



February 21, 2022

Location: Patapsco WWTP
Subject: Sludge Sample Results

To whom it may concern,

Please find below a table summarizing the results of the sampling campaign conducted on February 04, 2022. Samples were collected from;

- Sludge blending tank sample collection line inside of the Synagro processing facility (SBT),
- Southwest Diversion metering chamber (SWD), and
- IPI Screen building (IPI)

The following analysis was performed on all samples by Microbac Laboratory in Baltimore, MD.

- EPA 8260D for toluene

The results from the aforementioned analysis are tabulated below

	SWD	IPI	SBT
Date	2/4/2022	2/4/2022	2/4/2022
Toluene (ug/L)	2.97	16.4	24,900

The full report furnished by Microbac Labs is attached following this page. Please contact Aaron Thomas (Arthomas@hazenandsawyer.com) with any questions.

Regards,

Charles Portner

Job no



Microbac Laboratories, Inc. - Baltimore

CERTIFICATE OF ANALYSIS

22B0410

Hazen & Sawyer

Project Name: Patapsco OPS

Erik Rosenfeldt
1555 Roseneath RD
Richmond, VA 23230

Project / PO Number: N/A
Received: 02/04/2022
Reported: 02/17/2022

Analytical Testing Parameters

Client Sample ID:	002676 SWD	Collected By:	Charles Portner
Sample Matrix:	Wastewater	Collection Date:	02/04/2022 10:00
Lab Sample ID:	22B0410-01		

Analyses Performed by: Microbac Laboratories Inc., - Marietta, OH

Volatile Organic Compounds by GCMS	Result	Limit(s)	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 8260B		Method Notes: A9, H						
Toluene	2.97		1.00	ug/L		02/14/22	1715	CCC
Surrogate: 4-Bromofluorobenzene	108	Limit: 86-115		% Rec		02/14/22	1715	CCC
Surrogate: Dibromofluoromethane	109	Limit: 86-118		% Rec		02/14/22	1715	CCC
Surrogate: 1,2-Dichloroethane-d4	109	Limit: 80-120		% Rec		02/14/22	1715	CCC
Surrogate: Toluene-d8	98.0	Limit: 88-110		% Rec		02/14/22	1715	CCC

Client Sample ID:	002701 LL	Collected By:	Charles Portner
Sample Matrix:	Wastewater	Collection Date:	02/04/2022 10:00
Lab Sample ID:	22B0410-02		

Analyses Performed by: Microbac Laboratories Inc., - Marietta, OH

Volatile Organic Compounds by GCMS	Result	Limit(s)	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 8260B		Method Notes: A9, D1, H						
Toluene	16.4		2.00	ug/L		02/14/22	1733	CCC
Surrogate: 4-Bromofluorobenzene	107	Limit: 86-115		% Rec		02/14/22	1733	CCC
Surrogate: Dibromofluoromethane	111	Limit: 86-118		% Rec		02/14/22	1733	CCC
Surrogate: 1,2-Dichloroethane-d4	108	Limit: 80-120		% Rec		02/14/22	1733	CCC
Surrogate: Toluene-d8	98.8	Limit: 88-110		% Rec		02/14/22	1733	CCC



Microbac Laboratories, Inc. - Baltimore

CERTIFICATE OF ANALYSIS

22B0410

Client Sample ID: 002674 SS	Collected By: Charles Portner
Sample Matrix: Wastewater	Collection Date: 02/04/2022 9:30
Lab Sample ID: 22B0410-03	

Analyses Performed by: Microbac Laboratories Inc., - Marietta, OH

Volatile Organic Compounds by GCMS	Result	Limit(s)	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 8260B					Method Notes: A8, A9, D1, D3			
Toluene	24900		5000	ug/L			02/11/22 2022	CCC
Surrogate: 4-Bromofluorobenzene	109	Limit: 86-115		% Rec			02/11/22 2022	CCC
Surrogate: Dibromofluoromethane	109	Limit: 86-118		% Rec			02/11/22 2022	CCC
Surrogate: 1,2-Dichloroethane-d4	109	Limit: 80-120		% Rec			02/11/22 2022	CCC
Surrogate: Toluene-d8	102	Limit: 88-110		% Rec			02/11/22 2022	CCC

Results in **bold** have exceeded a limit defined for this project. Limits are provided for reference but as regulatory limits change frequently, Microbac Laboratories, Inc. advises the recipient of this report to confirm such limits and units of concentration with the appropriate Federal, state or local authorities before acting on the data.

Definitions

- A8:** Sample was received in an improper container.
- A9:** Sample was improperly preserved.
- D1:** Dilution was performed due to matrix interference.
- D3:** Dilution was performed due to high target analyte concentration.
- H:** Sample was analyzed past holding time.
- RL:** Reporting Limit
- ug/L:** Micrograms per Liter

Project Requested Certification(s)

Microbac Laboratories Inc., - Marietta, OH
68-01670
460187

PA Department of Environmental Protection
Virginia Department of General Services

Report Comments

Samples were received in proper condition and the reported results conform to applicable accreditation standard unless otherwise noted.

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:

Brittany Spraker
Supervisor - Micro
Reported: 02/17/2022 16:47

Microbac Laboratories, Inc.

2101 Van Deman Street | Baltimore, MD 21224 | 410.633.1800 p | www.microbac.com

Reviewed By: Hazen

Date: 02/07/22

2101 Van Deman Street
Baltimore, MD 21224
(410) 633-1800

MICROBAC

CHAIN OF CUSTODY RECORD

Number
Instructions on back

TO BE COMPLETED BY MICROBAC

Lab Report Address
Client Name: Hazen & Sawyer
Address: 1 South St. Suite 1160
City, State, Zip: Balt, MD 21202
Contact: Aaron Thomas
Telephone No.: 443-717-3247
Send Report via: Mail Fax e-mail (address)

Invoice Address
Client Name: Hazen & Sawyer
Address: 1 South St. Suite 1160
City, State, Zip: Baltimore, MD 21202
Contact: Aaron Thomas
Telephone No.: 443-717-3247
Send Invoice via: Mail Fax e-mail (address)

Turnaround Time
 Routine (5 to 7 business days)
 RUSH* (notify lab)
(needed by)
Report Type
 Results Only Level 1 Level 2 Level 3 Level 4 EDD

Temperature Upon Receipt (°C) 6.3°C
Therm ID
Holding Time
Samples Received on Ice? Yes No N/A
Custody Seals Intact? Yes No N/A

Project: Patapsco Ops
Sampled by (PRINT): Charles Porter

Location: Patapsco WWTP
Sampler Signature: Charles Porter

PO No.:
Compliance Monitoring? Yes No
 Agency/Program
Sampler Phone No.: 202-340-9282

* Matrix Types: Soil/Solid (S), Sludge, Oil, Wipe, Drinking Water (DW), Groundwater (GW), Surface Water (SW), Waste Water (WW), Other (specify)
** Preservative Types: (1) HNO3, (2) H2SO4, (3) HCl, (4) NaOH, (5) Zinc Acetate, (6) Methanol, (7) Sodium Bisulfate, (8) Sodium Thiosulfate, (9) Hexane, (10) Unpreserved

REQUESTED ANALYSIS:

Lab ID	Client Sample ID	Date Collected	Time Collected	No. of Containers	Matrix	Grab / Comp	Preservative Types **	
002676	SWD	2/4/22	10:AM	1	WW	Grab	U	8260D
002701	LL	2/4/22	10 AM	1	WW	Grab	U	8260D
002674	SS	2/4/22	9:30 AM	1	WW	Comp	U	8260D



22B0410

Additional Notes

DO NOT TEST IF SEAL IS BROKEN ON SAMPLE CONTAINER'S

Possible Hazard Identification Comments

Hazardous Non-Hazardous Radioactive

Sample Disposition

Dispose as appropriate Return Archive

Relinquished By (signature)

Charles Porter

Date/Time

2-4-22 10:35

Relinquished By (signature)

Charles Porter

Date/Time

2/4/22 11:55

Relinquished By (signature)

Received By (signature)

Charles Porter

Date/Time

2/4/22 10:35

Received By (signature)

Charles Porter

Date/Time

2-4-22 11:55

Received By (signature)

Cooler Receipt Form / Sample Acceptance & Noncompliance Form

Microbac Laboratories, Inc., Baltimore Division
 Control # 606-03
 Effective Date: 11/30/2016
 Page 1 of 1

Number of Coolers Received: 1
 Client: Hazen + Sawyer
 Form Completed By: Omarie Erbesman

Receipt Date / Time: 2-4-22 1155
 Work Order # 2250410

Shipper:
 Custody Tape Intact:
 Containers Intact:
 Sample Received on Ice or refrigerated:

 Chain of Custody Present with shipment:
 Sample Bottle IDs agree with COC:
 Preservation requirements met:
 Correct Number of Containers / Sample Volume:
 Headspace in container:
 Type of Sample:

Microbac Client UPS FedEx
 YES / NO / NA
 YES / NO
 YES / NO / NA
 Infrared (IR) Temperature: 63 °C
 YES / NO
 YES / NO
 YES / NO / (Not Checked)
 YES / NO (If No, contact client immediately)
 YES / (NO) NA 2/4/22
 Water Soil Wipes Oil Filter Solid
 Sludge Food Swab Other

Container Type / Quantity:

A -	Unpreserved	H2SO4	HNO3	HCl	NaOH	NaOH/Ascorbic Acid:	If preserved pH <2, pH >10
B -	Unpreserved	H2SO4	HNO3	HCl	NaOH	NaOH/Ascorbic Acid	If preserved pH <2, pH >10
C -	Unpreserved	H2SO4	HNO3	HCl	NaOH	NaOH/Ascorbic Acid	If preserved pH <2, pH >10
D -	Unpreserved	H2SO4	HNO3	HCl	NaOH	NaOH/Ascorbic Acid	If preserved pH <2, pH >10
E -	Unpreserved	H2SO4	HNO3	HCl	NaOH	NaOH/Ascorbic Acid	If preserved pH <2, pH >10
H -	Unpreserved	H2SO4	HNO3	HCl	NaOH	NaOH/Ascorbic Acid	If preserved pH <2, pH >10
K -	Unpreserved	H2SO4	HNO3	HCl	NaOH	NaOH/Ascorbic Acid	If preserved pH <2, pH >10
L -	Unpreserved	H2SO4	HNO3	HCl	NaOH	NaOH/Ascorbic Acid	If preserved pH <2, pH >10
M -	Unpreserved	H2SO4	HNO3	HCl	NaOH	NaOH/Ascorbic Acid	If preserved pH <2, pH >10
P -	Unpreserved	H2SO4	HNO3	HCl	NaOH	NaOH/Ascorbic Acid	If preserved pH <2, pH >10
W -	Unpreserved	H2SO4	HNO3	HCl	NaOH	NaOH/Ascorbic Acid	If preserved pH <2, pH >10
V -	Unpreserved	HCl	HCl / Ascorbic Acid	HCl / NaTHIO	(Checked at time of Analysis)		
F -	Unpreserved	NaTHIO (Checked at time of Analysis)					
S -	Unpreserved	NaTHIO (Checked at time of Analysis)					
SN -	Unpreserved	NaTHIO NaTHIO/EDTA (Checked at time of Analysis)					
<u>3 glass jars unpreserved</u>	Unpreserved	H2SO4	HNO3	HCl	NaOH	NaOH/Ascorbic Acid	If preserved pH <2, pH >10
	Unpreserved	H2SO4	HNO3	HCl	NaOH	NaOH/Ascorbic Acid	If preserved pH <2, pH >10
	Unpreserved	H2SO4	HNO3	HCl	NaOH	NaOH/Ascorbic Acid	If preserved pH <2, pH >10

