



Beneficial Use Determination: Solid By-Product Management Plan Analytical Testing Report

Beneficial Use ID#: _____ -BUD- _____ - _____
 DNR Certified Lab: Microbac Laboratories, Inc. - Lab ID: 1HF0974
 Lab Report Date: 06/28/2024
 By-Product Generator: Progressive Foundry
 City: Perry State: IA Zip: 50220
 By-Product Name: Foundry Sand

Send completed report form(s), laboratory analytics, and supplemental Solid By-Product Management Plan (SBMP) documentation to:
Iowa Department of Natural Resources
Land Quality Bureau
Solid Waste Section
502 E 9th St
Des Moines, IA 50319-0034
 For questions concerning this report form please contact the DNR at (515) 201-8272.

ANALYTICAL TESTING RESULTS

Test Methods for Evaluating Solid Waste: Physical/Chemical Methods (SW-846).

Required		Synthetic Precipitation Leaching Procedure (EPA Test Method 1312)			Total Metals		
*	Contaminant	MCL	10 X MCL	Test Result	Regulatory Limit	Test Result	
<input checked="" type="checkbox"/>	Antimony	0.006 mg/L	0.06 mg/L	mg/L	31 mg/kg	<1.00	mg/kg
<input checked="" type="checkbox"/>	Arsenic	0.010 mg/L	0.10 mg/L	0.0111 mg/L	17 mg/kg	1.07	mg/kg
<input checked="" type="checkbox"/>	Barium	2.0 mg/L	20.0 mg/L	0.231 mg/L	15,000 mg/kg	42.8	mg/kg
<input checked="" type="checkbox"/>	Beryllium	0.004 mg/L	0.04 mg/L	mg/L	110 mg/kg	<1.0	mg/kg
<input checked="" type="checkbox"/>	Boron				16,000 mg/kg	<10.0	mg/kg
<input checked="" type="checkbox"/>	Cadmium	0.005 mg/L	0.05 mg/L	<0.0050 mg/L	70 mg/kg	<1.0	mg/kg
<input checked="" type="checkbox"/>	Chromium	0.1 mg/L	1.0 mg/L	0.0244 mg/L	** (Total)	3.3	mg/kg
(Hexavalent - VI)					<5.0	mg/kg	
(Trivalent - III)					3.25	mg/kg	
<input checked="" type="checkbox"/>	Cobalt				23 mg/kg	<1.00	mg/kg
<input checked="" type="checkbox"/>	Copper	1.3 mg/L	13.0 mg/L	0.0321 mg/L	15,000 mg/kg	3.6	mg/kg
<input checked="" type="checkbox"/>	Fluoride	4.0 mg/L	40.0 mg/L	0.5 mg/L	4,700 mg/kg	<10.0	mg/kg
<input checked="" type="checkbox"/>	Lead	0.015 mg/L	0.15 mg/L	0.0247 mg/L	400 mg/kg	<5.00	mg/kg
<input checked="" type="checkbox"/>	Lithium				160 mg/kg	<5.00	mg/kg
<input checked="" type="checkbox"/>	Manganese				10,000 mg/kg	40.2	mg/kg
<input checked="" type="checkbox"/>	Mercury	0.002 mg/L	0.02 mg/L	<0.0005 mg/L	23 mg/kg	<0.05	mg/kg
<input checked="" type="checkbox"/>	Molybdenum				390 mg/kg	1.0	mg/kg
<input checked="" type="checkbox"/>	Nickel				1,500 mg/kg	<5.0	mg/kg
<input checked="" type="checkbox"/>	Selenium	0.05 mg/L	0.5 mg/L	<0.0100 mg/L	390 mg/kg	<3.0	mg/kg
<input checked="" type="checkbox"/>	Silver				370 mg/kg	<1.0	mg/kg
<input checked="" type="checkbox"/>	Thallium	0.002 mg/L	0.02 mg/L	<0.005 mg/L	0.78 mg/kg	<0.5	mg/kg
<input checked="" type="checkbox"/>	Vanadium				350 mg/kg	<5.00	mg/kg
<input checked="" type="checkbox"/>	Zinc				23,000 mg/kg	5.6	mg/kg

*Required contaminant

**If Total Chromium ≥210 mg/kg, further analysis shall be conducted to determine hexavalent and trivalent results.

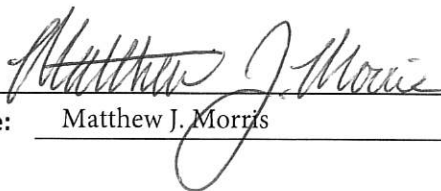
Toxicity Characteristic Leaching Procedure (EPA Test Method 1311) - Regulatory Limits

