Keystone LABORATORIES, INC.

ANALYTICAL REPORT

September 07, 2021

Work Order: **1EH2915**

Report To	Work Order Information
Kaylin Contag	Date Received: 8/30/2021 9:50:00AM
Iowa State University EH & S	Collector: Contag, Kaylin
2809 Daley Drive	Phone: (515) 294-5359
Ames, IA 50011	PO Number: C7 72761 47

Project: TCLP Analysis

Project Number: [none]

Analyte	Result	MRL	Batch	Method	Analyst	Analyzed	Qualifier
1EH2915-01	1 Vet Med Incinerator			Matrix: Solid	Collected:	08/23/21 09:30	
Silver (TCLP)	<0.010 mg/L	0.010	1EI0052	EPA 6010B	JAR	09/03/21 3:31	
Arsenic (TCLP)	<0.030 mg/L	0.030	1EI0052	EPA 6010B	JAR	09/03/21 3:31	
Barium (TCLP)	**0.024 mg/L**	**0.010**	1EI0052	EPA 6010B	JAR	09/03/21 3:31	
Cadmium (TCLP)	<0.005 mg/L	0.005	1EI0052	EPA 6010B	JAR	09/03/21 3:31	
Chromium (TCLP)	**0.481 mg/L**	**0.010**	1EI0052	EPA 6010B	JAR	09/03/21 3:31	
Mercury (TCLP)	<0.00050 mg/L	0.00050	1EH1472	EPA 7470A	JAR	09/03/21 12:01	
Lead (TCLP)	<0.020 mg/L	0.020	1EI0052	EPA 6010B	JAR	09/03/21 3:31	
Selenium (TCLP)	<0.050 mg/L	0.050	1EI0052	EPA 6010B	JAR	09/03/21 3:31	
TCLP pH, Initial	**4.9 pH**		1EH1489	EPA 1311	BMS	09/01/21 13:57	
TCLP pH, Final	**7.6 pH**		1EH1489	EPA 1311	BMS	09/01/21 13:57	

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Work Order: 1EH2915

Determination of TCLP Metals - Quality Control

Keystone Laboratories, Inc. - Newton

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1EH1472 - EPA 7470A Hg Water										
Blank (1EH1472-BLK1)				Prepared: 08/30/21 Analyzed: 09/03/21						
Mercury (TCLP)	ND	0.00050	mg/L							
Blank (1EH1472-BLK2)				Prepared: 08/30/21 Analyzed: 09/03/21						
Mercury (TCLP)	ND	0.00050	mg/L							
Blank (1EH1472-BLK3)				Prepared: 08/30/21 Analyzed: 09/03/21						
Mercury (TCLP)	ND	0.00050	mg/L							
Blank (1EH1472-BLK4)				Prepared: 08/30/21 Analyzed: 09/03/21						
Mercury (TCLP)	ND	0.00050	mg/L							
LCS (1EH1472-BS1)				Prepared: 08/30/21 Analyzed: 09/03/21						
Mercury (TCLP)	0.00256	0.00050	mg/L	0.00250000		102	79-116			
Matrix Spike (1EH1472-MS1)		**Source: 1EH2915-01**		Prepared: 08/30/21 Analyzed: 09/03/21						
Mercury (TCLP)	0.00263	0.00050	mg/L	0.00250000	ND	105	56-137			
Matrix Spike Dup (1EH1472-MSD1)		**Source: 1EH2915-01**		Prepared: 08/30/21 Analyzed: 09/03/21						
Mercury (TCLP)	0.00260	0.00050	mg/L	0.00250000	ND	104	56-137	1.05	13	
Batch 1EI0052 - EPA 3010A TCLP ICP										
Blank (1EI0052-BLK1)				Prepared: 09/01/21 Analyzed: 09/03/21						
Arsenic (TCLP)	ND	0.030	mg/L							
Barium (TCLP)	ND	0.010	"							
Cadmium (TCLP)	ND	0.005	"							
Chromium (TCLP)	ND	0.010	"							
Lead (TCLP)	ND	0.020	"							
Selenium (TCLP)	ND	0.050	"							
Silver (TCLP)	ND	0.010	"							