Describe preservation requirements not met:

All Acid preserved <2 pH NaOH preserved >12 pH All others >2 and <10 (usually 4-8)

Sample ID: _____ H₂SO₄ HNO₃ NaOH _____ mls added
 Sample ID: _____ H₂SO₄ HNO₃ NaOH _____ mls added
 Sample ID: _____ H₂SO₄ HNO₃ NaOH _____ mls added
 Sample ID: _____ H₂SO₄ HNO₃ NaOH _____ mls added

H₂SO₄ – Sulfuric Acid, HNO₃ – Nitric Acid, NaOH – Sodium Hydroxide, ASC – Ascorbic Acid, NaTHIO – Sodium Thiosulfate

Describe Anomalies: _____

Contact information / Summary of Actions:

Date / Time: _____ Contact: _____ Contact By: _____
 Comments: _____

Hazen

March 21, 2022

Location: Patapsco WWTP
Subject: Sludge Sample Results

To whom it may concern,

Please find below a table summarizing the results of the sampling campaign conducted on March 3, 2022. Samples were collected from;

- Southwest Diversion junction chamber (SWD),
- Screening area of the Pump and Blower building (IPI),
- Gravity sludge thickener #1 (GST),
- Sludge blending tank sample collection line inside of the Synagro processing facility (Synagro Sludge).

The following analyses were performed on all samples by Microbac Laboratory in Baltimore, MD;

- EPA 8015D for gasoline range organics (GRO),
- EPA 8260D for diesel range organics (DRO),
- EPA 8015D for toluene.

All results are given in ug/L (ppb) concentrations.

	GRO	DRO	Toluene
SWD	108	<5,000	14.4
IPI	499	598,000	24.2
GST	1,030	32,700	290
Synagro Sludge	20,100	1,830,000	10,100

The full report furnished by Microbac Labs is attached following this page. Please contact Aaron Thomas (Arthomas@hazenandsawyer.com) with any questions.

Regards,



Charles Portner

Job no



Microbac Laboratories, Inc. - Baltimore

CERTIFICATE OF ANALYSIS

22C0342

Hazen & Sawyer

Project Name: Patapsco OPS Patapsco WWTP

Charles Portner
1555 Roseneath RD
Richmond, VA 23230

Project / PO Number: N/A
Received: 03/04/2022
Reported: 03/21/2022

Analytical Testing Parameters

Table with 4 columns: Client Sample ID, Sample Matrix, Lab Sample ID, Collected By, Collection Date. Values include SWD, Wastewater, 22C0342-01, Charles Portner, 03/04/2022 10:40.

Analyses Performed by: Microbac Laboratories Inc., - Marietta, OH

Table for Volatile Hydrocarbons by GC/FID. Columns: Result, Limit(s), RL, Units, Note, Prepared, Analyzed, Analyst. Includes Gasoline Range Organics (GRO) and Surrogate: Chlorobenzene.

Table for Volatile Organic Compounds by GCMS. Columns: Result, Limit(s), RL, Units, Note, Prepared, Analyzed, Analyst. Includes Toluene and various surrogates.

Table for Extractable Hydrocarbons by GC/FID. Columns: Result, Limit(s), RL, Units, Note, Prepared, Analyzed, Analyst. Includes Diesel Range Organics (C10-C28) and surrogates. Method Notes: D1.



Microbac Laboratories, Inc. - Baltimore

CERTIFICATE OF ANALYSIS

22C0342

Client Sample ID: IPI	Collected By: Charles Portner
Sample Matrix: Wastewater	Collection Date: 03/04/2022 10:40
Lab Sample ID: 22C0342-02	

Analyses Performed by: Microbac Laboratories Inc., - Marietta, OH

Volatile Hydrocarbons by GC/FID	Result	Limit(s)	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 8015D								
Gasoline Range Organics (GRO)	499		100	ug/L			03/14/22 1738	KJB
Surrogate: Chlorobenzene	107	Limit: 74-138		% Rec			03/14/22 1738	KJB

Volatile Organic Compounds by GCMS	Result	Limit(s)	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 8260B								
Toluene	24.2		1.00	ug/L			03/10/22 0122	JDS
Surrogate: 4-Bromofluorobenzene	103	Limit: 86-115		% Rec			03/10/22 0122	JDS
Surrogate: Dibromofluoromethane	98.5	Limit: 86-118		% Rec			03/10/22 0122	JDS
Surrogate: 1,2-Dichloroethane-d4	100	Limit: 80-120		% Rec			03/10/22 0122	JDS
Surrogate: Toluene-d8	98.4	Limit: 88-110		% Rec			03/10/22 0122	JDS

Extractable Hydrocarbons by GC/FID	Result	Limit(s)	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 8015D								
Diesel Range Organics (C10-C28)	598000		150000	ug/L		03/09/22 1120	03/14/22 1054	SCB
Surrogate: o-Terphenyl	0	Limit: 49-141		% Rec	S3	03/09/22 1120	03/14/22 1054	SCB
Surrogate: Octacosane	0	Limit: 26-152		% Rec	S3	03/09/22 1120	03/14/22 1054	SCB



Microbac Laboratories, Inc. - Baltimore

CERTIFICATE OF ANALYSIS

22C0342

Client Sample ID: SS	Collected By: Charles Portner
Sample Matrix: Sludge	Collection Date: 03/04/2022 10:50
Lab Sample ID: 22C0342-03	

Analyses Performed by: Microbac Laboratories Inc., - Marietta, OH

Volatile Hydrocarbons by GC/FID	Result	Limit(s)	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 8015D								
Gasoline Range Organics (GRO)	20100		9650	ug/kg wet	D1		03/18/22 1830	KJB
Surrogate: Chlorobenzene	97.8	Limit: 64-148		% Rec			03/18/22 1830	KJB

Volatile Organic Compounds by GCMS	Result	Limit(s)	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 8260B								
Method Notes: D3								
Toluene	10100		241	ug/kg wet		03/16/22 1522	03/17/22 1519	CCC
Surrogate: 4-Bromofluorobenzene	97.9	Limit: 74-121		% Rec		03/16/22 1522	03/17/22 1519	CCC
Surrogate: Dibromofluoromethane	101	Limit: 80-120		% Rec		03/16/22 1522	03/17/22 1519	CCC
Surrogate: 1,2-Dichloroethane-d4	103	Limit: 80-120		% Rec		03/16/22 1522	03/17/22 1519	CCC
Surrogate: Toluene-d8	96.9	Limit: 81-117		% Rec		03/16/22 1522	03/17/22 1519	CCC

Extractable Hydrocarbons by GC/FID	Result	Limit(s)	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 8015D								
Method Notes: D1								
Diesel Range Organics (C10-C28)	1830000		42500	ug/kg wet		03/11/22 1040	03/11/22 2352	SCB
Surrogate: o-Terphenyl	49.7	Limit: 43-136		% Rec		03/11/22 1040	03/11/22 2352	SCB
Surrogate: Octacosane	76.3	Limit: 25-162		% Rec		03/11/22 1040	03/11/22 2352	SCB



Microbac Laboratories, Inc. - Baltimore

CERTIFICATE OF ANALYSIS

22C0342

Client Sample ID: GST	Collected By: Charles Portner
Sample Matrix: Wastewater	Collection Date: 03/04/2022 10:30
Lab Sample ID: 22C0342-04	

Analyses Performed by: Microbac Laboratories Inc., - Marietta, OH

Volatile Hydrocarbons by GC/FID	Result	Limit(s)	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 8015D					Method Notes: AC, D			
Gasoline Range Organics (GRO)	1030		200	ug/L			03/11/22 1713	KJB
Surrogate: Chlorobenzene	91.7	Limit: 74-138		% Rec			03/11/22 1713	KJB

Volatile Organic Compounds by GCMS	Result	Limit(s)	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 8260B								
Toluene	290		20.0	ug/L			03/15/22 2056	KJB
Surrogate: 4-Bromofluorobenzene	102	Limit: 86-115		% Rec			03/15/22 2056	KJB
Surrogate: Dibromofluoromethane	108	Limit: 86-118		% Rec			03/15/22 2056	KJB
Surrogate: 1,2-Dichloroethane-d4	111	Limit: 80-120		% Rec			03/15/22 2056	KJB
Surrogate: Toluene-d8	99.9	Limit: 88-110		% Rec			03/15/22 2056	KJB

Extractable Hydrocarbons by GC/FID	Result	Limit(s)	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 8015D					Method Notes: D1			
Diesel Range Organics (C10-C28)	32700		5000	ug/L		03/09/22 1120	03/11/22 1933	SCB
Surrogate: o-Terphenyl	33.0	Limit: 49-141		% Rec	S2	03/09/22 1120	03/11/22 1933	SCB
Surrogate: Octacosane	28.8	Limit: 26-152		% Rec		03/09/22 1120	03/11/22 1933	SCB

Results in bold have exceeded a limit defined for this project. Limits are provided for reference but as regulatory limits change frequently, Microbac Laboratories, Inc. advises the recipient of this report to confirm such limits and units of concentration with the appropriate Federal, state or local authorities before acting on the data.

Definitions

- AC:** Dilution performed due to insufficient volume.
- D:** Dilution performed on sample.
- D1:** Dilution was performed due to matrix interference.
- D3:** Dilution was performed due to high target analyte concentration.
- MDL:** Minimum Detection Limit
- RL:** Reporting Limit
- S2:** Surrogate recovery is below acceptance limits.
- S3:** Surrogate was diluted out.
- ug/kg:** Micrograms per Killogram
- ug/L:** Micrograms per Liter

Project Requested Certification(s)

Microbac Laboratories Inc., - Marietta, OH
68-01670
460187

PA Department of Environmental Protection
Virginia Department of General Services



Microbac Laboratories, Inc. - Baltimore

CERTIFICATE OF ANALYSIS

22C0342

Report Comments

Samples were received in proper condition and the reported results conform to applicable accreditation standard unless otherwise noted.

*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:

A handwritten signature in black ink that reads "Brittany Spraker".