Metals				Volatile Organic Compounds					
*	Contaminant	Regulatory Limit	Test Result		*	Contaminant	Regulatory Limit	Test Result	
<input checked="" type="checkbox"/>	Arsenic	5.0 mg/L	<0.030	mg/L	<input type="checkbox"/>	Benzene	0.5 mg/L		mg/L
<input checked="" type="checkbox"/>	Barium	100.0 mg/L	0.311	mg/L	<input type="checkbox"/>	Carbon tetrachloride	0.5 mg/L		mg/L
<input checked="" type="checkbox"/>	Cadmium	1.0 mg/L	<0.005	mg/L	<input type="checkbox"/>	Chlorobenzene	100.0 mg/L		mg/L
<input checked="" type="checkbox"/>	Chromium	5.0 mg/L	<0.010	mg/L	<input type="checkbox"/>	Chloroform	6.0 mg/L		mg/L
<input checked="" type="checkbox"/>	Lead	5.0 mg/L	<0.020	mg/L	<input type="checkbox"/>	1,2-Dichloroethane	0.5 mg/L		mg/L
<input checked="" type="checkbox"/>	Mercury	0.2 mg/L	<0.00050	mg/L	<input type="checkbox"/>	1,1-Dichloroethylene	0.7 mg/L		mg/L
<input checked="" type="checkbox"/>	Selenium	1.0 mg/L	<0.050	mg/L	<input type="checkbox"/>	Methyl ethyl ketone	200.0 mg/L		mg/L
<input checked="" type="checkbox"/>	Silver	5.0 mg/L	<0.010	mg/L	<input type="checkbox"/>	Tetrachloroethylene	0.7 mg/L		mg/L
					<input type="checkbox"/>	Trichloroethylene	0.5 mg/L		mg/L
					<input type="checkbox"/>	Vinyl chloride	0.2 mg/L		mg/L
Pesticides				Semi-Volatile Organic Compounds					
*	Contaminant	Regulatory Limit	Test Result		*	Contaminant	Regulatory Limit	Test Result	
<input type="checkbox"/>	Chlordane	0.03 mg/L		mg/L	<input type="checkbox"/>	o-Cresol	200.0 mg/L		mg/L
<input type="checkbox"/>	Endrin	0.02 mg/L		mg/L	<input type="checkbox"/>	m-Cresol	200.0 mg/L		mg/L
<input type="checkbox"/>	Heptachlor (and its epoxide)	0.008 mg/L		mg/L	<input type="checkbox"/>	p-Cresol	200.0 mg/L		mg/L
<input type="checkbox"/>	Lindane	0.4 mg/L		mg/L	<input type="checkbox"/>	Cresol	200.0 mg/L		mg/L
<input type="checkbox"/>	Methoxychlor	10.0 mg/L		mg/L	<input type="checkbox"/>	1,4-Dichlorobenzene	7.5 mg/L		mg/L
<input type="checkbox"/>	Toxaphene	0.5 mg/L		mg/L	<input type="checkbox"/>	2,4-Dinitrotoluene	0.13 mg/L		mg/L
					<input type="checkbox"/>	Hexachlorobenzene	0.13 mg/L		mg/L
					<input type="checkbox"/>	Hexachlorobutadiene	0.5 mg/L		mg/L
					<input type="checkbox"/>	Hexachloroethane	3.0 mg/L		mg/L
Herbicides									
*	Contaminant	Regulatory Limit	Test Result						
<input type="checkbox"/>	2,4-D	10.0 mg/L		mg/L	<input type="checkbox"/>	Nitrobenzene	2.0 mg/L		mg/L
<input type="checkbox"/>	2,4,5-TP (Silvex)	1.0 mg/L		mg/L	<input type="checkbox"/>	Pentachlorophenol	100.0 mg/L		mg/L
					<input type="checkbox"/>	Pyridine	5.0 mg/L		mg/L
					<input type="checkbox"/>	2,4,5-Trichlorophenol	400.0 mg/L		mg/L
					<input type="checkbox"/>	2,4,6-Trichlorophenol	2.0 mg/L		mg/L

*Required contaminant

BY-PRODUCT GENERATOR CERTIFICATION

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete.

