEX	<0.300		0.300	mg/kg	50	6121605	MS	16-Dec-16	8021B	

Surrogate: 4-Bromofluorobenzene (PID) 121 % 73.6-140 6121605 MS 16-Dec-16 8021B

Petroleum Hydrocarbons by GC FID

GRO C6-C10	<10.0		10.0	mg/kg	1	6121603	MS	16-Dec-16	8015B	
DRO >C10-C28	54.8		10.0	mg/kg	1	6121603	MS	16-Dec-16	8015B	

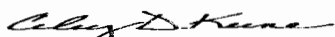
Surrogate: 1-Chlorooctane 81.9 % 35-147 6121603 MS 16-Dec-16 8015B

Surrogate: 1-Chlorooctadecane 92.5 % 28-171 6121603 MS 16-Dec-16 8015B

Cardinal Laboratories

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

 INDUSTRIAL ECOSYSTEMS
 49 CR 3150
 AZTEC NM, 87410

 Project: JFJ
 Project Number: NOT GIVEN
 Project Manager: MARCELLA MARQUEZ
 Fax To: (505) 632-1876

 Reported:
 20-Dec-16 12:48

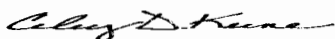
Inorganic Compounds - Quality Control
Cardinal Laboratories

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC Limits	RPD	RPD Limit	Notes
Batch 6121706 - 1:4 DI Water									
Blank (6121706-BLK1)					Prepared & Analyzed: 17-Dec-16				
Chloride	ND	16.0	mg/kg						
LCS (6121706-BS1)					Prepared & Analyzed: 17-Dec-16				
Chloride	416	16.0	mg/kg	400		104 80-120			
LCS Dup (6121706-BSD1)					Prepared & Analyzed: 17-Dec-16				
Chloride	432	16.0	mg/kg	400		108 80-120	3.77	20	

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

INDUSTRIAL ECOSYSTEMS
49 CR 3150
AZTEC NM, 87410

Project: JFJ
Project Number: NOT GIVEN
Project Manager: MARCELLA MARQUEZ
Fax To: (505) 632-1876

Reported:
20-Dec-16 12:48

Volatile Organic Compounds by EPA Method 8021 - Quality Control
Cardinal Laboratories

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 6121605 - Volatiles
Blank (6121605-BLK1)

Prepared & Analyzed: 16-Dec-16

Benzene	ND	0.050	mg/kg							
Toluene	ND	0.050	mg/kg							
Ethylbenzene	ND	0.050	mg/kg							
Total Xylenes	ND	0.150	mg/kg							
Total BTEX	ND	0.300	mg/kg							
Surrogate: 4-Bromofluorobenzene (PID)	0.0606		mg/kg	0.0500		121	73.6-140			

LCS (6121605-BS1)

Prepared & Analyzed: 16-Dec-16

Benzene	2.08	0.050	mg/kg	2.00		104	82.6-122			
Toluene	2.14	0.050	mg/kg	2.00		107	72.9-122			
Ethylbenzene	2.09	0.050	mg/kg	2.00		104	65.4-131			
Total Xylenes	6.34	0.150	mg/kg	6.00		106	73.8-125			
Surrogate: 4-Bromofluorobenzene (PID)	0.0605		mg/kg	0.0500		121	73.6-140			

LCS Dup (6121605-BSD1)

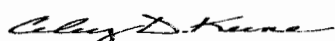
Prepared & Analyzed: 16-Dec-16

Benzene	2.08	0.050	mg/kg	2.00		104	82.6-122	0.242	8.23	
Toluene	2.15	0.050	mg/kg	2.00		107	72.9-122	0.405	8.71	
Ethylbenzene	2.10	0.050	mg/kg	2.00		105	65.4-131	0.356	9.46	
Total Xylenes	6.36	0.150	mg/kg	6.00		106	73.8-125	0.381	8.66	
Surrogate: 4-Bromofluorobenzene (PID)	0.0610		mg/kg	0.0500		122	73.6-140			

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

INDUSTRIAL ECOSYSTEMS
49 CR 3150
AZTEC NM, 87410

Project: JFJ
Project Number: NOT GIVEN
Project Manager: MARCELLA MARQUEZ
Fax To: (505) 632-1876

Reported:
20-Dec-16 12:48

Petroleum Hydrocarbons by GC FID - Quality Control
Cardinal Laboratories

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 6121603 - General Prep - Organics
Blank (6121603-BLK1)

Prepared & Analyzed: 16-Dec-16

GRO C6-C10	ND	10.0	mg/kg							
DRO >C10-C28	ND	10.0	mg/kg							
Surrogate: 1-Chlorooctane	42.8		mg/kg	50.0		85.7	35-147			
Surrogate: 1-Chlorooctadecane	48.6		mg/kg	50.0		97.3	28-171			

LCS (6121603-BS1)

Prepared & Analyzed: 16-Dec-16

GRO C6-C10	192	10.0	mg/kg	200		95.8	76.7-115			
DRO >C10-C28	197	10.0	mg/kg	200		98.5	78.3-122			
Surrogate: 1-Chlorooctane	48.1		mg/kg	50.0		96.2	35-147			
Surrogate: 1-Chlorooctadecane	49.4		mg/kg	50.0		98.8	28-171			

LCS Dup (6121603-BSD1)

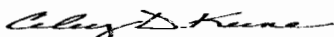
Prepared & Analyzed: 16-Dec-16

GRO C6-C10	187	10.0	mg/kg	200		93.6	76.7-115	2.26	9.42	
DRO >C10-C28	194	10.0	mg/kg	200		97.2	78.3-122	1.29	13.2	
Surrogate: 1-Chlorooctane	46.9		mg/kg	50.0		93.9	35-147			
Surrogate: 1-Chlorooctadecane	51.6		mg/kg	50.0		103	28-171			

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Celey D. Keene, Lab Director/Quality Manager

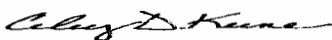
Notes and Definitions

ND	Analyte NOT DETECTED at or above the reporting limit
RPD	Relative Percent Difference
**	Samples not received at proper temperature of 6°C or below.
***	Insufficient time to reach temperature.
-	Chloride by SM4500Cl-B does not require samples be received at or below 6°C
	Samples reported on an as received basis (wet) unless otherwise noted on report

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Celey D. Keene, Lab Director/Quality Manager



CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

Company Name: <u>IEI</u>		Bill to (if different):		ANALYSIS REQUEST													
Project Manager: <u>Marcella</u>		P.O. #:		DR0 8015-B CR0 8015-B BTEX 8015-B Chlorides 300.0													
Address: <u>49 CR 3150</u>		Company:															
City: <u>AZtec</u> State: <u>NM</u> Zip: <u>87410</u>		Attn:															
Phone #: <u>632-1782</u> Email:		Address:															
Additional Report To:		City:															
Project Name: <u>JFJ</u>		State: Zip:															
Project Number:		Phone #:															
Sampler Name (Print): <u>Richard Chavez</u>		Fax or Email:															
FOR LAB USE ONLY	Lab I.D.	Sample Name or Location	Collected	Matrix (check one)	# of containers												
			Date	Time	GROUNDWATER	SURFACEWATER	WASTEWATER	PRODUCEDWATER	SOIL	OTHER:	No preservation (general)	HNO ₃	HCl	H ₂ SO ₄	Other:	Other:	Other:
	<u>H602808</u>																
	1	PILE = 991	12/13/16	7:00 AM													
	2	PILE = 981	12/13/16	7:40 AM													
	3	PILE = 992	12/13/16	8:20 AM													
	4	PILE = 984	12/13/16	8:40 AM													
	5	PILE = 787	12/13/16	9:20 AM													
	6	PILE = 893	12/13/16	10:00 AM													
	7	PILE 905	12/13/16	10:35 AM													
PLEASE NOTE: GAL's liability and client's exclusive remedy for any claim arising whether based in contract or tort, shall be limited to the amount paid by the client for the analyses. All claims including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by GAL within 30 days after completion. In no event shall GAL be liable for incidental or consequential damages, including without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of services hereunder by GAL, regardless of whether such claim is based upon any of the above stated reasons or otherwise.																	
Relinquished By: <u>Alberto Pablo</u>		Date: <u>12/14/16</u>		Received By: <u>Christin Clave</u>		ADDITIONAL REMARKS: Report to State? (Circle) Yes No											
Relinquished By: <u>Christin Clave</u>		Date: <u>12/14/16</u>		Received By: <u>FedEx</u>													
Relinquished By:		Date: <u>12/15/16</u>		Received By: <u>Jodi Henson</u>													
Delivered By: (Circle One)		Temperature at receipt: <u>6.8°C</u>		CHECKED BY: <u>u</u>													
Sampler - UPS - FedEx - Kangaroo - Other: <u>#75 3.10c</u>																	

† GAL cannot always accept verbal changes. Please fax or email written change requests.
* Chain of Custody must be signed in "Relinquished By:" as an acceptance of services and all applicable charges.

State of New Mexico
Energy, Minerals and Natural Resources Department

Susana Martinez
Governor

Ken McQueen
Cabinet Secretary

Matthias Sayer
Deputy Cabinet Secretary

David R. Catanach, Division Director
Oil Conservation Division



January 9, 2017

Ms. Marcella Marquez
JFJ Landfarm, L.L.C.
Industrial Ecosystems Inc.
Soil Reclamation Center
P.O. Box 2043
Farmington, New Mexico 87499

RE: Request for Approval to Reuse Remediated Biopile Soils for the Stabilization/Solidification of Drilling Mud and Tank Bottoms and Sludge
JFJ Landfarm, LLC - Industrial Ecosystems Inc.
JFJ Landfarm – Permit # NM1-010-B
Location: NW/4 SE/4 of Section 2, Township 29 North, Range 12 West, NMPM,
San Juan County, New Mexico

Dear Ms. Marquez:

The Oil Conservation Division (OCD) has reviewed JFJ Landfarm, LLC's (JFJ) request, emailed to OCD on December 20, 2016, and associated analytical results to reuse the remediated soils for the stabilization and/or solidification of incoming drilling mud and tank bottoms and sludge from following biopile(s): **417, 428, 429, 430, 431, 435, 439, 440, and 576.**

Based upon the information provided in the request, the above-referenced biopiles are hereby approved for the stabilization and/or solidification of incoming drilling mud and tank bottoms and sludge.

Please be advised that approval of this request does not relieve JFJ of liability should operations result in pollution of surface water, ground water or the environment. Nor does approval relieve JFJ of its responsibility to comply with any other applicable governmental authority's rules and regulations.

If there are any questions regarding this matter, please do not hesitate to contact Brad Jones on my staff at (505) 476-3487 or brad.a.jones@state.nm.us.

Sincerely,

Jim Griswold
Environmental Bureau Chief

JG/baj

cc: OCD District III Office, Aztec

Jones, Brad A., EMNRD

From: Marcella Marquez <marcella@industrialecosystems.com>
Sent: Tuesday, December 20, 2016 1:13 PM
To: Jones, Brad A., EMNRD
Subject: Request to Reuse Soils
Attachments: Request to Reuse Soil 122016.pdf; Passed Piles 121716.pdf

Importance: High

Brad:

Please see attached request to reuse treated soils and the corresponding analytical report.

Wishing you a Merry Christmas & Happy New Year!

***Thanks,
Marcella Marquez
Regulatory/Compliance/HR Manager
Industrial Ecosystems, Inc.
Phone: (505) 632-1782
Fax: (505) 632-1876 or (505) 334-1003***



**Industrial Ecosystems Inc.
Soil Reclamation Center**

P.O. Box 2043
Farmington, NM 87499

Phone: (505) 632-1782
Fax: (505) 632-1876

#49 CR 3150
Aztec, NM 87410

December 20, 2016

Brad Jones
Environmental Bureau
NM Oil Conservation Division
1220 S. St. Francis Drive
Santa Fe, New Mexico 87505

RE: Use of reclaimed soil

Dear Brad:

Recent analytical results show that the following biopiles(s) have reached acceptable levels as required by our NMOCD permit.

Pile #

417	DRO, GRO, BTEX & Chlorides Passed 12/17/16
428	DRO, GRO, BTEX & Chlorides Passed 12/17/16
429	DRO, GRO, BTEX & Chlorides Passed 12/17/16
430	DRO, GRO, BTEX & Chlorides Passed 12/17/16
431	DRO, GRO, BTEX & Chlorides Passed 12/17/16
435	DRO, GRO, BTEX & Chlorides Passed 12/17/16
439	DRO, GRO, BTEX & Chlorides Passed 12/17/16
440	DRO, GRO, BTEX & Chlorides Passed 12/17/16
576	DRO, GRO, BTEX & Chlorides Passed 12/17/16

We are seeking your approval to recycle this soil by using it to mix/solidify incoming liquid waste.

Respectfully Submitted,

A handwritten signature in cursive script that reads 'Marcella Marquez'.

Marcella Marquez
Regulatory/Compliance/HR

Enclosure(s) – Analytical Reports

Analytical Results For:

INDUSTRIAL ECOSYSTEMS
49 CR 3150
AZTEC NM, 87410

Project: JFJ
Project Number: 4252
Project Manager: MARCELLA MARQUEZ
Fax To: (505) 632-1876

Reported:
17-Dec-16 15:56

PILE 417
11602787-01 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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Cardinal Laboratories
Inorganic Compounds

Chloride	176	16.0	mg/kg	4	6121509	AC	16-Dec-16	4500-Cl-B
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Volatile Organic Compounds by EPA Method 8021

Benzene*	<0.050	0.050	mg/kg	50	6121401	MS	14-Dec-16	8021B
Toluene*	<0.050	0.050	mg/kg	50	6121401	MS	14-Dec-16	8021B
Ethylbenzene*	<0.050	0.050	mg/kg	50	6121401	MS	14-Dec-16	8021B
Total Xylenes*	<0.150	0.150	mg/kg	50	6121401	MS	14-Dec-16	8021B
Total BTEX	<0.300	0.300	mg/kg	50	6121401	MS	14-Dec-16	8021B

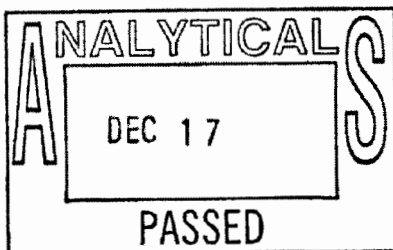
Surrogate: 4-Bromofluorobenzene (PID)	118 %	73.6-140	6121401	MS	14-Dec-16	8021B
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Petroleum Hydrocarbons by GC FID

GRO C6-C10	<10.0	10.0	mg/kg	1	6121309	MS	14-Dec-16	8015B
DRO >C10-C28	12.5	10.0	mg/kg	1	6121309	MS	14-Dec-16	8015B

Surrogate: 1-Chlorooctane	79.7 %	35-147	6121309	MS	14-Dec-16	8015B
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Surrogate: 1-Chlorooctadecane	78.3 %	28-171	6121309	MS	14-Dec-16	8015B
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Cardinal Laboratories

*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager



PHONE (575) 393-2326 • 101 E. MARLAND • HOBBS, NM 88240

Analytical Results For:INDUSTRIAL ECOSYSTEMS
49 CR 3150
AZTEC NM, 87410Project: JFJ
Project Number: 4252
Project Manager: MARCELLA MARQUEZ
Fax To: (505) 632-1876Reported:
17-Dec-16 15:56**PILE 428**
H602787-02 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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Cardinal Laboratories**Inorganic Compounds**

Chloride	48.0	16.0	mg/kg	4	6121509	AC	16-Dec-16	4500-Cl-B
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Volatile Organic Compounds by EPA Method 8021

Benzene*	<0.050	0.050	mg/kg	50	6121401	MS	14-Dec-16	8021B
Toluene*	<0.050	0.050	mg/kg	50	6121401	MS	14-Dec-16	8021B
Ethylbenzene*	<0.050	0.050	mg/kg	50	6121401	MS	14-Dec-16	8021B
Total Xylenes*	<0.150	0.150	mg/kg	50	6121401	MS	14-Dec-16	8021B
Total BTEX	<0.300	0.300	mg/kg	50	6121401	MS	14-Dec-16	8021B

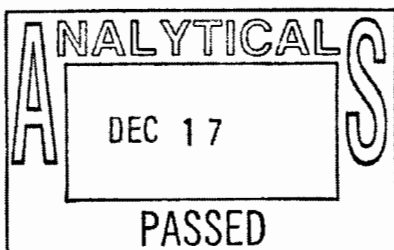
Surrogate: 4-Bromofluorobenzene (PIL)	119 %	73.6-140	6121401	MS	14-Dec-16	8021B
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Petroleum Hydrocarbons by GC FID

GRO C6-C10	<10.0	10.0	mg/kg	1	6121309	MS	14-Dec-16	8015B
DRO >C10-C28	<10.0	10.0	mg/kg	1	6121309	MS	14-Dec-16	8015B

Surrogate: 1-Chlorooctane	76.2 %	35-147	6121309	MS	14-Dec-16	8015B
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Surrogate: 1-Chlorooctadecane	77.6 %	28-171	6121309	MS	14-Dec-16	8015B
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Cardinal Laboratories

* = Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

INDUSTRIAL ECOSYSTEMS
49 CR 3150
AZTEC NM, 87410

Project: JFJ
Project Number: 4252
Project Manager: MARCELLA MARQUEZ
Fax To: (505) 632-1876

Reported:
17-Dec-16 15:56

PILE 429
H602787-03 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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Cardinal Laboratories

Inorganic Compounds

Chloride	48.0	16.0	mg/kg	4	6121509	AC	16-Dec-16	4500-Cl-B
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Volatile Organic Compounds by EPA Method 8021

Benzene*	<0.050	0.050	mg/kg	50	6121401	MS	14-Dec-16	8021B
Toluene*	<0.050	0.050	mg/kg	50	6121401	MS	14-Dec-16	8021B
Ethylbenzene*	<0.050	0.050	mg/kg	50	6121401	MS	14-Dec-16	8021B
Total Xylenes*	<0.150	0.150	mg/kg	50	6121401	MS	14-Dec-16	8021B
Total BTEX	<0.300	0.300	mg/kg	50	6121401	MS	14-Dec-16	8021B