Brittany Spraker

Supervisor - Micro

Reported: 03/21/2022 14:05

MICROBAC

2101 Van Deman Street
 Baltimore, MD 21224
 (410) 633-1800

CHAIN OF CUSTODY RECORD
 Number
 Instructions on back

Lab Report Address

Invoice Address

Turnaround Time

TO BE COMPLETED BY MICROBAC

Client Name: Hazen & Sawyer
 Address: 1 South St. Suite 1160
 City, State, Zip: Baltimore MD 21202

Client Name: Hazen & Sawyer
 Address: 11
 City, State, Zip: 11

Routine (5 to 7 business days)
 RUSH* (notify lab)

Temperature Upon Receipt (°C)
 Therm ID
 Holding Time
 Samples Received on Ice? Yes No N/A

Contact: Charles Farmer

Contact: Aaron Thomas

Report Type

Customary Seals Intact? Yes No N/A

Telephone No.: 202-340-9282

Telephone No.: 443-948-7894

Results Only Level 1 Level 2 Level 3 Level 4 EDD

Send Report Via: Mail Fax e-mail (address)

Location: Patapsco WUTP

Compliance Monitoring? Yes No

Project: Patapsco ORS

Sampler Signature: Charles Farmer

Agency/Program

Sampled by (PRINT): Charles Farmer

Sampler Signature: Charles Farmer

Sampler Phone No.: 202-340-9282


Matrix Types: Soil/Solid (S), Sludge, Oil, Wipe, Drinking Water (DW), Groundwater (GW), Surface Water (SW), Waste Water (WW), Other (specify)

Preservative Types: (1) HNO3, (2) H2SO4, (3) HCl, (4) NaOH, (5) Zinc Acetate, (6) Methanol, (7) Sodium Bisulfate, (8) Sodium Thiosulfate, (9) Hexane, (10) Unpreserved

REQUESTED ANALYSIS

Lab ID	Client Sample ID	Date Collected	Time Collected	No. of Containers	Matrix	Grab / Comp	Preservative Types **
SWD	Vial	3/4/22	10:40	3	WW	Grab	Ucl
IPI	Vial	3/4/22	10:40	3	WW	Grab	Ucl
SS	Vial	3/4/22	10:50	3	Sludge	Grab	Ucl
GST	Vial	3/4/22	10:30	3	WW	Grab	Ucl
SWD	1L	3/4/22	10:40	1	WW	Grab	Ucl
IPI	1L	3/4/22	10:40	1	WW	Grab	Ucl
SS	1L	3/4/22	10:50	1	Sludge	Grab	Ucl
GST	1L	3/4/22	10:30	1	WW	Grab	Ucl

Toluene, DRP, ARD
 Toluene, DRP, ARD
 Toluene, DRP, ARD
 DRD
 DRD

22C0342


Possible Hazard Identification

Hazardous Non-Hazardous Radioactive

Sample Disposition

Dispose as appropriate Return Archive

Relinquished By (signature)
 Relinquished By (signature)
 Relinquished By (signature)

Date/Time 3/4/22 11:30
 Date/Time 3/4/22 12:15
 Date/Time 3/4/22 12:15

Received By (signature)
 Received By (signature)
 Received By (signature)

Cooler Receipt Form / Sample Acceptance & Noncompliance Form

Microbac Laboratories, Inc., Baltimore Division
 Control # 606-03
 Effective Date: 11/30/2016
 Page 1 of 1

Number of Coolers Received: 1
 Client: Hazen + Sawyer
 Form Completed By: Melissa Bohole

Receipt Date / Time: 3/4/22 12:15
 Work Order # 2200342

Shipper:
 Custody Tape Intact:
 Containers Intact:
 Sample Received on Ice or refrigerated:

Microbac Client UPS FedEx
 YES / NO / NA

YES / NO
YES / NO / NA

Infrared (IR) Temperature: 12.3 °C

YES / NO

YES / NO

YES / NO / Not Checked

YES / NO (If No, contact client immediately)

YES / NO / NA

Water Soil Wipes Oil Filter Solid
Sludge Food Swab Other

Chain of Custody Present with shipment:
 Sample Bottle IDs agree with COC:
 Preservation requirements met:
 Correct Number of Containers / Sample Volume:
 Headspace in container:
 Type of Sample:

Container Type / Quantity:

A -	Unpreserved	H2SO4	HNO3	HCl	NaOH	NaOH/Ascorbic Acid:	If preserved pH <2	pH >10
B -	Unpreserved	H2SO4	HNO3	HCl	NaOH	NaOH/Ascorbic Acid	If preserved pH <2	pH >10
C -	Unpreserved	H2SO4	HNO3	HCl	NaOH	NaOH/Ascorbic Acid	If preserved pH <2	pH >10
D -	Unpreserved	H2SO4	HNO3	HCl	NaOH	NaOH/Ascorbic Acid	If preserved pH <2	pH >10
E -	Unpreserved	H2SO4	HNO3	HCl	NaOH	NaOH/Ascorbic Acid	If preserved pH <2	pH >10
H -	Unpreserved	H2SO4	HNO3	HCl	NaOH	NaOH/Ascorbic Acid	If preserved pH <2	pH >10
K -	Unpreserved	H2SO4	HNO3	HCl	NaOH	NaOH/Ascorbic Acid	If preserved pH <2	pH >10
L -	Unpreserved	H2SO4	HNO3	HCl	NaOH	NaOH/Ascorbic Acid	If preserved pH <2	pH >10
M -	Unpreserved	H2SO4	HNO3	HCl	NaOH	NaOH/Ascorbic Acid	If preserved pH <2	pH >10
P -	Unpreserved	H2SO4	HNO3	HCl	NaOH	NaOH/Ascorbic Acid	If preserved pH <2	pH >10
W -	<u>4</u> Unpreserved	H2SO4	HNO3	HCl	NaOH	NaOH/Ascorbic Acid	If preserved pH <2	pH >10
V -	Unpreserved	<u>12</u> HCl	HCl / Ascorbic Acid	HCl / NaTHIO	(Checked at time of Analysis)			
F -	Unpreserved	NaTHIO	(Checked at time of Analysis)					
S -	Unpreserved	NaTHIO	(Checked at time of Analysis)					
SN -	Unpreserved	NaTHIO	NaTHIO/EDTA	(Checked at time of Analysis)				
	Unpreserved	H2SO4	HNO3	HCl	NaOH	NaOH/Ascorbic Acid	If preserved pH <2	pH >10
	Unpreserved	H2SO4	HNO3	HCl	NaOH	NaOH/Ascorbic Acid	If preserved pH <2	pH >10
	Unpreserved	H2SO4	HNO3	HCl	NaOH	NaOH/Ascorbic Acid	If preserved pH <2	pH >10

Describe preservation requirements not met:

All Acid preserved <2 pH NaOH preserved >12 pH All others >2 and <10 (usually 4-8)

Sample ID: _____ H₂SO₄ HNO₃ NaOH _____ mls added
 Sample ID: _____ H₂SO₄ HNO₃ NaOH _____ mls added
 Sample ID: _____ H₂SO₄ HNO₃ NaOH _____ mls added
 Sample ID: _____ H₂SO₄ HNO₃ NaOH _____ mls added

H₂SO₄ - Sulfuric Acid, HNO₃ - Nitric Acid, NaOH - Sodium Hydroxide, ASC - Ascorbic Acid, NaTHIO - Sodium Thiosulfate

Describe Anomalies:

Contact information / Summary of Actions:

Date / Time: _____ Contact: _____ Contact By: _____

Comments: _____

Hazen

May 5, 2022

Location: Patapsco WWTP
Subject: Sludge Sample Results

To whom it may concern,

Please find below a table summarizing the results of the sampling campaign conducted on April 12, 2022. Samples were collected from;

- Sludge blending tank sample collection line inside of the Synagro processing facility (Synagro Sludge),
- Gravity sludge thickener #1 and #2 (GST 1 and GST 2),
- Synagro dewatered cake (Cake), and
- Synagro dewatering process centrate (Centrate).

The following analyses were performed on all samples by Microbac Laboratory in Baltimore, MD.

- EPA 8015D for gasoline range organics (GRO)
- EPA 8260D for toluene
- EPA 8015D for diesel range organics (DRO)

The results from the aforementioned analysis are tabulated below

	SBT Sludge	GST 1	GST 2	Cake	Centrate
Date	4/12/2022	4/12/2022	4/12/2022	4/12/2022	4/12/2022
GRO (ug/kg)	3,220,000	<589,000	<490,000	1,600,000	10,700
Toluene (ug/kg)	860,000	120,000	195,000	550,000	insufficient sample
DRO (mg/kg)	13,800	9,470	21,600	8,630	insufficient sample

The full report furnished by Microbac Labs is attached following this page. Please contact Aaron Thomas (Arthomas@hazenandsawyer.com) with any questions.

Regards,



Charles Portner

Job no



Microbac Laboratories, Inc. - Baltimore

CERTIFICATE OF ANALYSIS

22D0582

Hazen & Sawyer

Project Name: Patapsco WWTP

Charles Portner
1555 Roseneath RD
Richmond, VA 23230

Project / PO Number: N/A
Received: 04/12/2022
Reported: 04/29/2022

Analytical Testing Parameters

Table with client sample details: Client Sample ID: SL, Sample Matrix: Sludge, Lab Sample ID: 22D0582-01, Collected By: charles Portner, Collection Date: 04/12/2022 9:45

Analyses Performed by: Microbac Laboratories Inc., - Marietta, OH

General Parameters

Table with columns: Result, Limit(s), RL, Units, Note, Prepared, Analyzed, Analyst. Row: Method: ASTM D2216-10, Percent Solids, 2.93, 1.00, % (by wt.), 04/19/22 0642, 04/20/22 0505, JMH

Volatile Hydrocarbons by GC/FID

Table with columns: Result, Limit(s), RL, Units, Note, Prepared, Analyzed, Analyst. Includes Method: EPA 8015D, Gasoline Range Organics (GRO), Surrogate: Chlorobenzene, and Method Notes: D1

Volatile Organic Compounds by GCMS

Table with columns: Result, Limit(s), RL, Units, Note, Prepared, Analyzed, Analyst. Includes Method: EPA 8260B, Method Notes: D1, and a list of various organic compounds with their respective results and limits.