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Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1EI0052 - EPA 3010A TCLP ICP										
Blank (1EI0052-BLK2)				Prepared: 09/01/21 Analyzed: 09/03/21						
Arsenic (TCLP)	ND	0.030	mg/L							
Barium (TCLP)	ND	0.010	"							
Cadmium (TCLP)	ND	0.005	"							
Chromium (TCLP)	ND	0.010	"							
Lead (TCLP)	ND	0.020	"							
Selenium (TCLP)	ND	0.050	"							
Silver (TCLP)	ND	0.010	"							
Blank (1EI0052-BLK3)				Prepared: 09/01/21 Analyzed: 09/03/21						
Arsenic (TCLP)	ND	0.030	mg/L							
Barium (TCLP)	ND	0.010	"							
Cadmium (TCLP)	ND	0.005	"							
Chromium (TCLP)	ND	0.010	"							
Lead (TCLP)	ND	0.020	"							
Selenium (TCLP)	ND	0.050	"							
Silver (TCLP)	ND	0.010	"							
Blank (1EI0052-BLK4)				Prepared: 09/01/21 Analyzed: 09/03/21						
Arsenic (TCLP)	ND	0.030	mg/L							
Barium (TCLP)	0.0279	0.010	"							QB-03
Cadmium (TCLP)	ND	0.005	"							
Chromium (TCLP)	ND	0.010	"							
Lead (TCLP)	0.034	0.020	"							QB-03
Selenium (TCLP)	ND	0.050	"							
Silver (TCLP)	ND	0.010	"							
LCS (1EI0052-BS1)				Prepared: 09/01/21 Analyzed: 09/03/21						
Arsenic (TCLP)	0.199	0.030	mg/L	0.200000		99.5	80-120			
Barium (TCLP)	0.191	0.010	"	0.200000		95.6	80-120			
Cadmium (TCLP)	0.196	0.005	"	0.200000		97.8	80-120			
Chromium (TCLP)	0.193	0.010	"	0.200000		96.5	80-120			
Lead (TCLP)	0.191	0.020	"	0.200000		95.3	80-120			
Selenium (TCLP)	0.187	0.050	"	0.200000		93.3	80-120			
Silver (TCLP)	0.189	0.010	"	0.200000		94.3	80-120			

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Determination of TCLP Metals - Quality Control

Keystone Laboratories, Inc. - Newton

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1EI0052 - EPA 3010A TCLP ICP										
Matrix Spike (1EI0052-MS1)	**Source: 1EH2135-03**			Prepared: 09/01/21 Analyzed: 09/03/21						
Arsenic (TCLP)	0.219	0.030	mg/L	0.200000	ND	109	70-130			
Barium (TCLP)	0.428	0.010	"	0.200000	0.240	93.9	70-130			
Cadmium (TCLP)	17.8	0.005	"	0.200000	18.3	NR	70-130			QM-4X
Chromium (TCLP)	24.5	0.010	"	0.200000	24.8	NR	70-130			QM-4X
Lead (TCLP)	0.212	0.020	"	0.200000	ND	106	70-130			
Selenium (TCLP)	0.204	0.050	"	0.200000	ND	102	70-130			
Silver (TCLP)	3.96	0.010	"	0.200000	3.72	123	70-130			
Matrix Spike Dup (1EI0052-MSD1)	**Source: 1EH2135-03**			Prepared: 09/01/21 Analyzed: 09/03/21						
Arsenic (TCLP)	0.216	0.030	mg/L	0.200000	ND	108	70-130	1.26	20	
Barium (TCLP)	0.451	0.010	"	0.200000	0.240	105	70-130	5.18	20	
Cadmium (TCLP)	19.0	0.005	"	0.200000	18.3	346	70-130	6.29	20	QM-4X
Chromium (TCLP)	25.9	0.010	"	0.200000	24.8	516	70-130	5.41	20	QM-4X
Lead (TCLP)	0.218	0.020	"	0.200000	ND	109	70-130	2.99	20	
Selenium (TCLP)	0.219	0.050	"	0.200000	ND	109	70-130	6.82	20	
Silver (TCLP)	3.94	0.010	"	0.200000	3.72	114	70-130	0.441	20	
Post Spike (1EI0052-PS1)	**Source: 1EH2135-03**			Prepared: 09/01/21 Analyzed: 09/03/21						
Arsenic (TCLP)	0.875		mg/L	0.800000	-0.00697	109	75-125			
Barium (TCLP)	1.08		"	0.800000	0.240	105	75-125			
Cadmium (TCLP)	19.2		"	0.800000	18.3	117	75-125			
Chromium (TCLP)	26.5		"	0.800000	24.8	214	75-125			PS-4X
Lead (TCLP)	0.868		"	0.800000	0.009	107	75-125			
Selenium (TCLP)	0.873		"	0.800000	0.00588	108	75-125			
Silver (TCLP)	8.45		"	0.800000	3.72	591	75-125			PS-4X