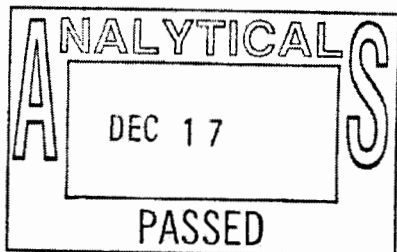
Surrogate: 4-Bromofluorobenzene (PFD)	117 %	73.6-140	6121401	MS	14-Dec-16	8021B
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Petroleum Hydrocarbons by GC FID

GRO C6-C10	<10.0	10.0	mg/kg	1	6121309	MS	14-Dec-16	8015B
DRO >C10-C28	<10.0	10.0	mg/kg	1	6121309	MS	14-Dec-16	8015B

Surrogate: 1-Chlorooctane	84.4 %	35-147	6121309	MS	14-Dec-16	8015B
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Surrogate: 1-Chlorooctadecane	87.8 %	28-171	6121309	MS	14-Dec-16	8015B
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Celey D. Keene

Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

INDUSTRIAL ECOSYSTEMS
49 CR 3150
AZTEC NM, 87410

Project: JFJ
Project Number: 4252
Project Manager: MARCELLA MARQUEZ
Fax To: (505) 632-1876

Reported:
17-Dec-16 15:56

PILE 430
II602787-04 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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Cardinal Laboratories

Inorganic Compounds

Chloride	64.0	16.0	mg/kg	4	6121509	AC	16-Dec-16	4500-C1-B	
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Volatile Organic Compounds by EPA Method 8021

Benzene*	<0.050	0.050	mg/kg	50	6121401	MS	14-Dec-16	8021B
Toluene*	<0.050	0.050	mg/kg	50	6121401	MS	14-Dec-16	8021B
Ethylbenzene*	<0.050	0.050	mg/kg	50	6121401	MS	14-Dec-16	8021B
Total Xylenes*	<0.150	0.150	mg/kg	50	6121401	MS	14-Dec-16	8021B
Total BTEX	<0.300	0.300	mg/kg	50	6121401	MS	14-Dec-16	8021B

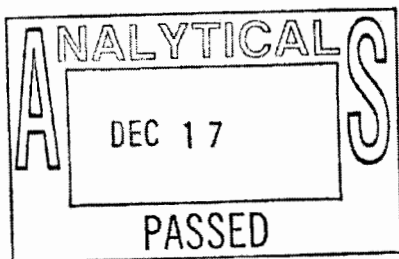
Surrogate: 4-Bromofluorobenzene (P11)	118 %	73.6-140	6121401	MS	14-Dec-16	8021B
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Petroleum Hydrocarbons by GC FID

GRO C6-C10	<10.0	10.0	mg/kg	1	6121309	MS	14-Dec-16	8015B
DRO >C10-C28	<10.0	10.0	mg/kg	1	6121309	MS	14-Dec-16	8015B

Surrogate: 1-Chlorooctane	79.8 %	35-147	6121309	MS	14-Dec-16	8015B
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Surrogate: 1-Chlorooctadecane	94.8 %	28-171	6121309	MS	14-Dec-16	8015B
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Celey D. Keene, Lab Director/Quality Manager



PHONE (575) 393-2326 • 101 E. MARLAND • HOBBS, NM 88240

Analytical Results For:INDUSTRIAL ECOSYSTEMS
49 CR 3150
AZTEC NM, 87410Project: JFJ
Project Number: 4252
Project Manager: MARCELLA MARQUEZ
Fax To: (505) 632-1876Reported:
17-Dec-16 15:56**PILE 431**
H602787-05 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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Cardinal Laboratories**Inorganic Compounds**

Chloride	48.0	16.0	mg/kg	4	6121509	AC	16-Dec-16	4500-Cl-B
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Volatile Organic Compounds by EPA Method 8021

Benzene*	<0.050	0.050	mg/kg	50	6121401	MS	14-Dec-16	8021B
Toluene*	<0.050	0.050	mg/kg	50	6121401	MS	14-Dec-16	8021B
Ethylbenzene*	<0.050	0.050	mg/kg	50	6121401	MS	14-Dec-16	8021B
Total Xylenes*	<0.150	0.150	mg/kg	50	6121401	MS	14-Dec-16	8021B
Total BTEX	<0.300	0.300	mg/kg	50	6121401	MS	14-Dec-16	8021B

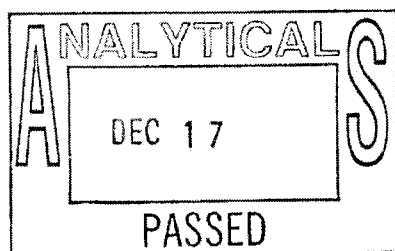
Surrogate: 4-Bromofluorobenzene (P11)	117 %	73.6-140	6121401	MS	14-Dec-16	8021B
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Petroleum Hydrocarbons by GC FID

GRO C6-C10	<10.0	10.0	mg/kg	1	6121309	MS	14-Dec-16	8015B
DRO >C10-C28	<10.0	10.0	mg/kg	1	6121309	MS	14-Dec-16	8015B

Surrogate: 1-Chlorooctane	88.3 %	35-147	6121309	MS	14-Dec-16	8015B
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Surrogate: 1-Chlorooctadecane	95.4 %	28-171	6121309	MS	14-Dec-16	8015B
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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

 INDUSTRIAL ECOSYSTEMS
 49 CR 3150
 AZTEC NM, 87410

 Project: JFJ
 Project Number: 4252
 Project Manager: MARCELLA MARQUEZ
 Fax To: (505) 632-1876

 Reported:
 17-Dec-16 15:56

PILE 435
H602787-06 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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Cardinal Laboratories
Inorganic Compounds

Chloride	144	16.0	mg/kg	4	6121509	AC	16-Dec-16	4500-Cl-B
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Volatile Organic Compounds by EPA Method 8021

Benzene*	<0.050	0.050	mg/kg	50	6121401	MS	14-Dec-16	8021B
Toluene*	<0.050	0.050	mg/kg	50	6121401	MS	14-Dec-16	8021B
Ethylbenzene*	<0.050	0.050	mg/kg	50	6121401	MS	14-Dec-16	8021B
Total Xylenes*	<0.150	0.150	mg/kg	50	6121401	MS	14-Dec-16	8021B
Total BTEX	<0.300	0.300	mg/kg	50	6121401	MS	14-Dec-16	8021B

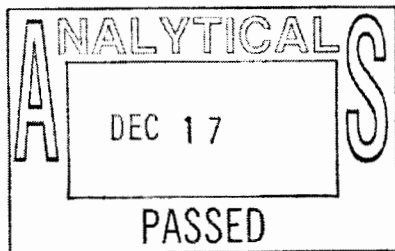
Surrogate: 4-Bromofluorobenzene (PID)	119 %	73.6-140	6121401	MS	14-Dec-16	8021B
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Petroleum Hydrocarbons by GC FID

GRO C6-C10	<10.0	10.0	mg/kg	1	6121309	MS	14-Dec-16	8015B
DRO >C10-C28	<10.0	10.0	mg/kg	1	6121309	MS	14-Dec-16	8015B

Surrogate: 1-Chlorooctane	88.5 %	35-147	6121309	MS	14-Dec-16	8015B
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Surrogate: 1-Chlorooctadecane	97.2 %	28-171	6121309	MS	14-Dec-16	8015B
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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

INDUSTRIAL ECOSYSTEMS
49 CR 3150
AZTEC NM, 87410

Project: JFJ
Project Number: 4252
Project Manager: MARCELLA MARQUEZ
Fax To: (505) 632-1876

Reported:
17-Dec-16 15:56

PILE 439
H602787-07 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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Cardinal Laboratories
Inorganic Compounds

Chloride	128	16.0	mg/kg	4	6121509	AC	16-Dec-16	4500-Cl-B
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Volatile Organic Compounds by EPA Method 8021

Benzene*	<0.050	0.050	mg/kg	50	6121401	MS	14-Dec-16	8021B
Toluene*	<0.050	0.050	mg/kg	50	6121401	MS	14-Dec-16	8021B
Ethylbenzene*	<0.050	0.050	mg/kg	50	6121401	MS	14-Dec-16	8021B
Total Xylenes*	<0.150	0.150	mg/kg	50	6121401	MS	14-Dec-16	8021B
Total BTEX	<0.300	0.300	mg/kg	50	6121401	MS	14-Dec-16	8021B

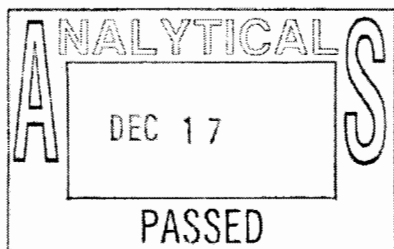
Surrogate: 4-Bromofluorobenzene (PID)	119 %	73.6-140	6121401	MS	14-Dec-16	8021B
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Petroleum Hydrocarbons by GC FID

GRO C6-C10	<10.0	10.0	mg/kg	1	6121309	MS	14-Dec-16	8015B
DRO >C10-C28	<10.0	10.0	mg/kg	1	6121309	MS	14-Dec-16	8015B

Surrogate: 1-Chlorooctane	87.1 %	35-147	6121309	MS	14-Dec-16	8015B
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Surrogate: 1-Chlorooctadecane	99.6 %	28-171	6121309	MS	14-Dec-16	8015B
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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

INDUSTRIAL ECOSYSTEMS
49 CR 3150
AZTEC NM, 87410

Project: JFJ
Project Number: 4252
Project Manager: MARCELLA MARQUEZ
Fax To: (505) 632-1876

Reported:
17-Dec-16 15:56

PILE 440
H602787-08 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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Cardinal Laboratories

Inorganic Compounds

Chloride	32.0	16.0	mg/kg	4	6121509	AC	16-Dec-16	4500-C1-B
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Volatile Organic Compounds by EPA Method 8021

Benzene*	<0.050	0.050	mg/kg	50	6121401	MS	14-Dec-16	8021B
Toluene*	<0.050	0.050	mg/kg	50	6121401	MS	14-Dec-16	8021B
Ethylbenzene*	<0.050	0.050	mg/kg	50	6121401	MS	14-Dec-16	8021B
Total Xylenes*	<0.150	0.150	mg/kg	50	6121401	MS	14-Dec-16	8021B
Total BTEX	<0.300	0.300	mg/kg	50	6121401	MS	14-Dec-16	8021B

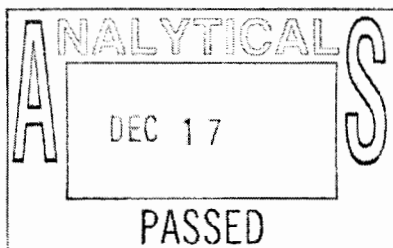
S surrogate: 4-Bromofluorobenzene (PID)	117 %	73.6-140	6121401	MS	14-Dec-16	8021B
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Petroleum Hydrocarbons by GC FID

GRO C6-C10	<10.0	10.0	mg/kg	1	6121309	MS	14-Dec-16	8015B
DRO >C10-C28	<10.0	10.0	mg/kg	1	6121309	MS	14-Dec-16	8015B

S surrogate: 1-Chlorooctane	81.6 %	35-147	6121309	MS	14-Dec-16	8015B
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S surrogate: 1-Chlorooctadecane	80.2 %	28-171	6121309	MS	14-Dec-16	8015B
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Celey D. Keene, Lab Director/Quality Manager



PHONE (575) 393-2326 • 101 E. MARLAND • HOBBS, NM 88240

Analytical Results For:INDUSTRIAL ECOSYSTEMS
49 CR 3150
AZTEC NM, 87410Project: JFJ
Project Number: 4252
Project Manager: MARCELLA MARQUEZ
Fax To: (505) 632-1876Reported:
17-Dec-16 15:56**PILE 576
H602787-09 (Soil)**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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Cardinal Laboratories**Inorganic Compounds**

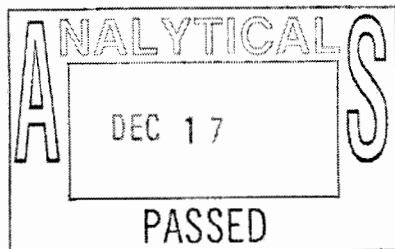
Chloride	64.0	16.0	mg/kg	4	6121509	AC	16-Dec-16	4500-Cl-B
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Volatile Organic Compounds by EPA Method 8021

Benzene*	<0.050	0.050	mg/kg	50	6121401	MS	14-Dec-16	8021B
Toluene*	<0.050	0.050	mg/kg	50	6121401	MS	14-Dec-16	8021B
Ethylbenzene*	<0.050	0.050	mg/kg	50	6121401	MS	14-Dec-16	8021B
Total Xylenes*	<0.150	0.150	mg/kg	50	6121401	MS	14-Dec-16	8021B
Total BTEX	<0.300	0.300	mg/kg	50	6121401	MS	14-Dec-16	8021B
Surrogate: 4-Bromofluorobenzene (PID)		119 %	73.6-140		6121401	MS	14-Dec-16	8021B

Petroleum Hydrocarbons by GC FID

GRO C6-C10	<10.0	10.0	mg/kg	1	6121309	MS	14-Dec-16	8015B
DRO >C10-C28	24.5	10.0	mg/kg	1	6121309	MS	14-Dec-16	8015B
Surrogate: 1-Chlorooctane		80.2 %	35-147		6121309	MS	14-Dec-16	8015B
Surrogate: 1-Chlorooctadecane		91.4 %	28-171		6121309	MS	14-Dec-16	8015B



Cardinal Laboratories

*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager



PHONE (575) 393-2326 • 101 E. MARLAND • HOBBS, NM 88240

Analytical Results For:

INDUSTRIAL ECOSYSTEMS
49 CR 3150
AZTEC NM, 87410

Project: JFJ
Project Number: 4252
Project Manager: MARCELLA MARQUEZ
Fax To: (505) 632-1876

Reported:
17-Dec-16 15:56

Inorganic Compounds - Quality Control

Cardinal Laboratories

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 6121509 - 1:4 DI Water

Blank (6121509-BLK1)

Prepared: 15-Dec-16 Analyzed: 16-Dec-16

Chloride ND 16.0 mg/kg

LCS (6121509-BS1)

Prepared: 15-Dec-16 Analyzed: 16-Dec-16

Chloride 416 16.0 mg/kg 400 104 80-120

LCS Dup (6121509-BSD1)

Prepared: 15-Dec-16 Analyzed: 16-Dec-16

Chloride 416 16.0 mg/kg 400 104 80-120 0.00 20

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

INDUSTRIAL ECOSYSTEMS
49 CR 3150
AZTEC NM, 87410

Project: JFJ
Project Number: 4252
Project Manager: MARCELLA MARQUEZ
Fax To: (505) 632-1876

Reported:
17-Dec-16 15:56

Volatile Organic Compounds by EPA Method 8021 - Quality Control

Cardinal Laboratories

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 6121401 - Volatiles

Blank (6121401-BLK1)

Prepared & Analyzed: 14-Dec-16

Benzene	ND	0.050	mg/kg							
Toluene	ND	0.050	mg/kg							
Ethylbenzene	ND	0.050	mg/kg							
Total Xylenes	ND	0.150	mg/kg							
Total BTEX	ND	0.300	mg/kg							
Surrogate: 4-Bromofluorobenzene (P11)	0.0593		mg/kg	0.0500		119	73.6-140			

LCS (6121401-BS1)

Prepared & Analyzed: 14-Dec-16

Benzene	2.20	0.050	mg/kg	2.00		110	82.6-122			
Toluene	2.27	0.050	mg/kg	2.00		114	72.9-122			
Ethylbenzene	2.23	0.050	mg/kg	2.00		111	65.4-131			
Total Xylenes	6.78	0.150	mg/kg	6.00		113	73.8-125			
Surrogate: 4-Bromofluorobenzene (P11)	0.0609		mg/kg	0.0500		122	73.6-140			

LCS Dup (6121401-BS1)

Prepared & Analyzed: 14-Dec-16

Benzene	2.13	0.050	mg/kg	2.00		107	82.6-122	3.37	8.23	
Toluene	2.20	0.050	mg/kg	2.00		110	72.9-122	3.38	8.71	
Ethylbenzene	2.16	0.050	mg/kg	2.00		108	65.4-131	3.28	9.46	
Total Xylenes	6.56	0.150	mg/kg	6.00		109	73.8-125	3.40	8.66	
Surrogate: 4-Bromofluorobenzene (P11)	0.0606		mg/kg	0.0500		121	73.6-140			

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

INDUSTRIAL ECOSYSTEMS
49 CR 3150
AZTEC NM, 87410

Project: JFJ
Project Number: 4252
Project Manager: MARCELLA MARQUEZ
Fax To: (505) 632-1876

Reported:
17-Dec-16 15:56

Petroleum Hydrocarbons by GC FID - Quality Control

Cardinal Laboratories

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 6121309 - General Prep - Organics

Blank (6121309-BLK1)

Prepared: 13-Dec-16 Analyzed: 14-Dec-16

GRO C6-C10	ND	10.0	mg/kg							
DRO >C10-C28	ND	10.0	mg/kg							
Surrogate: 1-Chlorooctane	38.1		mg/kg	50.0		76.2	35-147			
Surrogate: 1-Chlorooctadecane	44.7		mg/kg	50.0		89.5	28-171			

LCS (6121309-BS1)

Prepared: 13-Dec-16 Analyzed: 14-Dec-16

GRO C6-C10	189	10.0	mg/kg	200		94.6	76.7-115			
DRO >C10-C28	199	10.0	mg/kg	200		99.5	78.3-122			
Surrogate: 1-Chlorooctane	51.2		mg/kg	50.0		102	35-147			
Surrogate: 1-Chlorooctadecane	56.9		mg/kg	50.0		114	28-171			

LCS Dup (6121309-BSD1)