Signature:  Date: June 28th, 2024
 Printed Name: Matthew J. Morris Title: Compliance Coordinator



Microbac Laboratories, Inc., Newton

CERTIFICATE OF ANALYSIS

1HF0974

Progressive Foundry

Project Name: TCLP

Darek Vankirk
1518 1st Ave
Perry, IA 50220

Project / PO Number: N/A
Received: 06/13/2024
Reported: 06/28/2024

Analytical Testing Parameters

Table with 4 columns: Client Sample ID, Sample Matrix, Lab Sample ID, Collected By, Collection Date. Values include Beneficial Reuse Top Cover, Bulk-Solid, 1HF0974-01, Brown, Tucker, 06/12/2024 8:50.

Main data table with 10 columns: Determination of Total Metals, Result, RL, Units, DF, Note, Prepared, Analyzed, Analyst. Rows include Calculation, EPA 3050B/EPA 6010B, EPA 3050B/EPA 6020A, EPA 7196A, EPA 7471A, EPA 9056.

Table with 10 columns: Determination of TCLP Metals, Result, RL, Units, DF, Note, Prepared, Analyzed, Analyst. Rows include EPA 3010A/EPA 6010B with metals like Arsenic, Barium, Cadmium, Chromium, Lead.



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1HF0974

Client Sample ID:	Beneficial Reuse Top Cover	Collected By:	Brown, Tucker
Sample Matrix:	Bulk-Solid	Collection Date:	06/12/2024 8:50
Lab Sample ID:	1HF0974-01		

Determination of TCLP Metals	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
Selenium (TCLP)	<0.050	0.050	mg/L	1		06/25/24 1550	06/26/24 1445	JAR
Silver (TCLP)	<0.010	0.010	mg/L	1		06/25/24 1550	06/26/24 1445	JAR

EPA 7470A

Mercury (TCLP)	<0.00050	0.00050	mg/L	1		06/17/24 1549	06/19/24 1003	JAR
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Determination of TCLP Volatile Organic Compounds	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
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EPA 1311/EPA 5030B/EPA 8260B

Vinyl Chloride (TCLP)	<0.020	0.020	mg/L	5		06/19/24 0000	06/19/24 1258	LNH
1,1-Dichloroethylene (TCLP)	<0.070	0.070	mg/L	5		06/19/24 0000	06/19/24 1258	LNH
2-Butanone (MEK) (TCLP)	<20.0	20.0	mg/L	5		06/19/24 0000	06/19/24 1258	LNH
Chloroform (TCLP)	<0.600	0.600	mg/L	5		06/19/24 0000	06/19/24 1258	LNH
Carbon Tetrachloride (TCLP)	<0.050	0.050	mg/L	5		06/19/24 0000	06/19/24 1258	LNH
Benzene (TCLP)	<0.050	0.050	mg/L	5		06/19/24 0000	06/19/24 1258	LNH
1,2-Dichloroethane (TCLP)	<0.050	0.050	mg/L	5		06/19/24 0000	06/19/24 1258	LNH
Trichloroethylene (TCLP)	<0.050	0.050	mg/L	5		06/19/24 0000	06/19/24 1258	LNH
Tetrachloroethylene (TCLP)	<0.070	0.070	mg/L	5		06/19/24 0000	06/19/24 1258	LNH
Chlorobenzene (TCLP)	<10.0	10.0	mg/L	5		06/19/24 0000	06/19/24 1258	LNH
Surrogate: Dibromofluoromethane	85.2	Limit: 80-126	% Rec	5		06/19/24 0000	06/19/24 1258	LNH
Surrogate: 1,2-Dichloroethane-d4	87.9	Limit: 63-138	% Rec	5		06/19/24 0000	06/19/24 1258	LNH
Surrogate: Toluene-d8	92.0	Limit: 87-116	% Rec	5		06/19/24 0000	06/19/24 1258	LNH
Surrogate: 4-Bromofluorobenzene	96.4	Limit: 85-111	% Rec	5		06/19/24 0000	06/19/24 1258	LNH

Determination of TCLP Semi-Volatile Organic Compounds	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
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EPA 3520C/EPA 8270C