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TCLP Extraction - Quality Control

Keystone Laboratories, Inc. - Newton

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1EH1489 - EPA 1311										
Blank (1EH1489-BLK1)				Prepared: 08/30/21 Analyzed: 09/01/21						
TCLP pH, Initial	4.9		pH							
TCLP pH, Final	5.0		"							

ND = Non Detect; REC= Recovery; RPD= Relative Percent Difference

Certified Analyses Included In This Report

Method/Matrix	Analyte	Certifications
EPA 6010B in Water		
	Arsenic (TCLP)	KS-NT,SIA1X
	Barium (TCLP)	KS-NT,SIA1X
	Cadmium (TCLP)	KS-NT,SIA1X
	Chromium (TCLP)	KS-NT,SIA1X
	Lead (TCLP)	KS-NT,SIA1X
	Selenium (TCLP)	KS-NT,SIA1X
	Silver (TCLP)	KS-NT,SIA1X
EPA 7470A in Water		
	Mercury (TCLP)	IA-NT,KS-NT

Code	Description	Number	Expires
KS-KC	Kansas Department of Health and Environment-KC	E-10110	04/30/2022
KS-NT	Kansas Department of Health and Environment (NELAP)	E-10287	10/31/2021
MO-KC	Missouri Department of Natural Resources	140	04/30/2022
SIA1X	Iowa Department of Natural Resources	95	02/01/2021

Notes and Definitions

PS-4X	The spike recovery was outside of QC acceptance limits for the Post Spike due to analyte concentration at 4 times or greater the spike concentration.
QB-03	The method blank contains analyte at a concentration above the MRL; however concentration is less than 10% of the action level, which is negligble according to method criteria.
QM-4X	The spike recovery was outside of QC acceptance limits for the MS and/or MSD due to analyte concentration at 4 times or greater the spike concentration.

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Work Order: 1EH2915

End of Report

Sue Thompson

Keystone Laboratories, Inc.