Prepared: 13-Dec-16 Analyzed: 14-Dec-16

GRO C6-C10	188	10.0	mg/kg	200		94.2	76.7-115	0.431	9.42	
DRO >C10-C28	197	10.0	mg/kg	200		98.5	78.3-122	0.921	13.2	
Surrogate: 1-Chlorooctane	50.7		mg/kg	50.0		101	35-147			
Surrogate: 1-Chlorooctadecane	54.9		mg/kg	50.0		110	28-171			

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Celey D. Keene, Lab Director/Quality Manager

Notes and Definitions

ND	Analyte NOT DETECTED at or above the reporting limit
RPD	Relative Percent Difference
**	Samples not received at proper temperature of 6°C or below.
***	Insufficient time to reach temperature.
-	Chloride by SM4500Cl-B does not require samples be received at or below 6°C Samples reported on an as received basis (wet) unless otherwise noted on report

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Celey D. Keene, Lab Director/Quality Manager



CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

(970) 247-4220
Fax: (970) 247-4227

service@greenanalytical.com or dzufelt@greenanalytical.com
75 Suttle St Durango, CO 81303

Page 16 of 16

Company Name: IEI		Bill to (if different):		ANALYSIS REQUEST										
Project Manager: Marcella		P.O. #: 4252		DRO 8015B GRO 8015B BTEX 8021B Chlorides 300.0										
Address: 49 CR 3150		Company:												
City: AZtec State: NM Zip: 87410		Attn:												
Phone #: 632-1782 Email:		Address:												
Additional Report To:		City:												
Project Name: JFS		State: Zip:												
Project Number:		Phone #:												
Sampler Name (Print): Richard Chavez		Fax or Email:												
Lab I.D.	Sample Name or Location	Collected	Matrix (check one)	# of containers										
		Date	Time	GROUNDWATER	SURFACEWATER	WASTEWATER	PRODUCEDWATER	SOIL	OTHER:	HNO ₃	HCl	H ₂ SO ₄	Other:	Other:
H602787														
1	Pile 4/17	12/9/16	7:00 AM											
2	" " 428	12/9/16	7:30 AM											
3	" " 429	12/9/16	8:10											
4	" " 430	12/9/16	8:40											
5	" " 431	12/9/16	9:10											
6	" " 435	12/9/16	9:45											
7	" " 439	12/9/16	10:15											
8	" " 440	12/9/16	10:45											
9	" " 576	12/9/16	11:15											

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Relinquished By:	Date: 12/9/16 Time: 1437	Received By: Christin Clain	ADDITIONAL REMARKS:	Report to State? (Circle) Yes No
Relinquished By: Christin Clain	Date: 12/12/16 Time: 1600	Received By: Fed Ex		
Relinquished By:	Date: 12/13/16 Time: 10:00	Received By: Jodi Henson		
Delivered By: (Circle One) Sampler - UPS - FedEx - Kangaroo - Other: #75	Temperature at receipt: 3.20	CHECKED BY: 5.80		

† GAL cannot always accept verbal changes. Please fax or email written change requests.
* Chain of Custody must be signed in "Relinquished By:" as an acceptance of services and all applicable charges.

State of New Mexico
Energy, Minerals and Natural Resources Department

Susana Martinez
Governor

David Martin
Cabinet Secretary

Tony Delfin
Deputy Cabinet Secretary

David R. Catanach, Division Director
Oil Conservation Division



May 17, 2016

Ms. Marcella Marquez
JFJ Landfarm, L.L.C.
Industrial Ecosystems Inc.
Soil Reclamation Center
P.O. Box 2043
Farmington, New Mexico 87499

RE: Request for Approval to Reuse Remediated Biopile Soils for the Stabilization/Solidification of Drilling Mud and Tank Bottoms and Sludge
JFJ Landfarm, LLC - Industrial Ecosystems Inc.
JFJ Landfarm – Permit # NM1-010-B
Location: NW/4 SE/4 of Section 2, Township 29 North, Range 12 West, NMPM,
San Juan County, New Mexico

Dear Ms. Marquez:

The Oil Conservation Division (OCD) has reviewed JFJ Landfarm, LLC's (JFJ) request, emailed to OCD on May 13, 2016, and associated analytical results to reuse the remediated soils for the stabilization and/or solidification of incoming drilling mud and tank bottoms and sludge from following biopile(s): **839, 579, 976, 852, 980, 775, 999, 973, 977, 989, 433, and 434.**

Based upon the information provided in the request, the above-referenced biopiles are hereby approved for the stabilization and/or solidification of incoming drilling mud and tank bottoms and sludge.

Please be advised that approval of this request does not relieve JFJ of liability should operations result in pollution of surface water, ground water or the environment. Nor does approval relieve JFJ of its responsibility to comply with any other applicable governmental authority's rules and regulations.

If there are any questions regarding this matter, please do not hesitate to contact Brad Jones on my staff at (505) 476-3487 or brad.a.jones@state.nm.us.

Sincerely,

Jim Griswold
Environmental Bureau Chief

JG/baj

cc: OCD District III Office, Aztec

Jones, Brad A., EMNRD

From: Marcella Marquez <marcella@industrialecosystems.com>
Sent: Friday, May 13, 2016 4:55 PM
To: Jones, Brad A., EMNRD
Subject: Request to Recycle Treated Soils
Attachments: Passed Piles 051116.pdf; 1BLANK Request to Reuse Soil.doc

Importance: High

Please see attached request and corresponding documentation.

*Thanks,
Marcella Marquez
Regulatory/Compliance/HR Manager
Industrial Ecosystems, Inc.
Phone: (505) 632-1782
Fax: (505) 632-1876 or (505) 334-1003*



**Industrial Ecosystems Inc.
Soil Reclamation Center**

P.O. Box 2043
Farmington, NM 87499

Phone: (505) 632-1782
Fax: (505) 632-1876

#49 CR 3150
Aztec, NM 87410

May 13, 2016

Brad Jones
Environmental Bureau
NM Oil Conservation Division
1220 S. St. Francis Drive
Santa Fe, New Mexico 87505

RE: Use of reclaimed soil

Dear Brad:

Recent analytical results show that the following biopiles(s) have reached acceptable levels as required by our NMOCD permit.

File #

839	DRO, GRO, BTEX & Chlorides Passed 05/11/16
579	DRO, GRO, BTEX & Chlorides Passed 05/11/16
976	DRO, GRO, BTEX & Chlorides Passed 05/11/16
852	DRO, GRO, BTEX & Chlorides Passed 05/11/16
980	DRO, GRO, BTEX & Chlorides Passed 05/11/16
775	DRO, GRO, BTEX & Chlorides Passed 05/11/16
999	DRO, GRO, BTEX & Chlorides Passed 05/11/16
973	DRO, GRO, BTEX & Chlorides Passed 05/11/16
977	DRO, GRO, BTEX & Chlorides Passed 05/11/16
989	DRO, GRO, BTEX & Chlorides Passed 05/11/16
433	DRO, GRO, BTEX & Chlorides Passed 05/11/16
434	DRO, GRO, BTEX & Chlorides Passed 05/11/16

We are seeking your approval to recycle this soil by using it to mix/solidify incoming liquid waste.

Respectfully Submitted,

A handwritten signature in cursive script, appearing to read 'Marcella Marquez', is written over a horizontal line.

Marcella Marquez
Regulatory/Compliance/HR

Enclosure(s) – Analytical Reports

Analytical Results For:

INDUSTRIAL ECOSYSTEMS
49 CR 3150
AZTEC NM, 87410

Project: JFJ
Project Number: 3905
Project Manager: MARCELLA MARQUEZ
Fax To: (505) 632-1876

Reported:
11-May-16 16:32

PILE 839
H600984-01 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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Cardinal Laboratories
Inorganic Compounds

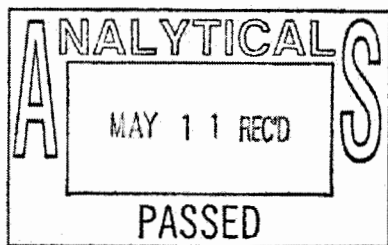
Chloride	32.0	16.0	mg/kg	4	6050509	AP	06-May-16	4500-Cl-B
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Volatiles Organic Compounds by EPA Method 8021

Benzene*	<0.050	0.050	mg/kg	50	6050603	MS	06-May-16	8021B
Toluene*	<0.050	0.050	mg/kg	50	6050603	MS	06-May-16	8021B
Ethylbenzene*	<0.050	0.050	mg/kg	50	6050603	MS	06-May-16	8021B
Total Xylenes*	<0.150	0.150	mg/kg	50	6050603	MS	06-May-16	8021B
Total BTEX	<0.300	0.300	mg/kg	50	6050603	MS	06-May-16	8021B
Surrogate: 4-Bromofluorobenzene (P1D)	100 %	73.6-140			6050603	MS	06-May-16	8021B

Petroleum Hydrocarbons by GC FID

GRO C6-C10	<10.0	10.0	mg/kg	1	6050408	MS	05-May-16	8015B
DRO >C10-C28	<10.0	10.0	mg/kg	1	6050408	MS	05-May-16	8015B
Surrogate: 1-Chlorooctane	75.3 %	35-147			6050408	MS	05-May-16	8015B
Surrogate: 1-Chlorooctadecane	87.8 %	28-171			6050408	MS	05-May-16	8015B



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Celey D. Keene, Lab Director/Quality Manager



PHONE (575) 393-2326 • 101 E. MARLAND • HOBBS, NM 88240

Analytical Results For:INDUSTRIAL ECOSYSTEMS
49 CR 3150
AZTEC NM, 87410Project: JFJ
Project Number: 3905
Project Manager: MARCELLA MARQUEZ
Fax To: (505) 632-1876Reported:
11-May-16 16:32**PILE 579
H600984-02 (Soil)**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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Cardinal Laboratories**Inorganic Compounds**

Chloride	32.0	16.0	mg/kg	4	6050602	AP	06-May-16	4500-Cl-B
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Volatile Organic Compounds by EPA Method 8021

Benzene*	<0.050	0.050	mg/kg	50	6050603	MS	06-May-16	8021B
Toluene*	<0.050	0.050	mg/kg	50	6050603	MS	06-May-16	8021B
Ethylbenzene*	<0.050	0.050	mg/kg	50	6050603	MS	06-May-16	8021B
Total Xylenes*	<0.150	0.150	mg/kg	50	6050603	MS	06-May-16	8021B
Total BTEX	<0.300	0.300	mg/kg	50	6050603	MS	06-May-16	8021B

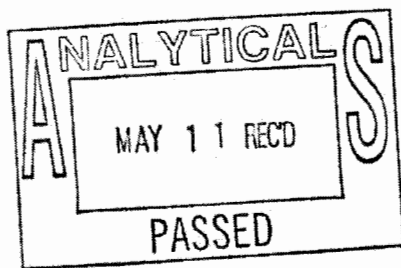
Surrrogate: 4-Bromofluorobenzene (PID)	99.0 %	73.6-140	6050603	MS	06-May-16	8021B
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Petroleum Hydrocarbons by GC FID

GRO C6-C10	<10.0	10.0	mg/kg	1	6050408	MS	05-May-16	8015B
DRO >C10-C28	<10.0	10.0	mg/kg	1	6050408	MS	05-May-16	8015B

Surrrogate: 1-Chlorooctane	83.2 %	35-147	6050408	MS	05-May-16	8015B
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Surrrogate: 1-Chlorooctadecane	89.7 %	28-171	6050408	MS	05-May-16	8015B
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* = Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

 INDUSTRIAL ECOSYSTEMS
 49 CR 3150
 AZTEC NM, 87410

 Project: JFJ
 Project Number: 3905
 Project Manager: MARCELLA MARQUEZ
 Fax To: (505) 632-1876

 Reported:
 11-May-16 16:32

PILE 976
II600984-03 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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Cardinal Laboratories
Inorganic Compounds

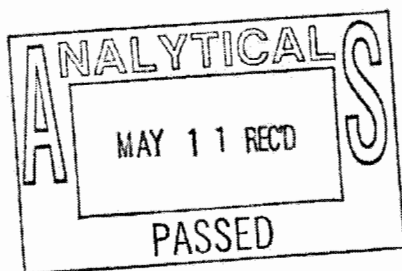
Chloride	48.0	16.0	mg/kg	4	6050602	AP	06-May-16	4506-Cl-B
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Volatile Organic Compounds by EPA Method 8021

Benzene*	<0.050	0.050	mg/kg	50	6050603	MS	06-May-16	8021B
Toluene*	<0.050	0.050	mg/kg	50	6050603	MS	06-May-16	8021B
Ethylbenzene*	<0.050	0.050	mg/kg	50	6050603	MS	06-May-16	8021B
Total Xylenes*	<0.150	0.150	mg/kg	50	6050603	MS	06-May-16	8021B
Total BTEX	<0.300	0.300	mg/kg	50	6050603	MS	06-May-16	8021B
Surrogate: 4-Bromofluorobenzene (P1D)	100 %	73.6-140			6050603	MS	06-May-16	8021B

Petroleum Hydrocarbons by GC FID

GRO C6-C10	<10.0	10.0	mg/kg	1	6050408	MS	05-May-16	8015B
DRO >C10-C28	<10.0	10.0	mg/kg	1	6050408	MS	05-May-16	8015B
Surrogate: 1-Chlorooctane	97.8 %	35-147			6050408	MS	05-May-16	8015B
Surrogate: 1-Chlorooctadecane	115 %	28-171			6050408	MS	05-May-16	8015B



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Celey D. Keene, Lab Director/Quality Manager



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Analytical Results For:INDUSTRIAL ECOSYSTEMS
49 CR 3150
AZTEC NM, 87410Project: JFJ
Project Number: 3905
Project Manager: MARCELLA MARQUEZ
Fax To: (505) 632-1876Reported:
11-May-16 16:32**PILE 852
H600984-04 (Soil)**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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Cardinal Laboratories**Inorganic Compounds**

Chloride	64.0	16.0	mg/kg	4	6050602	AP	06-May-16	4500-Cl-B
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Volatile Organic Compounds by EPA Method 8021

Benzene*	<0.050	0.050	mg/kg	50	6050603	MS	06-May-16	8021B
Toluene*	<0.050	0.050	mg/kg	50	6050603	MS	06-May-16	8021B
Ethylbenzene*	<0.050	0.050	mg/kg	50	6050603	MS	06-May-16	8021B
Total Xylenes*	<0.150	0.150	mg/kg	50	6050603	MS	06-May-16	8021B
Total BTEX	<0.300	0.300	mg/kg	50	6050603	MS	06-May-16	8021B

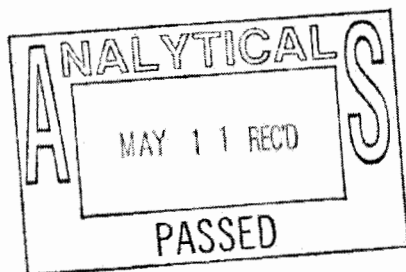
Surrogate: 4-Bromofluorobenzene (PID)	97.9 %	73.6-140	6050603	MS	06-May-16	8021B
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Petroleum Hydrocarbons by GC FID

GRO C6-C10	<10.0	10.0	mg/kg	1	6050408	MS	05-May-16	8015B
DRO >C10-C28	<10.0	10.0	mg/kg	1	6050408	MS	05-May-16	8015B

Surrogate: 1-Chloroacene	87.9 %	35-147	6050408	MS	05-May-16	8015B
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Surrogate: 1-Chlorooctadecane	67.2 %	28-171	6050408	MS	05-May-16	8015B
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Celey D. Keene, Lab Director/Quality Manager



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Analytical Results For:INDUSTRIAL ECOSYSTEMS
49 CR 3150
AZTEC NM, 87410Project: JFJ
Project Number: 3905
Project Manager: MARCELLA MARQUEZ
Fax To: (505) 632-1876Reported:
11-May-16 16:32**PILE 980**
H600984-05 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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Cardinal Laboratories**Inorganic Compounds**

Chloride	32.0	16.0	mg/kg	4	6050602	AP	06-May-16	4500-C1-B
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Volatile Organic Compounds by EPA Method 8021

Benzene*	<0.050	0.050	mg/kg	50	6050603	MS	06-May-16	8021B
Toluene*	<0.050	0.050	mg/kg	50	6050603	MS	06-May-16	8021B
Ethylbenzene*	<0.050	0.050	mg/kg	50	6050603	MS	06-May-16	8021B
Total Xylenes*	<0.150	0.150	mg/kg	50	6050603	MS	06-May-16	8021B
Total BTEX	<0.300	0.300	mg/kg	50	6050603	MS	06-May-16	8021B

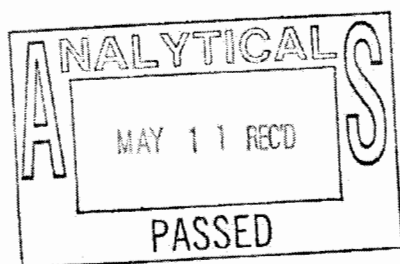
Surrogate: 4-Bromofluorobenzene (P11)	97.6 %	73.6-140	6050603	MS	06-May-16	8021B
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Petroleum Hydrocarbons by GC FID

GRO C6-C10	<10.0	10.0	mg/kg	1	6050408	MS	05-May-16	8015B
DRO >C10-C28	<10.0	10.0	mg/kg	1	6050408	MS	05-May-16	8015B

Surrogate: 1-Chlorooctane	78.5 %	35-147	6050408	MS	05-May-16	8015B
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Surrogate: 1-Chlorooctadecane	61.6 %	28-171	6050408	MS	05-May-16	8015B
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Celey D. Keene, Lab Director/Quality Manager



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Analytical Results For:INDUSTRIAL ECOSYSTEMS
49 CR 3150
AZTEC NM, 87410Project: JFJ
Project Number: 3905
Project Manager: MARCELLA MARQUEZ
Fax To: (505) 632-1876Reported:
11-May-16 16:32**PILE 775
H600984-06 (Soil)**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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Cardinal Laboratories**Inorganic Compounds**

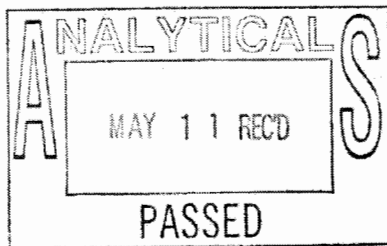
Chloride	96.0	16.0	mg/kg	4	6050602	AP	06-May-16	4500-Cl-B
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Volatile Organic Compounds by EPA Method 8021