Pyridine (TCLP)	<0.500	0.500	mg/L	1		06/19/24 1015	06/25/24 1928	PDS
1,4-Dichlorobenzene (TCLP)	<0.750	0.750	mg/L	1		06/19/24 1015	06/25/24 1928	PDS
o-Cresol (TCLP)	<20.0	20.0	mg/L	1		06/19/24 1015	06/25/24 1928	PDS
m+p-Cresol (TCLP)	<20.0	20.0	mg/L	1		06/19/24 1015	06/25/24 1928	PDS
Total Cresols (TCLP)	<20.0	20.0	mg/L	1		06/19/24 1015	06/25/24 1928	PDS
Hexachloroethane (TCLP)	<0.300	0.300	mg/L	1		06/19/24 1015	06/25/24 1928	PDS
Nitrobenzene (TCLP)	<0.200	0.200	mg/L	1		06/19/24 1015	06/25/24 1928	PDS
Hexachlorobutadiene (TCLP)	<0.050	0.050	mg/L	1		06/19/24 1015	06/25/24 1928	PDS
2,4,6-Trichlorophenol (TCLP)	<0.200	0.200	mg/L	1		06/19/24 1015	06/25/24 1928	PDS
2,4,5-Trichlorophenol (TCLP)	<40.0	40.0	mg/L	1		06/19/24 1015	06/25/24 1928	PDS
2,4-Dinitrotoluene (TCLP)	<0.013	0.013	mg/L	1		06/19/24 1015	06/25/24 1928	PDS
Hexachlorobenzene (TCLP)	<0.013	0.013	mg/L	1		06/19/24 1015	06/25/24 1928	PDS
Pentachlorophenol (TCLP)	<10.0	10.0	mg/L	1		06/19/24 1015	06/25/24 1928	PDS
Surrogate: 2-Fluorophenol	81.8	Limit: 24-136	% Rec	1		06/19/24 1015	06/25/24 1928	PDS
Surrogate: Phenol-d6	86.8	Limit: 15-140	% Rec	1		06/19/24 1015	06/25/24 1928	PDS
Surrogate: Nitrobenzene-d5	82.0	Limit: 29-130	% Rec	1		06/19/24 1015	06/25/24 1928	PDS
Surrogate: 2-Fluorobiphenyl	86.4	Limit: 23-113	% Rec	1		06/19/24 1015	06/25/24 1928	PDS
Surrogate: 2,4,6-Tribromophenol	96.0	Limit: 15-139	% Rec	1		06/19/24 1015	06/25/24 1928	PDS
Surrogate: Terphenyl-dl4	77.8	Limit: 27-141	% Rec	1		06/19/24 1015	06/25/24 1928	PDS



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Client Sample ID:	Beneficial Reuse Top Cover	Collected By:	Brown, Tucker
Sample Matrix:	Bulk-Solid	Collection Date:	06/12/2024 8:50
Lab Sample ID:	1HF0974-01		

Determination of TCLP Semi-Volatile Organic Compounds	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
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Determination of TCLP Organochlorine Insecticides	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
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EPA 3510C/EPA 8081								
gamma-BHC (TCLP)	<0.0400	0.0400	mg/L	1		06/19/24 1010	06/24/24 1916	PDS
Heptachlor (TCLP)	<0.0008	0.0008	mg/L	1		06/19/24 1010	06/24/24 1916	PDS
Heptachlor Epoxide (TCLP)	<0.0008	0.0008	mg/L	1		06/19/24 1010	06/24/24 1916	PDS
Endrin (TCLP)	<0.0020	0.0020	mg/L	1		06/19/24 1010	06/24/24 1916	PDS
Methoxychlor (TCLP)	<1.00	1.00	mg/L	1		06/19/24 1010	06/24/24 1916	PDS
Chlordane (TCLP)	<0.0030	0.0030	mg/L	1		06/19/24 1010	06/24/24 1916	PDS
Toxaphene (TCLP)	<0.0500	0.0500	mg/L	1		06/19/24 1010	06/24/24 1916	PDS
Surrogate: Tetrachloro-m-xylene	71.0	Limit: 10-121	% Rec	1		06/19/24 1010	06/24/24 1916	PDS

Determination of TCLP Chlorinated Phenoxy Herbicides	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
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EPA 8151A								
2,4-D (TCLP)	<1.00	1.00	mg/L	1		06/19/24 1012	06/26/24 0148	PDS
Silvex (TCLP)	<0.100	0.100	mg/L	1		06/19/24 1012	06/26/24 0148	PDS
Surrogate: 2,5-Dichlorobenzoic Acid	120	Limit: 10-132	% Rec	1		06/19/24 1012	06/26/24 0148	PDS

TCLP Extraction	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
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EPA 1311/EPA 1311								
TCLP pH, Initial	5.0		pH	1		06/14/24 1538	06/18/24 1533	BMS
TCLP pH, Final	5.1		pH	1		06/14/24 1538	06/18/24 1533	BMS