Microbac Laboratories, Inc. - Baltimore

CERTIFICATE OF ANALYSIS

22D0582

Client Sample ID: SL	Collected By: charles Portner
Sample Matrix: Sludge	Collection Date: 04/12/2022 9:45
Lab Sample ID: 22D0582-01	

Volatiles Organic Compounds by GCMS	Result	Limit(s)	RL	Units	Note	Prepared	Analyzed	Analyst
1,4-Dichlorobenzene	<26800		26800	ug/kg dry		04/25/22 1151	04/25/22 2009	KJB
Dichlorodifluoromethane	<26800		26800	ug/kg dry		04/25/22 1151	04/25/22 2009	KJB
1,1-Dichloroethane	<26800		26800	ug/kg dry		04/25/22 1151	04/25/22 2009	KJB
1,2-Dichloroethane	<26800		26800	ug/kg dry		04/25/22 1151	04/25/22 2009	KJB
1,1-Dichloroethene	<26800		26800	ug/kg dry		04/25/22 1151	04/25/22 2009	KJB
trans-1,2-Dichloroethene	<26800		26800	ug/kg dry		04/25/22 1151	04/25/22 2009	KJB
cis-1,2-Dichloroethene	<26800		26800	ug/kg dry		04/25/22 1151	04/25/22 2009	KJB
1,2-Dichloropropane	<26800		26800	ug/kg dry		04/25/22 1151	04/25/22 2009	KJB
1,3-Dichloropropane	<26800		26800	ug/kg dry		04/25/22 1151	04/25/22 2009	KJB
2,2-Dichloropropane	<26800		26800	ug/kg dry		04/25/22 1151	04/25/22 2009	KJB
1,1-Dichloropropene	<26800		26800	ug/kg dry		04/25/22 1151	04/25/22 2009	KJB
trans-1,3-Dichloropropene	<26800		26800	ug/kg dry		04/25/22 1151	04/25/22 2009	KJB
cis-1,3-Dichloropropene	<26800		26800	ug/kg dry		04/25/22 1151	04/25/22 2009	KJB
Ethylbenzene	<26800		26800	ug/kg dry		04/25/22 1151	04/25/22 2009	KJB
Hexachlorobutadiene	<26800		26800	ug/kg dry		04/25/22 1151	04/25/22 2009	KJB
2-Hexanone	<26800		26800	ug/kg dry		04/25/22 1151	04/25/22 2009	KJB
Isopropylbenzene	<26800		26800	ug/kg dry		04/25/22 1151	04/25/22 2009	KJB
p-Isopropyltoluene	<26800		26800	ug/kg dry		04/25/22 1151	04/25/22 2009	KJB
Methylene chloride	<26800		26800	ug/kg dry		04/25/22 1151	04/25/22 2009	KJB
4-Methyl-2-pentanone	<26800		26800	ug/kg dry		04/25/22 1151	04/25/22 2009	KJB
Naphthalene	<26800		26800	ug/kg dry		04/25/22 1151	04/25/22 2009	KJB
Propionitrile	<26800		26800	ug/kg dry		04/25/22 1151	04/25/22 2009	KJB
n-Propylbenzene	<26800		26800	ug/kg dry		04/25/22 1151	04/25/22 2009	KJB
Styrene	<26800		26800	ug/kg dry		04/25/22 1151	04/25/22 2009	KJB
1,1,2,2-Tetrachloroethane	<26800		26800	ug/kg dry		04/25/22 1151	04/25/22 2009	KJB
1,1,1,2-Tetrachloroethane	<26800		26800	ug/kg dry		04/25/22 1151	04/25/22 2009	KJB
Tetrachloroethene	<26800		26800	ug/kg dry		04/25/22 1151	04/25/22 2009	KJB
Toluene	860000		26800	ug/kg dry		04/25/22 1151	04/25/22 2009	KJB
1,2,3-Trichlorobenzene	<26800		26800	ug/kg dry		04/25/22 1151	04/25/22 2009	KJB
1,2,4-Trichlorobenzene	<26800		26800	ug/kg dry		04/25/22 1151	04/25/22 2009	KJB
1,1,1-Trichloroethane	<26800		26800	ug/kg dry		04/25/22 1151	04/25/22 2009	KJB
1,1,2-Trichloroethane	<26800		26800	ug/kg dry		04/25/22 1151	04/25/22 2009	KJB
Trichloroethene	<26800		26800	ug/kg dry		04/25/22 1151	04/25/22 2009	KJB
Trichlorofluoromethane	<53600		53600	ug/kg dry	Q7	04/25/22 1151	04/25/22 2009	KJB
1,3,5-Trimethylbenzene	<26800		26800	ug/kg dry		04/25/22 1151	04/25/22 2009	KJB
1,2,4-Trimethylbenzene	<26800		26800	ug/kg dry		04/25/22 1151	04/25/22 2009	KJB
Vinyl chloride	<26800		26800	ug/kg dry		04/25/22 1151	04/25/22 2009	KJB
o-Xylene	<26800		26800	ug/kg dry		04/25/22 1151	04/25/22 2009	KJB
m-,p-Xylene	<26800		26800	ug/kg dry		04/25/22 1151	04/25/22 2009	KJB
Xylenes	<26800		26800	ug/kg dry		04/25/22 1151	04/25/22 2009	KJB
Surrogate: 4-Bromofluorobenzene	102	Limit: 74-121		% Rec		04/25/22 1151	04/25/22 2009	KJB
Surrogate: Dibromofluoromethane	96.5	Limit: 80-120		% Rec		04/25/22 1151	04/25/22 2009	KJB
Surrogate: 1,2-Dichloroethane-d4	94.4	Limit: 80-120		% Rec		04/25/22 1151	04/25/22 2009	KJB
Surrogate: Toluene-d8	101	Limit: 81-117		% Rec		04/25/22 1151	04/25/22 2009	KJB

Microbac Laboratories, Inc.



Microbac Laboratories, Inc. - Baltimore

CERTIFICATE OF ANALYSIS

22D0582

Client Sample ID: SL	Collected By: charles Portner
Sample Matrix: Sludge	Collection Date: 04/12/2022 9:45
Lab Sample ID: 22D0582-01	

Volatile Organic Compounds by GCMS	Result	Limit(s)	RL	Units	Note	Prepared	Analyzed	Analyst
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Extractable Hydrocarbons by GC/FID	Result	Limit(s)	RL	Units	Note	Prepared	Analyzed	Analyst
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Method: EPA 8015D	Method Notes: D1							
Diesel Range Organics (C10-C28)	13800000		1370000	ug/kg dry		04/22/22 1310	04/25/22 1521	SCB
Surrogate: o-Terphenyl	47.9	Limit: 43-136		% Rec		04/22/22 1310	04/25/22 1521	SCB
Surrogate: Octacosane	51.8	Limit: 25-162		% Rec		04/22/22 1310	04/25/22 1521	SCB



Microbac Laboratories, Inc. - Baltimore

CERTIFICATE OF ANALYSIS

22D0582

Client Sample ID: Cake	Collected By: charles Portner
Sample Matrix: Solid	Collection Date: 04/12/2022 9:45
Lab Sample ID: 22D0582-02	

Analyses Performed by: Microbac Laboratories Inc., - Marietta, OH

General Parameters	Result	Limit(s)	RL	Units	Note	Prepared	Analyzed	Analyst
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Method: ASTM D2216-10								
Percent Solids	21.6		1.00	% (by wt.)		04/19/22 0642	04/20/22 0505	JMH

Volatile Hydrocarbons by GC/FID	Result	Limit(s)	RL	Units	Note	Prepared	Analyzed	Analyst
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Method: EPA 8015D								
Gasoline Range Organics (GRO)	1600000		126000	ug/kg dry			04/26/22 1644	KJB
Surrogate: Chlorobenzene	90.8	Limit: 64-148		% Rec			04/26/22 1644	KJB

Volatile Organic Compounds by GCMS	Result	Limit(s)	RL	Units	Note	Prepared	Analyzed	Analyst
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Method: EPA 8260B								
Toluene	550000		16600	ug/kg dry		04/25/22 1151	04/27/22 0326	KJB
Surrogate: 4-Bromofluorobenzene	99.5	Limit: 74-121		% Rec		04/25/22 1151	04/27/22 0326	KJB
Surrogate: 4-Bromofluorobenzene	101	Limit: 74-121		% Rec		04/25/22 1151	04/25/22 2031	KJB
Surrogate: Dibromofluoromethane	97.9	Limit: 80-120		% Rec		04/25/22 1151	04/27/22 0326	KJB
Surrogate: Dibromofluoromethane	99.1	Limit: 80-120		% Rec		04/25/22 1151	04/25/22 2031	KJB
Surrogate: 1,2-Dichloroethane-d4	95.7	Limit: 80-120		% Rec		04/25/22 1151	04/27/22 0326	KJB
Surrogate: 1,2-Dichloroethane-d4	96.9	Limit: 80-120		% Rec		04/25/22 1151	04/25/22 2031	KJB
Surrogate: Toluene-d8	103	Limit: 81-117		% Rec		04/25/22 1151	04/25/22 2031	KJB
Surrogate: Toluene-d8	101	Limit: 81-117		% Rec		04/25/22 1151	04/27/22 0326	KJB

Extractable Hydrocarbons by GC/FID	Result	Limit(s)	RL	Units	Note	Prepared	Analyzed	Analyst
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Method: EPA 8015D								
Diesel Range Organics (C10-C28)	8630000		377000	ug/kg dry		04/22/22 1310	04/25/22 1745	SCB
Surrogate: o-Terphenyl	89.5	Limit: 43-136		% Rec		04/22/22 1310	04/25/22 1745	SCB
Surrogate: o-Terphenyl	2590	Limit: 43-136		% Rec	S1	04/22/22 1310	04/25/22 1325	SCB
Surrogate: Octacosane	94.4	Limit: 25-162		% Rec		04/22/22 1310	04/25/22 1745	SCB
Surrogate: Octacosane	102	Limit: 25-162		% Rec		04/22/22 1310	04/25/22 1325	SCB



Microbac Laboratories, Inc. - Baltimore

CERTIFICATE OF ANALYSIS

22D0582

Client Sample ID: Centrate	Collected By: charles Portner
Sample Matrix: Aqueous	Collection Date: 04/12/2022 9:45
Lab Sample ID: 22D0582-03	

Analyses Performed by: Microbac Laboratories Inc., - Marietta, OH

Volatile Hydrocarbons by GC/FID	Result	Limit(s)	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 8015D					Method Notes: D3			
Gasoline Range Organics (GRO)	10700		500	ug/L			04/22/22 0027	KJB
Surrogate: Chlorobenzene	88.0	Limit: 74-138		% Rec			04/22/22 0027	KJB



Microbac Laboratories, Inc. - Baltimore

CERTIFICATE OF ANALYSIS

22D0582

Client Sample ID: GST 1	Collected By: charles Portner
Sample Matrix: Sludge	Collection Date: 04/12/2022 15:20
Lab Sample ID: 22D0582-04	