Benzene*	<0.050	0.050	mg/kg	50	6050603	MS	06-May-16	8021B
Toluene*	<0.050	0.050	mg/kg	50	6050603	MS	06-May-16	8021B
Ethylbenzene*	<0.050	0.050	mg/kg	50	6050603	MS	06-May-16	8021B
Total Xylenes*	<0.150	0.150	mg/kg	50	6050603	MS	06-May-16	8021B
Total BTEX	<0.300	0.300	mg/kg	50	6050603	MS	06-May-16	8021B
Surrogate: 4-Bromofluorobenzene (P11)	98.4 %	73.6-140	6050603	MS	06-May-16	8021B		

Petroleum Hydrocarbons by GC FID

GRO C6-C10	<10.0	10.0	mg/kg	1	6050408	MS	05-May-16	8015B
DRO >C10-C28	<10.0	10.0	mg/kg	1	6050408	MS	05-May-16	8015B
Surrogate: 1-Chlorooctane	86.1 %	35-147	6050408	MS	05-May-16	8015B		
Surrogate: 1-Chlorooctadecane	67.7 %	28-171	6050408	MS	05-May-16	8015B		



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Celey D. Keene, Lab Director/Quality Manager



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Analytical Results For:

INDUSTRIAL ECOSYSTEMS
49 CR 3150
AZTEC NM, 87410

Project: JFJ
Project Number: 3905
Project Manager: MARCELLA MARQUEZ
Fax To: (505) 632-1876

Reported:
11-May-16 16:32

**PILE 999
H600984-07 (Soil)**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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Cardinal Laboratories

Inorganic Compounds

Chloride	32.0	16.0	mg/kg	4	6050602	AP	06-May-16	4500-C1-B
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Volatile Organic Compounds by EPA Method 8021

Benzene*	<0.050	0.050	mg/kg	50	6050603	MS	06-May-16	8021B
Toluene*	<0.050	0.050	mg/kg	50	6050603	MS	06-May-16	8021B
Ethylbenzene*	<0.050	0.050	mg/kg	50	6050603	MS	06-May-16	8021B
Total Xylenes*	<0.150	0.150	mg/kg	50	6050603	MS	06-May-16	8021B
Total BTEX	<0.300	0.300	mg/kg	50	6050603	MS	06-May-16	8021B

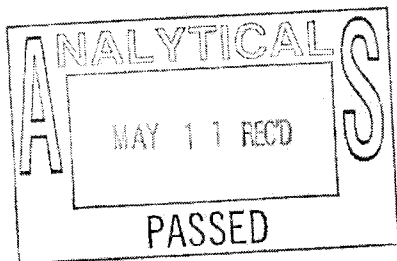
Surrogate: 4-Bromofluorobenzene (PID)	98.1 %	73.6-140	6050603	MS	06-May-16	8021B
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Petroleum Hydrocarbons by GC FID

GRO C6-C10	<10.0	10.0	mg/kg	1	6050601	MS	06-May-16	8015B
DRO >C10-C28	<10.0	10.0	mg/kg	1	6050601	MS	06-May-16	8015B QR-03

Surrogate: 1-Chlorooctane	76.0 %	35-147	6050601	MS	06-May-16	8015B
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Surrogate: 1-Chlorononadecane	67.7 %	28-171	6050601	MS	06-May-16	8015B
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Celestine D. Keene

Celestine D. Keene, Lab Director/Quality Manager



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Analytical Results For:

INDUSTRIAL ECOSYSTEMS 49 CR 3150 AZTEC NM, 87410	Project: JFJ Project Number: 3905 Project Manager: MARCELLA MARQUEZ Fax To: (505) 632-1876	Reported: 11-May-16 16:32
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**PILE 973
H600984-09 (Soil)**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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Cardinal Laboratories

Inorganic Compounds

Chloride	48.0		16.0	mg/kg	4	6050602	AP	06-May-16	4500-C1-B	
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Volatile Organic Compounds by EPA Method 8021

Benzene*	<0.050		0.050	mg/kg	50	6050603	MS	06-May-16	8021B	
Toluene*	<0.050		0.050	mg/kg	50	6050603	MS	06-May-16	8021B	
Ethylbenzene*	<0.050		0.050	mg/kg	50	6050603	MS	06-May-16	8021B	
Total Xylenes*	<0.150		0.150	mg/kg	50	6050603	MS	06-May-16	8021B	
Total BTEX	<0.300		0.300	mg/kg	50	6050603	MS	06-May-16	8021B	

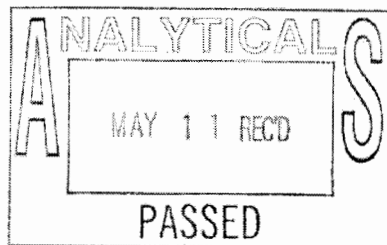
Surrogate: 4-Bromofluorobenzene (P1D) 97.7 % 73.6-140 6050603 MS 06-May-16 8021B

Petroleum Hydrocarbons by GC FID

GRO C6-C10	<10.0		10.0	mg/kg	1	6050601	MS	06-May-16	8015B	
DRO >C10-C28	<10.0		10.0	mg/kg	1	6050601	MS	06-May-16	8015B	

Surrogate: 1-Chlorooctane 88.7 % 35-147 6050601 MS 06-May-16 8015B

Surrogate: 1-Chlorodecane 102 % 28-171 6050601 MS 06-May-16 8015B



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Celestine

Celestine, Lab Director/Quality Manager



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Analytical Results For:INDUSTRIAL ECOSYSTEMS
49 CR 3150
AZTEC NM, 87410Project: JFJ
Project Number: 3905
Project Manager: MARCELLA MARQUEZ
Fax To: (505) 632-1876Reported:
11-May-16 16:32**PILE 977
H600984-10 (Soil)**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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Cardinal Laboratories**Inorganic Compounds**

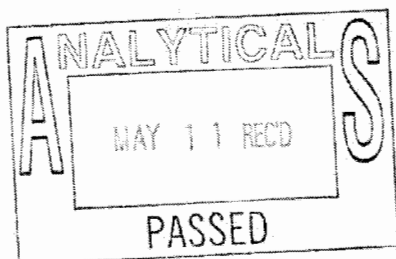
Chloride	32.0		16.0	mg/kg	4	6050602	AP	06-May-16	4500-Cl-B	
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Volatile Organic Compounds by EPA Method 8021

Benzene*	<0.050		0.050	mg/kg	50	6050603	MS	06-May-16	8021B	
Toluene*	<0.050		0.050	mg/kg	50	6050603	MS	06-May-16	8021B	
Ethylbenzene*	<0.050		0.050	mg/kg	50	6050603	MS	06-May-16	8021B	
Total Xylenes*	<0.150		0.150	mg/kg	50	6050603	MS	06-May-16	8021B	
Total BTEX	<0.300		0.300	mg/kg	50	6050603	MS	06-May-16	8021B	
Surrogate: 4-Bromofluorobenzene (P1D)			96.8 %	73.6-140		6050603	MS	06-May-16	8021B	

Petroleum Hydrocarbons by GC FID

GRO C6-C10	<10.0		10.0	mg/kg	1	6050601	MS	06-May-16	8015B	
DRO >C10-C28	<10.0		10.0	mg/kg	1	6050601	MS	06-May-16	8015B	
Surrogate: 1-Chlorooctane			83.3 %	35-147		6050601	MS	06-May-16	8015B	
Surrogate: 1-Chlorooctadecane			71.8 %	28-171		6050601	MS	06-May-16	8015B	



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Celey D. Keene, Lab Director/Quality Manager



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Analytical Results For:INDUSTRIAL ECOSYSTEMS
49 CR 3150
AZTEC NM, 87410Project: JFJ
Project Number: 3905
Project Manager: MARCELLA MARQUEZ
Fax To: (505) 632-1876Reported:
11-May-16 16:32**PILE 989
H600984-11 (Soil)**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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Cardinal Laboratories**Inorganic Compounds**

Chloride	<16.0	16.0	mg/kg	4	6050602	AP	06-May-16	4500-Cl-B
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Volatile Organic Compounds by EPA Method 8021

Benzene*	<0.050	0.050	mg/kg	50	6050603	MS	06-May-16	8021B
Toluene*	<0.050	0.050	mg/kg	50	6050603	MS	06-May-16	8021B
Ethylbenzene*	<0.050	0.050	mg/kg	50	6050603	MS	06-May-16	8021B
Total Xylenes*	<0.150	0.150	mg/kg	50	6050603	MS	06-May-16	8021B
Total BTEX	<0.300	0.300	mg/kg	50	6050603	MS	06-May-16	8021B

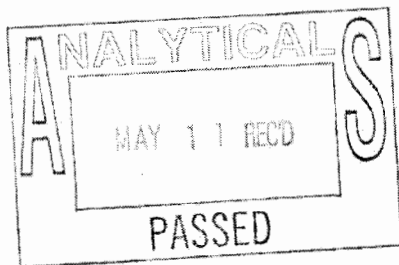
Surrogate: 4-Bromofluorobenzene (P11) 96.9 % 73.6-140 6050603 MS 06-May-16 8021B

Petroleum Hydrocarbons by GC FID

GRO C6-C10	<10.0	10.0	mg/kg	1	6050601	MS	06-May-16	8015B
DRO >C10-C28	<10.0	10.0	mg/kg	1	6050601	MS	06-May-16	8015B

Surrogate: 1-Chlorooctane 81.2 % 35-147 6050601 MS 06-May-16 8015B

Surrogate: 1-Chlorooctadecane 73.4 % 28-171 6050601 MS 06-May-16 8015B



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Celey D. Keene, Lab Director/Quality Manager



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Analytical Results For:

INDUSTRIAL ECOSYSTEMS
49 CR 3150
AZTEC NM, 87410

Project: JFJ
Project Number: 3905
Project Manager: MARCELLA MARQUEZ
Fax To: (505) 632-1876

Reported:
11-May-16 16:32

**PILE 433
H600984-12 (Soil)**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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Cardinal Laboratories

Inorganic Compounds

Chloride	<16.0	16.0	mg/kg	4	6050602	AP	06-May-16	4500-Cl-B
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Volatile Organic Compounds by EPA Method 8021

Benzene*	<0.050	0.050	mg/kg	50	6050603	MS	06-May-16	8021B
Toluene*	<0.050	0.050	mg/kg	50	6050603	MS	06-May-16	8021B
Ethylbenzene*	<0.050	0.050	mg/kg	50	6050603	MS	06-May-16	8021B
Total Xylenes*	<0.150	0.150	mg/kg	50	6050603	MS	06-May-16	8021B
Total BTEX	<0.300	0.300	mg/kg	50	6050603	MS	06-May-16	8021B

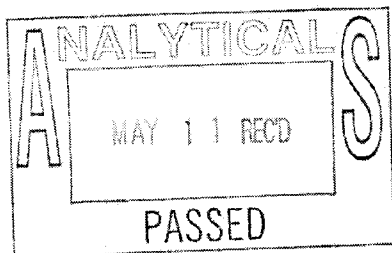
Surrogate: 4-Bromofluorobenzene (PID)	97.1 %	73.6-140	6050603	MS	06-May-16	8021B
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Petroleum Hydrocarbons by GC FID

GRO C6-C10	<10.0	10.0	mg/kg	1	6050601	MS	06-May-16	8015B
DRO >C10-C28	<10.0	10.0	mg/kg	1	6050601	MS	06-May-16	8015B

Surrogate: 1-Chlorooctane	78.2 %	35-147	6050601	MS	06-May-16	8015B
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Surrogate: 1-Chlorooctadecane	94.4 %	28-171	6050601	MS	06-May-16	8015B
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Celestine

Celestine D. Keene, Lab Director/Quality Manager

Analytical Results For:

INDUSTRIAL ECOSYSTEMS 49 CR 3150 AZTEC NM, 87410	Project: JFJ Project Number: 3905 Project Manager: MARCELLA MARQUEZ Fax To: (505) 632-1876	Reported: 11-May-16 16:32
---	---	------------------------------

PILE 434 H600984-13 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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Inorganic Compounds

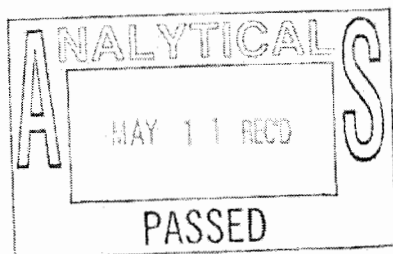
Chloride	112	16.0	mg/kg	4	6050602	AP	06-May-16	4500-Cl-B		
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Volatile Organic Compounds by EPA Method 8021

Benzene*	<0.050	0.050	mg/kg	50	6050603	MS	06-May-16	8021B		
Toluene*	<0.050	0.050	mg/kg	50	6050603	MS	06-May-16	8021B		
Ethylbenzene*	<0.050	0.050	mg/kg	50	6050603	MS	06-May-16	8021B		
Total Xylenes*	<0.150	0.150	mg/kg	50	6050603	MS	06-May-16	8021B		
Total BTEX	<0.300	0.300	mg/kg	50	6050603	MS	06-May-16	8021B		
Surrogate: 4-Bromofluorobenzene (PID)		96.5 %	73.6-140		6050603	MS	06-May-16	8021B		

Petroleum Hydrocarbons by GC FID

GRO C6-C10	<10.0	10.0	mg/kg	1	6050601	MS	06-May-16	8015B		
DRO >C10-C28	<10.0	10.0	mg/kg	1	6050601	MS	06-May-16	8015B		
Surrogate: 1-Chlorooctane		84.2 %	35-147		6050601	MS	06-May-16	8015B		
Surrogate: 1-Chlorotetradecane		66.1 %	28-171		6050601	MS	06-May-16	8015B		



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Celey D. Keene, Lab Director/Quality Manager



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Analytical Results For:INDUSTRIAL ECOSYSTEMS
49 CR 3150
AZTEC NM, 87410Project: JFJ
Project Number: 3905
Project Manager: MARCELLA MARQUEZ
Fax To: (505) 632-1876Reported:
11-May-16 16:32**Inorganic Compounds - Quality Control**
Cardinal Laboratories

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 6050509 - 1:4 DI Water										
Blank (6050509-BLK1)				Prepared & Analyzed: 05-May-16						
Chloride	ND	16.0	mg/kg							
LCS (6050509-BS1)				Prepared & Analyzed: 05-May-16						
Chloride	400	16.0	mg/kg	400		100	80-120			
LCS Dup (6050509-BSD1)				Prepared & Analyzed: 05-May-16						
Chloride	416	16.0	mg/kg	400		104	80-120	3.92	20	
Duplicate (6050509-DUP1)				Source: H600954-23 Prepared & Analyzed: 05-May-16						
Chloride	528	16.0	mg/kg		432			20.0	20	
Matrix Spike (6050509-MS1)				Source: H600954-23 Prepared & Analyzed: 05-May-16						
Chloride	944	16.0	mg/kg	400	432	128	80-120			QM-07
Batch 6050602 - 1:4 DI Water										
Blank (6050602-BLK1)				Prepared & Analyzed: 06-May-16						
Chloride	ND	16.0	mg/kg							
LCS (6050602-BS1)				Prepared & Analyzed: 06-May-16						
Chloride	432	16.0	mg/kg	400		108	80-120			
LCS Dup (6050602-BSD1)				Prepared & Analyzed: 06-May-16						
Chloride	416	16.0	mg/kg	400		104	80-120	3.77	20	
Duplicate (6050602-DUP1)				Source: H600984-02 Prepared & Analyzed: 06-May-16						
Chloride	32.0	16.0	mg/kg		32.0			0.00	20	

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Celey D. Keene, Lab Director/Quality Manager



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Analytical Results For:

INDUSTRIAL ECOSYSTEMS
49 CR 3150
AZTEC NM, 87410

Project: JFJ
Project Number: 3905
Project Manager: MARCELLA MARQUEZ
Fax To: (505) 632-1876

Reported:
11-May-16 16:32

Inorganic Compounds - Quality Control

Cardinal Laboratories

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 6050602 - 1:4 D1 Water										
Matrix Spike (6050602-MSI)		Source: H600984-02			Prepared & Analyzed: 06-May-16					
Chloride	448	16.0	mg/kg	400	32.0	104	80-120			

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Analytical Results For:INDUSTRIAL ECOSYSTEMS
49 CR 3150
AZTEC NM, 87410Project: JFJ
Project Number: 3905
Project Manager: MARCELLA MARQUEZ
Fax To: (505) 632-1876Reported:
11-May-16 16:32**Volatile Organic Compounds by EPA Method 8021 - Quality Control****Cardinal Laboratories**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 6050603 - Volatiles										
Blank (6050603-BLK1)										
Prepared & Analyzed: 06-May-16										
Benzene	ND	0.050	mg/kg							
Toluene	ND	0.050	mg/kg							
Ethylbenzene	ND	0.050	mg/kg							
Total Xylenes	ND	0.150	mg/kg							
Total BTEX	ND	0.300	mg/kg							
Surrogate: 4-Bromofluorobenzene (P11)	0.0508		mg/kg	0.0500		102	73.6-140			
LCS (6050603-BS1)										
Prepared & Analyzed: 06-May-16										
Benzene	2.28	0.050	mg/kg	2.00		114	82.6-122			
Toluene	2.24	0.050	mg/kg	2.00		112	72.9-122			
Ethylbenzene	2.01	0.050	mg/kg	2.00		101	65.4-131			
Total Xylenes	6.15	0.150	mg/kg	6.00		103	73.8-125			
Surrogate: 4-Bromofluorobenzene (P11)	0.0504		mg/kg	0.0500		101	73.6-140			
LCS Dup (6050603-BSD1)										
Prepared & Analyzed: 06-May-16										
Benzene	2.33	0.050	mg/kg	2.00		116	82.6-122	1.97	8.23	
Toluene	2.28	0.050	mg/kg	2.00		114	72.9-122	1.86	8.71	
Ethylbenzene	2.05	0.050	mg/kg	2.00		103	65.4-131	1.93	9.46	
Total Xylenes	6.31	0.150	mg/kg	6.00		105	73.8-125	2.54	8.66	
Surrogate: 4-Bromofluorobenzene (P11)	0.0500		mg/kg	0.0500		99.9	73.6-140			
Matrix Spike (6050603-MS1)										
Source: H600984-01 Prepared: 06-May-16 Analyzed: 07-May-16										
Benzene	2.29	0.050	mg/kg	2.00	ND	115	66.7-126			
Toluene	2.33	0.050	mg/kg	2.00	0.025	115	58.1-125			
Ethylbenzene	2.05	0.050	mg/kg	2.00	ND	103	45.6-142			
Total Xylenes	6.18	0.150	mg/kg	6.00	0.057	102	52-138			
Surrogate: 4-Bromofluorobenzene (P11)	0.0483		mg/kg	0.0500		96.6	73.6-140			