Determination of SPLP Metals	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
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EPA 3005A/EPA 6020A								
Antimony (SPLP)	<0.0100	0.0100	mg/L	10		06/18/24 1612	06/21/24 1817	RVV
Arsenic (SPLP)	0.0111	0.0100	mg/L	10		06/18/24 1612	06/21/24 1817	RVV
Barium (SPLP)	0.231	0.0100	mg/L	10		06/18/24 1612	06/21/24 1817	RVV
Beryllium (SPLP)	<0.0100	0.0100	mg/L	10		06/18/24 1612	06/21/24 1817	RVV
Cadmium (SPLP)	<0.0050	0.0050	mg/L	10		06/18/24 1612	06/21/24 1817	RVV
Chromium (SPLP)	0.0244	0.0200	mg/L	10		06/18/24 1612	06/21/24 1817	RVV
Copper (SPLP)	0.0321	0.0100	mg/L	10		06/18/24 1612	06/21/24 1817	RVV
Lead (SPLP)	0.0247	0.0100	mg/L	10		06/18/24 1612	06/21/24 1817	RVV
Selenium (SPLP)	<0.0100	0.0100	mg/L	10		06/18/24 1612	06/21/24 1817	RVV
Thallium (SPLP)	<0.0050	0.0050	mg/L	10		06/18/24 1612	06/21/24 1817	RVV

EPA 7470A								
Mercury (SPLP)	<0.00500	0.00500	mg/L	1		06/21/24 1514	06/25/24 1346	JAR

EPA 9056								
Fluoride (SPLP)	0.5	0.1	mg/L	1		06/20/24 0000	06/20/24 2320	MID

SPLP Extraction	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
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Microbac Laboratories, Inc., Newton

CERTIFICATE OF ANALYSIS

1HF0974

Client Sample ID:	Beneficial Reuse Top Cover	Collected By:	Brown, Tucker
Sample Matrix:	Bulk-Solid	Collection Date:	06/12/2024 8:50
Lab Sample ID:	1HF0974-01		

SPLP Extraction	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
EPA 1312/EPA 1312								
SPLP pH, Initial	5.0		pH	1		06/18/24 1544	06/20/24 1528	BMS
SPLP pH, Final	10.2		pH	1		06/18/24 1544	06/20/24 1528	BMS

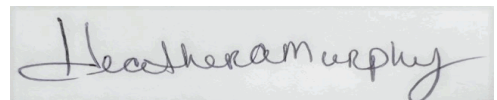
Definitions

- MDL:** Minimum Detection Limit
- RL:** Reporting Limit

Report Comments

The data and information on this, and other accompanying documents, represents only the sample(s) analyzed. This report is incomplete unless all pages indicated in the footnote are present and an authorized signature is included. **The services were provided under and subject to Microbac's standard terms and conditions which can be located and reviewed at <https://www.microbac.com/standard-terms-conditions>.**

Reviewed and Approved By:

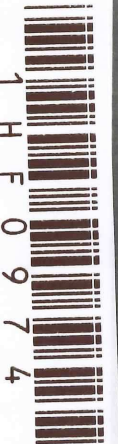


Heather Murphy
 Customer Relationship Specialist
 heather.murphy@microbac.com
 06/28/24 08:04



600 East 17th Street Sou
 Newton, IA 50208
 541-792-9454

CHAIN OF CUSTODY RECORD



Progressive Foundry
 P.M. Heather Murphy

Page 1 of 1
 Printed: 6/13/24 8:24 AM
 www.keystonelabs.com

SITE INFORMATION

Sampler: Tucker Brown
 Project: Beneficial Reuse: Top Cover
 TCLP

REPORT TO

Derek Vankirk
 Progressive Foundry
 4510 1st Ave
 Perry, IA 50220

Derek Vankirk
 Progressive Foundry
 4510 1st Ave
 Perry, IA 50220

SPECIAL INSTRUCTIONS

None
 Turn Around Time Standard RUSH, need by ___/___/___

LAB USE ONLY

Work Order IHF0974
 Temperature 4.6
 Turn-Cooler: Yes

Custody Seal
 Containers Intact
 COC/Labels Agree
 Preservation Confirmed
 Received on Ice

Number	Sample Identification / Client ID	Matrix	Sample Type	Date	Time	Number of Containers	Analyses	Lab Sample Number	
-001	<u>Beneficial Reuse: Top Cover</u>	Bulk-Solid	GRAB	<u>6/12/24</u>	<u>8:50AM</u>	<u>3</u>	8250-205 beneficial-use-metals splp-metals-icp-ms tclp-pest/herb	8270-201 cr-profile-solid tclp-metals	<u>01</u>

Relinquished By Tucker Brown Date/Time 6/12/24 9:05AM

Relinquished By Moya Parker Date/Time 6/13/24 10:30

Received By _____ Date/Time _____

Received for Lab By _____ Date/Time _____

Remarks:

Original - Lab Copy Yellow - Sampler Copy