Sue Thompson
Client Services Manager

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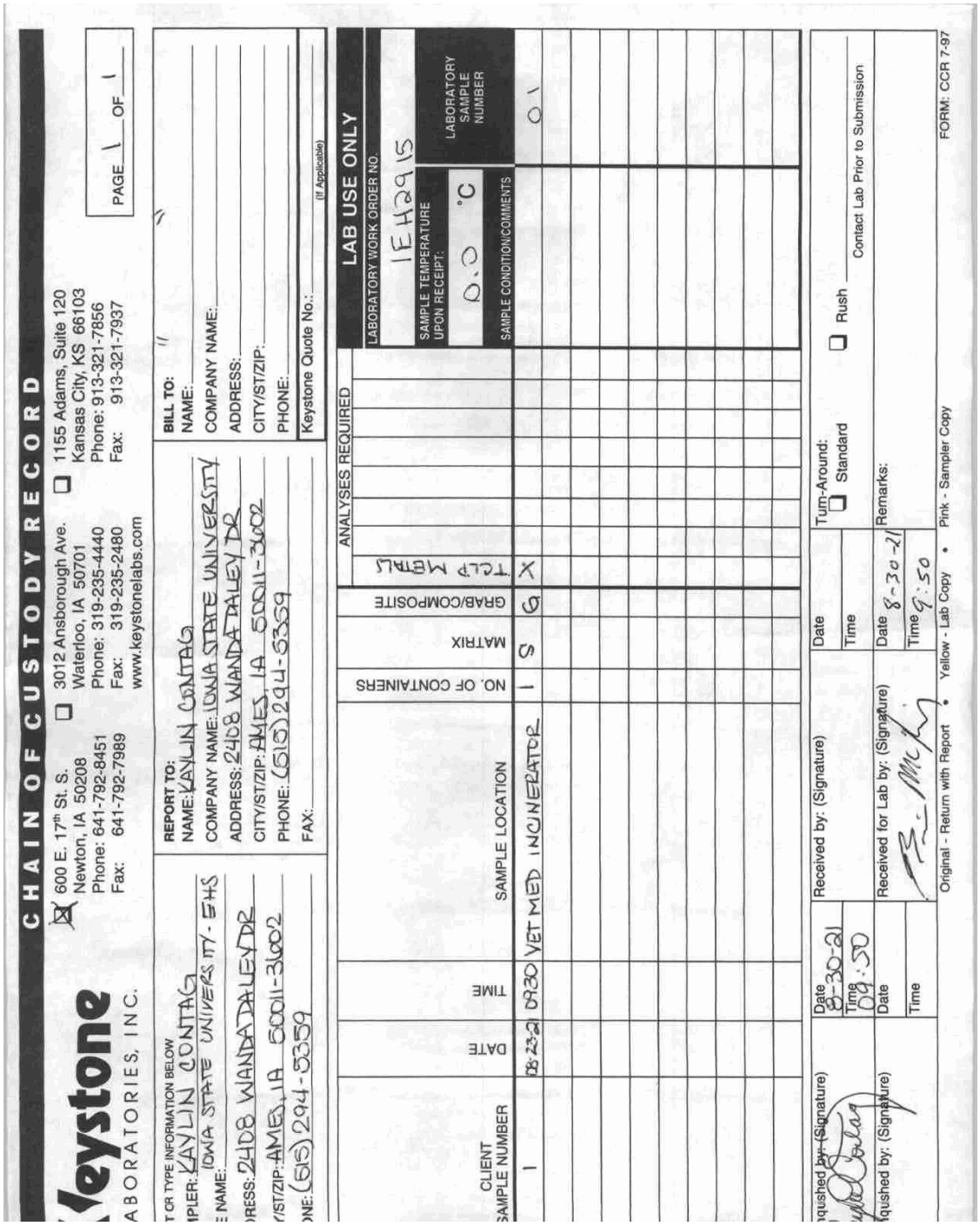

CHAIN OF CUSTODY RECORD

Keystone LABORATORIES, INC.

600 E. 17th St. S. Newton, IA 50208 Phone: 641-792-8451 Fax: 641-792-7989

3012 Ansborough Ave. Waterloo, IA 50701 Phone: 319-235-4440 Fax: 319-235-2480

1155 Adams, Suite 120 Kansas City, KS 66103 Phone: 913-321-7856 Fax: 913-321-7937

www.keystonelabs.com

PAGE 1 OF 1

PRINT OR TYPE INFORMATION BELOW
SAMPLER: KAYLIN CONTAG
CLIENT NAME: IOWA STATE UNIVERSITY - EHS
ADDRESS: 2408 WANDA DALEY DR
CITY/ST/ZIP: AMES, IA 50011-3002
PHONE: (515) 294-5359

REPORT TO:
NAME: KAYLIN CONTAG
COMPANY NAME: IOWA STATE UNIVERSITY
ADDRESS: 2408 WANDA DALEY DR
CITY/ST/ZIP: AMES, IA 50011-3002
PHONE: (515) 294-5359
FAX:

BILL TO:
NAME:
COMPANY NAME:
ADDRESS:
CITY/ST/ZIP:
PHONE:
Keystone Quote No.: (If Applicable)

CLIENT SAMPLE NUMBER	DATE	TIME	SAMPLE LOCATION	NO. OF CONTAINERS	MATRIX	GRAB/COMPOSITE	TCLP METALS	LABORATORY SAMPLE NUMBER
1	8-23-21	0930	VET MED INCINERATOR	1	S	G	X	01

ANALYSES REQUIRED

LAB USE ONLY
LABORATORY WORK ORDER NO.: 1EH2915
SAMPLE TEMPERATURE UPON RECEIPT: 0.0 °C
SAMPLE CONDITION/COMMENTS:

Relinquished by: (Signature) Date 8-30-21 Time 09:30 Received by: (Signature)

Relinquished by: (Signature) Date Time Received by: (Signature) Date Time

Turn-Around: ☐ Standard ☐ Rush Contact Lab Prior to Submission

Remarks: Date 8-30-21 Time 9:50

Original - Return with Report • Yellow - Lab Copy • Pink - Sampler Copy

FORM: CCR 7-97

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