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Analytical Results For:

INDUSTRIAL ECOSYSTEMS	Project: JFJ	Reported:
49 CR 3150	Project Number: 3905	11-May-16 16:32
AZTEC NM, 87410	Project Manager: MARCELLA MARQUEZ	
	Fax To: (505) 632-1876	

Volatile Organic Compounds by EPA Method 8021 - Quality Control
Cardinal Laboratories

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 6050603 - Volatiles										
Matrix Spike Dup (6050603-MSD1)		Source: H600984-01			Prepared: 06-May-16 Analyzed: 07-May-16					
Benzene	2.31	0.050	mg/kg	2.00	ND	115	66.7-126	0.676	12.2	
Toluene	2.35	0.050	mg/kg	2.00	0.025	116	58.1-125	0.697	18.1	
Ethylbenzene	2.06	0.050	mg/kg	2.00	ND	103	45.6-142	0.655	33.4	
Total Xylenes	6.23	0.150	mg/kg	6.00	0.057	103	52-138	0.827	36.2	
Surrogate: 4-Bromofluorobenzene (PIL)	0.0482		mg/kg	0.0500		96.4	73.6-140			

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Analytical Results For:INDUSTRIAL ECOSYSTEMS
49 CR 3150
AZTEC NM, 87410Project: JFJ
Project Number: 3905
Project Manager: MARCELLA MARQUEZ
Fax To: (505) 632-1876Reported:
11-May-16 16:32**Petroleum Hydrocarbons by GC FID - Quality Control****Cardinal Laboratories**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 6050408 - General Prep - Organics										
Blank (6050408-BLK1)				Prepared: 04-May-16 Analyzed: 05-May-16						
GRO C6-C10	ND	10.0	mg/kg							
DRO >C10-C28	ND	10.0	mg/kg							
Surrogate: 1-Chlorooctane	37.5		mg/kg	50.0		74.9	35-147			
Surrogate: 1-Chlorooctadecane	42.8		mg/kg	50.0		85.6	28-171			
LCS (6050408-BS1)				Prepared: 04-May-16 Analyzed: 05-May-16						
GRO C6-C10	177	10.0	mg/kg	200		88.5	76.7-115			
DRO >C10-C28	176	10.0	mg/kg	200		87.8	78.3-122			
Surrogate: 1-Chlorooctane	42.4		mg/kg	50.0		84.9	35-147			
Surrogate: 1-Chlorooctadecane	50.0		mg/kg	50.0		99.9	28-171			
LCS Dup (6050408-BSD1)				Prepared: 04-May-16 Analyzed: 05-May-16						
GRO C6-C10	188	10.0	mg/kg	200		94.2	76.7-115	6.25	9.42	
DRO >C10-C28	176	10.0	mg/kg	200		87.8	78.3-122	0.0182	13.2	
Surrogate: 1-Chlorooctane	44.7		mg/kg	50.0		89.5	35-147			
Surrogate: 1-Chlorooctadecane	48.8		mg/kg	50.0		97.7	28-171			
Matrix Spike (6050408-MS1)				Source: H600960-01	Prepared: 04-May-16 Analyzed: 05-May-16					
GRO C6-C10	180	10.0	mg/kg	200	21.4	79.1	66.4-123			
DRO >C10-C28	9560	10.0	mg/kg	200	10100	NR	67.6-126			QM-07
Surrogate: 1-Chlorooctane	44.3		mg/kg	50.0		88.5	35-147			
Surrogate: 1-Chlorooctadecane	135		mg/kg	50.0		269	28-171			S-04
Matrix Spike Dup (6050408-MSD1)				Source: H600960-01	Prepared: 04-May-16 Analyzed: 05-May-16					
GRO C6-C10	189	10.0	mg/kg	200	21.4	83.6	66.4-123	5.58	10.2	
DRO >C10-C28	9890	10.0	mg/kg	200	10100	NR	67.6-126	NR	11.6	QM-07
Surrogate: 1-Chlorooctane	46.5		mg/kg	50.0		92.9	35-147			
Surrogate: 1-Chlorooctadecane	132		mg/kg	50.0		264	28-171			S-04

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Analytical Results For:

INDUSTRIAL ECOSYSTEMS 49 CR 3150 AZTEC NM, 87410	Project: JFJ Project Number: 3905 Project Manager: MARCELLA MARQUEZ Fax To: (505) 632-1876	Reported: 11-May-16 16:32
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Petroleum Hydrocarbons by GC FID - Quality Control

Cardinal Laboratories

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 6050601 - General Prep - Organics										
Blank (6050601-BLK1)				Prepared & Analyzed: 06-May-16						
GRO C6-C10	ND	10.0	mg/kg							
DRO >C10-C28	ND	10.0	mg/kg							
Surrogate: 1-Chlorooctane	43.4		mg/kg	50.0		86.8	35-147			
Surrogate: 1-Chlorooctadecane	39.4		mg/kg	50.0		78.7	28-171			
LCS (6050601-BS1)				Prepared & Analyzed: 06-May-16						
GRO C6-C10	188	10.0	mg/kg	200		94.0	76.7-115			
DRO >C10-C28	193	10.0	mg/kg	200		96.4	78.3-122			
Surrogate: 1-Chlorooctane	47.7		mg/kg	50.0		95.3	35-147			
Surrogate: 1-Chlorooctadecane	55.4		mg/kg	50.0		111	28-171			
LCS Dup (6050601-BSD1)				Prepared & Analyzed: 06-May-16						
GRO C6-C10	184	10.0	mg/kg	200		92.1	76.7-115	2.02	9.42	
DRO >C10-C28	182	10.0	mg/kg	200		91.2	78.3-122	5.56	13.2	
Surrogate: 1-Chlorooctane	46.2		mg/kg	50.0		92.5	35-147			
Surrogate: 1-Chlorooctadecane	50.0		mg/kg	50.0		99.9	28-171			
Matrix Spike (6050601-MS1)				Source: H600984-07	Prepared: 06-May-16 Analyzed: 07-May-16					
GRO C6-C10	193	10.0	mg/kg	200	ND	96.5	66.4-123			
DRO >C10-C28	179	10.0	mg/kg	200	ND	89.7	67.6-126			
Surrogate: 1-Chlorooctane	48.7		mg/kg	50.0		97.3	35-147			
Surrogate: 1-Chlorooctadecane	38.6		mg/kg	50.0		77.1	28-171			
Matrix Spike Dup (6050601-MSD1)				Source: H600984-07	Prepared: 06-May-16 Analyzed: 07-May-16					
GRO C6-C10	199	10.0	mg/kg	200	ND	99.5	66.4-123	3.06	10.2	
DRO >C10-C28	203	10.0	mg/kg	200	ND	101	67.6-126	12.3	11.6	QR-03
Surrogate: 1-Chlorooctane	52.9		mg/kg	50.0		106	35-147			
Surrogate: 1-Chlorooctadecane	52.1		mg/kg	50.0		104	28-171			

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Celey D. Keene, Lab Director/Quality Manager

Notes and Definitions

- S-04 The surrogate recovery for this sample is outside of established control limits due to a sample matrix effect.
- QR-03 The RPD value for the sample duplicate or MS/MSD was outside if QC acceptance limits due to matrix interference. QC batch accepted based on LCS and/or LCSD recovery and/or RPD values.
- QM-07 The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.
- ND Analyte NOT DETECTED at or above the reporting limit
- RPD Relative Percent Difference
- *+ Samples not received at proper temperature of 6°C or below.
- *** Insufficient time to reach temperature.
- Chloride by SM4500Cl-B does not require samples be received at or below 6°C
Samples reported on an as received basis (wet) unless otherwise noted on report

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Celey D. Keene, Lab Director/Quality Manager



CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

Page 22 of 23

(970) 247-4220
Fax: (970) 247-4227

service@greenanalytical.com or dzufelt@greenanalytical.com
75 Suttle St Durango, CO 81303

Company Name: <u>IET</u>				Bill to (if different):				ANALYSIS REQUEST								
Project Manager: <u>Marcella</u>				P.O. #: <u>3905</u>				DRO 8015B GRO 8015B BTEX 8021B Chlorides 300.0								
Address: <u>49 CR 3150</u>				Company:												
City: <u>AZTEC</u> State: <u>NM</u> Zip: <u>87410</u>				Attn:												
Phone #: <u>632-1782</u> Email:				Address:												
Additional Report To:				City:												
Project Name: <u>JFJ</u>				State: Zip:												
Project Number:				Phone #:												
Sampler Name (Print): <u>Richard Chavez</u>				Fax or Email:												
FOR LAB USE ONLY		Collected		Matrix (check one)				# of containers								
Lab I.D.	Sample Name or Location	Date	Time	GROUNDWATER	SURFACEWATER	WASTEWATER	PRODUCEDWATER	SOIL	OTHER:	No preservation (General)	HNO ₃	HCl	H ₂ SO ₄	Other:	Other:	
<u>H600984</u>																
1	PILE = 839	5/3/16	7:00 AM													
2	PILE = 579	5/3/16	7:30													
3	PILE = 976	5/3/16	8:10													
4	PILE = 852	5/3/16	8:45													
5	PILE = 980	5/3/16	9:20													
6	PILE = 775	5/3/16	10:55													
7	PILE = 999	5/3/16	11:35													
8	PILE = 579	5/3/16	12:20													
9	PILE = 973	5/3/16	1:10													

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Relinquished By: <u>[Signature]</u>	Date: <u>5/4/16</u>	Received By: <u>Christen Clark</u>	ADDITIONAL REMARKS:	Report to State? (Circle) Yes No
Relinquished By: <u>Christen Clark</u>	Date: <u>5/4/16</u>	Received By: <u>Fed Ex</u>		
Relinquished By:	Date: <u>5/5/16</u>	Received By: <u>Jodi Benson</u>		
Relinquished By:	Date: <u>5/5/16</u>	Received By:		
Delivered By: (Circle One)	Temperature at receipt: <u>4.8°C #54</u>	CHECKED BY: <u>ca</u>		
Sampler - UPS - FedEx - Kangaroo - Other:				

† GAL cannot always accept verbal changes. Please fax or email written change requests.
* Chain of Custody must be signed in "Relinquished By:" as an acceptance of services and all applicable charges.
corrected 4.9°C

State of New Mexico
Energy, Minerals and Natural Resources Department

Susana Martinez
Governor

David Martin
Cabinet Secretary

Tony Delfin
Deputy Cabinet Secretary

David R. Catanach, Division Director
Oil Conservation Division



April 7, 2016

Ms. Marcella Marquez
JFJ Landfarm, L.L.C.
Industrial Ecosystems Inc.
Soil Reclamation Center
P.O. Box 2043
Farmington, New Mexico 87499

RE: Request for Approval to Reuse Remediated Biopile Soils for the Stabilization/Solidification of Drilling Mud and Tank Bottoms and Sludge
JFJ Landfarm, LLC - Industrial Ecosystems Inc.
JFJ Landfarm – Permit # NM1-010-B
Location: NW/4 SE/4 of Section 2, Township 29 North, Range 12 West, NMPM,
San Juan County, New Mexico

Dear Ms. Marquez:

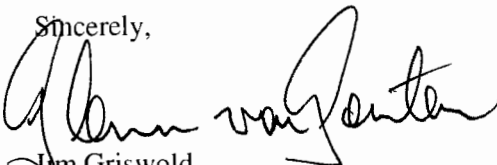
The Oil Conservation Division (OCD) has reviewed JFJ Landfarm, LLC's (JFJ) request, emailed to OCD on April 6, 2016, and associated analytical results to reuse the remediated soils for the stabilization and/or solidification of incoming drilling mud and tank bottoms and sludge from following biopile(s): **922, 972, 845, 978, 831, 964, 971, 969, and 974.**

Based upon the information provided in the request, the above-referenced biopiles are hereby approved for the stabilization and/or solidification of incoming drilling mud and tank bottoms and sludge.

Please be advised that approval of this request does not relieve JFJ of liability should operations result in pollution of surface water, ground water or the environment. Nor does approval relieve JFJ of its responsibility to comply with any other applicable governmental authority's rules and regulations.

If there are any questions regarding this matter, please do not hesitate to contact Brad Jones on my staff at (505) 476-3487 or brad.a.jones@state.nm.us.

Sincerely,


For Jim Griswold
Environmental Bureau Chief

JG/baj

cc: OCD District III Office, Aztec

Jones, Brad A., EMNRD

From: Marcella Marquez <marcella@industrialecosystems.com>
Sent: Wednesday, April 06, 2016 10:12 AM
To: Jones, Brad A., EMNRD
Subject: Request to Reuse Soil
Attachments: Biopiles Passed 040416.pdf; 1BLANK Request to Reuse Soil.doc

Importance: High

Brad:

Please see attached request and the corresponding analytical reports.

*Thanks,
Marcella Marquez
Regulatory/Compliance/HR Manager
Industrial Ecosystems, Inc.
Phone: (505) 632-1782
Fax: (505) 632-1876 or (505) 334-1003*



**Industrial Ecosystems Inc.
Soil Reclamation Center**

P.O. Box 2043
Farmington, NM 87499

Phone: (505) 632-1782
Fax: (505) 632-1876

#49 CR 3150
Aztec, NM 87410

April 6, 2016

Brad Jones
Environmental Bureau
NM Oil Conservation Division
1220 S. St. Francis Drive
Santa Fe, New Mexico 87505

RE: Use of reclaimed soil

Dear Brad:

Recent analytical results show that the following biopiles(s) have reached acceptable levels as required by our NMOCD permit.

Pile #

922	DRO, GRO, BTEX & Chlorides Passed 04/04/16
972	DRO, GRO, BTEX & Chlorides Passed 04/04/16
845	DRO, GRO, BTEX & Chlorides Passed 04/04/16
978	DRO, GRO, BTEX & Chlorides Passed 04/04/16
831	DRO, GRO, BTEX & Chlorides Passed 04/04/16
964	DRO, GRO, BTEX & Chlorides Passed 04/04/16
971	DRO, GRO, BTEX & Chlorides Passed 04/04/16
969	DRO, GRO, BTEX & Chlorides Passed 04/04/16
974	DRO, GRO, BTEX & Chlorides Passed 04/04/16

We are seeking your approval to recycle this soil by using it to mix/solidify incoming liquid waste.

Respectfully Submitted,

A handwritten signature in cursive script that reads 'Marcella Marquez'.

Marcella Marquez
Regulatory/Compliance/HR

Enclosure(s) – Analytical Reports

Analytical Results For:

INDUSTRIAL ECOSYSTEMS 49 CR 3150 AZTEC NM, 87410	Project: JFJ Project Number: 3840 Project Manager: MARCELLA MARQUEZ Fax To: (505) 632-1876	Reported: 04-Apr-16 17:02
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PILE 922
H600682-01 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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Cardinal Laboratories
Inorganic Compounds

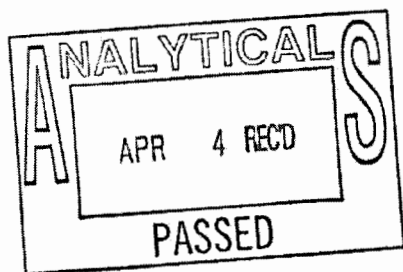
Chloride	256		16.0	mg/kg	4	6033103	HM	01-Apr-16	4500-Cl-B	
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Volatile Organic Compounds by EPA Method 8021

Benzene*	<0.050		0.050	mg/kg	50	6040106	MS	02-Apr-16	8021B	
Toluene*	<0.050		0.050	mg/kg	50	6040106	MS	02-Apr-16	8021B	
Ethylbenzene*	<0.050		0.050	mg/kg	50	6040106	MS	02-Apr-16	8021B	
Total Xylenes*	<0.150		0.150	mg/kg	50	6040106	MS	02-Apr-16	8021B	
Total BTEX	<0.300		0.300	mg/kg	50	6040106	MS	02-Apr-16	8021B	
Surrogate: 4-Bromofluorobenzene (PID)			102 %	73.6-140		6040106	MS	02-Apr-16	8021B	

Petroleum Hydrocarbons by GC FID

GRO C6-C10	<10.0		10.0	mg/kg	1	6040104	MS	01-Apr-16	8015B	
DRO >C10-C28	<10.0		10.0	mg/kg	1	6040104	MS	01-Apr-16	8015B	
Surrogate: 1-Chlorooctane			89.2 %	35-147		6040104	MS	01-Apr-16	8015B	
Surrogate: 1-Chlorooctadecane			105 %	28-171		6040104	MS	01-Apr-16	8015B	



Cardinal Laboratories

* = Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager



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Analytical Results For:INDUSTRIAL ECOSYSTEMS
49 CR 3150
AZTEC NM, 87410Project: JFJ
Project Number: 3840
Project Manager: MARCELLA MARQUEZ
Fax To: (505) 632-1876Reported:
04-Apr-16 17:02**PILE 972
H600682-02 (Soil)**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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Cardinal Laboratories**Inorganic Compounds**

Chloride	48.0	16.0	mg/kg	4	6033103	HM	01-Apr-16	4500-C1-B
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Volatile Organic Compounds by EPA Method 8021