Volatle Organic Compounds by GCMS	Result	Limit(s)	RL	Units	Note	Prepared	Analyzed	Analyst
1,2-Dichloropropane	<29100		29100	ug/kg dry		04/25/22 1151	04/25/22 2054	KJB
1,3-Dichloropropane	<29100		29100	ug/kg dry		04/25/22 1151	04/25/22 2054	KJB
2,2-Dichloropropane	<29100		29100	ug/kg dry		04/25/22 1151	04/25/22 2054	KJB
1,1-Dichloropropene	<29100		29100	ug/kg dry		04/25/22 1151	04/25/22 2054	KJB
trans-1,3-Dichloropropene	<29100		29100	ug/kg dry		04/25/22 1151	04/25/22 2054	KJB
cis-1,3-Dichloropropene	<29100		29100	ug/kg dry		04/25/22 1151	04/25/22 2054	KJB
Ethylbenzene	<29100		29100	ug/kg dry		04/25/22 1151	04/25/22 2054	KJB
Hexachlorobutadiene	<29100		29100	ug/kg dry		04/25/22 1151	04/25/22 2054	KJB
2-Hexanone	<29100		29100	ug/kg dry		04/25/22 1151	04/25/22 2054	KJB
Isopropylbenzene	<29100		29100	ug/kg dry		04/25/22 1151	04/25/22 2054	KJB
p-Isopropyltoluene	<29100		29100	ug/kg dry		04/25/22 1151	04/25/22 2054	KJB
Methylene chloride	<29100		29100	ug/kg dry		04/25/22 1151	04/25/22 2054	KJB
4-Methyl-2-pentanone	<29100		29100	ug/kg dry		04/25/22 1151	04/25/22 2054	KJB
Naphthalene	<29100		29100	ug/kg dry		04/25/22 1151	04/25/22 2054	KJB
Propionitrile	<29100		29100	ug/kg dry		04/25/22 1151	04/25/22 2054	KJB
n-Propylbenzene	<29100		29100	ug/kg dry		04/25/22 1151	04/25/22 2054	KJB
Styrene	<29100		29100	ug/kg dry		04/25/22 1151	04/25/22 2054	KJB
1,1,2,2-Tetrachloroethane	<29100		29100	ug/kg dry		04/25/22 1151	04/25/22 2054	KJB
1,1,1,2-Tetrachloroethane	<29100		29100	ug/kg dry		04/25/22 1151	04/25/22 2054	KJB
Tetrachloroethene	<29100		29100	ug/kg dry		04/25/22 1151	04/25/22 2054	KJB
Toluene	120000		29100	ug/kg dry		04/25/22 1151	04/25/22 2054	KJB
1,2,3-Trichlorobenzene	<29100		29100	ug/kg dry		04/25/22 1151	04/25/22 2054	KJB
1,2,4-Trichlorobenzene	<29100		29100	ug/kg dry		04/25/22 1151	04/25/22 2054	KJB
1,1,1-Trichloroethane	<29100		29100	ug/kg dry		04/25/22 1151	04/25/22 2054	KJB
1,1,2-Trichloroethane	<29100		29100	ug/kg dry		04/25/22 1151	04/25/22 2054	KJB
Trichloroethene	<29100		29100	ug/kg dry		04/25/22 1151	04/25/22 2054	KJB
Trichlorofluoromethane	<58100		58100	ug/kg dry	Q7	04/25/22 1151	04/25/22 2054	KJB
1,3,5-Trimethylbenzene	<29100		29100	ug/kg dry		04/25/22 1151	04/25/22 2054	KJB
1,2,4-Trimethylbenzene	<29100		29100	ug/kg dry		04/25/22 1151	04/25/22 2054	KJB
Vinyl chloride	<29100		29100	ug/kg dry		04/25/22 1151	04/25/22 2054	KJB
o-Xylene	<29100		29100	ug/kg dry		04/25/22 1151	04/25/22 2054	KJB
m-,p-Xylene	<29100		29100	ug/kg dry		04/25/22 1151	04/25/22 2054	KJB
Xylenes	<29100		29100	ug/kg dry		04/25/22 1151	04/25/22 2054	KJB
Surrogate: 4-Bromofluorobenzene	102	Limit: 74-121		% Rec		04/25/22 1151	04/25/22 2054	KJB
Surrogate: Dibromofluoromethane	101	Limit: 80-120		% Rec		04/25/22 1151	04/25/22 2054	KJB
Surrogate: 1,2-Dichloroethane-d4	100	Limit: 80-120		% Rec		04/25/22 1151	04/25/22 2054	KJB
Surrogate: Toluene-d8	104	Limit: 81-117		% Rec		04/25/22 1151	04/25/22 2054	KJB

Extractable Hydrocarbons by GC/FID	Result	Limit(s)	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 8015D								
					Method Notes: D3			
Diesel Range Organics (C10-C28)	9470000		3110000	ug/kg dry		04/22/22 1310	04/25/22 1647	SCB
Surrogate: o-Terphenyl	48.7	Limit: 43-136		% Rec		04/22/22 1310	04/25/22 1647	SCB
Surrogate: o-Terphenyl	61.8	Limit: 43-136		% Rec		04/22/22 1310	04/25/22 1130	SCB

Microbac Laboratories, Inc.

2101 Van Deman Street | Baltimore, MD 21224 | 410.633.1800 p | www.microbac.com



Microbac Laboratories, Inc. - Baltimore

CERTIFICATE OF ANALYSIS

22D0582

Client Sample ID: GST 1	Collected By: charles Portner
Sample Matrix: Sludge	Collection Date: 04/12/2022 15:20
Lab Sample ID: 22D0582-04	

Extractable Hydrocarbons by GC/FID	Result	Limit(s)	RL	Units	Note	Prepared	Analyzed	Analyst
Surrogate: Octacosane	53.1	Limit: 25-162		% Rec		04/22/22 1310	04/25/22 1647	SCB
Surrogate: Octacosane	50.4	Limit: 25-162		% Rec		04/22/22 1310	04/25/22 1130	SCB

Client Sample ID: GST 2	Collected By: charles Portner
Sample Matrix: Sludge	Collection Date: 04/12/2022 15:20
Lab Sample ID: 22D0582-05	

Analyses Performed by: Microbac Laboratories Inc., - Marietta, OH

General Parameters	Result	Limit(s)	RL	Units	Note	Prepared	Analyzed	Analyst
Method: ASTM D2216-10								
Percent Solids	3.06		1.00	% (by wt.)		04/19/22 0642	04/20/22 0505	JMH

Volatile Hydrocarbons by GC/FID	Result	Limit(s)	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 8015D					Method Notes: D1			
Gasoline Range Organics (GRO)	<490000		490000	ug/kg dry			04/26/22 1610	KJB
Surrogate: Chlorobenzene	89.6	Limit: 64-148		% Rec			04/26/22 1610	KJB

Volatile Organic Compounds by GCMS	Result	Limit(s)	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 8260B					Method Notes: D1			
Toluene	195000		24300	ug/kg dry		04/25/22 1151	04/25/22 1946	KJB
Surrogate: 4-Bromofluorobenzene	99.2	Limit: 74-121		% Rec		04/25/22 1151	04/25/22 1946	KJB
Surrogate: Dibromofluoromethane	95.8	Limit: 80-120		% Rec		04/25/22 1151	04/25/22 1946	KJB
Surrogate: 1,2-Dichloroethane-d4	96.4	Limit: 80-120		% Rec		04/25/22 1151	04/25/22 1946	KJB
Surrogate: Toluene-d8	101	Limit: 81-117		% Rec		04/25/22 1151	04/25/22 1946	KJB

Extractable Hydrocarbons by GC/FID	Result	Limit(s)	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 8015D					Method Notes: D3			
Diesel Range Organics (C10-C28)	21600000		2490000	ug/kg dry		04/22/22 1310	04/25/22 1716	SCB
Surrogate: o-Terphenyl	54.1	Limit: 43-136		% Rec		04/22/22 1310	04/25/22 1159	SCB
Surrogate: o-Terphenyl	64.2	Limit: 43-136		% Rec		04/22/22 1310	04/25/22 1716	SCB
Surrogate: Octacosane	63.8	Limit: 25-162		% Rec		04/22/22 1310	04/25/22 1716	SCB
Surrogate: Octacosane	57.8	Limit: 25-162		% Rec		04/22/22 1310	04/25/22 1159	SCB

Results in **bold** have exceeded a limit defined for this project. Limits are provided for reference but as regulatory limits change frequently, Microbac Laboratories, Inc. advises the recipient of this report to confirm such limits and units of concentration with the appropriate Federal, state or local authorities before acting on the data.



Microbac Laboratories, Inc. - Baltimore

CERTIFICATE OF ANALYSIS

22D0582

Definitions

- % (by wt.):** Percent by Weight
- D1:** Dilution was performed due to matrix interference.
- D3:** Dilution was performed due to high target analyte concentration.
- H2:** Initial analysis was within holding time. Reanalysis was past holding time.
- Q7:** CCV recovery is above acceptance limits. However there is no impact on the reported value.
- RL:** Reporting Limit
- S1:** Surrogate recovery is above acceptance limits.
- ug/kg:** Micrograms per Killogram
- ug/L:** Micrograms per Liter

Project Requested Certification(s)

Microbac Laboratories Inc., - Marietta, OH
68-01670
460187

PA Department of Environmental Protection
Virginia Department of General Services

Report Comments

Samples were received in proper condition and the reported results conform to applicable accreditation standard unless otherwise noted.

*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:

Brittany Spraker
Supervisor - Micro
Reported: 04/29/2022 10:14

MICROBAC

2101 Van Deman Street
Baltimore, MD 21224
(410) 633-1800

CHAIN OF CUSTODY RECORD

Instructions on back

TO BE COMPLETED BY MICROBAC

Temperature Upon Receipt (°C)
Therm ID
Holding Time
Samples Received on Ice? Yes No N/A
Custody Seals Intact? Yes No N/A

17.3°C

Number

Lab Report Address

Client Name:

Address:

City, State, Zip:

Contact:

Telephone No.:

Send Report via:

Project:

Sampled by (PRINT):

Invoice Address

Client Name: HAZEN & SAWYER

Address: 1 South St.

City, State, zip: Baltimore, MD 21202

Contact: Aaron Trivette

Telephone No.: 443-948-4478

Location: Baltimore, MD

Sampler Signature: Mark R. Rite

Sampler Phone No.: 202-340-9289

Turnaround Time

Routing (5 to 7 business days)

RUSH* (notify lab)

Report Type

Results Only

Level 1 Level 2 Level 3 Level 4 EDD

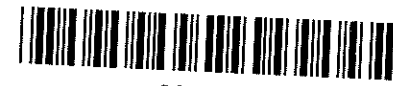
Compliance Monitoring? Yes No

Agency/Program

Matrix Types: Soil/Solid (S), Sludge, Oil, WPO, Drinking Water (DW), Groundwater (GW), Surface Water (SW), Waste Water (WW), Other (specify)
Preservative Types: (1) HNO3, (2) H2SO4, (3) HCl, (4) NaOH, (5) Zinc Acetate, (6) Methanol, (7) Sodium Bisulfate, (8) Sodium Thiosulfate, (9) Hexane, (U) Unpreserved

REQUESTED ANALYSIS

Lab ID	Client Sample ID	Date Collected	Time Collected	No. of Containers	Matrix	Grab / Comp	Preservative Types **
SL	Centrate WW	4/12/2022	9:45	2	Sludge	Comp	
	Centrate WW		9:45	2	Sludge	Comp	
	GST 1		9:45	1	Sludge	Comp	
	GST 2		3:20	1	Sludge	Grav	



22D0582

Possible Hazard Identification

Hazardous Non-Hazardous Radioactive

Sample Disposition

Dispose as appropriate Return Archive

Comments
CENTRATE MATRIX = AQUENS

Relinquished By (signature) Mark R. Rite

Relinquished By (signature)

Relinquished By (signature)

Received By (signature) [Signature]

Received By (signature)

Received By (signature)

Date/Time 4/12/2022 1600

Date/Time

Cooler Receipt Form / Sample Acceptance & Noncompliance Form

Microbac Laboratories, Inc., Baltimore Division
 Control # 606-03
 Effective Date: 11/30/2016
 Page 1 of 1

Number of Coolers Received: 1
 Client: Hazen + Sawyer
 Form Completed By: Omilia Erkkasima
 Shipper:
 Custody Tape Intact:
 Containers Intact:
 Sample Received on Ice or refrigerated:
 Chain of Custody Present with shipment:
 Sample Bottle IDs agree with COC:
 Preservation requirements met:
 Correct Number of Containers / Sample Volume:
 Headspace in container:
 Type of Sample:

Receipt Date / Time: 4-12-22 1600
 Work Order # 2200582
 Microbac Client UPS FedEx
 YES / NO / NA
 YES / NO
 YES / NO / NA
 Infrared (IR) Temperature: 17.3°C
 YES / NO
 YES / NO
 YES / NO / Not Checked
 YES / NO (If No, contact client immediately)
 YES / NO / NA
Water Soil Wipes Oil Filter Solid
Sludge Food Swab Other

Container Type / Quantity:							
A -	Unpreserved	H2SO4	HNO3	HCl	NaOH	NaOH/Ascorbic Acid:	If preserved pH <2, pH >10
B -	Unpreserved	H2SO4	HNO3	HCl	NaOH	NaOH/Ascorbic Acid	If preserved pH <2, pH >10
C -	Unpreserved	H2SO4	HNO3	HCl	NaOH	NaOH/Ascorbic Acid	If preserved pH <2, pH >10
D -	Unpreserved	H2SO4	HNO3	HCl	NaOH	NaOH/Ascorbic Acid	If preserved pH <2, pH >10
E -	Unpreserved	H2SO4	HNO3	HCl	NaOH	NaOH/Ascorbic Acid	If preserved pH <2, pH >10
H -	Unpreserved	H2SO4	HNO3	HCl	NaOH	NaOH/Ascorbic Acid	If preserved pH <2, pH >10
K -	Unpreserved	H2SO4	HNO3	HCl	NaOH	NaOH/Ascorbic Acid	If preserved pH <2, pH >10
L -	Unpreserved	H2SO4	HNO3	HCl	NaOH	NaOH/Ascorbic Acid	If preserved pH <2, pH >10
M -	Unpreserved	H2SO4	HNO3	HCl	NaOH	NaOH/Ascorbic Acid	If preserved pH <2, pH >10
P -	Unpreserved	H2SO4	HNO3	HCl	NaOH	NaOH/Ascorbic Acid	If preserved pH <2, pH >10
W -	<u>2</u> Unpreserved	H2SO4	HNO3	HCl	NaOH	NaOH/Ascorbic Acid	If preserved pH <2, pH >10
V -	Unpreserved	<u>3</u> HCl	HCl / Ascorbic Acid	HCl / NaTHIO	(Checked at time of Analysis)		
F -	Unpreserved	NaTHIO (Checked at time of Analysis)					
S -	Unpreserved	NaTHIO (Checked at time of Analysis)					
SN -	Unpreserved	NaTHIO / EDTA (Checked at time of Analysis)					
<u>6</u>	Unpreserved	<u>glass jars</u> H2SO4	HNO3	HCl	NaOH	NaOH/Ascorbic Acid	If preserved pH <2, pH >10
		H2SO4	HNO3	HCl	NaOH	NaOH/Ascorbic Acid	If preserved pH <2, pH >10
		H2SO4	HNO3	HCl	NaOH	NaOH/Ascorbic Acid	If preserved pH <2, pH >10

Describe preservation requirements not met:
All Acid preserved <2 pH NaOH preserved >12 pH All others >2 and <10 (usually 4-8)
 Sample ID: _____ H2SO4 HNO3 NaOH _____ mls added
 Sample ID: _____ H2SO4 HNO3 NaOH _____ mls added
 Sample ID: _____ H2SO4 HNO3 NaOH _____ mls added
 Sample ID: _____ H2SO4 HNO3 NaOH _____ mls added
H2SO4 - Sulfuric Acid, HNO3 - Nitric Acid, NaOH - Sodium Hydroxide, ASC - Ascorbic Acid, NaTHIO - Sodium Thiosulfate

Describe Anomalies:

Contact information / Summary of Actions:
 Date / Time: _____ Contact: _____ Contact By: _____
 Comments: _____

Hazen

May 23, 2022

Location: Patapsco WWTP
Subject: Sludge Sample Results - May 5, 2022

To whom it may concern,

Please find below a table summarizing the results of the sampling campaign conducted on May 5, 2022. Samples were collected from;

- Plant influent at Southwest Diversion (SWD),
- Plant influent at the Screen Room (IPI),
- Combined influent channel (CI),
- Primary sludge (PS),
- Waste activated sludge (WAS),
- Gravity sludge thickener #2 (PGST2),
- Synagro Influent Sludge (SGST2),
- Synagro dewatered cake (Cake), and
- Synagro dewatering process centrate (Centrate).

The following analyses were performed on all samples by Microbac Laboratory in Baltimore, MD.

- EPA 8015D for gasoline range organics (GRO)
- EPA 8260D for toluene
- EPA 8015D for diesel range organics (DRO)

The results from the aforementioned analysis are tabulated below

	SWD (ug/L)	IPI (ug/L)	CI (ug/L)	PS (ug/kg)	WAS (ug/L)	PGST2 (ug/L)	SGST2 (ug/L)	Cake (ug/kg)	Centrate (ug/L)
GRO	100	418	194	197,000	1,050	5240	1000	166,000	1,850
Toluene	2.6	57	11	11,400	315	392	493	26,200	345
DRO	6,610	68,100	13,200	62,300,000	71,400	261,000	164,000	11,000,000	10600

The full report furnished by Microbac Labs is attached following this page. Please contact Aaron Thomas (Arthomas@hazenandsawyer.com) with any questions.

Regards,



Charles Portner

Job no



Microbac Laboratories, Inc. - Baltimore

CERTIFICATE OF ANALYSIS

22E0514

Hazen & Sawyer

Project Name: Patapsco WWTP

Charles Portner
1 South Street
Baltimore, MD 21202

Project / PO Number: N/A
Received: 05/05/2022
Reported: 05/23/2022

Analytical Testing Parameters

Table with client sample details: Client Sample ID: Cake, Sample Matrix: Solid, Lab Sample ID: 22E0514-01, Collected By: Charles Portner, Collection Date: 05/05/2022 10:30

Analyses Performed by: Microbac Laboratories Inc., - Marietta, OH

General Parameters

Table with columns: Result, Limit(s), RL, Units, Note, Prepared, Analyzed, Analyst. Row: Method: ASTM D2216-10, Percent Solids, 27.2, 1.00, % (by wt.), 05/13/22 0634, 05/16/22 1015, JMH

Volatile Hydrocarbons by GC/FID

Table with columns: Result, Limit(s), RL, Units, Note, Prepared, Analyzed, Analyst. Includes Method: EPA 8015D, Gasoline Range Organics (GRO), and Surrogate: Chlorobenzene.

Volatile Organic Compounds by GCMS

Table with columns: Result, Limit(s), RL, Units, Note, Prepared, Analyzed, Analyst. Includes Method: EPA 8260B, Toluene, and various surrogates.

Extractable Hydrocarbons by GC/FID

Table with columns: Result, Limit(s), RL, Units, Note, Prepared, Analyzed, Analyst. Includes Method: EPA 8015D, Diesel Range Organics (C10-C28), and various surrogates.



Microbac Laboratories, Inc. - Baltimore

CERTIFICATE OF ANALYSIS

22E0514

Client Sample ID: Centrate	Collected By: Charles Portner
Sample Matrix: Wastewater	Collection Date: 05/05/2022 10:30
Lab Sample ID: 22E0514-02	

Analyses Performed by: Microbac Laboratories Inc., - Marietta, OH

Volatile Hydrocarbons by GC/FID	Result	Limit(s)	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 8015D					Method Notes: D1			
Gasoline Range Organics (GRO)	1850		500	ug/L			05/12/22 2344	KJB
Surrogate: Chlorobenzene	90.1	Limit: 74-138		% Rec			05/12/22 2344	KJB

Volatile Organic Compounds by GCMS	Result	Limit(s)	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 8260B					Method Notes: A8, D1			
Toluene	345		5.00	ug/L			05/12/22 2000	CCC
Surrogate: 4-Bromofluorobenzene	107	Limit: 86-115		% Rec			05/12/22 2000	CCC
Surrogate: Dibromofluoromethane	99.4	Limit: 86-118		% Rec			05/12/22 2000	CCC
Surrogate: 1,2-Dichloroethane-d4	98.3	Limit: 80-120		% Rec			05/12/22 2000	CCC
Surrogate: Toluene-d8	102	Limit: 88-110		% Rec			05/12/22 2000	CCC

Extractable Hydrocarbons by GC/FID	Result	Limit(s)	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 8015D					Method Notes: AC, D3			
Diesel Range Organics (C10-C28)	10600		5320	ug/L		05/17/22 1130	05/19/22 1542	SCB
Surrogate: o-Terphenyl	8.20	Limit: 49-141		% Rec	S2, S4	05/17/22 1130	05/19/22 1542	SCB
Surrogate: o-Terphenyl	9.74	Limit: 49-141		% Rec	S2, S4	05/17/22 1130	05/19/22 0104	SCB
Surrogate: Octacosane	25.9	Limit: 26-152		% Rec	S2, S4	05/17/22 1130	05/19/22 1542	SCB
Surrogate: Octacosane	11.5	Limit: 26-152		% Rec	S2, S4	05/17/22 1130	05/19/22 0104	SCB



Microbac Laboratories, Inc. - Baltimore

CERTIFICATE OF ANALYSIS

22E0514

Client Sample ID: IPI	Collected By: Charles Portner
Sample Matrix: Wastewater	Collection Date: 05/05/2022 10:30
Lab Sample ID: 22E0514-03	

Analyses Performed by: Microbac Laboratories Inc., - Marietta, OH

Volatile Hydrocarbons by GC/FID	Result	Limit(s)	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 8015D								
Gasoline Range Organics (GRO)	418		100	ug/L			05/12/22 2129	KJB
Surrogate: Chlorobenzene	90.6	Limit: 74-138		% Rec			05/12/22 2129	KJB

Volatile Organic Compounds by GCMS	Result	Limit(s)	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 8260B								
Toluene	57.2		1.00	ug/L			05/12/22 1800	CCC
Surrogate: 4-Bromofluorobenzene	94.8	Limit: 86-115		% Rec			05/12/22 1800	CCC
Surrogate: Dibromofluoromethane	102	Limit: 86-118		% Rec			05/12/22 1800	CCC
Surrogate: 1,2-Dichloroethane-d4	94.2	Limit: 80-120		% Rec			05/12/22 1800	CCC
Surrogate: Toluene-d8	109	Limit: 88-110		% Rec			05/12/22 1800	CCC