Benzene*	<0.050	0.050	mg/kg	50	6040106	MS	02-Apr-16	8021B
Toluene*	<0.050	0.050	mg/kg	50	6040106	MS	02-Apr-16	8021B
Ethylbenzene*	<0.050	0.050	mg/kg	50	6040106	MS	02-Apr-16	8021B
Total Xylenes*	<0.150	0.150	mg/kg	50	6040106	MS	02-Apr-16	8021B
Total BTEX	<0.300	0.300	mg/kg	50	6040106	MS	02-Apr-16	8021B

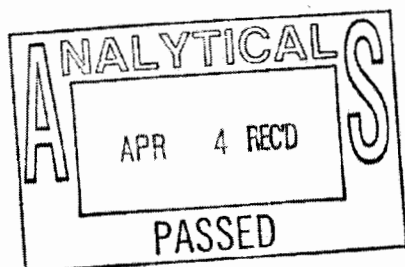
Surrogate: 4-Bromofluorobenzene (PHB)	102 %	73.6-140	6040106	MS	02-Apr-16	8021B
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Petroleum Hydrocarbons by GC FID

GRO C6-C10	<10.0	10.0	mg/kg	1	6040104	MS	01-Apr-16	8015B
DRO >C10-C28	<10.0	10.0	mg/kg	1	6040104	MS	01-Apr-16	8015B

Surrogate: 1-Chloronaphthalene	86.1 %	35-147	6040104	MS	01-Apr-16	8015B
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Surrogate: 1-Chloronaphthalene	99.9 %	28-171	6040104	MS	01-Apr-16	8015B
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* = Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

INDUSTRIAL ECOSYSTEMS
49 CR 3150
AZTEC NM, 87410

Project: JFJ
Project Number: 3840
Project Manager: MARCELLA MARQUEZ
Fax To: (505) 632-1876

Reported:
04-Apr-16 17:02

PILE 845
H600682-03 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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Cardinal Laboratories
Inorganic Compounds

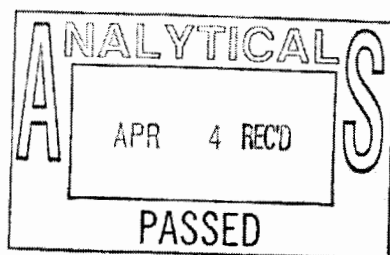
Chloride	192	16.0	mg/kg	4	6033103	HM	01-Apr-16	4500-Cl-B
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Volatile Organic Compounds by EPA Method 8021

Benzene*	<0.050	0.050	mg/kg	50	6040106	MS	02-Apr-16	8021B
Toluene*	<0.050	0.050	mg/kg	50	6040106	MS	02-Apr-16	8021B
Ethylbenzene*	<0.050	0.050	mg/kg	50	6040106	MS	02-Apr-16	8021B
Total Xylenes*	<0.150	0.150	mg/kg	50	6040106	MS	02-Apr-16	8021B
Total BTEX	<0.300	0.300	mg/kg	50	6040106	MS	02-Apr-16	8021B
Surrogate: 4-Bromofluorobenzene (P11)	102 %	73.6-140			6040106	MS	02-Apr-16	8021B

Petroleum Hydrocarbons by GC FID

GRO C6-C10	<10.0	10.0	mg/kg	1	6040104	MS	01-Apr-16	8015B
DRO >C10-C28	<10.0	10.0	mg/kg	1	6040104	MS	01-Apr-16	8015B
Surrogate: 1-Chlorooctane	90.2 %	35-147			6040104	MS	01-Apr-16	8015B
Surrogate: 1-Chlorodecane	101 %	28-171			6040104	MS	01-Apr-16	8015B



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*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager



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Analytical Results For:INDUSTRIAL ECOSYSTEMS
49 CR 3150
AZTEC NM, 87410Project: JFJ
Project Number: 3840
Project Manager: MARCELLA MARQUEZ
Fax To: (505) 632-1876Reported:
04-Apr-16 17:02**PILE 978
H600682-04 (Soil)**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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Cardinal Laboratories**Inorganic Compounds**

Chloride	80.0	16.0	mg/kg	4	6033103	HM	01-Apr-16	4500-Cl-B
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Volatile Organic Compounds by EPA Method 8021

Benzene*	<0.050	0.050	mg/kg	50	6040106	MS	02-Apr-16	8021B
Toluene*	<0.050	0.050	mg/kg	50	6040106	MS	02-Apr-16	8021B
Ethylbenzene*	<0.050	0.050	mg/kg	50	6040106	MS	02-Apr-16	8021B
Total Xylenes*	<0.150	0.150	mg/kg	50	6040106	MS	02-Apr-16	8021B
Total BTEX	<0.300	0.300	mg/kg	50	6040106	MS	02-Apr-16	8021B

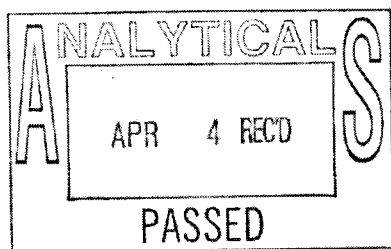
Surrogate: 4-Bromofluorobenzene (PID)	101 %	73.6-140	6040106	MS	02-Apr-16	8021B
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Petroleum Hydrocarbons by GC FID

GRO C6-C10	<10.0	10.0	mg/kg	1	6040104	MS	01-Apr-16	8015B
DRO >C10-C28	14.1	10.0	mg/kg	1	6040104	MS	01-Apr-16	8015B

Surrogate: 1-Chlorooctane	79.6 %	33-147	6040104	MS	01-Apr-16	8015B
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Surrogate: 1-Chlorooctadecane	91.1 %	28-171	6040104	MS	01-Apr-16	8015B
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*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager



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Analytical Results For:INDUSTRIAL ECOSYSTEMS
49 CR 3150
AZTEC NM, 87410Project: JFJ
Project Number: 3840
Project Manager: MARCELLA MARQUEZ
Fax To: (505) 632-1876Reported:
04-Apr-16 17:02**PILE 831
H600682-05 (Soil)**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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Cardinal Laboratories**Inorganic Compounds**

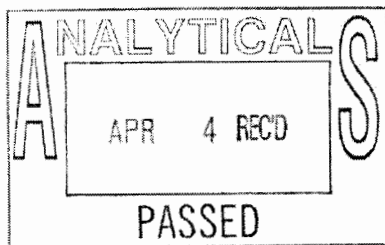
Chloride	64.0	16.0	mg/kg	4	6033103	HM	01-Apr-16	4500-Cl-B
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Volatile Organic Compounds by EPA Method 8021

Benzene*	<0.050	0.050	mg/kg	50	6040106	MS	02-Apr-16	8021B
Toluene*	<0.050	0.050	mg/kg	50	6040106	MS	02-Apr-16	8021B
Ethylbenzene*	<0.050	0.050	mg/kg	50	6040106	MS	02-Apr-16	8021B
Total Xylenes*	<0.150	0.150	mg/kg	50	6040106	MS	02-Apr-16	8021B
Total BTEX	<0.300	0.300	mg/kg	50	6040106	MS	02-Apr-16	8021B
Surrogate: 4-Bromofluorobenzene (PFD)		102 %	73.6-140		6040106	MS	02-Apr-16	8021B

Petroleum Hydrocarbons by GC FID

GRO C6-C10	<10.0	10.0	mg/kg	1	6040104	MS	01-Apr-16	8015B
DRO >C10-C28	<10.0	10.0	mg/kg	1	6040104	MS	01-Apr-16	8015B
Surrogate: 1-Chlorooctane		91.7 %	35-147		6040104	MS	01-Apr-16	8015B
Surrogate: 1-Chlorooctadecane		109 %	28-171		6040104	MS	01-Apr-16	8015B



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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

INDUSTRIAL ECOSYSTEMS
49 CR 3150
AZTEC NM, 87410

Project: JFJ
Project Number: 3840
Project Manager: MARCELLA MARQUEZ
Fax To: (505) 632-1876

Reported:
04-Apr-16 17:02

PILE 964
H600682-06 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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Cardinal Laboratories

Inorganic Compounds

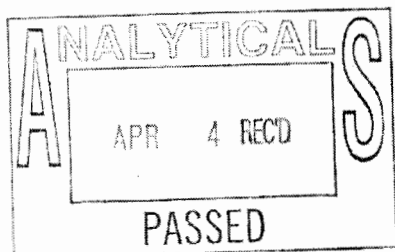
Chloride	112	16.0	mg/kg	4	6033103	HM	01-Apr-16	4500-Cl-B
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Volatile Organic Compounds by EPA Method 8021

Benzene*	<0.050	0.050	mg/kg	50	6040106	MS	02-Apr-16	8021B
Toluene*	<0.050	0.050	mg/kg	50	6040106	MS	02-Apr-16	8021B
Ethylbenzene*	<0.050	0.050	mg/kg	50	6040106	MS	02-Apr-16	8021B
Total Xylenes*	<0.150	0.150	mg/kg	50	6040106	MS	02-Apr-16	8021B
Total BTEX	<0.300	0.300	mg/kg	50	6040106	MS	02-Apr-16	8021B
Surrogate: 4-Bromofluorobenzene (P111)	101 %	73.6-140			6040106	MS	02-Apr-16	8021B

Petroleum Hydrocarbons by GC FID

GRO C6-C10	<10.0	10.0	mg/kg	1	6040104	MS	01-Apr-16	8015B
DRO >C10-C28	<10.0	10.0	mg/kg	1	6040104	MS	01-Apr-16	8015B
Surrogate: 1-Chlorooctane	84.1 %	35-147			6040104	MS	01-Apr-16	8015B
Surrogate: 1-Chlorooctadecane	92.3 %	28-171			6040104	MS	01-Apr-16	8015B



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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

 INDUSTRIAL ECOSYSTEMS
 49 CR 3150
 AZTEC NM, 87410

 Project: JFJ
 Project Number: 3840
 Project Manager: MARCELLA MARQUEZ
 Fax To: (505) 632-1876

 Reported:
 04-Apr-16 17:02

PILE 971
H600682-07 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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Cardinal Laboratories
Inorganic Compounds

Chloride	48.0	16.0	mg/kg	4	6033103	HM	01-Apr-16	4500-Cl-B
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Volatile Organic Compounds by EPA Method 8021

Benzene*	<0.050	0.050	mg/kg	50	6040106	MS	02-Apr-16	8021B
Toluene*	<0.050	0.050	mg/kg	50	6040106	MS	02-Apr-16	8021B
Ethylbenzene*	<0.050	0.050	mg/kg	50	6040106	MS	02-Apr-16	8021B
Total Xylenes*	<0.150	0.150	mg/kg	50	6040106	MS	02-Apr-16	8021B
Total BTEX	<0.300	0.300	mg/kg	50	6040106	MS	02-Apr-16	8021B

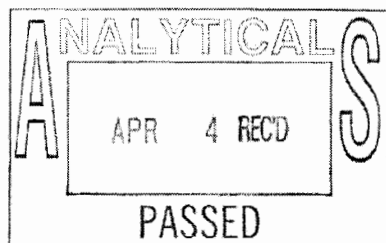
Surrogate: 4-Bromofluorobenzene (P1D)	102 %	73.6-140	6040106	MS	02-Apr-16	8021B
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Petroleum Hydrocarbons by GC FID

GRO C6-C10	<10.0	10.0	mg/kg	1	6040104	MS	01-Apr-16	8015B
DRO >C10-C28	<10.0	10.0	mg/kg	1	6040104	MS	01-Apr-16	8015B

Surrogate: 1-Chlorooctane	88.2 %	35-147	6040104	MS	01-Apr-16	8015B
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Surrogate: 1-Chlorooctadecane	97.2 %	28-171	6040104	MS	01-Apr-16	8015B
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Cardinal Laboratories

* = Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager



PHONE (575) 393-2326 • 101 E. MARLAND • HOBBS, NM 88240

Analytical Results For:INDUSTRIAL ECOSYSTEMS
49 CR 3150
AZTEC NM, 87410Project: JFJ
Project Number: 3840
Project Manager: MARCELLA MARQUEZ
Fax To: (505) 632-1876Reported:
04-Apr-16 17:02**PILE 969**
H600682-08 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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Cardinal Laboratories**Inorganic Compounds**

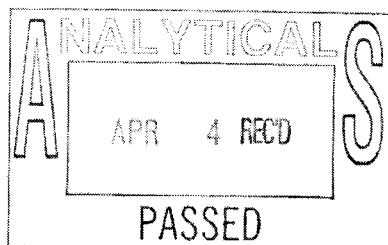
Chloride	160	16.0	mg/kg	4	6033103	HM	01-Apr-16	4500-Cl-B
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Volatile Organic Compounds by EPA Method 8021

Benzene*	<0.050	0.050	mg/kg	50	6040106	MS	02-Apr-16	8021B
Toluene*	<0.050	0.050	mg/kg	50	6040106	MS	02-Apr-16	8021B
Ethylbenzene*	<0.050	0.050	mg/kg	50	6040106	MS	02-Apr-16	8021B
Total Xylenes*	<0.150	0.150	mg/kg	50	6040106	MS	02-Apr-16	8021B
Total BTEX	<0.300	0.300	mg/kg	50	6040106	MS	02-Apr-16	8021B
Surrogate: 4-Bromofluorobenzene (P1D)	100 %	73.6-140	6040106	MS	02-Apr-16	8021B		

Petroleum Hydrocarbons by GC FID

GRO C6-C10	<10.0	10.0	mg/kg	1	6040104	MS	01-Apr-16	8015B
DRO >C10-C28	<10.0	10.0	mg/kg	1	6040104	MS	01-Apr-16	8015B
Surrogate: 1-Chlorooctane	95.7 %	35-147	6040104	MS	01-Apr-16	8015B		
Surrogate: 1-Chlorooctadecane	102 %	28-171	6040104	MS	01-Apr-16	8015B		



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*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager



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Analytical Results For:INDUSTRIAL ECOSYSTEMS
49 CR 3150
AZTEC NM, 87410Project: JFJ
Project Number: 3840
Project Manager: MARCELLA MARQUEZ
Fax To: (505) 632-1876Reported:
04-Apr-16 17:02**PILE 974****H600682-10 (Soil)**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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Cardinal Laboratories**Inorganic Compounds**

Chloride	96.0	16.0	mg/kg	4	6033103	HM	01-Apr-16	4500-CL-B
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Volatile Organic Compounds by EPA Method 8021

Benzene*	<0.050	0.050	mg/kg	50	6040106	MS	02-Apr-16	8021B
Toluene*	<0.050	0.050	mg/kg	50	6040106	MS	02-Apr-16	8021B
Ethylbenzene*	<0.050	0.050	mg/kg	50	6040106	MS	02-Apr-16	8021B
Total Xylenes*	<0.150	0.150	mg/kg	50	6040106	MS	02-Apr-16	8021B
Total BTEX	<0.300	0.300	mg/kg	50	6040106	MS	02-Apr-16	8021B

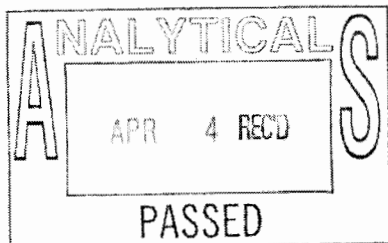
Surrogate: 4-Bromofluorobenzene (PFD)	100 %	73.6-140	6040106	MS	02-Apr-16	8021B
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Petroleum Hydrocarbons by GC FID

GRO C6-C10	<10.0	10.0	mg/kg	1	6040104	MS	01-Apr-16	8015B
DRO >C10-C28	<10.0	10.0	mg/kg	1	6040104	MS	01-Apr-16	8015B

Surrogate: 1-Chlorooctane	89.9 %	35-147	6040104	MS	01-Apr-16	8015B
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Surrogate: 1-Chlorooctadecane	92.7 %	28-171	6040104	MS	01-Apr-16	8015B
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* = Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager



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Analytical Results For:

INDUSTRIAL ECOSYSTEMS
49 CR 3150
AZTEC NM, 87410

Project: JFJ
Project Number: 3840
Project Manager: MARCELLA MARQUEZ
Fax To: (505) 632-1876

Reported:
04-Apr-16 17:02

Inorganic Compounds - Quality Control

Cardinal Laboratories

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 6033103 - 1:4 DI Water										
Blank (6033103-BLK1)										
Chloride	ND	16.0	mg/kg							Prepared & Analyzed: 31-Mar-16
LCS (6033103-BS1)										
Chloride	416	16.0	mg/kg	400		104	80-120			Prepared & Analyzed: 31-Mar-16
LCS Dup (6033103-BSD1)										
Chloride	416	16.0	mg/kg	400		104	80-120	0.00	20	Prepared & Analyzed: 31-Mar-16

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Celeste D. Keene, Lab Director/Quality Manager



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Analytical Results For:INDUSTRIAL ECOSYSTEMS
49 CR 3150
AZTEC NM, 87410Project: JFJ
Project Number: 3840
Project Manager: MARCELLA MARQUEZ
Fax To: (505) 632-1876Reported:
04-Apr-16 17:02**Volatile Organic Compounds by EPA Method 8021 - Quality Control****Cardinal Laboratories**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC Limits	RPD	RPD Limit	Notes
Batch 6040106 - Volatiles									
Blank (6040106-BLK1)				Prepared: 01-Apr-16 Analyzed: 02-Apr-16					
Benzene	ND	0.050	mg/kg						
Toluene	ND	0.050	mg/kg						
Ethylbenzene	ND	0.050	mg/kg						
Total Xylenes	ND	0.150	mg/kg						
Total BTEX	ND	0.300	mg/kg						
S surrogate: 4-Bromofluorobenzene (PID)	0.0510		mg/kg	0.0500		102	73.6-140		
LCS (6040106-BS1)				Prepared: 01-Apr-16 Analyzed: 02-Apr-16					
Benzene	2.13	0.050	mg/kg	2.00		106	82.6-122		
Toluene	2.04	0.050	mg/kg	2.00		102	72.9-122		
Ethylbenzene	1.81	0.050	mg/kg	2.00		90.4	65.4-131		
Total Xylenes	5.55	0.150	mg/kg	6.00		92.5	73.8-125		
S surrogate: 4-Bromofluorobenzene (PID)	0.0491		mg/kg	0.0500		98.2	73.6-140		
LCS Dup (6040106-BSD1)				Prepared: 01-Apr-16 Analyzed: 02-Apr-16					
Benzene	2.07	0.050	mg/kg	2.00		104	82.6-122	2.55	8.23
Toluene	2.00	0.050	mg/kg	2.00		99.8	72.9-122	2.45	8.71
Ethylbenzene	1.78	0.050	mg/kg	2.00		89.1	65.4-131	1.48	9.46
Total Xylenes	5.45	0.150	mg/kg	6.00		90.8	73.8-125	1.86	8.66
S surrogate: 4-Bromofluorobenzene (PID)	0.0494		mg/kg	0.0500		98.7	73.6-140		