Extractable Hydrocarbons by GC/FID	Result	Limit(s)	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 8015D								
Method Notes: AC, D3								
Diesel Range Organics (C10-C28)	68100		11600	ug/L		05/17/22 1130	05/19/22 1640	SCB
Surrogate: o-Terphenyl	0	Limit: 49-141		% Rec	S2, S4	05/17/22 1130	05/19/22 0522	SCB
Surrogate: o-Terphenyl	61.4	Limit: 49-141		% Rec	S3	05/17/22 1130	05/19/22 1640	SCB
Surrogate: Octacosane	79.2	Limit: 26-152		% Rec	S3	05/17/22 1130	05/19/22 1640	SCB
Surrogate: Octacosane	57.8	Limit: 26-152		% Rec		05/17/22 1130	05/19/22 0522	SCB



Microbac Laboratories, Inc. - Baltimore

CERTIFICATE OF ANALYSIS

22E0514

Client Sample ID: CI	Collected By: Charles Portner
Sample Matrix: Wastewater	Collection Date: 05/05/2022 10:30
Lab Sample ID: 22E0514-04	

Analyses Performed by: Microbac Laboratories Inc., - Marietta, OH

Volatile Hydrocarbons by GC/FID	Result	Limit(s)	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 8015D								
Gasoline Range Organics (GRO)	194		100	ug/L			05/12/22 2203	KJB
Surrogate: Chlorobenzene	88.0	Limit: 74-138		% Rec			05/12/22 2203	KJB

Volatile Organic Compounds by GCMS	Result	Limit(s)	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 8260B								
Toluene	11.0		1.00	ug/L			05/12/22 1821	CCC
Surrogate: 4-Bromofluorobenzene	91.8	Limit: 86-115		% Rec			05/12/22 1821	CCC
Surrogate: Dibromofluoromethane	90.8	Limit: 86-118		% Rec			05/12/22 1821	CCC
Surrogate: 1,2-Dichloroethane-d4	92.8	Limit: 80-120		% Rec			05/12/22 1821	CCC
Surrogate: Toluene-d8	106	Limit: 88-110		% Rec			05/12/22 1821	CCC

Extractable Hydrocarbons by GC/FID	Result	Limit(s)	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 8015D								
Method Notes: AC, D3								
Diesel Range Organics (C10-C28)	13200		11100	ug/L		05/17/22 1130	05/19/22 1709	SCB
Surrogate: o-Terphenyl	4190	Limit: 49-141		% Rec	S1, S4	05/17/22 1130	05/19/22 0620	SCB
Surrogate: o-Terphenyl	83.8	Limit: 49-141		% Rec	S3	05/17/22 1130	05/19/22 1709	SCB
Surrogate: Octacosane	82.4	Limit: 26-152		% Rec	S3	05/17/22 1130	05/19/22 1709	SCB
Surrogate: Octacosane	58.7	Limit: 26-152		% Rec		05/17/22 1130	05/19/22 0620	SCB



Microbac Laboratories, Inc. - Baltimore

CERTIFICATE OF ANALYSIS

22E0514

Client Sample ID: SWD	Collected By: Charles Portner
Sample Matrix: Wastewater	Collection Date: 05/05/2022 10:30
Lab Sample ID: 22E0514-05	

Analyses Performed by: Microbac Laboratories Inc., - Marietta, OH

Volatile Hydrocarbons by GC/FID	Result	Limit(s)	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 8015D								
Gasoline Range Organics (GRO)	<100		100	ug/L			05/12/22 2237	KJB
Surrogate: Chlorobenzene	88.0	Limit: 74-138		% Rec			05/12/22 2237	KJB

Volatile Organic Compounds by GCMS	Result	Limit(s)	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 8260B								
Toluene	2.60		1.00	ug/L			05/12/22 1923	CCC
Surrogate: 4-Bromofluorobenzene	105	Limit: 86-115		% Rec			05/12/22 1923	CCC
Surrogate: Dibromofluoromethane	100	Limit: 86-118		% Rec			05/12/22 1923	CCC
Surrogate: 1,2-Dichloroethane-d4	98.3	Limit: 80-120		% Rec			05/12/22 1923	CCC
Surrogate: Toluene-d8	101	Limit: 88-110		% Rec			05/12/22 1923	CCC

Extractable Hydrocarbons by GC/FID	Result	Limit(s)	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 8015D								
Method Notes: AC, D3								
Diesel Range Organics (C10-C28)	6610		5750	ug/L		05/17/22 1130	05/19/22 1611	SCB
Surrogate: o-Terphenyl	63.2	Limit: 49-141		% Rec		05/17/22 1130	05/19/22 1611	SCB
Surrogate: o-Terphenyl	2600	Limit: 49-141		% Rec	S1, S4	05/17/22 1130	05/19/22 0132	SCB
Surrogate: Octacosane	62.2	Limit: 26-152		% Rec		05/17/22 1130	05/19/22 1611	SCB
Surrogate: Octacosane	61.3	Limit: 26-152		% Rec		05/17/22 1130	05/19/22 0132	SCB



Microbac Laboratories, Inc. - Baltimore

CERTIFICATE OF ANALYSIS

22E0514

Client Sample ID: PGST2	Collected By: Charles Portner
Sample Matrix: Wastewater	Collection Date: 05/05/2022 10:30
Lab Sample ID: 22E0514-06	

Analyses Performed by: Microbac Laboratories Inc., - Marietta, OH

Volatile Hydrocarbons by GC/FID	Result	Limit(s)	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 8015D					Method Notes: ACa, D1, H			
Gasoline Range Organics (GRO)	5240		5000	ug/L			05/13/22 0018	KJB
Surrogate: Chlorobenzene	90.7	Limit: 74-138		% Rec			05/13/22 0018	KJB

Volatile Organic Compounds by GCMS	Result	Limit(s)	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 8260B					Method Notes: A8, D1			
Toluene	392		50.0	ug/L			05/12/22 2019	CCC
Surrogate: 4-Bromofluorobenzene	104	Limit: 86-115		% Rec			05/12/22 2019	CCC
Surrogate: Dibromofluoromethane	98.9	Limit: 86-118		% Rec			05/12/22 2019	CCC
Surrogate: 1,2-Dichloroethane-d4	95.8	Limit: 80-120		% Rec			05/12/22 2019	CCC
Surrogate: Toluene-d8	99.4	Limit: 88-110		% Rec			05/12/22 2019	CCC

Extractable Hydrocarbons by GC/FID	Result	Limit(s)	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 8015D					Method Notes: AC, D3			
Diesel Range Organics (C10-C28)	261000		64900	ug/L		05/17/22 1130	05/19/22 1806	SCB
Surrogate: o-Terphenyl	0	Limit: 49-141		% Rec	S2, S4	05/17/22 1130	05/19/22 0551	SCB
Surrogate: o-Terphenyl	0	Limit: 49-141		% Rec	S3	05/17/22 1130	05/19/22 1806	SCB
Surrogate: Octacosane	99.0	Limit: 26-152		% Rec	S3	05/17/22 1130	05/19/22 1806	SCB
Surrogate: Octacosane	8.98	Limit: 26-152		% Rec	S2, S4	05/17/22 1130	05/19/22 0551	SCB



Microbac Laboratories, Inc. - Baltimore

CERTIFICATE OF ANALYSIS

22E0514

Client Sample ID: SGST2	Collected By: Charles Portner
Sample Matrix: Wastewater	Collection Date: 05/05/2022 10:30
Lab Sample ID: 22E0514-07	

Analyses Performed by: Microbac Laboratories Inc., - Marietta, OH

Volatile Hydrocarbons by GC/FID	Result	Limit(s)	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 8015D					Method Notes: ACa, D1, H			
Gasoline Range Organics (GRO)	<1000		1000	ug/L			05/13/22 0052	KJB
Surrogate: Chlorobenzene	88.6	Limit: 74-138		% Rec			05/13/22 0052	KJB

Volatile Organic Compounds by GCMS	Result	Limit(s)	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 8260B					Method Notes: A8, D1			
Toluene	493		50.0	ug/L			05/12/22 2037	CCC
Surrogate: 4-Bromofluorobenzene	103	Limit: 86-115		% Rec			05/12/22 2037	CCC
Surrogate: Dibromofluoromethane	100	Limit: 86-118		% Rec			05/12/22 2037	CCC
Surrogate: 1,2-Dichloroethane-d4	97.2	Limit: 80-120		% Rec			05/12/22 2037	CCC
Surrogate: Toluene-d8	100	Limit: 88-110		% Rec			05/12/22 2037	CCC

Extractable Hydrocarbons by GC/FID	Result	Limit(s)	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 8015D					Method Notes: AC, D3			
Diesel Range Organics (C10-C28)	164000		62500	ug/L		05/17/22 1130	05/19/22 1737	SCB
Surrogate: o-Terphenyl	0	Limit: 49-141		% Rec	S2, S4	05/17/22 1130	05/19/22 0453	SCB
Surrogate: o-Terphenyl	0	Limit: 49-141		% Rec	S3	05/17/22 1130	05/19/22 1737	SCB
Surrogate: Octacosane	7.95	Limit: 26-152		% Rec	S2, S4	05/17/22 1130	05/19/22 0453	SCB
Surrogate: Octacosane	108	Limit: 26-152		% Rec	S3	05/17/22 1130	05/19/22 1737	SCB



Microbac Laboratories, Inc. - Baltimore

CERTIFICATE OF ANALYSIS

22E0514

Client Sample ID: WAS	Collected By: Charles Portner
Sample Matrix: Wastewater	Collection Date: 05/05/2022 10:30
Lab Sample ID: 22E0514-08	

Analyses Performed by: Microbac Laboratories Inc., - Marietta, OH

Volatile Hydrocarbons by GC/FID	Result	Limit(s)	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 8015D								
Gasoline Range Organics (GRO)	1050		100	ug/L			05/12/22 2311	KJB
Surrogate: Chlorobenzene	88.4	Limit: 74-138		% Rec			05/12/22 2311	KJB

Volatile Organic Compounds by GCMS	Result	Limit(s)	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 8260B								
Method Notes: H2								
Toluene	315		10.0	ug/L	D3		05/17/22 1747	EEA
Surrogate: 4-Bromofluorobenzene	99.5	Limit: 86-115		% Rec			05/17/22 1747	EEA
Surrogate: Dibromofluoromethane	99.8	Limit: 86-118		% Rec			05/17/22 1747	EEA
Surrogate: 1,2-Dichloroethane-d4	105	Limit: 80-120		% Rec			05/17/22 1747	EEA
Surrogate: Toluene-d8	104	Limit: 88-110		% Rec			05/17/22 1747	EEA

Extractable Hydrocarbons by GC/FID	Result	Limit(s)	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 8015D								
Method Notes: AC, D3								
Diesel Range Organics (C10-C28)	71400		60200	ug/L		05/17/22 1130	05/19/22 1835	SCB
Surrogate: o-Terphenyl	0	Limit: 49-141		% Rec	S3	05/17/22 1130	05/19/22 1835	SCB
Surrogate: o-Terphenyl	0	Limit: 49-141		% Rec		05/17/22 1130	05/19/22 0648	SCB
Surrogate: Octacosane	104	Limit: 26-152		% Rec	S3	05/17/22 1130	05/19/22 1835	SCB
Surrogate: Octacosane	17.9	Limit: 26-152		% Rec		05/17/22 1130	05/19/22 0648	SCB



Microbac Laboratories, Inc. - Baltimore

CERTIFICATE OF ANALYSIS

22E0514

Client Sample ID: PST	Collected By: Charles Portner
Sample Matrix: Sludge	Collection Date: 05/05/2022 10:30
Lab Sample ID: 22E0514-09	

Analyses Performed by: Microbac Laboratories Inc., - Marietta, OH

General Parameters	Result	Limit(s)	RL	Units	Note	Prepared	Analyzed	Analyst
Method: ASTM D2216-10								
Percent Solids	8.08		1.00	% (by wt.)		05/16/22 1029	05/17/22 0520	JMH
Volatile Hydrocarbons by GC/FID								
Method: EPA 8015D								
Method Notes: D1								
Gasoline Range Organics (GRO)	197000		177000	ug/kg dry			05/17/22 2142	KJB
Surrogate: Chlorobenzene	89.5	Limit: 64-148		% Rec			05/17/22 2142	KJB
Volatile Organic Compounds by GCMS								
Method: EPA 8260B								
Method Notes: D1								
Toluene	11400		8860	ug/kg dry		05/12/22 1721	05/17/22 1806	KJB
Surrogate: 4-Bromofluorobenzene	98.1	Limit: 74-121		% Rec		05/12/22 1721	05/17/22 1806	KJB
Surrogate: Dibromofluoromethane	94.2	Limit: 80-120		% Rec		05/12/22 1721	05/17/22 1806	KJB
Surrogate: 1,2-Dichloroethane-d4	91.9	Limit: 80-120		% Rec		05/12/22 1721	05/17/22 1806	KJB
Surrogate: Toluene-d8	99.3	Limit: 81-117		% Rec		05/12/22 1721	05/17/22 1806	KJB
Extractable Hydrocarbons by GC/FID								
Method: EPA 8015D								
Method Notes: D3								
Diesel Range Organics (C10-C28)	62300000		1880000	ug/kg dry		05/16/22 0942	05/19/22 0327	SCB
Surrogate: o-Terphenyl	0	Limit: 43-136		% Rec	S3	05/16/22 0942	05/19/22 0327	SCB
Surrogate: o-Terphenyl	0	Limit: 43-136		% Rec	S2, S4	05/16/22 0942	05/19/22 0258	SCB
Surrogate: Octacosane	66.6	Limit: 25-162		% Rec	S3	05/16/22 0942	05/19/22 0327	SCB
Surrogate: Octacosane	67.2	Limit: 25-162		% Rec		05/16/22 0942	05/19/22 0258	SCB

Results in **bold** have exceeded a limit defined for this project. Limits are provided for reference but as regulatory limits change frequently, Microbac Laboratories, Inc. advises the recipient of this report to confirm such limits and units of concentration with the appropriate Federal, state or local authorities before acting on the data.



Microbac Laboratories, Inc. - Baltimore

CERTIFICATE OF ANALYSIS

22E0514

Definitions

- % (by wt.): Percent by Weight
A8: Sample was received in an improper container.
AC: Sample extracted out of hold per client, see work order memo.
ACa: Sample recieved in evening on last day of hold.
ACb: Sample was extracted out of hold per client, see work order memo.
D1: Dilution was performed due to matrix interference.
D3: Dilution was performed due to high target analyte concentration.
H: Sample was analyzed past holding time.
H2: Initial analysis was within holding time. Reanalysis was past holding time.
RL: Reporting Limit
S1: Surrogate recovery is above acceptance limits.
S2: Surrogate recovery is below acceptance limits.
S3: Surrogate was diluted out.
S4: Surrogate recovery can not be accurately measured due to matrix interference.
ug/kg: Micrograms per Killogram
ug/L: Micrograms per Liter

Project Requested Certification(s)

Microbac Laboratories Inc., - Marietta, OH
E87551

Florida Department of Health

Report Comments

Samples were received in proper condition and the reported results conform to applicable accreditation standard unless otherwise noted.

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:

Brittany Spraker (signature)

Brittany Spraker
Project Manager

Reported: 05/23/2022 12:07

MICROBAC

2101 Van Deman Street
Baltimore, MD 21224
(410) 633-1800

CHAIN OF CUSTODY RECORD

Instructions on back

TO BE COMPLETED BY MICROBAC

Temperature Upon Receipt (°C) 10.7
Therm ID EQW40.12

Holding Time

Samples Received on Ice? Yes No

Custody Seals Intact? Yes No N/A

Turnaround Time

Routine (5 to 7 business days)

RUSH (notify lab)

(needed by)

Report Type

Results Only Level 1 Level 2 Level 3 Level 4 EDD

Send Invoice via: Mail Fax e-mail (address)

Compliance Monitoring? Yes No

Agency/Program

Lab Report Address

Client Name: Hazen & Sawyer

Address: 1 South St, Ste 1015

City, State, Zip: Baltimore MD

Contact: Aaron Thomas

Telephone No.: 413-717-3247

Send Report via: Mail Fax e-mail (address)

Project: Patapsco WOTF

Location: Patapsco

Sampled by (PRINT): Charles Parker

Sampler Signature: Charles Parker

Sampler Signature: Charles Parker

Sampler Signature: Charles Parker

Sampler Signature: Charles Parker

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22E0514

Lab ID	Client Sample ID	Date Collected	Time Collected	No. of Containers	Matrix	Grab/Comp	Preservative Types **	Additional Notes
	Cake	5/5	10:30	2	S			8015 D PRO, 8015 D GRO, 8260D Toluene
	Centrate			4	W/W		H2PO4	
	IPI			1	W/W			
	CI			1	W/W			
	SUD			1	W/W			
	PAST2			1	W/W			
	SGST2			1	W/W			
	WAS			4	W/W			
	PST			1	Sludge			

Possible Hazard Identification: Hazardous Non-Hazardous Radioactive

Refrigerated: Yes No

Comments: Recycled procedure

Refriniquished By (signature): Charles Parker Date/Time: 5/5/2022 12:12 PM

Received By (signature): Charles Parker Date/Time: 5/5/22 12:12 PM

Rev: 12/26/2017

Cooler Receipt Form / Sample Acceptance & Noncompliance Form

Microbac Laboratories, Inc., Baltimore Division
 Control # 606-03
 Effective Date: 11/30/2016
 Page 1 of 1

Number of Coolers Received: 1
 Client: Hazen + Slawert
 Form Completed By: Amie Fekolima
 Shipper:
 Custody Tape Intact:
 Containers Intact:
 Sample Received on Ice or refrigerated:
 Chain of Custody Present with shipment:
 Sample Bottle IDs agree with COC:
 Preservation requirements met:
 Correct Number of Containers / Sample Volume:
 Headspace in container:
 Type of Sample:

Receipt Date / Time: 5-6-22 1212
 Work Order # 2250514
 Microbac Client UPS FedEx
 YES / NO / NA
 YES / NO
 YES / NO / NA
 Infrared (IR) Temperature: 20.7 °C
 YES / NO
 YES / NO
 YES / NO / Not Checked
 YES / NO (If No, contact client immediately)
 YES / NO / NA
 Water Soil Wipes Oil Filter Solid
 Sludge Food Swab Other

Container Type / Quantity:						
A -	Unpreserved	H2SO4	HNO3	HCl	NaOH	NaOH/Ascorbic Acid: If preserved pH <2, pH >10
B -	Unpreserved	H2SO4	HNO3	HCl	NaOH	NaOH/Ascorbic Acid: If preserved pH <2, pH >10
C -	Unpreserved	H2SO4	HNO3	HCl	NaOH	NaOH/Ascorbic Acid: If preserved pH <2, pH >10
D -	Unpreserved	H2SO4	HNO3	HCl	NaOH	NaOH/Ascorbic Acid: If preserved pH <2, pH >10
E -	Unpreserved	H2SO4	HNO3	HCl	NaOH	NaOH/Ascorbic Acid: If preserved pH <2, pH >10
H -	Unpreserved	H2SO4	HNO3	HCl	NaOH	NaOH/Ascorbic Acid: If preserved pH <2, pH >10
K -	Unpreserved	H2SO4	HNO3	HCl	NaOH	NaOH/Ascorbic Acid: If preserved pH <2, pH >10
L -	Unpreserved	H2SO4	HNO3	HCl	NaOH	NaOH/Ascorbic Acid: If preserved pH <2, pH >10
M -	Unpreserved	H2SO4	HNO3	HCl	NaOH	NaOH/Ascorbic Acid: If preserved pH <2, pH >10
P -	Unpreserved	H2SO4	HNO3	HCl	NaOH	NaOH/Ascorbic Acid: If preserved pH <2, pH >10
W -	Unpreserved	H2SO4	HNO3	HCl	NaOH	NaOH/Ascorbic Acid: If preserved pH <2, pH >10
V -	Unpreserved	HCl	HCl / Ascorbic Acid	HCl / NaTHIO	(Checked at time of Analysis)	
F -	Unpreserved	NaTHIO	(Checked at time of Analysis)			
S -	Unpreserved	NaTHIO	(Checked at time of Analysis)			
SN -	Unpreserved	NaTHIO	NaTHIO/EDTA (Checked at time of Analysis)			
<u>6</u>	Unpreserved	<u>glass vials</u> H2SO4	HNO3	HCl	NaOH	NaOH/Ascorbic Acid: If preserved pH <2, pH >10
	Unpreserved	H2SO4	HNO3	HCl	NaOH	NaOH/Ascorbic Acid: If preserved pH <2, pH >10
	Unpreserved	H2SO4	HNO3	HCl	NaOH	NaOH/Ascorbic Acid: If preserved pH <2, pH >10

Describe preservation requirements not met:

All Acid preserved <2 pH NaOH preserved >12 pH All others >2 and <10 (usually 4-8)

Sample ID: _____ H2SO4 HNO3 NaOH _____ mls added
 Sample ID: _____ H2SO4 HNO3 NaOH _____ mls added
 Sample ID: _____ H2SO4 HNO3 NaOH _____ mls added
 Sample ID: _____ H2SO4 HNO3 NaOH _____ mls added

H2SO4 - Sulfuric Acid, HNO3 - Nitric Acid, NaOH - Sodium Hydroxide, ASC - Ascorbic Acid, NaTHIO - Sodium Thiosulfate

Describe Anomalies:

49015, 6015 GRD; 8240 - NOC created. Per/Am 5-6-22

Contact information / Summary of Actions:

Date / Time: _____ Contact: _____ Contact By: _____
 Comments: _____