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Celey D. Keene, Lab Director/Quality Manager



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Analytical Results For:INDUSTRIAL ECOSYSTEMS
49 CR 3150
AZTEC NM, 87410Project: JFJ
Project Number: 3840
Project Manager: MARCELLA MARQUEZ
Fax To: (505) 632-1876Reported:
04-Apr-16 17:02**Petroleum Hydrocarbons by GC FID - Quality Control****Cardinal Laboratories**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 6040104 - General Prep - Organics**Blank (6040104-BLK1)**

Prepared & Analyzed: 01-Apr-16

GRO C6-C10	ND	10.0	mg/kg							
DRO >C10-C28	ND	10.0	mg/kg							
Surrogate: 1-Chlorooctane	41.5		mg/kg	50.0		83.0	35-147			
Surrogate: 1-Chlorooctadecane	48.9		mg/kg	50.0		97.9	28-171			

LCS (6040104-BS1)

Prepared & Analyzed: 01-Apr-16

GRO C6-C10	181	10.0	mg/kg	200		90.4	76.7-115			
DRO >C10-C28	181	10.0	mg/kg	200		90.3	78.3-122			
Surrogate: 1-Chlorooctane	44.7		mg/kg	50.0		89.4	35-147			
Surrogate: 1-Chlorooctadecane	48.0		mg/kg	50.0		96.1	28-171			

LCS Dup (6040104-BSD1)

Prepared: 01-Apr-16 Analyzed: 02-Apr-16

GRO C6-C10	189	10.0	mg/kg	200		94.6	76.7-115	4.56	9.42	
DRO >C10-C28	201	10.0	mg/kg	200		101	78.3-122	10.8	13.2	
Surrogate: 1-Chlorooctane	46.6		mg/kg	50.0		93.2	35-147			
Surrogate: 1-Chlorooctadecane	51.2		mg/kg	50.0		102	28-171			

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Notes and Definitions

ND	Analyte NOT DETECTED at or above the reporting limit
RPD	Relative Percent Difference
**	Samples not received at proper temperature of 6°C or below.
***	Insufficient time to reach temperature.
-	Chloride by SM4500Cl-B does not require samples be received at or below 6°C
	Samples reported on an as received basis (wet) unless otherwise noted on report

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Celey D. Keene, Lab Director/Quality Manager



CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

(970) 247-4220
Fax: (970) 247-4227service@greenanalytical.com or dzufelt@greenanalytical.com
75 Suttle St Durango, CO 81303

Company Name: IEI		Bill to (if different):		ANALYSIS REQUEST											
Project Manager: Marcella		P.O. #: 3840		DR0801513 GR0801518 BTEx 80213 Chlorides 300.0											
Address: 49 CR 3150		Company:													
City: Aztec State: Nm Zip: 87410		Attn:													
Phone #: 632-1782 Email:		Address:													
Additional Report To:		City:													
Project Name: JFEJ		State: Zip:													
Project Number:		Phone #:													
Sampler Name (Print): Richard Chavez		Fax or Email:													
FOR LAB USE ONLY		Collected	Matrix (check one)	# of containers											
Lab I.D.	Sample Name or Location	Date	Time	GROUNDWATER	SURFACEWATER	WASTEWATER	PRODUCEDWATER	SOIL	OTHER:	No preservation (general)	HNO ₃	HCl	H ₂ SO ₄	Other:	Other:
H600682															
1	PILE- 922	3-29-16	8:00												
2	PILE- 972	3-29-16	8:45												
3	PILE- 845	3-29-16	9:20												
4	PILE- 978	3-29-16	9:55												
5	PILE- 831	3-29-16	10:35												
6	PILE- 964	3-30-16	7:00												
7	PILE- 971	3-30-16	7:40												
8	PILE- 969	3-30-16	8:15												
9	PILE- 977	3-30-16	9:00												
10	PILE- 974	3-30-16	9:35												
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Relinquished By: <i>[Signature]</i>		Date: 3/30/16	Received By: <i>[Signature]</i>	ADDITIONAL REMARKS:											
Relinquished By: <i>[Signature]</i>		Date: 3/30/16	Received By: <i>[Signature]</i>	Report to State? (Circle) Yes No											
Relinquished By: <i>[Signature]</i>		Date: 3/30/16	Received By: <i>[Signature]</i>												
Delivered By: (Circle One) <i>[Signature]</i>		Date: 3/30/16	Received By: <i>[Signature]</i>												
Sampler: UPS - FedEx - Kangaroo - Other: <i>[Signature]</i>		Date: 3/30/16	Received By: <i>[Signature]</i>												
		Temperature at receipt: <i>[Signature]</i>	CHECKED BY: <i>[Signature]</i>												

† GAL cannot always accept verbal changes. Please fax or email written change requests.

Chain of Custody must be signed in "Relinquished By:" as an acceptance of services and all applicable charges.

State of New Mexico
Energy, Minerals and Natural Resources Department

Susana Martinez
Governor

David Martin
Cabinet Secretary

Brett F. Woods, Ph.D.
Deputy Cabinet Secretary

David Catanach, Division Director
Oil Conservation Division



January 20, 2016

Ms. Marcella Marquez
JFJ Landfarm, L.L.C.
Industrial Ecosystems Inc.
Soil Reclamation Center
P.O. Box 2043
Farmington, New Mexico 87499

RE: Request for Approval to Reuse Remediated Biopile Soils for the Stabilization/Solidification of Drilling Mud and Tank Bottoms and Sludge
JFJ Landfarm, LLC - Industrial Ecosystems Inc.
JFJ Landfarm – Permit # NM1-010-B
Location: NW/4 SE/4 of Section 2, Township 29 North, Range 12 West, NMPM,
San Juan County, New Mexico

Dear Ms. Marquez:

The Oil Conservation Division (OCD) has reviewed JFJ Landfarm, LLC's (JFJ) request, emailed to OCD on January 19, 2016, and associated analytical results to reuse the remediated soils for the stabilization and/or solidification of incoming drilling mud and tank bottoms and sludge from following biopile(s): **437, 420, 936, 432, 889, 427, 410, 415, and 436.**

Based upon the information provided in the request, the above-referenced biopiles are hereby approved for the stabilization and/or solidification of incoming drilling mud and tank bottoms and sludge.

Please be advised that approval of this request does not relieve JFJ of liability should operations result in pollution of surface water, ground water or the environment. Nor does approval relieve JFJ of its responsibility to comply with any other applicable governmental authority's rules and regulations.

If there are any questions regarding this matter, please do not hesitate to contact Brad Jones on my staff at (505) 476-3487 or brad.a.jones@state.nm.us.

Sincerely,

Jim Griswold
Environmental Bureau Chief

JG/baj

cc: OCD District III Office, Aztec

Jones, Brad A., EMNRD

From: Marcella Marquez <marcella@industrialecosystems.com>
Sent: Tuesday, January 19, 2016 5:03 PM
To: Jones, Brad A., EMNRD
Subject: Request to Reuse/Recycle Treated Soils
Attachments: 121415 analytical report.pdf; 1BLANK Request to Reuse Soil.doc

Importance: High

Brad:

Please see attached request letter along with the corresponding analytical report.

Thanks,

Marcella Marquez

Regulatory/Compliance/HR Manager

Industrial Ecosystems, Inc.

Phone: (505) 632-1782

Fax: (505) 632-1876 or (505) 334-1003

From: scanner@industrialecosystems.com [mailto:scanner@industrialecosystems.com]
Sent: Monday, January 18, 2016 4:09 PM
To: marcella@industrialecosystems.com
Subject: Message from KM_284e



**Industrial Ecosystems Inc.
Soil Reclamation Center**

P.O. Box 2043
Farmington, NM 87499

Phone: (505) 632-1782
Fax: (505) 632-1876

#49 CR 3150
Aztec, NM 87410

January 19, 2016

Brad Jones

Environmental Bureau
NM Oil Conservation Division
1220 S. St. Francis Drive
Santa Fe, New Mexico 87505

RE: Use of reclaimed soil

Dear Brad:

Recent analytical results show that the following biopiles(s) have reached acceptable levels as required by our NMOCD permit.

Pile #

437	DRO, GRO, BTEX & Chlorides Passed 12/14/15
420	DRO, GRO, BTEX & Chlorides Passed 12/14/15
936	DRO, GRO, BTEX & Chlorides Passed 12/14/15
432	DRO, GRO, BTEX & Chlorides Passed 12/14/15
889	DRO, GRO, BTEX & Chlorides Passed 12/14/15
427	DRO, GRO, BTEX & Chlorides Passed 12/14/15
410	DRO, GRO, BTEX & Chlorides Passed 12/14/15
415	DRO, GRO, BTEX & Chlorides Passed 12/14/15
436	DRO, GRO, BTEX & Chlorides Passed 12/14/15

We are seeking your approval to recycle this soil by using it to mix/solidify incoming liquid waste.

Respectfully Submitted,

A handwritten signature in cursive script that reads 'Marcella Marquez'.

Marcella Marquez
Regulatory/Compliance/HR

Enclosure(s) – Analytical Reports

Analytical Results For:

INDUSTRIAL ECOSYSTEMS 49 CR 3150 AZTEC NM, 87410	Project: JFJ Project Number: 3649 Project Manager: MARCELLA MARQUEZ Fax To: (505) 632-1876	Reported: 14-Dec-15 11:32
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PILE #437
H503192-02 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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Cardinal Laboratories
Inorganic Compounds

Chloride	112		16.0	mg/kg	4	5121001	AP	11-Dec-15	4500-Cl-B	
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Volatile Organic Compounds by EPA Method 8021

Benzene*	<0.050		0.050	mg/kg	50	5121010	MS	11-Dec-15	8021B	
Toluene*	1.27		0.050	mg/kg	50	5121010	MS	11-Dec-15	8021B	
Ethylbenzene*	<0.050		0.050	mg/kg	50	5121010	MS	11-Dec-15	8021B	
Total Xylenes*	<0.150		0.150	mg/kg	50	5121010	MS	11-Dec-15	8021B	
Total BTEX	1.27		0.300	mg/kg	50	5121010	MS	11-Dec-15	8021B	

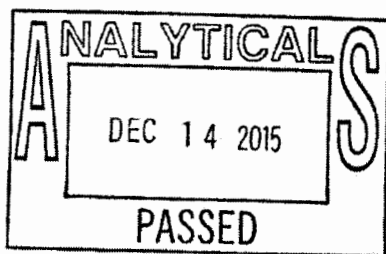
Surrogate: 4-Bromofluorobenzene (PID) 105 % 73.6-140 5121010 MS 11-Dec-15 8021B

Petroleum Hydrocarbons by GC FID

GRO C6-C10	<10.0		10.0	mg/kg	1	5120803	MS	09-Dec-15	8015B	
DRO >C10-C28	<10.0		10.0	mg/kg	1	5120803	MS	09-Dec-15	8015B	

Surrogate: 1-Chlorooctane 98.8 % 35-147 5120803 MS 09-Dec-15 8015B

Surrogate: 1-Chlorooctadecane 99.1 % 28-171 5120803 MS 09-Dec-15 8015B



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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

INDUSTRIAL ECOSYSTEMS
49 CR 3150
AZTEC NM, 87410

Project: JFJ
Project Number: 3649
Project Manager: MARCELLA MARQUEZ
Fax To: (505) 632-1876

Reported:
14-Dec-15 11:32

PILE #420
H503192-03 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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Cardinal Laboratories

Inorganic Compounds

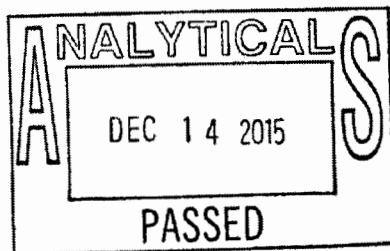
Chloride	48.0	16.0	mg/kg	4	5121001	AP	11-Dec-15	4500-Cl-B
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Volatile Organic Compounds by EPA Method 8021

Benzene*	<0.050	0.050	mg/kg	50	5121010	MS	11-Dec-15	8021B
Toluene*	1.62	0.050	mg/kg	50	5121010	MS	11-Dec-15	8021B
Ethylbenzene*	<0.050	0.050	mg/kg	50	5121010	MS	11-Dec-15	8021B
Total Xylenes*	<0.150	0.150	mg/kg	50	5121010	MS	11-Dec-15	8021B
Total BTEX	1.62	0.300	mg/kg	50	5121010	MS	11-Dec-15	8021B
Surrogate: 4-Bromofluorobenzene (PID)	104 %	73.6-140		5121010	MS	11-Dec-15	8021B	

Petroleum Hydrocarbons by GC FID

GRO C6-C10	<10.0	10.0	mg/kg	1	5120803	MS	09-Dec-15	8015B
DRO >C10-C28	<10.0	10.0	mg/kg	1	5120803	MS	09-Dec-15	8015B
Surrogate: 1-Chlorooctane	97.0 %	35-147		5120803	MS	09-Dec-15	8015B	
Surrogate: 1-Chlorooctadecane	96.0 %	28-171		5120803	MS	09-Dec-15	8015B	



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*=Accredited Analyte

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Celestine Keene

Celestine D. Keene, Lab Director/Quality Manager

Analytical Results For:

 INDUSTRIAL ECOSYSTEMS
 49 CR 3150
 AZTEC NM, 87410

 Project: JFJ
 Project Number: 3649
 Project Manager: MARCELLA MARQUEZ
 Fax To: (505) 632-1876

 Reported:
 14-Dec-15 11:32

PILE #936
H503192-04 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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Cardinal Laboratories
Inorganic Compounds

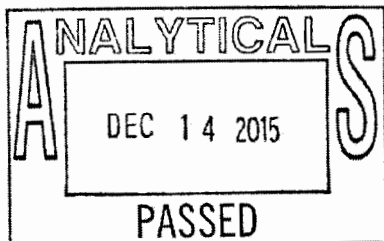
Chloride	64.0	16.0	mg/kg	4	5121001	AP	11-Dec-15	4500-Cl-B
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Volatile Organic Compounds by EPA Method 8021

Benzene*	<0.050	0.050	mg/kg	50	5121010	MS	11-Dec-15	8021B
Toluene*	1.24	0.050	mg/kg	50	5121010	MS	11-Dec-15	8021B
Ethylbenzene*	<0.050	0.050	mg/kg	50	5121010	MS	11-Dec-15	8021B
Total Xylenes*	<0.150	0.150	mg/kg	50	5121010	MS	11-Dec-15	8021B
Total BTEX	1.24	0.300	mg/kg	50	5121010	MS	11-Dec-15	8021B
Surrogate: 4-Bromofluorobenzene (PID)	106 %	73.6-140			5121010	MS	11-Dec-15	8021B

Petroleum Hydrocarbons by GC FID

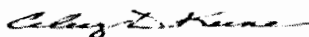
GRO C6-C10	<10.0	10.0	mg/kg	1	5120803	MS	09-Dec-15	8015B
DRO >C10-C28	<10.0	10.0	mg/kg	1	5120803	MS	09-Dec-15	8015B
Surrogate: 1-Chlorooctane	95.9 %	35-147			5120803	MS	09-Dec-15	8015B
Surrogate: 1-Chlorodecane	95.5 %	28-171			5120803	MS	09-Dec-15	8015B



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* = Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager



PHONE (575) 393-2326 • 101 E. MARLAND • HOBBS, NM 88240

Analytical Results For:INDUSTRIAL ECOSYSTEMS
49 CR 3150
AZTEC NM, 87410Project: JFJ
Project Number: 3649
Project Manager: MARCELLA MARQUEZ
Fax To: (505) 632-1876Reported:
14-Dec-15 11:32**PILE #432
H503192-05 (Soil)**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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Cardinal Laboratories**Inorganic Compounds**

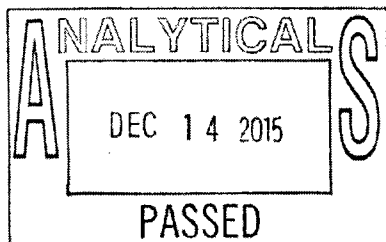
Chloride	192		16.0	mg/kg	4	5121001	AP	11-Dec-15	4500-Cl-B	
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Volatile Organic Compounds by EPA Method 8021

Benzene*	<0.050		0.050	mg/kg	50	5121010	MS	11-Dec-15	8021B	
Toluene*	1.14		0.050	mg/kg	50	5121010	MS	11-Dec-15	8021B	
Ethylbenzene*	<0.050		0.050	mg/kg	50	5121010	MS	11-Dec-15	8021B	
Total Xylenes*	<0.150		0.150	mg/kg	50	5121010	MS	11-Dec-15	8021B	
Total BTEX	1.14		0.300	mg/kg	50	5121010	MS	11-Dec-15	8021B	
Surrogate: 4-Bromofluorobenzene (PID)			105 %	73.6-140		5121010	MS	11-Dec-15	8021B	

Petroleum Hydrocarbons by GC FID

GRO C6-C10	<10.0		10.0	mg/kg	1	5120803	MS	09-Dec-15	8015B	
DRO >C10-C28	<10.0		10.0	mg/kg	1	5120803	MS	09-Dec-15	8015B	
Surrogate: 1-Chlorooctane			89.6 %	35-147		5120803	MS	09-Dec-15	8015B	
Surrogate: 1-Chlorooctadecane			87.5 %	28-171		5120803	MS	09-Dec-15	8015B	



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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

 INDUSTRIAL ECOSYSTEMS
 49 CR 3150
 AZTEC NM, 87410

 Project: JFJ
 Project Number: 3649
 Project Manager: MARCELLA MARQUEZ
 Fax To: (505) 632-1876

 Reported:
 14-Dec-15 11:32

PILE #889
H503192-06 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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Cardinal Laboratories
Inorganic Compounds

Chloride	192	16.0	mg/kg	4	5121001	AP	11-Dec-15	4500-Cl-B
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Volatile Organic Compounds by EPA Method 8021

Benzene*	<0.050	0.050	mg/kg	50	5121010	MS	11-Dec-15	8021B
Toluene*	1.94	0.050	mg/kg	50	5121010	MS	11-Dec-15	8021B
Ethylbenzene*	<0.050	0.050	mg/kg	50	5121010	MS	11-Dec-15	8021B
Total Xylenes*	<0.150	0.150	mg/kg	50	5121010	MS	11-Dec-15	8021B
Total BTEX	1.94	0.300	mg/kg	50	5121010	MS	11-Dec-15	8021B

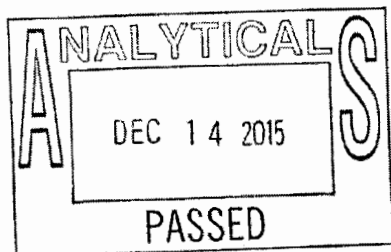
Surrogate: 4-Bromofluorobenzene (FID)	105 %	73.6-140	5121010	MS	11-Dec-15	8021B
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Petroleum Hydrocarbons by GC FID

GRO C6-C10	<10.0	10.0	mg/kg	1	5120803	MS	09-Dec-15	8015B
DRO >C10-C28	34.1	10.0	mg/kg	1	5120803	MS	09-Dec-15	8015B

Surrogate: 1-Chlorooctane	91.8 %	35-147	5120803	MS	09-Dec-15	8015B
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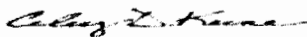
Surrogate: 1-Chlorooctadecane	87.5 %	28-171	5120803	MS	09-Dec-15	8015B
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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

 INDUSTRIAL ECOSYSTEMS
 49 CR 3150
 AZTEC NM, 87410

 Project: JFJ
 Project Number: 3649
 Project Manager: MARCELLA MARQUEZ
 Fax To: (505) 632-1876

 Reported:
 14-Dec-15 11:32

PILE #427
H503192-07 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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Cardinal Laboratories
Inorganic Compounds

Chloride	<16.0	16.0	mg/kg	4	5121001	AP	11-Dec-15	4500-Cl-B
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Volatile Organic Compounds by EPA Method 8021

Benzene*	<0.050	0.050	mg/kg	50	5121010	MS	11-Dec-15	8021B
Toluene*	1.26	0.050	mg/kg	50	5121010	MS	11-Dec-15	8021B
Ethylbenzene*	<0.050	0.050	mg/kg	50	5121010	MS	11-Dec-15	8021B
Total Xylenes*	<0.150	0.150	mg/kg	50	5121010	MS	11-Dec-15	8021B
Total BTEX	1.26	0.300	mg/kg	50	5121010	MS	11-Dec-15	8021B

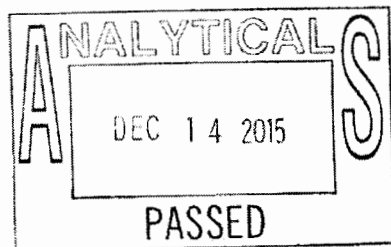
Surrogate: 4-Bromofluorobenzene (PID)	105 %	73.6-140	5121010	MS	11-Dec-15	8021B
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Petroleum Hydrocarbons by GC FID

GRO C6-C10	<10.0	10.0	mg/kg	1	5120803	MS	09-Dec-15	8015B
DRO >C10-C28	<10.0	10.0	mg/kg	1	5120803	MS	09-Dec-15	8015B

Surrogate: 1-Chlorooctane	97.3 %	35-147	5120803	MS	09-Dec-15	8015B
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Surrogate: 1-Chlorodecane	97.7 %	28-171	5120803	MS	09-Dec-15	8015B
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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

 INDUSTRIAL ECOSYSTEMS
 49 CR 3150
 AZTEC NM, 87410

 Project: JFJ
 Project Number: 3649
 Project Manager: MARCELLA MARQUEZ
 Fax To: (505) 632-1876

 Reported:
 14-Dec-15 11:32

PILE #410
H503192-08 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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Cardinal Laboratories
Inorganic Compounds

Chloride	96.0		16.0	mg/kg	4	5121001	AP	11-Dec-15	4500-Cl-B
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Volatile Organic Compounds by EPA Method 8021

Benzene*	<0.050	0.050	mg/kg	50	5121010	MS	11-Dec-15	8021B
Toluene*	1.56	0.050	mg/kg	50	5121010	MS	11-Dec-15	8021B
Ethylbenzene*	<0.050	0.050	mg/kg	50	5121010	MS	11-Dec-15	8021B
Total Xylenes*	<0.150	0.150	mg/kg	50	5121010	MS	11-Dec-15	8021B
Total BTEX	1.56	0.300	mg/kg	50	5121010	MS	11-Dec-15	8021B

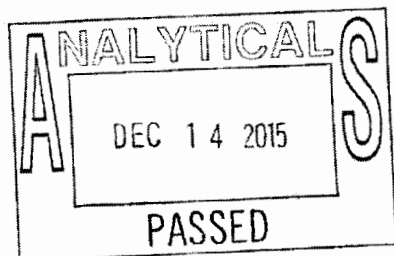
Surrogate: 4-Bromofluorobenzene (PID)	105 %	73.6-140	5121010	MS	11-Dec-15	8021B
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Petroleum Hydrocarbons by GC FID

GRO C6-C10	<10.0	10.0	mg/kg	1	5120803	MS	09-Dec-15	8015B
DRO >C10-C28	<10.0	10.0	mg/kg	1	5120803	MS	09-Dec-15	8015B

Surrogate: 1-Chlorooctane	90.0 %	35-147	5120803	MS	09-Dec-15	8015B
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Surrogate: 1-Chloronondecane	95.6 %	28-171	5120803	MS	09-Dec-15	8015B
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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

 INDUSTRIAL ECOSYSTEMS
 49 CR 3150
 AZTEC NM, 87410

 Project: JFJ
 Project Number: 3649
 Project Manager: MARCELLA MARQUEZ
 Fax To: (505) 632-1876

 Reported:
 14-Dec-15 11:32

PILE #415
H503192-09 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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Cardinal Laboratories
Inorganic Compounds

Chloride	240	16.0	mg/kg	4	5121001	AP	11-Dec-15	4500-Cl-B	
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Volatile Organic Compounds by EPA Method 8021

Benzene*	<0.050	0.050	mg/kg	50	5121010	MS	11-Dec-15	8021B	
Toluene*	2.21	0.050	mg/kg	50	5121010	MS	11-Dec-15	8021B	
Ethylbenzene*	<0.050	0.050	mg/kg	50	5121010	MS	11-Dec-15	8021B	
Total Xylenes*	<0.150	0.150	mg/kg	50	5121010	MS	11-Dec-15	8021B	
Total BTEX	2.21	0.300	mg/kg	50	5121010	MS	11-Dec-15	8021B	

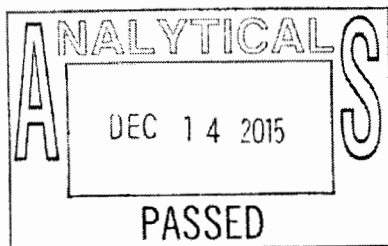
Surrogate: 4-Bromofluorobenzene (PID) 105 % 73.6-140 5121010 MS 11-Dec-15 8021B

Petroleum Hydrocarbons by GC FID

GRO C6-C10	<10.0	10.0	mg/kg	1	5120803	MS	09-Dec-15	8015B	
DRO >C10-C28	21.6	10.0	mg/kg	1	5120803	MS	09-Dec-15	8015B	

Surrogate: 1-Chlorooctane 96.6 % 35-147 5120803 MS 09-Dec-15 8015B

Surrogate: 1-Chlorooctadecane 99.1 % 28-171 5120803 MS 09-Dec-15 8015B



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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

INDUSTRIAL ECOSYSTEMS 49 CR 3150 AZTEC NM, 87410	Project: JFJ Project Number: 3649 Project Manager: MARCELLA MARQUEZ Fax To: (505) 632-1876	Reported: 14-Dec-15 11:32
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PILE #436 H503192-10 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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Cardinal Laboratories

Inorganic Compounds

Chloride	112		16.0	mg/kg	4	5121001	AP	11-Dec-15	4500-Cl-B	
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Volatile Organic Compounds by EPA Method 8021

Benzene*	<0.050		0.050	mg/kg	50	5121010	MS	11-Dec-15	8021B	
Toluene*	1.45		0.050	mg/kg	50	5121010	MS	11-Dec-15	8021B	
Ethylbenzene*	<0.050		0.050	mg/kg	50	5121010	MS	11-Dec-15	8021B	
Total Xylenes*	<0.150		0.150	mg/kg	50	5121010	MS	11-Dec-15	8021B	
Total BTEX	1.45		0.300	mg/kg	50	5121010	MS	11-Dec-15	8021B	

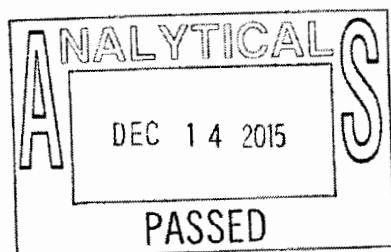
Surrogate: 4-Bromofluorobenzene (PID)		104 %	73.6-140			5121010	MS	11-Dec-15	8021B	
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Petroleum Hydrocarbons by GC FID

GRO C6-C10	<10.0		10.0	mg/kg	1	5120803	MS	09-Dec-15	8015B	
DRO >C10-C28	<10.0		10.0	mg/kg	1	5120803	MS	09-Dec-15	8015B	

Surrogate: 1-Chlorooctane		98.9 %	35-147			5120803	MS	09-Dec-15	8015B	
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Surrogate: 1-Chlorooctadecane		98.2 %	28-171			5120803	MS	09-Dec-15	8015B	
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Celey D. Keene, Lab Director/Quality Manager



PHONE (575) 393-2326 • 101 E. MARLAND • HOBBS, NM 88240

Analytical Results For:

INDUSTRIAL ECOSYSTEMS
49 CR 3150
AZTEC NM, 87410

Project: JFJ
Project Number: 3649
Project Manager: MARCELLA MARQUEZ
Fax To: (505) 632-1876

Reported:
14-Dec-15 11:32

Inorganic Compounds - Quality Control

Cardinal Laboratories

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 5121001 - General Prep - Wet Chem										
Blank (5121001-BLK1)										
				Prepared: 10-Dec-15 Analyzed: 11-Dec-15						
Chloride	ND	16.0	mg/kg							
LCS (5121001-BS1)										
				Prepared: 10-Dec-15 Analyzed: 11-Dec-15						
Chloride	432	16.0	mg/kg	400		108	80-120			
LCS Dup (5121001-BSD1)										
				Prepared: 10-Dec-15 Analyzed: 11-Dec-15						
Chloride	432	16.0	mg/kg	400		108	80-120	0.00	20	

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*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager



PHONE (575) 393-2326 • 101 E. MARLAND • HOBBS, NM 88240

Analytical Results For:INDUSTRIAL ECOSYSTEMS
49 CR 3150
AZTEC NM, 87410Project: JFJ
Project Number: 3649
Project Manager: MARCELLA MARQUEZ
Fax To: (505) 632-1876Reported:
14-Dec-15 11:32**Volatile Organic Compounds by EPA Method 8021 - Quality Control****Cardinal Laboratories**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 5121010 - Volatiles										
Blank (5121010-BLK1)										
Prepared: 10-Dec-15 Analyzed: 11-Dec-15										
Benzene	ND	0.050	mg/kg							
Toluene	ND	0.050	mg/kg							
Ethylbenzene	ND	0.050	mg/kg							
Total Xylenes	ND	0.150	mg/kg							
Total BTEX	ND	0.300	mg/kg							
Surrogate: 4-Bromofluorobenzene (P1D)	0.0528		mg/kg	0.0500		106	73.6-140			
LCS (5121010-BS1)										
Prepared: 10-Dec-15 Analyzed: 11-Dec-15										
Benzene	1.90	0.050	mg/kg	2.00		94.8	82.6-122			
Toluene	1.90	0.050	mg/kg	2.00		95.0	72.9-122			
Ethylbenzene	1.94	0.050	mg/kg	2.00		96.8	65.4-131			
Total Xylenes	5.90	0.150	mg/kg	6.00		98.3	73.8-125			
Surrogate: 4-Bromofluorobenzene (P1D)	0.0511		mg/kg	0.0500		102	73.6-140			
LCS Dup (5121010-BSD1)										
Prepared: 10-Dec-15 Analyzed: 11-Dec-15										
Benzene	1.81	0.050	mg/kg	2.00		90.5	82.6-122	4.60	8.23	
Toluene	1.83	0.050	mg/kg	2.00		91.4	72.9-122	3.78	8.71	
Ethylbenzene	1.89	0.050	mg/kg	2.00		94.3	65.4-131	2.63	9.46	
Total Xylenes	5.75	0.150	mg/kg	6.00		95.8	73.8-125	2.55	8.66	
Surrogate: 4-Bromofluorobenzene (P1D)	0.0520		mg/kg	0.0500		104	73.6-140			

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

 INDUSTRIAL ECOSYSTEMS
 49 CR 3150
 AZTEC NM, 87410

 Project: JFJ
 Project Number: 3649
 Project Manager: MARCELLA MARQUEZ
 Fax To: (505) 632-1876

 Reported:
 14-Dec-15 11:32

Petroleum Hydrocarbons by GC FID - Quality Control
Cardinal Laboratories

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 5120803 - General Prep - Organics										
Blank (5120803-BLK1)										
Prepared: 08-Dec-15 Analyzed: 09-Dec-15										
GRO C6-C10	ND	10.0	mg/kg							
DRO >C10-C28	ND	10.0	mg/kg							
Surrogate: 1-Chlorooctane	46.7		mg/kg	50.0		93.3	35-147			
Surrogate: 1-Chlorooctadecane	46.7		mg/kg	50.0		93.3	28-171			
LCS (5120803-BS1)										
Prepared: 08-Dec-15 Analyzed: 09-Dec-15										
GRO C6-C10	198	10.0	mg/kg	200		99.2	76.7-115			
DRO >C10-C28	188	10.0	mg/kg	200		94.2	78.3-122			
Surrogate: 1-Chlorooctane	46.8		mg/kg	50.0		93.7	35-147			
Surrogate: 1-Chlorooctadecane	46.2		mg/kg	50.0		92.4	28-171			
LCS Dup (5120803-BSD1)										
Prepared: 08-Dec-15 Analyzed: 09-Dec-15										
GRO C6-C10	197	10.0	mg/kg	200		98.5	76.7-115	0.713	9.42	
DRO >C10-C28	189	10.0	mg/kg	200		94.7	78.3-122	0.463	13.2	
Surrogate: 1-Chlorooctane	46.8		mg/kg	50.0		93.5	35-147			
Surrogate: 1-Chlorooctadecane	47.0		mg/kg	50.0		94.0	28-171			

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Notes and Definitions

ND	Analyte NOT DETECTED at or above the reporting limit
RPD	Relative Percent Difference
**	Samples not received at proper temperature of 6°C or below.
***	Insufficient time to reach temperature.
-	Chloride by SM4500Cl-B does not require samples be received at or below 6°C Samples reported on an as received basis (wet) unless otherwise noted on report

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Celey D. Keene, Lab Director/Quality Manager



CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

(970) 247-4220
Fax: (970) 247-4227

service@greenanalytical.com or dzufelt@greenanalytical.com
75 Suttle St Durango, CO 81303

Page 17 of 17

Company Name: Industrial Ecosystems, Inc.				Bill to (if different):				ANALYSIS REQUEST													
Project Manager: Marcella				P.O. #: 3649				DRO (8015B) GRO (8015B) BTEX (8021B) CHLORIDE (300.)													
Address: 49 Road 3150				Company:																	
City: Aztec		State: NM Zip: 87410		Attn:																	
Phone #: 505-832-1782		Email: marcella@industrialecosystems.com		Address:																	
Additional Report To:				City:																	
Project Name: JFJ				State: Zip:																	
Project Number:				Phone #:																	
Sampler Name (Print): Richard Chavez				Fax or Email:																	
Lab I.D.	Sample Name or Location	Date	Time	GROUNDWATER	SURFACEWATER	WASTEWATER	PRODUCEDWATER	SOIL	OTHER	No preservation (general)	HNO ₃	HCl	H ₂ SO ₄	Other:	Other:						
H503192																					
1.	PILE # 508	12-3-15	7:30AM					X													
2.	PILE # 437	12-3-15	8:15AM					X													
3.	PILE # 420	12-3-15	9:00AM					X													
4.	PILE # 936	12-3-15	9:45AM					X													
5.	PILE # 432	12-3-15	10:30AM					X													
6.	PILE # 889	12-3-15	11:15AM					X													
7.	PILE # 427	12-3-15	11:45					X													
8.	PILE # 410	12-4-15	7:00AM					X													
9.	PILE # 415	12-4-15	7:30AM					X													
10.	PILE # 436	12-4-15	8:10AM					X													

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Relinquished By:	Date: 12-4-15	Received By:	Report to State? (Circle)
<i>[Signature]</i>	Time: 1:05	<i>Minamogre</i>	Yes No
Relinquished By:	Date: 12-8-15	Received By:	
<i>[Signature]</i>	Time: 10:19	<i>Judy Garcia</i>	
Relinquished By:	Date:	Received By:	
	Time:		
Delivered By: (Circle One)	Temperature at receipt:	CHECKED BY:	
Sampler - UPS - FedEx - Kangaroo - Other:	4.0°C	<i>[Signature]</i>	

† GAL cannot always accept verbal changes. Please fax or email written change requests.
* Chain of Custody must be signed in "Relinquished By:" as an acceptance of services and all applicable charges.

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